

START

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Vol. 1212 Number 1

OFFICIAL GAZETTE

of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 7, 1998



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

July 7, 1998

Volume 1212

Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1205 O.G. 4, on December 2, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was increased, effective January 1, 1998, and was announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997. The basic fee and the designation fee were further changed effective January 1, 1998 and were announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1997, and were announced in the *Official Gazette* at 1201 O.G. 63, on August 19, 1997.

The schedule of PCT fees (in U.S. dollars), effective January 1, 1998, is as follows:

International Application (PCT Chapter I) fees:

Transmittal fee	240.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	700.00
— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	210.00
European Patent Office as ISA	1250.00
International fees	
Basic fee	455.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	105.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	105.00
— Confirmation fee	52.50

International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:

Handling fee	162.00
Preliminary examination fee	

USPTO as International Preliminary Examining Authority (IPEA)

— USPTO was ISA in PCT Chapter I	490.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	750.00
— Additional examination fee, per additional invention (payable only upon invitation)	270.00

U.S. National Stage Fees

	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	49.00	98.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	360.00	720.00
USPTO was ISA but not IPEA	395.00	790.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	535.00	1070.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	465.00	930.00

Other National fees

— For each independent claim in excess of 3	41.00	82.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	135.00	270.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Nov. 10, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on July 4, 1995 for which maintenance fees due at 3 years and six

months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,428,841 through 5,430,895
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 2, 1991 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,027,437 through 5,029,341
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on June 30, 1987 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,675,912 through 4,677,693
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1997, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))\$25.00
By other than a small entity\$1,050.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))\$1,050.00
By other than a small entity\$2,100.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f))\$1,580.00
By other than a small entity\$3,160.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f))\$65.00
By other than a small entity\$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable\$700.00
(2) unintentional\$1,640.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED April 29, 1998 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,584,732	06/695,827	04/29/86
4,584,738	06/704,184	04/29/86
4,584,740	06/641,275	04/29/86
4,584,741	06/756,381	04/29/86
4,584,745	06/577,564	04/29/86
4,584,748	06/606,172	04/29/86
4,584,751	06/605,097	04/29/86
4,584,757	06/704,834	04/29/86
4,584,758	06/647,342	04/29/86
4,584,762	06/558,073	04/29/86
4,584,763	06/561,507	04/29/86
4,584,766	06/542,256	04/29/86
4,584,772	06/609,222	04/29/86
4,584,773	06/754,028	04/29/86
4,584,777	06/702,884	04/29/86
4,584,786	06/452,691	04/29/86
4,584,797	06/604,008	04/29/86
4,584,798	06/594,546	04/29/86
4,584,803	06/628,292	04/29/86
4,584,804	06/484,672	04/29/86
4,584,815	06/665,155	04/29/86
4,584,816	06/672,338	04/29/86
4,584,818	06/767,594	04/29/86
4,584,831	06/729,551	04/29/86
4,584,843	06/668,408	04/29/86
4,584,852	06/630,079	04/29/86
4,584,855	06/508,740	04/29/86
4,584,868	06/734,935	04/29/86
4,584,879	06/621,729	04/29/86
4,584,883	06/439,900	04/29/86
4,584,885	06/572,582	04/29/86
4,584,888	06/645,269	04/29/86
4,584,894	06/584,567	04/29/86
4,584,904	06/362,195	04/29/86
4,584,910	06/720,863	04/29/86
4,584,916	06/400,264	04/29/86
4,584,923	06/708,547	04/29/86
4,584,925	06/535,814	04/29/86
4,584,942	06/568,364	04/29/86
4,584,948	06/678,220	04/29/86
4,584,955	06/662,950	04/29/86
4,584,957	06/570,983	04/29/86
4,584,958	06/468,913	04/29/86
4,584,960	06/566,002	04/29/86
4,584,968	06/757,484	04/29/86
4,584,969	06/654,612	04/29/86
4,584,971	06/662,262	04/29/86
4,584,973	06/675,769	04/29/86
4,584,974	06/514,687	04/29/86
4,584,981	06/658,024	04/29/86
4,584,988	06/645,158	04/29/86
4,584,990	06/656,980	04/29/86
4,584,994	06/537,785	04/29/86
4,584,999	06/626,410	04/29/86
4,585,007	06/493,415	04/29/86
4,585,010	06/627,065	04/29/86
4,585,011	06/659,297	04/29/86
4,585,017	06/579,116	04/29/86
4,585,018	06/591,258	04/29/86
4,585,021	06/579,262	04/29/86
4,585,023	06/634,140	04/29/86

Patent Number	Serial Number	Issue Date	4,585,466	06/506,549	04/29/86
4,585,034	06/758,408	04/29/86	4,585,468	06/678,957	04/29/86
4,585,036	06/604,579	04/29/86	4,585,495	06/710,542	04/29/86
4,585,037	06/553,756	04/29/86	4,585,496	06/710,543	04/29/86
4,585,040	06/697,782	04/29/86	4,585,502	06/701,533	04/29/86
4,585,041	06/672,458	04/29/86	4,585,503	06/540,798	04/29/86
4,585,042	06/527,814	04/29/86	4,585,504	06/694,149	04/29/86
4,585,044	06/451,746	04/29/86	4,585,508	06/665,054	04/29/86
4,585,050	06/746,947	04/29/86	4,585,513	06/696,465	04/29/86
4,585,066	06/676,743	04/29/86	4,585,523	06/583,593	04/29/86
4,585,068	06/579,907	04/29/86	4,585,526	06/656,370	04/29/86
4,585,069	06/662,447	04/29/86	4,585,529	06/547,563	04/29/86
4,585,091	06/633,054	04/29/86	4,585,530	06/764,273	04/29/86
4,585,093	06/611,761	04/29/86	4,585,545	06/679,172	04/29/86
4,585,110	06/498,231	04/29/86	4,585,550	06/647,772	04/29/86
4,585,135	06/706,537	04/29/86	4,585,555	06/433,638	04/29/86
4,585,136	06/450,061	04/29/86	4,585,558	06/652,322	04/29/86
4,585,139	06/763,491	04/29/86	4,585,570	06/678,972	04/29/86
4,585,146	06/504,864	04/29/86	4,585,589	06/626,358	04/29/86
4,585,148	06/575,846	04/29/86	4,585,591	06/325,026	04/29/86
4,585,157	06/719,987	04/29/86	4,585,592	06/706,472	04/29/86
4,585,159	06/724,728	04/29/86	4,585,594	06/680,514	04/29/86
4,585,160	06/728,425	04/29/86	4,585,604	06/620,828	04/29/86
4,585,163	06/702,232	04/29/86	4,585,605	06/780,117	04/29/86
4,585,179	06/615,536	04/29/86	4,585,609	06/449,948	04/29/86
4,585,180	06/626,139	04/29/86	4,585,615	06/473,516	04/29/86
4,585,181	06/745,273	04/29/86	4,585,616	06/473,515	04/29/86
4,585,184	06/634,787	04/29/86	4,585,618	06/580,532	04/29/86
4,585,186	06/654,311	04/29/86	4,585,620	06/386,534	04/29/86
4,585,199	06/611,592	04/29/86	4,585,621	06/626,500	04/29/86
4,585,205	06/620,351	04/29/86	4,585,626	06/516,965	04/29/86
4,585,207	06/772,107	04/29/86	4,585,629	06/649,235	04/29/86
4,585,209	06/545,907	04/29/86	4,585,633	06/279,089	04/29/86
4,585,219	06/750,696	04/29/86	4,585,647	06/672,619	04/29/86
4,585,226	06/630,129	04/29/86	4,585,648	06/638,679	04/29/86
4,585,230	06/615,833	04/29/86	4,585,651	06/217,746	04/29/86
4,585,234	06/704,298	04/29/86	4,585,652	06/673,522	04/29/86
4,585,238	06/768,146	04/29/86	4,585,654	06/684,440	04/29/86
4,585,239	06/772,568	04/29/86	4,585,658	06/661,371	04/29/86
4,585,248	06/620,253	04/29/86	4,585,667	06/687,563	04/29/86
4,585,257	06/513,745	04/29/86	4,585,669	06/778,176	04/29/86
4,585,258	06/522,703	04/29/86	4,585,672	06/706,175	04/29/86
4,585,264	06/613,316	04/29/86	4,585,674	06/704,609	04/29/86
4,585,266	06/586,868	04/29/86	4,585,677	06/753,957	04/29/86
4,585,271	06/634,388	04/29/86	4,585,678	06/629,664	04/29/86
4,585,279	06/631,673	04/29/86	4,585,681	06/624,750	04/29/86
4,585,282	06/515,956	04/29/86	4,585,682	06/497,451	04/29/86
4,585,290	06/634,816	04/29/86	4,585,684	06/669,968	04/29/86
4,585,291	06/531,885	04/29/86	4,585,686	06/682,432	04/29/86
4,585,294	06/562,752	04/29/86	4,585,688	06/688,741	04/29/86
4,585,295	06/612,547	04/29/86	4,585,694	06/603,917	04/29/86
4,585,303	06/520,282	04/29/86	4,585,695	06/652,488	04/29/86
4,585,310	06/560,475	04/29/86	4,585,697	06/654,465	04/29/86
4,585,311	06/455,932	04/29/86	4,585,699	06/651,834	04/29/86
4,585,318	06/570,349	04/29/86	4,585,704	06/642,700	04/29/86
4,585,327	06/609,579	04/29/86	4,585,707	06/489,938	04/29/86
4,585,328	06/509,136	04/29/86	4,585,709	06/459,713	04/29/86
4,585,331	06/642,272	04/29/86	4,585,713	06/671,440	04/29/86
4,585,342	06/626,496	04/29/86	4,585,717	06/716,613	04/29/86
4,585,348	06/573,783	04/29/86	4,585,749	06/536,921	04/29/86
4,585,354	06/618,097	04/29/86	4,585,766	06/645,099	04/29/86
4,585,357	06/662,234	04/29/86	4,585,771	06/641,641	04/29/86
4,585,362	06/679,342	04/29/86	4,585,773	06/629,649	04/29/86
4,585,368	06/650,912	04/29/86	4,585,793	06/492,825	04/29/86
4,585,379	06/333,632	04/29/86	4,585,797	06/610,621	04/29/86
4,585,393	06/477,701	04/29/86	4,585,801	06/362,684	04/29/86
4,585,396	06/556,668	04/29/86	4,585,802	06/764,267	04/29/86
4,585,417	06/612,436	04/29/86	4,585,804	06/697,418	04/29/86
4,585,418	06/694,892	04/29/86	4,585,805	06/768,064	04/29/86
4,585,432	06/602,548	04/29/86	4,585,809	06/579,148	04/29/86
4,585,433	06/656,644	04/29/86	4,585,810	06/626,669	04/29/86
4,585,434	06/656,645	04/29/86	4,585,813	06/472,206	04/29/86
4,585,438	06/484,907	04/29/86	4,585,815	06/560,303	04/29/86
4,585,441	06/650,838	04/29/86	4,585,816	06/751,152	04/29/86
4,585,451	06/492,567	04/29/86	4,585,826	06/695,651	04/29/86
4,585,454	06/581,727	04/29/86	4,585,827	06/630,488	04/29/86
4,585,463	06/689,105	04/29/86	4,585,828	06/665,566	04/29/86
4,585,464	06/736,414	04/29/86	4,585,829	06/614,712	04/29/86
			4,585,833	06/498,577	04/29/86

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Patent Number	Serial Number	Issue Date	4,586,191	06/406,442	04/29/86
4,585,835	06/685,621	04/29/86	4,918,752	07/191,060	04/24/90
4,585,840	06/724,272	04/29/86	4,918,754	07/190,150	04/24/90
4,585,841	06/547,585	04/29/86	4,918,756	07/278,214	04/24/90
4,585,846	06/688,243	04/29/86	4,918,760	07/330,125	04/24/90
4,585,847	06/671,037	04/29/86	4,918,764	07/206,251	04/24/90
4,585,850	06/645,721	04/29/86	4,918,778	07/258,271	04/24/90
4,585,851	06/583,511	04/29/86	4,918,780	07/229,016	04/24/90
4,585,854	06/699,286	04/29/86	4,918,783	07/352,449	04/24/90
4,585,855	06/706,981	04/29/86	4,918,785	07/321,579	04/24/90
4,585,857	06/681,732	04/29/86	4,918,789	07/237,947	04/24/90
4,585,859	06/598,016	04/29/86	4,918,790	07/351,862	04/24/90
4,585,862	06/577,946	04/29/86	4,918,798	07/197,528	04/24/90
4,585,874	06/558,629	04/29/86	4,918,808	07/274,893	04/24/90
4,585,881	06/584,864	04/29/86	4,918,814	07/146,879	04/24/90
4,585,887	06/677,986	04/29/86	4,918,815	07/294,450	04/24/90
4,585,890	06/586,753	04/29/86	4,918,817	07/293,821	04/24/90
4,585,898	06/683,027	04/29/86	4,918,819	07/249,615	04/24/90
4,585,907	06/558,213	04/29/86	4,918,820	07/302,376	04/24/90
4,585,908	06/670,510	04/29/86	4,918,824	07/253,780	04/24/90
4,585,909	06/594,181	04/29/86	4,918,829	07/176,233	04/24/90
4,585,910	06/561,037	04/29/86	4,918,834	07/297,990	04/24/90
4,585,912	06/590,071	04/29/86	4,918,839	07/274,487	04/24/90
4,585,928	06/502,118	04/29/86	4,918,840	07/301,847	04/24/90
4,585,946	06/585,064	04/29/86	4,918,842	07/184,014	04/24/90
4,585,950	06/678,838	04/29/86	4,918,855	07/040,082	04/24/90
4,585,952	06/472,326	04/29/86	4,918,865	07/364,503	04/24/90
4,585,960	06/659,808	04/29/86	4,918,874	07/229,181	04/24/90
4,585,966	06/662,974	04/29/86	4,918,877	07/281,076	04/24/90
4,585,969	06/702,074	04/29/86	4,918,880	07/295,827	04/24/90
4,585,977	06/678,171	04/29/86	4,918,881	07/306,774	04/24/90
4,585,984	06/704,271	04/29/86	4,918,883	07/206,579	04/24/90
4,585,985	06/639,173	04/29/86	4,918,887	07/109,471	04/24/90
4,585,992	06/576,851	04/29/86	4,918,891	07/339,842	04/24/90
4,585,996	06/498,978	04/29/86	4,918,893	07/262,707	04/24/90
4,586,001	06/596,353	04/29/86	4,918,894	07/275,045	04/24/90
4,586,002	06/616,398	04/29/86	4,918,895	07/295,960	04/24/90
4,586,012	06/631,319	04/29/86	4,918,899	07/284,208	04/24/90
4,586,016	06/595,918	04/29/86	4,918,900	07/374,303	04/24/90
4,586,027	06/638,424	04/29/86	4,918,902	07/225,838	04/24/90
4,586,031	06/530,423	04/29/86	4,918,905	07/212,677	04/24/90
4,586,033	06/579,431	04/29/86	4,918,914	07/123,242	04/24/90
4,586,037	06/472,463	04/29/86	4,918,916	07/236,368	04/24/90
4,586,042	06/474,620	04/29/86	4,918,920	07/207,054	04/24/90
4,586,051	06/470,538	04/29/86	4,918,923	07/201,919	04/24/90
4,586,053	06/610,715	04/29/86	4,918,927	07/403,374	04/24/90
4,586,056	06/630,528	04/29/86	4,918,941	07/353,804	04/24/90
4,586,058	06/640,126	04/29/86	4,918,942	07/419,982	04/24/90
4,586,063	06/595,873	04/29/86	4,918,949	07/173,455	04/24/90
4,586,064	06/539,446	04/29/86	4,918,953	07/304,235	04/24/90
4,586,065	06/464,456	04/29/86	4,918,954	07/365,740	04/24/90
4,586,071	06/609,406	04/29/86	4,918,958	07/005,163	04/24/90
4,586,072	06/402,425	04/29/86	4,918,961	07/235,958	04/24/90
4,586,073	06/248,205	04/29/86	4,918,968	07/377,879	04/24/90
4,586,077	06/618,009	04/29/86	4,918,976	07/383,122	04/24/90
4,586,079	06/540,454	04/29/86	4,918,983	07/344,593	04/24/90
4,586,080	06/592,201	04/29/86	4,918,985	07/295,490	04/24/90
4,586,084	06/758,790	04/29/86	4,918,988	07/316,608	04/24/90
4,586,086	06/635,419	04/29/86	4,918,991	07/280,867	04/24/90
4,586,096	06/499,932	04/29/86	4,918,994	07/279,549	04/24/90
4,586,099	06/480,646	04/29/86	4,919,002	07/313,747	04/24/90
4,586,100	06/476,530	04/29/86	4,919,011	07/292,920	04/24/90
4,586,101	06/457,906	04/29/86	4,919,017	07/303,500	04/24/90
4,586,104	06/560,710	04/29/86	4,919,023	07/171,546	04/24/90
4,586,105	06/761,799	04/29/86	4,919,024	07/226,367	04/24/90
4,586,109	06/718,136	04/29/86	4,919,029	07/295,441	04/24/90
4,586,112	06/605,102	04/29/86	4,919,034	07/365,534	04/24/90
4,586,115	06/597,672	04/29/86	4,919,039	07/223,850	04/24/90
4,586,122	06/448,688	04/29/86	4,919,044	07/279,856	04/24/90
4,586,128	06/485,044	04/29/86	4,919,054	07/250,986	04/24/90
4,586,134	06/580,576	04/29/86	4,919,060	07/301,899	04/24/90
4,586,151	06/528,934	04/29/86	4,919,061	07/336,822	04/24/90
4,586,160	06/482,195	04/29/86	4,919,065	07/305,579	04/24/90
4,586,168	06/560,628	04/29/86	4,919,071	07/250,475	04/24/90
4,586,169	06/440,723	04/29/86	4,919,076	07/252,828	04/24/90
4,586,171	06/381,584	04/29/86	4,919,078	07/277,970	04/24/90
4,586,173	06/511,963	04/29/86	4,919,081	07/195,860	04/24/90
4,586,188	06/585,243	04/29/86	4,919,088	07/369,359	04/24/90
			4,919,091	07/369,135	04/24/90

July 7, 1998

U.S. PATENT AND TRADEMARK OFFICE

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Patent Number	Serial Number	Issue Date	4,919,431	07/341,549	04/24/90
4,919,433	07/340,724	04/24/90	4,919,436	07/331,611	04/24/90
4,919,434	07/167,694	04/24/90	4,919,437	07/279,893	04/24/90
4,919,103	07/285,676	04/24/90	4,919,443	07/219,484	04/24/90
4,919,108	07/434,096	04/24/90	4,919,447	07/169,623	04/24/90
4,919,114	07/394,398	04/24/90	4,919,448	07/134,823	04/24/90
4,919,129	07/125,652	04/24/90	4,919,450	07/325,560	04/24/90
4,919,138	07/272,646	04/24/90	4,919,451	07/227,232	04/24/90
4,919,139	06/945,660	04/24/90	4,919,456	07/335,893	04/24/90
4,919,148	07/218,710	04/24/90	4,919,459	07/389,181	04/24/90
4,919,150	07/378,359	04/24/90	4,919,465	07/266,713	04/24/90
4,919,156	07/351,535	04/24/90	4,919,477	07/343,598	04/24/90
4,919,160	07/243,278	04/24/90	4,919,478	07/258,969	04/24/90
4,919,162	07/102,339	04/24/90	4,919,480	07/354,830	04/24/90
4,919,166	07/372,838	04/24/90	4,919,487	07/410,754	04/24/90
4,919,167	07/325,551	04/24/90	4,919,503	07/402,832	04/24/90
4,919,169	07/338,917	04/24/90	4,919,510	07/291,536	04/24/90
4,919,170	07/230,277	04/24/90	4,919,511	07/344,611	04/24/90
4,919,175	07/223,234	04/24/90	4,919,514	07/397,912	04/24/90
4,919,186	07/366,876	04/24/90	4,919,517	07/294,079	04/24/90
4,919,188	07/353,475	04/24/90	4,919,519	07/258,852	04/24/90
4,919,190	07/234,253	04/24/90	4,919,522	07/250,865	04/24/90
4,919,195	07/144,206	04/24/90	4,919,524	07/160,126	04/24/90
4,919,205	07/441,827	04/24/90	4,919,525	07/337,555	04/24/90
4,919,206	07/381,930	04/24/90	4,919,530	07/347,989	04/24/90
4,919,207	07/354,457	04/24/90	4,919,536	07/301,820	04/24/90
4,919,208	07/096,127	04/24/90	4,919,540	07/203,360	04/24/90
4,919,217	07/368,595	04/24/90	4,919,541	07/199,983	04/24/90
4,919,225	07/175,815	04/24/90	4,919,553	06/849,002	04/24/90
4,919,226	07/266,422	04/24/90	4,919,561	07/194,279	04/24/90
4,919,228	07/296,932	04/24/90	4,919,571	07/325,669	04/24/90
4,919,236	07/033,089	04/24/90	4,919,572	07/252,070	04/24/90
4,919,254	07/151,027	04/24/90	4,919,577	07/243,408	04/24/90
4,919,259	07/335,806	04/24/90	4,919,582	07/310,298	04/24/90
4,919,262	07/297,008	04/24/90	4,919,583	07/181,684	04/24/90
4,919,263	07/258,800	04/24/90	4,919,584	07/252,108	04/24/90
4,919,266	07/362,675	04/24/90	4,919,586	07/222,892	04/24/90
4,919,268	07/010,887	04/24/90	4,919,588	07/198,478	04/24/90
4,919,276	07/311,852	04/24/90	4,919,589	07/309,178	04/24/90
4,919,277	07/325,798	04/24/90	4,919,598	07/271,683	04/24/90
4,919,279	07/183,081	04/24/90	4,919,599	07/219,620	04/24/90
4,919,282	07/050,640	04/24/90	4,919,603	07/359,587	04/24/90
4,919,288	07/339,780	04/24/90	4,919,605	07/346,733	04/24/90
4,919,290	07/325,142	04/24/90	4,919,609	07/269,727	04/24/90
4,919,293	07/360,427	04/24/90	4,919,610	07/346,588	04/24/90
4,919,297	07/318,182	04/24/90	4,919,611	07/285,456	04/24/90
4,919,298	07/221,130	04/24/90	4,919,618	07/338,700	04/24/90
4,919,302	07/299,348	04/24/90	4,919,619	07/313,528	04/24/90
4,919,306	07/332,375	04/24/90	4,919,621	07/330,146	04/24/90
4,919,309	07/311,471	04/24/90	4,919,623	07/271,924	04/24/90
4,919,314	07/240,949	04/24/90	4,919,633	07/310,254	04/24/90
4,919,324	07/289,777	04/24/90	4,919,642	07/184,009	04/24/90
4,919,328	07/322,989	04/24/90	4,919,645	07/278,048	04/24/90
4,919,332	07/162,735	04/24/90	4,919,646	07/287,115	04/24/90
4,919,335	07/221,393	04/24/90	4,919,655	07/297,060	04/24/90
4,919,338	07/301,326	04/24/90	4,919,657	07/221,220	04/24/90
4,919,345	07/298,030	04/24/90	4,919,661	07/270,094	04/24/90
4,919,350	07/275,948	04/24/90	4,919,669	07/071,422	04/24/90
4,919,354	07/264,311	04/24/90	4,919,671	07/153,384	04/24/90
4,919,358	07/396,535	04/24/90	4,919,672	07/181,079	04/24/90
4,919,361	07/304,006	04/24/90	4,919,683	07/300,041	04/24/90
4,919,364	07/335,053	04/24/90	4,919,684	07/288,201	04/24/90
4,919,373	07/139,528	04/24/90	4,919,685	07/288,206	04/24/90
4,919,382	07/244,363	04/24/90	4,919,688	07/288,209	04/24/90
4,919,384	07/302,812	04/24/90	4,919,696	07/147,090	04/24/90
4,919,392	07/279,520	04/24/90	4,919,703	07/262,877	04/24/90
4,919,395	07/325,094	04/24/90	4,919,705	07/234,439	04/24/90
4,919,396	07/238,521	04/24/90	4,919,706	07/254,935	04/24/90
4,919,397	07/179,986	04/24/90	4,919,707	06/783,921	04/24/90
4,919,402	07/365,260	04/24/90	4,919,714	07/042,321	04/24/90
4,919,403	07/218,102	04/24/90	4,919,717	07/270,859	04/24/90
4,919,408	07/330,500	04/24/90	4,919,721	07/185,980	04/24/90
4,919,411	07/071,826	04/24/90	4,919,724	07/196,033	04/24/90
4,919,414	07/251,121	04/24/90	4,919,729	07/297,650	04/24/90
4,919,420	07/235,992	04/24/90	4,919,733	07/346,241	04/24/90
4,919,422	07/376,317	04/24/90	4,919,742	07/163,448	04/24/90
4,919,424	07/187,646	04/24/90	4,919,744	07/328,093	04/24/90
4,919,430	07/345,222	04/24/90	4,919,752	07/252,237	04/24/90
				07/269,582	04/24/90

Patent Number	Serial Number	Issue Date	4,920,200	07/290,053	04/24/90
4,919,754	07/028,017	04/24/90	4,920,201	07/233,669	04/24/90
4,919,763	07/073,816	04/24/90	4,920,204	07/120,054	04/24/90
4,919,769	07/307,368	04/24/90	4,920,207	07/098,023	04/24/90
4,919,773	07/204,070	04/24/90	4,920,208	07/250,572	04/24/90
4,919,778	07/356,668	04/24/90	4,920,215	07/133,752	04/24/90
4,919,786	07/283,681	04/24/90	4,920,219	07/277,582	04/24/90
4,919,790	07/264,766	04/24/90	4,920,227	07/277,611	04/24/90
4,919,797	07/308,338	04/24/90	4,920,228	07/156,765	04/24/90
4,919,799	07/285,518	04/24/90	4,920,231	07/331,732	04/24/90
4,919,803	07/281,778	04/24/90	4,920,233	07/235,297	04/24/90
4,919,808	06/789,682	04/24/90	4,920,237	07/305,585	04/24/90
4,919,810	07/054,894	04/24/90	4,920,240	07/221,113	04/24/90
4,919,816	07/304,090	04/24/90	4,920,246	07/326,682	04/24/90
4,919,820	07/339,259	04/24/90	4,920,253	07/293,611	04/24/90
4,919,828	07/336,589	04/24/90	4,920,256	07/162,541	04/24/90
4,919,831	07/253,306	04/24/90	4,920,257	07/107,331	04/24/90
4,919,832	07/305,037	04/24/90	4,920,261	07/356,244	04/24/90
4,919,847	07/202,773	04/24/90	4,920,265	07/265,314	04/24/90
4,919,848	06/913,888	04/24/90	4,920,270	07/094,192	04/24/90
4,919,867	07/118,035	04/24/90	4,920,276	07/228,023	04/24/90
4,919,874	07/095,234	04/24/90	4,920,288	07/329,750	04/24/90
4,919,887	07/184,637	04/24/90	4,920,297	07/353,201	04/24/90
4,919,897	07/197,272	04/24/90	4,920,300	07/192,636	04/24/90
4,919,899	07/161,681	04/24/90	4,920,303	07/334,201	04/24/90
4,919,902	07/269,389	04/24/90	4,920,305	07/308,989	04/24/90
4,919,923	07/293,733	04/24/90	4,920,308	07/332,125	04/24/90
4,919,924	06/770,498	04/24/90	4,920,319	07/153,292	04/24/90
4,919,927	07/239,071	04/24/90	4,920,330	07/220,149	04/24/90
4,919,928	07/034,712	04/24/90	4,920,335	07/304,202	04/24/90
4,919,944	07/298,303	04/24/90	4,920,338	07/201,995	04/24/90
4,919,950	07/224,740	04/24/90	4,920,339	07/295,070	04/24/90
4,919,958	07/303,328	04/24/90	4,920,342	07/262,568	04/24/90
4,919,972	07/225,448	04/24/90	4,920,343	07/252,228	04/24/90
4,919,978	07/285,746	04/24/90	4,920,347	07/337,182	04/24/90
4,919,982	07/351,089	04/24/90	4,920,351	06/843,008	04/24/90
4,919,984	07/256,146	04/24/90	4,920,354	07/127,195	04/24/90
4,919,985	07/294,637	04/24/90	4,920,356	07/286,190	04/24/90
4,919,995	07/154,044	04/24/90	4,920,357	07/373,415	04/24/90
4,919,996	07/167,160	04/24/90	4,920,363	07/293,823	04/24/90
4,919,998	07/407,705	04/24/90	4,920,364	07/349,667	04/24/90
4,920,005	07/355,937	04/24/90	4,920,373	07/202,023	04/24/90
4,920,008	07/325,847	04/24/90	4,920,378	07/284,077	04/24/90
4,920,009	07/233,699	04/24/90	4,920,390	07/218,456	04/24/90
4,920,018	07/373,109	04/24/90	4,920,392	07/122,114	04/24/90
4,920,024	07/252,097	04/24/90	4,920,394	07/191,783	04/24/90
4,920,038	07/267,677	04/24/90	4,920,396	07/179,315	04/24/90
4,920,043	07/323,873	04/24/90	4,920,397	07/173,478	04/24/90
4,920,049	07/073,451	04/24/90	4,920,410	07/185,628	04/24/90
4,920,053	07/190,814	04/24/90	4,920,416	07/169,793	04/24/90
4,920,057	07/360,256	04/24/90	4,920,420	07/269,699	04/24/90
4,920,060	07/180,729	04/24/90	4,920,424	07/199,179	04/24/90
4,920,069	07/183,489	04/24/90	4,920,429	07/301,622	04/24/90
4,920,083	07/195,649	04/24/90	4,920,437	07/029,610	04/24/90
4,920,089	07/192,217	04/24/90	4,920,439	07/194,600	04/24/90
4,920,092	07/202,588	04/24/90	4,920,444	07/251,640	04/24/90
4,920,093	07/200,515	04/24/90	4,920,452	07/408,808	04/24/90
4,920,096	07/255,356	04/24/90	4,920,456	07/246,200	04/24/90
4,920,099	07/123,855	04/24/90	4,920,461	07/296,521	04/24/90
4,920,103	06/912,891	04/24/90	4,920,463	07/380,546	04/24/90
4,920,126	07/192,459	04/24/90	4,920,466	07/373,434	04/24/90
4,920,127	07/155,756	04/24/90	4,920,467	07/190,331	04/24/90
4,920,129	07/247,657	04/24/90	4,920,471	07/167,031	04/24/90
4,920,135	07/306,928	04/24/90	4,920,474	07/400,181	04/24/90
4,920,136	07/218,740	04/24/90	4,920,484	07/253,961	04/24/90
4,920,141	07/159,793	04/24/90	4,920,492	07/127,069	04/24/90
4,920,142	07/304,630	04/24/90	4,920,498	06/893,814	04/24/90
4,920,147	07/329,669	04/24/90	4,920,513	07/171,486	04/24/90
4,920,154	07/338,072	04/24/90	4,920,516	07/190,447	04/24/90
4,920,165	07/071,123	04/24/90	4,920,520	07/241,363	04/24/90
4,920,169	07/357,572	04/24/90	4,920,526	07/232,603	04/24/90
4,920,171	07/017,910	04/24/90	4,920,531	07/157,621	04/24/90
4,920,178	07/312,725	04/24/90	4,920,545	07/275,052	04/24/90
4,920,179	07/174,380	04/24/90	4,920,551	07/349,927	04/24/90
4,920,183	07/307,707	04/24/90	4,920,552	07/324,380	04/24/90
4,920,191	07/319,028	04/24/90	4,920,559	07/138,897	04/24/90
4,920,198	07/203,425	04/24/90	4,920,571	07/349,952	04/24/90
4,920,199	07/269,824	04/24/90	4,920,572	07/304,563	04/24/90
			5,305,860	07/443,496	04/26/94

Patents Reinstated Due to the Acceptance of a
Late Maintenance Fee From 05/08/98

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,527,146	06/564,100	12/22/83	07/02/85	05/11/98
4,832,797	06/936,720	11/25/86	05/23/89	05/13/98
4,854,630	07/152,627	02/05/88	08/08/89	05/14/98
4,859,325	07/183,228	04/19/88	08/22/89	05/13/98
4,892,790	06/805,887	12/06/85	01/09/90	05/14/98
5,108,648	07/599,183	10/17/90	04/28/92	05/13/98
5,151,896	07/586,440	09/21/90	09/29/92	05/14/98
5,164,517	07/647,084	01/29/91	11/17/92	05/13/98
5,169,548	07/691,876	04/26/91	12/08/92	05/14/98
5,188,434	07/687,877	06/03/91	02/23/93	05/13/98
5,202,372	07/890,376	05/26/92	04/13/93	05/14/98
5,239,774	07/719,375	06/24/91	08/31/93	05/13/98
5,252,467	07/817,916	01/06/92	10/12/93	05/14/98
5,270,244	08/008,766	01/25/93	12/14/93	05/14/98
5,271,885	07/845,286	03/03/92	12/21/93	05/14/98
5,285,590	07/957,368	10/07/92	02/15/94	05/13/98

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,277,191, Re. S.N. 09/084,522, May 26, 1998, Cl. 128/713, HEATED CATHETER FOR MONITORING CARDIAC OUTPUT, Timothy J. Hughes, Owner of Record: *Abbott Laboratories, Abbott Park, Ill.*, Attorney or Agent: Harold Pezzner, Ex. Gp.: 3736

5,477,304, Re. S.N. 08/994,758, Dec. 19, 1997, Cl. 355/053, PROJECTION EXPOSURE APPARATUS, Kenji Nishi, Owner of Record: *Nikon Corp., Tokyo, Japan*, Attorney or Agent: Mitchell W. Shapiro, Ex. Gp.: 2101

5,515,745, Re. S.N. 09/076,838, May 13, 1998, Cl. 74/572, FLYWHEEL ASSEMBLY WITH ANNULAR ELASTIC BODY FOR REDUCING VIBRATIONS, Hiroyoshi Tsuruta, et. al., Owner of Record: *Exedy Corp., Osaka, Japan*, Attorney or Agent: John C. Robbins, Ex. Gp.: 3502

5,517,005, Re. S.N. 09/074,141, May 7, 1998, Cl. 219/685, VISIBLE LIGHT AND INFRA-RED COOKING APPARATUS, Eugene R. Westerberg, et. al., Owner of Record: *Quaddux, Inc., Atherton, Calif.*, Attorney or Agent: George C. Limbach, Ex. Gp.: 2106

5,517,941, Re. S.N. 09/079,358, May 15, 1998, Cl. 116/173, PENNANT CONSTRUCTION FOR A VEHICLE ANTENNAE, Kevin Fisher, Owner of Record: *Harris Corp., Melbourne, Fla.*, Attorney or Agent: William H. Wright, Ex. Gp.: 3108

5,519,446, Re. S.N. 09/080,390, May 18, 1998, Cl. 348/556, APPARATUS AND METHOD FOR CONVERTING AN HDTV SIGNAL TO A NON-HDTV SIGNAL, Dong Ho Lee, Owner of Record: *Goldstar Co. Ltd., Seoul, Korea*, Attorney or Agent: Song K. Jung, Ex. Gp.: 2602

5,519,760, Re. S.N. 09/080,270, May 18, 1998, Cl. 379/59, CELLULAR NETWORK-BASED LOCATION SYSTEM, Daniel G. Borkowski, et. al., Owner of Record: *GTE Laboratories Inc., Waltham, Mass.*, Attorney or Agent: Leland Wiesner, Ex. Gp.: 2608

5,519,970, Re. S.N. 09/086,429, May 28, 1998, Cl. 52/102, LANDSCAPE EDGING, Mark T. Reum, et. al., Owner of Record: *Avon Plastics, Inc., Albany, Minn.*, Attorney or Agent: Steven R. Funk, Ex. Gp.: 3504

5,521,418, Re. S.N. 09/084,937, May 28, 1998, Cl. 257/390, SEMICONDUCTOR DEVICE AND A METHOD OF MANUFACTURING SAME, Yusuke Kohyama, Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki-shi, Japan*, Attorney or Agent: Richard L. Schwaab, Ex. Gp.: 2503

5,537,911, Re. S.N. 08/747,029, Nov. 7, 1996, Cl. 95/45, METHOD AND DEVICE FOR SEPERATING GAS MIXTURES FORMED ABOVE LIQUIDS, Klaus Ohlrogge, et. al., Owner of Record: *GKSS-Forschungszentrum Geesthacht GmbH, Geesthacht, Germany and Sili Anlagentechnik GmbH, Itzenhoe, Germany*, Attorney or Agent: D. Douglas Price, Ex. Gp.: 1305

5,539,011, Re. S.N. 09/086,816, May 29, 1998, Cl. 521/163, USE OF SOFTENING ADDITIVES IN POLYURETHANE FOAM, Brian L. Hilker, et. al., Owner of Record: *OSI Specialties Inc., Tarrytown, N.Y.*, Attorney or Agent: Donald T. Black, Ex. Gp.: 1207

5,561,349, Re. S.N. 09/084,625, May 26, 1998, Cl. 315/209.R, FREQUENCY-MODULATED CONVERTER WITH A SERIES-PARALLEL RESONANCE, Julius Hartai, Owner of Record: *Lumica Patent AS, Drammen, Norway*, Attorney or Agent: J. Harold Nissen, Ex. Gp.: 2505

5,569,534, Re. S.N. 09/085,462, May 28, 1998, Cl. 428/402, REACTANT IN THE FORM OF GRANULES FOR THERMO-CHEMICAL SYSTEMS, Benoit Lambotte, Owner of Record: *Elf Aquitaine, Paris La Defense, France*, Attorney or Agent: Charles R. Wolfe Jr., Ex. Gp.: 1316

5,587,816, Re. S.N. 09/016,409, Jan. 30, 1998, Cl. 359/49, LCD DEVICE INCLUDING AN ILLUMINATION DEVICE HAVING A POLARIZED LIGHT SEPARATION SHEET BETWEEN A LIGHT GUIDE AND THE DISPLAY, Tomoki Gunjima, et. al., Owner of Record: *Asahi Glass Co. Ltd., Tokyo, Japan*, Attorney or Agent: Gregory J. Maier, Ex. Gp.: 2515

5,617,839, Re. S.N. 09/079,748, May 15, 1998, Cl. 126/020, RACK OVEN, Ralph E. Jennings, et. al., Owner of Record: *Premark FEG, Wilmington, Del.*, Attorney or Agent: Mark P. Levy, Ex. Gp.: 3406

5,623,743, Re. S.N. 09/084,700, May 26, 1998, Cl. 15/320, MOBILE SURFACE SCRUBBER SOLUTION RECOVERY SYSTEM, Jack L. Burgoon, et. al., Owner of Record: *Clarke Industries, Inc., Bowling Green, Ohio*, Attorney or Agent: David E. Crawford Jr., Ex. Gp.: 3405

Request for Reexamination Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,245,862, Reexam. No. 90/004,982, May 5, 1998, Cl. 296/180.3, DRAG REDUCER FOR LAND VEHICLES, Frank T. Buckley, Jr., Owner of Record: *Airshield Corp., Bridgeport, Conn.*, Attorney or Agent: Robert D. Fier, Kenyon and Kenyon, New York, N.Y., Ex. Gp.: 3612, Requester: Joseph T. Jakubek, Klarquist Sparkman Campbell Leigh and Whinston, Portland, Oreg.

4,518,422, Reexam. No. 90/004,983, May 7, 1998, Cl. 075/533, PROCESS AND APPARATUS FOR REFINING STEEL IN A METALLURGICAL VESSEL, Paul Metz, Owner of Record: *Paul Wurth S.A., Luxembourg, Luxembourg*, Attorney or Agent: David D. Fishman, Fishman Dionne Cantor and Colburn, Windsor, Conn., Ex. Gp.: 1742, Requester: Owner

5,205,315, Reexam. No. 90/004,984, May 7, 1998, Cl. 137/204, AUTOMATIC WET TANK DRAIN VALVE, Wayne R. Margerum, Owner of Record: *Augustine J. Matteo, Jr., Westville, N.J.*, Attorney or Agent: Glenn M. Massina and Anthony S. Volpe, Volpe and Koenig, Philadelphia, Pa., Ex. Gp.: 3753, Requester: Elroy Strickland, James Ray and Associates, Pittsburgh, Pa.

5,448,922, Reexam. No. 90/004,981, Apr. 30, 1998, Cl. 073/863.23, GAS PERMEATION SYSTEM, Charles L. Kimbell, et. al., Owner of Record: *Keco R. & D., Inc., Houston, Tex.*, Attorney or Agent: Donald H. Fidler, Fidler and Marnock, Houston, Tex., Ex. Gp.: 2856, Requester: Frank Sowa, II, Arlington, Va.

Notice of Expiration of Trademark Registrations
Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
May 18, 1998
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
118,019	71/103,291	08/14/1917
118,026	71/103,349	08/14/1917
348,777	71/389,134	08/10/1937
348,788	71/387,409	08/10/1937
348,821	71/390,897	08/10/1937
348,865	71/390,591	08/10/1937
649,914	72/000,468	08/13/1957
649,916	72/018,220	08/13/1957
649,924	72/020,397	08/13/1957
649,929	72/007,998	08/13/1957
649,941	72/013,466	08/13/1957
649,942	72/014,107	08/13/1957
649,944	72/016,927	08/13/1957
649,946	72/018,501	08/13/1957

649,947	72/018,502	08/13/1957
649,957	72/020,161	08/13/1957
649,962	72/020,747	08/13/1957
649,967	72/009,682	08/13/1957
649,969	72/016,233	08/13/1957
649,987	72/015,960	08/13/1957
649,998	71/688,793	08/13/1957
650,008	72/014,125	08/13/1957
650,021	72/022,242	08/13/1957
650,044	72/007,695	08/13/1957
650,049	72/015,669	08/13/1957
650,055	72/022,807	08/13/1957
650,060	72/010,091	08/13/1957
650,066	72/018,195	08/13/1957
650,069	72/018,557	08/13/1957
650,070	72/006,295	08/13/1957
650,078	71/688,672	08/13/1957
650,080	72/008,294	08/13/1957
650,083	72/012,573	08/13/1957
650,085	72/017,837	08/13/1957
650,088	72/022,082	08/13/1957
650,089	72/022,343	08/13/1957
650,096	72/016,667	08/13/1957
650,097	72/018,589	08/13/1957
650,106	72/017,254	08/13/1957
650,111	72/021,177	08/13/1957
650,113	71/681,141	08/13/1957
650,116	72/006,066	08/13/1957
650,121	72/011,197	08/13/1957
650,128	72/018,119	08/13/1957
650,131	72/020,813	08/13/1957
650,134	72/021,146	08/13/1957
650,145	72/017,930	08/13/1957
650,155	72/019,242	08/13/1957
650,159	72/020,134	08/13/1957
650,160	72/020,351	08/13/1957
650,162	71/691,456	08/13/1957
650,163	72/016,302	08/13/1957
650,168	71/678,068	08/13/1957
650,177	72/002,868	08/13/1957
650,178	72/002,955	08/13/1957
650,180	72/004,174	08/13/1957
650,183	72/005,104	08/13/1957
650,185	72/005,454	08/13/1957
650,191	72/010,814	08/13/1957
650,197	72/013,084	08/13/1957
650,200	72/014,667	08/13/1957
650,205	72/017,115	08/13/1957
650,209	72/019,019	08/13/1957
650,213	72/019,301	08/13/1957
650,215	72/019,427	08/13/1957
650,220	72/019,505	08/13/1957
650,229	71/017,310	08/13/1957
650,232	72/018,976	08/13/1957
650,234	71/696,257	08/13/1957
650,239	72/015,996	08/13/1957
650,240	72/016,921	08/13/1957
650,241	72/017,012	08/13/1957
650,246	72/004,165	08/13/1957
650,256	71/672,077	08/13/1957
650,267	71/688,778	08/13/1957
650,269	71/689,746	08/13/1957
650,270	71/689,750	08/13/1957
650,273	72/005,608	08/13/1957
1,070,810	73/072,392	08/09/1977
1,070,811	73/078,984	08/09/1977
1,070,813	73/081,854	08/09/1977
1,070,814	73/091,272	08/09/1977
1,070,816	73/096,793	08/09/1977
1,070,819	73/100,952	08/09/1977
1,070,820	73/102,449	08/09/1977
1,070,822	73/105,643	08/09/1977
1,070,824	73/106,720	08/09/1977
1,070,832	73/104,302	08/09/1977
1,070,838	73/087,969	08/09/1977
1,070,840	73/088,929	08/09/1977
1,070,842	73/088,947	08/09/1977
1,070,843	73/088,990	08/09/1977
1,070,845	73/093,965	08/09/1977

Reg. Number	Serial Number	Reg. Date	1,071,061	73/047,473	08/09/1977
1,070,849	73/099,923	08/09/1977	1,071,066	73/106,727	08/09/1977
1,070,850	73/099,924	08/09/1977	1,071,070	73/114,222	08/09/1977
1,070,851	73/100,671	08/09/1977	1,071,073	73/102,433	08/09/1977
1,070,853	73/104,405	08/09/1977	1,071,079	73/082,195	08/09/1977
1,070,858	73/108,307	08/09/1977	1,071,083	73/106,943	08/09/1977
1,070,859	73/108,308	08/09/1977	1,071,086	73/107,679	08/09/1977
1,070,864	73/080,865	08/09/1977	1,071,087	73/107,680	08/09/1977
1,070,865	73/081,618	08/09/1977	1,071,088	73/107,681	08/09/1977
1,070,867	73/070,612	08/09/1977	1,071,091	73/108,255	08/09/1977
1,070,868	73/088,907	08/09/1977	1,071,094	73/091,050	08/09/1977
1,070,869	73/098,844	08/09/1977	1,071,096	73/088,437	08/09/1977
1,070,870	73/100,642	08/09/1977	1,071,098	73/070,435	08/09/1977
1,070,871	73/101,433	08/09/1977	1,071,099	73/082,118	08/09/1977
1,070,872	73/102,912	08/09/1977	1,071,100	73/101,795	08/09/1977
1,070,878	73/110,859	08/09/1977	1,071,101	73/067,547	08/09/1977
1,070,879	73/111,195	08/09/1977	1,071,107	73/105,044	08/09/1977
1,070,884	73/111,667	08/09/1977	1,071,108	73/107,197	08/09/1977
1,070,889	73/082,426	08/09/1977	1,071,112	73/080,814	08/09/1977
1,070,894	73/104,966	08/09/1977	1,071,119	73/085,678	08/09/1977
1,070,897	73/108,792	08/09/1977	1,071,120	73/085,867	08/09/1977
1,070,905	73/089,870	08/09/1977	1,071,121	73/092,736	08/09/1977
1,070,906	73/090,383	08/09/1977	1,071,122	73/102,627	08/09/1977
1,070,909	73/097,889	08/09/1977	1,071,124	73/105,022	08/09/1977
1,070,912	73/099,539	08/09/1977	1,071,127	73/100,467	08/09/1977
1,070,915	73/101,723	08/09/1977	1,071,130	73/106,851	08/09/1977
1,070,917	73/083,084	08/09/1977	1,071,132	73/108,719	08/09/1977
1,070,918	73/083,824	08/09/1977	1,071,134	73/059,830	08/09/1977
1,070,919	73/083,974	08/09/1977	1,071,135	73/063,258	08/09/1977
1,070,920	73/098,710	08/09/1977	1,071,140	73/095,928	08/09/1977
1,070,929	73/087,518	08/09/1977	1,071,141	73/095,929	08/09/1977
1,070,930	73/093,324	08/09/1977	1,071,144	73/108,905	08/09/1977
1,070,946	73/100,005	08/09/1977	1,071,145	73/057,116	08/09/1977
1,070,948	73/101,957	08/09/1977	1,071,156	73/090,662	08/09/1977
1,070,949	73/102,967	08/09/1977	1,071,157	73/090,709	08/09/1977
1,070,952	73/104,599	08/09/1977	1,071,158	73/093,508	08/09/1977
1,070,953	73/105,746	08/09/1977	1,071,163	73/101,251	08/09/1977
1,070,956	73/092,942	08/09/1977	1,071,167	73/108,092	08/09/1977
1,070,957	73/095,183	08/09/1977	1,071,168	73/108,169	08/09/1977
1,070,958	73/098,048	08/09/1977	1,071,169	73/108,446	08/09/1977
1,070,959	73/102,679	08/09/1977	1,071,172	72/462,339	08/09/1977
1,070,961	73/075,677	08/09/1977	1,071,173	72/454,761	08/09/1977
1,070,962	73/083,083	08/09/1977	1,071,174	72/454,762	08/09/1977
1,070,965	73/098,282	08/09/1977	1,071,176	73/081,971	08/09/1977
1,070,968	73/098,659	08/09/1977	1,071,178	73/077,619	08/09/1977
1,070,970	73/072,824	08/09/1977	1,071,180	73/065,857	08/09/1977
1,070,976	73/099,120	08/09/1977	1,071,183	73/095,947	08/09/1977
1,070,978	73/106,197	08/09/1977	1,071,186	73/088,031	08/09/1977
1,070,982	73/081,562	08/09/1977	1,071,187	73/104,581	08/09/1977
1,070,986	73/092,059	08/09/1977	1,071,191	73/094,324	08/09/1977
1,070,988	73/093,322	08/09/1977	1,071,198	73/078,776	08/09/1977
1,070,990	73/099,472	08/09/1977	1,071,199	73/087,987	08/09/1977
1,070,992	73/099,714	08/09/1977	1,071,201	73/088,581	08/09/1977
1,071,002	73/099,152	08/09/1977	1,071,202	73/077,145	08/09/1977
1,071,005	73/077,588	08/09/1977	1,071,206	73/090,991	08/09/1977
1,071,007	73/041,548	08/09/1977	1,071,208	73/101,578	08/09/1977
1,071,008	73/041,930	08/09/1977	1,071,209	73/078,613	08/09/1977
1,071,009	73/045,275	08/09/1977	1,071,210	73/105,590	08/09/1977
1,071,011	73/079,823	08/09/1977			
1,071,012	73/088,716	08/09/1977			
1,071,013	73/095,891	08/09/1977			
1,071,014	73/096,263	08/09/1977			
1,071,018	73/102,021	08/09/1977			
1,071,019	73/053,850	08/09/1977			
1,071,022	73/088,484	08/09/1977			
1,071,023	73/051,199	08/09/1977			
1,071,025	73/074,021	08/09/1977			
1,071,026	73/075,160	08/09/1977			
1,071,027	73/084,249	08/09/1977			
1,071,036	73/074,755	08/09/1977			
1,071,038	73/099,288	08/09/1977			
1,071,041	73/077,682	08/09/1977			
1,071,042	73/088,909	08/09/1977			
1,071,043	73/094,612	08/09/1977			
1,071,046	73/096,738	08/09/1977			
1,071,050	73/110,787	08/09/1977			
1,071,052	73/111,548	08/09/1977			
1,071,057	73/113,922	08/09/1977			

March 11, 1998

Notice Regarding Technical Center
Box Issue Fee Mailings

The Office will begin mailing address labels with the PTOL-85, "Notice of Allowance and Issue Fee Due" for patent applications allowed in all Technology Centers. These address labels should be used to ensure proper routing of post-allowance correspondence. This directive supersedes the "Special Boxes for Patent Mail" instruction. Any Notice of Allowance and Issue Fee Due received without the accompanying address labels should continue to be addressed to Box Issue Fee.

NICHOLAS P. GODICI
Deputy Assistant Commissioner
for Patents and Invention

Status of Certification Services

On November 28, 1995, the Office published an Official Gazette Notice entitled "Temporary Suspension of At Cost Services for Orders for Certified Copies" (1180 OG 121) to advise practitioners and the public of delays in filling orders for certified copies of PTO documents. This is an update of actual days to mail for orders filled during the month of May 1998:

Certified Product	Goal	Actual Calendar Days to Mail
Patent Application-As-Filed, Expedited	7	7
Patent Application-As-Filed, Regular	17	22
Patent Related File Wrapper	25	54*
Patent Copy	10	10
Patent Assignments	10	14
Trademark Application-As-Filed, Expedited	7	8
Trademark Application-As-Filed, Regular	17	21
Trademark Related File Wrapper	25	33*
Trademark Assignments	10	15
Trademark Registration, Expedited	5	9
Trademark Registration, Regular	14	16

* Includes turnaround times for files on official search and file reconstruction.

The backlog of orders resulting from the relocation of the Office of Public Records in late March and early April is now being worked down. During the month of May 1998, a total of 10,681 orders (22,115 copies) were filled and closed, or 2,157 orders (4,807 copies) more than the FY-98 planning number of 8,524 orders (17,308 copies) to be closed per month. It is anticipated that average turnaround times for products will return to expected ranges as older orders are filled and closed during the month of June using additional staff resources and overtime.

Due to varying availability of media, customers will not be advised when orders are not delivered within the published goal periods. However, customers will be advised if any unexpected delay in their order has been identified. Customers should use the above actual days to mail for each product as a guide as to when they can expect their orders. In determining expected delivery times, the day an order is received in the Office is calculated as "day zero." The next business day is "day one."

Delivery of any specific copy will vary based on the availability of scanned images, microfilm products, and/or file accessibility. On June 10, 1997, the Office published an Official Gazette Notice entitled "Changes in Practice in Supplying Certified Copies and Filing Receipts" (1199 OG 39) which advised customers who placed orders for certified copies of patent applications-as-filed not to request them until the official filing receipt is received; images and related bibliographic data are not available to Certification Division until the filing receipt is generated by the Office of Initial Patent Examination.

Customers are encouraged to fax orders for copies directly to Certification Division at (703) 308-9759 and to pay by PTO Deposit Account, MasterCard, or Visa. Information on the status of pending orders may be obtained by calling (703) 308-9726 or 1 (800) 972-6382 (outside the Washington, DC Metro area), or via E-mail: certdiv@uspto.gov.

June 8, 1998

WESLEY H. GEWEHR
Administrator for Information
Dissemination

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Anix Tech Corporation, S. El Monte, Calif., Reg. No. 1,740,929, for the mark "ANIX". Canc. No. 26,692.

KATRINA PETERSON
Supervisory Legal Assistant
Trademark Trial and
Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Registration To Practice

The following list contains the names of persons who successfully passed the registration examination that was held August 27, 1997 and have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before August 28, 1998.

Eisenberg, Jacob M., 2630 Cabin Creek Rd., #404, Alexandria, Va. 22314

Loui, Martin S.C., 1110 Fidler Ln., #1023, Silver Spring, Md. 20910

June 4, 1998

KAREN L. BOVARD, Director
Office of Enrollment and Discipline

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before August 28, 1998.

Christensen, Andrew B., 6864B Brindle Heath Way, Alexandria, Va. 22315

Miles, Tim R., 11810 Coronado N.E., Albuquerque, N.M. 87122

Stoll, Thomas L., 4615 S. 34th St., Arlington, Va. 22206

June 4, 1998

KAREN L. BOVARD, Director
Office of Enrollment and Discipline

DEPARTMENT OF COMMERCE

3510-16 Patent and Trademark Office

[Docket No. 980605147-8147-01]

Request for Comments on Interim Guidelines for Reexamination of Cases In View of *In re Portola Packaging, Inc.*, 110 F.3d 786, 42 USPQ2d 1295 (Fed. Cir. 1997)

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Notice and request for public comments.

SUMMARY: The Patent and Trademark Office (PTO) requests comments from the public on interim guidelines that will be used by PTO personnel in their review of requests for reexaminations and ongoing reexaminations for compliance with the decision in *In re Portola Packaging, Inc.*, 110 F.3d 786, 42 USPQ2d 1295 (Fed. Cir. 1997).

DATES: To be ensured consideration, written comments on the interim guidelines must be received by the PTO by September 14, 1998.

ADDRESSES: Written comments should be addressed to Commissioner of Patents and Trademarks, Attention: Kevin T. Kramer or John M. Whealan, Box 8, Washington, D.C. 20231. Comments may be submitted by facsimile at (703) 305-9373. Comments may also be submitted by electronic mail addressed to "kevin.kramer@uspto.gov" or "john.whealan@uspto.gov".

FOR FURTHER INFORMATION CONTACT: John M. Whealan or Kevin T. Kramer by telephone at (703) 305-9035; by facsimile at (703) 305-9373; by mail addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231; or by electronic mail at "john.whealan@uspto.gov" or "kevin.kramer@uspto.gov".

SUPPLEMENTARY INFORMATION: The PTO requests comments from the public on the following interim guidelines. These guidelines will be used by PTO personnel in their review of requests for reexaminations and ongoing reexaminations for compliance with the decision in *In re Portola Packaging, Inc.*, 110 F.3d 786, 42 USPQ2d 1295 (Fed. Cir. 1997). Because these guidelines govern internal practices, they are exempt from notice and comment rulemaking under 5 U.S.C. § 553(b)(A).

Written comments should include the following information: (1) Name and affiliation of the individual responding; and (2) an indication of whether the comments offered represent views of the respondent's organization or are the respondent's personal views. Where possible, parties presenting written comments are requested to provide their comments in machine-readable format. Such submissions may be provided by electronic mail sent over the Internet, or on a 3.5" floppy disk formatted for use in a Windows® based computer. Preferably, machine-readable submissions should be provided in WordPerfect® 6.1 format.

Written comments will be available for public inspection in Suite 918, Crystal Park 2, 2121 Crystal Drive, Arlington, Virginia. In addition, comments provided in machine-readable format will be available through anonymous file transfer protocol (ftp) via the Internet (address: comments.uspto.gov) and through the World Wide Web (address: www.uspto.gov).

I. Interim Guidelines for Reexamination of Cases in View of *In re Portola Packaging, Inc.*, 110 F.3d 786, 42 USPQ2d 1295 (Fed. Cir. 1997)

The following guidelines have been developed to assist Patent and Trademark Office (PTO) personnel in determining whether to order a reexamination or terminate an ongoing reexamination in view of the United States Court of Appeals for the Federal Circuit's decision in *In re Portola Packaging, Inc.*¹ These guidelines supersede and supplement any previous guidelines issued by the PTO with respect to reexamination. These guidelines apply to all reexaminations regardless of whether they are initiated by the Commissioner, requested by the pat-

entee, or requested by a third party. When made final, these guidelines will be incorporated into Chapter 2200 of the Manual of Patent Examining Procedure.

A. Explanation of *Portola Packaging*

In order for the PTO to conduct reexamination, prior art must raise a "substantial new question of patentability."² In *Portola Packaging*, the Federal Circuit held that a combination of two references that were expressly relied upon individually to reject claims during the original examination does not raise a substantial new question of patentability.³ The Federal Circuit also held that an amendment of the claims during reexamination does not raise a substantial new question of patentability.⁴ The court explained that "a rejection made during reexamination does not raise a substantial new question of patentability if it is supported only by prior art previously considered by the PTO."⁵

B. General Principles Governing Compliance with *Portola Packaging*

If prior art was previously expressly relied upon to reject a claim in a prior related PTO proceeding,⁶ the PTO will not order or conduct reexamination based only on such prior art, regardless of whether that prior art is to be relied upon to reject the same or different claims in the reexamination.

If prior art was not expressly relied upon to reject a claim, but was cited in the record of a prior related PTO proceeding and its relevance to the patentability of any claim was actually discussed on the record,⁷ the PTO will not order or conduct reexamination based only on such prior art.

In contrast, the PTO will order and conduct reexamination based on prior art that was cited but whose relevance to patentability of the claims was not discussed in any prior related PTO proceeding.

C. Procedures for Determining Whether a Reexamination May be Ordered in Compliance with *Portola Packaging*

PTO personnel must adhere to the following procedures when determining whether a reexamination may be ordered in compliance with the Federal Circuit's decision in *Portola Packaging*:

1. Read the reexamination request to identify the prior art on which the request is based.
2. Conduct any necessary search of the prior art relevant to the subject matter of the patent for which reexamination was requested.⁸
3. Read the prosecution histories of prior related PTO proceedings.
4. Determine if the prior art in the reexamination request and the prior art uncovered in any search was:

(a) expressly relied upon to reject any claim in a prior related PTO proceeding; or

(b) cited and its relevance to patentability of any claim discussed in a prior related PTO proceeding.

5. Deny the reexamination request if the decision to order reexamination would be based only on prior art that was (a) expressly relied upon to reject any claim and/or (b) cited and its relevance to patentability of any claim discussed in a prior related PTO proceeding.⁹

6. Order reexamination if the decision to order reexamination would be based at least in part on prior art that was neither (a) expressly relied upon to reject any claim nor (b) cited and its relevance to patentability of any claim discussed in a prior related PTO proceeding, and a substantial new question of patentability is raised with respect to any claim of the patent.¹⁰

D. Procedures for Determining Whether an Ongoing Reexamination Must be Terminated in Compliance with *Portola Packaging*

PTO personnel must adhere to the following procedures when determining whether any current or future ongoing reexamination should be terminated in compliance with the Federal Circuit's decision in *Portola Packaging*:

1. Prior to making any rejection in an ongoing reexamination, determine for any prior related PTO proceeding what prior art was (a) expressly relied upon to reject any claim or (b) cited and discussed.

2. Base any and all rejections of the patent claims under reexamination at least in part on prior art that was neither (a) expressly relied upon to reject any claim nor (b) cited and its relevance to patentability of any claim discussed in any prior related PTO proceeding.

3. Withdraw any rejections based only on prior art that was previously either (a) expressly relied upon to reject any claim or (b) cited and its relevance to patentability of any claim discussed in any prior related PTO proceeding.

4. Terminate reexaminations in which the only remaining rejections are entirely based on prior art that was previously (a) expressly relied upon to reject any claim and/or (b) cited and its relevance to patentability of a claim discussed in any prior related PTO proceeding.¹¹

F. Application of *Portola Packaging* to Unusual Fact Patterns

The PTO recognizes that each case must be decided on its particular facts and that cases with unusual fact patterns will occur. In such a case, the reexamination should be brought to the attention of the Group Director who will then determine the appropriate action to be taken.

Unusual fact patterns may appear in cases in which prior art was expressly relied upon to reject any claim or cited and discussed with respect to the patentability of a claim in a prior related PTO proceeding, but other evidence clearly shows that the examiner did not appreciate the issues raised in the reexamination request or the ongoing reexamination with respect to that art. Such other evidence may appear in the reexamination request, in the nature of the prior art, in the prosecution history of the prior examination, or in an admission by the patent owner, applicant, or inventor.¹²

For example, if a textbook was cited during original examination, the record of that examination may show that only select information from the textbook was discussed with respect to the patentability of the claims.¹³ If the reexamination request relied upon other information in the textbook that actually teaches what is required by the claims, it may be appropriate to rely on this other information in the textbook to conduct reexamination.¹⁴

Another example involves the situation where an examiner discussed a reference in a prior PTO proceeding, but did not either expressly reject a claim based upon the reference or maintain the rejection based on the mistaken belief that the reference did not qualify as prior art.¹⁵ If the reexamination request were to explain how and why the reference actually does qualify as prior art, it may be appropriate to conduct reexamination.¹⁶

Another example involves foreign language prior art references. If a foreign language prior art reference was cited and discussed in any prior PTO proceeding, *Portola Packaging* may not prohibit reexamination over a complete and accurate translation of that foreign language prior art reference. Specifically, if a reexamination request were to explain why a more complete and accurate translation of that same foreign language prior art reference actually teaches what is required by the patent claims, it may be appropriate to conduct reexamination.

Another example of an unusual fact pattern involves cumulative references. To the extent that a cumulative reference is repetitive of a prior art reference that was previously expressly applied or discussed, *Portola Packaging* may prohibit reexamination of the patent claims based only on the repetitive refer-

ence.¹⁷ However, it is expected that a repetitive reference which cannot be considered by the PTO during reexamination will be a rare occurrence since most references teach additional information or present information in a different way than other references, even though the references might address the same general subject matter.

F. Notices Regarding Compliance with *Portola Packaging*

1. If a request for reexamination is denied under C.5. above in order to comply with the Federal Circuit's decision in *Portola Packaging*, the notice of denial should state: "This reexamination request is denied based on *In re Portola Packaging, Inc.*, 110 F.3d 786, 42 USPQ2d 1295 (Fed. Cir. 1997). No final patentability determination has been made."

2. If an ongoing reexamination is terminated under D.4. above in order to comply with the Federal Circuit's decision in *Portola Packaging*, the termination notice should state: "This reexamination is terminated based on *In re Portola Packaging, Inc.*, 110 F.3d 786, 42 USPQ2d 1295 (Fed. Cir. 1997). No final patentability determination has been made."

3. If a rejection in the reexamination has previously issued and that rejection is withdrawn under D.3. above in order to comply with the Federal Circuit's decision in *Portola Packaging*, the Office action withdrawing such rejection should state: "The rejection is withdrawn in view of *In re Portola Packaging, Inc.*, 110 F.3d 786, 42 USPQ2d 1295 (Fed. Cir. 1997). No final patentability determination of the claims of the patent in view of such prior art has been made." If multiple rejections have been made, the Office action should clarify which rejections are being withdrawn.

ENDNOTES

1. 110 F.3d 786, 42 USPQ2d 1295 (Fed. Cir.), reh'g in banc denied, 122 F.3d 1473, 44 USPQ2d 1060 (1997).

2. 35 U.S.C. § 304.

3. During the original prosecution of the application which led to the patent, the PTO had expressly rejected the claims separately based upon the Hunter and Faulstich references. The PTO never expressly applied the references in combination. During reexamination, *Portola Packaging* amended the patent claims, and for the first time the PTO expressly rejected the amended patent claims based upon the Hunter and Faulstich references in combination. Despite these facts, the Federal Circuit determined that the PTO was precluded from conducting reexamination on those references. 110 F.3d at 790, 42 USPQ2d at 1299.

4. 110 F.3d at 791, 42 USPQ2d at 1299.

5. 110 F.3d at 791, 42 USPQ2d at 1300.

6. Prior related PTO proceedings include the original prosecution history, any reissue prosecution history, and any previous reexamination prosecution history of a concluded PTO proceeding.

7. The relevance of the prior art to patentability may be discussed by either the applicant, patentee, examiner, or any third party. However, 37 C.F.R. § 1.2 requires that all PTO business be transacted in writing. Thus, the PTO cannot presume that a prior art reference was previously relied upon to reject or discussed in a prior PTO proceeding if there is no basis in the written record to so conclude other than the examiner's initials or a check on an information disclosure statement. Thus, any discussion of prior art must appear on the record of a prior related PTO proceeding. Examples of generalized statements in a prior related PTO proceeding that would not preclude reexamination include statements that prior art is "cited to show the state of the art," "cited to show the background of the invention," or "cited of interest."

8. See 35 U.S.C. § 303 ("On his own initiative, and any time, the Commissioner may determine whether a substantial new question of patentability is raised by patents and publication

DEPARTMENT OF COMMERCE

Patent and Trademark Office

[Docket No. 980605148-8148-01]

Request for Comments on Interim Guidelines for Examination of Patent Applications Under the 35 U.S.C. § 112 ¶ 1 "Written Description" Requirement

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Notice and request for public comments.

SUMMARY: The Patent and Trademark Office (PTO) requests comments from any interested member of the public on the following interim guidelines. These guidelines will be used by PTO personnel in their review of biotechnological patent applications for compliance with the "written description" requirement of 35 U.S.C. § 112 ¶ 1. Although the guidelines are directed primarily to written descriptions of biotechnological inventions, they reflect the current understanding of the PTO and apply across the board to all relevant technologies.

DATES: Written comments on the interim guidelines will be accepted by the PTO until September 14, 1998.

ADDRESSES: Written comments should be addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231, marked to the attention of Scott A. Chambers, Associate Solicitor or to Box Comments, Assistant Commissioner for Patents, Washington, D.C. 20231 marked to the attention of Linda S. Therkom. Alternatively, comments may be submitted to Scott Chambers via facsimile at (703) 305-9373 or by electronic mail addressed to "scott.chambers@uspto.gov" or to Linda Therkom via facsimile at (703) 305-8825 or by electronic mail addressed to "linda.therkom@uspto.gov."

FOR FURTHER INFORMATION CONTACT: Scott Chambers by telephone at (703) 305-9035, by facsimile at (703) 305-9373, by mail to his attention addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231, or by electronic mail at "scott.chambers@uspto.gov"; or Linda Therkom by telephone at (703) 305-8800, by facsimile at (703) 305-8825, by mail addressed to Box Comments, Assistant Commissioner for Patents, Washington, D.C. 20231, or by electronic mail at "linda.therkom@uspto.gov."

SUPPLEMENTARY INFORMATION: The PTO requests comments from any interested member of the public on the following interim guidelines. These guidelines will be used by PTO personnel in their review of biotechnological patent applications for compliance with the "written description" requirement of 35 U.S.C. § 112 ¶ 1. Although the guidelines are directed primarily to written descriptions of biotechnological inventions, they reflect the current understanding of the PTO and apply across the board to all relevant technologies. Because these guidelines govern internal practices, they are exempt from notice and comment rulemaking under 5 U.S.C. § 553(b)(A).

Written comments should include the following information: 1) name and affiliation of the individual responding; and 2) an indication of whether the comments offered represent views of the respondent's organization or are they respondent's personal views. The PTO is particularly interested in comments relating to: 1) the accuracy of the methodology; 2) relevant factors to consider in determining whether the written description requirement of 35 U.S.C. § 112 ¶ 1 is satisfied; 3) whether the scope of these guidelines should be limited to certain technologies, such as biotechnology, or even a particular area of biotechnology such as nucleic acids, or encompass all technologies generally; 4) whether the scope of these guidelines should be expanded to include processes and/or product-by-process claims; and 5) the impact these guidelines may have on currently pending applications as well as future applications.

Parties presenting written comments are requested, where possible, to provide their comments in machine-readable format in addition to a paper copy. Such submissions may be provided by electronic mail messages sent over the Internet, or on a 3.5" floppy disk formatted for use in either a Macintosh, Windows, Windows for Workgroups, Windows 95, Windows NT, or MS-DOS based computer.

discovered by him . . ."); see also MPEP § 2244 ("If the examiner believes that additional prior art patents and publications can be readily obtained by searching to supply any deficiencies in the prior art cited in the request, the examiner can perform such an additional search.").

9. See *Portola Packaging, Inc.*, 110 F.3d at 790, 42 USPQ2d at 1299 (examiner presumed to have done his job). There may be unusual fact patterns and evidence which suggests that the PTO did not consider the prior art that was discussed in the prior PTO proceeding. These cases should be brought to the attention of the Group Director. For a discussion of the treatment of such cases, see section E above.

10. If not specified, a reexamination generally includes all claims. However, reexamination may be limited to specific claims. See 35 U.S.C. § 304 (authorizing the power to grant reexamination for determination of a "substantial new question of patentability affecting any claim of a patent.") (emphasis added). Thus, the Commissioner may order reexamination confined to specific claims. However, reexamination is not necessarily limited to those questions set forth in the reexamination order. See 37 C.F.R. § 1.104(a) ("The examination shall be complete with respect both to compliance of the application or patent under reexamination with the applicable statutes and rules and to the patentability of the invention as claimed. . .").

11. The Commissioner may conduct a search for new art prior to determining whether a substantial new question of patentability exists prior to terminating any ongoing reexamination proceeding. See 35 U.S.C. § 303. See also 35 U.S.C. § 305 (indicating that "reexamination will be conducted according to the procedures established for initial examination," thereby suggesting that the Commissioner may conduct a search during an ongoing reexamination proceeding).

12. See 62 Fed. Reg. 53,151, 53,191 (October 10, 1997) (to be codified at 37 C.F.R. § 1.104(c)(2)).

13. The file history of the prior PTO proceeding should indicate which portion of the textbook was previously considered. See 37 C.F.R. § 1.98(a)(2)(ii) (an information disclosure statement must include a copy of each "publication or that portion which caused it to be listed") (emphasis added).

14. However, a reexamination request that merely provides a new interpretation of a reference already previously expressly relied upon or actually discussed by the PTO does not create a substantial new question of patentability.

15. For example, the examiner may have not believed that the reference qualified as prior art because: (i) the reference was undated; (ii) the applicant submitted a declaration believed to be sufficient to antedate the reference under 37 C.F.R. § 1.131; or (iii) the examiner attributed an incorrect filing date to the claimed invention.

16. For example, the request could: (i) verify the date of the reference; (ii) undermine the sufficiency of the section 131 declaration; or (iii) explain the correct filing date accorded a claim.

17. For purposes of reexamination, a cumulative reference that is repetitive is one that substantially reiterates verbatim the teachings of a reference that was either previously expressly relied upon or discussed in a prior PTO proceeding even though the title or the citation of the reference may be different.

June 9, 1998

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Written comments will be available for public inspection on or about September 14, 1998, in Suite 918, Crystal Park 2, 2121 Crystal Drive, Arlington, Virginia. In addition, comments provided in machine-readable format will be available through anonymous file transfer protocol (ftp) via the Internet (address: comments.uspto.gov) and through the World Wide Web (address: www.uspto.gov).

Interim Guidelines for the Examination of Patent Applications Under The 35 U.S.C. § 112 ¶ 1 "Written Description" Requirement

These "Written Description Guidelines" are intended to assist Office personnel in the examination of patent applications for compliance with the written description requirement of 35 U.S.C. § 112, ¶ 1, in view of *University of California v. Eli Lilly*¹ and the earlier cases *Fiers v. Revel and Amgen, Inc. v. Chugai Pharmaceutical Co.*² These Interim Guidelines are directed primarily to determining whether there is written description support for product claims and are not intended to specifically address the description necessary to support process or product-by-process claims. Similarly, these Guidelines are not intended to directly address the question of new matter, which is currently addressed in the Manual of Patent Examining Procedure §§ 2163.06-.07. The Final Guidelines may address these additional issues if public comment suggests they should be addressed. These guidelines are based on the Office's current understanding of the law and are believed to be fully consistent with binding precedent of the Supreme Court, the Federal Circuit, and the Federal Circuit's predecessor courts.

These guidelines do not constitute substantive rulemaking and hence do not have the force and effect of law. They are designed to assist Office personnel in analyzing claimed subject matter for compliance with substantive law. Rejections will be based upon the substantive law, and it is these rejections which are appealable. Consequently, any failure by Office personnel to follow the guidelines is neither appealable nor petitionable.

These guidelines are intended to form part of the normal examination process. Thus, where Office personnel establish a *prima facie* case of lack of written description for a claim, a thorough review of the prior art and examination on the merits for compliance with the other statutory requirements, including those of 35 U.S.C. §§ 101, 102, 103, and 112, is to be conducted prior to completing an Office action which includes a rejection for lack of written description.

Office personnel are to rely on these guidelines in the event of any inconsistent treatment of issues involving the written description requirement between these guidelines and any earlier guidance provided from the Office. Although these guidelines address examples principally drawn from the biotechnological arts, they are intended to be equally applicable to all fields of invention.

I. General Principles Governing Compliance with the "Written Description" Requirement For Applications

The first paragraph of 35 U.S.C. § 112 requires that the "specification shall contain a written description of the invention" This requirement is separate and distinct from the enablement requirement.³ This written description requirement has several policy objectives. "[T]he 'essential goal' of the description of the invention requirement is to clearly convey the information that an applicant has invented the subject matter which is claimed."⁴ Another objective is to put the public in possession of what the applicant claims as the invention. The written description requirement prevents an applicant from claiming subject matter that was not described in the specification as filed, and the proscription against the introduction of new matter in a patent application⁵ serves to prevent an applicant from adding information that goes beyond the subject matter originally filed.

To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention.⁶ This requirement of the Patent Act promotes the progress of the useful arts by ensuring that patentees adequately describe their inventions in their patent specifications for the benefit of the public in exchange for the right to exclude others from practicing the invention for the duration of the patent's term.⁷

II. Evaluate Whether The Application Complies With the "Written Description" Requirement

The inquiry into whether the description requirement is met must be determined on a case-by-case basis and is a question of fact.⁸ The examiner has the initial burden of presenting evidence or reasons why a person skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims.⁹ Office personnel should adhere to the following procedures when reviewing patent applications for compliance with the written description requirement of 35 U.S.C. § 112, ¶ 1.

A. Review the entire application to determine what applicant has invented, the field of the invention and the level of predictability in the art

Prior to determining whether the claims satisfy the written description requirement, Office personnel should review the entire specification, including the specific embodiments, figures, sequence listings, and the claims, to understand what applicant has invented and the correspondence between what applicant has described, i.e., has possession of, and what applicant is claiming. Such a review should be conducted from the standpoint of one of skill in the art at the time the application was filed and should include a determination of the field of the invention and, thus, the level of predictability in the art. Predictability of the structure of a species can be premised upon:

- (1) Whether the level of skill in the art leads to a predictability of structure; and/or
- (2) Whether teachings in the application or prior art lead to a predictability of structure.

There is an inverse correlation between the level of predictability in the art and the amount of disclosure necessary to satisfy the written description requirement. For example, if there is a well-established correlation between structure and function in the art, one skilled in the art will be able to reasonably predict the complete structure of the claimed invention from its function. Thus, in some factual situations, the written description requirement may be satisfied through disclosure of function alone when there is a well-established correlation between structure and function. In contrast, without such a correlation, prediction of structure from function is highly unlikely. In this latter case, disclosure of function alone will not satisfy the written description requirement.¹¹

B. For each claim, determine what the claim as a whole covers

Each claim must be separately analyzed and given its broadest reasonable interpretation.¹² The entire claim, including its preamble language and transitional phrase, must be considered. "Preamble language" is that language in a claim appearing before a transitional phrase, e.g., before "comprising," "consisting essentially of," or "consisting of." The transitional term "comprising" (and other comparable terms, e.g., "containing" and "including") is "open-ended"—it covers the expressly recited subject matter alone or in combination with other untated subject matter.¹³ There must be adequate written description to support the claimed invention including the preamble.¹⁴ The claim as a whole, including all limitations found in the preamble, the transitional phrase, and the body of the claim, must be described sufficiently to satisfy the written description requirement.¹⁵ For claims of the form "A [structure] comprising SEQ ID NO: 1" there may be a written description problem if the claim as a whole, including its preamble and transitional phrase, is directed to an invention of unpredictable structure that is not fully described.

For example, when the term "gene," "mRNA," or "cDNA" is recited in the preamble, it implies a specific structure (or a small genus of specific structures) when used in the traditional sense, i.e., to mean the structure having the naturally occurring sequence. Thus, "A gene comprising SEQ ID NO: 1"; "A mRNA comprising SEQ ID NO: 1"; and "A cDNA comprising SEQ ID NO: 1" implicitly recite specific structures such as promoters, enhancers, coding regions, and other regulatory elements in the preamble which must be sufficiently described in the specification so as to show the applicant was in possession of the claimed inventions.

In contrast, use of less specific, generic preamble language, such as "composition," "nucleic acid," "DNA," and "RNA," does not typically present a written description problem. These terms are sufficiently general that one skilled in the art can readily envision a sufficient number of members of the claimed genus to provide written description support for the genus.

A claim such as "A gene comprising SEQ ID NO: 1," can be viewed as a species claim in which the preamble recites a combination and the body of the claim recites a subcombination: The "gene" is the combination and "SEQ ID NO: 1" (which is a fragment of the gene) is the subcombination. Written description of *only* the subcombination (in this example the fragment SEQ ID NO: 1) normally does not put one in possession of the combination (in this example the gene).

Likewise, generic claims to sequences can be viewed as a genus of such combination-subcombination claims. For example, a claim such as "A nucleic acid comprising SEQ ID NO: 1" can be viewed as a genus claim in which each member of the genus (each species) is itself a combination-subcombination: Each member of the genus "nucleic acid" is a combination containing the subcombination "SEQ ID NO: 1" (which is a fragment of the nucleic acid). Again, the generic term "nucleic acid" does not typically present a written description problem because one skilled in the art can readily envision a sufficient number of members of the claimed genus to provide written description support for the genus.¹⁶

C. For each claimed species, determine whether there is sufficient written description to inform a skilled artisan that applicant was in possession of the claimed invention at the time the application was filed

Written description may be satisfied through disclosure of relevant identifying characteristics, i.e., structure, other physical and/or chemical characteristics, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics.¹⁷ What is well known to one skilled in the art need not be disclosed.¹⁸ If a skilled artisan would have understood the inventor to be in possession of the claimed invention at the time of filing, even if every nuance of the claims is not explicitly described in the specification, then the adequate description requirement is met.¹⁹

For each claimed species:

(1) Determine whether a complete structure is disclosed. The complete structure of a species typically satisfies the requirement that the description be set forth in "such full, clear, concise and exact terms" to show possession of the claimed invention.²⁰ If a complete structure is disclosed, the written description requirement is satisfied for that species, and a rejection under 35 U.S.C. § 112 ¶ 1 for lack of written description must not be made.

For example, consider the following claim:

A probe for use in detecting nucleic acid sequences coding for enzyme Q from the genus *Bacillus* consisting of SEQ ID NO: 16.²¹

Considering the claim as a whole, it is a species claim covering the probe SEQ ID NO: 16. The specification discloses the complete sequence for SEQ ID NO: 16. Thus, this claim falls into the "safe harbor" described under C(1).

(2) If the complete structure is not disclosed, determine whether the specification discloses other relevant identifying characteristics, i.e., physical and/or chemical characteristics and/or functional characteristics coupled with a known or disclosed correlation between function and structure, sufficient to describe the claimed invention in such full, clear, concise and exact terms that a skilled artisan would recognize applicant was in possession of the claimed invention. Disclosure of any combination of such identifying characteristics that would lead one of skill in the art to the conclusion that the applicant was in possession of the claimed species is sufficient. In such a case, a rejection for lack of written description under 35 U.S.C. § 112 ¶ 1 must not be made.

For example, consider the following claim:

An isolated double-stranded DNA consisting of (1) a single-stranded DNA which has a molecular size of 2.57 Kb and is derived from golden mosaic virus, and (2) a DNA complementary to said single-stranded DNA, giving the restriction endonu-

lease cleavage map shown in FIG.2(a) and having no Mbo I restriction endonuclease site.

Although the specification does not disclose the complete structure for the claimed DNA, it does disclose sufficient identifying characteristics, i.e., size, cleavage map, and source from which the DNA is derived. Thus, while this claim does not meet the C(1) criteria because the complete sequence is not disclosed, it does meet the C(2) criteria because one skilled in the art would recognize from the characteristics, e.g., size, map, source, that applicant was in possession of the claimed material at the time of filing.

The following protein claim also falls within the C(2) criteria:

An isolated alginate lyase enzyme wherein said enzyme lyses alginate in the mucous substance produced in a patient with cystic fibrosis and wherein said enzyme has the N-terminal amino acid sequence SEQ ID No. 1, obtained from *Flavobacterium pepermentum* and has the following physicochemical properties: (1) Activity: lyses alginate to saccharides having a non-reducing end C4-C5 double bond and ultimately to 4-deoxy-5-ketouronic acid; (2) Molecular weight: 60,000 daltons; (3) Optimal pH: 8.0; (4) Stable pH: 6.0-8.0; (5) Optimal temperature: 70 degrees C; and (6) Substrate specificity: alginate.

In this example, the specification discloses the molecular weight, origin, activity, and specificity but does not disclose the complete structure for the claimed enzyme. Thus, this claim would not meet the C(1) criteria because the complete sequence is not disclosed. However, the claim meets the C(2) criteria because, although the complete structure is not disclosed, one skilled in the art would recognize from the disclosed physical characteristics—e.g., molecular weight, origin, activity, and specificity—that applicant was in possession of the claimed material at the time of filing.

In contrast, consider the following claim:

An isolated nucleotide sequence consisting of the sequence of the reverse transcript of a human mRNA, which mRNA encodes insulin.

The specification in this example provides the coding sequence for rat insulin but not that for human insulin. The description for the reverse transcript of human mRNA is limited to its function, encoding human insulin, and to a method for isolating the claimed sequence from its natural source. A sequence described only by a *purely* functional characteristic, without any known or disclosed correlation between that function and the structure of the sequence, normally is not a sufficient identifying characteristic for written description purposes, even when accompanied by a method of obtaining the claimed species. In this case, even though a genetic code table would correlate a known insulin amino acid sequence with a genus of coding nucleic acids, the same table cannot predict the native, naturally occurring nucleic acid sequence of human mRNA or its corresponding cDNA. Thus, the specification in this example does not provide adequate written description, either under the C(1) or C(2) criteria.²²

Any claim to a species that does not meet the test described under C(1) or C(2) must be rejected as lacking adequate written description under 35 U.S.C. § 112 ¶ 1.

D. For each claimed genus, determine whether there is sufficient written description to inform a skilled artisan that applicant was in possession of the claimed genus at the time the application was filed

The written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by relevant identifying characteristics, i.e., structure or other physical and/or chemical characteristics, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus.²³ A "representative number of species" requires that the species which are expressly described be representative of the entire genus. Thus, when there is substantial variation within the genus, it may require a description of the various species which reflect the variation within the genus. For example, a broadly drawn claim to a specific gene from ruminant mammals may require a representative species from cattle, buffalo, bison, goat, deer, antelope, camel, giraffe and llama.

What constitutes a "representative number" is an inverse function of the predictability of the art, as determined in IIA above. The number must be sufficient to reasonably identify the other members of genus. In an unpredictable art, adequate written description of a genus cannot be achieved by disclosing only one species within the genus. In fact, if the members of the genus are expected to vary widely in their identifying characteristics, such as structure and activity, written description for each member within the genus may be necessary.

Generalized descriptions alone, such as "vertebrate insulin cDNA" or "mammalian insulin cDNA," fail to satisfy the written description requirement because they do not describe any members of the genus except by function without any known or disclosed correlation between function and structure.²⁴ If the correlation between structure and function in the art would not have been known to one skilled in the art and the specification does not describe the correlation, the written descriptive support cannot depend on that correlation.

For each claim to a genus:

(1) Determine whether a representative number of species have been described by complete structure as in C(1) above. If a representative number have been so described, then the applicant has written description support for the claimed genus and a rejection under § 112 ¶ 1 for lack of written description must not be made.

For example, consider the following claim to a genus:

An isolated DNA probe for detecting HIV-X, wherein said DNA probe hybridizes to the nucleotide sequence set forth in SEQ ID NO:1 under the following conditions: hybridization in 7% sodium dodecyl sulfate (SDS), 0.5M NaPO₄, pH 7.0, 1mM EDTA at 50° C.; and washing with 1% SDS at 42° C.

In this case, the specification discloses the sequence of the isolated DNA molecule consisting of SEQ ID NO: 1 and discloses several sequences that hybridize to SEQ ID NO: 1. Hybridization under the stringent conditions specified here requires that the claimed nucleic acid probes be structurally similar to the complement of the nucleic acid sequence disclosed as SEQ ID NO: 1. In this case, the description as a whole is sufficient to evidence possession of the claimed genus because the genus is defined by relation to the structure of the sequence provided as SEQ ID NO: 1, and because several species are disclosed that possess the hybridization property which further defines the genus. Thus, this claim to a genus meets the D(1) criteria.

(2) For each claim to a genus not supported as described under D(1), determine whether there is a representative number of adequately described species, as analyzed under C(2). The representative number must permit one skilled in the art to reasonably identify the remaining members of the genus. If a representative number are so described, then the written description requirement is satisfied and, again, a rejection under § 112 ¶ 1 for lack of written description must not be made.

For example, consider the following claim to a genus:

A monoclonal antibody which specifically binds to the novel cancer associated TAG-31 antigen but which does not substantially bind normal adult human tissues, wherein said monoclonal antibody has a binding affinity of greater than 3 times 10⁹ M⁻¹ for TAG-31.

Considering the claim as a whole, it is drawn to a genus of monoclonal antibodies. Although the specification does not disclose the complete structure of a representative number of species to support the claimed genus of antibodies, it does disclose multiple monoclonal antibodies which have the isotype claimed as well as the binding specificity and binding affinity characteristics recited in the claims. In this well-developed art, additional identifying characteristics for a substantial portion of the genus are well-known (e.g., number of chains, disulfide bonds, constant and variable regions, etc.). Thus, applicant's disclosure combined with what was known in the art are sufficient to describe the claimed genus of monoclonal antibodies in such full, clear, concise and exact terms to show applicant was in possession of the claimed antibodies. Thus, the claim meets the D(2) criteria.

As another example, consider the following claim to a genus:

An isolated mutanase enzyme produced by *Bacillus* having the following physicochemical properties (1) to (9): (1) action: an ability to cleave alpha-1,3-glucosidic links of mutan; (2) substrate specificity: an ability to effectively decompose mutan; (3) optimum pH: pH 4 to 4.5 when reacting on a mutan substrate at 35 degrees C. for 10 minutes; (4) pH range for stability: pH 4 to 10 when kept at 25 degrees C for 24 hours; (5) optimum temperature: 50 degrees to 65 degrees C when reacted at pH 5 with mutan as a substrate; (6) thermal stability: enzyme activity remains stable below 50 degrees C after incubation at pH 5 for 10 minutes; (7) effect of metal ions: mercury and silver show inhibitory effect on a mutan substrate; (8) effect of inhibitors: p-chloromercuribenzoic acid shows inhibitory effect on a mutan substrate; and (9) molecular weight: about 140,000 to about 160,000 as determined by SDS-polyacrylamide gel electrophoresis.

Considering the claim as a whole, it covers a genus of mutanase enzymes. Although the specification does not disclose the complete structure of a representative number of species to support the claimed genus of enzyme compositions, it does disclose 3 mutanase species produced by different strains of *Bacillus* (mutanases A, B and C) which are identified by multiple relevant identifying characteristics, i.e., molecular weight, substrate specificity, optimum and ranges of temperature and pH for mutan cleavage activity, etc. In this well-developed art, these identifying characteristics are sufficient for a skilled artisan to recognize applicant had possession of the species from the identifying characteristics of the three mutanase species, to reasonably predict sufficient identifying characteristics of the other members of the genus and, thus, establish possession of the genus. Thus, the claim meets the D(2) criteria.

As another example, consider the following claim to a genus:

A DNA comprising a novel DF3 enhancer and DNA encoding a heterologous gene but not encoding DF3 wherein said DF3 enhancer consists of SEQ ID NO: 1.

Considering the claim as a whole, it covers a genus of DNA. The specification does not describe a representative number of members of the genus by complete structure. Thus, the claim does not meet the D(1) criteria. However, there is sufficient disclosure of identifying characteristics common to the members of the genus, i.e., DF3 enhancer, to meet the D(2) criteria. Because of the nature of the generic term "DNA," one skilled in the art could envision a sufficient number of the members of the genus to describe the invention in such full, clear and concise terms as to show possession of the invention at the time of filing.

In contrast, consider the claim:

An isolated nucleic acid comprising the structure of the reverse transcript of a mammalian mRNA, which mRNA encodes insulin.

Considering the claim as a whole, the claim covers the genus of nucleotide sequences encoding mammalian insulin. The specification only provides the coding sequence for rat insulin cDNA and a method to isolate the coding sequence from its natural source.²⁵ This description does not meet the criteria of D(1) or D(2) and thus does not satisfy the written description requirement.

Also contrast the claim "A gene comprising SEQ ID NO: 1." Although all genes encompassed by this claim share the characteristic of comprising SEQ ID NO: 1, and as such might appear to meet the D(2) criteria, there is insufficient description of the characteristics (e.g., promoters, enhancers, coding regions, and other regulatory elements) which identify the genes, as opposed to any DNA comprising SEQ ID NO: 1.

If sufficient identifying characteristics are not disclosed for a given genus, as described in D(1) or D(2), the claim to that genus must be rejected as lacking adequate written description under 35 U.S.C. § 112 ¶ 1.

III. Complete Patentability Determination Under All Statutory Requirements and Clearly Communicate Findings, Conclusions and Their Bases

The above only describes how to determine whether the written description requirement of 35 U.S.C. § 112 ¶ 1 is satisfied. Regardless of the outcome of that determination, Office personnel must complete the patentability determination under all the relevant statutory provisions of the Patent Act.

Once Office personnel have concluded analysis of the claimed invention under all the statutory provisions, including 35 U.S.C. §§ 101, 112, 102 and 103, they should review all the proposed rejections and their bases to confirm their correctness. Only then should any rejection be imposed in an Office action. The Office action should clearly communicate the findings, conclusions and reasons which support them.

Specific to these guidelines:

A. For each claim lacking written description support, reject the claim under section 112, ¶ 1, for lack of adequate written description

In rejecting a claim, set forth express findings of fact regarding the above analysis which support the lack of written description conclusion. These findings should:

(1) identify the claim limitation not described; and

(2) provide reasons why a person skilled in the art at the time the application was filed would not have recognized the description of this limitation in view of the disclosure of the application as filed.

When appropriate, suggest amendments to the claims which would bring the claims into compliance with the written description in the specification, bearing in mind the prohibition against new matter in the claims and corresponding description set forth in 35 U.S.C. §§ 112 and 132.

B. Upon reply by applicant, again determine the patentability of the claimed invention, including whether the written description requirement is satisfied by performing the analysis described above in view of the whole record

Upon reply by applicant, before repeating any rejection under Section 112 ¶ 1 for lack of written descriptive basis, review the basis for the rejection in view of the record as a whole, including amendments, arguments and any evidence submitted by applicant. If the whole record now demonstrates that the written description requirement is satisfied, do not repeat the rejection in the next Office action. If the record still does not demonstrate that written description is adequate to support the claim(s), repeat the rejection under 35 U.S.C. § 112 ¶ 1, fully respond to applicant's rebuttal arguments, and properly treat any further showings submitted by applicant in the reply. Any affidavits, including those relevant to the § 112 ¶ 1 written description requirement, must be thoroughly analyzed and discussed in the Office action.

ENDNOTES

- 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997).
- 984 F.2d 1164, 25 USPQ2d 1601 (Fed. Cir. 1993).
- 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991).
- E.g.*, *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1560, 19 USPQ2d 1111, 1115 (Fed. Cir. 1991).
- In re Barker*, 559 F.2d 588, 592 n.4, 194 USPQ 470, 473 n.4 (CCPA 1977).
- 35 U.S.C. §§ 132 & 251.
- E.g.*, *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563, 19 USPQ2d 1111, 1116 (Fed. Cir. 1991). Much of the written description case law addresses whether the specification as originally filed supports claims not originally in the application. The issue raised in the cases is most often phrased as whether the original application provides "adequate support" for the claims at issue or whether the material added to the specification incorporates "new matter" in violation of 35 U.S.C. § 132. The "written description" question similarly arises in the interference context, where the issue is whether the specification of one party to the interference can support the newly added claims

corresponding to the count at issue, i.e., whether that party can "make the claim" corresponding to the interference count. *E.g.*, see *Martin v. Mayer*, 823 F.2d 500, 502, 3 USPQ2d 1333, 1335 (Fed. Cir. 1987).

In addition, early opinions suggest the Patent and Trademark Office was unwilling to find written descriptive support when the only description was found in the claims; however, this viewpoint was rejected. See *In re Koller*, 613 F.2d 819, 204 USPQ 702 (CCPA 1980) (original claims constitute their own description); *In re Gardner*, 475 F.2d 1389, 177 USPQ 396 (CCPA 1973) (accord); *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976) (accord). It is now well-accepted that a satisfactory description can be mined from the claims or any other portion of the originally filed specification.

These early opinions did not address the quality or specificity of particularity that was required in the description, i.e., how much description is enough.

8. See *Eli Lilly*, 119 F.3d at 1566, 43 USPQ2d at 1404.

9. See *In re Smith*, 458 F.2d 1389, 1395, 173 USPQ 679, 683 (CCPA 1972) ("Precisely how close [to the claimed invention] the description must come to comply with § 112 must be left to a case-by-case development."); *In re Wertheim*, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976) (inquiry is primarily factual and depends on the nature of the invention and the amount of knowledge imparted to those skilled in the art by the disclosure).

10. *Wertheim*, 541 F.2d at 262, 191 USPQ at 96.

11. See *Eli Lilly*, 119 F.3d at 1568, 43 USPQ2d at 1406 (written description requirement not satisfied by merely providing "a result that one might achieve if one made that invention"); *In re Wilder*, 736 F.2d 1516, 1521, 222 USPQ 369, 372-73 (Fed. Cir. 1984) (affirming a rejection for lack of written description because the specification does "little more than outline goals appellants hope the claimed invention achieves and the problems the invention will hopefully ameliorate").

12. See, e.g., *In re Morris*, 127 F.3d 1048, 1053-54, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997).

13. See, e.g., *Ex parte Davis*, 80 USPQ 448, 450 (1948) ("comprising" leaves the "claim open for the inclusion of unspecified ingredients even in major amounts"); quoted with approval in *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 1271, 229 USPQ 805, 812 (Fed. Cir. 1986).

14. See *Pac-Tec Inc. v. Amerace Corp.*, 903 F.2d 796, 801, 14 USPQ2d 1871, 1876 (Fed. Cir. 1990) (determining that preamble language that constitutes a structural limitation is actually part of the claimed invention).

15. An applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations. *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997).

16. *E.g.*, *Eli Lilly*, 119 F.3d at 1568, 43 USPQ2d at 1405-06.

17. A "relevant identifying characteristic" is one that would provide evidence that applicant was in possession of what is claimed. For example, the presence of a restriction enzyme map of a gene may be relevant to a statement that the gene has been isolated. One skilled in the art could determine whether the gene disclosed was the same as or different than a gene isolated by another by comparing the restriction enzyme map. In contrast, evidence that the gene could be digested with a nuclease would not normally represent a relevant characteristic since any gene would be digested with a nuclease.

Examples of identifying characteristics include a sequence, structure, binding affinity, binding specificity, molecular weight and length. Although structural formulas provide a convenient method of demonstrating possession of specific molecules, other identifying characteristics can demonstrate the requisite possession. For example, unique cleavage by particular enzymes, isoelectric points of fragments, detailed restric-

tion enzyme maps, a comparison of enzymatic activities, or antibody cross reactivity may be sufficient to show possession of the claimed invention to one of skill in the art. See *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (1997) ("written description" requirement may be satisfied by using "such as" descriptive means as words, structures, figures, diagrams, formulas, etc. that fully set forth the claimed invention").

However, a definition by function alone "does not suffice" to sufficiently describe a coding sequence "because it is only an indication of what the gene does, rather than what it is." *Eli Lilly*, 119 F.3d at 1568, 43 USPQ2d at 1406. See also *Fiers*, 984 F.2d at 1169-71, 25 USPQ2d at 1605-06 (discussing *Amgen*).

18. See *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379-80, 231 USPQ 81, 90 (Fed. Cir. 1986).

19. See, e.g., *Vas-Cath*, 935 F.2d at 1563, 19 USPQ2d at 1116; *Martin v. Johnson*, 454 F.2d 746, 751, 172 USPQ 391, 395 (CCPA 1972) (stating "the description need not be in *ipsis verbis* to be sufficient").

20. 35 U.S.C. § 112 ¶ 1. Cf. *Fields v. Conover*, 443 F.2d 1386, 1392, 170 USPQ 276, 280 (CCPA 1971) (finding a lack of written description because the specification lacked the "full, clear, concise, and exact written description" which is necessary to support the claimed invention).

21. The examples contained within these guidelines are not intended to represent the minimum requirements necessary to comply with 35 U.S.C. § 112 ¶ 1.

22. See *Eli Lilly*, 119 F.3d at 1568, 43 USPQ2d at 1406.

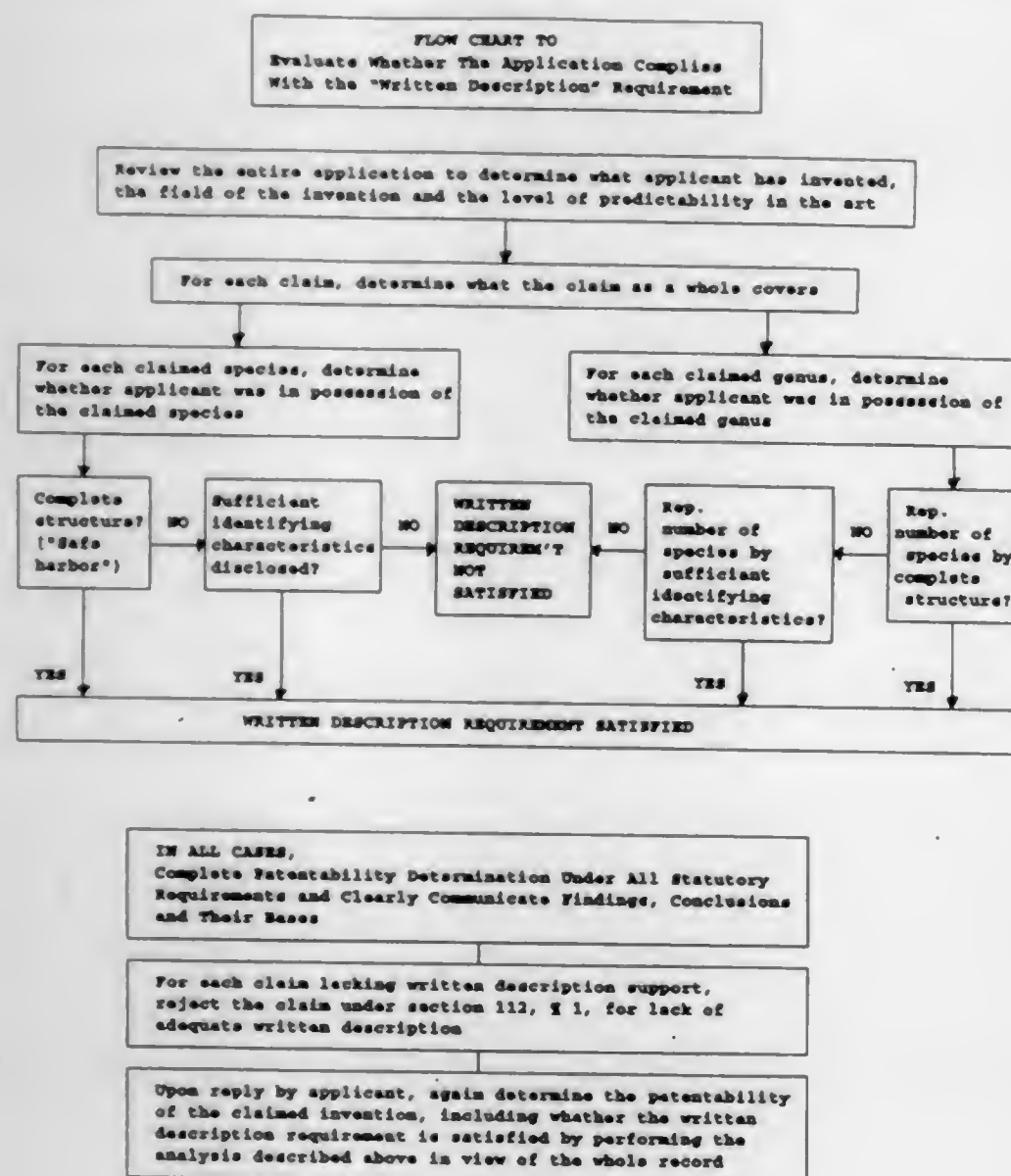
23. See *id.* at 1568, 43 USPQ2d at 1406.

24. Cf. *Eli Lilly*, 119 F.3d at 1567, 43 USPQ2d at 1405 (stating that "The name cDNA is not itself a written description of that DNA; it conveys no distinguishing information concerning itself").

25. See *id.* 1568, 43 USPQ2d at 1406.

June 9, 1998

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks



Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,709,078, Ulrich Schirmer, Stefan Karbach, Ernst-Heinrich Pommer, Eberhard Ammermann, Wolfgang Steglich, Barbara A. M. Schwalge, Timm Anke, ACRYLATES, AND FUNGICIDES WHICH CONTAIN THESE COMPOUNDS, Interference No. 102,848, final judgment adverse to the patentees rendered April 16, 1998, as to claims 1-8.

Patent No. 4,723,034, Ulrich Schirmer, Stefan Karbach, Ernst-Heinrich Pommer, Eberhard Ammermann, Wolfgang Steglich, Barbara A. M. Schwalge, Timm Anke, STILBENE DERIVATIVES, AND FUNGICIDES WHICH CONTAIN THESE COMPOUNDS, Interference No. 102,733, final judgment adverse to the patentees rendered April 16, 1998 as to claims 1-6.

Patent No. 4,782,177, Ulrich Schirmer, Stefan Karbach, Ernst-Heinrich Pommer, Eberhard Ammermann, Wolfgang Steglich, Barbara A. M. Schwalge, Timm Anke, ACRYLIC ACID DERIVATIVES AND FUNGICIDES WHICH CONTAIN THESE COMPOUNDS, Interference No. 102,847, final judgment adverse to the patentees rendered April 16, 1998 as to claims 1-9.

Patent No. 4,946,683, Eric A. Forssen, MULTIPLE STEP ENTRAPMENT/LOADING PROCEDURE FOR PREPARING LIPOPHILIC DRUG-CONTAINING LIPOSOMES, Interference No. 103,469, final judgment adverse to the patentee rendered May 19, 1998 as to claims 1-4 and 7-24.

Patent No. 4,965,189, David Owerbach, PROBES FOR THE DETERMINATION OF THE PROCLIVITY FOR DEVELOPMENT OF AUTOIMMUNE DISEASES, Interference No. 103,840, final judgment adverse to the patentee rendered March 26, 1998 as to claims 1, 4 and 7.

Patent No. 5,010,175, William J. Rutter, Daniel V. Santi, GENERAL METHOD FOR PRODUCING AND SELECTING PEPTIDES WITH SPECIFIC PROPERTIES, Interference No. 103,681, final judgment adverse to the patentees rendered April 21, 1998 as to claims 1-42.

Patent No. 5,031,030, Robert N. Hurst, VIDEO SIGNAL ENCODED WITH ADDITIONAL DETAIL INFORMATION, Interference No. 104,171, final judgment adverse to the patentee rendered May 14, 1998 as to claims 1-18.

Patent No. 5,043,033, Edward R. Fyfe, PROCESS OF IMPROVING THE STRENGTH OF EXISTING CONCRETE SUPPORT COLUMNS, Interference No. 103,367, final judgment adverse to the patentee rendered February 26, 1998, as to claims 1-7 and 11-15.

Patent No. 5,104,404, Rodney G. Wolff, ARTICULATED STENT, Interference No. 103,432, final judgment adverse to the patentee rendered April 20, 1998, as to claims 1-8, 10, 11, 13-17, and 19.

Patent No. 5,155,613, Hiroyuki Sakayori, DRIVING CIRCUIT OF LIQUID CRYSTAL DISPLAY WHICH HAS DELAY MEANS, Interference No. 103,923, final judgment adverse to the patentee rendered March 4, 1998, as to claims 1 and 2.

Patent No. 5,225,533, William J. Rutter, Daniel V. Santi, GENERAL METHOD FOR PRODUCING AND SELECTING PEPTIDES WITH SPECIFIC PROPERTIES, Interference No. 103,681, final judgment adverse to the patentees rendered April 21, 1998, as to claims 1-37.

Patent No. 5,260,204, Konrad Heckl, Walter Spevak, Elinborg Ostermann, Andreas Zophel, Edeltraud Krystek, Ingrid Maurer-Fogy, Maria J. Wich-Castanon, Christian Stratawa, Rudolf Hauptmann, HUMAN MANGANESE SUPER-OXIDE DISMUTASE (HMN-SOD), Interference No. 103,861,

final judgment adverse to the patentees rendered May 12, 1998, as to claims 1-7.

Patent No. 5,260,204, Konrad Heckl, Walter Spevak, Elinborg Ostermann, Andreas Zophel, Edeltraud Krystek, Ingrid Maurer-Fogy, Maria J. Wich-Castanon, Christian Stratawa, Rudolf Hauptmann, HUMAN MANGANESE SUPER-OXIDE DISMUTASE (HMN-SOD), Interference No. 103,862, final judgment adverse to the patentees rendered May 12, 1998, as to claim 7.

Patent No. 5,266,684, William J. Rutter, Daniel V. Santi, PEPTIDE MIXTURES, Interference No. 103,680, final judgment adverse to the patentees rendered April 21, 1998, as to claims 1-7.

Patent No. 5,298,863, Stefan Nowak, Franz Schmitt, Hubertus Fischer, MAGNETIC RESONANCE IMAGING APPARATUS HAVING A RESONANT CIRCUIT FOR GENERATING GRADIENT FIELDS, AND METHOD FOR OPERATING SAME, Interference No. 103,869, final judgment adverse to the patentees rendered May 27, 1998, as to claims 1-18.

Patent No. 5,340,827, Nigel R. A. Beeley, Thomas A. Millican, PHENYL CARBOXAMIDE COMPOUNDS WHICH HAVE USEFUL PHARMACEUTICAL ACTIVITY, Interference No. 104,072, final judgment adverse to the patentees rendered April 30, 1998, as to claims 1-16.

Patent No. 5,367,056, Catherine A. Hession, Roy R. Lobb, Susan E. Goetz, Laurelee Osborn, Christopher D. Benjamin, Margaret D. Rosa, ENDOTHELIAL CELL-LEUKOCYTE ADHESION MOLECULES (ELAMS) AND MOLECULES INVOLVED IN LEUKOCYTE ADHESION (MILAS), Interference No. 103,904, final judgment adverse to the patentees rendered April 29, 1998, as to claims 1-6.

Patent No. 5,400,334, Carl G. Hayssen, III, MESSAGE SECURITY ON TOKEN RING NETWORKS, Interference No. 103,992, final judgment adverse to the patentee rendered May 14, 1998, as to claims 1, 2, 5-8 and 10-12.

Patent No. 5,461,268, Yotaro Sanada, SPINDLE MOTOR FOR A MAGNETIC DISK DRIVE, Interference No. 103,767, final judgment adverse to the patentee rendered April 30, 1998, as to claims 1, 2 and 3.

Patent No. 5,464,853, Ming F. Chan, Bore G. Raju, Rosario S. Castillo, Adam Kois, Chengde Wu, Vitukudi N. Balaji, 103,876, final judgment adverse to the patentees rendered April 29, 1998, as to claims 1-25.

Patent No. 5,478,824, Dennis L. Burns, Charles A. Bernheiser, ADHERENT CORRECTIVE LENS, Interference No. 103,919, final judgment adverse to the patentees rendered May 8, 1998, as to claims 1-9.

Patent No. 5,589,502, Kenji Tsujihara, Tomiki Hashiyama, Motoaki Ohashi, Noriyuki Nakanishi, BACCATIN DERIVATIVES AND PROCESSES FOR PREPARING THE SAME, Interference No. 104,028, final judgment adverse to the patentees rendered March 30, 1998, as to claims 1-7 and 10-12.

LAVERNE SMITH, Deputy Clerk
Board of Patent Appeals &
Interferences
(703) 308-9797

Certificates of Correction for July 7, 1998

D. 360,938	4,798,827	5,403,496	5,523,843
D. 378,758	4,978,535	5,423,971	5,530,240
D. 382,541	5,007,557	5,456,114	5,534,907
D. 389,888	5,008,200	5,466,273	5,535,286
D. 391,023	5,159,153	5,476,919	5,539,048
D. 391,289	5,290,695	5,478,238	5,557,750
Re. 35,640	5,392,390	5,481,722	5,561,440
4,674,939	5,398,282	5,511,292	5,565,630

5,570,125	5,636,075	5,663,818	5,683,766	5,698,700	5,712,352	5,724,377	5,738,151
5,572,608	5,637,124	5,665,066	5,683,794	5,698,801	5,713,055	5,724,965	5,738,766
5,572,689	5,637,583	5,665,090	5,684,632	5,699,373	5,713,060	5,726,058	5,739,324
5,577,190	5,637,859	5,665,242	5,684,932	5,699,455	5,713,873	5,726,206	5,739,328
5,585,341	5,641,412	5,665,513	5,685,118	5,699,546	5,713,967	5,726,831	5,739,722
5,586,346	5,642,301	5,666,142	5,685,214	5,700,308	5,714,018	5,727,291	5,740,494
5,592,864	5,643,167	5,667,221	5,686,005	5,700,719	5,714,179	5,727,339	5,740,616
5,595,113	5,643,851	5,667,388	5,686,552	5,701,169	5,715,315	5,728,371	5,740,699
5,596,375	5,644,772	5,667,440	5,686,734	5,701,280	5,715,328	5,729,617	5,740,790
5,596,752	5,645,625	5,667,657	5,687,079	5,701,753	5,715,399	5,730,204	5,740,840
5,599,672	5,645,723	5,668,459	5,687,530	5,702,041	5,715,753	5,730,646	5,741,223
5,600,035	5,646,694	5,668,504	5,687,669	5,702,199	5,715,764	5,731,082	5,741,988
5,602,097	5,648,333	5,668,616	5,687,993	5,703,398	5,715,766	5,731,678	5,742,805
5,604,679	5,648,971	5,670,056	5,688,345	5,703,528	5,716,031	5,731,951	5,743,098
5,605,936	5,650,287	5,670,997	5,688,409	5,703,696	5,716,341	5,732,346	5,743,626
5,607,849	5,650,350	5,670,998	5,688,629	5,704,495	5,716,560	5,732,766	5,744,549
5,610,148	5,651,170	5,671,000	5,689,267	5,704,549	5,717,856	5,732,962	5,744,683
5,611,200	5,651,748	5,671,396	5,689,554	5,704,794	5,718,027	5,733,074	5,744,727
5,612,862	5,652,354	5,673,252	5,689,833	5,705,272	5,718,301	5,733,541	5,744,846
5,614,140	5,653,988	5,674,485	5,690,600	5,705,986	5,718,946	5,733,597	5,745,462
5,614,551	5,654,532	5,674,910	5,691,585	5,706,035	5,719,035	5,733,726	5,745,486
5,615,767	5,654,566	5,674,938	5,692,210	5,706,071	5,719,561	5,733,749	5,745,788
5,615,831	5,655,109	5,675,381	5,692,729	5,706,101	5,719,800	5,733,755	5,746,288
5,616,534	5,655,917	5,675,714	5,693,010	5,707,729	5,721,315	5,733,815	5,746,561
5,617,174	5,658,624	5,675,834	5,693,933	5,708,313	5,721,677	5,734,425	5,747,141
5,619,236	5,658,706	5,677,128	5,694,139	5,708,616	5,721,707	5,734,799	5,747,270
5,623,062	5,658,763	5,678,818	5,694,330	5,709,141	5,721,838	5,734,853	5,747,727
5,624,149	5,659,636	5,679,413	5,694,986	5,709,441	5,722,926	5,735,316	5,747,752
5,629,644	5,660,164	5,679,993	5,695,763	5,710,267	5,723,145	5,735,917	5,747,992
5,629,890	5,661,174	5,680,150	5,695,789	5,710,433	5,723,849	5,736,328	5,748,523
5,631,804	5,661,571	5,680,474	5,696,841	5,710,832	5,723,852	5,736,382	5,749,482
5,631,935	5,661,848	5,680,527	5,697,574	5,710,965	5,724,008	5,736,556	5,749,623
5,634,559	5,662,040	5,681,406	5,698,360	5,711,343	5,724,072	5,736,876	5,751,677
5,634,845	5,662,557	5,683,654	5,698,529	5,711,742	5,724,299	5,736,921	5,752,341
5,635,191	5,663,402	5,683,685	5,698,596	5,711,922	5,724,335	5,737,226	

Summary of Final Decisions Issued by the Trademark Trial and Appeal Board
May 18-22, 1998

Date Issued	Type of Case ⁽¹⁾	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
5-18	EX	74/662,708	VITA SOURCE	2(d)	Refusal Affirmed		"LIGHTNING 828" (herbal and botanical dietary supplements and dietary supplements containing extracts, concentrates, metabolites and constituents of herbs and botanicals)	"GREEN LIGHTNING" (powdered dietary supplement); "LIQUID LIGHTNING" (liquid dietary supplement)	No
5-18	EX	74/568,765	American Fertility Society	whether the words "SOCIETY FOR REPRODUCTIVE MEDICINE" in applicant's mark are generic and must be disclaimed under Sec. 6	Refusal Affirmed		"AMERICAN SOCIETY FOR REPRODUCTIVE MEDICINE" (association services, namely, promoting the interests of the reproductive medicine industry)		No
5-18	CANC	22,554	LAF Enterprises, Inc. v. Lauren Enterprises	whether registrant abandoned its mark through non-use or whether the non-use was legally excusable	Petition to Cancel Denied		"FRANCHISE" (equipment sold as a unit for playing a board game)		No

(1) EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (S)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case ⁽¹⁾	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
5-19	EX	74/532,528 74/532,529 74/591,331	International Flavors & Fragrances	whether the specimens of record show use of the marks appearing in applicant's drawings [propriety of registering applicant's marks incorporating a "phantom" or "place holder" element]	Refusal Affirmed		"LIVING xxxx FLAVORS" and "LIVING xxxx FLAVOR" [both marks for: essential oils for use in the manufacture of flavored foodstuffs, smoking tobacco compositions, smoking tobacco articles, chewing tobacco compositions, chewing gums, oral care products and beverages; non-synthetic and synthetic flavor substances for use in the manufacture of flavored foodstuffs, etc.]; "LIVING xxxx" [non-synthetic and synthetic fragrances for use in the manufacture of colognes, etc.; essential oils for use in the manufacture of colognes, etc.]		Yes
5-19	EX	74/676,293	Gilbarco, Inc.	2(e)(1)	Refusal Affirmed		"SMARTPAD" [electronic security devices comprising computer memory and microcontroller elements and encryption software for use in connection with fuel dispensers]		No

(1) EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SI)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case ⁽¹⁾	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
5-20	EX	74/581,388	Universal Services of America, Inc.	2(d); Sec. 6 disclaimer requirement (of term "USA")	Refusal Affirmed (as to disclaimer requirement only)		"USA" (and design) [insurance underwriting services and insurance brokerage services; financial management and financial planning services including tax return preparation and accounting services]	"USA" [administration in the field of life insurance]	No
5-20	EX	74/672,694	Anders Lowe, Inc.	2(e)(1)	Refusal Affirmed		"LIPSTIX" [lipstick]		No
5-20	EX	74/591,188	Legal Staffing, Inc.	2(e)(4); Sec. 6 disclaimer requirement (of term "LEGAL STAFFING")	Refusal Affirmed (on both grounds)		"BRIGGS LEGAL STAFFING" [temporary and permanent placement services for legal secretaries]		No
5-21	EX	74/620,191	Sports Heritage, U.S.A., Inc.	2(d)	Refusal Affirmed		"CLEVELAND SPIDERS" [t-shirts, sweatshirts, jerseys, hats/caps, sport shirts and jackets]	"SPYDER" (and spider design) [wide array of apparel including sweatshirts and t-shirts]	No
5-22	EX	74/574,975	RCM Enterprises, Inc.	2(e)(1)	Refusal Affirmed		"SPECIALTY COFFEE RETAILER" [magazines dealing with the business and activities of coffee retailers]		No

(1) EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SI)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
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Arlington, Virginia 22202-3513

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INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director.....	308-1782	11/06/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director.....	308-0511	04/12/96
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300— JOSEPH J. ROLLA, Director.....	305-3900	12/96
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director.....	305-3900	12/15/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500— JANICE A. HOWELL, Director.....	308-0956	10/14/96
TELECOMMUNICATIONS, GROUP 2600—JIN F. NG, Director.....	305-3900	09/13/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director.....	305-3293	06/07/96
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director.....	308-1113	12/08/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director.....	308-1148	02/04/97
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director.....	308-0858	01/31/96
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director.....	308-0861	02/06/96
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director.....	308-2168	01/14/97

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:

- (1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers, 35 U.S.C. 154(c)(1).
- (2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed, 35 U.S.C. 154(a)(2).
- (3) All design patents are granted for a term of 14 years from the date of the grant. However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of June 1, 1998

Law Office	Oldest Date	
	New*	Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308-9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	01/09/98	03/16/98
Law Office 102—Thomas Shaw, Acting Managing Attorney, (703) 308-9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	10/14/97	02/11/98
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308-9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	09/16/97	05/01/98
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308-9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	08/21/97	03/05/98
Law Office 105—Thomas Howell, Managing Attorney, (703) 308-9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	10/14/97	02/12/98
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308-9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	10/31/97	04/14/98
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308-9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	01/09/98	03/10/98
Law Office 108—David Shallant, Managing Attorney, (703) 308-9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	08/27/97	01/21/98
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308-9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	08/21/97	04/14/98
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Teron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use (ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126 Affidavits Under Sections 8 & 15 (All Classes).....	04/20/98	—0—
Renewals (All Classes).....	04/20/98	—0—
Section 12(c) Publications (All Classes).....	03/16/98	—0—

1. ** Assigned to all Law Office
2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305-8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.
3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

JULY 7, 1998

Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 34,572 (3564th)

EXERCISE MACHINE WITH MULTIPLE EXERCISE STATIONS

Jeffrey B. Johnson, and Arthur B. Ish, both of Redmond, Wash., assignors to Vectra Fitness, Inc., Redmond, Wash.

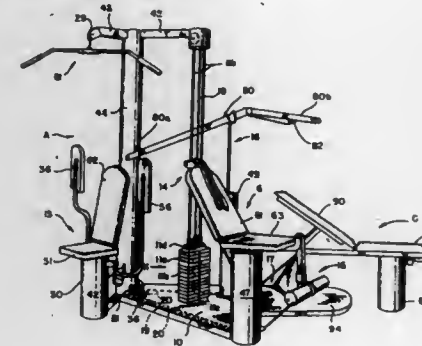
Reexamination Request No. 90/004,544, Feb. 10, 1997.

Reexamination Certificate for Reissue Patent Re. 34,572, issued Feb. 10, 1997, Ser. No. 697,949, May 9, 1991.

Original No. 4,809,972, dated Mar. 7, 1989, Ser. No. 697,549, U.S. Cl. 361—684 Sep. 16, 1987.

Int. Cl.⁶ A63B 21/06

U.S. Cl. 482—99



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 5-9, 11, 12, 14-19, 22, 23 and 25-30 is confirmed.

Claim 10 was previously cancelled.

Claims 1-4, 13, 20, 21 and 24 were previously disclaimed.

New claims 31-39 are added and determined to be patentable.

26. An exercise machine comprising:

a movable load;

first, second, and third exercise units;

a first floating pulley unit;

a second floating pulley unit;

a first cable receiving said floating pulley units and said load and connected to said first exercise unit such that a force exerted on either one of said floating pulley units or on said first exercise unit responsively tensions said first cable and is resisted by said load;

a second cable carried by said first floating pulley unit and connected at one of its ends to said second exercise unit;

a third cable carried by said second floating pulley unit and connected at one of its ends to said third exercise unit; and

stops on said three cables whereby a manual exercising force applied either to said first cable by use of said first exercise unit, or to said second cable by use of said second exercise unit, or to said third cable by use of said third exercise unit, responsively tensions said first cable and applies a force tending to move said load.

179-282 O.G.-98-2:QL 3

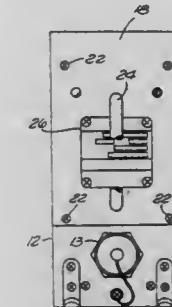
B1 4,935,846 (3565th)

ELECTRONIC ASSEMBLY

Alexis G. Karolys, San Clemente; Gen Miake, Orange, and Nikul S. Kapadia, Laguna Niguel, all of Calif., assignors to Endevo Corporation, San Juan Capistrano, Calif.

Reexamination Request No. 90/004,676, Jun. 24, 1997.

Reexamination Certificate for Patent 4,935,846, issued Jun. 19, 1990, Ser. No. 335,613, Apr. 10, 1989.

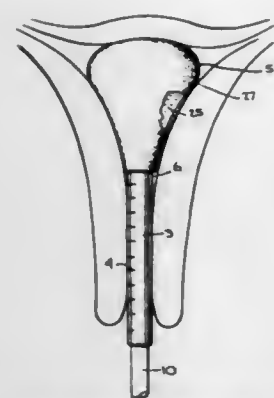
Int. Cl.⁶ H05K 7/10

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-6 is confirmed.

1. An electronic assembly comprising a housing, electronic circuit means in said housing including computer means and signal processing and amplification means, said housing having a front face, an opening in said front face and a first connector element recessed in said housing inside of said opening,

a removable module adapted to be attached to said front face including a faceplate, a chassis plate attached to the back side of said faceplate, programmable integrated circuit means fastened to said chassis plate,



- uterus and is in contact with substantially all of the [tissue lining for which necrosis is desired]endometrium;
- (c) heating said fluid within the inserted and inflated bladder by means of a heating element positioned internal to said distensible bladder;
- (d) controlling the temperature and pressure of said fluid by control means connected to said distensible bladder; and
- (e) maintaining the exterior of said bladder so inflated with said fluid at a temperature of about 190° F. to about 215° F. and preferably about 210° F. for a period of time of from about 4 to about 12 minutes, and preferably about 6 minutes to effect cauterization necrosis of substantially all of the [tissue lining of the body cavity for which necrosis is desired]endometrium.

B1 5,269,748 (3567th)

THERAPEUTIC LEG AND FOOT DEVICE

Robert Lonardo, Treasure Island, Fla., assignor to Restorative Care of America Incorporated, Clearwater, Fla.

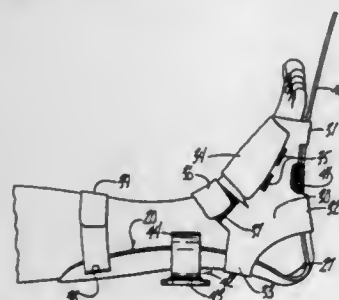
Reexamination Request No. 90/003,343, Feb. 24, 1994.

Reexamination Certificate for Patent 5,269,748, issued Dec. 14, 1993, Ser. No. 20,222, Feb. 16, 1993.

Continuation of Ser. No. 399,365, Sep. 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 237,643, Mar. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 86,647, Nov. 4, 1970, abandoned.

Int. Cl.⁶ A61F 5/00

U.S. Cl. 602—27



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–11 are cancelled.

[1. A therapeutic leg and foot device, comprising an L-shaped member comprised of a one piece flexible plastic material;

said L-shaped member having a leg portion, a heel portion integral with one end of said leg portion, and a foot portion extending integrally from said heel portion at right angles to said leg portion,

said heel portion having a configuration to provide a space between the patient's heel and said heel portion to prevent the application of pressure to the patient's heel by the heel portion when the posterior region of the lower leg and the sole of the foot of a patient wearing the device are in supporting contact with said leg portion and said foot portion, respectively, resulting from the configuration of said heel portion,

said heel portion having substantially free and unflanged side edges to permit lateral visibility of said space and a patient's heel suspended within said space, and means for releasably securing said device to the leg and foot of a patient.]

B1 5,298,013 (3568th)

METHOD OF HEALING THE DECUBITUS ON THE HEEL OF A BEDFAST PATIENT

Robert Lonardo, Treasure Island, Fla., assignor to Restorative Care of America Incorporated, Clearwater, Fla.

Reexamination Request No. 90/003,494, Jul. 11, 1994.

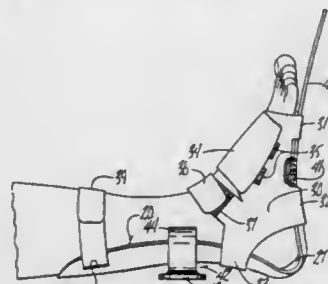
Reexamination Certificate for Patent 5,298,013, issued Mar. 29, 1994, Ser. No. 52,517, Apr. 29, 1993.

Division of Ser. No. 2,022, Feb. 16, 1993, Pat. No. 5,269,748, which is a continuation of Ser. No. 399,365, Sep. 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 237,643, Mar. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 86,647, Nov. 4, 1970, abandoned.

The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.

Int. Cl.⁶ A61F 5/00

U.S. Cl. 602—28



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–6 are cancelled.

[1. The method of healing or preventing decubitus on the heel of a bedfast patient, comprising,

placing on the leg and foot of said patient an L-shaped member having a leg portion, a heel portion on one end of said leg portion, and a foot portion extending from said heel portion at right angles to said leg portion,

forming the shape of said heel portion so that the shape alone of said heel portion will provide a space between the patient's heel and said heel portion to prevent the application of pressure to the patient's heel by said heel portion when the lower leg and the sole of the foot of said patient are in intimate contact with said leg portion and said foot portion, respectively, and securing said L-shaped member to the leg and foot of said patient by using a sandal extending substantially over said foot portion and the foot of the patient, and cutting out a heel portion of said sandal adjacent said heel portion of said L-shaped member and said space.]

STATUTORY INVENTION REGISTRATIONS

PUBLISHED JULY 7, 1998

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1738

TEAR RESISTANT DISPOSABLE BIB

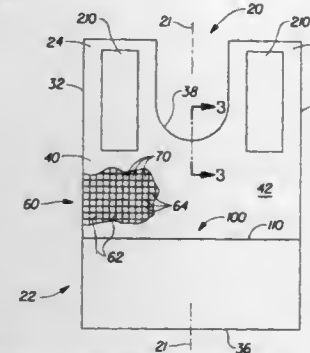
Richard Nicholas Reinhart, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 5, 1995, Ser. No. 369,210

Int. Cl.⁶ A41B 13/00

U.S. Cl. 2—49.1

17 Claims



1. A disposable bib having a composite construction and comprising:

- an absorbent, liquid permeable outer topsheet;
- a garment facing backsheet layer, the backsheet layer being liquid impermeable relative to the topsheet; and
- a filamentary network disposed intermediate the backsheet and the topsheet.

H1739

Patent Not Issued For This Number

H1740

SYNCHRONIZED ROTATING PRISM AND CCD ELECTRICAL READOUT COLOR CAMERA

Rodney M. Powell, Fort Walton Beach, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 1, 1992, Ser. No. 907,278

Int. Cl.⁶ H04N 5/228

U.S. Cl. 348—207

17 Claims

7. Video camera apparatus comprising the combination of:
- a charge coupled device semiconductor array having a plurality of predetermined orientation aligned columns of optical photon to electrical charge signal transducing pixel points dispersed over an image reception surface portion thereof;
 - optical means for focusing a camera input optical image on an image reception surface portion of said charge coupled device semiconductor array;
 - optical displacement means located intermediate said optical means for focusing and said image reception surface for moving said focused camera input optical image along the lengthwise extent of said column pixel points and toward a predetermined electrical signal readout location therein;
 - electrical shifting means synchronized with said optical displacement means for transferring electrical charge signals representing said camera input optical image between illuminated successive pixel points in each said column of said

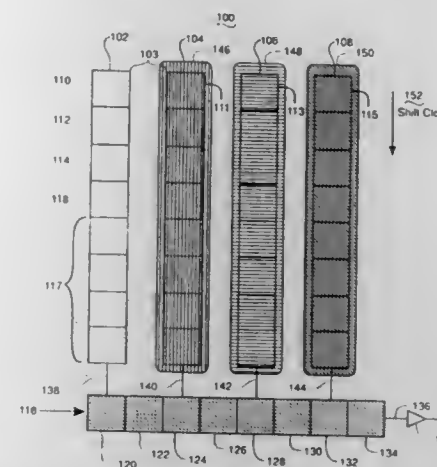


image reception surface toward said predetermined electrical signal readout location; and

means for communicating said column charge signals from said readout location into a video signal utilizing apparatus.

H1741

METHOD AND APPARATUS FOR PATTERN SENSITIVITY STRESS TESTING OF MEMORY SYSTEMS

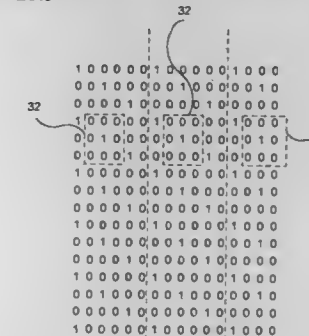
Melvin Lee Cruts, Milpitas, Calif., assignor to Tandem Computers Corporation, Cupertino, Calif.

Filed Dec. 5, 1994, Ser. No. 349,520

Int. Cl.⁶ H01L 31/0328; G11C 29/00

U.S. Cl. 371—21.3

10 Claims



1. A method for stress testing a memory system having a plurality of memory cells capable of being grouped in a plurality of neighborhoods of nine cells, each neighborhood of nine cells including a center cell and eight cells surrounding the center cell, the method comprising the steps of:

- writing all of the memory cells within a predetermined address range of the memory system with a first value;
- writing a plurality of target cells with a second value which is a complement of the first value, each of the target cells being a center cell of each of a first group of neighborhoods of nine cells within the address range, each of the target cells being surrounded by eight non-target cells;
- reading all of the non-target cells within the address range and reporting a failure condition if any non-target cells contain other than the first value; and
- reading all of the target cells and reporting a failure condition if any target cells contain other than the second value.

REISSUES

JULY 7, 1998

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in *italics* indicates additions made by reissue.

Re. 35,834

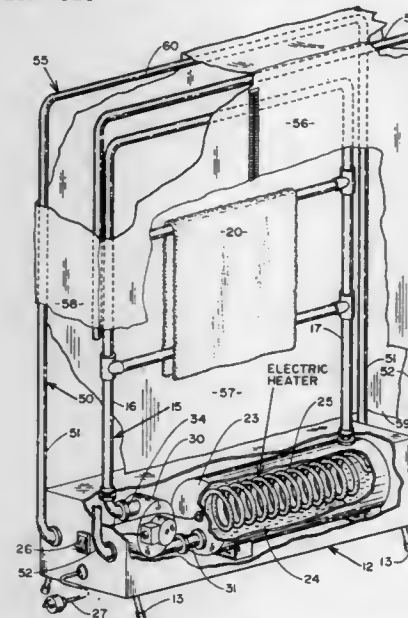
ARTICLE WARMER WITH HEATED FRAME AND FLEXIBLE ENCLOSURE

William R. Miller, P.O. Box 8534, Erie, Pa. 16505
Original No. 5,548,100, dated Aug. 20, 1996, Ser. No. 367,808,
Dec. 30, 1994. Application for reissue Dec. 20, 1996, Ser. No.
771,013

Int. Cl.⁶ F24H 1/06

U.S. Cl. 219—521

8 Claims



5. Apparatus for warming fabric articles, said apparatus having a base supporting a tubular warming frame and a means for circulating a heated fluid through said frame, the improvement comprising:

a flaccid bag passing over said frame to enclose said frame and an article to be warmed hanging upon said frame, said bag being constructed of a material adapted to retain heat while at the same time allowing moisture to pass freely there-through whereby a warm dry atmosphere is maintained within said bag.

Re. 35,835

DEVICE FOR ATTACHING AN AGRICULTURAL IMPLEMENT TO A TRACTOR

Manfred Eidam, Wilthen; Michael Flanhardt, Köln; Stefan Rauschenbach, Grosspostwitz, and Andreas Roth, Neunkirchen-Seelscheid, all of Germany, assignors to GKN Walterscheid GmbH, Lohmar, Germany

Original No. 5,462,131, dated Oct. 31, 1995, Ser. No. 313,720,
Sep. 27, 1994. Application for reissue Jun. 12, 1996, Ser. No.
661,954

Claims priority, application Germany, Sep. 29, 1993, 43 33
035.5

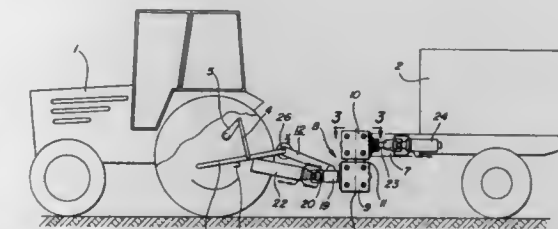
Int. Cl.⁶ B60K 25/06

U.S. Cl. 180—14.4

5 Claims

1. A device for attaching an agricultural implement to a tractor and for establishing a driving connection between a power take-off shaft of the tractor and a drive or a driveline for driving the implement comprising:

a drive unit having first and second drives arranged one above the other, said first drive includes a first connecting journal which, by a driveshaft, is connectable to the power take-off shaft of the tractor;



said second drive arranged above said first drive, said second drive includes a second connecting journal connected to the drive or driveline of the implement, said two connecting journals arranged in planes extending parallel relative to one another, said first and second drives, via a pivot bearing, being pivotable around a pivot axis which is arranged at a right angle relative to the two connecting journals, said pivot enables the tractor and implement to pivot relative to one another around a vertical axis;

drawing means arranged between the second drive, and the implement;

an attaching stirrup having two arms adapted for connection with one of two lower steering arms of the tractor and adapted for enabling the implement to be inclined relative to the tractor around a transverse axis;

a tilting bearing enabling the implement to be inclined sideways around a longitudinal axis relative to the tractor, with the longitudinal axis intersecting the transverse axis at a right angle and with the longitudinal axis being formed by the rotational axis of the first connecting journal of the first drive, the transverse axis is offset upwardly from the longitudinal axis towards the second drive and the tilting bearing is formed by a bearing housing supporting the first connecting journal and by a sleeve which is positioned on the bearing housing and forms part of the attaching stirrup.

Re. 35,836

SOLID STATE OPTICALLY COUPLED ELECTRICAL POWER SWITCH

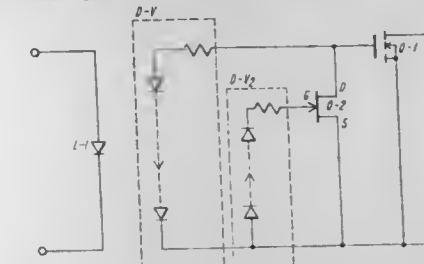
Edward T. Rodriguez, Winchester, Mass., assignor to C. P. Clare Corporation, Beverly, Mass.

Original No. 4,390,790, dated Jun. 28, 1983, Ser. No. 186,419,
Sep. 12, 1980. Continuation-in-part of Ser. No. 65,072, Aug.
9, 1979, Pat. No. 4,296,331. Application for reissue Aug. 7,
1995, Ser. No. 511,747

Int. Cl.⁶ G02B 27/00

U.S. Cl. 250—551

23 Claims



2. A solid state optically-coupled relay comprising,

(a) solid state light emitting means,

(b) principal solid state photodetector means comprising a first diode series array optically controllable by the light emitting means,

(c) output terminal means,

(d) an enhancement-mode vertical conduction (DMOS) MOS-FET, constituting an output FET of the relay [switch] with

gate, source and drain electrodes, the source and drain electrodes thereof being connected to said output terminal means and the source and gate electrodes being connected directly to the ends of the first diode array,

(e) a depletion-mode junction FET (JFET) with source, drain and gate electrodes [of the DMOS and] the gate and source electrodes of the JFET being connected to the ends of the second diode array,

the JFET providing a maximum turn-off bias to the DMOS when the JFET is at a low impedance, such low impedance condition of the JFET occurring when the second diode array is not illuminated, the JFET providing a turn on bias to the DMOS when the JFET is at a high impedance, such high impedance occurring when the second diode array is illuminated.

Re. 35,837

MICROPROCESSOR-CONTROLLED STROBE LIGHT

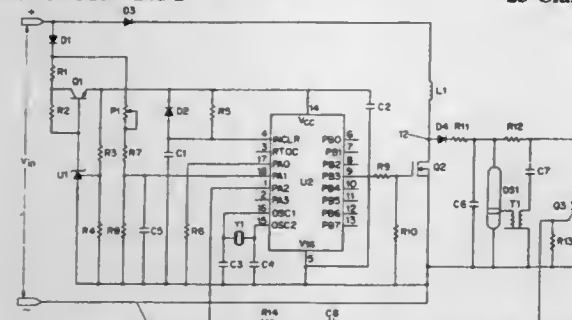
Joseph Kosich, South Toms River, and Edward V. Applegate, Toms River, both of N.J., assignors to Wheelock Inc., Long Branch, N.J.

Original No. 5,341,069, dated Aug. 23, 1994, Ser. No. 61,965, May 14, 1993. Application for reissue Jul. 30, 1996, Ser. No. 688,528

Int. Cl.⁶ H05B 37/00

U.S. Cl. 315—241 S

25 Claims



1. A strobe light circuit powered by an input voltage, for flashing a flashtube at a predetermined flash rate with a predetermined amount of energy in each flash, comprising:

first means for storing energy supplied from said input voltage; second means for storing energy, connected in shunt with said flashtube and capable of storing energy at a rate faster than said first storing means;

switching means for regulating the storage over time of energy in said first storing means and for allowing transfer of energy from said first storing means to said second storing means, said switching means having a first position and a second position such that when said switching means is in said first position, energy is stored in said first storing means and when said switching means is in said second position, energy from said first storing means is transferred to said second storing means, and such that a relative peak current drawn by said first storing means is attained as said switching means switches from said first position to said second position;

means for permitting current flow from said first storing means to said second storing means and for blocking current flow from said second storing means to said first storing means or said switching means;

means for triggering said flashtube at said predetermined flash rate;

means for regulating said input voltage into a regulated voltage supply; and

microcontroller means powered by said regulated voltage power supply, for initiating said triggering means at the predetermined flash rate, for receiving said input voltage, for sampling and digitizing said input voltage into a lookup table having a corresponding D.C. lookup table output, and for repeatedly cycling said switching means between flashes of said flashtube by controlling the time said switching means is in said first position [in accordance with the lookup table

output.] and controlling the time said switching means is in said second position [in accordance with the time expended since the last flash of said flashtube], such that said second energy storing means acquires said predetermined amount of energy as the triggering means is initiated by the microcontroller means and such that the time said switching means is in said first position is maximized [and the time said switching means is in said second position is generally decreased relative to the time since the last flash of said flashtube.] to minimize the peak current drawn by the first storing means.

Re. 35,838

ELECTRICALLY ERASABLE PROGRAMMABLE READ-ONLY MEMORY WITH NAND CELL STRUCTURE

Masaki Momodomi, Fujio Masuoka, both of Yokohama; Riichiro Shirota; Yasuo Itoh, both of Kawasaki; Kazunori Ohuchi, and Ryouhei Kirisawa, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

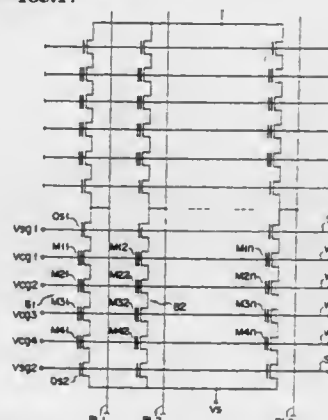
Original No. 4,959,812, dated Sep. 25, 1990, Ser. No. 289,702, Dec. 27, 1988. Continuation of Ser. No. 951,125, Sep. 25, 1992, abandoned. Application for reissue Apr. 28, 1995, Ser. No. 430,271

Claims priority, application Japan, Dec. 28, 1987, 62-329781

Int. Cl.⁶ G11C 17/00

U.S. Cl. 365—185.17

22 Claims



16. A nonvolatile semiconductor memory device comprising:

(a) a semiconductor substrate having a major surface;

(b) a semiconductor well region formed in said surface of said substrate, said well region being provided separate from a well region in which transistors are formed to constitute a peripheral circuit of said memory device;

(c) parallel bit lines provided above said substrate;

(d) rewritable memory cells connected to said bit lines, said memory cells comprising NAND cell blocks each of which has a series array of memory cell transistors, each of said memory cell transistors having a charge accumulation layer, a control gate and semiconductor layers formed in said well region to function as sources and drains;

(e) at least first selection transistors included in said NAND cell blocks, each of said first selection transistors provided at one end of said series array of memory cell transistors, and said first selection transistors being formed in said well region in which said NAND cell blocks are formed; and

(f) control means for writing data into memory cells of a selected NAND cell block sequentially during a data write mode subsequent to a data erase mode, said control means applying, when a certain memory cell of said selected NAND cell block is subjected to writing, to said control gate of said certain memory cell a voltage to form such a strong electric field as to allow the transfer of charges between said charge accumulation layer of said certain memory cell and said well region.

Re. 35,839

CD-ROM DISK AND SECURITY CHECK METHOD FOR THE SAME

Toshinori Asal, Yokosuka, and Masaki Kawahori, Chiba, both of Japan, assignors to Kabushiki Kaisha Sega Enterprises, Japan

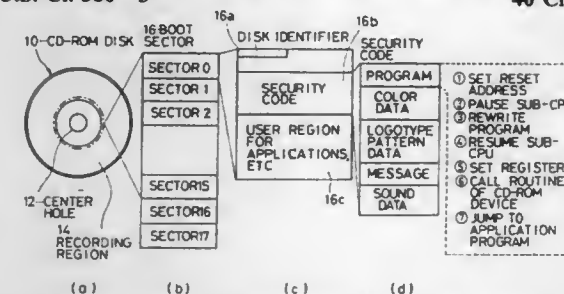
Original No. 5,371,792, dated Dec. 6, 1994, Ser. No. 171,756, Dec. 21, 1993. Continuation of Ser. No. 956,262, Oct. 5, 1992, abandoned. Application for reissue Aug. 25, 1995, Ser. No. 519,580

Claims priority, application Japan, Jan. 31, 1992, 4-017006

Int. Cl.⁶ G11B 23/28; H04L 9/00

U.S. Cl. 380—3

40 Claims



1. A CD-ROM disk to be mounted on a CD-ROM device, said CD-ROM disk comprising an identifier region having a disk identifier recorded therein, and a security code region having a security code recorded therein,

the identifier region and the security code region being provided in one sector of a boot sector to be read when actuated,

the disk identifier including a preset identification code,

the security code including at least a program to be executed after check of the security code.

Re. 35,840

IMIDAZO[1,5-A]QUINOLINES FOR TREATMENT OF ANXIETY AND SLEEP DISORDERS

Eric Jon Jacobsen, Plainwell, and Ruth Elizabeth TenBrink, Richland, both of Mich., assignors to Pharmacia & Upjohn Company, Kalamazoo, Mich.

PCT No. PCT/US94/12197, § 371 Date May 13, 1996, § 102(e) Date May 13, 1996, PCT Pub. No. WO95/14020, PCT Pub. Date May 26, 1995

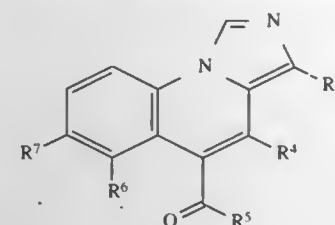
Original No. 5,594,140, dated Jan. 14, 1997, Ser. No. 640,973, May 13, 1996. Continuation of Ser. No. 242,556, May 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 155,405, Nov. 19, 1993, abandoned. This PCT application Oct. 27, 1994, Ser. No. 877,611

Int. Cl.⁶ C07D 471/04

U.S. Cl. 544—126

15 Claims

1. Imidazo[1,5-a]quinolines of formula (I)



where

(I) R₃ is

(A) —CO—OR_{3,1} where R_{3,1} is

- (1) —H,
- (2) C₁—C₆ alkyl,
- (3) C₃—C₇ cycloalkyl,
- (4) —(C₁—C₆ alkyl)—C₃—C₇ cycloalkyl,
- (5) —(CH₂)_n—CF₃ where n is 0 thru 4,
- (6) —(CH₂)_n—CHF₂ where n is defined above,
- (7) —(CH₂)_n—CH₂F where n is defined above,

(8) —φ optionally substituted with one or two

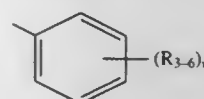
- (a) —F,
- (b) —Cl,
- (c) —Br,
- (d) —I,
- (e) C₁—C₄ alkyl,
- (f) —NR_{3,2}R_{3,3} where R_{3,2} and R_{3,3} are the same or different and are selected from the group consisting of
- (i) —H,
- (ii) C₁—C₆ alkyl,
- (iii) C₃—C₇ cycloalkyl,
- (iv) —(C₁—C₆ alkyl)—C₃—C₇ cycloalkyl, and where R_{3,2} and R_{3,3} are taken together with the attached nitrogen atom to form a heterocyclic moiety selected from the group consisting of pyrrolidinyl, morpholinyl, piperazinyl and piperidinyl.

(B) —CO—R_{3,5} where R_{3,5} is

- (1) —H,
- (2) C₁—C₆ alkyl,
- (3) —φ optionally substituted with one or two
- (a) —F,
- (b) —Cl,
- (c) —Br,
- (d) —I,
- (e) C₁—C₄ alkyl,
- (f) —NR_{3,2}R_{3,3} where R_{3,2} and R_{3,3} are defined above.

(C) aryl where aryl is

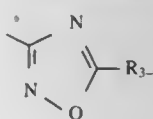
(1) phenyl



where w is 1 or 2 and where R_{3,6} is

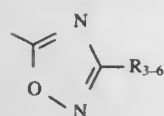
- (a) —H,
- (b) —F,
- (c) —Cl,
- (d) —Br,
- (e) —I,
- (f) —CN,
- (g) —NO₂,
- (h) —O—CO—R_{3,1} where R_{3,1} is defined above,
- (i) —(CH₂)_n—CF₃ where n is defined above,
- (j) C₁—C₆ alkyl,
- (k) C₃—C₇ cycloalkyl,
- (l) —(C₁—C₆ alkyl)—C₃—C₇ cycloalkyl,
- (m) —NR_{3,2}R_{3,3} where R_{3,2} and R_{3,3} are defined above,
- (n) —(CH₂)_n—O—R_{3,1} where R_{3,1} and n are defined above,
- (o) —(CH₂)_n—S—R_{3,1} where R_{3,1} and n are defined above,
- (p) —(CH₂)_n—CO—O—R_{3,1} where R_{3,1} and n are defined above,
- (q) —N_{3,1}—CO—R_{3,1} where the R_{3,1}'s are the same or different and are defined above,
- (r) —SO₂—NR_{3,2}R_{3,3} where R_{3,2} and R_{3,3} are defined above,
- (s) —CO—R_{3,5} where R_{3,5} is defined above,
- (t) —NH—SO₂—CH₃,
- (u) —CO—N(R_{3,4})₂ where the R_{3,4} may be the same or different and are —H or C₁—C₃ alkyl,

(2) 5-substituted-1,2,4-oxadiazol-3-yl



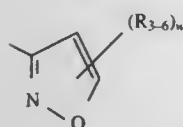
where R_{3,6} is defined above,

(3) 3-substituted-1,2,4-oxadiazol-5-yl



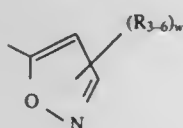
where R_{3-6} is as defined above.

(4) 4- or 5-substituted isoxazol-3-yl



where w and R_{3-6} are defined above.

(5) 3- or 4-substituted isoxazol-5-yl



where w and R_{3-6} are defined above;

(II) R_4 is

- (A) —H,
- (B) C_1-C_4 alkyl,
- (C) $-CF_3$;

(III) R_5 is

- (A) C_1-C_6 alkyl,
- (B) ϕ optionally substituted with I or 2
 - (1) —F,
 - (2) —Cl,
 - (3) —Br,
 - (4) —I,
 - (5) —CN,
 - (6) —NO₂,
- (7) —O—CO— R_{5-1} where R_{5-1} is
 - (a) —H,
 - (b) C_1-C_6 alkyl,
 - (c) C_3-C_7 cycloalkyl,
 - (d) $-(C_1-C_6 \text{ alkyl})-C_3-C_7$ cycloalkyl,
 - (e) $-(CH_2)_b-CF_3$ where b is 0 thru 4,
 - (f) $-(CH_2)_b-CHF_2$ where b is defined above,
 - (g) $-(CH_2)_b-CH_2F$ where b is defined above,
- (8) $-(CH_2)_b-CF_3$ where b is defined above,
- (9) C_1-C_6 alkyl,
- (10) C_3-C_7 cycloalkyl,
- (11) $-(C_1-C_4 \text{ alkyl})-C_3-C_7$ cycloalkyl,
- (12) $-NR_{5-2}$ where R_{5-2} and R_{5-3} are the same or different and are defined above,
- (13) $-(CH_2)_b-O-R_{5-1}$ where R_{5-1} and b are defined above,
- (14) $-(CH_2)_b-S-R_{5-1}$ where R_{5-1} and b are defined above,
- (15) $-(CH_2)_b-CO-O-R_{5-1}$ where R_{5-1} and b are defined above,
- (16) $-NR_{5-1}CO-R_{5-1}$ where the R_{5-1} 's are the same or different and are defined above,
- (16) $-SO_2-NR_{5-2}R_{5-3}$ where R_{5-2} and R_{5-3} are defined above,
- (18) $-CO-R_{5-4}$ where R_{5-4} is
 - (a) —H,
 - (b) C_1-C_6 alkyl,
 - (c) $N(R_{5-1})_2$ where the R_{5-1} 's are the same or different and are as defined above,
- (C) —O— R_{5-5} where R_{5-5} is
 - (1) —H,
 - (2) C_1-C_6 alkyl,
 - (3) C_3-C_7 cycloalkyl,
 - (4) $-(C_1-C_6 \text{ alkyl})-C_3-C_7$ cycloalkyl,
 - (5) $-(CH_2)_b-CF_3$ where b is defined above,

(6) $-(CH_2)_b-CHF_2$ where b is defined above,

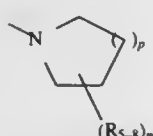
(7) $-(CH_2)_b-CH_2F$ where b is defined above,

(8) ϕ optionally substituted with one or two

- (a) —F,
 - (b) —Cl,
 - (c) —Br,
 - (d) —I,
 - (e) C_1-C_4 alkyl,
 - (f) $-NR_{5-2}R_{5-3}$ where R_{5-2} and R_{5-3} are defined above,
- (D) $-NR_{5-6}R_{5-7}$ where R_{5-6} and R_{5-7} are the same or different and are selected from the group consisting of

- (1) —H,
- (2) C_1-C_6 alkyl,
- (3) C_3-C_7 cycloalkyl,
- (4) $-(C_1-C_4 \text{ alkyl})-C_3-C_7$ cycloalkyl and where R_{5-6} and R_{5-7} are taken together with the attached nitrogen atom to form a heterocyclic moiety selected from the group consisting of

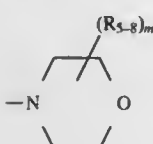
(a)



where m is 1 thru 4, p is 0 thru 4 and R_{5-8} is selected from the group consisting of

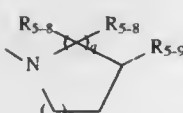
- (i) —H,
- (ii) C_1-C_6 alkyl,
- (iii) C_3-C_7 cycloalkyl,
- (iv) $-(C_1-C_6 \text{ alkyl})-C_3-C_7$ cycloalkyl,
- (v) $-(CH_2)_b-CF_3$ where b is defined above,
- (vi) $-(CH_2)_b-CHF_2$ where b is defined above,
- (vii) $-(CH_2)_b-CH_2F$ where b is defined above,
- (viii) ϕ optionally substituted with I or 2
 - (I) —F,
 - (II) —Cl,
 - (III) —Br,
 - (IV) —I,
 - (v) C_1-C_4 alkyl,
 - (VI) —NH₂,
 - (VII) —CO—NH₂,
 - (VIII) —SO₂—NH₂,
 - (IX) —NH—SO₂—CH₃,

(b)



where m and R_{5-8} are defined above,

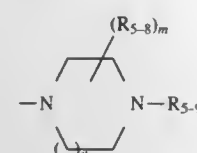
(c)



where q is 1 or 2, where p and R_{5-8} are defined above and where R_{5-9} is

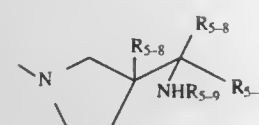
- (A) —H,
- (B) C_1-C_6 alkyl,
- (C) C_3-C_7 cycloalkyl,
- (D) $-(C_1-C_6 \text{ alkyl})-C_3-C_7$ cycloalkyl,
- (E) $-(CH_2)_b-CF_3$ where b is defined above,
- (F) $-(CH_2)_b-CHF_2$ where b is defined above,
- (G) $-(CH_2)_b-CH_2F$ where b is defined above,
- (H) ϕ optionally substituted with one or two
 - (1) —F,
 - (2) —Cl,

- (3) —Br,
- (4) —I,
- (5) C_1-C_4 alkyl,
- (6) —NH₂,
- (d)



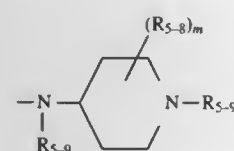
where m , q , R_{5-8} and R_{5-9} are defined above,

(e)



where R_{5-8} and R_{5-9} are defined above,

(f)



where m , R_{5-8} and R_{5-9} are defined above,

(IV) R_6 is

- (A) —H,
- (B) —F,
- (C) —Br,
- (D) —I,
- (E) C_1-C_4 alkyl,
- (F) —CN,
- (G) —NO₂,
- (H) $-(CH_2)_g-CF_3$ where g is 0 thru 4,
- (I) $-(CH_2)_g-OR_{6-1}$ where R_{6-1} is
 - (1) —H,
 - (2) C_1-C_6 alkyl,
- (3) ϕ optionally substituted with one or two
 - (a) —F,
 - (b) —Cl,
 - (c) —Br,
 - (d) —I,
 - (e) C_1-C_4 alkyl,
 - (f) $-NR_{6-2}R_{6-3}$ where R_{6-2} and R_{6-3} are the same or different and are selected from the group consisting of
 - (i) —H,
 - (ii) C_1-C_6 alkyl,
 - (iii) C_3-C_7 cycloalkyl,
 - (iv) $-(C_1-C_4 \text{ alkyl})-C_3-C_7$ cycloalkyl, and where R_{6-2} and R_{6-3} are taken together with the attached nitrogen atom to form a heterocyclic moiety selected from the group consisting of pyrrolidinyl, morpholinyl, piperazinyl, piperdinyl,
- (J) —CO—O— R_{6-4} where R_{6-4} is
 - (1) —H,
 - (2) C_1-C_6 alkyl,
 - (3) C_3-C_7 cycloalkyl,
 - (4) $-(C_1-C_6 \text{ alkyl})-C_3-C_7$ cycloalkyl,
 - (5) $-(CH_2)_g-CF_3$ where g is defined above,
 - (6) $-(CH_2)_g-CHF_2$ where g is defined above,
 - (7) $-(CH_2)_g-CH_2F$ where g is defined above,
 - (8) ϕ optionally substituted with one or two
 - (a) —F,
 - (b) —Cl,

(c) —Br,

(d) —I,

(e) C_1-C_4 alkyl,

(f) $-NR_{6-2}R_{6-3}$ where R_{6-2} and R_{6-3} are as defined above,

(K) —CO— $NR_{6-2}R_{6-3}$ where R_{6-2} and R_{6-3} are as defined above,

(L) $-(CH_2)_g-NR_{6-2}R_{6-3}$ where g , R_{6-2} and R_{6-3} are defined above,

(M) —NH—CO— R_{6-4} where R_{6-4} is defined above,

(N) —SO₂— $NR_{6-2}R_{6-3}$ where R_{6-2} and R_{6-3} are defined above,

(O) —N₃;

(V) R_7 is

- (A) —H,
- (B) —F,
- (C) —Cl,
- (C) —Br,
- (D) —I,
- (E) C_1-C_4 alkyl,
- (F) —CN,
- (G) —NO₂,
- (H) $-(CH_2)_g-CF_3$ where g is 0 thru 4,
- (I) $-(CH_2)_g-OR_{7-1}$ where R_{7-1} is
 - (1) —H,
 - (2) C_1-C_6 alkyl,
- (3) ϕ optionally substituted with one or two
 - (a) —F,
 - (b) —Cl,
 - (c) —Br,
 - (d) —I,
 - (e) C_1-C_4 alkyl,
 - (f) $-NR_{7-2}R_{7-3}$ where R_{7-2} and R_{7-3} are the same or different and are selected from the group consisting of
 - (i) —H,
 - (ii) C_1-C_6 alkyl,
 - (iii) C_3-C_7 cycloalkyl,
 - (iv) $-(C_1-C_4 \text{ alkyl})-C_3-C_7$ cycloalkyl, and where R_{6-2} and R_{7-3} are taken together with the attached nitrogen atom to form a heterocyclic moiety selected from the group consisting of pyrrolidinyl, morpholinyl, piperazinyl, piperdinyl,
- (J) —CO—O— R_{7-4} where R_{7-4} is
 - (1) —H,
 - (2) C_1-C_6 alkyl,
 - (3) C_3-C_7 cycloalkyl,
 - (4) $-(C_1-C_6 \text{ alkyl})-C_3-C_7$ cycloalkyl,
 - (5) $-(CH_2)_g-CF_3$ where g is defined above,
 - (6) $-(CH_2)_g-CHF_2$ where g is defined above,
 - (7) $-(CH_2)_g-CH_2F$ where g is defined above,
 - (8) ϕ optionally substituted with one or two
 - (a) —F,
 - (b) —Cl,
 - (c) —Br,
 - (d) —I,
 - (e) C_1-C_4 alkyl,
 - (f) $-NR_{7-2}R_{7-3}$ where R_{7-2} and R_{7-3} are as defined above,
- (K) —CO— $NR_{7-2}R_{7-3}$ where R_{7-2} and R_{7-3} are as defined above,
- (L) $-(CH_2)_g-NR_{7-2}R_{7-3}$ where g , R_{7-2} and R_{7-3} are defined above,
- (M) —NH—CO— R_{7-4} where R_{7-4} is defined above,
- (N) —SO₂— NR_{7-3} where R_{7-2} and R_{7-3} are defined above,
- (O) —N₃; and pharmaceutically acceptable salts thereof.

Re. 35,841

NEEDLELESS CONNECTOR SAMPLE SITE

Thomas P. Frank, Neenah, Wis., and Charles R. Patzer, Ashville, Ohio, assignors to Medex, Inc., Hilliard, Ohio
Original No. 5,203,775, dated Apr. 20, 1993, Ser. No. 855,147, Mar. 20, 1992. Continuation of Ser. No. 584,286, Sep. 18, 1990, abandoned. Application for reissue Oct. 11, 1994, Ser. No. 321,409

Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—256

61 Claims

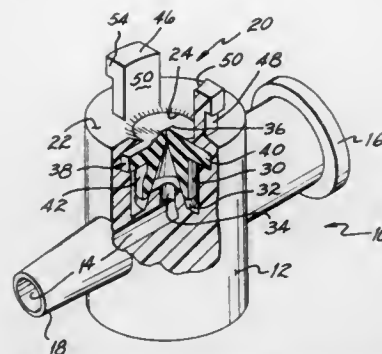
35. A sample site adapted to connect to a standard male Luer connector comprising:

a housing;

a liquid path extending into the housing;

an apertured exterior wall on the housing through which a tip of the standard male Luer connector can enter the housing to make fluid connection to the liquid path;

a seal member adjacent the exterior wall aperture and presenting an outer surface generally flush with the housing exterior wall for normally sealing the aperture against fluid communication with the liquid path, the seal member being openable under pressure of the standard male Luer connector passing into the aperture whereby to permit fluid connection thereof



with the liquid path, the seal member resealing after removal of the male Luer connector tip; and female Luer connector portions extending from the housing to mate with a threaded locking collar of the standard male Luer connector with the male Luer connector tip extending through the aperture, the female Luer connector portions being positioned such that the seal member may be cleaned by wiping across the seal member outer surface and adjacent portions of the housing exterior wall.

PLANT PATENTS

GRANTED JULY 7, 1998

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,477

ROSE PLANT NAMED 'MEIPARNIN'

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Apr. 10, 1997, Ser. No. 834,864

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—11

1 Claim

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

- (a) forms in abundance attractive very large Cream Yellow blossoms that are bordered and suffused with light Carmine Rose and possess a subtle peach-like fragrance,
- (b) exhibits a semi-erect growth habit,
- (c) forms attractive medium green and glossy foliage, and
- (d) exhibits good disease resistance:

substantially as herein shown and described.

10,478

FLORIBUNDA ROSE PLANT NAMED 'HARFLOW'

Robert Harkness, Mougins, France, assignor to Weeks Wholesale Rose Grower, Inc., Upland, Calif.

Filed Oct. 22, 1996, Ser. No. 735,235

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—22

1 Claim

1. A new and distinct variety of rose plant of the Floribunda rose class, substantially as described and illustrated herein.

10,479

NECTARINE TREE 'ARCTIC BELLE'

Chris Floyd Zaiger, 929 Grimes Ave.; Leith Marie Gardner, 1207 Grimes Ave.; Gary Neil Zaiger, 1907 Elm Ave., and Grant Gene Zaiger, 40005 California Ave., all of Modesto, Calif. 95358

Filed Apr. 21, 1997, Ser. No. 845,193

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—40.1

1 Claim

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, characterized by its large size, vigorous, upright growth, and a productive and regular bearer of large size, white flesh, semi-freestone fruit with excellent flavor and eating quality; the fruit is further characterized by having firm flesh, good handling and shipping quality and, in comparison to the white flesh Arctic Rose Nectarine (U.S. Plant Pat. No. 7,889), the new variety has greater production of larger size fruit and is 4 to 5 days later in maturity.

10,480

MANDARIN TANGERINE CALLED NADORCOTT

El Bachir Nadori, Agdal-Rabat, Morocco, assignor to Jean de Maistre, Porticagnos, France

Filed Jan. 28, 1997, Ser. No. 787,028

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—45

1 Claim

1. A new and distinct variety of Mandarin Tangerine tree having the characteristics described and illustrated herein.

10,481

CLETHRA ALNIFOLIA PLANT NAMED 'SEPTEMBER BEAUTY'

William Flemer, III, Plainsboro Township, Middlesex County, N.J., assignor to Treesearch (Partnership), Allentown, N.J.

Filed Oct. 23, 1996, Ser. No. 735,639

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—54.1

1 Claim

1. A new and distinct variety of Clethra plant as illustrated and described herein, characterized particularly as to novelty by its hardiness and its ability to bloom late in the year coming into full bloom in September, and having flowers with white petals from pale green buds.

10,482

AFRICAN VIOLET PLANT NAMED ROSALIE

Reinhold Holtkamp, Sr., Rees-Haffen, Germany, assignor to International Plant Breeding A.G., Bern, Switzerland

Filed Feb. 7, 1997, Ser. No. 798,296

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—69.1

1 Claim

1. A new and distinct cultivar of African violet plant named Rosalie, as described and illustrated, and particularly characterized by its single violet-shaped, white flowers with irregular patches of very light pink; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, heart-shaped leaves; profuse flowering; vigorous and compact growth habit; flowering 9–10 weeks after potting, and by its long lasting and non-dropping flowers.

10,483

AFRICAN VIOLET PLANT NAMED CENTENNIAL

Reinhold Holtkamp, Sr., Rees-Haffen, Germany, assignor to International Plant Breeding A.G., Bern, Switzerland

Filed Feb. 7, 1997, Ser. No. 798,297

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—69.1

1 Claim

1. A new and distinct cultivar of African violet plant named Centennial, as described and illustrated, and particularly characterized by its large, star-shaped, very light pink flowers with somewhat darker centers and slightly wavy edges; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, heart-shaped leaves; profuse flowering; vigorous and compact growth habit; flowering 9–10 weeks after potting, and by its long lasting and non-dropping flowers.

10,484
VARIETY OF GERANIUM PLANT NAMED 'PATRIOT'
LIGHT PINK'
David Lemon, Lompoc, Calif., assignor to John Bodger & Sons
Company, So. El Monte, Calif.
Filed Oct. 1, 1996, Ser. No. 724,702
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.12
1. A new and distinct variety of Geranium plant, substantially as
shown and described.

10,487
CACTACEAE PLANT NAMED RUDOLPH II
Mario Luciano Martins, Half Moon Bay, Calif., assignor to
Bay City Flower Company, Inc., Half Moon Bay, Calif.
Filed Mar. 10, 1997, Ser. No. 814,620
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—88.5
1. The new and distinct variety of cactus plant substantially as
herein shown and described.

10,485
KALANCHOE PLANT NAMED 'ARJUNO'
Ike Vlieland, De Lier, Netherlands, assignor to Fides Beheer
B.V., De Lier, Netherlands
Filed Oct. 18, 1996, Ser. No. 733,548
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.15
1. A new and distinct cultivar of Kalanchoe plant named
'Arjuno', as illustrated and described.

10,486
KALANCHOE PLANT NAMED 'CAROLINE'
Knud Jepsen, Hinnerup, Denmark, assignor to Knud Jepsen
A/S, Hinnerup, Denmark
Filed Dec. 4, 1996, Ser. No. 760,366
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.15
1. A new and distinct cultivar of Kalanchoe plant named 'Caro-
line', as illustrated and described.

10,488
VRIESEA CULTIVAR 'CATHY'
Luc Pieters; Caroline DeMeyer, both of Koewegstraat 4, 9270
Laarne, Belgium; Arie Stofbergen, Leeuwenhoekweg 30, and
Leendert Stofbergen, Leeuwenhoekweg 32, both of 2661 CZ,
Netherlands
Filed Feb. 20, 1997, Ser. No. 803,514
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—88.8
1. A new and distinct cultivar of Vriesea plant, named 'Cathy',
substantially as herein shown and described, characterized as to
novelty by the unique combination of an erect multi-branched
inflorescence reddish purple in color and also being dependably
vigorous in growth.

PATENTS

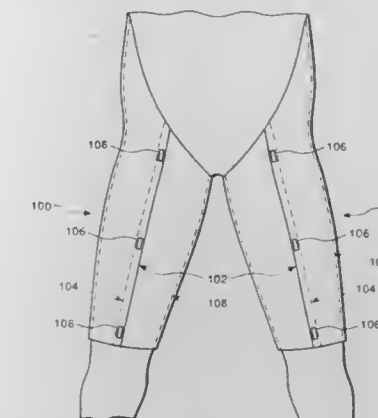
GRANTED JULY 7, 1998

GENERAL AND MECHANICAL

5,774,889
PROTECTIVE HAND COVERING
G. Gary Gochanour, 3108 Baker Rd., Dexter, Mich. 48130
Filed Oct. 7, 1996, Ser. No. 725,831
Int. Cl.⁶ A41D 13/08

U.S. Cl. 2—16

8 Claims



wherein said sheet material portions are made from a plastic film
with a paper backing on at least one side thereof.

1. A protective hand covering for adhering to a user's hand
before the user touches a contaminated or contaminatable sub-
stance, the user's hand having a palmar surface, a back surface,
sides and fingers, said protective hand covering comprising:
a sheet of thin flexible film having a front surface and a rear
surface, said sheet being sized to cover the palmar surface of
the hand with the fingers outstretched, thereby forming film
webs between the outstretched fingers,
said film being sufficiently stretchable that when the fingers of
the hand being covered area interleaved with the fingers of the
user's other hand said film web stretch to cover the sides and
a portion of the back surface of the user's hand while main-
taining the individual manipulation of the use's fingers,
said film being sufficiently impervious to contaminants to sub-
stantially inhibit the transfer of contaminants from the user's
hand to the contaminated or contaminatable substance and the
transfer of contaminants from the contaminated or contaminat-
able substance to the user's hand,
pressure-sensitive adhesive distributed about said rear surface,
said pressure-sensitive adhesive providing a sufficiently strong
bond when adhered to the user's hand to inhibit said sheet
from being inadvertently dislodged therefrom, and
said pressure-sensitive adhesive providing a sufficiently weak
bond when adhered to the user's hand to allow said pressure-
sensitive adhesive and said sheet to be removed without
injuring the user's hand, by peeling said sheet away from the
user's hand.

5,774,890
PERSONAL SANITARY BARRIER DEVICE
Saroj Shah, 454 E. Shore Rd., Great Neck, N.Y. 11024
Filed Jan. 18, 1996, Ser. No. 588,448
Int. Cl.⁶ A41B 1/00

U.S. Cl. 2—22

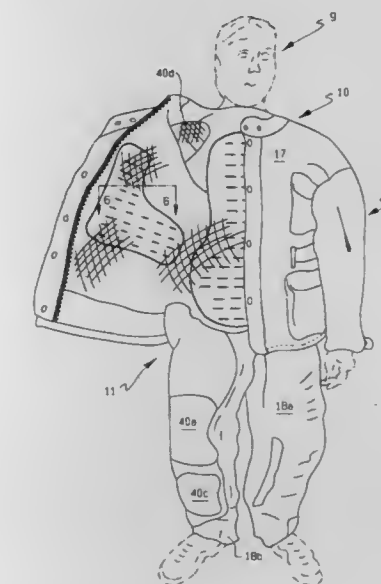
18 Claims

1. A personal sanitary barrier device for use by a wearer of the
barrier device while seated on a toilet comprising:
two sheet material portions, each said sheet material portion
being adapted to be removably fitted at least partially around
a periphery of a thigh of said wearer,
wherein each said sheet material portion is made from a substan-
tially moisture-impermeable material and is adapted to cover
a posterior portion of the wearer which would otherwise
contact the toilet, allowing the wearer to sit on the toilet
without making direct contact with the toilet;

5,774,891
BODY GARMENT INCLUDING AN OUTER
PROTECTING PORTION AND AN INNER BREATHABLE
PORTION
Wayne Boyer, 20845 Questhaven Rd., Escondido, Calif. 92029
Filed Feb. 2, 1996, Ser. No. 595,723
Int. Cl.⁶ A41B 1/12

U.S. Cl. 2—69

16 Claims



1. A body garment comprising:
(a) an outer protective portion for protecting the body con-
structed of breathable high abrasion resistant material; (b) a
inner liner portion readily detachable from the outer portion
which inner liner is constructed of multiple layers including a
layer of nylon and a membrane layer which is breathable/
windproof/waterproof; and (c) either said outer protective
portion or said inner liner portion are capable of being formed
as one piece or as a separate upper jacket and separate lower
pants.

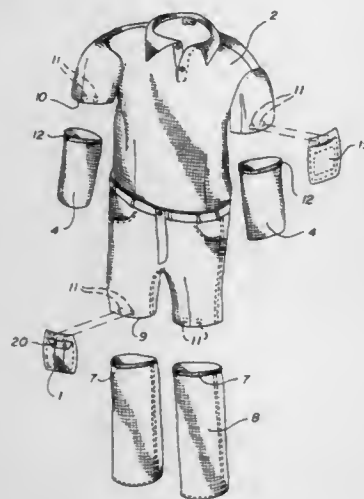
5,774,892

CONVERTIBLE CLOTHING

Ephesian Tisdale, and Althea Tisdale, both of 6363 Southland Forest Dr., Stone Mountain, Ga. 30087
Filed Jun. 25, 1997, Ser. No. 882,477
Int. Cl.⁶ A41B 1/12

U.S. Cl. 2—69

10 Claims



1. Clothing capable of being selectively converted to summer or winter apparel comprising:
 - a trouser having an upper pant component, said upper pant component having a pair of upper leg portions extending therefrom, said upper leg portions having a distal end, an interior surface and an exterior surface;
 - a pair of lower leg portions each having an exterior surface and first and second ends;
 - means for removably attaching said lower leg portions to said upper leg portions so that said trousers may be reversibly converted to shorts; said means comprising a peripheral strip of hook and loop fastener on the exterior surface of each of said lower leg portions proximal its first end;
 - a strip hook and loop fastener around the periphery of the interior surface of said upper leg portions each adjacent a distal end but spaced a predetermined distance therefrom for matably engaging said hook and loop fastener strips on said lower leg portions so that said hook and loop fastener strips on said lower and upper leg portions will be concealed;
 - detachable means for storing and carrying accessory items on said trouser, said means comprising an accessory pocket component, said pocket comprising a first flat substantially rectangular panel, a second flat substantially rectangular panel having four sides, three of said sides peripherally attached to said first panel, said panel forming a holding pouch having an exterior surface, said first panel having a snap style closure for matably engaging a corresponding snap style closure on the interior surface of an upper leg portion.

5,774,893

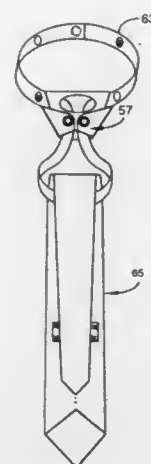
SIMULATED NECKTIE KNOT AND NECKTIE COMBINATION

Miguel Grajales Torres, 7264 Rosanna St., Gilroy, Calif. 95020
Filed Oct. 26, 1994, Ser. No. 346,551
Int. Cl.⁶ A41D 25/02

U.S. Cl. 2—148

16 Claims

1. A necktie assembly, comprising:
 - a simulated knot comprising a three-cornered hollow body having self-supporting walls including a front surface and a rear surface, a first opening at one corner, a second opening substantially equal to the first opening at a second corner, a third opening larger than the first and the second opening, the third opening at a third corner, and a fourth opening larger



- than the third opening in the rear surface positioned immediately below a line extending between the first and second openings;
 - a neckband passing into the first opening, through the hollow body, and out the second opening;
 - a liner component shaped to fit and inserted into the fourth opening of the simulated knot into the interior of the hollow body; and
 - a necktie tail portion passing into the third opening, over the neckband, and out the third opening;
- wherein the liner component is adapted to support an article inserted into the liner component to be concealed by the necktie assembly.

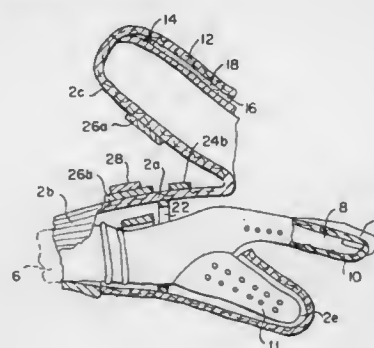
5,774,894

THERMAL MITTEN FOR GOLFERS

James W. Yates, Rte. 1, Box 585, and Ronnie L. Yates, P.O. Box 3441, both of Wise, Va. 24293
Filed Feb. 27, 1997, Ser. No. 805,647
Int. Cl.⁶ A41D 19/01

U.S. Cl. 2—158

10 Claims



1. A thermal mitten, comprising:
 - (a) a mitten body formed of a flexible material, said mitten body containing a chamber for receiving a user's hand, said mitten including:
 - (1) a first end portion containing an opening through which [the] a user's hand may be introduced into said chamber;
 - (2) a generally cup-shaped second end portion for normally receiving a user's fingers;
 - (3) a back portion connecting said first and second end portions, said back portion normally extending along the back of a user's hand;
 - (4) a palm portion containing intermediate said first and second end portions a palm opening which is designed to coincide with a user's palm,
 - (a) said palm opening having such a first dimension (x) in the longitudinal direction of said mitten body between

- said first and second end portions as to expose a substantial portion of a user's palm, thereby to permit the gripping of a steering wheel thereby;
- (b) said palm opening having such a transverse dimension (y) relative to the longitudinal axis of said mitten body as to permit said second end portion to be slipped off of a user's fingers and to be folded back to an inoperative position adjacent said mitten body back portion;
- (b) means defining on said mitten body second end portion a pocket for receiving a heating means, thereby to heat a user's fingers; and
- (c) retaining means for retaining said second end portion in said inoperative position relative to said mitten body.

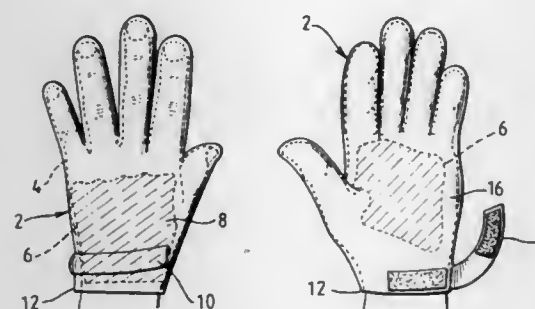
5,774,895

SPORTS GLOVE WITH ANTI-SLIP LINING

Gordon George Baldwin, 15 Sherborne Road, Petts Wood, Orpington, Kent, BR5 1RE, United Kingdom
Filed Jul. 8, 1996, Ser. No. 676,572
Int. Cl.⁶ A41D 19/00

U.S. Cl. 2—161.1

10 Claims



1. A sports glove having an inner surface, an outer surface, and an anti-slip member attached to the inner surface of the glove, the anti-slip member being such that it is a foamed polyvinyl chloride anti-slip member having a first side which is attached to the inner surface of the glove and a second side which is opposite the first side and which is engaged by a hand when the glove is worn, and the second side of the anti-slip member being such that it has a smooth surface which is effective to grip the hand and thus act to reduce slipping of the glove with respect to the hand.

5,774,896

GOALKEEPER'S GLOVE WITH IMPROVED FINGER FIT

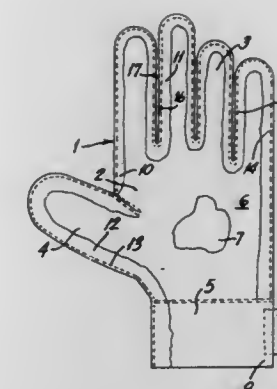
Peter Hochmuth, Weissenburger Str. 19, D-91757 Treuchtlingen, Germany
Filed Oct. 28, 1996, Ser. No. 740,357
Claims priority, application Germany, Oct. 27, 1995, 295 17 050 U

Int. Cl.⁶ A41D 19/00

U.S. Cl. 2—161.1

4 Claims

1. A goalkeeper's glove, comprising:
 - upper and inner portions having each a hand region, four front finger regions, and a wrist region;
 - separation areas provided between adjacent finger regions of the upper and inner portions, and elongate side strips and elongate layer strips connecting the upper and inner portions;
 - wherein the side and layer strips are applied to both upper and inner portions, are sewed thereto, and form lateral edges extending parallel to respective seams,
 - wherein lateral edges of the side and layer strips, which are associated with the upper portion are being turned inward and are folded into respective finger regions, and



wherein the separation areas between two adjacent finger regions of the inner portion are formed as slits.

5,774,897

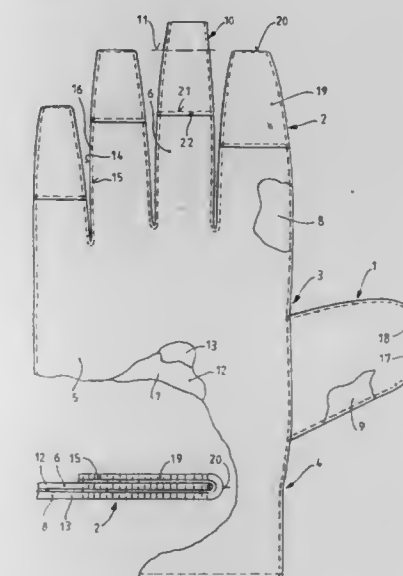
GOALKEEPER'S GLOVE WITH IMPROVED FINGERTIP CAPS

Peter Hochmuth, Weissenburger Str. 19, D-91757 Treuchtlingen, Germany
Filed Jan. 7, 1997, Ser. No. 779,594
Claims priority, application Germany, Jan. 19, 1996, 296 00 842.7

Int. Cl.⁶ A41D 19/00

U.S. Cl. 2—161.1

5 Claims



1. A goalkeeper's glove, comprising:
 - an upper portion having four upper finger regions and an upper hand region; and
 - an inner portion having four inner finger regions and an inner hand region,

wherein each upper finger region is connected with a respective inner finger region along lateral edges thereof;

wherein at least one inner finger region has, at a free end thereof, a strip-shaped fingertip extension forming an integral part thereof,

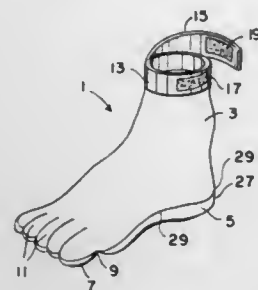
wherein the finger tip extension is turned over an associated upper finger region, forming a fingertip cap, the finger tip extension being secured to the associated upper finger region, and

wherein the inner portion has an outer latex layer, with the outer latex layer covering the fingertip extension.

5,774,898
ATHLETIC FOOTWEAR FOR SOFT TERRAIN
 Mitchell G. Malpee, 316 Standard St., El Segundo, Calif. 90245
 Filed May 2, 1996, Ser. No. 643,240
 Int. Cl.⁶ A41D 13/06

U.S. Cl. 2—239

42 Claims

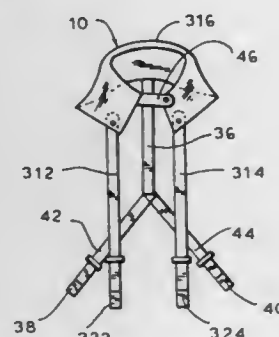


1. A foot glove constructed of a plurality of parts, comprising: a top portion extending from the ankle to the heel of said foot and from the ankle to the toes across the dorsum of the foot, said top portion being made of a first material;
- a bottom portion connecting with said top portion and extending from the heel across the bottom of the foot to the base of the toes, said bottom portion being made of a second material; and
- a toe base portion covering the bottom of the toes, connecting with said bottom portion at the base of the toes and defining the bottom of each of a plurality of toe pockets, said toe base portion being made from a third material, said toe base portion connecting with said top portion, said top portion defining the top of said plurality of toe pockets, wherein the third material is more flexible than the second material.

5,774,899
SUSPENDERS
 David J. Griffin, 300 E. 40th St., Apt. 19M, New York, N.Y. 10016
 Division of Ser. No. 736,511, Oct. 24, 1996, Pat. No. 5,682,619.
 This application Jun. 25, 1997, Ser. No. 882,646
 Int. Cl.⁶ A41F 3/00

U.S. Cl. 2—326

6 Claims



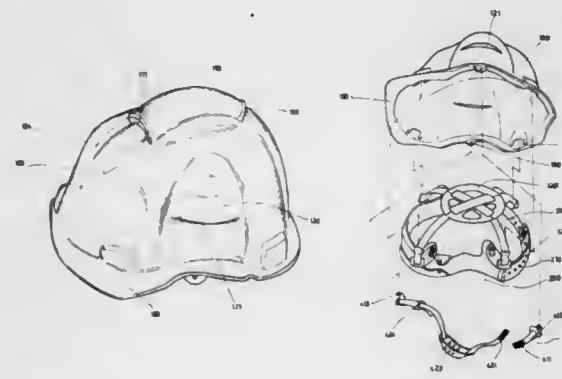
1. A suspender for a garment having a front portion, said suspender comprising: a collar section adapted to conform to the lower back of the neck of a person;
- said collar section being adapted to substantially encircle the entire neck of a person and comprising two front ends and a means to clasp said two front ends;
- two side portions connected to said collar section, each side portion having an end with an attachment means adapted to connect to the front portion of the garment;
- whereby the garment can be suspended on a person by securing the respective attachment means to the front portion of the

garment, with the collar section disposed around the lower back portion of the person's neck, and the clasp means engaged.

5,774,900
INDUSTRIAL SAFETY HELMET
 Shih-Hslung Wu, Taipei; Chung-Yun Gau, Taipei Hsien; Yeh-Liang Hsu, Tao-Yuan-Hsien, and Huoy-Shyi Tsay, Taipei, all of Taiwan, assignors to Institute of Occupational Safety and Health, Council of Labor Affairs, Taipei, Taiwan
 Filed Jun. 24, 1996, Ser. No. 668,697
 Int. Cl.⁶ A42B 3/00

U.S. Cl. 2—411

7 Claims



1. An industrial safety helmet having a front, a rear, opposite lateral sides, a rim, a longitudinal axis extending between the front and the rear, and a transverse axis extending between opposite lateral sides, the helmet comprising a hollow rigid shell having a substantially semi-ovoid configuration, the shell having: a top portion with a primary flexure extending upwardly from the top portion along a direction substantially parallel to the longitudinal axis, the primary flexure having a front end opening and a rear end opening to thereby form an air passage enabling air circulation within the shell; and a secondary flexure extending outwardly from each opposite lateral side in a direction substantially parallel to the transverse axis, each secondary flexure having a lateral ventilation port and an end contiguous with the rim of the shell.

5,774,901
SPORT HELMET RETENTION APPARATUS
 Don Satoshi Minami, Monte Sereno, Calif., assignor to Bell Sports, Inc., San Jose, Calif.
 Filed Aug. 15, 1996, Ser. No. 689,896
 Int. Cl.⁶ A42B 3/08

U.S. Cl. 2—421

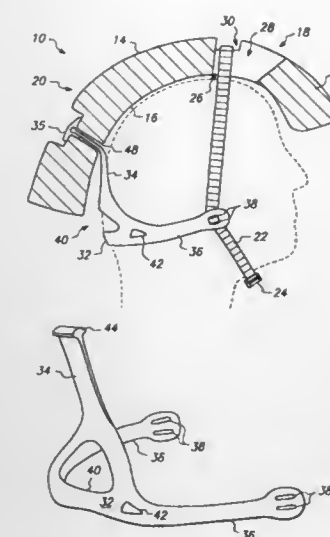
18 Claims

18. A sport helmet comprising: a rigid shell assembly for substantially covering a top portion of a wearer's head;
- a chin strap attached to the shell assembly for extending down one side of the wearer's head alongside of the wearer's face, under the wearer's chin, and up along the opposite side of the face back to the shell assembly; and
- a unitary back strap member having an upper leg attached to and depending from a rear portion of the shell assembly for extending over the occipital region of the wearer's head, the member having two lower legs each for extending around an opposite side of the wearer's head and slidably connecting to the chin strap generally adjacent to a wearer's cheek, each lower leg terminating on the chin strap such that each lower leg has a non-adjustable fixed length, the upper and lower legs integrally formed from a single piece of material having an inverted Y-shape, the chin strap and back strap member cooperating to secure the shell assembly from movement on and

5,774,903
DEVICE FOR DISPENSING A CHEMICAL COMPOSITION INTO A TOILET TANK
 Victor Edward Wilson, Glenelg East, and Lionel Albert Woolford, Kilburn, both of Australia, assignors to Sara Lee/DE N.V., Utrecht, Netherlands
 Continuation of Ser. No. 702,037, May 20, 1991, abandoned.
 This application Jan. 12, 1993, Ser. No. 3,673
 Int. Cl.⁶ E03D 9/02

U.S. Cl. 4—227.1

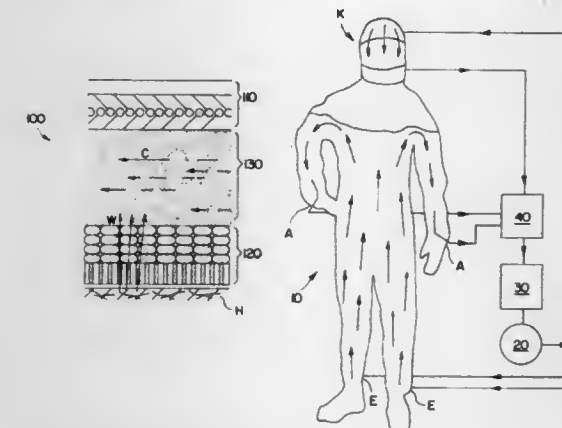
8 Claims



removal from the wearer's head by engaging the wearer's chin and the inwardly curved portion on the posterior of the wearer's head.

5,774,902
PROTECTION SUIT
 Hartmut Gehse, Markdorf, Germany, assignor to SD & E System Design & Engineering GmbH, Friedrichshafen, Germany
 Filed Dec. 13, 1996, Ser. No. 766,304
 Claims priority, application Germany, Dec. 20, 1995, 195 47 795.2

Int. Cl.⁶ A62B 17/00
 U.S. Cl. 2—458
 20 Claims



1. A special-purpose suit for individuals whose bodies need to be protected, said suit to be applied adjacent skin of the body to be protected, said suit comprising: an outer protective layer (110) which protects against undesirable external influences, a skin-engaging moisture-permeable and vapor-permeable textile inner layer (120) for accommodating transmission of perspiration from the skin through the inner layer and toward the outer layer, and a space-maintaining, fluid-permeable spacer layer (130) adjacent to and between the outer protective layer (110) and the inner layer (120) and being climatically conditionable by the introduction of fluid, the spacer layer (13) being an elastic structure formed by a flexible, compression-resistant, space-maintaining fabric containing interlinked plastic yarns, said spacer layer accommodating a flow of said perspiration and the introduced fluid between the inner and outer layers and away from the body.

1. A passive dispensing device for dosing a tank-type flush toilet, from a toilet tank which, in use, fills with water to a higher fill level, and when flushed, empties to a lower, flushed level, and which toilet tank has a sidewall having an upper edge, said dispensing device comprising:

- a water-impervious housing having a sidewall having an upper edge, and a bottom wall, together defining an upwardly open reservoir for water;
- means for supporting said housing from said toilet tank so that said upper edge of said housing sidewall is located above said fill level of said toilet tank, but most of said housing extends below said fill level;
- a discharge and filling tube associated with said housing, said tube having one end communicating with said reservoir adjacent said bottom wall of said housing, another end communicating externally of housing at a level which is intermediate said fill level and said flushed level of said toilet tank and about halfway said bottom wall and upper edge of said sidewall, and a conduit interconnecting said ends, so that, when the toilet is flushed, water contained in said reservoir will flow out into said toilet tank through said conduit while the water level in said toilet tank is below the water level in said reservoir and water contained in the toilet tank will flow into the reservoir while the water level in said reservoir is below the water level in said toilet tank; and
- means for supporting in said reservoir a body of water treatment composition which can, while disposed in said reservoir, erode from a surface of such body, into the water contained in said reservoir, for transfer with such water into the toilet tank as water flows out of said reservoir through said tube into said toilet tank;
- a body of water-erodible water-treatment composition, in solid or paste form;
- said body means for supporting said body comprising an upwardly opening casing having a peripheral sidewall and a bottom wall;
- said body being disposed in said casing so as to transversally fill said casing up to a level, at which said body has a generally horizontal upper surface;
- said sidewall of said casing having a plurality of angularly and vertically spaced openings therethrough;
- said casing being removably received in said housing so that said sidewall of said casing, at least partly perimetricaly thereabout, is laterally spaced from said sidewall of said housing, and so that at least a part of said reservoir is disposed laterally between said casing and said housing, at least partly perimetricaly of said sidewall of said casing;
- said generally horizontal upper surface of said body of water-erodible water-treatment composition being located below said fill level of said toilet tank, said side wall of said casing

having an upper edge disposed above said fill level of said toilet tank, and at least one of said openings through said sidewall of said casing is disposed above said upper surface of said body of water-erodible water-treatment composition and below said fill level of said toilet tank, so that, in use, the water within the housing makes contact with the said body of water-erodible water-treatment composition essentially only across its upper surface; and

said angularly and vertically spaced openings through said side wall being sufficiently small so that, in use, the contact between the water and the said body of water-erodible water-treatment composition by virtue of the said openings does not have any significant effect on the dissolving of the water-erodible water-treatment composition.

5,774,904

AUTOMATIC TOILET SEAT COVER CLOSING DEVICE

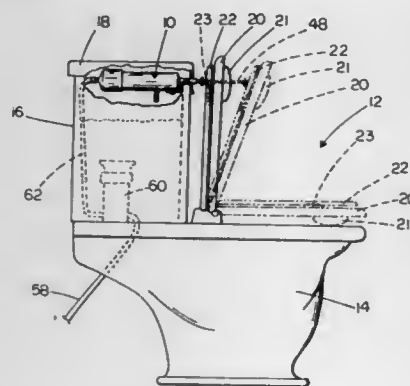
Dennis M. McWilliams, 7 Ronda, Florissant, Mo. 63031

Filed Feb. 5, 1997, Ser. No. 795,020

Int. Cl.⁶ A47K 13/10

U.S. Cl. 4—246.2

15 Claims



1. A device for automatically closing a toilet bowl cover upon flushing of the toilet in which the device is installed, the device comprising:

a housing having a first end and a second end and a continuous side wall extending between the first end and the second end, the continuous side wall of the housing defining a water outlet port formed through the continuous side wall, the housing first end having a water inlet port connectable to a source of water, the housing second end having a central aperture which is sized and positioned for passage therethrough of a piston rod, and the housing second end further having structure for supporting the device in a substantially horizontal position within a water tank of the toilet in which the device is installed, the normal use position of the device in the water tank being above the level of water, with the housing first end being directed toward the rear of the tank and connected to a toilet water tank water inlet source when the device is installed in a toilet in normal use position, and with the housing second end being supported on the front of the toilet water tank by the structure for supporting the device in a substantially horizontal position,

and a piston having a piston rod disposed longitudinally within the housing, the piston rod having a first end and a second end, the piston rod first end extending rearwardly in the housing, and the second end of the piston rod extending forwardly through the aperture in the second end of the housing, adjacent to and above a forward upper edge of the toilet tank when the device is in normal use position, and the second end of the piston rod further extending beyond the tank sufficiently far to be capable of contacting a cover of the bowl of the toilet in which toilet the device is installed when the cover of the toilet bowl is in an open, upright position and to be further capable of extending forwardly sufficiently far on a forward stroke actuated by flushing of the toilet to cause the

toilet bowl cover to be pushed far enough past a vertical plane to fall forwardly to a downward, closed position, and a piston head on the rearwardly directed first end of the piston rod, the piston head being sized and shaped so as to be slidable within the housing and to form a water-tight seal within an internal wall of the housing, so that the piston rod is caused to move linearly forwardly within the housing when water from the toilet tank water inlet source enters the inlet port and applies pressure against the piston head, thereby causing the piston rod second end to contact the cover of the toilet bowl and push the cover of the toilet bowl sufficiently far forwardly past a vertical plane so that gravity causes the cover to fall forwardly and downwardly to a substantially horizontal, closed position.

5,774,905

DEODORANT HOLDING DEVICE FOR A PLUMBING FIXTURE

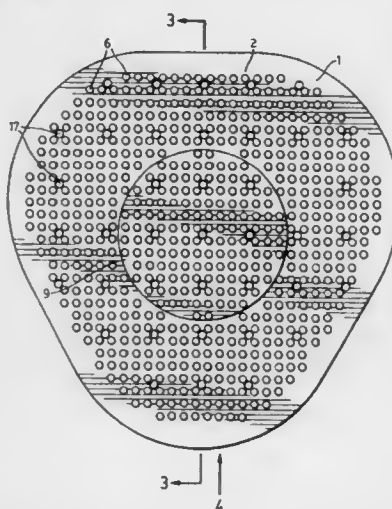
Leonard E. Wager, 408 Fairview Dr., Whitby, Ontario, Canada, L1N 3A8, and Dana S. Marshall, 63 Bennett Rd., West Hill, Ontario, Canada, M1E 3Y2

Filed Aug. 19, 1997, Ser. No. 914,087

Int. Cl.⁶ E03D 9/02;13/00

U.S. Cl. 4—309

9 Claims



1. A deodorant holding device for a plumbing fixture, the device comprising a base, having an upper and a bottom surface, and a deodorant receiving cavity, said base having positioned on its upper surface a plurality of upwardly extending pin members providing a means to deflect and to limit splashing of liquid directed onto said base;

said base includes wedge members on its bottom surface, said wedge members supporting said base when said base is positioned within a plumbing fixture and elevating said base from the plumbing fixture to present a fluid flow passageway between said base and the plumbing fixture;

a cover to enclose said opening in said bottom surface of said base, said cover releasably securable to said base to allow deodorizing material to be releasably retained within said cavity;

said wedge members contain outwardly extending posts, said posts being received within holes in said cover to allow said cover to be releasably secured to said base.

5,774,906

WAVE POOL CURBING SYSTEM

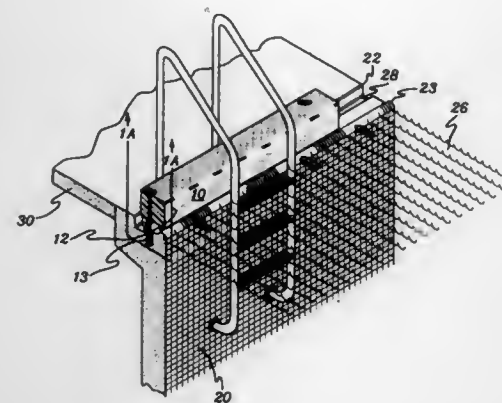
Herbert S. Ellis, Menands; Thomas W. Delp, Ravena; James F. Dunn, Troy, and Kenneth L. Ellis, Albany, all of N.Y., assignors to Aquatic Amusement Associates, Ltd., N.Y.

Filed Jul. 24, 1996, Ser. No. 690,267

Int. Cl.⁶ E04H 4/14

U.S. Cl. 4—510

15 Claims



1. A swimming/wave pool comprised of:
 - a pool defined, at least in part, by a vertical wall having an upper end, said pool adapted to be filled with water up to a certain operating level for swimming;
 - a gutter in the wall wherein said gutter has a lip proximate the water operating level;
 - a selectively activatable wave generator associated with the pool and adapted to propagate waves in the pool toward the vertical wall;
 - at least one wave reflecting panel removably mounted to the wall for use during wave generation, said panel having a reflecting surface which extends at least upwardly from the lip to a preselected height, having at least one opening therethrough, at least a portion of which opening is proximate the lip so as to permit water from the pool to flow over the lip into the gutter.

5,774,907

SHOWER WALL BACK SCRUBBER AND MASSAGER

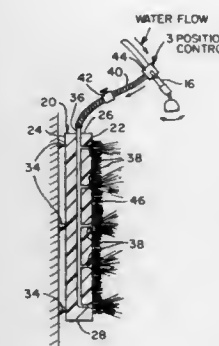
Marc Doggweiler, 63 Glover St., Sag Harbor, N.Y. 11963

Filed May 5, 1997, Ser. No. 851,216

Int. Cl.⁶ A47K 7/02

U.S. Cl. 4—606

11 Claims



1. A shower wall back scrubber and massager replaceable attachable to a wall of a shower and fluidly connectable to a head of the shower so as to clean and massage a showerer with a back that comes in contact therewith, said massager comprising:

- a) a pad replaceably attachable to the wall of the shower and contactable by the showerer;

b) attaching means for replaceably attaching said pad to the wall of the shower so as to allow said shower wall back scrubber and massager to be replaceably attachable to the wall of the shower;

c) fluid connecting means for fluidly connecting said pad to the head of the shower so as to allow said shower wall back scrubber and massager to be fluidly connectable to the head of the shower and receive water therefrom; and

d) cleaning and massaging means associated with said pad for cleaning and massaging the showerer coming in contact with said pad and being in fluid communication with said fluid connecting means so as to receive the water therefrom, wherein said pad has a front face, a back face that opposes said front face of said pad, a top, a bottom disposed below said top of said pad, and a pair of sides that are vertically-oriented, parallel, and connect said top of said pad to said bottom of said pad; said pad further has a concave portion disposed equidistantly between, and parallel to, said pair of sides of said pad; said concave portion of said pad extends continuously vertically from said top of said pad to said bottom of said pad; said concave portion of said pad arches laterally-rearwardly from said front face of said pad to said back face of said pad so as to conform anatomically to the back of the showerer so as to allow the back of the showerer to be positioned in said concave portion of said pad and by the showerer moving up and down and back and forth therein provides a washing and massaging function.

5,774,908

OUTDOOR SHOWER AND ACCESSORY HOLDER

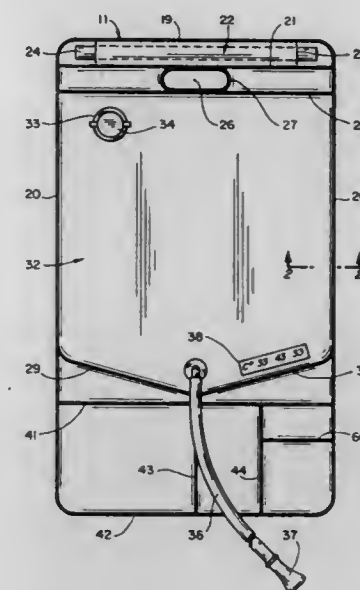
Charles P. Hall, Santa Rosa, Calif., assignor to Stearns, Incorporated, Santa Rosa, Calif.

Filed Sep. 18, 1996, Ser. No. 714,331

Int. Cl.⁶ H47K 3/22

U.S. Cl. 4—617

10 Claims



1. In a portable shower and accessory holder for outdoor use: first and second panels of flexible plastic material sealed together to form a chamber for holding water to be heated by solar energy, a flexible hose communicating with the chamber for delivering water from the chamber to a bather, and a sheet of flexible plastic material bonded to one of the panels along lateral margins of the sheet and along a plurality of spaced apart lines between the lateral margins to form a plurality of pockets for holding accessory items for use by the bather.

5,774,909

FOOT BATH

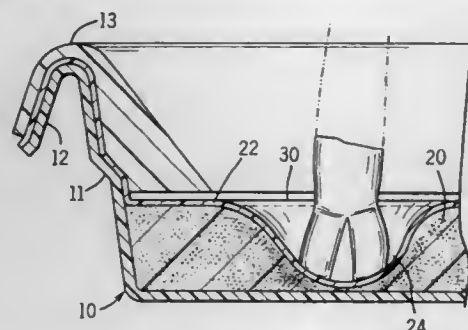
Michael T. Stable, Bolton Manor Farm, Cumbria, Great Britain, LA12 0PX

Continuation of Ser. No. 564,897, Nov. 29, 1995, abandoned, which is a continuation of Ser. No. 232,252, Sep. 19, 1994, abandoned. This application Nov. 12, 1996, Ser. No. 747,934 Claims priority, application United Kingdom, Nov. 5, 1991, 9123417

Int. Cl.⁶ A41K 3/022

U.S. Cl. 4-622

15 Claims



1. An apparatus for treating a surface of a foot with a treatment substance, the apparatus comprising:

- a floor;
- at least one sidewall having an upstanding peripheral rim and extending upward from the floor to define a basin;
- a support defining an impervious deformable support surface spaced from the floor by a distance such that the impervious deformable surface forms a localized well about the foot when subjected to loading by the foot, and such that the localized well has a depth sufficient for containing the treatment substance in contact with the surface of the foot to be treated; and
- a flange extending inwardly from the peripheral rim to partially overlie the support surface, wherein the flange slopes inwardly and downwardly from said at least one sidewall.

5,774,910

Patent Not Issued For This Number

5,774,911

SLATTED BASE FOR A BED

Andreas Stübe, Rodersdorf, and Wolfgang Leistner, Ettingen, both of Switzerland, assignors to Matra AG, Fluh, Switzerland

PCT No. PCT/CH95/00254, § 371 Date May 1, 1997, § 102(e) Date May 1, 1997, PCT Pub. No. WO96/14003, PCT Pub. Date May 17, 1996

PCT Filed Oct. 31, 1995, Ser. No. 836,183

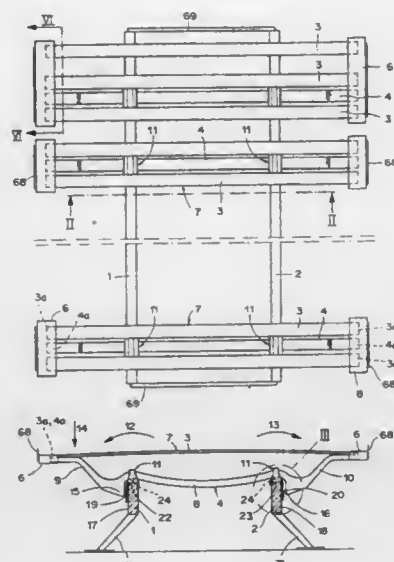
Claims priority, application European Pat. Off., Nov. 4, 1994, 94810638

Int. Cl.⁶ A47C 23/06

U.S. Cl. 5-236.1

20 Claims

1. A slatted base for a bed, comprising:
- a plurality of longitudinal supports, running essentially in a longitudinal direction of the bed, the longitudinal supports being spaced apart from each other;
 - a plurality of spring slats with mutual spacing to one another, the spring slats running essentially in a transverse direction with respect to the longitudinal supports and collectively forming a supporting surface for a mattress;
 - at least one elastically deformable supporting slat, situated lower than the spring slats, whereby the supporting slat connects the spring slats with the longitudinal supports, the longitudinal



supports being positioned below the spring slats and the outer sides of the longitudinal supports facing ends of the spring slats, the outer sides being set back with respect to the spring slat ends, the supporting slats having an elastically deformable middle area situated between the longitudinal supports, the middle area being more elastic than two end areas;

- a plurality of lateral edge-area elements, whereby the edge-area elements combine with at least one spring slat and at least one supporting slat to form a bearing module; and
- a plurality of connecting elements, which hold the supporting slats on the longitudinal supports, by means of one pivot place of the supporting slats being formed at each holding place in a transverse direction to a corresponding longitudinal support, such that the two lateral edge areas of a bearing module, when loaded at any place, move from the support surface downward.

5,774,912

TOWEL WITH CARRYING POCKET

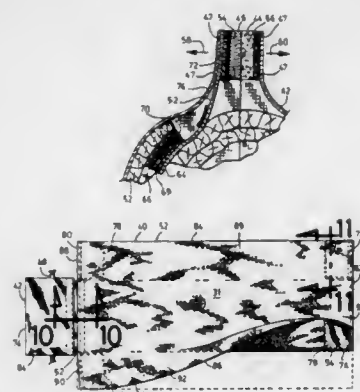
Bernard Dominique, 4480, Côte-de-Liesse, bureau 224, Ville Mont-Royal (QC), Canada, H4N 2R1

Filed Jan. 23, 1997, Ser. No. 784,355

Int. Cl.⁶ A47G 9/06

U.S. Cl. 5-419

15 Claims



1. A towel comprising:

- a substantially rectangular single layer sheet having a top edge, a bottom edge, a right and a left edges;
- a relatively smaller head piece having a two layer section extending from a one layer section, said two layer section forming a pocket with an openmouth oriented towards said rectangular sheet, said one layer section being attached at a

first end to said top edge of said rectangular sheet through an attachment means and being permanently attached at a second end internally to said pocket, said head piece being centered with respect to said top edge, said pocket having a releasable fastening means at said openmouth and being adapted to contain said rectangular sheet and said one layer section of said head piece to form said towel in a folded state, said pocket being also adapted to form a pillow when said towel is in an unfolded state.

5,774,913

BEDSPREAD HOLDING DEVICE

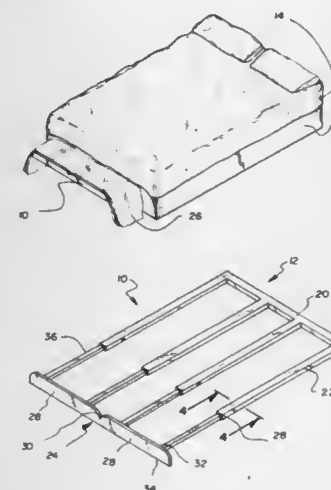
Judy A. Allen, and Wayne Allen, both of 1061 Torrey Pines Rd., Chula Vista, Calif. 91915

Filed Jun. 19, 1997, Ser. No. 878,808

Int. Cl.⁶ A47C 21/00

U.S. Cl. 5-504.1

1 Claim



1. A bedspread holding device for holding a folded bedspread at a foot of a bed comprising, in combination:

- an interior frame portion positioned laterally between a mattress and a boxspring of a bed, the interior frame portion comprising a lateral support having a length less than a width of the mattress and the boxspring, the lateral support having four longitudinal supports extending rearward therefrom, each of the four longitudinal supports being defined by a top wall, two downwardly extending side walls and an open outer end, each of the longitudinal supports having a length essentially equal to the length of the lateral support, two of the longitudinal supports extending from ends of the lateral support with two remaining longitudinal supports extending from intermediate locations between the ends of the lateral support; and
- an exterior frame portion coupled with respect to the interior frame portion and having an extended orientation adapted for supporting a bedspread thereon, the exterior frame portion comprising a pair of base portions joined together at interior edges thereof in a linear orientation to form a foot portion, the base portions each having arcuate upper edges and planar lower edges, the foot portion having four longitudinal members extending forwardly therefrom, the four longitudinal members slidably received within the open outer ends of the four longitudinal supports of the interior frame portion.

5,774,914

MATERNITY BED

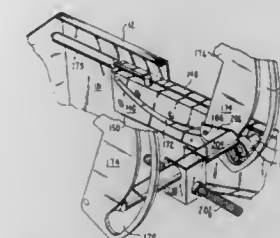
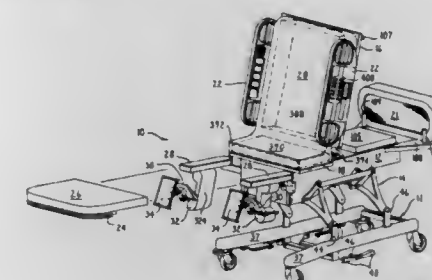
Ned Johnson, Bloomington, Mich.; John Luecke, Milwaukee, and John Lacey, Clackamas, both of Oreg., assignors to Stryker Corporation, Kalamazoo, Mich.

Filed Jan. 5, 1996, Ser. No. 583,235

Int. Cl.⁶ A61G 7/015

U.S. Cl. 5-602

25 Claims



1. A hospital bed including:

- a litter frame having a longitudinal axis;
- a seat section securely fastened to said litter frame;
- a Fowler section positioned on said litter frame so as to have a horizontal position wherein said Fowler section is aligned with said seat section; and
- a Fowler transport assembly mounted to said litter frame and attached to said Fowler section for moving said Fowler section along said longitudinal axis and pivoting said Fowler section relative to said seat section, said Fowler transport assembly including:
- at least one guide plate that is slidably mounted to said litter frame so as to undergo a translating motion relative to said seat section; and
- a follower frame attached at one end to said at least one guide plate and at a second end to said Fowler section, wherein said follower frame is configured to pivot relative to said Fowler carriage so as to incline said Fowler section.

5,774,915

PATIENT TREATMENT APPARATUS

Gerald R. Scott, Villa Park; James P. Moulton, Elgin, both of Ill.; V. Craig Seyl, Lenexa, Kans.; John L. Emrich, Algonquin, and Wayne L. Peterson, St. Charles, both of Ill., assignors to Standex International, Salem, N.H.

Continuation of Ser. No. 527,555, Sep. 13, 1995. This application Jan. 16, 1997, Ser. No. 784,416

Int. Cl.⁶ A61G 7/00; A61F 5/01

U.S. Cl. 5-611

9 Claims

1. Treatment apparatus for supporting a patient lying in a treatment position for manipulation, comprising:
- base means;
 - support column means pivotally mounted relative to said base means and extendable angularly upwardly thereof; said support column means includes a first section mounted for longitudinal horizontal movement between opposite ends of said base means powered by said first drive means and pivotal upwardly and downwardly relative to said base means about a lower end of said first section;

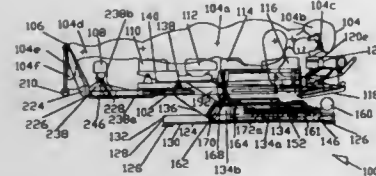
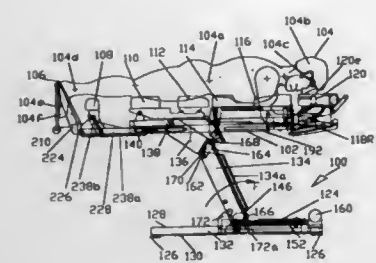
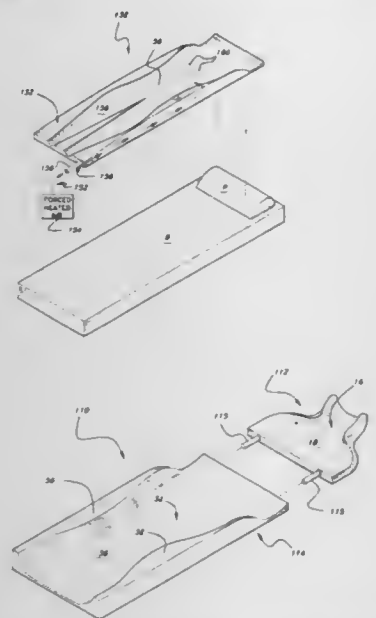


table means pivotally secured to said support column means; cushion means on said table means for supporting the patient; and electrically powered first drive means for moving said support column means relative to said base means for raising and lowering said table means.

5,774,916
ERGONOMIC MATRIX FOR BACK ALIGNMENT
Jaakko Kurhi, 5101 San Leandro St., Oakland, Calif. 94601
Filed Jun. 13, 1997, Ser. No. 874,624
Int. Cl.⁶ A47C 23/00; 27/14; A61F 5/02
U.S. Cl. 5—632

18 Claims



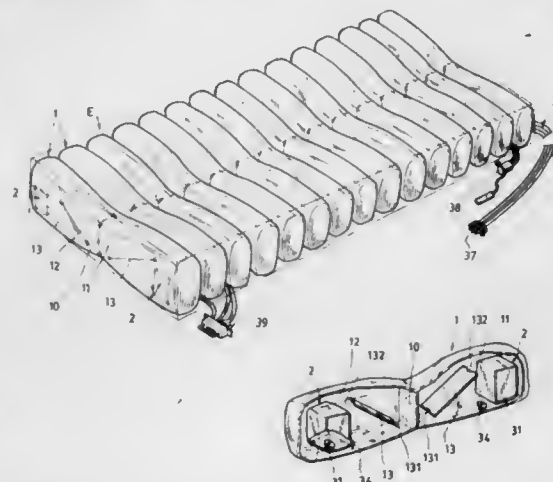
1. An ergonomic support member for back alignment comprising:

- a rigid, inflexible support structure defining a trunk support member, having a longitudinal axis corresponding to the axis of the spine of a human individual, said trunk support member defining a cavity contoured for receiving the body of a human individual laying supine, said cavity being symmetrical through said longitudinal axis, wherein said trunk support member further defines a left wall and a right wall each for wrapping up the sides of an individual laying supine in said cavity, and wherein further said trunk support member defines a continuous surface facing said cavity, said continuous surface corresponding in shape along said longitudinal axis to the spinal curvature of the individual and thereby defining a

thoracic section, a lumbar section, and a pelvic section of said trunk support member, whereby, when said continuous surface receives a supine individual, said left wall and said right wall oppose horizontal force vectors directed outward from the sides of the supine individual and redirect the weight of the body more centrally through the spine to torsionally readjust and conform the spine with the symmetry of said continuous surface.

5,774,917
TURN MATTRESS INHERENTLY FORMED WITH SIDE GUARDS
Antony Ching-fong Liu, P.O. Box 55-846, Taipei, Taiwan
Filed Jun. 20, 1997, Ser. No. 879,799
Int. Cl.⁶ A61G 7/057
U.S. Cl. 5—715

7 Claims



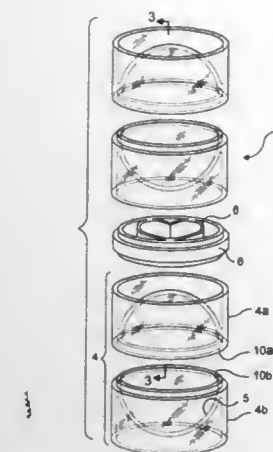
1. A turn mattress having a longitudinal axis along a length of the mattress comprising:

- a plurality of inflatable sacs juxtapositionally connected together in a mattress envelope, each said inflatable sac being transverse to said longitudinal axis of said mattress, and each said inflatable sac including a right cell and a left cell individually separated from said right cell with a central diaphragm;
- a plurality of pairs of restoring air bags respectively inherently formed in said right and left cells of said inflatable sacs, each said restoring air bag positioned in each said cell adjacent to an utmost side portion of each said cell to be distally opposite to each said central diaphragm in each said sac, each said restoring air bag constantly inflated to serve as a side guard when said cell is deflated; and
- an air distributing means fluidically communicated with said restoring air bags and with said right and left cells for inflating the bags and inflating or deflating the cells, whereby upon alternative inflation and deflation of said right and left cells, a patient laid on said sacs will be turned from side to side; and upon constant inflation of said restoring air bags in said cells, said air bags as inflated in a right or a left side of said mattress will prevent slipping of the patient away from the mattress.

5,774,918
MODULAR ROLLING PIN WITH DOUGH STORAGE MEANS
Wendy Cassell, 170-16 39th Ave., Flushing, N.Y. 11358; Edwin Chan, Brooklyn, N.Y., and Stephen Russak, Fort Lee, N.J., assignors to Wendy Cassell, Flushing, N.Y.
Filed Jul. 26, 1996, Ser. No. 690,355
Int. Cl.⁶ B25F 1/00
U.S. Cl. 7—111

6 Claims

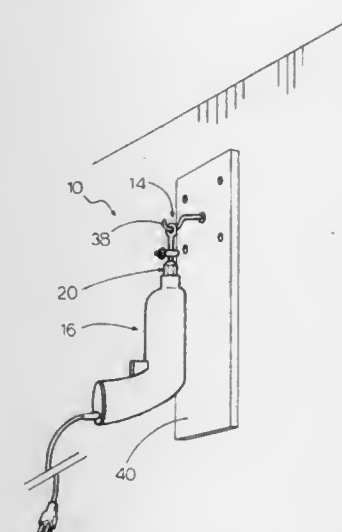
- 1. A modular rolling pin comprising one or more cylindrical linking modules and one or more cylindrical dough storage mod-



ules, the linking modules and the dough storage modules being releasably and interchangeably lockable to each other, each of said dough storage modules comprising two opposing sections for retaining dough therein, each of said sections defining a corresponding section of a generally rounded dough storage space.

5,774,919
COMBINATION POWER DRILL HANGER AND TOOL
Robert L. Rich, 13371 Lucille St., Garden Grove, Calif. 92644
Filed Dec. 26, 1995, Ser. No. 579,856
Int. Cl.⁶ B25G 1/00
U.S. Cl. 7—167

8 Claims

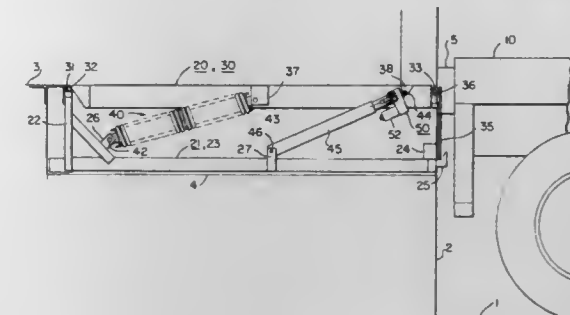


1. A combination hanger for a drill having a chuck and tool, comprising:

- a stem for insertion into the chuck of the drill and engagement with jaws thereof;
- a wrench tool mounted at an end portion of said stem, said wrench tool having an aperture for receiving a hook or peg therein in order to enable the combination hanger and tool with drill attached thereto to be hung therefrom on an external structure;
- a chuck key gear mounted on said stem.

5,774,920
ELECTRICALLY ACTUATED DOCK LEVELER
James C. Alexander, London, Canada, assignor to United Dominion Industries, Inc., Charlotte, N.C.
Filed May 20, 1996, Ser. No. 650,823
Int. Cl.⁶ E01D 1/00
U.S. Cl. 14—713

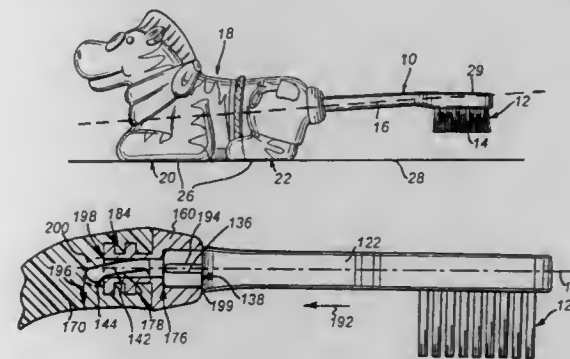
20 Claims



1. A dock leveler comprising:
a frame adapted to be fixedly mounted at a dock;
a deck, pivotally mounted to said frame at one end thereof, and having a pivotable lip at the other end thereof;
a compression spring attached to said deck and said frame to support said deck independently from said actuator;
an electric actuator coupled to said deck and said frame, said electric actuator moving said deck from a generally horizontal stored position into an operative position, and a circuit for controlling operation of said electrical actuator.

5,774,921
CHILD'S UTENSIL
Susan Harrison, Wichita Falls, Tex., and David W. Crossley, Charlestown, R.I., assignors to Zooth, Inc., Wichita Falls, Tex.
Continuation-in-part of Ser. No. 244,473, Sep. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 797,029, Nov. 25, 1991, abandoned. This application May 23, 1996, Ser. No. 652,855
Int. Cl.⁶ A46B 5/02
U.S. Cl. 15—145

4 Claims



1. A utensil for use by toddlers and small children comprising:
a handle defining an animal figure having front and rear legs for supporting the body on a flat surface, at least some of the legs having flattened portions for engaging the flat surface and at least some of the legs being positioned relative to the body so that a gripping hand of a toddler or small child can grip around the legs;
an orifice positioned at a posterior portion of the body at a location simulative of a tail of the animal figure, the orifice being defined by an orifice opening perimeter;
a channel located adjacent the orifice, remote from the orifice opening perimeter in an inward direction relative to the body,

the channel having a channel opening perimeter that is smaller than the orifice opening perimeter of the orifice opening perimeter;

an abutment located in the channel remote from the orifice;

a utensil having a shaft with an operative end and an opposing shaft base end, the shaft base end including a plug member having an outer perimeter sized and arranged to slideably engage the orifice and having, extending distally of the plug member, a curved hook, the curved hook defining a flexible curved leaf spring section having a shoulder mounted thereon, each of the shoulder and the abutment being sized and arranged so that, when the shaft is located at a predetermined position with the plug member inserted into the orifice, the shoulder is located in pressureable engagement, under force of the leaf spring, with the abutment; and wherein the orifice is arranged on the body so that, when the body is supported with the flattened portions of the legs in engagement with the flat surface, the operative end of the utensil is located remote from the flat surface, and wherein the shoulder includes a curved facing surface in engagement with the abutment constructed and arranged so that the force of the leaf spring is overcome and the shoulder is released from pressureable engagement with the abutment upon application of a predetermined releasing force applied to the shaft and against the orifice in a direction opposite the inward direction.

5,774,922

BROOM HEAD FOR CHANNELING MATERIAL

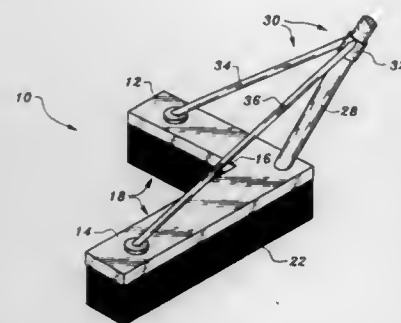
James Bumb, P.O. Box 603, Coloma, Calif. 95613

Filed Dec. 3, 1996, Ser. No. 759,241

Int. Cl.⁶ A46B 9/02

U.S. Cl. 15—159.1

1 Claim



1. A broom apparatus for channeling spreadable material, the apparatus comprising:
 - a) a first broom arm and a second broom arm, said broom arms having both a topside and an underside;
 - b) said first and second arms joined centrally, at a junction point to form a V-shape, said junction of said arms forming an interior angle between said arms, said angle in a range of between 90 and 145 degrees;
 - c) a plurality of bristles depending down from said underside of said broom arms, said bristles forming a V-shaped leading edge along said interior angle of said arms, said bristles continuing aback from said leading edge and forming a tapered section of bristles which terminate at a trailing edge;
 - d) said leading edge contacting and channeling said spreadable material toward said junction point;
 - e) a broom handle for pushing said broom apparatus upon a ground surface;
 - f) a collar, said collar for surrounding said broom handle; and
 - g) first and second elongate struts having first and second opposing ends, said struts each coupled to said collar at said first ends, said struts each coupled to said broom arms at said second ends.

5,774,923
TOOTHBRUSH HAVING A FLEXIBLY LINKED ZONE IN ITS HEAD

Hans Halm, Herne, Germany, assignor to Smithkline Beecham plc, England

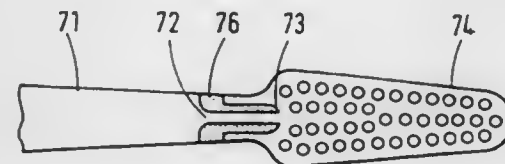
Continuation of Ser. No. 122,407, Sep. 27, 1993, abandoned.

This application Jun. 7, 1995, Ser. No. 480,075

Int. Cl.⁶ A46B 9/04

U.S. Cl. 15—167.1

4 Claims



4. A toothbrush having a handle and a bristle-bearing head, the handle and the bristle-bearing head being made of a plastic material, the handle and the bristle-bearing head being integrally connected to each other by the plastic material.

5,774,924

ADJUSTABLE DRYWALL AND PLASTERING TOOL

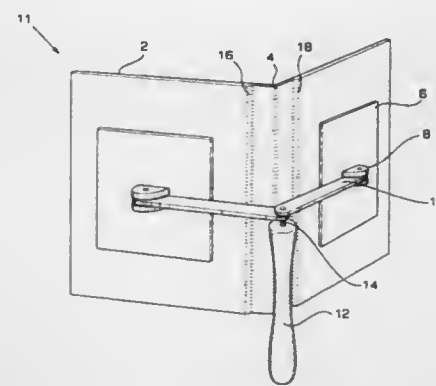
Danny A. Beckham, 8530 SW 170th St., Archer, Fla. 32618, and David W. Mitchell, P.O. Box 1823, High Springs, Fla. 32655-1823

Filed Jan. 16, 1997, Ser. No. 783,436

Int. Cl.⁶ B05C 17/10

U.S. Cl. 15—235.7

13 Claims



1. An adjustable handtool for application of coating materials to corners, the tool comprising:
 - a first blade,
 - a second blade,
 - means for flexibly interconnecting said first blade to said second blade;
 - a handle; and
 - means for adjustably supporting said first and second blades on said handle; said supporting means maintaining said handle in a plane symmetric with respect to said first and second blade;
 - means for locking said first blade relative to said second blade;
 - such that the blades may be easily adjusted in a wide range of relative angular positions without appreciably bending or distorting the blades while the handle is retained in a central position to naturally transmit pressure equally to the two blades.

5,774,925

ORAL WASH BRUSH

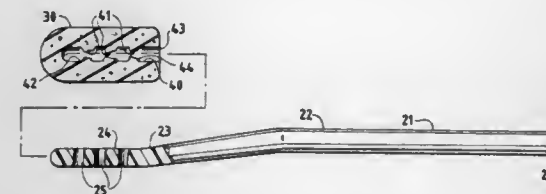
J. R. Pryor, III, 540 Florida Ave., Aurora, Ill. 60506

Filed Jul. 10, 1996, Ser. No. 676,701

Int. Cl.⁶ A46B 9/04; A61H 13/00

U.S. Cl. 15—244.1

1 Claim



1. An oral wash brush suitable for oral hygiene and cleaning the entire mouth through application of friction, the oral wash brush comprising:
 - a rigid handle having a hand-hold portion and a sponge attachment portion, said sponge attachment portion having several substantially cylindrical holes and outside dimensions;
 - a sterile rubber sponge mounting sleeve having an inside diameter surface, said inside diameter surface having inside dimensions that are substantially the same as the outside dimensions of the sponge attachment portion, an opening at one end, and rubber extrusions having inclined surfaces at ends opposite the inside diameter surface;
 - a sterile sponge head useful for scrubbing the human mouth mounted to the sterile rubber mounting sleeve; and
 - a fastening means wherein the sterile sponge head and sterile rubber sponge mounting sleeve are pushed onto the sponge attachment portion of the rigid handle, the inclined surfaces of the rubber extrusions allows movement of the sterile rubber sponge mounting sleeve until the rubber extrusions line up with and enter the several substantially cylindrical holes, preventing further linear motion with respect to the rigid handle until a great deal of force is used to remove the sterile rubber sponge mounting sleeve.

5,774,926

GRADUATED WINDSHIELD WIPER CLEANING ELEMENTS

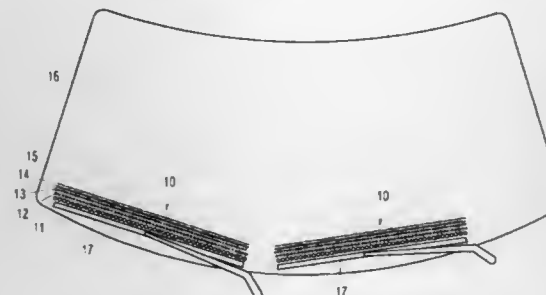
John J. Jacoby, 1919 Paper Mill Rd., Huntington Valley, Pa. 19006

Filed Jun. 13, 1996, Ser. No. 661,297

Int. Cl.⁶ B60S 1/56; B05D 5/02

U.S. Cl. 15—250.001

20 Claims



1. In a windshield wiper system of a vehicle having a windshield and a windshield wiper, a wiper cleaner comprising:
 - a plurality of raised cleaning elements arranged in an elongated field defining a plurality of rows, said field being arranged on an exterior surface of said windshield above and parallel to a resting position of said wiper, said field having a top edge and a bottom edge, said cleaning elements having a predetermined range of widths, said cleaning elements being graduated in width, between rows, between said top edge and said bottom edge.

edge of said field, so that whenever said wiper is operated, said wiper is cleaned by scraping across said cleaning elements.

5,774,927

SCREEN WIPER FOR A MOTOR VEHICLE, HAVING A BRACKET GIVING INDEXATION FOR FITTING PURPOSES AND LOCATION IN THE PARKED POSITION OF THE WIPER

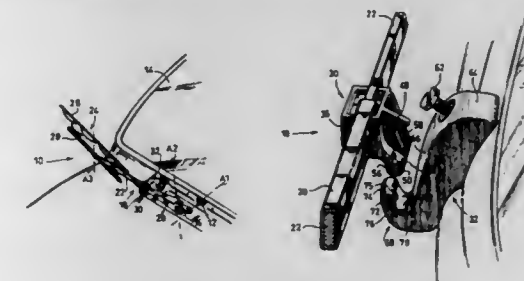
Pascal Morin, Chatellerault, France, assignor to Valeo Systemes D'Essuyage, La Verriere, France

Filed Jan. 30, 1996, Ser. No. 594,264

Claims priority, application France, Jan. 31, 1995, 95 01200 Int. Cl.⁶ B60S 1/04; 1/32

U.S. Cl. 15—250.19

10 Claims



1. An apparatus for use on a vehicle having a screen and a wiper arm having a parked position and a fitting position, the apparatus comprising:
 - a guide bracket configured to be mounted on the wiper arm, the guide bracket including an indexing claw having an indexing surface;
 - a guide ramp configured to be mounted on the vehicle, the guide ramp having an engagement surface and a ramp claw having an index abutment surface complementary to the indexing surface; and
 - wherein the indexing surface cooperates with the indexing abutment surface to define the fitting position; and
 - wherein the guide bracket has a side face defining a longitudinal lower edge of the side face, and a heel portion projecting obliquely from the longitudinal lower edge for cooperation with the engagement surface of the guide ramp to reduce wiping pressure in the parked position.

5,774,928

SCREEN WIPER APPARATUS, ESPECIALLY FOR A MOTOR VEHICLE, HAVING MEANS, FOR INDEXING THE SCREEN WIPER WITH RESPECT TO A DRIVE SPINDLE

Jack Schitter, Antran, and Jean-Paul Danjou, Chatellerault, both of France, assignors to Valeo Systemes D'Essuyage, La Verriere, France

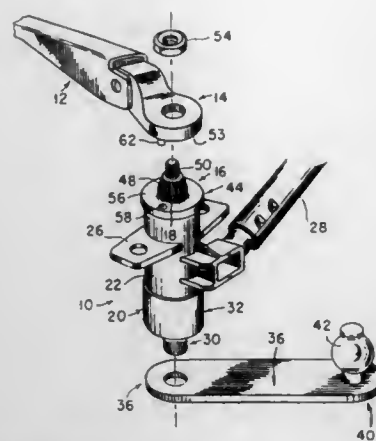
Filed Jan. 30, 1997, Ser. No. 791,820

Claims priority, application France, Jan. 31, 1996, 96 01153 Int. Cl.⁶ B60S 1/34

U.S. Cl. 15—250.34

5 Claims

1. A screen wiper apparatus for a motor vehicle having a fixed structure, the apparatus comprising: a bearing fixed on an element of the structure; a drive spindle defining an axis for establishing an angular position and mounted in said bearing for rotation therein about said drive spindle having one end extending outside and beyond said bearing; a screen wiper, including a drive head for establishing a fixed indexed angular position relative to said drive spindle, the apparatus including coupling means for securing said drive head on said drive spindle one end; a drive motor; and transmission means coupling said drive motor to said drive spindle and including a crank connected to said drive spindle for driving



said spindle in rotation whereby to impart rotary motion to the screen wiper via said drive head, wherein the apparatus includes a member coupled in rotation to said drive spindle and further includes indexing means having a first and a second indexing element for said indexed angular position of said drive head with respect to said drive spindle, said member coupled to said drive spindle including said first indexing element, and said drive head having said second indexing element, for cooperation with said first indexing element and wherein each of said coupling means and said indexing means have means defining complementary cooperating forms which come into engagement with each other by axial mating engagement when said driving head is fitted axially in a first direction on to said one end of said drive spindle, with said indexing elements of said indexing means coming into engagement with each other before those of said coupling means come into engagement with each other, said first and second indexing elements defining an axially projecting spigot and an annular ring coupled in rotation with said drive head and said drive spindle, said first and second indexing elements defining a hole complementary with said spigot, said spigot being received in said hole.

5,774,929

WRINGING DEVICE FOR A WET MOP HEAD OF A MOP HEAD CARRIER

Ralf Jürgens, Neckarhausen, and Uwe Dingert, Abtsteinach, both of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

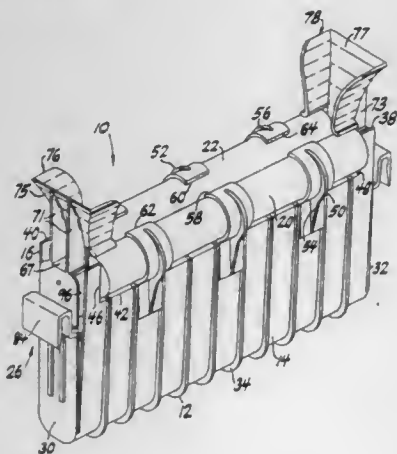
Filed Jul. 25, 1996, Ser. No. 690,417

Claims priority, application Germany, Jul. 25, 1995, 195 27 158.0

Int. Cl.⁶ A47L 13/60

U.S. Cl. 15—262

35 Claims



1. A device for wringing liquid out of a wet mop head, the wringing device comprising:

a base element having two ends and an outside surface and comprising a resilient material that is elastically prestressed, and wherein the base element has a U-shaped cross-section formed of two side walls having top, lengthwise edges and end edges, and a channel-shaped bottom that joins the side walls;

two cylindrical wringing rollers that are mounted in the base element and positioned adjacent to each other such that a roller nip is formed between the wringing rollers the axes of rotation being parallel to each other and the wringing rollers being designed to move away from one another counter to the elastic prestress force in the base element while the axes of rotation remain parallel.

5,774,930

VACUUM CLEANER ASSEMBLY

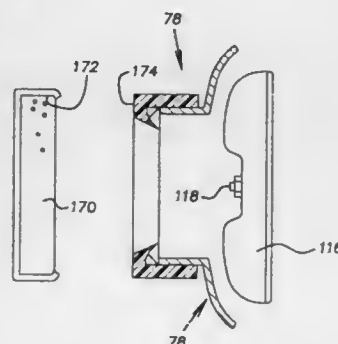
David R. Sommer, Bloomington; Leonard D. Hampton; William R. Reimer, both of Normal; John A. Huebsch, Bloomington, and George V. Hibbs, Pontiac, all of Ill., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jan. 16, 1996, Ser. No. 585,762

Int. Cl.⁶ A47L 9/00

U.S. Cl. 15—326

12 Claims



1. An upright vacuum cleaner, comprising a floor engaging unit, said floor engaging unit being supported above the floor by a plurality of floor engaging wheels and having a rotary brush roll mounted thereto, said floor engaging unit comprising a base, a motor mounted on said base and having an impeller mounted at one end of a drive shaft and a drive belt for said brush roll mounted at another end of said shaft, said base at least in part defining a vacuum plenum chamber having a first portion axially communicating with said impeller, a throttle ring between said plenum chamber and said impeller in axial alignment with said impeller, said throttle ring defining an opening having a cross sectional area less than a cross sectional area of said plenum chamber, said plenum chamber having a second portion extending substantially normal to said first portion and communicating with a suction inlet of said unit, and a sound absorbing pad at an intersection of said first and second portions and facing said impeller.

5,774,931

PENCIL HAVING AN ERASER-HOLDING FERRULE SECURED BY ULTRASONIC WELDING, AND A FERRULE ADAPTED FOR THAT PURPOSE

André Coinon, Le Portel-France, and Zoltan Trajber, Boulogne Sur Mer, both of France, assignors to Conte S.A., France

Filed Jul. 9, 1996, Ser. No. 677,137

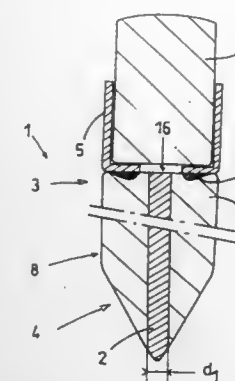
Claims priority, application France, Jul. 17, 1995, 95 08831

Int. Cl.⁶ B43K 29/02

U.S. Cl. 15—431

13 Claims

1. A pencil, comprising:
a body, a ferrule, and an eraser;
the ferrule including a top end and a bottom end;



the body including a top end, and a peripheral body surrounding a central lead extending therefrom;
wherein the eraser is mounted in the top end of the ferrule; and
wherein the peripheral body and the ferrule are made of compatible thermoplastic materials, and the bottom end of the ferrule is fixed to the top end of the body by localized interpenetration of the thermoplastic materials in at least one zone by ultrasonic welding.

5,774,932

VACUUM CLEANER ASSEMBLY

James M. Mallory, Normal; Arnold L. Sepke, Hudson, and David R. Sommer, Bloomington, all of Ill., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

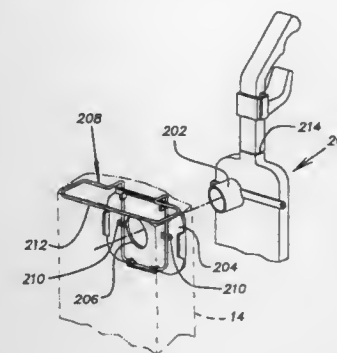
Division of Ser. No. 585,762, Jan. 15, 1996, Pat. No. 5,774,930.

This application Jun. 10, 1997, Ser. No. 872,366

Int. Cl.⁶ A47L 9/14

U.S. Cl. 15—350

3 Claims



1. An upright vacuum cleaner comprising a floor engaging unit and a handle pivotally attached thereto, a motor mounted in said floor engaging unit having an impeller for drawing dirt-laden air from a floor to be cleaned, an exhaust duct defining a passage for said dirt-laden air from said impeller to a porous dust bag cover, a dust bag cover mounting device attached to said handle, said mounting device comprising a baseplate mounted on said exhaust duct, said exhaust duct extending through an aperture in said baseplate, a dust bag cover support frame attached to said baseplate and supporting said dust bag cover so that said dust bag cover is in fluid communication with said exhaust duct, said handle having first and second separable portions separably joined at a parting plane, said first separable portion being pivotally attached to said floor engaging unit and having said dust bag cover mounting device attached thereto, all portions of said frame being positioned below said parting plane.

5,774,933

ATTACHMENT DEVICE FOR A CLEANING APPARATUS

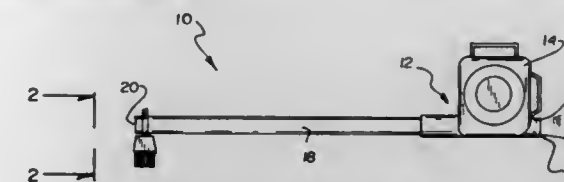
Edward Jannicelli, Jr., 1785 Rose Blvd., Nashville, N.C. 27856

Filed Jul. 8, 1996, Ser. No. 676,439

Int. Cl.⁶ A47L 5/28

U.S. Cl. 15—398

1 Claim



1. An attachment device for a cleaning apparatus for attaching to a cleaning apparatus to provide improved cleaning capabilities comprising, in combination:

a leaf blower having a motor housing, the motor housing having a bag extending from a rear portion thereof, the motor housing having an elongated tube extending from a front portion thereof, the elongated tube having an open free end;
a broom attachment comprised of a head portion, the head portion having an upper surface and a lower surface, a plurality of bristles extending downwardly from the lower surface;
a clamp assembly comprised of a pair of clamping members dimensioned for coupling with the elongated tube of the leaf blower inwardly of the open free end thereof, each clamping member having a tab extending upwardly from upper ends thereof, each tab having a threaded aperture therethrough, a thumbscrew extending through the threaded apertures of the tabs for securement of the pair of clamping members to the elongated tube, lower ends of the pair of clamping members having a cross member extending therebetween, the cross member having a downwardly extending central portion; and
a pivot assembly comprised of a plate member secured to the upper surface of the head portion of the broom attachment, the plate member having an upwardly extending central portion, a T-shaped stem extending upwardly from the upwardly extending central portion to rotatably couple with the downwardly extending central portion of the cross member of the clamp assembly, the upwardly extending central portion having a plurality of sockets formed in an upper surface thereof surrounding a shaft of the T-shaped stem, a plurality of ball bearings positioned within the plurality of sockets to facilitate rotation of the pivot assembly relative to the clamp assembly.

5,774,934

GROMMET AND A METHOD FOR MOUNTING A GROMMET

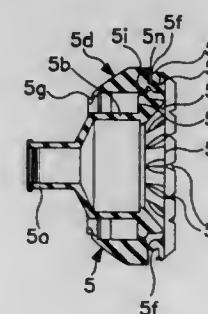
Hiroo Fujita; Yukimitsu Hattori, both of Yokkaichi; Yasuhiro Kasahara, and Kenji Kotani, both of Aichi-ken, all of Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Mar. 27, 1997, Ser. No. 828,803

Int. Cl.⁶ F16L 5/00

U.S. Cl. 16—2.1

12 Claims



1. A grommet (5) for mounting to a body panel (6), said grommet (5) having opposed front and rear ends and comprising: a tubular portion (5c) extending rearwardly from said front end;

a turnup portion (5d) projecting outwardly and axially from the front end, the turnup portion (5d) being formed with a locking groove (5e) located radially outside of the tubular portion (5c), the turnup portion (5d) being deformable between a first position where said locking groove (5e) opens forwardly to define an inserting position allowing the grommet (5) to be inserted into the body panel (6), and a second position where the locking groove (5e) opens radially outwardly to define a fitting position where the body panel (6) is engageable in the locking groove (5e) of the turnup portion (5d).

5,774,935

HINGE AND METHOD FOR JOINING AND ALIGNING TWO PANELS

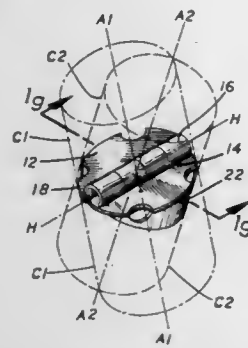
Jesse E. Hawley, Phoenix, Ariz., assignor to Robert P. Reisman, Scottsdale, Ariz.

Filed Feb. 27, 1997, Ser. No. 807,654

Int. Cl.⁶ E05D 5/00

U.S. Cl. 16—382

25 Claims



1. A hinge for joining and aligning a first panel with a second panel, the first panel including a first hinge-mounting surface having a first hinge-mounting recess and the second panel including a second hinge-mounting surface having a second hinge-mounting recess, the hinge comprising:

a first leaf hingedly joined to a second leaf so that the first and second leaves can pivot about a hinge axis;

the first leaf including a projection for insertion into the first hinge-mounting recess when the first leaf is mounted to the first hinge-mounting surface, the first leaf projection being disposed along an imaginary first right circular cylinder having a center axis intersecting the hinge axis;

the second leaf including a projection for insertion into the second hinge-mounting recess when the second leaf is mounted to the second hinge-mounting surface, the second leaf projection being disposed along an imaginary second right circular cylinder having a center axis intersecting the hinge axis and the first cylinder center axis and

at least one of the first leaf projection and the second leaf projection comprising at least one arcuate flange.

5,774,936

ROLLER, IN PARTICULAR A CASTOR

Klaus Vetter, Bergisch Gladbach, Germany, assignor to Tente-Rollen GmbH & Co., Wermelskirchen, Germany

PCT No. PCT/EP95/00940, § 371 Date Oct. 29, 1996, § 102(e)

Date Oct. 29, 1996, PCT Pub. No. WO95/28283, PCT Pub. Date Oct. 26, 1995

PCT Filed Mar. 14, 1995, Ser. No. 727,523

Claims priority, application Germany, Apr. 13, 1994, 44 12 603.4

Int. Cl.⁶ B60B 33/00

U.S. Cl. 16—35 R

8 Claims

1. A roller, in particular a castor (R), comprising a fork carrying a rotatable wheel with a tire and a braking device adapted for

braking rotation of the wheel, a push-rod mounted displaceably towards the wheel and including an actuating device enabling displacement of the push-rod towards the wheel, said braking device comprises a braking member mounted on a bottom portion of the push-rod so as to press into the tire upon displacement of said push-rod towards said wheel into a braking position, and an energy storage spring operatively mounted so as to act against said braking member enabling an axial shortening of said push-rod against force of said energy storage spring, and wherein the energy storage spring is prestressed in relation to pressure resistance of the tire such that in the braking position, the braking member maintains, without exceeding, a penetration depth into the tire specified for stopping the rotation of the wheel.

5,774,937

HANDLE ADAPTER

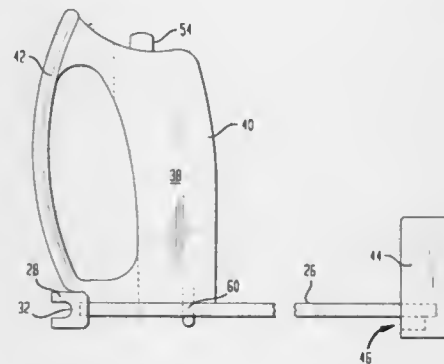
Frank Caminos, 1979 Crooked Oak Dr., Lancaster, Pa. 17601

Filed Feb. 5, 1997, Ser. No. 795,411

Int. Cl.⁶ A47B 95/02; A47J 45/10

U.S. Cl. 16—114 R

20 Claims



1. A handle adaptor for use with a handle of a cooking utensil, comprising:

a support member constructed and arranged to be operatively associated with the handle;

a hand grip attached to said support member, said hand grip having:

a body portion adapted to be gripped by a user's hand, and a shield portion extending from and spaced forwardly of said body portion, said shield portion having a surface area extend-

ing substantially wider than a width of the user's hand to shield the hand; and means to removably mount the support member to the handle.

5,774,938

LOCKING DEVICE FOR LOCKING A CLOSURE IN AN OPEN POSITION

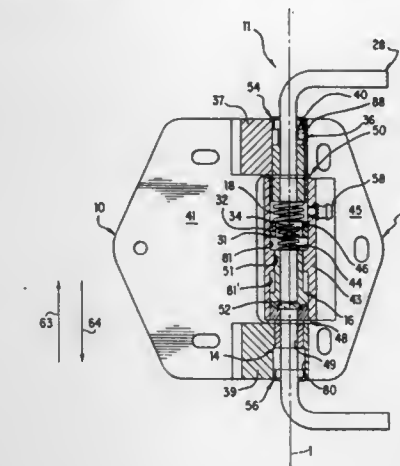
Erma W. Kent, 201 Bass Rd., Macon, Ga. 31210-2034; Daniel R. Nietzold, and Loranzo H. Thomson, both of Warner Robins, Ga., assignors to Erma W. Kent, Macon, Ga.

Filed Feb. 19, 1997, Ser. No. 802,240

Int. Cl.⁶ E05D 11/10

U.S. Cl. 16—332

45 Claims



1. A locking device for pivotally connecting a closure to a support and locking the closure in at least one open position relative to the support, wherein the closure pivots about an axis between a closed position and the at least one open position, said locking device comprising:

a closure-side housing member for fixedly coupling to the closure and a support-side housing member for fixedly coupling to the support;

locking means having a first ratchet member fixedly coupled to one of said housing members, a second ratchet member coupled to the other of said housing members and a biasing means for biasing the first and second ratchet members into engagement with each other, each of the first and second ratchet members having compatible teeth for limiting pivotal movement of the first ratchet member relative to the second ratchet member to a first direction and locking the closure in a set position when said first and second ratchet members are in engagement; and

releasing means for disengaging the first and second ratchet members, thereby allowing the closure to pivot in a second direction to the closed position, the releasing means comprising:

a pivot pin received by said housing members and extending along the axis, the second ratchet member being coupled to the pivot pin for movement with the pivot pin in a third direction perpendicular to the first and second directions, thereby disengaging the second ratchet member from the first ratchet member when the pivot pin is moved in the third direction; and

a cam assembly comprising a cam pin and a cam member having a cam surface;

wherein the cam pin is fixedly coupled to the other of said housing members, the cam member is fixedly coupled to the pivot pin, the cam surface comprises two portions which are spaced vertically, said cam pin engages the uppermost of said two portions when said first and second ratchet members are engaged and engages the lowermost of said two portions when the first and second ratchet members are disengaged.

5,774,939

POSITIONING PIVOT

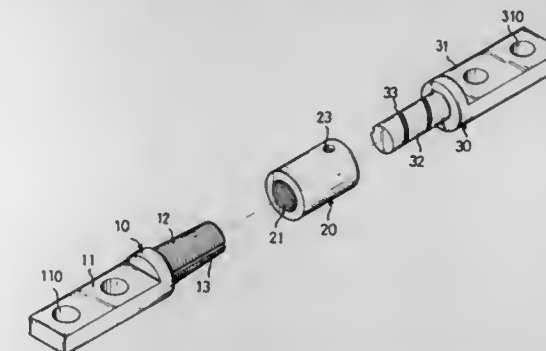
Sheng-nan Lu, No. 174, Chunying St., Shulin Chen, Taipei Hsien, Taiwan

Filed Apr. 26, 1996, Ser. No. 638,292

Int. Cl.⁶ E05D 11/08; E05C 17/64

U.S. Cl. 16—342

2 Claims



1. A friction adjustable positioning pivot comprising: a first shaft having a tapered externally threaded rod which defines a hollow space therein and a slot extending longitudinally along a periphery thereof;

an urging tube having an inner cylindrical threaded portion extending along a predetermined length thereof for rotatably threading onto the tapered externally threaded rod of the first shaft and an inner tapered smooth portion extending along the remaining length of the urging tube for limiting the tapered externally threaded rod to thread into the urging tube;

a second shaft having a rod portion which is received in the hollow space of the tapered externally threaded rod of the first shaft and is in contact with an inner periphery of the tapered externally threaded rod, the rod portion of the second shaft defining a plurality of grooves in the outer periphery thereof for receiving lubricant, thus preventing noise occurring when the first shaft is manually rotated with respect to the second shaft;

whereby the first shaft and the second shaft are rotatably retained at a relative angle due to a friction resulted from the rod portion of the second shaft against the inner periphery of the tapered externally threaded rod of the first shaft thus tightening the tapered externally threaded rod of the first shaft from radial direction thereby increasing friction between the first shaft and the second shaft.

5,774,940

DRAFTLESS SLIVER COILER PACKAGING SYSTEM FOR AUTOMATED TEXTILE DRAFTING SYSTEM

Timothy G. Clapp, New Hill; Jon P. Rust, Raleigh, both of N.C.; Carlos Farrington, Guatemala, Guatemala, and Dale Thomas Bowen, Timberlake, N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Jul. 19, 1996, Ser. No. 683,873

Int. Cl.⁶ D01G 15/66; 27/00

U.S. Cl. 19—159 R

26 Claims

1. A textile carding apparatus for forming and packaging of a formed strand of textile material comprising:

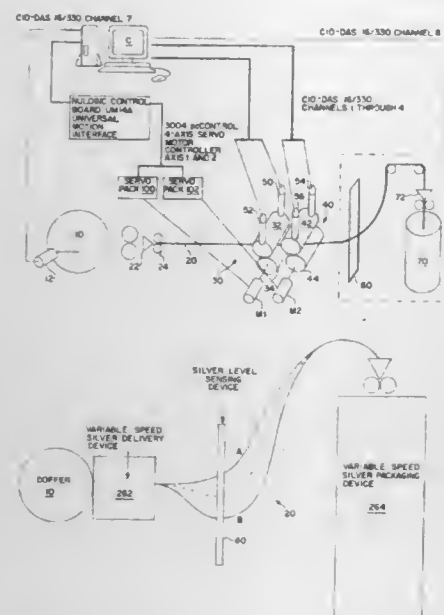
(a) carding means, or

(b) packaging means for packaging a strand of textile material into a container;

(c) sensing means for detecting the relative length of said strand of textile material as it passes from formation to packaging of said strand of textile material; and

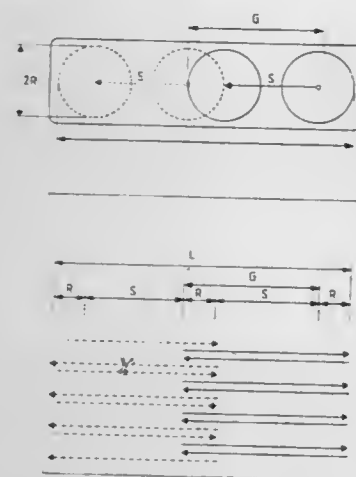
(d) autoleveling means positioned between a sliver delivery end of said carding means and said sensing means and packaging means and through which the sliver passes for imparting uniformity to the sliver;

(e) computer means communicating with said carding means said autoleveling means, said sensing means and said packaging



ing means for controlling a speed at which said strand of textile material is packaged by said packaging means so as to maintain a relatively constant length of said strand between autoleveling and packaging;
whereby the speed at which said strand of textile material is packaged by said packaging means can automatically change in response to a changing length of said strand of textile material being fed thereto by said autoleveling means.

5,774,941
TWO-HEAD ONE-CUBICAN DRAWING SYSTEM
C. T. Huang, Hsintien; C. T. Chang, Taipei; C. C. Huang, Tsucheng; Sheng-Fu Chiu, Chungho, and H. H. Chiou, Taipei, all of Taiwan, assignors to China Textile Institute
Filed Jul. 10, 1997, Ser. No. 889,963
Int. Cl.⁶ D04H 11/00
U.S. Cl. 19—159 R **6 Claims**

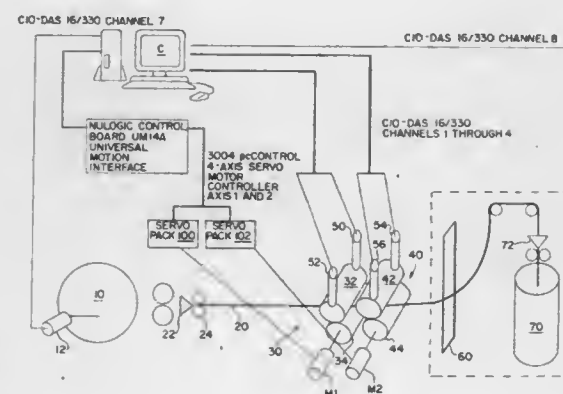


1. A two-head one-cubic drawing system including a cubic sliver can and employing a main motor to drive two sets of drafting mechanisms and two coilers so as to have the cubic can receive two strands of sliver fibers; wherein a driving means comprise the main motor of which an output speed is changed by a frequency converter and that drives the shafts of front, middle, and rear rollers of two sets of the drafting mechanisms via a gear set to deliver cotton fibers into the cubic can; said main motor rotating at a constant speed and so does each drafting roller.

5,774,942
FEED-FORWARD AND FEED-BACK AUTOLEVELING SYSTEM FOR AUTOMATED TEXTILE DRAFTING SYSTEM

Timothy G. Clapp, New Hill; Jon P. Rust, Raleigh, both of N.C.; Carlos Farrington, Guatemala, Guatemala, and Shahram Peykamian, Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.
Filed Jul. 19, 1996, Ser. No. 684,043
Int. Cl.⁶ D01H 5/42

U.S. Cl. 19—239 **17 Claims**



1. An autoleveling apparatus for drafting a strand of textile material between a plurality of pairs of drafting rollers, said autoleveling apparatus comprising:

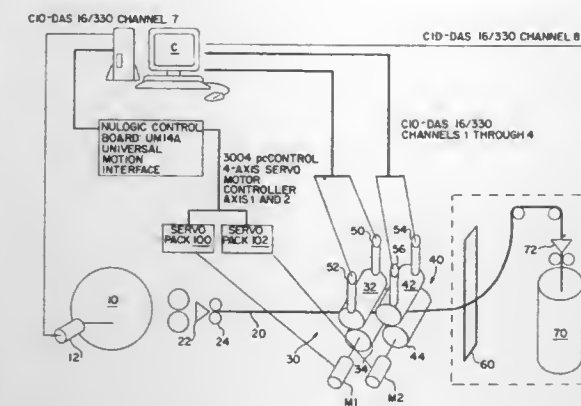
- two or more adjacent pairs of tongue and groove drafting rollers for drafting advancement of a strand of textile material therebetween;
- input sensing means for detecting linear density of a strand of textile material at a first location either prior to or as said strand of textile material passes between the first pair of drafting rollers and generating corresponding short term and intermediate term signal data;
- output sensing means for detecting linear density of said strand of textile material at a second location either as or after said strand of textile material passes between a second pair of drafting rollers and generating corresponding long term signal data; and
- computer means operatively communicating with said input and output sensing means for receiving and processing said signal data from said input and output sensing means to control the drafting ratio of said two or more pairs of drafting rollers.

5,774,943
TONGUE AND GROOVE DRAFTING ROLLER AUTOLEVELING SYSTEM FOR AUTOMATED TEXTILE DRAFTING SYSTEM

Timothy G. Clapp, New Hill; Jon P. Rust, Raleigh, both of N.C.; Carlos Farrington, Guatemala, Guatemala, and Dale Thomas Bowen, Timberlake, N.C., assignors to North Carolina State University, Raleigh, N.C.
Filed Jul. 19, 1996, Ser. No. 684,475
Int. Cl.⁶ D01H 5/32

U.S. Cl. 19—240 **18 Claims**

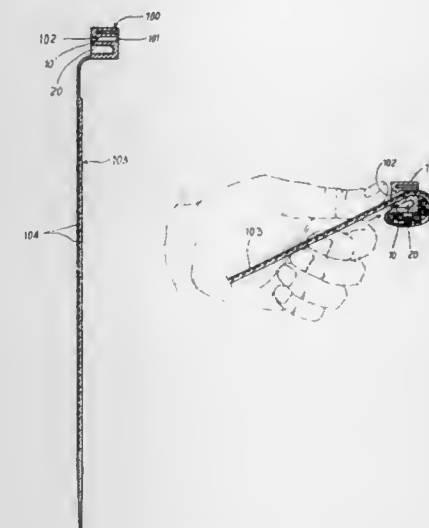
1. A textile drafting apparatus for drafting a strand of textile material comprising:
- two or more pairs of tongue and groove drafting rollers for advancement of a strand of textile material therebetween with one of each of said pairs of tongue and groove rollers being displaceably movable with respect to the other; and
 - gear means operatively connecting the rollers of each pair of tongue and groove drafting rollers such that when one roller of each of said pairs is caused to rotate the other roller of each of said pairs will be rotated at the same surface speed; and



- independent drive means operatively connected to each pair of said two or more pairs of tongue and groove drafting rollers; and
- sensing means operatively associated with said movable roller of each pair of said two or more pairs of drafting rollers for sensing thickness of the strand of textile material as it passes between each pair of tongue and groove rollers, said sensing means being in electrical connection with each of said independent drive means;

whereby each of said two or more pairs of tongue and groove rollers can be used during drafting to also sense thickness of the strand of textile material passing therebetween in order to provide at least a portion of the input control to said two or more independent drive means.

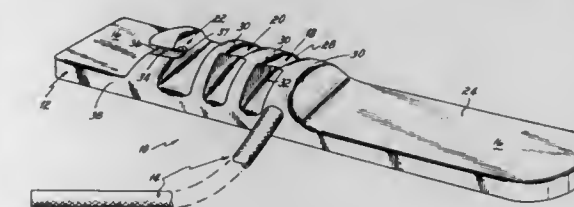
5,774,944
BAND CABLE EASILY RELEASED FROM COUPLING STATE
Woncheol Choi, Galak-town 104-306, 1161-2, Handan 2 dong, Shaha-ku Pusan, Rep. of Korea
Filed Jul. 23, 1997, Ser. No. 899,327
Claims priority, application Rep. of Korea, Jul. 26, 1996, 6-22686
Int. Cl.⁶ B65D 63/00
U.S. Cl. 24—16 **1 Claim**



1. A band cable having a tie through hole which is formed within a head, a stopper which is protrudedly formed on the top surface of said tie through hole, and a tie, on which a plurality of first grooves are formed, which is formed as a unitary body with said head, said band cable comprising:
- a second groove formed on the lower portion of said tie through hole; and

an elastic supporting member whose left and right side surfaces are separated from the inner side surface of said head, thus to move upwardly and downwardly, whereby after said tie is inserted into said tie through hole and is coupled with said head, if said tie coupled with said head is to be released, a user grasps said tie and then presses downwardly said tie with his thumb, and thereby, as said elastic supporting member is pushed in the downward direction of said second groove, said stopper is easily deviated from said first grooves formed on said tie.

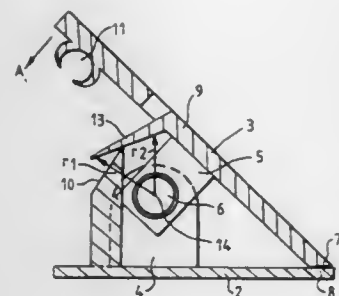
5,774,945
BUNDLING DEVICE
Mark H. Ginocchio, P.O. Box 4655, St. Petersburg Beach, Fla. 33741
Filed Dec. 18, 1996, Ser. No. 769,457
Int. Cl.⁶ A44B 21/00; B65D 63/00
U.S. Cl. 24—16 R **44 Claims**



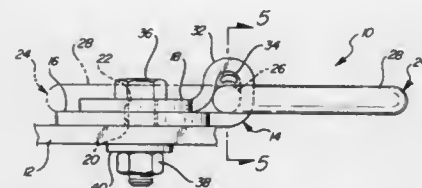
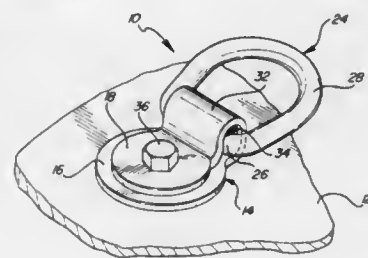
1. A device for securing a bundle, the device comprising:
- a support member;
 - an elongated longitudinally stretchable and resilient cord extending between an end which is free and a point which is attached to the support member, the cord having an unstretched length and diameter and being stretchable under tension to increase in length and decrease in diameter, the unstretched length and diameter being restored upon release of the tension; and
 - a pair of vertically-extending wedges on the support member, the wedges including opposed walls spaced apart to define a cord-receiving space therebetween, the cord-receiving space being narrower than the unstretched diameter of the cord, whereby the wedges are adapted to receive and secure the cord in a stretched condition wrapped around said bundle and engage the cord to hold the cord in said stretched and wrapped condition.

5,774,946
CLIP
Donald Albert Morgan, Chesham, United Kingdom, assignor to Marks & Clerk, United Kingdom
Filed Oct. 31, 1996, Ser. No. 741,835
Claims priority, application United Kingdom, Nov. 1, 1995, 9522360
Int. Cl.⁶ A45D 8/24; A44B 21/00; B42F 1/00
U.S. Cl. 24—67.5 **6 Claims**

1. A hand operable clip comprising:
- molded first and second members that are integrally formed, each of which comprises a respective gripping surface, the first and second members being journaled with respect to one another for pivotal movement; and
 - biasing means for biasing the gripping surfaces of the first and second members into contact, wherein the biasing means comprises a plastic resilient member integral with one of the first and second members and a cam surface that is smoothly profiled, that comprises a sharp edge and that is integral with



5,774,948
TIE-DOWN RING
Steven J. Petschke, New Baltimore, and James W. Petschke, Chesterfield, both of Mich., assignors to Creative Wire & Tube Forming, Inc., Mt. Clemens, Mich.
Filed Apr. 4, 1997, Ser. No. 833,133
Int. Cl.⁶ A44B 11/00; B61D 45/00
U.S. Cl. 24—265 CD 28 Claims

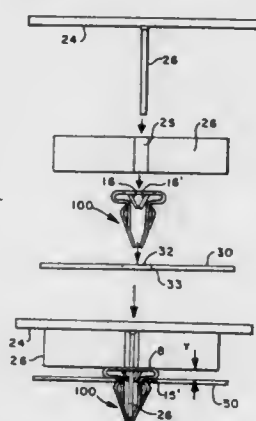


1. An articulating tie-down anchor (10) comprising: a base plate (16); a knuckle (32) extending from said base plate (16); a ring (24) having a shank (26) pivotally journaled in said knuckle (32); and characterized by a resilient tube (34) having a length disposed within said knuckle (32) and compressed lengthwise against said shank (26) with an outer surface of said tube (34) contacting said knuckle (32) and said shank (26) to restrain said ring (24) in any pivotally articulated position relative to said base plate (16).

5,774,949
TRIM CLIP

Jeffrey J. Cornell, Royal Oak; Robert B. Nita, Rochester Hills, both of Mich.; David J. Vidal, Beamsville, and John Wilusz, Hamilton, both of Canada, assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 27, 1997, Ser. No. 918,999
Int. Cl.⁶ A44B 21/00
U.S. Cl. 24—293 5 Claims



1. A clip for securing trim to a frame member having an opening therethrough for receiving a protuberance extending from the trim, said clip comprising:
a substantially flat head portion extending between opposite ends thereof;
an aperture through the head portion adapted to receive the protuberance therethrough;
a pair of resilient arms respectively extending inwardly towards each other from the head portion opposite ends and thence

and extends from a surface of one of the first and second members toward the resilient member, wherein the resilient member moves over the cam surface to resist rotational movement of the first and second members tending to separate the gripping surfaces, the movement of the resilient member defining varying respective positions of both the resilient member and the cam surface wherein either or both of the cam surface and the resilient member defines a surface that extends over varying radial distances from a center of pivotal motion, and wherein one of the first and second members on which the resilient member is integrally formed is composed of acetal and the other of the first and second gripping members comprises polypropylene.

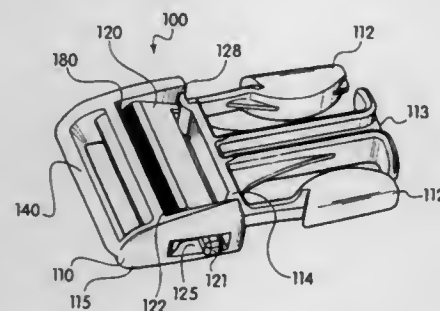
5,774,947

ANTI-SLIP WEBBING ADJUSTER

Joseph Anscher, Muttontown, N.Y., assignor to National Molding Corp., Farmingdale, N.Y.

Filed Nov. 14, 1997, Ser. No. 971,841
Int. Cl.⁶ A44B 11/00

U.S. Cl. 24—200 9 Claims



1. A device for adjusting a length of webbing, comprising:
a generally U-shaped body comprising two side arms connected by an end arm, said side arms each having an end;
a connecting device attached to the ends of the side arms;
a transverse bar mounted between the two side arms and separated from the end arm, said transverse bar having a gripping surface;
a pivotable plate mounted between the two side arms and in between said transverse bar and said connecting device, said pivotable plate having a gripping surface contacting the gripping surface of said transverse bar; and
release means on at least one side arm for selectively pivoting said pivotable plate,
wherein a length of webbing threaded through said device is securely held between the gripping surfaces of said transverse bar and said pivotable plate until said release means is actuated.

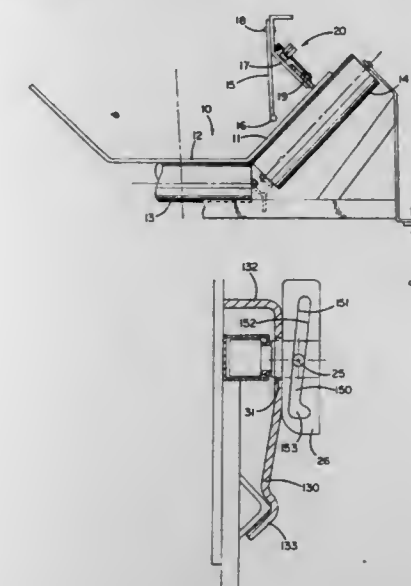
5,774,951
CLAMP

Brian Close, Fairlight, and Bruce Hart, Terrey Hills, both of Australia, assignors to Flexible Steel Lacing Company, Downers Grove, Ill.

PCT No. PCT/AU93/00278, § 371 Date Apr. 10, 1994, § 102(e) Date Apr. 10, 1994, PCT Pub. No. WO94/00697, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 11, 1993, Ser. No. 351,295
Claims priority, application United Kingdom, Jun. 30, 1992, 9213858

Int. Cl.⁶ A44B 21/00; B65G 47/00
U.S. Cl. 24—568 14 Claims



transversely away from the body portion in substantial parallel spaced-apart relationship to each other for a prescribed distance and thence towards each other to respective free-ends disposed in spaced-apart facing relationship to each other and operative to engage opposite sides of the protuberance upon insertion thereof through the aperture therebetween with each of said arms having a window therethrough having a bridging portion between the window and the free-ends there across; a pair of resilient fingers respectively extending from the bridging portions angularly outwardly away from each other in a direction towards the head portion for a prescribed distance and thence inwardly towards each other to respective free-ends disposed in spaced-apart relationship to each other, said fingers adapted to contract towards each other sufficiently to enable the arms and fingers to be received through the frame opening and thence spring outwardly away from each other sufficiently to enable a section of the fingers adjacent the free-ends to engage an edge of the frame surrounding the frame opening to secure the clip thereto; and at least one prong member respectively extending towards each other from opposite sides of an edge of the head portion surrounding the aperture in a direction towards the resilient arm free-ends and ending in respective free-ends disposed in spaced-apart relationship to each other and adapted to engage and secure the protuberance to the clip upon insertion thereof through the aperture.

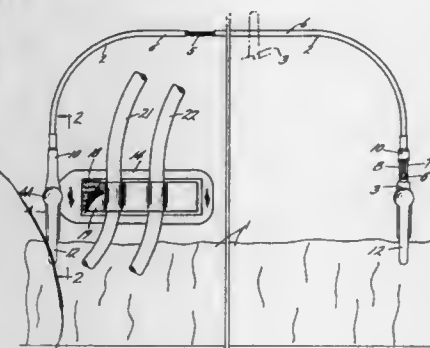
5,774,950

TIE WITH CLIPS

Richard A. Stout, 78471 Cedar Park Rd., Cottage Grove, Oreg. 97434

Filed Aug. 5, 1996, Ser. No. 693,904
Int. Cl.⁶ A44B 21/00

U.S. Cl. 24—298 2 Claims



1. A combination tie assembly and tube holder for attachment of an article to a patient and comprising,
first and second finger actuated clips each having spring biased jaws and a finger tip pad,
an elongate shapeable member including a malleable core and having opposite end segments individually secured to said clips,
said tube holder comprising cooperating fabric closure strips engageable with one or more flexible tubes, a base, and fastener means on said first clip including a shoulder and attaching said base of the tube holder to said first clip.

1. In a conveyor having a support plate extending adjacent a conveyor belt, the combination comprising:
a movable skirt mounted on the support plate and having an upper edge and a lower edge, which is positioned at the conveyor belt to retain material on the conveyor belt; the skirt being shiftable downwardly after its lower edge has been worn away;
a clamping device for releasably clamping a portion of the movable skirt to the support plate and movable to a release position to allow downward movement of the movable skirt when its lower edge is worn;
an elongated locking member pivotally mounted on the clamping device for pivoting between an upstanding position and a locking position;
a clamping member on the clamping device having an opening for aligning with the elongated locking member and for allowing the elongated member to pass through the opening when the locking member is in its upstanding position;
a face on the elongated locking member for lying against the clamping body when pivoted into its locking position;
a driving portion on the elongated locking member to be struck and driven to slide the face of the locking member along the clamping body;
camming surfaces on the clamping device and locking member to force the face of the locking member tightly against the clamping member; and
a clamping end on the clamping member for engaging the movable skirt and for releasably clamping the portion of the movable skirt to the support plate in its adjusted position when the driving portion has driven the locking member to its locking position.

5,774,952

SIZE ADJUSTER

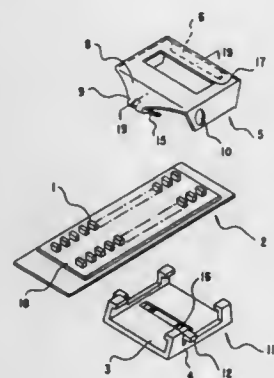
Yutaka Ito, No. 3-11, 5-chome, Nakagawa, Ikuno-ku, Osaka-shi, Osaka 544, Japan

Filed Nov. 7, 1996, Ser. No. 744,496

Claims priority, application Japan, Aug. 27, 1996, 8-225048
Int. Cl.⁶ A44B 11/20

U.S. Cl. 24—585

2 Claims



1. A size adjuster for an article requiring size adjustment comprising:

a flexible band having first and second surfaces and first and second ends, wherein said first end is a free end and said second end is fixed to a first part of said article requiring size adjustment;

two rows of teeth projecting outwardly from said first surface of said flexible band, wherein each tooth of said two rows of teeth is at a predetermined pitch; and

an adjustment fixing means for engaging said teeth of said flexible band to adjust a size of said article requiring size adjustment, wherein said adjustment fixing means is fixed to a second part of said article requiring size adjustment and said adjustment fixing means includes an operating plate pivotally supported on side plates, said side plates projecting perpendicularly from both sides of a bottom plate of an adjustment fixing means main body, said operating plate having an engaging claw formed at a front end part thereof to engage said teeth of said flexible band, and said operating plate includes a spring body part at a rear end part thereof, said spring body part having a tip being of a narrow width such that said tip can fit into a channel part formed between said two rows of teeth and said spring body part having a curled portion which is curled toward a rear side of said operating plate and which is formed integrally with said operating plate.

5,774,953

BUCKLING DEVICE FOR BAGGAGE AND THE LIKE

Chen Shou Mao, 344 Section 1, Chung Shan Rd. Tah-Cha Township, Talchung Hsien, Taiwan

Filed May 1, 1997, Ser. No. 848,900

Int. Cl.⁶ A44B 11/25

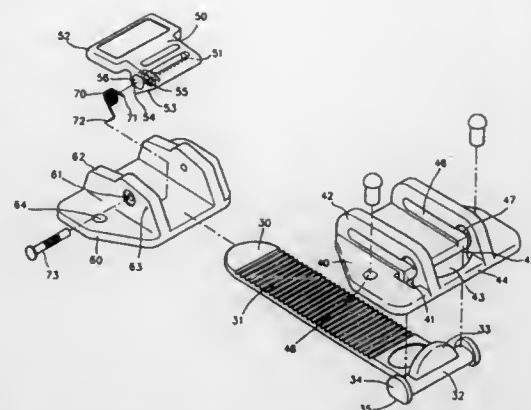
U.S. Cl. 24—585

5 Claims

1. A buckling device comprising:

a fastening strap of a predetermined length and provided with a toothed portion extending along the direction of a longitudinal axis of said fastening strap, said fastening strap further provided at one end of the longitudinal axis thereof with a projection to facilitate the holding of said fastening strap with fingers, said projection of said fastening strap being located on a rod provided respectively at both ends with an end plate having a flat bottom;

a strap seat provided with a plurality of fastening holes engageable with fastening screws for fastening said strap seat with a part of an article, said strap seat provided with two parallel ribs and a through slot located between said two parallel ribs for accommodating said toothed portion of said fastening



strap such that said fastening strap can be slid back and forth in said through slot, said strap seat being provided with a guide slot to accommodate said rod of said fastening strap such that said end plates of said rod press against said ribs of said strap seat; and
a means for catching said fastening strap such that two parts of the article are held together.

5,774,954

PEEL SEAL ZIPPER TAPE

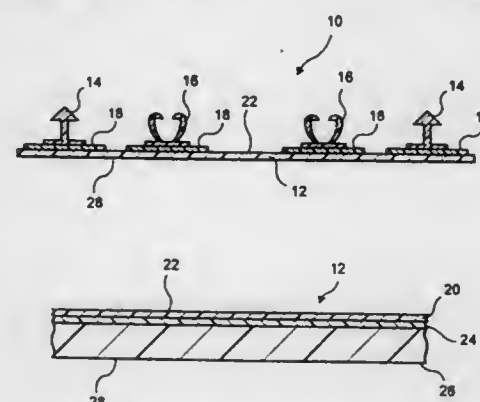
Ronald L. Ramsey, Villa Hills, Ky., and Lawrence Share, Skokie, Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed May 22, 1996, Ser. No. 652,338

Int. Cl.⁶ B65D 33/16

U.S. Cl. 24—587

15 Claims



1. A peel seal zipper tape comprising a first and a second mutually interlocking zipper profile, said zipper profiles being disposed on a top surface of a laminated film strip, said top surface being formed of a sealant material, and said zipper profiles being disposed so as to expose portions of said laminated film strip top surface adjacent to said zipper profiles, said exposed portions of said laminated film strip top surface adjacent to said zipper profiles being sealable to each other to form a peel seal.

5,774,955

CLOSURE DEVICE PROVIDING TACTILE CONFIRMATION OF OCCLUSION

Michael G. Borchardt, Naperville, and John W. Williams, Oak Lawn, both of Ill., assignors to First Brands Corporation

Filed Jun. 28, 1996, Ser. No. 673,653

Int. Cl.⁶ B65D 33/00; 77/00

U.S. Cl. 24—587

79 Claims

1. A closure device comprising first and second interlocking fastening strips arranged to be interlocked over a predetermined

engagement with said fixed catches and to move said third catch body out of engagement with said latch receptacle.

5,774,957

JEWELRY CLASP

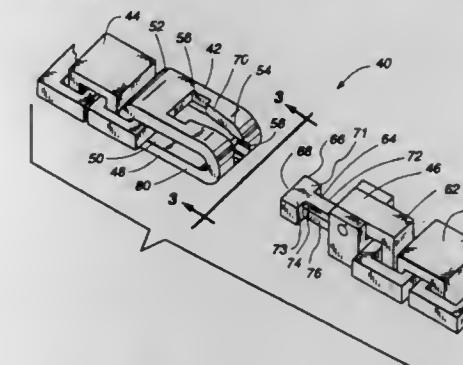
Thomas D. Kohl, 13895 Braun Rd., Golden, Colo. 80401, and Kenneth Lucien Mino, 3770 Allison Ct., Wheat Ridge, Colo. 80033

Filed Nov. 6, 1996, Ser. No. 746,105

Int. Cl.⁶ A44B 11/00; A44C 5/00

U.S. Cl. 24—701

23 Claims



1. A clasp comprising:

a receptor member having a surface defining a slot formed therethrough, and having a first and second end, a connector member having a shaft, said shaft having a first end defining a cross member extending transversely of said shaft, said shaft having a thickness dimension; and

said slot having opposing walls defining a width dimension at said first and second ends larger than said thickness dimension of said shaft and a width dimension intermediate said first and second ends where said width dimension is less than said thickness dimension of said shaft;

said shaft being positionable in said slot and moveable along said slot from said first end to said second end, through said width dimension intermediate said first and second ends and biasingly displacing said opposing walls to pass therethrough, to releasably retain said shaft in said second end and connect said connector member to said receptor member.

5,774,956

HIGH-SECURITY BUCKLE

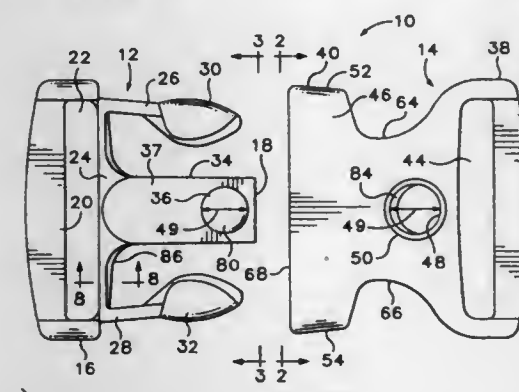
John M. French, Duarte, Calif., and Johannes G. F. Wigger, Lutte, Netherlands, assignors to Michaels of Oregon Co., Portland, Oreg.

Filed Jan. 24, 1997, Ser. No. 788,743

Int. Cl.⁶ A44B 11/00

U.S. Cl. 24—625

7 Claims



1. A high-security buckle, comprising:

(a) a male part having a base and a leading end, including a pair of laterally apart-spaced side release latch arms extending toward said leading end, each side release latch arm including a respective catch body, and a central latch arm having a third catch body located thereon, said side release latch arms being resiliently flexible toward each other; and

(b) a female part having a base and a tubular body including an open receiving end, said female part including a front wall, an opposite back wall, and a pair of opposite top and bottom sides, said top and bottom sides each defining an opening and said female body having a fixed catch associated with each of said openings and engaging the catch body of a respective one of said side release arms, said front wall defining a latch receptacle that is fully surrounded by but open through said front wall of said female part, and said third catch body extending into said latch receptacle, said third catch body having a top surface that is exposed through said front wall of said female part when said buckle is fastened, and said side release latch arms and said central latch arm being free from mechanisms interacting with each other, whereby disengagement of said male part from said female part requires simultaneous inward pressure on both of said side release catch bodies and on said top surface of said central latch arm, sufficient to move both of said side release catch bodies out of

5,774,958

DISSOLVABLE URN

Douglas M. Casimir, 182 Old Field Rd., Setauket, N.Y. 11733

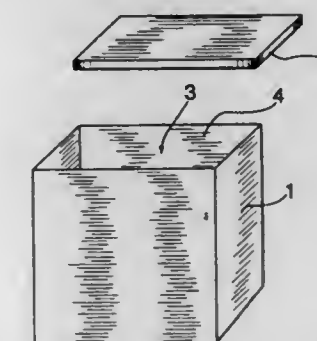
Continuation of Ser. No. 348,464, Dec. 2, 1994, abandoned.

This application Jul. 17, 1996, Ser. No. 682,445

Int. Cl.⁶ A61G 17/08

U.S. Cl. 27—1

2 Claims



1. A dissolvable urn for burial of cremated remains in water, said dissolvable urn comprising:

a container having a cavity and an opening formed therein, said cavity being capable of holding cremated remains and said opening being capable of allowing cremated remains to be placed into the cavity from the outside; and
 a lid capable of being affixed to the container to seal said opening therein;
 wherein said container and said lid comprise a material selected from the group consisting of clay, heat treated sodium bicarbonate, solid sodium chloride, solid calcium chloride and a combination thereof,
 said container and said lid being dissolvable within several days when immersed in water, and
 said urn being configured to have a specific gravity less than water so that said urn will initially float when immersed in water and dissolve while floating.

5,774,959

Patent Not Issued For This Number

5,774,960

PROCESS FOR MANUFACTURING A MULTI-ELEMENT ACOUSTIC PROBE, ESPECIALLY AN ECHOGRAPH PROBE

Sixte De Fraguier, Antibes; Jean-François Gelly, Valbonne, and Jean-Marc Bureau, Bures sur Yvette, all of France, assignors to Thomson-CSF, Paris, France

PCT No. PCT/FR94/00237, § 371 Date Aug. 29, 1995, § 102(e) Date Aug. 29, 1995

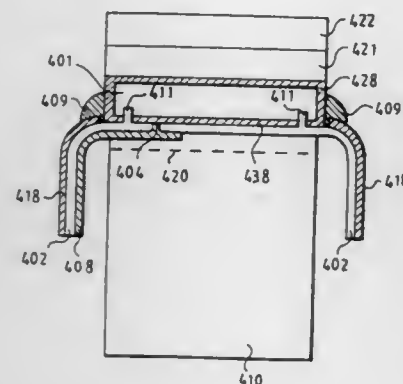
PCT Filed Mar. 4, 1994, Ser. No. 507,304

Claims priority, application France, Mar. 5, 1993, 93 02586

Int. Cl.⁶ H01L 41/22

U.S. Cl. 29—25.35

12 Claims



1. A process for manufacturing a multi-element acoustic probe, comprising the steps of:

- dividing a piezoelectric plate having top, bottom and lateral faces into a set of elementary transducer elements;
- depositing a conducting layer on the top, bottom, and at least two lateral faces of the plate;
- substantially isolating the bottom face of the plate by cutting a line through the conducting layer near the edges of the bottom face of the plate;
- depositing a conducting layer on a first face of a polymer film having first and second faces except for a space corresponding to the bottom face of the plate;
- fixing the bottom face of the plate to the space on the first face of the film without the conducting layer;
- depositing at least one bead of conducting adhesive on the conducting layer on the first face of the film thereby providing electrical linkage between the conducting layer and at least one lateral face of the plate for the purpose of making an earth connection;

- drilling holes in the film by means of an etching process at points where connections to the elementary transducer elements are to be established;
- depositing conducting tracks on the second face of the film so that the tracks connect to the elementary transducer elements via the holes in the film; and
- cutting the piezoelectric plate to complete formation of the elementary transducer elements.

5,774,961

METHOD OF PRODUCING PIEZOELECTRIC/ELECTROSTRICTIVE FILM ELEMENT

Yukihisa Takeuchi, Miyoshi-cho, and Tsutomu Nanataki, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 365,129, Dec. 28, 1994, Pat. No.

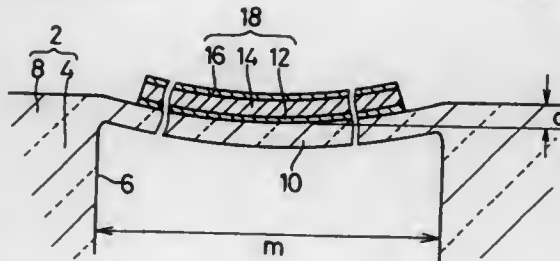
5,600,197. This application Aug. 8, 1996, Ser. No. 694,280

Claims priority, application Japan, Feb. 14, 1994, 6-017697; Feb. 22, 1994, 6-024174; Aug. 11, 1994, 6-189203; Oct. 5, 1994, 6-241172

Int. Cl.⁶ H01L 41/22

U.S. Cl. 29—25.35

10 Claims



1. A method of producing a piezoelectric/electrostrictive film element including: a ceramic substrate having at least one window, and a diaphragm portion for closing each of said at least one window, said diaphragm portion being formed as an integral part of said ceramic substrate; and a piezoelectric/electrostrictive unit including a lower electrode, a piezoelectric/electrostrictive layer and an upper electrode, which are formed in the order of description on an outer surface of said diaphragm portion to provide a laminar structure, comprising the steps of:

- preparing said ceramic substrate in which said diaphragm portion protrudes outwards to provide a convex diaphragm portion;
- forming said lower electrode and said piezoelectric/electrostrictive layer on an outer surface of said convex diaphragm portion by a film-forming method;
- firing said piezoelectric/electrostrictive layer so that said convex diaphragm portion is depressed into a corresponding one of said at least one window; and
- forming said upper electrode on said piezoelectric/electrostrictive layer by a film-forming method.

5,774,962

PROCESS FOR PRODUCING A SURFACE ACOUSTIC WAVE DEVICE

Yoshio Satoh; Osamu Ikata; Hidema Uchishiba; Takashi Matsuda; Tokihiro Nishihara; Mitsuo Takanatsu, and Hajime Taniguchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 297,914, Aug. 31, 1994. This application Jul. 8, 1996, Ser. No. 676,504

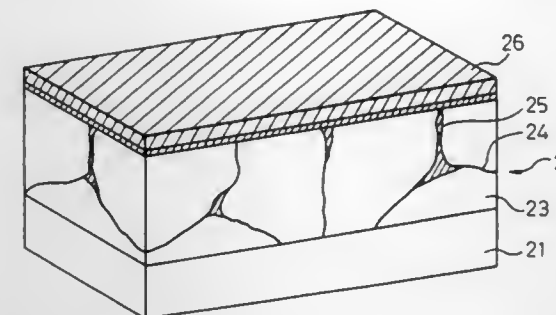
Claims priority, application Japan, Oct. 27, 1993, 5-268542

Int. Cl.⁶ H04R 17/00

U.S. Cl. 29—25.35

6 Claims

1. A process for producing a surface acoustic wave device having a piezoelectric substrate and an electrode disposed on said substrate, comprising the steps of:



alternately laminating an aluminum copper alloy film and a copper film on said piezoelectric substrate at a temperature not higher than 200° C. to thereby form a laminate structure having at least three layers, with two aluminum-copper alloy films sandwiching one copper film;
 patterning the resultant laminate structure to form an electrode; and
 carrying out subsequent processings while maintaining the temperature of not higher than 200° C.

5,774,963

ARMATURE MANUFACTURING LINES AND ARMATURE TRANSFER APPARATUS

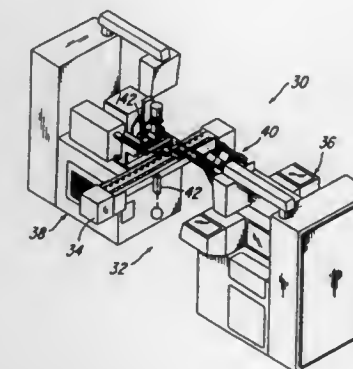
John W. Bradfute, Green County; Patrick A. Dolgas, Milford; Scott J. Kroencke, Cincinnati, and Mark T. Heaton, Springfield, all of Ohio, assignors to Globe Products Inc., Huber Heights, Ohio

Continuation-in-part of Ser. No. 717,283, Sep. 20, 1996. This application Sep. 24, 1996, Ser. No. 719,201

Int. Cl.⁶ B21B 15/00

U.S. Cl. 29—33 L

22 Claims



1. An armature manufacturing cell comprising:

- an armature winder having an armature gripper assembly that holds an armature with its shaft centered on a first horizontal axis;
- an armature fuser having an armature gripper assembly that holds an armature with its shaft centered on a second horizontal axis, said second horizontal axis being parallel to said first horizontal axis; and
- an armature transfer mechanism having a rotatable turret plate and an armature gripper slidably mounted on said turret plate and which removes an armature from said armature winder and, following rotation of said turret plate through 180 degrees, delivers the armature to said fuser.

5,774,964

APPARATUS FOR FORMING A PROFILED ELEMENT

Francis Edward Fisher, Swindon; Robin Douglas Johnson, Bath; David George Gove, and Michael Dennis Wade, both of Plympton, all of United Kingdom, assignors to Redpoint Thermalloy, Limited, Wiltshire, United Kingdom

Division of Ser. No. 249,393, May 26, 1994, Pat. No.

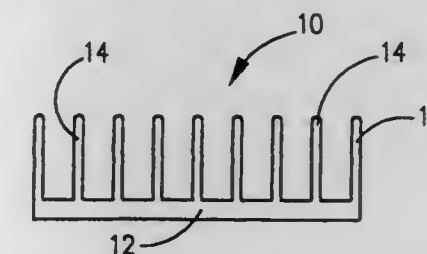
5,572,789. This application Apr. 20, 1995, Ser. No. 425,608

Claims priority, application United Kingdom, May 27, 1993, 9310993

Int. Cl.⁶ B21C 23/00

U.S. Cl. 29—33 R

9 Claims



1. An apparatus for forming profiled elements, said apparatus comprising:

- a punch including a transversely acting punch head, and a plurality of die members;
- means for conveying a longitudinally extending extruded member having a plurality of transversely spaced longitudinally extending ribs upstanding therefrom towards said punching means; and
- means for imparting drive to said punch head, wherein, said die members are located in gaps between said plurality of ribs, adjacent a side surface of an upstanding rib with the punch head located on an opposing side of said rib, whereby the drive means, in use, imparts drive to the punch head to cause transverse movement of the punch head towards said die members so that a portion of said longitudinally extending rib portion is removed.

5,774,965

APPARATUS FOR INSERTING AN INSERT INTO A COVER

David Mintz; Neil Mintz, both of West Bloomfield, and Pierre Tremblay, New Hudson, all of Mich., assignors to Machine Design Systems, Inc., Northville, Mich.

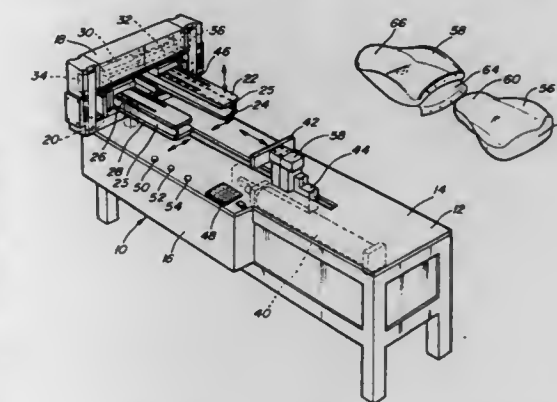
Continuation of Ser. No. 254,180, Jun. 6, 1994, abandoned, which is a continuation-in-part of Ser. No. 25,106, Mar. 2, 1993, abandoned. This application Apr. 5, 1996, Ser. No.

628,399

Int. Cl.⁶ B68G 7/00

U.S. Cl. 29—91.5

19 Claims



1. An apparatus for fitting a covering material over a supporting insert, said apparatus comprising:

a stuffing bracket for stuffing the supporting insert into the covering material;
 a material holding assembly comprising a plurality of blades upon which said covering material is placed;
 first means for moving said blades back and forth along a first axis;
 second means for moving said blades back and forth along a second axis perpendicular to said first axis;
 said stuffing bracket and said material holding assembly being movable with respect to each other from a spaced apart position to an insert position where said covering material is fitted over said supporting insert;
 means for selectively moving said stuffing bracket and said holding assembly between said spaced apart position and said insert position;
 a bench on which said stuffing bracket and said holding assembly are mounted; and
 a pivoting arm interconnecting said holding assembly and said bench and operable to permit said holding assembly to be pivoted from an installing position that allows a worker to install said covering material to said holding assembly to a stuffing position for stuffing said stuffing insert into said cover by said stuffing bracket.

5,774,966

FABRIC ARTICLE AND METHOD OF MANUFACTURE

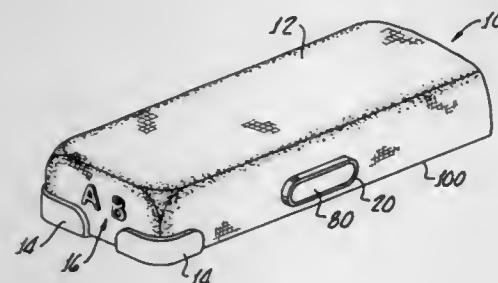
Paul M. Yates, 5814 Briar Tree Dr., LaCanada, Calif. 91011

Filed Oct. 16, 1996, Ser. No. 733,027

Int. Cl.⁶ B68G 7/00; B25B 27/14

U.S. Cl. 29—91.5

14 Claims



1. A method of attaching a plastic material to a fabric for decorative and/or protective purposes, said method comprising the steps of:

- forming a pressure plate having concavities on one side thereof wherein said concavities are disposed in a selected pattern;
- providing fluid communication between each said concavity and an opposite side of said pressure plate;
- disposing the fabric on a bed;
- forcing said pressure plate against the fabric and bed to form a seal between the said concavities;
- forcing fluid plastic material through the concavities and into the fabric disposed under each concavity to form a plastic pattern on the fabric;
- allowing the fluid plastic material to harden; and
- separating the pressure plate from the fabric leaving hardened plastic embedded in said fabric.

5,774,967

HAND HELD PIVOT ROD INSERTION TOOL
Christopher G. Greve, Covington; Paul L. Horton, Metairie, and Ronald M. O'Connor, Jefferson, all of La., assignors to The Laitram Corporation, Harahan, La.

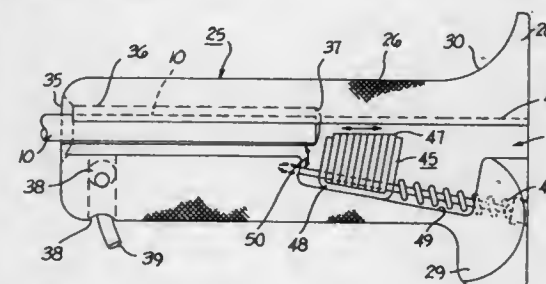
Continuation of Ser. No. 465,453, Jun. 5, 1995, abandoned.

This application Sep. 5, 1997, Ser. No. 924,506

Int. Cl.⁶ B23P 19/02

U.S. Cl. 29—235

15 Claims



1. A hand held tool for moving a thin flexible cylindrically shaped plastic rod forcefully into a resident nested position in a receptacle device, comprising in combination:
 - a generally cylindrical hand held grip body of substantially greater diameter than that of said rod,
 - a longitudinal passageway extending axially completely through said grip body for selectively receiving said rod axially within said grip body, and
 - manually releasable rod gripping means comprising a rack of movably disposed side-by-side blades nested within said grip body to move laterally in a path toward and away from said rod received within said passageway to contact an outer cylindrical surface of said rod and prevent movement of said rod through said passageway in at least one axial direction such that an axial manual force is permitted to be relayed from said grip body to said rod for forceful movement of said rod in an axial direction that is opposite to said one axial direction.

5,774,968

ELECTROMAGNETIC RIVETER RECOIL CUSHIONING, DAMPING AND POSITIONING SYSTEM

Gregory C. Givler, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 819,210, Jan. 9, 1992, abandoned, which is a division of Ser. No. 632,445, Dec. 21, 1990, Pat. No. 5,231,747. This application Jun. 17, 1996, Ser. No. 664,881

Int. Cl.⁶ B23P 11/00; 19/04

U.S. Cl. 29—243.54

7 Claims

1. A recoil cushioning, damping and positioning system for an electromagnetic riveter, having an electromagnetic actuator including a high amperage capacity flat coil and a transducer positioned adjacent said coil, said coil and said transducer generating a strong, mutually repelling force which drives a lower portion of said electromagnetic actuator from a ready position toward a workpiece to a retracted position, and drives an upper portion of said electromagnetic actuator in a ready position to recoil away from the workpiece to a retracted position, and a driver connected to said electromagnetic actuator lower portion is driven thereby against a rivet die for upsetting a rivet in said workpiece, wherein the improvement comprises:

- a bottom plate and a riveter support plate;
- means for supporting and positioning said riveter in a ready position, in which said bottom plate and said riveter support plate are moved toward each other to a ready position to establish hard contact between said driver and rivet die and said rivet, and said riveter is positioned to upset a rivet, and a retracted position, in which said bottom plate and said riveter support plate are moved farther apart and said riveter is retracted from said ready position, between said plates, said

5,774,970

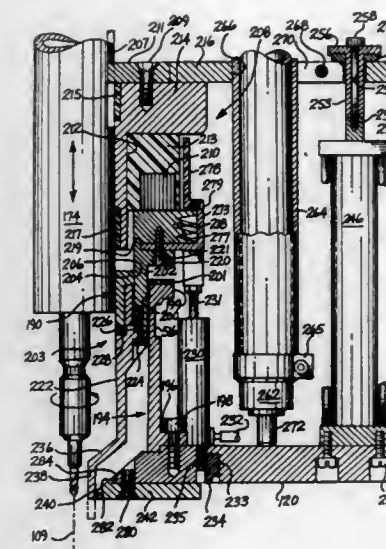
MANUFACTURING PROCESS OF A GOLF CLUB HEAD
Hui Ming Huang, No. 528, Yow Chang St., Kaohsiung, Taiwan

Filed Jul. 24, 1996, Ser. No. 685,523

Int. Cl.⁶ B23P 11/02

U.S. Cl. 29—447

2 Claims



means including a fluid actuator system for controlling said recoil of said upper portion of said electromagnetic actuator, and for positioning said riveter in its retracted and its ready positions.

5,774,969

MODULAR MODEL VEHICLE ASSEMBLY

Giuliano Zuccato, 38571 Northfarm Dr., Northville, Mich.

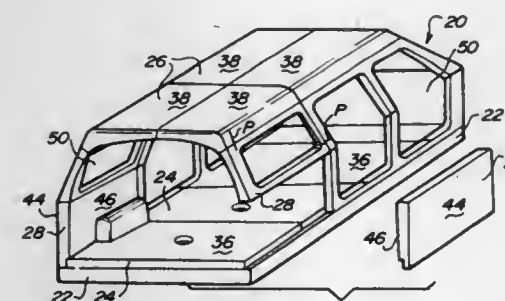
48167

Filed Feb. 5, 1996, Ser. No. 597,020

Int. Cl.⁶ B23P 19/04; B23Q 27/00

U.S. Cl. 29—407.05

6 Claims



1. A method of forming a model of a vehicle comprising the steps of:

- 1) placing a foam block on a cutting tool, said foam block having a reference surface such that said cutting tool can identify the distance between said reference surface and the working surface of the cutting tool;
- 2) communicating computer design information to said cutting tool of a desired vehicle interior;
- 3) cutting said foam block to achieve said desired vehicle interior contour;
- 4) repeating steps 1) through 3) with a plurality of blocks, each of said blocks forming a different portion of a desired vehicle interior;
- 5) then assembling said plurality of blocks to form a model vehicle; and said method including the further steps of evaluating the design of the interior of said vehicle after step 5) thereby determining whether any reconfiguration is necessary, and if reconfiguration of a particular modular block is desired, removing the particular block, and reconfiguring that block as necessary to achieve a new reconfigured design.

1. A manufacturing process of a golf club head having a head body comprising a plurality of steps of:

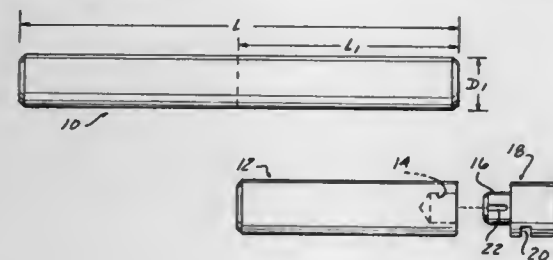
- (a) finishing a striking plate to form a golf ball striking surface and a periphery side, wherein said periphery side of said striking plate is shaped in flat manner;
- (b) forming a receiving groove on a striking flat surface of said head body, in which said receiving groove has a shape of said striking plate, a reverse taper periphery side, a depth equal to a thickness of said striking plate, and a room temperature original size which is slightly smaller than a size of said striking plate, and that said reverse taper periphery side has an inclined angle of 1 to 3 degree, said size of said striking plate and said size of said receiving groove defining a tolerance fitting relationship therebetween, in which said striking plate and said receiving groove on said head body is in a wringing fit condition, so that said striking plate is unable to be planted into said receiving groove during room temperature;
- (c) heating said head body having said receiving groove under gradually raising temperature from room temperature for expansion so that said size of said receiving groove is enlarged gradually until said head body is heated to a predetermined heating temperature so that said size of said striking plate becomes slightly smaller than said size of said receiving groove to enable said striking plate to be inserted into said receiving groove, and then maintaining said heating temperature;
- (d) planting said striking plate into said receiving groove of said heated head body, at this stage, said size of said receiving groove being expanded to be slightly larger than said size of said striking plate, wherein said tolerance fitting relationship between said striking plate and said receiving groove has changed from said wringing fit to a snug fit condition for enabling said striking plate to be easily planted into said receiving groove of said head body; and
- (e) cooling said head body and said striking plate which is planted in said receiving groove to a room temperature, so that said receiving groove of said head body shrinks back to said room temperature original size, at this stage, said fitting relationship between said striking plate and said receiving groove returning to said wringing fit condition and said reverse taper periphery side of said receiving groove being tightly engaged with said periphery side of said striking plate for holding said striking plate firmly and tightly in position so as to form said integral golf club head.

5,774,971
METHOD OF MANUFACTURING STANDARDIZED PIN-BASED PARTS
 Peter J. Manetta, 12477 Evergreen, Shelby Township, Mich. 48315, and Lawrence A. Schueneman, 32480 Sutton, New Baltimore, Mich. 48047

Filed Dec. 31, 1996, Ser. No. 770,946
 Int. Cl.⁶ B23P 25/00

U.S. Cl. 29—458

7 Claims



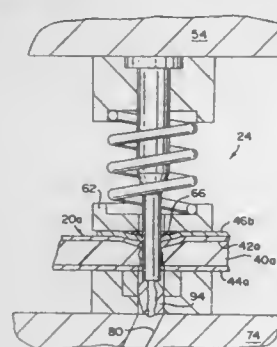
1. A method of manufacturing an assortment of parts having pin sections of various diameter and length, and features of various configurations, sizes, and locations at one or both ends of said pin sections, comprising the steps of:
 - manufacturing a quantity of pin blanks of each diameter of a length encompassing the range of lengths of said pin sections of said parts;
 - maintaining an inventory of said pin blanks;
 - hardening said pin blanks by heat treating;
 - grinding said pin blanks to a finished diameter;
 - manufacturing an assortment of end caps corresponding to each end feature of each configuration, size, and location for each part in said assortment; and
 - cutting a pin blank to a required length and assembling an end cap having a required size and feature to the cutoff pin blank to form a part.

5,774,972
METHOD OF PUNCHING A COMPOSITE PLATE
 Rodney P. Ehrlich, Monticello, Ind., assignor to Wabash National Corporation, Lafayette, Ind.

Filed Mar. 22, 1996, Ser. No. 620,999
 Int. Cl.⁶ B23P 11/00; B26D 1/04; B21D 28/26

U.S. Cl. 29—525.06

13 Claims



1. A method of forming a hole in a composite plate comprising the steps of:
 - (a) providing a composite plate having a first skin, a second skin and a core of resilient material between said first and second skins;
 - (b) providing a punching apparatus having a punch;
 - (c) advancing said punch through said composite plate to form a hole through said composite plate while simultaneously compressing said resilient core material;
 - (d) withdrawing said punch from said composite plate to allow an excess portion of the core material to expand into said hole;

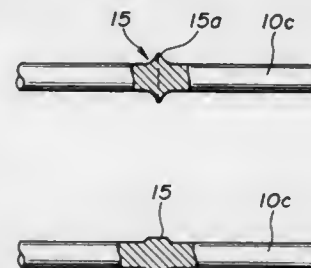
- (e) re-punching said hole by engaging said punch through said hole to remove any excess core material which has expanded into said hole; and
- (f) withdrawing said punch from said composite plate for a second time.

5,774,973
CONTINUOUS ROLLING METHOD OF CAST BILLETS
 Soichi Aoyama, Akira Sakai, and Koji Okushima, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan
 Filed Aug. 14, 1996, Ser. No. 696,386
 Claims priority, application Japan, Aug. 31, 1995, 7-223400; Sep. 22, 1995, 7-244083

Int. Cl.⁶ B21B 1/46

U.S. Cl. 29—526.2

2 Claims



1. A continuous rolling method comprising the steps of:
 - de-scaling billets sent directly from a continuous casting machine;
 - continuously welding the billets using a travelling flash butt welder;
 - grinding a burr on a welded part of the billets to remove the burr using a travelling grinding machine;
 - heating the billets to an elevated temperature using an induction heater; and
 - conducting continuous rolling;
 wherein said travelling flash butt welder and said travelling grinding machine are separately movable along a running line of the billets, and are moved together during flash butt welding; wherein said flash butt welding is carried out while said flash butt welder and said grinding machine travel a specified stroke for welding; wherein said travelling grinding machine and said travelling flash butt welder are moved together to meet the welded part of each of the billets, and said travelling flash butt welder is returned to a waiting position after said flash butt welding is completed; and wherein the burr on the welded part of each of the billets is removed while said travelling grinding machine independently changes travelling direction and travels a specified stroke, after the welded part arrives at a specified position.

5,774,974
RETAINING RING FOR DISC DRIVE SPINDLE MOTOR
 John Charles Dunfield, Santa Cruz; Steven Craig Knoche, Corralitos, and Klaus Dieter Kloeppel, Watsonville, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

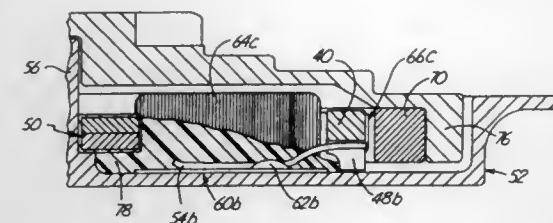
Division of Ser. No. 253,757, Jun. 3, 1994, Pat. No. 5,481,144.
 This application Jun. 2, 1995, Ser. No. 460,076

Int. Cl.⁶ H02K 15/00

U.S. Cl. 29—596

7 Claims

1. A method of making a disc drive motor, comprising:
 - obtaining a motor base;
 - placing a stator assembly and a wire guide into the motor base;
 - electrically connecting stator wires held by the wire guide to electrical contacts carried in the motor base;
 - removing the wire guide from the motor base; and



placing a rotor in the disc drive rotatably coupled to the stator assembly on a drive shaft coupled to the rotor base.

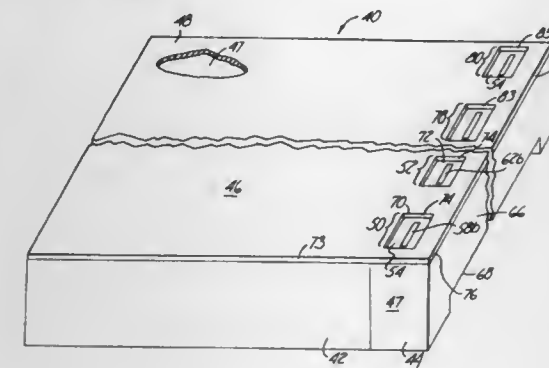
5,774,975
METHOD OF MAKING AN INSULATOR PATTERN FOR THIN FILM HEAD SLIDERS

Kent N. Maffitt, Lake Elmo, and Beat G. Keel, Prior Lake, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Division of Ser. No. 436,499, May 8, 1995, Pat. No. 5,610,783, which is a continuation of Ser. No. 231,399, Apr. 22, 1994, abandoned. This application Nov. 15, 1996, Ser. No. 749,994
 Int. Cl.⁶ G11B 5/42

U.S. Cl. 29—603.12

1 Claim



1. A method of forming a top surface of a thin film magnetic head slider, the slider of the type having a body including an air bearing surface, a top surface opposite the air bearing surface, and a rear surface, and the slider body further including a conductive substrate portion and an insulator portion, and a transducer embedded within the insulator portion adjacent the rear surface and air bearing surface of the slider and the transducer having a connecting link extending therefrom wherein an end of the connecting link is exposed on the top surface of the insulator portion of the slider body, the method comprising:
 - depositing a layer of insulating material onto the top surface of the slider body over both the conductive substrate portion and the insulator portion of the slider body;
 - depositing a first photo resist layer onto the insulating material layer on the top surface of the slider body; removing selectively a predetermined portion of the first photo resist layer to form a first aperture in the first photo resist layer at a location over the insulator portion of the slider body adjacent to the end of the connecting link;
 - removing the insulating material layer exposed within the first aperture of the first photo resist layer to form a second aperture in the insulating material layer and thereby expose the top surface of the insulator portion of the slider body and the end of the connecting link of the transducer;
 - removing the remaining portions of the first photo resist layer from the top surface of the insulating material layer;
 - depositing a metallic seed layer on the top surface of the slider body over the insulating material layer and the exposed insulator portion of the slider body;
 - depositing a second photoresist layer on the top surface of the slider body over the metallic seed layer;

- removing selectively a portion of the second photoresist layer in a predetermined strip region on the top surface of the slider, the predetermined strip region extending along a portion of the insulating material layer and a portion of the exposed insulator portion of the slider body within the second aperture of the insulating material layer;
- depositing selectively a conductive material layer onto the top surface of the slider body over the predetermined strip regions defining the removed portions of the second photoresist layer so that the conductive material layer forms a conductive bond pad which extends along the predetermined strip region and into the second aperture of the insulating material layer to establish electrical connection with the end of the connecting link of the transducer;
- removing the remaining portions of the second photoresist layer from the top surface of the slider body; and
- removing the remaining portions of the seed layer from the top surface of the slider body.

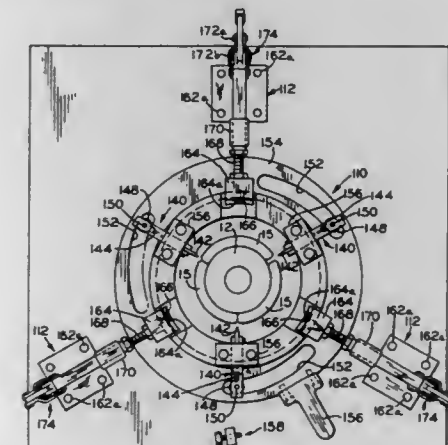
5,774,976
APPARATUS FOR MAKING PERMANENT MAGNET ROTOR

William H. Stark, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.
 Division of Ser. No. 872,551, Apr. 23, 1992, Pat. No. 5,563,463, which is a division of Ser. No. 721,689, Jun. 26, 1991, Pat. No. 5,144,735, which is a division of Ser. No. 459,633, Jan. 2, 1990, Pat. No. 5,040,286, which is a continuation-in-part of Ser. No. 203,942, Jun. 8, 1988, abandoned. This application Jul. 15, 1996, Ser. No. 680,188

Int. Cl.⁶ H02K 15/02

U.S. Cl. 29—732

7 Claims



1. Apparatus for making a permanent magnetizable rotor having a generally cylindrical core and a plurality of generally similar size magnetizable elements spaced about the circumference of the cylindrical core, each of said magnetizable elements having longitudinal edges and an inner arcuate surface dimensioned so that the sum of the inner arcuate surface dimensions of said plurality of magnetizable elements is less than the circumference of said cylindrical core, said apparatus comprising, in combination, a support fixture for supporting the core in a fixed position, a plurality of gauges each having a generally convex tip and being supported for movement radially of the longitudinal axis of a core when supported on said support fixture, an actuator operatively associated with said gauges and operative to effect substantially equal simultaneous radial movement of said gauge tips so that each tip is wedged between adjacent longitudinal edges of two adjacent magnetizable elements disposed against said core to cause said magnetizable elements to move circumferentially about said core until equally spaced from each other, and a plurality of clamps supported intermediate said gauges for movement generally radially of the longitudinal axis of a core when supported on said fixture, said clamps each being movable to engage an outer exposed surface of

a magnetizable element so as to clamp said magnetizable elements against said core independently of said gauges after equally spacing said elements from each other.

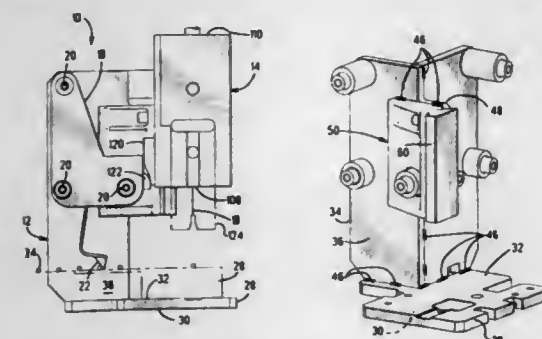
5,774,977 APPLICATOR FOR TERMINATING ELECTRICAL WIRES

Kenneth Foster Folk, Harrisburg, and William Herbert Bair, Mechanicsburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 13, 1996, Ser. No. 689,744
Int. Cl.⁶ H01R 43/048

U.S. Cl. 29—753

20 Claims



1. An applicator operable for attaching terminals to electrical conductors, said applicator having a frame, a tool mounting surface attached to said frame and adapted to receive lower termination tooling, a ram coupled to said frame and arranged for reciprocating movement along an axis in a first direction toward said mounting surface and in a second opposite direction, said ram adapted to receive upper terminating tooling for mating with said lower terminating tooling for effecting said attaching of said terminals, and a feed mechanism arranged for feeding said terminals during operation of said applicator, said frame comprising:

- (1) a base plate having first and second opposite major surfaces, said first surface being substantially flat and arranged to mount said applicator to another surface;
- (2) a first upright plate extending from said second surface, and having a third major surface perpendicular to said first surface; and
- (3) a second upright plate extending from said second surface adjacent said first upright plate, and having a fourth major surface perpendicular to both said first surface and said third surface;

wherein said first and second upright plates are mutually attached adjacent an outer edge of each said plate, and wherein said ram is spaced from both said first and second upright plates and said feed mechanism is attached to one of said third and fourth major surfaces.

5,774,978 APPARATUS FOR REMOVING ELECTRODE TIP FROM WELDING TOOL WITH VIBRATIONS

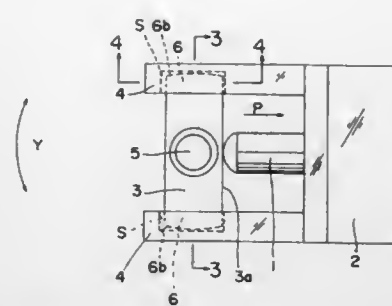
Tomomi Ishii, Nagoya, Japan, assignor to Kabushiki Kaisha Kyokuto, Aichi, Japan

Filed Feb. 7, 1996, Ser. No. 605,279
Claims priority, application Japan, Jul. 22, 1995, 7-008519 U
Int. Cl.⁶ B23P 19/00

U.S. Cl. 29—821

6 Claims

1. An apparatus for removing an electrode tip from a resistor welding tool, said apparatus comprising a main body, a vibration hammer provided adjacent to a central portion of said main body in a manner reciprocal in a horizontal direction so as to be brought into contact with a side surface of said electrode tip that is in tapered engagement with a tip of said welding tool by air pressure generated by compressed air for generating minute vibrations to



minutely vibrate and release said electrode tip from said tapered engagement with the tip of said welding gun, said apparatus being characterized in that said apparatus further comprises: a pair of arm blocks protruding from both sides of said main body of said apparatus, and a vibration block having a receiving hole for receiving said electrode tip, the vibration block being provided between said arm blocks in a manner slidable in a same horizontal direction as said vibration hammer by a specified amplitude, said vibration block being urged toward said vibration hammer.

5,774,979 MODULAR CABLING SYSTEM AND METHOD FOR INSTALLING SAME

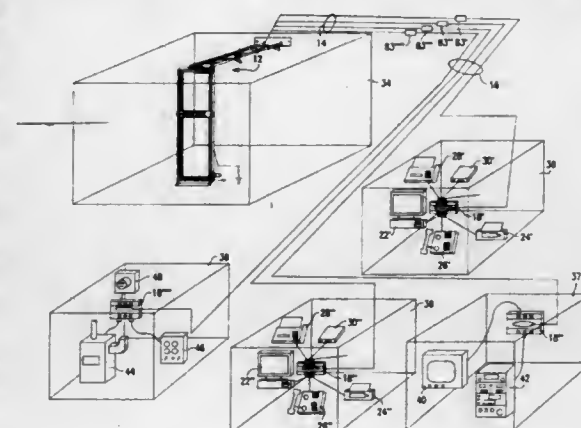
James L. Kraft, 4751 Fox La., Hellam, Pa. 17406

Filed Jul. 10, 1996, Ser. No. 676,671

Int. Cl.⁶ H04Q 1/06

U.S. Cl. 29—857

17 Claims



1. A method of installing a cabling system for interconnecting a plurality of devices to a network, said method comprising the steps of:

- providing a plurality of cabling kits, each configured for an installation site, each of said cabling kits comprising:
 - a prefabricated equipment rack;
 - a cable interconnection means mounted on said equipment rack for providing an interconnection to a network;
 - a plurality of multiconductor distribution cables formed in lengths dimensioned according to the physical layout of an installation site; and
 - a plurality of multiconductor connectors, each connector formed for connection to one of said plurality of multiconductor cables for facilitating the connection of a device to one of said multiconductor cables;

mounting a patch panel on said equipment rack; forming a plurality of multiconductor jumper cables for interconnecting said patch panel with said plurality of multiconductor distribution cables; terminating each of said multiconductor distribution cables with a multiconductor, strain relief connector at each end thereof; and installing one of said cabling kits at an installation site.

5,774,980 METHOD OF ATTACHING A DEVICE TO AN ELECTRICAL CORD

Lawrence J. Klein, Ansonia, and Thomas R. J. Swift, Monroe, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.

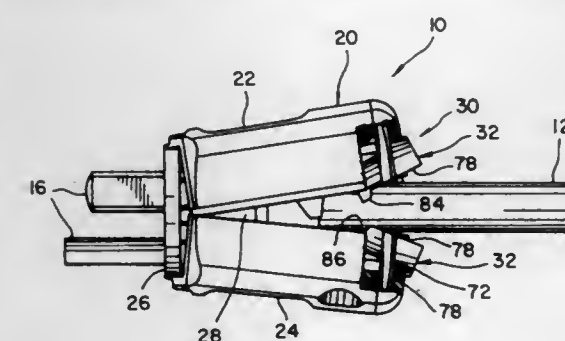
Division of Ser. No. 481,691, Jun. 7, 1995, Pat. No. 5,591,046.

This application Sep. 11, 1996, Ser. No. 712,501

Int. Cl.⁶ H01R 43/00

U.S. Cl. 29—857

19 Claims



1. A method for attaching a device to an end portion of an electrical cord, comprising the steps of: inserting said end portion of said electrical cord within a housing of said device while said housing is in an open position; pivoting a first member of said housing towards a second member of said housing to engage said electrical cord with a clamp coupled to said housing; further pivoting said first member of said housing toward said second member of said housing to simultaneously and automatically clamp said end portion of said electrical cord and axially pull an additional amount of said electrical cord within said housing via said clamp; and fastening said first and second members together in a closed position to maintain said additional amount of said electrical cord within said housing.

5,774,981 TERMINAL INSERTION METHOD AND APPARATUS

Takamichi Maejima, and Hiroo Suzuki, both of Haibara-gun, Japan, assignors to Yazaki Corporation, Tokyo, Japan

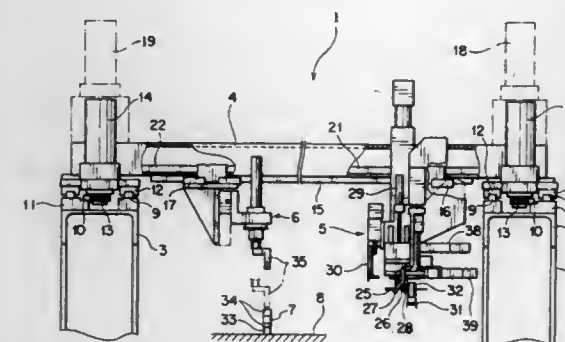
Filed Nov. 5, 1996, Ser. No. 744,168

Claims priority, application Japan, Jul. 11, 1995, 7-288556

Int. Cl.⁶ H01R 43/04

U.S. Cl. 29—861

8 Claims



1. A method of inserting a terminal in a connector housing comprising the steps of: picking out both terminal ends of each of terminal-equipped wires held by a plurality of clips by a pair of terminal insertion heads individually driven in both a Y-axis direction and an X-axis direction; and simultaneously moving both terminal ends of each wire into said connector housing.

5,774,982 CONDUIT ATTACHMENT TO RECEIVER/DRIER OR ACCUMULATOR

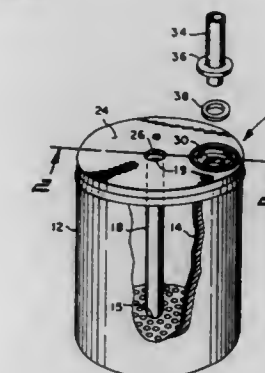
Wayne K. Hutchison, Ingersoll, and William N. Eybergen, Dutton, both of Canada, assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 16, 1994, Ser. No. 214,337

Int. Cl.⁶ B15P 23/00; F25B 43/00

U.S. Cl. 29—890.06

4 Claims



1. A method of making a receiver/drier or accumulator for a refrigerant system comprising: (a) forming a canister having one open end; (b) providing a header with an inlet fluid port therethrough and welding the header about the open end of the canister; (c) forming an annular rib about said fluid port in said header; (d) providing a tubular conduit and forming an annular bulge adjacent one end thereof; (e) disposing a sealing ring about said inlet fluid port; (f) inserting the end of said tubular conduit in said sealing ring and said fluid port and deforming said rib over said annular bulge and retaining and sealing said tubular conduit in said fluid port; (g) forming an outlet fluid port in the header and inserting an outlet tube in said outlet fluid port and deforming said outlet tube for retention therein.

5,774,983 METHOD OF INSERTING TERMINALS INTO HOUSING WITH SPECIAL ARRANGEMENT

Takamichi Maejima, Haibara-gun, Japan, assignor to Yazaki Corporation, Tokyo, Japan

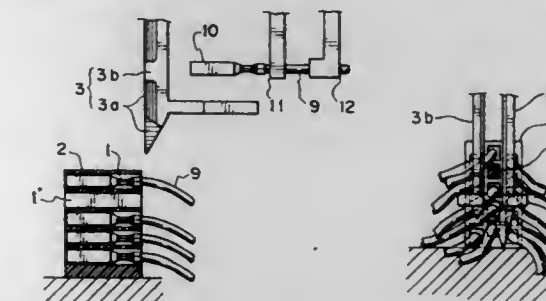
Filed Nov. 8, 1996, Ser. No. 745,612

Claims priority, application Japan, Nov. 10, 1995, 7-292803

Int. Cl.⁶ H01R 43/20; 9/16

U.S. Cl. 29—881

4 Claims



1. A method of inserting terminals into a specially arranged housing, said method comprising the steps of: providing a specially arranged housing having terminal receiving chambers into which said terminals are to be inserted, wherein said terminal receiving chambers of said specially arranged housing are arranged in columns and in staggered rows such that a longitudinal axis of adjacent rows are at

1. A cutting and serving apparatus for cutting baked goods into wedged segments and serving the baked goods comprising:
a front isosceles triangular hollow section;
an angled back segment coupled to said front isosceles triangular hollow section wherein said angled back segment cuts a back portion and crust of a pie; and
a handle member coupled to said angled back segment;
said front isosceles triangular hollow section comprising:
two equal length leg members; and

an apex;
wherein the left and right surfaces of said leg members, each have formed therein substantially equally spaced serrations and one distal end of each of said leg members are unitarily joined together via said apex.

5,774,991

GARDENING SHEARS

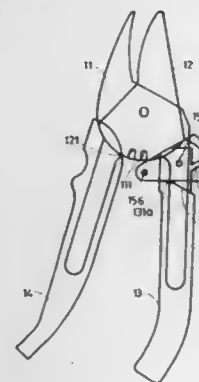
Jun-Chen Shi, 58, Ma Yuan West St., Taichung, Taiwan

Filed May 28, 1996, Ser. No. 654,035

Int. Cl.⁶ B26B 13/16

U.S. Cl. 30—262

2 Claims



1. A pair of shears comprising:
 - a first blade connecting to a first grip;
 - a second blade connecting to a second grip;
 - a first notch formed at a bottom of said first blade;
 - a second notch formed at a bottom of said second blade;
 - a round hole formed on a front portion of said first grip;
 - a tongue positioned on an upper surface of said front portion of said first grip;
 - a lower bevel and an upper bevel formed on a front surface of a middle portion of said first grip;
 - a positioning device having at least a first hole to receive a first pivot and a second hole to receive a rod;
 - a first and a second recesses formed in an upper inner periphery of said positioning device;
 - an opening formed in said positioning device to receive said front portion of said first grip;
 - said first pivot passing through said first hole and said round hole to fasten said positioning device and said first grip pivotally;
 - wherein said positioning device is rotated until said tongue touches said second recess, said rod disengages from said first notch and said second notch, said positioning device abuts said lower bevel, and said first blade and said second blade are opened;
 - wherein said second grip is pressed toward said first grip until said first notch matches said second notch, said positioning device is rotated toward said first notch and said second notch until said rod is inserted in said first notch and said second notch, said tongue touches said first recess, said positioning device abuts said upper bevel, and said first blade and said second blade are closed.

5,774,992

DUST SHROUD FOR POWER SAW

Steve D. Lindenmuth, 4364 Jessica Cir., Fremont, Calif. 94555

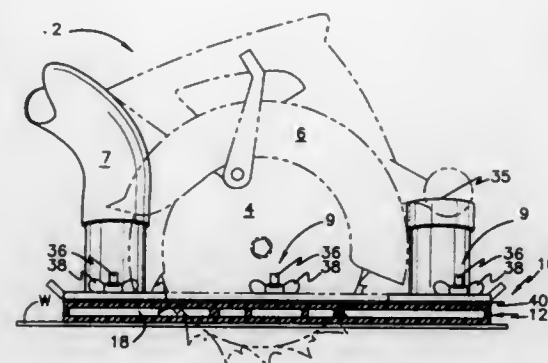
Filed Feb. 26, 1997, Ser. No. 806,214

Int. Cl.⁶ B25F 3/00

U.S. Cl. 30—124

7 Claims

1. A shroud for a hand welded, powered circular saw having a circular, rotatable blade, a blade guard, and a base, said shroud comprising



- a body fabricated from a transparent material, whereby a person cutting a workpiece with said shroud mounted to the circular saw can observe the workpiece while cutting the workpiece, said body having
 - an upper panel and a lower panel disposed beneath said upper panel and defining a chamber between said upper panel and said lower panel, said upper panel having means for being sealingly joined to said lower panel, thereby sealing said chamber, said lower panel of said body having a bottom surface which is flat, planar, and horizontal when said shroud is mounted to the circular saw, whereby said circular saw can be slid on the workpiece while cutting in its conventional position relative to the workpiece when the shroud is mounted to the circular saw,
 - said upper panel having a first slot and said lower panel having a second slot disposed in vertical registry with said first slot, said first slot and said second slot enabling passage of the blade and blade guard of the circular saw therethrough, and
 - at least one short conduit for accepting a vacuum hose to be slipped thereover, said short conduit communicating with said chamber of said body,
 - said shroud having means for mounting said shroud to the circular saw such that said body is horizontally oriented when the circular blade of the saw is vertically oriented; and
 - an adapting member for reducing clearances between the circular blade of the circular saw and said upper panel of said body of said shroud and for reducing clearances between the blade guard of the circular saw and said lower panel of said body of said shroud, said adapting member being dimensioned and configured to abut flush against said upper panel of said body and having formed therein a third slot including a relatively narrow section for passing only the blade of the circular saw therethrough and a relatively wide section for passing the blade guard therethrough,
 - said adapting member, said lower panel of said body and said upper panel of said body having means for accepting vertically oriented threaded fasteners to pass through holes formed in the base of the circular saw and to thread to said body of said shroud.

5,774,993

HAND-HELD WORKING TOOL, ESPECIALLY TRIMMER OR EDGE CUTTER

Helmut Schlessmann, Waiblingen, Germany, assignor to Andreas Stihl, Waiblingen, Germany

Filed Oct. 25, 1995, Ser. No. 548,045

Claims priority, application Germany, Oct. 29, 1994, 44 38 688.5; Jul. 5, 1995, 195 24 522.9

Int. Cl.⁶ B26B 7/00

U.S. Cl. 30—276

22 Claims

1. A hand-held working tool comprising:
 - a motor housing;
 - a motor with an output shaft positioned in said motor housing;
 - a clutch housing connected to said motor housing;

5,774,995

CANDLE SHARPENING SYSTEM

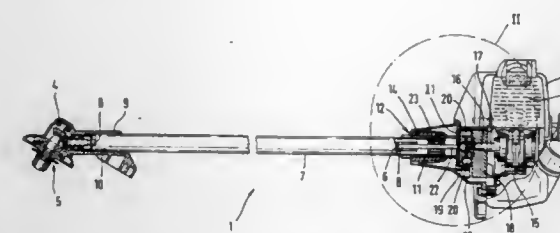
Richard M. Ross, 2369 Belcaro Way, Mississauga, Ontario, Canada, L5M 2M6

Filed Oct. 24, 1996, Ser. No. 736,135

Int. Cl.⁶ B43L 23/08

U.S. Cl. 30—454

8 Claims



- a centrifugal clutch positioned in said clutch housing;
- a drive shaft with a first and a second end;
- said centrifugal clutch detachably connecting said output shaft of said motor to said first end of said drive shaft;
- said centrifugal clutch comprising fly weights connected to said output shaft and further comprising a clutch drum connected to said first end of said drive shaft and surrounding said output shaft and said fly weights;
- a cutting element connected to said second end of said drive shaft;
- a protective tube having a proximal end connected to said clutch housing and a distal end connected to said cutting element, wherein said drive shaft is enclosed in said protective tube; and
- a bearing element positioned at said first end of said drive shaft, wherein a radial play between said bearing element and said first end of said drive shaft is smaller than a distance between said fly weights and said clutch drum, wherein said bearing element is a friction bearing spaced at an axial distance from said clutch drum; and
- wherein said axial distance between said clutch drum and said bearing element is at least twice and at most five times a diameter of said drive shaft.

5,774,994

COLLAPSIBLE BARBECUE TOOLS

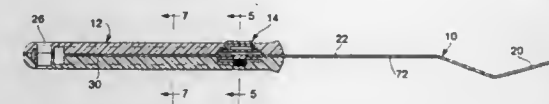
Douglas W. Stein, Chicago, Ill.; Bruce E. Ancona, New York, N.Y., and Daniel Winograd, Jersey City, N.J., assignors to Ekco Housewares, Inc., Franklin Park, Ill.

Filed Jul. 29, 1996, Ser. No. 681,775

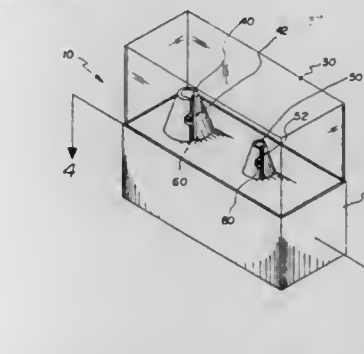
Int. Cl.⁶ A47J 43/28

U.S. Cl. 30—342

14 Claims



1. A collapsible cooking tool assembly comprising:
 - a cooking tool having a head and a handle-engaging portion extending from said head, said handle-engaging portion having at least one locating element, each locating element including an opening that extends from one surface fully through to an opposite surface of the handle-engaging portion and that is spaced a distance from each side of the handle-engaging portion;
 - a handle having a cavity for receiving the handle-engaging portion of said cooking tool; and
 - a latch mechanism operatively connected to said handle for releasably engaging one locating element of said cooking tool, wherein said cooking tool is movable relative to said handle to and between a collapsed position and an extended position, the head extending outwardly from the handle in either position.



1. A candle sharpening system comprising:
 - a base having a first passage and a second passage projecting in a parallel relationship into said base for each slidably receiving a candle;
 - a first conical member having a narrow end and an enlarged end, and being secured to said base in a position such that said enlarged end opens into said first passage;
 - a second conical member having a narrow end and an enlarged end, and being secured to said base in a position such that said enlarged end opens into said second passage;
 - said first conical member having a first slot extending from its enlarged end to its narrow end;
 - said second conical member having a second slot extending from its enlarged end to its narrow end;
 - a blade removably secured to said first conical member within said first slot so as to project toward a concentric portion of said first conical member to engage a candle inserted into said first conical member to thereby shape an end of said candle; and
 - a blade removably secured to said second conical member within said second slot so as to project toward a concentric portion of said second conical member to engage a candle inserted into said second conical member to thereby shape an end of said candle.

5,774,996

BIAXIAL INCLINATION SENSOR

Hideo Ogawa; Norihisa Teraji, both of Hachioji, and Isshu Terauchi, Nara-ken, all of Japan, assignors to Nissho Corporation, Osaka, Japan

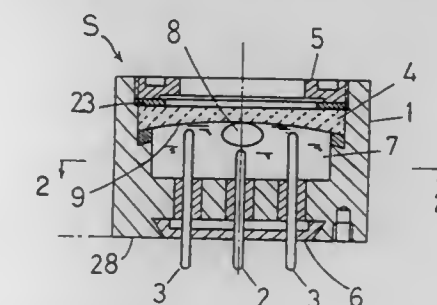
Filed Feb. 8, 1996, Ser. No. 598,384

Claims priority, application Japan, Feb. 14, 1995, 7-025614

Int. Cl.⁶ G01C 9/06; 9/24

U.S. Cl. 33—366

8 Claims



1. A biaxial inclination sensor comprising:

a sensor holder made of an insulating material and having a horizontal flat bottom surface and a concave portion serving as a liquid chamber formed in a central portion thereof;

a common electrode passing vertically and in a liquidproof manner through the center of an inner bottom of the concave portion serving as a liquid chamber;

outer electrodes projecting higher than the common electrode and all having the same surface area passing vertically and in a liquidproof manner through the inner bottom of the concave portion serving as a liquid chamber and at points of intersection of two horizontal orthogonal axes passing through said inner bottom center and a circle of a predetermined radius about said inner bottom center;

a window plate of an insulating material closing an opening of the sensor holder in a liquidproof manner, at least a central part of a surface of which is formed into a spherical concave portion having high surface roughness with the spherical concave portion of the window plate facing inward and the center thereof aligned with the center axis of the common electrode; and

a gas bubble and an electrolyte, the electrolyte having a low surface tension and mixed in a ratio such that the impedance between the electrodes is a predetermined value in the horizontal state, sealed in the concave portion serving as a liquid chamber in an amount such that the common electrode is always submerged in the electrolyte.

5,774,997

GOLF BALL OUT-OF-ROUND INDICATOR

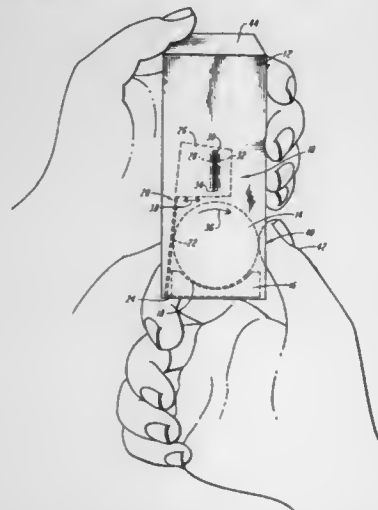
Paul J. Gruen, Jr., Amesbury, Mass., assignor to Performance Dynamics LLC, Middleton, Mass.

Filed Jan. 2, 1997, Ser. No. 778,279

Int. Cl.⁶ G01B 5/22

U.S. Cl. 33—508

12 Claims



1. Apparatus for measuring the out-of-roundness of golf balls, comprising:

a container adapted to house at least one golf ball, said container having an aperture at a side wall adjacent the base thereof to permit manipulation of a golf ball in said container adjacent said aperture; and,

an indicator module adapted to be inserted into said container, said module having a centerline and including a base, a cup mounted to said base and adapted to receive a golf ball therein, a cantilevered arm extending upwardly from said base and being spring-loaded towards the centerline of said module, said arm having a surface adapted to contact the surface of a golf ball in said cup, said arm having a tab portion extending at an angle to said arm, said tab portion having at least one marking thereon, with said markings being indicative of the position of said arm relative to said base, and a stationary support extending upwardly from said base, a portion of said support overlying said tab portion and having an

aperture therethrough of a size and position such that said marking is visible through said aperture when said arm is in a position indicative of a perfectly sized golf ball, whereby rotation of a golf ball in said cup results in a marking being visible in said aperture when the surface of said golf ball touching said arm is within a predetermined limit from an ideal golf ball surface.

5,774,998

PIPE SADDLE GAUGE

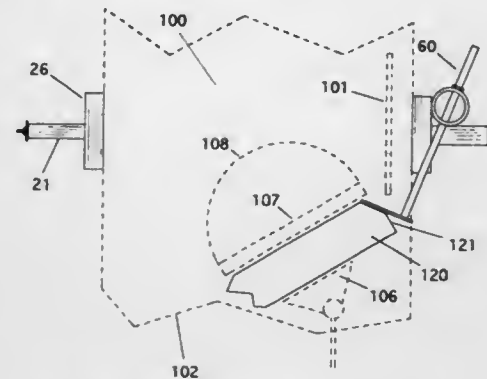
Jason Gregory Mortensen, P.O. Box 1794, Brooks, Alberta, Canada, T1R 1C5

Filed Jun. 10, 1996, Ser. No. 661,093

Int. Cl.⁶ B26D 7/01

U.S. Cl. 33—529

4 Claims



1. A pipe saddle gauge, comprising:

(A) an adjustable frame having a telescoping body;

(B) a vertically oriented pivot post, carried by the frame, and pivotable about an axis perpendicular to a horizontal plane;

(C) a gauge arm, having a forward end, the gauge arm carried by the pivot post, and having means for adjustably moving the gauge arm along its axis and having means for rotation of the forward end of the gauge arm about the pivot post; and

(D) an annular plate, having an off-center attachment location attached to the forward end of the gauge arm.

5,774,999

TREE MARKER

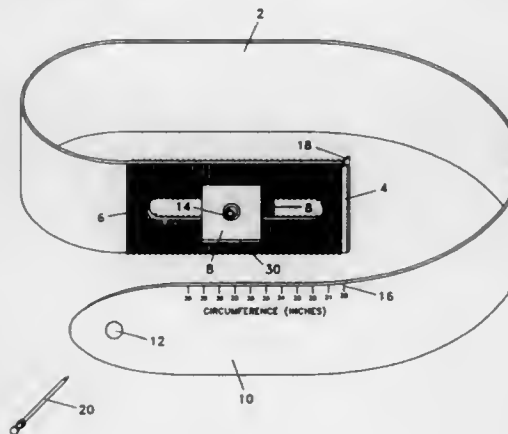
Lawson R. Smith, Rte. 2 Box 1330, Glennville, Ga. 30427

Filed Jan. 22, 1996, Ser. No. 589,396

Int. Cl.⁶ G01B 3/10

U.S. Cl. 33—555.4

14 Claims



1. A tree marker comprising:

a band formed of a flexible and durable material,

a sheath about the band,

a means for connecting the sheath to the band along a first end of the band so that the sheath may slide for a fixed length along the first end,

a means for connecting a second end of the band to the sheath.

5,775,000

SUBSTRATE GRIPPER DEVICE FOR SPIN DRYING

Toshiro Maekawa, Sagami, and Ryuji Haraguchi, Fujisawa, both of Japan, assignors to Ebara Corporation, Tokyo, Japan

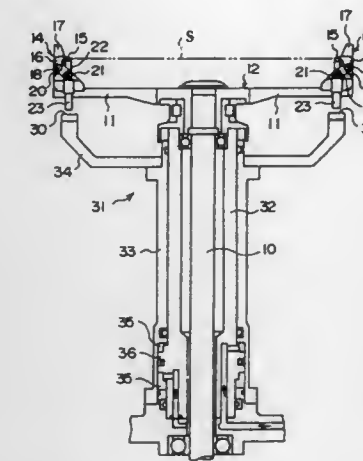
Filed May 13, 1997, Ser. No. 855,361

Claims priority, application Japan, May 13, 1996, 8-142281

Int. Cl.⁶ F26B 17/24

U.S. Cl. 34—58

5 Claims



1. A substrate gripper device for gripping a substrate, comprising:

a rotatable substrate stage;

a plurality of fixing fingers mounted on an outer edge of said rotatable substrate stage and having respective substrate rests for placing thereon an outer edge of the substrate;

a plurality of swing fingers angularly movably supported on said fixing fingers, respectively, for gripping the substrate in cooperation with said fixing fingers;

biasing means for normally biasing said swing fingers to move in a closing direction toward said fixing fingers;

a plurality of opening pins disposed below said swing fingers, and movable upwardly for angularly moving said swing fingers in an opening direction against biasing forces of said biasing means; and

an opening mechanism disposed below said substrate stage for simultaneously moving said opening pins upwardly.

5,775,001

DRYER SECTIONS OF A PAPER MACHINE

Reima Kerttula, and Jouko Yli-Kauppi, both of Muurame, Finland, assignors to Valmet Corporation, Helsinki, Finland

Continuation of Ser. No. 229,471, Apr. 18, 1994, Pat. No. 5,586,397. This application Dec. 23, 1996, Ser. No. 773,273

Claims priority, application Finland, Nov. 30, 1993, 935340

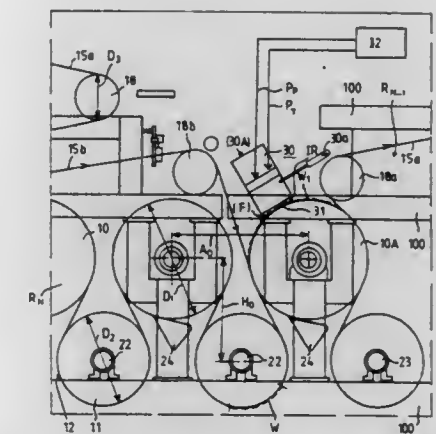
Int. Cl.⁶ D21F 5/00

U.S. Cl. 34—114

41 Claims

1. Dryer section in a paper machine, comprising

a plurality of only normal dryer groups having a single-wire draw, each of said dryer groups comprising contact-drying cylinders arranged in a first horizontal row, reversing suction cylinders arranged in a second horizontal row spaced from and situated vertically below said first row of contact-drying cylinders, and guide means for guiding a paper web to be dried in a closed draw between adjacent ones of said dryer



groups and such that the web runs over an outer circumference of said reversing suction cylinders while being subjected to negative pressure, said dryer section not including any inverted dryer groups having a single-wire draw in which contact-drying cylinders are arranged in one horizontal row and reversing suction cylinders are arranged in another horizontal row situated vertically above said row of contact-drying cylinders, and

means for applying moisture to the web during a run of the web through one of said normal dryer groups to control and/or equalize a moisture profile of the web in a direction of thickness of the web,

said reversing suction cylinders having a perforated outer mantle through which the negative pressure is applied to the web, said reversing suction cylinders having a diameter in the range from about 500 mm to about 2000 mm.

5,775,002

APPARATUS FOR DRYING AN ELECTRODE PLATE FOR A BATTERY

Hiroo Iwase, Yasuhiko Yamasaki, both of Osaka; Takeo Takayanagi, Nara; Tomohide Rokutani, Osaka; Saburo Nakatsuka, Kyoto, and Takashi Yokoyama, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

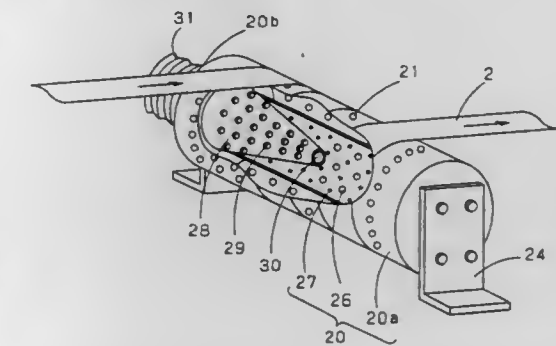
Filed Dec. 12, 1996, Ser. No. 764,007

Claims priority, application Japan, Dec. 13, 1995, 7-324294

Int. Cl.⁶ F26B 11/02

U.S. Cl. 34—122

7 Claims



1. An apparatus for drying an electrode plate for a battery comprising: a support drum of a cylindrical shape having a peripheral face on which a long sheet-like electrode plate for a battery is to be wound, and in which a large number of blow holes for allowing the electrode plate for a battery to run in a levitated manner are formed; external air blowing means which is adjacent to said support drum and which has a blowing port through which air is blown to a surface of the electrode plate for a battery wound

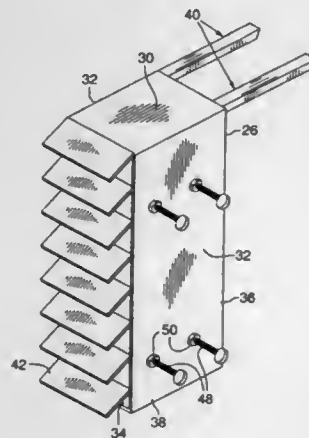
on said support drum; and moving means for causing the electrode plate for a battery to run in a longitudinal direction of the electrode plate for a battery.

5,775,003

PORTABLE SENSOR FOR DRY KILN SAMPLING
Thomas E. Goodwin, III, Green Cove Springs, Fla., assignor to U.S. Natural Resources, Inc., Vancouver, Wash.
Filed May 24, 1996, Ser. No. 653,257
Int. Cl.⁶ F26B 21/06

U.S. Cl. 34—191

6 Claims



1. A system for monitoring the wet-dry conditions of a charge of lumber being dried in a dry kiln comprising:
a portable sensing device including a carrier, a support member for the carrier and a sensor, said sensor supported by said carrier and said carrier supported by said support member, said support member adapted for supporting said carrier and sensor at varied locations adjacent a charge in a dry kiln;
a controller located outside the dry kiln and a connector connecting the controller to the sensor at said varied locations of the portable sensing device;
said sensor adapted for replacably holding a selected lumber sample for sensing the weight of the selected lumber sample during a drying process in a dry kiln, and stabilizers provided on the carrier for maintaining the lumber sample being held by the sensor in a stabilized orientation.

5,775,004

PROCESS AND APPARATUS FOR DRYING A SOLID-LIQUID MIXTURE

Klaus Steier, Munich, Germany; Stephan Wild, Quirnbach, and Erwin Brunnmair, Graz, both of Austria, assignors to Andritz-Patentverwaltungs-Gesellschaft m.b.H., Graz, Austria

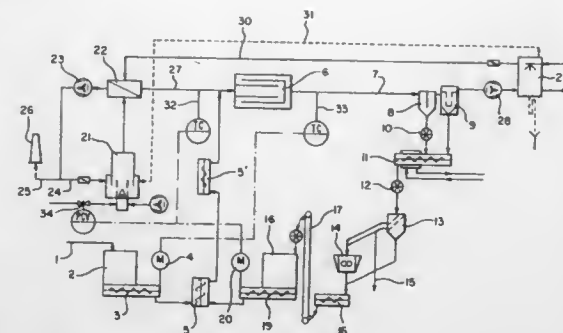
Filed Sep. 24, 1996, Ser. No. 710,930

Claims priority, application Austria, Sep. 27, 1995, 1598/95
Int. Cl.⁶ F26B 7/00

U.S. Cl. 34—424

26 Claims

1. A process for drying a mixture of a substantially dry base material and a wet material comprising the steps of:
feeding said dry base material and wet material to a mixer to form the mixture and feeding the mixture to an inlet of a drying apparatus,
feeding a hot gaseous material to an upstream end of said drying apparatus, for drying said mixture of dry base material and wet material and producing a dried material,
detecting the temperature of said gaseous material at an outlet of said drying apparatus,



adjusting a feed rate of said wet material into said mixer in relation to the exit temperature of said gaseous material, and discharging said dried material from said drying apparatus.

5,775,005

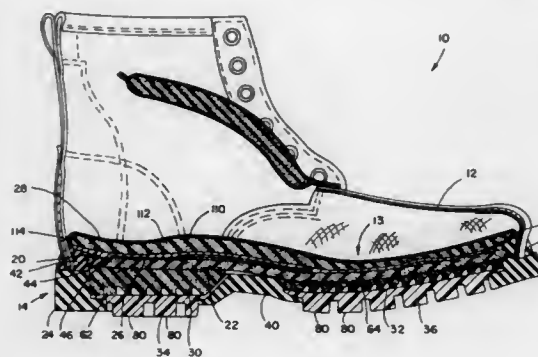
FOOTWEAR SOLE WITH CLEATED WINDOW
Larry W. McClelland, Rockford, Mich., assignor to Wolverine World Wide Inc., Rockford, Mich.

Filed Jun. 21, 1995, Ser. No. 493,334

Int. Cl.⁶ A43B 13/20; 13/18; 5/00

U.S. Cl. 36—31

7 Claims



1. A footwear outsole assembly comprising:
an outsole body including an upper side and a lower side, said lower side including a wear surface engaging the ground during walking, said outsole body defining an aperture extending therethrough;
a cushioning insert within said aperture; and
a window secured within said aperture below said insert, said window being non-opaque enabling said insert to be viewed through said window, said window including a wear surface engaging the ground during walking, said window wear surface extending below said outsole body wear surface, whereby said window and said insert are compressed during walking.

5,775,006

INSULATED WINTER WEATHER BOOT HAVING AN ADJUSTABLE STRAP CLOSURE

Richard W. Breuner, Truckee, Calif., assignor to Truckee Winter Sports, Inc., Truckee, Calif.

Continuation of Ser. No. 358,063, Dec. 14, 1994, abandoned.

This application Jun. 16, 1997, Ser. No. 874,904

Int. Cl.⁶ A43C 11/00; A43B 7/20; 23/00

U.S. Cl. 36—50.1

21 Claims

1. A winter weather footwear article comprising:
a sole having a top surface and bottom surface;
a flexible and foot-conformable upper attached to the top surface of said sole, said upper comprising a fabric layer and having an exterior surface;



separate lateral and medial struts affixed to opposite sides of the sole and extending upward from the sole adjacent an area which would contact a wearer's ankle when the article is being worn;

separate lateral and medial strap connectors provided on opposite sides of the sole and positioned forward of said struts such that the strap connectors are adjacent to a ball of a wearer's foot when the article is being worn;

a Z strap for tightening the footwear article on a wearer's foot, the Z strap being connected to the medial strap connector, extending from the medial strap connector across the exterior surface of the upper and being connected to the lateral strap connector, extending from the lateral strap connector across the exterior surface of the upper and being connected to the medial strut, and extending from the medial strut across the exterior surface of the upper and being connected to the lateral strut;

a rear strap having a first end portion and a second end portion, the first end portion being connected to the lateral strut and the second end portion being connected to the medial strut such that the rear strap is located adjacent to an area of the upper which would contact across a rearward portion of a wearer's ankle when the article is being worn; and

a top strap separate from and above the rear strap and encircling a top of the upper which would contact a portion of a wearer's lower leg above the ankle when the article is being worn.

5,775,007

HEEL PROTECTOR

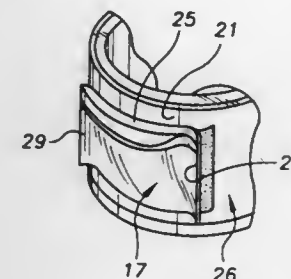
Darell Exposé, 3326 Spain Street, New Orleans, La. 70122

Filed Mar. 13, 1997, Ser. No. 816,311

Int. Cl.⁶ A43B 23/30

U.S. Cl. 36—72 B

14 Claims



1. A heel protector comprising:

a cover member having a curved exterior surface portion and a recessed area sized to receive at least a portion of a heel and back section of a footwear article, said recessed area being partially defined by a bottom member having an elongated heel slot formed therethrough from a front edge of said bottom member toward a back edge of said bottom member said slot being of a width sufficient to allow a high heel to be inserted laterally into said slot;

a first adjustable strap assembly securable between a first side edge and a second side edge of said cover member;
a second adjustable strap assembly securable between said first side edge and said second side edge of said cover member; and
a sealable pouch having a central portion permanently affixed to said curved exterior surface portion of said cover member and two side portions that are detachably securable to said curved exterior surface portion of said cover member with a restickable adhesive.

5,775,008

FOOTWEAR INCLUDING A SUPRAMALLEOLAR ANKLE FOOT ORTHOSIS

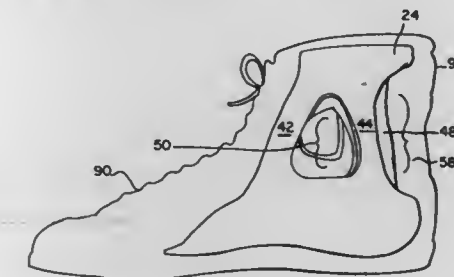
Mark H. Bussell, 6131 Curzon Ave., Apt. C, Ft. Worth, Tex. 76116, and Thomas C. Lottermoser, P.O. Box 26, Revere Dr., Barrington, Ill. 60010

Division of Ser. No. 277,503, Jul. 19, 1994, which is a continuation of Ser. No. 781,359, Oct. 23, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 467,732

Int. Cl.⁶ A43B 7/20

U.S. Cl. 36—89

16 Claims



1. An athletic shoe comprising:

a sole;
a side wall; and
an ankle brace incorporated into said side wall, wherein said ankle brace comprises:
a single unitary surface comprising a shape that is adapted to conform to an exterior surface of said ankle and foot, wherein said surface with said shape comprises:
a section comprising an inverted "Y" joint to support the ankle of the person and forming an opening adapted to be aligned with the malleoli of the person, wherein said opening is Delta shaped and comprises a first side connected to a second side and a third side connected to both said first side and second side, wherein said first, second and third sides form three corners; and
a bottom section to support the foot of the person, said bottom section integrally connected to said section, wherein said inverted "Y" joint has a structural flexibility that allows unrestricted plantar flexion and dorsiflexion of said ankle brace.

5,775,009

NON-RIGID SHOE FOR A SNOW BOARD

Antonello Marega, Volpago del Montello, Italy; Patrizio Roffi, Zurigo, Switzerland, and Luciano Tedesco, Caerano San Marco, Italy, assignors to Tecnica Spa, Treviso, Italy, and DNR Sportssystem Ltd., Zurigo, Switzerland

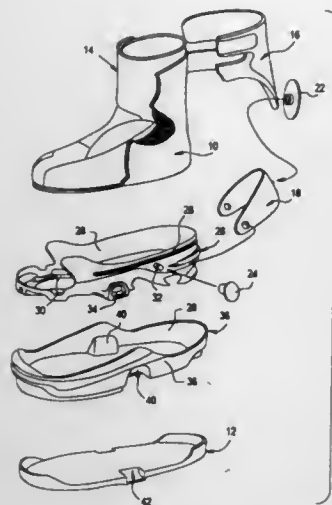
Filed Nov. 4, 1996, Ser. No. 744,063

Claims priority, application Italy, Nov. 16, 1995, TV95A0137
Int. Cl.⁶ A43B 5/04

U.S. Cl. 36—117.5

4 Claims

1. Snow board shoe comprising an upper provided with a lower edge and an insole attached thereto, a sole, and fastening means for being locked to an attachment of an upper surface of a snow board, wherein:



a reinforcing element and a mid-sole made of plastic material are interposed between the upper and the sole, the reinforcing element having peripheral sidewalls which surround and are in contact with a lower part of the upper so as to extend along a lower edge of the upper, and the reinforcing element further having lower walls extending inwards of the shoe for supporting the lower edge of the upper attached to the insole, the mid-sole surrounding externally the reinforcing element and forming a junction with the sole, and wherein; the shoe is provided in a heel zone with a U-shaped spoiler which has ends hinged to the reinforcing element, and with a U-shaped shaft portion extending above the spoiler, partially enclosing a rear part of the upper and being anchored to the spoiler by a stud, about which the shaft portion can be inclined.

5,775,010

SOLES FOR SPIKED TRACK-AND-FIELD SHOES
Yasunori Kaneko, Osaka, Japan, assignor to Mizuno Corporation, Osaka, Japan

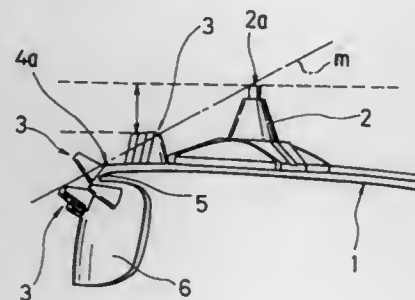
Filed Jun. 14, 1996, Ser. No. 662,109

Claims priority, application Japan, Jun. 14, 1995, 7-172932

Int. Cl.⁶ A43B 5/00; A43C 15/00

U.S. Cl. 36—129

4 Claims



1. A sole for a spiked track-and-field shoe comprising: a plurality of spike pins, a wrap-up portion extending, via a coupling portion, from a leading tip of a toe region of a sole proper, and multiple skid-preventing protrusions fixed onto the toe region of the sole proper, the coupling portion, and the wrap-up portion perpendicular to the toe region of an underneath part of the sole, a surface of the coupling portion, and a surface of the wrap-up portion, respectively, said skid-preventing protrusions being formed to extend past a line which connects a first row of the tips of the spike pins

and the leading tip of the toe portion but not past the spike pins, the wrap-up portion being affixed to a toe region of an upper portion of the spiked track-and-field shoe.

5,775,011

SNEAKER WATCH AND HOLDER THEREFOR

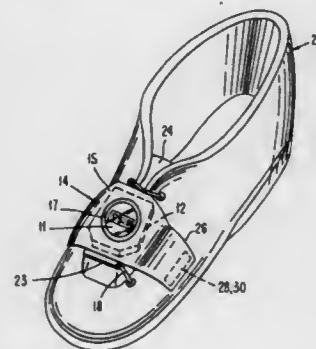
Joseph J. Reitano, Jr., 39 Perry Ave., Staten Island, N.Y. 10314

Filed Apr. 17, 1996, Ser. No. 633,624

Int. Cl.⁶ A43B 23/00; G09F 23/00; B65D 85/40

U.S. Cl. 36—136

20 Claims



1. A display unit holder assembly for holding a display unit having a display face, to footwear having an inclined top, the assembly comprising:

a wedge-shaped member having a bottom surface for positioning adjacent the inclined top of the footwear, and a top surface which is at an acute angle to the bottom surface for at least partly compensating for the inclined top when the wedge-shaped member is on the inclined top, the wedge-shaped member including a cavity for receiving the display unit and top opening communicating with the cavity for exposing the display face; and attachment means for attaching the wedge-shaped member to the inclined top of the footwear.

5,775,012

UTILITY BLADE HITCHED TO A VEHICLE

William L. Hockensmith, H.C. 81, Box 76, Romney, W. Va. 26757

Filed May 21, 1997, Ser. No. 861,059

Int. Cl.⁶ E01H 5/06

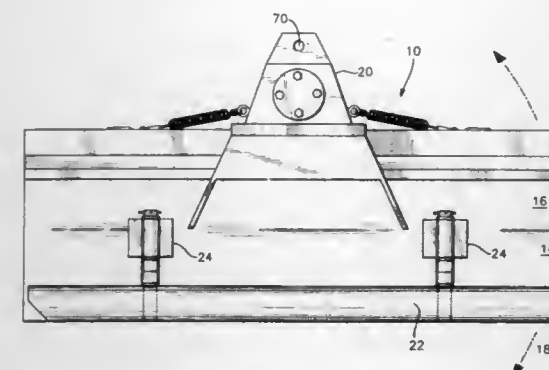
U.S. Cl. 37—270

15 Claims

1. A hitch adjustable blade for coupling to the front or rear of a hitchable vehicle, said blade having a length and an outwardly curved horizontal rear blade body with a bottom leading edge and capable of being tiltably secured by a yoke pin, said yoke pin being removed therefrom comprising,

a pair of spaced apart mounting assemblies mounted to the rear blade body,

an elongated horizontally oriented cylindrical skid releasably mounted to the mounting assemblies on the blade rear blade



body adjacent the leading edge, the skid extending nearly the length of the blade.

5,775,013

EXCAVATION BUCKET GRADING ATTACHMENT

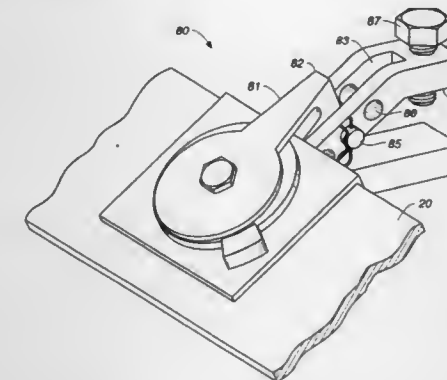
Craig C. Von Schalscha, 629 Vendola Dr., San Rafael, Calif. 94903

Continuation-in-part of Ser. No. 346,477, Nov. 29, 1994, Pat. No. 5,596,825. This application Jan. 28, 1997, Ser. No. 789,847

Int. Cl.⁶ F02F 3/76

U.S. Cl. 37—407

3 Claims



1. A grading attachment for releasable attachment to an excavation bucket, said excavation bucket having a front edge bearing a plurality of bucket teeth, said grading attachment comprising:

a generally V-shaped blade body portion having a width and adapted to fit over and accommodate said plurality of bucket teeth on said excavation bucket; and

a blade/bucket attachment assembly connected to said blade body portion and adapted for releasable attachment to the front edge of the excavation bucket, said blade/bucket attachment assembly comprising a blade clevis adapted to extend around a portion of said blade body, said blade clevis having an upper end, a bucket clevis having a slot to releasably engage said blade clevis upper end, and a bolt adapted to extend through said bucket clevis to secure against said excavation bucket, said blade body portion and said blade/bucket attachment assembly together defining a blade lateral axis along the width of the blade body portion at the attachment to the excavation bucket, and a longitudinal axis in line with the excavation bucket and generally perpendicular to the blade

lateral axis, said blade/bucket attachment assembly adapted for selective and releasable one-point adjustment of the relative distance between said excavation bucket front edge and said blade body portion, wherein when said blade/bucket attachment assembly is tightened said blade body portion is pulled tightly against the bucket front edge, and when said blade/bucket attachment assembly is loosened said blade body portion is separated from the bucket front edge and permitted to roll about said longitudinal axis.

5,775,014

CRYSTAL WATER GLOBE

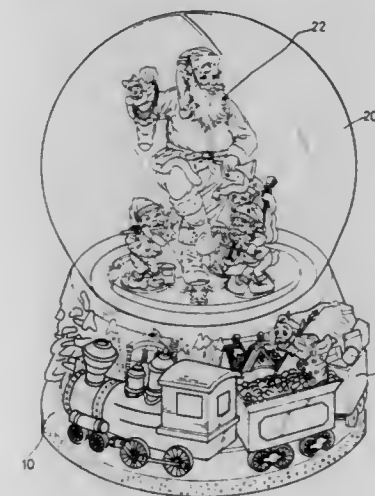
Chung-kuei Lin, 6F-4, No.1, Wuchuan 1st Rd., Wuku Industrial Dist., Hsinchuang City, Taipei Hsien, Taiwan

Filed Sep. 3, 1996, Ser. No. 707,294

Int. Cl.⁶ G09F 19/00

U.S. Cl. 40—406

9 Claims



1. A crystal water globe comprising:

a base;

a globe supported by the base;

a housing assembly affixed to an inner bottom rim of the globe, the housing assembly having a tubular extension and a first plug and a second plug, respectively, attached to one of two ends of the tubular extension;

a transmission supported on the housing assembly and having a motor-driven shaft extending through the first and the second plugs; and

a quantity of heavy oil filled within a space enclosed by an inner wall of the tubular extension and the first and the second plugs; the tubular extension, the first and second plugs and the oil sealingly confining water within a closed enclosure defined between the globe and the housing assembly.

5,775,015

LOCATION RECORDER PROCESS AND ASSEMBLY

Gweneth H. Hourihan, 2350 Lake View Ave, Los Angeles, Calif. 90039

Filed Oct. 24, 1995, Ser. No. 547,655

Int. Cl.⁶ G09F 11/04

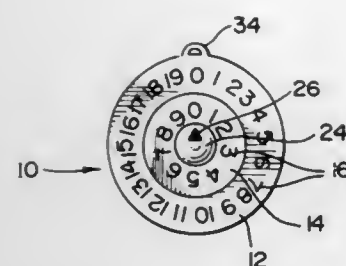
U.S. Cl. 40—495

7 Claims

1. A location recorder assembly including:

a first disk having two faces, a first face and a second face, each face bearing location site indicia about its periphery, the first disk including a central aperture,

a second disk having a face bearing location site indicia about the periphery, the second disk being smaller than the first disk to expose the location site indicia about the periphery of the first disk, the second disk also including a central aperture,



a first indicator stud bearing a designation device and mounted in the apertures, of the first and second disks, the stud being rotatable relative to the disks to permit the designation device to be turned to indicate a particular location site on the periphery of the first face of the first disk;

a second indicator stud bearing a designation device and mounted in the aperture of the first and second disks, the second indicator stud being rotatable independent of the first indicator stud to indicate a particular location on the second face of the first disk; and

means to hold the first and second indicator studs in any selected rotational orientation relative to the disks' indicia.

5,775,016

ILLUMINATED SAFETY GUIDE

Tseng-Lu Chien, 8F, No. 29, Alley 73, Lin-Shen Street, Shi-Chi Town, Taipei, Hseng, Taiwan

Continuation of Ser. No. 498,258, Jul. 3, 1995, abandoned.

This application Feb. 24, 1997, Ser. No. 803,767

Int. Cl.⁶ G09F 13/22

U.S. Cl. 40—544

14 Claims



14. A compound illumination arrangement, comprising: a photo-luminescent panel; and

at least one linear electro-luminescent strip attached to the photo-luminescent panel,

wherein the electro-luminescent strip has a predetermined shape and is placed such that the shape is illuminated whether or not power is being supplied to the strip because, when power is not being supplied to the strip, the strip will form a negative image of the predetermined shape as a result of the illumination provided by the photo-luminescent panel,

wherein the electro-luminescent elements and photo-luminescent elements are flexible to facilitate fixing of the housing to a variety of different shaped surfaces, and

wherein the electrical power supply means comprises a power source, means for converting power supplied by the power source into a voltage and frequency capable of triggering said electro-luminescent elements, and a function interface including means for turning the electro-luminescent elements on and off according to a predetermined timing pattern.

5,775,017
PRODUCT DISPLAY

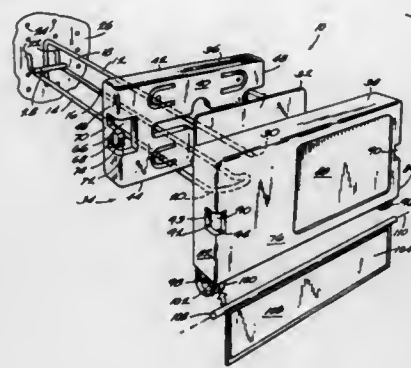
Lester W. Morrow, Chanhassen, Minn., assignor to Gage In-Store Marketing, Minneapolis, Minn.

Filed Feb. 13, 1996, Ser. No. 600,812

Int. Cl.⁶ G09F 3/00

U.S. Cl. 40—642.01

12 Claims



1. A display for use with a support panel, a support plate, and a product support, the product support having a first end for engagement with the support panel and a second end connected to the support plate, said display comprising:

a body including first and second releasably engageable body members:

said first body member including an aperture and said product support adapted to extend through said aperture,

said second body member adapted to be engageable with said first body member such that the support plate is positionable between said first and second body member,

said second body member including a recess and said first body member being nestable in said recess to define a nested relationship, and

a latch on said first and second body members defining a releasable connection between said first and second body members.

5,775,018

DISPLAY EYEGLASS FRAME

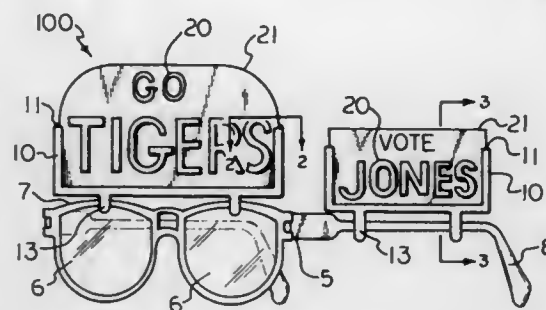
Mark J. J. Steinborn, 4276 Gratiot Ave., Port Huron, Mich. 48060

Filed Aug. 19, 1996, Ser. No. 699,423

Int. Cl.⁶ G09F 3/20; 3/16

U.S. Cl. 40—651

7 Claims



1. A display frame member in combination with a pair of eyeglasses that can be worn by a wearer comprising:

the pair of eyeglasses having two lenses assembled to a front lens frame including a nose bridge between the lenses and having a pair of opposing bows for resting above ears of the wearer of the eyeglasses, and

the display frame member attached to the pair of eyeglasses, wherein the display frame member includes a set of rails which form channels, and a separate card having display

indicia thereon held within the channels of the rails for removably securing the separate card to the display frame member.

5,775,019

SLEEVE LABEL WITH TAB

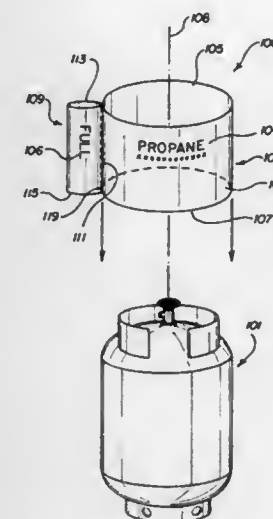
David E. Johnson, Dawsonville, Ga., assignor to SleeveCo, Inc., Dawsonville, Ga.

Filed Jan. 23, 1997, Ser. No. 787,847

Int. Cl.⁶ G09F 3/00

U.S. Cl. 40—665

7 Claims



1. A stretchable sleeve label with tab for labeling a product, the sleeve label comprising:

a sleeve made of a stretchable plastic film web with indicia printed on at least one surface of the web, the sleeve comprising an open top and an open bottom, the plastic film web having a predetermined thickness selected from the range of 0.001 inches to 0.005 inches, the web having a stretchability of at least 0.25% with memory whereby the sleeve can be stretched over the product and be retained by a stretch fit over the product;

a tab made of the stretchable plastic film web the tab being smaller in size than the sleeve and the tab is only attached to the sleeve along a single seam by an attachment seal extending in a longitudinal direction from the top of the sleeve to the bottom of the sleeve, the attachment seal being a heat formed seal generally parallel to a sleeve longitudinal axis, the attachment seal disposed between the sleeve and the tab.

5,775,020

GUN BARREL CLEANER

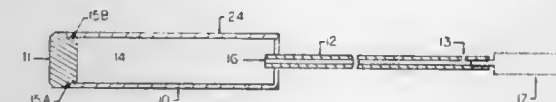
Ian Franklin Baird, 4354 Highway 78, Santa Ysabel, Calif. 92070

Filed Dec. 31, 1996, Ser. No. 777,269

Int. Cl.⁶ F41A 29/02

U.S. Cl. 42—95

6 Claims



1. A gun barrel cleaner, comprising:

(a) a fluid receptacle with a front portion and a rear portion and a removable cap over the rear portion of the fluid receptacle, the fluid receptacle having an internal cavity for containing a fluid for cleaning a bore of a gun barrel;

(b) a hollow rod with a first end and a second end, the first end of the hollow rod being inserted through the front portion of the fluid receptacle into the internal cavity of the fluid receptacle, and

(c) a brush, the brush being attached to the second end of the hollow rod,

(d) a fluid collector placed over the second end of the gun barrel, wherein the fluid collector comprises an open first end and a second end with a removable cap, wherein the second end of the gun barrel is inserted into the open first end of the fluid collector,

wherein the gun barrel cleaner fluid can be placed into the cavity in the fluid receptacle, the brush wetted by the fluid and the brush then used to clean the bore of the gun barrel by inserting the brush into a first end of the gun barrel, the gun barrel having the first end and a second end.

5,775,021

COLLAPSIBLE CLEANING ROD FOR FIREARMS

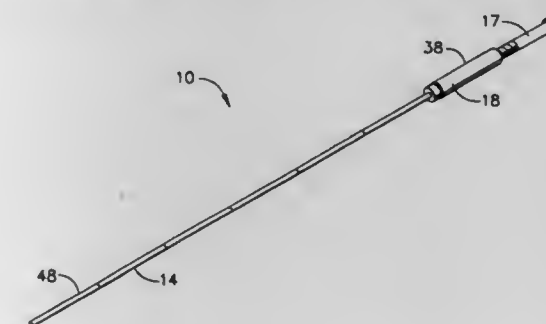
Michael J. Weiss, 1804 14th Ave., Sidney, Nebr. 69162

Filed Jan. 10, 1997, Ser. No. 781,664

Int. Cl.⁶ F41A 29/00; 31/00

U.S. Cl. 42—95

10 Claims



1. A collapsible rod, comprising:

a plurality of substantially hollow elongated sections, each said section including a tapered end, each said tapered end having a relatively smaller cross-sectional diameter as compared with the diameter of the elongated section, each said section further including a socket end, each said socket end having a configuration shaped so as to selectively receive a corresponding tapered end of an adjacently disposed elongated section, said plurality of elongated sections, taken as a whole, further including a distal end section;

an elongated handle, said handle having a substantially hollow internal volume, said handle further including a plurality of internal threads;

an elongated tubular tensioner, said tensioner having a substantially hollow internal volume, said tensioner including a first portion of relatively small internal and external cross-sectional diameters and a second portion of relatively large cross-sectional internal and external diameters, said first portion further including a threaded end, said threaded end being capable of selectively engaging said internal threads of said elongated handle, said first portion further being substantially slidably disposed within said internal volume of said elongated handle; and

a tension cable, said cable including first and second enlarged ends, said tension cable substantially extending through said plurality of elongated sections, said cable further extending substantially through said handle and said first portion of said tensioner, said first enlarged end of said cable being disposed within the internal volume of said second section of said tensioner, said first enlarged end being of greater cross-sectional diameter than the internal cross-sectional diameter of said first section of said tensioner so that said first enlarged end of said cable is fixedly held within the internal volume of said second section of said tensioner, said second enlarged

end of said cable being fixedly disposed within said distal end section, so that the tautness of said cable may be selectively adjusted by engaging said threaded end of said first portion of said tensioner with said internal threads of said elongated handle in order to assemble said collapsible rod.

in said sidewall running between said upper and lower extremities in a spiral path that travels about 180 degrees about said sleeve with respect to said axis.

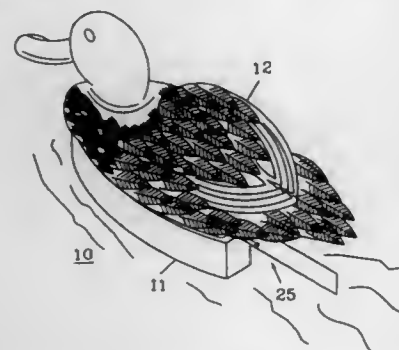
5,775,022

SELF-PROPELLED WATERFOWL DECOY

Jack F. Sumrall, 2600 Chadbourne Dr., Plano, Tex. 75023, and John F. Bush, Rte. 6, Box 110-B, Pittsburg, Tex. 75686
Filed Jun. 3, 1996, Ser. No. 660,158
Int. Cl.⁶ A01M 31/06

U.S. Cl. 43—3

18 Claims



1. A self-propelled floating decoy for simulating the swimming characteristics of waterfowl, comprising:
 - a base, having front and rear ends, for flotation;
 - an opening in the rear end which extends through the base;
 - an oscillatory propulsion system;
 - a single oscillating flexible tail fin, coupled to said propulsion system, extending through and beyond the opening in the rear end for propelling the decoy in water in a wobbling duck-like motion; and
 - a decoy shell representative of a waterfowl secured to said base.

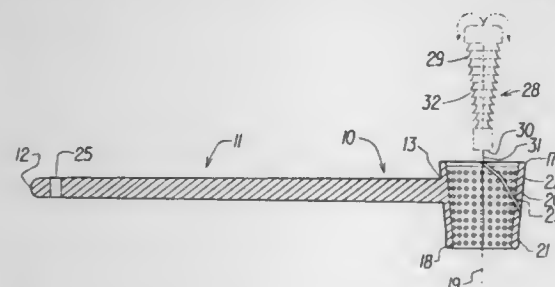
5,775,023

DEVICE FOR APPLYING A BAIT COMPOSITION TO A FISHING LURE

L. T. Botkins, P.O. Box 1663, Paragould, Ark. 72451
Filed Mar. 17, 1997, Ser. No. 827,096
Int. Cl.⁶ A01K 97/04

U.S. Cl. 43—4

9 Claims

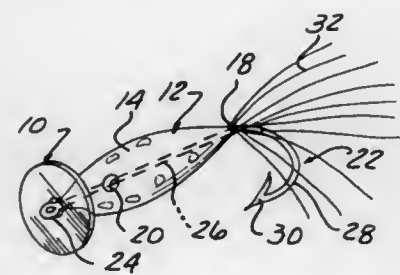


1. A device for scooping a dippable bait composition and applying said composition to a fishing lure, said device comprising:
 - a) a rigid handle elongated between proximal and distal extremities, and
 - b) a hollow sleeve attached to said distal extremity, said sleeve comprised of a monolithic sidewall having circular upper and lower extremities centered upon an axis orthogonal to the direction of elongation of said handle and having a downwardly convergent conical shape causing said lower extremity to be of smaller diameter than said upper extremity, and a slot

5,775,024
POPPING HEAD ATTACHMENT FOR ARTIFICIAL FLY
Thomas A. Hnizdor, 9164 Brady, Redford, Mich. 48239
Continuation of Ser. No. 611,284, Mar. 6, 1996, abandoned, which is a continuation of Ser. No. 330,007, Oct. 27, 1994, abandoned. This application Mar. 5, 1997, Ser. No. 811,914
Int. Cl.⁶ A01K 85/00

U.S. Cl. 43—42.37

12 Claims



1. An artificial fly comprising:
 - a fishhook having an eye at one end of a shank;
 - a body mounted on the shank and having a front end disposed in proximity to the eye of the shank, the body having an aerodynamic shape smoothly extending from a small diameter front end to a maximum diameter intermediate position and to a small diameter tail end; and
 - a thin, flexible disk-shaped member having a thickness of substantially 0.010 inches releasably mounted on the shank between the eye and the front end of the body, the disk shaped member having a solid, substantially unbroken surface extending from a center mounted on the shank to a peripheral edge, the peripheral edge having no substantial circumferential discontinuity, the peripheral edge disposed at a distance from the center at least equal to a maximum diameter of the body to form a water flow impact and sound generating surface.

5,775,025

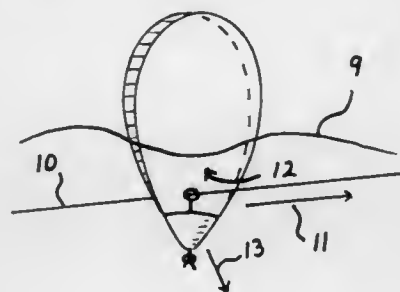
LIMITED RESISTANCE DIVE-ACTION BAIT-NAVIGATING FISHING BOBBER

Dorothy Marie Ooten, 2271 Bethel Hygiene Rd., Bethel, Ohio 45106

Filed Jan. 27, 1997, Ser. No. 788,393
Int. Cl.⁶ A01K 93/00

U.S. Cl. 43—43.1

1 Claim

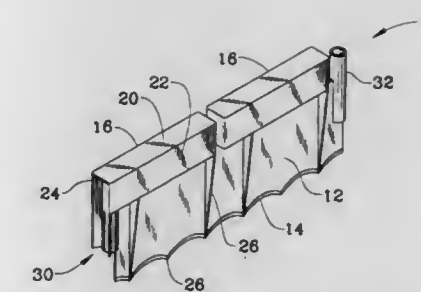


1. A fishing bobber comprising
 - a tear drop shaped planar floatant material having a wide top portion, a narrow, pointed bottom portion, a front flat side, a

back flat side and a small hole, adjacent the bottom portion, extending through the material from the front side to the back side;

a conical shaped weight having a hole extending from the base of the cone along the centerline of the cone to and through the tip of the cone wherein the conical shaped weight bore receives the pointed end of the planar floatant material to help retain the planar floatant material to the weight; and,

an attachment means for attaching the conical shaped weight to the pointed bottom portion of the tear drop shaped planar floatant material, the attachment means comprises a short piece of fishing line that extends through the holes in the planar floatant material and the conical shaped weight wherein a knot is used to tie the ends of the short piece of fishing line together after it has been passed through the holes to retain the weight against the pointed end of the planar floatant material.



5,775,026

INSECT BAIT AND CONTROL STATION

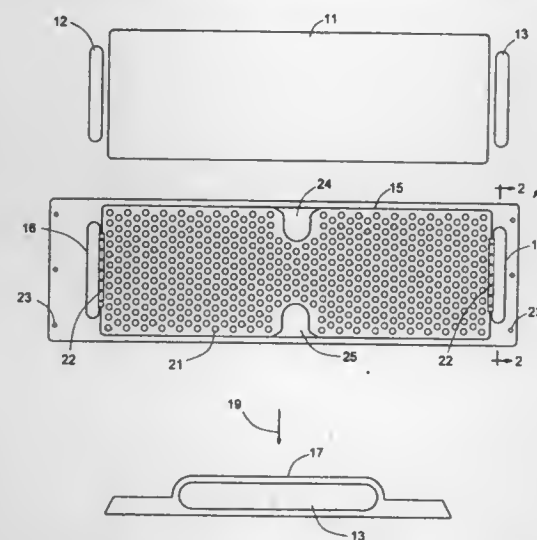
Robert C. Pearce, Arlington; Robby C. Murdock, Flower Mound; Amy E. Thompson, Arlington; Scott M. Reed, Flower Mound, and Don E. Wallace, Rockwall, all of Tex., assignors to Novartis AG, Basel, Switzerland

Filed Mar. 29, 1996, Ser. No. 624,297

Int. Cl.⁶ A01M 25/00

U.S. Cl. 43—132.1

12 Claims



1. A device for attracting and killing insects, comprising:
 - a solid sheet of nonabsorptive material coated with a solid layer comprising a tetrahydro-2-(nitromethylene)-2H-1,3-thiazine insecticide; and
 - an attractant composition encapsulated in a breakable shell; said coated solid sheet and said breakable shell retained in a flat, substantially planar housing with openings exposing regions of said solid sheet, a compressible cavity to receive said breakable shell, and ports adjacent to said cavity to permit the escape of vapors therefrom to the atmosphere.

5,775,027

BORDER EDGING

Thomas A. Tisbo, Barrington Hills; Torrence C. Anderson, and Michael R. Vogler, both of Aurora, all of Ill., assignors to Suncast Corporation, Batavia, Ill.

Filed Nov. 11, 1996, Ser. No. 784,583

Int. Cl.⁶ A01G 1/08

U.S. Cl. 47—33

18 Claims

1. A border edging device comprising:

a one piece structure characterized by a vertical barrier of nominal thickness having a first end and a second end forming a length therebetween, said barrier having a top edge and a bottom edge; at least one rectangular box-like structure defined by a top wall having a length and a width with an upper surface and a lower surface and four side walls depending therefrom, said lower surface formed integral to said top edge of said barrier; a receptacle having at least one vertical slot formed along said first end of said structure allowing for the slidable insertion of an insertion flange from an adjoining vertical barrier therein; an insertion flange formed along said second end of said structure; whereby said insertion flange is sized to slidably insert into a vertical slot of a receptacle formed in an adjoining border edging device allowing for the coupling of multiple border edging devices in series.

5,775,028

WINDOW STAYS

Peter Winston Lambert, 364 Royal Road, Massey, Auckland, New Zealand

PCT No. PCT/NL94/00066, § 371 Date May 2, 1996, § 102(e) Date May 2, 1996, PCT Pub. No. WO95/02106, PCT Pub. Date Jan. 19, 1996

PCT Filed Jun. 28, 1994, Ser. No. 591,465

Claims priority, application New Zealand, Jul. 9, 1993, 248114; Feb. 15, 1994, 250881; May 26, 1994, 260606

Int. Cl.⁶ E05D 15/28

U.S. Cl. 49—248

4 Claims



1. A window stay assembly comprising
 - first mounting means for mounting the assembly on a window frame, said first mounting means defining two pivot axes extending parallel to and substantially in a plane of a sashed window when said window is closed in said window frame,
 - a first arm pivoted adjacent a toothed end of said first arm to one of said two pivot axes of said first mounting means,
 - a second arm longer than said first arm, pivoted adjacent a toothed end of said second arm to the other of said two pivot axes of said first mounting means,
 - an actuator including teeth, said actuator being interposed between said toothed end adjacent said first arm and said toothed end adjacent said second arm such that the teeth of said actuator intermesh with said toothed end adjacent said first arm and said toothed end adjacent said second arm so

that movement of said actuator causes a rotation of one of the first arm and the second arms and a substantially opposite rotation of the other of the first and the second arms, second mounting means for mounting the assembly on a window sash and to which an opposite end of said first arm is pivoted by a pivot axis parallel to the two pivot axes of said first mounting means, said second arm being pivoted to sliding means slidably carried by said second mounting means, the sliding of said sliding means relative to said second mounting means being against a frictional resistance, and said first arm and second arm being operable only by said meshing with said actuator and their inter-relationship via (a) said first mounting means and (b) said second mounting means, and wherein a sliding of the pivot has the effect of allowing both of said first and second arms to lie substantially vertically in the plane of the window sash when the sashed window is closed in said window frame while allowing a top of said sashed window, when the window is open, to be closer to the window frame, yet still being spaced therefrom, than a bottom of said window sash, and when the window is open, the window is stabilisable in such a form under the action only of the window stay assembly on one side of the window and by another window stay assembly on the other side of the window.

5,775,029

REMOTE MANUAL DRIVE SYSTEM FOR MODULAR REAR-MOUNTED WINDOW ASSEMBLY

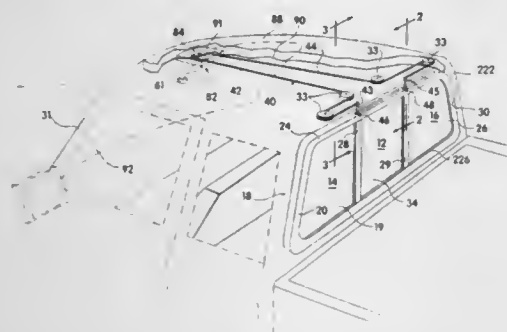
Dennis J. Buening, Northville, Mich., assignor to Excel Industries, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 624,130, Mar. 29, 1996. This application Sep. 27, 1996, Ser. No. 721,909

Int. Cl.⁶ E05F 11/06

U.S. Cl. 49—360

24 Claims



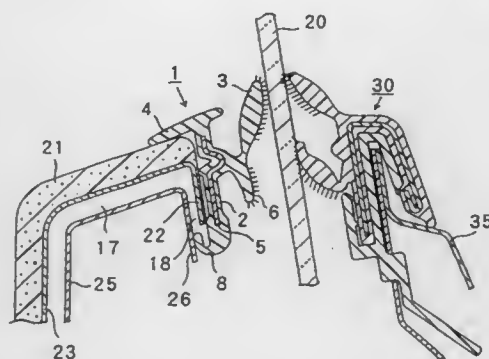
1. A modular window assembly vertically mounted in a motor vehicle body having a windshield and a roof, enclosing a passenger compartment, the modular window assembly comprising, in combination:

- a circumferential rear-mounted frame member mounted in a window recess in the vehicle body rearward of a driver's seat;
- a slider subassembly comprising a sliding pane mounted in the rear-mounted frame member for sliding laterally back and forth between an open position and a closed position; and
- a drive subassembly for moving the sliding pane laterally back and forth between its open and closed positions, the drive subassembly comprising a manually operable drive unit secured overhead to the roof of the vehicle in the passenger compartment, remote from the rear-mounted frame member.

5,775,030
SEALING STRUCTURE FOR AN INNER SIDE OF A DOOR GLASS IN A DOOR OF AN AUTOMOBILE
Mitsuo Hamabata, Nakashima-gun, Japan, assignor to Toyota Gosei Co., Ltd., Aichin-ken, Japan
Filed Jan. 19, 1996, Ser. No. 588,843
Claims priority, application Japan, Jan. 26, 1995, 7-031450
Int. Cl.⁶ B06J 1/16

U.S. Cl. 49—377

9 Claims



1. A sealing structure in combination with a door, the sealing structure sealing an inner side of a door glass in the door, comprising:

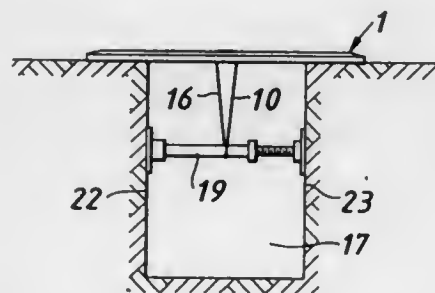
- a door trim having a downwardly extending trim flange adjacent the door glass;
- an inner door panel disposed adjacent said door trim and spaced therefrom to define a clearance therebetween, the inner door panel having a downwardly extending panel flange spaced inwardly from said trim flange;
- an inner weather strip attached to said door trim to form a seal between the door glass and said door trim; and
- an air sealing portion protruding from said inner weather strip and extending between said downwardly extending panel flange and said trim flange to control air flow through the clearance therebetween.

5,775,031
TEMPORARY COVER FOR EXCAVATIONS
Raymonde Maxwell Levy, Leeds, United Kingdom, assignor to British Gas plc, London, England
Filed Apr. 4, 1996, Ser. No. 628,017
Claims priority, application United Kingdom, Apr. 4, 1995, 9506922

U.S. Cl. 52—3

Int. Cl.⁶ B62D 63/04

13 Claims

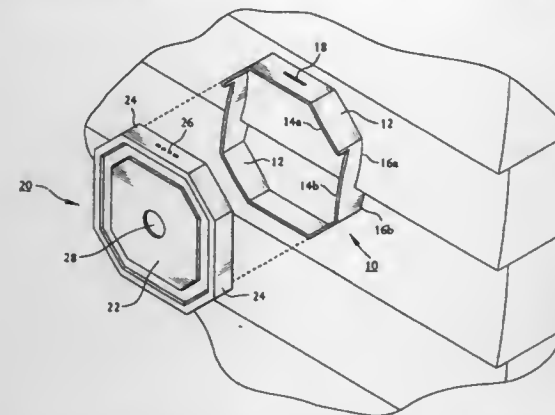


1. A temporary cover for excavations in the ground, comprising a platform having a lowermost surface for contact with the ground surface surrounding the excavation, and having an uppermost surface, and flexible means attached to and depending solely from the lowermost surface of the platform for facilitating securing the platform to a below ground anchor point.

5,775,032
EXTERIOR MOUNTING PLATE ASSEMBLY
Michael A. Lacy, Conyers, Ga., assignor to Vantage Products Corporation, Conyers, Ga.
Filed May 19, 1997, Ser. No. 858,835
Int. Cl.⁶ E04B 1/38; F16S 5/00

U.S. Cl. 52—28

9 Claims U.S. Cl. 52—36.1

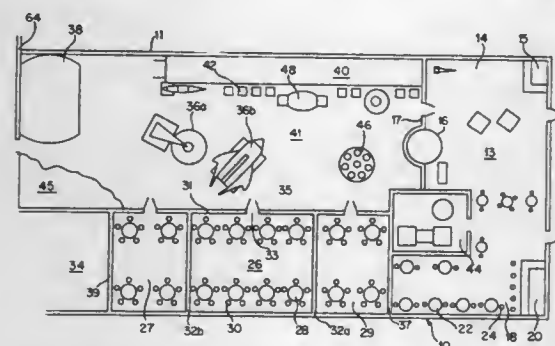


1. A reversible wall mounting plate assembly adapted for mounting to a surface of stepped siding, comprising:
a frame having a continuous wall with opposite first and second free-edge surfaces, and being symmetrical about an axis; said first and second free-edge surfaces configured in a stepped fashion, said first and second free-edge surfaces having at least two portions of convex curvature, said portions of the first free-edge surface having dimensions different from those portions of said second free-edge surface, said dimensions chosen to accommodate differently sized stepped siding; and a face portion including a front wall with a peripheral side wall extending therefrom and substantially surrounding said frame; said face portion and frame having cooperating mating elements permitting the face portion to be releasably attached to the frame.

5,775,033
BUILDING STRUCTURE COMPRISING A COMBINED ENCLOSED RESTAURANT AND AMUSEMENT AREA HAVING A VIEWING PANE THEREBETWEEN
Paula Kent Meehan, Beverly Hills, Calif., assignor to Kenquest, Inc., Beverly Hills, Calif.
Filed Aug. 20, 1996, Ser. No. 699,966
Int. Cl.⁶ E04H 3/04

U.S. Cl. 52—33

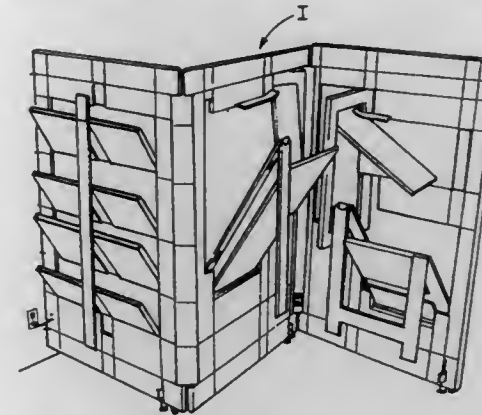
31 Claims



1. A building structure which houses a restaurant and an amusement area, comprising: a) an enclosed space defining a dining area, further comprising a doorway; b) an enclosed space defining an amusement area, further comprising a doorway; and c) a viewing pane disposed adjacent a wall common to said dining area and said amusement area, whereby patrons of the dining area can view said amusement area and further comprising sound proofing material disposed adjacent said dining area and said amusement area.

5,775,034
FOLDING SCREEN ENVIRONMENT SYSTEM
Michael F. D. Logue, 4221 Army St., Apt. 1, San Francisco, Calif. 94131
Filed Jun. 10, 1996, Ser. No. 659,715
Int. Cl.⁶ A47F 10/00; A47B 87/00

8 Claims

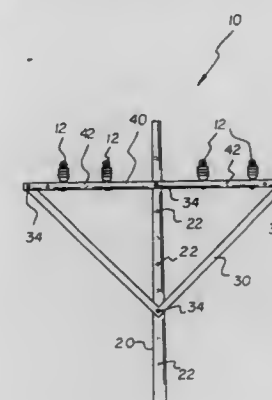


1. A folding screen environment system comprising:
at least three vertical screens having vertical edges including hinge means connecting said screens to allow them to be folded against each other, at least two of the screens having functional elements including at least a table and storage units movable between a stored position inset into such screens to become part of said screen forming a substantially planar surface to allow said screens to be folded and a set-up position ready for use;
means connecting the vertical edge of at least one of such screens to a fixed vertical support for stabilizing said at least three vertical screens and for allowing such screens to be unfolded and said functional elements utilized.

5,775,035
PLASTIC POWER POLE SYSTEM
Neal Papin, 1212 N. Linn St., Bay City, Mich. 48706
Filed Dec. 9, 1996, Ser. No. 762,317
Int. Cl.⁶ E04H 12/24

U.S. Cl. 52—100

8 Claims



1. A Plastic Power Pole System comprising:
a pole;
a syncline support member secured to an upper portion of the pole;
a horizontal support member centrally secured orthogonally to the upper portion of the pole and secured to the syncline support member the horizontal support member supporting a plurality of conventional insulators projecting vertically upward; and a plurality of pole knockout members in the pole, said knockout

members easily removable for forming a knockout aperture which receives a fastener.

5,775,036

ALIGNMENT OF OBJECTS

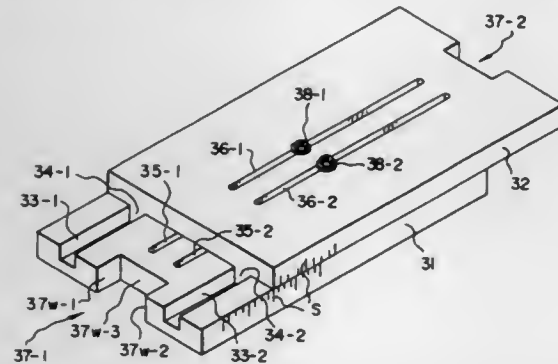
Jesse M. Stanley, Sr., 154 Pattrell Rd., Norwich, Vt. 05055

Filed Apr. 15, 1996, Ser. No. 632,289

Int. Cl.⁶ E04G 21/26; 25/06

U.S. Cl. 52—127.2

17 Claims



1. Apparatus for the facilitating the alignment of objects comprising:
 - a base;
 - a member positioned upon and extendable relative to said base;
 - means on said base for desired momentary engagement with one of said objects; and
 - complementary means on said member for desired momentary engagement with another one of said objects simultaneously with the first mentioned momentary engagement;
 - wherein said base is quadrilateral with a channel and a fastener extending therein to an underlying channel of said member which is slidable laterally with respect to said base.

5,775,037

GROUND ANCHOR

Charles Simon James, Surrey, United Kingdom, assignor to Platipus Anchors Limited, Surrey, United Kingdom

PCT No. PCT/GB94/01066, § 371 Date Aug. 6, 1996, § 102(e)

Date Aug. 6, 1996, PCT Pub. No. WO95/12713, PCT Pub.

Date May 11, 1995

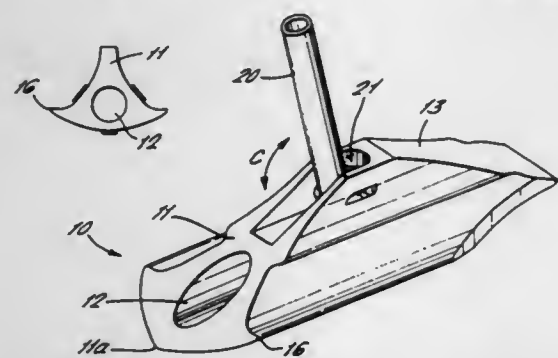
PCT Filed May 18, 1994, Ser. No. 649,616

Claims priority, application United Kingdom, Nov. 3, 1993, 9322642

Int. Cl.⁶ E02D 5/80

U.S. Cl. 52—163

10 Claims



1. A ground anchor comprising a body portion having a generally triangular cross-section extending substantially along a length thereof and having generally concave sides and a lower surface,

said lower surface and said concave sides meeting to form a first edge and a second edge, wherein said lower surface is continuously convex between said first and second edges.

5,775,038

FIXED POINT SEISMIC BUFFER SYSTEM

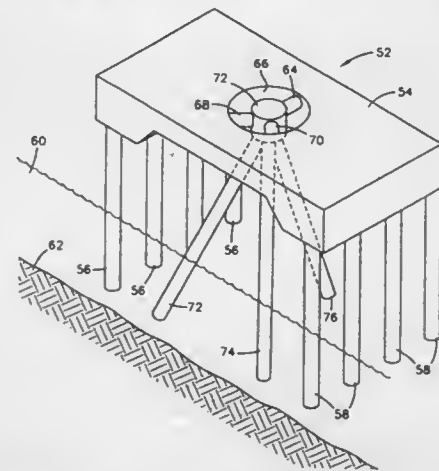
Gerard A. Sauvageot, San Diego, Calif., assignor to J. Muller International, San Diego, Calif.

Filed Dec. 20, 1996, Ser. No. 770,854

Int. Cl.⁶ E04B 1/98; E02D 31/08; E04H 9/02

U.S. Cl. 52—167.8

19 Claims



1. A seismic damping system for a man made structure, comprising:
 - a foundation for supporting said structure, said foundation constructed to enable lateral movement during an earthquake;
 - fixed anchoring means within the lateral perimeter of said foundation in an accessible position to enable inspection and repair of said anchoring means; and
 - damping means connected in a common horizontal plane between said foundation and said anchoring means for damping seismic movement of said foundation.

5,775,039

DRAINAGE DEVICE

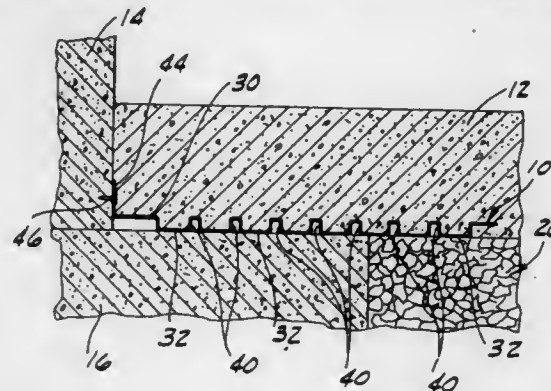
Kevin McPherson, Edwardsville, Ill., assignor to Glenna Sue Bruns, Troy, Ill.

Filed May 8, 1996, Ser. No. 646,918

Int. Cl.⁶ E04B 17/00

U.S. Cl. 52—169.5

20 Claims



1. A drainage device for use under a floor in a structure including the floor, a foundation wall, a footing located below the foundation wall and a drain, the drainage device being constructed for placement on the footing adjacent to the foundation wall prior

to installation of the floor to permit water to flow along the footing under the floor to the drain, the drainage device comprising a wall member and spaced apart feet depending from the wall member, the feet being engageable with the footing at spaced apart locations for vertically spacing the wall member from the footing, the feet defining fluid flow channels for water seeping from between the foundation wall and the footing and allowing water to flow freely underneath the floor and along the footing toward the drain, said wall member being formed of a material capable of transmitting light in the visual range so that any foreign matter located below the wall member and potentially blocking the channels will be apparent upon visual inspection prior to installing the floor over the drainage device.

5,775,040

NON-CONVEX AND CONVEX TILING KITS AND BUILDING BLOCKS FROM PRISMATIC NODES

Haresh Lalvani, 164 Bank St., Apt. 2B, New York, N.Y. 10014

Continuation-in-part of Ser. No. 684,978, Apr. 15, 1991, Pat.

No. 5,575,125, which is a continuation-in-part of Ser. No.

282,991, Dec. 2, 1988, which is a continuation of Ser. No.

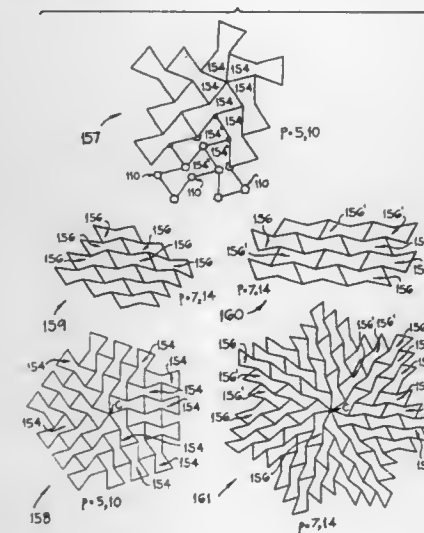
36,395, Apr. 9, 1987, Pat. No. 5,007,220. This application Nov.

18, 1996, Ser. No. 751,507

Int. Cl.⁶ E04C 2/30

U.S. Cl. 52—311.2

27 Claims



1. A tiling kit, the combination comprising:

a plurality of substantially planar, even-sided non-convex polygonal tiles, each of said tiles having m edges which meet at m vertices at interior angles defined by an angle between adjacent edges on an interior of said tile, where said edges are composed of m/2 pairs of parallel edges and where m is greater than 4, and wherein

said interior angles comprise two different sets of angles, a first set of angles comprising at least two distinct and separate sets of contiguous concave angles greater than 180°, each set of concave angles further comprising at least one said concave angle, and a second set of angles comprising at least two distinct and separate sets of contiguous convex angles less than 180°, each set of convex angles further comprising at least one convex angle, and where each set of said first set of angles is joined to another set of said first set of angles by a set of said second set of angles,

said tiles are engaged together to fill a substantially planar surface,

said edges are substantially equal in length and said interior angles are integer multiples of angle A, where A equals 360°/p, and the sum of all said interior angles of each tile equals ((m-2)/2)p multiplied by A, and where p is any number greater than 6.

5,775,041

DOOR ENTRY SYSTEM

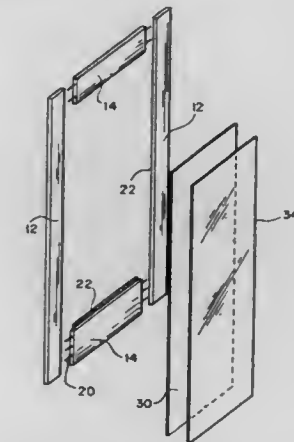
Michael Tull, Roswell, Ga., and J. Manning McPhillips, Mobile, Ala., assignors to McPhillips Manufacturing Co. Inc., Mobile, Ala.

Filed Jul. 21, 1995, Ser. No. 505,065

Int. Cl.⁶ E06B 3/70

U.S. Cl. 52—455

7 Claims



1. An entry system comprising:

a door comprising top and bottom rails and at least two stiles wherein the rails and stiles are formed by extruding a cellulose composite material in a cold extrusion process to produce an extrusion and then molding the extrusion after the cold extrusion process; the rails and stiles each comprising at least one hollow section and at least one web member extending between at least one hollow section,

wherein the top and bottom rails comprise at least one dowel fitted in a hole bored into at least one web member of each rail, and each stile comprises at least one stile plug at each end of the stile which fits within a portion of the hollow section of the stile, and wherein each stile includes at least one hole transversely bored through the end of the stile and through the stile plug the dowel being interfitted into at least one hole of the stile plug to secure the rail and the adjacent stile together.

5,775,042

SIDING PANEL WITH INTERLOCKING PROJECTION

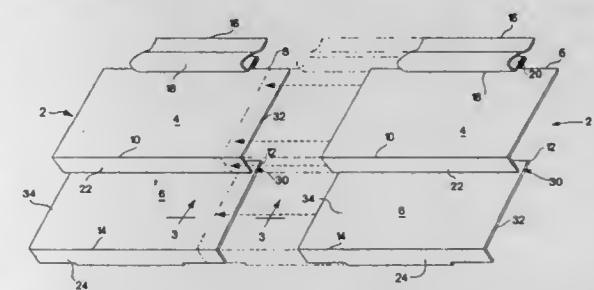
Jack T. Mowery, Medina, and Benjamin L. McGarry, Akron, both of Ohio, assignors to Associated Materials, Incorporated, Akron, Ohio

Filed Apr. 17, 1997, Ser. No. 843,872

Int. Cl.⁶ E04C 2/30; E04D 1/00

U.S. Cl. 52—520

20 Claims



1. A siding panel manufactured in a post forming operation to be installed in an overlapping manner and in a male-female engaging relationship with other horizontally and vertically adjacent siding panels comprising, in combination:

a nailing hem;

a flange member connected to the nailing hem;

an upper declination having an upper edge connected to the flange member, and a lower edge;
 a lower declination having an upper edge and a lower edge;
 an upper shoulder extending inwardly and substantially horizontally between the lower edge of the upper declination and the upper edge of the lower declination;
 a projection extending substantially along the length of the upper shoulder;
 a lower shoulder extending inwardly and substantially horizontally from the lower edge of the lower declination;
 a slot extending from an outer edge and along a portion of the upper shoulder, the slot being shaped to receive a portion of the projection of a horizontally adjacent panel; and
 a lip extending upwardly from an innermost edge of the lower shoulder to mate with and engage the flange member of a vertically adjacent panel in a male-female relationship.

5,775,043

UNDERGROUND CONSTRUCTION

Ko Muroi, 37-8, Kokubu-kita 3-chome, Ebina-shi, Kanagawa, 243-04, Japan

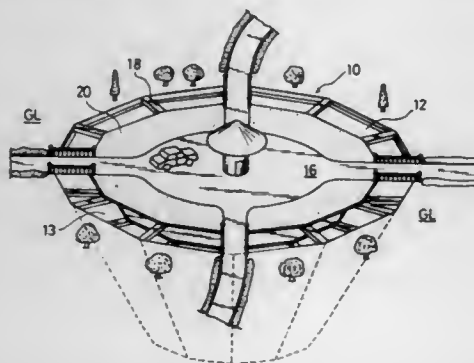
Filed Jun. 10, 1994, Ser. No. 258,660

Claims priority, application Japan, Jun. 10, 1993, 5-165120; Jun. 10, 1993, 5-165121; Jun. 10, 1993, 5-165122; Jun. 10, 1993, 5-165123; Jun. 10, 1993, 5-165124; Jun. 10, 1993, 5-165125; Jun. 10, 1993, 5-165126; May 23, 1994, 6-130864

Int. Cl.⁶ E02D 29/00; E04H 6/00; E04F 11/00

U.S. Cl. 52—169.6

33 Claims



I. An underground construction formed below the surface of the ground comprising:

- a circumference wall extending at an inclined angle from the surface of the ground to a given depth below the surface of the ground so as to define a generally cone-shaped space therein;
 - a plurality of support members divided into groups, wherein each group consists of several support members which are embedded in said circumference wall at the same vertical height and are spaced circumferentially therearound for supporting bed beams for a floor of the underground construction thereon; and
 - a plurality of floor construction bodies each corresponding to a respective group of support members, each floor construction body including a number of bed beams in spaced arrangement with each other and a floor portion supported by the bed beams,
- wherein respective ends of the bed beams of each floor construction body extend to and are supported on the corresponding group of support members, and wherein the floor portion of each floor construction body defines a floor space in tapering arrangement in the cone-shaped space in relation to the other floors.

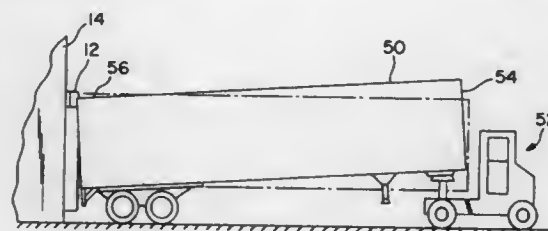
5,775,044
 LOADING DOCK HAVING A SPLIT DOCK SEAL
 Loren K. Styba, 3368 W. Southwood Dr., Franklin, Wis. 53132, and Joseph J. Tramonte, Jr., 2628 N. 93rd, Wauwatosa, Wis. 53226

Filed May 7, 1996, Ser. No. 646,088

Int. Cl.⁶ E04H 9/14; 14/00

U.S. Cl. 52—173.2

5 Claims



1. A method of providing a seal between a loading dock and a back of a vehicle, said method comprising the steps of:
 backing the vehicle toward the loading dock;
 engaging the back of the vehicle with an engaging member that is vertically movably mounted relative to the loading dock;
 vertically moving the back of the vehicle while the vehicle is in engagement with the engaging member; and
 vertically moving the engaging member in response to said vertical movement of the back of the vehicle.

5,775,045

DOOR FRAME GUARD

Donald L. Hill, 1860 Rainbow La., Powder Springs, Ga. 30073

Filed Jan. 18, 1997, Ser. No. 785,758

Int. Cl.⁶ E06B 1/04

U.S. Cl. 52—211

10 Claims



1. In combination,

- a metal door frame comprising a first metal molding having a planar surface, a second metal molding having a planar surface, a metal jamb having first and second planar surfaces, and a metal stop having first, second, and third planar surfaces, said metal door frame having a plurality of edges and a plurality of corners formed at intersections between various planar surfaces if said first metal molding, said second metal molding, said metal jamb, and said metal stop; and
- a magnetic door frame guard magnetically secured to said metal door frame, said magnetic door frame guard having a first side adjacent to said metal door frame and a second side facing away from said metal door frame, said first side having a plurality of magnetic planar surfaces and a plurality of grooves wherein one groove of said plurality of grooves

resides between adjacent magnetic planar surfaces of said plurality of magnetic planar surfaces, said second side having a continuous damage-resistant surface;
 wherein magnetic planar surfaces of said plurality of magnetic planar surfaces of said first side magnetically attract and contact said planar surfaces of said first metal molding, said second metal molding, said metal jamb, and said metal stop; wherein grooves of said plurality of grooves align opposite said edges of said plurality of edges and said corners of said plurality of corners.

5,775,046

MODULAR CONSTRUCTION MEMBER

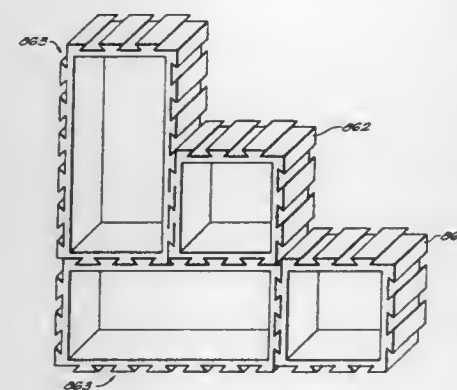
David J. Fanger, Albuquerque, N. Mex.; Richard E. Seubert, Renton, Wash.; Byungho Han, San Jose, Calif.; Darcy M. Ytterdahl, Chicago, Ill., and O. John Bourg, III, Houma, La., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 10, 1996, Ser. No. 644,541

Int. Cl.⁶ E04B 2/08; 2/18; 2/32; 2/46

U.S. Cl. 52—590.1

61 Claims



1. First and second construction members, comprising:

- a. a first construction member comprising:
 - i. a base having an engaging element side and an obverse side; and
 - ii. extending from said engaging element side along a meshing dimension, at least three engaging elements that are spaced apart along a discrete dimension that is perpendicular to said meshing dimension, and that extend along a sliding dimension that is perpendicular to both said discrete and said meshing dimensions;
- A. each of said engaging elements having a cross-section as cut by a cutting plane in which lie both of said discrete and meshing dimensions, which cross-section has a relatively narrow width along said discrete dimension at a narrow end registering plane that is relatively close to said base, and a relatively wide width along said discrete dimension at a wide end registering plane that is relatively distant from said base;
- B. each engaging element having a reference point, said engaging elements being spaced such that said reference point on each engaging element is spaced an integral number of pitches (P) from said reference point of any adjacent engaging element; and
- C. each pair of adjacent engaging elements defining therebetween, a receiving space, at least two of which have a cross-sectional shape and area cut by said cutting plane that is substantially congruent with so much of said cross-sectional shape of said engaging elements as lies between said wide end registering plane and said narrow end registering plane, and large enough so that an engaging element of a second construction member that is substantially identical with one of said engaging elements of said first construction member is slidably engageable with said receiving space, and also small

enough so that said second construction member, slideably engaged, is substantially restrained against motion along said meshing and discrete dimensions relative to said first construction member; and

- b. a second of said construction members, connected to said first construction member with said meshing dimensions of each construction member being inclined relative to each other, and said sliding dimensions of each construction member being parallel;
- c. said reference point of each of said engaging elements of both said first and second construction members further being located an integral number of pitches away from a first virtual corner line that:
 - i. is spaced away from a flush end of said first construction member along said discrete dimension of said first construction member;
 - ii. is spaced away from a butt end of said second construction member along said discrete dimension of said second construction member;
 - iii. is parallel to said sliding dimensions of both said first and second construction members; and
 - iv. lies at the intersection of a first boundary plane that includes said reference point for each of said engaging elements of said first construction member and a second boundary plane that includes said reference point for each of said engaging elements of said second construction member.

5,775,047

METHOD AND APPARATUS FOR PRODUCING LIGHTWEIGHT CONCRETE STRUCTURE

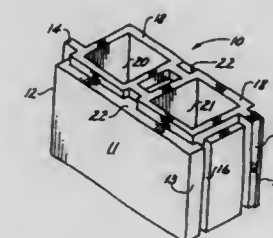
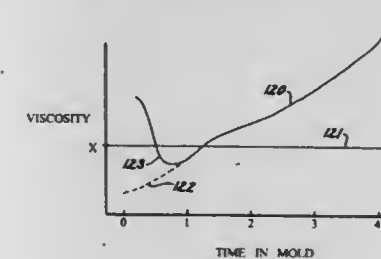
Daniel M. Jensen, South Jordan, Utah, assignor to Davies, Inc., Salt Lake City, Utah

Filed May 10, 1996, Ser. No. 641,524

Int. Cl.⁶ E04C 1/00; C04B 16/08

U.S. Cl. 52—596

5 Claims



- 1. A rigid lightweight cementitious structural member comprising:
 - (a) a rigid cementitious structure; and,
 - (b) a network of asymmetrical and symmetrical pores in said structure some of which are interconnected, substantially all of said pores being of many different widths ranging from 1/128 to 1/4 of an inch;
- said structural member having a density in the range of five pounds per cubic foot to fifty pounds per cubic foot.

5,775,048

UNDER DECK FASTENING SYSTEM

Brian Keith Orchard, 1640 Estevan Road, London, Canada, NSX 2G9

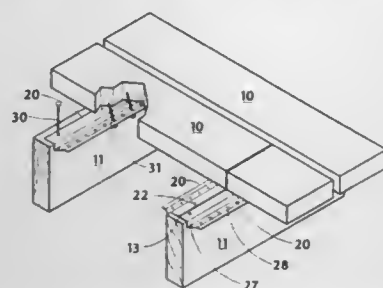
Filed Jul. 11, 1996, Ser. No. 678,687

Claims priority, application Canada, Jul. 17, 1995, 2154035

Int. Cl.⁶ F04B 1/38; F16B 1/00

U.S. Cl. 52—712

8 Claims



1. A clip for fastening an underface of a deck plank to an upperface of a joist, the clip comprising an elongated metallic sheet of a predetermined width, said clip having a profile defined by: a fastening flange having a leading edge; a depending facia having an upper end attached to the fastening flange and a lower end, said facia projecting at a right angle to said fastening flange from the leading edge thereof and terminating in an intersecting valley at said lower end; an angularly-upwardly-extending track having a leading edge, said angularly-upwardly-extending track projecting from said intersecting valley at the lower end of said depending facia; and a washer flange extending outwardly from the leading edge of said angularly-upwardly-extending track, the clip further comprising, connecting means for connecting the fastening flange to the upper face of the joist; and attachment means for attaching the angularly-upwardly-extending track to the underface of the deck plank.

5,775,049

METHOD AND APPARATUS FOR DAMPING STRUCTURAL VIBRATIONS

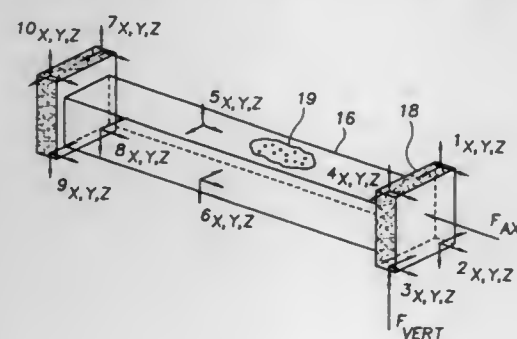
J. Robert Fricke, 160 Goden St., Belmont, Mass. 02178

Filed Jun. 12, 1996, Ser. No. 662,167

Int. Cl.⁶ E04C 3/46; E04B 1/98; E04H 9/02

U.S. Cl. 52—720.1

12 Claims



7. Damped structural member comprising: a structural member; and granular material having a bulk specific gravity less than 1.5 in intimate contact with the member wherein particles of the granular material are in intimate contact with each other.

5,775,050

Patent Not Issued For This Number

5,775,051

FRAME MEMBER FOR A SWITCHGEAR CABINET FRAME

Walter Nicolai, Buseck; Heinrich Strackbein, Biebertal; Udo Münch, Sinn; Adam Pawlowski, Dillenburg; Horst Besserer, Herborn; Matthias Schüller, Dietzhölztal, and Markus Neuhof, Ehringshausen, all of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Herborn, Germany

PCT No. PCT/EP95/04289, § 371 Date May 2, 1997, § 102(e)

Date May 2, 1997, PCT Pub. No. WO96/14731, PCT Pub.

Date May 17, 1996

PCT Filed Nov. 2, 1995, Ser. No. 836,568

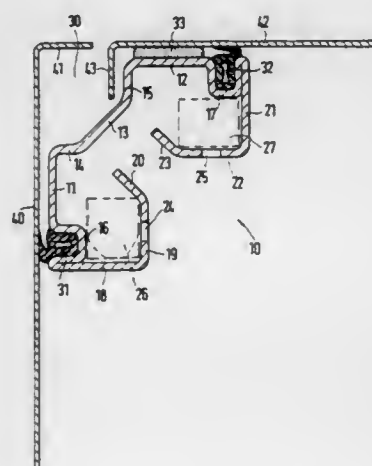
Claims priority, application Germany, Nov. 5, 1994, 44 39

551.5

Int. Cl.⁶ E04C 3/32

U.S. Cl. 52—731.1

17 Claims



1. A frame member for a switchgear cabinet frame, having two profile sides positioned vertically to one another, forming outer sides of a frame member, and which is formed as a hollow profile section which forms a receiver, wherein the improvement comprises:

the profile sides (11, 12) merging into one another by way of a plurality of transitional sections (14, 15) positioned vertically with respect to one another and into a connector section (13) positioned at an angle of about 135° with respect to the profile sides (11, 12);

each of the profile sides (11, 12) merging opposite the transitional sections (14, 15), into a corresponding one of a plurality of receiving grooves (16, 17) for accommodating one of a plurality of seal elements (31, 32);

connecting with the receiving grooves (16, 17) are a plurality of sections (18, 19; 21, 22) positioned vertically with respect to the associated profile sides (11, 12);

two first sections (19, 22) of the sections (18, 19; 21, 22) positioned parallel with respect to the associated profile sides (11, 12) and having a plurality of attachment means (24, 25); and

a plurality of inwardly angled terminal sections (20, 23) connected to the first sections (19, 22) of the sections (18, 19; 21, 22) which are positioned parallel to the corresponding profile sides (11, 12).

5,775,052

METHOD OF INSTALLING ROOFING MATERIAL

Robert L. Mayle, 2047 Hyde Rd., Port Clinton, Ohio 43452

Filed Jul. 11, 1996, Ser. No. 679,682

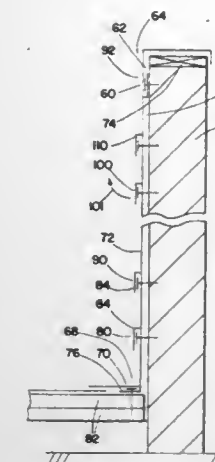
Int. Cl.⁶ E04B 1/00

U.S. Cl. 52—746.11

11 Claims

1. A method of installing roofing material comprising the steps of:

fastening said roofing material to a top portion of a wall;



fastening said roofing material to a location near the bottom of said wall;
folding back tabs affixed to an exterior surface of said roofing material; and
fastening said roofing material to an intervening portion of said wall by fastening means, wherein said fastening means are installed through said roofing material and into said wall.

5,775,053

CASE SEALING SYSTEM

Joe Augustine Shing-Tak Lam, Richmond, Canada, assignor to Belcor Industries Inc., Richmond, Canada

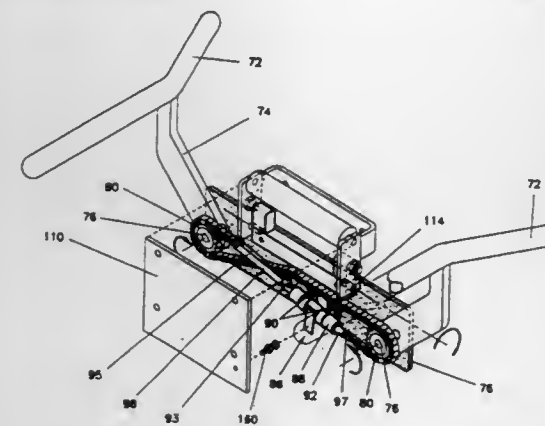
Division of Ser. No. 654,497, May 28, 1996, Pat. No.

5,687,543. This application May 6, 1997, Ser. No. 852,208

Int. Cl.⁶ B65B 61/00

U.S. Cl. 53—136.4

6 Claims



1. A packaging mechanism comprising a frame, a pair of lateral guide means positioned one on each side of a centerline of a path of travel of a package through said packaging mechanism and equally spaced on said opposite sides of said centerline and between which a package to be processed by said mechanism is to be guided, a support arm connected to each of said lateral guide means, a mounting plate, means mounting said mounting plate on said frame for movement relative to said frame between a locked position and a released position, a pair of shaft means one mounting each of said support arms, said pair of shaft means mounted on said mounting plate in spaced parallel relationship for rotation on a pair of spaced parallel rotational axes, said means mounting said mounting plate on said frame to position said rotational axes symmetrically one on each side of and in planes substantially parallel to said centerline, a connector means interconnecting said shafts for rotation in equal but opposite relative directions and releasable locking means for locking said connector means in a selected position to thereby lock each of said guide means in

5,775,054

UNIT FOR FORMING GROUPS OF CIGARETTES

Fulvio Boldrini, Ferrara, Italy, assignor to G.D. S.P.A., Bologna, Italy

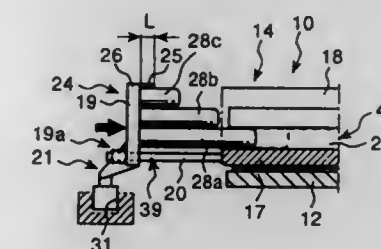
Filed Feb. 19, 1997, Ser. No. 802,265

Claims priority, application Italy, Feb. 19, 1996, B096 A 000073

Int. Cl.⁶ B65B 19/04; 3/06; A24C 1/38; 1/14

U.S. Cl. 53—149

16 Claims



1. A unit for forming groups of cigarettes including: at least one substantially U-shaped pocket designed to receive a group, feed means to feed in succession at least a bottom layer and a top layer of cigarettes, one above the other, into the pocket, the cigarettes being parallel with a longitudinal axis of the pocket; means for stabilising the cigarettes, said means being attached to the pocket, and an actuator for moving the stabilising means in a direction substantially parallel with said longitudinal axis, between a home position and an operating position, in which the stabilising means are respectively outside and inside the pocket, so as to hold the cigarettes in the correct position within the pocket.

5,775,055

ULTRASONIC SEALING ANVIL

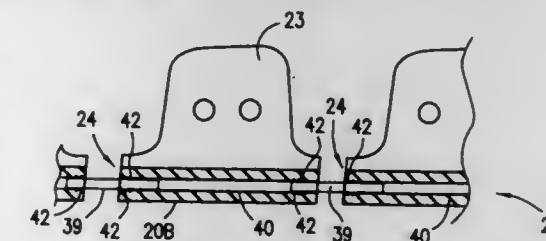
Peter Giacomelli, Lund; Erik Schott, Bjarred, both of Sweden; Ikuro Yokoyama, Arlington Heights; Takashi Omiya, Buffalo Grove, both of Ill., and Michio Sugata, Yokohama, Japan, assignors to Tetra Laval Holdings & Finance, S. A., Pully, Switzerland

Filed Feb. 21, 1997, Ser. No. 803,836

Int. Cl.⁶ B65B 51/10

U.S. Cl. 53—371.2

19 Claims



1. An anvil, for utilization in conjunction with an ultrasonic horn, a forward end of the anvil facing the ultrasonic horn, the anvil comprising:

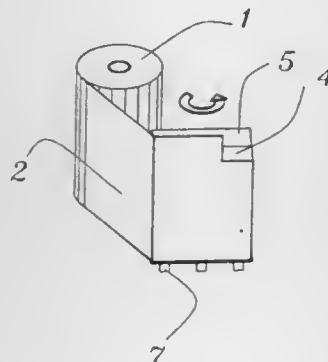
an anvil body;
a vibrating portion disposed forward from the anvil body;
a sealing portion attached to the vibrating portion;
means for acoustically insulating the anvil body disposed between the anvil body and the vibrating portion; and,
a cooling system disposed within the anvil.

5,775,056

METHOD AND APPARATUS FOR WRAPPING A PACKAGE AND FORMING FOLDS OF THE WRAPPING SHEET ONTO THE TOP SURFACE OF THE PACKAGE
Juhani Raubala, Jurva, and Heikki Airola, Sahalahti, both of Finland, assignors to Vesme Systems Oy, Finland
PCT No. PCT/FI94/00528, § 371 Date May 22, 1996, § 102(e) Date May 22, 1996, PCT Pub. No. WO95/14614, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 25, 1994, Ser. No. 649,621
Claims priority, application Finland, Nov. 29, 1993, 935291
Int. Cl.⁶ B65B 11/04
U.S. Cl. 53—397

20 Claims



1. A method of wrapping an object with a substantially inelastic wrapper comprising the steps of:

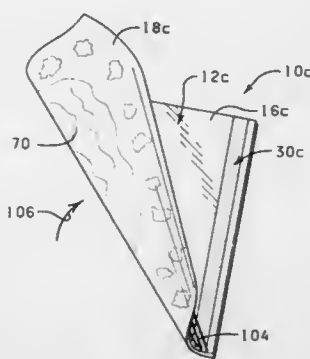
- positioning an object to be wrapped on a rotatable pallet such that a bottom end of the object rests on the pallet and such that the object extends vertically upwardly from said pallet to a top end of the object;
- providing a web of substantially inelastic wrapper material which is wider than the vertical height of the object positioned on the pallet;
- feeding a leading end of said web to a vertical side of the object positioned on the pallet such that a lower edge of said web is adjacent to said bottom end of said object and such that an upper edge of said web is above said top end of said object;
- folding a portion of the web material which extends between said top end of said object and the upper edge of the web, downwardly against the top end of the object;
- pressing only the folded web portion against said top end of said object to hold the web against the object;
- rotating the object, while the folded web portion is held against the top end of the object, to cause the vertical sides of the object to be wrapped by said web;
- securing a trailing edge of said web to the wrapped object; and
- folding the remaining portion of the web which extends between the top end of the object and the upper edge of the web, downwardly against the top end of the object.

5,775,057
OPTICAL EFFECT MATERIAL AND METHODS
Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc.

Continuation-in-part of Ser. No. 454,474, May 30, 1995, Ser. No. 965,585, Oct. 23, 1992, abandoned, Ser. No. 24,573, Mar. 1, 1993, abandoned, Ser. No. 67,882, May 25, 1993, Pat. No. 5,340,608, and Ser. No. 95,331, Jul. 21, 1993, Pat. No. 5,428,939, which is a continuation-in-part of Ser. No. 963,882, Oct. 20, 1992, Pat. No. 5,408,803, Ser. No. 923,117, Jul. 30, 1992, and Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, which is a continuation-in-part of Ser. No. 926,098, Aug. 5, 1992, which is a continuation-in-part of Ser. No. 803,318, Dec. 4, 1991, Pat. No. 5,344,016, which is a continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 923,177 is a continuation-in-part of Ser. No. 803,318, said Ser. No. 963,882 is a continuation-in-part of Ser. No. 865,563, May 21, 1992, Pat. No. 5,245,814, and Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, said Ser. No. 865,563 is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, said Ser. No. 965,585 is a continuation of Ser. No. 893,586, said Ser. No. 24,573 is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, said Ser. No. 454,474 is a continuation of Ser. No. 179,057, Jan. 7, 1994, Pat. No. 5,576,089, which is a continuation-in-part of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, which is a continuation of Ser. No. 865,563, said Ser. No. 67,882 is a continuation of Ser. No. 985,529, Dec. 3, 1992, Pat. No. 5,238,707, which is a continuation of Ser. No. 833,236, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 699,401, May 13, 1991, abandoned, which is a division of Ser. No. 428,249, Oct. 27, 1989, Pat. No. 5,038,975, which is a division of Ser. No. 163,596, Mar. 3, 1988, Pat. No. 4,893,757, which is a division of Ser. No. 916,892, Oct. 8, 1986, Pat. No. 4,776,521, which is a division of Ser. No. 640,517, Aug. 13, 1994, Pat. No. 4,646,388. This application Sep. 20, 1996, Ser. No. 717,335
Int. Cl.⁶ B65B 11/02; 11/04; 25/02

U.S. Cl. 53—397

55 Claims



1. A method for forming a decorative cover about a floral grouping having a flower portion and a stem portion, the method comprising:

- providing a sheet of optical effect material wherein the sheet of optical effect material has at least one hologram provided thereon;
- placing the floral grouping on the sheet of optical effect material; and
- wrapping the sheet of optical effect material about the floral grouping to provide the decorative cover about the floral

grouping such that the hologram is visible and constitutes at least a portion of the decor of the decorative cover.

5,775,058

PROCESS AND DEVICE FOR PACKING PRESSED BALES AS WELL AS PACKING MATERIAL BLANK
Hervig Hirschek, Bobingen, Germany, assignor to Autefa Maschinenfabrik GmbH, Friedberg, Germany
PCT No. PCT/EP95/00563, § 371 Date Aug. 7, 1996, § 102(e) Date Aug. 7, 1996, PCT Pub. No. WO95/22490, PCT Pub. Date Aug. 24, 1995

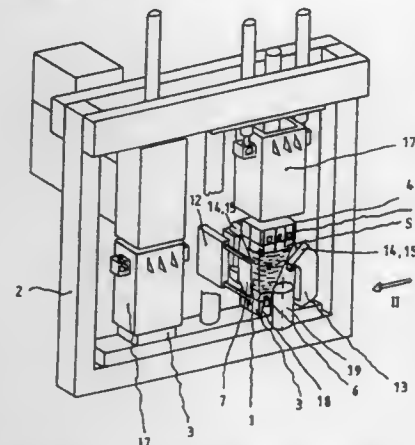
PCT Filed Feb. 16, 1995, Ser. No. 693,152

Claims priority, application Germany, Feb. 17, 1994, 42 05 120.4

Int. Cl.⁶ B65B 53/00; 27/12

U.S. Cl. 53—399

17 Claims



1. A process for packing pressed bales of fibrous materials, comprising:

- employing a baling press to form a pressed bale under a high pressing pressure;
- providing one or more elastic packing material blanks with a tensile strength and stretching resistance;
- providing the packing material blanks with two parts including a force-absorbing support insert with a meltable and/or bondable coating provided in some areas of said insert;
- disposing said packing material blanks to define overlaps of said packing material blanks on lateral surfaces of said pressed bale under a high pressing pressure;
- connecting said packing material blanks to one another by bonding and/or melting portions of said blanks, with said packing material blanks lying on said pressed bale, in a shear-resistant manner to form a packaged pressed bale, wherein at least one overlap located on said lateral surface of said pressed bale is formed by pressing a sealing means against a lateral surface of said pressed bale to provide an overlap blank connection.

5,775,059

METHOD AND APPARATUS FOR COMPACTING AND WINDING FLAT STOCK

Marshall B. Hampton, Larry J. Mattson, and Ronald O. Simpson, all of Charlotte, N.C., assignors to Alcoa Closure Systems International, Inc., Crawfordsville, Ind.

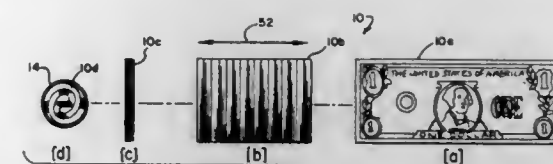
Filed Jan. 21, 1997, Ser. No. 785,982

Int. Cl.⁶ B65B 63/04

U.S. Cl. 53—429

18 Claims

1. A method of compacting and winding a bill comprising:
- providing a bill in a substantially flat state;
 - pleating said bill in a first direction to provide a series of substantially similar pleats;
 - compacting said pleated bill to set the pleats therein;



at least partially winding said compacted and pleated bill; and positioning said wound bill within a cavity of an associated closure.

5,775,060

PROCESS FOR FORMING WRAPPERS OF THIN SHEET MATERIALS AND A DEVICE FOR CARRYING OUT SAME

Pietro Ferrero, Waterloo, Belgium, assignor to Soremartec S.A., Belgium

PCT No. PCT/EP92/01438, § 371 Date Feb. 17, 1994, § 102(e) Date Feb. 17, 1994, PCT Pub. No. WO93/01093, PCT Pub. Date Jan. 21, 1993

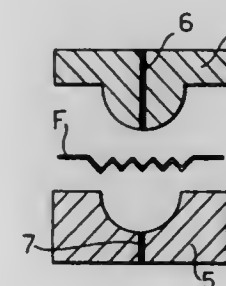
PCT Filed Jun. 25, 1992, Ser. No. 170,233

Claims priority, application Switzerland, Jul. 3, 1991, 1984/91

Int. Cl.⁶ B65B 47/04

U.S. Cl. 53—453

34 Claims



1. A method of wrapping an article having at least one rounded portion, comprising the steps of:

- (a) providing a first sheet of material on the order of tens of microns thick and having a coating thereon which can perform a self-lubricating function;
- (b) pleating said first sheet of material gradually, progressively, and symmetrically from a central region thereof towards outer regions thereof, thereby forming symmetrical meridional pleats in a pleated portion of said first sheet of material, said pleating step including maintaining said first sheet of material generally flat and causing limited movement of said first sheet of material from said outer regions thereof toward said central region thereof while said pleats are being formed, said pleating step further including subjecting said first sheet of material to restraining action which opposes said limited movement of said first sheet of material from its outer regions toward its central region;
- (c) forming the pleated portion of said first sheet of material into a dished shape while substantially eliminating said pleats from said pleated portion by unfolding-type expansion of said pleats, thereby yielding a substantially smooth, wrinkle-free surface;
- (d) inserting an article into said dished shape and then joining a second sheet of material to said first sheet of material along a closed line such that said article is completely surrounded by said first and second sheets of material; and
- (e) cutting said first and second sheets of material along said closed line, thereby forming a rim which projects outwardly from said closed line.

5,775,061
METHOD OF SHIPPING AND ASSEMBLING BURIAL CASKET AND CASKET SHIPPED AND ASSEMBLED BY SUCH METHOD

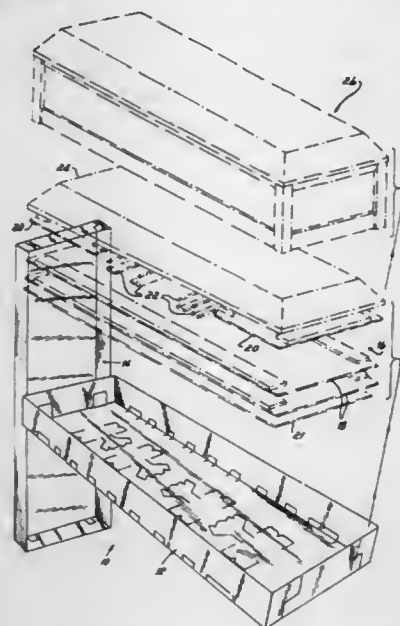
John R. Enneking; Gary L. Henby; Wilbur A. Schebler, all of Batesville, Ind.; Patrick M. Saaf, Manchester, N.H.; Eugene A. Ritter, Batesville, Ind., and Andrew Capogrosso, Fremont, Ohio, assignors to Batesville Casket Company, Inc., Batesville, Ind.

Continuation-in-part of Ser. No. 564,387, Nov. 29, 1995, abandoned. This application Feb. 20, 1996, Ser. No. 594,027

Int. Cl.⁶ B65B 61/20; 5/02; 43/26

U.S. Cl. 53—445

23 Claims



1. A method of shipping a casket in a knocked-down configuration and subsequently assembling the casket at its point of destination comprising the steps of:

- providing a kit of disassembled casket components assemblable into a casket having a shell and a cap;
- packing the kit of components into a shipping container;
- shipping the packaged casket kit to a destination point;
- removing the kit from the container; and
- assembling the casket from the kit including configuring at least a portion of the container into an interior component of the casket shell and placing the interior component into the shell.

5,775,062
METHOD OF CONTINUOUSLY FEEDING WRAPPING ELEMENTS IN SHEET FORM TO A USER MACHINE

Marco Ghini, S. Lazzaro di Savena; Michele Ferrari, Bologna, and Alessandro Minarelli, Bazzano, all of Italy, assignors to G.D. Società per Azioni, Italy

Filed Jun. 12, 1996, Ser. No. 662,935

Claims priority, application Italy, Jun. 14, 1995, BO95A0303

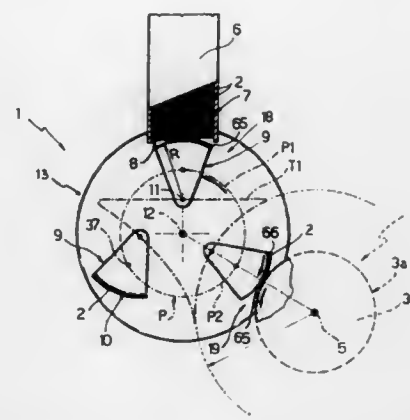
Int. Cl.⁶ B65H 3/42; B31B 1/80

U.S. Cl. 53—461

6 Claims

1. A method of continuously feeding wrapping elements in sheet form to a user machine having an input conveyor presenting a cylindrical conveying surface rotating continuously about a first axis at a substantially constant angular speed for successively receiving said elements; the method comprising:

- successively and continuously withdrawing said elements from an output end of a feedbox by means of respective gripping members, each of which is provided with a relevant curved peripheral gripping cylindrical surface having a second axis; each element being withdrawn progressively from said output end by rolling the peripheral gripping surface of the respective gripping member along the output end, by moving said



second axis of said respective gripping member along a first trajectory parallel to said output end and at a first speed, and by rotating said respective gripping member about the respective second axis so as to impart to the respective peripheral gripping surface a second surface speed, about said respective second axis, equal to twice said first speed; feeding said gripping members, together with the respective elements, along a given path; and progressively releasing the elements onto said conveying surface by rolling the peripheral gripping surface of the respective gripping member on the conveying surface, by moving the second axis of the respective gripping member along a second trajectory parallel to said conveying surface, and coaxial with said first axis, and by rotating the respective gripping member about said respective second axis so as to impart to the respective peripheral gripping surface a third speed, about said second axis, equal to the speed of the conveying surface; said second axis being moved along said second trajectory at a fourth speed equal to half said third speed.

5,775,063
PROCESS AND APPARATUS FOR ASSEMBLY-PACKAGING PELLET-LIKE ARTICLES

Kenji Ikai, and Yoshio Kito, both of Nagoya, Japan, assignors to Fuji Machinery Co., Ltd., Aichi, Japan

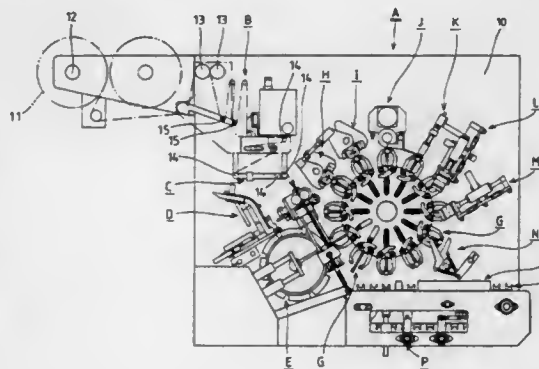
Filed Sep. 5, 1996, Ser. No. 707,645

Claims priority, application Japan, Oct. 31, 1995, 7-308324

Int. Cl.⁶ B65B 11/32

U.S. Cl. 53—463

7 Claims



1. A process for assembly-packing pellet-like articles in units of a predetermined number, which comprises: supplying a packaging film obtained by cutting a double-side heat-sealable belt-like film drawn from a web roll into a predetermined length to a stand-by position; ejecting a pellet-like article group, consisting of an assembly of pellet-like articles fed to a position where it opposes said packaging film with the end faces of said pellet-like articles

being abutted against one another in alignment, toward said packaging film at the stand-by position; gripping the thus ejected pellet-like article group and said packaging film half-wrapped around it with gripping means which is rotated intermittently by predetermined angles; putting together overlapping edges of said packaging film half-wrapped around said pellet-like article group and preheat-sealing said overlapping edges together to allow said packaging film to have a tubular form, at a stopping position of said gripping means; sealing said preheat-sealed overlapping edges of said packaging film fully to form a sealed rib, at the next stopping position of said gripping means; folding down said sealed rib along the barrel of said pellet-like article group, and heat-sealing the thus folded sealed rib onto the portion of said packaging film opposing said sealed rib, at the next stopping position of said gripping means; gusseting both open end portions of said tubular packaging film and preheat-sealing together overlapping two-sheet portion of each open end portion remaining ungusseted, at the next stopping position of said gripping means; sealing said gusseted and preheat-sealed end portions fully to form sealed tabs, at the next stopping position of said gripping means; cutting said sealed tab to a predetermined length at the next stopping position of said gripping means; and folding down each sealed tab along the end face of said assembled pellet-like article group and heat-sealing the thus folded sealed tab onto the portion of said packaging film opposing said tab.

5,775,064
CARTONING MACHINE

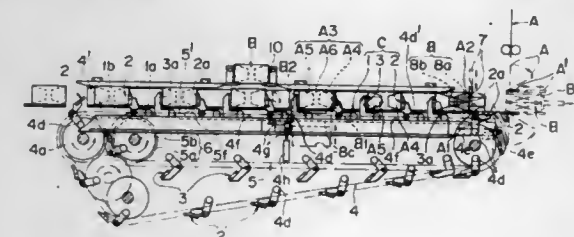
Yasuo Iwata, Tokyo, Japan, assignor to Tokyo Automatic Machinery Works, Ltd.

Filed Jul. 22, 1996, Ser. No. 683,982

Int. Cl.⁶ B65B 11/12

U.S. Cl. 53—466

14 Claims



13. A cartoning method wherein generally rectangular, arranged and stacked contents are fed horizontally into abutment with a flat foldable carton, the carton fed in a direction substantially orthogonal to the feed direction of the contents, thereby allowing a body portion of the carton to form a U shape around the contents, and body flaps and side flaps of the carton are folded in successively while the contents and the carton are conveyed substantially horizontally to pack the contents into the folded carton, said method comprising:

- depressing and holding one pivotable face of a conveyance pocket in the direction opposite to the feed direction of the contents so as to be substantially flush with an inner bottom surface of the conveyance pocket until the fed carton and contents transfer into the conveyance pocket, the pivotable face being oppositely abutable with a lower body flap of the carton and a rear face, in the feed direction, of the contents, the conveyance pocket being disposed in the feed direction of the contents and positioned on the most upstream side in the conveyance direction;
- folding down an upper body flap of the carton along the rear face of the contents by a fold-down piece when the fed carton and contents have passed into the conveyance pocket on the most upstream side in the conveyance direction;

pivotaly raising the pivotable face after the folding down by the fold-down piece; moving a plurality of contents and cartons within a plurality of conveyance pockets simultaneously, by the operation of endless flexible members to which the plurality of conveyance pockets are attached; and folding in side flaps of the cartons successively during the movement by a fold-in piece.

5,775,065
METHOD AND APPARATUS FOR TRANSVERSE CUTTING AND SEALING FILM WRAPPED AROUND A PRODUCT

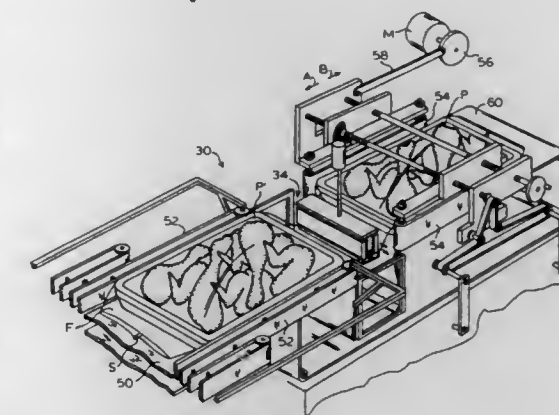
Sidney S. Tolson, Scotland Neck, N.C., assignor to Ossid Corporation, Rocky Mount, N.C.

Filed May 1, 1997, Ser. No. 847,020

Int. Cl.⁶ B65B 53/02; 51/26; 51/32

U.S. Cl. 53—479

4 Claims

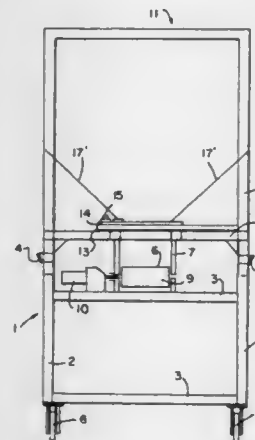


1. A method for cutting and sealing a heat shrinkable film transversely between successive film wrapped products, comprising the steps of:

- (a) clamping said heat shrinkable film transversely with first cooled clamping means at a position upstream and second cooled clamping means at a position downstream of a transverse sealing position;
- (b) providing a sealing head having a pair of protruding sealing bars;
- (c) heating said sealing head so as to cause said sealing bars to attain a temperature sufficient to seal said heat shrinkable film;
- (d) contacting said heat shrinkable film at said sealing position with said sealing bars so as to apply sufficient pressure to seal said heat shrinkable film;
- (e) cutting said heat shrinkable film with a cutting member maintained at a temperature lower than needed to thermally sever said film and fixedly positioned between said sealing bars so that a first of said successive film wrapped products is cut apart from a second of said successive film wrapped products;
- (f) retracting said sealing bars and said cutting member from contact with said heat shrinkable film;
- (g) allowing said heat shrinkable film upstream and downstream of said sealing position to shrink in a longitudinal direction away from said sealing position while maintaining said first and second cooled clamping means in clamping contact with said heat shrinkable film;
- (h) restraining said heat shrinkable film from shrinking in a transverse direction; and
- (i) unclamping said heat shrinkable film by retracting said first and second cooled clamping means.

5,775,066
**DEVICE FOR THE DISTRIBUTION OF BULK ARTICLES
 AND USE OF SUCH A DEVICE**
 José Lamaire, Vleteren, Belgium, assignor to Bart Lamaire,
 Vleteren, Belgium
 Filed Feb. 12, 1996, Ser. No. 600,164
 Int. Cl.⁶ B65B 1/32; 25/04; 37/00; 59/04
 U.S. Cl. 53—502

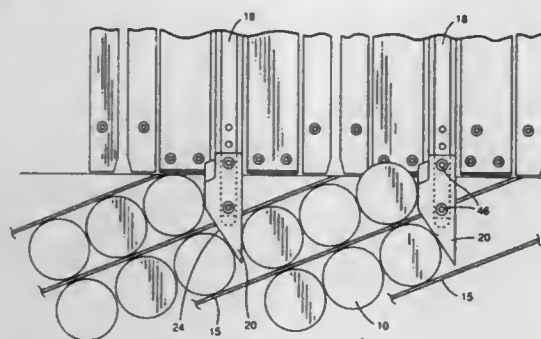
15 Claims



1. A method of distributing bulk articles comprising the steps of filling a portable stock container, moving the stock container to a desired location, positioning a conveyor by the stock container, supplying bulk articles from the stock container to the conveyor, driving the conveyor for transporting bulk articles received from the stock container, and filling bulk articles in packaging.

5,775,067
ARTICLE SELECTOR WEDGE
 Cory E. Hawley, Aitkin, Minn., assignor to Riverwood International Corporation, Atlanta, Ga.
 Filed Jan. 8, 1997, Ser. No. 780,645
 Int. Cl.⁶ B65B 35/30
 U.S. Cl. 53—543

18 Claims



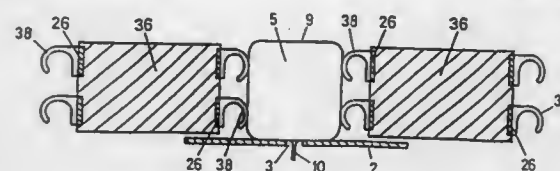
1. A selector wedge for selecting and forming groups of thin-walled, cylindrical articles traveling from an upstream end to a downstream end on an infeed mechanism, said selector wedge comprising: a body having an anterior end, a posterior end opposite said anterior end, a generally vertical first face and a generally vertical second face intersecting at said anterior end and forming an acute angle between said first face and said second face, said first face having an outwardly curving surface for contacting the articles on the infeed mechanism, said first face being oriented toward the upstream end of the infeed mechanism, wherein pressure exerted by an article in contact with said first face causes a portion of the article to temporarily conform to said outwardly curving surface, whereby said outwardly curving surface allows the article to withstand, without damage, greater pressure between the article and said wedge, whereby the greater pressure is caused by a higher relative velocity between the article traveling on the

infeed mechanism and said wedge, and whereby the higher relative velocity corresponds with a faster article group selection and formation process.

5,775,068
**BAG FORMING, FILLING AND SEALING MACHINE
 WITH ENDLESS SUPPORTING BELTS**
 Thomas Strasser, Benken; Theo Walz, Neunkirch, and Werner Kern, Schaffhausen, all of Switzerland, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
 PCT No. PCT/CH95/00214, § 371 Date Mar. 31, 1997, § 102(e) Date Mar. 31, 1997, PCT Pub. No. WO96/10516, PCT Pub. Date Apr. 11, 1996
 PCT Filed Sep. 22, 1995, Ser. No. 809,969
 Claims priority, application Switzerland, Oct. 3, 1994, 02980/94

Int. Cl.⁶ B65B 9/06; B65G 15/14; 15/44
 U.S. Cl. 53—550

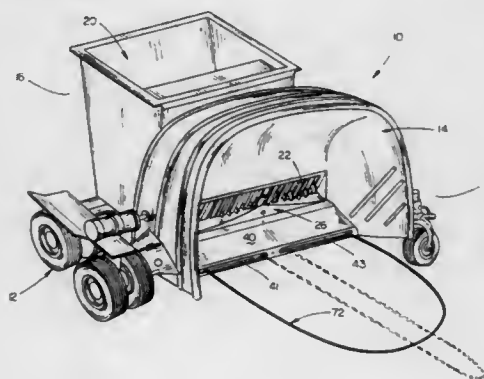
16 Claims



1. An arrangement for an endless belt, comprising: an endless belt having an inside adapted to be driven by a transport wheel and an outside; and elastic fingers attached to the outside of the endless belt, the elastic fingers being substantially evenly spaced from one another, each elastic finger having a free end and another end that constitutes a fastening point to the endless belt, and each elastic finger having a curved shape between the free end and the fastening point and presenting a clamping region between the free end and the fastening point.

5,775,069
**DENSITY CONTROL MEANS FOR AN AGRICULTURAL
 FEED BAGGING MACHINE**
 Steven R. Cullen, Astoria, Oreg., assignor to Versa Corporation, Astoria, Oreg.
 Continuation of Ser. No. 762,195, Dec. 9, 1996, Pat. No. 5,671,594, which is a continuation of Ser. No. 448,995, May 24, 1995, abandoned. This application Jun. 16, 1997, Ser. No. 876,352
 Int. Cl.⁶ B65B 1/24
 U.S. Cl. 53—567

1 Claim



1. An agricultural bagging machine for bagging agricultural material into an agricultural bag having a closed end and an open mouth comprising:

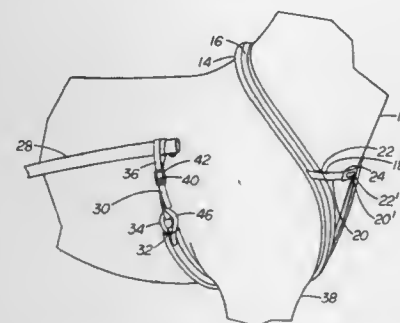
a frame having rearward and forward ends;
 a tunnel on said frame having an intake end for receiving the material to be bagged and an output end adapted to receive the open mouth of the agricultural bag;
 said tunnel having a top wall and opposite side walls;
 a hopper on said frame forwardly of said tunnel for receiving the material to be bagged;
 a horizontally disposed rotor at the intake end of said tunnel for forcing the material to be bagged from said hopper through said tunnel and into said bag;
 and a density control means positioned between the side walls of said tunnel for engagement with the material being bagged as the material is forced past said density control means and into said bag to control the density of the material;
 said density control means comprising an elongated flexible cable positioned between the side walls of said tunnel to define a first generally U-shaped cable loop having spaced-apart first and second leg portions joined by a base portion;
 said leg portions having forward ends positioned forwardly of said base portion;
 engagement means in engagement with said U-shaped cable loop to permit the spacing between said first and second leg portions to be selectively changed;
 said cable dwelling in a generally horizontally disposed plane positioned below said rotor.

5,775,070

Patent Not Issued For This Number

5,775,071
**DEVICE AND METHOD FOR CORRECTING THE GAIT
 OF A BAD GAITED HORSE**
 Al G. Terwilliger, Clawson, Mich., assignor to Protecto Horse Equipment Co., Clawson, Mich.
 Filed Oct. 11, 1996, Ser. No. 728,741
 Int. Cl.⁶ B68B 1/00
 U.S. Cl. 54—71

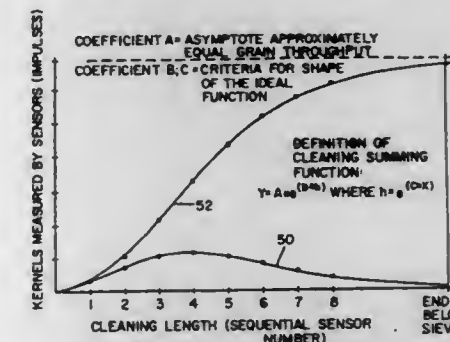
15 Claims



12. A gait correcting device for a horse comprising a soft flexible tube of sufficient length to fit over the neck and under the armpits of a horse.
 a strap through the tube, the strap having a first end and a second end.
 retaining means on the first and second ends of the strap.
 first tensioning means between the first end and first retaining means and second tensioning means between the second end and the second retaining means, and
 means for positioning and retaining the device on a horse.

5,775,072
**PROCESS FOR AUTOMATICALLY CONTROLLING A
 CROP PROCESSING UNIT**
 Thomas Herlitzius, Delfeld, and Lutz Bischoff, Dresden, both of Germany, assignors to Deere & Company, Moline, Ill.
 Filed Feb. 16, 1996, Ser. No. 602,474
 Claims priority, application Germany, Feb. 22, 1995, 195 06 059.8
 Int. Cl.⁶ A01D 75/00; A01F 12/00
 U.S. Cl. 56—10.2 R

4 Claims



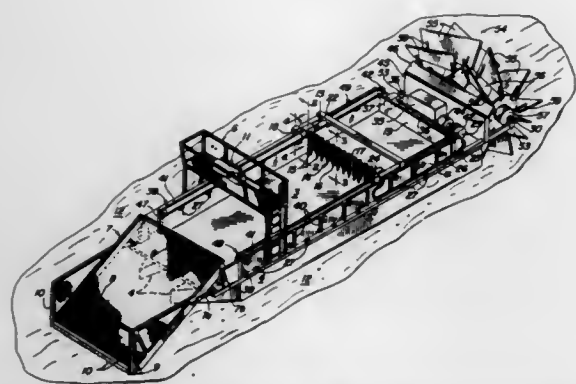
1. Process for the control of a crop processing unit in a harvesting machine (10) with the following process steps:
 a) creating an ideal function curve (50) from measured values determined under optimum cleaning conditions of the harvesting machine (10) during an actual cleaning operation, the ideal function curve being a function relating clean grain throughput of the cleaning system to longitudinal distance in the cleaning system;
 b) generating an algorithm describing the ideal function curve (50) having at least two coefficients (B, C) where the coefficients (B, C) is associated with a control variable that influences a cleaning operation;
 c) programming a computing device with the algorithm;
 d) during the operation of the harvesting machine (10) forming measurement values over the course of the cleaning process and determining the actual function curve;
 e) comparing the actual function curve to the ideal function curve;
 f) in case of a deviation in the actual function curve from the ideal function curve (50) changing a control variable that influences the coefficients to arrive at a closer approximation of the actual function curve to the ideal function curve (50).

5,775,073
**RAKE COMPACTOR AND HELICAL PADDLE WHEEL
 FOR AQUATIC HARVESTER**
 Thomas G. Kelpin, deceased, late of Shreveport, La., and by Margaret L. Kelpin, administratrix, 2045 Bert Kouns, Apt. 228, Shreveport, La. 71118
 Filed Oct. 9, 1996, Ser. No. 728,327
 Int. Cl.⁶ A01D 44/00

U.S. Cl. 56—8

17 Claims

1. In an aquatic harvester having a deck, pontoons disposed beneath the deck, a loading apron provided on one end of the deck and an aquatic vegetation cutter mounted on the loading apron, the improvement comprising a trolley characterized by a frame and wheels carried by said frame; rail means extending longitudinally along the deck in spaced relationship with respect to each other for receiving said wheels; a pair of endless chain drive means attached to said frames; and a mount bar rotatably carried by said frame; engaging means carried by said mount bar; and rake pivot means carried by said frame, said rake pivot means engaging said mount bar for selectively rotating said mount bar and pivoting said engaging means and positioning said engaging means for engaging and disengaging the aquatic vegetation deposited on the deck by the loading apron and selectively moving the aquatic vegetation on the deck responsive to operation of said inlet chain drive means

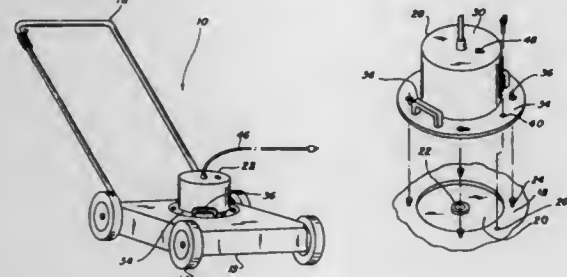


and controlled traversal of said rail means selectively in a forward and reverse direction by said trolley.

5,775,074
VERSATILE POWER MECHANISM FOR USE WITH A PLURALITY OF OUTDOOR APPLIANCES
Dennis G. Walter, 6471 El Jardin St., Long Beach, Calif. 90815
Filed Aug. 8, 1996, Ser. No. 689,484
Int. Cl.⁶ A01D 34/78

U.S. Cl. 56—11.9

2 Claims



1. A new and improved versatile power mechanism for use with a lawn mower comprising, in combination:

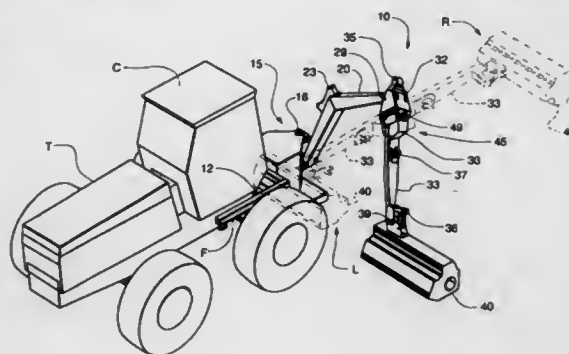
a lawn mower with a generally rectangular configuration having a closed top face, an open bottom face, and a periphery formed therebetween with a plurality of wheels rotatably coupled thereto for allowing maneuvering of the lawn mower and a handle pivotally coupled thereto for further facilitating such maneuvering, the top face of the lawn mower having a first inset circular portion centrally formed therein, a second inset circular portion centrally formed in the first inset circular portion, and a drive aperture formed centrally in the second inset circular portion, the top face of the lawn mower further having a plurality of securement pins coupled to the first inset circular portion and extending upwardly therefrom and a plurality of apertures formed in the first inset circular portion; and

a versatile power mechanism with a cylindrical configuration having a top face, a bottom face, and a periphery formed therebetween, the power mechanism having an annular flange integrally formed on the bottom face of the power mechanism, a pair of handles coupled to an upper surface of the flange at opposite ends of the power mechanism for allowing the convenient transportation thereof, a plurality of securement apertures positioned on the flange and adapted to releasably receive the securement pins of the lawn mower thus allowing the selective securement of the power mechanism to the top face of the lawn mower, a plurality of apertures formed in the flange in alignment with the apertures of the top face of the lawn mower upon the securement of the securement pins within the securement apertures, and a plurality of coupling pins adapted to releasably insert within the apertures of the power mechanism and the lawn mower thus further securing the power mechanism to the top face of the lawn mower, the power mechanism further having a threaded rotor

extending from the bottom face thereof and adapted rotate upon the activation thereof with the rotor further adapted to insert within the drive aperture of the lawn mower, a power cord with a first end coupled to the top face of the power mechanism and a second end releasably coupleable to a conventional alternating current receptacle for receiving power therefrom, and a power switch situated on the top face of the power mechanism and adapted to allow the selective activation of the power mechanism thus providing mechanical motion to the lawn mower, whereby the power mechanism may be releasably situated on a plurality of outdoor appliances for providing mechanical motion thereto.

5,775,075
ARTICULATED BOOM ASSEMBLY
Gary D. Dannar, 678 Valleywood Dr. SE., Salem, Ore. 97306
Filed Sep. 24, 1996, Ser. No. 719,400
Int. Cl.⁶ A01D 34/00; 34/86
U.S. Cl. 56—15.2

20 Claims



1. In a boom apparatus having a first boom member mounted for rotational movement about a generally vertical pivot axis and for pivotal movement about a first generally horizontal pivot axis; a second boom assembly pivotally connected to said first boom member for pivotal movement about a second generally horizontal pivot axis, said second boom assembly including a second boom member and being movable with said first boom member about said first horizontal pivot axis and said generally vertical pivot axis; and a work implement supported from a distal end of said second boom assembly, said work implement being pivotally movable within a first plane of movement defined by said first and second boom members through movement thereof about said first and second generally horizontal pivot axes, the improvement comprising:

said second boom assembly being articulated about a generally orthogonal pivot axis to permit movement therewith in said first plane of movement extending generally orthogonal to said first plane of movement.

15. A boom-mounted cutting apparatus, comprising:

a fixed frame member selectively connectable to a prime mover and supporting a substantially vertical pivot;

a boom assembly having a first end pivotally connected to said fixed frame member by a first horizontal pivot permitting said boom apparatus to move in a vertical plane and a distal second end, said first horizontal pivot being mounted on said fixed frame member for rotation in a generally horizontal plane about said vertical pivot, said boom assembly including: a first boom member pivotally connected to said first horizontal pivot and having a remote end carrying a second horizontal pivot;

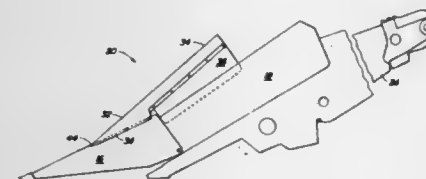
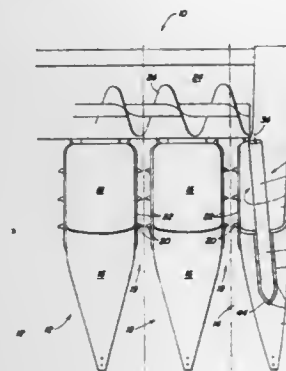
a second boom member pivotally connected at said remote end of said first boom member by said second horizontal pivot for movement in said vertical plane, said second boom member defining said distal end of said boom assembly; and

an orthogonal pivot carried by said second boom member; and

a cutting implement pivotally connected to said boom assembly by a third pivot carried by said distal end of said boom assembly, said cutting implement being movable generally vertically through movement thereof about said first and second horizontal pivots and being further movable in an orthogonal plane about said orthogonal pivot.

5,775,076
FENDER EXTENSION FOR A CORN HARVESTER
Michael Wayne Mossman, Silvis, Ill., assignor to Deere & Company, Moline, Ill.
Filed May 10, 1996, Ser. No. 644,505
Int. Cl.⁶ A01D 45/02
U.S. Cl. 56—119

14 Claims



1. A fender extension for a corn harvester having an end divider, the end divider is provided with a semi-conical portion and a semi-cylindrical portion, the fender extension comprising: an angled mounting portion adapted to be mounted to the semi-conical portion of the end divider; a cantilevered portion extending rearwardly from the angled mounting portion to overlie the semi-cylindrical portion of the end divider; and a sheet extending downwardly from and rigidly secured to the cantilevered portion, into contact with the semi-cylindrical portion of the end divider.

5,775,077
LAWNMOWING APPARATUS HAVING GRASS COLLECTOR FULLNESS DETECTOR WITH ELASTIC MEMBRANE

Jaroslav O. Olmr, 2919 N. 8th St., Sheboygan, Wis. 53083
Filed May 31, 1996, Ser. No. 655,855
Int. Cl.⁶ A01D 34/12

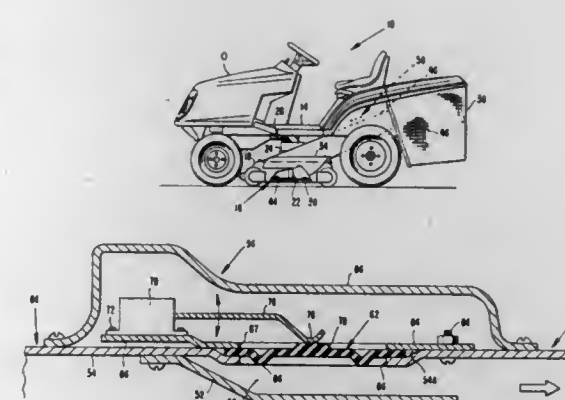
U.S. Cl. 56—202

11 Claims

1. A lawnmower including:

a cutting chamber and a rotary cutter blade therein; an air flow passage through which grass cuttings are discharged from said cutting chamber in a current of air; a collector connected to said passage for accumulating said grass cuttings; and

a detector responsive to an air pressure condition within said passage to change a state of said detector under a predeter-



mined pressure condition related to a fullness of said collector, said detector including:

an elastic membrane covering an opening arrangement formed in a wall of said passage to communicate a first side of said membrane with pressure in said passage;

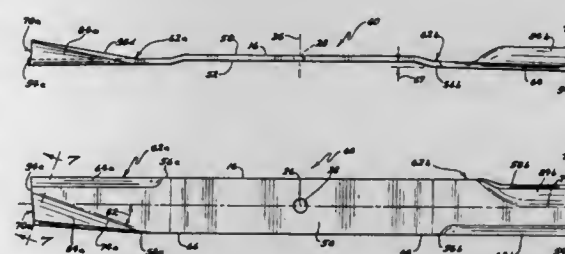
a switch including a sensing arm engageable with a second side of said membrane to be displaced in response to pressure-induced deflection of a contact region of said membrane contacted by said sensing arm; and

said membrane having formed therein a pleated structure surrounding said contact region and defining a bellows portion for increasing a displacement distance of said contact region of said membrane.

5,775,078
ROTARY LAWN MOWER
Richard C. Warren, 1293 Calumet Ave., West St. Paul, Minn. 55118
Filed Jul. 19, 1996, Ser. No. 684,526
Int. Cl.⁶ A01D 55/18

U.S. Cl. 56—255

11 Claims



1. A mower blade for cutting ground vegetation which is edge-wise rotatable about a center of rotation, said cutting blade comprising:

a central portion and first and second outer end portions substantially equally spaced from the central portion, each outer end portion comprising (i) a leading edge including a sharpened cutting surface for cutting the vegetation, (ii) a trailing edge, and (iii) a sail member having a sail surface upwardly extending away from a generally horizontal plane containing the cutting surface, wherein the sail member of the first outer end portion and the sail member of the second outer end portion are differently configured from one another, and wherein the mower blade is not rotationally symmetrical about the center of rotation.

5,775,079
APPARATUS FOR IMPARTING VIRTUAL TWIST TO
STRAND MATERIAL AND METHOD OF IMPARTING
SAME

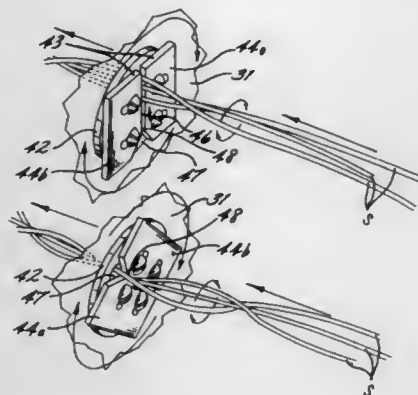
D. Lynn Hoover, Cramerton, N.C., assignor to American Linc
Corporation, Gastonia, N.C.

Filed Apr. 21, 1997, Ser. No. 843,797

Int. Cl.⁶ D01H 7/02

U.S. Cl. 57—59

48 Claims



1. An apparatus for imparting a virtual twist to textile strand material, the apparatus comprising:
a source of textile strand material;
drawing means positioned downstream from said textile strand material source for drawing strand material from said textile strand material source; and
virtual twisting means positioned between said textile strand material source and said drawing means for applying a virtual twist to strand material being drawn by said drawing means, said virtual twisting means comprising a strand guide for guiding strand material supplied thereto and strand guide driving means connected to said strand guide for rotatingly driving said strand guide in only one rotational direction, said strand guide including an opening for extending strand material therethrough, said opening having wider portions and narrower portions so that strand material slidably moves between the wider and narrower portions during rotation of said strand guide to thereby impart a virtual twist to strand material.

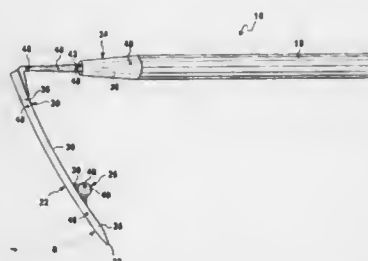
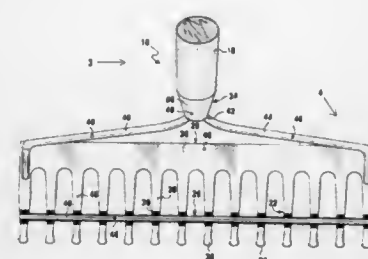
5,775,080
RAKE FOR REMOVING WEEDS WITH INTACT ROOTS
Frederick C. Reithel, 623 Caledonia Rd., Dix Hills, N.Y. 11746
Filed Oct. 7, 1996, Ser. No. 726,627

Int. Cl.⁶ A01D 7/06

U.S. Cl. 56—400.07

2 Claims

1. A rake for removing weeds with intact roots from the soil comprising:
a) an elongate handle;
b) a generally rigid rectangular spine having a plurality of tines extending therefrom and integral with said spine, the distal end of each tine having an enlarged, rounded tip, said tip having a flattened tapered chisel edge;
c) means for attaching said spine transversely to said elongate handle comprising a ferrule secured to a bottom end of said elongate handle, a tang projecting out from said ferrule, and a pair of bow arms in which each said bow arm extends from an opposite end of said spine to said tang, said spine being attached to said handle so that said tines are approximately at a 30 degree angle from the horizontal when said rake is being used, to permit easy penetration into the soil with minimum effort;
d) a crosspiece made from a cylindrical rod; and
e) means for affixing by welding said crosspiece across a surface of said tines facing said handle at a predetermined distance from distal free ends of said tines, so that when said tines



enter the soil, said crosspiece will engage with the roots of the weeds below grade level to lift the weeds with the intact roots completely out of the soil.

5,775,081

Patent Not Issued For This Number

5,775,082
DISCRETE SLIVER TUBE FITTING HAVING INTERNAL
SLIVER BRAKE

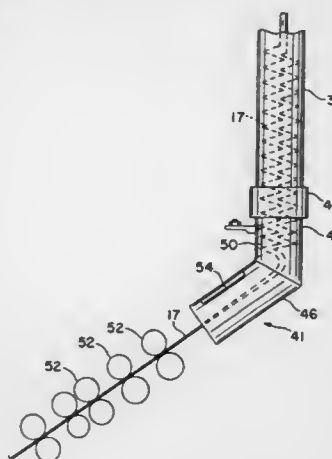
Kiyohiro Tsuzuki, Greenville, S.C., assignor to TNS Mills Inc.,
Greenville, S.C.

Continuation of Ser. No. 480,502, Jun. 7, 1995, Pat. No. 5,598,692, which is a continuation-in-part of Ser. No. 134,461, Oct. 8, 1993, Pat. No. 5,333,440, which is a continuation of Ser. No. 934,877, Aug. 21, 1992, abandoned. This application Oct. 15, 1996, Ser. No. 700,983

Int. Cl.⁶ D01H 13/02

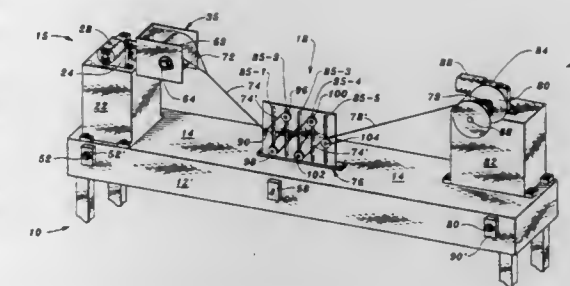
U.S. Cl. 57—90

4 Claims



1. A discrete fitting adapted for engagement with a lower end of a sliver feed tube, sliver being fed through said sliver feed tube from a point adjacent a plant ceiling to a point adjacent a ring spinning device on said plant floor, said fitting comprising:
an inlet section directly communicating with said lower end of said sliver tube;

a brake section extending vertically downwardly from said inlet section, said brake section including a stationary brake arranged parallel to said brake section to temporarily halt descent of a portion of sliver through said sliver feed tube said brake having a height in a direction parallel to said brake section and a width in a direction perpendicular to said brake section, said height being greater than said width; and
a slide section, adjacent a lower end of said brake and said brake section, and extending at an obtuse angle to said brake section and ending immediately adjacent a spinning device.



5,775,083

SPINDLE FOR A SPINNING OR A TWISTING MACHINE
Gerd Stahlecker, Eisingen/Fils, and Hans Braxmeyer, Süssen,
both of Germany, assignors to Novibra GmbH, Suessen,
Germany

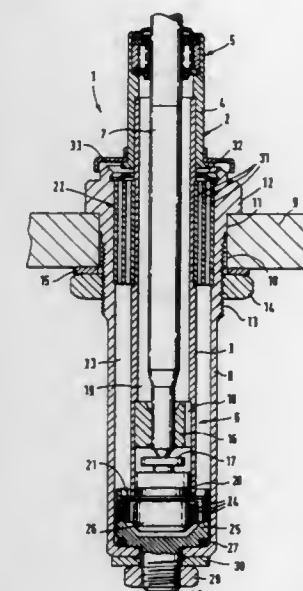
Filed Aug. 29, 1996, Ser. No. 705,312

Claims priority, application Germany, Sep. 15, 1995, 195 34 339.5

Int. Cl.⁶ D01H 7/08

U.S. Cl. 57—135

25 Claims



1. A spindle for spinning or twisting machines comprising a rigid inner sleeve which supports a neck bearing and a step bearing for a rotatably supported shaft and which is accommodated in a bearing housing, said bearing housing being connected to a spindle rail, the inner sleeve being supported against the bearing housing by first and second radially symmetrical acting metal springs disposed at a distance from one another, of which the first metal spring is closer to the neck bearing than to the step bearing and the second metal spring is closer to the step bearing than to the neck bearing, wherein the spring rate of the first metal spring amounts to between five times and twenty times the spring rate of the second metal spring.

5,775,084

RECYCLABLE STRING

Robert K. Bernhardt, 21 Cindy Pl., Brentwood, Calif. 94513,
assignor to Robert K. Bernhardt, Brentwood, Calif.

Continuation-in-part of Ser. No. 388,379, Feb. 14, 1995, abandoned. This application Apr. 26, 1996, Ser. No. 638,529

Int. Cl.⁶ D02G 3/02; 3/06

U.S. Cl. 57—260

8 Claims

1. A recyclable string formed by a method consisting of the steps formed by:
paying off a recyclable plastic strip from a roll;

passing the strip through an opening smaller than the width;
passing the strip through a braking means which stretches the compacted strip beyond the elastic limit and below the breaking strength limit of the strip to form the string;
taking up the string in a thoroughly stretched condition with circular to oval cross section created by the reduction of the size of the film strip.

5,775,085

METHOD AND DEVICE FOR PREVENTING MASS
FLUCTUATIONS IN FIBER MATERIAL

François Baechler, Wermatswil, Switzerland, assignor to Zellweger Luwa AG, Wilstrasse, Switzerland

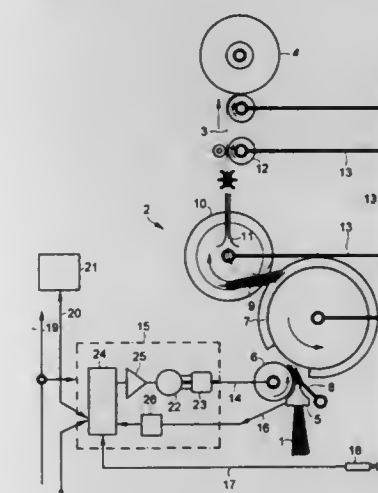
Filed Jul. 18, 1996, Ser. No. 683,405

Claims priority, application Switzerland, Jul. 19, 1995, 02127/95

Int. Cl.⁶ D01H 4/00; 7/46

U.S. Cl. 57—264

5 Claims



1. A method for controlling mass fluctuations in yarn formed in a rotor spinning system of the type which includes a rotor, feed means for feeding fiber material toward the rotor, and take up means for withdrawing yarn from the rotor, said method comprising detecting fluctuations in the mass of fiber material being fed toward the rotor, detecting fluctuations in the mass of the yarn withdrawn from the rotor, and controlling the speed of at least one of said feed means and said take up means in response to detected mass fluctuations to reduce mass fluctuations in the yarn.

1. A gas turbine engine comprising:
a core engine for generating a gas flow; and

a booster for pressurizing air, said booster comprising a low pressure compressor, a first flow path for directing air flow around said booster compressor to said core engine, and a second flow path for directing air flow at least partially through said booster compressor, to be pressurized thereby, to said core engine, at least a first control door and at least a first variable inlet guide vane for selectively controlling air flow through said first and second flow paths.

5,775,093

LOW NOX COMBUSTOR HAVING DUAL FUEL INJECTION SYSTEM

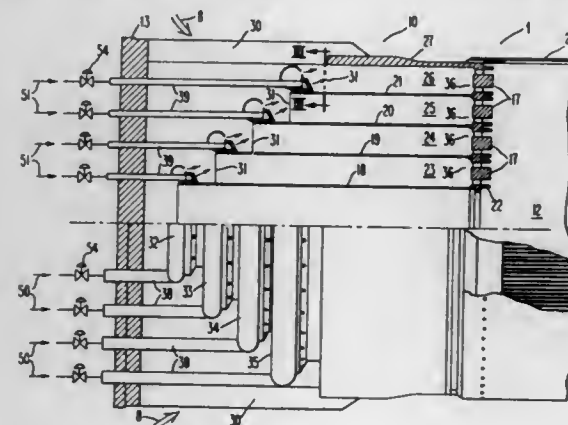
William Richard Ryan, Orlando, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1996, Ser. No. 775,437

Int. Cl.⁶ F02C 7/22

U.S. Cl. 60—39.463

16 Claims



1. A combustor for producing a hot gas by burning a fuel in air, said combustor having:

- a) a combustion zone;
 - b) a first annular passage for mixing fuel and air, said first annular passage in flow communication with said combustion zone;
 - c) a first manifold for introducing a liquid fuel into said first annular passage; and
 - d) a second manifold for introducing a gaseous fuel into said first annular passage, said first and second manifolds joined together to form an integral manifold assembly,
- wherein said combustor defines an axial direction, and wherein said first annular passage has a flow area axially projected onto a plane perpendicular to said axial direction, and wherein said second manifold has an area axially projected onto said flow area projected area, and wherein the area axially projected onto said flow area by said first and second manifolds as joined into said integral manifold assembly is substantially the same as said projected area of said second manifold.

5,775,094

APPARATUS AND METHOD FOR CONTROLLING THRUSTER VALVE

Junichiro Kawaguchi, Tatsuaki Hashimoto, and Yasuhiro Morita, all of Sagami, Japan, assignors to The Director-General of the Institute of Space and Astronautical Science, Sagami, Japan

Filed Aug. 15, 1996, Ser. No. 698,083

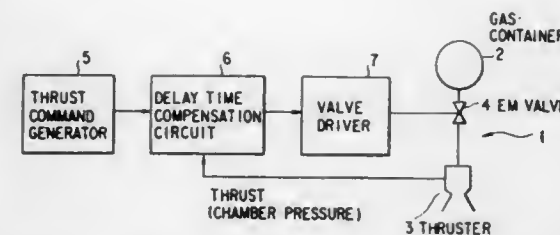
Claims priority, application Japan, Feb. 21, 1996, 8-033652

Int. Cl.⁶ F02K 9/58

U.S. Cl. 60—204

3 Claims

1. An apparatus for controlling a thruster valve disposed in a fluid passage between a gas tank filled with gas and a thruster unit for jetting gas filled in the gas tank, comprising:



means for measuring rise time of thrust, which responds to a certain thrust command, based on a state of operation of said thruster valve;

means for comparing the rise time measured by said measuring means with a predetermined reference time to detect delay regulation time with respect to a certain thrust command; and means for issuing a drive control command to said thruster valve after the delay regulation time obtained by said delay time detection means has elapsed from supply of a next thrust command.

5,775,095

METHOD OF NOISE SUPPRESSION FOR A TURBINE ENGINE

Steven H. Zysman, Middletown; Wesley K. Lord, Glastonbury, and Thomas J. Barber, West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

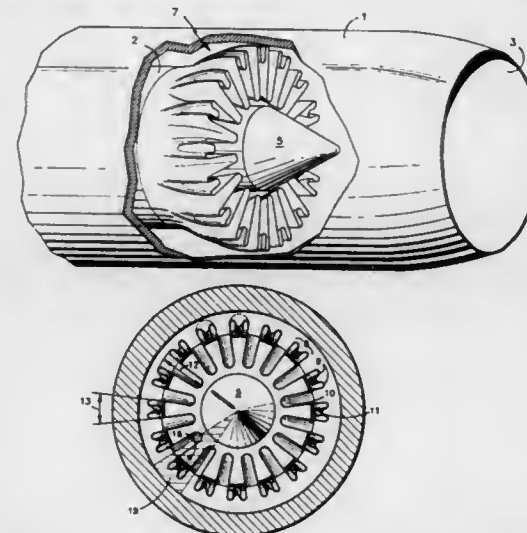
Division of Ser. No. 525,113, Sep. 8, 1995, Pat. No. 5,638,675.

This application Dec. 20, 1996, Ser. No. 771,294

Int. Cl.⁶ F02K 1/38

U.S. Cl. 60—204

2 Claims



1. A method for suppressing noise in a turbofan engine, the engine having a longitudinally extending central axis, coaxial inner and outer flowpaths for carrying inner and outer fluid flow streams through the engine, the method characterized by:

- segmenting the inner and outer flow streams into circumferentially interleaved inner and outer segments, the segmentation of the streams beginning at a common location along the engine axis, and the segments increasing in radial extent in the downstream direction;
- diverting additional portions of the outer stream radially inwardly, the additional portions being diverted from the outer stream at an axial location downstream of the common location and at circumferential locations intermediate circumferential extremities of each inner segment; and
- combining the inner segments, the outer segments and the additional portions into a common stream so that the additional portions are introduced into discrete radial locations in the common stream.

5,775,096

PROCESS FOR OPERATING A REACTION-TYPE MISSILE PROPULSION SYSTEM AND MISSILE PROPULSION SYSTEM

Peter Plichta, Bruhnstrasse 6a, D-40225 Düsseldorf, Germany

PCT No. PCT/DE95/01431, § 371 Date Jul. 18, 1996, § 102(e)

Date Jul. 18, 1996, PCT Pub. No. WO96/12688, PCT Pub.

Date May 2, 1996

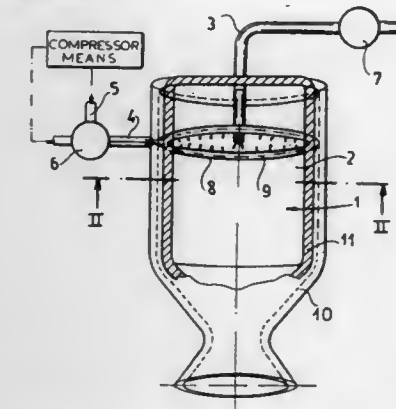
PCT Filed Oct. 16, 1995, Ser. No. 663,089

Claims priority, application Germany, Oct. 20, 1994, 44 37 524.7

Int. Cl.⁶ F02K 9/42

U.S. Cl. 60—209

9 Claims



1. A method of operating a reaction-type missile propulsion system comprising the steps of:

- combusting in a reaction-type missile a hydrogen of silane oil selected from the group which consists of silane oils from Si_3H_{12} to Si_9H_{20} in the presence of an agent supplying oxygen to produce water and generate a temperature from 1400° C. 0 to 3000° C. and capable of inducing reaction of silicon with nitrogen; and
- reacting nitrogen of air or nitrogen compounds carried along by the missile with the silicon of the silane oils for generation of silicon nitride at said temperature.

5,775,097

TURBOJET ENGINE THRUST REVERSER WITH BIASED BAFFLES

Pascal Lardy, Laurent Georges Valleroy, and Guy Bernard Vauchel, all of Le Havre, France, assignors to Societe Hispano-Suiza, Colombes Cedex, France

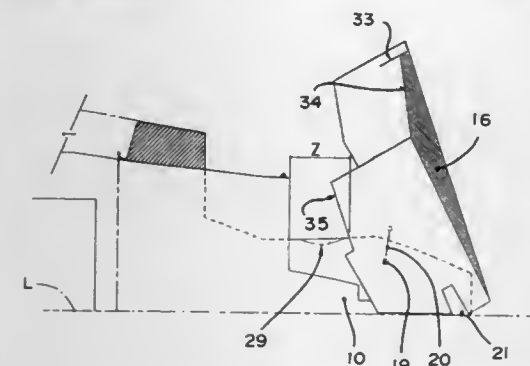
Filed Nov. 15, 1996, Ser. No. 748,910

Claims priority, application France, Nov. 15, 1995, 95 13506

Int. Cl.⁶ F02K 1/54

U.S. Cl. 60—226.2

11 Claims



1. A thrust reverser for a turbojet engine having a nacelle with an inner surface forming an outer boundary of a gas flow duct having a longitudinal axis, and an outer surface, the thrust reverser comprising:

- a) a plurality of beams extending rearwardly from a rear portion of the nacelle;
- b) at least one thrust reverser baffle pivotally attached to the plurality of beams so as to move between a forward thrust position and a reverse thrust position about a pivot axis, the at least one thrust reverser baffle having a forward edge, a rear edge, an outer baffle surface substantially flush with the outer surface of the nacelle when the baffle is in the forward thrust position, and an inner baffle surface, a portion of the inner baffle surface forming a portion of the gas flow duct when the baffle is in the forward thrust position, whereby each beam has a beam width h measured forwardly of the pivot axis and whereby the exhaust nozzle has a width H measured in a direction parallel to the beam width h such that h is at least equal to $0.6 H$; and,
- c) means preventing gases in the gas flow duct from contacting a forward portion of the at least one baffle when the at least one baffle is in the forward thrust position such that the force of the gases in the gas flow duct acting on the inner baffle surface when the at least one baffle is in the forward thrust position urge the at least one baffle to remain in the forward thrust position wherein the means preventing gas contact with the forward portion of the at least one baffle comprises:
 - i) a forward structure fixedly connected to the nacelle forwardly of the at least one thrust reverser baffle, the forward structure having an inner portion extending between the gas flow duct and a forward portion of the at least one baffle; and,
 - ii) a seal interposed between the inner portion of the forward structure and the inner baffle surface.

5,775,098

BYPASS AIR VALVE FOR A GAS TURBINE

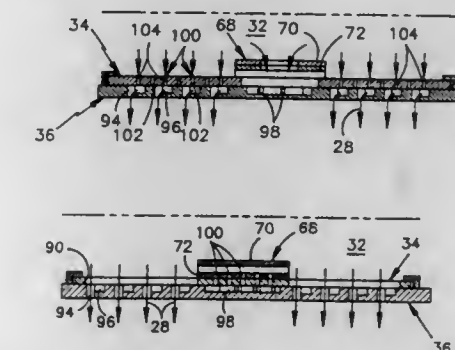
Derk S. Philippona, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 30, 1995, Ser. No. 496,989

Int. Cl.⁶ F02K 3/02

U.S. Cl. 60—226.3

24 Claims



1. A bypass air valve, comprising:
- a liner, having an outer surface, a plurality of first regions, each first region including a plurality of first apertures, and a plurality of impermeable second regions;
 - a strap, surrounding said liner, having a plurality of openings and a plurality of third regions, said third regions including a plurality of second apertures;
 - means for selectively actuating said valve;
 - wherein said valve may be selectively actuated into an open position where said first regions are substantially aligned with said openings and said third regions are substantially aligned with said impermeable second regions, thereby providing a first flow path for bypass air surrounding said valve to pass through said valve via said openings and first apertures; and
 - wherein said valve may be selectively actuated into a closed position where said first regions are substantially aligned with said third regions and said second regions are substantially aligned with said openings, thereby providing a second flow path for bypass air surrounding said valve through said valve

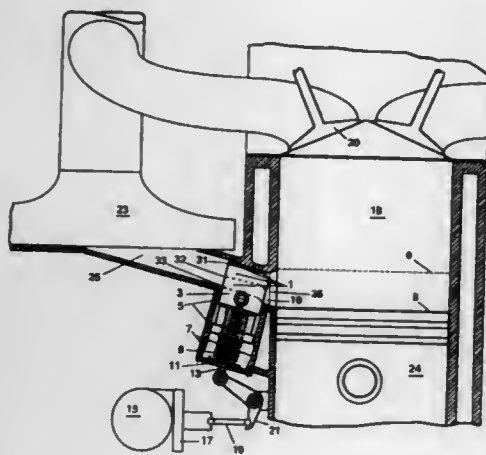
a rotary drive mechanism having a first rotary output rotating at a first speed and a second rotary output rotating at a second speed greater than and an integer multiple of the first speed; a cam member driven by the first rotary output and having a plurality of lobes equal in number to the integer multiple; each lobe having a rise and a fall, a dwell portion provided between adjacent lobes; hydraulic pump means driven by said lobes of said cam member for providing a first hydraulic pressure source in response to the lobe rise and for providing a second hydraulic pressure source in response to the lobe fall; a punch member having a reciprocal motor with a first power cylinder in fluid communication with the first pressure source to drive the punch in one direction and a second power cylinder in fluid communication with said second pressure source to drive the punch in an opposite direction; a pressurized fluid reservoir and valve means for supplying make-up hydraulic fluid to the first and second pressure sources during the dwell portion; and pressure relief means for each power cylinder for relieving hydraulic fluid when the pressure therein exceeds a predetermined value.

5,775,105
COMBINATION NOZZLE AND VALVE WITH VARIABLE GEOMETRY FOR INCREASED POWER RECOVERY FROM INTERNAL COMBUSTION ENGINE EXHAUST GAS

Herbert G. Zinsmeyer, 5911 Bullard Dr., Austin, Tex. 78757
Filed Mar. 27, 1997, Ser. No. 825,214
Int. Cl.⁶ F02B 41/10

U.S. Cl. 60—597

4 Claims



1. A combination exhaust valve and a variable geometry nozzle for each cylinder of a turbo compound engine comprising:
- a housing adjacent to said cylinder,
 - multiple openings in said cylinder communicating with said housing,
 - a flow channel leading through a top portion of said housing from said multiple openings to a turbine inlet,
 - a cam driven shaped plug means with a skirt in said housing, said cam driven plug means acting as a valve in an extended position to block flow in said flow channel and being shaped on an outer end to form a nozzle with a smooth variable opening throat with an opposite surface of said flow channel as said plug moves downward,
 - guide runner means for said skirt in said housing, said guide runner means being shaped to produce a programmed variable tipping action as said plug moves downward to open said throat of said nozzle thereby producing an exit section with a variable exit area relative to said throat area of said nozzle downstream of said throat.

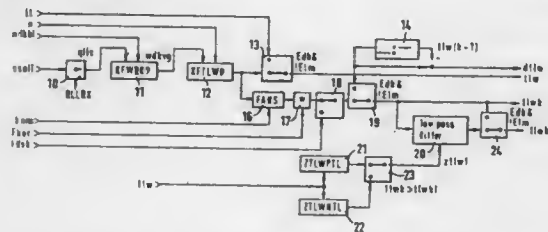
5,775,106
DEVICE FOR LOAD DETECTION IN AN INTERNAL COMBUSTION ENGINE WITH TURBO CHARGER
Helmut Denz, Stuttgart, and Klaus Böttcher, Oberriexingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/01688, § 371 Date Jul. 26, 1996, § 102(e)
Date Jul. 26, 1996, PCT Pub. No. WO96/21100, PCT Pub. Date Jul. 11, 1996

PCT Filed Nov. 30, 1995, Ser. No. 682,696
Claims priority, application Germany, Dec. 31, 1994, 44 47 304.4; Mar. 10, 1995, 195 08 641.4

Int. Cl.⁶ F02D 41/18
U.S. Cl. 60—605.1

7 Claims



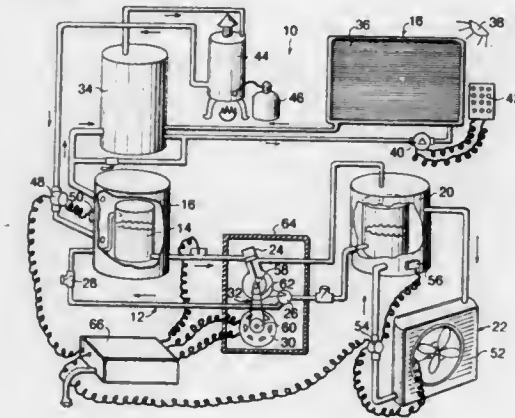
1. A device for load detection in an internal combustion engine, wherein an airflow meter delivers a first load signal, and a second load signal is formed as a function of a throttle flap position and the rpm of the internal combustion engine and the second load signal is subjected to a compression compensation by the multiplication of the second load signal with at least one factor selected from the group consisting of a temperature dependent-factor and a pressure-dependent factor, characterized in that the internal combustion engine has a turbocharger, that several different operational states of the internal combustion engine are defined and the determination of the corrected second load signal from the uncorrected one takes place at different conditions in accordance with different algorithms, a differentiation between three operational ranges is made, wherein the first operational range is an operational range comparable to a naturally aspirated engine, the second operational range is a boost range with regulation selected from the group consisting of airflow regulation and boost pressure regulation, and the third range is a boost range with controlled operation.

5,775,107
SOLAR POWERED ELECTRICAL GENERATING SYSTEM

Scott Sparkman, P.O. Box 240471, Honolulu, HI. 26824-0471
Filed Oct. 21, 1996, Ser. No. 734,190
Int. Cl.⁶ B60K 16/00

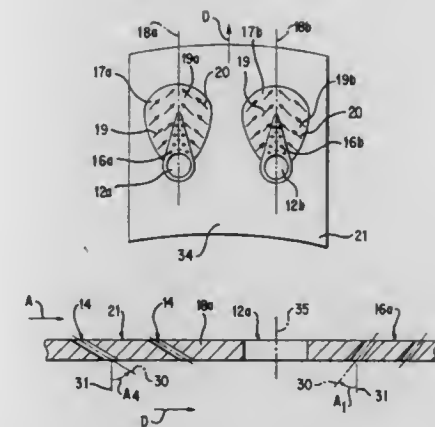
U.S. Cl. 60—641.8

4 Claims



1. A solar powered electrical generating system comprising:
- a continuous hydraulic circuit carrying a halogenated hydrocarbon liquid therethrough;

- a boiler fluidly connected to a first side of said continuous hydraulic circuit;
- means for heating said liquid within said boiler comprising an heated water storage tank fluidly connected to said boiler, a flat plate solar collector panel collecting heat from the sun fluidly connected to deliver solar heated water to said heated water storage tank, first pump means for circulating water between said collector panel, said storage tank, and said boiler, and a photocell to power said first pump means;
- a condenser fluidly connected to a second side of said continuous hydraulic circuit;
- means for cooling said liquid within said condenser comprising a water to air heat exchanger fluidly connected to said condenser, second pump means for circulating water between said condenser and said water to air heat exchanger, and aquastat thermostat on said condenser electrically connected to said second pump means for operating said second pump means when the temperature rises in said condenser by a predetermined amount;
- a hydraulic motor fluidly connected into a flow line of said continuous hydraulic circuit between a lower exit port of said boiler and an upper entrance port of said condenser, so that said liquid when heated in said boiler will flow from said boiler to said condenser to operate said hydraulic motor;
- a recirculation pump fluidly connected into a recirculation line of said continuous hydraulic circuit between a lower exit port of said condenser and an entrance port of said boiler, so that said liquid when cooled in said condenser will flow back to said boiler;
- a check valve in said recirculation line of said continuous hydraulic circuit;
- an electric generator;
- means for coupling said electric generator to said hydraulic motor, so that said hydraulic motor will drive said electric generator to produce electricity;
- a back up hot water heater fluidly connected between said heated water storage tank and said boiler, hydrocarbon fuel means to power said hot water heater, third pump means for circulating water between said boiler and said back up hot water heater, and an aquastat thermostat on said boiler electrically connected to said third pump means to operate said small water circulation pump when the temperature drops in said boiler by a predetermined amount.



said at least one wall comprising a plurality of zones within each of which a direction of a local flow of the burnt gas is approximately the same, wherein the direction of the local flow in different of said zones is different; and each first angle of each of said through holes arranged within each of said zones being the same and each second angle of each of said through holes arranged within each of said zones being the same, said first and second angles being determined according to an average direction of the local flow of the burnt gas in each of the zones.

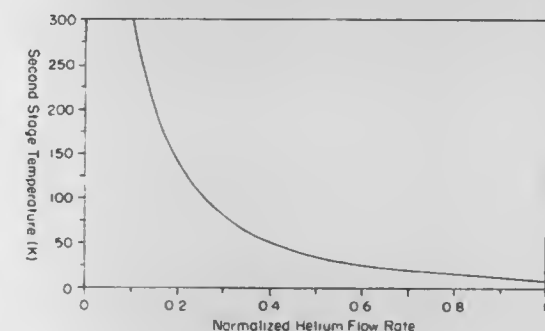
5,775,109
ENHANCED COOLDOWN OF MULTIPLE CRYOGENIC REFRIGERATORS SUPPLIED BY A COMMON COMPRESSOR

Michael J. Eacobacel, Jr., Weymouth; Stephen J. Yamartino, Wayland; Martin L. Stein, Bedford, and Robert E. Khed-
erian, Canton, all of Mass., assignors to Helix Technology Corporation, Mansfield, Mass.

Filed Jan. 2, 1997, Ser. No. 778,035
Int. Cl.⁶ F25B 9/00

U.S. Cl. 62—6

22 Claims



1. A method for regulating cooldown of a plurality of cryogenic refrigerators supplied with compressed refrigerant from a common compressor comprising the steps of:
- monitoring the cooldown of the plurality of cryogenic refrigerators;
 - governing the cooldown of at least one cryogenic refrigerator in response to the monitoring of cooldown to redistribute gas flow from the compressor to the cryogenic refrigerators for accelerated cooldown of an individual cryogenic refrigerator.

5,775,108
COMBUSTION CHAMBER HAVING A MULTI-HOLE COOLING SYSTEM WITH VARIABLY ORIENTED HOLES

Denis Roger Henri'Ansart, Bois le Roi; Patrick Samuel André Ciccía, Paris, and Michel André Albert Desautly, Vert St Denis, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma", Paris, France

Filed Apr. 17, 1996, Ser. No. 633,314

Claims priority, application France, Apr. 26, 1995, 95 04968
Int. Cl.⁶ F23R 3/00; F02K 1/82

U.S. Cl. 60—752

7 Claims

1. A combustion chamber for a turbomachine, comprising:
- at least one wall having a plurality of dilution holes evenly arranged on a plane transverse to a general direction of a flow of burnt gas in the combustion chamber, and a plurality of through holes around said dilution holes, and a fluid passing through said through holes for cooling said at least one wall;
 - each of said through holes defined by both a first angle and a second angle, said first angle formed between a center axis of each of said through holes and a normal axis perpendicular to said at least one wall at a center of each of said through holes, said second angle formed between a first plane including both said center axis and said normal axis and a second plane parallel to both said normal axis and said general direction of the flow of the burnt gas;

5,775,110

COOL ROOM TEMPERATURE CONTROL

Stephen N. Waldron, Lingfield, England, assignor to The BOC Group plc, Surrey, England

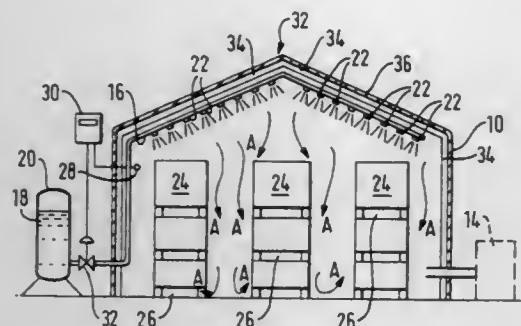
Filed Feb. 20, 1997, Ser. No. 804,141

Claims priority, application United Kingdom, Feb. 21, 1996, 9603669

Int. Cl.⁶ F17C 9/02; F25D 23/12

U.S. Cl. 62—50.2

5 Claims



1. A method of controlling the temperature in an enclosure so that it does not exceed a predetermined level comprising:

- providing a storage vessel for storing a quantity of liquefied breathable, life supporting gas;
- providing a temporary insulated enclosure within said enclosure in the form of a bubble wrap material having an air gap of substantially 4–5 mm and having inner and outer reflective surfaces for reducing the passage of heat through the material;
- providing a dispensing means, within said insulated enclosure, for dispensing said gas and including vaporizing means for vaporizing the gas during dispensing;
- providing temperature sensing means within said insulated enclosure and control means operably linked thereto and to said dispensing means; and
- causing said sensing means and control means to dispense the gas in a vaporized form from the dispensing means whenever the temperature in said insulated enclosure exceeds said predetermined temperature thereby chilling any atmosphere within the enclosure.

5,775,111

PORTABLE ICE AND CO₂ SNOW MAKER AND METHOD THEREFOR

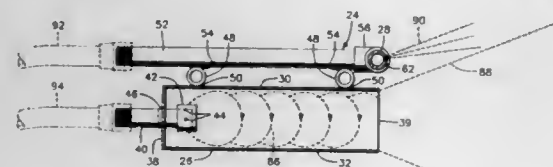
Paul R. Franklin, 5211 W. Beaver St., Jacksonville, Fla. 32254

Filed Oct. 25, 1996, Ser. No. 738,116

Int. Cl.⁶ F25C 3/00

U.S. Cl. 62—74

22 Claims



1. A portable apparatus for forming a blanket of ice and CO₂ snow over an elongated load within an elongated container at least partially open at one end thereof, which comprises an elongated duct having a first closed end and a second open end, liquid CO₂ discharge structure in said closed end located generally centrally transversely therein and operative to discharge at least three generally equally angularly displaced spray jets of liquid CO₂ therefrom toward and for impact with opposing inner surfaces of said duct and produce a CO₂ stream exiting said duct open end and water spray discharge structure mounted adjacent said open end and operative to discharge spray jets of water outwardly therefrom along a path transverse to a first direction in which said open end

opens and in a second direction generally paralleling said first direction such that said water spray jets merge with said CO₂ stream exiting said duct open end.

5,775,112

REFRIGERANT METERING CHARGE BOARD AND METHOD OF ITS OPERATION

Stephen W. Wilson, Fort Smith, Ark., assignor to Whirlpool Corporation, Benton Harbor, Mich.

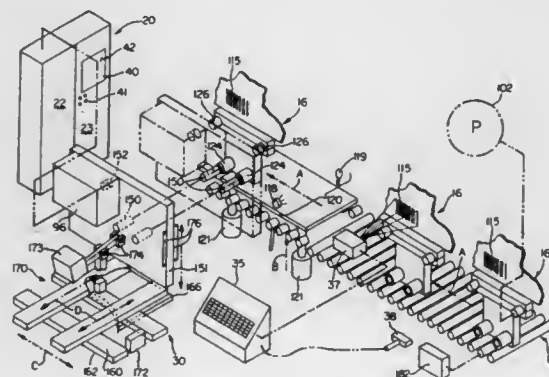
Division of Ser. No. 505,549, Jul. 21, 1995, Pat. No. 5,694,778.

This application Mar. 18, 1997, Ser. No. 820,271

Int. Cl.⁶ F25B 45/00

U.S. Cl. 62—77

18 Claims



13. A method for charging a refrigerating appliance with refrigerant comprising the steps of:

- providing a metering charge board connected to a supply of refrigerant;
- aligning the refrigerating appliance with an automatic connect and disconnect mechanism (ACDM) having a dispensing device, said ACDM connected to the metering charge board;
- connecting said dispensing device to refrigerant tubing in the refrigerating appliance; and
- automatically charging the refrigerating appliance with a specific charge amount of refrigerant by the metering charge board via the ACDM.

5,775,113

ENERGY EFFICIENT DOMESTIC REFRIGERATION SYSTEM

Edward R. Schulak, 567 Aspen, Birmingham, Mich. 48009

PCT No. PCT/US94/14383, § 371 Date May 23, 1996, § 102(e)

Date May 23, 1996, PCT Pub. No. WO95/16887, PCT Pub.

Date Jun. 29, 1995

Continuation-in-part of Ser. No. 995,980, Dec. 23, 1992, Pat. No. 5,291,749. This PCT application Dec. 13, 1994, Ser. No.

648,197

Int. Cl.⁶ F25D 17/02; F25B 25/00

U.S. Cl. 62—89

10 Claims

1. A refrigeration or freezer appliance comprising:
a housing surrounding at least one cooling storage compartment; refrigeration means for cooling said at least one cooling storage compartment; and
cooling means for adding and removing air between said housing and at least one cooling storage compartment, said cooling means coupled between said housing and at least one cooling storage compartment and with an air source and said air added

5,775,115

CLIMATE CONTROL DEVICE WITH A COOLING COMPRESSOR AND VISCOUS COUPLING

Dieter Lutz, Schweinfurt, and Reiner Schmitt, Wartmannsroth, both of Germany, assignors to Mannesmann Sachs AG, Schweinfurt, Germany

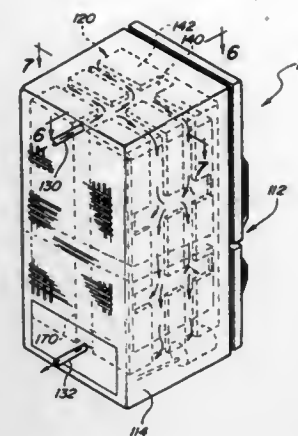
Filed Jun. 9, 1997, Ser. No. 871,237

Claims priority, application Germany, Jun. 14, 1996, 196 23 676.2

Int. Cl.⁶ B60H 1/32

U.S. Cl. 62—133

13 Claims



or removed by said cooling means cooling said refrigeration means.

5,775,114

FIGURE 8-FORM THERMODYNAMIC CYCLE AIR CONDITIONER

Aming Ji, 37/502 Yuannan Yicun, Shanghai, China

PCT No. PCT/CN95/00014, § 371 Date Nov. 19, 1996, § 102(e)

Date Nov. 19, 1996, PCT Pub. No. WO95/27177, PCT Pub.

Date Oct. 12, 1995

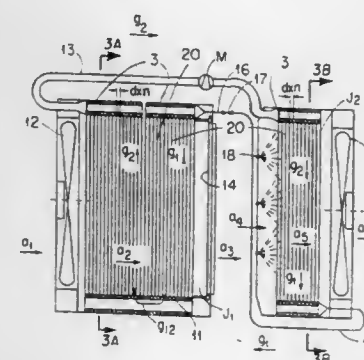
PCT Filed Feb. 20, 1995, Ser. No. 718,568

Claims priority, application Switzerland, Apr. 4, 1994, 94 1 12107.0

Int. Cl.⁶ F28C 1/00

U.S. Cl. 62—121

1 Claim



1. A refrigeration apparatus comprising a working fluid, a heat pump pipe for said working fluid, a supercondensation pipe for said working fluid, a low pressure difference energy transfer pump for pumping said working fluid through said pipes, a liquid vapor conveying pipe coupled to said low pressure difference pump for said working fluid, a throttle valve coupled to said liquid conveying pipe for isenthalpic throttling of said working fluid, a distributing pipe for said working fluid coupled to said energy transfer pump, at least one heat conducting strip for the working fluid, an air supply fan for supplying air to the apparatus and said heat conducting strip, whereby the working fluid absorbs heat with the temperature changing continually from a low temperature to a high temperature, the air to be refrigerated releases heat with the temperature changing continuously from said high temperature to said low temperature in which the temperature and enthalpy relationship of the air supplied by said fan follows a canted figure-8 configuration as the air is processed through the apparatus.

5,775,116

DEFROSTING CONTROL METHOD FOR AIR CONDITIONER

Satoshi Matsumoto, Ota; Hikaru Katsuki, Kiryu, and Masayuki Shimizu, Gunma, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 10, 1997, Ser. No. 837,252

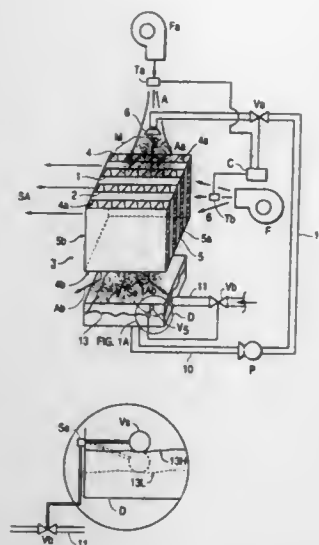
Claims priority, application Japan, Apr. 9, 1996, 8-111137

Int. Cl.⁶ F24F 11/02

U.S. Cl. 62—155

4 Claims

1. A method for controlling defrosting in a two-unit-type of air conditioner with refrigerant conduits connecting an indoor side heat exchanger and indoor fan to an outdoor side heat exchanger and fan, wherein, in a forward cycle cooling operation the indoor side heat exchanger and fan provide cooling air to a room and in a reverse cycle heating operation the inside heat exchanger and fan provide heated air to the room, comprising the steps of:



- (a) adding a volatile liquid mist to a flow of a gas to saturate the cooling gas with vapor of the said volatile liquid, to cause a large amount of misty minute liquid drops of said volatile liquid to float in the gas and to form a cooling gas;
- (b) passing the cooling gas through first flow channels of a heat exchanger having first and second flow channels, the first flow channels being non-porous and being separated from the second flow channels;
- (c) passing the fluid through the second flow channels of the heat exchanger, so that heat from the fluid is transferred to the cooling gas, while the cooling gas passes through the first flow channels of the heat exchanger to elevate the temperature of the cooling gas;
- (d) allowing a portion of the minute liquid drops floating in the cooling gas to vaporize due to the elevated temperature of the cooling gas;
- (e) continuously lowering the temperature of the cooling gas by the heat of vaporization of the minute liquid drops evaporated in step (d); and
- (f) continuously refrigerating the fluid through heat exchange with the cooling gas having a temperature continuously lowered in step (e).

5,775,122

METHOD OF AND APPARATUS FOR COOLING HOT-ROLLED STRUCTURAL SHAPES

Dieter Waase, Kaarst, Germany, assignor to SMS Schloemann-Siemag AG, Dusseldorf, Germany

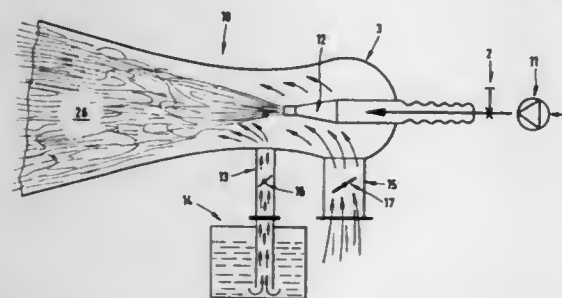
Filed Mar. 7, 1997, Ser. No. 813,762

Claims priority, application Germany, Mar. 8, 1996, 196 08 965.4

Int. Cl. F25D 17/02

U.S. Cl. 62—373

5 Claims



1. An apparatus for cooling a hot-rolled structural shape, comprising:
means for supporting a hot rolled structural shape to be cooled;

- a flow-accelerating venturi nozzle having an upstream end, a constriction and a diverging downstream end trained on said hot rolled structural shape for discharging fine droplets of water in an aerosol for cooling said structural shape with said aerosol;
- a compressed air source connected to said nozzle and provided with a flow-accelerating jet opening into said nozzle at said constriction;
- means for connecting said nozzle to a source of water at a location in said nozzle whereby said nozzle sucks water from said water source into said jet for dispersal of said water as said droplets in air traversing said nozzle from said upstream end to said downstream end;
- a throttle valve connected between said jet and said compressed air source; and
- means for varying in the aerosol emerging from said downstream end proportions of air and water in said aerosol.

5,775,123

AIR CONDITIONER AIR TURNING VANE

Takeshi Wakayama, Ageo; Toshiyuki Komuro, Gunma-Ken; Koji Mori, Ashikaga; Motomi Yamauchi, Kumagaya; Tet-sushi Yamashita, and Noriaki Kobayashi, both of Gunma-Ken, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

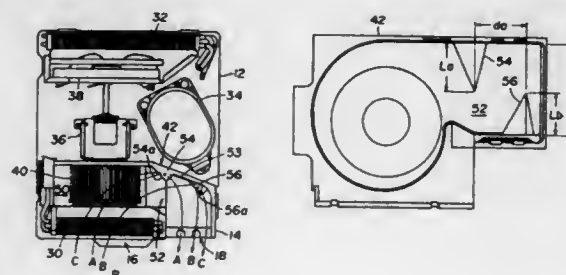
Filed May 31, 1996, Ser. No. 655,825

Claims priority, application Japan, Aug. 23, 1995, 7-214912

Int. Cl. F25D 17/04

U.S. Cl. 62—407

12 Claims



1. An air-conditioner apparatus comprising:
a front end having a suction port for sucking air in a first direction and a blow port for blowing air in a second direction generally opposite said first direction;
an inversion course for inverting the air sucked in through said suction port in said first direction such that the air blows from said-blow port in said second direction, said inversion course comprising a bend and having a rear surface forming an outer circumference of said bend and constituting an air flow directing surface; and
at least one air direction changing member disposed on said rear surface for causing some of the air flow along said rear surface to be changed in direction by deflection away from said rear surface toward an inner circumference of said bend of said air inversion course, so as to cause substantial uniformity in air flow amounts flowing along said rear surface and flowing along said inner circumference of said bend.

5,775,124

METHODS AND APPARATUS FOR CONTROLLING THE VOLUME AND ENTRY DIRECTION OF COOL AIR SUPPLIED TO A COOLING CHAMBER

Hae-Jin Park, Suwon; Jae-In Kim, Seoul, and Yun-Seok Kang, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

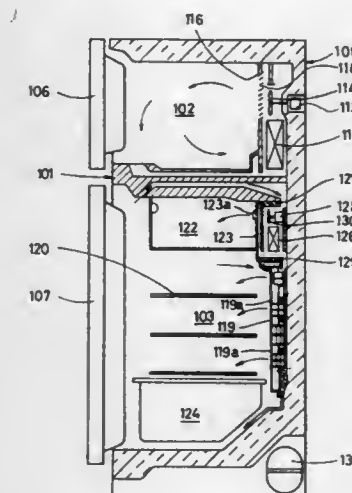
Filed Dec. 8, 1995, Ser. No. 569,871

Claims priority, application Rep. of Korea, Dec. 10, 1994, 1994-33558; Apr. 29, 1995, 1995-10783

Int. Cl. F25D 17/06

U.S. Cl. 62—408

22 Claims



1. A refrigerator comprising:
a casing;
a freezing chamber disposed in the casing;
a cooling chamber disposed in the casing, with the casing forming a rear wall of the cooling chamber;
a second evaporator for supplying cold air to the cooling chamber;
a first evaporator for supplying cold air to the cooling chamber;
a first fan communicating with the first evaporator for circulating cool air to the freezing chamber;
a second fan communicating with the second evaporator for circulating cool air to the cooling chamber; and
a guide member disposed in the cooling chamber and in front of the rear wall for guiding cool air from the second evaporator downwardly while dividing the downward flowing cool air into separate air streams and directing those streams in respective directions into the cooling chamber, wherein the guide member includes:
a support member for conducting cool air;
an insulating member disposed behind and upstream of the support member for creating the separate air streams;
a seal plate disposed between the rear wall and the insulating member for covering a rear side of the insulating member;
a rotatable adjustable louver member disposed in front of and downstream of the support member and including flow distributing members for controlling a flow direction of respective ones of the air streams into the cooling chamber, the flow distributing members interconnected for common rotation; and
a grille covering a front side of the support member and the louver member for separating the louver member from food disposed in the cooling chamber.

5,775,125

INTEGRATED AIR CONDITIONER

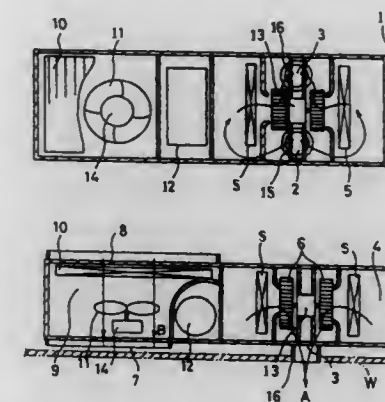
Hirokazu Sakai, Kyoto, and Takashi Sugio, Kusatsu, both of Japan, assignors to Matsushita Industrial Electric Co., Ltd., Japan

Filed Dec. 3, 1996, Ser. No. 759,962

Int. Cl. F25D 17/04

U.S. Cl. 62—410

12 Claims



1. An integrated air conditioners comprising:
an indoor-side ventilating circuit including two indoor-side heat exchangers two indoor-side air blowers having centrifugal fans with respective rotational shafts coupled to opposite ends of a single fan motor and ducting such that air sucked into said indoor-side ventilating circuit is divided substantially evenly such that approximately half of the air passes through each of said blowers, respectively, thereby providing balanced heat exchanging by said two indoor-side heat exchangers, an indoor-side circular suction port having a cross-sectional area that is substantially smaller than an area of either of said two indoor-side heat exchangers, and an indoor-side circular blowoff port having a cross-sectional area that is substantially smaller than an area of either of said two indoor-side heat exchangers, said two indoor-side heat exchangers being arranged at a suction side of said indoor-side air blowers and perpendicularly to an axis of rotation of said blowers;
an outdoor-side ventilating circuit including an outdoor-side heat exchanger, an outdoor-side air blower with an axial-flow fan, an outdoor-side suction port, and an outdoor-side blowoff port;
a horizontal compressor for compressing a refrigerant which flows through said indoor-side heat exchanger and said outdoor-side heat exchanger; and
ducts for leading said indoor-side suction port and said indoor-side blowoff port to an indoor side,
wherein said indoor-side ventilating circuit, said outdoor-side ventilating circuit, and said compressor are provided outdoors.

5,775,126

ADSORPTIVE-TYPE REFRIGERATION APPARATUS

Hiedaki Sato, Anjou; Masaaki Tanaka; Shin Honda, both of Nagoya; Kenichi Fujiwara, and Satoshi Inoue, both of Kariya, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Mar. 14, 1997, Ser. No. 816,433

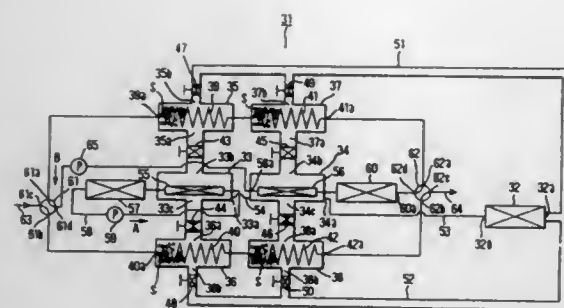
Claims priority, application Japan, Mar. 14, 1996, 8-057727; Nov. 6, 1996, 8-293974

Int. Cl. F25B 17/08

U.S. Cl. 62—480

20 Claims

1. An adsorptive-type refrigeration apparatus, comprising:
at least one condenser for condensing refrigerant;
a plurality of stages of evaporators for evaporating refrigerant from said condenser;



a plurality of stages of adsorption devices in correspondence with said plurality of stages of evaporators, each of said adsorption devices having an adsorbent for adsorbing refrigerant vapor vaporized in said several stages of evaporators by being chilled and for desorbing and releasing refrigerant vapor to said condenser by being heated;

a heat exchanging passage, in said stages of adsorption devices, for receiving a supply of coolant fluid and for cooling said adsorbent;

a radiator for chilling fluid from said heat exchanging passage of at least a final stage adsorption device among said plurality of stages of adsorption devices; and

a cooler for performing heat exchange between outside air and fluid chilled by at least a first stage evaporator among said plurality of stages of evaporators;

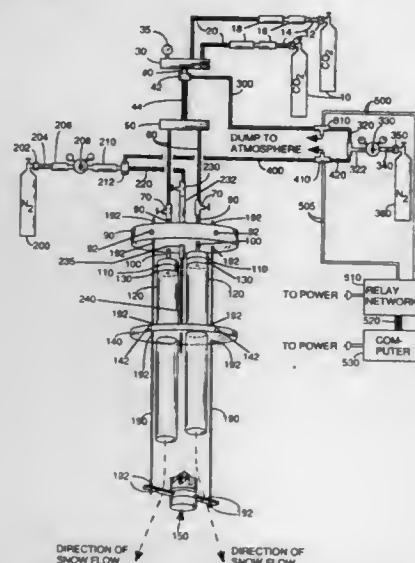
characterized in that

a later stage evaporator in said plurality of evaporators is further for cooling coolant fluid to be supplied to said heat exchanging passage of at least a prior stage of said adsorption devices, and

said heat exchanging passages of at least two mutually adjacent stages of adsorption devices among said plurality of stages of adsorption devices are connected in series so that said coolant fluid flows from a heat exchanging passage of an adsorption device of a prior stage side to a heat exchanging passage of an adsorption device of a later stage side.

5,775,127 HIGH DISPERSION CARBON DIOXIDE SNOW APPARATUS

Richard R. Zito, 5511 N. Fort Yuma Trail, Tucson, Ariz. 85705
Filed May 23, 1997, Ser. No. 862,979
Int. Cl.⁶ F25J 1/00
U.S. Cl. 62—603 3 Claims



1. A carbon dioxide snowflake producing apparatus, comprising:

- a primary manifold, whereby liquid carbon dioxide can enter into said carbon dioxide snowflake producing apparatus;
- a carbon dioxide flow pneumatic valve connected to said primary manifold, whereby the flow of liquid carbon dioxide from said primary manifold can be interrupted;
- a flexible large diameter carbon dioxide high pressure line connected to said carbon dioxide flow pneumatic valve, whereby liquid carbon dioxide can exit said carbon dioxide flow pneumatic valve;
- a secondary manifold, connected to said flexible large diameter carbon dioxide high pressure line, having a plurality of outlets, whereby liquid carbon dioxide can exit said secondary manifold through the outlets;
- a plurality of carbon dioxide flow manual metering valves connected to the outlets of said secondary manifold, whereby the flow of liquid carbon dioxide can be regulated;
- a mounting plate connected to the outlet of said carbon dioxide flow manual metering valves, whereby said carbon dioxide flow manual metering valves may be supported;
- a plurality of nozzles connected to said mounting plate so that each of said carbon dioxide flow manual metering valves regulates the flow of carbon dioxide through one of said nozzles, whereby liquid carbon dioxide is converted into carbon dioxide snowflakes;
- a plurality of drift tubes con to said nozzles in a one to one fashion, whereby carbon dioxide snowflakes may grow as they pass through said drift tubes;
- a turbine assembly connected to said mounting plate and positioned below the said drift tubes, whereby carbon dioxide snowflakes may be scattered into a variety of directions;
- a tube connected to said mounting plate and positioned above said turbine assembly, whereby a jet of nitrogen gas may be directed toward said turbine assembly;
- a turbine nitrogen gas manual metering valve connected to said mounting plate, whereby the flow of nitrogen gas to said tube may be controlled;
- a nitrogen flow pneumatic valve connected to said turbine nitrogen gas manual metering valve, whereby a flow of nitrogen gas can be interrupted;
- a nipple connected to said nitrogen flow pneumatic valve, whereby nitrogen gas may be injected;
- a carbon dioxide flow solenoid valve connected to said carbon dioxide flow pneumatic valve, whereby a flow of control gas may be injected into said carbon dioxide flow pneumatic valve;
- a nitrogen flow solenoid valve connected to said nitrogen flow pneumatic valve, whereby a flow of control gas may be injected into said nitrogen flow pneumatic valve;
- a relay network electrically connected to said carbon dioxide flow solenoid valve and said nitrogen flow solenoid valve, whereby the solenoid valves may be opened or closed; and
- a computer connected to said relay network, whereby control signals may be generated for said relay network.

5,775,128 PROCESS FOR PRODUCING AMMONIA AND RECOVERING ARGON USING LOW PURITY OXYGEN

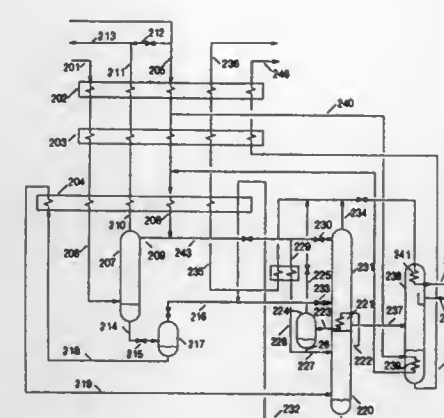
Raymond Francis Drnevich, Clarence Center, and Theodore Fringelin Fisher, Amherst, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed May 2, 1997, Ser. No. 850,697
Int. Cl.⁶ F25J 3/04

U.S. Cl. 62—632

20 Claims

1. A process for producing ammonia synthesis gas and recovering argon in conjunction with a low purity oxygen separating unit, said process comprising:
 - providing a feed gas comprising at least oxygen, nitrogen and argon into said separating unit to separate said feed gas into at least a low-purity oxygen gas and nitrogen;
 - passing said nitrogen into a wash unit comprising a wash column and at least one cryogenic fractional distillation column;



- washing a hydrogen-rich, argon-containing gas with at least a portion of said nitrogen in said wash column to produce a rich hydrogen-nitrogen mixture and an argon-containing residual liquid;
- combining said rich hydrogen-nitrogen mixture with another portion of said nitrogen gas to produce ammonia synthesis gas;
- passing said residual liquid into at least one of said distillation column; and
- recovering argon from said distillation column.

5,775,129

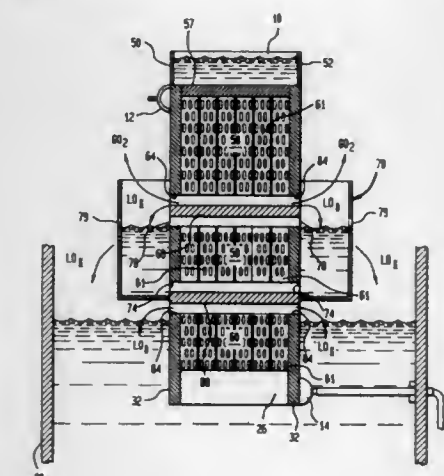
HEAT EXCHANGER

Donald Prentice Satchell, Jr., Summit; Venkat Natarajan, Scotch Plains, both of N.J., and Richard Henry Clarke, Oxfordshire, United Kingdom, assignors to The BOC Group, Inc., New Providence, N.J.

Filed Mar. 13, 1997, Ser. No. 816,233
Int. Cl.⁶ F25J 3/04; F28B 1/00

U.S. Cl. 62—643

10 Claims



1. A heat exchanger for use within a surrounding sump to condense a vapor and vaporize a liquid, said heat exchanger comprising:

- a core having first and second heat exchange passages alternating with one another so that said vapor flowing in said first heat exchange passages undergoes heat transfer with said liquid flowing in said second heat exchange passages;
- first inlet and outlet means for introducing said vapor into said first passages and for discharging condensed vapor from first passages, respectively;
- a liquid distributor for introducing said liquid into said second passages;
- said second passages having a down flow stage and at least one thermosiphon stage;

said down flow stage positioned to directly receive said liquid from said liquid distributor, thereby to allow formation of a falling film of said liquid and vaporization of part of the liquid received there within;

said at least one thermosiphon stage positioned to receive a remaining part of said liquid from said down flow stage and configured to operate submerged within said liquid, thereby to produce a convective flow of said liquid and additional vaporization of said liquid;

said down flow and at least one thermosiphon stages separated from one another so that said remaining part of said liquid is prevented from flowing directly into said at least one thermosiphon stage; and

ports defined in said core above and below the separation between said downflow stage and said at least one thermosiphon stage to allow at least part of the vaporized liquid produced within said down flow stage and said remainder of said liquid not vaporized within the down flow stage to be discharged from said core and to also allow said convective flow of said liquid to overflow said at least one thermosiphon stage and said additional vapor to be discharged from said core.

5,775,130

Patent Not Issued For This Number

5,775,131

Patent Not Issued For This Number

5,775,132

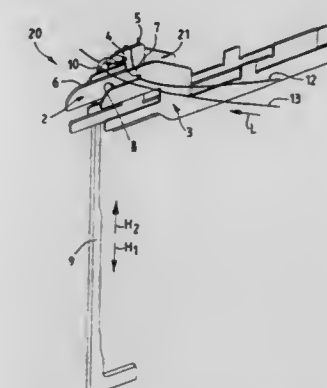
SINKER ARRANGEMENT IN A KNITTING MACHINE AND KNITWORK FORMATION METHODS USING SAID ARRANGEMENT

Tiberio Lonati; Fausto Lonati; Ettore Lonati, and Francesco Lonati, all of Brescia, Italy, assignors to Santoni S.r.l., Brescia, Italy

Filed Jul. 31, 1995, Ser. No. 509,577
Claims priority, application Italy, Jul. 29, 1994, MI9401653
Int. Cl.⁶ D04B 9/12; 15/06

U.S. Cl. 66—9 R

20 Claims



1. A sinker arrangement (20) for a knitting machine comprising a terry sinker (2) located between two stitch sinkers (3, 21), said terry sinker (2) having a working surface (6) located in a plane below a plane of a terry surface (5) of a terry hook (4), each of said stitch sinkers (3, 21) having a knocking-over surface (8) located in a plane below a stitch hook (7), and said terry hook (4) and stitch hooks (7) are directed in the same direction with said terry hook (4) being disposed above said stitch hooks (7).

5,775,133

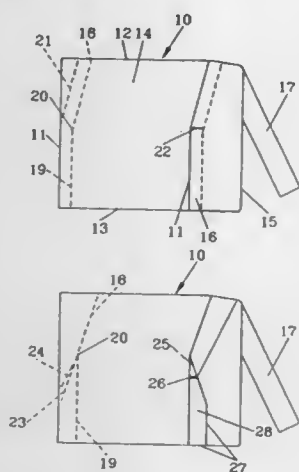
METHOD FOR PRODUCING A KNITTED GARMENT
Eivor Nilsson, Uppsala, Sweden, assignor to Kriss AB, Sparsor, Sweden

Filed Feb. 11, 1997, Ser. No. 795,484

Claims priority, application Sweden, Aug. 12, 1994, 9402722
Int. Cl.⁶ A41B 1/24

U.S. Cl. 66—176

7 Claims



1. A method for producing knitted ready-made garments, waistcoat or jacket type comprising the steps of:
knitting a piece of tricot having a rectangular configuration with two long sides, two short sides, and at least two fold markings;
folding the piece of tricot in at least two places, substantially in parallel with the short sides for forming back and side parts of the jacket, wherein remaining parts of the piece of tricot at the short sides, form a divided front with a substantially V-shaped front neck part; and
making an arm opening at each side part of the piece of tricot; knitting each divided front part with the fold markings, of which at least two of the fold markings extend substantially from the respective long side and meet each other in a vertex at a distance from the short sides of the tricot piece; and
folding the each divided front part along the fold markings and joining the each divided front part together to at least double thickness of the piece of tricot.

5,775,134

PATTERNING UNIT OF WARP KNITTING MACHINE AND CONTROL METHOD THEREOF

Yoshinori Otake, Yasumasa Narikiyo, Shigeo Yamagata, and Norimasa Nosaka, all of Fukui, Japan, assignors to Nippon Mayer Co., Ltd., Fukui, Japan

PCT No. PCT/JP96/00075, § 371 Date Nov. 6, 1996, § 102(e) Date Nov. 6, 1996, PCT Pub. No. WO96/22412, PCT Pub. Date Jul. 25, 1996

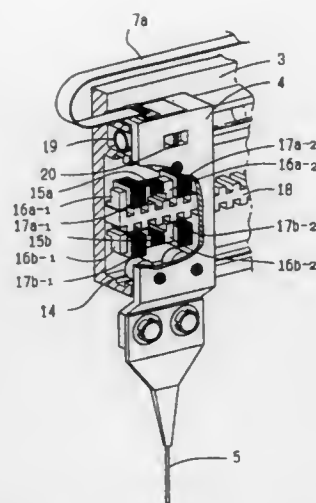
PCT Filed Jan. 18, 1996, Ser. No. 716,215

Claims priority, application Japan, Jan. 19, 1995, 7-006224
Int. Cl.⁶ D04B 27/26

U.S. Cl. 66—204

16 Claims

1. A method for controlling a patterning unit of a warp knitting machine comprising:
providing a holding member having moving elements slidably mounted thereon to travel along a guide path;
providing a stator of a linear pulse motor on said holding member along said guide path;
providing each of said moving elements with drive coils for operating in conjunction with said stator to form said linear motor;
providing said moving elements with a guide member for guiding patterning yarn;



- providing a signal transfer means along said guide path for transferring signals to said moving elements to effect operation of said linear pulse motor;
- providing a signal reception means, on each of said moving elements, for slidably interfacing with said signal transfer means and receiving said signals and driver means for driving said drive coils of said linear pulse motor in response to said signals; and
- positioning said moving elements by supplying power and control signals, via said signals received by said signal reception means, to the moving elements for operating said linear pulse motors of said moving elements.

5,775,135

CIRCULAR KNITTING MACHINE WITH JACQUARD PATTERN CONTROL MECHANISM FOR CYLINDER NEEDLES, SINKERS OR DIAL NEEDLES

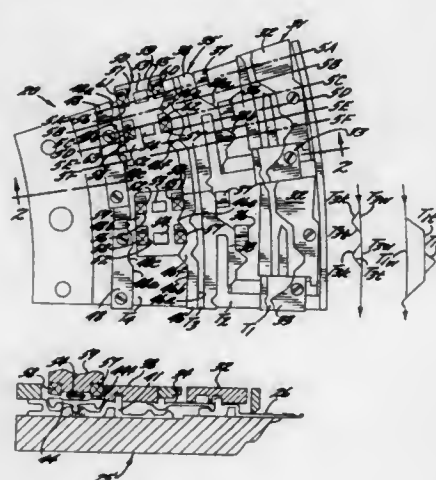
Takao Shibata, Osaka, and Yukiari Iida, Hyogo, both of Japan, assignors to Precision Fukuhara Works, Ltd., Japan

Filed Jun. 11, 1997, Ser. No. 872,535

Claims priority, application Japan, Jun. 20, 1996, 8-181338
Int. Cl.⁶ D04B 15/78

U.S. Cl. 66—219

18 Claims



1. A jacquard pattern control mechanism for a circular knitting machine having movable knitting instrumentalities, said pattern control mechanism comprising
a rocker base movably mounted in spaced relation to each of said knitting instrumentalities for sliding movement in alignment with and in the same directions as the knitting instrumentality moves,

- a selector jack mounted between said rocker base and said knitting instrumentality for assisting in controlling the selection and movement of the knitting instrumentality;
- a rocker bar pivotally mounted on said rocker base for rocking movement about a medial pivot relative to said rocker base and having attractable portions on opposite end portions thereof which when attracted cause said rocker bar to rock about its pivot;
- magnetic attracting means mounted adjacent said attractable portions of said rocker bar for attracting selectively said attractable portions;
- first control cam means for controlling said knitting instrumentalities;
- second control cam means for controlling said selector jack, and intermediate cam means for controlling said rocker base and for moving said rocker base as said rocker base engages with and disengages from said selector jack so that the circumferential stroke may be shortened and three positions of said knitting instrumentality selected.

5,775,136

SPRAY DYEING APPARATUS WITH BREADTH EXPANSION AND VIBRATION-ENHANCED DYEING OPERATION

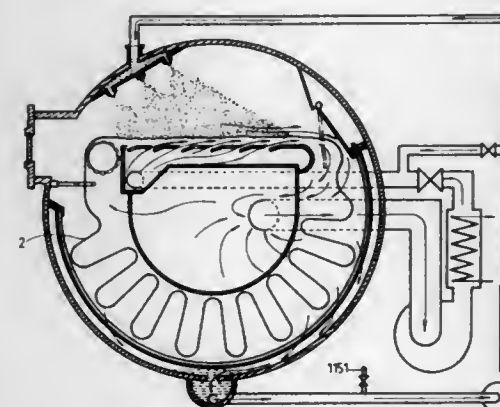
Chiang Chao-Cheng, 5F-2, No.455, Chung Cheng Road, Yung-Ho City Taipei Hsien, Taiwan

Filed Mar. 31, 1997, Ser. No. 828,884

Int. Cl.⁶ D06B 3/28

U.S. Cl. 68—15

15 Claims



1. A fabric treating apparatus comprising a fabric storage tank extending in an axial direction and adapted to receive therein fabric of a given breadth to be treated and a fabric guide tube extending in the axial direction, the fabric storage tank and the fabric guide tube being connected to and in fluid communication with each other at a laterally front side and an opposite laterally rear side to define a continuous path for the fabric to continuously circulate therein from the fabric storage tank into the laterally front side of the fabric guide tube to move through the fabric guide tube to the laterally rear side of the fabric guide tube and then back into the fabric storage tank, the improvements comprising:

the fabric guide tube comprising a bottom wall extending from a laterally front end upstream inlet of the fabric guide tube to a laterally rear end downstream outlet, having a flat width sufficient to allow the fabric to fully expand breadthwise in moving through the fabric guide tube, the fabric guide tube comprising at least one spray nozzle mounted therein above an upper side of the fabric to receive a first, fabric treating fluid from a first fluid supply and to spray the first fluid onto the upper side of the fabric substantially across the breadth of the fabric in an atomized form of the first fluid so as to enhance diffusion and penetration of the first fluid into the fabric to allow the fabric to be treated by the first fluid in an efficient manner, the bottom wall of the fabric guide tube having a plurality of directing nozzles in communication with

a supply of a second fluid via a second fluid conveyor tube for jetting high speed streams of the second fluid into the fabric guide tube in the downstream direction under a lower side of the fabric, the directing nozzles being spaced from each other at a given distance in the moving direction of the fabric, which distance between adjacent directing nozzles defining a support surface for constraining and guiding the streams of the second fluid in the downstream direction for carrying the fabric downstream by impacting the fabric and establishing shear force therebetween, the high speed streams of the second fluid under the lower side of the fabric creating a low pressure zone under the fabric which has a pressure lower than pressure on the opposite upper side of the fabric so as to have a pressure difference between the upper side and the lower side of the fabric which, together with the spaced arrangement of the directing nozzles, causes a violent vibration on the fabric which moves the fabric toward and away from the bottom of the fabric guide tube in a repeated manner, the pressure difference also tending to force the fabric toward the high speed streams of the second fluid so as to result in an efficient energy transfer therebetween to increase moving speed of the fabric.

the fabric being floatingly supported above the bottom of the fabric guide tube by means of the high speed streams of the second fluid from the directing nozzles to be breadthwise expanded and fast moved through the fabric guide tube, the fabric being substantially fully expanded in the breadth direction due to the wide bottom wall of the fabric guide tube, so that a treatment of the fabric with high efficiency, low energy consumption, low bath ratio and low pollution is achieved.

5,775,137

AGITATOR

Ken Yanagisawa, Matsumoto, Japan, assignor to Yugen Kaisha Sozoan, Nagano, Japan

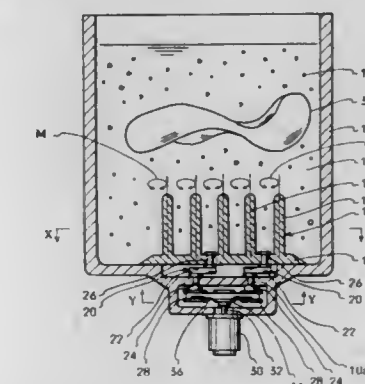
Filed Apr. 12, 1996, Ser. No. 630,988

Claims priority, application Japan, Apr. 14, 1995, 7-089750

Int. Cl.⁶ D06F 17/10; D06F 17/18

U.S. Cl. 68—133

15 Claims



1. An agitator for agitating a medium, said agitator comprising:
an agitating section having a plurality of separated, agitating pieces attached thereto, each agitating piece extending away from the agitating section in a common extension direction; and
a driving mechanism for creating a movement of the agitating section, the movement of the agitating section being in directions lying within a first plane, and the movement of the agitating section resulting in each agitating piece of said plurality of agitating pieces moving in a substantially identically shaped path.

5,775,138
ARRANGEMENT FOR MOUNTING THE MOTOR IN A
CLOTHES WASHING MACHINE

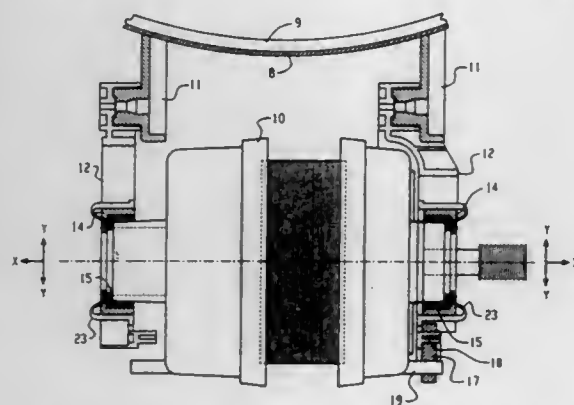
Piero Durazzani, Porica, and Roberto Quattrin, Murlis di Zoppola, both of Italy, assignors to Electrolux Zanussi Elettrodomestici, S.P.A., Pordenone, Italy

Filed Apr. 18, 1997, Ser. No. 843,538

Claims priority, application Italy, May 22, 1996, PN96A0029
Int. Cl.⁶ D06F 37/20

U.S. Cl. 68—140

9 Claims

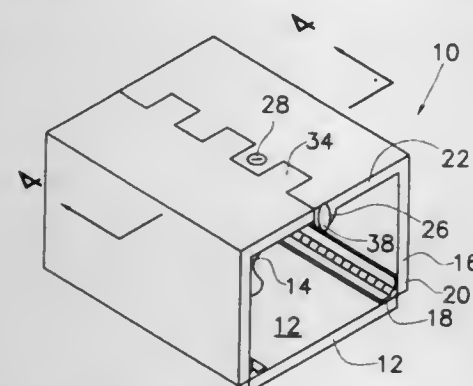


1. A clothes washing machine comprising a washing tub; a rotatable drum disposed in the tub for containing laundry to be washed; an electric motor for rotating the drum; two brackets for mounting the motor on the outside of the tub at a lower part of the tub; a seat provided with each bracket for accommodating a shaft of the motor; and shock absorbing means provided in the seats and capable of permitting absorption of vibration generated on the motor shaft during operation of the motor.

5,775,139
TRAILER HITCH LOCK
Fred J. Sellers, 1109 Roswell Rd., Knoxville, Tenn. 37923
Filed Jun. 10, 1997, Ser. No. 872,027
Int. Cl.⁶ B60D 1/60

U.S. Cl. 70—14

5 Claims



1. A trailer hitch lock comprising:
a base plate including a mounting ball mounted thereon;
a set of locking plates each defining a first end and a second end, said first ends of said set of locking plates being pivotally secured to opposing sides of said base plate;
a locking mechanism cooperating with said second ends to secure said second ends together;
wherein each of said second ends of said set of locking plates defines a plurality of spaced extensions, said plurality of spaced extensions of one locking plate alternating with said plurality of spaced extensions of the remaining locking plate, each of said spaced extensions defining a cylindrical opening therethrough, said cylindrical openings being alignable.

5,775,140
LOCK FOR CASSETTES FOR THE CONSTRUCTION OF
DRAWER CABINETS

Lars Olof Hallsten, Taby, Sweden, assignor to Borgstroms Platindustri AB, Kilafors, Sweden

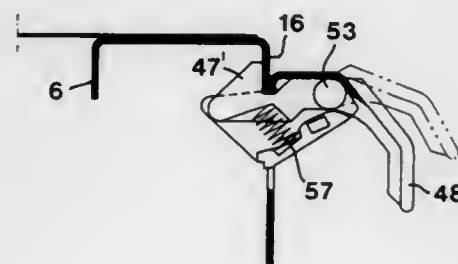
PCT No. PCT/SE94/00973, § 371 Date May 10, 1996, § 102(e)
Date May 10, 1996, PCT Pub. No. WO95/13726, PCT Pub.
Date May 26, 1995

PCT Filed Oct. 18, 1994, Ser. No. 646,350

Claims priority, application Sweden, Nov. 16, 1993, 9303797
Int. Cl.⁶ E05B 65/46; E05C 19/10

U.S. Cl. 70—85

8 Claims



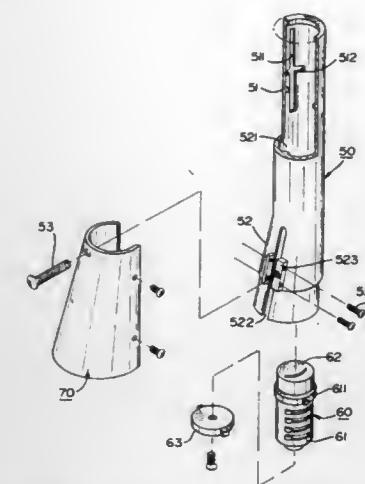
1. A cassette and drawer combination of the type intended for the construction of drawer cabinets, comprising (a) a cassette which comprises on one hand a rectangular frontal frame from which four walls extend including a bottom wall, two side walls and an upper wall, and on the other hand a rear wall to which said four walls are connected, and which frontal frame has substantially vertically positioned flanges in connection with said walls, and (b) a drawer adapted and arranged to slide in and out of said cassette and comprising a rear part, a bottom part, two side parts and a frontal part, said frontal part comprising a frontal wall having an upper edge and a longitudinal, forwardly projecting gripping flange extending from said upper edge and having a hook-or hitch-shaped cross-sectional profile, a length of said gripping flange comprising a cut-in portion forming a recess provided in at least one, suitably central part of the gripping flange, a fastening frame structure being fixedly mounted on an outside surface of the frontal wall adjacent said central part of the gripping flange, said frame structure carrying on one hand a turnable locking bar that extends through an opening in the frontal wall, said locking bar projecting into the drawer from an inside surface of the frontal wall, and on the other hand a handle connected to the locking bar, the profile shape of the handle substantially corresponding to the profile of the gripping flange and the handle substantially covering said recess in the gripping flange, and in that at least one projection is connected to the frame structure, said projection, like the locking bar, extending through the opening into the drawer and projecting from the inside surface of the frontal wall, the locking bar being pivotally mounted to the frame structure and movable by turning the handle between on one hand a locking, up-turned position in which the locking bar engages an inner surface of an upper, vertically positioned flange of the frontal frame of the cassette and extends above an upper surface of the projection, and on the other hand a liberating, down-turned position in which the bar disengages the inner surface and is positioned beneath the upper surface of the projection.

5,775,141
LOCK FOR HAND BRAKES
Chi-Yuan Li, No.740-7, Chung-Cheng Road, Hsin-Chuang City, Taipei, Taiwan
Filed Mar. 12, 1997, Ser. No. 815,509
Int. Cl.⁶ B60R 25/00

U.S. Cl. 70—237

3 Claims

1. A lock for a hand brake of a vehicle, the hand brake having a hand brake shaft with a push button protruding from an end of the hand brake shaft, the lock comprising:

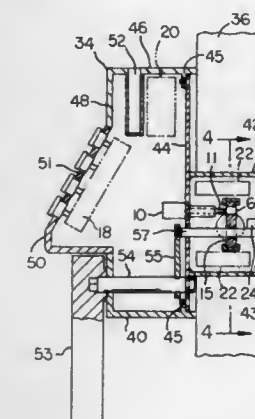


a) an external tubular sleeve having a receiving portion and a fixing portion with a clamping slot to facilitate clamping the external tubular sleeve to the hand brake such that the hand brake shaft and the push button are located within the receiving portion, the receiving portion of the external tubular sleeve having an inner surface in which are located an axial slot and a transverse slot, the transverse slot crossing the axial slot;
b) a lock head member having a lock housing located in an end of the external tubular sleeve, the lock housing having a limiting flange engaging the axial slot, a lock core extending from the lock housing so as to protrude from the external tubular sleeve, the lock core being rotatable between locked and unlocked positions, a lock plate rotatable with the lock core, the lock plate having a lock flange located such that, when the lock core is in the unlocked position, the lock flange engages the axial slot enabling axial movement of the lock core so as to push the push button of the hand brake, and when the lock core is in the locked position, the lock flange engages the transverse slot so as to prohibit axial movement of the lock core and pushing of the push button of the hand brake; and,
c) a guard plate covering at least a part of the fixing portion of the external tubular sleeve.

5,775,142
ELECTRONIC DOOR LOCK
Jitae Kim, 7266 Foanklin Ave. #303, Los Angeles, Calif. 90046
Filed Dec. 3, 1996, Ser. No. 759,985
Int. Cl.⁶ E05B 49/00

U.S. Cl. 70—278

5 Claims



1. A lock for a door, wherein said door has a first side and a second side, said lock comprising:
a housing having an external section locatable on the first side of the door, and an internal section locatable within the door;

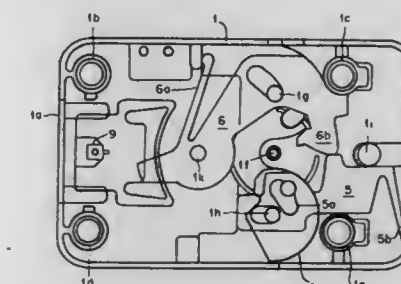
a reciprocable locking bolt in said internal section of said housing;
a handle mounted on said external section of the housing for operating said locking bolt from the first side of the door;
a central processing unit located within said external section of the housing; said central unit having a number of memorized access codes;
a battery power source for said central processing unit, said power source being located within said internal section of the housing;
a card reader in said external section of the housing for sending access codes to the central processing unit;
a keypad on said external section of the housing for sending access codes to the central processing unit; and
electrically-operated latch means connected to said central processing unit for normally retaining said locking bolt against movement; said central processing unit being operable to electrically disengage said latch means from said locking bolt when said central processing unit receives identical memorized access codes from the card reader and keypad.

5,775,143
RESETTABLE DOUBLE-BIT LOCK
Günter Mauer, Heiligenhaus, Germany, assignor to Mauer GmbH, Heiligenhaus, Germany
Filed Nov. 4, 1996, Ser. No. 743,103
Claims priority, application Germany, Nov. 11, 1995, 195 42 113.2

Int. Cl.⁶ E05B 21/00

U.S. Cl. 70—355

3 Claims



1. A resettable double-bit lock, comprising:
a housing;
a bolt having a resetting blade;
a mandrel;
a plurality of tumblers being pivotally supported around said mandrel and arranged by a double-bit key;
a plurality of studded disks supported within said resetting blade, said plurality of studded disks being faced by said plurality of tumblers;
a resetting swivel being supported on a bottom surface of said housing;
a keyhole for a resetting key located on a front side of said housing; and,
a reset lock device having a nose for releasing a locking angle having an arm, said locking angle swinging into an opening position under a biasing force, so that when said bolt is pulled backward, said resetting blade runs against said arm of said locking angle and releases said plurality of studded disks.

said resetting swivel being actuated by a bit of the resetting key via said keyhole, thereby displacing said reset lock device.

5,775,144
SYSTEM OF NON-REPRODUCIBLE LOCKING KEY AND CYLINDER FOR SAID KEY

Jose Ignacio Pagalday, Avda. de Tolosa, 77 20009 San Sebastian (Guipuzcoa), Spain

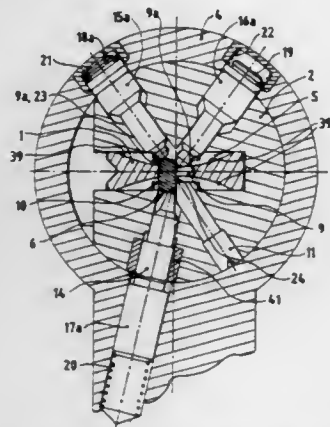
Filed Feb. 2, 1996, Ser. No. 595,731

Claims priority, application Spain, Aug. 2, 1995, 9501573

Int. Cl.⁶ E05B 27/06

U.S. Cl. 70—358

23 Claims



1. A rotating cylinder lock non-reproducible locking key comprising:

a key blade

said key blade having a lock insertion end which enters a cylinder lock to allow said key to open and close said lock, an opening formed in said key blade adjacent said lock insertion end, said opening having a first end closer to said lock insertion end than an opening second end opposite said first end,

said second end having an arcuate shape;

a swinging member mounted in said opening,

said swinging member being mounted to pivot about a first axis and a second axis and said first axis extends perpendicular to said second axis,

said swinging member has a first and a second side which are perpendicular to a plane of said key blade, and curvilinear horizontal bottom and top walls, whereby when an opening code for a rotating cylinder lock is determined said first side is adapted to receive from a fixed pin of said lock a lateral position action that produces an angular rotation of said swinging member with respect to said second axis such that said second side rests against a radial sidewall of the opening.

5,775,145
LOCK ASSEMBLY HAVING A KEY OPERATED REMOVABLE PLUG

Kazmier J. Kasper, Hopkinton, Mass., assignor to Algonquin Industries, Inc., Bellingham, Mass.

Filed Feb. 5, 1996, Ser. No. 596,967

Int. Cl.⁶ E05B 33/00

U.S. Cl. 70—367

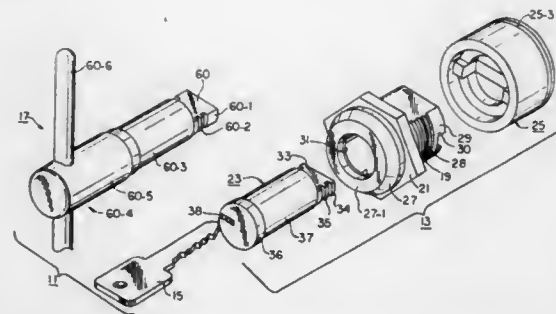
3 Claims

1. A lock assembly comprising:

a. a shell having a front end, a rear end, and a central bore extending from the front end to the rear end;

b. a key operated plug axially aligned and rotatably and removably disposed within the central bore of said shell;

c. a cam module, said cam module comprising a cam module base and a cam module bracket, said cam module base being



annularly shaped and rotatably mounted on the rear end of the shell, said cam module bracket being located inside said cam module base for restricting rotational movement of said cam module base on said shell;

d. a key insertable into said plug for removing said plug from said shell; and

e. a tool insertable through the central bore in said shell into the cam module when said key operated plug is removed from said shell for rotationally moving said cam module relative to said shell;

f. said cam module bracket being movably disposed within said cam module base;

g. said cam module base including a lateral slot and wherein said cam module bracket is located in said lateral slot and wherein said cam module base can rotate relative to said shell when said cam module bracket is disposed completely within said slot.

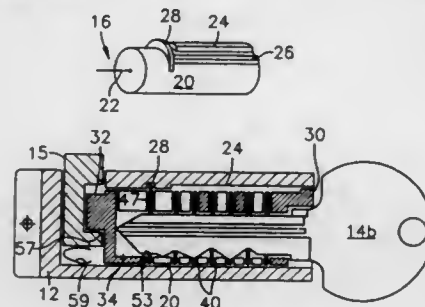
5,775,146
LOCK WITH REMOVABLE CYLINDER
Charles Christopher Edwards, and Grady A. Kelton, both of Greenville, Tenn., assignors to Hurd Corporation, Greenville, Tenn.

Filed Jun. 7, 1995, Ser. No. 479,165

Int. Cl.⁶ E05B 29/04

U.S. Cl. 70—369

18 Claims



1. A key operated cylinder lock assembly comprising a body member, a tumbler cylinder member and a latch member, said body member including a substantially cylindrical cavity within a cylindrical wall formed about a cylinder axis, said cylindrical wall having a pair of spline channels therein extending substantially parallel with said cylinder axis, said tumbler cylinder member comprising a plug having a substantially cylindrical surface configured and dimensioned to fit axially and rotatively within said cavity, said tumbler cylinder further comprising a key receptacle slot therein extended along an axial length, said slot being aligned substantially diametrically within said plug and a plurality of substantially parallel plane tumbler plates distributed along the axial length of said slot, said tumbler plates having a tongue element with a tongue width that is oriented substantially transversely to the slot length and confined in respective guide slots, each tumbler plate being slidably disposed within its respective guide slot and resiliently biased toward one radial edge of said key receptacle slot for projection of said tongue element beyond the cylindrical surface of said plug and into a first of said spline

channels in said cylindrical wall, said first spline channel having a width corresponding to said tongue width to prevent rotation of said tumbler cylinder about said cylinder axis, each of said tumbler plates also having a key aperture therein aligned to receive an operating key therethrough for withdrawing said tongue elements from said first spline channel thereby permitting said latch member to be operated by rotation of said tumbler cylinder about said cylinder axis, at least one of said tumbler plates having a tabular extension from said tongue element with a width substantially less than said tongue width, a second of said cylindrical wall spline channels having width corresponding to the width of said tabular extension, an arcuate channel in said cylindrical wall in planar alignment with said one tumbler plate to rotatively pass said tabular extension through said arcuate channel for a partial circle of rotation when the remainder of said plurality of tumbler plates are withdrawn from said first spline channel by insertion of said operating key through said apertures but preventing axial withdrawal of said tumbler cylinder from said cavity, said first spline channel having no open junction with said arcuate channel and said second spline channel having an open junction with said arcuate channel.

5,775,147
LOCKING DEVICE, ESPECIALLY FOR MOTOR VEHICLE LOCKING

Reinhard Wittwer, Heiligenhaus, Germany, assignor to Huelsbeck & Fuerst GmbH & Co. KG, Velbert, Germany

PCT No. PCT/EP95/00895, § 371 Date Dec. 18, 1996, § 102(e) Date Dec. 18, 1996, PCT Pub. No. WO95/28540, PCT Pub. Date Oct. 26, 1995

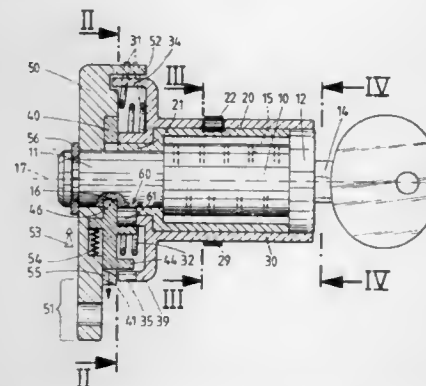
PCT Filed Mar. 10, 1995, Ser. No. 727,400

Claims priority, application Germany, Apr. 13, 1994, 44 12 609.3

Int. Cl.⁶ E05B 9/10

U.S. Cl. 70—379 R

10 Claims



1. The locking device with a locking cylinder, especially for motor vehicle locking, wherein the locking cylinder has a cylinder guide and a cylinder core which is rotatably supported therein along a longitudinal axis so as to be fixed axially and serves to receive a key and can be locked with the cylinder guide via spring-loaded tumblers when the key is withdrawn, the cylinder guide being rotatably supported in a stationary housing, but fixed with respect to rotation therein via an overload catch which is brought into an effective position, wherein the overload catch has a floating push-rod, a radial opening enclosing said push-rod, and a radial recess which receives only an inner radial end of the push-rod the radial recess being defined by stop cams which lift the end of the push-rod out of the radial recess when a determined torque is exerted on the cylinder core or by the cylinder core on the cylinder guide and accordingly set the overload catch in a free-running position, and when the inserted key is rotated, the cylinder core transmits the torque, via a radially displaceable and radially spring-loaded radial slide, to a driver which performs the locking functions in a motor vehicle wherein the radial slide has a stop face for the push-rod and presses the push-rod into the radial recess of the

overload catch due to the spring-loaded radial slide, and the push-rod, which is lifted out of the radial recess at a determined torque, displaces the radial slide, an improvement comprising that said radial slide is guided radially in the driver and is always connected with the driver so as to be fixed with respect to rotation relative thereto;

coupling faces are provided between the radial slide and one of a cylinder core and a core pin forming an extension of said core,

stopping surfaces are provided between the radial slide and the housing,

said radial slide engages with either said coupling faces of the cylinder core or with the stopping surfaces of the housing; and said radial spring loading between the driver and the radial slide presses the push-rod in the direction of the rotational axis of the cylinder core and holds the overload catch in the effective position.

5,775,148
UNIVERSAL APPARATUS FOR USE WITH ELECTRONIC AND/OR MECHANICAL ACCESS CONTROL DEVICES

Tim W. Layton, Roanoke, and Richard Hyatt, Jr., Shawsville, both of Va., assignors to Medeco Security Locks, Inc., Salem, Va.

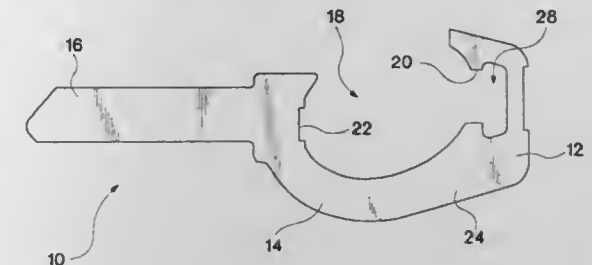
Continuation of Ser. No. 404,879, Mar. 16, 1995, abandoned.

This application Jun. 16, 1997, Ser. No. 876,291

Int. Cl.⁶ E05B 19/04

U.S. Cl. 70—408

14 Claims



1. A system of locks and keys in which a key for operating a mechanical lock may be upgraded to a key for operating the mechanical lock and an electronic access control device, the system comprising:

at least one mechanical lock operable by a key having a blade which is insertable into the mechanical lock;

at least one electronic access control device including a reader which communicates with an electronic module to operate the access control device;

the key including a blade and a key bow, the key having a recess formed therein with a first modular insert removably positioned within the recess and secured to the key, the first modular insert being a dummy insert which does not contain an electronic component;

a second modular insert containing an electronic module which communicates with the reader of the electronic access control device to operate the access control device;

said second modular insert configured to be removably positioned within the recess of the key by removing the first modular insert from the key and replacing the first modular insert disposed in the recess of the key with the second modular insert, and then securing the second modular insert thereto;

whereby the key operates the mechanical lock and the second modular insert cooperates with the reader of the electronic access control device to permit the key also to operate the electronic access control device and

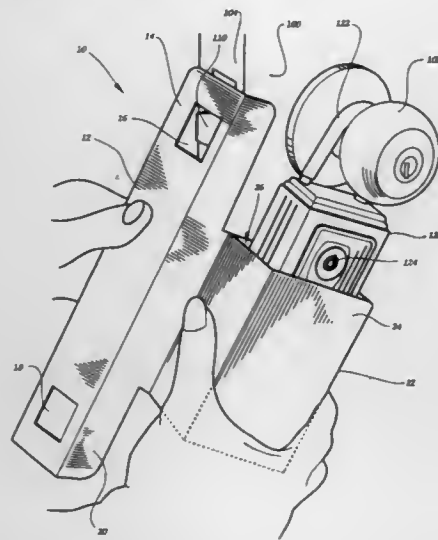
wherein said second modular insert contains all electronic components for said key, such that when said second modular insert is removed said key is free of any electronic components.

5,775,149

DEVICE FOR PREVENTING DOOR LOCK ACCESS
Keith R. Small, 1848 Forest Lake Dr., Rock Hill, S.C. 29732
Filed Jan. 21, 1997, Ser. No. 785,864
Int. Cl.⁶ E05B 13/00

U.S. Cl. 70—416

5 Claims



1. A device for preventing access to a key storage container attached to a door, said device comprising:
- (a) a body portion formed as a receptacle that is dimensioned to receive and contain therein said key storage container and block access to said key storage container;
 - (b) attaching means formed with a strike portion arranged to extend across a strike face of said door and including mounting means for mounting said strike portion to the door at the strike face of the door whereby said attaching means will be located between the strike face of the door and a door jamb so as to be inaccessible when said door is closed; and
 - (c) connecting means fixing said body portion to said attaching means to position said receptacle so that said receptacle will receive and contain said key storage container when said mounting means mounts said strike portion to the strike face of said door.

5,775,150

Patent Not Issued For This Number

5,775,151

METHOD AND APPARATUS FOR SPINNING A METAL SHEET

Johan Massée, Vijfsprongweg 104, 6741 JC Lunteren, Netherlands

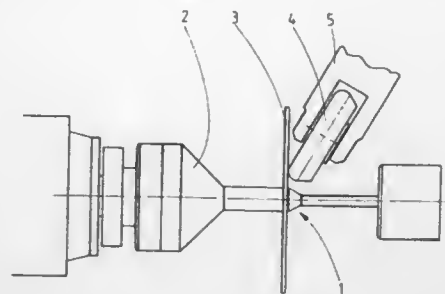
Filed Jul. 18, 1996, Ser. No. 683,341
Claims priority, application Netherlands, Jul. 20, 1995, 1000851

Int. Cl.⁶ B21D 22/18

U.S. Cl. 72—10.4

10 Claims

1. A method of spinning a metal sheet around a chuck for forming a product, comprising the steps of:
- forming an initial product on the chuck in a teaching phase using only force control by rotating the chuck about the axis of rotation and by moving a forming roller at least one time along the chuck with a pre-determined pressure force;
 - storing measuring data corresponding to the movement of the forming roller in a memory of a control unit during the step of forming an initial product;



forming further products on the chuck in a production phase by moving the forming roller under control of the control unit on the basis of said measuring data wherein the control unit determines position values of the forming roller in an axial direction and in a transverse direction relative to the chuck from the measuring data stored in the teaching phase, and wherein during said production phase the control unit controls the forming roller at least during a part of the movement of the forming roller along the chuck only by means of the position values.

5,775,152

APPARATUS FOR KEEPING COLD STRIP DRY IN THE RUNOUT OF COLD ROLLING PLANTS AND STRIP ROLLING PLANTS

Dieter Daub, Hilchenbach; Wolfgang Denker, Frendenberg, and Joachim Schmelzer, Olpe, all of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany

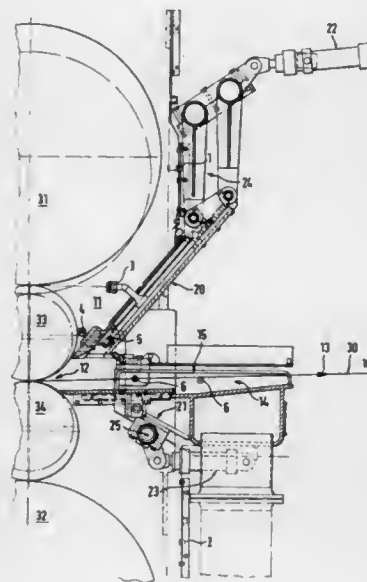
Filed Sep. 19, 1996, Ser. No. 716,580

Claims priority, application Germany, Sep. 22, 1995, 195 35 158.1

Int. Cl.⁶ B21C 43/00; 9/00

U.S. Cl. 72—39

8 Claims



1. An apparatus for keeping cold strip dry in a runout of a cold rolling plant or strip rolling plant by deflecting liquid rolling medium in the area of the strip runout and by removing spray liquid adhering to surfaces of the strip, the apparatus comprising the following components which act together to form a synergistically operating unit;

5,775,154

METHOD FOR ADJUSTING A ROLL GAP

Klaus-Dieter Haberkamm, Siegen, Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany

Filed Jan. 11, 1996, Ser. No. 584,968

Claims priority, application Germany, Jan. 7, 1995, 195 00 336.5

Int. Cl.⁶ B21B 31/07

U.S. Cl. 72—248

4 Claims

- a) a fixedly installed partition wall having an upper portion above the strip runout extending to a stand platform and a lower portion below the strip runout extending to a base plate;
- b) a moveable partitioning means comprising moveable components so as to facilitate a problem-free roll exchange;
- c) a roll body sealing means for sealing a roll space above the strip relative to the strip;
- d) a roll body blower for deflecting squeezed-out rolling medium from the finish-rolled strip;
- e) a strip edge blower for producing an air flow perpendicularly to the strip in a roll gap on an exit side above the strip runout; and
- f) a vapor-exhaust means for producing an air flow parallel to a strip travel direction above and below the strip in a strip channel.

5,775,153

HYDROFORMING OFFSET TUBE

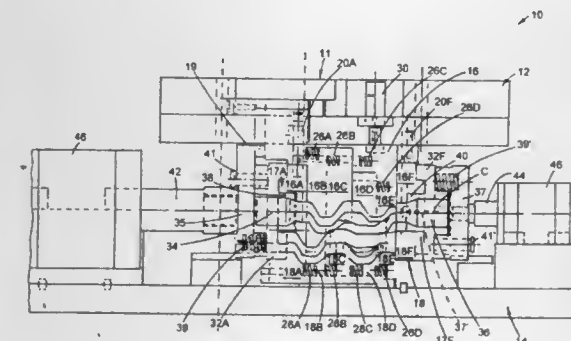
Donald R. Rigby, 1923 Mulberry La., Jenson, Mich. 49428, and Jerome C. Abbott, 635 Oak, Birmingham, Mich. 48009

Division of Ser. No. 607,820, Feb. 27, 1996. This application Jun. 3, 1997, Ser. No. 867,755

Int. Cl.⁶ B21D 15/03; 26/02

U.S. Cl. 72—58

6 Claims



1. A method of offset reconfiguring a tubular workpiece comprising the steps of:
- providing a pair of upper and lower tool subassemblies movable together to define an elongated configured cavity therebetween having open axial ends, and means for forcing said tool subassemblies together to mechanically offset deform a tubular workpiece in said cavity, said tool subassemblies each being formed of segments movable axially into engagement with each other or spaced from each other;
 - providing a pair of workpiece flaring, sealing and retaining mandrels at said axial ends of said cavity;
 - retaining and sealing an elongated tubular workpiece between said mandrels in said elongated cavity;
 - filling said workpiece with liquid;
 - lowering segments of said upper tool subassembly sequentially toward said lower tool subassembly while axially moving said mandrels toward each other to sequentially mechanically offset deform portions of said workpiece transversely of the cavity axis while supplying workpiece material axially inwardly;
 - axially moving all of said segments in both said upper and lower tool subassemblies together; and
 - increasing pressure on said liquid in said workpiece sufficient for hydroform expanding said workpiece to the specific configuration of said elongated cavity.

5,775,155

VARIABLE SECTION EXTRUSION DIE SET AND VARIABLE EXTRUSION MOLDING METHOD

Masatsugu Kato; Shigeo Sano, both of Tokyo; Atsushi Kamibayashi, Susono, and Yasumasa Hiyoshi, Susono, all of Japan, assignors to Mitsubishi Aluminum Co., Ltd., Tokyo, Japan PCT No. PCT/JP96/00019, § 371 Date Aug. 23, 1996, § 102(e) Date Aug. 23, 1996, PCT Pub. No. WO96/21528, PCT Pub. Date Jul. 18, 1996

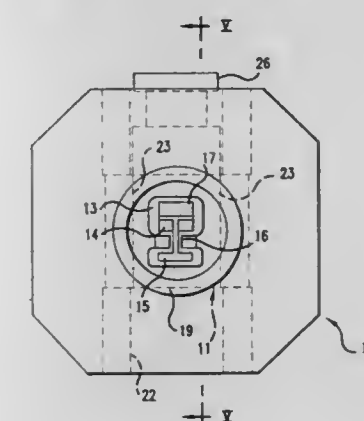
PCT Filed Jan. 10, 1996, Ser. No. 693,073

Claims priority, application Japan, Jan. 12, 1995, 7-018798; Mar. 8, 1995, 7-074708; Mar. 8, 1995, 7-074709; Sep. 4, 1995, 7-248295

Int. Cl.⁶ B21C 25/08

U.S. Cl. 72—260

20 Claims



1. A variable section extrusion die set comprising a first die and a second die, said first die being formed therein with a first extrusion hole, said first extrusion hole including a flange portion shaping-hole having a width equal to a maximum thickness, a web shaping-hole extending in a direction substantially perpendicular to said flange portion shaping-hole, said web shaping-hole having first and second end portions said first end portion terminating in said flange portion shaping-hole of said first

extrusion hole, and a flange portion communication hole formed in said second end portion of said web shaping-hole and having a larger width than said flange portion shaping-hole,

said second die being formed therein with a second extrusion hole, said second extrusion hole including a flange portion shaping-hole having a width equal to said maximum thickness, a web shaping-hole extending in a direction substantially perpendicular to said flange portion shaping-hole, said web-shaping hole having third and fourth end portions said third end portion terminating in said flange portion shaping-hole of said second extrusion hole, and a flange portion communication hole formed in said fourth end portion of said web shaping-hole and having a larger width than said flange portion shaping-hole,

said first and second dies being arranged in this order in an extrusion direction of a molding material and relatively movable along said web shaping-holes, respectively, such that said web shaping-holes of said first and second extrusion holes are in communication with each other and said flange portion shaping-hole of one of said first and second dies is situated on the side of said flange portion communication hole of the other die.

5,775,156

METHOD AND APPARATUS IN A BENDING MACHINE
Roberto De Rossi, Cologna Venta, and Luigi Patuzzi, Monteforte D'Alpone, both of Italy, assignors to Balaxman Oy, Kauhava, Finland

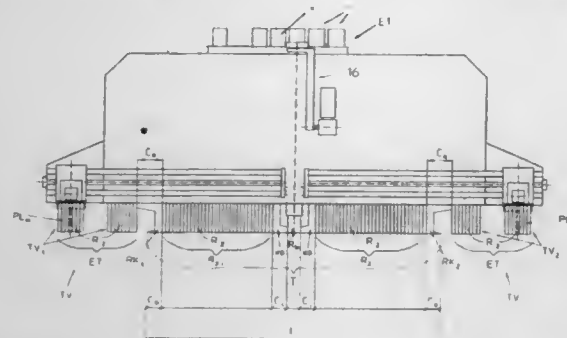
Filed Feb. 9, 1995, Ser. No. 386,356

Claims priority, application Finland, Feb. 10, 1994, 940613

Int. Cl.⁶ B21D 11/04

U.S. Cl. 72—319

16 Claims



1. Method of adjusting width of bending jaws of a bending machine including two sets of bending jaws transferable and/or exchangeable from an operational region to a non-operational region, comprising the steps of:

- placing a first set of said two sets of bending jaws at proximate middle of said operational region;
- placing a second set of said two sets of bending jaws at both sides of the bending jaws of said first set;
- providing respective edge pieces to each end of the bending jaws at said operational region for defining a total width of the bending jaws;
- calculating the total width of the bending jaws by electing from said first set which includes a group of jaw parts of different widths at least one jaw part for placement at said operational region of the bending jaws,
- electing a group of jaw parts with identical width and separate from said edge pieces to form said second set, and
- calculating the width of the bending jaws required according to the equation

$$L = R_{1n} + N \cdot R_{2k} + C$$

where

L=the width of the bending jaws,

R_{1n} =the width of the jaw part ($n=0 \dots M$) elected from said first set,

N=the width of the jaw parts of said second set, i.e. a constant, R_{2k} =the number ($k=0 \dots k$) of jaw parts of said second set at the operational region of the bending jaws, and

C=a constant representative of the parts with a constant width included in the total width of the bending jaws.

5,775,157

SWINGING SELF-POSITIONING SUPPORT FOR PIPE BENDING MACHINES

Alessandro Caporusso, and Mario Caporusso, both of Frosinone, Italy, assignors to C.M.L. Costruzioni Meccaniche Liri S.R.L., Frosinone, Italy

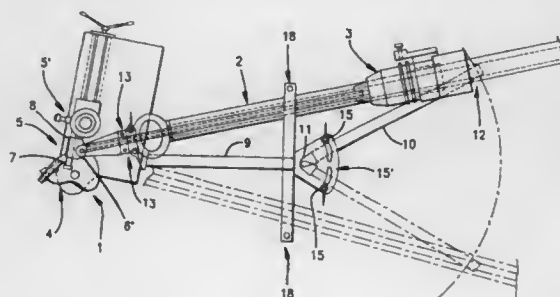
Filed Dec. 12, 1996, Ser. No. 764,750

Claims priority, application Italy, Dec. 15, 1995, RM95A0819

Int. Cl.⁶ B21D 7/024

U.S. Cl. 72—321

5 Claims



1. A pipe bending machine comprising a bending assembly (1) with a matrix (4) and a counter-matrix (5), a support arm (2) and a mandrel (3) for positioning a pipe, wherein said arm is pivotally supported swingingly with respect to the bending assembly through a pivot (6) slideably supported along a stem (7) on a first vertical axis passing through a center of rotation of the matrix and a center of swinging of the counter-matrix, so as to automatically position a horizontal axis of a side to be bent in said machine on said first vertical axis so as not to vary a distance between said first vertical axis and the mandrel when positioning said arm.

5,775,158

CUTTING DIES

Lyman J. Hensley, Sycamore; Neil H. Strawbridge, Jr., Machesney Park, and Donald L. Shaner, Rockford, all of Ill., assignors to Greenlee Textron Inc., Rockford, Ill.

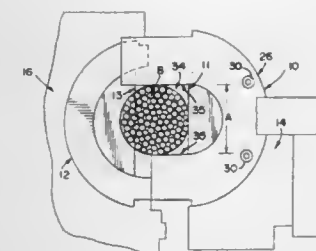
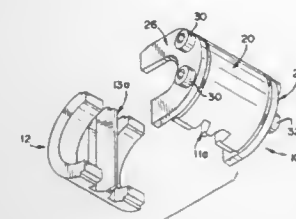
Filed Jul. 23, 1996, Ser. No. 685,135

Int. Cl.⁶ B21D 28/00

U.S. Cl. 72—325

32 Claims

1. A die structure for use in a crimping or cutting tool for impinging and deforming a workpiece between relatively movable jaws of the tool on which the die structure is securable, comprising: die body including an impinging formation arranged to impinge and deform said workpiece against another, directly opposing impinging formation thereby crimping or cutting said workpiece; and a retaining structure removably secured on said die body adjacently spaced from said impinging formation on said die body and arranged to support said workpiece engageable there-



against to prevent workpiece deformation thereat during said impingement by said impinging formation at an adjacent location on said workpiece.

5,775,159

METHOD OF MANUFACTURING AN UNDERCUT DEEP-DRAWN WORKPIECE

Reinhard Schröter, Solingen, and Peter Bach, Wermelskirchen, both of Germany, assignors to ED. Scharwachter GmbH & Co. KG, Remscheid, Germany

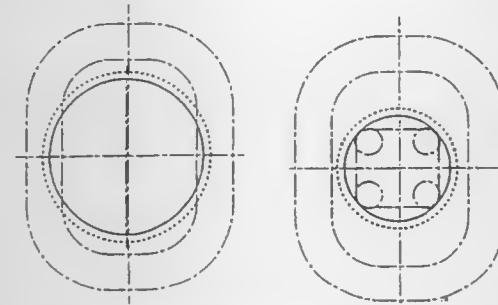
Filed May 22, 1996, Ser. No. 651,380

Claims priority, application Germany, Jun. 6, 1995, 195 20 554.5

Int. Cl.⁶ B21D 22/00; 22/21; B21C 37/02

U.S. Cl. 72—348

4 Claims



1. A method of manufacturing of an undercut deep-drawn workpiece from a sheet material, which is closed from five sides, has at least two non-parallel walls, and has, in a plan view, a substantially rectangular shape, said method comprising the steps of:

- deforming a sheet material in at least one state into a pot-shaped piece having a circular cross-section with a diameter, which decreases in a course of deformation, while retaining a flat circumferential rim flange;
- increasing a depth of the pot-shaped piece with formation of an outwardly cambered bottom substantially simultaneously with decreasing the diameter of the pot-shaped piece, while retaining a circular cross-section of the pot-shaped piece;
- thereafter, forming, one after another, two opposite flat surface side walls on the pot-shaped piece;
- bringing the two opposite side walls into divergent, relative to each other, angular positions, with synchronously flattening the bottom of the pot-shaped piece; and
- thereafter, forming two further opposite flat surface side walls to obtain a substantially rectangular cross-section of the pot-shaped piece, and

wherein the step of forming, one after another, two opposite side walls and the step of bringing the two opposite side walls in divergent, relative to each other, angular position are effected simultaneously.

5,775,160

REDRAW MECHANISM FOR CAN BODY MAKER APPARATUS

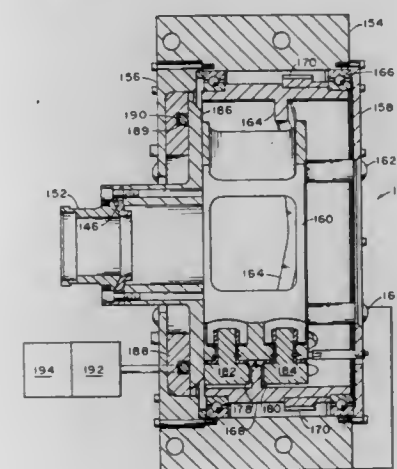
Karl S. Fleischer, Denver, and Behzad Bakhti-Suroosh, Evergreen, both of Colo., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 30, 1997, Ser. No. 846,745

Int. Cl.⁶ B21D 24/04

U.S. Cl. 72—349

20 Claims



1. An redraw apparatus for a can body maker comprising: a redraw housing means adapted to be fixedly mounted onto the body maker, said redraw housing having a forward face and a rearward face, said forward face including means susceptible to magnetic influence; a core means mounted for reciprocal motion within said redraw housing means, said core means including cam followers; cam means mounted in said redraw housing means and operatively engaged with said cam followers whereby movement of said cam means effects said core means reciprocal movement; and electromagnetic means mounted in the forward face of said redraw housing means, whereby the electromagnetic means is selectively activated to provide hold down force to said core means.

5,775,161

STAGGERED DIE METHOD AND APPARATUS FOR NECKING CONTAINERS

Antonio Caleffi, deceased, late of Nogara, Italy, by Gianfranco Caleffi, executor; William A. Hecimovich, Northampton, England; Timothy R. Wright, Narlidere Izmir, Turkey, and Leo F. Hayden, Fox River Grove, Ill., assignors to American National Can Co., Chicago, Ill.

Filed Nov. 5, 1996, Ser. No. 743,847

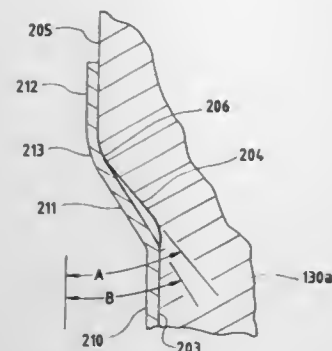
Int. Cl.⁶ B21D 51/26

U.S. Cl. 72—356

15 Claims

1. A necking apparatus for producing a smooth inwardly tapered necked-in portion adjacent an open end of a container having a generally cylindrical side wall comprising:

- a plurality of necking modules, each of the necking modules including
- a module frame and a turret rotatably mounted on the module frame for rotation about a fixed axis, the turret of each of the modules including



a drive shaft rotatably mounted on the module frame, an upper turret frame mounted on the drive shaft, a lower turret frame mounted on the drive shaft, and a plurality of necking substations mounted on the upper and lower turret frames, each of the necking substations including an annular necking die mounted on the upper turret frame, the necking die having a first cylindrical wall surface substantially equivalent in diameter to the container side wall and a second cylindrical wall surface of lesser diameter and a tapered neck extending between the first and second cylindrical wall surfaces, a container support mounted on the lower turret frame in axial alignment with a necking die, and cam means for producing relative axial movement between the necking die and the container support, between a first position in which the necking die and the container support are a maximum distance apart and a second position in which the necking die and the container support are a minimum distance apart,

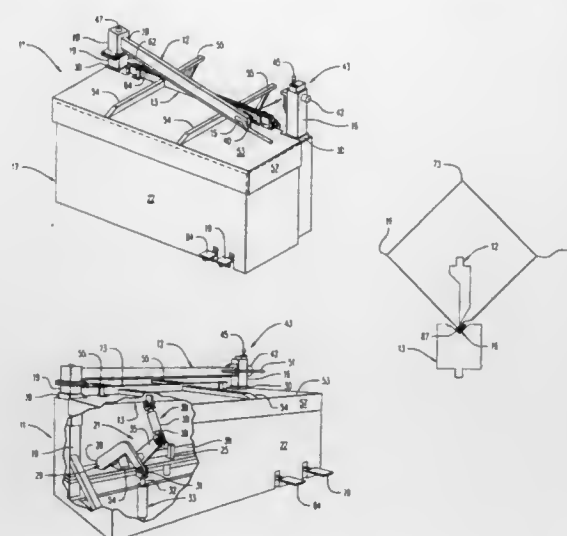
the improvement comprising means for varying the axial spacing between the upper turret frame and the lower turret frame of each of the turrets whereby the axial spacing between each necking die of the turret and the associated container support may be varied so that when the necking die and the container support are in the second position the tapered neck of the necking die does not engage the tapered neck-in portion of a container supported by the container.

5,775,162
METHOD AND APPARATUS FOR FORMING SHEET METAL DUCTS
Raymond L. Ward, 58 Howarth Rd., Oxford, Mass. 01540
Filed May 30, 1997, Ser. No. 865,990
Int. Cl.⁶ B21D 5/02

U.S. Cl. 72—389.3

20 Claims

1. A closed tube forming apparatus comprising:
a base including spaced apart first and second support members;
an elongated first die having one end supported by said first support member and an opposite end supported by said second support member; said one end being detachable from said first support member so as to permit separating movement therebetween;
an elongated second die supported by said base and extending parallel to said first die;
one of said first and second dies having a transverse V-shaped cross section forming a knife edge and the other of said first and second dies defining a longitudinally extending V-shaped groove conforming substantially to said V-shaped cross section;
a drive mechanism for producing relative movement between said first and second dies into forming positions with said knife edge received by said groove; and



a release mechanism operable to effect said detachment of said one end from said first support member and thereby permit said separating movement therebetween into positions substantially spaced apart.

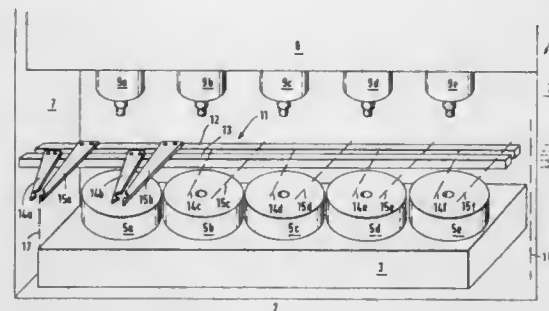
5,775,163
TRANSFER ARRANGEMENT FOR MULTISTATION PRESSES
Günter Riedisser, Eislingen, Germany, assignor to Schuler Pressen GmbH & Co., Germany
Filed Dec. 4, 1996, Ser. No. 760,604

Claims priority, application Germany, Dec. 7, 1995, 194 45 570.3

Int. Cl.⁶ B21D 43/05

U.S. Cl. 72—405.12

15 Claims



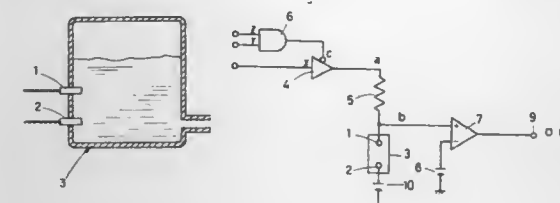
1. Transfer arrangement for a multistation press, comprising two translationally adjustable carrier devices, each carrying a plurality of complementary gripping devices forming pairs from the respective gripping devices on each of the carrier devices and having a gripping position and a releasing position and arranged parallel to a row of machining sites for workpieces, the complementary gripping devices establishing two parts of the pair and being arranged so that each part of each pair is carried by only one of the respective carrier devices,

wherein the carrier devices are mutually parallel gripper rails arranged on one side of a row defined by the machining sites.

5,775,164
REMAINING LIQUID QUANTITY DETECTING DEVICE
Motoshi Kishi, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Nov. 6, 1996, Ser. No. 743,681
Claims priority, application Japan, Nov. 16, 1995, 7-323769
Int. Cl.⁶ G01F 23/24

U.S. Cl. 73—304 R

11 Claims



1. A remaining liquid quantity detecting device for detecting a quantity of liquid remaining in a tank by applying a voltage to a pair of electrodes arranged in the tank and detecting electrolysis which changes under an influence of the liquid existing between the electrodes, the device comprising:

a first voltage supplying means, connected to said first electrode, for applying a direct-current signal to the first electrode;
a switching means, provided in said first voltage supplying means, for switching the same between a first mode incapable of applying a current-signal to the first electrode and a second mode capable of applying a current-signal to the first electrode; and

a second voltage supplying means, connected to the second electrode, for applying a predetermined standard voltage to the first electrode,

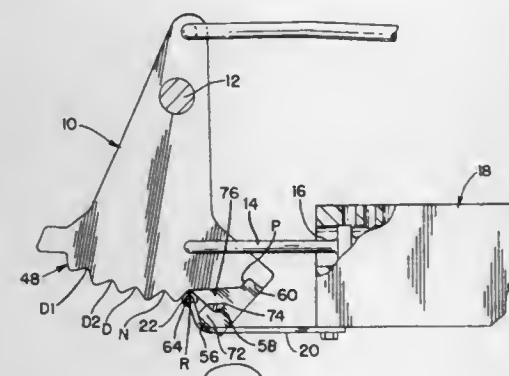
wherein during a time of non-detecting the quantity of the remaining liquid, the first voltage supplying means is set in the first mode through the switching means and a standard voltage is applied to the first and second electrodes based on the second voltage supplying means, and

during a time of detecting the quantity of the remaining liquid, the first voltage supplying means is set in the second mode through the switching means and an electric potential of the first electrode is made to change alternately on the basis of the standard voltage based on the first and second voltage supplying means.

5,775,165
TRANSMISSION SHIFT CONTROL DETENT MECHANISM
Jian Gang Lu, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 22, 1996, Ser. No. 735,281
Int. Cl.⁶ F16H 63/38

U.S. Cl. 74—473.28

3 Claims



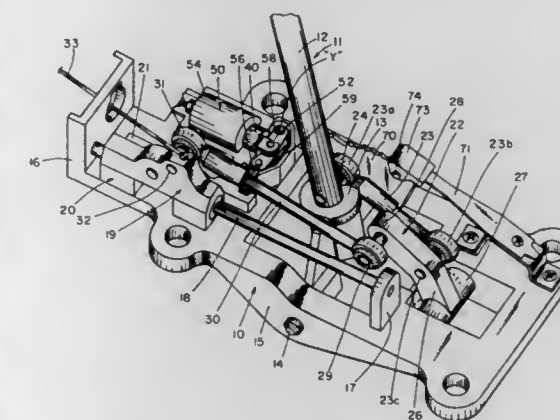
1. A detent mechanism in a transmission shift control comprising:

a detent plate pivotally mounted for movement in response to an operator input;
a cam surface defining a plurality of rises and valleys formed on said detent plate including a park rise and a first valley and a second valley adjacent the park rise;
a channel communicating between said first valley and said second valley bypassing said park rise;
a detent roller spring biased to engage said cam surface and to follow said park rise during travel from said second valley to said first valley; and
said channel providing an egress for said detent roller during travel from said first valley to said second valley.

5,775,166
VEHICLE SHIFTER
Charles Osborn, Spring Lake; Robert M. Medema, Muskegon, and Andrew K. Ruiter, Spring Lake, all of Mich., assignors to Grand Haven Stamped Products, Div. of JSJ Corp., Grand Haven, Mich.
Filed Jul. 29, 1996, Ser. No. 681,766
Int. Cl.⁶ B60K 20/02; F16H 59/04; G05G 5/08

U.S. Cl. 74—475

31 Claims



1. A vehicle shifting mechanism comprising a shift lever movable to different gear shifting positions and including a detent member having a plurality of notches including a "PARK" notch, each notch representing one of said gear positions, said "PARK" notch representing the "PARK" position;

a locking member for separately engaging each of said notches to determine the gear position of said shift lever, said locking member locking said shift lever in "PARK" position when engaging said "PARK" notch; an actuator for actuating said locking member to locked and unlocked positions; said detent member being movable with said shift lever.

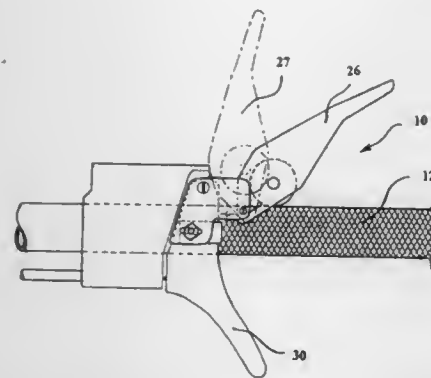
5,775,167
FINGER OPERATED THROTTLE LEVER
Neil R. Maietta, P.O. Box 1025, Gray, Me. 04039
Filed Sep. 13, 1996, Ser. No. 712,584
Int. Cl.⁶ G05G 11/00

U.S. Cl. 74—480 R

6 Claims

1. A throttle apparatus for a vehicle comprising handgrips; a thumb throttle associated with one of said grips, said thumb throttle having at least one thumb throttle pivot point; and a finger throttle comprising:

a finger operated member having a pivot end, a force end and having a home position;
a fulcrum attached to said finger operated member disposed between the pivot end and the force end of said finger operated member, wherein the home position is provided when said fulcrum is away from said handgrip so that a user's hand



may grip the handgrip clear of said finger operated member and the user's thumb may operate said thumb throttle in a normal manner;

a finger throttle pivot point adjacent to the pivot end of said finger operated member, wherein said finger operated member is pivotally attached via said finger throttle pivot point to said thumb throttle with said finger throttle pivot point being a predetermined distance from the thumb throttle pivot point; wherein the user can operate said finger operated member to rest the user's thumb by moving said finger operated member from the home position such that said fulcrum is in contact with said handgrip, wherein movement of said finger operated member causes said thumb throttle to move accordingly, thus regulating the speed of said vehicle.

5,775,168

COMBINED BRAKE AND SHIFTING DEVICE

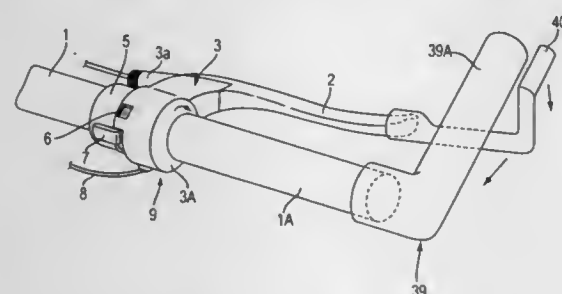
Haruhisa Furuta, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Feb. 14, 1996, Ser. No. 601,098

Int. Cl.⁶ G05G 11/00

U.S. Cl. 74—489

23 Claims



1. A bicycle control device comprising:

a brake lever (2);

a support unit (3,5) having a rotatable support member (3) for supporting the brake lever (2) on a structural member (1) of the bicycle so that the support member (3) and the brake lever (2) rotate together around the structural member (1) and coaxially with a rotational axis (X) defined within and extending along the structural member (1) of the bicycle;

a control member (4) for controlling movement of a transmission element (8); and

a clutch (20) for transferring rotational motion of the support member (3) around the rotational axis (X) to the control member (4) so that the control member (4) causes movement of the transmission element (8).

5,775,169

ROBOTIC ARM HAVING A SPLASH GUARD

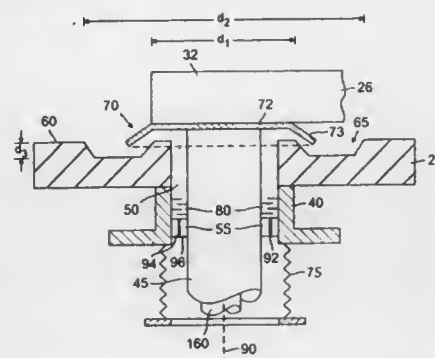
Todd Solomon, Los Gatos, and Donald J. Thomas, San Jose, both of Calif., assignors to Smart Machines, San Jose, Calif.

Continuation-in-part of Ser. No. 500,124, Jul. 10, 1995, Pat. No. 5,676,472. This application Jul. 9, 1996, Ser. No. 677,492

Int. Cl.⁶ B25J 17/00; F16C 33/76

U.S. Cl. 74—490.01

3 Claims



1. A robotic arm, comprising:

a first housing which provides a base of the robotic arm, the housing having a generally horizontal and integral top surface with an aperture therein;

a drive shaft extending up through said aperture and connected to a second housing which provides a generally horizontal link of the robotic arm, there being a gap between said shaft and an inner edge of said aperture;

an indentation in said top surface spaced apart from and at least partially surrounding said gap; and

a splash guard connected to said shaft, said splash guard extending over said gap.

5,775,170

ROBOTIC ARM MOTOR STABILIZER

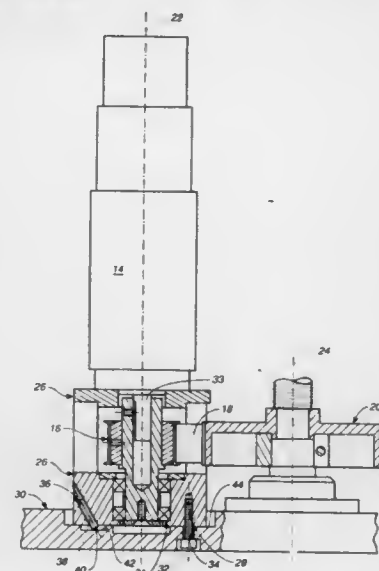
Genco Genov, Sunnyvale, and Gou-Kin Cui, Fremont, both of Calif., assignors to Genmark Automation, Sunnyvale, Calif.

Filed Jan. 26, 1996, Ser. No. 592,185

Int. Cl.⁶ B25J 18/00

U.S. Cl. 74—490.04

6 Claims



1. In a robotic arm mechanism providing motion to an end effector, the motion being provided by a motor driving a drive pulley, the drive pulley rotating about a first axis being connected by belt means to drive a driven pulley, the driven pulley having a second axis, the motor being mounted to a bracket, the bracket being slidably mounted to a base plate, the bracket being posi-

tioned relative to the base plate to provide desired tension in the belt means, the bracket being fastened to the base plate by bolt means which extend from the base plate orthogonally to the motor, a belt means tensioning improvement, comprising:

a threaded bore extending fully through the bracket from a distally facing end thereof removed from the driven pulley to a proximal end thereof, closer to the driven pulley, the bore having a third axis which is located generally in a plane which is contiguous with or parallel to the axes of the respective drive and driven pulleys, the bore extending to the base plate, and towards the axis of the driven pulley; and

a set screw having a tip, the screw being engaged with the bore and extending therethrough such that the tip forcibly engages with the base plate.

5,775,171

ROBOT WRIST MECHANISM

Hans Richter, Ortlerstrasse 77, D-86163 Augsburg, Germany

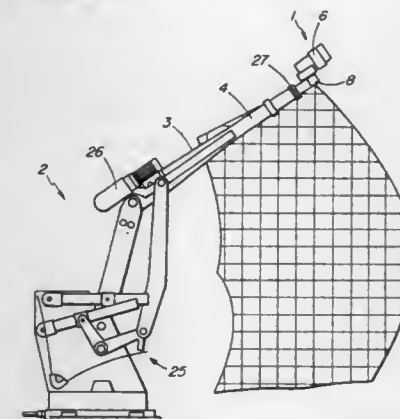
Filed Aug. 11, 1995, Ser. No. 514,248

Claims priority, application Germany, Aug. 12, 1994, 44 28 488.8

Int. Cl.⁶ B25J 17/02

U.S. Cl. 74—490.06

9 Claims



1. A robot wrist for attaching a working hand of a robot to a robot arm comprising in combination:

a connection element for connection of the wrist to the arm which defines a main axis of rotation for the wrist;

a tool holder comprising a first part and a second part in which the first part is rotatably attached to the connection element so that the first part can turn about a second axis normal to the main axis, and the second part is rotatably attached to the first part so that the second part can turn about a third axis parallel to the main axis, and

a tool receiver rotatably attached to the second part, and which defines an axis of rotation for the tool receiver parallel to the main axis,

wherein when the tool receiver is in a fully extended position furthest from the main axis the distance between the main axis and the third axis, and between the third axis and the tool receiver axis, are the same.

5,775,172

GUIDING AND ENERGY ABSORPTION DEVICE FOR A MOTOR VEHICLE STEERING COLUMN

Laurent Fevre, Saint-Sulpice, and Jean-Christophe Bodin, Saint Ouen, both of France, assignors to Lemforder Nacam S.A., Vendome, France

Filed Jul. 26, 1996, Ser. No. 686,673

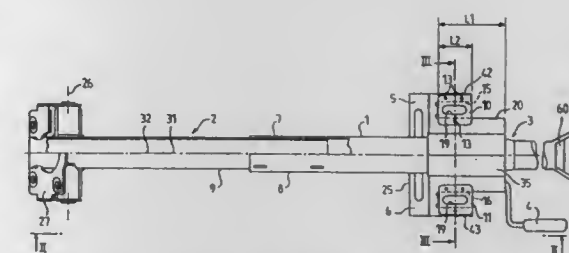
Claims priority, application France, Jul. 26, 1995, 95 09108

Int. Cl.⁶ B62D 1/18

U.S. Cl. 74—492

15 Claims

1. Steering column with energy absorption device for a motor vehicle and comprising a column body (1) mounted on the frame



of the vehicle by means of brackets (5, 6), said brackets (5, 6) comprising openings (15, 16) for the passage of fixing elements (12) for fixing to the frame, and capsules (10, 11) associated with at least some of said brackets (5, 6) and encompassing them, at least partially, said capsules (10, 11) being retained by said fixing elements (12), so that should an impact occur, the brackets (5, 6) integral with the column body (1) move with respect to the capsules (10, 11) fixed to the frame, the relative movement of a bracket (5, 6) with respect to the capsule (10, 11) associated with it having an effect of absorbing the energy due to the impact, said openings (15, 16) of the brackets (5, 6) comprising guiding surfaces (20, 21, 40, 41) which are disposed two by two on both sides of a vertical plane (31) containing the axis (32) of the column, and on which the capsules (10, 11) propelled by said elements (12) slide if an impact occurs, the guiding lengths (L1) of the guiding surfaces (20, 21, 40, 41) being sufficiently large so as to control movement of the column in a guiding direction substantially parallel to the axis (32) of the column, wherein said capsules (10, 11) are made of plastics and wherein a metallic insert (14) is inserted between said fixing elements (12) and said capsules (10, 11).

5,775,173

ACTUATING DEVICE FOR A CABLE LINE

Rudolf Wagner, Lerschstrasse 7, A-4600 Wels, Austria

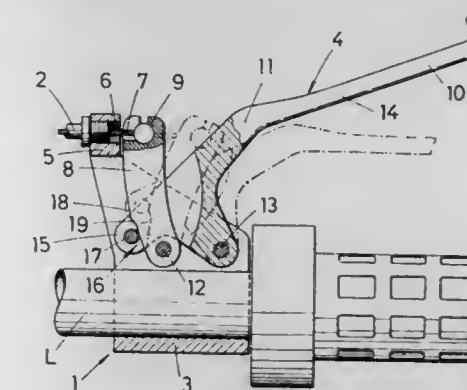
Filed Jul. 16, 1996, Ser. No. 680,630

Claims priority, application Austria, Jul. 17, 1995, 1209/95

Int. Cl.⁶ B62L 3/02

U.S. Cl. 74—502.2

1 Claim



1. An actuating device for a cable line, which comprises:

(a) a fixed support including

(1) an extension defining a guide for a traction cable of the cable line, and

(b) a handle including

(1) an actuating lever pivotally linked to the fixed support for pivoting about a pivot axis extending transversely to the guide, the traction cable being connected to the actuating lever, and the actuating lever comprising a curved cam track,

(2) a hand grip arranged to pivot the actuating lever,

(3) a two-armed handle lever pivotally linked to the fixed support for pivoting about a pivot axis extending parallel to the pivot axis of the actuating lever, an arm of the two-armed handle lever remote from the actuating lever constituting the hand grip, and

(4) the arm of the two-armed handle lever adjacent the actuating lever carrying a cam follower in frictional engagement with the curved cam track to form a cam gear, whereby the handle lever and the actuating lever constitute cooperating members of a gearing.

5,775,174

VEHICULAR FOOT-OPERATED PARKING BRAKE CONTROL APPARATUS

Kazunari Kanbe, Kariya; Takashi Ishikawa, Hekinan; Takuya Inaba, Chiryu, and Masayoshi Katagiri, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

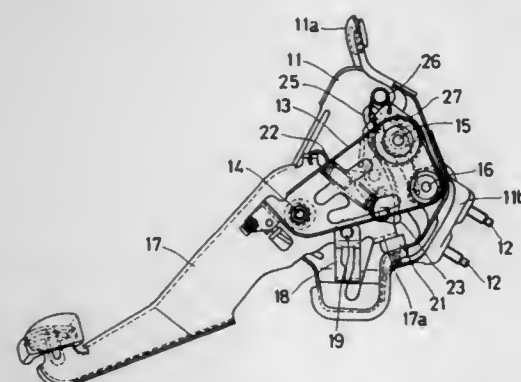
Filed Jul. 19, 1996, Ser. No. 684,234

Claims priority, application Japan, Jul. 20, 1995, 7-183729

Int. Cl.⁶ G05G 5/06

U.S. Cl. 74—542

15 Claims



6. A vehicular foot-operated parking brake control apparatus comprising:

- a mounting bracket for being fixed to a vehicle body;
- a pedal rotatably mounted on the bracket for rotation about a rotational axis to alternatively effect a parking brake engaged condition and a parking brake disengaged condition through application of a depression force to the pedal, said pedal being connectable to a parking brake control cable;
- a plurality of ratchet teeth provided on the pedal along an arc disposed about the rotational axis of the pedal;
- a pawl rotatably mounted on the bracket for being rotated in a first rotation direction in which the pawl is urged in a direction towards engagement with the ratchet teeth and a second rotational direction opposite the first rotational direction in which the pawl is urged in a direction away from engagement with the ratchet teeth, the pawl being rotatable about a rotational axis that is generally parallel to the rotational axis of the pedal, the pawl also being slidably mounted on the bracket to slide between a first slide position and a second slide position;
- a spring connected to the pawl and movable between a first orientation, when the pedal is in the parking brake disengaged condition, in which the spring imparts a force to the pawl that urges the pawl towards the first slide position and that urges the pawl in the first rotational direction and a second orientation, when the pedal is in the parking brake engaged condition, in which the spring imparts a force to the pawl that urges the pawl towards the first slide position and that urges the pawl in the second rotational direction; and
- means for causing the spring to move from the first orientation to the second orientation upon release of the depression force applied to the pedal in the parking brake engaged condition.

5,775,175

DEVICE FOR WINDING A CRANK AND ASSOCIATED METHOD

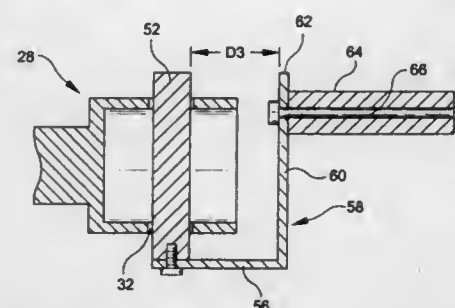
Thomas A. Salemno, 337 Indian Creek Rd., Harleysville, Pa. 19438, and William I. Smith, 2801 Stanbridge St., Apt. 807, Norristown, Pa. 19401

Continuation-in-part of Ser. No. 689,515, Aug. 12, 1996. This application Nov. 7, 1996, Ser. No. 744,602

Int. Cl.⁶ G05G 1/12

U.S. Cl. 74—545

5 Claims



1. A hand crank device for use in tightening a winch, said hand crank device comprising:

- a first rigid element having a first end and a second end, wherein an aperture is disposed through said first rigid element proximate said first end;
- a cylindrical pin having a top end, a bottom end, and a longitudinal axis, wherein a threaded bore is disposed in said bottom end of said cylindrical pin;
- a bolt having a longitudinal axis, said bolt extending through said aperture in said first rigid element, wherein said bolt is received by said threaded bore in said bottom end of said cylindrical pin and attaches said cylindrical pin to said first rigid element in a fixed orientation, and wherein said longitudinal axis of said bolt is generally parallel to said longitudinal axis of said cylindrical pin;
- a second rigid element coupled to said second end of said first rigid element, wherein a longitudinal axis of said second rigid element is generally parallel to said cylindrical pin and said second rigid element extends from said first rigid element in the same direction as said cylindrical pin; and
- a handle coupled to said second rigid element, wherein said handle has a mid-axis that is generally perpendicular to said longitudinal axis of said second rigid element and said handle is free to rotate about said mid-axis.

5,775,176

SEPARATORS FOR FLYWHEEL ROTORS

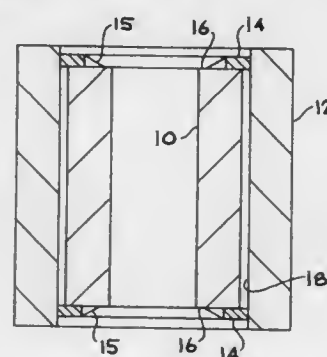
Donald A. Bender, Dublin, and Thomas C. Kuklo, Oakdale, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 14, 1996, Ser. No. 645,731

Int. Cl.⁶ G05G 1/00

U.S. Cl. 74—572

14 Claims



1. In a concentric ring rotor assembly comprising an inner rotor that rotates within the inner bore of an outer rotor, the improvement comprising:

at least one separator operatively connected between at least two concentric rings of said concentric ring rotor assembly, wherein said at least one separator allows for radial growth between said at least two concentric rings while providing a connection between said at least two concentric rings that is strong enough to prevent said concentric ring rotor assembly from disassembling.

5,775,177

OIL PUMP COVER

Yoichi Ikeda, Fuji, Japan, assignor to Jatco Corporation, Japan

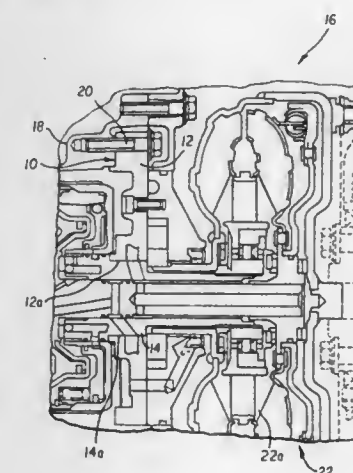
Filed Apr. 3, 1996, Ser. No. 627,113

Claims priority, application Japan, Apr. 7, 1995, 7-082291

Int. Cl.⁶ F16H 57/02

U.S. Cl. 74—606 R

2 Claims



1. An oil pump cover including an aluminum cover body fixed to a casing of an automatic transmission and having a hole formed in a shaft center thereof and an iron stator shaft being pressed into said hole in said cover body, the improvement comprising:

- said stator shaft is pressed into said hole in said cover body after a surface of said hole is hardened;
- wherein a hardness of the surface of said hole in said cover body is 90HB or more; and wherein the surface of said hole in said cover body is formed with aluminum alloy class 2B (AC2B) for metal mold casting, and is subjected to a solution heat treatment at 500 centigrade degree for 3 hours and is thereafter tempered at 180 centigrade degree for 4 hours.

5,775,178

WAVE GEAR DEVICE

Hideo Asawa, and Naomi Shirasawa, both of Nagano-ken, Japan, assignors to Harmonic Drive Systems, Inc., Tokyo, Japan

Filed Sep. 27, 1996, Ser. No. 722,797

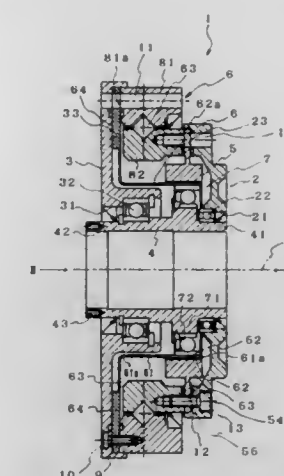
Claims priority, application Japan, Sep. 29, 1995, 7-251702

Int. Cl.⁶ F16H 1/00

U.S. Cl. 74—640

11 Claims

- 1. A wave gear device comprising:
- a circular spline;
- a flexspline arranged within said circular spline; and
- a wave generator disposed within said flexspline for deflecting said flexspline in radial direction for partially engaging external teeth formed on said flexspline with internal gear teeth formed on said circular spline and shifting an engaging position in circumferential direction to cause relative rotation depending upon difference in number of teeth of the internal gear tooth and the external gear teeth between said circular spline and said flexspline; wherein



said circular spline has an annular rigid teeth portion formed with said internal gear teeth along the inner periphery thereof, a fastening portion to be rigidly secured on one of a device housing and a supporting member rotatably supported in said device housing, and a connecting portion connecting said rigid teeth portion and said fastening portion, and wherein said connecting portion has a low rigidity at least in one of a direction of an axis of the device and a direction perpendicular to the axis, in comparison with that of said rigid teeth portion.

5,775,179

DEVICE FOR SETTING SAWBLADES

Hans Robert Haas, Emilienstr. 56, 42853 Remscheid, Germany

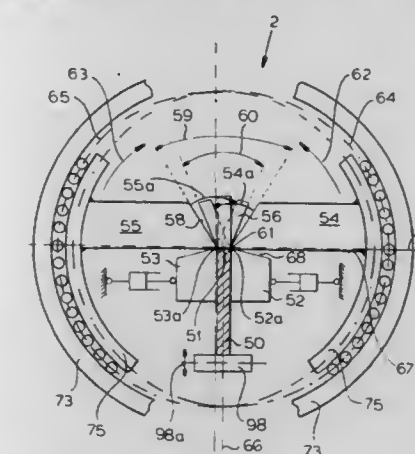
Filed May 10, 1996, Ser. No. 645,957

Claims priority, application Germany, May 12, 1995, 195 17 482.8

Int. Cl.⁶ B23D 63/04

U.S. Cl. 76—61

18 Claims



1. A device for setting a row of teeth of a sawblade, said device comprising:

- a pair of clamping members disposed on opposite sides of a sawblade having a row of teeth to be set and engageable with said opposite sides below a tooth-foot line of said row; means operatively connected with said clamping members for pressing said clamping members against said sides of said sawblade;
- a pair of separate setting members on opposite sides of said row of teeth and having respective setting surfaces juxtaposed with teeth of the row, said setting members having fixed starting positions in which said setting members are simultaneously in clamping-free engagement with said sawblade from opposite sides, said setting surfaces defining a setting-tool angle between them in said starting position which is at

least equal to a setting angle defined between outer tooth side planes upon setting of the teeth; and means for angularly displacing said setting members in opposite senses to press said setting surfaces against the teeth of said row and set said teeth so that outer tooth side flanks of set teeth lie in said outer tooth side planes at said setting angle.

5,775,180

SHARPENING DEVICE

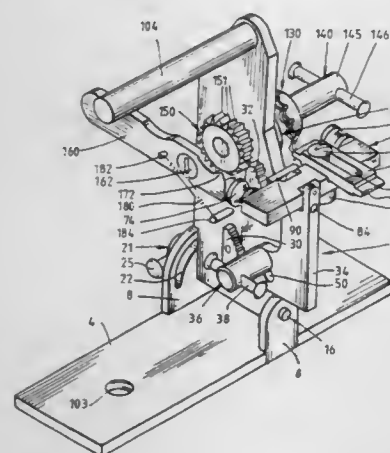
Terrence J. Parke, Toolern Downs, Melton, Australia
PCT No. PCT/AU95/00245, § 371 Date Oct. 28, 1996, § 102(e)
Date Oct. 28, 1996, PCT Pub. No. WO95/29789, PCT Pub.
Date Nov. 9, 1995

PCT Filed Apr. 28, 1995, Ser. No. 732,486

Claims priority, application Australia, Apr. 29, 1994,
PM5340

Int. Cl.⁶ B24B 3/36; 3/46; 3/52; B26D 7/12
U.S. Cl. 76—85

34 Claims



1. A device for sharpening a cutting edge of a cutting element, said device comprising a base member for supporting the device in use, a main member pivotably moveable with respect to the base member, said main member having a retaining subassembly for selectively holding the cutting element in a desired position, said retaining subassembly being moveable with respect to the main member, and a guide subassembly connected to or mounted on the main member, said guide subassembly being selectively moveable with respect to the main member to adopt a desired position, said guide subassembly being provided with a guide member for guiding movement of a sharpening means in use to sharpen the cutting element held by the retaining means, wherein said device is arranged in use to allow selective sharpening of the cutting element after adjustment of the positions of the guide subassembly and retaining subassembly with respect to the main member and after adjustment of the position of the main member with respect to the base member.

5,775,181

METHOD OF MAKING A SAWBLADE TOOTH FORM
Daniel J. Carlsen, Baltimore, and George F. Parker, Severna Park, both of Md., assignors to Black & Decker Inc., Newark, Del.

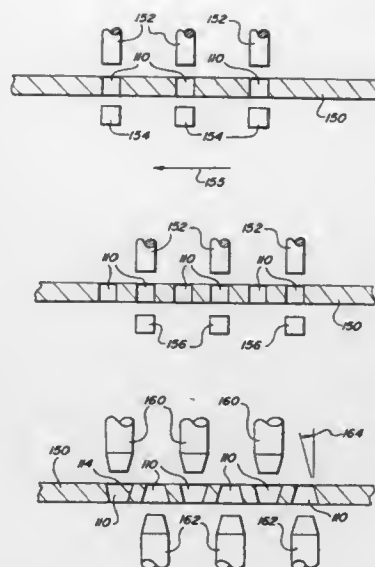
Continuation of Ser. No. 292,903, Aug. 19, 1994, abandoned.
This application Oct. 10, 1996, Ser. No. 730,425

Int. Cl.⁶ B23D 65/02

U.S. Cl. 76—112

15 Claims

1. A method of forming a tooth profile for a plurality of teeth on a saw blade having a specified tooth pitch, each of said plurality of teeth having a cutting edge, said method comprising the steps of: providing a strip of raw material;
punching a plurality of holes in said strip of raw material;



simultaneously forming an angled surface having a large opening and a small opening within each of said plurality of holes such that every other hole of the plurality of holes define said large opening on a first side of said strip of raw material and remaining adjacent alternating holes of said plurality of holes define said large opening on a second opposing side of said strip of raw material throughout said strip of raw material; and grinding a plurality of planar surfaces on said strip of material intersecting said angled surfaces to create said cutting edges.

5,775,182

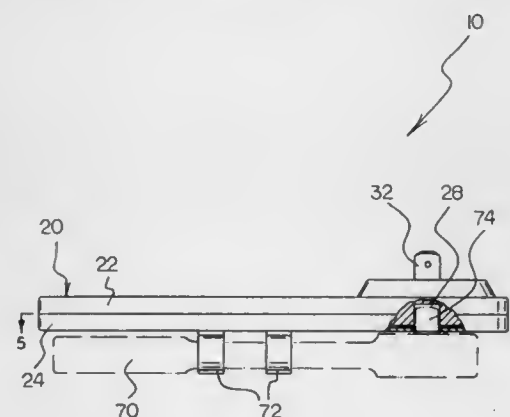
COMPOUND POWER SOCKET WRENCH

Frank J. Plakinger, Rt 2 Box 167-E, Raymond, Wash. 98577
Filed Jun. 18, 1996, Ser. No. 666,206

Int. Cl.⁶ B25B 17/00

U.S. Cl. 81—57.3

2 Claims



1. A compound power socket wrench system comprising:
a handle structured to have an interior chamber for a drive means and an extension means, the handle further having a drive aperture near a first handle end and a recess aperture near the end opposite of the drive aperture;
a first sprocket rotatably secured within the handle near the drive aperture;
a socket drive centrally secured to the first sprocket, the socket drive projecting outward through the drive aperture;
a second sprocket rotatably secured within the handle near the recess aperture, the second sprocket having a radius smaller than a radius of the first sprocket;
a drive chain engaging the first sprocket and the second sprocket;

an extension means having a first bevel gear mounted to one side of the second sprocket, a second bevel gear mounted to the side of the second sprocket opposite of the first bevel gear with the gears of the first bevel gear and the second bevel gear in aposition to one another, a dual sided bevel gear rotatably secured to handle near the recess aperture, said dual sided bevel gear engages the first bevel gear and the second bevel gear, and the dual sided bevel gear includes a drive recess aligned to the recess aperture receiving an auxiliary drive from the auxiliary drive handle; and
an auxiliary drive handle engaging the extension means.

5,775,183

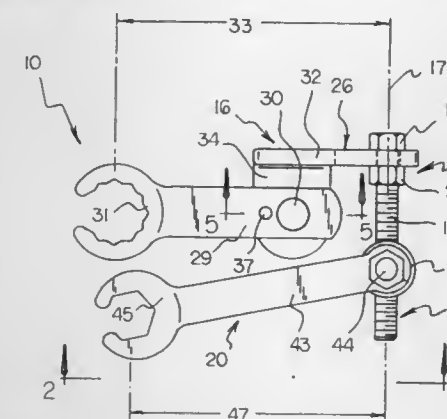
COMPOUND WRENCH APPARATUS

James Tavianini, 13375 January Ct., Corona, Calif. 91719
Filed Jul. 15, 1996, Ser. No. 680,035

Int. Cl.⁶ B25B 13/58

U.S. Cl. 81—57.36

10 Claims



1. A compound wrench apparatus, comprising:
a shaft which includes threads,
an implement-receiver connected to said shaft at a proximal end of said shaft,
a first wrench assembly engaged by said threads proximal to said proximal end of said shaft, and
a second wrench assembly engaged by said threads of said shaft distal to said first wrench assembly.

5,775,184

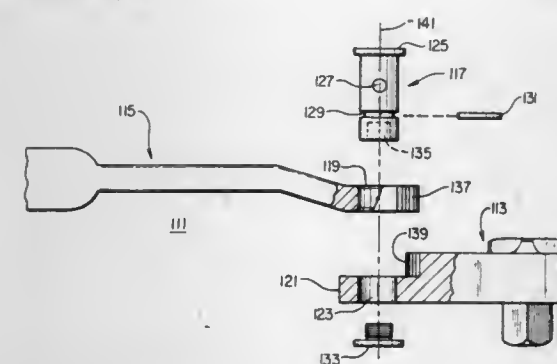
INDEXABLE WRENCHES

James Ellis Cole, P.O. Box 29911, Dallas, Tex. 75229-0911
Continuation of Ser. No. 541,509, Oct. 10, 1995, abandoned,
which is a continuation-in-part of Ser. No. 260,720, Jun. 16,
1994, Pat. No. 5,419,221. This application Jun. 16, 1997, Ser.
No. 876,488

Int. Cl.⁶ B25B 13/46

U.S. Cl. 81—60

5 Claims



1. A tool comprising:

a tool head including a first orifice having a first longitudinal axis and a first curved surface at a predetermined radial distance from the first longitudinal axis, the first curved surface including a first plurality of splines disposed parallel to the first longitudinal axis;
a handle including a second orifice having a second longitudinal axis, the first and second longitudinal axes being coaxial, and a second curved surface, the second curved surface being disposed of a predetermined radial distance from the second longitudinal axis and including a second plurality of splines configured to engage the first plurality of splines;
a connecting pin disposed in the first and second orifices and connecting the tool head and the handle;
the connecting pin being rigidly attached to a first one of the tool head and the handle, a second one of the tool head and the handle being slidable between a locked position and an unlocked position on the connecting pin;
in the unlocked position, the second one being free to rotate completely about the connecting pin; and
in the locked position, the first plurality of splines engaging the second plurality of splines to rotationally lock the handle to the tool head.

5,775,185

Patent Not Issued For This Number

5,775,186

POWER SCREW DRIVER

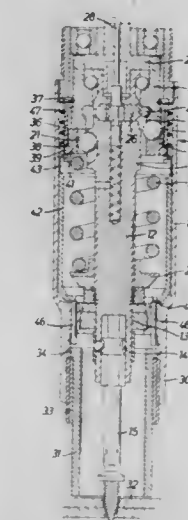
Erik Roland Rahm, Väsby, Sweden, assignor to Atlas Copco Tools AB, Nacka, Sweden

Filed Nov. 15, 1996, Ser. No. 749,823

Claims priority, application Sweden, Nov. 16, 1995, 9504088
Int. Cl.⁶ B25B 23/157

U.S. Cl. 81—474

8 Claims



1. A power screw driver for tightening self-tapping screws, comprising:
a housing (10) having a forward end;
an output shaft (12);
a torque limiting release clutch (11) including a driving clutch half (16) arranged to receive a driving torque from a rotation motor, and a driven clutch half (18) coupled to said output shaft (12);
a torque transferring cam unit (17, 19) and a movable spring biased thrust element (20) which exerts an engagement force on said cam unit (17, 19), said thrust element (20) being engaged by said cam unit (17, 19).

displaced into a release position of the release clutch (11) as a desired output torque is reached;

a screw bed (32) engaging contact member (31) supported at the forward end of the housing (10), said contact member (31) being displaceably guided relative to said housing (10) in the axial direction of said output shaft (12);

a lock unit (36, 39) disposed between one of said clutch halves (16, 18) and said thrust element (20), and being shiftable between a thrust element (20) locking position and a thrust element (20) unlocking position;

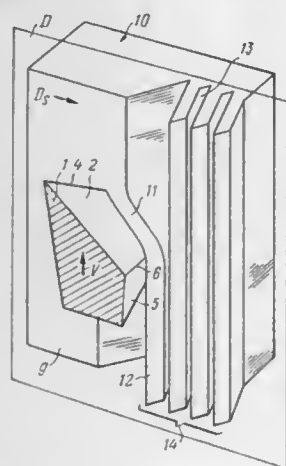
said lock unit (36, 39) comprising at least two balls (39) supported in apertures (38) in an axially immovable lock sleeve (36) surrounding said thrust element (20), said balls (39) being radially movable between inner thrust element (20) locking positions and outer thrust element (20) unlocking positions;

said thrust element (20) having an external circumferential groove (41) arranged for engagement by said balls (39) in their inner thrust element (20) locking positions; and

an activation unit (42, 46) coupling said contact member (31) to said lock unit (36, 39) so as to accomplish shifting of said lock unit (36, 39) from said thrust element (20) locking position to said thrust element (20) unlocking position as said contact member (31) is displaced rearwardly relative to the housing (10) at contact of said contact member (31) with the screw bed (32) during a final stage of a screw tightening process;

said activation unit (42, 46) comprising a shifting sleeve (42) surrounding said lock sleeve (36) and being provided with an internal circumferential groove (43) which by a rearward displacement of said shifting sleeve (42) enables a radial movement of said balls (39) from their inner thrust element (20) locking positions to their outer thrust element (20) unlocking positions.

5,775,187
METHOD AND APPARATUS OF PRODUCING A SURFACE WITH ALTERNATING RIDGES AND DEPRESSIONS
 Zoubkov Nikolai, 117463 Novoyasenevsky prosp. 32-161, korp. 1, and Ovtchinnikov Alexander, 105523, 15-th Parkovaia, st. 46-3 korp 5, both of Moscow, Russian Federation
 PCT No. PCT/RU94/00121, § 371 Date Feb. 5, 1996, § 102(e) Date Feb. 5, 1996, PCT Pub. No. WO94/25217, PCT Pub. Date Nov. 10, 1994
 PCT Filed Apr. 27, 1994, Ser. No. 545,640
 Claims priority, application Russian Federation, Apr. 30, 1993, 93017599
 Int. Cl.⁶ B23B 17/00; B26D 1/01
 U.S. Cl. 82—1.11 **20 Claims**



1. A method for producing on a blank a surface having a profile of alternating ridges and depressions with parallel sides, comprising:

as a first step, employing a tool with a rectilinear cutting edge having:

a main angle ϕ in a plan of said tool according to a relationship:

$$\phi = \arcsin [a/(S \cdot \epsilon)]$$

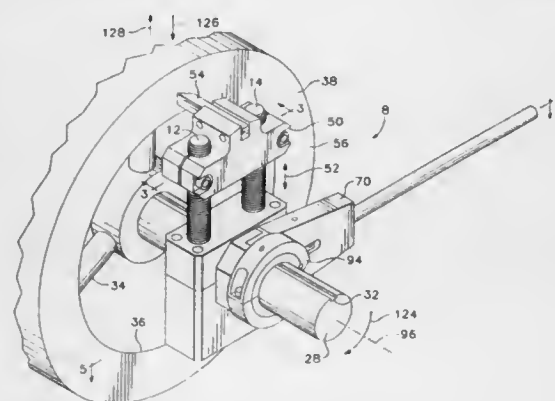
where a is a given thickness of a ridge
 S is a given pitch of said ridges of said profile
 ϵ is a distortion factor of said ridge profile equal to between 0.9 and 1.1,

an auxiliary angle ϕ_1 in said plan view of said tool equal to $(90^\circ - \psi)$,
 where ψ is a preset angle of deviation of a projection of said ridge from a vertical position with respect to said blank,
 a depth of penetration t equal to

$$t = [h \cdot \epsilon - S \cdot \cos(\phi - \psi)/2] \cdot (\sin \phi / \cos \psi),$$

where h is a given height of said ridges of said profile, and a feed S_n equal to said pitch of said ridges, and
 as a second step, moving said blank and said tool relative to each other, and undercutting and plastically deforming a surface layer of said blank with said tool while preserving an undercut layer on said surface to form alternating ridges and depressions with parallel sides.

5,775,188
APPARATUS FOR AND METHOD OF FACING SURFACES
 David S. Strait, Centerville, Wash., assignor to Climax Portable Machine Tools, Inc., Newberg, Oreg.
 Filed Feb. 29, 1996, Ser. No. 610,111
 Int. Cl.⁶ B23B 5/04
 U.S. Cl. 82—1.11 **15 Claims**

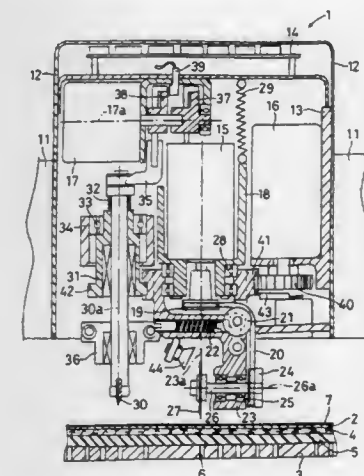


15. A method of facing a surface comprising: providing a portable facing head including: translation means having an axis of translation; facing means operatively connected to said translation means; feed means adapted for rotation about a rotational axis, the feed means operatively connected to the translation means and including engagement means adapted to engage the translation means so as to translate the translation means relative to the feed means and along said axis of translation upon rotation of the feed means about its rotational axis; and torque means positioned adjacent the feed means and including pivot means having first and second engagement surfaces, the pivot means pivotable such that either the first engagement surface or the second engagement surface rotates the engagement means in respective first and second directions upon rotation of the feed means; causing rotation of the feed means;

manipulating the torque means so as to pivot the pivot means such that the first engagement surface extends outwardly toward the feed means such that upon rotation of the feed means the first engagement surface contacts the engagement means causing it to rotate in a first direction so as to translate the translation means relative to the feed means thereby moving the facing means radially outwardly along the surface being faced; and

further manipulating said torque means so as to pivot the pivot means such that the first and the second engagement surface extend equally outwardly toward the feed means such that upon rotation of the feed means neither the first nor the second engagement surface contacts the engagement means thereby causing no rotation of the engagement means such that the facing means does not move radially along the surface being faced as the feed means rotates about its rotational axis.

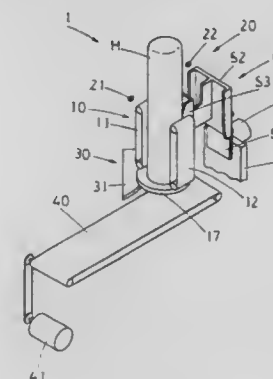
5,775,189
CUTTING MACHINE
 Kenji Ikoma, Wakayama, and Reiji Arikita, Naga-gun, both of Japan, assignors to Shima Seiki Manufacturing Limited, Wakayama, Japan
 Filed Oct. 8, 1996, Ser. No. 727,121
 Claims priority, application Japan, Oct. 9, 1995, 7-261899
 Int. Cl.⁶ B26D 3/14
 U.S. Cl. 83—76.1 **9 Claims**



1. A cutting machine which has a cutting table; a round blade for cutting a sheet material spread on a surface of the cutting table with a circumferential cutting edge thereof, the round blade having a rotation shaft parallel to the surface of the cutting table; and a cutting head for cutting the sheet material, while moving in parallel with the surface of the cutting table according to cutting data, the cutting head having a notching blade for cutting the sheet material by pressing an edge thereof against a surface of the sheet material, the cutting machine comprising:

selecting means for selectively displacing either the round blade or the notching blade in a direction of approaching or departing from the cutting table by driving force from a common drive source, and thereby selectively applying either the round blade or the notching blade to the sheet material to cut it; an angular displacement motor for driving the round blade and the notching blade so that a cutting direction is changed by angular displacement about an angular displacement axis thereof perpendicular to the surface of the cutting table; transmitting means for transmitting driving force from the angular displacement motor to angular displacement shafts of the round blade and the notching blade in a predetermined proportion; and control means for controlling the angular displacement motor so that the cutting direction of the round blade or the notching blade changes according to the cutting data.

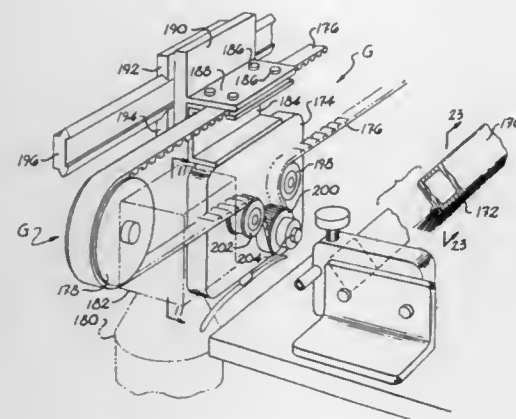
5,775,190
FOOD SLICER
 Masao Terai, Wakayama, Japan, assignor to Ryowa Co., Ltd., Wakayama, Japan
 Filed Mar. 20, 1996, Ser. No. 618,605
 Claims priority, application Japan, Mar. 22, 1995, 7-062918
 Int. Cl.⁶ B26D 5/26
 U.S. Cl. 83—92 **5 Claims**



1. A food slicer comprising: a pair of belt conveyors positioned opposite to each other for holding therebetween a lump of food and feeding the lump of food in a feeding direction; a cutter positioned downstream of said belt conveyors, relative to said feeding direction, for cutting a leading end, relative to said feeding direction, of the lump of food into successive slices; end detecting means for, during feeding of the lump of food by said belt conveyors, detecting a trailing end, relative to said feeding direction of the lump of food, and for generating a signal representative thereof; a holding mechanism movable in opposite directions parallel to said feeding direction between upstream and downstream positions, relative to said feeding direction, said holding mechanism including a retaining member movable in opposite directions substantially transverse to said feeding direction between a projected position, whereat said retaining member may be penetrated into the lump of food, and a retracted position, whereat said retaining member is withdrawn from the lump of food; and controlling means, responsive to said signal, for, during said feeding of the lump of food by said belt conveyors, causing movement of said retaining member from said retracted position to said projected position, such that said retaining member is penetrated into a trailing portion of the lump of food, and causing said holding mechanism and said retaining member to move from said upstream position to said downstream position.

5,775,191
FOLDING AND SEWING APPARATUS
 Perry E. Burton, 217 Marked Beech Rd., Marietta, S.C. 29661, and John V. Noonan, 106 Merrifield Ct., Greenville, S.C. 29615
 Continuation of Ser. No. 250,797, May 27, 1994, Pat. No. 5,572,940. This application Nov. 12, 1996, Ser. No. 747,579
 Int. Cl.⁶ B26D 1/06
 U.S. Cl. 83—488 **21 Claims**

1. A length cutter for laterally cutting a sheet of material comprising: a cutting head slidably supported upon a horizontal rail having a first end and a second end, said cutting head being laterally moved along said rail and across a sheet of material by a driven belt, said driven belt extending generally from said first end of said horizontal rail to said second end of said rail, said cutting head including a gear arrangement in operative asso-



ciation with a cutting blade, said gear arrangement being in communication with said belt such that when said cutting head is moved across said sheet of material by said belt, said belt simultaneously drives said cutting blade for cutting said material.

5,775,192

SLIDING MITER CUTTER

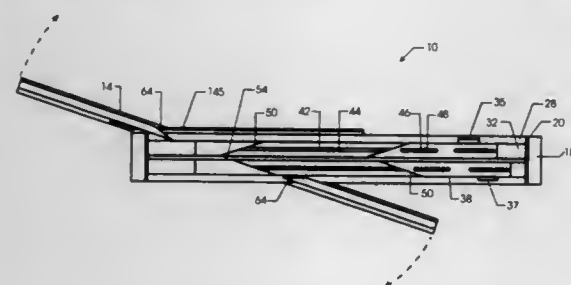
Willard N. Fuecker, 520 Raymond Ave. NE., St. Cloud, Minn. 56304; Peter S. Theisen, and John A. Theisen, both of St. Cloud, Minn., assignors to Willard N. Fuecker, St. Cloud, Minn.

Filed Mar. 20, 1996, Ser. No. 619,035

Int. Cl.⁶ B26D 1/30

U.S. Cl. 83—597

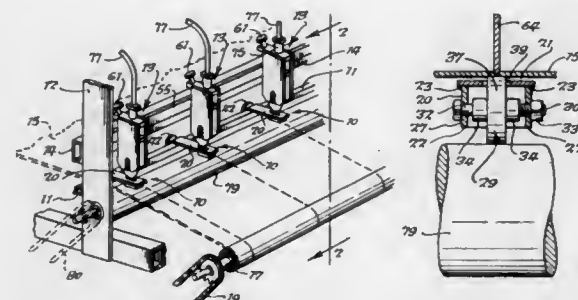
15 Claims



7. A steel siding miter cutter capable of smearing galvanized zinc during a cut comprising:

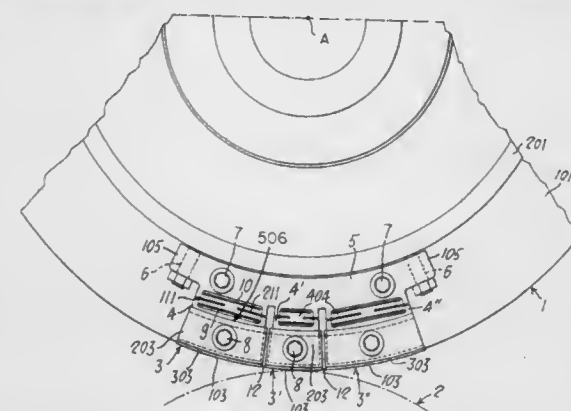
- a first pivotal blade;
- a first linearly adjustable blade;
- a second linearly adjustable blade, said first linearly adjustable blade and said second linearly adjustable blade spaced therebetween by a gap just sufficient to allow said first pivotal blade to pivot therebetween;
- a fence for supporting and aligning said steel siding to said cutters, said fence rotatable relative to said first pivotal blade about a first axis;
- a structural support for said first pivotal blade, said first and second linearly adjustable blades, and said fence to precisely maintain alignment therebetween;
- first and second pins rotatable by said fence, said first and second pins offset from said first axis; and
- tie rods interconnecting said first and second pins to said first and second linearly adjustable blades for adjustment thereof responsive to a rotation of said fence relative to said first pivotal blade.

5,775,193
CRUSH-SPLITTING STRUCTURE
Donald P. Pratt, 9875 New Oregon Rd., Eden, N.Y. 14057
Filed Jun. 25, 1996, Ser. No. 673,662
Int. Cl.⁶ B26D 1/22
U.S. Cl. 83—659
14 Claims



12. A crush-slitting anvil member in combination with a backup roller, said anvil member comprising a top wall, a side wall secured to said top wall, an axle mounted on said side wall, an anvil roller mounted on said axle, a slot in said top wall, a first portion of said anvil roller protruding through said slot, and said backup roller being in engagement with a second portion of said anvil roller, said second portion being on an opposite side of said anvil roller with respect to said axle than said first portion.

5,775,194
DEVICE FOR MAKING CUTS IN THE DIRECTION OF THE ADVANCE OF PIECES OF THIN MATERIAL
Valter Spada, Marzabotto, Italy, assignor to SASIB S.p.A., Bologna, Italy
Filed Jan. 31, 1996, Ser. No. 594,921
Claims priority, application Italy, Feb. 9, 1998, GE95A0012
Int. Cl.⁶ B26D 7/26
U.S. Cl. 83—698.31
19 Claims



1. A device for making cuts in a piece of thin material, said device comprising:

- a cutter carrying drum having a periphery and rotating about a drum axis in a direction of advance of the thin material, the drum axis defining a radial direction;
- a peripheral cutter including a cutting edge which is curved about an axis coaxial with the drum axis;
- a cutter mounting base including a fixing base removably attached to said cutter carrying drum, a radially outer portion attached to said peripheral cutter, said cutting edge orientated parallel to the direction of advance and projecting radially beyond the periphery of said cutter carrying drum, and an elastic support portion intermediate said common fixing base and said radially outer portion, said recess providing (a) a radial elasticity to said peripheral cutter relative to the drum axis, and (b) an oscillatory elasticity to said peripheral cutter relative to an oscillatory axis parallel to the drum axis;

eral cutter relative to an oscillatory axis parallel to the drum axis, said elastic support portion including

- (a) first and second lateral sides extending radially between said fixing base and said radially outer portion
- (b) a first slit having two opposite closed ends, said first slit disposed between said first and second lateral sides, and disposed adjacent to a radially outer position of said elastic support portion;
- (c) a second slit having two opposite closed ends, said second slit spaced radially inward from said first slit, said second slit disposed between said first and second lateral sides, and disposed adjacent to a radially inner position of said elastic support portion; and
- (d) two laterally aligned third slits spaced intermediate said first slit and said second slit, said third slits each having an open end, which extends into a respective one of said first and second lateral sides of said elastic support portion, and said third slits having an opposite closed end being laterally adjacent but spaced from the other closed end; and

a cutting bed drum having a periphery and rotating in the direction of advance and which interacts with the periphery of said cutter carrying drum.

5,775,195

ROTARY BRAIDER MACHINE

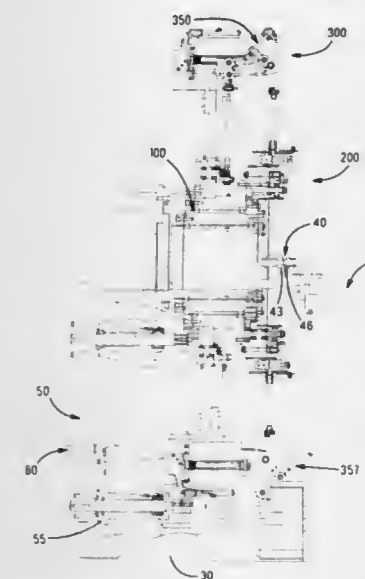
Rudolf Haehnel, Reading, Pa., and Xing Li, Lawrenceville, N.J., assignors to Magnatech International, L.P., Sinking Spring, Pa.

Filed Jan. 14, 1997, Ser. No. 782,661

Int. Cl.⁶ D04C 3/04

U.S. Cl. 87—44

9 Claims



- 1. A rotary braiding machine comprising: a frame having a central axis about which a plurality of strands of fiber are braided;
- a plurality of inner bobbin-carrier assemblies rotatably supported by said frame so as to be disposed radially outwardly of said central axis, wherein each of said inner bobbin-carrier assemblies is (i) separated by a recess defined by said frame, and (ii) supports a strand supply bobbin so that said plurality of inner bobbin-carrier assemblies forms a first circular array of strand supply bobbins, each of said inner bobbin-carrier assemblies comprising: means for paying-out a first strand of fiber; and means for manipulating said first strand so as to position said first strand in substantially-perpendicular relation to said central axis;

a plurality of outer bobbin-carrier assemblies rotatably supported by said frame so as to be disposed radially outwardly of said central axis and said inner circular array of strand supply bobbins wherein each of said outer bobbin-carrier assemblies supports a strand supply bobbin so that said plurality of outer bobbin-carrier assemblies forms a second circular array of strand supply bobbins, each of said outer bobbin-carrier assemblies comprising: means for paying-out a second strand of fiber; and means for manipulating said second strand between (i) an innermost position relative to said frame wherein said second strand is positioned in a corresponding one of said recesses in said frame to allow at least one of said inner bobbin-carrier assemblies to pass over said second strand, and, after said at least one of said inner bobbin-carrier assemblies rotates past said recess, (ii) an outermost position wherein at least one of said inner bobbin-carrier assemblies pass under said second strand, wherein said second strand moves between said innermost position and said outermost position in synchronous-relation with the rotation of each inner bobbin-carrier assembly and further wherein said second strand passes through a substantially-perpendicular position, relative to said central axis, while being manipulated between said innermost and said outermost positions; and, means for rotating said inner and said outer bobbin-carrier assemblies relative to one another.

means for manipulating said second strand between (i) an innermost position relative to said frame wherein said second strand is positioned in a corresponding one of said recesses in said frame to allow at least one of said inner bobbin-carrier assemblies to pass over said second strand, and, after said at least one of said inner bobbin-carrier assemblies rotates past said recess, (ii) an outermost position wherein at least one of said inner bobbin-carrier assemblies pass under said second strand, wherein said second strand moves between said innermost position and said outermost position in synchronous-relation with the rotation of each inner bobbin-carrier assembly and further wherein said second strand passes through a substantially-perpendicular position, relative to said central axis, while being manipulated between said innermost and said outermost positions; and, means for rotating said inner and said outer bobbin-carrier assemblies relative to one another.

5,775,196

VALVE ARRANGEMENT IN COMPRESSED AIR DRIVEN MOTORS

Roland Henriksson, Nacka, and Ake Nilsson, Enskede, both of Sweden, assignors to Atlas Copco Berema AB, Nacka, Sweden

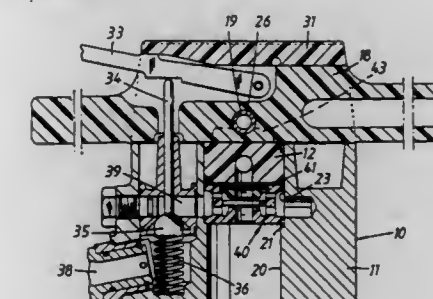
PCT No. PCT/SE95/00208, § 371 Date Aug. 16, 1996, § 102(e) Date Aug. 16, 1996, PCT Pub. No. WO95/23049, PCT Pub. Date Aug. 31, 1995

PCT Filed Feb. 28, 1995, Ser. No. 693,245
Claims priority, application Sweden, Feb. 28, 1994, 9400684; Feb. 28, 1994, 9400685

Int. Cl.⁶ F01L 25/04

U.S. Cl. 91—299

2 Claims



- 1. A compressed-air operated impact motor (10) comprising: a machine housing (11) having a cylinder (20) and a bore (23) connecting therewith;
- a valve housing (40) mounted in the bore (23) and supporting a flat valve (50) which is movable in the valve housing between a front valve seat (51) and a rear valve seat (52); wherein the rear valve seat (52) is connected to the end of the cylinder (20) that is located distal from the bore (23) through channels (44, 45) provided in the machine housing (11), and the front valve seat (51) is open towards the cylinder (20) at a location adjacent the bore (23); wherein compressed air is delivered to the space between the valve seats (51, 52) through a delivery channel (39) which opens laterally into the bore (23); and wherein a hammer piston (22) is sealingly guided for reciprocating movement in the cylinder (20) in response to movement of the flat valve (50) and the hammer piston (22). said

movement being governed by the alternating effect of compressed air on both sides of the hammer piston (22) and the subsequent release of air through air-ventilation openings (60, 61) in a center part of the cylinder (20);

the valve housing (40) having the form of a plastic bowl (46) which is outwardly flanged at the bowl mouth and at the bowl bottom and in which the flat valve (50) is movable between the bowl bottom, which forms the one valve seat (51), and a bowl cover member (53) for the bowl mouth which forms the other valve seat (52), wherein the flanges (47, 48) lie against the wall of the bore (23) and define therebetween a groove (54) which connects with the delivery channel (39) and which functions to deliver compressed air to the flat valve (50) inside the bowl through the medium of side openings (57, 58) provided in the bowl wall between the flanges (47, 48) on both sides of an undivided bowl wall portion that encircles the region of the length of the working stroke of the flat valve (50);

wherein the bowl cover member (53) is made of a plastic material and forms a detachable bowl closure for the bowl mouth, attached to the valve housing (40) with the aid of a stop ring (55).

5,775,197

PRESSURE REGULATING CIRCUIT

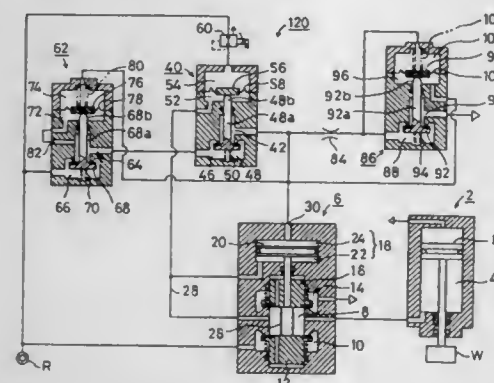
Noboru Kimura, Nagoya, Japan, assignor to Hirotaka Engineering Co., Ltd., Aichi-Ken, Japan

Filed Jan. 30, 1996, Ser. No. 595,165

Int. Cl.⁶ F15B 13/043

U.S. Cl. 91—433

14 Claims



1. A pressure regulating circuit in which by adjusting air pressure to be supplied to a pneumatic cylinder pressure chamber (4), the force counteracting a load of a workpiece (W) attached to a work piston (P) is applied to said work piston (P), comprising:

a main valve (6) having:

a main air supply chamber (10) connected to a pressure air source (R),

a main pressure chamber (8) connectable to said main air supply chamber (10) via an air supply valve member (12) and connected to said pneumatic cylinder pressure chamber (4),

an main exhaust chamber (14) connectable to said main pressure chamber (8) via an exhaust valve member (16) and connected to the outside air via a main exhaust port,

a piston rod (26) for maintaining said air supply valve member (12) and said exhaust valve member (16) in a closed position when said piston rod (26) is in a neutral position, for opening said air supply valve member (12) when said piston rod (26) moves in a first direction, and for opening said exhaust valve member (16) when said piston rod (26) moves in a second opposed direction, and

a pressure control piston (20) for reciprocating and displacing according to a difference in pressure between a main control chamber (22) connected to said main pressure chamber

(8) and a piston pressure chamber (24) opposed to said main control chamber (22), thereby raising and lowering said piston rod (26);

a control valve (40) having:

an auxiliary air supply chamber (46) for receiving pressure air from said pressure air source (R),

an auxiliary pressure chamber (42) connected to said piston pressure chamber (24) and connected to outside air via a control orifice (84),

a control valve member (48) for connecting and disconnecting said auxiliary air supply chamber (46) to and from said auxiliary pressure chamber (42) according to a rise and fall of pressure in said main control chamber (22), such that air pressure from said pressure air source (R) is reduced to a regulating pressure predetermined according to a weight of said workpiece (W) before being supplied to said piston pressure chamber (24),

an auxiliary control chamber (52) being connected to said main control chamber (22) and said main pressure chamber (8) of said main valve (6),

a control diaphragm chamber (54) being opposed to said auxiliary control chamber (52),

a control valve diaphragm (58) for opening and closing said control valve member (48) based on a difference in pressure between said auxiliary control chamber (52) and said control diaphragm chamber (54), and

a control spring (50) attached to said control valve member (48) for urging said control valve member (48) to a closed position;

a pressure reducing valve (62) being interposed between said auxiliary air supply chamber (46) of said control valve (40) and said pressure air source (R) for reducing air pressure from said pressure air source (R) before supplying the reduced air pressure to said auxiliary air supply chamber (46), said pressure reducing valve (62) having:

a pressure reducing air supply chamber (66) connected to said pressure air source (R),

a pressure reducing pressure chamber (64) connectable to said pressure reducing air supply chamber (66) via a pressure reducing valve member (68) and connected to said auxiliary air supply chamber (46),

a pressure reducing control chamber (72) connected to said pressure reducing pressure chamber (64),

a pressure reducing diaphragm chamber (74) opposed to said pressure reducing control chamber (72) and connected to said piston pressure chamber (24),

a pressure reducing diaphragm (78) for opening and closing said pressure reducing valve member (68) based on a difference in pressure between said pressure reducing control chamber (72) and said pressure reducing diaphragm chamber (74),

a pressure reducing spring (70) attached to said pressure reducing valve member (68) for urging said pressure reducing valve member (68) to a closed position, and

a pressure reducing diaphragm spring (80) attached to said pressure reducing diaphragm (78) for urging said pressure reducing diaphragm (78) toward said pressure reducing control chamber (72);

a relief valve (86), provided at the side of said control orifice (84) open to the outside air, for maintaining a difference in pressure between the side of said control orifice (84) connected to said auxiliary pressure chamber (42) and the side of said control orifice (84) open to the outside air within a predetermined range, said relief valve (86) having:

a relief pressure chamber (88) provided at the side of said control orifice (84) connected to the outside air,

a relief exhaust chamber (90) connectable to said relief pressure chamber (88) via a relief valve member (92) and connected to the outside air via a relief exhaust port,

a relief control chamber (96) connected to said piston pressure chamber (24),

a relief diaphragm chamber (102) opposed to said relief control chamber (96) and connected to the side of said control orifice (84) connected to said relief pressure chamber (88),

5,775,199

ROTARY VALVE AND DIRECTIONAL VALVE COMBINATION

Leslie J. Sell, Bothell, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 23, 1996, Ser. No. 590,235

Int. Cl.⁶ F01B 3/10

U.S. Cl. 91—498

4 Claims

a relief diaphragm (100) for opening and closing said relief valve member (92) based on a difference in pressure between said relief control chamber (96) and said relief diaphragm chamber (102),

a relief spring (94) attached to said relief valve member (92) for urging said relief valve member (92) to a closed position, and

a relief diaphragm spring (104) attached to said relief diaphragm (100) for urging said relief diaphragm (100) toward said relief control chamber (96); and

a regulator (60) connected between said pressure air source (R) and said control diaphragm chamber (54).

5,775,198

CONTROL SYSTEM FOR A LIMITED STALL LOAD ACTIVATOR

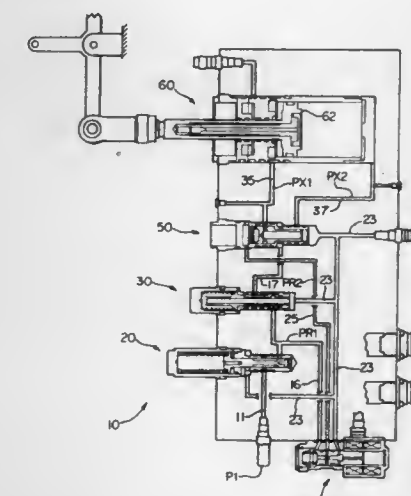
David J. Tuttle, and Edward J. Zielinski, both of South Bend, Ind., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Mar. 7, 1997, Ser. No. 813,474

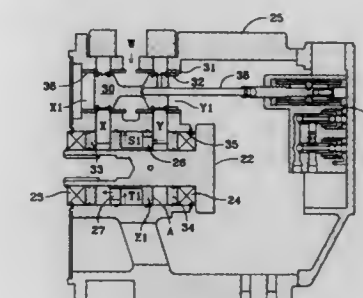
Int. Cl.⁶ F15B 11/10

U.S. Cl. 91—433

6 Claims



1. An actuator and a control system therefor, comprising means for regulating a pressure P1 from a source of pressure, the pressure regulating means receiving a return pressure PF1 and communicating regulated pressure PR1 to means for relieving pressure and to means for limiting regulated pressure PR1, the pressure relieving means communicating the regulated pressure PR1 to means for alternating selectively the regulated pressure between two flow connections, the regulated pressure flow limiting means permitting the regulated pressure PR1 to communicate as an output regulated pressure PR2 with the means for alternating selectively the regulated pressure PR1, return pressure PF1 communicated with the means for alternating selectively the regulated pressure, means for relieving pressure, and means for limiting regulated pressure. the means for alternating selectively the regulated pressure PR1 operable to effect one of providing the regulate pressure PR1 to an actuator to effect actuation thereof and providing a the return pressure PF1 to the actuator to effect deactivation thereof, whereby actuation of the means for limiting regulated pressure PR1 affects the output regulated pressure PR2 transmitted to the means for alternating selectively the regulated pressure PR1 such that the actuator receives the return pressure PF1 and moves to a deactivation position.



1. A rotary distribution valve and directional spool valve in combination with a selectively reversible air motor for use with an air motor operated hoist or the like comprising:

a selectively reversible air motor;

a valve body for receiving a supply of compressed air and selectively distributing said compressed air to said selectively reversible air motor;

a rotary valve disposed in a valve first body bore in said valve body and driven in rotation by said selectively reversible air motor receiving a circumferentially distributed supply of air from said rotary valve in sequential order to operate said air motor;

a spool valve disposed in a valve second body bore for reciprocation from a forward position supplying air to said rotary valve to effect forward rotation of said air motor and to a rearward position supplying air to said rotary valve to effect reverse rotation of said air motor;

said first body bore and said second body bore are interconnected by a first passageway and a second passageway alternately supplying and exhausting air from said spool valve to a first rotary valve end air chamber and a second rotary valve end air chamber and therefrom respectively to a first face end of said rotary valve exposed to said first rotary valve end air chamber and to a second face end of said rotary valve exposed to said second rotary valve end air chamber to effect distribution and exhaust of air to and from said motor;

said rotary valve is further provided with opposed circumferential distribution ports which sequentially registers in rotation with distribution ports for said air motor to effect supply and exhaust of air to and from said air motor;

said rotary valve is provided with end face entry and radial exit of supply air and conversely radial entry and opposite end face exit of exhaust air;

said rotary valve is provided with radial exit slots having different timing in registering with said distribution ports for said air motor to effect a different supply and exhaust timing for said air motor; and

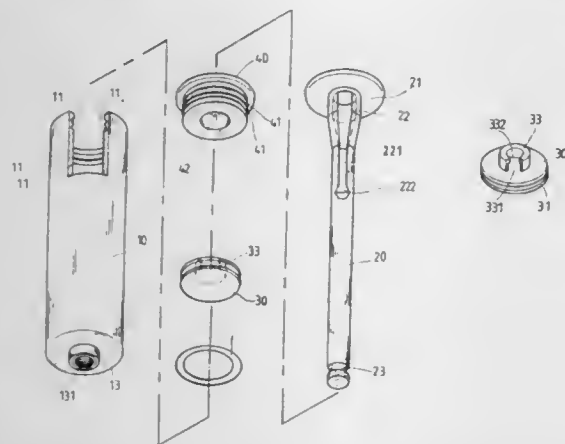
said rotary valve is mounted on an air motor driven shaft and reversible on said shaft at assembly to accommodate the difference in valve timing for selected primary clockwise or counterclockwise rotation of said air motor.

5,775,200
AIR PUMP

Peter Tsai, 3F, No. 16, Shi-Jei Street, Hsin-Chu City, Taiwan,
assignor to Peter Tsai, Hsin-Chu City, Taiwan
Filed Oct. 4, 1996, Ser. No. 726,290
Int. Cl.⁶ F01B 31/00

U.S. Cl. 92—58.1

1 Claim



1. An air pump comprising a housing of hollow cylinder having an open top, through which a piston is movably received in the housing, a cover fastened on the open top of the housing with a central circular hole formed therein, a piston-rod extending into the housing through the central circular hole in the cover and having a lower portion for connection to a piston to be movable in unison therewith, the piston-rod having a bottom end with a recessed neck formed near the bottom end thereof, a piston slidably movable within the cylinder and having a C connector horizontally attached on top for connection with the piston rod, the C connector comprising a hollow part to receive the bottom end of the piston-rod and a rim to receive and engage the neck of the piston-rod so as to connect with the piston-rod in a movable manner that the piston may incline from a position perpendicular to the piston-rod while remaining connected with each other, the piston-rod having a top end remote from the bottom end and including a cavity near the top end thereof and including a short internal cylindrical receptacle, a guiding groove and a bottom hole being formed in a surface of the piston-rod in order to retain an idle ball needle having a head at an end of the ball needle, the internal diameter of the short cylindrical receptacle being greater than a dimension of the guiding groove, and more than $\frac{1}{2}$ and less than $\frac{3}{4}$ of the diameter of the head of the ball needle, the bottom hole being formed below the guiding groove in order for a finger to fit in and draw the ball needle put of the cavity.

5,775,201

PISTON ARRANGEMENT FOR A PERCUSSION TOOL
Isamu Tanji, and Yoshinori Ishizawa, both of Hitachinaka,
Japan, assignors to Hitachi Koko Co., Ltd., Tokyo, Japan
Filed Aug. 31, 1995, Ser. No. 521,755

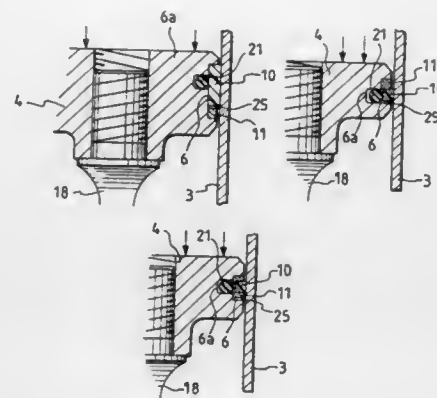
Claims priority, application Japan, Oct. 14, 1994, 6-249783

Int. Cl.⁶ F01B 11/02

U.S. Cl. 92—85 R

15 Claims

1. A piston apparatus for a percussion tool comprising:
a piston slidable in a cylinder of the percussion tool;
a groove recessed on a cylindrical surface of said piston;
a sealing member made of non-elastic material and accommodated in said groove; and
a bumper made of elastic material in said groove so that said bumper is interposed between said sealing member and at least one of opposed two walls of said groove in a sliding direction of said piston, said bumper deforming upon receiving an impact force along said sliding direction preventing a



large impact force from being exerted on said sealing member by said groove.

5,775,202

DEFORMED CLAMP BAND MADE FROM CONTINUOUS ROLL

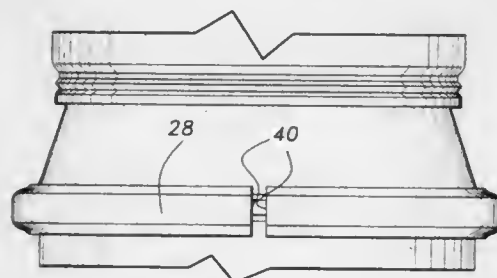
Ronald S. Plantan, Charlotte, and Graydon Choinski, Harrisburg, both of N.C., assignors to Indian Head Industries, Inc., Charlotte, N.C.

Filed Jun. 25, 1996, Ser. No. 670,403

Int. Cl.⁶ F16J 3/02; F16D 65/00

U.S. Cl. 92—98 R

3 Claims



from said cover panel portion and to a position substantially beneath said container attachment portion, whereby a portion of said well lies below the level of a liquid in said associated container, at least, a portion of said walls being liquid-permeable to permit water circulation between the regions lying respectively inside and outside said well to permit infusion of flavors from said flavoring materials to said liquid, a drinking area formed in a portion of said annular cover panel portion of said infuser, said drinking area including an opening having at least one portion lying radially inwardly of said container attachment portion.

5,775,206

COFFEEMAKER WITH A PERMANENT FILTER

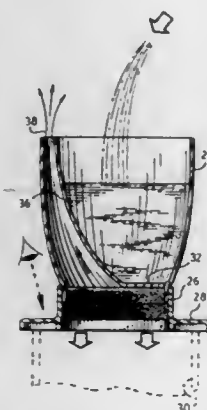
Yvan St-Gelais, 4480 Côte-de-Liesse, bureau 224, Ville Mont-Royal, Quebec, Canada, H4N 2R1

Filed Sep. 10, 1996, Ser. No. 712,060

Int. Cl.⁶ A47J 37/10

U.S. Cl. 99—323

15 Claims



1. A coffeemaker with a permanent filter comprising:
 - a tank for receiving boiling water having side walls, a bottom surface attached to said side walls, and an opened top defined by an upper edge, said bottom surface being perforated with a plurality of small holes allowing the flow of said boiling water, said side walls being extended downwardly;
 - an infusion chamber used to receive ground coffee and having side walls, a bottom surface, and a supporting means, said bottom surface being partially a permanent filter allowing the flow of said boiling water infused with said ground coffee, said supporting means providing support to rest said coffee-maker above a container;
 - a fastening means connecting said extended side walls of said tank to said side walls of said infusion chamber, said tank sitting above said infusion chamber, said fastening means providing a sealed interface, so as to prevent any leak of said water;
 - a chimney vertically located within said tank along said tank side walls, said chimney being opened at both ends with a lower end being attached to said tank bottom and connecting said infusion chamber to said opened top of said tank, said upper end of said chimney is at the same level as or above said upper edge of said tank, said chimney allowing infusion gases to escape from said infusion chamber.

5,775,207

SAFETY FORK FOR USE OVER CAMP FIRES AND GRILLS

John F. Warren, 618 Country Lake Dr., St. Peters, Mo. 63376-6902

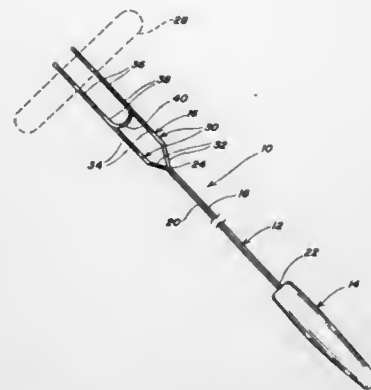
Filed Aug. 28, 1997, Ser. No. 919,901

Int. Cl.⁶ A47J 37/00; 37/04; 43/18; 43/28

U.S. Cl. 99—394

10 Claims

1. A safety fork for roasting hot dogs and marshmallows over an open fire, said fork comprising an elongated shaft with first and



5,775,208

PIZZA PAN SYSTEM AND METHOD

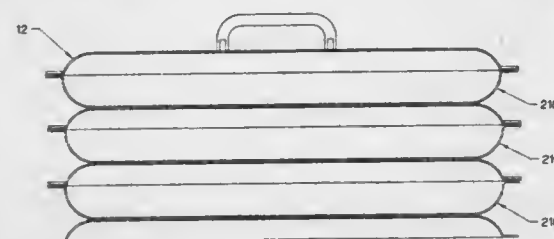
Robert J. Kimple, 14620 Bayes Ave., Lakewood, Ohio 44107

Filed Jul. 19, 1995, Ser. No. 504,240

Int. Cl.⁶ A47J 37/10; 37/01; A22C 7/00

U.S. Cl. 99—422

11 Claims



1. A pizza pan comprising:
 - a bottom wall;
 - a side wall about the periphery of the bottom wall, said bottom wall being in cooperative relation with said side wall to bound an area for containing pizza dough;
 - a rim extending outward substantially parallel to the bottom wall about the periphery of the side wall; and
 - a lid-like member attached to the underside of the bottom wall, said lid-like member being cooperative with another pan for stacking multiple pans.

5,775,209

MULTI-LAYER BAKING AND COOLING RACK

Frank Tiemann, Braham, Minn., assignor to T&L Nifty Products Co. Inc., Braham, Minn.

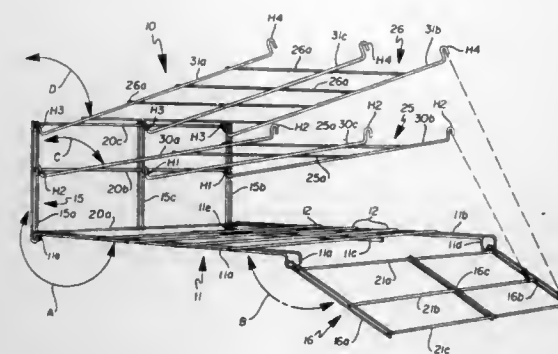
Filed Apr. 1, 1997, Ser. No. 831,763

Int. Cl.⁶ A47J 27/00; 37/00

U.S. Cl. 99—426

5 Claims

1. A multi-layer baking and cooking rack including:
 - a plurality of planar shelves each having a forward and a rearward end;
 - a first of said shelves having leg means at its forward and rearward end, said legs being rotatably attached to said shelf;
 - at least a pair of shelves being rotatably attached at said rearward end to one of said legs and being spaced thereon;
 - each of said pair of shelves having attachment means on said forward end thereof; and



- e. said attachment means being connectable to the other of said legs to provide a generally three dimensional rectangular shape to said shelves and legs when so attached.

5,775,210

Patent Not Issued For This Number

5,775,211

ROLLER DRIVING PROCESS AND APPARATUS

Bernhard Brendel, Grefrath, Germany, assignor to Eduard Kusters Maschinenfabrik GmbH & Co. KG, Krefeld, Germany

PCT No. PCT/DE95/00948, § 371 Date May 2, 1997, § 102(e) Date May 2, 1997, PCT Pub. No. WO96/03545, PCT Pub. Date Feb. 8, 1996

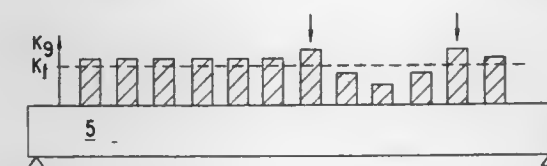
PCT Filed Jul. 19, 1995; Ser. No. 776,180

Claims priority, application Germany, Jul. 22, 1994, 44 26 007.5; Nov. 11, 1994, 44 40 267.8

Int. Cl.⁶ D21G 1/02

U.S. Cl. 100—35

15 Claims



1. In a system for driving a roller including
 - a first roller having a rotating hollow cylinder and a lengthwise end, the hollow cylinder further including a working cylindrical surface and an inside cylindrical surface,
 - a second roller with a roller gap disposed between the first roller and the second roller,
 - a non-rotating crosshead, extending lengthwise through the hollow cylinder, radially spaced from the inside cylindrical surface, and receiving external support at the lengthwise ends of the crosshead,
 - a first row of a plurality of hydrostatic supporting elements, each of the plurality of hydrostatic elements coupled to the crosshead and adjacently disposed to each other in the lengthwise direction of the first row, wherein each of the plurality of supporting elements of the first row are controlled in groups of approximately no more than three supporting elements to produce independent forces that are directed toward the roller gap and exerted against the inside cylindrical surface,
 - a second row of a plurality of hydrostatic supporting elements, the second row having a subgroup of a plurality of adjacent supporting elements, each of the plurality of hydrostatic elements of the second row coupled to the crosshead and adjacently disposed to each other in the lengthwise direction, wherein the second row of hydrostatic supporting elements

are controlled to produce forces directed away from the roller gap that are exerted against the inside cylindrical surface, a plurality of hydraulic fluid supply lines disposed in or on the crosshead, and a device for independently controlling each of the plurality of hydraulic fluid supply lines, a process for driving the roller comprising the step of: controlling the pressure in the subgroup of the second row to produce a uniform counter-linear force in each of the supporting elements of the subgroup, wherein forces in the supporting elements of the first row and the forces in the supporting elements of the subgroup are above the minimum force corresponding to the minimum pressure necessary for ideal operation of the supporting elements.

5,775,212

GUIDE GIB STRUCTURE FOR PRESS SLIDE OF MECHANICAL PRESS FOR METAL WORKING

Hiroichi Takao, Seto, Japan, assignor to Asahi-Seiki Manufacturing Co., Ltd., Aichi-ken, Japan

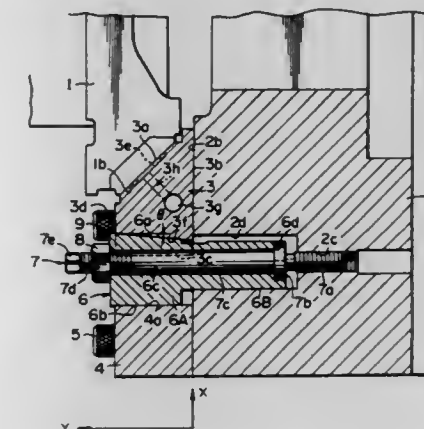
Filed Jun. 19, 1996, Ser. No. 663,877

Claims priority, application Japan, Aug. 31, 1995, 7-248856

Int. Cl.⁶ B30B 15/04

U.S. Cl. 100—214

1 Claim



1. A guide gib structure for slide guides in a mechanical press for metal working in which a press slide is reciprocally moved vertically by a drive source along a pair of parallel spaced, opposed uprights in a space between said uprights, and a direction of a depth of the mechanical press for metal working being represented by an X-axis while a direction of a width thereof perpendicular to the depthwise direction being represented by a Y-axis; wherein a pair of said slide guides are provided at each of front and rear sides of the mechanical press for metal working, respectively, and are mounted respectively on said uprights to extend in a direction of movement of the press slide, and said pair of slide guides which is provided at one of the front and rear sides of the mechanical press for metal working, constitutes a pair of guide gibs, said guide gibs being movable back and forth in a direction perpendicular to the direction of movement of the press slide so that their position can be adjusted; wherein each of said guide gibs has a first inclined guide surface in contact with a sliding surface of the press slide, said first inclined guide surface being inclined with respect to said X-axis and said Y-axis in a horizontal cross-section of said guide gibs; wherein each of said guide gibs is fixed along a surface of said uprights in such a manner that the position of said guide gibs can be adjusted in said X-axis direction; wherein wedge blocks are mounted on said uprights corresponding to at least two positions in a longitudinal direction of each of said guide gibs so as to adjust the position of each of said guide gibs;

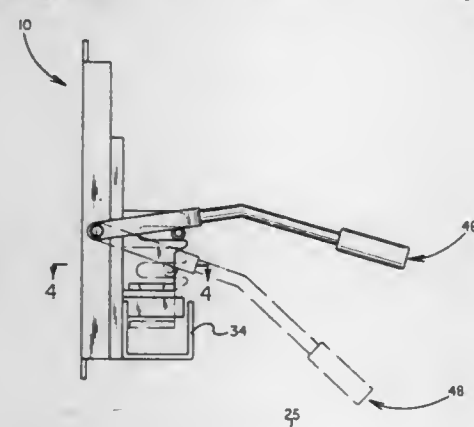
wherein each of said wedge blocks is movable back and forth in said Y-axis direction, and can be fixed at an arbitrary position, and a side surface of each of said wedge blocks in contact with each of said guide gibs is formed as a wedge inclined surface, and a side surface of each of said guide gibs, engaging said wedge inclined surface, is formed as a second inclined surface;

wherein each of said wedge blocks, except a head portion thereof having a wedge effect, is received in a hole formed in said uprights so that each of said wedge blocks can be movable in said Y-axis direction, a set screw has a flange for determining the position of a distal end of each of said wedge blocks in said Y-axis direction and extends through each of said wedge blocks for rotation and axial movement, said set screw is screwed into a threaded hole extending axially from said hole in said uprights, a nut is fitted on a threaded head portion of said set screw, and the position of each of said wedge blocks in said Y-axis direction is determined by the position of said nut in a longitudinal direction of said set screw and the position of said flange in said Y-axis direction so as to determine the position of said wedge inclined surface of each of said wedge blocks; and wherein the position of each of said guide gibs in said X-axis direction is determined by the engagement between said second inclined surface and said wedge inclined surface.

5,775,213
CAN CRUSHER
Carl D. Hyde, R.D. 3 Box 137 A, Palmyra, Pa. 17078
Filed Jun. 26, 1997, Ser. No. 883,561
Int. Cl.⁶ B30B 9/32

U.S. Cl. 100—215

9 Claims



I. A can crusher, comprising:

- a frame member for mounting to a structure;
- an elongate tray member having an upper surface, said tray member being coupled to said frame member, said tray member upper surface for resting cans thereon;
- an elongate handle member having a pivot end and a handle end, said pivot end being pivotally coupled to said frame member to permit pivoting of said handle member between a first position and a second position;
- a roller member being rotatably mounted on said handle member;
- a hammer member having a can crushing portion, a mounting portion and a main portion, said main portion having a slot, said roller member being disposed within said hammer member main portion slot, said mounting portion being slidably mounted to said frame member, said can crushing portion facing said tray member upper surface, said hammer member can crushing portion being moved towards said tray portion upper surface when said handle member is moved towards said second position, said hammer member can crushing portion being moved away from said tray portion upper surface when said handle member is moved towards said first position; and
- a stop tab being extended from said frame member, said stop tab being for helping position a can between said hammer member can crushing surface and said tray member upper surface.

5,775,214
APPARATUS FOR THE CONTINUOUS PRODUCTION OF PARTICLE, FIBER, PLASTIC AND WOOD BOARDS
Friedrich B. Bielfeldt, Pähl, and Detlef Kroll, Eppingen, both of Germany, assignors to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Germany

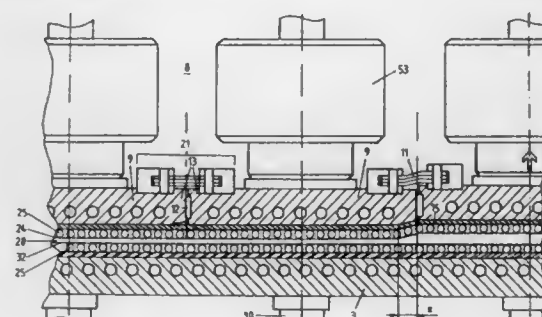
Filed May 28, 1996, Ser. No. 654,100

Claims priority, application Germany, May 28, 1995, 195 18 879.9

U.S. Cl. 100—306

Int. Cl.⁶ B30B 15/34; 5/06

15 Claims



I. A continuously operating press for producing boards from pressing stock, comprising:

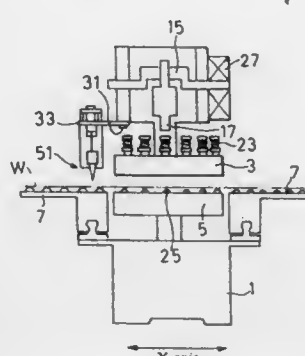
- a heating platen provided on a first side of the press;
- a plurality of press platen segments arranged on a second side of the press opposite to the heating platen, adjacent ones of the press platen segments being resiliently coupled to one another, a separation space between respective press platen segments and the heating platen defining a plurality of press nips; and
- hydraulic pressing-force cylinders respectively coupled to the press platen segments for displacing individual ones of the press platen segments relative to the heating platen independently of other press platen segments.

5,775,215
MACHINE TOOL EQUIPPED WITH MARKING APPARATUS

Takashi Hirate, Buena Park, Calif., assignor to Amada America, Inc., Buena Park, Calif.
Continuation-in-part of Ser. No. 350,448, Dec. 7, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 574,367
Int. Cl.⁶ B41F 17/00

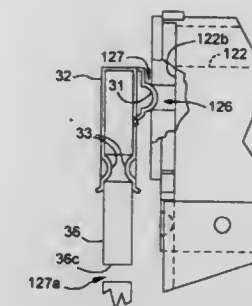
U.S. Cl. 101—4

12 Claims



I. Method of controlling a machine tool system, which includes a machine tool for performing a machining operation on a workpiece and a marking apparatus for performing a marking operation on the same workpiece, to manufacture a plurality of parts from a workpiece, each of the parts being formed with a machined section formed by the machine tool and a mark formed by the marking apparatus, the method comprising the steps of:

- (a) preparing a control program for controlling the machine tool and marking apparatus, the control program including a plurality of partial programs each of which is for each of the parts, and each partial program including first commands for forming a machined section on each part and second commands for forming a mark on said part; and
- (b) delivering the control program to an NC control system for controlling the operation of the machine tool and the marking apparatus;
- (c) machining each part;
- (d) marking each part at a separate location from the location where said machining step is performed; said machining operation and said marking operation being performed independently under control of the control program.



5,775,216
GOLD BLOCKING PRESS TYPE PRINTING MACHINE
Pierre Rouleau, Oyonnax, France, assignor to Societe d'Exploitation Des Machines Dubuit, Noisy Le Grand, France

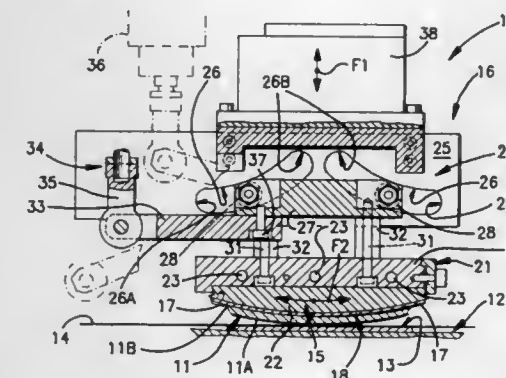
Filed Apr. 19, 1996, Ser. No. 634,805

Claims priority, application France, Apr. 21, 1995, 95 04844

Int. Cl.⁶ B44C 1/14; B44B 5/00

U.S. Cl. 101—27

12 Claims



- 12. Printing machine for metallic foil printing comprising: a support block for supporting a mobile printing plate for movement relative to an object support for supporting an object to be printed, said support block having a curved surface; said mobile printing plate being arranged to apply a foil against an object to be printed, said printing plate being cooperable with the curved surface of the supporting block, said printing plate having a curvature corresponding to that of the curved surface in cooperable position with said supporting block; an applicator head mounted for transverse movement relative to the object support; and said support block and said printing plate supported thereon being mounted for rocking movement on the applicator head for applying the foil to an object to be printed, further comprising an arm attached to said support block, and a double acting actuator coupled to said arm for oscillation of said support block on said applicator head.

5,775,217
CHECK WRITING MACHINE HAVING AN INKED RIBBON

Robert P. Koper, Bensenville, and Howard R. Konieczka, Chicago, both of Ill., assignors to Paymaster Technologies, Inc., Elk Grove Village, Ill.

Division of Ser. No. 367,001, Dec. 30, 1994, abandoned. This application Aug. 8, 1996, Ser. No. 694,172

Int. Cl.⁶ B41J 33/14

U.S. Cl. 101—93.18

7 Claims

I. An inked cartridge assembly for use with a check writer for imprinting checks, money orders and other negotiable instruments,

the check writer including a frame means having cartridge support means and a printing mechanism including a printing line, the inked cartridge assembly comprising:

- an inked ribbon;
- a spool comprised of a n elongated central shaft having a drive gear associated therewith;
- first and second housing members sealingly assembled together to provide a spool receiving chamber for enclosing said inked ribbon and said spool therein, with one end of said central shaft having a counterbore therein structurally arranged to receive and mount a cartridge turn means to said shaft and the other end of said central shaft opposite said one end including means engageable with the cartridge support means for removably securing the cartridge assembly to the frame means and supporting said inked ribbon adjacent the printing line;
- shaft tensioning means engageable with said other end of said central shaft opposite said one end and the cartridge support means for providing a constant and positive tension on said central shaft upon rotation of said drive gear; and
- a ribbon guide portion and a throat portion communicating said spool receiving chamber with said ribbon guide portion, with said inked ribbon being adapted for bidirectional advancement through said ribbon guide portion past the printing line.

5,775,218
SELF-CLEANING APPARATUS FOR THE APPLICATION OF A SUBSTANCE ON A FABRIC TRAIN AND PROCESS OF OPERATION THEREOF

Johannes Zimmer, Ebentalerstrasse 133, A-9020 Klagenfurt, Austria

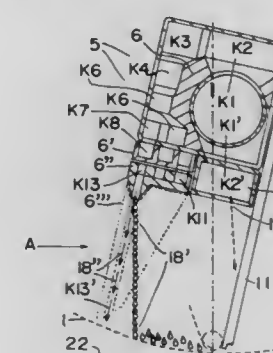
PCT No. PCT/AT95/00031, § 371 Date Dec. 11, 1995, § 102(e) Date Dec. 11, 1995, PCT Pub. No. WO95/21746, PCT Pub. Date Aug. 17, 1995

PCT Filed Feb. 13, 1995, Ser. No. 532,634
Claims priority, application European Pat. Off., Feb. 12, 1994, 9400419; Austria, Dec. 12, 1994, 2304/94; Dec. 12, 1994, 2307/94

Int. Cl.⁶ B41L 13/00

U.S. Cl. 101—120

16 Claims



I. A self-cleanable apparatus for the application of a substance to a fabric train, said apparatus comprising: a template;

an application device including a tubular body positioned to extend along said template at a location spaced therefrom; said tubular body including an inlet adapted to be connected alternatively to a source of the substance or to a source of cleaning fluid, an interior through which the substance or cleaning fluid is passable, and a plurality of discharge holes having respective discharge axes; said discharge holes being arranged with said discharge axes extending parallel to each other and spaced in a direction parallel to said template at intervals of 5-20 mm between adjacent said axes, and said discharge holes being spaced from said template such that the substance or the cleaning fluid passes from said discharge holes directly to said template; and said discharge holes having a total cross sectional area that is at least twice a cross sectional area of said inlet of said tubular body.

5,775,219

SQUEEGEE FOR SCREEN PRINTING

Hiroshi Shimazu; Yoshihiro Kobayashi, and Eiji Sakata, all of Fukuoka-Ken, Japan, assignors to Kyushu Hitachi Maxell, Ltd., Fukuoka-ken, Japan

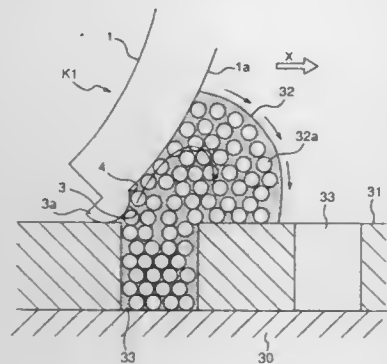
Filed Dec. 11, 1996, Ser. No. 764,625

Claims priority, application Japan, Dec. 13, 1995, 7-347262; Dec. 14, 1995, 7-348067

Int. Cl.⁶ B41F 15/44

U.S. Cl. 101-123

10 Claims



1. A squeegee for screen printing solder paste, comprising: a squeegee body which is formed by a metal sheet, a squeegeeing face and a convexly curved pressing edge on a bottom end of the squeegeeing face; wherein the convexly curved pressing edge is formed integrally with the squeegee body so as to be made of a material identical with that of the squeegee body and is formed by a protuberance.

5,775,220

METHOD FOR MULTIPLE FRAME SCREEN PRINTING

Robert M. Thatcher, 20 Independence Way, Rockaway, N.J. 07866

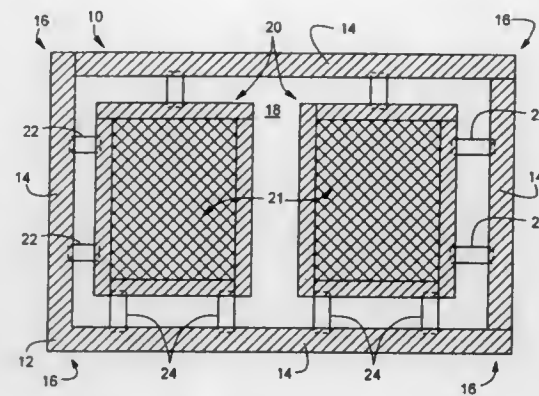
Filed May 22, 1996, Ser. No. 651,382

Int. Cl.⁶ B41F 15/36

U.S. Cl. 101-127.1

14 Claims

1. A method for screen printing where multiple screen frames used to facilitate multiple images are carried in fixed registration for an entire screen printing process, the method comprising: (a) positioning and registering at least two screen frames in fixed registration inside a master frame with the screen frames disposed adjacent to one another and lying in a common plane with the master frame, each screen frame having a screen;



(b) coating the screens with emulsion;
(c) drying the coated screens;
(d) producing an image on the screens;
(e) loading the master frame in a printing press;
(f) inking the screens; and
(g) printing by repeatably positioning an object in adjacency to each screen for transferring ink through each screen onto the object to produce multiple images on the object where the screens are maintained in fixed registration relative to one another.

5,775,221

PRINTING MACHINE

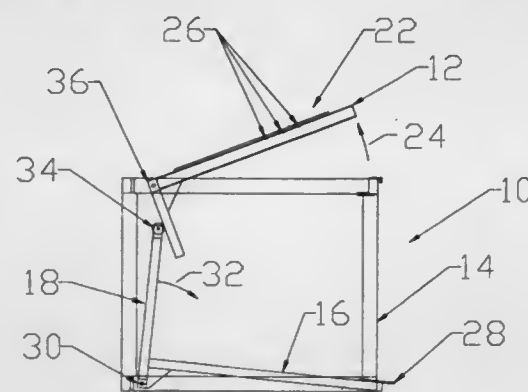
Ralph J. Bill, 5494 McFadden, Huntington Beach, Calif. 92649

Filed Aug. 25, 1997, Ser. No. 918,290

Int. Cl.⁶ B05C 17/06

U.S. Cl. 101-128.1

20 Claims



1. A printer comprising, in combination: an open construction frame, having a front, a rear, two sides a bottom and a top; an attachment arm held in the top of the open construction frame, the attachment arm having two ends; a plurality of spaced-apart holding means formed on the attachment arm for removably holding different size workpiece supporting means; and locator means held in the open construction frame adjacent one of the two ends of the attachment arm, the locator means including screen frame registration means held therein.

5,775,222

INDIVIDUALLY DRIVEN FOLDER FOR A ROTARY PRINTING PRESS

Johann Zweifel, Boll, and Thomas Treuthardt, Wohlen, both of Switzerland, assignors to Maschinenfabrik WIFAG, Bern, Switzerland

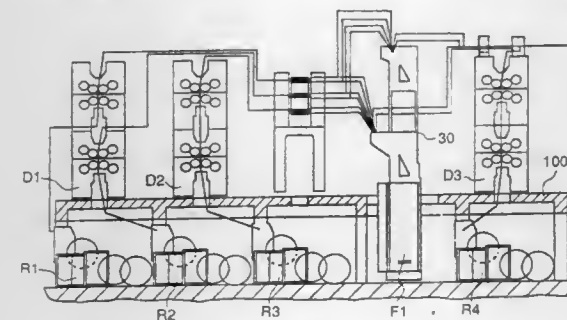
Filed May 3, 1996, Ser. No. 647,467

Claims priority, application United Kingdom, May 4, 1995, 195 16 443.1

Int. Cl.⁶ B41F 13/56; 13/58

U.S. Cl. 101-227

18 Claims



1. A rotary printing press comprising: a plurality of printing units; a plurality of folder units associated with said plurality of printing units, each of said plurality of folder units including a cutting cylinder and a folding jaw cylinder; a separate drive motor for each of said folder units said separate drive motor independently mechanically driving a respective said folder unit separately from said plurality of printing units, said each folder unit being registerable independently from said plurality of printing units.

5,775,223

Patent Not Issued For This Number

5,775,224

SHEET DELIVERY IN PRINTING PRESSES

Axel Hauck, Karlsruhe, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

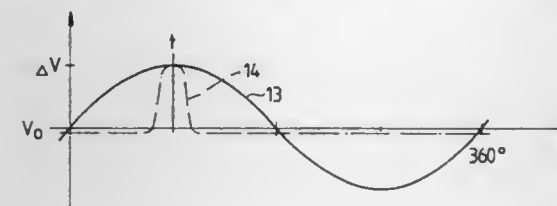
Filed Dec. 4, 1995, Ser. No. 566,550

Claims priority, application Germany, Dec. 3, 1994, 44 43 057.4

Int. Cl.⁶ B41F 13/24

U.S. Cl. 101-232

3 Claims



1. Sheet delivery system in a printing press having an impression cylinder, the impression cylinder having impression cylinder gripper bars and driven by a driving gear train, the sheet delivery system comprising: a sheet delivery having chains; gripper bars attached to said chains for receiving sheets from impression cylinder gripper bars of a printing press; a driving gear wheel connected to and driving said sheet delivery, said driving gear wheel being eccentrically mounted on said sheet delivery and having a longer radius, said driving gear wheel being driven by a driving gear train of the printing

press, said longer radius of said driving gear wheel being positioned for engaging the driving gear train when the sheets are transferred from the impression cylinder gripper bars to said gripper bars of said sheet delivery; and said driving gear wheel increasing a speed of said gripper bars after said gripper bars receive the sheets due to said eccentric mounting of said driving gear wheel in relationship to a speed of the impression cylinder gripper bars.

5,775,225

PLATE CYLINDER HAVING GLASS BEADS THEREON FOR A SHEET-FED PRINTING PRESS

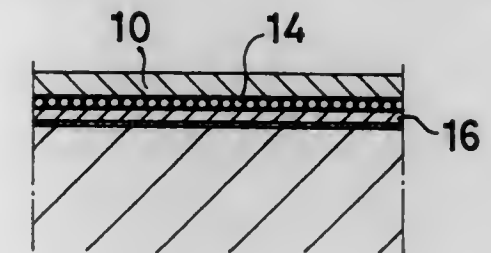
Shigetoshi Saitou, Shizuoka, Japan, assignor to Shinozaki Machinery Co., Ltd., Shizuoka-ken, Japan

Filed Apr. 1, 1997, Ser. No. 829,934

Int. Cl.⁶ B41F 13/16; 27/12

U.S. Cl. 101-415.1

13 Claims



1. In a plate cylinder for a sheet-fed printing press comprising a cylinder and a printing plate that is releasably clamped onto a surface of the cylinder, the improvement comprising glass bead means, comprising glass beads of approximately uniform diameter on the surface of the cylinder between the cylinder and the plate, said glass beads projecting from the surface of the cylinder with substantially an entire diameter of the beads projecting for contact with a printing plate for facilitating slidable movement of the printing plate along the surface of the cylinder.

5,775,226

UNDERWATER AND LAND TRAVEL VEHICLE

Hiroshi Futami, and Kenjiro Futami, both of Shimonoseki, Japan, assignors to Koyo Engineering Company, Ltd., Yamaguchi, Japan

PCT No. PCT/JP95/02503, § 371 Date Aug. 7, 1996, § 102(e) Date Aug. 7, 1996, PCT Pub. No. WO96/17735, PCT Pub. Date Jun. 13, 1996

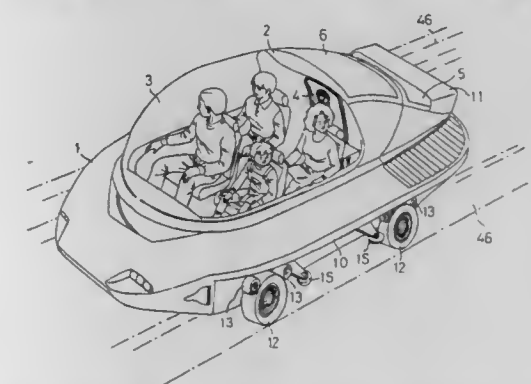
PCT Filed Jul. 12, 1995, Ser. No. 696,852

Claims priority, application Japan, Dec. 8, 1994, 6-304845; Dec. 8, 1994, 6-304846

Int. Cl.⁶ A63G 3/00

U.S. Cl. 104-71

9 Claims



1. An underwater and land travel vehicle comprising a bilged type vehicle body formed for movement along a pair of travel rails

which are laid to extend from on the land into the water and which each have an upper surface and a lower surface, wherein said vehicle further includes main tires which are located between the upper and lower surfaces of said travel rails, so that they abut against the lower surfaces of said travel rails during traveling of said vehicle on the land, and auxiliary tires each of which is disposed on an upper portion of one of said main tires to abut against said main tire, so that they abut against the upper surfaces of said travel rails under influence of the buoyancy of said vehicle body during traveling of the vehicle in the water.

5,775,227

ELECTRIC VEHICLE TRANSPORT SYSTEM

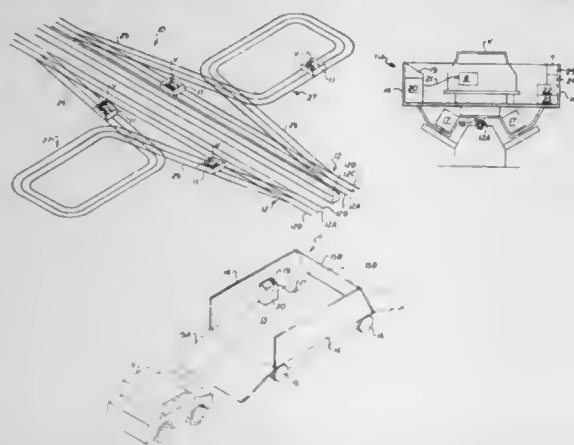
Charles F. Mullen, 204 Yacht Club La., Seabrook, Tex. 77586

Filed Oct. 28, 1996, Ser. No. 736,856

Int. Cl.⁶ B61L 3/00

U.S. Cl. 104—88.04

9 Claims



1. An electric vehicle transport system for electric powered and fuel powered vehicles, comprising:

a guideway extending between stations including an electrically conductive center rail extending longitudinally of said guideway connected with an electrical source for supplying electric energy thereto and a pair of wheel support rails disposed one at each side of said electrically conductive center rail in laterally spaced relation extending longitudinally of said guideway;

at least one electrically powered transport module having a platform for supporting at least one individual vehicle and other objects thereon, electrical conductor means on said transport module engaged in electrical contact with said electrically conductive center rail for receiving electric energy therefrom, and a set of wheels on laterally opposed sides of said transport module rotatably engaged with said wheel support rails for supporting said transport module thereon whereby said transport module is driven along said guideway with said electrical conductor in contact with said electrically conductive center rail;

electric motor means on said transport module connected with said electrical conductor means and said set of wheels for driving said transport module along said guideway;

D.C. voltage sower supply and battery charging means on said transport module connected with said electrical conductor means for receiving electric energy therefrom and including connection means for releasably connecting said D.C. voltage power supply means to a battery and electrical system of a vehicle parked on said platform to charge said battery and supply D.C. voltage to said vehicle electrical system for operating electrical accessories while said vehicle is being transported to said selected destination station;

an electronic computerized control system on said transport module connected with said motor means for controlling the operation of driving said transport module between said stations, including memory means, display means for displaying the identity of stations along said guideway, means for input-

ting data corresponding to the identity of a selected destination station, program means for translating said data into operational signals, programmable drivers for operating said motor means and starting and stopping said transport module, and an operating program stored in said memory means for activating said drivers to drive said transport module along said guideway to said selected destination station and to stop said transport module upon arrival; whereby

an individual may park a vehicle on said platform of said transport module and select a desired destination station by inputting said data corresponding to the identity of said desired destination station into said computerized control system and activating said operating program and thereafter be transported along with said parked vehicle by said transport module to said selected destination station while charging said battery and operating electrical accessories of said parked vehicle, and after arriving at said destination station, to drive said vehicle off of said platform.

5,775,228

LOCOMOTIVE ADHESION ENHANCING SLIPPING DISCS

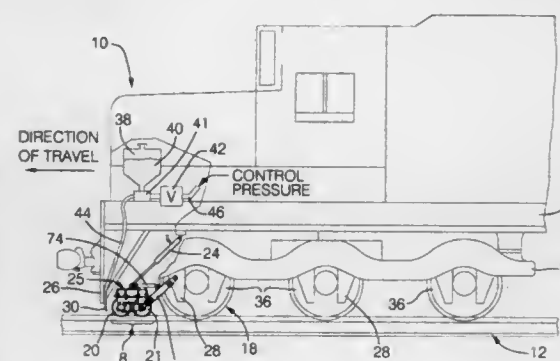
Harinder Singh Lamba, Downers Grove; Robert Thomas Scott, Lockport, and Xiaoying Sean Ma, Chicago, all of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 14, 1997, Ser. No. 843,320

Int. Cl.⁶ B61C 15/00

U.S. Cl. 105—73

5 Claims



1. A slipping disc apparatus secured to a locomotive for treating a rail surface to increase adhesion between driven wheels of the locomotive and the rail surface, comprising:

a circular disc;

an additional circular disc, wherein the first-recited and the additional circular disc form a pair of discs;

a positioning assembly coupled to the pair of discs for positioning the pair of discs in contact with the rail surface; and

a disc drive mechanism comprising a passive coupling between the pair of discs for coupling the rate of rotation of each of the pair of discs, providing for a significantly different rate of rotation between the pair of discs while the pair of discs are in contact with the rail surface.

5,775,229

ON-BOARD GENERATOR SYSTEM

Kenneth Foster Folk, and Frank Mario Mastrog, both of Harrisburg, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 606,470, Mar. 4, 1996, abandoned.

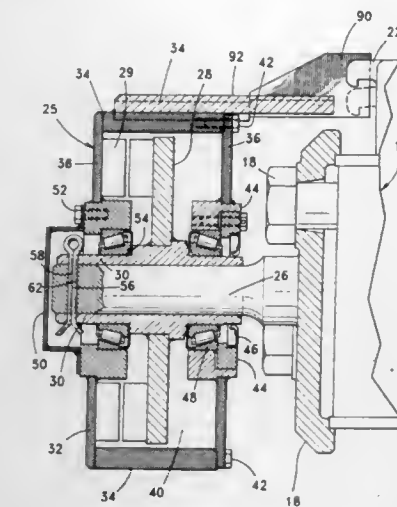
This application Oct. 20, 1997, Ser. No. 954,540

Int. Cl.⁶ B61F 5/50

U.S. Cl. 105—157.1

13 Claims

1. In an electrical generator system for mounting on a railroad vehicular axle which is mounted on a frame, where said axle



includes a pair of wheels inwardly mounted from the respective axle ends and rotatable with said axle, said generator including a rotor fixed for rotative movement relative to a stationary stator, whereby such relative movement causes electric currents to be generated in the stator, and a non-rotatable housing to contain said generator,

a hollow shaft for mounting of said rotor, where said shaft is slidably received on a respective axle end, and means to key said shaft to said axle end to ensure rotation of said shaft relative to said stator,

an axially extending member extending from said housing which cooperates with said frame to maintain said housing stationary relative to said axle, wherein said axially extending member comprises a U-configured member having a pair of upstanding legs spaced apart to slidably receive a projection extending from said frame.

5,775,230

GUIDANCE SYSTEM AND PROCESS FOR CONTROLLING THE LATERAL INCLINATION ON A RAIL VEHICLE

Uwe Joos, Rls-Worblingen, Germany, assignor to Fiat-SIG Schienenfahrzeuge AG, Switzerland

PCT No. PCT/CH95/00289, § 371 Date Oct. 15, 1996, § 102(e) Date Oct. 15, 1996, PCT Pub. No. WO96/17761, PCT Pub. Date Jun. 13, 1996

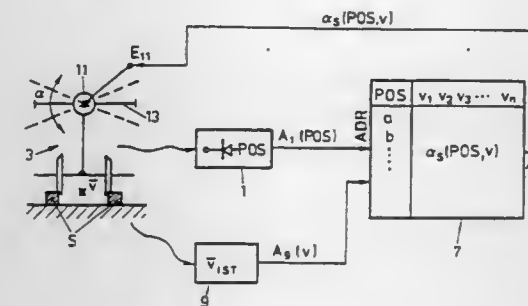
PCT Filed Dec. 5, 1995, Ser. No. 687,410

Claims priority, application European Pat. Off., Dec. 5, 1994, 94119183

Int. Cl.⁶ B61F 5/00

U.S. Cl. 105—199.2

15 Claims



1. A guidance system of the type including at least a first rail vehicle with a load bearing floor movably supported in a lateral direction and a setting device for setting the position of lateral inclination of the load-bearing floor, which system comprises:

a position detection device for detecting the actual position of the rail vehicle, the position detecting device, comprising a

synchronization device for synchronizing the detected position of the vehicle with the actual physical position of the vehicle;

a speed determining device for determining the actual speed of the rail vehicle; and

computing means including a storage device, the computing means being responsive to the position detection device and the speed determining device for generating lateral inclination setting signals and being coupled to the setting device for setting the position of lateral inclination of the load-bearing floor in accordance with such lateral inclination setting signals.

5,775,231

RAIL VEHICLE WITH CROSSBEAM ELASTICALLY HELD TO UNDERCARRIAGE

Gerd Kammerhofer, Kaisheim; Friedrich Werner, Wangen; Thomas Brendel, Treuchtlingen, and Max Huber, Bäumenheim, all of Germany, assignors to ABB Daimler-Benz Transportation (Deutschland) GmbH, Hennigsdorf, Germany

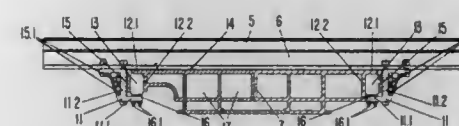
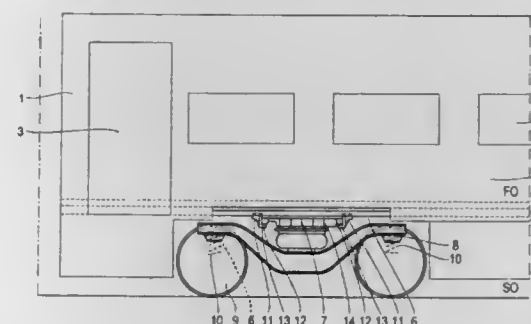
Filed Nov. 20, 1996, Ser. No. 749,767

Claims priority, application Germany, Nov. 25, 1995, 195 44 030.7

Int. Cl.⁶ B61D 17/00

U.S. Cl. 105—413

13 Claims



1. A rail vehicle, comprising:

a superstructure having a longitudinal direction and including an undercarriage, the undercarriage including at least two sole bars which extend parallel to one another in the longitudinal direction of the superstructure;

a crossbeam held against the undercarriage, extending transversely to the longitudinal direction of the superstructure and adapted for being seated on a bogie or carriage; and

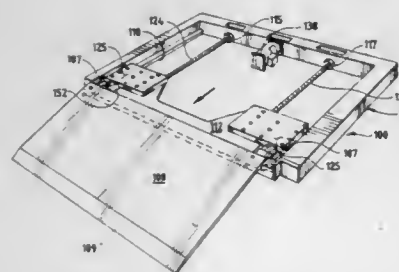
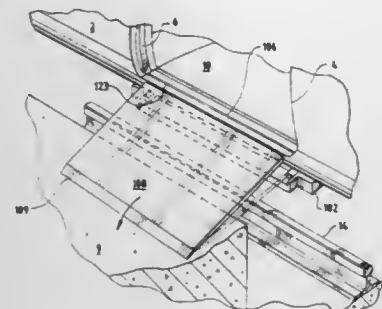
means for elastically holding the crossbeam to the undercarriage, the holding means including holders provided at the crossbeam, counterholders secured to the sole bars adjacent a respective one of the holders and elastically-deformable elements inserted, respectively, between each counterholder and adjacent holder.

5,775,232

BRIDGE PLATE FOR A MASS TRANSIT VEHICLE
 Fotios Golemis, Skokie, and Alf J. Olsen, Elk Grove Village,
 both of Ill., assignors to Vapor Corporation, Niles, Ill.
 Filed Feb. 14, 1997, Ser. No. 799,165
 Int. Cl.⁶ B60R 3/00

U.S. Cl. 105—458

8 Claims



1. A bridge plate cartridge in combination with a transit vehicle retrofitted with said bridge plate cartridge, comprising:
 said bridge plate cartridge including a bridge plate having an upper surface, mounting means for mounting said bridge plate to said transit vehicle, and drive means for moving said bridge plate between a stowed position and an extended position;
 said transit vehicle including a vehicle body structure provided with a floor surface, a vehicle body outer surface located beneath said floor, and a passenger door opening located above said floor surface; and
 wherein said bridge plate cartridge is mounted directly to said vehicle body outer surface beneath said floor surface and said passenger door opening, such that said mounting means aligns said upper surface of said bridge plate with said floor surface when said bridge plate is moved to said extended position so as to provide essentially uninterrupted surface from said floor surface to said upper surface of said plate bridge plate.

5,775,233

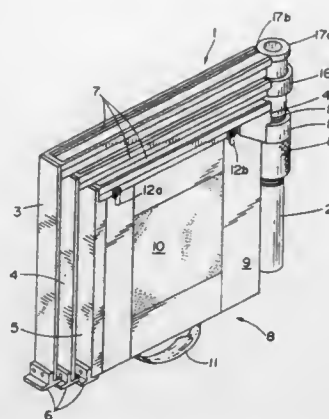
INTEGRATED TRIPOD RISER
 Charles S. Kendall, 6553 Kelsey Point Cir., Alexandria, Va.
 22315

Filed Mar. 28, 1997, Ser. No. 827,493
 Int. Cl.⁶ A47B 57/00

U.S. Cl. 108—59

13 Claims

1. A portable tripod riser comprising:
 a center support post;
 a first support leg attached to said center support post;
 a second support leg rotatably attached to said center support;
 a third support leg rotatably attached to said center support;
 a locking sleeve retained on an outer circumference of said center support post, and
 wherein in a setup configuration, said first, second and third legs are equidistantly separated and locked into position by axial adjustment of said locking sleeve to compress the first, second and third support legs together and in a transport position, said first, second and third legs are axially aligned until coaxially nested and thereafter locked by axial adjustment of



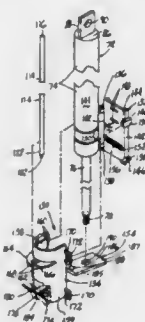
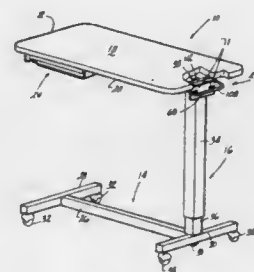
said locking sleeve thereby compressing said first, second and third support legs together.

5,775,234

HEIGHT ADJUSTABLE OVERBED TABLE AND LOCKING DEVICE THEREFOR
 Robert A. Solomon, and Mark E. Borton, both of Kalamazoo, Mich., assignors to BISSELL Inc., Grand Rapids, Mich.
 Filed Oct. 11, 1996, Ser. No. 731,287
 Int. Cl.⁶ A47B 9/00

U.S. Cl. 108—147

25 Claims



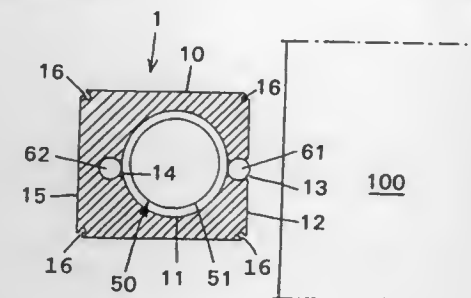
1. A locking device for a cylinder having an elongated shaft extending outwardly therefrom for reciprocating movement with respect to the cylinder, comprising:
 a shell mounted to the cylinder with a spring integrally formed therewith;
 a guide flange extending from the shell and having an aperture;
 a locking plate having an opening which receives the elongated shaft, the locking plate being pivotally mounted to the cylinder, the spring normally biasing the locking plate in a first position to lock the shaft with respect to the cylinder;
 an actuator rod extending through the guide flange aperture, the actuator rod having a first end mounted to the locking plate and a second end operatively associated with an actuator handle spaced from the locking plate, whereby movement of the actuator rod in one direction selectively moves the locking plate to a second position against the bias of the spring to thereby free the shaft for longitudinal movement with respect to the cylinder.

5,775,235

METHOD AND DEVICE FOR DESTRUCTION OF OBJECTS
 Kjell Lindskog, Foravägen 27, S-931 39 Skellefteå, and Ola Friström, Anumark 84, S-905 95 Umeå, both of Sweden
 Filed Oct. 18, 1996, Ser. No. 732,741
 Claims priority, application Sweden, Apr. 19, 1994, 9401340
 Int. Cl.⁶ E05G 1/00

U.S. Cl. 109—25

20 Claims



7. A destructive device to destroy a product stored in an alarm-protected safety enclosure, said destructive device comprising:
 a housing;
 said housing comprising a first side and a second side;
 said first side of said housing to be disposed next to the product stored in the alarm-protected safety enclosure;
 said first side of said housing comprising an opening;
 said second side of said housing being disposed opposite to said first side of said housing;
 at least one first explosive substance;
 said at least one first explosive substance being disposed in said housing;
 said at least one first explosive substance being disposed on said first side of said housing;
 a second explosive substance;
 said second explosive substance being disposed in said housing;
 a destructive agent to at least one of mark and destroy the product stored in the alarm-protected safety enclosure;
 said destructive agent being disposed between said opening in said first side of said housing and said second explosive substance;
 said destructive agent comprising means for being distributed over the product stored in the alarm-protected safety enclosure upon the alarm in the alarm-protected safety enclosure being activated;
 said first explosive substance comprising means for at least partially shredding the product stored in the alarm-protected safety enclosure and said second explosive substance comprising means for distributing said destructive agent over the product stored in the alarm-protected safety enclosure subsequent to said first explosive substance at least partially shredding the product stored in the alarm-protected safety enclosure.

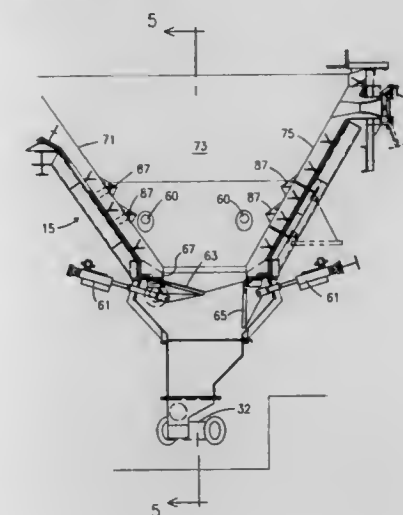
5,775,237

DRY BOTTOM ASH HANDLING SYSTEM
 William P. Reilly, Dunellon, Fla., and John S. Tomaszek, Mundelein, Ill., assignors to Florida Power Corporation, St. Petersburg, Fla., and United Conveyor Corporation, Waukegan, Ill.

Filed Dec. 30, 1996, Ser. No. 778,210
 Int. Cl.⁶ F23B 7/00

U.S. Cl. 110—234

17 Claims



1. A hopper for attachment to an underside of a solid fuel-fired boiler, comprising:
 a) a plurality of side walls converging from an upper opening to a lower outlet, adjacent side walls having a common seam;
 b) each seam having at least one air vent including an inlet port and an outlet nozzle, said nozzle being directed down said seam toward said lower outlet and including nozzle walls that diverge in a direction from said inlet port toward said lower outlet; and
 c) at least one grate door operable to control flow of ash through said lower outlet.

5,775,236

COMBUSTION CONTROL CIRCUIT OF COMBUSTION APPARATUS

Gordon William Fenn, Brevard, N.C.; Young Moon Ryoo, Ansan, and Hong Jib Kim, Incheon, both of Rep. of Korea, assignors to Haitai Electronics Co., Ltd., Incheon, Rep. of Korea

Filed Nov. 12, 1996, Ser. No. 745,703
 Claims priority, application Rep. of Korea, Nov. 20, 1995, 95-42316

Int. Cl.⁶ F23N 5/02; 5/18

U.S. Cl. 110—185

1 Claim

1. A combustion control circuit of a combustion apparatus including driving signal generating means producing a driving signal for an exhaust fan and a gas valve in response to each output signal of a temperature sensor and a flow sensor, exhaust fan

5,775,238

COOLED GRATE BLOCK

Rolf Hauser, Gruningen, Switzerland, assignor to Von Roll Umwelttechnik AG, Zurich, Switzerland

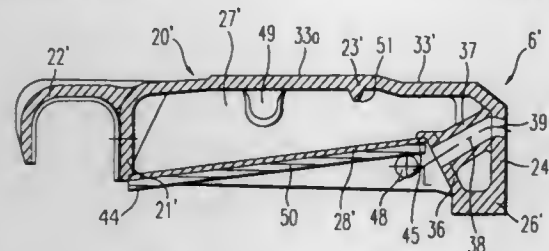
Filed May 17, 1996, Ser. No. 649,325

Claims priority, application Switzerland, May 17, 1995, 01447/95

Int. Cl.⁶ F23H 7/08

U.S. Cl. 110—282

14 Claims



1. A cooled grate block which is part of a grate for a plant for a thermal treatment of waste material, the cooled grate block comprising:

an upper wall having an outer surface which forms a useful surface on which waste material to be treated comes to rest, and along which the waste material is transported by means of relative movement of grate blocks disposed downstream of one another, wherein the upper wall, as part of a block body, bounds a cooling chamber with the upper wall being at a top portion of the cooling chamber, the cooling chamber being formed in the block body and being connected to a cooling water system, the cooling chamber being closed in a sealing manner from a bottom by a base provided with an insulation layer.

5,775,239

DOUBLE CAM DRIVES FOR A BUTTONHOLE SEWING MACHINE

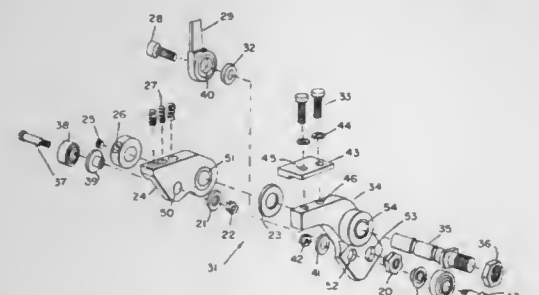
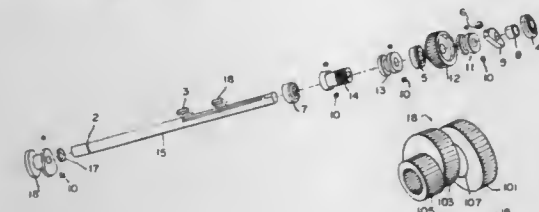
Rudy Papajewski, deceased, late of Stutensee, Germany, by Edith A. Papajewski, legal representative; Gerd Papajewski, Stutensee, Germany, and Louis Tocchio, Glen Allen, Va., assignors to AMF Recce, Inc., Mechanicsville, Va.

Filed Jan. 6, 1997, Ser. No. 779,107

Int. Cl.⁶ D05B 3/06

U.S. Cl. 112—65

33 Claims



1. A double cam drive for use in a buttonhole sewing machine comprising a double looper cam and a double feed cam mounted on a main drive shaft, wherein the double looper cam comprises a looper cam bushing section and a double cam having a first

concentric cam formed at an end of the looper cam bushing section and a second concentric cam formed at a middle of the looper cam bushing section, wherein the double feed cam comprises a feed cam bushing section and a double cam having a first concentric cam formed at an end of the feed cam bushing section and a second concentric cam formed at a middle of the feed cam bushing section, a looper cam follower pivoted on a looper cam stub shaft and paired looper roller followers having a first roller contacting the first concentric cam of the looper cam and a second roller contacting the second concentric cam of the looper cam, wherein the first roller is positioned on an outside surface of the double looper cam opposite the second roller, a feed cam follower pivoted on a feed cam stub shaft and feed roller followers having a first feed cam follower roller contacting the first concentric cam of the feed cam and a second feed cam follower roller contacting the second concentric cam of the feed cam and wherein the first feed cam follower roller is positioned on an outer surface of the feed cam opposite the feed cam follower roller.

5,775,240

SEWING MACHINE CAPABLE OF EMBROIDERY STITCHING, AND EMBROIDERY DATA PRODUCING DEVICE THEREFOR

Kazumasa Hara; Hidechika Kuramoto; Mikio Koike; Haruhiko Tanaka; Akiyoshi Sasano, and Shinichi Fukada, all of Hachioji, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

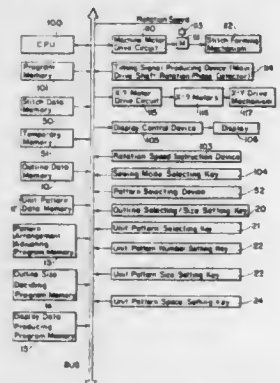
Filed Dec. 4, 1996, Ser. No. 760,197

Claims priority, application Japan, Dec. 5, 1995, 7-339849

Int. Cl.⁶ D05B 21/00; D05C 9/02

U.S. Cl. 112—102.5

19 Claims



1. A sewing machine capable of embroidery stitching, comprising first means for giving data for forming stitches of at least one unit pattern type to be embroidered; second means for giving data for representing a pattern arrangement configuration along which unit patterns of said at least one unit pattern type are arranged in series; third means for giving data for setting a size and a number of said unit patterns, a space between said unit patterns along, said pattern arrangement configuration, and a size of said pattern arrangement configuration; and stitching forming means operated under control of said given data to form the stitches of said unit patterns arranged along said pattern arrangement configuration.

5,775,241

SEWING MACHINE

Nami Morita, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 10, 1996, Ser. No. 762,969

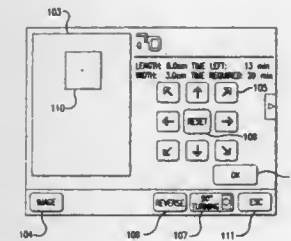
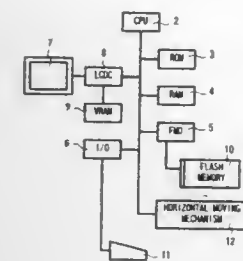
Claims priority, application Japan, Jan. 12, 1996, 8-004190

Int. Cl.⁶ D05B 21/00

U.S. Cl. 112—102.5

18 Claims

5. A sewing machine which moves a needle and a workpiece relative to each other for sewing operation, the sewing machine comprising:



first display means for displaying stitch patterns according to stitch data representing shapes of the stitch patterns; stitch pattern selecting means for selecting a stitch pattern among those displayed by the first display means; first editing means for editing stitch data representing the selected stitch pattern; second editing means for editing stitch data representing a plurality of component stitch patterns of a composite stitch pattern; editing means selecting means for selecting one of the first editing means and the second editing means; and movement control means for moving the needle and the workpiece relative to each other according to a stitch data editing operation of the first editing means for editing data on the selected stitch pattern when the first editing means is selected by the editing means selecting means and withholding the movement of the needle and the workpiece relative to each other during a stitch data editing operation of the second editing means for editing stitch data on the component stitch patterns when the second editing means is selected by the editing means selecting means.

5,775,242

Patent Not Issued For This Number

5,775,243

THREAD EXCHANGER DEVICE FOR SEWING MACHINE

Haruhiko Kinoshita, 201, Marusin, Kita-ku, Nagoya, and Sei Kato, 502, Takabari 5-chome, Meito-ku, Nagoya, both of Japan

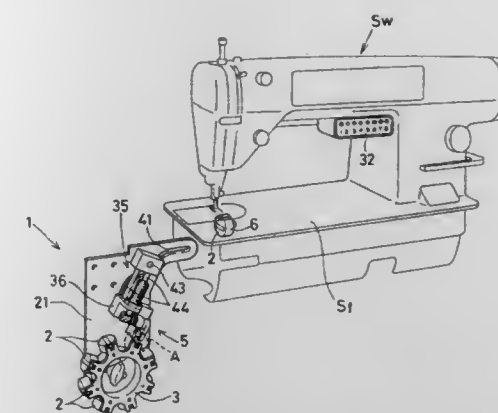
Filed Sep. 18, 1996, Ser. No. 710,518

Int. Cl.⁶ D05B 59/04

U.S. Cl. 112—186

2 Claims

1. A thread exchanger device for a sewing machine comprising: a rotary cassette having a plurality of bobbin casings along a circumferential direction thereof; a cassette driver member provided to rotationally drive the rotary cassette to select one of the plurality of bobbin casings so as to move it to an exchangeable position; a chuck member provided to take the bobbin case off the rotary cassette on the one hand, and attaching to the rotary cassette on the other hand; and



a chuck drive member provided to alternately move the chuck member toward a rotary bobbin frame, and move it toward the exchangeable position;

the chuck drive member further comprising:

a support plate having a first cam groove provided along a central axis of the rotary bobbin frame, a second cam groove defined toward the exchangeable position, and a third cam groove connecting one end of the first cam groove and one end of the second cam groove each opposite to the rotary bobbin frame and the exchangeable position in which the bobbin casing occupies;

an oscillating neck member pivotably provided around an axis mounted on the support plate, and the oscillating neck member having a cam stud moving along the first, second and third cam groove so as to move the chuck member; and a drive member provided to reciprocally move the chuck along the first, second and third cam groove.

5,775,244

NEEDLE CLAMPING MECHANISM OF A SEWING MACHINE

Koichi Nakayama, and Shinji Kojima, both of Utsunomiya, Japan, assignors to The Singer Company N.V., Curacao, Netherlands

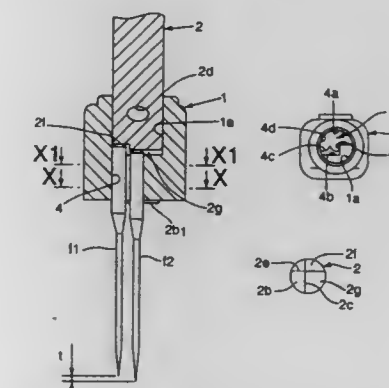
Filed Aug. 15, 1996, Ser. No. 698,505

Claims priority, application Japan, Aug. 18, 1995, 7-232091

Int. Cl.⁶ D05B 55/02

U.S. Cl. 112—226

2 Claims



1. A needle clamping mechanism comprising: a needle bar including a needle bar body having a circular cross section, a protrusion protruding downwardly from a lower surface of the needle bar body having a semicircular cross section, and a flat surface portion at a chord thereof; a needle clamp member engaged with and fixed to the needle bar, the needle clamp member having a recess that is circular in cross section at an upper end for receiving the needle bar body;

a needle containing hole defined by the recess and extending approximately parallel to the needle bar body, the needle containing hole being open at a lower end surface of the needle clamp member, and having a semicircular cross sectional portion for receiving the protrusion of the needle bar and a pair of circular arc grooves which receive the needle circular portions provided at upper ends of a pair of needles; wherein the needles received in the circular arc grooves are pressed by tip ends of set screws which are engaged with the needle clamp member, each of the needle circular portions being pressed against each of the side walls of the needle containing hole, a needle flat surface portion formed by a chord of the needle circular portions at the upper end of each of the needles is pressed against and fixed to the flat surface portion of the protrusion;

the protrusion and the needle bar body cooperating to define a groove approximately perpendicular to the flat surface portion; and wherein

an upper end surface of the left needle is brought into contact with an upper surface of the groove with the upper end surface of the right needle in communication with a lower surface of the needle bar body such that a difference is set between tip end positions of the needles.

5,775,245

BED SLIDE DEVICE OF A SEWING MACHINE

Shuichi Sato, Utsunomiya, and Yoshimi Koguchi, Imaichi, both of Japan, assignors to The Singer Company N.V., Curacao, Netherlands Antilles

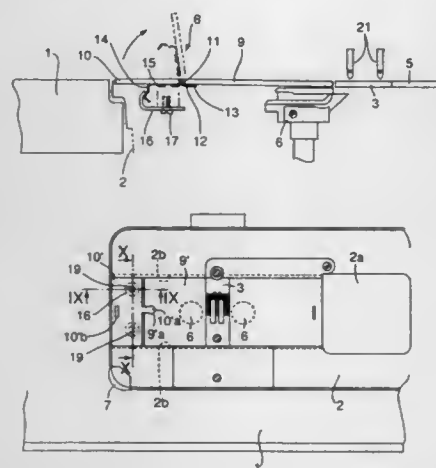
Filed Mar. 12, 1997, Ser. No. 815,248

Claims priority, application Japan, May 10, 1996, 8-140741

Int. Cl.⁶ D05B 73/12

U.S. Cl. 112—260

3 Claims



1. A bed slide device for a sewing machine including a bed having a stage surface, and a bed slide slidably provided on said bed for opening and closing a space over a hook, said bed slide comprising:

a bed slide body slidably provided on said bed; and
a closing plate hingedly coupled to and supported by said bed slide body adjacent to said stage surface for movement between an open position and a closed position wherein the closing plate abuts said stage surface.

5,775,246
UNDER TRIMMING DEVICE WITH INCLINEDLY MOVABLE CATCHERS FOR A MULTI-NEEDLE SEWING MACHINE WITH MULTIPLE LONGITUDINALLY EXTENDING LOOPERS

Lin Yu Wen, Taipei, Taiwan, assignor to Kaulin Mfg. Co., Ltd., Taipei, Taiwan

Filed Apr. 9, 1997, Ser. No. 833,787

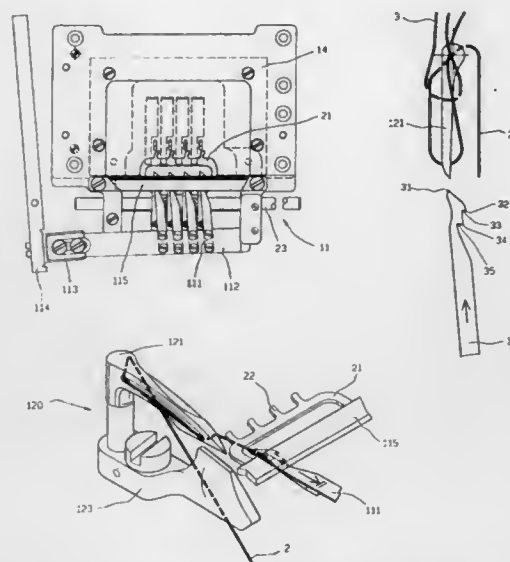
Claims priority, application Taiwan, Dec. 27, 1996, 85220155

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Int. Cl.⁶ D05B 65/00

U.S. Cl. 112—292

2 Claims



1. An under trimming device with inclinedly movable catchers for a multi-needle sewing machine with multiple longitudinally extended loopers, being disposed in an end portion of a bed of said sewing machine below needles thereof, comprising:

a cutting and clamping part being disposed in front of a needle plate and including a plurality of movable catchers fixedly mounted on a movable catcher holder and retained at a predetermined position, said plurality of movable catchers being connected to a link via an L-shaped connecting member and actuated by a transmission mechanism to move reciprocatingly toward the loopers;

a fixed cutter mounted to a front end of said needle plate of the sewing machine; a leaf spring mount being provided at the end portion of said front end of said needle plate, said leaf spring mount having a plurality of leaf springs mounted thereon and said leaf springs respectively pressing against the bottom sides of said movable catchers; the number and positions of said leaf springs correspond to those of said movable catchers;

a plurality of looper assemblies each comprising a looper which is mounted on a claw base, said claw base being fixed on a mounting block and connected to a looper driving mechanism of said sewing machine in order to longitudinally reciprocate, a looper thread threading into a thread hole provided at the rear end of the looper for sewing, and the number and the positions of the looper assemblies corresponding to the number and positions of said movable catchers; and

a thread push plate being provided below said needle plate and having a plurality of fingers of which the number corresponds to that of said movable catchers, said thread push plate being fixed to a transmission shaft for said thread push plate and actuated by said transmission mechanism of said sewing machine to reciprocate rightward and leftward in order to expand the loop formed by said looper threads for facilitating the extending of said movable catchers into said loops; characterized in that:

said movable catcher of each said cutting and clamping part and each said looper form an angle of inclination, and one side of each said movable catcher is provided with a first projected

edge portion, a first recess portion, a second projected edge portion and a second recess portion such that when performing the thread cutting, a plurality of movable catchers are actuated and moved toward the loopers by said transmission mechanism at an angle of inclination, and extend between the upper edges of said loopers and each said lower edge of said thread push plate; and when a movable catcher extends toward a dead point, the loops of a needle thread and looper thread are threaded through by a pointed end of each said movable catcher and slide respectively into said first recess portion and second recess portion on one side of said movable catcher; and

when each said movable catcher returns to its initial position from the dead point, said looper thread and said needle thread are cut off sequentially when they pass said fixed cutter, and the free end of said looper thread after being cut is still clamped between each said leaf spring and each said movable catcher.

5,775,247

Patent Not Issued For This Number

5,775,248

STABILIZED FLOAT DRUM

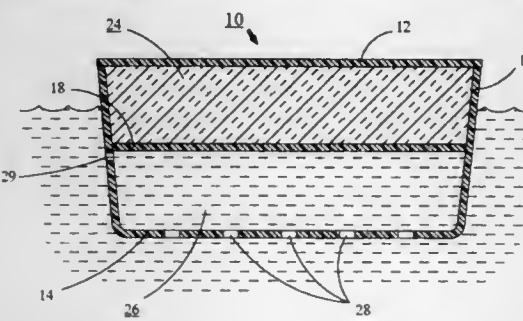
Charles H. Simola, P.O. Box 147, Speculator, N.Y. 12164

Filed Dec. 18, 1996, Ser. No. 770,947

Int. Cl.⁶ B63B 35/44

U.S. Cl. 114—267

18 Claims



1. A buoyant float drum for providing floatation of structures in a fluid which comprises:

a hollow polygonal outer body portion having top, bottom and side wall members;

an interior wall member mounted within said hollow body portion to form said body into first and second compartments;

a flotation medium sealed within said first compartment; and

a plurality of fluid vent holes formed in the bottom and sides of said second compartment;

whereby when said float drum is placed in a body of fluid said first compartment will cause said drum to float in said body of fluid and said second compartment will fill with fluid to stabilize said float drum.

5,775,249

ADJUSTABLE CAMBER INFLATABLE SAIL

David B. Samuel, 27241 Pasco Peregrino, San Juan Capistrano, Calif. 92675

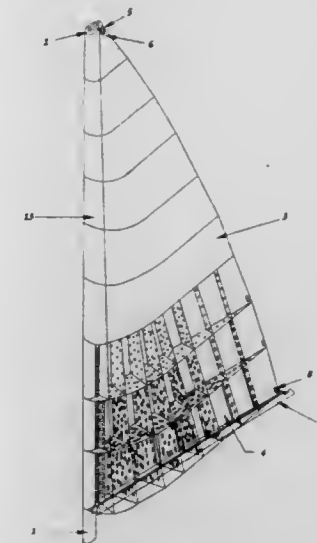
Filed Apr. 8, 1996, Ser. No. 629,321

Int. Cl.⁶ B63H 9/06

U.S. Cl. 114—103

33 Claims

1. A two-piece adjustable camber wing-shaped inflatable sail for use as a main and/or misin sail by contemporary sailing vessels with conventional sail rig having a mast, boom, headstay, backstay,



and sidestays; that features a leading edge portion and physically separate main body portion, each having two inflatable cells; one port and one starboard, each enclosed in an outer cover to provide a means of producing forward propulsion that consists of;

a main two-chamber inflatable cell that forms the main body and trailing edge portions of said sail that is designed in a conventional semi-triangular sail shape with a series of attachments incorporated in to a common center panel of said cell to be attached to a conventional sail rig that includes a fixed mast and boom, compatible with the various sail rigs; featuring independent port and starboard inflatable cells on either side of said center panel being substantially air-tight and of various size and shape depending on the size and dimensions of said sail enclosed in an outer cover attached along the leach portion of said cell;

and a physically separate two-chamber inflatable cell pocket that forms the leading edge portion of said sail that will attach to the forward and side portions of the mast, extending from the lower portion of the mast, just above the boom to within several inches above or below the masthead; and will feature two mirror image chambers that form a semi-wedge shape around the mast with independent port and starboard inflatable semi-wedge shaped cells that are the same general shape as the inside portion of the two cell pocket chambers and are substantially air-tight and will fit snugly and expand into the inside portion of the two cell pocket chambers.

5,775,250

WATERCRAFT

Noboru Kobayashi, and Toshiyuki Hattori, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 27, 1991, Ser. No. 722,599

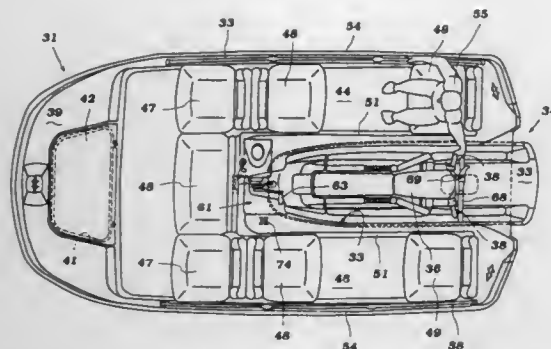
Claims priority, application Japan, Jul. 2, 1990, 2-175592

Int. Cl.⁶ B63B 35/44

U.S. Cl. 114—258

40 Claims

1. A watercraft comprised of a main hull defining a berthing area opening through a part of said main hull for receiving a smaller watercraft having a propulsion device and controls therefore, a passenger compartment defined by said main hull and at least partially juxtaposed to said berthing area, and an operator station positioned in said portion of said passenger compartment and juxtaposed to the controls of said smaller watercraft for permitting said controls to be operated by an operator within said portion of said main hull passenger compartment, a plurality of seats in said passenger compartment and a removable cover for at least partially covering said berthing area said removable cover being folded into



a table for use by persons seated on said seats in the passenger compartment.

5,775,251

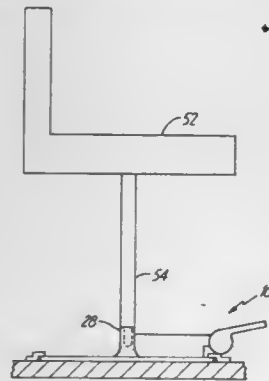
SLIDABLE PEDESTAL RECEIVER FOR BOAT SEAT
Craig L. Morningstar, 311 Highland St., Annandale, Minn. 55302

Filed Sep. 16, 1996, Ser. No. 714,768

Int. Cl.⁶ B63B 17/00

U.S. Cl. 114—363

18 Claims



1. A boat seat support for use in a boat having a floor, the boat seat support comprising:
a first track mounted to the floor having a lifted edge spaced above the floor and defining a first channel;
a second track mounted to the floor opposably spaced-apart from the first track and defining a second channel;
a slidable base slidable longitudinally within the first and second channels of the first and second tracks;
a pedestal receiver attached to the slidable base and adapted to receive a support pedestal;
a lock disposed on the slidable base proximate one of the first and second tracks, and adapted to selectively inhibit slidable movement of the base by engaging one of the tracks; and
wherein disengaging the lock allows longitudinal positioning of the boat seat support along the tracks, and engaging the lock fixes the longitudinal position of the boat seat along the tracks.

5,775,252

TACTILE DIAL

Gary Hartman Kilgore, 239 Calumet Pl., San Antonio, Tex. 78209

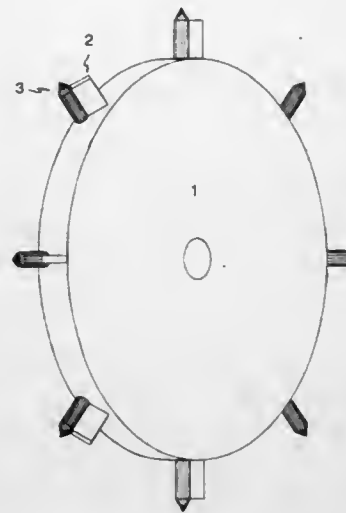
Filed Mar. 5, 1997, Ser. No. 811,193

Int. Cl.⁶ G01C 13/18; G09B 21/00; E05B 17/00

U.S. Cl. 116—205

1 Claim

1. A dial comprising: a disk; arranged on the circumference of said disk, a plurality of tactile sensed position indicating structures; each of said structures consisting of a bar terminated on a first end



by a rod having a diameter greater than the thickness of the bar; each of said bars extending outwardly from the circumference of the disk; and each of said rods extending outwardly from the circumference of the disk, a distance greater than the bar corresponding thereto; each said position indicating structure corresponding to a different orientation of a hand of a clock.

5,775,253

WARNING TRIANGLE

Song Quan, Beijing, and Wei Lin, Jiang Xi Province, both of China, assignors to Beijing Success Electronic Company Limited, Beijing, China

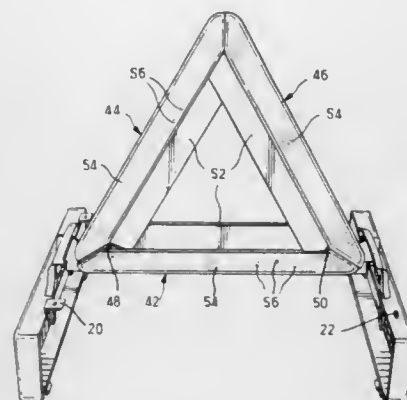
Filed Aug. 12, 1996, Ser. No. 695,427

Claims priority, application United Kingdom, Apr. 24, 1996, 9608451

Int. Cl.⁶ E01F 9/00

U.S. Cl. 116—63 T

9 Claims



1. A warning triangle assembly comprising structure erectable into a triangle assembly having a base, a case for containing the structure when collapsed for storage, the case being separable into two parts forming supports with means for receiving respective spaced apart portions of the base of the erected triangle assembly to support the erected triangle in an upright position, the erected triangle extending transversely of the case parts when so supported, said means for receiving including an extending handle portion positionable to secure the erected triangle assembly to the respective case part.

5,775,254

VALVE ASSEMBLY FOR A MILKING MACHINE

Ludger Köster, Naperville, Ill., and Ralf Wohlbrück, Oelde, Germany, assignors to Westfalia Separator Aktiengesellschaft, Oelde, Germany

PCT No. PCT/EP94/02989, § 371 Date Feb. 15, 1996, § 102(e)

Date Feb. 15, 1996, PCT Pub. No. WO95/10935, PCT Pub.

Date Apr. 27, 1995

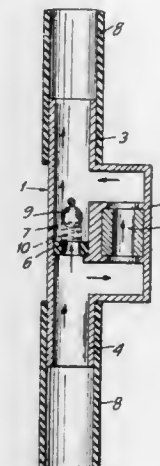
PCT Filed Sep. 7, 1994, Ser. No. 602,755

Claims priority, application Germany, Oct. 20, 1993, 43 35 699.0

Int. Cl.⁶ A01J 5/16

U.S. Cl. 119—14.38

6 Claims



1. A valve assembly for a milking machine having a teat cups, wherein each teat cup comprising a shell and a rubber lining, a pulsing chamber between the shell and the lining, and a pulsator for alternately pressurizing the pulsing chamber to atmospheric pressure and evacuating the pulsing chamber through a pulsation-forwarding line, wherein the pressurization and evacuation are timed in accordance with a cross-section of a channel that conveys air into and out of the pulsing chamber; the valve assembly comprising a bypass channel associated with the air channel, and a valve shut-off element in the bypass channel that opens when air is evacuated from the pulsing chamber and closes when pressurizing air enters the pulsing chamber such that flow impedance is greater for the pressurizing air than for the evacuating air.

5,775,255

ANT RETREAT DISH

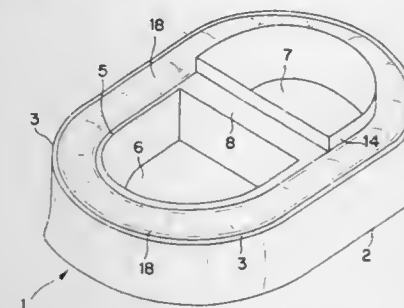
Dennis Louviere, III, 1018 Cajun Dr., New Iberia, La. 70560

Filed Aug. 1, 1996, Ser. No. 690,758

Int. Cl.⁶ A01K 5/01; 7/00

U.S. Cl. 119—51.5

10 Claims



1. An ant retreat dish comprising:
a housing having a bottom, sides, and an open top,
means for dividing said open top into multiple compartments,
means surrounding said multiple compartments for protecting said multiple compartments from infiltration by crawling insects

means for providing stability to said housing when said housing is placed on a horizontal surface, and
wherein said means surrounding said multiple compartments is provided with cover means for partially covering said surrounding means to prevent an animal from drinking liquid therein, and
wherein said cover means has projections on a bottom portion thereof, and said housing has apertures for receiving said projections, whereby said cover can be removably mounted on said housing.

5,775,256

BIRD FEED RECYCLER

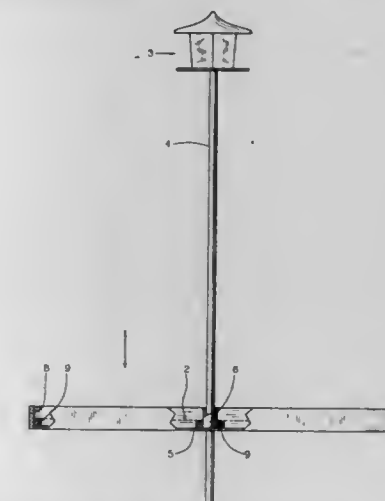
Thomas A. Henshaw, 1667 Carriage Dr. West, Titusville, Fla. 32796

Continuation-in-part of Ser. No. 679,825, Jul. 15, 1996, Pat. No. 5,711,247. This application Dec. 16, 1996, Ser. No. 767,546

Int. Cl.⁶ A01K 39/01

U.S. Cl. 119—57.8

8 Claims



1. A bird feeder and seed saver comprising:
a base frame sized, shaped and structured for positioning on a generally planar surface; and
a screen mesh insert on the base frame, the screen mesh insert being sized, shaped and structured to hold bird feed; and
wherein the screen mesh has built-in cross support members and a peripheral border.

5,775,257

BIRD FEEDER

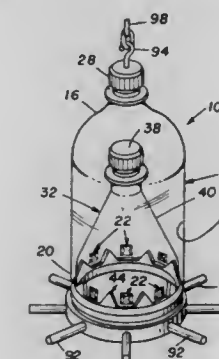
Hong Ku Park, 203 Southcrest Dr., Huntsville, Ala. 35802

Filed Apr. 21, 1997, Ser. No. 845,108

Int. Cl.⁶ A01K 39/01

U.S. Cl. 119—57.8

20 Claims



1. A bird feeder comprising:

a reservoir for holding a supply of feed, said reservoir including an upper end having a neck portion with an opening therein and closure means, a lower end having a central opening and a plurality of spaced apertures, and a side wall between said upper end and said lower end;

means for directing feed from said reservoir to its said plurality of spaced apertures including an inner spreader member having an upper end, a lower end, and a tapered outer wall;

means for closing said lower ends of said reservoir and said inner spreader member, said means including inner insert means positioned within said lower end of said inner spreader member and a hollow outer sleeve positioned within said lower end of said reservoir and outside of said lower end of said inner spreader member; and

bird perch means associated with said outer sleeve below said plurality of spaced apertures in said reservoir so that birds can comfortably stand and feed.

5,775,258

SANITIZATION SYSTEM FOR CAT LITTER BOXES

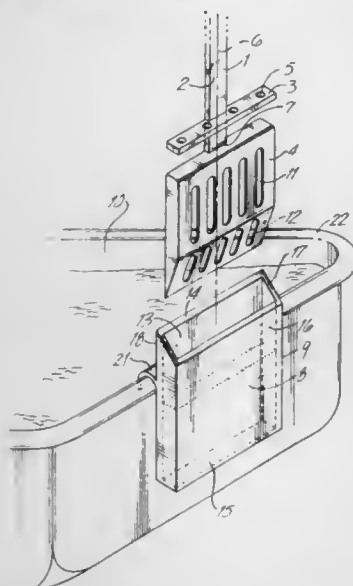
Knut H. Larsen; Ashley L. Larsen, both of 6206 Opal St., Alta Loma, Calif. 91701, and Deborah L. Demelo, 817 S. Magnolia St., Ontario, Calif. 91762

Filed Jul. 12, 1996, Ser. No. 678,993

Int. Cl.⁶ A01K 1/035

U.S. Cl. 119—161

14 Claims



1. A scoop device for straining cat litter comprising:
- (a) a handle member having an axis of elongation and a first end;
- (b) a scoop region extending axially from said first end of said handle member, said scoop region having an opening therein so dimensioned and proportioned to permit straining of said cat litter; and
- (c) a containment member extending laterally of said handle member and located a predetermined distance axially from said scoop region where said containment member has at least one venting orifice extending therethrough.

5,775,259

COMPACTED BENTONITE-BASED ABSORBENTS

Edward B. Tucker, Romeoville, Ill., assignor to First Brands Corporation

Continuation-in-part of Ser. No. 551,190, Oct. 31, 1995, Pat. No. 5,647,300. This application Jul. 9, 1997, Ser. No. 890,166

Int. Cl.⁶ A01K 1/015

U.S. Cl. 119—173

48 Claims

1. An animal litter comprising at least 5% by weight of a water-swelling bentonite-containing material containing a com-

packed bentonite formed by compacting bentonite-containing particles having an effective amount of said particles smaller than 100 U.S. mesh, said particles having a moisture content between about 5% by weight and about 15% by weight, based on the total weight of water and bentonite, said particles compacted under effective compacting pressure to form compacted masses of said bentonite particles and forming said compacted masses into particles having an appropriate size for use as an animal litter and containing at least one additive from the group consisting of:

ADDITIVE	QUANTITY ¹
Sodium Perborate	0.1 wt % to 20 wt %;
Dyes - urine activated color dyes	3000 ppm to 12,000 ppm; preferred to 6,000 ppm to 10,000 ppm;
Citric Acid and salts of citric acid	0.1 wt % to 5 wt %;
Dye/Sodium Perborate	0.1 wt % to 5 wt % (ratio of 1:5 to 1:50);
Starch	0.5 wt % to 5.0 wt %;
Guar Gum	Preferred 2.0 wt % to 4.0 wt %;
	0.5 wt % to 2.0 wt %;
	Preferred 1.0 wt % to 1.5 wt %;
Sodium Bicarbonate or Potassium Bicarbonate	0.5 wt % to 10.0 wt %;
	Preferred 2.0 wt % to 5.0 wt %;
Citric Acid or salts of citric acid	0.5 wt % to 10.0 wt %;
	Preferred 2.0 wt % to 5.0 wt %;
Water-Dispersible Dye	3000 ppm to 12,000 ppm; Preferred
FD & C Blue No. 1 (Brilliant Blue FCF)	6,000 ppm to 10,000 ppm;
FD & C Green No. 3 (Fast Green FCF)	Preferred 1.0 wt %;
Phloxine B (D & C Red 28)	0.5 wt % to 5.0 wt %;
Activated Carbon or other carbonaceous absorbent	Preferred 1.0 wt % to 3.0 wt %;
Zeolites and/or other molecular sieves	0.5 wt % to 5.0 wt %;
	Preferred 1.0 wt % to 3.0 wt %;
Spray-Dried Fragrance	25% loading; 0.1 wt % to 0.4 wt %;
Pine-Wood Flour	250 ppm to 1000 ppm
	Oil on a carrier;
	2 wt % to 20 wt %;
	Preferred 4 wt % to 8 wt %;
Cedar-Wood Flour	2 wt % to 20 wt %;
	Preferred 4 wt % to 8 wt %;
Spruce-Wood Flour	2 wt % to 20 wt %;
	Preferred 4 wt % to 8 wt %;

¹wt % = weight percent
ppm = parts per million

and mixtures thereof.

5,775,260

AQUARIUM EXTENSION

John Jansen, 5000 Bishop Lake Rd., #A8, Brighton, Mich. 48116

Filed Jan. 14, 1997, Ser. No. 783,484

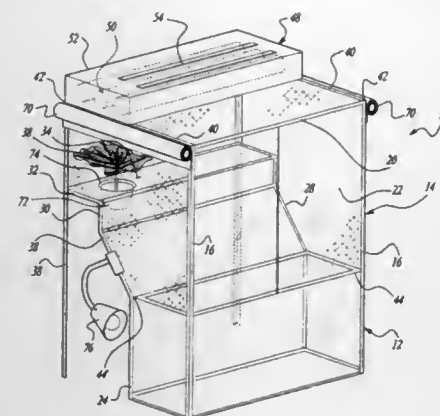
Int. Cl.⁶ A01K 1/00

U.S. Cl. 119—246

20 Claims

1. An enclosure extension for an aquarium, the aquarium having a front wall, a rear wall, opposing side wall for contacting and extending up from a support surface an open top, said enclosure extension comprising:

a frame for at least partially supporting said enclosure extension above said support surface, said frame including a plurality of support members, at least some of said support members contacting and extending up from the support surface;



wall means secured to said frame and supported thereby, said wall means defining top, front, side and rear walls of said enclosure;

a bottom opening into said enclosure and being defined by said support members and said wall means, said bottom opening being horizontally oriented and spaced above where said support members contact the support surface, said bottom opening also being generally adjacent to said front wall of said enclosure and spaced below said top wall of said enclosure;

means for mounting said frame relative to the aquarium such that said bottom opening is generally coincidental with the open top of the aquarium, a portion of said enclosure being located above said bottom opening with another portion of said enclosure located above and rearward of said bottom opening; and

whereby said enclosure provides an enclosed space extending both above and rearward of said bottom opening and the aquarium.

5,775,261

INSECT-KILLING CONTAINER WITH DYNAMIC ENTICEMENT

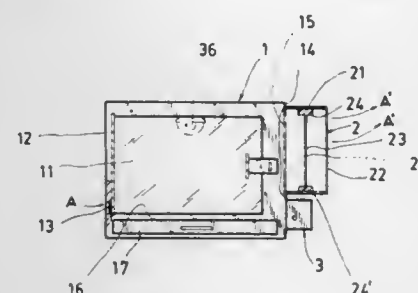
Sen-Yen Shaw, P. O. Box 55-846, Taipei, Taiwan

Filed Mar. 4, 1997, Ser. No. 811,040

Int. Cl.⁶ A01K 1/00

U.S. Cl. 119—482

4 Claims



1. An insect-killing container comprising:
- a housing having a lower ventilation window formed at a lower portion of a first side wall of the housing and having an upper ventilation window formed at an upper portion of a second side wall of the housing opposite to the first side wall, said upper ventilation window positioned above said lower ventilation window for drafting air from said lower ventilation window to said upper ventilation window, and said housing having an enticement kept therein to attract insects to enter the housing through said upper ventilation window, said housing including a perforated platform formed in a lower portion of said housing for supporting a pet or animal kept in said housing, and a drawer slidably held in a bottom portion of

said housing under said platform for collecting and removing manure or decay food as drained from said platform; and an electric-shock screen mounted on said upper ventilation window on said second side wall of said housing for screening said upper ventilation window, said screen electrically powered with a high voltage thereon for killing insects passing through said screen when entering said housing through said upper ventilation window and said screen as attracted by said enticement in said housing, said electric-shock screen including:

a hood secured on said housing for fencing said upper ventilation window, a protective grating secured on an outer portion of said hood for precluding intrusion of a person into said screen, a plurality of positive electrode bars and a plurality of negative electrode bars juxtapositionally mounted on at least an electrically insulative frame in a middle portion in said hood to be electrically connected to a positive pole and a negative pole of a direct-current power source of high voltage, with each said positive electrode bar interposed between two neighboring negative electrode bars, and said positive and negative electrode bars positioned between the upper ventilation window of the housing and the protective grating of the screen, whereby upon passing of an insect through an aperture between each positive electrode bar and each negative electrode bar having high voltage applied therebetween, the insect will be discharged and killed by the high voltage between the electrode bars before entering said housing.

5,775,262

Patent Not Issued For This Number

5,775,263

SCRATCH POST WITH VERTICAL ROTATABLE TREAD PATH

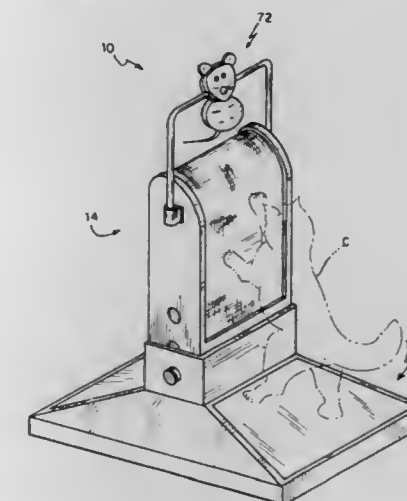
Thomas F. Richards, 15 Amherst Apartment 4L, Milford, N.H. 03055

Filed Oct. 15, 1997, Ser. No. 951,172

Int. Cl.⁶ A01K 29/00

U.S. Cl. 119—706

20 Claims



1. A scratch post for treading comprising:
- a freestanding base; and
- a vertical treadmill including
- a looped belt,
- an elongated frame vertically depending from said base, having an upper end portion and a lower end portion defining a longitudinal axis therebetween, said lower end portion engaged to said base;

a first axle and a second axle disposed in parallel relation to one another and depending from said frame, said belt engaged about said first axle and said second axle to revolve along a continuous path about said first axle and said second axle and substantially along said longitudinal axis, thereby generally defining a treadmill.

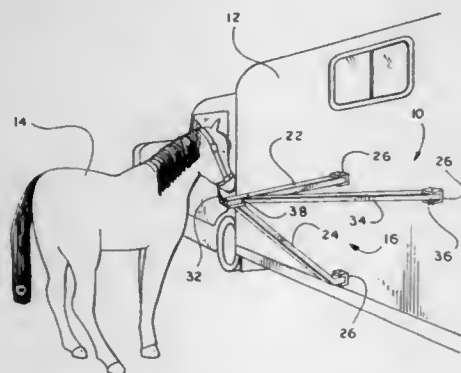
5,775,264

ANIMAL TETHERING SYSTEM

Randall W. Dixon; Joseph L. Dixon, and Emmett L. Griffith, all of P.O. Box 2210, Lawrenceville, Ga. 30246
Filed May 2, 1997, Ser. No. 850,691
Int. Cl.⁶ A01K 1/04

U.S. Cl. 119—771

14 Claims



1. An animal tethering system for attachment to a structure and receiving a lead of an animal, comprising:

- a frame having a first end and a second end and being pivotally mounted to the structure at the first end, the frame having an upper arm and a lower arm extending from and supporting the upper arm;
- a bracket mounted to the structure and the bracket being positioned on the structure to receive and releasably retain the frame while the frame is in a stored position;
- a brace being removably mounted to the structure and operably connected to the frame to secure the frame in an extended position;
- connecting means for operably connecting the brace to the frame; and,
- tether means proximate the second end of the frame for receiving the lead of the animal.

5,775,265

COOLING SURFACE CLADDING

Bernd Brandle; Paul Gilli; Werner Holblinger, all of Graz, and Emmerich Seidelberger, Vienna, all of Austria, assignors to Austrian Energy & Environment SGP/Waagner-BIRO GmbH, Vienna, Austria

PCT No. PCT/AT95/00203, § 371 Date Apr. 16, 1997, § 102(e) Date Apr. 16, 1997, PCT Pub. No. WO96/12140, PCT Pub. Date Apr. 25, 1996

PCT Filed Oct. 16, 1995, Ser. No. 817,992

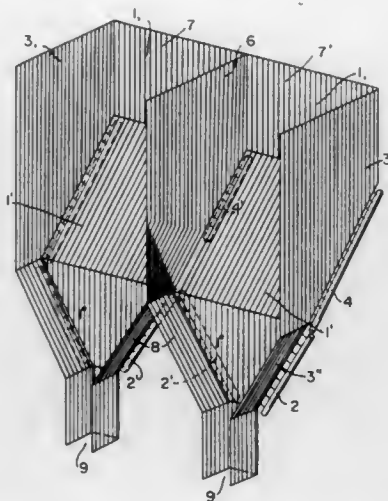
Claims priority, application Austria, Oct. 17, 1994, 1952/94
Int. Cl.⁶ F22B 37/00

U.S. Cl. 122—6 A

12 Claims

1. Cooling surface cladding for a chamber of a steam generator, comprising

- first and second opposed walls,
- each of said first and second walls including a plurality of medium-carrying tubes and having
- a first substantially vertical portion,
- a second portion arranged adjacent a bottom of said first portion and inclined toward the other of said first and second walls.



and at least one additional substantially vertical portion arranged adjacent a bottom of said second portion, the width of said at least one additional portion decreasing from the bottom of said second portion to a bottom of said at least one additional portion, the number of said tubes in said second portion of said first and second walls being greater than the number of said tubes at said bottom of said at least one additional portion such that at least a portion of said tubes in said first and second walls terminate in said at least one additional portion,

first collecting means arranged in flow communication with said portion of said tubes terminating in said at least one additional portion for collecting medium from said portion of said tubes terminating in said at least one additional portion,

third and fourth opposed walls extending between said first and second walls, each of said third and fourth walls including a plurality of medium-carrying tubes and having

a first substantially vertical portion having a substantially uniform width and being connected to said first portion of said first and second walls,

a second portion arranged adjacent a bottom of said first portion, said second portion having a width decreasing from the width of said first portion to a bottom of said second portion and being connected to said second portion of said first and second walls, and

a third portion having a substantially uniform width and being arranged adjacent the bottom of said second portion, said third portion of each of said third and fourth walls being inwardly inclined toward the other of said third and fourth walls, the number of said tubes in first portion of said third and fourth walls being greater than the number of said tubes at the bottom of said second portion of said third and fourth walls such that at least a portion of said tubes in said third and fourth walls terminate in said second portion of said third and fourth walls, and

second collecting means arranged in flow communication with said portion of said tubes terminating in said second portion for collecting medium from said portion of said tubes terminating in said second portion of said third and fourth walls.

5,775,266

STEAM GENERATOR

Georg Ziegler, Winterthur, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland

Filed Mar. 26, 1996, Ser. No. 621,643

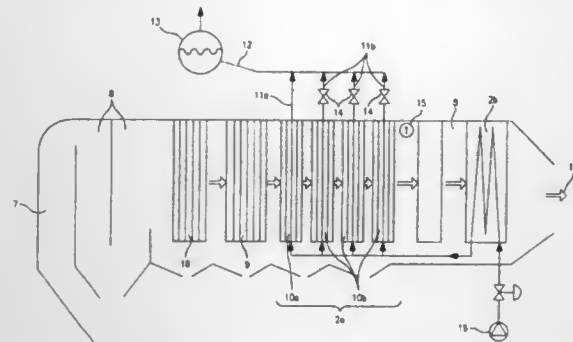
Claims priority, application European Pat. Off., May 31, 1995, 95810358

Int. Cl.⁶ F22D 1/00

U.S. Cl. 122—7 R

10 Claims

1. A steam generator for direct selective catalytic reduction (SCR process) of nitrogen oxides in a flue gas flow, comprising:



a radiant part connected to receive a flue gas flow from a fire box,

a convective part connected downstream of the radiant part as a flow duct, the convective part including, in series in the flow duct, a contact heat exchanger, a superheater, and an economizer, wherein the economizer includes two parts, and an NOx catalyst arranged between the two parts of the economizer,

wherein, a first part of the economizer upstream of the catalyst in the direction of flow of the flue gas is subdivided into at least two sections, the at least two sections positioned to contact the flue gas flow in series and, the at least two sections connected to receive a working medium in parallel flows,

wherein a first section is connected on an outlet side by a line for continuous flow of the working medium to a drum and at least a second section is connected on an outlet side by a line having shut off means for controlled flow of the working medium to the drum.

5,775,267

INSTANT HOT WATER BOILER STRUCTURE

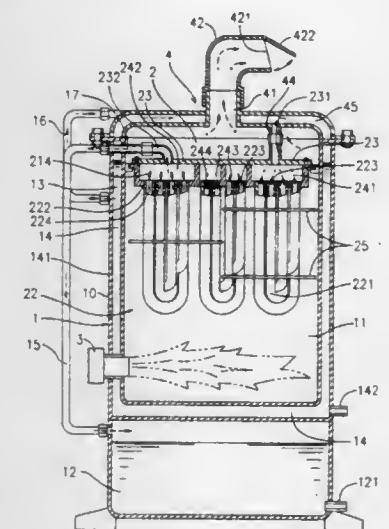
Liang-Yu Hou, No. 215, Shin-Chen Road Yang Mei, Tao Yuan, and Kun-Huang Chuang, No. 13, Lane 15, Shin-Chung-Bai Road, Chung Li City, Tao Yung, both of Taiwan

Filed Aug. 26, 1996, Ser. No. 703,315

Int. Cl.⁶ F22B 7/04

U.S. Cl. 122—13.2

5 Claims



1. An instant hot water boiler structure, comprises:

a water storage tank provided between a combustion chamber and the wall of said boiler, these members being the first stage water flow warming chamber and tank;

a smoke discharging cover with a water receiving tank provided and locked on the top end of said boiler, said water receiving tank being the middle stage water flow warming tank;

a heat exchanger is removably hung in said combustion chamber to be the last stage water flow rapid heating chamber; numerous pipes being provided to communicate with all said chamber and tanks sequentially,

said boiler structure is characterized in that: said heat exchanger is constructed with a plurality of vertically arranged bundles of pipes welded to the bottom of a horizontally disposed water collecting tray, wherein;

said water collecting tray is provided with a disk like cover which is provided at suitable locations thereof with a water injection pipe and a water releasing pipe respectively;

a plurality of partitions are provided in said water collecting tray to form a plurality of encircling water chambers which are assigned as a water feeding chamber, a water discharging chamber and a plurality of water exchanging chambers which are located between said water feeding chamber and said water discharging chamber in both clockwise and counter-clockwise directions;

each of said bundles of pipes is welded to the bottom of corresponding and neighbouring water chambers of said water collecting tray, numerous U-shaped pipe members are arranged to be encircled one by another to form said bundles of pipes in cross type, each said U shaped pipe member of said bundles of pipes has the same curvature and same diameters, the ends of said U-shaped pipe members are divided equally into two groups to connect with corresponding water chambers, so that said water chambers are provided on the bottom thereof with a plurality of water feeding holes and water draining holes for communication, water flow thereby can flow through said water feeding chamber, water discharging chamber and water exchanging chambers in a three dimensional flow path.

5,775,268

HIGH EFFICIENCY VERTICAL TUBE WATER HEATER APPARATUS

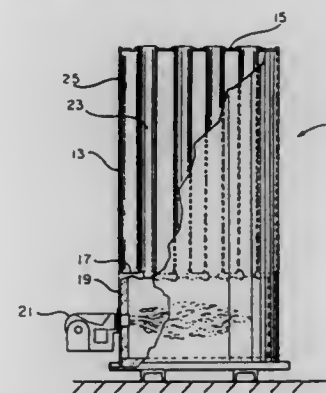
Mark A. Ferguson, Watauga, Tex., assignor to PVI Industries, Inc., Fort Worth, Tex.

Filed Apr. 24, 1996, Ser. No. 637,224

Int. Cl.⁶ F22B 5/00

U.S. Cl. 122—16

13 Claims



1. An improved water heater apparatus, comprising:

a water heating tank having generally cylindrical sidewalls with upper and lower ends, each of which is closed by an upper and lower transverse wall section, respectively, to define a closed interior for the tank, the tank also having a water inlet and a water outlet;

a plurality of vertically arranged fire tubes located within the tank closed interior, each fire tube having an open interior for conducting products of combustion, the exterior surfaces of the tubes being exposed within the interior of the tank for contact with water circulated within the tank interior;

a combustion chamber mounted on the upper end of the water heating tank for providing products of combustion to the open interiors of the fire tubes;

a burner communicating with the combustion chamber for combusting a selected fossil fuel, the burner having a burner inlet; a flue collector located at the bottom end of the water heating tank for collecting and exhausting the products of combustion from the vertically arranged fire tubes; draft inducing means for drawing the products of combustion downwardly from the combustion chamber, through the fire tubes and out the flue collector for exhaustion from the apparatus; and recirculating means for recirculating water from one region of the tank closed interior to an opposite region thereof when the tank closed interior is filled with water.

5,775,269

BOILER PROTECTION TUBE ASSEMBLY

Howard John Lawrence, White Rock, Canada, assignor to Industrial Ceramics Limited, Milton, Canada

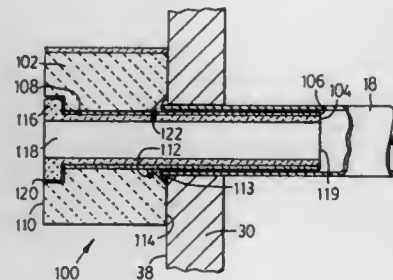
Filed Jul. 12, 1996, Ser. No. 679,305

Claims priority, application Canada, Jun. 7, 1996, 2178524

Int. Cl.⁶ F22B 37/06

U.S. Cl. 122—511

8 Claims



1. A boiler protection tube assembly comprising:

- an inner ceramic sleeve of a high strength, heat resistant ceramic material with at least moderate thermal shock resistance, said inner ceramic sleeve having an inner end insertable into an end of a condenser tube of a tube sheet boiler adjacent a hot face of said boiler, an outer end opposite said inner end and a flange extending radially outwardly from said outer end;
- a ceramic block of a light weight, low thermal conductivity, heat resistant ceramic material, said ceramic block having a hole extending generally axially therethrough between generally parallel inner and outer faces, said inner ceramic sleeve being insertable through said hole,
- an outer recess extends into said outer face about said hole and registers with said flange on said inner ceramic sleeve to stop said inner ceramic sleeve from passing entirely through said hole,
- an inner recess extends into said inner face of said block about said hole for accommodating said end of said condenser tube and any associated weld to allow said inner face to abut said tube sheet adjacent said hot face,
- each said ceramic block having a plurality of side faces generally perpendicular to said inner and outer faces, the number and size of said side faces being selected to enable said blocks to be installed with said side faces adjacent to corresponding side faces of adjacent of said blocks; and,
- an outer ceramic sleeve of a heat resistant insulating ceramic fiber extending around said inner ceramic sleeve substantially along the entire length of said inner ceramic sleeve between said flange and said inner end, said outer ceramic sleeve being insertable into said hole through said ceramic block along with said inner ceramic sleeve to reduce heat flow between said inner ceramic sleeve and both said ceramic block and said condenser tube.

5,775,270

THERMOSTATIC VALVE FOR THE COOLANT CIRCULATION SYSTEM OF AN INTERNAL-COMBUSTION ENGINE

Gerhart Huemer, Neukeferloh; Heinz Lemberger, Unterföhring; Peter Leu, Denkendorf; Manfred Kurz, Ditzingen, and Roland Saur, Stuttgart, all of Germany, assignors to Behr Thermot-Tronik GmbH & Co., Kornwestheim, Germany

PCT No. PCT/EP95/05053, § 371 Date Aug. 21, 1996, § 102(e) Date Aug. 21, 1996, PCT Pub. No. WO96/19762, PCT Pub. Date Jun. 27, 1996

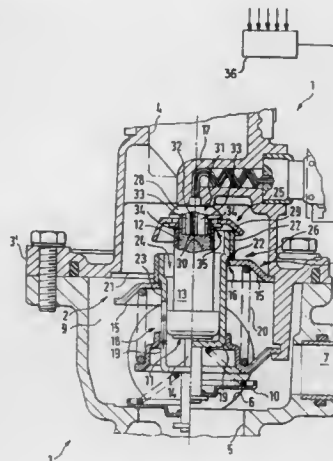
PCT Filed Dec. 20, 1995, Ser. No. 696,994

Claims priority, application Germany, Dec. 21, 1994, 44 45 761.8

Int. Cl.⁶ F01P 7/14

U.S. Cl. 123—41.1

24 Claims



1. Thermostatic valve for a coolant circulation system of an internal-combustion engine, comprising:

- a main valve which is disposed between a cold-side end section and a hot-side end section and which has a valve disk;
- an expansion material element which is drivingly connected with the main valve in the hot-side end section and which is stationarily supported in the cold-side end section, said expansion material element being configured to actuate the main valve as a function of coolant temperature, said expansion material element including a capsule which penetrates an opening in the valve disk of the main valve, the capsule containing an expansion material which acts upon an actuating element which is arranged in one of the end sections; and
- a hollow structure arranged around the capsule such that a chamber is defined between the capsule and the hollow structure, the chamber being communicated with a hot-side coolant connection and extending in the cold-side end section.

5,775,271

ENGINE WITH ELECTRIC IGNITION FOR MODEL CARS HAVING FORCED AIR COOLING SYSTEM

Rossano Compagnucci, Osimo (AN), Italy, assignor to Compagnucci S.P.A., Italy

Filed Dec. 3, 1996, Ser. No. 759,746

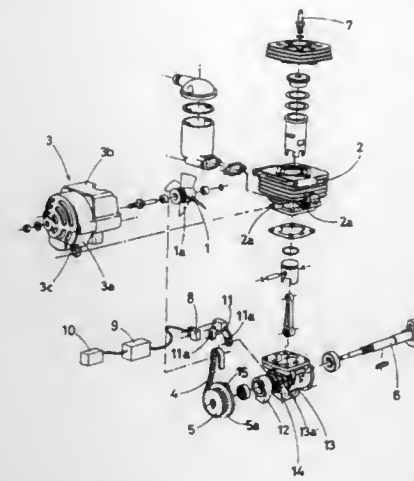
Claims priority, application Italy, Dec. 5, 1995, MC95 U 000029

Int. Cl.⁶ F01P 7/04

U.S. Cl. 123—41.65

3 Claims

- 1. An engine with electric ignition for model cars characterized by an axial fan (1) having a horizontal axis positioned in front of a finned cylinder (2) and having a hub, the fan being supported in a case (3) and provided, on its hub, with a toothed collar (1a) with which it engages a geared belt (4) as well as a geared pulley (5) splined on a drive shaft (6) and which acts as support for a magnet designed to excite a Hall sensor (8) connected to a capacitive**



control unit (9) that ignites a spark plug (7), the case (3) which houses and supports the fan (1), having a circular bottom cover (3a) provided with a grid as an air inlet and having a shaped mouthpiece (3b) which conveys the air flow generated by fan (1) against the fins of the cylinder (2).

5,775,272

CYLINDER HEAD FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Akio Matsunaga, Susono; Makoto Suzuki, and Shizuo Abe, both of Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

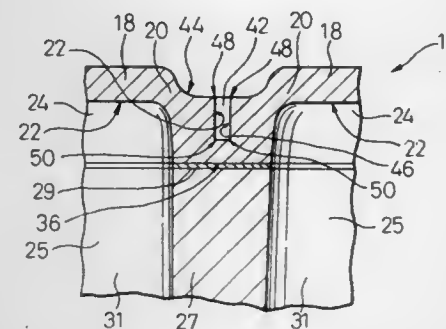
Filed Jan. 17, 1997, Ser. No. 785,436

Claims priority, application Japan, Jan. 19, 1996, 8-007246

Int. Cl.⁶ F02F 1/36

U.S. Cl. 123—41.82 R

9 Claims



1. A cylinder head for a multi-cylinder internal combustion engine, comprising:

- a bottom wall having an upper face which defines a waterjacket, said bottom wall having spaced recessed wall portions which have lower faces defining upper spaces of adjacent combustion chambers, and wherein said bottom wall has a bottom wall portion formed between said recessed wall portions to divide the upper spaces of the adjacent combustion chambers; and
- a slit extending from an opening formed in the upper face of said bottom wall portion toward a lower face of said bottom wall portion to a lower slit surface formed within said bottom wall portion.

5,775,273

FREE PISTON INTERNAL COMBUSTION ENGINE

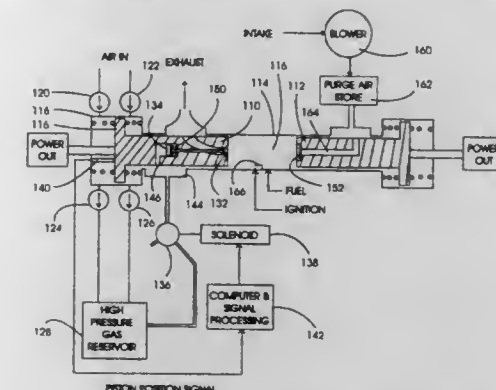
William T. Beale, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio

Filed Jul. 1, 1997, Ser. No. 886,647

Int. Cl.⁶ F02B 71/00

U.S. Cl. 123—46 B

26 Claims



1. In a free piston internal combustion engine including at least one piston slidably reciprocable in a cylinder and having an end face bounding and defining a combustion chamber portion of the cylinder, the engine also including a driver linked to the piston for driving the piston through its compression stroke and a fuel injector in communication with the combustion chamber, the improvement comprising:

- (a) a combustion chamber valve in a passageway extending between the combustion chamber and the earth's atmosphere for controlling passage of gas between the combustion chamber and the earth's atmosphere;
- (b) a valve closing actuator linked to the combustion chamber valve;
- (c) a first, piston-position sensor linked to the valve closing actuator and initiating closure of the valve in response to a selected first position of the piston in the cylinder; and
- (d) a piston-position responsive valve opening actuator wherein the valve opening and closing events may vary relative to piston position to affect power output linked to the combustion chamber valve.

5,775,274

TWO-STROKE ENGINE WITH AIR-BLAST FUEL MIXTURE INJECTION

Pierre Duret, Sartrouville, and Thierry Colliou, Le Chesnay, both of France, assignors to Institut Français du Pétrole, Rueil-Malmaison, France

PCT No. PCT/FR95/01303, § 371 Date Apr. 11, 1997, § 102(e) Date Apr. 11, 1997, PCT Pub. No. WO96/11333, PCT Pub. Date Apr. 18, 1996

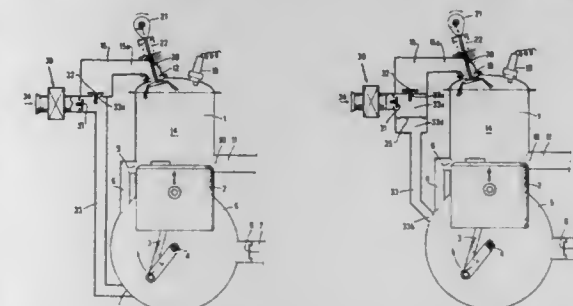
PCT Filed Oct. 6, 1995, Ser. No. 817,202

Claims priority, application France, Oct. 11, 1994, 94 12196

Int. Cl.⁶ F02B 25/04; 29/00

U.S. Cl. 123—73 A

20 Claims



1. A two-stroke engine with air-blast fuel injection comprising at least one cylinder in which moves a piston defining a combustion

chamber and a pump crankcase forming a continuation of the combustion chamber and separated therefrom by the piston, at least one main air inlet in the pump crankcase, a device for introducing a fuel mixture under pressure including a control controlling opening and closing of a port for introducing the fuel mixture into the combustion chamber, a container, connected to the port and containing the fuel mixture under pressure, and a mechanism for inducting and introducing the fuel mixture under pressure into the container; and wherein

the mechanism for inducting and introducing the fuel mixture under pressure into the container comprises a secondary air delivery pipe, into which opens a carburetor, and equipped with a nonreturn device placed downstream from the carburetor, the secondary air delivery pipe opening, downstream from the nonreturn device, into at least one pipe connecting the container to the pump crankcase and a second nonreturn device disposed between the container and the at least one pipe.

5,775,275

VALVE LIFTER

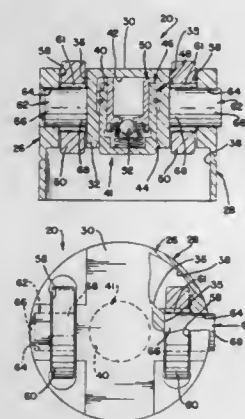
Charles Michael Philo, Hudsonville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 517,483, Aug. 21, 1995, abandoned. This application May 13, 1996, Ser. No. 645,339

Int. Cl.⁶ F01L 1/14

U.S. Cl. 123—90.5

1 Claim



1. A valve lifter comprising a cam follower acted on by a cam, including a follower body with concentric inner and outer surfaces defining laterally spaced recesses therebetween for receiving cam engaging rollers therein, said rollers supported on transverse, cantilevered shafts extending across said recesses, said shafts supported at first, radially outer ends in openings in said outer surface of said follower body, and at inner radial ends by abutment against a flattened area of said inner surface to define a contact area and operable to resist bending forces imposed by the action of the cam on said rollers.

5,775,276

VALVE DRIVING APPARATUS USING AN ELECTROMAGNETIC COIL TO MOVE A VALVE BODY WITH REDUCED NOISE

Akihiro Yanai, Toyota; Iwao Maeda, Mishima; Takashi Izuo, and Tatuo Iida, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi-Ken, Japan

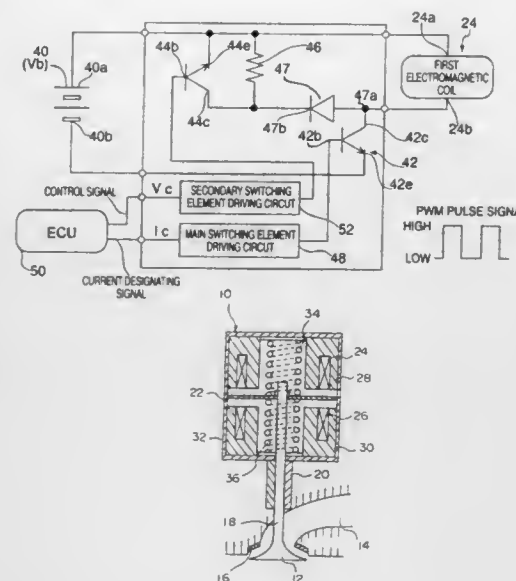
Filed Feb. 13, 1996, Ser. No. 600,663
Claims priority, application Japan, Feb. 15, 1995, 7-026947; Aug. 22, 1995, 7-213281

Int. Cl.⁶ F01L 9/04

U.S. Cl. 123—90.11

15 Claims

1. A valve driving apparatus for driving a valve provided in an internal combustion engine, said valve having a valve body mov-



able between a first position and a second position so as to open and close said valve, said valve driving apparatus comprising: an electromagnetic coil generating an electromagnetic force exerted on said valve body; current controlling means for controlling a current supplied to said electromagnetic coil in accordance with an operational condition of said internal combustion engine; and current decreasing means for decreasing said current when said valve body approaches one of said first position and said second position, said current decreasing means including a flywheel circuit and a variable resistor for increasing a resistance of said flywheel circuit when said valve body approaches one of said first position and said second position.

5,775,277

Patent Not Issued For This Number

5,775,278

ENERGIZATION CONTROL METHOD, AND ELECTROMAGNETIC CONTROL SYSTEM IN ELECTROMAGNETIC DRIVING DEVICE

Takashi Moriya; Yasuyuki Komatsu; Hiroshi Sono, and Takashi Sugai, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 485,705, Jun. 7, 1995, Pat. No. 5,636,601.

This application Jan. 24, 1997, Ser. No. 787,707

Claims priority, application Japan, Jun. 15, 1994, 6-133423; Jun. 15, 1994, 6-133425; Jul. 8, 1994, 6-157106

Int. Cl.⁶ F01L 9/04

U.S. Cl. 123—90.11

10 Claims

1. An electromagnetic driving device for an engine valve in an internal combustion engine, comprising: an armature operatively connected to the engine valve; a pair of electromagnets disposed in an opposed relation to each other on opposite sides of said armature for selectively applying an electromagnetic attracting force to said armature for opening and closing the engine valve; a pair of return springs for biasing said armature toward said electromagnets, respectively; means for estimating a distance between said armature and said electromagnets; and means for varying an energizing quantity applied to said electromagnets in accordance with

a force means for expanding one of said first pressure chamber and said second pressure chamber.

5,775,280

SECURING DEVICE FOR AN ACTUATING LEVER IN A VALVE CONTROL MECHANISM OF INTERNAL COMBUSTION ENGINES

Dieter Schmidt, Nürnberg; Günter Eisenhardt, Neuhaus; Norbert Geheeb, Bamberg; Peter Sailer, Erlangen; Helmut Engelhardt, Herzogenaurach, and Wolfgang Mayer, Seukendorf, all of Germany, assignors to INA Wälzlager Schaeffler KG, Herzogenaurach, Germany

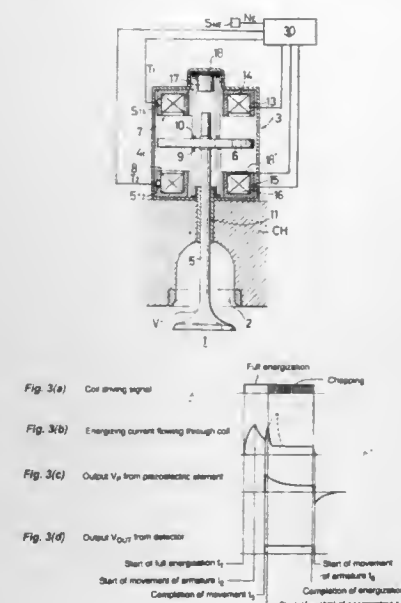
Filed May 1, 1997, Ser. No. 847,277

Claims priority, application Germany, May 2, 1996, 196 17 523.2

Int. Cl.⁶ F01L 1/12

U.S. Cl. 123—90.41

9 Claims



the estimated distance between said armature and said electromagnets.

5,775,279

VALVE TIMING CONTROL DEVICE

Kazumi Ogawa, Toyota; Katsuhiko Eguchi, Kariya, and Kongo Aoki, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

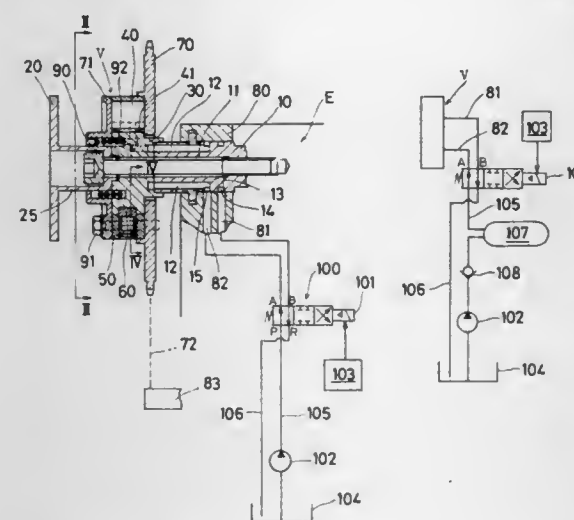
Filed Mar. 28, 1997, Ser. No. 828,937

Claims priority, application Japan, Mar. 28, 1996, 8-074823

Int. Cl.⁶ F01L 1/344

U.S. Cl. 123—90.17

7 Claims



1. A valve timing control device comprising: a rotor fixed on a cam shaft of an engine; a housing member rotatably mounted on the cam shaft so as to surround said rotor; a chamber defined between said housing member and said rotor and having a pair of circumferentially opposed walls; a vane mounted on said rotor and extending outwardly therefrom in the radial direction into said chamber so as to divide said chamber into a first pressure chamber and a second pressure chamber; a fluid supplying means for supplying fluid under pressure to at least one of said first pressure chamber and said second pressure chamber; and

1. A device for securing an actuating lever of a valve control mechanism of an internal combustion engine to a support element, with the actuating lever being formed with a concave recess receiving a spherical end of the support element for allowing the actuating lever to pivot relative to the support element, said securing device being secured to said actuating lever and comprising a connecting element received in an undercut of a displaceable piston of the support element and having a thickness which is smaller than a width of the undercut to effect a free movement of the connecting element within the undercut in all pivoted positions of the actuating lever.

5,775,281

DETERMINATION OF HEAT SOAK CONDITIONS

Rodney Sinclair Smith, South Australia, Australia, assignor to The Energy Research and Development Corporation, Australia

PCT No. PCT/AU95/00368, § 371 Date Dec. 20, 1996, § 102(e) Date Dec. 20, 1996, PCT Pub. No. WO95/35442, PCT Pub. Date Dec. 28, 1995

PCT Filed Jun. 21, 1995, Ser. No. 765,084

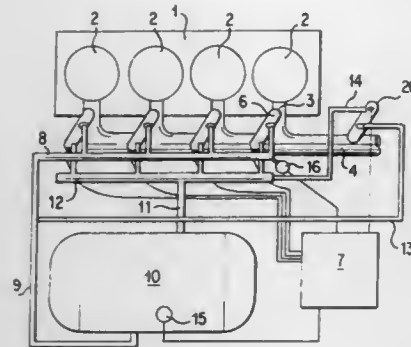
Claims priority, application Australia, Jun. 21, 1994, PM6323

Int. Cl.⁶ F02N 17/00

U.S. Cl. 123—179.8

18 Claims

1. Method of operating a fuel injected dual fuel internal combustion engine which utilizes alternatively a first fuel having a low boiling point and being susceptible to vaporization in a fuel rail due to high engine temperature, and a second fuel having a higher boiling point, said method comprising: measuring a first temperature in a tank for said first fuel; measuring a second temperature at a fuel rail of said engine; determining a temperature difference between said first and second temperatures; when upon starting of said engine said temperature difference exceeds a threshold value, determining existence of a heat



soak condition and causing said engine to switch from said first fuel to said second fuel.

5,775,282

AUXILIARY INJECTOR

Rodney Sinclair Smith, South Australia, Australia, assignor to The Energy Research and Development Corporation, Turner, Australia

PCT No. PCT/AU95/00367, § 371 Date Dec. 20, 1996, § 102(e) Date Dec. 20, 1996, PCT Pub. No. WO95/35441, PCT Pub. Date Dec. 28, 1995

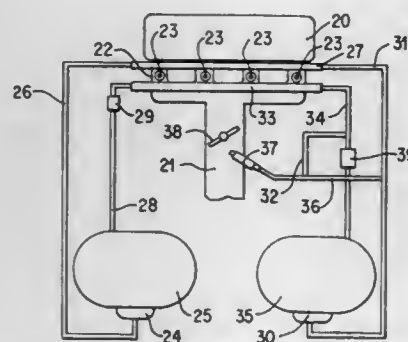
PCT Filed Jun. 21, 1995, Ser. No. 765,085

Claims priority, application Australia, Jun. 21, 1994, PM6324

Int. Cl.⁶ F02N 17/00

U.S. Cl. 123—179.8

8 Claims



1. An auxiliary injector arrangement in a dual fuel supply system for an internal combustion engine, the dual fuel supply system comprising a main fuel supply system to supply at least a first fuel using at least one main liquid fuel injector into at least an inlet manifold adjacent each engine cylinder of the engine, and an auxiliary fuel supply system, wherein:

- the inlet manifold includes a throttle body;
- the inlet manifold is divided downstream of the throttle body to supply air to each of the cylinders of the internal combustion engine;
- the auxiliary fuel supply system includes at least one injector for a second fuel, mounted in or adjacent the throttle body upstream or downstream of a throttle valve in the throttle body, and adapted to supply said second fuel at times when the at least one main injector cannot supply a sufficient amount of said first fuel; and
- the second fuel, supplied by the auxiliary injector, is petrol.

5,775,283

INTAKE CONTROL SYSTEM FOR ENGINE

Seiji Sawai, Kunihiko Nakajima, and Jiro Watase, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

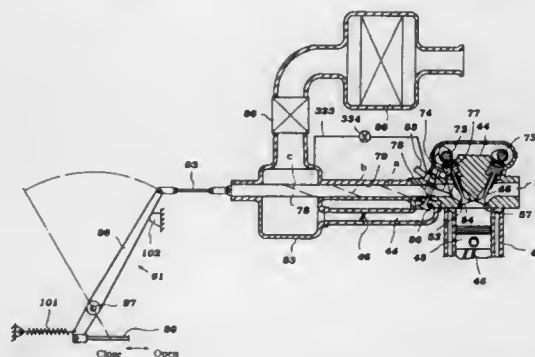
Filed May 25, 1995, Ser. No. 450,256

Claims priority, application Japan, May 31, 1994, 6-118269; Nov. 15, 1994, 6-280188

Int. Cl.⁶ F02B 29/08; F01L 13/00; F02D 9/02

U.S. Cl. 123—184.53

35 Claims



1. An induction system for an internal combustion engine having a combustion chamber with a volume that varies cyclicly during a cycle of engine operating, an intake port for admitting an air charge to said combustion chamber, means for cyclicly opening and closing said intake port for controlling the admission of an air charge to said combustion chamber, means defining an air chamber communicating with said intake port for supplying an air charge to said intake port, means for adjusting the effective volume of said air chamber in response to the operator demand and the load on said engine during at least a range of operation of said engine for controlling the volume of air which is supplied to said combustion chamber from said air chamber during a single intake cycle, and control valve means for communicating atmospheric air to said air chamber during the portion of the engine cycle when said intake port is closed.

5,775,284

TWO-PIECE VALVE STEM SEAL

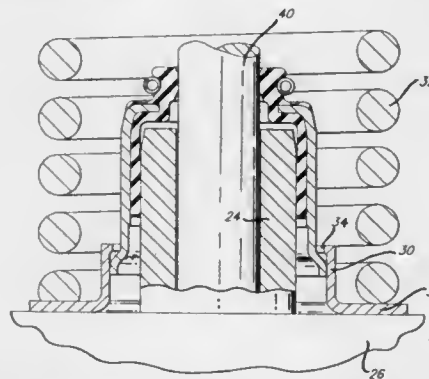
Karry S. Kirchner, and Milton L. Griswold, both of Gainesville, Ga., assignors to Freudenberg-NOK General Partnership, Plymouth, Mich.

Filed May 7, 1997, Ser. No. 852,836

Int. Cl.⁶ F01L 3/08

U.S. Cl. 123—188.6

16 Claims



1. A valve stem seal assembly for use in an internal combustion engine, said assembly including:
a first rigid cylindrical shell having a radially inwardly extending flange at a top end of said shell and an outwardly extending flange at a bottom end of said shell;

a second rigid cylindrical shell having an outwardly extending seat at a bottom end thereof and an inwardly radially extending flange at a top end thereof, said first rigid cylindrical shell in contact with an inner surface of said second rigid cylindrical shell;

a resilient sealing body in contact with said first rigid cylindrical shell, said resilient sealing body in constant contact with a valve stem; and

a spring having a circumferential shape, said spring used to urge the resilient sealing body in contact with the valve stem.

5,775,285

OIL FILTER ARRANGEMENT FOR ENGINE

Masanori Takahashi, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

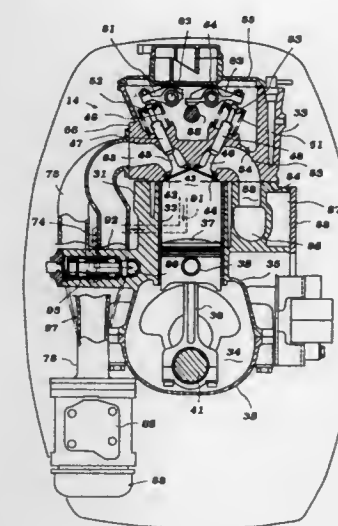
Filed Sep. 30, 1996, Ser. No. 720,424

Claims priority, application Japan, Sep. 29, 1995, 7-253561

Int. Cl.⁶ F01M 11/03

U.S. Cl. 123—196 A

16 Claims



1. An internal combustion engine comprised of a cylinder block forming a plurality of cylinder bores, a cylinder head affixed relative to said cylinder block and closing one end of said cylinder bores at one end thereof, a crankcase chamber formed at the other end of said cylinder bore by a crankcase member affixed to said cylinder block, a crankshaft rotatable journaled within said crankcase chamber and driven by pistons reciprocating in said cylinder bores, a plurality of inlet ports formed in one side of said cylinder head at least one for each cylinder bore, an induction system for supplying a charge to said intake ports, said induction system comprising a plenum chamber lying on said one side of said cylinder block and a plurality of intake runners each extending from said plenum chamber to a respective of said cylinder head intake ports, an oil gallery formed in said one side of said cylinder block, and an oil filter mounted on said one side of said cylinder block at a point in general alignment with at least one of said intake ports and spaced therefrom for filtering oil delivered to said oil gallery, said oil filter and said induction system being configured so as to facilitate servicing of said oil filter by having at least some of said intake runners curved to pass around said oil filter.

5,775,286

Patent Not Issued For This Number

5,775,287

CONNECTING ROD FOR AN INTERNAL COMBUSTION ENGINE

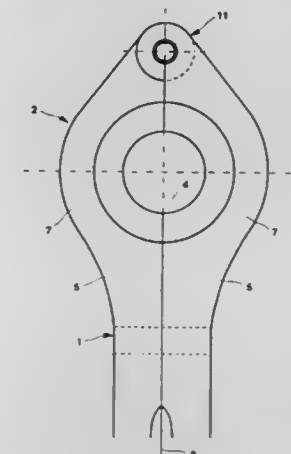
Michel Genouille, Verrieres Le Buisson, France, assignor to Ascometal, Puteaux, France

Filed Feb. 14, 1997, Ser. No. 800,625

Claims priority, application France, Feb. 16, 1996, 96 01916 Int. Cl.⁶ F02B 75/28

U.S. Cl. 123—197.3

4 Claims



1. A forged connecting rod comprising:
a body, a first end, and a second end which is larger than the first end, wherein first and second bearings are formed at the first and second ends, each of which can receive a piston shaft and a crank shaft pin, said connecting rod being comprised of first and second parts which are approximately symmetrical with respect to a longitudinal median plane of the connecting rod, which is substantially parallel to the axis of said bearings, a joint surface of the first and second parts being essentially arranged in the median plane, said first and second parts each carrying a half-bearing at the first end and a half-bearing at the second end, and said first and second parts being connected to one another by at least one immobilization means; wherein said immobilization means is located outside of the connecting rod on a side of the first end of said connecting rod and outside of an axis of the piston shaft, said immobilization means comprising an articulation having elements which are identical on each of the first and second parts of the connecting rod, the elements extending beyond a plane defined by a joint surface and having a thickness approximately equal to half a thickness of the connecting rod, seats of the elements being installed opposite one another, and friction surfaces of the articulation being arranged perpendicular to a longitudinal axis of the connecting rod bearings, the elements of each of the two first and second parts being held together by an assembly means.

5,775,288

COMBUSTION CHAMBER

Yuichi Suzuki, and Akira Serizawa, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Aug. 15, 1996, Ser. No. 698,387

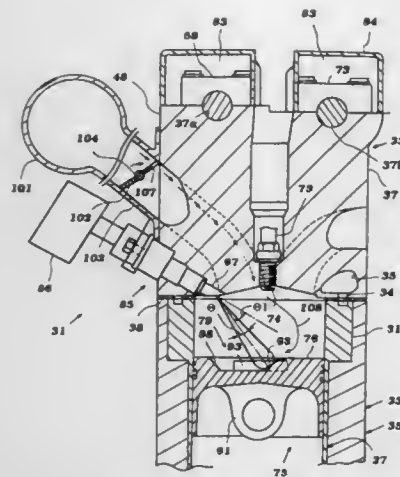
Claims priority, application Japan, Aug. 17, 1995, 7-209573

Int. Cl.⁶ F02B 23/10

U.S. Cl. 123—298

25 Claims

1. A direct injected internal combustion engine having a cylinder block defining a cylinder bore, a piston reciprocating in said cylinder bore, a cylinder head affixed to said cylinder block and closing said cylinder bore at one end of said piston, said cylinder head, said piston, and said cylinder bore forming a combustion chamber, a pair of intake valve seats formed in said cylinder head with their centers being positioned on one side of a plane contain-



ing the axis of said cylinder bore, a spark plug positioned in said combustion chamber with its gap being juxtaposed to said cylinder bore axis, a fuel injector mounted in said cylinder head between said intake valve seats and disposed at an angle so as to spray toward the other side of said plane containing said cylinder bore axis, and a projection formed in said cylinder head interposed between said fuel injector and said spark plug gap for precluding liquid fuel from said fuel injector from depositing on said spark plug gap.

5,775,289

DIRECT CYLINDER FUEL INJECTED ENGINE

Takeo Yoshida, and Takahiro Suzuki, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

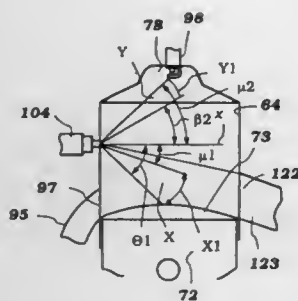
Filed May 13, 1996, Ser. No. 645,217

Claims priority, application Japan, May 12, 1995, 7-138511; May 15, 1995, 7-139983; May 29, 1995, 7-153980

Int. Cl.⁶ F01L 11/00; F02B 33/04

U.S. Cl. 123—305

35 Claims



1. A direct cylinder injected internal combustion engine comprised of a cylinder block having a cylinder bore extending from an upper peripheral edge closed by a cylinder head, a piston reciprocating in said cylinder bore between a bottom dead center (BDC) position and a top dead center (TDC) position and forming with said cylinder bore and cylinder head a variable volume combustion chamber, said piston having a piston head facing said cylinder head and at least an upper ring groove extending circumferentially therearound and receiving a piston ring, the distance between said piston at said BDC position and the upper peripheral edge of said cylinder bore being expressed as the dimension L, the distance between the lower end of said ring groove and said upper peripheral edge of said cylinder head when said piston is at said TDC position being expressed by the dimension RS, a fuel injector supported within said cylinder block and having a nozzle having a spray axis extending transversely into said cylinder bore, said spray axis laying at a distance A from said cylinder bore upper

peripheral edge and such that said spray axis is covered by said piston during at least a portion of its stroke, and the following relationship is true.

$$RS < A < 0.3L$$

5,775,290

ENGINE SPEED LIMITER WHICH IS SENSITIVE TO ACCELERATION

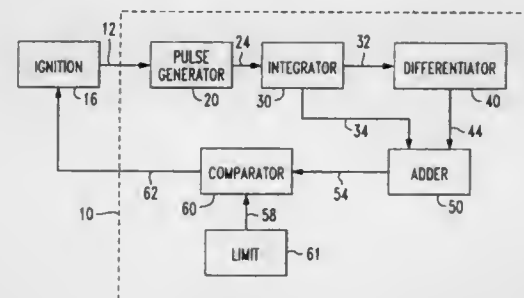
Richard E. Staerzl, Fond du Lac, and Fred M. Hauenstein, Oshkosh, both of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Jun. 26, 1997, Ser. No. 883,497

Int. Cl.⁶ F02P 11/02

U.S. Cl. 123—335

18 Claims



1. An engine speed controller, comprising:
means for measuring the speed of an engine;
means, connected in signal communication with said measuring means, for determining the acceleration of said engine;
means for combining the speed and the acceleration of said engine to form a combined variable which is a function of both the speed and the acceleration of said engine; and
means for stopping the acceleration of said engine when said combined variable exceeds a preselected threshold magnitude.

5,775,291

DIESEL ENGINE CONTROLLER

Nam-Yong Chol, Seoul, Rep. of Korea, assignor to Kia Motors Corporation, Seoul, Rep. of Korea

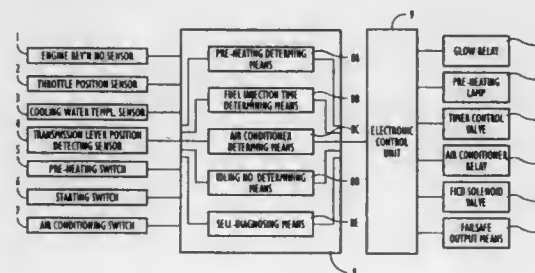
Filed Apr. 9, 1996, Ser. No. 629,707

Claims priority, application Rep. of Korea, Dec. 5, 1995, 1995-45824; Dec. 5, 1995, 1995-46926; Dec. 5, 1995, 1995-46932; Dec. 5, 1995, 1995-46934; Dec. 5, 1995, 1995-46935

Int. Cl.⁶ F02D 41/22; F02B 77/08; G06F 19/00

U.S. Cl. 123—339.15

10 Claims



1. A diesel engine controller comprising:
an engine revolution number sensor for detecting an engine revolution number of a car;
a throttle position sensor for detecting the position of a throttle valve, and detecting the flow of a mixer;

5,775,293

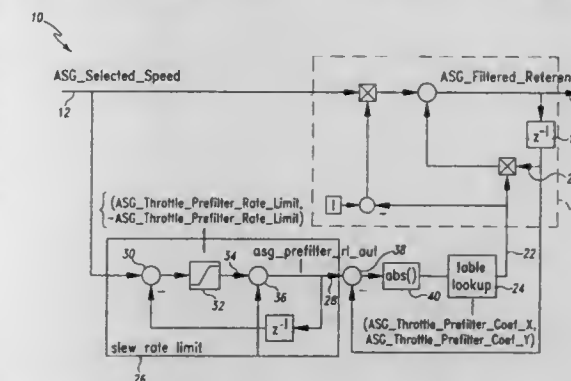
ELECTRONIC THROTTLE PEDAL NONLINEAR FILTER
John P. Kresse, Shelbyville, Ind., assignor to Cummins Engine Co., Inc., Columbus, Ind.

Filed Oct. 1, 1996, Ser. No. 722,750

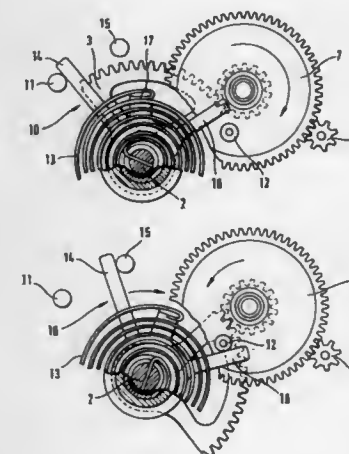
Int. Cl.⁶ F02D 11/10; G06F 17/10

U.S. Cl. 123—396

19 Claims



1. A method for nonlinearly filtering an electronic input signal in order to produce a filtered output signal, comprising the steps of:
a) receiving the input signal;
b) creating a slew rate limited signal that tracks the input signal, wherein the slew rate limited signal is limited in a rate at which its value can change;
c) subtracting a past value of the output signal from the slew rate limited signal in order to create a difference signal;
d) creating a table index signal by taking the absolute value of the difference signal;
e) applying the table index signal to a look-up table in order to generate filter coefficients; and
f) applying the input signal and the filter coefficients to a lag filter in order to generate the filtered output signal.
7. A method for nonlinearly filtering an electronic input signal in order to produce a filtered output signal, comprising the steps of:
a) receiving the input signal;
b) detecting any change in the input signal and a magnitude of the change; and
c) filtering the input signal in order to produce the output signal by applying the input signal to a digital first order lag filter, wherein said filtering exhibits a large time constant when the magnitude is small and a small time constant when the magnitude is large.



1. A load adjustment device for a setting member which determines the power of an internal combustion engine, the load adjustment device comprising:

a setting shaft which supports the setting member, the setting member being a throttle valve;
a reversible setting drive, said setting shaft being drivable pivotally by means of said reversible setting drive between a minimum-load position and a full-load position;
a minimum-load stop, an emergency-travel stop, and a pre-stressed return spring developed as torsion spring which urges the setting shaft in a direction toward minimum-load, said torsion spring serving also as an emergency-travel spring by which the setting shaft is movable in a direction toward full load up to an emergency-travel position determined by said emergency-travel stop;

wherein one end of said torsion spring is firmly attached to said setting shaft, and a second end of said torsion spring is firmly attached to a support part movable between said minimum-load stop and said emergency-travel stop;
said support part is urged by said torsion spring in the direction towards said emergency-travel stop, and is drivable by said setting drive which is movable against an initial tension of said torsion spring from said emergency-travel stop in the direction towards said minimum-load stop.

5,775,294

PRIME MOVER CONTROL RESPONSIVE TO ACCELERATOR OPERATION

Hiroyuki Kojima, Nishio, and Mutsumi Kawamoto, Nagoya, both of Japan, assignors to Aisin AW Co., Ltd., Japan

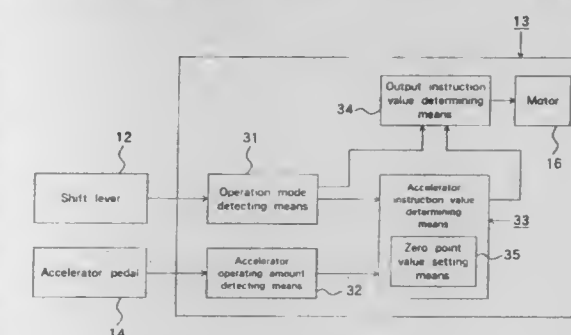
Filed Dec. 29, 1996, Ser. No. 777,180

Claims priority, application Japan, Dec. 28, 1995, 7-343281

Int. Cl.⁶ F02D 7/00

U.S. Cl. 123—399

4 Claims



1. A control system for controlling a vehicle prime mover responsive to operation of an accelerator, comprising:

an operation mode selecting means for selecting a travel mode or a non-travel mode as an operation mode;
 an accelerator operator;
 operation mode detecting means for detecting the operation mode selected by said operation mode selecting means;
 accelerator operating amount detecting means for detecting extent of accelerator operation by said accelerator operator as an accelerator operating amount;
 accelerator instruction value determining means for unconditionally setting an accelerator instruction value at 0 responsive to selection of a non-travel mode and for determining the accelerator instruction value based on a difference between the detected accelerator operating amount and a zero point value responsive to selection of a travel mode;
 output instruction value determining means for determining an output instruction value for output to a prime mover based on the operation mode selected by said operation mode selecting means and the accelerator instruction value determined by said accelerator instruction value determining means; and
 zero point value setting means, included within said accelerator instruction value determining means, for setting said zero point value in accordance with the detected accelerator operating amount responsive to a change of the operation mode from a non-travel mode to a travel mode.

5,775,295

PROCESS FOR CONTROLLING A DIRECT-INJECTION INTERNAL COMBUSTION ENGINE

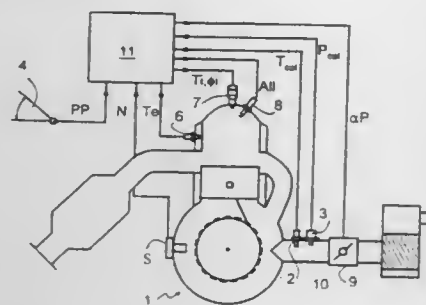
Alain Michel-Jean Aubourg, St. Jean, and Jean Cosault, Muret, both of France, assignors to Siemens Automotive S.A., Toulouse Cedex, France

PCT No. PCT/EP95/03544, § 371 Date Mar. 12, 1997, § 102(e) Date Mar. 12, 1997, PCT Pub. No. WO96/08645, PCT Pub. Date Mar. 21, 1996

PCT Filed Sep. 8, 1995, Ser. No. 809,659
 Int. Cl.⁶ F02D 43/00; 41/02

U.S. Cl. 123—399

6 Claims



1. A process for controlling a direct-injection internal combustion engine in a motor vehicle, which comprises:
 measuring a degree of depression of an accelerator pedal of the motor vehicle, measuring a speed of the internal combustion engine, and supplying parameters for optimal adjustment of the engine;
 during an initial adjustment of the engine, establishing a table which represents, for each combination of a degree of depression of the accelerator pedal and the speed of the engine, a prevailing pressure/temperature ratio of air in an intake manifold of the engine under stabilized operation;
 during normal operation of the engine, measuring a pressure and a temperature of the intake air, and calculating a measured pressure/temperature ratio therefrom;
 adjusting at least one of the parameters for optimal adjustment of the engine in dependence on the table established in the establishing step and on measurements in the measuring step during the normal operation of the engine.

5,775,296 ARRANGEMENT AND METHOD FOR CONFIGURATION OF DISTRIBUTED COMPUTER NETWORKS IMPLEMENTED IN MULTI CYLINDER COMBUSTION ENGINES

Anders J. Göras; Bo F. Nilson Almstedt, and Cunnar L. C. Björquist, all of Åmål, Sweden, assignors to Mecel AB, Sweden

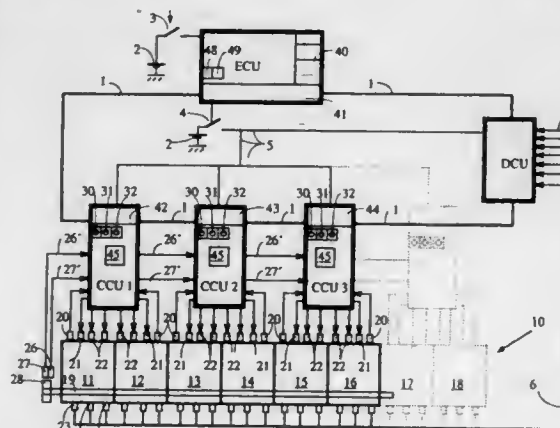
PCT No. PCT/SE95/01014, § 371 Date Aug. 8, 1996, § 102(e) Date Aug. 8, 1996, PCT Pub. No. WO96/07819, PCT Pub. Date Mar. 14, 1996

PCT Filed Sep. 8, 1995, Ser. No. 640,888

Claims priority, application Sweden, Sep. 11, 1994, 9403048
 Int. Cl.⁶ F02D 41/26; G06F 15/16

U.S. Cl. 123—417

9 Claims



1. A control system for a combustion engine having a plurality of cylinders, each of which has associated fuel supply means, which control system comprises:

- a distributed computer network having a main computer and a number of node computers, each respective node computer being arranged closely to a selected group of the cylinders of the combustion engine and controlling at least the fuel supply means of the cylinders of said group, the main computer and the node computers being connected to a common communication loop transmitting control data from the main computer to the node computers and information from the node computers to the main computer;
- a first switch means arranged at each node computer for setting a node number during installation of the node computer;
- a second switch means arranged at each node computer for setting the total number of cylinders of the combustion engine; and
- the main computer having a number of stored programs, each program used for generating basic control data in the form of at least one of fuel amount and ignition timing for a specific engine type, each node computer including a memory containing cylinder individual relation data for every cylinder of each specific engine type stored in the main computer.

5,775,297

ENGINE OPERATION CONTROL SYSTEM

Takashi Koike, and Kazumasa Itoh, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Nov. 8, 1996, Ser. No. 745,363

Claims priority, application Japan, Nov. 8, 1995, 7-289787
 Int. Cl.⁶ F02P 5/00

U.S. Cl. 123—422

9 Claims

1. An internal combustion engine having at least one variable volume combustion chamber, an ignition element for initiating combustion of a fuel/air mixture in said chamber, a member movably mounted with respect to said engine within said combustion chamber and connected to an output shaft so as to drive said

5,775,299

MULTIPLE CYLINDER ENGINE CONTROL

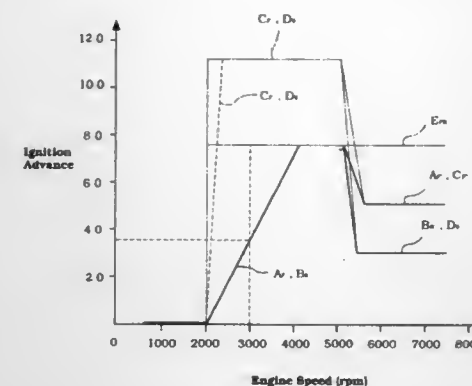
Takeshi Ito; Jun Taue, and Kosel Maebashi, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jan. 13, 1997, Ser. No. 782,617

Claims priority, application Japan, Jan. 12, 1996, 8-021732
 Int. Cl.⁶ F02D 41/04

U.S. Cl. 123—436

30 Claims



output shaft in rotational fashion as a result of combustion in said chamber, a flywheel positioned on said output shaft and driven thereby, said flywheel having such a low mass that at low output shaft revolution speeds the instantaneous rotational speed of said flywheel fluctuates widely during each revolution, means for providing ignition pulses in response to the rotation of said flywheel at time intervals dependent upon the rotational speed of said flywheel, whereby at low output shaft revolution speeds said ignition pulses are irregularly spaced, and further including ignition control means for controlling the ignition firing dependent upon average engine speed but offset from the timing of said ignition pulses as said engine speed varies up to a predetermined high flywheel rotational speed in a first control mode, and for controlling said ignition firing in a manner dependent upon the timing of said ignition pulses as dependent upon said flywheel rotational speed in a second control mode above said predetermined high flywheel rotational speed.

5,775,298

INTERNAL COMBUSTION ENGINE CONTROL

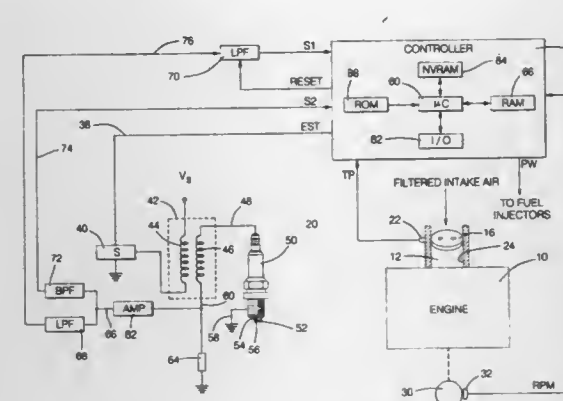
James Michael Haller, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 9, 1996, Ser. No. 762,626

Int. Cl.⁶ G01L 23/22

U.S. Cl. 123—425

12 Claims



1. An engine control method for controlling combustion of an air/fuel mixture in a cylinder of a two stroke cycle internal combustion engine in response to a diagnosed misfire condition to improve cylinder combustion quality, comprising the steps of:
 diagnosing a misfire condition in the engine cylinder;
 referencing a stored skip value representing an engine operating period over which combustion events in the cylinder are to be postponed following diagnosis of the misfire condition; and
 postponing combustion events in the engine cylinder over the engine operating period in response to the diagnosed misfire condition.

5,775,300

ELECTRONICALLY CONTROLLED TYPE FLOATLESS CARBURETOR

Toshio Sugii, Odawara, Japan, assignor to Mikuni Corporation, Japan

Division of Ser. No. 468,702, Jun. 6, 1995, Pat. No. 5,632,248.
 This application Dec. 10, 1996, Ser. No. 761,963

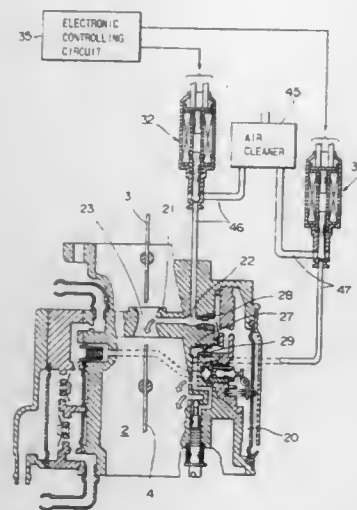
Int. Cl.⁶ F02M 7/24

U.S. Cl. 123—438

3 Claims

1. An electronically controlled type floatless carburetor wherein fuel is delivered to a fuel regulating chamber by actuation of pumping means, the fuel from said fuel regulating chamber is ejected in a suction passage from a main nozzle via a main fuel passage including a main jet, and moreover, the fuel from said fuel regulating chamber is ejected in said suction passage from a slow system ejection port via a pilot fuel passage including a pilot jet, comprising:

- a main air passage of which one end is communicated with atmosphere and of which other end is communicated with said main fuel passage at a position located downstream of said main jet;
- a main solenoid valve disposed at the intermediate position of said main air passage to adjust a quantity of air passing through said main air passage by duty driving;
- an electronic controlling circuit for controlling actuation of said main solenoid valve in response to inputting of one or more parameters; and
- a check valve disposed upstream of the main jet in the main fuel passage to prevent the backflow of air from the suction

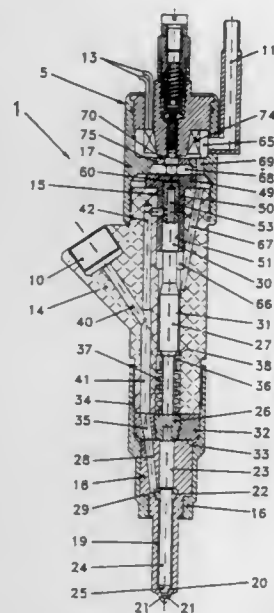


passage through the main fuel passage to the fuel regulating chamber and the pilot fuel passage; wherein the quantity of fluid ejected in said suction passage from said main nozzle includes a quantity of air adjusted by duty driving while passing through said main air passage as said main solenoid valve is actuated and a quantity of fuel passing through said main jet, and wherein said main solenoid valve is normally actuated in conformity with a fixed period, and when an engine is driven at a specific engine speed, said fixed period is slightly elongated or shortened.

5,775,301
FUEL INJECTION VALVE FOR INTERNAL COMBUSTION ENGINES
Marco A. Ganser, Zürich, Switzerland, assignor to Ganser-Hydromag AG, Zurich, Switzerland
Continuation of Ser. No. 657,252, Jun. 3, 1996, Pat. No. 5,694,903. This application Jun. 10, 1997, Ser. No. 872,077
Claims priority, application Switzerland, Jun. 2, 1995, 01628/95

Int. Cl.⁶ F02M 41/00; F16K 32/02
U.S. Cl. 123—467

9 Claims



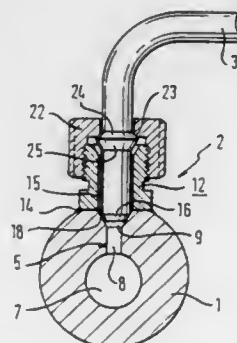
1. A fuel injection valve for intermittent injection of fuel into the combustion chamber of an internal combustion engine, comprising:
a housing;

a valve-seat provided with at least one injection port;
an injection-valve member mounted in said housing so as to be longitudinally displaceable for the closing or opening of said at least one injection port;
a hydraulic control device for controlling the movement of said injection-valve member, said control device comprising a control port;
an electrically actuatable solenoid valve having a pilot-valve stem movable between a closing-off position and an opening position, said pilot-valve stem in its closing-off position closes off said control port;
said solenoid valve further comprising a solenoid body having an outer part and an inner part, a solenoid coil arranged in a space provided in said solenoid body and defined by said outer part and said inner part and an armature connected to said pilot valve stem; and
securing means for securing said solenoid valve to said housing, said securing means comprising said outer part of said solenoid body, said outer part being attached to said housing and constituting at least partially part of the magnetic circuit of said solenoid valve.

5,775,302
FUEL DISTRIBUTOR PIPE
Jürgen Guido, and Norbert Binzer, both of Neutraubling, Germany, assignors to Jurgén Guido, Neutraubling, Germany
Filed Feb. 19, 1997, Ser. No. 808,961
Claims priority, application Germany, Feb. 28, 1996, 196 07 521.1

Int. Cl.⁶ F02M 37/04
U.S. Cl. 123—468

7 Claims



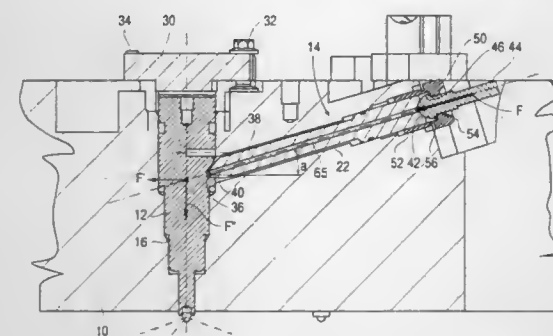
1. A substantially cylindrical fuel distributor pipe which can be subjected to a loading with a high internal pressure and which can be used in internal combustion engines with a common rail system as a high-pressure storage means and which includes at least one connecting arrangement for providing a releasable connection of a branch pipe to the distributor pipe, the arrangement comprising the following components:

a connecting bore (5) having an axis and extending substantially radially through the wall of the distributor pipe (1), and having an inner substantially cylindrical portion (8) and an outer, hollow-conical enlarging portion (9) forming a conical wall adjoining the cylindrical portion and opening to an outer surface of the distributor pipe;
a screwthreaded socket (12) which is connected to the distributor pipe (1), which has an internal bore (15) passing therethrough in a continuation of the connecting bore (5), and which is adapted to receive a connecting end of the branch pipe which is to be connected to the distributor pipe, and
a screwthreaded pressing element (22) having a pressure surface (23) which, upon screwing of the pressing element (22) with the screwthreaded socket (12), is moved towards the distributor pipe (1) and in so doing applies a force to a counterpressure surface (24) provided on a thickened portion (25) of the branch pipe, by which force a counter-sealing surface (18) provided at the connecting end of the branch pipe is pressed

in a pressure-tight manner against said conical wall, functioning as a sealing surface, of the outer portion (9) of the connecting bore (5),
wherein said screwthreaded socket (12) is non-integral with the distributor pipe (1), and is fixed at one end thereof directly to the outer surface (7) of the distributor pipe, only, in the immediate vicinity of a connecting region surrounding said conical wall of said outer portion (9) of said connecting bore (5), and without encircling the distributor pipe (3).

5,775,303
HIGH PRESSURE FUEL LINE CONNECTION
Roger D. Sweetland, Columbus, Ind., and Ralph E. Nelson, Greenville, N.C., assignors to Cummins Engine Company, Inc., Columbus, Ind.
Filed Jun. 30, 1995, Ser. No. 497,318
Int. Cl.⁶ F02M 55/02
U.S. Cl. 123—470

20 Claims



1. A fuel line connection assembly for a fuel injector positioned in a cylinder head of an internal combustion engine, the assembly comprising:

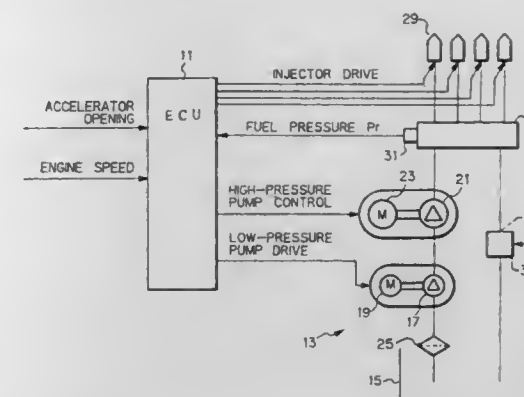
a fuel line for directing fuel to the fuel injector;
an intermediate elongated fuel line adapter releasably received in a bore formed in the cylinder head, said adapter having a length less than a length of the bore formed in the cylinder head and having a first end contacting the fuel injector in a fuel receiving region of the fuel injector; and
a biasing means for biasing an end of said fuel line against a second end of said elongated member and the first end of said elongated member against the fuel injector.

5,775,304
HIGH-PRESSURE FUEL INJECTION SYSTEM
Hiromi Kono; Toshiyuki Yoshino, and Hiroshi Kanai, all of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan
Filed Feb. 5, 1996, Ser. No. 596,465
Claims priority, application Japan, Feb. 6, 1995, 7-039430

Int. Cl.⁶ F02M 37/04
U.S. Cl. 123—497

17 Claims

1. A high-pressure fuel injection system, comprising:
a fuel injection unit including an injector;
a fuel pump for supplying a high-pressure fuel to said fuel injection unit;
a motor for driving said fuel pump;
a PID controller for controlling operation of said motor;
means for measuring actual fuel pressure in said fuel injection unit;
means for calculating deviation of said actual fuel pressure from a predetermined desired fuel pressure and for inputting said deviation to said PID controller as an actuating signal;
means for calculating a desired fuel injection quantity per injection from input signals indicating engine speed and accelerator opening;

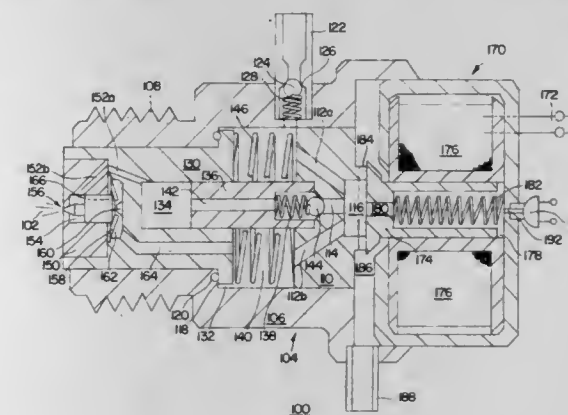


means for calculating an injection quantity per unit time on the basis of said desired injection quantity; and
means for correcting gain factors of said PID controller on the basis of said calculated per-unit time injection quantity.

5,775,305
FUEL PUMP INJECTOR FOR COMPRESSION IGNITION ENGINES
Stephen R. Bolger, 127 W. 79th St., Apartment 11 J, New York, N.Y. 10024
Filed May 6, 1997, Ser. No. 851,664
Int. Cl.⁶ F02M 37/04; F04B 17/00

U.S. Cl. 123—497

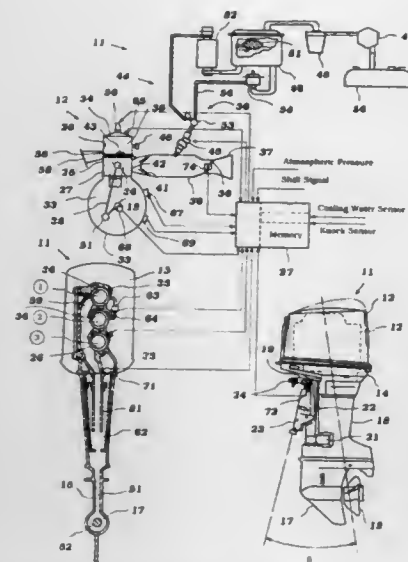
14 Claims



1. A fuel pump injector for a reciprocating engine having a piston and a combustion chamber comprising:

a housing having a driving piston slidably received therein, the driving piston in communication with the combustion chamber, a driving cylinder in pressure-exchange relationship with the piston, the driving piston statically pressurizing fuel in the driving cylinder during the engine's compression stroke, and a driven cylinder in pressure communication with the driving piston;
means for depressurizing the driving cylinder to transfer the pressure from the driving piston to the driven cylinder;
means for discharging atomized fuel from the driven cylinder into the combustion chamber;
means for introducing the fuel into the housing; and
means for controlling the pressurizing and depressurizing of the fuel in the driving cylinder based on the duty cycle of the engine.

1. A control method for an internal combustion engine having a combustion chamber, a fuel air charging system for delivering fuel and air to said combustion chamber, and an exhaust system for discharging a burnt charge from said combustion chamber, said method comprising the steps of setting a desired air fuel ratio, sensing engine running characteristics, sensing the air fuel ratio of the combustion products within said combustion chamber, providing a feedback control for altering the fuel air ratio to maintain the set air fuel ratio in a desired range, and setting a variable limit of



5,775,312

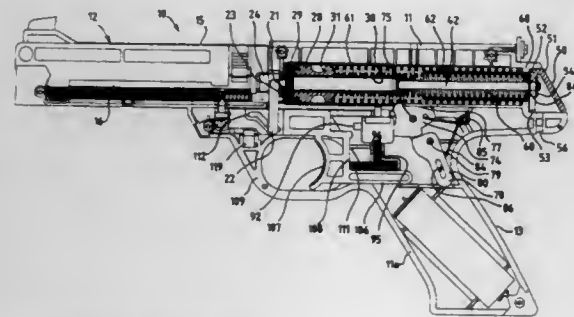
SPRING AIR GUN WITH INTERLOCKING MECHANISM
Todd D. Wilkinson, West Henrietta; Kenton H. Barker, Penfield, both of N.Y., and James Grassi, Princeton, N.J., assignors to Crosman Corporation, East Bloomfield, N.Y.

Filed Feb. 10, 1997, Ser. No. 798,043

Int. Cl. F41B 11/14

U.S. Cl. 124-67

23 Claims



1. A spring air gun comprising:
 - a frame having front and rear portions,
 - a barrel mounted on the front portion of the frame,
 - a compression cylinder mounted on the frame and communicating with the barrel,
 - a piston slidably mounted in the compression cylinder for movement between a cocked position and a fired position,
 - a sear mounted on the frame for movement between a cocked position in which the sear maintains the piston in the cocked position and a fired position in which the sear allows the piston to move to the fired position,
 - a trigger movably mounted on the frame for movement between an unfired position and a fired position,
 - a first spring engaging the piston for urging the piston toward the fired position,
 - a slide slidably mounted on the frame for movement between forward and rearward positions,
 - means connecting the slide and the piston for moving the piston from the fired position to the cocked position when the slide moves from the forward position to the rearward position,
 - a second spring engaging the piston for urging the slide toward the rearward position,

a detent movably mounted on the frame between first and second positions, the detent being engageable with the slide when the detent is in the first position and the slide is in the forward position to prevent the slide from moving rearwardly, the detent being maintained in the second position by the slide when the slide is in the rearward position, the detent preventing the trigger from moving to the fired position when the detent is in the second position.

5,775,313

METHOD AND APPARATUS FOR PROTECTING ARROWS IN A QUIVER

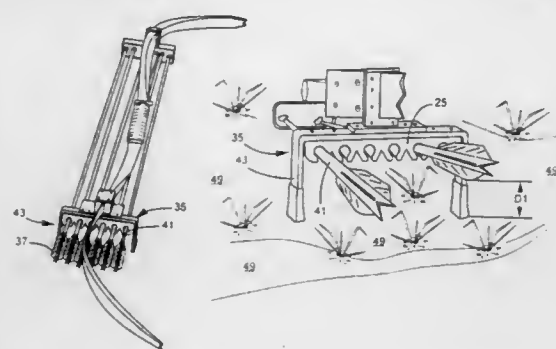
Douglas T. Bresette, 45 Rialto Dr., Watsonville, Calif. 95076, and John Mello, III, 464 Seeley Ave., Aromas, Calif. 95004

Filed Oct. 18, 1996, Ser. No. 733,802

Int. Cl. F41B 5/06

U.S. Cl. 124-86

25 Claims



1. A quiver apparatus for mounting on a bow, comprising:
 - a mounting interface adapted for attaching the apparatus to the bow; one or more retainers adapted for holding arrows; and
 - a support extending away from the one or more retainers and mounting interface;
 wherein with the support resting on a surface, an arrow held in the one or more retainers is held above the surface with no portion of the arrow, including fletching, touching the surface, wherein the one or more retainers include a retainer strip having notches for engaging arrow shafts, and wherein the mounting interface, the retainer strip, and the support are formed as a single contiguous element.
5. A quiver apparatus for mounting on a bow, comprising:
 - a mounting interface adapted for attaching the apparatus to the bow,
 - one or more retainers adapted for holding arrows; and
 - a support comprising two legs extending away from the one or more retainers and mounting interface;
 wherein with the support resting on a surface, an arrow held in the one or more retainers is held above the surface with no portion of the arrow, including fletching, touching the surface, and further comprising bumpers at the ends of the legs, the bumpers adapted for providing a replaceable contact component for contacting the surface.
8. A standoff bracket for mounting to a portion of a quiver, comprising:
 - a mounting portion comprising a substantially straight central bridge element having a length and adapted to attach to the portion of the quiver; and
 - a support comprising two or more leg extensions substantially parallel and extending in a direction substantially at a right angle to the length of the central bridge element, and extending away from mounting portion;
 wherein, with the support resting on a surface an arrow held in a quiver to which the support is attached is held away from the surface.
20. A method for protecting arrows and arrow fletchings in a quiver mounted to a bow, comprising steps of:
 - (a) fashioning a support adapted to mount to a quiver; and

(b) mounting the support to the quiver in a manner such that, with the bow placed on a surface on the side of the quiver, the support holds arrows away from the surface.

21. A standoff bracket for mounting to an archery bow having a bowstall, comprising:

- a mounting interface comprising a substantially straight central bridge element having a length and adapted for attaching the apparatus to the bowstall; and
 - a support comprising two or more leg extensions substantially parallel and extending in a direction substantially at a right angle to the length of the central bridge element, and extending away from mounting interface;
- wherein, with the support resting on a surface, the bow is held substantially above the surface.

5,775,314

EASY ACCESS PROTECTIVE ARROW QUIVER

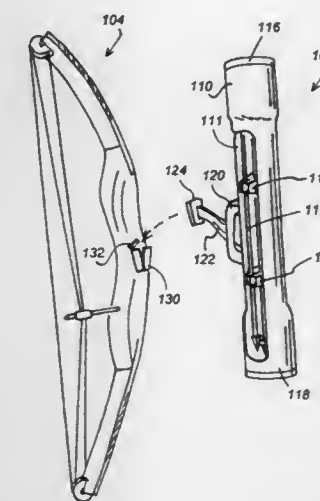
Donald E. Michael, and Gerald E. Michael, both of 2253 Meadowbrook, Walled Lake, Mich. 48390

Filed Feb. 25, 1997, Ser. No. 806,283

Int. Cl. F41B 5/06

U.S. Cl. 124-86

5 Claims



1. An arrow quiver mountable to a bow having a drawstring, comprising:
 - a hollow, elongated, generally cylindrical enclosure having an outer surface and two, spaced-apart ends defining a length somewhat longer than an arrow of the type used in archery, the enclosure including an elongated, longitudinally oriented aperture through which arrows may be inserted into, and removed from, the enclosure;
 - a rotatable rod disposed centrally within the enclosure, including a pair of spaced-apart arrow-retainment disks attached to the rod such that the rod extends centrally therethrough each, the diameter of each disk being dimensioned to permit rotation of the rod and attached disks within the enclosure,
 - each disk featuring a shaped perimeter defining a plurality of circumferentially spaced apart arrow-shaft retainment clips, the disks being rotationally positioned respectively about the rod so that the clips on each disk are longitudinally aligned;
 - a coupling unit having a first portion making physical connection to the enclosure and a second portion which attaches to the bow, the coupling unit permitting the enclosure to be removably mounted to the bow such that the longitudinal dimension of the enclosure and the aperture are generally parallel to the drawstring of the bow; and
 - a handle supported on the outer surface of the enclosure, and wherein: the first portion of the coupling unit makes physical connection to the enclosure by way of the handle.

5,775,315

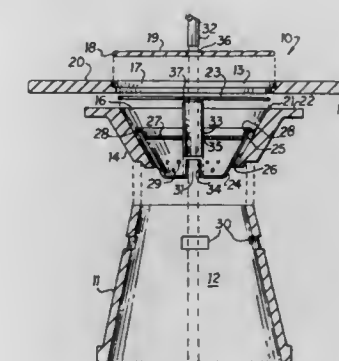
BARBEQUE AND PATIO TABLE COMBINATION
Micheal H. Baykal, P.O. Box 5005, Rancho Santa Fe, Calif. 92067

Filed Oct. 23, 1996, Ser. No. 735,936

Int. Cl. F24C 1/16

U.S. Cl. 126-25 R

11 Claims



1. A combination patio table and grill which comprises:
 - a masonry pit-liner having a peripheral wall, an upper rim opening and a lower rim opening;
 - a table top slab resting above said pit-liner, said slab having a central void shaped and dimensioned to substantially match said upper rim opening;
 - a ash-collecting bucket held in a lower section of said pit-liner;
 - a perforated coal plate held positioned in an upper part of said bucket; and
 - a cooking griddle held in a parallel and spaced-apart position above said coal plate.

5,775,316

COOKING RANGE WITH INTERCHANGEABLE GRATE AND WOK RING

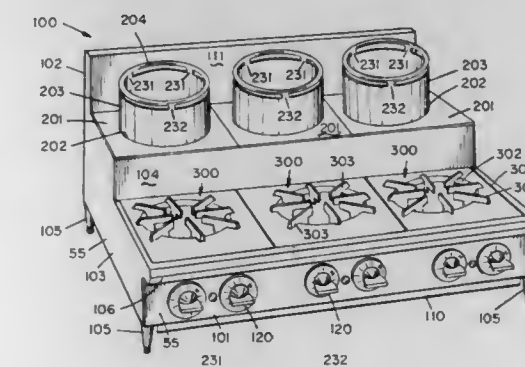
Richard R. Jones, St. Louis, Mo., assignor to Rawkin-Delux, Inc., Santa Fe Springs, Calif.

Filed Apr. 15, 1996, Ser. No. 632,619

Int. Cl. A47J 37/00; F24C 3/00

U.S. Cl. 126-41 R

18 Claims



1. A cooking range comprising,
 - a support frame,
 - a support plate adapted to be mounted on said support frame, said support plate including at least one of a grate means and a wok ring means integrally formed therewith, and
 - interlocking support means mounted on said support plate, said interlocking support means adapted to selectively engage with said support frame in order to permit said support plate to be mounted on said support frame in a selected orientation.

5,775,317

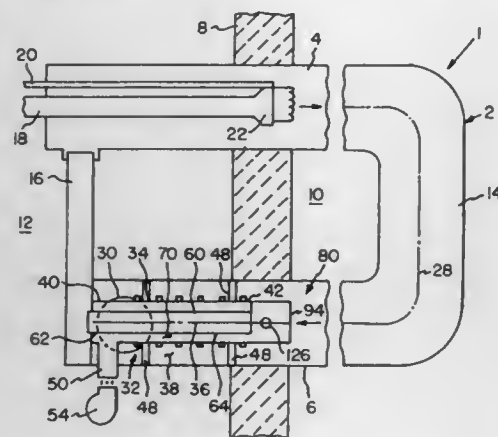
RECUPERATIVE RADIANT TUBE WITH HOT SIDE VITIATION

Harry P. Finke, Pittsburgh, Pa., assignor to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Filed Aug. 30, 1996, Ser. No. 705,776
Int. Cl.⁶ F23D 21/00

U.S. Cl. 126—91 A

21 Claims



1. A recuperator for a radiant tube burner assembly having a radiant tube with a burner leg and an exhaust leg, a burner positioned in the burner leg, an exhaust port for discharging products of combustion from the exhaust leg, a fuel inlet for the burner and an air duct for conveying air mixed with products of combustion to the burner, said recuperator comprising:

a first outer air tube located within and radially spaced from said exhaust leg forming a first annular passage for conveying products of combustion in a first direction, said air tube having an outer end connected to a source of air and an inner end;

a second inner mixing tube located within and radially spaced from said first outer air tube forming a second annular passage for conveying air in a second direction opposite said first direction and having an outer end and an inner end, the said outer end of said inner mixing tube in fluid communication with said air duct and said inner end in fluid communication with said air tube;

restriction means located at said inner end of said mixing tube for restricting the flow of air passing from said air tube into said mixing tube; and

conduit means disposed adjacent to said restriction means for providing fluid communication between said first annular passage in said exhaust leg and said mixing tube;

whereby said restriction means causes an increase in velocity of air flowing therethrough from said air tube to said mixing tube and the increase in velocity causes a pressure differential between said mixing tube and said exhaust leg to draw products of combustion from said first annular passage into said mixing tube through said conduit means.

5,775,318

FORCED AIR CONDENSING FURNACE AND HEAT EXCHANGER MANIFOLD THEREFOR

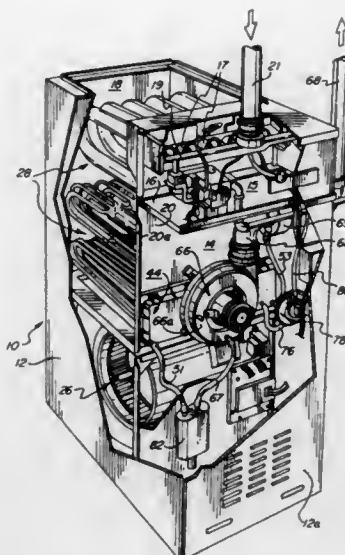
Paul M. Haydock, Zionsville, and Gerald K. Gable, Carmel, both of Ind., assignors to Consolidated Industries Corp., Lafayette, Ind.

Filed Oct. 30, 1995, Ser. No. 558,593
Int. Cl.⁶ F24H 3/02

U.S. Cl. 126—110 R

25 Claims

1. In a forced air furnace comprising (a) a burner assembly, (b) a housing defining a heat exchange chamber, (c) a condensing heat exchanger disposed within the heat exchange chamber and having (i) an exchanger inlet positioned to receive hot combustion product gases from the burner assembly and (ii) a condensing section of the



heat exchanger, the condensing section comprising one or more tubes terminating in one or more condensing tube outlets positioned to cause condensate to drain therefrom, (d) primary blower means to force air over the heat exchanger to be heated thereby, and (e) flue gas vent means connected in gas flow communication with the condensing tube outlets, the improvement comprising that:

the condensing tube outlets are connected in flow communication with a heat exchanger manifold having (1) condensate-receiving surfaces made of a corrosion-resistant material, (2) a flue gas outlet, (3) a condensate outlet, (4) one or more manifold inlet openings within which the condensing tube outlets are received, and (5) resilient sealant means carried in the manifold inlet openings and being disposed about and sealing the condensing tube outlets in gas-tight relation to the heat exchanger manifold.

5,775,319

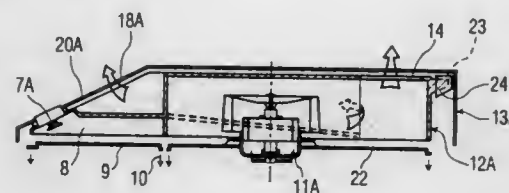
COOKER HOOD COMPRISING A SUCTION AND/OR FILTRATION UNIT

Pierluigi Pettinari, Cerreto d'Esti, Italy, assignor to Turboair S.p.a., Fabriano, Italy

Filed Jan. 11, 1996, Ser. No. 584,010
Int. Cl.⁶ F24C 15/20

U.S. Cl. 126—299 R

12 Claims



1. A hood comprising a housing and a suction and/or filtration unit, said suction and/or filtration unit being detachably mounted within said housing and including one or more electrical components.

said housing comprising first alignment means and a first electrical connector fixedly mounted relative to said first alignment means, and means for connecting said first electrical connector to a source of electrical power,

said suction and/or filtration unit comprising second alignment means and a second electrical connector fixedly mounted relative to said second alignment means, said one or more electrical components being electrically connected to said second electrical connector

said first alignment means and said second alignment means cooperating for correctly positioning said suction and/or filtration unit with respect to said housing and for positioning said first electrical connector into engagement with said second electrical connector so that said first electrical connector and second electrical connector are mutually connected by mounting said suction and/or filtration unit in said housing and disconnected by dismounting said suction and/or filtration unit from said housing whereby said electrical components are electrically connected to said power source only when said suction and/or filtration unit is mounted within said housing.

5,775,320

METHOD AND DEVICE FOR DELIVERING AEROSOLIZED MEDICAMENTS

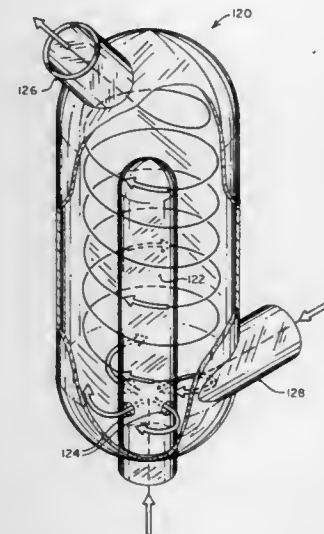
John S. Patton, San Carlos, and Robert M. Platz, Half Moon Bay, both of Calif., assignors to Inhale Therapeutic Systems, Palo Alto, Calif.

Continuation of Ser. No. 313,707, Sep. 27, 1994, abandoned, which is a continuation of Ser. No. 910,048, Jul. 8, 1992, Pat. No. 5,458,135, which is a continuation-in-part of Ser. No. 724,915, Jul. 2, 1991, abandoned. This application Dec. 22, 1995, Ser. No. 576,885

Int. Cl.⁶ A61M 11/00

U.S. Cl. 128—200.14

21 Claims



1. An apparatus for producing aerosolized doses of a medicament, said apparatus comprising:

means for aerosolizing a preselected amount of the medicament in a predetermined volume of gas from about 10 ml to 750 ml; a chamber having an inlet at one end, a mouthpiece at an opposite end, and a volume in the range from 100 ml to 750 ml; and

means for transferring substantially the entire volume of aerosolized medicament from the aerosolizing means to the chamber;

wherein the volume and geometry of the chamber are selected so that air initially present in said chamber is displaced without substantial loss of medicament through the mouthpiece or within the chamber.

5,775,321

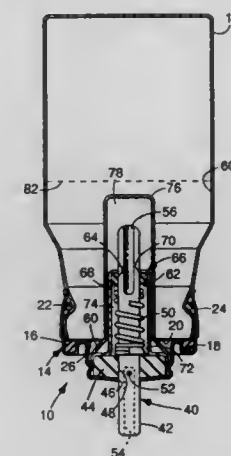
SEAL CONFIGURATION FOR AEROSOL CANISTER
Todd D. Alband, Eagan, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 57,239, Apr. 30, 1993, abandoned. This application Dec. 22, 1994, Ser. No. 361,719

Int. Cl.⁶ B65D 83/00

U.S. Cl. 128—200.23

29 Claims



1. An aerosol canister for containing a medicinal aerosol formulation, comprising:

a vial body, a first seal, a second seal, and a valve ferrule, wherein

the vial body has walls defining a vial opening, the valve ferrule occludes the vial opening, and the vial body, the first seal, and the valve ferrule define a chamber, and the valve ferrule and vial body are in opposing sealing engagement with each of the first and second seals, and wherein the first seal provides a barrier to one or more medicinal aerosol formulation components to which the second seal is more labile to said one or more formulation components than the first seal and wherein the ferrule comprises a cylindrical skirt that extends along the exterior or interior of the vial body or along a complementary radial skirt.

5,775,322

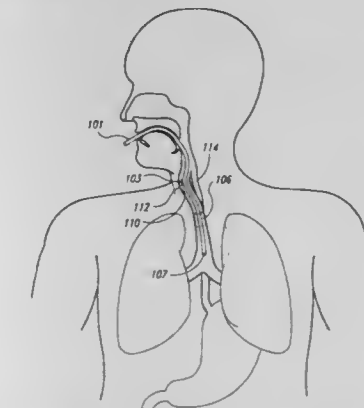
TRACHEAL TUBE AND METHODS RELATED THERETO
Fred E. Silverstein, Seattle; Robert N. Golden, Kirkland, and Christopher P. Somogyi, Woodinville, all of Wash., assignors to Lucent Medical Systems, Inc., Bellevue, Wash.

Filed Jun. 27, 1996, Ser. No. 669,763

Int. Cl.⁶ A61M 16/00

U.S. Cl. 128—207.14

16 Claims



1. A tracheal tube for insertion into the trachea of a patient, comprising a tube portion having a distal end and a permanent magnet associated with the tube portion, wherein the permanent

magnet is associated with the tube portion at a distance from the distal end such that, when the tube portion is inserted into the trachea of the patient and the permanent magnet is positioned immediately posterior to the patient's cricothyroid ligament, the distal end is positioned within the trachea at a proper depth.

5,775,323

REGULATOR CONVERSION SYSTEM

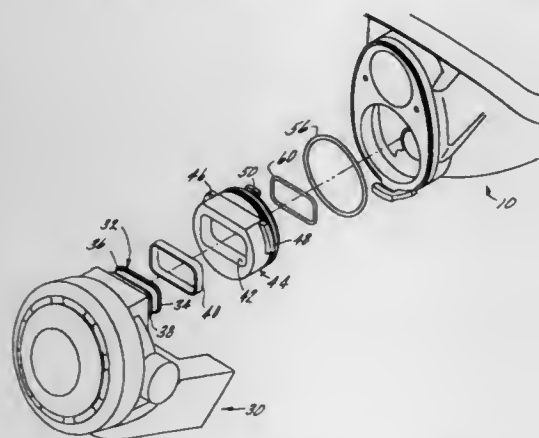
Gilbert L. Knott, Colchester, Conn., assignor to Tech-One, Inc., Colchester, Conn.

Filed Jan. 3, 1997, Ser. No. 778,887

Int. Cl.⁶ A62B 9/04

U.S. Cl. 128—202.27

14 Claims



1. A system for adapting a conventional scuba regulator having a substantially rectangular projection to a conventional full face scuba mask and manifold having a substantially rectangular opening comprising:

- a) a conversion stock having outer features adapted to water tightly engage said manifold and having an axial substantially rectangular aperture therethrough, said aperture being dimensioned to water tightly, operably receive a conventional regulator.

5,775,324

Patent Not Issued For This Number

5,775,325

TWO PART CLOSED TRACHEAL SUCTION SYSTEM

Ronald D. Russo, 8 Candleberry Rd., Barrington, R.I. 02806

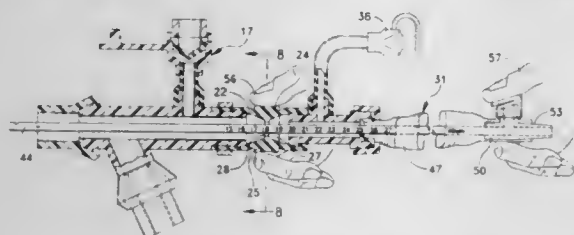
Continuation of Ser. No. 438,850, May 11, 1995, Pat. No.

5,676,136. This application Aug. 1, 1996, Ser. No. 691,091

Int. Cl.⁶ A61M 16/00

U.S. Cl. 128—205.12

25 Claims



1. A connector for use in a ventilator system including a conduit adapted for connection between a patient's trachea via an endotracheal tube and a respirator, said connector having a body defining

a first opening for connection to the endotracheal tube and a second opening for connection to the respirator; the improvement comprising said body defining a third opening generally oriented opposite said first opening and wherein said third opening is normally biased closed by an entrance seal valve positioned in said body, said valve including a structural portion located on the outside of said body and operable by depressing directly manually from the outside of said body during operation of the ventilator system so as to move and maintain said valve to and in an open position by the continual and direct application of external force to said valve structural portion, said valve automatically adapted to return to its normally closed position when said force application is removed, said valve permitting entrance and removal of a suction tube into and through said third opening when said valve is opened.

5,775,326

Patent Not Issued For This Number

5,775,327

GUIDING CATHETER FOR THE CORONARY SINUS

Yvonne Randolph, Morgan Hill, and Duane Dickens, San Clemente, both of Calif., assignors to Cardima, Inc., Fremont, Calif.

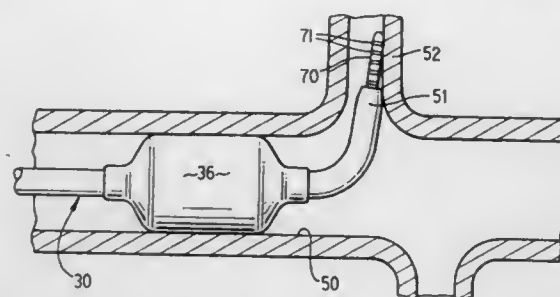
Continuation of Ser. No. 484,715, Jun. 7, 1995, abandoned.

This application May 19, 1997, Ser. No. 858,297

Int. Cl.⁶ A61B 5/04; A61M 29/00

U.S. Cl. 128—642

16 Claims



1. A guiding catheter for directing an intravascular device within a patient's coronary sinus comprising:

- a) an elongated shaft having a proximal and distal ends, a port in the distal end and guidewire receiving lumen extending to and in fluid communication with the port in the distal end;
b) a relatively stiff proximal shaft section of the elongated shaft;
c) a relatively flexible distal shaft section of the elongated shaft having a length of about 2 to about 7 centimeters and being shaped with a bend to facilitate entry into the patient's coronary sinus;
d) an expandable occluding member mounted on the flexible distal section; and
e) an adapter on the proximal end of the elongated shaft to provide access to the guidewire receiving lumen extending within the elongated shaft.

5,775,328

DEVICE FOR USE IN TEMPORARY INSERTION OF A SENSOR WITHIN A PATIENT'S BODY

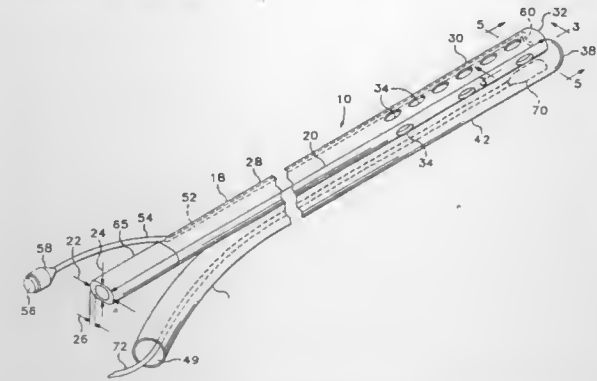
Robert I. Lowe, 450 SW. 88th Ave., and Anthony P. Furnary, 7266 SW. Eton Ct., both of Portland, Oreg. 97225

Filed Jun. 26, 1996, Ser. No. 672,484

Int. Cl.⁶ A61B 8/00

U.S. Cl. 128—662.06

20 Claims



1. A device for use in a medical procedure for placing a sensor probe temporarily in a desired location within a patient's body, comprising:

- (a) an elongate support member having a distal end portion and a proximal portion; and
(b) a thin-walled probe-receiving tube of flexible material integral with and extending closely alongside said distal end portion of said support member, said tube having a closed distal end defining an interior space within said tube.

5,775,329

METHOD AND COMPOUNDS FOR DIAGNOSING CORONARY ARTERY DISEASE

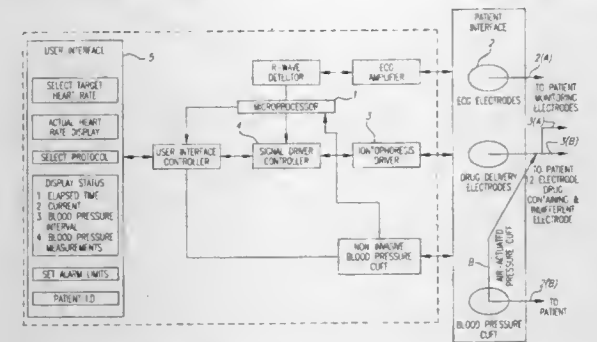
Ernest K. Metzner, and Mark D. Erion, both of Del Mar, Calif., assignors to Gensia, Inc., San Diego, Calif.

Filed Jun. 7, 1995, Ser. No. 482,435

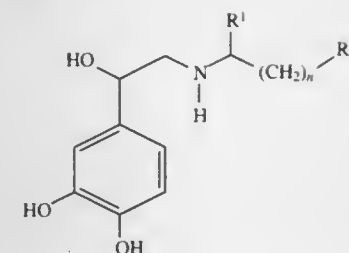
Int. Cl.⁶ A61B 5/02; 19/00; C07C 255/08; A61K 31/72

U.S. Cl. 128—695 R

20 Claims



1. A compound of the formula:



wherein:

R¹ is —H or lower alkyl of 1 to 3 carbon atoms;

R² is —N₃, —CN, —OR³, or —S(O)₂pR³;
R³ is lower alkyl of 1 to 3 carbon atoms;
p is zero, 1 or 2;
n is an integer from 1 to 5;
and pharmaceutically acceptable salts thereof.

5,775,330

NEUROMETRIC ASSESSMENT OF INTRAOPERATIVE ANESTHETIC

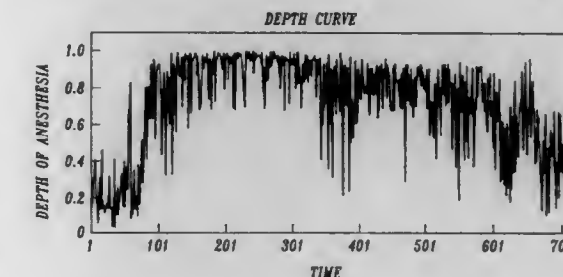
Lars J. Kangas, West Richland, and Paul E. Keller, Richland., both of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Jul. 22, 1996, Ser. No. 681,196

Int. Cl.⁶ A61B 5/04

U.S. Cl. 128—731

20 Claims



1. A method of monitoring an anesthetic depth of a person, comprising the steps of:

- (a) placing a plurality of EEG electrodes on the person's head;
(b) obtaining an EEG signal continuously from each of said EEG electrodes;
(c) windowing said continuous EEG signal into consecutive samples;
(d) transforming from a time domain to a frequency domain each of said consecutive samples of the EEG signal; and
(e) inputting said transformed consecutive samples into an artificial neural network having a plurality of input nodes and one output node, and correlating said transformed consecutive samples with said anesthetic depth as a scaled numeric value.

5,775,331

APPARATUS AND METHOD FOR LOCATING A NERVE

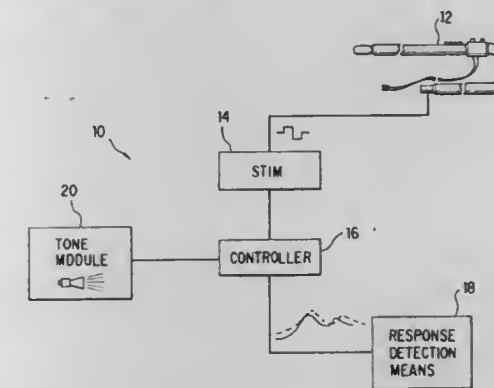
Stephen A. Raymond, Charlestown, and David E. Coats, Newton, both of Mass., assignors to UroMed Corporation, Needham, and Brigham and Women's Hospital, Boston, both of Mass.

Filed Jun. 7, 1995, Ser. No. 484,390

Int. Cl.⁶ A61B 5/05

U.S. Cl. 128—741

99 Claims



1. An apparatus for stimulating and locating a nerve, comprising:

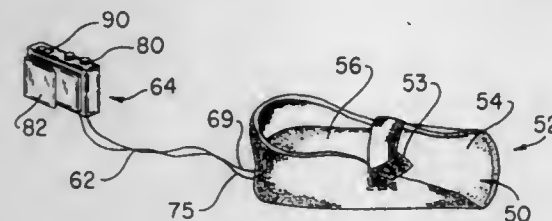
means for applying a stimulus to a plurality of sites within an area of tissue likely to contain the nerve to be located; means for detecting a response to said stimulus; means for automatically modifying the site of stimulation, said means for automatically modifying the site of stimulation including means for interpreting the response provided by said response detecting means; and means for indicating the location of the nerve to the user; wherein said modifying means automatically modifies the site of a stimulus applied to the area of tissue likely to contain the nerve based on an interpretation of the detected response by said interpreting means to further stimulate the nerve to determine its location.

5,775,332
CAPACITIVE BIOFEEDBACK SENSOR WITH RESILIENT POLYURETHANE DIELECTRIC FOR REHABILITATION

Robert J. Goldman, 3607 Baring St., Philadelphia, Pa. 19104
Division of Ser. No. 908,121, Jul. 1, 1992, Pat. No. 5,449,002.
This application Jun. 6, 1995, Ser. No. 467,744
Int. Cl.⁶ A61B 5/03

U.S. Cl. 128—774

2 Claims



- I. A pressure pad feedback device comprising:
- upper and lower dielectric means, said dielectric having almost zero hysteresis and creep and having a very high resilience, sensitivity and dynamic response;
 - an upper conductor, a middle conductor, and a lower conductor, wherein said upper conductor is separated from said middle conductor by said upper dielectric means, wherein said middle conductor is separated from said lower conductor by said lower dielectric means, and wherein said upper, middle, and lower conductors comprise carbon impregnated silicone rubber;
 - electronic means connected to said upper, middle and lower conductors, wherein upon compression of said upper and lower dielectric means, said electronic means detects and measures the capacitance between said upper, middle and lower conductors and compares said capacitance with a preset value set within said electronic means; and
 - feedback means for imparting information to a user according to the relation between said capacitance and said preset value.

5,775,333
APPARATUS FOR AUTOMATED BIOPSY AND COLLECTION OF SOFT TISSUE

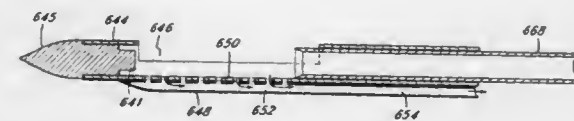
Fred H. Burbank, San Juan Capistrano; Thomas J. Fogarty, Portola Valley; Wayne E. Manska, Anaheim; Mark A. Ritchart, Murrieta; Timothy J. Ryan, Los Gatos, all of Calif., and Elias A. Zerhouni, Baltimore, Md., assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Division of Ser. No. 217,246, Mar. 24, 1994, Pat. No. 5,526,822. This application May 13, 1996, Ser. No. 645,225
Int. Cl.⁶ A61B 10/00

U.S. Cl. 128—754

16 Claims

- I. A biopsy instrument comprising:
- an elongated primary hollow tube with a closed distal end;



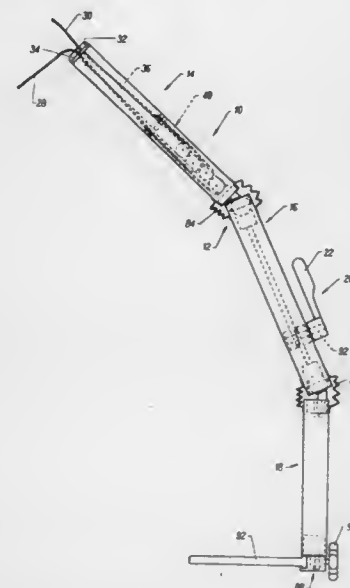
- a lateral tissue receiving port near said distal end of said elongated primary hollow tube, wherein said lateral tissue receiving port is configured to receive tissue;
- a vacuum chamber attached to said distal end of said elongated primary hollow tube;
- at least one communicating hole between said distal end of said elongated primary hollow tube and said vacuum chamber to pull tissue into said elongated primary hollow tube; and
- a rotatable retaining fixture coupled to said elongated primary hollow tube, wherein rotation of said fixture controls the angular orientation of the lateral tissue receiving port.

5,775,334
LIMB POSITIONING APPARATUS FOR SURGERY
Steven R. Lamb, Union City; Eugene M. Wolf, San Francisco, and Russel E. Klein, Redwood City, all of Calif., assignors to Orthopedic Systems, Inc., Union City, Calif.

Filed Mar. 15, 1996, Ser. No. 619,827
Int. Cl.⁶ A61G 15/00

U.S. Cl. 128—845

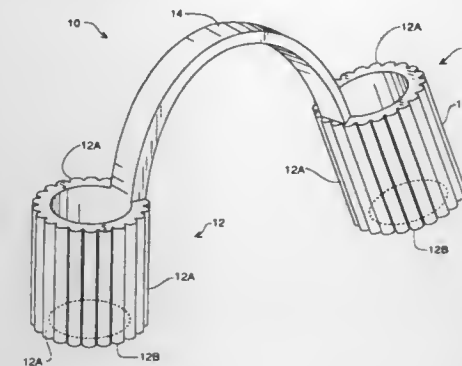
12 Claims



- I. A positioning apparatus for the limb of a patient, comprising:
- a structural member, said structural member including a compartment having an opening thereto;
 - support means for holding said structural member in a predetermined position relative to the limb and at a certain distance from the limb;
 - a first line having attachment means connected thereto for linkage to the limb;
 - a first essentially constant force spring connected to said first line for exerting a constant tension force thereupon, said first constant force spring lying within said compartment of said structural member, said first line extending from said compartment;
 - a second line having attachment means connected thereto for linkage to the limb; and
 - a second essentially constant force spring connected to said second line for exerting a tension force thereupon, said second constant force spring lying within said compartment of said structural member, said second line extending from said compartment.

5,775,335
APPARATUS TO DIMINISH OR ELIMINATE SNORING
Daniel J. Seal, 10201 Wehlie Cap Rd., Picayune, Miss. 39466
Filed May 29, 1997, Ser. No. 864,837
Int. Cl.⁶ A61F 5/56; 5/08; A61M 15/08; A62B 7/00
U.S. Cl. 128—848

5 Claims

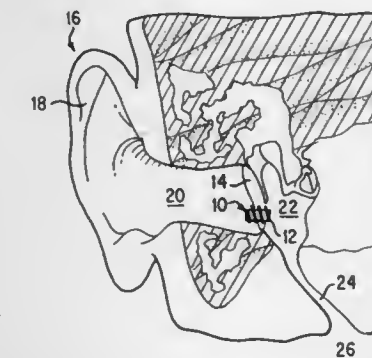


1. A device to assist in diminishing snoring comprising two hollow, tubular members having an elongated connector therebetween, each of the members adapted for insertion into a nostril of a person to enlarge the nostril, each of the members further comprising a series of longitudinally disposed ridges integrally formed on an outer surface of the member and arranged annularly about the member, for comfortably engaging the nostril to prevent accidental removal of the member from the nostril.

5,775,336
TUBULAR MEDICAL DEVICE
Michael S. Morris, North Potomac, Md., assignor to Georgetown University, Washington, D.C.
Filed May 31, 1996, Ser. No. 655,808
Int. Cl.⁶ A61F 11/00

U.S. Cl. 128—857

16 Claims

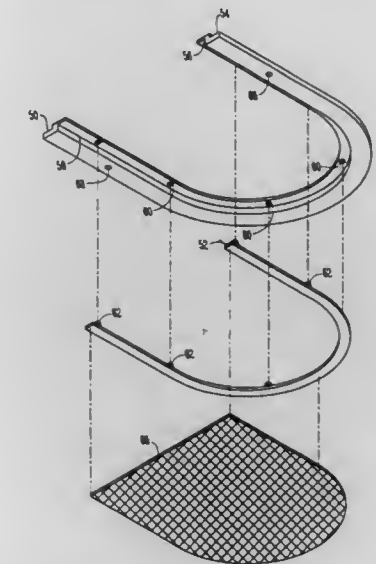


- I. A tubular medical device adapted for placement into an orifice formed in an eardrum of an ear structure of a living being, comprising:
- a body member extending along a longitudinal axis and having an outer surface and an inner surface, said inner surface defining a hole extending longitudinally through said body member between opposite end is of said body member; and
 - a rib structure connected to said outer surface of said body member and projecting outwardly from said outer surface relative to the longitudinal axis in a manner whereby said rib structure and said outer surface define at least one channel oriented transversely to the longitudinal axis and spiralling about said body member in a general direction of the longitudinal axis wherein said body member and said rib structure being sized to be received by the orifice formed in the eardrum.

5,775,337
IMMOBILIZATION DEVICE
Todd Hauger, and Loren G. Kamstra, both of Orange City, Iowa, assignors to Biotech, Orange City, Iowa
Filed Mar. 21, 1997, Ser. No. 821,331
Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—869

20 Claims

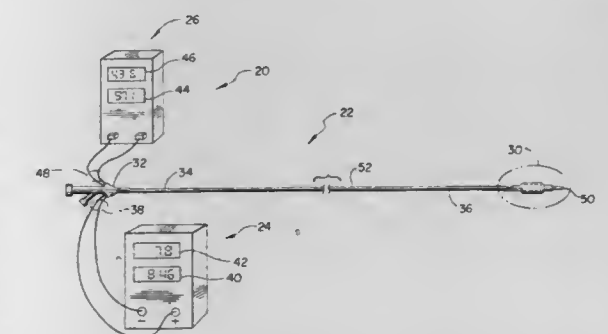


1. A head and neck immobilization device for use with a treatment table having a baseplate secured thereto, comprising:
- a U-shaped frame sized to extend around the sides and top of a patient's head and adapted to be secured to the baseplate;
 - a U-shaped insert adapted to retentively and detachably mount on the frame; and
 - a mesh sheet attached to the insert and being deformable to form a mask over the patient's head;
- the U-shaped insert and the mesh sheet attached thereto constituting a mesh insert assembly which is separable as a unit from the U-shaped frame.

5,775,338
HEATED PERFUSION BALLOON FOR REDUCTION OF RESTENOSIS
Roger N. Hastings, Maple Grove, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.
Filed Jan. 10, 1997, Ser. No. 781,663
Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—898

6 Claims



1. A method for inhibiting restenosis in a vessel region comprising the steps of:
- heating said vessel region at a temperature in the range of about 40 degrees C. to about 45 degrees C. for a time period of 10 seconds to 60 minutes.

5,775,339

PHOTODYNAMIC THERAPY OF PIGMENT-RELATED LESIONS

Kathryn W. Woodburn; Qing Fan, both of Sunnyvale, and Stuart W. Young, Portola Valley, all of Calif., assignors to Pharmacyclics, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 624,311, Mar. 26, 1996, abandoned.

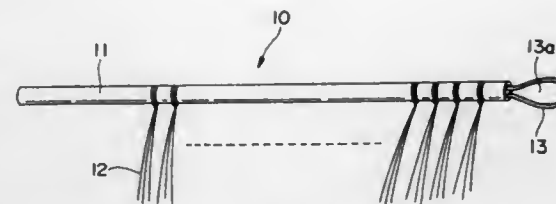
This application Aug. 19, 1997, Ser. No. 914,272

Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—898

26 Claims

1. A method for photodynamic therapy of a pigmented lesion or of a lesion obscured by melanodermic tissue of a subject, comprising: administering a photosensitive texaphyrin to the subject; and photoirradiating the lesion.



withdrawing said joining hair wound around and loosely knotted to said rod member, unit by unit, through said loop portion after a strand of natural hair on the scalp of a person's head is inserted into said loop portion; and tightly knotting a knot portion of said joining hair thus withdrawn by pulling opposite ends of said joining hair so that said joining hair is tied to said natural hair strand at the knot portion.

5,775,340

LONG HANDLE TOENAIL CLIPPERS

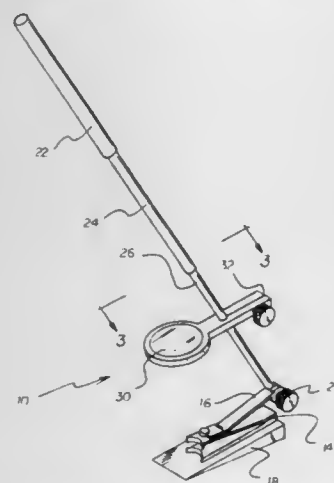
David Rains, 1842-A Williams Rd., Monroe, N.C. 28110

Filed Jul. 25, 1997, Ser. No. 906,117

Int. Cl.⁶ A45D 29/02

U.S. Cl. 132—73.5

7 Claims



2. A long handle toenail clipper for allowing a person to cut their toenails without needing to bend over comprising, in combination: a conventional nail clipper having a cutting portion and an actuating lever; a triangular base positioned below and secured to a lower segment of the cutting portion, the triangular base orienting the nail clipper with a forward end of the nail clipper disposed below a rearward end of the nail clipper; and a telescopic handle coupled to the actuating lever of the nail clipper.

5,775,341

METHOD FOR HAIR JOINING AND HAIR-JOINING DEVICE USED FOR THE SAME

Tomoko Abe, and Mutsumi Kawasaki, both of Niigata-ken, Japan, assignors to Aderans Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1997, Ser. No. 829,817

Claims priority, application Japan, Mar. 26, 1996, 8-094649 Int. Cl.⁶ A41G 3/00; 5/00

U.S. Cl. 132—201

22 Claims

1. A method for joining hair in which joining hair is tied to natural hair on the scalp of a person's head, said method including the steps of:

winding joining hair around and loosely knotting the same to a rod member, unit by unit, at predetermined intervals, which rod member is provided on one end thereof with a loop portion having flexibility;

5,775,342

HAIR WAVING METHOD USING ACIDIC REDUCING SOLUTION CONTAINING ALCOHOL AMINE SULFITE

Karen Hohenstein, Culver City, and George Andrassy, Walnut, both of Calif., assignors to Dep Corporation, Rancho Dominguez, Calif.

Filed May 10, 1996, Ser. No. 644,528

Int. Cl.⁶ A45D 7/04

U.S. Cl. 132—204

12 Claims

1. A process for waving or straightening hair, comprising the steps of:

applying to hair an effective amount of an acidic reducing solution including an alcohol amine sulfite; setting the hair in the desired formation; rinsing the hair to remove the acidic reducing solution; and treating the hair with an alkaline oxidizing solution comprising a mixture of a hydrogen peroxide solution and an alkaline solution.

5,775,343

HAIR-STYLING DEVICE AND METHOD FOR BRAIDING HAIR

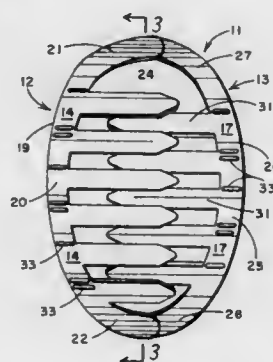
Patricia Smith Zarn, 1411 Nottingham St., Orlando, Fla. 32803

Filed Feb. 29, 1996, Ser. No. 608,750

Int. Cl.⁶ A45D 7/00; 24/06

U.S. Cl. 132—210

21 Claims



1. A hair-styling device for braiding or interweaving hair, said device, comprising:

(a) a first comb having a spine supporting a plurality of spaced-apart teeth; and
(b) a second comb, detachably secured to the first comb with said second comb disposed in an arc below and in concentric alignment to the first comb, said second comb having a spine supporting a plurality of spaced-apart teeth with each of the teeth of the second comb aligned intermediate consecutive

teeth of the first comb and teeth of the first comb aligned intermediate consecutive teeth of the second comb.

5,775,344

COSMETIC CONTAINER AND APPLICATOR WITH HEATING APPARATUS

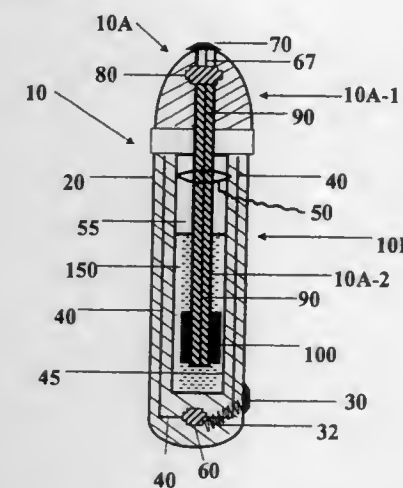
Mary A. Clay, 2770 E. Uintah St., Apt. 305, Colorado Springs, Colo. 80909

Filed Feb. 9, 1996, Ser. No. 598,901

Int. Cl.⁶ A45D 40/26

U.S. Cl. 132—218

10 Claims



1. A cosmetic container, comprising:

(a) a container having an opening at a top portion and a closed end at a bottom portion;
(b) a protective exterior layer that forms an outermost wall of said container;
(c) an interior wall that forms a reservoir protecting and holding a heatable cosmetic substance;
(d) a power supply to supply energy used to produce regulated heat in said container;
(e) a means for conveying a regulated temperature from said power supply to the reservoir to heat and melt said heatable cosmetic substance contained therein;
(f) a temperature resistant wiper element attached to said interior wall of said reservoir; and
said conveying means mounted about said interior wall forming said reservoir.

5,775,345

HAIR CLIP

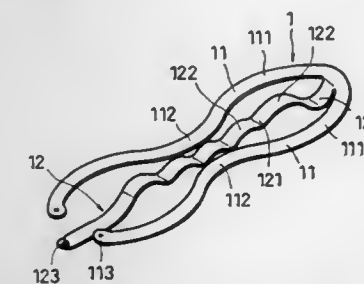
Kuo-Hua Chou, No. 17, Alley 10, Lane 118, Su-Wei Rd., Wu-Ku Hsiang, Taipei County, Taiwan

Filed Jun. 23, 1997, Ser. No. 880,650

Int. Cl.⁶ A45D 8/22

U.S. Cl. 132—278

4 Claims



1. A hair clip comprising two curved arms each; having a respective fixed end connected to each other and a respective free

end releasably secured to each other, each of said curved arms comprising a pair of horizontally outwardly arched sections connected between its free end and the horizontally inwardly curved sections of said arms forming a gap therebetween; and its fixed end, a horizontally inwardly curved section connected between said horizontally outwardly arched sections, and a coupling tip at its free end, and a clamping strip suspended between said curved arms, said clamping strip comprising a fixed end extending from the connected fixed ends of said curved arms, a free end terminating in a retainer portion releasably securing the coupling tips of said curved arms together, and a plurality of downwardly curved sections and upwardly curved sections alternatively connected in a line between its fixed end and its free end, said clamping strip having a width broader than the gap between the horizontally inwardly arched sections of said curved arms.

5,775,346

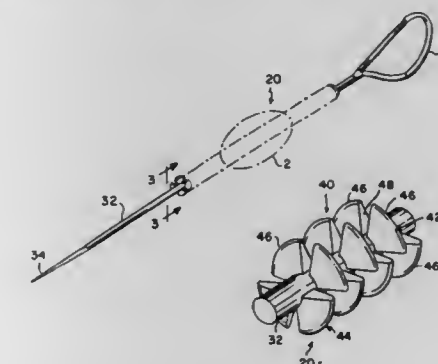
INTERPROXIMAL DENTAL APPLIANCES

Andrew J. Szyzkowski, Canyon Country, Calif., assignor to Advanced Implant Technologies Inc., Beverly Hills, Calif. Continuation-in-part of Ser. No. 601,085, Feb. 14, 1996, abandoned. This application Apr. 18, 1997, Ser. No. 844,004

Int. Cl.⁶ A61C 15/00

U.S. Cl. 132—329

31 Claims



1. An interproximal dental appliance, comprising:

an elongated base configured for insertion into interproximal spaces between teeth; and
a plurality of elastomeric flat-faced flanges extending perpendicularly outwardly from the base in a staggered pattern, the flanges including a first set spaced from one another along a longitudinal axis of the base and radially aligned with one another about said longitudinal axis, and a radially aligned second set longitudinally disposed in an alternating manner between adjacent flanges of the first set along the longitudinal axis of the base, wherein the first set of flanges is radially offset from the second set of flanges.

5,775,347

CONTINUOUS-FLOW WARE WASHING APPARATUS

Richard D. Hoover; Walter J. Borvca, both of Troy, and Gary V. Hoving, Sidney, all of Ohio, assignors to Premark FEG L.L.C., Wilmington, Del.

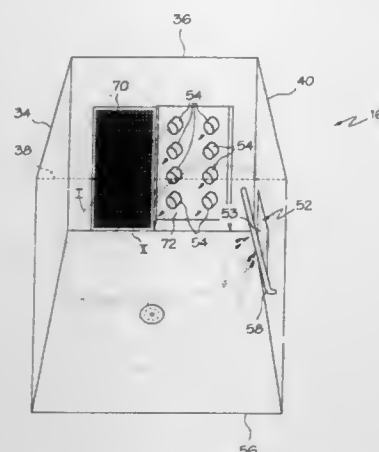
Filed Dec. 20, 1996, Ser. No. 770,508

Int. Cl.⁶ A47L 15/16

U.S. Cl. 134—56 D

20 Claims

1. A continuous-flow warewashing apparatus, comprising:
a frame;
a substantially rectangular tub mounted to said frame, having a tub interior, and including a back wall, a front wall, a pair of side walls and a floor, said side walls being shorter in length than said back and front walls,
said back, front and side walls forming a tub perimeter;



a pump mounted to said frame, said pump including an inlet port and an outlet port;

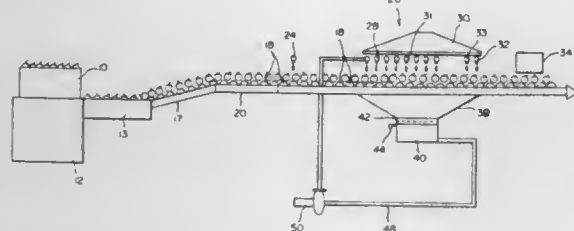
a tub outlet channel coupled between said back wall of said tub and said inlet port of said pump for providing fluid communication between said tub interior and said pump, said tub outlet channel having a mouth opening into said tub interior;

a manifold mounted to one of said side walls, having a manifold inlet coupled to, and in fluid communication with, said outlet port of said pump; and

an array of outlet nozzles coupled to said manifold and extending from said one side wall into said tub interior;

a substantial portion of said outlet nozzles being pointed towards one of said front wall or said back wall such that said nozzles are adapted to jet fluid in a whirlpool-like manner substantially about said perimeter of said tub.

5,775,348
**APPLE CLEANING SYSTEM USING HIGH PRESSURE
 WASHING**
 Heath Rush, Wenatchee, and Jeffrey Kent Townley, Cashmere,
 both of Wash., assignors to Rush Consultants, Inc.,
 Wenatchee, Wash.
 Filed Jul. 31, 1996, Ser. No. 688,867
 Int. Cl.⁶ B08B 3/02
 U.S. Cl. 134—72
 13 Claims



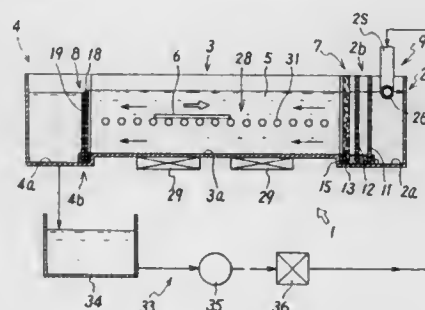
1. A system for cleaning apples prior to packing thereof, in a packing line system which includes a receiving end where apples move onto the packing line and a packing station, the cleaning system comprising:

- means, including a high pressure pump means and spray nozzle means, for spray washing the apples with a washing fluid, while the apples are on the packing line, in the range of 70-300 psi, wherein the spray nozzle means are located above the apples on the packing line, wherein the pressure and volume of the fluid directed by the spray nozzle means onto the apples results in the entire surface of the apple being cleaned, including the stem and calyx ends thereof;
- means for collecting the washing fluid after it has been used to wash the apples; and
- means for recirculating the washing fluid from the collecting means to the spray washing means at a volume rate in the range of 550-600 gpm.

5,775,349

Patent Not Issued For This Number

5,775,350
RUNNING WATER TYPE WASHING MACHINE
 Shigeo Akanuma, and Masashi Fujii, both of Ayase, Japan,
 assignors to Speedfam Clean System Co., Ltd., Ayase, Japan
 Filed Sep. 16, 1996, Ser. No. 714,396
 Claims priority, application Japan, Feb. 14, 1996, 8-050951
 Int. Cl.⁶ B08B 3/04
 U.S. Cl. 134—183 6 Claims



1. A running liquid washing machine, comprising:
 - a washing vessel including a liquid feed section, a liquid discharge section and a washing section arranged between said liquid feed section and said liquid discharge section such that a work is washed in said washing section by a wash liquid flowing from said liquid feed section to said liquid discharge section via said washing section; and
 - a flow regulator provided in said liquid feed section in order to regulate a flow of the wash liquid toward said washing section and including at least one perforated flow regulator plate and at least one fibrous flow regulator plate, said at least one perforated flow regulator plate having plural liquid passage apertures, said at least one fibrous flow regulator plate being provided downstream of said at least one perforated flow regulator plate along the flow of the wash liquid.

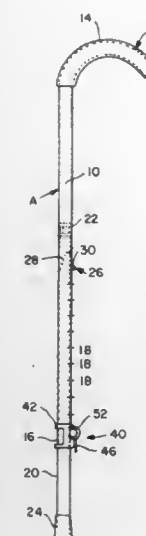
5,775,351

Patent Not Issued For This Number

5,775,352
CAM LOCK ASSEMBLY FOR ADJUSTABLE CANE
Shane Obitts, Elyria, Ohio, assignor to Invacare Corporation,
Elyria, Ohio
Filed Oct. 23, 1995, Ser. No. 546,635
Int. Cl.⁶ A45B 9/04
U.S. Cl. 135—69 11 Claims

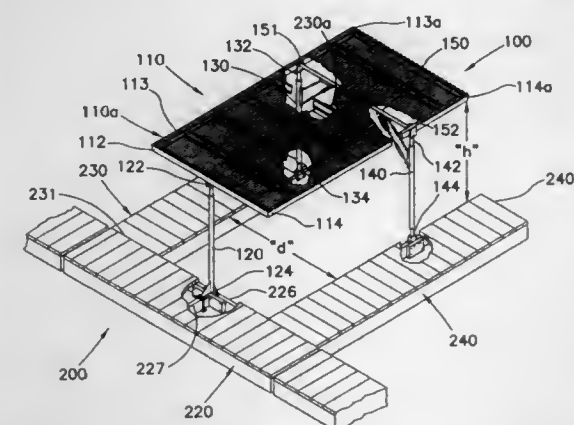
1. An adjustable cane comprising:
 - a first member having a plurality of spaced apertures and an opening;
 - a second member adapted for telescoping relation with the first member;
 - a handle located at an end of one of the first member and the second member;
 - a snap button assembly at least partially housed inside of the second member and having a button on a first end extending radially outward through one of the apertures in the first member;
 - a cam locking assembly located adjacent the opening including a housing receiving a cam member with a raised surface, and a cam lever operatively associated with the cam member for

JULY 7, 1998



selectively engaging the raised surface with the second member through the opening of the first member.

5,775,353
DYNAMICALLY-MOUNTED SHELTER FOR FLOATING
BOAT DOCK
W. A. Johnson, 12406 Taylorsville Rd., Louisville, Ky. 40299
Filed Jun. 20, 1997, Ser. No. 880,029
Int. Cl.⁶ E04H 15/02
U.S. Cl. 135—96 6 Claims

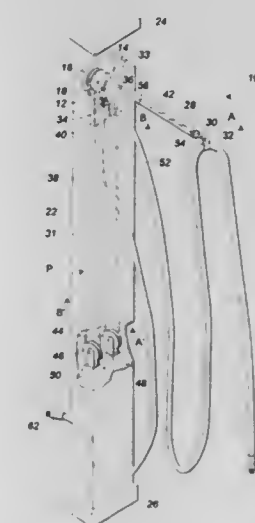


1. A shelter for use in combination with a boat dock having a support platform, a first docking platform extending therefrom, and a second docking platform extending therefrom, said shelter comprising:

- a canopy having a base side member, a first side member extending perpendicularly from a first distal end of said base side member and a second side member extending perpendicularly from a second distal end of said base side member opposite said base side member first distal end, said second side member being parallel to said first side member;
- a base support post depending downwardly from said base side member, said base support post having a first distal end pivotally attached to said base side member near a midpoint thereof, said base support post having a second distal end opposite said first distal end fixedly attached to said boat dock support platform;
- a first support post depending downwardly from said first side member, said first support post having a first distal end pivotally attached to said first side member, said first support post having a second distal end opposite said first distal end pivotally attached to said boat dock first docking platform; and,

a second support post depending downwardly from said second side member, said second support post having a first distal end pivotally attached to said second side member, said second support post having a second distal end opposite said first distal end pivotally attached to said boat dock second docking platform.

5,775,354
FLEXIBLE HOSE TAKE-UP ASSEMBLY
W. Lovelle Upton, Collins, Miss., assignor to Upton Limited
Partnership, Collins, Miss.
Filed Feb. 5, 1997, Ser. No. 795,085
Int. Cl.⁶ E03B 1/00
U.S. Cl. 137—1 19 Claims



16. A method of controlling the rate of speed at which a flexible fluid dispensing hose supported on a flexible hose take-up assembly is automatically retracted into a stored position on said assembly from any one of a range of paid out fluid dispensing positions, said method comprising the steps of:

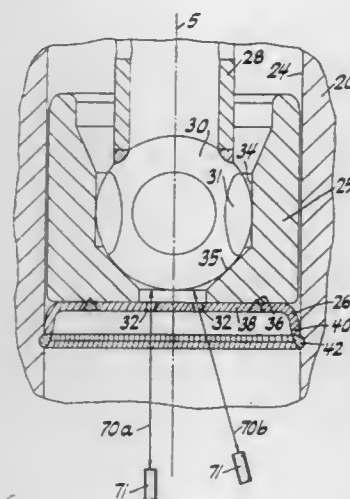
- (a) at least partially immersing at least one counterweight within a generally water-tight chamber in a home position, said water-tight chamber being defined within a cabinet formed as a part of said take-up assembly, said chamber being filled with a predetermined amount of a damping liquid;
- (b) moving said at least one counterweight in a first direction away from said home position within said chamber in response to the movement of the flexible hose from its stored position into one of its fluid dispensing positions;
- (c) gravitationally moving said at least one counterweight in a second direction within said chamber in response to the release of the fluid dispensing hose from one of its fluid dispensing positions;
- (d) damping the movement of said at least one counterweight within said chamber toward said home position with said damping liquid;
- (e) retracting the fluid dispensing hose toward its stored position on said assembly in response to the movement of said at least one counterweight toward said home position; and
- (f) controlling the rate of speed at which the fluid dispensing hose is retracted into its stored position in response to damping the movement of said at least one counterweight within said chamber.

5,775,355

METHOD FOR MEASURING THE LIFT OF A VALVE NEEDLE OF A VALVE AND FOR ADJUSTING THE VOLUME OF MEDIA FLOW OF THE VALVE
 Stefan Maier, Kawasaki, Japan; Joachim Stilling, Fellbach, and Frank Schindler, Markgröningen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
 Filed Mar. 11, 1996, Ser. No. 613,952
 Int. Cl.⁶ F02M 65/00

U.S. Cl. 137—15

16 Claims



1. A method for adjusting a lift of a valve, the valve having a longitudinal valve axis, a valve-seat surface, a valve needle and a valve-closure member connected to the valve needle, the valve needle lifting along the longitudinal valve axis in a direction opposite to the valve-seat surface, the method comprising the steps of:

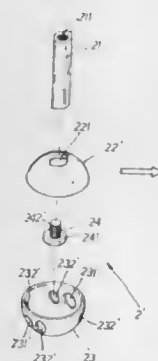
directing collimated, high-energy radiation at the valve-closure member;
 receiving a reflection of the collimated, high-energy radiation from the valve-closure member;
 measuring an axial range of motion of the valve needle as a function of the reflected radiation; and
 adjusting the lift of the valve needle along the longitudinal valve axis as a function of the axial range of motion.

5,775,356

METHOD FOR ASSEMBLING THE CONTROL VALVE OF A SINGLE-HANDLE FAUCET
 Hsi-Chia Ko, Changhua Hsien, Taiwan, assignor to Chung Cheng Faucet Co., Ltd., Hsien, Taiwan
 Filed Nov. 26, 1996, Ser. No. 756,525
 Int. Cl.⁶ F16K 43/00; 51/00

U.S. Cl. 137—15

1 Claim



1. A method of assembling a control valve for a single-handle faucet wherein the control valve includes an upper semispherical housing having an inner wall, an engaging hole formed in a top

end thereof and a lower peripheral edge, a lower semispherical housing having an upper peripheral edge, a water inlet and a water outlet, a valve stem having a threaded hole formed in a lower end thereof, and a screw including a threaded stem and a head section, the method comprising the steps of:

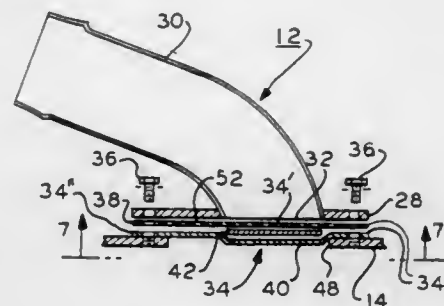
- fitting the lower end of the valve stem into the engaging hole of the upper semispherical housing;
- screwing the threaded stem of the screw into the threaded hole of the valve stem until the head section of the screw abuts against the inner wall of the upper semispherical housing;
- welding the head section of the screw to the inner wall of the upper semispherical housing to prevent detachment of the valve stem from the housing and maintaining its alignment with respect thereto; and
- welding the lower peripheral edge of the upper semispherical housing to the upper peripheral edge of the lower semispherical housing, whereby the standard line of the valve stem will remain in alignment with the water outlet of the lower housing for accurately controlling water flow through the faucet.

5,775,357

FUEL FILL VALVE AND VENT VALVE ASSEMBLY
 Peter J. Regna, Tuxedo Park, and Albert S. Baris, Suffern, both of N.Y., assignors to Aero Tec Laboratories, Ramsey, N.J.
 Filed Feb. 20, 1997, Ser. No. 802,727
 Int. Cl.⁶ F16K 24/04; 15/14

U.S. Cl. 137—43

23 Claims



1. A fuel fill valve for a liquid fuel container fill opening in a normally horizontal exterior wall thereof comprising:

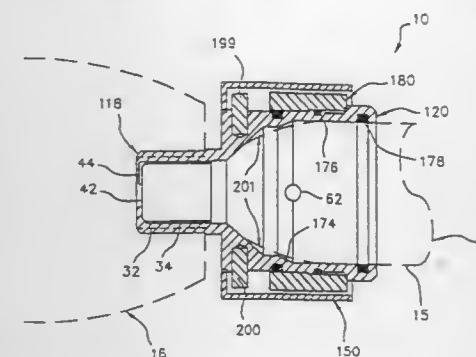
- a base plate for attachment to said fuel container exterior wall, said plate having opposing sides and an opening for passing received fuel therethrough and through said fill opening, said plate having a circumferential region surrounding said plate opening; and
- a resilient flexible fuel impervious valve flap member comprising a proximal portion fixedly attached in overlying relation to one side of said plate spaced from said opening and a distal movable portion overlying the opening and the plate circumferential region on the plate one side for resilient sealing engagement with the plate in a valve closed position in a flap member horizontal orientation, the distal and proximal portions being resiliently biased hinged to each other with sufficient resilient memory at a hinge region with the hinge region overlying the plate for resiliently biasing said distal portion to the closed horizontal position such that the distal portion displaces away from said opening and said plate region to a valve open position in response to the incidence of said received fuel thereon and returns to the closed position in the absence of said received fuel in response to said memory.

5,775,358

INDICATOR FOR COMPRESSED GAS CARTRIDGE
 Lyman W. Fawcett, Jr., St. Petersburg, and Jacek M. Weinheimer, Treasure Island, both of Fla., assignors to Halkey-Roberts Corporation, St. Petersburg, Fla.
 Filed Nov. 3, 1995, Ser. No. 552,737
 Int. Cl.⁶ F16K 37/00

U.S. Cl. 137—68.18

20 Claims



19. A cylinder indicator system for use with inflation devices that include a cylinder of compressed gas, said cylinder indicator system comprising:

- an adaptor means for receiving the cylinder and facilitating coupling the cylinder to the inflation device;
- an indication means for indicating the respective status of the cylinder as being full or empty operatively associated with said adaptor means; and
- a gas flow means for providing a secondary supply of gas to said indication means, said gas flow means being associated with said adaptor means and in fluid communication with said indication means, whereby said indication means is responsive to a secondary flow of gas guided threat upon the discharging of the cylinder into the inflation device, wherein said gas flow means is comprised of a gas flow channel, a dye chamber, a valve means for allowing gas to flow from said gas flow channel to said dye chamber and concurrently preventing flow from said dye chamber to said gas flow channel, and a vent hole.

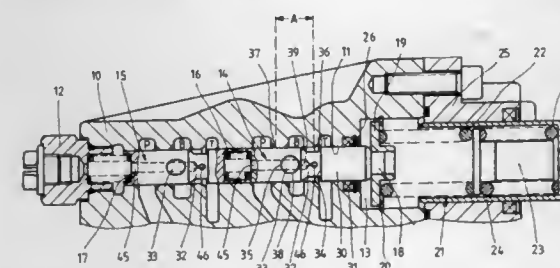
5,775,359

HYDRAULIC PRESSURE CONTROL VALVE, ESPECIALLY A HYDRAULIC POWER BRAKE VALVE
 Hubert Mies, Partenstein, Germany, assignor to Mannesmann AG, Lohr/Main, Germany
 PCT No. PCT/EP94/01892, § 371 Date Dec. 29, 1995, § 102(e)
 Date Dec. 29, 1995, PCT Pub. No. WO95/01899, PCT Pub. Date Jan. 19, 1995

PCT Filed Jun. 10, 1994, Ser. No. 586,655
 Claims priority, application Germany, Jul. 7, 1993, 43 22 634.5

Int. Cl.⁶ B601 13/14; G05D 16/10
 U.S. Cl. 137—102

15 Claims



1. A hydraulic pressure control valve, particularly a power brake valve, having a valve bore which is present in a valve housing and into which, at an axial distance from each other, a supply channel, a load channel and a tank channel open, and having a control

piston which is arranged in the valve bore and which can be displaced in a first direction into a first end position defined by a stop in which the load channel is connected with the supply channel, and in a second direction into a second end position in which the load channel is connected with the tank channel and which can assume a control position between them, wherein the load channel is arranged between the supply channel and the tank channel; the control piston has a radial recess for direct connection of the load channel with the supply channel upon a positioning of the control piston adjacent a first end position of the control piston; and upon a positioning of the control piston in the first end position of the control piston, the radial recess lies symmetrical to the load channel and the supply channel; wherein said radial recess is a first radial recess, and the control piston has a second radial recess and a piston strap, the axial length of the piston strap corresponds to at least approximately to the axial length of the load channel;

said first radial recess and said second radial recess are present in the control piston on opposite sides of the piston strap; and the load channel can be connected with the supply channel via said first recess and with the tank channel via said second recess; and

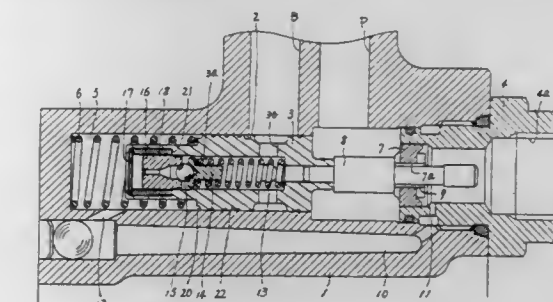
wherein the control piston is provided in the piston strap with a transverse bore which connects a longitudinal bore in the control piston, and said longitudinal bore is open towards an end of the control piston with the load channel.

5,775,360

PRESSURE CONTROL VALVE
 Tetsuji Hayashi, and Shiniti Osawa, both of Gifu-ken, Japan, assignors to Kayaba Industry Co., Ltd., Tokyo, Japan
 Filed Jan. 31, 1996, Ser. No. 594,706
 Int. Cl.⁶ F16K 15/04

U.S. Cl. 137—115.05

3 Claims



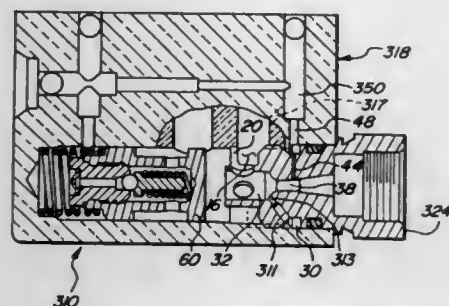
- A pressure control valve, comprising:
 a body made of aluminum and having a pump port, an actuator port and a bypass port formed therein, said body further having a spool hole formed therein;
 a spool made of aluminum fitted for sliding movement in said spool hole of said body;
 an orifice provided intermediately in an oil flow path between said pump port and said actuator port;
 a pressure chamber formed at an end portion of said body remote from said orifice and defined by said spool and said spool hole;
 an oil passage for introducing pressure oil on the downstream side of said orifice into said pressure chamber;
 a spring for exerting a spring force to said spool;
 said spool having a seat member insertion hole formed at an end portion thereof adjacent said pressure chamber;
 a seat member made of steel and fitted in said seat member insertion hole;
 a relief valve including a poppet made of steel and resiliently pressed against a seat portion of said seat member;
 said relief valve being opened, when the pressure in said pressure chamber and on the downstream side of said orifice becomes higher than a preset pressure, to allow pressure oil to partially escape to said bypass port; and
 a sleeve made of steel and force fitted in said seat member insertion hole at a room temperature;

said seat member of steel being force fitted in said sleeve; an end portion of said spool around said seat member insertion hole being caulked to secure said sleeve in said seat member insertion hole.

5,775,361
METHOD AND APPARATUS FOR ENHANCING STABILITY IN HYDRAULIC FLOW CONTROL
Edward H. Phillips, Troy, Mich., assignor to Techco Corporation, Southfield, Mich.
Continuation of Ser. No. 17,283, Feb. 16, 1993, abandoned.
This application Dec. 28, 1994, Ser. No. 365,059
Int. Cl.⁶ F16K 17/00

U.S. Cl. 137—115.11

3 Claims



1. A flow control device for use in a hydraulic system, said device comprising:

a housing having a cylinder and a bypass hole communicating with said cylinder, means for delivering pressurized fluid into said cylinder; an output fitting mounted at one end of said cylinder, said output fitting having a first passageway for delivering pressurized fluid to a venturi;

a piston reciprocally mounted in said cylinder, said piston being movable within said cylinder to open and close said bypass hole;

means for biasing said piston towards said output fitting;

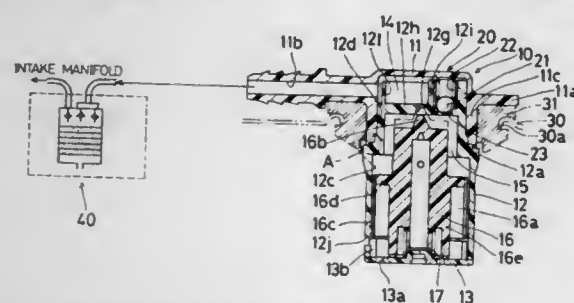
means for sensing pressure in said venturi, said means for sensing extending between said venturi and a second passageway formed in said housing; and

a metering passage communicating between said first passageway of said output fitting and said second passageway in said housing for producing a flow through said means for sensing to generate hydraulic resistance in said flow control device.

5,775,362
FUEL-EFFUSION PREVENTION VALVE
Tadayoshi Sato, Chita-gun; Shinichi Nakayama; Masahiro Mochizuki, both of Okazaki; Yasushi Miura, Toyooka, and Kazuo Miyazato, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed May 30, 1997, Ser. No. 866,298
Claims priority, application Japan, May 30, 1996, 8-136876
Int. Cl.⁶ F16K 24/04

U.S. Cl. 137—202

4 Claims



1. A fuel-effusion prevention valve, comprising:

a resinous cylindrical housing having first and second engaging portions each formed on an outer circumferential portion of said housing, a partition portion which axially defines first and second chambers in an interior of said housing, a valve hole formed on the partition portion so as to communicatively connect the first and second chambers, an evaporation passage which communicatively connects the first chamber with a filter and a communicating passage which communicatively connects the second chamber with an interior of a fuel tank,

a floating valve disposed in the second chamber as to open and close the valve hole in response to buoyancy due to fuel flowing into the second chamber through the communicating passage and,

a circular seal member fitted into an installation hole formed on the fuel tank, the seal member having an inner hole defined on the outer circumferential surface of the housing between the first and second engaging portions, wherein

the housing further includes a first housing member having the evaporation passage, the first engaging portion and a first cylindrical portion formed so as to extend axially from the first engaging portion and with a diameter smaller than that of the second engaging portion,

a second housing member having the partition portion, the communicating passage, the second engaging portion and a second cylindrical portion formed so as to extend axially from the second engaging portion, the outer circumferential portion of the second cylindrical portion and the inner circumferential portion of the first cylindrical portion being fused to each other.

5,775,363
DOUBLE SEAT VALVE WITH A CONTROLLED LEAKAGE CAVITY

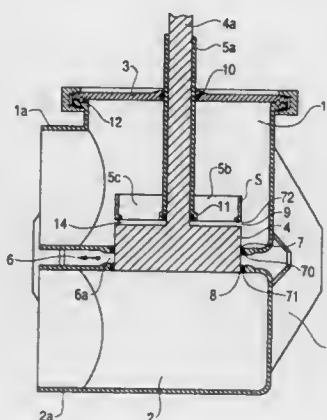
Duane Hammond, 440 Carskill Rd., Waukesha, Wis. 54936-1638

Filed Aug. 15, 1996, Ser. No. 698,106

Int. Cl.⁶ F16K 11/20; B08B 9/02; 9/06

U.S. Cl. 137—244

13 Claims



1. Double seat valve with a controlled leakage cavity provided with two sealing places disposed in series and on levels parallel to one another which in the closed position of the double seat valve prevent the overflow of fluid from one part of a valve casing into another; the leakage cavity being disposed between the sealing places and connected on the side of the valve casing to the environs of the double seat valve; with a locking piece designed as a slide and translatorily displaceable between a closed and an open position of the double seat valve, the locking piece in cooperation with the valve casing realizing the two sealing places radially on the outside, the locking piece furthermore controlling the connection between the leakage cavity and an inside space of the valve casing and in the open position of the double seat valve connecting

the inside space of the two valve casing parts by a penetration aperture disposed radially on its inside; and with a closing member designed as a slide disposed relatively movable to the locking piece in the direction of the degree of its freedom of motion, the said closing member in combination with the valve casing realizing the two sealing places and controlling the connection between the inside spaces of the two valve casing parts,

characterized in that between the sealing places (7, 8; 70, 71) a penetration cross-section (6a) is provided from the inside space of the valve casing parts (1, 2) to the leakage cavity (6) which is at least as great as the nominal cross-section of the double seat valve and that the cross-section of the connection between the leakage cavity and the environs of the double seat valve is at least as great as the nominal cross-section of the double seat valve to prevent pressure buildup in the valve casing by enabling fluid to exit the valve casing as fast as it enters the valve casing.

5,775,364
CONNECTOR FOR GUARANTEE TAP

René Erb, Phalsbourg, France, assignor to Vitop, Phalsbourg, France

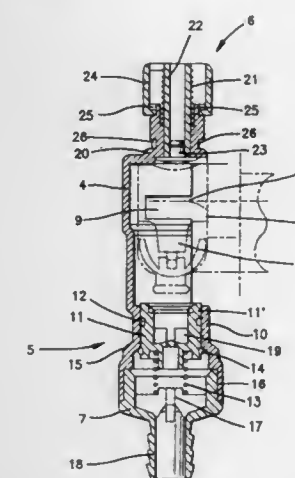
Filed Dec. 6, 1996, Ser. No. 759,706

Claims priority, application France, Dec. 7, 1995, 95 14814

Int. Cl.⁶ F16L 37/30; 37/36

U.S. Cl. 137—322

5 Claims



1. A connector for a guarantee tap (1) provided with a dispensing piston (2) actuated by appendages (3) secured to said dispensing piston for controlling flow therethrough (2), the connector comprising a body (4) for mounting the tap (1), a device (5) for sealed connection of an outlet end of the tap (1), means (6) for holding the tap (1) including means for actuating the dispensing piston (2), and a coupling (7) to a dispensing conduit (8), said body (4) for mounting the tap (1) being a semi-cylindrical element for receiving the tap (1) and being provided at the appendages (3) for actuating the piston (2) of the tap (1) with cutouts (9) for receiving said appendages (3) with clearance for the displacement of said appendages when the actuating means moves the actuating piston (2), said body (4) being closed at its upper portion by said means (6) for holding the tap (1) and at its lower portion by said device (5) for a sealed connection of the outlet end of the tap (1).

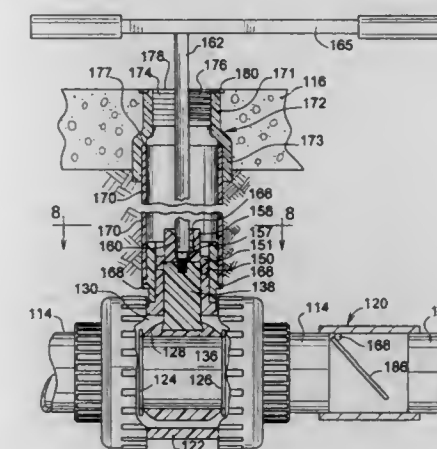
5,775,365
FLOOD PROTECTION SEWER BACKFLOW CONTROL VALVE AND ADAPTER ASSEMBLY

Stuart E. Hayden, Louisville; Douglas A. Kieper, Finchville, and George H. Hunt, Louisville, all of Ky., assignors to Nibco, Inc., Elkhart, Ind.

Continuation of Ser. No. 566,062, Dec. 1, 1995, Pat. No. 5,577,062. This application Nov. 26, 1996, Ser. No. 756,057
Int. Cl.⁶ F16L 5/00

U.S. Cl. 137—369

15 Claims



1. A valve adapter assembly for rotating a valve stem of a buried valve connected to a conduit in the open and closed condition, the valve adapter assembly comprising:

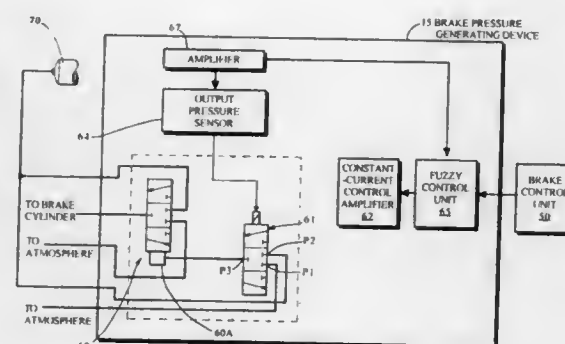
a valve collar extending from a main body of said valve, said valve collar defining a first cylindrical body having an upper end including a means for engaging a drive coupling and a lower end defining a collar means for supporting and holding a support mount;

said support mount defining a second cylindrical body extending coaxially around at least a portion of said first cylindrical body of said valve collar, said support mount including means of supporting extending outwardly therefrom, said support mount including means for cooperatively engaging said means for supporting and holding said collar means for supporting and holding a support mount of said valve collar for preventing rotation of said support mount with respect to said valve collar and said valve;

an extension conduit having an upper end and a lower end, at least a portion of said lower end of said extension conduit cooperatively engaging at least a portion of said support mount, said means of supporting extending outwardly from said support mount supporting said lower end of said extension conduit;

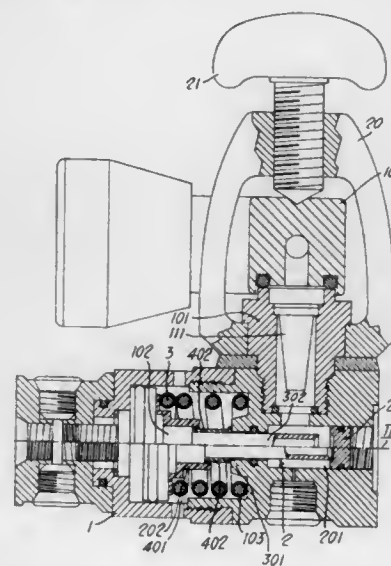
said drive coupling defining an upper end and a lower end, at least a portion of said drive coupling being disposed coaxially within said support member and in coaxial engagement with at least a portion of said valve stem, said lower end of said drive coupling including a means for cooperatively engaging said upper end of said collar for limiting rotation of said drive coupling with respect to said collar upon rotation of said valve stem, and said upper end of said drive coupling including means for cooperatively engaging a distal end of a rod defining a key for rotating said drive coupling and said stem in cooperative engagement therewith for opening and closing said valve.

19 Claims



(c) in that said command current value is value of ranging freely between (i) said current value at which said solenoid valve adopts said supply position wherein second and third ports of said solenoid valve communicate to direct said output pressure from a reservoir to a pressure operative device and (ii) said current value at which said solenoid valve adopts said exhaust position wherein said third port and a first port of said solenoid valve communicate to vent such pressure operative device to atmosphere.

U.S. Cl. 137—505,25



a pressure chamber which communicates with a high pressure gas source;

U.S. Cl. 137—487.5

(b) a fuzzy control means for comparing an output pressure signal from said output pressure detecting means with said pressure command signal and, based on a difference therebetween and on a time variation rate of said output pressure

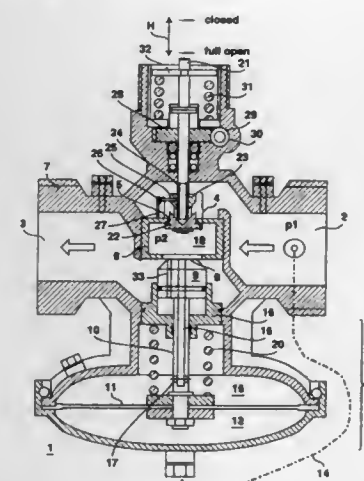
- a compensating chamber separated from said pressure chamber by a partition wall having a hole therein;
- an axially movable tubular shutoff member which extends sealingly through said hole in said partition wall and which has an inlet end in said pressure chamber and an outlet end in said compensating chamber;
- a valve seat provided in said pressure chamber opposite to said inlet end of said shutoff member and which cooperates with said inlet end to shut off flow through said shutoff member;
- a piston in said compensating chamber fastened to said outlet end of said shutoff member, said piston being axially movable in a sealing manner in said compensating chamber;
- a helical pressure spring arranged around said shutoff member and between said piston and said partition wall to bias said inlet end of said shutoff member away from said valve seat, said helical spring including a thermally insulating covering;
- an aperture in said compensating chamber adjacent said helical spring which provides communication between said compensating chamber and an ambient environment; and
- a thermally insulating component interposed radially between said helical spring and said shutoff member and disposed along an entire length of said shutoff member in said compensating chamber.

Claims priority, application Switzerland, Jun. 28, 1995,
1891/95

Int. Cl.⁶ F16K 31/12

U.S. Cl. 137—501

7 Claims



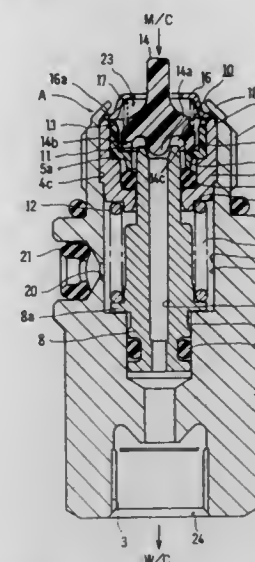
a valve housing;
an inlet chamber;
a first throttle location, including a cone, disposed in the valve housing;
a second throttle location disposed in the valve housing;
a hydraulic drive comprising a diaphragm and first and second pressure chambers, the diaphragm having a first side which forms a wall of said first pressure chamber and a second side which forms a wall of said second pressure chamber, said first pressure chamber communicating with said inlet chamber and said second pressure chamber communicating with a chamber located behind said first throttle location, and said diaphragm being connected by means of a rod to a regulating cone of said second throttle location;
wherein, by means of said second throttle location, a differential pressure across said first throttle location can be regulated to a constant value, said regulation being effected by means of said hydraulic drive; and wherein said first throttle location

comprises an opening, and said cone which is steplessly axially displaceable relative to said opening by a valve drive by means of a valve spindle, said cone comprising at least two individual portions which are displaceable relative to each other to vary the spacing thereof and thereby to vary the effective cross-section of said first throttle location such that an increase in the spacing between the individual portions increases the fluid flow through the valve and a decrease in the spacing between the individual portions decreases the fluid flow through the valve.

Claims priority, application Japan, Mar. 13, 1995, 7-081737
Int. Cl.⁶ F16K 31/12; 31/26

U.S. Cl. 137—505.25

5 Claims



1. In a fluid pressure control valve apparatus, including:
 - (A) a main body in which an input opening is formed in communication with a master cylinder and an output opening is formed in communication with a wheel cylinder;
 - (B) a stepped bore made in said main body, in communication with said input opening and output opening, the diameter of said stepped bore being stepwisely enlarged in the direction towards said input opening side from said output opening side;
 - (C) cover means inserted into said input opening of the stepped bore, having a through hole;
 - (D) a stepped piston slidably fitted into said stepped bore, extending between said through hole of the cover means and said output opening side of the stepped bore;
 - (E) a path formed in said stepped piston, one end of said path be communicating with said through hole of the cover means and another end of said path be communicating with said output opening side;
 - (F) a valve seat formed at the one end of said path;
 - (G) a valve body being able to seat on, and separate from, said valve seat, arranged in a valve chamber formed in said through hole of the cover means;
 - (H) a valve spring urging said valve body toward said valve seat;
 - (I) retainer means arranged at said input opening side of the cover means, supporting one end of said valve spring;
 - (J) a pre-loaded spring for urging said stepped piston in the direction to separate from said valve body; and
 - (K) an annular thin projecting portion formed integrally with said main body at said input opening side, being projected outwards from the end of said cover means, wherein said

cover means is fixed to said main body by deforming plastically said annular thin projecting portion towards said cover means, the improvement in which an outer circumferential portion of said retainer means is held between the deformed annular thin projecting portion and said cover means.

5,775,371

VALVE CONTROL

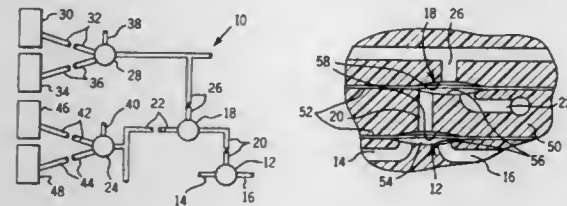
Jeffrey Y. Pan, Lake Forest, and Donald Ver Lee, Libertyville, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Mar. 8, 1995, Ser. No. 399,081

Int. Cl.⁶ F16K 11/12

U.S. Cl. 137—597

17 Claims



1. A valve control comprising:

- a first valve fluidly connected with a first fluid conveying conduit and a second fluid conveying conduit, the first valve movable between a first position where fluid communicates between the first fluid conveying conduit and the second fluid conveying conduit and a second position where fluid does not communicate between the first fluid conveying conduit and the second fluid conveying conduit;
- a first source of relatively increased pressure;
- a first source of relatively reduced pressure;
- a third conduit fluidly connecting the first source of relatively increased pressure and the first source of relatively reduced pressure with the first valve;
- a third valve fluidly connected with the third conduit, the third valve movable between a first position where the first source of relatively increased pressure is fluidly connected with the third conduit and the first valve thereby moving the first valve toward its second position and a second position where the first source of relatively reduced pressure is fluidly connected with the third conduit and the first valve thereby moving the first valve toward its first position; and
- a second valve fluidly connected with the third conduit between the third valve and the first valve, the second valve movable between a first position where fluid communicates between the first valve and the third valve such that the first valve moves between its first position and its second position responsive to position of the third valve and a second position where no fluid communicates between the first valve and the third valve such that the first valve does not move between its first position and its second position irrespective of position of the third valve.

5,775,372

UNIVERSAL WATER AND ENERGY CONSERVATION SYSTEM

John A. Houlihan, 1210-A E. Foster Rd., Santa Maria, Calif. 93455

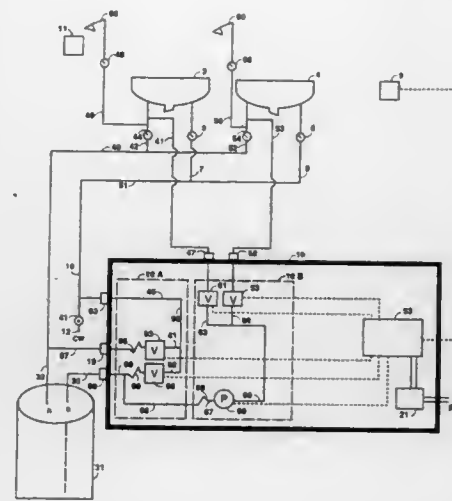
Filed Jul. 5, 1996, Ser. No. 675,967

Int. Cl.⁶ F16K 49/00

U.S. Cl. 137—624.12

14 Claims

1. A plumbing system having a pressurized cool water supply, a plurality of cool water outlets and a plurality of hot water outlets, having a cool water supply conduit for the purpose of coupling said cool water supply to a cool water inlet of a hot water supply means and a second cool water supply conduit in fluid communication with a plurality of branched cool water service conduits to



each cool water outlet, and having a hot water supply conduit for the purpose of coupling a hot water outlet of said hot water supply means to a plurality of hot water service conduits, each branched to a hot water outlet, a water and energy conservation system, remotely controlled, for supplying hot water on command, without permitting water to be wasted down the drain, and for, automatically by programmed timed command or optionally by a user's remote command, utilizing all of the hot water delivered to any hot water outlet from said hot water supply means, configured so as to be capable of segmentation, at the discretion of the user, for independent operation as a water saver segment only or as an energy saver segment only, comprising in combination:

- a power source;
- a power distribution means for distributing power to selected components activated by remote command;
- a remote control means in electrical continuity with said water and energy conservation system;
- a radio control means in radio communication with said water and energy conservation system;
- a radio receiving means in radio communication with said radio signal remote control means;
- a power control means to direct the application of power;
- a pump;
- a plurality of separate return conduits, each in separate fluid communication with a separate said hot water service conduit and each in fluid communication with separate inlets of a water saver segment;
- a flow control unit comprising: said water saver segment including a plurality of separate, remotely actuated valves, normally closed to flow, the inlet side of each separate valve in fluid communication with each separate hot water use point through each said separate return conduit and the outlets of the valves joined in fluid communication with the inlet of said pump, the outlet of said pump in fluid communication with said cool water supply conduit to said hot water supply and
- an energy saver segment including a first remotely actuated valve means normally open-to-flow, the inlet of the valve in fluid communication with the cool water supply conduit and the outlet of the valve in fluid communication with said cool water inlet of said hot water supply means and a second remotely actuated valve means, normally closed-to-flow, the inlet of the valve in fluid communication with the cool water supply conduit and the outlet of the valve in fluid communication with the hot water supply conduit;
- a first check valve to limit back flow through the first valve means;
- a second check valve to limit back flow through the second valve means;
- a programmable controller means in electrical continuity with said water saver segment, said energy saver segment and said power source.

5,775,373

FLOW-DIVERTER VALVE

Manfred Pawelzik, Soest, and Wolfgang Gebhardt, Menden, both of Germany, assignors to Friedrich Grohe AG, Hemer, Germany

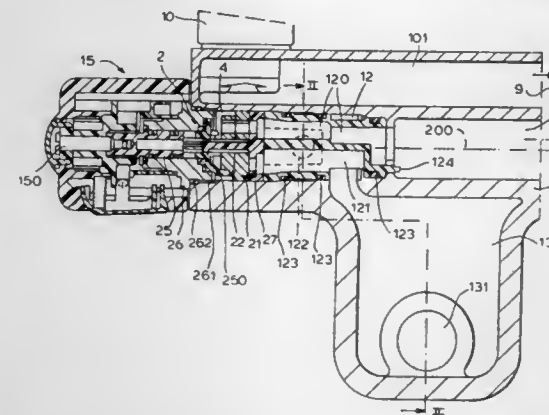
Filed Mar. 25, 1997, Ser. No. 823,640

Claims priority, application Germany, Apr. 13, 1996, 196 14 653.4

Int. Cl.⁶ F16K 11/00

U.S. Cl. 137—625.46

14 Claims



1. A diverter valve comprising:

- a housing forming an inlet for pressurized fluid and a pair of separate outlets connectable to respective users;
- a valve disk fixed in the housing, centered on an axis, and having to one side of a diameter through the axis two axially throughgoing outlet ports each communicating with a respective one of the outlets and to the other side of the diameter an axially throughgoing inlet port communicating with the inlet, the ports being spaced about the axis and centered on a circle itself centered on the axis;
- a valve disk sitting on the fixed valve disk and movable in the housing about the axis, the movable valve disk being formed with a pair of axially throughgoing holes spaced about the axis and centered on the circle; and
- means including a spindle rotatable in the housing about the axis and connected to the movable valve disk for displacing the movable valve disk from a central blocking position in which the holes overlap only the inlet port and between one end position in which one of the holes overlaps one of the outlet ports and the inlet port and permits fluid communication therebetween and another end position in which the other of the holes overlaps the other of the outlet ports and the inlet port and permits fluid communication therebetween.

5,775,374

SOLENOID CONTROLLED VALVE

Takashi Doi, Kodaira; Naoki Homma, Hoya, and Shinichiro Hamada, Adachi, all of Japan, assignors to Koganei Corporation, Tokyo, Japan

Filed Jan. 6, 1995, Ser. No. 369,716

Claims priority, application Japan, Jan. 6, 1994, 6-000266; Jan. 17, 1994, 6-003216

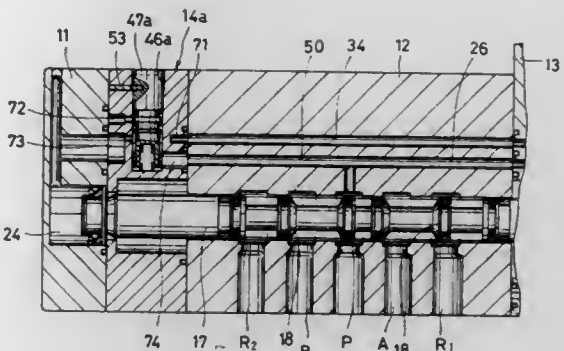
Int. Cl.⁶ F15B 13/043

U.S. Cl. 137—625.64

2 Claims

1. A solenoid controlled valve including a housing having a valve hole, an intake port opening into said valve hole, and output and exhaust ports communicating with said intake port through said valve hole; a valve shaft, fitted in said valve hole and slideable in the axial direction thereof, said valve shaft having a large diameter piston at one end portion and a small diameter piston at the opposite end portion thereof, said valve shaft having a plurality of valves;

the solenoid controlled valve comprising:



a plurality of solenoids including;

a first solenoid for controlling communication between a common communicating passage formed in said housing and a first operating passage communicating with a large diameter pressure chamber in said housing and containing said large diameter piston;

and a second solenoid for controlling communication between said common communicating passage and a second operating passage communicating with a small diameter pressure chamber in said housing containing said small diameter piston;

said housing having a by-pass including a spool shaft hole communicating between said intake port and said small diameter pressure chamber by communicating said second operating passage with said intake port, said by-pass being out of relation to the operation of said second solenoid;

converting means for altering operating characteristics of said solenoid controlled valve in response to operation of said solenoids and movable between an initial position and an actuated position, said converting means formed to be fixable at both said initial position and said actuated position;

when said converting means is in said actuated position said by-pass is blocked to communicate said intake port with said small diameter pressure chamber when said second solenoid is energized; whereby,

when said converting means is in said initial position fluid is supplied to said large diameter pressure chamber by energizing said first solenoid to actuate said valve shaft, and when the energizing of said first solenoid is stopped fluid is supplied to said small diameter pressure chamber via said by-pass;

and when said converting means is in said actuated position, fluid is supplied to said small diameter pressure chamber by energizing said second solenoid and to said large diameter pressure chamber by energizing said fine solenoid to actuate said valve shaft, and when the energizing of said first and second solenoids is stopped, said valve shaft is held at the position in which said valve shaft existed when said solenoids were energized.

5,775,375

HYDRAULIC COUPLER DUST COVER

Norman Lee Calhoun, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 10, 1996, Ser. No. 661,248

Int. Cl.⁶ F16L 55/16

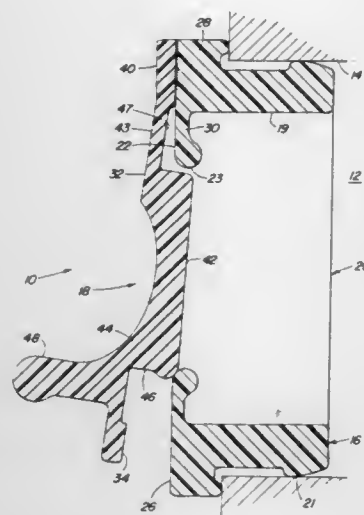
U.S. Cl. 138—89

18 Claims

17. A dust cover for covering an opening of a fluid connector, the dust cover comprising:

a hollow sleeve member for insertion into the connector opening, the sleeve member having an inner rim projecting radially inwardly from one end of the sleeve member, an inner edge of the inner rim forming a coupler seal; a flex member coupled to an outer end of the sleeve member; and

a lid comprising: an end attached to and integrally formed with the flex member, a disk-shaped body which forms an annular contact surface which is engageable with an end of the sleeve member,



a disk-shaped seal member oriented at an angle with respect to the contact surface, and a neck connecting the seal member to the body, the body, the seal member and the neck forming a recess which opens in a direction facing away from the attached end of the lid,

the lid being biased to a passive sealing position by the flex member wherein the lid engages the rim, and the lid being manually movable to an active sealing position wherein a part of the rim is releasably received by a recess formed on a part of the lid.

5,775,376

Patent Not Issued For This Number

5,775,377

Patent Not Issued For This Number

5,775,378

FLUID CONDUIT SYSTEMS AND METHODS FOR MAKING

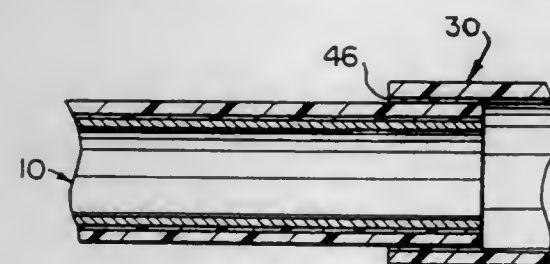
Andrew L. Auvil, Brecksville; Fred Brannan, Akron; Girish Trikamal Dalal, Avon Lake; Thomas L. Evans, Amherst, all of Ohio; George G. Meyer; Stephen J. Meyer, both of Malvern, Pa.; Carmine L. Schiavone, Royersford, Pa., and Theodore Joseph Schmitz, Avon, Ohio, assignors to Central Sprinkler Company, Lansdale, Pa., and The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 2, 1995, Ser. No. 552,295

Int. Cl.⁶ F16L 7/14

U.S. Cl. 138—143

33 Claims



1. A multilayer fluid conduit system comprising:

- a hollow conduit formed by a hollow length of metal pipe having a pair of opposing open ends defined by a completely closed tubular outer surface, the open ends of the metal pipe defining open ends of the conduit, a layer of thermoplastic completely covering the tubular outer surface of the metal pipe, and an adhesive layer between the metal pipe and the thermoplastic layer distributed to provide a circumferential leak-proof seal between the metal pipe and the thermoplastic layer at least at the open ends of the conduit;
- a fitting mounted on one open end of the conduit, the fitting including at least one open end receiving and overlapping the one open end of the conduit, the one open end of the fitting having an exposed, innermost tubular surface of thermoplastic directly facing and bonded to the thermoplastic layer on the one open end of the conduit so as to form a leak-proof sealed joint at the one end of the conduit directly between the conduit and the fitting.

5,775,379

INSULATION JACKET FOR FLUID CARRYING CONDUITS

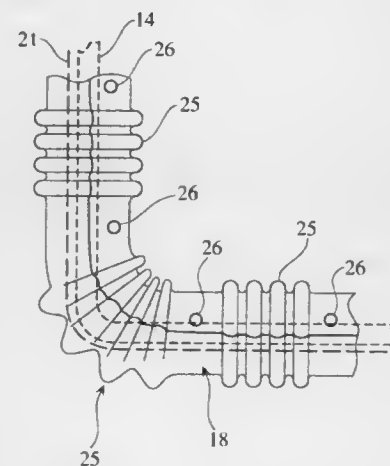
William L. Manofsky, San Jose, and Simon Yavelberg, Cupertino, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Sep. 29, 1995, Ser. No. 536,714

Int. Cl.⁶ F16L 9/14

U.S. Cl. 138—149

15 Claims



- 1. An insulation jacket for a fluid carrying conduit, comprising: insulation material adapted to surround and thermally insulate said conduit, said insulation material having an inner diameter;
- a semi-rigid, resilient outer shell having an axial opening that extends along a length thereof, said outer shell adapted to engage with said conduit along said opening and to entirely surround said conduit and said insulation material, wherein said insulation material substantially conforms to said conduit and is secured about said conduit by said outer shell;
- means for fixedly closing said opening to seal said outer shell about said conduit and said insulation; and
- wherein entire said insulation jacket has a plurality of pleats that provide points of flexure which allow said insulation jacket to conform to bends and curves that occur along a length of said conduit.

5,775,380

WARP BEAM REPLACEMENT AND THREADING APPARATUS

Kristof Roelstraete, Zwevegem, and Henry Shaw, Woesten-Vleteren, both of Belgium, assignors to Santrade Ltd., Lucerne, Switzerland

PCT No. PCT/EP95/00289, § 371 Date Sep. 11, 1996, § 102(e) Date Sep. 11, 1996, PCT Pub. No. WO95/21282, PCT Pub. Date Aug. 10, 1995

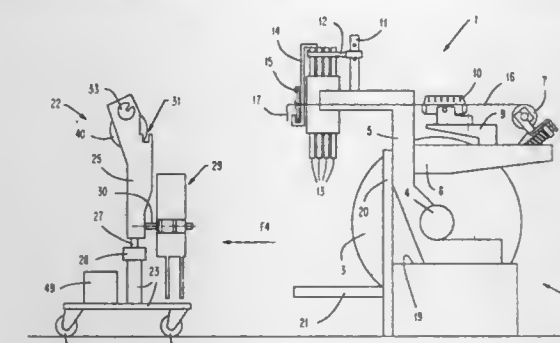
PCT Filed Jan. 27, 1995, Ser. No. 687,337

Claims priority, application Belgium, Feb. 2, 1994, 9400121

Int. Cl.⁶ D03J 1/00; 1/02

U.S. Cl. 139—1 R

21 Claims



1. A method of pulling new warp threads through a device of a power weaving loom, comprising the steps of:

- A) providing a device of a power weaving loom;
- B) attaching old warp threads to new warp threads of a new warp beam;
- C) winding the old warp threads onto a winding element such that points of connection between the old and new warp threads are on the winding element, and such that the new warp threads pass through the device; and
- D) moving the winding element to a removal position with the warp threads remaining thereon.

5,775,381

BIAS YARN ASSEMBLY FORMING DEVICE

Stephen Robert Addis, Crumlin County Antrim, Northern Ireland, assignor to Short Brothers PLC, Belfast, Northern Ireland

PCT No. PCT/GB95/01921, § 371 Date Jul. 15, 1996, § 102(e) Date Jul. 15, 1996, PCT Pub. No. WO96/06213, PCT Pub. Date Feb. 29, 1996

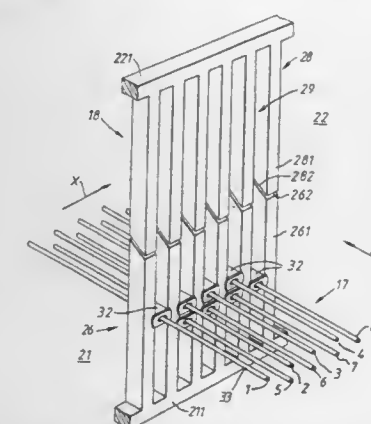
PCT Filed Aug. 15, 1995, Ser. No. 633,786

Claims priority, application United Kingdom, Aug. 18, 1994, 9416721

Int. Cl.⁶ D03D 41/00

U.S. Cl. 139—11

19 Claims



1. A bias yarn assembly forming device for forming in a succession of bias yarn forming steps in which warp yarns being fed in a

warp sheet in a warp feed direction from a supply side of the device are displaced in opposite weft directions, a bias yarn assembly comprising two superposed bias yarn sub-assemblies in which the bias yarns of one sub-assembly are inclined to the bias yarns of the other sub-assembly and in both of which the bias yarns are inclined to the warp feed direction, the device including: a yarn transfer mechanism comprising

a yarn guide member having a support portion extending in the weft direction and a plurality of first guide elements which extend laterally from the support portion to form a row of equi-spaced first guide elements which terminate in ends lying on a line extending in the weft direction and which define between pairs of adjacent first guide elements warp yarn guide openings through which warp yarns of the warp sheet are caused to pass and by which the warp yarns are confined to predetermined relative positions therein along the weft direction, and

a yarn transfer member having a support portion extending in the weft direction and a plurality of second guide elements which extend laterally from the support portion to form a row of equi-spaced second guide elements which terminate in ends lying on a line extending in the weft direction and which define between pairs of adjacent second guide elements yarn transfer openings to which warp yarns of the warp sheet are transferred and by which the warp yarns are confined to predetermined relative positions therein along the weft direction, and

yarn transfer drive means to cause predetermined relative displacements of the yarn transfer member and the yarn guide member in the weft direction to bring the yarn transfer member to any one of a plurality of transfer positions in which ends of the guide elements of the yarn transfer member oppose and register with ends of the guide elements of the yarn guide member and in which transfer openings of the yarn transfer member register with yarn guide openings in the yarn guide member and

shedding means on the supply side of the transfer mechanism for shedding selected warp yarns to cause the selected yarns to move from predetermined first yarn guide openings in the yarn guide member to registering yarn transfer openings in the yarn transfer member and following displacement of the yarn transfer member to another of the plurality of the transfer positions to return the selected warp yarns to the warp sheet and into predetermined second yarn guide openings in the yarn guide member offset from the predetermined first yarn guide openings the device being characterized in that:

the transfer mechanism includes a plurality of eyelet elements through which the warp yarns of the warp sheet pass from the supply side of the device to an opposite delivery side of the device, said eyelet elements including means for being supported by the guide elements for sliding movement along the elements into and out of the yarn guide and yarn transfer openings and for sliding movements from one opening in one member into a registering opening in the other member when the yarn transfer member is in any one of the registering positions.

5,775,382

PROCESS FOR MANUFACTURING TEXTILE

Wilson Chu, Annapolis Tower, 43 Annapolis St., Greenhills St., San Juan, Metro Manila, Philippines

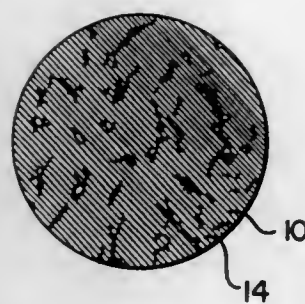
Filed Dec. 22, 1995, Ser. No. 578,877

Int. Cl.⁶ D03D 15/00

U.S. Cl. 139—420 R

8 Claims

- 1. A method of manufacturing a fabric so that it has a stony-washed appearance, the method comprising the steps of: providing a hairy warp yarn that has not been stonewashed; dyeing said hairy warp yarn; and



weaving said dyed hairy warp yarn with a natural weft yarn that has not been stonewashed so as to produce said fabric having a stony-washed appearance during the weaving process.

5,775,383

Patent Not Issued For This Number

5,775,384

FLUID FILLER GUN HAVING A PIVOTABLE GUN BARREL

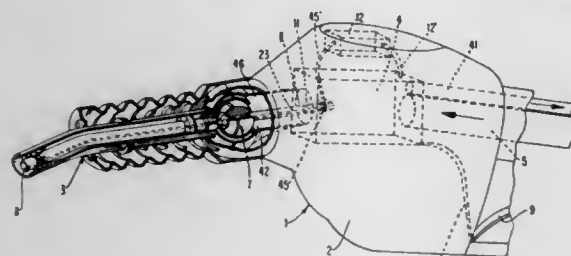
Öyvind Alvern, Hjeltestad, Norway, assignor to Alvern-Norway A/S, Oslo, Norway

Filed Feb. 20, 1997, Ser. No. 803,452

Int. Cl.⁶ B65B 1/04

U.S. Cl. 141—59

29 Claims



1. A fluid filler gun comprising:
 - a gun handle;
 - a gun head having a first end connected to said gun handle, said gun head housing an actuating valve;
 - a gun barrel surrounding a first fluid conduit; and
 - a ball joint apparatus pivotally connecting said gun barrel to a second end of said gun head, said ball joint apparatus including a second fluid conduit in communication between the first fluid conduit and an outlet of the actuating valve.

5,775,385

PROCESS AND SYSTEM FOR CHANGING OIL

Charles R. Tackett, Sr., 524 Woodbine St., Willard, Ohio 44890

Continuation-in-part of Ser. No. 36,102, Apr. 27, 1995, abandoned. This application Apr. 15, 1996, Ser. No. 673,416

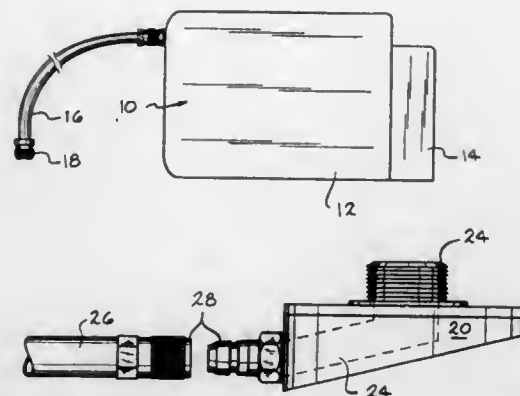
Int. Cl.⁶ F01M 1/04

U.S. Cl. 141—98

4 Claims

1. A system for changing oil for a single vehicle with an oil pan with an opening comprising:

- a. a container with two compartments and one of said compartments is collapsible and is adapted to hold the oil from the single vehicle and said other compartment is of a size sufficient to hold the oil filter from that vehicle; and
- b. a first tube with two ends, the first end is attached and opens into the compartment of the container for holding the oil; and,



- c. a first quick disconnect attached to the second end of the tube; and,
- d. a plug adapted to fit within the opening of the oil pan of the vehicle; and,
- e. an opening in the plug that passes through the plug; and,
- f. a second quick disconnect that is adapted to quick disconnect with the first quick disconnect attached to the opening in the plug; and,
- g. whereas to change the oil from the vehicle the plug is placed in the opening of the oil pan of the vehicle and when it is time to change oil the first quick disconnect is quick connected to the second disconnect in the plug and the container is placed below the oil pan such that the oil from the vehicle will drain from the oil pan into the first compartment and when all the oil has drained from the oil pan into the first compartment then the second quick disconnect is quickly disconnected from the first quick disconnect and the oil filter from the vehicle is removed from the vehicle and placed in the second compartment and thus the used oil filter and the used oil is in a single container.

5,775,386

APPARATUS AND PROCESS FOR FILLING PLURAL CHAMBER CONTAINER WITH FLOWABLE MATERIALS

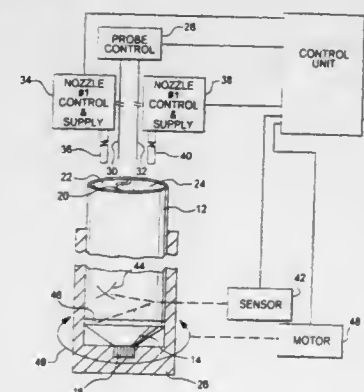
Patrick Andre Connan, Lebanon, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 13, 1996, Ser. No. 662,385

Int. Cl.⁶ B65B 1/04; B67C 3/02

U.S. Cl. 141—103

36 Claims



8. A process for filling two flowable materials into a container having a sidewall, a closed end, an open end and an internal flexible partition extending from the closed end to the open end to provide two chambers to maintain the two materials separated within the container, said flexible partitioning having a first and a second side edge, each side edge attached to said sidewall, said internal flexible partitioning having a transverse dimension greater than the linear distance of the first side edge attachment to said

sidewall and said second side edge attachment to said sidewall, said process comprising the steps of:

- (a) positioning the container with a known orientation;
- (b) positioning the internal partition at a desired location within the container;
- (c) inserting a first supply nozzle into a first one of the two chambers and discharging a known quantity of the first material into said first one of the two chambers; and
- (d) inserting a second supply nozzle into the other one of the two chambers and discharging a known quantity of the second material into said other one of the two chambers.

5,775,387

CONTAINER FILLING SYSTEM HAVING FILL-PIPE WITH AN EXTENDED SEALING MEMBER FOR REDUCING MIXING OF PRODUCT AND AIR DURING CONTAINER FILLING

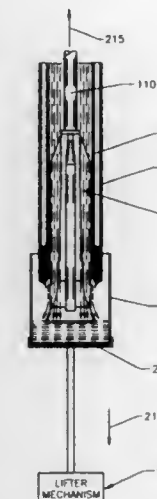
Yutaka Kaneko, Wheeling, Ill., assignor to Tetra Laval Holdings & Finance, S. A., Pully, Switzerland

Filed Sep. 10, 1996, Ser. No. 707,944

Int. Cl.⁶ B67C 3/26

U.S. Cl. 141—263

11 Claims



1. A filling system for filling a container through an open end thereof, the filling system comprising:

a fill-pipe having an inlet for receiving a liquid product and an outlet through which the liquid product can be dispensed into the open end of the container when the container is disposed below the outlet;

a valve sealing member disposed within the fill-pipe, the valve sealing member comprising a body portion with a maximum exterior diameter slightly less than the interior diameter of the fill-pipe, the body portion comprising a plurality of flow channels having sidewalls defined by air displacement fins, the valve sealing member further having a closure portion dimension to seal the outlet of the fill-pipe, the body portion and the closure portion having a combined length that is at least about as long as the height of a level of liquid to which the container is to be filled;

an actuator for moving the valve sealing member between a first position in which the closure portion seals the outlet of the fill-pipe and a second position in which the body portion and closure portion are extended from the outlet of the fill-pipe a length approximately equal to the height to which the container is to be filled with liquid product to thereby displace a substantial portion of air from the interior of the container and allow liquid product to exit the outlet of the fill-pipe.

5,775,388

VALVE BAG SPOUT APPARATUS

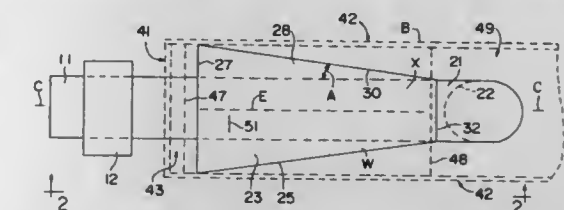
Richard J. Toft, Brooklyn Park, and Wayne H. Gulbranson, Blaine, both of Minn., assignors to Bemis Company, Inc., Minneapolis, Minn.

Filed Mar. 24, 1997, Ser. No. 828,841

Int. Cl.⁶ B65B 1/04

U.S. Cl. 141—313

18 Claims



18. The method of filling a valve bag that has a bag top with a valve sleeve having an exterior opening and an inlet opening that opens to the bag interior, and in an open condition, having a given interior peripheral dimension, the step of inserting a bag spout into the valve sleeve to initially open the valve sleeve to a generally circular shape and then progressive maintaining the height of the valve sleeve opening relatively constant while progressive further mechanically increasing the valve sleeve opening transversely on transverse diametric opposite sides of the valve tube before discharging product into the bag.

5,775,389

FILLING CONTAINERS WITH PARTICULATE MATERIAL

David Peter Griffin, Cambridge, United Kingdom, assignor to Cambridge Consultants Limited, Cambridge, United Kingdom

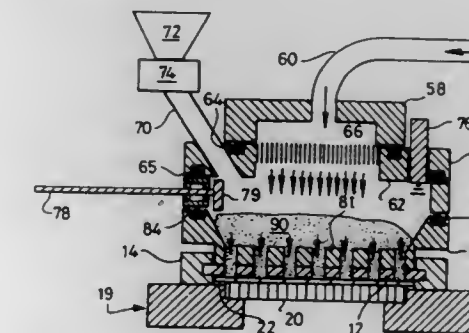
Filed Nov. 18, 1996, Ser. No. 746,928

Claims priority, application United Kingdom, Nov. 17, 1995, 9523555

Int. Cl.⁶ B65B 1/04

U.S. Cl. 141—325

17 Claims



1. A method of introducing each of a plurality of doses of particulate material into a respective compartment of a container, the container comprising a plate having a plurality of apertures, each of which constitutes a respective compartment, the method comprising the steps of:

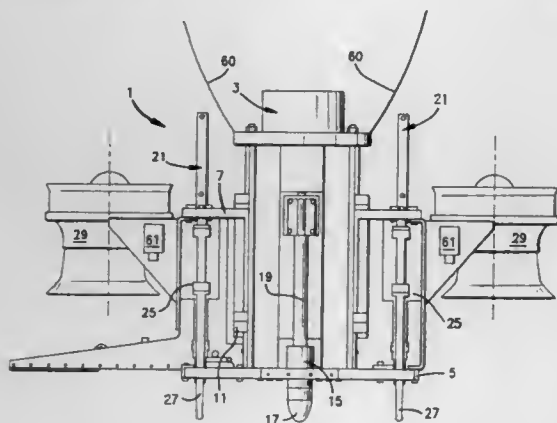
a) inserting a respective protuberance into each compartment so as to reduce the capacity thereof;

b) filling each compartment with said particulate material, with the respective protuberance inserted in said compartment by positioning the plate on a porous bed with the apertures in communication with a reservoir of particulate material; applying gaseous pressure to the reservoir so as to transfer particulate material from the reservoir to the apertures, the porosity of the bed being such as to allow the passage of gas but to prevent the particulate material from passing all the way through the apertures and escaping from the underside of the plate; and

c) removing said protuberances, wherein the volume of each dose of material is less than that of its respective compartment.

5,775,390
APPARATUS FOR EXTRACTION OF A FLUENT MATERIAL FROM A CONTAINER
Frank Mohn, 108 Coombe Lane, London SW20 0AY, England
PCT No. PCT/GB94/02672, § 371 Date Jun. 28, 1996, § 102(e)
Date Jun. 28, 1996, PCT Pub. No. WO95/15280, PCT Pub. Date Jun. 8, 1995
PCT Filed Nov. 30, 1994, Ser. No. 647,913
Claims priority, application United Kingdom, Nov. 3, 1993, 9324560

Int. Cl.⁶ B65B 1/04
U.S. Cl. 141—329 31 Claims



1. An apparatus for removing fluent material from a container, the apparatus comprising locating means for locating the apparatus against a wall of the container, securing means for securing the apparatus to the wall, means for forming an aperture through the wall and for extracting the material from the container through the aperture, and closure means for closing the aperture, comprising a first module having the means for extracting the material and for locating and securing a second module to the container, the second module having closure means, the first and second modules being releasably connectable one to the other, and wherein the closure means of the second module is adapted to become effective in response to separation of the first module from the second module.

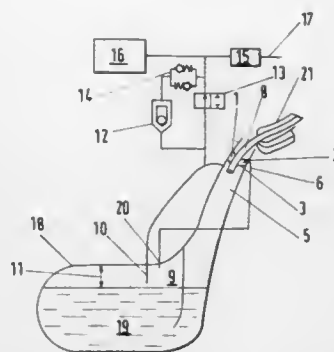
5,775,391

Patent Not Issued For This Number

5,775,392
MOTOR VEHICLE TANK WITH FILLING TUBE VENT
Burkhard Kraft, Isenbüttel, Germany, assignor to Volkswagen AG, Wolfsburg, Germany
Filed Oct. 21, 1996, Ser. No. 734,486
Claims priority, application Germany, Oct. 24, 1995, 195 39 455.0

Int. Cl.⁶ B60K 15/0356
U.S. Cl. 141—382 9 Claims

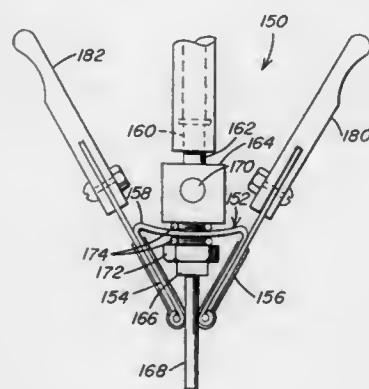
1. A motor vehicle tank comprising:
a tank having a tank filling tube;
a tank vent having a vent orifice in the tank filling tube;
a connection line which connects the vent orifice with an upper portion of the tank and can be isolated from the tank filling tube; and



a closing arrangement for closing the vent orifice in the tank filling tube during filling and responsive to introduction of a pump nozzle into the tank filling tube for closing the tank filling tube with respect to the atmosphere and isolating the connection line from the tank filling tube when the motor vehicle tank is being filled by introduction of a fuel pump nozzle into the tank filling tube.

5,775,393
METHOD OF AND NOZZLE FOR FILLING COMPARTMENT OF A MULTISHEET GLAZING UNIT
Paul J. Kovacic, Ford City, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

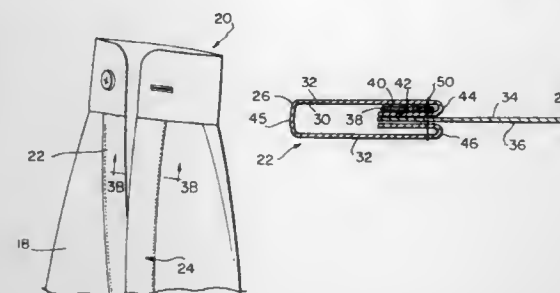
Division of Ser. No. 102,596, Aug. 5, 1993. This application May 24, 1995, Ser. No. 449,594
Int. Cl.⁶ B65B 1/04; 3/00; B67C 3/00
U.S. Cl. 141—383 8 Claims



4. A nozzle for moving a fluid into a unit having a pair of sheets secured to a spacer to form a sealed air space between the sheets, the fluid is moved through a base of the spacer into the space between the sheets, the nozzle comprising:

a clamp having a middle member and a pair of outer legs connected to the middle member to provide the clamp with a generally C-shaped configuration;
means for biasing the legs toward and away from one another;
a first tube mounted in the middle member and secured thereto with ends of the first tube extending beyond the base;
a second tube mounted in the first tube and spaced from inner wall of the first tube, ends of the second tube extending beyond adjacent ends of the first tube, and
means for securing the second tube spaced from the first tube to provide an exhaust passage.

5,775,394
PUCKER FREE SLEEVE PLACKET GARMENT SEAM AND METHOD FOR PRODUCTION
John Wong, Montreal, Canada, assignor to Tal Apparel, Ltd., Kowloon, Hong Kong
Continuation-in-part of Ser. No. 613,656, Mar. 11, 1996, Pat. No. 5,590,615, which is a continuation of Ser. No. 245,122, May 17, 1994, Pat. No. 5,568,779. This application Jan. 6, 1997, Ser. No. 782,003
Int. Cl.⁶ D05B 1/18; A41D 27/10; B32B 7/08; 7/12
U.S. Cl. 112—441 58 Claims

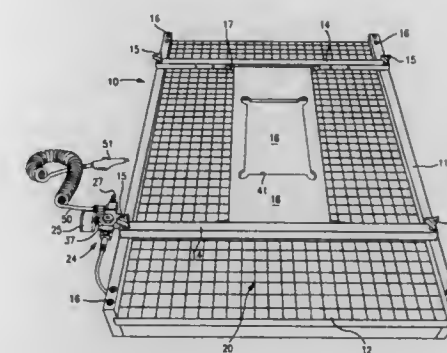


1. A method for producing a smooth garment seam between a first garment component and a second garment component, said method comprising the steps of:

- placing the first garment component having a first surface and a second surface in an adjacent relationship to the second garment component having a first surface and a second surface so as to define a seam;
- placing a bonding strip having a first surface and a second surface and at least a thermal adhesive component along the seam such that the second surface of the bonding strip abuts the first surface of the first garment component;
- reverse folding the first garment component over the bonding strip such that the first surface of the first garment component also abuts the first surface of the bonding strip;
- reverse folding the first garment component a second time such that a portion of the first surface of the first garment component abuts itself;
- reverse folding a portion of the first garment component a third time such that a portion of the second surface of the first garment component abuts the second surface of the second garment component along the seam, and a portion of the first surface of the first garment component abuts itself along the seam;
- sewing the first and second garment components and the bonding strip together by a stitch running along the bonding strip; and
- applying sufficient heat and pressure to said bonding strip to cause the thermal adhesive to melt such that said adhesive flows onto the first surface of the first garment component along the first surface of the bonding strip and concomitantly along the second surface of the bonding strip to provide a bond along the seam and around the stitch such that the bonded component will effectively reduce a tendency of the seam to exhibit pucker following laundering operations.

5,775,395
VACUUM FIXTURE
David Wilkins, 25 S. Highland St., Winchester, Ky. 40391
Filed Apr. 9, 1997, Ser. No. 833,707
Int. Cl.⁶ B25H 1/02; B25B 11/00
U.S. Cl. 144—286.5 9 Claims

1. A vacuum fixture having a flat work surface on which a flat workpiece is adapted to be clamped while tracing a template pattern thereon comprising:
a sealing bead defining a vacuum chamber under a portion of the workpiece when placed thereon;

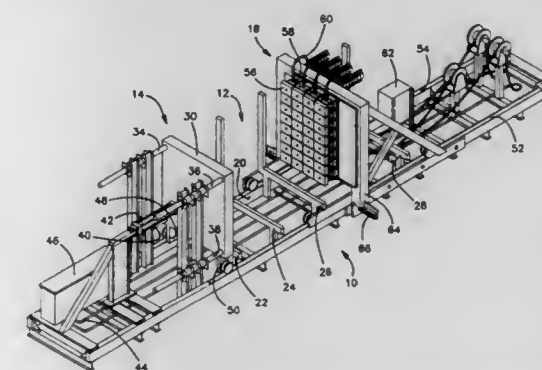


a source of vacuum connectable to the chamber capable of generating a negative pressure therein sufficient to hold the workpiece against movement under working conditions; and a plurality of template indexing elements adjustable relative to the work surface adapted to be set into position to removably hold a template in fixed relationship above the workpiece without directly being attached to the workpiece, the template indexing elements preventing relative movement of the template and workpiece while the vacuum chamber prevents relative movement of the workpiece and work surface as a tool is moved relative to the template in tracing a pattern onto the workpiece underneath.

5,775,396

Patent Not Issued For This Number

5,775,397
LUMBER STAMPER
Thomas E. Lippincott, Wilmington, N.C., assignor to Tank Fab, Inc., Rocky Point, N.C.
Filed Jul. 2, 1997, Ser. No. 887,145
Int. Cl.⁶ B27M 1/00; B05D 3/12
U.S. Cl. 144—358 14 Claims



1. An apparatus for embossing the ends of a plurality of elongated articles comprising:
a) an embossing plate having an embossing surface with three-dimensional indicia thereon;
b) a press plate spaced from said embossing plate, said press plate having an article contact surface facing said embossing surface;
c) a support for supporting a plurality of elongated articles with first and second opposed ends between said plates with the first ends of said articles being toward said embossing plate and the second ends of said articles being toward said press plate; and
d) drive means attached to one of said plates to move said plate toward the other of said plates to press said first ends of said

articles against said embossing surface, whereby the first ends of said articles are embossed with said indicia.

5,775,398

CARD HOLDER

Milton I. Siegel, Scottsdale, Ariz., assignor to Helen P. Siegel, Scottsdale, Ariz.

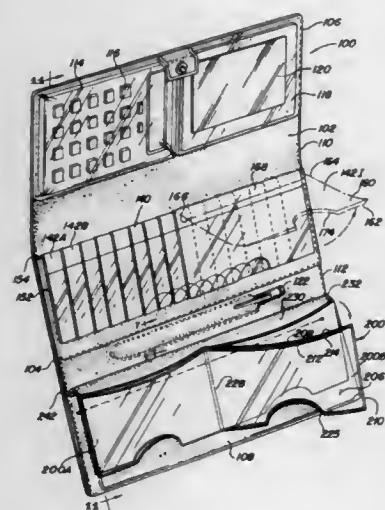
Division of Ser. No. 871,195, Apr. 20, 1992, Pat. No. 5,431,207.

This application Jul. 7, 1995, Ser. No. 499,795

Int. Cl.⁶ A45C 1/06; 11/18

U.S. Cl. 150—139

5 Claims



1. An organizer for cards comprising:

(a) a first assembly comprising a plurality of card holders each holder having:

- (i) a front panel having opposite sides and opposite edges;
- (ii) a rear panel having opposite sides and opposite edges and being joined to said front panel along selected opposite edges and sides to define a card-receiving pocket therebetween;
- (iii) each of said holders defining a card insertion opening and at least one of said panels being transparent;

(b) an insert member having an edge;

(c) said plurality of card holders each being attached at a hinge along a selected common side to said insert member, whereby a plurality of hinges are formed at said edge, said hinges being positionally fixed with respect to said insert at said edge, said plurality of card holders positioned in overlapping arrangement with at least a part of each card holder exposed when the holders are in said overlapping arrangement to permit viewing of at least part of the contained card and whereby a selected holder may be accessed by grasping the selected holder causing it to be lifted away from said insert at the associated hinge;

(d) one of said panels defining a notch opposite said card insertion opening whereby a manual force may be applied to a contained card by a user's finger at said notch to at least partially extend the card from the pocket at said card insertion opening; and

(e) a wallet having a body with a peripheral edge and opposite interior and exterior surface and a first pocket therein for removably receiving said insert, said wallet having an open and a closed position and said card holder remaining in said overlapping arrangement in both said open and closed positions.

5,775,399
LOUVERED BLIND WITH REMOVABLE CLOTH SHADES

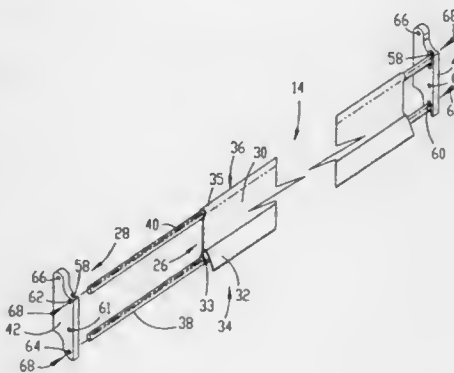
John W. Shields, Jr., 1400 E. 79th St., Kansas City, Mo. 64131

Filed Jan. 8, 1997, Ser. No. 780,676

Int. Cl.⁶ E06B 9/26

U.S. Cl. 160—176.1 R

16 Claims



1. A window blind comprising:

- a frame; and
- a plurality of spaced louvers mounted to said frame and selectively shiftable between opened and closed positions, each of said louvers including elongated shade having a pair of opposed side edges, and a support assembly for supporting said shade to said frame, said support assembly including a pair of support slats for attachment to said shade and adjusting means for selectively adjusting the distance between said support slats on each of said louvers for adjusting the distance between the opposed side edges of said shade for each of said louvers.

5,775,400

INSTANT SCREEN DOOR

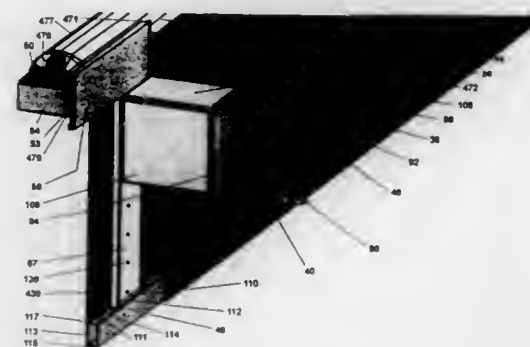
Anthony Wilkinson, 38 Winding Wood Dr. Apt. 5A, Sayreville, N.J. 08872

Filed Aug. 5, 1996, Ser. No. 695,120

Int. Cl.⁶ A47G 5/02

U.S. Cl. 160—323.1

23 Claims



1. A closure assembly for mounting on a frame in a wall, said frame having a horizontal dimension and being formed of a pair of stiles connected by a horizontal connecting member, said closure assembly comprising in combination:

- (a) a roller rod having a first end and a second end, said roller rod being longer than said horizontal dimension of said frame, said roller rod including two telescopically engaged hollow cylindrical portions,
- (b) a closure coupled to said roller rod,
- (c) first and second bracket means for positioning said roller rod minimally close to said wall, outside said frame, and at or

above the top of said frame, each of said bracket means being extensible in three dimensions, and each of said bracket means including:

- a depth extender member comprising a vertical plate portion for contacting one of said stiles of said frame, a horizontal planar portion for contacting said horizontal connecting member of said frame, a first extender outer edge normal to said frame and positioned on said horizontal plate portion, a first extender flange extending from said first extender outer edge, a second extender outer edge normal to said frame and positioned on said vertical plate portion, a second extender flange extending from said second extender outer edge, a first extender guideway formed between said first extender flange and said first extender outer edge and a second extender guideway formed between said second extender flange and said second extender outer edge,

a right angle shaped arm comprising:

- a vertical planar portion normal to said frame, said vertical planar portion having a first arm vertical edge adjacent said frame and a second arm vertical edge farther from said frame than said first arm vertical edge, and
 - a horizontal planar portion, said horizontal planar portion having a first arm horizontal edge, normal to said stiles and adjacent to said frame, and a second arm horizontal edge normal to said stiles;
- said arm being substantially longer than said depth extender member, and said arm being slidably received by said first extender guideway and said second extender guideway,

depth extender securing means for holding said depth extender member in an adjusted position in relation to said arm,

an upright interlocking member parallel to said frame, said upright interlocking member being connected to said first arm vertical edge and to said first arm horizontal edge, said upright interlocking member having a first upright interlocking vertical edge parallel to said stiles, and having a first upright interlocking guideway along said first upright interlocking vertical edge and a second upright interlocking guideway along said second upright interlocking vertical edge,

an upright member parallel to said frame, said upright member being substantially longer than said upright interlocking member, said upright member having a top upright horizontal edge, a first upright vertical edge and a second upright vertical edge, a first lateral upright flange extending from said first upright vertical edge and a second upright lateral flange extending from said second upright vertical edge, a first upright guideway formed between said first upright lateral flange and a second upright guideway formed between said upright second lateral flange, said first upright guideway and said second upright guideway being slidably interengaged with said first upright interlocking guideway and said second upright interlocking guideway,

an upright interlocking member securing means for holding said upright interlocking member in an adjusted position in relation to said upright member,

a lateral extension member positioned parallel to said frame including:

- a lateral extension vertical edge in alignment with one of said upright vertical edges,
- top and bottom lateral extension longitudinal edges, a portion of said bottom lateral extension longitudinal edge being connected to said top upright horizontal edge,
- a lateral extension longitudinal flange positioned along each of said top and bottom lateral extension longitudinal edges, said lateral extension longitudinal flanges extending in a direction opposite to the direction in which said first upright lateral flange and said second upright lateral flange extends, and
- lateral extension horizontal guideways formed by each of said lateral extension longitudinal flanges,
- a transverse member oriented parallel to said frame, said transverse member having a planar, rectangular first sur-

face and a planar, rectangular second surface facing in opposite directions, said second surface facing the direction in which said arm extends from said upright interlocking member,

said transverse member being slidably received in said lateral extension horizontal guideways,

lateral extension member securing means for holding said lateral extension member in an adjusted position in relation to said transverse member,

an intermediate member extending normally from said second surface of said transverse member, said intermediate member being positioned at an end of said second surface of said transverse member farthest from said upright member, and

frame pads formed of a material having a high coefficient of friction, secured to said vertical planar portion of said depth extender member and to said horizontal planar portion of depth extender member,

(d) a slot pocket positioned at the bottom of said closure between said first bracket means and said second bracket means,

(e) slot means having a length approximately equal to that of said closure and comprising a right angled association of three planar surfaces forming a slot cavity having an upward opening and extending longitudinally across said slot means, said slot means being slidably received within said slot pocket,

(f) a catch extending downward from the bottom of said upright member, said catch being thinner than said cavity of said slot means,

(g) a housing located within said second end of said roller rod, said housing including an end surface facing towards said first end of said roller rod and including a housing cavity having a closed base, sides and opening away from said first end of said roller rod,

(h) expansive pressure means for forcing said first and second bracket means outwardly into static frictional engagement with said stiles of said frame, said expansive pressure means being located substantially within said housing, and said expansive pressure means including:

a forward shaft having an interior end within said housing cavity and having an exterior end protruding from said housing cavity and coupled to said second bracket means, forward shaft axial bearing means for maintaining said forward shaft within said housing cavity in axial alignment with said roller rod, and for permitting relative movement between said sides of said housing cavity and said forward shaft,

a rearward shaft slidably associated with said interior end of said forward shaft and extending towards said base of said housing cavity,

base bearing means for facilitating rotation between said rearward shaft and said base of said housing cavity,

rearward shaft axial bearing means for maintaining said rearward shaft within said housing cavity in axial alignment with said roller rod, and for permitting relative movement between the sides of said housing cavity and said rearward shaft,

spring means positioned between said forward shaft axial bearing means and said rearward shaft axial bearing means, spring stop means bearing against said spring means, said spring stop means being positioned between said forward shaft axial bearing means and said rearward shaft axial bearing means, and

locking means for fixing the position of said spring stop means relative to said housing when said closure assembly is mounted in said frame, said locking means being removable to permit translation of said spring stop means relative to said housing,

(i) conductive shaft means for conducting the force of said expansive pressure means, said conductive shaft means having an external end coupled to said first bracket means, said conductive shaft means having an internal end located within said roller rod, said conductive shaft means having primary shaft engaged with a secondary shaft,

said primary shaft extends towards said first end of said roller rod, said secondary shaft extends towards said second end of said roller rod, said primary shaft has a primary engaged portion at one end of said primary shaft farthest from said first end of said roller rod, said secondary shaft has a secondary engaged portion at an end of said secondary shaft farthest from said second end of said roller rod, said secondary engaged portion has a base perpendicular to a longitudinal axis of said roller rod, said primary shaft has threads on the exterior of the end of said primary engaged portion forming a threaded end,

said threaded end of said primary shaft is located beyond the boundary of said telescoping portion of said roller rod, said secondary shaft has a secondary shaft cavity with an opening at said base of said secondary engaged portion, said secondary shaft cavity of said secondary shaft has a closed base within said secondary shaft engaged portion, said secondary shaft cavity has a threaded cavity portion and an unthreaded cavity portion, said unthreaded cavity portion extending from said opening of said secondary shaft cavity to said threaded cavity portion of said secondary shaft cavity, said unthreaded cavity portion being longer than said threaded end of said primary shaft,

said threaded cavity portion of said secondary shaft extends to said closed base of said secondary shaft cavity, the length of said threaded cavity portion being approximately equal to the maximum change in length of said roller rod, said threaded end of said primary shaft passes through unthreaded cavity portion of said secondary shaft and twists into said threaded cavity portion of said secondary shaft, and

conductive shaft extension means for adjustably extending and maintaining the length of said conductive shaft means, said conductive shaft extension means includes primary shaft securing means for holding said primary shaft in an adjusted position in relation to said secondary shaft, said primary shaft securing means having a screw that twists through said secondary engaged portion, through said unthreaded cavity portion and contacts said primary shaft,

(j) housing bearing means for facilitating rotation between said internal end of said conductive shaft means and said end surface of said housing, and

(k) winding means for winding and unwinding said closure on said roller rod, whereby said closure assembly may be quickly mounted for covering said frame completely and closely to minimize the passage of insects, light or visibility through said frame.

5,775,401

DRAPERY TIE BACK RINGS

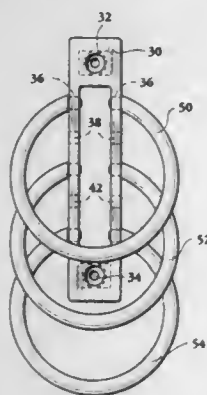
Vickie A. Faurie, 9216 S. 92nd East Ave., Tulsa, Okla. 74133

Filed Jun. 7, 1995, Ser. No. 486,332

Int. Cl.⁶ A47H 19/00

U.S. Cl. 160—349.2

8 Claims



3. A drapery tie back device comprising:

a base member having side edges and a plurality of longitudinally spaced receiving means along each said side edge, said base member having a means to attach to a wall or window frame surface;

a plurality of unitary rings, each ring having split ends, each of said ends capable of being removably and pivotally retained in said receiving means whereby a drapery can be decoratively laced through and around said rings.

5,775,402

ENHANCEMENT OF THERMAL PROPERTIES OF TOOLING MADE BY SOLID FREE FORM FABRICATION TECHNIQUES

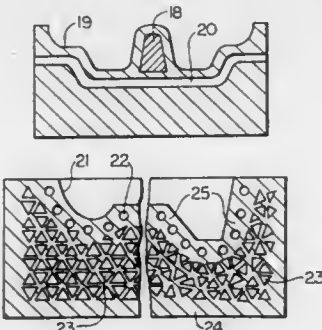
Emanuel Sachs, Newton; Steven P. Michaels, Carlisle, and Samuel M. Allen, Jamaica Plain, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 31, 1995, Ser. No. 551,012

Int. Cl.⁶ B22D 19/00; 19/02; B22C 13/00

U.S. Cl. 164—4.1

47 Claims



1. A process for fabricating a part having an internal void, comprising the steps of:

depositing a powder onto a surface in layers;

selectively binding regions of each layer of the powder and leaving other regions of each layer of the powder unbound to provide an intermediate part having an internal void;

substantially simultaneously with said selectively binding step, selectively depositing an infiltration stop material adjacent the region defining a wall of the internal void;

providing an outlet from said unbound regions that will form said void;

removing any unbound powder to form said void; and processing the intermediate part to attain full density by infiltrating the intermediate part with an infiltrant, whereby said infiltration stop material prevents infiltration of the infiltrant into the internal void, to provide a finished part having an internal void.

22. A process for fabricating tooling having enhanced thermal properties, comprising the steps of:

depositing a powder onto a surface in layers;

selectively binding regions of each layer of the powder and leaving the powder unbound in other regions to provide an intermediate part with a heat transfer channel having an inlet and an outlet and a configuration that conforms to a surface portion of a finished tool element;

removing said unbound powder to form said heat transfer channel; and

processing the intermediate part to provide the finished tool element having regions of different thermal properties, by infiltrating the intermediate part with an infiltrant while providing a pressure differential of a value preselected to prevent infiltration of the infiltrant into the heat transfer channel, the pressure differential being provided by disposing the intermediate part on a stilt assembly formed of a material through which the infiltrant rises by capillarity, a lower portion of the stilt assembly being placed in a pool of the infiltrant, the stilt assembly having a height preselected to cause the infiltrant to

infiltrate the intermediate part and to maintain the heat transfer channel free of infiltrant.

27. A process for fabricating a part having an internal void, said process, comprising the steps of:

depositing a powder onto a surface in layers;

selectively binding regions of each layer of the powder and leaving other regions of each layer of the powder unbound to provide an intermediate part having an internal void;

providing at least one opening to said unbound regions that will form said void; and

removing unbound powder to form the void by immersing the intermediate part in a vessel of water and CO₂ dissolved in the water and reducing the pressure inside the vessel to cause the CO₂ to come out of solution as bubbles, thereby pushing the powder out of at least one opening to provide the intermediate part having an internal void; and

infiltrating said intermediate part with an infiltrant to form a finished part having said internal void.

5,775,403

INCORPORATING PARTIALLY SINTERED PREFORMS IN METAL MATRIX COMPOSITES

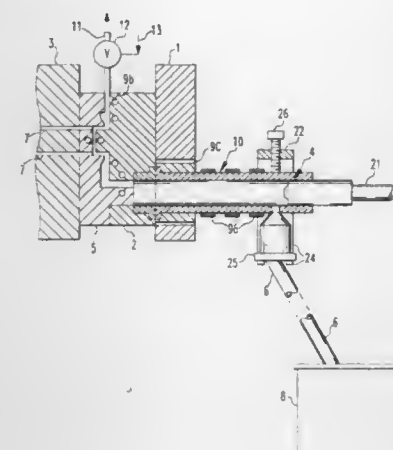
M. K. Premkumar; Ralph R. Sawtell, both of Monroeville; Frankie E. Phelps, Apollo; James A. DerKacy, Bethel Park, all of Pa., and David I. Yun, Orange, Conn., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 444,171, May 18, 1995, Pat. No. 5,616,421, which is a division of Ser. No. 235,018, Apr. 28, 1994, Pat. No. 5,570,502, which is a continuation-in-part of Ser. No. 111,993, Aug. 25, 1993, abandoned, which is a division of Ser. No. 682,513, Apr. 8, 1991, Pat. No. 5,259,436. This application Jun. 7, 1995, Ser. No. 482,389

Int. Cl.⁶ B22D 17/10; 19/02; 19/14

U.S. Cl. 164—98

24 Claims



1. A method of fabricating a metal matrix composite having a combination of high thermal conductivity and a good coefficient of thermal expansion, said method comprising:

(a) preparing a formed agglomeration of powder particles, and tacking the formed agglomeration of powder particles by heating the formed agglomeration to a temperature between 600° and 1000° C. in an oxidizing atmosphere to oxidize the powder particles to bond the powder particles of the agglomeration together;

(b) partially sintering said formed agglomeration by heating the formed agglomeration to a temperature between approximately 1650° and 2000° C. in a substantially inert atmosphere;

(c) placing said partially sintered agglomeration in a die cavity;

(d) infiltrating said partially sintered agglomeration with a liquid-phase metal; and

(e) solidifying said liquid-phase metal to form said metal matrix around and through said partially sintered agglomeration.

5,775,404

METHOD OF CONTINUOUSLY CASTING AUSTENITIC STAINLESS STEEL

Yuji Miki; Seiji Itoyama; Nagayasu Bessho; Sumio Yamada, and Hiroshi Nomura, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

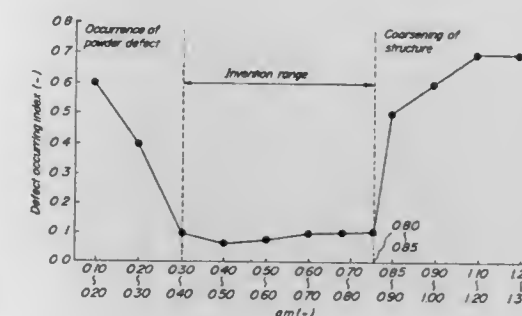
PCT No. PCT/JP96/00281, § 371 Date Sep. 16, 1996, § 102(e) Date Sep. 16, 1996, PCT Pub. No. WO96/24452, PCT Pub. Date Aug. 15, 1996

PCT Filed Feb. 9, 1996, Ser. No. 704,591

Claims priority, application Japan, Feb. 9, 1995, 7-021659 Int. Cl.⁶ B22D 11/00

U.S. Cl. 164—477

4 Claims



1. A method for high-speed continuous casting of austenitic stainless steel comprises pouring a melt of an austenitic stainless steel into a casting tundish and flowing the melt from the tundish through an immersion nozzle having a discharge port into a mold of a continuous slab caster, forming a cast slab by solidifying the poured melt in the mold and then continually drawing the resulting slab out from the mold, said slab having a predetermined slab width upon exiting said mold, wherein the high-speed continuous casting is carried out by controlling a heat input quantity of the melt cast through said immersion nozzle, said heat input quantity regulated by simultaneous control of the parameters satisfying the following equation of dimensionless value:

$$0.30 \leq V^{0.58} W^{-0.04} \Delta T \cdot d^{-0.96} \leq 0.85$$

wherein

V: is the casting speed (m/min)

W: is the slab width (mm)

ΔT: is the superheating degree of the molten steel in the tundish (°C.)

d: is the square root of a cross sectional area of the immersion nozzle discharge port (mm).

5,775,405

AIR PREHEATER BASKET ASSEMBLY

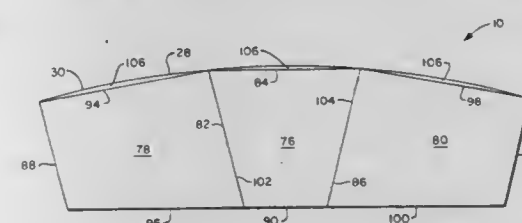
Vong Boussa, Wellsville, N.Y., assignor to ABB Air Preheater, Inc., Wellsville, N.Y.

Filed Nov. 7, 1996, Ser. No. 745,097

Int. Cl.⁶ F23L 15/02

U.S. Cl. 165—8

20 Claims



1. A heat exchange basket assembly for an air preheater comprising:

first and second lateral heat exchange baskets, each of the lateral heat exchange baskets comprising first and second parallel sides and first and second non-parallel sides; and a keystone heat exchange basket comprising first and second parallel sides and first and second non-parallel sides; wherein the keystone heat exchange basket is positioned intermediate the first and second lateral heat exchange baskets, wherein the first non-parallel side of the keystone heat exchange basket is adjacent the first parallel side of the first lateral heat exchange basket and the second non-parallel side of the keystone heat exchange basket is adjacent the first parallel side of the second lateral heat exchange basket.

5,775,406

VENTILATION MESSAGE DISPLAY SYSTEM AND METHOD FOR A VEHICLE

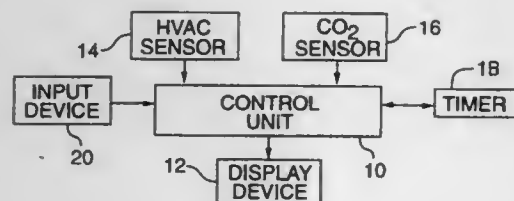
Nicolae Ghitea, Jr., Tigard, Oreg., assignor to Freightliner Corporation, Portland, Oreg.

Filed Jul. 1, 1996, Ser. No. 674,134

Int. Cl.⁶ G05D 23/00; F24F 7/06

U.S. Cl. 165—11.1

12 Claims



1. In a vehicle having a ventilation system with a recirculation mode, a message system for the vehicle comprising:
a display device;
an HVAC sensor operable to generate a signal indicating whether the ventilation system is in the recirculation mode;
a control unit coupled to the HVAC sensor and the display device, the control unit being operable to receive the signal from the HVAC sensor, being operable to detect when the recirculation mode is active by monitoring the signal, and being operable to detect a first condition in which a predefined time period has elapsed while the HVAC system has been in the recirculation mode, and in response to detecting that the first condition is satisfied, being operable to generate the display of an alert message on the display device.

5,775,407

DUAL ZONE AIR CONDITIONING APPARATUS WITH SEALING PORTIONS ON PARTITION WALL

Eiji Inoue, Nagoya, Japan, assignor to Denso Corporation, Kariya, Japan

Filed Dec. 19, 1996, Ser. No. 769,890

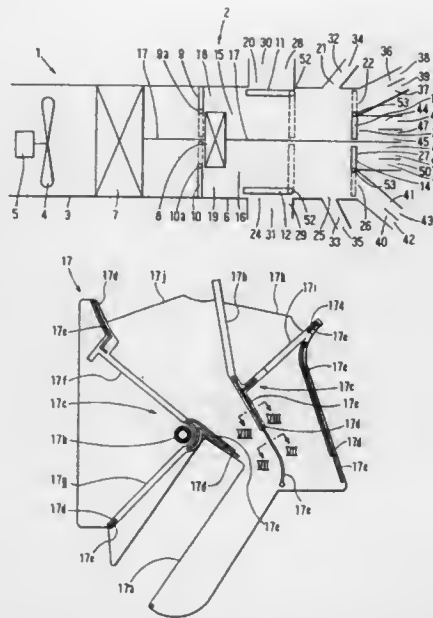
Claims priority, application Japan, Dec. 26, 1995, 7-339536

Int. Cl.⁶ B60H 1/02

U.S. Cl. 16—42

11 Claims

1. An air conditioning apparatus for a vehicle having a passenger compartment including a first air conditioning zone and a second air conditioning zone, said air conditioning apparatus comprising:
an air conditioning case having an air passage therein, for introducing conditioned air into said first and second air conditioning zones;
a partitioning member for partitioning said air passage into a first air passage communicating with said first air conditioning zone and a second air passage communicating with said second air conditioning zone;
a first door provided in said first air passage, for closing a predetermined air flow path formed in said first air passage;



a second door provided in said second air passage, for closing a predetermined air flow path formed in said second air passage; and
a sealing portion protruding from both surfaces of said partitioning member, said sealing portion contacting with said first and second doors to seal a gap between said partitioning member and each of said first and second doors when said first and second doors close respective said predetermined air flow paths.

5,775,408

INTEGRATED GAS FIREPLACE AND AIR CONDITIONER SYSTEM

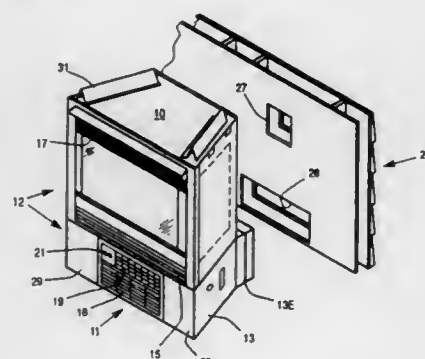
Ronald John Shimek, Prior Lake, and Daniel Curtis Shimek, Apple Valley, both of Minn., assignors to Heat-N-Glo Fireplace Products Inc., Savage, Minn.

Filed Jan. 19, 1996, Ser. No. 588,865

Int. Cl.⁶ F25B 29/00

U.S. Cl. 165—48.1

18 Claims



1. A combined air conditioner/fireplace unit for controlling the temperature of space air in an area or space adjacent to said unit comprising:
a prefabricated fireplace,
a prefabricated air conditioner,
a prefabricated enclosure having an upper compartment for housing said fireplace and a lower compartment for housing said air conditioner,
said upper compartment of said enclosure having first front opening means for passageway of said space air through said prefabricated fireplace to provide heating of said space,

said lower compartment of said enclosure having second front opening means for passageway of said space air through said prefabricated air conditioner, and
thermostatic control means remote from said unit for controlling said prefabricated fireplace and said prefabricated air conditioner.

15. A combined heating and cooling unit, comprising:
an air conditioning unit,
a gas fireplace unit mounted on top of said air conditioning unit, an air conditioner extension adapter coupled to said air conditioning unit,
said extension adapter having a cooling air inlet duct and a hot air discharge duct for cooling said air conditioner,
said extension adapter having means for extending said duct through an outside wall, and
thermostatic control means in said combined heating and cooling unit comprising a fireplace switch and an air conditioning switch for actuating either said gas fireplace unit or said air conditioner unit in response to a remote thermostat control.

5,775,409

COOLING TOWER

Osamu Goto, Ushiku, and Koji Kimura, Chiba, both of Japan, assignors to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

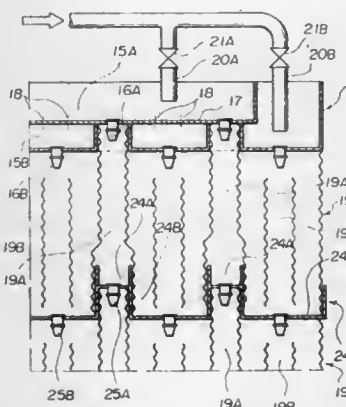
Filed Oct. 29, 1996, Ser. No. 739,299

Claims priority, application Japan, Oct. 30, 1995, 7-282017

Int. Cl.⁶ F28F 27/02; B01F 3/04

U.S. Cl. 165—101

8 Claims



1. A cross flow type cooling tower comprising:
a water bath disposed on a casing covering heat dissipation units for storing hot-water to be cooled, said water bath being divided into an upper bath and a lower bath by a partition plate, said partition plate having a plurality of uniformly distributed holes;
water supply tubes for exclusively supplying hot water to said upper bath and said lower bath respectively, each of said supply tubes being equipped with respective transfer valves;
multiple stacked heat dissipation units, each of which consists of a plurality of filling plates arranged vertically and parallel with each other so as to define passages therebetween, said passages being separated into wet passages and switchable passages;
water spray means for spraying water stored in said water bath into wet passages and switchable passages;
wherein operation of said cooling tower is changed from a wet operating mode to a wet-and dry operating mode by switching said water supply from the upper bath to the lower bath, respectively.

5,775,410

HEAT EXCHANGER

Leif Ramm-Schmidt, Kirkkonummi; Hemmo Eriksson, Vantaa; Peter Koistinen, Espoo, and Veli Tiainen, Klaukkala, all of Finland, assignors to Hadwaco Ltd. Oy, Helsinki, Finland
PCT No. PCT/FI95/00525, § 371 Date May 29, 1997, § 102(e) Date May 29, 1997, PCT Pub. No. WO96/09871, PCT Pub. Date Apr. 4, 1996

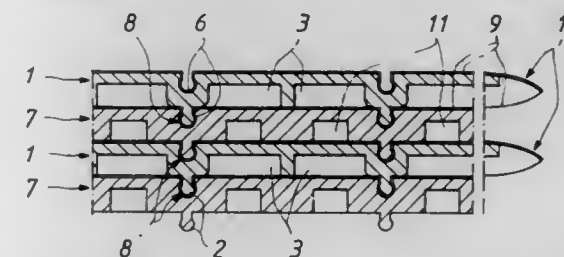
PCT Filed Sep. 26, 1995, Ser. No. 809,794

Claims priority, application Finland, Sep. 27, 1994, 944472

Int. Cl.⁶ F28B 1/00

U.S. Cl. 165—110

9 Claims



1. A heat exchanger comprising a heat exchange surface of membrane material and a vapor distributor for feeding a heating vapor onto the heat exchange surface, the vapor distributor having parallel conduits for directing the vapor over the entire width of the heat exchange surface, wherein the vapor distributor includes two opposing wall elements fastened to each other by means of projections in one said wall element and corresponding recesses in the other said wall element, and the membrane material which constitutes the heat exchange surface is locked between the fastened projections and recesses.

5,775,411

HEAT-EXCHANGER TUBE FOR CONDENSING OF VAPOR

Gerhard Schuez, Voebringen; Manfred Knab, Dornstadt-Bollingen, and Robert Kloeckler, Tiefenbach, all of Germany, assignors to Wieland-Werke AG, Ulm, Germany
Continuation of Ser. No. 384,000, Feb. 6, 1995, abandoned.

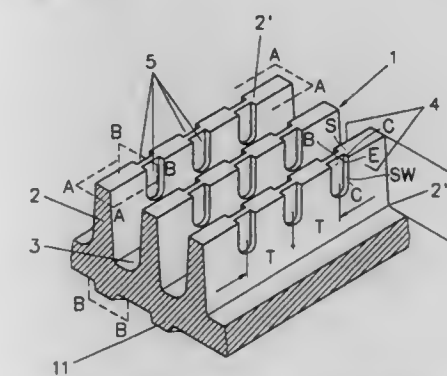
This application Nov. 6, 1996, Ser. No. 744,267

Claims priority, application Germany, Feb. 11, 1994, 44 04 357.0

Int. Cl.⁶ F28F 1/34

U.S. Cl. 165—133

21 Claims



5. In a metallic heat-exchanger tube with integral external fins which extend annularly or helically on an outside of the tube, wherein the fins have a uniform fin height H throughout and a trapezoidally-shaped cross section over a majority of the fin height, wherein the fins have generally axially facing fin flanks with convex edge defining means thereon, and wherein the convex edge defining means include spaced-apart depressions in the fin flanks, each of the depressions being elongated in a radial direction to a specified dimension from a fin tip and increasing in depth in a radially inward direction toward said specified dimension and

having a bottom wall contained in a plane parallel to a central plane of the fin and terminating at a radially outer edge flush with a radially outwardly facing surface at the fin tip so as to define a first convex edge at a juncture therebetween, and sidewalls interposed between the bottom wall and the fin flank, a juncture between the sidewalls and the fin flank as well as between the sidewalls and the radially outwardly facing surface at the fin tip forming a second convex edge therebetween.

5,775,412

HIGH PRESSURE DENSE HEAT TRANSFER AREA HEAT EXCHANGER

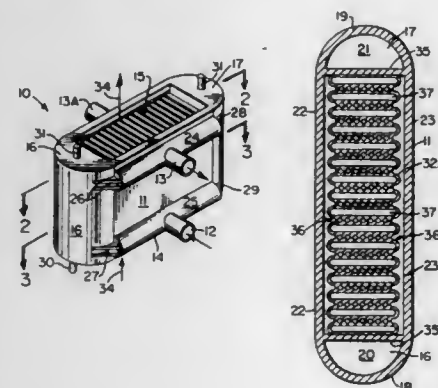
Alfred N. Montestruc, III, Slidell, La., and G. Frederick Liebkemann, IV, Pearlinton, Miss., assignors to Gidding Engineering, Inc., Slidell, La.

Filed Jan. 11, 1996, Ser. No. 583,824

Int. Cl.⁶ F28F 9/00

U.S. Cl. 165—134.1

22 Claims



1. A heat exchanger comprising:

- a) a plurality of tanks assembled together, each of said tanks comprising a separate structural member;
- b) a pair of opposed generally parallel surfaces on each tank, the surfaces of adjacent tanks being in face-to-face contact;
- c) a plurality of generally parallel grooves formed on one of the opposed surfaces of each tank, the grooves being correspondingly placed on each tank so that a closed fluid conveying channel is formed when two tanks are assembled together and oriented so that the grooves of the tanks are aligned;
- d) contact portions for forming load transfer contact areas between adjacent tanks when two tanks are assembled, said contact areas extending substantially the length of the adjacent groove;
- e) a load carrying portion that extends between the opposed surfaces and to the periphery of each tank; and
- f) a second plurality of fluid conveying channels extending through the load carrying portion of each tank;
- g) a fluid inlet for adding a first fluid flow at a lower pressure value to the first plurality of channels;
- h) a fluid outlet for removing the first fluid flow from the first plurality of channels;
- i) a fluid inlet for adding a second fluid to the second plurality of channels at a higher pressure value;
- j) a fluid outlet for removing the second fluid flow from the second plurality of channels;
- k) wherein the first and second fluid flow are maintained as separate fluid flow streams and at substantial pressure differential during use; and
- l) a heat exchanger vessel having a restraining structure for holding the tanks together.

5,775,413

HEAT EXCHANGER HAVING CORRUGATED FINS AND AIR CONDITIONER HAVING THE SAME

Takashi Kawanabe; Hideaki Mukaida; Masanori Gotoh; Yoshinori Tohya, all of Ohra-gun; Masahiro Kobayashi; Atsuyumi Ishikawa, both of Ohta, and Yoshitaka Hara, Ohra-gun, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

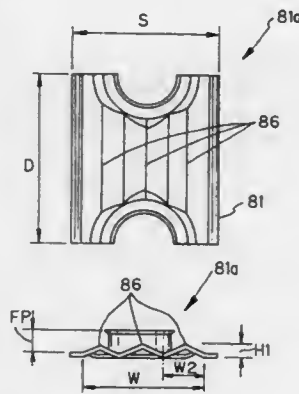
Filed May 24, 1996, Ser. No. 653,303

Claims priority, application Japan, Sep. 14, 1995, 7-262534; Oct. 11, 1995, 7-289301; Oct. 18, 1995, 7-294830

Int. Cl.⁶ F28D 1/053

U.S. Cl. 165—151

2 Claims



1. A heat exchanger comprising:

- a number of multilayered fins; and
- a refrigerant pipe inserted in said multilayered fins in a meandering form, and having a preselected diameter, wherein: said heat exchanger performs heat exchange between air and refrigerant to perform at least one of cooling and heating operations;
- each of said fins having a width of two to three times said preselected pipe diameter;
- each of said fins has a corrugated portion formed in an air-flow direction thereon; and
- said corrugated portion has three wavelike portions for producing a turbulent flow of air with which a temperature boundary layer of the air is broken, but resistance against air flow is minimized, said three wavelike portions being formed in the air flow direction on each of said fins and each of said three wavelike portions having a substantially triangular section, a width set by substantially trisectioning said fin and a height set to one-seventh to one-eighth of the width of said wavelike portion.

5,775,414

HIGH TEMPERATURE HIGH PRESSURE AIR-TO-AIR HEAT EXCHANGERS AND ASSEMBLIES USEFUL THEREIN

Robert G. Graham, 6027 E. Grand Lake Rd., Presque Isle, Mich. 49777

Filed Jun. 13, 1996, Ser. No. 662,392

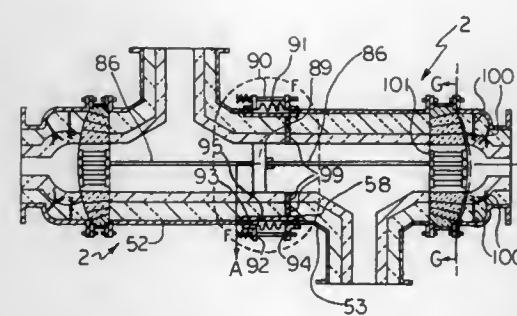
Int. Cl.⁶ F28F 9/00

U.S. Cl. 165—158

14 Claims

I. A high temperature high pressure air-to-air sprung dome heat exchanger segment comprising:

- (I) a multiple-layered air entry or exit assembly comprising:
 - (a) a nitride-bonded air entry or exit silicon carbide brick array having an air entry or exit surface, and a base, and an air entry or exit end, said array having essentially a circular configuration, said air entry or exit surface being coated with a dense, low porosity ceramic coating;
 - said array having a plurality of openings extending from the air entry or exit surface through the base;
 - said base having a plurality of pan openings therein, each pan opening essentially in alignment with each of the openings in the array;



- a first outer brick layer having a plurality of holes therein and a back surface;
- a second outer brick layer having a plurality of slots therein and a back surface, said slots and said holes being filled with a light weight, insulating castable material;
- a third outer layer which is configured from mullite brick and having a back surface;

- (b) a two-layered outer dome having a large center opening therethrough, said outer dome having an inside layer and an outside layer wherein the inside layer is a high temperature type castable insulation and the outside layer has an outside surface and is a low temperature type castable insulation, and wherein both layers have aligned back surfaces laying essentially in the same plane;
- (c) a first steel shell, said steel shell having a distal end and a near end, said first steel shell covering essentially the entire outside surface of the two-layered outer dome and conforming essentially to the outside surface of the outside layer of said dome, said first steel shell having a steel plate fixedly attached to and covering the distal end of the first steel shell, said steel plate having a large centered opening therethrough to allow the passage of air into or out of the two-layered outer dome;
- (d) a dual-walled steel flange encircling the heat exchanger at the line formed by the near end of the steel shell, said steel flange having a front surface and a back surface, said dual-walled steel flange having an inside edge and an outside edge, said steel flange being fixed to the near end of the steel shell and at the inside edge thereof;
- (e) a flat steel bar fixed to the first steel flange front surface and fixed to the outside surface of the first steel shell near the near end thereof to form a brace between the first steel flange and the first steel shell;
- (f) a high alloy, metal flashing fixed to the inside surface of the first steel shell and near the near end of the first steel shell, said high alloy metal flashing having a distal edge and said high alloy metal flashing covering the aligned back surfaces of the two-layered outer dome layers and having the distal edge thereof inserted between the first outer brick layer and the second outer brick layer thereof;
- (II) a multi-layered central body, said central body having essentially a round configuration wherein there is a first insulating fire brick lining having an outside surface, a second insulating fire brick lining having an outside surface and conforming essentially to the outside surface of the first insulating fire brick lining, and a third insulating fire brick lining having an outside surface and conforming essentially to the outer surface of the second insulating fire brick lining;
- a second steel shell having an outside surface covering and conforming essentially to the outside surface of the third insulating fire brick lining, said second steel shell having a near edge and a distal edge;
- said second steel shell having a dual-walled second steel flange encircling the heat exchanger segment at the line formed by the near end of the second steel shell, said second steel flange having an inside edge and an outside edge, said second steel flange being fixed to the near end of the second steel shell and at the inside edge thereof;
- the first steel flange and the second steel flange being fixed together near their respective outside edges by a flat steel cover having an inside surface such that the flat steel cover,

the first steel flange, the second steel flange and the third outer layer of the air entry or exit assembly form a tunnel encircling the heat exchanger segment;

said inside surface of the steel cover being covered with a ceramic fiber matting and said tunnel being filled with castable mullite;

the back surfaces of the first fire brick layer, the second insulating fire brick layer and the third insulating fire brick layer being layered with a ceramic fiberboard, the fiberboard having a back surface, there being a ceramic fiber matting layered against the back surface of the ceramic fiber board over the area opposite the third outer layer of mullite, said ceramic fiber matting being configured such that it also covers any exposed mullite in the tunnel;

a second flat steel bar fixed to the second steel flange back surface and fixed to the outside surface of the second steel shell near the near edge thereof to form a second brace between the second steel flange and the second steel shell;

there being a flue gas port for entry or exit of flue gas, said port being configured such that entry or exit of flue gas to the heat exchanger segment is essentially perpendicular to the flow of air through the heat exchanger segment, said port being configured such that it is a round configuration wherein there is a first flue insulating fire brick lining having an outside surface, a second flue insulating fire brick lining having an outside surface and conforming essentially to the outside surface of the first flue insulating fire brick lining, and a third flue insulating fire brick lining having an outside surface and conforming essentially to the second flue insulating fire brick lining;

a third steel shell, said steel shell having a distal end and a near end, said third steel shell covering essentially the entire outside surface of the flue gas port and conforming essentially to the outside surface of the third flue insulating fire brick lining, said third steel shell having a second steel plate fixedly attached to and covering the distal end of the third steel shell, said second steel plate having a large centered opening therethrough to allow the passage of flue gas into and out of the central body thereof;

the second steel shell having fixed on and encircling the outside surface, near the distal end thereof, an L-shaped steel bar having a vertical wall and a horizontal wall, said vertical wall having an opening centered therethrough;

said second steel shell having fixed on its inside surface near the distal end thereof, a flat metal plate, which flat metal plate conforms to the inside of the second steel shell;

a plurality of ceramic tubes having near ends and distal ends, each ceramic tube being aligned at their near ends and inserted in a pan opening in the silicon brick array;

said ceramic tubes being supported on their distal ends by a baffle wall.

5,775,415

AIR CONDITIONING SYSTEM

Tomohisa Yoshimi, Gamagori; Takayoshi Kawai, Hoi-gun; Yuji Ito, Ichinomiya; Masafumi Kawashima, Kariya; Yuji Honda, Okazaki, and Katsuhiko Samukawa, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 7, 1994, Ser. No. 271,465

Claims priority, application Japan, Jul. 7, 1993, 5-168173; Sep. 16, 1993, 5-230182; Nov. 15, 1993, 5-285078; Mar. 2, 1994, 6-032675

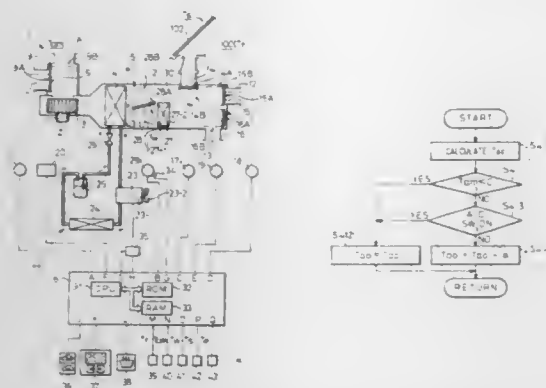
Int. Cl.⁶ F25B 29/00

U.S. Cl. 165—202

10 Claims

2. An air conditioning system for a vehicle having a cabin, the system comprising:

- (a) a blower for generating an air flow;
- (b) an air flow passageway for introducing, into the cabin, the air flow generated by said blower;
- (c) cooling means arranged in said air flow passageway for cooling air passed through the passageway;



- (d) heating means arranged in said air flow passageway at a location downstream from said cooling means for heating the cooled air flowing from said cooling means;
- (e) temperature adjustment means for adjusting a heated amount by said heating means for controlling a temperature of the air discharged into the cabin;
- (f) signal generating means, responsive to manipulation by a passenger, for generating, selectively, an ON signal for causing the cooling means to be made on and an OFF signal for causing the cooling means to be made off;
- (g) first target adjusting amount calculating means for calculating a first target adjusting amount by means of said temperature adjustment means, so as to obtain a temperature of the air discharged to the cabin equal to a target value;
- (h) second target adjusting amount calculating means for calculating a second target adjusting amount by means of said temperature adjustment means, so as to obtain a temperature of the air discharged to the cabin lower than said target value;
- (i) first control means for allowing said ON signal and said OFF signal to be selectively transmitted into said cooling means for making the cooling means to be selectively made on and off;
- (j) heating condition determining means for determining if the cabin is under a condition where a heating is necessary;
- (k) second control means for:
- (A) when it is determined that heating is necessary based upon a determination by the heating condition determining means, controlling said temperature adjustment means in accordance with said first target adjusting amount under both of ON and OFF conditions of said cooling means by means of said first control means, and
- (B) when it is determined that heating is not necessary based upon a determination by the heating condition determining means,
- (B1) controlling said temperature adjustment means by means of said first control means in accordance with said first target adjusting amount under ON condition of said cooling means and
- (B2) controlling said temperature adjusting means by means of said first control means in accordance with said second target adjusting amount under OFF condition of the cooling means.

5,775,416

TEMPERATURE CONTROLLED CHUCK FOR VACUUM PROCESSING

Dorian Heimanson, and Thomas R. Omstead, both of Rochester, N.Y., assignors to CVC Products, Inc., Rochester, N.Y.

Filed Nov. 17, 1995, Ser. No. 560,344

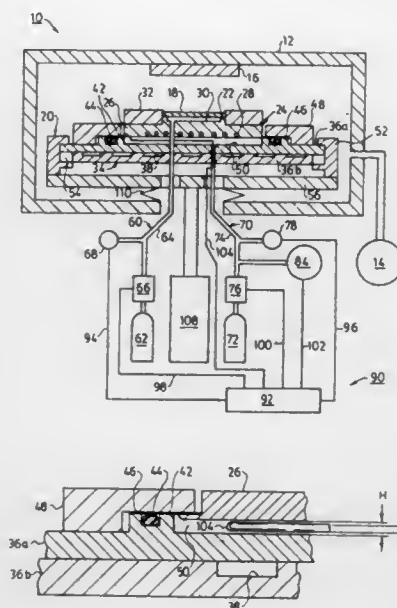
Int. Cl.⁶ F25B 29/00

U.S. Cl. 165—275

12 Claims

1. Apparatus for regulating temperature of a substrate in an evacuated environment comprising:

a first temperature conditioner that supports and regulates temperature of the substrate;



- a first cavity between said first temperature conditioner and the substrate;
- a first delivery system that conducts a fluid to said first cavity for exchanging heat between said first temperature conditioner and the substrate;
- a second temperature conditioner that regulates temperature of the substrate;
- a second cavity between said first temperature conditioner and said second temperature conditioner;
- a second delivery system that conducts a fluid to said second cavity for exchanging heat between said first and second temperature conditioners;
- said first temperature conditioner being arranged for heating the substrate and said second temperature conditioner being arranged for cooling the substrate;
- said first temperature conditioner having a heat conductive body surrounded by a peripheral rim that is reduced in thickness with respect to said heat conductive body for limiting transmissions of heat through said peripheral rim; and
- said peripheral rim being urged into engagement with a seal that encloses said second cavity by a peripheral clamp in thermal communication with said second temperature conditioner for conducting heat away from said seal.

5,775,417

COILED TUBING HANDLING APPARATUS

Malcolm N. Council, 332 Ridge Crest Dr., Richardson, Tex. 75080

Filed Mar. 24, 1997, Ser. No. 823,786

Int. Cl.⁶ E21B 19/08; 19/22

U.S. Cl. 166—77.3

10 Claims

1. A coiled tubing handling apparatus, comprising:

a base,

four spaced apart elongated frame members coupled to said base defining first and second opposite sides,

a first pair of plate members coupled to said elongated frame members on said first and second opposite sides,

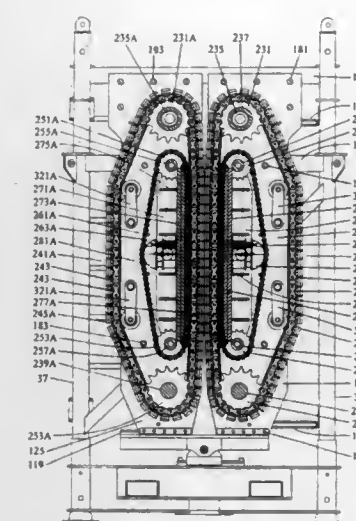
a second pair of plate members coupled to said elongated frame members on said first and second opposite sides,

a first drive sprocket coupled to said first pair of plate members,

a first idler sprocket coupled to said first pair of plate members,

a first continuous gripper chain, having gripper members, supported by said first drive sprocket and said first idler sprocket for movement along a first path,

a second drive sprocket coupled to said second pair of plate members,



- a second idler sprocket coupled to said second pair of plate members,
- a second continuous gripper chain, having gripper members, supported by said second drive sprocket and said second idler sprocket for movement along a second path,
- said first and second gripper chains being supported for movement close to each other along said first and second paths for gripping a tube with their said gripper members,
- means for rotating said first and second drive sprockets together for moving said first and second gripper chains along said first and second paths for gripping a tube with their said gripper members and for moving the tube,
- a first pair of inner idler sprockets coupled to said first pair of plate members at fixed spaced apart positions surrounded by said first gripping chain,
- a first continuous linear bearing chain supported by said first pair of idler sprockets for rotation,
- a first elongated linear bearing race supported within said first linear bearing chain to cause said first linear bearing chain to engage said first gripper chain for causing said first gripper chain to move in a linear path along said first path,
- a second pair of inner idler sprockets coupled to said second pair of plate members at fixed spaced apart positions surrounded by said second gripper chain,
- a second continuous linear bearing chain supported by said second pair of idler sprockets for rotation,
- a second elongated linear bearing race supported within said second linear bearing chain to cause said second linear bearing chain to engage said second gripper chain for causing said second gripper chain to move in a linear path along said second path,
- a first slack adjusting member formed of plastic material and having an outward curved surface, and
- means for supporting and urging said first slack adjusting member to engage its said outward curved surface with the inside of said first linear bearing chain at a position between said first pair of inner idler sprockets,
- a second slack adjusting member formed of plastic material and having an outward curved surface, and
- means for supporting and urging said second slack adjusting member to engage its said outward curved surface with the inside of said second linear bearing chain at a position between said second pair of inner idler sprockets.

5,775,418

T-SHAPED LOCKING MEMBER FOR ENGAGING A PASSAGeway IN A HEAT SINK FOR SECUREMENT TO A MOUNTING BOARD

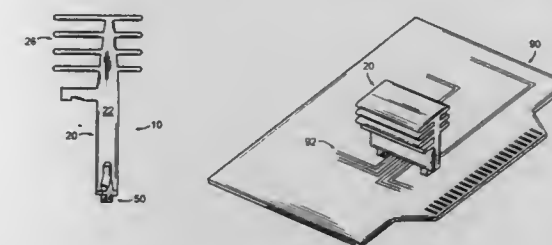
Kevin Lonergan, Monument; Karl Cunha; John Kosatschkow, both of Colorado Springs, and Ralph Michael Tusler, Monument, all of Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 20, 1996, Ser. No. 717,338

Int. Cl.⁶ F28F 7/00

U.S. Cl. 165—80.2

3 Claims



1. Board mounting apparatus comprising:

- a heat sink including an external bottom surface, said heat sink having a passageway extending therein from an entrance opening on the bottom surface in a direction normal thereto and terminating at an inner end within the heat sink, said passageway being defined by fixed opposing side walls and by an end wall closing the passageway at said inner end, a portion of the side walls converging to define an outer passageway region tapering towards the inner end, the passageway extending from the outer passageway region to an inner passageway region defined by generally parallel side wall portions, the converging portion of said side walls of the outer passageway region having a notch providing an engagement surface facing the inner end of the passageway; and a locking member for locking engagement with the heat sink upon insertion into the passageway thereof, said locking member including a stem with a forward end and a base end, the forward end including a longitudinal crossing member extending laterally of and normal to the stem, the crossing member dimensioned for snug fit engagement with the generally parallel portions of said side walls of the inner passageway region, an engagement member at each end of the crossing member located in spaced apart relationship with the stem and extending toward the base end thereof, the engagement members being offset from the crossing member to interlock with the engagement surface of the entrance region when the locking member is inserted in the passageway of the heat sink, the base end of the stem including a cross bar and a termination mounting pin extending beyond the cross bar to terminate the stem at the base end of the locking member, the cross bar abutting the bottom surface of the heat sink when the locking member is fully inserted in the passageway, the cross bar providing a spacer between the bottom surface of the heat sink and a mounting board when the pin is secured in a through hole of the mounting board with said cross bar engaging the board.

5,775,419

WELLHEAD LEAK CONTAINMENT DEVICE

Bruce Gramlich, General Delivery, Hayter, Alberta, Canada, 10B 1X0

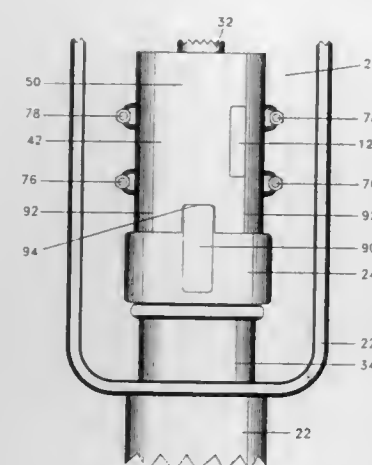
Filed May 1, 1996, Ser. No. 641,438

Int. Cl.⁶ E21B 33/08

U.S. Cl. 166—81.1

21 Claims

1. A device for attachment to a production wellhead of the type having a stuffing box, the stuffing box having an upper end, and



having a rod string protruding from the upper end of the stuffing box, for collecting and retaining a fluid escaping from between the stuffing box and the rod string at the upper end of the stuffing box, the device comprising:

- (a) a housing for collecting the fluid escaping from the upper end of the stuffing box by surrounding the upper end of the stuffing box and a portion of the rod string adjacent thereto, the housing having an upper surface, a lower surface for abutting the stuffing box to mount the housing on top of the stuffing box, and a side wall extending between the upper surface and the lower surface, the lower surface defining a first opening for communication with the upper end of the stuffing box, the first opening sized to permit the rod string to pass therethrough and sized to permit the escaping fluid to pass from the stuffing box into the housing when the housing is mounted on top of the stuffing box, and the upper surface defining a second opening sized to permit the rod string to pass therethrough so that when the housing is mounted on top of the stuffing box, the rod string protrudes from the upper end of the stuffing box, through the first opening and through the second opening; and
- (b) an absorbent pad contained within the housing for retaining the escaping fluid collected in the housing wherein said absorbent pad is removable from the housing and replaceable.

5,775,420

DUAL STRING ASSEMBLY FOR GAS WELLS

Morton Lindsay Mitchell, 319 Cimmaron Bay, Okotoks, Alberta, Canada, T0L 1T5; Bryson James Mitchell, Box 527, Redcliff, Alberta, Canada, T0J 2P0, and Blair Orvel Mitchell, R.R. #2, Site 17, Box 3, Rocky Mountain House, Alberta, Canada, T0M 1T0

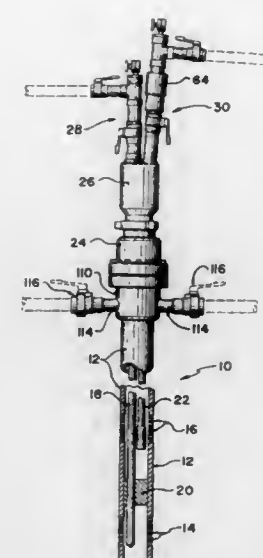
Filed Mar. 18, 1996, Ser. No. 617,037

Int. Cl.⁶ E21B 33/047; 43/14

U.S. Cl. 166—85.4

12 Claims

1. A dual base for running two strings of coiled tubing in a well casing, said dual base comprising a body with a bottom end, a top end and primary and secondary bores for receiving primary and secondary tubing strings respectively, each bore extending through the body from the top towards the bottom with the two bores



5,775,421

FLUID LOSS DEVICE

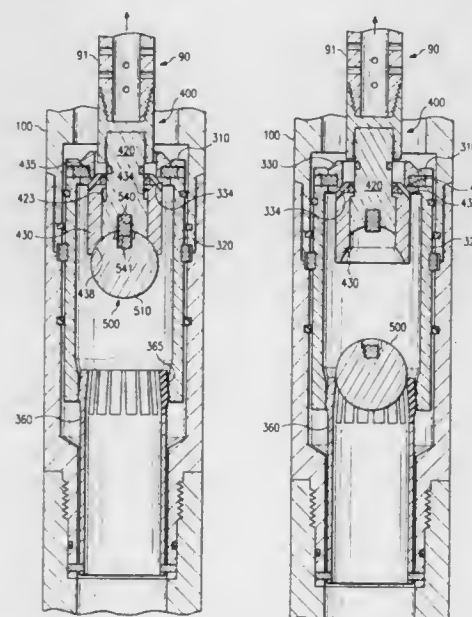
Peter A. Duhon, Harvey, and Kennedy J. Brown, Marrero, both of La., assignors to Halliburton Company, Houston, Tex.

Filed Feb. 13, 1996, Ser. No. 600,840

Int. Cl.⁶ E21B 34/12

U.S. Cl. 166—135

25 Claims



1. A fluid loss device comprising: a housing having a longitudinal bore therethrough; a seal assembly including:

a compression sleeve positioned within the longitudinal bore of the housing and having an inner compression land; and a collet sleeve positioned within the compression sleeve, the collet sleeve having a collet seal section with an outer compression land larger than the inner compression land of the compression sleeve;

a running tool;
a plug detachably attached to the running tool;

means for sealing between the compression sleeve and the housing; and
means for securing the inner compression land of the compression sleeve in engagement with the outer compression land of the collet sleeve such that the collet seal section in the collet sleeve is reduced to a predetermined size for sealing engagement with the plug.

5,775,422

TREE TEST PLUG

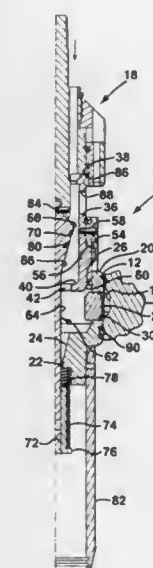
Henry Wong; David E. Cain, both of Houston, Tex., and Jeffrey L. Mathews, Singapore, Singapore, assignors to FMC Corporation, Chicago, Ill.

Filed Apr. 25, 1996, Ser. No. 637,962

Int. Cl.⁶ E21B 33/00

U.S. Cl. 166—135

2 Claims



1. A test plug for seating a bore within a tubing hanger comprising: an annular plug body having an axial bore extending therethrough, the axial bore forming an annular seat and an enlarged receptacle within the plug body; a plurality of support dogs retractable mounted within corresponding slots formed in the plug body; a mandrel slidably received within the receptacle, the mandrel having a downwardly and outwardly facing cam surface formed on a lower portion thereof; a stinger having a closure member adapted to be received in the annular seat, means for biasing the closure member against the seat and a seal ring for providing a fluid-tight seal between the closure member and the seat; wherein each support dog comprises an inner beveled edge formed on an upper portion thereof which preferably matches the cam surface of the mandrel; whereby when the mandrel is moved downward in the receptacle, the cam surface will engage the beveled edge and urge the support dogs into an annular recess formed in the tubing hanger to thereby secure the test plug within the tubing hanger; and wherein the mandrel comprises an inwardly extending annular collar and the stinger comprises an outwardly extending ring forming a downwardly facing annular shoulder which overlaps the collar above the closure member.

5,775,423

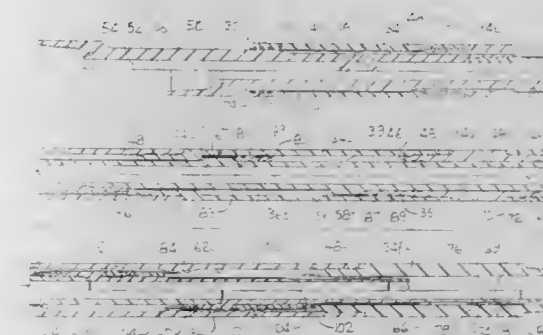
VALVE FOR A TWO WAY HYDRAULIC DRILLING JAR AND A TWO WAY HYDRAULIC DRILLING JAR

Aureliusz Eric Tadeusz Kaczynski, Edmonton, Canada, assignor to A.T.K. Enterprises Inc., Edmonton, Canada
Filed Sep. 30, 1996, Ser. No. 723,538

Int. Cl.⁶ E21B 23/00; F16K 47/00

U.S. Cl. 166—178

8 Claims



1. A valve for a two way hydraulic drilling jar, comprising: a hollow cylindrical member having an exterior surface, an interior surface, a first end and a second end, at least one spiral-form fluid bypass passage being positioned in each of the first end and the second end of the cylindrical member, each of the at least one spiral-form bypass passages having a first end communicating with the exterior surface and a second end communicating with the interior surface.

5,775,424

DEPTH-DISCRETE SAMPLING PORT

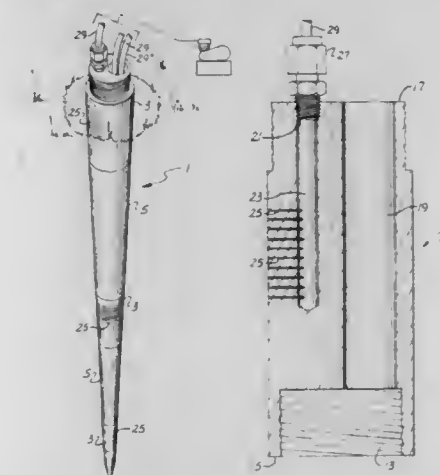
Bradley E. Pemberton, 131 Glencarin Dr., Aiken, S.C. 29803; Christopher P. May, 5002 Hesperus Dr., Columbia, Md. 21044; Joseph Rossabi, 105 Michael Ct., Aiken, S.C. 29801; Brian D. Riha, 238C Broad St., Augusta, Ga. 30909, and Ralph L. Nichols, 812 Plantation Point Dr., North Augusta, S.C. 29841

Filed Jul. 8, 1996, Ser. No. 676,427

Int. Cl.⁶ E21B 49/10

U.S. Cl. 166—264

2 Claims



1. A process of collecting subsurface fluid samples comprising: supplying a plurality of individual sampling ports, each said port carried vertically between a respective upper and a lower length of pipe to form a spaced vertical array of ports, each said port further defining a chamber in communication with an exterior of said port and in further communication with a first end of a fitting, a second end of said fitting in communication with a length of flexible tubing, each said port further defining a longitudinal bore traversing a length of each said

port, thereby providing an uppermost port and a series of vertically spaced lower ports;
 running said length of flexible tubing of each said lower ports through said longitudinal bore of said uppermost port and each intervening lower port;
 inserting said spaced vertical array of ports into a subsurface bore;
 applying a vacuum to said tubing of an individual port, thereby accumulating a subsurface fluid into said chamber and further into said tubing;
 collecting said fluid from said tubing.

5,775,425

CONTROL OF FINE PARTICULATE FLOWBACK IN SUBTERRANEAN WELLS

Jim D. Weaver; James R. Stanford; Philip D. Nguyen, all of Duncan; Bobby K. Bowles, Comanche; Steven F. Wilson, Duncan; Brahmdeo Dewprashad, Lawton, and Mark A. Parker, Duncan, all of Okla., assignors to Halliburton Energy Services, Inc.

Continuation-in-part of Ser. No. 725,368, Oct. 3, 1996, which is a continuation-in-part of Ser. No. 510,399, Aug. 2, 1995, Pat. No. 5,582,249, which is a continuation-in-part of Ser. No. 412,668, Mar. 29, 1995, Pat. No. 5,501,274. This application May 19, 1997, Ser. No. 858,312

Int. Cl.⁶ F21B 33/138;43/04;43/267

U.S. Cl. 166—276

20 Claims

5. A method of treating a subterranean formation to control fines migration comprising the steps of:

introducing a treatment fluid into a subterranean formation through a wellbore at a rate and pressure sufficient to create at least one fracture in said formation;
 admixing with at least a portion of said fluid, a particulate which is introduced into and subsequently deposited within said fracture;
 admixing with at least a portion of said particulate an effective amount of a liquid or solution of a tackifying compound whereby at least a portion of said particulate is at least partially coated by said compound such that the continuous critical resuspension velocity of said at least partially coated particulate is increased by in excess of about 30 percent when tested at a level of 0.5% active material by weight over said particulate alone with water;
 depositing the tackifying compound coated particulate in the subterranean formation; and
 flowing back fluid from the formation whereby the tackifying compound coated particulate retards movement of at least a portion of any fine particulate flowing back to said wellbore within said formation by adhering said fines to said coated particulate.

14. A method of treating a subterranean formation penetrated by a wellbore to control fines migration to said wellbore comprising the steps of:

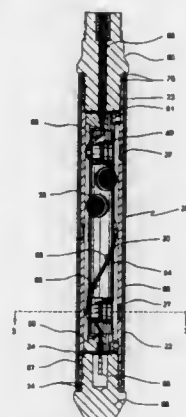
providing a fluid suspension including a mixture of a particulate material and another material selected from the group of particles comprising metal, natural or synthetic polymers, ceramics and glass which are at least partially coated with an effective amount of a liquid or solution of a tackifying compound;
 introducing the fluid suspension into a subterranean formation through a wellbore;
 depositing the fluid suspension in the formation; and
 flowing back fluid from the formation through the tackifying compound coated material whereby the tackifying compound material retards movement of at least a portion of any fine particulate material moving to said wellbore from the formation by adhering said fines to said coated particulate.

5,775,426 APPARATUS AND METHOD FOR PERFORATING AND STIMULATING A SUBTERRANEAN FORMATION

Philip M. Snider, Houston, Tex.; Joseph P. Haney, Coeur d'Alene, Id.; Robert L. Haney, Calgary, Canada; David S. Wesson, Waxahachie, Tex.; and David A. Cuthill, Calgary, Canada, assignors to Marathon Oil Company, Findlay, Ohio
 Filed Sep. 9, 1996, Ser. No. 711,188
 Int. Cl.⁶ E21B 43/117;43/26;43/267

U.S. Cl. 166—308

45 Claims



30. A method of perforating and stimulating a subterranean formation which is penetrated by a well bore having casing positioned therein so as to establish fluid communication between the formation and the well bore, said method comprising:

detonating a perforating charge in said well bore thereby igniting a propellant material which is interposed between said perforating charge and said casing and perforating said casing.

5,775,427 INTERNALLY LATCHED SUBSEA WELLHEAD TIEBACK CONNECTOR

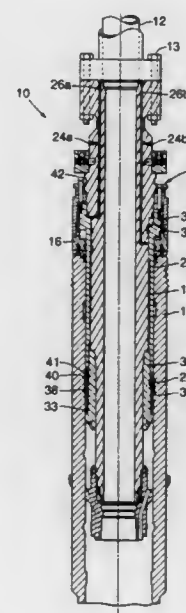
Harold B. Skeels, Kingwood; Bashir M. Koleilat, Spring, and Shiva Singeetham, Houston, all of Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Nov. 13, 1996, Ser. No. 748,700

Int. Cl.⁶ E21B 43/013

U.S. Cl. 166—344

22 Claims



1. A tieback connector for connecting a riser, conductor, or other well pipe to a subsea wellhead, said connector comprising:

- (a) a tubular outer body means adapted to rest axially upon an upper surface of the wellhead;
- (b) an inner body means adapted to extend partially into an inner diameter of said wellhead;
- (c) an energizing piston means extending axially between said wellhead and said inner body means, said piston means including actuating means disposed between said inner body means and said outer body means for selectively moving said piston means in an axial direction;
- (d) a lock ring means extending circumferentially around a portion of the inner body means, said lock ring means disposed beneath a lower end of said energizing piston means, axial movement of said energizing piston means in one direction expanding the locking ring means into locking engagement with a wellhead component for connecting the tieback connector to said component; and
- (e) an adjusting ring means extending around and operatively connected to said inner body means, said adjusting ring means disposed beneath and in contact with a surface of said lock ring means, said adjusting ring means capable of axial movement to alter the axial position of said lock ring means relative to said inner body means to establish an adjustable pre-load on the lock ring means when the lock ring means is in locking engagement.

5,775,428

WHIPSTOCK-SETTING APPARATUS

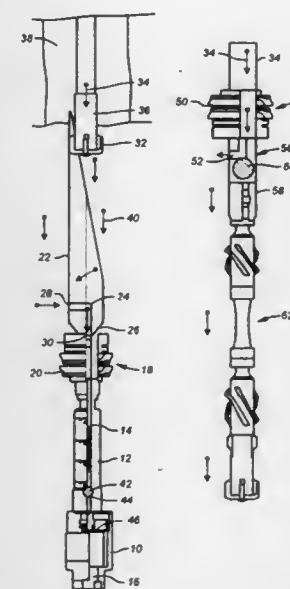
Jerry Davis, Spring, and Gerald Lynde, Houston, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Nov. 20, 1996, Ser. No. 752,839

Int. Cl.⁶ E21B 7/08;23/04

U.S. Cl. 166—381

14 Claims



- 1. A one-trip window-milling method, comprising:
 running in a single trip a whipstock support, at least one annular seal, a whipstock, and at least one mill;
 setting said whipstock support by applying pressure outside said whipstock;
 using said annular seal to direct said applied pressure into an opening in the whipstock for setting said support;
 milling the window.

5,775,429 DOWNHOLE PACKER

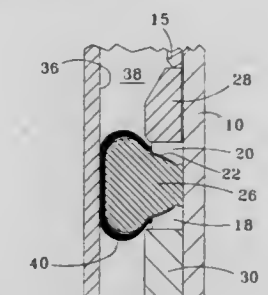
Napoleon Arizmendi, Magnolia, and Timothy Tips, Spring, both of Tex., assignors to PES, Inc., The Woodlands, Tex.

Filed Feb. 3, 1997, Ser. No. 792,404

Int. Cl.⁶ E21B 33/12

U.S. Cl. 166—387

19 Claims



- 1. An apparatus for filling a space proximate to a tool surface downhole in a wellbore, comprising:
 a deformable sheath having a first end proximate to the tool surface, a second end proximate to the tool surface and moveable toward said sheath first end, and a body between said first and second ends for defining an interior volume between the tool surface and said sheath first and second ends; and
 a deformable material within said interior volume for moving said sheath body into the space when the sheath second end moves toward said sheath first end.

5,775,430

ELECTROLUMINESCENT SIGNALLING FIRE EXTINGUISHER

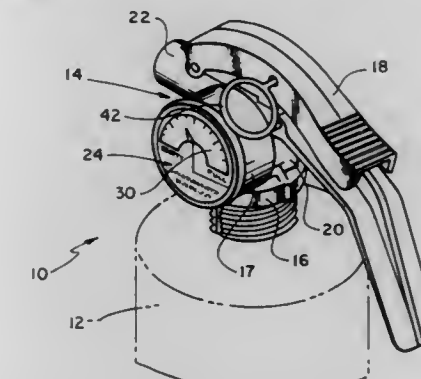
Brendan T. McSheffrey, Newton, Mass., assignor to MIJA Industries, Inc., Plymouth, Mass.

Filed Jan. 23, 1996, Ser. No. 590,411

Int. Cl.⁶ A62C 13/76

U.S. Cl. 169—30

11 Claims



- 1. A portable fire extinguisher comprising:
 a tank defining a volume containing a fire extinguishing material and further defining a tank outlet, and
 a valve assembly mounted at said tank outlet, said valve assembly comprising:
 a valve housing,
 a valve disposed relative to said tank outlet for metering release of the fire extinguishing material from said volume,
 a valve trigger mounted for movement of said valve between a first position for containing the fire extinguishing material within said volume and a second position for metering release of the fire extinguishing material, and
 a gauge disposed in communication with said volume for display of pressure condition of the fire extinguishing material within said volume.

said portable fire extinguisher further comprising an electronic circuit mounted thereupon and adapted to issue a signal upon detection of a predetermined condition,

said predetermined condition comprising an external condition and said electronic circuit comprising a detector of said predetermined external condition, said detector of said predetermined external condition being adapted to actuate issue of said signal upon detection of said predetermined external condition, said predetermined external condition being lack of light.

2. The portable fire extinguisher of claim 1, wherein said fire extinguisher electronic circuit is further adapted to issue a signal upon detection of predetermined conditions comprising at least one predetermined internal condition within said fire extinguisher tank and at least one additional predetermined external condition outside said fire extinguisher tank, said signal comprising a visual signal and said fire extinguisher electronic circuit comprising an electroluminescent light panel mounted upon a gauge face surface of said fire extinguisher gauge and adapted to issue said visual signal by illumination of a region of said gauge face surface,

said at least one predetermined internal condition comprising a low pressure condition within said fire extinguisher tank, and said fire extinguisher electronic circuit further comprising a detector of said at least one predetermined internal condition, said detector of said at least one predetermined internal condition being adapted to actuate issue of said signal upon detection of said at least one predetermined internal condition, and

said at least one additional predetermined external condition comprising a signal from an external electronic circuit, and said fire extinguisher electronic circuit further comprising a detector of said at least one additional predetermined external condition, said detector of said at least one additional predetermined external condition being adapted to actuate issue of said signal upon detection of said at least one additional predetermined external condition.

5,775,431

DRY SPRINKLER ARRANGEMENTS

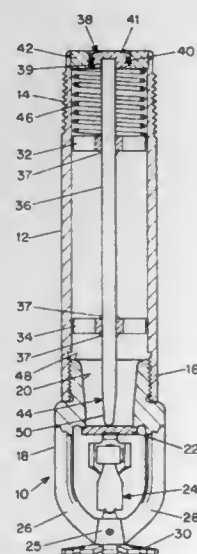
Jiri Ondracek, Danbury, Conn., assignor to The Reliable Automatic Sprinkler Co., Inc., Mount Vernon, N.Y.

Filed Sep. 11, 1996, Ser. No. 712,274

Int. Cl.⁶ A62C 35/68

U.S. Cl. 169—37

7 Claims



1. A dry sprinkler comprising:

a tube section,

a sprinkler head having a deflector mounted at one end of the tube section,

a water supply line connection at the other end of the tube section having an opening to receive water from a water supply line,

a sealing plug normally positioned in the opening to prevent pressurized air or water from entering the tube section from the water supply line,

a sealing plug support structure extending through the tube section and having a first end supporting the sealing plug and a second end,

and a thermally responsive structure in the sprinkler head adjacent to the second end of the sealing plug support structure and arranged to maintain the sealing plug support structure in position to support the sealing plug in its sealing position and to permit the sealing plug support structure to move toward the sprinkler head, releasing the sealing plug from its sealing position, in response to an elevated temperature condition,

wherein the second end of the sealing plug support structure has a continuously inwardly tapered outer surface so as to be generally conical in cross section to facilitate flow of water through the tube section and toward the deflector upon actuation of the dry sprinkler.

5,775,432

FRONT SQUEEZE TRIGGER HANDLE FOR USE WITH FIRE EXTINGUISHERS

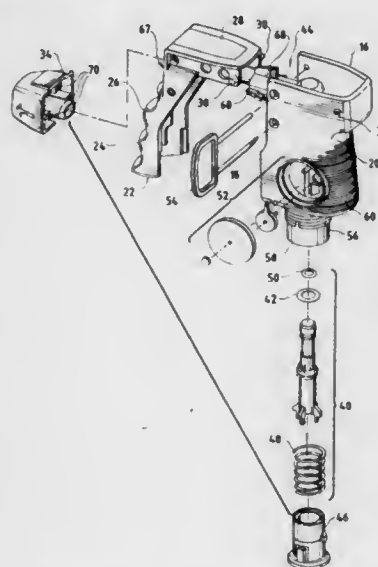
Clay Burns, Boston, Mass.; Victor Cheung, Chicago, Ill.; Paul Sabin, Milton, Mass., and Susannah Gardner, Berkeley, Calif., assignors to BRK Brands, Inc., Aurora, Ill.

Filed Feb. 5, 1996, Ser. No. 596,941

Int. Cl.⁶ A62C 13/76

U.S. Cl. 169—74

27 Claims



1. A front squeeze trigger discharge assembly for use with an associated pressurized container having a pressurized medium therein, the discharge assembly comprising:

a housing having a first portion and a second portion, said housing defining a flow chamber at least partially aligned along a vertical axis and being mountable to the container, said second portion configured to rest in the hand of a user on a first side of said vertical axis;

a pivotable trigger handle mounted to said housing and having a gripping portion positioned at said first portion thereof, on a second side of the axis, diametrically opposite said first side of the axis, said handle also including a transverse lever having at least one pivot on said first side of the axis for rotatably supporting said handle relative to said housing, wherein said handle is rotatable between a first, closed position and a second, open position inward of said housing;

a discharge nozzle positioned on said first portion of said housing adjacent to said trigger handle on said second side of the

axis, and in flow communication with said chamber, wherein said transverse lever is movable independently of said discharge nozzle; and

a discharge valve assembly operably connected to said trigger handle and disposed along the axis in said chamber, said valve assembly being movable between a closed position downwardly to an open position, said open position providing a flow path between the container and said discharge nozzle, said transverse lever overlying said valve assembly, wherein said trigger handle is biased into said first, closed position, and pivotable from said first position to said second, open position by moving said trigger handle toward said second position of said housing, thereby moving said transverse lever against said discharge valve assembly to move to said open position to discharge the medium from the container through said discharge nozzle.

5,775,433

COILED TUBING PULLING TOOL

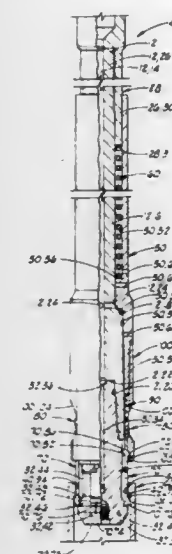
Robert C. Hammett, Garland, and James Dan Vick, Jr., Dallas, both of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 3, 1996, Ser. No. 626,871

Int. Cl.⁶ E21B 31/20

U.S. Cl. 166—98

20 Claims



1. An improved coiled tubing pulling tool for latching to a well tool having a fishing neck thereon comprising:

an elongated inner mandrel having an axial fluid flow passageway therethrough, said inner mandrel being adapted to be connected at one end to a crossover attached to a length of coiled tubing, said inner mandrel including an outer shoulder formed thereon and having a lateral fluid passage extending from said axial fluid flow passageway to said outer shoulder;

a latching mandrel connected at the end of said inner mandrel opposite from said coiled tubing having a fluid flow passageway communicating with said fluid flow passageway of said inner mandrel, having a fishing nose thereon sized to engage said fishing neck on said well tool and having at least one fluid jet forming passage extending from said fluid flow passageway through said fishing nose;

a tubular piston member slidably extending over said inner mandrel and a portion of the crossover, said piston member having an inner shoulder formed therein which is complementary to said outer shoulder on said inner mandrel whereby fluid pressure exerted between said shoulders by way of said

lateral fluid passage and said axial fluid flow passageway of said inner mandrel urges said piston member in a direction away from said fishing nose on said latching mandrel;

first spring means disposed between said inner mandrel and said piston member for urging said piston member in a direction towards said fishing nose, a portion of said piston member covering said first spring means;

latching means disposed on said latching mandrel and connected to said piston member for latching said pulling tool to said fishing neck of said well tool when said fishing neck is engaged by said fishing nose; and

releasing means for unlatching said pulling tool from said fishing neck of said well tool when sufficient fluid pressure is exerted between said inner mandrel outer shoulder and said piston member inner shoulder to overcome said first spring means and move said piston member away from said fishing nose.

5,775,434

FIRE FIGHTING METHOD AND INSTALLATION FOR EXTINGUISHING AN ELONGATED OBJECT

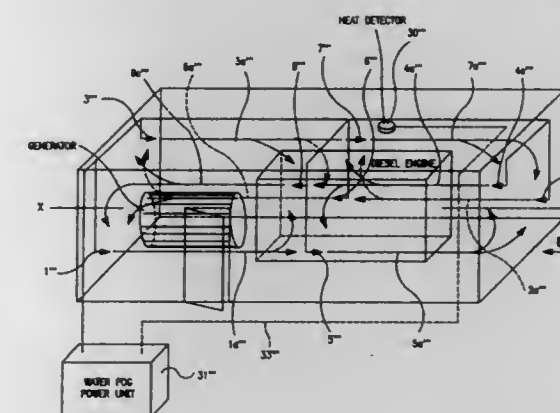
Göran Sundholm, Ilmari Kiannon kuja 3, FIN-04310, Tuusula, Finland

Filed Jun. 14, 1996, Ser. No. 663,975

Int. Cl.⁶ A62C 35/68; 3/10

U.S. Cl. 169—46

14 Claims



1. A fire fighting method for extinguishing a fire in an elongated object having a longitudinal axis, an entire length, and ends said method comprising:

spraying to an immediate vicinity of the object a first extinguishing medium spray with a first spray nozzle in at least approximately a first direction of the longitudinal axis, said first extinguishing medium spray generating an underpressure of air in an immediate vicinity of the first spray nozzle,

spraying to an immediate vicinity of the object a second extinguishing medium spray with a second spray nozzle in at least approximately a second direction of the longitudinal axis opposite said first direction, said second extinguishing medium spray generating an underpressure of air in an immediate vicinity of the second spray nozzle,

said first and second extinguishing medium sprays providing a continuous flow of extinguishing medium around the elongated object.

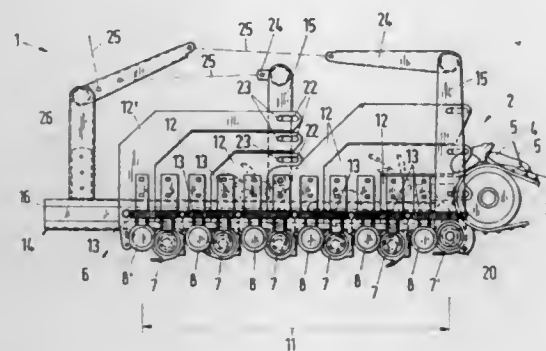
5,775,435
APPARATUS FOR SEPARATING POTATOES FROM
OTHER MATERIALS

Klemens Kalverkamp, and Richard Tepe, both of Damme, Germany, assignors to Franz Grimme Landmaschinenfabrik GmbH & Co. KG, Damme, Germany
PCT No. PCT/EP94/03682, § 371 Date May 20, 1996, § 102(e)
Date May 20, 1996, PCT Pub. No. WO95/14376, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 9, 1994, Ser. No. 648,066
Claims priority, application Germany, Nov. 25, 1993, 43 40 101.5

Int. Cl.⁶ A01D 17/10
U.S. Cl. 171—126

32 Claims



1. Apparatus for separating potatoes from other materials, comprising a frame structure which includes a separating segment extending from a potato-charging end to a potato-discharging end, a plurality of pairs of roller bodies having parallel axes and being disposed alongside one another along said separating segment, said axes of said roller bodies being disposed at right angles relative to said separating segment, each pair of said plurality of pairs of said roller bodies including a first roller body and a second roller body with the first roller body rotating in a rotary direction opposite to the direction of rotation of said second roller body, said first roller body of each pair being disposed closer to said potato-charging end than the second roller body of each respective pair, said first roller body of each pair including means exerting an enhanced conveying thrust to the potatoes in the crotch between each pair of roller bodies at least once during each revolution of said first roller body.

5,775,436
SOD HARVESTER WITH PIVOTABLE ROLL-FORMING
UNIT

Thomas E. Noyes, II, Creston; Roelof H. DeVries, Dalton, and Glenn D. Gerber, Apple Creek, all of Ohio, assignors to Steiner Turf Equipment, Inc., Dalton, Ohio

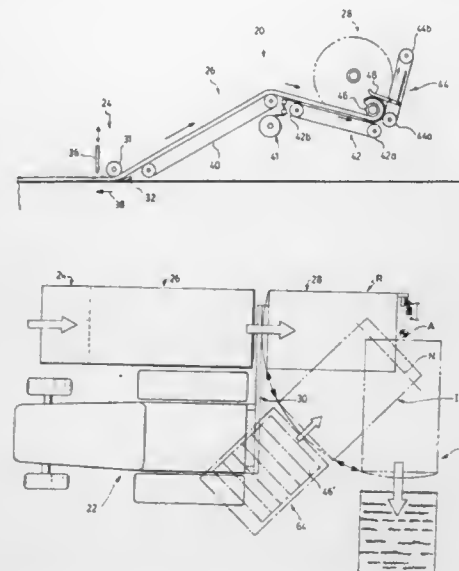
Filed Jul. 26, 1996, Ser. No. 686,555
Int. Cl.⁶ A01B 45/04

U.S. Cl. 172—20

16 Claims

1. A sod harvester for movement along a cutting path, comprising:
cutter means for forming a strip of cut sod as the harvester travels along said path; and

sod roll forming means to which said strip of cut sod is delivered from said cutter means, said roll-forming means comprising first and second linear conveyors each having an inner end and an outer end and being operable to convey sod between said ends, said first conveyor being arranged to receive a leading end portion of an in-coming strip of cut sod and convey said strip towards the second conveyor, the conveyors being arranged with their inner ends adjacent one another and at a substantial angle with respect to one another, selected so that said second conveyor in use causes said leading end portion of the strip of sod to tend to turn back on itself for forming a roll, the roll-forming means further including means for laterally confining the growing roll of sod to assure



formation of said roll having ends which are square with respect to the surface of the roll;
wherein the roll-forming means comprises a unit which is turnable about a generally upright axis between a roll-forming position for receiving said strip of cut sod and forming said roll, and a discharge position in which said first conveyor is directed laterally of said path of travel for discharge of a formed roll to a position which is laterally clear of the next pass of the harvester.

5,775,437
WORKING VEHICLE

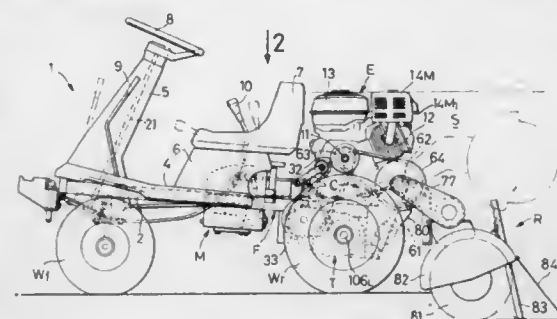
Katsuhisa Ichikawa; Masakatsu Kono; Kazunari Iriki; Tsuyoshi Kawabata; Kenji Kuroiwa, and Tsutomu Inui, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 446,885, May 17, 1995, This application Oct. 9, 1996, Ser. No. 728,145

Claims priority, application Japan, May 17, 1994, 6-103128; Apr. 24, 1995, 7-98994

Int. Cl.⁶ F16D 39/00
U.S. Cl. 172—74

9 Claims



1. A working vehicle comprising: a working machine-lifting/lowering shaft extended laterally of a vehicle body and rotatably supported on a rear portion of a vehicle frame in which an engine is mounted; and a working machine vertically movably connected to said vehicle frame through said working machine-lifting/lowering shaft, a driving force of said engine being transmitted to said working machine through said working machine-lifting/lowering shaft, wherein a cylinder of said engine is inclined rearwardly and upwardly so as to extend rearwardly from a rear end of said vehicle frame, said working machine-lifting/lowering shaft being disposed below said cylinder as viewed on a side plane, said working vehicle further including

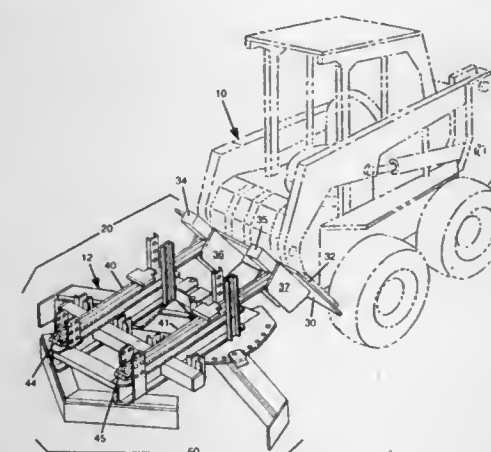
a transmission system mounted in said vehicle frame for transmitting a driving force of the engine to left and right driven wheels, said transmission including a speed reduction device and a hydrostatic pressure type continuously variable transmission provided with a hydraulic pump and a hydraulic motor, said transmission system being disposed within a projection area of said driven wheels as viewed on a side plane.

5,775,438
EARTH WORKING SCRAPER APPARATUS
Richard J. Confoey, 15846 Heiser Rd., Berlin Center, Ohio 44401-9721, and Donald W. Akins, 38159 Dodd's Hill, Wiloughby Hills, Ohio 44094

Filed Jun. 11, 1997, Ser. No. 873,151
Int. Cl.⁶ E02F 3/76

U.S. Cl. 172—831

18 Claims



1. A front mounted earth working apparatus for a skid steer, comprising:

a guide frame portion attached to the skid steer by a mounting mechanism, the guide frame portion having a lifting fork extending forward from said mounting mechanism, and the lifting fork being substantially horizontal with the ground;
a grading portion suspended below said guide frame portion from said lifting fork by a suspension mechanism, said grading portion being substantially parallel with said lifting fork, and said grading portion having a blade attached thereto; and
the suspension mechanism having an attaching mechanism for pulling the grading portion as the skid steer moves forward so that the grading portion will lift without assistance under the lifting fork when the blade hits an unyielding obstruction.

5,775,439
METHOD OF COOLING AN IMPULSE TOOL
Paul Albert Biek, Houston, Tex., assignor to GPX Corp., Las Vegas, Nev.

Division of Ser. No. 626,805, Apr. 3, 1996, Pat. No. 5,673,759, which is a division of Ser. No. 226,810, Apr. 12, 1994, Pat. No. 5,531,279. This application Jan. 24, 1997, Ser. No. 785,842

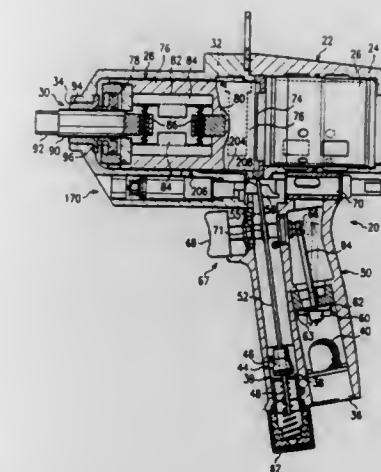
Int. Cl.⁶ B25B 19/00

U.S. Cl. 173—1

24 Claims

1. A method of cooling a compressible-fluid-operated tool having an entry orifice and an exhaust orifice, the method comprising the steps of:

supplying a compressible fluid to the interior of the tool through the entry orifice; and
providing a shut-off means that substantially closes the exhaust orifice allowing the fluid to build to a substantially uniform



pressure throughout the tool thereby causing the fluid to compress and be held in the interior of the tool.

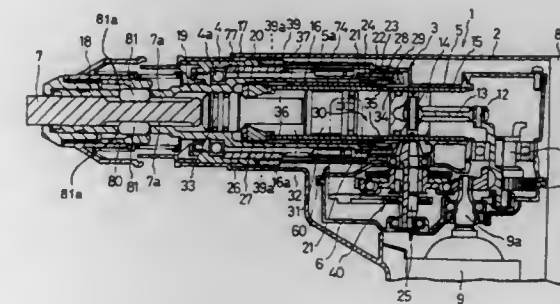
5,775,440
HAMMER DRILL WITH AN IDLING STRIKE
PREVENTION MECHANISM

Yasutoshi Shinma, Anjo, Japan, assignor to Makita Corporation, Anjo, Japan

Filed Aug. 14, 1996, Ser. No. 696,504
Claims priority, application Japan, Aug. 18, 1995, 7-210863
Int. Cl.⁶ B25D 11/06

U.S. Cl. 173—109

6 Claims



1. A hammer drill, comprising:
a motor for providing drive power for the hammer drill;
a cylinder fixed in a housing;
a tool holder coaxially fitted around the cylinder for holding a tool bit in a front thereof;
a piston reciprocally mounted in the cylinder;
a striking member reciprocally mounted in the cylinder in front of the piston for imparting hammer blows to the tool bit held in the tool holder;
an air chamber formed between the piston and the striking member in the cylinder for pneumatically actuating the striking member so that the reciprocating motion of the piston can be transmitted to the striking member;
a rotation transmission mechanism for transmitting the rotation of the motor to the tool holder so as to rotate the tool holder; means forming at least one air port formed in a peripheral wall of the air chamber for pneumatically communicating the inside of the air chamber with the outside of the cylinder; and an axially movable cylindrical slide sleeve urged in the forward direction by urging means, the slide sleeve being mounted between the cylinder and the tool holder, the slide sleeve being pushed backward together with the tool bit and covering the at least one air port in the peripheral wall of the air chamber during normal operation of the hammer drill, and the slide sleeve being moved forward by the urging means and uncovering the at least one air port during idle operation of

the hammer drill, thereby, terminating the pneumatic actuation of the striking member; wherein each of the cylinder, the slide sleeve, and the tool holder has at least one air vent formed therein for venting air in the cylinder in front of the striking member to the outside of the tool holder.

5,775,441

POWER DRIVEN STRIKING TOOL

Masaki Sakuragi, and Yoshihiro Kasuya, both of Anjo, Japan, assignors to Makita Corporation, Aichi-pref., Japan

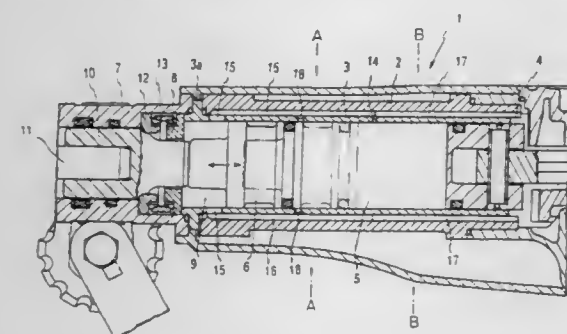
Filed May 21, 1996, Ser. No. 651,670

Claims priority, application Japan, May 25, 1995, 7-126756

Int. Cl.⁶ B25D 9/04

U.S. Cl. 173—200

7 Claims



1. A power driven striking tool comprising:
 - a cylinder;
 - a piston reciprocable in the cylinder;
 - a first air chamber provided in the cylinder;
 - a bit mounted in front of the cylinder;
 - a striking member pneumatically interlocked with and actuated by the piston via the first air chamber for transmitting impacts to the bit by forward motion thereof;
 - a second air chamber formed between the striking member and the bit; and
 - an air flow regulation means for restricting the amount of air forced out of the second air chamber to the outside of the cylinder when the air in the second air chamber is compressed by the striking member in forward motion, the air flow regulation means including
 - air passages provided between the cylinder and a cylindrical housing for supporting the cylinder, the air passages being disposed at the front of the cylinder to communicate with the second air chamber, and
 - choke passages provided between the cylinder and the housing, the choke passages having a smaller cross sectional area than that of the air passages and being disposed at the rear of the cylinder to connect the respective air passages to the outside of the cylinder.

5,775,442

RECOVERY OF GAS FROM DRILLING FLUID RETURNS IN UNDERBALANCED DRILLING

David Speed, Calgary, Canada, assignor to Northland Production Testing, Ltd., Alberta, Canada

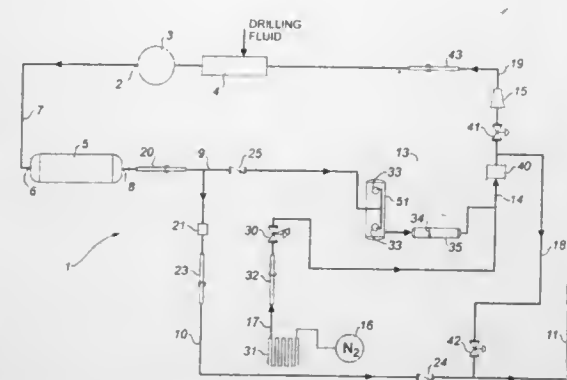
Filed Oct. 29, 1996, Ser. No. 741,201

Int. Cl.⁶ E21B 21/06; 21/08; 21/14; 49/00

U.S. Cl. 175—48

3 Claims

1. A method for treating pressurized drilling fluid returns from a well having a returns outlet and inlet means for introducing drilling fluid and added gas to the well, said well undergoing underbalanced drilling, said returns comprising a liquid component, a particulate solids component and a gas component comprising added gas, said method comprising:
 - providing a pressure-containing loop circuit extending between and connected with the returns outlet and inlet means, said circuit comprising a separator vessel, a circuit for cleaning gas and a compressor;
 - introducing the returns into the separator vessel, separating the solids, liquid and gas components in the vessel and producing separate solids, liquid and gas streams from the vessel, said gas stream containing minor amounts of entrained solids and liquid;
 - separating sufficient entrained solids and liquid from the gas stream in the cleaning circuit to produce cleaned gas acceptable as compressor feed; and
 - compressing cleaned gas in the compressor to well re-injection pressure and recycling it to the well as added gas.



- providing a pressure-containing loop circuit extending between and connected with the returns outlet and inlet means, said circuit comprising a separator vessel, a circuit for cleaning gas and a compressor;
- introducing the returns into the separator vessel, separating the solids, liquid and gas components in the vessel and producing separate solids, liquid and gas streams from the vessel, said gas stream containing minor amounts of entrained solids and liquid;
- separating sufficient entrained solids and liquid from the gas stream in the cleaning circuit to produce cleaned gas acceptable as compressor feed; and
- compressing cleaned gas in the compressor to well re-injection pressure and recycling it to the well as added gas.

5,775,443

JET PUMP DRILLING APPARATUS AND METHOD

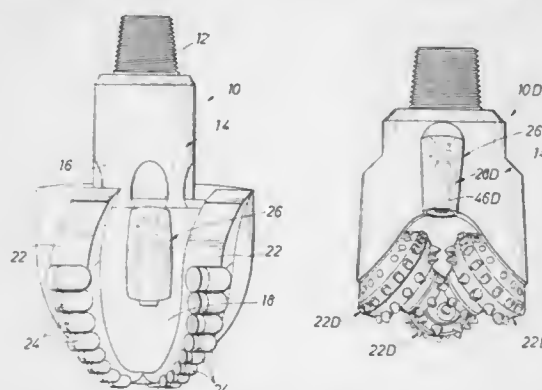
W. Gerald Lott, Houston, Tex., assignor to Nozzle Technology, Inc., Houston, Tex.

Filed Oct. 15, 1996, Ser. No. 735,448

Int. Cl.⁶ E21B 10/18; 10/60

U.S. Cl. 175—57

30 Claims



1. A rotary drill bit for drilling a well bore hole in a formation comprising:
 - a bit body having a central bore to receive a pressurized drilling fluid;
 - a jet pump device positioned on said bit body including a jet assembly having a lower jet nozzle directed downwardly toward the formation and a fluid flow restriction;
 - flow diverter means communicating with said central bore to receive pressurized drilling fluid therefrom and to separate said pressurized drilling fluid into two streams for said jet assembly, one of said streams being directed to said lower jet nozzle for discharge against the formation in a downward direction and the other stream being directed through said flow restriction; and
 - a discharge flow passage extending from a lower bore hole cavity adjacent the lower face of the drill bit through said flow restriction for said jet assembly for drawing a mixture of drilling fluid and entrained formation cuttings upwardly from

said lower bore hole cavity for discharge from the well bore hole through said flow restriction.

5,775,444

DRILL STRING ORIENTING MOTOR

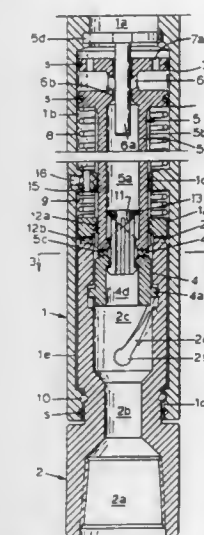
Thomas E. Falgout, Sr., 110 Charles Read St., Lafayette, La. 70503

Filed Oct. 23, 1996, Ser. No. 735,738

Int. Cl.⁶ E21B 17/07

U.S. Cl. 175—322

10 Claims



1. An orienting motor, usable as a length element of a continuing pipe string, to incrementally rotate one end of said pipe string relative to the other in response to preselected flow rate changes in a stream of fluid pumped down the pipe string bore, the motor comprising:
 - a) an elongated body comprising a housing on one end and an arbor on the opposite end, said housing telescopically receiving said arbor for fluid tight relative rotation and axial constraint, means at each said end for fluid tight attachment to the continuing pipe string components and at least one channel to conduct fluid between attached said components;
 - b) actuator means situated in said housing, responsive to pressure difference between opposite ends of said body to move axially between first, second, and third positions, with spring bias to return said actuator to said first position;
 - c) an axial to rotary motion converter movable in response to movement of said actuator to rotate said arbor relative to said housing an incremental amount each time said actuator moves in at least one direction between said first two positions;
 - d) a one way clutch situated to operate between said housing and said arbor to retain said incremental amount of rotation;
 - e) a clutch situated to transmit torque between said actuator and said converter and responsive to the direction of movement of said actuator to engage when said actuator moves away from said first position and to disengage when said actuator moves toward said first position.

- a) an elongated body comprising a housing on one end and an arbor on the opposite end, said housing telescopically receiving said arbor for fluid tight relative rotation and axial constraint, means at each said end for fluid tight attachment to the continuing pipe string components and at least one channel to conduct fluid between attached said components;
- b) actuator means situated in said housing, responsive to pressure difference between opposite ends of said body to move axially between first, second, and third positions, with spring bias to return said actuator to said first position;
- c) an axial to rotary motion converter movable in response to movement of said actuator to rotate said arbor relative to said housing an incremental amount each time said actuator moves in at least one direction between said first two positions;
- d) a one way clutch situated to operate between said housing and said arbor to retain said incremental amount of rotation;
- e) a clutch situated to transmit torque between said actuator and said converter and responsive to the direction of movement of said actuator to engage when said actuator moves away from said first position and to disengage when said actuator moves toward said first position.

5,775,445

DRILLING UNIT WITH HOLLOW ANNULAR DRILL BIT AND CENTRAL DRILL

Werner Kleine, An der Marsch 29, D-28832 Achim, Germany

Filed Sep. 5, 1995, Ser. No. 524,013

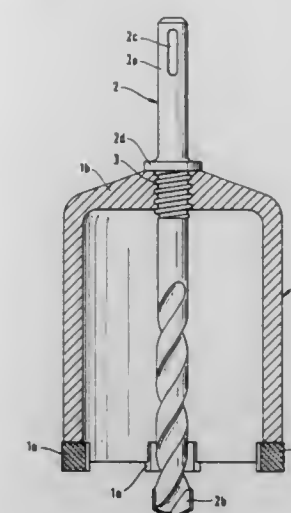
Claims priority, application Germany, Oct. 15, 1994, 44 36 917.4

Int. Cl.⁶ E21B 10/00

U.S. Cl. 175—385

1 Claim

1. Drilling unit comprising a axially extending hollow annular drill bit (1) having a leading end and a trailing end and an axially



- extending centering drill (2) having a leading end and a trailing end, said centering drill (2) having an axially extending chucking shank (2a) extending from the trailing end and a drill head (2b) at the leading end thereof, said centering drill extending through the trailing end of said annular drill bit (1) with said drill head (2b) projecting axially outwardly from the leading end of said annular drill bit and the chucking shank (2a) projecting axially outwardly from the trailing end of said annular drill bit, wherein the improvement comprises a detachable connection between said centering drill and said annular drill bit (1), said annular drill bit is a single piece and bell-shaped with said trailing end thereof comprising a base (1b) extending transversely of said centering drill, said base (1b) having a first surface and a second surface each extending transversely of said centering drill with said first surface facing toward the leading end of said annular drill bit (1) and said second surface forming the trailing end of said annular drill bit, said detachable connection comprises a helical thread (3) formed in part on said centering drill (2) and in part in said base (1b) of said annular drill bit (1), said centering drill (2) is a single piece and has an annular collar-like stop (2d) formed on the leading end of said chucking shank (2a) extending transversely of said centering drill radially outwardly from said helical stop and with said helical thread on said centering drill extending axially from said stop towards the leading end of said centering drill, and with said stop bearing against the second surface of said base (1b) of said annular drill bit (1).

5,775,446

NOZZLE INSERT FOR ROTARY ROCK BIT

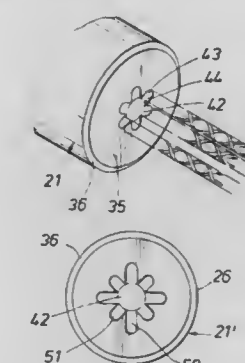
W. Gerald Lott, Houston, Tex., assignor to Nozzle Technology, Inc.

Filed Jul. 3, 1996, Ser. No. 675,717

Int. Cl.⁶ E21B 10/18

U.S. Cl. 175—424

2 Claims



1. A nozzle insert for a rotary drill bit comprising: a generally cylindrical body having a lower end wall; orifice means opening

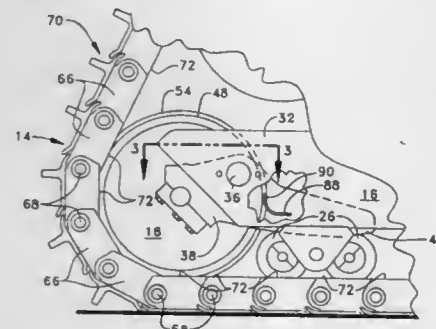
through said end wall and having a generally circular central region and a plurality of angularly spaced, non-circular outer regions around the periphery of said central region, so that flow through each of said outer regions develops a vortex flow pattern to increase the entrainment of rock particles and to enhance the rate of penetration, each of said outer regions having a generally semi-elliptical shape provided by spaced-apart, parallel side walls having outer ends that are joined by a semi-circular end wall, and alternating ones of said outer regions having side walls that are longer than the side walls of the other of said regions.

5,775,447
MATERIAL DEFLECTING ASSEMBLY FOR A TRACK ASSEMBLY

Delbert D. Dester, Washington, and Dave E. Keedy, Pekin, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Sep. 25, 1996, Ser. No. 719,378
Int. Cl.⁶ B62D 55/088

U.S. Cl. 180—9.1

15 Claims



1. A material deflector assembly for a track assembly, comprising:
 - a frame having a first end portion defining a pair of bifurcated arm members;
 - an idler member having a pair of engagement surfaces defined thereon in spaced relationship to one another and being mounted to the frame between the bifurcated arm members;
 - a roller member having a pair of engagement surfaces defined thereon in spaced relationship to one another and being mounted to the frame with the engagement surfaces thereof aligned with the engagement surfaces of the idler member; and
 - a pair of deflecting plates having a first portion and a second portion positioned at an upwardly extending angle from the first portion, each of said deflecting plates being secured to opposing ones of the bifurcated arms in overlying relationship to the track roller with the second portion thereof adjacent the engagement surfaces of the idler member.

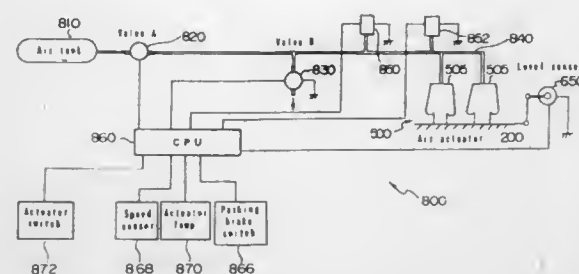
5,775,448
CONTROL DEVICE OF A START-ASSIST SYSTEM
Hideto Hirahara; Masaaki Kano; Minoru Higuchi, and Haruyuki Hosoya, all of Kawasaki, Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Filed Jul. 12, 1996, Ser. No. 679,230
Int. Cl.⁶ B62D 61/12

U.S. Cl. 180—24.02

7 Claims

1. A control device for a start-assist system in a vehicle having two rear axles, one of which is a drive axle and the other of which is an idler axle, said control device comprising:
 - an air actuator adapted to be attached to the drive axle to increase the load to drive wheels mounted on the drive axle;
 - a parking brake switch;
 - a speed sensor for detecting the speed of the vehicle;
 - a level sensor for detecting loads applied to the drive axle and the idler axle;



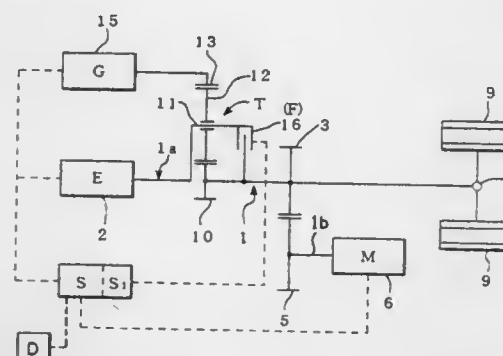
- a first valve for supplying air from an air source to said air actuator;
- a second valve for releasing air from said air actuator; and
- a control unit for controlling said first valve and said second valve, said control unit opening said second valve to release air from said air actuator upon detecting that the vehicle is stopped and said parking brake switch is in an activated condition.

5,775,449
HYBRID VEHICLE
Shuzo Moroto, and Kozo Yamaguchi, both of Aichi-ken, Japan, assignors to Kabushikikaisha Equos Research, Japan
PCT No. PCT/JP95/01109, § 371 Date Aug. 21, 1995, § 102(e)
Date Aug. 21, 1995

PCT Filed Jun. 6, 1995, Ser. No. 507,514
Claims priority, application Japan, Jun. 6, 1994, 6-147078
Int. Cl.⁶ B60K 6/04

U.S. Cl. 180—65.2

22 Claims



13. A hybrid vehicle comprising:
 - an internal combustion engine driving an engine output shaft;
 - an electric motor driving a motor output shaft;
 - a generator driven by torque input through a generator shaft;
 - a differential gear unit comprising first, second and third gear elements, said first gear element being connected with said internal combustion engine and said second gear element being connected with said generator;
 - a casing housing said differential gear unit;
 - first frictional engagement means for engaging said third gear element with said casing;
 - load detection means for detecting a load demand and for generating a command signal indicative of the load demand; and
 - control means for determining if the indicated load demand satisfies conditions predetermined for establishment of a high load drive mode, for releasing said frictional engagement means to establish a low load drive mode when said predetermined conditions are not satisfied and for causing said frictional engagement means to become fully engaged when said predetermined conditions are satisfied.

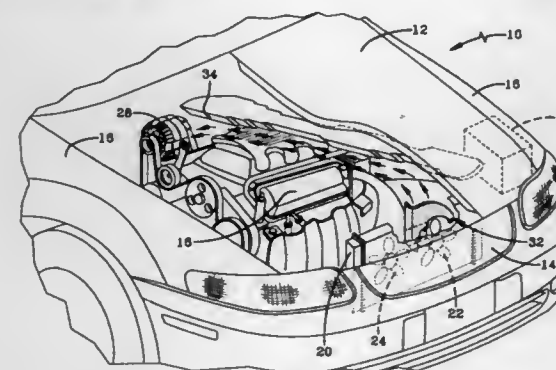
5,775,450
VEHICLE UNDERHOOD COMPONENT COOLING SYSTEM

Donald Kevin Porter, Olivet, and Mark Eugene Franchet, Grosse Pointe Park, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 6, 1996, Ser. No. 642,990
Int. Cl.⁶ B60K 11/00

U.S. Cl. 180—68.1

3 Claims



1. In a vehicle having an engine contained in an engine compartment enclosed by a hood located above said engine, a radiator located in said front of said engine, and having a cooling fan assembly mounted behind said radiator that pulls outside air into said compartment and through said radiator and which normally exhausts said cooling air in a stream generally toward and beneath said engine, and in which a component that runs hotter than said exhausted air is located generally above said engine and out of the normal path of said exhausted air, a system for redirecting a portion of said exhausted air toward and over said component, comprising:
 - a deflector mounted behind said fan assembly and adapted to catch and redirect at least a portion of said exhausted air stream up and over said engine, beneath said hood, and,
 - an elongated curb mounted beneath said hood and above said engine and extending continuously from a front end located above and to the side of said deflector to a back end located to the same side of said component,

whereby exhausted air redirected by said deflector from said fan assembly and above said engine is thereafter directed by said curb along the outside of said curb toward and generally over said component, thereby cooling it.

5,775,451
METHOD OF OPERATING A VEHICLE CRUISE CONTROL SYSTEM

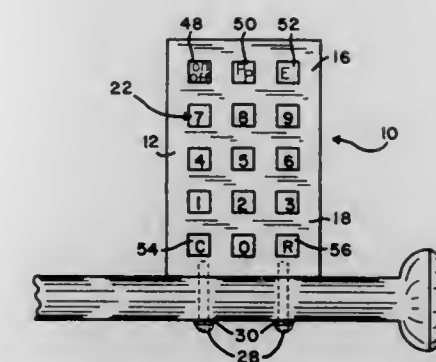
Harold L. Hull, 401 Canyon Way #43, Sparks; Howard H. McMaster, and Sandra A. McMaster, both of 1490 Shadow La., Sparks, all of Nev. 89434

Filed Aug. 26, 1996, Ser. No. 702,848
Int. Cl.⁶ B60K 31/04

U.S. Cl. 180—170

2 Claims

1. A method of operating a vehicle cruise control system, the system comprising a control pad connected to a vehicle cruise control for maintaining a vehicle at a desired speed of travel, the control pad including an on/off button, a pre-programming button, and six buttons with numerical designations of 1-6 respectively, each of the six buttons being assigned a different vehicle speed range within which a specific vehicle speed could be pre-programmed by a user, the pre-programmed vehicle speed for each button increasing in relation to the numerical designation of the button, the method comprising the steps of:
 - 1) pre-programming each of the buttons with a specific vehicle speed within the speed range assigned to each button;
 - 2) pressing the on/off button to activate the cruise control system for permitting the user to set the vehicle speed;
 - 3) pressing the pre-programming button;



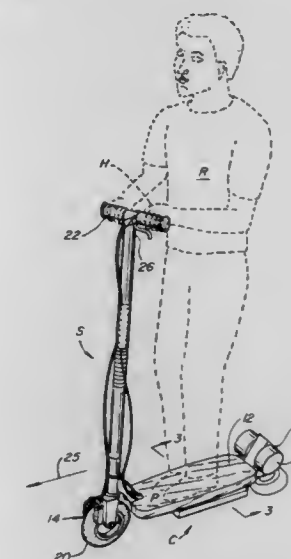
- 4) selecting and pressing one of the six buttons having a pre-programmed speed which corresponds to a desired speed of travel, for setting the vehicle speed to the pre-programmed vehicle speed of the selected button;
- 5) selecting and pressing a second one of the six buttons, when a different speed of travel is desired, for resetting the vehicle speed to the pre-programmed vehicle speed of the second selected button; and
- 6) pressing the on/off button to deactivate the cruise control system when a set vehicle speed is no longer desired.

5,775,452
ELECTRIC SCOOTER
Steven J. Patmont, Pleasanton, Calif., assignor to Patmont Motor Werks, Pleasanton, Calif.

Filed Jan. 31, 1996, Ser. No. 593,324
Int. Cl.⁶ B62D 61/00

U.S. Cl. 180—181

3 Claims



1. An electrically powered scooter for powered movement over a ground surface comprising in combination:
 - a scooter chassis having a rear wheel mount at one end and a front wheel mount at the other end with a chassis support member extending therebetween;
 - a chassis supported front wheel mounted to the front wheel mount for turning steering movement with respect to the front wheel mount;
 - the chassis includes a single central tubular member extending between the front wheel mount and the rear wheel mount;
 - a chassis supported rear wheel;
 - a chassis supported motor;
 - means adjacent the rear wheel mount for enabling the chassis supported motor to drive the chassis supported rear wheel;
 - a platform supported from the scooter chassis between the rear wheel mount and the front wheel mount defining an upper

surface for supporting a scooter rider and an underside exposed to the ground surface over which the scooter passes; a battery support between the underside of the platform and ground over which the scooter passes for supporting motor driving batteries; a plurality of batteries mounted to either side of the single central tubular member in depending relations from the platform; and, the batteries mounted to either side of the single central tubular member define a wiring channel therebetween with the platform overhead for enabling scooter operating wiring to pass between scooter controls at the forward portion of the chassis and the chassis supported motor.

5,775,453

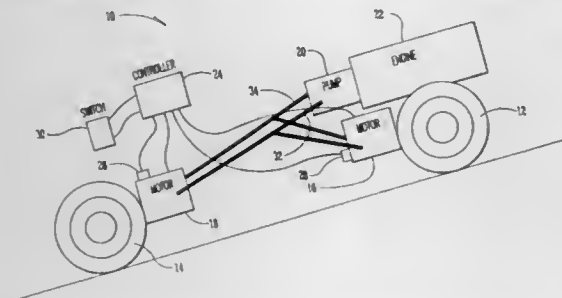
TRACTION CONTROL SYSTEM AND METHOD FOR HYDRAULICALLY PROPELLED VEHICLES

Keith R. Williams, Minnetonka; Lynn T. Jansen, Blain, both of Minn., and Lon A. Jennings, Boone, Iowa, assignors to Sauer Inc., Ames, Iowa

Filed Sep. 20, 1995, Ser. No. 531,246
Int. Cl.⁶ B60T 8/66

U.S. Cl. 180—197

11 Claims



1. A traction control system in combination with a hydraulically propelled vehicle having front and rear drive assemblies comprising:

- a variable speed hydraulic motor coupled to each of the front and rear drive assemblies;
- a pulse pickup operatively coupled to each drive assembly for sensing the speed and direction of each drive assembly;
- a grade sensor for sensing the grade of a ground surface; and
- a controller electrically operatively connected to each variable speed hydraulic motor, each pulse pickup, and the grade sensor to control the motors based on the sensed speeds, the sensed directions, and the sensed grade, wherein the controller controls the motors such that if one of the motors is determined to be slipping, the slipping motor is selectively destroyed unless the vehicle is traveling downhill and the slipping motor is farther downhill than the other motor.

5,775,454

MOTORCYCLE WITH FRONT FENDER MOUNTING SYSTEM

Brian M. Scherbarth, Menomonee Falls, and John E. Stelling, Port Washington, both of Wis., assignors to Harley-Davidson Motor Company, Milwaukee, Wis.

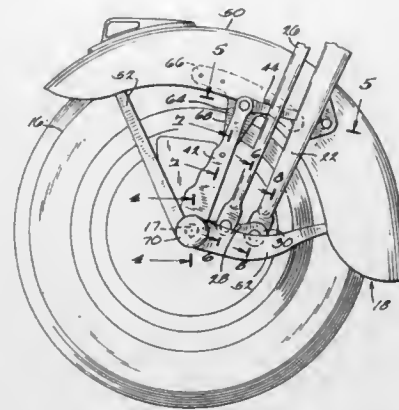
Filed Jul. 9, 1996, Ser. No. 678,507
Int. Cl.⁶ B62K 25/08

U.S. Cl. 180—219

20 Claims

1. A motorcycle comprising:

- a frame;
- a front fork assembly connected to said frame;
- a front wheel including a front axle secured to said front fork assembly; and
- a fender assembly including:
- a fender positioned over said front wheel; and



- a fender strap interconnecting said fender with said front axle such that vertical movement of said front axle results in substantially the same vertical movement of said fender; and
- a bearing interconnecting said front axle with said fender strap such that said fender assembly is rotatably mounted to said front axle.

5,775,455

STEERING MECHANISM FOR ELECTRIC VEHICLES WITH AN OFF-CENTER MOUNTED DRIVE WHEEL

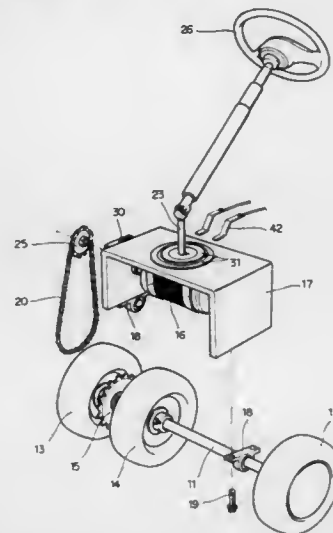
In Hee Cho, 250-1, Duckpoong-Dong, Hanam, Kyungki-Do, Rep. of Korea

Filed Nov. 28, 1995, Ser. No. 563,592
Claims priority, application Rep. of Korea, Aug. 30, 1995, 1995-23128

Int. Cl.⁶ B60K 17/30

U.S. Cl. 180—264

5 Claims



1. A steering device for an amusement car comprising:
- a bracket supporting on a first side a drive motor and motor shaft;
 - a wheel shaft mounted to said bracket by mounting members and operatively coupled to said motor shaft so that rotational motion of said motor shaft is transmitted to said wheel shaft;
 - a freely rotating idle wheel mounted at each end of said wheel shaft;
 - a drive wheel fixedly mounted off-center to said wheel shaft;
 - a pair of annular contact plates of differing diameters mounted to a second side of said bracket and connected to electric terminals of said motor for engaging a pair of contact members connected to electric terminals of a power source; and
 - a steering shaft fixedly mounted to said second side of said bracket so that rotation of said steer shaft results in rotation of

said bracket and resulting movement of said wheel shaft to steer said amusement car.

5,775,456

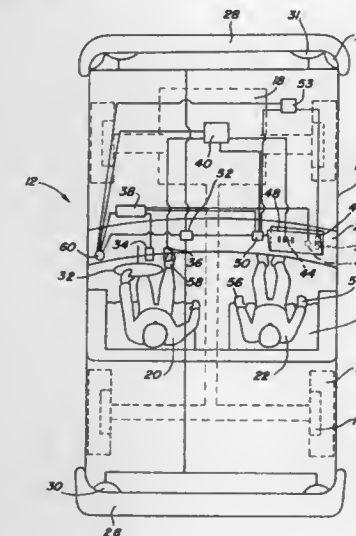
EMERGENCY DRIVER SYSTEM

George S. Reppas, 1030 San Raymundo Rd., Hillborough, Calif. 94010-6656

Filed Jun. 5, 1995, Ser. No. 464,525
Int. Cl.⁶ B62D 1/12

U.S. Cl. 180—322

21 Claims



1. An emergency driver system for a motor vehicle, said system comprising:
- a first controller, said first controller being responsive to a first actuator and a second actuator and operable to control a first operation of said motor vehicle;
 - a cover, said cover concealing said second actuator; and
 - a cover sensor, said cover sensor operable to sense the opening of said cover to expose said second actuator, wherein upon opening said cover, said cover sensor disables the operation of said first actuator.

5,775,457

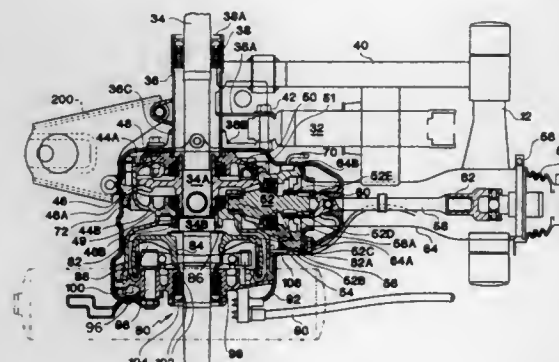
FINAL DRIVE ASSEMBLY FOR AN ALL-TERRAIN VEHICLE

Akio Handa, and Bunzo Seki, both of Saitama, Japan, assignors to Honda Giken Kabushika Kaisha, Tokyo, Japan

Filed Jul. 16, 1996, Ser. No. 682,950
Int. Cl.⁶ B60K 17/00

U.S. Cl. 180—344

16 Claims



1. An axle for a vehicle comprising:

an elongated shaft having a first end, a second end and an intermediate portion being disposed therebetween, said intermediate portion having a perimeter surface; said first end of said elongated shaft being adapted for mounting a first wheel thereon; said second end of said elongated shaft being adapted for mounting a second wheel thereon; and a flange extending a predetermined distance along a length of said intermediate portion, said flange forming a first edge extending out of said perimeter surface of said intermediate portion, said first edge facing said first end of said elongated shaft, said flange also forming a second edge extending out of said perimeter surface of said intermediate portion, said second edge facing said second end of said elongated shaft, said first edge for serving as an abutment against which a drive gear assembly is mounted and said second edge for serving as an abutment against which a brake drum assembly is mounted.

5,775,458

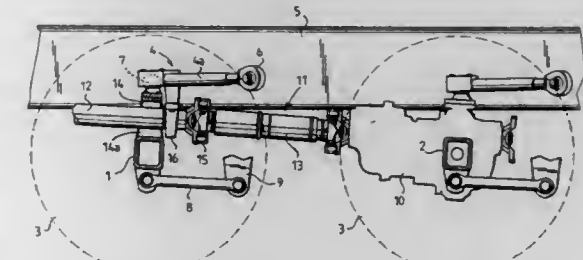
SUPPORT ARRANGEMENT FOR A DIVIDED ARTICULATED SHAFT

Timo Salo, Mustio, Finland, assignor to Tamrock Oy, Tampere, Finland

Filed Dec. 15, 1995, Ser. No. 573,234
Claims priority, application Finland, Dec. 21, 1994, 946010
Int. Cl.⁶ B60K 17/24

U.S. Cl. 180—374

10 Claims



1. A support arrangement for a divided articulated shaft in a vehicle having a frame, at least one driving axle and at least one turning non-driving axle having a middle for the divided articulated shaft to pass across the turning non-driving axle to the driving axle, the support arrangement comprising:
- supporting unit means for supporting a turning non-driving axle from about its middle on a frame of a vehicle; and
 - means for supporting a divided articulated shaft on the supporting unit means at about the middle of the turning non-driving axle for following only vertical movement of the turning non-driving axle.

5,775,459

RACK-AND-PINION STEERING SYSTEM

Wolfgang Jörg, Stuttgart; Jaromir Bordovsky, Berglen; Aydogan Cakmaz, Stuttgart; Hubert Heck, Düsseldorf; Arno Röhringer, Ditzingen; Claus Gall, Fellbach; Reinhold Abt, Neuhäusen; Rainer Strass, Kaarst, and Karl-Hans Köhler, Wernau, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

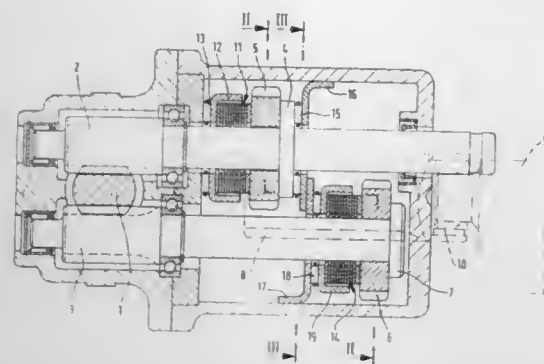
Filed Dec. 22, 1995, Ser. No. 577,103
Claims priority, application Germany, Dec. 23, 1994, 44 46 482.7

Int. Cl.⁶ B62D 5/04

U.S. Cl. 180—444

15 Claims

1. Rack-and-pinion steering system comprising:
- a helically toothed rack having first and second toothings at respective different sides of the rack,



a first pinion with teeth engaging said first toothing, said first pinion being axially movable,
a second pinion with teeth engaging said second toothing,
a servo motor which in use continuously rotates in one direction, and a clutch arrangement for controlling driving connections between the servo motor and the pinions in dependence on axial movement of the first pinion.

5,775,460

HINGE AND LADDER

Mark James Stone, 67 Marshall Lane, Kenmore, Queensland, 4069, Australia

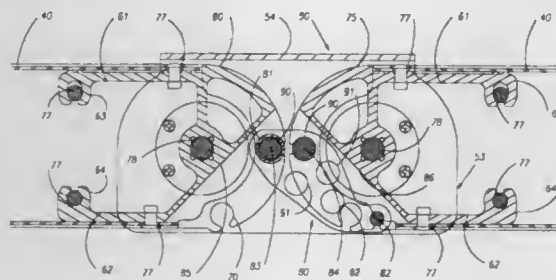
Filed Jan. 23, 1996, Ser. No. 590,467

Claims priority, application Australia, Feb. 2, 1995, PN0880; Aug. 17, 1995, PN4804

Int. Cl.⁶ F16D 1/00

U.S. Cl. 182—22

16 Claims

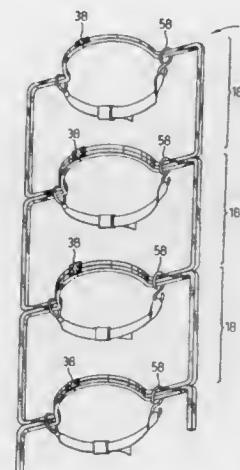


1. A hinge for a reconfigurable ladder, the ladder having two spaced stiles and each stile comprising a plurality of stile sections, the hinge including two hinge members and a respective said hinge member being mountable to each end of two adjacent stile sections to allow the stile sections to be coupled to one another, a hinge cover extending over and receiving the hinge members and having the hinge members pivotally connected thereto about respective pivot axes located between sides of the stile sections, the hinge members being linked to each other by at least one link member pivotally coupled to the hinge members at locations spaced from the pivot axes and extending between the hinge members, whereby the pivotal movement of the hinge members relative to the cover is controlled so that both said hinge members may pivot in unison and to the same extend relative to the cover, the hinge members each having a plurality of locating apertures, and a locking mechanism cooperable with the locating apertures for locking the hinge members in a desired relative position to one another.

5,775,461
LINK LADDER SYSTEM
Henry Vandelinde, 22521 Warden Avenue, R.R. 1, Queensville, Ontario, Canada, L0G 1R0
Filed Apr. 2, 1996, Ser. No. 626,422
Int. Cl.⁶ E06C 1/52

U.S. Cl. 182—93

8 Claims



1. A ladder system formed of a plurality of ladder segments arranged in a vertical column, each ladder segment comprising:
first and second segment sections, each of which includes upper and lower abutment portions to abut an object to be scaled and a riser portion interconnecting said upper and lower abutment portions to provide support for a user;
upper and lower hinge means to connect said first and second segment sections;
retaining means removably attachable to the first and second segment sections to maintain said abutment portions in engagement with said object to be scaled; and
linking means to pivotally connect said ladder segment to an adjacent ladder segment.

5,775,462

Patent Not Issued For This Number

5,775,463

TOEBOARD SYSTEM FOR A DECKPLATE

Robert A. Alberts, Wyomissing Hills, Pa., assignor to Alumax Extrusions, Inc., Cressona, Pa.

Filed Jul. 15, 1996, Ser. No. 683,588

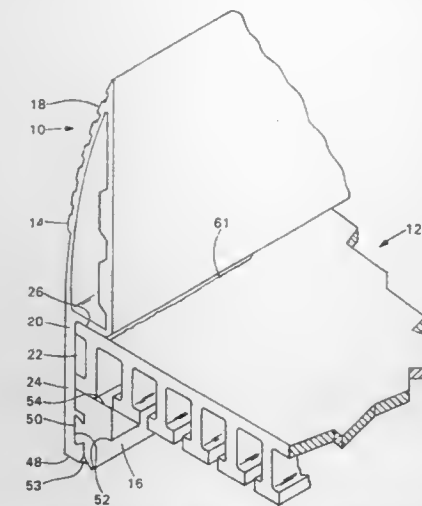
Int. Cl.⁶ A47L 3/02

U.S. Cl. 182—113

7 Claims

1. A toeboard system for a deckplate, said toeboard system comprising:

- (a) a longitudinally extending toeboard member comprising
 - (i) an upper section having an upper deckplate contact surface being substantially flat;
 - (ii) a longitudinally extending inboard surface being substantially perpendicular to and intersecting with said upper deckplate contact surface and a longitudinally extending outboard surface being arcuate and convergent with said inboard surface at an edge of said upper section above said upper deckplate contact surface;
 - (iii) a central section having a longitudinally extending deckplate opening configured to receive a full length of a side edge of a deckplate said central section having a sidewall extending substantially perpendicular to said upper deckplate contact surface; and



- (iv) a lower section having a substantially flat base surface extending along a bottom edge of said lower section, and said lower section includes a longitudinally extending opening; and
- (b) a longitudinally extending spacer member having a lower deckplate contact surface and said spacer member being fastened to said toeboard member below said deckplate opening of said central section in said lower section opening of said toeboard member, wherein said spacer member extends over a full length of said toeboard member and said lower section opening of said toeboard member is a mating opening configured to receive a projection from said spacer member, said projection being disposed within said mating opening.

5,775,464

TREE CHAIR

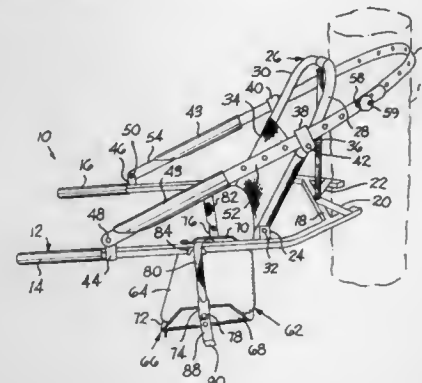
Billy D. Gardner, 4830 Camellia Ave., NW., Cleveland, Tenn. 37311

Filed May 23, 1997, Ser. No. 862,187

Int. Cl.⁶ E47C 9/10

U.S. Cl. 182—187

7 Claims



1. Tree chair apparatus securable to a tree for supporting a user at elevated dispositions, said apparatus comprising a rigid frame having a pair of spaced apart rail members, said frame including rigid gripping means secured thereto intermediate said rail members for engaging and gripping a first surface of said tree facing said gripping means, flexible elongated band means including at least two bands, each band having two ends, means for pivotally connecting one end of each band to a respective rail member remote from said gripping means, a seat for accommodating a user in a sitting disposition when disposed beneath said frame, means for supporting said seat from said rail members, a seat back comprising a substantially U-shape yoke having a pair of spaced apart legs, journal means for pivotally mounting each leg to a respective rail such that the seat back may pivot relatively to said

frame, a sleeve pivotally connected to each leg of said yoke spaced from said journal means pivotable relative to said back support, the second end of one of said bands extending through one sleeve and the second end of the other band extending through the other sleeve, and means for adjustably connecting the two ends of said bands together to permit said bands to loop about said tree and engage a second surface of said tree opposed to said first surface and elevated relative to said rigid gripping means, and biasing means for urging said seat back towards said rigid gripping means for tightly engaging said seat back against said tree above said rigid gripping means when said tree chair is in operative disposition.

5,775,465

LADDER SUPPORT

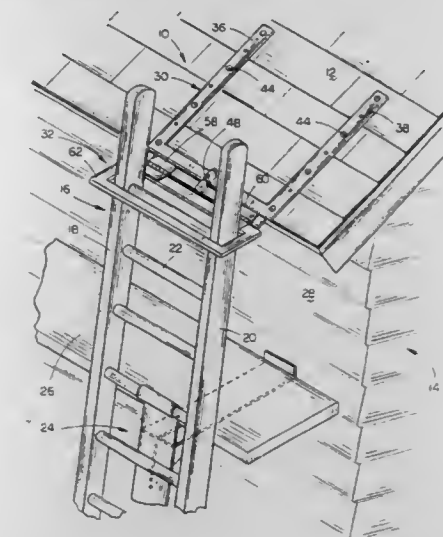
Darby J. Vossler, P.O. Box 286, Elkhorn, Nebr. 68022

Filed Apr. 18, 1997, Ser. No. 843,997

Int. Cl.⁶ E06C 7/48

U.S. Cl. 182—214

7 Claims



1. A ladder support apparatus, comprising:
a generally U-shaped roof attachment portion, having a pair of spaced apart legs connected at rearward ends to a base; each leg having at least one aperture formed generally vertically therethrough receive a fastener nail;
a ladder retention portion connected to the base of the roof attachment portion;
said ladder retention portion including a strap formed into a loop having opposing forward and rearward legs and opposing side legs, said roof attachment base connected to the forward leg of the ladder retention portion;
an intermediate portion connected between the roof attachment portion and ladder retention portion;
said intermediate portion including an elongated strap pivotally mounted parallel to the ladder retention portion loop forward leg, for pivotal movement about a pivot axis parallel to both the intermediate portion strap and the loop forward leg strap; said roof attachment portion base being connected to the intermediate portion strap; and
means for rotatably connecting the intermediate portion strap to the roof attachment portion base, for rotatable movement of the base on an axis orthogonal to both the base and the intermediate portion strap.

5,775,466

BICYCLE BRAKING SYSTEM

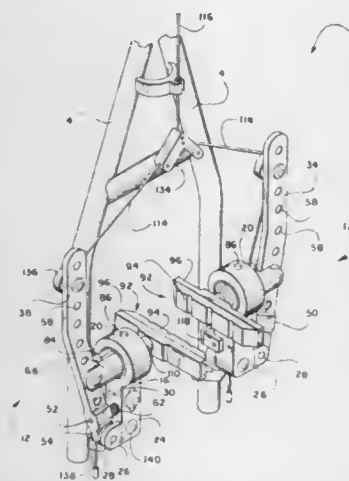
Michael Banyas, 7105 Hunters Branch Dr., Atlanta, Ga. 30328,
and Paul L. Artigues, 3040 Sumitwood Dr., Kennesaw, Ga.
30144

Filed Oct. 4, 1996, Ser. No. 726,852

Int. Cl.⁶ B62L 3/00

U.S. Cl. 188—24.21

18 Claims



1. An arm and piston brake assembly for a bicycle having a hand actuator and a pair of wheel posts straddling a wheel including a rim, comprising:

- a brake mounting bracket mounted to each wheel post proximate the rim, the brake mounting brackets opposing one another and having a head, the head having an aperture;
- an arm pivotally mounted to each brake mounting bracket, each arm being operably connected to the hand actuator and having an elongated connector bore;
- a piston pivotally connected to each arm and disposed within the aperture to slidably engage the head of the conjunctive brake mounting bracket, the piston having a piston bore and a pivot screw, the pivot screw being disposed through the piston bore and the connector bore; and
- a brake pad assembly mounted to each piston to brakingly engage the rim of the wheel.

5,775,467

FLOATING ELECTROMAGNETIC BRAKE SYSTEM

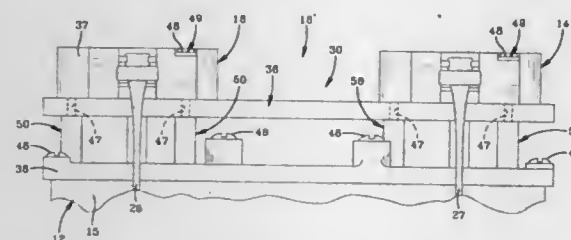
Erik Forrest Knuth, Columbus; Abraham Shawky Farag, Dayton; William Frank Borchers, Beavercreek, and Loren Emil Majersik, Oakwood, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 29, 1996, Ser. No. 688,696

Int. Cl.⁶ B60T 8/42; H02K 5/24

U.S. Cl. 188—161

10 Claims



1. An electromagnetic brake system comprising:
a motor having a rotor carried in a housing with a shaft extending from the housing and being rotatable with the rotor;
a disk carried by the shaft and being fixed to the shaft to rotate in concert therewith;

an electromagnetic brake disposed about the disk including a body, a coil carried by the body and a plunger disposed between the coil and the disk; and
at least one resilient element interposed between the housing and the body wherein the body is suspended on the housing by the resilient element so that the electromagnetic brake floats on the resilient element relative to the housing and the disk.

5,775,468

HIGH PERFORMANCE TWO-PLY FRICTION MATERIAL

Robert C. Lam, Naperville, and Marc A. Yesnik, Glen Ellyn, both of Ill., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Jan. 16, 1997, Ser. No. 784,415

Int. Cl.⁶ F16D 69/00

U.S. Cl. 188—251 A

15 Claims



1. A two-ply fibrous base material for use in a non-asbestos friction material comprising a secondary or top layer bonded to a primary or lower layer, the primary layer comprising non-linearly elastic fibers, cotton fibers, and filler material; the secondary layer comprising porous carbon, cotton fibers, and aramid fibers.

5,775,469

ELECTRODYNAMIC STRUT WITH ASSOCIATED BRACING MECHANISM

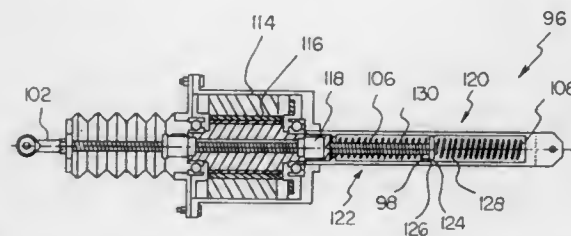
Song D. Kang, 5540 Stonewall Pl. #22, Boulder, Colo. 80309

Filed Apr. 15, 1996, Ser. No. 631,944

Int. Cl.⁶ B60G 13/00; F16F 6/00

U.S. Cl. 188—267

15 Claims



1. An electrodynamic strut with variable stiffness, variable damping and associated adaptive bracing mechanism model for use with seismic structures/buildings vibration control, bridges vibration control, load relieving adaptive space structures, nuclear power plants, the electrodynamic strut comprising, in combination:
a bracing mechanism including a first pair of braces oriented in a V-shaped configuration with first ends pivotally coupled to a first part of a structure and a second pair of braces orientated in a V-shaped configuration with first ends pivotally coupled to another part of the structure, wherein the braces each terminate at a second end with each second end of the first pair of braces pivotally coupled to an associated second end of the second pair of braces thus defining a pair of pivot joints which vibrate coincidentally upon the vibration of the structure;
a strut pivotally coupled between the pivot joints of the bracing mechanism and adapted to damp the vibration of the structure; the strut including a hollow support cylinder with a first end and a second end; a neutral fixed ring coupled to an interior surface of the support cylinder at a central extent thereof; a telescoping rod with an outboard end hingably

5,775,470

HYDRAULIC CONTROLLABLE VIBRATION ABSORBER

Hans-Joerg Feigel, Rosbach, Germany, assignor to ITT Automotive Europe GmbH, Germany

PCT No. PCT/EP92/02627, § 371 Date Aug. 22, 1994, § 102(e)
Date Aug. 22, 1994, PCT Pub. No. WO93/09966, PCT Pub.
Date May 27, 1993

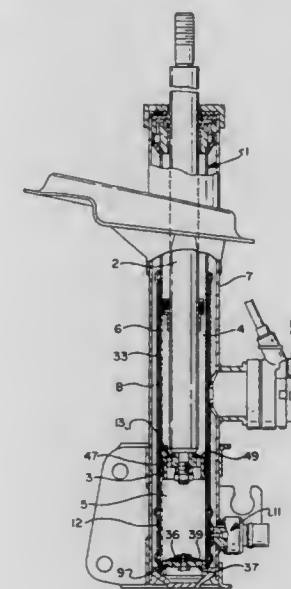
PCT Filed Nov. 14, 1992, Ser. No. 244,109

Claims priority, application Germany, Nov. 18, 1991, 41 367
915.2

Int. Cl.⁶ F16F 9/46; B60G 11/26

U.S. Cl. 188—299

27 Claims



1. A hydraulic controllable vibration absorber for an automotive vehicle comprising:

- a power cylinder having a bottom and having a subdivided interior space, said subdivided space including a first power chamber and a second power chamber;
- a piston and a piston rod, said piston being slidable by said piston rod into said first power chamber and said second power chamber;
- a balancing chamber in connection with both said power chambers;
- a connecting duct linking said balancing chamber to the first power chamber;
- a first non-return valve linking said balancing chamber to the second power chamber;
- a second non-return valve subjectible to pressure existing within the second power chamber;
- a controllable vibration absorber valve for varying a vibration absorbing force, and a sensor arrangement having an output variable for recognizing the direction of movement of the piston, said sensor arrangement being inserted between said second power chamber and said balancing chamber, wherein said sensor arrangement is actuatable due to a pressure differential existing between said second power chamber and said balancing chamber.

coupled to one of the pivot joints of the bracing mechanism and an inboard end situated within an interior space of the support cylinder with the telescoping rod having a threaded bore axially formed therein thus defining a ball nut and further having a flange formed adjacent to the second end thereof on an outer surface thereof; an end cap coupled to the second end of the support cylinder with a concentric aperture formed therein for allowing the slidable movement of the telescoping rod within the support cylinder; a direct current motor/generator with a pair of associated contacts coupled to the first end of the support cylinder with a stator fixed with relation to the support cylinder and a rotor situated within the stator in axial alignment with the telescoping rod, wherein a torque is generated as a function of the resistance between the contacts upon the rotation of the rotor; a ball screw formed integrally with the rotor and extended axially within the entire length of the support cylinder and further screwably inserted within the ball nut of the telescoping rod, the ball screw supported at the first end of the support cylinder by a pair of thrust bearings secured about the ball screw for allowing the free rotation thereof; a first spring compartment and a second spring compartment each including a pair of thrust rings comprising a washer with a flange integrally formed about an aperture thereof and extended normally therefrom, the first spring compartment having a first thrust ring abutting the end cap with the flange thereof extending toward the first end of the support cylinder, a second thrust ring with the washer thereof abutting both the fixed ring and the flange of the telescoping rod in a neutral orientation with the flange of the second thrust ring extending towards the second end of the support cylinder, and a pre-loaded helical spring situated about the telescoping rod between the washer of both the first thrust ring and the second thrust ring, the second spring compartment having a first thrust ring with the washer thereof abutting both the fixed ring and the flange of the telescoping rod in a neutral orientation with the flange of the first thrust ring extending toward the first end of the support cylinder, a second thrust ring abutting the thrust bearing with the flange thereof extending toward the second end of the support shaft, and a pre-loaded helical spring situated about the ball screw between the washer of both the first thrust ring and the second thrust ring; whereby the ball nut of the telescoping rod is adapted to slide linearly between the springs compartments and the springs exhibit high stiffness to damp low level vibration of the strut until said vibration reaches a predetermined value, wherein upon the vibration reaching the predetermined value, the springs exhibit a low constant stiffness; and
a passive mode variable resistive network comprising a motor winding resistance and a rectifier circuit connected in series with the contacts of the motor/generator for producing a direct current at an output of the rectifier circuit upon the linear motion of the telescoping rod, the resistive network further comprising a three port adjustable positive regulator, a potentiometer, and a load resistor connected in series between the output and an input of the rectifier with a line connected between an adjustment port of the adjustable positive regulator and a node positioned between the load resistor and the potentiometer, whereby the adjustable positive regulator is adapted to adjust an output voltage thereof via the potentiometer thus maintaining a constant voltage between an output thereof and the adjustment port thus allowing the passive mode variable resistive network to work in combination with the springs of the strut in order to damp high level vibration of the strut and associated bracing mechanism.

5,775,471

METHOD FOR CONNECTING A SLENDER STRUCTURE TO A REFERENCE BODY AND FOR SUPPRESSING THE VIBRATION OF SUCH SLENDER STRUCTURES

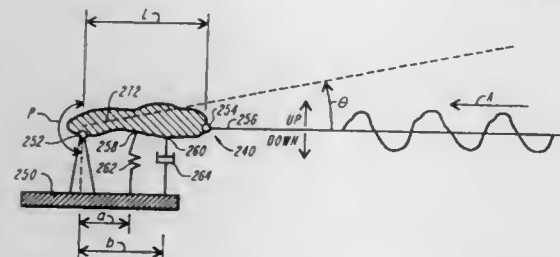
J. Kim Vandiver, Lexington, and Li Li, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 343,792, Nov. 22, 1994, Pat. No. 5,526,906, which is a continuation of Ser. No. 268,871, Jun. 30, 1994, abandoned, which is a continuation of Ser. No. 934,590, Aug. 24, 1992, abandoned. This application May 7, 1996, Ser. No. 646,407

Int. Cl.⁶ F16D 63/00; F16F 7/10

U.S. Cl. 188—378

2 Claims



1. A method for suppressing vibration traveling at speed C in a slender structure experiencing a tension T and having a mass per unit length p, connected to a reference body, the method comprising the steps of:

- connecting a link at a first point of the link to the slender structure;
- connecting the link with a hinge at a second point of the link to the reference body with at least one degree of rotational freedom, the distance between the first point and the second point being designated L;
- connecting, between the link at a third point and the reference body, a means for damping motion of the link through at least one of the link's degrees of freedom, the distance between the second point and the third point being designated b and the damping coefficient of the means for damping being designated R; and
- maintaining the value of the ratio Rb^2/L^2 within a preselected degree of deviation from the value of p, C.

5,775,472

MULTI-AXIS TUNED MASS DAMPER

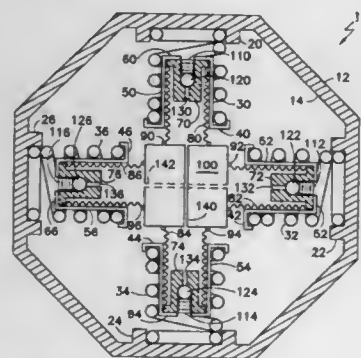
David A. Osterberg, Glendale, and Lawrence P. Davis, Phoenix, both of Ariz., assignors to Honeywell Inc.

Continuation-in-part of Ser. No. 495,156, Jun. 27, 1995, abandoned. This application Nov. 22, 1996, Ser. No. 754,487

Int. Cl.⁶ F16F 7/10

U.S. Cl. 188—378

18 Claims



1. A tuned mass damper comprising:
a container having at least first, second, third and fourth inside wall portions;
a mass;

a first pair of oppositely directed bellows containing a damping fluid and connected between said first and third wall portions respectively and said mass to permit motion of said mass along a first axis at a first predetermined frequency; and
a second pair of oppositely directed bellows containing a damping fluid and connected between said second and fourth wall portions respectively and said mass to permit motion of said mass along a second axis at a second predetermined frequency, said first and second pair of bellows constituting the only connection to said mass.

5,775,473

CORD RETRACTOR

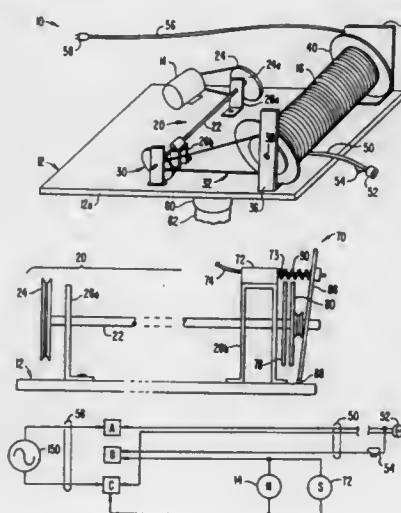
Jose Cordero, 1647 Sweetwood Dr., Daly City, Calif. 94015, assignor to Jose Cordero, Daly City, Calif.

Filed Aug. 8, 1996, Ser. No. 694,528

Int. Cl.⁶ H02G 11/00

U.S. Cl. 191—12.2 A

8 Claims



1. A transfer mechanism for transferring electrical power to a rotating plate comprising:

- a retraction reel;
- a rotating plate attached to and positioned concentric with the retraction reel, the rotating plate having a first surface upon which is formed a plurality of concentric current carrying paths;
- a stationary, non-conducting mounting plate juxtaposed with the first surface of the rotating plate;
- a plurality of electrical contacts each one of the plurality of electric contacts having at one end a roller that is positioned to protrude through a corresponding aperture in the mounting plate and placed in electrical contact with a corresponding one of the plurality of concentric current carrying paths; and
- a source of alternating current having first and second leads respectively coupled to first and second ones of the plurality of concentric current carrying paths, an electric motor coupled through a pair of the plurality electrical contacts to the second one and a third one of the concentric current carrying paths, and a switch connected in series through corresponding ones of the electrical contacts between the first and third ones of the plurality of concentric current carrying paths, the switch operating in a first position to apply alternating current to the electric motor, and in a second position to prevent alternating current from being applied to the electric motor.

5,775,474

Patent Not Issued For This Number

5,775,475

DEVICE FOR TRANSPORTING PRODUCTS, SUCH AS FRUIT AND VEGETABLES IN A STATION FOR SORTING THEM

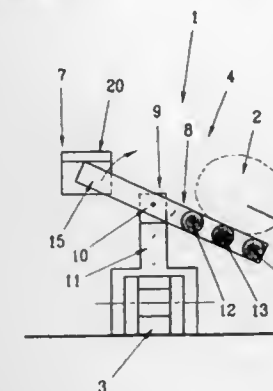
Alberto Sardo, Chateaufort, France, assignor to Xeda International, Saint-Audiot, France

Filed Mar. 25, 1996, Ser. No. 621,310

Claims priority, application France, Mar. 23, 1995, 95 03441 Int. Cl.⁶ B65G 47/38

U.S. Cl. 198—370.04

11 Claims



1. A device for transporting products via a conveyor chain in a station for sorting the products, said device comprising:

- a support stem having a first end for fixing to the conveyor chain, and a second end;
- a lever having a first end portion, a second end portion and an intermediate portion between said first end portion and said second end portion;
- support fingers provided on said first end portion of said lever to support the products;
- wherein an operating part is provided at said second end portion of said lever;
- wherein said lever is pivotally joined, at said intermediate portion thereof, to said second end of said support stem by an articulation joint such that said lever is pivotable between a first position for transporting the products in the station and a second position for removing the products from said device; and
- wherein a sorting control device is operably disposed for interacting with said operating part to control movements of said lever between said first and second positions by allowing said lever to pivot, due to gravity, from said first position to said second position at at least one predetermined location along a path of the conveyor chain.

5,775,476

Patent Not Issued For This Number

5,775,477

DRIVE SYSTEM FOR CURVED ESCALATOR

Erik Brunn, Delmenhorst, Germany, assignor to O&K Roll-treppen GmbH, Hattingen, Germany

PCT No. PCT/EP94/03291, § 371 Date Apr. 9, 1996, § 102(e) Date Apr. 9, 1996, PCT Pub. No. WO95/10477, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 5, 1994, Ser. No. 633,824

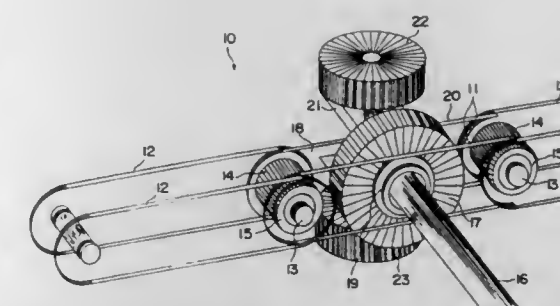
Claims priority, application Germany, Oct. 9, 1993, 43 34 449.6; Oct. 25, 1993, 43 36 320.2

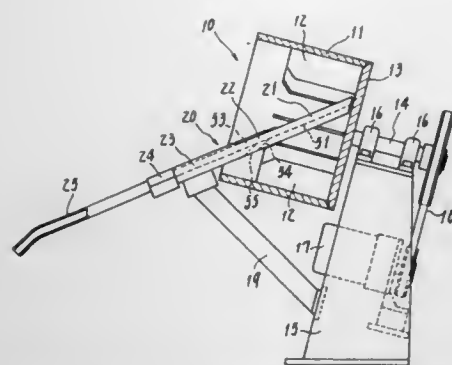
Int. Cl.⁶ B66B 21/06

U.S. Cl. 198—328

13 Claims

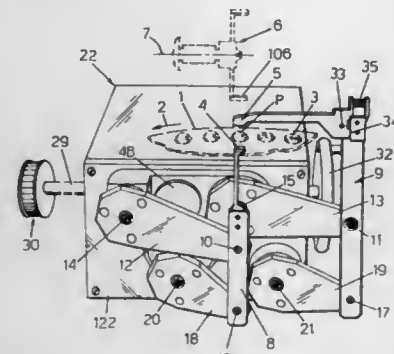
1. A drive system for a curved escalator having a frame helically arranged in a vertical direction, a transport section disposed on the frame and including steps, return tracks and guide tracks for the





a middle sorting section for mechanically distinguishing a front face from a rear face of each of the parts so as to separate the parts standing in a regular direction from the other parts standing in an inverse direction; and
a downstream discharging section for transferring only the parts standing in the regular direction;
the upstream section having formed therein a longitudinal groove that has a widely open top and is of a depth enough to wholly embrace each of the parts lying on its side such that its front and rear faces confront generally-upright side walls of the groove,
wherein the side walls defining the groove has upper oblique zones to widen the groove towards its top so as to smoothly receive the parts;
a path defined in the middle sorting section and continuing from the longitudinal groove; and
the path being composed of a main passageway for the regularly positioned parts only and an auxiliary passageway for the inverse parts only,
wherein the main passageway extends to the downstream discharging section, and the auxiliary passageway branching off from the main passageway extends to an outlet opening formed in a bottom of the said chute.

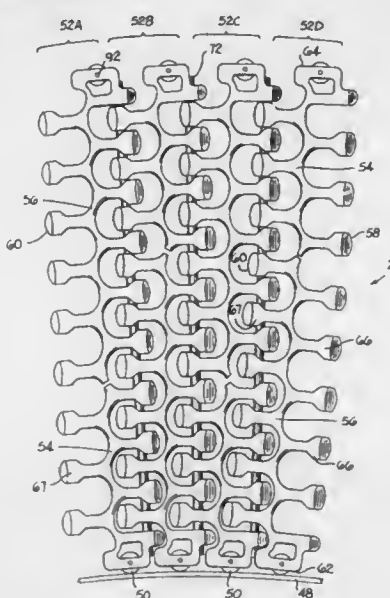
5,775,479
LEVER DEVICE FOR ACTUATING THE LIFTING MEMBER AND THE COUNTER-LIFTING MEMBER IN AUTOMATIC MACHINES FOR WRAPPING SWEETS, CHOCOLATES OR SIMILAR PRODUCTS
Marco Giovanni Carle, Milan, Italy, assignor to Carle & Montanari S.p.A., Bologna, Italy
Filed Apr. 10, 1996, Ser. No. 630,484
Claims priority, application Italy, Apr. 14, 1995, BO95A0166
Int. Cl.⁶ B65G 47/90
U.S. Cl. 198—468.8 13 Claims



1. Lever device for actuating a lifting member (4) and a counter-lifting member (5) in automatic machines for wrapping sweets, chocolates or other products involving similar requirements, where the automatic machine is of the type having at least one disc (1) which rotates about its vertical axis and which has evenly-spaced cavities (3) around its periphery, each cavity accommodating a

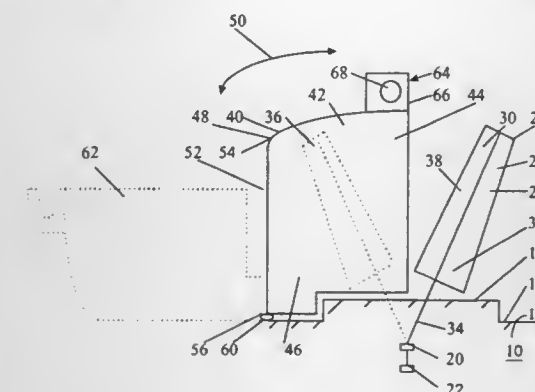
product (P) which, at the appropriate stage, must be lifted by the said lifting member and simultaneously held by the said counter-lifting member so that it can be transferred to superjacent pick-up and processing means (6), characterized in that the lifting member and the counter-lifting member (4, 5) are mounted on the top of respective vertical or substantially vertical levers (8, 9) associated with respective quadrilaterals (8, 12, 18, 122 and 9, 13, 19 and 122) that are articulated on horizontal spindles (10, 16, 14, 20 and 11, 17, 15, 21) which are mutually parallel and orthogonal to the tangent of the peripheral portion of the disc on which the said lifting members (4, 5) operate cyclically, one side of each of the said articulated quadrilaterals being supported laterally by a box (22) which is fixed to the base of the wrapping machine and into which passes a fixed one of the horizontal spindles (14, 15) of each of the said quadrilaterals, in order to receive, via suitable means, the necessary oscillatory motion from a shaft (29) that rotates continuously and in step with the other members of the said wrapping machine.

5,775,480
LOW-FRICTION CONVEYOR ASSEMBLY
Robert S. Lapeyre, New Orleans, and Christopher G. Greve, Covington, both of La., assignors to The Laitram Corporation, Harahan, La.
Filed Jun. 14, 1996, Ser. No. 664,394
Int. Cl.⁶ B65G 21/16
U.S. Cl. 198—831 19 Claims



1. A conveyor assembly suitable for conveying product along a path that includes a turn, comprising:
a frame;
a section of railing attached to the frame and arcuately arranged to form the inside of a turn; and
a conveyor belt supported in the frame and including a series of rows of belt modules, each row extending longitudinally from a first end to a second end and laterally from a first side edge to a second side edge and forming a top product-conveying surface; the rows being hingedly interlinked end-to-end into an endless conveyor belt by hinge pins extending laterally between interleaved hinge elements disposed at adjacent ends of consecutive rows, wherein the hinge elements at the second end of a row define aligned slots for accommodating the hinge pins to allow the belt to fan out in a turn, selected rows including edge structure forming a recess inward of the first side edge and opening onto the first side edge and a roller rotatably disposed in the recess and having a rotatable outer surface extending from the recess outward of the first side edge to engage the railing at the inside of the turn in rolling contact.

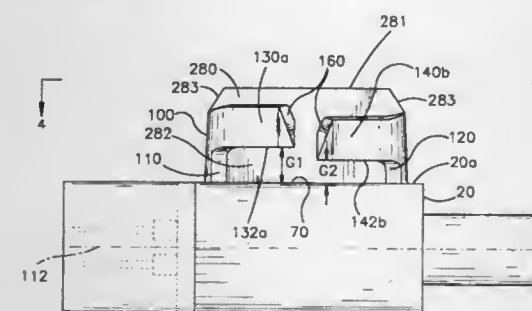
5,775,481
LOCKOFF DEVICE AND METHOD FOR POSITIVELY INDICATING THE STATE OF A DISTRIBUTION DEVICE
Andrew John Lyke, Iowa City, Iowa, assignor to Square D Company, Palatine, Ill.
Filed Dec. 31, 1996, Ser. No. 774,803
Int. Cl.⁶ H01H 9/28
U.S. Cl. 200—43.22 17 Claims



1. A guard for preventing movement of a handle by an operator from a locked position to a second position, the handle being coupled to an operating mechanism which controls a distribution device, the handle extending outwardly from the surface of the distribution device, the guard comprising:

a cover configured to substantially enclose the handle while in the locked position, the cover being supported about the handle by abutting the surface of the distribution device, the cover also configured to allow the handle to move from the locked position to the second position wherein the cover prevents an operator, but not the operating mechanism, from moving the handle from the locked position to the second position and the handle positively indicates the state of the operating mechanism between the positions, the cover having an opening positioned perpendicular to the direction of movement of the handle, the opening configured to allow the handle to externally pass from enclosure by the cover as the handle moves from the locked position to the second position; means for reversibly locking the cover to the distribution device, the locking means being integrally formed with the cover.

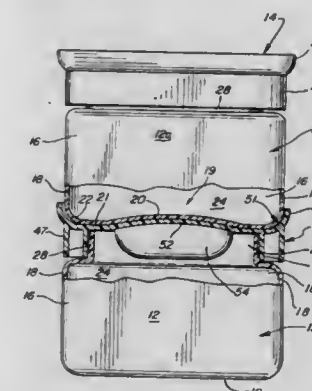
5,775,482
SNAP-IN MOUNT FOR PLUNGER SWITCH
Tonny B. Wolfe, Wadsworth, and Thomas D. Williams, Hudson, both of Ohio, assignors to Delta Systems, Inc., Streetsboro, Ohio
Filed May 8, 1996, Ser. No. 646,848
Int. Cl.⁶ H01H 9/08
U.S. Cl. 200—296 27 Claims



1. A switch apparatus comprising:
a) a switch housing supporting conductive switch terminals within a switch housing interior;

b) a switch actuator supported by the switch housing for movement along a travel path to control an actuation state of said switch by selectively shorting the conductive switch terminals; and
c) structure for mounting the switch housing into different thickness mounting panels, comprising:
i) first and second retainer posts coupled to the switch housing at separate spaced locations along a longitudinal axis of the switch housing;
ii) flexible first and second legs extending laterally from each said retainer post that can be flexed away from a first position and inserted into a panel opening in a mounting panel;
iii) wherein each of said legs have bottom portions that contact a mounting panel surface wherein said bottom portion of the first leg is spaced from a wall of the switch housing by a first gap and said bottom portion of the second leg is spaced from the wall of the switch housing by a second gap; and
iv) wherein said retainer posts are bridged by a rib portion that extends along said longitudinal axis and generally normal to a switch housing surface from which the two retainer posts extend.

5,775,483
STACKABLE CONTAINERS WITH REMOVABLE COVER MEMBERS
John M. Lown, Huntington Beach, and Thomas J. Marcello, Corona, both of Calif., assignors to FloTool Plastics Corporation, Fullerton, Calif.
Filed Jan. 9, 1997, Ser. No. 780,967
Int. Cl.⁶ B65D 51/18
U.S. Cl. 206—508 22 Claims



1. In combination, a cover member arranged to be secured over the open mouth of a container, wherein the combination comprises:
a container having a body member in which is formed an annular collar that defines the open mouth of the container;
a cover member having a configuration corresponding to the configuration of said container and formed having an inner annular cover ring;
a plurality of keeper means integrally formed in said collar of said container and interposed between said collar and said inner annular cover ring;
a plurality of keeper members integrally formed on said inner annular cover ring and positioned to be lockingly received in respective keeper means; and wherein
said cover member is formed having a receptacle arranged to receive the lower portion of said container for stacking thereon.

5,775,484

JEWELRY PAD WITH SLIDER ROD

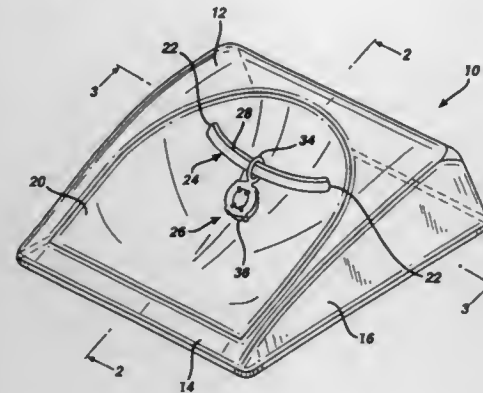
Joseph Ovadia, 109 Long Hill Rd., Little Falls, N.J. 07424

Filed Nov. 29, 1996, Ser. No. 758,435

Int. Cl.⁶ A45C 11/04

U.S. Cl. 206—6.1

17 Claims



1. A jewelry pad for holding jewelry items, comprising:
an upper wall having an upper exposed surface on which at least one said jewelry item is held;
at least one supporting wall for supporting the upper at least one opening in said upper exposed surface of said upper wall; and
a rod removably extending into said at least one opening in said upper exposed surface to hold at least one said jewelry item on said rod such that said at least one jewelry item rests on said upper exposed surface, said rod having opposite ends, at least one end removably positionable in said at least one opening such that said rod is spaced from said upper exposed surface in order to hold said jewelry item on said upper exposed surface and said rod being exposed and viewable above said upper exposed surface.

5,775,485

VIAL HOLDER APPARATUS

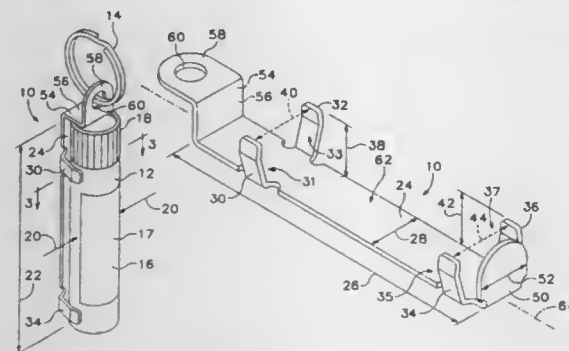
James R. Dierking, Portland, Oreg., assignor to Liberty Natural Products, Inc., Portland, Oreg.

Filed Aug. 30, 1996, Ser. No. 705,801

Int. Cl.⁶ B65D 85/30

U.S. Cl. 206—38

6 Claims



1. A vial holder comprising:
an elongate base region having upper and lower end regions;
a pair of securement arms extending generally outwardly from said base region, said arms being somewhat flexible with respect to said base region;
an upper support extending generally outwardly from said upper end region of said base region;
a lower support extending generally outwardly from said lower end region of said base region;

wherein said pair of securement arms and said upper and lower supports define an elongate cavity sized to releasably secure therein a vial;

wherein said upper support includes an aperture sized to releasably secure therein an attachment ring; and
a key chain ring releasably secured within said aperture.

5,775,486

PACKAGE AND METHOD FOR PRODUCING SAID PACKAGE

Håkan Edqvist, Mosstorpsvägen 40, S-617 00 Skärblacka, Sweden

Continuation of Ser. No. 605,079, Mar. 1, 1996, abandoned.

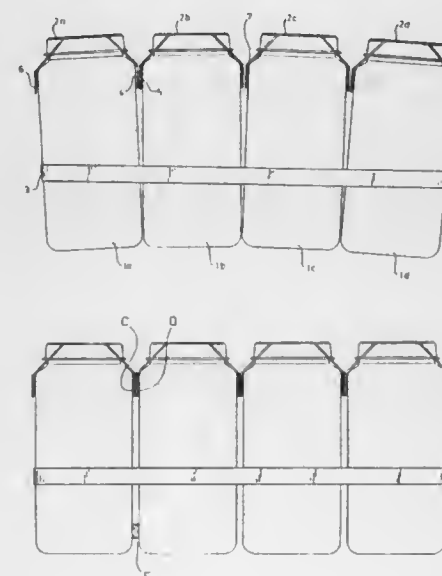
This application Sep. 17, 1997, Ser. No. 932,395

Claims priority, application Sweden, Sep. 1, 1993, 9302822-3

Int. Cl.⁶ B65D 75/00

U.S. Cl. 206—145

13 Claims



13. A method of producing a package comprised of several multipacks of containers, the method comprising:

securing a respective plurality of the containers in a folded blank that is shaped for engaging and holding each of the containers in position with respect to each other by installing the blank over tops of the containers to hold the containers in position to form a multipack;

positioning between containers in adjacent multipacks means for preventing relative movement between adjacent opposing containers of two adjacent multipacks which are to be assembled together to form the package;

with the means for preventing relative motion between the containers in position, banding the multipacks together with an elastic band which draws the multipacks together so that the opposing adjacent containers of the adjacent multipacks are brought into engagement, with the upper parts of the containers engaging the relative movement preventing means and the lower parts of the containers engaging each other, whereby the means for preventing movement prevents containers in adjacent multipacks from shifting with respect to each other during the banding together of the multipacks and while they are banded together.

5,775,487

BASKET-STYLE CARRIER WITH REINFORCED HANDLE

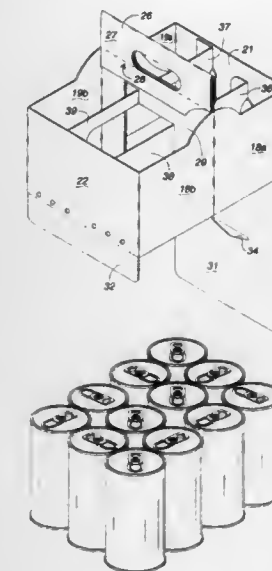
Glen R. Harrelson, Gainesville, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Dec. 19, 1996, Ser. No. 769,824

Int. Cl.⁶ B65D 5/462; 71/58

U.S. Cl. 206—193

9 Claims



1. A basket-style carrier for containing and carrying twelve containers or other articles, said carrier comprising:

two end panels opposite each other;
two side panels opposite each other and connected to said end panels;

a bottom connected to said side panels, said bottom having a tab opening formed therein;

a central handle comprising six handle panels secured to one another, with at least one of said handle panels being secured or connected to one of said end panels and with at least another one of said handle panels being secured or connected to the other of said end panels, said central handle including a predefined fold line defining a foldable handgrip portion which is foldable between an upright position for carrying said carrier in which said handgrip portion extends above an uppermost portion of said end panels and said side panels and a folded position adjacent the containers for stacking said carrier;

a locking tab connected to one of said handle panels and extending through said tab opening in said bottom, said locking tab being adhered to said bottom; and

a plurality of partitions connected to said central handle and extending to said side panels, said partitions defining six 2-container cells.

2. A basket-style carrier for containing and carrying twelve containers or other articles, said carrier comprising:

first and second end panels opposite each other;

first and second side panels opposite each other and connected to said end panels;

a bottom connected to said side panels;

a central handle comprising six handle panels secured to one another, said central handle being connected to said end panels, wherein said central handle comprises a predefined score line delineating an upper portion which is foldable between an upright grasping position and a folded, stacking position; and

a plurality of partitions connected to said central handle and extending from said central handle to said first and second side panels.

8. A basket-style carrier for containing and carrying twelve containers or other articles, said carrier comprising:

first and second end panels opposite each other;

first and second side panels opposite each other and connected to said end panels;

a bottom connected to said side panels;

a central handle comprising six handle panels secured to one another, said central handle being connected to said end panels;

a plurality of partitions connected to said central handle and extending from said central handle to said first and second side panels, said partitions defining six 2-container cells; and
a locking tab connected to one of said handle panels and extending through a tab opening in said bottom and adhered to said bottom.

9. A basket-style carrier for containing and carrying twelve containers or other articles said carrier comprising:

first and second end panels opposite each other;

first and second side panels opposite each other and connected to said end panels;

a bottom connected to said side panels;

a central handle comprising six handle panels secured to one another, said central handle being connected to said end panels; and

a plurality of partitions connected to said central handle and extending from said central handle to said first and second side panels, said partitions defining six 2-container cells, wherein said bottom comprises a large bottom panel connected to one of said side panels and extending to the other of said side panels and a small bottom panel connected to the other of said side panels and partially overlapping said large bottom panel, with said large and small bottom panels being adhered to one another.

5,775,488

THERMOMETER HOLDER AND ADJUSTMENT TOOL

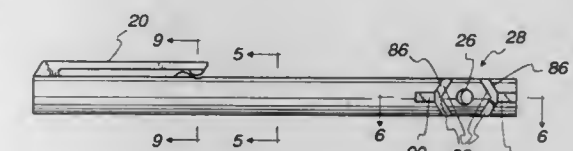
Earl D. Vaught, Asheville, N.C., assignor to Taylor Environmental Instruments, L.P., Northfield, Ill.

Filed Sep. 11, 1996, Ser. No. 710,002

Int. Cl.⁶ B65D 85/38; G01K 15/00

U.S. Cl. 206—306

9 Claims



1. A device for adjusting a probe-type thermometer which has a probe portion, an adjustment member and a dial portion which is movable relative to the probe portion and the adjustment member in order to adjust the thermometer said device comprising:

a cylindrical member having an exterior surface and an interior surface, said interior surface being defined by a generally longitudinal bore in said cylindrical member, said bore being sized for accepting the probe portion of the thermometer, whereby the thermometer may be stored within said cylindrical member,

said cylindrical member also having a transverse opening therein, said transverse opening also being sized for accepting the probe portion of the thermometer, and

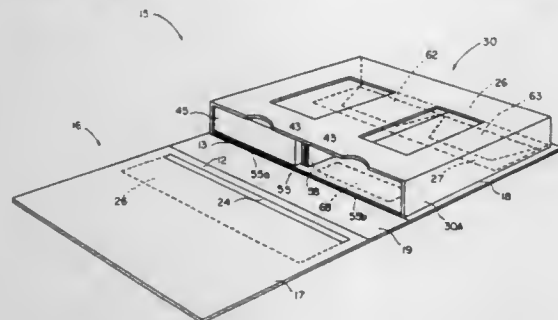
adjustment member receiving means, adjacent said transverse opening, for receiving the adjustment member of the thermometer and for preventing rotational movement of the adjustment member relative to said cylindrical member whereby a user can easily adjust the thermometer by rotating the dial portion of the thermometer relative to said cylindrical member.

5,775,489

MULTI-MEDIA LIBRARIAL STORAGE SYSTEM
Thomas M. Vickers, 3303 Arendell St., Moorehead City, N.C. 28557Filed Nov. 12, 1996, Ser. No. 747,526
Int. Cl.⁶ B65D 85/57; 85/575

U.S. Cl. 206—307.1

15 Claims



1. A multi-media librial storage system for storing, identifying, and organizing a plurality of differently configured multi-media items such as audio and video cassettes, CD-ROMs, computer diskettes, and their protective cases, said system comprising:
 - at least one storage container means including universal binder having interlocking means formed therein, said universal binder including an area for receiving labeling means thereon, said universal binder being adapted to accept at least one receiver insert means therein;
 - a plurality of interchangeable receiver insert means having locking tab members formed thereon, said tab members being insertable into said interlocking means so as to attach said insert means within said binder, said insert means including a box-shaped compartment conforming to an external contour of said multi-media items enabling differently configured multi-media items to be received within said insert means and to be interchanged for storage within a single storage container means;
 - a plurality of labeling means for identification of said multi-media items within said storage container, said labeling means including preprinted indicia thereon; and
 - an index means including a printed booklet wherein a user of said systems can identify and catalog said multi-media items to facilitate retrieval thereof.

5,775,490

COMPACT DISK PACKAGE

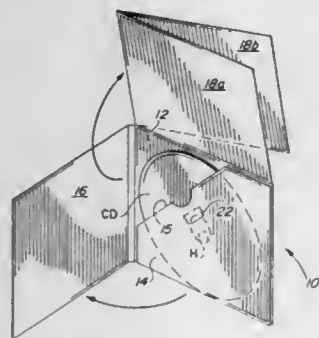
Mark P. Baker, Fort Wayne, Ind.; Allen M. Brandenburger, Clarkston, Ga.; Richard F. House, St. Charles, Ill., and William H. Perkins, Oxford, Ohio, assignors to Jefferson Smurfit Corporation, Clayton, Mo.

Filed Oct. 11, 1995, Ser. No. 542,512

Int. Cl.⁶ B65D 85/57

U.S. Cl. 206—308.1

19 Claims



3. A package for holding a circular compact disk having a central opening, said package being formed from a unitary blank of foldable sheet material, such as paperboard, and comprising:

- (a) a rear panel having a lower edge, an upper edge, and a pair of opposed side edges;
- (b) a smaller retaining panel having:
 - (i) adjacent first and second side edges extending from each other and in a direction normal to each other;
 - (ii) a third side edge extending diagonally with respect to said first and second side edges;
- (c) said retaining panel being foldably joined, along said first side edge, to a lower edge of said rear panel and being adhesively secured to said rear panel along areas adjacent other of said retention panel side edges;
- (d) an outer cover panel foldably joined to another of said rear panel edges and folded to overlie said rear panel;
- (e) a retaining tab cut from material of and foldably joined to said retaining panel adjacent said third side edge, for engagement with said compact disk central opening to retain said compact disk under said retaining panel.

5,775,491

COMPACT DISK TRAY AND COVER THEREFOR

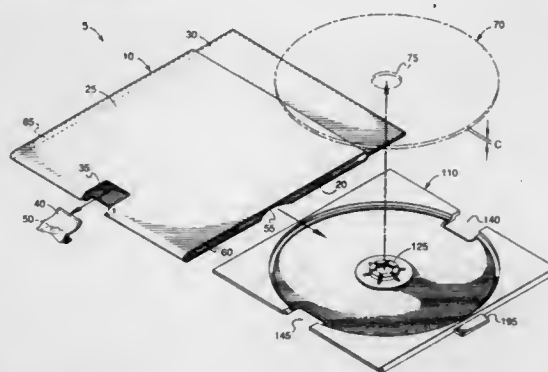
Yoshihiko Taniyama, Alpharetta, Ga., assignor to Atlanta Precision Molding Company, Duluth, Ga.

Filed May 15, 1996, Ser. No. 648,534

Int. Cl.⁶ B65D 85/57

U.S. Cl. 206—308.1

26 Claims



1. An enclosure for protecting and securing an optical disk having a mounting aperture, said enclosure comprising:
 - a tray adapted to receive the disk on a top portion thereof, wherein said tray includes a supporting surface for supporting said disk, wherein said tray has a maximum height ranging from approximately 2 mm to approximately 6 mm; and
 - a receptacle formed from a sheet of foldable material including means for slidably receiving said tray therein.
 9. An enclosure for protecting and securing an optical disk having a mounting aperture, said enclosure comprising:
 - a tray adapted to receive the disk on a top portion thereof; and
 - a receptacle for slidably receiving said tray, said receptacle formed from a sheet of foldable material, said receptacle, including
 - a top portion of said sheet including front and rear edges,
 - a bottom portion of said sheet including front and rear edges,
 - at least one crease separating said top and bottom portions for allowing said top portion to be folded over said bottom portion to form an interior space there between,
 - a front opening defined by said front edges of said top and bottom portions;
 - a rear opening defined by said rear edges of said top and bottom portions; and
 - a top extension member for attaching said receptacle to a retail delivery means,
- said top extension including inside and outside surfaces, attached to said top portion;
- at least one crease in said sheet between said top portion and said top extension member;
- a bottom extension member including inside and outside surfaces attached to said bottom portion;

5,775,493

ASSEMBLY AND METHOD FOR LABELING AND STORING MEDIA CARTRIDGES

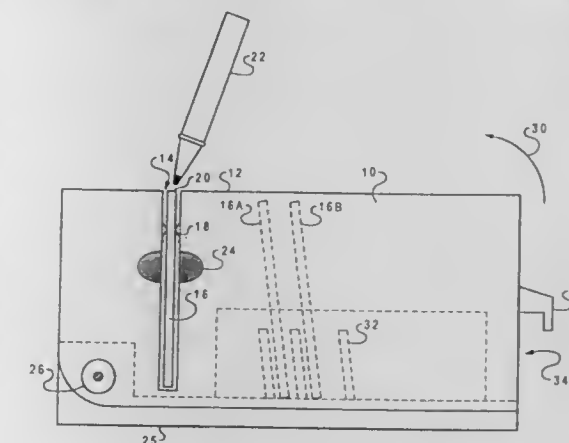
Brian John Cragun, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 15, 1994, Ser. No. 339,531

Int. Cl.⁶ B43L 15/00

U.S. Cl. 206—308.3

14 Claims



3. A media cartridge storage device, comprising:
 - a substantially box-shaped assembly having a selectively openable aperture and a substantially planar upper surface, wherein a plurality of media cartridges may be stored within said substantially box-shaped assembly;
 - a slot formed in said substantially planar upper surface and substantially perpendicular to a plane containing said substantially planar upper surface, said slot being sized to accommodate a media cartridge such that an edge of the media cartridge is flush with said substantially planar upper surface when the media cartridge is inserted into said slot; and
 - a spring-arm member disposed within said slot for securing the media cartridge in a fixed position, wherein facility of hand writing on said edge of the media cartridge is enhanced.

5,775,492

CARD FOR MAILING A PRODUCT

Ichiro Ban, Osaka, Japan, assignor to Ban PR Kahushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 501,882, Jul. 13, 1995, abandoned. This application Nov. 25, 1996, Ser. No. 755,675

Claims priority, application Japan, Jun. 30, 1995, 7-165330; Jan. 16, 1996, 8-005029

Int. Cl.⁶ B65D 85/57

U.S. Cl. 206—308.1

15 Claims



1. A card for mailing a storage disc, comprising:
 - a board of a particular size and thickness,
 - a coupling part, a shallow cylindrical space corresponding to the size and shape of the storage disc on one side of the board,
 - a communication entry part, a space to write messages on an opposite side of the board,
 - a sealing sheet which covers one side of said board after the storage disc is fixed in said coupling part, and the entire rim of which is adhered to said board, and
 - an opening part is formed in said sealing sheet corresponding to said coupling part and said opening part is encircled by a break line along which the opening is sealed in order to remove the disc.

5,775,494

FLOATING DISK PRODUCT PACKAGE WITH WINDOW VISIBILITY, SECURE CONTAINMENT, AND INCREASED GRAPHIC SURFACE AREA

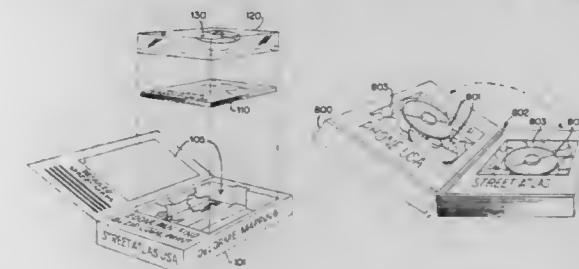
Jeffrey S. Taplin, Falmouth, Me., assignor to DeLorme Publishing Company, Yarmouth, Me.

Filed Jun. 6, 1995, Ser. No. 471,580

Int. Cl.⁶ B65D 85/30

U.S. Cl. 206—308.2

44 Claims



1. A package for one or more disk products, each generally formed with a center hole comprising:
 - a box formed with outer and inner surfaces spaced from each other for presenting one or more disk products between the surfaces, said outer surface being composed of substantially transparent material so that each disk product is visible through the outer surface;
 - said box being formed with at least first and second hubs on the inner surface each with a free end extending toward the outer

surface, each said free end of each hub being constructed to pass through a center hole of each disk product, each hub having formed thereon a holding surface for holding at least one of said one or more disk products suspended thereupon so that it does not contact the inner surface; and said at least first and second hubs being horizontally separated one from another by a positive distance that is substantially less than a diameter of said disk product.

5,775,495

VERSATILE ARTICLE CARRIER

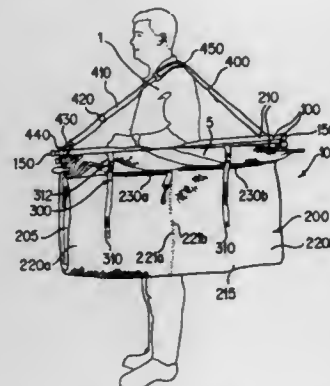
Mark Everett Lang, 403 Dove La., Hampstead, Md. 21074

Filed Jan. 6, 1997, Ser. No. 779,325

Int. Cl.⁶ B65D 85/20

U.S. Cl. 206—315.1

13 Claims



1. A versatile article carrier for carrying a plurality of discrete articles of various structural configuration comprising:

- (a) at least a pair of longitudinally extended frame members;
- (b) a carrier body member coupled to said frame members for supportingly capturing said articles, said carrier body member having opposing first and second end portions and a substantially flexible panel portion extending therebetween, said first and second end portions being coupled respectively to said pair of frame members, said panel portion having formed thereon at least one article receiving compartment;
- (c) securing means coupled to at least one of said frame and carrier body members for adjustable securing at least one of said articles against one of said frame members, said securing means including at least a pair of looped strap members engaging one of said frame members for securing against said frame member a folded beach umbrella, said strap members being longitudinally displaced one from the other by a predetermined distance; and
- (d) means for handling said carrier body releasably coupled to said frame members.

5,775,496

LENS-GATE DIVIDER SYSTEM FOR CAMERA BAGS
Ryan Cyr, Hidden Hills, Calif., assignor to Tamrac, Inc., Chatsworth, Calif.

Division of Ser. No. 385,311, Feb. 7, 1995, Pat. No. 5,573,114.

This application Sep. 12, 1996, Ser. No. 715,373

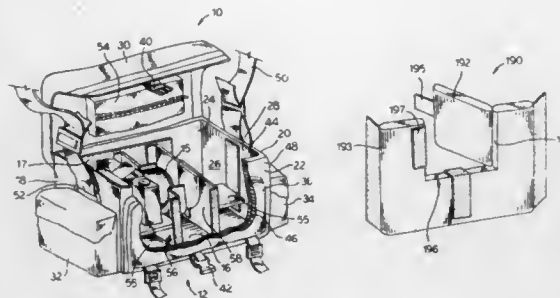
Int. Cl.⁶ B65D 85/38

U.S. Cl. 206—316.1

11 Claims

1. A camera bag for holding photographic equipment which has a body and a protruding lens attached thereto and extending laterally from the body, the camera bag comprising:

- a. a base and sidewalls, the sidewalls extending upwardly from the base to form an enclosure;
- b. at least one vertical divider attachable to and extending between a respective two of said sidewalls of said enclosure, and having a top end and a bottom end, the top end having a square shaped cutout portion for closely receiving and sup-



porting said protruding lens while said protruding lens is attached to said camera body, the cutout portion having two vertical edges; and

- c. at least one swinging gate for covering said cutout portion of said at least one vertical divider and hingeably attached to one of said two vertical edges of said cutout portion, where the at least one swinging gate can be swung open to allow said protruding lens being placed within said cutout portion of said at least one vertical divider and further protect said protruding lens from at least one lateral side and further prevent said protruding lens from lateral movement, and the at least one swinging gate can be swung closed when there is no lens being placed within said cutout portion.

5,775,497

PORTABLE CRADLE FOR A PERSONAL COMPUTER

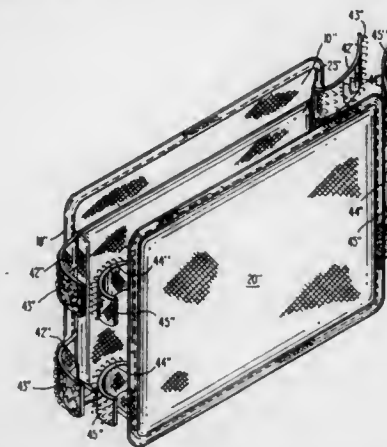
Richard J. Krulik, Dix Hills, N.Y., assignor to United States Luggage, L.P., Hauppauge, N.Y.

Filed Dec. 10, 1996, Ser. No. 762,715

Int. Cl.⁶ B65D 85/00

U.S. Cl. 206—320

12 Claims



1. A modular, self-contained protective carrying case for a laptop computer, comprising:

- a pair of substantially rigid side boards in spaced, substantially parallel, arrangement;
- each of said side boards having top, bottom, and right and left edges, and inner and outer generally planar surfaces extending between said edges;
- an elastically resilient generally U-shaped sling extending between the inner planar surfaces of said side boards,
- each of the open ends of the "U" secured to respective ones of said inner side board surfaces at their top edge region, with the central section of the "U" depending towards said bottom edges;
- cushioning material contained in at least the side boards between the inner and outer planar surfaces, a long the arms of the U-shaped sling;
- a first side strap connected between the right edges of said side boards, and a second side strap connected between the left edges of said side boards;

the top edges of said side boards providing an access opening for inserting an electronic unit and removing same from within said sling, with said side straps urging said side boards towards each other to tightly and snugly retain the electronic unit within the sling therebetween.

5,775,498

HYPODERMIC NEEDLE STORAGE APPARATUS
Behnam Kashanchi, 450 N. Bedford Dr., Suite 209, Beverly Hills, Calif. 90210

Filed Jul. 31, 1997, Ser. No. 903,591

Int. Cl.⁶ B65D 83/10

U.S. Cl. 206—364

6 Claims



1. A hypodermic needle storage apparatus for use with a hypodermic needle assembly having a collar and a needle extending therethrough, comprising:

- (a) a first cylindrical storage housing having an open end and an opposing closed end, said open end being adapted to frictionally engage the collar of the hypodermic needle assembly;
- (b) a second cylindrical storage housing disposed adjacent said first cylindrical storage housing and having an outer wall defining an inner chamber and an open end and a closed end at axial ends of said outer wall, said open end being adapted to frictionally engage the collar of the hypodermic needle assembly, the outer wall of said second cylindrical storage housing being longitudinally severed from said open end to said second end and providing lateral access to the inner chamber for storage of the hypodermic needle assembly therein; and
- (c) a sealing cap adapted to be longitudinally disposed upon and received by the hypodermic needle assembly in opposition to the needle.

5,775,499

TOOL HOLDING APPARATUS

Günter H. Budert, Pflagstrasse 7, D-89429 Bachhagel, Germany

Filed Aug. 21, 1996, Ser. No. 697,445

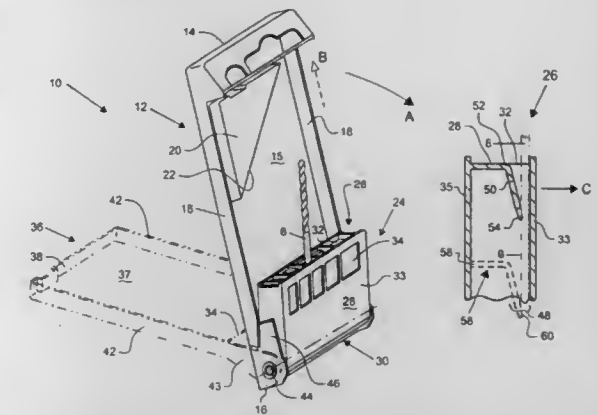
Claims priority, application Germany, Aug. 21, 1995, 295 13 388 U

Int. Cl.⁶ B65D 85/28

18 Claims

1. A tool holder for holding tools of the type having an elongated base section, said holder comprising:

- a base member having upper and lower ends;
- a tool support member having upper and lower ends, said lower end of said tool support member being mounted to said lower end of said base member, said upper end of said tool support member including at least one opening that defines a tool retention channel within said tool support member, said opening being adapted to receive a base section of a tool; and
- at least one elastically deformable tool securing member having a base affixed to said tool support member and having a tool



5,775,500

MULTIPLE AUDIO CASSETTE CONTAINER

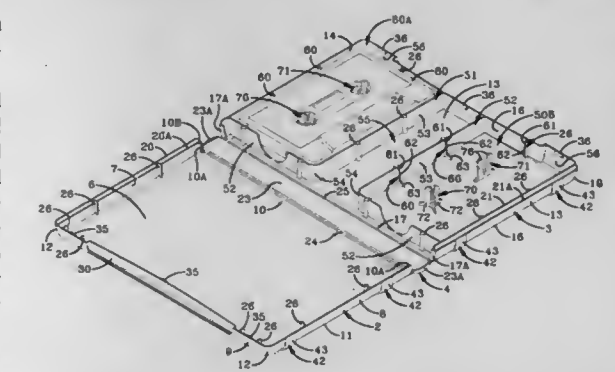
Mathew P. Williams, North Canton, Ohio, assignor to Alpha Enterprises, Inc., North Canton, Ohio

Filed May 16, 1997, Ser. No. 857,321

Int. Cl.⁶ B65D 85/57

U.S. Cl. 206—387.1

24 Claims



1. A storage container for storing audio cassettes, said storage container including:

- a base having a bottom wall, a pair of spaced end walls and a front wall, wherein said base is subdivided by interior walls between the end walls and front wall into at least two audio cassette-receiving cavities, wherein each audio cassette-receiving cavity includes a pair of stems for receiving an audio cassette;
- a lid having a bottom wall, a pair of spaced end walls and a front wall, said lid hingedly mounted on the base and movable between open and closed positions on said base, said base and lid forming an audio cassette storage chamber therebetween including the audio cassette-receiving cavities;
- one of said stems including at least two flexible legs having necks extending therefrom, said legs being movable inwardly from an unflexed position to a flexed position to enable the necks to pass through a reel of an audio cassette whereby said necks retain the audio cassette on said one stem after the legs resume their unflexed position; and
- said other stem being configured to pass freely through another reel of the audio cassette without movement, wherein said other stem prevents lateral movement only of the cassette while permitting free removal of the cassette from the said other stem.

5,775,501

PACKAGING FOR PHOTOGRAPHIC PAPER

Helmut Wleklinski, Bergisch Gladbach; Georg Fryda, München, both of Germany, and Rene Degroeve, Deurne, Belgium, assignors to AFGA-Gevaert Aktiengesellschaft, Germany

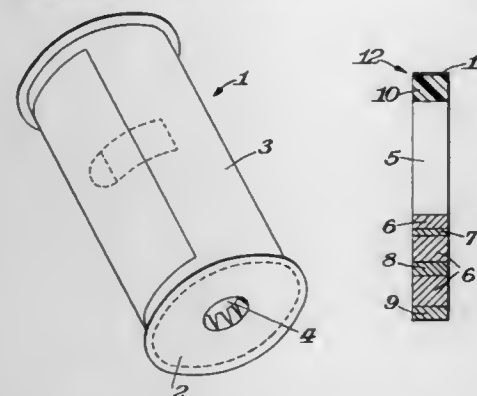
Filed Jan. 24, 1997, Ser. No. 788,506

Claims priority, application Germany, Jan. 25, 1996, 196 02 526.5

Int. Cl.⁶ B65D 85/67

U.S. Cl. 206—416

3 Claims



1. Daylight loading packaging for photographic paper in the form of a roll of photographic paper wound around a tubular core, the packaging comprising spaced apart end flanges and a casing lengthening piece secured between the flanges, the lengthening piece having one end connected to a start end of a roll of photographic paper and an unattached free other end, a circular opening in each flange having edge portions for securement to end edges of the tubular core, and wherein each flange comprises a paper base with at least one inside blackened layer forming a light barrier, at least one inside aluminum layer forming a vapor barrier, at least one inside layer which increases resistance to puncture, and an innermost layer which permits securement to the casing lengthening piece and the tube roll, and wherein the flanges include an outside layer of a synthetic polymer for imparting tension to the flanges to thereby prevent inward collapse of the flanges.

5,775,502

METHOD OF APPLYING A DECORATIVE SKIRT TO A FLOWER POT

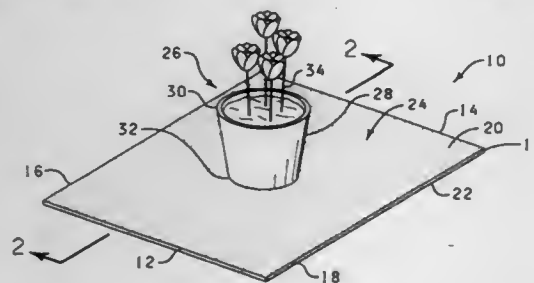
Donald E. Weder, Highland, Ill., assignor to Southpac Trust International Inc., Oklahoma City, Okla.

Filed May 30, 1997, Ser. No. 867,431

Int. Cl.⁶ B65D 85/52

U.S. Cl. 206—423

29 Claims



1. A method of preparing a floral assembly for shipping, comprising:
extruding a thermoplastic material into a sheet;
applying a bonding material to a surface of the sheet;
separating a portion of the sheet into an individual sheet portion having a bonding surface and having the bonding material on the bonding surface wherein said sheet portion and bonding material comprise a shipping device;

providing a floral assembly comprising a rigid or semi-rigid floral container and a floral item; and
placing the floral assembly upon the bonding surface of the shipping device and bondingly connecting the floral assembly to the shipping device via the bonding material on the bonding surface.

5,775,503

ARTICLE CARRIER

Philippe LeBras, Chateauroux, France, assignor to The Mead Corporation, Dayton, Ohio

PCT No. PCT/US95/12063, § 371 Date Jun. 11, 1997, § 102(e) Date Jun. 11, 1997, PCT Pub. No. WO96/09226, PCT Pub. Date Mar. 28, 1996

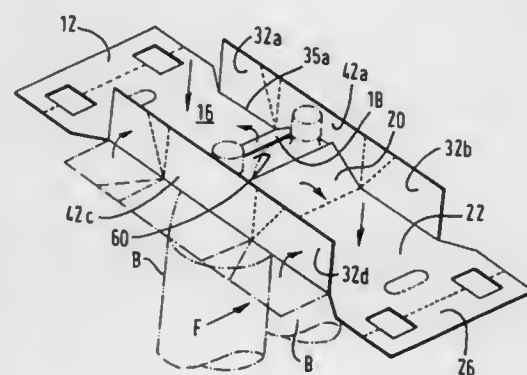
PCT Filed Sep. 21, 1995, Ser. No. 809,381

Claims priority, application United Kingdom, Sep. 22, 1994, 9419108

Int. Cl.⁶ B65D 75/00

U.S. Cl. 206—427

13 Claims



1. A blank for forming an article carrier of the top gripping type comprising hingably interconnected first and second end panels, first and second side panels and an upper panel having means for cooperating with an article to retain the article in a formed carrier, wherein the first end panel, first side panel, second end panel and second side panel are hingably interconnected in series about an aperture through which an article is passable in packaging the article during formation of the carrier.

5,775,504

MERCHANDISING PACKAGE

Neal M. Menaged, 1714 Fredendall Cir., South Hampton, Pa. 19006

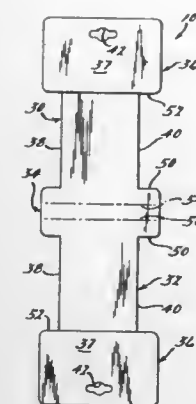
Filed Oct. 1, 1996, Ser. No. 723,086

Int. Cl.⁶ B65D 71/00

U.S. Cl. 206—495

16 Claims

1. A merchandising package for displaying a plurality of products for retail sale, the merchandising package comprising:
a first elongated portion for holding a first of the plurality of products for retail sale in an encircling relationship;
a second elongated portion for holding a second of the plurality of products for retail sale in an encircling relationship;
said first and second elongated portions each including first and second spaced apart edges;
an intermediate portion interconnecting said first and second elongated portions; and
a first header portion interconnected to said first elongated portion, said header portion laterally extending beyond the first and second spaced apart edges of the first elongated portion, said intermediate portion including a first predetermined fold line, said first predetermined fold line being arranged for enabling said first and second elongated portions to be sub-



stantially parallel to each other said merchandising package being generally symmetrical about a longitudinal centerline.

5,775,505

BLISTER CARD PACKAGE

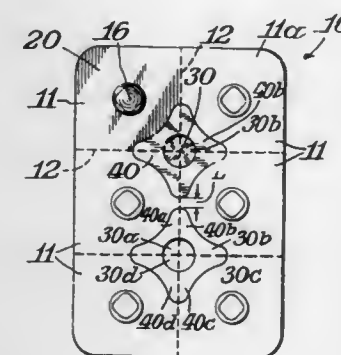
William M. Vasquez, 4512 Saddle Run Rd., Elm City, N.C. 27822; Jeffrey Alan Murphy, 114 Westminster Dr., North Wales, Pa. 19454, and Jill Nicole Sheldon, 1925 Chestnut Ridge Dr., Pittsburgh, Pa. 15205

Filed Feb. 27, 1996, Ser. No. 606,737

Int. Cl.⁶ B65D 83/04

U.S. Cl. 206—538

8 Claims



1. A multi-section blister card package comprising:
(a) a rigid container sheet having cavities formed therein for containing a dosage form and having at least one cut out area provided therein;
(b) a closure sheet sealed to the container sheet and covering the cavities in the container sheet;
(c) perforations allowing detachment of individual sections from the blister card package, wherein at least one of the individual sections contains at least one covered cavity around which the container sheet is sealed to the closure sheet, and wherein the perforations form intersections;
(d) at least one area of exposed closure sheet underlying the at least one cut out area of the container sheet, which area of exposed closure sheet is positioned at the intersections of the perforations; and
(e) an unsealed zone surrounding said area of exposed closure sheet in which the container sheet and closure sheet overlap but are not sealed together;

whereby when the individual sections are detached, an area of exposed closure sheet forms a finger tab on the detached section which when pulled separates the container sheet and closure sheet in the unsealed zone to form a pull tab which can be pulled to access the product stored in the cavity.

5,775,506

PHARMACEUTICAL AMPUL

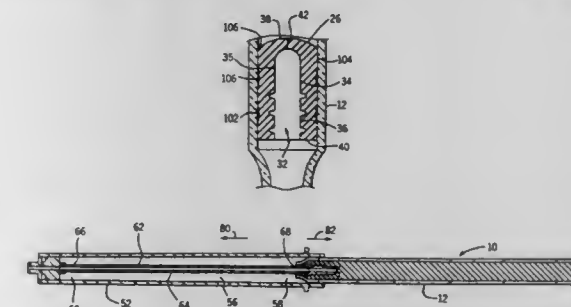
Richard W. Grabenkort, Barrington, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 25, 1996, Ser. No. 719,744

Int. Cl.⁶ B65D 85/00

U.S. Cl. 206—571

10 Claims



1. A pharmaceutical container comprising:
a body defining a chamber therein, said body having a first end portion and a second end portion, said body having a terminal end on said second end portion, and a plug positioned in said chamber defined by said body, said plug spaced from said terminal end, said plug and said body defining a first chamber of said chamber between said plug and said first end portion of said body, said plug and said body defining a second chamber of said chamber between said plug and said terminal end of said second end portion of said body, said plug defining a slit therethrough from said second chamber to said first chamber, said body being frangible at a position on said second end portion between said plug and said terminal end.
7. A method for packaging a pharmaceutical product, said method comprising the steps of:
providing a container defining a chamber therein, said container having a first end portion and a second end portion, said first end portion being open to an external environment, said container being frangible at a point on said second end portion;
providing a plug constructed to be slidable within said chamber defined by said container, said plug defining a channel therethrough, said channel defined by said plug having threads disposed on a surface thereof;
placing said plug into said chamber defined by said container at a position on a first end portion side of said point at which said container is frangible, said plug and said first end portion of said container defining a first chamber, said plug and said second end portion of said container defining a second chamber;
placing a quantity of a pharmaceutical product in said first chamber; and
fluidly sealing said first end portion of said container.
8. A system for delivering a pharmaceutical product, said system comprising:
a pharmaceutical container comprising:
a body defining a chamber therein, said body having a first end portion and a second end portion, said body having a terminal end on said second end portion, and a plug positioned in said chamber defined by said body, said plug spaced from said terminal end, said plug and said body defining a first chamber of said chamber between said plug and said first end portion of said body, said plug and said body defining a second chamber of said chamber between

said plug and said terminal end of said second end portion, said body being frangible at a position on said second end portion between said plug and said terminal end, said plug defining a channel therethrough, said channel defined through said plug having threads formed on a wall thereof; and

a syringe comprising:

a syringe body defining a chamber therein, said chamber constructed to receive therein said body of said pharmaceutical container, said syringe body having a first open end and a second end opposite said first end; and

a fluid flow member mounted within said chamber defined by said syringe body, said fluid flow member defining a fluid flow channel from a first end portion to a second end portion thereof, said first end portion having a means comprising a piercing member constructed to open said channel defined through said plug for establishing fluid contact between said first chamber and said fluid flow channel defined by said fluid flow member, said piercing member having mating threads formed thereon, whereby said piercing member can be threadably advanced into said channel defined through said plug, said second end portion having a means for establishing fluid communication between said fluid flow channel defined by said fluid flow member and an external environment of said syringe body.

10. A system for delivering a pharmaceutical product, said system comprising:

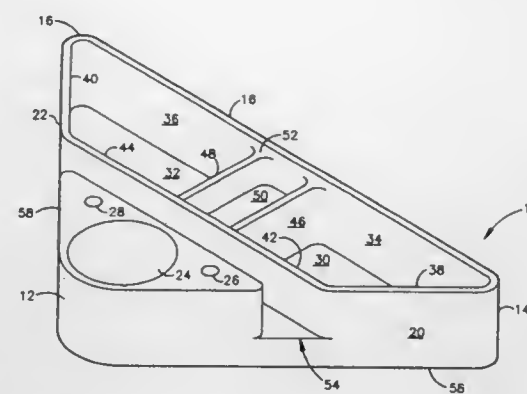
a pharmaceutical container comprising:

a body defining a chamber therein, said body having a first end portion and a second end portion, said body having a terminal end on said second end portion, and a plug positioned in said chamber defined by said body, said plug spaced from said terminal end, said plug and said body defining a first chamber of said chamber between said plug and said first end portion of said body, said plug and said body defining a second chamber of said chamber between said plug and said terminal end of said second end portion, said body being frangible at a position on said second end portion between said plug and said terminal end; and

a syringe comprising:

a syringe body defining a chamber therein, said chamber constructed to receive therein said body of said pharmaceutical container, said syringe body having a first open end and a second end opposite said first end; and

a fluid flow member mounted within said chamber defined by said syringe body, said fluid flow member defining a fluid flow channel from a first end portion to a second end portion thereof, said first end portion having a means for establishing fluid contact between said first chamber and said fluid flow channel defined by said fluid flow member, said second end portion having a means comprising a luer fitting for establishing fluid communication between said fluid flow channel defined by said fluid flow member and an external environment of said syringe body.



a liquid tight mixing chamber located between said first well and said second well which has less depth than the depth of said first and second wells.

5,775,508

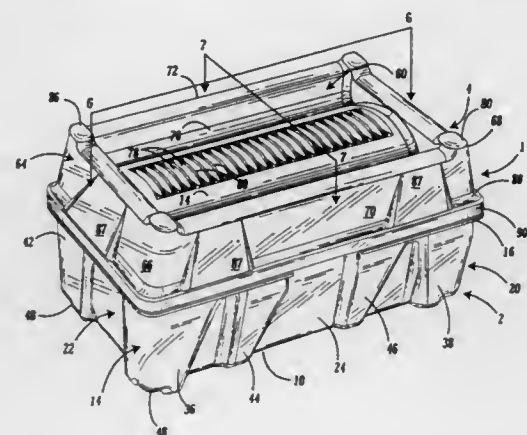
DISK PACKAGE FOR ROTATING MEMORY DISKS
Lynn R. Bongard, and Larry G. Dressen, both of Waconia, Minn., assignors to Empak, Inc., Chanhassen, Minn.

Filed Jan. 6, 1997, Ser. No. 778,977

Int. Cl.⁶ B65D 85/48

U.S. Cl. 206—711

9 Claims



1. A storage and transport package for enclosing a plurality of disks of a predetermined diameter, each with a peripheral edge, said package comprising:

(a) a cassette

(b) a base including a closed bottom having two opposing larger sides and two opposing shorter sides, an open top, a first continuous side wall projecting from the closed bottom to the open top, said closed bottom including a center section surrounded by a channel for receiving and retaining a bottom portion of said cassette, said first continuous side wall including a rim projecting outward from said first continuous side wall near the top of said first continuous side wall, four corner gussets, and two additional gussets located on each of the two portions of said first continuous side walls projecting from the two longer sides of the closed bottom; and

(c) a cover including a closed top, an open bottom, a second continuous side wall projecting from the closed top to the open bottom, said closed top including a center section surrounded by a channel for receiving and retaining a top portion of said cassette, said second continuous side wall having, an outward projecting ledge, a surface projecting downwardly from said ledge, means for latching said cover to said base, and a plurality of gussets extending between said outward projecting ledge and the closed top.

5,775,507

HAIR COLORIST PALETTE

Terrill W. Wood, 2700 Charles St., Wellsburg, W. Va. 26070

Filed Jul. 9, 1997, Ser. No. 890,319

Int. Cl.⁶ B65D 25/04

U.S. Cl. 206—581

4 Claims

1. A hair colorist palette comprising:

a triangular shaped base member;

a first corner of said base member;

a rounded opening adjacent to said first corner for accepting a container;

a second corner of said base member;

a first liquid tight well adjacent said second corner;

a third corner of said base member;

a second liquid tight well adjacent said third corner; and

5,775,509

CARRIER SYSTEM FOR ELECTRICAL COMPONENTS
Ewald Lampl, Vienna, Austria, assignor to Siemens Matsushita Components GmbH & Co. KG, Munich, Germany

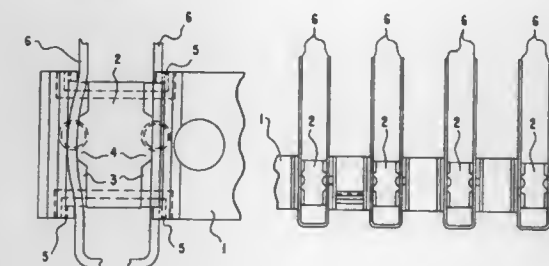
Filed Jun. 24, 1996, Ser. No. 669,628

Claims priority, application Germany, Jun. 22, 1995, 295 10 169 U

Int. Cl.⁶ B65D 73/02

U.S. Cl. 206—714

6 Claims



1. A carrier system for electrical components, comprising:

a carrier strip for receiving supply line wires of components; fasteners for fixing the supply line wires to said carrier strip, said fasteners being fastening elements disposed on said carrier strip, said fastening elements having guide grooves formed therein for retaining the supply line wires threaded into said guide grooves; and

said guide grooves having an open side facing away from said carrier strip, said guide grooves defining a groove wall of said fastening elements, and said fastening elements having attachments on said groove wall for elastically deforming and clamping the supply line wires threaded into said guide grooves.

5,775,510

UV LIGHT SENSITIVE DIE-PAC FOR SECURING SEMICONDUCTOR DICE DURING TRANSPORT

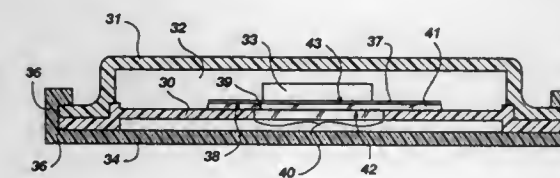
Joe Hodges, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 368,516, Jan. 4, 1995, Pat. No. 5,590,787. This application Jun. 6, 1996, Ser. No. 659,268

Int. Cl.⁶ B65D 85/30;73/00

U.S. Cl. 206—724

33 Claims



1. A structure for releasably holding at least one microcircuit die, comprising:

a plate having an upper face and formed at least partially from a material which is penetrable by electromagnetic radiation; and a layer of adhesive over a section of said upper face, said layer of adhesive having a coefficient of friction sensitive to electromagnetic radiation, whereby at least one die held in a fixed position with respect to said upper face by said layer of adhesive may be released by exposing said layer of adhesive proximate the at least one die to electromagnetic radiation through said section.

5,775,511

APPARATUS AND METHOD FOR UTILIZING A PACKAGE OF AN ARTICLE FOR SUPPORTING THE SAME

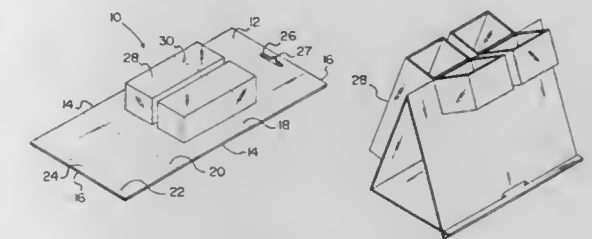
Ralph C. Stark, 220 Rummel Rd., Milford, N.J. 08848

Filed Nov. 18, 1996, Ser. No. 747,255

Int. Cl.⁶ B65D 5/50

U.S. Cl. 206—760

8 Claims



1. A new and improved apparatus for utilizing a package of an article for supporting the same comprising, in combination:

a cardboard backing with a thin rectangular configuration having a pair of long edges and a pair of short edges coupled therebetween, the cardboard backing having a first perforation extending between the long edges thereof a distance $\frac{1}{2}$ the length of the backing from a first short edge, a second perforation extending between the long edges thereof a distance $\frac{3}{4}$ the length of the backing from the first short edge, a third perforation extending between the long edges thereof adjacent a second edge of the cardboard backing with the exception of a short space situated at a central extent of the third perforation, an oval cut out situated adjacent the first short edge of the cardboard backing; and

a pair of rectilinear containers each constructed from a rigid transparent material, each container including a front face, a rear face, and a periphery integrally coupled therebetween defining an interior space for storing tubes of glue therein, each container having a length $\frac{1}{2}$ that of the long edges of the cardboard backing, the rear face of each of the containers coupled to the cardboard backing such that a top extent of each container which is $\frac{1}{4}$ the length of each container resides between the first perforation and the first edge of the cardboard backing and a bottom extent of each container which is $\frac{3}{4}$ the length of each container resides between the first perforation and the second perforation of the cardboard backing, each container further having a container perforation formed about the front face and the periphery thereof wherein the container perforation resides in a plane in which the second perforation resides;

whereby a user may cut a majority of the third perforation to form a tab, bend the cardboard backing along the first perforation and second perforation thereof to form a triangle, engage the tab within the oval cut out, further separate the containers along the container perforation to allow access to the tubes of glue therein, and allow storage of the tubes of glue within the bottom extent of the containers.

5,775,512

COMPOSITE PACKAGE STRUCTURE FOR CONTAINING ARTICLES AND METHOD FOR PRODUCING THEREOF

Brad Allen Jones, Chesterfield, and Ralph Scott Peterson, Clifton Forge, both of Va., assignors to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 401,143, Mar. 8, 1995, abandoned. This application Oct. 30, 1996, Ser. No. 741,054

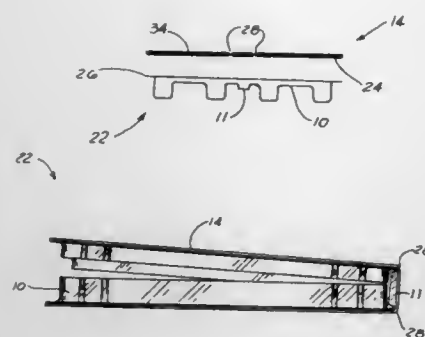
Int. Cl.⁶ B65D 77/00

U.S. Cl. 206—312

6 Claims

1. A composite package for containing articles, wherein said composite package is comprised of:

a paperboard base having first and second sides;



- a layer of particulate minerals located exterior to said first side of said paperboard base;
- a layer of a low temperature, heat sealable polymeric material located exterior to said second side of said paperboard base wherein said polymeric material is further comprised of water-based ethylene vinyl acetate;
- a layer of printed graphics located exterior to said layer of said particulate minerals;
- a layer of a varnish located exterior to said layer of said printed graphics; and
- a thermoformable polymeric shell having first and second sides said first side of said shell is rigidly attached to said heat sealable polymeric material and said second side includes a plurality of article holding means and a flexible spine means located substantially between said plurality of said article holding means such that said plurality of article holding means provide a means for holding an article when said article holding means are closed and said spine means provides support for said composite package and an alignment means for said article holding means.

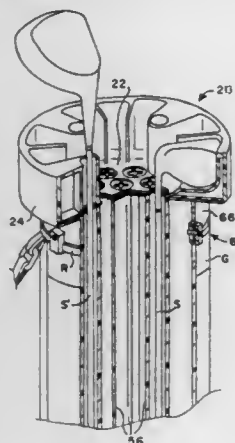
5,775,513 GOLF CLUB HOLDER

Larry L. Anthony, 1000 Sutton Pl., Apt. 1021, Horn Lake, Miss. 38637

Filed Sep. 19, 1996, Ser. No. 710,566
Int. Cl.⁶ A63B 55/00; 55/02

U.S. Cl. 206—315.3

29 Claims



1. A golf club holder, said golf club holder comprising:
- (a) a floor portion, said floor portion having a first plurality of holes therethrough and said floor portion having a substantially central axis; each hole of said first plurality of holes being sized for receipt of a shaft of a first golf club therethrough; and
- (b) a circumferential sidewall portion extending upwardly from said floor portion substantially concentric with said central axis, said circumferential sidewall portion having a second plurality of wedge-shaped compartments formed radially

therewithin about said central axis; each said wedge-shaped compartment being shaped substantially as an annular sector about said central axis; each said wedge-shaped compartment being downwardly closed by said floor portion, each said wedge-shaped compartment having an open apex radially inward toward said central axis of said floor portion, and each said wedge-shaped compartment being upwardly open; said second plurality being no greater than said first plurality and the apex of each said wedge-shaped compartment being in substantial radial alignment with a different one hole of said first plurality of holes with each said different one hole of said first plurality of holes being external to its respective wedge-shaped compartment, each said wedge-shaped compartment being adapted for receiving a head of the first golf club therewithin when a shaft of the golf club is received into said different one hole in substantial radial alignment with its respective wedge-shaped compartment.

5,775,514 SCREW BAND

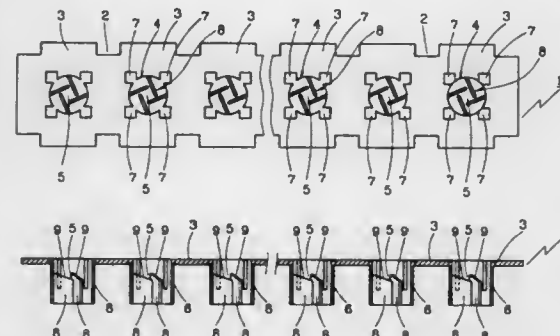
Jack Lin, 9F3R, No. 210, Chung Hsueh Rd., Tainan, Taiwan

Filed Feb. 28, 1997, Ser. No. 810,319

Int. Cl.⁶ B65D 85/24

U.S. Cl. 206—347

4 Claims



1. A screw band comprising:
- a body of any length,
- a plurality of notches provided in two longitudinal sides so that said screw band is moved by an automatic screw driver,
- a plurality of screw holes in a center portion of said body, each said screw hole includes a through hole defined by an annular wall extending downward from said body to form a screw supporting portion, said annular wall includes a plurality of notches; wherein
- said annular wall further includes a plurality of vanes extending from a bottom of said annular wall to a center thereof and continuing upward to form a curved surface with a groove in a front end thereof,
- said vanes define a clamp space a diameter of which is altered in accordance with a diameter of a screw to be inserted in said screw hole so as to support said screw securely therein.

5,775,515 METHOD AND APPARATUS FOR WRAPPING COILS, AND THE WRAPPED PRODUCT

Dennis P. Chadwick, Napanee, Canada, assignor to Chadwick Engineering Limited, Kingston, Canada

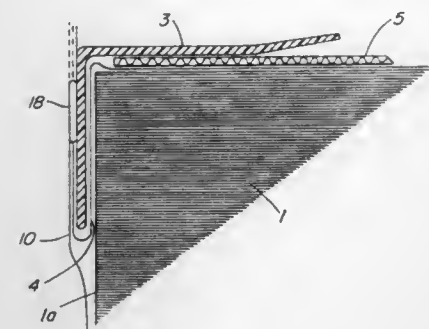
Filed May 6, 1996, Ser. No. 643,750

Int. Cl.⁶ B65D 85/66

U.S. Cl. 206—416

16 Claims

1. A product comprising an object having a substantially cylindrical peripheral surface, two end surfaces and a hollow cylindrical central space substantially sealed within a flexible protective film envelope, said product including a cylindrical sleeve of said protective film, having a length and diameter greater than the length



and diameter respectively of said central space, inserted in said central space such that respective ends of said cylindrical sleeve project from respective ends of said central space; flanged collar means inserted into said central space to position a projecting end portion of said cylindrical sleeve against each said end surface; an end of said projecting end portion of said cylindrical sleeve folded to overlay each said flanged collar; and a continuous strip of said flexible protective film enveloping said cylindrical peripheral surface, said two end surfaces and both said overlain collar means, and wherein said protective film is sealed around each respective end of said sleeve adjacent each said collar means so as to seal said object within said envelope.

5,775,516 BLISTER PACKAGE WITH PIVOTABLE DOOR CLOSURE

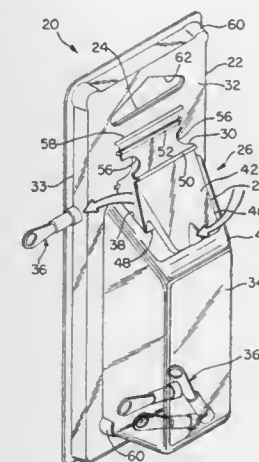
Donald E. McCumber, and Charles Austen Angell, both of Madison, Wis., assignors to Placon Corporation, Madison, Wis.

Filed Jul. 8, 1997, Ser. No. 889,427

Int. Cl.⁶ B65D 73/00

U.S. Cl. 206—470

47 Claims



1. A package comprising:
- a product bubble which protrudes frontwardly from a flange, the product bubble having a top panel which extends frontwardly from the flange, wherein portions of the top panel define an access opening which opens into the product bubble;
- a protruding door member which extends from the top panel along a first hinge; and
- a hinge panel which extends from the door member along a second hinge positioned above the first hinge, the hinge panel being connected to the flange at a third hinge which is above the second hinge, wherein the first hinge, the second hinge, and the third hinge are substantially parallel to one another, and wherein the door member is pivotable about the first hinge to selectively reveal and close the bubble access opening.

5,775,517 SUPPORTING FRAME

Ulrich Speck, Ludwigsburg, Germany, assignor to LTG Luft-technische Gesellschaft mit beschränkter Haftung, Stuttgart, Germany

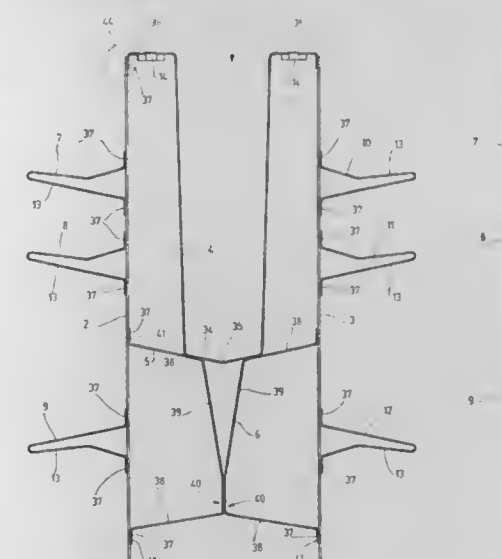
Filed Mar. 10, 1997, Ser. No. 812,674

Claims priority, application Germany, Mar. 8, 1996, 196 09 023.7

Int. Cl.⁶ B65G 17/00

U.S. Cl. 211—41.1

8 Claims



1. A supporting frame for a transporting device, for transporting flat objects, comprising
- first and second web parts forming a receiving surface for said objects, said first web part having a fastening surface for fastening to said second web part by welding, said first web part having a first bead which projects above said fastening surface.

5,775,518 KITCHEN CADDY

Jamie C. Connor, c/o Source Manufacturing Co. Inc. 191 Post Rd. West, Weston, Conn. 06880

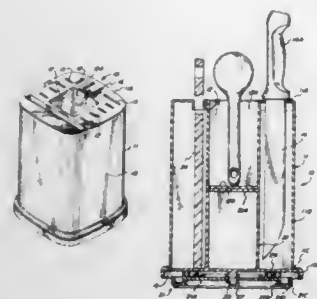
Filed May 29, 1996, Ser. No. 654,574

Int. Cl.⁶ A47F 7/00

U.S. Cl. 211—70.7

4 Claims

1. A kitchen caddy comprising:
- a generally rectangular unitary housing having a solid flat top surface and integrally connected circumscribing depending sidewalls terminating in a lower edge.



a generally rectangular base member directly connected to said lower edge of said depending side walls of said unitary housing, said base member defining the bottom of said housing, said solid flat top surface having a depending well formed thereon adapted for receiving a plurality of cooking utensils such as ladles, spatulas, strainers and serving spoons, said well having a well bottom disposed in spaced relationship and intermediately between said flat top surface and said base member, a plurality of slots formed in said flat top surface disposed about said well, each of said slots being formed for receiving and holding only one of a given blade of a variety of knives therein, and an elongated slot formed in said flat top surface extending substantially transversely of the width of said flat top surface to one side of said well for stowing a cutting board therein, a spacer support projecting upwardly from said base and in alignment with said well, and said spacer support having an upper surface engaging said well bottom to provide a stable central support for said housing and connected base assembly, and a carousel connected to said base member for rotatably supporting said housing thereon.

5,775,519

Patent Not Issued For This Number

5,775,520

STORAGE RACK WITH MODULAR PAIRS OF SUPPORT LOOPS MAINTAINING UNIFORM PRESSURE AGAINST THE ARTICLES

Herbert M. Drower, Wilmette, Ill., assignor to Transilwrap Company, Inc., Chicago, Ill.

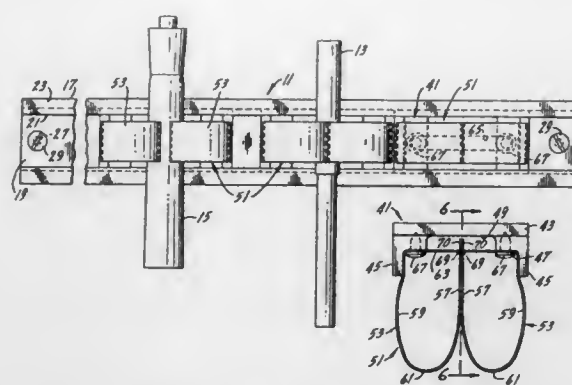
Filed Oct. 11, 1996, Ser. No. 728,748
Int. Cl.⁶ A47F 5/00

U.S. Cl. 211—89.01

15 Claims

1. An elongated storage rack for supporting small articles and things, said rack including:

an elongated support having a bracket receiving channel, an elongated bracket having a front face and arms located at opposite ends of and extending outwardly of said front face, said elongated bracket formed and adapted to be received and supported in said bracket receiving channel with said arms extending outwardly of said elongated support, a pair of support loops positioned in said bracket between said outwardly extending arms, said pair of support loops formed as a plastic strip having pairs of legs each connected by a bight portion which are positioned outwardly of said front face of said bracket, one leg of each of said support loops positioned contiguously relative to and in contact with a similar leg of said other



support loop of said pair and said other leg of each of said support loops positioned remotely of a similar leg of said other support loop of said pair; said remotely positioned legs of said pair of loops each having base portions attached to said front face of said bracket, a guide formed in said base portions, at least one of said contiguously positioned legs of said pair of support loops being mounted in said guide for slidable movement away from said other contiguously positioned leg of said pair of support loops and toward the remotely positioned leg of its loop to provide and maintain a uniform pressure against a small article or thing placed between said contiguously positioned legs of said pair of loops, and fasteners to attach said base portions of said legs to said front face of said bracket.

5,775,521

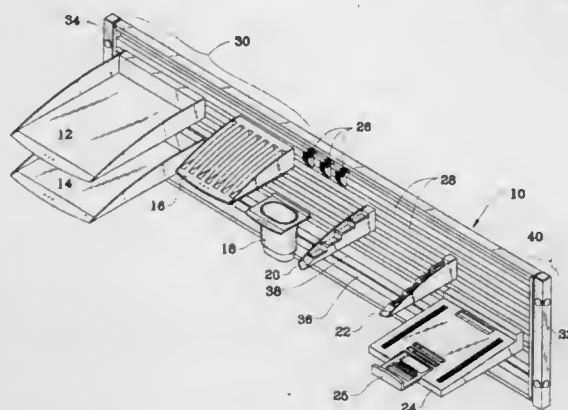
OFFICE ORGANIZER

Peter M. Tisbo, Barrington, Ill., assignor to Custom Plastics, Inc., Elk Grove Village, Ill.

Filed Mar. 22, 1996, Ser. No. 620,416
Int. Cl.⁶ A47F 5/00

U.S. Cl. 211—94.1

20 Claims



1. An organizational apparatus comprising:

a support structure consisting of at least one rectangular slat wall section formed from a single piece of plastic having a front surface, a rear surface, side edges, a top end having a first linking tab, and a bottom end having a second linking tab, said front surface having at least two spaced-apart T-shaped members formed integral therewith and extending therefrom, each T-shaped member spanning between said side edges and including a spacing panel that abuts a support panel; at least one organizational accessory having at least one hanger shaped to engage at least one of said T-shaped members; and a wire chase means for enclosing and guiding wires, whereby a first slat wall first linking tab will detachably couple with a corresponding second slat wall second linking tab when said first slat wall and said second slat wall are adjacent and coplanar.

5,775,522

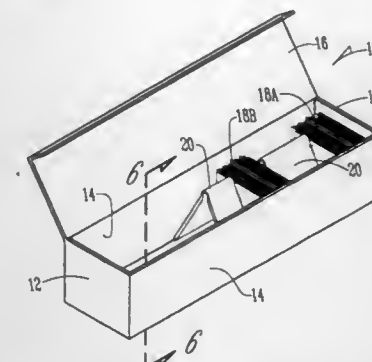
CARD DIVIDER AND HOLDER

Chester Martin, Sr., 201 N. State, Terril, Iowa 51364
Filed Oct. 9, 1996, Ser. No. 727,886

Int. Cl.⁶ A47F 5/00

U.S. Cl. 211—184

3 Claims



1. A method of separating and supporting articles within a rectangular container having a bottom and opposing sides comprising the steps of:

placing a plurality of articles within the container in an upright position and disposed perpendicular to the opposing sides of the container; providing a substantially flat rectangular body having opposing first and second edges; forming a hinge between the first and second edges defining first and second portions of the rectangular body, with one portion on each side of the hinge; bending the rectangular body about the hinge with the first and second portions of the rectangular body each extending at an angle toward the hinge to form a V-shaped member; and placing the V-shaped member within the container with the first and second edges biased against the opposing sides of the container so that the V-shaped member abuts at least one of the articles.

5,775,523

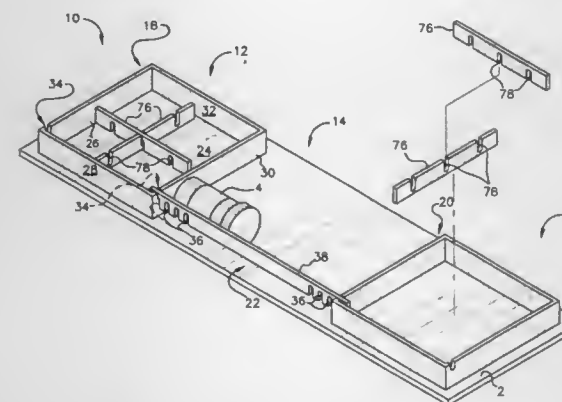
SHELF ORGANIZER WITH FENCE

William M. Teringo, PDMP, 105 Loudoun St. SW., Leesburg, Va. 22075

Filed Oct. 28, 1996, Ser. No. 738,550
Int. Cl.⁶ A47F 7/00

U.S. Cl. 211—184

12 Claims



1. A shelf organizer for partitioning a horizontal storage shelf into compartments, comprising:

a fence comprising a fence member further comprising a vertical wall; and a tray having attachment means for supporting said fence member in vertical orientation projecting outwardly from said tray.

5,775,524

REMOTE UNCOUPLING MECHANISM

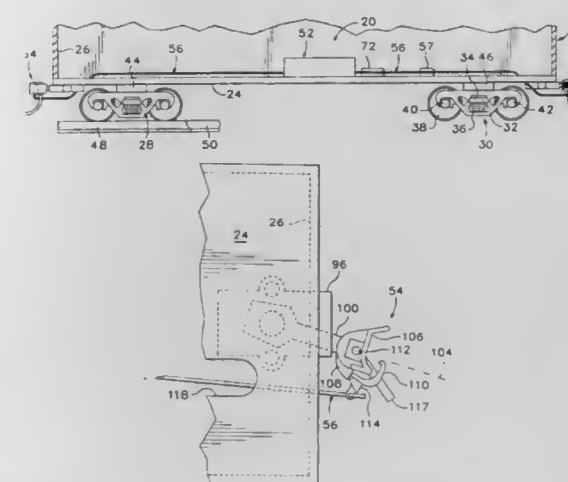
Michael Nathan Dunham, Eagle Point, Oreg., assignor to Kadee Quality Products Co., White City, Oreg.

Filed Mar. 25, 1996, Ser. No. 621,505

Int. Cl.⁶ B61G 7/00

U.S. Cl. 213—75 TC

10 Claims



1. A model railroad remote uncoupler mechanism connected to a signal-receiving mechanism and a self-centering coupler, wherein the coupler is mounted, for arcuate movement within a substantially horizontal plane, on a unit of model railroad rolling stock, and is shiftable between a coupled condition, wherein the coupler engages a coupler on another unit of rolling stock, and an uncoupled condition, and which includes a coupler shank, a coupler head, a coupler knuckle mounted on the coupler head for pivoting movement relative thereto between a closed position and an open position, and a biasing mechanism extending between the head and the knuckle to bias the knuckle to its closed position, comprising:

an electromotive actuator which is activated by the signal-receiving mechanism, including a prime mover effectuating the uncoupling action, a pivot arm connected to said prime mover wherein said prime mover is operable to shift said pivot arm to a first, uncoupling position; and a spring biasing mechanism for biasing said pivot arm to a second, coupling position;

a power supply for said electromotive actuator; and a connector extending between said pivot arm and the coupler for shifting the knuckle between its closed position and its open position.

5,775,525

MAGNETIC COUPLING ASSEMBLY FOR MODEL RAILROAD CARS AND COUPLING SYSTEM THEREFOR

Gilbert A. Brill, 17423 W. 17th Pl., Golden, Colo. 80401

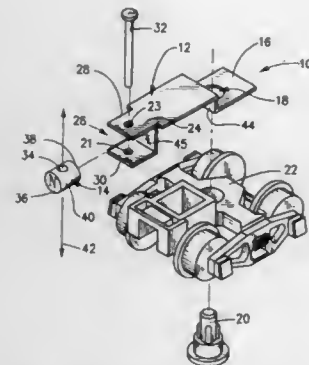
Filed Nov. 7, 1996, Ser. No. 745,011

Int. Cl.⁶ B61G 5/00

U.S. Cl. 213—75 TC

14 Claims

1. In a truck adapted for pivotal attachment to a body of a railroad car wherein said truck includes a cavity formed therein and a wheeled assembly sized and adapted to engage a track and to advance therealong, the improvement comprising a coupling assembly mounted to said truck, said coupling assembly including a retainer releasably securable to said truck and having a proximal end portion which is sized and adapted to be retained in the cavity



by a friction fit and a distal end portion, and including a magnet disposed on said distal end portion.

5,775,526

SEAL FOR A THERMAL FILLER AND CARAFE HOUSING

Colin Overy, North Augusta, Canada, assignor to Black & Decker Inc., Newark, Del.

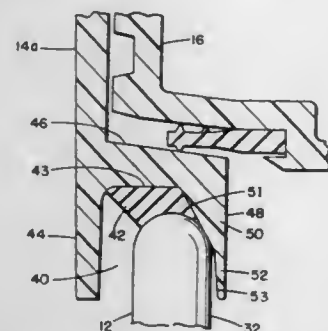
Continuation of Ser. No. 504,215, Jul. 19, 1995, abandoned.

This application Mar. 19, 1997, Ser. No. 821,187

Int. Cl.⁶ A47J 41/02; B65D 25/18

U.S. Cl. 215—12.1

9 Claims



1. A carafe comprising:
a thermal filler having a neck portion which defines an opening;
a one-piece housing surrounding the thermal filler, the housing having a top with an annular groove facing a bottom of the housing, and a flange forming an interior side of the groove, an upper portion of the neck portion of the thermal filler being located in the groove with the housing at the interior side of the groove extending into the opening at the upper portion of the neck portion of the filler, said flange having a first section with a relatively shallow sloped inner surface which intersects a second section with a relatively steeped sloped inner surface at a corner;
the thickness of the flange increasing deeper into the groove; and
said upper portion of said filler engaging one of said first and said second sections.

5,775,527

CLOSURE CAP WITH ANTI-TAMPER STRIP

Udo Bösl, Eimeldingen, and Michael Kirchgessner, Egringen, both of Germany, assignors to Crown Cork AG, Reinach, Switzerland

Filed Jan. 5, 1996, Ser. No. 582,366

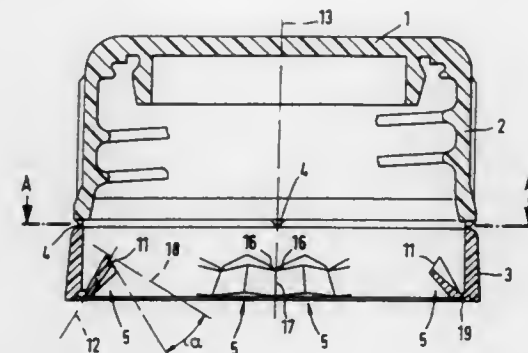
Claims priority, application Switzerland, Feb. 10, 1995, 395/95

Int. Cl.⁶ B65D 41/34

U.S. Cl. 215—252

8 Claims

1. A closure cap for closure of a container mouth, said closure cap comprising:



a cap base and an abutting cap wall,
an anti-tamper strip being arranged on the lower edge of said cap wall, and a plurality of flaps being arranged on the inside surface of the anti-tamper strip to protrude radially inwards having facing surfaces at a distal end, lateral portions of the facing surfaces defining lateral edge areas, a center portion of each of the facing surfaces defining flap centers, said flaps pointing upwards towards the cap base in order to engage beneath a bead on the container mouth when the closure cap is at a predetermined position on the container mouth, characterized in that the lateral edge areas of the flaps directed towards the cap base are directed inwards in such a way that, at one position at least, the lateral edge areas being more closely located to the cap axis than the flap centres.

5,775,528

SNAP-ON/SCREW-OFF CAP AND NECK CONFIGURATION

Emanuel E. Wohlgemuth, North Bellmore, N.Y., and Charles Hogan, Spokane, Wash., assignors to Superseal Corporation, Condado, Puerto Rico

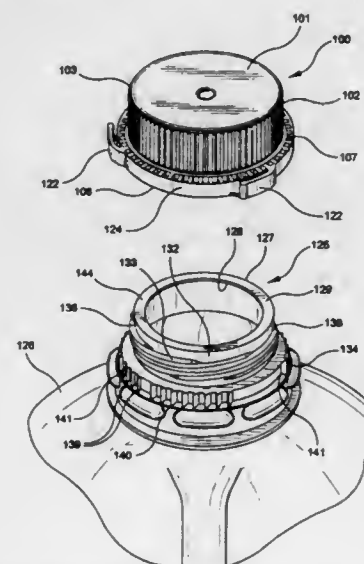
Continuation-in-part of Ser. No. 545,959, Oct. 20, 1995, which is a continuation-in-part of Ser. No. 517,065, Aug. 21, 1995, Pat. No. 5,642,825. This application Nov. 19, 1996, Ser. No. 752,641

The portion of the term of this patent subsequent to Aug. 21, 2015, has been disclaimed.

Int. Cl.⁶ B65D 41/47

U.S. Cl. 215—256

21 Claims



1. In combination, a container neck and a container cap, said container neck having an upper opening, a first threaded neck portion depending downwardly from said upper opening and having at least one external thread, and a second neck

portion depending downwardly from said threaded neck portion, said second neck portion including external anti-rotation means; and

said container cap having a top surface, an upper skirt portion depending downwardly from said top surface, said upper skirt portion having at least one internal thread, and a tamper indicating ring depending downwardly from said upper skirt and integrally connected thereto via a frangible line of weakness, said tamper indicating ring including internal anti-rotation means, said tamper indicating ring having at least two sections separated by at least two slots, said tamper indicating ring including at least two pull tabs, each pull tab having a first end connected to an outer surface of the section of the tamper indicating ring adjacent one of said slots and a free end extending over said adjacent slot and a plurality of frangible membranes extending, respectively, between the outer surface of the tamper indicating ring sections and the free end of each pull tab, wherein pulling on one of said pull tabs breaks the frangible membrane exposing one of said at least two slots followed by removal of the tamper indicating ring from the upper skirt by breaking along the line of weakness while the remaining membrane stays intact and the frangible ring is completely removed from the upper skirt as a single unit.

5,775,530

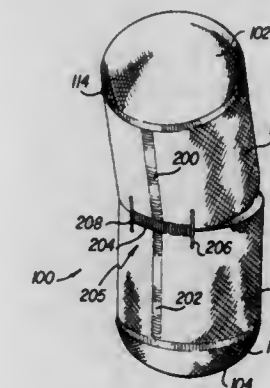
METHOD OF AND APPARATUS FOR PROTECTING FRAGILE OBJECTS

Joel Attaway, 25615 99th Ave., East, Graham, Wash. 98338
Filed Oct. 5, 1995, Ser. No. 540,243

Int. Cl.⁶ B65D 6/28; 81/02; 81/03

U.S. Cl. 220—4.22

14 Claims



1. A method of protecting a fragile object from breakage, comprising the steps of:

forming a case in the shape of said fragile object having inside dimension smaller than said fragile object;
said case being formed such that it has top and bottom portions of substantially equal size which are flexibly movable with respect to each other about a hinge formed by stitching juxtaposed portions of said top and bottom portions;
moving said top and bottom portions away from each other said inserting said fragile object into one of said top and bottom portions such that said one of said top and bottom portions stretches around said fragile object to form a snug fit around said fragile object;
pivoting said other one of said top and bottom portions towards the other one of said top and bottom portions and stretching said other one of said top and bottom portions over said fragile object such that at least one inside dimension of said at least one top and bottom portions is increased, thereby forming a snug fit over and around said fragile object; and
said top and bottom portions covering essentially said entire fragile object.

5,775,531

CONTAINER FOR POWDERED PRODUCT HAVING A MEASURING CUP DEVICE THEREIN

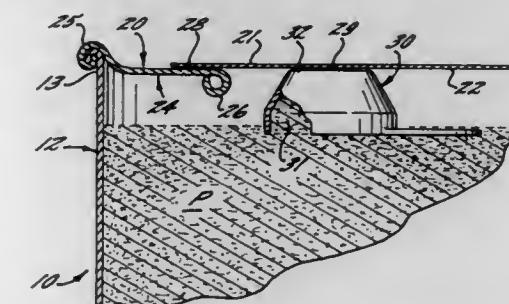
James W. Lowry, Florence, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Jan. 9, 1997, Ser. No. 780,855

Int. Cl.⁶ B65D 1/24

U.S. Cl. 220—212.5

7 Claims



1. A container adapted for being filled with a powdered product and comprising:

a hollow container body of desired configuration defining top and bottom opposite end portions;

said container bottom end portion being open for filling of said container with the powdered product through said open bottom end and with said container in an inverted position and being adapted to be closed after filling;

an end closure attached to said container top end portion for closing said top end portion to adapt said container to be filled through said open bottom end portion while said container is in the inverted position, said top end closure including easy-opening means for adapting said container to be easily opened by removing at least a part of said top end closure to obtain access to the powdered product within said container after filling and closure of said bottom end portion; and

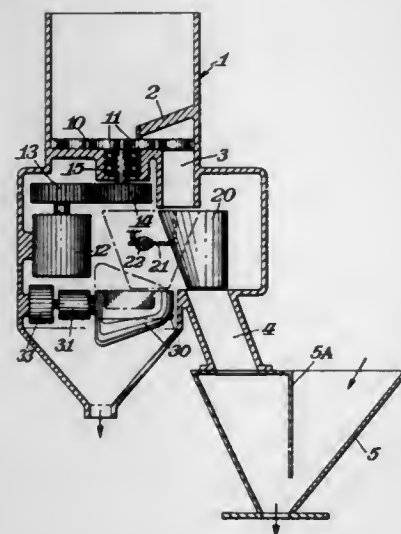
a measuring cup device having an open side and a closed side and being detachably attached at said closed side to an inside surface of said part of said top end closure adapted to be removed during container opening (1) for adapting said cup device to be removed and detached for use after opening said container and (2) for adapting said container to be filled in the inverted position with said open side of said cup device facing up to receive powdered product therein during filling to prevent undesirable air from being trapped within said cup device.

5,775,532
AUTOMATIC CALIBRATION PROCESS AND APPARATUS FOR MATERIALS FEEDING
Kenneth Walter Bullivant, 3 Camly La., Chadds Ford, Pa. 19317

Filed Mar. 18, 1996, Ser. No. 617,064
Int. Cl.⁶ B67B 7/00

U.S. Cl. 222—1

17 Claims



1. In a process for admixing, at a predetermined ratio, at least two components in a blending apparatus, the blending apparatus being operatively connected to and receiving component from at least one feeding apparatus at a determined rate and passing the resulting blend to utilization equipment, the improvement comprising automatic, intermittent, periodic calibration of the feeding apparatus while the utilization equipment continues to operate by:

(A) defining integral units of operation of the feeding apparatus;

(B) determining the time periods during which the feeding apparatus is not required to dispense its component, during which periods the utilization equipment continues to operate;

(C) diverting, in integral increments corresponding to the integral units of operation, quantities of component to a collection vessel, the diversion occurring during time periods determined in (B) above;

(D) collecting the diverted component until it is at least equal to a predetermined minimum weight required for accurate measurement;

(E) weighing the diverted component;

(F) calculating the amount by weight of diverted component dispensed by the feeding apparatus per integral unit of operation, and determining, from the known rate of operation of the feeding apparatus, the rate at which the component is being dispensed by the feeder, in terms of amount by weight over time, and;

(G) adjusting the rate of operation of the feeding apparatus so that the component is dispensed by the feeding apparatus at the rate required to maintain the predetermined ratio, given the rate of consumption of the particular utilization equipment.

5. In an apparatus for admixing, at a predetermined ratio, at least two components in a blending apparatus, the blending apparatus being operatively connected to and receiving component from at least one feeding apparatus at a determined rate and passing the resulting blend to utilization equipment, the improvement for automatic, intermittent, periodic calibration of the feeding apparatus while the utilization equipment continues to operate comprising:

(A) means for defining integral units of operation of the feeding apparatus;

(B) means for determining the time periods during which the feeding apparatus is not required to dispense its component, during which periods the utilization equipment continues to operate;

(C) means for diverting, in integral increments corresponding to the integral units of operation, quantities of component to a collection vessel, the diversion occurring during time periods determined in (B) above;

(D) means for collecting the diverted component until it is at least equal to a predetermined minimum weight required for accurate measurement;

(E) means for weighing the diverted component;

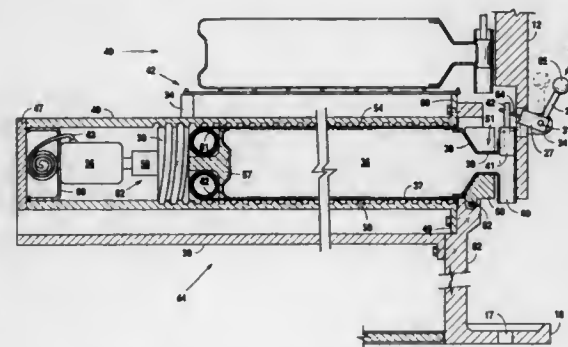
(F) means for calculating the amount by weight of diverted component dispensed by the feeding apparatus per integral unit of operation, and determining, from the known rate of operation of the feeding apparatus, the rate at which the component is being dispensed by the feeder, in terms of amount by weight over time, and;

(G) means for adjusting the rate of operation of the feeding apparatus so that the component is dispensed by the feeding apparatus at the rate required to maintain the predetermined ratio, given the rate of consumption of the particular utilization equipment.

5,775,533
APPARATUS FOR DISPENSING SOFT SERVE FROZEN PRODUCT
Alfred A. Schroeder, San Antonio, Tex., assignor to Lancer Partnership Ltd., San Antonio, Tex.
Filed Sep. 11, 1996, Ser. No. 714,020
Int. Cl.⁶ B65D 35/28

U.S. Cl. 222—95

11 Claims



1. An apparatus for dispensing a soft-serve frozen product, comprising:

a housing including first and second compartments;

means disposed within said second compartment for cooling said first compartment;

means disposed within said first compartment for supporting a soft-serve frozen product container;

means for compressing said soft-serve frozen product container to extrude product therefrom; and

means for preventing the entanglement of said soft-serve frozen product container with said means for compressing.

5,775,534
BEVERAGE CONTAINER HAVING FILTERED OPENING
Michael Reginald Webb, Theydon Willows, Copice Row, Theydon Bois, Essex CM16 7DP, and Denis Matthews, Laurel House, Earlstone Common, Burghclere, Nr. Newbury, RG20 9HN, both of United Kingdom

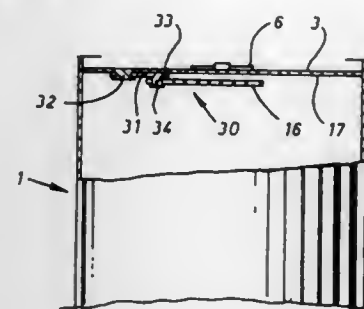
Filed Feb. 16, 1996, Ser. No. 601,341

Claims priority, application United Kingdom, Nov. 24, 1995, 9524099; Jan. 12, 1996, 9600640; Feb. 5, 1996, 9602263

Int. Cl.⁶ B65D 17/34

U.S. Cl. 220—269

26 Claims



1. A container having a top comprising a top plate with an inner and outer face, said top plate is disrupable at a zone of weakness constituted by a tear line defining in outline a tongue portion, the top further comprising actuating means mounted on the outer face of the top plate and operable to cause tearing of the top plate along the tear line and to inwardly displace the tongue portion relative to the top plate to define a dispensing aperture; and filtering means mounted internally of the container and comprising a filter and mounting means to support the filter at a deployed position adjacent to the top plate at a location traversing the dispensing aperture, said filter being displaceable to an intermediate position at which it is spaced from the inner face of the top plate to accommodate inward movement of the tongue portion and being displaceable thereafter to the deployed position.

5,775,535
FOOD WARMER WITH BALANCED-MOVEMENT COVER
Ferruccio Vercellone, Sergio Sambonet, and Fausto Rissone, all of Vercelli, Italy, assignors to Table Top Engineering & Design, Italy

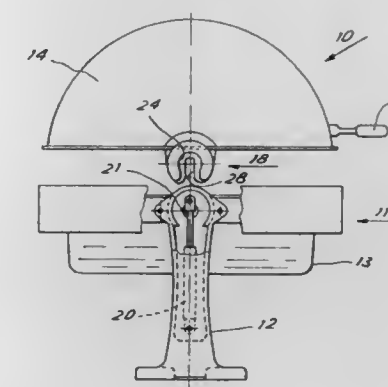
Filed Apr. 8, 1996, Ser. No. 630,972

Int. Cl.⁶ B65D 43/00

U.S. Cl. 220—318

9 Claims

1. In a food warmer including a removable cover hinged on a frame by means of opposing side hinges for rotating the cover around an axis of rotation between a closed position and a fully open position and characterized in that at least one of the hinges comprises coupling means interposed between the cover and the frame, and which rotate with the cover, and reaction means mounted on the frame and connected with the coupling means for supplying substantial balancing action of the moment produced by the weight of the cover during rotation thereof, said coupling means comprising a pin with a faceted lateral surface supported in a rotatable manner on the frame in a position axial with the cover rotation axis, and a fork integral with the cover and having therein a slot for releasably receiving the pin transversely thereof and constituting an engagement causing the pin to be rotatable with the

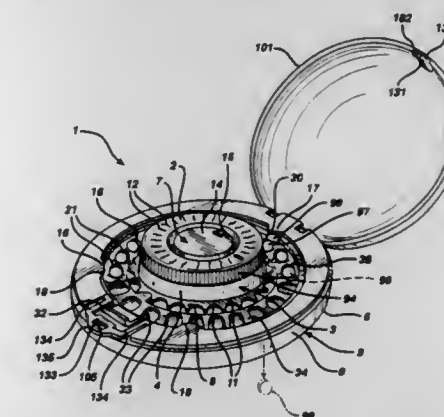


5,775,536
VARIABLE DAY START TABLET DISPENSER
Lawrence E. Lambelet, Jr., Flemington, N.J.; Martin Link, Doylestown, and David G. DuHaime, Chalfont, both of Pa., assignors to Ortho Pharmaceutical Corp., Raritan, N.J.
Continuation-in-part of Ser. No. 282,950, Jul. 29, 1994, Pat. No. 5,562,231. This application May 14, 1996, Ser. No. 647,493

Int. Cl.⁶ B65D 83/04

U.S. Cl. 221—5

30 Claims



1. A tablet dispenser for dispensing a regimen of pills in a designated sequence, comprising:

as a first element, a flat support having a tablet dispensing aperture, an encircling wall portion defining a cup-like interior, and an axis of rotation;

as a second element, a rotatable knob having indicators of periodicity, rotatable means for connecting to the flat support for movement about the axis of rotation, and means for ratchet advancement;

as a third element, a tablet package for containing the tablets of the regimen in individual collapsible pockets with frangible lidding, the pockets arrayed circularly about a bore to dispense from the aperture when rotated about the axis of rotation, the tablet package having second rotatable means for connecting to the rotatable knob when extended through the bore; and

as a fourth element, means for preventing the loading of the tablet package onto the flat support except in one predetermined orientation.

5,775,537

MERCHANDISE DISPENSER

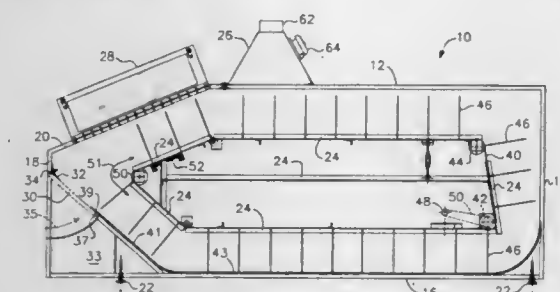
Merton G. Doyle, Jr., Sarasota, Fla., assignor to HIGA Development Corporation, Sarasota, Fla.

Filed Nov. 14, 1995, Ser. No. 557,469

Int. Cl.⁶ G07F 11/00

U.S. Cl. 221—85

17 Claims

**1. A merchandise dispenser, comprising:**

- a housing having a top wall, a forward wall inclined downwardly from said top wall, a front wall, a bottom wall, a rear wall, and a pair of side walls;
- a conveyor belt that follows a continuous path of travel within said housing, said conveyor belt being oriented in a vertical plane and advancing in a first, forward direction parallel to said top wall, a second, downwardly inclined direction parallel to said forward wall, a third, downward direction, a fourth, rearward direction parallel to said bottom wall, and a fifth, upward direction parallel to said rear wall so that items carried by said conveyor belt fall from said conveyor belt under influence of gravity at a forward end of said conveyor belt where said path of travel of said conveyor belt turns from said second direction to said third direction;
- a control cabinet having an interface means, said interface means being connected to a remote coin operated device which offers an award based upon score, points or achievements, said control cabinet being programmed to activate said conveyor belt at a pre-programmed score, point or achievement level based on signals received by said control cabinet from said remote coin operated device through said interface means;
- a prize retrieval space contained within said housing at a forward end of said housing, said prize retrieval space having an open upper end and being positioned directly below said forward end of said conveyor belt where said path of travel turns from said second direction to said third direction so that a falling prize is deposited into said prize retrieval space by influence of gravity; and
- an access door formed in said front wall of said housing; whereby a prize deposited into said prize retrieval space can be retrieved by opening said access door.

5,775,538

GOLF TEE SHAKER

Ronnie Covington, and Jim Covington, both of 400 Georgetown, Richardson, Tex. 75081

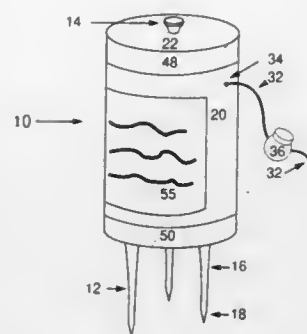
Filed Sep. 22, 1995, Ser. No. 532,856

Int. Cl.⁶ A47F 1/04

U.S. Cl. 221—307

2 Claims

- 1. A container and dispenser for golf tees, said container comprising
 - a cylindrical body having a hollow interior with diameter less than length of a tee, said body having an exterior upon which printing can be permanently imposed;
 - a resilient deformable elastomeric first closing end attached to said body for closing one end of the body;
 - an aperture in for inserting said tees into said body through said first closing end;
 - a resilient deformable elastomeric second closing end attached to said body for closing the opposite end of said body;



- a multiplicity of apertures in said second closing end, for removing said objects;
- a hanger secured to said body for suspending and dispensing said container in a convenient location.

5,775,539

ELECTRICALLY OPERATED MATERIAL DISPENSING GUN AND METHOD

Darryle E. Bates, 1592 Redwing Trail, Stow, Ohio 44224, and Scott S. Kalanish, 18087 Rapids Rd., Hiram, Ohio 44234

PCT No. PCT/US96/06302, § 371 Date Jun. 20, 1996, § 102(e)

Date Jun. 20, 1996, PCT Pub. No. WO96/34696, PCT Pub.

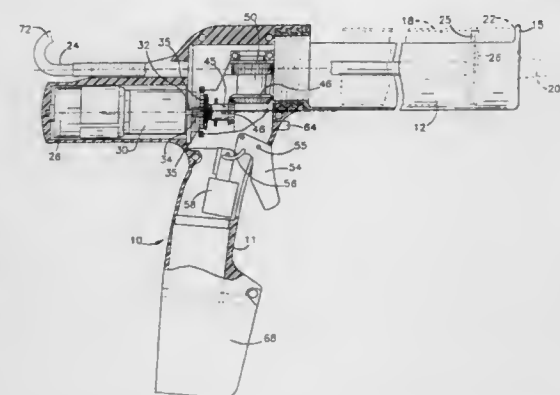
Date Nov. 7, 1996

PCT Filed May 3, 1996, Ser. No. 663,320

Int. Cl.⁶ G01F 11/00

U.S. Cl. 222—1

19 Claims



- 1. An electrically actuated viscous material dispenser comprising:
 - a) a body including a handle section and a viscous material section connected to and extending outwardly from the handle section;
 - b) a reciprocable push rod carried by the handle section for force transmission to the material section;
 - c) an electric motor mounted in the handle section and including an output shaft;
 - d) a drive element rotatively mounted in the handle section and in positive drive mechanically interconnected relationship with the rod;
 - e) the drive element being rotatable in one direction to drive the rod toward the material section;
 - f) the drive element normally being freely rotatable in another direction opposite the one direction in response to retractive motion of the rod;
 - g) a power train axially aligned with and connected to the output shaft for transmission of driving force on rotation of the output shaft in response to motor energization;
 - h) a drive transmission means including a planetary and a first bevel gear in axial alignment with the power train, the transmission means also including a second bevel gear in meshing engagement with the first bevel gear, the gears having trans-

- verse axes and being oriented such that the push rod and output shaft are generally parallel, the transmission means being for interconnecting the drive element and the power train and for the transmission of driving forces when so interconnected and when the output shaft is rotated in response to motor energization; and
 - i) the drive transmission means being adapted to terminate the interconnection of the drive element and the power train when the output shaft is not rotating.
7. A process of dispensing viscous material from a cartridge including a tube surrounding the material, an output nozzle at a dispensing end of the cartridge, the process comprising:
- a) placing the cartridge in a cartridge hold section of a viscous material dispensing gun;
 - b) manually advancing a dispensing rod including rack teeth toward the cartridge and concurrently causing a drive pinion to rotate and with it rotation of a ring gear and other components of a connected planetary;
 - c) continuing the manual rod advance until a pusher at a distal end of the rod engages the cartridge;
 - d) energizing an electric motor to cause the planetary components to rotate; and,
 - e) arresting rotation of the ring gear to cause motor produced forces to be transmitted to the rod to drive the pusher in a dispensing direction against the cartridge to dispense material.

5,775,540

COLLAPSIBLE TUBE DISPENSER AID

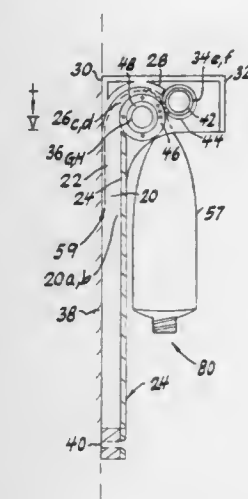
Robert M. Greenberg, 80 N. Division St., St. Johnsville, N.Y. 13452

Filed Mar. 1, 1995, Ser. No. 396,982

Int. Cl.⁶ B65D 35/28

U.S. Cl. 222—102

16 Claims



- II. An apparatus for aiding dispensing of material from a collapsible tube, said apparatus comprising:
 - a support structure, said support structure being securable to a vertical surface;
 - a closure structure rotatably mounted on said support structure, said closure structure and said support structure together defining a hollow space for housing said collapsible tube;
 - a first roller, said first roller being engageable with an end of said collapsible tube, said first roller comprising:
 - (a) a hollow shaft, said hollow shaft comprising gears on an inner surface, said hollow shaft being engageable with an end of said collapsible tube;
 - (b) a second shaft, said second shaft being movable relative to said hollow shaft, said movable shaft comprising gears on an outer surface, said gears on said hollow shaft being selectively engageable with said gears on said second shaft;

- said closure structure further comprising a bearing fixedly secured to said closure structure, said bearing being engageable with said second shaft to rotate said second shaft upon rotation of said closure structure, whereby movement of said closure structure in a first direction causes said first roller to move in a direction away from said hollow space to thereby move said end of said container away from said hollow space, and whereby movement of said closure structure in a second direction opposite to said first direction, upon disengagement of said at least one roller from said closure structure, does not cause movement of said at least one roller; and
- a second roller, said second roller being engageable with said end of said container, movement of said first roller in a direction away from said hollow space causing movement of said second roller in a direction away from said hollow space, to thereby move said end of said container away from said hollow space.

5,775,541

LIQUID CONTAINER AND VALVE

David W. Perkins, Hiawatha, Iowa, assignor to Plastic Systems, Inc., Des Moines, Iowa

Division of Ser. No. 519,077, Aug. 24, 1995, Pat. No.

5,579,953, which is a continuation-in-part of Ser. No. 298,405,

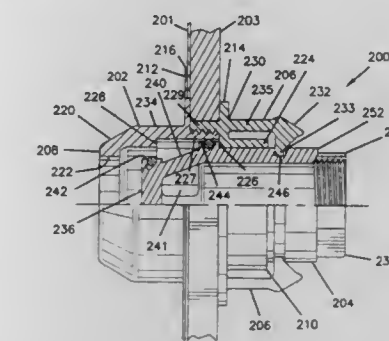
Aug. 30, 1994, abandoned. This application Aug. 9, 1996, Ser.

No. 694,874

Int. Cl.⁶ B65D 35/48

U.S. Cl. 222—105

3 Claims



- 1. An apparatus for containing and dispensing a liquid, comprising:
 - a container;
 - a valve including an outer sleeve and an inner conduit telescopically mounted within the outer sleeve, the inner conduit being selectively telescopically moveable between an open position and a closed position, the valve also including a flexible cantilever member longitudinally aligned generally along the outer sleeve and the inner conduit, the cantilever member being attached to a first one of the outer sleeve and the inner conduit, and being selectively engageable with a second one of the outer sleeve and the inner conduit to selectively retain the inner conduit in at least one of the open and closed positions, said cantilever member having a free end forming a hook and a base end connected to the inner conduit, the outer sleeve including a hook receiving means, the hook of the cantilever member selectively engaging the hook receiving means to selectively retain the inner conduit in at least one of the open and closed positions, said valve further including a thin membrane extending between the cantilever member and the inner conduit for detecting tampering with the valve; and means for fastening the container and the valve together so that liquid contained in the container can be dispensed through the valve when the inner conduit is in the open position.

5,775,542

SELF CONTAINED DRUM DUMPING AND HOT MELT HOLDING TANK AND METHOD OF UNLOADING, MELTING AND DISPENSING A SLUG OF HOT MELT MATERIAL

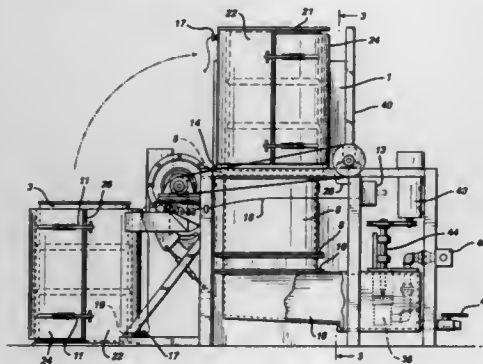
Arnold Field, Garfield, N.J., assignor to Watson Machinery International, Paterson, N.J.

Filed Jun. 7, 1995, Ser. No. 482,637

Int. Cl.⁶ F27B 14/00

U.S. Cl. 222—146.5

15 Claims



1. The method for unloading a slug of solid, unitary mass hot melt from a container into a hot melt dispenser hopper, said slug being retained inside said container by adhesion of said slug to the inside surfaces of said container in its unheated condition, comprising the steps of:

- placing a container in a heated support and carrier;
- inverting and heating said container to release the contents of said container into a hopper;
- sealing the inverted container and the hopper from ambient atmospheric conditions; and
- injecting a controlled atmosphere into said hopper for treating the contents of said container.

5,775,543

SPRAYERS FOR DISPENSING DETERRENT CHEMICALS

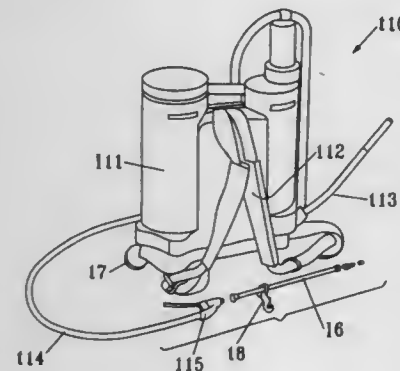
Richard N. Wahrenbrock, 587 N. Ventu Park Rd., Unit F, Ste. 903, Newbury Park, Calif. 91320

Filed Apr. 20, 1995, Ser. No. 426,120

Int. Cl.⁶ B67D 5/06

U.S. Cl. 222—175

2 Claims



1. A sprayer for dispensing a deterrent chemical, said sprayer comprising:

- a. a flexible bag for containing the deterrent chemical;
- b. a tube fluidly coupled to said flexible bag;
- c. a shut-off valve fluidly coupled to said tube;
- d. a slide pump fluidly coupled to said shut-off valve;
- e. an extension tube fluidly coupled to said slide pump;
- f. a spray discharge nozzle fluidly coupled to said extension tube, said spray discharge nozzle including a base which has

an outer surface and an inner surface, a first groove on said outer surface, a second groove on said outer surface and a rotary groove on said inner surface, a first o-ring which is disposed in said first groove, a second o-ring which is disposed in said second groove and an outlet piece which has a bore and which engages both of said first and second o-rings to positively shut-off said spray discharge nozzle and which has a hole which is aligned with said rotary groove and in which said pin is inserted in order to engage said rotary groove so that the outlet piece can not be removed; and

g. a backpack coupled to said flexible bag in order to suspend said flexible bag.

5,775,544

APPARATUS FOR DISCHARGING FLOWABLE MATERIAL HAVING A CLOSURE AND AN OBTURATING DEVICE

Ivan Semenenko, Moreton-in-Marsh, United Kingdom, assignor to Matcon Limited, Moreton-in-Marsh, United Kingdom

PCT No. PCT/GB94/00361, § 371 Date Oct. 16, 1995, § 102(e) Date Oct. 16, 1995, PCT Pub. No. WO94/19265, PCT Pub. Date Sep. 1, 1994

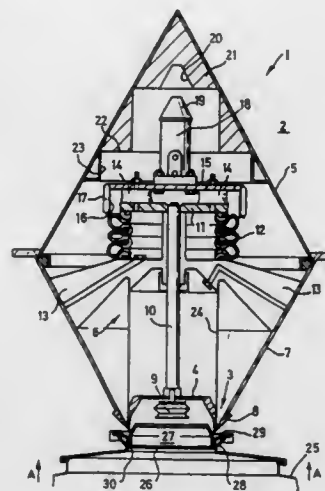
PCT Filed Feb. 23, 1994, Ser. No. 448,565

Claims priority, application United Kingdom, Feb. 26, 1993, 9303928

Int. Cl.⁶ B67D 5/06

U.S. Cl. 222—181.1

22 Claims



1. An apparatus for discharging flowable material, comprising: a hopper for the material having a discharge outlet with a closure arranged to sealingly cooperate with a receptacle and, spaced from the outlet within the hopper, a device for obturating flow of material towards the outlet; and a mechanism, within the hopper, which is connectible with the obturating device and is operative to open the discharge outlet closure and the obturating device in sequence.

5,775,545

METERING VALVE FOR AEROSOLS

Howard Michael Sullivan, "Fancote", 26 Honeypot Lane, Brentwood, Essex CM14 4QX, United Kingdom

PCT No. PCT/GB93/02206, § 371 Date Apr. 24, 1996, § 102(e) Date Apr. 24, 1996, PCT Pub. No. WO95/11841, PCT Pub. Date May 4, 1995

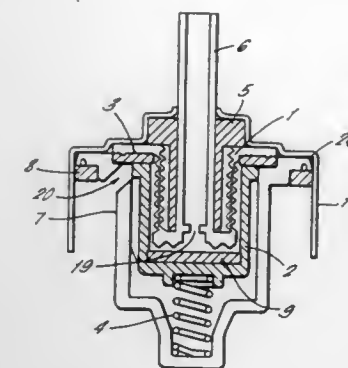
PCT Filed Oct. 26, 1993, Ser. No. 632,423

Int. Cl.⁶ B65D 83/14

U.S. Cl. 222—207

16 Claims

1. A metering valve to be fitted to an aerosol container for dispensing a product, said valve comprising:



a housing;

a metering chamber located within said housing;

a hollow actuator stem extending into the chamber and axially slidable relative thereto, the metering chamber and actuator stem being moveable into and out of positive sealing contact with oppositely facing valve seats provided on the valve housing and the metering chamber respectively; and

sealing means being provided between the actuator stem and the housing and fixed to the housing such that relative movement between the stem and housing is permitted, wherein the sealing means consist of a flexible web or membrane fixed to the actuator stem; and

the resilient membrane or web is a bellows assembly.

5,775,546

DISPENSING BULB

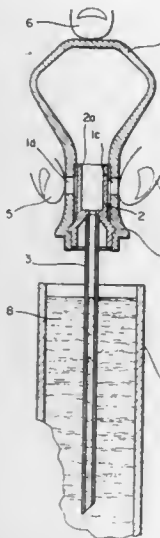
John D. Buehler, Bridgeton, N.J., assignor to Comar, Inc., Buena, N.J.

Filed May 1, 1997, Ser. No. 848,880

Int. Cl.⁶ B01L 3/02; B65D 47/18

U.S. Cl. 222—209

4 Claims



1. A dispensing bulb comprising a squeezable body portion, a squeezable neck portion integral with said squeezable body portion, at least one vent hole provided in said neck portion, an adaptor mounted in said neck portion, said adaptor having a portion spaced radially inwardly from said neck portion, a tube, one end of said tube being connected to said adaptor, a transversely extending partition mounted in said adaptor, and an aperture extending through said partition, said vent hole being positioned on one side of said partition, said one end of said tube being positioned on the opposite side of said partition, said tube communicating with said neck portion and said vent hole through said aperture, whereby liquid can be selectively drawn into the tube by

capillary action and squeezing the neck portion of the bulb radially inwardly against the radially inwardly spaced portion of the adaptor to thereby draw a volume of liquid into the tube, the radially inwardly spaced portion of the adaptor limiting the squeezing of the neck portion to thereby prevent liquid from being drawn through the tube and into the body portion of the bulb.

5,775,547

LOTION DISPENSING PUMP WITH SEALING PLUG FOR SEALING PUMP CHAMBER

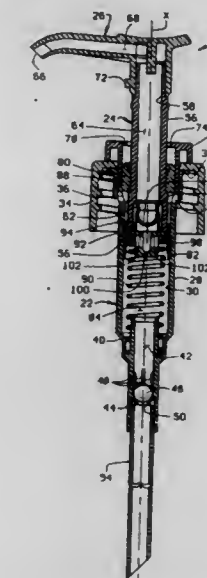
Donald D. Foster, St. Charles, and Philip L. Nelson, Ellisville, both of Mo., assignors to Continental Sprayers International, Inc., St. Peters, Mo.

Filed Oct. 7, 1996, Ser. No. 726,773

Int. Cl.⁶ B65D 88/54

U.S. Cl. 222—321.3

26 Claims



1. A manually operated reciprocating fluid pump comprising: a pump housing having an inner surface and a pump chamber defined at least in part by the inner surface, said pump chamber extending axially through the pump housing;

a plunger configured for extending axially into the pump chamber of the pump housing, the plunger having a fluid passage-way extending generally axially therethrough;

a piston on the plunger and slidable within the pump chamber, the piston being configured for sealing engagement with the inner surface of the pump housing all around the piston to seal against leakage of fluid between the inner surface of the pump housing and the piston, the piston being reciprocally and axially slidable within the pump chamber between a bottom stroke position and a top stroke position, the top stroke position being spaced axially from the bottom stroke position;

a priming valve within the pump chamber, the priming valve being configured to be open and thereby permit fluid to flow through the pump chamber when the piston stroke moves the piston from the top stroke position toward the bottom stroke position, the priming valve being configured to be closed and thereby prevent fluid from flowing through the pump chamber when the piston stroke moves the piston upward from the bottom stroke position toward the top stroke position, at least a part of the priming valve and at least a part of the piston being a single monolithic piece; and

a sealing plug moveable with the plunger, the sealing plug being configured to seat against and seal closed the pump chamber when the piston is in its bottom stroke position to prevent fluid from flowing through the pump chamber, the sealing plug being configured to be unseated from the pump chamber when the piston is positioned away from its bottom stroke position.

5,775,548

UPRIGHT/INVERTED SPRAYER

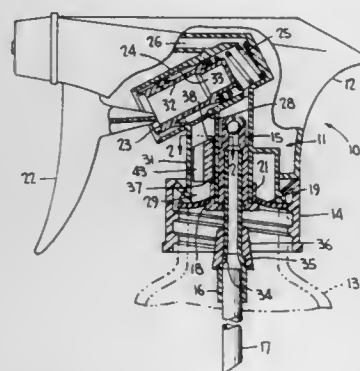
Thomas Hohmann, Hemer, and Ingo Schäfer, Lüdenscheld, both of Germany, assignors to Calmar Inc., City of Industry, Calif.

Continuation-in-part of Ser. No. 848,030, Apr. 28, 1997, Pat. No. 5,738,252. This application May 22, 1997, Ser. No. 861,624

Int. Cl.⁶ B67D 5/40

U.S. Cl. 222—376

6 Claims



1. A manually actuated liquid pump sprayer capable of spraying during pumping in an upright position and in an inverted position, comprising a pump body having means for mounting the body to a container of liquid to be dispensed, said body having a pump chamber, means defining a primary liquid inlet passage extending to said chamber and means defining a liquid discharge passage extending from said chamber, the sprayer having a container vent passage including a vent port establishing communication between an interior of the container and the atmosphere during operation of the sprayer in the upright position, an auxiliary liquid inlet passage including an inlet port extending between the interior of the container at an upper end thereof and said primary passage, the improvement wherein a slider valve is mounted on said primary inlet passage means for sliding movement for blocking the inlet port in the upright position, and a second slider valve within said pump body for blocking the vent port in the inverted position.

5,775,549

SPRAY PACKAGE AND PROCESS FOR PRODUCING THE SAME

Vincent De Laforcade, Rambouillet, France, assignor to L'Oreal, Paris, France

Filed Mar. 13, 1996, Ser. No. 596,925

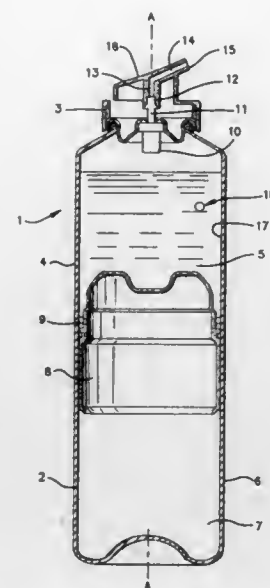
Claims priority, application France, Mar. 15, 1995, 95 03012

Int. Cl.⁶ B67D 5/42

U.S. Cl. 222—389

15 Claims

11. A packaging (1) having a longitudinal axis, comprising a cylindrical internal wall (17) and an external wall, and a piston (8) sliding in the packaging and having an annular sealing joint (9) which is in sealing contact with said internal wall; the improvement comprising annular grooves (18) perpendicular to said longitudinal axis and disposed in said internal wall to insure sealing between said sealing joint and said internal wall, said grooves



being spaced apart from each other by no more than 1,000 µm and having a depth no greater than 100 µm.

5,775,550

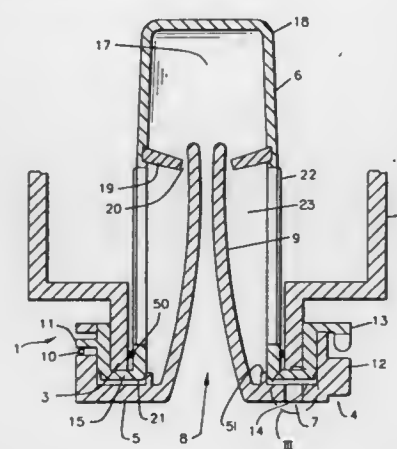
GRAVITY DISPENSER WITH IMPROVED SHUT-OFF FEATURE

Duncan M. Toll, 54 Cobbs Mill Rd., Wilton, Conn. 06897
Filed Jun. 30, 1995, Ser. No. 497,658

Int. Cl.⁶ B67D 3/00

U.S. Cl. 222—481.5

11 Claims



1. A flow control apparatus for use with a closed container, for controlling the dispensing of a fluid at a predetermined flow rate, comprising:

- (a) a first part, the first part including a dispensing orifice and a first surface, the dispensing orifice adapted to be placed in communication with fluid contained within the container, the first part further comprising an air inlet orifice adapted to be placed in communication with the atmosphere; and
- (b) a second part, the second part forming a chamber, the chamber being in fluid communication with air inlet orifice and comprising an air outlet, the second part further comprising a second surface axially movable relative to the dispensing orifice, the second surface being located axially above the first surface, the first and second surfaces cooperating to close the dispensing orifice when the first and second surfaces contact one another, the second surface comprising a projection located in an area above the dispensing orifice.

5,775,551

CAULKING NOZZLE

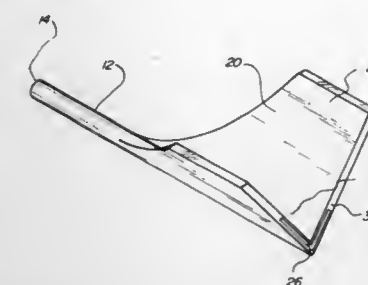
Gordon John Torsden, 747 Lewelling Blvd. #18, San Leandro, Calif. 94571

Filed Jul. 26, 1996, Ser. No. 686,515

Int. Cl.⁶ B67D 25/48

U.S. Cl. 222—567

1 Claim



1. A caulking nozzle for caulking a ninety degree angle corner comprising, in combination:

- an elongated cylindrical tube having an open first end and a second end, the open first end dimensioned for being pushed within an opening of a caulk tube for receiving filler therefrom;
- a pair of planar side walls, each of the side walls having an upper end portion and a lower end portion, each lower end portion integral with each other with the pair of side walls in an orthogonal relationship to each other, the lower end portions integral with the second end of the elongated tube, each lower end portion having a channel formed therein, each channel having a first end portion and a second end portion, each first end portion extends within the second end of the elongated tube at a forty-five degree angle for allowing the filler to be properly received by the channels, each second end portion opening out distal ends of the lower end portions for distributing the filler in a 90 degree corner, the channels each having a length less than 1/2 that of the corresponding side wall, the pair of planar side walls having lengths slightly less than a length of the elongated tube.

5,775,552

POURING SPOUT

Fritz-Peter Pleschitschnigg, Duisburg, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
PCT No. PCT/DE95/01266, § 371 Date Apr. 7, 1997, § 102(e)
Date Apr. 7, 1997, PCT Pub. No. WO96/11078, PCT Pub. Date Apr. 18, 1996

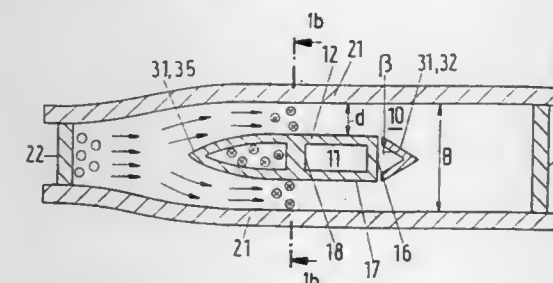
PCT Filed Sep. 7, 1995, Ser. No. 817,320

Claims priority, application Germany, Nov. 7, 1994, 44 36 990.5

Int. Cl.⁶ B22D 11/10

U.S. Cl. 222—607

12 Claims



1. A pouring spout for delivering molten steel into a continuous casting mold having transverse sides and longitudinal sides defining a maximum mold breadth, said spout having means for connection at one end to a casting vessel and the other end having an

opening defined therein for immersion into the molten steel in the mold, said pouring spout comprising:

- an outer spout wall including longitudinal sides and transverse sides, the longitudinal sides of said outer spout wall being substantially parallel to the longitudinal sides of the mold regardless of an immersion depth of said pouring spout into the molten steel in the mold; and
- form elements being disposed in a region between the transverse sides of said outer spout wall and the transverse sides of the mold and facing the transverse sides of the mold so that said form element provide a minimum resistance a horizontal flow of the molten steel and casting powder floating thereon.

5,775,553

INDICATOR ATTACHMENT MECHANISM

David J. Marshall, Bulleen, Australia; Roland Harmer, Centereach, and Stanley F. Gouldson, Northport, both of N.Y., assignors to Spotless Plastics Pty. Ltd., Australia

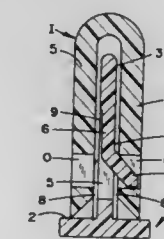
Continuation-in-part of Ser. No. 595,757, Feb. 2, 1996, abandoned. This application Aug. 1, 1996, Ser. No. 688,994

Claims priority, application Australia, Feb. 2, 1995, PN0888

Int. Cl.⁶ A47G 25/14

U.S. Cl. 223—85

25 Claims



1. A molded plastic hanger having an indicator attachment device, said hanger having a hook formed with an upstanding web to be received within a downwardly opening cavity of a molded plastic indicator, and attachment means formed on said upstanding web to engage and releasably.

5,775,554

SPRING LOADED CAPTURE HANGER

Arthur F. Taylor, 528 Broward Rd., Jacksonville, Fla. 32218

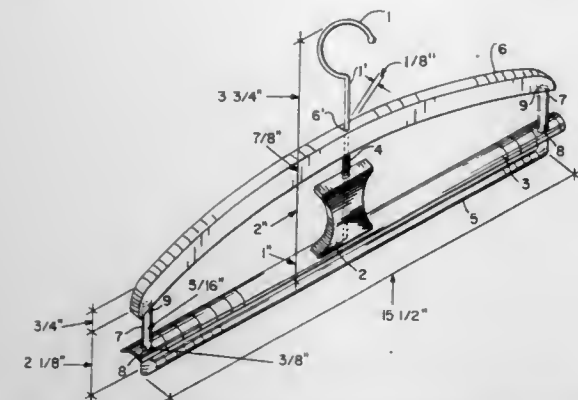
Continuation-in-part of Ser. No. 395,856, Feb. 28, 1995, abandoned. This application Jan. 27, 1997, Ser. No. 789,636

Int. Cl.⁶ A47G 25/49;25/18

U.S. Cl. 223—96

20 Claims

2. A clothes hanger comprising an elongate support member having opposite end portions and an elongate hanger member having opposite end portions, a pair of spaced post members, each said post member being mounted between one said end portion of said support member and one said end portion of said hanger member to space said support and hanger members apart, an elongate engaging member having opposite end portions, each said end portion of said engaging member having a passageway there-through, said engaging member being slidably mounted on said posts disposed in respective said passageways between said support and hanger members, biasing means attached between said support member and said engaging member for forcing said engaging member into contact with said hanger member to grasp articles of clothing placed therebetween, said engaging member including lifting means for moving said engaging member against said



biasing means to provide space between said engaging and hanger members to permit ready removal of articles of clothing therefrom and attachment means mounted to one of said members for suspending said hanger vertically.

5,775,555 SINGLE ARM HOLDER AND BRACKET FOR BICYCLE RACK

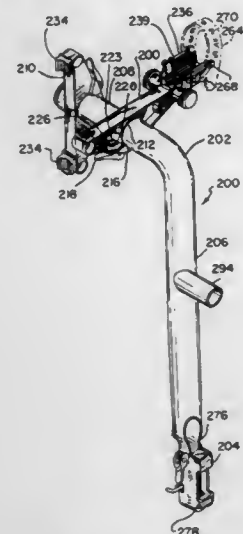
John M. Bloemer, Madison, Wis.; John M. Kaloustian, Northville, Mich., and Todd W. Lassanske, Ridgeway, Wis., assignors to Graber Products, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 525,233, Sep. 8, 1995, abandoned, which is a continuation-in-part of Ser. No. 392,547, Feb. 17, 1995, Pat. No. 5,573,165. This application Dec. 7, 1995, Ser. No. 568,660

Int. Cl.⁶ B60R 9/10; 9/12; 9/06

U.S. Cl. 224—531

11 Claims



1. A recreational equipment carrier for attachment to a vehicle comprising:

- a support member which has a first segment which extends upwardly with respect to the vehicle and a second segment which extends horizontally and rearwardly from the vehicle and defines an axis along which the second segment extends;
- a bracket which is pivotally mounted to the support member second segment to pivot about the second segment in a plane perpendicular to the defined axis;
- a first means for connecting an article of recreational equipment to the bracket, wherein the bracket and the connected article of recreational equipment are pivotable together on the support member second segment; and
- means for fixing the bracket at a desired orientation on the support member second segment;
- a brace which is releasably connected to the first segment of the support member, wherein the brace has means for attachment to a vehicle trailer hitch; and

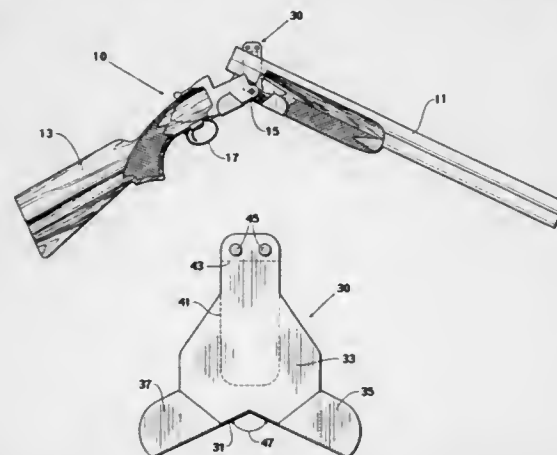
f) a pivotable clamping arm which is mounted to a pin which extends through the support member first segment and the brace, wherein the clamping arm has cam portions such that pivoting of the clamping arm selectably clamps the brace to the first segment, and unclamps the first segment to allow rearward pivoting of the support member with respect to the brace.

5,775,556 OPENED SHOTGUN HOLSTER

Bruce L. Brandow, Mayville, N.Y., assignor to Barbara J. Bennett, Westfield, N.Y.
Filed Mar. 14, 1997, Ser. No. 818,734
Int. Cl.⁶ A45F 5/00

U.S. Cl. 224—270

10 Claims



1. For use with a shotgun having a barrel portion and a stock portion pivotally connected to permit manipulation of the shotgun between a closed condition in which the portions are in substantially straight alignment and an opened condition in which the portions are in obtuse alignment, a holster for supporting the shotgun above the ground in the opened condition at the side of a shooter comprising a seat for supporting the shotgun, sidewalls extending upwardly from said seat and spaced to receive the pivotally connected barrel and stock portions therebetween so as to prevent the shotgun from sliding laterally off said seat and means on one of said side walls for mounting the holster proximate the waist of the shooter so as to support the shotgun above the ground, said seat having a front plate section for supporting the barrel portion of the shotgun and a rear plate section for supporting the stock portion of the shotgun, said front and rear plate sections of said seat lying in intersecting planes extending downwardly at an obtuse angle therebetween from a line of intersection thereof for supporting the barrel and stock portions of the shotgun at approximately said obtuse angle.

5,775,557 ARRANGEMENT FOR CARRYING A CRAFT ON A VEHICLE ROOF

Jan-Ivar Arvidsson, Hillerstorp, Sweden, assignor to Industri Ab Tizule, Hillerstorp, Sweden

PCT No. PCT/SE92/00869, § 371 Date Dec. 18, 1991, § 102(e) Date Dec. 18, 1991, PCT Pub. No. WO93/11969, PCT Pub. Date Jun. 24, 1993

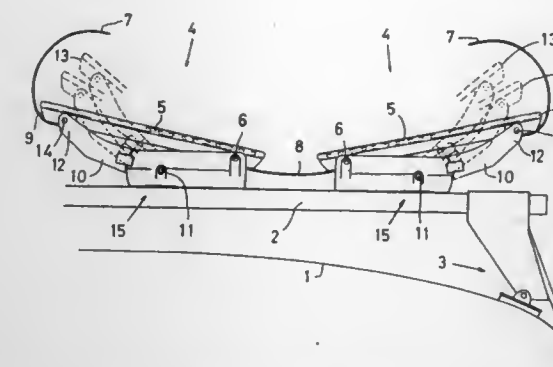
Continuation of Ser. No. 244,792, Jun. 10, 1994, Pat. No. 5,516,017. This PCT application Dec. 15, 1992, Ser. No. 560,875

Int. Cl.⁶ B60R 9/00; 9/042

U.S. Cl. 224—310

8 Claims

1. An arrangement for carrying a craft such as a kayak or a surfboard, comprising:



a carrier bar extending across a vehicle roof; at least one holder for engagement with said carrier bar and having fixing means for fixing said holder in a selected position along said carrier bar; at least one support member for the craft, said support member being pivotal about a shaft extending lengthwise of the vehicle; clamping means for clamping the craft to said support member; said support member connected to an arm, said arm being pivotally fastened to said holder at a pivot axis, said pivot axis being horizontal and oriented substantially lengthwise of the vehicle; said fixing means having a fixing member movable relative to said holder so that said fixing member is shiftable between a fixing position engaging said carrier bar and an open position in which said holder is movable along said carrier bar, and said fixing member being shiftable between said fixing position and said open position by said arm.

5,775,558 HARNESS-TYPE SECURING SYSTEM FOR PERSONAL EQUIPMENT

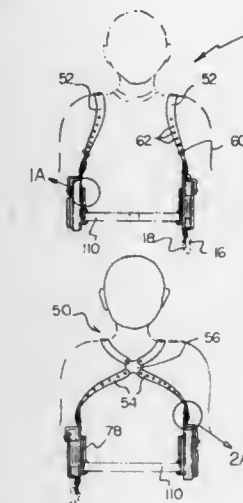
Isabella Montalbano, 1321 Dawsberry Way, New Port Richey, Fla. 34655

Filed Oct. 23, 1996, Ser. No. 736,345

Int. Cl.⁶ A45F 5/00

U.S. Cl. 224—627

13 Claims



8. A harness type securing system adapted for use in association with personal equipment comprising:

a harness assembly comprising at least two front straps, at least two rear straps and a central strap coupler, each strap having an inboard end and an outboard end, each strap including adjustment means, the inboard ends of each strap being coupled to the central strap coupler, in an operative orientation, a user positioning the harness assembly upon the user's

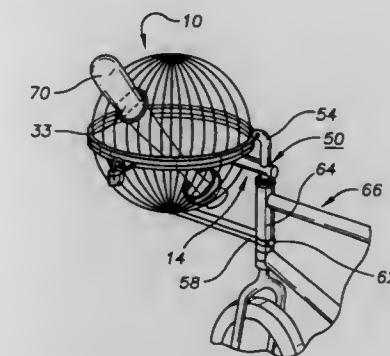
torso, the adjustment means of each strap comprising a plurality of spaced holes and cooperatively couplable rivets; and at least two pouches, each pouch having at least one compartment and including securement means to firmly retain personal objects therein, the securement means of each pouch including a releasably couplable snap, each pouch being couplable to the harness assembly to enable users to carry personal equipment in a suspended orientation from the harness assembly wherein two pouches being couplable to the harness at one time, the harness assembly including two front straps and two rear straps, in an operative orientation, a user positioning the harness assembly upon the user's torso with the front straps extending over the user's shoulder's and across the user's chest, the rear straps extending downwardly and outwardly along the user's back, wherein one of the pouches is a cellular telephone pouch formed in a generally rectangular configuration with a front face, a rear face, an interior compartment, a lower loop and two elastic side sections, the front face having an upper extent including a snap coupler, the rear face including two upper horns each having an aperture, a securing strip being coupled to the rear face between the upper horns, the securing strip having an outboard end including a snap coupler, a pager holder formed in a generally rectangular configuration and including a rectangular shaped aperture, the pager holder being coupled through the lower loop, a belt securing strap having a free outboard end and an inboard end coupled to the rear face of the pouch, the belt securing strap having about twice the length of the pouch, the inboard and outboard ends each including pile type fasteners, in an operative orientation a user positioning a cellular telephone within the pouch and securing it in place by coupling the securing strap to the front face, a pager being couplable to the pager holder by fastening the rear clip of the pager through the aperture of the pager holder.

5,775,559 BICYCLE BASKET ASSEMBLY

Joseph M. Mechanic, and Victoria Mechanic, both of 4987 Oldham St., Sarasota, Fla. 34238
Filed Jun. 5, 1997, Ser. No. 869,673
Int. Cl.⁶ B62J 7/00

U.S. Cl. 224—434

16 Claims



1. A bicycle basket assembly comprising:

a two-part, spherically-shaped clamshell cage assembly; said clamshell cage assembly including a lower hemisphere cage section that is hingedly attached to an upper hemisphere cage section; said lower hemisphere cage section including a lower circular opening, a circular-shaped lower rim portion and a lower locking hasp member; said upper hemisphere cage section including an upper circular opening, a circular-shaped upper rim portion and an upper locking hasp member; an upper cage mounting bracket secured to said lower hemisphere cage portion; and a lower cage mounting bracket secured to said lower hemisphere cage portion wherein each said bracket being configured to suspend said cage assembly from a bicycle.

5,775,560

MULTI-FUNCTIONAL, HITCH MOUNTED CARRYING APPARATUS

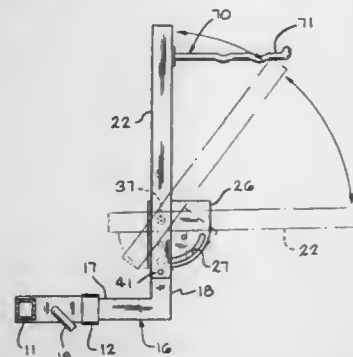
James B. Zahn, Midland; Paul B. Knight, Kawkawlin, and Larry D. Zahn, Davisburg, all of Mich., assignors to Hosco Incorporated, Kawkawlin, Mich.

Filed Feb. 18, 1997, Ser. No. 801,745

Int. Cl.⁶ B60R 9/06; 9/10; 9/055

U.S. Cl. 224—524

12 Claims



1. A hitch mounted multipurpose carrying apparatus for connecting to a vehicle, comprising a hitch member for connection to a vehicle hitch positioned rearwardly in the center rear of the vehicle along the transverse axis of the vehicle and a bumper positioned along the rear of the vehicle, said vehicle hitch having a center standard receiver opening, a multipurpose mounting platform connected to the hitch member, said hitch member adapted to be positioned within said center standard receiver opening, said hitch member comprising a one-piece L-shaped tubular member having a substantially horizontal first leg for connection to said vehicle hitch and a second substantially vertical leg extending upwardly from and substantially planar with said first leg such that an upper end of said second leg lies at a level proximate to the level of the vehicle bumper, said multipurpose mounting platform pivotably mounted to said second leg below the upper end thereof for carrying an accessory, said mounting platform being mounted at an elevation higher than said first leg, whereby a user can connect the carrying apparatus without crawling under said vehicle hitch or said carrying apparatus, said mounting platform pivoting between a vertical position and a horizontal position and lock means for selectively securing said mounting platform in either a fixed vertical accessory position or a fixed horizontal accessory position, and attachment means for removably attaching cargo carrying accessories to said mounting platform.

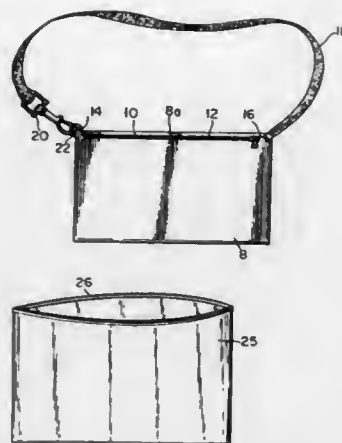
5,775,561

WATERPROOF SWIMMING POUCHLinda Kennedy, P.O. Box 680398, Park City, Utah 84068
Division of Ser. No. 183,918, Jan. 19, 1994, Pat. No. 5,645,205, which is a continuation of Ser. No. 803,128, Dec. 4, 1991. This application May 30, 1997, Ser. No. 866,917Int. Cl.⁶ A45F 3/00

U.S. Cl. 224—676

11 Claims

1. A method of carrying personal belongings such as cash, a watch, credit cards, a wallet, and the like and of keeping the personal belongings dry while engaging in water activities, using a lightweight waterproof pouch for carrying personal belongings in a wet environment, said pouch comprising an enclosure of comfortable size formed of flexible material, the enclosure having an upper end portion, and first and second side portions, an opening formed in the upper end portion of the enclosure, closure means formed at the opening in the upper end portion of the enclosure for securely closing the opening when desired, an inner pouch liner for insertion into said enclosure, the inner pouch liner being formed of a waterproof flexible material and having an upper end portion, an opening in the upper end portion of the inner pouch liner,



resealable interlocking closure means formed at the opening in the inner pouch liner for closing the opening in the inner pouch liner when desired, for forming a watertight compartment inside the inner pouch liner, and for keeping the personal belongings dry, and a flexible strap mounted on the enclosure for holding the pouch around a wearer's body, comprising the steps of inserting personal belongings into the inner pouch liner, closing the resealable interlocking closure means of the inner pouch liner to form a watertight compartment in which the personal belongings are being held, securing the closed inner pouch liner in the enclosure by closing the closure means of the enclosure, and securing the enclosure around the waist of a wearer using the flexible strap.

5,775,562

CONVEYING TABLE WITH STRAIGHTENING DEVICE FOR CONTINUOUSLY CONVEYING A DEFORMABLE MATERIAL STRIP

Andreas Jungk, Wedemark, and Gerd Brandes, Hemmingen, both of Germany, assignors to Continental Aktiengesellschaft, Hanover, Germany

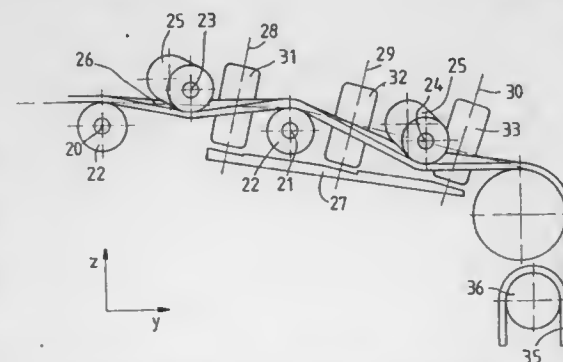
Filed Nov. 1, 1996, Ser. No. 743,116

Claims priority, application Germany, Nov. 3, 1995, 195 41 095

Int. Cl.⁶ B65H 20/00; 20/00; 23/32; B29C 43/22

U.S. Cl. 226—21

10 Claims



1. A conveying table for continuously conveying a strip of plastically deformable material to a processing device, said conveying table comprising: a straightening device for straightening a lateral limiting edge of a strip conveyed on said conveying table in a constant conveying direction within said straightening device; said straightening device comprising a device for changing a lateral position of cross-sectional strip areas, extending perpendicular to said conveying direction and being sequentially

arranged in said conveying direction, relative to one another and perpendicular to said conveying direction, and a device for aligning the cross-sectional strip areas with one side thereof, delimiting one side of said strip, in a line extending parallel to said conveying direction in a lateral position at said conveying table, said lateral position adjustable relative to a width of said conveying table; wherein said device for changing comprises a means for displacing the strip laterally relative to said conveying direction; wherein said means for displacing comprise means for deflecting the strip from and returning the strip into a conveying plane, wherein said means for deflecting and returning comprises at least one axle and conveying elements rotatable connected to said at least one axle, wherein said at least one axle is positioned slantedly to at least one plane selected from said conveying plane and a plane perpendicular to said conveying direction.

5,775,563

LEADER TRANSPORT APPARATUS IN AUTOMATIC FILM PROCESSING APPARATUS

Masayuki Kojima, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama-ken, Japan

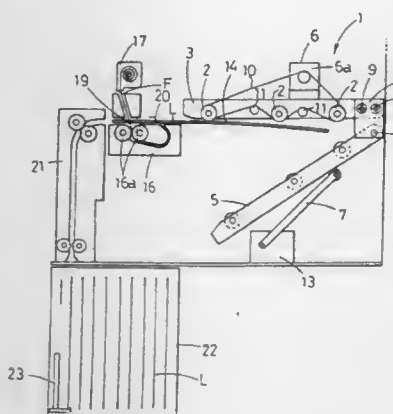
Filed Feb. 20, 1997, Ser. No. 803,348

Claims priority, application Japan, Feb. 28, 1996, 8-041560

Int. Cl.⁶ G03B 1/56; B65H 20/00

U.S. Cl. 226—92

8 Claims



1. A leader transport apparatus for an automatic film processing apparatus, comprising: a fixed base having transporting rollers; a movable base having transporting rollers and being supported at one end thereof by a hinge so that the movable base can be arbitrarily moved between an open position and a closed position, said movable base and said fixed base being disposed so that the transporting rollers of the movable base confront the transporting rollers of the fixed base when the movable base is in the closed position; a support member for supporting a bottom surface of the movable base, said support member being movable so as to enable the movable base to move downward into the open position; and a driving unit for driving the transporting rollers of at least one of the fixed base and the movable base so that a leader and an undeveloped film can be transported while being sandwiched between the transporting rollers of the fixed base and the transporting rollers of the movable base.

5,775,564

METHOD AND APPARATUS FOR REDUCING WEAR OF A BELT MANTLE OF AN EXTENDED-NIP ROLL

Antti Ilmarinen, Jyväskylä, Finland, assignor to Valmet Corporation, Helsinki, Finland

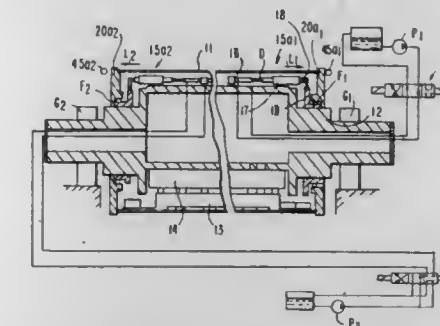
Filed Jan. 16, 1997, Ser. No. 783,334

Claims priority, application Finland, Oct. 25, 1996, 964296

Int. Cl.⁶ B65H 20/00; D21H 11/00; D21F 3/00; 11/00

U.S. Cl. 226—171

26 Claims



1. A method for reducing wear of a resilient belt mantle of an extended-nip roll including a stationary central axle, bearings for revolvingly supporting the belt mantle on the central axle, a loading shoe arranged in the belt mantle, and loading means arranged on the central axle for pressing the loading shoe toward a backup roll arranged in nip-defining relationship with the extended-nip roll, comprising the steps of: coupling a first set of at least one actuator to a first end of the belt mantle, said at least one actuator in said first set being actuatable to apply a force to the first end of the belt mantle such that the belt mantle is stretchable in a first direction, coupling a second set of at least one actuator to a second end of the belt mantle, said at least one actuator in said second set being actuatable to apply a force to the second end of the belt mantle such that the belt mantle is stretchable in a second direction opposite to said first direction, controlling the actuation of said at least one actuator in said first set and said at least one actuator in said second set such that the belt mantle is alternately stretched in the first direction and the second direction, said step of controlling said at least one actuator in said first set and said at least one actuator in said second set comprises the steps of: locking the first end of the belt mantle when said at least one actuator in said second set is actuated and locking the second end of the belt mantle when said at least one actuator in said first set is actuated.

5,775,565

APPARATUS FOR FEEDING ONE OR MORE FIBRE THREADS

Kjell Sand, Västra Frölunda, Sweden, assignor to Aplicator System AB, Sweden

PCT No. PCT/SE95/00841, § 371 Date Jan. 21, 1997, § 102(e) Date Jan. 21, 1997, PCT Pub. No. WO96/02474, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 11, 1995, Ser. No. 776,462

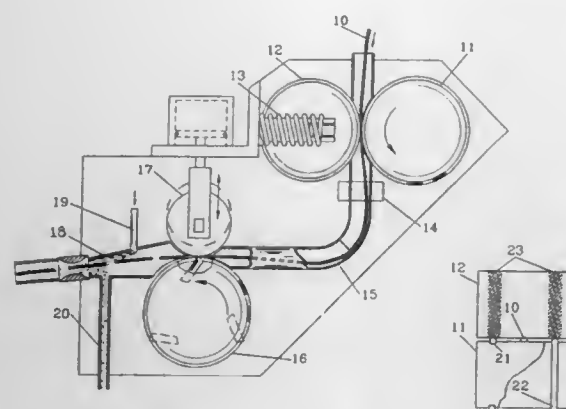
Claims priority, application Sweden, Jul. 18, 1994, 9402519

Int. Cl.⁶ B65H 20/00

U.S. Cl. 226—187

8 Claims

1. Apparatus for feeding at least one fiber thread at an adjustable feed rate, the apparatus comprising: at least two synchronously driven feed rollers each having a cylindrical mantle surface, the rollers being so positioned adjacent each other that their mantle surfaces form a nip between the two feed rollers for the fiber thread; one of the rollers being supported for being motor driven and the other roller being supported for being a co-rotating roller for co-rotating with the motor driven roller;



the surface of at least one of the motor driven roller and the co-rotating roller having a peripheral slot in the surface, an O-ring of an elastic incompressible material being supported in the slot, the slot in the surface of the one roller and the O-ring therein being shaped so that the O-ring bears on the mantle surface of the other of the motor driven roller and co-rotating roller to transmit the rotary motion between the driven and co-rotating rollers by means of friction transmitted through the O-ring.

5,775,566

MACHINE FOR THE ATTACHMENT OF BUTTONS, RIVETS OR THE LIKE, PREFERABLY TO ARTICLES OF CLOTHING

Karl-Josef Kochs, Baesweiler, and Paul Hagmann, Stolberg, both of Germany, assignors to William Prym GmbH & Co. KG, Stolberg, Germany
PCT No. PCT/EP94/02962, § 371 Date Mar. 18, 1996, § 102(e)
Date Mar. 18, 1996, PCT Pub. No. WO95/08278, PCT Pub. Date Mar. 30, 1995

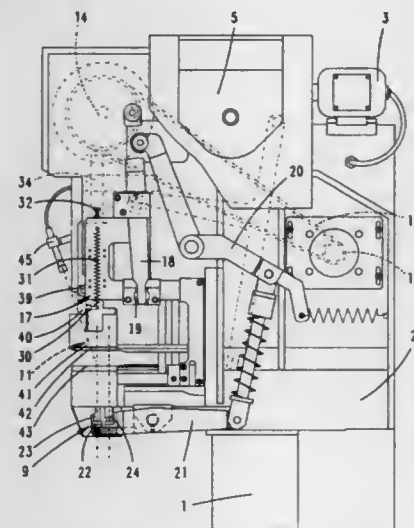
PCT Filed Sep. 6, 1994, Ser. No. 617,924

Claims priority, application Germany, Sep. 18, 1993, 43 31 783.9

Int. Cl.⁶ A41H 37/02

U.S. Cl. 227—18

11 Claims



1. A machine for the attachment of a fastener comprising buttons, rivets and the like, respectively, preferably to articles of clothing, the fastener having an upper portion and a lower portion, the machine comprising an upper clamping jaw and a lower clamping jaw for holding material therebetween, a ram for punching the material by actuation of the ram, a tool slide having an upper tool and a lower tool, and a tool carrier having a control flank; and

wherein after movement of the tool slide by actuation of the ram by an approaching of the upper and lower tools towards one another, fastener portions located in the tool slide are in form-locked connection to one another;
upon a horizontal displacement of the tool slide, said control flank of said tool carrier travels underneath a bracket of the upper clamping jaw, said upper clamping jaw forming a finger protection cage enabling vertical downward displacement of the upper tool; and
said control flank is inclined to induce a vertical displacement of said upper tool in response to the horizontal displacement of said tool slide.

5,775,567

APPARATUS FOR WIREBONDING USING A TUBULAR PIEZOELECTRIC ULTRASONIC TRANSDUCER

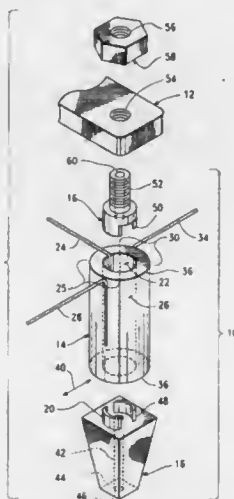
Jiann-Chang Lo, and Michael Servedio, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 14, 1996, Ser. No. 616,128

Int. Cl.⁶ B23K 20/10

U.S. Cl. 228—1.1

19 Claims



1. Apparatus for performing wirebonding operations on a circuit chip, wherein said apparatus comprises:
tubular piezoelectric actuator;
mounting means for mounting said actuator from a proximal end thereof to extend in an engagement direction;
a bonding tip attached to a distal end of said actuator, extending in said engagement direction therefrom;
a passageway, formed by internal surfaces of said mounting means, said actuator, and said bonding tip, to extend there-through, for supplying bonding wire therethrough; and
actuator drive means for applying an electrical signal at an ultrasonic frequency to said actuator to cause said distal end of said actuator to vibrate at an ultrasonic frequency.

5,775,568

WAVE SOLDER METHOD FOR ATTACHING COMPONENTS TO A PRINTED CIRCUIT BOARD

Jess Asla; Roy Lange, and Ron Despain, all of Boise, Id., assignors to Micron Custom Manufacturing Services, Inc., Nampa, Id.

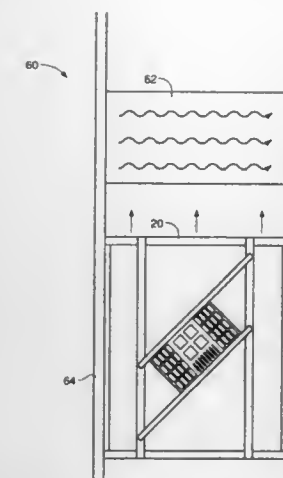
Continuation of Ser. No. 324,087, Oct. 14, 1994, Pat. No. 5,540,376. This application Jul. 26, 1996, Ser. No. 686,781

Int. Cl.⁶ H05K 3/34

U.S. Cl. 228—180.1

11 Claims

1. A method for electrically coupling an electronic component to a circuit board comprising the following steps:
providing at least one electronic component having at least one row of conductive leads aligned in a first direction;



providing a solder wave moving in a generally second direction; moving said electronic component across said solder wave in a third direction generally perpendicular with said second direction, wherein said first direction forms an angle of between about 30° and about 60° with said second direction.

5,775,569

METHOD FOR BUILDING INTERCONNECT STRUCTURES BY INJECTION MOLDED SOLDER AND STRUCTURES BUILT

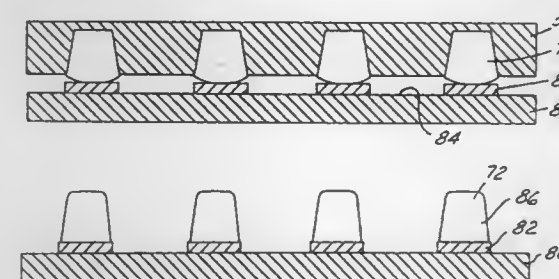
Daniel George Berger, Wappingers Falls, N.Y.; Guy Paul Brouillette; David Hirsch Danovitch, both of Quebec, Canada; Peter Alfred Gruber, Mohegan Lake, N.Y.; Rajesh Shankerlal Patel, Fremont, Calif.; Stephen Roux, Purdys, N.Y.; Carlos Juan Sambucetti, Croton-on-Hudson, N.Y., and James Louis Speidell, Poughuag, N.Y., assignors to IBM Corporation, N.Y.

Filed Oct. 31, 1996, Ser. No. 741,453

Int. Cl.⁶ H05K 3/34

U.S. Cl. 228—254

16 Claims



1. A method of forming solder bumps on an electronic structure comprising the steps of:

providing a mold made by a sheet of a mold material having a thickness greater than that of the solder bumps to be formed, said mold material having sufficient optical transparency so as to allow the inspection of a solder material subsequently filled into mold cavities formed in said material, and a coefficient of thermal expansion substantially similar to that of a substrate that the mold will be mated to,
forming a multiplicity of mold cavities in said sheet of mold material,
filling said multiplicity of mold cavities with a solder material, cooling said mold to a temperature sufficient to solidify said solder material in said multiplicity of mold cavities,
positioning said mold juxtaposed to and aligning with said electronic structure with said multiplicity of mold cavities facing said structure, and
heating said mold and said electronic structure together to a temperature sufficiently high such that said solder material transfers onto said electronic structure.

5,775,570

FOOD CONTAINER ADAPTABLE FOR HOLDING A DRINK CUP

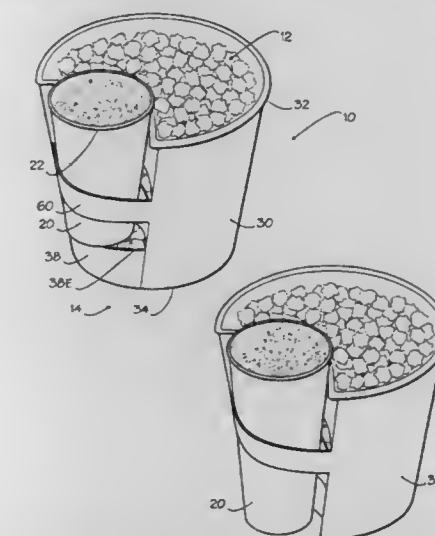
Hong R. Kim, 4340 Campus Dr., Newport Beach, Calif. 92660

Filed Apr. 8, 1997, Ser. No. 835,013

Int. Cl.⁶ B65D 5/489;3/24

U.S. Cl. 229—4.5

10 Claims



1. A food container device for use with at least one drink cup, the device comprising: a generally circular sidewall providing a top and a bottom annular lips, the lips defining a top and a bottom respective openings into the container; a disk shaped bottom wall joined with the sidewall and positioned for covering the bottom opening; the sidewall providing at least one cup holding enablement, each of the at least one cup holding enablements comprising: a first and a second linear score lines extending between the top and the bottom lips for folding a minor portion of the sidewall inwardly;

a plurality of, spaced apart slits, each of the slits extending between the first and the second linear score lines for enabling at least one band portion of the minor portion of the sidewall to extend outwardly when the minor portion of the sidewall is folded inwardly, the outwardly extending band portion, and the inwardly folded minor portion of the sidewall, together, forming an encircling member for holding one of the at least one drink cup securely on the food container device.

5,775,571

AUTOMATIC POP UP, BULK BIN, MULTI-SIDED CONTAINER APPARATUS

Frederick E. Edelman, Yardley, Pa., assignor to Art Kraft Container Corporation, Tullytown, Pa.

Filed Aug. 26, 1996, Ser. No. 703,004

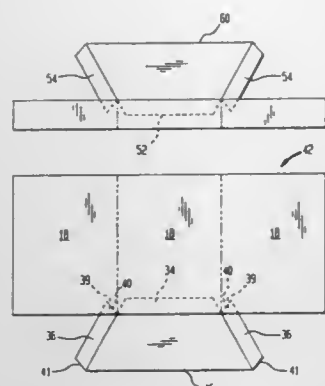
Int. Cl.⁶ B65D 5/12

U.S. Cl. 229—108.1

6 Claims

1. A container apparatus which can be stored in a flat state and popped up into an erected state, said apparatus comprising:

a multi-sided, sidewall section having a top, a bottom, an inside and an outside and including at least six sidewall panels separated by fold lines, each sidewall panel having a top, a bottom, an inside, an outside, and a pair of opposing sides;
a bottom section having at least six sides;
at least six tabs connected to said at least six sides of the bottom section respectively, each tab including a fold line adjacent to where it meets said bottom section, wherein at least two of said tabs are attachable tabs attachable to two of said sidewall panels respectively and the remaining at least four tabs are unattachable tabs;
attachment means for attaching said at least two attachable tabs to said sidewall panels.



wherein a portion of said each of said at least four unattached tabs lies inside of said sidewall section and another portion of the same unattached tab lies outside of said sidewall section when said container is in the flat state and wherein all of said unattached tabs automatically slide into the bottom of said sidewall section when said container is erected.

5,775,572

CARTON WITH CENTER PARTITION

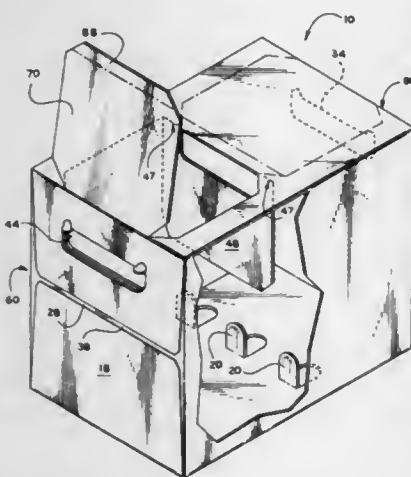
James R. Oliff, Douglasville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 5, 1997, Ser. No. 869,389

Int. Cl.⁶ B65D 5/4805

U.S. Cl. 229—120.03

10 Claims



1. A carton (10) comprising:

a tubular structure having a multiple-ply top wall wherein an outer-most ply (66) thereof has at least one removeable access panel (68, 70) and an inner-most ply (46) adjacent said outer-most ply (66) has a drop-down panel member (48) hingedly attached to said inner-most ply (46) and integrally formed with said inner-most ply (46), said drop-down panel member (48) having a configuration corresponding to said at least one removeable access panel (68, 70), wherein said at least one removeable access panel (68, 70) and said drop-down panel member (48) lie adjacent one another when the carton (10) is in a collapsed condition and said drop-down panel member (48) pivots to a substantially vertically position when the carton (10) is placed in an erected condition wherein a perimeter of said top wall remains multiple-ply.

5,775,573

COMPARTMENTALIZED DISPLAY TRAY WITH ERECTABLE PARTITIONS

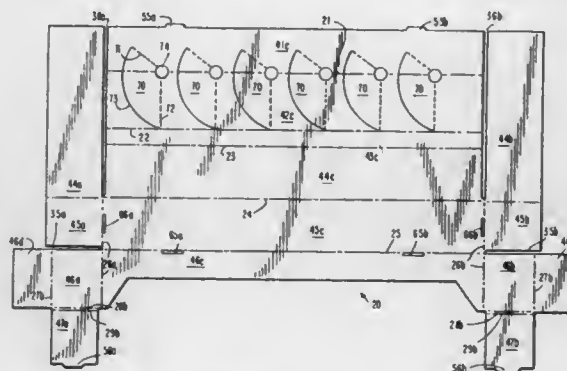
Michael J. Smith, Orangeburg, N.Y., assignor to Arrow Art Finishers, L.L.C., Princeton, N.J.

Filed Sep. 30, 1996, Ser. No. 723,827

Int. Cl.⁶ B65D 25/04

U.S. Cl. 229—120.14

13 Claims



1. A display tray comprising:

- a pair of generally planar shelf walls foldable about a fold line between an initial position in which said shelf walls are generally co-planar, and a final position in which said shelf walls are generally orthogonal to, and bound a space with, each other,
- an incision extending across said fold line between said shelf walls,
- a pair of radial crease lines, one in each said shelf wall, each crease line extending from said incision toward said fold line to bound therewith a respective sector portion in each said shelf wall,
- said sector portion in one of said shelf walls pivoting about said crease line in said one shelf wall during folding of said walls to overlie said one shelf wall in said final position,
- said sector portion in the other of said shelf walls pivoting about said crease line in said other shelf wall during said folding to extend in a generally erect state with said other shelf wall and constitute a partition that subdivides said space into respective compartments situated on opposite sides of said partition,
- a pair of generally planar side walls generally co-planar with said shelf walls in said initial position, and generally parallel to said partition in said final position,
- a pair of generally planar front and rear walls generally co-planar with said shelf walls in said initial position, and generally parallel to said other shelf wall in said final position,
- a generally planar base wall generally co-planar with said shelf walls in said initial position, and generally parallel to said one shelf wall in said final position, and
- a lock for releasably holding all of said walls in said final position.

5,775,574

SPLIT WALL CARTON

Simon Whitnell, Exton, Pa., assignor to Dopaco, Inc., Exton, Pa.

Filed Feb. 3, 1997, Ser. No. 790,866

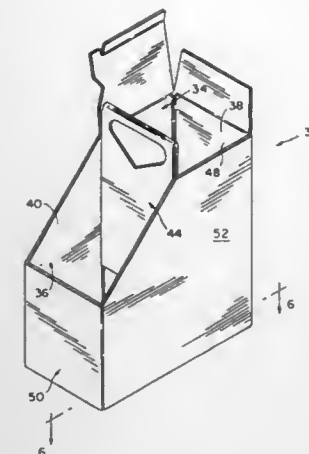
Int. Cl.⁶ B65D 5/486

U.S. Cl. 229—120.18

7 Claims

1. For use in the formation of a two-cell carton of rectangular cross-section with a transverse divider;

an elongate blank of foldable sheet material, said blank including a central front wall panel of predetermined length and having opposed side edges, first and second end wall panels integral with said opposed side edges with a fold line defined along each side edge between said front wall panel and the corresponding end wall panel, each of said end wall panels



having an outer side edge remote from said central front wall panel, first and second rear wall panels integral with the respective outer side edges of said first and second end wall panels with fold lines defined therealong, said first and second rear wall panels being of a combined length slightly greater than the length of said front wall panel wherein a co-planar positioning of the rear wall panels with a slight overlap will, in a formed carton, provide a rear wall of equal length to the length of said front wall panel, said first rear wall panel having an outer side edge remote from said first end wall panel, a divider panel integral with said outer side edge of said first rear wall panel with a fold line defined therebetween, said divider panel terminating adjacent a first outer edge of said blank, said second rear wall panel terminating at a second outer edge of said blank, said first end wall panel, said first rear wall panel and said divider panel having upper edges, a handle panel integral with said upper edge of said divider panel and extending co-planar thereto to an upper handle panel edge, a lid panel integral with said upper edge of said first rear wall panel immediately adjacent to and coplanar with said handle panel and extending upwardly from said rear wall panel and terminating in an upper lid panel edge substantially linearly aligned with said upper edge of said handle panel, said handle panel and said lid panel having adjacent side edges defined by a cut line therebetween, said front wall panel, end wall panels and rear wall panels have lower edges in a common line, said first rear wall panel and first end wall panel, and said front wall panel for a portion of the length thereof adjacent said first end wall panel being of equal height above said lower edges, said second end wall panel being of a lesser height than said first end wall panel, said front wall panel having an upper edge which is linearly aligned with the upper edge of the adjacent first end wall panel for said portion of the length of the front wall panel, said upper edge of said front wall panel being inclined downward from said portion of the length of the front wall panel to terminate at said second end wall panel, said second rear wall panel having an upper edge with a minor portion immediately adjacent said second outer edge of the blank aligned with the upper edge of the first end wall panel, and a major portion of said upper edge of said second rear wall panel being inclined downward toward and terminating at said second end wall panel, the inclined upper edge portions being opposed each other and defining an upwardly directed recess in said blank adapted to receive both the handle panel and the adjacent lid panel of a second duplicate blank positioned thereabove and inverted relative thereto.

5,775,575

BOX HAVING FLAP RETAINERS

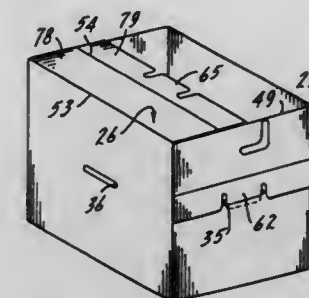
John G. Dorman, Holland, and Russell O. Blanchard, Zeeland, both of Mich., assignors to Batts, Inc., Zeeland, Mich.

Filed Jun. 6, 1996, Ser. No. 660,705

Int. Cl.⁶ B65D 43/24

U.S. Cl. 229—125

16 Claims



1. A box comprising:
a plurality of enclosing walls,
a bottom,
a flap extending from the upper end of one of said walls, said flap being connected to said one wall by a bend line at the junction between said flap and wall,
said flap having an outermost edge located distally from the junction between said flap and wall,
a gripping aperture in said one wall,
a tab formed in said flap,
said tab being defined by notches formed in the outermost edge of the flap and being formed in said flap in a location such that, when the flap is bent outwardly about its junction bend line to an open condition said tab is aligned with, and is directable by hand/finger pressure into the gripping aperture in said one wall
whereby said flap, when the box is in the open condition, is positioned closely adjacent the exterior surface of said one wall to thereby occupy a minimum space beyond the exterior surface of said one wall.

5,775,576

FLIP-TOP RECLOSABLE CARTON WITH REDUCED-WEIGHT LINER

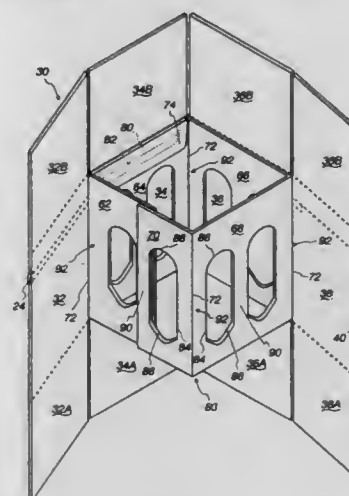
James L. Stone, Grand Rapids, Mich., assignor to Tenneco Packaging

Filed Jul. 19, 1996, Ser. No. 687,789

Int. Cl.⁶ B65D 5/56; 5/68

U.S. Cl. 229—225

17 Claims



1. A paperboard carton-liner assembly, comprising:

an outer carton including opposing top and bottom carton walls, opposing front and back carton walls, and opposing first and second side carton walls, said front carton wall and said side carton walls including an integral and continuous horizontal tear element for opening up said carton from a sealed form to form a lid hingedly connected to a base; and

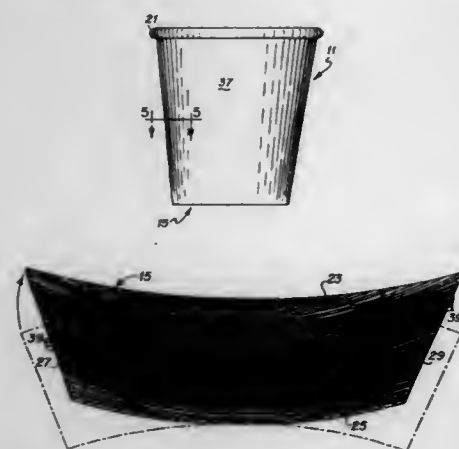
a liner disposed within said outer carton and including a front liner wall and opposing first and second side liner walls, said front liner wall being adjacent to said front carton wall, said first and second side liner walls being adjacent to said respective first and second side carton walls, each of said front liner wall and said side liner walls including a respective pair of stripped-out areas entirely encompassed by paperboard material.

5,775,577
DISPOSABLE INSULATED CONTAINER WITH MICROFLUTE STRUCTURE
Jack H. Titus, Middletown, Calif., assignor to Baldocci, Modena, Scherrer, Stanghellini Family Trust, and Titus, Calif.

Filed Oct. 15, 1996, Ser. No. 731,317
Int. Cl.⁶ B65D 3/22

U.S. Cl. 229—403

16 Claims



1. A disposable, insulated container comprising, an inner container structure having an upper end portion providing an open top, a lower end portion providing a closed bottom, and a generally conically extending side wall portion providing a closed side wall between the open top and the closed bottom, outer insulating wrap means extending both around and up and down the outer side of the side wall portion of the inner container structure for enabling the container to be held comfortably in the hand of a user when the container is filled with a liquid having temperatures up to or near the boiling point of water, adhering means adhering said outer insulating wrap means to the side wall portion of the inner container structure, said outer insulating wrap means comprising a microflute laminated structure having:

(a) a first corrugated laminate of microflute corrugations which are aligned so that the parallel extending ridges and depressions of the microflute corrugations are disposed substantially circumferentially around the side wall portion of the inner container structure, and

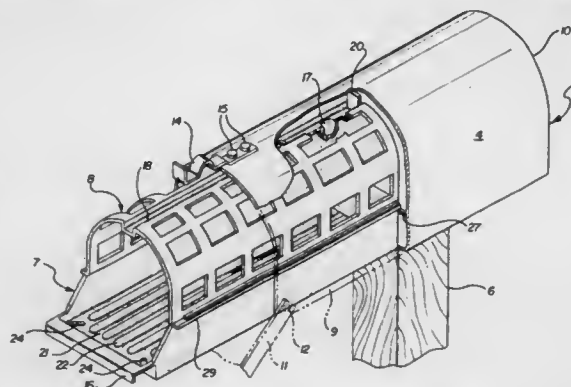
(b) a second, outer sheet laminate of thin flexible paper extending on the outer side of the outer insulating wrap means and presenting a substantially smooth outer surface for engagement by the hand of a user of the container, and wherein the size of the microflute corrugations, the generally circumferentially extending orientation of the microflute corrugations, and the thin thickness of the outer paper sheet

laminate enable the outer insulating wrap means to be wrapped and maintained in continuous, substantially uniform engagement with said side wall portion without breaking or collapsing of the corrugations.

5,775,578
MAILBOX SLIDABLE HOODED TRAY INSERT
Rupen P. Baxi, 45112 Kensington Rd., Utica, Mich. 48317, and Peter J. Backer, 1287 Johns Rd., Clinton, Ohio 44216
Filed Sep. 19, 1996, Ser. No. 715,863
Int. Cl.⁶ B65D 91/00

U.S. Cl. 232—17

4 Claims



1. A slidable hooded tray insert in combination with a rural mailbox having a bottom panel, a back panel and a U-shaped roof portion defining an enclosure with an entrance opening at one end thereof, and a door member having a door latch, and a roof latch attached to the U-shaped roof to make contact with said door latch, the door member pivotally mounted adjacent said entrance opening for movement between an open position permitting access to the enclosure through the entrance opening and a closed position covering the entrance opening, said slidable hooded tray insert comprising: a rectangular bottom wall section, an inverted U-shaped hood top piece extending downwardly attached to said bottom wall section, a first end wall extending upwardly from said bottom wall and transversely between said inverted U-shaped hood top piece and a second end wall extending upwardly from said bottom wall opposite said first end wall, and having a finger grip disposed on said second end wall, said finger grip normally forms inverted C-shape to said bottom wall, the inverted U-shaped hood top piece contains a groove for guiding the hooded tray insert smoothly in horizontal engagement in and out of said rural mailbox.

5,775,579
REFUSE AIRLOCK
Iwe Kardum, Neutoting, and Rudolf Ebner, Rattenkirchen, both of Germany, assignors to InnoRatio Aktiengesellschaft für Innovative umwelttechnische System I.Gr., Germany
Filed Jan. 30, 1996, Ser. No. 593,876
Int. Cl.⁶ B65D 91/00

U.S. Cl. 232—43.1

18 Claims

1. A refuse airlock (10) for use with refuse containers comprising:

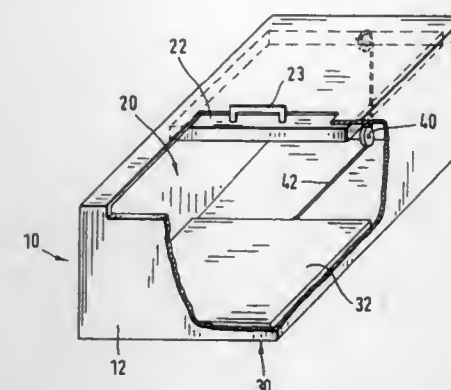
a refuse chamber of a predetermined volume;

an inlet (20) communicating with said refuse chamber;

a first inlet closure device (22) movably mounted in proximity to said inlet (20) for selectively opening and closing said inlet;

a second inlet closure device (24) movably mounted in proximity to said inlet (20) for selectively opening and closing said inlet (20) after an initial opening of said first inlet closure device (22);

an outlet (30) spaced from said inlet (20) and communicating with said chamber;



an outlet closure (32) movably mounted in proximity to said outlet (30) for selectively opening and closing said outlet (30);

means for preventing simultaneous opening of the inlet (20) and the outlet (30); and

at least one controllable interlock for selectively locking at least said second inlet closure device (24) in dependence on a payment calculation operation.

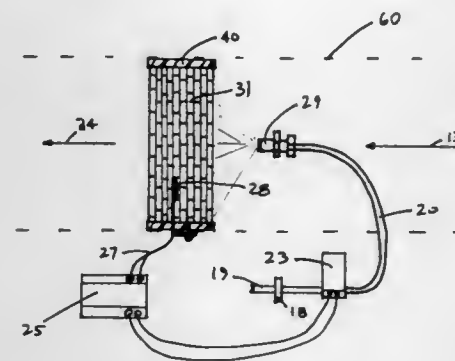
5,775,580
EVAPORATIVE COOLING SYSTEM
Timothy J. Sizemore, 2064 Silverfield Loop, Redding, Calif. 96002, and Bryan L. Redd, 6325 Borg Cir., Odgen, Utah 84403

Continuation-in-part of Ser. No. 504,509, Jul. 20, 1995, Pat. No. 5,695,117. This application Aug. 16, 1996, Ser. No. 700,633

Int. Cl.⁶ B01F 3/02; F25B 49/00

U.S. Cl. 236—44 E

18 Claims



1. A method of evaporatively conditioning a moving stream of air to modulate the moisture content thereof to achieve target values of moisture content and temperature therewithin, comprising the steps:

embedding at least one sensor to be surrounded by an evaporation pad through which the air stream is moving, the output of said sensor being predictably related to the moisture content of the air as it moves through the evaporation pad;

continuously monitoring the sensor output;

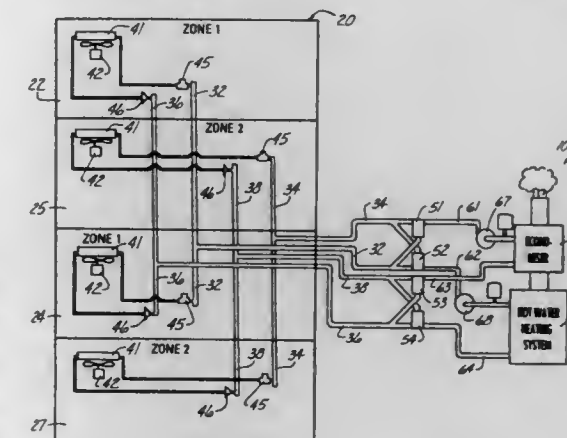
continuously analyzing the monitored output to determine whether and at what rate to add water to the air stream entering the pad, to urge the moisture content to a target value selected from between a target value which is less than 100% relative humidity without dripping of water out of the pad, and a target value which is at or beyond the condensation point with minimal dripping of water out of the pad;

introducing water into the stream entering the pad in accordance with the continuing analyses.

5,775,581
DUAL HEAT SOURCE HEATING SYSTEM
David P. Welden, North Indiana Ave., Iowa Falls, Iowa 50126
Filed Sep. 24, 1996, Ser. No. 719,247
Int. Cl.⁶ F24D 3/00

U.S. Cl. 237—8 R

13 Claims



1. A heating system for heating a building, said building including a first zone and a second zone to be heated, comprising:

a first heat source;

a second heat source;

first transferring means for transferring heat, wherein said first transferring means including means for transferring heat from said first heat source to said first building zone and wherein said first transferring means including means for transferring heat from said second heat source to said second building zone;

second transferring means for transferring heat, wherein said second transferring means including means for transferring heat from said first heat source to said second building zone and wherein said second transferring means including means for transferring heat from said second heat source to said first building zone;

means for utilizing said first transferring means and said second transferring means in an alternating manner;

wherein said first transferring means and said second transferring means utilizes hot water for the transferring of heat;

wherein said first heat source comprises a hot water boiler system; and

wherein said second heat source comprises a heating system which utilizes the recovered from said first heat source which is not transferred.

5,775,582
METHOD AND APPARATUS FOR REGULATING HEATER CYCLES TO IMPROVE FUEL EFFICIENCY
Jack Hammer, 2973 Brentwood Ct., Wantagh, N.Y. 11793
Filed Mar. 5, 1997, Ser. No. 811,867
Int. Cl.⁶ G05S 23/00; 23/24

U.S. Cl. 237—8 A

24 Claims

1. A method of improving heating system efficiency, in a heating system having:

a boiler,

a burner for heating the boiler,

a heat exchanger remote from the boiler for transferring heat to a space to be heated,

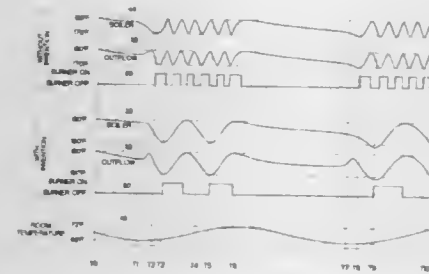
a fluid heat transfer medium for delivery of heat from the boiler to the heat exchanger,

an outflow line communicating the fluid heat transfer medium to said heat exchanger, and

an energy value sensor within the boiler for:

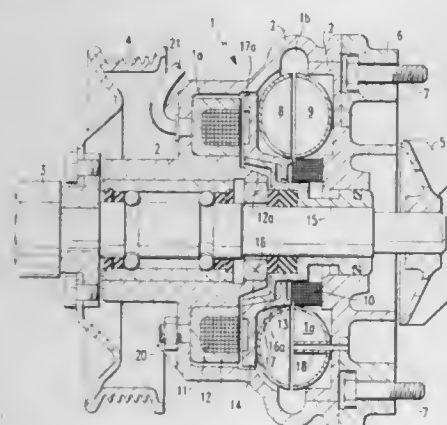
sensing a low energy at which the boiler requires more heat, firing said burner at said low energy,

sensing a maximum energy, and



terminating firing above the maximum energy, said method comprising:
sensing a firing signal from the boiler energy value sensor; and preventing the boiler energy value sensor from firing the burner: while
sensing an energy value of the outflow line at the boiler; monitoring the outflow energy value;
recording the outflow energy value at a first time of the firing signal; then
detecting a change of a predetermined outflow energy value, said change being an energy drop from the outflow energy value at the first time of the firing signal; and responding to the change by firing the burner.

5,775,583
HYDRODYNAMIC HEAT GENERATOR FOR A MOTOR VEHICLE
Andreas Braatz, Rutesheim, and Hans Hanke, Heuchlingen, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Apr. 27, 1995, Ser. No. 429,647
Claims priority, application Germany, Apr. 29, 1994, 44 15 031.8
Int. Cl.⁶ B60H 1/00; F01P 5/12
U.S. Cl. 237—12.3 B 5 Claims

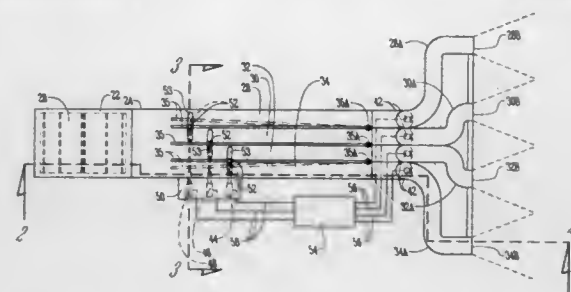


1. A hydrodynamic heat generator for a motor vehicle with an internal combustion engine having a cooling water circuit with a water circulating pump having a pump drive shaft driven by said internal combustion engine and including a pump housing part to

be mounted on said engine, said hydrodynamic heat generator comprising a generator housing part integrated with said pump housing part and defining a generator water space, said housing parts including passages providing for communication between said pump and said generator water space, a pump impeller mounted on said drive shaft in said pump housing part, a bladed stator firmly supported in said generator water space, a bladed rotor rotatably supported in said water space adjacent said stator, and an electromagnetic clutch also arranged in said generator water space for engagement of said bladed rotor for rotation with said drive shaft when the cooling water temperature is insufficient.

5,775,584
Patent Not Issued For This Number

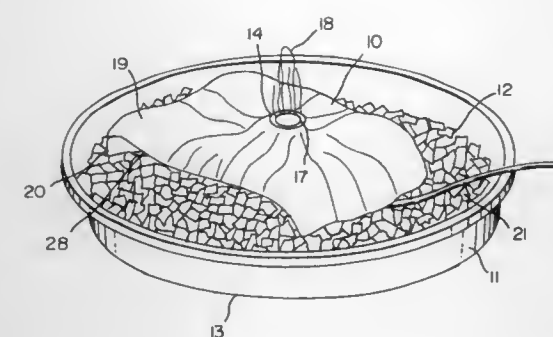
5,775,585
METHOD AND MEANS FOR EVENLY DISTRIBUTING PARTICULATE FERTILIZER
Dennis E. Duello, 5939 27th Ave., Vinton, Iowa 52349
Filed Apr. 12, 1996, Ser. No. 630,695
Int. Cl.⁶ A01C 3/06 4 Claims



4. A method of distributing a quantity of granular material of varying particulate mass from a plurality of distribution points, comprising,
providing a plurality of separate distribution conduits having discharge ends,
providing a curved portion in each of said conduits,
forcing air through said conduits in a direction towards said discharge ends,
metering granular material into said conduits upstream of said curved portions and said discharge ends,
sensing the magnitude of the pressure of granular material being blown by said forced air through the curved portions of said conduits,
conveying the measured pressure information occurring in each conduit to a microprocessor to determine the quantity of flow of granular material through each of said conduits,
comparing the quantity of flow of granular material through each of said conduits to determine variations of flow among said conduits,
adjusting by linear actuators controlled by said microprocessor to adjust the flow of granular material through one or more of said conduits to cause a substantial equal quantity of material to flow out of said discharge ends.

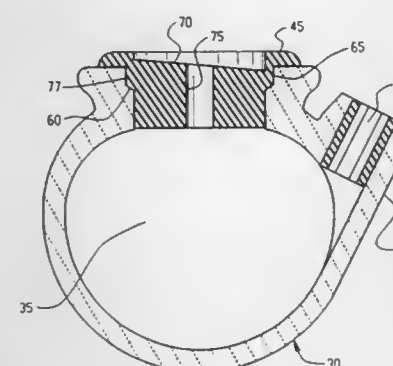
5,775,586
FOUNTAIN HAVING INTERNALLY LIGHTED PLUME
Ginette Hamilton-Bruzzi, and Richard Bruzzi, both of 6947 Coal Creek Pkwy. SE, #302, New Castle, Wash. 98059
Filed Sep. 19, 1996, Ser. No. 715,936
Int. Cl.⁶ F21P 7/00 2 Claims

1. A fountain comprising:
a container,



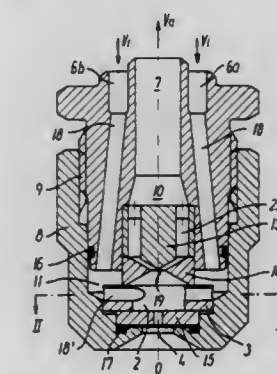
an opaque cover having at least one hole and an outside surface, and
means for producing effluent including at least one plume, said at least one plume having a height and a major cross sectional dimension, said height being in a range of one to six times said major cross sectional dimension,
said cover being placed in said container,
said means for producing said effluent being installed in said container under said cover and comprising at least one spout, said spout having an open end and being made of translucent material, said open end extending into said at least one hole, said fountain further comprising means under said cover for illuminating said at least one spout whereby said effluent is illuminated.

5,775,587
PORTABLE HANDHELD DRINKING WATER FOUNTAIN
Russell A. Davis, 5250 W. Mill Rd., Broadview Heights, Ohio 44147
Filed Apr. 25, 1996, Ser. No. 638,969
Int. Cl.⁶ E03B 9/20 18 Claims



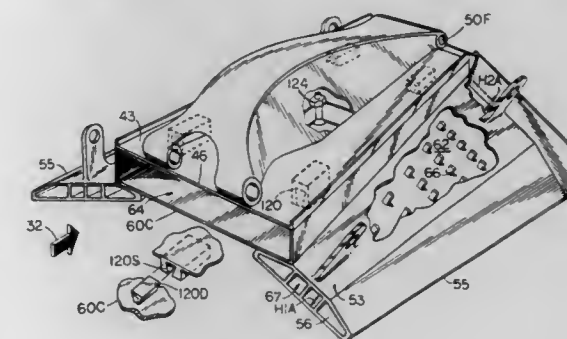
1. A handheld drinking fountain comprising:
a main body element a body cavity and an upper opening for water entry into said body cavity;
an upward directed spout projecting outward from said body, said spout being in fluid communication with said body cavity for water export from said cavity; and
a repositionable upper opening insert having an inlet orifice and adapted to be seated in said upper opening, said upper opening insert having a longitudinal axis, said upper opening insert having a flat-surfaced aerator contacting area which defines a contacting plane, said contacting plane being in angled relationship with a plane perpendicular to said longitudinal axis.

5,775,588
SPRAY DRYING PLANT WITH BY-PASS NOZZLE
Anders Hallström, Espergerde; Nicolaj Stahnke, Gentofte, and Henrik Sønderby, Helsingør, all of Denmark, assignors to APV Anhydro AS, Søborg, Denmark
PCT No. PCT/DK94/00392, § 371 Date May 15, 1996, § 102(e) Date May 15, 1996, PCT Pub. No. WO95/11758, PCT Pub. Date May 4, 1995
PCT Filed Oct. 25, 1994, Ser. No. 635,897
Claims priority, application Denmark, Oct. 22, 1993, 1195/93 Int. Cl.⁶ B23K 27/00 5 Claims



1. A spray drying system having a whirl chamber nozzle for atomization of a liquid which is introduced tangentially into the whirl chamber of the nozzle at its outer periphery, said whirl chamber nozzle comprising a bypass which extends away from the whirl chamber via a central discharge orifice, wherein said bypass is provided as a ring-shaped slot extending axially away from said central discharge orifice with an increasing cross-sectional area, said ring-shaped slot also extending radially outwards with its outermost periphery extending to a point in the vicinity of the outer periphery of the whirl chamber.

5,775,589
COOLING APPARATUS FOR AIRCRAFT GAS TURBINE ENGINE EXHAUST NOZZLES
John William Vdovjak, Marblehead, and Robert Alexander Nicoll, Beverly, both of Mass., assignors to General Electric Company, Cincinnati, Ohio
Division of Ser. No. 787,983, Nov. 5, 1991, Pat. No. 5,720,434.
This application Jul. 23, 1997, Ser. No. 898,744
Int. Cl.⁶ B64D 33/04; B05B 12/00; F02C 7/20; F02K 3/10 U.S. Cl. 239—127.1 3 Claims



1. A nozzle flap and liner attachment means for attaching a coolable liner to its respective nozzle flap, said nozzle flap and liner attachment means comprising:
at least one axially slidable dovetail engaged within a mating dovetail slot of a lug wherein each of one of said dovetails is attached to one of said flaps and each of said lugs is attached to a respective one of said liners, and

a fixing means for generally axially fixing said liner relative to said flap when said dovetail and said slot are axially engaged while permitting differential thermal growth between said flap and said liner.

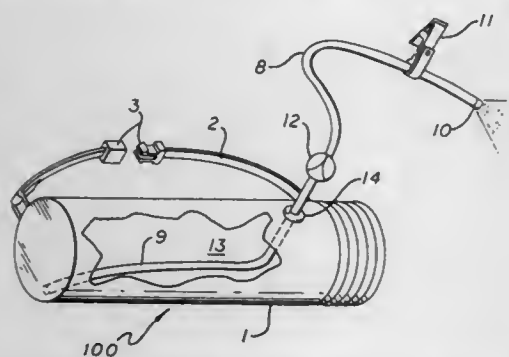
5,775,590

PORTABLE MIST COOLING DEVICE

Steven M. Utter, 481 N. Longmont St., Chandler, Ariz. 85224
Continuation of Ser. No. 664,302, Jun. 10, 1996, Pat. No. 5,620,140, which is a continuation of Ser. No. 324,872, Oct. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 927,231, Aug. 7, 1992, Pat. No. 5,535,951. This application Feb. 19, 1997, Ser. No. 802,072
Int. Cl.⁶ B05B 9/08

U.S. Cl. 239—152

6 Claims



1. A misting apparatus for cooling a local area in the vicinity of a person by evaporative cooling, comprising:
 - a pressurizable fluid tank, said fluid tank including means for adding fluid to the fluid tank;
 - a manual air pump for pressurizing the fluid tank, said manual air pump being removably connectable to said pressurizable fluid tank;
 - a flexible tube in fluid communication with the fluid tank, said flexible tube having a distal end and a proximal end, said proximal end connected to said fluid tank;
 - at least one spray nozzle secured at the distal end of the flexible tube, said spray nozzle delivering a fine mist of fluid in the vicinity of a person for cooling the person when pressurized fluid is communicated to the spray nozzle; and
 - a valve between said fluid tank and each said spray nozzle for controlling flow of fluid through said flexible tube.

5,775,591

PORTABLE PRESSURE CLEANING DEVICE

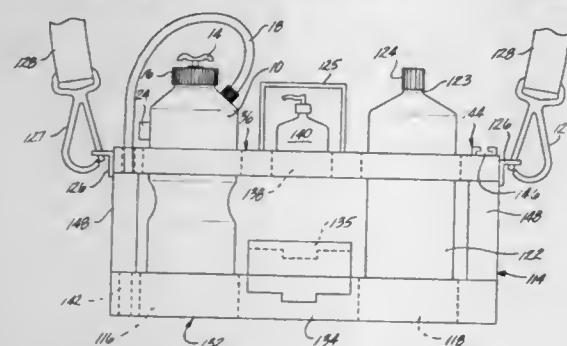
Dino A. Fauci, 24773 W. Sand Wedge La., Valencia, Calif. 91355

Filed Aug. 16, 1996, Ser. No. 696,593

Int. Cl.⁶ B05B 9/08; E03B 9/20

U.S. Cl. 239—304

12 Claims



1. A portable washing system comprising:
 - a hand-held water bottle;

an air pump integral to the water bottle for pressurizing the water bottle;

a handle for operating the air pump;

a hose for directing water from the water bottle;

a spray nozzle that can be removably attached to the hose, the spray nozzle having a trigger operated valve for remotely allowing intermittent flow of pressurized water from the water bottle;

a faucet that can be removably attached to the hose, the faucet including an on-off valve for remotely permitting a steady, high volume stream of water to flow from the pressurized water bottle; and

a carrying case for carrying the water bottle and for removable attachment of the faucet.

5,775,592

UPSTREAM INLET INJECTOR

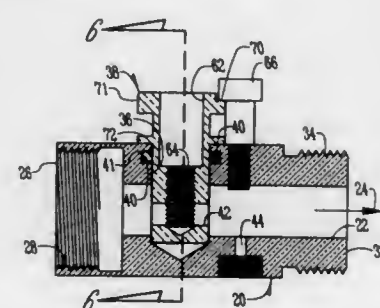
Thomas L. Goldsmith, Earlville, Iowa, and Lother Hartmann, Oerlinghausen, Germany, assignors to Suttner America Company, Dubuque, Iowa

Filed May 16, 1996, Ser. No. 648,624

Int. Cl.⁶ B05B 7/26

U.S. Cl. 239—310

16 Claims



1. An upstream inlet injector for use with a pressure washer having a pump, a fluid source, and a chemical source, the injector comprising:
 - a housing having first and second ends with a passageway formed through the housing between the first and second ends, the first end being operatively attachable to the fluid source, the second end being operatively attachable to the pump on an upstream side thereof;

a chemical inlet formed in the housing between the first and second ends, the chemical inlet being in communication with the passageway and operatively attachable to the chemical source;

a movable body coupled to the housing, the body having an adjustable orifice formed in the body, the body being movable between a first position restricting the flow of fluid through the passageway by blocking the passageway except for the orifice, and a second position allowing full flow of fluid through the passageway, wherein the flow of fluid through the passageway in the first position is determined by the size of the orifice, wherein the size of the orifice is adjustable to provide a substantially infinite number of orifice sizes;

wherein the flow of fluid through the adjustable orifice creates a venturi causing chemicals to be drawn into the passageway through the chemical inlet when fluid flows through the passageway.

5,775,593

AUTOMATIC LAWN TREATMENT DISPENSING UNIT

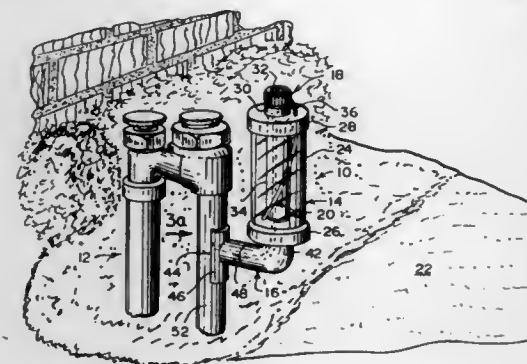
Virgil A. Delorme, 23615 1/2 Hillview Rd., San Bernardino, Calif. 92404; Thomas Crisofulli, 13066 Balboa La., Moreno Valley, Calif. 92553, and Madelyn Joy Warner, 3908 Oakwood Pl., Riverside, Calif. 92506

Filed Sep. 19, 1996, Ser. No. 715,070

Int. Cl.⁶ B05B 7/30

U.S. Cl. 239—310

20 Claims



1. An automatic lawn treatment dispensing unit for a main water supply assembly comprising:
 - a container for holding a liquefied substance therein, said container including:
 - i) a main body portion;
 - ii) a bottom portion affixed to said main body portion; and
 - iii) a top portion affixed to said main body portion, so as to form a sealed chamber for the liquefied substance;

b) means for coupling a lower end of said container into the main water supply assembly;

c) means for filling the liquefied substance into said container through an upper end thereof; and

d) means for siphoning the liquefied substance out of said container, through said coupling means and into the main water supply assembly to be dispersed onto a lawn, said siphoning means including:

- i) an upstanding center pipe mounted through said bottom portion of said container to said coupling means, whereby said upstanding center pipe is slightly spaced away from said top portion of said container; and
- ii) an elongated flexible aspirator tube which extends through said coupling means, up said upstanding center pipe, out said top portion of said container, back in said top portion of said container and down to said bottom portion of said container, so that when water flows through the main water supply assembly, the liquefied substance in said container will be sucked through a first end of said elongated flexible aspirator tube, mixed with the water via a second end of said elongated flexible aspirator tube and dispersed onto the lawn, through the main water supply assembly.

5,775,594

SPRAYER

Takaharu Tasaki; Shigeru Hayakawa, both of Koto-ku; Mitsuhiro Sasazaki, Nasu-gun; Chitoshi Okawara, Nasu-gun; Seiichi Watanabe, Nasu-gun, and Shigeru Akutsu, Nasu-gun, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/02482, § 371 Date Jul. 15, 1996, § 102(e) Date Jul. 15, 1996, PCT Pub. No. WO96/17690, PCT Pub. Date Jun. 13, 1996

PCT Filed Dec. 5, 1995, Ser. No. 676,262

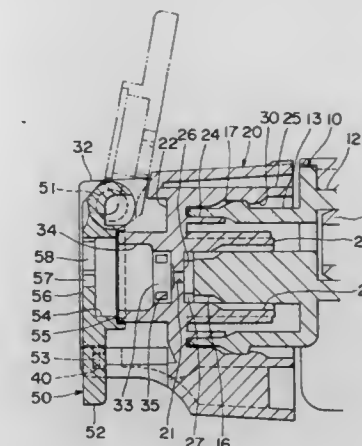
Claims priority, application Japan, Dec. 9, 1994, 6-330923

Int. Cl.⁶ B05B 7/30

U.S. Cl. 239—343

10 Claims

3. A sprayer for spraying foamable liquid in the foamed state, comprising:
 - (a) a discharge nozzle,



- (b) a swirling passage disposed at an upstream side of said discharge nozzle to communicate with said discharge nozzle for swirling the liquid;
 - (c) a gas-liquid mixing passage concentrically disposed at a downstream side of said discharge nozzle to communicate with said discharge nozzle;
 - (d) an air inlet for allowing air to enter into said gas-liquid mixing passage; and
 - (e) a collision plate having a collision portion and a flow opening and disposed at a downstream side of said gas-liquid mixing passage to face said discharge nozzle, said collision plate being movable away from a position in front of said discharge nozzle,
- wherein said discharge member, said swirling passage, said gas-liquid mixing passage and said air inlet form a front end member, said collision plate being mounted to said front end member.

5,775,595

GRAVITY FED SPRAYER

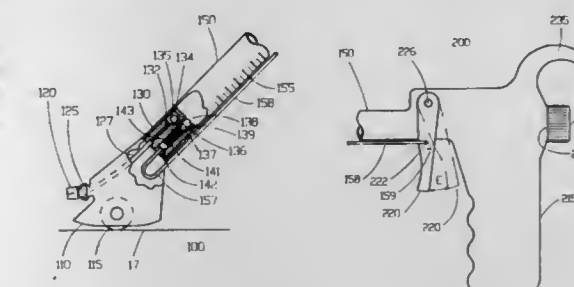
John J. Knodel, 439 Pauma Valley Way, Melbourne, Fla. 32940, and Kenneth D. White, 6825 Cedar Ave., Cocoa, Fla. 32927

Filed Feb. 16, 1996, Ser. No. 603,033

Int. Cl.⁶ B05B 9/03

U.S. Cl. 239—375

13 Claims



1. A handheld sprayer apparatus for fertilizer, weed control and insecticides, the apparatus comprising:
 - (a) a handgrip having a movable trigger;

(b) a sprayer nozzle having an adjustable nozzle tip for adjusting beam spray width of a spray pattern and a swivel base support for the nozzle tip;

(c) a hollow longitudinal storage tube for storing liquid, having a lower end connected to the sprayer nozzle and an upper end connected to the handgrip, the tube allowing for the liquid to be gravity fed to the sprayer nozzle; and

(d) a wheel attached adjacent to the sprayer nozzle, for allowing the apparatus to roll over surfaces, wherein moving the trigger to a compressed position causes the sprayer nozzle to release the gravity fed liquid.

5,775,596

FOAM GENERATING NOZZLE

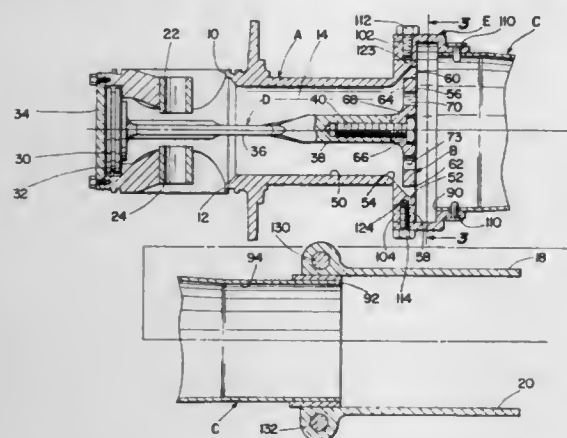
Daniel Bruce Whisman, and Kevin James Petit, both of Wooster, Ohio, assignors to Premier Farnell Corp., Cleveland, Ohio

Filed Apr. 18, 1996, Ser. No. 634,601

Int. Cl.⁶ E03C 1/08

U.S. Cl. 239—428.5

20 Claims



1. In a nozzle having a foam tube and a stream divider for dividing a large volume liquid stream flowing toward said foam tube into a plurality of small volume liquid streams entering said foam tube, said plurality of small volume liquid streams including an outer hollow stream surrounding a plurality of spaced-apart inner streams, said foam tube having an entrance end, and air inlet passages outwardly of said outer hollow stream adjacent said entrance end through which air is aspirated into said foam tube.

5,775,597

FIVE-SIDED FEED LINE FOR A MISTING SYSTEM

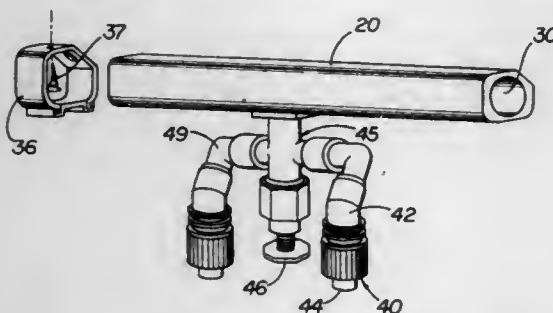
Itamar C. Kleinberger, 4367 Dunmore Rd., Marietta, Ga. 30068

Filed Feb. 21, 1996, Ser. No. 603,559

Int. Cl.⁶ B05B 1/14

U.S. Cl. 239—550

15 Claims



1. A feed line for a misting system that provides a spray of a fluid from a supply of the fluid through a spray nozzle having a fluid receiving end and a fluid dispensing end, the feed line comprising:

a hollow body portion having a first end adapted to be in fluid communication with the supply of the fluid, an opposite second end, and an exterior surface on the body portion, the body portion defining a longitudinally-extending bore through which the fluid flows, the body portion having at least one opening from the exterior surface into the bore in which the spray nozzle is disposed so that the fluid receiving end of the spray nozzle is in fluid communication with the fluid within the bore, and wherein at least a portion of the exterior surface is five-sided in which the five sides of the exterior surface are asymmetrically oriented about the bore.

5,775,598

ROTARY ATOMIZING HEAD TYPE COATING MACHINE

Shinichi Takayama, and Takehito Katsumura, both of Tokyo, Japan, assignors to ABB Industry K.K., Tokyo, Japan

PCT No. PCT/JP96/00929, § 371 Date Dec. 3, 1996, § 102(e) Date Dec. 3, 1996, PCT Pub. No. WO96/31286, PCT Pub. Date Oct. 10, 1996

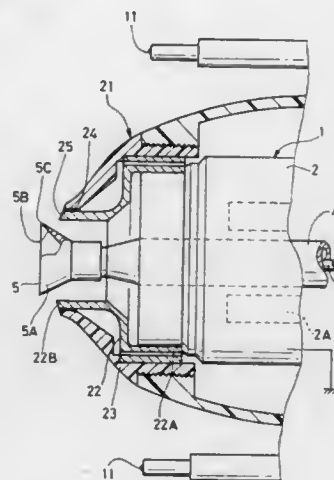
PCT Filed Apr. 5, 1996, Ser. No. 737,934

Claims priority, application Japan, Apr. 6, 1995, 7-106840; Apr. 6, 1995, 7-106841

Int. Cl.⁶ B05B 17/00

U.S. Cl. 239—703

20 Claims



1. A rotary atomizing head type coating machine, including: a coating machine body circumferentially enshrouded under a synthetic resin cover,

an air motor provided within said coating machine body and grounded to earth potential,

a rotary atomizing head provided at a fore end of said coating machine body and coupled with said air motor, said rotary atomizing head being terminated with paint releasing edges at a fore end thereof,

a shaping air ring provided at the fore end of said coating machine body in such a way as to circumvent an outer periphery of said rotary atomizing head and having an air outlet to spurt shaping air from behind said paint releasing edges of said rotary atomizing head,

external electrodes positioned radially on an outer side of said coating machine body and applied with a high voltage to charge paint particles sprayed from said paint releasing edges of said rotary atomizing head,

at least part of said shaping air ring being formed of a conductive material and electrically connected to said air motor, and an annular repulsion electrode formed at least in part of said conductive material.

5,775,599

GASEOUS FUEL INJECTOR FOR INTERNAL COMBUSTION ENGINE

David H. Smith, Mercer Island, and Craig D. Mawle, Seattle, both of Wash., assignors to Impeco Technologies, Inc., Seattle, Wash.

Filed Jun. 12, 1996, Ser. No. 661,918

Int. Cl.⁶ B05B 1/30

U.S. Cl. 239—585.3

2 Claims

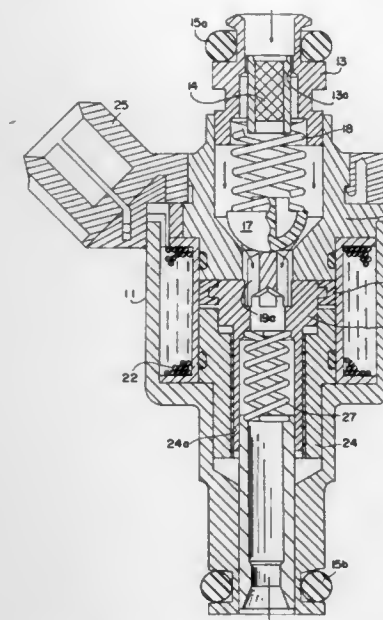
1. A gaseous fuel injector comprising:

An outer housing,

a valve seat mounted in the outer housing, said valve seat having a seating surface with an opening formed therein,

a valve member in the form of a partial ball mounted opposite said seating surface,

means for resiliently urging said valve member towards said seating surface,



an inner housing having an inner surface, an armature slidably mounted in said inner housing in abutment with said inner surface, said armature having a stop member thereon for limiting the slidable travel thereof in said inner housing, said stop member running around the periphery of said armature and forming a ledge extending outwardly therefrom, the upper surface of said ledge, abutting against a lower surface of said seat when said armature is driven upwardly, the lower surface of said ledge abutting against an upper surface of said inner housing when said armature is driven downwardly,

a solenoid coil mounted in said outer housing and surrounding said armature, and

means for periodically feeding electrical power to said solenoid coil to energize said coil so as to electromagnetically drive said armature against said valve to effect the opening thereof, said valve member, the inner surface of said inner housing and the ledge of said stop member being of a durable resilient high temperature plastic material.

5,775,600

METHOD AND FUEL INJECTOR ENABLING PRECISION SETTING OF VALVE LIFT

Ray Wildeson, 105 Sheild La., Yorktown, Va. 23692; David Wiecezorek, 181 Revelle Dr., Newport News, Va. 23602; Gordon Wyant, 101 Northampton Dr., Hampton, Va. 23666, and Christoph Hamann, Erlenweg 2, Kirchheim, Germany, 85551

Filed Jul. 31, 1996, Ser. No. 688,937

Int. Cl.⁶ F02M 51/00

U.S. Cl. 239—585.4

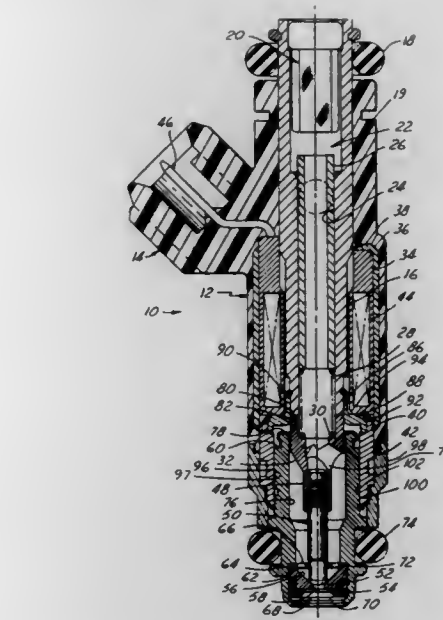
24 Claims

1. A method of setting a desired valve lift in a fuel injector for internal combustion engines, the fuel injector having a needle valve armature assembly slidable in a bore in a valve body member, a valve seat fastened in an end of the valve body member and engaged by a tip of the needle valve, the armature having an end face movable into abutment against an end face of a pole piece of a solenoid operator upon energization of the solenoid operator, the movement of the armature carrying the needle valve tip off the valve seat and defining the valve lift, the method comprising the steps of:

fitting a valve body shell member over the valve body member so as to allow telescoping movement therebetween;

fixing said valve body shell member relative to the pole piece;

telescoping the valve body member into the valve body shell member and measuring their relative position to determine when a set position corresponding to the desired valve lift is



5,775,601

SYSTEMS AND METHOD FOR PRODUCING DELAMINATED SEDIMENTARY MICA

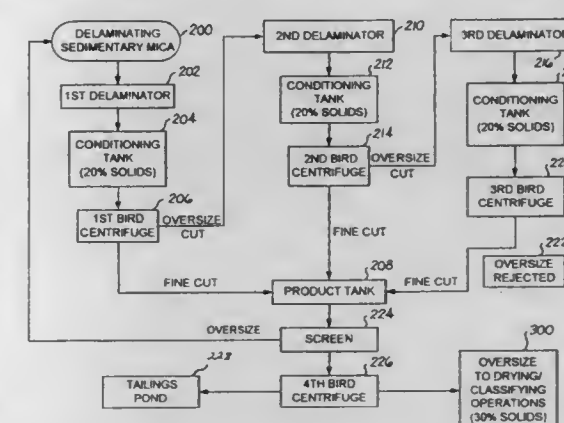
David M. Avant, Jr., Sandersville, and Donald G. Turner, Washington, both of Ga., assignors to Georgia Industrial Minerals, Inc., Sandersville, Ga.

Filed Jun. 12, 1996, Ser. No. 661,985

Int. Cl.⁶ B02C 19/12;23/08

U.S. Cl. 241—4

24 Claims



separating fine mica flakes from coarse mica flakes within said second slurry; and
drying said separated fine mica flakes.

5,775,602

MANUFACTURING METHOD FOR A HYDROGEN-STORAGE-ALLOY POWDER FOR BATTERIES

Jun Furukawa, Iwaki, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Yokohama, Japan

Filed Sep. 9, 1996, Ser. No. 709,722

Claims priority, application Japan, Sep. 27, 1995, 7-249629

Int. Cl.⁶ B02C 19/12; 23/18

U.S. Cl. 241—16

16 Claims

1. A method for manufacturing a hydrogen-storage-alloy powder for batteries, comprising:

crushing a hydrogen-storage-alloy ingot into a coarse alloy powder in an non-oxidizing atmosphere; and
mechanically grinding the coarse alloy powder in contact with an aqueous solution in which is dissolved at least one salt selected from the group consisting of a sulfite, hydrogen phosphate, and dihydrogen phosphate.

5,775,603

LOW PRESSURE ULTRA-HIGH ENERGY CRYOGENIC IMPACT SYSTEM

Rudolph Hugo Kobler, Danbury, Conn.; Robert Bruce Davis, Nyack, and Frederic Neal Steigman, Ossining, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 497,654, Jun. 30, 1995, Pat.

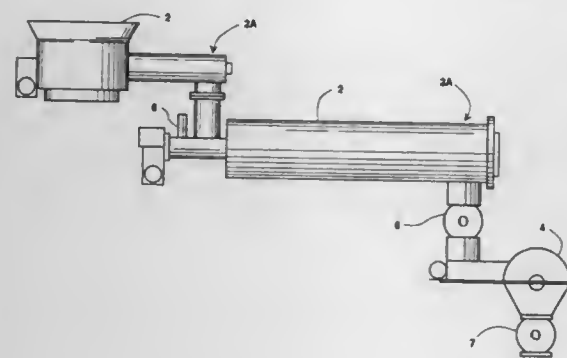
No. 5,597,123. This application Dec. 23, 1996, Ser. No.

780,085

Int. Cl.⁶ B02C 19/00; 19/12

U.S. Cl. 241—23

10 Claims



7. A process for reducing the particle size of material to an average diameter as small as about 40 μ m, said process comprising the steps of:

- (a) cooling said material to a temperature within the range of from about -40° F. to about -450° F. by directly contacting said material with refrigerant; and
- (b) milling the resulting cooled materials in a modified gaseous atmosphere having a pressure less than 20 inches of mercury absolute at a milling station which does not require cooling by refrigerant, employing a rotor operating at a tip speed within the range of from about 500 to about 1500 feet per second.

GLASSWARE CRUSHING, GRADING, SCREENING AND COLLECTING DRY-TYPE METHOD AND APPARATUS

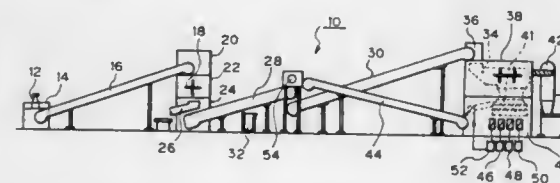
Kōthi Satō, Yamagata-ken, Japan, assignor to Kaneto Co., Ltd., Kaminoyama, and Kankyohozenservice Co., Ltd., Mizusawa, both of Japan

Filed Mar. 10, 1997, Ser. No. 813,187

Int. Cl.⁶ B02C 19/14

U.S. Cl. 241—24.22

19 Claims



1. A method for crushing glassware to form crushed glass having rounded broken surfaces and that can be used as a substitute for natural sand, and for grading, screening and collecting said crushed glass according to sizes thereof, said method comprising:

- supplying glassware to be crushed to a glassware charging frame;
- feeding the thus supplied glassware to a first crusher having a rotor having spaced blades;
- crushing said glassware by said first crusher to thus form preliminarily crushed glass;
- supplying said preliminarily crushed glass to a last crusher having at least two rotors each having spaced blades;
- crushing said preliminarily crushed glass by said last crusher to thus form finely crushed glass having rounded broken surfaces;
- said crushing by said last crusher including providing spaces between said blades of each of said two rotors to be smaller than spaces between said blades of said rotor of said first crusher and rotating said two rotors at a speed greater than a speed of rotation of said rotor of said first crusher;
- screening said finely crushed glass with a sieve device to thereby grade said finely crushed glass according to different sizes thereof; and
- collecting the thus graded different sizes of said finely crushed glass.

5,775,605

SHREDDING MACHINE WITH CONTACT-TYPE CONTROL SWITCH ASSEMBLY

Shao-Nong Tsai, No. 17, Lane 267, Hua-Chen Rd., Hsin-Chuang City, Taipei Hsien, Taiwan

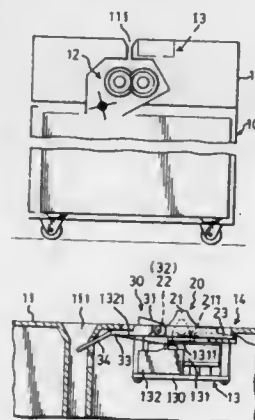
Filed May 29, 1997, Ser. No. 865,347

Claims priority, application Taiwan, Apr. 9, 1997, 86205507

Int. Cl.⁶ B02C 18/24; 18/40

U.S. Cl. 241—36

11 Claims



1. A shredding machine comprising:

a machine housing having a top wall formed with a paper feed inlet;

a cutting device disposed in said machine housing adjacent to said inlet; and

a contact-type control switch assembly mounted on said top wall of said machine housing and connected electrically to said cutting device, said control switch assembly including a multi-position slide switch provided with a slider that is movable between first and second switch positions, and a contact switch provided with a movable contact arm;

wherein said top wall of said machine housing is formed with an access hole which has a front portion adjacent to said inlet and aligned with said contact switch, and a rear portion distant from said inlet and aligned with said slide switch;

said control switch assembly further including a switch actuator unit which includes a slider actuator that is mounted slidably in said rear portion of said access hole and that engages said slider of said slide switch, and a contact arm actuator that is disposed in said front portion of said access hole and that has a rear part connected to said slider actuator and a front part, said slider actuator being movable in said access hole so as to move said slider of said slide switch between said first and second switch positions and so as to move said front part of said contact arm actuator between an extended position, where said front part of said contact arm actuator extends into said inlet so as to be adapted to be depressed by a sheet of paper fed into said inlet in order to enable said contact arm actuator to depress said movable contact arm of said contact switch and activate said cutting device automatically to initiate shredding of the sheet of paper, and a retracted position, where said front part of said contact arm actuator ceases to extend substantially into said inlet to prevent said contact arm actuator from depressing said movable contact arm of said contact switch when a sheet of paper is fed into said inlet and to prevent damage to said front part of said contact arm actuator when said cutting device is operated in a reverse mode to release said cutting device from a paper jam condition.

5,775,606

COOLING ATTACHMENT FOR A GRINDER

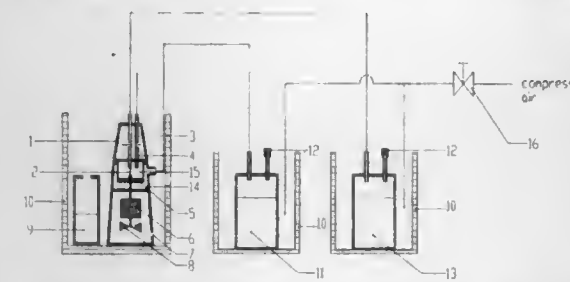
Luyu Yang, 38 Westland Ave. #24, Boston, Mass. 02115

Filed Apr. 15, 1996, Ser. No. 632,056

Int. Cl.⁶ B02C 23/18

U.S. Cl. 241—65

2 Claims



1. Apparatus for grinding heat sensitive material in a micro-mill grinder comprising: a micro-mill grinder having a grinding chamber and motor (6); thin-walled metal tanks (11,13) for storing liquefied gas, said tanks and said grinder being insulated by respective insulation boxes (10); a needle valve (16) for controlling the flow rate of room temperature air introduced into said insulation boxes in order to heat said tanks; rubber safety plugs (12) associated with said tanks to allow the operating pressure inside of said tanks to be at a relatively low value; a grinder cover (1) located above the grinding chamber, said cover including a fin and tubes extending into the grinder chamber to slow down the speed of the heat sensitive material while it is being ground in order to eliminate static electricity as well as provide a sufficient heat transfer area to cool down the material inside the grinding chamber; a liquefied gas tank (9) located adjacent said grinder within said

grinder insulation box for cooling said motor so as to allow the grinder to operate continuously at a controlled grinding temperature.

5,775,607

HEAD ANTI-ROTATIONAL AND SEALING SYSTEM FOR A GYRATORY CRUSHER

John Andrew Bayliss, Crawley, and James William Shannon, City Beach, both of Australia, assignors to Wescone Crushers Pty, Ltd., Australia

PCT No. PCT/AU95/00489, § 371 Date Feb. 11, 1997, § 102(e)

Date Feb. 11, 1997, PCT Pub. No. WO96/04993, PCT Pub.

Date Feb. 22, 1996

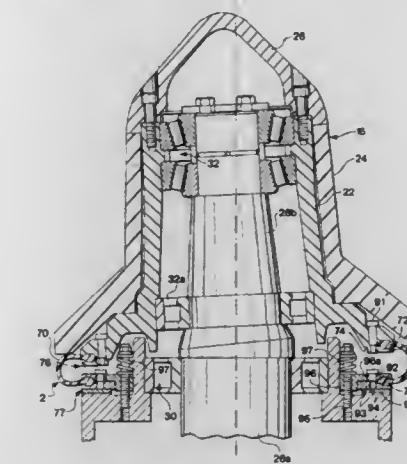
PCT Filed Aug. 11, 1995, Ser. No. 793,158

Claims priority, application Australia, Aug. 12, 1994, PM7392

Int. Cl.⁶ B02C 2/04

U.S. Cl. 241—207

22 Claims



1. A gyratory crusher for crushing frangible or friable material, said crusher including a bowl which defines a chamber for receiving said material to be crushed and a discharge opening at the base thereof through which crushed material is able to discharge, a crushing head mounted in said bowl at an offset position with respect to a central axis of said bowl, and a drive assembly for driving said crushing head within said bowl for imparting gyratory motion to said head about a gyratory axis inclined with respect to and intersecting said central axis, whereby said frangible or friable material received into the chamber is subjected to crushing between an inner peripheral surface of said bowl and an outer peripheral surface of said head by the gyratory motion of the head, said crusher further including a system for restraining rotation of said head relative to said bowl and said gyratory axis, the system including:

- (i) an annular resilient member disposed between an annular lower peripheral region of said head and an annular surface, of a fixed structure of said crusher, which is spaced from and substantially co-axial with said region;
- (ii) securing means for securing a first edge of said resilient member to one of said annular region of said head and said annular surface of said fixed structure;
- (iii) an annular band of friction material provided around a second edge of said resilient member; and
- (iv) biasing means for urging said friction band into frictional contact with the other one of said annular region of said head and said annular surface of said fixed structure.

5,775,608

REVERSIBLE GRANULATOR

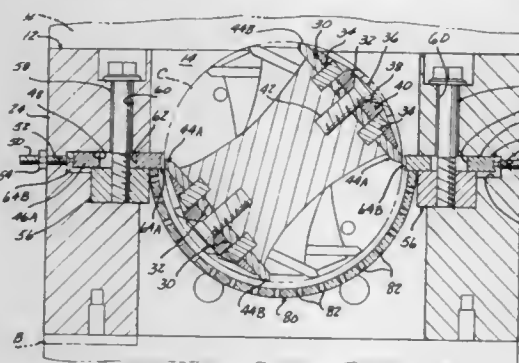
Thomas J. Dumaine, 432 Kelly Blvd., North Attleboro, Mass. 02760, and Mark A. Weldon, 42 Malbone St., Lakeville, Mass. 02347

Filed Apr. 7, 1997, Ser. No. 835,237

Int. Cl.⁶ B02C 18/06; 18/18

U.S. Cl. 241—242

11 Claims



1. A granulator comprising:

- a housing defining a cutting chamber;
- an elongated rotor mounted for rotation about a longitudinal axis in said cutting chamber;
- a reversible motor drivingly coupled to said rotor to enable rotation about said longitudinal axis in either direction;
- a series of cutting knives mounted to said rotor for rotation therewith, said cutting knives defining a pair of oppositely facing cutting edges extending longitudinally on said rotor and lying on an imaginary cutting circle centered on the rotor axis, said cutting knives transversely inclined with respect to said cutting circle;

each cutting edge in said pair of cutting edges facing in an opposite direction from the other cutting edge in said pair of cutting edges, but lying on said common cutting circle centered on said rotor axis, one of said cutting edges in each pair leading upon rotation of said rotor in one direction and the other cutting edge in each pair leading upon rotation of said rotor in the opposite direction;

a fixed bed knife first peak cutting edge projecting towards said one of said cutting edges in each pair as said one blade cutting edge is rotated past said first cutting edge by rotation of said rotor in said first direction;

a fixed bed knife second peak cutting edge projecting towards said other cutting edge when said other cutting edge is rotated past said second bed knife peak cutting edge by rotation of said rotor in said opposite direction.

5,775,609

HORIZONTAL IMPACT CRUSHER HAVING HYDRAULIC COVER LATCH

Stephen B. Ackers, deceased, late of Columbia, S.C.; Jennifer Ackers, executor, Clackamas, Oreg., and Donley D. Freshwater, Columbia, S.C., assignors to W. S. Tyler, Incorporated, Gastonia, N.C.

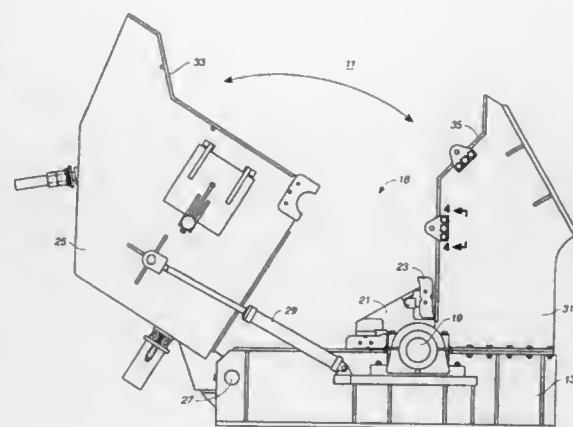
Filed Mar. 13, 1996, Ser. No. 615,093

Int. Cl.⁶ B02C 13/282

U.S. Cl. 241—285.3

11 Claims

1. In a horizontal impact crusher having a base, a crusher frame on said base, and an interior crushing chamber within said crusher frame, said crusher frame including a stationary portion having a first interior edge structure, and a cover portion movable between a closed and open position to access said interior crushing chamber, said cover portion having a second interior edge structure that mates with the first interior edge structure of the stationary portion of said frame when said cover portion is closed, a latch assembly comprising



a latch mechanism secured to the edge structure of one of the stationary and cover portions of said crusher frame, said latch mechanism being moveable between an unlocked position where the cover portion of said crusher frame can be opened and a locked position where the cover portion of the crusher frame, when closed, is secured to the stationary portion of the crusher frame,

hydraulic means for hydraulically moving said latch mechanism to its unlocked position by exerting a sufficient hydraulic actuation force thereon, and

spring means for mechanically biasing said latch mechanism to its locked position in the absence of a sufficient hydraulic actuation force from said hydraulic means whereby the latch mechanism remains in a normally locked position.

5,775,610

METHOD AND APPARATUS OF CONTROLLING ROTARY DRIVE WINDING MACHINE

Heiner Kudrus, Barmstedt, Germany, assignor to Neumag-Neumuenstersche Maschinen und Anlagenbau GmbH, Barmstedt, Germany

PCT No. PCT/EP95/02553, § 371 Date Dec. 30, 1996, § 102(e) Date Dec. 30, 1996, PCT Pub. No. WO96/01222, PCT Pub. Date Jan. 18, 1996

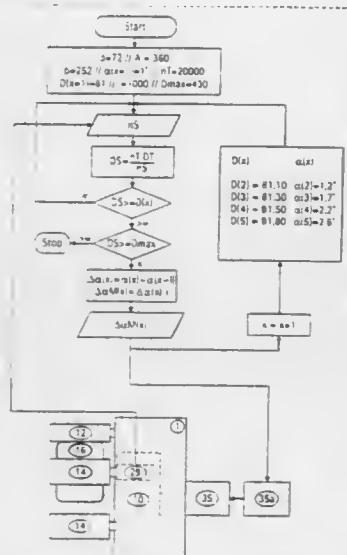
PCT Filed Jul. 3, 1995, Ser. No. 765,599

Claims priority, application Germany, Jul. 5, 1994, 44 23 491.0

Int. Cl.⁶ B65H 67/044; 54/02

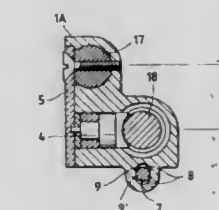
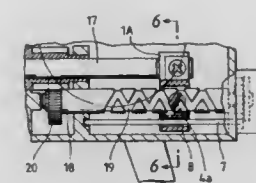
U.S. Cl. 242—18 A

14 Claims



1. A method of controlling a rotary drive of a turntable which supports at least one bobbin spindle supporting a bobbin package

which is being wound so that the bobbin package increases in diameter in a course of the bobbin travel in a bobbin winding machine for a continuously arriving thread with a predetermined yarn path, which winding machine also has a contact roller located upstream of the turntable in the yarn path, the method of controlling comprising the steps of determining a speed of rotation of the contact roller, a diameter of the contact roller, and a speed of rotation of the bobbin spindle supporting the bobbin package; calculating a diameter of the bobbin package by forming a quotient from a product of the determined speed of rotation of the contact roller and the diameter of the contact roller in respect to the determined speed of rotation of the bobbin spindle supporting the bobbin package; determining an angular position of the bobbin spindle supporting the bobbin package on its circle of rotation, in which a circumference of the bobbin package is in circumferential contact with the contact roller, from the calculated diameter of the bobbin package; and controlling the rotary drive of the turntable so that the bobbin spindle supporting the bobbin package assumes the determined angular position on its circle of rotation, so as to maintain the contact roller in continuous circumferential contact with the bobbin package.



5,775,611

SUPPORT FOR A TRAVELING STRAND OF RUBBER YARN

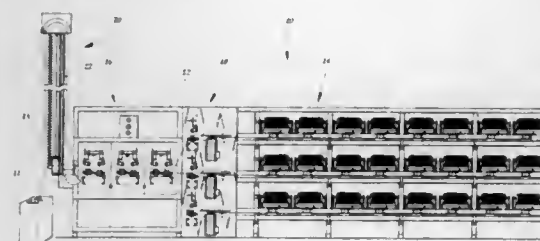
James O. Threlkeld, 4100 Barringer Dr., Charlotte, N.C. 28217

Filed Mar. 13, 1996, Ser. No. 614,694

Int. Cl.⁶ B65H 57/00; 20/00; 23/32

U.S. Cl. 242—157 R

14 Claims



1. A support for a traveling strand of rubber yarn being wound on a winder, said winder including an apparatus for imparting motion to the traveling strand to move the strand through a predetermined travel path, said support being disposed intermediate a rubber yarn supply and the winder, said support comprising:

- a first pneumatic bearing for guiding the rubber yarn,
- a vertically extending support member, and
- a means for movably mounting said first pneumatic bearing to said support member for selected vertical movement to a selected vertical position to thereby allow entanglements of the rubber yarn to dissipate as the yarn travels the vertical distances between the yarn supply and said first pneumatic bearing, and between said first pneumatic bearing and the winder.

5,775,612

SPINNING REEL FOR FISHING WITH A SLIDER FOR LONGITUDINALLY MOVING A SPOOL

Hiroshi Hashimoto, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Division of Ser. No. 425,111, Apr. 20, 1995. This application

Dec. 10, 1996, Ser. No. 763,259

Claims priority, application Japan, Apr. 20, 1994, 6-5441

Int. Cl.⁶ A01K 89/01

U.S. Cl. 242—241

11 Claims

1. A spinning reel for fishing comprising:

- a casing;
- a spool shaft movably supported by said casing;

a rotary shaft provided with a traverse cam groove and supported in parallel to said spool shaft by said casing; gear means for rotating said rotary shaft by turning said handle; a slider fixed to said spool shaft and slidably fitted over said rotary shaft so that a mating part of said slider is engaged with said traverse cam groove, said slider having a mating hole; and a guide rod extending parallel to said rotary shaft, said slider being slidably fitted over said guide rod through said mating hole, wherein a section of said mating hole is formed into such non-circular configuration having an inwardly directed short portion so as to suppress the generation of rotational clattering of said slider about said spool shaft and a releasing portion in an offset direction in which said rotary shaft is offset with respect to said spool shaft.

5,775,613

ANTI-REVERSE SYSTEM FOR A FISHING REEL

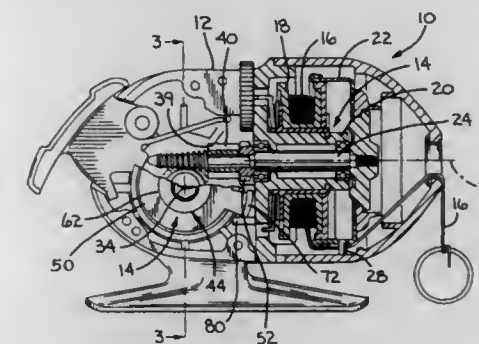
Kent Zwyer, and Dale Davis, both of Tulsa, Okla., assignors to Zebco Division of Brunswick Corporation, Tulsa, Okla.

Filed Mar. 11, 1996, Ser. No. 613,679

Int. Cl.⁶ A01K 89/02

U.S. Cl. 242—247

16 Claims



1. A fishing reel comprising:

- a line carrying spool; and
- an operating mechanism for directing line onto the spool, said operating mechanism including a first shaft that is rotatable about a first axis and a second shaft that is rotatable about a second axis that is transverse to the first axis, said first and second shafts each being rotatable in forward and reverse directions around the first and second axes, said operating mechanism including an anti-reverse system with a ratchet element on the second shaft, an actuator, and first means cooperating between the first shaft and actuator for causing the actuator to follow movement of the first shaft between a) a first position resulting from the first shaft rotat-

ing in the forward direction wherein the actuator does not interfere with rotation of the second shaft in the reverse direction and b) a second position resulting from the first shaft rotating in the reverse direction wherein the actuator cooperates with the ratchet to limit rotation of the second shaft in the reverse direction,
said actuator being rotatable about the first axis between the first and second positions,
said first means comprising a first surface on the actuator facing axially with respect to the first axis and a second surface on the first shaft facing axially relative to the first axis towards the first surface,
said first and second surfaces slippingly, frictionally gripping each other to cause the actuator to follow movement of the first shaft.

5,775,614

FISHING REEL WITH SPOOL SUPPORTED BETWEEN TWO SIDE PLATES, LEVEL WIND DEVICE AND MEANS FOR LINKING SPOOL DRIVE CLUTCH WITH LEVEL WIND DEVICE

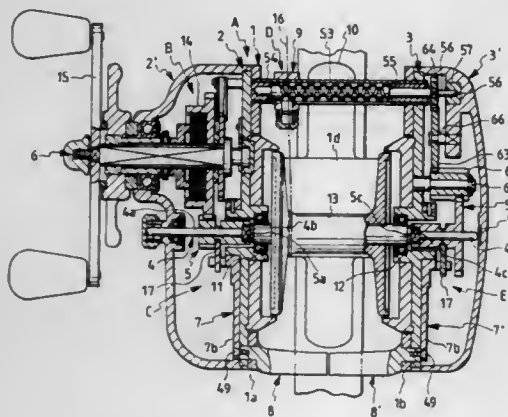
Nobuyuki Yamaguchi, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Feb. 21, 1997, Ser. No. 803,883

Claims priority, application Japan, Feb. 21, 1996, 8-058431
Int. Cl.⁶ A01K 89/015

U.S. Cl. 242—261

9 Claims



1. A fishing reel comprising:
a reel main body including two side plates;
a spool rotatable supported between said two side plates;
means for rotating said spool;
a level wind device supported by said reel main body for winding a fishing line around the spool when the spool is rotated by said means for rotating, said level wind device including a fishing line guide part;
level wind drive switching means for switching the fishing line guide part between a spool-linked condition in which the fishing line guide part is driven to reciprocate right and left in linking with rotation of the spool, and a spool-non-linked condition wherein the fishing line guide part is kept stationary regardless of the rotation of the spool;
a clutch mechanism for switching said spool between a spool free condition in which the spool is not driven by the means for rotating and a fishing line take-up condition in which the spool is driven by the means for rotating; and
means for linking the level wind drive switching means with the clutch mechanism so that the level wind drive switching means switch the fishing line guide part over to the spool-non-linked condition when the spool is set in the spool free condition and switch the fishing line guide part over to the spool-linked condition when the spool is set in the fishing line take-up condition.

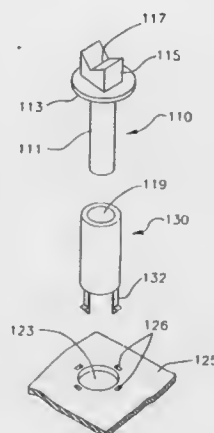
5,775,615
VCR HAVING A REEL SENSOR PRISM DEVICE
Seong Ick Ahn, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Sep. 24, 1996, Ser. No. 719,071

Claims priority, application Rep. of Korea, Sep. 30, 1995, 95-33435

Int. Cl.⁶ G11B 23/08

U.S. Cl. 242—333.2

8 Claims



1. A VCR having a reel sensor prism device comprising:
a scattering member formed by a body part for transmitting light and a head provided to an upper portion of said body part for scattering said light;
a fixing member formed with a center hole for being inserted with said body part of said scattering member through the center portion thereof, and at least one pair of hooks formed to a lower end;
a base formed with at least one pair of hook holes in areas of corresponding to said hooks of said fixing member, and a thruhole in the center of said hook holes for allowing said light generated from a reel sensor light emitting part to pass therethrough; and
a fixing law larger than said body part formed between said body part and head of said scattering member.

5,775,616

TAPE TENSION CONTROL APPARATUS FOR VIDEO CASSETTE TAPE RECORDER

Kwan Bo Sim, and Mun Chae Joung, both of Seoul, Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jan. 19, 1996, Ser. No. 587,704

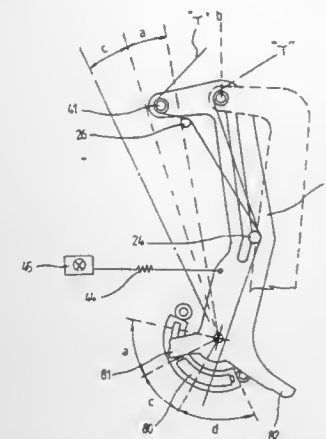
Claims priority, application Rep. of Korea, Jan. 20, 1995, 807/1995

Int. Cl.⁶ G11B 15/43

U.S. Cl. 242—353

8 Claims

1. A tape tension control apparatus for a video cassette tape recorder wherein a tension post is disposed between guide rollers and being in contact with an inner surface of a video cassette tape; a tension arm having one end thereof connected to said tension post and another end thereof being connected to a base plate; a tension applying means having an elastic member elastically connected to said tension arm; and a tension arm movement damping means disposed at a predetermined portion of the tension arm for



preventing a rapid movement of the tension arm at the time of loading/unloading the video cassette tape.

5,775,617

METHOD TO EXTRACT AND DEPOSIT COILS IN A ROLLING LINE AND DEVICE TO PERFORM THE METHOD

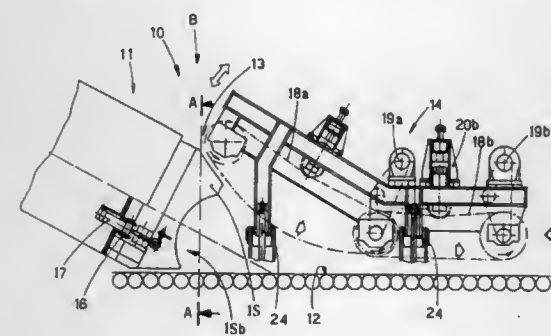
Alfredo Poloni, Redipuglia, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Continuation of Ser. No. 396,785, Mar. 1, 1995, Pat. No. 5,634,607. This application Nov. 1, 1996, Ser. No. 742,320

Claims priority, application Italy, Mar. 23, 1994, UD94A0044
Int. Cl.⁶ B21C 47/24; B21F 00/00

U.S. Cl. 242—363

6 Claims



1. Device to extract coils leaving a coiling machine and overturn and lay a plurality of the coils partly superimposed on one another on a removal conveyor belt positioned on a substantially horizontal plane, the coiling machine having a longitudinal axis inclined with respect to the horizontal plane, the device comprising a coil-retaining assembly comprising at least two retaining blades positioned opposite to each other and circumferentially to, and at sides of, and in direct cooperation with an outlet of the coiling machine, and means for moving the retaining blades between a first closed working position, in which the retaining blades close at least partly the outlet for the coils from the coiling machine so as to prevent the emerging of a number of coils, and a second open release position, in which the retaining blades release the number of coils prevented from emerging and in which the retaining blades do not obstruct the coils leaving the outlet of the coiling machine but enable the coils to fall as each coil is formed onto the removal conveyor belt so as to be partly superimposed on one another.

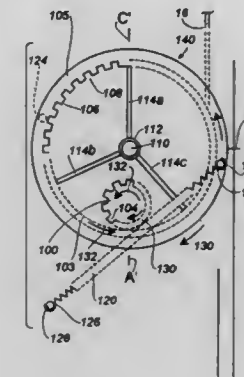
5,775,618
TENSION CONTROLLED SEAT BELT RETRACTOR
Dagoberto Krambeck, Troy, Mich., assignor to AlliedSignal Inc., Morristown, N.J.

Filed May 31, 1996, Ser. No. 656,625

Int. Cl.⁶ B60R 22/44

U.S. Cl. 242—372

6 Claims



1. A seat belt retractor comprising:
a spool and frame means for rotationally supporting the spool;
a seat belt receivable on the spool;
rewind spring means for biasing the spool in a belt winding direction;
a drive unit comprising only a first member and a second member, the first member rotatable with the spool and the second member in driving relationship with the first member, the first and second members always rotatable in the same direction, and an auxiliary spring having one end attached to the second member for generating an auxiliary driving torque which, in combination with the second member, selectively reduces the rewind spring force subsequent to the seat belt having been protracted a determinable amount and selectively increases the rewind spring force during seat belt retraction.

5,775,619

ROLLER FOR WINDING AND UNWINDING A PROTECTIVE COVER EQUIPPING A MACHINE TOOL OR THE LIKE

Giorgio Tabellini, Sasso Marconi, Italy, assignor to P.E.I. Protezioni Elaborazioni Industriali S.R.L., Zola Predosa Bologna, Italy

Continuation of Ser. No. 242,364, May 13, 1994, abandoned.

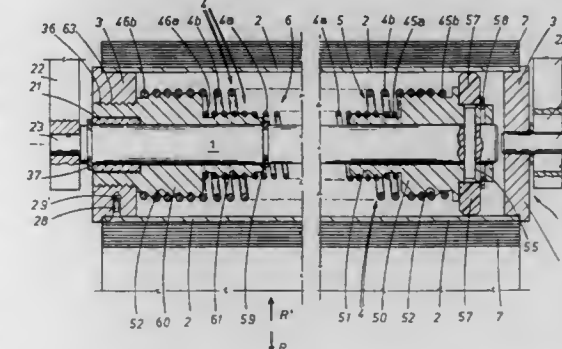
This application Sep. 23, 1996, Ser. No. 724,060

Claims priority, application Italy, Jun. 29, 1993, BO93A0300

Int. Cl.⁶ B65H 75/48; A47G 5/02; A47H 1/00

U.S. Cl. 242—372

12 Claims



7. A cover for covering guides along which a mobile part of a machine moves back and forth between two extreme ends, said cover comprising:
a pair of flexible retractable covering parts, each positioned over said guides at a respective side of said mobile part of said

machine, each said cover being fixed at a first end to the mobile part of the machine, and at the other end to one of a pair of retracting means for retracting the covering parts, such that whenever the mobile part of the machine is moving, one covering part is being retracted while the opposite covering part is being extended, each of said retracting means comprising:

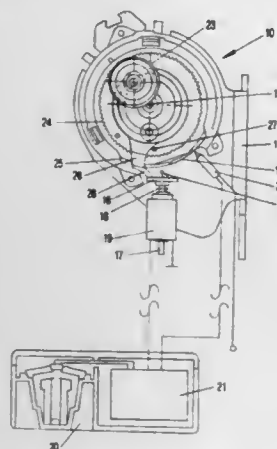
- a support shaft having first and second opposed ends;
- two rotary bearings situated at the opposed ends of the shaft;
- an external tubular element, supported by the rotary bearings, and coaxially containing the shaft, the tubular element being rotatable with respect to the shaft by virtue of being supported by the rotary bearings;
- said other end of said covering part being fixed to the tubular element;
- means for preventing any substantial axial sliding between the tubular element and the shaft;
- means for axially retracting the covering parts after the covering parts have been extended by movement of the mobile part of the machine as the mobile part moves toward the respective end of the guides;
- a first support, fixedly constrained on the shaft, the first support being provided with at least first and second seats;
- a second support, fixedly constrained to the tubular element and rotatably mounted on the shaft, the second support being provided with at least first and second seats;
- wherein the axial retracting means comprises at least first and second nested helical torsion springs, separate but cooperating, which are coaxially mounted on the shaft, each of said springs having an axial length and a circumference, each of said springs having first and second ends, the first end of each of the at least first and second helical springs being respectively fixed in the at least first and second seats on the first support, the second end of each of the at least first and second helical springs being respectively fixed in the at least first and second seats on the second support, each of said springs having a plurality of coils spaced and dimensioned for multiple rotations of said springs, each of said springs having a wire diameter which is small compared to said axial length and said circumference of said springs.

5,775,620 ELECTRICALLY CONTROLLED SAFETY BELT REELING DEVICE

Ronald Jabusch, Elmshorn, and Andreas Bissinger, München, both of Germany, assignors to Autoliv Development AB, Vargarda, Sweden

Filed Nov. 7, 1996, Ser. No. 745,388
Int. Cl.⁶ B60R 22/41

U.S. Cl. 242—383.1



1. A safety belt reeling device for a vehicle, said safety belt reeling device comprising:
a housing;

a reeling shaft rotatably connected in said housing;
a belt connected to said reeling shaft;
a blocking mechanism for blocking said reeling shaft;
a control system for controlling said blocking mechanism and comprising at least one of a vehicle-sensitive sensor and a belt-sensitive sensor;
said control system comprising a control disk with outer tooth- ing rotatably connected to said reeling shaft;
said blocking mechanism comprising a locking pawl for engag- ing, when actuated, said outer tooth- ing and thereby locking said control disk;
said blocking mechanism further comprising a solenoid, respon- sive to said at least one sensor and acting on said locking pawl such that, when said solenoid is excited, said locking pawl is in a release position out of engagement with said outer tooth- ing, and, when said solenoid is not excited, said locking pawl is in a locking position engaging said outer tooth- ing;
a securing device including a follower, said follower securing in a first position said locking pawl in said release position, when said belt is in a rest position completely wound onto said reeling shaft and said solenoid is not excited, and in a second position releasing said locking pawl at a preset removal state of said belt;
said follower connected frictionally to said reeling shaft such that upon a return movement of said reeling shaft, after completion of removal of said belt from said reeling shaft for buckling up, said locking pawl is released;
said follower, in said first position, directly loading said locking pawl;
a reducing gear system connected to said reeling shaft for determining a winding condition of said belt on said reeling shaft;
said reducing gear system comprising a gear wheel with reversed direction of rotation relative to said reeling shaft, said gear wheel comprising a control cam;
said control cam securing in a securing position said locking pawl in said release position when said belt is in said rest position.

5,775,621 COMBINATION REEL CADDY AND STAND FOR CABLE SPOOLS

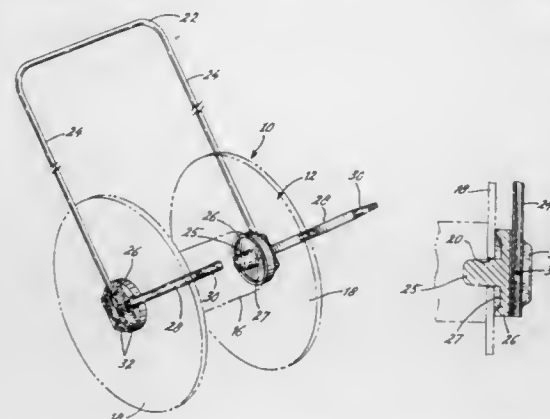
Charles J. Sauber, Virgil, Ill., assignor to We Cousins, Inc., Virgil, Ill.

Continuation of Ser. No. 234,173, Apr. 28, 1994, abandoned.
This application Oct. 25, 1995, Ser. No. 547,961

Int. Cl.⁶ B65H 75/40; 16/06

U.S. Cl. 242—391.1

2 Claims



1. A combination reel caddy and stand for interchangeable use with cable spools, each cable spool having a central drum member and enlarged disk-like ends with central openings therein, the reel caddy and stand providing for portability of the cable spools over a support surface and for selective suspension of the cable spools above the support surface for unwinding the cable therefrom, the

reel caddy and stand comprising: a generally U-shaped bent rod handle having opposed elongated leg portions and a curved end disposed between and joining said leg portions, each of said leg portions carrying a stub spindle member, said stub spindle members being opposed and adapted to be received in the central openings of the spool disk-like ends, each of the leg portions having an end and the ends of the respective leg portions being normally spaced apart and the elongated leg portions being curved end of said handle being formed of a material and disposed with respect to each other so as to allow the leg portions to be resiliently spread apart to interchange the reel caddy and stand between cable spools, the stub spindle members being disposed such that the returning action causes said stub spindle members to be inserted into the central openings of said spool disk-like ends whereby the curved end and leg portions of the handle retain the spool rotatably mounted between the leg portions solely by means of the returning action exerted on said stub spindle members and for rolling the spool on a support surface by movement of the handle parallel to the support surface and wherein an angularly extending stand leg projects radially from each of the stub spindle members for a distance greater than the radius of the disk-like ends of said spool, said stand legs being selectively engageable with said support surface to provide a pivot point for rotation of said handle and the attached spool about said pivot point to a position where said curved end of said handle and said stand legs each engage said support surface to supportably suspend said spool above said support surface to allow for free rotation of said spool for unwinding the cable therefrom, and each stub spindle member including a collar with the inside surface of the collar being dished surrounding the stub spindle member.

5,775,622

WARP REELING SYSTEM

Eduard Jürgens, Wegberg; Ralf Fuchs, Stolberg, and Joachim Beckers, Mönchengladbach, all of Germany, assignors to Sucker-Müller-Hacoba GmbH & Co., Monchen-Gladbach, Germany

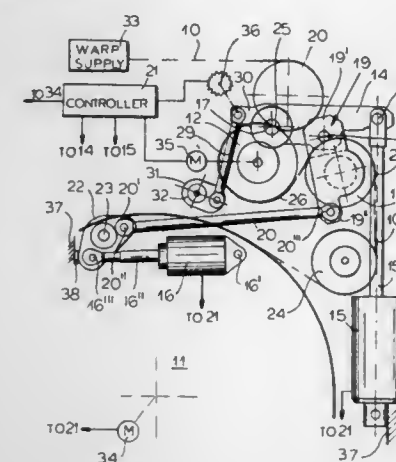
Filed Oct. 16, 1996, Ser. No. 730,956

Claims priority, application Germany, Oct. 16, 1995, 195 38 478.4

Int. Cl.⁶ B65H 23/198

U.S. Cl. 242—413.5

8 Claims



1. A method of winding a warp formed of a multiplicity of parallel filaments on a warp beam with an apparatus having:
a supply of the warp;
a transport roller; and
an adjustment roller adjacent the transport roller and movable between a holding position engaging the transport roller and a winding position spaced therefrom, the warp extending from the supply along a path around the transport roller, then around the adjustment roller, and then around the warp beam; the method comprising the steps of:

normally rotating the beam and transport roller to displace the warp along the path and wind it up on the beam while maintaining the adjustment roller in the winding position;
detecting tension in the warp at least during winding of the warp on the beam;
during winding of the warp on the beam, displacing the adjust- ment roller by a first actuator in a predetermined first direction transverse to the path to increase and decrease the tension to maintain the tension within a predetermined range while maintaining the adjustment roller in the winding position;
periodically arresting the beam and transport roller to stop winding of the warp; and
while winding is stopped, pressing the adjustment roller by a second actuator separate from the first actuator in a second direction transverse to the first direction against the transport roller into the holding position to pinch the stopped warp between the adjustment roller and the transport roller.

5,775,623

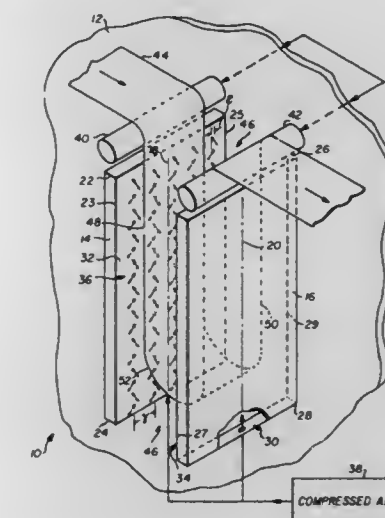
LOW INERTIA APPARATUS AND METHOD FOR ACCUMULATING AND APPLYING TENSION TO WEBS

Michael Long, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 676,996, Jul. 8, 1996, abandoned, which is a continuation of Ser. No. 269,295, Jun. 30, 1994, abandoned. This application Jun. 20, 1997, Ser. No. 879,397

Int. Cl.⁶ B65H 23/24

U.S. Cl. 242—417.1

13 Claims

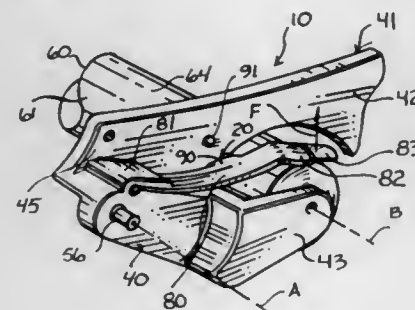


9. In combination, an apparatus for applying tension to a travel- ing web comprising:

- an upstream tensioning wall member including at least one first control surface with a first plurality of apertures therein and having an upper end and a lower end;
- a downstream tensioning wall member including at least one second control surface with a second plurality of apertures therein and having an upper end and a lower end and, said at least one second control surface facing said at least one first control surface;
- a web accumulation space open to ambient pressure between said at least one first control surface and said at least one second control surface;
- a traveling web including a loop portion residing in said web accumulation space, said loop portion having an incoming span traveling generally downward and an outgoing span traveling generally upward, said incoming span residing adja- cent said at least one first control surface, said outgoing span residing adjacent said at least one second control surface, said outgoing span being downstream of said incoming span;
- a first plurality of flows of gas emitted through said first plurality of apertures, each of said first plurality of flows of gas

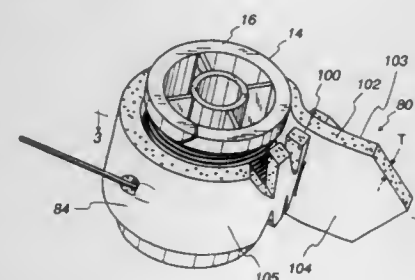
including a substantial component directed in the direction of travel of said incoming span; and
a second plurality of flows of gas emitted through said second plurality of apertures, each of said second plurality of flows of gas including a substantial directed opposite the direction of travel of said outgoing span.

5,775,624
ROLL HOLDER WITH LOCKING PAPER ROLL TENSIONING MEMBER
Joe A. Huerta, 12634 S. 35th Pl., Phoenix, Ariz. 85044
Filed Jun. 26, 1996, Ser. No. 673,731
Int. Cl.⁶ B65H 23/06; B65D 85/02; E04D 15/00
U.S. Cl. 242—422.6 2 Claims



1. In a hand held masking machine for dispensing paper and tape, said hand held masking machine including:
a frame having a handle carried thereby for being held by a human hand;
a paper tensioning member carried by said frame and movable between a normal first orientation for applying tension to a roll of paper, and a second orientation for releasing tension from said roll of paper, said paper tensioning member having a lifting portion accessible by a finger of the hand while a grip is being maintained for allowing a user to dispose said paper tensioning member in said second orientation;
improvements therein comprising:
a detent affixed to said frame, said paper tensioning member disengaged from said detent in said first orientation and detachably engaged with said detent in said second orientation to hold said paper tensioning member in said second orientation.

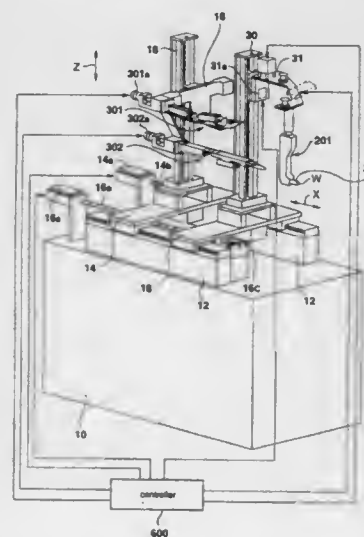
5,775,625
COVER STRIP FOR FACILITATING PAY OFF OF LINE FROM A SPOOL
Hideo Shimomura, 511 Hingham La., Schaumburg, Ill. 60193
Filed Feb. 11, 1997, Ser. No. 798,776
Int. Cl.⁶ B65H 59/02; 75/28; 49/00
U.S. Cl. 242—422.6 21 Claims



1. In combination:
a spool having a core with a central axis;

a supply of a flexible line with a plurality of turns wrapped over the core around the central axis; and
a control strip having a body which in an operative state on the core extends around the core over the supply of flexible line to prevent the flexible line from inadvertently unwrapping, said core being movable relative to the control strip around the central axis,
there being a gripping portion on the control strip which can be grasped to hold the control strip substantially stationary while rotating the core around the core axis,
there being an opening through the control strip,
said flexible line extending from one of the turns through the control strip opening to a usable portion of the flexible line that projects outwardly from the control strip,
said control strip opening being located so that with a user simultaneously grasping the gripping portion of the control strip and the usable portion of the flexible line and exerting oppositely directed forces on the gripping portion of the control strip and the usable portion of the flexible line in a first line to draw the usable portion of the flexible line taut, the usable portion of the flexible line projects from the one turn in a second line that is substantially tangent to the one turn and parallel to the first line,
said control strip body being configured and made from material that has sufficient flexibility to allow the strip to be selectively
a) wrapped conformingly around the supply of flexible line on the spool core with the control strip in the operative state and
b) placed in a substantially flattened state with the control strip separated from the spool.

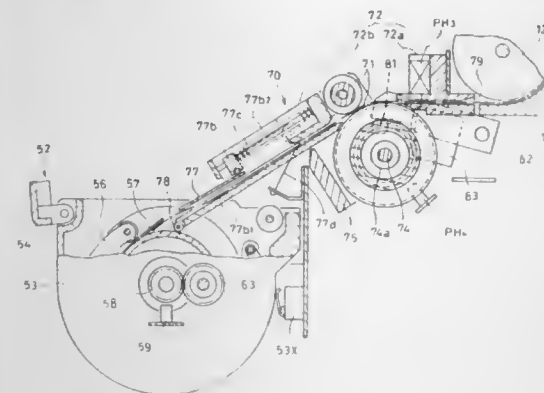
5,775,626
APPARATUS AND METHOD FOR WINDING WIRE AROUND A WORKPIECE
Akira Ono; Hiroyuki Takubo, both of Kanagawa, and Hideaki Kawaura, Chiba, all of Japan, assignors to Sony Corporation, Japan
Filed Sep. 25, 1996, Ser. No. 719,443
Claims priority, application Japan, Sep. 29, 1995, 7-276857
Int. Cl.⁶ B21F 3/10; B65H 81/06; H01F 41/06
U.S. Cl. 242—437 6 Claims



1. A winding apparatus for winding a wire material from a wire material supply source around a workpiece having an outer surface, which apparatus comprises:
first winding means for forming a first winding on the workpiece by moving a nozzle unit, said nozzle unit having an end through which the wire material is paid out from the wire

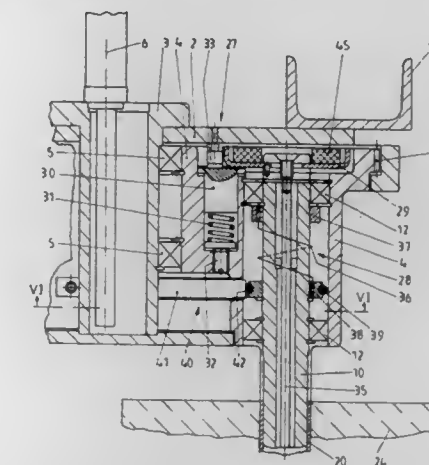
material supply source to the workpiece and a guide unit and operating such that the wire material from the nozzle unit is bound around a binding portion of the workpiece and moved in a three-dimensional direction by the guide unit cooperating with the movement of the nozzle unit, to thereby form a first winding on the workpiece; and
second winding means for forming on the workpiece a second winding different from the first winding by moving the nozzle unit in directions parallel and normal to the axis of the workpiece, said nozzle unit being maintained exterior to said outer surface of said workpiece during the formation of said second winding.

5,775,627
FILM WINDER
Motoaki Murakami, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan
Continuation of Ser. No. 492,565, Jun. 20, 1995, abandoned.
This application Apr. 9, 1997, Ser. No. 832,682
Claims priority, application Japan, Jun. 20, 1994, 6-137247
Int. Cl.⁶ B65H 35/08; 39/14; 19/28
U.S. Cl. 242—526 6 Claims



1. A film winder for winding films discharged from a film developing machine, said film winder comprising:
a film feed path through which are fed developed films discharged from the film developing machine with leaders attached to leading ends of the films;
a film feed adjusting means provided along said film feed path for adjusting the feed of the films along said film feed path by slackening the films;
a film cutter for cutting the films from the leaders;
a separator for directing the films and leaders into separate paths;
a film magazine having a rotatable film winding reel provided on a surface thereof with a film end engaging means; and
a continuous film winding means for continuously winding films around said film winding reel, said film winding means comprising a film guide for sliding a leading end of each film under said film end engaging means to cause the film end to be engaged by said engaging means or a trailing end of a preceding film which has been wound around said reel while raising such trailing end, and a driving means for rotating said reel with the leading end of such each film slid under said film end engaging means or under the trailing end of such preceding film to wind such each film around said reel.

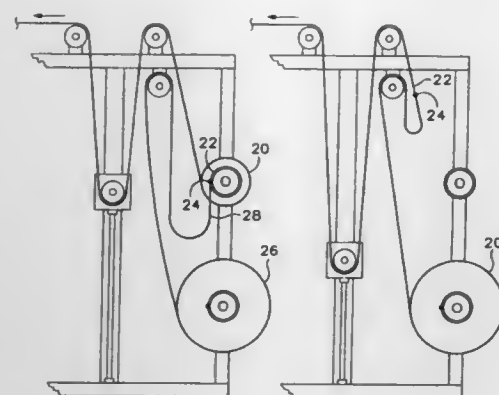
5,775,628
DISCONTINUOUSLY OPERATING WINDING MACHINE FOR WINDING ON MATERIAL TO BE WOUND
Helmut Rabe, Wehretal, and Ernst Döring, Wilbich, both of Germany, assignors to Georg Sahn GmbH & Co. KG, Eschwege, Germany
Filed Oct. 11, 1996, Ser. No. 730,693
Claims priority, application Germany, Oct. 13, 1995, 195 38 095.9
Int. Cl.⁶ B65H 35/04
U.S. Cl. 242—527.3 8 Claims



1. A discontinuously operating winding machine for winding material onto removable tubes comprising:
a frame;
a drum pivotally connected to said frame and rotatable about its longitudinal axis;
a plurality of spindles offset from said longitudinal axis and rotatably mounted on said drum for mounting and rotating tubes for winding with said material, each of said spindles having a longitudinal axis;
a means for rotating said drum about its longitudinal axis such that said spindles revolve from a winding position to a tube changing position;
a means connected to said frame for laying material on tubes mounted on said spindles when one of said spindles occupies said winding position;
a tightening device connected to each of said spindles including a brake assembly and a force storage means; said brake assembly arranged to temporarily prevent free rotary movement of said spindles while said spindles revolve from a winding position to a tube change position; said force storage means of each spindle arranged to collect and store energy imparted thereon as the spindles revolve from said winding position to said tube change position, and
a cutting means connected to said frame for cutting the material extending toward a spindle as the spindle is temporarily prevented by said brake assembly from rotating freely about said longitudinal axis of said spindle.

5,775,629
NON-TWISTING TRANSFER TAIL SYSTEM
Gilles Cyr, Eugene, Oreg., assignor to Industrial Adhesives, Inc., Eugene, Oreg.
Filed Oct. 31, 1996, Ser. No. 741,831
Int. Cl.⁶ B65H 19/00
U.S. Cl. 242—551 16 Claims

1. A non-twisting tape transfer system for interconnecting spools of tape, said system comprising:
(a) a first, currently dispensing spool having a tail, said tail having a pivot;
(b) a second spool having a tape end; and



(c) a lead having a first end connectable to said pivot and a second end connectable to said tape end, said first end of said lead defining an aperture.

5,775,630

ROLL STAND

Hans Högberg, and Stefan Bäck, both of Åmål, Sweden, assignors to Amal Aktiebolag, Amal, Sweden

PCT No. PCT/SE94/00862, § 371 Date Mar. 5, 1996, § 102(e) Date Mar. 5, 1996, PCT Pub. No. WO95/08503, PCT Pub. Date Mar. 30, 1995

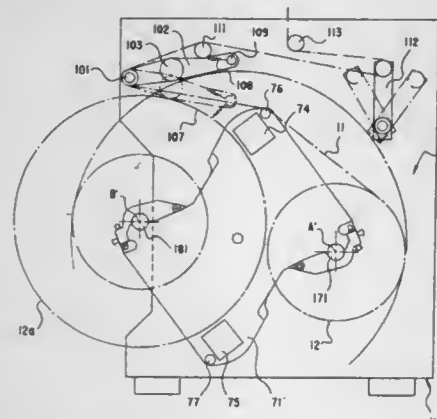
PCT Filed Sep. 16, 1994, Ser. No. 605,062

Claims priority, application Sweden, Sep. 20, 1993, 9303055

Int. Cl.⁶ B65H 19/16

U.S. Cl. 242—554.6

9 Claims



1. Roll stand comprising:

- a frame;
- at least one supporting shaft mounted on said frame;
- a roll-holding device on said at least one supporting shaft and having two unwinding stations, each unwinding station including a rotatably mounted roll spindle;
- means mounted on said frame for joining a first material web during a roll-changing operation unwound from a roll provided on one rotating roll spindle to a leading end of a second material web from another roll mounted on the other rotating roll spindle, the leading end being provided with adhesive;
- means for cutting off the first material web; and
- a rotational motion transmission connected to each of the roll spindles, said transmission including two coaxially arranged shafts running through said at least one supporting shaft, roll arm transmissions connected between said two coaxially arranged shafts and said roll spindles, an acceleration unit arranged to drive said two coaxially arranged shafts, a braking unit arranged for braking the spindles, and means for transferring the rotary moment from the roll spindles to the braking unit, comprising a first free-wheel mechanism arranged to connect

the braking unit to the one roll spindle which is momentarily rotating at a higher speed than the other roll spindle, and at the start of the roll-changing operation, for transferring an acceleration moment from the acceleration unit to the roll spindles, said transferring means further comprising a second free-wheel mechanism arranged to connect the acceleration unit to the one roll spindle which is momentarily rotating at a lower speed than the other roll spindle.

5,775,631

SUPPORT SHAFT ASSEMBLY FOR STABLY SUPPORTING ROLLS OF MATERIAL

Motoaki Murakami, Wakayama, Japan, assignor to Noritsu

Koki Co., Ltd., Wakayama, Japan

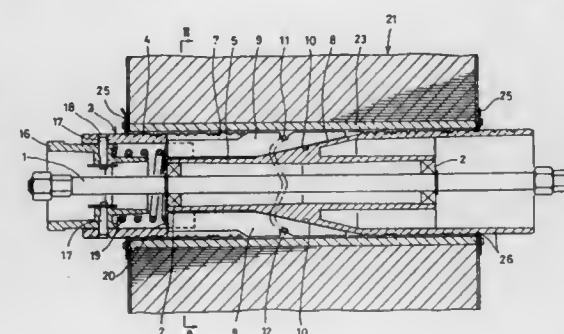
Filed Oct. 23, 1996, Ser. No. 731,979

Claims priority, application Japan, Oct. 25, 1995, 7-277689

Int. Cl.⁶ B65H 75/24

U.S. Cl. 242—573.9

14 Claims



1. A support shaft assembly for supporting a roll of material, said assembly comprising:

- a core shaft;
- a core support roll rotatably supported on said core shaft;
- said core support roll having an outer periphery having therein a plurality of circumferentially spaced and axially extending guide grooves, each said guide groove having a tapered surface inclined radially outwardly toward a first axial end of said core support roll;
- a plurality of slider plates, each said slider plate being positioned within a respective said guide groove, and each said slider plate having an inner side face inclined in the same direction as said tapered surface of said respective guide groove;
- a coil spring positioned around said core support roll and urging each said slider plate inwardly toward said respective guide groove;
- said core support roll having at a second axial end thereof a guide hole having a guide portion extending in a direction inclined with respect to both axial and circumferential directions of said core support roll;
- a knob having a guide pin extending therefrom; and
- said knob being positioned at said second axial end of said core support roll with said guide pin extending into said guide hole, and said knob being rotatable relative to said core support roll such that said guide pin is moved along said guide portion of said guide hole, thereby causing said knob to move axially relative to said core support roll to cause movement of said slider plates toward said first axial end of said core support roll, whereby said inner side faces of said slider plates slide along said tapered surfaces of said guide grooves and said slider plates are moved radially outwardly of said guide grooves.

5,775,632

MANDREL FOR USE WITH AN APPARATUS FOR DISPENSING MATERIAL FROM A ROLL

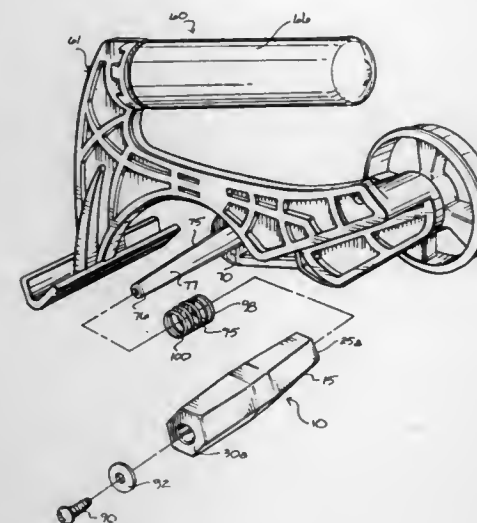
Joe A. Huerta, 12634 S. 35th Pl., Phoenix, Ariz. 85044

Filed Jun. 3, 1996, Ser. No. 656,925

Int. Cl.⁶ B65H 49/26

U.S. Cl. 242—597.6

10 Claims



1. An apparatus for dispensing material from a roll, said apparatus including:

- a frame;
- a shaft extending outwardly from said frame and terminating with a free end and having an outer surface;
- a roll of material including a core, said core having a generally cylindrical inner surface defining a bore extending there-through;
- a unitary mandrel detachably and rotatably carried by said shaft, said mandrel including an exterior surface with a contact portion, an outer tapered lead portion, and an inner tapered lead portion, said contact portion of said mandrel being detachably engaged to said generally cylindrical inner surface of said core for detachably retaining said roll of material thereon; and
- means proximate said free end of said shaft for detachably retaining said unitary mandrel to said shaft while allowing said unitary mandrel to rotate upon said shaft.

5,775,633

WALLPAPER BORDER ROLL HOLDER

Arthur Zane, 3800 20th St. N., St. Petersburg, Fla. 33714, assignor to Arthur Zane, St. Petersburg, Fla.

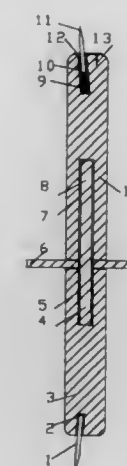
Filed Aug. 19, 1996, Ser. No. 699,537

Int. Cl.⁶ B65H 16/02

U.S. Cl. 242—599.1

1 Claim

- 1. A wall paper border supporting device comprising an elongated shaft member having bottom and top shaft portions, a dowel extending from the bottom shaft portion and into an opening in the top shaft portion to rotatably support the top shaft portion for rotation with respect to the bottom shaft portion, a shelf supported by the dowel between the bottom and top shaft portions for rotatably supporting a roll of wallpaper border, a fixed spike extending from the bottom shaft portion and a spring loaded spike extending from the top shaft portion, wherein a roll of wallpaper can be supported on the elongated shaft member for dispensing of the wallpaper while the shaft member is temporarily mounted



5,775,634

LATCHING RECYCLABLE MOTION PICTURE REEL

Ian Fettes, Newport Beach; Ranjiv Goonetilleke, and Cesar Fernandez, both of Paramount, all of Calif., assignors to Circular Motion Products, Paramount, Calif.

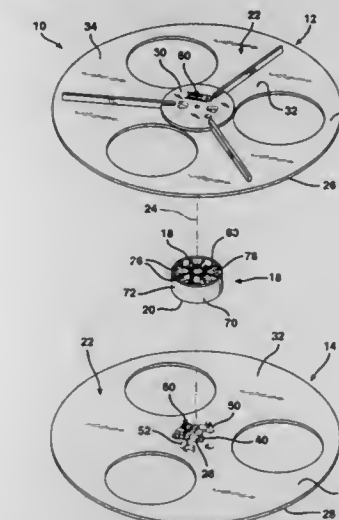
Continuation-in-part of Ser. No. 632,061, Apr. 15, 1996, Pat. No. 5,676,332. This application Apr. 21, 1997, Ser. No.

845,165

Int. Cl.⁶ B65H 75/14

U.S. Cl. 242—608.6

16 Claims



- 1. A motion picture film reel comprising: a pair of retaining members each formed with a flat, side cheek-plate member having a central axis of rotation, an outer circular perimeter, and an inner, hub-engaging region concentric relative to said axis of rotation, each retaining member also having a pair of diametrically opposed posts, each post extending normal to said cheek-plate member from said hub-engaging region thereof and having a catch thereon extending parallel to said cheek-plate member and at a tangential orientation in a common direction of angular displacement from said posts, each of said posts further defining a cam surface thereon oriented to face in a direction away from said catch thereon; and a disk-shaped hub having opposite sides, an annular outer cylindrical rim, and a transverse web extending radially inwardly therefrom and defining a pair of diametrically opposed post-receiving apertures therethrough, wherein said retaining members are disposed on said opposite sides of said hub with said posts of both of said retaining members projecting through said pair of post-receiving

apertures from opposite sides of said hub and said cam surfaces of said posts of each of said retaining members reside in contact with said cam surfaces of said posts of each other of said retaining members, whereby said catches engage said web from opposite sides thereof.

5,775,635

AIRCRAFT ENGINE NOZZLE

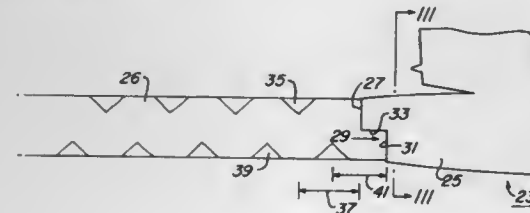
Boyd B. Bushman, Lewisville, Tex., assignor to Lockheed Martin Corporation, Houston, Tex.

Filed Jun. 17, 1996, Ser. No. 667,963

Int. Cl.⁶ B64D 33/04

U.S. Cl. 244—1 N

11 Claims



1. In an aircraft having an engine which has a nozzle through which a gaseous plume exhausts along an axis of the nozzle, the improvement comprising:

the nozzle having a forward discharge edge and a rearward discharge edge, the forward discharge edge being spaced forward of the rearward discharge edge along the axis to reduce a volume of Mach diamonds created in the plume; and wherein

the nozzle has a maximum transverse dimension at the rearward discharge edge measured perpendicular to the axis, and the forward discharge edge is spaced forward of the rearward discharge edge by a distance substantially equal to one-half the maximum transverse dimension of the nozzle at the rearward discharge edge.

5,775,636

GUIDED ARTILLERY PROJECTILE AND METHOD

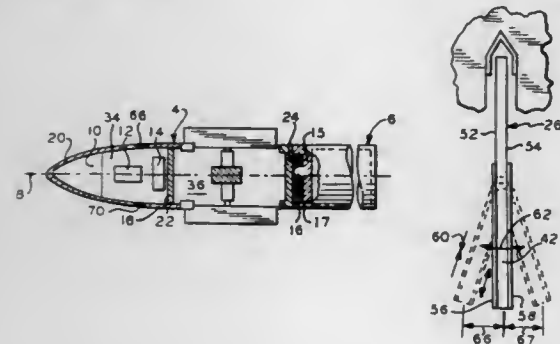
John R. Vig, Colts Neck, N.J., and Steven W. Waugh, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 30, 1996, Ser. No. 723,069

Int. Cl.⁶ F42B 10/00; F41G 7/00

U.S. Cl. 244—3.24

7 Claims



1. A projectile comprising:

a shell having an axis;

a plurality of air deflectors mounted on the shell and movable relative thereto;

actuating means connected to the air deflectors for providing steering of the projectile during spinning thereof without the need to despin any portion of the projectile;

control means for controlling the actuating means; a guidance system including a GPS receiver for providing information to the control means; and a fuse unit for detonation of the projectile upon actuation of the fuse unit and wherein the actuating means includes a plurality of cylinders with pistons respectively connected to the air deflectors for movement of the air deflectors in a radial direction at a rate in synchronism with a spin rate of the projectile; and wherein said air deflectors are fins.

5,775,637

DEVICE FOR REDUCING THE VIBRATIONS ON THE STRUCTURE OF A HELICOPTER

Alain Vuillet, Bouc Bel Air, and Elio Zoppitelli, Velaux, both of France, assignors to Eurocopter France, Marignane Cedex, France

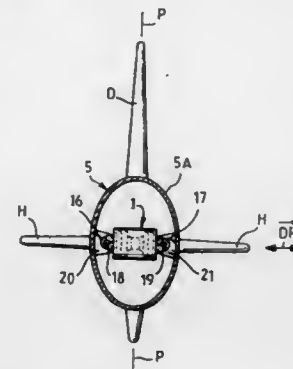
Filed Dec. 9, 1996, Ser. No. 762,614

Claims priority, application France, Dec. 8, 1995, 95 14554

Int. Cl.⁶ B64C 27/06

U.S. Cl. 244—17.11

5 Claims



1. In a helicopter comprising:

a structure (5A) with a tail boom (5) and a fin (D), said structure having a longitudinal vertical mid-plane (P); and

a main lift and propulsion rotor (3) generating an aerodynamic flow passing through said rotor and inducing vibrations on said structure, a damping device for reducing said vibrations which:

comprises a longitudinal chamber (9) which is equipped with at least one central restriction (9A) and with two elastically urged mobile lateral walls (10, 11) and which is full of a fluid (FL) representing an oscillating mass; and is mounted in said tail boom (5) close to said fin (D) so that the direction (X—X) of travel of said oscillating mass (FL) is at least substantially orthogonal to said longitudinal vertical mid-plane (P).

5,775,638

MOUNTING ARRANGEMENT FOR A GAS TURBINE ENGINE

Paul W. Duesler, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 362,719, Dec. 23, 1994, abandoned.

This application Nov. 1, 1996, Ser. No. 742,525

Int. Cl.⁶ B64D 27/26; F16M 1/00

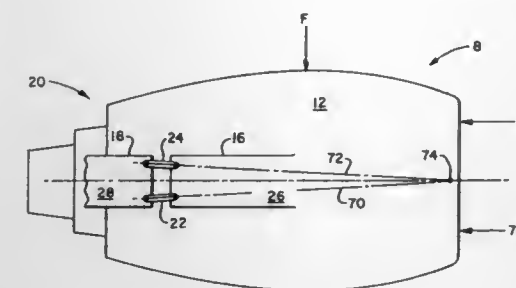
U.S. Cl. 244—54

21 Claims

1. A mounting arrangement for a gas turbine engine on an aircraft including:

a gas turbine engine for powering said aircraft;

a nacelle enclosing said gas turbine engine; said nacelle having a net aerodynamic load acting on said nacelle in a direction perpendicular to the axis of said nacelle, a pylon suspended from said aircraft; and



a support for securing said nacelle to said pylon comprising:

a four bar linkage arrangement having,

a first pylon attachment point,

a second pylon attachment point,

a first nacelle attachment point,

a second nacelle attachment point,

a first link, connecting one of said pylon attachment points and one of said nacelle attachment points,

a second link, connecting the other of said pylon attachment points and the other of said nacelle attachment points,

the distance between said first and second nacelle attachment points being less than the distance between said first and second pylon attachment points, whereby an instant center of rotation is established by said first and second links and said instant center of rotation disposed forward of a point of application of said net aerodynamic load, thereby steering said nacelle to counteract angular deflection of said pylon and said nacelle due to said aerodynamic load acting thereon.

5,775,639

THRUST REVERSER WITH PIVOTING DOORS WHICH CAN MOVE IN TRANSLATION

Etienne Fage, "Le Moulin" 31, Avenue des Cistes, 83350 Ramatuelle, France

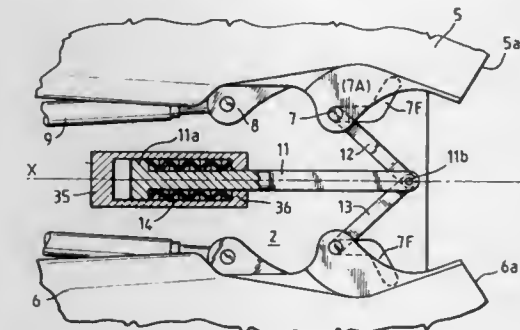
Filed Nov. 17, 1995, Ser. No. 544,445

Claims priority, application France, Dec. 15, 1994, 94 15365; Aug. 10, 1995, 95 09714; Sep. 4, 1995, 95 10330

Int. Cl.⁶ F02K 1/60

U.S. Cl. 244—110 B

29 Claims



1. A thrust reverser for an aircraft jet engine including:

at least one door, the rear end of which is mounted so that said door can pivot with respect to said engine, about an axis of pivoting (P—P) arranged at the rear end of said engine and arranged transverse to the longitudinal axis (X—X) of said engine;

means for making each door pivot about said axis of pivoting (P—P), between:

an extreme retracted position, in which said door is subjected by said engine to pressure forces acting in the direction of deployment; and

an extreme deployed position, in which said door is arranged at least substantially transversely to said longitudinal axis (X—X) of the engine; and

means for displacing said axis of pivoting (P—P) along said longitudinal axis (X—X) of the engine, a distance between an advanced position and a retreated position and vice versa, the distance separating said advanced and retreated positions along the longitudinal axis of the engine being of the order of 1% to 2% of the diameter of the outer orifice of the engine, and

radial stop means having no control means and including elements integral with the front end of each door and capable of interacting with mating elements integral with said engine; said radial stop means being designed to prevent the deployment of said door in the advanced position of said axis of pivoting (P—P) and to allow this deployment in the retreated position of said axis of pivoting, and wherein said at least one door is deployed only when said means for displacing the axis of pivoting receives a control order.

5,775,640

LANDING INSTALLATION FOR LANDING A TETHERED BALLOON

Matthieu Gobbi, 71 avenue Raymond Poincaré, and Jérôme Giacomoni, 91 avenue Kléber, both of 75116 Paris, France

PCT No. PCT/FR94/01488, § 371 Date Jun. 19, 1996, § 102(e) Date Jun. 19, 1996, PCT Pub. No. WO95/17333, PCT Pub. Date Jun. 29, 1995

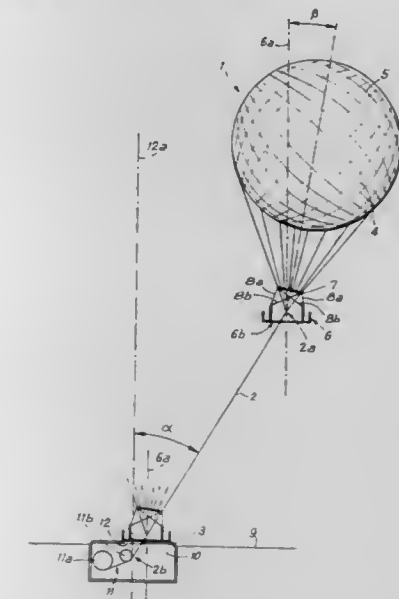
PCT Filed Dec. 19, 1994, Ser. No. 663,074

Claims priority, application France, Dec. 22, 1993, 93 15709

Int. Cl.⁶ B64B 1/66

U.S. Cl. 244—115

14 Claims



1. A tethered balloon and landing installation therefor, the tethered balloon being brought back towards the ground by means of a return cable, and including a gondola which has a hollow center through which the return cable passes, and the installation including means for winding out and in the return cable, which means are mounted in a cavity in the ground, the balloon and installation being characterized in that the installation further comprises a landing platform covering the cavity and including an opening through which the return cable passes and which is centered on a vertical outlet axis for the return cable, in that firstly the landing platform is constituted by the curved surface of at least one right truncated cone which is extended at its bottom by a substantially horizontal annular landing zone and which is centered on the vertical outlet axis for the return cable, and in that, secondly, the gondola of the balloon is fitted with at least three swivel-mounted wheels which are fixed beneath the gondola in an annular zone having the same dimensions as the landing zone.

5,775,641

AIRCRAFT CARGO PANNIER ASSEMBLY

Peter Goon, The Levels, Australia, assignor to Australian Flight Test Services Pty Ltd, Australia

PCT No. PCT/AU94/00622, § 371 Date Apr. 15, 1996, § 102(e)

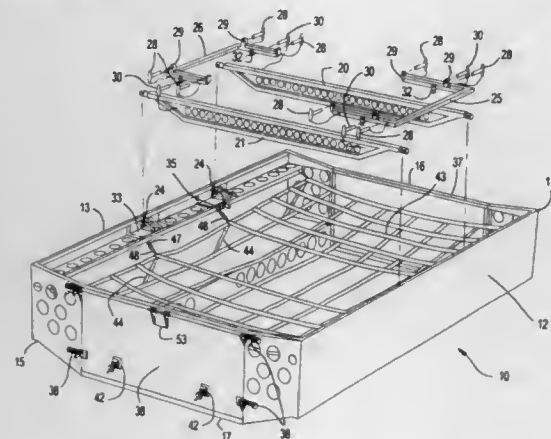
Date Apr. 15, 1996, PCT Pub. No. WO95/10449, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 13, 1994, Ser. No. 628,688

Claims priority, application Australia, Oct. 15, 1993, PM1825

Int. Cl.⁶ B64D 1/10; B64C 1/20; F41F 3/042

U.S. Cl. 244—118.1 22 Claims



1. An aircraft cargo and/or equipment pannier system for an aircraft having a weapons bay in its fuselage, said pannier system comprising:

a container chassis having a pair of opposite side walls, a pair of opposite end walls, a bottom wall and an open top, a pair of longitudinally spaced apart beam attachment mountings adjacent each of the side walls near the upper edge thereof, the attachment mountings on one side of the chassis being transversely aligned with the corresponding attachment mountings on the other side,

a pair of longitudinally spaced apart rigid cross beams, each extending between and having its opposite ends respectively releasably attached by connection means to said mountings, said cross beams, when thus attached, being housed essentially within the confines of the container chassis, an upper support frame assembly,

mutually spaced apart attachment means on said support frame assembly for releasably securing the support frame assembly at spaced apart fastening points to the ceiling of the weapons bay of the aircraft, and

releasable securing means for releasably securing the support frame assembly at mutually spaced locations to said cross beams near opposite ends of each said cross beam.

5,775,642

CONVERTIBLE PASSENGER SEAT ASSEMBLY

Michael T. Beroth, Lewisville, N.C., assignor to BE Aerospace, Inc., Wellington, Fla.

Continuation of Ser. No. 228,512, Apr. 15, 1994, Pat. No.

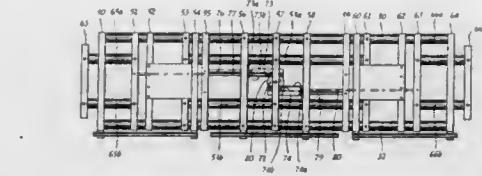
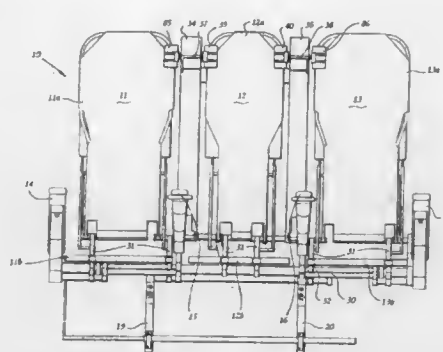
5,597,139. This application Jan. 15, 1997, Ser. No. 784,022

Int. Cl.⁶ B64D 11/06

U.S. Cl. 244—118.6 8 Claims

1. A seat assembly convertible between multi-seat configurations, comprising:

(a) a seat assembly base;
(b) first and second outboard seats moveable on said seat assembly base, and defining a variable-width zone therebetween;
(c) manually-actuated drive means carried by said seat assembly base and drivably interconnecting said first and second outboard seats for simultaneous movement of said outboard seats relative to each other, said first and second outboard seats being moveable:



1. away from each other on said seat assembly base to increase the variable-width zone, thereby increasing the space for accommodating additional seats between the outboard seats; and
2. towards each other on said seat assembly base to decrease the variable-width zone, thereby reducing the space for accommodating additional seats between the outboard seats.

5,775,643

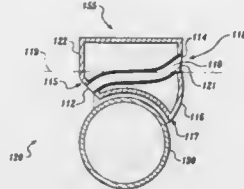
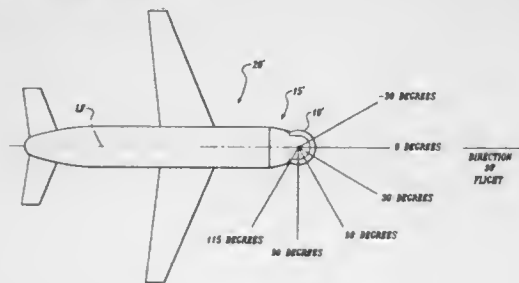
PASSIVE FLOW CONTROL AERO-OPTICAL TURRET ASSEMBLY

Daniel McMaster, Bellevue, and Robert Edward Breidenthal, Jr., Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 18, 1996, Ser. No. 731,755

Int. Cl.⁶ H01Q 1/28; F41G 7/26; B64C 1/38; 21/06

U.S. Cl. 244—130 12 Claims



1. An aircraft mountable aero-optical turret assembly comprising:

(a) an aero-optical turret mount, the mount comprising a housing having a forward end adapted for rotatably mounting an aero-optical turret thereto, and an aft end adapted for mounting to an aircraft, the housing comprising an outboard extend-

ing aerodynamic bulge on an outer surface of the housing, the bulge comprising a bulge aft zone located aft of the forward end of the housing;

(b) a rotatable aero-optical turret mounted to the forward end of the turret mount;

(c) at least one duct extending through the housing of the turret assembly, the at least one duct having:

- (i) at least one inlet end adjacent, and aft of, the aero-optical turret, and
- (ii) an outlet end, in fluid communication with the bulge aft zone, so that when air flows over the assembly, the outlet end of the duct is exposed to low pressure in the bulge aft zone.

5,775,644

Patent Not Issued For This Number

5,775,645

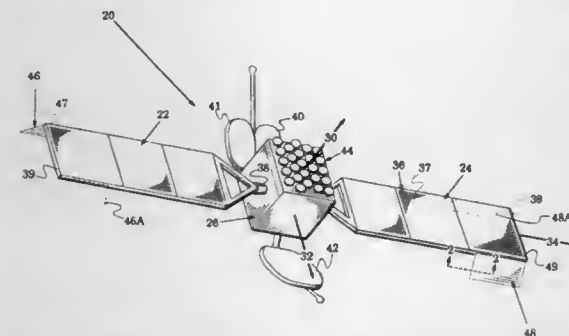
CONTROLLED-EMISSION SOLAR TABS FOR ATTITUDE SOLAR SAILING

John F. Yocum, Jr., Rancho Palos Verdes; Richard A. Fowell, Culver City, and Raymond S. Lee, Cerritos, all of Calif., assignors to Hughes Electronics Corporation, Los Angeles, Calif.

Filed Mar. 5, 1996, Ser. No. 610,920

Int. Cl.⁶ B64G 1/24

U.S. Cl. 244—168 28 Claims



1. Apparatus for using solar radiation to generate at least one attitude-control torque on a spacecraft which has a body and first and second wings extending oppositely from said body, said wings rotatable about a rotation axis and each having front and back faces, comprising:

first and second tabs attached respectively to said first and second wings and oppositely spaced from said rotation axis; a front face formed by each of said tabs with a solar radiant-energy absorptivity greater than 0.5 and a thermal emissivity less than 0.5; and a back face formed by each of said tabs with a thermal emissivity greater than 0.5; photon absorption from said solar radiation in the front faces of said first and second tabs and thermal emission of photons from the back faces of said first and second tabs generating said attitude-control torque.

5,775,646

SELF-POWERED HORIZON CROSSING INDICATOR

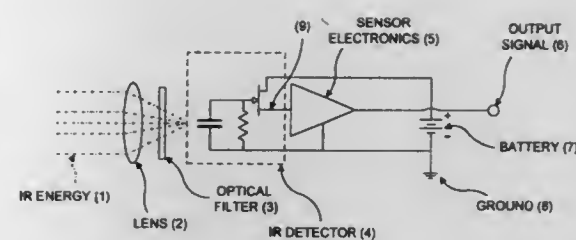
Alan P. Doctor, Sea Cliff, N.Y., assignor to Servo Corporation of America, Westbury, N.Y.

Filed Sep. 28, 1995, Ser. No. 535,625

Int. Cl.⁶ B64G 1/36

U.S. Cl. 244—171 2 Claims

1. In an earth horizon crossing indicator attitude control system for a satellite, an earth horizon crossing indicator comprising a



detector and electronic signal processing means responsive to the detector, wherein the satellite includes a power supply, and the improvement comprises a dedicated battery providing power to said electronic signal processing means, whereby said electronic signal processing means is electrically isolated from the power supply of the satellite.

5,775,647

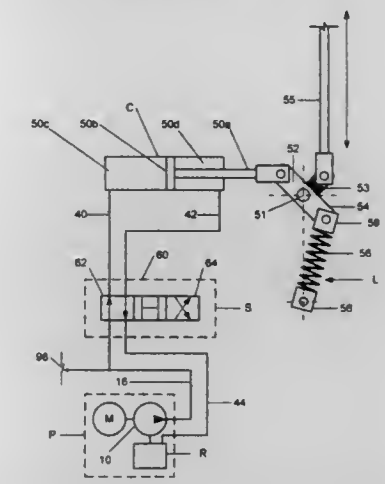
HYDRAULIC SWITCH STAND

Michael L. Wyatt, 6455 Muirfield Dr., Paducah, Ky. 42001

Filed Jan. 31, 1997, Ser. No. 792,493

Int. Cl.⁶ B61L 7/04

U.S. Cl. 246—258 7 Claims



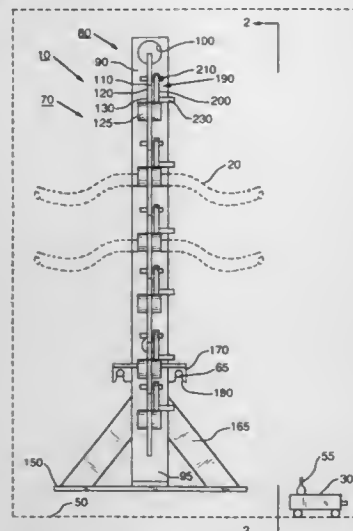
1. An apparatus for moving railroad switch points from side-to-side, the apparatus comprising:

a pivot shaft;
a connecting rod having a first end operatively connected to the pivot shaft and a second end operatively attached to the switch points such that movement of the connecting rod along its axis moves the switch points from side-to-side;
a hydraulic cylinder having an operating rod that has a first end operatively connected to the pivot shaft and a second end connected to a piston internally disposed in the hydraulic cylinder, the piston defining a portion of two separate pressurizable chambers within the hydraulic cylinder;
a hydraulic power source in fluid communication with the pressurizable chambers in the hydraulic cylinder;
a valve positioned in fluid communication between the hydraulic power source and each of the pressurizable chambers in the hydraulic cylinder for selectively controlling the direction of movement of the operating rod of the hydraulic cylinder;
a biasing spring having a first end pivotally attached to a fixed point and a second end operatively attached to the pivot shaft, wherein movement of the operating rod along its axis causes a rotation of the main pivot shaft, which translates to movement of the connecting rod along its axis to effect switching of the switch points from side-to-side and wherein the biasing spring exerts a force against its connection to the pivot shaft to assist in the retraction or extension of the connecting rod and to lock the connecting rod in position after the operating rod has been extended or retracted.

5,775,648
PORTABLE CONDUIT RETENTION APPARATUS FOR
RELEASABLY RETAINING A CONDUIT THEREIN
 Richard H. Metzger, West Seneca, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
 Filed Aug. 26, 1996, Ser. No. 703,179
 Int. Cl.⁶ F16L 3/22

U.S. Cl. 248—68.1

10 Claims



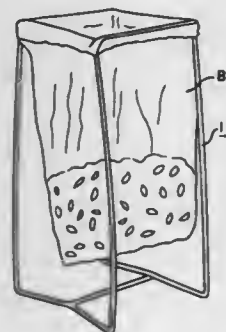
1. A portable conduit retention apparatus for releasably retaining a conduit therein, comprising:

- (a) portable conduit support means for supporting the conduit, said conduit support means adapted to receive the conduit therethrough;
- (b) releasable retention means pivotally connected to said conduit support means for releasably retaining the conduit in said conduit support means; and
- (c) ballast means of predetermined weight removably connected to said conduit support means for adding ballast to and removing ballast from said conduit support means, so that said conduit support means is respectively stationary and movable.

5,775,649
BAG HOLDER
 Dennis S. O'Leary, 3712 Misty Oak Dr., Memphis, Tenn. 38125
 Continuation-in-part of Ser. No. 655,976, May 31, 1996, abandoned. This application Mar. 21, 1997, Ser. No. 821,469
 Int. Cl.⁶ A63B 55/04

U.S. Cl. 248—97

5 Claims



1. A bag holder placeable in a bag holding condition in which a bag is being held by the bag holder and a bag removed condition in which no bag is being held by the bag holder, said bag holder comprising:

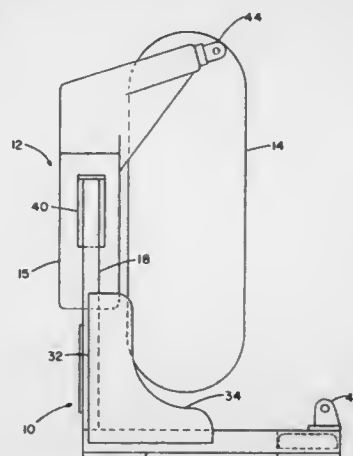
- (a) a base including a resilient first base member having opposite ends and a resilient second base member having opposite ends, said first and second base members being spaced apart in substantially parallel relationship;
- (b) a crossbar member joining said first base member and said second base member midway and perpendicular between said first base member and said second base member;
- (c) four resilient legs fixedly attached to said base and upwardly extending therefrom, two of said legs being respectively attached to one of the ends of said first base member and to one of the ends of said second base member to provide a first side of the bag holder, and the other two of said legs being respectively attached to the other of the ends of said first base member and to the other of the ends of said second base member to provide a second side of the bag holder;
- (d) said first base member and said second base member being slightly bent upward at the respective junctures of said crossbar member and said first base member and said second base member;

wherein when said bag holder is in the bag removed condition said first and second sides of said bag holder diverge upwardly and outwardly away from one another with the upper ends of said first and second sides being spaced apart wider than the mouth of the bag to be held by the bag holder whereby when said bag holder is placed in said bag holding condition with the bag on said bag holder said first and second sides of said bag holder are held inwardly towards one another in a substantially vertical position by the bag and said first and second base members are moved by said first, second, third and fourth leg members towards a straightened horizontal position.

5,775,650
ROLL WHEEL STAND
 Barry A. Fox, Overland Park, Kans., assignor to The Babcock & Wilcox Company, New Orleans, La.
 Filed Dec. 20, 1996, Ser. No. 771,558
 Int. Cl.⁶ B65D 19/44

U.S. Cl. 248—176.1

6 Claims



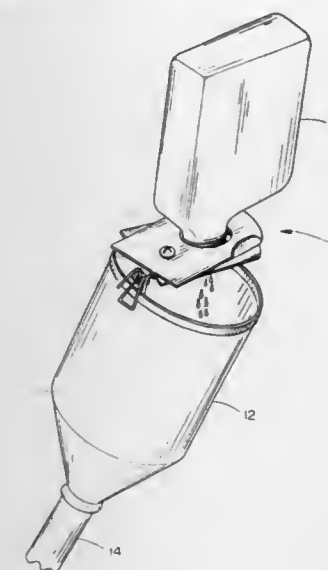
1. An apparatus which holds a roller wheel assembly, the roller wheel assembly comprised of a roller wheel supported by a triangular frame, comprising:

- a pair of vertically oriented channel members spaced apart in a predetermined manner, each of said vertically oriented channel members having a distal end that is angled inwardly so as to receive a triangular portion of the triangular frame of a roller wheel assembly;
- a pair of bottom members fastened to said vertically oriented channel members, said bottom members being situated substantially at a right angle to said vertically oriented members with each of said vertically oriented channel members connected to said bottom members in a spaced apart relationship approximately parallel to each other and connected to each

5,775,651
DEVICE FOR HOLDING A CONTAINER INVERTED FOR
EMPTYING
 Steven J. Jackovich, 919 25th St., Bettendorf, Iowa 52722
 Filed Sep. 30, 1996, Ser. No. 724,102
 Int. Cl.⁶ A47G 23/02

U.S. Cl. 248—213.2

2 Claims



1. A device for holding a container inverted for emptying, comprising:

- (a) a first container lock plate having a first aperture formed therethrough;
- (b) a second container lock plate, pivotally affixed to said first container lock plate, and having a second aperture formed therethrough, said first and second lock plates being selectively pivotable to vary the alignment of said first and second apertures from full alignment, through various degrees of partial alignment, the inverted container being received when said apertures are generally fully aligned and being held by pivoting of said lock plates to position said apertures in partial alignment; and
- (c) a funnel engagement clip secured to said first and second container lock plates.

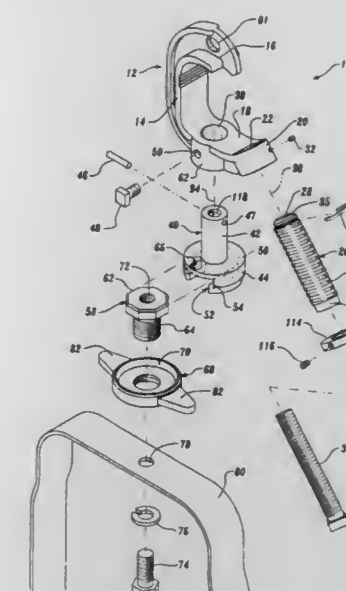
5,775,652
THEATRICAL LIGHTING CLAMP
 Alan W. Crawshaw, Seattle; Paul J. Katocs, Fall City, and Nicholas J. Watts, Renton, all of Wash., assignors to A.C.T. Enterprises, Inc., Seattle, Wash.
 Filed Nov. 16, 1995, Ser. No. 559,545
 Int. Cl.⁶ E04G 3/00

U.S. Cl. 248—230.6

32 Claims

1. A quick release clamp for mounting equipment on a structural member, comprising:

- a C-shaped body having a jaw portion, a back portion, and a base portion, the jaw and base portions extending from the back portion in opposing spaced disposition, the base portion defining an adjustment aperture, wherein the adjustment aperture is formed with an internal interrupted thread;
- an elongate tubular sleeve defining an internal uninterrupted threaded passage and an external interrupted thread, the sleeve being receivable within the adjustment aperture of the

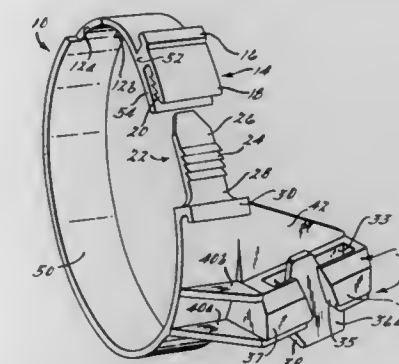


body and rotatable about a longitudinal axis of the sleeve between a first position, in which the sleeve is freely movable longitudinally within the adjustment aperture, and a second position, in which the external interrupted thread of the sleeve engages and locks within the internal interrupted thread of the body to prevent longitudinal movement of the sleeve; an elongate bolt coaxially and threadably received within the sleeve and rotatable within the sleeve to project a selected amount through the sleeve towards the jaw and back portions of the body to securely capture the structural member therebetween; and mounting means formed on the body for securing the body to the equipment.

5,775,653
CLAMP DEVICE FOR ATTACHING AND POSITIVELY
ORIENTING A VEHICULAR COMPONENT TO A
TUBULAR MEMBER
 Kenneth Horney, Harrison Township, and Thomas M. Knowles, Sterling Heights, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
 Filed May 30, 1996, Ser. No. 656,940
 Int. Cl.⁶ B65D 63/00

U.S. Cl. 248—230.8

4 Claims



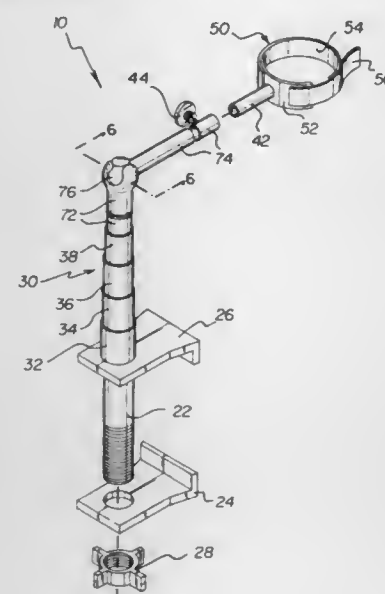
1. A clamp device for attaching a vehicular component to a tubular member, the tubular member having a first flexible ring retention member protruding therefrom and an opposing, longitudinally spaced second flexible ring retention member protruding therefrom, the clamp device comprising:

- (A) a split ring comprising:
 - (i) a latch end member defining a first free end of the split ring,

- (ii) a tab end member defining a second free end of the split ring, and
- (iii) means disposed on the latch end member and the tab end member for interengaging the latch end member and the tab end member when the ring is closed around the tubular member, and
- (iv) two opposing, adjacent notches disposed therein for positively locating the ring on the tubular member when the two notches are disposed between the first flexible ring retention member and the second flexible ring retention member of the tubular member; and
- (B) a component retention member fixedly attached to the ring for positively orienting the component on the tubular member, the retention member comprising:
- (i) a support member integrally formed with the ring, and
- (ii) a housing affixed to the support member, the housing having means for slidably receiving and releasably attaching the component to the ring.

5,775,654
TELESCOPING CUP HOLDING SYSTEM
Betty J. Price, 1 Lamont La., Greenville, S.C. 29611
Filed Jul. 15, 1996, Ser. No. 679,989
Int. Cl.⁶ A47B 96/06
U.S. Cl. 248—231.61

1 Claim



1. A telescoping cup holding system comprising:
- a securing means for engaging an article of furniture;
- a first telescoping member having first and second ends with said first end thereof being mounted on the securing means;
- a second telescoping member having first and second ends with the first end thereof being coupled to the second end of said first telescoping member; and
- a cup capturing means secured to the second end of the second telescoping member for mounting a cup to said second telescoping member;
- wherein the coupling of the first and second telescoping members comprises a ball mounted on an end of one said telescoping member and a socket mounted on an end of the other said telescoping member, said ball being positioned in said socket to permit pivoting of said second telescoping member with respect to said first telescoping member;
- wherein the securing means includes:
- a threaded shaft;
- a top clamping member secured to the upper portion of the threaded shaft and projecting orthogonally with respect to said threaded shaft;
- a bottom clamping member slidably attached to the threaded shaft below the top clamping member; and

a clamping knob rotatably threadedly engaging the bottom portion of the threaded shaft adjacent to the bottom clamping member for forcing the bottom clamping member toward the top clamping member to capture a portion of an article of furniture positioned between the top and bottom clamping members;

wherein the first telescoping member includes:

a base tube secured to the securing means;

a first projecting tube slidably positioned within the base tube;

a second projecting tube slidably positioned within the first projecting tube;

a third projecting tube slidably positioned within the second projecting tube; and

a rod slidably positioned within the third projecting tube;

wherein the second telescoping member includes:

a support tube coupled to the first telescoping member;

an extending rod slidably positioned within support tube; and

an adjusting member projecting through the support tube near the end adjacent to the extending rod to engage the extending rod to prevent movement of said rod relative to said support tube;

wherein the cup capturing means includes:

a semi-circular support band having a central portion secured to the second end of the second telescoping member;

a first fastening strap secured to one end of the semi-circular support band; and

a second fastening strap secured to the end of the semicircular support band opposite of the first fastening strap,

said first and second fastening straps having hook and loop fastening means thereon for removably fastening the straps together about a cup positioned adjacent to the support band;

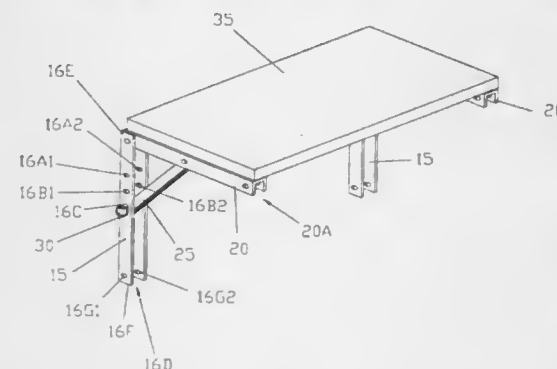
wherein the first telescoping member is fixedly secured to said securing means to prevent movement of said first telescoping member relative to said securing means;

wherein the first and second telescoping members define a pivot angle therebetween, and wherein said socket is adapted to permit movement of said second telescoping member at pivot angles greater than about ninety degrees and prevent movement of said second telescoping member at a pivot angle less than about ninety degrees; and

wherein the second telescoping member is rotatably secured to said cup capturing means to permit rotational movement of said cup capturing means relative to said second telescoping member.

5,775,655
COLLAPSIBLE AND ADJUSTABLE SUPPORT MEANS FOR ATTACHMENT TO A BUILDING STRUCTURE
Harold H. Schmeets, Rural Rte. 2, Box 82, Harvey, N. Dak. 58341
Filed Sep. 23, 1996, Ser. No. 717,864
Int. Cl.⁶ E04G 3/08
U.S. Cl. 248—240

3 Claims

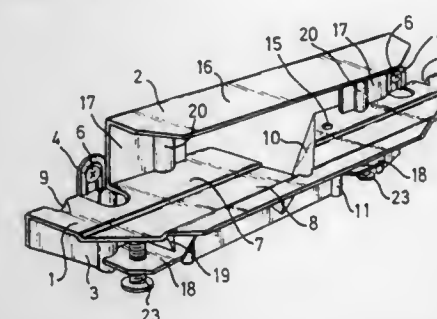


1. A collapsible and adjustable support means for attachment to a building structure comprising:

at least one bracket member having a first extended member, a second extended member having a proximate end which is pivotally attached to said first extended member, a fastener member, and a brace member having a first end fastened to said second extended member and having a second end detachably and adjustably fastened with said fastener member to and along said first extended member for attachment to a building structure with said second extended member capable of either being collapsed upon said first extended member or extended in a load bearing position, said first extended member having a back wall and two side walls, said two side walls defining a first channel therebetween, which is adapted to receive said second extended member when said support means is placed in said collapsed and stored position, further said first extended member having a plurality of holes spaced along and extended through said side walls thereof and adapted to receive said fastener member for fastening said brace member to and along said first extended member.

5,775,656
SHELF HOLDER
Clifford John Roberts, London; Keith Brazier, Southend-on-Sea; Bryan Christopher Harrison, Hampshire, and Timothy John Hedley Nicholson, Berkshire, all of United Kingdom, assignors to Cliffhanger (Export) Limited, United Kingdom
Filed Feb. 22, 1996, Ser. No. 605,594
Claims priority, application United Kingdom, Feb. 24, 1995, 9503803
Int. Cl.⁶ A47G 29/02
U.S. Cl. 248—250

25 Claims



1. A shelf holder for fixing to a generally vertical surface, for supporting the underside of a shelf and gripping the rear portion of the shelf, the holder comprising:

a first component having a first, surface-engaging part for engaging the generally vertical surface, a support part for supporting the bottom of the shelf, a lower-most portion, and means for fixing the first component to the generally vertical surface, the first, surface-engaging part defining an opening and defining a portion adjacent the opening;

a second component moveable vertically with respect to the first component whereby when the first component is fixed to the generally vertical surface, the second component is not firmly clamped to the generally vertical surface but can move vertically, the second component having a gripping part for bearing on the top of the rear portion of the shelf; and

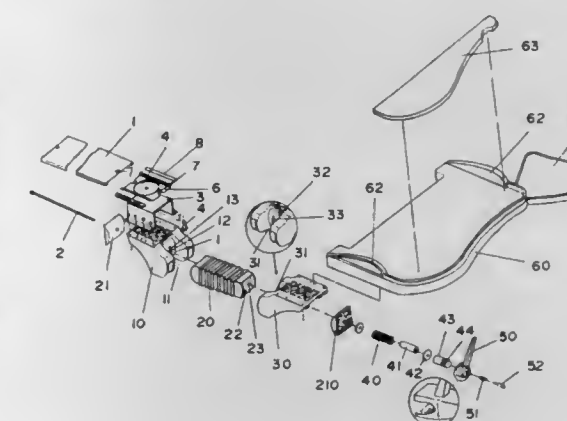
a tightening screw for moving the gripping part downwards when the shelf is in position, to cause the rear portion of the shelf to be gripped between the gripping part and the support part, the tightening screw being below the first component support part and in front of the first, surface-engaging part of the first component;

the second component having a connecting part which extends downwards relative to the gripping part so as to pass between the rear of the shelf and the generally vertical surface, and a projecting part which extends forwards from the connecting part below the first component support part but above the lowermost portion of the first component and extends forwards through said opening in the first, surface-engaging part of the first component, the second component having a por-

tion adjacent said projecting part which engages behind said first component portion and prevents forward movement of the projecting part relative to the first, surface-engaging part, the projecting part co-acting with the tightening screw; whereby when the first component is fixed to the generally vertical surface, the second component is not firmly clamped to the generally vertical surface but can move vertically.

5,775,657
COMPUTER KEYBOARD SUPPORT WITH ANGLE ADJUSTABLE AT RANDOM
Chin-Jui Hung, No. 498-3, Chung Shan Rd., Ching Shui Chen, Taichung Hsien, Taiwan
Filed Jun. 28, 1996, Ser. No. 671,644
Int. Cl.⁶ A47F 5/00
U.S. Cl. 248—289.11

3 Claims



1. An adjustable computer keyboard support comprising a retaining plate, locking bolt, fixing seat, slide plate, rotary disk, main seat, adjustment arm, keyboard plate seat, packing blocks, loose-proof spring, linking bar, wrench, clutch/control spring, keyboard plate, wherein:

said retaining plate has first locating projections on front and rear ends and fixed to the bottom of a table plate; said slide plate has second locating projections on front and rear ends, and a rail on each side for fitting in the retaining plate enabling sliding back and forth; a bottom of said fixing seat integrally connected with a mandrel, said rotary disk and slide plate rotatable along the mandrel;

said main seat having a first recess on an end, a bottom of said recess being an arcuate projection having a through adjustment slot, said keyboard plate seat having a second recess, arcuate projection and through adjustment slot on an end; ends of said adjustment arm having a recessed arc corresponding to said arcuate projections, and having through holes engaged by the main seat and keyboard plate seat and integrally connected by the locking bolt, and packing blocks mounted on the main seat and keyboard plate seat forcibly pushing the main seat, keyboard plate seat and adjustment arm when the locking bolt is tightened;

said loose-proof spring and a sleeve having said locking bolt penetrated therethrough, and the end of said locking bolt having a link bar with clutch tooth; and a thrust sheet located between said sleeve and link bar to provide a supporting point for said loose-proof spring so that said locking bolt produces a tight pushing force to form a loose-proof device; and

said wrench including a pin corresponding to the clutch tooth of said link bar, and fitting into said link bar, and having a clutch control spring, and connecting said link bar by matching a connection bolt, said wrench slidable along said link bar so that the pin may be engaged and disengaged with said clutch tooth.

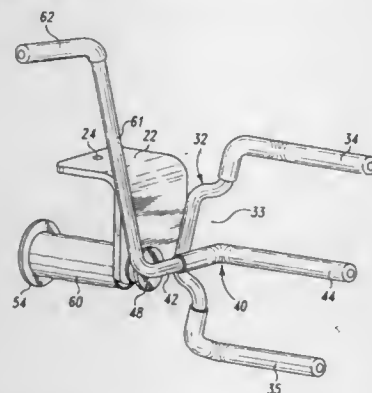
5,775,658

BOW HOLDER

Larry R. Englehardt, R.R. 2, Box 298, Elberfeld, Ind. 47613
 Filed Aug. 28, 1996, Ser. No. 702,246
 Int. Cl.⁶ A47F 5/00

U.S. Cl. 248—309.1

4 Claims



1. A bow holder comprising:

- a base;
- at least one support module connected to said base and comprising a first bow contacting surface and a second bow contacting surface;
- a clamping member movable between a first position and a second position, said clamping member comprising a third bow contacting surface;
- wherein said at least one support module is structured and arranged relative to said clamping member to provide a bow insertion space between said third bow contacting surface and said first and second bow contacting surfaces when said clamping member is disposed in said first position, and wherein movement of said clamping member from said first position toward said second position compresses said bow insertion space to thereby secure a bow inserted within said insertion space between said third bow contacting surface and said first and second bow contacting surfaces;
- a control member manually operable to move said clamping member from said second position to said first position;
- wherein said clamping member is pivotally mounted to said base, and wherein said clamping member is one of integrally formed with and rigidly fixed to said control member;
- a torque spring connected to said clamping member and said base for biasing said clamping member from said first position toward said second position; and
- a protective sleeve covering said torque spring.

5,775,659

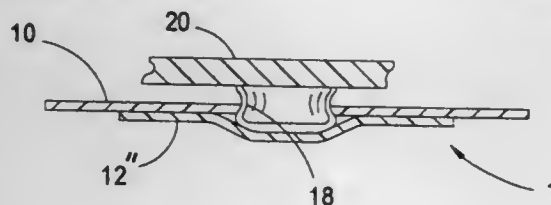
COMPACT DISK DRINK COASTER

Thaddeus J. Hartlaub, 1726 N. Claremont Dr., Janesville, Wis. 53545, and Donald J. Ersler, 725 Garvens Ave., Brookfield, Wis. 53005

Filed Jun. 12, 1997, Ser. No. 873,686
 Int. Cl.⁶ A47B 91/00

U.S. Cl. 248—346.11

14 Claims



1. A compact disc drink coaster comprising:

- a compact disc; and
- a protective backing having a cavity which provides clearance for a spindle of a compact disc jewel case fastened to a back

surface of said compact disc, wherein said protective backing protects a resting surface from scratches.

5,775,660

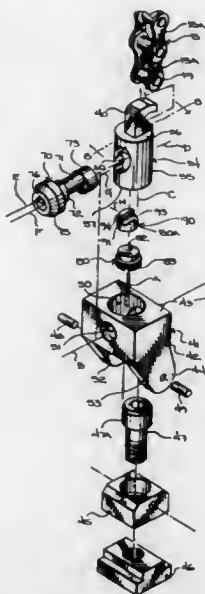
CLAMP ASSEMBLY

Robert L. Coope, Phoenix, Ariz., assignor to Stevens Engineering, Phoenix, Ariz.

Filed Aug. 6, 1997, Ser. No. 906,995
 Int. Cl.⁶ A44B 21/00; B65D 63/00

U.S. Cl. 248—505

6 Claims



1. A clamp assembly for clamping an irregularly-shaped item to a work surface and for immobilizing the irregularly-shaped item relative to the work surface, said clamp assembly comprising:

- a flexible restraining element having a first end and a second end, the flexible restraining element receivable about an irregularly-shaped item carried upon a work surface;
- first means for engaging the first end of the flexible restraining element to the work surface; and
- a coupler for engaging the second end of the flexible restraining element to the work surface in spaced-apart relation relative to the first end of the flexible restraining element and for adjusting the flexible restraining element about the irregularly-shaped item for clamping the irregularly-shaped item to the work surface, the coupler comprising:
- a housing including a distal end engagable to the work surface, a proximal end, a first bore having a diameter and extending through the housing along a first axis, and a second bore having a diameter and extending through the housing along a second axis, the first axis and the second axis intersecting at a junction,
- an adjustment member including a body having a diameter somewhat less than the diameter of the first bore of the housing, an upper end, a lower end, a blind bore extending inwardly into the body of the adjustment member from the lower end along a first axis and terminating with an endwall, and a bore extending through the body of the adjustment member intersecting at a junction, and an engagement element extending outwardly from the upper end of the body of the adjustment member for engaging the second end of the flexible restraining element, the adjustment member receivable by the first bore of the housing for reciprocating movement along the first axis of the first bore with the lower end of the adjustment member directed toward the distal end of the housing, the engagement element extending outwardly from the proximal end of the housing with the second axis of the

bore of the adjustment member being substantially common with the second axis of the second bore of the housing,

- a crank having an eccentric element receivable into and through the first bore of the housing and the bore of the adjustment member for rotation,
- a plug engagable to the lower end of the adjustment member and having an upper surface spaced from the endwall of the adjustment member, the upper surface of the plug and the endwall of the adjustment member cooperating together to define a medial portion of the bore of the adjustment member,
- a spacer carried by the upper surface of the plug and having a recess for capturing portions of the eccentric element extending through the medial portion of the bore of the adjustment member, the spacer being of a size sufficient to cause the eccentric element to bear against the endwall of the adjustment member allowing a user to impart reciprocating movement to the adjustment member upon rotation of the crank in a predetermined direction to urge the adjustment member either inwardly toward the distal end of the housing to tighten the flexible retention member about the irregularly shaped item or outwardly toward the proximal end of the housing to loosen the flexible retention member from the irregularly shaped item,
- an engagement element carried by the spacer, and
- a complementary engagement element carried by the plug, the engagement element being engagable with the complementary engagement element for inhibiting the spacer from migrating along the axis of the eccentric element.

5,775,661

SEAT LIFTER FOR MOTOR VEHICLES

Tadashi Matsumoto, and Eiichi Kawai, both of Hamamatsu, Japan, assignors to Fuji Kiko Co., Ltd., Tokyo, Japan

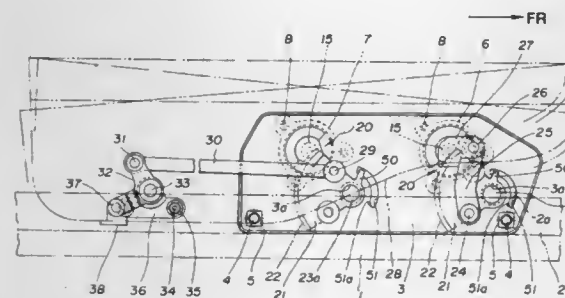
Filed Jul. 8, 1996, Ser. No. 676,730

Claims priority, application Japan, Jul. 6, 1995, 7-170077; Jul. 6, 1995, 7-170078

Int. Cl.⁶ F16M 13/00

U.S. Cl. 248—421

12 Claims



1. A seat lifter, comprising:

- first and second frames;
- a shaft arranged through a hole formed in one of said first and second frames, said shaft serving to vertically move said second frame with respect to said first frame through a link;
- means for defining a predetermined hole in said first frame, said defining means being partly covered with said second frame;
- a sector gear engaged with said shaft, said sector gear being formed with a stopper arm which protrudes from one side of said sector gear, said stopper arm having an end engaged with said defining means; and
- a center gear supported to said one of first and second frames, said center gear being meshed with said sector gear.

5,775,662

SEAT SLIDING MECHANISM PROVIDED WITH PLAY MECHANISM

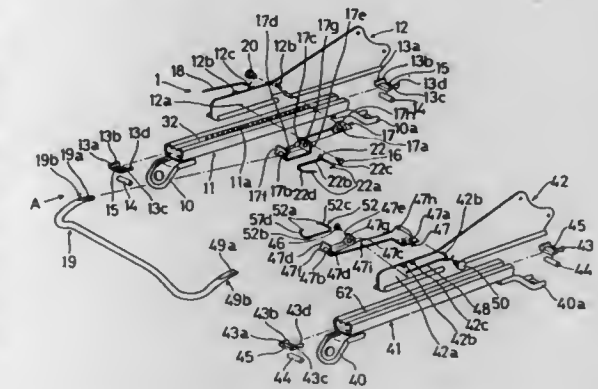
Naoaki Hoshihara, Chita-gun, and Kenzi Onodera, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 28, 1996, Ser. No. 671,917

Claims priority, application Japan, Jun. 30, 1995, 7-165427
 Int. Cl.⁶ F16M 13/00

U.S. Cl. 248—429

18 Claims



6. A seat sliding mechanism for slidably mounting a seat in a vehicle, comprising:

- a first lower rail for being fixed to a vehicle floor;
- a second lower rail for being fixed to a vehicle floor;
- a pair of upper rails for supporting a seat, the pair of upper rails including a first upper rail slidably mounted on the first lower rail and a second upper rail slidably mounted on the second lower rail;
- a pair of locking levers each movable between an engaging position for preventing a respective upper rail from sliding relative to the respective lower rail and a disengaging position for permitting the respective upper rail to slide relative to the respective lower rail, the pair of locking levers including a first locking lever mounted on one of the first lower rail and the first upper rail for engaging and disengaging the other of the first lower rail and the first upper rail, and a second locking lever mounted on one of the second lower rail and the second upper rail for engaging and disengaging the other of the second lower rail and the second upper rail;
- an operating lever disposed between the first and second locking levers to connect the first and second locking levers, the operating lever being operative to move the first and second locking levers between the engaging and disengaging positions; and
- a play mechanism for engaging the operating lever with the first and second locking levers to permit the operating lever to move relative to the first and second locking levers.

5,775,663

COPY STAND

William T. Fitzsimmons, South Portland, Me., and Steven E. Callahan, Sutton, Mass., assignors to Microplas, Inc., Clinton, Mass.

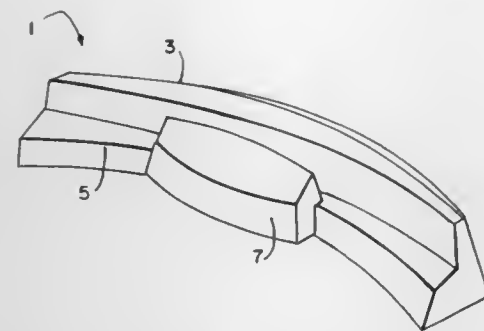
Filed Jul. 25, 1996, Ser. No. 687,031

Int. Cl.⁶ A47B 97/04

U.S. Cl. 248—450

19 Claims

- 1. A paper sheet stand apparatus, comprising a back, a front and an intermediate ledge, the back having a forward positioned short backing wall concavely curved around an upward and rearward sloping axis for allowing curved paper sheets to lean backward, the intermediate ledge having a paper sheet floor which curves upward and outward from a low central portion in front of a bottom of the backing wall for keeping outer edges of bottoms of paper sheets from dropping down, the front having a curved convex wall



extending upward from a central portion of the floor for holding paper sheet bottom edges from sliding forward.

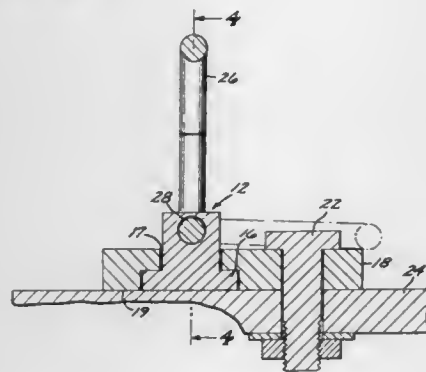
5,775,664

ANCHOR FASTENING DEVICE

Andrew T. Martin, 20960 Brant Ave., Carson, Calif. 90810
Continuation of Ser. No. 308,681, Sep. 19, 1994, abandoned,
which is a continuation of Ser. No. 96,881, Jul. 26, 1993,
abandoned. This application Mar. 14, 1996, Ser. No. 615,424
Int. Cl.⁶ B61D 45/00

U.S. Cl. 248—500

4 Claims



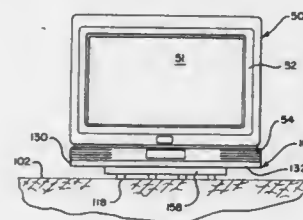
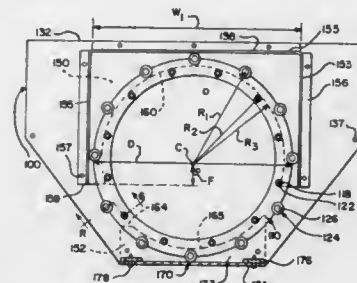
1. A non-releasable swivel coupling device for coupling a load to a base member comprising:

- a an anchor plate having top and bottom sides formed with a fastener bore and a swivel socket, said swivel socket being further formed with an enlarged-in-diameter, downwardly opening recess extending to said bottom side and a retainer collar formed with a reduced-in-diameter, uninterrupted circular wall defining an aperture opening upwardly from said recess to said top side of said plate;
- a one piece, unitary swivel formed with an enlarged-in-diameter head received in said recess to be unreleasably locked below said collar and further formed with an upstanding cylindrical swivel shank having a pivot axis and projecting through said aperture, said shank being formed at a location above said collar with a through cross bore, said core bore having a closed substantially circular cross section; and
- an endless circular lock ring received pivotably in said cross bore for rotation in opposite lateral directions in said cross bore, said lock ring having an outside diameter larger than said aperture to cooperate with said head to permanently lock said swivel to said collar to prevent dissociation of said swivel from said plate whereby said swivel is permanently locked to said anchor plate, whereby said swivel may be assembled during manufacture by inserting said shank upwardly from said bottom side and said ring connected through said cross bore.

5,775,665
SECURITY MOUNTING ASSEMBLY
Igor Haskin, Skokie, and Joseph Tcherny, Desplaines, both of Ill., assignors to Peerless Industries, Melrose Park, Ill.
Filed Sep. 25, 1996, Ser. No. 718,664
Int. Cl.⁶ F16M 13/00

U.S. Cl. 248—551

19 Claims



1. A rotatable mounting assembly for mounting an electrical appliance to a support surface, comprising:

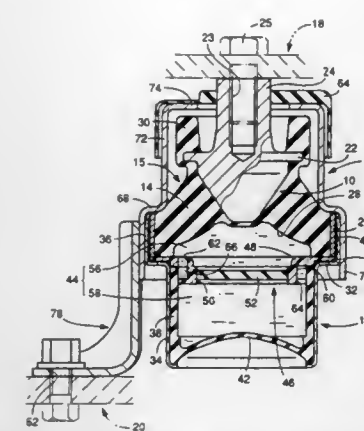
- a base member adapted to mate with the support surface, the base member having a plurality of mounting apertures therethrough to permit passage of first fasteners for fastening said base member to said support surface;
- a support tray dimensioned to receive the appliance thereon, the support tray including a pair of flanges extending along a bottom surface of said support tray, the flanges cooperatively defining an enclosure that receives and houses said base member therein in a manner such that said support tray is rotatable upon said base member and said pair of flanges are rotatable around the base member, said support tray further including a plurality of apertures extending therethrough to permit the passage of second fasteners for fastening said appliance to said support tray; and
- said mounting assembly further including a plurality of glide members disposed on said base member radially outwardly of said plurality of mounting apertures of said base member, the plurality of glide members facilitating rotation of said support tray relative to said base member, said base member including an annular ring with a plurality of recesses formed in an outer perimeter of said annular ring, said plurality of glide members each being received in a corresponding one of said plurality of recesses.

5,775,666
ELASTIC MOUNT HAVING MOUNTING BRACKET
FUNCTIONING AS STOP MECHANISM AND METHOD
OF PRODUCING THE SAME
Hiroshi Tsukamoto, Iwakura, and Hiroaki Tanahashi, Aichi-ken, both of Japan, assignors to Tokai Rubber Industries, Ltd., Japan
Filed Sep. 30, 1996, Ser. No. 724,593
Claims priority, application Japan, Sep. 29, 1995, 7-252447
Int. Cl.⁶ F16F 9/00; F16M 1/00

U.S. Cl. 248—634

11 Claims

- 1. An elastic mount comprising:
a first support member and a second support member which are spaced apart from each other and elastically connected to each other by an elastic body;

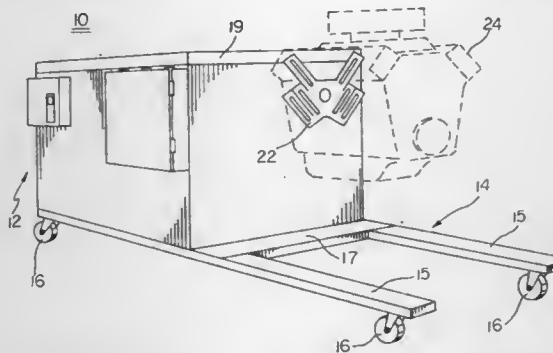


said second support member having a cylindrical fixing portion with a larger diameter than said first support member;
a cylindrical bracket member press-fitted on an outer circumferential surface of said cylindrical fixing portion of said second support member such that said cylindrical bracket member encloses said first support member;
said cylindrical bracket member including a large-diameter portion press-fitted on said outer circumferential surface of said cylindrical fixing portion of said second support member, and a small-diameter portion which has a smaller diameter than said large-diameter portion and which has an axial end portion provided with an integrally formed abutting part,
said abutting part being spaced apart from said first support member in an axial direction of said bracket member from said second support member toward said first support member and opposed to said first support member in said axial direction;
said bracket member further including a shoulder portion between said large-diameter and small-diameter portions, said shoulder portion being held in contact with one of opposite axial ends of said cylindrical fixing portion of said second support member, whereby said bracket member is positioned relative to said second support member in said axial direction; and
a first buffer member interposed between said first support member and said abutting part of said bracket member;
said first support member, said abutting part and said first buffer member cooperating to constitute a first stop mechanism for limiting an amount of relative displacement of said first and second support members away from each other, by abutting contact of said first support member and said abutting part with each other through said first buffer member.

5,775,667
MOTORIZED ENGINE STAND
Wayne T. Tassic, 3230 N. Glenn Rd., Bourbonnais, Ill. 60914
Filed Jul. 26, 1996, Ser. No. 690,356
Int. Cl.⁶ F16M 1/00

U.S. Cl. 248—676

10 Claims



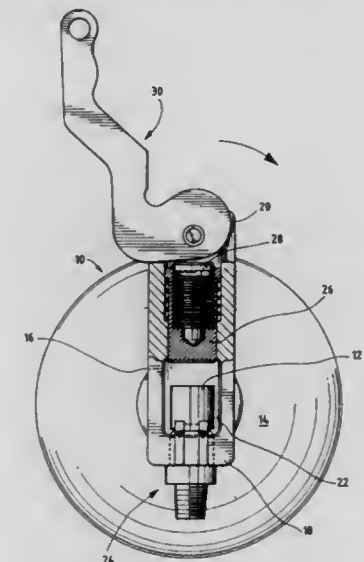
1. Stand for positioning an engine block for assembly, disassembly or repair of an engine comprising:

a frame including a base and a support framework mounted to said base;
motorized drive means mounted on said frame for turning said engine block relative to said frame, said drive means including
a shaft, and
a mounting member mounted for rotation with said shaft for coupling said engine block for rotation with the shaft,
braking means for holding said shaft against rotation relative to said frame, and
control means for starting and stopping the drive means to effect turning of the engine block said control means including means responsive to starting and stopping of the drive means for releasing the braking means when the drive means is started and for engaging the braking means when the drive means is stopped.

5,775,668
CONNECTING YOKE APPARATUS
Michael E. Howser, 22548 Westview Ave., Golden, Colo. 80401
Filed Sep. 16, 1996, Ser. No. 714,557
Int. Cl.⁶ F16L 29/00

U.S. Cl. 251—148

20 Claims



1. A connecting yoke apparatus for attachment to a valve of a compressed gas cylinder, said apparatus comprising:
a yoke member having a first and a second end, said yoke member defining an opening for the reception therein of the valve;
connection means extending through said first end of said yoke member for selective connection with the valve, said connection means selectively cooperating in fluid tight communication with the valve when the valve is disposed within said opening;
piston means slidably disposed within said yoke member for selectively urging the valve and said connection means towards each other such that when said piston means is in an operative disposition thereof, said fluid tight communication between said connection means and the valve is generated and when said piston means is in an inoperative disposition thereof, disengagement of said yoke member from the valve is permitted;
heat sensitive expansion compensation adjusting means disposed between said second end of said yoke member and said piston means for adjusting said operative disposition of said piston means, the arrangement being such that when the temperature of the apparatus increases, said expansion compensation adjusting means progressively moves said piston means for urging the valve and said connection means towards each other for maintaining said fluid tight communication; and

driving means cooperating with said piston means for driving said piston means between said inoperative and operative dispositions thereof.

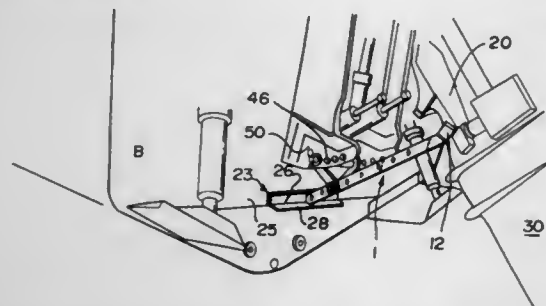
5,775,669 OUTBOARD MOTOR/OUTDRIVE TRAVELING BRACKET

William Clarence Huggins, 1431 Dover Rd., Parker, and Samuel T. Adams, 4612 Brook Forest Dr., Panama City, both of Fla. 32404

Filed Feb. 15, 1996, Ser. No. 601,770
Int. Cl.⁶ F16M 1/00

U.S. Cl. 248—640

7 Claims

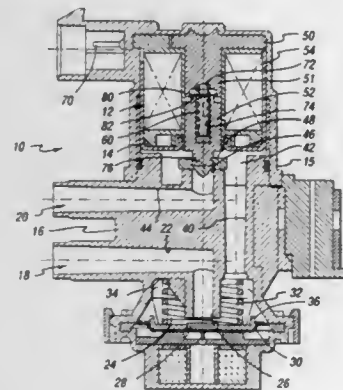


7. A bracket for supporting an outboard motor comprising: an elongate bar;
- a yoke attached to one end of said elongate bar is adapted to support said outboard motor;
- a support plate is attached to the other end of said elongate bar, and is adapted to rest against a stern of a boat, whereby the outboard motor is held in an upward tilted position during road travel on a trailer; and
- a suspension support member on said elongate bar is adapted to be attached to a bracket on said outboard motor to secure the support member to said bracket on said outboard motor.

5,775,670
REDUCED NOISE SOLENOID VALVE
Mark Dean Osterbrink, Rockford, Ill., assignor to Borg-Warner Automotive Inc., Sterling Height, Mich.
Continuation of Ser. No. 358,185, Dec. 16, 1994, Pat. No. 5,538,219. This application Jul. 23, 1996, Ser. No. 685,108
Int. Cl.⁶ F16K 31/06

U.S. Cl. 251—129.15

6 Claims



1. A valve device for a vehicle, said valve device comprising: a housing;
- valve means in said housing for controlling the flow of fluids through said valve device, said valve means having a valve seat and a movable valve member;

a solenoid device in said housing, said solenoid device having a pole piece member, a movable armature member and a spring member;

said armature member having a first end and a second end;

said valve member comprising a flexible energy absorbing material and attached to said first end of said armature member;

said pole piece member having a raised outer annular means positioned toward said armature member, said pole piece member also having a central recess;

said second end of said armature member having a centrally-located raised circular ridge member for mating with said recess in said pole piece member upon activation of said solenoid device; and

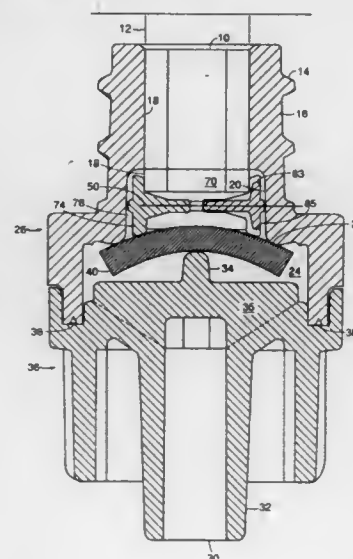
said raised outer annular means having an inner diameter dimension and a height dimension, said raised circular ridge member has an outer diameter dimension, and the relationship between the difference between said outer diameter dimension and said inner diameter dimension relative to said height dimension is about 2:7;

wherein operation of said valve device is accomplished with reduced noise.

5,775,671
LUER-ACTIVATED VALVE
Andrew L. Cote, Sr., Merrimack, N.H., assignor to Nipro Inc., Clinton, Mass.
Continuation-in-part of Ser. No. 662,616, Jun. 13, 1996, abandoned. This application Nov. 18, 1996, Ser. No. 751,357
Int. Cl.⁶ F16K 15/14

U.S. Cl. 251—149.8

44 Claims



1. A normally closed valve that may be opened upon insertion of a nozzle, the valve comprising:
- a housing including:
- an inlet housing portion defining an inlet section of a fluid passageway, and
- an outlet housing portion defining an outlet section of the fluid passageway, the inlet and outlet housing portions being connected so as to permit fluid communication between the inlet and outlet sections of the fluid passageway,
- the housing further defining a valving chamber, the valving chamber forming a middle section of the fluid passageway between the inlet section and the outlet section;
- an actuateable valve element, located in the valving chamber, that in a first position blocks flow through the passageway, and that in a second position permits flow through the passageway; and
- an actuator, disposed adjacent the actuateable valve element and the inlet section, for urging the actuateable valve element into

the second position when the nozzle is inserted into the inlet section, the actuator including:

a perimeter wall, the perimeter wall having an inlet end disposed away from the valve element and an outlet end disposed towards the valve element, the perimeter wall defining an interior actuator path, and the perimeter wall and the housing defining an exterior actuator path,

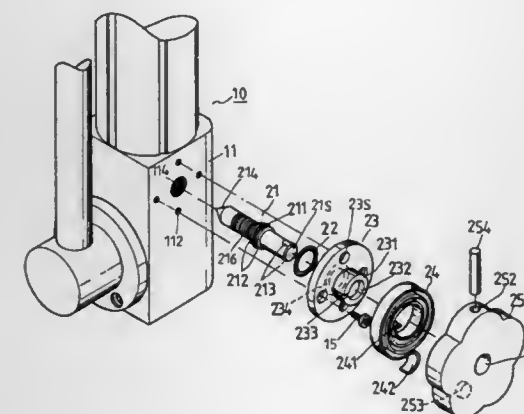
means for permitting flow from the nozzle to the exterior actuator path, wherein the means includes means for maintaining a space between the perimeter wall's interior surface and the nozzle's exterior surface, and

means, disposed on the perimeter wall's outlet end, for permitting flow from the interior actuator path to the valving chamber.

5,775,672
RELEASE VALVE FOR LIFTING DEVICES
Kun-Shan Hsu, No. 18-2, Hi Liao Pei Hou Lei, Chia Yi, Taiwan
Filed Feb. 21, 1997, Ser. No. 804,228
Int. Cl.⁶ F16K 31/50; 51/00

U.S. Cl. 251—215

4 Claims

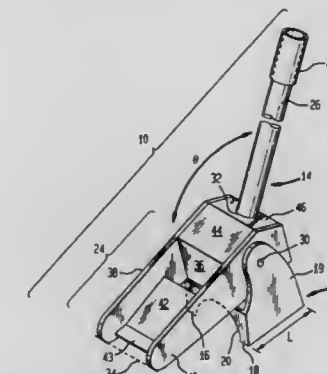


1. A release valve for a lifting device having a cylinder with an oil path, the release valve comprising:
- a valve stem having a first conical end adapted to be displaceably mounted in the oil path of the lifting device to selectively block and unblock the oil path, a mediate portion, and a second end extending from the lifting device, the valve stem further including a threaded section in threading engagement with the lifting device;
- a fixing seat mounted to the lifting device and including a boss formed on a first side thereof and a central through hole extending through the fixing seat and the boss, the second end of the valve stem passing through the central through hole and the mediate portion of the valve stem being disposed within the fixing seat, the boss including a longitudinal slit defined in a periphery thereof;
- a spiral spring mounted around the boss of the fixing seat, the spiral spring having an inner end which is securely received in the longitudinal slit of the boss and an outer end;
- a knob securely mounted to the second end of the valve stem to rotate therewith, the knob including a protrusion projecting from a side thereof, the outer end of the spiral spring being securely engaged the protrusion for applying a bias force thereto; and
- sealing means disposed between the fixing seat and the lifting device for providing a seal therebetween, whereby a user's rotational displacement of the knob in a direction displaces the first conical end of the valve stem to unblock the oil path and wind the spiral spring, the spiral spring rotatively displaces the knob in an opposite direction to displace the first conical end of the valve stem to re-block the oil path responsive to the user's release of the knob.

5,775,673
LOAD BINDER TOOL
Melvin R. Carnes, Sr., and Jeffrey S. Carnes, both of Sunland, Calif., assignors to Binder Jac, L.C., Hampton, Va.
Continuation-in-part of Ser. No. 38,476, May 5, 1995. This application May 3, 1996, Ser. No. 646,726
Int. Cl.⁶ B66F 3/00

U.S. Cl. 254—131

13 Claims

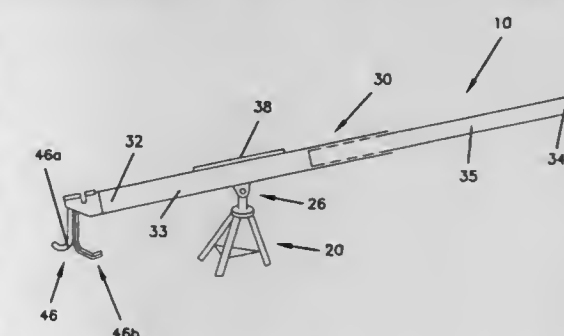


1. A tool for use with a lever-type load binder, comprising:
- a base member;
- a handle member having a first end and a second end, said handle member pivotally mounted to said base member at a pivot point between said first end and said second end;
- a portion of said handle member defining a generally U-shaped cradle open at said first end and terminating at an end wall prior to said pivot point, said U-shaped cradle sized to receive the lever of said lever-type load binder; and
- a generally U-shaped guide channel at said first end, said U-shaped guide channel facing in a direction opposite that of said U-shaped cradle.

5,775,674
**LIFT APPARATUS HAVING A PIVOTING POLE FOR
LIFTING AND MOVING A MANHOLE COVER**
Vern Bigham, 354 Forest La., North Mankato, Minn. 56003
Filed Oct. 15, 1996, Ser. No. 731,316
Int. Cl.⁶ B66F 3/00

U.S. Cl. 254—131

9 Claims



1. A lift device for lifting a manhole cover, the lift device comprising:
- a base having three substantially equal-length legs, each leg including a joint proximate an upper portion of each leg such that the base may be collapsed when not in use by folding the three legs together such that the legs are substantially parallel to one another, and the base may be opened by unfolding each of the legs;
- a substantially rigid pole having a first end, a second end, and an intermediate portion,
- a) the first end including a transverse opening comprising a groove in the first end, the groove extending across an axis formed from the first end to the second end of the pole;

- b) the first end further including a medial opening comprising a groove extending from a tip of the first end along an axis formed from the first end to the second end of the pole;
- b) the second end including a handle configured for holding by a hand and configured for application of a downward force;

- c) the intermediate portion being pivotally connected to the base by means of a threaded shaft projecting into the base such that the pole may pivot horizontally by turning the threaded shaft within the base, and such that pole may be removed from the base by rotating the pole with relation to the base; and

- a) a manhole retainer for attaching to a manhole, the manhole retainer comprising a rigid body having a head, a foot, an inflexible body, and a heel; the retainer configured to be rigidly secured in the medial opening of the first end of the pole;

- a) the head configured to be rigidly secured to the first end of the pole;
- b) the foot rigidly connected to the head by the inflexible body;
- c) the inflexible body being at least 6 inches in length and formed such that when the head is positioned above a center of mass of the manhole cover prior to removal of the manhole cover, the foot is positioned at a hole in the manhole cover, the hole being distant from the center of mass; and
- d) the heel positioned opposite the foot, the heel configured and arranged to provide a balancing force during lifting of the manhole cover.

5,775,675

SEQUENTIAL KINKING GUARDRAIL TERMINAL SYSTEM

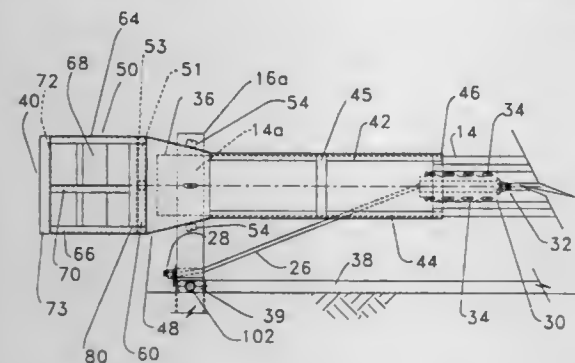
Dean L. Sicking, and John D. Reid, both of Lincoln, Nebr., assignors to Safety By Design, Inc., Lincoln, Nebr.

Filed Apr. 2, 1997, Ser. No. 832,422

Int. Cl.⁶ E01F 15/04

U.S. Cl. 256—13.1

14 Claims



1. A crash attenuation impact head for use with a rail element comprising:

- an inlet for receiving said rail element;
- an outlet for discharging said rail element;
- a kinker beam attached to said inlet of said head;
- a kinking deflector plate attached within said head and extending from said inlet to said outlet, said deflector plate having a multiplicity of discrete intersecting angular faces whereby upon impact to said impact heads impact energy is dissipated in incremental amounts through the sequential kinking of said rail element as it passes by said beam, through said head, and out said outlet.

5,775,676

SELF-LOCKING SLATS WITH FINS FOR CHAIN LINK FENCES

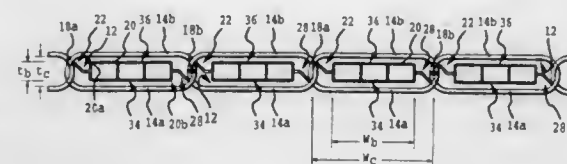
Jeffrey A. Hoggan, River Heights, Utah, assignor to Plastics Resources, Inc., River Heights, Utah

Filed Feb. 21, 1997, Ser. No. 804,223

Int. Cl.⁶ B21F 27/00

U.S. Cl. 256—34

16 Claims



1. A slat for insertion in a channel of a chain link fence, the channel being defined by proximal and distal portions of wire mesh fencing fabric of the chain link fence and on opposite sides by a plurality of intermittently spaced, opposing knuckles defined at intersections of the wire mesh fencing fabric, the opposing knuckles defining a width of the channel, said slat comprising:

- an elongate, imperforate body member having distal and proximal face sheets, wherein said proximal and distal face sheets are parallel to each other and are interconnected by first and second sides of said body member, said first and second sides are adapted to correspond to the first and second opposing knuckles; and

- first and second fins extending from said body member, for locking said slat within the channel, wherein at least an end leg of said first fin extends at least distally, relative to said proximal face sheet of said body member, to engage at least a first knuckle, and an end leg of said second fin extends at least proximally, relative to said distal face sheet of said body member, to engage at least a second knuckle opposite the first knuckle, wherein said first and second fins further include intermediate leas extending between said first and second sides of said body member and said end leas of said first and second fins, respectively wherein said intermediate leas are oriented substantially parallel to said proximal and distal face sheets.

5,775,677

AIR OR GAS SPRUNG AND DAMPENED SHOCK ABSORBER

Arlo C. Englund, 4945 Parkvista Blvd., Colorado Springs, Colo. 80918

Continuation-in-part of Ser. No. 388,055, Feb. 7, 1995, abandoned. This application Apr. 12, 1996, Ser. No. 631,853

Int. Cl.⁶ F16F 9/02; 9/36; 5/00

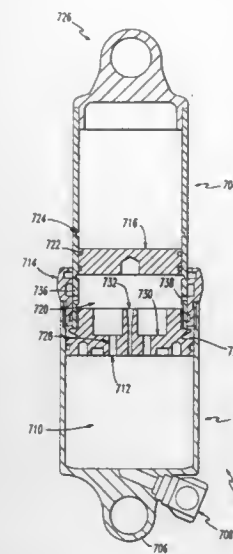
U.S. Cl. 267—64.11

8 Claims

1. A gas sprung and pressure dampened shock absorber utilizing compressed gas for dampening comprising:

- a cylinder having a closed end and an open end forming a compression chamber;
- a shaft having a closed end and an open end; said open end of said shaft being reciprocally received within said cylinder through said open end of said cylinder for contracting and expanding said compression chamber during compression and rebound strokes of the shock absorber;
- a piston sealingly positioned in said open end of said shaft and slidably and sealingly positioned adjacent an inner surface of said cylinder forming a rebound chamber in said shaft; and
- a negative gas spring chamber formed between an outer surface of said shaft and said inner surface of said cylinder, said negative gas spring chamber expanding and contracting inversely relative to said compression chamber;

- wherein said negative gas spring chamber is adapted to communicate with at least said rebound chamber during only a



portion of the compression and rebound strokes of the shock absorber and is closed relative to the atmosphere.

5,775,678

EYE GLASS REPAIR TOOL

Serge Ferland, 85 Killoran, Drummondville, Quebec, Canada, J2C 1J1

PCT No. PCT/CA94/00348, § 371 Date Jan. 16, 1996, § 102(e)

Date Jan. 16, 1996, PCT Pub. No. WO95/02844, PCT Pub.

Date Jan. 25, 1995

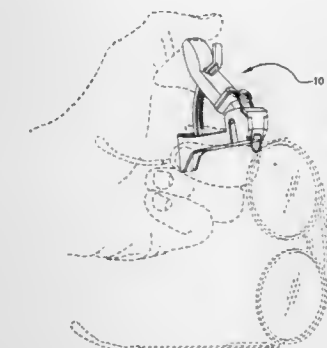
PCT Filed Jul. 11, 1994, Ser. No. 586,188

Claims priority, application United Kingdom, Dec. 7, 1993, 9314369

Int. Cl.⁶ B25B 1/20

U.S. Cl. 269—3

7 Claims



1. A hand tool, for use in repairing eye glasses, said tool comprising a body portion (16), a thin flexible wire clamping member (62) adapted to move into and out of a clamping relationship with said body portion (16), an arm (28) pivotably mounted with respect to said body portion (16), said arm (28) having said clamping member (62) associated therewith such that pivotable movement of said arm (28) will cause said clamping member (62) to move into and out of the clamping relationship with the body portion (16), and means (42) for retaining said clamping member (62) in a clamped relationship with said body portion (16), said means comprising a toothed member adapted to engage said arm in a ratchet like relationship.

5,775,679

TYING VISE FOR FLY-FISHING

Michael Strub, Kirchgasse 2-4, D-78579 Neuhansen, Germany

Filed Mar. 12, 1996, Ser. No. 614,385

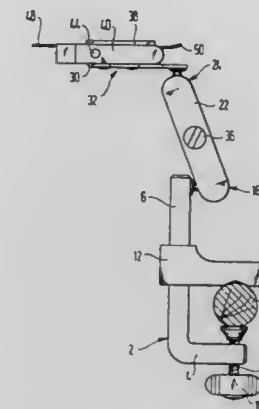
Claims priority, application Germany, Mar. 15, 1995, 295 04

371.7

Int. Cl.⁶ B25B 1/22

U.S. Cl. 269—75

12 Claims



1. Tying vise for fly-fishing that has a clamp having a first leg for attachment to a support and, connected to said clamp, a gripping jaw unit for gripping a fishhook, said gripping jaw unit (32) having a guide plate (30) and being connected to said clamp (2) across an articulated arm (22) equipped with joints (16, 24) on both ends, said joints having balls (18, 26) attached thereto each with a ball pivot (20, 28) respectively on said first leg (6) and on said guide plate (30) of said gripping jaw unit (32), said articulated arm (22) being formed by two plate strips having respective ends which encompass said balls (18, 26) on two sides wherein said strips are held together by an adjustment screw (34, 36) that traverses them, and wherein said articulated arm (22) is pivoted, respectively, to said first leg (6) of said clamp (2) and to said gripping jaw unit (32) in such a way that said tying vise can be folded into a compact transport position, in which said gripping jaw unit (32), said articulated arm (22), and said leg (6) of the clamp (2) carrying the clamping foot (12) lie approximately parallel to one another.

5,775,680

CLAMP WITH INCLINED SCREW

Joseph A. Sorensen, Lincoln; Thomas M. Chervenak, Beatrice; Anthony Fuller, DeWitt, and Toby J. Beckmann, Seward, all of Nebr., assignors to Petersen Manufacturing, Inc., DeWitt, Nebr.

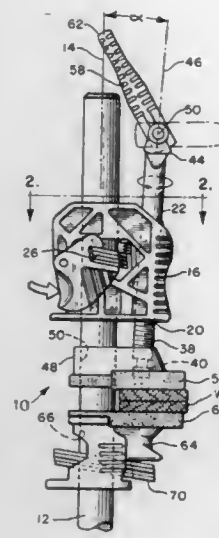
Continuation of Ser. No. 597,595, Feb. 6, 1996, abandoned, which is a continuation of Ser. No. 281,448, Jul. 27, 1994, abandoned. This application Oct. 10, 1997, Ser. No. 948,757

Int. Cl.⁶ B25B 5/02

U.S. Cl. 269—170

17 Claims

1. A clamp comprising:
- a bar defining a bar axis;
- a clamp body movable along the bar axis;
- a retainer movably mounted in the clamp body to engage the bar selectively and thereby to hold the clamp body selectively against movement with respect to the bar in at least a first direction along the bar axis;
- a screw mounted in the clamp body, said screw comprising a jaw engaging portion, an actuator engaging portion, and a screw axis extending therebetween;
- a jaw guided by the bar for movement along the bar axis, said jaw mounted to the jaw engaging portion of the screw such that movement of the screw with respect to the clamp body along the screw axis causes the jaw to translate with respect to the bar and the clamp body along the bar axis, wherein the jaw defines a slot angled with respect to both the screw axis



and the bar axis, and wherein the jaw engaging portion of the screw moves along the slot toward the bar as the jaw engaging portion of the screw moves away from the clamp body; an actuator coupled to the actuator engaging portion for rotation about the screw axis such that rotation of the actuator shifts the screw with respect to the clamp body; a workpiece supporting element mounted to the bar to oppose the jaw; wherein the actuator is positioned alongside the bar for at least some positions of the clamp body along the bar axis; and wherein the screw axis is tilted with respect to the bar axis such that the actuator engaging portion of the screw at the actuator is farther from the bar than is the jaw engaging portion, thereby providing increased clearance between the actuator and the bar.

5,775,681

Patent Not Issued For This Number

5,775,682

SHEET TRANSFER MEMBER HAVING AT LEAST ONE OUTWARDLY OPENING SHEET-RECEIVING SLOT AND SHEET WITHDRAWAL PORTION AND APPARATUS INCLUDING SUCH A MEMBER

Steven Michael Hosking, Hampshire, and Raymond William Simpson-Davis, Southampton, both of United Kingdom, assignors to De La Rue International Limited, United Kingdom

Filed May 17, 1996, Ser. No. 649,366

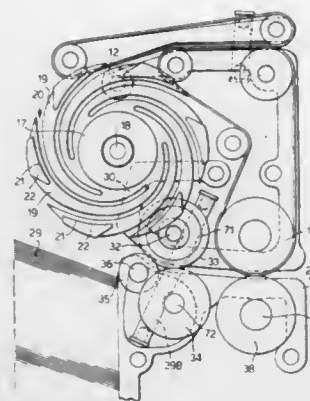
Claims priority, application United Kingdom, May 22, 1995, 9510297

Int. Cl.⁶ B65H 5/22

U.S. Cl. 271—3.08

22 Claims

1. A sheet transfer member having at least one outwardly opening slot into which a sheet can be received, the member being rotatably mounted so that a sheet in said slot can be transferred to a sheet stacking position, wherein a portion of said member com-



prises sheet withdrawal means which, during a dispense operation, withdraws sheets from said stacking position.

5,775,683

METHOD FOR TRANSPORTING HANDLING SHEETS

Anton Rodi, Leimen, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Continuation of Ser. No. 424,154, Apr. 17, 1995, abandoned.

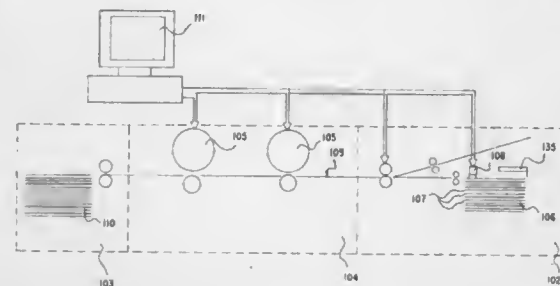
This application Aug. 1, 1997, Ser. No. 904,378

Claims priority, application Germany, Apr. 15, 1994, 44 13 238.7; Mar. 8, 1995, 195 08 254.0

Int. Cl.⁶ B65H 83/00

U.S. Cl. 271—3.15

26 Claims



1. Method for transporting/handling sheets along at least one transport/handling segment in a machine, the machine including a feeder pile and a single-sheet unit, the method which comprises supplying sheets of a given length to and removing sheets from the machine, the transport/handling segment having a period length for successive sheets which is dependent upon the format length of the respective sheets, determining at least once, in a first determination, a position of a respective sheet within the transport/handling segment, and selectively introducing a new sheet into the transport/handling segment either from the feeder pile or from the single-sheet unit, and accelerating the new sheet until a given distance has been adjusted between the respective sheet and the new sheet.

5,775,684

APPARATUS FOR FEEDING DISTINCT FEED STOCK AND MAINTAINING THE ALIGNMENT OF PRINTABLE STOCK IN A ROLLER DRIVEN TRAY INFORMATION TRANSFER DEVICE

Richard C. Jackson, San Jose; John Avery Howard; Christopher O. Lada, both of Palo Alto; Donald S. Minami, Monte Sereno, all of Calif.; Lan Hao-Jui, Taipei, Taiwan, and Tsai Cheng-Liang, Fu-Chien Province, China, assignors to Apple Computer, Inc., Cupertino, Calif.

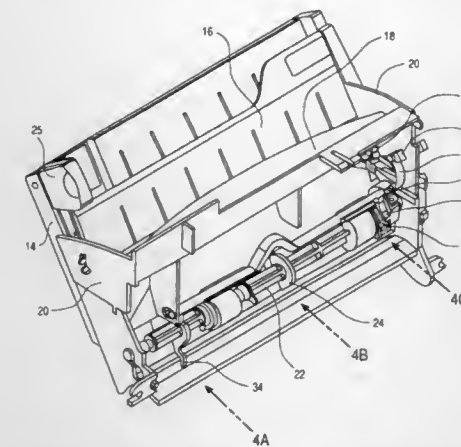
Filed Oct. 20, 1995, Ser. No. 545,895

Int. Cl.⁶ B65H 3/44

U.S. Cl. 271—9.07

19 Claims

9. An apparatus for feeding distinct feed stock through an information transfer device comprising:



an information transfer device for processing feed stock, the information transfer device including a motor; a first tray with a front portion and a rear portion and a base, wherein the first tray is coupled to the information transfer device;

at least two side supports with length portions, each side support coupled to either end of the first tray;

a second tray with a front portion and a rear portion and a length that does not extend to the base of the first tray, coupled at either side to the pair of side supports to define a first space between the front portion of the first tray and the rear portion of the second tray, wherein the first space is capable of holding at least one item of feed stock for processing through the information transfer device, and a second space between the front portion of the second tray and the length of the side supports, wherein the second space is capable of holding at least one item of feed stock for processing through the information transfer device;

a roller shaft with a first end and a second end, the first end and the second end rotatably coupled to the pair of side supports, and wherein the roller shaft is engaged to the motor; a roller radially coupled to the roller shaft to retrieve feed stock from the first space or the second space; and

a sensory device actuatably extended across a portion of the width of the second space.

5,775,685

SHEET MEMBER CONVEYING MECHANISM

Masanori Yamaoka; Keiji Ban, and Hiroshi Kobayashi, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

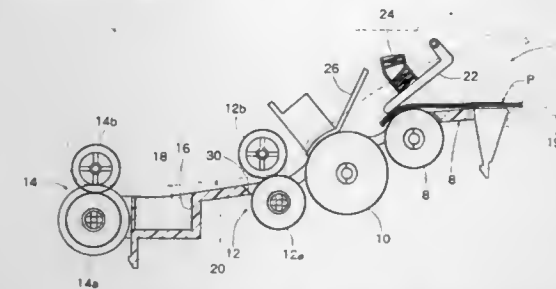
Filed Jul. 26, 1996, Ser. No. 686,537

Claims priority, application Japan, Aug. 2, 1995, 7-218128; Aug. 2, 1995, 7-218132; Aug. 2, 1995, 7-218134

Int. Cl.⁶ B65H 5/00

U.S. Cl. 271—10.13

15 Claims



1. A sheet member conveying mechanism comprising a conveying guide for guiding a sheet member from a paper feed port to a paper discharge tray; a forwarding roller disposed on the most upstream side of the conveying guide with an upper part of the outer peripheral surface of the forwarding roller exposed upwards

from the upper surface of the conveying guide over a predetermined peripheral range, to permit the forward end portion of the sheet member to curl downwardly over the forwarding roller; and a paper feed roller disposed on the downstream side of the forwarding roller with an upper part of the outer peripheral surface of the paper feed roller exposed upwards from the upper surface of the conveying guide over a predetermined peripheral range, whereby sheet members sent forward by the forwarding roller, are conveyed downstream one by one; the axes of the forwarding roller and the paper feed roller being located parallel to each other, and the uppermost site of the paper feed roller being located lower than the upper site of the forwarding roller; wherein, the upper surface of the conveying guide is curved with a downwardly protruding shape and with its height decreasing beginning at the downstream end of the exposed part of the outer peripheral surface of the forwarding roller toward the upstream end of the exposed part of the outer peripheral surface of the paper feed roller, as viewed in the roller axial direction, so that a sheet member having its forward end portion curled downwardly over the forwarding roller avoids contact with the upper surface of the conveying guide.

5,775,686

SHEET FEEDING DEVICE WITH LIFTER MEMBER TO HOLD SHEETS AT PREDETERMINED HEIGHT

Hiroaki Miyake, Kawaguchi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

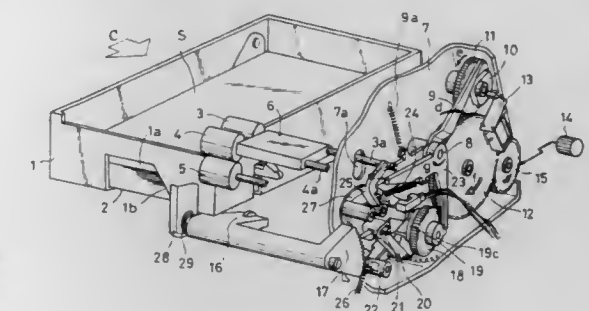
Filed May 16, 1996, Ser. No. 648,884

Claims priority, application Japan, May 22, 1995, 7-122322

Int. Cl.⁶ B65H 1/08; 1/22

U.S. Cl. 271—127

17 Claims



1. A sheet feeding device comprising:

a device body;

sheet holding means for holding a stack of sheets, said sheet holding means removably mounted to the device body;

sheet feeding means for feeding sheets held by said sheet holding means;

lifter means provided at said device body for supporting the sheet stack such that the topmost sheet of the sheet stack held by said sheet holding means is held at a predetermined height;

a lifter member provided in said lifter means to lift in an upward direction the sheet stack held by said sheet holding means; and

lifter member support means for movably supporting said lifter member to allow movement of said lifter member in the direction of removal of said sheet holding means from said device body,

wherein said lifter member support means has a biasing means for biasing said lifter member in a direction of mounting of said sheet holding means.

5,775,687

TRAY FOR LOADING SHEETS, INCLUDING A RECEPTACLE AND A LID HAVING PREVENTION MEANS PREVENTING THE PASSAGE OF SHEETS BETWEEN THE LID AND THE RECEPTACLE

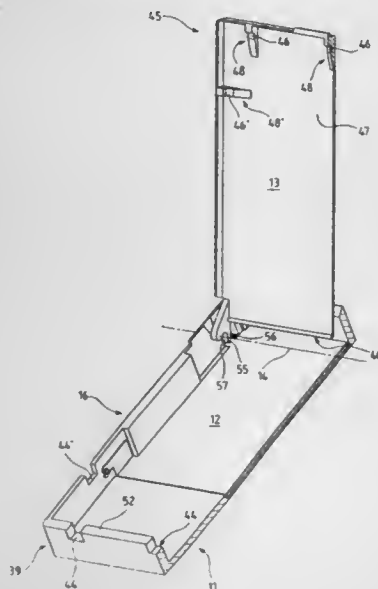
Noboru Nakatani, Rennes; Stéphane Michel, Montfort sur Meu; Marie-Hélène Froger, Chateaugiron; Alexandre Dodge, Pace, and Christophe Truffaut, Rennes, all of France, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1995, Ser. No. 547,816

Claims priority, application France, Oct. 28, 1994, 94 12994
Int. Cl.⁶ B65H 1/00

U.S. Cl. 271—145

30 Claims



1. A tray for loading sheets into a sheet processing apparatus having a receptacle and a lid designed to cover the receptacle, wherein the tray includes at least one clearance arranged on the periphery of the receptacle opposite the lid, and at least one plane limitation area arranged on the periphery of the lid and opposite to the bottom of the receptacle, when the lid is closed, each plane limitation area being offset with respect to the inner surface of the lid and arranged on a support structure integral with the lid, this structure being positioned so as to enter the corresponding clearance in the closed position of the lid, each plane limitation area then opening onto the inside of the receptacle, thereby preventing the passage of the sheets contained in the receptacle between the lid and the receptacle.

5,775,688

PAPER FEED DEVICE

Hiroyuki Kato, and Takatoshi Takemoto, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

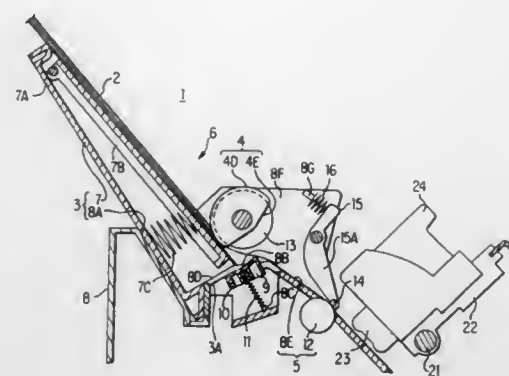
Filed Dec. 24, 1996, Ser. No. 773,286

Claims priority, application Japan, Dec. 26, 1995, 7-351794
Int. Cl.⁶ B65H 3/06

U.S. Cl. 271—167

25 Claims

1. A paper feed device, comprising:
a hopper having a rim for accommodating a plurality of sheets of paper in a stacked manner;
a paper supply roller for supplying one sheet of paper from the hopper;
a separating pawl which is arranged near the rim of the hopper downstream in the feed direction of the plurality of sheets of paper accommodated in the hopper and resiliently extends toward a paper feed path;
a paper guide plane and a feed member positioned downstream of the paper supply roller in the paper feed direction feeding



the paper supplied by the paper supply roller, the paper guide plane offset from the hopper; and
a separating plane extending between the paper guide plane and the rim of the hopper to provide the offset between the hopper and the paper guide plane, the separating pawl crosses the separating plane in a substantially transverse direction and is urged in a direction of protruding from the separating plane.

5,775,689

ACCUMULATOR APPARATUS AND METHOD

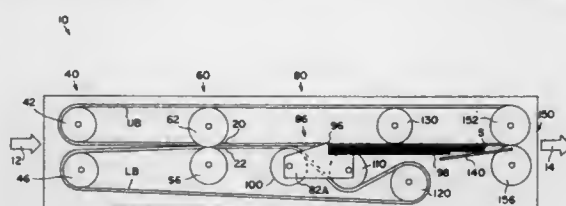
James R. Moser; Donald Dudash, both of Easton; Richard W. Finnochio, Saylorsburg, and Frank S. Lusk, Walnutport, all of Pa., assignors to Bell & Howell Mail Processing Systems, Durham, N.C.

Filed Nov. 22, 1996, Ser. No. 755,001

Int. Cl.⁶ B65H 43/04

U.S. Cl. 271—198

23 Claims



1. An accumulator apparatus for accumulating sheet articles, said accumulator apparatus comprising:

- (a) upper belt means and lower belt means being at least proximately operative such that sheet articles can be advanced in a seriatim manner between portions thereof in an at least substantially horizontal feeding plane;
- (b) a ramp operative for deflecting out of the feeding plane sheet articles advanced between said upper and lower belt means;
- (c) an accumulator for over-accumulating in an accumulation location sheet articles deflected by said ramp; and
- (d) said lower belt means extending away from said upper belt means such that said lower belt means are positioned below and entirely out of contact with accumulated sheet articles in said accumulation location;
- (e) whereby sheet articles can be accumulated in and advanced from said accumulation location without being contacted by said lower belt means after sheet articles are in said accumulation location.

5,775,690

TWO STEP OPTIMIZED STALLED ROLL REGISTRATION AND DESKEW

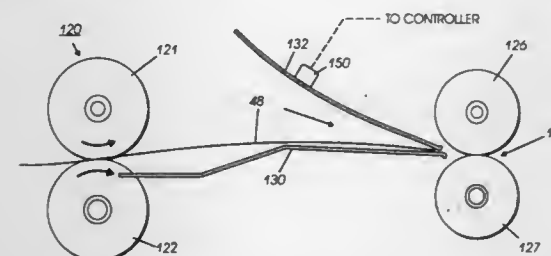
Lisbeth S. Quesnel, Pittsford, and David M. Attridge, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1996, Ser. No. 626,062

Int. Cl.⁶ B65H 9/04

U.S. Cl. 271—242

6 Claims



1. An apparatus for registering a sheet in a path, comprising:
a registration nip located in the path;
a drive nip for transporting a sheet, preceding said registration nip;
a sensor located between said drive nip and said registration nip to sense a buckle in the sheet and generate a signal indicative thereof;
a controller which receives the buckle signal from said sensor and generates a brief drive pulse signal to said registration nip so as to advance the sheet a small distance and capture the sheet in said registration nip.

5,775,691

MEDAL GAME MACHINE

Takashi Hamano, Kawasaki, Japan, assignor to Konami Co., Ltd., Kanagawa-ken, Japan

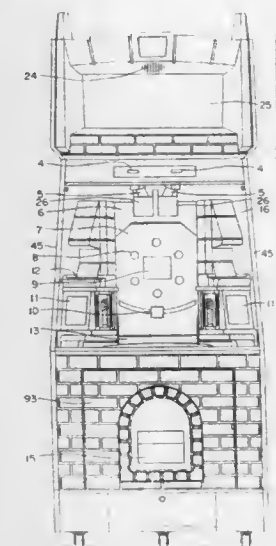
Continuation of Ser. No. 693,636, Aug. 9, 1996. This application May 14, 1997, Ser. No. 856,177

Claims priority, application Japan, Aug. 11, 1995, 7-205746

Int. Cl.⁶ A63F 7/02

U.S. Cl. 273—138.2

10 Claims



1. A medal game machine, comprising:
a table having an upper surface on which medals are located;
a medal pushing member slidably movable relative to and along said upper surface of said table to push the medals located on said upper surface of said table toward an edge of said upper surface of the said table;

a medal pushing member slidably movable relative to and along said upper surface of said table to push the medals located on said upper surface of said table toward an edge of said upper surface of the said table;
a guide which guides medals to said upper surface of said table according to an operation by a player;
a vessel including a sidewall member surrounding a space in which medals can be accommodated, said sidewall member having a lower opening through which medals can be accommodated in said space are discharged, and a bottom plate movable between a first position in which said bottom plate closes said lower opening of said sidewall member and second position in which said bottom plate opens said lower opening of said sidewall member; and
a first supply mechanism which transfers medals accommodated in said vessel to said upper surface of said table by moving said bottom plate from said first position to said second position when a first condition is satisfied.

5,775,692

GAMING OR AMUSEMENT MACHINES

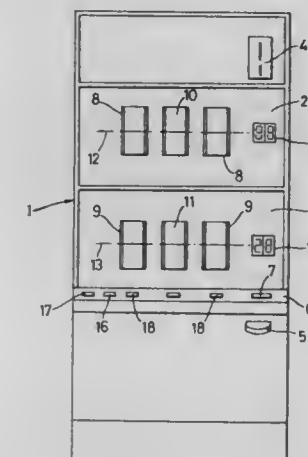
Ronald Arthur Watts, Cardiff, and Alan Parker, South Glamorgan, both of United Kingdom, assignors to Astra Innovations Ltd., Mid Glamorgan, United Kingdom

Filed Dec. 20, 1996, Ser. No. 771,418

Int. Cl.⁶ A63F 5/04

U.S. Cl. 273—143 R

11 Claims



1. A gaming or amusement machine having a first random selector which, on enablement by player insertion of a coin or token, is operable to produce any of a first plurality of results, and a second separate random selector which is operable when a particular one or more of said first plurality of results is obtained to produce any one of a second plurality of results, at least one of these generating a major prize.

5,775,693

INTERACTIVE AND EDUCATIONAL ACTIVITY TOY

Robert E. Clancy, 13 Mays Ave., Hornell, N.Y. 14843

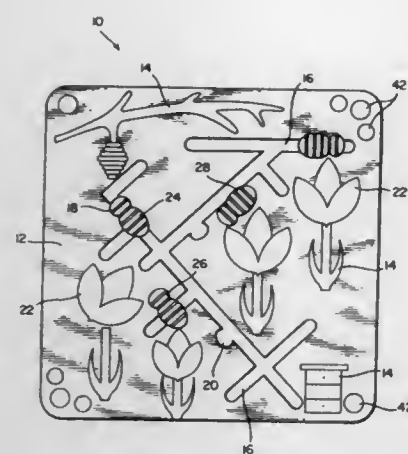
Filed Jan. 29, 1997, Ser. No. 790,935

Int. Cl.⁶ A63F 9/08

U.S. Cl. 273—153 S

31 Claims

1. An interactive toy, comprising a playing board having an upper surface and a parallel lower surface, each surface having a primary set of indicia fixed relative to the board and a secondary set of indicia disposed upon at least one playing piece movably connected to the board within a predetermined range of motion to assume at least one predetermined relationship between the primary and the secondary set of indicia, further comprising at least one selector containing indicia depicting a plurality of predeter-



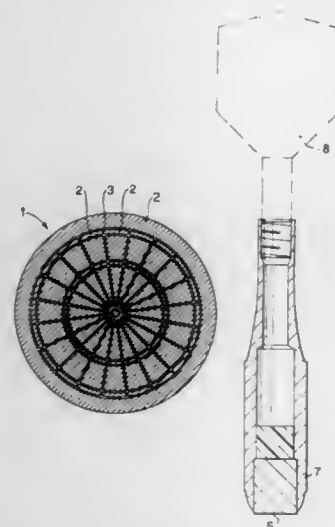
mined relationships between the primary set of indicia and secondary set of indicia and means for choosing at random one of said plurality of predetermined relationships.

5,775,694

DART GAME WITH BLUNT DART HAVING MAGNET SURROUNDED BY NON-MAGNETIC SLEEVE AND BOARD INCLUDING MAGNETIC MATERIAL
Sven Jonsson, Vretavagen 3A, S-147 43, Tumba, Sweden
PCT No. PCT/SE94/00691, § 371 Date Sep. 20, 1996, § 102(e)
Date Sep. 20, 1996, PCT Pub. No. WO95/21660, PCT Pub.
Date Aug. 17, 1995

PCT Filed Jul. 13, 1994, Ser. No. 682,774
Int. Cl.⁶ A63B 65/02; F41J 3/00
U.S. Cl. 273—348.3

9 Claims

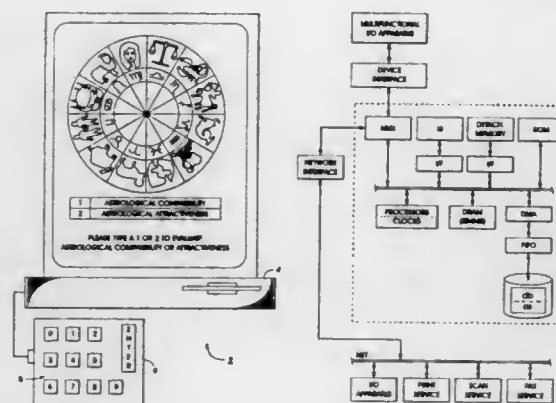


1. A dart game comprising safe darts and a board, wherein each of the darts has a blunt nose comprising a high-energy magnet surrounded by a sleeve of non-magnetic material, and wherein the board comprises fields of a magnetic material, the magnet exerts a magnetic attraction force on each of the fields when the nose approaches said each of the fields, the fields are surrounded by boundaries forming non-magnetic bands, whereby the magnet exerts less magnetic force on any one of the bands than on any of the fields adjacent to said any one of the bands, and each of the bands has a width such that when any one of the darts hits said any one of the bands at a location closer to a first one of the fields than to each other one of the fields, said any one of the darts is pulled magnetically to said first one of the fields and adheres to said first one of the fields.

5,775,695
DEVICE FOR PROVIDING ASTROLOGICAL ENTERTAINMENT AND METHOD THEREOF
Stephen T. Byers, 335 Monroe St., Honeoye Falls, N.Y. 14472, assignor to Stephen T. Byers, Honeoye Falls, N.Y.
Filed Sep. 15, 1995, Ser. No. 528,835
Int. Cl.⁶ A63F 1/00

U.S. Cl. 273—161

12 Claims



1. Astrological entertainment method of evaluating a degree of astrological attractiveness between a requesting player and one of a plurality of subject players, comprising:

- storing sets of information corresponding respectively with astrological profiles of the plurality of subject players, each of the sets of information including personal information regarding one of the plurality of subject players;
- inputting a set of information corresponding to an astrological profile of the requesting player to a processing apparatus via a telecommunications system, with the astrological profile of the requesting player including birth data of the requesting player, wherein said inputting includes inputting a number, with the telecommunications system, to designate a place of birth for the birth data of the astrological profile of the requesting player and the number corresponds to a selected one of a zip code and a telephone area code;
- electronically comparing the set of information corresponding with the requesting player to one of the sets of information of the plurality of subject players for determining the degree of astrological attractiveness between the requesting player and the one of the subject players; and
- if the degree of astrological compatibility between the requesting player and the one of the subject players exceeds a preselected threshold, transmitting the personal information of the one of the subject players to the requesting player.

5,775,696

GAMING TABLE LAYOUT

Peter Sidlow, and Norman Domsy, both of Las Vegas, Nev., assignors to Casino Concepts Company, Las Vegas, Nev.

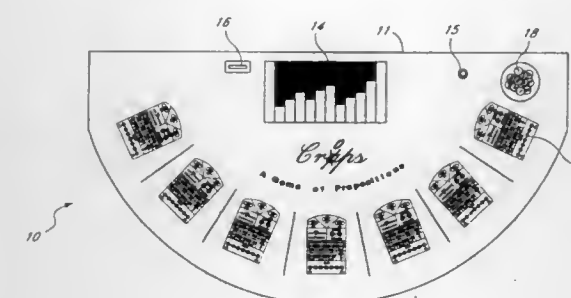
Filed Feb. 12, 1996, Ser. No. 600,307

Int. Cl.⁶ A63F 3/00; A47B 25/00

U.S. Cl. 273—274

38 Claims

25. A gaming table comprising a surface having three or more substantially identical wagering stations thereon, each of said stations spaced apart from the other of said stations for placing bets thereon by a different player, each of said stations comprising a



plurality of spaces having indicia thereon corresponding to different combinations of two numbers from one to six, respectively.

5,775,697

BETTING AND WAGERING GAME BOARD

Roger Sten Snarli, Oslo, Norway, assignor to Quanto AS, Oslo, Norway

PCT No. PCT/NOR95/00194, § 371 Date Jun. 23, 1997, § 102(e)
Date Jun. 23, 1997, PCT Pub. No. WO96/14116, PCT Pub.
Date May 17, 1996

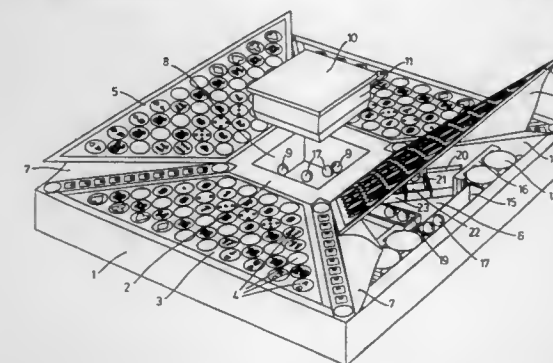
PCT Filed Oct. 25, 1995, Ser. No. 836,393

Claims priority, application Norway, Nov. 3, 1994, 944188

Int. Cl.⁶ A63F 3/00

U.S. Cl. 273—274

10 Claims



1. A game comprising: a playing board having a central section surrounded by a plurality of playing sections having markings on a top portion thereof, each of said playing sections being capable of being raised to give access to a service area including playing devices located underneath said playing section, said central section including a plurality of walls defining a central space wherein each of said walls is located adjacent to each of said service areas and each of said walls has a hole which connects said central space with each of said service areas.

5,775,698

TARGET CADDY

Herbert D. Jones, 12016 White House Rd., and Robert T. Scarborough, 10407 Stallings Creek Dr., both of Smithfield, Va. 23430

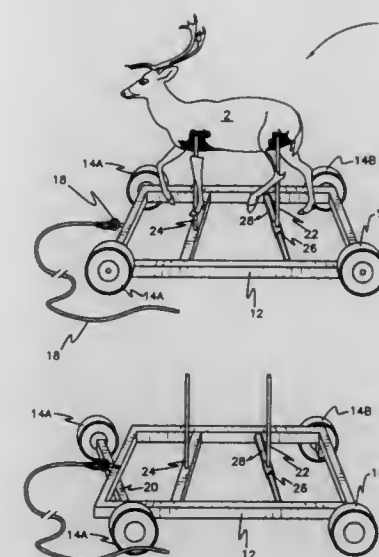
Filed Mar. 10, 1997, Ser. No. 813,441

Int. Cl.⁶ F41J 9/02

U.S. Cl. 273—359

6 Claims

1. A carriage having a hunting target, comprising:
a chassis having a plurality of wheels mounted on said chassis, for rolling said chassis along the ground, said chassis having a first centrally located, upwardly projecting post and a second centrally located, upwardly projecting post, said first post and said second post adapted to engage said target, said first post fixed to said chassis and said second post having structure



enabling only horizontal adjustment for varying the dimension between said first post and said second post, said chassis also having propulsion means for propelling said carriage on the ground while maintaining operating personnel spaced away from said carriage;

said target having openings cooperating with said first post and said second post such that said target is mounted to said chassis on said first post and said second post.

5,775,699

APPARATUS WITH SHOOTING TARGET AND METHOD OF SCORING TARGET SHOOTING

Masaomi Orito, Tokyo; Nobutaka Hirata, Sakura; Satoshi Kimura, Tokyo; Kazuo Asaka, Tokyo, and Shigeo Uehara, Tokyo, all of Japan, assignors to Shibasoku Co., Ltd., Tokyo, Japan

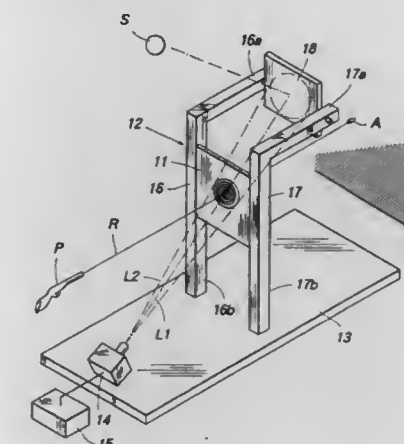
Filed Jan. 4, 1996, Ser. No. 582,624

Claims priority, application Japan, Jan. 11, 1995, 7-018375;
Jan. 24, 1995, 7-027211; Mar. 8, 1995, 7-078344

Int. Cl.⁶ F41J 5/00; 1/10

U.S. Cl. 273—371

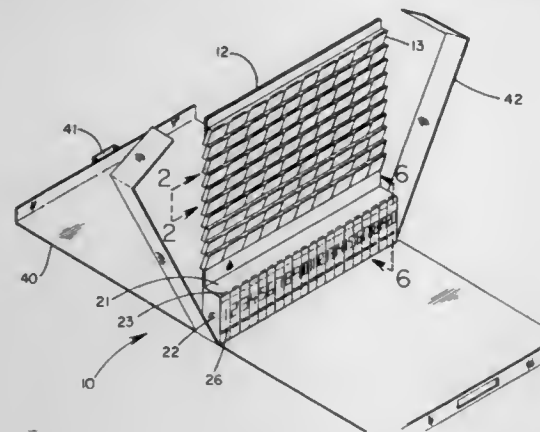
5 Claims



1. A shooting target apparatus comprising:
a shooting target;

an image picking-up means for picking-up an image of the shooting target to derive an image signal;
 an image processing means for processing said image signal supplied from the image picking-up means to detect a position of a bullet hole formed in the shooting target by means of a bullet;
 a scoring means for making a shooting score in accordance with said detected position of the bullet hole in the shooting target; and
 a light reflecting means provided on a line connecting said shooting target and said image picking-up means for reflecting light toward said image-picking up means via said shooting target;
 wherein said light reflecting means includes adjustment means for aligning a light source, said shooting target and said image picking-up means; and said adjustment means includes a central axis for pivoting said light reflecting means thereabout for said aligning.

5,775,700
PARTNERING GAME AND METHOD OF PLAYING SAME
 Lester Hornia, and Osmany Hornia, both of 175 W. 87th St., New York, N.Y. 10024
 Filed May 14, 1997, Ser. No. 855,676
 Int. Cl.⁶ A63F 9/00
 U.S. Cl. 273—459 8 Claims



1. A Method of Playing a Partnering Game comprising the steps of:

providing a plurality of game tokens, the game tokens further comprising a first set of game tokens and a second set of game tokens, the first set of game tokens being equal in number to the second set of game tokens and distinguishable therefrom, each of the game tokens of the first set of game tokens having distinguishable indicia from a first set of indicia thereon and each of game tokens of the second set of game tokens having distinguishable indicia from a second set of indicia thereon;
 providing a plurality of token pockets, each of the token pockets having a pair of indicia thereon, a first indicia being from the first set of indicia and a second indicia being from the second set of indicia and wherein no two pair of indicia are the same, the token pockets further comprising a front portion, a back portion formed of a transparent material, a bottom portion, side portions and a top portion having a token pocket slot formed therein, the top portion, front portion, back portion, bottom portion and side portions forming an enclosure therebetween, the enclosure formed to receive a pair of game tokens in side-by-side relation to one another;
 providing a plurality of numbered token boxes, each of the numbered token boxes having a back section, a bottom section, side sections, a numbered front section; and a top section having a token box slot formed therein and further comprising a token retaining means integrally formed thereon for retain-

ing game tokens in a first position within the numbered token box when the token retaining means is in a closed position, the front section further comprising a card key receiving means for accepting a correspondingly numbered card key, the numbered card key being engageable to the token retaining means for moving the token retaining means to an open position wherein a first end of the token retaining means engages a guiding means integrally formed on a front section lower portion for guiding the game tokens held within the numbered token box through an aperture formed in the front section;

distributing to each of a plurality of male game players a single game token from the first set of game tokens and to each of a plurality of female game players a single game token from the second set of game tokens;

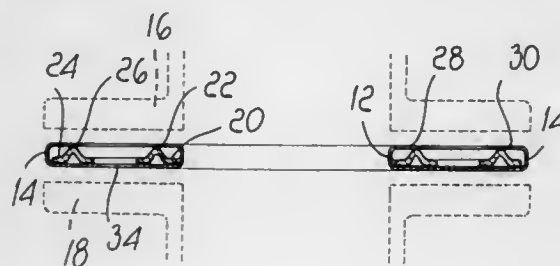
distributing to each of the male game players and to each of the female game players a numbered card key;

initiating play of the game by having each male game player and each female game player privately deposit their game token into the token box slot of the numbered token box corresponding to the numbered key card held by a game player of the opposite sex of their desiring;

continuing the game by having each male game player and each female game player privately retrieve the game tokens from their numbered token boxes by inserting their numbered card key into the corresponding card key receiving means and retrieving the game tokens therein; and

continuing the game by having each male game player and each female game player privately place each game token retrieved from the numbered token boxes into the token pocket having the indicia corresponding to the indicia on each retrieved game token and the indicia of the game token originally given to each male game player and each female game player, and wherein two game tokens placed in a token pocket indicate a mutual liking.

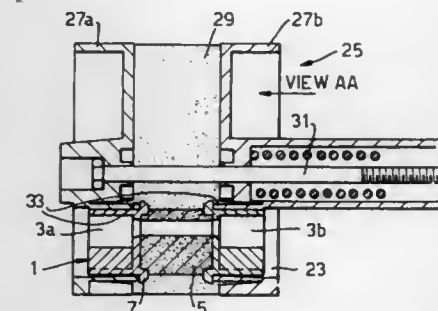
5,775,701
EXHAUST TUBE GASKET FOR COMBUSTION GASES
 Gino Martini, Biella, Italy, assignor to Tako Payen S.p.A., Turin, Italy
 Filed Nov. 1, 1996, Ser. No. 742,618
 Claims priority, application European Pat. Off., Nov. 23, 1995, 95830490
 Int. Cl.⁶ F16J 15/00
 U.S. Cl. 277—207 R 2 Claims



1. An exhaust tube gasket for hot combustion gases, comprising: a ring made of a flat elastic-steel plate of uniform thickness and having an inner edge and an outer edge, the ring being formed with a first V-shaped ridge or bead which extends along the inner edge; and

an annular sheet of malleable steel, lying flat against the face of the elastic-steel ring opposite to said ridge, the sheet of malleable steel having an inner rim which is folded over the inner edge of the ring to overhang said first ridge and an outer rim which is folded over the outer edge of the ring.

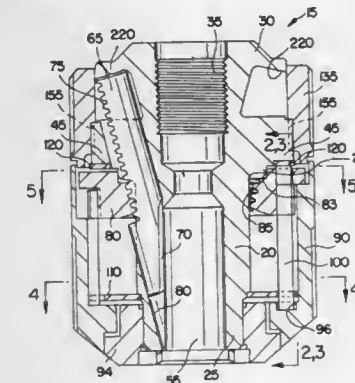
5,775,702
SEALING ARRANGEMENT
 Etienne Laeremans, Scherpenheuvel-Zichen, and Marc Demesmaecker, Antwerpen, both of Belgium, assignors to N.V. Raychem S.A., Kessel-Lo, Belgium
 PCT No. PCT/GB95/00469, § 371 Date Dec. 2, 1996, § 102(e) Date Dec. 2, 1996, PCT Pub. No. WO95/24756, PCT Pub. Date Sep. 14, 1995
 PCT Filed Mar. 6, 1995, Ser. No. 704,686
 Claims priority, application United Kingdom, Mar. 7, 1994, 9404396
 Int. Cl.⁶ F16J 15/00
 U.S. Cl. 277—314 14 Claims



13. A method of sealing an annular space around an elongate object to be inserted into an enclosure comprising the steps of: placing an adaptor including adaptor compressing means and a sealant around the elongate object;
 placing the adaptor within a port of a sealing device, said sealing device including sealing device compressing means and a sealing device sealant around the adaptor;
 placing the sealing device into an end of the enclosure; and driving the adaptor compressing means longitudinally with respect to the elongate object with the sealing device compressing means to compress the sealant of the adaptor into sealing contact with the elongate object.

5,775,703
 Patent Not Issued For This Number

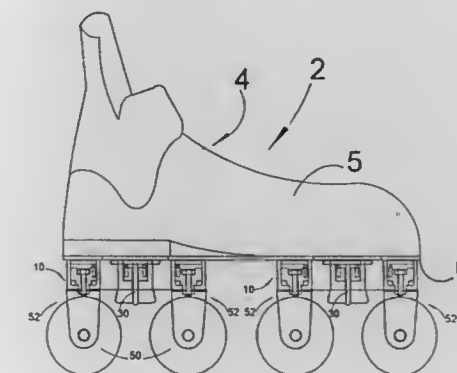
5,775,704
REVERSE LEVER ACTUATED KEYLESS CHUCK
 Larry Wilson, Belton, S.C.; Glenn L. Salpaka, Evansville, Ind., and Valerie Owens, Townville, S.C., assignors to Power Tool Holders Incorporated, Wilmington, Del.
 Filed Jun. 22, 1996, Ser. No. 670,193
 Int. Cl.⁶ B23B 31/12
 U.S. Cl. 279—62 19 Claims



1. A chuck for use with a manual or powered driver having a rotatable drive shaft, said chuck comprising:

a) a generally cylindrical body member having a nose section and a tail section, said tail section adapted to mate with the drive shaft of the driver and said nose section having an axial bore formed therein and a plurality of angularly disposed passageways formed therethrough and intersecting said axial bore;
 b) a plurality of jaws slidably positioned in each of said angularly disposed passageways, each of said jaws having a jaw face formed on one side thereof for engaging a tool to be held thereby, and threads formed on the opposite side thereof for engagement with a nut;
 c) a nut rotatably mounted with respect to said body member and in engagement with said threads on said jaws;
 d) a sleeve member in driving engagement with said nut so that when said sleeve member is rotated with respect to said body member, said jaws will be moved thereby; and
 e) a supplemental tightening mechanism configured and disposed so as to force said nut toward said nose section and thereby cause said jaws to produce an enhanced tightening force on the tool, said mechanism including a portion disposed between said nut and said nose section of said body member wherein said supplemental tightening mechanism includes at least one lever member.

5,775,705
CONVERTIBLE IN-LINE/PARALLEL SKATES
 Jimmy Cochlin, 4431 Fairfield Ave., Fort Wayne, Ind. 46807
 PCT No. PCT/US95/10082, § 371 Date Jan. 10, 1997, § 102(e) Date Jan. 10, 1997, PCT Pub. No. WO96/03187, PCT Pub. Date Feb. 8, 1996
 Continuation-in-part of Ser. No. 280,806, Jul. 26, 1994, Pat. No. 5,524,911. This PCT application Jul. 25, 1995, Ser. No. 780,827
 Int. Cl.⁶ A63C 17/02
 U.S. Cl. 280—7.1 31 Claims



1. A convertible skate comprising:
 an enclosure
 a base frame attached to said enclosure;
 at least one vertical post attached to said base frame;
 at least one wheel chassis, each said wheel chassis including a chassis body pivotably attached to said vertical post, a pair of wheels, a pair of wheel supports for rotatably supporting said wheels in vertical rotational planes relative to a ground surface, each said wheel support being pivotably connected to a respective end of said wheel chassis for movement about a vertical axis, said wheel chassis further including means for connecting said wheel supports to a fixed member located proximate said vertical post, said connecting means changing the pivotal position of the vertical axes of said wheel supports in response to pivotal movement of said wheel chassis relative to said vertical post; and
 positioning means for selectively positioning said chassis in a selected one of a plurality of pivotal positions whereby the vertical rotational planes of said pair of wheels may be selectively arranged either in-line along a longitudinal axis of

the skate or transversely along each side of the longitudinal axis in response to a selected pivotal position of said wheel chassis.

5,775,706

SKATE WITH IN-LINE WHEELS

Francesco Caeran, Montebelluna, Italy, assignor to Nordica S.p.A., Treviso, Italy

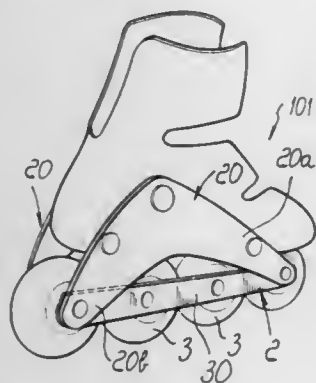
Filed Jul. 6, 1995, Ser. No. 498,818

Claims priority, application Italy, Jul. 13, 1994, MI94A1459

Int. Cl.⁶ A63C 17/06

U.S. Cl. 280—11.22

2 Claims



1. A skate with in-line wheels, comprising:
a shoe portion;
a wheel supporting frame comprising a pair of side walls which are mutually interconnected by at least one cross member;
a plurality of wheels;
pivot members which rotatably connect said wheels between said side walls of said wheel supporting frame; and
a pair of brackets each of which is connected to a respective lateral side of said shoe portion and each of which comprises a front arm connected to a front pivot member and a rear arm connected to a rear pivot member.

5,775,707

SKATE WHEEL FASTENING SYSTEM

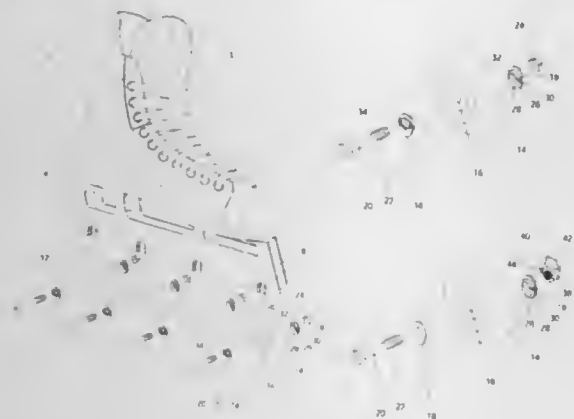
Antonio Chung-Hua Hu, Menlo Park, Calif., and Albert Yiu-So Shum, Calgary, Canada, assignors to Primal Products, Inc., San Francisco, Calif.

Filed Feb. 15, 1996, Ser. No. 601,690

Int. Cl.⁶ A63C 17/06

U.S. Cl. 280—11.22

16 Claims



1. A wheel fastening system for rotatably securing wheels to a shoe portion of an in-line skate, comprising:

a frame for attaching to a bottom surface of the shoe portion and including a pair of first and second opposing walls that depend from said shoe portion, each of said walls having a bottom edge, a pair of opposing slots one of each being formed in said first and second walls respectively, said slots having an open end at said bottom edges, each of said walls having a side surface with one of a safety recess and a safety protrusion formed therein adjacent said slots;

- a first and a second frame spacer each having a plug with a flange portion extending therefrom, said plug having a through-hole formed therethrough and being dimensioned to insert into said slot, each of said first and second frame spacers having the other of said safety recess and said safety protrusion formed on said flange portion, each of said frame spacers inserted into said slots such that said safety protrusion removably engages said safety recess to removably secure said first and second spacers to said frame and to prevent movement of the frame spacers toward said bottom edges;
a wheel having an axle hole formed through its center of rotation positioned between said pair of slots; and
an axle means received through said axle hole of said wheel and said through-holes of said frame spacers for rotatably and removably securing said wheel between said first and second walls of said frame.

5,775,708

EXERCISE VEHICLE WITH CABLE STEERING SYSTEM

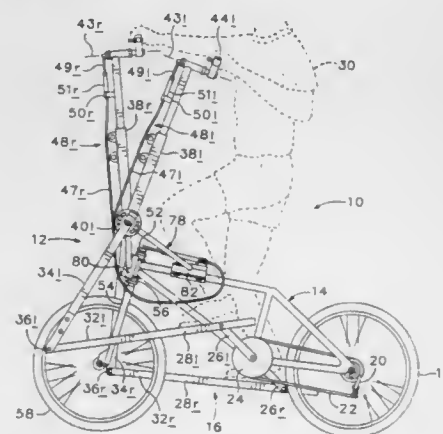
Steven C. Heath, 715 NE 152nd Ave., Vancouver, Wash. 98684

Filed Oct. 2, 1995, Ser. No. 537,644

Int. Cl.⁶ B62M 1/12

U.S. Cl. 280—234

20 Claims



1. A vehicle comprising:
a frame including first and second arm levers projecting generally upwardly from the frame within arm's reach of a rider;
at least one drive wheel rotatably coupled with said frame;
a drive system attached to said frame, the drive system for rotating said drive wheel; and
a steering system including (a) a guidance wheel rotatably coupled with said frame, the guidance wheel being configured to roll on a surface about a rolling axis and to turn left or right to effect a directional change in vehicle travel; (b) an elongate steering crank operatively connected to the guidance wheel so that the guidance wheel turns when the steering crank rotates about an axis normal to a longitudinal axis of the steering crank; (c) a first hand lever pivotally attached to the first arm lever and having a freely rotatable end, and a second hand lever pivotally attached to the second arm lever and having a freely rotatable end; (d) a first cabling assembly connected between a first end of the steering crank and the first hand lever, and a second cabling assembly connected between a second end of the steering crank and the second hand lever so that when the first hand lever pivots, the second hand lever pivots in the same direction of rotation while the freely

rotatable ends of the first and second hand levers move in opposite translational directions, respectively, pivot of the hand levers thus causing the steering crank to rotate, and correspondingly causing the guidance wheel to turn, thereby effecting a directional change in vehicle travel.

5,775,709

BICYCLE HEADSET ASSEMBLY

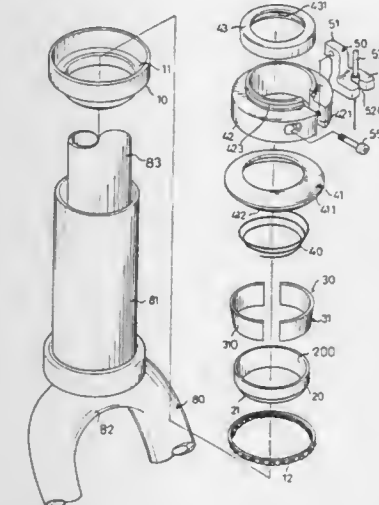
Chiung-yao Chen, 6F-6, No. 12, Lane 222, Chinlung Road, Taipei, Taiwan

Filed Jun. 4, 1996, Ser. No. 658,023

Int. Cl.⁶ B62K 21/18

U.S. Cl. 280—279

3 Claims



1. A headset assembly for a bicycle which comprises a steerer tube, a head tube in which said steerer tube is pivotably received, an upper bowl mounted around said steerer tube and supported on a top portion of said head tube, and a bearing rotatably mounted in said upper bowl, said headset assembly further comprising:

- a race mounted on said bearing and having a first tapered surface formed on an inner periphery thereof;
a compression member having two semi-annular urging elements each mounted between said steerer tube and said race and each having a second tapered surface formed on an outer periphery thereof and engaged on said first tapered surface;
a cap mounted around said steerer tube and supported on said upper bowl;
a biasing member mounted around said steerer tube and urged between said two semi-annular urging elements and said cap; and
a sleeve fixedly mounted around said steerer tube and urged on said cap.

5,775,710

BICYCLE SADDLE

Tsai-Yun Yu, Taichung Hsien, Taiwan, assignor to Selle Tech Industrial Co., Ltd., Taiwan

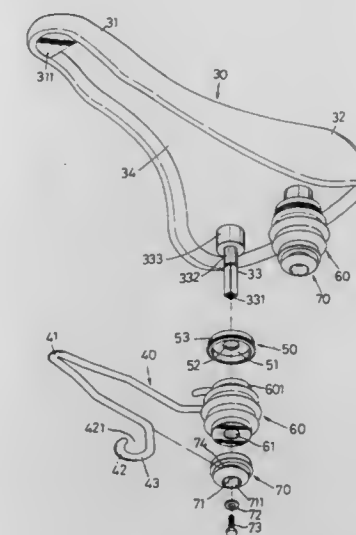
Filed Aug. 20, 1996, Ser. No. 700,027

Int. Cl.⁶ B62J 1/02

U.S. Cl. 280—283

5 Claims

1. A bicycle saddle comprising:
a saddle body having a front converging portion and a rear diverging portion;
a front mounting socket member formed at a bottom side of said front converging portion;
a pair of rear mounting posts which are spaced apart and which project downwardly from a bottom side of said rear diverging portion;



- a support rod which has a converging bent front end to be mounted to said front mounting socket member and two diverging arms with hook portions to be mounted on said rear mounting posts, respectively; and
a pair of hook engaging members, each of which has a peripheral groove, each of said hook portions extending around one of said hook engaging members and being received in said peripheral groove;
said hook engaging members being mountable on said mounting posts respectively after engaging said bent hook portions;
a pair of resilient members respectively sleeved around said mounting posts to cushion said hook engaging members;
wherein each of said mounting posts is stepped and includes a head portion disposed immediately below the bottom side of said rear diverging portion of said saddle body, and a neck portion below said head portion.

5,775,711

TRAILER STRUCTURE

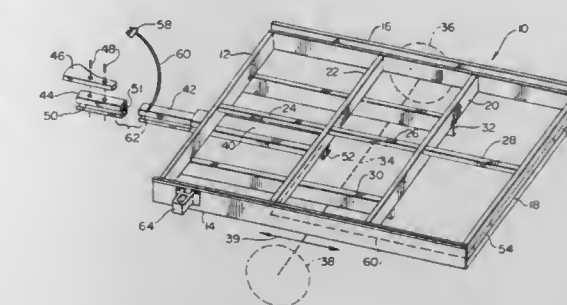
Wayne G. Floe, HCR Box 131, Aitkin County, McGregor, Minn. 55760

Filed Nov. 16, 1995, Ser. No. 559,360

Int. Cl.⁶ B62D 63/06

U.S. Cl. 280—405.1

15 Claims



1. An improved tilt-bed trailer comprising:
a bed support structure;
an elongated tongue member having a first end rotatably connected to said bed support structure, and having a predetermined length;
a channel member fixedly mounted to said bed support structure, and arranged to engage a first predetermined portion of said elongated tongue member, along said length;
a tongue retention and release mechanism arranged to slidably engage along said length a second portion of said elongated tongue member and a predetermined portion of said channel member.

member and including a tension mechanism for selectively locking and releasing said tongue retention and release mechanism;

- a pair of bed support members mounted to said bed support structure, each of said bed support members having a predetermined length, an upper support surface, and a lower surface, and having a longitudinal channel of a first predetermined cross-section extending along said length at said lower surface;
- a pair of axle support members each having a second predetermined cross-section complementary to said first predetermined cross-section of said longitudinal channel in each of said pair of bed support members, and slidably engaged within an associated one of said longitudinal channels, and including a locking mechanism in conjunction with each of said pair of axle support members for locking each said axle support member in a predetermined selectable position relative to the associated one of said pair of bed support members.

a control circuit comprising a switch, said switch being operably connected to receive power from the auxiliary lighting power conductor and, when it is receiving power, to cause the device to operate in the first mode wherein said plurality of input conductors are electrically connected to said plurality of output conductors so that the trailer lights operate in normal fashion, said switch being operable, when it fails to receive power, to cause the device to operate in the second mode wherein said battery output conductor is operable, when it is connected to a battery carried on the trailer, to deliver the output of the battery to said flasher element through said switch and said flasher element is operable to deliver a pulsed output to said plurality of output conductors.

5,775,713

COLLAPSIBLE GOOSE-NECK VAN TRAILER

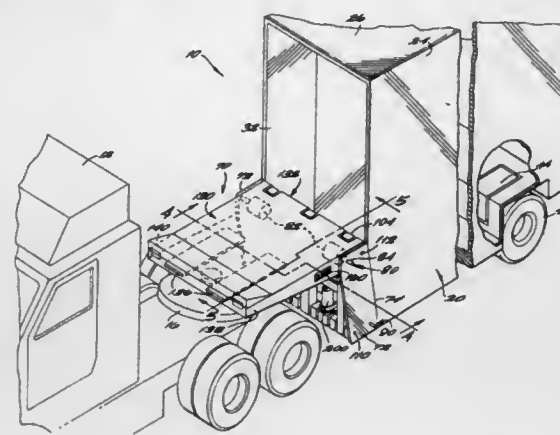
Thomas W. Peterson, and Keith D. Peterson, both of 402 Old Chester Rd., Winnsboro, S.C. 29180

Filed Oct. 26, 1995, Ser. No. 548,431

Int. Cl.⁶ B60P 1/04

U.S. Cl. 280—441.2

18 Claims



1. A trailer having at least one axle and adapted to be towed by a tractor, said trailer for use on a surface, said trailer comprising:
 - a substantially enclosed van having a floor, an interior, a pair of sides, and a front end;
 - means carried by said front end of said van for attaching said van to said tractor, said attaching means having a raised and a lowered position, said attaching means attachable to said tractor when said attaching means is in said raised position, said attaching means further comprising
 - a platform pivotally carried by said van, said platform extending approximately perpendicular to said floor of said van when said attaching means is in said raised position, said platform extending approximately parallel to said floor of said van when said attaching means is in said lowered position; and
 - a tongue pivotally carried by said platform, said platform and said tongue being lowerable until said tongue engages said surface when said attaching means is in said lowered position, said tongue having a pair of channels adapted for use by a forklift.

5,775,714

TOW BAR

Leon Meadows, 822 Bunny Rabbit Rd., Athens, Tex. 75751

Filed Mar. 15, 1996, Ser. No. 616,726

Int. Cl.⁶ B60D 1/16

U.S. Cl. 280—458

13 Claims

1. A tow bar for connection between a first device and a second device for transferring forces, comprising:
 - a first member attached to the first device;

5,775,712

METHOD AND APPARATUS TO AUTOMATICALLY CONVERT TRAILER MARKER LIGHTS TO FLASHING HAZARD LIGHTS UPON DISRUPTION OF TRAILER LIGHTING POWER SUPPLIED FROM A TOWING VEHICLE

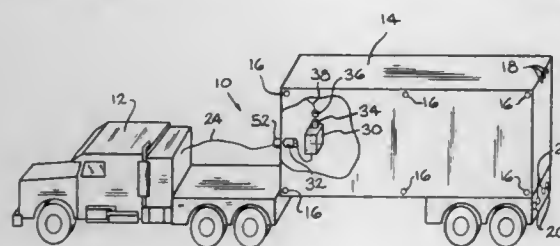
Richard L. Link, 2136 Char Ming Ave., and Richard S. Link, 7410 Dorr St., both of Toledo, Ohio 43615

Filed May 15, 1996, Ser. No. 647,635

Int. Cl.⁶ B60D 1/62

U.S. Cl. 280—422

4 Claims



1. A device operable, in a first mode, to transmit lighting power from a towing vehicle through an electrical connector of the towing vehicle to an electrical connector of a trailer lighting harness, lighting pigtail, and operable, in a second mode, to deliver power from a battery carried on the trailer, in a pulsed output, to the electrical connector of the trailer lighting harness, lighting pigtail to provide emergency actuation of lights on the trailer, said device comprising

- an electrical input connector for electrically connecting a plurality of input conductors, including an auxiliary lighting power conductor, in the device, with the electrical connector of the towing vehicle lighting pigtail,
- an electrical output connector for electrically connecting a plurality of output conductors in the device with the electrical connector of the trailer lighting harness,
- a plurality of conductors connected to deliver, when the device is operating in the first mode, power from said plurality of input conductors to said plurality of output conductors so that the trailer lights operate in normal fashion and the device does not interfere with the normal operation of the towing vehicle lights,
- a battery charging circuit operable to receive power from said auxiliary lighting power conductor and to charge a battery carried on the trailer,
- a flasher element including conductors and selectively operable to receive power from a battery carried on the trailer and to deliver a pulsed output through at least one of said output conductors to the electrical connector of the trailer lighting harness,
- a battery output conductor for delivering the output of a battery carried on the trailer to said flasher element,

5,775,716

CARRIER ARRANGEMENT FOR A SKI BINDING

Otto Harsányi, Murnau; Edwin Lehner, Farchant; Werner Messerschmidt, Garmisch-Partenkirchen, all of Germany; Piero Ruffinengo, Salt Lake City, Utah, and Premek Stepanek, Garmisch-Partenkirchen, Germany, assignors to Marker Deutschland GmbH, Eschenlohe, Germany

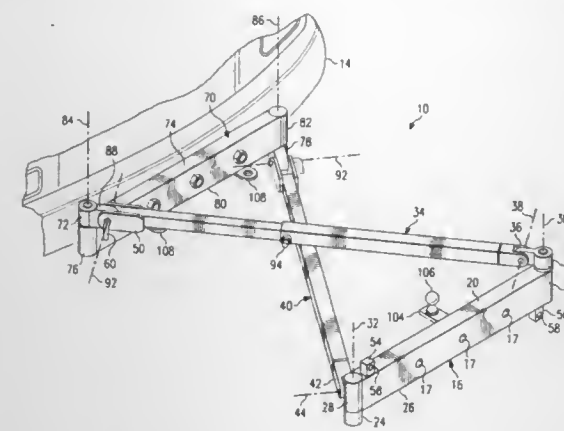
Filed May 17, 1996, Ser. No. 649,915

Claims priority, application Germany, May 17, 1995, 195 17 417.8

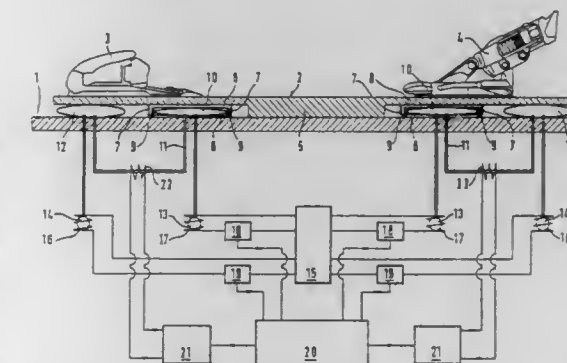
Int. Cl.⁶ A63C 5/07

U.S. Cl. 280—602

17 Claims



- a first arm pivoted at a first end thereof to the first member for motion between a storage position and a towing position;
- a second arm pivoted at a first end thereof to the first member for motion between a storage position and a towing position;
- a second member attached to the second device;
- the first and second arm secured at second ends thereof to the second device in the towing position with the second ends of said arms pivoted to the second member at positions spaced apart from each other with the first and second arms crossing each other in the towing position, the first and second arms parallel each other in the storage position with the second ends secured to the first member.



1. For use with a ski having bending properties relating to the stiffness and/or vibrations of the ski, a system for modifying the bending properties of the ski, the ski having a central region, a forward end and a rearward end, said system comprising:

- support means for supporting a ski boot on the ski, said support means including:
 - a first portion fixed to said ski, and
 - at least one elongated portion extending from said first portion in the longitudinal direction of the ski, said elongated portion having a free end defining a recess between the ski and the at least one elongated portion, to allow the ski to move longitudinally and perpendicularly relative to the at least one elongated portion, as the ski bends; and
 - impedance means for applying a variable force to the ski relative to said support means for controlling movement of said ski relative to the at least one elongated portion as the ski bends, said force being dependent on the magnitude and speed of movement of said free end and the ski.

5,775,715

PIEZOELECTRIC DAMPER FOR A BOARD SUCH AS A SNOW SKI OR SNOWBOARD

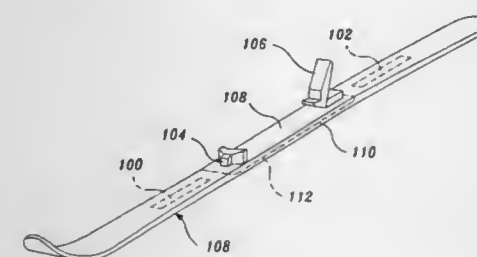
James A. Vandergrift, Seattle, Wash., assignor to K-2 Corporation, Vashon, Wash.

Filed Aug. 1, 1995, Ser. No. 509,970

Int. Cl.⁶ A63C 5/07

U.S. Cl. 280—602

28 Claims



1. A board for use on snow, the board comprising:
 - (a) a longitudinally extending structural, flexing body;
 - (b) a piezoelectric material coupled to the body so as to flex when the body flexes and including a signal generating piece of piezoelectric material to produce an electrical signal in response to a vibration produced within the body; and
 - (c) a control circuit electrically connected to the piezoelectric material that receives and regulates the electrical signal produced by the signal generating piece of the piezoelectric material to influence the deformation of a responsive piece of piezoelectric material included in the piezoelectric material to dampen flexing of the body.

5,775,717

SINGLE GLIDING BOARD HAVING WEDGES FOR RAISING THE BINDINGS

Eric Bobrowicz, Monetier les Bains, France, assignor to Skis Rossignol S.A., France

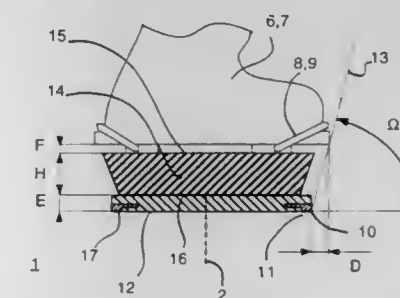
Filed May 2, 1996, Ser. No. 641,782

Claims priority, application France, May 3, 1995, 95 05492

Int. Cl.⁶ A63C 5/04

U.S. Cl. 280—607

12 Claims



1. A single gliding board of the type that includes

- a board having a maximum thickness (E) and a width (L) in a central zone thereof, said board further having a longitudinal axis that corresponds with an axis, along which the board moves;
- a front binding and a rear binding mounted upon said board, each binding having a plate thickness (F) and said front binding forming an angle α and the rear binding forming an angle β with said longitudinal axis of said board;
- a securing unit associated with each of the bindings for securing a binding to the shoe of a user;
- wedge means of a given height (H) for raising each of the bindings relative to the board;
- at least one of said securing units overhanging at least one side edge of the board by a distance (D) such that the height (H) of the wedge satisfies the relationship

$$H \geq kD - (E + F)$$

wherein:

D is the distance measured from the said one edge of the board and the outermost projection of the securing unit, and k is a constant.

5,775,718

FOLDING ASSEMBLY FOR A TROLLEY

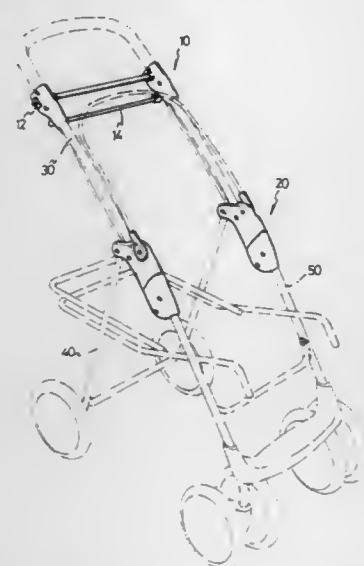
Li-chu Chen Huang, No. 99, Fuchou 7th St., Chiayi City, Taiwan

Filed Apr. 17, 1996, Ser. No. 633,646

Int. Cl.⁶ B62B 7/06

U.S. Cl. 280—642

3 Claims



1. A folding assembly for a trolley comprising:
- a driving device having:
- a cover provided with an inner shell and an outer shell, securely connected with said inner shell and having an extension integrally formed therein;
 - a supporting rod securely received between said inner shell and said outer shell;
 - a safety switch pivotally received within said cover and having a protrusion integrally formed therein;
 - a link pivotally received within said cover and securely connected with said safety switch;
 - a cable having a first end securely attached to said link;
 - a driving rod pivotally received within said cover and securely connected with said link; and
 - a spring securely received between said protrusion of said safety switch and said extension of said outer shell, and
- a driven device having:
- a connecting seat having defined therein a first hole through which said supporting rod is securely received;

- a resilient member securely received within said connecting seat;
- a receiving seat having defined therein a second hole through which second support is received, a recess and an opening in which a distal end of said supporting rod is received; and
- a block securely abutted by an end of said resilient member and securely engaged with a second end of said cable and having an extending portion formed therewith and movably received within said recess of said receiving seat.

5,775,719

CONTROL ARM ALIGNMENT MECHANISM

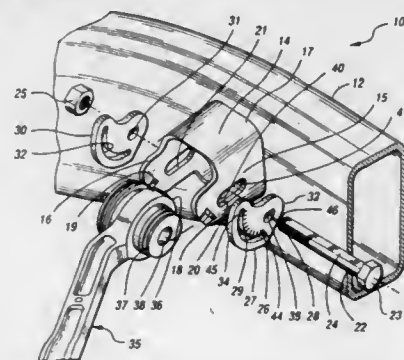
Jerry Lee Holden, New Baltimore, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1997, Ser. No. 822,630

Int. Cl.⁶ B62D 17/00

U.S. Cl. 280—661

3 Claims



1. A control arm alignment mechanism comprising:
- a frame bracket connected to a vehicle frame, the frame bracket having a first wall with a first elongated opening, a guide tab extending substantially perpendicularly to the first wall, and a second wall disposed in a generally parallel and opposed relationship with the first wall, the second wall including a second elongated opening positioned in correspondence with the first elongated opening;
 - a bolt extending through the first and second elongated openings and having a shaped cross section;
 - a cam positioned on the bolt adjacent the first wall and having a pivot opening corresponding in shape to the shaped cross section of the bolt so that the cam is keyed to the bolt and cannot rotate substantially with respect to the bolt, wherein the cam has an eccentric slot spiraling about the pivot opening, with the guide tab extending through the eccentric slot so that rotation of the bolt causes the guide tab to track within the eccentric slot causing a displacement of the bolt along the first and second elongated openings; and
 - a control arm end having a bushing with an opening through which the bolt extends maintaining the position of the control arm end between the first and the second walls wherein displacement of the bolt along the first and the second elongated openings moves the control arm end within the first and the second walls to adjust the relationship of the control arm end to the frame.

5,775,720

SHOCK ABSORBING APPARATUS

Daniel F. Kmiec, Birmingham, and William Benjamin Turck, Taylor, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

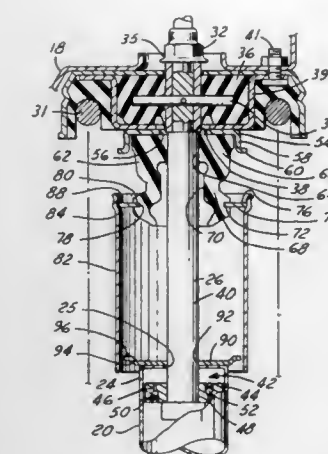
Filed Oct. 3, 1996, Ser. No. 725,043

Int. Cl.⁶ B60G 3/20

U.S. Cl. 280—667

17 Claims

1. A shock absorbing apparatus for use in a motor vehicle having a first component movably attached to a second component, said shock absorbing apparatus comprising:



5,775,722

PROTECTIVE POST-GUARD FOR A VEHICLE

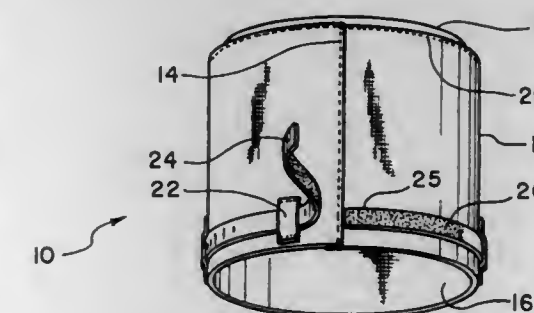
Bruce A. Moore, and Susan L. Moore, both of 29 N. Paquatuck Ave., East Moriches, N.Y. 11940

Filed Aug. 21, 1996, Ser. No. 700,913

Int. Cl.⁶ B60R 21/34; 27/00; B65D 65/08

U.S. Cl. 280—727

19 Claims



- a first hollow member having a first end attached to said first component and a second end opposite therefrom;
 - a rod having a first end adapted to attach to said second component and a second end slidably disposed within said first hollow member;
 - a first metallic member having a first aperture therein for receiving said first end of said rod therethrough, said first metallic member being attached to said second component;
 - an elastomeric member having a second aperture therein for receiving said first end of said rod therethrough, said elastomeric member being adjacent to said first metallic member and secured relative to said first end of said rod;
 - a second metallic member having an outer periphery and a third aperture therein defining an inner periphery for receiving said elastomeric member and said rod therethrough;
 - a second hollow member having a first end attached to said outer periphery of said second metallic member and extending away from said second metallic member toward said second end of said rod; and
 - a third metallic member securely disposed on said second end of said first hollow member;
- said first, second and third metallic members being aligned with one another to provide metal to metal contact when said elastomeric member undergoes a predetermined compression.

1. A protective cover for covering jagged edges of an exposed post of a crashed vehicle, the exposed post being formed in situ during a rescue operation, comprising:

- a sidewall having opposite axial ends and enveloping an end portion of the exposed post of the crashed vehicle; and
- a cap, disposed at one of the axial ends of the sidewall, and having an inside surface contacting the jagged edges of the exposed post of the crashed vehicle when fitted thereon.

5,775,723

EXTRUDED AIRBAG RETAINER

Carsten Dede, Roisdorf, Germany, and Thomas B. Branski, Glendale, Ariz., assignors to VAW Aluminium AG, Bonn, Germany

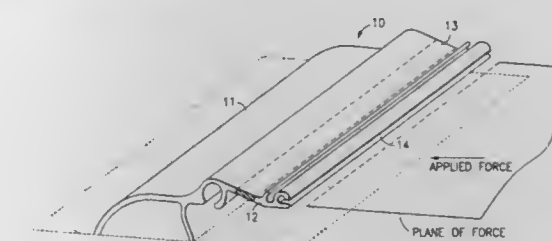
Filed Mar. 20, 1996, Ser. No. 619,915

Claims priority, application Germany, Mar. 31, 1995, 195 12 378.6

Int. Cl.⁶ B60R 21/16

U.S. Cl. 280—728.2

7 Claims



1. An extruded airbag retainer capable of absorbing and cushioning the force of a passenger impact thereagainst, comprising a trough-shaped metallic sidewall section having opposed leg members, designed to contain an inflatable airbag and a gas generator for deployment at an activation impact, characterized by at least one of said opposed leg members being formed with a narrow

5,775,721

COVER FOR A GAS BAG OF AN OCCUPANT RESTRAINING SYSTEM IN VEHICLES

John Grout, Alfdorf, Germany, assignor to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany

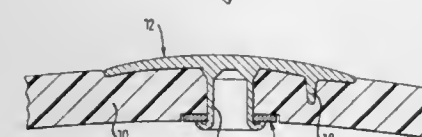
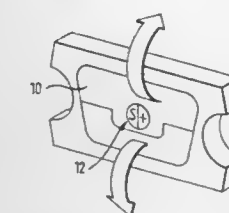
Filed May 10, 1996, Ser. No. 644,316

Claims priority, application Germany, May 12, 1995, 295 07 890.1

Int. Cl.⁶ B60P 1/43

U.S. Cl. 280—727

5 Claims



1. A cover for a gas bag of an occupant restraining system in vehicles comprising a cover plate having a front side and a rear side, a badge bearing an emblem fixed on the front side of said

transverse area of reduced strength to provide a localized line of weakness capable of yielding and deforming under the effects of impact pressure applied against the leading edge of said leg said narrow transverse area of reduced strength comprising a flange which projects from said leg member a sufficient height to permit attachment thereto of a support member.

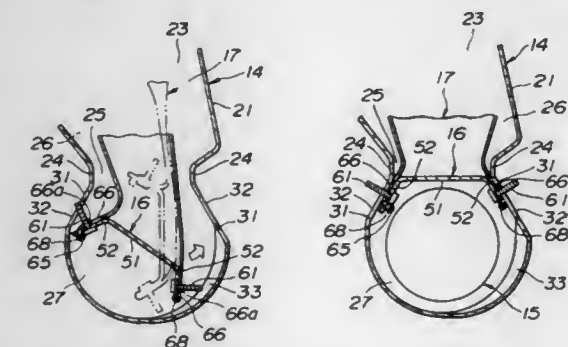
5,775,724
AIRBAG RESTRAINT UNIT AND METHOD OF
PRODUCING SAME

Masami Tonooka; Yoshio Horiike, and Mitutaka Watanabe, all of Fuji, Japan, assignors to Nihon Plast Co., Ltd., Fuji, Japan

Filed Apr. 24, 1996, Ser. No. 636,982
Claims priority, application Japan, Feb. 14, 1996, 8-026586
Int. Cl.⁶ B60R 21/20; 21/26

U.S. Cl. 280—728.2

12 Claims



1. An airbag restraint unit comprising:
 - a casing;
 - an inflator for ejecting gas, disposed in the casing;
 - an airbag adapted to inflate and deploy upon the inflator supplying the gas, the airbag being disposed in the casing; and
 - a mid-retainer disposed in the casing and located between the inflator and the airbag,
- wherein the casing includes a first engagement section having first and second engagement surfaces, which are opposite to each other,
- wherein the mid-retainer includes a second engagement section having opposite first and second engagement surfaces engageable respectively with the first and second engagement surfaces of the first engagement section,
- wherein at least one of the casing and mid-retainer includes means for fastening the mid-retainer to the casing so that the first and second engagement surfaces of the second engagement section respectively engage the first and second engagement surfaces of the first engagement section, the fastening means being formed integral with at least one of the casing and the mid-retainer,
- wherein the fastening means includes first and second installation holes formed respectively at the first and second engagement surfaces of the first engagement section, and further includes first and second fastening members projecting respectively from the first and second engagement surfaces of the second engagement section, the first and second fastening members being inserted into the first and second installation holes,
- wherein said casing includes means for guiding said first fastening member along the inner periphery of said casing toward the first engagement surface of said first engagement section.

5,775,725
DEVICE FOR FASTENING AN AIR BAG HOUSING
COMPRISING A HOUSING BOTTOM AND A HOUSING
COVER IN THE STEERING WHEEL

Hung Hodac, Niedernberg, and Karl Hussy, Waldaschaff, both of Germany, assignors to Petri AG, Aschaffenburg, Germany

PCT No. PCT/EP96/00543, § 371 Date Oct. 2, 1996, § 102(e) Date Oct. 2, 1996, PCT Pub. No. WO96/24511, PCT Pub. Date Aug. 15, 1996

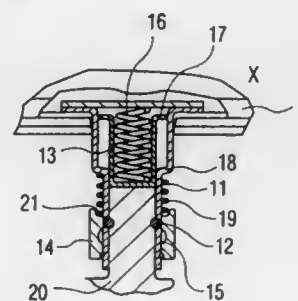
PCT Filed Feb. 3, 1996, Ser. No. 727,550

Claims priority, application Germany, Feb. 6, 1995, 195 03 816.9

Int. Cl.⁶ B60R 21/16; F16B 21/00

U.S. Cl. 280—728.2

6 Claims



1. A fastening device in combination with an air bag housing and a steering wheel, the combination comprising:
 - an air bag housing with a housing bottom and a housing cover attached to said housing bottom;
 - a steering wheel;
 - a locking member arranged on one of said housing bottom and the steering wheel, said locking member including a pin comprising a circular groove and fastened to a skeleton of the steering wheel;
 - a spring-tensioned catch engaging said locking member for mounting the air bag housing in the steering wheel, said spring tensioned catch being arranged at the other of said housing bottom and the steering wheel, said spring-tensioned catch including a middle sleeve attachable to said pin, said middle sleeve including an inner and outer shoulder, said middle sleeve being fastened to said bottom housing, said middle sleeve comprising a plurality of holes formed as ball cages;
 - a plurality of balls positioned in said holes, said plurality of balls having a diameter greater than a wall thickness of said middle sleeve;
 - an inner sleeve guided in said middle sleeve, said inner sleeve including a stop defining a stop position of said inner sleeve with respect to said middle sleeve, said inner sleeve pressing said balls outward in said stop position;
 - an outer sleeve guided on said middle sleeve, said outer sleeve including a stop defining a stop position of said outer sleeve with respect to said middle sleeve, said outer sleeve pressing said balls inward in said stop position, said outer sleeve having dome-shaped recesses arranged on a circumferential line of said outer sleeve corresponding to said holes in said middle sleeve;
 - an inner spring supported on said bottom housing and biases said inner sleeve in said stop position of said inner sleeve; and
 - an outer spring supported on said outer shoulder and biases said outer sleeve in said stop position of said outer sleeve, said outer spring acts on said outer sleeve in a same direction as said inner spring.

5,775,726
ROOF-MOUNTED AIR BAG

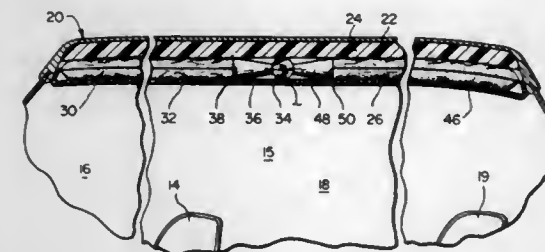
Calvin M. Timothy, Brigham City; Mark W. Osmond, Perry, and Jonathan A. Mitchell, Brigham City, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed May 29, 1996, Ser. No. 655,105

Int. Cl.⁶ B60R 21/22

U.S. Cl. 280—730.1

15 Claims



1. A passive vehicle occupant restraint system for an automotive vehicle having a front seat including a seat back defining generally a front passenger area to one side thereof and a rear passenger area to an opposite side thereof, an outer roof surface, a quantity of insulation material inside of said outer roof surface and a headliner covering said insulation material, said restraint system comprising:
 - a first inflatable cushion mounted between said quantity of insulation material and said headliner and overlying at least a portion of the front passenger area of said vehicle; said inflatable cushion being inflatable to an increased thickness while still being retained between said quantity of insulation material and said headliner in such a manner as to provide a cushion, when inflated, between a head of a passenger and the outer roof surface, and an inflator operatively connected with said inflatable cushion and responsive to a predetermined triggering signal for producing a quantity of gas for inflating said cushion.

15. A passive vehicle occupant restraint system for an automotive vehicle having a front seat including a seat back defining generally a front passenger area to one side thereof and a rear passenger area to an opposite side thereof, an outer roof surface, a quantity of insulation material inside of said outer roof surface and a headliner covering said insulation material, said restraint system comprising: a first inflatable cushion mounted between said quantity of insulation material and said headliner and overlying at least a portion of the front passenger area of said vehicle; an inflator operatively connected with said inflatable cushion and responsive to a predetermined triggering signal for producing a quantity of inflating gas for inflating said cushion; and roll-over sensor means operatively coupled with said inflator and mounted to said vehicle for producing said predetermined triggering signal in response to a roll-over of said vehicle, wherein said vehicle has a plurality of roof posts supporting said roof and wherein said roll-over sensor means comprises a plurality of roll-over sensors, respectively mounted on ones of said roof posts.

5,775,727
DEPLOYMENT DOOR ASSEMBLY

Xingyuan Sun, Rochester Hills; Scott A. Kelley, Algonac, and Andrew J. Smydra, Rochester, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

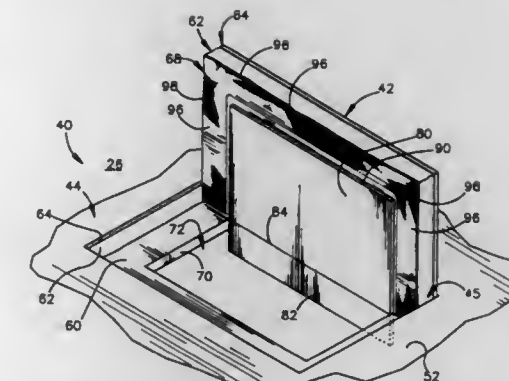
Filed Jan. 17, 1996, Ser. No. 588,075

Int. Cl.⁶ B60R 21/16

U.S. Cl. 280—728.3

7 Claims

1. Apparatus for use with an inflatable vehicle occupant protection device, said apparatus comprising:
 - a trim panel for covering the inflatable device in a vehicle, said trim panel having layers including a scrim layer;
 - said scrim layer having an edge defining a boundary between first and second portions of said trim panel which have first and second shear strengths, respectively, said scrim layer imparting a difference between said shear strengths such that said trim panel is rupturable along said edge under the influ-



ence of the inflatable device as a result of said difference between shear strengths.

5,775,728
PAD FOR STEERING WHEEL INCLUDING MEMBRANE
SWITCH

Minoru Niwa; Kimio Muramatsu; Makoto Kanai; Michio Inoue; Junichi Mizutani; Takanori Kantoh, and Tadashi Yamamoto, all of Nakashima-gun, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai-gun, Japan

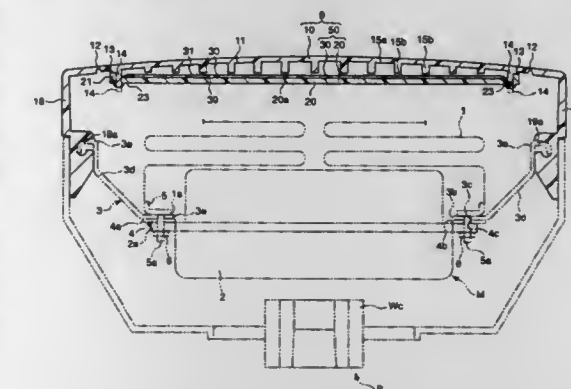
Division of Ser. No. 216,824, Mar. 23, 1994, Pat. No. 5,577,766. This application Aug. 21, 1996, Ser. No. 700,989

Claims priority, application Japan, Apr. 27, 1993, 5-101499

Int. Cl.⁶ B60R 21/16

U.S. Cl. 280—728.3

5 Claims



1. A cover member of an air bag device comprising:
 - (a) a main body including a rupture portion to be ruptured when an air bag is inflated;
 - (b) at least one door portion defined by the rupture portion and positioned at the inside thereof, wherein said at least one door portion is made of a thermoplastic elastomer and is formed in a single layer;
 - (c) a gap regulating brim positioned within the door portion and extending along the rupture portion and being thicker than a remaining portion of the door portion;
 - (d) an actuating portion positioned at an inner portion defined by the gap regulating brim and being thinner than the remaining portion;
 - (e) switching means arranged within the actuating portion; and
 - (f) a support plate positioned on a back face of the switching means and fixed to the door portion.

5,775,729

INTEGRAL HEAD/TORSO AIRBAG AND KNEE AIRBAG RESTRAINT SYSTEM

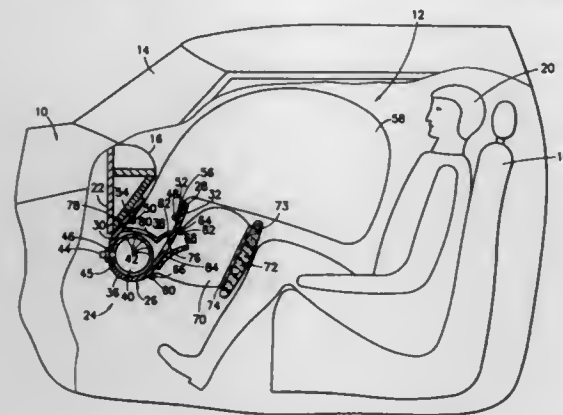
David W. Schneider, Waterford; Patrick G. Jarboe, Almont Township; Daniel J. Snyder, Sterling Heights, and Michael A. Macocha, Oxford, all of Mich., assignors to Autoliv ASP, Inc., Ogden, Utah

Filed May 6, 1997, Ser. No. 851,625

Int. Cl.⁶ B60R 21/22

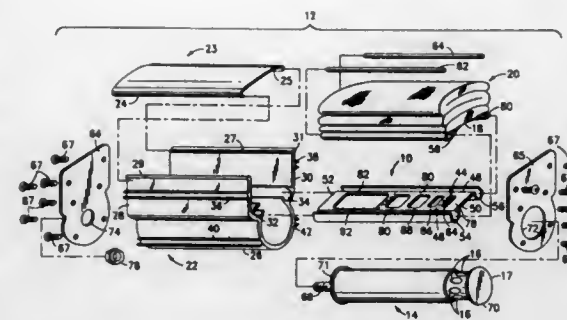
U.S. Cl. 280—730.1

20 Claims



1. A vehicle occupant restraint module assembly comprising an occupant head/torso airbag and a knee airbag for concurrent deployment from a single inflator, said assembly comprising:

- a trough-shaped module canister comprising a bottom wall, and first and second opposing sidewalls and first and second opposing endwalls extending therefrom and forming a trough opening opposite said bottom wall, said first sidewall having at least one kneebag inflation port therein;
- an inflator having a plurality of inflator gas exhaust ports and mounted along said bottom wall of the canister;
- an occupant head/torso airbag mounted to said module canister for receiving inflation gases from the inflation gas exhaust ports of the inflator into a mouth of said head/torso airbag through the trough opening;
- an occupant knee airbag mounted to said module canister for receiving inflation gases from the inflator gas exhaust ports of the inflator into a mouth of said knee airbag through the at least one kneebag inflation port in the first sidewall of the module canister; and
- an inflation gas diffuser and an inflation gas diverter mounted in said module canister intermediate the inflation gas exhaust ports of the inflator and the mouth of the head/torso airbag for diffusing a first portion of inflation gases from the inflator into the mouth of the head/torso airbag and for diverting a second portion of the inflation gases from the inflator into the mouth of the knee airbag through the at least one kneebag inflation port in the first sidewall of the module canister.



- opposing first and second diffuser ends;
- a first end section extending from the first diffuser end, positionable over the inflation exhaust ports of the elongated inflator and defining at least one diffuser vent opening;
- an intermediate section extending from the first end section and defining a plurality of diffuser vent openings, each of the plurality of diffuser vent openings being equal or larger than a preceding diffuser vent opening closer to the first end section, with a diffuser vent opening of the plurality of diffuser vent openings of the intermediate section closest to the first end section being equal or larger than the at least one diffuser vent opening of the first end section;
- a second end section extending from the intermediate section to the second diffuser end and defining a single diffuser vent opening equal to or larger than a diffuser vent opening of the plurality of diffuser vent openings of the intermediate section closest to the second end section;
- the at least one diffuser vent opening of the first end section, the plurality of diffuser vent openings of the intermediate section, and the single diffuser vent opening of the second end section forming a total diffuser vent area of the diffuser;
- the at least one diffuser vent opening of the first end section having a diffuser vent area equal to between about four and about ten percent of the total diffuser vent area;
- the plurality of diffuser vent openings of the intermediate section combined having a diffuser vent area equal to between about thirty and about fifty-six percent of the total diffuser vent area; and
- the single diffuser vent opening of the second end section having a diffuser vent area equal to between about forty and about sixty percent of the total diffuser vent area.

5,775,731

Patent Not Issued For This Number

5,775,730

AIRBAG MODULE DIFFUSER

Steven R. Pripps, North Ogden, Utah, and Claus Geisler, Markgroningen, Germany, assignors to Morton International, Inc., Chicago, Ill.

Filed Feb. 14, 1997, Ser. No. 800,773

Int. Cl.⁶ B60R 21/26

U.S. Cl. 280—740

10 Claims

1. A diffuser for substantially uniformly diffusing inflation gases into a mouth of an inflatable airbag cushion from an elongated inflator having inflation exhaust ports at only one end thereof, the diffuser comprising:

5,775,733

AIRBAG CUSHION FOLDING PROCESS

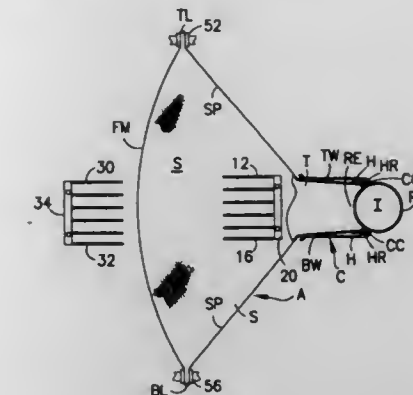
Larry F. Lunt, Brigham, and Russell I. Rose, Tremonton, both of Utah, assignors to Autoliv ASP, Inc., Ogden, Utah

Filed May 6, 1997, Ser. No. 852,177

Int. Cl.⁶ B60R 21/20

U.S. Cl. 280—743.1

10 Claims



1. A method for folding an inflatable airbag cushion having an inflation opening therein, the cushion secured about the inflation opening to a canister, the cushion comprising a main panel having opposite side margins and extending forward from the canister to a face panel portion, having a width and a periphery, and back to the canister, and side panels secured to respective side margins of the main panel, said folding method comprising the steps of:

- a. gripping the main panel at spaced points about the periphery of the face panel portion and arranging the face panel portion generally taut and in a direction away from the canister;
- b. folding the face panel portion and side panel portions adjacent the face panel into accordion pleats parallel to the width of the front face portion and leaving excess portions of the cushion at either end of the pleats;
- c. tucking the excess portions inbetween the respective accordion pleats to form a folded package of the airbag cushion; and
- d. inserting the folded package into the canister.

5,775,732

DEFLECTION FITTING FOR SAFETY BELTS

Hermann Grau, Durlangen-Tanau, Germany, assignor to TRW Occupant Restraint System GmbH, Alfdorf, Germany

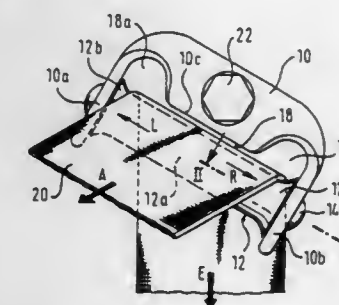
Filed Jan. 25, 1996, Ser. No. 591,276

Claims priority, application Germany, Feb. 10, 1995, 295 02 192.6

Int. Cl.⁶ B60R 22/00

U.S. Cl. 280—808

7 Claims



1. A deflection fitting for vehicular safety belt systems, comprising a yoke with a pair of parallel limbs interconnected by a rod and a roller rotatably mounted on said rod, said roller having a cylindrical main section between a pair of axial end sections, wherein a substantially continuous and concavely curved transition surface is provided from said main section to each of said end sections and from each end section to an adjacent limb surface portion, a passage slot is provided between the roller and the yoke, said passage slot being enlarged at its ends in the form of cusps and said cusps continuing the curvature of the transition surface across at least about 180°, said transition surface between each of said end sections and the adjacent limb surface portion being interrupted by a narrow gap between the axial ends of the roller and the internal limb surface portions, and said transition surface extending for an angle of approximately 90° substantially along a circular arc.

5,775,734

INVESTMENT ADMINISTRATION SYSTEM

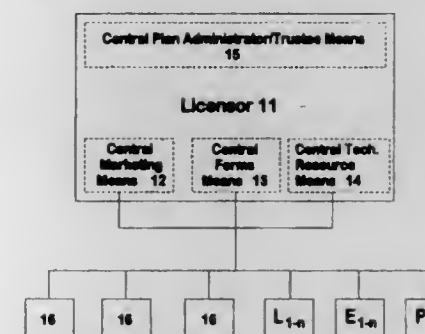
Ralph N. George, Jr., 62 Woodlake Dr., Piscataway, N.J. 08854

Filed Aug. 2, 1996, Ser. No. 691,612

Int. Cl.⁶ B42D 15/00

U.S. Cl. 283—57

26 Claims



1. An investment administration system for administering participant after-tax contributions, comprising:
- a participant account to hold said participant contributions for each of a plurality of participants, each participant being associated with an employer;
 - a plurality of said employers, each employer enrolled through a licensee;

a plurality of licensees, each said licensee adapted to offer each said participant who is associated with an employer enrolled through said licensee access to a set of qualified investment vehicles selected by said licensee;

each said licensee subscribed through a single licensor;

said licensor having central plan administrator/trustee means, central marketing means and central technical resource means;

said plan administrator/trustee means including a receiving means adapted to receive all said participant contributions, an investment means adapted to direct, under the instructions of each participant, each said participant contribution corresponding to that participant into any of said qualified investment vehicles available to that said participant selected by said licensee that said participant's employer is enrolled through, to compute and receive all proceeds generated by each said participant contribution invested with said qualified investment vehicles, to disburse proceeds generated by each said participant contribution invested in said qualified investment vehicles into an appropriate participant account, and a reporting means adapted for prepare and disburse necessary information concerning each participant account, participant contribution, qualified investment vehicle, and proceeds of each said participant contribution invested with said qualified investment vehicles;

said central marketing means adapted to generate for use by said licensees and employers marketing tools and information to assist in the marketing of the investment administration system; and

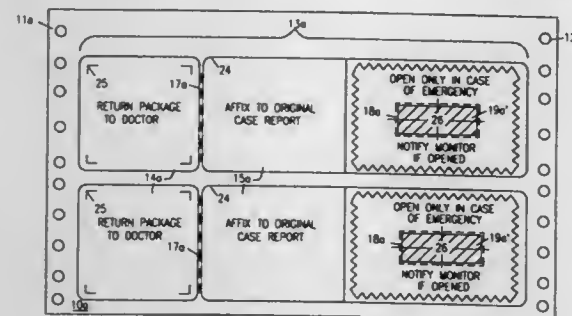
said central technical resource means adapted to provide training and support to said licensees regarding the operation of said investment administration system.

5,775,735
LABEL FORM FOR USE IN DRUG TESTING AND METHOD FOR APPLYING THE SAME
Martin M. Bolnick, 7161 Woodbridge Cir., Boca Raton, Fla. 33434, and Richard S. Bolnick, 8 Spring Hollow, Roslyn, N.Y. 11576

Filed Oct. 2, 1996, Ser. No. 724,804
Int. Cl.⁶ B42D 15/00

U.S. Cl. 283—81

29 Claims



1. A multi-segment label form comprising: an elongated label carrying sheet said sheet having a non-stick surface for detachably receiving label sets comprising label segments having self-adhering adhesive coatings thereon; and

a plurality of adjacent label sets disposed on said label carrying sheet and detachably adhered thereto without being attached to each other, each label set including

a first label segment having a permanent affixation adhesive layer on a major surface,

a second label segment adjacent and detachably attached to said first label segment, said second label segment having a permanent affixation adhesive layer on a major surface, and

a mounting sheet having a first major surface and a second major surface, said second major surface provided with a temporary affixation adhesive layer, said first major surface of

said mounting sheet attached to said permanent affixation adhesive on said second label segment,

a third label segment adjacent and attached to said second label segment, said third label segment having a removable cover portion and an underlying data portion having one major surface adapted to receive indicia that is unreadable until said removable cover portion is removed, said data portion having a permanent affixation adhesive layer on its opposite major surface,

a mounting sheet having a first major surface and a second major surface, said second major surface provided with a temporary affixation adhesive layer, said first major surface of said mounting sheet attached to said permanent affixation adhesive on said third label segment,

a line of perforations between said first label segment and said second label segment to facilitate the detachment of said first label segment from said second label segment.

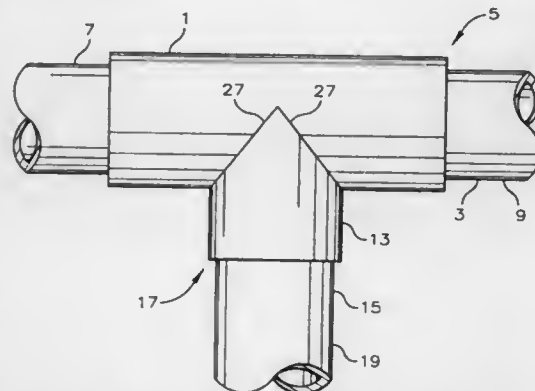
5,775,736
PLASTIC PIPE FITTINGS
Harvey E. Svetlik, Dallas, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 21, 1996, Ser. No. 604,214

Int. Cl.⁶ F16L 27/00

U.S. Cl. 285—21.1

6 Claims



1. A reinforced plastic pipe fitting comprising a plurality of angled cut tubular pieces each said piece having an angled cut inner tubular member and an angled cut outer tubular member wherein said outer tubular member surrounds said inner tubular member in an interference fit and wherein said angled cut tubular pieces are joined by butt-fusion such that said inner tubular members are butt-fused together and said outer tubular members are butt-fused together such that the interiors of said angled cut tubular pieces are in fluid flow communication and said plastic pipe fitting has a curved shape.

5,775,737
CONDUIT VIBRATION DECOUPLING DEVICE
Dietmar Morgner, München, and Hans Deinhard, Kirchheim, both of Germany, assignors to Feodor Burgmann Dichtungswerke GmbH & Co., Wolfratshausen, Germany

Filed May 27, 1997, Ser. No. 863,634

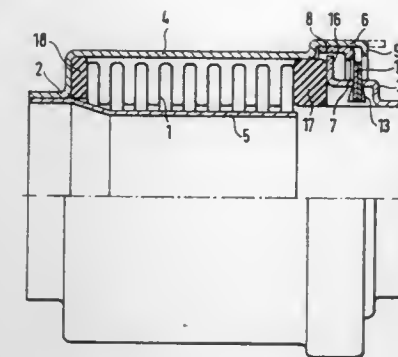
Claims priority, application Germany, Jun. 25, 1996, 296 11 142.2

Int. Cl.⁶ F16L 11/12

U.S. Cl. 285—49

15 Claims

1. A conduit vibration decoupling device, particularly for use in exhaust systems of internal combustion engines, comprising a pair of axially spaced conduit connecting members connected with each other by a flexible connecting element, and a force transmitting means having at least axial elasticity for transferring forces between said conduit connecting members, said force transmitting means comprising a housing surrounding said flexible connecting



means for abutting one side of said retainer for preventing the separation of said conduit from said housing.

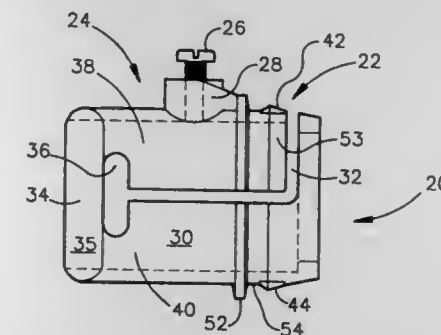
5,775,739
ELECTRICAL CONNECTOR
Thomas J. Gretz, Summit, Pa., assignor to Arlington Industries, Inc., Scranton, Pa.

Filed Jan. 10, 1997, Ser. No. 781,723

Int. Cl.⁶ F16L 11/118

U.S. Cl. 285—154.4

3 Claims



element and being connected to at least one of the conduit connecting member by an articulated spring arrangement comprising at least a pair of spring means circumferentially spaced from each other, wherein each spring means comprises at least a single leaf-type spring element extending in a substantially radial plane of the decoupling device, supported at the end portions thereof with axial clearance at portions of said housing circumferentially spaced from each other, prevented from moving in a circumferential direction, and engaging at an intermediate portion thereof a recess formed in said conduit connecting member and oriented to said spring element, said spring means during movement of said conduit connecting member relative to said housing engaging portions of said conduit connecting member defining said recess for transmitting a force therebetween.

5,775,738
MEANS OF COUPLING OF NON-THREADED CONNECTIONS
Donald D. Bartholomew, Mt. Clemens, Mich., assignor to Proprietary Technology, Inc., Bloomfield Hills, Mich.

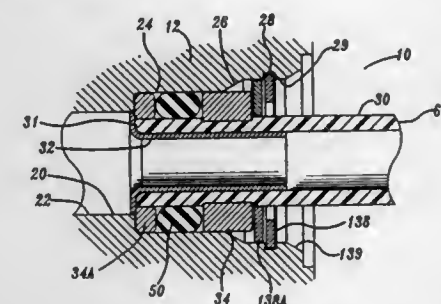
PCT No. PCT/US92/08007, § 371 Date Mar. 20, 1995, § 102(e) Date Mar. 20, 1995, PCT Pub. No. WO94/07077, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 21, 1992, Ser. No. 403,930

Int. Cl.⁶ F16L 13/04

U.S. Cl. 285—114

24 Claims



1. A connector assembly for use in communicating a fluid, said connector assembly comprising:

a male conduit having an expanded diameter member firmly affixed to a first peripheral portion thereof;

a female housing having a longitudinal bore therethrough, said female housing further having a substantially lateral abutting wall, a portion of said male conduit fitting within said female housing;

a seal sealably surrounding a second and continuously smooth peripheral portion of said male conduit and sealing against a smooth continuous internal portion of said female housing;

a bushing firmly affixed around a third peripheral portion of said male conduit;

a retainer associated with said female housing, said retainer having at least a portion thereof fitting within said female housing longitudinally internal to said abutting wall;

said conduit being prevented from separation from said housing by said retainer which expands into said housing, and ring

1. A connector for attaching electrical mechanical tubing to junction boxes fittings comprising:

a cylindrical body including a nose portion and a rear portion and a passageway therethrough, the outer periphery of said nose portion capable of being received within an access hole of a junction box, the inner periphery of said rear portion capable of receiving an end of tubing;

an outer flange located on the outer periphery of said nose portion having an inner face that stops said body from being inserted in an access hole past said inner face;

an inner flange located inboard of said outer flange on the outer periphery of said nose portion and having an outer diameter sufficiently small to be inserted in an access hole;

a seat on the outer periphery of said nose portion between said outer flange and said inner flange and having a width greater than the wall thickness of the wall at an access hole;

at least two wedge holding tabs located on the periphery of said nose portion at said inner flange and extending outward in a wedge part way across said seat and extending inward in a ramp;

a slot in said cylindrical body, said slot running inward of said wedge holding tabs first laterally from the outside surface of said nose portion approximately midway laterally through said cylindrical body, and, second, said slot continuing from said point longitudinally down the approximate center of said cylindrical body to a terminus at an area near the end of said rear portion, said slot defining a top half semi-circular body portion and a bottom half semi-circular body portion;

hinges formed by said area of said cylindrical body between said terminus of said slot and said end of said rear portion; and

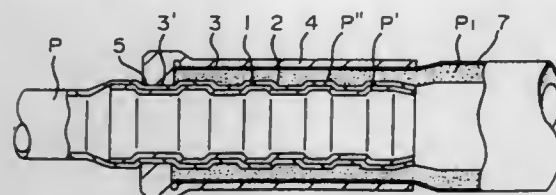
a screw mounted laterally within said cylindrical body and capable of tightening against an end of tubing inserted within said passageway within said cylindrical body thereby causing said top half semi-circular cylindrical body portion and said bottom half semi-circular body portion to bend apart around said hinge and locking said tubing within said passageway and locking said connector to the junction box.

5,775,740
STRUCTURE AND PROCESS FOR JOINTING SMALL-
DIAMETER THIN METAL TUBE AND PRESSURE
RUBBER HOSE

Kazumi Fukaya, and Tsuyoshi Aoki, both of Mishima, Japan,
assignors to Usui Kokusai Sangyo Kaisha Limited, Japan
Filed Nov. 13, 1996, Ser. No. 746,561
Claims priority, application Japan, Nov. 16, 1995, 7-322240
Int. Cl.⁶ F16L 33/20

U.S. Cl. 285—256

16 Claims



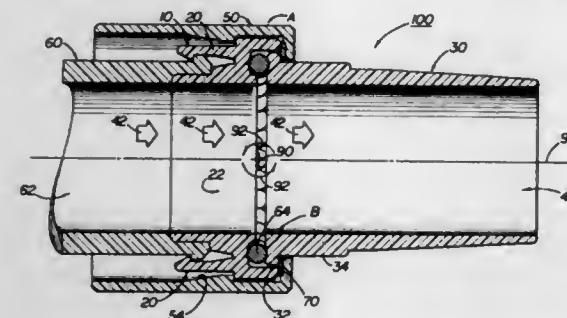
1. A joint structure for joining a small-diameter thin metal tube and a pressure-resistant rubber hose, said joint structure comprising: a small-diameter thin metal tube having a joint end portion; a short inner tube fitted in said joint end portion of said metal tube to define a double wall portion, a plurality of annular deformations formed at least in said metal tube at said double wall portion; a pressure-resistant rubber hose surrounding at least one of said annular deformations; and a socket member having a bottom wall caulked inwardly and retained on at least a second of the annular deformations of said metal tube in said double wall portion and a cylindrical side wall disposed in overlapping relationship with portions of said pressure-resistant rubber hose surrounding said metal tube, said cylindrical side wall of said socket member being caulked inwardly such that said pressure-resistant rubber hose is deformed and fitted on said at least one annular deformation of said double wall portion.

5,775,741
SWIMMING POOL CLEANER SWIVEL ASSEMBLY
Chris A. Rice, Boca Raton, Fla., and Graham M. Barton,
Escondido, Calif., assignors to Baracuda International Cor-
poration, Ft. Lauderdale, Fla.

Filed Jan. 26, 1996, Ser. No. 592,197
Int. Cl.⁶ F16L 27/08; E04H 3/20

U.S. Cl. 285—272

29 Claims



1. A swivel assembly for use in an automatic swimming pool cleaner comprising:
a. a longitudinal axis defining an axial direction;
b. a bearing race that is substantially symmetrical around the longitudinal axis and adapted to be connected in fluid communication with a cleaner head of the automatic swimming pool cleaner, which bearing race comprises:
i. an inner wall defining a first fluid passage,
ii. an outer wall having a retaining surface, and
iii. a race bearing surface inside the outer wall,
c. a hose pipe that is substantially symmetrical around the longitudinal axis and adapted to be connected to a hose that is in fluid communication with a pump, which hose pipe comprises:

- i. a tubular section defining a second fluid passage that substantially aligns with the first fluid passage,
- ii. a pipe flange on the distal end of the tubular section and extending radially outward, which pipe flange has a proximal surface and a distal surface, and
- iii. a pipe bearing surface located on the distal surface of the pipe flange;
- d. a plurality of ball bearings that run between the race bearing surface and the pipe bearing surface; and
- e. a swivel housing that is substantially symmetrical around the longitudinal axis comprising
 - i. a swivel housing locking surface that engages the retaining surface and
 - ii. a housing flange located on the proximal end of the swivel housing and extending radially inward to define a hose pipe aperture, which housing flange has a housing flange distal surface in which (A) the swivel housing is in locked engagement with the bearing race, (B) the hose pipe aperture closely surrounds the distal end of the hose pipe at a location just proximal to the pipe flange, and (C) the housing flange distal surface is immediately adjacent the proximal surface of the pipe flange whereby the hose pipe freely rotates in relation to the bearing race when the swivel assembly is exposed to forces aligned with the axial direction and forces not aligned with the axial direction.

5,775,742

TUBE COUPLINGS

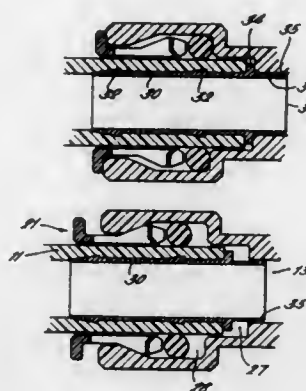
John Derek Guest, "Iona", Cannon Hill Way, Bray, Maiden-
head, Berkshire SL6 2EX, United Kingdom
Filed Jul. 26, 1996, Ser. No. 687,808

Claims priority, application United Kingdom, Jul. 28, 1995,
9515473

Int. Cl.⁶ F16L 37/02

U.S. Cl. 285—323

7 Claims



1. A tube coupling comprising a coupling body having a throughway open at one end to receive a tube, the diameter of the throughway increasing towards said open end at a first step to form a first enlarged diameter portion to receive a tube and at a second step to form a second, further enlarged diameter portion to receive a tube locking device to hold a tube in the coupling body, and a thin wall sleeve having one end slidably engaged in the throughway and the other end engageable in a tube to be located in the coupling body so that, in use, the sleeve extends from the tube past the first step into the throughway, the end of the tube in the throughway having a sealing engagement with the throughway to prevent ingress of fluids between the sleeve and throughway.

5,775,743

NUT AND SPLIT RING ASSEMBLY

Gary P. Rochelle, 4316 Marina City Dr., #721, Marina del Rey,
Calif. 90292

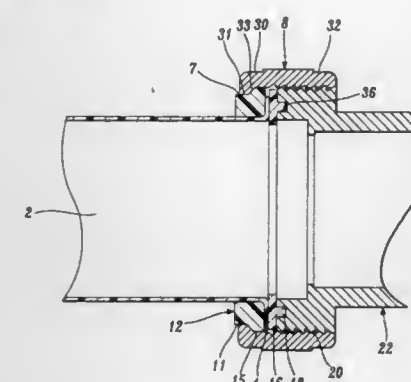
Continuation of Ser. No. 544,273, Oct. 17, 1995, abandoned.

This application Dec. 13, 1996, Ser. No. 768,779

Int. Cl.⁶ F16L 17/06

U.S. Cl. 285—349

12 Claims



1. A plumbing assembly for fluidly coupling a flanged pipe having an annular flange to a threaded pipe having an externally threaded end, comprising:

- an annular nut having a central passage defining a minimum internal diameter sized greater than an external diameter of the flange of the flanged pipe such that said annular nut can slide without deformation over the flange, and including a retaining section defining a retaining surface and an internally threaded section for engaging the threaded pipe; and
- an annular insert having a minimum internal diameter sized less than the external diameter of the flange of the flanged pipe such that said annular insert cannot freely slide over said flange of said flanged pipe, said annular insert having a single split that allows said annular insert to undergo uniform elastic deformation and slip over said flange of said flanged pipe and then return to an undeformed annular shape, said annular insert bearing against the retaining surface of said annular nut and the flange of the flanged pipe when said annular nut and said annular insert have both been slid over said flange of said flanged pipe and said annular nut is threadedly engaged with the threaded pipe, said annular insert securing said annular nut from sliding over the flange of the flanged pipe, said annular insert having an annular base portion that is received within the retaining section of the nut and a larger annular extension portion defining an outside diameter that is substantially equal to an inside diameter of the internally threaded section of the nut and that freely slides within the internally threaded section of the nut and is closely received therein.

5,775,744

SLEEVE FOR QUICK DISCONNECT COUPLING

Robert E. Smith, III, Missouri City, Tex., assignor to National
Coupling Inc., Stafford, Tex.

Filed Jun. 14, 1996, Ser. No. 662,660

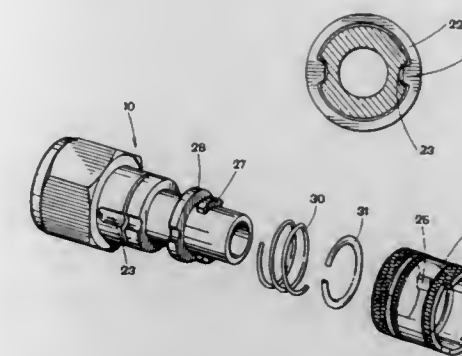
Int. Cl.⁶ F16L 21/08

U.S. Cl. 285—401

1 Claim

1. A coupling member for engagement with an opposing coupling member comprising:

- (a) a body having a cylindrical passageway therethrough, at least one outer shoulder surface, and a pair of longitudinal grooves extending at least partially along the body;
- (b) a sleeve dimensioned to slide over the body, the sleeve having a first end and a second end, an internal cylindrical surface and a pair of protrusions extending inwardly therefrom, the protrusions machined into the internal cylindrical surface of the sleeve, the first end having a stepped surface for engagement with the opposing coupling member; and



(c) a spring between the body and the sleeve, the sleeve retractable longitudinally to compress the spring and expose the outer shoulder surface of the body the pair of protrusions sliding in the pair of longitudinal grooves when the sleeve is retracted.

5,775,745

LATCH AND LOCKSET SYSTEM

Friedrich Hoppe, Müstair, Switzerland, and Heinz-Eckhard
Engel, Glurns, Italy, assignors to Hoppe Holding AG, Mü-
stair, Switzerland

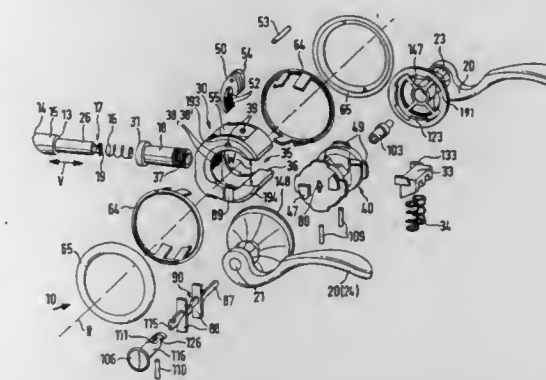
PCT No. PCT/EP93/01387, § 371 Date Jan. 10, 1994, § 102(e)
Date Jan. 10, 1994, PCT Pub. No. WO93/25788, PCT Pub.
Date Dec. 23, 1993

PCT Filed Jun. 2, 1993, Ser. No. 178,297

Claims priority, application European Pat. Off., Jun. 9, 1992,
92109679; Germany, Jan. 16, 1993, 9300546 U
Int. Cl.⁶ E05G 1/06

U.S. Cl. 292—138

28 Claims



1. A latch and lockset adapted to operate in two bores (L, Q) that intersect each other horizontally in a door, the latch and lockset including at least one handle (20), the handle (20) having a neck (23) attached to a rotor (40) a catch (50) of which acts upon a spring-biased bolt (15) that extends through a guide element thereof, the bolt adapted to be in a longitudinal bore (L) and being movable along a shifting axis (V), the rotor (40) being housed in a socket (30) adapted to be seated in a transversal bore (Q).

wherein lockset (10), catch (50) and handle (20) form a common unit preassembled for mounting by insertion in the transversal bore (Q), the bolt (15) being configured for insertion through the guide element to lock in the catch (50),

wherein the catch (50) is journaled on a pin (53) arranged in a bore (39) of the socket (30) and wherein the pin (53) is axially secured by cheeks (48) of the rotor, said cheeks located at each side of the rotor (40) whose rotational axis (R) is parallel to the bore (39) of the socket.

5,775,746
RETRACTABLE DOOR STOP SECURITY DEVICE/
UTILITY BOX

John Charlton, 581 Middleside Road Route 3, Amherstburg,
Ontario, Canada, N9V 3R3

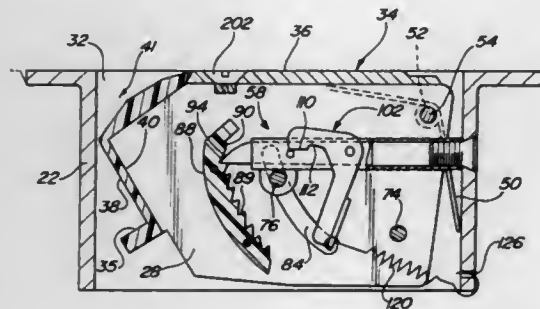
Continuation of Ser. No. 263,042, Jun. 21, 1994, abandoned.

This application Apr. 18, 1996, Ser. No. 639,107

Int. Cl.⁶ E05C 3/12

U.S. Cl. 292—219

13 Claims



1. A spring biased retractable apparatus mounted in a flat surface such as a floor or wall and having raised and lowered positions, said apparatus further having dual lockout resistance, said apparatus comprising:

a housing having an opening to receive a retractable member;
a spring biased retractable member disposed in said opening, said spring biased retractable member having a top surface substantially coplanar with said flat surface in which said apparatus is mounted when said apparatus is in said closed position, said spring biased retractable member having an engagement surface for engaging and impeding the movement of an object, said surface for engaging said object having a camming surface for lowering said retractable member by engaging said object, wherein said camming surface and said top surface of said spring biased retractable member form a single uninterrupted surface;

a ratchet plate in association with said retractable member, said ratchet plate having a series of teeth mounted to form an arc of teeth wherein said ratchet plate and said retractable member are moveable relative to said housing;

a latch mechanism in association with said housing, said latch mechanism having a spring biased plunger which sequentially engages surfaces of said teeth of said ratchet plate and which follows said arc of said teeth to retain said retractable member in a plurality of indexed positions relative to said housing, said plunger having a camming surface which interacts with said ratchet to incrementally move said plunger.

5,775,747

LOCKING DEVICE FOR CONTAINER DOOR

Victor Navarsky, 10-9 Yamamoto-dori 3-chome, Chuo-ku,
Kobe-shi, Hyogo, Japan, 650

Continuation of Ser. No. 630,504, Apr. 10, 1996, abandoned.

This application Jun. 27, 1997, Ser. No. 884,326

Claims priority, application Japan, Nov. 29, 1995, 7-310327

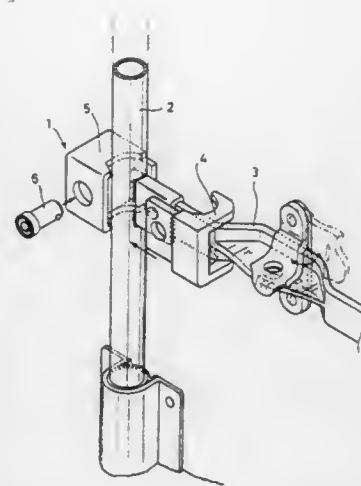
Int. Cl.⁶ B65D 55/00

U.S. Cl. 292—307 B

16 Claims

1. A door assembly and a locking device for said door assembly, said door assembly including a door having a pivotal door closing rod extending along a surface of said door and a control handle fixed to said door closing rod for pivoting said rod, said control handle having a base portion connected to said rod, said locking device comprising:

a first locking member comprising a first front wall confronting and contacting said base portion of said control handle, a pair of first horizontal walls extending substantially perpendicularly from said first front wall and receiving and contacting



said rod, and a substantially flat coupling wall extending from said first front wall substantially parallel to said first front wall;

a second locking member engaged with said first locking member and positioned opposite to said first locking member with respect to said rod, said second locking member being a separate member from said first locking member and comprising a substantially flat second front wall, a rear wall extending substantially parallel to said second front wall and having a rigid substantially flat contact surface, and a pair of second horizontal walls connected to and extending substantially perpendicular to said second front wall and said rear wall;

said coupling wall being received in said second locking member parallel to said second front wall, with said rod held by said first and second horizontal walls, said control handle being held by said first front wall, and said rigid flat contact surface being juxtaposed with said door for contact therewith; and

a fixing member inseparably fixing said coupling wall with said second front wall together with said coupling wall juxtaposed with said second front wall.

5,775,748

LATCH DEVICE

Katsubito Kurachi, Aichi-ken, Japan, assignor to Nifco Inc.,
Kanagawa, Japan

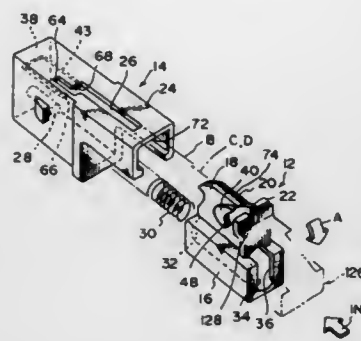
Filed Jan. 11, 1996, Ser. No. 587,839

Claims priority, application Japan, Jan. 17, 1995, 7-005120

Int. Cl.⁶ E05B 15/02

U.S. Cl. 292—341.15

10 Claims



1. A latch device comprising:

a case having a case wall;

a main body movable in said case in an insertion direction and in an opposite direction to said insertion direction, said main body having a plate-shaped portion projecting therefrom;

an urging member positioned between and engaging said case and said main body to urge said main body in said opposite direction;

at least one cam on said plate-shaped portion;

an elastically deformable lever mounted to said case to be engaged by said at least one cam and be elastically deformed in response to movement of said main body;

said lever engaging said at least one cam against the action of said urging member to hold said main body when moved in said insertion direction to a first releasable position and releasing engagement with said at least one cam when said main body is moved further in said insertion direction from said first position;

a guide hole in said wall of said case extending parallel to said insertion direction;

a stop fixed to and extending from said plate-shaped portion into said guide hole, said stop moving in said guide hole as said main body moves in said insertion and opposite directions and engaging an end of said guide hole against the action of said urging member in said opposite direction to limit movement of said main body in said opposite direction at a second position of said main body;

said lever, when released from engagement with said at least one cam upon movement of said main body from said first position in said insertion direction, allowing said main body to move to said second position;

a hook pivotally mounted to said main body at an end thereof facing said opposite direction adapted to be engaged by a striker to move said main body in said insertion direction, said hook pivoting in one direction while entering said case as said main body is moved from said second position to said first position and pivoting in a direction opposite to said one direction while exiting said case as said main body is moved from said first position to said second position, pivoting of said hook urging said main body to pivot within said case;

said plate-shaped portion having a configuration at a top thereof adjacent said guide hole sufficiently larger than a width of said guide hole to provide a portion of said plate-shaped portion which is urged into contact with said wall adjacent said guide hole in response to pivoting of said hook and which prevents any part of said plate-shaped portion from entering said guide hole, whereby said plate-shaped portion is substantially prevented from pivoting as said main body moves in said case.

5,775,749

LATCH KEEPER ASSEMBLY

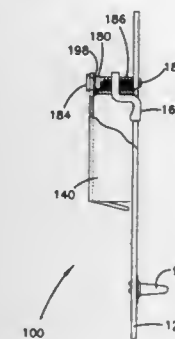
Joseph Guy Reithmeyer, Afton, Minn.; Stephen M. Purcell,
Loves Park, Ill., and Dean A. Pettit, Rockford, Ill., assignors
to Andersen Corporation, Bayport, Minn.

Filed Aug. 8, 1996, Ser. No. 695,145

Int. Cl.⁶ E05B 15/02

U.S. Cl. 292—341.18

22 Claims



1. A latch assembly, comprising:

a latch hook;

a strike plate, the strike plate having an opening formed therein to receive at least a portion of the latch hook;

a keeper housing connected to the strike plate and aligned relative to the opening, the keeper housing having a wall extending generally perpendicular to the strike plate; and
a latch keeper, the latch keeper having:

a first flange sized and configured for selective engagement and disengagement by the latch hook;

a second flange slidably mounted relative to the wall; a third flange interconnected between the first flange and the second flange and extending generally perpendicular thereto, wherein the third flange is adjacent the wall and extends generally parallel thereto, and wherein said second flange and said third flange are disposed on opposite sides of said wall.

5,775,750

ROBOTIC COLLISION DETECTION BUMPER

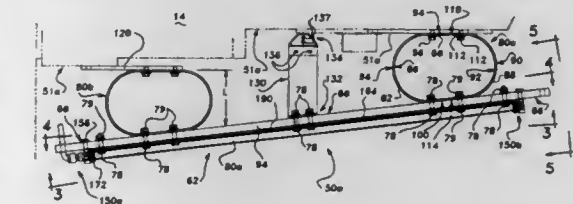
Noel J. Gauci, Rochester Hills, and Paul T. Prange, Royal Oak,
both of Mich., assignors to ABB Flexible Automation Inc.,
New Berlin, Wis.

Filed Jun. 19, 1996, Ser. No. 666,856

Int. Cl.⁶ B60R 19/00

U.S. Cl. 293—2

18 Claims



1. A robot bumper device coupled to a mobile robot for altering control of the robot when a predetermined external force is sensed, comprising:

a pair of compressible loop members each having a first portion attached to an outer surface of the mobile robot facing a path traveled by the robot;

an electronic switch associated with at least a portion of the outer surface of the mobile robot; and

a plastic member having a first surface and a second surface, the electronic switch being mounted to the first surface of the plastic member, second portions of the pair of compressible loop members being attached to the second surface of the plastic member, whereby when the external force is exerted against the electronic switch, the loop members are compressed and provide constant absorption of the external force and the electronic switch generates an electric signal in response to the external force, the electronic switch being able to generate the electric signal independently of the loop members being compressed.

5,775,751

BALL RETRIEVAL, STORAGE AND DISCHARGE
DEVICE

Ryan L. Nelson, 1633 E. Lakeside Dr. #186, Gilbert, Ariz.
85234

Filed Aug. 29, 1997, Ser. No. 920,970

Int. Cl.⁶ A63B 47/02

U.S. Cl. 294—19.2

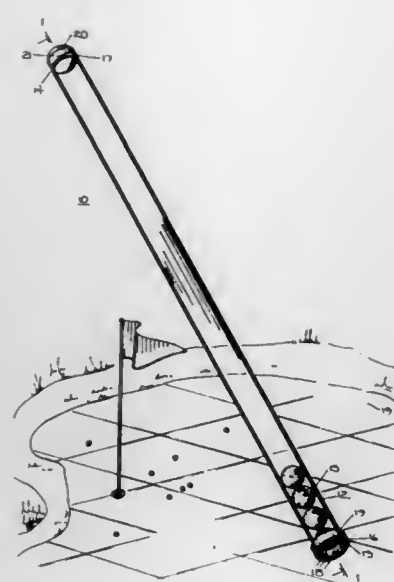
15 Claims

1. A retrieval, storage and discharge device for a multiplicity of balls comprising:

an inner cylindrical tube having a lower end, an upper end, an outer diameter, and an inner diameter sufficient to receive the balls;

an outer cylindrical tube having a lower end, an upper end, an outer diameter, and an inner diameter sufficient to receive the outer diameter of the inner cylindrical tube;

circumferentially spaced biased members carried in apertures formed through the lower end of the inner tube;



a collar mounted on the lower end of the outer cylindrical tube having an inner surface with greater diameters and lesser diameters, the collar rotatable with respect to the inner tube between a storage position wherein the biased members are aligned with and urged inward by the lesser diameter of the collar and a discharge position wherein the biased members are aligned with the greater diameter, and therefore permitted to move outwardly.

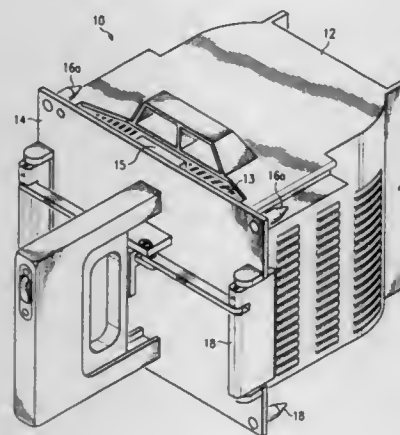
5,775,752

HOLDER FOR SEMICONDUCTOR WAFER CASSETTES
George E. Niemiowski, 1359 Blue Teal, South Lake, Tex. 76092; John M. Harrell, 723 Becky La., Waxahachie, Tex. 75165, and Adam F. Niemiowski, P.O. Box 142, Grapevine, Tex. 76099

Filed May 20, 1996, Ser. No. 651,995
Int. Cl.⁶ B65D 25/28

U.S. Cl. 294—28

15 Claims



1. An apparatus for holding a semiconductor wafer cassette comprising:
a pair of gripping plates for holding opposing edges of an open face semiconductor wafer cassette;
means for actuating the pair of gripping plates between a first position and a second position;
means for locking the gripping plates in a first position corresponding to a closed position of the gripping plates;
a handle connected to the means for actuating enabling manipulation of a held semiconductor wafer cassette in both horizontal and vertical directions; and

a shielding plate for enclosing the open face of the semiconductor wafer cassette wherein the pair of gripping plates are pivotally connected to opposing edges of the shielding plate.

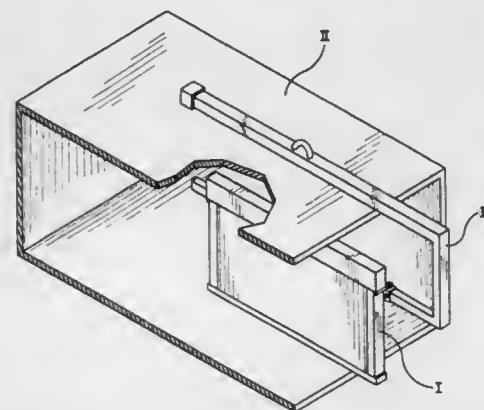
5,775,753

EQUIPMENT FOR LOADING CONTAINERS
Boris Tetelboim, Haifa, Israel, assignor to Phoenixia America-Israel, Nazaret Illt, Israel

Filed Mar. 25, 1996, Ser. No. 618,017
Int. Cl.⁶ B66C 1/24

U.S. Cl. 294—67.21

18 Claims



1. Equipment for loading a box of relatively great length and height and of relatively narrow width into standing alignment into a closed-top box container by means of a lifting device having a hook, said box being provided with at least two lugs each projecting lengthwise from a respective end of said box, said equipment comprising:

a first portion to be inserted into said container while supporting said box, said first portion including a horizontal beam positionable in contact with a side wall of said box with no portion of said horizontal beam projecting beyond a top of said box, and two gripper members mounted on said horizontal beam in symmetrical alignment to a vertical line through said hook of said lifting device, said gripper members projecting sideways from said horizontal beam and each of said gripper members being placeable underneath a respective one of said at least two lugs of said box so as to support said box with a center of gravity of said box vertically underneath said hook of said lifting device; and

a second portion remaining outside and above said container, said second portion including a lifting arm in spaced-apart alignment with said horizontal beam, a loop for attachment to said hook of said lifting device, and a branch member connecting an end of said lifting arm to an end of said horizontal beam, said branch member being configured to remain outside of said container.

5,775,754

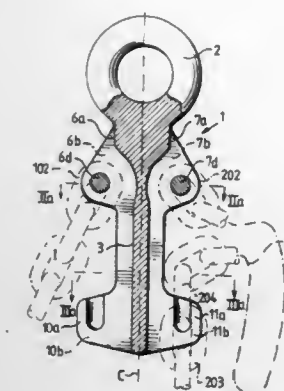
CHAIN COUPLING DEVICE
Lars Olof Arne Fredriksson, Västerskärsringen 34, S-184 92, Åkersberga, Sweden

Filed Dec. 20, 1996, Ser. No. 771,037
Claims priority, application Sweden, Dec. 22, 1995, 9504635
Int. Cl.⁶ B66C 1/12

U.S. Cl. 294—82.11

12 Claims

1. A chain coupling device comprising a ring member adapted to be coupled to a hoisting means, and a chain coupling means adapted to be coupled to at least two hoisting chains (101, 201), characterized in that said chain coupling means comprises a unitary anchoring body (1) being made in one piece and being secured to said ring member, said unitary anchoring body



having at least two pairs (6a, 6b; 7a, 7b) of anchoring projections, each pair of anchoring projections being provided with a detachable anchoring pin (6d, 7d) for anchoring an end link (102, 202) of an associated hoisting chain (101, 201) to said unitary anchoring body, said unitary anchoring body also having at least one pair (10a, 10b; 11a, 11b) of coupling projections being located at a distance from a corresponding pair of anchoring projections and being provided with seating surfaces (10d, 10e, 11d, 11e) for accommodating one (204) of the links of said associated hoisting chain.

5,775,755

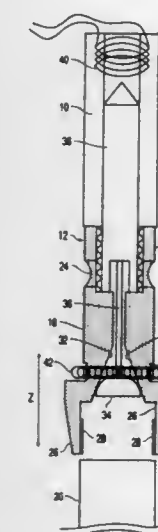
TUBE GRIPPER DEVICE

Steven R. Covert, Waynesboro; Jeffrey P. Moore, Staunton, and John M. Rhoades, Waynesboro, all of Va., assignors to Duratech, Inc., Waynesboro, Va.

Filed Mar. 19, 1997, Ser. No. 820,089
Int. Cl.⁶ B25J 15/08

U.S. Cl. 294—88

3 Claims

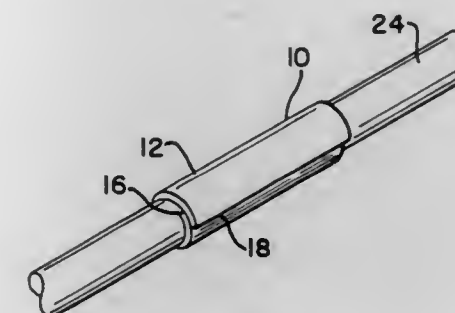


1. A tube gripper device comprising a one-piece gripper assembly of plastic material having a base portion, a plurality of gripper fingers extending therefrom in spaced apart parallel relation to each other for individual flexing movement relative to the base portion, solenoid actuator means connected to said base portion and cam means disposed between said fingers and connected to said actuator means for engaging and spreading said fingers apart upon energization of said solenoid actuator means and resilient means disposed in direct continuous engagement with said fingers for returning said fingers to a tube gripping position upon de-energization of said solenoid actuator means.

5,775,756
SECURE GRIPPING SYSTEM
Robert Rozenich, P.O. Box 5595, Lansing, Ill. 60438
Filed Apr. 3, 1996, Ser. No. 627,891
Int. Cl.⁶ A63B 21/072

U.S. Cl. 294—137

15 Claims



1. A system for providing a secure resilient gripping surface on a bar comprising:
an adjustable flexible first pad having a first outward gripping surface and an opposing second surface, said first pad consisting of a single layer of rubber having a constant thickness of approximately 1/16 inches, said first pad wrapped around a first portion of said bar wherein at least a portion of said pad overlaps so that a portion of said second surface of said first pad contacts and adheres to a portion of said first surface, said first pad being removable from said first portion of said bar by unwrapping said first pad from said first portion of said bar; and
a flexible second pad having a first outward surface and an opposing second surface, said second pad wrapped around a second portion of said bar wherein at least a portion of said second pad overlaps so that a portion of said second surface of said second pad contacts and adheres to a portion of said first surface of said second pad, said second pad being removable from said second portion of said bar by unwrapping said second pad from said bar.

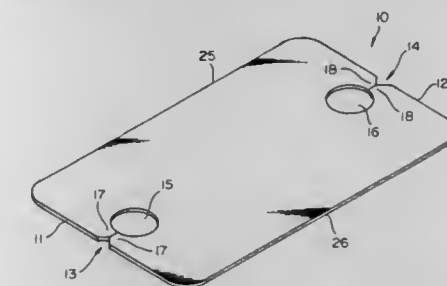
5,775,757

FLEXIBLE BAG HANDLE HAND GRIP

Raymond P. Tipp, P.O. Box 3778, Missoula, Mont. 59806
Continuation-in-part of Ser. No. 661,748, Jun. 11, 1996, abandoned. This application Dec. 12, 1996, Ser. No. 764,785
Int. Cl.⁶ A45F 5/10; B65D 33/06

U.S. Cl. 294—171

7 Claims



1. A hand grip for attachment to an elongated cord-like element which comprises a unitary flat body having a thickness of at least 0.016 inches but not exceeding 0.025 inches, said body being provided with first enclosing means providing a first aperture adjacent a first end of said body with a first slit extending from said first end to said first aperture and a first pair of transverse tabs between said first aperture and said first end with said first slit extending between the tabs of said first pair; second enclosing means providing a second aperture adjacent a second end of said body with a second slit extending from said second end to said second aperture and a second pair of transverse tabs between said

second aperture and said second end with said second slit extending between the tabs of said second pair; the tabs being unsegmented and integral with said body; the first and second apertures being circular and having a size of at least about 0.5 inches in diameter sufficient to loosely contain portions of said cord-like element so that said hand grip may easily slide along said cord-like element after being applied thereto; the first and second apertures being located close enough to their respective first and second body ends that their adjacent first and second slits each have a length less than the diameter of the adjacent aperture, and that their adjacent tabs each have a width less than the diameter of the aperture; and said body being so formed as to provide a central portion extending between said apertures and side means providing a pair of side portions extending on either side of said central portion from one end of said body to the other end of said body, said body being formed of a material having sufficient elasticity that said side portions of said body can be longitudinally bent so as to form a longitudinal channel with the side portions of said side means extending upward from said central portion so that said hand grip may be cupped in a user's hand without exceeding the elastic limit of said material.

5,775,758

PORTABLE EMERGENCY CARE FACILITY

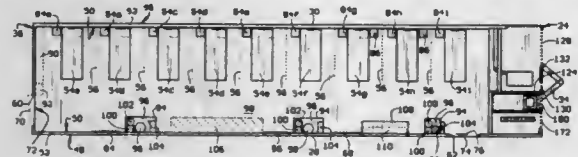
Charles H. Eberspacher, 2 NW. 61st Ter., Gladstone, Mo. 64188

Filed May 20, 1996, Ser. No. 650,467

Int. Cl.⁶ B60P 3/14; A61G 3/00

U.S. Cl. 296—24.1

20 Claims



1. A portable emergency care facility comprising:
an elongate enclosure having first and second ends and two opposing long walls extending between the first and second ends;
a plurality of wheels on the enclosure to facilitate transporting the facility; and
a plurality of treatment tables extending from at least one of the long walls toward the center of the enclosure, each of the treatment tables being sufficiently spaced from the others to allow patient access on both sides of the treatment tables.

5,775,759

VEHICLE BED EXTENDER

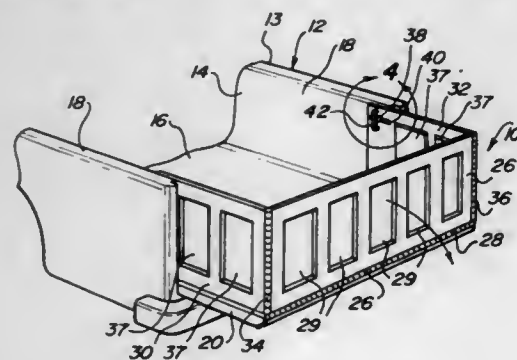
Andrew J. Cummins, 6557 Forest Park, Troy, Mich. 48098

Filed Sep. 24, 1996, Ser. No. 719,408

Int. Cl.⁶ B62D 33/08

U.S. Cl. 296—26

11 Claims



1. An extender for a bed of a vehicle comprising:

- a bottom section fixedly mounted and non-movable relative to a tailgate of a bed of a vehicle;
a rear section pivotally attached to said bottom section;
opposed side sections pivotally attached to sides of said rear section; and
a fastener mechanism to removably fasten each of said opposed side sections to an inner surface of the bed.

5,775,760

Patent Not Issued For This Number

5,775,761

HOLDER FOR SMALL ARTICLES PROVIDED IN A CEILING OF AN AUTOMOBILE

Goro Asami, Machida; Tomoo Eguchi, Utsunomiya; Osamu Takezawa, Wako; Yuji Saito, Wako, and Hideyuki Abe, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, and Nifco Inc., Yokohama, both of Japan

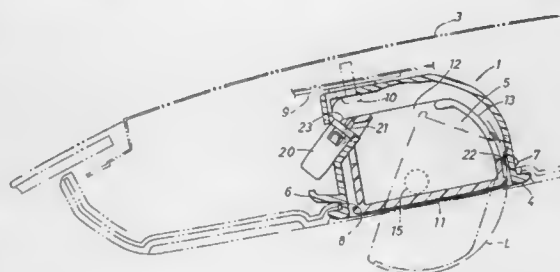
Filed Sep. 17, 1996, Ser. No. 714,975

Claims priority, application Japan, Dec. 19, 1995, 7-349306

Int. Cl.⁶ B60R 7/04

U.S. Cl. 296—37.7

9 Claims



1. A holder for small articles provided in a ceiling of an automobile comprising:
a frame member fixed to the ceiling in a cabin of the automobile and having an opening;
a movable member including a lid portion for opening and closing the opening of the frame member having an opening edge; and a case portion integrally provided at a rear side of the lid portion, said case portion having two opposing side walls, a back portion located between the side portions, and an opening situated away from the back portion so that when the lid portion is opened, the opening of the case portion is exposed in the cabin; and rotating shafts extending laterally outwardly from middle lower areas of the side walls and pivotally attached to the frame member to reduce an area of the movable member projecting downwardly from the frame member when the movable member is in an open position, and
a stopper projection formed at the back portion of the case portion, said stopper projection having a projecting edge for defining the open position of the lid portion by engaging the frame member, said projecting edge being located on an imaginary circumferential line having a radius substantially equal to a length from a center of the rotating shafts to the opening edge of the lid portion.

5,775,762

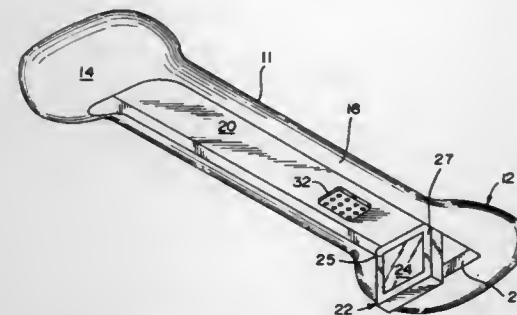
OVERHEAD CONSOLE HAVING FLIP-DOWN MONITOR
Christopher J. Vitito, 1618 Sherwood Lakes Blvd., Lakeland, Fla. 33809

Filed Feb. 27, 1997, Ser. No. 807,366

Int. Cl.⁶ B60R 5/00

U.S. Cl. 296—37.7

18 Claims



1. An overhead console for a motor vehicle, boat, or aircraft, comprising:
an elongated console housing having a leading end and a trailing end, the elongated console being shaped for attachment to an interior ceiling of a vehicle;
a television monitor mounted in the leading end of the console housing; and
a compartment for storing a source of video signals formed in the trailing end of the console housing, and conductive means associated with the compartment for connecting the television monitor to the compartment to provide ready attachment of the source of video signals to the television monitor and transmission of video signals between the source of video signals and the television monitor.

5,775,763

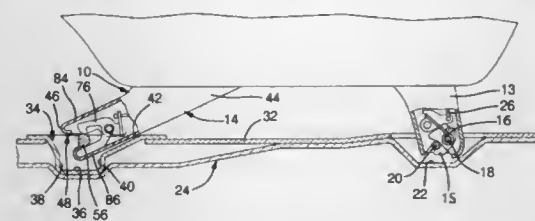
VEHICLE SEAT CONNECTIVE ARRANGEMENT
Jeffrey Alan Gliner, Waterford, and Kevin John Van Nieu-lande, Fraser, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1995, Ser. No. 579,486

Int. Cl.⁶ B60N 2/04

U.S. Cl. 296—65.1

9 Claims



1. An arrangement for connecting a vehicle seat to a vehicle in at least two positions, the arrangement comprising:
a floor having a first surface;
a cross pin fixed with respect to the vehicle floor first surface, the cross pin having a cross section with a first larger width and a second smaller width;
a chair leg with a first end connected to the vehicle seat, the chair leg also having a second end with a slot, the slot having a first end wider than the cross pin first width, the slot also having a neck and further having a closure section divided away from the slot first end by the neck, the closure section having a dimension less than the cross pin first width and greater than the cross pin second width; and
a lock arm with a finger for locking on to the pin about the second width to entrap the pin in the closure section of the slot, wherein in a normal first seating position the seat leg is positioned to place the cross pin in close proximity to the

neck of the slot and in a second fold-up storage position wherein the seat leg is held in a second position extending more vertically upward than in the first position by the latch locking on to the second width of the cross pin.

5,775,764

WIRE TYPE TELEOPERATIONAL SYSTEM

Hideo Yamashita, Okazaki, Japan, assignor to Chuo Hatsujo Kabushiki Kaisha, Nagoya, Japan

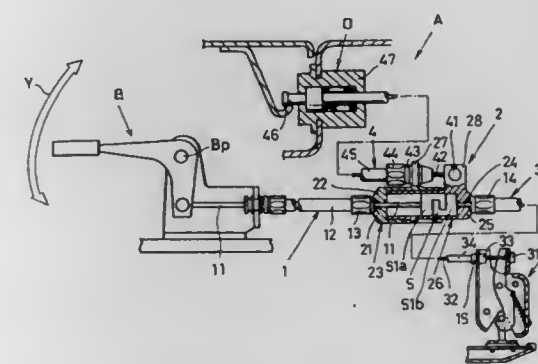
Filed Oct. 28, 1996, Ser. No. 738,722

Claims priority, application Japan, Jan. 29, 1996, 8-013078

Int. Cl.⁶ B62D 25/10

U.S. Cl. 296—76

2 Claims



1. A wire type teleoperational system comprising:
a push-pull cable including a push-pull inner cable which is at one end connected to an operative portion, and the other end connected to a coupler, and the push-pull cable further including a push-pull outer cable which encases the push-pull inner cable so that one end of the push-pull outer cable is connected to a guide member which movably supports said coupler;
a pull cable including a pull inner cable which is at one end connected to a first operative portion, and at the other end connected to said coupler, and the pull cable further including a pull outer cable which encases the pull inner cable so that one end of the pull outer cable is connected to a displacement member which is movably connected to said guide member; and
a push cable placed opposite to said pull cable and including a push inner cable which is at one end connected to a second operative portion, and at the other end connected to said displacement member, and the push cable further including a push outer cable which encases the push inner cable so that one end of the push outer cable is connected to said guide member;
wherein said guide member has an open ended outer cylinder, and said displacement member has an inner cylinder which is slidably mounted on said outer cylinder, and said coupler is slidably placed within said outer cylinder so as to form a bifurcated joint.

5,775,765

TRUCK BED TARP AND STORING SYSTEM

Robert A. Kintz, 301-A White St., Weissport, Pa. 18235

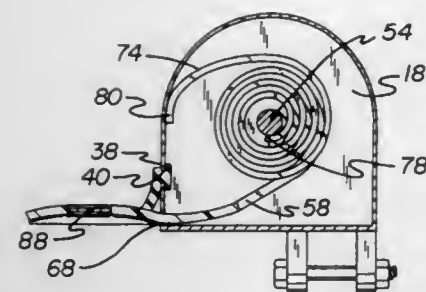
Filed Aug. 26, 1996, Ser. No. 701,653

Int. Cl.⁶ B60P 7/04

U.S. Cl. 296—98

9 Claims

2. A truck bed tarp and storing system comprising:
a housing unit having a bottom side, a top side, a hollow therebetween, a front edge with a first slot, and a second slot, the bottom side of the housing unit having a pair of brackets capable of being coupled to a forward portion of a truck bed of a pickup truck;



a roller mechanism mounted within the hollow of the housing unit, and having a roller and an axle;
a tarp having a first end being attached to the roller, a second end extending through the second slot, and a middle portion therebetween; and
a spring being disposed about the axle and within the hollow of the housing unit;
the tarp being capable of being deployed off the roller within the housing unit by pulling the second end of the tarp out through the second slot and over the truck bed, and being secured to a pair of side walls of the truck bed.

5,775,766

CONVERTIBLE HARDDTOP VEHICLE

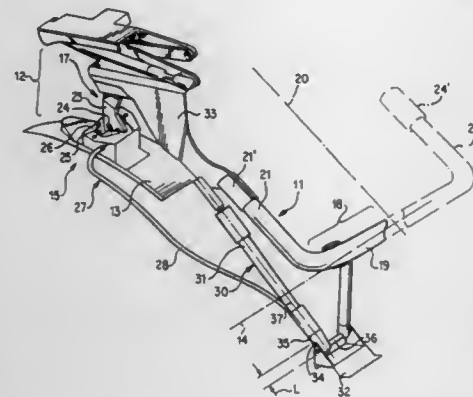
Kurt Schaible; Holger Seel, both of Aidingen, and Bernahrd Schenk, Böblingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed May 9, 1996, Ser. No. 647,316

Claims priority, application Germany, May 9, 1995, 195 16 877.1

Int. Cl.⁶ B62D 25/06

U.S. Cl. 296—107



1. Hardtop vehicle having a roof construction which has a forward roof part and a rear window part and which can be swivelled from a closed position resting against an area of a forward windshield frame into an opening position toward a rear area of the vehicle body in a top compartment, said top compartment being coverable by a swivellable rear opening device, wherein an auxiliary frame is provided on the rear opening device, said auxiliary frame being movable about pivot bearings fixed to the body, and wherein the auxiliary frame is supported by way of at least one additional supporting connection in a crash-stable connecting position on the vehicle body when the rear opening device is closed.

5,775,767 CONVERTIBLE TOP FOR A VEHICLE HAVING A REAR EGRESS

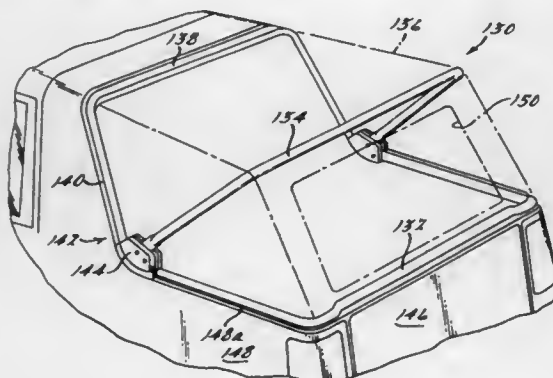
Albert W. Harrison, Bloomfield, and George A. Corder, Romulus, both of Mich., assignors to ASC Incorporated, Southgate, Mich.

Filed Aug. 15, 1996, Ser. No. 698,210

Int. Cl.⁶ B60J 7/12

U.S. Cl. 296—107

10 Claims



1. A top for a vehicle having a rear egress including a tailgate attached to a rear of the vehicle, comprising:
a rear bow having a pair of side arms pivotally attached to a body of said vehicle, said rear bow resting against an upper surface of said tailgate and movable away from said tailgate; and
a cover attached to said rear bow.

5,775,768

SEALING STRUCTURE FOR FRONT DOOR

Tadanao Yamane, Hiroshima, Japan, assignor to Nishikawa Rubber Co., Ltd., Hiroshima, Japan

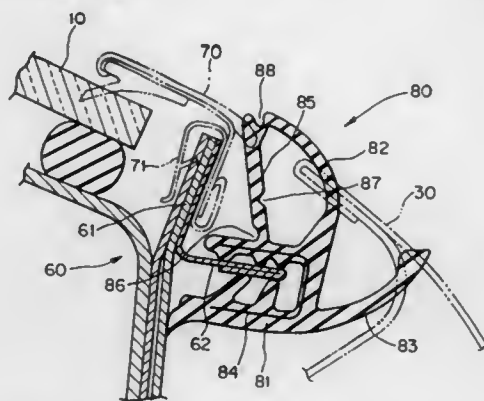
Filed Mar. 6, 1996, Ser. No. 611,746

Claims priority, application Japan, Mar. 30, 1995, 7-100265

Int. Cl.⁶ B60J 10/08

U.S. Cl. 296—146.9

13 Claims



1. A sealing structure for sealing the gap between a windshield molding and the front edge of a front door, said sealing structure comprising:
a main flange projecting forward from a front pillar and fitted in a base part of the windshield molding which has a U-shaped cross section;
an auxiliary flange laterally projecting from the main flange;
and a drip sealing weather strip comprising:
a trim having a U-shaped cross section which is fitted on the auxiliary flange,
a hollow sealing part which is supported on said trim and has a first section disposed in elastic contact with the windshield molding and a second section disposed in elastic contact with the front edge of the front door, and

a sealing lip in elastic contact with an inner surface of the front door, said trim, said hollow sealing part and said sealing lip being formed integrally together;
said hollow sealing part having an inner side wall which extends between said first section and said trim and faces inwardly toward the base part of the windshield molding, said inner side wall having easily bendable portions in a base portion and a middle portion thereof such that bending of said inner side wall occurs at said base portion and said middle portion when said windshield molding presses against said first section.

5,775,769

MOTOR VEHICLE ROOF

Peter Reihl, Starnberg; Bernhard Wingen, Feldkirchen; Wolfram Salz, Bochum; Johann Mayer, Petershausen; Martin Danzl, München; Arpad Fürst, Germering, and Thomas Zirbs, Weil der Stadt, all of Germany, assignors to Webasto Karosseriesysteme GmbH, Stockdorf, Germany

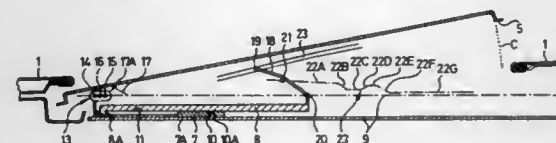
Filed Apr. 1, 1996, Ser. No. 625,319

Claims priority, application Germany, Apr. 1, 1995, 195 12 342.5

Int. Cl.⁶ B60J 7/05

U.S. Cl. 296—216

16 Claims



1. Motor vehicle roof with a cover comprising a cover panel and a cover displacement mechanism by which the cover selectively closes and at least partially exposes an opening in a fixed roof surface, the cover panel having a raised position in which a rear edge thereof is raised above the fixed roof surface and a closed position in which the cover panel rests with a front panel edge and a rear panel edge thereof disposed under the fixed roof surface.

5,775,770

PORTABLE BABY CARRIER

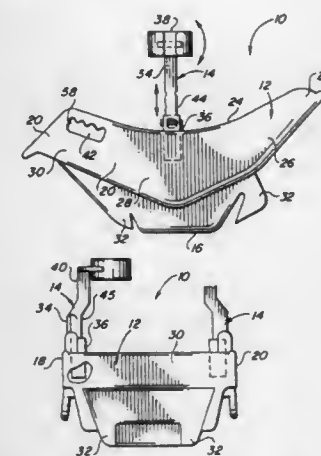
John P. Tunney, 1410 Calle Violeta, Thousand Oaks, Calif. 91360

Filed Nov. 25, 1996, Ser. No. 756,201

Int. Cl.⁶ A47C 31/00

U.S. Cl. 297—183.1

9 Claims



1. A single-arm infant carrier having a tray carrying means comprising:
a) a generally horizontally extending tray having generally vertical side walls, a back, and an open top, whereby said tray

forming a rear portion, an intermediate portion, a front portion, and an interior portion;
b) a cantilevered tray carrying means comprising, in combination:

- i. a single, removable, adjustable upstanding post having a lower section connected to one of two opposite integral tubular sleeves at the intermediate portion of said tray for reception of said post to permit either left or right hand use of said tray carrying means, said post having a lower section oriented vertically to said tray, an intermediate section oriented vertically and medially from an upper end of the lower section of said post toward the interior portion of said tray, and an upper section of said post oriented vertically from an upper end of the intermediate section;
- ii. a forearm attachment means attached to the upper, medial section of said post, said forearm attachment means adaptable to receive the forearm of a right or left hand user, said forearm attachment means permitting said forearm to extend downwardly and forwardly to facilitate carrying of said tray, said forearm attachment means pivotally connected to said post for partial movement in vertical and horizontal planes to facilitate angling of said forearm toward said grip;
- iii. an integral hand grip on both of the side walls to permit a person to hold said grip after extending an arm through said forearm attachment means, facilitating the support of said infant carrier in a natural downwardly strain-free arm position; and,
- iv. an integral hip pad positioned on each of said sidewalls of said intermediate portion of said tray, said pad to provide a weight bearing surface as said pad contacts with the hip of a user, thereby reducing stress of the weight of said tray to the arm of the user.

5,775,771

CHILD RESTRAINING SEAT FOR VEHICLE

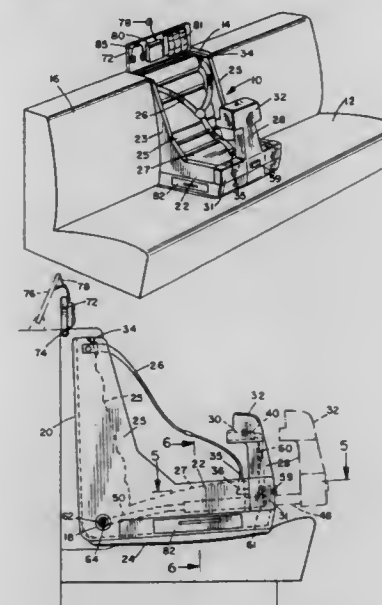
Cynthia M. La Cour, 6670 Obispo Ave., Apt. 609, Long Beach, Calif. 90805, and Lynette M. Richards, 4873 Magnus Way, San Diego, Calif. 92113

Filed Aug. 5, 1996, Ser. No. 692,370

Int. Cl.⁶ B60N 2/14

U.S. Cl. 297—238

9 Claims



1. A child safety seat, comprising:
a seat frame having a seat portion and a backrest portion;
pivot means projecting from the seat frame for pivotally securing the seat frame in a cut-out in the backrest of a vehicle seat for movement between an upright deployed position and a

rearwardly retracted position, the backrest portion being adapted to be flush with the vehicle seat backrest in the upright, deployed position and to project to the rear of the vehicle seat in the rearwardly retracted position, the seat portion being adapted to be flush with the vehicle seat backrest in the rearwardly retracted position;

the seat portion having a forward end, an upright column projecting upwardly from the forward end of the seat portion, the column having a housing at an upper end with an opening facing towards the backrest portion of the seat, a lid normally covering said opening, an inflatable air bag mounted in said housing facing said opening for extending out of said opening to restrain an occupant of the seat when inflated, and an air bag actuator device for inflating said air bag;

electrical connector means extending from said air bag actuator device through said seat frame for connection to the trigger circuit of a vehicle air bag system, so that the child seat air bag is deployed whenever the vehicle driver side air bag is deployed; and

tubing extending from the air bag actuator device through the column and seat frame out of the seat frame for carrying said electrical connector means.

5,775,772

CHILD SEAT

Louis Lefranc, Nantes, France, assignor to Ampafrance S.A., Cholet, France

Filed Jun. 7, 1996, Ser. No. 660,897

Claims priority, application France, Jun. 7, 1995, 95 06705; Nov. 20, 1995, 95 13732

Int. Cl.⁶ A47C 1/08

U.S. Cl. 297—250.1

16 Claims



1. A child seat including a seat part and a back part and adapted to be placed on and fixed to an automobile vehicle seat equipped with a three-point safety belt having a lap portion and a chest portion, characterized in that the seat part is adapted to be placed directly on the automobile vehicle seat and includes guide means for the lap portion of the safety belt and in that the back part has, on its rear face, means for guiding and immobilizing the chest portion of the safety belt, said guiding and immobilizing means being adjustable in height on the back part and further including means for fixing ends of shoulder straps of a safety harness passing through the back part of the child seat, the guiding and immobilizing means comprising a mounting plate, mounted to the back of the child seat, provided with retaining members for a locking member mobile between a first position allowing insertion of the chest part of the belt, a second position in which said chest portion is guided and a third position in which said chest portion of the belt is immobilized, the retaining members being in the form of two saddles, attached to the mounting plate, cooperating with a sliding rod, which passes through the saddles, said sliding rod having a curved part providing the locking member.

5,775,773

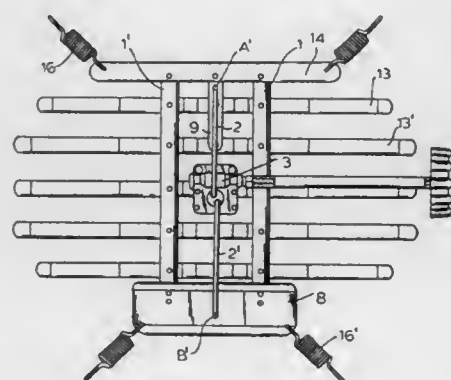
ARCHING MECHANISM

Wilhelm Schuster, Neubauzeile 87, A-4030 Linz, and Wilhelm Schuster, Zinngässing 3, A-4210 Gallneukirchen, both of Austria, assignors to Wilhelm Schuster, Linz, Austria
Division of Ser. No. 488,117, Jun. 7, 1995, Pat. No. 5,626,390, which is a division of Ser. No. 352,374, Dec. 8, 1994, Pat. No. 5,498,063, which is a division of Ser. No. 820,870, Jan. 17, 1992, Pat. No. 5,397,164. This application Jan. 6, 1997, Ser. No. 778,965

Claims priority, application Austria, Aug. 4, 1989, 1882/89; Sep. 12, 1989, 2133/89; WIPO, Aug. 6, 1990, PCT/AT90/00078 Int. Cl.⁶ A47C 3/00

U.S. Cl. 297—284.1

7 Claims



1. A lumbar support for a back of a seat, comprising:
a flexible structure having an upper portion and a lower portion, said flexible structure adapted to bow upon displacement of said upper and lower portions toward one another, thereby forming a curvature having an apex;
a traction mechanism for drawing said upper and lower portions toward one another, said traction mechanism including a first vertical rod attached to said upper portion and a second vertical rod attached to said lower portion, and an adjustment member for moving said first and second vertical rods in an upward or downward direction; and
wherein said first vertical rod is attached to a midsection of said upper portion and said second vertical rod is attached to a midsection of said lower portion of said flexible structure.

5,775,774

TILT MECHANISM FOR CHAIRS

Hiroshi Okano, 12 Olive Avenue, Toronto, Ontario, Canada, M6G 1T8

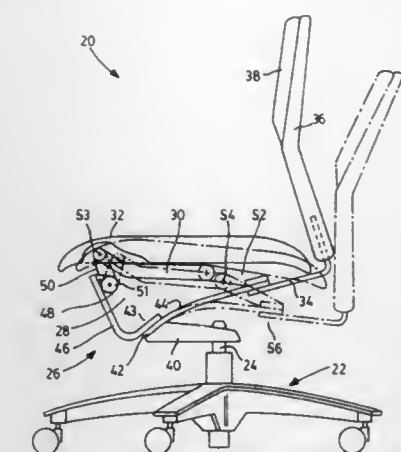
Filed Aug. 12, 1996, Ser. No. 689,611

Int. Cl.⁶ A47C 3/026

U.S. Cl. 297—300.2

17 Claims

1. A support structure for use in a chair having a seat, a backrest and a base to provide a tilting action, the support structure having:
a front element adapted to be fixed to the base for extending forwardly and upwardly terminating at a distal end;
a spring link adapted to be fixed to the base for extending rearwardly terminating at a rear end for bending to accommodate the tilting action;
a seat support pivotally coupled to said distal end of the front element and coupled to the spring link at said rear end; and
a backrest support fixedly attached to said rear end of the spring link whereby on assembly, a force applied to the backrest



support will bend the spring link and result in said tilting action.

5,775,775

RECLINING SEATING UNIT AND METHOD FOR CONSTRUCTING SAME

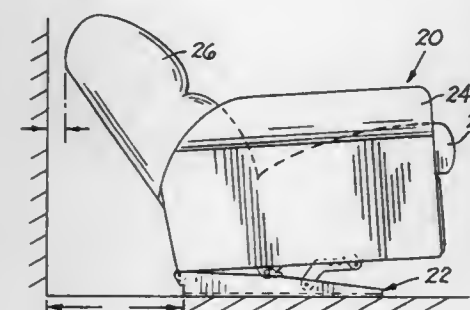
D. Stephen Hoffman, High Point, N.C., assignor to Ultra-Mek, Inc., Denton, N.C.

Filed Sep. 14, 1995, Ser. No. 528,675

Int. Cl.⁶ A47C 1/02

U.S. Cl. 297—316

23 Claims



1. A seating unit, comprising:
a base configured to rest upon an underlying surface;
a seat positioned generally above said base, said seat having front and rear end portions;
a backrest positioned generally above said base and generally rearward of said seat, said backrest having an upper end and a lower end; and
a mechanism interconnecting said base, said seat, and said backrest, said mechanism comprising a plurality of pivotally interconnected links and being free of links forming a footrest linkage, said mechanism being mounted to said base, seat and backrest and configured so that said seat and backrest move between an upright position and a reclined position, wherein in said upright position, said seat slopes slightly downwardly from its forward end portion to its rearward end portion at a first predetermined pitch angle relative to the underlying surface, and said backrest is disposed to be generally upright, with its upper end portion positioned slightly rearwardly of its lower end portion, and in said reclined position, said seat is positioned forwardly of its position in the upright position relative to said base, and said backrest is translated and rotated relative to said seat to be disposed less upright than in the upright position, with its upper end portion being positioned lower than in the upright position and its lower end being positioned forward of its position in the upright position, and said backrest upper end is positioned between about 0 and 6 inches rearward from its position in said upright

position, so that said seating unit can be placed in its upright position with said backrest upper end portion between 0 and 6 inches from a wall and can move to its reclined position without said backrest upper end portion striking the adjacent wall;

said backrest upper portion moving downwardly and rearwardly without upward movement as it moves to the reclined position from the upright position.

5,775,776

LOCK FOR SEAT BACKS

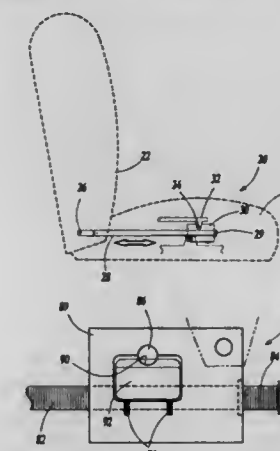
Paul Schooler, Fraser, and Philip J. Sandula, Dryden, both of Mich., assignors to Seating Specialties, Inc., Davison, Mich.

Filed Jan. 22, 1997, Ser. No. 786,260

Int. Cl.⁶ B60N 2/02

U.S. Cl. 297—375

6 Claims



1. A seat comprising:
a seat back;
a seat bottom, said seat back being pivotally attached to said seat bottom, a rod fixed for movement with said seat back, said rod selectively axially movable relative to a member fixed to said seat bottom;
a lock for locking said rod within said seat back, said lock including a lock portion moved into a notch in said rod to lock said rod relative to said member at a desired location; and
said lock including a cam member which forces and holds said lock member into said notch, said rod having a plurality of notches and said lock member being a moving member which includes a plurality of locked portions forced into said notches, a spring biasing said moving member away from said rod, and said cam contacting and forcing said moving member toward said rod such that said locked portions are forced into said notches and said cam holding said locked portions in said notches.

5,775,777

HEAD SUPPORT ARRESTING ARRANGEMENT

Gerhard Delling, Schmidgaden, Germany, assignor to Grammer AG, Amberg, Germany

Filed May 19, 1997, Ser. No. 858,273

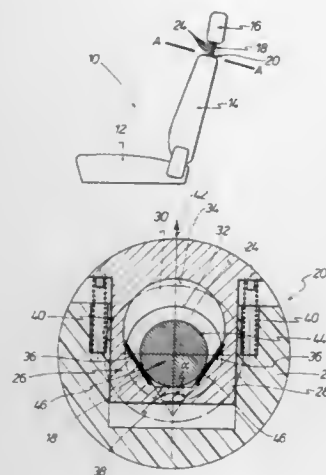
Claims priority, application Germany, May 25, 1996, 196 21 770.7

Int. Cl.⁶ A47C 7/38

U.S. Cl. 297—410

15 Claims

1. A head support arresting device co-operable with a connecting element having an outside contour and which connects a height-adjustable head support to a back rest of a vehicle seat, wherein the connecting element includes means for attachment to the back rest and has mutually vertically spaced recesses, the arresting device comprising a housing, a retaining member and means for securing the retaining member for resilient displacement relative to the



housing between a retaining position engaging a recess of the connecting element and a release position disengaging the recess, the retaining member having a retaining edge and at least one slide edge, the retaining edge and the slide edge being so provided relative to each other that in the retaining position the retaining edge is engaged into the corresponding recess and in the release position the at least one slide edge bears slidably against the outside contour of the associated connecting element and the retaining edge is spaced from the connecting element;
said retaining edge comprising metal and said at least one slide edge comprises plastic material.

5,775,778

SHAPE ADAPTABLE AND RENEWABLE FURNITURE SYSTEM

Paula Riley, New York, and Kenneth V. Stevens, Brooklyn, both of N.Y., assignors to Prescient Partners, LP, New York, N.Y.

Filed Feb. 29, 1996, Ser. No. 608,694
Int. Cl.⁶ A47C 4/02

U.S. Cl. 297—440.1

51 Claims

1. A shape changeable furniture system comprising:
an L-shaped core element having a horizontally extending seat portion and a vertically extending back portion connected to and forming a single non-detachable structure with said seat portion, said seat and back portions being non-detachably connected to each other at an elongated intersection, said core element having opposite ends;
a back shaping module detachably connected to said core element and extending over said back portion, said back shaping module having a front lower edge extending to said intersection;
first shaping module holding means at said intersection for holding the front lower edge of said back shaping module to the intersection of said core element;
at least one arm module detachable connected to one of said opposite ends of said core element, said arm module comprising a full arm module which extends from a lower end of the seat portion to an upper arm rest level; and
a groove connected to one of the core element and full arm module, and a rib connected to the other of the core element and full arm module for engagement into the groove for securing the relative positions between the core element and full arm module.

5,775,779
POLYURETHANE THERMOPLASTIC ELASTOMER
MEMBRANE FOR SEAT SUSPENSION

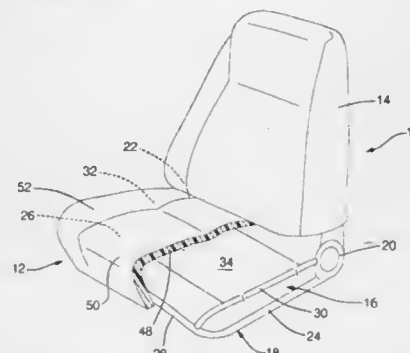
Ismat Ali Abu-Isa, Rochester Hills; Craig Bryant Jaynes, Bloomfield Hills; Youssef Tishbi, Farmington Hills, and Joseph John Zwolinski, Warren, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1997, Ser. No. 826,178

Int. Cl.⁶ A47C 7/02

U.S. Cl. 297—452.56

8 Claims



1. A seat comprising a seat frame carrying a seat suspension membrane for receiving a seating load, said seat suspension membrane having a side-to-side direction and a front-to-back direction with respect to said seat, said seat suspension membrane consisting essentially of a polyurethane thermoplastic elastomer membrane that is oriented in at least one of said directions, said polyurethane thermoplastic elastomer consisting substantially of generally linear polymer molecules that are characterized by rigid segments of diisocyanate and short chain diol addition reaction products and flexible segments of a polymeric species selected from the group consisting of polyether diols or polyester diols.

5,775,780

AUXILIARY VEHICLE SEAT SUPPORT RAIL WITH DYNAMIC SEAT BELT AND SEAT BACK ANCHORING

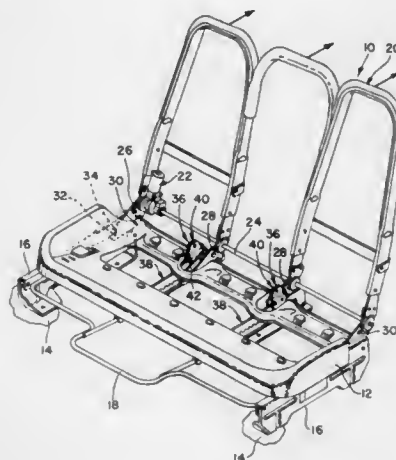
Karl Andrew Murphy, Milford; James Peter Nini, Clinton Township, Macomb County, and Kreg S. Bell, Oak Park, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 28, 1997, Ser. No. 901,737

Int. Cl.⁶ B60N 2/42

U.S. Cl. 297—473

3 Claims



1. In a vehicle having a seat with a weight supporting seat cushion frame and a seat back having a pair of outboard brackets supported on said seat cushion frame in such a way as to remain stationary when subjected to ordinary rearward forces to allow limited rearward rotation of said seat back relative to said seat

cushion frame about a pivot axis in the event of extraordinary rearward forces caused by extraordinary vehicle acceleration, said seat back also having at least one inboard bracket intermediate said outboard brackets and rotatable therewith about said same pivot axis, with said seat cushion supported on a vehicle floor by a pair of primary, parallel seat adjuster tracks, and also having a seat belt with a lower attachment point, said seat belt attachment point being subject to normal, forwardly directed tension forces in ordinary operation and potentially subject to higher than normal tension forces in the event of extraordinary vehicle deceleration, an auxiliary seat support with combined seat belt and seat back dynamic anchoring, comprising:

at least one auxiliary support rail fixed to said vehicle floor beneath said seat cushion frame and intermediate said primary tracks, said auxiliary rail having a substantially horizontal upper rail edge and a series of locking teeth below said upper rail edge,
a seat belt support slidably supported on said auxiliary support rail and having a pair of forward and rearward, side by side pivot pins, said pivot pins each having a roller freely journaled thereon so that said seat belt support can freely roll back and forth on said upper rail edge, said seat belt support further providing said lower seat belt attachment point above said rollers so that belt tension forces can pull forwardly on said seat belt support to create a forward moment acting about said forward roller and pivot pin,
an inboard seat back bracket support pivotally supported to said seat belt support at said forward pivot pin, so that said seat belt support can pivot forward independently of and relative to said inboard seat back bracket support about said forward pivot pin, said inboard seat back bracket support further being fixed to said inboard seat back bracket so that a portion of the weight of said seat acts downwardly through said inboard bracket and bracket support on said forward pivot pin to maintain said forward roller on said rail upper edge in opposition to ordinary rearward forces acting on said seat back and so that extraordinary rearward forces on said seat back create a rearward moment on said inboard seat back bracket support sufficient to lift said forward roller from said rail edge,
a resilient means connected between said seat belt support and inboard seat back bracket support sufficiently strong to create a rearward moment on said seat belt support acting about said forward pivot pin and roller and to maintain said rearward roller on said upper rail edge in opposition to normal tension forces acting on said seat belt support, but insufficiently strong to oppose extraordinary belt tension forces pulling on said seat belt attachment point, which are sufficient to create a forward moment about said forward roller and pivot pin sufficient to lift said rearward roller from said upper rail edge, a rearward locking pin fixed to said seat belt support and spaced below said locking teeth when said rollers are both engaged with said upper rail edge, and
a forward locking pin fixed to said inboard seat back bracket support and spaced below said locking teeth when said rollers are both engaged with said upper rail edge,
whereby, when said seat belt and seat back are both subject to ordinary forces, said seat belt support and inboard seat back bracket support can move together along said upper rail edge, on said rollers, as said seat moves fore and aft on said primary seat tracks and said locking pins remain below said locking teeth and said seat belt attachment point maintains a constant position relative to said seat cushion frame, with the weight of said seat at least partially supported by said rollers rolling on said rail upper edge, and when said seat belt is subject to extraordinary tension forces, said seat belt support rotates forward on said forward pivot pin and roller independently of said inboard seat back bracket support, lifting said rearward roller and pivot pin from said upper rail edge in opposition to said resilient means while concurrently lifting said rearward locking pin into said rail locking teeth to anchor said seat belt support and seat back against said extraordinary tension forces, and when said seat back is subject to extraordinary rearward forces, said inboard seat back bracket support and said seat belt support rotate together with said seat back and said outboard seat back brackets while lifting said forward roller

and pivot pin from said rail upper edge and concurrently lifting said forward locking pin into said rail locking teeth to anchor said inboard seat back bracket support and inboard seat back bracket against said extraordinary rearward forces.

5,775,781

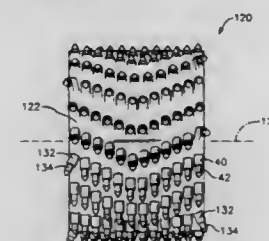
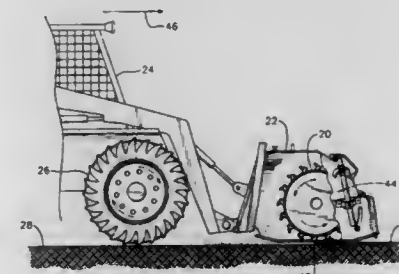
PAVEMENT MARKING REMOVAL TOOL AND METHOD
Randy R. Sawtelle, 355 Paint Fork Rd., Barnardsville, N.C. 28709, and Ronald D. Mills, Yorba Linda, Calif., assignors to Randy R. Sawtelle, Barnardsville, N.C.

Filed Jan. 24, 1997, Ser. No. 791,415

Int. Cl.⁶ E01C 23/088

U.S. Cl. 299—39.8

8 Claims



1. A method for removing pavement markings, said method comprising:
providing a drum unit with a plurality of cutting bit holders secured to its outer cylindrical surface and a plurality of cutting bits that can be repeatedly installed in and removed from the holders, the holders and cutting bits being arranged so as to produce chipping grooves in pavement sufficiently closely spaced for removing pavement markings and a thin layer of underlying pavement while leaving an acceptably smooth surface, and the holders and cutting bits being arranged in a repeating chevron pattern oriented for lateral movement of removed marking and pavement material towards the ends of the drum unit;
mounting the drum unit in a drive unit on a horizontal rotational axis; and
rotating the drum unit and employing the rotating drum unit to remove pavement markings.

5,775,782

SELF-ENERGIZING VEHICLE BRAKE SYSTEM WITH CONTROL ARRANGEMENT FOR ELIMINATING BRAKE PAD FRICTION FLUCTUATION AFFECTS

Tokihiko Akita, Davis, and Andrew A. Frank, El Macero, both of Calif., assignors to IMRA America, Inc., Ann Arbor, Mich.

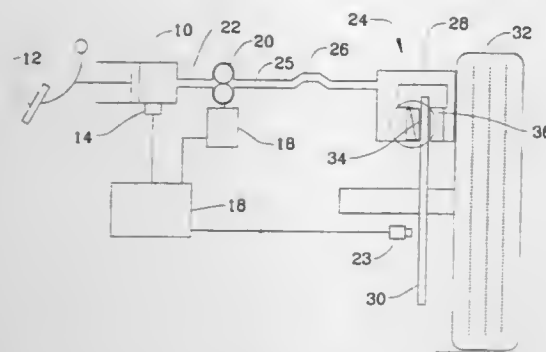
Filed Feb. 23, 1996, Ser. No. 605,964

Int. Cl.⁶ B60T 13/16

U.S. Cl. 303—10

20 Claims

1. Hydraulic brake system for a vehicle comprising:
a master cylinder for supplying brake pressure through operation of an operating member of the vehicle;
a brake caliper mountable adjacent a rotatable brake disk of a vehicle wheel;



- a pump connected to the master cylinder and the brake caliper for pumping hydraulic fluid from the master cylinder to the brake caliper;
- a motor connected to the pump;
- a brake pad mounted on the caliper and movable toward the brake disk as a result of hydraulic fluid pressure to impart a braking force to the brake disk, said brake pad being movable with the brake disk when the brake pad is urged against the brake disk;
- a pressure increasing element positioned adjacent the brake pad and movable toward and away from the brake pad in response to movement of the brake pad;
- means for causing the pressure increasing element to move away from the brake pad when the brake pad is urged against and moves with the brake disk to effect a relatively fast increase in pressure downstream of the pump;
- a controller operatively associated with said motor to control operation of the pump so that the hydraulic fluid pressure in the caliper is maintained substantially at a predetermined target pressure based on brake pad friction.

5,775,783

ANTI-LOCK BRAKING SYSTEM CAPABLE OF RECORDING THE OPERATING CONDITIONS OF ELEMENTS THEREOF AND RECORDING METHOD THEREFOR

Sung-Kwang Byon, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Rep. of Korea

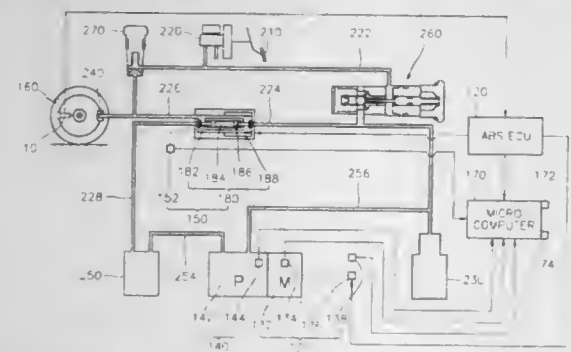
Filed Jul. 24, 1996, Ser. No. 686,102

Claims priority, application Rep. of Korea, Jul. 28, 1995, 1995-22708

Int. Cl.⁶ B60T 8/32

U.S. Cl. 303—122.08

7 Claims



1. An anti-lock braking system capable of recording operating conditions of elements thereof, comprising:

- a wheel speed sensor attached to a wheel of a vehicle for sensing a wheel speed and generating a wheel speed signal;
- an ABS ECU connected to the wheel speed sensor so as to receive the wheel speed signal from the wheel speed sensor, the ABS ECU calculating a slip rate based on the wheel speed signal and generating electric signals for controlling fluid

- pressure applied to the wheel when the slip rate exceeds a predetermined normal value;
 - a motor section, which is driven as the electric signal is input thereto by the ABS ECU;
 - a pump section for increasing pressure of fluid, the pump section being operated by the motor section;
 - a fluid pressure adjusting section for adjusting the fluid pressure applied to the wheel by intermittently transferring pressurized fluid to the wheel according to the electric signal from the ABS ECU; and
 - a microcomputer for recording the operating conditions of the wheel speed sensor, the ABS ECU, the motor section, the pump section, and the fluid pressure adjusting section, respectively,
- wherein the microcomputer includes a first memory means comprising a random access memory for recording the operating conditions of the wheel speed sensor, the ABS ECU, the motor section, the pump section, and the fluid pressure adjusting section, respectively, and a second memory means comprising of an electrically erasable and programmable read only memory for storing data recorded in the first memory means, wherein the microcomputer is connected to an engine ECU to determine whether the engine ECU has been turned on or not, the microcomputer generating a reset signal for resetting the records stored in the second memory means when the engine ECU is turned on,
- wherein the microcomputer is connected to the ABS ECU to receive wheel-slip rate data and the electric signals applied to both the motor section and the fluid pressure adjusting section from the ABS ECU, the microcomputer storing the data in the first memory means into the second memory means when the wheel-slip rate exceeds the predetermined normal value.

5,775,784

BRAKING CONTROL SYSTEM FOR ELECTRIC AUTOMOBILE

Hisamitsu Koga; Naotake Kumagai; Tomiji Owada; Nobuya Furukawa; Masaaki Kato, and Nobuyuki Kawamura, all of Tokyo, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP95/02423, § 371 Date Sep. 19, 1996, § 102(e) Date Sep. 19, 1996, PCT Pub. No. WO96/16831, PCT Pub. Date Jun. 6, 1996

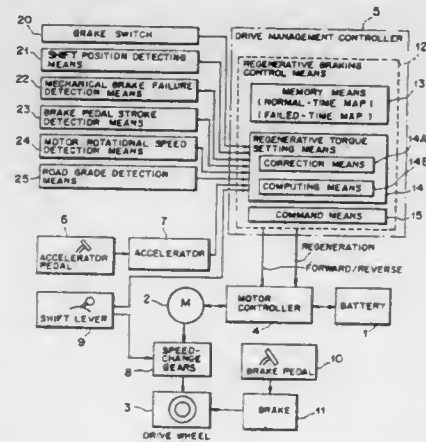
PCT Filed Nov. 28, 1995, Ser. No. 682,748

Claims priority, application Japan, Nov. 29, 1994, 6-294378

Int. Cl.⁶ B60L 7/10

U.S. Cl. 303—152

7 Claims



1. A braking control system for an electric automobile, said brake control system permitting combined use of mechanical braking by a mechanical brake system (11) and regenerative braking by a drive motor (2) upon application of brakes, comprising: failure detection means (22) for detecting whether said mechanical brake system (11) is normal or in failure, and

5,775,786

DRAWER SLIDE

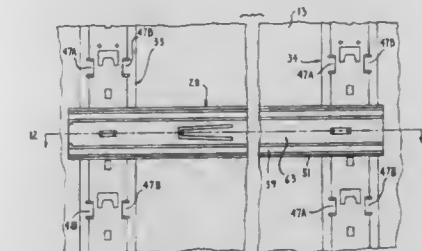
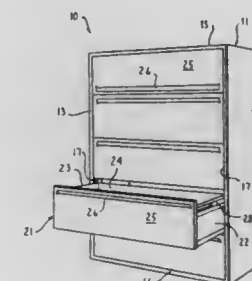
Frederick C. Liebertz, Twin Lake, Mich., assignor to Haworth, Inc., Holland, Mich.

Filed Feb. 5, 1997, Ser. No. 794,867

Int. Cl.⁶ A47B 88/04

U.S. Cl. 312—334.8

10 Claims



1. A drawer slide for a drawer-type storage unit having at least one drawer therein, comprising:

- an elongate support rail adapted for releasable attachment to a side wall of a storage unit housing, said support rail having a channel-shaped configuration with top and bottom support rail edges extending from edges of a base wall;
- said elongate support rail including a cantilevered elongate tongue extending outwardly from one longitudinally extending side surface of said support rail adjacent one end, a loop-like bracket extending outwardly from said one side surface adjacent the other end of said support rail, said loop-like bracket having a U-shaped member extending outwardly from the base wall to define an opening between said bracket and said one side surface which extends generally transverse to the elongate direction of said support rail for permitting the support rail and the bracket thereon to be moved downwardly onto a mounting structure of the storage unit, said bracket being longitudinally spaced from said tongue, a resilient latch provided on said one side surface and having a locking tab extending generally transverse of said one side surface, said latch being intermediate said tongue and said bracket and positioned closer to said bracket than said tongue, said tongue, said bracket and said latch being positioned along a central longitudinal axis of said support rail so that said support rail is vertically symmetrical about said central longitudinal axis;
- an elongate intermediate rail having top and bottom intermediate rail edges;
- an elongate slide rail adapted for releasable attachment to a drawer, said slide rail having a channel-shaped configuration with top and bottom slide rail edges;
- a first set of rolling support elements engaged between said support rail top and bottom edges and said intermediate rail top and bottom edges for permitting relative translational movement between said support and intermediate rails; and
- a second set of rolling support elements engaged between said top and bottom intermediate rail edges and said top and bottom slide rail edges for permitting relative translational movement between said intermediate and slide rails.

- regenerative braking control means (12) for receiving a detection signal from said failure detection means (22) upon application of said brakes and then performing control of regenerative braking by said drive motor (2);
- wherein said regenerative braking control means (12) performs said control of regenerative braking by said drive motor (2) so that greater braking force is produced when a failure in said mechanical brake system (11) is detected by said failure detection means (22) than when said mechanical brake system (11) is detected to be normal.

5,775,785

ANTI-LOCK BRAKING SYSTEM HAVING PULSED PRESSURE RE-APPLICATION

Alan Leslie Harris, Coventry, and Mark Ian Phillips, Birmingham, both of England, assignors to Lucas Industries PLC, Solihull, England

PCT No. PCT/GB94/01259, § 371 Date Nov. 20, 1995, § 102(e) Date Nov. 20, 1995, PCT Pub. No. WO95/26287, PCT Pub. Date Oct. 5, 1995

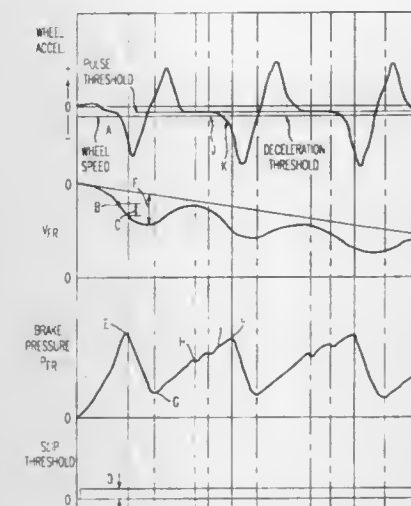
PCT Filed Jun. 10, 1994, Ser. No. 537,940

Claims priority, application WIPO, Mar. 25, 1994, PCT/GB94/00623; Mar. 25, 1994, PCT/GB94/00624

Int. Cl.⁶ B60T 8/00

U.S. Cl. 303—156

15 Claims



1. An anti-skid braking system for wheeled vehicles having fluid actuated brakes associated with the vehicle wheels, comprising: speed sensors associated with the vehicle wheels, a control device responsive to speed signals from the speed sensors to actuate a pressure dump device to periodically release the fluid pressure applied to the brake of any wheel which is determined to be about to lock and to later re-apply the actuating pressure to that brake when the tendency of that wheel to lock has reduced, a pressure re-apply phase being present from a wheel recovery point after a full pressure dump until reaching a threshold for starting a full pressure dump, means for pulsing said pressure dump device at intervals with at least one fixed duration pulse during the pressure re-apply phase to cause interruption to the re-application of pressure to that brake, means for controlling the initiation of said at least one fixed length pulse in response to the wheel angular deceleration being above a predetermined threshold value, and means for adjusting the magnitude of said predetermined threshold value in dependence upon information from the previous anti-lock braking cycle.

5,775,787

PULL-OUT GUIDE ASSEMBLY FOR DRAWERS OR THE LIKE

Ingo Gasser, Höchst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria

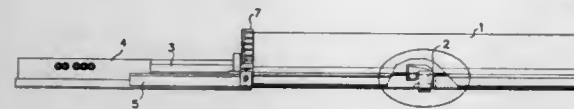
Filed Jan. 14, 1997, Ser. No. 783,106

Claims priority, application Austria, Nov. 5, 1996, 640/96

Int. Cl.⁶ A47B 88/00

U.S. Cl. 312—334.12

14 Claims



1. A pull-out guide assembly for use on each of opposite sides of a drawer for guiding the movement of the drawer into and out of the body of an article of furniture, said assembly comprising:

a supporting rail to be mounted on a respective side of the body of the article of furniture;

a pull-out rail to be mounted on a respective side of the drawer;

a center rail having a forward end and a recess adjacent said forward end, said recess being open solely toward a bottom of said center rail;

supporting rollers mounted between said rails and enabling relative longitudinal movement therebetween to a fully extracted position, whereat said center rail is moved outwardly relative to said supporting rail, said pull-out rail is moved outwardly relative to said center rail, and said pull-out rail is moved further outwardly relative to said supporting rail than is said center rail; and

a stop member mounted on said pull-out rail and operable on said center rail to limit the extent of movement therebetween in said fully extracted position, said stop member including a lug projecting horizontally beneath said center rail and positioned underneath said recess and a tiltable flap positioned above said center rail.

5,775,788

TRACK ASSEMBLY FOR A DRAWER

Wilfried Sasse, Kirchleugern; Peter Kuppen, Bielefeld; Eckhard Meier, Bünde; Günter Kolkhorst, Rahden; Thomas Kohlmeier, Porta Westfalica, and Frank Noske, Löhne, all of Germany, assignors to Paul Hettich GmbH & Co., Kirchleugern, Germany

Filed May 15, 1996, Ser. No. 645,024

Claims priority, application Germany, May 17, 1995, 295 07 916 U

Int. Cl.⁶ A47B 88/10

U.S. Cl. 312—334.38

8 Claims

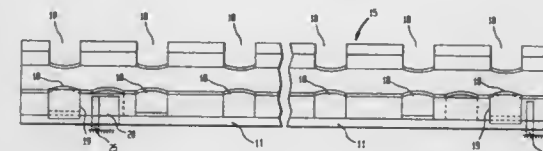
1. A track assembly for a drawer, comprising:

a guide rail securable to a piece of furniture;

a runner securable to a drawer and slidable with respect to the guide rail between extended and retracted positions defined by stationary stop members, said runner being formed with a metallic end stop;

an inner slide rail for interconnecting the guide rail with the runner, and

a cage assembly connected to the inner slide rail and retaining at least one roller element, said cage assembly having opposite end areas, each of which having incorporated therein an elastic stop member for impact upon the stationary stop members before impact of the metallic end stop.



5,775,789

UNIVERSAL CONTAINER SLIDE FOR A REACH-IN CABINET

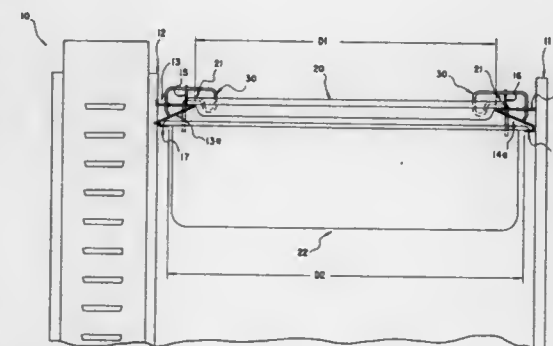
Jerry Rainey, Tyrone, and Donald Dunn, Senoya, both of Ga., assignors to Hoshizaki America, Inc., Peachtree City, Ga.

Filed Feb. 1, 1996, Ser. No. 595,174

Int. Cl.⁶ A47B 9/00

U.S. Cl. 312—408

7 Claims



1. A reach-in universal container slide, comprising:

a pair of first container supports, each first container support of said pair of first container supports configured to be mounted on opposite internal sides of a cabinet, said pair of first container supports including first innermost edges which are configured to engage and support a first container of a first size therebetween;

a pair of second container supports respectively attached to each of said first container supports, said pair of second container supports having second innermost edges which are configured to support a second container therebetween, said second container being of a second size which has a larger dimension than a dimension of said first container;

stop means disposed at a rear portion of at least one of the first container supports, said stop means for stopping rearward movement of each of the first and second containers, thereby preventing damage to an inner portion of the cabinet, said stop means further comprising a stop element for engaging said first container, and a second stop element for engaging said second container, said first and second stop elements being integral with each other, wherein said stop means includes attachment means for attaching the stop means to the rear portion of the at least one of the first container supports.

5,775,790

ILLUMINATING OPTICAL SYSTEM

Motoyuki Ohtake, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

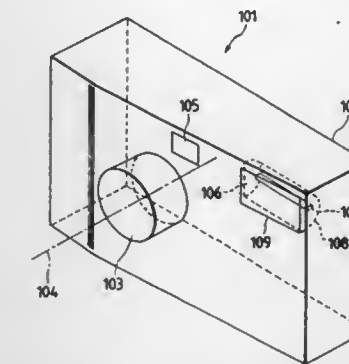
Filed Jul. 19, 1996, Ser. No. 684,476

Claims priority, application Japan, Jul. 21, 1995, 7-207604

Int. Cl.⁶ G03B 15/02

U.S. Cl. 362—18

10 Claims



1. An illuminating optical system including: light emitting means for supplying illuminating light; directing means for directing the light beam from said light emitting means by refracting action; and moving means for moving at least one of said light emitting means and said directing means in a direction differing from the direction of the optical axis of said directing means and varying the spacing between said light emitting means and said directing means to thereby vary the illumination range at a predetermined distance.

5,775,791

SURFACE EMISSION APPARATUSYukio Yoshikawa, and Shigekazu Nakamura, both of Tokyo, Japan, assignors to Copal Company Limited, Tokyo, Japan
PCT No. PCT/JP93/01238, § 371 Date Apr. 27, 1995, § 102(e)
Date Apr. 27, 1995, PCT Pub. No. WO95/06889, PCT Pub. Date Mar. 9, 1995

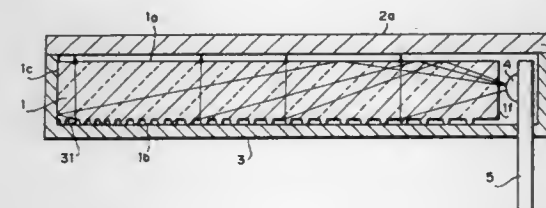
PCT Filed Sep. 1, 1993, Ser. No. 338,580

Claims priority, application Japan, Aug. 31, 1992, 4-061246

Int. Cl.⁶ F21V 8/00

U.S. Cl. 362—31

6 Claims



1. A surface emission apparatus characterized in that light emitted from a light source arranged near a side portion of a flat light-emitting member thereof emerges from a flat light-emitting surface of said flat light-emitting member, comprising: a transparent light-guided plate in which reflecting shape portions formed with small projecting portions each with a circular cone having predetermined vertex angle are arranged on a bottom surface portion thereof opposing said flat light-emitting surface such that a density of said projecting portions is gradually increased in accordance with a distance from said light source and also being formed in a staggered manner along parallel lines with respect to said side portion; said small projecting portions being formed to have small curved surfaces at top end corners of the vertex angles thereof

and also being formed to have small curved surfaces at bottom portions thereof so as to continue with said bottom surface portion; wherein light incident from said light source is reflected by said reflecting shape portions and emerges from said flat light-emitting surface.

5,775,792

LOCALIZED ILLUMINATION USING TIR TECHNOLOGY

Lynn Wiese, Santa Clara, Calif., assignor to Siemens Microelectronics, Inc., Cupertino, Calif.

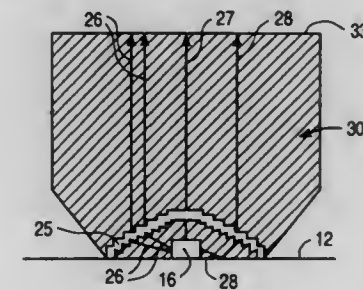
Continuation of Ser. No. 496,819, Jun. 29, 1995, abandoned.

This application Sep. 15, 1997, Ser. No. 929,374

Int. Cl.⁶ F21V 7/04

U.S. Cl. 362—32

22 Claims



16. An apparatus which provides light to a display, the apparatus comprising:

a light source which generates the light;

a total internal reflection optical element which captures the light from the light source and redirects the light from the light source in a single direction;

a surface with an aperture located therein; and,

a light pipe which receives the light from the total internal reflection optical element and channels the light to the surface, the surface being located at a top of the light pipe; wherein the light is emitted through the surface at the top of the light pipe through the aperture, the aperture being shaped different from a cross section of the top of the light pipe.

5,775,793

HEADLIGHT FOR VEHICLES

Hans-Joachim Schmidt, Dusslingen; Horst Haelen, Reutlingen; Georg Ebinger, Kusterdingen, and Giancarlo Chiaramonte, Mössingen-Belsen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 264,437, Jun. 23, 1994. This application Nov. 3, 1995, Ser. No. 552,578

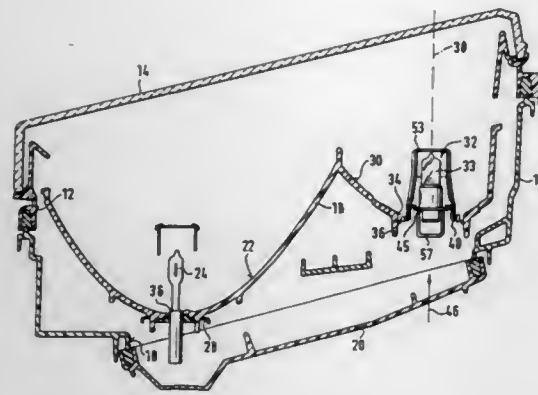
Claims priority, application Germany, Jun. 23, 1993, 43 23 991.9

Int. Cl.⁶ B60Q 1/04

U.S. Cl. 362—61

3 Claims

1. A headlight for vehicles, comprising a reflector having at least two regions formed for different illumination functions; at least two light sources associated correspondingly with said regions of said reflector and having two light source elements; a lamp carrier fixed to said reflector, one of said light source elements being inserted in said reflector via said lamp carrier and held in said lamp carrier, said lamp carrier having a first portion fixed to said reflector and a second portion in which said one light source element is held, said second portion of said lamp carrier with said one light source element held in it being movable transverse to an optical axis of said reflector relative to said first portion of said lamp carrier for adjusting of said one light source element when said first portion is fixed to said reflector and said one light source element is held in said second portion of said lamp carrier, said



second portion of said lamp carrier being accessible from a back-side of said reflector for moving said second portion relative to said first portion of said lamp carrier after and when the lamp carrier with said one light source element are inside said reflector, so that a position of said one light source element in said reflector can be adjusted after said lamp carrier has been fixed on said reflector and said one light source element is held in said lamp carrier.

5,775,794

HEADLAMP ADJUSTOR WITH VENT TUBE

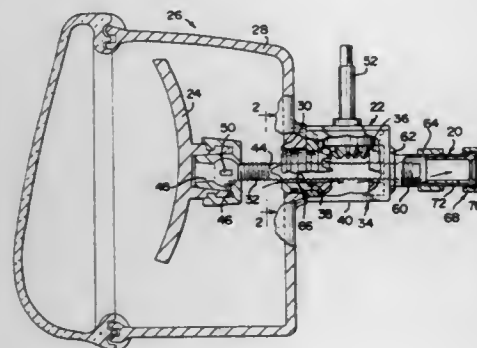
Karl R. Schmitt, Rockford, Ill., assignor to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 509,130, Jul. 31, 1995, Pat. No. 5,642,935. This application Jun. 19, 1996, Ser. No. 659,701

Int. Cl.⁶ B60Q 1/06

U.S. Cl. 362—66

26 Claims



1. A headlamp adjustor mechanism for attachment to and which is used to effect movement of a movable component of a sealed headlamp arrangement and mountable to a stationary component of said headlamp arrangement, said headlamp adjustor mechanism comprising: a housing having a portion being in communication with the interior of said headlamp arrangement, and a vent passageway provided through said headlamp adjustor mechanism when said headlamp adjustor mechanism is engaged with the stationary component, said vent passageway leading from the interior of said headlamp arrangement to the exterior thereof for venting air from the interior of said headlamp arrangement to the exterior of said headlamp arrangement.

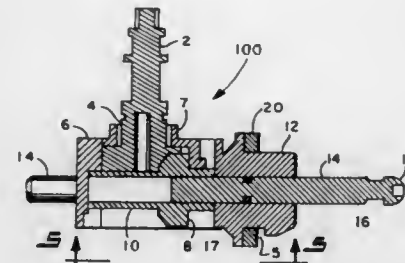
5,775,795
HEADLIGHT POSITION ADJUSTMENT ASSEMBLY
Todd Christian, Wadsworth, and Thomas Franz, North Canton, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 10, 1997, Ser. No. 891,444

Int. Cl.⁶ B60Q 1/06

U.S. Cl. 362—66

5 Claims



1. A vehicular headlight position adjusting assembly comprising: intermeshed drive and driven gears having respective rotational axes disposed in angular relationship to each other, a drive member operable upon rotation to cause both the drive gear and the driven gear to rotate about their respective rotational axes, an elongate adjusting member threadingly engaged with the driven gear and having an end thereof adapted to engage a movable frame upon which a headlight is mounted, a housing adapted to protectively enclose the drive and driven gears and having respective openings therein enabling opposite ends of the adjusting member to extend therethrough, means for securing the housing to a fixed frame on a vehicle so as to enable the adjusting member to move the movable frame in response to rotation of the drive member, and means for preventing the adjusting member from rotating whilst enabling the adjusting member to traverse in opposite axial directions in response to rotation of the drive member in opposite rotational directions, said means comprising at least one protrusion extending radially inwardly from a periphery of one of the housing openings through which one of the opposite ends of the adjusting member extends, and at least one elongate open-ended groove extending from the opposite end of the adjusting member for a predetermined axial length therealong, said groove adapted to receive the protrusion therein and to cooperate therewith to provide the means for preventing rotation of the adjusting member.

5,775,796

TRUCK WITH OVERHEAD STORAGE COMPARTMENT LIGHTING SYSTEM

Richard P. Weber, Portland, Oreg., assignor to Freightliner Corporation, Portland, Oreg.

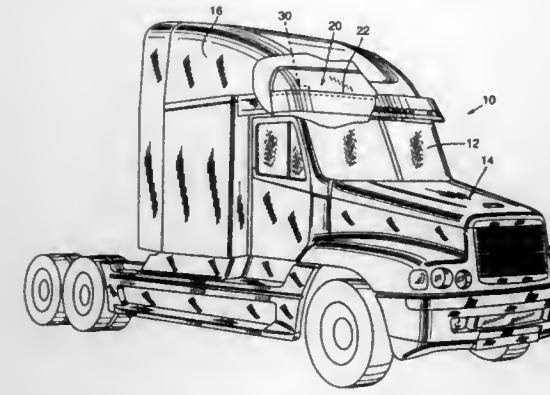
Filed Apr. 12, 1996, Ser. No. 631,780

Int. Cl.⁶ B60Q 1/00

U.S. Cl. 362—80

26 Claims

1. A truck comprising: a cab having a windshield; an overhead storage compartment having a wall separating the interior of the overhead storage compartment from the portion of the cab at the exterior of the overhead storage compartment; at least one plural purpose light source coupled to the wall having a first lamp, the light source being operable to direct light from said first lamp simultaneously into the interior of the overhead storage area and into the cab at the exterior of



the overhead storage compartment when said first lamp of the plural purpose light source is on.

5,775,797

LINE ILLUMINATION DEVICE

Greald Henstra, Winterswijk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

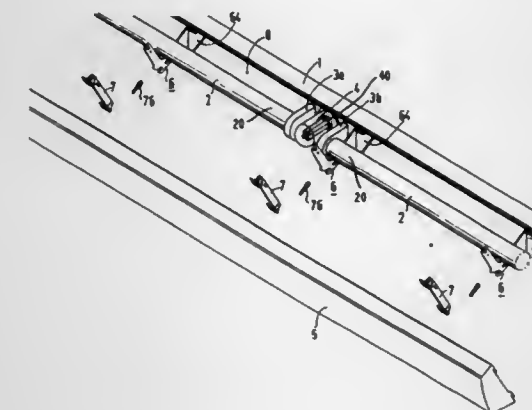
Filed Dec. 9, 1996, Ser. No. 762,643

Claims priority, application European Pat. Off., Dec. 8, 1995, 95203408

Int. Cl.⁶ F21S 3/00

U.S. Cl. 362—225

12 Claims



1. A line illumination device comprising:

a carrier (1); a plurality of tubular lamps (2) arranged in a line and each having end portions (20) with respective lamp caps (21); lampholder pairs (3a, b) which are connected to the carrier (1) and in which respective tubular lamps (2) are accommodated with their lamp caps (21); a screen (5) having a longitudinal direction parallel to the tubular lamps (2) and having a side (50) facing the carrier (1), which screen (5) is suspended from suspension brackets (6) fastened to the carrier (1), while the tubular lamps (2) are present at said side (50) of the screen (5) facing the carrier (1), characterized in that mounting brackets (7) capable of being fastened to any screen locations as desired in longitudinal screen direction are fastened to the screen (5), each mounting bracket (7) is coupled to a respective suspension bracket (6), the suspension brackets (6) each have a first hole (60) extending into its circumference, and each mounting bracket (7) has a first pin (73) which is supported in said first hole (60).

5,775,798

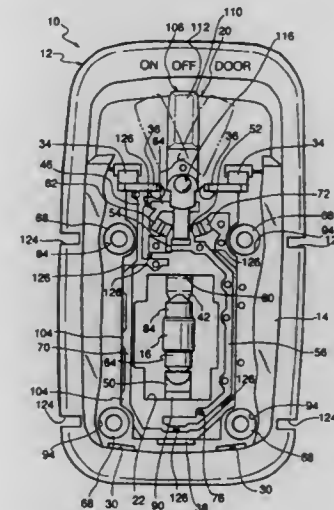
INSERT MOLDED ARTICLE FOR USE IN A MOTOR VEHICLE INTERIOR LAMP OR THE LIKE
Atsushi Yamada, and Tadayuki Okuda, both of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1996, Ser. No. 628,890

Claims priority, application Japan, Apr. 6, 1995, 7-104569
Int. Cl.⁶ H01R 33/00

U.S. Cl. 362—226

1 Claim



1. An insert molded article comprising:

(a) a body of plastic material; and
(b) a metal insert having a first portion disposed in a preassigned position on the body, a second portion at least partly integrally embedded in the body by insert molding, and a link joining the first and the second portions, the link being formed to include an offset which is capable of deformation in the event of deformation or displacement of the second portion during the insert molding of the body and which is thus effective to hold the first portion in the preassigned position on the body and wherein the first portion and the second portion are planes having predetermined surface areas and said metal insert is formed into at least first and second lamp source terminals for mounting a lamp, a power supply terminal and a grounding means before being embedded in said body.

5,775,799

LIGHTING DEVICE INCORPORATING A ZOOMABLE BEAMSPREADER

John F. Forkner, South Laguna, Calif., assignor to David W. Cunningham, Los Angeles, Calif.

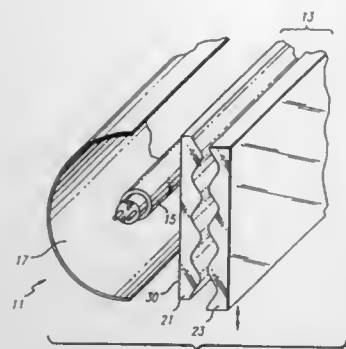
Continuation of Ser. No. 340,845, Nov. 17, 1994, abandoned.
This application Mar. 26, 1997, Ser. No. 824,264

Int. Cl.⁶ F21V 5/00

U.S. Cl. 362—268

36 Claims

1. A zoomable beamspreader comprising: a first lens having an array of alternating positive and negative lens segments; and second lens having an array of alternating positive and negative lens segments; wherein the positive lens segments are each configured to converge incident parallel light rays, and the negative lens segments are each configured to diverge incident parallel light rays; wherein the first and second lenses are arranged in confronting relationship, to define an optical axis; wherein one of the first and second lenses is configured to be controllably movable relative to the other lens in a direction substantially perpendicular to the optical axis, between a

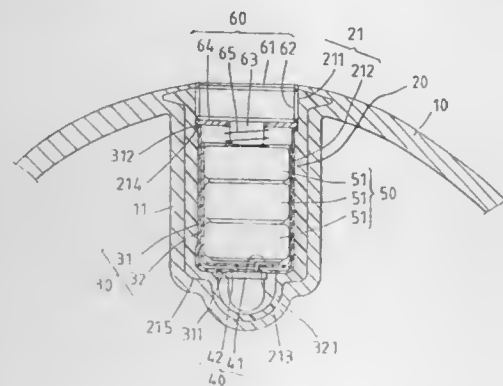


non-spread position, in which the positive and negative lens segments of the first lens are aligned with the respective negative and positive lens segments of the second lens, and a spread position, in which the positive and negative lens segments of the first lens are aligned with the respective positive and negative lens segments of the second lens, and wherein movement between the spread and non-spread positions alters the beamspread of a beam of light passing through the beamspreader along the optical axis, without substantially altering the beam's direction.

5,775,800
ILLUMINATING DEVICE HAVING ROTARY SWITCH
Frank Hsieh, 9th-1 Floor, Kuang Fu South Road, Taipei, Taiwan

Filed Dec. 6, 1996, Ser. No. 761,608
Int. Cl.⁶ F21V 23/00; 3/00
U.S. Cl. 362—295

7 Claims



1. An illuminating device comprising:
 - a base dimensioned to fit securely into a receiving cell of an article and provided with a bore having a threaded portion, a battery compartment, a lighting compartment, a first circular surface formed between said threaded portion and said battery compartment, and a second circular surface formed between said battery compartment and said lighting compartment;
 - a conduction member located in said battery compartment of said base;
 - a light-emitting body located in said lighting compartment of said base and provided with a first pin and a second pin;
 - a battery set located in said battery compartment of said base, said first pin of said light-emitting body engaged to said battery set; and
 - a rotary switch having a threaded portion rotatably engaged with said threaded portion of said base, said rotary switch having a seat, extending through a center hole of a conduction piece, and an elastic conduction body fitted over said seat, said elastic conduction body being located between said conduction piece and said battery set, wherein said elastic conduction body permits said conduction piece to make electrical contact

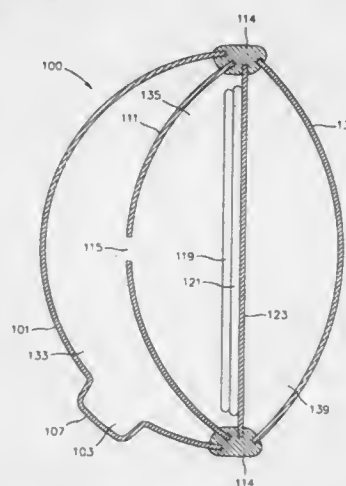
with said second pin of said light-emitting body through said conduction member at such time when said rotary switch is rotated;

wherein said conduction member is composed of an outer conduction tube and an inner insulation tube, said outer conduction tube provided at a first end with a through hole and at a second end with a lip extending from a periphery of said second end to engage said first circular surface, said inner insulation tube being fitted into said outer conduction tube such that said first pin of said light-emitting body extends through said inner insulation tube and that said second pin of said light-emitting body is engaged between said through hole and said outer conduction tube to engage with said battery and said inner insulation tube.

5,775,801
NEON TRAFFIC SIGNAL
Kevin Robert Shaffer, Oceanside, Calif., assignor to McCain Traffic Supply, Inc., Vista, Calif.

Filed Jan. 26, 1996, Ser. No. 592,656
Int. Cl.⁶ F21S 5/00; F21Q 3/00; H01J 61/30; 61/70
U.S. Cl. 362—310

20 Claims



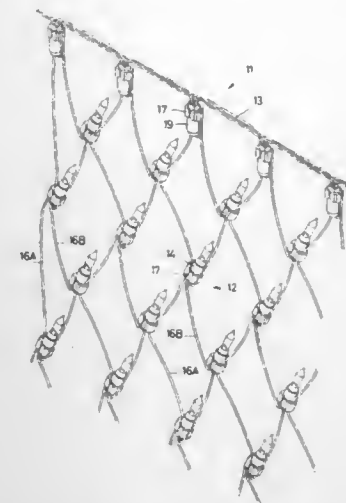
12. A sealed beam neon traffic signal indicator comprising:
 - (a) a generally cup-shaped housing having an essentially concave inner surface;
 - (b) a first neon light source mounted within the housing;
 - (c) a second neon light source mounted within the housing, the second light source being positioned in relatively close proximity to the first light source;
 - (d) a reflective back plate having an edge; and
 - (e) a disc having an edge which essentially conforms to the shape of the edge of the housing and the reflective back plate, the edge of the disc being sealed to the edge of the reflective back plate to form an air gap between the reflective back plate and the disc, wherein the first and second neon light source are each mounted on the disc.

5,775,802
CLAMP DEVICE FOR WIRES OF ORNAMENTAL LAMP STRING
Cheng-Ju Kuo, 5F-7, No. 63, Sec. 2, Chang-An E. Rd., Taipei, Taiwan

Filed Mar. 5, 1997, Ser. No. 811,569
Int. Cl.⁶ F21V 21/08

3 Claims

1. A clamp device for wires of an ornamental lamp string having a main power supply cable connected with a plurality of main sockets, each main socket being connected to a connecting member of a lamp string each lamp string having first and second power-



supply wires, the first power-supply wire extending from said connecting member and connecting a plurality of sub-sockets in series, the second power-supply wire extending from said connecting member to a last sub-socket in the series connection to provide a complete electrical circuit in series for each of said lamp strings, each sub-socket having an outer socket surface, said clamp device comprising:

a clasp removably mounted on the outer socket surface of at least one of said sub-sockets, the clasp having a portion with two symmetrical flat surfaces connected by two symmetrical curved surfaces; said flat surfaces and said curved surfaces all being tapered and having slipping-resistant threads, at least one of said two curved surfaces forming a clamping groove receiving one of said first and second power-supply wires therein an outer plate of one of said flat surfaces of said clasp having a slot with semi-circular recesses on opposite ends thereof to facilitate insertion of said one of said first and second power-supply wires into said clamping groove, such that said one of said first and second wires is fastened firmly between said clamping groove and a curved side of said outer socket surface.

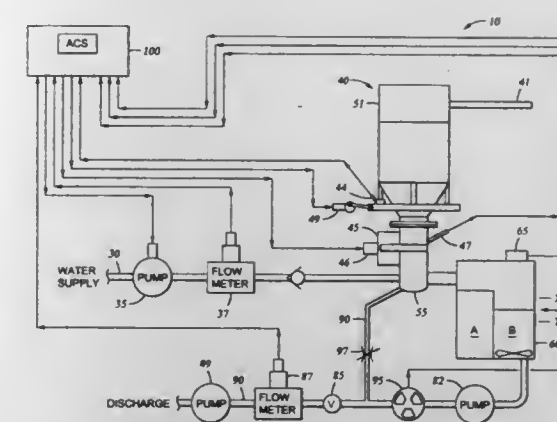
5,775,803
AUTOMATIC CEMENTING SYSTEM WITH IMPROVED DENSITY CONTROL

Clifford Stanley Montgomery, Houston; Michael P. Dearing, Sr., Cypress; Bruce A. Vicknair, Baytown; Randall R. Price, Houston; Robert A. Baten, Friendswood; Greg L. Cedillo, and John Howard Craig, both of Houston, all of Tex., assignors to Stewart & Stevenson Services, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 394,476, Feb. 27, 1995, Pat. No. 5,624,182, which is a continuation-in-part of Ser. No. 178,659, Jan. 7, 1994, Pat. No. 5,503,473, which is a continuation-in-part of Ser. No. 969,944, Oct. 30, 1992, abandoned, which is a division of Ser. No. 389,923, Aug. 2, 1989, Pat. No. 5,281,023, said Ser. No. 394,476 is a continuation-in-part of Ser. No. 308,477, Sep. 19, 1994, Pat. No. 5,441,340, which is a continuation of Ser. No. 969,944. This application Jan. 31, 1997, Ser. No. 791,936
Int. Cl.⁶ B01F 15/04

U.S. Cl. 366—2

20 Claims

1. A method for controlling the density of a cement slurry in a system comprising a mix water pump and input line, a dry cement hopper with a regulating valve, and a mixing chamber for receiving and mixing the mix water and cement to produce a cement slurry, comprising the steps of:
 - measuring the slurry discharge rate from the mixing chamber;
 - determining the percentage of mix water by volume in the slurry;
 - regulating the mix water flow rate to the mixing chamber to substantially equal the slurry discharge rate multiplied by the percentage of mix water by volume in the slurry;



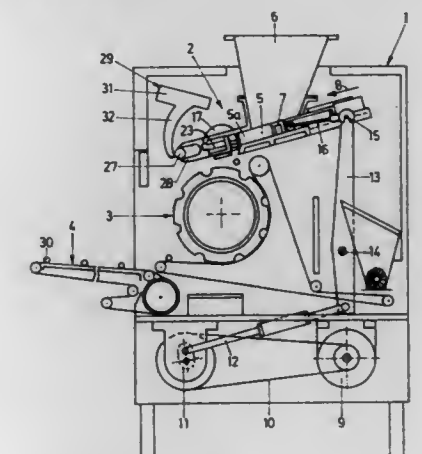
measuring the slurry level in the mixing chamber; regulating the dry cement flow rate to the mixing chamber; and adjusting the regulating valve based on the measured slurry level to maintain the slurry level in the mixing chamber substantially constant.

5,775,804
DOUGH PORTIONING MACHINE
Alexander Meier, Dürrwangen, Germany, assignor to Werner & Pfleiderer Lebensmitteltechnik GmbH, Dinkelsbühl, Germany

Filed Sep. 11, 1997, Ser. No. 927,490
Claims priority, application Germany, Sep. 28, 1996, 196 40 176.3

Int. Cl.⁶ A21C 3/00; 5/00; 7/06; A21D 6/00
U.S. Cl. 366—76.8

7 Claims



1. A dough portioning machine comprising:
 - at least one dough hopper (6)
 - a conveying chamber (5) disposed downstream of the dough hopper (6)
 - a conveying piston (7) disposed displaceably in the conveying chamber (5)
 - at least one metering chamber (22), which is disposed downstream of the conveying chamber (5) and which is movable between a first position open towards the conveying chamber (5) and a second position free from the conveying chamber (5)
 - a metering piston (23), which is disposed displaceably in each metering chamber (22) and which partially frees the metering chamber (22) in the latter's first position and which empties the metering chamber (22) in the latter's second position
 - a degassing device (33) formed in the vicinity of the metering piston (23), and
 - a cleaning device allocated to the degassing device (33).

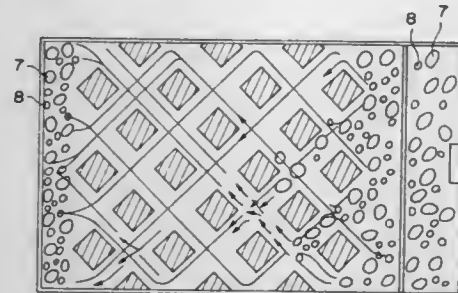
5,775,805
DEVICE FOR MIXING GRANULAR MEDICINES TOGETHER

Mitsumasa Furuya, 8-18 Haruecho, 2-chome, Edogawa-ku, Tokyo, Japan, 132, assignor to Takamasa Shirai, Dove Canyon, Calif., and Mitsumasa Furuya, Tokyo, Japan
 Filed Jan. 30, 1997, Ser. No. 791,160

Claims priority, application Japan, May 30, 1996, 8-005867 U

Int. Cl.⁶ B01F 5/06
 U.S. Cl. 366—130

1 Claim



1. A device for mixing granular medicines together, said device comprising:

- a flat box-shaped container having four sides, with opposed sides being parallel to each other, and top with a flat interior surface and a bottom with an interior surface,
- a multiplicity of prisms, each of said prisms having four sides and edges formed at an intersection of two adjacent sides and opposed sides of each prism being parallel with each other to form two sets of parallel sides,
- said prisms being fixed to the interior surface of the bottom of the flat box-shaped container,
- said prisms being aligned in a plurality of rows and columns with a same edge of each prism of all of the prisms in a same row lying along a first axis, said first axis extending in parallel with two of the four sides of said box-shaped container and a same edge of each prism of all of the prisms in a same column lying along a second axis, said second axis extending in parallel with the other two of the four sides of said box shaped container,
- all sides of said prisms extending in oblique directions with respect to the sides of the container, and
- one of said four sides of said container forming a portion of the container through which medicines can be inserted to be mixed and mixed medicines can be discharged therefrom,
- said box shaped container being swingable about at least one of said first axis and said second axis for mixing of medicines inserted into the box-shaped container by dividing the medicines into two flows by an edge of each of said prisms arranged in a column or a row, and said two flows traveling along sides of each of said prisms and are joined together and the joined medicines are again divided into two separate flows by an edge of each of said prisms arranged in a next lower row or column, such separation and mixing being repeatedly performed.

5,775,806
INFRARED ASSESSMENT SYSTEM

Lloyd G. Allred, Bountiful, Utah, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

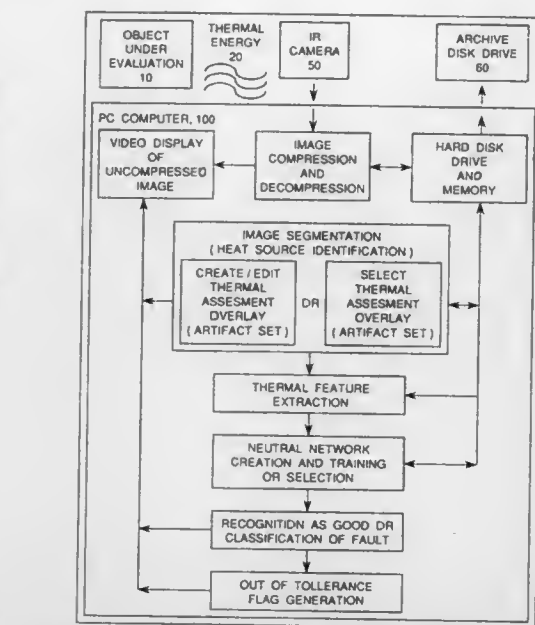
Filed Sep. 12, 1996, Ser. No. 712,920

U.S. Cl. 374—124

18 Claims

1. A process for analyzing an object to determine its functional status, comprising:

- scanning a reference object with an infrared detector to measure infrared radiation emitted from the reference object and determining its heating rate thereby;



scanning a test object with an infrared detector to measure infrared radiation emitted from the test object and determining its heating rate thereby;

comparing the reference and test object heating rates to determine if the test object is functioning within specified tolerances;

graphically displaying a thermal image generated from the infrared detector; and

identifying the test object if it exceeds specified tolerances.

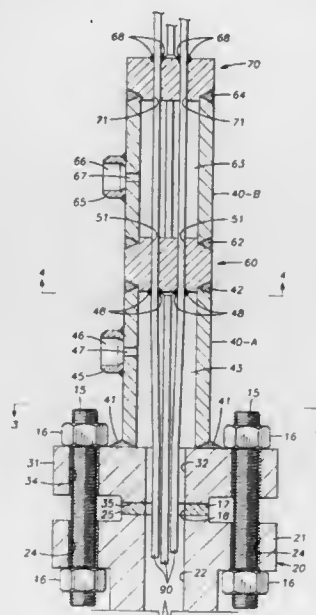
5,775,807
INTRODUCING A PLURALITY OF TEMPERATURE MEASURING DEVICES INTO A PRESSURE VESSEL
 Dale Eugene Dutcher, Pasadena, Tex., assignor to Gay Engineering & Sales Co., Inc., Pasadena, Tex.

Filed Feb. 26, 1996, Ser. No. 606,864

Int. Cl.⁶ G01K 11/14; 13/00

U.S. Cl. 374—143

12 Claims



1. An apparatus for introducing a plurality of temperature measuring devices into a pressure vessel through an opening therein for measuring temperatures within the vessel, said apparatus comprising:

a tubular body having an opening through which the plurality of temperature measuring devices are introduced into the vessel; means for mounting said body to the vessel at the opening in the vessel such that the pressure in the vessel is communicated to said body through the opening in the vessel and the opening in said body;

primary pressure retaining disc means connected to said body across the opening therein, said primary disc means and said mounting means together forming a first chamber within said body; and

said primary disc means having a plurality of apertures there-through providing sealable passageways within said body for introducing the plurality of temperature measuring devices into the vessel, the apertures forming an array of greater area than that of the opening in the vessel.

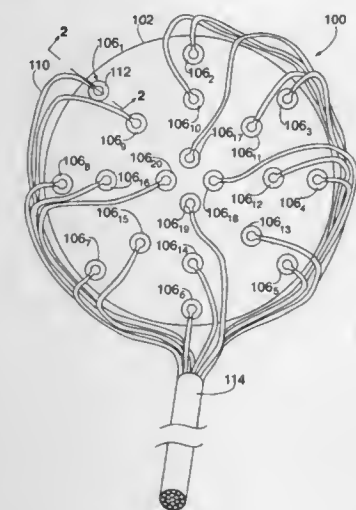
5,775,808
APPARATUS FOR REAL-TIME, IN SITU MEASUREMENT OF TEMPERATURE AND A METHOD OF FABRICATING AND USING SAME
 Shaohar X. Pan, San Jose, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 665,938, Jun. 19, 1996. This application Aug. 27, 1996, Ser. No. 703,500

Int. Cl.⁶ G01K 11/20

U.S. Cl. 374—161

8 Claims



1. Apparatus for measuring temperature comprising:

a placebo wafer; and

a plurality of luminescent temperature probes affixed to a surface of said placebo wafer wherein each of said luminescent temperature probes further comprises a mound of thermally conductive material, formed upon a surface of said placebo wafer, having a portion thereof coated with a phosphor material, a fiber optic cable, having an end affixed to said placebo wafer and abutting said phosphor material to receive light produced by fluorescence of said phosphor material and an encapsulation layer, affixed to said fiber optic cable and said mound, for encapsulating said end of said fiber optic cable, said mound and said phosphor material.

5,775,809
VEHICLE COMPARTMENT TEMPERATURE RECORDER

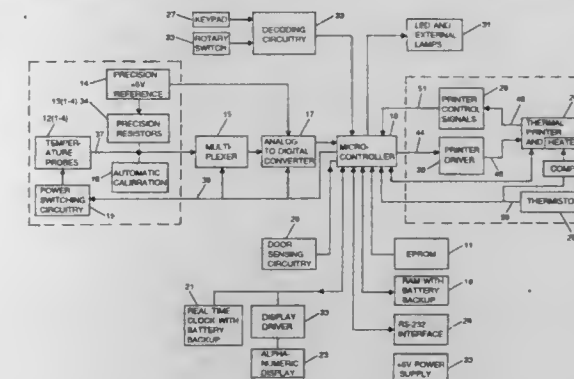
Harold J. Cooley, New City, N.Y.; Lawrence C. Bischoff, Hopatcong, N.J.; Ernest W. Delany, North Kingstown, R.I.; Frank Pagano, Randolph, N.J.; Mark A. Sitcoske, Barrington, R.I., and Georgiy V. Yaroshevskiy, Verona, N.J., assignors to Measurement Dynamics LLC, Dover, N.J.

Filed Jul. 11, 1996, Ser. No. 679,703

Int. Cl.⁶ G01K 7/00

U.S. Cl. 374—164

8 Claims



1. The method of measuring and recording temperature readings inside a closed compartment by utilizing at least one temperature sensing probe in the compartment which generates a range of signals corresponding to a range of temperatures, calibration means which generates calibration signals, and verifying means for verifying the operability of the temperature sensing probe, consisting of the steps of,

- a) read six successive calibration signals, discard the highest and lowest readings, and average the remaining four,
- b) calculate and store a correction term based on the result of step a),
- c) read six successive temperature signals from the at least one probe, discard the highest and lowest readings, and average the remaining four,
- d) calculate and store a temperature reading based on the results of steps c) and b),
- e) heat the probe for a predetermined time interval and then terminate heating,
- f) read six successive temperature signals from the at least one probe, discard the highest and lowest readings, and average the remaining four,
- g) compare the readings of steps d) and f); if the reading of step f) is higher than the reading of step d) by a predetermined amount do not add an error flag to the stored reading of step d); if the reading of step f) is not higher than the reading of step d) by a predetermined amount add an error flag to the stored reading of step d).

5,775,810
FERRITE DEVICE FOR SENSING TEMPERATURE
 Hyeog-Soo Shin, Kyongki-do, Rep. of Korea, assignor to Samsung Electric-Mechanics Co. Ltd., Kyongki-do, Rep. of Korea

Filed Aug. 1, 1996, Ser. No. 690,795
 Claims priority, application Rep. of Korea, Dec. 26, 1995, 1995-55976

Int. Cl.⁶ G01K 7/38

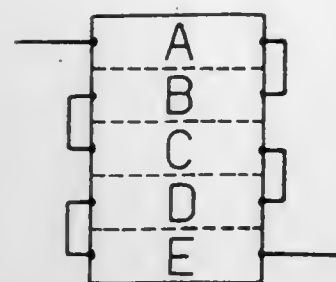
U.S. Cl. 374—176

13 Claims

1. A temperature sensing ferrite device comprising:

(a) a lower layer and an upper layer each comprising a ferrite material;

(b) a first stacked layer between the lower layer and the upper layer and comprising a plurality of first layer subregions, each of said first layer subregions comprising a ferrite material and bordering upon another of the first layer subregions, each of



- said first layer subregions having a composition and a Curie temperature that is different than a composition and a Curie temperature of a first layer subregion upon which it borders;
- (c) a second stacked layer on the first stacked layer and comprising a plurality of second layer subregions, each of the second layer subregions having the shape of, and being superposed on, one of the plurality of first layer subregions, each of the second layer subregions having a composition and Curie temperature that is the same as the composition and Curie temperature of the first layer subregion on which it is superposed; and
- (d) electrode means for electrically connecting each of the second layer subregions to the first layer subregion on which it is superposed.

5,775,811

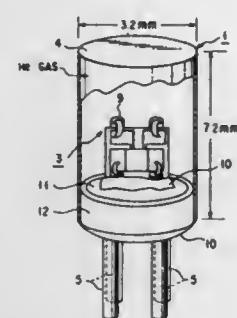
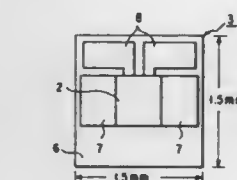
TEMPERATURE SENSOR SYSTEM USING A MICRO-CRYSTALLINE SEMICONDUCTOR THIN FILM

Jun Hiraoka, and Setsuo Kodato, both of Atsugi, Japan, assignors to Anritsu Corporation, Tokyo, Japan
PCT No. PCT/JP95/02520, § 371 Date Aug. 6, 1996, § 102(e)
Date Aug. 6, 1996, PCT Pub. No. WO96/18871, PCT Pub. Date Jun. 20, 1996

PCT Filed Dec. 8, 1995, Ser. No. 687,558
Claims priority, application Japan, Dec. 15, 1994, 6-333348
Int. Cl.⁶ G01K 1/08

U.S. Cl. 374—185

20 Claims



1. A temperature sensor comprising:
a temperature-sensitive device having an insulating substrate, a micro-crystalline semiconductor thin film formed on the insulating substrate, a pair of first electrodes connected to the micro-crystalline semiconductor thin film to allow a measuring current to flow through the micro-crystalline semiconductor thin film and a pair of second electrodes connected to the micro-crystalline semiconductor thin film to detect a voltage drop induced by the measuring current in the micro-crystalline semiconductor thin film;

a cylindrical container of a nonmagnetic material with the temperature-sensitive device and helium gas hermetically sealed therein; and
four conductors connected to the pair of first and second electrodes to allow currents to be carried from an outside of the cylindrical container, respectively, the temperature-sensitive device being closely arranged in a direction parallel to a longitudinal direction of the two of the four conductors which are connected to the pair of first electrodes, whereby the temperature-sensitive device held in the cylindrical container of a nonmagnetic material has an oriented direction thereof visibly confirmed from an outside to allow the temperature sensor to be set such that the temperature-sensitive device is oriented in a predetermined direction in a magnetic field.

5,775,812

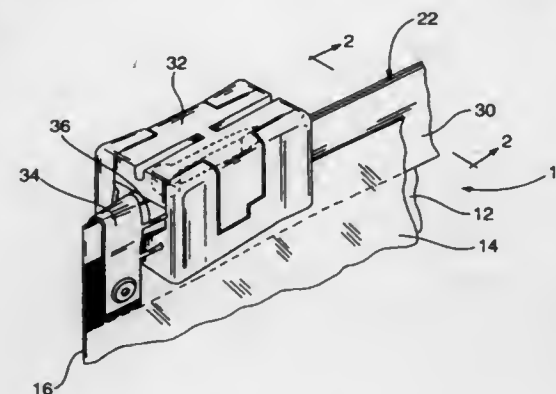
TAMPER-EVIDENT RECLOSABLE PLASTIC BAG WITH BREAKAWAY SLIDER

Eric A. St. Phillips, Fairport, and David G. Vanderlee, Macdon, both of N.Y., assignors to Tenneco Packaging, Evanston, Ill.

Filed Nov. 20, 1996, Ser. No. 754,022
Int. Cl.⁶ B65D 33/18

U.S. Cl. 383—5

8 Claims



1. A taper-evident reclosable plastics bag, comprising:
first and second opposing panels fixedly connected to each other along a pair of sides and a bottom bridging said pair of sides;
a reclosable zipper extending along a mouth formed opposite said bottom, said zipper including a first track with a first profile and a second track with a section profile, said first and second profiles being releasably engageable to each other; and
a slider slidably mounted to said zipper for movement between a closed position and an open position, said first and second profiles being engaged to each other while said slider is in said closed position, said first and second profiles being disengaged from each other in response to movement of said slider from said closed position to said open position;
an end termination near one end of said zipper adjacent to one of said pair of sides; and
a one-time breakable, irreplaceable element initially integrally connecting said slider to said end termination to secure said slider in said closed position and being broken in response in response to movement of said slider from said closed position to said open position.

5,775,813

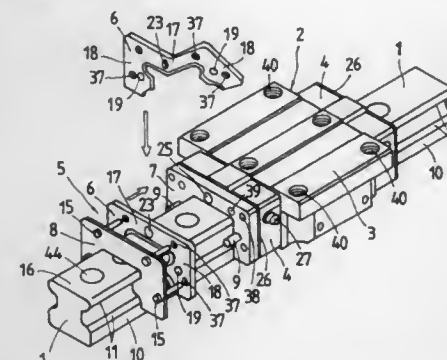
SEAL STRUCTURE-CARRYING LINEAR MOTION GUIDE UNIT

Masahide Saitoh, Gifu-ken, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed May 27, 1997, Ser. No. 863,304
Claims priority, application Japan, May 27, 1996, 8-152925
Int. Cl.⁶ F16C 29/06

U.S. Cl. 384—15

8 Claims



1. A linear motion rolling guide unit provided with a track rail having first raceway surfaces on both of longitudinally extending side portions thereof, a slider which has second raceway surfaces opposed to said first raceway surfaces, and which is moved slidably and relatively on said track rail via rolling elements, and a seal structure fixed to an end surface of said slider and moved slidably and relatively on said track rail,

wherein said seal structure comprises seal members including upper seal portions slidably contacting an upper surface of said track rail, and a pair of side seal portions extending downward from both sides of said upper seal portions and outstretchable with respect to each other around predetermined parts of said upper seal portions, positioning pins provided on said slider and inserted into pin holes provided in said side seal portions of said seal members, and a scraper plate contacting an end surface of an outer seal member and positioned on said track rail with narrow clearances left therebetween.

5,775,814

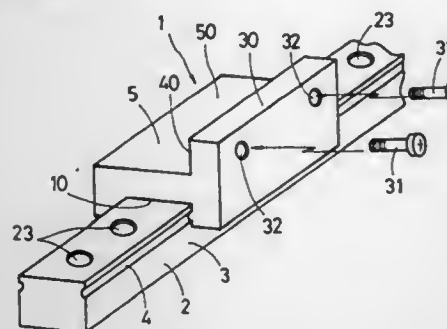
LINEAR MOTION ROLLING GUIDE UNIT

Norimasa Agari, Gifu-ken, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Division of Ser. No. 607,660, Feb. 27, 1996, Pat. No. 5,678,928. This application Jul. 8, 1997, Ser. No. 889,479
Claims priority, application Japan, Mar. 8, 1995, 7-74711
Int. Cl.⁶ F16C 29/06

U.S. Cl. 384—45

1 Claim



1. A linear motion rolling guide unit comprising:
a cross table including a central portion, and arms extending from said central portion in opposite directions, said arms including first and second arms extending so as to cross each other,

said first arms having shelves at both end portions thereof, said second arms having flat regions at both end portions thereof, said shelves and said flat regions being provided with second fixing reference surfaces, a pair of first sliders being fixed to said shelves, a pair of second sliders being fixed to said flat regions, said first sliders being saddled on a pair of parallel-extending first track rails, said first sliders being able to be moved linearly on and relatively to said first track rails, said second sliders being saddled on a pair of parallel-extending second track rails, said second sliders being able to be moved relatively on and relatively to said second track rails, said first and second track rails being provided with first raceway grooves in both of longitudinally extending side surfaces thereof, and extending so as to cross each other, said first and second sliders comprising casings provided with second raceway grooves opposed to said first raceway grooves, and end caps attached to both end surfaces of said casings, raceways formed between said first and second raceway grooves being loaded with rolling elements rollably, said casings being provided with flanges formed integrally therewith and extending from the surfaces thereof which are on the opposite side of said second raceway grooves, said flanges being provided on side surfaces thereof with first fixing reference surfaces, with which said second fixing reference surfaces of said shelves and said flat regions are engaged, whereby said shelves and said flat regions of said cross table are fixed to said flanges of said casings.

5,775,815

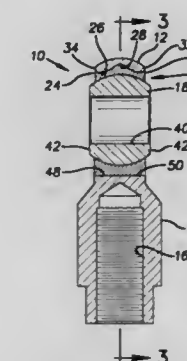
BALL AND SOCKET SWIVEL BEARING

Muneer Abusamra, Spencerville, Ind., assignor to Tuthill Corporation, New Haven, Ind.

Filed Feb. 26, 1997, Ser. No. 806,843
Int. Cl.⁶ F16C 23/04

U.S. Cl. 384—208

8 Claims



1. A ball and socket swivel bearing comprising a rod and having a shank portion and a metallic socket portion, said socket portion having a continuous toroidal inner periphery and having outer side walls defining circular side openings, a metallic swivel ball member having an exterior spherical bearing surface positioned within said socket, said bearing surface being spaced from said inner periphery to thereby define a cavity, a bearing material molded in said cavity providing an interior spherical bearing surface for said ball member, said continuous toroidal inner periphery being concave and having a minor diameter defined by said side openings and further having a major diameter midway between said side openings, a key slot in said shank portion extending through at least one of said outer side walls and communicating with said toroidal inner periphery of said socket portion, said bearing material being molded in said key slot to enhance breakaway resistance between said molded material and said toroidal inner periphery.

5,775,816

BEARING ARRANGEMENT

Bodo Baranek, Schenefeld; Ralf Mann, Hufe, and Rainer Landowski, Nutteln, all of Germany, assignors to Sibi GmbH & Co KG, Itzehoe, Germany

PCT No. PCT/EP95/04832, § 371 Date Jun. 6, 1997, § 102(e) Date Jun. 6, 1997, PCT Pub. No. WO96/18047, PCT Pub. Date Jun. 13, 1996

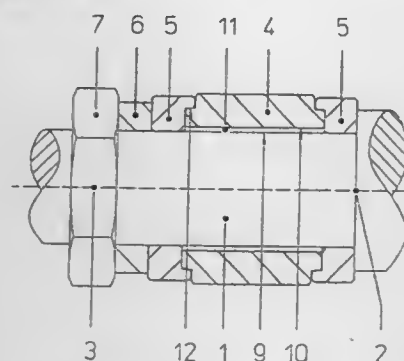
PCT Filed Dec. 8, 1995, Ser. No. 849,358

Claims priority, application Germany, Dec. 8, 1994, 94 19 709

Int. Cl.⁶ F16C 17/22

U.S. Cl. 384—278

2 Claims



1. A bearing assembly comprising a shaft having an outer circumferential surface and a bearing bushing subassembly mounted on a predetermined axial length of said outer surface, said subassembly comprising a bearing bushing having an inner circumferential surface spaced from the shaft's outer surface to provide play therebetween and a pair of centering rings centerably retaining the bearing bushing in a play-free manner when the assembly is at the lower end of the assembly's predetermined operating-temperature range, said bushing being composed of a material susceptible to tensile stress and exhibiting a coefficient of thermal expansion smaller than that of the shaft such that the space between the bushing's inner circumferential surface and the shaft becomes virtually zero and said inner surface butts against the shaft's outer surface at the top end of the predetermined operating-temperature range, said centering rings having a higher coefficient of thermal expansion than the bushing and being pressed together axially in order to carry the bushing along during rotation of the centering rings at the bottom end of the operating-temperature range, said centering rings providing play between the bushing and the centering rings in a middle zone of the predetermined operating-temperature range, the thermal expansion of the subassembly along said shaft's predetermined axial length being essentially equal to the thermal expansion of the corresponding length of the shaft at the top end of the operating-temperature range.

5,775,817

FRACTURE PROCESS WITH BORE DISTORTION CONTROLS

Paul Göttemoller, Palos Park, and Melvin Jerry Tomblin, Kankakee, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

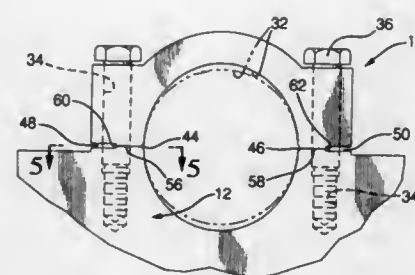
Filed Nov. 4, 1996, Ser. No. 743,581

Int. Cl.⁶ F16C 33/64

U.S. Cl. 384—434

2 Claims

2. A split bearing assembly having a saddle-like main body with first and second legs and a removable saddle-like bearing cap with first and second legs having ends respectively secured in end-to-end engagement with mating ends of said first and second legs of said body to define a journal receiving opening, said mating ends each defined by a first portion of rough uneven mating surface formed by fracturing said bearing cap from said main body and a



5,775,818

Patent Not Issued For This Number

5,775,819

ROLLER BEARING ASSEMBLY AND METHOD FOR MAKING THE SAME

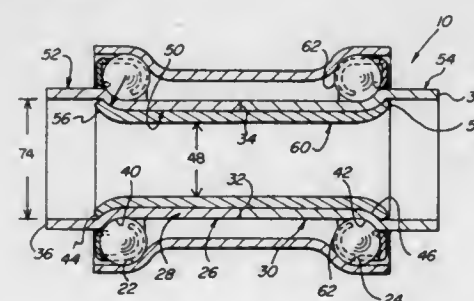
Layton R. Kinney, Rocky Hill, and John A. Hitchiner, Burlington, both of Conn., assignors to Virginia Industries, Inc., Rocky Hill, Conn.

Filed Mar. 14, 1996, Ser. No. 616,105

Int. Cl.⁶ F16C 33/60

U.S. Cl. 384—544

7 Claims



1. A roller bearing assembly consisting essentially of: a single-piece, substantially tubular-shaped outer race ring having a central, circumferential depression and a pair of raceway surfaces on opposite sides of the depression; an inner race ring sized and shaped to fit within the outer race ring and comprising a pair of inner race members, each inner race member having an axially and circumferentially extending lip extending from the shoulder, an abutting end, a free end and a raceway surface formed at least in part by a shoulder located at substantially the free end, the inner race members positioned so as to abut each other at their respective abutting ends and being axially aligned so as to have a substantially continuous internal bore extending substantially between the free ends and such that each of the raceway surfaces of the inner race members are aligned with one of the raceway surfaces of the outer race ring to form two raceways; a plurality of rolling elements disposed in each raceway; and a substantially tubular-shaped inner sleeve having two ends and sized and shaped to fit snugly in the internal bore of the inner race ring for maintaining the position of the inner race members, the inner sleeve having a plurality of stop members at each end which cooperate with the shoulders of each of the inner race members to desirably position the inner sleeve inside the inner race ring.

5,775,820

THERMAL PRINTER HAVING A PRESS RELEASING MECHANISM

Kazuaki Sugimoto, Mishima; Izumi Matsushita, Suntoh-gun, and Chikaki Yukawa, Mishima, all of Japan, assignors to Kabushiki Kaisha TEC, Shizuoka, Japan

PCT No. PCT/JP95/01018, § 371 Date Apr. 8, 1996, § 102(e)

Date Apr. 8, 1996, PCT Pub. No. WO95/32869, PCT Pub.

Date Dec. 7, 1995

PCT Filed May 29, 1995, Ser. No. 545,767

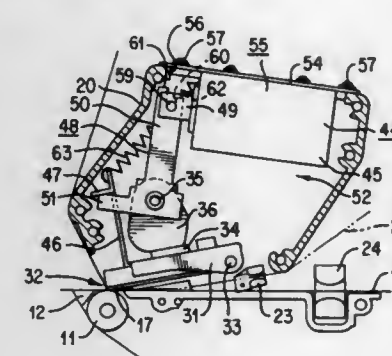
Claims priority, application Japan, May 31, 1994, 6-117900;

May 27, 1994, 6-115587; Jun. 1, 1994, 6-119445

Int. Cl.⁶ B41J 2/315

U.S. Cl. 400—120.16

13 Claims



1. A thermal printer comprising:

- a platen;
 - a thermal head which is pressed against or separated from said platen, said thermal head having a rear surface and including a plurality of heating elements arranged at a part thereof which comes into contact with said platen;
 - a head pressing mechanism which presses said thermal head against said platen;
 - a paper feeding mechanism for feeding print paper between said thermal head and said platen in a secondary scanning direction;
 - a ribbon transporting mechanism for transporting an ink ribbon between said thermal head and said platen in the secondary scanning direction while the ink ribbon is brought into contact with the heating elements; and
 - a press releasing mechanism for causing said thermal head to move away from said platen against a pressing force of said head pressing mechanism,
- wherein said press releasing mechanism includes a solenoid elongated in the secondary scanning direction which slides a rod in the secondary scanning direction at a position opposing to the rear surface of said thermal head, a support shaft disposed between said solenoid and said thermal head, said support shaft being oriented in a primary scanning direction, and a lever link which is pivotally attached to said support shaft and is made up of a first arm and a second arm both of which extend in directions substantially orthogonal to said support shaft, said first arm being coupled to the rod of said solenoid and said second arm being coupled to said thermal head,
- wherein a recess is formed on a tip of said first arm of said lever link, and a connection pin to be fitted into said recess is formed on said rod of said solenoid,
- wherein said second arm of said lever link extends in said secondary scanning direction in relation to said support shaft.

5,775,821

RIBBON CASSETTE FOR A PRINTING APPARATUS

Tokunori Kato, Ichinomiya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 228,718, Apr. 18, 1994, Pat. No.

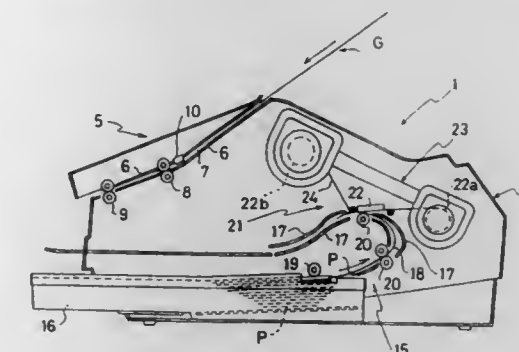
5,539,533. This application May 22, 1996, Ser. No. 653,925

Claims priority, application Japan, May 28, 1993, 5-151185

Int. Cl.⁶ B41J 31/00; 2/315; 35/28; 33/14

U.S. Cl. 400—191

15 Claims



1. A ribbon cassette, comprising:

- a ribbon supply spool;
- a ribbon take-out spool; and
- an ink ribbon wound on the ribbon supply spool such that an ink side of the ink ribbon is toward an axis of the ribbon supply spool, an end of the ink ribbon attached to the ribbon take-out spool to permit storage of used ink ribbon.

5,775,822

ERGONOMIC COMPUTER KEYBOARD

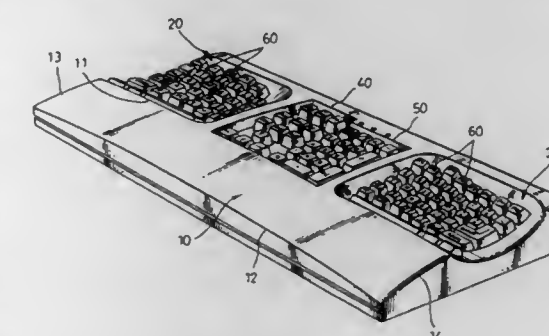
Shih-Ming Cheng, 4th Floor, No. 314, Sec. 6, Chung Hsiao E. Rd., Taipei, Taiwan

Filed Oct. 28, 1996, Ser. No. 738,551

Int. Cl.⁶ B41J 5/10

U.S. Cl. 400—489

5 Claims



1. An ergonomic computer keyboard comprising:

- a) left and right spaced apart character control sections each having a plurality of rows of keys disposed in a concave keyboard portion;
- b) an edit control section and a number control section located between the spaced apart character control sections, the edit control section and the number control section each having a plurality of keys and both being located in a recessed portion of the keyboard; and
- c) a front edge section for supporting wrists of a keyboard user, the front edge section having a front side located adjacent to a row of keys in each of the character control sections whereby a height of the front side is above a height of the adjacent row of keys.

5,775,823

AUTOMATIC SHEET FEEDER

Toshihiko Bekki, Kawasaki; Hiroharu Nakajima, Chiba; Toshihide Wada, Yokohama; Noriyuki Sugiyama, Kawasaki, and Hisatsugu Naito, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha

Continuation of Ser. No. 82,959, Jun. 29, 1993, abandoned.

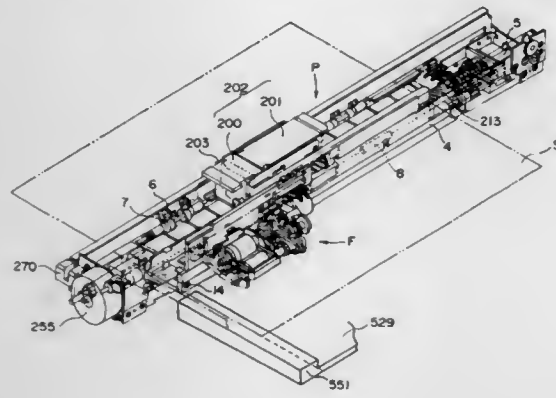
This application Sep. 23, 1996, Ser. No. 717,678

Claims priority, application Japan, Jun. 30, 1992, 4-173414; Jun. 30, 1992, 4-173415; Jul. 10, 1992, 4-207494; Jan. 19, 1993, 5-006924; Jan. 19, 1993, 5-006981; Jan. 19, 1993, 5-006982

Int. Cl.⁶ B41J 11/58

U.S. Cl. 400—629

19 Claims



1. An automatic sheet feeding apparatus comprising: sheet supporting means for supporting sheets; an auxiliary roller for feeding the sheets supported on said sheet supporting means; separating means, having a separation roller and friction separation means, for separating a sheet from the sheets fed by said auxiliary roller one-by-one; feeding means for feeding the sheet separated by said separating means; auxiliary roller moving means for moving said auxiliary roller between an operative position where said auxiliary roller is in contact with the sheets supported by said sheet supporting means and an inoperative position where it is away therefrom; separation roller moving means for moving said separation roller between an operative position where said separation roller is in contact with the sheet fed by said auxiliary roller for separating the sheet one by one with said friction separating means and an inoperative position where said separation roller is away therefrom, wherein the separation roller moving means supports the separation roller on a drive shaft which is rotatable supported, the drive shaft being provided with a cam that with one full rotation moves the separation roller between the operative position and the inoperative position, and wherein one full rotation of said drive shaft causes one full rotation of the cam; wherein said separation roller moving means moves said separation roller from the operative position to the inoperative position after said auxiliary roller moving means moves said auxiliary roller from the operative position to the inoperative position after said feeding means starts to feed the sheet separated by said separating means.

5,775,824

INK-JET PRINTING APPARATUS FOR EJECTING RECORDING PAPER UPON OPENING COVER THEREOF

Sang-Jin Bae, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

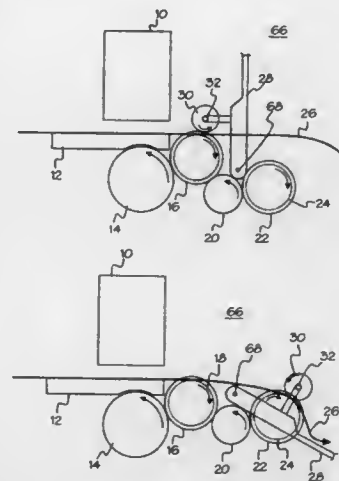
Filed Jan. 27, 1997, Ser. No. 788,795

Claims priority, application Rep. of Korea, Jan. 25, 1996, 1048/1996

Int. Cl.⁶ B41J 13/02

U.S. Cl. 400—636

14 Claims



1. An ink-jet printing apparatus for ejecting recording paper upon opening a cover, said ink-jet printer having a cartridge including a printer head for forming an image on said recording paper, said ink-jet printer having a star-wheel for ejecting said recording paper that said image is formed, said cover having a spring for pressing said star-wheel under the given pressure, said ink-jet printer comprising:

- a driving gear;
- a first eject roller for ejecting said recording paper when engaged to said star-wheel upon locking said cover;
- a first gear for actuating said first eject roller, said first gear driven by said driving gear;
- a second eject roller for ejecting said recording paper when engaged to said star-wheel upon unlocking said cover;
- a second gear for actuating said second eject roller; and,
- an idle gear for transferring the driving force of said first gear to said second gear.

5,775,825

INTEGRATED SHELL-AND-CHASSIS CONSTRUCTION FOR A DESKTOP IMAGE-RELATED DEVICE

Juehui Hong; Olev Tammer, both of San Diego, and Salomon X. Valencia, Laguna Hills, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

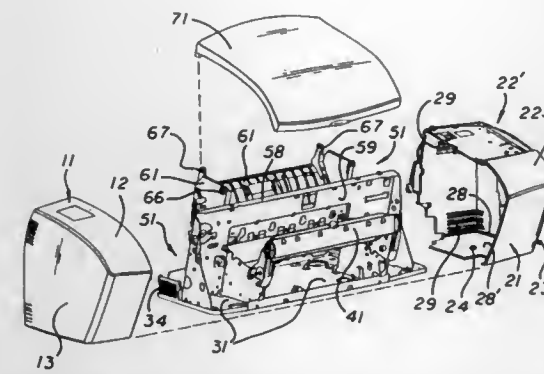
Filed Jul. 22, 1996, Ser. No. 684,736

Int. Cl.⁶ B41J 29/02

U.S. Cl. 400—693

20 Claims

1. An enclosure-and-structural system, for a desktop image-related device that is subject to mechanical shock loads during shipping and the like; said system comprising: plural side covers; a major chassis element of the image-related device; and means for attaching the covers to the chassis element, said attaching means comprising means for omnidirectional transfer of such shock loads between the covers and the chassis element;



said transfer means comprising a hand-in-glove fit of a portion of the chassis element into each of the covers.

5,775,826

SAFETY FLUID DISPENSING SYSTEM

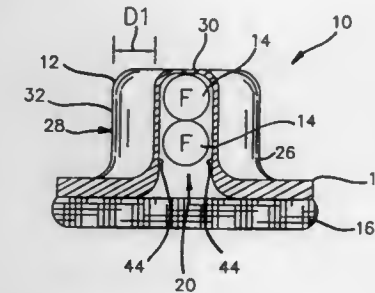
Frederic Dickson Miller, Rockford, Ill., assignor to Siebe North, Inc., Charleston, S.C.

Filed May 29, 1996, Ser. No. 655,044

Int. Cl.⁶ A61M 35/00; A47L 13/34

U.S. Cl. 401—132

16 Claims



1. A safety fluid applicator, comprising a fluid bearing ampule formed of a frangible material; a housing including a generally planar flange portion recessed to a displaced back wall portion joined to the flange portion by an enclosing wall portion to form an inner recess for enclosing the ampule therein; and a perforate material secured to the flange portion so that the fluid flows through the perforate material when the ampule is fractured; wherein the enclosing wall portion includes at least one inner portion defining an ampule receptacle, at least one outer portion defining a gripping surface, and means interconnecting the gripping surface and the ampule receptacle and forming an isolation space for transmitting pressure on the gripping surface to the ampule receptacle to fracture the ampule, the isolation space isolating the gripping surface from the ampule receptacle so that fingers placed on the gripping surface are protected from shards of a fractured ampule.

5,775,827

BRUSH WITH CLEANING ELEMENT

Charles Christopher Packham, Crowthorne; Robert White, Cholsey, and Alan Robert Hill, Reading, all of United Kingdom, assignors to The Gillette Company, Boston, Mass.

PCT No. PCT/US94/13654, § 371 Date Jul. 19, 1996, § 102(e) Date Jul. 19, 1996, PCT Pub. No. WO96/15096, PCT Pub. Date Jun. 8, 1995

PCT Filed Nov. 29, 1994, Ser. No. 647,957

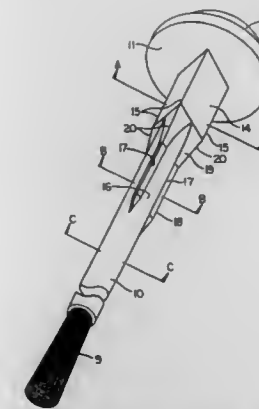
Claims priority, application United Kingdom, Dec. 1, 1993, 9324686

Int. Cl.⁶ A45D 40/00; 40/26; A46B 11/00

U.S. Cl. 401—129

20 Claims

1. A container for containing a fluid material, comprising



a reservoir for storing a fluid material, the reservoir defining an internal volume for storing a fluid material, and an opening having a neck with an interior surface; and an applicator brush constructed to be removably inserted into the reservoir, the applicator brush having an elongate stem carrying a brush head at a free end thereof, the stem also including a portion spaced from the brush head and provided with a radially projecting, elongate cleaning element for contacting deposits collected within the neck of the reservoir, the elongate cleaning element arranged to sweep the entire circumference of the interior surface of the neck as the applicator brush is rotated one full revolution with respect to the reservoir.

5,775,828

WRITING IMPLEMENT

Yasuo Ikeda, Naka-Gun, Japan, assignor to Kabushiki Kaisha Pilot, Tokyo-to, Japan

PCT No. PCT/JP95/01388, § 371 Date Dec. 4, 1995, § 102(e) Date Dec. 4, 1995, PCT Pub. No. WO96/05072, PCT Pub. Date Feb. 22, 1996

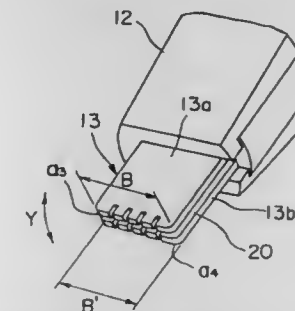
PCT Filed Jul. 12, 1995, Ser. No. 557,190

Claims priority, application Japan, Aug. 9, 1994, 6-187500; Aug. 9, 1994, 6-187559

Int. Cl.⁶ B43K 8/00; 1/04

U.S. Cl. 401—222

10 Claims



1. A writing implement comprising: a barrel to receive therein an ink tank, said barrel having a front end; a feed tube mounted at said front end of said barrel, said feed tube having a feed groove extending therethrough; a writing member including strips superposed on each other and defining therebetween a minute gap forming an ink passage extending therethrough, said strips having rear parts fixedly secured to each other and remaining parts forwardly of said rear parts not secured to each other and resiliently movable relative to each other; said writing member being fitted in said feed groove of said feed tube with a front part of said writing member projecting forwardly from a front end of said feed tube and with said ink passage located to communicate with the ink tank to be received in said barrel;

whereby when writing pressure is applied to said front part of said writing member, said remaining parts other than said fixedly secured rear parts of said strips are caused to slide relative to each other during writing, thereby to remove dry ingredients of ink sticking to said strips.

5,775,829 END JOINER FOR CONTINUOUS BELTS FOR CONVEYORS

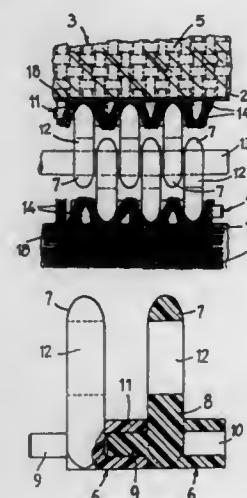
Ana Marie Valles Pousa, Barcelona, Spain, assignor to Valfor, S.A., Barcelona, Spain

Filed Jun. 12, 1996, Ser. No. 660,978

Int. Cl.⁶ F16C 11/04

U.S. Cl. 403—119

9 Claims



1. An end joiner for continuous belts for conveyors, of the type that comprises a hinge in a plastic material joined into web threads of a supporting fabric fused into the continuous belt by vulcanizing, comprising two equal hinge halves, one at each transverse end edge of the belt, designed to link together in joiner forming the hinge, characterized in that each of said hinge halves consists of a substantially equal number of members that can be coupled together longitudinally in a line, each coupling member consisting of at least one ring with an opening and one male coupler and one female coupler, the two couplers lying opposite and coaxial to each other with a male coupler being designed to link up with a female coupler of another coupling member to form a half hinge, these linearly linked couplers forming a rod, all designed to form the hinge in such a way that the rings of the two hinge halves interleave, with the openings of their rings substantially aligned and threaded onto a pin that passes through each of them.

5,775,830 WATERTIGHT CONNECTOR CASING

Bertrand Courtaigne, Paris, France, assignor to Blue Moon WW, France

Filed Jan. 19, 1996, Ser. No. 588,645

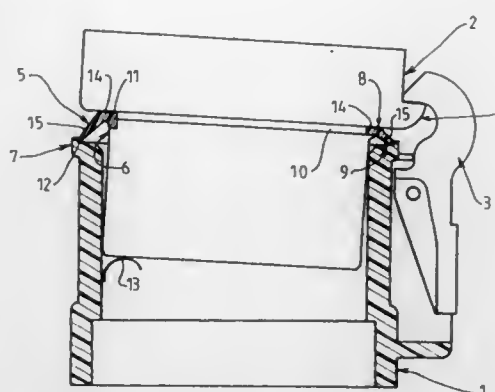
Claims priority, application France, Jan. 20, 1995, 95 00665

Int. Cl.⁶ H01R 13/52

U.S. Cl. 403—288

6 Claims

1. Watertight connector casing comprising a first and a second casing element designed to mate with a radial looseness between them, and having a respective peripheral location provided respectively with clamping means cooperating with each other for retaining said two casing elements in a mating position at said peripheral locations, the mating action of said two casing elements involving an insertion movement and then a limited substantially pivoting withdrawal movement due to a combined action of said cooperating clamping means and of said radial looseness, said two casing



elements having two respective facing plane sealing surfaces, at least said first casing element being provided with an elastic seal having at least one lip which is deformed between said two sealing surfaces at the end of said insertion movement while remaining applied against said two sealing surfaces after said pivoting withdrawal movement.

5,775,831 CONNECTED COMPONENT ASSEMBLY HAVING CONICAL CLAMPING SLEEVES

Ralph Mullenberg, Im Wiesengrund 6, D-41516 Grevenbroich, Germany

PCT No. PCT/DE95/00190, § 371 Date Aug. 21, 1996, § 102(e)

Date Aug. 21, 1996, PCT Pub. No. WO95/23926, PCT Pub.

Date Sep. 8, 1995

PCT Filed Feb. 15, 1995, Ser. No. 696,931

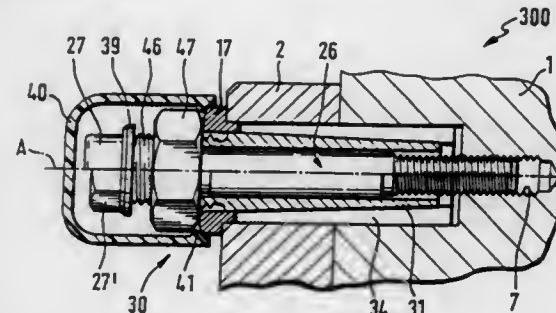
Claims priority, application Germany, Mar. 2, 1994, 9403481

U

Int. Cl.⁶ F16B 2/14

U.S. Cl. 403—337

15 Claims



1. A component assembly for clamping a first component and an axially adjacent second component by a conical clamping system arranged in axially aligned bores of the first component and the second component, the assembly including an inner sleeve part that has a central bore and a conical outer circumferential surface extending concentrically thereto and having a first conical angle in a self-locking range, the assembly further including a bushing-like, outer sleeve part that has a cylindrical outer circumferential surface and a conical inner circumferential surface having a second conical angle generally the same as said first conical angle, the inner circumferential surface being matched to interact with the conical outer circumferential surface of the inner sleeve part, the assembly further comprising a clamping bolt that engages said central bore from an end of the conical clamping system, the bolt having a head for supporting itself against an adjacent end of one of said inner sleeve part or said outer sleeve part which allows said sleeve parts to be displaced toward one another sliding axially over the conical surfaces as the outer sleeve part expands radially, wherein at one end, the outer sleeve part supports a radial circumferential projection that rests axially against the outside of the second component, while the other end of the outer sleeve part is cylindrical throughout and has a diameter that corresponds to the diameter of the bore

configured as a blind bore in the first component, and a coaxial threaded bore of a smaller diameter is provided in the bottom of the blind bore.

5,775,832 COMPACT TIRE DEFLATOR

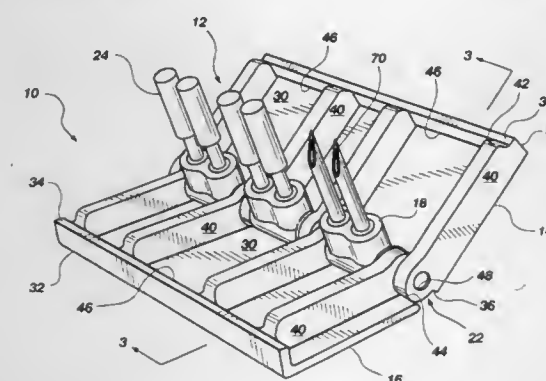
Donald C. Kilgore, 164 W. 100 South, P.O. Box 848, Monticello, Utah 84535, and Melvin H. Pederson, 161 E. 175 South, North Salt Lake, Utah 84054

Filed Oct. 8, 1996, Ser. No. 729,808

Int. Cl.⁶ E01F 13/12

U.S. Cl. 404—6

23 Claims



1. A deflator for tires, said deflator comprising:

a pivotal engagement;

a mounting assembly having at least one aperture extending a first depth and a first diameter, said mounting assembly providing means for pivotally engaging said pivotal engagement;

a spike disposed in said aperture of said mounting assembly, said spike having a second diameter less than said first diameter;

a housing member comprising a first panel and a second opposing panel disposed in relation to said pivotal engagement, said first and second panels being selectively pivotable into an open position, said open position providing a structural support for angularly disposing said housing member in relation to said mounting assembly; and

said housing member being selectively pivotable into a closed position, wherein at least one of said panels of said housing member comprises an internal surface area being dimensionally sufficient for disposing said mounting assembly and said spike.

5,775,833 COLLAPSIBLE, BREAKAWAY HIGHWAY DELINEATOR

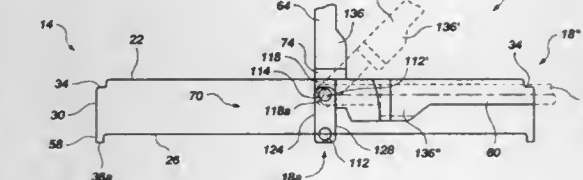
David Little, Wellsville, Utah, assignor to Rotational Molding of Utah, Brigham City, Utah

Filed Jun. 19, 1996, Ser. No. 666,019

Int. Cl.⁶ E01F 9/018

U.S. Cl. 404—9

36 Claims



28. A breakaway highway delineator for marking boundaries and hazards on roadways, the delineator comprising:

a panel member having lateral side walls at a lower end thereof, said lateral side walls including lateral release means capable of being attached to a base member, said panel members being moveable between a generally vertical orientation and a generally horizontal orientation; and

a base member attached to the lower end of the panel member for selectively supporting the panel member; and anchoring means for selectively holding the panel member in the generally vertical orientation and for maintaining attachment between the panel member and the base member when the panel member is disposed in the generally horizontal orientation, the anchoring means including said lateral release means for releasing the attachment between the panel member and the base member when the panel member is forcefully impacted while disposed in the vertical orientation.

5,775,834 PORTABLE HIGHWAY WARNING DEVICE WITH FRANGIBLE RETAINER RING

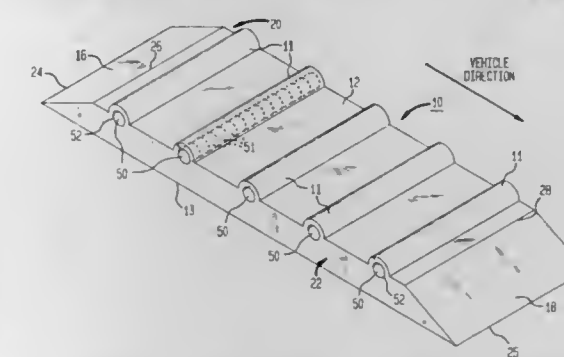
Brian G. Jackson, 11 Briarwood Dr., Somerset, N.J. 08873

Filed Aug. 14, 1995, Ser. No. 514,854

Int. Cl.⁶ E01F 9/047

U.S. Cl. 404—15

6 Claims



6. An improved portable highway warning device comprising (a) a mat fabricated of a flexible resilient composition and having an elongated rectangular periphery characterized in having a width direction parallel to the direction of travel and a length direction transverse to the direction of travel, and (b) a series of strips of uniform elongated rectangular periphery characterized in having a long length direction and shorter height direction, said strips being attached in a parallel array to said mat extending in their length direction in the length direction of said mat, and spaced apart in the width direction of said mat a uniform distance, said strips being hollow; and (c) a segmented rod located inside each said strip, said segmented rod comprising a plurality of adjacent end-to-end segments; whereby (d) when the device is placed with the lower surface of the mat resting upon a roadway surface and the length direction oriented transversely to the direction of vehicular travel, passage of the wheels of a vehicle across said array of strips causes momentary differential deflection of said segmented rod, resulting in frictional contact between adjacent ends of said segments which contact produces a discernible sound.

5,775,835 EMBEDMENT TILES FOR PEDESTRIAN PLATFORMS AND WALKWAYS

Kenneth E. J. Szekely, 5 Third Line, Oakville, Ontario, Canada, L6L 3Z3

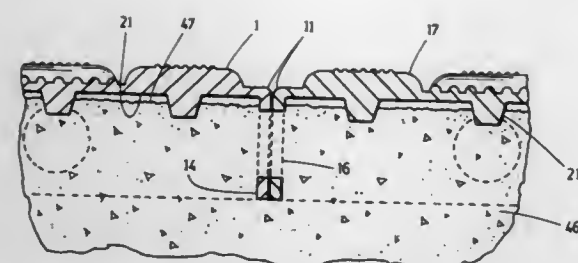
Filed Oct. 26, 1995, Ser. No. 548,914

Int. Cl.⁶ E04F 15/10

U.S. Cl. 404—34

7 Claims

1. A textured tile for embedment in fresh concrete on a platform or walking surface comprising a generally planar element with an

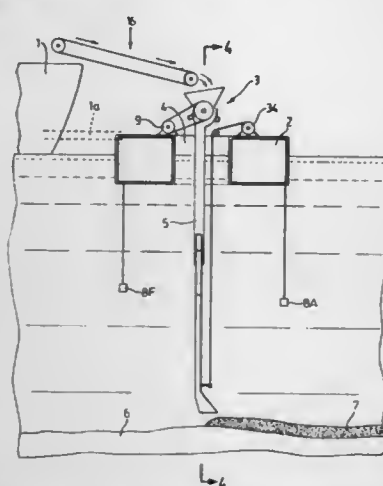


upper surface and a bottom surface, said upper surface having a plurality of upper projections therefrom to provide a distinctive texture relative to the surface of the tile or walkway detectable by the visually impaired, said tile having two opposite side edges intended for alignment with corresponding side edges of other tiles, front and rear edges, at least one of which faces oncoming pedestrian traffic, vertical depending flanges along said opposite side edges and said front and rear edges, a plurality of holes in said depending flanges, each hole having a perimeter and a center, and wherein said depending flanges are adapted to be pressed into the fresh concrete so that any air trapped under said tile can escape through said holes in said flanges so that said flanges and said holes in the flanges anchor the tile to the concrete, and a plurality of truncated conical projections depending from the bottom surface of the generally planar element and extending below the perimeter of said holes but not extending below the center of said holes and wherein said truncated conical projections are of sufficient height to bridge any air space inadvertently formed between the surface of the fresh concrete after it has cured and the bottom surface of the generally planar element.

5,775,836
CAPPING DEVICE FOR UNIFORM CAPPING OF
SUBAQUATIC SEDIMENTS
Americo Dean, Jr., 645 Old Tecumseh Road East, R.R. No. 1,
Belle River, Ontario, Canada, N0R 1A0
Filed Mar. 5, 1996, Ser. No. 610,738
Int. Cl.⁶ F02D 15/10

U.S. Cl. 405—17

18 Claims



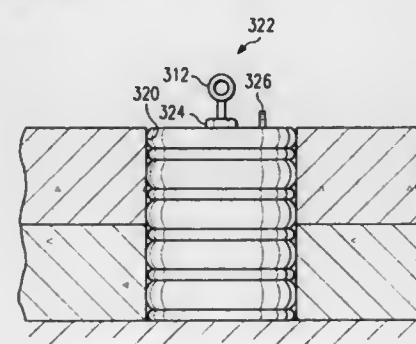
1. A capping vessel for the low-turbidity delivery of a desired depth of capping materials to the sediment surface of a body of water along a predetermined course, said vessel comprising:
at least one floatable platform;
a plurality of generally vertically submerged tremies comprising an array, said array of tremies depending from said at least one platform and extending to a predetermined height above the sediment surface, for the delivery of capping material to the sediment surface, wherein each tremie of said array of tremies is adapted to be extensible and is provided with means to effect the selective extension thereof;

a detector disposed to the fore of said platform for detecting the depth and profile of the sediment along the predetermined course of the platform, wherein said means for effecting the extension of each of said tremies is provided with controlling information from said fore detector;
at least one delivery hopper for the apportioning and feeding of capping material to said array of tremies;
at least one rotary feeder interposed between said array of tremies and said delivery hopper for delivering the capping material to said array of tremies at a controlled rate;
at least one rotation control means for controlling the rate of rotation of said at least one rotary feeder in predetermined relationship to the desired depth of capping material and the velocity of the vessel; and
navigation control means for controlling individually the position of the vessel and the velocity of the vessel along the predetermined course.

5,775,837
INFLATABLE PLUGS FOR INSTALLING EROSION
CONTROL BLOCKS
Thomas W. Schneider, 3400 Stowers, Monroe, La. 71201
Filed Jul. 3, 1996, Ser. No. 675,706
Int. Cl.⁶ E02B 3/12

U.S. Cl. 405—17

18 Claims

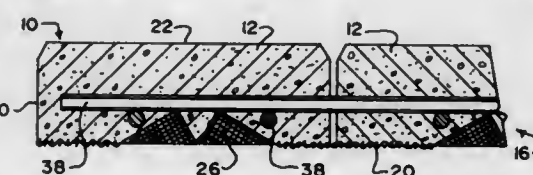


1. A method of moving a matrix of erosion control blocks, comprising the steps of:
inserting inflatable plugs in corresponding bores of ones of the erosion control blocks;
inflating the inflatable plugs;
cabling a plurality of the inflatable plugs together;
lifting the matrix of erosion control blocks by the cabling and
lowering the matrix to a desired location; and
removing the cabling from the matrix and reusing the cabling for another matrix of erosion control blocks.

5,775,838
BLOCK BLANKET EROSION CONTROL SYSTEM
Gary K. Pettee, Sr., 16870 Straight Way, Genoa, Ill. 60135
Filed Feb. 7, 1996, Ser. No. 597,924
Int. Cl.⁶ E02B 3/12

U.S. Cl. 405—20

12 Claims



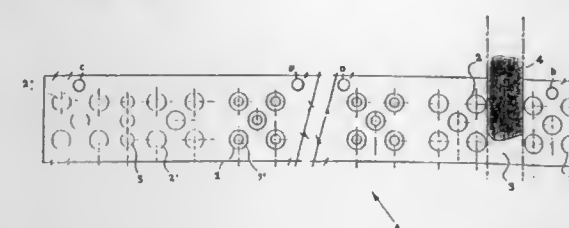
1. A blanket of concrete blocks having a preselected configuration and having blocks thereof adhered to and held together by at least a first reinforcing lattice extending across a bottom surface of the blanket and to edges of the blanket, the blocks being positioned

adjacent to one another with gaps therebetween, and adhering to the at least first reinforcing lattice by having wings of lattice underlying each block flexed into the concrete of each block during production thereof.

5,775,839
PROTECTIVE WATERPROOFING MEMBRANE,
PARTICULARLY FOR COATINGS OF WALLS AND
PAVINGS
Luciano Mazzer, Vittorio Veneto, Italy, assignor to Tema Technologies & Materials S.R.L., Vittorio Veneto, Italy
PCT No. PCT/IT94/00056, § 371 Date Mar. 14, 1996, § 102(e)
Date Mar. 14, 1996, PCT Pub. No. WO95/01480, PCT Pub. Date Jan. 12, 1995
PCT Filed May 6, 1994, Ser. No. 578,518
Claims priority, application Italy, Jul. 2, 1993, TV930032 U
Int. Cl.⁶ E02D 31/02

U.S. Cl. 405—50

16 Claims



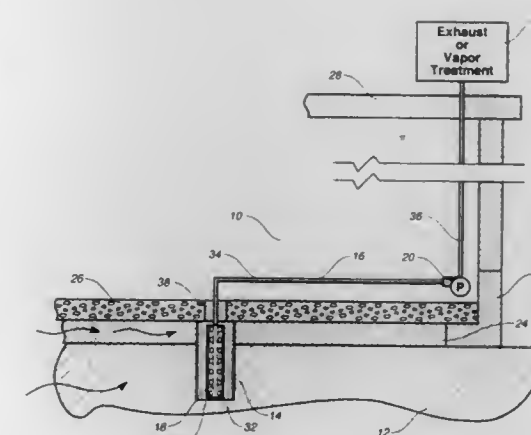
1. A protective membrane suitable for use for modular coating of walls and pavings generally of a type superimposable with an analogue for mechanical junction, obtaining the continuity of the coating, made in plastic material and comprising a central area of plurality of protrusions all on a same side of each membrane, wherein the membrane has a first border joining area and an opposite second border joining area provided with a series of male and female joining protrusions to join two of said membranes on their respective borders to form a continuous layer, one of the borders being provided with a sealing material to form a seal, said first and second border joining areas comprising:
at least two lines of said male and female joining protrusions, said lines of said male and female joining protrusions being divided, the first of said borders by the sealing material;
the second of said borders having at least one row of protrusions abutting in a joining action against said sealing material of the joined adjacent membrane to form a seal surrounding said protrusions.

5,775,840
APPARATUS AND METHOD FOR REMOVAL OF
VAPORS FROM SUBSOIL
Louis H. Knieper, and Gary Tipton, both of 1657 Oak Tree Dr., Houston, Tex. 77080
Filed Sep. 18, 1996, Ser. No. 715,526
Int. Cl.⁶ E02D 3/00; 31/00

U.S. Cl. 405—128

13 Claims

1. An apparatus for preventing migration of a vapor from a subsoil comprising:
a chamber formed within the subsoil;
a conduit having an inlet extending into said chamber, said conduit having an outlet at a discharge location, said inlet of said conduit being received within a cage positioned in said chamber, said cage having at least one inlet aperture for allowing the vapor to pass from said chamber into said inlet of said conduit, said cage surrounding said inlet of said conduit, said cage having a first aperture extending through a bottom of said cage, said cage having a plurality of second apertures extending through a side of said cage; and
a vacuum pump means connected to said conduit for drawing at least a partial vacuum so as to induce vapor migration from

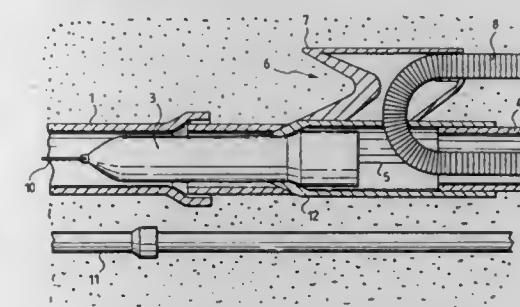


the subsoil into said chamber and into said inlet of said conduit and through said conduit.
7. An apparatus for preventing migration of a vapor from a subsoil comprising:
a chamber formed within the subsoil;
a conduit having an inlet extending into said chamber, said conduit having an outlet at a discharge location, said conduit having a sealed end within said chamber, said inlet comprising a plurality of holes extending radially through a wall of said conduit, said conduit further comprising a float valve means positioned within the inlet of said conduit, said float valve means for preventing a flow of liquids through said conduit; and
a vacuum pump means connected to said conduit for drawing at least a partial vacuum so as to induce vapor migration from the subsoil into said chamber and into said inlet of said conduit and through said conduit.

5,775,841
DEVICE FOR USE IN REPLACING SEWAGE PIPING
Pertti Pajunen, Harjavalta, Finland, assignor to Oy Aineko AB, Harjavalta, Finland
PCT No. PCT/FI95/00025, § 371 Date Jul. 11, 1996, § 102(e)
Date Jul. 11, 1996, PCT Pub. No. WO95/20126, PCT Pub. Date Jul. 27, 1995
PCT Filed Jan. 20, 1995, Ser. No. 669,454
Claims priority, application Finland, Jan. 21, 1994, 940317; Jun. 20, 1994, 942960
Int. Cl.⁶ F16L 1/00

U.S. Cl. 405—154

13 Claims



1. A device for replacing piping, comprising:
an impact member provided with a drawing tip,
a reamer engaged with the impact member for breaking a pipe to be replaced, the reamer including a rear portion for engaging a replacement pipe,
a supply hose for driving the impact member, and
a plowing tip attached to the reamer by means of an arm projecting from the reamer, the plowing tip including a front portion for cutting soil in a plough-like manner and a rear portion with a passage for insertion of a secondary pipe.

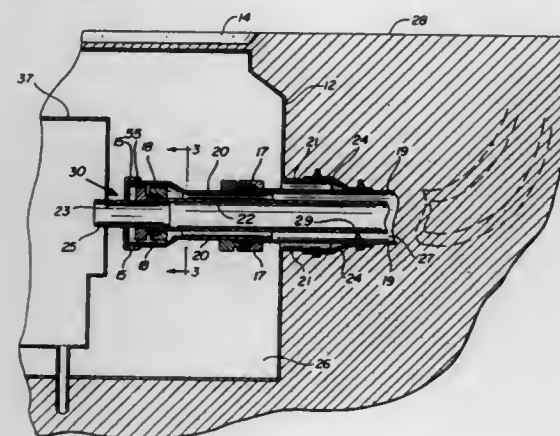
5,775,842
DOUBLE CONTAINMENT UNDER GROUND PIPING
SYSTEM

Keith J. Osborne, Glen Ellyn, Ill., assignor to Pisces by OPW, Inc., Cincinnati, Ohio

Continuation of Ser. No. 469,652, Jun. 6, 1995, Pat. No. 5,590,981, which is a continuation of Ser. No. 286,893, Dec. 20, 1988, Pat. No. 5,553,971. This application Jan. 3, 1997, Ser. No. 778,474

Int. Cl.⁶ F16L 1/00; E02D 3/00
U.S. Cl. 405—154

6 Claims



5,775,848

EARTH AND ROCK ANCHORING DEVICES

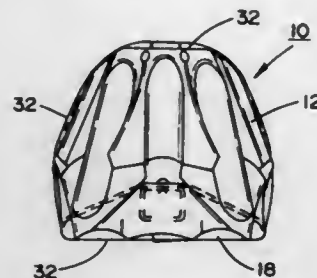
Willis J. Blankinship; Daniel V. Hamilton, both of Centralia, and Stephen W. Odneal, Columbia, all of Mo., assignors to Hubbell Incorporated, Orange, Conn.

Filed Sep. 30, 1996, Ser. No. 724,256

Int. Cl.⁶ E02D 5/74

U.S. Cl. 405—244

15 Claims



1. An anchoring device for securing structures, said anchoring device being anchorable in the earth or rock strata and comprising, in combination:

- (a) metallic anchor means insertable into and fastenable in the earth or rock strata, said anchor means being adapted to be connected to said structures;
- (b) and protective packaging means tightly encasing said metallic anchor means so as to form in permanent connection therewith an integrally bound encompassing arrangement prior to and during insertion of said metallic anchor means into the earth or rock strata whereby at least portions of said arrangement are located unitarily within said earth or rock strata.

5,775,849

COUPLER FOR DUCTS USED IN POST-TENSION ROCK ANCHORAGE SYSTEMS

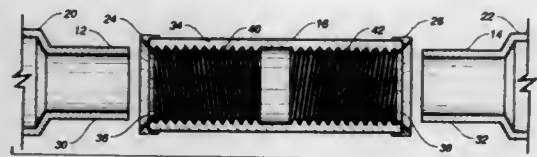
Felix L. Sorkin, P.O. Box 1503, Stafford, Tex. 77477

Filed Apr. 25, 1996, Ser. No. 638,885

Int. Cl.⁶ E21D 21/00

U.S. Cl. 405—259.1

20 Claims



1. A coupler apparatus for use in post-tension rock anchorage systems comprising:

- a first duct;
- a second duct;
- a tubular body having a maximum outer diameter not greater than a maximum outer diameter of said first and second ducts;
- a first threaded section formed on an inner wall of said tubular body adjacent one end of said tubular body; and
- a second threaded section formed on said inner wall of said tubular body adjacent an opposite end of said tubular body, said first and second threaded sections formed of a harder material than a material of said first and second ducts, said first threaded section receiving an end of said first duct therein, said second threaded section receiving an end of said second duct therein.

5,775,850

ROCK BOLT

Winton James Gale, Corrimall; Mieczyslaw Wieslaw Fabjanczyk, Austinmer, and Maxwell Thomas Renwick, Mangerton, all of Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne, Australia

PCT No. PCT/AU94/00455, § 371 Date Apr. 8, 1996, § 102(e) Date Apr. 8, 1996, PCT Pub. No. WO95/05525, PCT Pub. Date Feb. 23, 1995

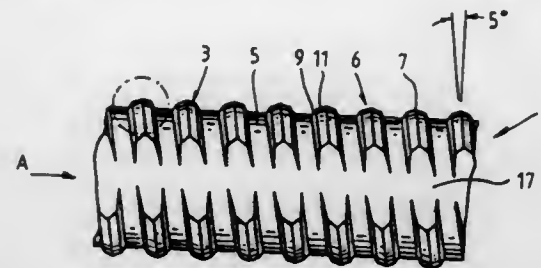
PCT Filed Aug. 9, 1994, Ser. No. 592,313

Claims priority, application Australia, Aug. 12, 1993, PM 0540

Int. Cl.⁶ E21D 20/02

U.S. Cl. 405—259.5

30 Claims



1. A rock bolt adapted to be anchored in a hole in a rock formation by means of a cement or a chemical resin anchor thereby to form a rock bolt system, the rock bolt comprising a core on which is formed a profile for optimizing the load transfer and the stiffness properties of the rock bolt system, the profile comprising opposed first and second sides, wherein at least one of said first and second sides comprises at least a first section and a second section, with first section being steeper than said second section.

5,775,851

METHOD FOR OPERATING A CONVEYOR PIPELINE WITH DENSE PHASE CONVEYING, AND APPARATUS FOR PERFORMING THE METHOD

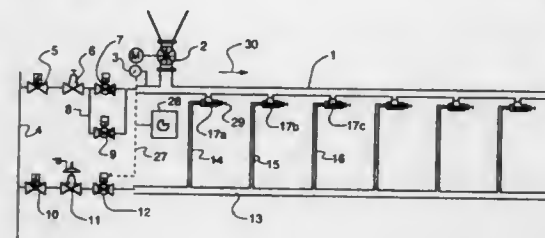
Franz Waeschle, Weingarten; Dieter Heep, Bergatreute; Guido Winkhardt, Friedrichshafen, and Gottfried Isopp, Langenargen, all of Germany, assignors to Motan Fuller Verfahr-
enstechnik GmbH, Weingarten, Germany

Filed Mar. 1, 1996, Ser. No. 609,820

Int. Cl.⁶ B65G 53/06

U.S. Cl. 406—14

9 Claims



1. A method for operating a conveyor pipeline with pneumatic dense phase conveying, in which bulk material is fed into the conveyor pipeline and conveyed in it by means of compressed air, and additional compressed air is blown into the conveyor pipeline by a pure-gas-carrying shunt line with feed lines branching off from it at regular intervals over the length of the conveyor pipeline, each feed line having an associated spill valve, wherein the closing forces of the spill valves are adjusted over the length of the conveyor pipeline in downstream order in accordance with a desired increasing course of closing force, and spill valves open if the pressure in the corresponding feed line is greater than the closing force of the corresponding spill valves, wherein during conveying of the bulk material in the conveyor pipeline, the pressure in the shunt line is varied repeatedly by varying the air

quantity introduced into the shunt line, in order accordingly to open a predetermined number of the spill valves for blowing out into the conveyor pipeline.

5,775,852

APPARATUS AND METHOD FOR ADDING DRY MATERIALS TO LIQUID DRILLING MUD SYSTEM

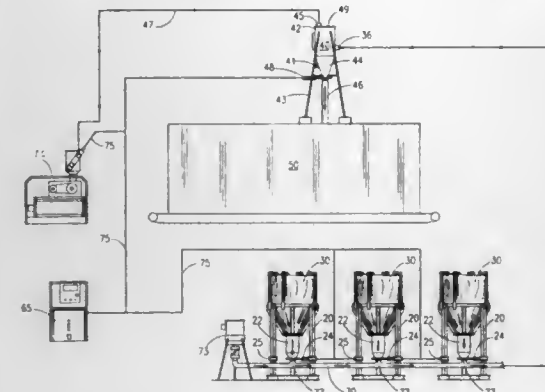
Kenneth J. Boutte, Erath, and Ban D. Green, New Iberia, both of La., assignors to Pro Line Systems, Inc., Lafayette, La.

Filed Mar. 15, 1996, Ser. No. 616,700

Int. Cl.⁶ B65G 53/24

U.S. Cl. 406—32

20 Claims



1. An apparatus for delivering dry bulk material to a drilling mud system of an oil and gas well comprising:

- (a) a plurality of collapsible bags for holding a quantity of the dry bulk material, each of said bags having a tubular bag outlet portion extending from said bags;
- (b) a plurality of bag storage racks supporting said bags, each of said racks having a discharge outlet connected to said outlet portion of a respective one of said bags;
- (c) a hopper for receiving and collecting said material from said bags, said hopper having a material inlet port, a material discharge outlet port, a hopper outlet valve controlling discharge from said outlet port, and a vacuum stub opening for attaching a vacuum hose;
- (d) a length of material discharge hose, said discharge hose having an air inlet end, a plurality of material inlet hose ports, and a hopper connection end, said hopper connection end of said material discharge hose being connected to said material inlet port of said hopper and selected said material inlet hose ports of said material discharge hose being connected to selected said tubular bag outlet portions of said bags; and
- (e) a vacuum pump having a desired length of vacuum hose, said vacuum hose being connected to said vacuum stub opening of said hopper for producing a vacuum in said hopper and said material discharge hose and thereby drawing said material from said bags into said hopper.

5,775,853

MACHINING METHOD AND MULTI-FUNCTION TOOL

Gary L. Keefer, West Chester; Stanley C. Weidmer, Cincinnati; Kazuyuki Hiramoto, Yamanashi, and Gregory Aaron Hyatt, West Chester, all of Ohio, assignors to Makino Inc., Mason, Ohio

Filed Sep. 3, 1996, Ser. No. 707,233

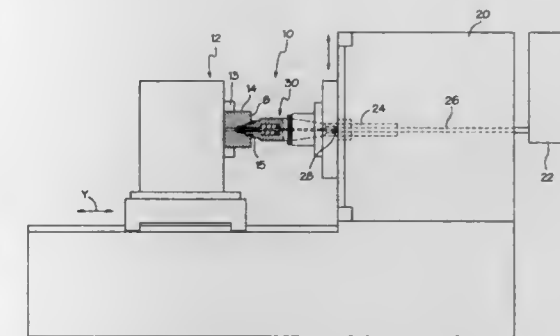
Int. Cl.⁶ B23B 35/00

U.S. Cl. 408—1 R

22 Claims

1. An improved device for use with a machine spindle and a fluid supply system in machining a workpiece, said device comprising:

- a tool body having a slot and a longitudinal axis;



a drive mechanism disposed in said tool body; a machining tool having a first machining surface for machining the workpiece, said tool being reciprocally receivable in said slot, and being selectively movable by said drive mechanism from a retracted position to an extended position; and a supporting mechanism having an interior surface with a portion of said interior surface angularly offset from the longitudinal axis to substantially restrict movement of the machining tool relative to the tool body while positioned in said retracted position to enable accurate machining operations with said machining tool in both its retracted and extended position, as desired.

5,775,854

METAL CUTTING TOOL

Rafael Wertheim, Qiryat Bialik, Israel, assignor to Iscar Ltd., Migdal Tefen, Israel

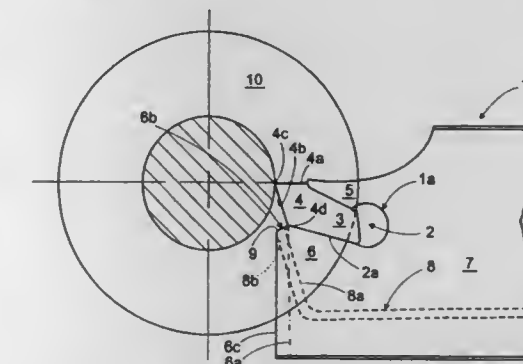
Continuation of Ser. No. 268,379, Jun. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 224,174, Apr. 7, 1994, Pat. No. 5,439,327, which is a continuation of Ser. No. 948,197, Sep. 18, 1992, abandoned. This application Jul. 24, 1996, Ser. No. 685,754

Claims priority, application Israel, Sep. 27, 1991, 99584; Jul. 30, 1993, 106537

Int. Cl.⁶ B23P 15/28

U.S. Cl. 407—11

16 Claims



1. A metal cutting tool comprising an exchangeable cutting insert having a body portion and a cutting head portion; said cutting head portion comprising an upper rake surface and a front relief flank surface, defining between them a cutting edge; and a cutting insert holder formed with a pair of clamping jaws releasably clamping said insert in said holder, a first of said clamping jaws being located adjacent said rake surface, a second of said clamping jaws being located adjacent a base edge of said front relief flank surface, a projecting portion of said second clamping jaw extending beyond said base edge and having an upper surface extending beyond surface of said second clamping jaw abutting a base of said body portion and a front end surface oriented transversely to said upper surface of the projecting portion; a coolant flow channel formed in said holder having an inlet adapted to be

coupled to a coolant flow supply; a downstream portion of said channel having an outlet formed in the upper surface of said projecting portion and being so formed that a coolant outflow from said outlet is directed substantially parallel to said front relief flank surface.

5,775,855

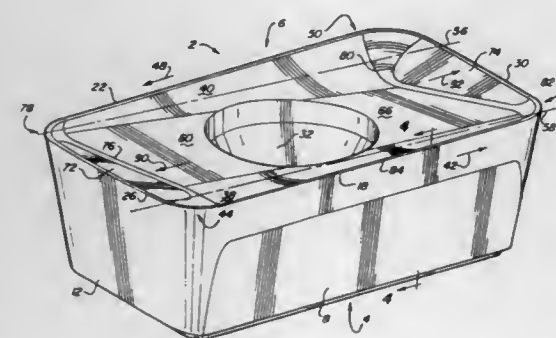
CUTTING INSERT AND CUTTER FOR MILLING

Lee Reiterman, Royal Oak; James D. Lark, II, West Bloomfield; Lawrence Plutschuck, Warren, and Paul R. Doxen, Clinton Twp., all of Mich., assignors to Valenite Inc., Madison Hts., Mich.

Filed Jun. 8, 1995, Ser. No. 480,609
Int. Cl.⁶ B23C 5/02

U.S. Cl. 407—42

20 Claims

**1. A milling insert comprising:**

- a polygonal body having an upper surface comprising a center and a periphery, a lower surface and a plurality of side surfaces extending between said upper surface and said lower surface, the side surfaces sloping outwardly from the lower surface to intersection with the upper surface;
- a first radial cutting edge formed at the intersection of a side surface with the upper surface, the first radial cutting edge extending between corners of said upper surface, wherein the upper surface comprises a first concave conical portion adjacent said first radial cutting edge, the first concave conical portion extending between corner portions of the insert and narrowing in a direction associated with increasing depth of cut along the first radial cutting edge, and being formed to achieve constant positive radial rake, as defined with respect to a cutter body, throughout the length of the first radial cutting edge at the angle of inclination of said radial cutting edge as the insert is to be mounted in a cutter body with the first radial cutting edge positioned as an active radial cutting edge.

5,775,856

PORTABLE ADJUSTABLE DRILL JIG

A. Bruce Woodard, 502 Howell Rd., Princeton, N.C. 27569
Filed Oct. 28, 1996, Ser. No. 738,801

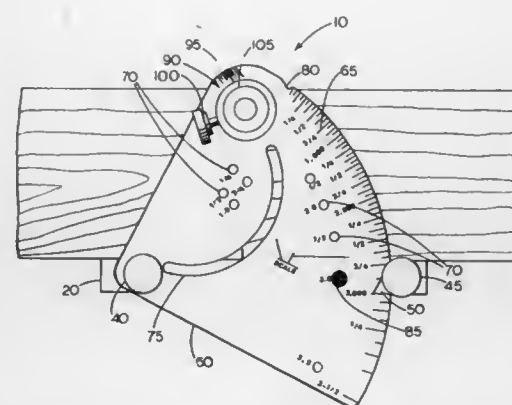
Int. Cl.⁶ B23B 49/00

U.S. Cl. 408—103

20 Claims

1. A drill jig comprising:

- (a) an edge guide adapted to engage an edge of a workpiece;
- (b) a top plate rotatably connected to the edge guide;
- (c) a drill guide mounted to the top plate;
- (d) indicating means for indicating the distance from the edge guide to center of the drill guide; and



(e) position indicating means for axially locating said drill guide lengthwise along said workpiece.

5,775,857

TOOL-HOLDER

Frank Johnne, Lohne, Germany, assignor to Johnne & Co. Präzisionswerkzeuge GmbH, Dorsten, Germany

PCT No. PCT/DE94/01541, § 371 Date Jun. 24, 1996, § 102(e)

Date Jun. 24, 1996, PCT Pub. No. WO95/17275, PCT Pub. Date Jun. 29, 1995

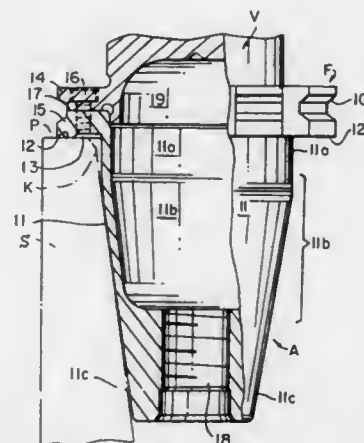
PCT Filed Dec. 23, 1994, Ser. No. 666,478

Claims priority, application Germany, Dec. 23, 1993, 43 44 042.8; Jan. 28, 1994, 44 02 483.5

Int. Cl.⁶ B23B 31/00; B23C 5/26

U.S. Cl. 409—234

27 Claims



- 1. A tool holder for holding a tool in a receiver of a machine part, comprising: a front part; an extension member that is insertable into the receiver, the extension member having an external shape essentially adapted to a shape of the receiver; and a flange located between the front part and the extension, the flange having a rear surface facing the extension member that is restable flat against an end surface of the machine part, the extension member being configured as a sleeve body that has a front portion adjacent to the flange, an elastically deformable portion adjacent the front portion, and a rear portion adjacent to the deformable portion, the deformable portion being oversized relative to the receiver, the rear portion of the sleeve body being configured to be engagable by a clamping device.

5,775,858

STORAGE ASSEMBLY FOR LOADING AND TRANSPORTING VEHICLES IN A CONTAINER

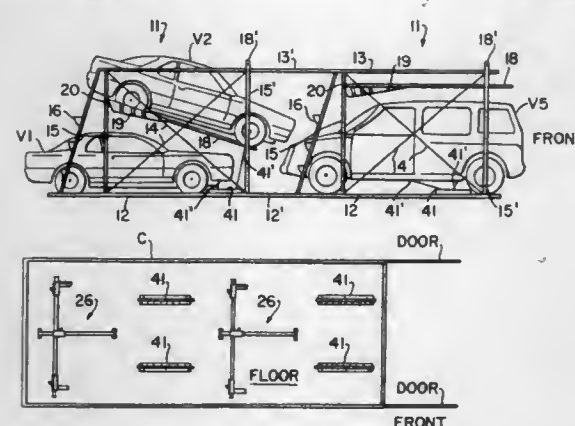
Dwight G. Bacon, Callahan, Fla., assignor to Vehicle Transport, Inc., Jacksonville, Fla.

Filed Dec. 1, 1995, Ser. No. 565,816

Int. Cl.⁶ B60P 3/08

U.S. Cl. 410—26

20 Claims



- 1. An adjustable storage apparatus for loading and transporting vehicles in a substantially rectangular container having a roof, a floor, two elongate side walls, an end wall and a door comprising a frame having a front end and a rear end, said frame including two pairs of spaced vertical post members, one said pair being at said front end of said frame and another said pair being at said rear end of said frame, each said post member having an upper end portion and a lower end portion, a front and rear horizontal cross member each having opposite end portions, first means for mounting said front cross member horizontally between said post members at said front end of said frame, second means for mounting said rear cross member horizontally between said post members at said rear end of said frame, ramp means having a freely movably front end portion and a rear end portion, pivotal securing means affixed between said rear end portion of said ramp means and said rear cross member for securing said rear end portion of said ramp means to said rear cross member and further including a chock assembly for inhibiting the movement of a vehicle stored on the floor of the container within the space defined by said vertical post members of said frame, said chock assembly including a first bar having a mounting plate member at each end portion thereof, each said mounting plate member having holes therethrough for affixing said first bar to a floor of a container, bracket means slideably mounted on said first bar, first means for securing said bracket means into one of a plurality of positions along said bar, a pair of chock bars mounted to said bracket means and extending outward perpendicularly to said first bar, each said chock bar having a wheel chock slideably mounted on said chock bar, second means for securing each said chock into one of a plurality of positions along a respective said chock bar.

5,775,859

MAT FASTENER

Joseph Anscher, Muttontown, N.Y., assignor to National Molding Corp., Farmingdale, N.Y.

Filed Jun. 6, 1997, Ser. No. 870,257

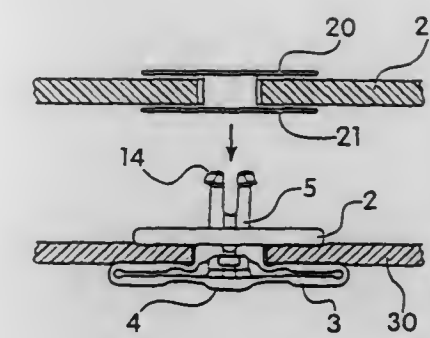
Int. Cl.⁶ F16B 13/04; 21/00

U.S. Cl. 411—38

20 Claims

- 1. A device for securing a floor mat to the floor carpet of an automobile wherein the floor carpet has a hole extending therethrough and is laid on a floor panel, comprising:

- a base plate for positioning on top of the floor carpet, said base plate having an aperture positioned above the hole in the floor carpet;
- two leg members, each leg member having a top end, an intermediate portion and a bottom end, said top end being



- attached to the base plate near said aperture and extending downward through the hole in the floor carpet, said leg members being foldable at the intermediate portions such that said intermediate portions can move apart from each other;
- a connecting section connecting the bottom ends of said two leg members;
- a post mounted on said connecting section, said post having at least one prong and extending upward toward said base plate such that when said leg members are folded by pressing the base plate toward the floor panel, the base plate is brought toward the connecting section and at least a portion of said post extends through the aperture in the base plate and the hole in the carpet;
- means for maintaining the leg members in a folded state so that said at least a portion of said post is kept extended through the aperture in the base plate;
- an eyelet assembly for mounting around a hole in a floor mat; and
- means for detachably engaging said post with said eyelet assembly.

5,775,860

PLASTIC RIVET HAVING INTEGRAL DRIVE PIN AND BODY

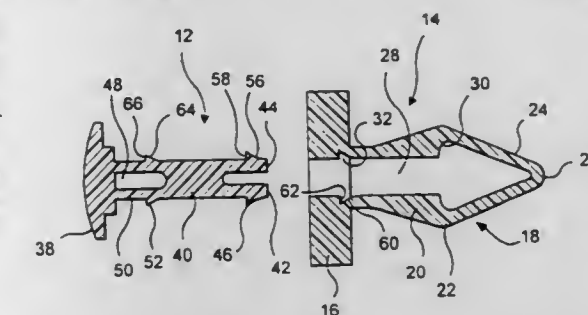
Charles Meyer, New Lenox, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed May 15, 1997, Ser. No. 856,931

Int. Cl.⁶ F16B 19/00; 13/06

U.S. Cl. 411—46

7 Claims



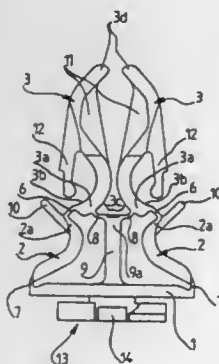
- 1. A plastic rivet for securing two members by passing through an aligned hole in said members, said rivet being formed of a resilient material and comprising:
- a drive pin having a head, a shank projecting from an under surface of said head and a first locking means located at a distal end of said shank; and
- a body having a head and an elongated portion, said elongated portion being insertable into said hole and having a plurality of longitudinal members projecting from an under surface of said head, said longitudinal members tapering radially outwardly from a longitudinal axis of said elongated portion, a distal end of each of said longitudinal members being interconnected by a nose, said nose tapering radially inwardly toward said longitudinal axis, a space between said longitudinal members defining a passage, said passage extending

through said head, each of said longitudinal members including a first mating surface located at a proximal end and a second mating surface located at said distal end; wherein said shank is partially insertable into said passage so that said first locking means engages with said first mating surfaces, imparting a retention force on said drive pin opposing said drive pin from being withdrawn from said passage; wherein when said drive pin is fully inserted into said passage, said first locking means engages with said second mating surfaces, imparting a retention force on said drive pin opposing said drive pin from being withdrawn from said passage, said shank opposing said longitudinal members from being biased inwardly toward said longitudinal axis, thereby opposing said body from being withdrawn from said hole and, wherein a plurality of resilient legs project longitudinally from said distal end of said shank, said first locking means comprises a protrusion projecting radially outwardly from each of said legs, said body having a plurality of transverse slots defining said first mating surfaces, each of said distal ends of said longitudinal members having a shoulder defining said second mating surfaces, said legs being inwardly deflected while said drive pin is being driven into said body, said legs then relaxing when said drive pin is fully driven into said body.

5,775,861
AUTOMATIC FASTENING OR CLOSING DEVICE
OPERATING BY PASSING THROUGH A DEAD POINT
Jean-Pierre Leon, Houilles, and Philippe Vigoroux, Conflans Sainte Honorine, both of France, assignors to Rapid S.A., Paris, France

Filed Dec. 18, 1996, Ser. No. 768,595
Claims priority, application France, Dec. 19, 1995, 95 15080
Int. Cl.⁶ F16B 21/00; E04F 19/02
U.S. Cl. 411—344

12 Claims



1. In an automatic fastening or closing device formed from a single piece of material having a base portion and at least two opposite fastening lugs which under the effect of pressure assume a position near or remote from each other upon moving past a dead point between the two positions, the improvement comprising: first and second arcuate tongues, each pivotally connected to the base portion; first means for connecting a lower end of a first lug to an upper end of the first tongue; second means for connecting a lower end of a second lug to an upper end of the second tongue; a post member attached to the base portion extending towards the lugs and positioned between the lugs; third means for connecting the lower end of the first lug to an upper end of the post member; and fourth means for connecting the lower end of the second lug to the upper end of the post member whereby movement of the lugs toward each other to a closed unlocked position enables insertion of the lugs into an aperture, whereupon, after passing therethrough, the lugs move away from each other to an open locking position.

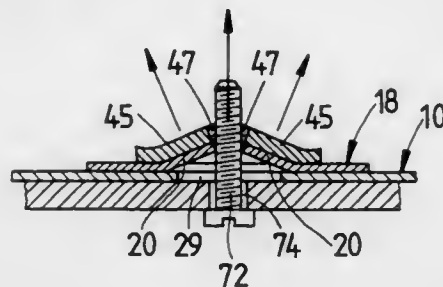
5,775,862
THREADED DEVICE FOR RECEIVING AN
EXTERNALLY THREADED SCREW

John Prosper Cullen, 79 Brunskill Avenue, Wagga Wagga, New South Wales, 2650, Australia

PCT No. PCT/AU95/00214, § 371 Date Dec. 16, 1996, § 102(e)
Date Dec. 16, 1996, PCT Pub. No. WO95/28572, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 13, 1995, Ser. No. 722,208
Claims priority, application Australia, Apr. 13, 1994, PM5006/94; Dec. 14, 1994, PM0056/94
Int. Cl.⁶ F16B 37/08; 37/16
U.S. Cl. 411—433

9 Claims



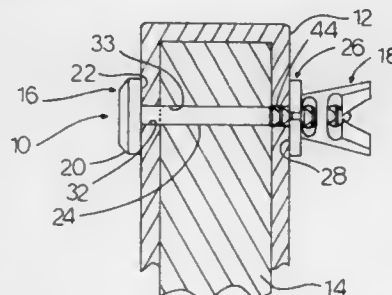
1. A threaded device for receiving an externally threaded screw, the device having a base portion and an engaging portion secured thereto, said base portion having an opening through which a screw may extend to be engaged by the engaging portion, said engaging portion being in the form of a leaf spring which extends from a substantially fixed location to a free end and which is resiliently biased to a position at which, at the free end, it threadedly engages the screw when received in the device by pressing the screw through said opening, the engaging portion being movable against said bias under engagement by, and axial movement of, the screw with respect to the device, to enable the screw to pass the engaging portion without rotating the screw, the engaging portion having an abutment surface positioned thereon at a location spaced from said substantially fixed location in the direction away from said fixed end, and which is arranged to be brought into engagement with the base portion of the threaded device to limit the movement of the engaging portion against said base under engagement by, and axial movement of, the screw.

5,775,863
HAND-OPERABLE SELF-LOCKING FASTENER
Jennifer Elisabeth Anderson, 4220 Lori Dr., Rockford, Ill. 61114

Filed Apr. 30, 1997, Ser. No. 846,320
Int. Cl.⁶ F16B 21/00; 21/18

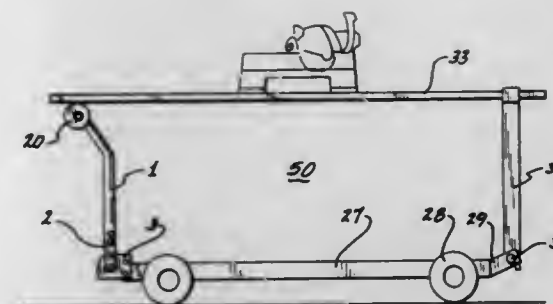
U.S. Cl. 411—512

10 Claims



1. A fastener comprising: an elongated shank having a plurality of longitudinally spaced ribs formed with generally forwardly facing shoulders; a clip having at least two collar sections connected for movement between first and second positions relative to one another and relative to said shank;

said collar sections having generally rearwardly facing surfaces sized for rearwardly locking engagement with at least one of said shoulders when in said first position, said collar sections being resiliently biased to said first position and adapted to snap past successive shoulders when said clip is pushed forwardly into engagement with said shank; and lever means connected to respective ones of said collar sections to effect selective movement of said collar section to said second position.



5,775,864
CLAMPING DEVICE FOR POSITIONING DOCUMENTS
IN A THERMAL BINDING APPARATUS

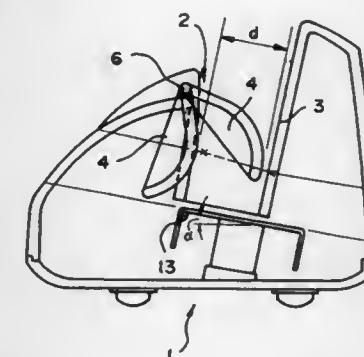
Dirk Maes, Lokeren, Belgium, assignor to Esselte N.V., Sint Niklaas, Belgium

Filed Jan. 17, 1997, Ser. No. 784,525
Claims priority, application European Pat. Off., Jan. 23, 1996, 96100879

Int. Cl.⁶ B42F 3/00

U.S. Cl. 412—9

15 Claims



1. A clamping device for positioning a sheaf of documents in a thermal binding apparatus, the thermal binding apparatus having a working phase and a stand-by phase associated therewith and including a housing with a base plate, two spaced apart sidewalls and at least one of a rear wall and a front wall which together define an opening which extends into the thermal binding apparatus, said clamping device comprising: a clamping element having a curved surface defining a clamping area which contacts the sheaf of documents during the working phase of the thermal binding apparatus, said clamping element being mounted to said housing to at least partially cover the base plate during the stand-by phase of the thermal binding apparatus; and means for urging said clamping element, and consequently the sheaf of documents, against one of said front and rear walls during the working phase of the thermal binding apparatus.

5,775,865
MANUALLY OPERATED, MECHANICALLY
ADJUSTABLE, QUICK LIFTER SUPPORT ARM FOR
LOADING EQUIPMENT ONTO PICKUP TRUCKS
Mario J. Capiluppi, Jr., 8103 Crestview Dr., Niagara Falls, N.Y. 14304

Filed Dec. 9, 1996, Ser. No. 762,444
Int. Cl.⁶ B65G 65/00

U.S. Cl. 414—498

7 Claims

1. A support arm lifting device for loading equipment onto beds of conveyances for the equipment, said device comprising a U-shaped tubular metal frame with sides and a transverse portion, the sides of the U-shaped frame being referred to as its elongated arms with ends and the transverse portion of the U-shaped frame being referred to as its lifting handle, wherein the lifting handle is referred to as one end of the device and has wheels operatively connected thereto,

5,775,866
CARGO LOADING CRANE
Hans Tax, Dieter Bauer, both of München, and Klaus Hösler, Elchenau, all of Germany, assignors to Tax Ingenieurgesellschaft mbH, Munich, Germany

PCT No. PCT/EP95/01907, § 371 Date Nov. 6, 1996, § 102(e)
Date Nov. 6, 1996, PCT Pub. No. WO95/32146, PCT Pub. Date Nov. 30, 1995

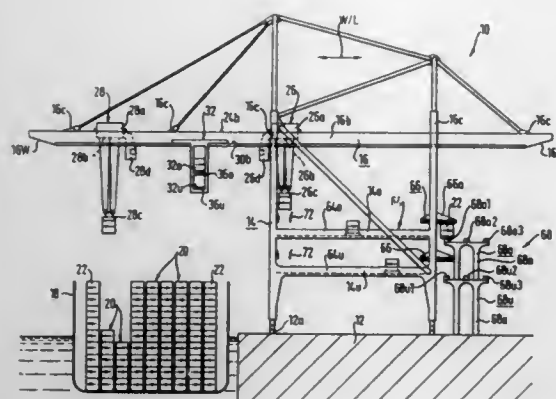
PCT Filed May 18, 1995, Ser. No. 737,711
Claims priority, application Germany, May 20, 1994, 44 17 841.7

Int. Cl.⁶ B66C 5/02

U.S. Cl. 414—140.3

36 Claims

36. A method for the transport of cargo along a transfer direction between a first cargo set-down region and a second cargo set-down region spaced apart horizontally from the first cargo set-down region, comprising the steps of:



transporting cargo between the first cargo set-down region and a first position with the use of at least one first cargo pick-up and transport unit associated with the first cargo set-down region, transporting cargo from the first position to a second position with the use of at least one intermediate carrier unit, transporting cargo between the second position and a third position with the use of at least one second cargo pick-up and transport unit, transporting cargo between the third position and the second cargo set-down region with the use of a supplementary conveyor unit which conveys the cargo in the transfer direction, and at each of the first, second and third positions, transferring cargo between the unit by which cargo is transported to the respective position and the unit by which cargo is transported from the respective position.

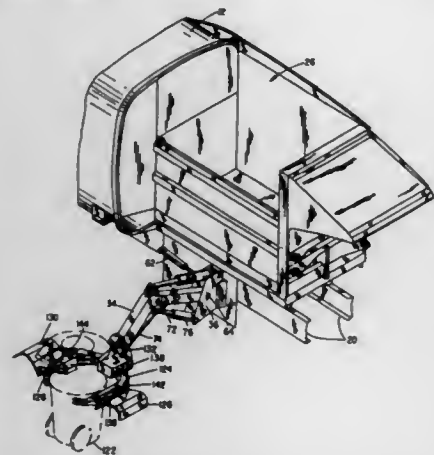
5,775,867

CLAMSHELL BASKET LOADER

Ronald E. Christenson, Parsons, Tenn., assignor to McNeilus Truck and Manufacturing, Inc., Dodge Center, Minn.
Filed Dec. 28, 1995, Ser. No. 579,748
Int. Cl.⁶ B65F 3/02

U.S. Cl. 414—408

16 Claims



1. A dual function apparatus for acquiring and transferring material to a receiving hopper of a collection vehicle, the apparatus comprising:

- (a) an articulated mechanized arm connected to a collection vehicle, operable between stowed, extended, lift and dumping positions, and having a free end;
- (b) a container grabbing mechanism comprising a pair of opposed arms connected to said free end of said mechanized arm and aligned in spaced relation operable for accessing, grasping and releasing a container, and fluid operated cylinder means connected to said pair of arms for opening and closing said opposed arms; and

- (c) a pair of opposed mechanized scoops that are carried by and pivotally connected to said opposed arms and disposed to converge and diverge beneath said opposed arms when said opposed arms are in a grasping posture to scoop and release objects of interest, and fluid operated cylinder means connected between said opposed arms and said opposed mechanized scoops for opening and closing said opposed scoops.

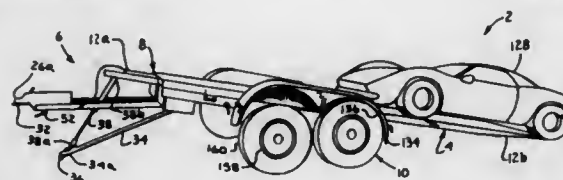
5,775,868

MOVABLE-DECK TRAILER

Fred W. Mann, Box 444, Waterville, Kans. 66548
Filed Aug. 14, 1995, Ser. No. 514,691
Int. Cl.⁶ B60P 1/04

U.S. Cl. 414—475

32 Claims



1. A movable-deck trailer with a normal, forward direction of travel and adapted for releasable attachment to a tow vehicle, which comprises:

- (a) a longitudinal axis extending generally longitudinally parallel with the direction of travel;
- (b) a frame including a pair of longitudinal members extending in spaced, generally parallel relation with respect to said longitudinal axis;
- (c) a deck mounted on said frame;
- (d) a tongue assembly connected to said frame and including means for selective attachment to said tow vehicle;
- (e) a wheeled carriage including a carriage subframe having a pair of walking beams each mounted on a respective side of said carriage and connected to a respective frame longitudinal member by pivotal connection means for providing pivoting of said walking beam with respect to a transverse pivotal axis, each said walking beam having front and back ends;
- (f) front and back axles mounted on said walking beam front and back ends respectively and extending transversely across said trailer; and
- (g) each said axle mounting a pair of wheels and each said axle comprising a torque tube having a pair of trailing arms and stub axles projecting laterally outwardly therefrom and rotatably mounting said wheels.

5,775,869

TRANSPORTABLE SPILL CONTAINMENT PAN

Merrill E. Bishop, Crystal Lake, Ill., assignor to Trans Environmental Systems, Inc., Bay Village, Ohio
Filed Oct. 15, 1996, Ser. No. 732,796
Int. Cl.⁶ B65D 88/00

U.S. Cl. 414—608

17 Claims

1. A transportable spill containment pan adapted to be disposed beneath a railroad tank car between railroad rails on which the tank car is resting and to be moved by a forklift truck having forks, comprising:

- a bottom wall from which upstanding peripheral sidewalls and endwalls extend, the bottom wall, the sidewalls, and the endwalls defining a reservoir having a top opening;
- first and second flaps connected to the sidewalls, the first and second flaps being movable from a first, inwardly folded position where they overlie the reservoir and provide a cover for the top opening, and a second, outwardly extended position where they overlie the rails to catch inadvertent spills and direct the spills into the reservoir;
- support arms extending outwardly of the pan to support the flaps in the outwardly extended position, the support arms being

5,775,871

ROLLERLESS PLATE-FEEDING APPARATUS

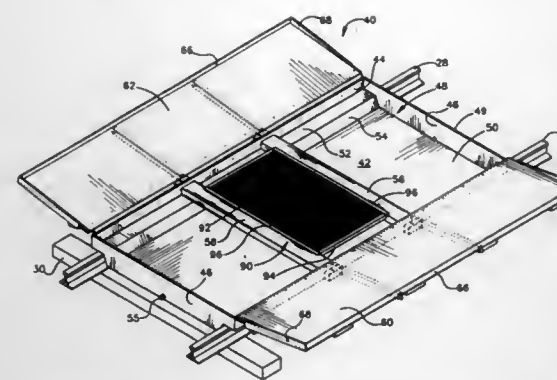
Galen H. Redden, Gypsum, Kans., assignor to Exide Corporation, Reading, Pa.

Filed Sep. 18, 1996, Ser. No. 715,405

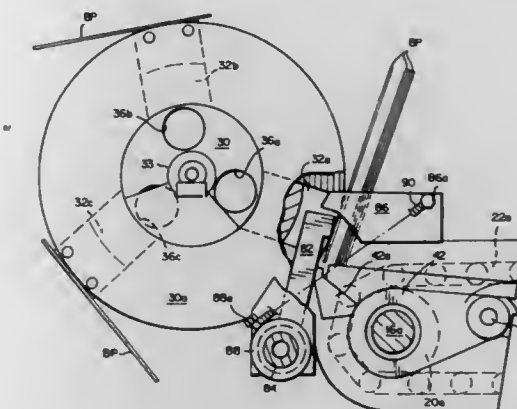
Int. Cl.⁶ B65G 59/00

U.S. Cl. 414—798.9

50 Claims



connected to the tubes at that location where the tubes extend through the sidewalls; and parallel, spaced tubes extending across the reservoir and opening through the opposed sidewalls, the tubes being of a size and shape to receive the forks of the forklift truck.



5,775,870

VEHICLE SIDE TILTING APPARATUS

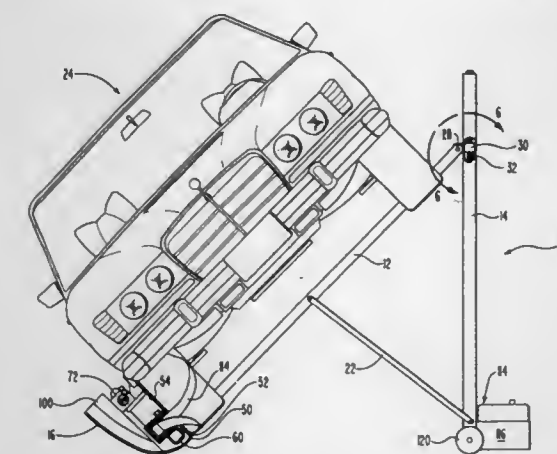
Sherman David Hogan, 1882 S. West Temple, No. 150B, Salt Lake City, Utah 84115

Filed Aug. 3, 1995, Ser. No. 510,601

Int. Cl.⁶ B63C 3/00

U.S. Cl. 414—678

20 Claims



- 1. A vehicle side tilting apparatus comprising a base shaft having length to extend beneath a portion of a vehicle;
- a mast having travel means mounted to move axially along said mast;
- means to pivotally connect one end of said base shaft to said travel means;
- a pair of wheel rockers, each having an arcuate ground engaging surface;
- a rocker support bar having a length greater than the distance between wheels at one side of a vehicle and having said wheel rockers slidably and non-rotatably mounted thereon;
- means non-rotatably connecting the other end of said base shaft to said rocker support bar; and
- means to individually releasably clamp each of said wheel rockers to one of said wheels at said one side of said vehicle.

1. Apparatus for sequentially removing plates from a stack of plates comprising:

- a rotary carrier assembly having at least one vacuum pick-up head for removing a forwardmost one of the plates from the stack;
- a conveyor for supporting the stack of plates and advancing the stack of plates toward the rotary carrier;
- a plate feed assembly having a detent finger which is pivotally movable between a detent position in which said detent finger arrests advancement of the stack of plates toward the carrier assembly and thereby establishes a transfer gap between the forwardmost one of the plates in the stack and the carrier assembly, and a release position in which said detent member is spaced from the forwardmost one of the plates in the stack to thereby release the forwardmost one of the plates in the stack in response to substantial alignment of said at least one vacuum pick-up head; and
- a vacuum assist transfer arm assembly to assist in the transfer of said forwardmost one of the plates stripped from the stack across said established space, said vacuum assist transfer arm assembly including:
 - (i) a rotatable tubular support shaft connectable to a vacuum source;
 - (ii) a hollow transfer arm radially extending from said support shaft so as to be in contact with said detent finger, said transfer arm having a terminal end and apertures formed in said terminal end which are adapted to fluid-communicate with a vacuum source through said transfer arm;
 - (iii) said transfer arm being pivotal with said support shaft between a first position in which the terminal end of said transfer arm contacts the forwardmost one of the plates in the stack, and a second position in which the terminal end of said transfer arm is positioned adjacent said at least one vacuum head, and wherein
 - (iv) pivotal movement of said detent finger between said detent and release positions thereof responsively pivotally drives said transfer arm between said first and second positions thereof, respectively, whereby said forwardmost one of the plates is stripped from the stack and is transferred across said established space so as to be captured by the vacuum pick-up head and be rotated thereby.

5,775,872

PROCESS AND DEVICE TO FORM A STACK OF GROUPED PIECES OF MATERIAL

Maximilian R. Seidl, and Manfred Adler, both of Eching, Germany, assignors to Avery Dennison Corporation, Pasadena, Calif.

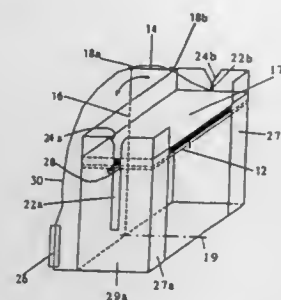
Filed Aug. 4, 1995, Ser. No. 511,264

Claims priority, application Germany, Aug. 5, 1994, 44 27 801.2

Int. Cl.⁶ B65G 57/02

U.S. Cl. 414—789.5

16 Claims



15. A process for forming a vertically oriented stack of grouped pieces of substantially planar sheet materials, which comprises:

- providing a horizontally oriented base;
- attaching to the base a first free end of a continuous separating strip provided to separate the grouped pieces of sheet materials forming the stack;
- layering a plurality of pieces of substantially planar sheet materials to form a first group of vertically oriented materials on the base with a lowermost piece of the first group contacting the base and the uppermost piece of the first group facing upwards and vertically spaced from the lowermost piece;
- placing a section of the separating strip on the uppermost piece of the first group;
- placing a next group of a plurality of substantially planar sheet materials forming the stack on the first group of materials with the lowermost piece of the pieces of material forming said next group on top of the uppermost piece of material of the first group and the section of the separating strip located thereon; and
- completing the stack by alternately adding to such next group of a plurality of vertically oriented planar pieces of materials a section of separating strip then groups of vertically oriented pieces of substantially planar sheet materials.

5,775,873

SPILLSTRIP DESIGN FOR ELASTIC FLUID TURBINES AND A METHOD OF STRATEGICALLY INSTALLING THE SAME THEREIN

William Stewart Dalton, Chesterfield; Richard Scott Clark, Feeding Hills, and Kevin Scott Trunkett, Springfield, all of Mass., assignors to Demag Delaval Turbomachinery Corporation, Trenton, N.J.

Continuation of Ser. No. 216,685, Mar. 23, 1994, Pat. No. 5,547,340. This application Aug. 13, 1996, Ser. No. 699,772

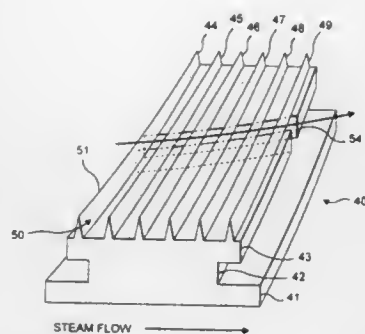
Int. Cl.⁶ F01D 11/08

U.S. Cl. 415—121.2

12 Claims

1. A spillstrip for use in forming a tip seal in an axial flow fluid turbine including at least one stage having at least one diaphragm stationarily mounted in a turbine casing and having a plurality of steam directing nozzles, and a rotor fixedly attached to a turbine shaft rotatably mounted within said turbine casing, said rotor having a plurality of blades bounded by a shroud and disposed adjacent said plurality of steam directing nozzles, said spillstrip comprising:

- a body portion having a longitudinal extent, a vertical extent, and a horizontal extent, and being particularly adapted for mounting in said diaphragm;



at least one projection extending from said body portion substantially parallel to said vertical extent and along the longitudinal extent of said body portion, said at least one projection having tapered side walls converging to a tip portion continuously extending along the longitudinal extent of said body portion and forming a tip seal with the shroud of said rotor; and

a narrow channel formed through a portion of the vertical extent of said body portion and beneath said at least one projection, without interrupting said tip portion continuously extending along the longitudinal extent of said body portion, and said narrow channel being disposed at an oblique angle with respect to said longitudinal extent.

5,775,874

DEVICE FOR JOINING CIRCULAR DISTRIBUTOR SEGMENTS TO A TURBINE ENGINE CASING

Sylvain Boite, and Jean-Baptiste Arilla, both of Savigny le Temple, France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma", Paris, France

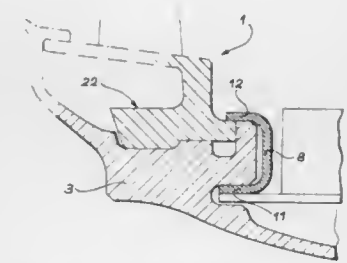
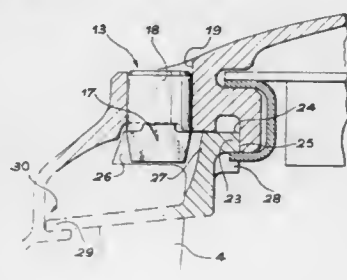
Filed Dec. 9, 1996, Ser. No. 760,872

Claims priority, application France, Jan. 11, 1996, 96 00241

Int. Cl.⁶ F04D 29/44

U.S. Cl. 415—209.3

2 Claims



1. Device for joining circular distributor segments to a turbine engine casing, comprising:

- pins for stopping the rotation of the segments, fixed to the casing and penetrating notches of the segments,
- ring sectors engaged on the casing and retaining a flange of the segments against the casing, and
- a continuous wall along the segments and touching engaging the casing and separating the flange from the notches.

5,775,875

Patent Not Issued For This Number

5,775,876

CEILING-FAN-BLADE-MOUNTED AIR FRESHENER APPARATUS

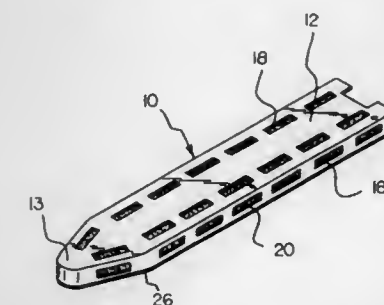
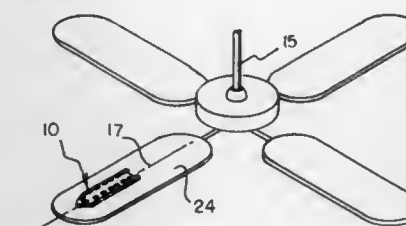
Qwan James Walker, 2028 Titan St., Harvey, La. 70058, and Christopher Williams, 3522 Vespasian #137, New Orleans, La. 70114

Filed Nov. 13, 1995, Ser. No. 556,591

Int. Cl.⁶ F04D 29/00

U.S. Cl. 416—62

7 Claims



1. A ceiling-fan-blade-mounted air freshener apparatus, comprising:

- a housing assembly which includes a lower housing portion and an upper housing portion projecting upward from said lower housing portion, wherein said upper housing portion includes a plurality of vent apertures,
 - an air freshener/matrix assembly housed within said housing assembly, and
 - a housing-to-blade connector for connecting said housing assembly to a ceiling fan blade, and
- wherein:
- said housing assembly includes a pointed end,
 - said air freshener/matrix assembly includes a pointed end, and
 - said pointed end of said air freshener/matrix assembly is wedged into said pointed end of said housing assembly under an influence of centrifugal force.

5,775,877

SUBMERSIBLE MOTOR-DRIVEN PUMP WITH FLOAT SWITCH

Otto Genz, Overath, Germany, assignor to ABS Pumps, Ltd., Wexford, Ireland

Filed Feb. 26, 1996, Ser. No. 607,004

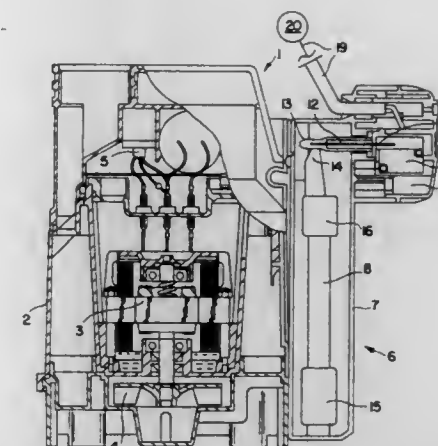
Claims priority, application Germany, Feb. 28, 1995, 195 07 010.0

Int. Cl.⁶ F04B 49/04; 49/00

U.S. Cl. 417—41

3 Claims

1. An electric submersible motor-driven pump comprising a pump housing (2), a pump motor (3) and an associated impeller (4) disposed within said pump housing (2), a separate detachable float and switch housing (6), means for detachably securing said float and switch housing (6) relative to said pump housing (2), means for placing said housings in fluid communication with each other,



said float and switch housing (6) defining a substantially elongated upright chamber having a substantially longitudinal axis, an elongated float (8) mounted for movement in said elongated upright chamber along said substantially longitudinal axis, a switch (10) in said float and switch housing (6) operative by movement of said float (8), means for isolating electrical components of said switch from fluid in said float and switch housing (6), a switchable adapter plug (20) exterior of said housings rendered operative by said electrical components upon movement of said float (8) to selectively energize or de-energize said pump motor (3), said elongated float (8) being a one-piece hollow body defined by upper (16) and lower (15) relatively wide hollow float portions and an elongated narrow medial hollow float portion therebetween, said isolating means being a fluid tight chamber portion (9) of said elongated float and switch housing (6), said electrical components being housed in said fluid tight chamber portion (9), and a switch arm (12) of said switch (10) being rendered operative by movement of said elongated float (8).

5,775,878

TURBINE OF THERMOSTRUCTURAL COMPOSITE MATERIAL, IN PARTICULAR OF SMALL DIAMETER, AND A METHOD OF MANUFACTURING IT

Jean-Pierre Maumus, Cenon, and Guy Martini, St. Aubin Du Medoc, both of France, assignors to Societe Europeene de Propulsion, Suresnes, France

Filed Aug. 13, 1996, Ser. No. 689,735

Claims priority, application France, Aug. 30, 1995, 95-10205

Int. Cl.⁶ B63H 1/16

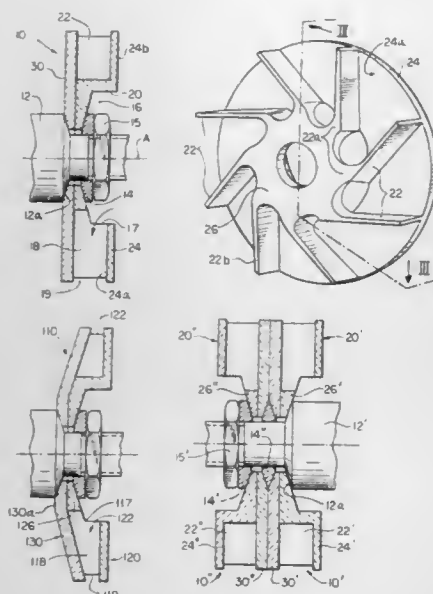
U.S. Cl. 416—186 R

7 Claims

1. A turbine comprising a hub, a first end plate, a second end plate, and a plurality of blades disposed between said end plates and defining flow passage therebetween, wherein:

said hub, said first end plate, and said blades form a first single one-piece part made out of a thermostructural composite material, said first part having a central portion forming said hub and an annular portion forming said first end plate, each of said blades having an inner root portion connected integrally with said central hub-forming portion and an outer end portion, and each of said blades projecting from said annular portion forming said first end plate with a first radial edge connected integrally with said annular portion and a second radial edge opposite said first radial edge; and

said second end plate forms a second single one-piece part made out of a thermostructural composite material, said second part having an inner central portion applied against said central hub-forming portion of the first part and an outer portion applied against the second radial edges of said blades;



said first part and said second part being assembled to each other solely by clamping said central portions together.

5,775,879

PROCESS AND DEVICE FOR REGULATING A MULTIPHASE PUMPING ASSEMBLY

Pierre Durando, Lyons, France, assignor to Institut Français du Pétrole, Rueil-Malmaison, France

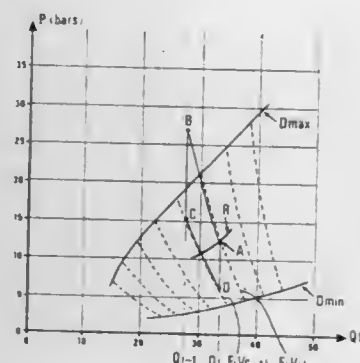
Filed Feb. 21, 1996, Ser. No. 604,483

Claims priority, application France, Feb. 21, 1995, 95 02083

Int. Cl.⁶ F04B 49/06

U.S. Cl. 417-45

12 Claims



1. A method of regulating a pumping assembly used for communicating energy to a multiphase effluent comprising at least one gas phase and at least one liquid phase, said pumping assembly being positioned between a source of effluents and a point of destination and including at least one multiphase pump having a predetermined operating range, said method comprising the steps of:

- determining one parameter representative of a working hydraulic instability of the multiphase pumps,
- measuring the amplitude of the parameter representative of the instability, and
- regulating the value of the rotating speed of said multiphase pump so as to bring the pump back into its operating range until the working hydraulic instability represented by the measured value of said parameter disappears.

5,775,880 VALVE DISABLER FOR USE IN HIGH PRESSURE PIPE CLEANING SYSTEMS

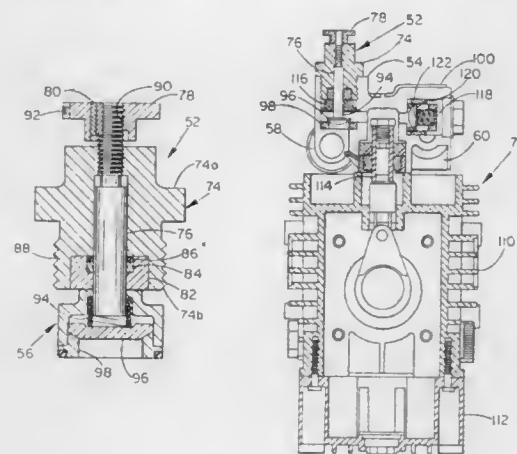
David G. Vensland, Champlin, and Edward P. Murphy, Blaine, both of Minn., assignors to Hypro Corporation, St. Paul, Minn.

Filed Mar. 20, 1996, Ser. No. 619,074

Int. Cl.⁶ F04B 49/22

U.S. Cl. 417-53

3 Claims



a modular discharge check valve assembly connected to the pump housing, the modular discharge check valve assembly comprising a single modular unit threadedly engaging the pump housing; and
 a modular diaphragm assembly connected to the pump housing the diaphragm assembly being a single modular unit threadedly engaging the pump housing and comprising:
 a body defining an interior chamber at a first end thereof, a cap engaging the first end of the body to enclose the interior chamber, the cap defining at least one outlet port therein, a diaphragm located between the body and the cap, and means for biasing the diaphragm to a predetermined position.

5,775,885

COMBINATION SUCTION MANIFOLD AND CYLINDER BLOCK FOR A RECIPROCATING COMPRESSOR

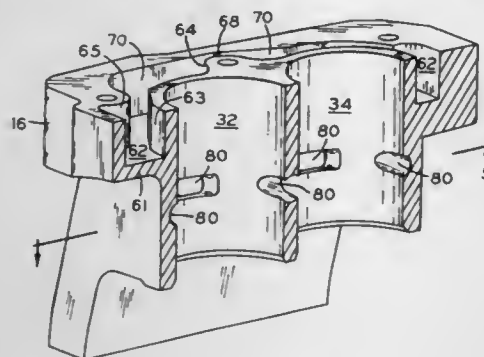
Nelik I. Dreiman, Tipton, and Russell A. Cowen, Brooklyn, both of Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Feb. 20, 1996, Ser. No. 603,647

Int. Cl.⁶ F04B 39/10

U.S. Cl. 417—553

40 Claims



1. A reciprocating hermetic refrigerant compressor, comprising:
 a housing;
 a motor disposed in said housing and having a stator and a rotor connected to a crankshaft;
 a cylinder block disposed in said housing and having an inner wall and an outer wall, said inner wall being at least partially separated from said outer wall, said outer wall surrounding said inner wall;
 a cylinder formed in said inner wall and having a suction gas aperture extending through said inner wall into said cylinder;
 a cylinder head attached to said cylinder block;
 a piston reciprocatingly received in said cylinder and drivingly connected to said crankshaft;
 a suction gas plenum provided in the space between said inner wall and said outer wall and at least partially surrounding said cylinder, said suction gas aperture being in fluid communication with said suction gas plenum; and
 a suction gas inlet in fluid communication with said suction gas plenum and said suction gas aperture, whereby suction gas is drawn directly into said cylinder through said suction gas aperture from said suction gas plenum during a suction stroke of said compressor.

5,775,886

GAS COMPRESSOR WITH RECIPROCATING PISTON WITH VALVE SHEATH

Gerald L. Terwilliger, 4122 Pine Creek, Tyler, Tex. 75707

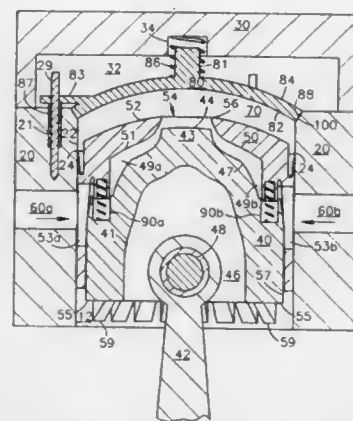
Filed Aug. 8, 1996, Ser. No. 700,322

Int. Cl.⁶ F04B 21/04

U.S. Cl. 417—553

53 Claims

1. A gas compressor comprising:



a cylinder block having a piston bore formed therein, said piston bore being defined by a bore wall having a bore opening;
 a cylinder block head connected to the cylinder block;
 a piston having a piston top, a piston bottom, a piston perimeter, and a piston length defined by the distance between the top and bottom, said piston mounted for reciprocation within said piston bore along a piston axis of reciprocation, the reciprocation of the piston including a suction stroke of the piston and a compression stroke of the piston;
 wherein each of said strokes defines movement of said piston over a piston stroke distance;
 a valving sheath having a sheath top disposed over the piston top and a sheath body intermediate said piston and said bore wall, said sheath having:
 an outer surface defining an outer sheath perimeter;
 an inner surface defining an inner sheath perimeter greater than said piston perimeter and less than said outer sheath perimeter, said inner surface including a sheath seat for engaging the piston top;
 a top opening formed in the sheath top; and
 one or more body openings formed in said sheath body;
 said sheath positioned in said piston bore so that said inner sheath perimeter is adjacent said piston perimeter and said outer sheath perimeter is adjacent said bore wall, said inner sheath perimeter and said piston perimeter defining a sheath chamber therebetween, said sheath being mounted for reciprocation along the piston axis of reciprocation to provide movement of the sheath over a sheath stroke distance;
 a discharge valve mounted intermediate said cylinder block head and said sheath top and having a valve bottom and a valve top, said valve bottom positioned adjacent the sheath top, defining a compression chamber between the valve bottom and the sheath top and further defining a discharge chamber between the valve top and the cylinder block head;
 means for sealing the compression chamber to prevent compressed gas from escaping the compression chamber;
 means for isolating the discharge chamber from the compression chamber during at least a portion of the suction stroke of the piston; and
 an inlet in communication with said one or more body openings in the sheath body for inputting gas in the compression chamber by way of the sheath chamber during the suction stroke of the piston.

49. A compressor discharge valve assembly disposed between the cylinder block and cylinder block head of a gas compressor for regulating the release of compressed gas from a compression chamber disposed in a piston bore formed in the cylinder block to a discharge chamber formed in the cylinder block head, said discharge valve assembly comprising:

a seating surface formed in the cylinder block adjacent the piston bore;
 a discharge valve mounted intermediate said cylinder block head and said compression chamber, said discharge valve having:
 a bottom surface adjacent said compression chamber;
 a top surface adjacent said discharge chamber; and
 a discharge valve seat conforming to said seating surface;

a plurality of guides arranged about a periphery of said discharge valve;
 a plurality of stanchions integral with said cylinder block and projecting outwardly therefrom by a stanchion protrusion length, said plurality of stanchions being in aligned engagement with said plurality of guides to provide aligned engagement of said discharge valve seat with said seating surface; and
 means for urging said discharge valve seat toward said seating surface so that said discharge valve seat engages said seating surface when the force applied to the bottom of the discharge valve by compressed gas in the compression chamber is less than the force applied by said means for urging to the discharge valve.

5,775,887

SPACER CONFIGURATION FOR A DISCHARGE REED VALVE OF A HERMETIC TYPE COMPRESSOR

Jae Sang Park, Busan, and Jae Mun Hwang, Masan, both of Rep. of Korea, assignors to L. G. Electronics Inc., Seoul, Rep. of Korea

Division of Ser. No. 631,528, Apr. 12, 1996, Pat. No. 5,676,533.

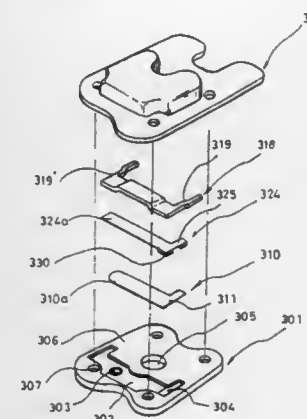
This application Aug. 19, 1996, Ser. No. 699,544

Claims priority, application Rep. of Korea, Apr. 20, 1995, 9354/1995; Jun. 12, 1995, 13141/1995; Jun. 12, 1995, 15360/1995

Int. Cl.⁶ F04B 39/10; F16K 15/16; F04C 29/00

U.S. Cl. 417—569

1 Claim



1. A hermetic type compressor comprising:
 a cylinder head containing a reentrant groove having an exhaust hole through which compressed refrigerant is discharged from inside a cylinder and having a valve seat surface on an outer periphery of said exhaust hole and a valve fixing surface and a reentrant groove formed in said cylinder head;
 an exhaust valve element disposed above said exhaust hole so as to open or shut said exhaust hole element, the exhaust valve being disposed such that a fixing end portion formed on a side of said exhaust valve element is positioned on said valve fixing surface;
 a valve spring having a spring fixing end portion formed on a side thereof in contact with said exhaust valve element;
 a spacer disposed between said exhaust valve element and said valve spring, the spacer being integrally formed with the spring fixing piece of the valve spring;
 a valve stopper installed on said valve spring for limiting movement of said valve spring;
 a head cover for covering said cylinder head;
 a packing inserted between said cylinder head and said head cover for preventing leakage of the refrigerant; and
 said spacer is formed by bent portions of the spring fixing piece of said valve spring.

5,775,888

SCROLL FLUID MACHINE HAVING END PLATE WITH GREATER CENTER THICKNESS

Susumu Sakamoto, Kanagawa-ken; Yuji Komai, Tokyo; Katsushi Hidano, and Yoshio Kobayashi, both of Kanagawa-ken, all of Japan, assignors to Tokico Ltd., Kawasaki, Japan

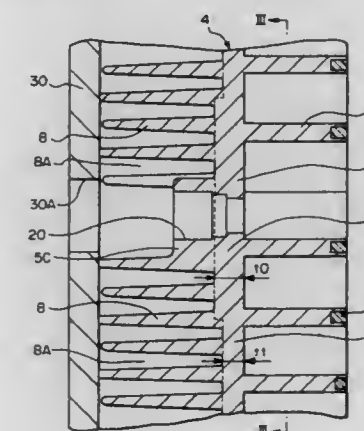
Filed Aug. 15, 1996, Ser. No. 698,455

Claims priority, application Japan, Sep. 1, 1995, 7-248682

Int. Cl.⁶ F01C 1/04; 21/06

U.S. Cl. 418—55.2

4 Claims



1. A scroll fluid machine comprising:

a casing;
 a fixed scroll member secured to said casing, said fixed scroll member including an end plate having a center area and opposite first and second sides, said center area having there-through a discharge port, a spiral wrap portion extending from said first side, and radiating fins extending from said second side except at said center area, such that said radiating fins surround said center area;
 an orbiting scroll member including an end plate having extending therefrom a spiral wrap portion, said orbiting scroll member being positioned in said casing facing said fixed scroll member with a plurality of compression chambers being defined between said spiral wrap portion of said orbiting scroll member and said spiral wrap portion of said fixed scroll member; and
 said end plate of said fixed scroll member having a central portion including said center area and a peripheral portion surrounding and extending outwardly from said central portion, said central portion having a thickness greater than a thickness of said peripheral portion.

5,775,889

HEAT TREATMENT PROCESS FOR PREVENTING SLIPS IN SEMICONDUCTOR WAFERS

Junichi Kobayashi, Sagami-hara; Eiichi Takanabe, Kanagawa-ken; Harunori Ushikawa, Sagami-hara, and Tomohisa Shimazu, Minato-ku, all of Japan, assignors to Tokyo Electron Limited, Tokyo-to, Japan

Continuation-in-part of Ser. No. 441,048, May 15, 1995, Pat. No. 5,688,116. This application Oct. 27, 1995, Ser. No. 549,163

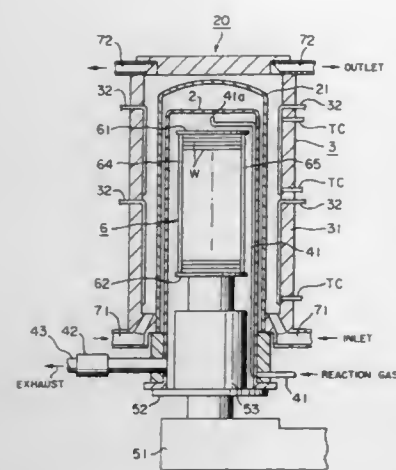
Claims priority, application Japan, May 17, 1994, 6-128127; Oct. 31, 1994, 6-290582

Int. Cl.⁶ F27B 9/12

U.S. Cl. 432—18

3 Claims

1. A process for heat treating a plurality of semiconductor wafers in a substantially tubular reaction vessel located in a tubular furnace, each of said semiconductor wafers having a diameter of about 300 mm, said process comprising the steps of:
 mounting said semiconductor wafers in parallel one above another in a mounting jig at a vertical mounting pitch of 18–20 mm;



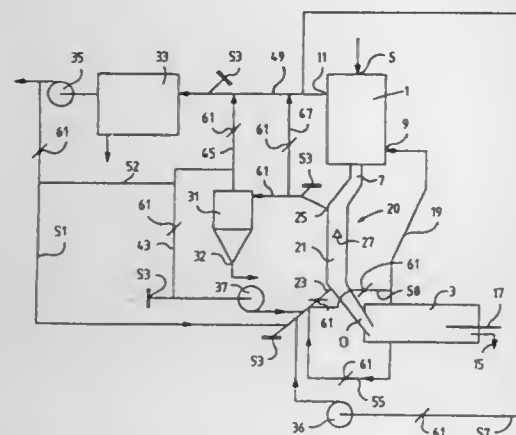
loading said mounting jig having said semiconductor wafers mounted therein into said reaction vessel;
heating said semiconductor wafers to a temperature above 600° C. and below 950° C. at a rate in which the temperature increases by up to 10° C./minute, a temperature above 950° C. and below 1000° C. at a rate in which the temperature increases by up to 40° C./minute, a temperature above 1000° C. and below 1025° C. in which the temperature increases by up to 3° C./minute, and a temperature above 1025° C. and below 1050° C. at a rate in which the temperature increases by up to 2° C./minute, and cooling said semiconductor wafers from a temperature of 1050° C. to 600° C. at a rate in which the temperature decreases by up to 3° C./minute.

5,775,890

PLANT FOR HEAT TREATMENT OF LUMPY MATERIAL
Bendt Ølbye, and Bent Mærsk, both of Valby, Denmark,
assignors to F. L. Smidth & Co. A/S, Denmark

PCT No. PCT/DK95/00216, § 371 Date Oct. 10, 1996, § 102(e)
Date Oct. 10, 1996, PCT Pub. No. WO96/00703, PCT Pub.
Date Jan. 11, 1996

PCT Filed Jun. 1, 1995, Ser. No. 727,537
Claims priority, application Denmark, Jun. 29, 1994, 0775/94
Int. Cl.⁶ F27B 15/00
U.S. Cl. 432—58 18 Claims



1. A plant for heat treatment of lumpy material such as limestone, other carbonate materials or cement raw materials, said plant comprising
a preheating zone and a burning zone, said preheating zone having at least one material inlet, at least one material outlet, at least one inlet for preheating gas, and at least one outlet for

used preheating gas, the material in said preheating zone being preheated by means of hot preheated gas from which the material is subsequently separated,

said burning zone having a material inlet for preheated material from the preheating zone and a material outlet for material burned in the burning zone,

said plant further comprising connecting means for connecting the material outlet of the preheating zone to the material inlet of the burning zone, said connecting means including a separating device for separating finer particles from coarser particles in the preheated material, said separating device comprising a separating duct having an upper end and a lower end, gas introducing means in the lower end of the duct and gas/material discharge means at the upper end of the duct, and means for generating a gas stream from the gas introducing means through the duct and out of gas/material discharge means such that finer particles in the preheated material are suspended in the gas stream and carried out of the gas/material discharge means.

5,775,891

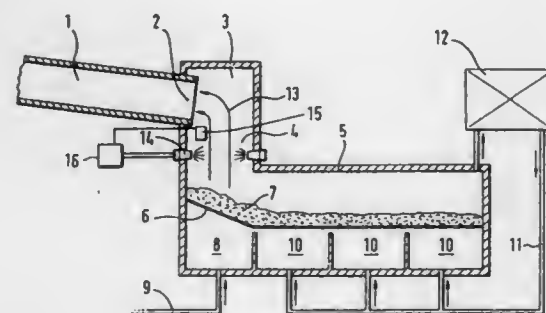
GRATE COOLER FOR COMBUSTION MATERIAL AND
PROCESS FOR ITS OPERATION

Klaus Klintworth, and Joachim Harder, both of Buxtehude, Germany, assignors to Babcock Materials Handling Division GmbH, Buxtehude, Germany

PCT No. PCT/EP95/02060, § 371 Date Jan. 24, 1996, § 102(e)
Date Jan. 24, 1996, PCT Pub. No. WO95/33172, PCT Pub.
Date Dec. 7, 1995

PCT Filed May 30, 1995, Ser. No. 586,868
Claims priority, application Germany, May 30, 1994, 44 18
885.4

Int. Cl.⁶ F27D 15/02
U.S. Cl. 432—78 5 Claims



1. A process for dampening the thermal oscillations in a grate cooler system for use with a kiln, comprising an air-cooled grate cooler for supporting a bed of combustion material fed thereto from the kiln for cooling and a cooling inlet therebetween, wherein cooling air passes through the bed for cooling the material forming the bed and a portion of the air after passing through the bed is fed to the kiln as secondary combustion air comprising the steps of:
sensing the condition of the air portion having passed through the bed; and
injecting water into said air portion within the cooler inlet to cause evaporation thereof as said air portion flows toward the kiln, the quantity of water injected being in response to the sensed air condition.

5,775,892

PROCESS FOR ANODIZING ALUMINUM MATERIALS
AND APPLICATION MEMBERS THEREOF

Hajime Miyasaka, and Hideaki Ikeda, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

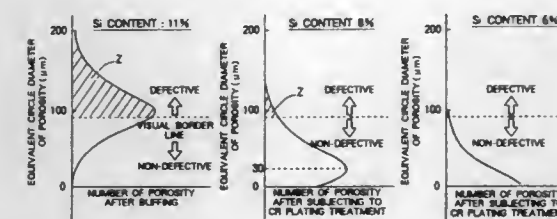
Filed Mar. 22, 1996, Ser. No. 621,294

Claims priority, application Japan, Mar. 24, 1995, 7-065500;
Mar. 24, 1995, 7-065955; Oct. 16, 1995, 7-267445; Oct. 26, 1995,
7-279474; Nov. 10, 1995, 7-292744

Int. Cl.⁶ C25D 11/06

U.S. Cl. 418—55.2

11 Claims



1. A process for anodizing an aluminum alloy containing Si, which comprises subjecting the aluminum alloy containing Si to an anodizing treatment using an electrolyte comprising:

- (i) at least one compound containing an anion capable of coordinating as a ligand on a metal ion to form a complex during said anodizing treatment selected from the group consisting of sodium hydrogenphosphate and tribasic sodium phosphate,
- (ii) at least one salt of an organic acid containing an oxyacid anion selected from the group consisting of sodium citrate and sodium tartrate, or sorbitol, and
- (iii) at least one halide selected from the group consisting of potassium fluoride and sodium fluoride.

7. A spiral scroll member for a compressor that comprises a casing and a relatively rotating a pair of spiral scroll members, comprising:

a spiral scroll member made of an aluminum alloy containing Si; and

an anodized film formed on the surface of the spiral scroll member by subjecting the spiral scroll member to an anodizing treatment using an electrolyte comprising:

- (i) at least one compound containing an anion capable of coordinating as a ligand on a metal ion to form a complex during said anodizing treatment selected from the group consisting of sodium hydrogenphosphate and tribasic sodium phosphate,
- (ii) at least one salt of an organic acid containing an oxyacid anion selected from the group consisting of sodium citrate and sodium tartrate, or sorbitol, and
- (iii) at least one halide selected from the group consisting of potassium fluoride and sodium fluoride,

wherein the amount of sodium hydrogenphosphate, tribasic sodium phosphate, sodium citrate, sodium tartrate, sorbitol, potassium fluoride and sodium fluoride is 0.2 to 0.5 mol, 0.2 to 0.4 mol, 0.1 to 0.75 mol, 0.1 to 0.55 mol, 0.25 to 0.75 mol, 0.1 to 0.75 mol and 0.1 to 0.75 mol, respectively.

5,775,893

SCROLL COMPRESSOR HAVING AN ORBITING
SCROLL WITH VOLUTE WRAPS ON BOTH SIDES OF A
PLATE

Kunihiko Takao; Masahiro Takebayashi, both of Tsuchiura; Yoshishige Endo, Tsuchiura; Yuji Yoshitomi, Ibaraki-ken; Shigeru Machida, Ibaraki-ken; Kenji Tojo, Ibaraki-ken, and Kazuo Sekigami, Tochigi-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

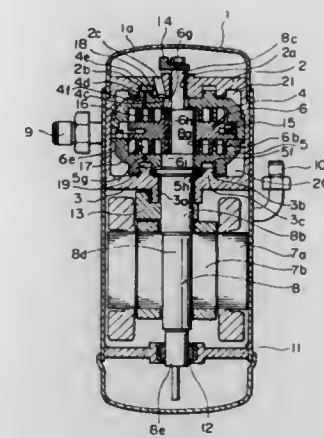
Filed Jun. 19, 1996, Ser. No. 665,984

Claims priority, application Japan, Jun. 20, 1995, 07-153529
Int. Cl.⁶ F04C 18/04

U.S. Cl. 418—55.2

7 Claims

1. A scroll compressor comprising an orbiting scroll having volute wraps on both sides of a flat plate; fixed scrolls arranged on



the both sides of said orbiting scroll, each having a wrap paired face to face with a mating wrap of said orbiting scroll; and a drive shaft provided through said orbiting scroll and said fixed scrolls for orbiting said orbiting scroll inside said fixed scrolls, in which said orbiting scroll is provided with an orbiting motion while being prevented from turning round said fixed scrolls so that gas is compressed, wherein

a concave groove is provided in said orbiting scroll extending from an outer circumferential edge surface of said orbiting scroll radially inwardly, and an Oldham's coupling is accommodated in the concave groove and engaged with said orbiting scroll so that said orbiting scroll is provided with an orbiting motion while being prevented from turning on its axis.

5,775,894

COMPRESSOR BALL VALVE

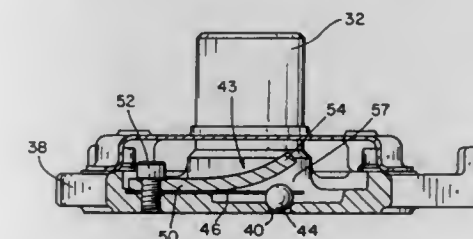
John Kosco, Jr., Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 5, 1996, Ser. No. 743,845

Int. Cl.⁶ F04C 18/356; F16K 15/04

U.S. Cl. 418—63

19 Claims



1. A refrigerant compressor, comprising:
a compressor mechanism defining a compression chamber for compressing refrigerant fluid;
a discharge chamber receiving compressed refrigerant fluid from said compression chamber; and
a discharge valve assembly disposed intermediate said compression chamber and said discharge chamber, said discharge valve assembly comprising:
a discharge port;
a spherical valve member seated against said discharge port, said spherical valve member dimensioned to partially penetrate and seal said discharge port;
an elastically deformable arm having an aperture partially receiving said spherical valve member therein, said arm engaging said spherical valve member and biasing said spherical valve member into engagement with said discharge port, said arm adapted to deform and thereby allow said spherical valve member to move out of engagement with said discharge port during a compression phase; and

a rigid stop disposed adjacent said spherical valve member and said arm, and limiting the movement of said spherical valve member during the compression phase, thereby maintaining alignment of said spherical valve member with said discharge port.

5,775,895

COMBUSTION-STATE DETECTING CIRCUIT OF COMBUSTION APPARATUS

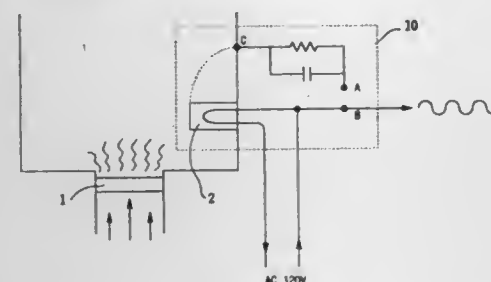
Gordon William Fenn, Brevard, N.C.; Young Moon Ryoo, Ansan, and Hong Jib Kim, Incheon, both of Rep. of Korea, assignors to Haitai Electronics Co., Ltd., Incheon, Rep. of Korea

Filed Nov. 12, 1996, Ser. No. 745,702

Claims priority, application Rep. of Korea, Nov. 20, 1995, 95-42315

Int. Cl.⁶ F23N 5/00

U.S. Cl. 431-66



1. A combustion-state detecting circuit of a combustion apparatus installed in a combustion chamber, comprising:
a flame detector having a heat-emitting device for emitting heat on application of an alternating current signal and producing a flame detector alternating current signal;
a rectifier connected to said flame detector for receiving the flame detector alternating current signal from said flame detector and converting said flame detector alternating current signal to a direct current signal;
an inversion amplifier connected to said rectifier for receiving the direct current signal from said rectifier, inverting the received direct current signal based on a reference signal and amplifying the inverted direct current signal; and
a flame discriminator/comparator connected to said inversion amplifier, said flame discriminator/comparator for receiving the amplified inverted direct current signal from said inversion amplifier and comparing the amplified inverted direct current signal with a flame discriminating reference signal to determine whether ignition occurs.

5,775,896

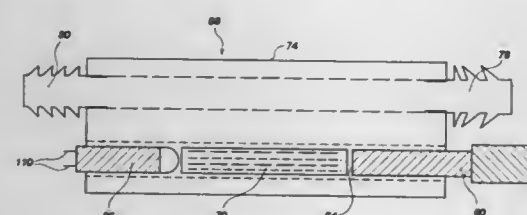
VERSATILE OPERATORY LIGHT SYSTEM
Gary W. Woodward, Vancouver, Wash., assignor to Micron Dental Manufacturing, Inc., Missoula, Mont.

Filed Mar. 10, 1995, Ser. No. 401,717

Int. Cl.⁶ A61C 1/00

U.S. Cl. 433-29

21 Claims



1. A system for conducting light to a dental handpiece, said system comprising:

a bundle of flexible, light-conducting fibers, said bundle having a first end structured to terminate in a window capable of receiving light from a light source and a second end capable of emitting light conducted by said bundle from said first end;
a first coupling fixture associated with said first end structured and arranged to hold a subminiature bulb within said first coupling fixture juxtaposed with respect to said window when said first end is inserted within said first coupling;
a second coupling fixture associated with said second end and structurally adapted for connection to a dental handpiece, whereby to furnish illumination through said handpiece; and
a subminiature bulb mounted within said first coupling fixture.

5,775,897

GASEOUS FLOW REVERSING VALVE WITH DISTRIBUTED GAS FLOW

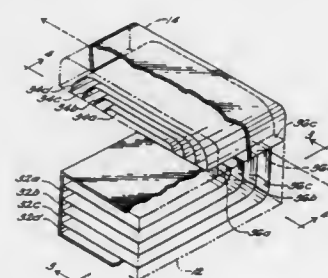
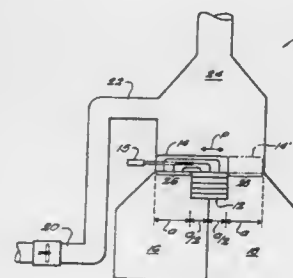
1 Claim Daniel P. Smith, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Mar. 11, 1997, Ser. No. 814,971

Int. Cl.⁶ F27D 17/00

U.S. Cl. 432-181

17 Claims



1. For use with a regenerative furnace heat recovery system including a pair of regenerators connected respectively via first and second ports to a common exhaust stack, a delivery system for alternately supplying combustion air to one or the other of said ports, said system comprising:

a combustion air supply conduit arranged between said ports;
a valve member movable along a path in opposite directions between first and second positions, said valve member having a chamber configured to connect said combustion air supply conduit to said first port when in said first position, and to connect said combustion air supply conduit to said second port when in said second position;

means for subdividing said combustion air supply conduit into a plurality of supply channels having outlets communicating with said valve chamber and separated one from the other in a direction transverse to said path; and

means for subdividing said valve chamber into a plurality of connecting channels separated one from the other and extending in the direction of said path, each of said connecting channels being in communication with each of said supply channels and vice versa when said valve is at said first and second positions.

5,775,898

ORTHODONTIC SCREW FOR A FAST EXPANSION ON THE ANTERIOR SECTOR OF THE MAXILLARY ARCH

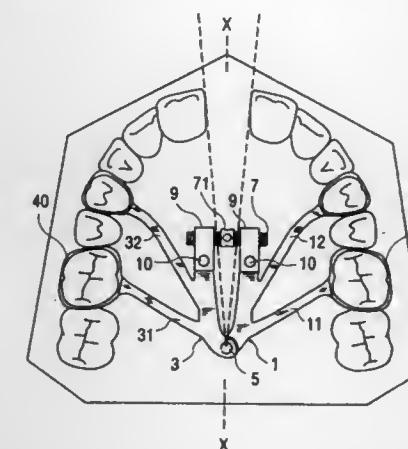
Eleonora Scbellino, Vinovo, and Modica Remo, Turin, both of Italy, assignors to Leone S.p.A., Fiorentino, Italy

Filed Dec. 26, 1996, Ser. No. 773,959

Int. Cl.⁶ A61C 3/00

U.S. Cl. 433-7

10 Claims



1. An orthodontic apparatus for expanding the maxillary arch of a patient, comprising:
a first component with arm stretching outwardly toward one side in a fan-like arrangement;
a second component with arms stretching outwardly toward another side in a fan-like arrangement;
arms extending from said first and second components to the maxillary arch when in use;
a hinge, said first component and said second component being articulated to said hinge to form an articulated arrangement which is substantially symmetrical;
anchorage means for anchoring said fan like arms of said first component to the anterior maxillary arch of a patient and for anchoring said fan like arms of said second component to the anterior maxillary arch; and
fast expansion orthodontic screw means acting between said two components for moving said first component and said second component angularly apart by progressive action on the screw for one of a prevailing or exclusive expansion in the upper maxillary arch anterior sector of the patient.

5,775,899

DENTAL MODEL BASE HAVING INTEGRAL PINS

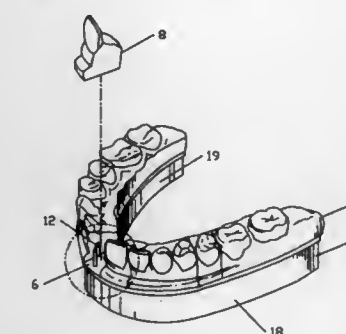
Ronald E. Huffman, Rte. 1, Box 502M, Sapulpa, Okla. 74066

Filed Nov. 1, 1995, Ser. No. 551,559

Int. Cl.⁶ A61C 11/00

U.S. Cl. 433-60

8 Claims



1. A dental model base comprising:

a dental model base body, said dental model base body having an interior wall;
a dental model support surface adjacent said interior wall;
an exterior wall adjacent said dental model support surface;
a plurality of pins protruding from said dental model support surface, said pins being tapered, said pins having the greatest cross-sectional area near said dental model support surface; and
an articulator attachment plate disengageably connected to said dental model base body.

5,775,900

METHOD OF PRODUCING A CLEAR STENT FOR THE EDENTULOUS IMPLANT PATIENT AND APPARATUS THEREFOR

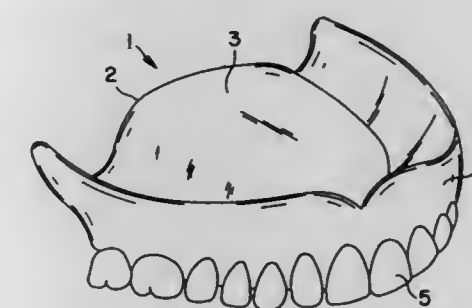
Stephen J. Ginsburg, 9 Everett St., Wellesley, Mass. 02181, and Nell N. Cavalier, 28 Lockeland Rd., Winchester, Mass. 01890

Filed Jul. 25, 1996, Ser. No. 685,831

Int. Cl.⁶ A61C 3/00

U.S. Cl. 433-75

33 Claims



1. A clear, thermally deformable surgical and radiographic stent for the edentulous patient, said stent having an inner surface conforming to the details of an edentulous ridge and surrounding interior contour of the patient's mouth, and an outer surface conforming to the position, length, and width of teeth to be restored in a final prosthesis, said stent being formed from a thermoplastic acrylic resin which is rendered malleable when heated to a temperature above 120° F. (49° C.) whereby the stent is capable of being molded in the mouth or on a model of a patient to attain an approximation of the tissue surfaces and tooth positions.

5,775,901

INSERT FOR ULTRASONIC SCALER

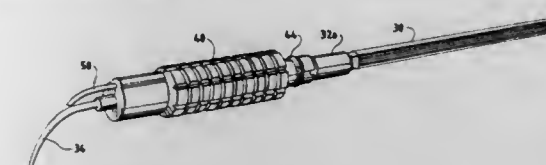
Anthony T. Riso, Bal Harbor, Fla., assignor to Hu-Friedy Mfg. Co., Ltd., Chicago, Ill.

Filed Mar. 7, 1996, Ser. No. 612,516

Int. Cl.⁶ A61C 1/07

U.S. Cl. 433-86

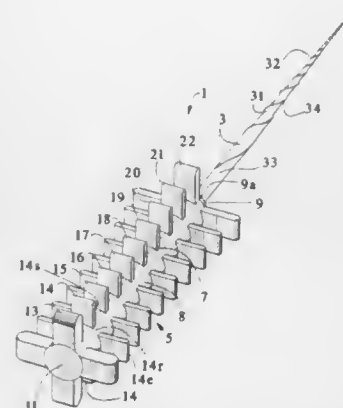
23 Claims



1. An insert for an ultrasonic scaler comprising:
an elongated body, having first and second ends;
an elongated scaling probe having first and second ends wherein one of said probe ends is connected to one of said ends of said body;
a molded, elongated collar with first and second ends, wherein one end of said collar surrounds a portion of said one end of said body thereby forming a substantially rigid, unified structure and wherein a fluid flow input port is defined by said

collar at said other end thereof and wherein an internal flow path is defined between said input port and said one end of said collar; and

a fluid flow conduit having first and second ends wherein said conduit is arranged with one of said ends in fluid flow communication with said internal flow path and wherein said collar rigidly surrounds said one end of said conduit with said other end thereof extending from said collar, displaced from said first probe end, and oriented to direct a fluid flow onto a portion of said probe wherein said one end of said conduit is fixedly retained by said collar thereby preventing relative movement between said conduit and said probe.

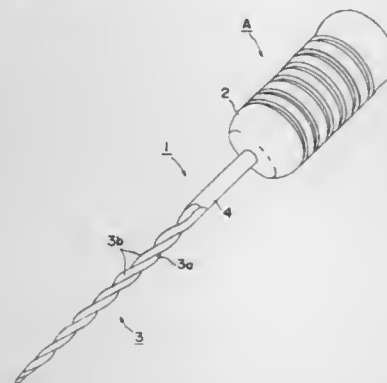


5,775,902
ROOT CANAL TREATMENT INSTRUMENT AND MANUFACTURING METHOD FOR THE ROOT CANAL TREATMENT INSTRUMENT

Kanji Matsutani; Hiroshi Hirano; Katsutoshi Satoh, and Takayuki Matsumoto, all of Tochigi-ken, Japan, assignors to Kabushiki Kaisha Matsutani Seisakusho, Shioya-gun, Japan
Filed Dec. 22, 1995, Ser. No. 577,330
Claims priority, application Japan, Dec. 27, 1994, 6-324163
Int. Cl.⁶ A61C 1/02

U.S. Cl. 433—102

4 Claims



1. A root canal treatment instrument comprising:
an elongated cylindrical needle having a proximal end and a distal end;
a working section made of a super-elastic alloy extending from said distal end of the needle; and
a shank extending axially between the working section and said proximal end of the needle;
a transformed portion formed on said shank which does not have super-elastic ability; and
a handle attached to said proximal end of the needle so as to cover said transformed portion.

5,775,903
ENDODONTIC INSTRUMENT WITH A HUGGER HANDLE

John Atkins, 3542 N. Albany, Chicago, Ill. 60618
Filed Dec. 23, 1996, Ser. No. 772,628
Int. Cl.⁶ A61C 5/02

U.S. Cl. 433—102

17 Claims

1. An endodontic instrument for root canal therapy handled by fingers of an operator, comprising:
intracanal tool portion for operating a wall of the root canal having a working end to be inserted into the root canal and a shank end, and
a handle manually handled by the thumb and the index finger of the operator comprising:
a stem extending in an axial direction thereof in a substantially cylindrical shape formed with a circumferential surface and a pair of opposite ends, one of the ends having a

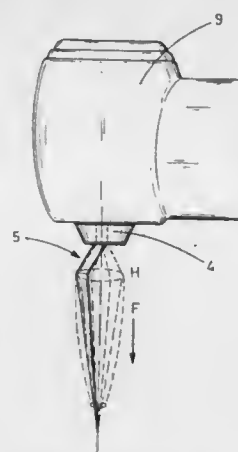
recess extending in the axial direction of the stem immovably securing the shank end of the intracanal tool portion therein; and
a pair of end portions radially extending from the opposite ends of the handle member; and
a plurality of brims radially extending from the circumferential surface of the stem in a plate shaped juxtaposed in the axial direction of the stem with a predetermined space from one another between the end portions, wherein the brims are in a rotationally symmetric shape having the center axis of the stem as a symmetry axis, each brim having a plurality of recesses circumferentially spaced and wherein the recesses on each brim are provided at four positions equally separated from each other on the circumferential edge of the brim such that the brim radially extends in a cross shape.

5,775,904
ENDODONTIC INSTRUMENT FOR RAPID MECHANICAL WIDENING OF THE CANAL MOUTH AND SPECIFICATION OF THE FIRST TWO THIRDS

Francesco Riitano, Soverato, Italy, assignor to Ultradent Products, Inc., South Jordan, Utah
Continuation of Ser. No. 656,988, Jun. 6, 1996, Pat. No. 5,642,998. This application Jun. 30, 1997, Ser. No. 885,906
Claims priority, application Italy, Jun. 6, 1995, RM95A0377
Int. Cl.⁶ A61C 5/02

U.S. Cl. 433—102

8 Claims



1. An endodontic instrument for rapid mechanical widening of the canal mouth and rectification of the first two thirds of the dental root canals, comprising a head (2, 3, 4) for engagement in an attachment device of a contra-angle (9) or handpiece for mechanical operation, and an elongated conical body or tine (1) with a cutting or abrasive surface, joined to said head (2, 3, 4) with a neck part (5), wherein said tine (1) is disaligned with respect to said head (2, 3, 4), whereby the axis (Y'-Y') of the tine (1) and the axis (Y-Y') of the head (2, 3, 4) define an angle (α); said neck part (5) having a straight portion (5a) coaxial with said head, and a portion (5b) with an axis (Y''-Y'') which is oblique and coplanar in relation to said axes of said tine and said head (Y-Y'; Y'-Y').

axis (Y-Y') of the head (2, 3, 4) define an angle (α); said neck part (5) having a straight portion (5a) coaxial with said head, and a portion (5b) with an axis (Y''-Y'') which is oblique and coplanar in relation to said axes of said tine and said head (Y-Y'; Y'-Y').

5,775,905
CUP AS A CARRIER OF PASTES FOR DENTAL HYGIENIC

Beat A.v. Weissenfluh, Gentilino, and Gianni Baffelli, Tesserete, both of Switzerland, assignors to Hawe Neos Dental Dr. H.v. Weissenfluh AG, Bioggio, Switzerland

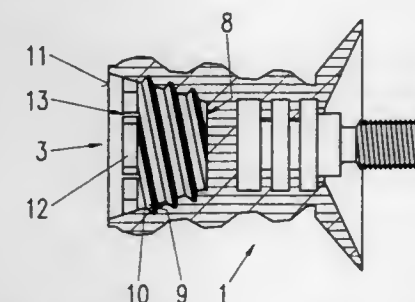
Filed Apr. 11, 1997, Ser. No. 840,131

Claims priority, application Switzerland, Apr. 11, 1996, 0914/96

Int. Cl.⁶ A61C 3/06

U.S. Cl. 433—166

4 Claims



1. A cup drivable by a hand piece for carrying a cleaning paste in dental hygienic, comprising:
a paste receiving portion having an inner side that enlarges toward an open edge of the paste receiving portion and an outer side that enlarges toward said open edge;
wherein said inner side and outer side of the paste receiving portion include spiraled ribs which run in a direction opposite to a rotational direction of the hand piece.

5,775,906

Patent Not Issued For This Number

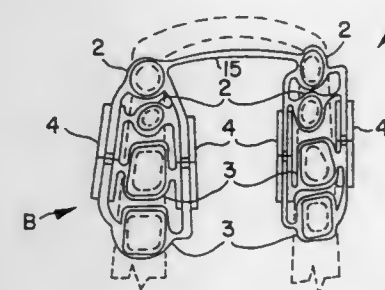
5,775,907
METHOD OF MANDIBULAR DISTRACTION OSTEOGENESIS

Yan Razdolsky, 600 Lake Cook Rd., Suite 150, Buffalo Grove, Ill. 60089
Continuation-in-part of Ser. No. 222,579, Apr. 4, 1994, Pat. No. 5,599,183. This application Feb. 22, 1996, Ser. No. 606,037

Int. Cl.⁶ A61C 8/00

U.S. Cl. 433—173

10 Claims



1. A method of mandibular distraction osteogenesis, comprising:

performing corticotomy surgery at two points on opposite sides of the mandible;
attaching an expandable intraoral distraction device to the teeth of the mandible on opposite sides of the two points of the corticotomy;
periodically expanding the expandable distraction device until a desired mandibular length is attained,
and further comprising a step of preparing the expandable distraction device for attachment during said step of performing corticotomy surgery, said step of preparing comprising:
fitting a plurality of crowns onto the teeth of the mandible;
taking an impression of the teeth of the mandible;
removing the crowns from the teeth of the mandible and placing the crowns in the impression;
preparing a solid model of the teeth of the mandible from said impression, said crowns being located on said solid model;
and
attaching expansion screw devices to said crowns.

5,775,908
TOOTHBRUSH METHOD OF MAKING A TOOTHBRUSH AND METHOD OF BRUSHING TEETH

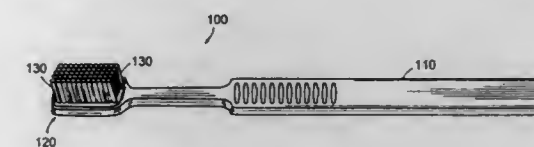
Jean L. Spencer, Boston, Mass., assignor to Gillette Canada Inc., Kirkland, Canada

Filed Dec. 3, 1996, Ser. No. 753,927

Int. Cl.⁶ A61C 15/00

U.S. Cl. 433—216

39 Claims



1. A method of manufacturing a toothbrush, comprising:
providing a bristle comprising a first opening, a second opening, and a lumen between said first opening and said second opening;
contacting said first opening with a substance;
applying a vacuum to said second opening thereby suctioning said substance into said lumen through said first opening to provide a bristle containing said substance; and
attaching said bristle containing said substance to a toothbrush.

5,775,909
TOOTH IMITATION

Arnold Langer, Berlin, Germany, assignor to Kryolan GmbH Chemische Farik, Berlin, Germany

Filed Dec. 5, 1996, Ser. No. 760,985

Claims priority, application Germany, Dec. 9, 1995, 195 47 554.2

U.S. Cl. 433—218

9 Claims



1. A tooth imitation intended for application to at least one of naturally grown teeth and a correspondingly shaped denture, the tooth imitation comprising:

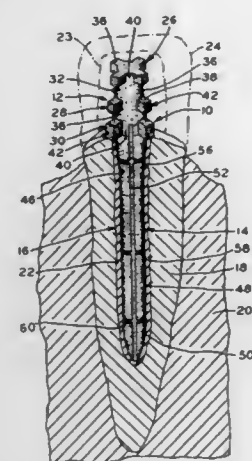
materials which are nearly completely digestible in the gastrointestinal tract in the form of a hollow body which can be directly molded onto the naturally grown teeth or the denture.

5,775,910 DENTAL POST

Anthony J. Orrico, 112 Quayside Dr., Jupiter, Fla. 33477
Filed Jun. 4, 1997, Ser. No. 869,180
Int. Cl.⁶ A61C 5/08

U.S. Cl. 433—221

20 Claims



1. An improved dental post of the type having a radicular portion for insertion and cementing into a root canal area of a tooth and a coronal portion for attachment of an artificial tooth thereto, wherein the improvement comprises:

said radicular portion having a cervical flare shaped section, a central parallel circular shaped section and an apical tapered section;

said coronal portion being adjacent said cervical flare shaped section and having a plurality cross shaped sections, said cross shaped sections each having four protrusions extending from a central hub and said four protrusions forming valleys therebetween; and,

a longitudinal venting flute extending over said apical tapered section, said central parallel circular shaped section and said cervical flare shaped section and through a valley between said protrusions, whereby during cementing of the dental post in a root canal area of a tooth hydraulic pressure between said radicular portion and said root canal area is relieved.

5,775,911 METHOD AND APPARATUS FOR PRODUCING A SHAPED ARTICLE BY SONOEROSION

Rainer Hahn, Tübingen, Germany, assignor to Thera Patent GmbH & Co., KG Gesellschaft fuer industrielle Schutzrechte, Seefeld, Germany

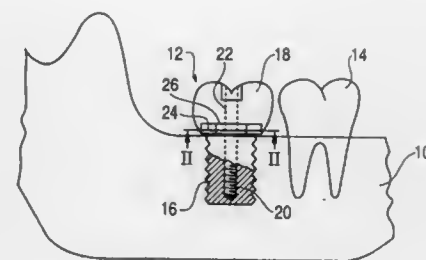
Filed Jan. 22, 1996, Ser. No. 589,126
Claims priority, application Germany, Jan. 20, 1995, 195 01 699.8

Int. Cl.⁶ A61C 13/00; 5/08

U.S. Cl. 433—223

2 Claims

1. A method of manufacturing a shaped article which has in a part of its surface a locking portion for positive engagement with a counter-locking portion of a pre-fabricated structural part, the remaining surface of said shaped article being individually shaped, wherein said locking portion is worked with a standardized sonotrode in a first step, and a portion of said remaining surface of said shaped article surrounding said locking portion is worked with an individually formed sonotrode in a second step subsequent to



said first step, said individually formed sonotrode having a fitting portion for engagement with the locking portion formed in said first step, and wherein an adapter is used for aligning said individually formed sonotrode with the locking portion formed in said first step, said adapter having a first end shaped for engagement with the locking portion of said shaped article and a second end opposite said first end shaped for engagement with the fitting portion of said individually formed sonotrode.

5,775,912 METHOD OF PRODUCING A DENTAL RESTORATION USING CAD/CAM

Carlino Panzera, Belle Mead; Richard A. Brightly, Westwood; Lisa M. DiMeglio, Monmouth Junction, and Jana Pruden, Belle Mead, all of N.J., assignors to American Thermocraft Corporation, Somerset, N.J.

Filed Aug. 16, 1996, Ser. No. 699,149

Int. Cl.⁶ A61C 5/10

U.S. Cl. 433—223

12 Claims

1. A method of making a dental restoration which comprises: providing a soft-sintered dental porcelain pellet; milling the soft-sintered dental porcelain pellet under the control of a CAD/CAM system to provide a tooth structure; investing the tooth structure with an investment refractory material to provide an invested tooth structure; fusing the invested tooth structure; and removing the investment refractory material from the fused tooth structure to provide the dental restoration.

5,775,913 PROCESS FOR MINIMAL TIME TOOTH CAPPING

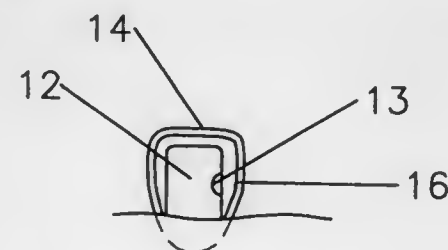
John R. Updyke, 11923 Brookwood Cir., Austin, Tex. 78750; Robert D. Martin, 4409 Malaga Dr., Austin, Tex. 78759, and David G. Lippincott, 12021 Ladrada La., Austin, Tex. 78727

Filed May 27, 1997, Ser. No. 863,178

Int. Cl.⁶ A61C 5/02

U.S. Cl. 433—223

2 Claims



2. A method for capping a patients tooth comprising:
A) measuring a length and width of each side of said tooth to be capped;
B) choosing a cap prepared from a multifunctional methacrylate monomer capable of forming a highly crosslinked three dimensional molecular network and filled with about 20% glass particles of about a two micrometer size and 55% of

glass particles of about seven tenths micrometer size from a group of previously prepared caps of approximately the same size as said tooth to be capped;

C) grinding said tooth to be capped to allow said chosen cap to fit over said tooth;

D) choosing a portion of a multifunctional methacrylate monomer capable of forming a highly crosslinked three dimensional molecular network and filled with about 75% of glass particles of about seven tenths micrometer size—that has a color similar to a color of said patients teeth;

E) placing a quantity of said multifunctional methacrylate monomer capable of forming a highly crosslinked three dimensional molecular network and filled with about 75% of glass particles of about seven tenths micrometer size inside said chosen cap and placing said cap over said tooth to be capped and having said patient bite to settle said cap in place and removing any excess of said chosen material;

F) exposing said capped tooth to ultraviolet light for a minimum of approximately three minutes; and

G) grinding and polishing said capped tooth to attain a comfortable fit for said patient.

5,775,914 DRAWING APPARATUS

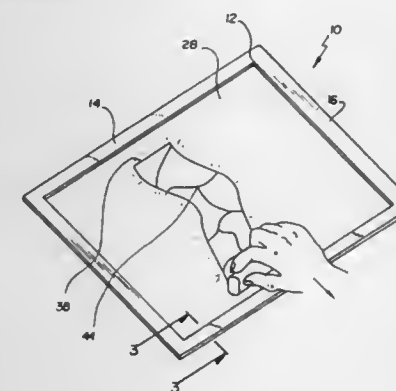
Peter McCormack Smith, 4319 Saltillo St., Woodland Hills, Calif. 91364

Filed Oct. 11, 1996, Ser. No. 728,965

Int. Cl.⁶ G09B 11/00

U.S. Cl. 434—85

4 Claims



1. A drawing apparatus for pushing a fluid around to expose various shapes and colors comprising, in combination:
a frame portion having a generally rectangular configuration, the frame portion having two long side portions and two short side portions, the frame portion having an upper portion, an indented intermediate portion and a further indented lower portion;

a liquid membrane having a generally rectangular configuration, the liquid membrane comprising an outer plastic casing encapsulating a black pliable liquid therein, the liquid membrane removably positionable within the indented intermediate portion of the frame portion;

a multi-color planar portion having a generally rectangular configuration, the planar portion having an upper surface, the upper surface having a plurality of patterns and colors disposed thereon, the planar portion removably positionable within the further indented lower portion of the frame portion below the liquid membrane; and

a drawing implement comprised of a blunt object.

5,775,915 FORM OF MUSIC NOTATION

Beris Ivy Quinn, 138 Ellesmere Road, Gympsea Bay, New South Wales, Australia, 2227

PCT No. PCT/AU95/00275, § 371 Date Jan. 18, 1996, § 102(e) Date Jan. 18, 1996, PCT Pub. No. WO95/32495, PCT Pub. Date Nov. 30, 1995

PCT Filed May 15, 1995, Ser. No. 581,630
Claims priority, application Australia, May 24, 1994, PM5807

Int. Cl.⁶ G09B 19/00; 15/02

U.S. Cl. 434—156

2 Claims



1. A musical score in which the key and any accidentals are indicated by visual coding of the individual notes and associated components as they appear throughout said score, said visual coding including a set of contrasting chromatic colours, one of said chromatic colours being applied to those individual notes inflected with a sharp and another of said chromatic colours being applied to those individual notes inflected with a flat.

5,775,916 METHOD OF MAKING A SURGICAL AND/OR CLINICAL APPARATUS

Carolyn M. Cooper, Briston, and James Sunderland, London, both of England, assignors to Limbs & Things Limited, Bristol, England

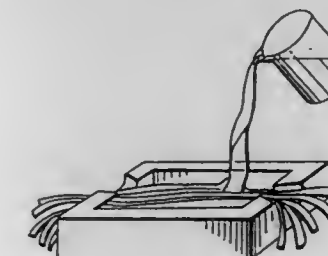
Division of Ser. No. 256,663, Jul. 15, 1994. This application Aug. 27, 1996, Ser. No. 704,447

Claims priority, application United Kingdom, Jan. 15, 1992, 9200858; Aug. 13, 1992, 9217157; Oct. 19, 1992, 9221934

Int. Cl.⁶ G09B 23/30

U.S. Cl. 434—267

15 Claims



1. A method of making a simulation of body tissue for use in practicing surgical and/or clinical techniques, the method comprising:

a) forming a simulated epidermal layer comprising the steps:
i) locating a liquid-foam-latex-coated mesh material between first and second mold members which are spaced closely together to provide a thin layer;
ii) allowing the liquid-foam-latex to gel;
iii) heating the latex-coated mesh material until the foam latex is cured; and
iv) allowing the resultant material to cool to form a thin, rubber coated mesh; and

applying the thin, rubber-coated mesh material over a member of elastomeric material.

5,775,917
PROPELLER-DRIVEN EDUCATIONAL VEHICLE
APPARATUS

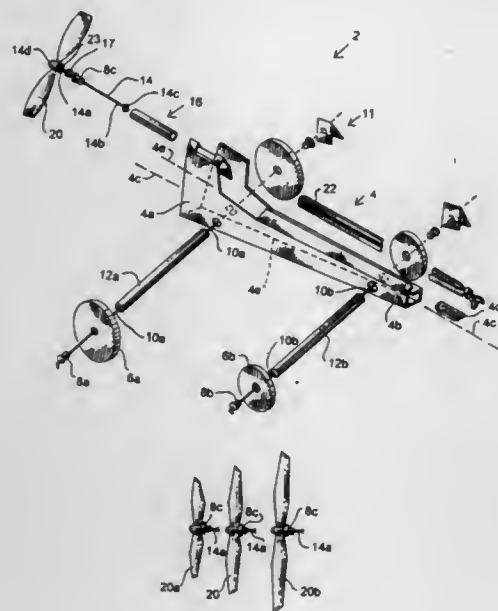
James P. Louviere, New Iberia, La., assignor to Lou-Vee-Air Systems L.L.C., New Iberia, La.

Filed Jul. 24, 1996, Ser. No. 685,515

Int. Cl.⁶ G09B 23/06; A63H 27/22

U.S. Cl. 434—300

12 Claims



I. An educational apparatus for teaching science, mathematics, technology, and research methodology, the apparatus comprising: a propeller-driven vehicle which includes

- a body having first and second ends and a longitudinal axis;
- a first pair of wheels at the first end of the body;
- a second pair of wheels at the second end of the body;
- a plurality of propellers of different sizes, constructed and arranged for attachment to and detachment from the first end of the body, for teaching and illustrating the relationship between independent and dependent variables;
- a rotatable propeller shaft having first and second ends, mounted to the first end of the body, one of the propellers being attached to the first end of the propeller shaft;
- an elastic member having first and second ends, the first end of the elastic member being attached to the second end of the body, and the second end of the elastic member being attached to the second end of the propeller shaft, whereby rotation of the propeller and the propeller shaft in a first direction winds and tightens the elastic member, thereby storing in the elastic member potential energy which is transformed into kinetic energy and which causes the propeller and propeller shaft to rotate in a second and opposite direction as the elastic member unwinds and loosens, thereby moving the vehicle at an acceleration and speed which are directly related to the size of the propeller, and teaching and illustrating the principle of the conversion of potential energy into kinetic energy.

5,775,918
SYSTEM FOR MAKING EXAMINATION PAPERS AND
HAVING AN AUTOMATIC MARKING FUNCTION
Masato Yanagida, Tokyo; Takako Sato, Yokohama, and Tet-suya Kagawa, Ebina, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

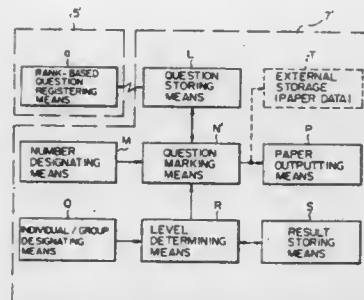
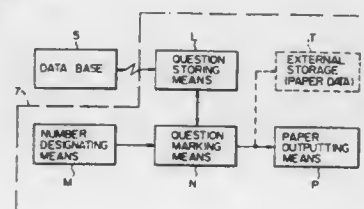
Division of Ser. No. 367,429, Dec. 30, 1994, Pat. No. 5,597,311. This application Oct. 9, 1996, Ser. No. 728,386

Claims priority, application Japan, Dec. 30, 1993, 5-354382; Jul. 28, 1994, 6-177199

Int. Cl.⁶ G09B 3/00; 7/00

U.S. Cl. 434—353

4 Claims



I. A system for making an examination paper, comprising: a data base storing a number of questions registered thereat; and an apparatus for making an examination paper by using the questions registered at said data base; said apparatus comprising:

- question storing means for storing data representing the questions received from said data base either directly or via a network;
- number designating means for designating a desired number of questions;
- question making means for randomly selecting, among the number of questions registered at said data base, the desired number of questions and writing said desired number of questions in said question storing means to thereby make questions; and
- outputting means for forming an image representing the questions made by said question making means on a recording sheet and outputting said recording sheet as an examination paper.

5,775,919
COMBINATION BULLETIN/WRITE BOARD
Marshall Gardner, Chicago, Ill., assignor to Right Message, L.L.C., Chicago, Ill.

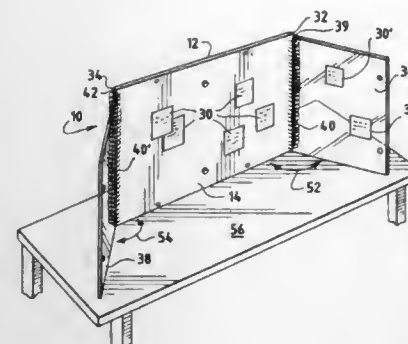
Filed Feb. 12, 1997, Ser. No. 800,205

Int. Cl.⁶ B43L 1/00

U.S. Cl. 434—408

7 Claims

I. A combination bulletin/write board comprising, a first member having a smooth surface for removable receipt thereon of adhesive placed items and wipe/off markings, said first member having a first straight edge and a second straight edge, one overlay cover with a first straight edge pivotally secured to the first straight edge of said first member and a second overlay cover with a first straight edge pivotally secured to the second straight edge of said first member, and respective hinge members co-joining said first member and said covers along said straight edges, whereby said covers may selectively be positioned in abutting disposition over



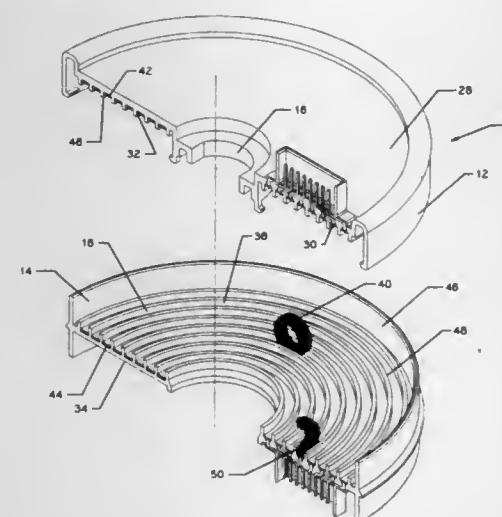
5,775,920
ROLLING ELASTOMER CONTACT CLOCKSPRING
Brent Eugene Henderson, Golden, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.

Filed Sep. 1, 1995, Ser. No. 522,628

Int. Cl.⁶ H01R 39/00

U.S. Cl. 439—15

8 Claims



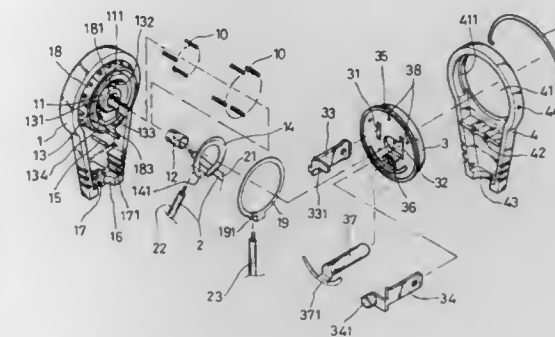
I. A steering column interconnector comprising:

- a stator;
- a rotor rotatably associated with the stator to create a radial space;
- an aperture passing through the rotor and the stator;
- a rotor annular recess associated with an inner face of the rotor containing a first electrically conductive track associated with a first connector;
- a stator annular recess located on the inner face of the stator complementary to the rotor annular recess, the stator annular recess including a second electrically conductive track associated with a second connector; and
- an elastomer rolling contact having metallic flakes impregnated therein and electrically uniting the first electrically conductive track and the second electrically conductive track, the elastomer rolling contact capable of rotation between the rotor and the stator due to relative rotation between said first and second tracks.

5,775,921
ELECTRICAL PLUG
Jonie Chou, 9F-4, No. 232, Chung Ho Road, Chung Ho City, Taipei Hsien, Taiwan
Filed Apr. 10, 1996, Ser. No. 630,574
Int. Cl.⁶ H01R 39/00

U.S. Cl. 439—21

8 Claims



I. An electrical plug comprising:

- an insulative bottom shell, said bottom shell comprising an upright stub tube, said upright stub tube having a first side opening; a metal sleeve mounted within said upright stub tube; a first upright annular flange extending around said upright stub tube, said first upright annular flange having a second side opening corresponding to the first side opening of said upright stub tube and a third side opening, a first annular groove defined between said first upright annular flange and said upright stub tube; a plurality of first upright rods disposed in said first annular groove; a first annular metal cushion mounted within said first annular groove and supported on said first upright rods; and a first cable hole at one end;
- an insulative upper shell covering said bottom shell, said upper shell comprising a circular opening; an inward coupling flange spaced around said circular opening; and a second cable hole at one end located adjacent to said first cable hole;
- a rotary cap rotatably located within the circular opening of said upper shell, said rotary cap comprising a first slot; a first metal contact blade mounted in the rotating cap and extending through said first slot, the first metal contact blade having an arched tail disposed in contact with the first annular metal cushion of said bottom shell; a second slot; a second metal contact blade mounted in said rotary cap and extending through said second slot, the second metal contact blade having a rounded coupling end in contact with the metal sleeve of said bottom shell; and an outward coupling flange around a periphery and coupled to the inward coupling flange of said upper shell; and
- an electrical cable inserted through the first and second cable holes, comprising a first electrical wire inserted through the second side opening of said first upright annular flange and connected to said metal sleeve, and a second electrical wire inserted through the third side opening of said first upright annular flange and connected to said first annular metal cushion.

5,775,922
SLIP RING DEVICE FOR A CABLE REEL
Lars Kilström, Täby, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Oct. 16, 1996, Ser. No. 729,346

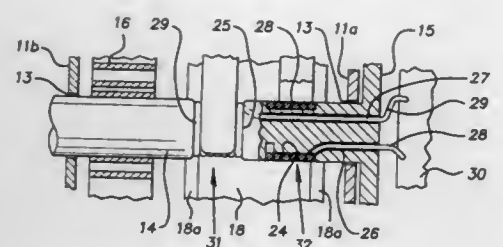
Claims priority, application Sweden, Nov. 9, 1995, 9503968

Int. Cl.⁶ H01R 39/08

U.S. Cl. 439—23

17 Claims

I. A slip ring device for a cable reel (10), said cable reel having a cable drum (11) rotatably mounted on a stationary shaft (14), said drum including at least one contact (22) to which a cable (12) of the cable reel (10) is connected, wherein a slip ring (31, 32) is arranged on the shaft (14) and in engagement with said contact,



said slip ring comprising an element (28, 29) of electrically conductive material which is wound about the shaft in a plurality of turns.

5,775,923

PC CARD CONNECTOR

Shoichi Tomioka, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan

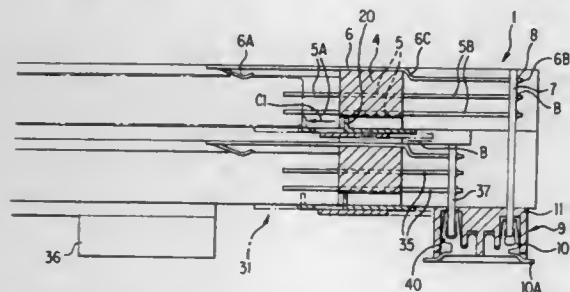
Filed Jun. 25, 1996, Ser. No. 670,020

Claims priority, application Japan, Jul. 5, 1995, 7-191049

Int. Cl.⁶ H01R 9/09

U.S. Cl. 439—79

8 Claims



1. A PC card connector for a PC card having a plurality of first contact elements such that contact portions of said first contact elements are arranged in a front area of said PC card and a ground portion provided at a front portion of said PC card, comprising:

- a housing having a pair of guide sections for guiding opposite sides of said PC card;
- a support section extends between said guide sections in a rear area of said housing;
- a plurality of substantially straight second contact elements extend through said support section for contact with said first contact elements;
- a ground member supported by said housing so as to extend along said second contact elements;
- said second contact elements having a contact portion on a first side where said PC card is provided and a wiring portion on a second side opposite to said first side with respect to said support section;
- a connection board provided on said second side at substantially right angles with said second contact elements and having a signal circuit for connection with said wiring portion; and
- said ground member having a leg portion on said second side for wiring to a ground circuit of said connection board.

5,775,924

MODULAR TERMINATING CONNECTOR WITH FRAME GROUND

Michael J. Miskin; Ed Seamands, both of Little Rock, and Munawar Ahmad, Conway, all of Ark., assignors to Molex Incorporated, Lisle, Ill.

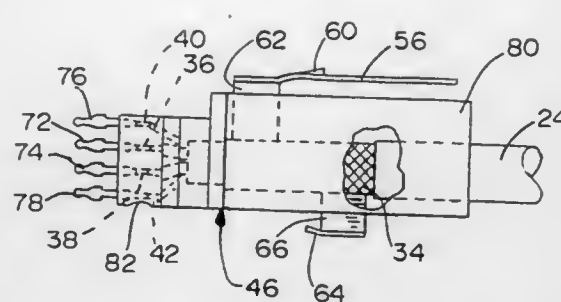
Filed Oct. 11, 1996, Ser. No. 729,116

Int. Cl.⁶ H01R 13/648

U.S. Cl. 439—98

26 Claims

1. An electrical terminating connector for at least one electrical signal transmission cable of the type having at signal carrying



conductors and a cable shield, and the connector coupling said signal carrying conductors through a ground plate and to a mating connector or pin field assembly, the connector comprising, a housing adapted for mating with the connector assembly, and a plurality of subassemblies detachably coupled to the housing, each subassembly comprising a terminal electrically coupled to a respective signal carrying conductor, a latch mechanism for latching the subassembly directly to the ground plate, and grounding means electrically coupled to the cable shield for providing a ground path from the cable shield to the ground plate.

5,775,925

ELECTRICAL CONNECTOR SOCKET WITH DAUGHTERCARD EJECTOR

Robert J. Tondreault, Louisville, Ky., assignor to Robinson Nugent, Inc., New Albany, Ind.

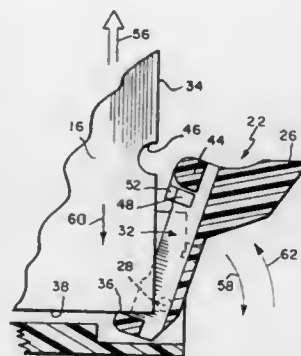
Continuation of Ser. No. 590,772, Jan. 24, 1996, Pat. No. 5,603,625, which is a continuation of Ser. No. 298,118, Aug. 30, 1994, abandoned, which is a continuation of Ser. No. 107,274, Aug. 16, 1993, Pat. No. 5,364,282. This application

Nov. 13, 1996, Ser. No. 748,357

Int. Cl.⁶ H01R 13/629

U.S. Cl. 439—157

10 Claims



1. An ejector apparatus configured to be coupled to an electrical connector socket which is formed to include an elongated slot for receiving a daughtercard, the socket having a plurality of electrical terminals configured to engage a plurality of conductive surfaces formed on the daughtercard for electrically coupling the daughtercard to the socket, the daughtercard being formed to include an opening located in close proximity to an end edge of the daughtercard, the ejector apparatus comprising first and second spring arms located on opposite sides of the elongated slot, at least one spring arm including a head configured to enter the opening in the daughtercard to provide a first retention force on the daughtercard, each spring arm also including a raised surface located adjacent the head, each raised surface being configured to engage a side surface of the daughtercard upon insertion of the daughtercard into the socket to provide a second retention force on the daughtercard in a direction normal to the first retention force, the ejector also including a surface configured to eject an end of the daughtercard located adjacent the ejector out of the elongated slot upon movement of the ejector relative to the socket.

5,775,926

Patent Not Issued For This Number

5,775,927

SELF-TERMINATING COAXIAL CONNECTOR

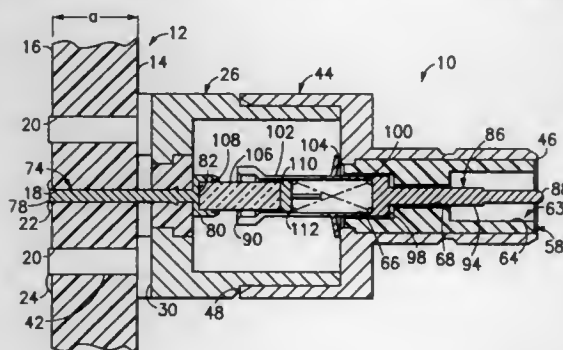
Eric S. Wider, East Haven, Conn., assignor to Applied Engineering Products, Inc., Conn.

Filed Dec. 30, 1996, Ser. No. 774,656

Int. Cl.⁶ H01R 29/00

U.S. Cl. 439—188

10 Claims



1. A self-terminating coaxial connector comprising: a generally tubular body; a contact assembly disposed concentrically within said body, said contact assembly comprising a rear contact for secure connection to a signal carrier and a front contact for releasable connection to a center contact of a mating coaxial connection, said front contact being moveable axially relative to said rear contact and relative to said body between a first position where said front and rear contacts are electrically engaged with one another and a second position where said front and rear contacts are spaced from one another; biasing means for urging said front and rear contacts towards said second position relative to one another; and a resistor connected to said rear contact for terminating signals transmitted to said rear contact when said front and rear contacts are in said second position.

5,775,928

FLEXIBLE HIGH VOLTAGE TERMINAL FOR ELECTROMECHANICAL CONNECTION

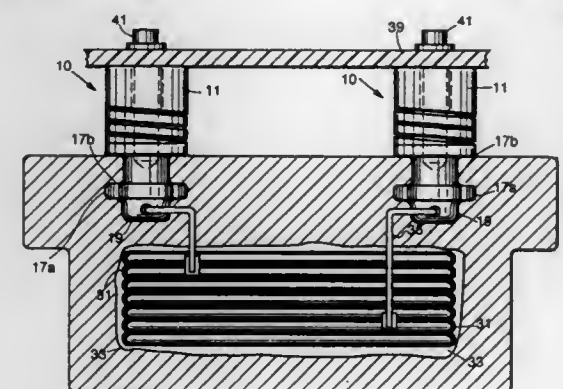
Cedric J. Booker, 4019 Marcelle St., Compton, Calif. 90221, and Douglas Shinno, 604 Fremont Ave., #2, South Pasadena, Calif. 91030

Filed Jul. 8, 1996, Ser. No. 676,711

Int. Cl.⁶ H01R 13/64

U.S. Cl. 439—246

9 Claims



1. A one piece electrical terminal comprising: a connecting post having a threaded central bore; an intermediate section;

a helical flexure section attached between said connecting post and said intermediate section, said helical flexure section including a central bore having a diameter that is less than 50 percent of a diameter of said helical flexure section; and an anchoring section attached to said intermediate section.

5,775,929

CARD CONNECTOR CAPABLE OF PREVENTING AN OBJECT AND CONTACTS FROM BEING DAMAGED

Osamu Hashiguchi, Tokyo, Japan, assignor to Japan Aviation Electronics Industry, Limited, Tokyo, Japan

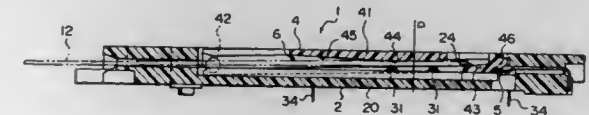
Filed May 1, 1997, Ser. No. 848,795

Claims priority, application Japan, May 23, 1996, 8-128072

Int. Cl.⁶ H01R 23/70

U.S. Cl. 439—260

8 Claims



1. A card connector for connection with a card-like object having a terminal on one surface thereof, said card connector comprising:

- a base insulator having a principal surface and an inclined surface inclined to said principal surface, said inclined surface being brought into engagement with a first part of said card-like object to move said first part towards said principal surface in accordance with movement of said card-like object along said principal surface;
- a contact held to said base insulator and having a contacting portion located above said principal surface; and
- a cover insulator opposite said principal surface; said cover insulator comprising: an engaging portion for being brought into engagement with said card-like object, said engaging portion being moved towards said principal surface together with said first part of the card-like object in accordance with movement of said card-like object along said principal surface; and a pressing portion connected to said engaging portion for pressing a second part of said card-like object towards said principal surface to make said terminal be brought into contact with said contacting portion of the contact.

5,775,930

ELECTRICAL CONNECTOR WITH LOCKING CONNECTOR POSITION ASSURANCE MEMBER

Michael Model; Edward Martin Bungo, both of Cortland, Ohio; John Marvin Chupak, West Middlesex, Pa.; Thomas Borsuck; Andreas Sikora, both of Hagen, Germany; Paul Gerbard Halbach, Wuppertal, Germany, and Shao Chung Hsieh, Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich., and Delphi Automotive Systems Deutschland, Wuppertal, Germany

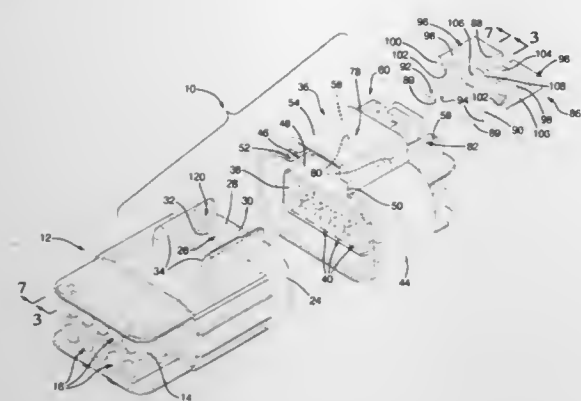
Filed Dec. 13, 1996, Ser. No. 766,857

Int. Cl.⁶ H01R 13/627

U.S. Cl. 439—352

2 Claims

- 1. An electrical connector assembly comprising: a first connector having a plurality of cavities formed therein and a latch nub on a surface;
- a second connector having a plurality of cavities defined therein and a primary connector lock arm elevated above a surface of the second connector for pivotal movement of the lock arm, the lock arm being slotted and defined by two spaced apart fingers and a bridge connecting the fingers at a first end and a pump handle connecting the fingers at a second end, channels being defined in the second connector intersecting a raised shoulder formed in the second connector,



a connector position assurance member having a base and two spaced apart steering arms extending in the same direction from the base and having a ramped tip and constructed and arranged so that a steering arm may be slidably moved in a respective channel formed in the second connector, said steering arms having a stop defined at a lower edge so that in a first pre-staged position of the connector position assurance member, the stop on the steering arms engages the raised shoulder formed in the second connector, said shoulder preventing further forward slidable movement of the connector position assurance member, and wherein upon mating said first connector to said second connector the bridge of the primary connector lock engages the latch nub on the first connector causing the primary connector lock arm to pivot upward and ride over the nub and snap back downward so that an inside edge of the bridge engages a rear surface of the latch nub locking said first and second connectors together and simultaneously a ridge on the first connector engages the ramped tip on each of the steering arms of the connector position assurance member causing the connector position assurance member arms to be lifted up wherein the stop at the lower edge of the arms is raised above the shoulder formed in the second connector so that the connector position assurance member may be moved forward to a final locking position wherein a portion of the connector position assurance member engages an underside of the pump handle and a surface of the second connector preventing the pump handle from being depressed downward and unlocking the bridge of the primary connector lock arm from the latch nub.

5,775,931

ELECTRICAL CONNECTOR LATCHING SYSTEM

Dennis Boyd Jones, Tustin, Calif., assignor to Molex Incorporated, Lisle, Ill.

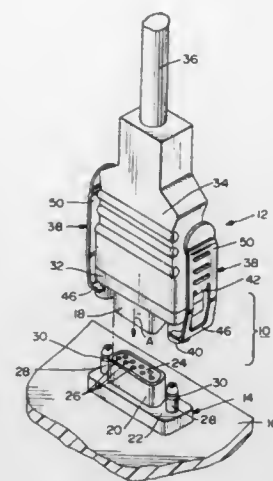
Filed May 3, 1996, Ser. No. 642,728

Int. Cl.⁶ H01R 13/627

U.S. Cl. 439—358

10 Claims

6. An electrical connector, comprising:
a shell having a forward connecting section for connection with a complementary electrical connector in a mating direction;
a pair of guide ferrules on respective opposite sides of the connection section of the shell for receiving an appropriate pair of guide posts on the complementary electrical connector; and
a pair of latch members extending in said mating direction along opposite sides of said connecting section, each latch member being a one-piece metal structure and including a fulcrum portion securely fixed to a respective one of the guide ferrules, a free latch end projecting from one side of the fulcrum portion and pivotally movable between a latch position in latching engagement with a respective one of the guide posts on the complementary electrical connector and a release position disconnected from the complementary connector, and a



free actuator end projecting from the opposite side of the fulcrum portion.

5,775,932

ELECTRICAL CONNECTOR

Hitoshi Saito, and Kazuto Ohtaka, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

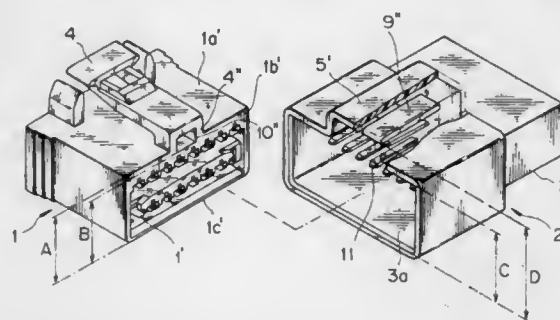
Filed Oct. 16, 1996, Ser. No. 732,664

Claims priority, application Japan, Oct. 16, 1995, 7-266668

Int. Cl.⁶ H01R 13/64

U.S. Cl. 439—378

2 Claims



1. An electrical connector comprising:

a male connector;
a female connector for at least partially housing therewithin said male connector;
a locking arm mounted on an upper wall face of said male connector;
a bending preventing member extending from an inner wall face of said female connector toward an opening in said female connector; and
an escape portion formed through a front end face of said male connector below said locking arm and on a side of said male connector which faces a front end of a housing body of said female connector so as to allow said bending preventing member mounted on said front end of said housing body to enter said escape portion, and prevent terminals of said female connector from being bent by said bending preventing member of said female connector contacting said front end face of said male connector when said male connector is mistakenly fitted so as to be slanted at an angle with respect to said female connector.

5,775,933

STRUCTURE OF LAMP SOCKET

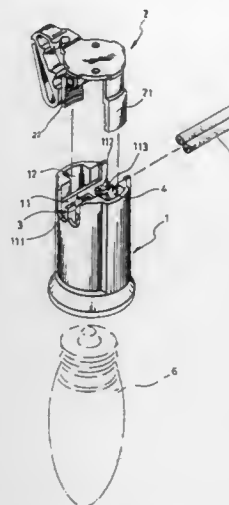
Ming-Hsiung Chen, 7F, 16, Alley 3, Lane 227, Nung-An St., Taipei, Taiwan

Filed Jul. 8, 1996, Ser. No. 678,554

Int. Cl.⁶ H01R 4/24

U.S. Cl. 439—419

1 Claim



1. An electric socket of the type comprising a socket body having a top wire groove and two plug holes at two opposite sides of the top wire groove, a center metal contact plate and a side metal contact plate respectively mounted in said socket body and partially projecting into said top wire groove of said socket body, an electric wire mounted in said top wire groove of said socket body, and a socket cap having two downward mounting plug rods respectively fastened to said plug holes of said socket body to hold down said electric wire, the improvement comprising two outer electric wire supports transversely raised from two opposite ends of the top wire groove of said socket body, and an intermediate electric wire support transversely raised from the top wire groove of said socket body between said center metal contact plate and said side metal contact plate, said outer electric wire supports and said intermediate electric wire support having a respective transversely corrugated top edge fitting the transverse cross section of the periphery of said electric wire and forced into engagement the periphery of said electric wire after the mounting of said socket cap on said socket body.

5,775,934

COAXIAL CABLE CONNECTOR

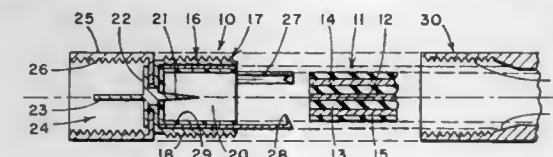
Dale C. McCarthy, Pensacola, Fla., assignor to Centerpin Technology, Inc., Gulf Breeze, Fla.

Filed May 15, 1996, Ser. No. 647,735

Int. Cl.⁶ H01R 13/00

U.S. Cl. 439—427

10 Claims



1. An electrical connector for coupling to an end of an electrical conductor of the type having a center conductor enclosed with an inner insulation and a generally concentric conductive sheath around said inner insulation and enclosed in an outer insulation comprising:

a housing having an electrically conductive portion and a bore therein, said housing having a threaded portion thereon;
at least one electrical conductive prong having two end portions, said conductive prong having one end portion attached to said

housing and having a second end portion protruding axially into said housing bore for receiving the end of said electrical conductor;

an electrically conductive clamp electrically connected to said electrically conductive housing portion and insulated from said electrical conductive prong, said electrically conductive clamp having a pointed end sized for driving into said electrical conductor outer insulation and into the conductive sheath without contacting the center conductor;

a housing cap member having a bore therethrough, said bore having a threaded portion for threaded attachment to said housing threaded portion, and said bore having an annular tapered wedge portion therein and being attachable to said housing and shaped to drive said electrically conductive clamp into said outer insulation and into the concentric conductive sheath when said threaded cap member is threaded onto said housing threaded portion to thereby drive said conductive clamp into said insulated wire outer insulation to form a conductive path between the concentric conductive sheath and the electrically conductive housing portion, whereby a coaxial cable can be attached to the electrical connector by sliding the end of a coaxial cable end portion into the electrical connector housing bore and attaching the cap member.

5,775,935

SYSTEM AND METHOD FOR CONNECTING COLOR CODED CABLES TO A DEVICE

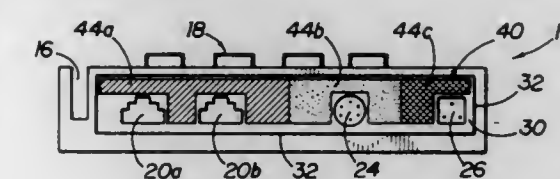
Joseph A. Barna, Marietta, Ga., assignor to Computer Data Exchange, Inc., Marietta, Ga.

Filed Dec. 18, 1996, Ser. No. 769,456

Int. Cl.⁶ H01R 9/22

U.S. Cl. 439—488

10 Claims



1. A system for associating each of a plurality of individual electrical connection ports with a particular cable designated for connection with a specific one of said ports, comprising:

a device having a plurality of electrical connection ports for receiving color coded cables, said device having a recessed portion extending around said electrical connection ports, said recessed portion having a rim portion defining the boundary of said recessed portion, said rim portion having a height; and
a color coded alignment strip having a thickness and a surface of colors arranged in ordered positions on said strip, said colors matching in color to color of said color coded cables, each color uniquely corresponding to one of the color coded cables, said color coded alignment strip being positioned and aligned in said recessed portion in a position that aligns said colors with said electrical connection ports that are to receive the color coded cables of the corresponding colors aligned with said electrical connection ports, and

said color coded alignment strip fitting in said recessed portion and the thickness of the color coded alignment strip being flushed with or below the height of the rim portion extending above the surface of the device and wherein said colors aligned with said electrical connection ports extend around said electrical connection ports.

5,775,936

ENGAGEMENT DETECTION CONNECTOR

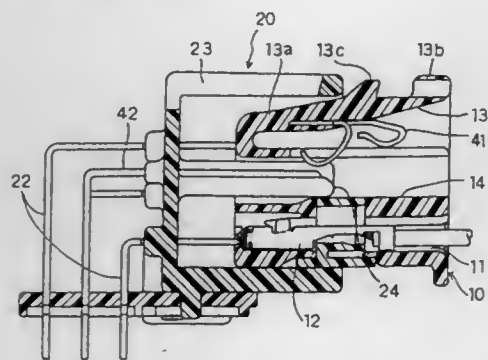
Takeshi Tsuji, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Jun. 6, 1996, Ser. No. 659,762

Claims priority, application Japan, Jun. 29, 1995, 7-188454
Int. Cl.⁶ H01R 3/00

U.S. Cl. 439—489

13 Claims



1. An engagement detection connector comprising:
a first connector (10) comprising an elastic member (13),
a second connector (20) configured for movement relative to the first connector (10) from an unengaged state, through an intermediate state where portions of said first connector (10) and said second connector (20) are in movable contact with one another and into a fully engaged state, the second connector (20) comprising a deflecting member (23) disposed for deflecting the elastic member (13) when the first connector (10) and the second connector (20) are in the intermediate state, and
an intermediate state detector (41, 42) for detecting the intermediate state of engagement of the first connector (10) and the second connector (20), the intermediate state detector (41, 42) comprising a deflection detector (42) for detecting the deflection of the elastic means (13) and a short-circuiting means (41) for affecting a short-circuit of the deflection detector (42) in the intermediate state of the first connector (10) and the second connector (20).

5,775,937

CARD CONNECTOR WITH SWITCH

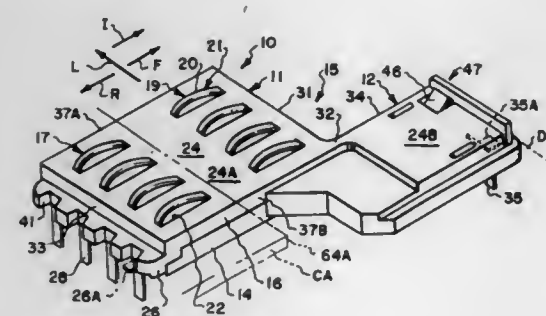
Harvé Guy Bricaud, and Fabrice Valcher, both of Dole, France, assignors to ITT Composants Et Instrumets, Bagneux, France

Filed Jan. 18, 1996, Ser. No. 588,536

Int. Cl.⁶ H01R 3/00

U.S. Cl. 439—489

7 Claims



1. An electrical connector for mounting on a read/write device, to connect to a microcircuit card that has a lower face with contact pads thereon, comprising:
a contact body portion which has an upper face with a plurality of slots therein;

a plurality of contacts mounted in said contact body portion, said contacts having resiliently deflectable blades that project above said contact body upper face, with said contacts having terminals for terminating to a circuit board;
a switch body portion which has an upper face;
a switch mounted on said switch body portion, said switch including an actuator with a portion projecting above said switch body portion upper face, and said switch including a plurality of terminals for terminating to the circuit board;
said contact body portion and said switch body portion being integrally molded with their upper faces being coplanar;
said connector body portion has a largely rectangular shape as seen in a plan view, with front and rear ends and first and second opposite sides, said connector body having an intersection location at the intersection of said front end and said second side;
said terminals of said contacts lying at said front and rear ends of said connector body portion and said switch terminals lying at a front end of said switch body portion;
said switch body portion projects forwardly and primarily beyond said second side of said connector body portion, from said intersection location, so said switch body portion is offset from said contact body portion, with said actuator lying forward and to one side of said contact blades.

5,775,938

CONNECTOR FOR FLAT CABLES

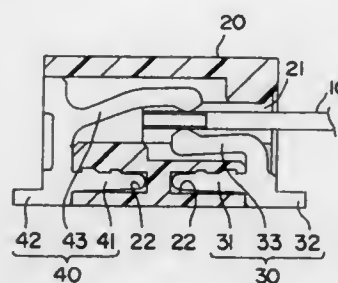
Yutaka Noro; Hideto Nakamura, and Masamitsu Chishima, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Dec. 19, 1996, Ser. No. 767,955

Claims priority, application Japan, Dec. 19, 1995, 7-330375
Int. Cl.⁶ H01R 9/07

U.S. Cl. 439—495

17 Claims



1. A connector for a flat cable comprising
a casing having a cavity therein, said cavity extending from a front opening in a front of said casing to a rear opening in a rear of said casing, said rear opening being remote from said front opening, said cavity adapted to receive a leading end of said cable through said front opening, a plurality of flat terminals on both sides of said leading end,
a plurality of front terminals complementary to said flat terminals, in said cavity, and inserted through said front opening, said front terminals adapted to contact said flat terminals on one side of said leading end,
a plurality of rear terminals complementary to said flat terminals, in said cavity, and inserted through said rear opening, said rear terminals adapted to contact said flat terminals on another side of said leading end,
said front terminals and said rear terminals making electrical contact with said leading end when said leading end is between said front terminals and said rear terminals,
a plurality of front leads, each in electrical contact with at least one of said front terminals and extending out of said casing through said front opening, a plurality of rear leads, each in electrical contact with at least one of said rear terminals and extending out of said casing through said rear opening.

5,775,939
INTERFACE ASSEMBLY FOR PERIPHERAL ACCESSORIES

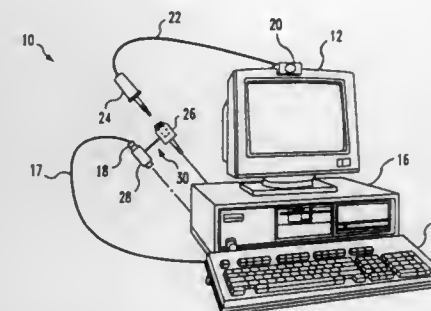
David A. Brown, Indianapolis, Ind., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 8, 1996, Ser. No. 727,684

Int. Cl.⁶ H01R 27/00

U.S. Cl. 439—502

13 Claims



1. An accessory connector and adapter assembly for use in a personal computer system comprising a first accessory port having a reference voltage terminal, an accessory cable having cable end connectors insertable into the first accessory port for connection to the reference voltage terminal, and an audio input port, said assembly being operable to supply electrical power to an audio peripheral device coupled to said audio input port and comprising:
a first interface having a first connector portion dimensioned for insertion into the first accessory port and a second connector portion dimensioned to accommodate a terminating end of the accessory cable, to thereby establish an electrical connection therebetween;
a second interface having a first connector portion dimensioned to selectively establish an electrical interconnection with the audio input port and
a second connector portion dimensioned to selectively establish an electrical interconnection with the audio peripheral device;
and
an electrical cable for electrically interconnecting the first and second interfaces, whereby electrical power may be supplied to the audio peripheral device from the reference voltage terminal of the first accessory port.

5,775,940

CARD-TYPE CONNECTOR WITH FUSIBLE ELEMENTS
Hidemi Tanigawa, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

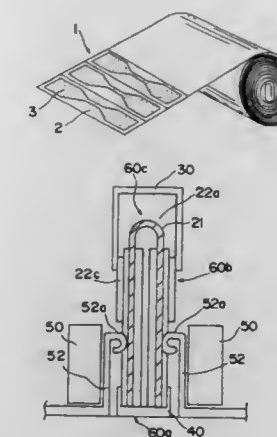
Filed Aug. 1, 1996, Ser. No. 690,772

Claims priority, application Japan, Aug. 1, 1995, 7-216619
Int. Cl.⁶ H01R 31/08

U.S. Cl. 439—507

19 Claims

1. An electrical connector adapted for introduction into an insertion position in a complementary socket containing at least one terminal biased toward said connector when in said insertion position, said connector having a foot portion, constituting a leading edge when said connector is inserted into said socket, a heat portion remote from said foot portion, and a body portion therebetween, said connector comprising a first insulation board and a second insulation board placed back-to-back, said first board having a first outer face, said second board having a second outer face, at least one first groove in said first face and, in alignment therewith, at least one second groove in said second face,
a conductor, having two ends, and a central portion therebetween in said first groove and said second groove, one of said ends being in said first groove and another of said ends being in said second groove, said conductor being bent at said central portion between said first groove and said second groove at said head portion, said ends being in said body portion or adjacent said foot portion, a protective cover on



said foot portion or said body portion overlying said ends of said conductors, said first insulation board and said second insulation board being joined at a central fold line, said protective cover comprising a first protective plate on said first face and a second protective plate on said second face, said first plate and said second plate overlying said ends, said first protective plate being hinged to said first board and said second protective plate being hinged to said first board or said second board.

5,775,941

Patent Not Issued For This Number

5,775,942

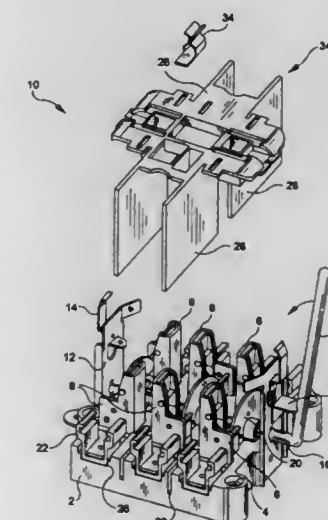
CLAMP JAW, LEVER BYPASS METER SOCKET
Walter Jeffcoat, Vidalia, Ga., assignor to Thomas & Betts Corporation, Memphis, Tenn.

Filed Sep. 11, 1996, Ser. No. 710,080

Int. Cl.⁶ H01R 29/00

U.S. Cl. 439—517

20 Claims



1. A meter socket assembly comprising:
a block of insulative material;
a plurality of line and load jaw-type releasable contacts for receiving the blades of a meter, each of said contacts being mounted on said block and including a stationary contact and a movable contact mechanically and electrically connected to the stationary contact;

means resiliently biasing each of said movable contacts to be in clamped relation with its associated stationary contact; and meter bypass means including bypass cams coupled to a manually rotatable shaft, the bypass cams being movable from an operating position whereby the jaw-type contacts are clamped and current flows through a meter and a bypass position in which the bypass cams are electrically shorting the line and load end contacts for changing or testing a meter without service interruption, wherein each of said stationary contacts is stamped from a conductive material and bent into shape to form a one-piece contact thereby eliminating areas of high resistance and potential failure points due to multi-component assembly.

5,775,943

STANDBY RECEPTACLES

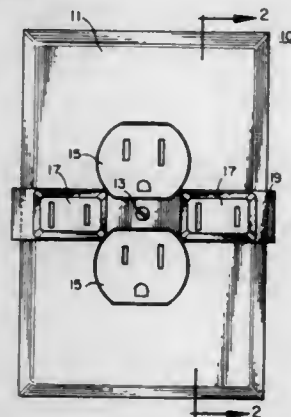
James J. McElhone, 8 S. 13th St., Darby, Pa. 19023

Filed Dec. 13, 1996, Ser. No. 764,986

Int. Cl.⁶ H01R 13/60

U.S. Cl. 439—528

13 Claims



1. A device for use with electrical appliances having an electrical plug with conductive prongs for insertion in an electrical power outlet, comprising:

- an electrical power outlet having a receptacle for transmitting electrical power to the electrical plug through the conductive prongs thereof;
- a standby receptacle made of dielectric material and having prong receptacles for receiving the conductive prongs snugly and simultaneously, said prong receptacles preventing transmission of electrical power to the electrical plug when inserted therein; and
- means for readily removably mounting said standby receptacle to a point proximate the electrical power outlet.

5,775,944

SEALED CONNECTOR-TO-BODY INTERFACE

William George Flask, Youngstown, and John Henry Bakker, Cortland, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

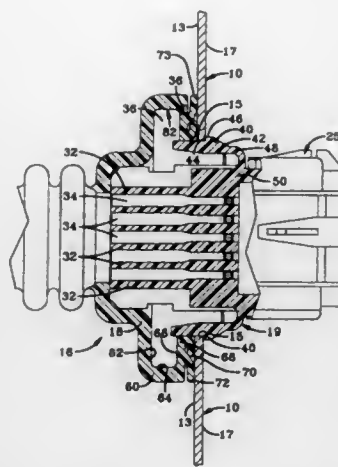
Filed Aug. 19, 1996, Ser. No. 699,368

Int. Cl.⁶ H01R 13/73

U.S. Cl. 439—556

7 Claims

1. A sealed connector-to-body interface comprising:
- a substantially planar body surface;
 - an electrical connector including a housing having a shoulder proximate to one end thereof, wherein the electrical connector is affixed to the planar body surface and the shoulder is aligned substantially parallel to the planar body surface and spaced apart therefrom, wherein the shoulder includes a first shoulder surface facing the planar body surface; and
 - a grommet mounted to the connector extending away from the planar body surface, wherein the grommet includes (i) an



annular radially extending wall abutting the first shoulder surface, (ii) a first annular lip seal mounted to the annular radially extending wall and compressed between the shoulder and a first side of the planar body surface facing the shoulder and (iii) a second annular lip seal mounted to the annular radially extending wall concentrically with the first annular lip seal and radially exterior thereof, wherein the first annular lip seal is radially interior of an exterior periphery of the shoulder and wherein the second annular lip seal extends to a radial exterior of the exterior periphery of the shoulder.

5,775,945

SPlicing OF DISCRETE COMPONENTS OR ASSEMBLIES RELATED APPLICATIONS

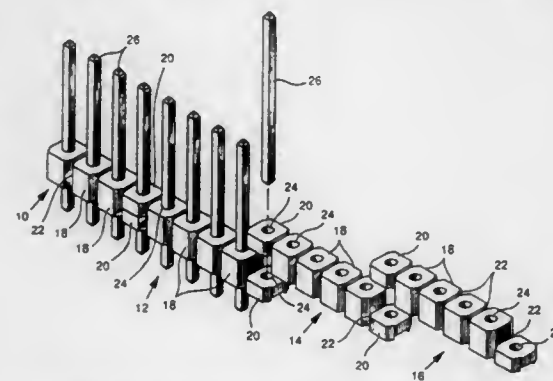
Giuseppe Bianca, Temecula, and Robert M. Bogursky, Encinitas, both of Calif., assignors to Autosplice Systems Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 498,536, Jul. 5, 1995, Pat. No. 5,616,053, and Ser. No. 761,899, Dec. 9, 1996. This application Dec. 13, 1996, Ser. No. 764,385

Int. Cl.⁶ H01R 13/40

U.S. Cl. 439—590

24 Claims



1. A method of chaining together discrete segments comprising molded units having a hole containing components separated at a given pitch distance to form a continuous elongated strip comprising component-containing units while maintaining the given pitch distance, comprising the steps:

- (a) providing at least first and second discrete molded segments each comprising units having holes containing components separated by said given pitch distance, said molded segments each comprising at least at one end a reduced-size end unit having a hole with the reduced-size end units of the first and second units free of components and being complementarily configured so that when fitted together they jointly form a unit with approximately the same size and shape as the units in the first and second segments and in-line with the other units,

(b) positioning the first and second discrete segments end-to-end such that the end units fit together with their holes in aligned relationship.

(c) introducing a component into the aligned holes to splice together the first and second discrete segments to form a continuous elongated strip comprising component-containing units while maintaining the given pitch distance between the components.

5,775,946

SHIELDED MULTI-PORT CONNECTOR AND METHOD OF ASSEMBLY

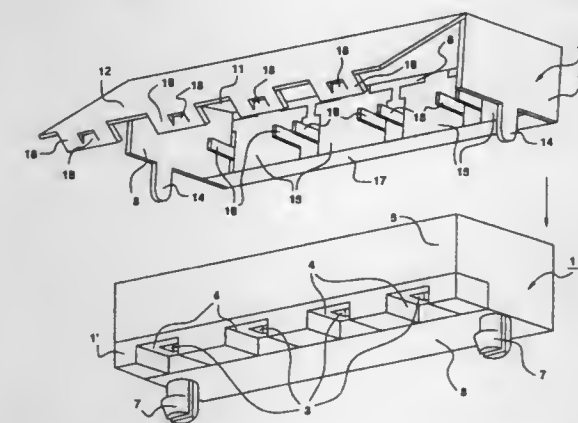
Francisco R. Briones, Markham, Canada, assignor to Amphe-nol Corporation, Wallingford, Conn.

Filed Aug. 23, 1996, Ser. No. 702,179

Int. Cl.⁶ H01R 13/648

U.S. Cl. 439—607

32 Claims



1. A shielded electrical connector having an insulative housing, said housing including a bottom wall, a top wall, a rear wall, a front wall, and side walls extending between said top and bottom walls and also between said front and rear walls, said shielded electrical connector further including a one-piece metal shield of the type in which a rear panel of the shield is in a first position while the shield is being fitted over the housing, said rear panel in said first position being substantially coplanar with a top panel of the shield and said shield having in addition to the rear panel and said top panel, side panels for engaging the side walls of the housing; a front panel having openings for permitting passage of a mating connector, and a transverse extension of the front panel for engaging the bottom wall of the housing adjacent the front wall of the housing; and wherein said shield further comprises:

means for permitting the rear panel to be folded from said first position in which the rear panel is substantially coplanar with the top panel to a second position in which the rear panel is substantially perpendicular to said top panel to cover the rear wall of the connector housing after the shield has been fitted over the housing.

wherein said bottom wall of the housing and the rear panel of the shield have formed therein respective complementary latching means for securing the rear panel of the shield to the bottom wall of the housing at a location on the bottom wall which is adjacent the rear wall of the housing, said latching means and said extension of the front wall of the housing cooperating to retain the shield on the housing, and

wherein said latching means comprises a tab extending transversely from the rear panel of the housing, a latch extending upwardly from said tab, and a cavity in said bottom wall adjacent the rear wall of the housing for receiving said latch.

5,775,947

MULTI-CONTACT CONNECTOR WITH CROSS-TALK BLOCKING ELEMENTS BETWEEN SIGNAL CONTACTS

Takao Suzuki, Goro Haga, and Kazushi Kamata, all of Tokyo, Japan, assignors to Japan Aviation Electronics Industry, Limited, Tokyo, Japan

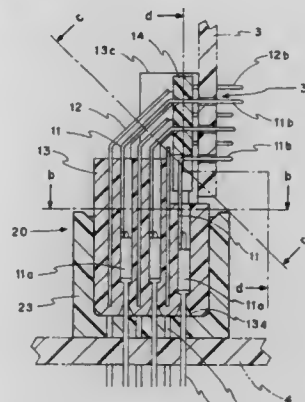
Filed Jul. 26, 1994, Ser. No. 280,807

Claims priority, application Japan, Jul. 27, 1993, 5-040841

Int. Cl.⁶ H01R 13/648

U.S. Cl. 439—608

8 Claims



1. A multi-contact cross talk blocking connector plug comprising an insulative housing defined by a bottom wall and side walls to be inserted into a recess in a housing of a receptacle connector so that said plug housing fits into said recess of said receptacle connector, a plurality of first contacts fixedly mounted in said insulative plug housing, said first contacts extending in parallel with one another and being arranged, in cross-sectional view, in rows and columns of a first matrix pattern with a constant pitch between rows and columns, and a plurality of discrete right angle second contacts fixedly mounted in said insulative plug housing, said second contacts being insulated from each other, said second contacts separately extending in parallel with one another and with said first contacts and being arranged, in cross-sectional view, in rows and columns of a second matrix pattern with a constant pitch between rows and columns, said second matrix pattern being displaced by a half pitch from said first matrix pattern in both the row and column directions, each one of said second contacts providing cross talk blocking means interposed between two of said first contacts for blocking cross talk from occurring between said two of said first contacts, the right angle of each of said second contacts having an L-shaped cross section with two flange portions connected to each other, one of said two flange portions of said L-shaped cross section being interposed between an adjacent two of said first contacts arranged in a row, the other of said two flange portions of said L-shaped cross section being interposed between an adjacent two of said first contacts arranged in a column, said two flange portions extending along said first contacts to provide said cross talk blocking means.

5,775,948

ELECTRICAL CONNECTOR

John Nigel Madeley, Workson, United Kingdom, assignor to Cinch Connectors Ltd., Carlton-In Lindrick, United Kingdom

Filed Jul. 26, 1996, Ser. No. 686,940

Claims priority, application United Kingdom, Aug. 28, 1995, 9515507

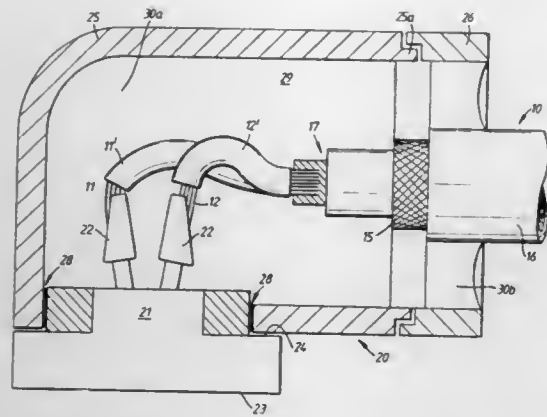
Int. Cl.⁶ H01R 9/03

U.S. Cl. 439—610

16 Claims

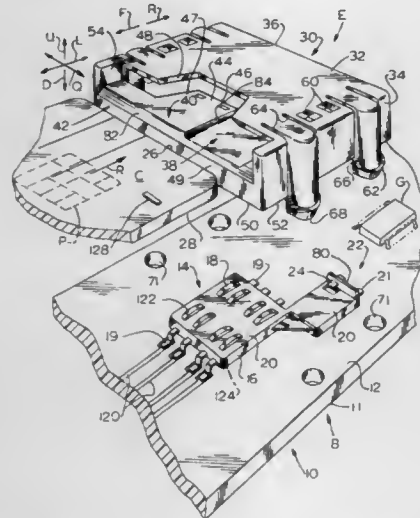
6. Electrical connector apparatus comprising:

- a cable attached to a main connector part;
- a back shell attached to said main connector part arranged to enclose the connection between said main connector part and said cable, said back shell comprising a first portion attached



5,775,949
COMPACT SMART CARD RECEIVER
Herve Guy Bricaud, and Yves Pizard, both of Dole, France, assignors to ITT Composants et Instruments, Bagneux, France

Filed Jul. 26, 1996, Ser. No. 687,846
Claims priority, application France, Jul. 28, 1995, 95 09207
Int. Cl.⁶ H01R 23/70
U.S. Cl. 439—630



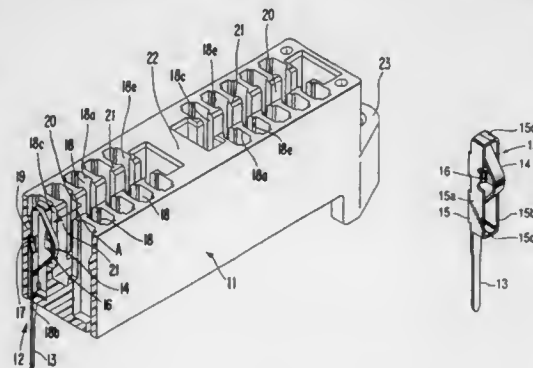
1. A smart card receiver for receiving a smart card of the type that has upper and lower faces and a plurality of contact pads on one of said faces, and for establishing electrical connection with said contact pads comprising:

- a circuit board having upper and lower faces and a plurality of conductive traces;
- a one-piece molded plastic cover (30) that lies on said circuit board to lie primarily above said board upper face, said cover forming slot walls of a card-receiving slot (38) that receives a rearwardly-inserted smart card into a fully-installed card position;
- an electrical connector (14) which includes a connector body (16) mounted on said circuit board and a plurality of card-engaging contacts mounted on said body, each contact having a tail engaged with one of said traces of said circuit board, and each contact having a card-engaging contact portion positioned to initially lie in said card-receiving slot prior to

insertion of the smart card, and to engage the contact pads of the card lying in said card-receiving slot;
said connector body being fixed in position on said circuit board and said cover being shiftable on said circuit board, with said cover engaging and being positioned in at least one direction by said connector body.

5,775,950
CARD-EDGE CONNECTOR
Takeshi Tsuji, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Sep. 16, 1996, Ser. No. 714,391
Claims priority, application Japan, Sep. 22, 1995, 7-269228
Int. Cl.⁶ H01R 23/70
U.S. Cl. 439—637



8 Claims

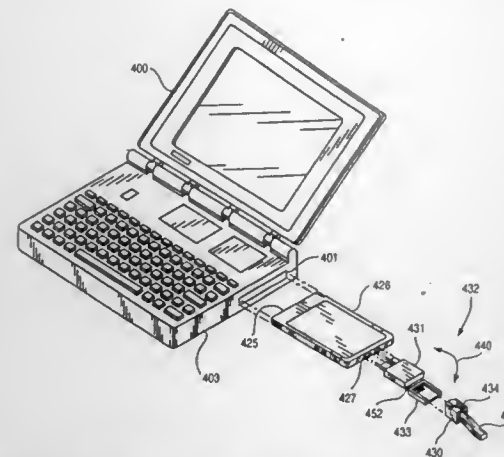
1. A card-edge connector comprising a housing having a slot to receive a card-edge, the housing having a recess at the side of said slot, said recess having an electrical terminal therein and an open end through which said terminal is inserted into said recess, the terminal comprising a body within said recess and a resilient member protruding into said slot through an opening for contact with a card-edge, wherein said opening extends to and is open at said open end of said recess, said recess includes a plurality of abutment surfaces engageable with said body to prevent substantial movement toward and away from said slot and control surfaces at the open end and along the length of said opening engageable with said resilient member to prevent substantial movement in a direction along said slot, said terminal is composed of sheet metal and comprises a base, a resilient arm extending from the base and bent over the base to lie at a spacing therefrom, and upstanding side arms on either side of said resilient arm, said side arms extending beyond the bend and free end of said resilient arm and having free end portions bent towards the respective other side arm to define a substantially continuous peripheral wall around said resilient arm, said resilient arm extending outwardly of said wall to define an electrical contact, and wherein a mid portion of at least one of said walls of said terminal is bent inwardly to lie behind said resilient arm and thereby prevent excessive inward movement of said arm with respect to said wall.

5,775,951
HI-JACK HINGED CONNECTION ADAPTER FOR INPUT/OUTPUT CARDS
Richard R. Gargiulo, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 333,139, Nov. 1, 1994. This application Sep. 30, 1996, Ser. No. 724,625
Int. Cl.⁶ H01R 25/00
U.S. Cl. 439—640

28 Claims

1. A communications adapter for connecting a communication connector and an input/output (I/O) card inserted in a receptacle defined by a body of a data processing system, the I/O card having an I/O card connector at an end exposed by the receptacle when the



I/O card is inserted in the receptacle of the body of the data processing system, the communications adapter comprising:

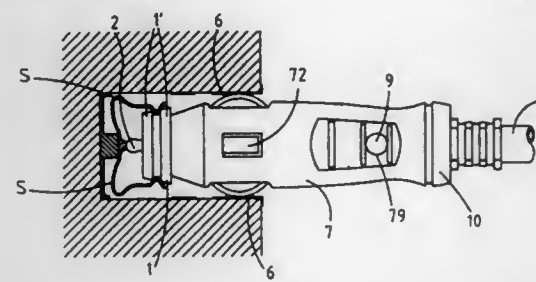
- a first member configured to mate with the I/O card connector of the I/O card;
- a second member configured to mate with the communication connector;
- the second member configured with the first member such that the second member may be positioned in an operational position for mating with the communication connector when the first member is mated with the I/O card connector of the I/O card in the receptacle of the body of the data processing system; and
- the second member configured with the first member such that the second member may be positioned in a stored position different from the operational position when the first member is mated with the I/O card connector of the I/O card in the receptacle of the body of the data processing system.

5,775,952
PLUG FOR AUTOMOBILE CIGARETTE LIGHTER SOCKET

Wen-San Lu, No. 2, Lane 9, June Yi St., Shin Chin Town, Taipei, Taiwan
Continuation of Ser. No. 530,622, Sep. 20, 1995, abandoned.
This application Jul. 16, 1997, Ser. No. 895,207
Int. Cl.⁶ H01R 17/18

U.S. Cl. 439—668

14 Claims



1. A plug for an automobile cigarette lighter socket, comprising: a case body having a front end and a rear end, said case body having two openings defined therethrough and said rear end having a securing cap housing provided thereon;
two elastic pieces extending from said case body for engaging an inner periphery of said automobile cigarette lighter socket; an elastic conducting strip having two sides extending outside of said case body through said openings, respectively;
a first conducting means connected to said conducting strip and contacting an electrical outlet of said automobile cigarette lighter socket;
a cable having a terminal end;
a second conducting means connected to said cable and said conducting strip;

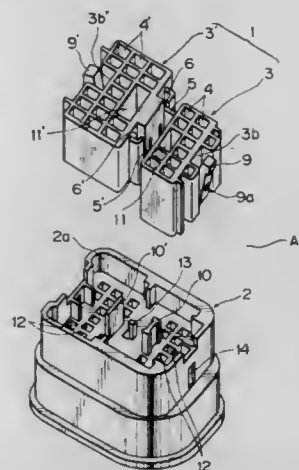
a securing cap engaged with said terminal end of said cable and received within said securing cap housing provided on said case body;

a front cover engaging said front end of said case body, said front cover having an outer surface, a first projecting portion and a second projecting portion, each of said projecting portions being defined about and protecting outwardly from said outer surface of said front cover, said first and said second projecting portions defining a securing recess therebetween, a second securing recess defined between a rear surface of said second projecting portion and said front end of said case body, said first securing recess being for receiving a retaining member of said automobile cigarette lighter socket; and
a rear cover engaging said rear end of said case body, wherein, when said plug is engaged in said socket, said elastic pieces deform inwardly and provide clearance for said inner periphery of said socket and apply a holding pressure thereagainst.

5,775,953
LOW-INSERTION-FORCE CONNECTOR ASSEMBLY
Makoto Yamanashi, and Masahiro Sawayanagi, both of Shi-zuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 14, 1996, Ser. No. 645,756
Claims priority, application Japan, May 16, 1995, 7-116682
Int. Cl.⁶ H01R 13/502
U.S. Cl. 439—701

4 Claims



1. A low-insertion-force connector assembly comprising: first and second connector housings to be mated with each other, the first connector housing including a plurality of connector housing units which are to be mated with the second connector housing successively step by step; adjacent connector housing units of said plurality of connector housing units being coupled so as to be slidable in a fitting direction;
a resilient securing arm formed on an opposite wall of a first connector housing unit of said adjacent connector housing units;
a provisional securing piece formed on another opposite wall of a second connector housing unit of said adjacent connector housing units; and
a protrusion for releasing provisional securing of the first and second connector housing units formed in a fitting plane of the second connector housing,
wherein said resilient securing arm is abutted on said provisional securing piece to secure the first connector housing unit to the second connector housing unit provisionally in a state where the first connector housing unit is ahead of the second connector housing unit,
wherein after the first connector housing unit is mated with the second connector housing, said protrusion moves said provisional securing piece so that provisional securing of the first

and second connector housing units is released, and thereafter the second connector housing unit is mated with the second connector housing.

5,775,954

ELECTRICAL PLUG-IN CONNECTOR

Bart Kerckhof, Oostkamp, Belgium; Artur Wohlfart, Bad Durkheim, Germany, and Joris Dobbelaere, Beernem, Belgium, assignors to Siemens Aktiengesellschaft, Munich, Germany

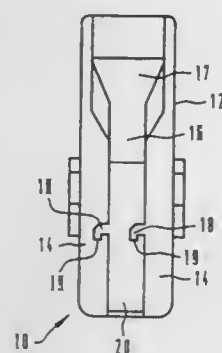
Filed Jun. 3, 1996, Ser. No. 657,410

Claims priority, application Germany, Jun. 2, 1995, 195 20 417.4

Int. Cl.⁶ H01R 13/502

U.S. Cl. 439—701

15 Claims



1. An electrical plug-in connector, comprising:
an encompassing enclosure having side walls defining an interior and having guides in said interior;
at least one modular multipole contact enclosure for insertion in said interior, said at least one contact enclosure having one-piece contact chambers being disposed next to each other in a row and being connected with each other and having integrated locking devices;
contact elements to be inserted and locked in said contact chambers; and
said at least one contact enclosure and one of said side walls having integral hooks, said at least one contact enclosure and another of said side walls having recesses formed therein compatible with said integral hooks, said at least one contact enclosure forming a form-locking connection with each of said side walls of said encompassing enclosure via said hooks and recesses formed on opposite side walls of said at least one contact enclosure and said side walls.

5,775,955

MODULAR FIELDBUS TERMINAL BLOCK

Maris Graube, 4247 NW. Half Mile La., Forest Grove, Oreg. 97116, and Ferrous Steinka, 18570 SW. Alderwood Dr., Aloha, Oreg. 97006

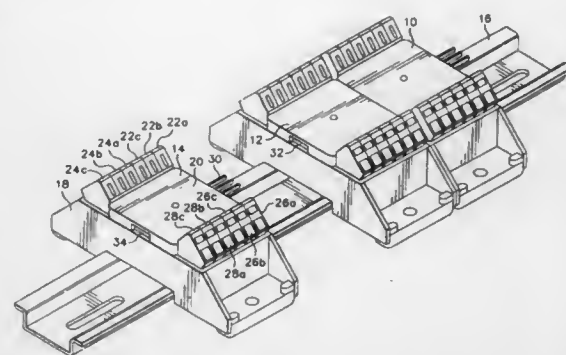
Filed Sep. 17, 1996, Ser. No. 710,466

Int. Cl.⁶ H01R 9/22

U.S. Cl. 439—717

13 Claims

1. A modular terminal block for a digital communication loop comprising a plurality of interconnected terminal sets mounted within a block housing, a set of male output connectors coupled to the terminal sets and positioned at a first end of the block housing, and a set of female input connectors coupled to the terminal sets and mounted at an opposite end of the block housing, said male



output connectors adapted to be mated with the female input connectors of a similar terminal block.

5,775,956

DISTRIBUTION PANELS ESPECIALLY FOR DATA TRANSMISSION NETWORKS

Rolf Sticker; Karl Muller, both of Donaueschingen, and Dieter Jaag, Villingen-Schwenningen, all of Germany, assignors to BTR Blumberger Telefon-Und Relaisbau Albert Metz, Germany

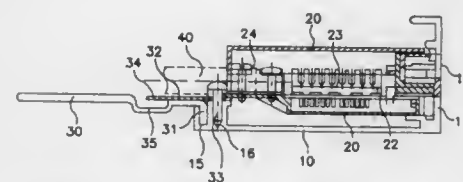
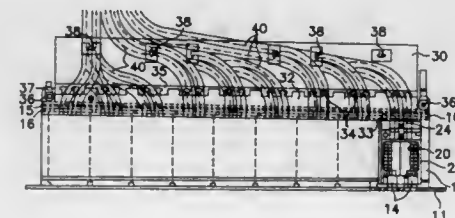
Filed Dec. 2, 1996, Ser. No. 755,894

Claims priority, application Germany, Dec. 7, 1995, 295 19 389 U

Int. Cl.⁶ H01R 9/24

U.S. Cl. 439—719

5 Claims



1. A modular cable distribution assembly for data transmission networks comprising:
a) a shaped rail (10) having a front portion (10a) with a plurality of jacks (14) arranged in a row therein and a receiving groove (15) on a rear longitudinal edge thereof;
b) a plurality of printed circuit boards (22) mounted on an inside face of said shaped rail (10), wherein a plurality of cable terminals (23) are mounted on said printed circuit boards (22);
c) a plurality of cables (40) adapted to be electrically and conductively connected to said cable terminals (23);
d) removable shield housings (20) encasing said printed circuit boards (22), said cable terminals (23) and said jacks (14);
e) a detachable support plate (30) having mounting means (38) for holding said cables (40), said detachable support plate (30) having a bent edge strip (31) which fits into said receiving groove (15) so that said detachable support plate (30) can be connected to said rear longitudinal edge of said shaped rail (10) in such a way that a top surface of said support plate (30) lies in a plane essentially parallel to said shaped rail (10); and
f) a clamping rail (32) for detachably securing said detachable support plate (30) in said receiving groove (15), said clamping rail extending over said edge strip (31) and said receiving groove (15), said clamping rail having a means (34) assigned

to a rear of each said jack for mounting said cables (40) leading to said jacks (14).

5,775,957

ELECTRICAL CONNECTOR

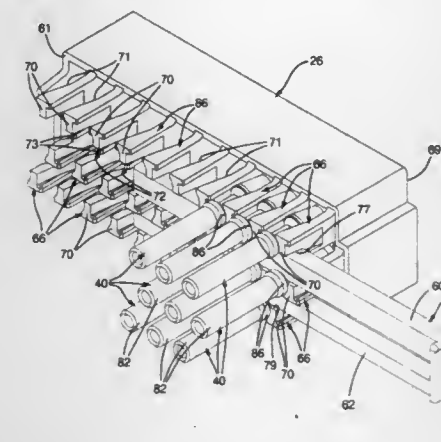
Randy Lynn Fink, and Brian Matthew Donato, both of Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 23, 1996, Ser. No. 716,958

Int. Cl.⁶ H01R 13/436

U.S. Cl. 439—752

13 Claims



1. An electrical connector comprising:
an outer housing;
a cavity within the outer housing;
a first inner housing within the cavity;
a first plurality of cylindrical openings within the first inner housing;
a first plurality of conductive terminals, wherein a portion of each conductive terminal of the first plurality of conductive terminals extends through one of the cylindrical openings;
a plurality of extensions aligned in at least first and second extension rows on a first end of the inner housing, wherein each extension includes a ramp for facilitating cantilever deflection of the extension when one of the conductive terminals is inserted in the first inner housing and wherein each extension includes a seat for locking said one of the conductive terminals in place;
a first channel located between the first and second extension rows on the first end of the first inner housing; and
a first lock bar in the first channel, maintaining the first plurality of conductive terminals in place.

5,775,958

RETENTION INSERT FOR ELECTRICAL CONNECTOR

Benjamin Samuel Luci, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

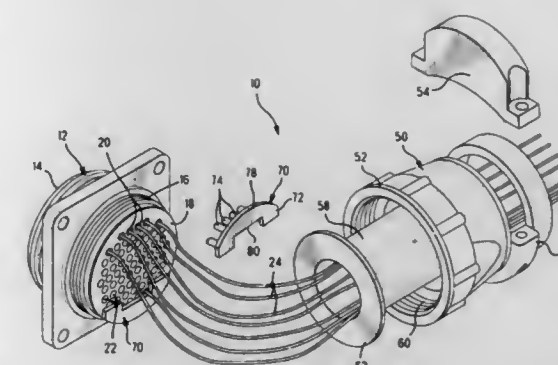
Filed Dec. 19, 1996, Ser. No. 770,036

Int. Cl.⁶ H01R 13/436

U.S. Cl. 439—752

6 Claims

1. A combination of a multiconductor cable connector and a retention insert therefor, comprising:
the cable connector including a housing having an array of passageways extending between a mating face and a rear face; and
the retention insert comprising an integral member having a transverse base section and a plurality of legs extending forwardly therefrom associated with several respective ones of said passageways adjacent a periphery of said housing rear face and spaced from remaining ones thereof, said member adapted to be located along said housing rear face for said legs to be inserted into said several ones of said passageways.



said base section extending between a peripheral edge and an inner edge and being shaped and dimensioned to correspond with a portion of said housing rear face adjacent a periphery thereof, said portion containing only said several ones of said passageways, said inner edge concluding prior to traversing any other ones of said passageways which are farther from said periphery when assembled to said housing, and said legs extending from adjacent said inner edge and said inner edge traverses said housing rear face adjacent said several passageways;
each said leg being shaped and dimensioned to extend into and closely along a side wall of a respective said passageway, alongside a conductor already positioned in and along said passageway,
whereby said retention insert is adapted to be assembled to said housing along said rear face after said conductors already extend rearwardly therefrom, with said legs extending forwardly into said respective passageways when said base section is disposed along and adjacent said housing rear face, and thereafter secure terminals on said conductors in position along said several passageways when said retention insert is then secured in position.

5,775,959

Patent Not Issued For This Number

5,775,960

FEMALE TERMINAL

Hitoshi Saito, and Hisashi Tsukamoto, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

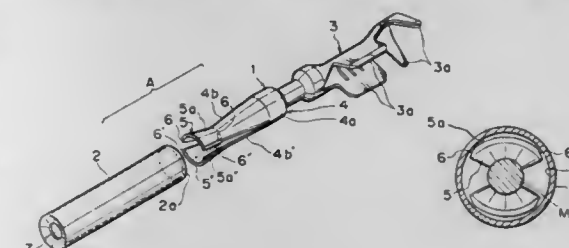
Filed Dec. 27, 1996, Ser. No. 774,271

Claims priority, application Japan, Dec. 28, 1995, 7-343970

Int. Cl.⁶ H01R 13/187

U.S. Cl. 439—843

6 Claims



1. A female terminal comprising:
a main body having a pair of opposed elastic clamping portions;
a cylindrical sleeve into which said main body and pair of opposed elastic clamping portions are inserted; and
guiding portions of said elastic clamping portions being formed with an inner peripheral wall surface which is of greater extent than an outer peripheral wall surface thereof, and opposite sides of said inner and outer peripheral wall surfaces

being connected by edges whose surfaces inclinedly extend between said inner and outer wall surfaces so that the opposite edges do not contact an inner wall of said sleeve when a male terminal is inserted into the female terminal.

5,775,961

ELECTRICAL CONTACT ASSEMBLY

John Mark Myer, Millersville, and Keith Robert Denlinger, Lancaster, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

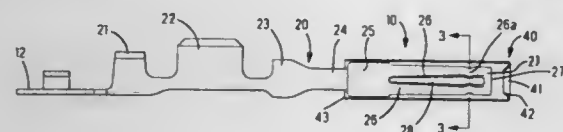
Continuation of Ser. No. 421,729, Apr. 13, 1995, abandoned.

This application Nov. 8, 1996, Ser. No. 744,886

Int. Cl.⁶ H01R 13/187; 15/10

U.S. Cl. 439—843

25 Claims



1. An electrical receptacle contact assembly for electrically receiving a pin contact comprising a wire termination section, said receptacle contact further comprising:

a first contact member having a free end and comprising a first pair of beams each having at least one section which comprises an inner surface which is adapted for electrical engagement with said pin contact;

a second contact member having a free end and comprising a second pair of beams;

said first and second contact members define a pin contact receiving area therebetween, said contact members are separated by two distinct gaps, said gaps are disposed between said free ends and are located at opposed positions relative to an axial length of said contact, and said gaps expand as said pin contact is inserted into said receptacle contact; and a sleeve member which encloses said contact members.

5,775,962

JOINING STRUCTURE FOR BOX-SHAPED PORTION OF TERMINAL LUG

Naoki Kakuta, and Takeya Miwa, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

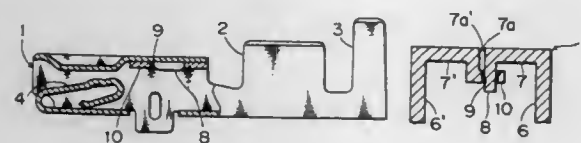
Filed Nov. 5, 1996, Ser. No. 744,194

Claims priority, application Japan, Nov. 8, 1995, 7-289856

Int. Cl.⁶ H01R 11/22

U.S. Cl. 439—852

6 Claims



1. A joining structure for a box-shaped portion of a terminal lug formed by bending a thin metallic plate, comprising:

first and second walls constituting a part of said box-shaped portion;

a locking claw provided at first end of said first wall;

a locking hole provided at a first end of said second wall, wherein said locking claw is fitted into said locking hole to join said first ends of said first and second walls to each other, and wherein said locking claw is bent at a substantially right angle to said first wall, and said locking hole opens in such direction as to allow said locking claw to fit therein to.

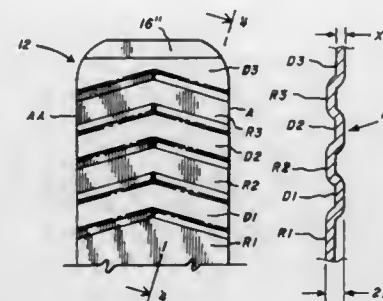
5,775,963
MALE-TYPE ELECTRICAL TERMINAL
Dwight Byfield, Jr., Fresno, Calif., assignor to WirthCo Engineering, Inc., Bloomington, Minn.

Filed Jan. 29, 1997, Ser. No. 790,646

Int. Cl.⁶ H01R 13/04

U.S. Cl. 439—884

6 Claims



1. An electrical terminal having a male-type terminal end portion shaped to be received by a female-type terminal, said male-type terminal end portion comprising a relatively thin, flat conductive metal strip having a preselected thickness;

mutually perpendicular longitudinal and transverse axes, a preselected transverse width defined by two sides respectively parallel to said longitudinal axis and a proximal end, said male-type terminal end portion further being characterized by having a plurality of longitudinally spaced apart indentations extending along said longitudinal axis toward said proximal end, said indentations each having a preselected depth to thus create an effective thickness of said male-type terminal end portion equal to the sum of said preselected depth and said preselected thickness of said metal strip; and each of said indentations extending from said longitudinal axis to said sides in two sections having preselected non-parallel axes.

5,775,964

FLUID MIXER CONDUIT

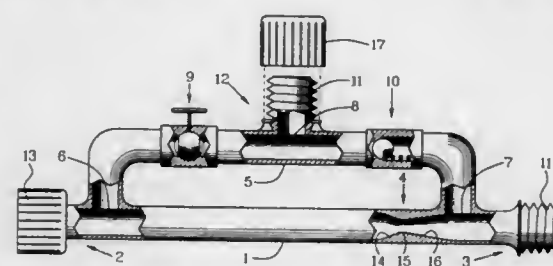
Scott R. Clark, 2021 Umbrella Tree Dr., Edgewater, Fla. 32141

Filed May 31, 1996, Ser. No. 657,788

Int. Cl.⁶ B63H 21/10

U.S. Cl. 440—88

20 Claims



1. A fluid-mixer conduit comprising:

a delivery tube having an input end and an output end;

a flow restriction in an internal periphery of the delivery tube at a position designedly upstream from the output end of the delivery tube;

an input tube which extends outwardly from the delivery tube at a divergence exit designedly downstream fluidly from the input end of the delivery tube and which converges back into the delivery tube at a mixture entry intermediate the flow restriction and the output end of the delivery tube;

at least one ingredient entry in fluid communication with the input tube intermediate the divergence exit and the mixture entry.

5,775,965

LEASH RELEASE MECHANISM FOR SURFBOARDS AND THE LIKE

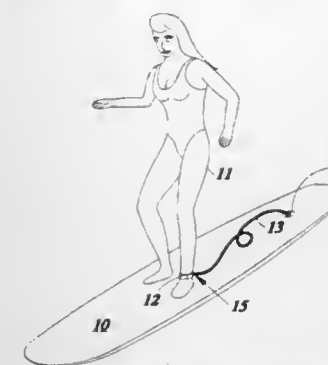
Joseph W. Hango, Brea, Calif., assignor to Surf More Products, Inc., San Clemente, Calif.

Filed Jan. 8, 1997, Ser. No. 780,635

Int. Cl.⁶ A63C 15/06

U.S. Cl. 441—75

5 Claims



1. A tether device for a surfboard comprising:

a. a flexible line adapted to be secured at one end to a surfboard, said line carrying a plug at its opposite end, said plug having a passage extending perpendicularly to the longitudinal axis thereof;

b. a body strap for securement about a body part of a user of said tether device;

c. a receptacle secured to said body strap, said receptacle having side walls defining a socket for receiving said plug, said receptacle including aligned openings extending through said side walls thereof and being aligned with said passage in said plug when said plug is inserted in said socket;

d. a locking pin for insertion through said aligned openings of said receptacle and said passage of said plug to retain said plug in said receptacle thereby to secure said flexible line to said body strap when said locking pin is so inserted and for releasing said line from said body strap when said locking pin is removed; and

e. retainer means for removably retaining said pin in said aligned openings of said receptacle and in said passage of said plug.

5,775,966

LIFE-SAVING DEVICE WITH LAUNCHER

Josep Antoni Bautista Real, and Rosa Maria Soriano Colomina, both of c/ Ferrandiz y Belles 4, 1°1°-17004-Girona, Spain

PCT No. PCT/ES96/00043, § 371 Date Jan. 15, 1997, § 102(e) Date Jan. 15, 1997, PCT Pub. No. WO96/36530, PCT Pub. Date Nov. 21, 1996

PCT Filed Mar. 1, 1996, Ser. No. 776,460

Claims priority, application Spain, May 17, 1995, 9500996

Int. Cl.⁶ B63C 9/00

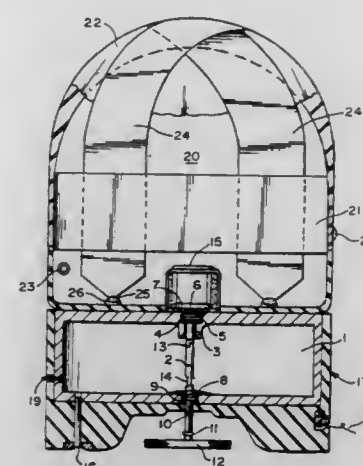
U.S. Cl. 441—80

6 Claims

1. A compact, reusable and launchable life-saving device generally of "missile" shape and having a replenishable/replaceable pressurized gas tank, comprising:

an inflatable life preserver which when inflated having generally the shape of a donut, a housing/container (1) forming said gas tank, and having a translatable, gas control element (2) extending through said housing/container from a first side to a second side thereof, and said gas control element having inlet (14) and outlet (13) means adjacent opposite ends of a gas passageway extending therebetween;

said inflatable life preserver and said housing/container being sealingly affixed to each other, with the end of said gas passageway containing said outlet means extendible into said inflatable life preserver via a "cup-like" entry section having a stop, forming a part of said preserver, for limiting the trans-



latable movement of said gas control element when activated to release said gas in said housing/container; wherein said life-saving device may be manually inflated as desired to any degree or fully inflated when launched by means of a launching gun.

5,775,967

DIAPER SWIM SUIT

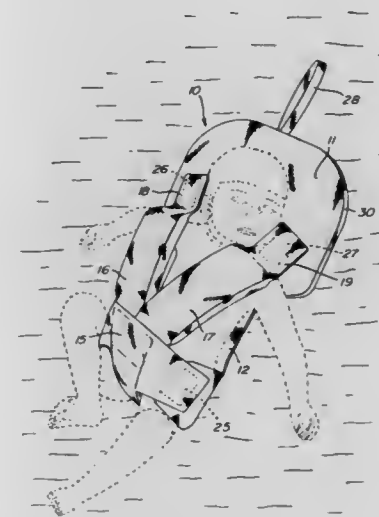
Regent Lacoursiere, and Mary Lacoursiere, both of 7015 Jarry St. East, Montreal, Que., Canada, H1J 1G3

Filed Mar. 25, 1996, Ser. No. 621,457

Int. Cl.⁶ B63C 9/00

U.S. Cl. 441—115

15 Claims



1. A flotation device for a child, the device comprising an upper section having flotation means designed to be adjacent to a rear head area of the child, a lower section having flotation means and designed to be adjacent the crotch and lower torso of the child, and an intermediate section having flotation means extending between said upper section and said lower section and designed to be adjacent an upper torso area of the child, said lower section having a diaper like configuration and having means for securing together a front and back portion thereof, and means for securing said front portion of said lower section to said upper section said flotation means of said upper section comprising a flotation panel, a recess being formed in said flotation panel to receive a rear portion of a child's head.

5,775,968

CATHODE DEVICE HAVING SMALLER OPENING

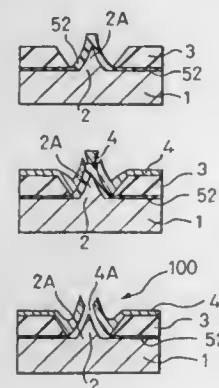
Osamu Toyoda; Keiichi Betsui; Shiya Fukuta, and Tadashi Nakatani, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 554,032, Nov. 6, 1995, Pat. No. 5,576,594, which is a continuation of Ser. No. 259,694, Jun. 13, 1994, abandoned. This application Aug. 19, 1996, Ser. No. 699,482 Claims priority, application Japan, Jun. 14, 1993, 5-141654

Int. Cl.⁶ H01J 1/30; 9/02

U.S. Cl. 445—24

36 Claims



13. A method for fabricating a cathode device, the method comprising the steps of:

forming at least one emitter tip having a conical tip end portion on a substrate;

forming an oxide layer at least one the surface of the formed emitter tip;

forming a gate electrode layer such that a material for the gate electrode is deposited at least to the oxide layer on the surface of the conical tip end portion of the emitter tip and the gate electrode layer has an opening through which the tip end portion of the emitter tip is exposed;

removing the oxide layer on the surface of the emitter tip so that an inner circumferential wall of the opening of the gate electrode layer is formed on the outside of the conical tip end portion of the emitter tip and extends approximately in parallel to the conical tip end portion of the emitter tip; and forming an insulating layer between the substrate and the gate electrode layer, the insulating layer having an opening through which the emitter tip is exposed.

5,775,969

TOY ELEMENT COMPRISING A HOLDER AND A THIN FLEXIBLE MATERIAL

Lars Pedersen, Billund, Denmark, assignor to INTERLEGO AG, Baar, Switzerland

PCT No. PCT/DK94/00356, § 371 Date Mar. 19, 1996, § 102(e) Date Mar. 19, 1996, PCT Pub. No. WO95/08380, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 21, 1994, Ser. No. 617,767

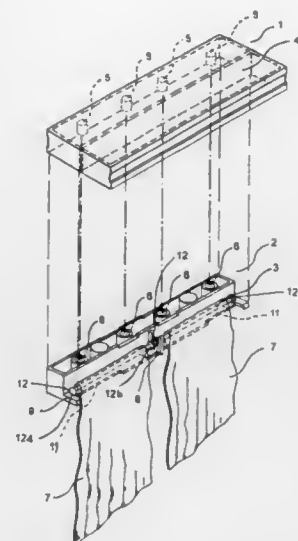
Claims priority, application Denmark, Sep. 22, 1993, 1067/93

Int. Cl.⁶ A63H 33/08; 19/00; 33/00

U.S. Cl. 446—110

10 Claims

1. An element to be used as a toy, e.g. for dollhouses, comprising a holder (1, 2) and a thin, flexible material (7) as well as coupling means for mounting the flexible material (7) in the holder (1, 2), characterized in that the coupling means comprise an elongate cavity in the holder with a longitudinal slot (10), said cavity encasing flexible holding means (3) and that the flexible material (7) extends through the slot (10) and includes portions disposed about the holding means (3) in such a manner that the thin, flexible material can be slidably moved on the holding means, and wherein the width of the slot is less than the holding means cross-sectional dimension so that upon attempt to pull the thin, flexible material (7) out of the longitudinal slot, said material (7)



acts on the holding means (3) to provide a clamping effect between the holding means (3) and the surfaces of said elongate cavity adjacent said slot on both sides of the holding means (3).

5,775,970

TOY ANIMAL ADJUSTABLE LEASH WITH SOUND AND LIGHT

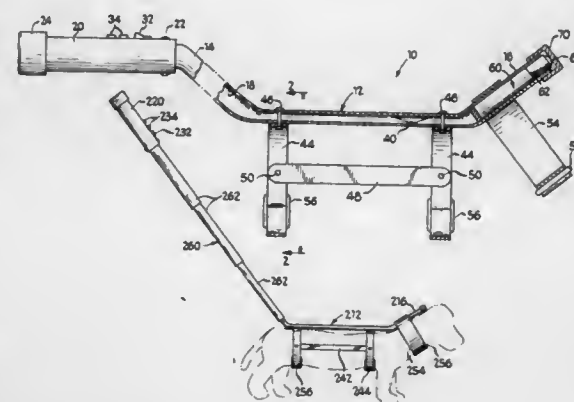
Daniel J. Klees, 224 W. Park St., Mundelein, Ill. 60060, and Terri Shepherd, 241 N. California Ave., Mundelein, Ill. 60060

Filed Jun. 27, 1996, Ser. No. 671,214

Int. Cl.⁶ A63J 5/04; A01K 27/00; A63H 5/00

U.S. Cl. 446—297

11 Claims



1. A toy comprising:
a substantially rigid, elongated, hollow leash member which maintains a preformed shape and having opposed ends;
a handle adjacent one end of the member;
a free end at the other end of the member opposite the handle;
at least one adjustable body strap loop attached to the leash member proximate the free end configured to fit around a toy animal;
a speaker carried by the toy proximate the free end of the leash member and obscured from view;
electronic sound producing circuitry carried by the toy;
a battery power source;
electrical connections between the sound producing circuitry and the speaker;
switches carried by the toy for manually actuating the sound producing circuitry; and
the body strap loop including a fastener permitting adjustment of the size of the body strap loop.

5,775,971

THREE-DIMENSIONAL FOLDED CARTON ACTION FIGURES

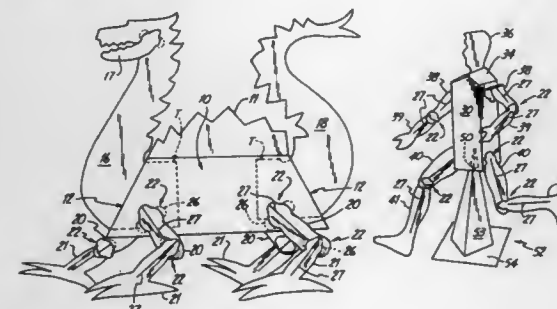
Jerry L. Brown, 683 N. Shore Dr., Forest Lake, Minn. 55025

Filed May 9, 1996, Ser. No. 644,046

Int. Cl.⁶ A63H 3/08; 3/46

U.S. Cl. 446—376

20 Claims



1. A toy character comprising:
a torso formed of sheet material, the torso having a plurality of spaced circular openings;
a plurality of appendages formed of sheet material, each appendage being pivotally connected to the torso at one of the circular openings, each appendage including:
a proximal end;
a distal end;
a head at the proximal end for engaging the circular opening, the head having first, second and third tabs, the first and third tabs located on opposite sides of the second tab and extending into the circular opening while the second tab does not extend through the circular opening; and
a longitudinal crease which bisects the second tab and extends generally along a center of the appendage from the proximal end toward the distal end.

5,775,972

TOY VEHICLE WITH AN IMPROVED STEERING MECHANISM

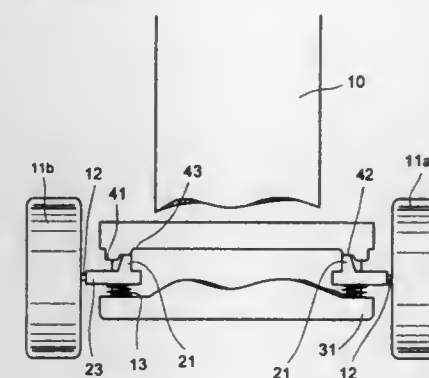
Wai-Hung Siu, Kowloon, Hong Kong, assignor to Energetic Industrial Technology Ltd., Hong Kong

Filed Aug. 1, 1996, Ser. No. 695,204

Int. Cl.⁶ A63H 17/36; 17/26; 18/00

U.S. Cl. 446—468

4 Claims



1. A toy vehicle comprising:
a rigid chassis;
a steering control mechanism,
first and second front wheels which are connected to first and second arms, respectively, and which are located on first and second sides of said vehicle, wherein each said arm is pivotally movable and said pivotal movement is controllable by said steering control mechanism to control the steering of said front wheels,

a cam member provided on each said arm such that when said vehicle is caused to turn to a first side, said cam member on said first arm wedges against said chassis; and
a first and second set of contoured step-levels on said first and second sides of said chassis respectively, wherein each said set of contoured step-levels comprises a lowest step-level nearest to the ground, a highest step-level furthest away from the ground and a shoulder level in between.

5,775,973

METHOD AND APPARATUS FOR GRINDING THE RIM OF A LENS

Takahiro Watanabe, Tokyo, Japan, assignor to Kabushiki Kaisha Topcon, Tokyo, Japan

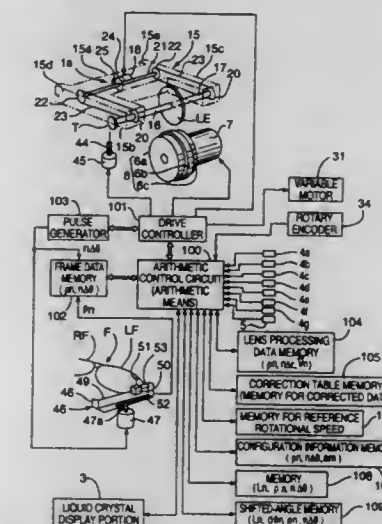
Filed Apr. 16, 1997, Ser. No. 843,702

Claims priority, application Japan, Apr. 17, 1996, 8-095429

Int. Cl.⁶ B24B 49/00

U.S. Cl. 451—5

8 Claims



1. A method of processing a rim of a lens, which comprises the step of grinding the rim of the lens to be processed with a grindstone so as to fit a configuration of an eyeglass while rotating and moving the lens toward and away from said grindstone at intervals of a rotational angle $n\Delta\theta$, in accordance with data (pn, $n\Delta\theta$) for processing the rim of the lens, said data having obtained by configuration measuring means;

wherein, from said data (pn, $n\Delta\theta$) and a radius of curvature of said grindstone, a displacement angle $d\theta_n$ is calculated between an assumed processing point at a radius vector pn of the rotational angle $n\Delta\theta$ [$n=0, 1, 2, 3, \dots, i$] and a true processing point where the lens comes into contact with said grindstone at the rotational angle $n\Delta\theta$.

5,775,974

UNIVERSAL JAW ATTACHMENT FOR MICROFINISHING MACHINE

Jon L. Hulsebus, Grandville, Mich., assignor to K-Line Industries, Inc., Holland, Mich.

Filed Dec. 10, 1996, Ser. No. 763,237

Int. Cl.⁶ B24B 1/00

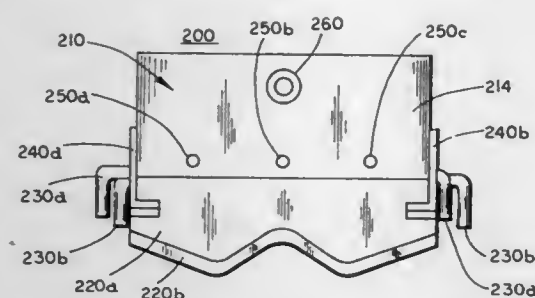
U.S. Cl. 451—28

30 Claims

1. A taper-correcting shoe assembly for a microfinishing machine having a pair of arms fixed to a base for engaging a workpiece, said taper-correcting shoe assembly comprising:

a mounting structure adapted for mounting to an arm of a microfinishing machine;

a first shoe movably mounted to said mounting structure for applying variable grinding pressure to a first portion of a surface of a workpiece;



a second shoe mounted to said mounting structure adjacent said first shoe for applying grinding pressure to a second portion of the surface of the workpiece; and
manual extension means, responsive to manual movement, for extending said first shoe outward from the arm on which said first shoe is mounted in order to correct any taper of the surface of the workpiece.

5,775,975

METHOD OF LAPPING A BEVEL GEAR

Sadao Mizuno, Nagoya; Akinori Hoshino, Toyota, and Tetsuya Morita, Gamagori, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

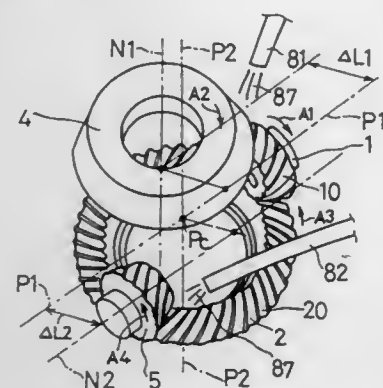
Filed Oct. 31, 1996, Ser. No. 741,912

Claims priority, application Japan, Oct. 31, 1995, 7-283872

Int. Cl.⁶ B24B 1/00

U.S. Cl. 451—47

10 Claims



1. A method of lapping at least one of a first gear and a second gear constituting a pair of bevel gears, comprising the steps of:
engaging said first and second gears with one another;
placing at least one gear-shaped tool such that an axis thereof lies in a position offset by a predetermined distance with respect to an intersection with an axis of said at least one of said first gear and said second gear, and which is engaged with said at least one of said first gear and said second gear, and
engaging said at least one of said first gear and said second gear with said at least one gear-shaped tool while supplying lapping liquid to engaging portions of said at least one of said first gear and said second gear and said tool, so as to apply a lapping treatment to an engaging surface of a toothed portion of said at least one of said first gear and said second gear.

5,775,976
METHOD AND DEVICE FOR MAGNETIC-ABRASIVE
MACHINING OF PARTS

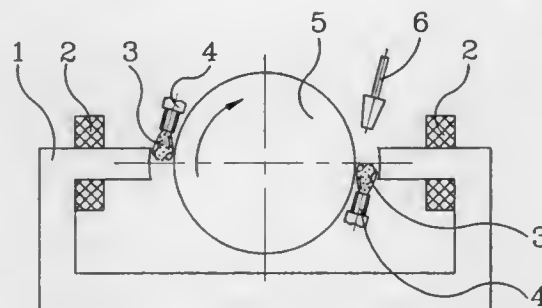
Gennady Kremen, Brooklyn, N.Y.; Savva Feigyn, and Leonid Igelshteyn, both of Manalapan, N.J., assignors to Scientific Manufacturing Technologies, Inc., Brooklyn, N.Y.

Filed Mar. 27, 1997, Ser. No. 827,158

Int. Cl.⁶ B24B 1/00; B24C 1/00

U.S. Cl. 451—36

12 Claims



1. A method of magnetic-abrasive machining of a part, comprising the steps of generating a magnetic field; introducing a part to be machined into the magnetic field; supplying a magnetic-abrasive powder into a machining zone toward a surface of the part to be machined; and generating a vacuum between the magnetic-abrasive powder and the surface of the part to be machined so that the magnetic-abrasive powder is moved relative to the surface of the part to be machined.

5,775,977

PROCESS FOR THE MECHANICAL ROUGHENING OF
THE SURFACE OF A PRINTING PLATE SUBSTRATE

Stephan J. W. Platzer, Califon, N.J.; Walter Mackert, Mainz, and Rudolf Neubauer, Oestrich-Winkel, both of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Germany

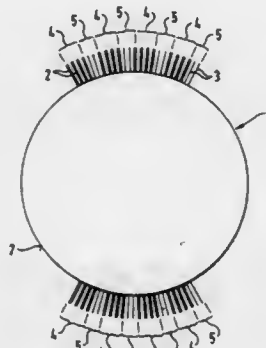
Division of Ser. No. 530,573, Sep. 19, 1995, abandoned. This application May 23, 1996, Ser. No. 652,167

Claims priority, application Germany, Sep. 30, 1994, 44 35 221.2

Int. Cl.⁶ B24B 1/00

U.S. Cl. 451—37

11 Claims



1. A process for the mechanical roughening of a surface of a printing plate substrate comprising aluminum or aluminum alloy, which process comprises wet brushing the substrate with a suspension of from 5 to 80% by weight of abrasive particles in water, with a brush on which organic fibers and metal wires are arranged side by side said brushing is effected using a brush on which organic fibers and metal wires are arranged side by side in a ratio of the organic fibers to the metal wires in the range of 0.01:1 to 10:1.

5,775,978

METHOD FOR THE FINE MACHINING OF PISTON
RINGS AND APPARATUS FOR CARRYING OUT SAME

Manfred Brocksieper, Hückeswagen, and Eberhard Schneider, Solingen, both of Germany, assignors to AE Goetze GmbH, Burscheid, Germany

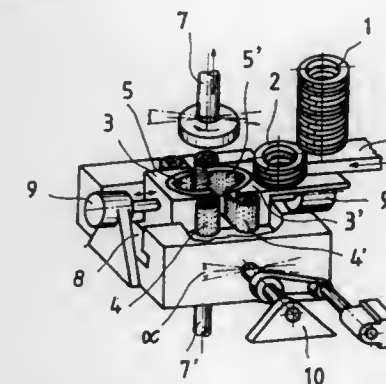
Filed Jul. 18, 1996, Ser. No. 683,217

Claims priority, application Germany, Jul. 22, 1995, 195 26 863.6

Int. Cl.⁶ B24B 1/00

U.S. Cl. 451—51

11 Claims



1. A method for fine machining an outside circumferential surface of radially outwardly expanded, ring-shaped workpieces having respective holes therein, the workpieces being combined to form a stack, the method comprising the steps of:

utilizing a fine machining tool including:
clamping means for clamping the stack;
a pair of segments disposed adjacent the clamping means, each of the segments having a segment surface defining a predetermined radius of curvature corresponding approximately to a radius of curvature of each of the workpieces expanded to a nominal diameter; and
grinding belt means disposed adjacent the segment surfaces; moving the segments into a processing position wherein the radii of curvature of respective ones of the segment surfaces share a common center point, the step of moving the segments including the step of advancing the segments toward the stack such that the grinding belt means is brought into grinding contact with the stack and thereby assumes a contour of the segment surfaces;
moving the stack relative to the grinding belts after the step of moving the segments into their processing position; and
keeping the segments in their processing position during the step of moving the stack.

5,775,979

ENCLOSED ABRASIVE BLASTING APPARATUS

Dan A. Coke, 1362 Brookmark SE., Grand Rapids, Mich. 49508, and Douglas R. Coke, 6291 Wing Ave. SE., Grand Rapids, Mich. 49512

Filed Oct. 22, 1996, Ser. No. 735,004

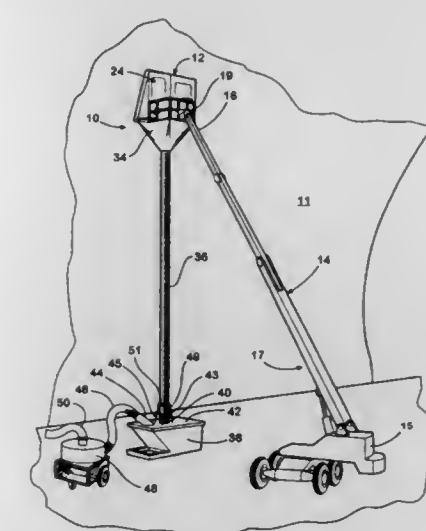
Int. Cl.⁶ B24C 9/00

U.S. Cl. 451—87

14 Claims

1. Apparatus for grit blasting a working surface wherein the apparatus comprises:

a movable and adjustable boom having a distal end;
an enclosure for an operator comprising a platform enclosed by a top, sides, back, and bottom, and having an open front, the top, sides, back, and bottom being substantially air impermeable, the enclosure further comprising an air permeable panel near the open front and in an upper portion of the enclosure, the enclosure being mounted on the distal end of the boom for placement of the open front against the working surface;
abrasive blasting means for directing fluid impelled abrasive media stream onto the working surface through the open front of the enclosure; and



a waste collection system that directs a high rate airflow stream, through the air permeable panel and downwardly across the working surface, entraining waste particles proximate to the working surface into the airflow stream, and then directs the air and waste particles to a sealed collection container below the enclosure, the waste collector system then drawing air and dust and lighter particulate material from the collection container to a dust removal apparatus before discharging the air.

5,775,980

POLISHING METHOD AND POLISHING APPARATUS

Yasutaka Sasaki; Mie Matsuo, both of Yokohama; Rempai Nakata, Kawasaki; Junichi Wada, Yokohama; Nobuo Hayasaka, Yokosuka, all of Japan; Hiroyuki Yano, Wappingers Falls, N.Y., and Haruo Okano, Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

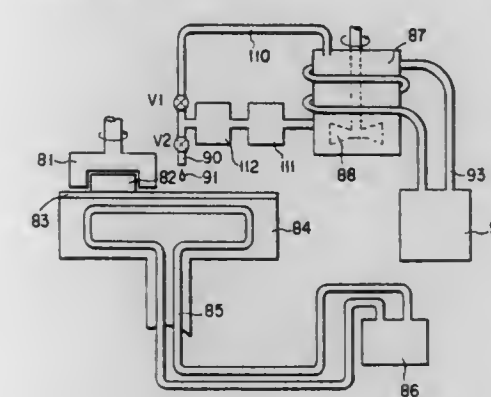
Division of Ser. No. 300,127, Sep. 2, 1994, Pat. No. 5,607,718, which is a continuation-in-part of Ser. No. 217,642, Mar. 25, 1994, abandoned. This application Nov. 4, 1996, Ser. No. 743,044

Claims priority, application Japan, Mar. 26, 1993, 5-068906; Sep. 17, 1993, 5-231283; Sep. 17, 1993, 5-231284; Nov. 16, 1993, 5-286988; Mar. 15, 1994, 6-044160; Mar. 15, 1994, 6-044316

Int. Cl.⁶ B24B 5/00

U.S. Cl. 451—285

8 Claims



1. A polishing apparatus comprising:
a polishing agent storage vessel for storing a polishing agent;
a turntable for polishing an object to be polished;
a polishing agent supply pipe for supplying said polishing agent from said polishing agent storage vessel onto said turntable;
a polishing object holding jig for holding said object to be polished such that a surface to be polished of said object opposes said turntable;

first temperature adjusting means for adjusting a temperature of said polishing agent in said polishing agent supply pipe; and second temperature adjusting means for adjusting a temperature of said polishing agent in said polishing agent storage vessel.

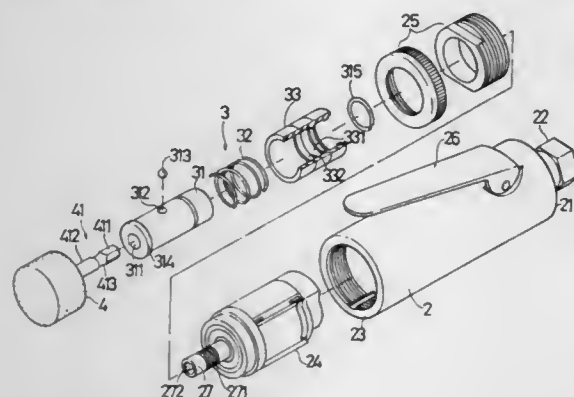
5,775,981

AIR DIE GRINDER

Maw-Chyuan Yang, No. 133, Chuan-Tou Lane, Ying-Pu Tsun, Ta-Tu Hsiang, Taichung Hsien, Taiwan
Filed Mar. 12, 1997, Ser. No. 815,608
Int. Cl.⁶ B24B 47/14; 23/02

U.S. Cl. 451—295

2 Claims



1. An air die grinder comprising:

a main body formed by a hollow tube member, a rear end of the main body being formed with an air inlet, a front end of the main body being axially disposed with a pneumatic motor, a rotary shaft of the motor axially extending out of the front end of the main body; and,

a fixing device secured on the rotary shaft, a stem of a grinding wheel being axially inserted and located in the fixing device, the fixing device including a hollow sleeve screwed on the rotary shaft, the hollow portion of the sleeve forming a driving section with a non-circular cross-section and a locating section with a circular cross-section extending forwardly from a front end of the rotary shaft, a wall of the locating section of the sleeve having a ball hole formed therethrough, the fixing device including a steel ball positioned in the ball hole, and an outer tube fitted around the sleeve and push the steel ball to protrude out of an inner surface of the wall of the locating section, the driving section of the fixing device having a groove extending rearwardly from the front end of the rotary shaft, the locating section being defined by a socket extending forwardly from the inner wall of the sleeve at the front end of the rotary shaft, the locating section having a length longer than that of the driving section.

5,775,982

WAX CONTAINER HAND BUFFER

Michael Paterno, 405 N. Woodward Dr., No. Massapequa, N.Y. 11758

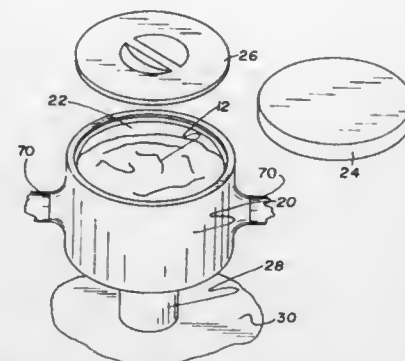
Filed Jan. 23, 1997, Ser. No. 787,953
Int. Cl.⁶ A46B 13/04

U.S. Cl. 451—359

9 Claims

1. A wax container hand buffer comprising:

a cylindrical handle;
a tube secured to a bottom end of the cylindrical handle, where the tube is narrower than the cylindrical handle;
a circular base removably secured to the tube orthogonal to a longitudinal axis of the cylindrical handle;
a buffer pad removably secured to the circular base opposite of the tube;



wherein the cylindrical handle includes a wax reservoir exposed through an end opposite of the tube, the wax reservoir being adapted for storing wax for utilization;
wherein the cylindrical handle includes a reservoir cap which removably encloses the wax reservoir;
a circular sponge storable within the wax reservoir;
wherein the buffer pad includes an adjustable lip having at least one concentric string fastener, the string fastener for surrounding and engaging a perimeter edge of the circular base whereby the buffer pad can be removed from the circular base by loosening the string fastener.

5,775,983

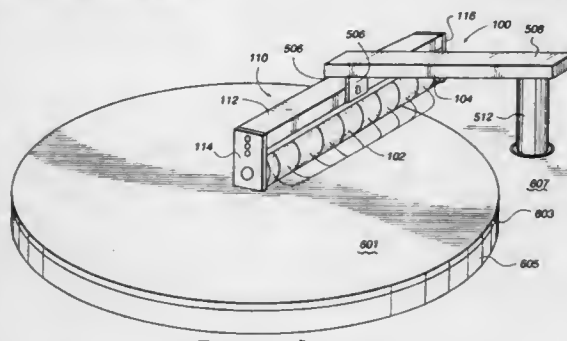
APPARATUS AND METHOD FOR CONDITIONING A CHEMICAL MECHANICAL POLISHING PAD

Norman Shendon, San Carlos, and William R. Bartlett, Los Gatos, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed May 1, 1995, Ser. No. 431,934
Int. Cl.⁶ B24B 21/18; 33/00; 47/26; 55/00

U.S. Cl. 451—444

27 Claims



1. A device for conditioning a polishing surface, said device adapted for use in combination with a means for forcibly pressing said device against said polishing surface, comprising: a plurality of rollers each having a knurled outer surface and coupled to form a bank of independently rotatable rollers.

5,775,984

REMOVABLE-RESUABLE FIBROUS SCRUBBING PAD FOR USE IN WET POWER ORBITAL SCUFFING APPLICATIONS

Jim C. Olson, 316 S. Rammer Rd., Arlington Heights, Ill. 60004, and Leroy H. Rogers, 712 Dresser Rd., Mount Prospect, Ill. 60056

Continuation-in-part of Ser. No. 311,266, Sep. 23, 1994, abandoned. This application Aug. 12, 1996, Ser. No. 693,682
Int. Cl.⁶ B24B 11/00

U.S. Cl. 451—536

10 Claims

1. A reusable fibrous scrubbing pad for use in orbital power wet scuffing applications using a wet acid based scuffing medium, and

5,775,986

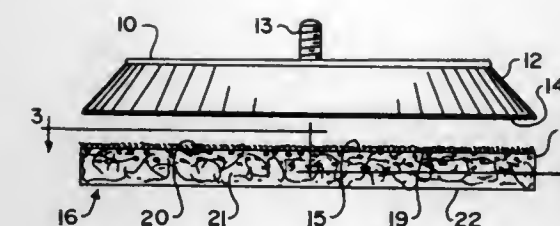
COOKED MEAT PULLING APPARATUS

Ronald Law, Astoria; Michael Maki, Seaside, and John Niemann, Astoria, all of Oreg., assignors to Carruthers Equipment Co., Warrenton, Oreg.

Continuation-in-part of Ser. No. 626,713, Mar. 29, 1996. This application Feb. 5, 1997, Ser. No. 795,683
Int. Cl.⁶ A22C 9/00

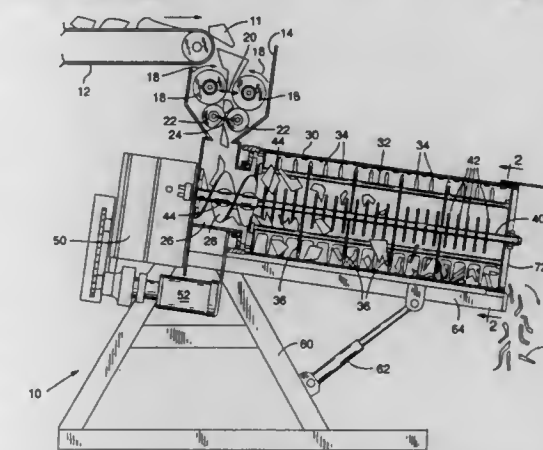
U.S. Cl. 452—141

18 Claims



a power driven (orbital) device having a disc pad which has a hooked scrubbing pad engaging surface, the scrubbing pad comprising:

- a first layer of material defined as a sheet of loops which mechanically engages the hooked scrubbing pad engaging surface of the power device disc pad;
- a second layer of material defined as a loosely woven fibrous pad for scrubbing the wet acid based scuffing medium against a surface to be scuffed; and
- a third layer of at least one firm and flexible material, the at least one material being defined as a wet acid based scuffing medium impermeable material, the third layer being formed between and in a manner engaging each of the first and second layers, to form an integral three layer power wet scrubbing pad for use in orbital applications.



1. An apparatus for pulling cooked meat product into separated strands, comprising:

- a drum for receiving a cooked meat product and having a drum interior defining an axis and a periphery adjacent an inner drum wall;
- a set of rakes mounted at the periphery of the drum interior and rotatable about said axis;
- a puller bar rotatably mounted at the axis in said drum, said puller bar having radially extended teeth rotating about said axis;
- said drum and rakes oriented, and with the rakes in rotation inducing movement of meat product from the interior periphery toward the interior axis, and drive mechanism rotatably driving the rakes to induce said movement of the meat product, and said drive mechanism rotatably driving the puller bar and fingers at a rate whereby food product movement toward the axis produces impact of the food product by the fingers for separation of the food product into strands.

5,775,985

ZERO TIME CLIPPER

Thomas Ralph Stanley, Georgetown, Ill.; Mark David Kelley, Kansas City, Mo.; James Allen Snider, Georgetown, and Jerry Edward Armstrong, Danville, both of Ill., assignors to Devro-Teepak, Inc., Westchester, Ill.

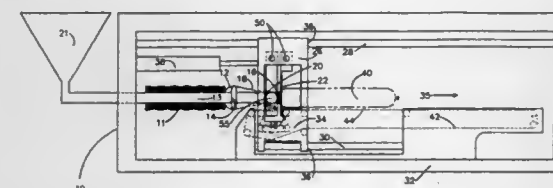
Continuation of Ser. No. 520,583, Aug. 29, 1995, abandoned.

This application May 16, 1997, Ser. No. 857,345

Int. Cl.⁶ A22C 11/00

U.S. Cl. 452—48

10 Claims



1. A method for stuffing food product into a tubular food casing which comprises:

- a) continuously filling a tubular food casing to obtain a predetermined linear rate of movement of stuffed food product;
- b) from an initial starting position, moving a single closing device along a path with said food casing at said predetermined linear rate of movement;
- c) activating said closing device to apply a prior double closure in the form of ties or clips to the stuffed food product while the stuffed food product continues to move at said predetermined rate;
- d) returning the closing device in a reverse direction along said path to said initial position;
- e) again moving the closing device along the path; and
- f) again activating the closing device to apply a subsequent double closure in the form of ties or clips to form a link in the stuffed food product between the prior and subsequent closures; and again repeating steps d) through f).

5,775,987

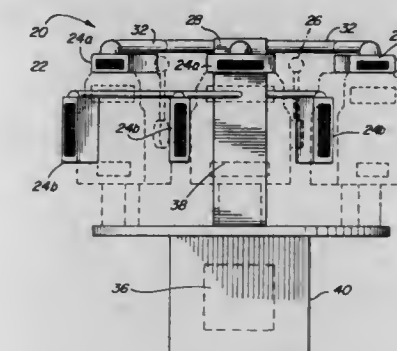
SMOKE REMOVING DEVICE AND METHOD

Oscar J. Brinket, 3816 Montego Dr., Huntington Beach, Calif. 92649

Continuation-in-part of Ser. No. 349,679, Dec. 5, 1994, Pat. No. 5,562,286. This application Oct. 4, 1996, Ser. No. 725,978
Int. Cl.⁶ B08B 15/04

U.S. Cl. 454—49

12 Claims



1. A system for removing tobacco smoke from an indoor location occupied by smokers before the tobacco smoke disperses into a bulk of the room air, the system comprising:

at least one slot-shaped air intake having an intake area of about ten square inches and a ratio between slot length and slot height of at least two, said slot-shaped air intake located within about two feet of a source of tobacco smoke;
an air evacuating unit for pulling smoke into the air intake, said evacuating unit configured to provide an air velocity of about 1000 to about 2000 feet per minute measured at the air intake; and
conduction means for operatively connecting the air evacuating unit with the air intake.

5,775,988

METHOD AND MEANS FOR IMPROVED SIDEWALL VENTILATION

George R. Eakin, Osborne, Kans., assignor to Osborne Industries, Inc., Osborne, Kans.

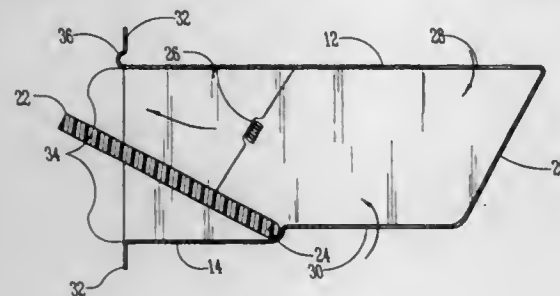
Continuation of Ser. No. 464,301, Jun. 5, 1995, abandoned.

This application Nov. 18, 1996, Ser. No. 751,954

Int. Cl.⁶ F24F 13/10

U.S. Cl. 454—256

6 Claims



1. A livestock ventilator inlet for improving air flow into a livestock confinement building, comprising:

- a housing having an air inlet and an air outlet;
- a baffle located adjacent the air outlet supported for pivotal movement between a closed position and an open position;
- biasing means operatively connected to the baffle having a sufficient spring constant and positioned such that the air flow exiting the air outlet has a velocity which is automatically maintained substantially in the range of 100 inches per second to 320 inches per second.

5,775,989

METHODS OF AND APPARATUS FOR ADJUSTING AIR FLOW CONTROL LOUVER

Kwi-Ju Choi, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 16, 1996, Ser. No. 698,655

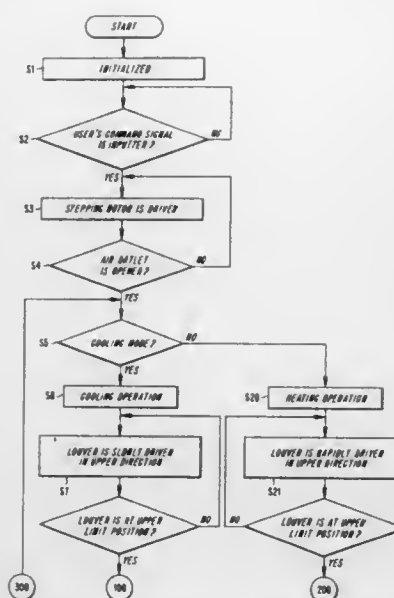
Claims priority, application Rep. of Korea, Aug. 21, 1995, 95-25768; Sep. 27, 1995, 95-32152

Int. Cl.⁶ F24F 13/14

U.S. Cl. 454—285

8 Claims

1. A room air conditioner, comprising:
 - a body having an air inlet and an air outlet;
 - a heat exchanger in the body;
 - a fan for drawing room air through the air inlet and discharging the air back into the room after passing the air through the heat exchanger;
 - an air directing louver at the air outlet for controlling a direction of flow of the discharged air, the air directing louver being vertically adjustable to adjust the discharged air flow direction upwardly and downwardly;
 - a motor connected to the louver for vertically adjusting the louver;
 - a manual selector for enabling a user to select between heating and cooling modes of operation; and



a controller operably connected to the manual selector and the motor for operating the motor in a first mode during a cooling mode of operation, and in a second mode different from the first mode, during a heating mode of operation.

5,775,990

Patent Not Issued For This Number

5,775,991

HOURLY SHAPE DISCHARGE BEATER

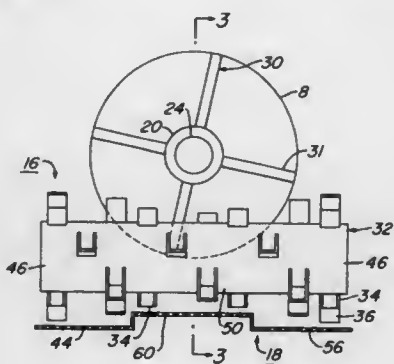
Mark Ray Underwood, Burr Oak, and Sushil V. Dwyer, Arkansas City, both of Kans., assignors to Deere & Company, Moline, Ill.

Filed Nov. 22, 1996, Ser. No. 755,107

Int. Cl.⁶ A01D 43/00; A01F 12/40

U.S. Cl. 460—111

8 Claims



1. In a grain combine having a threshing rotor which rotates about a longitudinal axis to thresh grain from crop, and a crop discharge assembly which receives and discharges crop from the threshing rotor, wherein the straw discharge assembly comprises:
 - a beater located adjacent to a rearward end of the threshing rotor and rotatable about a transverse axis perpendicular to the longitudinal axis, the beater having a central section and two side sections, the central section having a lesser surface of revolution about the transverse axis than the two side sections; and
 - a discharge grate mounted below and closely spaced to the beater, the grate substantially conforming to the surfaces of revolution of the central section and the two side sections of the beater.

the beater to define a substantially constant clearance between the central section and the two side sections of the beater and the grate, the straw being expelled between the beater and the discharge grate.

5,775,992

METHOD OF PLAYING

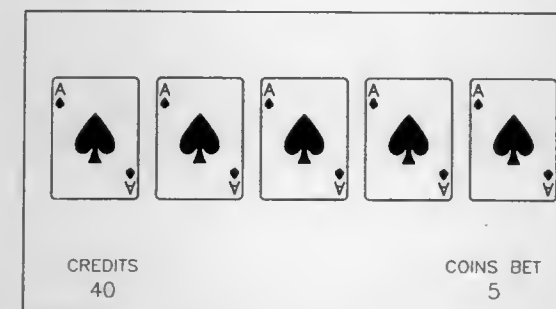
Michael W. Wood, 11831 Wentling Ave., Suite #C, Baton Rouge, La. 70816, and Gary Weingardt, 5416 Gipsy, Las Vegas, Nev. 89107

Filed Sep. 30, 1996, Ser. No. 723,047

Int. Cl.⁶ A63F 1/00

U.S. Cl. 463—13

10 Claims



1. A method of playing a card game comprising:
 - a) forming a pool, of playing cards consisting essentially of five identical decks of playing cards all shuffled together, each deck of playing cards consisting essentially of a standard deck of fifty-two playing cards;
 - b) dealing a five card hand from the pool of playing cards;
 - c) selecting which, if any, of the cards from the five card hand to discard;
 - d) creating a final five card hand by replacing each discarded card with a replacement card from the pool of playing cards; and
 - e) comparing the final five card hand to one or more preselected winning hand combinations to determine if a winning hand has been achieved
 whereby at least one of the preselected winning hand combinations includes a hand of five cards, each card having identical suit and rank.

5,775,993

ROULETTE GAMING MACHINE

Barry W. Fentz; D. Bradly Olah, both of Plymouth; Donald F. Lovely, Bloomington, and Cory James Hanscom, New Hope, all of Minn., assignors to Innovative Gaming Corporation of America, Reno, Nev.

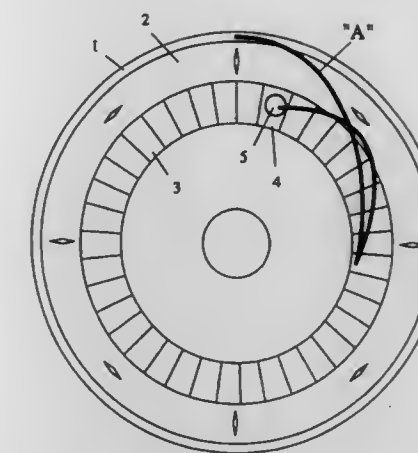
Filed Jan. 31, 1996, Ser. No. 594,807

Int. Cl.⁶ A63F 5/00

U.S. Cl. 463—17

30 Claims

1. An electronic roulette gaming apparatus, comprising:
 - (a) a display;
 - (b) a storage device outputting a pre-recorded graphic image of a spinning roulette wheel to the display; and
 - (c) a controller outputting a superimposed graphic image of a ball to the display, wherein the controller synchronizes movement of the graphic image of the ball with the pre-recorded



graphic image of the spinning roulette wheel to simulate movement of a ball on a roulette wheel.

5,775,994

METHOD FOR AUTOMATICALLY ACTIVATING A CONTROL PROCEDURE AT A USER'S GAME SYSTEM THROUGH A BROADCAST NETWORK WHEN SAID USER'S LICENSE IS EXPIRED

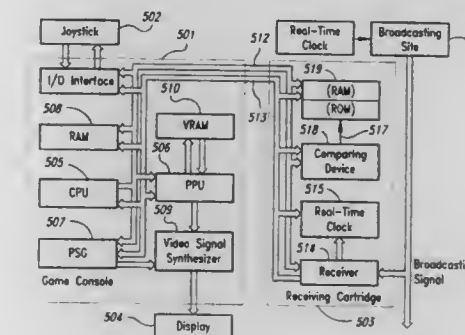
Shih-Pin Hsu, Hsin-Chu, Taiwan, assignor to United Microelectronics Corp., Hsin-Chu City, Taiwan

Filed Dec. 27, 1995, Ser. No. 579,556

Int. Cl.⁶ G06F 15/16

U.S. Cl. 463—29

8 Claims



1. A method for automatically activating a control procedure at a user's game system through a broadcast network when said user's license is expired, wherein said user's game system having at least dual-mode means, and a broadcast site having a timing instrument for generating standard timing signals, said method comprising the steps of:

- selecting an oscillator for said timing instrument of said user's game system;
- synchronizing timing signals generated by said oscillator with said standard timing signals;
- broadcasting said standard timing signals to said user's game system periodically along with broadcast game programs;
- reading said standard timing signals from said broadcast game programs at said user's game system;
- computing a deviation between said standard timing signals and said timing signals generated by said oscillator; and
- enabling said dual-mode means to error mode when said deviation exceeds a limit of accuracy.

5,775,995

INTERACTIVE COMMUNICATION SYSTEM FOR COMMUNICATING VIDEO

Takeya Okamoto, c/o Adachi International, Nagoyaseni Bldg. 9-27, Nishiki 2-chome, Naka-ku, Nagoya-shi, Aichi-ken, Japan

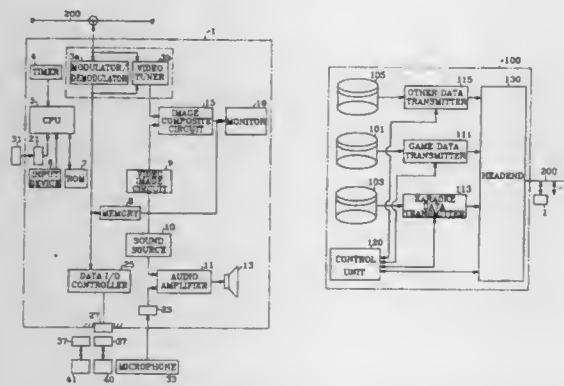
Division of Ser. No. 555,400, Nov. 9, 1995, and a continuation-in-part of Ser. No. 232,862, Apr. 25, 1994, Pat. No. 5,489,103.

This application May 3, 1996, Ser. No. 642,560

Claims priority, application Japan, Apr. 25, 1994, 5-108303 Int. Cl.⁶ A63F 9/22

U.S. Cl. 463—40

3 Claims



1. A communication system having a host facility and communication terminal device capable of communicating with said host facility, said communication terminal device comprising:

an input device for inputting instructions to process data, receiving means for receiving software program as sent out from said host facility,

software program storage means for storing the software program received by said receiving means,

executing means for executing data processing by using the software program stored in said software program storage means, in accordance with instructions from said input device, display means having a screen for displaying the progress of data processing by said executing means,

clock means for keeping a predetermined time period after said receiving means received the software program, and interference means for interfering with the execution of said executing means by blocking the view on the screen on which the progress of data processing is displayed by display means when said clock means counts said predetermined time period,

said host facility comprising:

software program file storage for storing software program as well as duration data indicative of the predetermined time period to be counted by said clock means, and

sending out means for sending out the software program and the duration data stored in said software program file storage to said communication terminal device.

5,775,996

METHOD AND APPARATUS FOR SYNCHRONIZING THE EXECUTION OF MULTIPLE VIDEO GAME SYSTEMS IN A NETWORKED ENVIRONMENT

Konstantin Othmer, San Jose; Shannon A. Holland; Stephen G. Perlman, both of Mountain View, and Steven G. Roskowski, San Jose, all of Calif., assignors to MPath Interactive, Inc., Mountain View, Calif.

Continuation of Ser. No. 340,032, Nov. 14, 1994, abandoned.

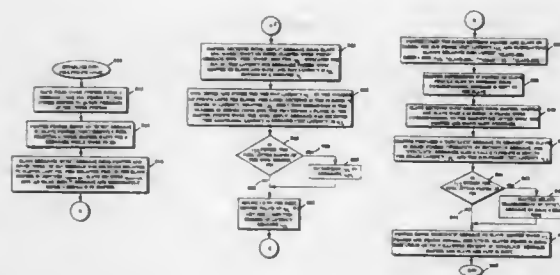
This application Aug. 28, 1996, Ser. No. 704,930

Int. Cl.⁶ A63F 9/22

U.S. Cl. 463—40

8 Claims

1. In a networked video game system, an apparatus for establishing and maintaining synchronization of a first and a second raster display, said apparatus comprising:



a first means for sending a first message from a first raster display to a second raster display along a communication medium;

a second means for sending a second message from said second raster display to said first raster display in response to said first message;

a third means for determining a latency between sending said first message and receiving said second message at said first raster display;

a fourth means for determining a skew between a refreshed cycle event in said first raster display and a refreshed cycle event in said second raster display; and

a fifth means for activating an alternate display mode in said first raster display or said second raster display to maintain said latency between refresh cycle events within a predetermined limit.

5,775,997

BIG BALL VIDEO GAME CONSOLE

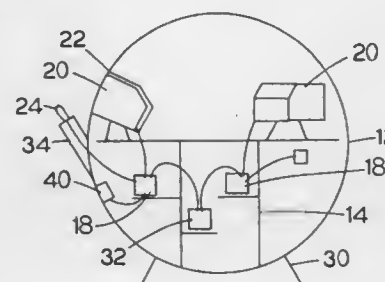
Steven Veatch, P.O. Box 307, Eldon, Mo. 65026

Filed Dec. 18, 1996, Ser. No. 768,641

Int. Cl.⁶ A63F 9/24

U.S. Cl. 463—46

16 Claims



1. A big ball video game console comprising:

a hollow ball, having at least one opening therethrough,

a base upon which said ball sits, said base holding said ball in a stationary position,

shelving contained within said ball, said shelving holding at least one computer for a computer based video game and at least one monitor, said shelving holding said monitor in front of said opening through said ball,

an initiation means electrically attached to said computer for initiation of said computer based video game, and

a game playing device attached to the outside of said ball under said opening, said game playing device used to play said computer based video game contained within said ball.

5,775,998

ANALYZER FOR DEVELOPING ATTRACTIONS IN A SHOOTING GAME SYSTEM

Shinichi Ikematsu; Hiroshi Kawakami; Satoshi Nakano; Tatsuya Kouno; Keisuke Hiromi, and Masakazu Yoshimoto, all of Ohta-Ku, Japan, assignors to Sega Enterprises, Ltd., Tokyo, Japan

Division of Ser. No. 418,029, Apr. 6, 1995, Pat. No. 5,613,913.

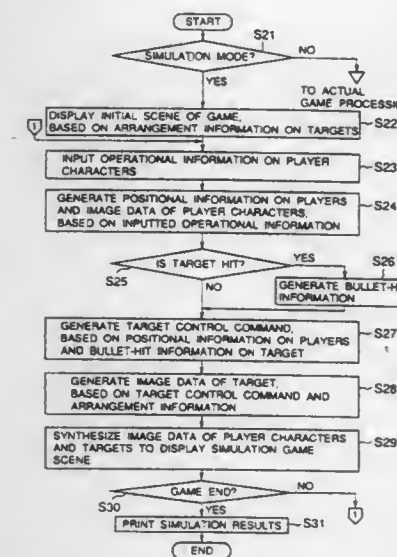
This application Jul. 23, 1996, Ser. No. 681,513

Claims priority, application Japan, Apr. 6, 1994, 6-090761

Int. Cl.⁶ A63F 9/22

U.S. Cl. 463—52

6 Claims



1. A shooting game quality analyzer comprising:

means for inputting arrangement information of targets in a shooting game to be analyzed;

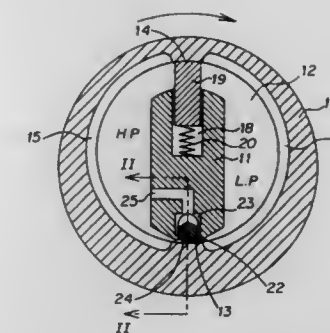
a memory storing said arrangement information;

a monitor which displays an arrangement state of targets in accordance with said arrangement information;

means for inputting operational information on player characters;

means for simulating the shooting game to be analyzed including gun fights between targets and player characters in accordance with said arrangement information and said operational information; and

means for analyzing, based on results of the simulating means, the game quality for targets located in said arrangement state.



compartment (L.P.) during a limited angular interval of relative rotation between said drive member (10) and said output spindle (11); and

a valve means (24; 44) for enabling a bypass flow between said high and low pressure compartments (H.P., L.P.) during said limited angular interval when a hydraulic fluid pressure in said high pressure compartment (H.P.) is below a predetermined level, said valve means (24; 44) comprising an elongate contact element (24; 44) movably supported in an axially extending groove (23; 43) in each of said at least one seal ridge (22) or in one of said seal lands (13), said contact element (24; 44) being shiftable between a nonsealing condition and a sealing condition, said contact element (24; 44) in said sealing condition being arranged to sealingly cooperate with said seal land (13) or said seal ridge (22) to block said bypass flow and to more fully form said seal which divides said fluid chamber into said high and low pressure compartments;

a passage means (25) provided to communicate said groove (23; 43) with said high pressure compartment (H.P.), thereby enabling the hydraulic fluid pressure in said high pressure compartment (H.P.) to shift said contact element (24; 44) from said nonsealing condition to said sealing condition at pressure magnitudes in said high pressure compartment (H.P.) above said predetermined level; and

at least one of said seal lands (13, 14) being circumferentially dimensioned to provide for a sealing cooperation with at least one of (i) said at least one radially movable seal element (19) and said contact element (24; 44), and wherein said sealing cooperation extends over less than 5° of the relative rotation between said drive member (10) and said output spindle (11).

5,776,000

Patent Not Issued For This Number

5,775,999

HYDRAULIC TORQUE IMPULSE GENERATOR HAVING A PRESSURE RESPONSIVE BYPASS FLOW VALVE

Gunnar Christer Hansson, Stockholm; Knut Christian Schoeps, Tyresö, and Sten Herman Olsson, Enskede, all of Sweden, assignors to Atlas Copco Tools AB, Nacka, Sweden

Continuation of Ser. No. 380,609, Jan. 30, 1995, abandoned.

This application Nov. 8, 1996, Ser. No. 748,520

Claims priority, application Sweden, Jan. 28, 1994, 9400270

Int. Cl.⁶ F16D 3/80

U.S. Cl. 464—25

20 Claims

1. Hydraulic torque impulse generator, comprising:

a drive member (10) with an eccentrically disposed fluid chamber (12) and a torque impulse receiving output spindle (11) extending into said fluid chamber (12), said output spindle (11) having at least one radially movable seal element (19) and at least one axially extending seal ridge (22), said fluid chamber (12) having axially extending linear seal lands (13, 14) for cooperating with said at least one radially movable seal element (19) and said at least one seal ridge (22) to form a seal and divide said fluid chamber (12) into at least one high pressure compartment (H.P.) and at least one low pressure

5,776,001

THREAD FORMATION

Nigel Carter, Leeds, England, assignor to CCL Systems Limited, Leeds, England

PCT No. PCT/GB95/00309, § 371 Date Oct. 3, 1996, § 102(e) Date Oct. 3, 1996, PCT Pub. No. WO95/22422, PCT Pub. Date Aug. 24, 1995

PCT Filed Feb. 15, 1992, Ser. No. 687,451

Claims priority, application United Kingdom, Feb. 16, 1994, 9402966

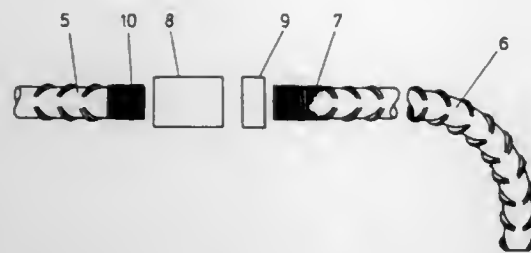
Int. Cl.⁶ B21H 3/02

U.S. Cl. 470—8

25 Claims

22. A method of joining first and second steel reinforcing rods having substantially identical nominal diameters using a coupler, wherein neither of said first and second rods need be rotated to join said rods, comprising the steps of:

cold upsetting an end region of each of said rods so as to increase the diameter of said end regions to a new, upset,



wherein said seat lever arm further comprises a plurality of handle slots for said handle.

5,776,003 JUMPING TOY

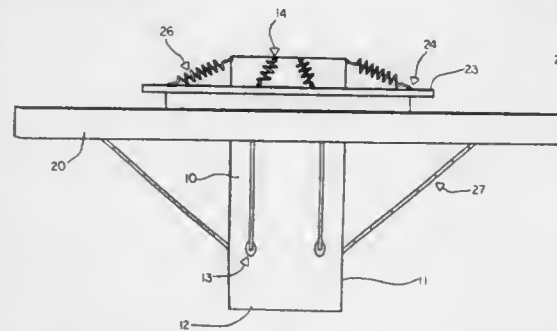
Trevor Lindsey Kenny, 39 Penfold Crescent, Winnipeg, Manitoba, Canada, R2J 1S3

Filed Oct. 23, 1996, Ser. No. 735,584

Int. Cl.⁶ A63G 13/04

U.S. Cl. 472—135

13 Claims



1. Recreational apparatus comprising:
 - a rigid cylindrical core member having a vertical axis and defining a first lower end and a second upper end, the first lower end being arranged for directly contacting the ground;
 - a rigid horizontal annular platform surrounding the axis of the core member and moveable in a direction along the axis relative to the core member, said rigid annular platform having foot engagement means thereon for gripping contact with feet of a person standing on said platform;
 - at least one spring having a first end of the spring attached to the core member and a second end of the spring attached to the rigid annular platform,
 wherein the at least one spring is of sufficient strength to support the person standing upon the rigid annular platform and provide resilient suspension for bouncing movements in said direction.

5,776,004

PUTTING PRACTICE DEVICE

Thomas G. Wilson, 105 S. Porter St., Bollivar, Tenn. 98008

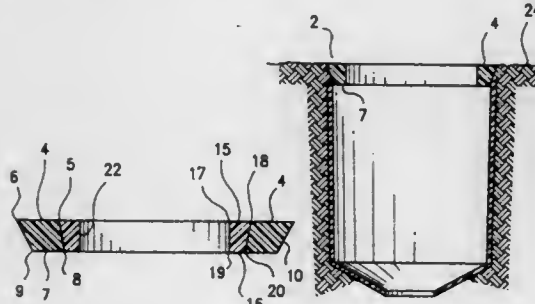
Continuation of Ser. No. 423,468, Apr. 19, 1995, abandoned.

This application Sep. 4, 1996, Ser. No. 706,254

Int. Cl.⁶ A63B 69/36

U.S. Cl. 473—179

5 Claims



1. A device for reducing the diameter of a conventional golf hole which comprises:
 - a flat top planar surface in the shape of a circle having an outermost and an innermost diameter;
 - a bottom planar surface having an outermost and an innermost diameter, said bottom planar surface extending substantially

- diameter which is greater than said nominal diameter but is less than or equal to 110% of said nominal diameter;
- skimming said end regions of each of said rods to remove any ridges from said end and to create a uniform diameter in said end regions;
- rolling a thread onto said end regions so as to produce a threaded region on each rod wherein said threaded regions have identical major diameters which are greater than said nominal diameter and minor diameters which are less than said nominal diameter, wherein said threaded region on said second rod extends beyond said end region of said second rod and wherein a coupler can be rotated completely onto said second rod such that said end regions of said first and second rods can be abutted without interference from said coupler;
- rotating a threaded coupler completely onto said threaded region of said second rod wherein said end regions of said first and second rods can be abutted without interference from said coupler;
- abutting said threaded regions of said rods;
- rotating said coupler such that it rotates onto first rod and until said coupler reaches a run out of said first rod.

5,776,002

SOLO SEESAW DEVICE

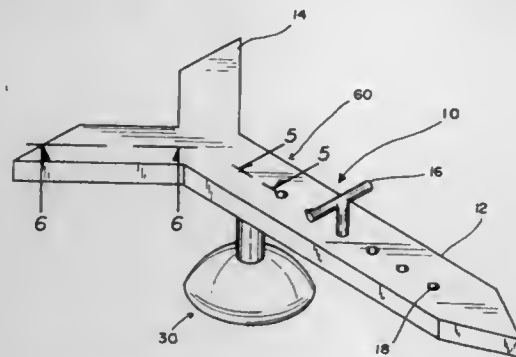
James F. Weber, 115 Terrace Ave., Camden, N.J. 08105

Filed Feb. 21, 1997, Ser. No. 804,073

Int. Cl.⁶ A63G 11/00

U.S. Cl. 472—110

6 Claims



1. A solo seesaw device comprising:
 - a base providing upstanding vertical support means;
 - a seesaw body;
 - a seat lever arm included on said seesaw body;
 - a counterweight lever arm included on said seesaw body;
 - said seesaw body being supported on said base at a point between said seat lever arm and said counterweight lever arm;
 - a pivot arrangement pivotally coupled to said seesaw body and rotatably mounted to said base for mounting said seesaw body on said base;
 - a counterweight assembly included on said counterweight lever arm providing counterweight to the weight of a user seated on the seat lever arm of said seesaw body to thereby permit a single user to produce a rocking motion of said seesaw body with respect to said base;
 - a handle removably attached to said seat lever arm; and

- parallel to the top planar surface, being spaced vertically therefrom and being generally coextensive in width with the top planar surface;
- a truncated conically shaped outer sidewall which terminates at an upper end at the outermost diameter of the top planar surface and which terminates at a lower end at the outermost diameter of the bottom planar surface; and
- a vertically extending circular inner sidewall which terminates at an upper end in the top planar surface and which terminates at a lower end in the bottom planar surface,
- the top and bottom planar surfaces and the outer and inner sidewalls forming a ring-shaped member which defines a central aperture having a diameter which is greater than the diameter of a conventional golf ball, and
- the outermost diameter of said top planar surface being substantially the same as the diameter of a conventional golf hole and the outermost diameter of the bottom planar surface being sufficiently less than the outermost diameter of the top planar surface to bevel the outer sidewall inwardly toward the central aperture for fitting the golf hole, and the top planar surface defining a continuously flat rigid surface with the turf of the green so as to provide a continuous playing surface from the turf of the green, across the flat top planar surface, and into the golf hole through the central aperture,
- whereby a body of the ring-shaped member of the device defined between the top planar surface, the bottom planar surface, the circular inner sidewall and the truncated conically shaped outer sidewall being substantially rigid, non-compressible, dense and sufficiently weighted for allowing a golfer to easily tap and cause gliding of the body over the turf of a green without snagging or tipping over as a golfer taps the body with a foot or a golf club towards the golf hole.

5,776,005

Patent Not Issued For This Number

5,776,006

GOLF PRACTICE ENHANCER

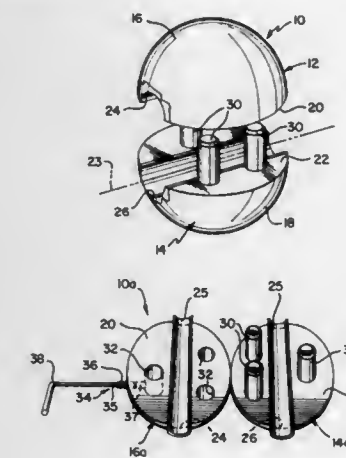
Isaac Gruber, 1500 Todd Street, #302, St. Laurent, Quebec, Canada, H4R 2H1

Filed Aug. 1, 1996, Ser. No. 690,865

Int. Cl.⁶ A63B 69/36

U.S. Cl. 473—256

15 Claims



1. A golf practice device for attachment to a golf club shaft, said device comprising:
 - a first weighted element having a substantially smooth exterior surface and an interior surface;
 - a second weighted element having a substantially smooth exterior surface and an interior surface, said interior surface of

- said second weighted element facing said interior surface of said first weighted element when said golf practice device is attached to a golf club shaft;
- a coupling having a first part formed along said interior surface of said first weighted element and a second part formed along said interior surface of said second weighted element, said coupling detachably coupling said first and said second weighted elements, with said interior surfaces facing each other, said coupling permitting adjustment of the relative positions of said first and second weighted elements;
- an interior shaft channel defined between said first and second weighted elements along said interior surfaces of said first and second weighted elements, said interior shaft channel being adapted to receive a golf club shaft; and
- a locking device positioned in one of said first and second weighted elements and adapted to engage said coupling to lock said first and second weighted elements in position with respect to each other, said locking device releasably locking said first and second weighted elements to each other for embracing therebetween a golf club shaft without said locking device extending into said interior shaft channel.

5,776,007

PUTTING PRACTICE DEVICE

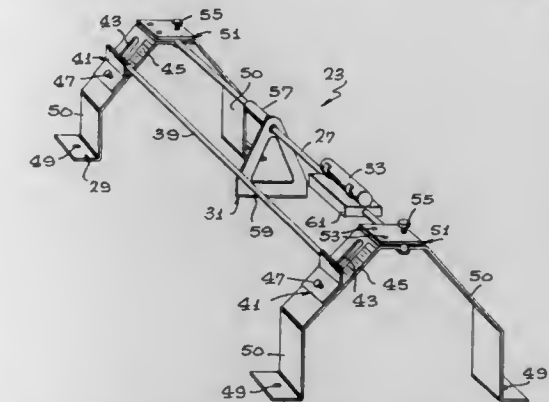
George Kendall, P.O. Box 9132, Rancho Santa Fe, Calif. 92067; Horacio Yrueta, Rancho Santa Fe, Calif., and John Bearden, San Leandro, Calif., assignors to George Kendall, Rancho Santa Fe, Calif.

Filed Mar. 27, 1996, Ser. No. 622,377

Int. Cl.⁶ A63B 69/36

U.S. Cl. 473—258

6 Claims



1. An instructional device for putting a golf ball with a putter, comprising:
 - a first and a second stand each having a top, a side, and a base;
 - a sight rod having two ends, with one end attached to the top of the first stand laterally of said base and the other end attached to the top of the second stand laterally of said base so that the sight rod is adapted to be positioned directly above the golf ball and the head of the putter and a golf ball may be putted along the line of said sight rod to a target remote from said device; and
 - a square face indicator operably communicating to the sight rod and positioned perpendicular to the sight rod.

5,776,008

COMPOSITE GOLF CLUB SHAFT HAVING LOW MOMENT OF INERTIA

Harry C. Lundberg, 312 Shadyside Rd., Ramsey, N.J. 07446

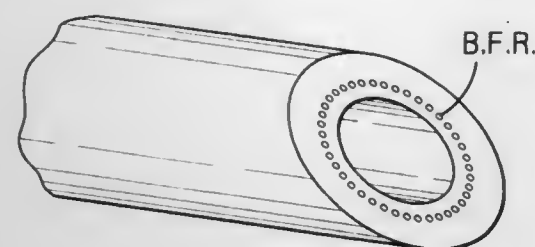
Filed Dec. 30, 1996, Ser. No. 774,466

Int. Cl.⁶ A63B 53/10; 53/12

U.S. Cl. 473—320

7 Claims

1. A composite shaft for a "wood" or "iron" golf club, said shaft comprising:



- (a) tip and butt ends defined at opposite distal ends of said shaft's length;
- (b) said shaft being tubular and tapering generally from a larger diameter at said butt end to a smaller diameter at said tip end;
- (c) said shaft being constructed primarily of a first material having a first modulus of elasticity; and
- (d) two, spaced apart substantially cylindrical portions of a second, reinforcing material, having a second modulus of elasticity greater than said first modulus of elasticity, disposed axially in said first material, said substantially cylindrical portions being disposed to either side of a point axially spaced from said tip end a distance in the range of from about 45 percent to about 52 percent of said shaft's length.

5,776,009

MOMENTUM GENERATING GOLF CLUB

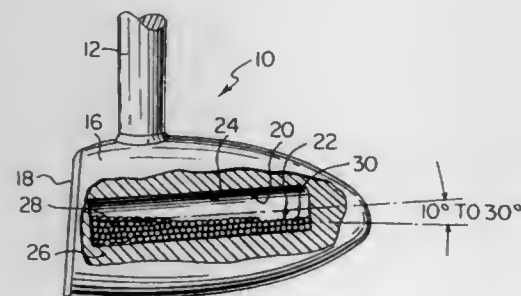
Joseph P. McAtee, 1613 Thistlewood Dr., Washington Crossing, Pa. 18977

Filed Apr. 29, 1997, Ser. No. 848,061

Int. Cl.⁶ A63B 53/04

U.S. Cl. 473—333

16 Claims



1. A momentum generating golf club comprising:

- a) an elongated shaft;
- b) a resilient grip on a top end of said elongated shaft;
- c) a club head body on a bottom end of said elongated shaft, said club head body having a front striking face and an internal chamber; and
- d) a weight located within said internal chamber for free movement therein, whereby when a golfer takes a back swing said weight will move backwards in said internal chamber, to produce inertia in the direction of the back swing of said club head body to increase the extent of the back swing, thus allowing for a higher speed of said club head body in the forward swing of said golf club, so as to hit a golf ball further on said front striking face, and wherein said internal chamber in said club head body is carried at a forwardly angled longitudinal position with respect to said front striking internal chamber being angled toward a lower extent of said front striking face when said head is viewed in end view in a normal address position, so as to assure that said weight is forward prior to the start of the back swing of said golf club.

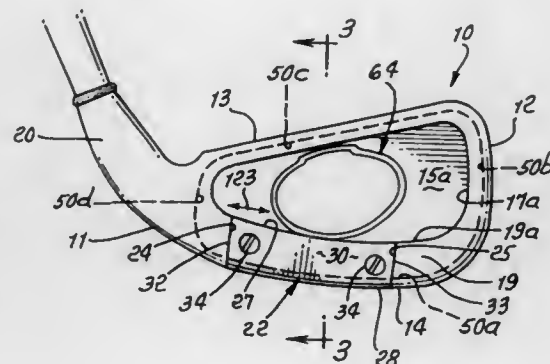
5,776,010
WEIGHT STRUCTURE ON A GOLF CLUB HEAD
Richard C. Helmstetter, Rancho Santa Fe; Thomas R. Hilton, Cardiff By the Sea; Donald A. Bistline, Vista, and Victor S. Dennis, Carlsbad, all of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.

Filed Jan. 22, 1997, Ser. No. 787,154

Int. Cl.⁶ A63B 53/04

U.S. Cl. 473—334

35 Claims



33. A golf club head comprising:

- a) a head body having a front wall defining a ball-striking front face, a rear side, a top wall having a top, a bottom wall having a bottom, a toe, and a heel, said rear side forming a cavity;
- b) a recess formed in the head body proximate the head body rear side and bottom, and below the cavity;
- c) an inset consisting essentially of tungsten and positionable in said recess, said head body having a weight W_1 and said inset having a weight W_2 , and wherein the ratio $W_2/(W_1+W_2)$ is between about 0.25 and 0.90;
- d) said body having a volume V_1 and said inset having a volume V_2 , and where V_1 is greater than V_2 ;
- e) said head body consisting essentially of titanium;
- f) said front wall also defining a rear face, and corner walls being defined between said top wall and said heel and toe;
- g) said body defining a forwardly extending main recess located rearwardly of said front wall;
- h) said body also defining an undercut recess located directly rearwardly of said front wall to intersect said main recess and extending outwardly from said main recess toward at least one of said top wall and bottom walls, and also toward at least one of said corner walls, proximate said rear face;
- i) the thickness of said one of said top and bottom walls measured in a plane generally parallel to said front wall front face and proximate said rear face being less than the thickness of said one of said top and bottom walls measured in a plane generally parallel to said front face and distal said rear face.

5,776,011

GOLF CLUB HEAD

Charles Su, Taiwan, China, and Phil Chang, Wainut, Calif., assignors to Ecbelon Golf, Industry, Calif.

Filed Sep. 27, 1996, Ser. No. 723,234

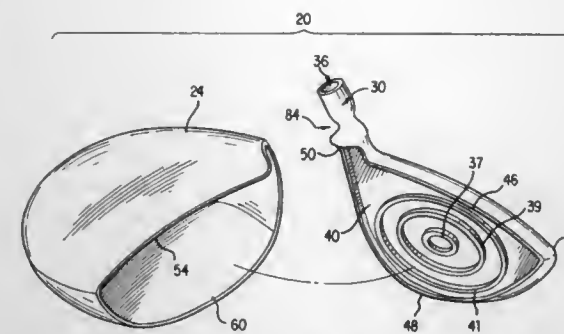
Int. Cl.⁶ A63B 53/04

U.S. Cl. 473—345

19 Claims

1. A metalwood golf club head, comprising:

- a) ball-striking face having a toe, a heel, a top edge, a bottom edge, a center of percussion located at an approximate center of the face, a rear surface, and a spiral mass provided at the rear surface of the face behind the center of percussion;
- b) hosel connected to the face, the hosel having a diameter and a narrowed section adjacent the heel and having a width from the toe to heel direction which is less than the diameter of the hosel; and



- a sole plate connected to the face, the sole plate comprising a threaded opening and a removable weight threadably coupled to the threaded opening.

5,776,012

SOLID GOLF BALL

Keiji Moriyama; Takeshi Asakura, and Yoshikazu Yabuki, all of Shirakawa, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Jul. 11, 1996, Ser. No. 678,327

Claims priority, application Japan, Jul. 13, 1995, 6-201755

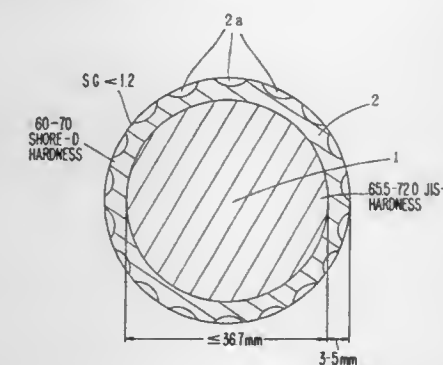
Int. Cl.⁶ A63B 37/06; 37/12

U.S. Cl. 473—372

1 Claim

U.S. Cl. 473—396

7 Claims



1. A solid golf ball comprising a core and a cover covering said core, wherein

- said core has a diameter of not more than 36.7 mm and a hardness (JIS-C hardness) in a range from 65.5 to 72 from a center to an outer surface of said core, said core being formed from a vulcanized molded material of a rubber composition comprising a base rubber, a metal salt of an unsaturated carboxylic acid, an organic peroxide, an organosulfur compound and/or metal-containing organosulfur compound and a filler,
- a difference between the hardness (JIS-C hardness) at the center of said core and that at any part from the center to the outer surface of said core is not greater than 5, and
- the cover has a specific gravity of less than 1.2, a thickness of 3 to 5 mm and a hardness (Shore-D scale hardness) of 60 to 70.

5,776,013

SOLID GOLF BALL

Masatoshi Yokota; Seichiro Endo; Keiji Moriyama, all of Shirakawa, and Kuniyasu Horiuchi, Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Sep. 13, 1996, Ser. No. 713,654

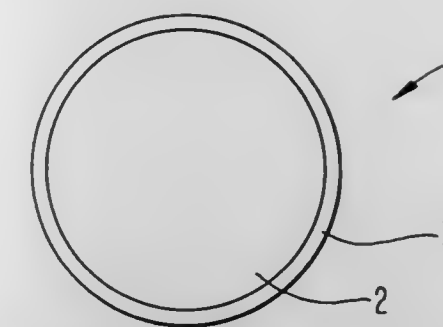
Claims priority, application Japan, Sep. 14, 1995, 7-236655

Int. Cl.⁶ A63B 37/12; 37/14

U.S. Cl. 473—377

7 Claims

1. A solid golf ball comprising a solid core, a cover covering said core and dimples formed on the surface of the cover, wherein said dimples satisfy the following equation:



- (number of dimples) × (ratio of the area which is not occupied by dimples) ÷ (Shore D hardness of the cover) = 1.4 to 1.9; and wherein the cover has a flexural modulus of 1,000 to 2,500 kgf/cm², and wherein the core has a deformation amount of 2.4 to 3.5 mm when applying a load of from 10 to 130 kg.

5,776,014

ADJUSTABLE GOLF BALL TEE

Floyd L. Gustine, 5631 Curry Rd., Pittsburgh, Pa. 15236

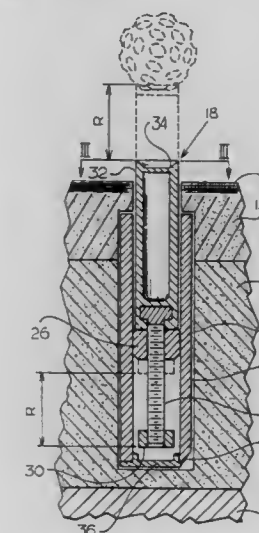
Filed Dec. 27, 1996, Ser. No. 774,947

Int. Cl.⁶ A63B 57/00

1 Claim

U.S. Cl. 473—396

7 Claims



1. An adjustable golf ball tee assembly receivable in an elongated annular cavity beneath a playing field for teeing up a golf ball above the playing field, the adjustable golf ball tee including the combination of:

- a) a golf ball support having a golf ball support surface and a base at opposite ends thereof, said support being elongated by a distance sufficient to support a golf ball on the golf ball support surface within a selectable range of elevations above such a playing field;
- b) a threaded carrier extending from the base of said golf ball support in a direction opposite to said golf ball support surface, said threaded carrier being elongated by a distance sufficient to position said golf ball support surface within said selectable range;
- c) a receiver including an anchoring surface for support and retention against movement in such elongated annular cavity beneath such a playing field, said receiver having an internal cavity for guiding and supporting said elongated golf ball support through said range of elevations; and
- d) a threaded nut affixed within the internal cavity of said receiver to threadably receive and vertically displace said threaded carrier within said range of elevations, the range being predetermined by the amount of extension of said threaded carrier with respect to the threaded nut.

5,776,015

GOLF RANGE FINDING APPARATUS

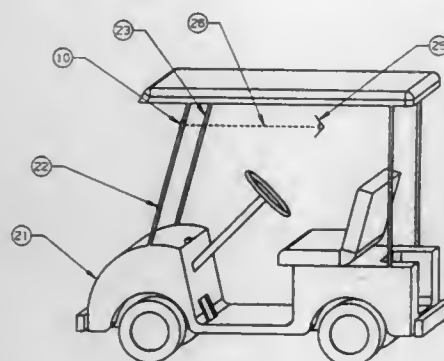
Arlyn M. Bernhardt, 4718 Glen Moor Way, Kokomo, Ind. 46902

Filed Dec. 13, 1996, Ser. No. 764,223

Int. Cl.⁶ G01C 22/00

U.S. Cl. 473—407

13 Claims



1. A golf cart mounted range finding apparatus for accurately determining the distance between a golfer's ball and a flag stick on a putting surface, said apparatus comprising:

- (a) a golf cart having a support frame attached to a base portion of said golf cart, said support frame extending upward from said base portion of said golf cart;
- (b) a range finder, said range finder comprising a clip having a face plate, said face plate having a baseline and calibrated yardage indicators, said range finder being removably mounted to said support frame on said golf cart; and wherein the length of said flag stick on said putting surface measured from said baseline of said face plate corresponds to an actual distance between the golfer and said flag stick on said putting surface.

5,776,016

GOLF PUTTING METHOD

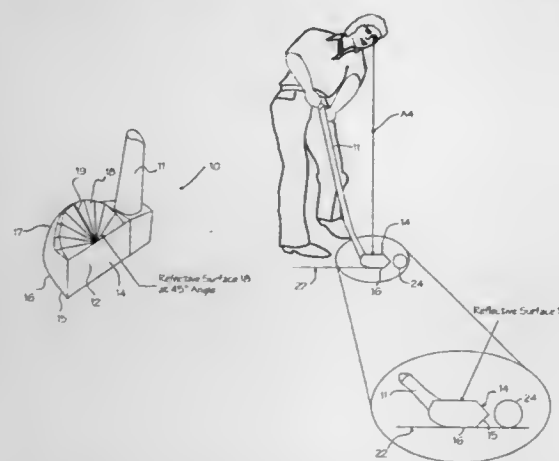
Robert L. Benoit, Oakdale; William F. Fahey, Kings Park; Bernard I. Rachowitz, and Glenn L. Spacht, both of Lloyd Neck, all of N.Y., assignors to NBG Technologies, Inc., Hauppauge, N.Y.

Filed Apr. 9, 1997, Ser. No. 831,587

Int. Cl.⁶ A63B 69/36

U.S. Cl. 473—409

6 Claims



5. A method of aligning and addressing a golf ball upon a putting green in order to stroke and putt the golf ball into a cup of the green, comprising the steps of:

- a) presenting a golf club in a non-addressing position, so that the head of said golf club is adjacent said golf ball, said head including a reflective surface, but is positioned so that the club head of said golf club cannot putt the golf ball;
- b) positioning said club head to address said golf ball, and then optically aligning said club head towards a cup of the green by sighting a reflection of said cup upon said reflective surface of said club head, and adjusting said club head direction; and
- c) optically controlling the stroke of said club head by sighting a reflection of said golf ball upon said reflective surface of said club head and aligning said club head with respect to said golf ball.

5,776,017

BATTING PRACTICE DEVICE

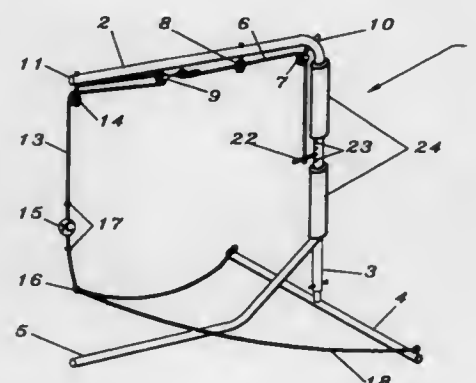
Randy W. Brawn, 327 13th St., Huntington Beach, Calif. 92648

Filed Apr. 12, 1996, Ser. No. 629,932

Int. Cl.⁶ A63B 69/40

U.S. Cl. 473—426

8 Claims



1. A batting practice device comprising:

- a substantially horizontal suspension beam having one end attached to the upper end of a vertical member to define a top corner, said suspension beam further having a free end;
- a cross beam attached to a lower end of said vertical member and being perpendicular to a plane defined by the suspension beam and the vertical member;
- a horizontal support beam having one end attached to the vertical member intermediate said vertical member upper and lower ends, said support beam being in the same plane and parallel to said suspension beam;
- an elastic cord having one end attached to the vertical member intermediate said top corner and the cross member, said elastic cord having its other end routed through a first pulley attached at said top corner and through an eyebolt attached to said suspension beam intermediate said top corner and said suspension beam free end and attached to a connecting pulley;
- a ball line having one end connected to the suspension beam free end and routed through said connecting pulley and a second pulley attached to said suspension beam free end;
- a ball slidably mounted on said ball line below said second pulley, said ball being retained at a vertical position on the ball line by retention means; and
- a pair of anchor lines, each anchor line having an end thereof attached to respectively an end of said cross beam and the other end thereof attached to the other end of said ball line.

5,776,018

BASKETBALL COLLECTION, PASSING AND SHOT ANALYSIS SYSTEM

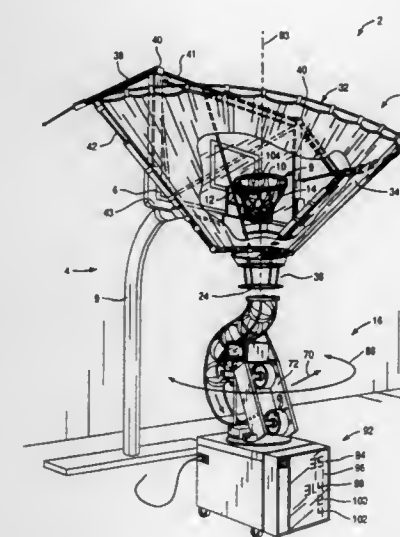
John B. Simpson; John David Simpson, both of Woodside; Michael E. Dodson; Phillip T. Nash, both of Sunnyvale; Sung H. Kim, Palo Alto; Robert B. Brownell, Santa Clara, and Ronald J. Smith, Menlo Park, all of Calif., assignors to SoloPractice, Inc., Sunnyvale, Calif.

Filed Nov. 12, 1996, Ser. No. 747,921

Int. Cl.⁶ A63B 69/00

U.S. Cl. 473—433

44 Claims



1. A basketball passing machine comprising:

- a body;
- a basketball supply, mounted to the body, comprising a basketball supply region having an entrance, through which basketballs are introduced into the supply region, the basketball supply region sized and configured to hold at least two basketballs;
- a basketball ejector assembly, mounted to the body and operably coupled to the basketball supply region, arranged and adapted to pass basketballs, one-at-a-time and in a controlled manner, from the basketball supply along a trajectory directed away from said machine; and
- said basketball ejector assembly comprising:
 - first and second passing rollers having basketball-engaging surfaces; and
 - a basketball metering assembly which supplies basketballs one-at-a-time and in a controlled manner along a path to a discharge position between and engagable with the first and second rollers, said basketball metering assembly comprising a rotatable paddle-wheel having arms engagable with said basketballs and a paddle-wheel rotation limiter for limiting rotation of said paddle-wheel to a chosen rotary movement.

5,776,019

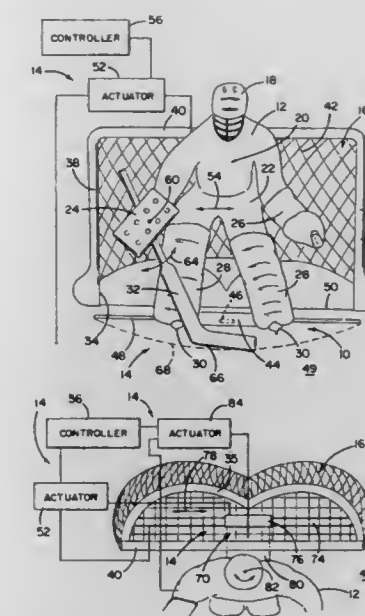
GOALKEEPING APPARATUS

Ronald Kronenberger, 320 Portwine Rd., Riverwood, Ill. 60015
Continuation-in-part of Ser. No. 249,548, May 26, 1994, abandoned. This application Mar. 4, 1996, Ser. No. 610,367Int. Cl.⁶ A63B 69/40

U.S. Cl. 473—446

17 Claims

- 1. In combination:
 - a frame defining at least one of a hockey and a soccer goal over a subjacent surface;
 - a blocking element; and
 - first means cooperating between the blocking element and at least one of the frame and the subjacent surface for moving



the blocking element in front of the frame so as to expose and block different parts of the goal as the blocking element is moved.

said first means comprising means for moving the blocking element relative to the frame in first and second opposite directions in a first path and in third and fourth opposite directions in a second path.

5,776,020

TENSIONING DEVICE FOR SPORTING RACQUETS

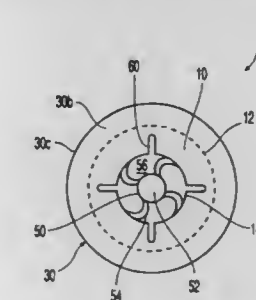
Michael A. Barone, 4 Bonaire Blvd., Delray, Fla. 33446

Filed May 19, 1997, Ser. No. 858,423

Int. Cl.⁶ A63B 51/00

U.S. Cl. 473—522

20 Claims



1. The combination of a strung sporting racquet having a striking surface and a tensioning device mounted on the striking surface of the sporting racquet for dampening vibrations generated in the striking surface, the tensioning device comprising:

- a tubular body portion having cylindrical outer and inner walls and two end surfaces, the cylindrical outer wall having a diameter substantially equal to a spacing formed by two generally parallel strings of the sporting racquet;
- a dampening unit disposed inside the tubular body portion and comprising a center post substantially concentric with the tubular body portion and a plurality of leaf members connecting the center post to the inner wall of the tubular body portion; and
- two sets of flange members extending radially outwardly from the outer wall of the tubular body portion and near the end surfaces respectively, the two sets of flange members defining a peripheral channel portion therebetween to accommodate strings of the sporting racquet whereby the tensioning device is retained in place.

5,776,021

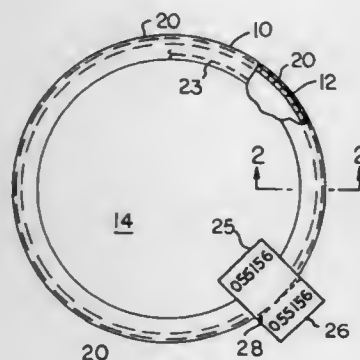
GAME EMPLOYING THROWABLE DISKS

Zoran Rakonjac, 2719 Rockefeller La., Redondo Beach, Calif. 90278

Filed Oct. 3, 1996, Ser. No. 724,866
Int. Cl.⁶ A63H 27/00

U.S. Cl. 473—588

1 Claim



1. A throwable disk comprising:
an annular wire ring, and a fabric sheet having a peripheral edge area thereof secured to said wire ring, whereby the weight of the disk is concentrated primarily in the wire ring; and
a numbered tab and a numbered tear-off tag attached to said fabric sheet; said tag being adapted to be torn off of the tab to identify the person initially possessing the disk after the person has thrown the disk toward a distant target.

5,776,022

PULLEY

Antonius Lambertus Hermanus Schellekens, Tilburg, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands

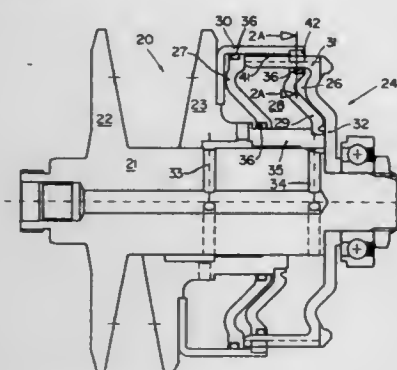
Filed Aug. 5, 1996, Ser. No. 691,016

Claims priority, application Netherlands, Aug. 4, 1995, 1000932

Int. Cl.⁶ F16H 61/00

U.S. Cl. 474—18

17 Claims



1. In a pulley, in particular for a continuously variable transmission, provided with two sheaves placed on a pulley shaft, at least one of the sheaves being movable in the axial direction relative to the pulley shaft by means of movement means, which movement means comprise at least one piston/cylinder assembly, and said movement means being also provided with fixing means which fix the movable sheave in the direction of rotation relative to the pulley shaft; the improvement wherein the fixing means comprise at least one separate non-integral element separately fixed to the piston/cylinder assembly and which element is provided with at least one spline or groove.

5,776,023

HEAVY-DUTY POWER TRANSMISSION V-BELT

Hirokazu Okawa; Hidetake Iwasaki; Mitsuhiro Takahashi; Hidekazu Maruyama; Hiroyuki Sakanaka, and Sakae Umeda, all of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan

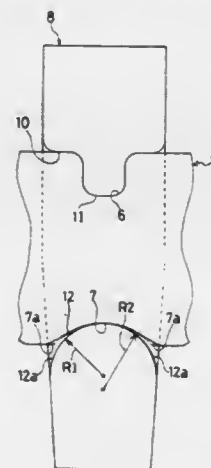
Filed Jul. 12, 1996, Ser. No. 679,518

Claims priority, application Japan, Jul. 13, 1995, 7-176963

Int. Cl.⁶ F16G 1/22

U.S. Cl. 474—243

3 Claims



1. A heavy-duty power transmission V-belt adapted to be wound between set pulleys comprising:
at least one endless tension member; and
a multitude of blocks fixedly engaged along a width with the tension member at specific intervals in a belt length direction, wherein the tension member is provided at a bottom surface side with bottom-surface grooves at specific intervals in the belt length direction, said bottom-surface grooves each having an approximately arcuate cross section and extend in a belt width direction,
the blocks are each provided at a portion corresponding to the bottom surface of the tension member with upward projections, each having an approximately arcuate cross section that extends completely across its width and each being engaged with the bottom-surface groove to fixedly secure the block, and
wherein the radius of curvature of the arcuate portion of the bottom-surface groove is set larger than the radius of curvature of the arcuate portion of the upward projection when the tension is straight, and the radius of the curvature of the bottom-surface groove is set to be approximately equal to the radius of curvature of the upward projection when the belt bends around a pulley with a minimum diameter amount a plurality of pulleys having different pulley diameters.

5,776,024

TENSIONER WITH INTEGRAL BODY AND ARM

David C. White, Dryden, and Thomas J. Becker, Auburn, both of N.Y., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

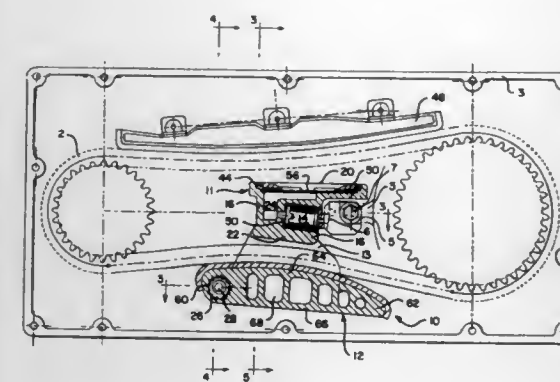
Filed Apr. 3, 1996, Ser. No. 627,142

Int. Cl.⁶ F16H 7/08; 7/22

U.S. Cl. 474—110

13 Claims

1. A chain tensioner with an integral body and arm assembly comprising:
a tensioner body, the tensioner body including a fluid reservoir and a tensioner bore;
a check valve connecting the fluid reservoir to the tensioner bore to permit fluid flow from the fluid reservoir into the tensioner bore and restrict fluid flow from the tensioner bore into the fluid reservoir;
a boss fixedly mounted to a mounting block;



- a plunger having a first end and a second end, said first end of said plunger slidably fitted in said tensioner bore and said second end rigidly attached to said boss;
a tensioner arm having a first side and a second side opposite said first side, a first end disposed between said first and second sides of said tensioner arm and a second end opposite said first end disposed between said first and second sides, said tensioner arm being rigidly attached to the tensioner body at said first end, the tensioner arm having a pivot bore disposed in said first side of said tensioner arm;
a pivot pin disposed in the pivot bore, the pivot pin mounting the tensioner arm for pivotal rotation with respect to said mounting block;
a flow of fluid into the tensioner bore causing the plunger to extend from the tensioner bore and against the boss to cause rotational movement of the tensioner body and tensioner arm.

5,776,025

ADJUSTABLE SELF-ALIGNING BELT TENSIONER

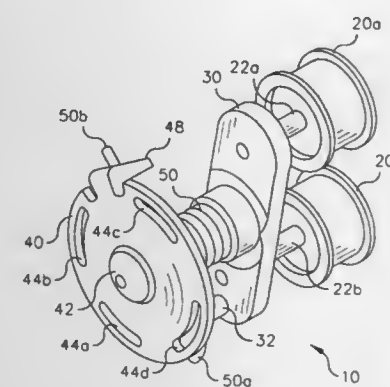
Brian R. Labudde, and Alex B. Vayntrub, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 25, 1996, Ser. No. 719,940

Int. Cl.⁶ F16H 7/12

U.S. Cl. 474—135

6 Claims



1. An adjustable self-aligning tensioner for a drive belt, said tensioner comprising:
a pair of idler pulleys;
a support for said pair of idler pulleys;
a mount, said support being rotatably carried by said mount;
a plurality of slots defined in said mount and a plurality of fasteners associated with said plurality of slots respectively, wherein said fasteners enable said mount to move relative to said fasteners for angular adjustment of said mount location relative to said support whereby said support carried by said mount locates said idler pulleys so as to be adapted to be respectively engageable with a drive belt on opposite sides thereof; and

urging means reactive with said support and said mount to urge said idler pulleys into engagement with the drive belt with a force so as to provide an adjustable preselected tension on such drive belt.

5,776,026

POWER TRANSMISSION BELT AND METHOD OF MANUFACTURING THE SAME

Yoshitaka Tajima; Sizuaki Tsuruta; Hirotaka Hatai, and Takamitsu Akashi, all of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan

PCT No. PCT/JP96/00127, § 371 Date Sep. 20, 1996, § 102(e) Date Sep. 20, 1996, PCT Pub. No. WO96/22479, PCT Pub. Date Jul. 25, 1996

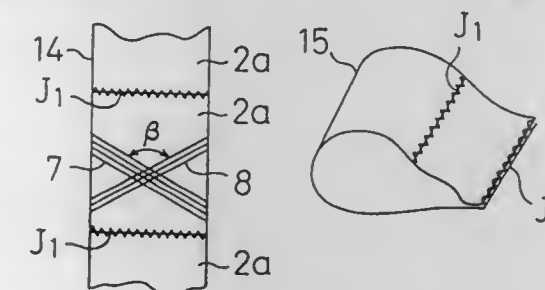
PCT Filed Jan. 22, 1996, Ser. No. 716,236

Claims priority, application Japan, Jan. 20, 1995, 7-006837

Int. Cl.⁶ F16G 1/04

U.S. Cl. 474—267

10 Claims



1. A power transmission belt with a top fabric on a back face of the belt, comprising:
a top fabric formed from a plurality of rubberized woven fabric pieces which are joined at adjacent edges in the shape of a ring,
each of the rubberized fabric pieces being arranged such that warps and wefts thereof intersect each other at an obtuse angle which is open toward the longitudinal direction of the belt, wherein
each joining line of any adjacent fabric pieces extends in a direction orthogonal to the longitudinal direction of the belt, and wherein said adjacent fabric edges are abutted together without overlapping and are joined by stitches to form a sewed portion, variations in the height between said adjacent edges in the sewed portion being 14 μm or smaller on the back face side of the belt to reduce noise when belt is in operation.

5,776,027

Patent Not Issued For This Number

5,776,028

BELT-TYPE CONTINUOUSLY VARIABLE TRANSMISSION

Takahiro Matsuda, and Daihei Teshima, both of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1996, Ser. No. 704,877

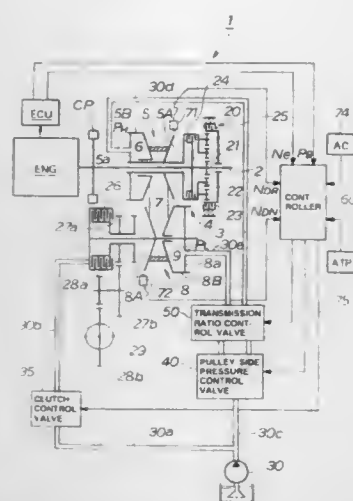
Claims priority, application Japan, Sep. 1, 1995, 7-248731

Int. Cl.⁶ F16H 9/00

U.S. Cl. 477—45

6 Claims

1. A belt-type continuously variable transmission comprising a drive pulley connected to an input shaft connected to an engine, a driven pulley connected to an output shaft, a metal V-belt fitted around said driven pulley and said drive pulley, a drive side



cylinder chamber for setting the pulley width of said drive pulley, a driven side cylinder chamber for setting the pulley width of said driven pulley, a single side pressure control valve for controlling side pressure control hydraulic pressures of hydraulic fluid supplied both to said drive side cylinder chamber and said driven side cylinder chamber, and a controller for controlling said side pressure control valve, wherein said controller comprises:

- a transmission torque calculator for calculating a transmission torque signal on the basis of a signal detected from the running state of said engine;
- a belt transmission torque calculator for calculating a belt transmission torque from the transmission torque;
- a correcting device for correcting the belt transmission torque when the polarity of the belt transmission torque calculated by said belt transmission torque calculator changes; and
- a signal converter for generating a control signal for driving said side pressure control valve on the basis of the corrected belt transmission torque.

5,776,029

Patent Not Issued For This Number

5,776,030

DRIVING FORCE CONTROL SYSTEM FOR A VEHICLE
Toshimichi Minowa, Ibaraki-ken; Hiroshi Kimura; Junich Ishii, both of Katsuta; Takashi Shiraishi, Ibaraki-ken, and Naoyuki Ozaki, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 120,552, Sep. 14, 1993, abandoned.

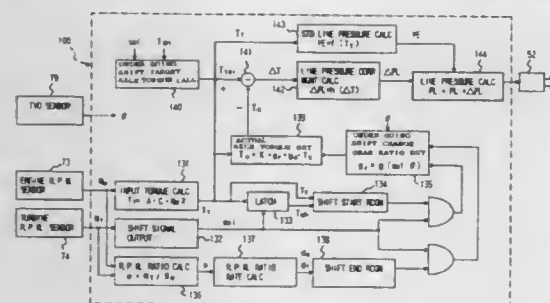
This application Nov. 26, 1996, Ser. No. 753,509

Claims priority, application Japan, Sep. 16, 1992, 4-246720; Nov. 17, 1992, 4-307169

Int. Cl.⁶ B60K 41/04; F16H 61/26

U.S. Cl. 477-109

16 Claims



1. A driving force control system for a vehicle having an engine, a torque converter connected to an output shaft of the engine, a

stepped automatic transmission mechanism connected to an output shaft of the torque converter, a hydraulic circuit for actuating the stepped automatic transmission mechanism, and an axle torque manipulation means operatively connected to said engine and said automatic transmission for changing axle torque of a driving axle connected to an output shaft of the stepped automatic transmission mechanism, said driving force control system supplying a manipulated variable to said axle torque manipulation device to control the axle torque; said driving force control system comprising:

- shift signal output means for generating a shift signal which indicates a gear shift position of said stepped automatic transmission mechanism;
- means for determining a shift start recognition parameter based on a selected one of a rate of change of speed of said output shaft of said stepped automatic transmission mechanism and a change in acceleration of said vehicle;
- shift start recognition means for recognizing an actual mechanical shift start timing of said stepped automatic transmission mechanism in response to a predetermined change of said shift start recognition parameter when the shift signal delivered from said shift signal output means has changed; and
- means for calculating a gear shifting manipulated variable for diminishing variation of said axle torque during the gear shift operation, and for delivering the calculated gear shifting manipulated variable to said axle torque manipulation means for controlling said axle in response to said gear shifting manipulated variable during a period commencing after said shift start timing recognized by said shift start recognition means.

5,776,031

POWER TRAIN CONTROLLER AND CONTROL METHOD

Toshimichi Minowa, Tokai-mura; Yoshiyuki Yoshida, Hitachi, both of Japan, and Junichi Ishii, Novi, Mich., assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 523,607, Sep. 5, 1995, Pat. No.

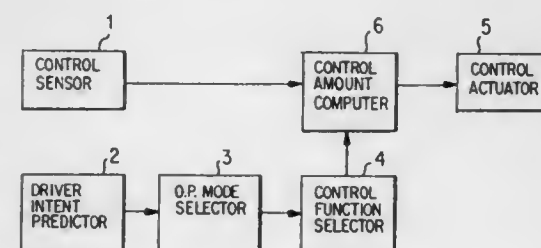
5,620,393. This application Jan. 23, 1997, Ser. No. 787,818

Claims priority, application Japan, Sep. 2, 1994, 6-209521

Int. Cl.⁶ F02D 35/00

U.S. Cl. 477-155

22 Claims



1. A motor vehicle control system for a vehicle having an automatic change speed transmission operable to change a rotational speed ratio between an input shaft and an output shaft, a plurality of vehicle operating condition sensors for sensing respective vehicle operating conditions, and an operating mode selector for accommodating vehicle operator selection of one of a plurality of vehicle operating modes, comprising:

- a transmission control unit for automatically controlling the operation of the transmission as a function of the respective selected operating mode and as a function of a plurality of said operating conditions sensed by said sensors, said control unit being operable to control at least two control functions of said transmission as a function of said operating conditions in respective different control parameters for respective different selected operating modes,

wherein said transmission includes the following control functions:

- a transmission speed ratio pattern control function establishing the time of initiation of transmission speed change operation,

a shifting period control function establishing the duration of transmission speed change operation, and a transmission lock-up control function.

5,776,032

CLUTCH CONTROL DEVICE

Masahiko Kurishige, and Hideaki Katashiba, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

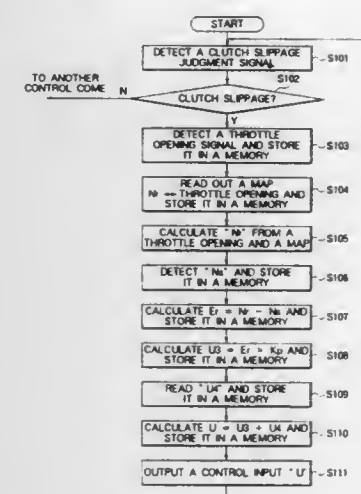
Filed Nov. 12, 1996, Ser. No. 747,048

Claims priority, application Japan, May 21, 1996, 8-125634

Int. Cl.⁶ B60K 41/02

U.S. Cl. 477-175

12 Claims

K₀ PROPORTIONAL GAIN

1. A clutch control device comprising: a clutch disposed on a torque transmission path between an engine and a driven member; target revolving speed generating means for generating a target revolving speed of said engine; revolving speed detecting means for detecting a revolving speed of said engine; revolving speed error calculating means for calculating an error between said target revolving speed and the detected revolving speed; clutch control means for outputting a clutch drive signal which corresponds to the calculated error; drive signal setting means for outputting a clutch drive signal which corresponds to the revolving speed of said engine; and an adder for adding the output of said clutch control means and the output of said drive signal setting means and outputting a clutch drive signal corresponding to the target revolving speed to said clutch, said clutch being controlled based on an output of said adder.

5,776,033

CHIN-UP BAR

William R. Brown, 4815 W. 61st Ter., Mission, Kans. 66205

Filed Dec. 19, 1996, Ser. No. 770,727

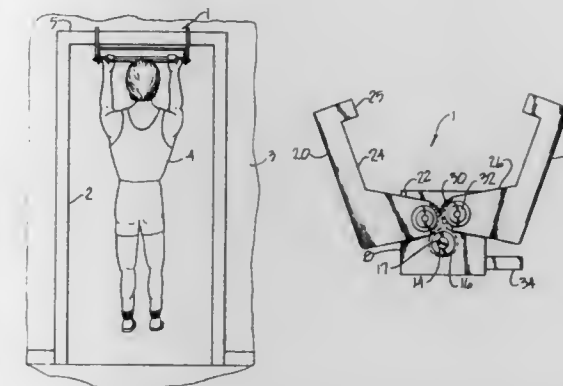
Int. Cl.⁶ A63B 1/00; F16H 21/44; A47H 1/10; B65G 7/12

U.S. Cl. 482-40

4 Claims

2. A removable chin-up bar arrangement for fitting about the frame of a doorway and comprising:

- a) spaced body members situated at opposite ends of a chin-up bar extending therebetween, said bar being rotatable with respect to said body members;
- b) a pair of opposed pincher members swingably attached to each of said body members, said pincher members having arm members generally in the shape of an inverted L with remote



and distal arm ends and adapted to extend about a frame of a doorway and hang said body members and said chin-up bar therefrom;

- c) a gear tooth lock mechanism extending between said ends of said chin-up bar and each of said pincher members and including intermeshing gear teeth in said distal arm ends and at an end of said chin-up bar, said lock mechanism moving said pincher members in unison toward each other upon rotation of said chin-up bar in a first direction and upon rotation of said chin-up bar in an opposite direction causing said pincher members to open from each other.

5,776,034

WRIST AND FOREARM EXERCISE DEVICE

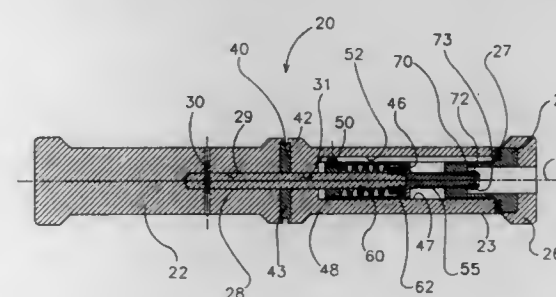
Lenny Stamler, Calgary, Canada, assignor to Pro 4 Arm Ltd., Calgary, Canada

Filed May 1, 1997, Ser. No. 850,113

Int. Cl.⁶ A63B 23/14

U.S. Cl. 482-46

20 Claims



1. A exercise device comprising:

- a. a first hand grip body;
- b. a second hand grip body mounted coaxially to the first hand grip body for rotation relative to the first hand grip body about an axis;
- c. biasing means for biasing the first hand grip body toward the second hand grip body, the biasing means comprising:
 - (i) an adjustment member slidably but non-rotationally mounted in a bore of the second hand grip body,
 - (ii) adjustment means for adjusting the position of the adjustment member along the bore, and,
 - (iii) a compression spring extending between the adjustment member and a force transmission member extending from the first hand grip body.

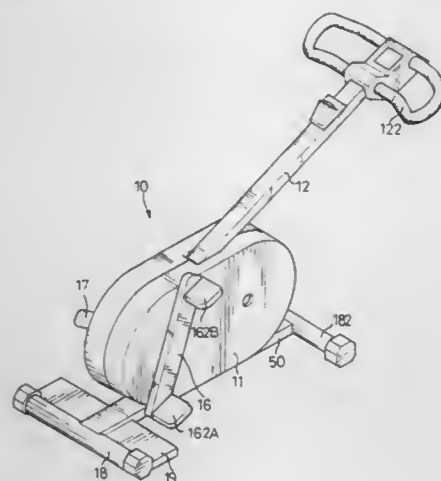
5,776,035

STEPPING EXERCISER

Ping Chen, No. 29, Nanmei St., Nantun Li, Nantun Dist., Taichung, Taiwan
Division of Ser. No. 786,083, Jan. 17, 1997, Pat. No. 5,704,878.
This application Jul. 23, 1997, Ser. No. 899,058
Int. Cl.⁶ A63B 21/00

U.S. Cl. 482—52

3 Claims



1. A stepping exerciser comprising:

- a base frame (11) having a first end portion, a second end portion, a first side wall, and a second side wall;
- a supporting handle (12) having a lower end portion mounted on the first end portion of said base frame (11) in an inclined manner, and an upper end portion with a handgrip (122) mounted thereon;
- a driving axle (15) rotatably mounted on said second end portion of said base frame (11) and having a first end and a second end extending through said first and said second side wall of said base frame (11) respectively;
- a first stepping plate (22) including a mediate portion fixedly and directly mounted on said first end of said driving axle (15), and two distal end portions each with a first abutting edge (224) vertically protruding outwardly;
- a second stepping plate (24) disposed in an inclined manner with said first stepping plate (22) and including a mediate portion fixedly mounted on said second end of said driving axle (15), and two distal end portions each with a second abutting edge (244) vertically protruding outwardly;
- a tension adjusting mechanism (30) mounted in said base frame (11) and engaged with said driving axle (15) for damping a rotation of said driving axle (15); and
- resistance means capable of creating a damping action for complementing said tension adjusting mechanism.

5,776,036

STEPPING EXERCISER

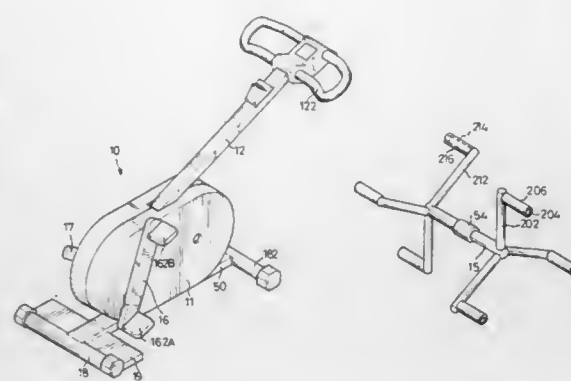
Ping Chen, No. 29, Nanmei St., Nantun Li, Nantun Dist., Taichung, Taiwan
Division of Ser. No. 786,083, Jan. 17, 1997, Pat. No. 5,704,878.
This application Jul. 23, 1997, Ser. No. 899,059
Int. Cl.⁶ A63B 21/00

U.S. Cl. 482—52

5 Claims

1. A stepping exerciser comprising:

- a base frame (11) having a first end portion, a second end portion, a first side wall, and a second side wall;
- a supporting handle (12) having a lower end portion mounted on the first end portion of said base frame (11) in an inclined manner, and an upper end portion with a handgrip (122) mounted thereon;
- a driving axle (15) rotatably mounted on said second end portion of said base frame (11) and having a first end and a second



- end extending through said first side wall and said second side wall of said base frame (11) respectively;
- is a first stepping member including a plurality of first upright rods (202) each having a first end fixedly mounted on said first end of said driving axle (15) and a second end with a first crossbar (204) mounted thereon;
- a second stepping member including a plurality of second upright rods (212) each having a first end fixedly mounted on said second end of said driving axle (15) and a second end with a second crossbar (214) mounted thereon, each of said second upright rods (212) disposed in an inclined manner with a corresponding one of said first upright rods (202);
- a tension adjusting mechanism (30) mounted in said base frame (11) and engaged with said driving axle (15) for damping a rotation of said driving axle (15); and
- resistance means capable of creating a damping action for complementing said tension adjusting mechanism.

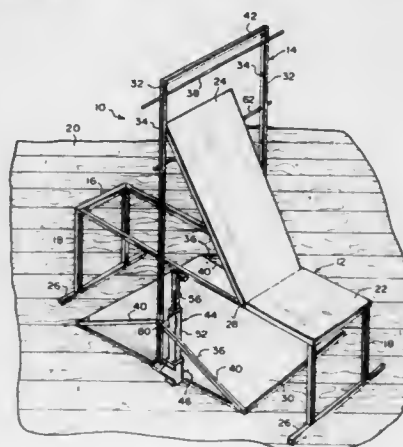
5,776,037

ISOMETRIC EXERCISE DEVICE

Donald B. Millington, 97 Paddock Ave., Meriden, Conn. 06450
Filed Feb. 10, 1997, Ser. No. 797,870
Int. Cl.⁶ A63B 21/002

U.S. Cl. 482—91

16 Claims



- 1. An isometric exercise device, which comprises: an upright rack which includes:
 - a) a base plate to sit upon the floor;
 - b) a pair of elongated standards, each said elongated standard having a plurality of evenly spaced apart adjustment holes therethrough;
 - c) means for attaching in an upright position each said elongated standard to an opposite side of said base plate, so that said adjustment holes in said elongated standards are in alignment;
 - d) an adjustable exercise bar to fit into any two aligned adjustment holes in said elongated standards, so that said adjustable exercise bar can extend horizontally across said elongated standards above said base plate, to allow a person to grip said adjustable exercise bar and exercise isometrically;

- e) a pair of butterfly arms; and
- f) means for holding in an upright position and an outwardly angular position each said butterfly arm to an opposite side of said base plate, so that a person can grip said butterfly arms to exercise isometrically.

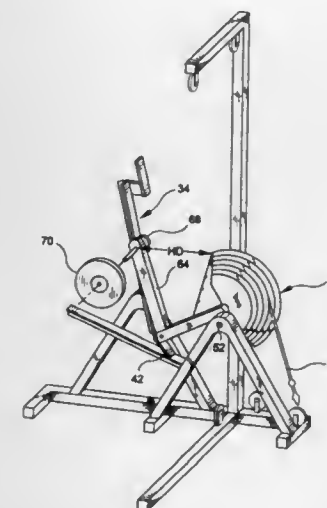
5,776,038

EXERCISE APPARATUS AND ASSOCIATED METHOD

Jeff Hazelwood, 218 Glen Dr., Sausalito, Calif. 94965
Filed Jun. 30, 1997, Ser. No. 885,038
Int. Cl.⁶ A63B 21/06

U.S. Cl. 482—92

17 Claims



- 1. An exercise device for providing a resistance to a muscle group when that muscle group is contracted and relaxed, said device comprising:
 - an articulated arm assembly having a plurality of arm elements that extend between a first end and a second end;
 - a frame structure for supporting said arm assembly, wherein said arm assembly is pivotally connected to said frame structure proximate said second end at a pivot point;
 - a flexible element having a distal end and a proximal end, wherein said distal end of said flexible element is coupled to said arm assembly;
 - an exercise attachment coupled to said proximal end of said flexible element for engaging said flexible element with a muscle group, wherein said exercise attachment enables the muscle group to move the flexible element in a first direction from a beginning point when the muscle group is contracted and enables the flexible element to return to said beginning point when the muscle group is relaxed;
 - a first inclined surface having a top end and a bottom end, wherein said inclined surface is coupled to said frame structure;
 - a second inclined surface; and
 - an engagement element coupled to said arm assembly proximate said first end for engaging said inclined surfaces;
- wherein said arm assembly pivots about said pivot point and said engagement element moves up along said first inclined surface and passes over said top end of said inclined surface when said flexible element moves in said first direction and moves down along said second inclined surface when said flexible element moves in said second direction.

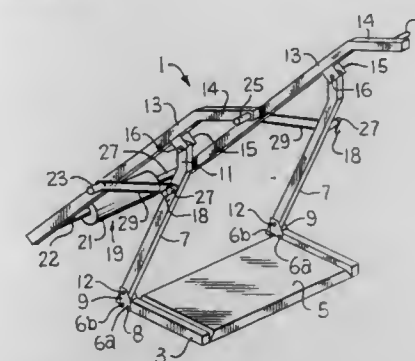
5,776,039

EXERCISE APPARATUS

Charles B. Perez, Jr., Venice, Calif., assignor to Dean G. Tornabene, Marina del Rey, Calif.
Filed Dec. 23, 1993, Ser. No. 172,492
Int. Cl.⁶ A63B 21/08

U.S. Cl. 482—97

3 Claims



- 1. An exercise apparatus comprising:
 - a base member having a cushion;
 - a first rigid arm having a lower end secured to said base member and an upper end;
 - an elongated second rigid arm with first and second ends, said second rigid arm pivotally mounted on said upper end of said first arm intermediate said first and second ends;
 - pivotal mounting said second arm on said upper end of said first arm;
 - resilient means coupled between said first arm at a location between said lower and upper ends, and said second arm at a location spaced from said pivot means;
 - said second arm includes means for selective attachment of said resilient means to one of at least two locations, one of said locations being on one side of said pivot means, and another of said locations being on the other side of said pivot means;
 - an exercise being performed by pivoting said second arm about said pivot means in said one direction when said resilient means is attached at said one location, and an exercise being performed by pivoting said second arm about said pivot means in the opposite direction when said resilient means is attached at said other location;
 - said first arm being releasably secured to said base member, and upon release of such securing and removal of at least one attachment point of said resilient means, said base member, said first arm, and said second arm collapse to a folded condition.

5,776,040

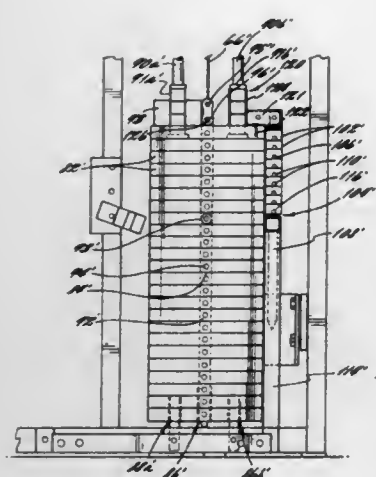
AUXILIARY WEIGHT SYSTEM FOR EXERCISE APPARATUS

Gregory M. Webb; William F. Halsey, both of Independence, and Michael W. Morris, Galax, all of Va., assignors to Nautilus International, Inc., Independence, Va.
Filed Aug. 2, 1996, Ser. No. 691,693
Int. Cl.⁶ A63B 21/06

U.S. Cl. 482—98

17 Claims

- 11. A system of weights for an exercise apparatus, comprising:
 - a set of first weights arranged in a first stack having a top weight, each of said first weights being of a first magnitude;
 - a first connecting member;
 - first means for connecting a selected number of said first weights to said first connecting member;
 - first guiding means for guiding said set of first weights along a first path;
 - a set of second weights arranged in a second stack, each of said second weights being of a second magnitude that differs from said first magnitude;
 - a second connecting member affixed to said top weight of said first stack;



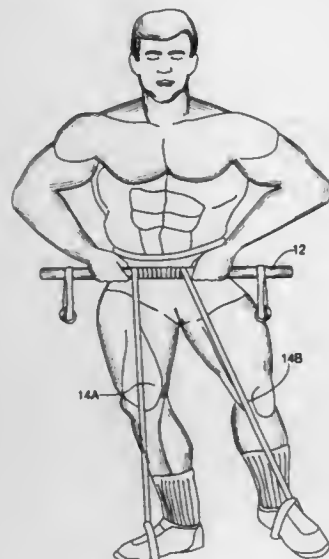
second means for connecting a selected number of said second weights to said second connecting member;
second guiding means for guiding said set of second weights along a second path that is non-coincident with said first path; and
interconnecting means for interconnecting said first connecting member to an exercise station of an exercise machine such that use of such exercise station would draw a selected number of said first weights and, if at least said top weight of said first stack is selected, a selected number of said second weights.

5,776,041
EXERCISE DEVICE WITH AN ELASTIC MEMBER
Karol Fisher, 179-10 Union Turnpike, Jamaica Estates, N.Y. 11366

Filed Jan. 8, 1997, Ser. No. 780,461
Int. Cl.⁶ A63B 21/02

U.S. Cl. 482—125

17 Claims

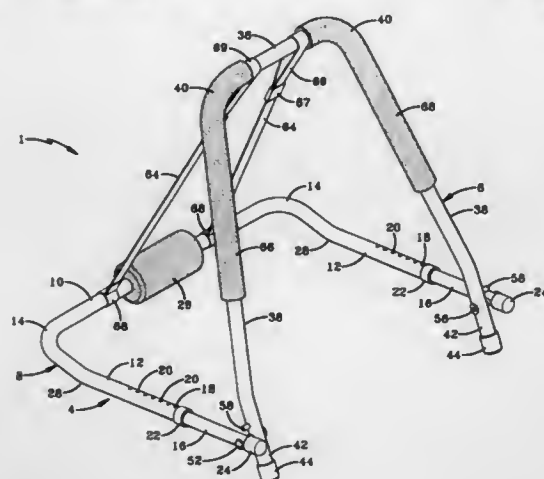


1. An exercising device comprising:
an elastic filament having first and second filament ends, filament limb engagement elements and a central filament portion in between; and
a stiff bar member having first and second bar ends, a bar central portion extending between said bar ends and first and second bar limb engagement elements spaced from said first and second bar ends respectively with said central filament portion being attached to said bar central portion wherein said bar limb engagement elements include loops.

5,776,042
ABDOMINAL EXERCISE DEVICE
William J. Szabo, 10126 Langmuir Ave., Sunland, Calif. 91040
Filed Jun. 3, 1996, Ser. No. 660,209
Int. Cl.⁶ A63B 23/02

U.S. Cl. 482—140

11 Claims



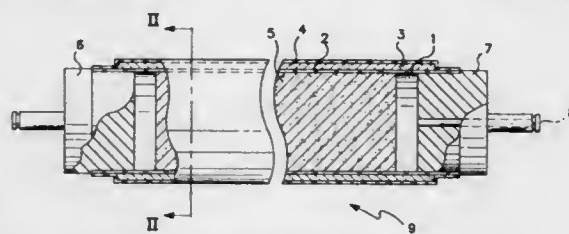
1. An exercise device, including:
a generally U-shaped first frame member having a pair of spaced legs and a cross section which extends therebetween;
a generally U-shaped second frame member having a pair of spaced legs and a cross section which extends therebetween;
a pivot mechanism pivotally connecting each leg of said second frame member to a respective leg of said first frame member permitting said frame members to move between a collapsed storage position and an open operating position;
retention means extending between the two frame members to retain the second frame member in an angular relationship to the first member when in the open operating position; and
said cross sections of the frame members being located at a first end of the device and the pivot mechanism being located at a second end opposite said first end thereby forming a void area between the legs and cross section of each of the first and second frame members and forming an open end at said second end whereby the user can lay down in a supine position through said open end between the frame member and perform abdominal exercises by moving the device while said device provides support for the user.

5,776,043
RELEASE LIQUID SUPPLY DEVICE AND LIQUID-ABSORBING MATERIAL FOR USE THEREIN
Hiroshi Kato, and Hiroyasu Kikukawa, both of Okayama, Japan, assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Feb. 21, 1996, Ser. No. 604,635
Claims priority, application Japan, Feb. 22, 1995, 7-057973
Int. Cl.⁶ B23P 15/00

U.S. Cl. 492—56

26 Claims



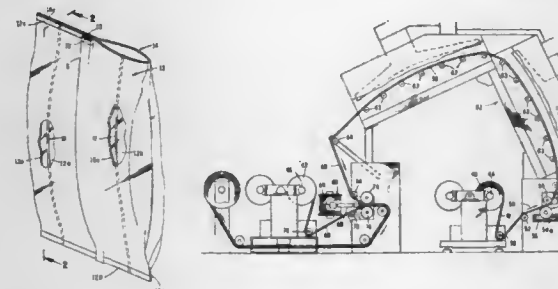
1. A liquid metering and coating device comprising:
a perforated hollow member;
a liquid-absorbent porous material within the hollow of said perforated hollow member;

a liquid diffusion layer in contact with the outer perimeter of said perforated hollow member;
a liquid permeation regulating layer in contact with the outer perimeter of said liquid diffusion layer;
sealing means for sealing said liquid-absorbent porous material within said perforated hollow member; and
at least one hole in said sealing means which permits gas within said liquid metering and coating device to escape during operation.

5,776,044
CLOSABLE BAG AND METHOD OF MAKING SAME
Donald Clark, 1913 Woodholly Ct., Glendale, Calif. 91207
Division of Ser. No. 198,601, Feb. 18, 1994, abandoned. This application Aug. 7, 1995, Ser. No. 458,491
Int. Cl.⁶ B31B 1/90

U.S. Cl. 493—215

19 Claims



1. A method of making a reclosable bag from a length of laminate composite formed from a first roll of thin film, a second roll of a thin film and a filament of inelastic, malleable material, said method comprising the steps of:

- removing the length of thin film from the first roll;
- removing a length of the film from the second roll;
- bringing said lengths of thin film into close proximity;
- inserting the filament of inelastic malleable material between said lengths of thin film; and
- bonding together said first and second lengths of thin film to form a laminate composite in a manner to sealably encapsulate the filament of inelastic, malleable material between said lengths of thin film;
- cutting said laminate composite into discrete lengths to form a plurality of bag forming lengths each having a top portion, bottom portion and first and second side portions; and
- interconnecting said first and second side portions of each said bag forming length to form a tube-like construction having a bottom opening and sealing said bottom opening to form a bag.

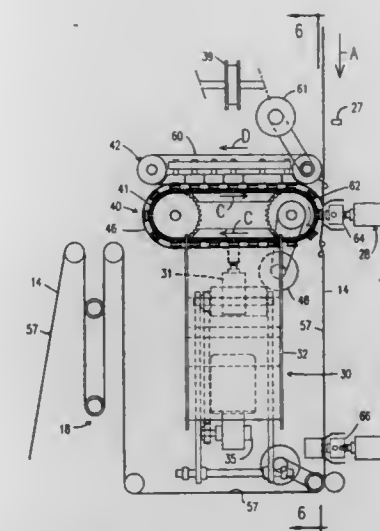
5,776,045
MACHINE FOR ATTACHING A RECLOSABLE FASTENER TO A FLEXIBLE MATERIAL
William A. Bodolay, and Michael J. Bodolay, both of Lakeland, Fla., assignors to Lakeland Micro, Inc., Lakeland, Fla.
Filed Nov. 6, 1995, Ser. No. 554,434
Int. Cl.⁶ B31B 1/90

U.S. Cl. 493—215

24 Claims

1. A machine for attaching a reclosable zipper-type fastener to a flexible material primarily intended for use with a host form, fill, seal and separate packaging machine to form a reclosable container, said machine comprising:

- a means for supplying a flexible material to said machine; at least one motor for indexing a predetermined length of flexible material along a path through said machine;
- a cutting device that forms at least one cut through a predetermined segment of said flexible material, said device being disposed along said path of said flexible material;



means for supplying a predetermined length of a reclosable fastener having a perimeter and fastener distal ends, said fastener comprising a pair of mating reclosable sealing strips, one of said strips comprising a male fastener part and the other of said strips comprising a female fastener part;
means for fusing said distal ends of said fastener disposed downstream from said supplying means;
means for conveying said fastener from said supplying means to said fusing means such that each said fastener passes adjacent to said fusing means; and
means for attaching said fused fastener to said flexible material in overlying relation to said cut by sealing along said perimeter of said fused fastener around said cut.

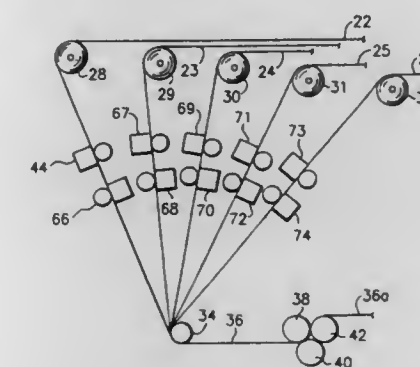
5,776,046
DOILIES AND METHOD OF MANUFACTURING SAME
Howard E. Harper, Redding, Conn., and Robert D. Tarr, Jr., Middletown, Ohio, assignors to Mafcot Industries, Inc., Norwalk, Conn.

Filed Mar. 27, 1997, Ser. No. 829,325

Int. Cl.⁶ B31D 1/04

U.S. Cl. 493—342

19 Claims



1. A method of producing doilies comprising the steps of:
A) applying a lubricious release fluid to selected surfaces of a plurality of sheets of paper stock;
B) superimposing the plurality of sheets of paper stock into a multi-layered paper web; and
C) passing the multi-layered paper web between a die roller having doily-pattern cutters thereon and a backer roller.

5,776,047

CARDIOPULMONARY FUNCTION ASSISTING DEVICE
Shintaro Fukunaga; Taijiro Sueda, and Yuichiro Matsuura, all
of Hiroshima, Japan, assignors to President of Hiroshima
University, Hiroshima, Japan

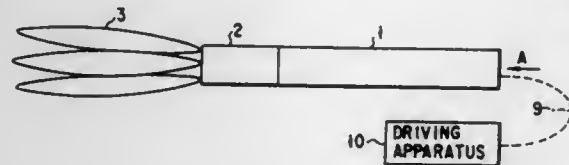
Filed Aug. 14, 1995, Ser. No. 515,004

Claims priority, application Japan, Aug. 19, 1994, 6-195177

Int. Cl.⁶ A61N 1/362

U.S. Cl. 600—18

7 Claims



1. A cardiopulmonary function assisting device comprising:
a plurality of balloons arranged side by side to be left in a blood
vessel, the balloons being formed of a gas permeable film;
and
gas supplying and discharging means, connected to the balloons,
for supplying oxygen or a mixture of oxygen and another gas
to the balloons so as to simultaneously expand the balloons
and discharging the gas from the balloons so as to simulta-
neously contract the balloons,
wherein, when the gas is supplied to the balloons, the balloons
are expanded, so that oxygen is added through the balloons to
blood on peripheries of the balloons and the blood on the
peripheries of the balloons is removed away by the balloons;
and when the gas is discharged from the balloons; the periph-
eries of the balloons are filled with blood.

5,776,048

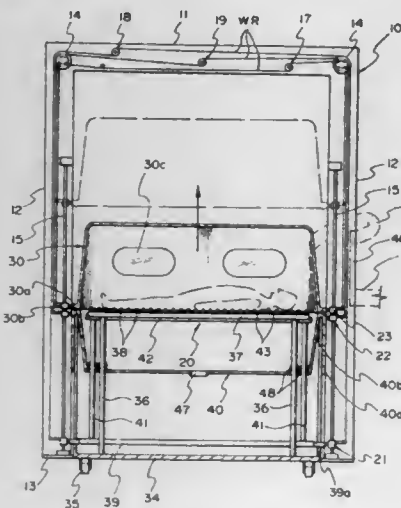
SYSTEM FOR TREATING BURN SUFFERERS
Sung Kee Jo, 29-1, Hwkyung-Dong, Dongdaemoon-Ku, Seoul,
Rep. of Korea

Filed Mar. 8, 1996, Ser. No. 612,686

Claims priority, application Rep. of Korea, Mar. 9, 1995,
1995-4835Int. Cl.⁶ A61G 10/00

U.S. Cl. 600—21

12 Claims



1. A system for treating burn sufferers comprising:
a rectangular holder having a top frame, a pair of side frames
and a bottom support panel;
a first drive means operably coupled to said rectangular holder;
a bed horizontally placed between said side frames, said bed
having a fixed bed surface and movable bed surface, said
fixed and movable bed surfaces alternatively holding a burn
sufferer, said movable bed surface being operably coupled to

and selectively moved by said first drive means thereby being
selectively lifted up higher than the fixed bed surface;
a second drive means operably coupled to said rectangular
holder;
a movable sealing cap movably mounted to said holder for
selectively sealing said bed and thereby capsuling the bed,
said sealing cap being operably coupled to and vertically
moved by said second drive means;
a third drive means operably coupled to said rectangular holder;
a movable bathing tank placed under said bed and operably
coupled to and selectively vertically moved by said third drive
means; and
an air and water treating and supplying unit connected to said
sealing cap and adapted for supplying both clean air with the
appropriate temperature and humidity and purified water for
the bed sealed by said sealing cap.

5,776,049

**STEREO ENDOSCOPE AND STEREO ENDOSCOPE
IMAGING APPARATUS**

Susumu Takahashi, Iruma, Japan, assignor to Olympus Opti-
cal Co., Ltd., Tokyo, Japan

Division of Ser. No. 155,807, Nov. 23, 1993, Pat. No.

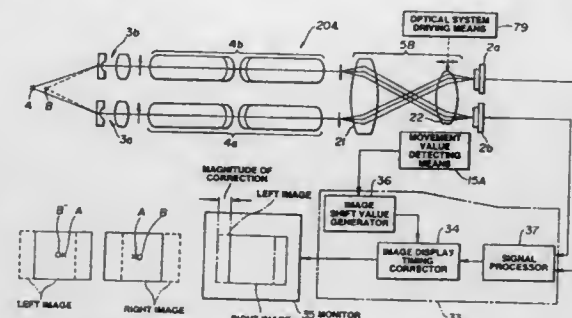
5,522,789. This application May 24, 1995, Ser. No. 449,269

Claims priority, application Japan, Dec. 24, 1992, 4-344814

Int. Cl.⁶ A61B 1/00

U.S. Cl. 600—111

1 Claim



1. A stereo endoscope imaging apparatus comprising:
a pair of right and left objective optical systems opposed to an
object and arranged with a predetermined space therebetween
so as to form a right object image and a left object image,
respectively;
an image transmitting means for transmitting said right object
image and said left object image formed to predetermined
positions by said objective optical systems;
an imagery optical system having a single optical axis, for
receiving said right and left object images from said image
transmitting means and forming said right and left object
images at predetermined positions; and
an imaging means for receiving said right and left object images
from said imagery optical system and converting them into
electrical signals,
wherein said imaging means includes two imaging devices that
are arranged to optically receive said right and left object
images formed by said imagery optical system, and which
convert said right and left object images into electrical sig-
nals,
wherein said imagery optical system includes an adjustment
optical system for performing at least one of magnification
adjustment and focus adjustment on said right and left object
images transmitted by said image transmitting means, said
stereo endoscope imaging apparatus comprising:
a driving signal supplying means for applying a driving signal
for reading electrical signals resulting from photoelectric
conversion performed by said two imaging devices;
an optical system driving means for driving said adjustment
optical system to effect at least one of said magnification
adjustment and said focus adjustment;

5,776,051

Patent Not Issued For This Number

5,776,052

**LARYNGOSCOPE ADAPTED TO POSITION AND
ADVANCE A FIBEROPTIC BRONCHOSCOPE**

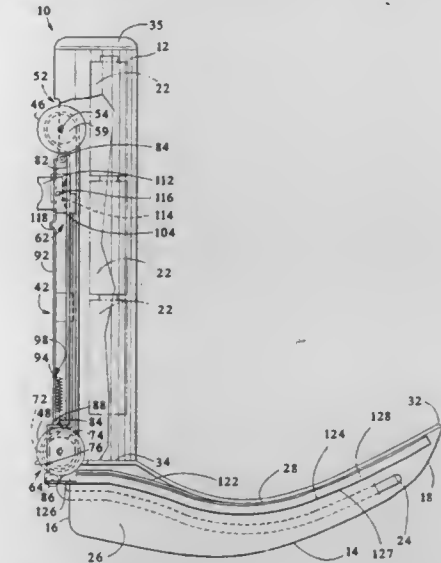
Patrick C. Callahan, 340 Parkwood Ct., Palatine, Ill. 60067

Filed Dec. 19, 1996, Ser. No. 770,587

Int. Cl.⁶ A61B 1/267

U.S. Cl. 600—194

6 Claims



1. A laryngoscope comprising:
an elongate handle extending from a proximal end to a distal
end, the handle including a mechanism having an engagement
section at the distal end of the handle that is adapted to engage
a flexible fiberoptic tube of a bronchoscope;
a blade structured to manipulate the proximal tissue of a patient's
airway, having a proximal end and a distal end, and secured to
the distal end of the handle at a location adjacent to the
proximal end of the blade;
the blade defining a surface extending from a location adjacent
to the engagement section of the mechanism along the blade
to the distal end of the blade;
the mechanism having a guide extending along the surface and
structured to overlie the surface to define a channel from the
engagement section to the distal end of the blade sized to
accept the flexible fiberoptic tube of a bronchoscope when the
a flexible fiberoptic tube is engaged by the engagement sec-
tion;
the mechanism adapted to be manually operable from the handle
to advance the flexible fiberoptic tube of a bronchoscope
through the channel when the fiberoptic tube is engaged by
the engagement section;
the engagement section further adapted to disengage the flexible
fiberoptic tube of a bronchoscope;
the mechanism being adapted to displace the guide from the
surface a distance sufficient to allow the flexible fiberoptic
tube of a bronchoscope to separate from the laryngoscope;
and
the mechanism adapted to be manually operable from the handle
to cause the engagement section to disengage the flexible
fiberoptic tube and to cause the guide to displace from the
surface
whereby a practitioner can grasp the handle of the laryngoscope
to manipulate proximal airway tissue while viewing the
region adjacent to the distal end of the blade either directly as
in conventional laryngoscopy or via the flexible fiberoptic
tube of a bronchoscope, can advance the flexible fiberoptic
tube of a bronchoscope beyond the blade using the hand

a detecting means for detecting magnitude of adjustment
effected by said adjustment optical system driven by said
optical system driving means;
an image display timing correcting means for correcting the
timing of displaying electrical signals, which is read by said
driving signal supplying means and displayed as right and
left images in a display means, so as to change at least one
of the display positions of said right and left images; and
an image shift value generating means for providing a mag-
nitude of correction of the display timing effected by said
image display timing correcting means according to the
magnitude of adjustment detected by said detecting means,
wherein said image display timing correction means includes:
a memory means for temporarily storing electrical signals
read with said driving signal; and
a read timing regulating means for regulating the timing of
reading electrical signals as right and left images from
said memory means according to a magnitude of correc-
tion effected by said image shift value generating means.

5,776,050

ANATOMICAL VISUALIZATION SYSTEM

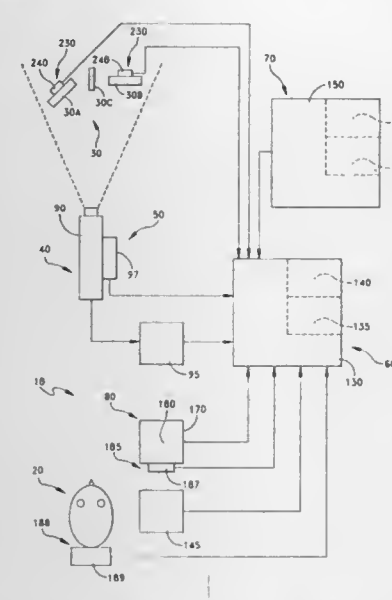
David T. Chen, Somerville, Mass.; Steven D. Pieper, Thetford
Center, Vt., and Michael A. McKenna, Cambridge, Mass.,
assignors to Medical Media Systems, West Lebanon, N.H.

Filed Jul. 24, 1995, Ser. No. 505,587

Int. Cl.⁶ A61B 1/00; 5/05

U.S. Cl. 600—117

20 Claims



1. A real-time computer-based viewing system comprising:
a database defining a 3-D computer model, said database com-
prising at least a first software object corresponding to a
physical structure which is to be viewed by said system;
sensor means for acquiring real-time data regarding said phys-
ical structure when said physical structure is located within the
data acquisition field of said sensor means, said sensor means
being selectively movable relative to said physical structure;
generating means for generating a second software object, said
second software object comprising a surface, wherein said
surface embodies said real-time data acquired by said sensor
means;
registration means for positioning said second software object in
registration with said first software object in said 3-D com-
puter model, such that said first and second software objects
simultaneously coexist in a single coordinate system; and
processing means for generating an image from said first and
said second registered software objects taken from a specified
point of view relative to said single coordinate system.

grasping the handle of the laryngoscope, and can disengage the laryngoscope from the flexible fiberoptic tube after placement of the tube within the patient's airway.

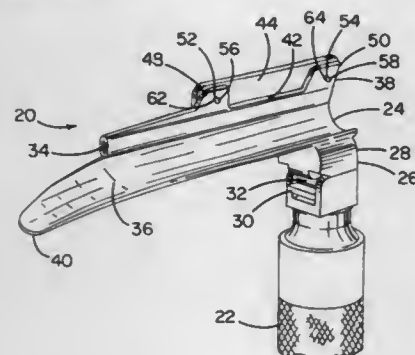
5,776,053
LARYNGOSCOPE BLADE WITH PROTECTIVE INSERT
Branislav M. Dragisic, 7849 Forest Hill Rd., Burr Ridge, Ill. 60525, and Timothy R. Lubenow, 14 S. Oak St., Hinsdale, Ill. 60521-4215

Filed Apr. 15, 1997, Ser. No. 843,437

Int. Cl.⁶ A61B 1/267

U.S. Cl. 600—195

9 Claims



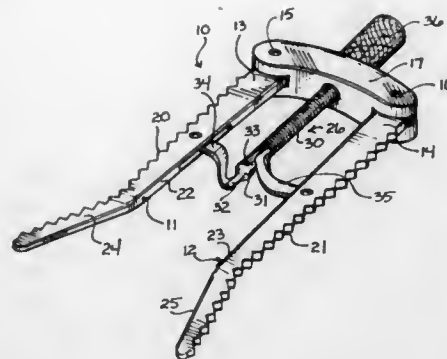
1. A blade assembly for a laryngoscope including a handle, said blade assembly comprising
 - base for coupling to the handle, and
 - unitary blade structure secured to the base, said unitary blade structure including an elongated blade and a tongue deflector, said elongated blade having a proximal end, a distal end, an upper surface, a lower surface, and an elongated edge section, said lower surface of the blade being secured to the base at the proximal end, said tongue deflector extending in a direction substantially vertical to the upper surface of the elongated blade along a portion of the elongated edge section, the tongue deflector having a recess in its upper surface such that the tongue deflector is not continuous in a plane substantially parallel to the upper surface of the elongated blade,
 - a resilient protective insert having a thin elongated shape with proximal and distal ends, the insert being removably coupled to the tongue deflector at its proximal and distal ends, the insert being disposed substantially adjacent to the recess such that the insert presents a continuous upper surface in the plane substantially parallel to the upper surface of the elongated blade,
- whereby a vertical force applied to the upper surface of the resilient protective insert deflects the insert within the recess.

5,776,054
APPARATUS FOR RETRACTING TISSUE
Dilip Bobra, 2072 E. Lavieva La., Tempe, Ariz. 85284
Filed Aug. 7, 1996, Ser. No. 694,481
Int. Cl.⁶ A61B 11/02

U.S. Cl. 600—219

9 Claims

1. A retractor for holding back the edges of an incision, said retractor comprising:
 - a base;
 - a substantially elongate first retractor arm having an inner end pivotally coupled to said base, an outer end, an inner edge, and a substantially irregular outer engagement edge extending substantially along the entire length of said first retractor arm from said inner end to said outer end thereof;
 - a substantially elongate second retractor arm having an inner end pivotally mounted to said base, an outer end, an inner edge and a substantially irregular outer engagement edge extending along substantially the entire length of said second

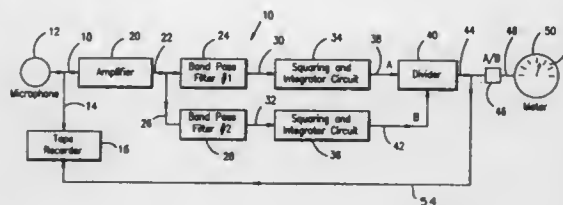


retractor arm from said inner end to said outer end thereof, said first retractor arm being disposed parallel to and spaced from said second retractor arm;
an expansion assembly coupled to said first retractor arm and said second retractor arm for moving said first retractor arm and said second retractor arm between a contracted and an expanded position, said substantially irregular outer engagement edge of said first retractor arm and said substantially irregular engagement edge of said second retractor arm for engaging the edges of the incision.

5,776,055
NONINVASIVE MEASUREMENT OF PHYSIOLOGICAL CHEMICAL IMPAIRMENT
Harb S. Hayre, 10 Legend La., Houston, Tex. 77224-9756
Filed Jul. 1, 1996, Ser. No. 674,143
Int. Cl.⁶ A61B 5/00

U.S. Cl. 600—300

11 Claims



1. A noninvasive method for identifying and measuring the physiological manifestations of chemical impairment in a human subject, comprising:
 - converting the subject's spoken words into a corresponding electrical signals;
 - amplifying the said electrical signals;
 - frequency band limiting the said electrical signals to produce corresponding conditioned electrical signals;
 - determining the frequency spectral density of the conditioned speech signals;
 - determining a first value corresponding to the energy contained in the said upper half frequency band of signal spectral density from 580 to 1160 Hertz;
 - determining a second value corresponding to the energy contained in the entire frequency band of the said signal spectral density from 00 to 1160 Hertz; and
 - determining the ratio of the said first value to the said second value to obtain a third value corresponding to the said chemical impairment.

5,776,056
HEALTH SELF-CHECKING SYSTEM USING REMOTE CONTROLLER AND TELEVISION AND METHOD THEREOF

Jong-Uk Bu, and Kwang-Kyun Jung, both of Seoul, Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

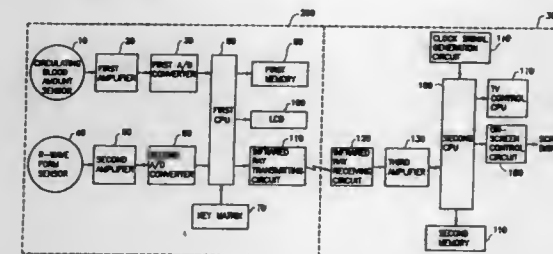
Filed Jul. 5, 1995, Ser. No. 498,466

Claims priority, application Rep. of Korea, Jul. 5, 1994, 1994-16017

Int. Cl.⁶ A61B 5/02

U.S. Cl. 600—301

19 Claims

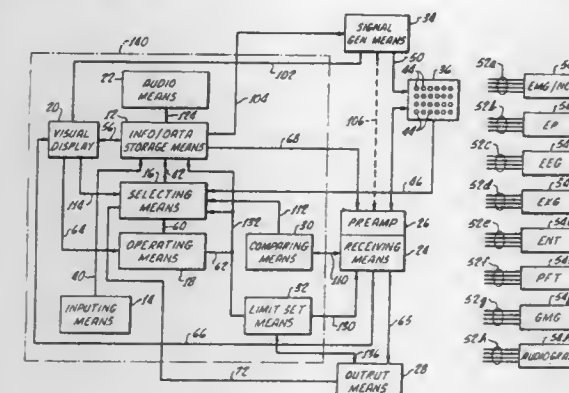


10. A self-check health system, comprising:
 - a television remote controller unit for detecting health characteristics from a user, and for processing the detected health characteristics into health information; and
 - a display unit for receiving the health information, for analyzing the received health information to produce user information, and for displaying the user information based on the analyzed health information.

5,776,057
VIRTUAL MEDICAL INSTRUMENT FOR PERFORMING MEDICAL DIAGNOSTIC TESTING ON PATIENTS
Michael R. Swenson, San Diego, and Gregory R. Holland, Irvine, both of Calif., assignors to CMEd, Inc., Irvine, Calif.
Division of Ser. No. 463,055, Jun. 5, 1995, Pat. No. 5,623,925.
This application Feb. 4, 1997, Ser. No. 794,380
Int. Cl.⁶ A61B 5/0205

U.S. Cl. 600—301

3 Claims



1. A virtual medical instrument system for a medical facility having a plurality of patient medical diagnostic test protocols, said virtual medical instrument comprising:
 - a. a universal interface having a number of electrical contacts, said universal interface being configured for having connected to at least some of said contacts any selected set of a plurality of different sets of electrical conduits associated with a like plurality of different patient diagnostic test protocols;
 - b. computer means for electronically storing said plurality of different patient diagnostic test protocols;
 - c. selecting means connected to said computer means for enabling the selection of any one of said plurality of different patient diagnostic test protocols for conducting on a patient,

the simultaneous selection of the corresponding set of electrical conduits to be connected to particular electrical contacts of said universal interface, and for causing the selected diagnostic test protocol to be performed on said patient after the corresponding set of electrical conduits have been connected to the universal interface contacts and to the patient on which the selected diagnostic test protocol is to be performed;
d. receiving means connected to said universal interface for receiving electrical signals from the set of electrical conduits connected to said universal interface contacts from a patient undergoing said selected diagnostic test protocol and for providing said electrical signals to said computer means; and
e. output means connected to said computer means for providing a detectable output corresponding to said received electrical signals.

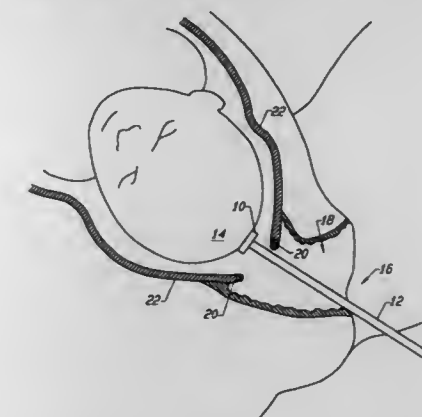
5,776,058
PRESSURE-ATTACHED PRESENTING PART FETAL PULSE OXIMETRY SENSOR
Mitchell Levinson, Pleasanton; Jessica Warring, Millbrae; Steven L. Nierlich, and Phillip S. Palmer, both of San Leandro, all of Calif., assignors to Nellcor Puritan Bennett Incorporated, Pleasanton, Calif.

Filed Aug. 13, 1996, Ser. No. 701,351

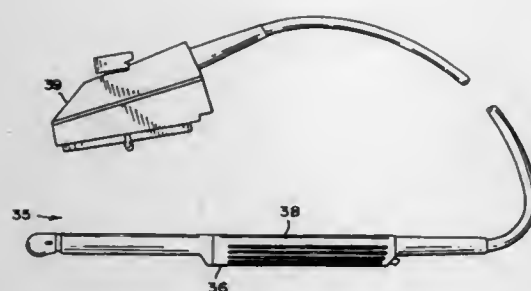
Int. Cl.⁶ A61B 5/00

U.S. Cl. 600—338

8 Claims



1. A perinatal pulse oximeter sensor for temporary application to a fetus and providing a signal corresponding to blood oxygen saturation, comprising:
 - a sensor head having a fetus engaging surface for engagement with a presenting part of said fetus with applied pressure;
 - light emitting means connected to said sensor head for emitting light of at least two wavelengths directed in a predetermined direction at said presenting part of said fetus;
 - light detecting means mounted in said sensor head for collecting light from said light emitting means scattered through said fetus, and providing said signal corresponding to blood oxygen saturation; and
 - a rigid member having a longitudinal axis connected to said sensor head with said longitudinal axis aligned with said predetermined direction having sufficient length for inserting said sensor head into a vagina and for applying said pressure to said sensor head from external to said vagina.



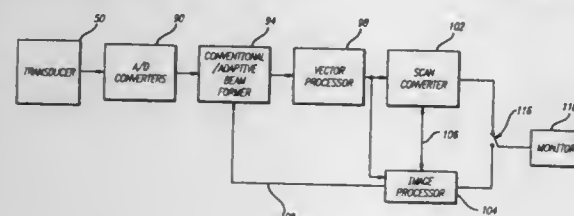
a control mechanism responsive to the sensor signal, the control mechanism generating a transducer disabling signal when the sensor signal fails to enter the first state within a selected time period.

5,776,066

METHOD AND APPARATUS FOR CREATING ADAPTIVELY FOCUSED ULTRASOUND IMAGES
Levin F. Nock, and Barry H. Friemel, both of Issaquah, Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.
Filed Sep. 30, 1996, Ser. No. 723,170
Int. Cl.⁶ A61B 8/00

U.S. Cl. 600—443

10 Claims



I. A method of creating ultrasound images in an ultrasound system of the type that includes a transducer that transmits ultrasound signals into a patient and receives echo signals from the patient, comprising:

- obtaining a current set of conventionally focused echo signal data and a previous set of conventionally focused echo signal data;
- determining if the transducer has moved between the time when the current and the previous sets of conventionally focused echo signal data are obtained;
- obtaining a current set of adaptively focused echo signal data and a previous set of adaptively focused echo signal data,
- forming matched pairs of conventionally and adaptively focused echo signal data, the current set of adaptively focused echo signal data in each matched pair corresponding in time to the current set of conventionally focused echo signal data in the pair;
- translating the previous set of adaptively focused echo signal data to compensate for the transducer movement;
- averaging the current set of adaptively focused echo signal data and the translated set of adaptively focused echo signal data; and
- using the averaged set of adaptively focused echo signal data to produce an adaptively focused ultrasound image.

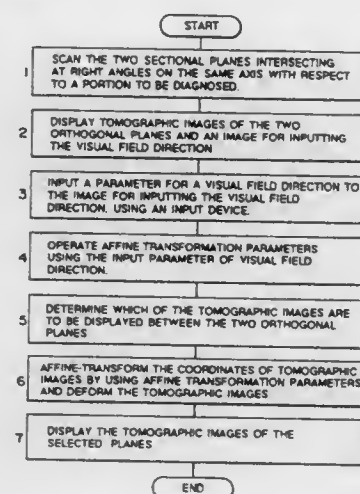
5,776,067

METHOD OF DISPLAYING A BIPLANE IMAGE IN REAL TIME AND AN ULTRASONIC DIAGNOSING APPARATUS FOR DISPLAYING THE BIPLANE IN REAL TIME
Kazushi Kamada, Kashiwa, and Shinichi Kondo, Asahikawa, both of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Jan. 17, 1997, Ser. No. 785,254
Claims priority, application Japan, Jan. 19, 1996, 8-024817
Int. Cl.⁶ A61B 8/00

U.S. Cl. 600—443

16 Claims



1. A method of displaying a biplane image in real time in an ultrasonic diagnosing apparatus, comprising the steps of: transmitting ultrasonic waves from a biplane probe to a portion of a sample to be diagnosed to scan simultaneously two sectional planes that intersect orthogonally at an axis of intersection; receiving with the probe echo signals reflected from the sample portion; displaying on a display unit a tomographic image of each of the two orthogonal sectional planes, each of the two displayed tomographic images being divided into two tomographic image planes along a line of intersection representing the axis of intersection of the two sectional planes; also displaying on the display unit an image for inputting a visual field direction; using an input device, inputting to the image for inputting the visual field direction a parameter indicating a chosen visual field direction; operating affine transformation parameters of the two displayed tomographic images using the parameter of the chosen visual field direction; selecting one of the two tomographic image planes of each of the two displayed tomographic images, based on the parameter of the chosen visual field direction; affine transporting the coordinates of the two displayed tomographic images using the operated affine transformation parameters to deform the two displayed tomographic images, the two deformed tomographic images being divided into two deformed tomographic image planes along the line of intersection; and displaying in real time a three-dimensional image formed by coupling the planes of the two deformed tomographic images corresponding to the two tomographic image planes of the two displayed tomographic images selected in said selecting step.

5,776,068

ULTRASONIC SCANNING OF THE EYE USING A STATIONARY TRANSDUCER

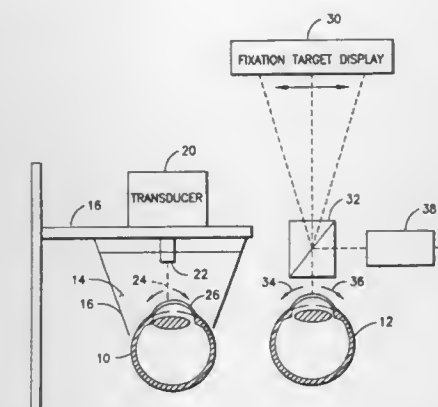
Ronald H. Silverman, Brooklyn, N.Y.; Donald Jackson Coleman, Haworth, N.J.; Dan Z. Reinstein, New York, N.Y.; George Simoni, Teaneck, N.J., and David Najafi, New York, N.Y., assignors to Cornell Research Foundation, Ithaca, N.Y.

Filed Jun. 19, 1997, Ser. No. 879,292

Int. Cl.⁶ A61B 8/00

U.S. Cl. 600—443

9 Claims



1. Apparatus for ultrasonically examining a patient's eyes, wherein a patient's first eye to be imaged is submerged in a liquid bath, said apparatus comprising:

- a fixed ultrasound transducer in contact with said liquid bath, for directing a beam of ultrasound energy to said first eye and for receiving echoes of said ultrasound energy;
- fixation source means juxtaposed to a second eye of said patient, for displaying a fixation target; and
- control means for operating said fixation source means to move said fixation target relative to said second eye while said patient moves said second eye to remain focused on said fixation target, movement of said second eye causing said first eye to move concurrently and enabling relative movement between said beam of ultrasound energy and anterior segments of said first eye.

5,776,069

METHOD AND SYSTEM FOR QUANTITATIVELY DETERMINING EKG WAVEFORM ORGANIZATION
John S. Platt, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

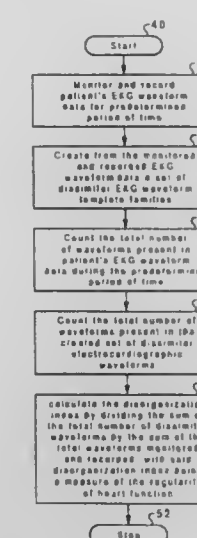
Filed Jan. 9, 1997, Ser. No. 781,115

Int. Cl.⁶ A61B 5/0472

U.S. Cl. 600—515

6 Claims

1. A method for assessing the regularity of heart function, to be utilized with electrocardiographic waveform representations of heart function, said method comprising the steps of: monitoring and recording a patient's electrocardiographic waveform data for a predetermined period of time; creating, from said patient's monitored and recorded electrocardiographic waveform data a set of dissimilar electrocardiographic waveforms; and calculating a disorganization index on the basis of said set of dissimilar waveforms and said monitored and recorded electrocardiographic waveform data such that the regularity of



said patient's heart function is assessed on the basis of said disorganization index.

5,776,070

PULSE RATE COUNTER UTILIZING BODY MOVEMENT AMPLITUDE DETECTION

Kouji Kitazawa, Motomu Hayakawa, both of Suwa, and Hiroshi Odagiri, Chiba, all of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

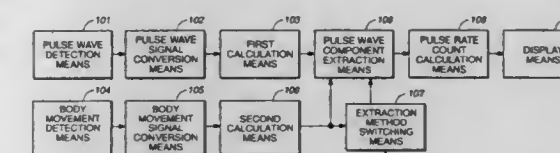
Filed Feb. 16, 1996, Ser. No. 602,650

Claims priority, application Japan, Feb. 20, 1995, 7-031018; Feb. 9, 1996, 8-024510

Int. Cl.⁶ A61B 5/0205

U.S. Cl. 600—483

19 Claims



1. A pulse rate counter, comprising:

- first calculation means responsive to a pulse wave signal of a body for analyzing the frequency of the pulse wave signal and for outputting a pulse wave frequency analysis result;
- second calculation means responsive to a body movement signal of the body for analyzing the frequency of the body movement signal and for outputting a body movement frequency analysis result;
- pulse wave component extraction means operating in one of a first and a second extraction method for extracting pulse frequency components from the frequency analysis results output by the first and second calculation means;
- extraction method switching means responsive to the body movement signal for determining an amplitude level of the body movement signal and for switching the pulse wave component extraction means to operate in one of the first and second methods according to the amplitude level of the body movement signal; and
- pulse rate calculation means for converting the pulse frequency components extracted by the pulse wave component extraction means to a pulse rate.

1. A conditioning machine for the lower back, comprising:
a frame including a base for supporting said conditioning machine on a horizontal surface;

a seat assembly fixed to said frame, having means for supporting the pelvis and legs of a user in a fixed, seated position;

a seatback assembly having powered drive means connected to said seatback assembly, for compelling the torso of the user to incline pivotally in a forward direction from a vertical seated position regardless of resistance applied by the user, said drive means having a motor operably connected to said drive means, said motor having means for developing force greater than that of a person, whereby said drive means compels a person resisting said seatback assembly to incline forwardly regardless of effort of resistance by the person,

said seatback assembly having a horizontal axis of pivot, said seatback assembly further comprising anchoring means for anchoring said seatback assembly to said seat assembly pivotally about said horizontal axis, and for constraining said seatback assembly to pivot relative to said seat assembly in a vertical plane,

said seatback assembly further comprising a right handgrip solidly fixed to said seatback assembly and a left handgrip solidly fixed to said seatback assembly, whereby a user's arms and hands may be supported in a constant position relative to the user's torso when using said conditioning machine, said drive means comprising a hydraulic power circuit having a double acting hydraulic servo powered by said motor and fluid conduits conducting fluid flowing within said hydraulic power circuit, said drive means further comprising drive control means for independently adjusting upper and lower limits of motion as said seat assembly pivots about said horizontal axis, said controls operating by interference between relatively moving components of said conditioning machine, and means for adjusting angular limits of arcuate motion of said seatback assembly relative to said seat assembly, comprising a reversing switch having a trip bar and mounted to said seatback assembly, and a first stop and a second stop each adjustably and independently mounted to said frame and disposed to contact said trip bar of said reversing switch during inclination of said seatback assembly and to generate a signal for reversing said motor, said first stop contacting said trip bar at one end of arcuate motion of said seatback assembly and said second stop contacting said trip bar at the other end of arcuate motion of said seatback assembly, said conditioning machine further having circuitry for transmitting said signal to said motor.

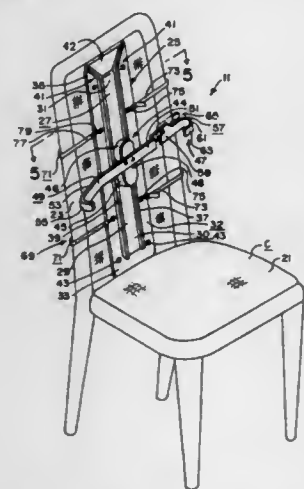
5,776,085 APPARATUS FOR ATTACHING A MASSAGING MACHINE TO A SUPPORT MEMBER

Leonard J. Stone, 5400 Park Ave. #408, Memphis, Tenn. 38119,
and Philip Kantor, 5661 Shady Glen, Memphis, Tenn. 38120
Filed Sep. 18, 1996, Ser. No. 715,102

Int. Cl.⁶ A61H 1/00

U.S. Cl. 601—99

11 Claims



1. In combination, a portable massaging machine, and an apparatus for mounting said portable massaging machine to a support member; said apparatus comprising:

- (a) a backboard member for attachment to the support member; said backboard member including a magnetic member; said backboard member including a base member having a face surface and a pair of spaced apart ridge members on said face surface; and
- (b) securing means for adjustably securing the portable massaging machine to said backboard member; said securing means including a magnet for movable attachment to said magnetic member of said backboard member.

5,776,086 HINGE SYSTEM FOR AN ORTHOPEDIC BRACE

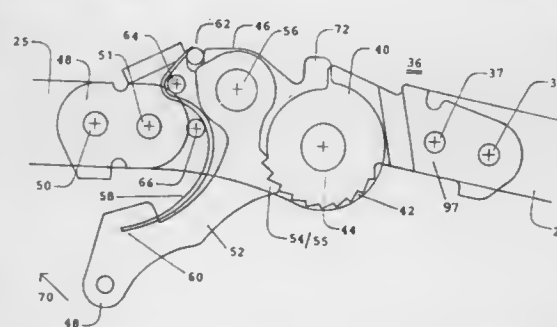
Timothy T. Pansiera, 735 N. Fork Rd., Barnardsville, N.C. 28709

Filed Jan. 11, 1996, Ser. No. 584,775

Int. Cl.⁶ A61F 5/00

U.S. Cl. 602—16

12 Claims



7. A hinge system for an orthopedic brace, the system comprising:

- (a) a distal section including a substantially circular pivot area having an axis of rotation, said area including a ratchet depending therefrom, said ratchet having an angular saw-tooth defined by major and minor arms, the intersection of said arms defining an outer and inner vertex tilted in a counter-clockwise direction, said inner vertex defines a total included angle of between about 75 and about 95 degrees, in which a ratio of the length of the major to minor arm is in a range of about 2:1 to about 3.5:1, said inner vertex also defines a virtual inner radius of said ratchet between said inner vertex and said axis of rotation of said pivot area, and the outer vertex defines a virtual outer radius between said vertices and said axis of rotation, said major arm of the tooth intersects a tangent of a circle defined by said outer radius at an angle in a range of about 20 to about 40 degrees and in which said minor arm of said tooth intersects said outer circle at an angle in a range of about 60 degrees to about 80 degrees;
- (b) a control section having an axis of rotation, said section including a rotatable pawl having an indentation complementary in geometry to said tooth of said ratchet of said pivot area, said indentation of said pawl selectively rotationally engagable with said tooth of said ratchet, in which such engagement of said tooth does not intersect a virtual line existing between said axes of rotation of said distal and control sections;
- (c) release means for selectable disengagement of said indentation of said pawl from said tooth of said ratchet, to permit free rotational movement of said distal section relative to said control section of the orthopedic brace when a change in relative position therebetween is desired;
- (d) a four sided distal receiver integrally dependent from said distal section and proportioned for securable receipt of a distal member of said brace;
- (e) a proximal section proportioned for securable receipt of a proximal receiver proportioned for securable receipt of a proximal member of said brace, said receiver also providing pivot axes for said pivot area of said distal section of said rotatable pawl, in which forces transmitted from and through said distal section of the brace to said ratchet are transmitted through said pawl to inner walls of said receivers, thereby

exerting multi-point pressure between said pawl and said receivers, thus stabilizing the hinge system against unwanted rotation between engaged teeth and movement of said distal control sections relative to the respective distal and proximal members;

- (f) biasing means for effecting said rotational engagement of said indentation of said pawl into said tooth of said ratchet in which said biasing means comprise a spring element mounted within the proximal section of the brace, having one end thereof selectively in contact with a rear surface of said proximal section; and

- (g) extension limit means integrally depending from said proximal section of said brace, said limit means defining a greatest extent of forward motion of the distal section of the brace relative to the proximal section.

5,776,087 BACK BRACE

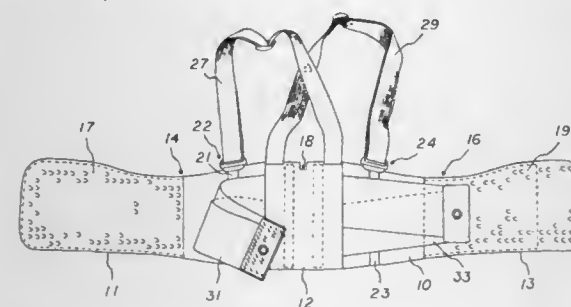
Ronald E. Nelson, Chetek, Wis., and Stefan Lüssenhop, Uetersen, Germany, assignors to Tamarack International, Inc., Chetek, Wis.

Filed Aug. 7, 1996, Ser. No. 694,488

Int. Cl.⁶ A61F 5/00

U.S. Cl. 602—19

8 Claims



1. Back brace apparatus for a human body comprising:

- a waist belt including a pair of at least partially elastic arms each having an end portion, said arm portions including closure means for interconnection thereof at a plurality of positions;
- a non-elastic stay member connected to said belt at a position adapted to overlie the dorsal area of the body when the belt is worn;
- a non-elastic strap connection element mounted on each of said arms at a position spaced from said support member, and a strap connector mounted on each of said strap connection elements;
- a pair of non-elastic shoulder straps each having a first end anchored to said support member and a second end adjustably connected to different ones of said strap connectors;
- a pocket mounted on each of said arms at a position between the arm ends and the crest of the ilium when the belt is worn, an upper portion of each of said pockets being curved to underlie the curve of the lower ribs of the body; and
- said stay members being within said pockets, each stay member comprising a material stiff within the plane of said stay member and flexible outside the plane of said stay member, and each of said stay members including an upper portion curved to underlie the curve of the lower ribs of the body.

5,776,088

SUPPORT DEVICE AND ASSOCIATED METHOD

Joel L. Sereboff, 204 E. Joppa Rd., Penthouse Suite 10, Towson, Md. 21286

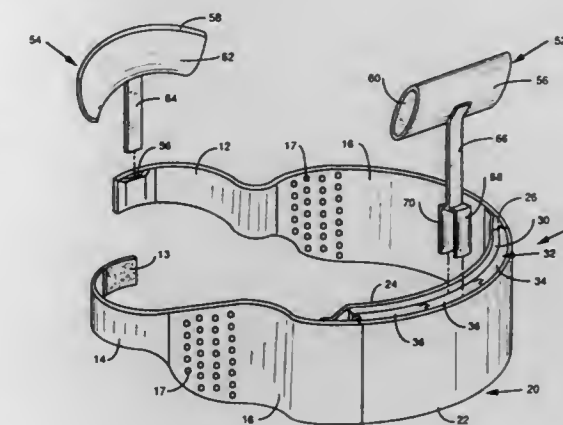
Continuation of Ser. No. 415,404, Mar. 31, 1995, abandoned.

This application Apr. 15, 1997, Ser. No. 835,784

Int. Cl.⁶ A16F 5/00

U.S. Cl. 602—19

15 Claims



1. A support device for positioning around an area of the anatomy of a user, comprising:

- a resilient pad member responsive to movement by said user having a viscous substance means contained in a flexible member and positioned close to said area of said user, permanently deformable means insertable in said flexible member adjacent to and in influential contact with said viscous substance means and positionable remote from said area of said user, and
 - said permanently deformable means being separate from said viscous substance means so that said permanent deformable means selectively is positioned and inserted in said flexible member and adjacent to said viscous substance means to deform said viscous substance means so as to position the anatomy of the user in a particular posture while providing comfort to said user and a desired amount of support to said area.
14. A cervical collar for positioning around a neck of a user, comprising:
- a resilient pad member responsive to movement by said user having a viscous substance means contained in a flexible member and positionable close to said neck of said user, and
 - b permanently deformable means insertable in said flexible member adjacent to said viscous substance means and positionable remote from said neck of said user to act against the cervical spine of said user to deform said viscous substance means said permanently deformable means being separated from said viscous substance means so that said permanent deformable means is selectively positioned and inserted in said flexible member and adjacent to said viscous substance means to deform said viscous substance means so as to position the anatomy of the user in a particular posture while providing comfort to said user and a desired amount of support to said cervical spine.

5,776,089

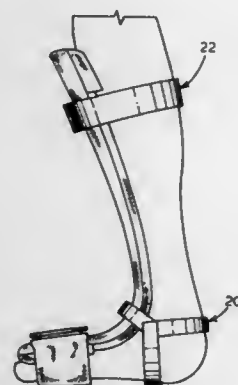
Patent Not Issued For This Number

5,776,090
MEANS AND METHOD FOR TREATING PLANTAR
FASCIITIS
Kel Bergmann, P.O. Box 8692, Rancho Santa Fe, Calif. 92067,
and Loren Saxton, 11142 Promesa Dr., San Diego, Calif.
92124

Filed Dec. 24, 1996, Ser. No. 772,907
Int. Cl.⁶ A61F 5/00

U.S. Cl. 602—28

15 Claims



1. A device for treating Plantar fasciitis comprising:
 - A) a one-piece splint worn on a wearer's leg for stretching a wearer's plantar fascia and including
 - (1) a fore leg-engaging portion that engages the dorsal aspect of the wearer's leg when said splint is in place,
 - (2) an ankle-engaging portion that engages the dorsal aspect of the wearer's ankle when said splint is in place,
 - (3) a foot-engaging portion that engages the dorsal aspect of the wearer's foot when said splint is in place;
 - B) a heel strap having one end thereof anchored to said splint near said ankle-engaging portion, another end having fastening means thereon for attaching said heel strap to itself, said heel strap including a heel sling portion that engages the wearer's heel when said splint is in place;
 - C) a calf strap having one end thereof anchored to said fore leg-engaging portion and another end having fastening means thereon for attaching said calf strap to itself;
 - D) a toe strap having fastening means thereon for attaching said toe strap to itself and to the wearer's foot;
 - E) said splint being formed of a material that will maintain a selected angular orientation between the wearer's foot and the wearer's foreleg when said splint is in place, said foot-engaging portion and said fore leg-engaging portion forming an acute angle with each other to cause the wearer's foreleg and foot to form an acute angle between them to pull the wearer's foot toward the wearer's foreleg when the splint is in place whereby the wearer's ankle and foot are held in a dorsi-flexed position for stretching the wearer's plantar fascia.

5,776,091
TECHNIQUE FOR PRIMING AND RECIRCULATING
FLUID THROUGH A DIALYSIS MACHINE TO PREPARE
THE MACHINE FOR USE

James Brugger, Boulder; Dan Lee Hendrickson, Golden, and
Roy Sven Hovland, Denver, all of Colo., assignors to COBE
Laboratories, Inc., Lakewood, Colo.

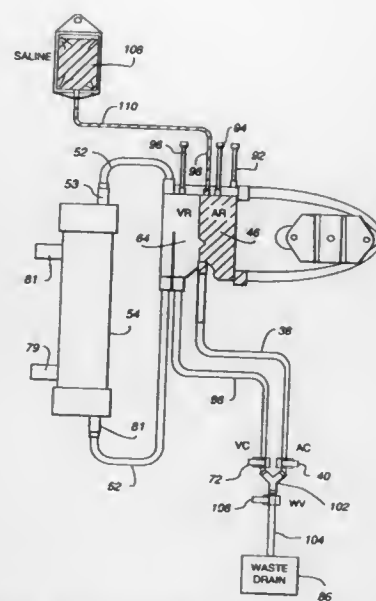
Division of Ser. No. 481,755, Jun. 7, 1995, Pat. No. 5,650,071.
This application Oct. 22, 1996, Ser. No. 735,366

Int. Cl.⁶ A61M 35/00

U.S. Cl. 604—4

14 Claims

1. An improved dialysis machine having a pump, a dialyzer, and a blood tubing set which includes an arterial line having a distal end adapted to draw blood from a patient and a venous line having a distal end adapted to return the blood to the patient after the blood passes through the dialyzer, the improved dialysis machine allowing an operator to configure the dialysis machine at one time



for both priming and recirculating a sterile solution through the dialyzer and the blood tubing set without having to reconfigure the dialysis machine after priming and before recirculating the sterile solution, said improvement comprising:

- a connector adapted to connect the distal ends of the arterial line and the venous line to a waste drain; and
- a waste valve positioned between the connector and the waste drain to selectively drain fluid from the arterial line and the venous line when the waste valve is opened and to transfer fluid between the arterial and venous lines through the connector when the waste valve is closed.

5,776,092
MULTIFUNCTIONAL SURGICAL INSTRUMENT
Gunter Farin, Tübingen; Klaus Fischer, Nagold-Emmingen,
and Dieter Müller, Wangen, all of Germany, assignors to
Erbe Elektromedizin GmbH, Tübingen, Germany

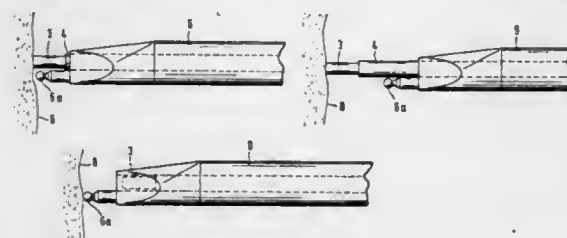
Filed Mar. 22, 1995, Ser. No. 408,311

Claims priority, application European Pat. Off., Mar. 23,
1994, 94 104 568.4

Int. Cl.⁶ A61B 17/20

U.S. Cl. 604—22

17 Claims



1. A multifunctional surgical instrument, comprising:
 - an instrument housing having distal and proximal ends;
 - an ultrasonic cutting tool extending longitudinally through said housing and having a tool tip extending from said distal end of said housing;
 - an electrosurgical coagulating tool extending longitudinally through said housing and having a tool tip extending from said distal end of said housing;
 - said ultrasonic cutting tool tip and said electrosurgical coagulating tool tip being laterally spaced apart;
 - said ultrasonic cutting tool and said electrosurgical coagulating tool being longitudinally movable in said housing, whereby said ultrasonic cutting tool tip and said electrosurgical coagulating tool tip may be separately retracted or extended to be positioned relative to a tissue to be treated using said surgical instrument;

wherein said housing includes an electrical insulating material whereby said ultrasonic cutting tool is electrically insulated from said electrosurgical coagulating tool.

5,776,093
METHOD FOR IMAGING AND TREATING ORGANS
AND TISSUES

Milton David Goldenberg, Short Hills, N.J., assignor to Immunomedics, Inc., Morris Plains, N.J.

Continuation-in-part of Ser. No. 167,077, Mar. 11, 1988, Pat. No. 5,101,827, which is a continuation of Ser. No. 751,877, Jul. 5, 1985, Pat. No. 4,735,210. This application Apr. 7, 1992, Ser. No. 866,789

Int. Cl.⁶ A61N 1/30; A61K 35/14

U.S. Cl. 604—20

14 Claims

1. A method of imaging hypoplastic, anatomically displaced or ectopic cells or tissues in a mammalian subject by scintigraphic or magnetic resonance imaging, comprising the steps of: (a) parenterally injecting a mammalian subject, at a locus and by a route providing access to an organ of interest, with an antibody or antibody fragment which specifically binds a marker produced by or associated with said cell or tissue, said antibody or antibody fragment being labeled with a radioisotope or with a magnetic resonance image enhancing agent capable of external detection, the amount of the labeled antibody or antibody fragment being sufficient to permit a scintigraphic image or an enhanced magnetic resonance image of said organ to be obtained; and (b) obtaining a positive scintigraphic image or positive enhanced magnetic resonance image of said organ, at a time after injection of said agent sufficient for said agent to diffusely accrete in said organ and specifically bind to said marker.

5,776,094
METHOD AND KIT FOR IMAGING AND TREATING
ORGANS AND TISSUES

Milton David Goldenberg, Short Hills, N.J., assignor to Immunomedics, Inc., Morris Plains, N.J.

Continuation of Ser. No. 866,789, Apr. 7, 1992, which is a continuation-in-part of Ser. No. 167,077, Mar. 11, 1988, Pat. No. 5,101,827, which is a continuation of Ser. No. 751,877, Jul. 5, 1985, Pat. No. 4,735,210. This application Jun. 1, 1995, Ser. No. 456,629

Int. Cl.⁶ A61H 1/30; A61K 35/14

U.S. Cl. 604—20

22 Claims

1. A method of imaging anatomically displaced organs or ectopic cells or tissues in a mammalian subject by scintigraphic or magnetic resonance imaging, comprising (a) parenterally injecting a mammalian subject, at a locus and by a route providing access to an organ or to cells or tissues characteristic of said organ of interest, with an antibody or antibody fragment which specifically binds a marker produced by or associated with said cells or tissues, said antibody or antibody fragment being labeled with a radioisotope or with a magnetic resonance image enhancing agent capable of external detection, the amount of the labeled antibody or antibody fragment being sufficient to permit a scintigraphic or an enhanced magnetic resonance image of said organ, cells or tissue to be obtained; and (b) obtaining a positive scintigraphic image or positive enhanced magnetic resonance image of said organ, cells or tissues, at a time after injection of said agent sufficient for said agent to specifically bind to said marker and, where it is desired to observe the anatomical position of an organ, to diffusely accrete in said organ.

5,776,095
METHOD AND KIT FOR IMAGING AND TREATING
ORGANS AND TISSUES

Milton David Goldenberg, Short Hills, N.J., assignor to Immunomedics, Inc., Morris Plains, N.J.

Division of Ser. No. 866,789, Apr. 7, 1992, which is a continuation-in-part of Ser. No. 167,077, Mar. 11, 1988, Pat. No. 5,101,827, which is a continuation of Ser. No. 751,877, Jul. 5, 1985, Pat. No. 4,735,210. This application Jun. 1, 1995, Ser. No. 456,914

Int. Cl.⁶ A61N 1/30; A61K 51/00

U.S. Cl. 604—20

7 Claims

1. A method of therapy of cancer, comprising treating a human patient suffering from a cancer susceptible to treatment with radiation or a cytotoxic agent by first pretargeting non-cancerous cells or tissue to be protected from said radiation or cytotoxic agent with a first composition, comprising a streptavidin-conjugated antibody, biotinylated antibody used in conjunction with avidin or streptavidin, bifunctional antibody, antibody-hapten complex, or enzyme-conjugated antibody, wherein said antibody is an antibody or antibody fragment which specifically binds a marker produced by or associated with said cells or tissue to be protected; after said first composition accretes at the targeted cells or tissue, administering to said patient a second composition which couples a cytoprotective agent to the first composition; and then administering a therapeutic amount of said radiation or cytotoxic agent to the patient, whereupon cancer cells are killed while said targeted non-cancerous cells or tissue are protected by a cytoprotective effect.

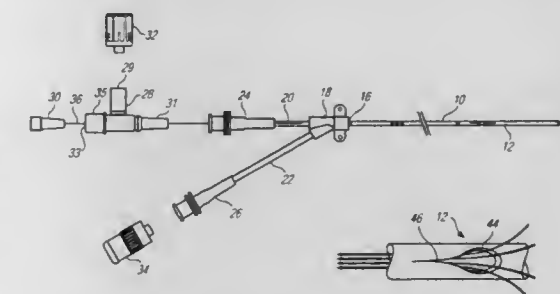
5,776,096
DUAL LUMEN VASCULAR CATHETER WITH
EXPANDING SIDE PORTAL
Charles Bruce Fields, Pittsburg, Calif., assignor to HDC Corporation, San Jose, Calif.

Filed Jun. 6, 1996, Ser. No. 660,020

Int. Cl.⁶ A61M 3/00

U.S. Cl. 604—43

14 Claims

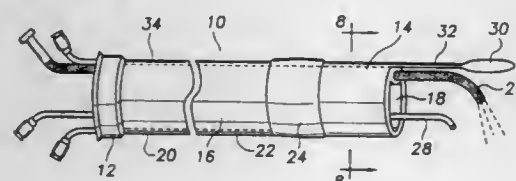


1. A vascular catheter, comprising:
 - a generally cylindrical tubing comprising a distal end and defining at least one lumen, said tubing defining a portal located on a side of said tubing, said portal comprising an axially oriented opening having a distal end and an axially oriented slit having a proximal end in communication with said opening, said axially oriented slit extending from said distal end of said opening toward said distal end of said tubing, said proximal end of said slit expandable from a closed position to an open position.

5,776,097
METHOD AND DEVICE FOR TREATING INTRACRANIAL VASCULAR ANEURYSMS
 Tarik F. Massoud, Los Angeles, Calif., assignor to University of California at Los Angeles, Los Angeles, Calif.
 Filed Dec. 19, 1996, Ser. No. 770,694
 Int. Cl.⁶ A61M 31/00

U.S. Cl. 604—49

12 Claims

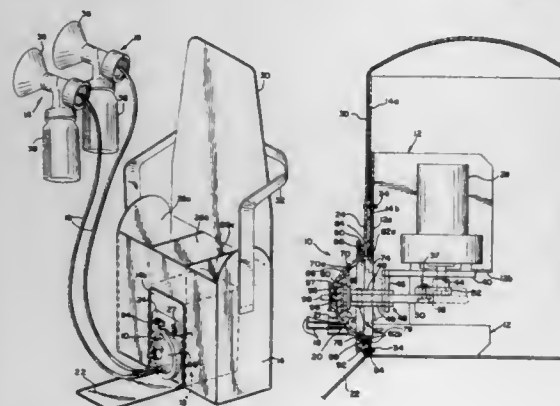


1. A device for treating an intracranial vascular aneurysm located on an intracranial blood vessel, the blood vessel having a lumen and the aneurysm having a lumen, the device comprising: a catheter including a central lumen therethrough, a first inflation conduit having a distal end, and a first inflation balloon in communication with the distal end of the inflation conduit; the catheter further including means for visualizing the blood vessel lumen adjacent the aneurysm lumen, the means for visualizing in combination with the central lumen; and the catheter further including means for delivering a liquid sealing agent to the lumen of the aneurysm, the means for delivering in combination with the central lumen.

5,776,098
DIAPHRAGM PUMP AND PUMP MOUNTED IN A CARRYING CASE USEFUL IN BREAST PUMPING
 Brian H. Silver, Cary, and Larry D. Annis, Elgin, both of Ill., assignors to Medela, Incorporated, McHenry, Ill.
 Filed Aug. 3, 1995, Ser. No. 510,714
 Int. Cl.⁶ A61M 1/06

U.S. Cl. 604—74

20 Claims



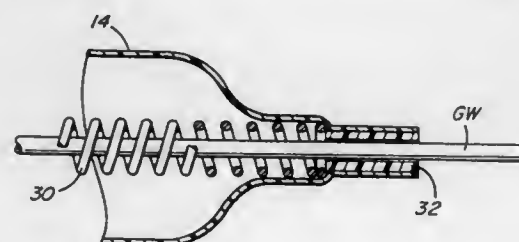
1. A pump comprising: a flexible diaphragm, a first mounting ring upon which said flexible diaphragm is releasably attached, a rigid member, a second mounting ring upon which said rigid member is releasably attached, an air seal formed between said diaphragm and said rigid member, a puller member attached to said flexible diaphragm, a drive member connected to said puller member which drive member is adapted to draw said puller member along with said diaphragm away from said rigid member, thereby creat-

ing a space between said diaphragm and said rigid member and forming a pressure region within said space, a motor drive mechanism including said drive member to reciprocate said puller member to first draw said puller member away from said rigid member and then move said puller member back toward said rigid member, and an outlet in communication with said space between said diaphragm and said rigid member.

5,776,099
SINGLE LUMEN BALLOON CATHETER AND METHOD FOR ITS INTRALUMINAL INTRODUCTION
 William S. Tremulis, Redwood City, Calif., assignor to Micro Interventional Systems, Sunnyvale, Calif.
 Continuation of Ser. No. 415,002, Mar. 31, 1995, abandoned.
 This application Mar. 10, 1997, Ser. No. 816,007
 Int. Cl.⁶ A61M 29/00

U.S. Cl. 604—96

16 Claims



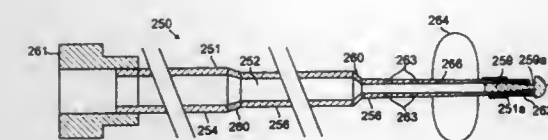
1. A method for introducing a balloon catheter over a guide wire, said method comprising: providing a guide wire having a constant diameter over substantially the entire length of the guide wire, and a catheter body with an inflation lumen, a balloon and a guide wire port at a distal end of the inflation lumen, said guide wire port being dimensioned slightly larger than said constant diameter of said guide wire; loading the catheter body over a proximal end of the guide wire, wherein an annular clearance is established between the guide wire and the guide wire port; axially translating the catheter body over the guide wire to position the balloon at a target location within a body lumen of a patient; positioning the guide wire port of the catheter body over the guide wire; inflating the balloon of the catheter body with a liquid inflation medium through the inflation lumen, wherein the guide wire port permits free movement of the guide wire relative to the guide wire port and wherein the annular clearance has an area which concurrently permits minor leakage of said liquid inflation medium from said balloon through said annular clearance while substantially inhibiting loss of the inflation medium from said balloon through said annular clearance while the balloon is inflated.

5,776,100
NICKEL TITANIUM GUIDE WIRES FOR OCCLUSION AND DRUG DELIVERY
 Michael R. Forman, St. Paul, Minn., assignor to Interventional Innovations Corporation, St. Paul, Minn.
 Filed Sep. 25, 1996, Ser. No. 719,999
 Int. Cl.⁶ A61M 29/00

U.S. Cl. 604—102

3 Claims

1. A guide wire comprising: a nickel titanium wire comprising a distal portion and a proximal portion, wherein the distal portion has a smaller outer diameter than the proximal portion, at least one intermediate portion between the distal and proximal portions, the intermediate portion having an outer diameter less than the outer



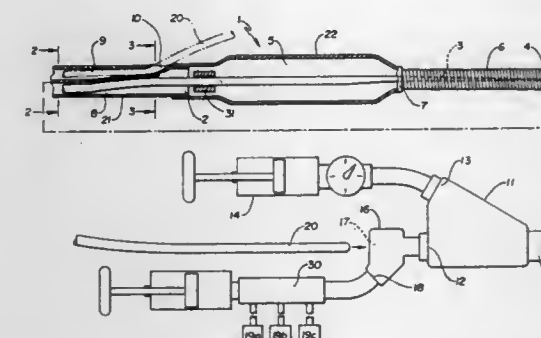
diameter of the proximal portion and greater than the outer diameter of the distal portion, and a lumen extending longitudinally through the wire, the lumen having a distal portion that is sealed by a solid tube; and an occlusion balloon attached to the distal portion of the wire; wherein the distal portion of the wire defines at least one port providing fluid communication between the lumen and the balloon, and at least one port proximal to the occlusion balloon providing fluid communication between the lumen and the exterior of the guide wire.

5,776,101
BALLOON DILATATION CATHETER
 Jean-Jacques Goy, Yverdon, Switzerland, assignor to Schneider A.G., Bulach, Switzerland
 Continuation of Ser. No. 415,111, Mar. 20, 1995, abandoned, which is a continuation of Ser. No. 88,484, Jul. 7, 1993, Pat. No. 5,413,581, which is a continuation of Ser. No. 770,255, Oct. 2, 1991, abandoned. This application Jan. 11, 1996, Ser. No. 584,723

Claims priority, application Switzerland, Oct. 4, 1990, 204/90
 Int. Cl.⁶ A61M 29/00

U.S. Cl. 604—104

12 Claims



1. A steerable balloon dilatation catheter comprising: (a) a shaft having a center longitudinal axis, a distal section, a proximal section, and an outside wall; (b) a first lumen extending through at least part of the shaft; (c) a balloon with a distal section and a proximal section arranged proximate the distal section of the shaft, the first lumen being in communication with the balloon; (d) a spiral element with a distal section and a proximal section, the proximal section of the spiral element connecting to and extending distally from the distal section of the balloon; (e) a wire extending through at least part of the first lumen and spiral element and fixed to at least a portion of the shaft and the spiral element; and (f) a second lumen extending through at least part of the shaft and having a first opening in the proximal section of the shaft and a distal most portion oriented in a distal direction away from the center longitudinal axis of the shaft and terminating as a second opening through the wall proximal of the balloon, the second lumen adapted to receive a guidewire and being in a substantially side-by-side relationship with the first lumen.

5,776,102

Patent Not Issued For This Number

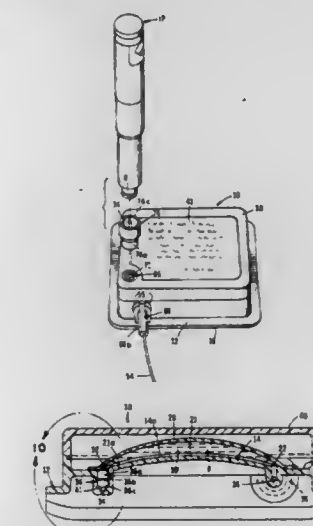
5,776,103
FLUID DELIVERY DEVICE WITH BOLUS INJECTION SITE

Marshall S. Kriesel, St. Paul; Farhad Kazemzadeh, Bloomington; Matthew B. Kriesel, St. Paul, all of Minn.; William W. Feng, Lafayette, Calif.; Steve C. Barber, Shorewood, Minn., and William J. Kluck, Hudson, Wis., assignors to Science Incorporated, Bloomington, Minn.

Filed Oct. 11, 1995, Ser. No. 541,184
 Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—132

13 Claims



1. A fluid delivery device for use in the delivery of fluids to a patient at a controlled rate comprising:

- (a) a base;
- (b) stored energy means for forming in conjunction with said base, a reservoir having an inlet and an outlet, said stored energy means comprising at least one distensible membrane superimposed over said base, said membrane being distensible as a result of pressure imparted by fluids introduced into said reservoir to establish internal stresses, said stresses tending to move said membrane toward a less distended configuration;
- (c) infusion means for delivering fluid from said reservoir to the patient, said infusion means comprising an outlet port and a fluid passageway interconnecting said outlet port with said outlet of said reservoir;
- (d) a cover connected to said base; and
- (e) bolus injection means in communication with said infusion means for providing a bolus volume of fluid to said infusion means, said bolus injection means comprising an injection site formed in said cover and in communication with said fluid passageway of said infusion means.

5,776,104
DEVICE FOR SUPPLYING A LIQUID TO A BODY CAVITY OF A PERSON OR AN ANIMAL AND SUBJECTING IT TO A DETERMINED PRESSURE
 Mireille Guignard, "Le Vezely", Sergy-Gare, F-01630 Saint-Genis-Pouilly; Remi Cottenceau, "Les Hameaux de la Côte", La Côte, F-74580 Viry, both of France, and Erwin Zuercher, Avenue du Lignon 21, CH-1219 Le Lignon, Switzerland
 PCT No. PCT/FR93/00975, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO94/27659, PCT Pub. Date Dec. 8, 1994

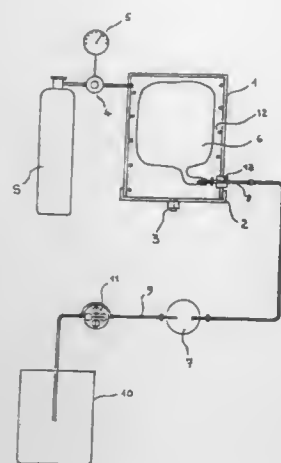
PCT Filed Oct. 4, 1993, Ser. No. 553,531

Claims priority, application France, Jun. 1, 1993, 93 06627
 Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—132

10 Claims

1. A device to facilitate endoscopic examination or operation by supplying a biological liquid to a body cavity of a person or an



animal and thus pressurizing the cavity to a predetermined pressure, said device comprising:

- at least one watertight and sterile flexible bag containing a biological liquid;
- a watertight and sterile supply tube connecting said flexible bag to said cavity;
- a means to pressurize said biological liquid supplied to said cavity, at a predetermined pressure;
- an evacuation tube to empty said biological liquid from said cavity; and
- a means to adjust the flow rate through said evacuation tube, wherein, said means to pressurize said biological liquid supplied to said body cavity includes at least one watertight enclosure having rigid walls and enclosing said flexible bag, said enclosure having an access opening with watertight seal through which to insert and remove said flexible bag, said enclosure having an exit opening with a watertight seal for the exit of said supply tube from said enclosure, said enclosure having an entrance opening for introducing a source tube from a source of pressurized air, said source tube connecting said source to said watertight enclosure, and a means to adjust the pressure within said enclosure.

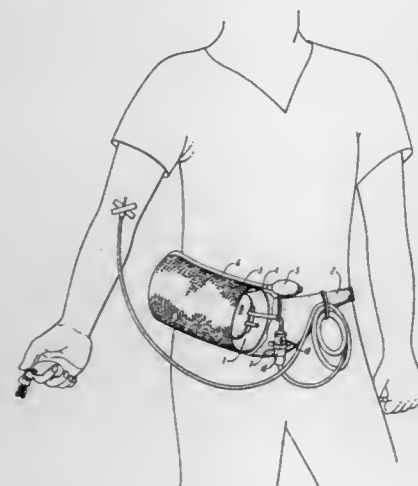
5,776,105

AMBULATORY INTRAVENOUS FLUID HOLDER
Stephen B. Corn, Sharon, Mass., assignor to Children's Medical Center Corp., Boston, Mass.

Filed Sep. 27, 1996, Ser. No. 721,804
Int. Cl.⁶ A61M 5/32

U.S. Cl. 604—174

12 Claims



1. An ambulatory intravenous fluid delivery system comprising:

a holder for securing a source of intravenous fluid to a patient's body;

pressurization means for applying pressure to the intravenous fluid to induce infusion;

an infusion line adopted to delivery fluid from the source to a patient;

a drip chamber disposed between the source of intravenous fluid and the infusion line through which the fluid can flow in a controlled manner; and

a drip chamber mounting element for mounting the drip chamber to the holder, the mounting element serving to maintain the drip chamber in a substantially vertical orientation in use.

5,776,106

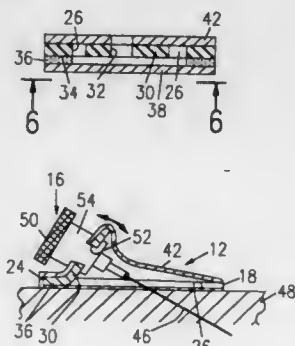
REPLACEABLE FLEXIBLE PROTECTIVE COVER FOR AN INFUSION DEVICE

Melanie E. Matyas, 301 N. Duane Ave., San Gabriel, Calif. 91775

Filed Jan. 3, 1995, Ser. No. 368,097
Int. Cl.⁶ A61M 5/32

U.S. Cl. 604—180

12 Claims



1. A replaceable flexible protective cover for an infusion device, the infusion device having a shank portion defining an exterior hub portion and an interior portion having a catheter means insertable into the vein through the skin of a person, and the infusion device angled to the surface of the skin of the person for the condition of the catheter inserted into the skin of the person, the replaceable flexible protective cover comprising, in combination:

- a flexible, resilient middle layer having a top surface and a bottom surface and a peripheral wall having a predetermined geometrical configuration, and said peripheral wall having a front wall portion, a pair of spaced apart side wall portions and a back wall portion spaced from said front wall portion defining a central section therebetween;
- a flexible, resilient, waterproof adhesive layer substantially coextensive with said middle layer and having an inner surface on said bottom surface of said middle layer and an outer surface, and said outer surface adapted to be adhered to the skin of the person;
- a flexible, resilient waterproof top layer on said upper surface of said middle layer and substantially coextensive with said middle layer;
- aperture walls in said central section defining a central aperture extending through said middle layer and said adhesive layer and said aperture walls spaced from said peripheral walls to define a frame section between said first walls and said peripheral wall;
- shank walls in said central section and said shank walls defining a shank receiving aperture through said top layer, said middle layer and for receiving the shank of the infusion device in waterproof sealing relationship thereto.

5,776,107

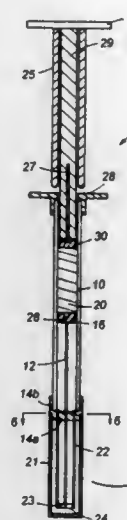
INJECTION DEVICE

Roland Cherif-Cheikh, Issy les Moulineaux, France, assignor to Delab, Paris, France

Filed Dec. 31, 1996, Ser. No. 777,634
Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—198

8 Claims



1. An injection device for injecting a liquid or semi-solid composition into a subject, the device comprising: a hollow housing having a proximal end and distal end, said housing being configured to contain a liquid or semi-solid composition;

- a hollow needle, said needle affixed to the distal end of the housing and extending longitudinally within said housing;
- a plunger arranged to slide within the proximal end of the housing;
- a septum plunger slidably arranged within the housing between the plunger and the distal end of the housing;
- a hollow sleeve slidably connected to the distal end of the housing and arranged to cover the needle prior to injection and to retract into the housing during injection;

wherein the device is configured such that when the sleeve is pressed against the subject, the sleeve retracts into the housing thereby allowing the needle to penetrate into the subject, and when the plunger is pushed into the housing, the composition is pushed from the housing through the needle and into the subject.

5,776,108

BLOOD CHECK DEVICE OF AN INFUSION BOTTLE
Miin-Tsang Sheu, No. 156, Cheng Kung Road, and Yeong-Shing Chern, No. 13, Alley 12, Lane 212, Fu Shan Street, both of Chang Hua City, Taiwan

Filed Jul. 25, 1996, Ser. No. 687,175
Int. Cl.⁶ A61M 5/00

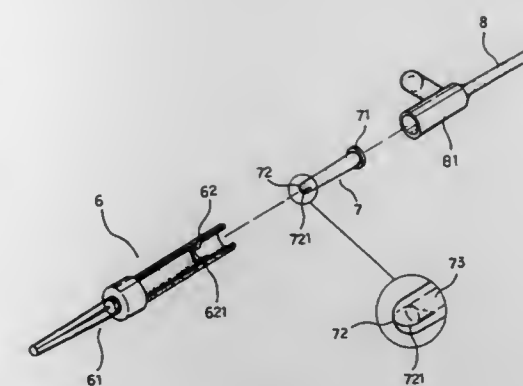
U.S. Cl. 604—247

5 Claims

1. A blood check device, comprising

- a needle,
- a barrel engaged with the needle,
- a check tube having a rear open end and a front end, the check tube being received in the barrel, and
- a sleeve engaged with the barrel,

wherein the barrel includes a pipe member having an annular rib disposed on an inner periphery of the pipe member, the check tube includes an end flange disposed on the rear open end thereof and a tapered notch formed on the front end thereof, the tapered notch communicating with a hollow interior of the check tube, the end flange of the check tube engaging the annular rib of the barrel, and



a front portion of the sleeve is received in a rear portion of the pipe member.

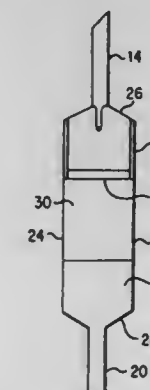
5,776,109

DRIP CHAMBER FOR INTRAVENOUS FLUID DELIVERY SYSTEM

Hector Urrutia, 2404 W. Augusta Sq., McAllen, Tex. 78503
Filed Aug. 23, 1996, Ser. No. 701,874

Int. Cl.⁶ A61M 5/00
U.S. Cl. 604—251

25 Claims



1. A drip chamber for an intravenous fluid delivery system, comprising:

- a housing comprising an inlet port and an outlet port, and at least one side wall defining a chamber between the inlet and outlet ports, the housing configured to channel intravenous fluid in a flow path from the inlet port through the chamber to the outlet port; and
- a member supported by the at least one side wall in the chamber between, and spaced from both, the inlet and outlet ports and positioned so that the intravenous fluid flowing into the chamber impinges against the member to reduce the velocity of the intravenous fluid and minimize formation of air bubbles in the intravenous fluid, the intravenous fluid impinging against the member flowing directly from the member to the outlet port.

5,776,110

THORACIC PORT

Thomas D. Guy, Fairfield, and Alim Alli, Norwalk, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

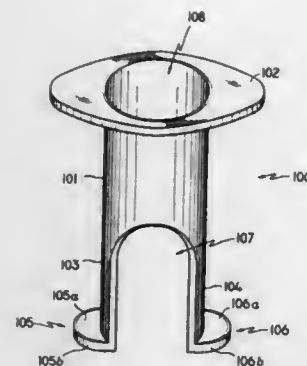
Filed Jan. 26, 1996, Ser. No. 592,140
Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—264

12 Claims

1. A method for performing thoracic surgery, comprising:

- a) providing a thoracic port which includes a body having a tubular portion defining an axial bore, rotation means connected to the tubular portion, two spaced apart legs defined by

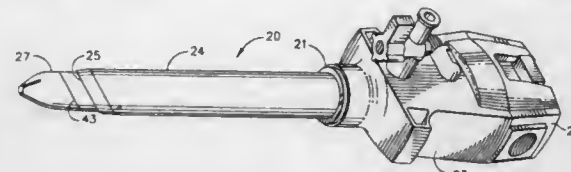


5,776,112 TROCAR HAVING AN IMPROVED TIP CONFIGURATION

Randy R. Stephens, Fairfield; Steven G. Yapp, Loveland; Salvatore Privitera, West Chester; Richard F. Schwemmerger, and Darrel Powell, both of Cincinnati, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Somerville, N.J.
Continuation of Ser. No. 543,455, Oct. 16, 1995, Pat. No. 5,709,671. This application Apr. 8, 1997, Ser. No. 823,951
Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—264

8 Claims



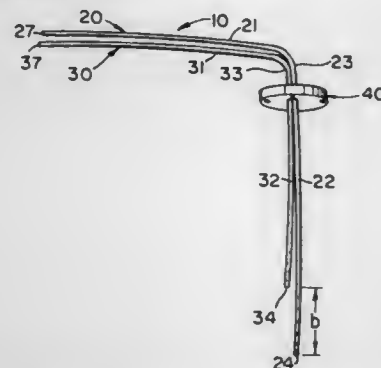
1. A trocar for piercing a body wall, said trocar comprising:
 - a) an obturator having a piercing tip with first and second planar surfaces generally parallel to each other, said surfaces converging to a cutting edge surface; and
 - b) a safety shield encasing said piercing tip, said safety shield retractable from an extended position wherein said shield encloses said cutting edge surface of said piercing tip to a retracted position wherein said cutting edge is exposed through said shield;
 wherein said shield has a body region and a shield tip region extending from said body region, said body and shield tip regions intersecting at a beveled surface line.

5,776,111 MULTIPLE CATHETER ASSEMBLY

Franco Tesio, Pordenone, Italy, assignor to Medical Components, Inc., Harleysville, Pa.
Filed Nov. 7, 1996, Ser. No. 746,260
Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—264

16 Claims



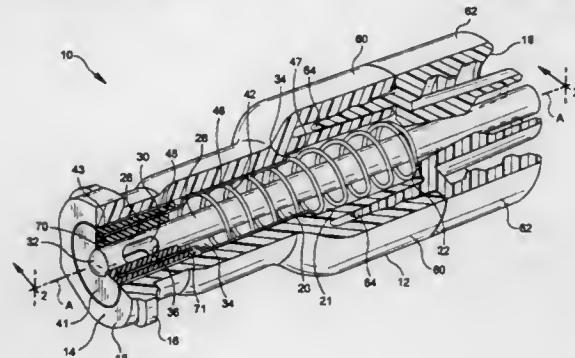
1. A double catheter assembly useful for vascular access which comprises:
 - two single lumen catheters, each having an external portion and an implantable portion along their respective lengths;
 - a stabilizer disk having opposed surfaces through which each of the two catheters pass at a transition point along the catheter lengths between the external portions and the implantable portions, said transition point being located for externally attaching said disk to a patient's skin;
 - said catheters passing through holes formed transversely through said disk and being secured within said holes of the disk in a juxtaposed and parallel relationship with each other at a centrally located portion of the disk; and
 - each of said catheters having a heat set bend in the external portion of each of said catheters proximate to the stabilizer disk, said bends having sufficient radius of curvature for avoiding constriction of the catheter lumens and being at an angle for facilitating placement and routing of the external portions of the catheters remote from the bends next to a patient's skin during a catheterization.

5,776,113 VALVED PRN ADAPTER FOR MEDICAL ACCESS DEVICES

Charles W. Daugherty, Jamestown, Ohio; Timothy J. Erskine, and Glade Howell, both of Sandy, Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Mar. 29, 1996, Ser. No. 624,241
Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—280

15 Claims



1. A valved adapter for connecting a fluid handling device to a medical device comprising:
 - a body with a longitudinal axis having a proximal end, a distal end and a chamber extending therebetween;
 - a valve contained within said chamber in a normally closed position but being operative to an open position, said valve comprising a hollow tube having a bore therethrough with a closed proximal end, said tube being mounted coaxially within said chamber extending from adjacent said proximal end of said body to adjacent said distal end, said tube having at least one side port opening into said bore located a distance distally from said closed end, said valve further including a resilient member located coaxially about said tube and biased to occlude said side port in said normally closed position wherein said resilient member has a proximal end defining an opening therein with a diameter sufficient to allow said tube to

pass therethrough, said valve being operative to be opened by a distal movement of said resilient member to overcome said bias and to uncover said side port thereby allowing a fluid flow through said valve;

wherein said chamber includes an inwardly projecting distal shoulder, said resilient member being compressible between a mounted fluid handling device and said distal shoulder thereby providing a bias for said valve to said normally closed position and wherein said bias is provided by a coil spring located distally to said resilient member coaxially about said tube and compressible between said resilient member and said shoulder.

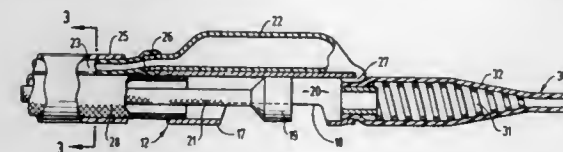
5,776,114

FLEXIBLE HOUSING FOR INTRACORPOREAL USE

John J. Frantzen, Copperopolis, and Sepehr Fariabi, Fremont, both of Calif., assignors to Devices For Vascular Intervention, Inc., Santa Clara, Calif.
Division of Ser. No. 88,930, Jul. 7, 1993, Pat. No. 5,514,115.
This application Jan. 23, 1996, Ser. No. 590,206
Int. Cl.⁶ A61M 25/00; A61B 17/32

U.S. Cl. 604—281

16 Claims



1. A housing for use within a patient's body lumen or cavity comprising a single piece of a cold worked shape memory alloy configured for intracorporeal use, having a tubular shape with an interior chamber extending therein, and at least one integral transformable shape memory section in a heat treated condition transformable from a first metallurgical phase existing at body temperature to a second metallurgical phase.

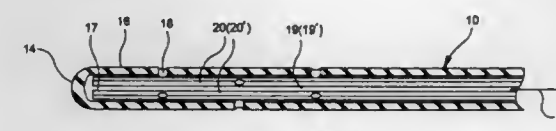
5,776,115

CATHETER HAVING A GEAR-SHAPED LUMEN TO AVERT THE ELIMINATION OF FLUID FLOW THEREIN

William Thomas Antoskiw, Wayne, and Joseph Choon Chee, Fort Lee, both of N.J., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Jan. 17, 1996, Ser. No. 587,624
Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—282

4 Claims



1. A catheter having patency properties, comprising a tube having a proximal end, a distal end and a length therebetween, said tube defining a fluid path having a central axis, an outer wall and an inner wall, said inner wall having a plurality of protuberances disposed lengthwise on said inner wall in a direction parallel with the central axis of said tube, each of said protuberances having a tip, a root extending along said inner wall, and a pair of straight sidewalls extending between said tip and said root, each of said

roots of said plurality of protuberances being spaced a distance from another of said roots of another of said protuberances along said inner wall so that one of said pair of straight sidewalls of said each protuberances faces in opposed relation to one of said sidewalls of another of said protuberances, and wherein in response to a force experienced during normal use of said catheter, said distance between said roots of said plurality of protuberances prevents said opposed straight sidewalls from entering into total contact with one another to prevent occlusion of the fluid path, and wherein at least one of said protuberances further comprises a radiopaque stripe between said outer wall of said tube and said tip of said protuberance.

5,776,116

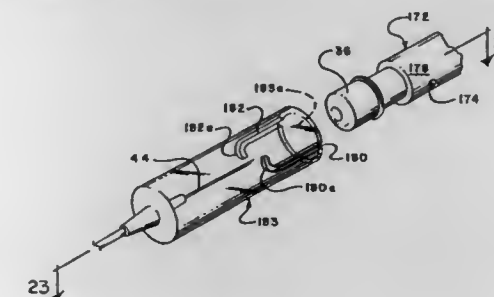
MEDICAL CONNECTOR

George A. Lopez, Huntington Beach, and Virgil R. Lual, Dana Point, both of Calif., assignors to ICU Medical, Inc., San Clemente, Calif.

Continuation of Ser. No. 424,237, Apr. 19, 1995, abandoned, which is a continuation of Ser. No. 279,247, Jul. 21, 1994, abandoned, which is a continuation of Ser. No. 20,098, Feb. 19, 1993, Pat. No. 5,344,414, which is a continuation of Ser. No. 346,193, Jan. 9, 1987, abandoned, which is a division of Ser. No. 606,679, May 3, 1984, abandoned, which is a continuation-in-part of Ser. No. 543,248, Oct. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 460,585, Jan. 24, 1983, abandoned. This application Jun. 7, 1995, Ser. No. 473,524
Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—283

20 Claims



1. A method of transferring a fluid from a first conduit to a second conduit, said first conduit having a hollow tube at an end thereof, said second conduit having a resilient, resealable septum at an end thereof, comprising the steps of:
 - presenting a generally flat outer surface at the end of said second conduit;
 - penetrating said septum with said hollow tube;
 - locking said first conduit to said second conduit;
 - transferring a fluid between said conduits;
 - disengaging said first and second conduits; and
 - removing said tube from said septum thereby causing said septum to reseal.

5,776,117

ADAPTER FOR CONNECTION TO VARIOUSLY SIZED TUBES, ADAPTERS AND/OR Y-PORTS AND A METHOD OF USING THE ADAPTER

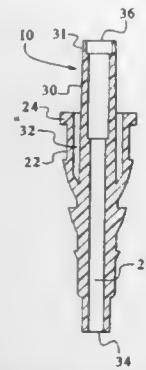
Ronald Haselhorst, Lindenhurst, and Tom Lillegard, Crystal Lake, both of Ill., assignors to Nestec Ltd., Vevey, Switzerland

Continuation of Ser. No. 263,043, Jun. 21, 1994, Pat. No. 5,569,222. This application Jun. 11, 1996, Ser. No. 661,454
Int. Cl.⁶ A61M 3/00

U.S. Cl. 604—283

9 Claims

1. An adapter for connecting a fluid source to a variety of tubes having various sized access ports, the adapter comprising:



a body having a channel therethrough, the channel defined by a first opening at a first end and a second opening at a second end, the body integrally formed by a plurality of sections in continuous and sequential order from the first end to the second end wherein a first section has a first substantially uniform diameter section and a first tapering section, a second section has a second substantially uniform diameter section and a second tapering section wherein the second tapering section is longer than the first tapering section, and a third section having a third tapering section wherein the third tapering section is longer than the second tapering section, the first, second and third sections being integrally formed with the channel extending therethrough wherein the second opening has an increased diameter channel tapering from the second opening to a reduced diameter intermediate the first opening and the second opening.

5,776,118

MEDICAL AND BIOLOGICAL FLUID COLLECTION AND DISPOSAL SYSTEM

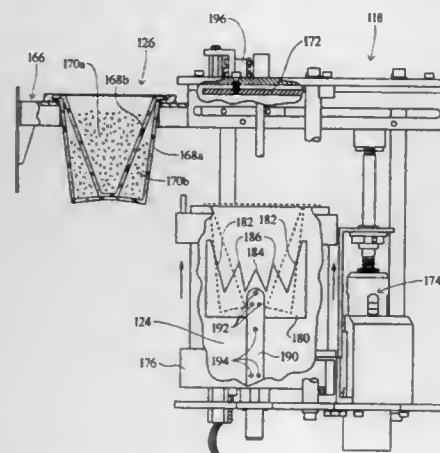
Raymond C. Seifert, Chardon, and John R. Bradbury, Strongsville, both of Ohio, assignors to Steris Corporation, Mentor, Ohio

Filed Dec. 13, 1995, Ser. No. 571,533

Int. Cl.⁶ A61M 1/00; A61L 2/18

U.S. Cl. 604—317

24 Claims



1. An apparatus for handling biological and medical fluid wastes, the apparatus comprising:
at least one inlet fitting for interconnection with a flexible tube which is connected with a source of the fluid waste;
a collection vessel connected with the inlet fitting such that received fluid waste flows into the collection vessel;
a drain line connected with the collection vessel for selectively draining the collection vessel;
a rinse liquid inlet for receiving a source of rinse liquid, the rinse liquid inlet being interconnected by interconnecting tubing with the collection vessel for selectively rinsing waste fluid residue therefrom;

a disinfectant liquid source for selectively supplying a concentrated disinfectant liquid, the disinfectant source including:
a reservoir for receiving single-use powered reagent canisters including powdered reagents which intermix with the rinse liquid to form the liquid disinfectant concentrate, the reservoir being interconnected with the rinse fluid inlet for receiving the rinse liquid therefrom and being interconnected with the interconnecting tubing for entraining the disinfectant concentrate in the rinse liquid flowing there-through;
a cutter disposed in the reservoir for opening powdered reagent canisters received therein; and
a mechanical actuator for moving the cutter to engage the canisters such that the cup is forced open to release the powered reagents.

5,776,119

PORTABLE SUCTION UNIT

Sharon C. Bilbo, 304 Oakview Dr., Houma, La. 70364; Melanie

Watts Barker, 311 Lark Dr., Lockport, La. 70374, and Traci

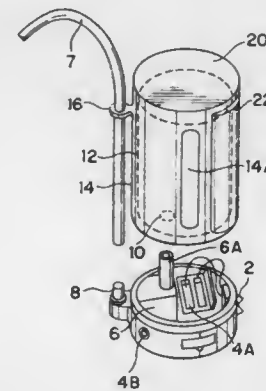
R. Bland, 311 Lark Dr., Houma, La. 70360

Filed Sep. 30, 1996, Ser. No. 722,994

Int. Cl.⁶ A61M 1/00

U.S. Cl. 604—317

10 Claims



1. A portable suction device for use in removing mucus, sputum and other body fluids comprising:
a base including a pump with an inlet and an outlet opening,
a source of electrical power operatively connected to said pump with a switch for controlling said pump,
tubing detachably connected at one end to said pump inlet,
a collection container having an open bottom attached to said base,
a liner within said collection container,
means connected to said liner for sealing said liner to said pump outlet, and
means for closing said open bottom of said collection container, and
wherein said means for closing said open bottom has an inlet tube with a first and second end connected to said pump at one of said ends,
another end of said inlet tube projecting into said collection chamber when said means for closing said open bottom is connected to collection chamber,
said liner being sealingly connected to another end of said inlet tube.

5,776,120

OSTOMY BAGS

Nicholas Steven Shelley, Burgess Hill; Rory James Maxwell Smith, Nr. Skipton, and Paul Stephen Bird, Cophthorne, all of United Kingdom, assignors to Welland Medical Limited, West Sussex, United Kingdom

PCT No. PCT/GB95/01423, § 371 Date Dec. 31, 1996, § 102(e)

Date Dec. 31, 1996, PCT Pub. No. WO96/01089, PCT Pub.

Date Jan. 18, 1996

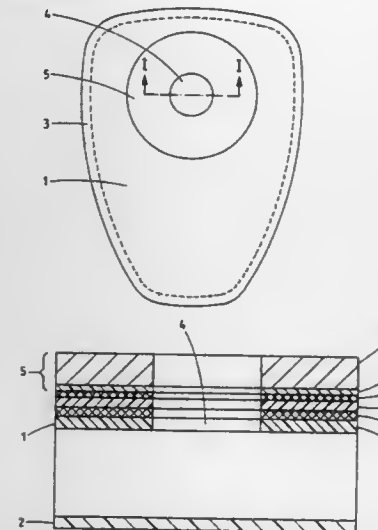
PCT Filed Jun. 19, 1995, Ser. No. 765,604

Claims priority, application United Kingdom, Jul. 1, 1994, 9413226

Int. Cl.⁶ A61F 5/44

U.S. Cl. 604—339

5 Claims



1. A drainage bag for receiving bodily waste, the drainage bag comprising a wall portion formed of a water-softenable or hot-water-soluble first film material, the wall portion having an opening therein for receiving the bodily waste or bodily fluid; a water-impermeable, water-insoluble polymeric film material being adhered to an outer surface of said wall portion so as to surround said opening, the water-impermeable, water insoluble layer being adhered to said wall portion by a cyanoacrylate layer interposed therebetween; and an adhesive flange secured to an outer surface of the water-impermeable, water-insoluble layer for securing the drainage bag to the body wall of a patient.

5,776,121

ABSORBENT ARTICLE HAVING INTEGRAL BARRIER CUFFS AND PROCESS FOR MAKING THE SAME

Donald Carroll Roe, West Chester; Frank Heinrich Bakes, Cincinnati; Dean Jeffrey Daniels, Cincinnati; Kimberly Ann Dreier, Cincinnati; Michael Thomas Huber, Cincinnati, and John Carroll Molander, Montgomery, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 361,248, Dec. 21, 1994, abandoned.

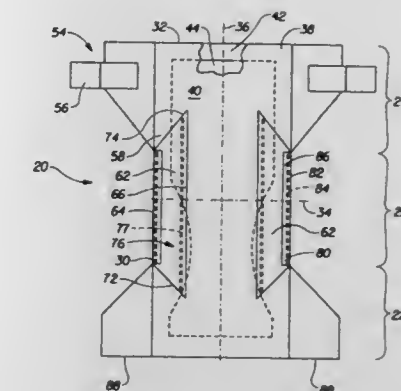
This application Mar. 20, 1996, Ser. No. 619,112

Int. Cl.⁶ A61F 13/15

U.S. Cl. 604—385.1

17 Claims

1. An absorbent article having a longitudinal centerline, a lateral centerline, longitudinal side edges and lateral ends defining a periphery, a first waist region, a second waist region and a crotch region between the first waist region and the second waist region, and comprising:
a liquid pervious topsheet;
a liquid impervious backsheet joined to the topsheet;
an absorbent core having longitudinal side edges disposed between the topsheet and the backsheet;
a pair of longitudinally extending barrier cuffs, each of the barrier cuffs being integrally formed from a lateral extension of the topsheet and the backsheet beyond the side edge of the



absorbent core, the lateral extension being provided with first and second cuts defining a cuff area having first and second ends, the cuff area further having a free distal edge, the distal edge being folded toward the longitudinal centerline, at least one of the ends of the cuff area being joined to one of the first waist region or the second waist region to form the barrier cuff, each of the barrier cuffs being further provided with a spacing means adjacent the distal edge for spacing the barrier cuffs upwardly away from the absorbent core in at least the crotch region; and
a pair of longitudinally extending gasketing cuffs integrally formed from the extended topsheet and backsheet and lying laterally outboard of the barrier cuff in at least the crotch region.

5,776,122

ABSORBENT ARTICLE PROVIDING IMPROVED FECAL CONTAINMENT

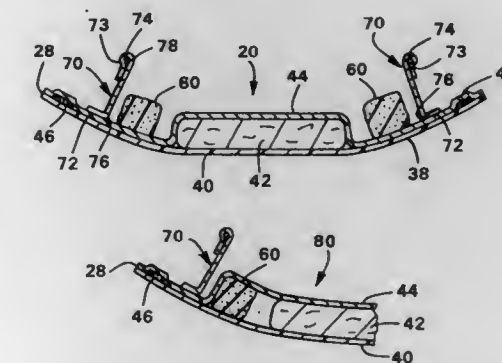
Michael John Faulks, Neenah, and Alan Francis Schleinz, Appleton, both of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Dec. 21, 1994, Ser. No. 362,611

Int. Cl.⁶ A61F 13/15

U.S. Cl. 604—385.2

32 Claims



1. An absorbent article having longitudinal and transverse axes, longitudinal end edges, and longitudinal side edges extending between the longitudinal end edges, the absorbent article comprising:
a moisture barrier;
an absorbent assembly disposed on the moisture barrier; and
fecal containment members positioned transversely outward of the absorbent assembly between the absorbent assembly and each longitudinal side edge, the fecal containment members having a wet compression recovery of at least about 85 percent and a mean pore size of at least about 1.5 millimeters.

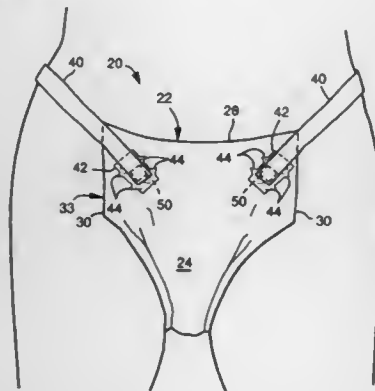
5,776,123

GARMENT WITH TACTILE POSITION INDICATORS
Charles Herbert Goerg, Appleton, and Gregory James Hess,
Fremont, both of Wis., assignors to Kimberly-Clark World-
wide, Inc., Neenah, Wis.

Filed Jul. 28, 1993, Ser. No. 98,558
Int. Cl.⁶ A61F 13/15

U.S. Cl. 604—391

18 Claims



2. A method of making a disposable absorbent article, comprising the steps of:

providing a garment shell defining a first waist section, an opposite second waist section, and a crotch section between the first and second waist sections; and

providing at least one first fastening element having a length dimension and two second fastening elements, the second fastening elements being releasably engageable with the at least one first fastening element;

forming a plurality of tactile position indicators, each of the tactile position indicators forming a perceptible surface irregularity having a dimension of at least about 1 millimeter, the forming step comprising applying a room-temperature non-tacky thermally setting material to the at least one first fastening element; and

attaching the at least one first fastening element to the first waist section such that a plurality of discrete tactile position indicators are operatively associated with the at least one first fastening element along the length dimension.

3. A method of making a disposable absorbent article, comprising the steps of:

providing a garment shell defining a first waist section, an opposite second waist section, and a crotch section between the first and second waist sections; and

providing at least one first fastening element having a length dimension and two second fastening elements, the second fastening elements being releasably engageable with the at least one first fastening element;

forming a plurality of tactile position indicators, each of the tactile position indicators forming a perceptible surface irregularity having a dimension of at least about 1 millimeter, the forming step comprising applying a room-temperature non-tacky thermally setting material to the garment shell within about 20 millimeters of the at least one first fastening element; and

attaching the at least one first fastening element to the first waist section such that a plurality of discrete tactile position indicators are operatively associated with the at least one first fastening element along the length dimension.

6. A garment, comprising:

a garment shell defining a first waist section, an opposite second waist section, and a crotch section between the first and second waist sections;

at least one first fastening element attached to or formed from the garment shell in the first waist section, the at least one first fastening element having a length dimension and a plurality of discrete tactile position indicators operatively associated with the at least one first fastening element along the length dimension, each of the tactile position indicators forming a perceptible surface irregularity having a dimension

of at least about 1 millimeter, and wherein the tactile position indicators comprise a room-temperature non-tacky thermally setting material; and

means for releasably connecting portions of the second waist section and the at least one first fastening element, the releasably connecting means comprising at least one second fastening element releasably engageable with the at least one first fastening element.

8. A garment, comprising:

a garment shell defining a first waist section, an opposite second waist section, and a crotch section between the first and second waist sections;

at least one first fastening element attached to or formed from the garment shell in the first waist section, the at least one first fastening element having a length dimension and a plurality of discrete tactile position indicators operatively associated with the at least one first fastening element along the length dimension, each of the tactile position indicators forming a perceptible surface irregularity having a dimension

of at least about 1 millimeter, and wherein the at least one first fastening element comprises a plurality of ridges that define the tactile position indicators and the ridges are formed by a plurality of strand segments positioned between the at least one first fastening element and the garment shell; and

means for releasably connecting portions of the second waist section and the at least one first fastening element; the releasably connecting means comprising at least one second fastening element releasably engageable with the at least one first fastening element.

5,776,124

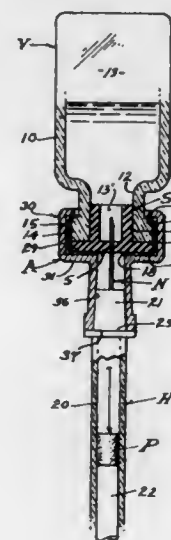
REUSABLE ADAPTER FOR UNITING A SYRINGE AND VIAL

Arnold Wald, 4019 West Victory Blvd., Burbank, Calif. 91505
Filed Jul. 15, 1996, Ser. No. 679,970

Int. Cl.⁶ A61B 19/00

U.S. Cl. 604—403

14 Claims



1. An adapter for releasably connecting a medical syringe and a medicinal vial as a unit, the syringe being a cylinder and piston device for withdrawing and injecting liquid and having an elongated cylindrical hub carrying a tubular needle open into the cylinder for transferring said liquid and the needle projecting axially a determined distance from a flange, the vial being a vessel having a chamber for containing said liquid to be withdrawn therefrom and having a neck with an open top and a surrounding collar and an opening into the chamber of the vial and the open top being closed by a plug carrying a pierceable seal and the plug having a pocket underlying the seal and open into the chamber of the vial, the adapter including:

5,776,125

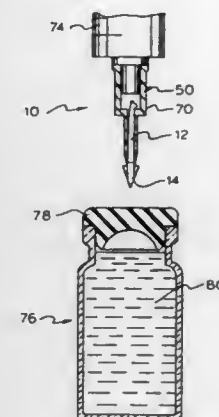
NEEDLELESS VIAL ACCESS DEVICE

Thomas E. Dudar, Palatine, Ill.; Peter L. Graham, Pinckney, Mich., and Steven C. Jepson, Palatine, Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 737,735, Jul. 30, 1991, Pat. No. 5,411,499. This application Apr. 24, 1995, Ser. No. 427,063
Int. Cl.⁶ A61M 37/00

U.S. Cl. 606—411

30 Claims



1. A piercing member adapted for use with a flow channel for piercing a solid closure or stopper comprising:

means associated with the piercing member for retaining the piercing member to the flow channel;

means associated with the piercing member adapted for allowing fluid to flow through the flow channel when the piercing member is retained to the flow channel; and

a tip on the piercing member having a penetrating member at a distal end of the tip, the flow means comprising cutouts in the penetrating member of the tip.

5,776,126

LAPAROSCOPIC SURGICAL APPARATUS AND ASSOCIATED METHOD

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023, and Cary W. Schneebaum, 230 Brinckerhoff Ct., Englewood, N.J. 07631

Filed Sep. 23, 1993, Ser. No. 125,671
Int. Cl.⁶ A61B 17/39

U.S. Cl. 606—1

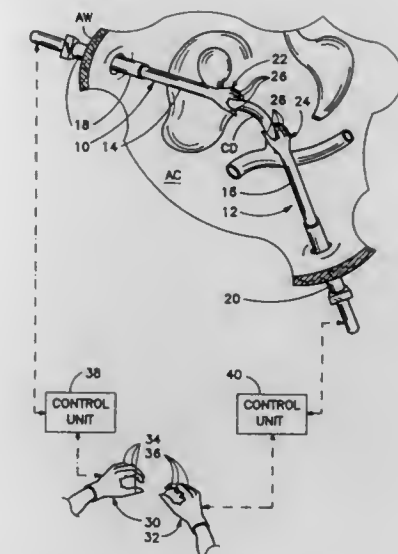
21 Claims

1. A laparoscopic surgical apparatus comprising:

a laparoscopic instrument having a distal end portion insertable through a laparoscopic trocar sleeve into an abdominal cavity of a patient, said distal end portion including a plurality of at least partially opposable articulated manipulating fingers;

a glove having a plurality of hollow finger parts;

position sensing means operatively connected to said glove for detecting positions and configurations of said hollow finger parts upon insertion of a surgeon's hand into said glove and



upon movement of said finger parts by said surgeon during a laparoscopic procedure;

actuator means operatively connected to said sensing means and to said instrument for moving said manipulating fingers to essentially duplicate positions and configurations of said finger parts in response to signals from said sensing means; and cauterization means including a laser-transmitting optical fiber for cauterizing organic tissues of the patient, said optical fiber being at least partially connected to said instrument at said distal end portion.

5,776,127

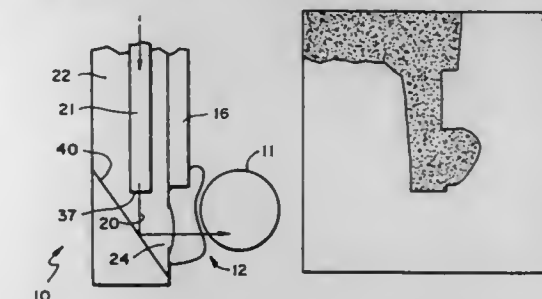
TWO-PULSE, LATERAL TISSUE ILLUMINATOR

Richard Rox Anderson, Lexington, and Joseph A. Grocela, Winchester, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 323,295, Oct. 13, 1994, Pat. No. 5,632,739. This application Oct. 29, 1996, Ser. No. 741,139
Int. Cl.⁶ A61B 17/36

U.S. Cl. 606—2

18 Claims



1. An apparatus for delivering optical radiation to a tissue of a patient, comprising:

a first optical waveguide defining a first axis along a longitudinal dimension of said first optical waveguide, said first optical waveguide configured to deliver optical radiation to a liquid-containing region adjacent to the tissue along the first axis so as to form a vapor bubble in the liquid-containing region;

a second optical waveguide configured to deliver optical radiation to the tissue through the vapor bubble;

a light deflector arranged to redirect the optical radiation from said second optical waveguide but not from said first optical waveguide along a second axis divergent from said first axis, and

a chamber having a longitudinal axis aligned substantially parallel with the first axis, said first and second optical waveguides being attached to said chamber.

5,776,128
HEMOSTATIC BI-POLAR ELECTROSURGICAL
CUTTING APPARATUS

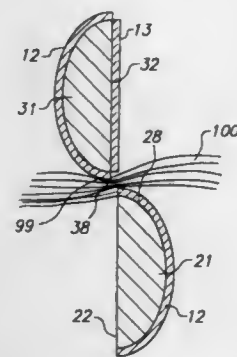
Philip E. Eggers, Dublin, Ohio, assignor to Hemostatic Surgery Corporation, Sausalito, Calif.

Continuation of Ser. No. 447,996, May 23, 1995, abandoned, which is a continuation of Ser. No. 257,734, Jun. 9, 1994, abandoned, which is a continuation of Ser. No. 877,703, May 1, 1992, Pat. No. 5,324,289, which is a continuation-in-part of Ser. No. 711,920, Jun. 7, 1991, abandoned. This application Jan. 3, 1997, Ser. No. 778,511

Int. Cl.⁶ A61B 17/36

U.S. Cl. 606—48

16 Claims



1. Apparatus for hemostatically cutting tissue, the apparatus comprising:

- first and second scissor blades arranged to contact one another along a cutting length;
- a layer of insulative material disposed for the cutting length to electrically isolate the first and second scissor blades from one another;
- means for joining the first and second scissor blades together so that at least the first scissor blade moves relative to the second scissor blade in a scissors-like cutting motion, wherein the first and second scissor blades close together for shearing tissue located therebetween; and
- means for electrically coupling a high frequency alternating-current waveform to the first and second scissor blades.

5,776,129
ENDOMETRIAL ABLATION APPARATUS AND METHOD

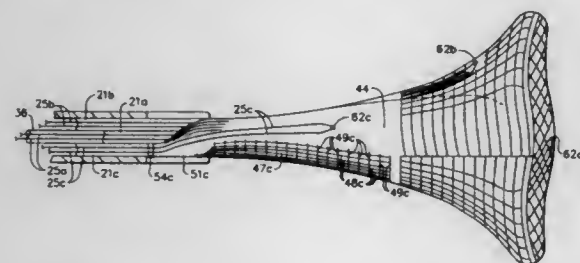
Steven H. Mersch, Germantown, Ohio, assignor to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed Jun. 12, 1996, Ser. No. 662,892

Int. Cl.⁶ A61B 17/38

U.S. Cl. 606—31

3 Claims



1. An apparatus for heating the inner lining of an organ, said apparatus comprising:

- an expandable element wherein said expandable element has an interior surface and an exterior surface and said exterior surface of said expandable element is covered by an optically reflective coating;
- an optically conductive diffusing material on said expandable element wherein said optically conductive diffusing material comprises a web of optical fibers;

a light source connected to said optically conductive material by one or more optical conductors.

5,776,130
VASCULAR TISSUE SEALING PRESSURE CONTROL

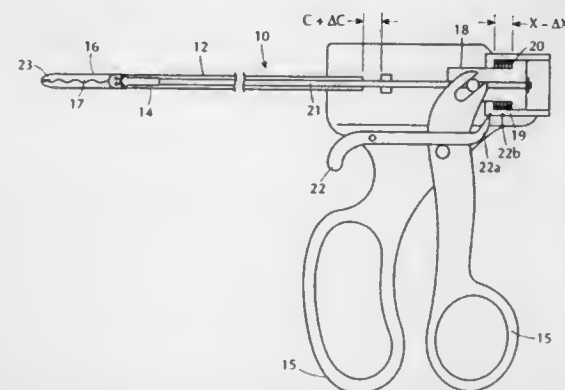
Steven P. Buysse, Longmont; Jenifer S. Kennedy, Boulder; Michael J. Lands, Louisville; Donald R. Loeffler, Longmont; S. Wade Lukianow, Boulder, and Thomas P. Ryan, Fort Collins, all of Colo., assignors to Valleylab, Inc., Boulder, Colo.

Filed Sep. 19, 1995, Ser. No. 530,450

Int. Cl.⁶ A61B 17/36

U.S. Cl. 606—48

17 Claims



17. A clamping force mechanism for an instrument for allowing a user to clamp and apply force and electrosurgical energy to seal and/or join particular vascular tissue of a patient comprising:

- an elongate support having a user end and a patient end;
- an actuator at the user end for operation by the user;
- a pair of end effectors at the patient end, the pair of end effectors connected to the actuator for operation thereby and from the user end to control motion of the pair of end effectors, the pair of end effectors each having an opposing face of an area adapted for contact with particular vascular tissue of the patient;
- a lost motion connection between the pair of end effectors at the patient end and the actuator at the user end, the lost motion connection for transferring user manipulation of the actuator to the pair of end effectors for maintaining force over the opposing face of an area to achieve a predetermined clamping force application during sealing of particular vascular tissue of the patient between the pair of end effectors;
- a yielding member in the lost motion connection so the opposing faces clamp particular vascular tissue of the patient therebetween with the predetermined clamping force from the yielding member, the yielding member including a spring as part of the lost motion connection between the pair of end effectors at the patient end and the actuator at the user end, the spring located near the actuator at the user end to maintain a predetermined clamping force within an preferred range irrespective of total user manipulation;
- an elongated transfer rod in the lost motion connection, the elongate transfer rod located between the spring near the actuator and the pair of end effectors at the patient end, the rod coupled to the pair of end effectors for movement thereof between an open position adapted to receive particular vascular tissue of the patient to a clamping position adapted to maintain the predetermined clamping force on particular vascular tissue of the patient between the pair of end effectors;
- an active electrode carried on one of the pair of end effectors;
- a return electrode in contact with the tissue of the patient;
- an electrosurgical energy supply connected across the active electrode of the pair of end effectors and the return electrode to provide an electrosurgical circuit therebetween, the electrosurgical energy supply for delivery of electrosurgical energy between and across the active electrode and the return electrode when particular vascular tissue of the patient is held by the pair of end effectors;
- an electrosurgical generator in the electrosurgical energy supply to provide electrosurgical energy;
- a feedback circuit in the electrosurgical generator, the feedback circuit electrically coupled in circuit with the active electrode and the return electrode, the feedback circuit responsive to energy delivery through the electrosurgical circuit of particular vascular tissue of the patient interposed between the active electrode and the return electrode;
- a temperature sensor in the feedback circuit, the temperature sensor carried on at least one of the opposed faces, the temperature sensor responding to temperature of particular vascular tissue of the patient between the pair of end effectors during delivery of electrosurgical energy;
- an impedance monitor in the feedback circuit, the impedance monitor electrically hooked up to the electrosurgical generator, an impedance circuit responsive to impedance of particular vascular tissue of the patient between the active electrode and return electrode during delivery of electrosurgical energy, and a control associated with the electrosurgical energy supply adapted to apply electrosurgical energy to the particular vascular tissue of the patient that is held in response to the predetermined clamping force application for sealing particular vascular tissue between the pair of end effectors.

5,776,132
EXTERNAL FIXATION ASSEMBLY

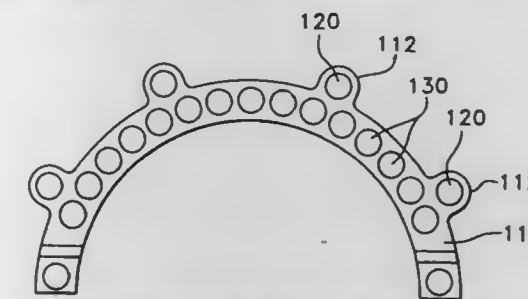
Arkady Blyakher, 7400 Roosevelt Blvd. Apt. A-2, Philadelphia, Pa. 19152

Filed Dec. 26, 1996, Ser. No. 773,980

Int. Cl.⁶ A61B 17/60

U.S. Cl. 606—56

7 Claims



1. A method of externally fixating a patient's bone, comprising: providing a frame containing a pair of arcuate members having a plurality of connecting rods adjustably coupled thereto to provide a plurality of fixed positions around said patient's bone, said arcuate members including a plurality of locating indicia displaced along the perimeter of said arcuate members to provide a visible contrast on a film exposed to x-ray radiation; disposing a limb of a patient within and between said arcuate members and attaching said frame to said patient's bone with a plurality of wires; x-raying said patient's bone whereby said indicia become visible and assists in aligning said bone within said arcuate members.

5,776,131
DEVICE FOR CAUTERIZING HORN BUTTONS AND
HORN STUMPS IN CATTLE

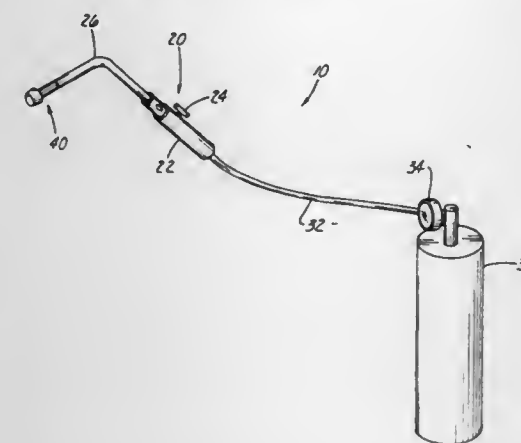
Donald C. Hansen, 305 Center St., Shelby, Iowa 51570

Filed Mar. 12, 1996, Ser. No. 614,985

Int. Cl.⁶ A61B 17/36

U.S. Cl. 606—49

4 Claims



1. A device for cauterizing horn buttons and horn stumps in cattle comprising:

- (a) cauterizing tip having a cauterizing surface formed integrally with a rearwardly projecting frustoconical tubular sidewall;
- (b) a flammable gas torch including a torch attachment tube secured on a first end to a burner tube of the flammable gas torch, wherein a second end of the torch attachment tube is suspended within said cauterizing tip at a location spaced from both said cauterizing surface and said frustoconical tubular sidewall; and,
- (c) securing means for suspending said second end of said torch attachment tube within said cauterizing tip.

5,776,133
BONE SETTING APPARATUS

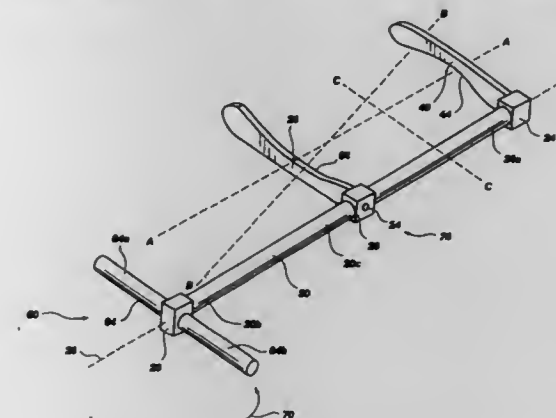
Edward Spencer, 3260 E. 9425 South, Sandy, Utah 84092, and Randy Telford, 1804 E. Carriage Park Cir., Salt Lake City, Utah 84121

Filed Sep. 20, 1996, Ser. No. 718,211

Int. Cl.⁶ A61B 17/60

U.S. Cl. 606—57

21 Claims



1. An apparatus for facilitating the reduction of compound fractures within a limb, the apparatus comprising:

- a first rigid elongate shaft having a proximal end and a distal end;
- a distal working arm and an intermediate working arm connected to said shaft and extending generally perpendicularly thereto, said arms being generally parallel to each other with each being configured for engaging a portion of a limb on opposing sides of the fracture and for applying torque about an axis generally perpendicular to said elongate shaft and between said working arms when said elongate shaft is pivoted relative to the limb, each of said arms having a concave tip.

portion for engaging the limb, the concave portion of the distal working arm being disposed on an opposite side as the concave portion of the intermediate working arm to facilitate engagement of opposing sides of the limb; and torque control means connected at the proximal end of the elongate shaft and spaced from the working arms for controlling the rotation of the elongate shaft about its longitudinal axis when the elongate shaft is pivoted with respect to said limb to apply torque to said limb about said perpendicular axis, said torque control means comprising a bar extending outwardly and generally perpendicular to said elongate shaft.

5,776,134

LOW-PROFILE SPINAL FIXATION SYSTEM

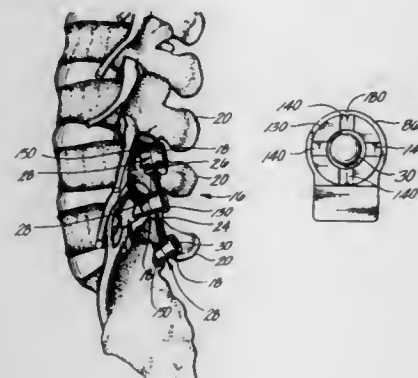
Robert S. Howland, Seal Beach, Calif., assignor to Advanced Spine Fixation Systems, Inc., Irvine, Calif.

Division of Ser. No. 219,748, Mar. 29, 1924, Pat. No. 5,520,687, which is a continuation of Ser. No. 938,868, Sep. 2, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 471,637

Int. Cl.⁶ A61B 17/56; 17/58; A61F 2/30

U.S. Cl. 606—61

3 Claims



1. A low-profile screw-clamp assembly for use in spinal support fixation systems comprising:

- an anchor screw having a lower threaded end portion for attaching the screw-clamp assembly to a vertebra, an upper threaded end, and a substantially cylindrical shoulder disposed between the upper and lower threaded ends;
- a clamping assembly mounted on the substantially-cylindrical shoulder of the anchor screw comprising an upper-half clamp having an enclosed recessed upper surface and a lower-half clamp which mates with the upper-half clamp to form a rod-receiving aperture; and
- a sleeve nut for attaching the clamping assembly to the upper threaded end of the anchor screw, wherein the sleeve nut fits into the enclosed recess on the upper surface of the upper-half clamp to provide a substantially smooth outer surface so as to reduce irritation to the muscles of the back when a system is implanted.

5,776,135

SIDE MOUNTED POLYAXIAL PEDICLE SCREW

Joseph P. Errico, Far Hills; Thomas J. Errico, Summit, and James D. Ralph, Oakland, all of N.J., assignors to Third Millennium Engineering, LLC, Summit, N.J.

Filed Dec. 23, 1996, Ser. No. 772,407

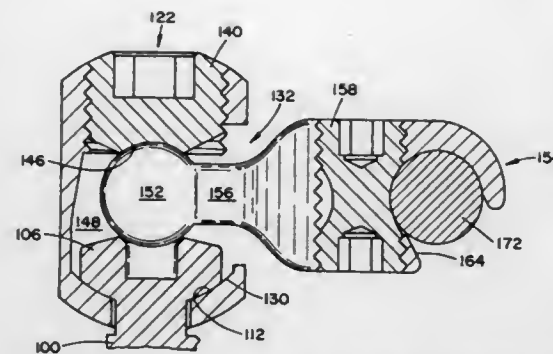
Int. Cl.⁶ A61B 17/70

U.S. Cl. 606—61

5 Claims

1. A polyaxial screw and coupling element assembly for use with orthopedic rod implantation apparatus, comprising:

- a body portion, said body portion having a tubular conformation, defining therein an interior volume, and further including a first opening formed at a top of the body, a second opening



formed in a side of of the body, and a third opening formed in a bottom of the body;

- a bone screw having a head and a shaft, said head being disposed in said interior volume such that the body and the screw may rotate relative to one another, and such that said shaft extends outwardly through said third opening in the bottom of said body;

- a rod coupling element including a ball-shaped proximal end and a rod coupling distal end, said ball-shaped proximal end being disposed in said interior volume of said body portion, said rod coupling distal end of said rod coupling element extending outwardly through said second opening in the side of the body, such that said rod coupling element may polyaxially rotate through a range of angles relative to the body, and such that said ball shaped proximal end is disposed in contact with said head of said screw;

first means for securing a rod of an orthopaedic implant apparatus to the rod coupling distal end of said rod coupling element;

second means for locking the ball shaped proximal end of the rod coupling element in the interior volume of the body such that the rod coupling element is no longer polyaxially rotatable relative to the body; and

third means for locking the head of the screw in the interior volume of the body such that the body is no longer rotatable relative to the screw, said third means causing the ball-shaped end of said rod coupling element to be crushed onto the head of the screw thereby locking the ball-shaped proximal end and the head to the body.

5,776,136

METHOD AND SYSTEM FOR FINISH CUTTING BONE CAVITIES

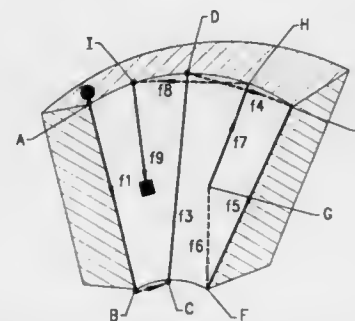
Alind Sahay, Sacramento, and Zhenghao Yeh, Stevenson Ranch, both of Calif., assignors to Integrated Surgical Systems, Inc., Sacramento, Calif.

Filed Sep. 30, 1996, Ser. No. 720,544

Int. Cl.⁶ A61B 17/56

U.S. Cl. 606—79

9 Claims



1. An improved method for cutting a tapered cavity into an elongate bone, said cavity being of the type wherein an enlarged entrance tapers down in an axial direction and over an axial length

to a small terminal end and said method being of the type wherein the bone is first rough cut to produce a rough cavity and then finish cut by translating a rotary cutter axially along a plurality of circumferentially spaced-apart finish cut paths to form axial grooves separated by axial cusps in a cavity wall which approximates a preplanned cavity model, wherein the improvement comprises selectively shortening the axial lengths of some but not all of the finish cut paths to a distance less than the axial cavity length whereby total cutting time is reduced.

5,776,137

METHOD AND APPARATUS FOR LOCATING BONE CUTS AT THE DISTAL CONDYLAR FEMUR REGION TO RECEIVE A KNEE PROSTHESIS

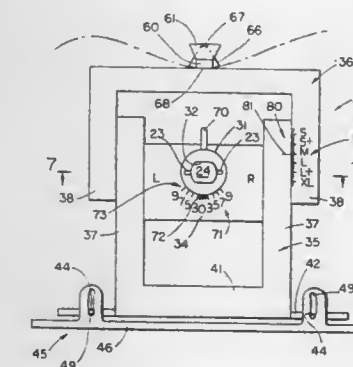
Lawrence Katz, 10 Iron Latch West, Upper Saddle River, N.J. 07458

Filed May 31, 1995, Ser. No. 455,985

Int. Cl.⁶ A61B 17/58

U.S. Cl. 606—88

49 Claims



1. A method for forming planar resections on the medial and lateral condyles of a femur of a knee to form seating surfaces to receive a femoral prosthesis and to properly articulate with a tibial and patellar prosthesis, said method comprising:

determining a prospective planar resection to be made at the posterior medial and lateral condyles of a femur at which a distance between an anterior surface of the femoral cortex and the prospective planar resection is substantially equal to an interior dimension of a femoral prosthesis to be fitted on said femur,

said planar resection producing resection of the medial and lateral condyles at said posterior surface of respective thicknesses which are not necessarily equal,

measuring the thicknesses which will be resected by said planar resection at said medial and lateral condyles at said posterior surface,

resecting a distal end of the medial and lateral condyles along a plane which produces respective resected thicknesses, not necessarily equal, at said medial and lateral condyles and wherein the distal medial resection is substantially equal to the measured posterior medial condyle thickness to be resected and the distal lateral resection is substantially equal to the measured posterior lateral condyle thickness to be resected, and

resecting the medial and lateral condyles along a plane at the anterior surfaces thereof substantially flush with the anterior surface of the femoral cortex, and along said prospective planar resection.

5,776,138

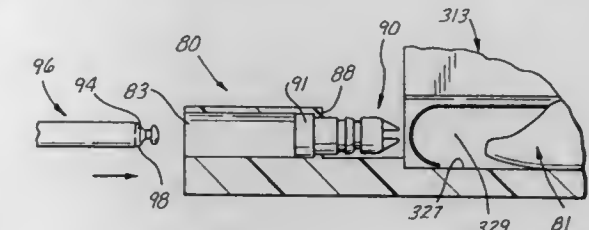
APPARATUS AND METHODS FOR IOL INSERTION
Claude A. Vidal, Santa Barbara; Michael Collinson, and Alan K. Plyley, both of Goleta, all of Calif., assignors to Allergan, Waco, Tex.

Filed Jan. 26, 1996, Ser. No. 592,163

Int. Cl.⁶ A61F 9/00

U.S. Cl. 606—107

20 Claims



1. An apparatus for inserting a folded intraocular lens into an eye comprising:

- a tube defining a hollow passage and having a port through which the intraocular lens is passed from said hollow passage into an eye;
 - an elongated member longitudinally provable within said hollow passage and having a distal end portion and a proximal end portion;
 - a rod which is longitudinally movable and has a distal end region which is removably coupled to said elongated member at said proximal end portion;
 - a tip secured to said elongated member and extending distally from said distal end portion, said tip being softer than said distal end portion and being sized and configured so that said tip comes in contact with the folded intraocular lens as said elongated member is moved distally in said hollow passage; and
- said elongated member includes a through hole and a portion of said tip is located in said through hole, thereby facilitating permanent securement of said tip to said elongated member.

5,776,139

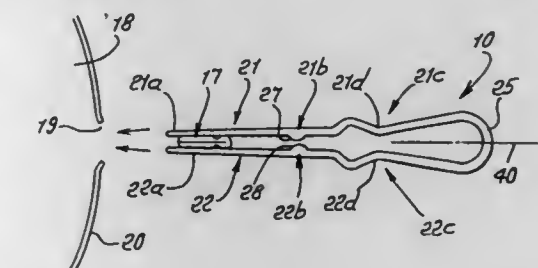
ROCKING LENS IMPLANTATION APPARATUS
Henry H. McDonald, 8 Whittier Ct., Rancho Mirage, Calif. 92270, assignor to Henry H. McDonald, and William W. Haefliger, both of Pasadena, Calif., a part interest

Filed Feb. 18, 1997, Ser. No. 800,966

Int. Cl.⁶ A61F 9/00

U.S. Cl. 606—107

12 Claims



1. Apparatus used for intraocular implantation of a plastic lens in an internal eye zone, as through a surgical incision in the corneal limbus, which includes:

- a) two elongated lever arms, each of which has a distal first zone for gripping the lens, a second pivot zone rearward of said distal zone, and a third manual pressure receiving zone,
- b) said arms coupled together rearwardly of said third zones so that said first distal zones are yieldably urged toward one another by said arms to grip the lens therebetween for intraocular implantation,
- c) interengageable surfaces at said second pivot zones and configured to pivot in interengagement in response to control-

lable manual squeezing force exertion on said third zones, thereby to cause said first zones to relatively separate, freeing the lens for release in the internal eye zone.
d) said arms between said first and third zones thereof remaining respectively at opposite sides of a plane extending between the arms.

5,776,140

STENT DELIVERY SYSTEM

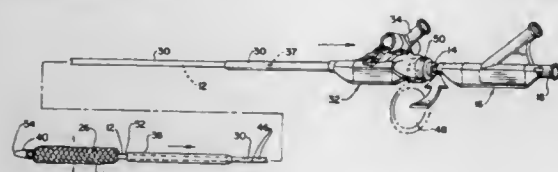
Robert Cottone, Ft. Lauderdale, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Jul. 16, 1996, Ser. No. 683,063

Int. Cl.⁶ A61B 17/00

U.S. Cl. 606—108

29 Claims



25. A catheter for deploying an implantable medical device within a patient, which catheter comprises:

a tubular catheter body having proximal and distal ends, said catheter carrying an inflatable balloon adjacent said distal end of said catheter, said catheter also carrying an outer, semi-flexible sheath surrounding said catheter balloon in a first position, said sheath being slidably retractable from a position adjacent said proximal end to expose said balloon to the exterior, said catheter body and sheath each defining proximal ends which are connected each to a separate hub, one of said hubs and said sheath being slidably movable along said catheter body between said first position and a retracted position where the sheath is longitudinally spaced from the catheter balloon, and in which said catheter body defines a proximal portion of non-circular cross section, said hub connected to said sheath being slidable along said proximal portion between said first and retracted positions in a manner preventing rotation about the longitudinal axis of said catheter.

5,776,141

METHOD AND APPARATUS FOR INTRALUMINAL PROSTHESIS DELIVERY

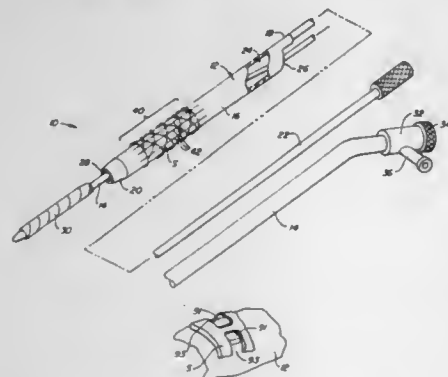
Enrique J. Klein; Aaron V. Kaplan; Mark Clifford, all of Los Altos, and Martin Overbeek-Bloem, Palo Alto, all of Calif., assignors to LocalMed, Inc., Palo Alto, Calif.

Filed Aug. 26, 1996, Ser. No. 704,801

Int. Cl.⁶ A61F 11/00

U.S. Cl. 606—108

23 Claims



1. A catheter for use in combination with a balloon catheter for delivering a radially expandable tubular prosthesis having transverse surfaces, said catheter comprising:

a tubular catheter body having a proximal end, a distal end, and a lumen therebetween, wherein the catheter body is axially split over a distal region thereof to define a radially expandable portion, and wherein the lumen slidably receives the balloon catheter so that a balloon thereon can be aligned within the radially expandable portion of the body; and
a structure comprising abutting surfaces attached to the axially split region of the catheter body which is adapted to engage the transverse surfaces on the tubular prosthesis to inhibit axial movement thereof.

5,776,142

CONTROLLABLE STENT DELIVERY SYSTEM AND METHOD

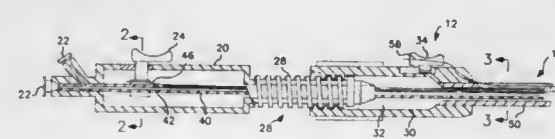
Richard C. Gunderson, Maple Grove, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 25, 1997, Ser. No. 845,780

Int. Cl.⁶ A61F 11/00; A61M 29/00

U.S. Cl. 606—108

22 Claims



8. A system for delivering a radially expandable stent for implantation within a body vessel, comprising:

an elongated tubular member comprising an inner sheath having a proximal end and a distal end and an outer sheath having a proximal end and a distal end, the outer sheath having a lumen for at least partially receiving the inner sheath, the distal end of the inner sheath extending past the distal end of the outer sheath;
a self-expanding intraluminal stent located over the distal end of the inner sheath, the stent having a proximal end attached to the distal end of the outer sheath and a distal end attached to the distal end of the inner sheath;
a first handle operatively attached to the inner sheath, the first handle located at the proximal end of the inner sheath;
a second handle operatively attached to the outer sheath, the second handle located at the proximal end of the outer sheath; and
the first and second handles being operatively mounted on a screw such that rotation of one handle relative to the other handle results in controlled axial movement of the inner and outer sheaths relative to each other.

5,776,143

STEREOSTATIC POINTING DEVICE

Laurence Pentecost Adams, Cape Town, South Africa, assignor to Implico B.V., Amsterdam, Netherlands

PCT No. PCT/NL95/00063, § 371 Date Nov. 15, 1996, § 102(e) Date Nov. 15, 1996, PCT Pub. No. WO95/22297, PCT Pub. Date Aug. 24, 1995

PCT Filed Feb. 17, 1995, Ser. No. 693,115

Claims priority, application South Africa, Feb. 18, 1994, 94/1132

Int. Cl.⁶ A61B 19/00

U.S. Cl. 606—130

8 Claims

1. A surgical guidance device for the precise positioning of a surgical object, wherein the device comprises:
a base having three feet which define a first plane, and which are adapted for location on markers secured to a patient's body;
a swivel head which is constrained for movement in a second plane;
a guide for the surgical object, the guide being mounted on the swivel head so that it can swivel with respect to the swivel head in all directions about a pivot point; and

5,776,145

Patent Not Issued For This Number

5,776,146

LAPAROSCOPIC SURGICAL CLAMP

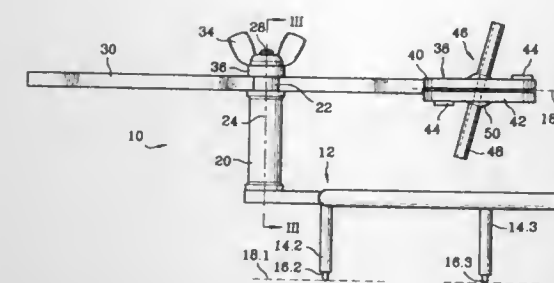
Jonathan M. Sackier, Great Falls, Va.; Michael L. Jones, Capistrano Beach, and Edward E. Dolendo, Huntington Beach, both of Calif., assignors to Applied Medical Resources, Laguna Hills, Calif.

Continuation-in-part of Ser. No. 139,919, Oct. 20, 1993, Pat. No. 5,496,333. This application Jul. 3, 1996, Ser. No. 674,925

Int. Cl.⁶ A61B 17/10

U.S. Cl. 606—142

35 Claims



locating means for locking the swivel head in a selected translational position in the second plane and the guide in the selected angular position with respect to the swivel head.

5,776,144

DEVICE FOR POSITIONING AND FIXING OF THERAPEUTIC, SURGICAL, OR DIAGNOSTIC INSTRUMENTS

Hans Leysieffer, Taufkirchen, and Rolf Lehner, Esslingen, both of Germany, assignors to IMPLEX GmbH Spezialhorgerate, Ismaning, Germany

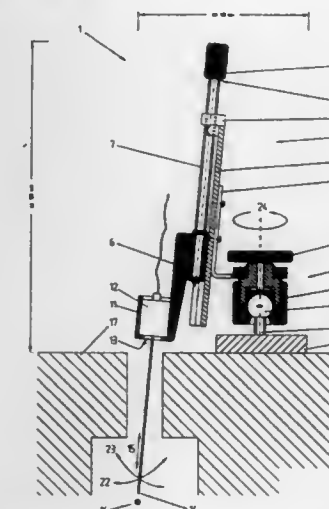
Filed Oct. 7, 1996, Ser. No. 726,494

Claims priority, application Germany, May 10, 1996, 196 18 945.4

Int. Cl.⁶ A61B 19/00

U.S. Cl. 606—130

18 Claims



1. Fixable positioning system for secure, play-free fastening of a surgical, therapeutic or diagnostic instrument relative to a human body, comprising:

a holder having a head support configured for bilateral fixing directly to a skull in ear areas thereof;
a base attached to the holder so as to be fully supported thereon;
a linear axis mechanism having a linear guide and a threaded spindle extending parallel to said linear guide, said linear guide having an internally threaded member attached thereto, the threaded spindle being in threaded engagement with the internally threaded members to form a threaded drive and being axially movable relative to said linear guide by manual rotation of said spindle;
a receiving device for receiving said instrument, said receiving device being connected to said threaded spindle for axial movement therewith and being guided by said linear guide for linear movement along said linear guide; and
a ball-and-socket joint which is manually movable in three rotational degrees of freedom and which is fixable via a clamp mechanism, said ball-and-socket joint being connected between the base and the linear guide of the linear axis mechanism.

5,776,147

LAPAROSCOPIC SURGICAL CLAMP

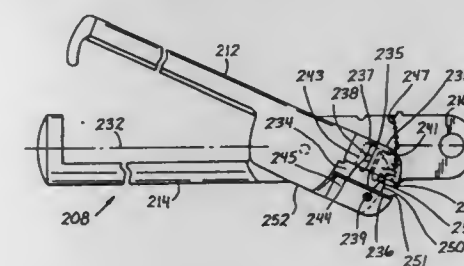
Edward E. Dolendo, Lake Forest, Calif., assignor to Applied Medical Resources Corporation, Laguna Hills, Calif.

Continuation-in-part of Ser. No. 674,925, Jul. 3, 1996, which is a continuation-in-part of Ser. No. 139,919, Oct. 20, 1993, Pat. No. 5,496,333. This application Oct. 8, 1996, Ser. No. 727,773

Int. Cl.⁶ A61B 17/04

U.S. Cl. 606—142

21 Claims



1. A surgical clamp, comprising:
a first jaw having a proximal end and a distal end;

a movable set of teeth disposed near the proximal end of the first jaw and having a movable relationship with the first jaw;
a second jaw having a proximal end and a distal end and a pivotal relationship with the first jaw;
a fixed set of teeth disposed near the proximal end of the second jaw and having a fixed relationship with the second jaw; and
a movable member disposed in proximity to the first jaw and configured for contacting and moving the movable set of teeth in and out of mesh with the fixed set of teeth, the movable member having properties for moving the first jaw and the second jaw between an open state wherein the distal end of the first jaw is spaced from the distal end of the second jaw to accept a body conduit, and a closed state wherein the distal end of the first jaw and the distal end of the second jaw are proximate to at least partially occlude the body conduit.

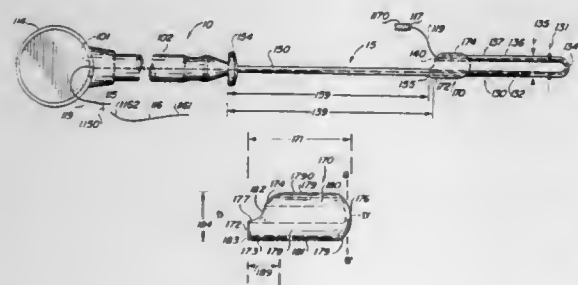
5,776,148

SURGICAL STAB WOUND CLOSURE DEVICE AND METHOD

William J. Christy, 1324 Sunset Dr., Winter Park, Fla. 32789
Continuation of Ser. No. 127,775, Sep. 27, 1993, Pat. No. 5,503,634, which is a continuation-in-part of Ser. No. 54,856, Apr. 28, 1993, Pat. No. 5,350,385. This application Jan. 24, 1996, Ser. No. 592,875
Int. Cl.⁶ A61B 17/00

U.S. Cl. 606—144

1 Claim



1. A locking member for use in an endoscopic surgical procedure for maintaining gas pressure within a body cavity having an incision thereinto, the locking member slidably affixable in surrounding relation to an end of a suture needle affixed to a manipulator for movement relative to the incision and comprising a unitary member having a generally rounded distal end and a smooth outer contour for ease of entry into and withdrawal from the incision, the unitary member shaped commensurate with and sufficiently large to plug the incision against release of gas pressure the locking member having:

- a distal end;
- a proximal end;
- a cross-sectional shape in a first plane, the first plane including the distal and the proximal ends, the first plane cross-sectional shape comprising an outwardly curving section at the distal end connecting with two generally parallel, generally straight sides;
- a generally elliptical cross-sectional shape in a second plane generally normal to the sides and generally perpendicular to the first plane, the sides defining ends of a major elliptical axis; and
- a protrusion in a third plane generally normal to the sides and generally perpendicular to the first plane and the second plane, the protrusion for plugging the incision against leakage of gas pressure from the body cavity.

5,776,149

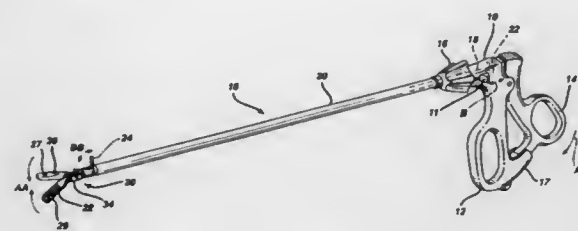
Patent Not Issued For This Number

5,776,150
SUTURE ASSIST DEVICE
Leo J. Nolan; John P. Measamer, both of Cincinnati; James D. Staley, Jr., Loveland, and Robert F. Welch, Maineville, all of Ohio, assignors to Ethicon Endo Surgery, Inc., Cincinnati, Ohio

Filed Jun. 10, 1996, Ser. No. 662,755
Int. Cl.⁶ A61B 17/04

U.S. Cl. 606—148

21 Claims



1. An end effector for a surgical instrument, said end effector comprising:
- a first jaw including a first hole and a first slot;
 - a second jaw including a second hole and a second slot, said second jaw being pivotally connected to said first jaw wherein said first hole is aligned with said second hole when said first and second jaw are closed;
 - a first connector connected to said first jaw such that movement of said first connector moves said first jaw from a first open position to a second, closed position; and
 - a second connector connected to said second jaw such that movement of said second connector moves said second jaw from a first open position to a second, closed position.

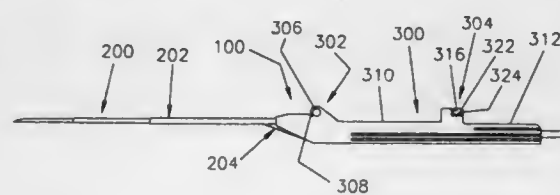
5,776,151

SURGICAL REPAIR KIT AND ITS METHOD OF USE

Kwan-Ho Chan, 4702 S. Jackson, Joplin, Mo. 64804
Continuation of Ser. No. 234,840, Apr. 28, 1994, Pat. No. 5,562,683, which is a continuation-in-part of Ser. No. 90,651, Jul. 12, 1993, Pat. No. 5,562,687. This application Oct. 8, 1996, Ser. No. 727,027
Int. Cl.⁶ A61B 17/00

U.S. Cl. 606—148

17 Claims

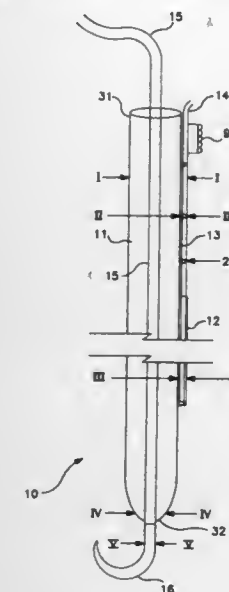


1. A suture passer comprising:
- a longitudinally extending tubular cannula having a central passage extending longitudinally and internally therethrough and open at a cannula distal end and slidably receivable of a surgical suture;
 - a manually graspable handle adapted for connection directly to said tubular cannula for manipulation thereof, said handle having a distal end, a proximal end, and an upper surface;
 - first suture guide means connected to said upper surface of said handle proximate to said distal end of said handle and forming a first aperture for releasably, guidingly holding said surgical suture;
 - second suture guide means connected to said upper surface of said handle proximal to said first suture guide means and forming a second aperture for releasably, guidingly holding said surgical suture; and
 - locking means for releasably, lockingly maintaining said cannula in a substantially fixed position on said handle.

5,776,152
INTRACORPOREAL LIGATURE DEVICE
David H. Sekons, 41 Fifth Ave., New York, N.Y. 10003
Filed Mar. 13, 1997, Ser. No. 816,845
Int. Cl.⁶ A61B 17/04

U.S. Cl. 606—148

7 Claims



1. An intracorporeal ligature tying device, comprising:
- (a) a needle holder having a longitudinal channel running through the length of said needle holder, said needle holder having a proximal end and a distal end;
 - (b) a longitudinal groove located on an outside surface of said needle holder, said groove terminating at a location on said needle holder prior to said distal end, at least a final portion of said groove being covered; and
 - (c) a wire located in said groove, said wire being made from a memory material, said wire being slidably positioned within said groove so that in a retracted position, said wire terminates in said covered portion of said groove, and in an advanced position, an end of said wire extends beyond said covered portion of said groove and forms a hook to aid in tying a ligature within a patient's body.

5,776,153

ANGIOPLASTY CATHETER WITH GUIDEWIRE

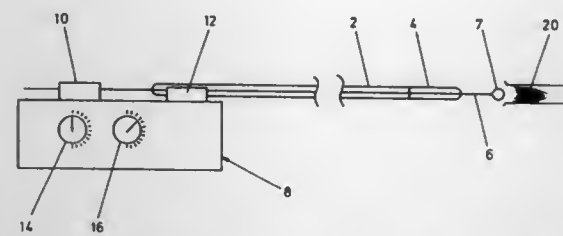
Michael Ralph Rees, Avon, Great Britain, assignor to Medical Miracles Company Limited, United Kingdom
PCT No. PCT/GB94/01446, § 371 Date Apr. 3, 1996, § 102(e)
Date Apr. 3, 1996, PCT Pub. No. WO95/01752, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 4, 1994, Ser. No. 581,551
Claims priority, application United Kingdom, Jul. 3, 1993, 9313810; Nov. 13, 1993, 9323474

Int. Cl.⁶ A61B 17/22

U.S. Cl. 606—159

9 Claims



1. An apparatus for use in clearing a blockage in a body passage comprising:
- a housing;

a catheter having a distal end with an opening having an axis; a wire having a proximal end portion and a distal end portion, the wire adapted to guide the catheter, the distal end portion of the wire adapted to bow downwardly from horizontal when extended a distance equal to or less than five centimeters beyond the distal end of the catheter when in use; means for moving the distal end portion of the wire extending beyond the distal end of the catheter diffusely in at least two degrees of freedom with respect to the axis of said opening, the means for moving including a drive unit mounted in the housing coupled to the proximal end portion of the wire to vibrate the distal end portion of the wire and; means for clamping the catheter to the housing.

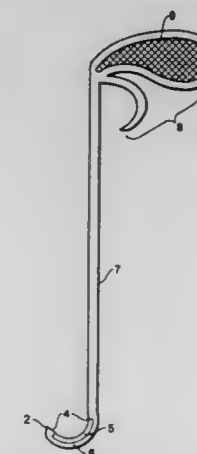
5,776,154

SURGICAL INSTRUMENTS FOR MAKING PRECISE INCISIONS IN A CARDIAC VESSEL

Charles S. Taylor, San Francisco; John J. Frantzen, Copperopolis, and Ivan Sepetka, Los Altos, all of Calif., assignors to Cardiothoracic Systems, Inc., Cupertino, Calif.
Filed Feb. 20, 1996, Ser. No. 603,329
Int. Cl.⁶ A61B 17/32

U.S. Cl. 606—167

2 Claims



1. A cutting instrument for making an incision having a predetermined length in the wall of a vessel, said cutting instrument comprising:
- a shaft having proximal and distal ends, and having a handle on said proximal end;
 - a curved element integrally attached to said distal end, said curved element ending in a sharp pointed tip for penetrating a wall of a vessel, and including a concave blade on a proximal edge thereof, said concave blade extending between said pointed tip and said distal end of said shaft, said pointed tip being fixed a predetermined distance from said distal end of said shaft; and
 - wherein said curved element is adapted to create a substantially linear incision in a wall of a vessel having a length corresponding substantially to said predetermined distance.

5,776,155

METHODS AND DEVICES FOR ATTACHING AND DETACHING TRANSMISSION COMPONENTS

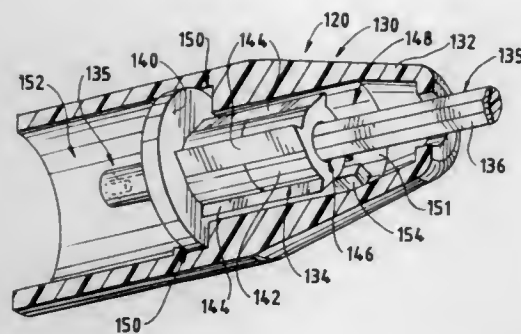
Jean Beaupre, Cincinnati, Ohio, and Gary Whipple, South Attleboro, Mass., assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed Dec. 23, 1996, Ser. No. 777,934
Int. Cl.⁶ A61N 7/00

U.S. Cl. 606—169

11 Claims

1. An ultrasonic surgical instrument comprising:
- a working member having a first end and a second end, the working member adapted to receive ultrasonic vibration and



to transmit the ultrasonic vibration from the first end to the second end of the working member;
a collar coupled to the working member, the collar having at least one tooth like member;
an adapter having at least one pawl-like member wherein the at least one pawl-like member of the adapter is engageable with the at least one tooth-like member of the collar so that the collar can rotate with the rotation of the adapter and the at least one pawl-like member of the adapter to slip out of engagement with the at least one tooth-like member of the collar when a predetermined torque is applied.

5,776,156

ENDOSCOPIC CUTTING INSTRUMENT

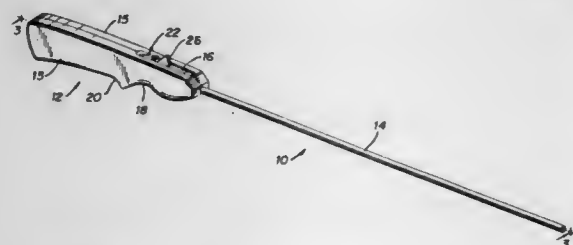
Oleg Shikhman, Fairfield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Sep. 5, 1995, Ser. No. 488,845

Int. Cl.⁶ A61B 17/32

U.S. Cl. 606—170

14 Claims



1. An endoscopic cutting instrument to be used in conjunction with endoscopic surgical procedures, which comprises:
 - a) a housing member dimensioned to be grasped by the hand of a user;
 - b) an elongated tubular member connected to the housing member and extending distally therefrom, the elongated member defining a longitudinal axis and having a longitudinal bore extending therethrough;
 - c) a drive member at least partially accommodated within the longitudinal bore of the tubular member and reciprocally longitudinally movable therein;
 - d) a blade member disposed at a distal end of the drive member and defining a cutting edge for incising tissue;
 - e) an actuating member associated with the housing member and operatively connected to the drive member, the actuating member movable to cause corresponding distal movement of the drive member to at least partially expose the blade member beyond a distal end of the tubular member; and
 - f) a release member including a locking surface selectively engageable with one of the drive member and the housing member wherein engagement of the locking surface of the release member with one of the drive member and the housing member prevents distal movement of the drive member and exposure of the blade member beyond the distal end of the tubular member, the release member movable independent of movement of the actuating member to cause release of the locking surface from the one of the drive member and the

housing member to permit distal movement of the drive member and exposure of the blade member.

5,776,157

LANCET APPARATUS AND METHODS

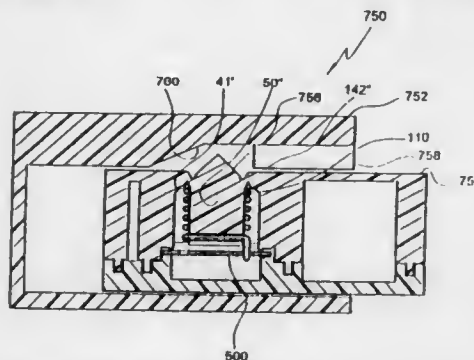
Gale H. Thorne; Gale H. Thorne, Jr., both of Bountiful; Charles V. Owen, Highland; Gary H. Stout, Farmington, and Tim L. Farnes, North Salt Lake, all of Utah, assignors to Specialized Health Products, Inc., Bountiful, Utah

Filed Oct. 2, 1996, Ser. No. 720,699

Int. Cl.⁶ A61B 17/32

U.S. Cl. 606—182

15 Claims



1. A one-time-use, disposable lancet actuating apparatus which is triggered to discharge a lancet tip from a lancet housing and to retract the lancet tip into the lancet housing for safe disposal, said apparatus comprising:

the lancet housing comprising at least one frangible part;
a lancet blade disposed within the lancet housing and comprising the lancet tip;

means for storing energy which is also disposed within the lancet housing and which is adapted to be selectively released from a state of high potential energy to provide a unidirectional angular form of kinetic energy, said energy storing means comprising means for driving said blade linearly outward from and inward into said lancet housing as a result of said angular form of kinetic energy and for communicating with a catch which further communicates with a triggerable release;

said lancet housing further comprising a hub which in an initial state is an integral and is a frangibly releasable part of said lancet housing, said hub comprising a frangibly releasing section the catch and a base which communicates through said frangibly releasing section to the rest of said lancet housing as a part of said triggerable release and which communicates through the hub to the catch for said communicating means; and

said frangibly releasing section comprising a pair of concentric grooves, at least one of said grooves circumscribing said base, said grooves in combination defining a region, interposed between said grooves, in which substantially all segments of said lancet housing which frange when the base of the hub is placed under stress and separated from the rest of the lancet housing are disposed.

5,776,158

PERMANENT PIGMENT APPLICATOR HAVING A DETACHABLE NEEDLE COUPLER

Kuei Chun Chou, Taiwan, China, assignor to Mel-Chi-Na Beauty International, Inc., Irvine, Calif.

Division of Ser. No. 97,936, Jul. 26, 1993, Pat. No. 5,472,449.

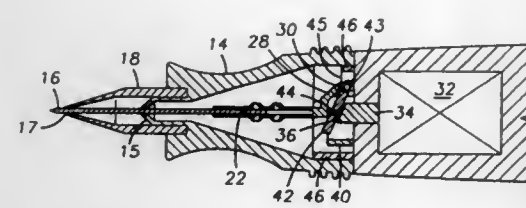
This application Apr. 27, 1995, Ser. No. 429,724

Int. Cl.⁶ B43K 5/00

U.S. Cl. 606—186

5 Claims

1. A pigment applicator device comprising:
 - a body portion;



a drive mechanism contained substantially within the body portion;
a needle; and

a needle coupler that receives the needle at a first end and connects to the drive mechanism at a second end, the needle coupler having a needle chamber that receives the needle at the first end and an anchor section that detachably couples the needle coupler at the second end to the drive mechanism, wherein the anchor section is coupled to the drive mechanism with an interference fit and can be coupled and decoupled from the drive mechanism during normal operation.

5,776,159

COMBINATION DISSECTOR AND EXPANDER

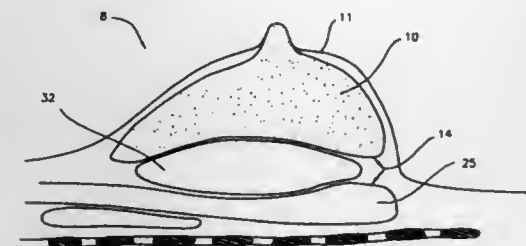
Roderick A. Young, Palo Alto, Calif., assignor to General Surgical Innovations, Inc., Cupertino, Calif.

Filed Oct. 3, 1996, Ser. No. 726,072

Int. Cl.⁶ A61F 2/12

U.S. Cl. 606—190

8 Claims



1. A method of using an inflatable device to dissect a tissue pocket underlying the skin and to thereafter expand the dissected tissue pocket, the method comprising the steps of:
 - making an incision through the skin to access desired tissue layers;
 - inserting the inflatable device into the incision;
 - advancing the inflatable device between the tissue layers to a location remote from the incision where it is desired to create a tissue pocket;
 - dissecting the tissue layers to create the tissue pocket by inflating the inflatable device with a fluid to a selected fill volume or pressure;
 - reducing the fluid volume of the inflatable device to a level appropriate for long term tissue expansion; and
 - gradually expanding the dissected tissue pocket by adjusting the fill volume of the inflatable device over a predetermined period of time.

5,776,160

WINGED BILIARY STENT

Pankaj Jay Pasricha, and Anthony N. Kalloo, both of Columbia, Md., assignors to Pankaj Pasricha, and Anthony Kalloo

Division of Ser. No. 190,465, Feb. 2, 1994, Pat. No. 5,486,191.

This application May 18, 1995, Ser. No. 443,755

Int. Cl.⁶ A61M 29/00

U.S. Cl. 606—191

12 Claims

1. A method of providing for flow through a biological duct having a portion that is at least partially obstructed or constricted, comprising the steps of:



providing a structure comprising:

an elongated main body member having first and second longitudinal ends and a longitudinal axis extending therebetween; and a plurality of wing elements projecting outwardly from said main body member, said wing elements being substantially uniformly distributed about an outer circumference of said main body member, each said wing element extending in a helical configuration along said main body member so as to have a length greater than the length of said main body member, each said wing member having first and second longitudinal side faces along which fluid flows due to the action of surface tension provided by such side faces; and

inserting said structure into the biological duct so that it extends along at least a substantial portion of the constricted or partially obstructed portion thereof; whereby biological fluid is enabled to flow along said side faces of said wing members and further whereby axial displacement of said structure within said duct is resisted.

5,776,161

MEDICAL STENTS, APPARATUS AND METHOD FOR MAKING SAME

Oren Globerman, Holon, Israel, assignor to Instent, Inc., Eden Prairie, Minn.

Filed Oct. 16, 1995, Ser. No. 543,337

Int. Cl.⁶ A61M 29/00

U.S. Cl. 606—194

25 Claims



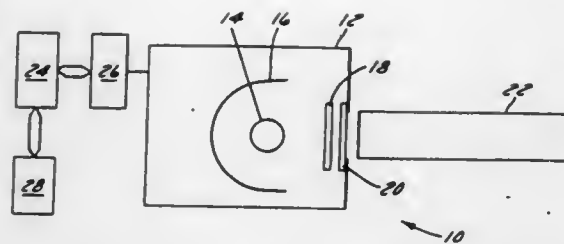
1. A medical stent, comprising:

at least two radial rings, each of said rings being curved into peaks and valleys, and further having windings, each of said rings having both a constricted state and an expanded state corresponding to the constricted and expanded state of said windings of said stent, said constricted state being a state of said rings in which said windings are curled in shape, said expanded state being a state of said rings in which said windings are straightened such that each of said rings becomes substantially circular and of greater diameter than said ring in said constricted state; and,

1. In an implantable cardiac medical device having the capability of sensing cardiac events on a sensing lead positioned in relation with the patient's heart and storing the electrogram (EGM) of the heart in device memory in response thereto, a method of recording an EGM epoch in an oversensing condition comprising the steps of:

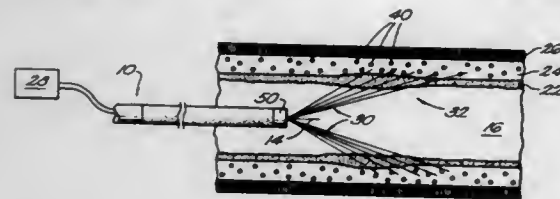
- establishing oversense event criteria;

first signal source for providing a first signal, said first signal having a first frequency;
 a second signal source for providing a second signal, said second signal having a second frequency, said second frequency being different from said first frequency;
 control means operatively connected to said first signal source and to said second signal source for controlling at least one from the group of amplitude, frequency, phase, current, or pulse width of at least one of said first signal and said second signal, thereby generating a first controlled signal and a second controlled signal;
 mixing means, operatively connected to said control means, for combining at least a portion said first controlled signal and at least a portion of said second controlled signal and producing a resultant signal having a frequency which is the sum of said first frequency and said second frequency;
 electrode means operatively connected to said control means and to said mixing means for applying at least one of said first controlled signal, said second controlled signal, or said resultant signal to the skin of a person, said signal being an applied signal; and monitoring means operatively connected to said control means for recording information about said applied signal and retaining said recorded information within the stimulator.



filtering and controlling the spectrum of the pulsed radiation output, wherein the step of providing a pulsed radiation output includes the step of generating the pulsed radiation output over at least one continuous band of wavelengths; and wherein said step of controlling the pulse width includes the step of providing a pulse width in the range of about 100 microseconds to 50 milliseconds with energy density of the pulsed radiation output at the treatment area of at least 0.2 W/cm²; and wherein the energy density of the pulsed radiation output at the treatment area is greater than 90 J/cm² per treatment.

5,776,174
STABILIZATION OF VASCULAR LESIONS BY ULTRAVIOLET RADIATION
 Robert A. Van Tassel, Excelsior, Minn., assignor to Illumenex Corporation, Plymouth, Minn.
 Filed Jan. 30, 1995, Ser. No. 382,095
 Int. Cl.⁶ A61N 5/06
 U.S. Cl. 607—89 6 Claims

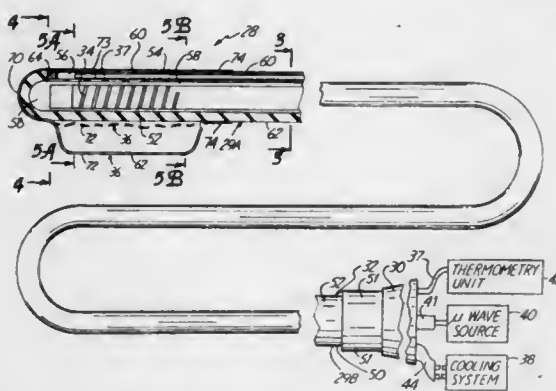


1. A method of treating an unstable atherosclerotic lesion comprising:
 disposing an optical waveguide means inside a blood vessel;
 locating the waveguide means adjacent to an atherosclerotic lesion site within the vessel; and
 irradiating the lesion site with non-ablative, cytotoxic UV radiation having a wavelength ranging from about 240–280 nanometers via said optical waveguide means to inactivate smooth muscle cells in the vicinity of the lesion site without the use of either angioplasty or a photoactivatable psoralen.

5,776,175
METHOD AND APPARATUS FOR TREATMENT OF CANCER USING PULSED ELECTROMAGNETIC RADIATION
 Shimon Eckhouse, and Michael Kreindel, both of Haifa, Israel, assignors to ESC Medical Systems Ltd., Yokneam, Israel
 Filed Sep. 29, 1995, Ser. No. 536,985
 Int. Cl.⁶ A61F 2/00
 U.S. Cl. 607—100 11 Claims

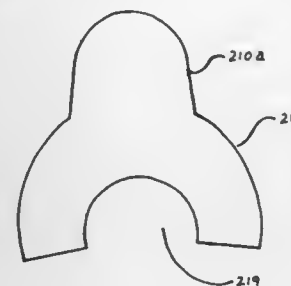
1. A method for the hyperthermic treatment of tumors with electromagnetic radiation comprising the steps of:
 providing pulsed radiation cutout from a radiation source;
 directing the pulsed radiation output toward a tumor;
 controlling the pulse-width of the pulsed radiation output;
 focusing the radiation source for controlling the power density of the pulsed radiation output; and

5,776,176
MICROWAVE ANTENNA FOR ARTERIAL FOR ARTERIAL MICROWAVE APPLICATOR
 Eric N. Rudie, Maple Grove, Minn., assignor to Urologix Inc., Minneapolis, Minn.
 Filed Jun. 17, 1996, Ser. No. 672,505
 Int. Cl.⁶ A61N 5/02
 U.S. Cl. 607—101 22 Claims



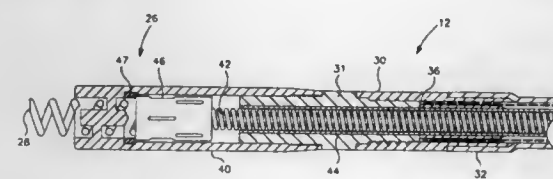
1. A device for cardiovascular microwave thermal therapy, the device comprising,
 a catheter;
 a coaxial cable carried by the catheter, the coaxial cable having a proximal end, a distal end, an outer insulator, an outer conductor, an inner insulator and an inner conductor, the coaxial cable further having a transition portion between the distal and proximal ends adjacent the distal end of the cable wherein the inner insulator has a reduced diameter portion adjacent the distal end of the cable;
 a supplemental outer insulator tube disposed about the reduced diameter portion of the inner insulator, and disposed adjacent an end of the outer insulator of the coaxial cable;
 an antenna extending from the distal portion of the coaxial cable and having a first section, a second section of equal length to the first section and a point intermediate to the first and second sections, the intermediate point electrically connected to the outer conductor, the antenna being disposed about the reduced diameter portion of the inner insulator; and
 impedance matching means connected to the inner conductor and to the second section for matching impedances of the antenna and the coaxial cable.

5,776,177
C-SHAPED HEAT PACK FOR THERMAL TREATMENT OF BREAST
 Virginia MacWhinnie, and John V. MacWhinnie, both of R.R. 519 Deerfield Rd., Water Mill, N.Y. 11976
 Continuation-in-part of Ser. No. 15,213, Feb. 9, 1993, Pat. No. 5,441,534, which is a continuation-in-part of Ser. No. 995,509, Dec. 21, 1992, Pat. No. 5,304,215. This application Mar. 8, 1995, Ser. No. 400,860
 Int. Cl.⁶ A61F 2/00
 U.S. Cl. 607—108 6 Claims



1. A thermal heat pack adapted to closely correspond to a three dimensional contour of a female breast of a user of said heat pack, said heat pack heating adjacent skin area of the breast of the user; said thermal heat pack comprising:
 a generally c-shaped conforming member having a pair of ends separated by a space therebetween;
 said c-shaped conforming member including a curved portion having respective end portions spaced apart from each other at opposite ends of said curved portion;
 said c-shaped conforming member having a recess within a central region of said c-shaped conforming member;
 said c-shaped conforming member including pliant heat conducting material,
 said c-shaped conforming member being bendable and conformable from a flattened shape to a protruding shape corresponding to an outer contour of the female breast, wherein said c-shaped conforming member uniformly applies heat to the breast,
 wherein further said c-shaped conforming member further includes a separation between each respective end of said c-shaped conforming member,
 said heat pack further having an appendage handle adapted to be inserted under an armpit of the user of said heat pack.

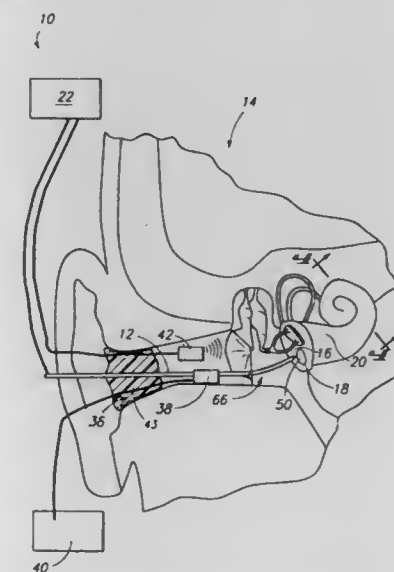
5,776,178
MEDICAL ELECTRICAL LEAD WITH SURFACE TREATMENT FOR ENHANCED FIXATION
 Peter J. Pohndorf, Stillwater; Linda L. Lach, Vadnais Heights; Mark Holle, Blaine, and Terrell M. Williams, Brooklyn Park, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
 Filed Feb. 21, 1996, Ser. No. 604,215
 Int. Cl.⁶ A61N 1/05
 U.S. Cl. 607—127 19 Claims



1. A medical electrical lead comprising:
 an electrical conductor having a first end and a second end;
 an insulating sleeve covering the electrical conductor between the first end and the second end; and

a helix coupled to the first end of the electrical conductor, the helix having a distal end and surface treated portion, surface treated portion having a uniform coating of a bioabsorbable material.

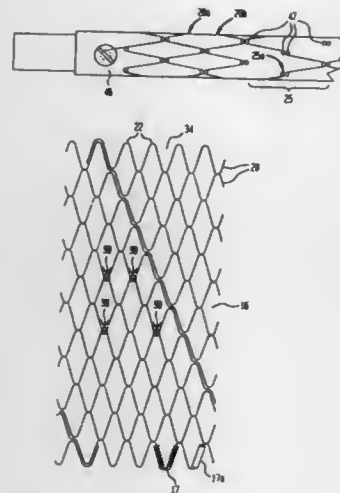
5,776,179
METHOD FOR EVALUATING INNER EAR HEARING LOSS
 Tianying Ren, and Alfred L. Nuttall, both of Ann Arbor, Mich., assignors to The University of Michigan, Ann Arbor, Mich.
 Filed Oct. 6, 1995, Ser. No. 539,821
 Int. Cl.⁶ A61N 1/00
 U.S. Cl. 607—137 21 Claims



1. A method for evaluating the health of hair cells within the intact cochlea of a mammal, the method comprising:
 providing a patient ear to be analyzed;
 providing an electrode configured for an insertion into the patient's middle ear;
 inserting the electrode into the middle ear, external of the cochlea;
 positioning the inserted electrode proximate the cochlea;
 applying a continuous sinusoidal electric current at a stimulation frequency to the electrode so as to excite outer hair cells within the inner ear and electrically evoke activity therefrom; and
 detecting electrically evoked otoacoustic emissions emitted from within the inner ear.

5,776,180
BIFURCATED ENDOLUMINAL PROSTHESIS
 George Goicoechea, Grand Bahama, Bahamas; John Hudson, Clearwater, Fla.; Claude Mialhe, Draguignan, France, and Andrew H. Cragg, Edina, Minn., assignors to Boston Scientific Technology, Maple Grove, Minn.
 Division of Ser. No. 317,763, Oct. 4, 1994, Pat. No. 5,609,627, which is a continuation-in-part of Ser. No. 312,881, Sep. 27, 1994. This application Jun. 5, 1995, Ser. No. 462,272
 Claims priority, application European Pat. Off., Feb. 9, 1994, 94400284.9; Jun. 10, 1994, 94401306.9
 Int. Cl.⁶ A61F 2/06 2 Claims

1. A method of making an endoluminal stent having a plurality of hoops which are axially displaced in a tubular configuration, each of said hoops being formed by a substantially complete turn of a sinuous wire with apices at longitudinal ends that lie in planes



perpendicular to the longitudinal axis of the stent, said method comprising the steps of:

- winding a wire in a zig-zag pattern around a mandrel having a plurality of upstanding pins defining said zig-zag pattern to form a first hoop having apices at longitudinal ends that lie in planes perpendicular to the longitudinal axis of said mandrel;
- longitudinally displacing said wire with respect to the axis of said mandrel;
- winding said wire in a zig-zag pattern around a plurality of upstanding pins on said mandrel to form a second hoop, adjacent said first hoop, having apices juxtaposed to the apices of said first circumferential hoop and longitudinal ends that lie in planes perpendicular to the longitudinal axis of said mandrel;
- longitudinally displacing said wire with respect to the axis of said mandrel;
- repeating steps (a)-(d) to form additional hoops until a predetermined number of hoops are formed;
- annealing said wire on said mandrel;
- cooling said wire on said mandrel;
- removing said wire from said mandrel;
- providing a separate securing means; and
- securing together at least two juxtaposed apices of adjacent hoops with said separate securing means to permit limited relative movement between the apices.

5,776,181

EXPANDABLE STENT

J. Michael Lee, Halifax; Katherin H. Crewe, and Christine Mastrangelo, both of Etobicoke, all of Canada, assignors to MedStent Inc., Rexdale, Canada

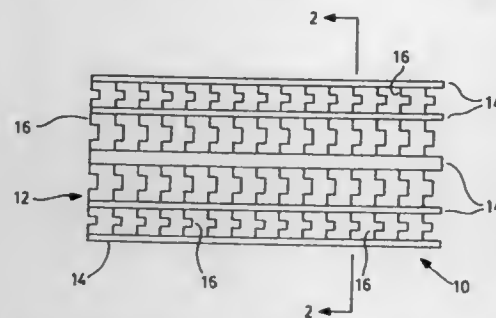
Filed Jul. 25, 1996, Ser. No. 687,223

Claims priority, application United Kingdom, Jul. 25, 1995, 9515282; Mar. 15, 1996, 9605486

Int. Cl.⁶ A61F 2/06

U.S. Cl. 623-1

61 Claims



1. A stent having a generally tubular body with a plurality of circumferentially spaced longitudinal struts extending parallel to a

longitudinal axis of said body, circumferentially adjacent pairs of said struts being interconnected solely by a set of linkages axially spaced from one another and each including a plurality of links connected to one another, adjacent links of said linkages being angularly disposed relative to one another such that a radial force causes relative rotation between adjacent links and plastic deformation thereof to permit radial expansion of said stent, said struts inhibiting relative axial movement between said linkages and forestening of said body and said struts remaining in substantially parallel relationship with said longitudinal axis upon radial expansion of said stent and wherein all of said sets of linkages are unidirectionally facing with one of said links of each linkage being offset axially from the connection of said linkage to said struts in a common direction.

5,776,182

BLOOD CONTACT SURFACES EMPLOYING NATURAL SUBENDOTHELIAL MATRIX AND METHOD FOR MAKING AND USING THE SAME

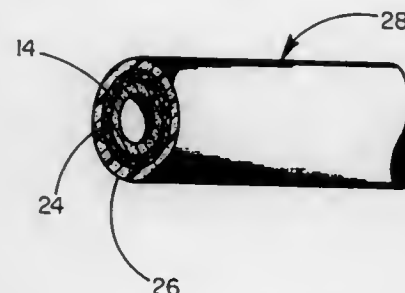
William Carl Bruchman, Flagstaff, and Anita Jean Switzer, Parks, both of Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 469,976, Jun. 6, 1995, abandoned, which is a division of Ser. No. 424,698, Apr. 19, 1995, abandoned, which is a continuation-in-part of Ser. No. 235,045, Apr. 29, 1994, abandoned. This application Dec. 2, 1996, Ser. No. 759,849

Int. Cl.⁶ A61F 2/06

U.S. Cl. 623-1

24 Claims



1. A blood contact material which comprises:
a substratum;
a blood contact layer attached to the substratum comprising a preserved subendothelial matrix layer substantially free of donor endothelial cells;
wherein the preserved subendothelial matrix layer comprises chondroitin sulfate proteoglycans, fibronectin, collagen, glycosaminoglycan-bearing proteoglycans, and elastin;
wherein the preserved subendothelial matrix layer is suitable to serve as a primary blood contact surface;
wherein the substratum comprises a tubular blood vessel having an exterior and interior,
wherein the exterior of the blood vessel is surrounded by a microporous polymeric sheath, the sheath being permeable to macromolecules, while preventing cell ingrowth across the sheath; and
wherein the blood contact surface comprises the interior of the tubular blood vessel.

5,776,183

EXPANDABLE STENT

Nozomu Kanesaka, 36 Cathy Rd., and George A. Tashji, 24 Cathy Rd., both of Hillsdale, N.J. 07642

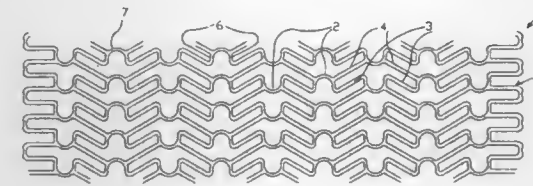
Filed Aug. 23, 1996, Ser. No. 702,167

Int. Cl.⁶ A61F 2/06

U.S. Cl. 623-1

18 Claims

1. An expandable tubular reinforcing member used for a body lumen comprising,



5,776,185

CARDIOVASCULAR GRAFT

Alessandro Verona, Via Griziotti 4 IT-20145, Milan, and Giuseppe Poletti, Torino, both of Italy, assignors to Alessandro Verona, Milan, Italy

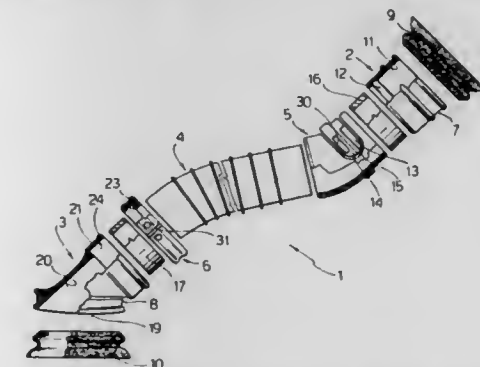
PCT No. PCT/EP95/03800, § 371 Date Mar. 26, 1997, § 102(e) Date Mar. 26, 1997, PCT Pub. No. WO96/09800, PCT Pub. Date Apr. 4, 1996

PCT Filed Sep. 26, 1995, Ser. No. 817,969

Claims priority, application Italy, Sep. 27, 1994, TO94A0748 Int. Cl.⁶ A61F 2/06:2/24:1/10

U.S. Cl. 623-1

20 Claims



a plurality of rows of joint members, each of the rows being spaced for a predetermined distance away from each other along a central longitudinal axis of the reinforcing member, each row being formed of a plurality of said joint members spaced apart from each other and arranged circularly around the central axis with a first diameter, and

a plurality of rows of flexible elongated members, each of the rows being situated between adjacent two rows of the joint members and arranged circularly around the central axis, said elongated members in each of the rows being inclined substantially in a same direction and diagonally with an acute angle with respect to a line on a surface of the reinforcing member parallel to the central axis of the reinforcing member, each of said elongated members connecting two of the joint members situated in adjacent two rows of the joint members, said elongated members in two rows sandwiching one row of the joint members to be connected together and being arranged substantially symmetrically relative to said one row of the joint members situated therebetween so that when a radial force is applied from an inside of the reinforcing member, the elongated members are pivoted relative to the joint members to thereby allow the reinforcing member to have a second diameter larger than the first diameter.

5,776,184

INTRAVASOULAR STENT AND METHOD

Ronald J. Tuch, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 482,346, Jun. 7, 1995, Pat. No. 5,679,400, which is a continuation-in-part of Ser. No. 52,878, Apr. 26, 1993, Pat. No. 5,464,650. This application Oct. 9, 1996, Ser. No. 728,541

Int. Cl.⁶ A61F 2/06

U.S. Cl. 623-1

12 Claims



1. A device for delivery of a drug into a body lumen comprising:
(a) a catheter;
(b) a generally cylindrical, radially expandable stent body on the catheter; and
(c) a porous coating on the stent body comprising a polymer and a therapeutic substance in a solid/solid solution with the polymer such that the polymer has a first concentration of therapeutic substance on a portion of the coating nearest to the stent body and a second, lesser concentration of therapeutic substance on a portion of the coating away from the stent body.

5,776,186

ADJUSTABLE AND RETRIEVABLE GRAFT AND GRAFT DELIVERY SYSTEM FOR STENT-GRAFT SYSTEM AND METHODS OF IMPLANTATION

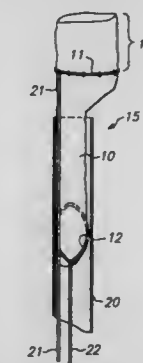
Renan Uflacker, Mount Pleasant, S.C., assignor to Endotex Interventional Systems, Inc., Menlo Park, Calif.

Division of Ser. No. 504,396, Jul. 19, 1995, Pat. No. 5,713,948. This application Sep. 25, 1997, Ser. No. 937,468

Int. Cl.⁶ A61F 2/06

U.S. Cl. 623-1

14 Claims



1. A method of implanting a graft of a stent-graft system within an aneurysm in a hollow-body organ or vessel, the method comprising steps of:
providing a graft having first and second end regions, a loop affixed to the graft near the first end region, the loop having first and second ends and a predetermined circumference, the loop assuming an elongated shape when compressed for delivery and resuming an expanded shape when the draft is

deployed, the loop spreading the graft to an expanded diameter when the graft is deployed, substantially without the loop sliding relative to the graft;

providing a delivery device having a manipulation lead disposed in an outer sheath, the manipulation lead including engagement means for releasably engaging the first and second ends; engaging the engagement means with the first and second ends; inserting the graft into the outer sheath of the delivery device by compressing the loop to assume an elongated shape; inserting the delivery device transluminally to deliver the graft to a position in the vicinity of the aneurysm; deploying the graft by retracting the outer sheath, the loop resuming the expanded shape and spreading the graft to the expanded diameter, substantially without the loop sliding relative to the graft; and moving the manipulation lead to adjust the graft to a desired position relative to the aneurysm.

5,776,187

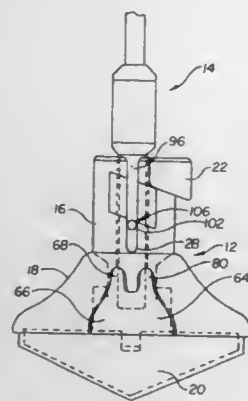
COMBINED HOLDER TOOL AND ROTATOR FOR A PROSTHETIC HEART VALVE

Kurt D. Krueger, Stacy; Averdon M. DeLeon, Shoreview, both of Minn.; William S. Nettekoven, Sandy, Utah; Kimberly A. Anderson, Eagan, and Michael J. Girard, Lino Lakes, both of Minn., assignors to St. Jude Medical, Inc., St. Paul, Minn. Continuation-in-part of Ser. No. 385,785, Feb. 9, 1995, abandoned. This application Aug. 5, 1996, Ser. No. 692,396

Int. Cl.⁶ A61F 2/24

U.S. Cl. 623-2

19 Claims



1. A device for engaging and gripping during implantation a heart valve prosthesis having two leaflets in an annulus with a substantially annular aperture therein, the prosthesis having a first perimeter and a second perimeter disposed on opposite sides of the annular aperture with the leaflets positioned therebetween, the device comprising:

an elongated handle having a proximal end and a keyed distal end;

an upstanding post extending in an axial direction having a proximal end and a distal end, the post comprising a substantially rigid material, the upstanding post having a keyed bore formed therein extending in the axial direction from the proximal end, the keyed bore adapted for receiving the elongated handle keyed distal end, the keyed bore shaped to substantially conform to the keyed distal end such that the keyed distal end of the elongated handle is moveable in the axial direction relative to the keyed bore and the keyed bore prevents rotation of the keyed distal end relative to the bore in a plane substantially perpendicular to the axial direction such that a torque applied to the handle is transferred to the post, and the handle is selectively removeable from the upstanding post; and

a head integral with the distal end of the post, the head having a gripping surface configured to couple with the first perimeter and extend into the annulus a distance less than a distance to

the second perimeter and generally conform to the leaflets, the gripping surface spaced apart from and not contacting the second perimeter, whereby the gripping surface of head may engage and grip the first perimeter of the heart valve prosthesis to facilitate rotation of the valve prosthesis relative to a sewing cuff during implantation.

5,776,188

DIRECT SUTURE ORIFICE FOR MECHANICAL HEART VALVE

Terry L. Shepherd, Shoreview; Guy Vanney, Blaine, and Kurt D. Krueger, Stacy, all of Minn., assignors to St. Jude Medical, Inc., St. Paul, Minn.

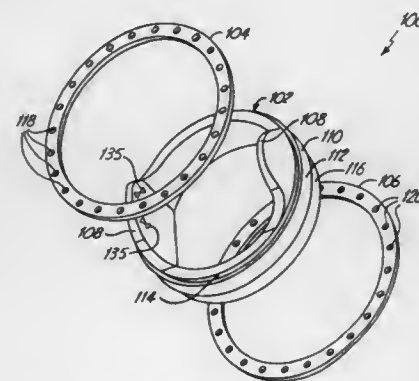
Continuation of Ser. No. 483,255, Jun. 7, 1995, abandoned.

This application Nov. 12, 1996, Ser. No. 748,071

Int. Cl.⁶ A61F 2/24

U.S. Cl. 623-2

18 Claims



1. A prosthetic heart valve for implantation in a heart, comprising:

an orifice body having an outer circumference and defining a lumen therethrough;

at least one occluder carried in the lumen of the orifice body and movable between an open position allowing flow through the lumen and a closed position blocking flow therethrough;

an orifice flange having a plurality of suture holes defined therein, the orifice flange extending around and generally conforming to the outer circumference of the orifice body, the plurality of suture holes adapted for receiving a suture there-through;

a separate flange ring shaped to generally conform to the outer circumference of the orifice body and having a plurality of suture holes defined therein adapted for receiving the suture for attaching the heart valve to tissue of the heart and urging the orifice flange and the flange ring together such that a tissue annulus of the heart can be securely held between the orifice flange and the flange ring to reduce blood leakage therepast; and

a gasket adjacent one of either the orifice flange or the flange ring for forming a tissue seal between the one flange ring and the tissue annulus to reduce blood leakage.

5,776,189

CARDIAC VALVULAR SUPPORT PROSTHESIS

Naqeeb Khalid, 764/N Samanabad, Lahore, Pakistan

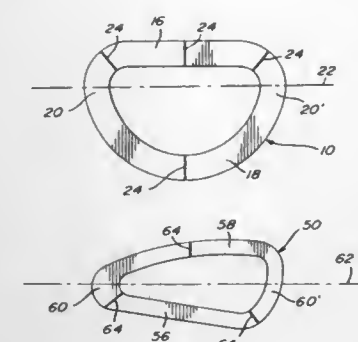
Filed Mar. 5, 1997, Ser. No. 811,211

Int. Cl.⁶ A61F 2/24

U.S. Cl. 623-2

10 Claims

1. A support prosthesis for a natural human heart valve having an annulus of generally oval configuration with a major axis and a minor axis and at least two leaflets stemming from said annulus and each moving along a naturally preordained path during systolic contraction or diastolic expansion, said support prosthesis consisting of an oblong, annular flexible member of a size and shape to fit



against said annulus, said member having a longitudinal axis and being made of a biocompatible material exhibiting elasticity only along said longitudinal axis so as to permit dilatation of said annulus along the major axis thereof, in response to hemodynamic and functional changes, while preventing dilatation of said annulus along the minor axis thereof so that the path along which each said leaflet travels remains unaltered.

5,776,190

CANNULA PUMPS FOR TEMPORARY CARDIAC SUPPORT AND METHODS OF THEIR APPLICATION AND USE

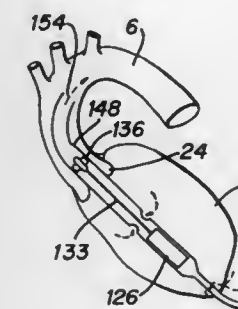
Robert Jarvik, 124 W. 60 St., New York, N.Y. 10023

Division of Ser. No. 15,246, Feb. 5, 1993, Pat. No. 5,376,114, which is a continuation-in-part of Ser. No. 969,034, Oct. 30, 1992. This application Oct. 19, 1994, Ser. No. 325,848

Int. Cl.⁶ A61F 2/24

U.S. Cl. 623-3

19 Claims



1. A method for supporting all or part of the pumping function of a heart, comprising the steps of:

a) providing a cannula pump including a cannula housing having a pump section and a motor section, the pump section having a pumping mechanism, the motor section having an electric motor mounted therein for imparting movement to the pumping mechanism, the pump section and motor section having substantially equal outer diameters, the cannula housing further including at least one blood inflow opening disposed in the pump section to permit blood to enter the pump section and at least one blood outflow opening to permit blood to exit the cannula housing;

b) positioning the cannula pump within one of the left and right ventricles of a patient's heart such that at least the electric motor is contained within the one ventricle and the outflow opening of the cannula housing is disposed within a respective artery associated with the one ventricle; and

c) activating the electric motor such that the pumping mechanism directs blood entering through the inflow opening of the cannula housing through the outflow opening of the cannula housing.

5,776,191 FIXATION SYSTEM FOR INTRAOCULAR LENS STRUCTURES

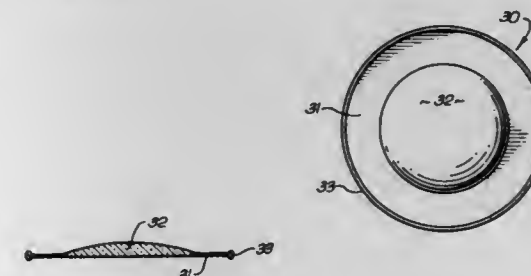
Thomas R. Mazzocco, Granada Hills, Calif., assignor to Staar Surgical Company, Monrovia, Calif.

Continuation of Ser. No. 184,503, Jan. 19, 1994, abandoned, which is a continuation of Ser. No. 400,655, Jul. 22, 1982, abandoned, which is a continuation-in-part of Ser. No. 346,105, Feb. 5, 1982, Pat. No. 4,573,998. This application Dec. 13, 1994, Ser. No. 356,789

Int. Cl.⁶ A61F 2/16

U.S. Cl. 623-6

15 Claims



1. An intraocular lens which comprises:

an optical zone portion;

a substantially resilient, deformable, compliant, annular skirt having a uniform surface continuous with the periphery of said optical zone portion of said lens structure;

said optical zone portion being deformable by compressing, rolling, folding, stretching or by a combination of such forces to temporarily reduce said optical zone portion to a diameter of 80% or less of the cross-sectional diameter of said optical zone portion in an unstressed state;

said annular skirt being integral with said optical zone portion and having a minimum diameter at least about 20% greater than the diameter of said optical zone portion in an unstressed state, in all directions perpendicular to the optical axis of said optical zone portion; wherein when placement is effected in the eye, the ocular tissue in front of and behind said annular skirt prevents displacement of the lens structure in the anterior or posterior axis without iris engagement.

5,776,192

ARTIFICIAL LENS INSERTIBLE BETWEEN THE IRIS AND NATURAL LENS OF THE EYE

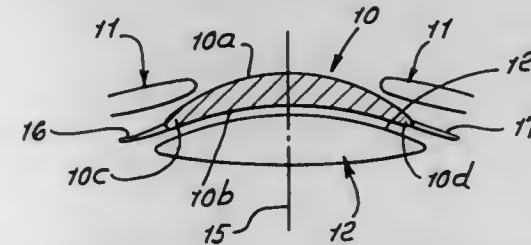
Henry H. McDonald, Pasadena, Calif., assignor to Surgical Concepts, Inc., Newport Beach, Calif.

Division of Ser. No. 229,793, Apr. 19, 1994, abandoned. This application Mar. 26, 1996, Ser. No. 622,104

Int. Cl.⁶ A61F 2/16

U.S. Cl. 623-6

7 Claims



1. The method of inserting and positioning an artificial soft lens in the eye between the iris and the natural lens, that comprises:

a) providing said lens to be compliant, to have opposed surfaces, and to have a medial transparent zone and darkened border zones, the lens having an aspherical configuration,

b) said lens also provided and configured to flex under pressure exerted by the iris whereby at least one of said opposed surfaces yieldably and resiliently deforms.

c) and inserting said lens into the eye and positioning the lens to extend between the iris and the natural lens of the eye, and allowing said lens, including said darkened border zones, to flex under pressure exerted by the iris.

5,776,193

BONE GRAFTING MATRIX

Michael K. Kwan, Cupertino; Stephen D. Pacetti, Sunnyvale, and Ronald K. Yamamoto, San Francisco, all of Calif., assignors to Orquest, Inc., Mountain View, Calif.

Filed Apr. 17, 1996, Ser. No. 633,554

Int. Cl.⁶ A61F 2/28; 2/02

U.S. Cl. 623—16

10 Claims

1. A porous, biodegradable three-dimensionally fixed matrix for the replacement of bone which maintains physical integrity for a period of at least about three days after implant and its porosity for a period of about seven to fourteen days after implant into a physiological environment in which bone replacement is occurring, comprising a bound network of water insoluble mineralized biopolymer fibers and a water insoluble binder, wherein said mineralized biopolymer fibers comprise immobile calcium phosphate mineral.

5,776,194

INTERMEDULLARY ROD APPARATUS AND METHODS OF REPAIRING PROXIMAL HUMERUS FRACTURES

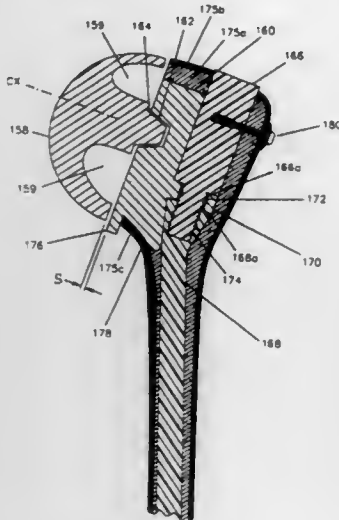
Edward John Mikol, Nashville, Tenn., and Thomas John Chambers, Key Biscayne, Fla., assignors to Nuvana Medical Innovations, LLC, Myrtle Beach, S.C.

Filed Apr. 25, 1996, Ser. No. 638,940

Int. Cl.⁶ A61F 2/28; A61B 17/56

U.S. Cl. 623—16

14 Claims



1. A bone stabilizing device, comprising:
a stem member, extending substantially along a first longitudinal axis, for insertion into a bone cavity, said stem member having a distal end and a proximal end;
an extension member, extending substantially along a second longitudinal axis, having a distal and a proximal end, said distal end connected to said proximal end of said stem member; and
means for securing a bone to said extension member comprising a securing member having a first end affixed into the extension member and a second end spaced apart from said extension member, and means connected to said second end for pressing on a surface of the bone to urge the bone against said extension member.

5,776,195
PROCEDURE AND DEVICE FOR FACILITATING OSSEOUS GROWTH

Raymond René Derycke, 66, Avenue Victor Hugo, 75116 Paris, France

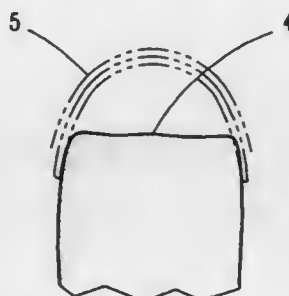
Filed Dec. 24, 1996, Ser. No. 773,085

Claims priority, application France, Dec. 28, 1995, 95 15675

Int. Cl.⁶ A61F 2/28; A61C 13/12

U.S. Cl. 623—16

20 Claims



1. An implantable device for facilitating osseous growth, said device comprising:

an elastic biasing structure for interposition between a surface of a bone and a membrane arranged beneath tissues overlying the bone,

said elastic biasing structure being resiliently deformable between a retracted configuration and an expanded configuration, said elastic biasing structure at said retracted configuration presenting a minimum thickness which permits it to be interposed between the bone surface and the membrane, wherein said elastic biasing structure is capable of lifting the membrane with a controlled amount of pressure when said elastic biasing structure moves from said retracted position toward said expanded position; and

holding means for temporarily holding said elastic biasing structure in said retracted configuration until scarring of the overlying tissues has taken place,

wherein said elastic biasing structure, while in said retracted configuration, is capable of being interposed between the bone surface and the membrane without exerting any appreciable stress on the membrane, and when said elastic biasing structure moves from said retracted configuration to said expanded configuration, said elastic biasing structure is configured such that it can create an empty space over the bone surface.

18. A procedure for facilitating osseous growth, said procedure comprising:

removing periosteum from a surface of a bone at which osseous growth is intended;

interposing a membrane between the bone surface and tissues overlying the bone, said membrane being intended to delimit a volume in which osseous growth, at the surface of the bone, can take place; and

applying a stress or pressure of a controlled intensity to the membrane in order to create, between the bone and the membrane, a volume which is sufficient for good osseous growth, said stress or pressure being applied after having verified good closure and scarring of the overlying tissues.

5,776,196

PROSTHESIS FOR SPANNING A SPACE FORMED UPON REMOVAL OF AN INTERVERTEBRAL DISK

Hiromi Matsuzaki; Satoshi Ojima, and Masashi Nakamura, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 306,430, Sep. 19, 1994, Pat. No. 5,534,031, which is a continuation of Ser. No. 9,916, Jan. 27, 1993, abandoned. This application Mar. 5, 1996, Ser. No. 610,835

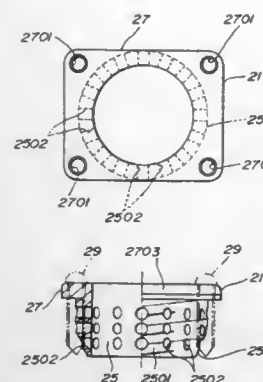
Claims priority, application Japan, Jan. 28, 1992, 4-038566

Int. Cl.⁶ A61F 2/44

U.S. Cl. 623—17

8 Claims

1. An artificial vertebra spacer comprising:



a hollow cylindrical member sized to be embedded in two adjacent vertebrae;
screw means, provided on an outer circumferential surface of said hollow cylindrical member, for connecting said hollow cylindrical member with said two adjacent vertebrae by threadably engaging said two adjacent vertebrae;
fixing means for fixing said hollow cylindrical member to said vertebrae;
wherein said hollow cylindrical member further comprises a substantially rectangular flange portion at one end thereof and said flange portion is provided with at least one hole, and wherein said fixing means comprises at least one screw passing through said at least one hole.

5,776,197

ADJUSTABLE VERTEBRAL BODY REPLACEMENT

Louis-Marie Rabbe, Mantoche, France; Lawrence M. Boyd, Memphis, Tenn.; Jean-Louis Chevalier, Merlimont-Plage, and Jean-Charles Moreau, Paris-Plage, both of France, assignors to SDGI Holdings, Inc., Wilmington, Del.

Division of Ser. No. 647,272, May 13, 1996, Pat. No.

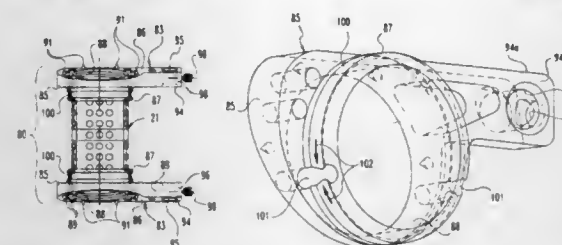
5,702,453, which is a continuation of Ser. No. 353,566, Dec. 9, 1994, abandoned. This application Dec. 11, 1996, Ser. No.

763,745

Int. Cl.⁶ A61F 2/44

U.S. Cl. 623—17

9 Claims



1. A vertebral replacement implant for interposition in a space left by one or more removed vertebrae between adjacent intact vertebrae, comprising:

a replacement body with opposite ends sized to span a portion of the spa between the intact vertebrae, said replacement body having first threads define thereon at each of said opposite ends;

a pair of endplates each having an end surface for contacting a respective one of the intact vertebrae when the implant is interposed in the space, each of said endplates having a cylindrical portion integrally extending from said end surface, said cylindrical portion having a length projecting from said end surface and including second threads defined thereon configured to threadably engage the first threads on said replacement body; and

a crimping notch formed along a portion of said length of said cylindrical portion, said cylindrical portion being deformable at said crimping notch to close said notch and thereby reduce the circumference of said cylindrical portion about said replacement body when said body is threadably engaged to said endplate cylindrical portion.

5,776,198

ADJUSTABLE VERTEBRAL BODY REPLACEMENT

Louis-Marie Rabbe, Mantoche, France; Lawrence M. Boyd, Memphis, Tenn.; Jean-Louis Chevalier, Merlimont-Plage, and Jean-Charles Moreau, Paris-Plage, both of France, assignors to SDGI Holdings, Inc., Wilmington, Del.

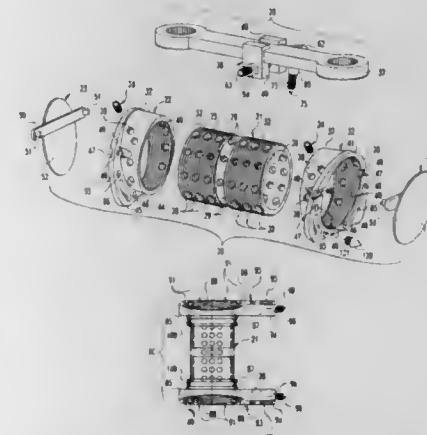
Continuation of Ser. No. 647,272, May 13, 1996, Pat. No. 5,702,453, which is a continuation of Ser. No. 353,566, Dec. 9, 1994, abandoned. This application Mar. 10, 1997, Ser. No.

814,115

Int. Cl.⁶ A61F 2/44

U.S. Cl. 623—17

23 Claims



1. A vertebral replacement implant for interposition in a space left by one or more removed vertebrae between adjacent intact vertebrae, comprising:

a replacement body having a cylindrical wall defining a hollow interior with opposite ends sized to span a portion of the space between the intact vertebrae, said cylindrical wall defining external threads extending from each of said opposite ends, said wall further defining a plurality of apertures in communication with said hollow interior, said aperture being of substantially equal size; and

a pair of endplates each having an end surface for contacting a respective one of the intact vertebrae when the implant is interposed in the space, each of said endplates having a cylindrical portion integrally extending from said end surface, said cylindrical portion defining internal threads configured to threadably engage said external threads on said replacement body.

5,776,199

ARTIFICIAL SPINAL FUSION IMPLANTS

Gary Karlin Michelson, Venice, Calif., assignor to Sofamor Danek Properties, Memphis, Tenn.

Continuation of Ser. No. 597,539, Feb. 2, 1996, abandoned, which is a continuation of Ser. No. 482,801, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 263,952, Jun.

22, 1994, abandoned, which is a continuation of Ser. No. 52,211, Apr. 22, 1993, abandoned, which is a continuation of Ser. No. 546,849, Jul. 2, 1990, abandoned, which is a continuation of Ser. No. 212,480, Jun. 28, 1988, abandoned. This

application May 2, 1997, Ser. No. 850,654

Int. Cl.⁶ A61F 2/44

U.S. Cl. 623—17

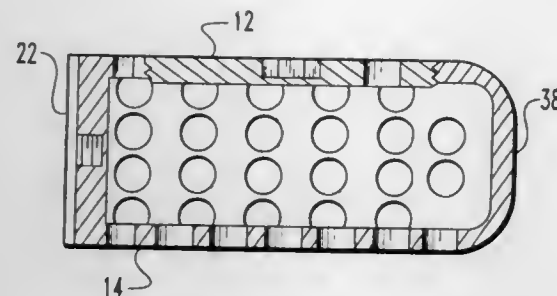
50 Claims

1. An implant for fusion of two adjacent vertebrae in the human spine after removal of disc material between endplates of the adjacent vertebrae, said implant comprising:

upper and lower walls and opposite side walls between said upper and lower walls.

said upper and lower walls having opposite surfaces configured to bear against and support a substantial portion of the endplates of the adjacent vertebrae,

said implant having a plurality of openings therethrough defined in at least said upper and lower walls, said openings being



sized to permit fusion bone growth in continuity through said implant between the vertebral endplates, said implant having a height substantially equal to the height of the space created by the removal of disc material from between the adjacent vertebrae and sized and shaped to be wholly contained within the space.

5,776,200

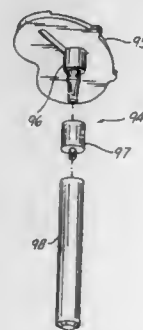
TIBIAL TRIAL PROSTHESIS AND BONE PREPARATION SYSTEM

Chris E. Johnson; Tim Vendrely, both of Memphis, Tenn.; Leo A. Whiteside, Bridgeton, Mo.; Thomas A. Carls, Memphis, Tenn.; John Steele, Aurora, Colo., and Khosrow Naraghian, Memphis, Tenn., assignors to Smith & Nephew, Inc., Memphis, Tenn.

Continuation of Ser. No. 389,100, Feb. 15, 1995, Pat. No. 5,609,642. This application Jun. 7, 1995, Ser. No. 472,815 Int. Cl.⁶ A61F 2/38

U.S. Cl. 623—20

22 Claims



1. A trial prosthesis kit for trial attachment to a patient's long bone during knee joint replacement surgery comprising:
 - a) a trial prep tray member, the prep tray member providing a trial articulating surface and a connecting taper portion;
 - b) a plurality of elongated trial stems, each having a generally uniform diameter enabling the stem to fit within the patient's long bone intramedullary canal; and
 - c) a pair of trial stem couplers that can each form a connection between the taper portion and a selected trial stem, each of said couplers providing a shaped connecting surface that forms a connection with a correspondingly-shaped connecting surface of the trial stem taper, the couplers defining different respective angular orientations between a selected trial prep tray member and a selected trial stem.

5,776,201

MODULAR FEMORAL TRIAL SYSTEM

Dennis P. Collieran, Plainville; Robert S. Brown, Boston, and David G. Sheehan, Carver, all of Mass., assignors to Johnson & Johnson Professional, Inc., Raynham, Mass.

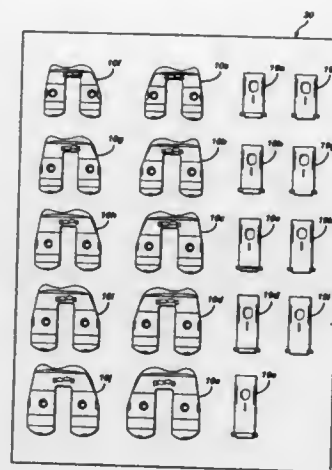
Filed Oct. 2, 1995, Ser. No. 537,023

Int. Cl.⁶ A61F 2/38

U.S. Cl. 623—20

5 Claims

1. A modular femoral trial kit for use in surgical procedures for implanting a femoral prosthesis comprising:



- a femoral base portion including medial and lateral condyle portions said condyle portions forming a groove therebetween;
- a plurality of removable attachable knee joint stabilizing adapters, each of said plurality of adapters comprising a base having a pair of side walls extending from said base and a fixation device, each of said plurality of adapters arranged to be removably attached with said fixation device to said femoral base portion to provide a knee joint stabilizing trial device wherein said side walls are fixable in a position adjacent said groove, wherein each of said plurality of adapters has a different stabilizing capacity.

5,776,202

JOINT PROSTHESIS

Franz Copf, Marienstr. 12, D-70178 Stuttgart; Gunter Rentsch, Hohestr. 5, D-70174 Stuttgart; Peter Reill, Schnarrenbergstr. 95, D-72076 Tübingen, all of Germany, and Srecko Herman, Mekinceva 11, SI-6100 Ljubljana, Slovenia

PCT No. PCT/EP94/02977, § 371 Date Sep. 18, 1996, § 102(e) Date Sep. 18, 1996, PCT Pub. No. WO95/07060, PCT Pub. Date Mar. 16, 1995

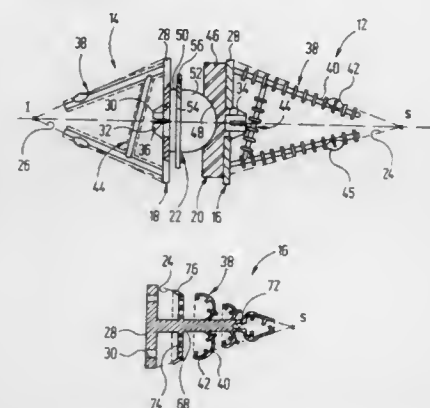
PCT Filed Sep. 7, 1994, Ser. No. 605,168

Claims priority, application Germany, Sep. 7, 1993, 43 30 248.3

Int. Cl.⁶ A61F 2/42

U.S. Cl. 623—21

41 Claims



1. A joint prosthesis for insertion into a bone cavity of a small joint, comprising:

an anchoring unit and a joint element carried by the anchoring unit, the anchoring unit comprising a mounting plate and a plurality of spaced elongated anchoring elements extending away from the mounting plate and cooperating to define a generally frustoconical outer contour of the anchoring unit, each anchoring element being formed of a histocompatible

alloy and comprising a plurality of radial anchoring disks axially spaced along its length and an end portion, the end portion being elastically deformable to automatically conform the anchoring unit to the geometry of the bone cavity when being inserted into the bone cavity.

5,776,203

METATARSAL PHALANGEAL SESAMOID PROSTHETIC JOINT

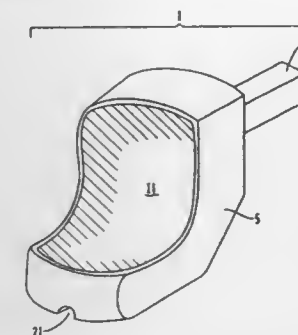
Robert Tucker Spalding, 6673 Cherry Bark Dr., Memphis, Tenn. 38141; Kenneth Dornell Mitchell, 315 89th Apt 1FW, New York, N.Y. 10128, and Chris Dipersio, #6 Brookdale Rd., Glencove, N.Y. 11542

Filed Jan. 13, 1997, Ser. No. 782,747

Int. Cl.⁶ A61F 2/42

U.S. Cl. 623—21

2 Claims



1. A prosthetic joint replacement between a posterior metatarsal bone and an anterior phalangeal bone of a human toe comprising:
 - a metatarsal component in the form of a metallic body member having a head including an anterior convex articulating surface and a posterior stem for implantation into an end of the metatarsal bone, said articulating surface defining a bearing surface;
 - a phalangeal component having a metallic sesamoid support member and a plastic articular insert, said support member having a posterior concave surface and an anterior stem for implantation into an end of the phalangeal bone;
 - a recess formed in at least portions of said concave surface including notches for receiving said insert, whereby said convex articulating surface of said head may articulate against said insert, and
 - an elongated groove recessed into and extending along a plantar surface of said sesamoid support member in a posterior to anterior direction to define a passageway for the human flexor hallucis longus tendon to extend therethrough.

5,776,204

ASYMMETRIC HIP STEM

Philip C. Noble, Houston, Tex.; Anthony K. Hedley, Paradise Valley, Ariz.; Michael J. Schulzki, Boonton, and William J. Kelly, Jr., Clifton, both of N.J., assignors to Howmedica Inc., New York, N.Y.

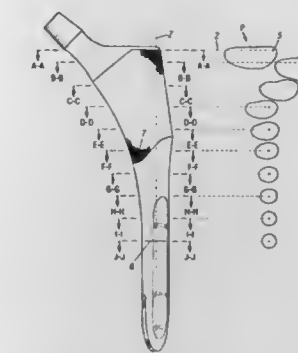
Filed May 24, 1996, Ser. No. 653,295

Int. Cl.⁶ A61F 2/32

U.S. Cl. 623—23

14 Claims

1. A prosthetic femoral hip stem comprising:
 - (a) a longitudinal axis;
 - (b) a distal region having a distal portion and a center, said longitudinal axis intersecting said center;
 - (c) a proximal region; and
 - (d) a mid-stem region positioned between said distal and proximal regions;
 wherein at least one cross-section taken perpendicular to said longitudinal axis through said proximal region includes:
 - (e) a substantially arcuate anterior side having a varying radius of curvature;



- (f) a posterior side having a concavity;
- (g) a substantially arcuate medial side having a radius of curvature;
- (h) a substantially arcuate lateral side that slopes anteriorly to define an acute angle of declination; and
- (i) a substantially arcuate posterior/lateral corner having a radius of curvature larger than said medial side radius of curvature.

5,776,205

SPLIT FOOT PROSTHESIS

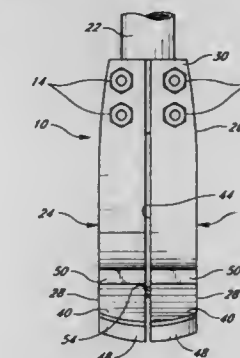
Van L. Phillips, 5499 Avenida Maravillas, Rancho Santa Fe, Calif. 92067

Continuation of Ser. No. 643,869, May 7, 1996, abandoned, which is a continuation of Ser. No. 185,325, Jan. 21, 1994, Pat. No. 5,514,185, which is a continuation of Ser. No. 91,458, Jul. 14, 1993, abandoned, which is a continuation of Ser. No. 936,854, Aug. 27, 1992, abandoned, which is a continuation of Ser. No. 662,928, Feb. 28, 1991, Pat. No. 5,181,933. This application Jan. 24, 1997, Ser. No. 789,159

Int. Cl.⁶ A61F 2/66

U.S. Cl. 623—55

34 Claims



CHEMICAL

5,776,206

SURFACTANT MIXTURE FOR TEXTILE TREATMENT

Rolf Kleber, Neu-Isenburg, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed May 8, 1996, Ser. No. 646,985

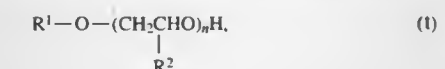
Claims priority, application Germany, May 10, 1995, 195 17 033.4

Int. Cl.⁶ C11D 1/72; 1/02; 1/722

U.S. Cl. 8—137

13 Claims

1. A surfactant mixture consisting essentially of 33–95 parts by weight of at least one alkoxyated fatty alcohol (component I) of the formula I:

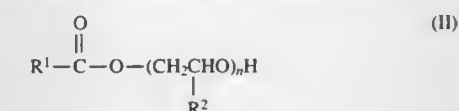


where,

R¹ is C₉–C₁₈-alkyl or C₉–C₁₈-alkenyl,R² is independently hydrogen or methyl, and

n is from 5 to 30, and

5–67 parts by weight of a mixture comprising at least one alkoxyated fatty acid (component II) of the formula II:

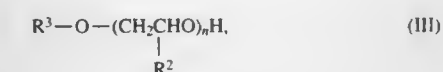


where,

R¹ is C₉–C₁₈-alkyl or C₉–C₁₈-alkenyl,R² is independently hydrogen or methyl, and

n is from 5 to 30, and

at least one alkoxyated alcohol (component III) of the formula III:



where,

R³ is C₁–C₆-alkyl,R² is independently hydrogen or methyl, and

n is from 5 to 30,

wherein the alkoxyated fatty acid (component II) and the alkoxyated alcohol (component III) are present in a weight ratio ranging from 1–9:9–1, and wherein the surfactant mixture optionally contains an anionic surfactant, an anionic complexing agent capable of complexing a peroxide bleach, a phosphate-free dispersant of anionic provenance, or a foam inhibitor based on silicone or trialkylphosphate, for pretreating textiles.

5,776,207

LEAD ACID STORAGE BATTERY AND METHOD FOR MAKING SAME

Kensaku Tsuchida, Chigasaki; Takashi Hattori, Toyohashi, and Rikio Miyagi, Kosai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

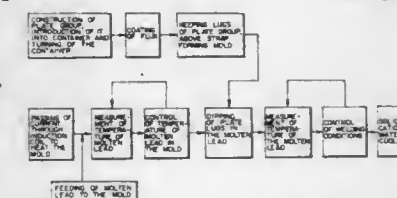
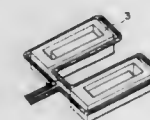
Filed Jul. 25, 1995, Ser. No. 506,522

Claims priority, application Japan, Mar. 20, 1995, 7-060768

Int. Cl.⁶ H01M 6/00; 4/56

U.S. Cl. 29—623.1

19 Claims



1. A method for producing a lead acid storage battery by integrally connecting lugs of a plurality of plates of the same polarity placed in a cell compartment of a container to a strap by a cast-on-strap process comprising, heating a strap forming mold by induction heating to a first temperature at least prior to feeding

pure lead or a lead alloy in a molten state to the mold, feeding the pure lead or lead alloy in the molten state to the strap forming mold heated by induction heating, induction heating said mold which contains molten lead or lead alloy to achieve a second temperature at which the pure lead or lead alloy is molten, then partially inserting the lugs of the plates in the molten pure lead or lead alloy and induction heating the mold while it contains the molten lead or lead alloy and inserted portion of said lugs to a third temperature and maintaining the third temperature to melt at least the tips of the lugs to form a melt, and then force cooling the entire melt by spraying with liquid coolant against the mold underside to form the strap and integrally connect the lugs to the strap.

5,776,208

APPARATUS AND METHOD FOR ASSEMBLING BATTERY

Masumi Mieda, Himeji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

PCT No. PCT/JP95/00450, § 371 Date Sep. 13, 1996, § 102(e)

Date Sep. 13, 1996, PCT Pub. No. WO95/25356, PCT Pub.

Date Sep. 21, 1995

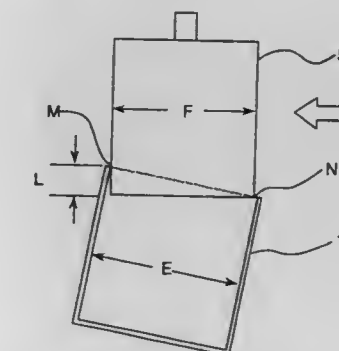
PCT Filed Mar. 16, 1995, Ser. No. 704,659

Claims priority, application Japan, Mar. 16, 1994, 6-044603

Int. Cl.⁶ H01M 6/02

U.S. Cl. 29—623.1

3 Claims



1. A method for assembling a battery using an apparatus for assembling a battery to insert an electrode body into an outer casing so that a center axis of the electrode body and a center axis of the outer casing are substantially in a straight line, the electrode having an outer size smaller than an inner size of the outer casing, and the outer casing having an opening at one end, comprising the steps of:

carrying the electrode body at prescribed intervals by an electrode body supplying mechanism;
carrying the outer casing at prescribed intervals by an outer casing supplying mechanism;
disposing to oppose the electrode body and the outer casing and inclining to a prescribed angle at least either of the center axes of the electrode body and the outer casing so as to intersect with the other axis substantially on the same plane by a swing mechanism;
contacting a side surface portion of the electrode body with an inner end portion of the outer casing and moving at least either of the electrode body and the outer casing toward the other so as to align in a substantially straight line the center axis of the electrode body and the center axis of the outer casing by a moving mechanism; and
inserting the electrode body into the outer casing by a fitting mechanism.

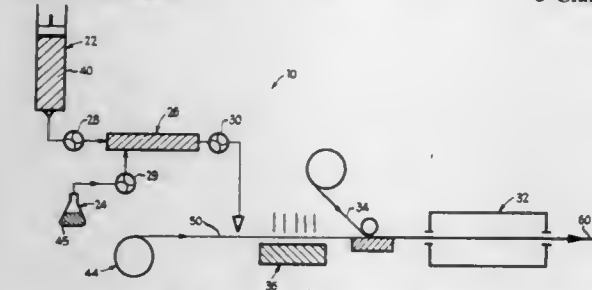
5,776,209

ELECTRODE PASTE APPLICATOR PROCESS

Denis G. Fauteux, Acton; Martin Van Buren, Chelmsford, and Arthur A. Massucco, Natick, all of Mass., assignors to Mitsubishi Chemical Corporation, Tokyo, Japan
Filed May 26, 1995, Ser. No. 451,911
Int. Cl.⁶ H01M 4/04

U.S. Cl. 29—623.5

5 Claims



1. A process for applying an electrode paste to a substrate, comprising the steps of:

- inserting an electrode paste into a support member;
- inserting a polymerization initiator into a retaining chamber;
- releasing regulated amounts of the electrode paste and the polymerization initiator, from the support member and retaining chamber, respectively, into a mixing chamber;
- mixing the regulated amounts of the electrode paste and polymerization initiator within the mixing chamber;
- releasing the mixed electrode paste and polymerization initiator from the mixing chamber and applying it onto a substrate;
- initiating polymerization of the electrode paste after it has been released from the mixing chamber and after it has been applied onto the substrate;
- curing the electrode paste after the step of applying the electrode paste onto the substrate; and
- applying a protective cover to the substrate after the step of applying the electrode paste onto the substrate and before the step of curing the electrode paste, wherein the protective cover serves to preclude excessive exposure of the electrode paste to oxygen.

5,776,210

Patent Not Issued For This Number

5,776,211

JACKTOP CLEANER

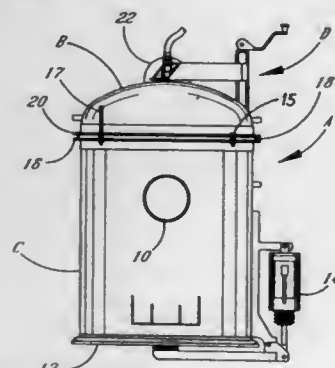
Jon Kent Jacob, Abington, Mass., assignor to Abington, Inc., North Abington, Mass.

Filed Apr. 21, 1997, Ser. No. 837,567

Int. Cl.⁶ B01D 46/00

U.S. Cl. 55—356

14 Claims



1. In an industrial cleaning arrangement having a dust and lint collection cylinder including a tank having an air intake, a remov-

able dome having an air outlet and a screen removably located between an outer edge of said dome and an upper edge of said tank, said arrangement comprising:

- a lock and lift unit connecting with said tank at a point along the periphery thereof and with said dome at a point aligned with the vertical axis of said cylinder, said unit being operative to separate said dome from said tank by lifting said dome along said vertical axis and to seal said dome with said tank by moving said dome downward along said vertical axis into pressured contact with said upper edge of said tank; whereby, said dome may be raised to allow removal of said screen and lowered into sealing engagement with said tank.

5,776,212

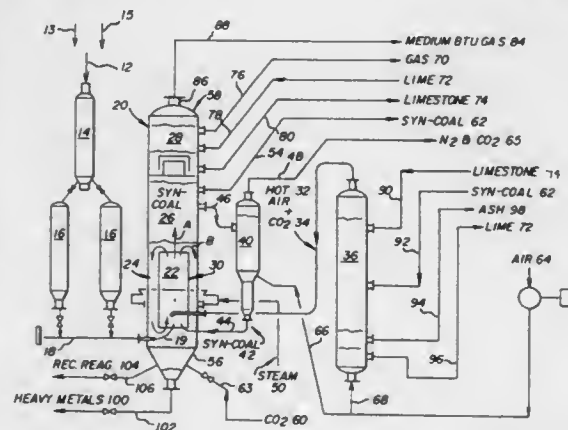
CATALYTIC GASIFICATION SYSTEM

Arnold M. Leas, 122 N. 34th St., 10-C, Richmond, Ind. 47374
Division of Ser. No. 352,833, Dec. 2, 1994, Pat. No. 5,641,327.
This application Sep. 13, 1996, Ser. No. 716,716

Int. Cl.⁶ C10J 3/20; 3/68; B01J 8/04

U.S. Cl. 48—73

20 Claims



1. A solid gasification system for the production of a medium grade BTU gas comprising:

- a gas reaction vessel which contains a first, second, third, and fourth reaction zone;
- a first inlet means for receiving and directing a blended mixture of a solid carbonaceous fuel and a catalyst reagent to said first reaction zone of said reaction vessel;
- a second inlet means for receiving and directing heated air to said first reaction zone of said reaction vessel;
- a third inlet means for receiving and directing steam to said second reaction zone of said gasification reaction vessel;
- a gas product outlet means for removing a medium grade BTU gas from the gasification reaction vessel;
- a conveyance means for delivering a blended mixture of a solid fuel and catalyst reagent through said first inlet means;
- whereby the hot air delivered to said first reaction zone through said second inlet means reacts with the carbon of the solid fuel in an exothermic reaction for the production of a low grade BTU gas and the steam delivered to said second reaction zone through said third inlet means reacts with carbon deposited on said catalyst reagent in an endothermic reaction for the production of a high grade BTU gas wherein the low BTU gas and the high grade BTU gas mix in the third reaction zone thereby forming a medium grade BTU gas.

5,776,213

RESPIRATORY FILTER AND SAMPLING DEVICE

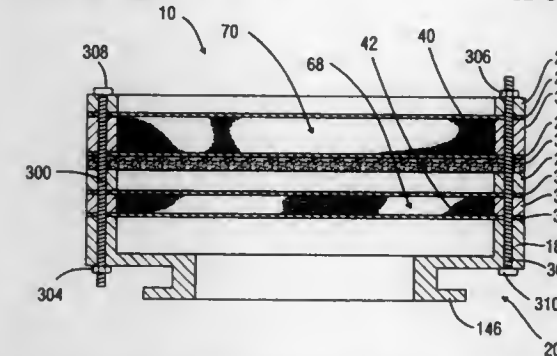
Dennis K. Flaherty, Ballwin, Mo.; Russell P. Gordon, Campbell; Paul M. Taylor, Saratoga, both of Calif., and Frank D. Zielinski, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 324,072, Oct. 14, 1994, Pat. No. 5,651,810.
This application Apr. 9, 1997, Ser. No. 831,573

Int. Cl.⁶ B01D 35/30

U.S. Cl. 55—482

12 Claims



1. A combined sampling and filtering device, comprising:

- a first end member;
- a second end member in operative alignment with said first end member;
- first sampling and filtering means positioned intermediate said first and second end members and in operative alignment therewith;
- first adjustable threaded connecting means for engaging said first and second end members and said first sampling and filtering means and wherein said first connecting means passes entirely through said first sampling and filtering means and said first and second end members, and is adjustably removable therefrom; and
- second adjustable threaded connecting means for engaging said first and second end members and said first sampling and filtering means and wherein said second connecting means passes entirely through said first sampling and filtering means and said first and second end members, and is adjustably removable therefrom.

5,776,214

METHOD FOR MAKING ABRASIVE GRAIN AND ABRASIVE ARTICLES

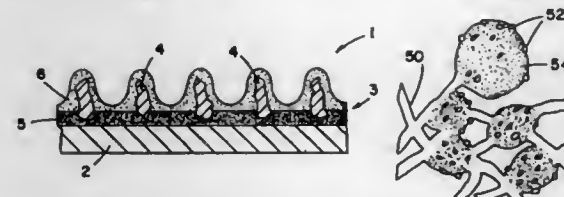
William P. Wood, Golden Valley, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 18, 1996, Ser. No. 715,672

Int. Cl.⁶ C09C 1/68

U.S. Cl. 51—309

44 Claims



1. A method for making alpha alumina-based ceramic abrasive grain, said method comprising the steps of:

- (a) preparing a homogeneous dispersion by combining components comprising liquid medium, acid, greater than 60 percent by weight boehmite, based on the total solids content of said dispersion, and, on a metal oxide basis, at least 0.1 percent by weight of at least one of metal oxide or precursor thereof, said dispersion containing less than 0.05 percent by weight alpha alumina seeds, based on the total metal oxide content of said dispersion, and the amount of said boehmite being greater than 60 percent by weight, based on the total weight of said dispersion;

(b) converting the dispersion to alpha alumina-based ceramic precursor material; and

(c) sintering the precursor material to provide alpha alumina-based ceramic abrasive grain having a density greater than 90 percent of theoretical,

wherein said converting step includes extruding the dispersion such that said abrasive grain has an essentially uniform composition and hardness, and wherein extruding the dispersion includes compacting the dispersion by applying a pressure of at least 3.5×10^4 kg/m² to the dispersion.

5,776,215

MACHINE FOR HOUSEHOLD CLEANING

Andrea Amoretti, Romano D'Ezzelino, Italy, assignor to T.P.A. Impex S.p.A., Romano D'Ezzelino, Italy

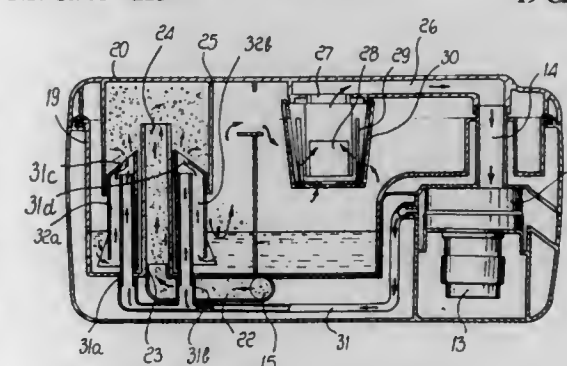
Filed Oct. 11, 1996, Ser. No. 729,888

Claims priority, application Italy, Oct. 13, 1995, PD95A0189; Jul. 12, 1996, PD96A0178

Int. Cl.⁶ B01D 47/02; 47/06

U.S. Cl. 55—223

19 Claims



1. A machine for household cleaning comprising:

- a box shaped body including a vacuum-cleaner section;
- a fan for generating a main air stream; an electric motor coupled to said fan, the fan and the electric motor being located in said vacuum-cleaner section;
- a hermetically closed water container;
- a dirt suction duct, being connected to an intake of said fan, and having an end portion with an outlet thereof located in said water container;
- at least one Venturi duct, for aspirating water from the water container, which ends in a region where said main air stream passes so as to wet and remove the dirt contained in said main stream;
- air generating means, provided in said body upstream of said fan, for generating a secondary air stream, in said at least one Venturi duct, which is separate from the main stream that contains dirt;
- an upper duct portion, connected to the intake of the fan, and ending downwardly at the internal upper part of said water container, with a vertical coupling thereof;
- a floater for interrupting said vertical coupling; and
- a gridded containment element for retaining said floater, with said floater having a closure level being lower than the outlet of said end portion that lies inside said container.

5,776,216

VACUUM PUMP FILTER FOR USE IN A SEMICONDUCTOR SYSTEM

Vince W. H. Yang, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan

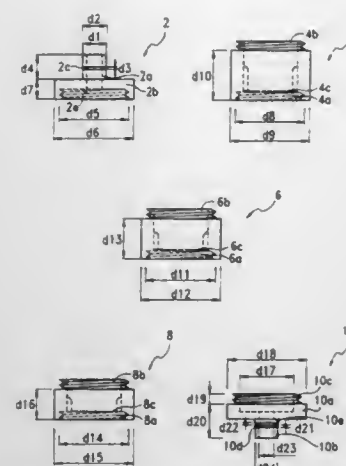
Filed Jan. 14, 1997, Ser. No. 783,477

Int. Cl.⁶ B01D 46/00

U.S. Cl. 55—385.1

18 Claims

1. A filter assembly for use in a semiconductor fabrication system, said filter assembly comprising:



an inlet port used to connect to a port of a semiconductor system, said inlet port comprising:

- (i) a first cylinder having a first terminal and a second terminal, said first cylinder connected to said port of said semiconductor system via said first terminal; and
- (ii) a second cylinder having first internal spiral threads, said second cylinder coaxially connected to said first cylinder via said second terminal of said first cylinder;

a first filter holder having a first filter, said first filter holder having first external spiral threads for connecting to said first internal spiral threads of said second cylinder and second internal spiral threads;

a second filter holder having a second filter, said second filter holder having second external spiral threads for connecting to said second internal spiral threads of said first filter holder and a third internal spiral threads;

a third filter holder having a third filter, said third filter holder having third external spiral threads for connecting to said third internal spiral threads of said second filter holder and fourth internal spiral threads, wherein said first filter, second filter and said third filter are mesh nets having holes, wherein said first filter has the largest holes and said third filter has the smallest holes; and

an outlet port used to connect to a pump system, said outlet port including fourth external spiral threads for connecting to said fourth internal spiral threads of said third filter holder.

5,776,217

VACUUM RECEIVER

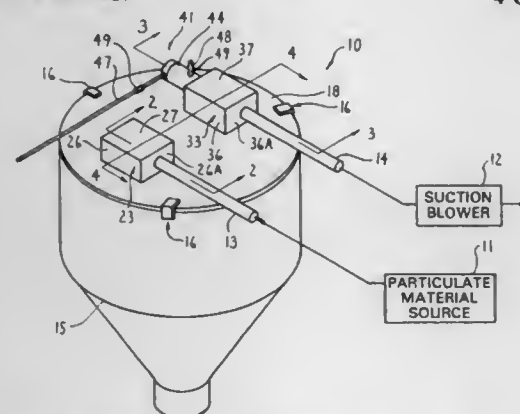
Charles W. Thiele, Kalamazoo, Mich., assignor to Motan, Inc., Plainwell, Mich.

Filed Dec. 23, 1996, Ser. No. 771,919

Int. Cl.⁶ B01D 45/04

U.S. Cl. 55—417

4 Claims



1. In a vacuum receiver for separating particles entrained in a gas-particle stream and for allowing a gas stream to exit from the vacuum receiver to an exhaust blower means while simultaneously

allowing the particles to remain in a particle receiving vessel having an open top, the improvement comprising:

a lid mountable on said particle receiving vessel for gas-tightly closing said open top of said particle receiving vessel, said lid having an exterior surface facing away from said vessel when said lid is positioned thereon, an interior surface facing into said vessel when said lid is positioned thereon, and first and second apertures extending through said lid;

an upstanding hollow inlet housing extending outwardly from said exterior surface of said lid and enclosing a first interior space immediately adjacent and communicating with said first aperture and an interior of said vessel, said hollow inlet housing having means defining a first upstanding wall member and a top wall connected to a top edge of said first upstanding wall member so as to gas-tightly enclose and define said first interior space of said hollow inlet housing, a first side of said first upstanding wall member of said hollow inlet housing having an inlet port adapted for connection to and for reception of said gas-particle stream, a second side of said first upstanding wall member of said hollow inlet housing being oriented directly opposite said first side of said first upstanding wall member thereon and in direct alignment with the path of said gas-particle stream; and

an upstanding hollow outlet housing extending outwardly from said exterior surface of said lid and enclosing a second interior space immediately adjacent and communicating with said second aperture and an interior of said vessel, said hollow outlet housing having a second upstanding wall member and a top wall connected on a top edge of said second upstanding wall member so as to gas-tightly enclose and define said second interior space of said hollow outlet housing, a first side of said second upstanding wall member of said hollow outlet housing having an outlet port therein adapted for connection to said exhaust blower means in order to facilitate the exit of said gas stream from said gas-particle separator, a second side of said second upstanding wall member of said hollow outlet housing being oriented directly opposite said first side of said second upstanding wall member of said hollow outlet housing having a valve housing with a reciprocal plunger extending therefrom, said plunger having stopper means thereon for selectively closing said outlet port so as to stop said gas stream from flowing through said outlet port;

whereby particles entrained in said gas stream and drawn into the interior of said hollow inlet housing, in response to said outlet port being open to said exhaust blower means, will strike said second side of said first upstanding wall member of said hollow inlet housing and be sufficiently decelerated so as to be separated from said gas stream and allowed to move through said first aperture and be collected in said particle receiving vessel.

5,776,218

DUCT INSERTION FILTER

Victor Enns, 5796 Golden Road Crescent, Tsawwassen, British Columbia, Canada, V4L 2H6

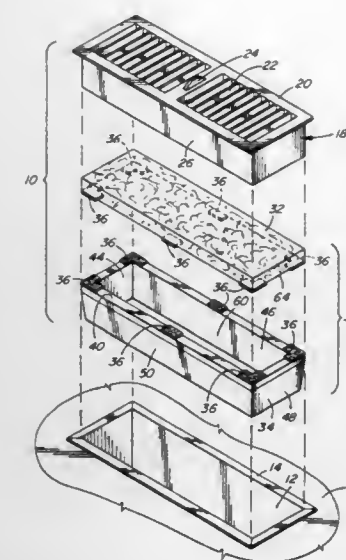
Filed Nov. 20, 1996, Ser. No. 752,797

Int. Cl.⁶ B01D 35/02

U.S. Cl. 55—495

3 Claims

1. A forced air ventilation apparatus comprising:
a forced air ventilation duct having an inside and an outlet end; a register fitted to the duct outlet end;
a frame having a tapered body shaped to wedge within the duct adjacent the register, the frame having an outer end facing the register and an inner end distal the register, the frame having sides which taper such that the inner end is smaller than the outer end;



a filter shaped to fit the inside of the duct and located between the frame and the register, said filter being replaceable by removing the register while leaving the frame in place; and a hook and loop fastener which connects the filter to the frame.

5,776,219

METHOD OF MAKING A PIECE OF GLASS FOR MEASURING TRANSMITTANCE

Hiroki Jinbo, Kasawaki; Satoru Oshikawa, and Hiroyuki Hiraiwa, both of Yokohama, all of Japan, assignors to Nikon Corporation, Japan

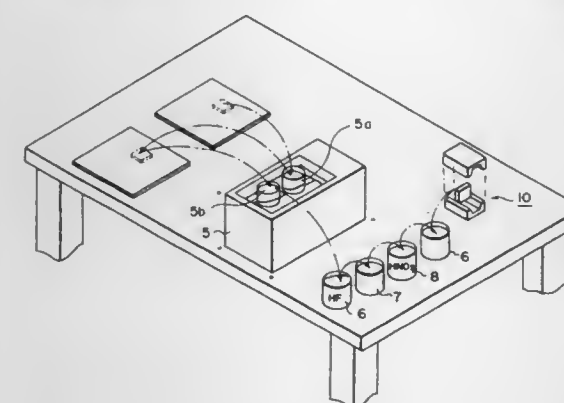
Filed Sep. 8, 1995, Ser. No. 525,882

Claims priority, application Japan, Sep. 8, 1994, 6-215096

Int. Cl.⁶ C03C 15/02; 19/00

U.S. Cl. 65—31

14 Claims



1. A method of making a piece of glass for measuring transmittance, said method comprising the steps of:

- (a) polishing a first surface of a piece of silica glass with an abrasive agent including Ce until said first surface has a roughness of 100 angstroms or less; and
- (b) polishing said first surface of the piece with an abrasive agent made of SiO₂ until said first surface has a roughness of 10 angstroms or less and the amount of Ce on said first surface is 4×10¹² atoms/cm² or less, after step (a).

5,776,220

METHOD AND APPARATUS FOR BREAKING BRITTLE MATERIALS

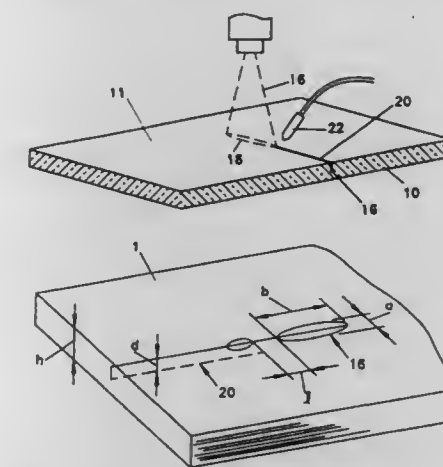
Roger A. Allaire, Big Flats; Harry E. Menegus, Beaver Dams; Bruce H. Raeder, Horseheads, and Harrie J. Stevens, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 308,276, Sep. 19, 1994, Pat. No. 5,622,540, and Ser. No. 521,616, Aug. 31, 1995, abandoned. This application Dec. 15, 1995, Ser. No. 573,471

Int. Cl.⁶ B05B 12/00; 12/04; C03C 17/23

U.S. Cl. 65—112

22 Claims



1. A method for separating flat glass sheets comprising: moving a laser beam across a glass sheet having a thickness of 2 mm or less to draw a crack across said sheet, said laser beam moving in a direction of travel and having an elongated beam spot where it impinges on said glass sheet, said beam spot having a width and length dimension, the length of the spot being longer than the width of the spot, the length dimension being greater than 20 mm, said length dimension aligned with said direction of travel; and separating said sheet along said crack.

5,776,221

METHOD FOR DELIVERING A GLASS STREAM FOR FORMING CHARGES OF GLASS

Michael T. Dembicki, Pemberville, and Garrett L. Scott, Toledo, both of Ohio, assignors to Owens-Brockway Glass Container Inc., Toledo, Ohio

Continuation of Ser. No. 374,371, Jan. 18, 1995, abandoned.

This application Jan. 22, 1996, Ser. No. 787,061

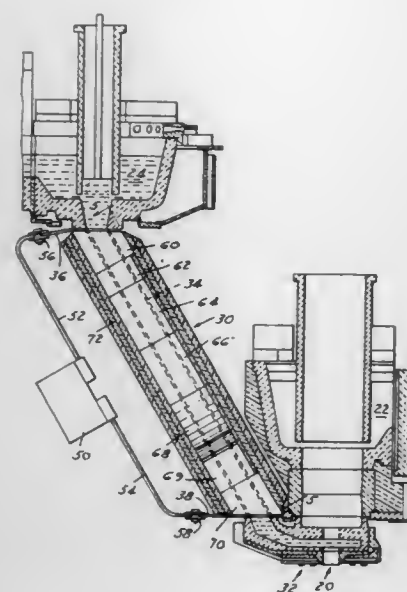
Int. Cl.⁶ C03B 5/027; 5/033; 17/06

U.S. Cl. 65—121

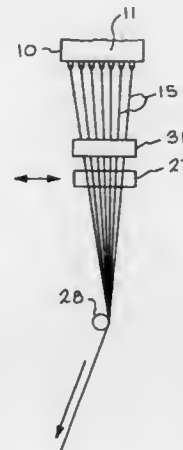
20 Claims

1. In a method of forming a glass stream comprising a first inner layer and a second outer layer which consists of providing a vertical orifice, delivering molten glass from a first glass source through said orifice, and delivering glass from a second glass source such that the glass from said second glass source provides an outer layer about the glass from the first glass source as it flows through said orifice, the improvement comprising the steps of:

- (a) providing a resistance heated tube assembly comprising a corrosion resistant electrically conductive tube portion having an inlet end and an outlet end through which the glass flows from said second glass source for the outer layer;
- (b) positioning said tube portion such that the inlet end receives glass from said second source and the outlet end delivers glass to said orifice;
- (c) providing a flange at each end of said tube portion of a material which is corrosion resistant and is electrically conductive;
- (d) securing said flanges to said ends of said tube portion such that said flanges are connected uniformly about the upper end



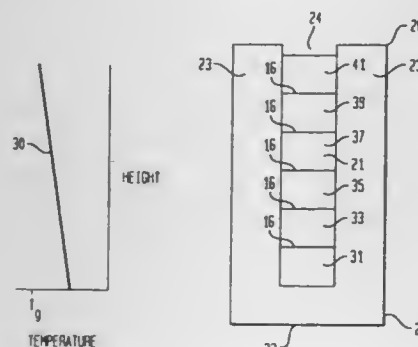
5,776,223
METHOD OF MAKING SHAPED FIBERS
Jianzhong Huang, Westerville, Ohio, assignor to Owens Corning Fiberglas Technology, Inc., Summit, Ill.
Filed Feb. 29, 1996, Ser. No. 608,883
Int. Cl.⁶ C03B 37/022; 37/075; 37/027; B29C 47/00
U.S. Cl. 65—437 13 Claims



and lower end of said tube portion and in an electrically continuous manner around said tube portion; and
(e) resistance heating said flanges and tube portion by applying electric power to said flanges for distributing electrical power through said flanges and said tube portion to heat said tube portion uniformly around said tube portion.

5,776,222
METHOD OF ELIMINATING LIGHT SCATTERING
BUBBLES IN OPTICAL FIBER PREFORMS
Nonna Kopylov, Scotch Plains, and Ahmet R. Kortan, Warren, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 31, 1996, Ser. No. 594,194
Int. Cl.⁶ C03B 37/025
U.S. Cl. 65—384 18 Claims



1. A method of making an optical fiber preform, comprising the steps of:
a. simultaneously vacuum-pumping and cooling a molten liquid glass, said liquid glass having a given viscosity;
b. pouring said liquid glass into a generally cylindrical casting mold having a bottom and a top end;
c. applying a temperature gradient across an axial length of said casting mold so that said liquid glass solidifies substantially from said bottom end to said top end over a predetermined period of time thereby producing a preform substantially free of ambient gas bubbles.

1. A method of making a shaped fiber for reinforcing a composite material, the method comprising:
providing a stream of fiberizable material having a cylindrical shape with a void fraction from about 20% to about 80%, and having a soft portion,
applying torsion to the stream to change the stream at the soft portion, and
cooling the stream to make a fiber having a substantially untwisted cylindrical shape with a helical protrusion on its surface.

5,776,224
THICKENED SOIL STABILIZER, AND A PACKAGED
READY MIX COMPRISING IT
André Trautmann, Essen; Stephan Bloemer, Düsseldorf, and Egbert Hausberg, Schermbeck, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany
Filed Mar. 25, 1996, Ser. No. 622,284
Claims priority, application Germany, Mar. 25, 1995, 195 10 957.0

Int. Cl.⁶ B65D 81/24; C05D 9/00
U.S. Cl. 71—1 11 Claims

1. A packaged soil stabilizing composition, comprising:
(a) a biodegradable external packaging;
(b) an environmentally degradable internal liner not softened by oil; and
(c) a concentrated soil stabilizer surrounded by said internal liner;
wherein said external packaging comprises,
(i) a first member selected from the group consisting of cellulose, paper and board; and
(ii) a second member selected from the group consisting of seed, fertilizer, plants, plant parts, organic fibers, mineral substrates, substrates which absorb and store fluid, and pH regulators;
said internal liner is selected from the group consisting of paper coated with polymer and water-soluble biodegradable polymer films; and
said concentrated soil stabilizer comprises at least one organic binder and at least one carrier.
7. A method for treating soil, comprising introducing into a mixing tank a packaged soil stabilizing composition, without removing the packaging;
mixing, in said mixing tank, said packaged soil stabilizing composition with water, thereby forming a mixture; and
applying said mixture to soil;

wherein said packaged soil stabilizing composition comprises:
(a) a biodegradable external packaging;
(b) an environmentally degradable internal liner not softened by oil; and
(c) a concentrated soil stabilizer surrounded by said internal liner;

wherein said external packaging comprises:
(i) a first member selected from the group consisting of cellulose, paper and board; and
(ii) a second member selected from the group consisting of seed, fertilizer, plants, plant parts, organic fibers, mineral substrates, substrates which absorb and store fluid, and pH regulators;

said internal liner is selected from the group consisting of paper coated with polymer and water-soluble biodegradable polymer films; and
said concentrated soil stabilizer comprises at least one organic binder and at least one carrier.

5,776,225
REFRACTORY METAL SPONGE FINES COMPOSITION
Joseph A. Megy, 100 N. Chester St., New Cumberland, W. Va. 26047
Continuation-in-part of Ser. No. 338,594, Nov. 15, 1994, Pat. No. 5,597,401. This application Nov. 21, 1996, Ser. No. 753,157

U.S. Cl. 75—304

Int. Cl.⁶ C22C 29/00

20 Claims



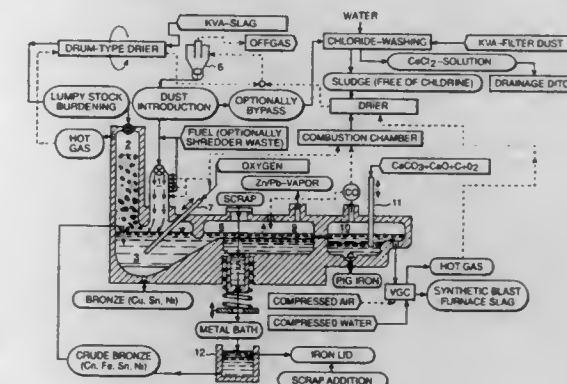
1. A process for converting refractory metal sponge fines into pure, clean refractory metal sponge fines substantially free of hard refractory metal materials, silicon carbide, heavy pieces of iron alloy and tungsten carbide, alkali metal halide salts, dirt, and oils, grease, organic chemical contaminants comprising the steps of:
vigorously agitating the refractory metal sponge fines with an aqueous solution for a sufficient period to break off the hard refractory metal materials from the surface of the refractory metal sponge fines, powder the silicon carbide and hard refractory metal materials in the refractory metal sponge fines, dissolve the alkali metal halide salts contaminating the refractory metal sponge fines and cleaning off dirt, dust, grease, oil and organic chemical contaminants on the surface of and in the refractory metal sponge fine;
separating the vigorously agitated refractory metal sponge fines from the aqueous solution; and
washing the separated refractory metal sponge fines with water to wash off adherent aqueous solution to yield pure, clean refractory metal sponge fines.

5,776,226
METHOD FOR WORKING UP REFUSE OR METAL-
OXIDE-CONTAINING REFUSE INCINERATION
RESIDUES

Alfred Edlinger, Baden, Switzerland, assignor to "Holderbank" Financiere Glarus AG, Glarus, Switzerland
Filed Oct. 5, 1995, Ser. No. 539,678
Claims priority, application Austria, Oct. 10, 1994, 1910/94
Int. Cl.⁶ C21B 11/00; C22B 7/04

U.S. Cl. 75—500

9 Claims



1. A method for working up solids comprising iron, nonferrous metals including siderophilic metals such as Cu, Ni, and/or Sn, and/or atmospheric metals such as Cd, Zn, and/or Pb and/or oxides thereof formed by at least one of refuse, metal-oxide-containing refuse incineration residues, galvanic residues and/or sewage sludge, by drying and preheating said solids and supplying said solids to a meltdown oxidizing reactor for obtaining a melt, the improvement comprising the steps of: at least partially oxidizing said melt so as to obtain a slag having an FeO content, reducing said slag in two reduction stages comprising

a first reduction stage for carrying out a nonferrous-metal reduction by adding scrap and/or introducing a CO/CO₂ mixture to said slag so as to enhance the deposition of siderophilic metals from said slag, and vaporizing atmospheric metals from said slag;

a second reduction stage for carrying out a direct iron reduction by introducing CaCO₃, CaO and carbon below said slag remaining after said first reduction stage so as to reduce said FeO content of said slag bath and forming a CO/CO₂ mixture, partially burning said CO/CO₂ mixture with O₂ for reducing the reduction potential of said mixture and introducing said partially burnt CO/CO₂ mixture to said slag in said first reduction stage, and
recovering iron-free slag and nonferrous metal-free iron.

5,776,227
VAPOR STORAGE CANISTER WITH FOAM SCREEN
RETAINER

Thomas Charles Meiller, Pittsford; Timothy Michael Beadnell, Avon; Charles Henry Covert, Manchester; Robert Augustine Zaso, and Gordon Richard Paddock, both of Rochester, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

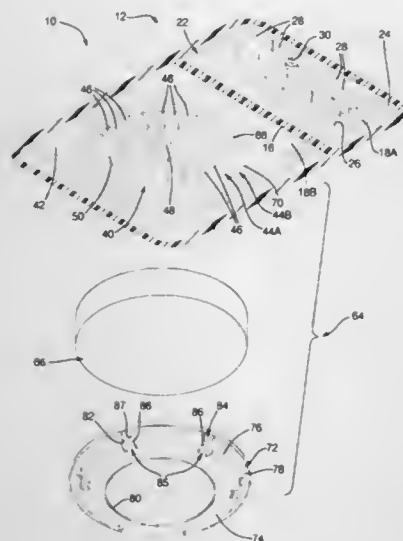
Filed Mar. 14, 1997, Ser. No. 818,018

Int. Cl.⁶ B01D 53/04

U.S. Cl. 96—134

2 Claims

1. A fuel vapor storage canister for a motor vehicle evaporative emission control system including
a cup-shaped canister body having a vent port through which said canister body communicates with the atmosphere surrounding said fuel vapor storage canister and a purge port through which said canister body communicates with a region of subatmospheric pressure to induce a flow of air through said canister body from said vent port to said port, a mass of carbon granules in said canister body,



a plenum in said canister body exposed to said mass of carbon granules therein and connected to said purge port, and a screen assembly between said plenum and said mass of carbon granules in said canister body, characterized in that said screen assembly comprises:

- a pair of concentric cylindrical bosses on said canister body around said plenum each having an uninterrupted circular edge thereon,
- a flat foam screen over said plenum overlapping each of said pair of concentric cylindrical bosses and seated on each of said uninterrupted circular edges thereof,
- a retainer over said flat foam screen having an annular planar side around a window in said retainer and a seated position on said pair of concentric cylindrical bosses in which said flat foam screen is exposed to said mass of carbon granules through said window and a pair of concentric segments of said flat foam screen are compressed between said annular planar side of said retainer and respective ones of said uninterrupted circular edges on said pair of concentric cylindrical bosses to define a pair of seals preventing migration of carbon granules to said plenum around said flat foam screen, and
- a plurality of flexible one-way barbs on said retainer each having a distal end biased against a first side of an outermost one of said pair of concentric cylindrical bosses to prevent dislodgment of said retainer from said seated position.

5,776,228

VAPOR STORAGE CANISTER WITH FOAM SCREEN RETAINER

Thomas Charles Meiller, Pittsford; Timothy Michael Beadnell, Avon; Charles Henry Covert, Manchester; Robert Augustine Zaso, and Gordon Richard Paddock, both of Rochester, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

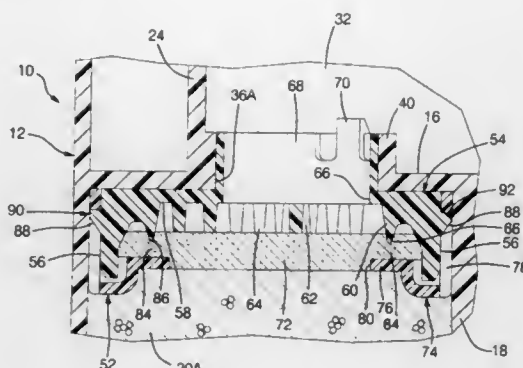
Filed Mar. 14, 1997, Ser. No. 818,019
Int. Cl.⁶ B01D 53/04

U.S. Cl. 96—134

4 Claims

1. A fuel vapor storage canister for a motor vehicle evaporative emission control system including

- a cup-shaped canister body having a vent port through which said canister body communicates with the atmosphere surrounding said fuel vapor storage canister and a purge port through which said canister body communicates with a region of subatmospheric pressure to induce a flow of air through said canister body from said vent port to said purge port,
- a mass of carbon granules in said canister body, and



a screen module between said purge port and said mass of carbon granules in said canister body, characterized in that said screen module comprises:

- a module body having a bottom wall,
- a raised boss on said bottom wall of said module body having an uninterrupted edge around a plenum on said module body,
- an aperture in said bottom wall in fluid communication with said plenum,
- a flat foam screen over said plenum seated on said uninterrupted edge of said raised boss,
- a retainer over said flat foam screen having a seated position on said module body in which a segment of said flat foam screen is compressed between a planar side of said retainer having a window therein and said uninterrupted edge of said raised boss thereby to define a seal around said window preventing migration of carbon granules to said plenum around said flat foam screen,
- a retention means on said retainer and on said module body operative to maintain the integrity of said seal at said compressed segment of said flat foam screen by preventing dislodgment of said retainer from said seated position thereof on said module body, and
- an attachment means operative to mount said module body on said canister body with said flat foam screen exposed to said mass of carbon granules and with said aperture in said bottom wall of said modular body in fluid communication with said purge port of said canister body.

5,776,229

OIL SEPARATOR ROTOR FOR LUBRICATION ENCLOSURE

Gérard Antoine Gilbert Blanes, Ris Orangis; René Joseph Antoine Cannavo, Maincy; Jean Bernard Forgue, Saint Mery; Francis Georges Albert Garnier, Bombon; Michel Georges Hugues, Boise le Roi; Gilles Claude Gabriel Massot, Voisenon; Patrick Charles Georges Morel, Chartrettes, and Carole Claudine Tournon, Vert le Petit, all of France, assignors to Societe Nationale d'etude et de Construction de Moteurs d'Aviation "Sneema", Paris, France

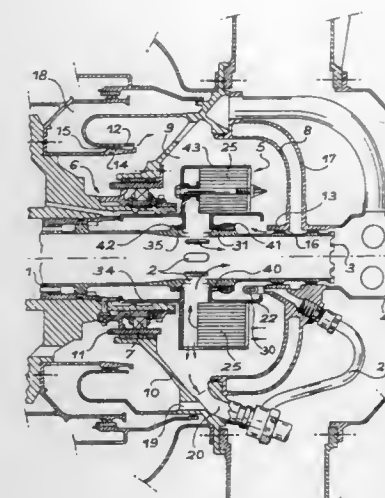
Filed Dec. 12, 1996, Ser. No. 764,450
Claims priority, application France, Dec. 20, 1995, 95 15121
Int. Cl.⁶ B01D 19/00

U.S. Cl. 96—188

3 Claims

1. Rotor for separating oil suspended in air flowing through the rotor with a centripetal flow, the rotor being in the form of a collar, comprising

- a separating lining in the form of a honeycomb structure having axial air flow passages and two planar plates between which extends said lining, one of the plates, located on an air entry side into the lining, being perforated upstream of the lining, while the other of the plates is solid and separated from the lining,
- a plurality of bolts interconnecting the plates, said bolts traversing the lining, and



a plurality of spacers positioned around the bolts between the lining and the solid plate.

5,776,230

INK COMPOSITIONS FOR THERMAL INK JET PRINTING

Kurt B. Gundlach; Luis A. Sanchez, both of Fairport, and Richard L. Colt, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 30, 1997, Ser. No. 960,991
Int. Cl.⁶ C09D 11/02

U.S. Cl. 106—31.43

11 Claims

1. An ink composition which comprises water, a dye selected from the group consisting of Direct Blue 199, Direct Yellow 132, Acid Yellow 17, Reactive Red 180, Acid Red 52, and mixtures thereof, and a material of the formula $[(F_3C(F_2C)_nCH=CHCH_2OCH(OH)CH_2)_2NCH_2COO^-][X^+]$, wherein X is a cation and n is an integer of from about 3 to about 20, wherein the ink is substantially free of imidazole.

5,776,231

CONCENTRATE FOR THE ELECTROLESS DEPOSITION OF COPPER COATINGS ON IRON AND IRON ALLOY SURFACES

Klaus-Dieter Nittel, Frankfurt am Main, and Karl-Heinz Nuss, Neu-Isenburg, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany
Division of Ser. No. 554,288, Nov. 6, 1995. This application
Feb. 18, 1997, Ser. No. 802,029

Claims priority, application Germany, Nov. 11, 1994, 44 40 299.6

Int. Cl.⁶ B22F 7/00

U.S. Cl. 106—1.23

5 Claims

1. A solid concentrate for preparing and replenishing a solution for the electroless deposition of a copper coating on an iron or steel substrate comprising $CuSO_4 \cdot 5H_2O$ and anhydrous $MgSO_4$, wherein the Cu and Mg are in a ratio of 35 to 5 parts Cu per 1 part Mg, wherein the total weight of $CuSO_4 \cdot 5H_2O$ and anhydrous $MgSO_4$ is at least 85 percent by weight of the solid concentrate.

5,776,232

EMULSION INK FOR STENCIL PRINTING

Sadanao Okuda; Masato Ishikawa; Takashi Suzuki, and Yoshihiro Hayashi, all of Inashiki-gun, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Mar. 14, 1997, Ser. No. 818,720
Claims priority, application Japan, Mar. 14, 1996, 8-085891
Int. Cl.⁶ C09D 11/02

U.S. Cl. 106—31.26

14 Claims

1. A water-in-oil (W/O) emulsion ink for stencil printing comprising an oil phase and a water phase, wherein a water-insoluble colorant is contained in said water phase, said water-insoluble colorant having an average particle size of 1 μm or less, and wherein water-insoluble colorant particles of 1 μm or less in particle size are present in an amount of 50% or more on area basis of the total of said water-insoluble colorant.

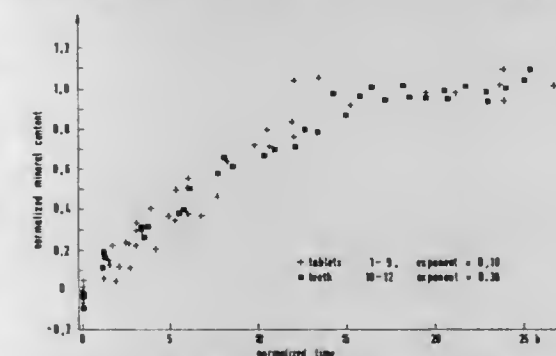
5,776,233

PROCESS FOR PREPARING A CERAMIC MATERIAL FOR USE IN DENTAL FILLINGS AND DENTAL CROWNS

Wolfgang Wiedemann, Höchberg, and Hans Georg Klinger, Rossbrunn, both of Germany, assignors to BEGO Bremer Goldschlagerei Wilh. Herbst GmbH & Co., Bremen, Germany

Continuation of Ser. No. 873,947, Apr. 24, 1992, abandoned.
This application May 13, 1994, Ser. No. 243,071
Int. Cl.⁶ A61F 1/24; C09K 3/00; C04B 35/00; A61K 5/01
U.S. Cl. 106—35

20 Claims



1. A process for preparing a ceramic material for dental purposes, comprising the steps of:

- making calcium phosphate compounds from an aqueous solution of at least one calcium compound by adding at least one phosphate compound, and precipitating calcium phosphate compounds from the aqueous solution under such conditions that the Ca/P-atomic ratio is <1.65 wherein the solution is initially set to a pH value of 10 which reduces to a value of 7 during precipitation;
- drying the precipitate and then comminuting it to produce a product and
- then compressing the product into green compacts and sintering them at temperatures of 800° to 1400° C. so that crystallites of sparingly water-soluble calcium phosphate compounds are created in an amorphous or polycrystalline matrix of readily water-soluble calcium phosphate compounds.

5,776,234

ANIONIC BITUMINOUS EMULSIONS WITH IMPROVED ADHESION

Peter Schilling, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 12, 1996, Ser. No. 695,641
Int. Cl.⁶ C08L 95/00

U.S. Cl. 106—277

12 Claims

1. An improved method for enhancing adhesion between asphalt and aggregate in anionic bituminous emulsions wherein the

improvement comprises the addition to the emulsion of a composition comprising the polyimidoamine condensation reaction products consisting essentially of:

- (A) 20–80 wt. % of a copolymer, formed by reacting
 (1) 1–99 wt. % of a member selected from the group consisting of α -methyl styrene, styrene, and combinations thereof, with
 (2) 99–1 wt. % of maleic anhydride; and
 (B) 80–20 wt. % of a polyamine.

5,776,235

THICK OPAQUE CERAMIC COATINGS

Robert Charles Camilletti; Loren Andrew Haluska, and Keith Winton Michael, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 4, 1996, Ser. No. 725,790

Int. Cl.⁶ C09D 183/12; B05D 3/02

U.S. Cl. 106—287.1

15 Claims

1. A method of forming a coating on an electronic device comprising applying to a surface of the electronic device a coating composition containing phosphoric anhydride, and a preceramic silicon-containing material selected from the group consisting of
 (i) a resin derived from an aqueous alkanol dispersion of colloidal silica and partial condensate of methylsilanetriol,
 (ii) a hydrogen silsesquioxane resin,
 (iii) a hydrolyzed or partially hydrolyzed compound of the formula $R_nSi(OR)_{4-n}$ in which R is independently an aliphatic, alicyclic, or aromatic substituent of 1–20 carbon atoms, and n is 0–3,
 (iv) a hydridopolysilazane resin,
 (v) a methyl polydisilazane resin, and
 (vi) a boron modified hydripolysilazane, and converting the coating composition into a ceramic SiO_2 containing coating.

5,776,236

MIXED METAL OXIDE FILM HAVING AN ACCELERANT

George A. Neuman; Patricia Ruzakowski Athey, both of Pittsburgh, and Royann L. Stewart-Davis, Springdale, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 472,589, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 264,816, Jun. 23, 1994, Pat. No. 5,464,657, which is a division of Ser. No. 17,930, Feb. 16, 1993, Pat. No. 5,356,718. This application Jul. 11, 1996, Ser. No. 678,252

Int. Cl.⁶ C03C 1/00

U.S. Cl. 106—287.17

9 Claims

1. A film comprising one or more metal oxides and an accelerant.

5,776,237

PROCESS FOR PREPARING PIGMENT COMPOSITION, PIGMENT COMPOSITION AND ITS USE

Nobuyuki Tomiya, and Mikio Hayashi, both of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1997, Ser. No. 840,930

Claims priority, application Japan, Apr. 26, 1996, 8-107454

Int. Cl.⁶ C09B 67/50

U.S. Cl. 106—412

19 Claims

1. A method for preparing a pigment composition comprising the steps of
 adding a resin effective for controlling transformation of crude copper phthalocyanine from α -crystal form to β -crystal form, to crude copper phthalocyanine in an amount of from 1 to 200% by weight of said crude copper phthalocyanine, and

performing dry-milling in an atmosphere which is selected from the group consisting of a deoxygenated atmosphere and an atmosphere containing inert gas.

5,776,238

PRODUCTION OF PIGMENTS

Paul Kerwin, Bridge of Weir; Robert Langley, Glasgow, and Arthur Stark Walls, Kilmarnock, all of Scotland, assignors to Ciba Specialty Chemicals Corporation, Terrytown, N.Y.

Filed Dec. 16, 1996, Ser. No. 768,052

Claims priority, application United Kingdom, Dec. 23, 1995, 9526517

Int. Cl.⁶ C09B 67/04; 67/14; 67/16

U.S. Cl. 106—412

12 Claims

1. A process for converting a crude non-pigmentary form of an organic pigment into pigmentary form which comprises
 a) kneading the crude non-pigmentary form of an organic pigment in the presence of a liquid carboxylic acid having 6 to 20 carbon atoms and optionally an inorganic or organic salt, and
 b) separating the pigment produced from step (a) from the liquid carboxylic acid and optional inorganic or organic salt.

5,776,239

HYDROTHERMAL PROCESS FOR MAKING ULTAFINE METAL OXIDE POWDERS

Salvatore Anthony Bruno, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

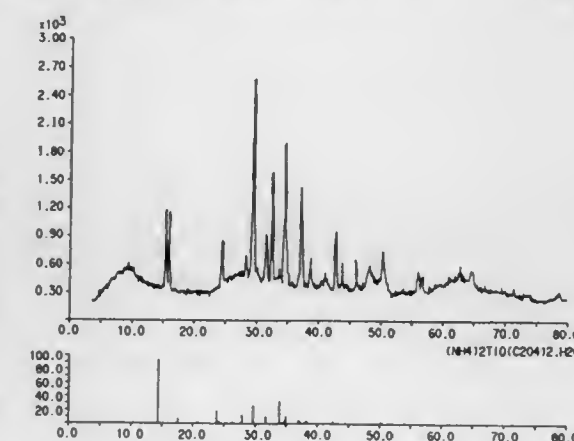
Continuation of Ser. No. 548,987, Oct. 27, 1995, abandoned.

This application Aug. 22, 1997, Ser. No. 918,702

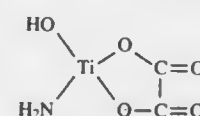
Int. Cl.⁶ C09C 1/36

U.S. Cl. 106—437

5 Claims



1. A process for making an inorganic powder comprising:
 preparing an aqueous solution comprising oxalic acid,
 adding a hydrolyzable metal compound to the aqueous solution of oxalic acid at a molar ratio of oxalic acid to metal compound of from about 0.9:1 to about 1.1:1, optionally, adding deionized water,
 adding ammonia or ammonium hydroxide solution,
 adjusting the pH of the solution to about 8–10 thereby forming a slurry containing a solid comprising an amino metal oxalate having the structure



recovering said oxalate via filtration, and
 reacting said oxalate with water at a temperature of about 200° C. to 250° C. under pressure to yield an inorganic metal oxide powder.

5,776,240

GRANULES BASED ON PYROGENICALLY PREPARED SILICON DIOXIDE, METHODS FOR THEIR PREPARATION AND USE THEREOF

Klaus Deller, Hainburg; Helmfried Krause, Rodenbach; Juergen Meyer, Rheinfelden, all of Germany; Dieter Kerner, Midland Park, N.J.; Hans Lansink-Rotgerink, Glatbach, and Werner Hartmann, Babenhausen, both of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

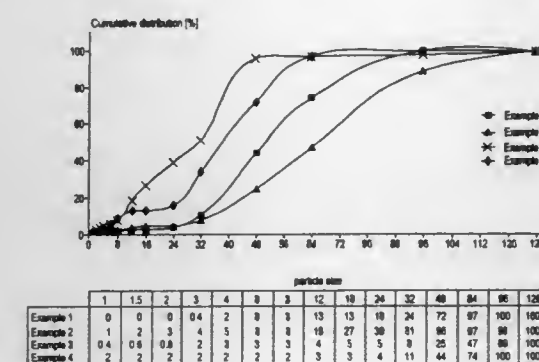
Filed Feb. 5, 1996, Ser. No. 597,893

Claims priority, application Germany, Feb. 4, 1995, 195 03 717.0; Jan. 17, 1996, 196 01 415.8

Int. Cl.⁶ C04B 14/04

U.S. Cl. 106—482

16 Claims



1. Granules based on pyrogenically prepared silicon dioxide and having the following physicochemical properties:

Average particle size: 10 to 120 μm BET surface area: 40 to 400 m^2/g Pore volume: 0.5 to 2.5 ml/g

Pore size distribution: less than 5% of the total pore volume exists as pores with a diameter < 5 nm, remainder meso- and macropores

pH value: 3.6 to 8.5

Tapped density: 220 to 700 g/l .

5,776,241

PROCESS FOR THE PREPARATION OF A MELANIC PIGMENT OF SMALL PARTICLE SIZE AND ITS USE IN COSMETICS

Paolo Giacomoni, Enghien-les-Bains; Laurent Marrot, Livry-Gargan; Myriam Mellul, l'Hay-les-Roses, and Annick Colette, l'Hay-les-Roses, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 360,844, Dec. 27, 1994, abandoned.

This application Mar. 10, 1997, Ser. No. 815,662

Claims priority, application France, Apr. 27, 1993, 93 04960

Int. Cl.⁶ F08K 5/00

U.S. Cl. 106—498

15 Claims

1. A process for the preparation of a melanin pigment particle of less than 1 μm from a melanin pigment particle of more than 1 μm , comprising dissolving a melanin pigment particle of larger than 1 μm selected from the group consisting of a melanin of natural origin and a melanin of synthetic origin at a temperature of between 10° C. and 50° C. in an aqueous medium containing at least one component selected from the group consisting of an alkalinizing agent and a sequestering agent, and then precipitating the melanin thus dissolved by the addition of at least one alkaline-earth metal salt, whereby a melanic pigment particle of less than 1 μm is formed.

5,776,242

SILICATE-DEXTRIN CLAY ADHESIVE COMPOSITIONS
 Petra Gill, Warminster, Pa.; Michael J. McDonald, Toronto, Canada, and Judith L. Thompson, Harleysville, Pa., assignors to PQ Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 607,905, Feb. 28, 1996, Pat. No. 5,571,316. This application Nov. 4, 1996, Ser. No. 743,117

Int. Cl.⁶ C09J 103/02

U.S. Cl. 106—617

11 Claims

1. An adhesive composition comprising of:
 (a) from about 0.05 to about 0.50% w/w of sodium metasilicate;
 (b) from about 0 to about 50% w/w of dextrin;
 (c) from about 3 to about 50% w/w of an inert clay or a starch;
 (d) from about 17 to about 70% w/w of an alkali metal silicate;
 (e) from about 0.05 to about 0.50% w/w of sodium metaborate octahydrate or sodium metaborate tetrahydrate;
 (f) from about 0.1 to about 10% w/w of 50% w/w sodium hydroxide or potassium hydroxide;
 (g) from about 0 to about 1% w/w of a wetting agent;
 (h) from about 0.1 to about 10% w/w of an alcohol or polyvinyl acetate;
 (i) from about 0.1 to about 30% w/w of a sugar; and
 (j) from about 15 to about 62% w/w of water.

5,776,243

PERMEABLE CELLULAR CONCRETE AND STRUCTURE

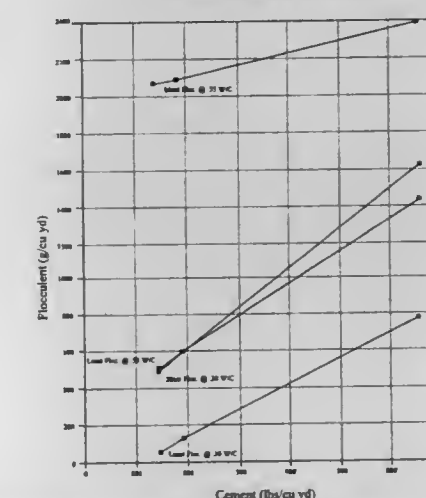
Russell L. Goodson, Denver; Gary J. Colaizzi, Lakewood; Brian Masloff, Westminster, and Joseph J. Feiler, Colorado, all of Colo., assignors to Goodson and Associates, Inc., Lakewood, Colo.

Filed Feb. 3, 1997, Ser. No. 792,981

Int. Cl.⁶ C04B 38/10

U.S. Cl. 106—677

18 Claims

FLOCCULENT QUANTITY vs Cement Content & W/C Ratio

1. A permeable cellular concrete product suited, upon setting, to form a cellular drainage structure, wherein on a volumetric basis the product comprises a mixture of:

aggregate material of substantially uniform grade in the size range from 1/16 inch to two inches, in a quantity corresponding to the volume of the product;
 a cementitious component in the quantity range from 141 to 658 pounds per cubic yard of product;
 water in quantity sufficient to create a water-to-cement ratio in the range from 0.30 to 0.55 and sufficient to wet said aggregate, establishing a cementitious-component-and-water matrix of known volume;
 pre-formed surfactant foam having a foam density in the range from 2.0 to 3.0 pcf and in a quantity range of from 5% to 30% of said known volume of the cementitious-component-and-water matrix; and

aqueous flocculent solution in a quantity of from 54 to 2,394 grams per cubic yard of product.

5,776,244

ULTRAFINE CEMENTITIOUS GROUT

Ernst H. Ahrens, Albuquerque, N. Mex., assignor to Sandia Corporation, Albuquerque, N. Mex.

Filed Sep. 10, 1996, Ser. No. 707,931

Int. Cl.⁶ C04B 14/16; 24/16

U.S. Cl. 106—737

12 Claims

I. An ultrafine cementitious grout composition consisting essentially of:

from about 40 wt. % to about 50 wt. % Portland cement;
from about 50 wt. % to about 60 wt. % pumice; and
from 0.1 wt. % to about 1.5 wt. % superplasticizer;
the Portland cement, the pumice and superplasticizer all having particle sizes such that approximately 90% of the particles are less than 6 μ m in diameter and the average particle size is less than 2.5 μ m in diameter.

5,776,245

METHOD FOR HYDROPHOBING GYPSUM

Bryan Thomas, Barry, United Kingdom, assignor to Dow Corning Limited, Barry, Wales

Filed Mar. 4, 1997, Ser. No. 812,097

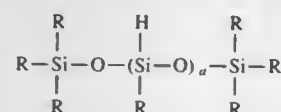
Claims priority, application United Kingdom, Mar. 19, 1996, 9605706

Int. Cl.⁶ C04B 24/40; 11/00; C09D 183/04

U.S. Cl. 106—781

10 Claims

I. A method for preparing an aqueous gypsum mixture having hydrophobic additive substantially uniformly dispersed therein, which method comprises admixing in water gypsum, a silane selected from the group consisting of silanes of the general formula (RO)₃SiR' and the general formula (RO)₂SiRR', and a non-emulsified polysiloxane of the general formula:



wherein each R is a hydrocarbon group having from one to eight carbon atoms, R' represents a lower alkyl group which is optionally substituted by a substituent selected from the group consisting of amino, amino-loweralkylene-amino and dialkylenetriamine groups, and a has an average value of between 20 and 200.

5,776,246

DIAMOND WAFER AND METHOD OF PRODUCING A DIAMOND WAFER

Keiichi Tanabe; Yuichiro Seki; Akihiko Ikegaya; Naoji Fujimori; Hideaki Nakahata, and Shin-ichi Shikata, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 6, 1995, Ser. No. 418,116

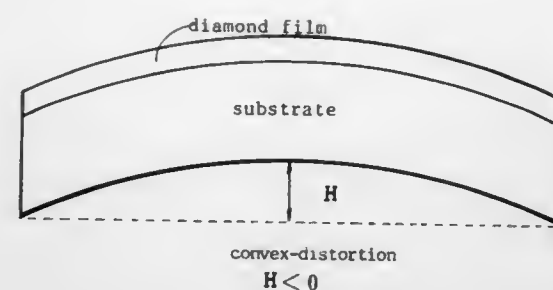
Claims priority, application Japan, Apr. 7, 1994, 6-095930

Int. Cl.⁶ C30B 29/04

U.S. Cl. 117—89

25 Claims

I. A diamond wafer comprising:
a distorted substrate which is substantially flat in a free-standing state, and
a (100) oriented polycrystalline diamond film synthesized directly on the substrate by a CVD method and polished to a roughness of less than R_{max}50 nm and Ra20 nm,
wherein the wafer is a circular wafer with a center and a periphery and is distorted monotonously from the center to the periphery without a deflection point,



wherein the wafer has a distortion height H, which is defined as a height from the center of the wafer to a plane including a circumference of the wafer, satisfying an inequality $2 \mu\text{m} \leq |H| \leq 150 \mu\text{m}$,

wherein the substrate is a Si single crystal wafer, a GaAs single crystal wafer, an AlN crystal wafer, a LiNbO₃ wafer, a LiTaO₃ wafer or a quartz wafer, and

wherein interdigital transducers of comb-shaped electrodes are formed on the diamond film, and a piezoelectric film is formed on the interdigital transducers and the diamond film, wherein the diamond film, the interdigital electrodes and the piezoelectric film form a surface acoustic wave device, and wherein a plurality of surface acoustic wave devices are arranged lengthwise and crosswise on the wafer.

5,776,247

Patent Not Issued For This Number

5,776,248

GUMMING DEVICE

Mario Spatafora, Bologna, Italy, assignor to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A., Bologna, Italy

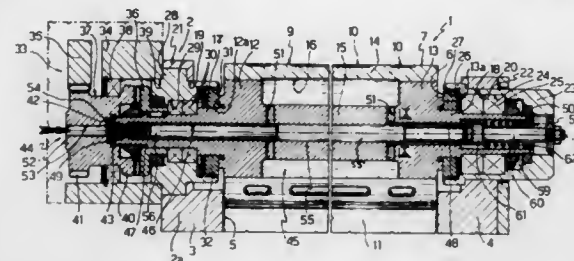
Filed Sep. 6, 1996, Ser. No. 709,219

Claims priority, application Italy, Sep. 7, 1995, B095A0416

Int. Cl.⁶ B05C 1/00; 1/08

U.S. Cl. 118—202

4 Claims



1. A gummy device comprising:
a frame and a gummy roller fitted in rotary manner to the frame;
a circuit circulating a cooling fluid, the circuit comprising a first and second portion, the circuit comprising a first and second portion, the first portion extending through said roller and having two opposite ends, at least one of which is connected to the second; and
a seal connecting said two portions of the circuit in a rotary and fluidtight manner; the gummy roller being removably connected to said second portion and comprising a normally-closed valve controlling said opposite ends of said first portion; and
the frame comprising a shoulder cooperating with and maintaining said valve in an open position when the gummy roller is fitted to the frame.

5,776,249

POWDER SPRAY COATING DEVICE

Guido Rutz, Gossau, Switzerland, assignor to Gema Volstatic AG, Switzerland

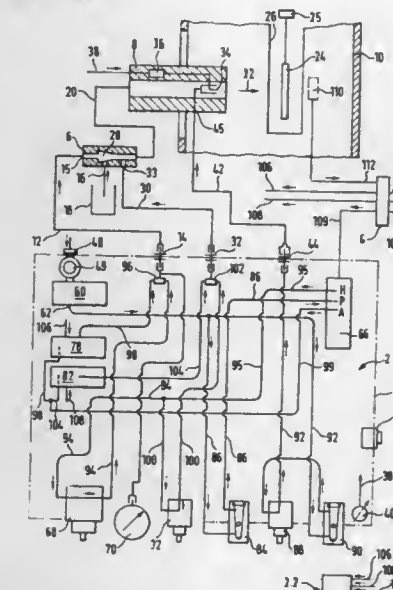
Filed Dec. 20, 1996, Ser. No. 770,318

Claims priority, application Germany, Dec. 23, 1995, 195 48 607.2

Int. Cl.⁶ B05B 7/00; B05C 5/00; 19/00

U.S. Cl. 118—308

9 Claims



1. In a powder spray coating device having at least one control unit which includes a feed air outlet adapted to be connected for supplying feed air to a powder injector feed pump in order to feed coating powder to a spray device, a first feed air path extending from an air inlet to said feed air outlet, a manually set first feed air adjustment valve located in said first feed air path for manually adjusting the flow of feed air in said first feed air path from said inlet to said feed air outlet, the improvement comprising a second feed air path which connects from said inlet to said feed air outlet, an automatically adjustable second feed air adjustment valve located in said second feed air path for automatically adjusting the flow of feed air in said second feed air path from said inlet to said feed air outlet, a selector located between said air inlet and said first and second feed air paths, said selector having a first setting connecting said air inlet to said first feed air path upstream of said first feed air adjustment valve and a second setting connecting said air inlet to said second feed air path upstream of said second feed air adjustment valve, and control means for automatically adjusting said second feed air adjustment valve when said selector is in said second setting.

5,776,250

DEVICE FOR RECOVERING PHOTORESIST MATERIAL EXHAUSTED FROM A SPIN COATER

Dong-Hwa Shin, and Young-Min Ko, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 18, 1996, Ser. No. 768,700

Claims priority, application Rep. of Korea, Dec. 29, 1995, 95-65739

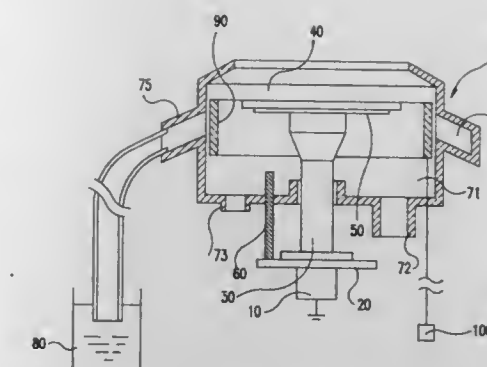
Int. Cl.⁶ B05B 1/28; 3/04; B05C 11/02; B08B 3/04

U.S. Cl. 118—326

5 Claims

I. A device for recovering superfluous photoresist material exhausted from a spin coater, the spin coater having a drive motor for alternately rotating a wafer at high and low speeds at predetermined intervals, comprising:

a solution collecting member disposed around the wafer into which superfluous photoresist material and a cleaning solution are collected after a photoresist is coated onto the wafer and the wafer is cleaned during operation of said drive motor, said



solution collecting member having at least one first inner wall defining a first collection area into which the superfluous photoresist material is collected, and having at least one second inner wall defining a second collection area into which a mix of the superfluous photoresist material and the cleaning solution is collected;

at least one first discharge pipe in flow communication with said first collection area of said solution collecting member;

at least one second discharge pipe in flow communication with said second collection area of said solution collecting member;

a blocking member moveably disposed at an opening of said first collection area and moveable between an open position and a closed position to open and close said first collection area; and

an actuator communicating with said blocking member for moving said blocking member to the open position when a photoresist material is sprayed on the wafer by the spin coater, and for moving said blocking member to the closed position when the cleaning solution is sprayed on the wafer by the spin coater.

5,776,251

DUPLEX TYPE COATING APPARATUS AND COATING SYSTEM

Nobuaki Irie; Takao Ishida; Akiyoshi Hashimoto, and Yasutomi Yoshimura, all of Nara, Japan, assignors to Hirano Tecseed Co., Ltd., Nara, Japan

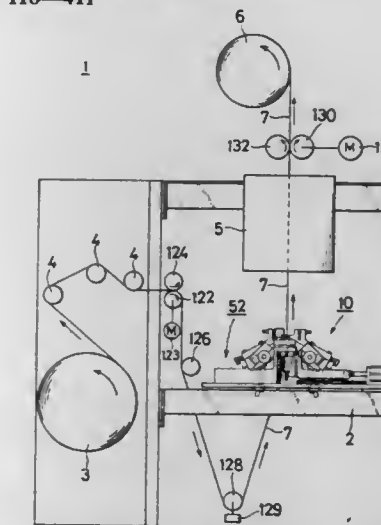
Filed Sep. 30, 1996, Ser. No. 720,599

Claims priority, application Japan, Jul. 22, 1996, 8-192525

Int. Cl.⁶ B05C 3/02

U.S. Cl. 118—411

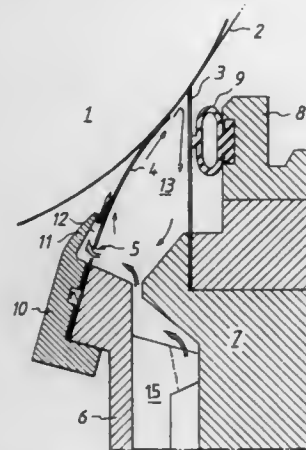
9 Claims



I. A duplex type coating apparatus for applying a coating liquid to a web, comprising:
a pair of dies disposed on opposite sides of a carrying path of said web;

each of said dies having a liquid reservoir for holding said coating liquid;
 each of said dies having a tip portion with a discharge port extending in a widthwise direction of the web for discharging said coating liquid onto opposite sides of said web;
 each of said dies having a coating liquid discharge passage extending from the liquid reservoir to the discharge port;
 coating liquid supplying means for supplying coating liquid to the liquid reservoirs such that the duplex type coating apparatus applies said coating liquid to both sides of said web by discharging same amounts of said coating liquid from each of said discharge ports onto the web;
 said discharge ports being disposed opposite one another and each having a web entry side edge part and a web exit side edge part;
 said web entry side edge parts projecting further toward said web than said web exit side edge parts such that the web exit side edge parts define an exit gap therebetween, the web entry side edge parts define an entry gap therebetween and said exit gap is wider than said entry gap so that the coating liquid is prevented from leaking from between said discharge ports; and
 the web exit side edge parts each having a curved surface extending from the coating liquid discharge passage to the tip part of each of the dies so that a coating pressure of the coating liquid discharged from the discharge passages increases from a lower level adjacent said web entry side edge parts to a higher level adjacent the web exit side edge parts.

5,776,252
ASSEMBLY FOR PREVENTING STRIPING IN A SHORT DWELL TIME APPLICATOR
 Jukka Koskinen, Järvenpää, Finland, assignor to Valmet Corporation, Helsinki, Finland
 Filed Sep. 16, 1996, Ser. No. 714,758
 Claims priority, application Finland, Sep. 20, 1995, 954450
 Int. Cl.⁶ B05C 3/02
 U.S. Cl. 118—413 7 Claims

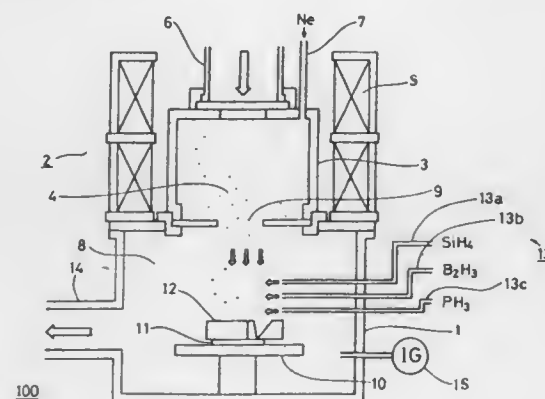


1. An apparatus for preventing striping in an applicator for coating a paper or paperboard web comprising:
 a frame;
 a doctor blade mounted to the frame positioned so as to meter and smooth a coat onto a moving surface, the moving surface comprising one of the web and a roll for applying the coat to the web;
 a flexible leading blade mounted to the frame so as to contact the moving surface, said leading blade having a stem perforated with a plurality of openings;
 an elongated application chamber formed in the frame so that the doctor blade forms one side thereof, the leading blade forms a second side thereof, and the moving surface forms a third side thereof, the plurality of openings in said leading blade extending into said application chamber;

a means for supplying a coating mix into the application chamber; and
 a flow barrier disposed outside of said application chamber and positioned a distance from said leading blade, a homogenizing chamber formed by said flow barrier and said leading blade, the plurality of openings in said leading blade extending into said homogenizing chamber, an end of said flow barrier being proximate a surface of said leading blade so that flow of coating mix from said application chamber through the plurality of openings in said leading blade and out of said homogenizing chamber is constricted by said flow barrier and the surface of said leading blade.

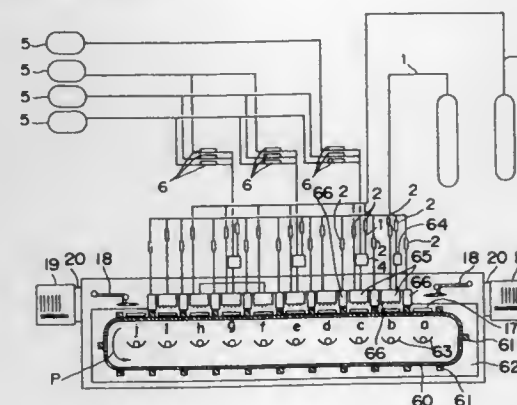
5,776,253
APPARATUS FOR FORMING SINGLE-CRYSTALLINE THIN FILM BY BEAM IRRADIATOR AND BEAM REFLECTING DEVICE

Toshifumi Asakawa, Yamato; Masahiro Shindo, Suita; Toshikazu Yoshimizu, Suita, and Sumiyoshi Ueyama, Suita, all of Japan, assignors to Neursystems Corporation, Tokyo, and Mega Chips Corporation, Suita, both of Japan
 Continuation of Ser. No. 598,221, Feb. 7, 1996, abandoned, which is a division of Ser. No. 239,969, May 9, 1994, abandoned. This application Mar. 19, 1997, Ser. No. 820,599
 Claims priority, application Japan, Oct. 14, 1993, 5-281748; Oct. 20, 1993, 5-285674; Dec. 10, 1993, 5-341281; Mar. 29, 1994, 6-058887
 Int. Cl.⁶ C23C 16/00
 U.S. Cl. 118—723 CB 12 Claims



1. A beam irradiator for irradiating a target surface of a sample with a gas beam, said beam irradiator comprising:
 a container for storing said sample; and
 a beam source for irradiating said target surface of said sample being set in a prescribed position of said container with said gas beam,
 at least a surface of a portion irradiated with said beam being made of a material having threshold energy being higher than energy of said beam in sputtering by irradiation with said beam among an inner wall of said container and a member being stored in said container.

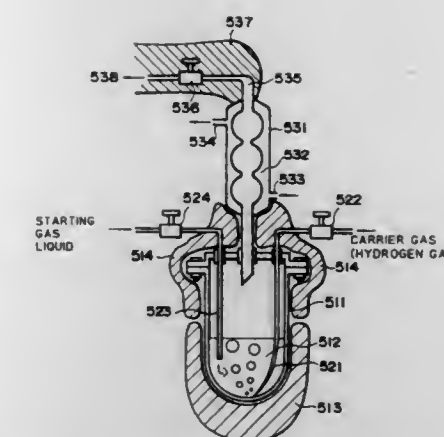
5,776,254
APPARATUS FOR FORMING THIN FILM BY CHEMICAL VAPOR DEPOSITION
 Akimasa Yuuki; Takaaki Kawahara; Tetsuro Makita; Mikio Yamamuka; Koichi Ono, and Tomonori Okudaira, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed Dec. 27, 1995, Ser. No. 579,495
 Claims priority, application Japan, Dec. 28, 1994, 6-326971; Dec. 28, 1994, 6-326972
 Int. Cl.⁶ C23C 16/00
 U.S. Cl. 118—725 2 Claims



1. An apparatus for depositing a thin film on a substrate by chemical vapor deposition (CVD) comprising:
 material containing means for containing a liquid CVD source material;
 material feeding means for feeding the liquid CVD source material from said material containing means to a vaporizer while keeping the CVD source material liquid,
 a vaporizer for vaporizing the liquid CVD source material fed from said material feeding means by heating the liquid CVD source material to a high temperature to form a CVD source material gas; and
 a reaction chamber connected to said vaporizer by a pipe for forming a thin film on a substrate using the CVD source material gas, wherein said reaction chamber includes means for moving the substrate, a plurality of gas heads, and a plurality of lamp heaters for heating substrate to form a thin film on the substrate, said gas heads being arranged in a line and connected for controlling material ejecting rate independently, and said lamp heaters being arranged in a line.

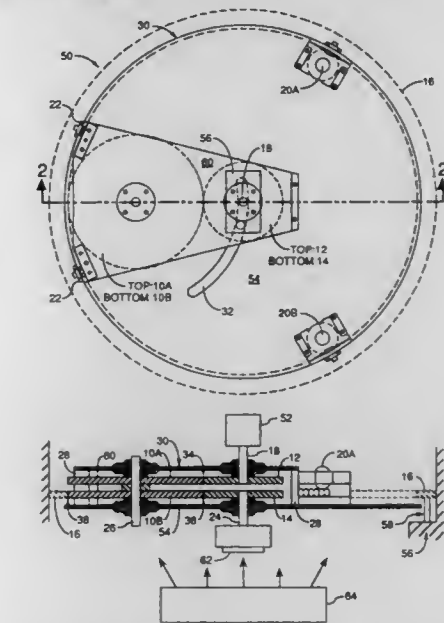
5,776,255
CHEMICAL VAPOR DEPOSITION APPARATUS
 Tetsuo Asaba, Odawara; Yasushi Kawasumi, Fujisawa; Kazuaki Obmi; Yasuhiro Sekine, both of Yokobama, and Yukihiro Hayakawa, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Continuation of Ser. No. 171,431, Dec. 22, 1993. This application Jul. 5, 1996, Ser. No. 675,843
 Claims priority, application Japan, Dec. 24, 1992, 4-357271
 Int. Cl.⁶ C23C 16/00
 U.S. Cl. 118—726 7 Claims

1. A unit for vaporizing a liquid starting material into a vaporized starting material and supplying the vaporized starting material to a chemical vapor deposition apparatus, the unit comprising:
 a container for storing a liquid starting material provided with a first heater;
 a capillary tube having a tip, said tip being positioned so that it is in contact with the bottom of the container to supply a bubbling gas into the container;
 a condenser for cooling the vaporized starting material provided downstream of the container; and
 a second heater for heating the vaporized starting material provided downstream of the condenser,



wherein the first heater heats the liquid starting material to a temperature equal to or greater than the boiling point of the starting material, and the second heater maintains a temperature below the temperature provided by the first heater.

5,776,256
COATING CHAMBER PLANETARY GEAR MIRROR ROTATING SYSTEM
 Terry D. Born, Kula, and Daniel O'Connell, Kihei, both of HI., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
 Filed Oct. 1, 1996, Ser. No. 725,226
 Int. Cl.⁶ C23C 16/00
 U.S. Cl. 118—730 5 Claims



1. A mirror rotating system, said mirror rotating system mounted within a vacuum chamber having a source of coating material therein, said mirror rotating system moving a mirror in a complex pattern to provide for a more uniform coating on the surface of said mirror, said mirror rotating system comprising:
 a carousel, said carousel having means for holding the mirror, wherein said carousel comprises:
 a carousel housing, said carousel housing comprising an upper floor; and
 a lower floor;
 at least two idler gears, said idler gears mounted to said lower floor and engaged with an internal ring gear;
 at least two bearing trucks, said bearing trucks being mounted to said upper floor of said carousel and riding on a top surface of said internal ring gear;

means for rotating said carousel within said internal ring gear; and
 means for rotating a mirror holder, said means for rotating a mirror holder mounted on said carousel and engaged with said means for rotating said carousel, said means for rotating a mirror holder being adjustable to change a radius of movement; and
 means for holding said carousel within the vacuum chamber, said means for holding allowing said carousel to rotate within said vacuum chamber, said rotation further causing the mirror mounted to said carousel to rotate.

5,776,257

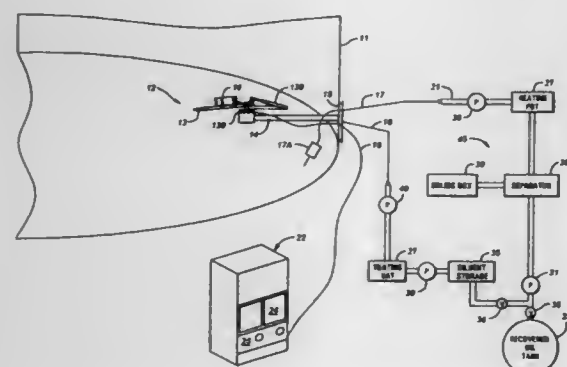
GAS TIGHT TANK CLEANING METHOD
 Kermit R. Arnold, Bacliff, and Craig Jeffrey Byard, League City, both of Tex., assignors to Landry Service Co. Inc., Bacliff, Tex.

Continuation-in-part of Ser. No. 677,389, Jul. 9, 1996. This application Aug. 22, 1997, Ser. No. 916,380

Int. Cl.⁶ B08B 9/08

U.S. Cl. 134—11

8 Claims



1. A method for gas tight cleaning of industrial tanks which prevents significant outside venting of the tanks' atmosphere until a safe and legal volatile organic compound (VOC) level is obtained, comprising the steps of:

- removing a manway cover on the top or side of the tank and immediately installing a flexible seal material over the manway opening to temporarily prevent significant venting of the tank atmosphere to the outside;
- positioning a tank cleaning robot system in front of the manway opening and inserting said system through said flexible seal material into the tank interior, said system having a visual monitor, a directable fluid spray nozzle and on evacuation hose, and sealedly attaching said system to said manway opening;
- sampling the internal atmosphere of said tank and analyzing the sample for VOC to establish a VOC baseline;
- spraying a diluent at relatively high pressure and volume on the interior of the tank to flush away as much material capable of generating VOC's and removing such material from the tank;
- spraying diesel fuel at a relatively lower pressure and volume into the tank to create a diesel fog in the tank and allowing the diesel fog to settle, thereby absorbing airborne VOC's;
- spraying a water and surfactant mixture into the tank to create a water mist in the tank atmosphere and allowing the water mist to settle;
- monitoring the VOC level in the tank and if necessary, repeating steps (e) and (f) to lower the VOC level to a safe and legal percentage of baseline.

5,776,258 CONTINUOUS CLEANSING METHODS FLAT-ROLLER STEEL STRIP

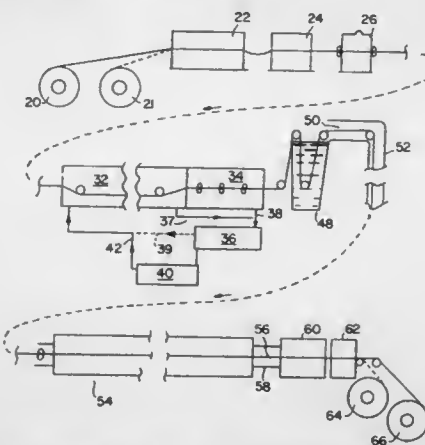
Kenneth R. Olashuk, Follansbee, and Lester R. Shields, Weirton, both of W. Va., assignors to Weirton Steel Corporation, Weirton, W. Va.

Division of Ser. No. 445,530, May 23, 1995, Pat. No. 5,599,395. This application Nov. 22, 1996, Ser. No. 753,267

Int. Cl.⁶ B08B 1/02

U.S. Cl. 134—15

5 Claims



1. Method for providing a continuously-operable solution cleansing system for use in cleansing iron fines and associated surface debris from flat-rolled steel strip for subsequent processing, comprising

- providing a continuous-strip line with in-line main cleaning solution tank means of predetermined capacity for receiving flat-rolled steel in continuous strip form for surface cleansing;
- providing for continuously-operable surface cleansing of such steel strip, by:
 - selecting such predetermined capacity so as to enable continuous withdrawal of a preselected portion of such solution as contaminated by surface cleansing of iron fines and associated debris,
 - continuously withdrawing such preselected portion of such predetermined capacity, as contaminated;
 - directing such withdrawn contaminated portion to contaminant separation means for separating and retaining such iron fines and associated debris, with such contaminant separation means presenting:
 - a separating tank assembled from non-ferromagnetic material of predetermined thickness gauge between closely-spaced opposite surfaces so as to present a plurality of internal surfaces disposed within the separating tank with the remaining opposite surface presenting an external surface of the separating tank,
 - an inlet means for receiving such withdrawn contaminated portion for movement selected from the group consisting of along at least one such internal surface and along more than one internal surface of the separating tank,
 - magnetic field source means disposed so as to establish lines of magnetic flux selected from the group consisting of a location contiguous to at least one internal surface and locations contiguous to more than one such internal surface within the separating tank, so as to magnetically attract and retain iron fines and associated debris surface contaminants internally of such separating tank, and
 - means for returning cleaning solution, from which such contaminants have been separated and retained, to such main tank means; and
- maintaining desired uniformity of strip-cleansing operations in such main tank means, free of interruption of operations of such continuous-strip line for replacement of cleaning solution for strip surface cleansing purposes, by
- continuously magnetically removing such surface contaminants from contaminated solution being withdrawn from such main tank means, magnetically retaining such contaminants,

as removed, and returning cleaning solution from which contaminants have been removed to such main tank means.

5,776,259

METHOD FOR FINAL RINSE/DRY FOR CRITICAL CLEANING APPLICATION

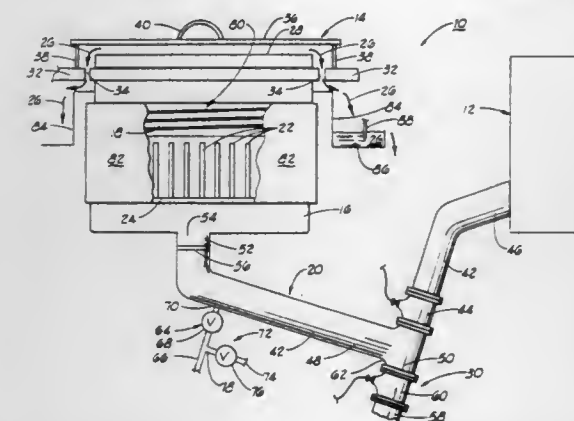
Richard P. Ciari, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 41,956, Apr. 2, 1993, Pat. No. 5,419,351. This application Apr. 12, 1995, Ser. No. 421,676

Int. Cl.⁶ B08B 3/04;7/04

U.S. Cl. 134—18

10 Claims



1. A final rinse/dry method for critically cleaning articles, the method comprising:

- prefiltering a liquid in a prefiltration unit to remove contaminants and to provide an ultrapurified liquid;
- placing articles to be critically cleaned in a holding chamber within a housing;
- flowing the ultrapurified liquid to the holding chamber so that the ultrapurified liquid rinses the articles in the holding chamber, the ultrapurified liquid exiting the holding chamber as a spent effluent stream, wherein flowing the ultrapurified liquid to the holding chamber is accomplished by:
 - using a fluid flow conduit having an upstream end portion, a medial portion and a downstream end portion, the upstream end portion thereof connected to the prefiltration unit and the downstream end portion thereof connected to the housing so that fluid communication is provided between the prefiltration unit and the holding chamber of the housing, the medial portion of the fluid flow conduit connected to the liquid discharge unit such that the liquid discharge unit is disposed between the upstream and downstream end portions of the fluid flow conduit; and
 - selectively controlling the flow of the ultrapurified liquid to the holding chamber of the housing by using a normally closed valve disposed within the fluid flow conduit upstream of the liquid discharge unit;
- ceasing the flow of ultrapurified liquid to the holding chamber; draining residual liquid from the holding chamber by way of a liquid discharge unit;
- flowing an inert gas to the holding chamber to provide an inert atmosphere within the holding chamber;
- heating the holding chamber by way of a heater to dry the articles in the inert atmosphere; and
- purging the inert gas from the holding chamber.

5,776,260

LIQUID WASTE DISPOSAL AND CANISTER FLUSHING SYSTEM AND METHOD

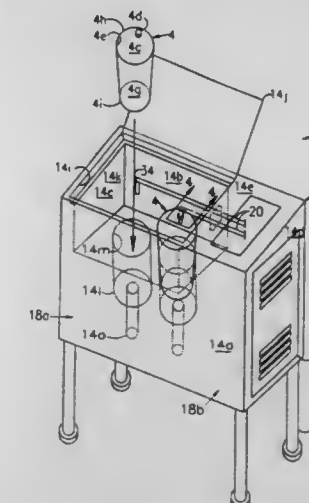
James L. Dunn, and Timothy A. Carty, both of Topeka, Kans., assignors to Dornoch Medical Systems, Inc., Riverside, Mo.

Filed Aug. 16, 1996, Ser. No. 698,940

Int. Cl.⁶ B08B 9/08

U.S. Cl. 134—18

36 Claims



30. A method of disposing liquid waste from a canister having a lid with an accessory port, a base with a drain opening and a canister sidewall connected to the canister lid and canister base, which comprises the steps of:

- providing the canister with a drain valve closing the drain opening;
- opening the drain valve;
- draining the canister liquid waste contents;
- flushing the canister;
- delaying the step of flushing the canister a predetermined length of time after commencing the step of draining the canister;
- providing a water source;
- providing an injection jet with a water inlet port and a discharge orifice;
- providing a water inlet line;
- connecting the water inlet line to the water source and to the injection jet water inlet port;
- inserting the injection jet into the canister accessory opening;
- providing a water stream from said water source through said water line, through said injection jet and out of said discharge orifice into said canister;
- providing a control system with a microprocessor; and
- programming the microprocessor with a delay interval corresponding to a drain cycle with said drain valve open for a predetermined time limit prior to commencing the flush cycle.

5,776,261

METHOD FOR CLEANING A COMMUTATOR OF AN ELECTRIC MOTOR

James Robert Panyard, Livonia, and Lawrence William Staley, Ann Arbor, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Nov. 3, 1995, Ser. No. 552,445

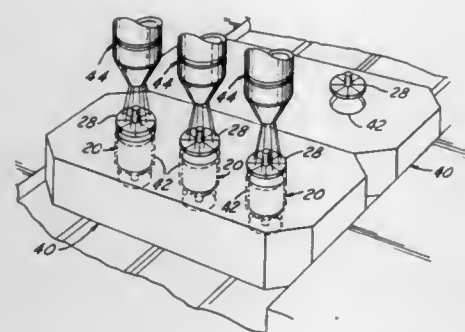
Int. Cl.⁶ B08B 3/00;5/00

U.S. Cl. 134—26

5 Claims

1. A method for cleaning an end-face commutator of a motor, said commutator forming a portion of a rotor of said motor, said method comprising:

- presenting said commutator to a water spray, said water spray having an area when reaching said commutator less than or equal to a surface area of said commutator facing said spray;



- (b) presenting said rotor to at least one stream of air heated above an ambient temperature in a vicinity of said rotor; wherein said commutator includes at least one slot provided therein;
- wherein said water spray cleans machining chips from said at least one slot;
- wherein said stream of air is directed substantially axially toward said rotor;
- wherein said rotor has a periphery extending axially and wherein said method further comprises substantially shielding said periphery from said water spray by placing said rotor in a cavity of substantially the same shape as said periphery.

5,776,262

SOLAR MODULE WITH PERFORATED PLATE

Bernd Melchior, Wermelskirchen, Germany, assignor to Blue Planet AG, Schaan, Liechtenstein

PCT No. PCT/EP94/02942, § 371 Date Aug. 15, 1996, § 102(e) Date Aug. 15, 1996, PCT Pub. No. WO95/08193, PCT Pub. Date Mar. 23, 1995

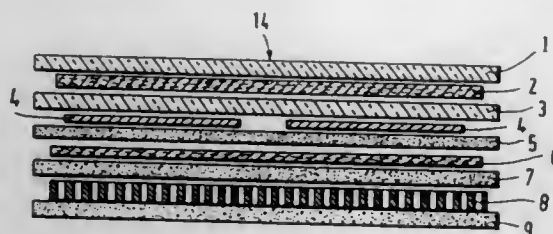
PCT Filed Sep. 3, 1994, Ser. No. 615,214

Claims priority, application Germany, Sep. 16, 1993, 43 31 425.2; Apr. 1, 1994, 44 11 458.3

Int. Cl.⁶ H01L 31/048

U.S. Cl. 136—251

2 Claims



1. A solar panel comprising
- a plurality of photovoltaic solar cells (4);
- a carrier plate (8) supporting said solar cells; and synthetic polymer resin (1, 3, 5, 7, 9) surrounding said cells on said carrier plate, wherein the carrier plate (8) is formed with a plurality of openings (25) distributed over its surface and said synthetic polymer resin penetrates said openings.

5,776,263
METHOD FOR PRODUCING ALLOY POWDER OF THE R₂T₁₇ SYSTEM, A METHOD FOR PRODUCING MAGNETIC POWDER OF THE OF THE R₂T₁₇NX SYSTEM, AND A HIGH PRESSURE HEAT-TREATMENT APPARATUS

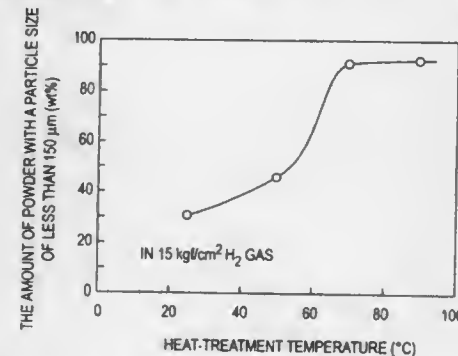
Kiyoshi Kojima, Nara, and Takeshi Takahashi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 360,078, Dec. 20, 1994, Pat. No. 5,609,695. This application Nov. 19, 1996, Ser. No. 751,809 Claims priority, application Japan, Dec. 21, 1993, 5-322356; Dec. 22, 1993, 5-324321; Apr. 26, 1994, 6-088592

Int. Cl.⁶ H01F 1/053

U.S. Cl. 148—122

5 Claims



1. A method for producing a R₂T₁₇ alloy powder wherein R is Sm or a substance obtained by replacing a part of Sm with one or more rare earth elements, and T is Fe or a substance obtained by replacing by a part of Fe with one or more transition elements, the method comprising:

- (a) heat-treating an ingot containing R and T to form a R₂T₁₇ alloy ingot having a Th₂Zn₁₇ crystal lattice structure;
- (b) hydrogen decrepitating said R₂T₁₇ alloy ingot in a vessel containing hydrogen gas at a temperature of 70° C. to 300° C. and at a pressure of 5 kgf/cm² to 50 kgf/cm² whereby said R₂T₁₇ alloy ingot is caused to absorb said hydrogen gas and is changed into a R₂T₁₇ alloy powder having a particle size of less than 150 μm; and
- (c) desorbing said hydrogen gas from said R₂T₁₇ alloy powder.

5,776,264

METHOD FOR PRODUCING AMORPHOUS BASED METALS

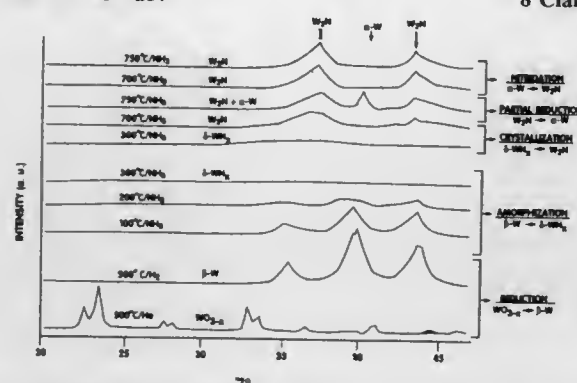
Larry E. McCandlish, Highland Park; Bernard Kear, Whitehouse Station, both of N.J., and Nicos C. Angastiniotis, Nicosia, Cyprus, assignors to Rutgers University, Piscataway, N.J.

Filed Apr. 12, 1996, Ser. No. 631,453

Int. Cl.⁶ C22B 34/30

U.S. Cl. 148—237

8 Claims



1. A method of forming an amorphous metal compound of a metal selected from the group consisting of tungsten, molybdenum, tungsten-molybdenum alloys, alloys containing tungsten or molyb-

denum and a metal selected from the group consisting of chromium, iron, cobalt and nickel comprising;

reducing a composition containing said metal to form metal; and oxidizing said metal at a temperature less than about 350° C. in an environment comprising less than about 3% oxygen in an inert gas, thereby oxidizing said elemental metal without generating an exotherm, and forming amorphous metal oxide.

5,776,265

PROCESS FOR ACTIVATING A METAL SURFACE FOR CONVERSION COATING

Linda S. Kramer, Troy; Robin M. Dunn, Royal Oak; Terrence R. Giles, Brighton, and Robert W. Miller, Clarkston, all of Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/US93/10243, § 371 Date Apr. 26, 1996, § 102(e) Date Apr. 26, 1996, PCT Pub. No. WO95/12011, PCT Pub. Date May 4, 1995

PCT Filed Oct. 26, 1993, Ser. No. 624,623

Int. Cl.⁶ C23C 22/80

U.S. Cl. 148—241

12 Claims



1. An improved process for forming a phosphate conversion coating on a metal substrate, wherein the surface of the metal substrate is cleaned, activated by contact with an aqueous activating composition comprising a reaction product of a titanium compound and a phosphorus compound and coated by a conversion coating process, the improvement which comprises: applying ultrasonic vibration energy to the aqueous activating composition.

5,776,266

OXIDATION PROTECTION METHOD FOR TITANIUM

Albert G. Tobin, Smithtown, N.Y., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

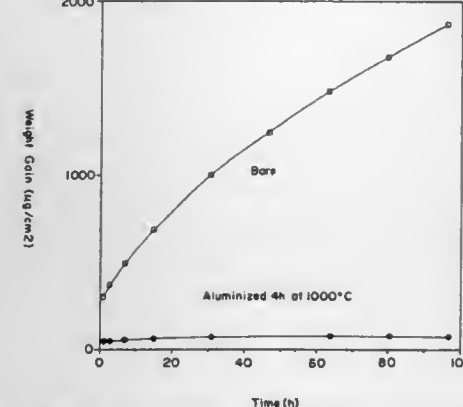
Division of Ser. No. 531,036, May 31, 1990, Pat. No. 5,672,436. This application Jun. 5, 1995, Ser. No. 464,160

Int. Cl.⁶ C23C 8/80

U.S. Cl. 148—277

15 Claims

Effect of Aluminumization on Oxidation of CP Titanium at 850°C



1. A process for forming an oxidation resistance surface on titanium comprising suspending a surface of titanium in a pure

vapor of aluminum or a vapor of an aluminum alloy at a temperature in the range of between about 650° C. and about 1175° C. for a period of time of between about 1 hour and about 4 hours whereby an aluminized surface is obtained and oxidizing said aluminized surface.

5,776,267

SPRING STEEL WITH EXCELLENT RESISTANCE TO HYDROGEN EMBRITTLEMENT AND FATIGUE

Shigenobu Nanba; Hiroshi Yaguchi; Masataka Shimotsusa; Nobuhiko Ibaraki; Takenori Nakayama; Takashi Iwata; Yoshinori Yamamoto; Norio Ohkouchi, and Mamoru Nagao, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 9, 1996, Ser. No. 728,530

Claims priority, application Japan, Oct. 27, 1995, 7-280931; Oct. 27, 1995, 7-280932; Aug. 9, 1996, 8-211708

Int. Cl.⁶ C22C 38/02

U.S. Cl. 148—328

13 Claims

1. A spring steel, comprising at least one element selected from the group consisting of Ti at 0.001 to 0.5% (the term “%” herein means “mass %”, the same is true hereinbelow), Nb at 0.001 to 0.5%, Zr at 0.001 to 0.5%, Ta at 0.001 to 0.5% and Hf at 0.001 to 0.5%, and also comprising C at 0.3% to 0.55%, Si at 1.49 to 2.50%, Mn at 0.005 to 2.0%, N of 1 to 200 ppm and S of 5 to 300 ppm, with a balance beginning essentially Fe and inevitable impurities,

wherein a great number of fine precipitates including carbides, nitrides, sulfides and/or their compounds having an average particle size of less than 5 μm and comprising at least one element selected from the group consisting of Ti Nb, Zr, Ta and Hf, are at least dispersed in a testing area;

said testing area defined by a region of a depth of 0.3 mm or more from a surface with no inclusion of a center part and having an area of 20 mm².

5,776,268

PROCESS FOR MANUFACTURING SURGICAL NEEDLES

William McJames, Belle Mead; Bernard M. Willis, East Brunswick; Daniel Smith, Manalapan Township; Eugene Reynolds, Freehold; Carl Gucker, Branchburg, and Michael Nordmeyer, Neshanic Station, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

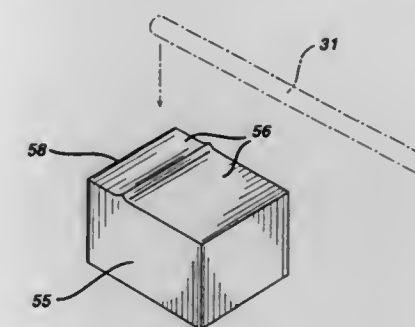
Continuation of Ser. No. 773,809, Dec. 19, 1996, abandoned, which is a continuation of Ser. No. 633,607, Apr. 17, 1996, abandoned, which is a continuation of Ser. No. 405,554, Mar. 15, 1995, abandoned, which is a continuation of Ser. No. 147,435, Nov. 1, 1993, abandoned. This application Jun. 25,

1997, Ser. No. 882,064

Int. Cl.⁶ C21D 6/00

U.S. Cl. 148—656

4 Claims



1. A method for manufacturing a cutting edge surgical suture needle, comprising:

providing an open radius die, said open radius die comprising a curved surface terminating in a distal ridge, wherein said curved surface is continuous;
 mounting a plurality of needle blanks to a carrier means, said needle blanks comprising metal wire;
 moving the carrier means and each needle blank successively to the open radius coining die;
 coining each needle blank on the curved surface of the open radius coining die and thereby causing at least part of each needle blank to flow onto the surface of the open radius die such that the flow is unrestrained laterally;
 then moving each needle blank successively to at least one coining die having a cavity and coining each needle blank in each said coining die;
 moving each needle blank to a trimming station and trimming off any excess flash;
 moving each needle blank to at least one additional coining die having a cavity and coining each needle blank in each coining die, thereby forming a surgical suture needle; and,
 moving each needle to a curving anvil station and curving each surgical needle wherein the metal wire comprises a metal alloy selected from the group consisting of 300 series stainless steel, 400 series stainless steel and equivalent alloys.

5,776,269

LEAD-FREE 6000 SERIES ALUMINUM ALLOY

Larry E. Farrar, Jr., and Norman LeRoy Coats, II, both of Jackson, Tenn., assignors to Kaiser Aluminum & Chemical Corporation, Pleasanton, Calif.

Filed Aug. 24, 1995, Ser. No. 518,726
 Int. Cl.⁶ C22C 21/00

U.S. Cl. 148—689

7 Claims

1. An essentially lead-free, extruded and then solution heat-treated aluminum screw machine stock alloy consisting essentially of about 0.40 to 0.8 wt. % silicon, not more than about 0.7 wt. % iron, about 0.15 to 0.40 wt. % copper, not more than about 0.15 wt. % manganese, about 0.8 to 1.2 wt. % magnesium, about 0.04 to 0.14 wt. % chromium, not more than about 0.25 wt. % zinc, not more than about 0.15 wt. % titanium, about 0.10 to 0.7 wt. % tin, and about 0.20 to 0.8 wt. % bismuth, balance aluminum and unavoidable impurities.

5,776,270

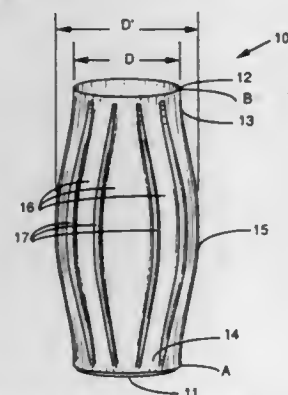
METHOD FOR REFORMING A CONTAINER AND CONTAINER PRODUCED THEREBY

Scott C. Biondich, Delmont, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 2, 1996, Ser. No. 582,005
 Int. Cl.⁶ C22F 1/00

U.S. Cl. 148—696

26 Claims



24. A method of reforming a sidewall of a generally cylindrical shaped portion of an aluminum container comprising:
 providing a generally cylindrical aluminum sidewall having an initial diameter;

thermally treating at least a portion of the generally cylindrical sidewall;
 expanding the thermally treated portion of the generally cylindrical sidewall to form an intermediate sidewall having an intermediate expanded diameter greater than the initial diameter; and
 expanding at least the intermediate expanded diameter of the previously expanded intermediate sidewall to form a final sidewall having a final expanded diameter greater than the intermediate diameter.

5,776,271

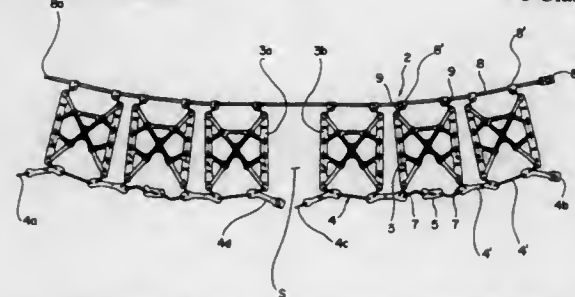
TIRE ANTI-SKID APPARATUS

Kiyoshi Sakuma, and Tadashi Mituyasu, both of Tokyo, Japan, assignors to Car Mate Mfg. Co., Ltd., Tokyo, Japan
 Filed Dec. 12, 1996, Ser. No. 764,152

Claims priority, application Japan, Dec. 13, 1995, 7-346239
 Int. Cl.⁶ B60C 27/12

U.S. Cl. 152—213 R

8 Claims



1. A tire anti-skid apparatus comprising a tire outer tightening device, a tire inner tightening device, and a plurality of non-metallic anti-skid members coupled between said tire outer tightening member and said tire inner tightening device, wherein said plurality of non-metallic anti-skid members are separated into a plurality of groups with a space between said plurality of groups, and one end of a joint is pivotally coupled to an outer end of at least one of said plurality of anti-skid members while another end of said joint is pivotally coupled to said outside tightening member and one end of another joint is pivotally coupled to an inner end of said at least one of said plurality of anti-skid members while another end of said another joint is pivotally coupled to said inner tightening member.

5,776,272

VEHICLE WHEEL WITH BEADLESS PNEUMATIC VEHICLE TIRE

Henryk Pakur, Bückeburg; Roland Jenke, Hademsdorf; Geert Roik, Cremlingen, and Rainer Baumgarten, Wietendorf, all of Germany, assignors to Continental Aktiengesellschaft, Hanover, Germany

Filed Aug. 22, 1996, Ser. No. 703,213
 Claims priority, application Germany, Aug. 23, 1995, 195 30 939.1

Int. Cl.⁶ B60B 21/02; 21/10; B60C 3/02; 3/06

U.S. Cl. 152—453

10 Claims

1. A vehicle wheel comprising:
 a wheel rim with a radially inwardly positioned mounting surface and rim flanges connected axially outwardly to opposite sides of said mounting surface;
 a beadless pneumatic vehicle tire with a carcass comprised of at least one carcass ply;
 said pneumatic vehicle tire having a tread and two sidewalls;
 said pneumatic vehicle tire [mounted on] vulcanized to said inner mounting surface of said wheel rim so as to substantially enclose said mounting surface of said wheel rim;
 said rim flanges each having a radially outwardly projecting end portion serving as axial contact surfaces for a respective one of said sidewalls, wherein said sidewalls are not fastened to

5,776,274

Patent Not Issued For This Number

5,776,275

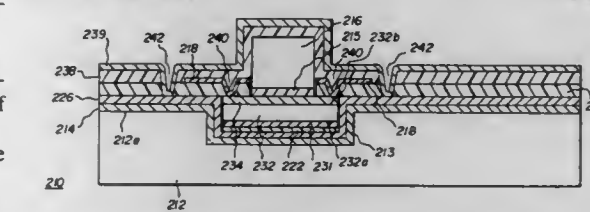
FABRICATION OF COMPACT MAGNETIC CIRCULATOR COMPONENTS IN MICROWAVE PACKAGES USING HIGH DENSITY INTERCONNECTIONS

Vikram Bidare Krishnamurthy, Latham; Kyung Wook Paik, Clifton Park; Mario Ghezzi, Ballston Lake; William Paul Kornumpf, Albany, and Eric Joseph Wildi, Niskayuna, all of N.Y., assignors to Martin Marietta Corporation, King of Prussia, Pa.

Division of Ser. No. 421,180, Apr. 13, 1995, Pat. No. 5,653,841.
 This application Oct. 21, 1996, Ser. No. 734,558
 Int. Cl.⁶ B29C 65/48; H01P 1/383

U.S. Cl. 156—150

12 Claims



1. A method for making a high density interconnect-compatible stripline circulator, comprising the steps of:

- disposing a permanent magnet onto a surface of a substrate;
- bonding a conductive sheet to the permanent magnet, the conductive sheet having a plurality of holes disposed therein;
- dielectrically bonding a first ferrite disk to the conductive sheet;
- laminating a first dielectric layer to at least parts of the conductive sheet, to enclose the first ferrite disk;
- disposing a Y-shaped metallization layer over the second dielectric layer;
- dielectrically bonding a second ferrite disk to the Y-shaped metallization layer;
- laminating a second dielectric layer to at least portions of the first dielectric layer to enclose the second ferrite disk and at least parts of the Y-shaped metallization layer;
- drilling a plurality of via holes through the second dielectric layer to the substrate surface;
- metallizing the second dielectric layer and an inner surface of each of the via holes with a first member of a soft magnetic material;
- removing the substrate and metallizing the permanent magnet and bottom of the conductive sheet with a second member of a soft magnetic material; and
- ablating the second dielectric film to expose portions of the Y-shaped metallization layer.

5,776,273

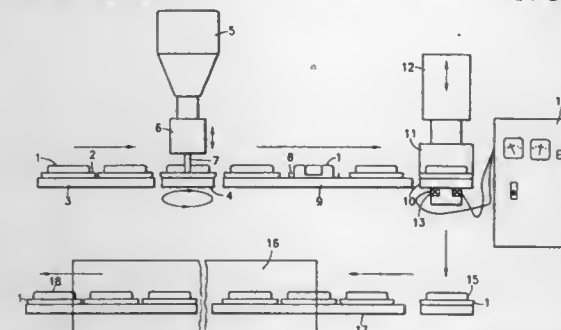
METHOD FOR LINING WITH POWDER

Norio Takeuchi; Masaki Morotomi, both of Yokohama; Toshi-nori Moriga, Tokyo; Ken Takenouchi, and Seishichi Kobayashi, both of Yokohama, all of Japan, assignors to Toyo Seikan Kalsba, Ltd., Tokyo, Japan

Filed Oct. 16, 1995, Ser. No. 543,595
 Claims priority, application Japan, Oct. 14, 1994, 6-249633
 Int. Cl.⁶ B27N 3/00; B32B 17/00

U.S. Cl. 156—62.2

84 Claims



1. A lining method for lining a predefined surface area on a base object, comprising:

- providing a lining material in the form a non-spherical powder with a resting angle of 40 degrees or greater;
- holding said powder in a container having a feed outlet;
- vibrating at least one of said feed outlet and said container at a frequency and amplitude such that said powder flows by gravity through said feed outlet thereby feeding said powder;
- feeding at least a portion of said powder stored in said container onto said predefined surface area on said base object; and
- fixing said powder fed onto said predefined area on said base object to form a lining.

5,776,276

METHOD FOR PRODUCING A PRESSURE SENSOR

Ulrich Goebel, Reutlingen; Andreas Thoma, Kirchentellinsfurt; Juergen Schwaiger, Reutlingen; Rolf Becker, Pfullingen, and Andreas Fischer, Reutlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

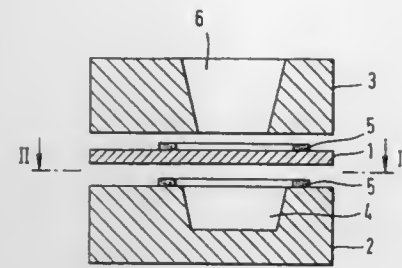
Filed Feb. 12, 1996, Ser. No. 599,844
 Claims priority, application Germany, Mar. 15, 1995, 195 09 250.3

Int. Cl.⁶ B32B 31/26; G01L 1/14
 U.S. Cl. 156—89

6 Claims

1. A method for producing a pressure sensor comprising the steps of:

- forming a depression in a first shaped ceramic member;
- providing a thick-layer paste on at least one of a ceramic plate and the first shaped ceramic member;



arranging the ceramic plate on top of the first shaped ceramic member, the thick-layer paste lying between the ceramic plate and the first shaped ceramic member; and sealing the depression at a preselected internal pressure by joining the ceramic plate to the first shaped ceramic member, the sealed depression defining a reference volume, wherein the ceramic plate and the first shaped ceramic member are joined by firing the thick-layer paste, and wherein the thick-layer paste does not completely surround the depression prior to firing, the thick-layer paste becomes fluid upon firing, and the fluid flows around the depression.

5,776,277

ENVIRONMENTAL SEALING

Alain Wambeke, Zoutleeuw, Belgium, assignor to N.V. Raychem S.A., Kessel-Lo, Belgium
PCT No. PCT/GB95/00383, § 371 Date Dec. 2, 1996, § 102(e)
Date Dec. 2, 1996, PCT Pub. No. WO95/23448, PCT Pub. Date Aug. 31, 1995

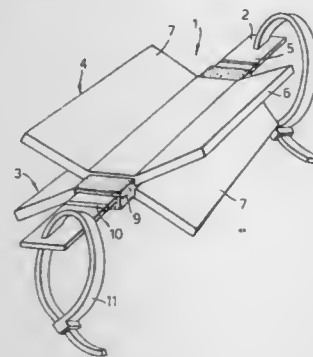
PCT Filed Feb. 24, 1995, Ser. No. 702,691

Claims priority, application United Kingdom, Feb. 28, 1994, 9403838

Int. Cl.⁶ B65H 69/00

U.S. Cl. 156—158

12 Claims



1. An environmental sealing device capable of cooperating with an outer pressure member to form a sealing block between two or more elongate substrates and a hollow housing within which the substrates extend, the device comprising:

an elongate support member, and
two or more elongate flexible leaves each of which comprises a sealing material that is not heat fusible and is secured by bonding to the support member, and extends laterally of the elongate support member,

the elongate sealing device being positioned, in use, between the elongate substrates, so that a first of the flexible leaves extends at least part of the way around the periphery of a first of the elongate substrates, and a second of the flexible leaves extends at least part of the way around the periphery of a second of the elongate substrates, so that in cooperation with the action of an outer pressure member acting inwardly on the substrates and the device, and outwardly onto the housing, a sealing block is made between the elongate substrates and the housing.

5,776,278
METHOD OF MANUFACTURING AN ENCLOSED TRANSCEIVER

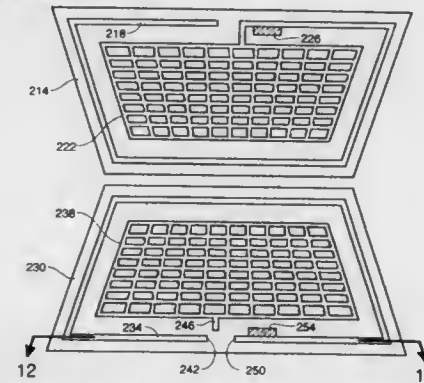
Mark E. Tuttle; John R. Tuttle, both of Boise, and Rickie C. Lake, Eagle, all of Id., assignors to Micron Communications, Inc., Boise, Id.

Continuation of Ser. No. 602,686, Feb. 16, 1996, abandoned, which is a continuation of Ser. No. 137,677, Oct. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 899,777, Jun. 17, 1992, abandoned. This application Jan. 9, 1997, Ser. No. 781,107

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—213

9 Claims



1. A method of manufacturing a device including a memory for storing data, the method comprising:
providing a housing defined by first and second housing portions;
providing an integrated circuit including a random access memory for storing the data, and supporting the integrated circuit from the first housing portion;
providing a battery in the housing; and
connecting the battery to the integrated circuit using a conductor supported by and movable with the second housing portion.

5,776,279

Patent Not Issued For This Number

5,776,280

RECEPTIVE LAYER FOR THERMAL TRANSFER PRINTING ON CARTONS

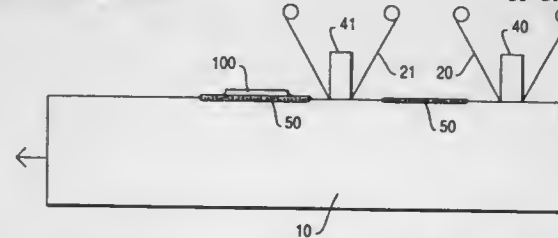
Richard D. Puckett, Miamisburg, and David J. Rainbow, Centerville, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 18, 1995, Ser. No. 574,169

Int. Cl.⁶ B41M 5/035; 5/38

U.S. Cl. 156—235

11 Claims



1. A method of thermally printing an image directly on a carton which comprises:
depositing a receptive layer on a surface of a carton from a thermal transfer ribbon by heating and transferring a portion of a coating of a thermal transfer material on said thermal transfer ribbon by a thermal print head, the thermal transfer material of said receptive layer comprising wax and 5–40 wt. % elastomeric resin, based on the total dry ingredients of said

thermal transfer material, and depositing a thermal transfer ink having a sensible material therein on the surface of the receptive layer from a thermal transfer ribbon by heating and transferring portions of a coating of said thermal transfer ink on said thermal transfer ribbon by a thermal print head.

5,776,281

METHOD OF MANUFACTURING A PALLET MADE OF COMPOSITE FIBER REINFORCED POLYOLEFIN

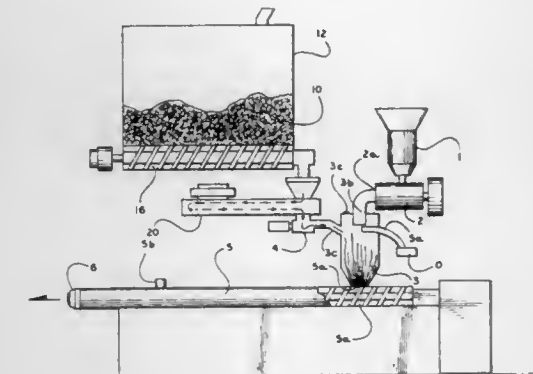
Daniel W. Evans, 8265 St. Marlo Fairway Dr., Duluth, Ga. 30155

Division of Ser. No. 400,662, Mar. 8, 1995, abandoned. This application Sep. 9, 1996, Ser. No. 711,059

Int. Cl.⁶ B29C 47/08; B32B 31/14; 31/30

U.S. Cl. 156—244.17

21 Claims



1. A method for manufacturing a composite fiber reinforced polyolefin pallet, comprising the steps of:
mixing a molten polyolefin and cellulose fibers in the presence of ozone to form a matrix;
extruding the matrix into a formed material having predetermined shapes of pallet components; and bonding the pallet components together to form a pallet.

5,776,282

METHOD OF PRODUCING CERAMIC GREEN SHEETS
Kazuo Kayama, Sagami, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 340,419, Nov. 15, 1994, Pat. No. 5,520,994. This application Mar. 6, 1996, Ser. No. 611,621

Claims priority, application Japan, Nov. 18, 1993, 5-289278

Int. Cl.⁶ B32B 31/12

U.S. Cl. 156—247

12 Claims

1. A ceramic green sheet producing method comprising the steps of:
coating both sides of a laminate film, composed of two carrier films united into a laminate, with a ceramic slurry;
drying the ceramic slurry; and
separating the two carrier films from each other to thereby obtain ceramic green sheets each supported by a carrier film.

5,776,283

MANUFACTURING METHOD OF SWITCH SHEET AND APPARATUS THEREOF

Teruyuki Kato, Settsu, Japan, assignor to Kabushiki Kaisha Kato Seiko and Hosiden Corporation, Osaka, Japan

PCT No. PCT/JP95/02094, § 371 Date Jun. 11, 1996, § 102(e)
Date Jun. 11, 1996, PCT Pub. No. WO96/11794, PCT Pub. Date Apr. 25, 1996

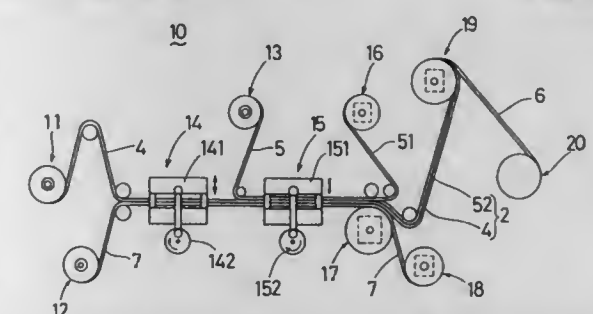
PCT Filed Oct. 11, 1995, Ser. No. 656,325

Claims priority, application Japan, Oct. 14, 1994, 6-249603

Int. Cl.⁶ B32B 31/18

U.S. Cl. 156—249

9 Claims



1. A manufacturing method of a switch sheet comprising the steps of:
sticking a refuse removing tape having an upper surface and a lower surface on a lower surface of a film separator via an adhesive layer formed on the upper surface of the refuse removing tape,
forming one or a plurality of first holes in the film separator piled on the refuse removing tape,
sticking a processing tape having an upper surface and a lower surface on an upper surface of the film separator piled on the refuse removing tape via an adhesive layer formed on the lower surface of the processing tape,
punching the processing tape in a setting shape, and simultaneously forming one or a plurality of second holes through at least the processing tape or both of the processing tape and the film separator, and
stripping refuse portions of the processing tape after being punched in a setting shape off the upper surface of the film separator.

5,776,284

METHOD OF FORMING DUAL-LAYERED LABELS AND THE RESULTANT PRODUCT

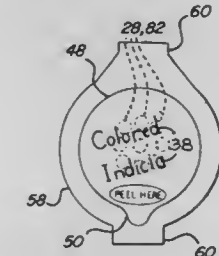
Joseph A. Sykes, Grayslake, Ill., and Michael E. Bowser, Algoma, Wis., assignors to Label Makers, Inc., Pleasant Prairie, and Wisconsin Label Corporation, Algoma, both of Wis.

Filed Oct. 8, 1996, Ser. No. 727,023

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—252

24 Claims



1. A method of producing multiple-layered lids, said method comprising the steps of providing at least first and second webs of selected materials to a printing press, die cutting one of a plurality of holes or a plurality of through-cut rings each retaining a removable portion in one of the webs, printing indicia on at least one face of the other web, printing an adhesive on one of the webs, bonding the webs together, die cutting one of the bonded webs to form a label.

selected peelable lid shapes, and die cutting the other bonded web around the peelable lid shapes to form underlying lids.

5,776,285

METHOD AND APPARATUS FOR APPLYING ADHESIVE TO A CLOSURE FLAP OF ENVELOPES

Martin Blümle, Horhausen, Germany, assignor to Winkler & Duennbeier Maschinenfabrik und Eisengiesserei KG., Neuwied, Germany

Continuation of Ser. No. 237,115, May 3, 1994, abandoned.

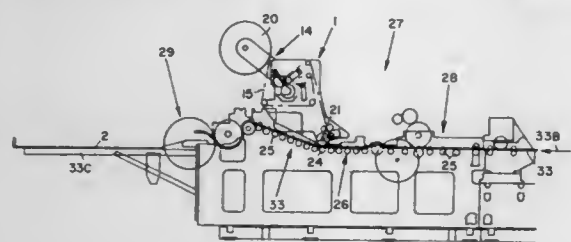
This application Feb. 5, 1996, Ser. No. 596,697

Claims priority, application Germany, May 4, 1993, 43 14 685.6

Int. Cl.⁶ B32B 31/10; 31/12; 35/00

U.S. Cl. 156—256

16 Claims



1. A method for applying adhesive to a closure flap of envelopes comprising the following steps:

- feeding said envelopes on a conveyor (33) including a counter roller (24) in a feed advance direction (2B), whereby closure flaps of said envelopes are oriented substantially horizontally and crosswise to said feed advance direction;
- feeding a continuous flat, unfolded carrier web (15) having an anti-stick surface, through an adhesive applicator device (1, 1A);
- sequentially applying adhesive stripes (3C) to said anti-stick surface of said flat, unfolded carrier web (15) so that said adhesive stripes (3C) extend perpendicularly to and crosswise to a length of said web (15) on said anti-stick surface and so that a spacing (S) without adhesive is provided between each two neighboring adhesive stripes (3C) on said flat, unfolded carrier web (15);
- using a single cutter roller (21) also as a transfer roller for cooperation with said counter roller (24) in a transfer plane common to both rollers (21, 24);
- cutting said flat, unfolded carrier web (15) along and within said spacing (S) without adhesive with said single cutting roller (21) into individual adhesive carrying cover strips (3A), each strip having a carrier web backing and one of said adhesive stripes (3C) on said anti-stick surface; and
- transferring and securing said cover strips (3A) with said single cutting roller (21) now operating as a transfer roller to said envelopes at said counter roller (24) so that a strip securing roller pressure is effective perpendicularly to a length of said cover strips (3A) and simultaneously along a length of said cover strips whereby one of said adhesive stripes (3C) is sandwiched between said backing formed by said flat, unfolded carrier web (15) and a surface of each closure flap, and so that said flat, unfolded carrier web (15) and said envelopes (2) can travel in vertical alignment with each other toward said transfer plane common to both rollers (21, 24).

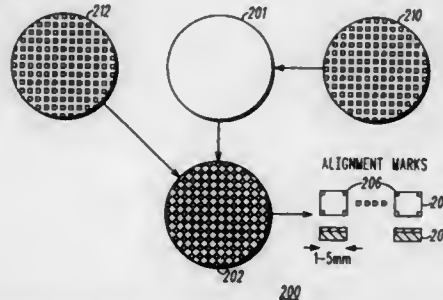
5,776,286
HOLOGRAM MANUFACTURING PROCESS AND METHOD FOR EFFICIENTLY PROVIDING A MULTI-HOLOGRAPHIC OPTICAL ELEMENT SUBSTRATE UNIT
Jang-Hun Yeh, Streamwood; Karl W. Wyatt, Cary, both of Ill., and Terry Rohde, Delray Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 29, 1997, Ser. No. 791,076

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—256

14 Claims



1. A method for efficiently providing a multi-holographic optical element substrate unit, comprising the steps of:

- preparing an original holographic optical element with uniform diffraction efficiency and marking the original holographic optical element with predetermined alignment marks;
- cutting the original holographic optical element into a predetermined number of individual holographic optical elements in accordance with the predetermined alignment marks;
- preparing a substrate with alignment marks in accordance with the predetermined alignment marks of the individual holographic optical elements; and
- attaching the individual holographic optical elements to a substrate in accordance with the alignment marks of the individual holographic optical elements and the substrate.

5,776,287

COUPON MANUFACTURING MACHINE

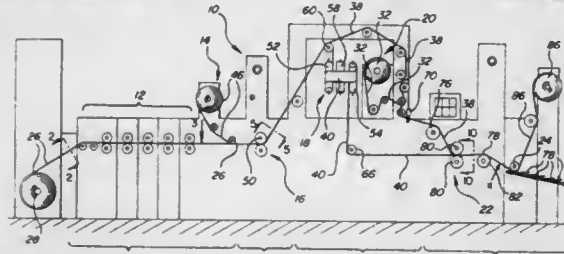
Scott D. Best, Troy, and James F. Turner, Farmington Hills, both of Mich., assignors to Saxon Incorporated, Ferndale, Mich.

Filed Oct. 18, 1996, Ser. No. 733,801

Int. Cl.⁶ B32B 31/08; 31/18

U.S. Cl. 156—260

26 Claims



1. A method of manufacturing a coupon card (78) fabricated from a continuous sheet of stock (26) having indicia printed on a top surface (36) and covered by a clear laminate (46) with an adhesive layer (30) and a release film (32) adhered to a bottom surface (34), the method comprising the steps of:

- printing the indicia on the top surface (36) of the continuous sheet of stock (26) in two parallel rows that define a first strip (38) and a second strip (40) of the stock (26) moving along a path;
- applying the clear laminate (46) to the top surface (36) of the stock (26) for viewing the indicia;
- removing the release film (32) from the first strip (38) to expose the adhesive layer (30); and
- matting the adhesive layer (30) of the first strip (38) with the release film (32) of the second strip (40) to form a series of two-sided coupon cards (78) with the indicia printed on both sides thereof;

the method characterized by the mating being further defined as cutting the continuous sheet of stock (26) between the first (38) and second (40) strips to separate the first (38) and second (40) strips and rotating one of the first and second strips (38, 40) 180° relative to the other of the first and second strips (40, 38) and moving the adhesive layer (30) of the first strip (38) into a bonded relationship with the release film (32) of the second strip (40).

5,776,288

METHOD AND APPARATUS FOR LINED CLUTCH PLATE

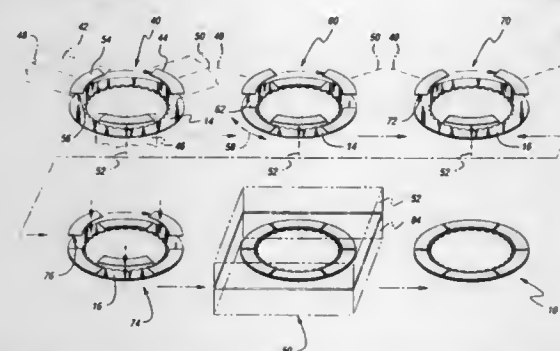
Oscar E. Stefanutti, Orchard Lake; John Willwerth, Rochester Hills, and Gregory J. Guitar, Roseville, all of Mich., assignors to Automotive Composites Company, Sterling Heights, Mich.

Filed May 7, 1996, Ser. No. 648,301

Int. Cl.⁶ B32B 31/18; F16D 13/68

U.S. Cl. 156—263

12 Claims



1. A method for lining annular sides of clutch plates with friction material, comprising: forming arcuate segments from a sheet of friction material;

- applying a plurality of said segments at spaced, adjacent positions from a plurality of radial directions upon at least one side of an annular clutch plate to form intermediate channels between said arcuate segments; and
- bonding said plurality of segments at said spaced, adjacent positions.

5,776,289

APPARATUS AND METHOD FOR APPLYING LABELS USING STATIC ELECTRICAL ATTRACTION

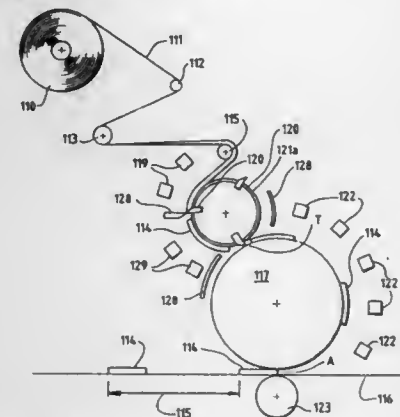
Donald J. Steidinger, Barrington, Ill., assignor to Tamarack Products, Inc., Wauconda, Ill.

Filed Sep. 29, 1995, Ser. No. 537,264

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—273.1

5 Claims



1. A method of handling discrete lengths of material having a first and second side from a source of said material, and transfer-

ring said discrete lengths to a carrier, at least a portion of one of said first side of said material and carrier being coated with an adhesive having an initial tack, comprising:

- transporting said discrete lengths of said material in spaced relation on the surface of a rotating applicator cylinder with said second side of said discrete lengths contacting said surface of said applicator cylinder,
- applying an electrostatic charge to said discrete lengths to adhere said discrete lengths to said surface of applicator cylinder;
- advancing said carrier for sequentially receiving said discrete lengths from said applicator cylinder at a transfer location; and
- controlling the intensity of said electrostatic charge on said discrete lengths while said discrete lengths are adhered to said applicator cylinder under electrostatic attraction by applying a controlled voltage to a plurality of charge bars moving said discrete lengths to said transfer location, thereby controlling said electrostatic attraction of said discrete lengths to said applicator cylinder during said transporting step to permit said initial tack to transfer said discrete lengths from said applicator cylinder onto said carrier.

5,776,290

METHOD OF PREPARING A COATED ABRASIVE ARTICLE BY LAMINATING AN ENERGY-CURABLE PRESSURE SENSITIVE ADHESIVE FILM TO A BACKING

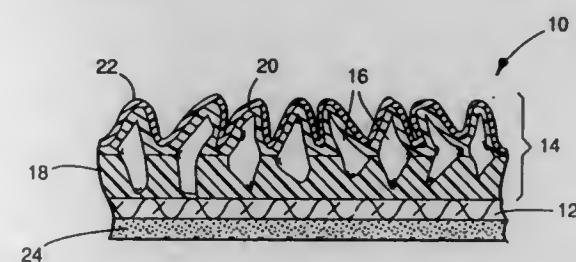
Gary J. Follett, St. Paul, and Clayton A. George, Afton, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 457,390, Jun. 1, 1995, Pat. No. 5,582,672, which is a division of Ser. No. 47,861, Apr. 15, 1993, Pat. No. 5,436,063. This application Jul. 3, 1996, Ser. No. 675,136

Int. Cl.⁶ B32B 5/16; 27/38

U.S. Cl. 156—279

18 Claims



1. A method of preparing a coated abrasive article, the method comprising the steps of:

- providing a backing;
- providing a curable pressure sensitive adhesive film that is capable of being supplied as a free standing, unsupported film;
- laminating the curable pressure sensitive adhesive film to the backing to provide a first binder on the backing;
- exposing the first binder to an energy-producing source to initiate curing of the first binder;
- depositing a plurality of abrasive particles in the first binder; and
- permitting the first binder to cure to a crosslinked coating with the abrasive particles therein.

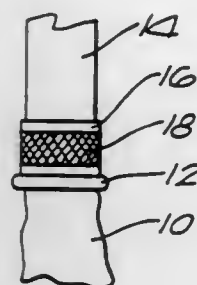
5,776,291
BALLOONS

Philip Edward Lang, London, United Kingdom, assignor to Self Sealing Systems Limited, London, United Kingdom
PCT No. PCT/GB94/00185, § 371 Date Oct. 23, 1995, § 102(e)
Date Oct. 23, 1995, PCT Pub. No. WO94/16789, PCT Pub.
Date Aug. 4, 1994

PCT Filed Jan. 31, 1994, Ser. No. 507,496
Claims priority, application United Kingdom, Jan. 29, 1993,
9301810

Int. Cl.⁶ A63H 27/10; G09F 21/06
U.S. Cl. 156—290

19 Claims



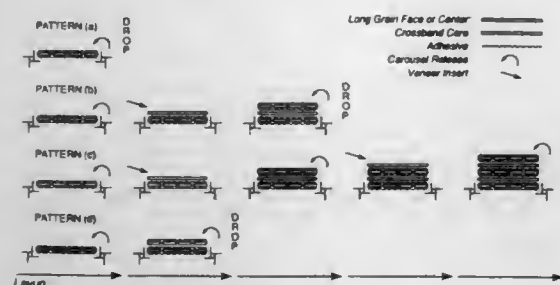
1. A latex balloon, wherein at least a region of the inner surface of the neck of said balloon comprises a latex surface that has been cleaned and dried to be refreshed without any application of adhesive, the refreshed region extending substantially around an inner circumference of the neck, such that the neck can be sealed by bringing opposed areas of the refreshed surface into direct contact with each other to form a latex-latex bond.

5,776,292
PLYWOOD LAY-UP SYSTEM

Yutaka Fujii, Fukuyama; Fuminori Akao, Fuchu, both of Japan, and John Omelchuk, Armstrong, Canada, assignors to Kitagawa Seiki Kabushiki Kaisha, Hiroshima-ken, Japan
Division of Ser. No. 394,710, Feb. 27, 1995, Pat. No. 5,665,197. This application May 7, 1997, Ser. No. 852,662

Int. Cl.⁶ B32B 31/00
U.S. Cl. 156—299

4 Claims



1. A lay-up method for assembling plywood veneer plies, the lay-up method comprising the steps of:

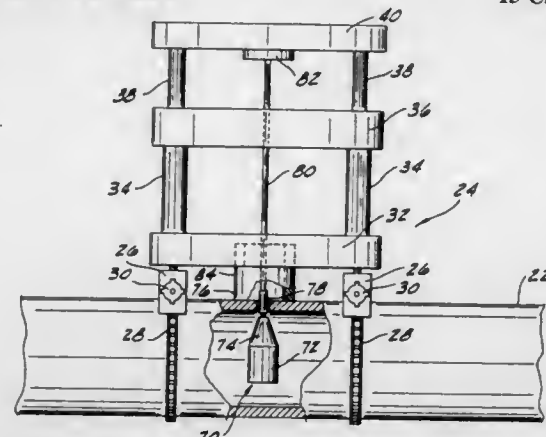
- conveying a long grain back veneer ply to a conveyor toward a position beneath an accumulating means; then
- gluing a unitary crossband core veneer ply; then
- placing said glued unitary crossband core veneer ply in said accumulating means; then
- holding said glued unitary crossband core veneer ply in said accumulating means while said long grain back veneer ply approaches; then
- releasing plies held in said accumulating means on top of said long grain back veneer plies in synchronization with said approach of said long grain back veneer plies and aligned with said long grain back veneer plies to form a ply assembly.

5,776,293
JOINTS FOR POLYMERIC PIPE

Jerry C. Livingston, P.O. Box 1157, Steelville, Mo. 65565
Continuation of Ser. No. 380,838, Jan. 30, 1995, abandoned.
This application May 2, 1997, Ser. No. 850,634
Int. Cl.⁶ B29C 65/02

U.S. Cl. 156—304.6

15 Claims



1. A method for forming a branch in a pipe made of polymeric material comprising the steps of:

- applying heat to a portion of a cylindrical exterior surface of the pipe wall;
- applying heat to a portion of a cylindrical interior surface of the pipe wall generally radially opposite to the exterior surface portion of the pipe wall to which heat is applied;
- said steps of applying heat being carried out for a sufficient period to render generally plastic the polymeric material in the pipe wall in a volume of the wall between said interior and exterior surface portions of the pipe wall;
- positioning a forming member in the interior of the pipe in the proximity of the interior surface portion of the pipe wall, the forming member having a temperature less than the melting temperature of the polymeric material;
- pulling the forming member through the plasticized volume of the pipe wall toward the exterior of the pipe;
- forming polymeric material of the pipe which is displaced outwardly by the forming member as it is pulled through the volume to form the branch generally in the shape of a pipe section extending outwardly from the pipe wall.

5,776,294

PEROXIDE-CURED ELASTOMERS WITH IMPROVED METAL ADHESION

Walter R. Nagel, West Chester, Pa., assignor to Sartomer Company, Exton, Pa.

Continuation of Ser. No. 882,464, May 13, 1992, abandoned.

This application Jun. 12, 1997, Ser. No. 874,097

Int. Cl.⁶ B32B 31/00; C08J 5/00

U.S. Cl. 156—307.7

33 Claims

1. A method for adhering an elastomeric composition to a polar surface, said method comprising the steps of:

- preparing a curable elastomeric composition comprising a curable elastomer selected from the group consisting of synthetic polyisoprene, styrenebutadiene rubbers, polybutadiene rubbers, butyl rubber, bromobutyl rubber, chlorobutyl rubber, the neoprenes, ethylene propylene rubbers, nitrile elastomers, silicone elastomers, fluoroelastomers, high styrene butadiene copolymers, vinyl acetate ethylene copolymers, chlorinated polyethylene rubber, chlorosulfonated polyethylene elastomer, polyethylene, reclaimed rubber, and natural rubber; a metal salt of an α , β -ethylenically unsaturated carboxylic acid present in an amount between 0.01 to about 100 parts by weight per 100 parts by weight of the elastomer; and a cure-effective amount of an organic peroxide;
- applying the curable elastomeric composition prepared in step (a) to a polar surface; and

(c) curing the curable elastomeric composition while the curable elastomeric composition is applied to the polar surface.

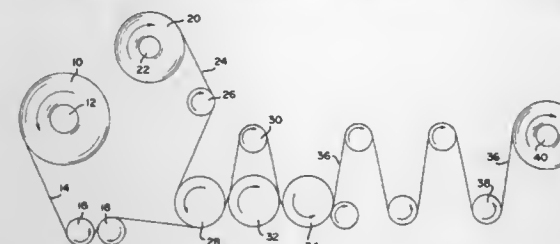
5,776,295
METHOD OF FABRICATING A FLUID IMPERVIOUS AND NON-SLIP FABRIC

Charles Daniel Montgomery, Valdosta, Ga., assignor to Ludan Corporation, Valdosta, Ga.

Division of Ser. No. 350,527, Dec. 7, 1994, abandoned. This application Jan. 3, 1996, Ser. No. 581,005

Int. Cl.⁶ A43B 3/16; B32B 31/08
U.S. Cl. 156—324

5 Claims



1. A method of making a fluid impervious and non-slip fabric suitable for shoe coverings, comprising the steps of:

- providing a thin, continuous, nonwoven polymer backing sheet having a weight of about 0.75 to about 0.8 ounces per square yard;
- providing a thin polymer film sheet comprised of from about 10 to 100% propylene copolymer;
- heating said film sheet;
- contacting said film sheet with said backing sheet; and
- applying pressure to said sheets so that said film sheet laminates onto said backing sheet for forming a thin fluid impervious and non-slip fabric.

5,776,296

APPARATUS FOR THE TREATMENT OF SEMICONDUCTOR WAFERS IN A FLUID

Robert Roger Matthews, Richmond, Calif., assignor to Legacy Systems, Inc., Fremont, Calif.

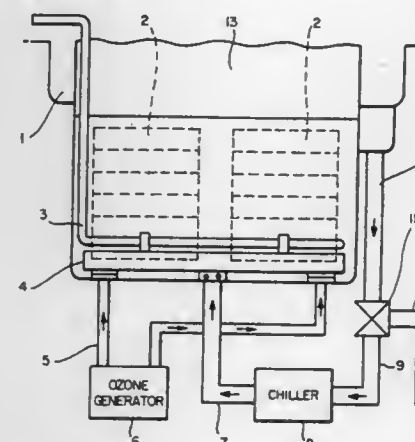
Division of Ser. No. 92,523, Jul. 16, 1993, Pat. No. 5,464,480.

This application Jul. 26, 1995, Ser. No. 507,193

Int. Cl.⁶ B08B 3/10

U.S. Cl. 156—345

11 Claims



1. A tank for treatment of semiconductor wafers with a fluid having multiple sides and a bottom, comprising:
means connected to the tank for providing fluid into the tank;
means for supporting at least one wafer within the tank in contact with the fluid;
means connected to the tank for injecting gas into the tank; and

means for diffusing the gas into the tank such that the gas is absorbed into the fluid and contacts the surface of each wafer disposed in the tank.

said means for diffusing comprising a composite element having a permeable member and a nonpermeable member, said permeable member having a top portion and a bottom portion, means defining an open space in a center portion of the permeable member, and means defining a trench positioned on the top portion of the permeable member between an outer periphery of the permeable member and the means defining an open space, said impermeable member having a means defining an open space in a center portion of the impermeable member which corresponds to the means defining an open space in a center portion of the permeable member, the permeable member and the impermeable member being joined such that the trench opens at the top portion of the permeable member and is covered by the impermeable member, and the composite element being positioned with the bottom portion of the permeable member connected to the bottom of the tank.

5,776,297

APPARATUS AND METHOD FOR PREPARING PRINTING LABELS

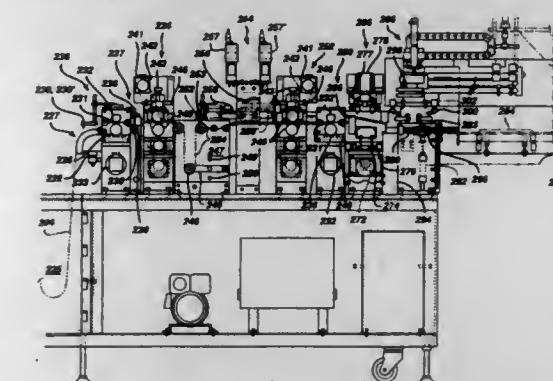
Russell James Edwards, Jacksonville, Fla.; Masao Funo, Saitama-Pref., Japan; Richard Wayne Abrams, Jacksonville, Fla.; Kiyoshi Imai, Saitama-Pref.; Hirokazu Kitagawa, Chiba-Pref., both of Japan; Borge Peter Gundersen, Tikob, Denmark; William Edward Holley, Ponte Vedra Beach, Fla.; Thomas Christian Ravn, Helsingør, Denmark; Mark Edward Schlagel, and Daniel Tsu-Fang Wang, both of Jacksonville, Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Division of Ser. No. 432,925, May 1, 1995, Pat. No. 5,674,347, which is a continuation-in-part of Ser. No. 257,789, Jun. 10, 1994, Pat. No. 5,565,059. This application Jan. 3, 1997, Ser. No. 778,564

Int. Cl.⁶ B65B 61/02

U.S. Cl. 156—379

7 Claims



1. An apparatus for producing printed labels forming a strip of covers interconnecting a plurality of package bases, with each strip of covers being a segment severed from a continuous length of a laminated foil, including a framework for supporting the laminated foil along a predetermined path of movement, comprising:

- a supply roll having a continuous strip of laminated foil thereon, the laminated foil strip comprising a series of individual covers, with each individual cover having background graphics and a print field on which appropriate product data is to be printed;
- a printer for printing appropriate product data on successive print fields of successive labels;
- a perforation cutter for perforating the laminated foil strip across the width thereof between each adjacent label in each strip of labels;
- a first feed roller unit for pulling the printed laminated foil strip output of the printer into the perforation cutter;

- e. an optical inspection station having a camera positioned over the laminated foil strip of covers to provide a pixel image of each printed field of each cover, which is analyzed using image analyzing techniques for proper print position and print quality;
- f. a second feed roller unit which pulls the laminated foil strip through the optical inspection station and directs the laminated foil strip into a second cutting unit;
- g. a second cutting unit for cutting the laminated foil strip between successive strips of labels; and
- h. a separating unit for separating strips of labels which have passed inspection in the optical inspection station from strips which have failed inspection in the optical inspection station.

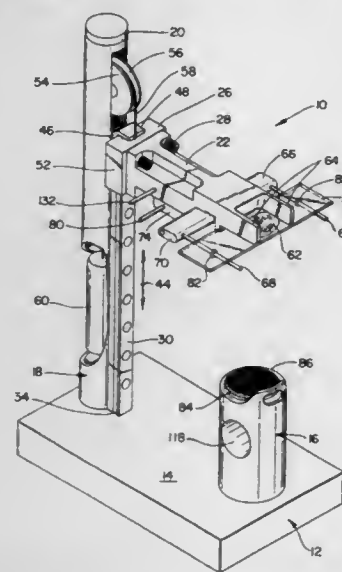
5,776,298

TISSUE PREPARATION APPARATUS AND METHOD
James W. Franks, 2153 Driftwood Cir., Palm Beach Gardens, Fla. 33410

Filed Jul. 26, 1996, Ser. No. 690,298
Int. Cl.⁶ B29B 13/04; 11/02

U.S. Cl. 156—390

13 Claims



1. An apparatus for mounting a tissue specimen on a tissue mounting surface of a tissue chuck for sectioning in a cryostat, said apparatus comprising:
- a base;
 - a clamp for receiving a glass tissue preparation slide having at least one face;
 - a chuck holder secured to said base for holding said tissue mounting surface of said chuck in a predetermined orientation relative to said clamp;
 - a support secured to said base and extending therefrom and terminating in a distal end; and,
 - means for slideably securing said clamp to said support comprising a rail fixedly secured to said support, a conveyor block movably secured to said rail and constrained by said rail to travel along a linear path, said block including means for preventing rotation of said block relative to said rail, said block fixedly secured to said clamp; and,
 - means for providing a predetermined force acting on said clamp, comprising a pulley rotatably mounted adjacent said distal end and having an annular channel therein, a cable having a first end connected to said clamp and a second end connected to a counterweight, said cable received within said channel, said predetermined force tending to move said clamp from said first position to said second position;
- wherein said clamp is positionable between a first location in which the clamp is at a minimum distance from said chuck holder and a second location in which the clamp is at a maximum distance from said chuck holder, and said one face of said tissue mounting

slide is substantially parallel to said tissue mounting surface of said chuck at said first location, said second location, and all locations therebetween.

5,776,299

LOW PROFILE ROOFING TORCH

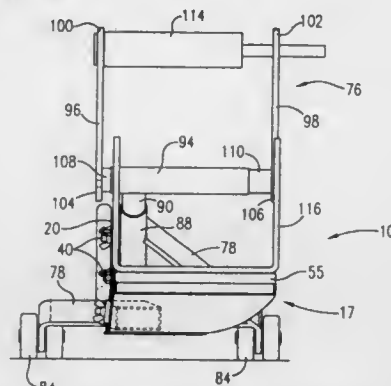
Paul L. Morris, 8815 W. 104th St., Overland Park, Kans. 66212

Filed Apr. 22, 1996, Ser. No. 635,621

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—497

7 Claims



1. A low profile torch head assembly adapted for coupling with an elongated handle to form a torch unit for use in fabricating roofs, said torch head assembly comprising:
- a shoe element having upper and lower walls defining an elongated chamber presenting a rearward outlet opening; and
 - an elongated torch head at least partially disposed within said shoe element between said upper and lower walls and having a forward end and an open, rearward, flame-exiting end oriented for delivering flame towards said element outlet opening,
- said torch head being generally rectangular in cross-section and having a series of air inlets adjacent said forward end thereof.

5,776,300

DEVICE OF REGULATING RUNNING POSITION OF UNSEALING TAPE FOR PACKING FILM

Taizo Ogata, Chiba-ken, Japan, assignor to Tokyo Automatic Machinery Works, Ltd, Tokyo, Japan

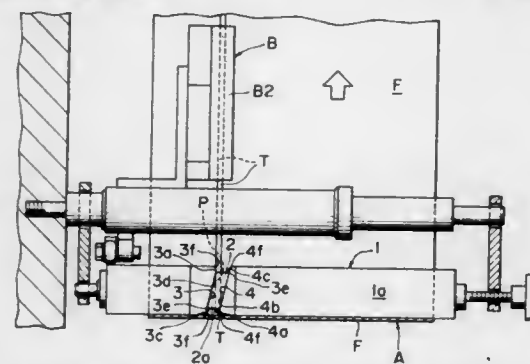
Filed Nov. 29, 1996, Ser. No. 758,524

Claims priority, application Japan, Dec. 6, 1995, 7-318173

Int. Cl.⁶ B31F 5/00

U.S. Cl. 156—554

27 Claims



1. A device for regulating a running position of unsealing tape for packing film, in which unsealing tape is fed along a feed path, and a packing film is fed separately from the unsealing tape, said packing film and said unsealing tape are laminated together at an intermediate point of the feed path, the unsealing tape being brought into press-contact with a regulating roller arranged on the feed path which regulates a running path of the unsealing tape, and

an adhering device which adheres the unsealing tape onto the packing film, said device comprising:

- an annular groove recessed in an outer peripheral face of the regulating roller in a circumferential direction, said annular groove receiving the running unsealing tape;

- projecting portions formed at two opposed side faces of the annular groove substantially extending along the running path of the unsealing tape;

- separating portions, extending from the projecting portions in the circumferential direction, and gradually extending away from the unsealing tape in a width direction perpendicular to the running path;

- intermediate portions, extending from the separating portions substantially along and spaced from the running path of the unsealing tape; and

- approaching portions, extending from the intermediate portions, along the circumferential direction and gradually tapering toward the running path.

5,776,301

ADHESIVE TAPE DISPENSER

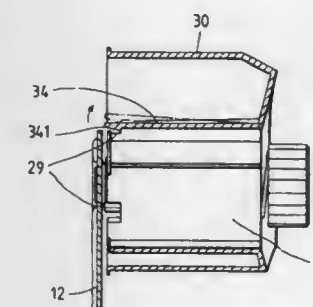
Harrison Huang, No. 23, Lin T'So Rd., Sheng Kang, Taichung Hsien, Taiwan

Filed Dec. 23, 1996, Ser. No. 771,833

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—577

1 Claim



1. An adhesive tape dispenser comprising:
- a main body composed of a handle, a cutter, and a fixed shaft;
 - a shaft jacket of a tubular construction and provided in an outer wall thereof with a plurality of parallel protruded rails extending in the direction of a longitudinal axis of said shaft jacket, said shaft jacket fitted pivotally over said fixed shaft of said main body for holding a small-size adhesive tape roll; and
 - a rotary wheel having a center hole provided in an inner wall thereof with a plurality of slide slots parallel to one another, said rotary wheel being detachably mounted on said shaft jacket for holding a large-size adhesive tape roll such that said shaft jacket is received in said center hole of said rotary wheel, and that said slide slots of said rotary wheel are engaged with said protruded rails of said shaft jacket;
- wherein said shaft jacket is provided at one end thereof with a cut; and wherein said rotary wheel is provided in said center hole thereof with a suspended elastic arm capable of deformation and having a retaining portion engageable and disengageable with said cut of said shaft jacket.

5,776,302

Patent Not Issued For This Number

5,776,303
COVERING FOR AN OPENING IN A FLEXIBLY CURVING CONTAINER WALL

Werner Stahlecker, Stuttgart, Germany, assignor to Ruediger Haaga GmbH, Germany

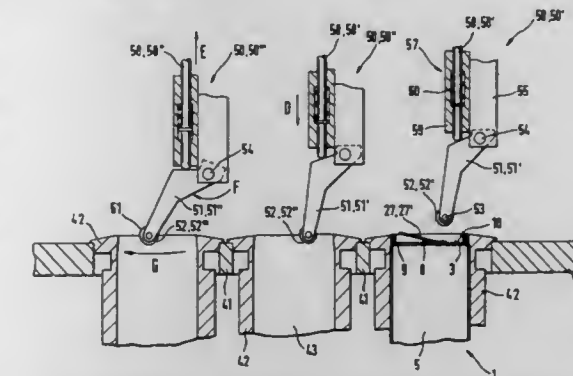
Filed Feb. 2, 1996, Ser. No. 595,800

Claims priority, application Germany, Feb. 3, 1995, 195 034 458.9

Int. Cl.⁶ B65B 7/28

U.S. Cl. 156—583.1

1 Claim



1. An apparatus for assembling a pull-tab over an opening in a flexible container wall, comprising a device for applying the pull-tab to a surface of the wall over and around the opening, and a device for adhering the pull-tab to the surface of the wall, wherein the device for applying has an application surface arranged to be guidable in a direction following a curved shape of the flexible container wall, which curved shape occurs during the assembly operation, the application surface being curved and configured to be swivellable in a direction to permit the curved application surface thereof to move in a direction along the curved shape of the flexible container wall as the application surface presses the pull-tab against the flexible container wall around the opening.

5,776,304

METHOD AND APPARATUS FOR TREATING FILLER-CONTAINING MATERIAL, SUCH AS RECYCLED FIBERS

Pentti Vikiö, Karhula, Finland, assignor to Ahlstrom Machinery Oy, Helsinki, Finland

PCT No. PCT/FI94/00086, § 371 Date Jan. 24, 1996, § 102(e)

Date Jan. 24, 1996, PCT Pub. No. WO95/04189, PCT Pub. Date Feb. 9, 1995

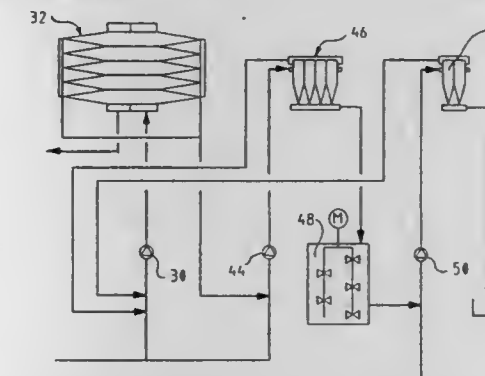
PCT Filed Mar. 10, 1994, Ser. No. 586,870

Claims priority, application Finland, Jul. 28, 1993, 933369

Int. Cl.⁶ D21C 5/02

U.S. Cl. 162—4

26 Claims



1. A method of treating filler-containing material utilizing a vortex cleaning plant having a plurality of steps including a last step, and utilizing a first fractionation stage and a last fractionation stage distinct from the vortex cleaning plant, said method comprising the steps of:

- passing filler-containing material to the vortex cleaning plant including the last step thereof in which the material is divided into a first, finer, fraction and a second, coarser, fraction;
- passing the second fraction to the first fractionation stage to divide the second fraction into a third, fine, fraction, and a fourth, coarse, fraction;
- returning the third fraction to the vortex cleaning plant;
- dispersing the fourth fraction to produce dispersed material;
- passing the dispersed material to the last fractionation stage;
- in the last fractionation stage, dividing the dispersed material into a fifth, fine fraction and a sixth fraction; and
- returning the fifth fraction the vortex cleaning plant, or to be treated again in steps (b) or (e).

5,776,305

LOW-RESIDENT, HIGH-TEMPERATURE, HIGH-SPEED CHIP REFINING

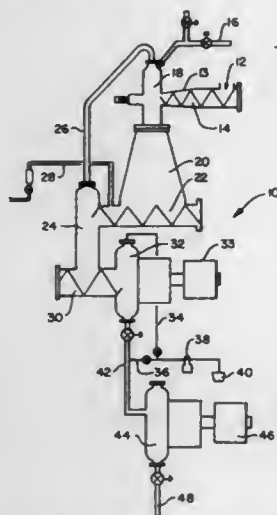
Marc J. Sabourin, Huber Heights, Ohio, assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Continuation-in-part of Ser. No. 489,332, Jun. 12, 1995, abandoned. This application Oct. 23, 1996, Ser. No. 736,366

Int. Cl.⁶ D21B 1/14

U.S. Cl. 162—23

23 Claims



1. A method for producing pulp from lignocellulose-containing fiber material, by a refining process which includes the step of preheating the material in an environment of saturated steam and at least a primary refining step performed by a single rotating disc refiner, wherein the improvement comprises:

- preheating the material by maintaining the fiber material above the glass transition temperature of the lignin of the fiber material at a saturation pressure in the range of about 75–95 psi for a period of time of 15 seconds or less during which period the feed material is conveyed toward and introduced into the refiner without mechanical compression, and then immediately;
- refining the fiber material in the primary refining step with the disc rotating at a speed of at least 2000 rpm.

5,776,306

RECREPED ABSORBENT PAPER PRODUCT AND METHOD FOR MAKING

Richard R. Hepford, Folcroft, Pa., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

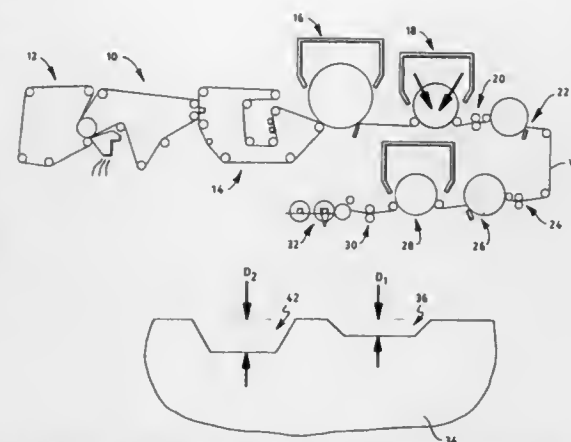
Filed Jun. 7, 1995, Ser. No. 484,591

Int. Cl.⁶ B31F 1/12; D21F 11/00

U.S. Cl. 162—112

24 Claims

1. A method of making a bonded and creped type absorbent paper web that has improved bulk to peel strength characteristics, comprising steps of:



- printing a low density pattern of a bonding material onto a first and a second side of a paper web with a gravure roll that has a pattern defined thereon to a depth that is from between about 30 to about 100 microns;
- in no particular sequence with respect to step (a), printing a high density pattern of a bonding material onto the first side of the paper web, steps (a) and (b) being performed so that the high density pattern of bonding material penetrates into the paper web by a distance that is about 166 to about 470 percent of the distance by which the low density pattern of bonding material penetrates into the web, said high density pattern being visible only on the first side of the web; and
- creping the paper web to a degree that is sufficient to impart a significant degree of bulk to areas of the paper web that have the low density pattern of bonding material printed thereon, but not the areas of the paper web that have the high density pattern printed thereon, whereby both superior bulk and peel strength characteristics are imparted to the absorbent web product.

5,776,307

METHOD OF MAKING WET PRESSED TISSUE PAPER WITH FELTS HAVING SELECTED PERMEABILITIES

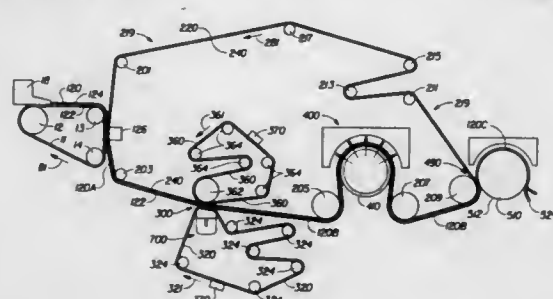
Robert Stanley Ampulski, Fairfield, and Ward William Ostendorf, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 460,949, Jun. 5, 1995, abandoned, which is a continuation-in-part of Ser. No. 358,661, Dec. 19, 1994, Pat. No. 5,637,194, which is a continuation-in-part of Ser. No. 170,140, Dec. 20, 1993, abandoned. This application Jun. 28, 1996, Ser. No. 672,293

Int. Cl.⁶ D21H 13/00

U.S. Cl. 162—117

11 Claims



1. A method of forming a paper web comprising the steps of:
- providing an aqueous dispersion of papermaking fibers;
 - providing a foraminous forming member;
 - providing a first dewatering felt layer having an air permeability;
 - providing a second dewatering felt layer having an air permeability, wherein the air permeability of the second dewatering felt layer is greater than the air permeability of the first dewatering felt layer;
 - providing a compression nip;

- providing an imprinting member having a web contacting face comprising a web imprinting surface and a deflection conduit portion;
- forming an embryonic web of the papermaking fibers on the foraminous forming member, the embryonic web having a first face and a second face;
- transferring the embryonic web from the foraminous forming member to the imprinting member to position the second face of the embryonic web adjacent the web contacting face of the foraminous imprinting member;
- positioning the web intermediate the first and second felt layers in the compression nip, wherein the first felt layer is positioned adjacent the first face of the web, wherein the web imprinting surface is positioned adjacent the second face of the web, and wherein the deflection conduit portion is in flow communication with the second felt layer; and
- pressing the web in the compression nip to form a molded web.

5,776,308

METHOD OF SOFTENING PULP AND PULP PRODUCTS PRODUCED BY SAME

Karl D. Sears, Jesup, and Peter R. Abitz, St. Simons Island, both of Ga., assignors to Rayonier Research Center, Jesup, Ga.

Filed Oct. 10, 1996, Ser. No. 731,142

Int. Cl.⁶ D21H 17/06

U.S. Cl. 162—158

28 Claims

1. A method of softening a wood pulp comprising the step of contacting the pulp with a softening agent selected from the group consisting of triacetin, propylene glycol diacetate, 2-phenoxyethanol, and mixtures thereof, wherein the Mullen strength of the pulp is decreased by at least 5%, the Kamas energy of the pulp is decreased by at least 5%, and the relative liquid absorption rate is not decreased by more than 5%.

5,776,309

METHOD AND APPARATUS FOR MEASURING AND CONTROLLING THE SPEED OF PAPERMAKING FABRICS

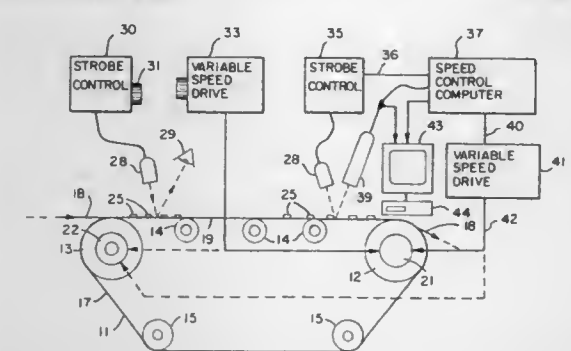
Robert D. Fraik, Marinette, Wis., assignor to Badger Paper Mills, Inc., Pestigo, Wis.

Filed Jan. 21, 1997, Ser. No. 785,328

Int. Cl.⁶ D21F 11/00; 7/08

U.S. Cl. 162—198

14 Claims



1. A method of measuring the speed of a loop of flexible fabric used in papermaking comprising the steps of:
- providing spaced optically detectable marks in a row on the fabric aligned in the direction of motion of the fabric, the optically detectable marks spaced in the row a uniform distance apart;
 - driving the loop of fabric in motion;
 - directing a beam from a strobe light at a position on the fabric at which the row of optically detectable marks pass by, the strobe light providing pulses of light at a selected frequency; and

- observing the marks as illuminated by the strobe light whereby the frequency of the strobe light pulses or the speed of the motion of the loop of fabric or both may be adjusted to synchronize the light pulses with the position of the marks on the moving fabric as they pass by the beam of the strobe light, and whereby variations in fabric speed result in variations in the position of the marks as illuminated by the strobe light.

5,776,310

METHOD FOR TREATMENT OF PAPER MACHINE PRESS SECTION FELTS

Michael Anthony McDermott, Liverpool, Great Britain, and Jurgen Friedrich Schuetz, Antwerp, Belgium, assignors to BetzDearborn Inc., Trevose, Pa.

Division of Ser. No. 461,486, Jun. 5, 1995, Pat. No. 5,651,812.

This application Apr. 23, 1997, Ser. No. 842,142

Claims priority, application Germany, Nov. 22, 1994, 44 43 181.3

Int. Cl.⁶ D21F 1/32

U.S. Cl. 162—199

6 Claims

1. In a process for inhibiting the blinding of paper machine press section felts in which papermaking felt is cleaned with a felt cleaning agent and wherein a vacuum is applied to a bottom surface of said felt to remove water, and the removed water is then sent to a white water system, the improvement comprising: cleaning said felts with an effective amount of an aqueous solution of a cleaning agent, said cleaning agent comprising:

- at least one anionic polymer selected from the group consisting of polycarboxylic acids and derivatives thereof, having an average molecular weight of 500 to less than 5000;
- 2-phosphino-1,2,4-tricarboxybutane, and;
- an amphoteric surfactant selected from the group consisting of alkyl-N-(3 aminopropyl)-glycines and alkyl-di(aminoethyl)-glycines.

5,776,311

VACUUM APPARATUS HAVING TRANSITIONAL AREA FOR CONTROLLING THE RATE OF APPLICATION OF VACUUM IN A THROUGH AIR DRYING PAPERMAKING PROCESS

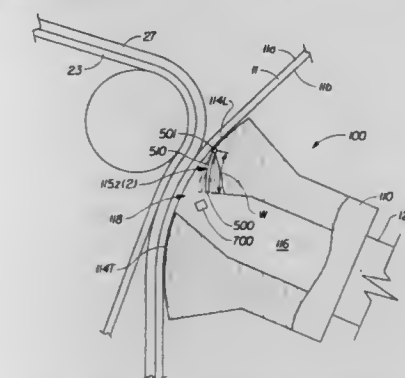
Paul Dennis Trokhan, Hamilton, and Donald Eugene Ensign, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 3, 1996, Ser. No. 706,917

Int. Cl.⁶ D21F 1/48

U.S. Cl. 162—252

10 Claims



1. A vacuum apparatus in a papermaking machine, in combination with a papermaking belt, said apparatus having a machine direction and a cross-machine direction perpendicular to said machine direction, said apparatus comprising:
- a head having a web-facing surface comprised of a leading web-facing surface and a trailing web-facing surface, said web-facing surface supporting said papermaking belt having a paper web thereupon and traveling in said machine direction,

said head further having at least one vacuum slot disposed therein, and defining an aperture or said web-facing surface, said aperture being intermediate said leading web-facing surface and said trailing web-facing surface,

a body joined to said head, said body extending to and being in fluid communication with a vacuum source through said at least one vacuum slot; and

said leading web-facing surface having a transitional area juxtaposed with said aperture and having a predetermined Z-spacing from the papermaking belt, said Z-spacing increasing in said machine direction, whereby the amount of vacuum pressure applied through said vacuum spot to the papermaking belt increases in said machine direction;

a means for automatically adjusting said Z-spacing while said apparatus is in use, said means comprising a device for detecting conditions in said at least one vacuum slot, said automatic adjustment of said Z-spacing being in response to a signal from said device.

5,776,312

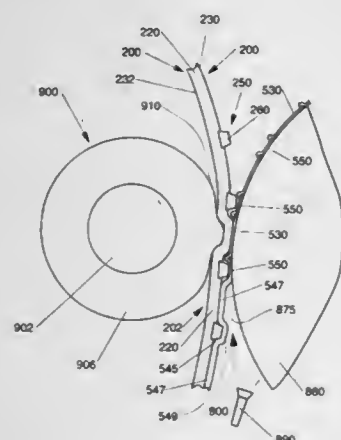
PAPER STRUCTURES HAVING AT LEAST THREE REGIONS INCLUDING A TRANSITION REGION INTERCONNECTING RELATIVELY THINNER REGIONS DISPOSED AT DIFFERENT ELEVATIONS, AND APPARATUS AND PROCESS FOR MAKING THE SAME

Paul Dennis Trokhan, Hamilton, and Dean Van Phan, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 268,213, Jun. 29, 1994, Pat. No. 5,556,509. This application Jun. 5, 1995, Ser. No. 462,239
Int. Cl.⁶ D21F 3/00

U.S. Cl. 162—358.2

32 Claims



1. An apparatus for use in making a web of papermaking fibers, the apparatus comprising:

a dewatering felt layer comprising a nonwoven batt of fibers, the felt layer having a first web facing felt surface at a first elevation and an oppositely facing second felt surface; and

a web patterning layer joined to the first web facing surface of the dewatering felt layer, wherein the web patterning layer extends from the first felt surface, the patterning layer having a continuous network web contacting top surface at a second elevation different from the first elevation, the continuous network top surface having a plurality of discrete openings therein, wherein the surface area of the continuous network top surface is between about 5 percent and about 75 percent of the projected area of the apparatus, and wherein the continuous network top surface has less than about 700 discrete openings therein per square inch of projected area of the apparatus.

5,776,313
PAPER MACHINE CLOTHING OF ALIPHATIC POLYKETONES

George Bakis, West Roxbury, Mass., and John Edmond Flood, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 5, 1997, Ser. No. 795,010
Int. Cl.⁶ D21F 3/00

U.S. Cl. 162—358.2

16 Claims

1. Papermachine clothing comprised of melt spun fibers of an addition polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbons wherein said polymer is an alternating aliphatic polyketone.

5,776,314

Patent Not Issued For This Number

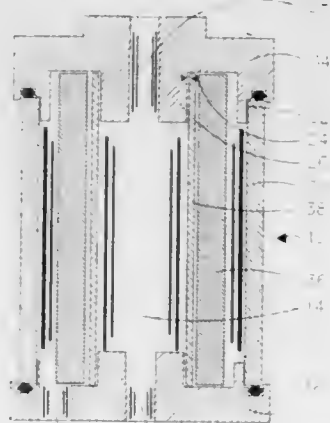
5,776,315

OIL RECLAMATION DEVICE

Charles Andrew Lowry, 937 Well Spring Rd. #25M, Midvale, Utah 84047, assignor to Charles Andrew Lowry, Salt Lake City, Utah

Filed Apr. 9, 1997, Ser. No. 845,309
Int. Cl.⁶ C10C 1/20; B01D 1/00; C10G 1/10
U.S. Cl. 196—46.1

3 Claims



1. An oil reclamation device for removing impurities and contaminants from oil comprising:

a housing defining a first chamber, said housing comprising a base, said first chamber comprising at least one side wall, second evaporation chamber disposed within said first chamber and a lid releasably attached to said side wall of said first chamber;

said lid further comprising a projection having a sidewall;

an inlet in operative connection with said first chamber permitting flow of oil into said first chamber from an oil source outside of said housing, said first chamber comprising a filter wherein oil is introduced at a first pressure;

said second evaporation chamber comprising at least one second chamber sidewall parallel to the adjacent side wall of said lid providing an oil metering orifice for controlling the flow of oil from the first chamber to the second chamber, the pressure being lower in the second chamber than said first chamber;

said metering orifice is provided by a gap between said lid projection and second chamber sidewall, said gap being dimensioned to provide oil to pass through the gap at a predetermined rate;

said second evaporation chamber comprising at least one sidewall providing contaminate removal and a vent for venting

airborne contaminants therefrom; and an outlet from said second evaporation chamber to remove reclaimed oil from said chamber.

5,776,316

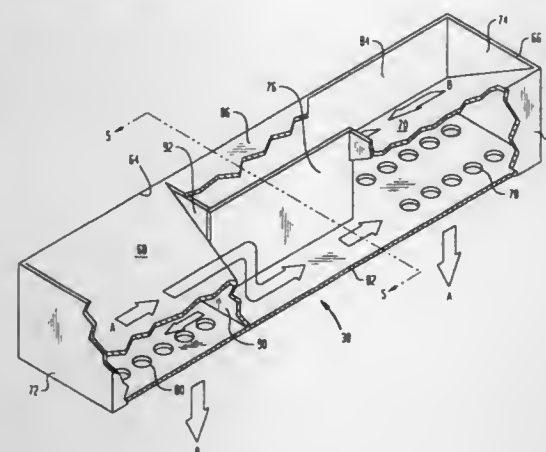
LIQUID REDISTRIBUTION SYSTEM

Richard W. Potthoff, and Alan C. Burton, both of Scotch Plains, N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Mar. 7, 1996, Ser. No. 610,818
Int. Cl.⁶ B01D 3/32

U.S. Cl. 202—158

1 Claim



1. A liquid redistribution system for redistributing liquid descending in a distillation column, said system comprising:

a plurality of parallel distribution elements, each sized to extend between two opposite transverse locations of said distillation column situated on opposite sides of said distillation column; each of said parallel distribution elements having,

two opposed ends,

a rectangular transverse cross-section,

first and second inlet means for receiving said liquid at said two opposed ends, the first and second inlet means comprising a pair of rectangularly configured open, upper end regions of said distributor elements,

two inclined floor elements located directly beneath said open, upper end regions to provide two opposed weirs to catch said liquid,

first and second outlet means for discharging said liquid at said two opposed ends, the first and second outlet means comprising a pair of arrays of openings defined on lower end regions of said distributor elements,

the first inlet and outlet means located at one of the two opposed ends and the second inlet and outlet means located at the other of the two opposed ends, and

a pair of parallel channels providing flow communication between said first and second inlet and outlet means such that said liquid received by said first inlet means is discharged from said second outlet means and said liquid received by said second inlet means is discharged from said first outlet means, the pair of parallel channels defined by a rectangular partition extending between said two weirs; and

said parallel distribution elements arranged with a lateral spacing therebetween to produce an open area allowing part of said liquid descending within said distillation column and vapor ascending within said distillation column to pass between said parallel distribution elements.

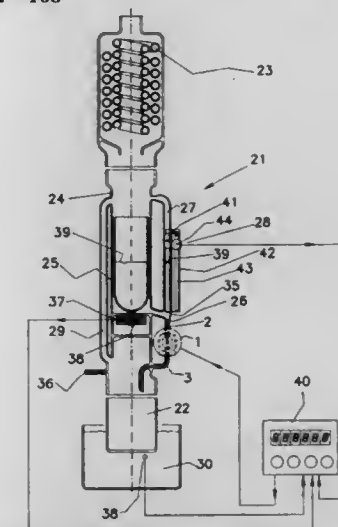
5,776,317
EXTRACTOR FOR SOXHLET SOLID-LIQUID EXTRACTION

Arthur Spring; Stefan Hungerbühler, both of Flawil; Marco Sanwald, Grub, and Erwin Bossart, Erwin Bossart, all of Switzerland, assignors to Buchi Labortechnik AG, Flawil, Switzerland

Filed Jun. 7, 1996, Ser. No. 660,401
Claims priority, application European Pat. Off., Jun. 8, 1995, 95810380

Int. Cl.⁶ B01D 3/00; 11/00; C10B 27/00
U.S. Cl. 202—168

16 Claims



1. Soxhlet extractor (21) for solid-liquid extraction with heatable distillation vessel (22), extraction vessel (24) located above the latter to hold the material to be extracted and the extract, and with cooler (23) for condensing the extractant, to periodically return the extract from extraction vessel (24) to distillation vessel (22) when predetermined level (39) is reached reflux line (26) being provided, which proceeds from the bottom area of extraction vessel (24) and discharges into distillation vessel (22), characterized in that reflux line (26) is routed with a gradient over its entire length from extraction vessel (24) to distillation vessel (22) and that it has valve (1) for opening and closing reflux line (26).

5,776,318

Patent Not Issued For This Number

5,776,319

CONTINUOUS LINEAR-TOROIDAL EXTRACTION METHOD

Michael W. Mar, Seattle, Wash., assignor to H-O-H Research Inc., Seattle, Wash.

Division of Ser. No. 248,364, May 24, 1994, Pat. No. 5,549,794. This application Apr. 16, 1996, Ser. No. 631,893

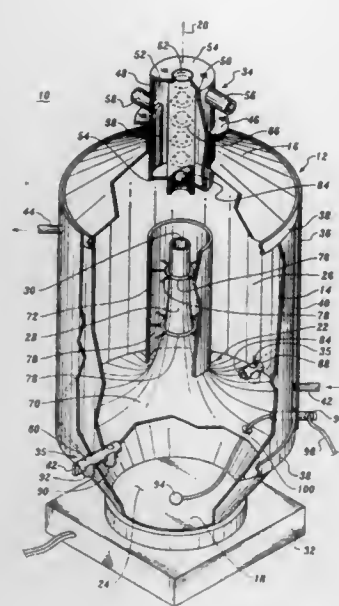
Int. Cl.⁶ B01D 3/42

16 Claims

1. A method for continuously extracting a solute from a carrier medium using a volatile solvent, comprising:

introducing the volatile solvent in a lower distillation chamber of a vessel, disposing a convergent baffle in the vessel for separating the vessel into the lower distillation chamber and an upper extraction chamber, wherein the convergent baffle is contoured to converge to define a conduit riser projecting upwardly into the extraction chamber and terminating in a vaporized solvent port placing the distillation chamber in fluid flow communication with the extraction chamber;

introducing the carrier medium containing the solute to be extracted in the extraction chamber;



vaporizing solvent in the distillation chamber; converging the vaporized solvent upwardly through the convergent baffle and conduit riser; inducing a linear-toroidal flow in the carrier medium by passing the converged vaporized solvent through the vaporized solvent port into the carrier medium; extracting solute from the linear-toroidal flowing carrier medium into the converged solvent passing therethrough; condensing vaporized solvent after it exits the carrier medium; and returning condensed solvent to the distillation chamber of the vessel.

5,776,320

PROCESS AND APPARATUS FOR REACTIVE DISTILLATION WITH A PARTICULAR DISTRIBUTION OF LIQUID AND VAPOUR PHASES

Marie-Claire Marion, Villeurbanne; Jean-Charles Viltard, Valence; Philippe Travers, Rueil Malmaison; Isabelle Harter, Lyons, and Alain Forestiere, Vernaison, all of France, assignors to Institut Francais Du Petrole, France

Filed Jul. 24, 1996, Ser. No. 686,101
Claims priority, application France, Jul. 24, 1995, 95 09060; Dec. 27, 1995, 95 15532

Int. Cl.⁶ B01D 3/34

U.S. Cl. 203—29

23 Claims

1. A reactive distillation process in which: the reactants, which may be diluted with a diluent, one of the reactants possibly being in excess, are introduced to at least one level in a reactive distillation column which includes: (a) at least one catalytic reaction zone including at least one catalytic bed comprising the catalyst; (b) at least one distillation zone, or lower distillation zone, located below the said catalytic zone; (c) at least one further distillation zone, or upper distillation zone, located above the said catalytic zone; the distillation conditions are maintained so as to have a liquid phase and a vapour phase in the reactive distillation zone; a major portion of the liquid is circulated from bottom to top through the catalyst in the catalytic zone; a major portion of the vapour is circulated from bottom to top in the catalytic zone, so that said vapour is in practically no contact with the catalyst; a portion of the desired product is recovered; and a portion of any diluent and the reactants is recovered; the process being characterized in that:

the major portion of the liquid from the upper distillation zone is collected by at least one collecting means so that the liquid arrives in a substantially central zone of the catalytic zone, below each catalytic bed of the catalytic zone, with substantially no contact with the catalyst;

the major portion of the liquid is circulated substantially radially below said catalytic bed by at least one substantially radial circulation means so as to introduce the liquid into at least one liquid distribution zone;

the major portion of the liquid is recovered after its passage through the catalytic bed by at least one liquid overflow means, so that the liquid overflows into the lower distillation zone.

5,776,321

SEPARATION OF T-AMYL ALCOHOL FROM 1-PROPANOL BY AZEOTROPIC DISTILLATION

Lloyd Berg, 1314 S. 3rd Ave., Bozeman, Mont. 59715

Filed May 30, 1997, Ser. No. 865,896

Int. Cl.⁶ B01D 3/36; C07C 29/84

U.S. Cl. 203—57

1 Claim

1. A method for recovering 1-propanol from a mixture of 1-propanol and t-amyl alcohol which consists essentially of distilling a mixture consisting of 1-propanol and t-amyl alcohol in the presence of an azeotrope forming agent, recovering the 1-propanol and the azeotrope forming agent as overhead product and obtaining the t-amyl alcohol as bottoms product, wherein said azeotrope forming agent consists essentially of one material selected from the group consisting of methyl acetate, ethyl acetate, isopropyl acetate, butyl formate, methyl pivalate, di-tert. butyl formate, methyl propionate, ethyl propionate, acetone, 2-butanone, cyclopentane, benzene, cyclohexane, cyclohexene, 1-octene, octane, isooctane, 2,2,4-trimethylpentane, hexane, t-butyl methyl ether, petroleum ether, dimethoxymethane, nitroethane, heptane, toluene, methylcyclohexane, tetrahydrofuran and ethyl formate.

5,776,322

SEPARATION OF 4-METHYL-2-PENTANOL FROM 3-METHYL-1-BUTANOL BY AZEOTROPIC DISTILLATION

Lloyd Berg, 1314 S. 3rd Ave., Bozeman, Mont. 59715

Filed May 20, 1997, Ser. No. 859,436

Int. Cl.⁶ B01D 3/36; C07C 29/84

U.S. Cl. 203—57

2 Claims

1. A method for recovering 3-methyl-1-butanol from a mixture of 3-methyl-1-butanol and 4-methyl-2-pentanol which consists essentially of distilling a mixture consisting of 3-methyl-1-butanol and 4-methyl-2-pentanol in the presence of an azeotrope forming agent, recovering the 3-methyl-1-butanol and the azeotrope forming agent as overhead product and obtaining the 4-methyl-2-pentanol as bottoms product, wherein said azeotrope forming agent is one material selected from the group consisting of p-xylene, m-xylene, o-xylene, ethyl benzene, octane, toluene, n-nonane, 1-octene, 2,2,4-trimethyl pentane and dimethyl carbonate.

2. A method for recovering 4-methyl-2-pentanol from a mixture of 4-methyl-2-pentanol and 3-methyl-1-butanol which consists essentially of distilling a mixture consisting of 4-methyl-2-pentanol and 3-methyl-1-butanol in the presence of an azeotrope forming agent, recovering the 4-methyl-2-pentanol and the azeotrope forming agent as overhead product and obtaining the 3-methyl-1-butanol as bottoms product, wherein said azeotrope forming agent consists of cumene.

5,776,323

DIAMOND ELECTRODE

Koji Kobashi, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 26, 1996, Ser. No. 668,358

Claims priority, application Japan, Jun. 29, 1995, 7-163561

Int. Cl.⁶ C25B 11/12

U.S. Cl. 204—294

20 Claims

1. A diamond electrode comprising a semiconducting diamond film whose surface is chemically modified, wherein said surface chemical modification is hydrogenation, oxidation, or surface substitution by one or more selected from the group consisting of a hydroxyl group, cyano group, carboxyl group, sulfate group, nitro group, acetyl group, and aromatic or alkyl groups with a molecular weight of 50 or more.

5,776,324

ELECTROCHEMICAL BIOSENSORS

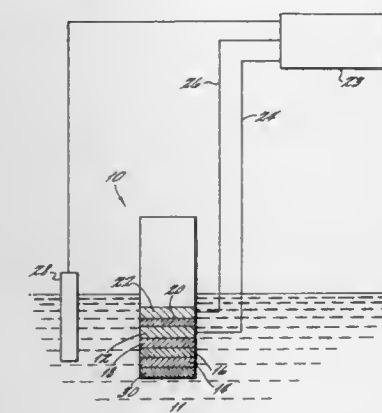
Anton-Lewis Usala, Winterville, N.C., assignor to Encelle, Inc., Cleveland, Ohio

Filed May 17, 1996, Ser. No. 602,909

Int. Cl.⁶ G01N 27/26; 1/10; B32B 5/18; A61L 31/00

U.S. Cl. 204—403

11 Claims



1. An electrochemical biosensor for determining in vivo in a mammal the level of a target chemical in a biological fluid, said biosensor comprising:

an electrochemical system including a substrate which reacts with the target chemical to yield a system signal related to the concentration in the biological fluid of said target chemical; a first membrane immobilizing said substrate and having a porosity permitting passage therethrough of the target chemical to react with said substrate, said first membrane having a surface characterized by electron donor sites susceptible to facilitating attachment thereon of proteins and fibrin, thus impairing said system signal; and

a second membrane bonded to said electron donor sites of and surrounding said first membrane, said second membrane being formed of poly-para-xylylene having connecting hydrogen atom donors, said hydrogen atom donors bonding to said electron donor sites of said first membrane at least sufficiently to form an outer surface on said first membrane without significantly changing the porosity provided by said first membrane, wherein said outer surface is exposed to the biological fluid and consists of phenyl rings;

and wherein said biosensor is implanted in a mammalian subject without biological fouling.

5,776,325

ION TRANSPORT APPARATUS AND PROCESS

Ashton Cyril Partridge, Stokes Valley, New Zealand, assignor to Industrial Research Limited, Lower Hutt, New Zealand
PCT No. PCT/NZ95/00060, § 371 Date Jan. 6, 1997, § 102(e)
Date Jan. 6, 1997, PCT Pub. No. WO96/01681, PCT Pub. Date Jan. 25, 1996

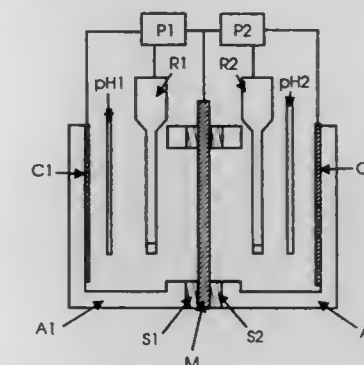
PCT Filed Jul. 6, 1995, Ser. No. 765,757

Claims priority, application New Zealand, Jul. 7, 1994, 260960

Int. Cl.⁶ B01D 61/44

U.S. Cl. 204—518

24 Claims



1. A method of inducing mono-directional transport of ions between electrolyte solutions comprising separating the electrolyte solutions with a conducting polymer membrane and creating a potential gradient across said polymer membrane wherein the potential gradient is created by using the conducting polymer membrane as a shared working electrode.

5,776,326

Patent Not Issued For This Number

5,776,327

METHOD AND APPARATUS USING AN ANODE BASKET FOR ELECTROPLATING A WORKPIECE

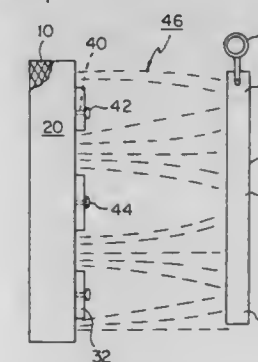
Robert R. Botts, Swati V. Joshi, and Louis W. Nicholls, all of Durham, N.C., assignors to Mitsubishi Semiconductor America, Inc., Durham, N.C.

Filed Oct. 16, 1996, Ser. No. 732,655

Int. Cl.⁶ C25D 5/00; 17/10

U.S. Cl. 205—96

18 Claims



10. A method of electroplating a workpiece, comprising the steps of:

(a) immersing the workpiece supported by a cathode rack in an electroplating bath; (b) providing an anode basket containing anodes of a prescribed plating material;

- (c) covering a portion of the anode basket with a non-conductive frame snugly fitted around the anode basket and having an opening facing the workpiece;
- (d) connecting at least one non-conductive plate on the frame to mask a portion of the frame opening;
- (e) adjusting the position of the non-conductive plate on the frame to achieve a desired electrical field distribution;
- (f) immersing the masked anode basket in the bath; and
- (g) causing a current to flow between the anode and cathode to deposit the plating material on the workpiece.

5,776,328

APPARATUS AND PROCESS FOR ELECTROCHEMICALLY DECOMPOSING SALT SOLUTIONS TO FORM THE RELEVANT BASE AND ACID

Carlo Traini, Milan, and Giuseppe Faita, Novara, both of Italy, assignors to De Nora Permelec S.p.A., Italy

Division of Ser. No. 157,180, Dec. 8, 1993, Pat. No. 5,595,641.

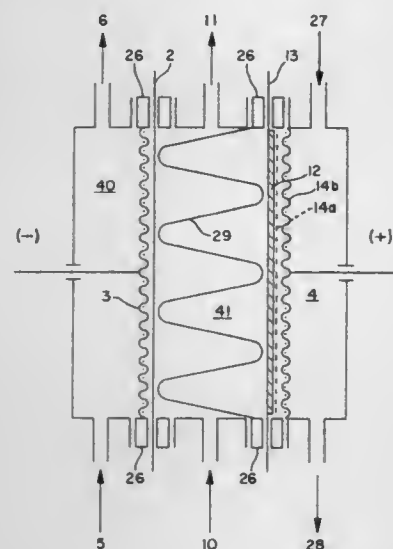
This application May 24, 1996, Ser. No. 653,628

Claims priority, application Italy, Jun. 27, 1991, MI91A1765

Int. Cl.⁶ C25B 1/10; 1/22; 9/00; 11/03

U.S. Cl. 205—514

15 Claims



1. Electrolyzer for the electrolysis of a solution of a salt for the production of a solution containing an acid and a solution of a base, said electrolyzer comprising at least one elementary cell divided into three compartments by two cation-exchange membranes, the first of said compartments contains the first of said membranes and a cathode for hydrogen evolution and the production of the base, a central compartment is defined by said cation-exchange membranes and has an inlet for the solution of the salt and has an outlet for the withdrawal of the solution containing the acid, a third compartment contains the second of said cation-exchange membranes and an anode, said anode comprises a porous electrocatalytic sheet for hydrogen ionization and a porous rigid current collector, said third compartment further has an inlet for a hydrogen-containing gaseous stream and an outlet for the venting of rest gas characterized in that said current collector has a multiplicity of contact points and said porous electrocatalytic sheet is flexible and is held in contact with said second membrane and said rigid current collector by pressure without bonding.

5,776,329

METHOD FOR THE DECOMPOSITION AND RECOVERY OF METALLIC CONSTITUENTS FROM SUPERALLOYS

Ulrich Krynitz, Goslar; Armin Olbrich, Seesen; Wolfgang Kummer, Goslar, and Martin Schloh, Weisbaden, all of Germany, assignors to H.C. Starck GmbH & Co. KG, Goslar, and Bayer AG, Leverkusen, both of Germany

PCT No. PCT/EP95/04177, § 371 Date Apr. 15, 1997, § 102(e)

Date Apr. 15, 1997, PCT Pub. No. WO96/14440, PCT Pub. Date May 17, 1996

PCT Filed Oct. 25, 1995, Ser. No. 817,894

Claims priority, application Germany, Nov. 2, 1994, 44 39

041.6

Int. Cl.⁶ C25B 1/00; C25C 1/00; B01D 17/06; C01G 45/00

U.S. Cl. 205—538

12 Claims

1. Method for recovery of rhenium from superalloys containing rhenium and other alloying metals, comprising the steps of:

- providing a superalloy with one or more minority amounts of alloying metals, including rhenium;
- decomposing the superalloy electrochemically by anodic oxidation in an electrochemical cell, wherein the cell has an electrolyte mixture comprising:
 - at least one organic solvent component selected from the group consisting of alcohols and beta-diketones,
 - water, and
 - at least one conducting salt,
- filtering solid particles from the electrolyte to create a filtration residue and calcining the filtration residue at 500° to 1,200° C. in an oxidizing gas stream to form a volatile Re_2O_7 contained in the gas stream, and
- washing the gas stream containing Re_2O_7 with water.

5,776,330

ELECTROLYTIC DECONTAMINATION METHODS AND APPARATUS

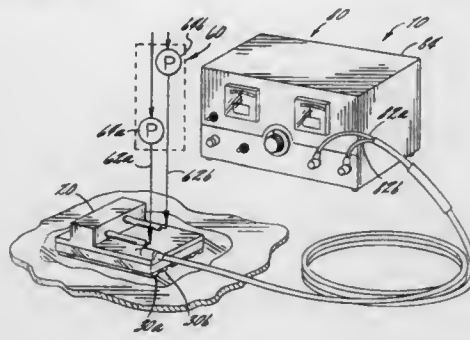
Thomas F. D'Muhala, Raleigh, N.C., assignor to Corpex Technologies, Inc., Durham, N.C.

Filed May 8, 1996, Ser. No. 646,770

Int. Cl.⁶ C25F 1/04; 7/00

U.S. Cl. 205—687

46 Claims



1. An apparatus for decontaminating surfaces having contamination thereon, comprising:

- a housing including first and second channels and first and second fluid pathways, each of which is in fluid communication with a respective one of said first and second channels for supplying fluid thereto;
- a first applicator positioned within said first channel to receive a first fluid supplied via said first fluid pathway and configured to transfer said first fluid to a contaminated surface;
- a second applicator positioned within said second channel to receive a second fluid supplied via said second fluid pathway and configured to transfer said second fluid to a contaminated surface, wherein said second applicator is electrically insulated from said first applicator;
- a first electrode having a contact portion extending from said housing and being electrically connected with said first applicator for supplying electric current of a first polarity between said first electrode and said first applicator; and

a second electrode having a contact portion extending from said housing and being electrically connected with said second applicator for drawing electric current of a second polarity between said second electrode and said second applicator.

5,776,331

PROCESS TO REMOVE SULFUR USING ZINC CONTAINING SORBENT SUBJECTED TO STEAM TREATMENT

Gyanesh P. Khare, and Donald H. Kubicek, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 483,358, Jun. 7, 1995, Pat. No. 5,726,117.

This application Nov. 6, 1997, Ser. No. 965,471

Int. Cl.⁶ C10G 29/00; B01J 8/00

U.S. Cl. 708—247

22 Claims

1. A process to remove sulfur from a sulfur containing fluid stream said process comprising contacting said sulfur containing fluid stream with a sorbent composition comprising a zinc component, a colloidal oxide component, and a metal oxide component wherein said sorbent composition has been subjected to a temperature in the range of about 50° C. to about 800° C. to remove substantially all of the liquid medium, and wherein said sorbent composition is then subjected to a steaming treatment that comprises contacting said sorbent composition with a steam mixture that comprises water and air.

5,776,332

FUEL SYSTEM WITH SIGHT-GLASS

Erwin E. Hurner, 920 Belsly Blvd. South, Moorhead, Minn. 56560

Division of Ser. No. 376,420, Jan. 23, 1995, Pat. No. 5,682,661, and a continuation-in-part of Ser. No. 176,641, Dec. 30, 1993,

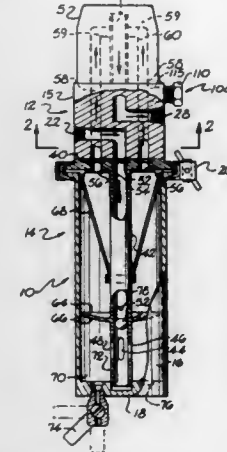
Pat. No. 5,471,964. This application Feb. 18, 1997, Ser. No.

802,308

Int. Cl.⁶ B01D 36/04

U.S. Cl. 210—95

5 Claims



1. A fuel treating system, comprising:

- a block, comprising:
 - opposite upper and lower surfaces;
 - an outer peripheral surface extending between said upper and lower surfaces;
 - a first passage extending through said block;
 - a second passage extending through said block;
 - at least one through passage extending from said upper surface to said lower surface, wherein said at least one through passage excludes any obstructions therein, permitting fuel to flow freely from said upper surface to said lower surface or from said lower surface to said upper surface; and
 - a bore extending from said outer peripheral surface to said at least one through passage;

a fuel filter mounted to said upper surface of said block and in fluid communication with said first passage and said at least one through passage; and

a sight-glass structure positioned below said fuel filter adjacent said outer peripheral surface and extending into said bore; wherein a mechanic can see if the fuel is in said through passage by looking at said sight-glass.

5,776,333

ON PREMISE WATER TREATMENT APPARATUS

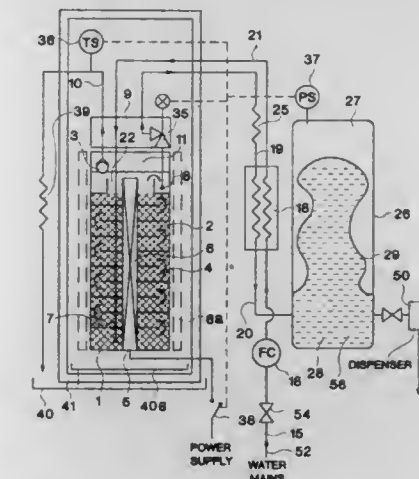
George Plester, and Stijn Vandekerckhove, both of Brussels, Belgium, assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Mar. 31, 1995, Ser. No. 414,954

Int. Cl.⁶ B01D 17/12; 35/01; B67D 5/56

U.S. Cl. 210—104

24 Claims



24. A water treatment apparatus comprising:

a housing defining a water treatment chamber;

an inlet connected to the housing for introducing water into the water treatment chamber;

an outlet connected to the housing for accommodating flow of treated water from the water treatment chamber;

control means for controlling treatment time of water in the water treatment chamber;

heater means for heating water in the water treatment chamber;

a storage tank connected to the water outlet for receiving water from the housing;

a collapsible water chamber in the storage tank, the collapsible water chamber including a movable hermetic barrier contacting water stored in the water chamber and following changes in water volume for keeping the water in the storage tank out of contact with head-space gases therein;

a movable actuator in the storage tank and flow control means for controlling flow of water into the storage tank, the flow control means including a level switch at least partially located within the storage tank, the actuator being in contact with and being moved by the movable barrier, the barrier being moved by introduction and removal of water in the storage tank such that when a capacity of the storage tank is at a maximum, the actuator is moved by the barrier to engage the level switch to thereby terminate flow of water into the storage tank; and

a thermal switch for sensing temperature within the water treatment chamber and a valve in the outlet from the housing, the valve being opened and closed to control flow of water from the water treatment chamber to the storage tank, the level switch being operatively connected to the valve in the outlet and being operatively connected to the heater means, the level switch turning the heater means off when the storage tank is full, the level switch further turning the heater means on when water is discharged from the full storage tank, the thermal switch delaying opening of the valve in the outlet until a predetermined temperature is reached in the water treatment

chamber whereby water at a predetermined temperature is discharged from the water treatment chamber.

5,776,334

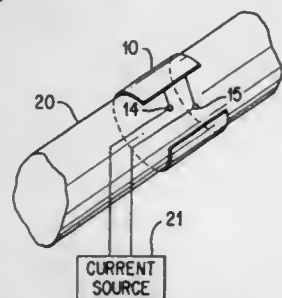
ELECTRONIC SCALE REDUCTION TECHNIQUE
Young I. Cho, Cherry Hill, N.J., assignor to Electronic Descaling 2000, Inc., Boothwyn, Pa.

Filed Oct. 24, 1996, Ser. No. 736,230

Int. Cl.⁶ C02F 1/48

U.S. Cl. 210—138

16 Claims



1. An apparatus for use in reducing scale formation inside a vessel having an outer surface and adapted to contain flowing fluids, said apparatus comprising:

- a coil formed from a length of wire having opposite ends, each end being adapted to be connected to an electrical source, said wire, when placed on a substantially flat surface forming concentric rectangles having long and short legs; and said coil being adapted to be applied and secured to said vessel so that said long legs of said coil are substantially perpendicular to the direction of the fluid flowing through the vessel.

5,776,335

GAS ENTRAINMENT FLOTATION REACTOR WITH ARRANGEMENTS FOR SEPARATING SOLIDS FROM LIQUIDS

Horst Overath, Jülich, Germany, assignor to Forschungszentrum Jülich GmbH, Jülich, Germany

PCT No. PCT/DE95/01192, § 371 Date Mar. 7, 1997, § 102(e) Date Mar. 7, 1997, PCT Pub. No. WO96/07483, PCT Pub. Date Mar. 14, 1996

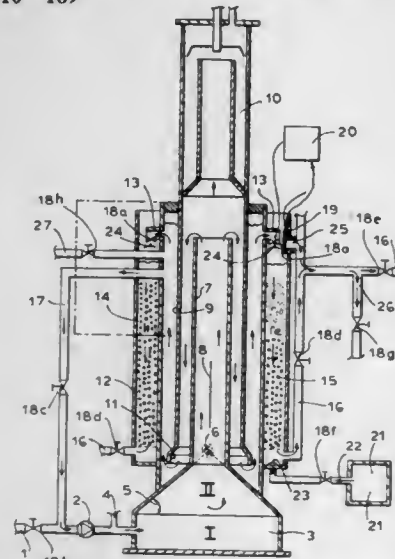
PCT Filed Sep. 1, 1995, Ser. No. 809,743

Claims priority, application Germany, Sep. 9, 1994, 44 32 042.6

Int. Cl.⁶ A01K 63/04; C02F 1/24

U.S. Cl. 210—169

8 Claims



1. A gas entrainment/flotation reactor comprising:

- at least one feed pipe conveying a liquid to be purified and supplied with air or air-ozone mixture which is admixed as the finest of bubbles with the liquid;
- an inlet chamber extending along an axis and in flow communication with the feed pipe which opens tangentially into the chamber;
- a riser tube coaxial with and mounted on and being in flow communication with the chamber for guiding a foam column;
- a foam pipe coaxial with the chamber and spaced radially outwardly from the riser tube and formed with lower and upper ends, the riser tube terminating between the ends, so that the foam column overflows into a space between the tube and pipe;
- foam collecting means formed in the foam pipe on the upper end thereof for collecting the bubbles overloaded with organic material rising in the space toward the upper end of the foam pipe; and
- a tubular casing coaxial with and spaced radially outwardly from the foam pipe to form another space therebetween and being in flow communication with the lower end of the foam pipe to guide axially upwardly the liquid evacuated from the foam pipe, the casing having at least one liquid outlet spaced upwardly axially from the lower end of the pipe and draining the liquid from the other space, the chamber being formed with a cylindrical base having the feed pipe tangentially connected there to and a frustoconical cap on the base having a cone wall extending at an angle with respect to the base so that the liquid entering the base is guided along the cone wall in a rotary raising flow to a region of formation of the foam column in the riser tube encompassing an imaginary apex of the wall of the cap.

5,776,336

ANNULAR FILTER ASSEMBLY

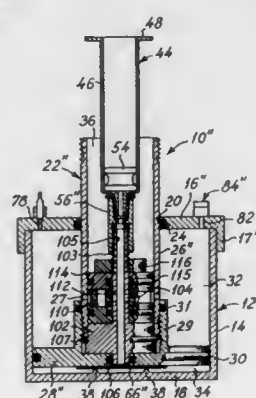
Niels Erik Holm, Birkerød, Denmark, assignor to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 421,599, Apr. 12, 1995, Pat. No. 5,603,845, which is a continuation-in-part of Ser. No. 155,984, Nov. 19, 1993, abandoned. This application Oct. 31, 1996, Ser. No. 739,663

Int. Cl.⁶ B01D 21/26; 35/00; A61K 35/16

U.S. Cl. 210—206

2 Claims



1. An annular assembly locatable within a centrifuge device, for exposing a liquid to a chemical or biological agent during centrifugation comprising, in concentric arrangement,

- a) an outer annular wall defining an annular outer liquid entry chamber;
- b) a first annular filter disposed inwardly from said entry chamber;
- c) an annular agent chamber containing a source of said chemical or biological agent and disposed inwardly from said first filter;
- d) a second annular filter disposed inwardly from said agent chamber;
- e) an inner liquid exit conduit disposed inwardly from said second filter; and,

f) pressure means sufficient to provide liquid flow in an inward direction during centrifugation.

5,776,337

Patent Not Issued For This Number

5,776,338

DISPOSABLE STERILE APPARATUS FOR BLOOD FILTRATION WITH A SYSTEM FOR OPTIMIZING THE RECOVERY OF BLOOD BETWEEN POUCHES

Giorgio Mari, Mirandola, Italy, assignor to Biofil s.r.l., Cavezzo, Italy

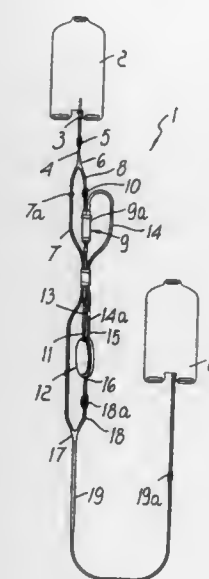
Continuation of Ser. No. 292,464, Aug. 18, 1994, abandoned.

This application Nov. 22, 1996, Ser. No. 755,284

Int. Cl.⁶ B01D 36/00

U.S. Cl. 210—252

6 Claims



1. A disposable sterile apparatus for blood filtration having a system for optimizing the recovery of blood comprising:

- a) a main tube, one end of the main tube being connectable to a first container for containing a liquid to be filtered and the other end being connectable to a second container for receiving filtered liquid;
- b) at least one filter disposed along the main tube, the filter defining an interior chamber, filtration material partitioning the interior chamber into two semi-chambers, the first semi-chamber having an inlet port for the inlet of liquid to be filtered and the second semi-chamber having an outlet port for the outlet of filtered liquid, the second semi-chamber further having a connector communicating with the one end of the main tube by means of a filter vent tube;
- c) an air return tube for facilitating the return of air from the second container to the first container thereby equalizing the pressure in the first and second containers, one end of the air return tube being connected to the main tube at a first connection point interposed between the one end of the main tube and the inlet port of the at least one filter, the other end of the air return tube being connected to the main tube at a second connection point interposed between the outlet port of the at least one filter and the other end of the main tube; and
- d) means for selectively preventing the passage of liquid from the second chamber of the at least one filter into the filter vent tube.

5,776,339

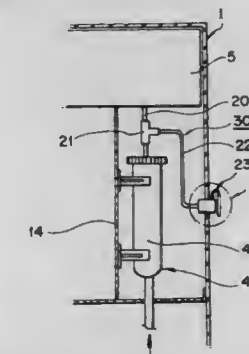
WATER PURIFIER HAVING PURIFIED WATER STORAGE TANK AND VALVE FOR DISCHARGING PURIFIED WATER BEFORE REACHING THE TANK
Dong-Kyu Ha, and Eun-Kwan Lee, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 29, 1996, Ser. No. 690,644

Int. Cl.⁶ B01D 61/20

U.S. Cl. 210—257.2

2 Claims



1. A water purifier comprising:

- a filter unit adapted to filter harmful materials from tap water and provide purified water, and having a drain for draining-off concentrated waste water, said filter unit further having a casing and a series of filters disposed in said casing, including a post-processing filter;
- a purified water tank disposed in said casing downstream of said post-processing filter for receiving purified water therefrom;
- at least one manually actuable main dispensing valve downstream of said tank for dispensing purified water therefrom; and means comprising
- a manually actuable secondary valve downstream of said post-processing filter and upstream of said tank arranged for providing a discharge of purified water directly from said post-processing filter so as to prevent flow of purified water into said tank when said secondary valve is opened.

5,776,340

APPARATUS FOR MINIMIZING WASTEWATER DISCHARGE

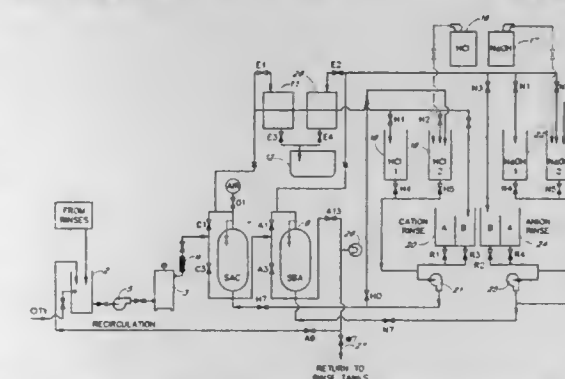
Juzer Jangbarwala, Chino Hills, and Charles F. Michaud, Fullerton, both of Calif., assignors to Hydromatix Inc., Chino, Calif.

Division of Ser. No. 592,803, Jan. 26, 1996. This application Jan. 23, 1997, Ser. No. 787,691

Int. Cl.⁶ B01J 49/00

U.S. Cl. 210—274

20 Claims



1. An apparatus of a deionization and regeneration system, comprising:

- a cation exchange bed packed with cation exchange resin;
- an anion exchange bed packed with anion exchange resin, said anion exchange bed arranged in series with said cation exchange bed;

a collection sump for storing water or rinse to be circulated in the apparatus, said collection sump being in connection with said cation exchange bed and said anion exchange bed;

a main loop comprising said cation exchange bed, said anion exchange bed, and said collection sump to circulate said water or rinse therethrough;

plural cation tanks for storing cation regenerant solution, said cation tanks arranged in a row and numbered from 1 to n, wherein n is an integer >1, at least tank number n being provided with a chemical injector;

a cation loop comprising said cation exchange bed and said cation tanks to circulate said cation regenerant solution therethrough, wherein the flow in said cation exchange bed is in an up-flow direction, each cation tank being in closable connection with said cation exchange bed through said cation loop, said cation loop having a closable branch downstream of said cation exchange bed and upstream of said cation tanks;

plural anion tanks for storing anion regenerant solution, said anion tanks arranged in a row and numbered from 1 to n, wherein n is an integer >1, at least tank number n being provided with a chemical injector;

an anion loop comprising said anion exchange bed and said anion tanks to circulate said anion regenerant solution therethrough, wherein the flow in said anion exchange bed is in an up-flow direction, each anion tank being in closable connection with said anion exchange bed through said anion loop, said anion loop having a closable branch downstream of said anion exchange bed and upstream of said anion tanks;

at least one cation rinse tank for storing cation displacement rinse, and one source of fresh rinse, said at least one cation rinse tank being connected to said cation loop and arranged to bypass said cation tanks, said at least one cation rinse tank and said source of fresh rinse being numbered from 1 to q, wherein said source of fresh rinse is numbered q which is an integer >1, each cation rinse tank being in closable connection with said cation loop, said source of fresh rinse being in closable connection with said cation exchange bed;

at least one anion rinse tank for storing anion displacement rinse, and one source of fresh rinse, said at least one anion rinse tank being connected to said anion loop and arranged to bypass said anion tanks, said at least one anion rinse tank and said source of fresh rinse being numbered from 1 to q, wherein said source of fresh rinse is numbered q which is an integer >1, each anion rinse tank being in closable connection with said anion loop, said source of fresh rinse being in closable connection with said anion exchange bed;

a feed compartment connected to said branch of said cation loop; and

a feed compartment connected to said branch of said anion loop; and

an air-purging blower being in connection with the tops of said cation and anion exchange beds for purging the solution present in said cation exchange bed therefrom with air to said collection sump via said main loop; wherein said main loop, said cation loop, said anion loop, said closable connections, and said closable branches are controllable in sequence for backwashing, regenerating, and rinsing.

5,776,341

FUEL INTAKE DEVICE FOR FUEL SYSTEMS

Richard S. Barnard, Monroe, and Scott A. Chasen, Orange, both of Conn., assignors to Sikorsky Aircraft Corporation, Stratford, Conn.

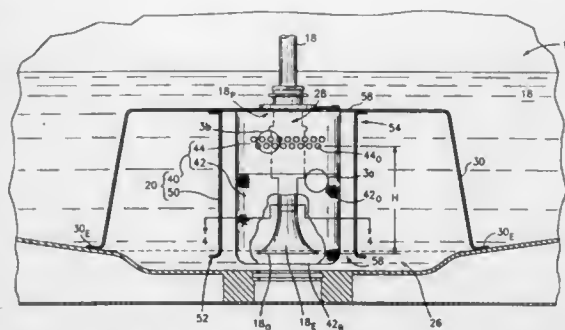
Filed Dec. 23, 1996, Ser. No. 772,679

Int. Cl.⁶ B01D 35/02

U.S. Cl. 210—306

8 Claims

1. A fuel intake device (20) for use in combination with a fuel system (10), the fuel system (10) having a fuel tank (14) for containing a supply of fuel (16), the fuel tank (14) defining a sump region (26), the fuel intake device (20) comprising:



an internal fuel feed line (18) having an end portion (18_e) adapted to extend into the sump region (26) and defining an inlet orifice (18_a) for drawing fuel (16) from said sump region;

a filter assembly (40) enveloping the end portion (18_e) of the internal fuel feed line (18) and having a lower fuel filtering portion (42) and an upper fuel bypass portion (44), said lower fuel filtering portion (42) having a plurality of fine apertures (42_a) therein for facilitating a primary fuel flow P_f of fuel (16) therethrough and for filtering debris from the supply of fuel (16) in a normal operating mode, said upper fuel bypass portion (44) having a plurality of coarse apertures (44_a) for facilitating a secondary flow S_f of fuel (16) therethrough in a bypass operating mode;

each of said fine apertures (42_a) defining a maximum opening size (O₄₂) of about 0.050 inches (0.127 cm) to about 0.12 inches (0.310 cm) and each of said coarse apertures (44_a) defining a maximum opening size (O₄₄) of about 0.25 inches (0.64 cm) to about 0.375 inches (0.95 cm);

said filter being situated about the end portion (18_e) such that the inlet orifice (18_a) thereof is disposed internally of the lower fuel filtering portion (42) and such that said coarse apertures (44_a) of said upper fuel bypass portion (44) are distally spaced from the inlet orifice (18_a); and

a shroud member (50) disposed about said filter assembly (40) and having upper and lower end portions (52, 54), said upper end portion (52) being disposed in sealed combination with an external peripheral surface (18_p) of the internal fuel feed line (18), said lower end portion (54) extending into the sump region (26) and defining an opening (56) for facilitating fuel flow to said filter assembly (40).

5,776,342

FILTER ASSEMBLY

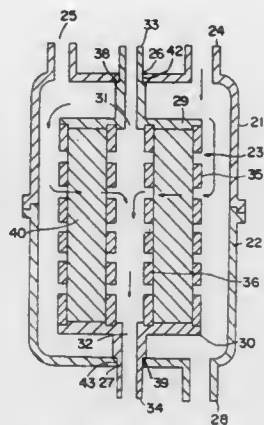
Hajime Hiranaga, and Hidenori Nakayama, both of Ibaraki-Ken, Japan, assignors to Pall Corporation, East Hills, N.Y.

Filed Mar. 5, 1996, Ser. No. 611,110

Int. Cl.⁶ B01D 27/08

U.S. Cl. 210—442

16 Claims



1. A filter assembly comprising:

a housing having first and second end portions and first and second openings formed in the first and second end portions, respectively;

a cylindrical filter element disposed within the housing and including a filter medium and first and second end caps, the first and second end caps being joined to the first and second end portions, respectively, of the housing, the first end cap being sealed to the first end portion of the housing and including a third opening communicating with the first opening of the housing and a portion abutting against an interior surface of the first end portion of the housing.

5,776,343

FLUOROPLASTIC APERTURED FILM FABRIC, STRUCTURES EMPLOYING SAME AND METHOD OF MAKING SAME

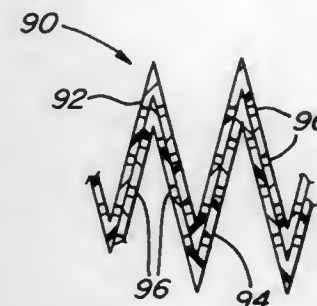
D. Timothy Cullen, Wilmington; Edward E. Hovis, Newark, and Joseph V. Marra, Wilmington, all of Del., assignors to Applied Extrusion Technologies, Inc., Peabody, Mass.

Filed Aug. 3, 1995, Ser. No. 510,723

Int. Cl.⁶ B01D 39/16

U.S. Cl. 210—483

13 Claims



8. A laminated filter structure including a filter membrane sandwiched between a pair of extruded apertured films, each of the apertured films being formed from a crystalline, thermoplastic, extrudable fluoroplastic material, each of the films including spaced-apart strand segments defining apertures therebetween, each of the films having at least 10 strand segments per inch, a thickness of 2–12 mils and a Frazier air permeability number in the range of 200–2,000.

5,776,344

METHOD FOR REMOVING NITROGEN FROM WASTEWATER

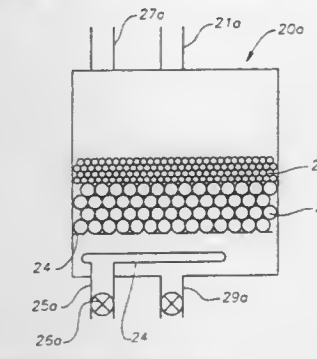
Donald J. McCarty, Mechanicsburg, Pa., and Keith Dobie, Humarock, Mass., assignors to Tetra Technologies Inc., The Woodlands, Tex.

Filed Oct. 26, 1995, Ser. No. 548,556

Int. Cl.⁶ C02F 3/30

U.S. Cl. 210—605

20 Claims



1. A process for treating wastewater containing nitrogen compounds, comprising the steps of:

passing the wastewater through a biologically active material maintained under substantially aerobic conditions to oxidize at least a portion of the nitrogen compounds in the wastewater to nitrites and nitrates to provide nitrified wastewater; and passing the nitrified wastewater through the same biologically active material maintained under substantially anoxic conditions to reduce at least a portion of the nitrites and nitrates in the nitrified wastewater to gaseous nitrogen.

5,776,345

AUTOMATIC PRIMING TECHNIQUE

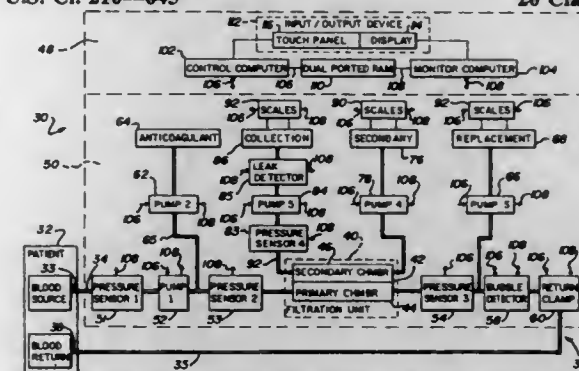
Lori A. Truitt, Golden; Douglas P. Miller, Broomfield, and Keith Manica, Lakewood, all of Colo., assignors to COBE Laboratories, Inc., Lakewood, Colo.

Continuation of Ser. No. 17,571, Feb. 12, 1993. This application Jun. 7, 1995, Ser. No. 472,676

Int. Cl.⁶ B01D 61/00; 61/24; 61/28; 61/32

U.S. Cl. 210—645

20 Claims



6. A method for treating blood from a patient extracorporeally by a treatment which transfers matter to or from the blood through a semipermeable membrane, the semipermeable membrane being part of a filtration unit of an apparatus and dividing the filtration unit into a primary chamber and a secondary chamber, the primary chamber receiving the blood and the matter transferred across the semipermeable membrane into the blood, the secondary chamber receiving the matter to be transferred into the blood and the matter transferred across the semipermeable membrane from the blood, said method comprising the steps of:

establishing an extracorporeal blood flow primary circuit from the patient through the primary chamber and back to the patient; controlling the flow of blood through the primary circuit; selectively supplying a replacement fluid to the blood in the primary circuit prior to returning the blood to the patient; controlling the amount of the replacement fluid supplied to the blood in the primary circuit; establishing a secondary circuit for the flow of fluid through the secondary chamber; selectively supplying a one of a secondary fluid containing matter which is to be transferred across the semipermeable membrane into the blood or a secondary fluid to remove matter from the secondary chamber which has been transferred across the semipermeable membrane from the blood to the secondary chamber; controlling the amount of secondary fluid supplied to the secondary chamber; collecting fluid exiting from the secondary chamber; controlling the amount of fluid collected from the secondary chamber; selecting one of a plurality of different extracorporeal blood treatments to be performed by the apparatus; automatically moving a priming fluid into the primary and secondary circuits prior to treatment according to the extracorporeal blood treatment selected, fully priming portions of the primary and secondary circuits to be used during the selected treatment and partially filling with priming fluid those portions of the primary and secondary circuits not to be used during the selected treatment;

initiating the selected treatment; automatically controlling the rate of flow of fluid through the primary circuit, the rate of flow of replacement fluid into the primary circuit, the rate of flow of secondary fluid into the secondary chamber and the rate of flow of fluid collected from the secondary chamber according to the extracorporeal blood treatment selected; and storing information defining which of the ones of the replacement fluid and the secondary fluid are to be supplied for each of the plurality of treatments.

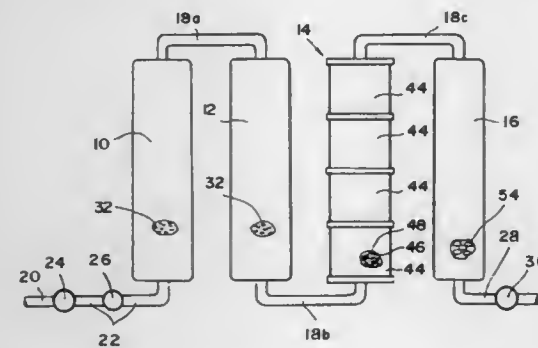
5,776,346

METHOD AND APPARATUS FOR MAKING WATER HAVING PURIFIED AND ACTIVATED FUNCTIONS
Toshiharu Fukai, 1112-1, Ooaza-hakeyama, Kitamimaki-mura, Kitasaku-gun, Nagano, Japan
PCT No. PCT/JP94/01733, § 371 Date Apr. 26, 1996, § 102(e) Date Apr. 26, 1996, PCT Pub. No. WO95/13245, PCT Pub. Date May 18, 1995

PCT Filed Oct. 14, 1994, Ser. No. 637,736
Claims priority, application Japan, Nov. 9, 1993, 5-302179
Int. Cl.⁶ C02F 1/42; 1/48

U.S. Cl. 210—663

26 Claims



1. A method for purifying and activating water comprising passing water through an ion exchange resin, then through a mixture of tourmaline and a metal, and then through a particulate rock selected from the group consisting of obsidian, perlite and fluorite.

5,776,347

METHOD FOR REDUCING THE CONTENT OF ORGANIC SOLVENT IN CELLULOSE-REACTIVE HYDROPHOBING AGENTS

Erik Lindgren, Bohus, and Jeppe Magnusson, Lerum, both of Sweden, assignors to Eka Nobel AB, Sweden
PCT No. PCT/SE94/00094, § 371 Date Jul. 7, 1995, § 102(e) Date Jul. 7, 1995, PCT Pub. No. WO94/18389, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 7, 1994, Ser. No. 481,530
Claims priority, application Sweden, Feb. 15, 1993, 9300490; Aug. 19, 1993, 9302683

Int. Cl.⁶ B01D 15/00

U.S. Cl. 210—691

11 Claims

1. A method for reducing the content of organic solvent in an aqueous dispersion of a cellulose-reactive hydrophobing agent, prepared by emulsifying a molten cellulose-reactive hydrophobing agent containing organic solvent in an aqueous solution containing one or more emulsifying agents, and then solidifying said hydrophobing agent by means of cooling, wherein said method comprises contacting the aqueous dispersion under agitation with a sorbent, said sorbent having the capacity of absorbing or adsorbing organic molecules, or a gas, whereby the solvent is transferred to the sorbent or the gas.

5,776,348 MINERAL PRECIPITATION SYSTEM AND METHOD FOR INHIBITING MINERAL PRECIPITATE FORMATION

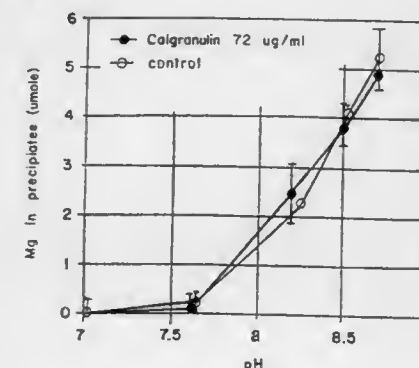
Jeremy D. Selengut, Brookline; William H. Orme-Johnson, Cambridge; Stephen P. Dretler, Wayland, and Hirotsuka Asakura, Arlington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 7, 1995, Ser. No. 385,241

Int. Cl.⁶ C02F 5/10; 5/12

U.S. Cl. 210—698

17 Claims



1. A method for inhibiting formation of a mineral precipitate in a solution, the method comprising the steps of: providing a solution comprising component ions of the mineral precipitate, or precursors thereof; and contacting the solution with an effective amount of isolated calprotectin, or with a calprotectin derivative.

5,776,349

METHOD FOR DEWATERING MICROALGAE WITH A JAMESON CELL

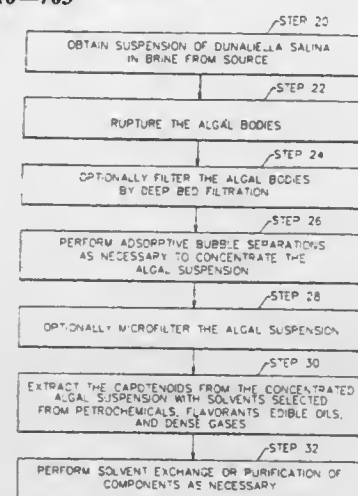
Scott Arthur Guelcher, Weirton, W. Va., and Jeffrey Scott Kanel, Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Dec. 20, 1996, Ser. No. 771,727

Int. Cl.⁶ B03D 1/02

U.S. Cl. 210—703

23 Claims



1. A process for dewatering an aqueous suspension of microalgae comprising the steps of:

- obtaining an aqueous suspension of the algae from a source thereof;
- rupturing the algal cells sufficiently to promote froth flotation of the cells from the suspension;
- generating a free liquid jet of the aqueous suspension;
- plunging the liquid jet downwardly through a gas;
- transporting gas with the liquid jet through a gas and liquid interface and into the aqueous suspension;

- dissipating the momentum of the jet in the aqueous suspension, whereby the gas is dispersed into fine bubbles;
- intimately contacting the fine bubbles with the algal cells in co-current two-phase downward flow to adsorb the algal bodies onto the surfaces of the bubbles, whereby bubble and alga agglomerates are formed; and
- separating the bubble and alga agglomerates from the aqueous suspension to obtain a dewatered algal concentrate.

5,776,350

SEPARATION OF RAW AGRICULTURAL WASTE
Joseph P. Miknevich, Coraopolis, and Denis E. Hassick, Monroeville, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Sep. 12, 1996, Ser. No. 716,827

Int. Cl.⁶ C02F 1/56

U.S. Cl. 210—710

16 Claims

1. A method for separating raw agricultural waste into a liquid portion and a nutrient solids portion comprising:

- providing a raw agricultural waste to be treated;
- treating said raw agricultural waste by adding to said raw agricultural waste an effective amount of a composition comprising a quaternized amino methylated polyacrylamide polymer for separating said raw agricultural waste into a mixture having a liquid portion and a nutrient solids portion consisting essentially of said waste and said polymer, wherein said composition comprising said quaternized amino methylated polyacrylamide contains polymeric microparticles and wherein said quaternized amino methylated polyacrylamide polymeric microparticles being substituted with at least about one mole percent of tertiary amino methyl groups and having an average particle size of from about 200 to 4000 Angstroms in diameter wherein crosslinking of said polymeric microparticles occurs in said composition;
- mixing said composition comprising said quaternized amino methylated polyacrylamide polymer with said raw agricultural waste for facilitating said separation of said raw agricultural waste into said mixture having said liquid portion and said nutrient solids portion;
- subjecting said mixture to at least one mechanical separation means for segregating said separated liquid portion as a purified filtrate from said separated nutrient solids portion as a dewatered cake, wherein said mechanical separation means is a screen;
- providing a collection means for collecting said separated nutrient solids portion;
- collecting said separated nutrient solids portion subjected to said mechanical separation means in said collection means;
- providing another collection means for collecting said separated liquid portion; and
- collecting said separated liquid portion subjected to said mechanical separation means in said another collection means.

5,776,351

METHOD FOR REGENERATION AND CLOSED LOOP RECYCLING OF CONTAMINATED CLEANING SOLUTION

Michael P. McGinness, 2710 S. Shaver, Unit D, Pasadena, Tex. 77502, and Warren Short, 5102 Washington Ave., Houston, Tex. 77007

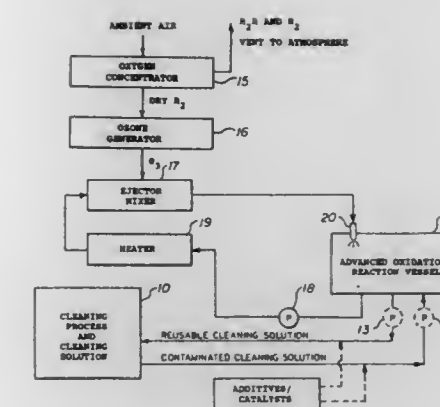
Continuation-in-part of Ser. No. 230,346, Apr. 20, 1994, Pat. No. 5,593,598. This application Sep. 26, 1996, Ser. No. 771,212

Int. Cl.⁶ C02F 1/78

U.S. Cl. 210—748

17 Claims

1. An oxidation process for regeneration of a contaminated cleaning solution to convert the contaminated cleaning solution into a reusable regenerated cleaning solution containing new useful



cleaning agents including surfactants, detergents, wetting agents and emulsifiers that are formed by said process, comprising the steps of:

mixing a contaminated cleaning solution containing inactive organic and inorganic contaminants selected from the group consisting of water, organic solvents, surfactants, ionic salts, fats, oils, and greases with an ozone containing gas containing a stoichiometric amount of ozone sufficient to partially oxidize the inactive organic contaminants in said contaminated cleaning solution and convert them into new useful active cleaning agents, polar water soluble surfactants, detergents, wetting agents and emulsifiers which reduce the surface tension of said contaminated cleaning solution;

said amount of ozone being insufficient to sterilize, purify, or totally destroy all of the organic contaminants in said contaminated cleaning solution; and

said reusable regenerated cleaning solution has a cleaning strength at least as great as the strength of the original cleaning solution prior to contamination.

5,776,352

PROCESS FOR TREATMENT OF WATER AND OF SURFACES IN CONTACT WITH THE SAID WATER IN ORDER TO PREVENT THE ATTACHMENT OF AND/OR TO REMOVE AND/OR TO CONTROL MACROORGANISMS, COMPOSITION AND PAINT FOR THE SAID TREATMENT

Antoine Vanlaer, 607 avenue de la Republique, 59000 Lille, France

Continuation of Ser. No. 364,973, Dec. 28, 1994, Pat. No.

5,565,021. This application Apr. 1, 1996, Ser. No. 625,357

Claims priority, application France, Dec. 8, 1994, 94 14762

Int. Cl.⁶ C09D 5/14

U.S. Cl. 210—749

25 Claims

1. A process for preventing attachment, for removing and for controlling the growth of macroorganisms in water and on surfaces in contact with said water comprising adding at least one biocidal or biostatic active agent to said water or said surfaces expected to contain said macroorganisms wherein said biocidal or biostatic active agent is a mixture of at least one polyamine of formula (I):



wherein R_1 is a dodecyl radical or R_1 is a tetradecyl radical, and at least one polyamine of formula (I) wherein R_1 is an octadecyl radical, n being an integer from 0 to 3.

5,776,353

ADVANCED COMPOSITE FILTRATION MEDIA

Scott K. Palm, Santa Maria; Timothy R. Smith, Lompoc; Jerome C. Shiuh, Lompoc, and John S. Roulston, Lompoc, all of Calif., assignors to Advanced Minerals Corporation, Santa Barbara, Calif.

Filed Feb. 16, 1996, Ser. No. 602,583

Int. Cl.⁶ H01D 37/02; 39/00

U.S. Cl. 210—777

56 Claims

1. An advanced composite filtration media comprising heterogeneous media particles, each of said media particles comprising:

- (i) a diatomite component; and,
(ii) an expanded perlite component;

wherein said diatomite component is intimately and directly bound to said perlite component.

13. A method of filtration comprising the step of passing a fluid containing suspended particulates through a filter aid material supported on a septum, wherein said filter aid material comprises an advanced composite filtration media according to claim 1.

5,776,354

USE OF A POROUS, PARTICULATE MATERIAL IN A PACKED FILTER BED FOR LIQUID/GAS AND/OR LIQUID/LIQUID SEPARATION

Abele Broer van der Meer, EH Renkum; Elwin Schomaker, NX Velp; Johannes Bos, BG Westervoort, and Erik Leonard Middelhoek, GH Arnhem, all of Netherlands, assignors to Akzo Nobel NV, Arnhem, Netherlands

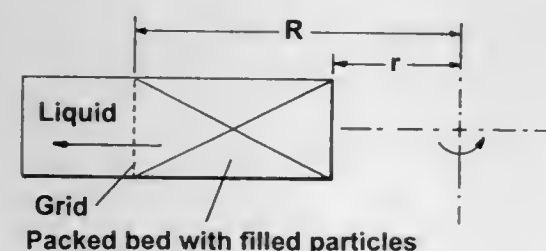
Filed Jun. 1, 1995, Ser. No. 457,005

Claims priority, application Netherlands, Jun. 1, 1994, 9400892

Int. Cl.⁶ B01D 21/26; 15/04

U.S. Cl. 210—806

8 Claims



1. A method comprising using a porous, dimensionally stable, particulate polymer material in a packed filter bed for separating a disperse liquid phase from at least one of a gas and a liquid, wherein the average size of the particles is in the range of from 0.5 to 2 mm and the internal surface area of the material is such that, after the bed has been filled with the disperse liquid phase to be separated and placed, as a packed bed, at a distance of from R to r from the center in a centrifuge rotating at an angular velocity w, for which it holds that $0 < w^2(R^2 - r^2) \leq 20 \text{ (rad/s)}^2 \text{ m}^2$, wherein w stands for the angular velocity (in rad/s) and R and r represent the largest and the smallest radius (in m), respectively, of the material in the centrifuge, at least 1% of the liquid will have been separated after 5 minutes, while at least 10% of the liquid will have been separated after 60 minutes.

5,776,355

METHOD OF PREPARING CUTTING TOOL SUBSTRATE MATERIALS FOR DEPOSITION OF A MORE ADHERENT DIAMOND COATING AND PRODUCTS RESULTING THEREFROM

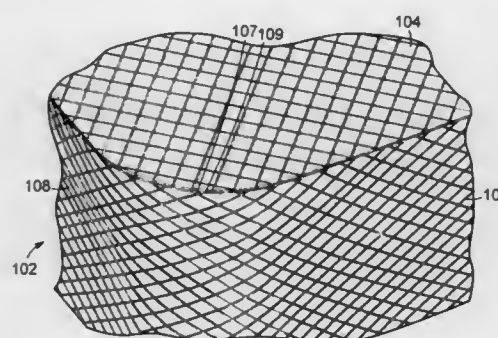
Scott D. Martin, Paxton, Mass., assignor to Saint-Gobain/Norton Industrial Ceramics Corp, Worcester, Mass.

Filed Jan. 11, 1996, Ser. No. 585,340

Int. Cl.⁶ B23K 26/00

U.S. Cl. 216—52

27 Claims



1. A method for preparing a cutting tool substrate material prior to coating the tool substrate material with a diamond coating, said method comprising:

- scoring at least a portion of the top surface of the cutting tool substrate material with a first pattern of grooves; and
scoring at least a portion of at least two adjacent side surfaces of the cutting tool substrate material with a second pattern of grooves, said portions of said top and two adjacent side surfaces excluding areas immediately adjacent to a cutting edge of the cutting tool substrate material.

5,776,356

METHOD FOR ETCHING FERROELECTRIC FILM

Seichi Yokoyama; Yasuyuki Itoh, both of Kashiwa; Shigeo Onishi; Jun Kudo, both of Nara; Keizo Sakiyama, Kashi-hara, and Hitoshi Urashima, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

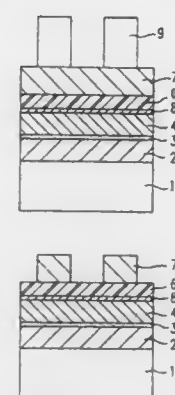
Filed Feb. 15, 1995, Ser. No. 388,828

Claims priority, application Japan, Jul. 27, 1994, 6-175363; Oct. 26, 1994, 6-262629

Int. Cl.⁶ H01L 21/3065

U.S. Cl. 216—76

24 Claims



1. A method for etching a ferroelectric film made of a compound containing lead, comprising the steps of:
forming an insulating film, metal films, and a ferroelectric film on a substrate in this order;

5,776,359

GIANT MAGNETORESISTIVE COBALT OXIDE COMPOUNDS

Peter G. Schultz, Oakland; Xiaodong Xiang, Alameda, and Isy Goldwasser, Menlo Park, all of Calif., assignors to Symyx Technologies, Palo Alto, and The Regents of the University of California, Oakland, both of Calif.

Continuation-in-part of Ser. No. 327,513, Oct. 18, 1994. This application May 8, 1995, Ser. No. 438,043

Int. Cl.⁶ C04B 35/50; C01F 11/02; 17/00

U.S. Cl. 252—62.51

8 Claims

x	y									
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.1	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19
0.2	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29
0.3	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39
0.4	0.40	0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49
0.5	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59
0.6	0.60	0.61	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69
0.7	0.70	0.71	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79
0.8	0.80	0.81	0.82	0.83	0.84	0.85	0.86	0.87	0.88	0.89
0.9	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99

1. A giant magnetoresistive (GMR) cobalt oxide compound, said GMR cobalt oxide compound having the formula:



wherein:

- y has a value ranging from about 1 to about 2;
x has a value ranging from about 0.1 to about 0.9; and
z has a value ranging from about 2 to about 4.

5,776,360

HIGHLY DISPERSE MAGNETIC METAL OXIDE PARTICLES, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Werner Sieber, Fribourg, Switzerland, assignor to Chiron Diagnostics Corporation, East Walpole, Mass.

PCT No. PCT/EP95/02441, § 371 Date Jan. 3, 1997, § 102(e) Date Jan. 3, 1997, PCT Pub. No. WO96/02060, PCT Pub. Date Jan. 25, 1996

PCT Filed Jun. 22, 1995, Ser. No. 765,091

Claims priority, application Switzerland, Jul. 7, 1994, 2176/94

Int. Cl.⁶ H01F 1/36; 1/44; B03C 1/01; G01N 33/543

U.S. Cl. 252—62.63

38 Claims

1. A magnetic particle of an iron-based oxide, which has a particle diameter of 1 to less than 5 nm and a specific surface area of about 220 to 350 m²/g and to whose surface functional silanes are bound.

forming an etching resistant film on the ferroelectric film, followed by patterning; and
etching the ferroelectric film with a mixed gas containing an inert gas and a halogen gas or a halogenated gas as an etching gas, using the patterned etching resistant film as an etching mask, wherein the halogen gas or the halogenated gas is chlorine gas or a chloride gas, and wherein a ratio of a flow rate of the halogen gas or the halogenated gas with respect to a total flow rate of the mixed gas is 50% or less.

5,776,357

SERUM OR PLASMA SEPARATING COMPOSITIONS

Ryusuke Okamoto, and Hideo Anraku, both of Yamaguchi, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP96/02390, § 371 Date Apr. 28, 1997, § 102(e) Date Apr. 28, 1997, PCT Pub. No. WO97/08548, PCT Pub. Date Mar. 6, 1997

PCT Filed Aug. 26, 1996, Ser. No. 809,421

Claims priority, application Japan, Aug. 28, 1995, 7-218661; Dec. 13, 1995, 7-324342; Apr. 26, 1996, 8-108083

Int. Cl.⁶ G01N 33/48

U.S. Cl. 252—60

16 Claims

1. A serum or plasma separating composition comprising an oligomer of cyclopentadiene, an organic gelling agent and a dispersant for the organic gelling agent, the organic gelling agent comprising a condensation product of sorbitol and an aromatic aldehyde, the dispersant for the organic gelling agent comprising a polyoxyethylene-polyoxypropylene block copolymer having HLB of 1.0 to 9.0, the composition comprising 0.02 to 3 parts by weight of the organic gelling agent, and 0.1 to 15 parts by weight of the dispersant for the organic gelling agent per 100 parts by weight of the oligomer of cyclopentadiene.

5,776,358

ELECTROLYTE FOR DRIVING ELECTROLYTIC CAPACITOR AND ELECTROLYTIC CAPACITOR USING THE SAME

Nario Niibo; Naoko Yoshida, both of Osaka, and Yoshinori Takamuku, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP96/00473, § 371 Date May 2, 1997, § 102(e) Date May 2, 1997, PCT Pub. No. WO96/27201, PCT Pub. Date Sep. 6, 1996

PCT Filed Feb. 29, 1996, Ser. No. 732,372

Claims priority, application Japan, Mar. 2, 1995, 7-042892

Int. Cl.⁶ H01G 9/022

U.S. Cl. 252—62.2

16 Claims

1. An electrolyte for driving an electrolytic capacitor prepared by using a solvent comprising an organic compound, and dissolving one or more solutes selected from the group consisting of at least one random copolymer of polyethylene glycol and polypropylene glycol shown in formula (1)



(1 is not less than 2 each value of m and n is not less than 1 and each one of the plurality of m is the same or different and each one of the plurality of n is the same or different).

5,776,361

MULTI-COMPONENT OXYGEN SCAVENGING COMPOSITION

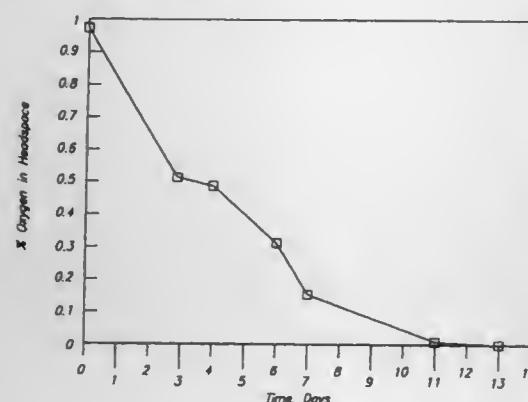
Kiyoshi Katsumoto, El Cerrito, and Ta Yen Ching, Novato, both of Calif., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation-in-part of Ser. No. 388,815, Feb. 15, 1995, Pat. No. 5,660,761. This application Aug. 13, 1996, Ser. No. 698,011

Int. Cl.⁶ C09K 15/02; B32B 1/00; 27/18

U.S. Cl. 252—188.28

38 Claims



1. An oxygen scavenging composition comprising at least one polyterpene and at least one catalyst effective in catalyzing oxygen scavenging.

5,776,362

SLUDGE DEHYDRATING AGENT

Shigeru Sato; Hisao Ohshimizu, both of Tokyo, and Shinobu Kawaguchi, Kyoto, all of Japan, assignors to Kurita Water Industries Ltd., Tokyo, and Sanyo Chemical Industries Ltd., Kyoto, both of Japan

PCT No. PCT/JP93/00904, § 371 Date Aug. 23, 1994, § 102(e) Date Aug. 23, 1994, PCT Pub. No. WO94/01370, PCT Pub. Date Jan. 20, 1994

PCT Filed Jun. 30, 1993, Ser. No. 290,986

Claims priority, application Japan, Jul. 4, 1992, 4-200624

Int. Cl.⁶ G02F 1/14

U.S. Cl. 252—194

16 Claims

1. A sludge dehydrating agent comprising a mixture of a copolymer composed of 10 to 60 mole % of cationic vinyl monomer units, 10 to 45 mole % of vinylic carboxylic acid monomer units and 5 to 80 mole % of nonionic vinyl monomer units with a mineral acid salt or an organic carboxylic acid salt of a group IIA metal of the periodic table, the molar ratio of said salt of a group IIA metal to the vinylic carboxylic acid monomer being in the range from 0.2 to 2.0, the molar ratio of the cationic vinyl monomer units to vinylic carboxylic acid monomer units being 0.3 to 3.0, based on the amount of the vinylic carboxylic acid monomer to the amount of the cationic vinyl monomer, and said agent having an improved storage stability imparted by the presence of said salt.

5,776,363

COMPOUNDS HAVING SIDE CHAINS WITH MULTIPLE METHYL BRANCHES AND THEIR USE IN LIQUID-CRYSTAL MIXTURES

Barbara Hornung, Hasselroth; Rainer Wingen, Hattersheim; Michael Morr, Wolfenbüttel; Detlef Löttsch, and Gerd Hepke, both of Berlin, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Jul. 18, 1996, Ser. No. 683,298

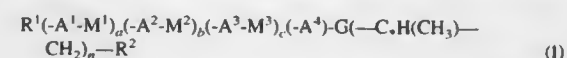
Claims priority, application Germany, Jul. 21, 1995, 195 26 611.0

Int. Cl.⁶ C09K 19/52; C07D 239/00; 285/08; 319/06

U.S. Cl. 252—299.01

9 Claims

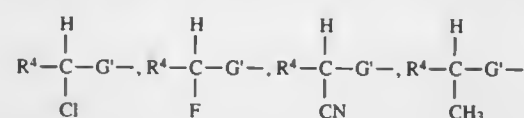
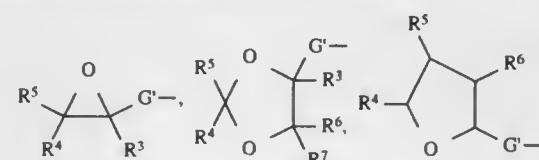
1. A compound of the formula (I) with multiple methyl branches,



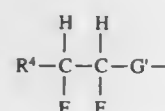
in which the symbols and indices have the following meanings:

* is a chiral carbon atom;

R¹ is hydrogen, —CN, —F, —Cl, —CF₃, —CHF₂, —CH₂F, —OCF₃, —OCHF₂, —OCH₂F or a straight-chain or branched alkyl radical having 1 to 20 carbon atoms (with or without an asymmetrical carbon atom), where one or more —CH₂— groups may also be replaced by —O—, —S—, —CO—O—, —O—CO—, —O—CO—O—, —CO—, —CS—, —CH=CH—, —C≡C—, cyclopropane-1,2-diyl, —Si(CH₃)₂—, 1,4-phenylene, trans-1,4-cyclohexylene or trans-1,3-cyclopentylene, with the proviso that oxygen atoms and/or sulfur atoms must not be bonded directly to one another, and/or where one or more H atoms of the alkyl radical may be substituted by —F, —Cl, —Br, —OR³, —SCN, —OCN or —N₃, or R¹ is alternatively one of the following groups (optically active or racemic):



or



or R¹ is a radical of the formula —G(C.H(CH₃))_n—R²; R² is an n-alkyl group having 1 to 6 carbon atoms;

G is —CO—O—CH₂—, —CO—O—, —O—CO—, —O—CO—O—CH₂—, —O—CO—O—, —O—CH₂—, —O—, —S— or a single bond;

G' is —CO—O—, —CH₂—O— or a single bond;

R³, R⁴, R⁵, R⁶ and R⁷ are identical or different and are hydrogen or a straight-chain or branched alkyl radical having 1 to 16 carbon atoms (with or without an asymmetrical carbon atom), where one or more —CH₂— groups may also be replaced by —O— and/or —CH=CH—, with the proviso that oxygen atoms must not be bonded directly to one another, and/or where one or more H atoms of the alkyl radical may be substituted by —F or —Cl; R⁴ and R⁵ together may also be —(CH₂)₄— or —(CH₂)₅— if they are bonded to an oxirane, dioxolane or tetrahydrofuran system;

M¹, M², M³ and M⁴ are identical or different and are —CO—O—, —O—CO—, —O—CO—O—, —CH₂—O—, —O—CH₂—, —CH₂—S—, —S—CH₂—, —CH=CH— or a single bond;

A¹, A², A³ and A⁴ are identical or different and are 1,4-phenylene, in which one or more H atoms may be replaced by F, Cl and/or CN, pyrazine-2,5-diyl, in which one or two H atoms may be replaced by F, Cl and/or CN, pyridazine-3,6-diyl, in which one or two H atoms may be replaced by F, Cl and/or CN, pyridine-2,5-diyl, in which one or more H atoms may be replaced by F, Cl and/or CN, pyrimidine-2,5-diyl, in which one or two H atoms may be replaced by F, Cl and/or CN, trans-1,4-cyclohexylene, in which one or two H atoms may be replaced by CN and/or CH₃, 1,3,4-thiadiazole-2,5-diyl, 1,3-dioxane-2,5-diyl, 1,3-dithiane-2,5-diyl, 1,3-thiazole-2,4-diyl, in which one H atom may be replaced by F, Cl and/or CN, 1,3-thiazole-2,5-diyl, in which one H atom may be replaced by F, Cl and/or CN, thiophene-2,4-diyl, in which one H atom may be replaced by F, Cl and/or CN, thiophene-2,5-diyl, in which one or two H atoms may be replaced by F, Cl and/or CN, or naphthalene-2,6-diyl, in which one or more H atoms may be replaced by F, Cl and/or CN; a, b and c are 0 or 1 and a+b+c is 1, 2 or 3; and n is 2, 3, 4, 5 or 6.

5,776,364

LIQUID CRYSTAL OPTICAL ELEMENT, A METHOD FOR PRODUCING THE SAME AND A PROJECTION TYPE LIQUID CRYSTAL DISPLAY APPARATUS

Satoshi Niiyama; Kazuhiko Yamada, and Hiroshi Kumai, all of Kanagawa, Japan, assignors to AG Technology Co., Ltd., Yokohama, Japan

Filed Apr. 24, 1996, Ser. No. 636,989

Claims priority, application Japan, Apr. 24, 1995, 7-098894

Int. Cl.⁶ G02F 1/13

U.S. Cl. 252—299.01

14 Claims

1. A liquid crystal optical element comprising: a pair of substrates with electrodes, and a liquid crystal/polymer composite material interposed between the pair of substrates, wherein the polymer of the liquid crystal/polymer composite is a cured product of a curable material comprising an addition-polymerizable urethane compound comprising at least 10 weight percent of an addition-polymerizable acrylurethane compound obtained from a non-cyclic branched aliphatic isocyanate compound.

5,776,365

CARBOXYLATE COMPOUNDS, LIQUID CRYSTAL MATERIALS, LIQUID CRYSTAL COMPOSITIONS AND LIQUID CRYSTAL ELEMENTS

Yuuichirou Tatsuki; Shinichi Nishiyama; Junichi Kawabata; Tooru Yamanaka, and Chiho Tanaka, all of Sodegaura, Japan, assignors to Mitsui Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 438,036, May 8, 1995, Pat. No. 5,725,798, which is a continuation of Ser. No. 180,452, Jan. 12, 1994, abandoned, which is a continuation-in-part of Ser. No. 995,208, Dec. 23, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,213

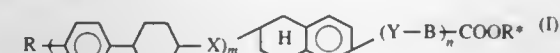
Claims priority, application Japan, Dec. 27, 1991, 3-347122; Mar. 13, 1992, 4-55209; Mar. 13, 1992, 4-55210

Int. Cl.⁶ C09K 19/32; 19/34; C07C 69/76

U.S. Cl. 252—299.62

65 Claims

1. A carboxylic acid ester compound represented by the following formula (I)

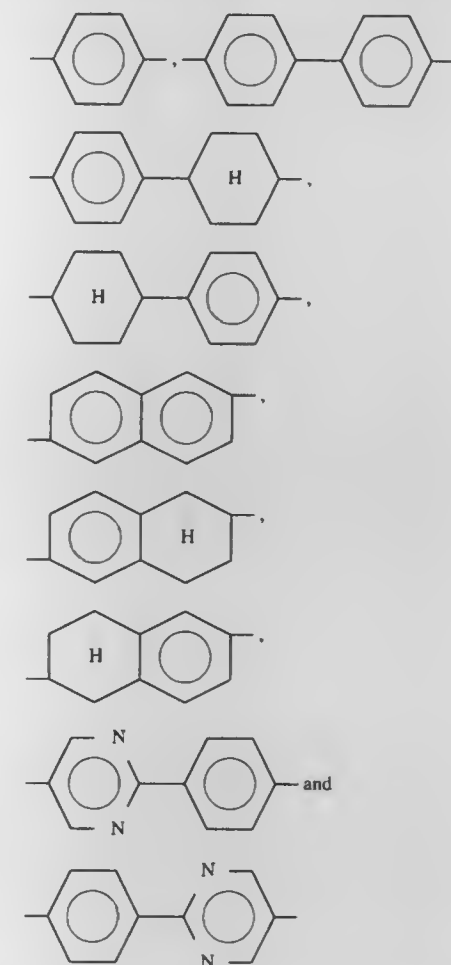


wherein

R is a group selected from the group consisting of an alkyl of 3–20 carbon atoms, an alkoxy of 3–20 carbon atoms, and a halogenated alkyl of 3–20 carbon atoms,

X and Y are independently a group selected from the group consisting of —COO—, —OCO—, —CH₂CH₂—, —CH₂O—, —OCH₂—, —S—S—, —CO—CH₂— and —CH₂—CO—, or a single bond,

B is a group selected from the group consisting of



R* is an optically active group of 4–20 carbon atoms containing at least one asymmetric carbon atom where one or more hydrogen atoms attached to the carbon atoms constituting said optically active group may be substituted with a halogen atom, and m is 1 or 2 and n is an integer of 0–2.

5,776,366

LIQUID CRYSTAL COMPOSITION AND ELECTRO-OPTIC DISPLAY DEVICE

Yoshitaka Tomi; Tetsuya Matsushita; Fusayuki Takeshita; Katsuyuki Murashiro, and Etsuo Nakagawa, all of Chiba, Japan, assignors to Chisso Corporation, Osaka-fu, Japan

Filed Oct. 31, 1996, Ser. No. 741,720

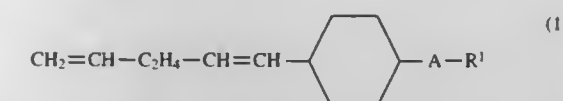
Claims priority, application Japan, Nov. 2, 1995, 7-310040

Int. Cl.⁶ C09K 19/30; 19/52

U.S. Cl. 252—299.63

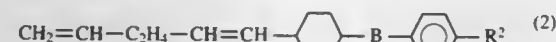
6 Claims

1. A chiral nematic liquid crystal composition containing as a first component, at least one member of compounds expressed by the formula (I)



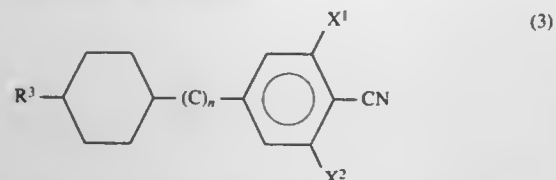
wherein R¹ represents a linear alkyl group of 1 to 10 carbon atoms, and A represents trans-1,4-cyclohexylene or 1,4-phenylene;

as a second component, at least one member of compounds expressed by the formula (2)



wherein R^2 represents a linear alkyl group of 1 to 10 carbon atoms and B represents trans-1,4-cyclohexylene or 1,4-phenylene,

as a third component, at least one member of compounds expressed by the formula (3)



wherein R^3 represents a linear alkyl group of 1 to 10 carbon atoms, or a group wherein an optional $-\text{CH}_2-$ or two or more not adjacent $-\text{CH}_2-$ s present in the above group are replaced by $-\text{O}-$ or $-\text{CH}=\text{CH}-$; X^1 and X^2 each independently represent H or F; C represents $-\text{COO}-$, $-\text{C}_2\text{H}_4-$, trans-1,4-cyclohexylene or 1,4-phenylene; and n represents 0 or 1, and

as a fourth component, a chiral dopant in a quantity in which a ratio (d/p) of the thickness (dum) of a liquid crystal layer in a liquid crystal cell to be filled with the liquid crystal composition to the helical pitch thereof (pum) is 0.03 to 2.0.

5,776,367

ALKENYLCYCLOHEXANE DERIVATIVES, LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DISPLAY ELEMENT

Shuichi Matsui; Yasuyuki Koizumi; Takashi Kato; Kazutoshi Miyazawa; Norihisa Hachiya, and Etsuo Nakagawa, all of Chiba, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jun. 19, 1996, Ser. No. 666,832

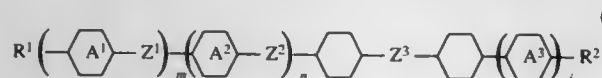
Claims priority, application Japan, Jun. 22, 1995, 7-180745

Int. Cl.⁶ C09K 19/30; 19/52; C07C 19/08

U.S. Cl. 252—299.63

18 Claims

1. An alkenylcyclohexane derivative expressed by the formula (1):



wherein R^1 and R^2 represent a linear or branched alkyl group of 1 to 15 carbon atoms or alkenyl group of 2 to 15 carbon atoms; at least one of R^1 and R^2 represents an alkenyl group; in these groups, one or more non-adjacent CH_2 groups may be replaced by oxygen atom, sulfur atom or $-\text{C}=\text{C}-$ group; ring A^1 , ring A^2 and ring A^3 each independently represent 1,4-cyclohexylene group wherein one or more CH_2 groups in the ring may be replaced by oxygen atom or sulfur atom, or 1,4-phenylene group wherein one or more CH groups in the ring may be replaced by nitrogen atom; Z^1 and Z^2 each independently represent $-\text{CH}_2\text{CH}_2-$, $-\text{CH}_2\text{O}-$, $-\text{OCH}_2-$, $-\text{CH}=\text{CH}-$, $-\text{C}=\text{C}-$ or single bond; Z^3 represents $-(\text{CH}_2)_4-$, $-\text{CH}=\text{CH}-(\text{CH}_2)_2-$, $-\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2-$ or $-(\text{CH}_2)_2-\text{CH}=\text{CH}-$; and m, n and i each independently represent 0 or 1,

provided that when m and n represent 0, and i represents 1, and Z^3 represents $-(\text{CH}_2)_4-$, and ring A^3 represents 1,4-phenylene group; then R^1 represents a linear or branched alkenyl group of 2 to 15 carbon atoms, and R^2 represents a group other than methoxy;

when m represents 1, and n and i represent 0, and Z^1 represents single bond, and Z^3 represents $-(\text{CH}_2)_4-$, and ring A^1 represents 1,4-phenylene group; then R^1 represents a group other than methoxy, and R^2 represents a linear or branched alkenyl group of 2 to 15 carbon atoms; and

when m represents 0, and n represents 1, and i represents 0, and Z^2 represents a single bond, and Z^3 represents $-(\text{CH}_2)_4-$, and ring A^2 represents 1,4-phenylene group; then R^1 represents a group other than methoxy, and R^2 represents a linear or branched alkenyl group of 2 to 15 carbon atoms.

5,776,368

BORATE PHOSPHOR SYNTHESIS USING BORON NITRIDE

Chung-Nin Chau, Sayre, Pa., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed Aug. 22, 1997, Ser. No. 916,383

Int. Cl.⁶ C01B 35/12; C09K 11/63

U.S. Cl. 252—301.4 R

12 Claims

1. An improved method for a single step firing synthesis of a borate phosphor from a boron source selected from boron oxide, boric acid or a combination thereof, wherein the improvement comprises replacing at least about half of the boron source with an equivalent amount of boron nitride.

5,776,369

ALKALI METAL DISPERSIONS

B. Troy Dover, Kings Mountain; Conrad W. Kamienski; Robert C. Morrison, both of Gastonia; R. Thomas Currin, Jr., Salisbury, and James A. Schwindeman, Lincolnton, all of N.C., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 210,840, Mar. 21, 1994, Pat. No. 5,567,474, which is a continuation-in-part of Ser. No. 19,006, Feb. 18, 1993, abandoned. This application Apr. 22,

1996, Ser. No. 639,250

Int. Cl.⁶ B01J 13/00; B05D 7/14; B32B 15/02

U.S. Cl. 252—309

18 Claims

9. Atmospherically stable coated lithium metal particles formed by heating lithium metal in a hydrocarbon oil to a temperature above the melting point of the lithium metal, agitating the molten lithium, optionally in the presence of a dispersing agent, maintaining agitation under conditions sufficient to disperse the lithium metal into small molten particles, while contacting the lithium metal-oil dispersion mixture, above or below its surface, with at least 0.3 weight percent of anhydrous carbon dioxide for at least one minute to disperse the molten lithium metal, and cooling the dispersion is to below the melting point of the lithium metal, to produce alkali metal particles dispersed in oil.

5,776,370

CHARGE TRANSFER COMPLEXES BETWEEN POLYANILINE AND ORGANIC ELECTRON ACCEPTORS AND METHOD OF FABRICATION

Ali Afzali-Ardakani, Yorktown Heights, and Stephen Leslie Buchwalter, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

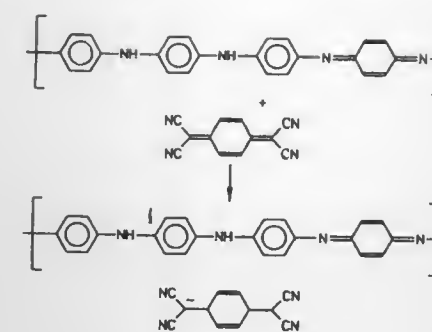
Filed Apr. 25, 1996, Ser. No. 637,993

Int. Cl.⁶ H01B 1/00; 1/20; C08J 5/00; C08K 5/04

U.S. Cl. 252—500

11 Claims

1. A composition of matter comprising: polymer comprising the emeraldine base form of polyaniline; an organic electron-acceptor, wherein said electron-acceptor is selected from the group consisting of unsubstituted and ring-substituted benzoquinones, unsubsti-



tuted and ring-substituted naphthoquinones, and tetracyanoquinodimethane; and a protonic acid dopant.

5,776,371

CONDUCTIVE COMPOSITION FOR FUSE STATE INDICATOR

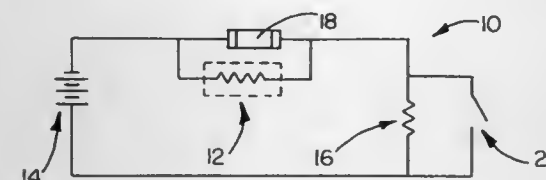
Robert Parker, Palm Desert, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Filed Apr. 16, 1996, Ser. No. 632,902

Int. Cl.⁶ H01B 1/22; 1/24; C08L 91/06

U.S. Cl. 252—502

15 Claims



1. A composition having a positive temperature coefficient of resistance comprising a binder, an electrically conductive material and discrete volumes of electrically non-conductive meltable material insoluble in the binder and distributed throughout the binder, wherein the binder and the electrically non-conductive meltable material are not the same, and wherein the composition exhibits an irreversible electrical resistance change when the composition reaches a temperature above the melting point of the non-conductive meltable material.

5,776,372

CARBON COMPOSITE MATERIAL

Kazuo Saito; Atsushi Hagiwara, and Fumio Tanno, all of Tokyo, Japan, assignors to Nissinbo Industries, Inc., Tokyo, Japan

Filed May 22, 1996, Ser. No. 651,561

Claims priority, application Japan, May 29, 1995, 7-155190

Int. Cl.⁶ H01B 1/24; 1/18

U.S. Cl. 252—511

1 Claim

1. A carbon composite material which is a molded material consisting of (a) an expanded graphite powder and (b) a thermoplastic resin or a thermosetting resin or a fired product of the thermosetting resin, the expanded graphite powder (a) being dispersed in the component (b), wherein the expanded graphite powder has an average particle diameter of 5–12 μm and at least 80% of the total particles of the expanded graphite powder have particle diameters of 0.1–20 μm .

5,776,373

TIN OXIDE BASED CONDUCTIVE POWDERS AND COATINGS

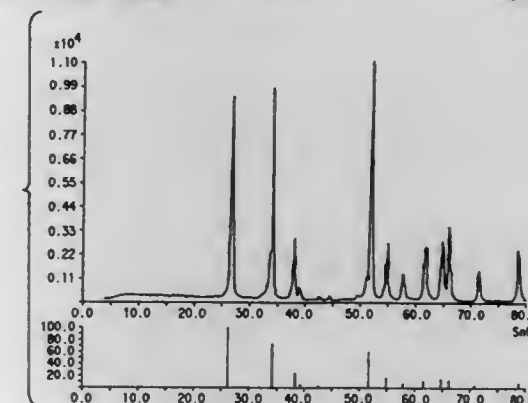
Oswald Robert Bergmann, Wilmington; Thomas Paul Feist, Hockessin; Jacob Hormadaly, and Howard Wayne Jacobson, both of Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 292,895, Aug. 18, 1994, Pat. No. 5,569,412. This application Mar. 6, 1996, Ser. No. 611,894

Int. Cl.⁶ H01B 1/08; 1/14

U.S. Cl. 252—518.1

4 Claims



1. A method for making an electroconductive powder by a process comprising:

- (1) preparing a first solution comprising an aqueous solution containing a source of tin, and a second solution comprising a source of phosphorus,
- (2) combining the first and second solutions,
- (3) adding the combined solution to water while stirring and maintaining pH at about 0 to about 7 by adding a basic solution, thereby precipitating a hydrous tin oxide; and
- (4) heating the hydrous tin oxide to a temperature sufficient to obtain the electroconductive powder.

5,776,374

CROSSLINKABLE THERMOPLASTIC AND CROSSLINKED THERMOSET NONLINEAR OPTICAL POLYMERIC COMPOSITIONS DERIVED FROM AROMATIC DIHYDROXY COMPOUNDS

Mark D. Newsham; Michael N. Mang; Robert J. Gulotty, Jr., all of Midland, Mich., and Dennis W. Smith, Jr., Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 7, 1995, Ser. No. 553,165

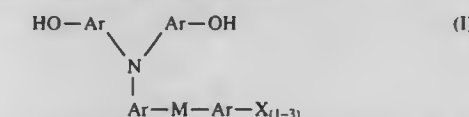
Int. Cl.⁶ F21V 9/00; C08G 65/38

U.S. Cl. 252—582

17 Claims

1. A crosslinkable thermoplastic nonlinear optical polymeric composition comprising:

- a) a plurality of crosslinkable moieties incorporated by functionalization of poly(hydroxy ether), wherein the poly(hydroxy ether) comprises moieties derived from a nonlinear optical compound represented by the formula:



wherein Ar independently denotes a C_6-C_{18} aromatic hydrocarbyl or a C_4-C_{17} heterocyclic radical containing one heteroatom selected from sulfur, oxygen and nitrogen at each occurrence, M is a divalent conjugated group selected from the group consisting of $-\text{C}=\text{C}-$, $-\text{CR}=\text{CR}-$, $-\text{CR}=\text{CR}-\text{CR}=\text{CR}-$, $-\text{CR}=\text{N}-$, $-\text{N}=\text{CR}-$, and $-\text{N}=\text{N}-$, wherein R is a C_1 to C_{20} hydrocarbyl radical, and X is an electron withdrawing group selected from the group consisting of $-\text{NO}_2$, $-\text{SO}_2\text{R}$, $-\text{SO}_2\text{CH}_2\text{F}$, $-\text{SO}_2\text{CHF}_2$,

—SO₂CF₃, —S(NSO₂CF₃)CF₃, —CF₃, —CO₂R, —COCF₃, —CN, cyanovinyl, and dicyanovinyl, wherein R is as given above.

5,776,375

ELECTRO-OPTICAL DEVICE STABLE IN THE 600-1600 NANOMETER WAVELENGTH RANGE

Johannes Willem Hofstra, Doetinchem; Marinus Cornelis Flipse, Zutphen, and Richard Herman Woudenberg, Rotterdam, all of Netherlands, assignors to AKzo Nobel N.V., Arnhem, Netherlands

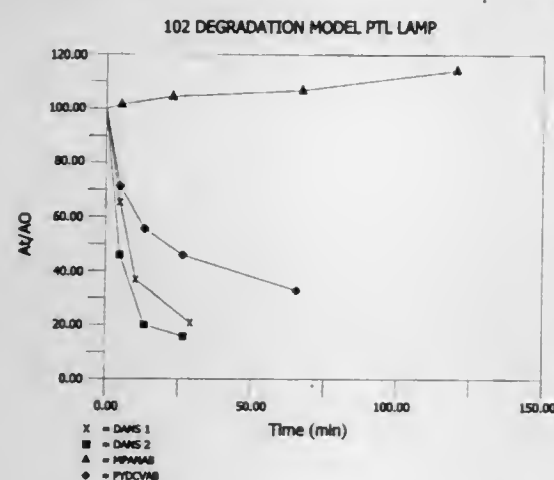
Filed Feb. 13, 1996, Ser. No. 600,665

Claims priority, application European Pat. Off., Dec. 22, 1995, 95203566

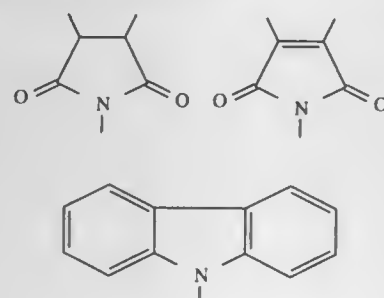
Int. Cl.⁶ F21V 9/00; G02B 6/00

U.S. Cl. 252—582

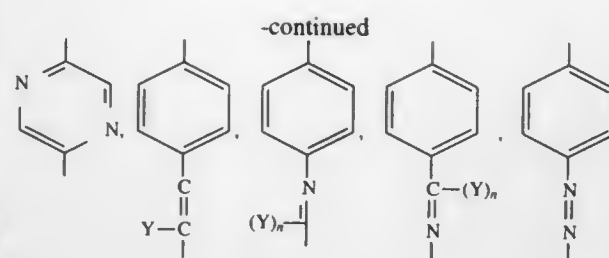
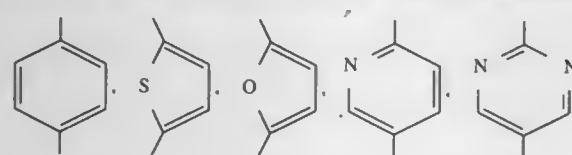
8 Claims



1. An electro-optical device comprising two cladding layers and an active layer sandwiched between these cladding layers wherein the active layer comprises a non-linear optically active side chain polymer with NLO chromophores having an N-donor-delocated π system-acceptor structure, the N-donor is selected from being bonded directly to one aromatic group and one hydrogen atom, being bonded directly to two aromatic groups, and being present as one of the following moieties and being bonded to the delocated- π -system:



wherein the delocated π system has one of the following structures:



wherein n is 0 or 1 and Y represents —CN or halogen.

5,776,376

PHOTOCHROMIC CURABLE COMPOSITION

Hironobu Nagoh; Satoshi Imura, and Takashi Kobayakawa, all of Tokuyama, Japan, assignors to Tokuyama Corporation, Yamaguchi, Japan

PCT No. PCT/JP96/01385, § 371 Date Jan. 23, 1997, § 102(e) Date Jan. 23, 1997, PCT Pub. No. WO96/37574, PCT Pub. Date Nov. 28, 1996

PCT Filed May 24, 1996, Ser. No. 776,029

Claims priority, application Japan, May 25, 1995, 7-126798

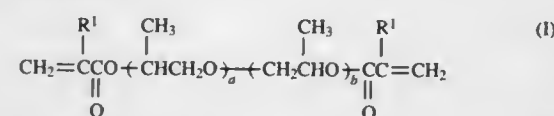
Int. Cl.⁶ G02B 5/23; C08F 2/00

U.S. Cl. 252—586

14 Claims

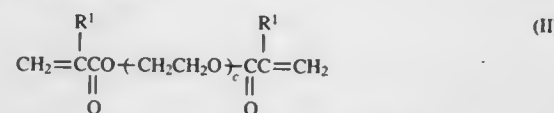
1. A photochromic curable composition comprising a polymerizable monomer composed of 0.1 to 30 parts by weight of (A) a compound having at least one epoxy group in the molecule,

30 to 70 parts by weight of (B) a polypropylene glycol di(meth)acrylate monomer represented by the following general formula (I):



wherein R¹ is a hydrogen atom or a methyl group, and a and b are each independently a number of 0 to 7 with a proviso that (a+b)=2 to 7,

20 to 60 parts by weight of (C) apolyethylene glycol di(meth)acrylate monomer represented by the following general formula (II):



wherein R¹ is a hydrogen atom or a methyl group, and c is an integer of 2 to 9, and

0 to 35 parts by weight of (D) a (meth)acrylate monomer and/or a styryl monomer, the total of the components (A), (B), (C) and (D) being 100 parts by weight, and

0.1 to 2 parts by weight, based on 100 parts by weight of the polymerizable monomer, of (E) an α -methylstyrene dimer, and 0.001 to 10 parts by weight, based on 100 parts by weight of the polymerizable monomer, of (F) a photochromic compound.

5,776,377

METERING BLOCK FOR CARBURETORS

Louis E. Hammel, Jr., Fontana, Calif., assignor to Blythe International Marketing, Inc., Las Vegas, Nev.

Filed Sep. 12, 1996, Ser. No. 713,173

Int. Cl.⁶ F02M 7/02; 7/18

U.S. Cl. 261—23.2

8 Claims

1. A metering block assembly for use with a carburetor having a fuel bowl, the metering block assembly comprising:

5,776,379

CARBURETOR ADJUSTMENT SCREW APPARATUS

Roger Bowles, Tralee, Ireland, assignor to Barcarole Limited, Cork, Ireland

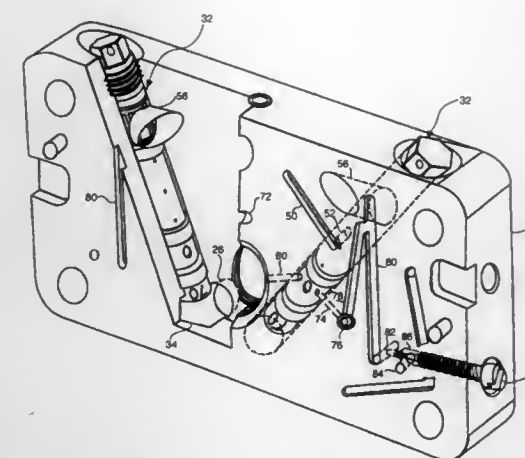
Filed Feb. 12, 1997, Ser. No. 799,503

Claims priority, application Ireland, Mar. 26, 1996, S960247

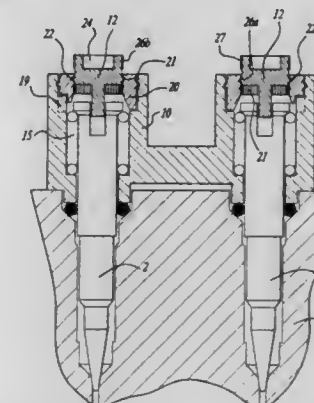
Int. Cl.⁶ F02M 3/08; F16K 35/10

U.S. Cl. 261—71

6 Claims



a body having a bore in a top of said body at an angle from vertical, said bore forming a main fuel well; and
a fuel jet cartridge removably received in said main fuel well, said fuel cartridge having a threaded hole adapted to engage a standard fuel jet, said fuel jet cartridge being removable from said body while the carburetor and the fuel bowl remain attached to the metering block assembly to allow replacement of said fuel jet cartridge and said fuel jet with a fuel cartridge and fuel jet having different performance characteristics.



1. A carburetor adjustment screw apparatus comprising a screw member having a shaft in screw threaded engagement with a carburetor body and a head by which the shaft may be rotated, a generally tubular open-ended housing surrounding the head of the screw member, a ring member rotatably mounted in the open end of the housing, stop means limiting the angular range of rotation of the ring member relative to the housing, and a plug member rotatably mounted in the ring member and movable relative to the ring member between a first axial position wherein the plug member can rotate independently of the ring member and a second axial position wherein the plug member engages the ring member for co-rotation therewith such that the angular range of rotation of the plug member is limited to the angular range of rotation of the ring member, the plug member engaging the head of the screw member in both the first and second axial positions such that rotation of the plug member effects corresponding rotation of the screw member.

5,776,378

METHOD AND MEANS FOR APPLYING SCENT TO CLOTHING

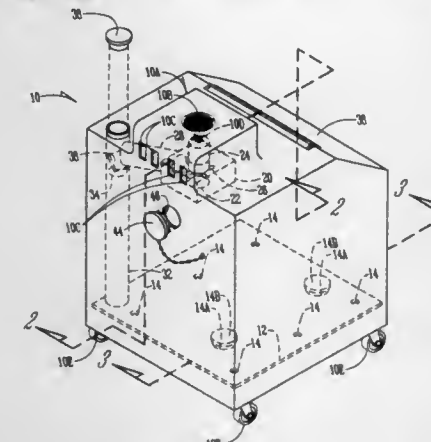
William A. Knight, Centerville, Iowa, assignor to Modern Muzzleloading, Inc., Centerville, Iowa

Filed Nov. 18, 1996, Ser. No. 755,786

Int. Cl.⁶ B01F 3/04

U.S. Cl. 261—30

10 Claims



1. A device for applying scent to clothing, comprising, an enclosed compartment having a top, bottom, and side walls, a horizontal perforated shelf extending across said compartment and dividing said compartment into an upper portion and lower portions, a closable access opening in said compartment for placing articles of clothing on top of said shelf, an air circulation conduit connecting said upper and lower portions of said compartment, fan means connected to said conduit for moving air therethrough from said upper portion to said lower portion of said compartment, a scent cartridge in communication with said compartment and in the path of air passing therethrough so that said passing air will pick up the scent of said scent cartridge whereupon the scented air will move into the lower portion of said compartment, thence through said shelf and articles of clothing thereon, and thence into said upper portion of said compartment and back into said conduit.

5,776,380

CHEMICAL AND MICROBIOLOGICAL RESISTANT EVAPORATIVE COOLER MEDIA AND PROCESSES FOR MAKING THE SAME

Joseph Fredrick Baigas, Jr., Charlotte, N.C., assignor to Kem-Wave Incorporated, Charlotte, N.C.

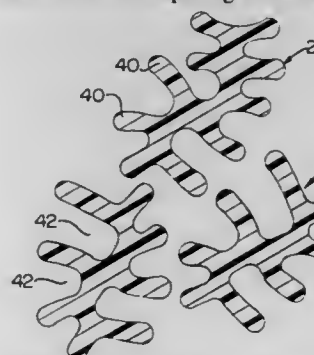
Filed Nov. 15, 1996, Ser. No. 751,222

Int. Cl.⁶ B01F 3/04

U.S. Cl. 261—107

30 Claims

1. An evaporative cooler comprising an enclosure, an evapora-



tive cooler pad positioned within said enclosure, means for feeding water to the pad for flow through the pad, and a blower for moving air through the pad,

said evaporative cooler pad comprising a body of randomly oriented synthetic staple fibers, said fibers being separated from one another along the greater part of their respective lengths and forming interconnecting interstices and passage-

ways throughout the body such that air directed toward the pad can flow generally freely therethrough in all directions, said synthetic staple fibers having a plurality of projections radially extending from the axis thereof, said projections forming a plurality of channels extending along the longitudinal axis of the staple fibers to substantially increase the available surface area of the pad for contact of the water with the air flowing therethrough, said channels producing a capillary type effect when contacted by water whereby the pad upon being contacted with water wicks the water along the channels to thereby optimize the relative cooling efficiency of the pad.

5,776,381

PROCESS AND APPARATUS FOR THE PRODUCTION OF OPTICAL LENSES

Lothar Haase, Morsbach/Sieg, Germany, assignor to CIBA Vision Corporation, Duluth, Ga.

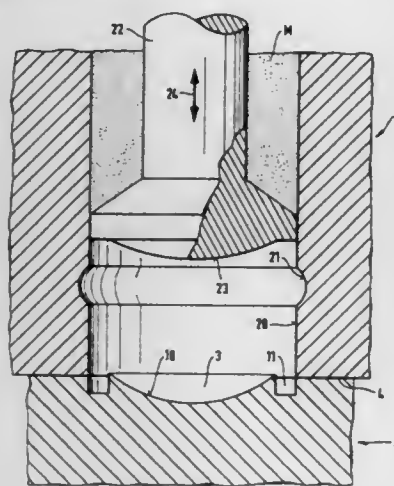
Continuation of Ser. No. 392,561, Feb. 23, 1995, abandoned.

This application Jan. 29, 1997, Ser. No. 792,689

Int. Cl.⁶ B29D 11/00

U.S. Cl. 264—2.2

11 Claims



1. A process for the production of an optical lens, comprising:
 - (a) providing a first mold half with a first mold surface;
 - (b) providing a second mold half comprising an inner mold part and a hollow cylindrical outer mold part having an inner wall, said inner mold part having a second mold surface facing said first mold surface and being movable in the manner of a piston along said inner wall of said hollow cylindrical outer mold part toward and away from said first mold surface;
 - (c) introducing a lens material between said two mold surfaces prior to said first and second mold surfaces being in a closed engagement position; and
 - (d) moving said second mold surface towards said first mold surface until said mold surfaces are in said closed engagement position such that said mold surfaces form a closed mold cavity in which the lens material is enclosed.

5,776,382

FABRICATION METHOD FOR CERAMIC CORE OF A DENTAL PROSTHESIS

Dae Joon Kim, Seoul, and Myung Hyun Lee, Kyungki-Do, both of Rep. of Korea, assignors to Korea Institute of Science and Technology, and Myung Bum Lee, both of Seoul, Rep. of Korea

Filed May 2, 1997, Ser. No. 850,322

Claims priority, application Rep. of Korea, Aug. 31, 1996, 37493/1996

Int. Cl.⁶ A61C 16/00

U.S. Cl. 264—16

13 Claims

1. An all ceramic jacket crown fabrication method for an artificial crown, comprising:

- (a) a step of manufacturing a slurry by mixing: a metallic oxide selected from the group consisting of alumina particles, spinel MgO-Al₂O₃ particles, and a mixed powder of alumina and zirconia; 0.5 wt. % to 2.0 wt. % of a dispersant against the metallic oxide; 30 wt. % to 90 wt. % of a solvent against the metallic oxide; 5 wt. % to 12 wt. % of a binding agent against the metallic oxide; and 7 wt. % to 17 wt. % of a plasticizer against the metallic oxide;
- (b) a step of defoaming the slurry;
- (c) a step of forming the defoamed slurry into a ceramic sheet having a thickness of 0.1 mm to 1.0 mm by using a method selected from the group consisting of a doctor blade method and a roll compaction method;
- (d) a step of coating the ceramic sheet onto a tooth-shaped gypsum mold which was heated at a temperature of 100° C. to 200° C. for more than 10 minutes for dehydration;
- (e) a step of joining the ceramic sheet and the gypsum mold by applying thereto a heat hydrostatic pressing at 15 Kg/cm² to 150 Kg/cm² for 5 minutes to 15 minutes while heating the gypsum mold coated by the ceramic sheet at a temperature of 50° C. to 100° C.;
- (f) a step of fabricating a sintered body by heating at a temperature increase rate of 1° C./min to 500° C. and 3° C./min to 1150° C.;
- (g) a step of removing the gypsum mold from the sintered body; and
- (h) a step of spreading a glass powder on the sintered body and heating the same such that glass powder melts and impregnates the sintered body.

5,776,383

METHOD FOR PRODUCING CARBON SHAPED PARTS MADE OF A GRAPHITIZED CARBON/CARBON COMPOSITE MATERIAL

Jean-Louis Darrieux, Saint Medard en Jalles, and Jean-Marc Nicolas Pascal Donzac, Sainte Helene, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris Cedex, France

Filed Feb. 16, 1996, Ser. No. 602,420

Claims priority, application France, Feb. 17, 1995, 95 02063

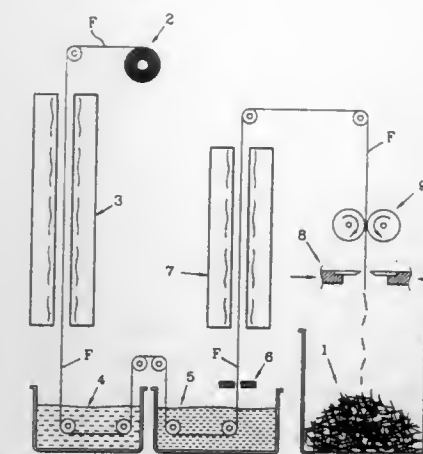
Int. Cl.⁶ C01B 31/00

U.S. Cl. 264—29.1

20 Claims

1. A method for producing a shaped part made of a graphitized carbon/carbon composite material, comprising:

- a) continuously subjecting carbon fiber to heat deoxidation and oil removal treatment;
- b) softening the carbon fiber by impregnation in a softening bath containing solvents and binders for increasing wettability and hooking;
- c) impregnating the carbon fiber in an impregnation bath comprising an aqueous solution containing pitch mesophase, high-yield pitch and binder;
- d) calibration-drying the carbon fiber;
- e) cutting the carbon fiber into sections;
- f) placing the sections in bulk in a hot constant volume pressing mold in a calculated amount to accurately fill the mold at the end of pressing and prior to performing carbonization;



- g) subjecting the sections to carbonization by hot unidirectional pressing to form a shaped part; and
- h) graphitizing the shaped part at a high temperature.

5,776,384

METHOD FOR MAKING CARBON SUPER CAPACITOR ELECTRODE MATERIALS

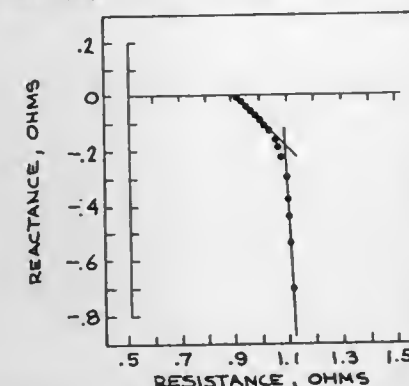
David W. Firsich, Dayton, Ohio; David Ingersoll, Albuquerque, N. Mex., and Frank M. Delnick, Dexter, Mich., assignors to Sandia Corporation, Livermore, Calif.

Filed Aug. 4, 1995, Ser. No. 511,384

Int. Cl.⁶ C01B 31/00

U.S. Cl. 264—29.4

16 Claims



1. A method for making near-net-shape, monolithic carbon electrodes for energy storage devices having a uniform, continuous, porous structure, comprising the steps of:

- a) providing a powder consisting essentially of methyl cellulose;
- b) forming the powder into a shape;
- c) pre-oxidizing the shape by heating in an oxidizing atmosphere;
- d) carbonizing the pre-oxidized shape; and
- e) activating the carbonized shape.

5,776,385

METHOD OF MAKING ACTIVATED CARBON COMPOSITES FROM SUPPORTED CROSSLINKABLE RESINS

Kishor P. Gadkaree, Big Flats, and Joseph F. Mach, Lindley, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation of Ser. No. 434,221, May 4, 1995, abandoned, which is a continuation of Ser. No. 228,265, Apr. 15, 1994, abandoned. This application Feb. 25, 1997, Ser. No. 806,892

Int. Cl.⁶ C01B 31/00

U.S. Cl. 264—29.5

18 Claims

1. A method for making an activated carbon composite, said method comprising:

- a) impregnating a support material with a crosslinkable resin to saturate the support material with the resin and form a supported resin, wherein the viscosity of the resin is about 50 cps to 1000 cps, said support material being selected from the group consisting of cotton, chopped wood, sisal, non-fugitive material, and combinations thereof;
- b) drying the supported resin;
- c) shaping the dried supported resin;
- d) curing the resin;
- e) carbonizing the cured resin by heating the cured resin at a temperature of about 600° C. to 1000° C. in an inert or reducing atmosphere; and
- f) heat-treating the supported resin from step e to activate the carbon and produce an activated carbon composite adsorber.

5,776,386

SCRAP-BASED METHOD OF MOLDING PLASTIC ARTICLES

Patrick A. Bancroft, Rockwall, Tex., assignor to United States Brass Corporation, Dallas, Tex.

Filed Dec. 24, 1996, Ser. No. 777,956

Int. Cl.⁶ B29C 67/00

U.S. Cl. 264—37

15 Claims

1. A method of manufacturing a plastic article comprising the steps of:

- providing a quantity of cross-linked plastic scrap;
- utilizing said quantity of cross-linked plastic scrap to form a scrap-containing plastic material having a gel percent greater than the gel percent of essentially virgin cross-linkable plastic material of the type from which said scrap was formed;
- providing a heat-based plastic article forming apparatus into which plastic may be forcibly flowed,
- said plastic article forming apparatus, when utilized with said essentially virgin cross-linkable plastic material, having a first maximum acceptable plastic volumetric inflow rate; and
- flowing said scrap-containing plastic material into said plastic article forming apparatus at a volumetric inflow rate not greater than a second plastic volumetric inflow rate less than said first maximum acceptable plastic volumetric inflow rate and inversely related to the ratio of the gel percent of the scrap-containing plastic material to the gel percent of said essentially virgin cross-linkable plastic material.

5,776,387

METHOD OF FORMING STABILIZED POROUS PIPE

Thomas N. Prassas, Glendale, and Shannon Bard, Scottsdale, both of Ariz., assignors to Aquapore Moisture Systems, Inc., Phoenix, Ariz.

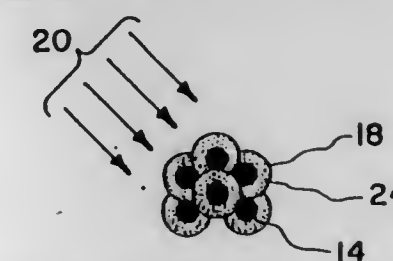
Division of Ser. No. 178,313, Jan. 10, 1994, Pat. No. 5,474,398, which is a continuation-in-part of Ser. No. 144,316, Nov. 1, 1993, Pat. No. 5,445,775, which is a division of Ser. No. 930,345, Aug. 14, 1992, Pat. No. 5,299,885. This application

Jul. 14, 1995, Ser. No. 490,845

Int. Cl.⁶ B29C 47/88

U.S. Cl. 264—41

9 Claims



1. A method of forming porous pipe comprising the step of extruding a mixture of about 60% to about 80% by weight of vulcanized elastomer particles dispersed in a thermoplastic, linear,

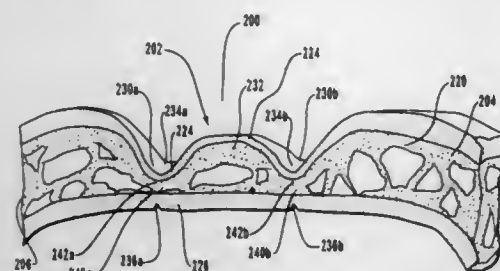
low density polyethylene binder resin having a Melt Index below 1 and a Melt Flow Ratio above about 50 containing about 0.1% to about 10% by weight of an ultraviolet stabilizer through a heated pipe die to form a hollow pipe having a porous wall; and cooling the extruded pipe in a cooling trough.

5,776,388
METHODS FOR MOLDING ARTICLES WHICH INCLUDE A HINGED STARCH-BOUND CELLULAR MATRIX

Per Just Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, LLC, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 192,965, Feb. 7, 1994, abandoned, Ser. No. 218,967, Mar. 25, 1994, Pat. No. 5,545,450, Ser. No. 288,664, Aug. 9, 1994, Pat. No. 5,660,900, Ser. No. 353,543, Dec. 9, 1994, Pat. No. 5,683,772, and Ser. No. 577,123, Dec. 22, 1995, abandoned. This application Jun. 10, 1996, Ser. No. 661,224

Int. Cl.⁶ B29C 44/06
U.S. Cl. 264—45.5



1. A method for manufacturing an article having a starch-bound cellular matrix, the method comprising:
molding an aqueous starch-based mixture into a desired shape of the article under elevated temperature in order to remove a substantial portion of the water from the mixture by evaporation and thereby form the starch-bound cellular matrix of the article, the molding step including forming a hinge structure within the article, the hinge structure comprising an interior skin portion, an exterior skin portion, and an interior cellular core disposed between the interior skin portion and the exterior skin portion, the interior cellular core having a density less than the densities of the interior and exterior skin portions; and
demolding the article after the article has achieved form stability.

5,776,389
PROCESS FOR MAKING AN ALKENYL AROMATIC POLYMER FOAM HAVING ENLARGED CELL SIZE
Bharat I. Chaudhary, Westerville, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 20, 1996, Ser. No. 667,252
Int. Cl.⁶ B29C 44/20

U.S. Cl. 264—50
1. A process for making an extruded alkenyl aromatic polymer foam with a thickness of about 1 inch or more and having enhanced cell size, comprising:

- heating an alkenyl aromatic polymer material comprising greater than 50 percent by weight alkenyl aromatic monomeric units to form a melt polymer material;
- incorporating into the melt polymer material about 0.2 to about 2.0 percent by weight of a glycerol monoester of a C₈₋₂₄ fatty acid to increase cell size about 5 percent or more relative to a corresponding foam without the glycerol monoester;
- further incorporating into the melt polymer material at an elevated pressure to form a foamable gel a blowing agent

comprising greater than 50 percent of a blowing agent selected from the group consisting of carbon dioxide and 1,1,1-trifluoroethane; and
d) extruding the foamable gel through a die to form a foam.

5,776,390
METHOD OF FORMING BOARDS OF FOAM POLYOLEFIN USING NEEDLE PUNCHING TO RELEASE BLOWING AGENT

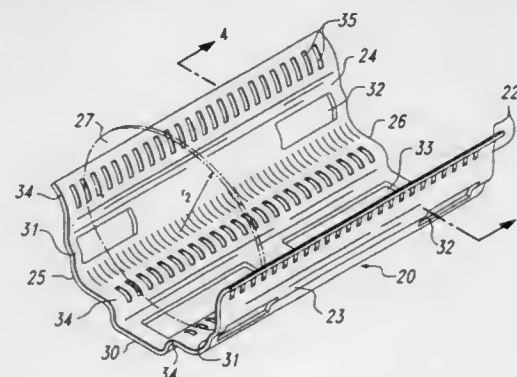
Martin Fiddelaers, Genk, and Leon Swennen, Bilzen, both of Belgium, assignors to Scriptoria N.V., Wellen, Belgium
Continuation of Ser. No. 404,264, Mar. 14, 1995, abandoned, which is a division of Ser. No. 87,404, Jul. 8, 1993, abandoned. This application Jul. 12, 1996, Ser. No. 678,949

Claims priority, application European Pat. Off., Dec. 15, 1992, 92121283

Int. Cl.⁶ B29C 44/20
U.S. Cl. 264—50
1. A process for the production of a foam board, comprising extruding or ejecting polyolefin foamed with a blowing agent selected from the group consisting of halogen-free hydrocarbon and CO₂ to the shape of a board, and, between about one hour and about three hours after extrusion or ejection, needle-punching at least one surface of the board to a perforation depth in the range of 60 to 97 percent of the board thickness.

5,776,391
SILICON CARBIDE CARRIER FOR WAFER PROCESSING AND METHOD FOR MAKING SAME
Thomas Sibley, 5439 McCommas, Dallas, Tex. 75206
Division of Ser. No. 286,942, Aug. 8, 1994, Pat. No. 5,538,230.

This application Jun. 18, 1996, Ser. No. 668,449
Int. Cl.⁶ C04B 35/565; B23Q 3/00
U.S. Cl. 264—81



1. A process for making a carrier for holding multiple semiconductor wafers which comprises the steps of:
a) machining a substrate material suitable for receiving a chemical vapor deposit of silicon carbide, into a cylindrical form, having a convex surface including at least two concave longitudinal surface segments;
b) placing said form in a chemical vapor deposition reactor;
c) chemical vapor depositing at least one layer of silicon carbide onto the form;
d) separating the form from the silicon carbide layer, whereby the resulting silicon carbide carrier has the shape of a generally cylindrical shell with an average radius greater than the radius of the wafers to be held and that the inner concave surface of said shell has at least two convex longitudinal segments extending inwardly;
e) grinding into at least two of said convex surfaces a plurality of slots for supporting each of the wafers in a substantially vertical position for processing, and extending to an inward point such that a portion of the slot is within the diameter of

the wafer to be held, and such that the distance from the inward point to the center of the wafer is less than the radius of the wafer; and

f) recovering the resulting silicon carbide carrier having an inner longitudinal surface of a diameter greater than the diameter of the wafers to be held.

5,776,392
METHOD FOR PRODUCING INSULATING PANELS BASED ON MINERAL AND PAPER FIBERS

Manfred Schmuck, Essen, Germany, assignor to Th. Goldschmidt AG, Essen, Germany

Filed Mar. 14, 1997, Ser. No. 818,816
Claims priority, application Germany, Mar. 15, 1996, 196 10 234.0

Int. Cl.⁶ B28B 1/26
U.S. Cl. 264—86
1. In a method for producing insulating panels of mineral fibers and paper fibers wherein a slurry of mineral fibers and paper fibers, binders and additives selected from the group consisting of aluminum hydroxide, magnesium hydroxide, clay and kaolin, is prepared in water, the insulating panel is formed by applying the slurry on a screen and drying and consolidating the insulating panel, the improvement wherein a siloxane containing betaine or quaternary groups is added to the slurry in amounts of 0.01 to 3% by weight, based on the solids content of the slurry.

5,776,393
Patent Not Issued For This Number

5,776,394
PROCESS FOR MANUFACTURING CELLULOSE FIBRES
Wolfgang Schrott, Böhl-Iggelheim, and Wolfram Badura, Mannheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/03327, § 371 Date Mar. 6, 1997, § 102(e)
Date Mar. 6, 1997, PCT Pub. No. WO96/07780, PCT Pub. Date Mar. 14, 1996

PCT Filed Aug. 22, 1995, Ser. No. 793,607
Claims priority, application Germany, Sep. 6, 1994, 44 31 635.6

Int. Cl.⁶ D01F 11/02; D06M 15/564
U.S. Cl. 264—129
1. A process for producing solvent-spun cellulosic fibers having a reduced tendency to fibrillate, which comprises treating the fibers with one or more compounds selected from the group consisting of
1) hydrophilic modified polyisocyanates; and
2) mixtures of polyurethanes with isocyanates.

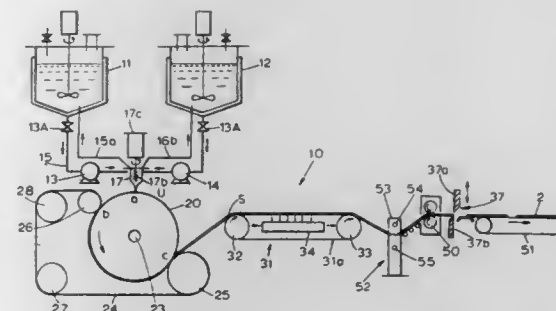
5,776,395
METHOD AND APPARATUS FOR MAKING A BLADE FOR ELECTROPHOTOGRAPHIC DEVICES

Yoshinori Fujiwara, Kobe; Takeshi Noda, Kakogawa; Yuichi Shigechika, Kobe; Toshiharu Taniguchi, and Arata Tani, both of Akashi, all of Japan, assignors to Bando Kagaku Kabushiki Kaisha, Kobe, Japan

Continuation-in-part of Ser. No. 461,695, Jun. 5, 1995, abandoned. This application Nov. 21, 1996, Ser. No. 754,774

Claims priority, application Japan, Jun. 7, 1994, 6-150451; Nov. 24, 1995, 7-329749

Int. Cl.⁶ B29C 43/08
U.S. Cl. 264—146
1. A production method for producing a banded blade molding for electrophotographic devices, comprising the steps of:



mixing and stirring a liquid polyurethane prepolymer, which is a raw material component for a thermosetting polyurethane polymer, and a liquid crosslinking agent, to prepare a mixture, injecting the mixture thereof into a groove formed on the outer peripheral face of a molding drum which is heated and is rotating, filling said mixture into a space formed by the groove and an endless belt which covers the groove and runs with the rotation of said molding drum, heating said mixture to continuously mold the banded blade molding having a width and thickness, and cutting said blade molding to a length after removing it from the drum and cooling it down.

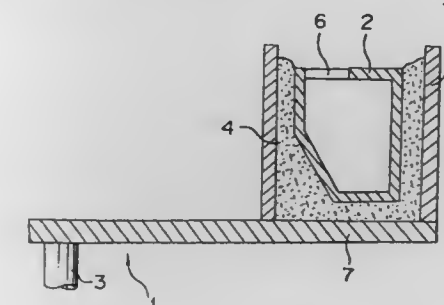
5,776,396
Patent Not Issued For This Number

5,776,397
METHOD OF PRODUCING ZIRCONIA FUSED CAST REFRACTORIES

Ryunosuke Kuroda, Yokohama, and Kazuyori Takatsuji, Takasago, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jan. 30, 1996, Ser. No. 593,525
Claims priority, application Japan, Jan. 31, 1995, 7-014405
Int. Cl.⁶ B28B 1/54

U.S. Cl. 264—161



1. A method for producing zirconia fused cast refractories, which comprises casting zirconia fused cast refractories containing at least 33 wt % of a ZrO₂ component utilizing a mold, wherein the mold is rotated on a rotation axis, so that at least a portion of a meltage of raw material poured into the mold is cooled to solidify under a centrifugal force of at least 1.2 G, thereby forming a localized void cluster in the vicinity of an inlet port.

5,776,398

METHOD OF REGENERATING SAUSAGE CASING

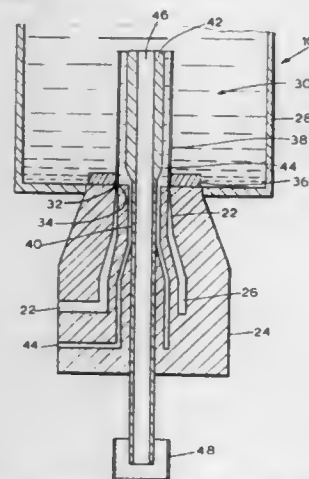
Alan David Stall, Naperville, Ill., and Antonio Vitorero Miguelez, Madrid, Spain, assignors to Alfamel s.a., Madrid, Spain

Filed Jan. 15, 1997, Ser. No. 784,695

Int. Cl.⁶ B29C 47/00; 71/00; B29D 23/00

U.S. Cl. 264—188

11 Claims



1. In a method of producing tubular sausage casings of regenerated cellulose comprising extruding viscose through an annular extrusion die to form a casing of viscose having an interior portion, an exterior portion, and a core portion disposed between said interior portion and said exterior portion, contacting the interior portion of the casing with a first regenerating fluid, and contacting the exterior portion of the casing to form a tubular casing of regenerated cellulose with a second regenerating fluid and regenerating the tubular casing the improvement comprising:

contacting the interior portion of the casing with the first regenerating fluid and the exterior portion of the casing with the second regenerating fluid in a manner such that regenerating of the interior portion of the casing is initiated prior to regenerating of the exterior portion of the casing.

5,776,399

METHOD OF MOLDING A SHAPED ARTICLE ON A HEATED AND INSULATED MOLDING TOOL

Harold W. Swenson, Dover, N.H., assignor to Davidson Texttron Inc., Dover, N.H.

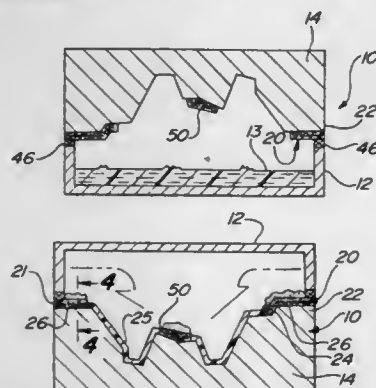
Division of Ser. No. 419,905, Apr. 11, 1995, Pat. No. 5,612,066.

This application Oct. 24, 1996, Ser. No. 736,529

Int. Cl.⁶ B29C 41/18

U.S. Cl. 264—219

1 Claim



1. A method of molding a shaped plastic article characterized by the steps of:

providing a mold tool having a mold surface with an exposed section for receiving a plastic powder resin to be melted thereagainst and a section for receiving a heat insulating panel;

providing a heat insulating panel with insulated laminated alternating layers of fiberglass and silicone rubber and an inner core filled with silicone rubber and a plurality of hollow glass beads to prevent melting of plastic powder resin;

applying the heat insulating panel on the section for receiving a heat insulating panel and leaving the exposed section of said molding surface uncovered;

preheating said exposed section of said mold surface;

applying a plastic powder resin on said exposed section of the mold surface and said heat insulating panel such that said powder resin in contact on said exposed section of the mold surface melts and said powder in contact with said heat insulating panel remains in powder form for reclaiming;

cooling said melted plastic to set said plastic on said mold tool into said shaped plastic article; and

removing said shaped plastic article from said mold tool.

5,776,400

METHOD FOR COMPRESSION MOLDING A COMPOSITE MATERIAL FIXED ANGLE ROTOR

Alireza Piramoon, Santa Clara; Robert Wedemeyer, Palo Alto, and Michel Mark Fournier, Sacramento, all of Calif., assignors to Piramoon Technologies, Inc., Mountainview, Calif.

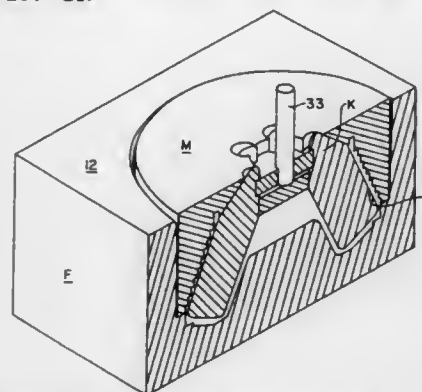
Division of Ser. No. 431,544, May 1, 1995, Pat. No. 5,643,168.

This application Dec. 2, 1996, Ser. No. 753,840

Int. Cl.⁶ B29C 43/18; 43/20; B27N 3/08

U.S. Cl. 264—219

23 Claims



1. A method of compression molding a fixed angle centrifuge rotor body having a frustum shaped peripheral contour about a central spin axis between a base end and an apex end, the rotor body having angled sample tube apertures extending from openings in the apex end adjacent the spin axis of the rotor body to bottom portions of the sample tube apertures more remote from the spin axis of the rotor body, the compression molding comprising the steps of:

providing a mold member;

forming a frustum shaped cavity within an interior of the mold member with a periphery having the frustum shaped peripheral contour of the rotor body;

providing sample tube aperture cores with bottom portions, each of said sample tube aperture cores used for forming one of said sample tube apertures;

clustering the sample tube aperture cores to form a cluster of sample tube aperture cores used for forming said openings for said sample tube apertures in the apex end of the rotor body adjacent the spin axis, the bottom portions of the sample tube apertures more remote from the spin axis of the rotor body;

mounting the cluster of sample tube aperture cores within said interior of the mold member to form interiorly mounted sample tube aperture cores;

filling the mold member with resin impregnated composite material to be pressure molded;

heating and compressing the resin impregnated composite material in the mold member for a sufficient interval, thereby flowing the resin impregnated composite material within the frustum shaped cavity of the mold member to conform the resin impregnated composite material about the interiorly

mounted sample tube aperture cores and curing the resin impregnated composite material to form the fixed angle centrifuge rotor body;

detaching the sample tube aperture cores from the interior of the mold member to provide detached sample tube aperture cores; separating the rotor body from the mold member; and, separating the detached sample tube aperture cores from the rotor body.

5,776,401

METHOD OF MANUFACTURING RUBBER MOLDS

Douglas J. Goss, North Kingstown, R.I., assignor to Conley Casting Supply Corp., Warwick, R.I.

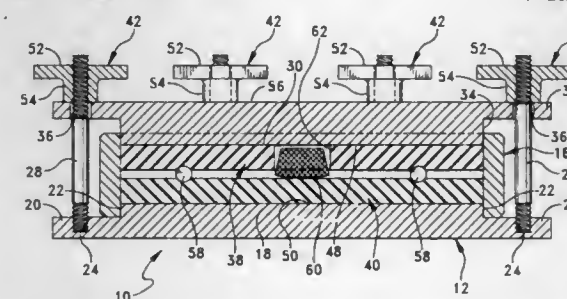
Division of Ser. No. 548,576, Oct. 26, 1995, abandoned. This

application Sep. 10, 1997, Ser. No. 929,245

Int. Cl.⁶ B29C 33/40

U.S. Cl. 264—225

7 Claims



1. A method for manufacturing a rubber mold having mating mold halves comprising the steps of:

(a) providing a mold apparatus having a bottom plate, a top plate and means for tightening the top plate towards the bottom plate;

(b) disposing two unvulcanized rubber discs between the bottom and top plates of the mold apparatus;

(c) disposing models between the two unvulcanized rubber discs, said models defining mold cavities;

(d) applying a nominal tightening force on the top plate by tightening said tightening means by hand so as to gently press the rubber discs together;

(e) applying heat to said mold apparatus from an external heat source for softening the rubber discs;

(f) increasing the tightening force on the top plate by hand until the top plate is incapable of being tightened any further, said top plate being maintained in parallel relation to said bottom plate while increasing said tightening force; and

(g) curing the rubber discs.

5,776,402

INJECTION MOLDING MACHINE HAVING A UNIFORMLY COMPRESSIBLE PLATEN AND PROCESS FOR PREVENTING FLASH FORMATION

Pierre Glaesener, Bissen, Luxembourg, assignor to Husky Injection Molding Systems Ltd., Canada

Continuation-in-part of Ser. No. 482,874, Jun. 7, 1995, Pat.

No. 5,593,711. This application Nov. 4, 1996, Ser. No. 742,660

Int. Cl.⁶ B29C 45/64; B30B 15/06

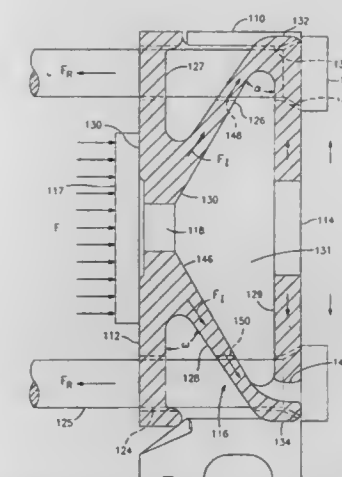
U.S. Cl. 264—239

66 Claims

1. A method for distributing forces within a platen having two parallel walls spaced apart by an intermediate support structure, which comprises:

providing a mold platen having two walls spaced from each other, with a first of said walls being on the mold side and a second of said walls being spaced from and parallel to said first wall, wherein each of said two walls have edges and a central area;

generating a force against at least one of said walls in a first direction, wherein said walls extend substantially transverse to said first direction; and



directing said force from one of said walls solely towards the other of said walls from the central area of one of said walls towards the edges of the other of said walls via an intermediate support structure positioned between and connected to both of said walls, thereby substantially preventing deflection of said first wall.

5,776,403

METHOD OF MANUFACTURING AN ASSEMBLY OF A WINDSHIELD GLASS AND A WEATHER STRIP HAVING A PARTLY MODIFIED CROSS SECTION

Yukihiko Yada, and Toshikazu Ito, both of c/o Tokai Kogyo Kabushiki Kaisha of I, Nagane-cho 4-chome, Obu-shi, Aichi-ken, Japan

Continuation of Ser. No. 413,620, Mar. 30, 1995, Pat. No.

5,551,855, which is a division of Ser. No. 109,449, Aug. 20,

1993, Pat. No. 5,445,780. This application Jun. 10, 1996, Ser.

No. 660,885

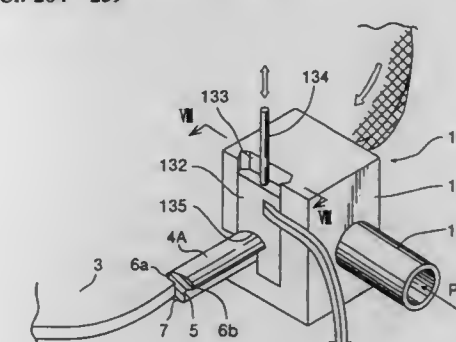
Claims priority, application Japan, Aug. 26, 1992, 4-250545;

Jul. 20, 1993, 5-179324

Int. Cl.⁶ B29C 47/02

U.S. Cl. 264—259

4 Claims



1. A method of manufacturing an assembly of a windshield glass having a peripheral edge and a weather strip having a trimming portion and extrusion molded on the peripheral edge of the windshield glass, comprising the steps of:

providing extrusion die means having a die body comprising a plurality of die elements selectively movable relative to each other;

engaging the peripheral edge of the windshield glass with the die body for forming a molding space defined between the peripheral edge of the windshield glass and an inner peripheral wall of an extrusion orifice formed on the die body and having a predetermined configuration, a part of which corresponds to the trimmina portion;

extruding a molding material into the molding space;

moving the windshield glass with respect to the die body so that the die body moves along the peripheral edge of the windshield glass; and

relatively moving the die elements of the die body for changing the configuration of the molding space to a modified configuration without changing the part of the predetermined configuration which corresponds to the trimming portion.

5,776,404

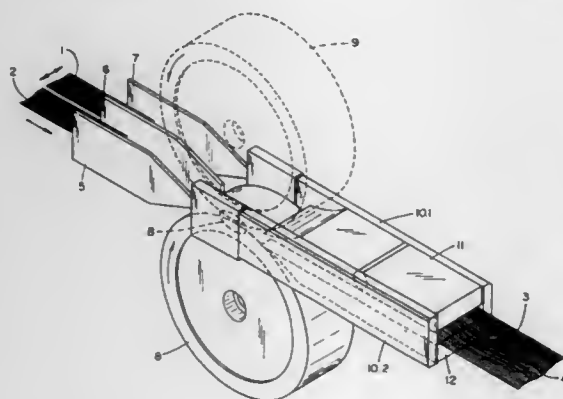
METHOD OF MAKING MULTIPLE WIDTH FIBER STRIP
Rudiger Dollhopf, Herbolzheim, Germany, assignor to Rhodia Acetow Aktiengesellschaft, Freiburg, Germany
Division of Ser. No. 529,753, Sep. 18, 1995, Pat. No. 5,683,777, which is a continuation-in-part of Ser. No. 93,091, Jul. 16, 1993, abandoned. This application Jan. 6, 1997, Ser. No. 778,773

Claims priority, application Germany, Jun. 16, 1993, 43 20 303.5

Int. Cl.⁶ B29C 67/00; B31F 1/12

U.S. Cl. 264—282

9 Claims



1. A method of producing one or several crimped fiber strips which comprises the steps of forming several mutually separated bands (1,2) from filaments extending substantially parallel to each other and then crimping the formed bands jointly, to produce one or several crimped fiber strips (3).

5,776,405

METHOD FOR MOLDING A ROTATIONALLY-MOLDED CONTAINER

J. Timothy Prout, Winston-Salem; Todd E. Wright; Smith E. Trent, III, both of Statesville; Anthony J. Brescia, Huntersville, and Jerry E. Lambert, Statesville, all of N.C., assignors to Toter, Inc., Statesville, N.C.

Continuation-in-part of Ser. No. 439,308, May 11, 1995, Pat. No. 5,582,322, which is a continuation of Ser. No. 238,635, May 5, 1994, Pat. No. 5,538,158. This application Nov. 25, 1996, Ser. No. 758,181

Int. Cl.⁶ B65D 43/14

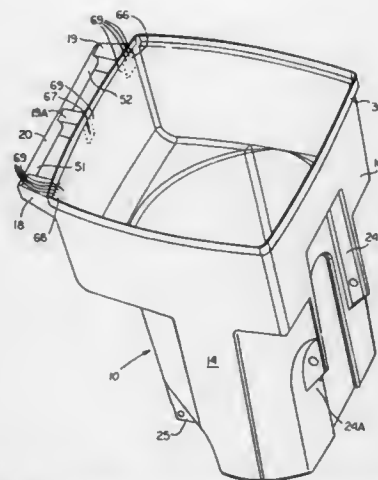
U.S. Cl. 264—310

3 Claims

1. A method of molding a plastic container having a hollow protrusion integrally-molded with a material carrying compartment of the container, comprising the steps of:

rotationally molding the container in a mold containing a blend of plastic material consisting essentially of micropellets having diameters in the range of from 600 microns to 1300 microns; and

forming a wall integrally with the container and sealingly enclosing the hollow protrusion from communication with the



material carrying compartment of the container for providing greater strength to the container and preventing material from lodging in the hollow protrusion.

5,776,406

MOLDINGS OF POLYURETHANE HOTMELT ADHESIVES

Georg Schubert, Moenchengladbach; Michael Krebs, Hilden; Karin Jonscher, Duesseldorf, and Roland Heider, Hilden, all of Germany, assignors to Henkel Dommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP95/04949, § 371 Date Jun. 23, 1997, § 102(e) Date Jun. 23, 1997, PCT Pub. No. WO96/20252, PCT Pub. Date Jul. 4, 1996

PCT Filed Dec. 14, 1995, Ser. No. 860,400

Claims priority, application Germany, Dec. 23, 1994, 44 46 027.9

Int. Cl.⁶ B29G 45/14; C08G 18/10; 18/42; 18/48

U.S. Cl. 264—328.1

25 Claims

1. In a process comprising a step of molding moisture-curing polyurethane hotmelt adhesives compounds for the production of moldings in a mold, wherein the improvement comprises molding with a polyurethane hotmelt adhesive that has a melt viscosity of less than about 100 Pa-s at the polyurethane hotmelt adhesive's processing temperature.

5,776,407

INJECTION MOLDING APPARATUS AND METHOD FOR SHUTTING GATE AND COMPRESSING MOLD MATERIAL

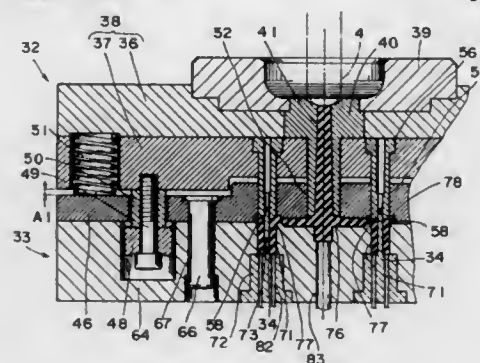
Yoshinobu Takeda, Niigata, Japan, assignor to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Sep. 26, 1996, Ser. No. 721,249

Int. Cl.⁶ B29C 45/26

U.S. Cl. 264—328.7

6 Claims



1. A method of injection molding using:

a mold assembly incorporating a first mold member and a second mold member which open and close relative to each other and which form a mold cavity therebetween when closed, said first mold member having:

a base member;

a movable member supported on said base member so as to be movable relative thereto in the open and close direction of said first mold member and said second mold member, and said movable member closes against said second mold member; biasing means for biasing said movable member relative to said base member towards said second mold member; and a protruding portion provided integral with said base member, said second mold member having a recess portion for removably engaging with the protruding portion on said first mold member, the construction being such that said mold cavity is formed by the recess portion and the protruding portion, and a material passage is formed between said movable member and said second mold member so that a gate to said mold cavity is formed therefrom, said gate being closed by said protruding portion engaging in said recess portion;

a material supply apparatus for supplying mold material in a moldable condition to said material passage in said mold assembly; and

a mold clamping device with adjustable clamping force for opening and closing said first mold member and said second mold member of said mold assembly,

said method comprising the steps of:

closing said first mold member and said second mold member with a light mold clamping force, and closing said movable member against said second mold member, but leaving said movable member and said base member in an open condition, then supplying mold material from said material supply device to said material passage of said mold assembly to fill said mold cavity;

at the same time, adjusting the pressure of the mold material inside said mold cavity so as to make the density of the mold material even by the displacement of said movable member and said second mold member relative to said base member, as a result of an equilibrium between the pressure of the mold material inside said mold assembly, and the mold clamping force; and

stopping supply of mold material from said material supply device, and increasing the mold clamping force to close the base member and the movable member towards each other, and during this operation, allowing some of the mold material on the mold cavity side to return to said material supply device side, and after a constant amount of mold material remains in said mold cavity at the point in time of closing said gate, closing said base member and said movable member against each other, thereby compressing the mold material inside said mold cavity.

5,776,408

METHOD OF ENGRAVING GREEN CERAMIC ARTICLES

Syamal K. Ghosh; Dilip K. Chatterjee, and Badhri Narayan, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1996, Ser. No. 701,824

Int. Cl.⁶ B28B 11/00

U.S. Cl. 264—400

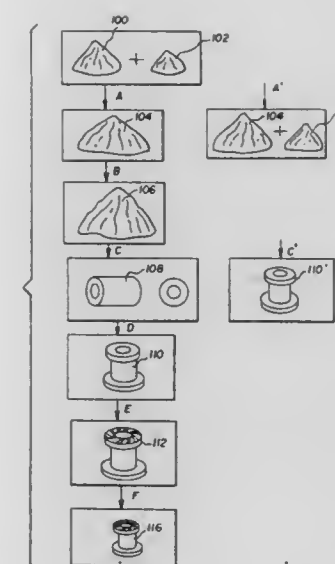
6 Claims

1. Method of engraving a green ceramic article, comprising the steps of:

forming a green ceramic article by compacting a ceramic powder and binder;

providing a polyester mask having a predetermined engraved pattern therein;

overlaying said polyester mask onto said green ceramic article; bombarding said polyester mask overlaying said green ceramic article with hard ceramic grits; and,



removing the polyester mask from said ceramic article exposing an engraved ceramic article.

5,776,409

THERMAL STEREOLITHOGRAPH USING SLICE TECHNIQUES

Thomas A. Almquist, San Gabriel, and Dennis R. Smalley, Newhall, both of Calif., assignors to 3D Systems, Inc., Valencia, Calif.

Continuation-in-part of Ser. No. 148,544, Nov. 8, 1993, Pat. No. 5,501,824, and Ser. No. 861,210, Mar. 31, 1992, Pat. No. 5,345,391, which is a continuation of Ser. No. 331,644, Mar. 31, 1989, Pat. No. 5,184,307, which is a continuation-in-part of Ser. No. 269,801, Nov. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 182,830, Apr. 18, 1988, Pat. No. 5,059,359, said Ser. No. 148,544 is a continuation of Ser. No. 900,001, Jun. 17, 1992, abandoned, which is a continuation of Ser. No. 592,559, Oct. 4, 1990, Pat. No. 5,141,680. This application Sep. 1, 1994, Ser. No. 299,887

Int. Cl.⁶ B29C 35/08; 41/02

U.S. Cl. 264—401

15 Claims

1. An apparatus for forming a three-dimensional object on a substantially cross-section by cross-section basis from a building material which is normally in a solid state and which is flowable when maintained at or above a flowable temperature, comprising:

at least one computer programmed to convert data descriptive of a faceted representation of the object into data descriptive of object cross-sections;

means for maintaining the building material at or above the flowable temperature thereby forming flowable building material;

a dispenser responsive to the at least one computer for selectively dispensing successive layers of the flowable building material according to the data descriptive of object cross-sections; and

a building environment which is maintained below the flowable temperature and into which the flowable building material is dispensed.

5,776,410

Patent Not Issued For This Number

5,776,411

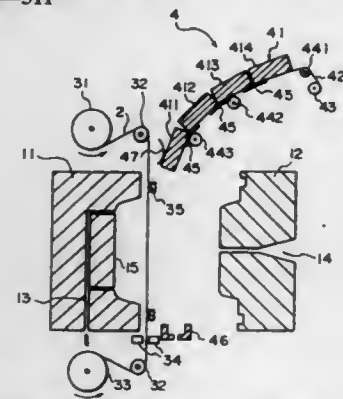
SIMULTANEOUS INJECTION MOLDING AND PATTERNING METHOD USING HEATING BODY WITH NON-PARALLEL HEATING AND NON-HEATING POSITIONS

Kazushi Miyazawa, Keiji Hanamoto, and Hiroyuki Atake, all of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Division of Ser. No. 492,143, Jun. 19, 1995, Pat. No. 5,676,981. This application May 2, 1997, Ser. No. 850,754
Claims priority, application Japan, Jun. 21, 1994, 6-160775
Int. Cl.⁶ B29C 45/15; 51/10

U.S. Cl. 264—511

12 Claims



1. A simultaneous injection molding and patterning method, comprising:

- providing first and second mutually opposing molds;
- interposing a decorative pattern sheet between the molds;
- moving a heating body from a non-heating position to a heating position so as to heat and soften a portion of the decorative pattern sheet positioned between the opposing molds, wherein the heating position is arranged such that a heating surface of the heating body confronts the decorative pattern sheet while the sheet is positioned between the opposing molds, and the non-heating position is arranged such that the heating surface of the heating body is not parallel to the heating surface of the heating body when in the heating position;
- evacuating the first mold to bring the heated and softened decorative pattern sheet into contact with a cavity surface of the first mold;
- closing the molds to define a mold cavity between the sheet in contact with the cavity surface of the first mold and a cavity surface of the second mold; and
- injecting molten resin into the mold cavity to form a molded patterned product including the decorative pattern sheet.

5,776,412

METHOD AND APPARATUS FOR PRODUCING PLASTIC OBJECTS WITH SOLID SECTIONS AND HOLLOW SECTIONS

Helmut Eckardt, Meinerzhagen; Jürgen Ehrhrt, Hilchenbach; Alfons Seuthe, and Michael Gosdin, both of Meinerzhagen, all of Germany, assignors to Battenfeld GmbH, Meinerzhagen, Germany

Filed Jul. 10, 1996, Ser. No. 677,826

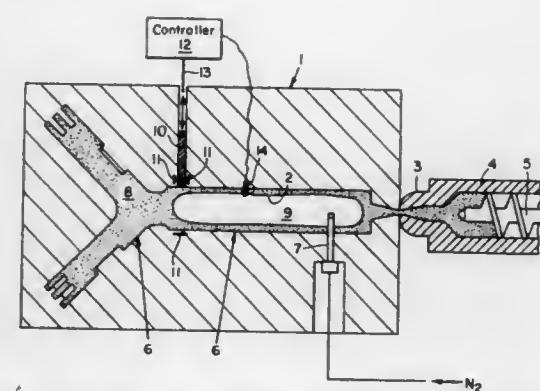
Claims priority, application Germany, Aug. 31, 1995, 195 32 243.6

Int. Cl.⁶ B29C 45/00

U.S. Cl. 264—572

1 Claim

1. A method for producing plastic molded parts with solid regions and hollow spaces, comprising:
- blocking off a portion of the cavity of a molding tool;
 - injecting plastic melt into the unblocked portion of the cavity of the molding tool along a melt flow path, which extends from a plasticizing unit through a plastic injection nozzle into the molding tool;
 - heating the melt in a region of blockage in order to avoid freezing;



unblocking the cavity enabling the plastic melt to reach the previously blocked-off portion of the cavity;

simultaneously and/or subsequently to injecting the plastic melt, injecting a pressurized fluid into the melt via at least one fluid injection nozzle, so that the melt injected into the molding tool is distributed in the cavity while forming a hollow space and is pressed against cavity walls of the molding tool;

allowing a molded part thus produced to cool down to a temperature below the melting point of the plastic melt;

relieving the cavity of the pressure of the pressurized fluid; and

demolding the molded part.

5,776,413

CHEMICAL MODE OF OPERATION OF A WATER/STEAM CYCLE

Werner Kamberger, Ober-Ohringen, Switzerland, and Erhard Liebig, Ditzingen, Germany, assignors to Asea Brown Boveri AG, Baden, Switzerland

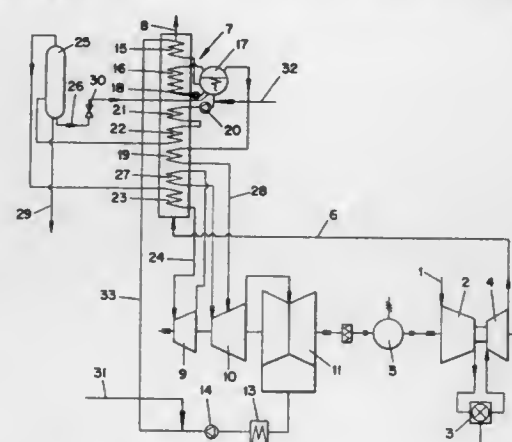
Filed Nov. 5, 1996, Ser. No. 743,181

Claims priority, application Germany, Nov. 28, 1995, 195 44 224.5

Int. Cl.⁶ C23F 11/00; F02C 6/00; F02G 1/00

U.S. Cl. 422—7

2 Claims



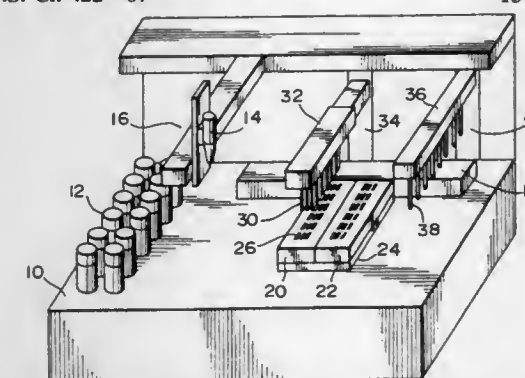
1. A method of operating a multi-pressure waste-heat boiler having at least one circulation steam generator including a low-pressure economizer, a low-pressure drum and a low-pressure evaporator, and at least one once-through steam generator, including a high-pressure economizer, a high-pressure evaporator and a high-pressure superheater, the method comprising the steps of:
- introducing an amount of dissolved ammonia into condensate flowing into the circulation steam generator, said condensate having a pH value between 8.8 and 9.4, sufficient to obtain a pH of steam in the steam space of the low-pressure drum at a value between 9.4 and 9.7, and
 - introducing an amount of gaseous oxygen into water flowing to the once-through steam generator sufficient to obtain an oxygen content in a range between 50 and 150 ppb at a pH value between 8.8 and 9.2.

5,776,414

PHYSIOLOGICAL TISSUE TREATMENT APPARATUS
Kazunori Itani, Kouhei Kihara, and Shogo Iijima, all of Mitaka, Japan, assignors to Aloka Co., Ltd., Tokyo, Japan
Filed Jan. 24, 1997, Ser. No. 788,547
Int. Cl.⁶ G01N 35/10

U.S. Cl. 422—67

13 Claims



1. An apparatus for treating a physiological tissue sample on at least one sample plate by a reagent, comprising:

- at least one reagent bath having an upward opening through which said at least one sample plate is insertable vertically from above said opening, the cross-sectional surface area of an upper part of the at least one bath being larger than that of a lower part of the at least one bath, and
- a controller for controlling transport of said at least one sample plate and a supply of said reagent to said at least one bath, wherein:

in a first treatment mode, a first amount of reagent wherein a liquid surface level of said reagent is higher than a sample location on said sample plate during treatment is supplied to said at least one bath, and said at least one sample plate is inserted in said at least one bath up to a first treatment position, and

in a second treatment mode, a second amount of reagent wherein said liquid surface level of said reagent is higher than the sample location during treatment is supplied to said at least one bath, and said at least one sample plate is inserted in said bath up to a second treatment position, said second amount being larger and the liquid surface level being higher than said first amount, and said second treatment position being higher vertically than said first treatment position.

5,776,415

METHOD AND TEST KIT FOR DETERMINING HYDROXY AROMATIC COMPOUNDS

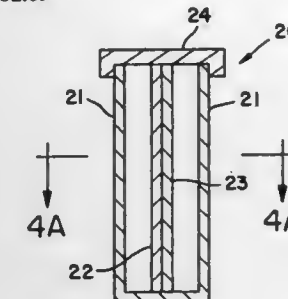
Kris A. Berglund, Okemos; Joel I. Dulebohn, and Beatrice A. Torgerson, both of Lansing, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation of Ser. No. 373,603, Jan. 17, 1995, abandoned, which is a division of Ser. No. 301,652, Sep. 6, 1994, Pat. No. 5,462,878. This application Aug. 12, 1996, Ser. No. 695,538

Int. Cl.⁶ G01N 21/27

U.S. Cl. 422—82.09

7 Claims



1. A test kit for determining the presence of a hydroxy substituted aromatic compound which is suspected to be in a solution which comprises:

- (a) a titanium film formed from a reaction of a titanium alkoxide and an aliphatic carboxylic acid which changes light absorbance in the presence of the hydroxy substituted aromatic compound in the solution wherein the film is used for determination of a reaction of the hydroxy aromatic substituted compound after contact with a solution to be tested for the hydroxy substituted aromatic compound;
- (b) a sealed light transparent spectrophotometric container having a transparent element on which is deposited the film, which container is openable for inserting the solution to be tested, wherein the container is free of any hydroxy substituted aromatic compound; and
- (c) an absorbance detecting spectrophotometer means using visible to ultraviolet light adapted for use under field conditions for detecting the reaction of the hydroxy aromatic compound from the solution with the film because of a change of light absorbance of the titanium film.

5,776,416

CYCLONE AND FLUIDIZED BED REACTOR HAVING SAME

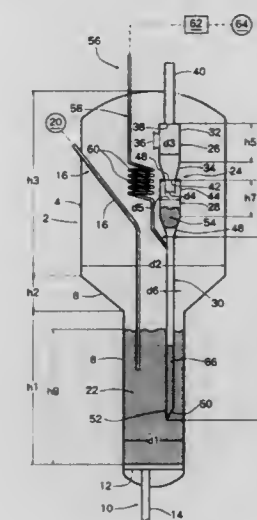
Hiroyuki Oda, Tokuyama, Japan, assignor to Tokuyama Corporation, Yamaguchi-Ken, Japan

Filed Nov. 13, 1996, Ser. No. 748,611

Claims priority, application Japan, Nov. 14, 1995, 7-295835
Int. Cl.⁶ F27B 15/18

U.S. Cl. 422—145

11 Claims



1. A cyclone comprising:
- a cyclone body having an inlet for introducing a gas accompanied by particles, a gas outlet, and a particle drop port,
 - a particle discharge pipe having an upper end in communication with said particle drop port of said cyclone body,
 - a sealing means for feeding a sealing gas to said particle discharge pipe to generate a sealing gas stream ascending through said particle discharge pipe, whereby the sealing gas stream produces a sealing fluidized bed that includes particles separated from the gas that entered through said inlet by said cyclone body, the sealing fluidized bed includes a top surface, and
 - a flow rate adjusting means for controlling a linear velocity U_d of the sealing gas stream in said particle discharge pipe at said sealing means and indirectly controlling a linear velocity U_u of the sealing gas stream at the top surface of the sealing fluidized bed.

5,776,417

EMISSIONS CONTROL

Johnathan C. Frost, Henley; Stephen C. Bennett, Reading; David S. Lafyatis, Reading, and Andrew P. Walker, Reading, all of United Kingdom, assignors to Johnson Matthey Public Limited Company, London, United Kingdom

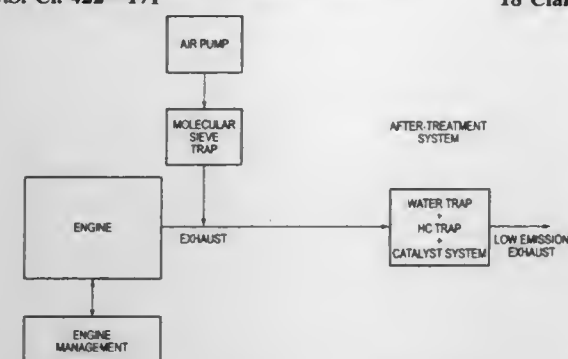
Filed Jun. 6, 1996, Ser. No. 658,808

Claims priority, application United Kingdom, Jun. 6, 1995, 9511421

Int. Cl.⁶ B01D 50/00; 53/34

U.S. Cl. 422—171

18 Claims



1. An emission control system for an internal combustion engine for a vehicle, comprising an emission control catalyst, a trap for trapping hydrocarbons (HC) positioned upstream of the emission control catalyst, and means for pre-drying the trap and/or the catalyst wherein said emission control system is on-board the vehicle and said pre-drying means is operative after engine switch-off or before engine start-up and is effective to reduce moisture in said trap and/or emission control catalyst prior to each engine start-up.

5,776,418

AUTOMATED ANALYSIS APPARATUS HAVING FIXED CELLS

Joseph Besnier, Sonno-beaunout-Hague, and Gilbert Ringot, Querqueviue, both of France, assignors to Compagnie Generale Des Matieres Nucleaires, Velizy Villacoublay, France

Continuation of Ser. No. 393,163, Feb. 21, 1995, abandoned.

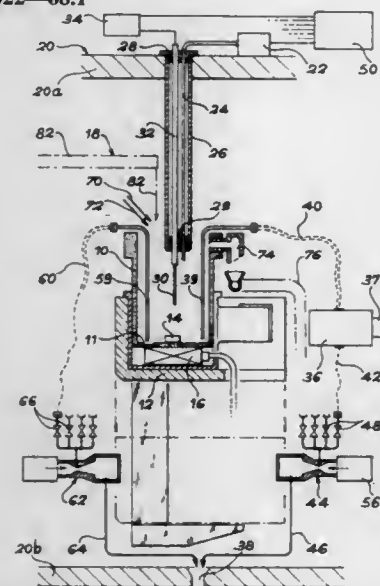
This application Aug. 29, 1996, Ser. No. 705,920

Claims priority, application France, Feb. 23, 1994, 94 02045

Int. Cl.⁶ G01N 33/00

U.S. Cl. 422—68.1

11 Claims



1. Automated analysis apparatus for simultaneously performing several analyses on a liquid sample, said automated analysis apparatus comprising:

at least two analysis lines, each including a fixed chemical preparation cell for the liquid sample, means for injecting chemical reagents into said chemical preparation cell, means for stirring liquid in said chemical preparation cell, an analysis cell equipped with analysis means for analyzing the liquid sample, transfer means for transferring liquid in said chemical preparation cell into said analysis cell and from said analysis cell to an effluent discharge system, and discharge means for directly discharging liquid in said chemical preparation cell to said effluent discharge system;

said transfer means including pumping means for pumping liquid, a first tube connecting said chemical preparation cell to said analysis cell and providing a first passage so that liquid can be transferred from said chemical preparation cell to said analysis cell, a second tube connecting said analysis cell to said pumping means and providing a second passage so that liquid can be transferred from said analysis cell to said pumping means, a third tube connecting said pumping means to said effluent discharge system and providing a third passage so that liquid can be transferred from said pumping means to said effluent discharge system, and a valve located in said second tube for selectively opening and closing said second passage;

distributing means for introducing the liquid sample to be analyzed into said chemical preparation cell of each of said analysis lines;

control means for controlling at least the stirring means, the injection means, the analysis means, the transfer means, and the discharge means of each of the analysis lines; and

a single fluid-tight enclosure containing said chemical preparation cell of each of said analysis lines and having a top flange, said injection means comprising at least one injection apparatus outside said enclosure and at least one catheter connecting said injection apparatus to said chemical preparation cell, said catheter passing through said top flange and being placed, beneath said flange, in a vertical guide tube.

5,776,419

EXHAUST PURIFYING FILTER MATERIAL AND METHOD FOR MANUFACTURING THE SAME

Tomohiko Ihara; Masayuki Ishii, and Hiroshi Yoshino, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 293,147, Aug. 19, 1994, abandoned.

This application Nov. 9, 1995, Ser. No. 555,381

Claims priority, application Japan, Aug. 23, 1993, 5-207384; Jul. 1, 1994, 6-173481

Int. Cl.⁶ B01D 53/34

U.S. Cl. 422—177

5 Claims



10 μm

1. A filter material for purifying an exhaust gas comprising a substrate in the form of an unwoven fabric of a hollow metal fiber having a diameter of 10–40 μm, said metal fiber comprising 5–20% by weight of Ni, 10–40% by weight of Cr, and 5–15% by weight of Al, the remainder being Fe and residual impurities, the content of said Al being higher near the surface of said metal fiber than the inner portion of said metal fiber, alumina whiskers grown on the surface of said substrate, and a catalyst carried on said alumina whiskers.

5,776,420

APPARATUS FOR TREATING A GAS FORMED FROM A WASTE IN A MOLTEN METAL BATH

Christopher J. Nagel, Wayland, Mass., assignor to Molten Metal Technology, Inc., Fall River, Mass.

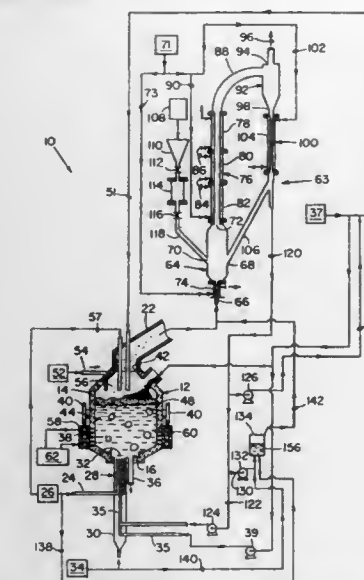
Division of Ser. No. 41,491, Apr. 1, 1993, Pat. No. 5,585,532, which is a continuation-in-part of Ser. No. 23,696, Feb. 26, 1993, Pat. No. 5,358,697, which is a division of Ser. No. 737,048, Jul. 29, 1991, Pat. No. 5,191,154. This application

Sep. 5, 1996, Ser. No. 711,693

Int. Cl.⁶ B09B 3/00

U.S. Cl. 422—184

9 Claims



1. An apparatus for treating a gaseous discharge stream formed from a waste in a molten metal bath, comprising:

- a) a reactor having a molten metal bath formed therein and a gaseous discharge port above the molten metal bath;
- b) a reaction section extending from the gaseous discharge port;
- c) a cooling column extending from the reaction section;
- d) separation means in fluid communication with the cooling section for separating a particulate dissociation product from a gaseous component of a gaseous discharge stream formed from a waste in the reactor and passing from the reactor through the reaction section and the cooling column into said separation means;
- e) a gaseous discharge conduit extending from the separation means;
- f) a cooling section extending from the separation means for cooling a particulate stream formed of the particulate dissociation product separated from the gaseous discharge stream in said separation means;
- g) a recirculation conduit extending from the cooling section to the reaction section for conducting at least portion of the particulate stream from the cooling section to the reaction section; and
- h) a recycle conduit extending from the cooling section to the reactor for recycling a portion of the particulate stream from the cooling section to the reactor for submerged injection into the molten metal bath.

5,776,421

REFORMING REACTOR

Mitsue Matsumura, and Toshio Shinoki, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1996, Ser. No. 619,838

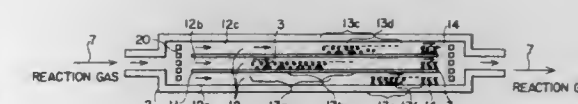
Claims priority, application Japan, Jul. 19, 1995, 7-182919

Int. Cl.⁶ B01J 8/04; H01M 8/18

U.S. Cl. 422—197

16 Claims

1. A reforming reactor comprising:



a reforming chamber for reforming a reaction gas to a reformed gas by a reforming reaction;

a plurality of gas flow passages disposed in adjacent layers in said reforming chamber for guiding said reaction gas from an inlet side toward an outlet side thereof, each of said gas flow passages having at least one reforming section, wherein a location of each reforming section in a flow direction of said reaction gas differs from a location of a reforming section in an adjacent gas flow passage such that adjacent reforming sections are staggered in said flow direction; and reforming block means provided in at least one reforming section within each of said gas flow passages and containing reforming catalyst with which said reaction gas, flowing through said gas flow passages, is brought into contact.

5,776,422

CLEANING STERILIZATION APPARATUS FOR TOPSOIL

Seiji Kawasaki, Yokohama, Japan, assignor to K. K. Key & Kraft, Tokyo, Japan

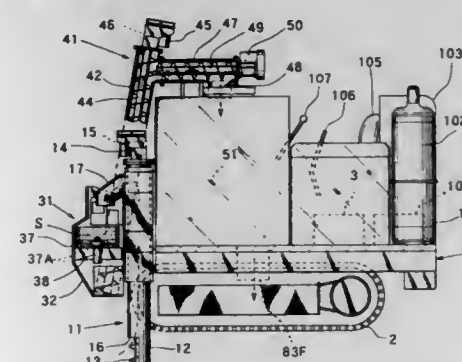
Filed Mar. 12, 1996, Ser. No. 614,416

Claims priority, application Japan, Dec. 27, 1995, 7-341428

Int. Cl.⁶ A01B 77/00

U.S. Cl. 422—307

13 Claims



1. A cleaning sterilization apparatus for topsoil which comprises: an apparatus body having a lower portion with means for traveling over a ground surface;

a driving means mounted on said apparatus body, for driving said means for traveling;

an intake means positioned at a forward side of said apparatus body, for taking up the topsoil into the apparatus body;

a separating means provided in said apparatus body for separating and removing foreign matter from the soil taken up by the intake means;

a heat sterilization means provided in said apparatus body for thermally sterilizing the topsoil separated by the separating means; and,

a discharge port provided in said apparatus body for discharging the sterilized topsoil out of the apparatus body;

wherein said intake means further comprises:

at least one screw conveyor having an elongated cylindrical body, said cylindrical body having a lower end side wall with a portion that is open in a forward direction of travel for the apparatus to form a topsoil intake port, said screw conveyor also having a spiral vane mounted for rotation around an axis extending longitudinally through said cylindrical body, said spiral vane extending to the intake port for contact with the topsoil, and said screw conveyor having a motor for rotating said spiral vane while in contact with the topsoil to convey topsoil upward; and

elevation equipment provided at a front side of said apparatus body for moving said intake screw conveyor axially and substantially vertically downward into the topsoil, said eleva-

tion equipment also being operable for moving the intake screw conveyor upward and out of the topsoil.

5,776,423

TRIMETALLIC ZEOLITE CATALYST AND METHOD OF NO_x ABATEMENT USING THE SAME

Jennifer S. Feeley, Clinton; Michel Deeba, North Brunswick; Robert J. Farrauto, Westfield, and Dinh Dang, South Plainfield, all of N.J., assignors to Eogelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 241,072, May 10, 1994, abandoned.

This application Aug. 15, 1996, Ser. No. 699,676

Int. Cl.⁶ B01J 8/00

U.S. Cl. 423—239.2

3 Claims

1. A method for reducing nitrogen oxides in a lean waste gas stream comprising the steps of:

flowing the gas stream at from 200° C. to 600° C. in contact with a catalytic material comprising a zeolite material comprising ZSM-5 having ion exchanged and precipitated therein from about 2.0 to about 8.0 percent by weight of copper, from about 1.0 to about 4.0 percent by weight of iron and from about 0.25 to about 4.0 percent by weight of cobalt; and reducing nitrogen oxides.

5,776,424

TWO POWDER SYNTHESIS OF HYDROTALCITE AND HYDROTALCITE-LIKE COMPOUNDS WITH MONOVALENT INORGANIC ANIONS

Edward S. Martin, New Kensington; John M. Stinson, Murrysville; Vito Cedro, III, Export, and William E. Horn, Jr., Gibsonia, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 473,585, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 290,220, Aug. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 235,504, Apr. 29, 1994, Pat. No. 5,514,361. This application Apr. 9, 1996, Ser. No. 629,713

Int. Cl.⁶ C07F 11/00; 13/00

U.S. Cl. 423—593

41 Claims

1. A method for making a layered double hydroxide with at least one monovalent inorganic anion intercalated therein, said layered double hydroxide having the formula: A_{1-x}B_x(OH)₂C₂mH₂O, where A represents a divalent metal cation, B represents a trivalent metal cation, C represents a mono- to polyvalent anion, and x, z and m satisfy the following conditions: 0.09<x<0.67; z=x/n, where n=the charge on the anion; and 2>m>0.5. said method comprising:

(a) reacting at least one divalent metal compound and at least one trivalent metal oxide powder in a carboxylic acid and carboxylate ion-free, aqueous suspension to form a double hydroxide intermediate containing said divalent metal and said trivalent metal;

(b) after the double hydroxide intermediate has formed, contacting said double hydroxide intermediate with a monovalent inorganic anion, in its acid or soluble salt form, to make said intercalated layered double hydroxide; and

(c) separating said intercalated layered double hydroxide from the suspension.

5,776,425

METHOD FOR PREPARING POROUS TIN OXIDE MONOLITH WITH HIGH SPECIFIC SURFACE AREA AND CONTROLLED DEGREE OF TRANSPARENCY

Lih-Fu Wu, Jwu-Beei City, and Nae-Lih Wu, Yeong-Her City, both of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Apr. 26, 1995, Ser. No. 431,069

Int. Cl.⁶ C01G 19/02

U.S. Cl. 423—618

12 Claims

1. A process for preparing tin oxide monolith comprising the steps of:

a. dissolving tin chloride or its hydrate in alcohol to form an alcohol solution having a tin ion concentration ranging between 0.001 to 5.0M, and then mixing the alcohol solution with water to make a tin-alcohol-water mixture solution, wherein the molar ratio between water and tin ion ranges between 3,500:1 and 100:1;

b. settling the tin-alcohol-water mixture solution so as to allow colloid or flocculating gel to be formed and settle to the bottom of the mixture solution to become sediments;

c. removing the mixture solution above the sediments, then adding fresh water or fresh water/alcohol mixture to the sediments to thereby increase the solution pH without the use of any alkaline solution;

d. repeat steps b and c until the solution pH of the mixture solution reaches a value between 2.0 and 7.0;

e. collecting and drying the sediments to obtain a tin oxide monolith; and

heat-treating the tin oxide monolith obtained from step e to obtain heat treated tin oxide monolith.

5,776,426

TREATMENT OF SOLID MATERIAL CONTAINING FLUORIDE AND SODIUM INCLUDING MIXING WITH CAUSTIC LIQUOR AND LIME

Ian Lewis Kidd; Darren Paul Rodda, both of Thornbury, and Grant Ashley Wellwood, Mill Park, all of Australia, assignors to Comalco Aluminium Limited, Melbourne, Australia

PCT No. PCT/AU93/00374, § 371 Date Mar. 15, 1994, § 102(e) Date Mar. 15, 1994, PCT Pub. No. WO94/02263, PCT Pub. Date Feb. 3, 1994

Continuation of Ser. No. 473,922, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 204,311, Mar. 15, 1994, abandoned. This PCT application Jul. 23, 1993, Ser. No. 734,450

Claims priority, application Australia, Jul. 24, 1992, PL3753

Int. Cl.⁶ C01F 1/00; B01D 11/00

U.S. Cl. 423—111

18 Claims

1. A process for the treatment of solid material containing fluoride and sodium comprising the steps of:

(i) mixing said solid material with a caustic liquor and lime to form a mixture, having a molar ratio of Ca:F of from 0.8 to 2.0;

(ii) separating the mixture into a liquid fraction and a solids fraction;

(iii) recovering a product caustic liquor from the liquid fraction;

(iv) washing said solids fraction to form a washed solids fraction and a wash liquor;

(v) recycling caustic liquor having a caustic concentration of 75–200 g/l, calculated as Na₂CO₃, to step (i), said caustic liquor being selected from the group consisting of a part of the liquid fraction from step (ii); a wash liquor obtained from step (iv); and a mixture of a part of the liquid fraction from step (ii) and a wash liquor obtained from step (iv); and

(vi) recovering the washed solids fraction.

5,776,427

METHODS FOR TARGETING THE VASCULATURE OF SOLID TUMORS

Philip E. Thorpe, Dallas, Tex., and Francis J. Burrows, San Diego, Calif., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 350,212, Dec. 5, 1994, which is a continuation-in-part of Ser. No. 205,330, Mar. 2, 1994, which is a continuation-in-part of Ser. No. 846,349, Mar. 5, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,495

Int. Cl.⁶ A61K 51/10; 35/395; C07K 16/00

U.S. Cl. 424—1.49

23 Claims

1. A method for treating an animal having a vascularized tumor, the method comprising the steps of:

(a) introducing into the bloodstream of the animal a first bispecific antibody, said bispecific antibody binding to both an activating antigen on the cell surface of a leukocyte and a tumor antigen on the surface of tumor cells of the tumor mass, the bispecific antibody being effective to induce the expression of a cytokine by leukocytes in the tumor; and

(b) introducing into the animal's bloodstream a biologically effective amount of a second antibody operatively linked to a selected therapeutic agent, the second antibody binding to an antigen that is induced on the surface of intratumoral blood vessels of the vascularized tumor by said cytokine.

5,776,428

TECHNETIUM-99M LABELED PEPTIDES FOR IMAGING

Richard T. Dean, Bedford; Scott Buttram, Derry; William McBride, Manchester; John Lister-James, Bedford, and Edgar R. Civitello, Londonderry, all of N.H., assignors to Diatide, Inc., Londonderry, N.H.

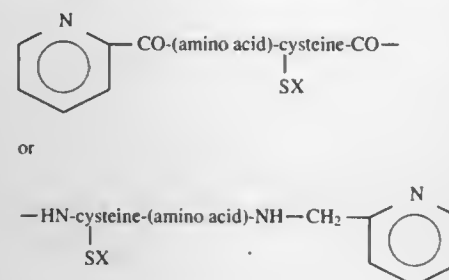
Division of Ser. No. 871,282, Apr. 30, 1992. This application Jun. 6, 1995, Ser. No. 468,975

Int. Cl.⁶ A61K 51/00; A61M 36/14

U.S. Cl. 424—1.69

4 Claims

1. A radiolabeled peptide for imaging sites within a mammalian body, comprising a specific binding peptide having an amino acid sequence and a radiolabel-binding moiety of formula:



wherein

X=H or a protecting group;

(amino acid)=any amino acid;

the radiolabel-binding moiety is covalently linked to the peptide and wherein the radiolabel-binding moiety forms a complex with a radioisotope and the complex of the radiolabel-binding moiety and the radioisotope is electrically neutral.

5,776,429

METHOD OF PREPARING GAS-FILLED MICROSPHERES USING A LYOPHILIZED LIPIDS

Evan C. Unger; Thomas A. Fritz; Terry Matsunaga; VaradaRajan Ramaswami; David Yellowhair, and Guanli Wu, all of Tucson, Ariz., assignors to ImaRx Pharmaceutical Corp., Tucson, Ariz.

Continuation-in-part of Ser. No. 401,974, Mar. 9, 1995, which is a continuation-in-part of Ser. No. 159,687, Nov. 30, 1993, Pat. No. 5,585,112, which is a continuation-in-part of Ser. No. 76,239, Jun. 11, 1993, Pat. No. 5,469,854, which is a continuation-in-part of Ser. No. 18,112, Feb. 17, 1993, abandoned, which is a division of Ser. No. 967,974, Oct. 27, 1992, Pat. No. 5,352,435, which is a division of Ser. No. 818,069, Nov. 18, 1992, Pat. No. 5,230,882, which is a division of Ser. No. 750,877, Aug. 26, 1991, Pat. No. 5,123,414, which is a division of Ser. No. 569,828, Aug. 20, 1990, Pat. No. 5,088,499, which is a continuation-in-part of Ser. No. 455,707, Dec. 22, 1989, abandoned. This application Apr. 30, 1996, Ser. No. 643,070

Int. Cl.⁶ A61K 49/04; A61B 8/13

U.S. Cl. 424—9.52

18 Claims

1. A method of preparing a gas-filled microsphere comprising:

a. obtaining a lyophilized lipid composition comprising the lipids dipalmitoylphosphatidylcholine, dipalmitoylphosphatidylethanolamine-polyethylene glycol, and dipalmitoylphosphatidic acid, in a ratio of about 70 to about 90 mole percent, about 5 to about 15 mole percent, and about 5 to about 15 mole percent, respectively, wherein the combined concentration of lipids is about 20 mg/ml to about 50 mg/ml of aqueous solution prior to lyophilizing;

b. dispersing said lyophilized composition in an aqueous-based pharmaceutically acceptable carrier to a concentration of about 0.1 mg/ml to about 5 mg/ml to form an aqueous microsphere-forming solution;

c. introducing a fluorine-containing gas into said aqueous microsphere-forming solution; and

d. shaking said aqueous microsphere-forming solution to form a microsphere filled with fluorine-containing gas.

5,776,430

TOPICAL ANTIMICROBIAL CLEANSER CONTAINING CHLORHEXIDINE GLUCONATE AND ALCOHOL

David W. Osborne, The Woodlands, Tex., and Fred Kirchner, St. Charles, Mo., assignors to Calgon Vestal, Inc., Mentor, Ohio

PCT No. PCT/US94/12549, § 371 Date Aug. 20, 1996, § 102(e) Date Aug. 20, 1996, PCT Pub. No. WO95/12395, PCT Pub. Date May 11, 1995

PCT Filed Nov. 1, 1994, Ser. No. 628,748

Int. Cl.⁶ A61K 9/00; 31/155

U.S. Cl. 424—43

17 Claims

1. An antimicrobial foam formulation comprising:

(a) between about 0.65 and 0.85 wt. % chlorhexidine or a pharmaceutically acceptable salt thereof;

(b) between about 0.1 and 0.4 wt. % cetyl lactate or a pharmaceutically acceptable salt thereof;

(c) between about 50 and 60 wt. % ethyl alcohol;

(d) between about 1.0 and 2.0 wt. % emulsifying wax NF; and,

(e) an aerosol propellant.

5,776,431

WATER-SOLUBLE ASPIRIN COMPOSITION

Alexander Galat, 126 Buckingham Rd., Yonkers, N.Y. 10701

Filed Mar. 26, 1997, Ser. No. 824,429

Int. Cl.⁶ A61K 27/00

U.S. Cl. 424—44

20 Claims

1. A water-soluble and stable composition comprising: aspirin; and hydrated salts (tri) of citric acid with metals of the alkaline group.

5,776,432

BECLOMETHASONE SOLUTION AEROSOL FORMULATIONS

Robert K. Schultz, Shoreview, and David W. Schultz, Falcon Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 769,547, Oct. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 599,694, Oct. 18, 1990, abandoned. This application May 31, 1995, Ser. No. 455,872

Int. Cl.⁶ A61K 9/12

U.S. Cl. 424—45

12 Claims

1. An aerosol formulation comprising a therapeutically effective amount of beclomethasone 17,21 dipropionate, a propellant comprising a hydrofluorocarbon selected from the group consisting of 1,1,1,2-tetrafluoroethane, 1,1,1,2,3,3,3-heptafluoropropane, and a mixture thereof, and ethanol in an amount effective to solubilize the beclomethasone 17,21 dipropionate in the propellant, the formulation being further characterized in that the beclomethasone 17,21 dipropionate is dissolved in the formulation, and that the formulation is free of any surfactant.

5,776,433

FLUNISOLIDE AEROSOL FORMULATIONS

Tsi-Zong Tzou, Lake Elmo; Robert K. Schultz, Edina, and Danna L. Ross, Pine Springs, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 170,509, Dec. 20, 1993, abandoned. This application May 31, 1995, Ser. No. 456,029

Int. Cl.⁶ A61K 9/12

U.S. Cl. 424—45

19 Claims

1. A solution aerosol formulation consisting essentially of about 0.1 percent to about 0.9 percent by weight of flunisolide in solution; a propellant comprising a hydrofluorocarbon propellant selected from the group consisting of 1,1,1,2-tetrafluoroethane, 1,1,1,2,3,3,3-heptafluoropropane, and a mixture thereof; about 3 percent to about 30 percent by weight and ethanol in an amount effective to solubilize the flunisolide in the formulation.

5,776,434

MEDICINAL AEROSOL FORMULATIONS

Tarlochan S. Purewal, Leamington Spa, and David J. Greenleaf, Loughborough, both of England, assignors to Riker Laboratories, Inc., St. Paul, Minn.

Continuation of Ser. No. 455,638, May 31, 1995, abandoned, which is a division of Ser. No. 26,476, Mar. 4, 1993, Pat. No. 5,695,743, which is a division of Ser. No. 649,140, Jan. 30, 1991, Pat. No. 5,225,183, which is a continuation of Ser. No. 442,119, Nov. 28, 1989, abandoned. This application Jan. 16, 1997, Ser. No. 784,436

Claims priority, application United Kingdom, Dec. 6, 1988, 8828477

Int. Cl.⁶ A61L 9/04

U.S. Cl. 424—45

1 Claim

1. A method of making an aerosol formulation suitable for delivery to the lung by inhalation comprising the steps of:

- providing an aerosol container, and
- charging to said container:
 - a medicament in an amount sufficient to provide a plurality of therapeutically effective doses,
 - an amount of propellant sufficient to propel from said container said plurality of therapeutically effective doses, said propellant being substantially free of chlorofluorocarbons and comprising 1,1,1,2-tetrafluoroethane; and
 - at least one compound selected from the group consisting of ethyl alcohol, isopropyl alcohol, n-pentane, isopentane, neopentane, isopropyl myristate, and mixtures thereof, and
 - a surface active agent.

5,776,435

ANTIPLAQUE ANTIBACTERIAL ORAL COMPOSITION

Abdul Gaffar, Princeton; Nuran Nabi, No. Brunswick; John Affitto, Brookside, all of N.J., and Orum Stringer, Yardley, Pa., assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 964,247, Oct. 21, 1992, Pat. No. 5,288,480, which is a division of Ser. No. 655,571, Feb. 19, 1991, Pat. No. 5,178,851, which is a continuation of Ser. No. 398,566, Aug. 25, 1989, Pat. No. 5,032,386, which is a continuation-in-part of Ser. No. 291,712, Dec. 29, 1988, Pat. No. 4,894,220, and Ser. No. 346,258, May 1, 1989, Pat. No. 5,043,154, said Ser. No. 291,712 is a continuation-in-part of Ser. No. 8,901, Jan. 30, 1987, abandoned, said Ser. No. 346,258 is a continuation of Ser. No. 8,901, Jan. 30, 1987, abandoned. This application Feb. 22, 1994, Ser. No. 176,926

Int. Cl.⁶ A61K 7/16;7/18

U.S. Cl. 424—49

19 Claims

1. An oral composition dentifrice for attaching, adhering or bonding a plaque-inhibiting antibacterial agent to oral tooth and gum surfaces comprising in an orally acceptable aqueous humectant vehicle, about 5–30% by weight of a siliceous polishing agent and about 0.25%–0.35% by weight of a substantially water insoluble noncationic antibacterial agent, said oral composition comprising at least one of a surface active agent and a flavoring oil and also containing about 0.05–4% by weight of a water soluble or water swellable antibacterial enhancing agent having an average material weight of about 100 to 1,000,000 which contains at least one carboxylic delivery enhancing group and at least one organic retention-enhancing group, which delivery enhancing group enhances delivery of said antibacterial agent to oral tooth and gum surfaces and said retention-enhancing group enhances attachment, adherence or bonding of said antibacterial agent on oral tooth and gum surfaces, wherein said oral composition is free of polyphosphate anticalculus agent in an effective anticalculus amount and said vehicle is other than polyethylene glycol which reduces the antibacterial activity of said antibacterial agent.

5,776,436

Patent Not Issued For This Number

5,776,437

METHOD OF MAKING A TARTAR CONTROL DENTIFRICE CONTAINING FLUORIDE AND PEROXIDE

Steven Carl Burgess, Sharonville; Connie Lynn Sheets, Cincinnati; Sue Ellen Bernheim, Cincinnati; James Albert Berta, Cincinnati, and Michael Lashawn Britt, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 26, 1996, Ser. No. 756,995

Int. Cl.⁶ A61K 7/16;7/18;7/20

U.S. Cl. 414—53

15 Claims

1. A method of manufacturing predominately undissolved pyrophosphate and calcium peroxide dentifrice compositions comprising the steps of:

- preparing a mixture of a soluble fluoride ion source and one or more aqueous carrier materials;
- adding tetrasodium pyrophosphate and calcium peroxide, all at once or in portions, under conditions wherein less than about 20% of the total pyrophosphate and calcium peroxide are dissolved in the mixture, and wherein any further remaining aqueous carrier materials not added to the mixture during step (a) are added in whole or in part in step (b) or thereafter, either by themselves or with any remaining amount of the tetrasodium pyrophosphate or calcium peroxide under conditions such that less than about 20% of the total pyrophosphate and calcium peroxide are dissolved in the mixture; and
- heating the mixture to a temperature range of from about 38° C. to about 71° C.;

and wherein the dentifrice has a viscosity of from about 10 to about 60 Brookfield units at 23° C. in bulk or packed product from about 10 minutes to about two hours after being made or packed and the viscosity builds to about 30 to about 125 Brookfield units at 23° C. in bulk or packed product after about one month or more after being made or packed.

5,776,438

EXTERNAL PREPARATION

Wataru Tokue; Kenzo Ito, both of Yokohama, and Naoki Tomi-naga, Tokyo, all of Japan, assignors to Shiseido Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 371,484, Jan. 11, 1995, abandoned, which is a continuation of Ser. No. 854,624, Jun. 26, 1992. This application May 14, 1996, Ser. No. 645,681

Int. Cl.⁶ A61K 7/42;31/66

U.S. Cl. 424—59

11 Claims

1. A method of treating a patient to resist cutaneous aging of the skin caused by cross-linking of collagen in the skin due to ultraviolet radiation, comprising applying to the skin an external preparation comprising: at least 0.005 wt % of DL- α -tocopherol 2-L-ascorbic phosphoric diester and/or a salt thereof; and at least 0.01 wt % of at least one ultraviolet absorbing agent, whereby cross-linking of collagen in the skin is suppressed when irradiated with ultraviolet rays, the wt % is based on the weight of the entire composition.

5,776,439

SUN PROTECTING COSMETIC COMPOSITIONS COMPRISING DERIVATIVES OF DIBENZOYLMETHANE AND OF BENZOPHENONE

Giuseppe Raspanti, and Alverio Malpede, both of Bergamo, Italy, assignors to 3V Inc., Weehawken, N.J.

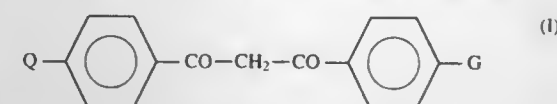
Filed Nov. 29, 1996, Ser. No. 753,736

Int. Cl.⁶ A61K 7/42;7/00;31/12

U.S. Cl. 424—59

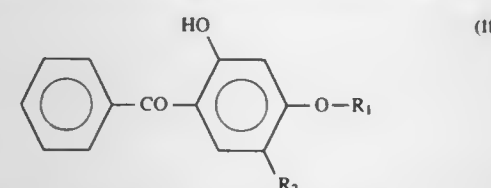
13 Claims

1. A cosmetic composition comprising in mixture with a cosmetic substrate, with respect to the total weight of the composition: a) from 1 to 10% of one or more compounds of formula (I)



wherein Q is hydrogen, straight or branched C₁–C₄ alkoxy group and G is straight or branched C₁–C₈ alkyl,

b) from 0.5 to 10% of one or more compounds of formula (II)



wherein R₁ is a straight or branched C₁–C₈ alkyl, R₂ is hydrogen or a SO₃M group, wherein M is hydrogen, an alkali metal or a mono- or polyalkyl-substituted ammonium group;

with the condition that the weight ratio between the compounds of formula (II) and those of formula (I) is at least 0.5.

5,776,440

SCREENING COSMETIC COMPOSITION COMPRISING ONE NANOPIGMENT OF METALLIC OXIDE AND ONE FAT-SOLUBLE SCREENING POLYMER

Serge Forestier, Claye-Souilly, and Isabelle Hansenne, Paris, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 39,324, Apr. 23, 1993, Pat. No. 5,733,895.

This application Jul. 17, 1997, Ser. No. 895,866

Claims priority, application France, Aug. 29, 1991, 91/10731

Int. Cl.⁶ A61K 7/42;7/44;7/00; C01G 1/02

U.S. Cl. 424—59

19 Claims

1. A screening cosmetic composition, comprising, in a cosmetically acceptable carrier, at least one coated nanopigment of metallic oxides selected from the group consisting of titanium, zinc, cerium, zirconium and iron oxides and mixtures thereof, with a mean diameter of less than 100 nm, having undergone one or more surface treatments of a chemical, electronic, mechanicochemical or mechanical nature with compounds selected from the group consisting of amino acids, beeswax, fatty acids, fatty alcohols, anionic surfactants, lecithins, sodium, potassium, zinc, iron and aluminum salts of fatty acids, metallic alkoxides, polyethylene, silicones, proteins, alkanolamines, silicon oxides, metallic oxides and sodium hexametaphosphate, and at least one fat-soluble polymer with hydrocarbon structure carrying at least one ultraviolet-absorbing group.

5,776,441

LIP TREATMENT CONTAINING LIVE YEAST CELL DERIVATIVE

Neil Scancarella, Wyckoff; Harold Pablick, Waldwick, and Maha Raouf, Franklin Lakes, all of N.J., assignors to Avon Products, Inc., New York, N.Y.

Filed Aug. 30, 1996, Ser. No. 705,779

Int. Cl.⁶ A61K 7/00;7/04

U.S. Cl. 424—61

20 Claims

1. A lip composition comprising: yeast cell protoplasm from yeast cells that have been subjected to an injury process, said yeast cell protoplasm being substantially free of yeast cell wall material; and a suitable carrier.

5,776,442

REDUCTION OF HAIR GROWTH

Gurpreet S. Ahluwalia, 8632 Stable View Ct., Gaithersburg, Md. 20879

Continuation of Ser. No. 396,426, Feb. 28, 1995, Pat. No. 5,674,477. This application Jul. 16, 1997, Ser. No. 893,319

Int. Cl.⁶ A61K 7/06

U.S. Cl. 424—70.1

11 Claims

1. A method of reducing mammalian hair growth, comprising selecting an area of skin from which reduce hair growth is desired; and applying to said area of skin a dermatologically acceptable composition including a catechin, wherein said composition comprises between 0.1% and 40% of said catechin compound by weight.

5,776,443

HAIR CARE COMPOSITIONS

Paul Vinski, Danbury, and Paul Edward Miner, Newtown, both of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Mar. 18, 1996, Ser. No. 616,949

Int. Cl.⁶ A61K 7/075

U.S. Cl. 424—70.12

9 Claims

1. A hair care composition comprising: (i) from 0.001 to 0.25% by weight of phytantriol;

- (ii) from 0.001 to 10% by weight of a silicone compound; and
(iii) from 20 to 99.9% by weight of water.

5,776,444

HAIR TREATMENT COMPOSITIONS

David Howard Birtwistle, Bangkok THX, and Andrew Malcolm Murray, Parkgate, United Kingdom, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc.

Filed Apr. 5, 1996, Ser. No. 628,825

Claims priority, application United Kingdom, Apr. 6, 1995, 9507130

Int. Cl.⁶ A61K 7/07;7/00

U.S. Cl. 424—70.12

10 Claims

1. A hair treatment composition comprising from about 0.01 to about 50% by weight of a non-rigid, emulsion-polymerised cross-linked silicone conditioning polymer, in which the polymer has from about 0.05% to about 2% branched monomer units.

5,776,445

OPHTHALMIC DELIVERY SYSTEM

Smadar Cohen, Petach Tikva, and Esther Lobel, Rehovot, both of Israel, assignors to Teva Pharmaceutical Industries Ltd., Netanya, and The Ben Gurion University of the Negev, Beersheva, both of Israel

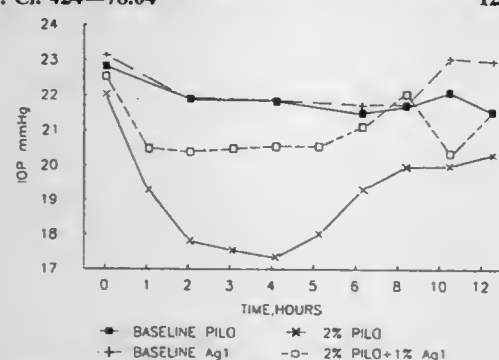
Continuation of Ser. No. 262,294, Jun. 20, 1994, abandoned.

This application Aug. 7, 1996, Ser. No. 689,218

Int. Cl.⁶ A61K 31/74;47/36

U.S. Cl. 424—78.04

12 Claims



1. An ophthalmic formulation comprising:
a therapeutically effective amount of at least one active agent,
and 0.5 to 5 weight percent of a dissolved sodium alginate
comprising at least 50% guluronic acid,
said sodium alginate undergoing a change from a dissolved
phase to a gel phase upon contacting lacrimal fluid.

5,776,446

HUMAN LYMPHOTOXIN

Toshiaki Osawa, Shin-machi, Masuo Obinata, Sendai; Yoshiyuki Ishii, Chiba, all of Japan, and Yoshio Kobayashi, Frederick, Md., assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 733,974, Jul. 22, 1991, Pat. No. 5,403,725, which is a continuation of Ser. No. 212,293, Jun. 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 945,904, Dec. 23, 1986, abandoned. This application May 16, 1994, Ser. No. 243,168

Claims priority, application Japan, Dec. 24, 1985, 60-289249; Jun. 30, 1986, 61-151772; Jun. 30, 1986, 61-151773; Jun. 27, 1987, 62-160115

Int. Cl.⁶ A61K 38/19; C07K 14/52

U.S. Cl. 424—85.1

6 Claims

1. An isolated lymphotoxin having the following amino acid sequence (I):

MET ASP PRO ALA GLN THR ALA ARG GLN HIS

PRO LYS MET HIS LEU ALA HIS SER ASN LEU

LYS PRO ALA ALA HIS LEU ILE GLY ASP PRO

SER LYS GLN ASN SER LEU LEU TRP ARG ALA

ASN THR ASP ARG ALA PHE LEU GLN ASP GLY

PHE SER LEU SER ASN ASN SER LEU LEU VAL

PRO THR SER GLY ILE TYR PHE VAL THR SER

GLN VAL VAL PHE SER GLY LYS ALA TYR SER

PRO LYS ALA THR SER SER PRO LEU TYR LEU

ALA HIS GLU VAL GLN LEU PHE SER SER GLN

TYR PRO PHE HIS VAL PRO LEU LEU SER SER

GLN LYS MET VAL TYR PRO GLY LEU GLN GLU

PRO TRP LEU HIS SER MET TYR HIS GLY ALA

ALA PHE GLN LEU THR GLN GLY ASP GLN LEU

SER THR HIS THR ASP GLY ILE PRO HIS LEU

VAL LEU SER PRO SER THR VAL PHE PHE GLY.

5,776,447

Patent Not Issued For This Number

5,776,448

CHITINASE-PRODUCING BACTERIA

Trevor V. Suslow, El Cerrito, Calif., and Jonathan D.G. Jones, Norwich, United Kingdom, assignors to DNA Plant Technology Corporation, Oakland, Calif.

Continuation of Ser. No. 358,901, Dec. 19, 1994, Pat. No. 5,554,521, which is a continuation-in-part of Ser. No. 930,970, Aug. 14, 1992, Pat. No. 5,290,687, which is a continuation of Ser. No. 550,253, Jul. 9, 1990, Pat. No. 5,374,540, which is a continuation-in-part of Ser. No. 888,033, Jul. 18, 1986, Pat. No. 4,940,840, which is a continuation-in-part of Ser. No. 593,691, Mar. 26, 1984, Pat. No. 4,751,081. This application Aug. 1, 1996, Ser. No. 693,835

Int. Cl.⁶ C12N 1/21;15/56;15/78; A01C 1/06; A61K 39/104
U.S. Cl. 424—93.2

22 Claims

5. A method of protecting a plant from chitinase sensitive plant pathogens, comprising:
transforming a bacteria with a nucleic acid encoding a chitinase which nucleic acid was isolated from a heterologous source; and
growing said plant in the presence of an effective concentration of said bacteria.

5,776,449

RECOMBINANT *BACILLUS THURINGIENSIS* STRAINS, INSECTICIDAL COMPOSITIONS AND METHOD OF USE
James A. Baum, Doylestown, Pa., assignor to Ecogen Inc., Langhorne, Pa.

Continuation-in-part of Ser. No. 266,408, Jun. 24, 1994, which is a continuation-in-part of Ser. No. 89,986, Jul. 8, 1993, Pat. No. 5,441,884. This application Sep. 20, 1996, Ser. No. 717,312
Int. Cl.⁶ A01N 63/00; C12N 1/21

U.S. Cl. 424—93.2

21 Claims

1. A recombinant *Bacillus thuringiensis* bacterium designated as B.t. strain EG7841, deposited with the NRRL and having Accession No. NRRL B-21250.

5,776,450

Patent Not Issued For This Number

5,776,451

USE OF INTERLEUKIN-10 IN ADOPTIVE IMMUNOTHERAPY OF CANCER

Di-Hwei Hsu, Mountain View; Kevin W. Moore, and Hergen Spits, both of Palo Alto, all of Calif., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 995,564, Dec. 23, 1992, abandoned, which is a continuation of Ser. No. 830,493, Feb. 4, 1992, abandoned, which is a continuation of Ser. No. 641,342, Jan. 16, 1991, abandoned. This application Jul. 5, 1994, Ser. No. 270,805

Int. Cl.⁶ A61K 45/05

U.S. Cl. 424—85.2

20 Claims

1. A method of treating an individual for cancer, comprising:
(a) culturing tumor-infiltrating lymphocytes in the presence of interleukin-2 and interleukin-10 so that the tumor-infiltrating lymphocytes proliferate;
(b) administering the cultured tumor-infiltrating lymphocytes to a individual afflicted with cancer; and
(c) administering an effective amount of interleukin-2 and interleukin-10 to the individual after administration of the cultured tumor-infiltrating lymphocytes.

5,776,452

THROMBOSIS AGENT

Johann Eibl, Vienna; Anton Philippitsch, Ebenfurt, and Hans Peter Schwarz, Vienna, all of Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Filed Mar. 27, 1995, Ser. No. 410,766

Claims priority, application Germany, Mar. 30, 1994, 44 11 143.6

Int. Cl.⁶ A61K 38/48;35/14;35/16

U.S. Cl. 424—94.64

19 Claims

1. A pharmaceutical composition for thrombolytic therapy comprising active plasmin and a plasminogen activator selected from the group consisting of tissue plasminogen activator and urokinase, wherein the active plasmin and plasminogen activator are present in the range of 10 CU plasmin per microgram plasminogen activator to 1 CU plasmin per milligram plasminogen activator and at least a portion of the plasminogen activator is present in a non-complexed, free form.

5,776,453

DEODORANT COMPOSITION CONTAINING A COMPOUND WHICH YIELDS FORMALDEHYDE

Wilhelmus Hendricus Hubertus Van Den Elshout, Onderstephof 9, NL-6132 SM Sittard, Netherlands

PCT No. PCT/NL95/00043, § 371 Date Aug. 15, 1996, § 102(e) Date Aug. 15, 1996, PCT Pub. No. WO95/22309, PCT Pub. Date Aug. 24, 1995

PCT Filed Jan. 30, 1995, Ser. No. 693,331

Claims priority, application Netherlands, Feb. 18, 1994, 9400260

Int. Cl.⁶ A61K 7/32;7/00; A01N 25/02

U.S. Cl. 424—65

5 Claims

1. Product for preventing and controlling malodors caused by human perspiration containing
a. 0.005–0.15 wt. % of a compound selected from the group consisting of formaldehyde, para-formaldehyde and trioxane,
b. 0.01–0.15 wt. % of hexamethylene tetramine and,
c. 0.1–30 wt. % of camphor,
wherein said amounts are based on the weight of the total product.

5,776,454

PERMANENT WAVING WITH MERCAPTOSILICONES

Ronald Paul Gee, and Carol Anne Hoag, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 13, 1996, Ser. No. 713,910

Int. Cl.⁶ A61K 7/09;7/06

U.S. Cl. 424—70.5

10 Claims

1. In a process for permanent waving hair by a reaction in which cystine bridges are reduced to cysteine by applying to hair a waving lotion containing a reducing agent, the hair is reshaped, and the reaction is reversed by applying to hair a neutralizing solution containing an oxidizing agent, the improvement comprising incorporating into the waving lotion, the neutralizing solution, or in both the waving lotion and the neutralizing solution, an emulsion containing a mercapto functional silicone prepared by emulsion polymerization, the mercapto functional silicone having the formula $R'_3SiO_2[SiO_2]_x[SiO_2]_y[SiO_2]_z$, where R' is an alkyl group of 1–4 carbon atoms or a phenyl group, provided at least 50 percent of the total number of R' groups are methyl; Q is mercapto functional substituent $-R''SH$ where R'' is a divalent alkylene radical of 3–6 carbon atoms; z is 0 or 1; x is 25–500; y is 0–50 when z is 1, and y is 1–50 when z is 0.

5,776,455

PHARMACEUTICAL FORMULATIONS

Kenneth Coleman, Tadworth, and Jane Elizabeth Neale, Verwood, both of England, assignors to SmithKline Beecham p.l.c., Brentford, England

Filed Jun. 1, 1995, Ser. No. 457,562

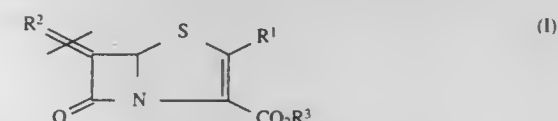
Claims priority, application United Kingdom, Apr. 25, 1994, 9408161; Apr. 25, 1994, 9408162; Apr. 25, 1994, 9408163; Apr. 25, 1994, 9408164

Int. Cl.⁶ A61K 34/43

U.S. Cl. 424—114

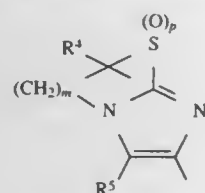
6 Claims

1. A pharmaceutical formulation comprising, a penem of formula (I):



in which:
 R^1 is hydrogen or an organic substituent group;

R² is a fused bicyclic heterocyclic ring system of the formula:



wherein R⁴ and R⁵ are independently hydrogen or one or more substituents replacing hydrogen atoms in the ring system shown; m is 2 or 3; p is zero, 1 or 2; and R³ is hydrogen, a salt-forming cation or an ester-forming group; and the symbol \equiv indicates that the double bond may be in either the E or Z configuration; and a pharmaceutically acceptable carrier; and the β -lactam antibiotic cefazidime or a pharmaceutically acceptable derivative thereof.

5,776,456

THERAPEUTIC APPLICATION OF CHIMERIC AND RADIOLABELED ANTIBODIES TO HUMAN B LYMPHOCYTE RESTRICTED DIFFERENTIATION ANTIGEN FOR TREATMENT OF B CELL LYMPHOMA
Darrell R. Anderson, Escondido; Nabil Hanna, Olivenhain; John E. Leonard, Encinitas; Roland A. Newman; Mitchell E. Reff, both of San Diego, and William H. Rastetter, Rancho Santa Fe, all of Calif., assignors to IDEC Pharmaceuticals Corporation, San Diego, Calif.

Division of Ser. No. 149,099, Nov. 3, 1993, which is a continuation-in-part of Ser. No. 978,891, Nov. 13, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 476,275
Int. Cl.⁶ A61K 39/395; 51/00; C07K 16/28; 16/30

U.S. Cl. 424—133.1

14 Claims

5. A method for the treatment of B cell lymphoma comprising the steps of:

- 1) administering, at a first administration period, an immunologically active chimeric anti-CD20 antibody to a human, wherein said chimeric anti-CD20 antibody is derived from a transfectoma comprising anti-CD20 in TCAE 8 as deposited with the American Type Culture Collection as ATCC deposit number 69119; and,
- 2) administering, at a second administration period, a radiolabeled anti-CD20 antibody to said human.

5,776,457

ANTIBODIES TO HUMAN PF4A RECEPTOR AND COMPOSITIONS THEREOF

James Lee, San Bruno, and William I. Wood, San Mateo, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 664,228, Jun. 7, 1996, abandoned, which is a continuation of Ser. No. 76,093, Jun. 11, 1993, Pat. No. 5,543,503, which is a continuation-in-part of Ser. No. 810,782, Dec. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 677,211, Mar. 29, 1991, abandoned. This application Aug. 22, 1996, Ser. No. 701,265

Int. Cl.⁶ C07K 16/00; C12P 21/08; A61K 39/395

U.S. Cl. 424—139.1

5 Claims

1. An antibody that is capable of binding to an extracellular region of a platelet factor 4 superfamily receptor (PF4AR) polypeptide having the amino acid sequence of FIG. 4 (SEQ ID NO.4).

5,776,458

ANTHRACYCLINE-CONJUGATES

Francesco Angelucci; Daniela Ruggieri; Stefania Stefanelli; Antonino Suarato, and Laura Bersani, all of Milan, Italy, assignors to Pharmacia & Upjohn S.p.A., Milan, Italy
Continuation of Ser. No. 917,064, Aug. 5, 1992, abandoned.

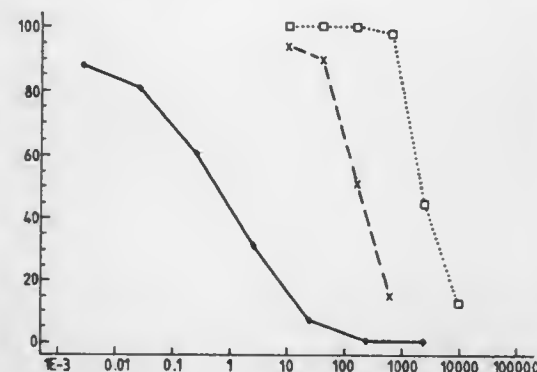
This application Mar. 27, 1995, Ser. No. 412,220

Claims priority, application United Kingdom, Dec. 5, 1990, 9026491

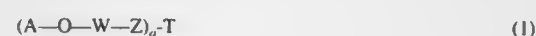
Int. Cl.⁶ A61K 39/395; 39/00; C07K 16/00; 17/00

U.S. Cl. 424—178.1

6 Claims



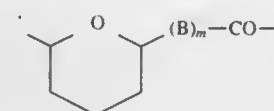
1. A conjugate of the formula 1:



wherein the moiety A—O— is the residue of an anthracycline bearing a primary hydroxyl group such that the group —O— derives from the hydroxyl group in the 14 position of the anthracycline moiety, and the 3'-position of said anthracycline is substituted with a morpholino moiety;

a is an integer of from 1 to 30;

W is a residue of formula 2:



wherein B is a —CH₂OCH₂— group and m is 0 or 1;

Z is a spacer group selected from the group consisting of —NH—, —NH—N=CH—, —NH—NH—CO—, and a piperazinylcarbonyl moiety; and

T is the residue of a carrier moiety of formula T—NH₂, T—(CHO)_n, or T—[COOH]_n, wherein a is as defined above, the carrier moiety being selected from the group consisting of a polyclonal antibody, a fragment of a polyclonal antibody which comprises an antigen binding site and is capable of binding to a tumor associated antigen, a monoclonal antibody, and a fragment of a polyclonal antibody which comprises an antigen binding site and is capable of binding to an antigen which is preferentially or selectively expressed on a tumor cell population.

5,776,459

TCR V BETA 5 PEPTIDES

Arthur A. Vandenberg, Portland, Oreg., assignor to Connetics Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 59,020, Mar. 16, 1993, Pat. No. 5,614,192, which is a continuation of Ser. No. 735,612, Jul. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 708,022, May 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 554,529, Jul. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 467,577, Jan. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 382,804, Jul. 19, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 476,405

Int. Cl.⁶ A61K 38/00; C07K 14/725

U.S. Cl. 424—185.1

27 Claims

1. A purified or synthetic immunogenic T cell receptor peptide capable of reducing the severity of a T cell mediated disease, selected from the V β 5 family, having an amino acid sequence of about 15 to 30 amino acid comprising at least part of the second complementarity determining region of a T cell receptor characteristic of such T cell mediated disease, or a corresponding purified or synthetic immunogenic functional derivative that is a fragment, a variant or an analog of said peptide.

5,776,460

PROCESSED GINSENG PRODUCT WITH ENHANCED PHARMACOLOGICAL EFFECTS

Nak Doo Kim; Man Ki Park, 100-26 Nonhyun-dong, Kangnam-ku; Seung Ki Lee; Jeong Hill Park, and Jong Moon Kim, all of Seoul, Rep. of Korea, assignors to Man Ki Park, Seoul, Rep. of Korea

Filed Jun. 7, 1996, Ser. No. 660,448

Claims priority, application Rep. of Korea, Jun. 7, 1995, 95-14973; May 23, 1996, 96-17670

Int. Cl.⁶ A61K 35/78

U.S. Cl. 424—195.1

3 Claims

1. A processed ginseng or processed ginseng extract comprising a ratio of ginsenoside (Rg₃+Rg₂) to (Rc+Rd+Rb₁+Rb₂) above 1.0, wherein said ginseng or ginseng extract is processed by heat-treating ginseng or an extract thereof at a temperature of 120° to 180° C. for 0.5 to 20 hours.

5,776,461

COSMETIC COMPOSITIONS CONTAINING PHYTOVITAMIN D

Sreekumar Pillai, Wayne, N.J.; Keith Andrew Gottlieb, Houston, Tex.; Anita Marie Brinker, Midland Park; Manisha Mahajan, Westwood, both of N.J., and Anthony Vincent Rawlings, Warrington, England, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Jul. 26, 1996, Ser. No. 690,290

Int. Cl.⁶ A61K 35/78

U.S. Cl. 424—195.1

7 Claims

1. A skin care composition comprising:
(i) from about 0.01% to about 10% of a plant extract containing a phytovitamin D;
(ii) from about 0.01% to about 10% of a glycosidase; and
(iii) a cosmetically acceptable vehicle;
wherein the plant is selected from the group consisting of *Solanum glaucophyllum*, *Cestrum diurnum*, *Trisetum flavescens*, *Fabiana imbricata*, *Lycopersicon esculentum*.

5,776,462

POGOSTEMON CABLIN EXTRACT FOR INHIBITING H. INFLUENZAE ADHESION AND TREATING OTITIS MEDIA OR SORE THROAT

Hsiu-Hsien Tsai, Chang-Huah, Taiwan, and Shie-Ming Hwang, Columbus, Ohio, assignors to Sage R&D, a partnership, Columbus, Ohio

Filed Dec. 10, 1996, Ser. No. 761,321

Int. Cl.⁶ A61K 35/78; 47/00; 9/68; 9/20

U.S. Cl. 424—195.1

13 Claims

1. A method of inhibiting the attachment of *H. influenzae* to human cells by orally or nasally administering to a human, a therapeutically effective amount of a composition comprising an aqueous extract of *Pogostemon cablin* wherein said extract has an HPLC profile selected from FIG. 2A or 2B or an HPSEC profile selected from FIG. 4A or 4B under conditions wherein peaks in the HPLC or HPSEC profile are eluted relative to the acetaminophen peak.

5,776,463

METHOD OF REDUCING STRESS AND CIRCULATORY HEART DISEASE WITH FREEZE-DRIED BORAGE PETAL EXTRACTS

Ronit Arginteanu, 401 E. 86th St. Apt. 9G, New York, N.Y. 10028

Filed Feb. 19, 1997, Ser. No. 802,069

Int. Cl.⁶ A61K 35/78; A23F 3/34; 3/00

U.S. Cl. 424—195.1

6 Claims

1. An oral pharmaceutical composition for reducing heart rate and blood pressure due to stress in a mammal consisting essentially of freeze-dried soluble components of borage petals obtained by extraction of said soluble components with a solvent selected from the group consisting of acetone, methyl ethyl ketone and diethyl ketone.

5,776,464

AGENT FOR RELIEVING SIDE EFFECTS CAUSED BY IMMUNOSUPPRESSANTS

Toshikazu Nakamura, 10-27, Takamidai, Takatsuki-shi, Osaka 569, Japan

PCT No. PCT/JP95/00329, § 371 Date Nov. 13, 1996, § 102(e) Date Nov. 13, 1996, PCT Pub. No. WO95/25537, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 1, 1995, Ser. No. 716,141

Claims priority, application Japan, Mar. 18, 1994, 6-074272
Int. Cl.⁶ A61K 39/00; 38/18

U.S. Cl. 424—198.1

6 Claims

1. A method for relieving a side effect caused by immunosuppressants, which comprises:
administering an effective amount of hepatocyte growth factor (HGF) to reduce said side effect selected from the group consisting of hepatic disorder, kidney disorder, neuropathy, gastrointestinal disorder, anorexia, diarrhea, piloerection, fever and convulsion.

5,776,465

RECOMBINANT MYCOBACTERIAL VACCINES

Michael A. O'Donnell, Sudbury; Rosemary B. Duda, Carlisle; William C. DeWolf, Southborough; Anna Aldovini, and Richard A. Young, both of Winchester, all of Mass., assignors to Beth Israel Hospital Association, Boston, and Whitehead Institute for Biomedical Research, Cambridge, both of Mass. Continuation of Ser. No. 96,027, Jul. 22, 1993, Pat. No. 5,591,632, which is a continuation-in-part of Ser. No. 711,334, Jun. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 367,894, Jun. 19, 1989, abandoned, and Ser. No. 361,944, Jun. 5, 1989, Pat. No. 5,504,005, which is a continuation-in-part of Ser. No. 223,089, Jul. 22, 1988, abandoned, and Ser. No. 216,390, Jul. 7, 1988, abandoned, which is a continuation-in-part of Ser. No. 163,546, Mar. 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 20,451, Mar. 2, 1987, said Ser. No. 223,089 is a continuation-in-part of Ser. No. 163,546. This application Jun. 5, 1995, Ser. No. 461,725

Int. Cl.⁶ A61K 39/04; 45/05; C12N 1/21

U.S. Cl. 424—200.1

4 Claims

1. A method of inducing production of an endogenous cytokine by a mammalian host, comprising administering to the host a recombinant mycobacterium having enhanced immunostimulatory properties in comparison with immunostimulatory properties of wild type mycobacterium, the recombinant mycobacterium having incorporated therein a plasmid comprising:

DNA of interest encoding a cytokine wherein the DNA is expressed extrachromosomally under the control of a mycobacterial heat shock gene promoter or a mycobacterial stress protein gene promoter and the cytokine is secreted from the recombinant mycobacterium in a biologically active form.

5,776,466

Patent Not Issued For This Number

5,776,467

Patent Not Issued For This Number

5,776,468

VACCINE COMPOSITIONS CONTAINING 3-O DEACYLATED MONOPHOSPHORYL LIPID A

Pierre Hauser, Chaumont-Gistoux; Pierre Voet, Izel; Moncef Slaoui, Rixensart; Nathalie Marie-Josephe Claude Garcon-Johnson, Wavre, and Pierre Desmons, Nivelles, all of Belgium, assignors to SmithKline Beecham Biologicals (S.A.), Rixensart, Belgium

PCT No. PCT/EP94/00818, § 371 Date Feb. 12, 1996, § 102(e) Date Feb. 12, 1996, PCT Pub. No. WO94/21292, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 14, 1994, Ser. No. 525,638

Claims priority, application United Kingdom, Mar. 23, 1993, 9306029; Feb. 23, 1994, 9403417

Int. Cl.⁶ A61K 39/29; 39/39

U.S. Cl. 424—226.1

53 Claims

1. A sterile vaccine composition comprising an antigen, 3-O-deacylated monophosphoryl lipid A (3D-MPL) particles, and a suitable carrier, wherein the particles of 3D-MPL are small enough to give a clear aqueous suspension of 3D-MPL.

5,776,469

Patent Not Issued For This Number

5,776,470

METHOD OF USING LIPID TRANSFER PROTEINS AND LIPIDS TO RECONSTITUTE MEMBRANES

Karlheinz Schmidt, Aussere Weiler Strasse 12, 7413 Gomaringen, Germany

Continuation-in-part of Ser. No. 744,308, Aug. 13, 1991, which is a continuation-in-part of Ser. No. 347,026, May 4, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 474,460

Claims priority, application Germany, May 6, 1988, 38 15 473.0

Int. Cl.⁶ A61K 7/00; 9/12; 9/127; 9/107

U.S. Cl. 424—401

9 Claims

1. A method for treating the skin comprising selecting a lipid to incorporate into the lipid layer of the skin, selecting a lipid transfer protein or mixture of lipid transfer proteins that can transfer the selected lipid, forming an active ingredient system by combining an aqueous solution of said lipid transfer protein with said lipid, and topically applying said active ingredient system to the skin.

5,776,471

Patent Not Issued For This Number

5,776,472

UVA PHOTOPROTECTIVE COSMETIC/ DERMATOLOGICAL COMPOSITIONS COMPRISING IRON CHELATING AGENTS

Pascal Simon, Vitry Sur Seine, and Didier Gagnebien, Chatillon, both of France, assignors to Societe L'Oreal S.A., Paris, France

Filed Jul. 22, 1996, Ser. No. 685,913

Claims priority, application France, Jul. 20, 1995, 95 08817

Int. Cl.⁶ A61K 7/48

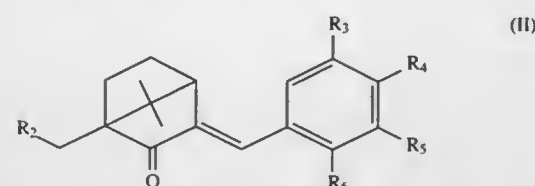
U.S. Cl. 424—401

18 Claims

1. A topically applicable UVA photoprotective cosmetic/ dermatological composition, comprising:

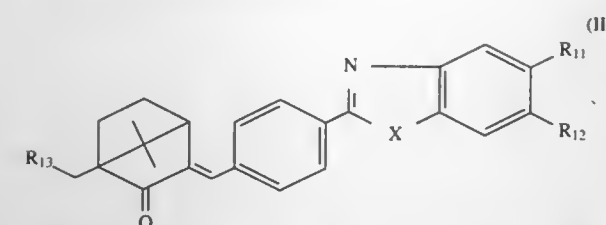
an effective photoprotecting amount of at least one UVA benzylidene camphor compound selected from the group consisting of:

(i) a compound of formula (II)



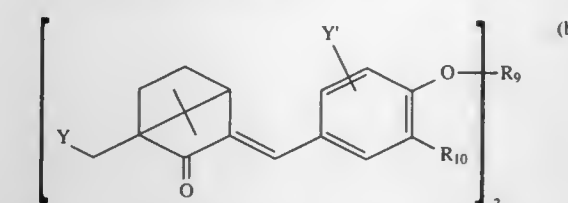
wherein R₂ is hydrogen or -SO₃H; R₃, R₄, R₅ and R₆, which may be identical or different, are each hydroxy, linear or branched chain alkyl having from 1-4 carbon atoms, linear or branched chain alkenyl having from 2-4 carbon atoms, linear or branched chain alkoxy having from 1-4 carbon atoms, linear or branched chain alkenyloxy having from 2-4 carbon atoms or halo, with the proviso that only one radical of the group R₃-R₆ may be -SO₃H and that at least one of the radicals R₃-R₆ denote the -SO₃H radical when R₂ is hydrogen;

(ii) a compound of formula (III):



wherein R₁₁ is hydrogen, a linear or branched chain alkyl or alkoxy radical having from 1-6 carbon atoms, or -SO₃H; R₁₂ is hydrogen or a linear or branched chain alkyl or alkoxy group having from 1-6 carbon atoms; R₁₃ is hydrogen or -SO₃H, with the proviso that at least one of the radicals R₁₁ and R₁₃ is a -SO₃H radical; and X is oxygen or sulfur or -NR-, wherein R is hydrogen or a linear or branched chain alkyl having from 1-6 carbon atoms; and

(iii) a compound of formula (b):



wherein R₉ is a divalent radical -(CH₂)_m- or -CH₂-CHOH-CH₂-, wherein m is an integer ranging from 1-10 (1 ≤ m ≤ 10); R₁₀ is hydrogen, alkoxy having from 1-4 carbon atoms, or a divalent radical -O- bonded to radical R₉ when the latter is also divalent; and Y and Y' are each hydrogen or -SO₃H, at least one of Y or Y' being other than hydrogen, and an effective UVA photoprotecting-enhancing amount of at least one otherwise non-UVA photoprotecting iron chelating agent having an association constant with ferrous or ferric ions greater than 10² and selected from the group consisting of dibenzylidithiocarbamate ethylenediaminetetramethylenephosphonic acid, ethylenediaminetetraacetic acid, citric acid, tartaric acid, phytic acid salts thereof and in a cosmetically/ dermatologically acceptable topical vehicle, carrier or diluent therefor.

5,776,473

RAZOR COMFORT STRIP WITH ALPHA-HYDROXY ACID ADDITIVE

Nicholas Perricone, Guilford; William Vreeland, Shelton, and Fred Wexler, Madison, all of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 17, 1997, Ser. No. 785,705

Int. Cl.⁶ A61K 2/100

U.S. Cl. 424—401

13 Claims

1. A method of applying at least one material selected from the group consisting of alpha-hydroxy acids, derivatives of alpha-hydroxy acids, and mixtures thereof to the skin via a comfort strip on a razor.

5,776,474

SKIN AND HAIR CARE PRODUCT

Maija Laurila, Espoo, and Pekka Vapaaoksa, Tampere, both of Finland, assignors to Carefibres OY, Espoo, Finland

PCT No. PCT/FI95/00314, § 371 Date Jan. 22, 1997, § 102(e) Date Jan. 22, 1997, PCT Pub. No. WO95/33438, PCT Pub. Date Dec. 14, 1995

PCT Filed Jun. 2, 1995, Ser. No. 750,002

Claims priority, application Finland, Jun. 2, 1995, 942609

Int. Cl.⁶ A61K 6/00

U.S. Cl. 424—401

12 Claims

1. A skin and hair care product made of water-insoluble cellulose-based fiber that contains polysilicic acid, an active agent

acting cosmetically on hairs or skin and containing amino groups absorbed in the water-insoluble cellulose-based fiber, said water-insoluble cellulose-based fiber being of the type containing polysilicic acid already prior to absorbing the active agent, and said active agent being bound to said cellulose-based fiber through the polysilicic acid contained in the fiber.

5,776,475

CLEAR COSMETIC STICK COMPOSITION CONTAINING SUCROSE ESTERS AND METHOD OF USE

LaTonya Kilpatrick-Liverman, Princeton, and Lynne Ann Miller, Sayreville, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Feb. 13, 1997, Ser. No. 800,914

Int. Cl.⁶ A61K 7/32

U.S. Cl. 424—401

30 Claims

1. A base, for a clear cosmetic composition, comprising water in the amount of 9-25% and at least one alcohol, and gelled with at least one soap gelling agent, the composition also containing at least one sucrose ester in the amount of 0.2-2% as a clarifying agent, in an amount sufficient to provide a clear stick composition.

5,776,476

COSMETIC COMPOSITIONS CONTAINING HYDROPHOBIC STARCH DERIVATIVES

Robert L. Billmers, Stockton; Daniel B. Solarek, Belle Mead; Maria Tolchinsky, Piscataway; Donna L. Ronco, Oxford, and Joseph Pasapane, Morristown, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

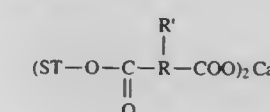
Filed Feb. 28, 1997, Ser. No. 808,730

Int. Cl.⁶ A61K 7/48

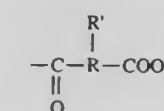
U.S. Cl. 424—401

12 Claims

1. A cosmetic skin care composition having hydrophobic properties and good heat stability and comprising a cosmetic vehicle and from about 0.1 to 99% by weight of a calcium salt derivative having the following formula:



wherein ST is starch, R is dimethylene, R' is an alkenyl group having 10 to 16 carbon atoms and wherein from about 3 to 25% by weight of the



group is bound to the starch, based on the weight of dry starch.

5,776,477

ORGANIC INSECT REPELLENT

Kathleen A. Ryder, 208 Chestnut St., Middleburg, Va. 22117

Filed Jul. 8, 1996, Ser. No. 676,419

Int. Cl.⁶ A01N 25/04

U.S. Cl. 424—405

2 Claims

1. An organic composition for the treatment of animals against pestilential beings, said composition comprising:

a first amount of pennyroyal, tansy, acetic acid and isopropyl alcohol, said pennyroyal and tansy is derived by mixing pennyroyal herb and tansy herb with said acetic acid and said

isopropyl alcohol in a first tincture, a ratio of pennyroyal herb to tansy herb is between 4:1 and 2:1 and said isopropyl alcohol is between 40% and 80% by weight of said acetic acid, wherein said isopropyl alcohol serves to enhance beneficial properties of said pennyroyal herb and said tansy herb; a second amount of calendula, acetic acid and isopropyl alcohol, said calendula derived by mixing calendula herbs with isopropyl alcohol in a second tincture, said isopropyl alcohol is between 40% and 80% by weight of said acetic acid, said isopropyl alcohol serving to enhance beneficial properties of said calendula, wherein a ratio of calendula herb to tansy herb is about 2:1;

a third amount of citronella oil which is between about 2% and 7% by weight of said composition, and
a fourth amount of pyrethrin which is between about 1% and 6% by weight of said composition.

5,776,478

INSECT REPELLENT

Pritam Sain Jain, 1750 Boyd Street, Regina, Saskatchewan, Canada, S4V 1S6

Filed Nov. 27, 1996, Ser. No. 757,324

Int. Cl.⁶ A01N 25/04

U.S. Cl. 424—405

2 Claims

1. A method of repelling insects comprising:
providing a mixture consisting essentially of:

- 5–60% active ingredient, selected from the group consisting of: lemon oil; cedarwood oil; and mixtures thereof;
 - 25–80% isopropyl alcohol;
 - 5–60% lemon juice or lime juice
 - 4–25% water; and
 - less than 1% anti-oxidizing agent when the mixture does not contain lemon juice or lime juice; and
- repelling insects by applying the mixture to areas desired for protection.

5,776,479

STABLE, GERMICIDAL FILM-FORMING TEAT-DIP SOLUTIONS

Ferenc M. Pallos, Walnut Creek, Calif.; Thomas C. Hemling, Lake Winnebago, Mo.; Dominic W. S. Wong, El Cerrito, and Attila E. Pavlath, Walnut Creek, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C., and West Agro, Inc., Kansas City, Mo.

Filed Dec. 20, 1996, Ser. No. 770,965

Int. Cl.⁶ A01N 25/32

U.S. Cl. 424—406

12 Claims

1. A stable, germicidal film-forming composition consisting essentially of (a) a film-forming agent selected from the group consisting of hydroxyethylcellulose, methyl hydroxypropylcellulose, and ethylhydroxyethylcellulose, (b) an effective germicidal amount of a germicidal agent consisting of a nonionic surfactant-complexed iodine, and (c) water, said composition having a pH in the range of about 3 to 9 and a viscosity of about 50 to 1000 cP measured using spindle #2 at 60 rpm, and wherein said film-forming agent is about 0.25 to 10% by weight of the composition, said iodine is present at a level of about 0.05 to 1.25% average available iodine on a nominal basis and is provided by a hydrogen or alkali metal iodide-iodine mixture, said weight ratio of iodine:iodide is about 1:0.1 to 1:0.8, and said weight ratio of nonionic surfactant to iodine is about 2:1 to 20:1.

5,776,480
COSMETIC OR DERMATOLOGICAL COMPOSITION
CONTAINING A MIXTURE OF CERAMIDES FOR
MOISTURIZING THE SKIN

Didier Candau, Bievres; Carine Khayat, La Varenne; Jean-François Nadaud, Clamart, and Dominique Agnus-Ancilotti, La Varenne St. Hilaire, all of France, assignors to L'Oreal, France

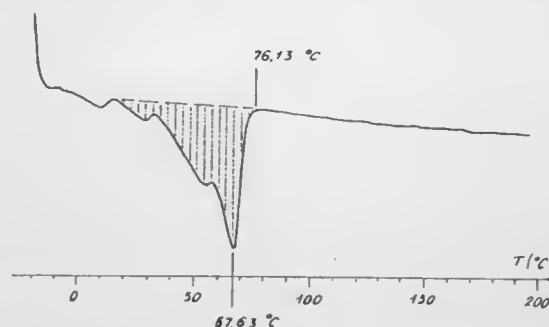
Filed Dec. 14, 1995, Ser. No. 572,673

Claims priority, application France, Dec. 14, 1994, 94 15074

Int. Cl.⁶ A61K 7/48

U.S. Cl. 424—401

22 Claims



1. A cosmetic or dermatological composition comprising a mixture of at least one class-III ceramide in the form of a single stereoisomer and at least one class-V ceramide, wherein any ceramides present in said mixture, other than class-III ceramides, may be present in the form of a mixture of stereoisomers.

5,776,481

CONTROLLED-RELEASE DEVICE AND PREPARATION PROCESS

Christian Karst, Villeneuve Loubet; Thierry Gozlan, Cannes; Guy Derrieu, Cagnes-Sur-Mer, and Luc Castelli, Saint Laurent Du Var, all of France, assignors to Laboratoires Virbac, Carros, France

Filed Jan. 19, 1996, Ser. No. 588,921

Claims priority, application France, Jan. 23, 1995, 95 00712

Int. Cl.⁶ A61D 7/00

U.S. Cl. 424—411

12 Claims



1. A device in tubular form, having the same configuration when not in use and in use environment, made of a material comprising at least one flexible polymeric matrix enclosing at least one active substance capable of being released from said matrix,

wherein said at least one active substance is at least released from the part of said matrix directly in contact with an animal, said matrix not being impermeable to the active substance, wherein the length of said device is regulatable, and is capable in use of releasing a daily dose of active substance related to the weight of the animal, wherein the thickness of the polymeric matrix comprising the active substance is between 0.1 mm and 10 mm, in order to obtain linear removal of the active substance, and

wherein said device is capable of being combined with a flexible or rigid support for animals, and wherein said device has a shape selected from the groups illustrated in FIGS. 1–17 of the specification, and tubular shapes substantially equivalent thereto.

5,776,482

TETRAHYDROQUINOLINE ANALOGUES FOR USE IN GLAUCOMA TREATMENT

Ronald D. Schoenwald, and Charles F. Barfknecht, both of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Filed Mar. 29, 1996, Ser. No. 625,721

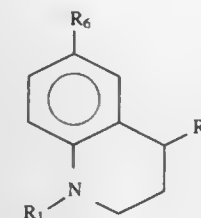
Int. Cl.⁶ A61F 2/00; C07D 215/00; 215/36; 215/16

U.S. Cl. 424—427

9 Claims

1. A method of reducing intraocular eye pressure, said method comprising:

topically applying to an affected eye a therapeutically effective intraocular eye pressure reducing amount of a 1,2,3,4-tetrahydroquinoline compound of the following formula:



wherein R₁ is ethyl, R₄ is hydrogen or hydroxy, and R₆ is hydrogen, hydroxy or fluoro or a hydroxy C₁ to C₆ alkyl.

5,776,483

FEED ADDITIVE FOR RUMINANTS

Takao Morikawa, Tougane; Seiji Sasaoka, Ichihara; Shigeru Saitoh, Ichihara; Masato Sugawara, Ichihara, and Kaoru Mutoh, Sodegaura, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

PCT No. PCT/JP96/01627, § 371 Date Feb. 4, 1997, § 102(e)

Date Feb. 4, 1997, PCT Pub. No. WO97/00019, PCT Pub.

Date Jan. 3, 1997

PCT Filed Jun. 14, 1996, Ser. No. 793,128

Claims priority, application Japan, Jun. 15, 1995, 7-172783; Nov. 8, 1995, 7-314790

Int. Cl.⁶ A23K 1/00

U.S. Cl. 424—438

10 Claims

1. A rumen bypass formulation which comprises (A) 50 to 90% by weight of a biologically active substance; dispersed in (B) 10 to 50% by weight of a protective material, wherein the protective material comprises (1) a compound selected from the group consisting of components (a), (b), (c), and a mixture thereof, and (2) a compound which is a salt of an aliphatic monocarboxylic acid containing 12 to 24 carbon atoms, where (a) is an aliphatic monocarboxylic acid having 8 to 24 carbon atoms, (b) is an aliphatic alcohol having one hydroxy group and having 8 to 24 carbon atoms, and (c) is an aliphatic carboxylic acid having 2 to 3 carboxyl groups and 2 to 8 carbon atoms, and wherein compound (1) and compound (2) are in a ratio from 20:70 to 10:90.

5,776,484

ANALGESIC ANTI-INFLAMMATORY ADHESIVE PLASTER

Yasuhiko Sasaki, Soka; Yukihiko Matsumura; Susumu Imai, both of Saitama-ken; Tetsuhiro Tooyama, Saitama-ken; Masamichi Orihara, Saitama-ken; Yoshio Sugimoto, Kazo; Masaru Yamazaki, Showamachi; Mitsunari Hoshino; Masumasa Uchikawa, both of Soka, and Hiroshi Arai, Gunma-ken, all of Japan, assignors to Tokubon Corporation, Tokyo, Japan

Filed Oct. 24, 1995, Ser. No. 547,336

Claims priority, application Japan, Oct. 26, 1994, 6-284573

Int. Cl.⁶ A61K 9/70

U.S. Cl. 424—448

2 Claims

1. A non-steroidal, analgesic anti-inflammatory adhesive plaster prepared by coating one surface of a support with an adhesive composition comprising:

- a) 10–50 wt % of a styrene-isoprene-styrene block copolymer or said block copolymer modified by having methyl methacrylate graft-polymerized onto the copolymer,
- b) 10–60 wt % of a tackifier, and
- c) 1–10 wt % of mentha oil;

said adhesive composition containing 50–1000 µm of (s)-(+)-2-(2-fluoro-4-biphenyl) propionic acid per cm² of the adhesive composition.

5,776,485

ENHANCED SKIN PENETRATION SYSTEM FOR IMPROVED TOPICAL DELIVERY OF DRUGS

George Endel Deckner, Trumbull, and Brian Scott Lombardo, Ansonia, both of Conn., assignors to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 390,902, Feb. 16, 1995, abandoned, which is a continuation of Ser. No. 228,167, Apr. 15, 1994, abandoned, which is a continuation of Ser. No. 111,032, Aug. 24, 1993, abandoned, which is a continuation of Ser. No. 957,752, Oct. 2, 1992, abandoned, which is a continuation of Ser. No. 778,424, Oct. 16, 1991, abandoned. This application

Jun. 6, 1995, Ser. No. 469,701

Int. Cl.⁶ A61K 9/07; 31/78; 47/44

U.S. Cl. 424—449

15 Claims

1. A topical pharmaceutical composition having enhanced penetration through the skin, comprising:

- (a) an aqueous carrier comprising from about 53% to about 91.5% water;
- (b) a safe and effective amount of a sunless tanning agent; and
- (c) from about 0.05% to about 5% of a non-ionic polyacrylamide having a molecular weight of from about 1,000,000 to about 30,000,000, the polyacrylamide being predispersed in a water-immiscible oil containing a surfactant having an HLB of from about 7 to about 10,

wherein the composition is in gel emulsion form and has a pH below about 5.

5,776,486

METHODS AND APPARATUS FOR MAKING LIPOSOMES CONTAINING HYDROPHOBIC DRUGS

Trevor P. Castor, Arlington, and Ling Chu, Chelmsford, both of Mass., assignors to Aphios Corporation, Woburn, Mass.

Continuation-in-part of Ser. No. 342,443, Nov. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 69,134, May 28, 1993, Pat. No. 5,554,382. This application Apr. 12, 1996, Ser. No. 631,808

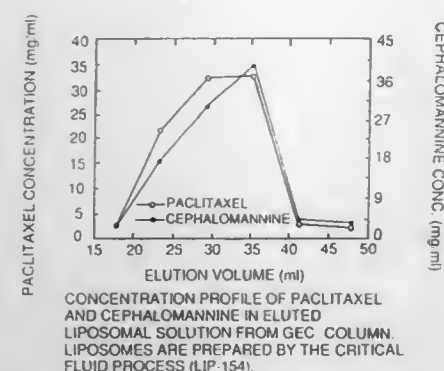
Int. Cl.⁶ A61K 9/127

U.S. Cl. 424—450

31 Claims

1. A method of making liposomes comprising:

- a) forming a solution or mixture of a phospholipid, one or more hydrophobic drugs and an aqueous phase in a fluid selected from the group consisting of critical, supercritical and near critical fluids; and,



b) reducing the pressure of the solution or mixture to separate the selected fluid from the phospholipid and the aqueous phase, said phospholipid and aqueous phase forming liposomes containing said drug.

5,776,487

LIPOSOME REAGENTS FOR IMMUNOASSAYS

Nancy Maxfield Wilson, Bloomington, Minn., and Catherine Larue, Vaucresson, France, assignors to Pasteur Sanofi Diagnostics, Marnes la Coquette, France

Filed Apr. 19, 1996, Ser. No. 634,969

Int. Cl.⁶ A61K 9/127

U.S. Cl. 424—450

43 Claims

1. A liposome reagent for use in an assay to detect analyte in a test sample containing an analyte comprising:

- a) a liposome;
- a) a ligand chosen to bind specifically to the analyte and associated with the liposome membrane; and
- a) a haptenated component associated with the liposome membrane, where the hapten is chosen to bind specifically to a receptor on a solid phase; and where the ligand and haptenated component remain associated with a portion of the liposome membrane to maintain a linkage between the solid phase and ligand.

5,776,488

LIPOSOME PREPARATION

Yoshiyuki Mori; Kazuyoshi Sagara; Hiroaki Mizuta, all of Chikugo-gun, and Akihiro Fujii, Iruma, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP95/00383, § 371 Date Sep. 10, 1996, § 102(e) Date Sep. 10, 1996, PCT Pub. No. WO95/24201, PCT Pub. Date Sep. 14, 1995

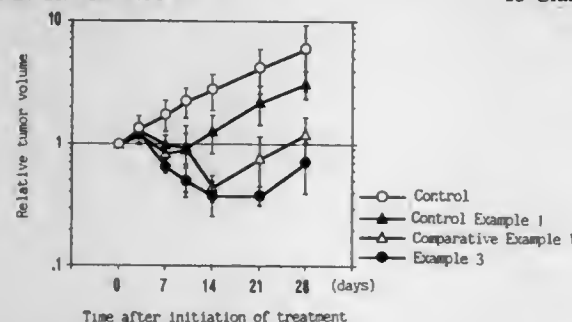
PCT Filed Mar. 8, 1995, Ser. No. 716,201

Claims priority, application Japan, Mar. 11, 1994, 6-041065

Int. Cl.⁶ A61K 9/127; 9/133

U.S. Cl. 424—450

13 Claims



1. A liposome preparation which comprises
(a) a liposome having an average particle size 50 to 200 nm and composed of a phospholipid selected from the group consisting of hydrogenated purified egg yolk phosphatidylcholine,

hydrogenated purified soy bean phosphatidylcholine, dipalmitoylphosphatidylcholine and distearoylphosphatidylcholine, said liposome having encapsulated therein a water-soluble 2'-deoxycytidine compound,

- (b) 0.02–0.4 moles of stearylamine per mole of the phospholipid which positively charges the surface of the lipid membrane, and
- (c) 0.6–1 mole of a sterol per mole of the phospholipid as a stabilizer.

5,776,489

CONTROLLED RELEASE CARBONIC ANHYDRASE INHIBITOR CONTAINING PHARMACEUTICAL COMPOSITIONS FROM SPHERICAL GRANULES IN CAPSULE ORAL DOSAGE UNIT FORM

Wendy Ann Preston, Suffern; Daniel Joseph Doyon, Florida, both of N.Y., and Stephen Patrick Simmons, Overland Park, Kans., assignors to American Cyanamid Company, Madison, N.J.

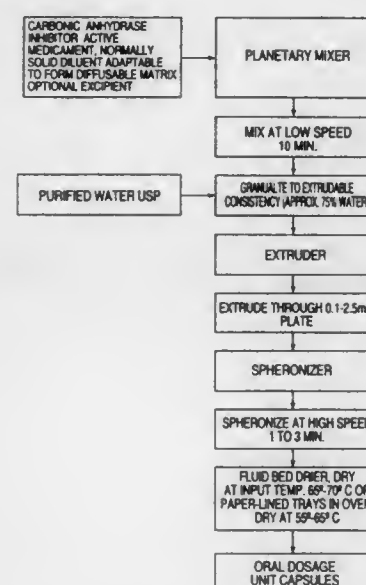
Continuation of Ser. No. 410,709, Sep. 21, 1989, abandoned.

This application Feb. 20, 1992, Ser. No. 840,618

Int. Cl.⁶ A61K 9/58; 9/62

U.S. Cl. 424—451

27 Claims



1. A controlled release pharmaceutical composition in oral dosage unit form comprising a hard or a soft shell capsule containing a filling comprising

- (A) a therapeutically effective number of active spherical granules comprising
 - (i) an effective amount of a carbonic anhydrase inhibitor active medicament selected from the group consisting of acetazolamide and methazolamide;
 - (ii) a pharmaceutically acceptable normally solid diluent adapted to form a diffusible matrix for said at least one carbonic anhydrase inhibitor active medicament (A)(i); and, optionally,
 - (iii) at least one pharmaceutically acceptable excipient which may be the same as or different than (A)(ii).

5,776,490

COMPLEX PROTEIN-WALLED MICROCAPSULES CONTAINING LIPID-WALLED MICROCAPSULES AND METHOD FOR PRODUCING SAME

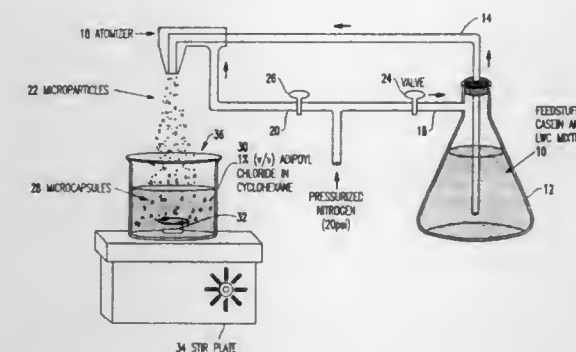
Fu-Lin E. Chu, Williamsburg, Va., and Sureyya Ozkizilcik, Baltimore, Md., assignors to The Center for Innovative Technology, Herndon, Va.

Filed Jan. 26, 1996, Ser. No. 590,701

Int. Cl.⁶ A61K 9/50

U.S. Cl. 424—451

3 Claims



1. A method for forming complex protein-walled microcapsules, comprising the steps of:

- combining a lipid-walled microcapsule incorporating a first constituent with a second constituent that is not incorporated in said lipid-walled microcapsule, and a protein to form a mixture;

forming microparticles from said mixture which include said lipid-walled microcapsule and said second constituent incorporated in said protein, said forming step including the step of atomizing said mixture; and

cross linking said protein in said microparticles to form a protein microcapsule which incorporates said lipid-walled microcapsule and said second constituent.

5,776,491

RAPIDLY DISSOLVING DOSAGE FORM

Lloyd V. Allen, Jr., Edmond; Bingnan Wang, Oklahoma City, both of Okla., and John Desmond Davies, Grosse Pointe Farms, Mich., assignors to The Board of Regents of the University of Oklahoma, Norman, Okla., and Janssen Pharmaceutica, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 191,237, Feb. 3, 1994. This application Jun. 7, 1995, Ser. No. 487,268

Int. Cl.⁶ A61K 9/20; 9/28; 9/46

U.S. Cl. 424—465

31 Claims

1. A rapidly dissolving solid pharmaceutical dosage form, comprising:

- a particulate support matrix comprising an effective amount of a first polypeptide component having a predetermined net charge, an effective amount of a second polypeptide component having a predetermined net charge of the same sign as the net charge of the first polypeptide component, and a bulking agent, and wherein the first polypeptide component and the second polypeptide component together comprise about 2% to 20% by weight of the particulate support matrix and wherein the bulking agent comprises about 60% to 96% by weight of the particulate support matrix, and wherein the second polypeptide component has a solubility in aqueous solution greater than that of the first polypeptide component; and

a pharmaceutical ingredient dispersed throughout the particulate support matrix; and

wherein when the dosage form is introduced into an aqueous environment the support matrix is substantially completely disintegrable within less than about 20 seconds.

5,776,492

RAPIDLY DISINTEGRATING MEDICINAL FORM OF TRAMADOL OR A TRAMADOL SALT

Juergen Betzing, and Johannes Heinrich Antonius Bartholomaeus, both of Aachen, Germany, assignors to Gruenthal GmbH, Aachen, Germany

Filed Aug. 19, 1996, Ser. No. 699,623

Claims priority, application Germany, Aug. 19, 1995, 195 30 575.2

Int. Cl.⁶ A61K 9/20

U.S. Cl. 424—465

6 Claims

1. A binder-free tablet containing an effective analgesic amount of tramadol or a tramadol salt for oral administration, said tablet comprising microcrystalline cellulose and tramadol or a pharmaceutically acceptable tramadol salt in a weight ratio of at least 2:1.

5,776,493

ORAL OSMOTIC DEVICE FOR DELIVERY OF NYSTATIN WITH HYDROGEL DRIVING MEMBER

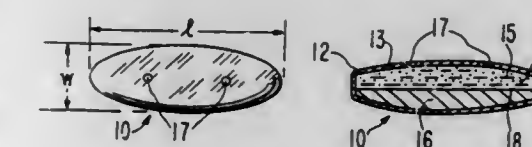
Brian L. Barclay; Jerry D. Childers, both of Sunnyvale; Jeri Wright, Dublin, all of Calif.; Virgil A. Place, Kawaihae, Hi., and Patrick S.-L. Wong, Palo Alto, Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 781,234, Jan. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 380,229, Jul. 14, 1989, Pat. No. 5,021,053. This application Dec. 22, 1993, Ser. No. 171,875

Int. Cl.⁶ A61K 9/24

U.S. Cl. 424—468

14 Claims



1. An osmotic device for retention in the oral cavity, the device consisting essentially of:

- (a) a compartment containing a hydrophilic polymer in juxtaposition with a nystatin formulation for delivering 0.05 ng to 500 mg nystatin to the oral cavity at a rate that is therapeutically effective in the treatment of oral candidiasis for a period of time of 0.5 to 4 hours;
- (b) the compartment being formed by a wall sized and shaped for retention in the oral cavity for a period of 0.5 hours to 4 hours, the wall surrounding and forming the compartment for containing the hydrophilic polymer and the formulation being formed at least in part of a semipermeable material;
- (c) a passageway extending through the wall, the passageway communicating the formulation with the exterior of the device; and
- (d) a flavoring agent contained within the wall.

5,776,494

PHARMACEUTICALS COMPOSITIONS CONTAINING GELLANTS IN THE FORM OF ALKYL AMIDES OF DI- AND TRI-CARBOXYLIC ACIDS

Gerald John Guskey, Montgomery; Raymond Joseph Lo, and David Frederick Swalle, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 20, 1996, Ser. No. 771,101

Int. Cl.⁶ A61K 9/10; 47/18

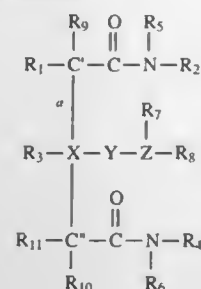
U.S. Cl. 424—484

20 Claims

1. A pharmaceutical composition comprising:

- A.) a safe and effective amount of at least one pharmaceutical active;

B.) a gellant of the formula:



- a) R_1 is nil, hydroxy, hydrogen, aryl, siloxane or saturated or unsaturated, substituted or unsubstituted, straight, branched or cyclic chain C_1 - C_{22} alkyl, C_1 - C_{22} alkenyl, C_1 - C_{22} alkoxy, C_1 - C_{22} alkyl esters, C_1 - C_{22} alkyl ethers, or C_1 - C_{22} alkyl substituted aryl;
- b) R_2 , R_4 , R_5 and R_6 are independently or together, hydrogen, hydroxy, aryl, siloxane or saturated or unsaturated, substituted or unsubstituted, straight, branched or cyclic chain C_1 - C_{22} alkyl, C_1 - C_{22} alkenyl, C_1 - C_{22} alkoxy, C_1 - C_{22} alkyl esters, C_1 - C_{22} alkyl ethers, or C_1 - C_{22} alkyl substituted aryl;
- c) R_3 is nil, hydroxy, hydrogen, saturated or unsaturated, substituted or unsubstituted, straight, branched or cyclic chain C_1 - C_4 alkyl, C_1 - C_4 alkenyl, C_1 - C_4 alkoxy, C_1 - C_4 alkyl esters or C_1 - C_4 alkyl ethers;
- d) R_7 and R_8 are independently or together, nil, hydrogen, hydroxy, aryl, siloxane or saturated or unsaturated, substituted or unsubstituted, straight, branched or cyclic chain C_1 - C_{22} alkyl, C_1 - C_{22} alkenyl, C_1 - C_{22} alkoxy, C_1 - C_{22} alkyl esters, C_1 - C_{22} alkyl ethers, or C_1 - C_{22} alkyl substituted aryl;
- e) R_9 is nil or hydrogen;
- f) R_{10} and R_{11} are independently or together, nil, hydrogen, hydroxy, aryl, siloxane or saturated or unsaturated, substituted or unsubstituted, straight, branched or cyclic chain C_1 - C_6 alkyl, C_1 - C_6 alkenyl, C_1 - C_6 alkoxy, C_1 - C_6 alkyl esters, C_1 - C_6 alkyl ethers, or C_1 - C_6 alkyl substituted aryl;
- g) X is nil, nitrogen, aryl or $-(CH_2)_n$ where n is an integer from 1 to 6;
- h) Y is nil, acyl or carbonyl;
- i) Z is nil, hydrogen, hydroxy, aryl, siloxane, nitrogen or saturated or unsaturated, substituted or unsubstituted, straight, branched or cyclic chain C_1 - C_{22} alkyl, C_1 - C_{22} alkenyl, C_1 - C_{22} alkoxy, C_1 - C_{22} alkyl esters, C_1 - C_{22} alkyl ethers, or C_1 - C_{22} alkyl substituted aryl; and
- j) "a" is a double or single bond provided:
- when X is nil, Y , Z , R_3 , R_7 and R_8 are nil, C' is bonded directly to C'' and R_1 is not a hydrogen;
 - when X and Z are not nil and Y is nil, X is directly bonded to Z ;
 - when Z is nil, a hydrogen or a hydroxy, R_7 and R_8 are nil; and
 - when "a" is a double bond, R_3 and R_9 are nil; and
- C.) an anhydrous liquid carrier.

5,776,495

PROCESS FOR THE PRODUCTION OF DRY PHARMACEUTICAL FORMS AND THE THUS OBTAINED PHARMACEUTICAL COMPOSITIONS
Roselyne Duclos, Bonsecours, and Didier Terracol, Verrieres le Buisson, both of France, assignors to Laboratoires Efk, France

Filed Jun. 27, 1996, Ser. No. 670,497
Int. Cl.⁶ A61K 9/66

U.S. Cl. 424—455

20 Claims

1. A process for the production of a solid dispersion of 1 to 20% by weight of a surface active agent, 10 to 60% by weight of at least one therapeutic agent selected from the group consisting of progesterone and a mixture of progesterone and estradiol or an ester or ether thereof in a hydrophilic carrier having enhanced solubility in

an aqueous media comprising dissolving the therapeutic agent in a volatile organic solvent containing a very hydrophilic polymer and without strong heat or vacuum evaporating the solvent to dryness to form a co-precipitate of therapeutic agent and hydrophilic polymer.

5,776,496

ULTRASMALL POROUS PARTICLES FOR ENHANCING ULTRASOUND BACK SCATTER

Michael R. Violante, Pittsford, and Kevin J. Parker, Rochester, both of N.Y., assignors to University of Rochester, Rochester, N.Y.

Continuation of Ser. No. 106,966, Aug. 16, 1993, abandoned, which is a continuation of Ser. No. 725,983, Jul. 5, 1991, abandoned. This application Feb. 6, 1995, Ser. No. 384,193
Int. Cl.⁶ A61K 9/14

U.S. Cl. 424—489

26 Claims

1. A composition suitable for use as an ultrasound contrast agent comprising porous particles of a matrix material comprising a plurality of pores capable of trapping gas for an extended period when the particles are placed in a vehicle, the particles being insoluble in the vehicle, the particle diameter being uniform and the contrast agent being able to enhance ultrasound back scatter by a detectable amount when administered in the vehicle.

5,776,497

PRODUCT BASED ON INORGANIC OR ORGANIC PARTICLES BEARING AN INDOLINE-BASED PRODUCT
Alain Lagrange, Chatou; Hervé Andrean, Paris, and Alex Junino, Livry-Gargan, all of France, assignors to L'Oreal, Paris, France

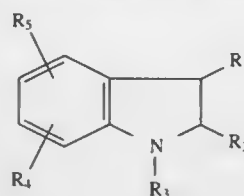
Division of Ser. No. 117,206, Dec. 29, 1993, Pat. No. 5,496,543.
This application Jun. 7, 1995, Ser. No. 478,138

Claims priority, application France, Jan. 16, 1992, 92 00417
Int. Cl.⁶ A61K 9/14; 7/48

U.S. Cl. 424—489

21 Claims

1. Process for preparing a product in powder form, comprising mixing in air at a temperature between room temperature and 100° C. inorganic or organic particles of particle size of less than 200 microns, and an indoline compound of formula (I)



(I)

in which:

- R_1 and R_3 represent, independently of one another, a hydrogen atom or a C_1 - C_4 alkyl group;
- R_2 represents a hydrogen atom, a C_1 - C_4 alkyl group, a carboxyl group, a C_1 - C_4 alkoxy carbonyl group, or an n -alkylamino radical;
- R_4 denotes a hydrogen atom, a C_1 - C_4 alkyl group, a hydroxyl group, a C_1 - C_4 alkoxy group, an amino group, a C_1 - C_{10} alkylamino radical or a halogen atom;
- R_5 denotes a hydrogen atom, a hydroxyl group, a C_1 - C_4 alkoxy group or an amino group;
- at least one of the radicals R_4 or R_5 denoting a hydroxyl, alkoxy or amino group; with the proviso that when R_5 denotes an amino group, R_4 cannot denote an alkylamino radical; or
- R_4 and R_5 attached to the carbon atoms joined together form a C_1 - C_2 alkylenedioxy ring, at positions 5 and 6;
- as well as the cosmetically acceptable salts, or the indoline compound of formula (I) and at least one indole selected from the group consisting of monohydroxyindoles, dihydroxyindoles and aminoindoles, wherein the indoles have the formula;

5,776,499

PROCESS FOR PREPARING A CLODRONATE PREPARATION

Esko Pohjala, Tampere; Heikki Nupponen, Kangasala, and Kari Lehmussaari, Tampere, all of Finland, assignors to Leiras Oy, Turku, Finland

PCT No. PCT/FI94/00509, § 371 Date Aug. 6, 1996, § 102(e) Date Aug. 6, 1996, PCT Pub. No. WO95/13054, PCT Pub. Date May 18, 1995

PCT Filed Nov. 11, 1994, Ser. No. 646,359

Claims priority, application France, Nov. 11, 1993, 93509
Int. Cl.⁶ A01K 9/14

U.S. Cl. 424—489

18 Claims

1. A process for preparing a clodronate preparation comprising the following steps:
clodronate is crystallized as disodium clodronate tetrahydrate from an aqueous solution of disodium clodronate,
the disodium clodronate tetrahydrate is dry granulated by compressing in such a way that the crystal structure of the disodium clodronate tetrahydrate is preserved and by crumbling and screening the mass to granules of a suitable size.

5,776,500

Patent Not Issued For This Number

5,776,501

COATING BASE FOR SOLID ENTERIC PHARMACEUTICAL PREPARATIONS

Hiroyasu Kokubo, and Takashi Tanaka, both of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1995, Ser. No. 554,834

Claims priority, application Japan, Nov. 7, 1994, 6-272397

Int. Cl.⁶ A61K 9/32; C08B 11/00

U.S. Cl. 424—494

2 Claims

1. A coating base for coating a solid enteric pharmaceutical preparation prepared by substituting at least one member selected from the group consisting of methyl cellulose, hydroxypropyl cellulose, hydroxypropylmethyl cellulose, and hydroxyethyl cellulose, with 0.25 to 0.5 acetyl group and 0.35 to 0.6 maleyl group per glucose ring of the cellulose, and having a dissolution pH ranging from 3 to 4.

5,776,502

METHODS OF TRANSCRIPTIONALLY MODULATING GENE EXPRESSION

J. Gordon Foulkes, Huntington Station; Robert Franco, Spencerport; Franz Leichtfried, Bellerose; Christian Pieler, Westbury, and John R. Stephenson, Rockville Centre, all of N.Y., assignors to Oncogene Science, Inc., Uniondale, N.Y.

Division of Ser. No. 306,925, Sep. 15, 1994, which is a continuation of Ser. No. 26,270, Mar. 4, 1993, abandoned, which is a continuation of Ser. No. 382,711, Jul. 18, 1989, abandoned. This application Jun. 2, 1995, Ser. No. 458,691

Int. Cl.⁶ C12N 15/00; A61K 49/00; 33/00; 31/70

U.S. Cl. 424—617

20 Claims

1. A method for transcriptionally modulating the expression of a gene of interest in a multicellular organism which comprises administering to said organism an amount of a molecule effective to modulate transcription of the gene of interest,
wherein said gene of interest is operably linked to a nucleotide sequence regulating transcription of said gene, which nucleotide sequence comprises a promoter and 5' nucleotide regulatory sequences of said gene,
wherein said molecule has a molecular weight of 2,000 daltons or less, does not naturally occur in the organism, and specifically modulates transcription of the gene of interest by:

5,776,498

MAGNESIUM TAURATE AS AN ADJUVANT TO RAPID THROMBOLYTIC THERAPY

Mark F. McCarty, San Diego, Calif., assignor to Nutrition 21, San Diego, Calif.

Filed Nov. 6, 1995, Ser. No. 554,151

Int. Cl.⁶ A61F 2/02; A61K 9/14; 9/20; 9/48

U.S. Cl. 424—489

8 Claims

1. A method of treating thrombotic or embolic stroke in a patient in need thereof, comprising parenterally administering to said patient, in conjunction with an anti-thrombotic agent, an effective therapeutic dose of a compound having the formula $(H_2N-CH_2-CH_2-SO_3^-)_2Mg^{2+}$.

- 1) binding directly to said nucleotide sequence regulating transcription, or
 - 2) by binding directly to RNA produced by transcription from the gene of interest, or
 - 3) by binding directly to a protein regulating transcription of said gene, with the proviso that said molecule binds the protein at a site distinct from the normal ligand binding site if the protein is a receptor, and
- wherein said binding of said molecule results in the transcriptional modulation of the expression of the gene of interest within said organism.

5,776,503

AMINO ACID SOLUTIONS FOR TREATMENT OF PERITONEAL DIALYSIS PATIENTS

Leo Martis, Long Grove, and Michael R. Jones, Hawthorne Woods, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 822,519, Mar. 24, 1997, Pat. No. 5,698,230, which is a continuation of Ser. No. 995,855, Dec. 22, 1992, abandoned. This application Jul. 24, 1997, Ser. No. 899,502

Int. Cl.⁶ A61K 33/14;31/70;31/19;31/195

U.S. Cl. 424—663

7 Claims

1. A peritoneal dialysis solution comprising not more than 1.6% (w/v) of an amino acid mixture having the following composition:

Amino Acid	Conc. (mg)
Leucine	74-112
Valine	100-151
Threonine	47-71
Isoleucine	61-92
Lysine	55-83
Histidine	52-78
Methionine	32-48
Phenylalanine	42-62
Tryptophan	20-30
Alanine	68-103
Proline	43-65
Arginine	60-113
Glycine	36-55
Serine	48-72
Tyrosine	20-35
Aspartate	0-83
Glutamate	0-83

per 100 ml of solution.

5,776,504

MAGNESIUM TAURATE FOR PREVENTION AND TREATMENT OF PRE-ECLAMPSIA/ECLAMPSIA

Mark F. McCarty, San Diego, Calif., assignor to Nutrition 21, San Diego, Calif.

Continuation-in-part of Ser. No. 423,891, Apr. 18, 1995, Pat. No. 5,582,839. This application Nov. 6, 1995, Ser. No. 554,153

Int. Cl.⁶ A61K 9/14;9/20;9/48

U.S. Cl. 424—682

12 Claims

1. A method of treating pre-eclampsia in a pregnant woman in need thereof, comprising the step of parenterally administering to said pregnant woman an effective therapeutic dose of a compound having the formula $(H_2N-CH_2-CH_2-SO_3^-)_2Mg^{2+}$.

5,776,505
PHARMACEUTICAL COMBINATION PREPARATION COMPRISING KETOPROFEN

Joachim Maasz, Convent Station, N.J.; Ingrid Hürner, Leverkusen, Germany; Peter Kurka, Langenfeld, Germany, and Ralph Lange, Wülfrath, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 30, 1996, Ser. No. 708,024

Claims priority, application Germany, Sep. 8, 1995, 195 33 162.1

Int. Cl.⁶ A61K 33/10;33/08;31/19

U.S. Cl. 424—686

8 Claims

1. A process for accelerating the absorption of ketoprofen in vivo which comprises combining 1 part by weight of ketoprofen with 1 to 25 parts by weight of an inorganic buffer substance of magnesium hydroxide, magnesium oxide or magnesium carbonate into a buffered administration form and orally administering the so combined ketoprofen and buffer.

5,776,506

WINDSHIELD REPAIR APPARATUS INCLUDING CRACK REPAIR FIXTURE AND METHOD

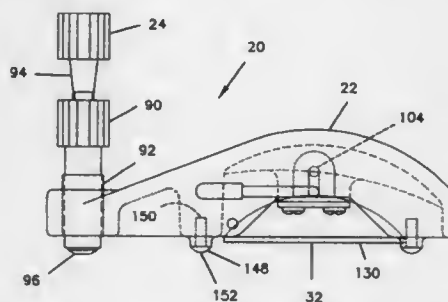
Jonathan P. Thomas, Maple Lake, and Paul E. Syfko, Woodbury, both of Minn., assignors to TCG International Inc., Burnaby, Canada

Filed Oct. 2, 1996, Ser. No. 720,700

Int. Cl.⁶ B32B 35/00

U.S. Cl. 425—12

6 Claims



1. A windshield repair apparatus comprising:

a fixture including a front end, opposed sides extending from the front end, a top surface extending from the opposed sides, and an opposite facing bottom surface extending from the opposed sides;

the front end defining an injector holder; and

a plurality of slideable support legs extending from the bottom surface configured and arranged for sliding engagement with a windshield, wherein three support legs are provided, one of the three support legs being mounted adjacent to the front end of the fixture, and the remaining two support legs being mounted adjacent to a rear of the fixture, wherein each of the three support legs includes an end engageable with the windshield, each end having a convexly rounded shape, each end made of lubricious plastic whereby the fixture is slideable across the windshield.

5,776,507

CENTER MECHANISM FOR TIRE VULCANIZER

Kashiro Ureshino; Hiroyuki Takebayashi; Hisaaki Onishi, and Hisashi Mitamura, all of Takasago, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 16, 1996, Ser. No. 648,757

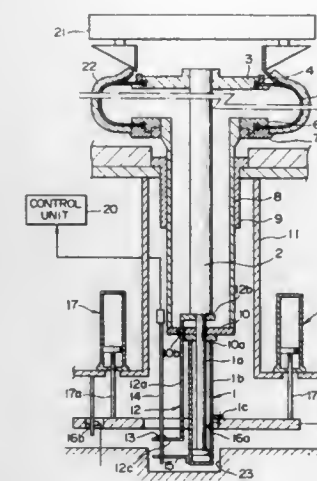
Claims priority, application Japan, Jun. 2, 1995, 7-159800

Int. Cl.⁶ B29C 33/02

U.S. Cl. 425—29

4 Claims

1. A center mechanism for a tire vulcanizer including a bladder, comprising:



an upper clamp mechanism for holding an upper edge portion of said bladder;

a lower clamp mechanism for holding a lower edge portion of said bladder;

a first cylinder for moving said upper clamp mechanism upwardly and downwardly by reciprocation of a cylinder rod thereof, said first cylinder extending into a pit when in a lowermost position thereof;

a stem for supporting said lower clamp mechanism, through which said cylinder rod of said first cylinder extends;

a second cylinder for moving said first cylinder upwardly and downwardly, wherein said second cylinder is arranged in parallel to said first cylinder and is connected to a side face of a cylinder case of said first cylinder via a cylinder support member, and wherein a position at which said cylinder support member is connected to said side face of said cylinder case of said first cylinder is set such that, when said first cylinder moves to its lowermost position, said cylinder support member is positioned above the pit; and

position detection means for detecting a stroke amount of said first cylinder with respect to said second cylinder;

said position detection means including a stroke bracket having a stroke portion extending downwardly in parallel to said first cylinder and outwardly from within said stem and provided so as to advance into said stem together with said cylinder rod of said first cylinder, and detection means for detecting the stroke amount of said first cylinder from said stroke portion of said stroke bracket outside said stem.

5,776,508

APPARATUS FOR LOADING OF GREEN TIRE ON BLADDERLESS TIRE VULCANIZER

Nobuhiko Irie, Nogasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 390,997, Feb. 21, 1995, Pat. No. 5,597,429. This application Oct. 18, 1996, Ser. No. 733,766

Claims priority, application Japan, Feb. 24, 1994, 6-026828

Int. Cl.⁶ B29D 30/06; B29C 31/08

U.S. Cl. 425—36

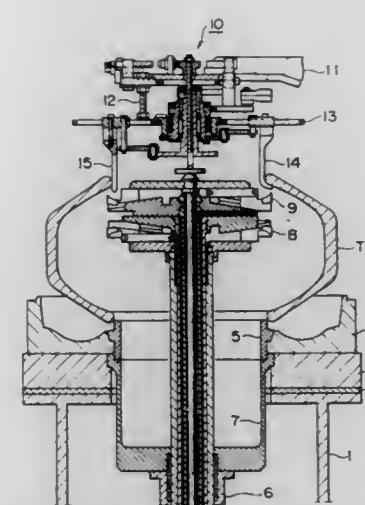
3 Claims

1. A green tire loading apparatus for a bladderless tire vulcanizer, for gripping a green tire using a plurality of expanded grip claws and then loading said green tire onto said bladderless tire vulcanizer, said bladderless vulcanizer having a pair of upper and lower pressing members expandable and shrinkable and movable upwards and downwards for molding inner surfaces of bead portions of a tire, opposite to upper and lower bead rings of upper and lower tire molds, said green tire loading apparatus comprising:

an arm and a disk fixed to the arm for loading of the green tire;

a plurality of blocks being arranged slidably in a radial direction of said disk and at intervals on a circumference of said disk;

first grip claws having a bent portion at a distal end thereof and second grip claws being substantially straight at a distal end



thereof, said first claws and said second claws being alternately fixed to each of said blocks;

a first driving means for moving said first grip claws in the radial direction of said disk via said blocks to which said first grip claws are fixed respectively; and

a second driving means for moving said second grip claws in the radial direction of said disk via said blocks to which said second grip claws are fixed respectively;

wherein when said green tire is gripped by said first and second grip claws said first and second grip claws are in an expanded condition, and when said green tire is loaded onto a vulcanizer, said first driving means moves said first grip claws into a shrunken condition which releases said gripping of said green tire by said first grip claws, and at the same time, said second grip claws guide said green tire into a loaded position on said vulcanizer.

5,776,509

DIE ASSEMBLY DEVICE FOR MOLDING LAMINATED ASSEMBLIES

Tetsuyuki Ota, and Masahiko Hara, both of Kanagawa-ken, Japan, assignors to Kasai Kogyo Co., Ltd, Tokyo-to, Japan

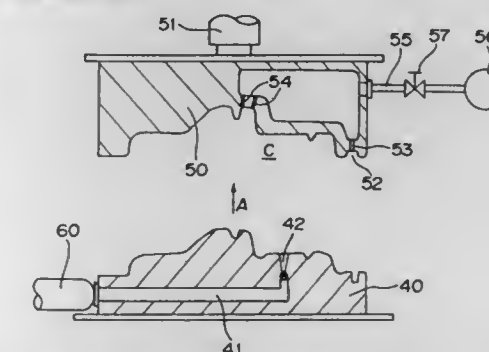
Filed Mar. 27, 1996, Ser. No. 623,900

Claims priority, application Japan, Mar. 29, 1995, 7-072015

Int. Cl.⁶ B29C 45/14

U.S. Cl. 425—111

7 Claims



1. A die assembly device for molding laminated assemblies essentially consisting of a resin core member and a surface skin member covering at least part of said resin core, comprising:

a die assembly for mold press forming, including an upper die and a lower die adapted to be closed upon each other;

means for selectively closing said die assembly; and

an injection molding device for supplying at least semi-molten resin material serving as material for said resin core member over a die surface of said lower die;

wherein said die assembly comprises a peripheral groove extending at least partly along a peripheral part of a cavity defined in a die surface of said upper die; a plurality of

vacuum suction holes arranged in a bottom region of said groove; and vacuum suction means communicating with said vacuum suction holes for producing a negative pressure in said groove.

5,776,510

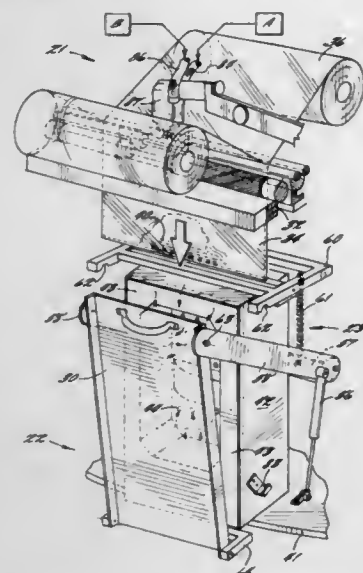
ON-DEMAND PRODUCTION OF FOAM CUSHIONS WITH DEFINED THREE-DIMENSIONAL GEOMETRY
Abraham N. Reichental, Southbury; Alexander Shafir, Watertown; George T. Bertram, Newtown, all of Conn., and James M. Corliss, Spofford, N.H., assignors to Sealed Air Corporation, Saddle Brook, N.J.

Filed Nov. 1, 1996, Ser. No. 743,401

Int. Cl.⁶ B29C 44/36; B65B 9/02

U.S. Cl. 425—112

26 Claims



1. An apparatus for automatically molding defined three-dimensional foam cushions, and comprising:

means for preparing a bag from solidified plastic film material and for enclosing a foamable composition in the plastic bag, said bag preparing means including means for automatically withdrawing the solidified plastic film material from a stock supply, means for automatically manipulating the plastic film material to position portions thereof in parallel, adjacent relation, and means for automatically sealing the plastic film portions together at selected locations to form the plastic bag; means for automatically moving a mold into alignment with the plastic bag and the bag preparing means concurrently with the preparation of the bag by the bag preparing means; means for automatically placing the bag containing the foamable composition into said aligned mold as the foamable composition begins to form foam; and means for maintaining the bag in said mold until the foamable composition has substantially finished forming foam in a shape conforming to said mold.

5,776,511

APPARATUS FOR FORMING PLATE-SHAPED ARTICLES
Teruhisa Miki, and Tsuyoshi Sano, both of Kawano, Japan, assignors to Miki Tokushu Paper Mfg. Co., Ltd., Kawano, Japan

Filed May 8, 1996, Ser. No. 643,414

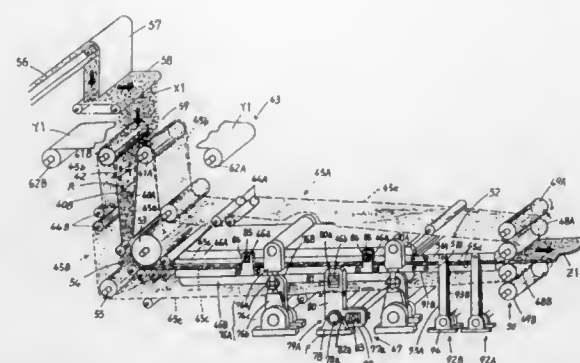
Claims priority, application Japan, Feb. 15, 1996, 8-028265

Int. Cl.⁶ B29C 43/48

U.S. Cl. 425—115

5 Claims

1. An apparatus for continuously forming plate-shaped articles, said apparatus comprising:



a pair of belt support plates having top ends and defining a material introduction chamber therebetween, said belt support plates being positioned such that said material introduction chamber has a width which increases in a direction toward said top ends of said belt support plates to facilitate introduction of a mixture of materials into said introduction chamber; a pair of inlet rolls provided adjacent said top ends of said belt support plates, respectively;

a pair of endless belts;

a pair of horizontal hot plates vertically spaced from each other for pressing the mixture of materials therebetween to form a strip article;

a hot plate moving unit including a first hot plate moving means for reciprocating said hot plates in a horizontal direction parallel to a feed direction of the material between said hot plates, and a second hot plate moving means for moving the hot plates in a vertical direction toward and away from each other,

wherein said first and second hot plate moving means are combined so that said hot plates are moved from an initial position in a vertical direction toward each other while moving said hot plates forward, and then said hot plates are moved in a vertical direction away from each other while moving said hot plates backward to the initial position;

a plurality of delivery rolls for moving said endless belts in a direction to feed said strip article; and

a cooling unit including cooling plate for cooling an outer surface of the strip article, wherein said endless belts are wound around said inlet rolls and said delivery rolls so as to cover said belt support plates, said hot plates and said cooling plates.

5,776,512

APPARATUS FOR ENCAPSULATING ELECTRONIC PACKAGES

Patrick O. Weber, San Jose, Calif., assignor to Hestia Technologies, Inc., Sunnyvale, Calif.

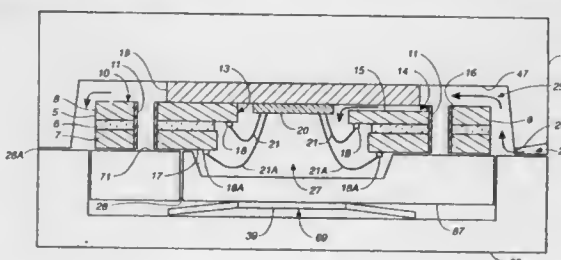
Continuation of Ser. No. 452,130, May 26, 1995, Pat. No.

5,609,889. This application Oct. 16, 1996, Ser. No. 733,147

Int. Cl.⁶ B29C 45/02; 45/14

U.S. Cl. 425—116

6 Claims



1. An apparatus for encapsulating a laminate substrate having a heat sink thereon, comprising:

a first mold platen having a first recessed portion for accommodating the laminate substrate having the heat sink thereon;

a second mold platen for mating with the first mold platen to form a mold cavity, said second mold platen having a second recessed portion with a width greater than the laminate substrate;

a member having a third recessed portion and a planar surface surrounding the third recessed portion for supporting the laminate substrate, the member being movable translationally in the second recessed portion of the second mold platen; and biasing means located in the second recessed portion of the second mold platen contacting a surface of the member opposite of the planar surface for forcing said heat sink against a surface of the first recessed portion of the first mold platen when the substrate is supported on the planar surface and centered over the third recessed portion of the member.

5,776,513

DEVICE FOR CONTROLLING TEMPERATURE OF A NOZZLE

Yutaka Honjo, Nagoya, and Kazumitsu Omori, Handa, both of Japan, assignors to Kabushiki Kaisha Meiki Seisakusho, Aichi-ken, Japan

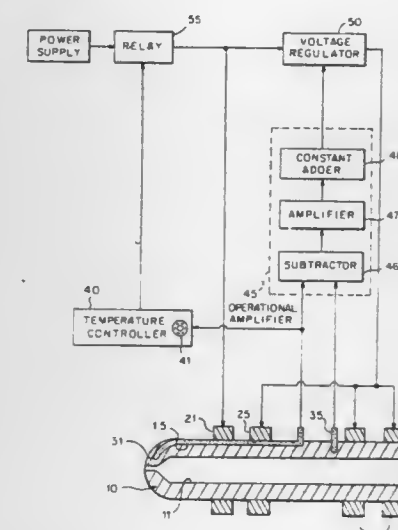
Filed Aug. 9, 1996, Ser. No. 694,543

Claims priority, application Japan, Aug. 10, 1995, 7-227452; May 27, 1996, 8-1561679

Int. Cl.⁶ B29C 45/78

U.S. Cl. 425—143

6 Claims



1. A device for controlling a temperature of an injection molding machine nozzle comprising:

at least one front heater for heating a front portion of the nozzle; a front temperature sensor for detecting temperature at the front portion of the nozzle;

at least one rear heater for heating a rear portion of the nozzle; a rear temperature sensor for detecting temperature at the rear portion of the nozzle;

a relay for conducting and shutting off current to the front and rear heaters with an ON-OFF operation;

a temperature controller including means to compare a predetermined temperature signal to an input temperature signal from one of the front temperature sensor and the rear temperature sensor and then to

output to the relay an output signal for controlling electric power supplied to one of the front heater and the rear heater;

a voltage regulator for regulating voltage applied to one of the front heater and the rear heater; and

an operational amplifier including means for outputting a control signal to the voltage regulator to increase or decrease the voltage due to a difference between temperatures detected by the front temperature sensor and the rear temperature sensor.

5,776,514

ON-DEMAND FAST CYCLE MOLD

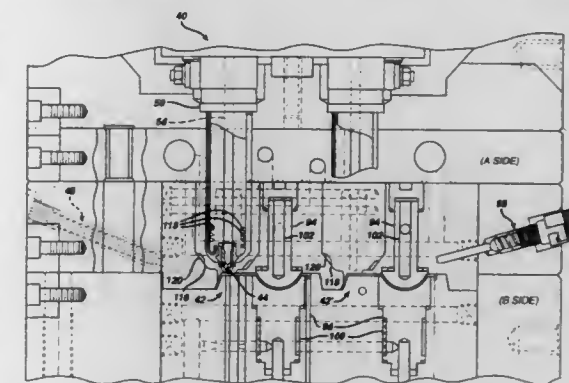
Jong Liang Wu; Scott F. Ansell; Carl Crowe, Jr.; Victor Lust, all of Jacksonville, and Robert Phillips, Orange Park, all of Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Filed Sep. 20, 1996, Ser. No. 717,513

Int. Cl.⁶ B29C 45/78

U.S. Cl. 425—144

16 Claims



1. An on-demand fast cycle mold system for producing injection molded products, comprising at least one mold, wherein the mold includes an upper bowl insert defining an upper surface of a bowl being molded and a lower bowl insert defining a lower surface of a bowl being molded, the upper bowl insert includes a central coolant flow passage extending longitudinally centrally therein for conveying coolant for cooling the upper bowl insert, a hot runner system for supplying molten plastic to at least one injection nozzle, a high thermal conductivity gate insert surrounding said at least one injection nozzle and having an annular coolant flow passage therein positioned around said at least one injection nozzle to provide precise mold temperature control and improved cosmetic appearance of the molded product, and the mold system is both heated and cooled to provide a short response time and optimal temperature control, including a pulse modulated cooling system for cooling the mold system, wherein in operation of the pulse modulated cooling system, during each molding cycle, after the mold is filled with molten plastic the heat input of the molten plastic is matched by a timed pulse of coolant, after which the mold is allowed to dissipate heat gradients and seek equilibrium such that the molten plastic is cooled, an electric heating system for heating the mold system, a plurality of temperature sensors installed inside the mold system, which are used in control loops to control the flow of coolant through the pulse modulated cooling system.

5,776,515

DEVICE FOR PRODUCING DISCRETE ROLLS OF CHILLED SOLUTIONS OR DISPERSIONS

Steven D. Possanza, Penfield; Daniel J. Wooster, Ontario, both of N.Y.; Kenneth A. Nicolai, Fort Collins, Colo., and Paul K. Kelly, Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 16, 1996, Ser. No. 602,189

Int. Cl.⁶ B29C 41/26; 41/36

U.S. Cl. 425—147

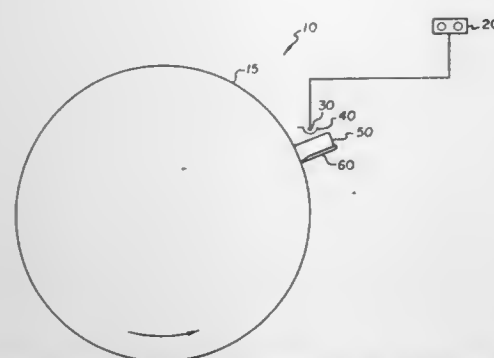
1 Claim

1. A device to produce uniform, discrete rolls of solid material from a continuous feed in the form of emulsion, dispersion or gelatin solution comprising:

(a) a supply pump which receives said emulsion, dispersion or gelatin solution from a supply vessel;

(b) an auxiliary weir hopper having a top edge;

(c) a level sensor located in the bottom of said auxiliary weir hopper designed to measure the volume of said emulsion, dispersion or gelatin solution delivered into said auxiliary weir hopper from a distribution bar;



- (d) means to tip said auxiliary weir hopper 90 degrees relative to its horizontal position to empty a predetermined volume of emulsion, dispersion or gelatin solution from said weir hopper into a puddle hopper;
- (e) said distribution bar located flush with the top edge of the auxiliary weir hopper said distribution bar comprising:
- a tubing having open ends to receive said emulsion, dispersion or gelatin solution through said open ends thereof from said supply pump and having a slot at the top of the bar to allow distribution of said emulsion, dispersion or gelatin solution into said auxiliary weir hopper;
- (f) a rotating drum chiller to receive and cool the emulsion, dispersion or gelatin solution into a solid material delivered onto its surface from said puddle hopper;
- (g) said puddle hopper located at about 290 degrees from the top of said drum chiller measured in the direction of the drum rotation and spaced therefrom and also spaced below said auxiliary weir hopper to receive the emulsion, dispersion or gelatin solution from said auxiliary weir hopper; and
- (h) a doctor blade located between 290–300 degrees from the top of said drum chiller measured in the direction of the drum rotation and in contact therewith and located below said puddle hopper, said doctor blade having an angle of from about 90 to about 115 degrees to the tangent of the drum surface and is designed to remove said solid material from said drum chiller and to form said solid material into a roll.

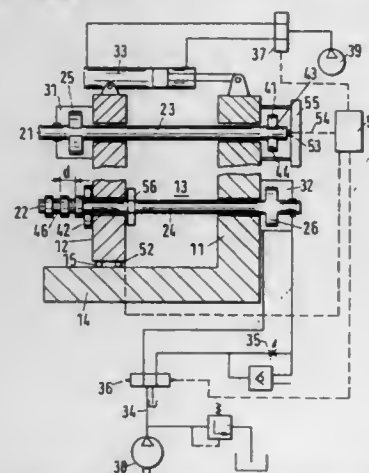
5,776,516

TWO-PLATEN INJECTION MOLDING MACHINE
Manfred Armbrüster, Schwaig, Germany; Robert Scott Betschman, Euclid; Richard D. Kimpel, Middleburg Heights, both of Ohio, and Gerhard Schmidt, Wendelstein, Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

Filed Aug. 12, 1996, Ser. No. 700,675
Int. Cl. B29C 45/80

U.S. Cl. 425—150

10 Claims



1. A two-platen injection molding machine, comprising: a stationary mold carrier plate; a movable mold carrier plate; a tiebar

arrangement including tiebars arranged to connect the stationary mold carrier plate to the movable mold carrier plate so as to define a die space between the mold carrier plates, piston-cylinder means for building up and cancelling clamping force between the carrier plates, and at least one driving cylinder arranged for quick driving movement, the piston-cylinder means including a first piston cylinder unit having a first piston rod and a second piston cylinder unit having a second piston rod, the tiebars being configured as loose clamping pins that form the piston rods of the piston-cylinder units, the movable mold carrier plate and the stationary mold carrier plate being configured to guide the tiebars therethrough; a hydraulic high-pressure closing means provided at a first end of the piston rods for closing the piston rods; quick-locking means external to the mold carrier plates for locking the piston rods; means for detecting position of the movable mold carrier plate in a defined manner and controlling the quick-locking means, the closing means and the driving cylinders, each of the piston-cylinder units having a synchronous cylinder with a length L corresponding to the following formula:

$$L=1 \text{ to } 1.2 \times (1_F + 1_S + 1_K),$$

where 1_F is a length of a path for application of force when closing the mold carrier plates,
 1_S is a required path (tolerance) of the locking means, and
 1_K is a thickness of the piston of the piston-cylinder unit, the quick-locking means being provided on an end of the piston rods; and stop members provided so that the end of the piston rods on which the quick-locking means are provided contacts the stops when the mold plates are moved together.

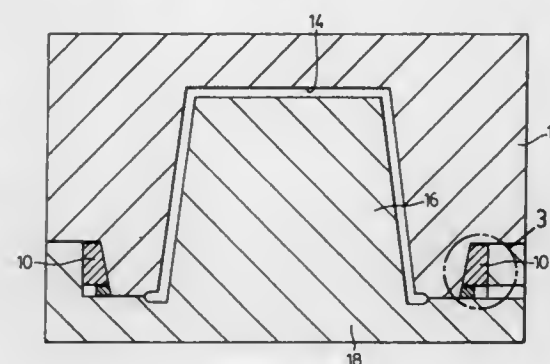
5,776,517

ADJUSTABLE MOLD CLAMPING WEDGES
Vince Ciccone, and Frank Intihar, both of Ontario, Canada, assignors to Top Grade Machining Ltd., Mississauga, Canada

Filed Nov. 12, 1996, Ser. No. 745,727
Int. Cl. B29C 33/20

U.S. Cl. 425—168

17 Claims



1. An adjustable mold clamping wedge comprising:
- a main body portion having an oblique wedging surface adapted to be engaged by a moving portion of a closing mold; said main body portion including at least one slotted mounting hole for mounting the main body portion in a mold for position adjustment of said oblique wedging surface; the main body portion including a second wedging surface located transversely of the oblique wedging surface; a positioning wedge located for sliding engagement against said second wedging surface and having a bearing surface adapted to engage the mold and support the clamping wedge therein; and threaded adjustment means mounted between the main body portion and the positioning wedge for moving the positioning wedge relative to the main body portion, thereby adjusting the position of the oblique wedging surface.

5,776,518

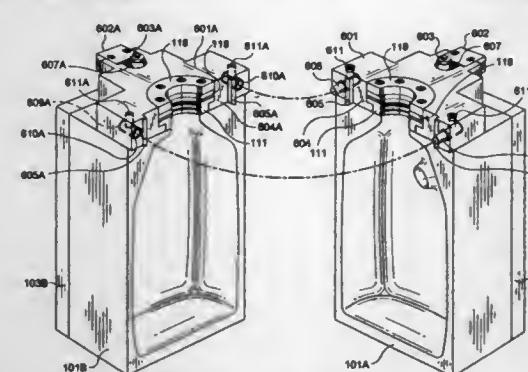
BOTTLE MOLD AND ADJUSTABLE TOP BLOCK ASSEMBLY AND TOP BLOCK ALIGNMENT MEMBERS
Emanuel E. Wohlgenuth, North Bellmore, N.Y., assignor to Ultraseal Technologies Corporation, Worcester, Mass.

Continuation-in-part of Ser. No. 491,552, May 16, 1995, Pat. No. 5,589,204. This application Nov. 13, 1996, Ser. No. 748,431

Int. Cl. B29C 49/76

U.S. Cl. 425—182

23 Claims



21. A top block assembly comprising:
- a top block base adapted for attachment to a main mold and including a front parting face and a rear end portion;
 - a neck finish insert mounted to said top block base and adjoining said front parting face;
 - a heel attached to said top block base, said heel including a forward face and a tail face, said forward face being in opposing relation to said rear end portion of said top block base; and
 - a spacing element mounted to said top block base and positioned between and engaging said forward face of said heel and maintaining a selected spacing between said rear end portion of said top block base and said forward face of said heel.

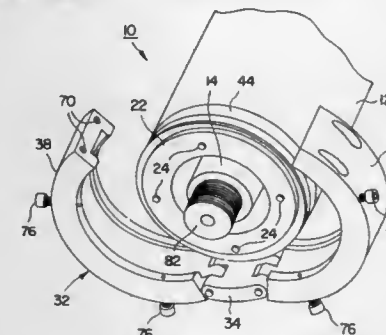
5,776,519

PARISON EXTRUSION HEAD WITH QUICK CHANGE DIE RING CLAMP ASSEMBLY
Charles D. Flammer, Flanders, N.J., assignor to Graham Engineering Corporation, York, Pa.

Filed Jun. 6, 1997, Ser. No. 870,835
Int. Cl. B29C 47/20; 47/22

U.S. Cl. 425—188

14 Claims



1. A parison extrusion head comprising a cylindrical body, a rod located on a longitudinal axis within the body to define an annular flow path between the rod and body, a die ring surrounding the rod, an arm support member on one side of the body, a pair of arcuate clamp arms each having opposed ends, a pair of hinges each joining one end of one clamp arm to the body, said clamp arms surrounding the body and the die ring, a radially inwardly extending first ridge on each clamp arm, each said ridge having an upper support lying in a plane perpendicular to said axis and facing the head, said die ring including a circumferential flange having a lower surface lying in said plane, facing away from the body and

engaging said upper supports, and adjustment structure on said arms engaging said ring operable to move the ring laterally relative to said axis while maintaining engagement between such surface and supports.

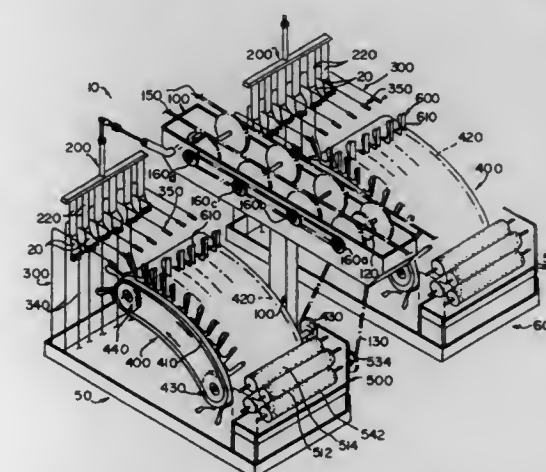
5,776,520

SHELL MOLDED ARTICLE STRIPPING MACHINE
William L. Howe, Canal Fulton, and John M. Alexander, Tallmadge, both of Ohio, assignors to ACC Automation Company, Akron, Ohio

Filed Dec. 12, 1996, Ser. No. 763,936
Int. Cl. B29C 41/14; 41/42

U.S. Cl. 425—274

17 Claims



1. An apparatus for removing an article from a mold having an outer periphery, said article disposed on at least a portion of the outer periphery of said mold, said apparatus comprising:
- a conveyor having a forward end, a rearward end, at least one flexible closed loop drive member extending between said forward end and said rearward end, and at least one grip assembly affixed to said closed loop drive member;
 - said grip assembly comprising at least one pair of outwardly extending grip members adapted for contacting said article on said mold;
 - a drive unit, said drive unit in operable engagement with said closed loop drive member such that upon activation of said apparatus, said drive unit causes said closed loop drive member to revolve between said forward end and said rearward end of said conveyor thereby effecting movement of said grip assembly from said forward end to said rearward end of said conveyor;
 - a transport mechanism for moving said mold, said transport mechanism in operable engagement with said drive unit such that upon activation of said apparatus, said mold is moved across said conveyor and is brought into temporary engagement with said pair of grip members of said grip assembly; and
 - a cam assembly adapted for (i) effecting contact between said pair of grip members and said article on said mold as said mold is brought into temporary engagement with said pair of grip members, and (ii) at least partially removing said article from said mold as said mold is brought out of temporary engagement with said pair of grip members.

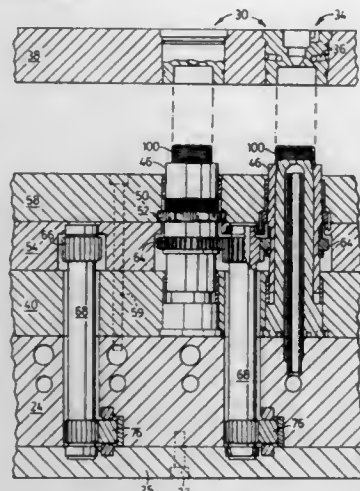
5,776,521
APPARATUS FOR FORMING THREADED MOULDED ARTICLES

John B. Wright, Alliston, and Mark W. Burrows, Georgetown, both of Canada, assignors to Zygo Mould Limited, Etobicoke, Canada

Filed May 14, 1996, Ser. No. 645,625
Int. Cl.⁶ B29C 45/44

U.S. Cl. 425—556

23 Claims



1. An apparatus for forming a threaded moulded article comprising:

- a stationary mould core having an external threaded surface;
- a female mould surrounding a portion of said mould core including said threaded surface in a mould closed condition to define a mould cavity between said mould core and said female mould into which molten plastic is injected to form said moulded article, said female mould being moveable relative to said mould core to a mould open condition where said female mould is spaced from said mould core;
- a rotatable sleeve surrounding a portion of said mould core and engageable with a moulded article formed in said mould cavity; and

drive means to move said female mould relative to said mould core and to rotate and axially displace said sleeve relative to said mould core to unscrew said moulded article from said threaded surface when said female mould is in said mould open condition, said drive means including a lead screw cooperating with a lead screw nut, one of said lead screw and lead screw nut being carried by said sleeve said lead screw and lead screw nut causing said sleeve to displace axially upon rotation thereof.

5,776,522
APPARATUS FOR MAKING AN AIR BAG COVER HAVING A HIDDEN TEAR SEAM

Roger R. Budnick, Clinton Township, Mich., assignor to Larry J. Winget, Leonard, Mich.

Filed Apr. 29, 1996, Ser. No. 639,701
Int. Cl.⁶ B29C 45/17

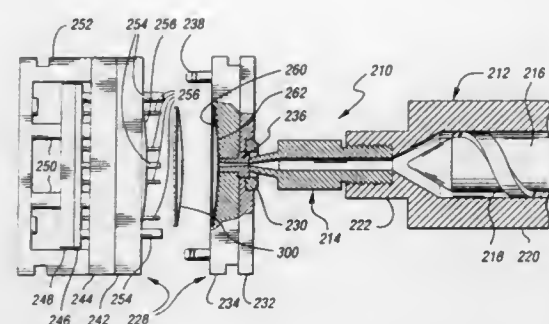
U.S. Cl. 425—577

12 Claims

1. An apparatus for making an air bag cover for an inflatable air bag system, the air bag cover having front and back surfaces and having a tear seam visually imperceptible from the front surface, the apparatus comprising:

- a thermoplastic injection mold for receiving a molten resin, the mold having first and second mold halves with first and second surfaces, respectively, defining a mold cavity corresponding to the air bag cover; and

an insert having an edge dimensioned to form the tear seam, the insert being slidably mounted within a hole within one of the first and second mold halves for movement relative thereto, the insert having a retracted position and an extended position,



tion, wherein in the extended position, the edge extends from the hole within one of the first and second mold halves to within approximately 0.2 to 0.4 millimeters of the other one of the first and second mold halves after the molten resin has been received within the mold cavity but before the molten resin has solidified so as to displace plastic along a substantially continuous line defining the tear seam.

5,776,523
METHOD FOR PRESERVING BAITS
Herbert R. Axelrod, 211 W. Sylvania Ave., Deal, N.J. 07753
Filed Dec. 27, 1996, Ser. No. 774,922
Int. Cl.⁶ A23L 3/34

U.S. Cl. 426—1

14 Claims

1. A method for preserving fish bait comprising:

- a) supplying fish bait and immersing said bait in a first aqueous sterilizing solution comprising about 8–100% (wt) of an aqueous solution of formalin, said formalin solution containing formaldehyde at a concentration of at least about 37% wherein the time of immersion in said solution is adjusted to prevent decay via bacterial action and to increase the hardness of the bait;
- b) removing said bait from the sterilizing solution and immersing in running water to remove substantially residual sterilizing solution to provide a hardened sterilized bait; and
- c) placing the hardened and sterilized bait of step b) in a container which contains a sufficient amount of a second aqueous solution which prevents further bacterial and/or viral decay and which maintains said fish in a hydrated state for use as a bait product.

5,776,524
PROCESS FOR TREATING SMALL INTESTINE BACTERIAL OVERGROWTH IN ANIMALS

Gregory A. Reinhart, Dayton, Ohio, assignor to The Iams Company, Dayton, Ohio

Continuation of Ser. No. 428,875, Apr. 25, 1997, abandoned.

This application Oct. 30, 1996, Ser. No. 741,300

Int. Cl.⁶ A23K 1/18

U.S. Cl. 426—2

3 Claims

1. A process for treating small intestine bacterial overgrowth in animals comprising feeding an animal selected from the group consisting of dogs, cats, and horses a diet consisting essentially of a pet food composition containing, on a dry matter basis, from about 0.2 to 1.5 weight percent of a fructooligosaccharide, wherein said diet decreases bacteria in the small intestine of said animal and produces a healthy bacterial environment in the small intestine of said animal.

5,776,525
CONTINUOUS PROCESS FOR PRODUCING HIGH PROTEIN FOODSTUFF AND AN APPARATUS USEFUL THEREIN

Takeo Ide, Saitama-ken; Yasunobu Hiraoka, Hannou; Shoichi Koizumi; Minoru Morita, both of Kawagoe, and Kunio Ueda, Yamanashi-ken, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

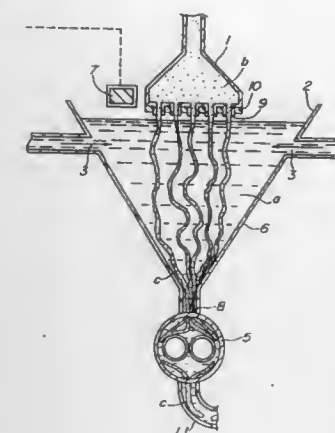
Filed Sep. 6, 1996, Ser. No. 709,490

Claims priority, application Japan, Sep. 7, 1995, 7-229886

Int. Cl.⁶ A23C 9/12; 19/02; 3/02

U.S. Cl. 426—36

6 Claims



1. A continuous process for producing cheese curd characterized by

- continuously sprinkling and pouring a condensed milk, regulated 10° C. or below and to a pH in the range 4.8–5.8, from a nozzle equipped with a discharge port having multiple holes so as to sprinkle and pour the condensed milk in a shape of thin membranes or strings into a warm water bath from above the water surface whereby said condensed milk is converted into curd,
- continuously removing said curd and a portion of the water in said water bath from said water bath, and
- continuously supplying to said water bath, in an amount equal to the portion of the water removed therefrom, warm water kept at a fixed temperature of 45°–95° C.

5,776,526
LOW-TEMPERATURE INACTIVE INDUSTRIAL BAKER'S YEAST AND PROCESS FOR PREPARING SAME

Johannes Baensch, Landridge Cond., Singapore; Christof Gysler, Blonay, and Peter Niederberger, Epalinges, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Mar. 15, 1995, Ser. No. 404,679

Claims priority, application European Pat. Off., Mar. 16, 1994, 9410403.8

Int. Cl.⁶ A23L 1/105

U.S. Cl. 426—62

15 Claims

1. A process for developing a baker's yeast which comprises crossing a haploid *Saccharomyces cerevisiae* strain which is inactive between about 3 and 10° C. with a haploid *Saccharomyces cerevisiae* strain having at least one MAL allele which is active but under catabolic repression to form a first diploid strain; sporulating the first diploid strain to obtain haploid segregants; culturing the haploid segregants to identify those which have the MAL allele and which are substantially inactive at a temperature of between about 3° and 18° C.; crossing the identified haploid segregants to form second diploid strains; and selecting a prototrophic diploid strain having an Lti phenotype characterized as being inactive but living in a dough at a temperature of less than or equal to about 14° C. of which the dough does not become frozen and being substantially inactive in a maltose containing medium up to a temperature

of 18° C., a Mal phenotype which is active but under catabolic repression, and a potential for growing in a fed-batch process as the baker's yeast.

5,776,527
PACKAGE OF GROUND COFFEE OF THE PREFILLED TABLET TYPE AND ESPRESSO COFFEE MACHINE USING SUCH A PACKAGE

Jean Pierre Blanc, Gattieres, France, assignor to Compagnie Mediterraneenne des Cafes S.A., Carros, France

PCT No. PCT/FR94/01039, § 371 Date Feb. 21, 1996, § 102(e)
Date Feb. 21, 1996, PCT Pub. No. WO95/07041, PCT Pub. Date Mar. 16, 1995

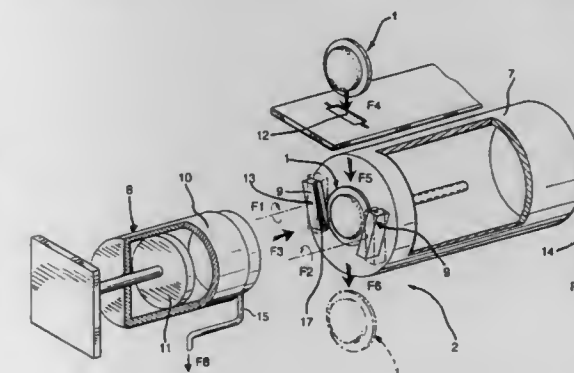
PCT Filed Sep. 5, 1994, Ser. No. 602,724

Claims priority, application France, Sep. 6, 1993, 93 10760;
Jun. 16, 1994, 94 07509

Int. Cl.⁶ B65B 1/00; A47J 31/00

U.S. Cl. 426—77

10 Claims



1. Package of ground coffee, comprising:

- a prefilled bag having a central axis and including a first concave filter portion having a first peripheral edge which extends circumferentially relative to said central axis and a first flange extending from said first peripheral edge radially outward relative to said central axis, and a second concave filter portion having a second peripheral edge which extends circumferentially relative to said central axis and a second flange extending from said second peripheral edge radially outward relative to said central axis, an inner surface of said first concave portion facing an opposing inner surface of said second concave portion to provide a cavity therebetween structured and configured for the containment of coffee, said first flange abutting said second flange in a plane which extends in a transverse direction relative to said central axis and which bisects said cavity into two substantially equal parts, and an annular reinforcement member which abuts at least one of said first flange and said second flange, said annular reinforcement member being sufficiently rigid to serve as a framework such that said prefilled bag has sufficient mechanical strength to be usable in an espresso coffee maker.

5,776,528

Patent Not Issued For This Number

5,776,529

CONTINUOUS FLOW ELECTRICAL TREATMENT OF FLOWABLE FOOD PRODUCTS

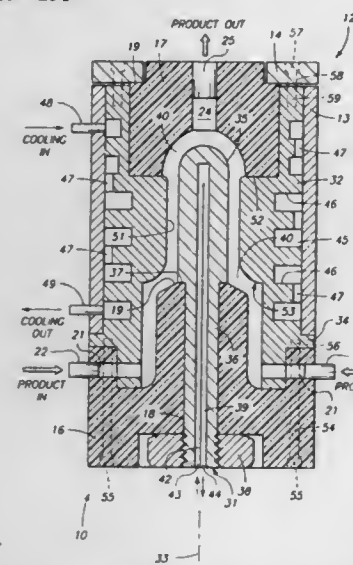
Bai-Lin Qin; Gustavo V. Barbosa-Canovas, both of Pullman, Wash.; Barry G. Swanson; Patrick D. Pedrow, both of Moscow, Id.; Robert G. Olsen, Pullman, Wash., and Qinghua Zhang, Columbus, Ohio, assignors to Washington State University Research Foundation, Pullman, Wash.

Division of Ser. No. 533,164, Sep. 13, 1995, Pat. No. 5,662,031, which is a continuation-in-part of Ser. No. 371,261, Dec. 23, 1994, abandoned. This application Jul. 3, 1997, Ser. No. 887,797

Int. Cl.⁶ A23L 3/00

U.S. Cl. 426—231

19 Claims



1. A method for processing a flowable food product, comprising: passing a flowable food product through a flow-through processor having a first electrode and a second electrode; said first and second electrodes being spaced apart and defining therebetween a treatment chamber through which the food product flows; said flow-through processor having at least one inlet through which food product flows into the treatment chamber and at least one outlet through which food product flows from the treatment chamber;

generating electrical pulses having durations of less than 100 milliseconds; said generating electrical pulses being defined to include bipolar output which charges the first electrode positively relative to the second electrode during positive pulses and which charges the first electrode negatively relative to the second electrode during negative pulses; treating the food product by applying positive and negative pulses to the electrodes of the flow-through processor; controlling a temperature control subsystem which is connected to the flow-through processor to control temperature of the treatment chamber.

5,776,530

DEEP FAT FRYING APPARATUS WITH AUTOMATED OIL MANAGEMENT AND METHODS

John R. Davis; Ralph L. Macy, Jr., both of Shreveport; John M. Kinch, Bossier City, all of La., and Lynn L. Stark, Tyler, Tex., assignors to The Frymaster Corporation, Shreveport, La.

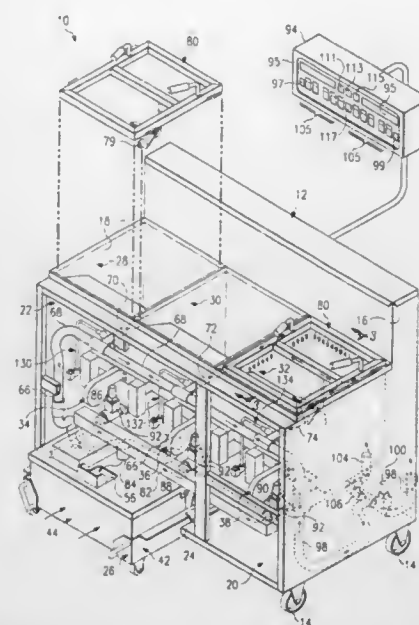
Division of Ser. No. 457,862, Jun. 1, 1995, Pat. No. 5,617,777. This application Jan. 23, 1997, Ser. No. 786,347

Int. Cl.⁶ A47J 37/12

U.S. Cl. 426—233

23 Claims

1. In a commercial frypot of the type having a housing with one or more frying vats sized to hold a quantity of cooking liquid, an electric or gas fired heating system closely associated with each frying vat, capable of heating the cooking liquid to a high cooking



temperature, a temperature sensor for monitoring the temperature of the cooking liquid, and a control system for said one or more frying vats configured to collect signals from the temperature sensor and send control signals to the heating system to maintain a selected temperature in the cooking liquid, the improvement in combination comprising:

a level sensor mounted on each vat, having an opening into the cooking liquid at an elevation which is below the liquid surface by a control distance selected to indicate when said vat is nearly filled to a desired operating level;

the level sensor having a tube portion extending from said opening, configured to generate a pressure responsive to a level of the cooking liquid above said opening; and a switch portion connected to said tube portion, having a switch operatively connected to said control system which is responsive to said pressure whereby the condition of the switch is monitored by said control system in order to determine the presence of cooking liquid above said level in the vat, for safety or control purposes.

5,776,531

METHODS AND APPARATUS FOR PEELING POTATOES AND SIMILAR PRODUCE

Jan Rense Aasman, De Sallandse Roe 37, NL-8252 JW Dronten, Netherlands

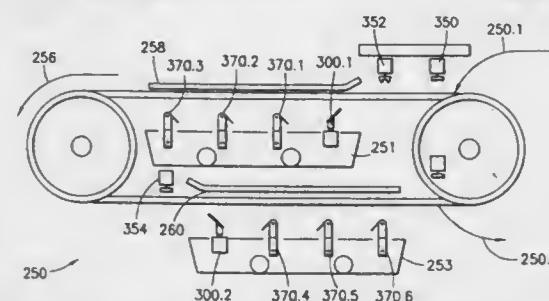
Filed Nov. 8, 1996, Ser. No. 745,297

Claims priority, application Netherlands, May 9, 1995, 9400765

Int. Cl.⁶ A23N 7/00; 7/02; A23L 1/00; 1/216

U.S. Cl. 426—482

20 Claims



1. A method for peeling produce such as a potato, comprising:

a) pushing the produce into a punch cutter so that an outer periphery of the produce is substantially separated from the produce and the produce is held in the punch cutter against the action of gravity; and

b) removing additional outer periphery portions of the produce while the produce is held in the punch cutter, wherein the punch cutter includes a plate member lying in a first plane and having a central opening occupying a first area, and a substantially endless punch member having a surface which is substantially perpendicular to the first plane and defining an interior area which is smaller than the first area, the punch member being located within the central opening to define an annular space.

5,776,532

BAKING METHOD AND ASSOCIATED APPARATUS

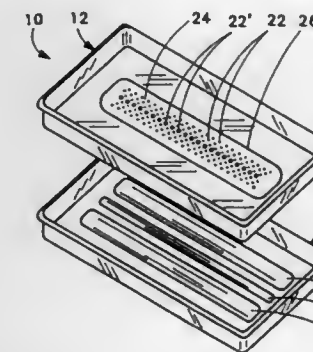
Ping Wang, 420 Mills Dr., Benicia, Calif. 94510

Filed Jul. 22, 1996, Ser. No. 681,113

Int. Cl.⁶ A23L 1/10

U.S. Cl. 426—511

30 Claims



1. A cooking method comprising:

depositing a piece of dough on a substantially horizontal support surface provided with at least one perforation, said piece of dough covering said perforation; moving said surface together with said piece of dough into a heated enclosure; maintaining said surface and said piece of dough in said enclosure for a predetermined period of time; during at least one portion of said predetermined period, feeding steam through said perforation so that at least some of said steam enters said piece of dough through a lower surface thereof; and during at least another portion of said predetermined period, baking said dough in said enclosure.

5,776,533

PROCESS AND APPARATUS FOR PREPARING PRECUT SOLID WATER-IN-OIL EMULSION

Kiyotaka Okamoto; Yoshihiko Honda, both of Sapporo; Moto-take Murakami, Sayama; Shigeru Oniki, Kawakami-gun, and Koji Suzuki, Kawagoe, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

PCT No. PCT/JP96/00607, § 371 Date Mar. 6, 1996, § 102(e) Date Mar. 6, 1996, PCT Pub. No. WO96/29859, PCT Pub. Date Oct. 3, 1996

PCT Filed Mar. 12, 1996, Ser. No. 750,120

Claims priority, application Japan, Mar. 29, 1995, 7-071348

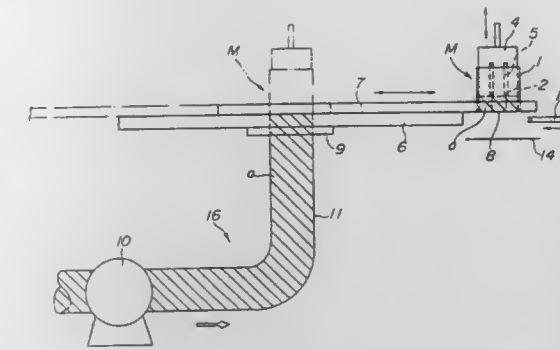
Int. Cl.⁶ A23C 15/00; A23P 1/00; B29C 43/00

U.S. Cl. 426—515

23 Claims

1. A process for preparing a precut, solid water-in-oil emulsion, comprising:

1) providing a mold having an outer frame and a plurality of configured partitioning plates disposed within the outer frame; 2) at least partially filling the mold with a fluid form of the emulsion so as to form precuts in the emulsion corresponding to the partitioning plates; 3) allowing the emulsion to set;



4) advancing an extrusion die into the mold the extrusion die having grooves configured complimentary to the configuration of the partitioning plates so as to receive the partitioning plates therein; and

5) discharging the set emulsion from the mold by at least partially passing the extrusion die through the mold so as to discharge the set emulsion with the precuts therein.

5,776,534

FOOD APPARATUS FOR FORMING MULTIPLE COLORED EXTRUDATES AND METHOD OF PREPARATION

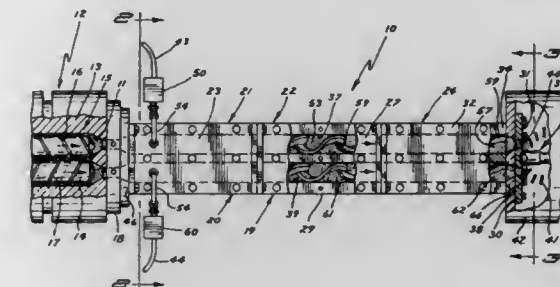
John C. Christensen, Sylvania, Ohio; Thomas G. Cremers, Belle Plaine, Minn.; James L. Stinson, and Philip K. Zietlow, both of Wayzata, Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Apr. 3, 1996, Ser. No. 627,864

Int. Cl.⁶ A21C 5/00; A21D 2/00

U.S. Cl. 426—516

34 Claims



18. A method for producing multiple extrudates from a single product mass stream comprising the steps of:

A. providing a single extrudable food product mass stream; B. dividing the extrudable food product mass stream into at least a first and a second food product mass substream disposed within separate subpassageways; C. adding a first flowable additive exclusively to the first food mass substream without communication to the other substreams to form a first unmixed substream blend; D. admixing the first unmixed substream blend without imparting shear to form a first mixed substream blend; E. extruding the first mixed substream blend through a die port to form a first extrudate stream; and F. simultaneously extruding the second substream through a die port to form a second extrudate stream.

5,776,535
TREATMENTS TO REDUCE MOISTURE IN THE
DEWATERING OF GRAIN-BASED CELLULOSIC
MATERIALS

William J. Palardy, Chalfont, Pa., assignor to BetzDearborn Inc., Trevose, Pa.

Filed Oct. 16, 1996, Ser. No. 734,428
Int. Cl.⁶ A23L 1/015

U.S. Cl. 426—618 10 Claims

1. A method for enhancing mechanical dewatering of wet corn milling fiber comprising adding to said wet fiber, prior to mechanical dewatering, an effective dewatering amount of a polyglycerol ester surfactant.

5,776,536
REDUCED FAT CHOCOLATE AND METHOD OF
MANUFACTURE

Paul A. Tremblay, Mercerville, and Rajiv Mathur, Sewell, both of N.J., assignors to Igen, Inc., Wilmington, N.J.

Filed Dec. 23, 1996, Ser. No. 772,354
Int. Cl.⁶ A23L 1/035; A23G 1/00

U.S. Cl. 426—660 31 Claims

1. A reduced fat chocolate preparation comprising a blend of:
(a) defatted chocolate; and
(b) lipid vesicles comprising a lipid phase and an aqueous phase wherein said lipid phase comprises a mixture of an edible fat and at least one edible non-phospholipid surfactant selected from the group consisting of sucrose distearate, glycerol monoesters, propylene glycol esters, polyoxyethylene fatty alcohols, polyoxyethylene derivatives of sorbitan fatty acid esters having 10–20 oxyethylene groups, and mixtures thereof; wherein the fatty acids in the ester groups in the polyoxyethylene derivatives of sorbitan fatty acid esters are selected from the group consisting of palmitic acid, stearic acid, lauric acid, and oleic acid, and mixtures thereof, and wherein said aqueous phase comprises a mixture of a sweetener and water.

5,776,537
METHOD OF CHARACTERIZING EXCHANGE
COUPLING FOR MAGNETORESISTIVE SENSOR

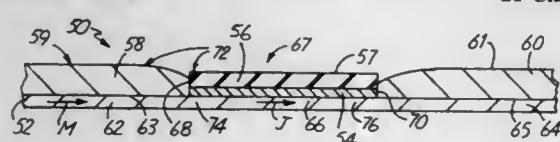
Patrick J. Ryan, St. Paul; Zhijun Yang, Eden Prairie, and Greg S. Mowry, Burnsville, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Feb. 5, 1997, Ser. No. 794,421

Int. Cl.⁶ B05D 5/12

U.S. Cl. 427—8

21 Claims



1. A method of selecting a thickness of a layer for use in a magnetic device, the magnetic device having a magnetoresistive layer with a first outer region, a second outer region and a central region located between the first and second outer regions, the magnetic device also having a permanent magnet layer which at least partially defines an active region of the magnetic device, the active region including the central region of the magnetoresistive layer, the permanent magnet layer having a first permanent magnet region formed in contact with the first magnetoresistive layer outer region and defining a first boundary of the active region, and a second permanent magnet region formed in contact with the second magnetoresistive layer outer region and defining a second boundary of the active region such that the active region is positioned at least partially between the first and second permanent magnet regions, the method comprising the steps of:
depositing a permanent magnet layer on a substrate;

depositing a magnetoresistive layer on the permanent magnet layer to form a bi-layer structure;
applying a DC magnetic field to the bi-layer structure;
during application of the DC magnetic field, measuring the magnetism of the magnetoresistive layer to determine a hysteresis loop of the magnetoresistive layer; and
determining a point of inflection on the hysteresis loop.

5,776,538
METHOD OF MANUFACTURE FOR MICROCHANNEL
PLATE HAVING BOTH IMPROVED GAIN AND SIGNAL-
TO-NOISE RATIO

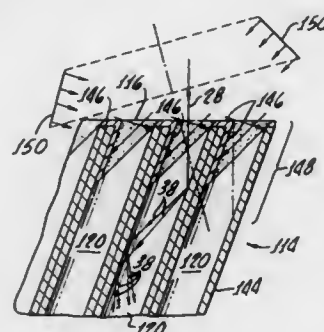
Robert L. Pierle, 5131 E. Tonoko, Phoenix, Ariz. 85044; Mark Gilpin, 1515 N. Nebraska, Chandler, Ariz. 85224; Hubert G. Parish, 4305 W. Jupiter Way, Chandler, Ariz. 85226, and Po-Ping Lin, 810 Lytton Ave., Palo Alto, Calif. 94301

Division of Ser. No. 281,827, Jul. 28, 1994, Pat. No. 5,493,169,
This application Sep. 26, 1995, Ser. No. 533,737

Int. Cl.⁶ B05D 5/12; C23C 16/00

U.S. Cl. 427—78

11 Claims



1. A method for fabricating a microchannel plate having plural microchannels each with an entrance portion for initial impact by photoelectrons onto the microchannel plate, which said entrance portion over an entire surface area thereof has an electron emissivity coefficient greater than 1, said method comprising the steps of:
providing said microchannel plate with an electron-receiving face and an opposite electron-discharge face;
configuring said microchannel plate to define said plural microchannels therethrough opening onto both said electron-receiving face and said electron-discharge face and each defining a respective opening on said electron-receiving face and on said electron-discharge face;
defining said entrance portion within each of said plural microchannels adjacent to said electron-receiving face;
providing at each said entrance portion an initial electron-impact area which is angulated relative to a perpendicular from said electron-receiving face, and substantially having a perpendicular line of sight relation with the respective opening of the respective one of said plural microchannels on said electron-receiving face; and
providing each said entrance portion angulated initial electron-impact area with an electron emissivity coefficient greater than one (1).

5,776,539
PROCESS OF PREPARING CARBON SUPPORT COATED
WITH POLYOLEFIN AND OF PREPARING GAS
DIFFUSION ELECTRODE EMPLOYING SAID CARBON
SUPPORT

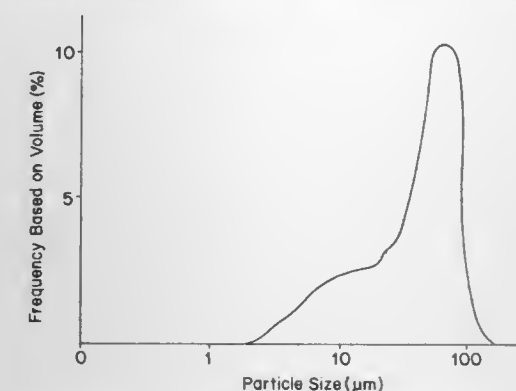
Masahiro Watanabe, No. 2421-8, Wadamachi, Kofu-shi, Yamashiro, and Noriaki Hara, Kanagawa, both of Japan, assignors to Tanaka Kikinzoku Kogyo K.K., and Masahiro Watanabe, both of Japan

Filed Dec. 12, 1995, Ser. No. 570,784

Int. Cl.⁶ B05N 5/12

U.S. Cl. 427—113

15 Claims



6. A process for preparing carbon supports which comprises the steps of:

- mixing carbon supports, a polyolefin and a solvent;
- heating the resultant mixture at a pressure in the range 3.5 to 30 kg/cm² and at a temperature which is higher than the melting point of the polyolefin, but lower than the critical temperature of the solvent to thereby solvate the polyolefin;
- cooling the mixture resulting from step b) to thereby load the polyolefin in the form of a uniform layer on the carbon supports;
- fusing the polyolefin;
- subjecting the carbon supports containing the fused polyolefin to a fluorine gas atmosphere to thereby convert the polyolefin into a fluorinated polyolefin; and
- employing the carbon supports resulting from step e) as a constituent of a catalyst layer and/or a gas diffusion layer in a gas diffusion electrode.

5,776,540
PROCESS FOR MANUFACTURING A PRASEODYMIUM
OXIDE- AND MANGANESE OXIDE-CONTAINING
BASEPLATE FOR USE IN FIELD EMISSION DISPLAYS

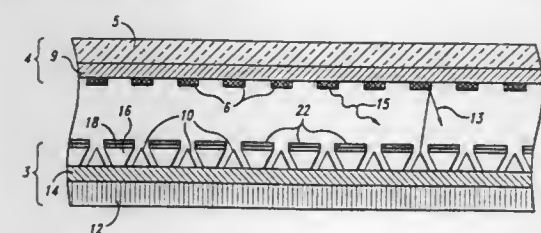
Surjit S. Chadha, Meridian, and Robert T. Rasmussen, Boise, both of Id., assignors to Micron Display Technology, Inc., Boise, Id.

Division of Ser. No. 645,615, May 14, 1996, Pat. No. 5,668,437. This application Dec. 31, 1996, Ser. No. 777,797

Int. Cl.⁶ B05D 5/12; C23C 16/40; 14/08

U.S. Cl. 427—126.3

23 Claims



1. A process for manufacturing a conductive and light-absorbing baseplate for use in field emission display, comprising coating a surface of a baseplate with a layer comprising praseodymium oxide and manganese oxide, wherein the layer has a resistivity which does not exceed $1 \times 10^5 \Omega\text{-cm}$.

5,776,541
METHOD AND APPARATUS FOR FORMING AN
IRREGULAR PATTERN OF GRANULES ON AN
ASPHALT COATED SHEET

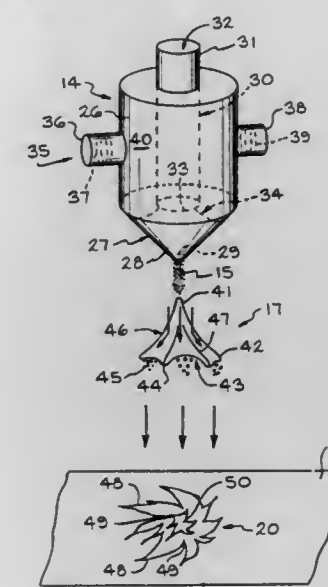
James S. Belt, Utica; Frank R. Wilgus, Powell, and Frank A. Wilgus, Westerville, all of Ohio, assignors to Owens-Corning Fiberglass Technology, Summit, Ill.

Filed Dec. 30, 1996, Ser. No. 774,433

Int. Cl.⁶ B05D 1/12; 1/36

U.S. Cl. 427—186

20 Claims



1. A method of forming an irregular pattern of granules on an asphalt coated sheet comprising:
discharging a flow of granules toward the asphalt coated sheet, and deflecting the flow of granules onto the asphalt coated sheet with a deflector having a surface with changes in the direction of curvature to provide a non-uniform flow of granules so as to form on the asphalt coated sheet a granule deposit having an irregular pattern.

5,776,542
METHOD OF COATING AN IRON-BASED STRUCTURE
AND ARTICLE PRODUCED THEREBY

Patsie C. Campana, deceased, late of Lorain, Ohio, Dolores Jene Campana, executrix, assignor to P.C. Campana, Inc., Lorain, Ohio

Continuation-in-part of Ser. No. 312,661, Sep. 27, 1997, abandoned, which is a continuation of Ser. No. 79,154, Jun. 17, 1993, abandoned. This application Apr. 6, 1995, Ser. No. 418,178

Int. Cl.⁶ C23C 16/00

U.S. Cl. 427—250

8 Claims

1. A method of forming a coating on a ferrous substrate comprising:

- preparing a ceramic powder mixture comprising about 38.4% wt. SiO₂, about 5.4% wt. Na₂O, about 2.4% wt. CaO, about 4.1% wt. BaO, about 22.9% wt. Al₂O₃, about 14.3% wt. B₂O₃, about 0.5% wt. MgO, about 0.1% wt. K₂O, about 2.2% wt. TiO₂, about 0.3% wt. Fe₂O₃, about 9.2% wt. calcined Al₂O₃, and about 0.2% wt. Na₂O•2B₂O₃•10H₂O;
- preparing a metallic powder mixture comprising zinc and nickel;
- combining the ceramic powder mixture and the metallic powder mixture to create a coating mixture comprising from about 50% to about 70% by weight of the ceramic powder and from about 30% to about 50% by weight of the metallic powder;
- combining the coating mixture with water to form a slurry;
- coating the ferrous substrate with the slurry;

- f) drying the coated ferrous substrate to remove substantially all of the water;
g) heating the coated ferrous substrate to an elevated temperature and maintaining the coated ferrous substrate at this temperature for an amount of time sufficient for the ferrous substrate surface to alloy with the metallic components of the slurry at the substrate-coating interface; and
h) cooling the coated ferrous substrate.

5,776,543

TRANSFER PAPER FOR OUTPUTTING COLOR IMAGES AND METHOD OF FORMING COLOR IMAGES BY USING SAME

Tatsuo Takeuchi, Kawasaki; Masahiro Inoue, Yokohama, and Jiro Ishizuka, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 128,724, Sep. 30, 1993, Pat. No. 5,620,783.

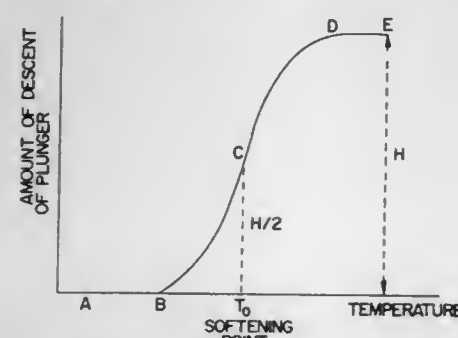
This application Jan. 28, 1997, Ser. No. 789,870

Claims priority, application Japan, Sep. 30, 1992, 4-283423

Int. Cl.⁶ B05D 1/36

U.S. Cl. 427—258

7 Claims



1. A method of forming a color image, comprising the steps of:
(a) transferring a color toner image to an uncoated transfer paper having a whiteness degree of 85% or more and an opaqueness degree of 90% or more; and
(b) heat-fixing the color toner image.

5,776,544

CHARGING DEVICE AND AN IMAGE FORMING APPARATUS USING A CHARGING DEVICE

Teruyuki Naka, Izumi; Yoshio Umeda, Kobe; Toshiki Yamamura, Hirakata; Akira Kumon; Seiichi Suzuki, both of Katano; Junichi Nawama, Osaka, and Hisanori Nagase, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 365,206, Dec. 28, 1994, Pat. No. 5,548,380. This application Feb. 28, 1996, Ser. No. 608,527

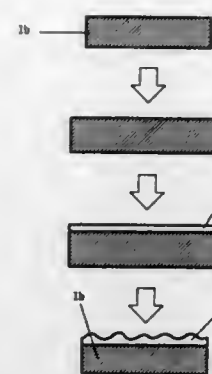
Claims priority, application Japan, Dec. 28, 1993, 5-336370; Jun. 7, 1994, 6-147003; Oct. 21, 1994, 6-281543; Dec. 2, 1994, 6-299347

Int. Cl.⁶ B05D 3/15

U.S. Cl. 427—307

8 Claims

1. A method of manufacturing a charging member for use in an electrophotographic system comprising the steps of:
immersing said charging member having a conductive elastic layer on a metallic substrate in a volatile solvent, said solvent selected to swell said elastic layer without attacking said elastic layer;
removing said charging member from said solvent and immediately applying a resistance layer over said elastic layer of said charging member; drying said resistance layer before solvent in said elastic layer is fully evaporated, thereby forming a smooth resistance layer; and
allowing solvent remaining in said elastic layer to evaporate thereby causing said elastic layer to shrink to its original size



thus compressing said resistance layer to produce said charging member with a smooth surface in the relatively high space frequency range and exhibiting surface roughness in the low frequency range.

5,776,545

NOZZLE COATING METHOD AND EQUIPMENT

Hiroshi Yoshida, Funabashi; Yoichiro Ohashi, Tokyo; Kazuo Watanabe, Shiki, and Kazuyuki Shiozaki, Kawagoe, all of Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

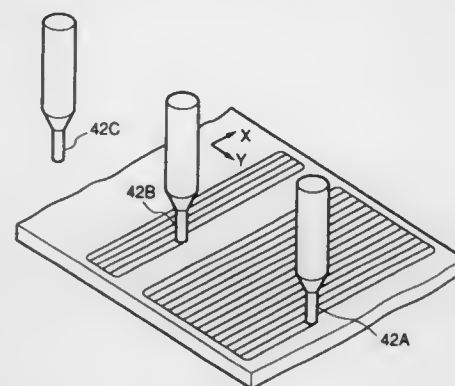
Filed Sep. 20, 1996, Ser. No. 717,348

Claims priority, application Japan, Sep. 22, 1995, 7-244436

Int. Cl.⁶ B05D 3/12; 1/02

U.S. Cl. 427—356

7 Claims



1. A nozzle coating method comprising the step of coating a planar surface to-be-coated of a workpiece with a coating solution in parallel coating lines in such a way that a nozzle is moved relatively to and in parallel with the surface to-be-coated while the coating solution is being discharged from a tip of the nozzle in a state in which the nozzle tip is spaced from the surface to-be-coated, the step of iteratively coating the surface to-be-coated in succession in such a manner that a next coating line in a widthwise direction thereof overlaps the previous coating line in the widthwise direction, thereby to form a coated surface, and a gap between the surface to-be-coated and the nozzle tip is set substantially equal to or smaller than a desired film thickness of the coated thickness, thereby to stir the surface of the layer of the coating solution by the nozzle tip.

5,776,546

METHOD AND APPARATUS FOR IMPREGNATING A POROUS SUBSTRATE WITH A SOLIDS-BEARING SATURANT

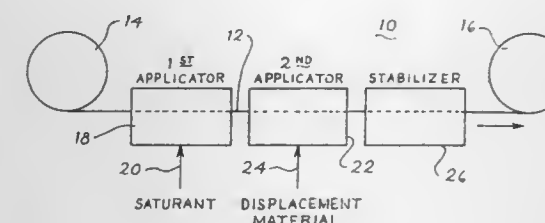
Eliot R. Long, Wheeling, Ill., assignor to Miply Equipment, Inc., Brooklyn, N.Y.

Filed Jun. 26, 1996, Ser. No. 673,240

Int. Cl.⁶ B05D 1/36

U.S. Cl. 427—402

27 Claims



1. A method for impregnating a porous substrate with a solids-bearing saturant, said method comprising the following steps:

- (a) introducing the saturant into the substrate from a first side; and then
(b) introducing a displacement material into the substrate from the first side, using an apparatus that forces said displacement material into the substrate from the first side to cause said displacement material to force at least some of the saturant in the substrate farther into the substrate, away from the first side.

5,776,547

LOW PERMEABILITY GEOSYNTHETIC CLAY LINER AND METHOD OF MANUFACTURE THEREOF

Richard W. Carriker, Woodstock, and John M. Fuller, Dunwoody, both of Ga., assignors to Claymax Corporation, Chicago, Ill.

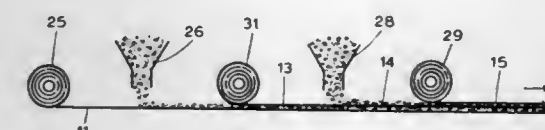
Division of Ser. No. 436,540, May 8, 1995, Pat. No. 5,589,257.

This application Dec. 16, 1996, Ser. No. 767,204

Int. Cl.⁶ E02D 31/00

U.S. Cl. 427—403

5 Claims



1. A method of fabricating an improved, low permeability flexible geosynthetic clay liner having a water permeability less than 5×10^{-10} cm/sec, the method comprising the following steps:

- (a) providing a primary carrier fabric sheet;
(b) depositing a first layer of bentonite on top of the primary carrier sheet;
(c) depositing an intermediate polymeric sheet or fabric layer on top of the first layer of bentonite;
(d) depositing a second layer of bentonite on top of the intermediate layer;
(e) depositing a fabric cover sheet on top of the second layer of bentonite;
(f) attaching the cover sheet to the primary carrier sheet with the first and second layers of bentonite and intermediate layer disposed therebetween.

5,776,548

PRIMER FOR PROMOTING ADHESION OF POLYURETHANE TO A METAL OXIDE COATING

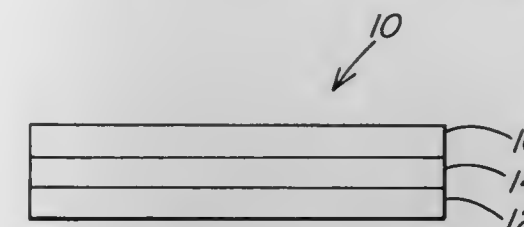
Thomas G. Rukavina, Verona, and Robert M. Hunia, Kittanning, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 5, 1996, Ser. No. 743,874

Int. Cl.⁶ B05D 1/38; 3/02; 1/02; 1/18

U.S. Cl. 427—407.1

40 Claims



1. A method of adhering a polyurethane protective liner to a metal oxide coating comprising the steps of:

- providing a metal oxide coating;
applying a primer composition comprising a reaction product of a crosslinking agent and a polymer selected from the group consisting of a copolymer of 2-ethylhexylacrylate and acrylic acid, a copolymer of cyanoethylacrylate and acrylic acid and a terpolymer of cyanoethylacrylate, 2-ethylhexylacrylate and acrylic acid in a solvent onto a surface of said metal oxide coating;
drying said primer composition until the viscosity of said primer composition stabilizes;
curing said primer composition to promote crosslinking to form a crosslinked primer on the metal oxide coating; and
depositing a polyurethane protective liner coating composition on said crosslinked primer and drying and curing said polyurethane protective liner coating composition to form a polyurethane protective liner over said crosslinked primer; wherein said polyurethane protective line is adhered to said metal oxide coating by said crosslinked primer.

5,776,549

BONDING POLYSULFIDE SEALANT TO SILICONE

Kent Robert Larson, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 642,760, Jan. 18, 1991, Pat. No. 5,145,918.

This application May 4, 1992, Ser. No. 878,274

Int. Cl.⁶ B05D 1/36; 7/02

U.S. Cl. 427—419.7

3 Claims

1. A method of priming a substrate comprising a silicone elastomer or silicone elastomer contaminated surface, the method comprising:

- applying to the substrate a composition consisting essentially of
(a) 1 part by weight of silicone sealant which includes a hydroxyl endblocked polydiorganosiloxane, a silane or silane mixture having from 2.01 to 4 inclusive alkoxy radicals, and a titanium catalyst and which cures upon exposure to moisture; and
(b) 0.1 to 40 parts by weight of polysulfide sealant.

5,776,550

OXIDATION INHIBITOR COATING

Joachim Disam, Mainz, Germany; Hans-Peter Martinz, Höfen, and Manfred Sulik, Reutte, both of Austria, assignors to Schwarzkopf Technologies Corporation, New York, N.Y.

Filed Mar. 13, 1997, Ser. No. 816,985

Claims priority, application Austria, Mar. 27, 1996, GM170/96

Int. Cl.⁶ C23C 4/64

U.S. Cl. 427—452

6 Claims

1. An oxidation inhibitor coating applied to a substrate consisting of a high-melting metal selected from the group consisting of molybdenum, tungsten, tantalum, niobium and their alloys, or composites thereof, said coating consisting essentially of silicon, 1 to 14% by weight boron, and 0.1 to 4% by weight carbon.

5,776,551

USE OF PLASMA ACTIVATED NF₃ TO CLEAN SOLDER BUMPS ON A DEVICE

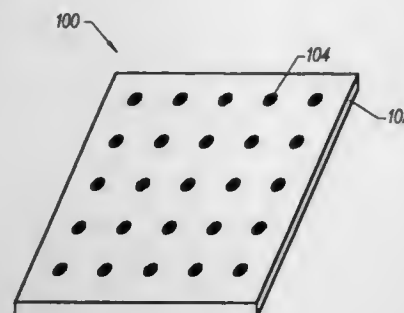
Nicholas F. Pasch, Pacifica, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Dec. 23, 1996, Ser. No. 771,955

Int. Cl.⁶ C23C 14/02

U.S. Cl. 427—534

9 Claims



1. A method for cleaning solder bumps on a substrate, said method comprising:
placing said substrate having said solder bumps into a plasma reactor;
introducing a source gas including nitrogen trifluoride gas into said plasma reactor;
striking a plasma from said source gas in said plasma reactor;
and
forming a fluoride compound on the surface of said solder bump.

5,776,552

PROCESS FOR THE VAPOR PHASE SYNTHESIS OF DIAMOND AND HIGHLY CRYSTALLINE DIAMOND

Keiichi Tanabe, and Naoki Fujimori, both of Hyogo-ken, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 108,497, Aug. 18, 1993, abandoned, which is a continuation of Ser. No. 899,002, Jun. 15, 1992, abandoned, which is a continuation of Ser. No. 457,170, Dec. 26, 1989, abandoned. This application Mar. 9, 1995, Ser. No. 401,291

Claims priority, application Japan, Feb. 26, 1988, 63-328349; Dec. 14, 1989, 1-322625

Int. Cl.⁶ H05H 1/24

U.S. Cl. 427—577

7 Claims

1. A process for the vapor phase synthesis of diamond having a percent transmission of visible rays at a wavelength of 600 nm of at least 10%, which consists essentially of using, as a raw material gas, a mixed gas of hydrogen gas A, an inert gas B, a carbon

atom-containing gas C and an oxygen atom-containing inorganic gas D in such proportion as satisfying the following relationship by molar ratio:

$$0.001 \leq B/(A+B+C+D) \leq 0.95$$

$$0.001 \leq C/(A+B+C+D) \leq 0.1$$

$$0.0005 \leq D/C \leq 10$$

wherein the carbon atom-containing gas C is selected from the group consisting of methane, acetylene and ethanol, and the oxygen atom-containing inorganic gas D is selected from the group consisting of oxygen, steam, hydrogen peroxide, carbon monoxide, and carbon dioxide, feeding the mixed gas into a reactor in which plasma is then formed by applying a microwave electric field of at least 500 MHz at a pressure of 40 to 760 torr and thereby depositing and forming diamond on a substrate arranged in the reactor wherein the reactor has neither nozzle nor partition plate to throttle or inject a gas flow.

5,776,553

METHOD FOR DEPOSITING DIAMOND FILMS BY DIELECTRIC BARRIER DISCHARGE

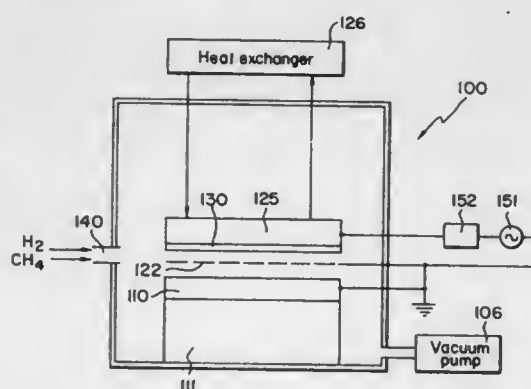
Stephen M. Jaffe, Lake Forest, Calif.; Matthew Simpson, Sudbury, Mass.; Cecil B. Shepard, Laguna Niguel, and Michael S. Heuser, Foothill Ranch, both of Calif., assignors to Saint Gobain/Norton Industrial Ceramics Corp., Worcester, Mass.

Filed Feb. 23, 1996, Ser. No. 607,279

Int. Cl.⁶ B05D 3/06; C23C 16/26

U.S. Cl. 427—577

5 Claims



1. A method for depositing diamond film, comprising the steps of:

- providing an environment comprising hydrogen gas and a hydrocarbon gas;
 - dissociating hydrogen gas of said environment by dielectric barrier discharge to obtain atomic hydrogen; and
 - providing a deposition surface having an area of at least 300 cm² in said environment and implementing diamond deposition on said deposition surface from said hydrocarbon gas, assisted by said atomic hydrogen;
- said atomic hydrogen being transported by molecular diffusion from its dissociation site to said deposition surface, and said hydrogen gas being dissociated over an area opposing said deposition surface of at least 300 cm² and at a distance of less than 10 millimeters from said deposition surface.

5,776,554

ELECTROSTATIC POWDER COATING SYSTEM AND METHOD

Christopher R. Merritt, Noblesville, and Robert M. Thorn, Indianapolis, both of Ind., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Jan. 3, 1997, Ser. No. 775,974

Int. Cl.⁶ B05D 1/06; B05B 1/28; 15/04; 15/12

U.S. Cl. 427—478

20 Claims

1. An electrostatic powder coating system for coating articles with electrostatic powder coating materials, comprising:
a conveyor for transporting articles to a coating station;
a laterally movable base member;
an upright support member mounted upon said movable base member;
a coating booth, having an open bottom portion, movably mounted upon said upright support member for vertically upward and downward movements alone said upright support member;
an electrostatic coating applicator projecting into said coating booth so as to apply electrostatic powder coating materials to articles disposed within said coating booth; and
means for laterally moving said laterally movable base member with respect to said conveyor and means for vertically moving said coating booth with respect to said upright support member so as to laterally position said coating booth toward and away from said conveyor as well as to vertically position said coating booth along said upright support member so as to position said coating booth with respect to an article disposed upon said conveyor at said coating station.

5,776,556

METHOD FOR DEPOSITING THIN LAYERS OF A MATERIAL CONSISTING OF CHEMICAL COMPOUNDS COMPRISING A METAL FROM GROUP IV OF THE PERIODIC SYSTEM, NITROGEN AND OXYGEN ONTO HEATABLE SUBSTRATES

Miladin P. Lazarov, 1075 Calle Ciruelo, Thousand Oaks, Calif. 91360, and Isabella V. Mayer, Schelling Str 75, D-80799 Munich, Germany

Division of Ser. No. 276,026, Jul. 15, 1994, Pat. No. 5,670,248.

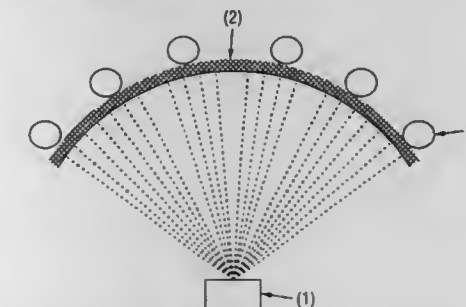
This application Jul. 29, 1996, Ser. No. 681,762

Claims priority, application Germany, Dec. 23, 1993, 43 44 258.7

Int. Cl.⁶ B05D 3/06; C23C 14/24

U.S. Cl. 427—567

15 Claims



1. A process for the production of thin layers of a composition of a metal M from Group IV B of the periodic system, nitrogen and oxygen, having a formula of MN_xO_y, wherein x and y each ranges from about 0.1 to about 1.7, by means of reactive vacuum deposition or activated reactive vacuum deposition, wherein, during the deposition of the metal from Group IV B of the periodic system, maintaining a gas atmosphere comprising N₂ and O₂ gas, and controlling deposition of evaporated metal particles onto a heatable substrate via total gas pressure p_{tot}, evaporation rate r, substrate temperature T_{sub}, and distance l between a metal evaporation source and a substrate, in which case these parameters lie in the ranges

$$T_{sub} = 20^\circ \text{ to } 400^\circ \text{ C.},$$

$$l = 0.01 \text{ to } 1.5 \text{ m},$$

$$\text{the partial pressure ratio of the gases N}_2 \text{ and O}_2; (p_{N_2}/p_{O_2}) = 1 \text{ to } 2,000,$$

$$p_{tot} = 2 \times 10^{-5} \text{ hPa} - 4 \times 10^{-2} \text{ hPa},$$

$$r = 0.01 \text{ to } 60 \text{ nm/s},$$

so that layers with a volume share of voids of from 2 to 45% arises, whose size lies in the range from (0.5 nm)³ to (100 nm)³.

5,776,557

METHOD FOR FORMING A FILM ON A SUBSTRATE BY ACTIVATING A REACTIVE GAS

Haruo Okano, Tokyo; Sadahisa Noguchi, Fuchu, and Makoto Sekine, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 474,312, Jun. 7, 1995, Pat. No. 5,591,486, which is a division of Ser. No. 323,693, Oct. 18, 1994, Pat. No. 5,458,919, which is a continuation of Ser. No. 203,757, Mar. 1, 1994, Pat. No. 5,385,763, which is a continuation of Ser. No. 917,531, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 917,531, Jul. 20, 1992, abandoned, which is a division of Ser. No. 686,283, Apr. 16, 1991, Pat. No. 5,156,881, which is a continuation of Ser. No. 169,577, Mar. 17, 1988, abandoned. This application Oct. 10, 1996, Ser. No. 728,613

Claims priority, application Japan, Mar. 18, 1987, 62-61237; Mar. 18, 1987, 62-61238

Int. Cl.⁶ B05D 3/06

U.S. Cl. 427—579

27 Claims

1. A thin film forming method, comprising the steps of:
supporting a substrate in a reaction chamber, said substrate having a trench or unevenness thereon;
activating a first reactive gas including oxygen in an activating chamber;

5,776,555

PROCESS FOR THE METALLIZATION OF PHOSPHOR SCREENS

Alison Mary Wagland, Cumnor Hill; Karen Savill, Erskine; Warren Li, Reading; Jason Robert Brewer, Bracknell, and Brian John Collister, Witney, all of United Kingdom, assignors to Cookson Group PLC, London, United Kingdom

PCT No. PCT/GB95/02762, § 371 Date May 29, 1997, § 102(e)

Date May 29, 1997, PCT Pub. No. WO96/17370, PCT Pub.

Date Jun. 6, 1996

PCT Filed Nov. 27, 1995, Ser. No. 849,430

Claims priority, application United Kingdom, Nov. 30, 1994, 9424163

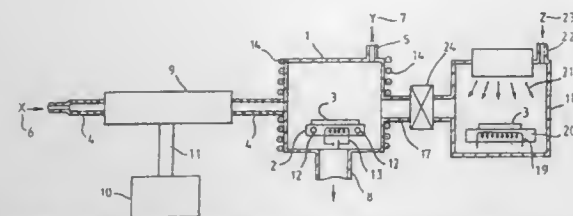
Int. Cl.⁶ B05D 5/06; C07F 2/46

U.S. Cl. 427—487

13 Claims

1. A process for the metallization of a phosphor screen which process comprises the steps of:

- i) applying to a phosphor screen a coating composition comprising a poly(acrylate) or poly(methacrylate) dissolved in an acrylate or methacrylate monomer, the said composition including an initiator therein;
- ii) subjecting the coated screen to irradiation in order to form a polymeric film coating;
- iii) depositing a layer of metal upon the coated screen to form a composite; and
- iv) heating the composite to a temperature above the decomposition temperature of the film coating in order to decompose and/or volatilise the polymeric film coating.



introducing said activated first reactive gas including oxygen into said reaction chamber;
introducing a second reactive gas into said reaction chamber, said second reactive gas including an organic silicon compound;
reacting said activated first reactive gas including oxygen and said second reactive gas in said reaction chamber to form a deposit species comprising Si—O—Si bonds and characterized by a phase diagram including a liquid phase region defined by a melting curve and an evaporation curve that intersect at a triple point; and
forming a silicon oxide film on the substrate while retaining a pressure in the reaction chamber higher than the triple point of the phase diagram of the deposit species, and maintaining a temperature of the substrate within the liquid phase region of the phase diagram of the deposit species.

5,776,558

WEATHERPROOF TREE ORNAMENTATION

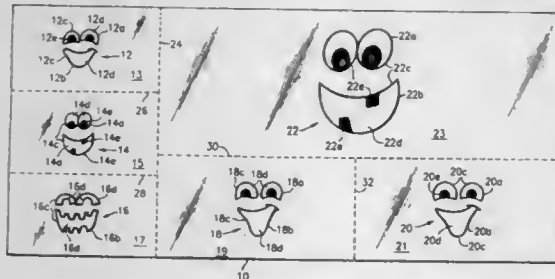
Michael C. Wotton, Plantsville, Conn., assignor to Sun Hill Industries, Inc., Stamford, Conn.

Filed Dec. 28, 1995, Ser. No. 583,135

Int. Cl.⁶ A01M 29/00; F41H 3/00

U.S. Cl. 428—16

19 Claims



1. A weatherproof tree ornamentation for use with an outdoor tree, said ornamentation comprising:
a weatherproof plastic sheet dimensioned to fit at least partially around the trunk of the tree,
said sheet being imprinted with indicia suggesting an animate character such that when said sheet is attached to the trunk of the tree, said indicia create the appearance of the tree being an animate character.

5,776,559

ELECTRIC CHRISTMAS TREE

Esther Woolford, 4708 Montebello Ave., Las Vegas, Nev. 89110

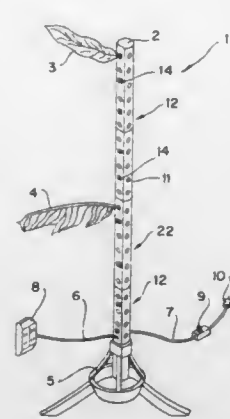
Filed Apr. 11, 1997, Ser. No. 834,019

Int. Cl.⁶ A47G 33/06

U.S. Cl. 428—18

6 Claims

1. An artificial Christmas tree comprising:
a plurality of intermediate trunk sections and two end trunk sections,
each of said trunk sections having a plurality of tree branch receiving apertures spaced therealong, and a plurality of electrical sockets,
each of said intermediate trunk sections having an electrical plug at one end, and an electrical socket at an opposite end, whereby said intermediate trunk sections are mechanically and electrically connected together when said electrical plugs and



electrical sockets on said ends of adjacent intermediate trunk sections are joined together,
electrical conductor means connected to at least one of said trunk sections at one end and having an electrical plug at another end to connect said artificial Christmas tree to a source of electrical power.

5,776,560

UNITS FOR BUILDING ORNAMENTAL ARTICLE

Mituru Kori, and Masako Kori, both of 12-16-804, Hong 4-chome, Bunkyo-ku, Tokyo, Japan

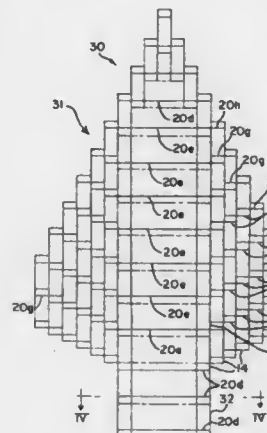
Filed Jun. 30, 1994, Ser. No. 269,931

Claims priority, application Japan, Jul. 2, 1993, 5-164802; Jun. 16, 1994, 6-134425

Int. Cl.⁶ A47G 33/06

U.S. Cl. 428—20

17 Claims



1. Units for constructing ornamental articles comprising:
a) a plurality of building members and a plurality of sheet members for connecting said plurality of building members;
b) each of said plurality of building members including a main body portion and a coupling portion to be fitted on an end of said main body portion, one of the ends of the main body portion and the coupling portion being provided with a small diameter portion and the other of them being provided with a hole for passing said small diameter portion therethrough;
c) each of said sheet members having a plurality of openings for receiving said small diameter portion; and
d) said small diameter portion being passed through said opening of the sheet member and inserted into said hole to sandwich the sheet member between said main body portion and said coupling portion to thereby fasten the building member comprised of said main body portion and said coupling portion to the sheet member.

5,776,561
FRAGRANCE-DISPENSING SILK FLOWER COMBINATION

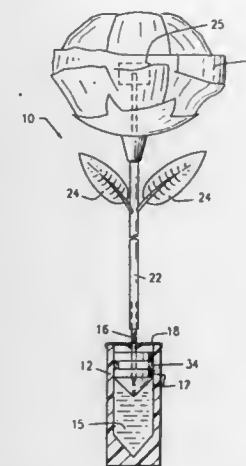
Jerome I. Lindauer, Hillsdale, N.J., assignor to Bath & Body Works, Inc., Reynoldsburg, Ohio

Filed Mar. 31, 1997, Ser. No. 828,565

Int. Cl.⁶ A41G 1/00

U.S. Cl. 428—24

20 Claims



1. A fragrance-dispensing artificial flower combination, comprising:

- a cylindrical container having an open upper end and a closed lower end;
- a volatile liquid fragrance in the container;
- a piston slidably mounted in the container for closing the container over the fragrance, the piston having an opening there-through, between the open upper end of the container and fragrance in the container;
- a tube having a lower open end extending into the open end of the piston, the tube having an upper open end;
- an absorbent material button for receiving the upper end of the tube, the button having a lower surface pierced by a passage into which the upper end of the tube extends;
- means defining an artificial flower connected around the button; and
- a sleeve around the tube extending from the container to the flower for simulating a stem of the flower, the tube being operable to push the piston downwardly into the container for forcing liquid fragrance from the container through the piston, along the tube and into the porous button for saturating the button to dispense the fragrance from the button.

5,776,562

TRANSPARENT WEB PLATE

Dietrich Schwarz, Reichsgasse 61, 7000 Chur, Switzerland

PCT No. PCT/CH95/00041, § 371 Date Aug. 16, 1996, § 102(e)

Date Aug. 16, 1996, PCT Pub. No. WO95/22886, PCT Pub.

Date Aug. 31, 1995

PCT Filed Feb. 24, 1995, Ser. No. 693,047

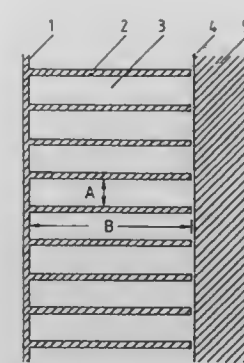
Claims priority, application Switzerland, Feb. 28, 1994, 587/94

Int. Cl.⁶ E06B 3/24

U.S. Cl. 428—34

18 Claims

1. Light-transparent web plate, comprising at least one transparent pane (1), from which project a plurality of webs (2), wherein the ratio of the width (B) of an uninterrupted space between the



webs (2) to the distance (A) between neighboring webs (2) is at least 4:1 and wherein all of the webs are transparent and parallel to each other.

5,776,563

DRIED CHEMICAL COMPOSITIONS

Steven N. Buhl, Cupertino; Bhaskar Bhayani, Fremont; Chi-Sou Yu, Saratoga, and Thuy N. Tang, San Jose, all of Calif., assignors to Abaxis, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 134,574, Oct. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 747,179, Aug. 19, 1991, Pat. No. 5,413,732. This application Jun. 6, 1995, Ser. No. 466,155

Int. Cl.⁶ B65D 79/00

U.S. Cl. 428—34.1

4 Claims

1. A container holding a dried chemical composition which dissolves in less than about 10 seconds in water, wherein said dried chemical composition comprises a preselected precisely measured aliquot of said dried chemical composition which chemical composition is in bead form have in a diameter between 1.5 mm and 10.0 mm.

5,776,564

SINGLE-PIN OR MULTI-PIN PLUG CONNECTOR WITH AN EXTRUDED HOUSING

Horst Kontants, Oldenburg, Germany, assignor to Siemens Aktiengesellschaft, München, Germany

PCT No. PCT/DE94/00684, § 371 Date Mar. 4, 1996, § 102(e) Date Mar. 4, 1996, PCT Pub. No. WO95/00987, PCT Pub.

Date Jan. 5, 1995

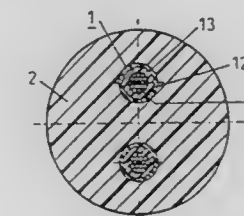
PCT Filed Jun. 10, 1994, Ser. No. 569,141

Claims priority, application Germany, Jun. 23, 1993, 9309574 U

Int. Cl.⁶ FI6D 65/52

U.S. Cl. 428—34.1

15 Claims



1. A plug connector, comprising:

- a) at least one contact element;
- b) at least one electric conductor being attached to the at least one contact element;
- c) an insulation surrounding the at least one conductor and being made of a fluorinated ethylene polymer, said insulation having an external coating of a thermoplastic material; and

d) a housing made of a thermoplastic material extruded around the at least one contact element and the at least one insulated electric conductor.

5,776,565

HYBRID SOL-GEL BARRIER COATINGS

Raymond A. Volpe, Weathersfield, Conn., and Paul C. Lucas, Chester, N.Y., assignors to International Paper Company, Purchase, N.Y.

Filed Dec. 4, 1996, Ser. No. 753,975

Int. Cl.⁶ B32B 9/04; 9/06; C08G 77/18; 77/02

U.S. Cl. 428—34.2

23 Claims

1. A method of producing a sol-gel composition which comprises

- (a) hydrolyzing a mixture of a tetrafunctional alkoxide silicate, and a silane which is substituted to have one or two pendant crosslinkable groups, in an aqueous solution comprising water or water plus a water miscible organic solvent and a catalytic amount of at least one catalyst selected from the group consisting of a protic acid, a Lewis acid, and a metal chelate, until a viscosity of from about 2,600 to about 3,200 cps is obtained to thereby produce a sol-gel polymer containing composition;
- (b) diluting the product obtained from step (a) and effecting substantially complete hydrolysis of any residual alkoxyl groups thereof by diluting it with water or water plus a water miscible organic solvent, optionally containing one or more components selected from the group consisting of a protic acid, a Lewis acid and metal chelate, until a viscosity of about 0.5 to about 10 cps is obtained while not depolymerizing said sol-gel polymer; and
- (c) blending the product obtained from step (b) with a photoinitiator.

5,776,566

BLOCK COPOLYMER CONTAINING COMPOSITION TO BE USED FOR AIR BAG COVERS AND AIR BAG COVERS DERIVED THEREFROM

Jean Michael Mace, and Jacques Moerenhout, both of Ottingen, Belgium, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 3, 1995, Ser. No. 552,400

Claims priority, application European Pat. Off., Nov. 4, 1994, 9430145.5

Int. Cl.⁶ B60R 21/16

U.S. Cl. 428—34.5

4 Claims

1. Air bag cover comprising a block copolymer containing composition, the block copolymer composition having a flexural modulus in the range of 450 to 700 MPa and containing no oil, said composition comprising:

100 parts by weight of a selectively hydrogenated block copolymer, comprising at least two end blocks of predominantly monovinyl aromatic monomers and at least one intermediate block of predominantly conjugated diene, the predominantly poly(conjugated diene) blocks in which have been selectively hydrogenated up to a residual ethylenic unsaturation degree of 20% or less of the original ethylenic unsaturation, whereas the aromatic unsaturation has retained at least 95% of its original value, and having a monovinyl aromatic compound content in the range of from 5 to 50%;

50–250 parts by weight of a poly(olefin) resin;

from 20 to 80 parts by weight of a filler having an average particle size of at most 50; and

0.25–2.5 parts by weight of antioxidant/UV stabilizer additives.

5,776,567

MULTI-LAYER FILTER FOR SEPARATING SOLID AND LIQUID WASTE

Michael Ray Schilling, Clinton, and Morris Fred Mintz, Monroe, both of La., assignors to Pactec, Inc., Clinton, La.

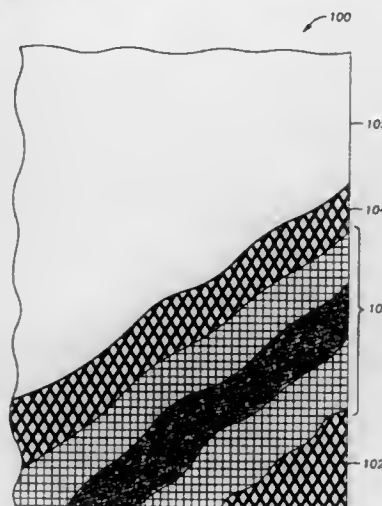
Continuation of Ser. No. 144,796, Oct. 28, 1993, abandoned.

This application Nov. 22, 1996, Ser. No. 755,124

Int. Cl.⁶ B01D 39/00

U.S. Cl. 428—34.5

54 Claims



1. A multi-layer filter for separating liquid from semi-solid material, comprising:

- (a) a first layer comprising a first distinct sub-layer of flexible parallel strands and a second distinct sub-layer of flexible parallel strands, wherein the strands in the first distinct sub-layer overlie and cross the strands in the second sub-layer to facilitate channeling of liquids along the parallel strands of the first distinct sub-layer and along the parallel strands of the second distinct sub-layer;
- (b) a second layer overlying the first layer, the second layer comprising a flexible fibrous mat that facilitates passage of liquid therethrough;
- (c) a third layer overlying the second layer, the third layer comprising a first distinct sub-layer of flexible parallel strands and a second distinct sub-layer of flexible parallel strands wherein the strands in the first distinct sub-layer of the third layer overlie and cross the strands in the second distinct sub-layer of the third layer to facilitate channeling of liquids along the parallel strands of the first distinct sub-layer of the third layer and along the parallel strands of the second distinct sub-layer of the third layer; and
- (d) a fourth layer overlying the third layer, the fourth layer having interstices sized to inhibit passage of solid material therethrough and to facilitate passage of liquid therethrough.

5,776,568

HOLLOW BODY WITH AN INTERNAL SUPPORTING FRAME

Heinz Andress, Erdmannhausen; Arthur Klotz, Remseck, and Arnold Kuhn, Muellheim, all of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

Filed Jun. 15, 1995, Ser. No. 490,985

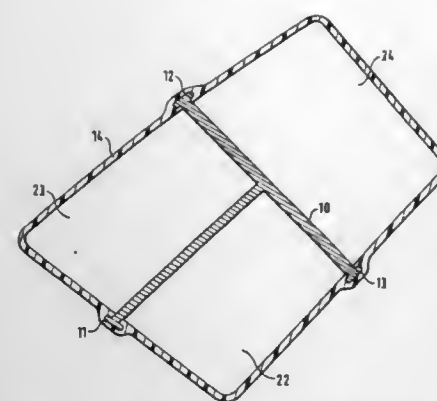
Claims priority, application Germany, Jun. 15, 1994, 44 20 879.0

Int. Cl.⁶ F02M 33/00; B32B 3/18

U.S. Cl. 428—35.7

12 Claims

1. A hollow body comprising a continuous housing with an internal supporting frame, wherein said housing is formed of plastic material and is produced by blow molding and encloses the supporting frame, said housing having an inner contour and an outer contour which define a cross-sectional thickness of the housing, and wherein the supporting frame includes at least two contact



portions which extend into said cross-sectional thickness of the housing and which connect the supporting frame to the housing.

5,776,569

COATING COMPOSITION FOR METAL CONTAINERS

Harold F. Cole, Racine, Wis., assignor to The Dexter Corporation, Windsor Locks, Conn.

Continuation-in-part of Ser. No. 395,382, Feb. 21, 1995, Pat. No. 5,514,433, which is a continuation of Ser. No. 100,563, Jul. 30, 1993, abandoned. This application May 1, 1996, Ser. No. 640,686

Int. Cl.⁶ B29D 22/00; B32B 1/08; C08F 8/00; C08L 63/00

U.S. Cl. 428—35.8

17 Claims

1. A coating composition for a metal substrate comprising:
- (a) about 2% to about 25% by weight of nonvolatile material of a low molecular weight polyfunctional epoxy novolac resin having an epoxy functionality of about 2.1 to about 6, said low molecular weight epoxy resin having a weight average molecular weight of about 200 to about 10,000;
 - (b) about 2% to about 25% by weight of nonvolatile material of a phenolic resin;
 - (c) about 2% to about 25% by weight of nonvolatile material of a high molecular weight epoxy resin having an epoxy functionality of about 1.1 to about 2, said high molecular weight epoxy having a weight average molecular weight of about 10,000 to about 70,000;
 - (d) about 60% to about 90% by weight of nonvolatile material of a vinyl chloride dispersion resin; and
 - (e) a sufficient amount of a nonaqueous carrier such that the coating composition includes about 20% to about 70% by weight of the composition of the total weight of (a), (b), (c), and (d).

5,776,570

FUEL HOSE AND METHOD OF PRODUCING THEREOF

Koyo Murakami, Nagoya; Hiroaki Ito, and Tetsuji Narasaki, both of Komaki, all of Japan, assignors to Tokai Rubber Industries Ltd., Aichi, Japan

Filed Feb. 20, 1996, Ser. No. 603,317

Claims priority, application Japan, Feb. 21, 1995, 7-032657

Int. Cl.⁶ B05D 7/22; B29D 23/00

U.S. Cl. 428—36.8

4 Claims



1. A fuel hose comprising an outer rubber layer having a cross-linked structure with a polysulfide bonding density of not

less than 4×10^{-5} mol/cm³ and being formed by sulfur-vulcanizing a rubber composition comprising a carboxyl group-containing acrylonitrile-butadiene rubber and an inner polyamide resin layer laminated on the inside face of the outer rubber layer and integrated thereto by heat-bonding so that polysulfide bonds of the outer rubber layer decompose during the heat-bonding and the resultant residue after decomposition combines with polyamide molecules of the polyamide resin layer so as to form a strong bond between the outer rubber layer and the inner polyamide resin layer.

5,776,571

COMBINED FORM AND LABEL CONSTRUCTION

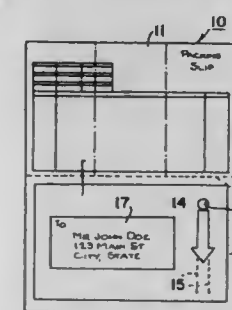
Irving R. Michlin, Roanoke; Guy Kiraly, Troutville, both of Va., and Frank H. Neubauer, Mt. Kisco, N.Y., assignors to Transkrit Corporation, Roanoke, Va.

Filed Sep. 20, 1995, Ser. No. 531,292

Int. Cl.⁶ G09F 3/00

U.S. Cl. 428—40.1

26 Claims



1. A combined form and label construction comprising
- a form portion of rectangular shape for receiving information thereon;
 - a label portion of rectangular shape removably connected to said form portion along an edge of said form portion, said label portion having a removable tear strip near one edge thereof and a plurality of glue strips on a back side thereof to define a rectangular area;
 - a backing strip disposed over a part of said back side of said label portion and being releasably secured to one of said glue strips adjacent and parallel to one edge of said label portion; and
 - a backing sheet disposed over a remaining part of said back side of said label portion and being releasably secured to the remainder of said glue strips thereon.

5,776,572

ZONE-COATED MASKING MATERIAL

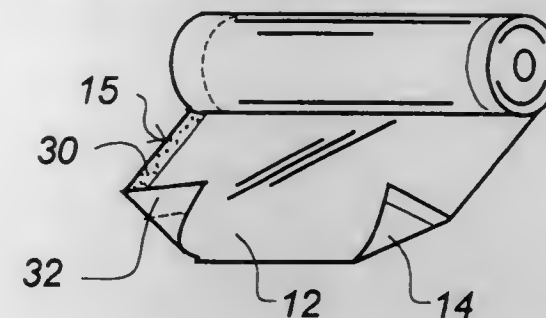
Ronald B. Lipson, 6085 Pickwood Dr., West Bloomfield, Mich. 48322

Filed Jan. 24, 1997, Ser. No. 788,517

Int. Cl.⁶ B32B 3/02

U.S. Cl. 428—40.1

5 Claims



1. Masking material suited to vehicular surface coating operations, comprising:

a thin, flexible base sheet having an inner surface and an outer surface and having opposing first and second longitudinal edges defining a width;

a first pressure-sensitive adhesive layer applied longitudinally along at least the first edge on the inner surface of the sheet, the adhesive layer having a width substantially less than that of the base sheet;

a second pressure sensitive adhesive layer applied longitudinally along the second edge on the outer surface of the sheet, the second adhesive layer having a width substantially less than that of the base sheet;

the base sheet further including a first longitudinal area on its outer surface and along the first edge which functions as a release layer, and a second longitudinal area on its inner surface along the second edge which functions as a release layer, the first and second longitudinal areas enabling the base sheet with adhesive layers to be provided in roll form and easily removed therefrom for use.

5,776,573

COMPACT DISC REVITALIZER FORMULATIONS AND REVITALIZER

J. Morgan Trotter, Dallas, and Galen W. Hartman, Kemp, both of Tex., assignors to CD Magic, Inc., Dallas, Tex.

Filed Apr. 16, 1997, Ser. No. 839,856

Int. Cl.⁶ B39B 3/02

U.S. Cl. 428—64

9 Claims

1. A composition for use on an optical disc having a transparent side comprised predominantly of polycarbonate polymer plastic, the composition comprising:

- a) a volatile organic solvent having pseudo-solubility with the polycarbonate polymer, the solvent having solubility parameters located within the following domain volume:

δ_p	δ_h	δ_a
(Polar)	(H-bonding)	(Nonpolar)
0.65	0.00	5.00
0.00	0.65	5.00
2.90	1.75	5.00
2.25	5.00	5.00
0.65	0.00	9.00
0.00	0.65	9.00
2.90	1.75	9.00
2.25	5.00	9.00

- b) a nonvolatile binder comprising at least one component selected from the group consisting of:

- i) an aminofunctional dimethylpolysiloxane with various amine functionalities, with total amine functionality of from 0 to about 3 milliequivalents/gram; and
- ii) a polydimethylsiloxane;

- c) an effective amount of a mixture of insoluble particulate materials having particle sizes ranging from about 0.2 microns to about 15 microns in diameter;

- d) an effective amount of an agent, immiscible in components (a) and (b), for forming an emulsion for suspending the insoluble particulate materials of component (c).

5,776,574
OPTICAL RECORDING MEDIUM AND OPTICAL RECORDING/REPRODUCING APPARATUS

Yoshinori Honguh; Toyoki Taguchi, both of Yokohama; Hiroshi Hasegawa, Kawasaki; Tadashi Kobayashi, Shiba; Naoki Morishita, and Naomasa Nakamura, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

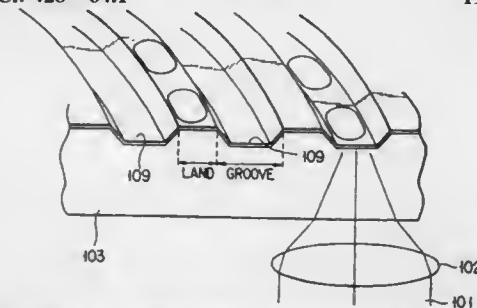
Continuation-in-part of Ser. No. 419,943, Apr. 11, 1995, Pat. No. 5,474,826, which is a continuation of Ser. No. 40,291, Mar. 30, 1993, Pat. No. 5,431,975. This application Sep. 25, 1995, Ser. No. 533,276

Claims priority, application Japan, Mar. 30, 1992, 4-072032; Apr. 15, 1992, 4-095613; Oct. 1, 1992, 4-262628

Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—64.1

19 Claims



1. An optical recording medium having a land and a groove, the medium comprising:

- a transparent substrate;
- an inner protection layer formed on the transparent substrate;
- a recording material layer formed on the inner protection layer and having a predetermined thickness;
- an outer protection layer formed on the recording material and having a predetermined thickness; and
- a reflection layer formed on the outer protection layer, wherein the groove is formed to have a depth such that crosstalk between the groove and the land is minimized; and
- a ratio of a thickness of the outer protection layer to a thickness of the recording material layer is set such that an amplitude of a signal to be recorded on the land coincides with an amplitude of a signal to be recorded in the groove and that crosstalk between the land and groove is minimized.

5,776,575

INFORMATION RECORDING MEDIUM AND PROCESS FOR PRODUCTION THEREOF

Mizuho Hiraoka, Kawasaki, and Hiroyuki Imataki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

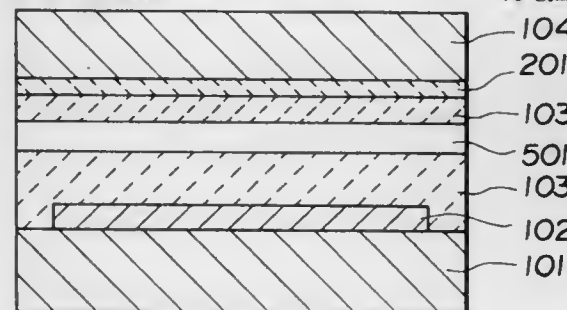
Filed Apr. 10, 1995, Ser. No. 419,234

Claims priority, application Japan, Apr. 27, 1994, 6-110119; Apr. 27, 1994, 6-110120; Apr. 27, 1994, 6-1100118

Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—64.1

70 Claims



1. An information recording medium comprising:

- a substrate; and
- a multilayer structure comprising a recording layer,

a protective layer,

a print layer provided on the protective layer, and

a barrier layer located intermediate the print layer and the recording layer, wherein total solvent permeability of the layers between the print layer and the recording layer is 5×10^{-12} (cm³(STP)·cm/cm²·s·cmHg) or less, and the thickness of the barrier layer is from 0.1 to 200 μm.

5,776,576

PHTHALOCYANINE COMPOUND AS A LAYER IN OPTICAL RECORDING MEDIUM

Mutsumi Kimura, Ueda; Hirofusa Shirai, 2496, Nagase, Maruko-cho, Chisagata-gun, Nagano; Toshiki Koyama; Kenji Hanabusa, both of Ueda, and Yuichi Kubota, Chiba, all of Japan, assignors to Hirofusa Shirai, Nagano, and TDK Corporation, Tokyo, both of Japan

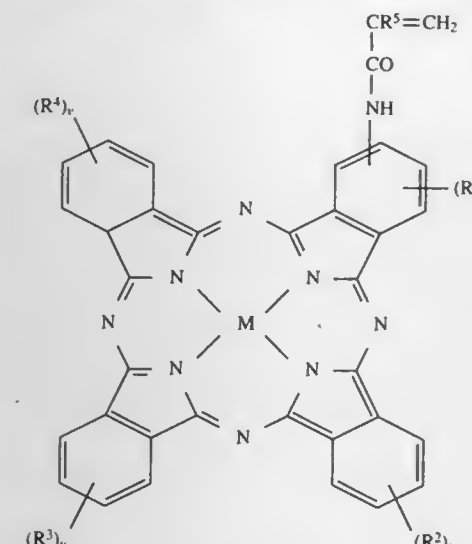
Division of Ser. No. 609,548, Mar. 1, 1996, which is a division of Ser. No. 305,881, Sep. 14, 1994, Pat. No. 5,516,900. This application Oct. 7, 1996, Ser. No. 726,933

Int. Cl.⁶ B32B 3/30; C09B 47/04

U.S. Cl. 428—64.1

3 Claims

1. An optical recording medium comprising a recording layer containing a phthalocyanine-compound of the following formula:



wherein R¹, R², R³, and R⁴ are independently selected from the group consisting of an alkyl, alkoxy, alkylthio, and arylthio group; s is equal to 0 or an integer of 1 to 3, and the R¹ groups may be identical or different when s is at least 2; t, u and v each are equal to 0 or an integer of 1 to 4, and the R², R³, and R⁴ groups may be identical or different when t, u and v are at least 2, respectively; with the proviso that all of s, t, u, and v are not equal to 0 at the same time, the sum of s+t+u+v being an integer of at least 1; and R⁵ is a hydrogen atom or alkyl group, and M is a metal atom.

5,776,577

MAGNETIC RECORDING DISK HAVING A LUBRICANT RESERVOIR ON THE INNER CIRCUMFERENTIAL SURFACE

Masabiro Yanagisawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 27, 1994, Ser. No. 281,435

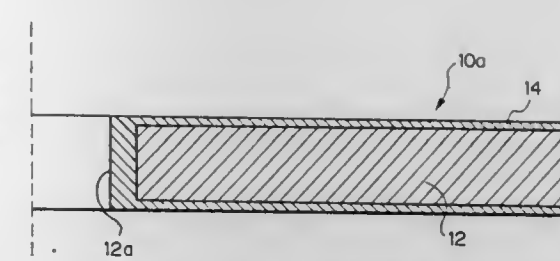
Claims priority, application Japan, Jul. 29, 1993, 5-205572

Int. Cl.⁶ G11B 05/82

U.S. Cl. 428—65.4

5 Claims

1. A magnetic recording medium comprising: a disk body comprising a base, said disk body having an inner circumferential surface, a metal thin film magnetic layer



formed on a major surface of said base, and a protective film formed on said metal thin film magnetic layer; and a liquid lubricant layer covering the opposite major surface of said disk body as well as covering both said protective film and said inner circumferential surface of said disk body, said liquid lubricant layer being substantially thicker on said inner circumferential surface of the disk than on other surface areas of said disk, wherein said liquid lubricant layer on the inner circumferential surface has surface tension which links lubricant covering said opposite major surface with the lubricant covering the protecting film and said lubricant layer-on said inner circumferential surfaces serves as a lubrication reservoir for the remaining surfaces of said disk.

5,776,578

NOVELTY DEVICE

Arnold M. Dejaynes, R.R. #1, Box 168, New London, Iowa 52645

Filed Jan. 31, 1997, Ser. No. 797,693

Int. Cl.⁶ B32B 1/08; 3/10

U.S. Cl. 428—66.6

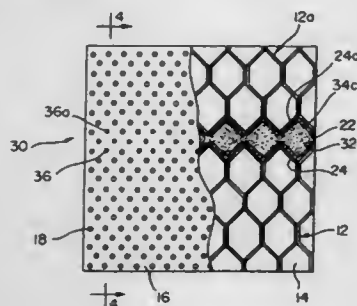
3 Claims



1. A novelty device, comprising, an elongated body member having an outer surface and first and second ends, a flexible elongated tube slidably mounted on the outer surface of said body member, said tube having a central portion and first and second ends normally positioned adjacent the first and second ends of said body member, said central portion of said tube having a plurality of elongated slits to create a plurality of elongated ribbon portions, said first end of said tube being fixed to said first end of said body member, and said second end of said tube being rotatably and slidably mounted on said second end of said body member so that by sliding said second end of said tube towards said first end of said tube, and by rotating said second end of said tube, said ribbon portions will be moved away from said body member into an expanded longitudinally shortened and cross-sectionally inflated decorative configuration; and a disk element on the first end of said body member to lift said body member away from a flat supporting surface to protect

said ribbon portions from being distorted when said novelty device is placed on a flat supporting surface when said ribbon portions are in a position away from said body member.

5,776,579
STRUCTURAL BONDING WITH ENCAPSULATED FOAMING ADHESIVE
Jerry R. Jessup, and Richard Perez, Sr., both of Wichita, Kans., assignors to The Boeing Company, Seattle, Wash.
Filed Mar. 28, 1996, Ser. No. 623,434
Int. Cl.⁶ B32B 3/12; E04B 1/82
U.S. Cl. 428—73

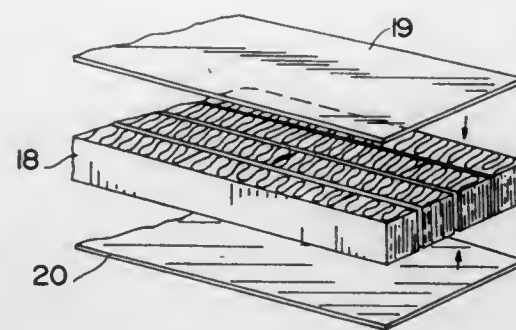


1. An improved panel structure wherein at least one face of the panel is perforated with small holes, the panel being suitable for use where it is desirable to minimize the number of said small holes that are filled in with adhesive, said panel comprising:

- (a) at least two sections of cellular core material separated by a gap;
- (b) a perforated outer skin, said perforated outer skin being perforated by small holes, said perforated outer skin being adhesively bonded by a film adhesive to the outer sides of said sections of cellular core material;
- (c) a cured encapsulated foaming adhesive unit comprising a cured foaming adhesive encapsulated on at least three sides by a cured supported film adhesive, said cured encapsulated foaming adhesive unit being located in said gap and in the cells abutting said gap, said cured encapsulated foaming adhesive unit bonding together said sections of cellular core material, wherein said foaming adhesive has foamed and expanded, wherein said supported film adhesive has been forced against and bonded to the walls of the cells abutting said gap separating said sections of cellular core material, and said supported film adhesive has contained said foaming adhesive, thereby minimizing the number of said small holes that are filled in with adhesive; and
- (d) a nonperforated inner skin, said nonperforated inner skin being adhesively bonded by a film adhesive to the inner sides of said sections of cellular core material.

5,776,580
INSULATING ELEMENT AND METHOD FOR MANUFACTURING THE ELEMENT
Jeppe Rasmussen, Virum, and Luis Nørgaard, Roskilde, both of Denmark, assignors to Rockwool International A/S, Hede-husene, Denmark
PCT No. PCT/DK95/00153, § 371 Date Oct. 11, 1996, § 102(e) Date Oct. 11, 1996, PCT Pub. No. WO95/28533, PCT Pub. Date Oct. 26, 1995
PCT Filed Apr. 11, 1995, Ser. No. 727,434
Claims priority, application Denmark, Apr. 13, 1994, 0427/94
Int. Cl.⁶ B32B 3/12

U.S. Cl. 428—74 13 Claims
1. Insulating plate element comprising a heat-insulating core layer (1,10) open to diffusion, with a vapor-proof outer layer (4,5; 19,20) coated on opposite sides of said core layer, and a plurality of vapor-proof separating layers (3,15) which extend through said

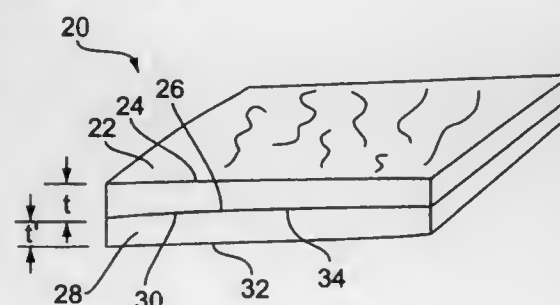


core layer perpendicularly to the vapor-proof outer layers (4,5;19,20) and which are connected to said outer layers in a vapor-proof manner.

8. Method of producing an insulating plate element comprising the steps of applying a vapor-proof layer (11) onto at least one side of a plate or a web (10) of an insulating core material which is open to diffusion, cutting the plate or web thus produced into lamellae (12), turning the lamellae (12) 90° about longitudinal axes thereof and adhering said lamellae to each other to form a plate, strips (15) of the vapor-proof layer forming a separating layer between adjacent lamellae (12), coating both sides of the plate or web thus produced with a vapor-proof outer layer in such a manner that vapor-proof connections are obtained between the edges of the separating layers and the outer layers (19,20), and cutting the web into desired lengths.

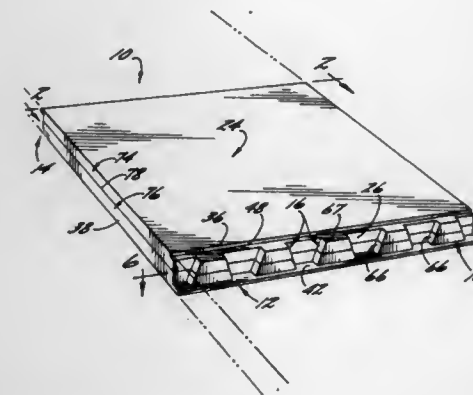
5,776,581
ORGANIC SHELL BLANK AND METHOD FOR MAKING SAME
Lawrence J. Sifel, 1030 Woodburn Hill Rd., Mechanicsville, Md. 20659, and Charles W. Erikson, 18072 Greenborn Rd., Grass Valley, Calif. 95945
Filed Dec. 21, 1995, Ser. No. 612,733
Int. Cl.⁶ B32B 5/12

U.S. Cl. 428—105 23 Claims



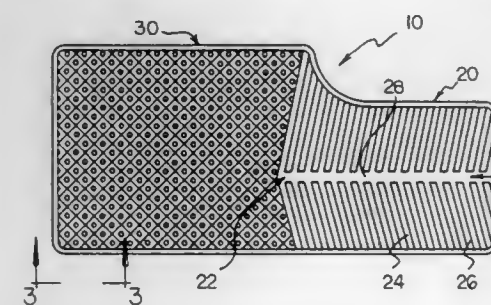
1. An organic shell inlay blank comprising:
a first sheet of nacreous shell matter having two opposed surfaces defining a first thickness therebetween rendering the first layer flexible;
a second sheet of nacreous shell matter having two opposed surfaces defining a second thickness therebetween rendering the second sheet flexible, one of the surfaces of the first layer substantially overlapping and being secured to one of the surfaces of the second sheet; and
a bonding agent securing together the first sheet and the second sheet, thereby forming the inlay blank.

5,776,582
LOAD-BEARING STRUCTURES WITH INTERLOCKABLE EDGES
Donald G. Needham, Ramona, Okla., assignor to Polyplus, Inc., Bartlesville, Okla.
Filed Aug. 5, 1996, Ser. No. 689,195
Int. Cl.⁶ B32B 3/12
U.S. Cl. 428—116 15 Claims



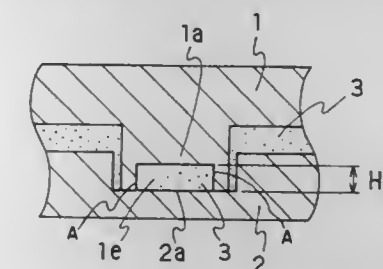
1. A load-bearing structure comprising a body portion comprising first and second skin structures respectively comprising a first peripheral edge portion and a second peripheral edge portion, and peripheral edges providing at least one pair of upper and lower offsets, wherein an upper offset of said at least one pair of upper and lower offsets, comprises said first peripheral edge portion and a plurality of spaced apart, depending projections uncovered by said second skin structure, and wherein a lower offset of said at least one pair of upper and lower offsets, comprises said second peripheral edge portion and a plurality of complementary upstanding projections uncovered by said first skin structure and adapted to interlock with an upper offset of a second load-bearing structure.

5,776,583
FLOOR MAT SYSTEM
Kirby K. Peyton, 127 Simmons Blvd., Brampton, Ontario, Canada, L6V 3X4
Filed Nov. 18, 1996, Ser. No. 749,517
Int. Cl.⁶ B60N 3/04
U.S. Cl. 428—120 12 Claims



1. A Floor Mat System comprising:
an upper portion;
a lower portion connected to the upper portion at an upper portion bottom section; and
a plurality of drainage compartments formed on a lower portion upper layer and a storage area disposed thereunder, the drainage compartments further having an aperture formed in the lower portion upper layer surrounded by a containing wall, the aperture being in flow communication with the storage area.

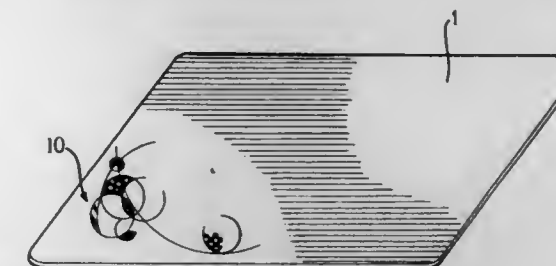
5,776,584
BONDED ASSEMBLY, METHOD OF JOINTING FOR PREPARATION THEREOF AND RIVET
Kosuke Haraga; Naoki Yagi, both of Amagasaki; Yoshinobu Nakashima, Nagasaki; Yuzi Ganryu, Kobe; Tsutomu Sasaki; Atsushi Takimoto, both of Amagasaki; Yosiro Komazawa, Chiyoda-ku; Asao Okuda, Inazawa; Shoji Takagi; Akifumi Matsukawa, both of Marugame; Hideaki Urata, Wakayama; Yasushi Kawashima, Nagoya; Kazumi Masuo, Kamakura; Kenji Honma, Koriyama, and Isao Ikeda, Nagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 19, 1995, Ser. No. 545,276
Claims priority, application Japan, Oct. 26, 1994, 6-262303
Int. Cl.⁶ F16B 1/48; B32B 3/26
U.S. Cl. 428—132 3 Claims



1e: CONCAVED PORTION FOR KEEPING ADHESIVE

1. A bonded assembly comprising:
a first board having a convexed portion on a jointing surface thereof, said convexed portion having a concave region for keeping adhesives therein;
a second board having a concaved portion on a jointing surface thereof to be engaged with said convexed portion; and
adhesives interposed between the first and second boards for jointly fastening said first and second boards;
wherein said concave region is provided on a top flat surface of the convexed portion; and
a height of the convexed portion is larger than a depth of the concaved portion to secure a thickness of an adhesive layer between the first and the second boards.

5,776,585
MOUSE PAD
Toru Fukuhara, and Ken-ichi Kinoshita, both of Aichi, Japan, assignors to Narumi China Corporation, Aichi, Japan
Filed Sep. 24, 1996, Ser. No. 718,868
Claims priority, application Japan, Sep. 26, 1995, 7-273597; Mar. 8, 1996, 8-080823
Int. Cl.⁶ B32B 3/30; A47B 97/00
U.S. Cl. 428—141 4 Claims



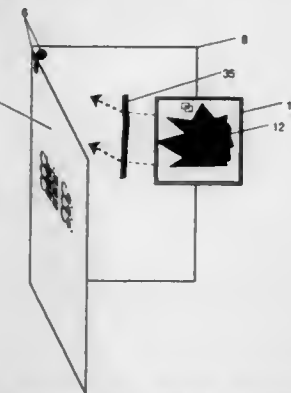
1. In a mouse pad for improving controllability of a mouse associated therewith for inputting data to a computer, the improvement comprising that said mouse pad is formed from a glass with 20 to 50 peaks per 1 cm of a rugged pattern surface having an average roughness ranging from 2 to 20 μm thereof.

5,776,586
PROMOTIONAL HANG-TAG WITH INTEGRAL
REMOVABLE TATTOO

Chris Lipper, 10591 Topsfield Dr., Cockeysville, Md. 21131
Continuation-in-part of Ser. No. 621,469, Mar. 26, 1996. This
application Jul. 19, 1997, Ser. No. 914,128
Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—195

8 Claims



1. A promotional hang-tag with integral removable tattoo, comprising:

- a cardboard sheet having at least one surface bearing printed subject matter, said cardboard sheet being defined by at least one through hole to allow said sheet to be hung from an intended product by a swifttack, string or cord threaded through the top of the tag;
 - a removable tattoo displaying secondary printed matter, said tattoo further comprising,
 - a panel of porous decal paper,
 - a water soluble slip layer carried on one side of said porous decal paper,
 - a water resistant film carried on said water soluble slip layer,
 - secondary printed matter on said water resistant film, and
 - a layer of pressure sensitive adhesive covering the secondary printed matter; and
 - a reattachable bonding agent applied to the other side of said porous decal paper along an edge thereof for removably attaching said edge of said removable tattoo to said cardboard sheet, the attached tattoo thereby obscuring at least a portion of the printed subject matter until removed;
- whereby said cardboard sheet is intended for conveying product information, and said removable tattoo, which may be removed and applied elsewhere to generate further publicity, adds the capability of conveying supplemental information such as retailer advertising.

5,776,587
ELECTRONIC PACKAGE COMPRISING A SUBSTRATE
AND A SEMICONDUCTOR DEVICE BONDED THERETO
Marie Angelopoulos, Cortlandt Manor; Vlasta A. Bruslic, Amawalk; Teresita Ordenez Graham, Irvington; Sampath Purushothaman, Yorktown Heights; Ravi F. Saraf, Briarcliff Manor, all of N.Y.; Jane Margaret Shaw, Ridgefield, Conn.; Judith Marie Roldan, Ossining, and Alfred Viehbeck, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 356,026, Dec. 14, 1994, Pat. No. 5,700,398. This application Sep. 12, 1997, Ser. No. 928,497
Int. Cl.⁶ B32B 9/00; H01B 1/06

U.S. Cl. 428—209

15 Claims

1. An electronic package which comprises a substrate and a semiconductor device bonded to said substrate with a composition comprising a thermoset or thermoplastic polymeric matrix, and a conductive filler component, where said filler component comprises electrically conductive particles and at least one conducting polymer selected from the group consisting of substituted and unsubstituted polyparaphenylenes, substituted and unsubstituted polyanilines, substituted and unsubstituted polyazines, sub-

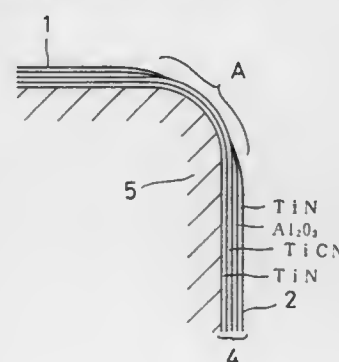
stituted and unsubstituted polythiophenes, substituted and unsubstituted polyparaphenylenes, substituted and unsubstituted poly-p-phenylene sulfides, substituted and unsubstituted polyfuranes, substituted and unsubstituted polypyrroles, substituted and unsubstituted polyselenophenes, substituted and unsubstituted polyacetylenes, mixtures thereof, and copolymers thereof.

5,776,588
COATED HARD ALLOY TOOL
Hideki Moriguchi; Daisuke Murakami; Akibiko Ikegaya, and Toshio Nomura, all of Itama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 427,601, Apr. 24, 1995, Pat. No. 5,597,272. This application Aug. 1, 1996, Ser. No. 690,911
Claims priority, application Japan, Apr. 27, 1994, 6-89758
Int. Cl.⁶ B23B 27/14

U.S. Cl. 428—210

6 Claims



1. A coated hard alloy tool having a cutting edge including a ridge and comprising a substrate made of a hard alloy, and a multi-layer ceramic coating film provided on the surface of said substrate, said coating film including at least one oxide layer and at least one non-oxide layer, the top several layers of said coating film being missing partially or completely along said ridge, at least one oxide layer being included in missing layers among said top several layers, whereby a non-oxide layer, whose main component is a nitride or a carbonitride, of said coating film is exposed along said ridge where said top several layers are missing.

5,776,589
COMOLDED MULTI-LAYER MONOVINYLAROMATIC/
CONJUGATED DIENE BLOCK POLYMER BLEND
SYSTEM, AND SHAPED ARTICLES DERIVED
THEREFROM

Jean Michael Mace, and Jacques Moerenhout, both of Ottignies, Belgium, assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 28, 1995, Ser. No. 519,886
Claims priority, application European Pat. Off., Aug. 30, 1994, 94306350

Int. Cl.⁶ B32B 25/04; 25/14; 27/32; B60R 21/20

U.S. Cl. 428—212

11 Claims

1. A comolded multi-layered polymer blend system, comprising: at least two layers, each layer comprised of a blend which contains an optionally hydrogenated block copolymer which comprise at least two terminal polymonovinylaromatic blocks and at least one central polyconjugated diene block, and at least one of said layers comprising the blend of the block copolymer further comprises a co-continuous rigid polymer phase consisting of a homopolyalkylene or a copolymer of alkylenes having from 2 to 10 carbon atoms; wherein the two layers are in intimate contact with each other; wherein the layers have different contents by weight of the block copolymers; and

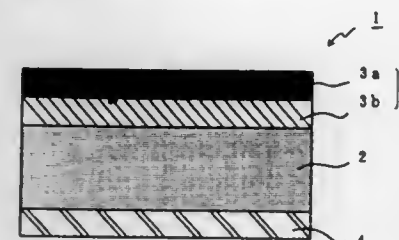
wherein an extender is present in each polymer blend such that the final weight ratio of the block copolymer and the extender in each layer is the same.

5,776,590
MAGNETIC RECORDING MEDIUM
Toshio Yamazaki; Ken Yoshizawa; Tadashi Itou; Shigeaki Wakana, and Satoshi Shimizu, all of Tochigi-ken, Japan, assignors to Kao Corporation, Tokyo, Japan
Filed Apr. 4, 1996, Ser. No. 625,850
Claims priority, application Japan, Apr. 4, 1995, 7-79215; Jan. 11, 1996, 8-3336

Int. Cl.⁶ G11B 5/716

U.S. Cl. 428—212

10 Claims



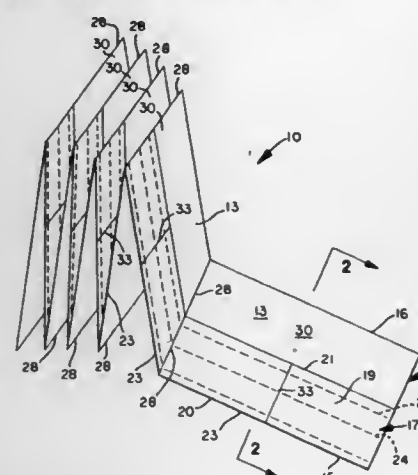
1. A magnetic recording medium comprising:
a nonmagnetic support having provided thereon a plurality of magnetic layers including a first magnetic layer and a second magnetic layer interposed between the nonmagnetic support and the first magnetic layer, wherein:
the first magnetic layer contains acicular magnetic powder and has a thickness of not more than 1.0 μm ; and
the second magnetic layer contains hexagonal plate-shaped magnetic powder comprising a hexagonal ferromagnetic oxide and further alpha-iron oxide, its axis of easy magnetization is oriented in the longitudinal direction of the magnetic recording medium, and
wherein said first magnetic layer is applied and formed while the second magnetic layer is wet.

5,776,591
ELONGATE PRINTABLE SHEET COMPOSITE
Timothy A. Mertens, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 30, 1995, Ser. No. 565,422

Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—195

6 Claims



1. In combination,
an elongate sheet composite, and

an impact printer comprising printing head means, and sheet feeding means defining a sharply arcuate path for driving the sheet composite longitudinally past the printing head means on the printer,

said sheet composite comprising:

- an elongate primary sheet portion having opposite longitudinally extending first and second edges, and first and second major surfaces between said edges;
- a secondary sheet portion having first and second opposite major surfaces and having first and second opposite edges, said secondary sheet portion having a width between said first and second edges that is no more than the width of the primary sheet portion between the first and second opposite edges of the primary sheet portion, the first surface of said secondary sheet portion being positioned adjacent the first surface of the primary sheet portion with the first edges of said primary and secondary sheet portions generally aligned; and
- a layer of pressure sensitive adhesive extending between the adjacent first surfaces of said sheet portions, said adhesive being firmly adhered on the first surface of one of said sheet portions and being releasably adhered on the first surface of the other of said sheet portions;
- said primary and secondary sheet portions having transverse paths of weakness at spaced locations along the length of said sheet composite to define a concatenation of sheet composite segments therebetween, and said sheet composite being folded in opposite directions along successive transverse paths of weakness to form a stack of sheet composite segments alternately disposed with parts of said primary sheet portion adjacent and parts of said secondary sheet portion adjacent;
- said sheet composite having a width between the first and second edges of said primary sheet portion adapted to be received and fed through the printer by the sheet feeding means of the printer,
- said sheet composite being fed from said stack into the sheet feeding means of the printer, and after a length of the sheet composite is printed by the printer and separated from the non printed portion of the sheet composite, the secondary sheet portion being separable from the primary sheet portion along the separated printed length to expose the layer of adhesive, and that separated printed length being adherable on a substrate to which the printing on the separated length relates.

5,776,592
POLYESTER FILMS USABLE FOR CLOSURES AND
PROCESS FOR THEIR PREPARATION
Jean-Paul Benhayoun, Villeurbanne; Alain Marze, Chassieu, and Brunot Melquioni, Lyons, all of France, assignors to Rhone-Poulenc Films, Miribel, France
Filed Jul. 3, 1995, Ser. No. 497,890
Claims priority, application France, Jul. 1, 1994, 94 08369
Int. Cl.⁶ B32B 7/02

U.S. Cl. 428—221

24 Claims

1. A polyester film, said film having
a) a thickness of 5 to 30 micrometers;
b) a crystallinity higher than or equal to 50%;
c) a planar birefringence $\Delta P \leq 0.160$;
d) a tensile strength in the lengthwise direction (MDTS) and the lower tensile strength of a first and a second diagonal direction (± 45 degrees relative to the lengthwise direction) (TS45), wherein (MDTS)+(TS45) $\leq 40 \text{ kg/mm}^2$ (392.4 MPa); and
e) an elongation at break in the lengthwise direction (MDEB) and the higher elongation at break of said first and said second diagonal direction (EB45), wherein (MDEB)+(EB45) $\geq 290\%$, and wherein the film satisfies a use test.

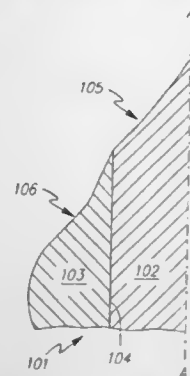
5,776,593
COMPOSITE CERMET ARTICLES AND METHOD OF MAKING

Ted R. Massa, Latrobe; John S. Van Kirk, Murrysville, and Edward V. Conley, North Huntingdon, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Division of Ser. No. 363,172, Dec. 23, 1994. This application Dec. 21, 1995, Ser. No. 576,532
Int. Cl.⁶ C22C 29/08

U.S. Cl. 428—212

32 Claims



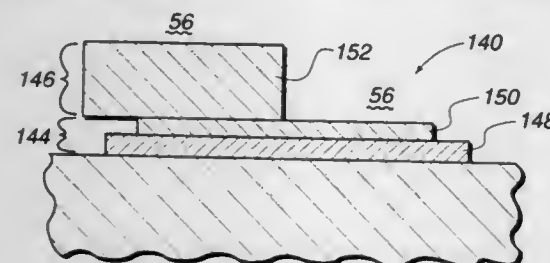
1. A tool for manipulating a material formation whereby such manipulation creates abrasive cuttings, the tool comprising: an elongated tool body having opposite forward and rearward ends; and a hard tip being affixed on the forward end of said tool body, said hard tip comprising:
 - (a) a first region comprising a first ceramic component having an average coarse grain size comprising about 0.5 μ m to about 12 μ m and a first binder content comprising about 5 wt. % to about 10 wt. %; and
 - (b) at least one additional region comprising a second ceramic component comprising about 0.5 μ m to about 8 μ m and a second binder content comprising about 8 wt. % to about 15 wt. %, wherein the average grain size of the second ceramic component is less than the average grain size of the ceramic component of the first region, the second binder amount of the at least one additional region is greater than the first binder amount of the first region, the first region and at least one additional region at least partially share at least one autogeneously formed interface, and there is a stepwise gradation of binder content from the first region to the at least one addition region.

5,776,594
TRANSPARENT ELECTRODES FOR LIQUID CELLS AND LIQUID CRYSTAL DISPLAYS
R. Russel Austin, Novato, Calif., assignor to Photran Corporation, Lakeville, Minn.

Continuation-in-part of Ser. No. 175,769, Dec. 30, 1993, Pat. No. 5,508,091, which is a continuation-in-part of Ser. No. 66,713, May 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 985,287, Dec. 4, 1992, abandoned. This application Apr. 15, 1996, Ser. No. 631,137
Int. Cl.⁶ B32B 17/06

U.S. Cl. 428—212

3 Claims



1. A coated substrate, comprising: a base coating deposited on the substrate, and a plurality of spaced-apart transparent electrodes formed on the base coating and exposing the base coating therebetween, the electrodes and the exposed base coating therebetween configured to be immersed in a selected liquid; each of the electrodes including at least three layers, each of said three layers having an extinction coefficient less than 0.10 at about 520 nanometers, any adjacent two of said three layers having a different refractive index, and said three layers designated as first second and third layers in consecutive numerical order; said third layer being adjacent said base coating and being a layer of a transparent electrically conductive material having a refractive index between about 1.8 and 2.2 at a wavelength of about 520 nanometers; said base coating including at least one layer of a dielectric material, said at least one layer being adjacent said third layer; and said base coating alone having a first spectral response in the selected liquid, and the base coating and any electrode together having a second spectral response in the selected liquid, said first and second spectral responses in the selected liquid substantially matching in a wavelength range between about 470 and 650 nanometers.

5,776,595
THERMAL TRANSFER SHEET
Kenji Kurokawa; Yasuo Tago, and Seiji Tsuboi, all of Osaka, Japan, assignors to Fujicopian Co., Ltd., Osaka, Japan
Filed Jul. 8, 1996, Ser. No. 676,729
Claims priority, application Japan, Jul. 6, 1995, 6-170660
Int. Cl.⁶ B41M 5/26

U.S. Cl. 428—212

6 Claims

1. A thermal transfer sheet comprising a foundation, and at least a release layer containing a paraffin wax, an intermediate layer containing a wax and a heat-meltable color ink layer which are stacked on the foundation in this order, the intermediate layer containing 10% to 100% by weight of an isoparaffin wax.

5,776,596
MAGNETIC RECORDING MEDIUM HAVING A MAGNETIC LAYER AND INTERMEDIATE LAYER EACH CONTAINING A SPECIFIED FATTY ACID AND FATTY ACID ESTER

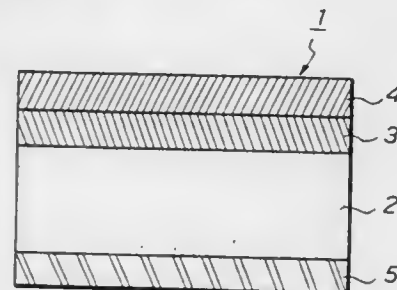
Toshio Yamazaki; Shigeaki Wakana; Satoshi Nagai, and Tetsutaro Inoue, all of Tochigi-ken, Japan, assignors to Kao Corporation, Tokyo, Japan
Filed Nov. 22, 1996, Ser. No. 754,958

Claims priority, application Japan, Nov. 22, 1995, 7-304851; Sep. 26, 1996, 8-254534

Int. Cl.⁶ G11B 5/71

U.S. Cl. 428—212

11 Claims

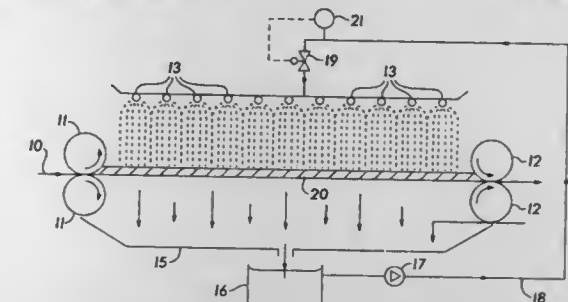


1. A magnetic recording medium comprising a non-magnetic substrate and a magnetic layer, said magnetic layer containing, as a lubricant, (A) a fatty acid ester of a straight-chain or branched

5,776,598
FIBRE TREATMENT
Bernd Huber; Gerhard Stein, both of Kelheim; Heinz Paul Pöter, Saal, all of Germany, and David Eric William Hill, Grimsby, United Kingdom, assignors to Faserwerk Kelheim GmbH, Germany
Filed Jan. 30, 1996, Ser. No. 601,215
Claims priority, application Germany, Jan. 31, 1995, 9501845
Int. Cl.⁶ B32B 5/06; 5/22

U.S. Cl. 428—298

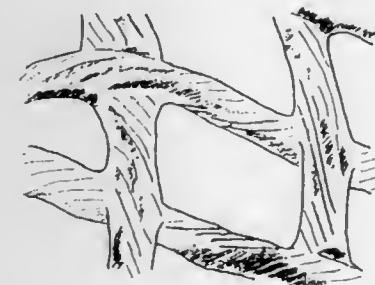
9 Claims



1. A method of treatment of a fibre surface with a finish comprising the steps of: providing a surface finish as an aqueous emulsion stabilised at a first pH value; destabilizing said aqueous emulsion by a change in said first pH value; and applying said aqueous emulsion to the fibre surface, wherein said emulsion is destabilized no later than when it is applied to the fibre surface.

5,776,597
SPEAKER DAMPER
Hirosuke Watanabe, Ibaraki; Takeo Kimura, Osaka; Masatoshi Okazaki, Ashiya, and Shinya Mizone, Tsu, all of Japan, assignors to Teijin Limited, and Matsushita Electric Industrial Co., Ltd., both of Osaka, Japan
Filed Feb. 22, 1996, Ser. No. 603,867
Int. Cl.⁶ H04R 7/26; 31/00
U.S. Cl. 428—297.4

7 Claims



1. A speaker damper which is composed of cloth, as a matrix component, formed of a mixed yarn comprising wholly aromatic polyamide fibers and thermoplastic aromatic polyester fibers wherein

- (i) said thermoplastic aromatic polyester fiber having a thermal fusing temperature which is at least 100° C. lower than a thermal decomposition temperature of said wholly aromatic polyamide fiber constituting said mixed yarn,
 - (ii) said wholly aromatic polyamide fibers constituting said mixed yarn are fixed together by the fusion of said thermoplastic aromatic polyester fiber,
 - (iii) said fibers forming said yarn are fixed together with a shape retaining agent comprising a polyester resin which has been impregnated in said mixed yarn, and
 - (iv) said mixed yarn, at intersections thereof in said cloth, being fixed together by the shape retaining agent comprising a polyester resin which has been impregnated in said mixed yarn and by the fusion of said thermoplastic aromatic polyester fiber;
- said polyester resin which has been impregnated in said mixed yarn being present in an amount of 15 to 40% by weight of said cloth;
- said speaker damper having a gas permeability of 70 to 170 cc/cm²-sec.

5,776,599
ELECTRONIC COATING MATERIALS USING MIXED POLYMERS
Loren Andrew Haluska, and Keith Winton Michael, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
Division of Ser. No. 491,734, Jun. 19, 1995, Pat. No. 5,635,240. This application Dec. 23, 1996, Ser. No. 773,465
Int. Cl.⁶ B32B 9/04

U.S. Cl. 428—323

7 Claims

1. An electronic substrate produced by the method comprising applying a coating composition comprising 10 to 90 wt % hydrogen silsesquioxane resin and 90 to 10 wt % polysilazane onto an electronic substrate; and heating the coated substrate at a temperature sufficient to convert the coating composition into a ceramic coating.

5,776,600
SLIDE MEMBER AND METHOD OF MANUFACTURING THE SAME

Tetsuya Katayama; Kaoru Murabe; Osamu Komura; Chihiro Kawai; Akira Yamakawa; Kenji Matsumura; Norio Yasuoka; Matsuo Higuchi, and Masaya Miyake, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 150,189, Nov. 30, 1993, Pat. No. 5,543,371. This application Apr. 9, 1996, Ser. No. 631,666
Claims priority, application Japan, Mar. 31, 1992, 4-77651; Apr. 9, 1992, 4-89049; Mar. 29, 1993, PCT/JP93/00385
Int. Cl.⁶ C04B 35/587

U.S. Cl. 428—325

26 Claims

1. A slide system comprising a cooling medium containing fluorine and a slide member comprising a sliding surface arranged in an atmosphere of said cooling medium, wherein said sliding surface includes ceramic and has a surface roughness of not more than 0.5 μ m in center line average roughness Ra, and wherein said

ceramic contains crystal grains in a linear density of at least 35 per 30 μm in length with a boundary phase volume ratio of not more than 15 volume %, and contains pores of not more than 20 μm in maximum diameter in a content of not more than 3%.

5,776,601

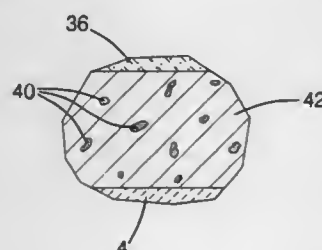
TITANIA EXHAUST GAS OXYGEN SENSOR

Robert Gregory Fournier, Burton; Kailash Chandra Jain, Troy, and Carlos Augusto Valdes, Flint, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 28, 1996, Ser. No. 742,609
Int. Cl.⁶ B32B 18/00

U.S. Cl. 428—325

4 Claims



1. In a resistive, thick-film, titania, engine exhaust gas oxygen sensor comprising principally a sintered alumina substrate, a thin-film electrode bonded to said substrate, and a layer of sintered titania supported on said substrate in contact with said electrode, the improvement wherein said electrode comprises (i) a noble metal resistant to oxidation at the operating temperature of said exhaust gas, and (ii) a sufficient amount of titania particles to promote bonding of said titania layer to said electrode upon firing of said titania layer.

5,776,602

MAGNETIC RECORDING MEDIUM HAVING A CARBON PROTECTIVE FILM CONTAINING NITROGEN AND OXYGEN AND OVERCOATED WITH A LUBRICANT

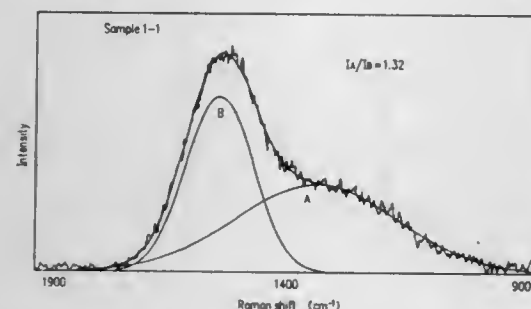
Hideyuki Ueda, Takatsuki; Kenji Kuwahara, Ikoma; Hiroshi Seki, Nara; Sadayuki Okazaki, Hirakata; Masaru Odagiri, Kawanishi; Kiyoshi Takahashi, Ibaraki, and Mikio Murai, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 23, 1995, Ser. No. 546,833

Claims priority, application Japan, Oct. 25, 1994, 6-260198
Int. Cl.⁶ G11B 05/66

U.S. Cl. 428—332

20 Claims



1. A magnetic recording medium comprising:
a non-magnetic substrate;
a ferromagnetic thin metal layer formed on the non-magnetic substrate;
a carbon layer; and
a lubricant layer in contact with the carbon layer so that the carbon layer is positioned between the ferromagnetic thin metal layer and the lubricant layer, wherein the carbon layer

contains nitrogen atoms, the Raman spectrum of the carbon layer has a peak A in the range of about 1310 to about 1410 cm^{-1} and a peak B in the range of about 1520 to about 1570 cm^{-1} , the ratio of integrated intensities of the peak A to the peak B is in the range of about 1.2 to about 2.0, and the atomic percentage of nitrogen to carbon in the carbon layer is in the range of about 5 to about 20%.

5,776,603

GLAZING PANE EQUIPPED WITH AT LEAST ONE THIN FILM AND METHOD OF MANUFACTURING THE SAME

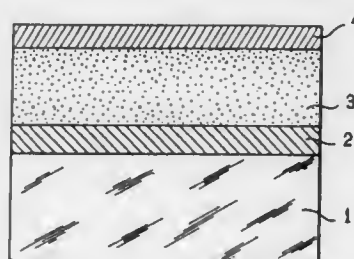
Georges Zagdoun, La Garenne Colombes, and Victor Corinne, Saint-Leu La Foret, both of France, assignors to Saint-Gobain Vitrage, Aubervilliers Cedex, France

Filed Nov. 21, 1995, Ser. No. 561,387

Claims priority, application France, Nov. 21, 1994, 94 13911
Int. Cl.⁶ B32B 17/06

U.S. Cl. 428—336

32 Claims



1. A product comprising
(a) a transparent substrate, and
(b) a homogeneous thin film, on said substrate;
wherein said homogeneous thin film is formed by pyrolysis and comprises a mixed oxide of silicon and aluminum, and an additive amount of an element M, which is a halogen.

5,776,604

COATING FOR PRINTABLE PLASTIC FILMS

Pang-Chia Lu, Pittsford; Gordon Musclove, Henrietta, both of N.Y., and Robert Michael Sheppard, Luxembourg, Luxembourg, assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 383,133, Feb. 3, 1995. This application Jan. 4, 1996, Ser. No. 582,819

Int. Cl.⁶ B32B 27/30; 27/32; C08K 3/00; 5/3492

U.S. Cl. 428—343

21 Claims

II. A lithographic printable thermoplastic substrate comprising: a polyolefin substrate treated on at least one surface with a coating composition comprising:

- about 20 to about 80 weight percent based on the entire weight of the coating of a binder composition consisting of about 5 to about 50 weight percent of a homopolymer of acrylic acid and about 95 to about 50 weight percent of an ethylene acrylic acid copolymer;
- about 20 to about 80 weight percent, based on the entire weight of the coating, of at least one finely divided particulate filler selected from the group consisting of silica, talc, diatomaceous earth, calcium silicate, bentonite and clay;
- about 0.5 to about 10 weight percent, based on the entire weight of the coating, of a surface active agent.

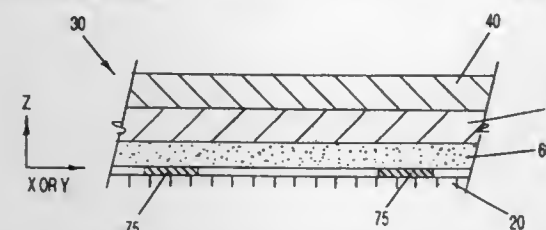
5,776,605

REPLACEMENT SURFACE AND METHOD OF INSTALLATION

Michael W. May, P.O. Box 697, Sandia Park, N. Mex. 87047
Continuation-in-part of Ser. No. 551,155, Oct. 31, 1995, Pat. No. 5,650,228. This application Oct. 8, 1996, Ser. No. 728,263
Int. Cl.⁶ B32B 7/12; A47K 3/02

U.S. Cl. 428—354

6 Claims



1. A replacement surface for covering substantially all of an existing surface and adapted to conform and seal surface irregularities and to fill cracks in the existing surface to present at the upper surface of the replacement surface a substantially smooth contour, comprising:

- a replacement surface comprising a plurality of layers;
- a lowermost layer of the plurality of layers serving to provide a bottom surface for adhesion to the existing surface;
- an uppermost layer of the plurality of layers serving to provide a biomedically sound upper surface having a non-skid texture;
- a double-sided adhesive tape disposed between said lowermost layer and the existing surface; and
- an adhesive layer disposed on a bottom surface of the lowermost layer of the plurality of layers and said adhesive layer and said tape serving to adhere said replacement surface to the existing surface, said adhesive layer comprising a waterproof adhesive whereby cracks in substantially all of the existing surface are enveloped and sealed and at least partially filled.

5,776,606

INSULATING AND ANTICORROSIVE COMPOSITION FOR ELECTRICAL DEVICES

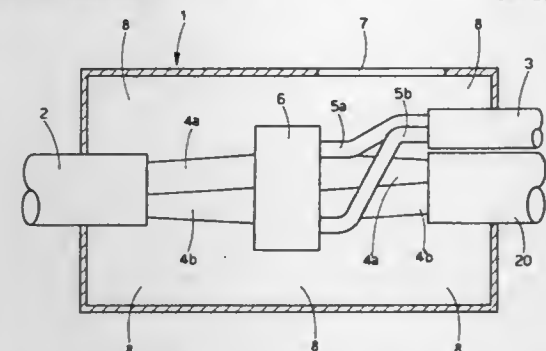
Emilio Locatelli, Basiglio, and Claudio Bosisio, Brenbate Sotto, both of Italy, assignors to Pirelli Cavi S.p.A., Italy

Filed Apr. 4, 1996, Ser. No. 627,981

Claims priority, application Italy, Apr. 14, 1995, MI95A0770
Int. Cl.⁶ H01B 3/26; C08L 95/00

U.S. Cl. 428—357

30 Claims



1. An insulating and anticorrosive composition for electrical devices consisting essentially of a mixture of two semifluid components, characterized in that

- the first component comprises
from 20 to 35 parts (w/w) of a bitumen having a softening point of at least 90° C.,
from 1.5 to 7 parts (w/w) of a hydrocarbon resin,
from 0.5 to 5 parts (w/w) of an alkylbenzene,
from 35 to 60 parts (w/w) of resin oil comprising a mixture of rosin acids and esters, and
from 10 to 30 parts (w/w) of olein,
- the second component comprises

from 40 to 60 parts (w/w) of a mixture of partially hydrogenated terphenyls and quaterphenyls,
from 0.5 to 5 parts (w/w) of a styrene/butadiene block copolymer,

from 5 to 30 parts (w/w) calcium oxide, and
from 10 to 30 parts (w/w) of calcium hydroxide,
C) and the mixture has 1 part (w/w) of the first component (A) mixed with 0.1–0.3 parts (w/w) of the second component (B).

5,776,607

FLEXIBLE BIREGIONAL CARBONACEOUS FIBER, ARTICLES MADE FROM BIREGIONAL CARBONACEOUS FIBERS, AND METHOD OF MANUFACTURE

Francis Patrick McCullough, 104 Fir Dr., Lake Jackson, Tex. 77566

Division of Ser. No. 428,691, Apr. 25, 1995, Pat. No. 5,700,573.
This application Jul. 31, 1997, Ser. No. 903,698

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—367

15 Claims

1. An fiber assembly comprising a multiplicity of biregional carbonaceous fibers blended with other natural or polymeric fibers, wherein each said biregional fiber has an inner region of a thermoplastic polymeric core and an outer region of a carbonaceous sheath, and wherein said biregional fibers are present in said blend in an amount of from about 7.5% to 90%.

5,776,608

PROCESS FOR MAKING ELECTRICALLY CONDUCTIVE FIBERS

Pravin P. Asher, Candler; Robert L. Lilly; Grover L. Davenport, Jr., both of Asheville; Robert K. Hyatt, Canton, and Charles H. Rogers, Asheville, all of N.C., assignors to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 686,854, Jul. 26, 1996, Pat. No. 5,698,148.
This application Jun. 6, 1997, Ser. No. 870,741

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—373

2 Claims

1. An electrically conductive melt-spun fiber having a denier per filament of about 3 to about 10 and a transverse cross-section with an electrically conductive sheath of a thermoplastic formulated with carbon black; and an electrically non-conductive core; said fiber having an electrical resistance of less than 1×10^{13} ohms/cm, said sheath consisting essentially of synthetic thermoplastic fiber forming polyester containing uniformly dispersed therein from about 3 to about 40% by weight of electrically conductive carbon black, wherein said electrically conductive sheath and said electrically non-conductive core are made of the same synthetic thermoplastic fiber-forming host polymer, wherein said synthetic thermoplastic fiber-forming host polymer is a blend of poly(ethylene terephthalate) and poly(butylene terephthalate).

5,776,609

FLEXIBLE BIREGIONAL CARBONACEOUS FIBER, ARTICLES MADE FROM BIREGIONAL CARBON FIBERS, AND METHOD OF MANUFACTURE

Francis Patrick McCullough, 104 Fir Dr., Lake Jackson, Tex. 77566

Division of Ser. No. 428,691, Apr. 25, 1995, Pat. No. 5,700,573.
This application Jul. 31, 1997, Ser. No. 904,024

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—375

7 Claims

1. A biregional carbonaceous fiber derived from a biregional precursor fiber, wherein said biregional fiber comprises an inner region of a thermoplastic polymeric composition and an outer region of a carbonaceous sheath, said biregional fiber having a coating of a water insoluble hydrophobic composition.

5,776,610

CARBON COMPOSITE ELECTRODE MATERIAL AND METHOD OF MAKING THEREOF

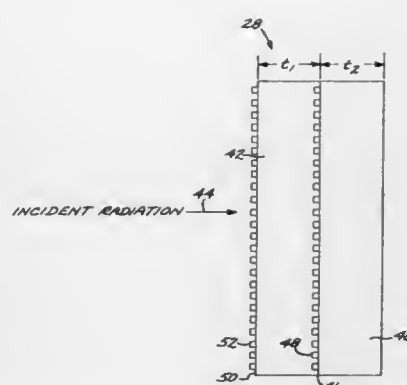
Kazuo Yamada, Kitakatsuragi-gun; Hideaki Tanaka, Nara; Takehito Mitate, Kitakatsuragi-gun, and Masaharu Yoshikawa, Kashihara-cho, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 323,572, Oct. 17, 1994, Pat. No. 5,595,838, which is a division of Ser. No. 13,029, Feb. 3, 1993, abandoned. This application Oct. 11, 1996, Ser. No. 729,170
Int. Cl.⁶ B32B 5/16

U.S. Cl. 428—403

12 Claims

1. A particulate carbon material comprising a plurality of carbon particles, each particle having a crystalline carbon core-coated with a carbon material in which an element of group VIII metal is diffused.



5,776,611

CROSSLINKED HYDROGEL COATINGS

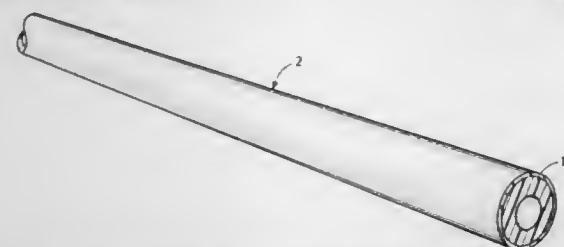
Richard Elton, Glens Falls, N.Y., and Margret Opolski, Carlisle, Mass., assignors to C.R. Bard, Inc., Murray Hill, N.J.

Filed Nov. 18, 1996, Ser. No. 746,946

Int. Cl.⁶ B32B 27/00; 27/40

U.S. Cl. 428—423.1

16 Claims



5. An article comprising a substrate and a durable, flexible hydrophilic, lubricious organic coating adhered thereto, said coating formed from the reaction on the surface of the substrate to be coated, of a mixture comprising an isocyanate, a compound having at least two active hydrogens per molecule selected from the group consisting of polyamines, polymercaptans, and polycarboxylates or compounds with NH, NH₂, SH or COOH groups on same molecule, in the presence of said hydrophilic polymer, with the total sum of the average isocyanate functionality plus the average active hydrogen functionality exceeding 4 and the molar ratio of total NCO group to total active hydrogens being at least 0.8 and a hydrophilic polymer selected from the group consisting of a poly(ethylene oxide) and a polyvinylpyrrolidone in a carrier liquid to form a coating of a crosslinked polyurea matrix complexed with the hydrophilic polymer having good adherence to the substrate and a very low coefficient of friction when wetted with water.

5,776,612

WINDOW THAT TRANSMITS LIGHT ENERGY AND SELECTIVELY ABSORBS MICROWAVE ENERGY

Donald S. Fisher, Valley Center, Calif., assignor to Exotic Materials Inc., Murrieta, Calif.

Filed Feb. 21, 1996, Ser. No. 604,170

Int. Cl.⁶ G02B 5/28; 1/10; B32B 7/00

U.S. Cl. 428—426

29 Claims

1. A window, comprising:
a first layer of a first material that transmits radiation in a transmitted wavelength range selected from the group consisting of the visible and the infrared, the first material being a dielectric;
a second layer positioned adjacent to the first layer, the second layer comprising a second material that transmits radiation in the transmitted wavelength range selected for the first material, the second material being selected from the group consisting of a dielectric and a semiconductor;

first electrical conductor means disposed between the first layer and the second layer, for imparting electrical conductivity to a region between the first layer and the second layer wherein the first electrical conductor means comprises a first grid of electrical conductors; and

second electrical conductor means disposed on at least one of an exterior surface of the first layer remote from the second layer and an interior surface of the second layer remote from the first layer, for imparting electrical conductivity at the exterior surface, wherein the second electrical conductor means comprises a second grid of electrical conductors.

5,776,613

ENAMEL FRIT COMPOSITION FOR A LOW-EXPANSION CRYSTALLIZED GLASS AND ENAMEL-COATED LOW-EXPANSION CRYSTALLIZED GLASS PLATE USING THE SAME

Narutoshi Shimatani; Kiyoshi Katagi, and Akihiko Sakamoto, all of Shiga-ken, Japan, assignors to Nippon Electric Glass Co. Ltd., Shiga-ken, Japan

Filed Oct. 31, 1996, Ser. No. 740,626

Int. Cl.⁶ B32B 17/06

U.S. Cl. 428—427

4 Claims

1. An enamel-coated low-expansion crystallized glass plate comprising a low-expansion crystallized glass plate covered with an enamel coating, wherein said enamel coating consists essentially of, by weight, of about 30–94 wt % glass component, 5–69 wt % TiO₂ crystals, and 0.05–34 wt % coloring pigment component, said glass component consisting essentially of, by weight, of about 45–75% SiO₂, 10–30% B₂O₃, 1–8% Al₂O₃, 1–10% BaO, 0–10% Na₂O, 0–5% K₂O, 0–5% Li₂O, and 0–2% F₂.

5,776,614

SILICONE PRESSURE SENSITIVE ADHESIVE COMPOSITIONS

Martin Eric Cifuentes, and William Neal Fenton, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 27, 1997, Ser. No. 822,896

Int. Cl.⁶ C09J 183/04; B32B 9/04

U.S. Cl. 428—447

30 Claims

1. A silicone pressure sensitive adhesive composition obtained by a method comprising the steps of

(I) reacting a mixture comprising:

(A)(i) at least one hydroxyl-terminated polydiorganosiloxane having a viscosity of from 100 to 100,000,000 mm²/s at 25° C. or

(ii) a mixture of

(a) a hydroxyl-terminated polydiorganosiloxane and

(b) a polydiorganosiloxane selected from

(i) polydiorganosiloxanes terminated with monovalent hydrocarbon radicals free of aliphatic unsaturation or

(ii) alkenyl-terminated polydiorganosiloxanes wherein said mixture has a viscosity of from 100 to 100,000,000 mm²/s at 25° C.;

(B) at least one soluble silicone resin consisting essentially of at least one R₃SiO_{1/2} unit and at least one SiO_{4/2} unit, wherein R is independently selected from a monovalent hydrocarbon or halohydrocarbon radical free of aliphatic unsaturation and having from 1 to 20 carbon atoms, an alkenyl radical, or a hydroxyl radical wherein the molar ratio of R₃SiO_{1/2} units to SiO_{4/2} units is from 0.5:1 to 1.2:1; and

(C) at least one solvent or plasticizer selected from the group consisting of carboxylic acids having at least six carbon atoms and having a boiling point of at least 200° C. and amines having at least 9 carbon atoms and having a boiling point of at least 200° C. to form a reaction product; and

(II) adding (D) an organic peroxide or azo compound to the reaction product of (I).

5,776,615

SUPERHARD COMPOSITE MATERIALS INCLUDING COMPOUNDS OF CARBON AND NITROGEN DEPOSITED ON METAL AND METAL NITRIDE, CARBIDE AND CARBONITRIDE

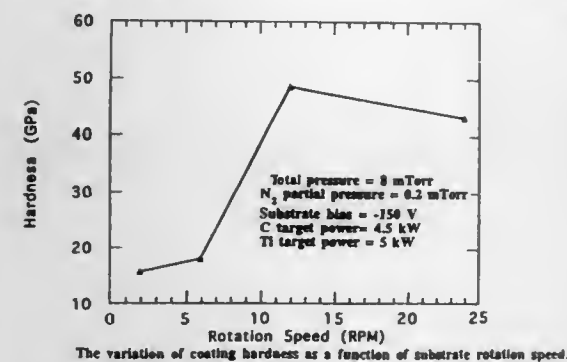
Ming-Show Wong, Northbrook; Dong Li, Evanston; Yip-Wah Chung, Wilmette; William D. Sproul, Palatine; Xi Chu, and Scott A. Barnett, both of Evanston, all of Ill., assignors to Northwestern University, Evanston, Ill.

Continuation-in-part of Ser. No. 973,390, Nov. 9, 1992. This application Feb. 14, 1995, Ser. No. 388,020

Int. Cl.⁶ C23C 14/06

U.S. Cl. 428—698

II Claims



1. A composite material having high hardness, comprising a plurality of layers comprising a carbon nitrogen compound in alternating sequence with a metal or metal compound as a seed material, said carbon nitrogen compound being deposited on a crystal plane of said metal or said metal compound sufficiently lattice-matched with a crystal plane of said carbon nitrogen compound that said carbon nitrogen compound is substantially crystalline, said layers being ion bombardment densified during deposition so as to be substantially free of voids and exhibiting a collective hardness greater than a hardness of any individual layer.

5,776,616

LAMINATED POLYESTER FILM TO BE LAMINATED ON METAL PLATE

Masahiko Kosuga, and Hideshi Kurihara, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 17, 1995, Ser. No. 544,100

Claims priority, application Japan, Oct. 18, 1994, 6-251826

Int. Cl.⁶ B32B 27/06; 27/36; 15/08

U.S. Cl. 428—480

25 Claims

1. A laminated polyester film to be laminated on a metal plate, which comprises:

(A) a first layer formed of a first aromatic copolyester which contains terephthalic acid as a main dicarboxylic acid component and ethylene glycol as a main glycol component and which has a melting point in the range of 210° to 245° C. and a glass transition temperature of at least 60° C., and

(B) a second layer formed of a molten blend which comprises 60 to 99% by weight of a second aromatic polyester which second aromatic polyester contains ethylene terephthalate as a main recurring unit and which has a melting point in the range of 210° to 255° C. and a glass transition temperature of at least 60° C., and 1 to 40% by weight of a third aromatic polyester which third aromatic polyester contains tetramethylene terephthalate as a main recurring unit and which has a melting point of 180° to 223° C., and wherein said second layer contains 1 to 40 ppm of alkali metal based on the weight of the second layer, and providing that said laminated film contains 1 to 40 ppm of alkali metal based on the weight of the entire laminated film, and

wherein the second layer contains free terephthalic acid in an amount of not more than 15 ppm, based on the weight of the second layer, and providing that the said laminated film contains free terephthalic acid in an amount of not more than 15 ppm, based on the weight of the entire laminated film, and (C) which laminated film when said second layer (B) is laminated to a metal plate and deep-drawn and subsequently subjected to a rust proofing ERV test shows an electrical current value of 0.1 mA or less.

5,776,617

OXIDATION-RESISTANT TI-AL-FE ALLOY DIFFUSION BARRIER COATINGS

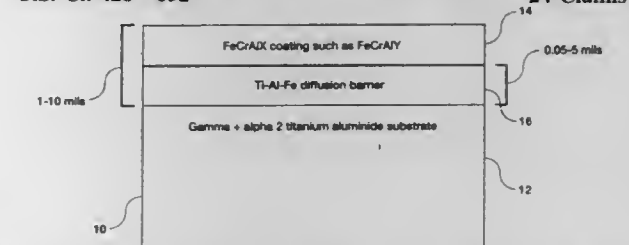
Michael P. Brady, Cleveland; James L. Smialek, Strongsville, and William J. Brindley, North Royalton, all of Ohio, assignors to The United States of America Government as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 21, 1996, Ser. No. 735,368

Int. Cl.⁶ B32B 15/00; 15/01; C22C 21/00; 14/00

U.S. Cl. 428—632

24 Claims



3. A composite structural article comprising a substrate and a coating for protecting the substrate from oxidative attack and interstitial embrittlement at temperatures up to at least 1000° C., and a diffusion barrier between said substrate and said coating, the diffusion barrier comprising titanium, aluminum, and iron in the following approximate atomic percent:

Ti-(50-55)Al-(9-20)Fe.

5,776,618

BARRIER FILM STRUCTURES

Pang-Chia Lu, Pittsford, N.Y., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 25, 1996, Ser. No. 686,305

Int. Cl.⁶ B32B 27/28; 27/32

U.S. Cl. 428—500

12 Claims

1. A polymeric film structure produced by the process comprising:

coating at least one side of a polyolefinic substrate with a solution of a polyvinyl alcohol-vinyl amine copolymer, an aldehyde-containing crosslinking agent for crosslinking said

copolymer and a catalytically-effective amount of a crosslinking-promoting acid catalyst.

5,776,619

PLATE STOCK

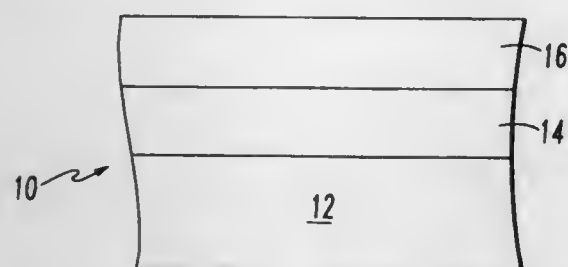
Kenneth J. Shanton, Neenan, Wis., assignor to Fort James Corporation, Richmond, Va.

Filed Jul. 31, 1996, Ser. No. 688,871

Int. Cl.⁶ B32B 23/08; 23/06; 27/10; B05D 1/36

U.S. Cl. 428—511

29 Claims



1. A coated paperboard with a smooth, print-receptive finish suitable for forming disposable food service and food storage containers that are grease-resistant, oil soak-through resistant, and cut-resistant after the coated paperboard is subjected to the heat and pressure required to form the finished food containers, wherein a sized paperboard substrate with a basis weight suitable for forming a food service container or food storage container is coated with two layers of a coating composition consisting of:

- a base coat coating layer immediately adjacent to and covering a sized surface of the paperboard substrate, said base coat coating layer comprising a mixture of a polymer latex and a particulate pigment comprising a blend of a premium grade kaolin clay and an ultrafine, wet ground calcium carbonate, said polymer latex and said pigment being approved for food contact by the U.S. Food and Drug Administration; and
- a top coat coating layer immediately adjacent to and covering the base coat coating layer, said top coat coating layer comprising a mixture of a styrene acrylic polymer latex and a particulate pigment comprising a blend of a premium grade kaolin clay and an ultrafine wet ground calcium carbonate, said styrene acrylic polymer latex and said pigment being approved for food contact by the U.S. Food and Drug Administration.

5,776,620

PROCESS FOR THE ASSEMBLY OF CERAMIC AND REFRACTORY ALLOY PARTS

Pierre Josso, Issy Les Moulinbaux, and Serge Alperine, Paris, both of France, assignors to Office National D'Etudes et de Recherches Aerospatiales, Chatillon, France

PCT No. PCT/FR95/00671, § 371 Date Jan. 22, 1996, § 102(e)

Date Jan. 22, 1996, PCT Pub. No. WO95/32163, PCT Pub. Date Nov. 30, 1995

PCT Filed May 22, 1995, Ser. No. 583,029

Claims priority, application France, May 25, 1994, 94/06344 Int. Cl.⁶ B22F 7/04

U.S. Cl. 428—610

18 Claims

1. Process for the assembly of a first ceramic part and a second part of a material chosen from ceramics and refractory metallic materials and super alloys based on at least one metal chosen from nickel, cobalt, iron and platinum metals, wherein the ceramic which constitutes the first part or the two parts is capable of syncrystallizing, directly or indirectly, with mullite, in which process the parts are juxtaposed, sealing composition containing fine particles of aluminium and of a moderating metal capable of forming an alloy with the aluminium so as to limit the high temperature reactivity of the aluminium in relation to the materials

of said parts, and/or of a preformed alloy of these two metals, and optionally at least one constituent chosen from silicon and silica, said particles being dispersed in a vehicle capable of maintaining them in position up to a temperature at which they react with one another and/or with said materials, and the whole is heated to a temperature sufficient to eliminate physically and/or chemically said vehicle and form between the two parts, by the reaction of said particles, a median layer of mullite connected to the ceramic part or to each ceramic part by a transition layer whose chemical composition evolves progressively, with continuity of crystalline structure, from that of the mullite to that of the part concerned, and when the second part is metal by an intermediate layer containing mullite, silica and an aluminate of the base metal of the metal part, in concentrations which vary progressively between the median layer and the metal part.

5,776,621

ORIENTED FERROELECTRIC THIN FILM ELEMENT

Keiichi Nashimoto, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 172,209, Dec. 23, 1993, abandoned.

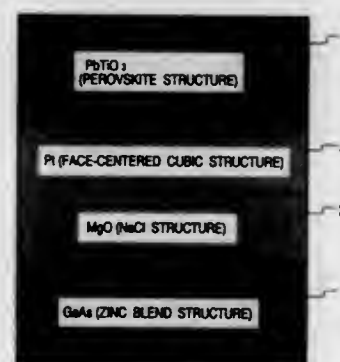
This application Oct. 25, 1995, Ser. No. 547,905

Claims priority, application Japan, Dec. 25, 1992, 4-358050

Int. Cl.⁶ B32B 9/00

U.S. Cl. 428—688

11 Claims



1. An oriented ferroelectric thin film element, comprising: a semiconductor single crystal substrate; an epitaxial oxide buffer thin film formed on said semiconductor single crystal substrate; an epitaxial metallic thin film formed on said oxide buffer thin film; and an epitaxial ferroelectric thin film formed on said metallic thin film.

5,776,622

BILAYER ELECTRON-INJECTING ELECTRODE FOR USE IN AN ELECTROLUMINESCENT DEVICE

Liang-Sun Hung, Webster, and Ching W. Tang, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 29, 1996, Ser. No. 681,680

Int. Cl.⁶ H05B 33/04; B32B 15/04

U.S. Cl. 428—690

22 Claims

1. An electroluminescent device comprising an anode, an electroluminescent layer, and a cathode, said cathode comprises a bilayer structure, comprising:

- a fluoride layer contacting the electroluminescent layer;
- a conductive layer contacting the fluoride layer; and
- the thickness of the fluoride layer being selected so that the bilayer acts as an electron injecting contact, the bilayer providing stability against atmospheric corrosion.

5,776,623

TRANSPARENT ELECTRON-INJECTING ELECTRODE FOR USE IN AN ELECTROLUMINESCENT DEVICE

Liang-Sun Hung; Ching Wan Tang, and Joseph Kuru Madathil, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 29, 1996, Ser. No. 681,734

Int. Cl.⁶ H05B 33/04; B32B 15/04

U.S. Cl. 428—690

25 Claims

1. An electroluminescent device containing a transparent electron-injecting electrode, the electrode comprising:

- a thin nonconductive layer contacting an electroluminescent layer;
- a conductive transparent overcoat layer; and
- the thickness of the nonconductive layer being selected so that the bilayer acts as an electron injecting contact, the bilayer providing stability against atmospheric corrosion.

5,776,624

BRAZED BIPOLAR PLATES FOR PEM FUEL CELLS

Jay Kevin Neutzler, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1996, Ser. No. 773,239

Int. Cl.⁶ H01M 8/04; 8/10

U.S. Cl. 429—26

12 Claims



1. A liquid-cooled, bipolar plate for separating adjacent first and second cells of a PEM fuel cell and for conducting electric current between said cells, said plate comprising: (1) a first corrosion-resistant metal sheet having an anode-confronting face comprising a plurality of first lands defining a plurality of first grooves for distributing hydrogen to said first cell, and a first heat exchange face; (2) a second corrosion-resistant metal sheet having a cathode-confronting face comprising a plurality of second lands defining a plurality of second grooves for distributing oxygen to said second cell, and a second heat exchange face; and (3) said first and second heat exchange faces (a) confronting each other so as to define therebetween a coolant flow passage adapted to receive a substantially dielectric liquid coolant, and (b) being electrically coupled to each other at a plurality of oxide-free sites via a brazement having a melting temperature less than the melting temperature of said sheets, said brazement being selected from metals which are so insoluble in said coolant as not to contaminate said coolant with metal ions which diminish the dielectric character of said coolant.

5,776,625

HYDROGEN-AIR FUEL CELL

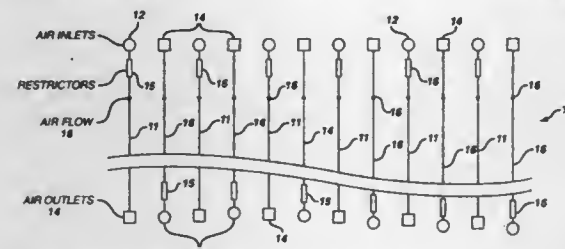
Arthur Kaufman, and Peter L. Terry, both of Belleville, N.J., assignors to H Power Corporation, Belleville, N.J.

Filed Jun. 18, 1997, Ser. No. 878,015

Int. Cl.⁶ H01M 8/04

U.S. Cl. 429—30

28 Claims



1. A reactant flow system for a Proton Exchange Membrane (PEM) fuel cell stack comprising a plurality of cells in which each cell of said PEM fuel cell stack comprises a positive cathode electrode at which reactant oxygen reduction takes place, a nega-

tive anode electrode at which reactant fuel is oxidized, a proton-exchange electrolyte membrane disposed between said positive cathode electrode and said negative anode electrode, and wherein between pairs of adjacent cells are disposed a cathode flow-field for distributing oxygen to an adjacent cathode electrode, at a side of said adjacent cathode electrode opposite a side in contact with a corresponding proton-exchange electrolyte membrane, an anode flow-field for distributing fuel to an adjacent anode electrode, at a side of said adjacent anode electrode opposite a side in contact with a corresponding proton-exchange electrolyte membrane, and a reactant separator layer disposed between said cathode flow-field and said anode flow-field, said reactant separator layer isolating said oxygen in said cathode flow-field from said fuel in said anode flow-field, said PEM fuel cell stack being configured to prevent said electrolyte membrane from drying out, wherein said flow-field for at least one reactant of said reactant oxygen and said reactant fuel, includes at least one pair of reactant flow channels, and further wherein at least a portion of each reactant flow channel is operatively adjacent to at least one corresponding flow channel such that a reactant flow direction in the flow channel is opposite a reactant flow direction in at least one operatively adjacent flow channel, and each reactant flow channel has a reactant inlet and a reactant outlet.

5,776,626

HYDROGEN-OCCLUDING ALLOY AND HYDROGEN-OCCLUDING ALLOY ELECTRODE

Makoto Tsukahara; Kunio Takahashi; Takahiro Mishima; Aki-hito Isomura, all of Aichi-ken; Tetsuo Sakai, Osaka; Hiroshi Miyamura, Osaka, and Itsuki Uehara, Osaka, all of Japan, assignors to Imra Material R&D Co., Ltd., Aichi-ken, and Agency of Industrial Science and Technology, Tokyo-to, both of Japan

Division of Ser. No. 410,798, Mar. 27, 1995, Pat. No.

5,690,799. This application Mar. 24, 1997, Ser. No. 822,043

Claims priority, application Japan, Mar. 28, 1994, 6-57513; Mar. 28, 1994, 6-57514

Int. Cl.⁶ H01M 10/34

U.S. Cl. 429—59

6 Claims

1. A hydrogen-occluding alloy electrode comprising an alloy powder wherein the alloy comprises a Ti-V solid solution mother phase and a secondary phase predominantly containing an AB₂ Laves phase.

said alloy having the formulation TiV_{0.1}Ni_{0.9}Ap, wherein A is at least one element selected from the group consisting of Zr, Hf and Ta, and 1 ≤ o ≤ 10, 0.2 ≤ p ≤ 2 and 0.05 ≤ p ≤ 1, provided that in all cases A includes Hf.

5,776,627

AROMATIC MONOMER GASSING AGENTS FOR PROTECTING NON-AQUEOUS LITHIUM BATTERIES AGAINST OVERCHARGE

Huanyu Mao, Burnaby, and Ulrich von Sacken, Coquitlam, both of Canada, assignors to Moli Energy (1990) Limited, Canada

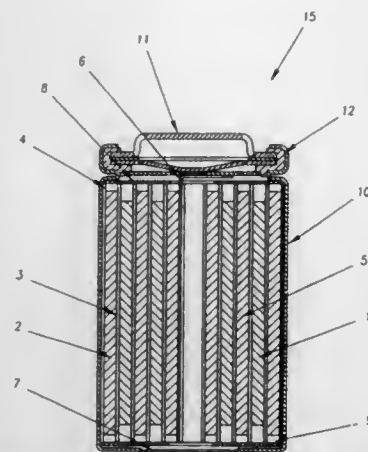
Filed Oct. 8, 1996, Ser. No. 728,274

Claims priority, application Canada, Nov. 17, 1995, 2163187 Int. Cl.⁶ H01M 2/00

U.S. Cl. 429—61

18 Claims

1. A non-aqueous rechargeable lithium battery having a lithium insertion compound cathode; a lithium compound anode; a non-aqueous liquid electrolyte; a maximum operating charging voltage; and an internal electrical disconnect device; said disconnect device activating at a predetermined internal pressure, wherein the battery comprises a monomer additive mixed in said liquid electrolyte, said monomer additive polymerizing at battery voltages greater



than the maximum operating voltage thereby generating gas and pressure activating the disconnect device during overcharge abuse.

5,776,628

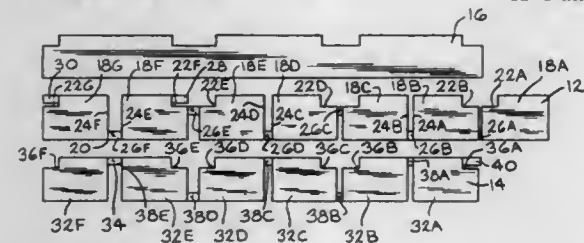
FLAT-FOLDED, MULTI-PLATE ELECTRODE ASSEMBLY
Glenn Kraft, Akron, and Deborah Czamara, Medina, both of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Jun. 30, 1997, Ser. No. 885,085

Int. Cl.⁶ H01M 6/10

U.S. Cl. 429—94

12 Claims



1. A battery, which comprises:

- a) an anode comprising an anode current collector having a plurality of anode connector portions bridging between adjacent anode contact portions of the anode current collector provided with an anode active material contacted thereto to thereby provide anode plates connected by the anode connector portions, wherein the anode connector portions are of an increasingly greater length from a first anode plate progressing to a last anode plate;
- b) a cathode electrode comprising a cathode current collector having a plurality of cathode connector portions bridging between adjacent cathode contact portions of the cathode current collector provided with a cathode active material contacted thereto to thereby provide cathode plates connected by the cathode connector portions, wherein the cathode connector portions are of an increasingly greater length from a first cathode plate progressing to a last cathode plate;
- c) a separator disposed between the anode electrode and the cathode electrode juxtaposed one on top of the other to provide a flat foldable anode and cathode electrode overlay with a first plate of one of the anode electrode and the cathode electrode folded on top of a second plate of the other of the anode electrode and the cathode electrode such that a first connector portion of the one folded cathode plate or anode plate is of a length greater than the thickness of the other of the anode electrode or the cathode electrode to thereby provide a first folded electrode configuration and wherein the first folded electrode configuration is foldable on top of the next anode and cathode electrode overlay with the connector portions of the anode electrode and the cathode electrode intermediate the first folded electrode configuration and the next anode and cathode electrode overlay having lengths sufficient to provide for the combined thickness of the subsequent folded electrode configuration consisting of the first folded electrode configuration and the next anode electrode and

cathode electrode overlay and wherein the respective successive connector portions connecting between the subsequent folded electrode configuration and the successive anode plates and the successive cathode plates of the electrode overlay are of a progressively greater length to accommodate the ever increasing thickness of the following folded electrode configuration foldable to the last anode plate and the last cathode plate of the electrode overlay; and
d) an electrolyte activating and operatively associating the anode electrode and the cathode electrode.

5,776,629

RECHARGEABLE BATTERIES AND METHODS OF PREPARING SAME

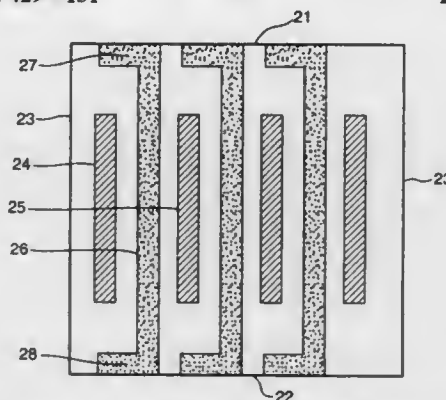
Peter J. Degen, Huntington; Joseph Y. Lee, South Setauket; Ioannis P. Sipsas, Forest Hills, and Ralph B. DiPalma, New Hyde Park, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Filed Jul. 17, 1996, Ser. No. 682,388

Int. Cl.⁶ H01M 2/18

U.S. Cl. 429—131

27 Claims



1. A rechargeable battery comprising (a) a container having a top, a bottom, and one or more side walls, and, positioned within said container, (b) an anode subject to shedding during charge/discharge cycling, (c) a cathode subject to shedding during charge/discharge cycling, (d) a separator between said anode and said cathode, and (e) an electrolyte, wherein said anode, said cathode, and said separator are sheets positioned substantially parallel to said one or more side walls of said container and perpendicular to said top and said bottom of said container, and wherein said separator has a folded portion which is positioned between said anode and/or said cathode and said top and/or said bottom of said container so as to inhibit the formation of a conductive pathway between said anode and said cathode, which conductive pathway would render said battery incapable of holding a charge by way of the material shed from said anode and said cathode during charge/discharge cycling.

5,776,630

SEPARATOR WITH LONGITUDINAL AND TRANSVERSE RIBS FOR USE IN ACCUMULATORS

Werner Bohnstedt, Henstedt-Ulzburg, Germany, assignor to Daramic, Inc., North Charleston, S.C.

PCT No. PCT/EP95/01464, § 371 Date Oct. 3, 1996, § 102(e) Date Oct. 3, 1996, PCT Pub. No. WO95/29508, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 20, 1995, Ser. No. 718,342

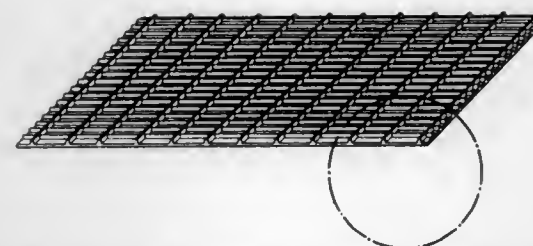
Claims priority, application Germany, Apr. 25, 1994, 44 14 723.6

Int. Cl.⁶ H01M 2/18; 2/16

U.S. Cl. 429—143

8 Claims

1. Separator for accumulators made of a microporous, thermoplastic material which is provided with longitudinal and transverse ribs with the height of the longitudinal ribs being greater than that



of the transverse ribs, and the longitudinal and transverse ribs consisting of solid ribs which are formed integrally from the plastic, characterized in that the transverse ribs extend across the entire width of the separator.

5,776,631

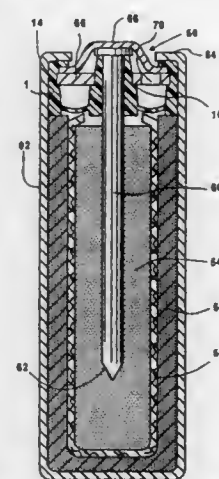
SAFETY SNAP-THROUGH SEAL FOR GALVANIC CELLS
Xi-Xian Wu, North Olmsted, Ohio, assignor to Eveready Battery Company, Inc., St. Louis, Mo.

Filed Dec. 6, 1995, Ser. No. 568,160

Int. Cl.⁶ H01M 2/02

U.S. Cl. 429—171

20 Claims



1. An electrochemical cell comprising an anode electrode, a cathode electrode and an electrolyte contained in a container, said container having an open end and a closed end and wherein the open end of the container is sealed with a seal assembly comprising a base member having an upstanding peripheral wall and an upstanding hub defining an opening, said base member defined by the peripheral wall and said hub containing at least one membrane having a concave contour facing the inside of the cell; the seal assembly is secured to the open end of the container; a current collector rod extended through the opening defined by the hub and extended into the container to contact one of the electrodes of the cell; and wherein the at least one concave membrane which snaps from its concave contour to a convex contour and rupture upon the application of a set pressure within the cell.

5,776,632

HERMETIC SEAL FOR AN ELECTROCHEMICAL CELL
Allen Honegger, East Amherst, N.Y., assignor to Wilson Greatbatch Ltd., Clarence, N.Y.

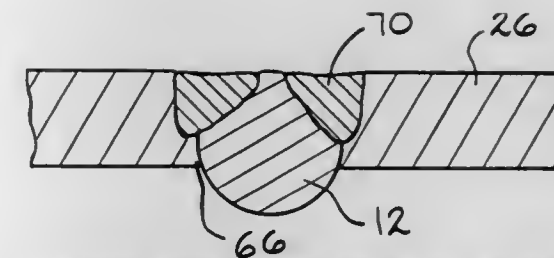
Filed Oct. 3, 1996, Ser. No. 729,673

Int. Cl.⁶ H01M 2/08

U.S. Cl. 429—185

7 Claims

1. An electrochemical cell, comprising:
a) a casing defined by an enclosing casing side wall;
b) an anode means and a cathode means housed inside the casing and in operative electrical association with each other;
c) an opening provided in the casing side wall for filling an electrolyte therein to activate the anode means and the cath-



ode means, wherein the casing side wall has a thickness and provides a perimeter surrounding the opening, and wherein the casing side wall has an outer surface not forming the opening perimeter and accessible from outside the cell; and
d) a sealing means registered in a force-fit sealing relationship with the opening perimeter to block the opening, wherein the sealing means has an outer portion fused to and completely surrounded by the opening perimeter without having a diameter of the fused sealing means greater than that of the opening perimeter such that no part of the sealing means overlies the outer surface of the casing side wall to thereby provide a hermetic seal for the fill opening.

5,776,633

CARBON/CARBON COMPOSITE MATERIALS AND USE THEREOF IN ELECTROCHEMICAL CELLS

Edward N. Mrotek, Grafton, Wis.; Benjamin Reichman, West Bloomfield, Mich., and MengPing Yin, Milwaukee, Wis., assignors to Johnson Controls Technology Company, Plymouth, Mich.

Continuation of Ser. No. 493,813, Jun. 22, 1995, abandoned.

This application Oct. 7, 1996, Ser. No. 727,856

Int. Cl.⁶ H01M 4/02

U.S. Cl. 429—218

22 Claims

1. A porous carbon/carbon composite electrode comprising activated carbon powder and activated carbon fibers in a matrix of a carbonized synthetic resin.

5,776,634

PHOTOSENSITIVE RECORDING MEDIUM AND METHOD OF PREPARING VOLUME TYPE PHASE HOLOGRAM MEMBER USING SAME

Norio Ohkuma; Tetsuro Kuwayama; Toshiaki Majima, all of Yokohama; Naosato Taniguchi, Machida; Yomishi Toshida, Yokohama; Yoko Yoshinaga, Machida, and Tetsuro Fukui, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 795,400, Nov. 21, 1991, abandoned.

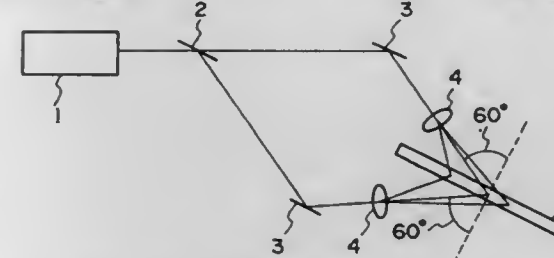
This application May 23, 1994, Ser. No. 247,456

Claims priority, application Japan, Nov. 22, 1990, 2-316178

Int. Cl.⁶ G03H 1/04

U.S. Cl. 430—2

10 Claims



6. A volume phase hologram produced by the process comprising irradiating a recording layer of a volume phase hologram recording medium with coherent radiation employing an object beam and a reference beam from opposite sides, said volume phase hologram recording medium comprising a substrate of a glass plate or a transparent film and a recording layer on said substrate, said recording layer comprising a composition containing (a) a radical-

polymerizable monomer, (b) a cationic-polymerizable monomer, and (c) an initiator combination of a radical-polymerization initiator having a sensitivity in a visible light region and a cationic-polymerization initiator having a sensitivity in an ultraviolet light region as main constituents, wherein the radical-polymerization initiator and the cationic-polymerization initiator are sensitive in light wavelength regions different from each other; said radical polymerization initiator being sensitive to coherent radiation in the visible light region of a wavelength of at least about 450 nm to initiate polymerization of said radical-polymerizable monomer to form an interference pattern and said cationic-polymerization initiator being insensitive to said coherent radiation, wherein said irradiation provides a difference in refractive index between an irradiated portion and a non-irradiated portion of the recording layer.

5,776,635

TERNARY SOLVENT NONAQUEOUS ORGANIC ELECTROLYTE FOR ALKALI METAL ELECTROCHEMICAL CELLS

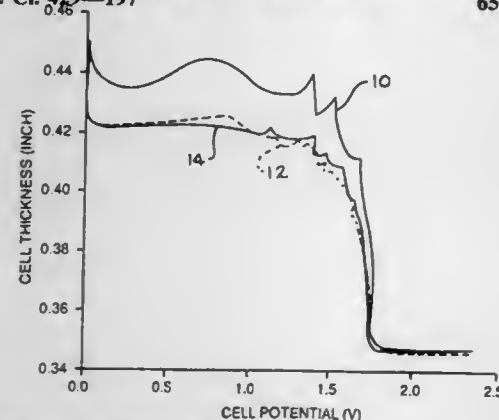
Hong Gan, E. Amherst, and Esther S. Takeuchi, East Amherst, both of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Sep. 16, 1996, Ser. No. 710,382

Int. Cl.⁶ H01M 10/40

U.S. Cl. 429—197

65 Claims



1. An electrochemical cell, which comprises:
 - a) an anode comprising an alkali metal;
 - b) a cathode comprising a cathode active material; and
 - c) an electrolyte solution activating the anode and the cathode, the electrolyte comprising a ternary, nonaqueous solvent mixture comprising:
 - i) a linear mono-ether as a first solvent having a ratio of carbon atoms to the functional oxygen atom greater than 4:1;
 - ii) a second linear ether as a second solvent; and
 - iii) a third solvent selected from the group consisting of a cyclic carbonate, a cyclic ester and a cyclic amide, and mixtures thereof.

5,776,636

METHOD OF MANUFACTURING LIGHT-TRANSMITTING PLATES

Toshitaka Kunisawa; Osamu Shinji, both of Kitakanbara-gun; Kouzo Yasuda, Kashima-gun, and Toshiyuki Yoshikawa, Tokyo, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jun. 13, 1996, Ser. No. 661,320

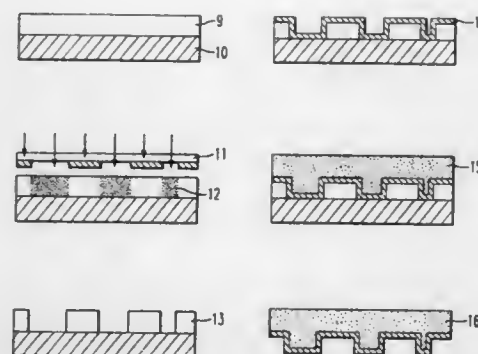
Claims priority, application Japan, Jun. 16, 1995, 7-149949; Dec. 12, 1995, 7-322770

Int. Cl.⁶ G03F 9/00

U.S. Cl. 430—5

7 Claims

1. A method of manufacturing light-transmitting plates comprising:



forming a photo resist layer on a flat substrate; exposing the photo resist so as to form a pattern of deflection elements in the photo resist; developing the pattern of deflection elements in the exposed photo resist so as to form a topographical relief in the photo resist corresponding to the pattern of deflection elements, said topographical relief having a particular height; providing the photo resist topographical relief pattern corresponding to the pattern of deflection elements with a metal layer and electroforming the topographical relief pattern to form a stamper; and molding the light-transmitting plates from said stamper so that the light-transmitting plates are provided with a relief pattern of deflection elements having the particular height, said deflection elements of said particular height providing transmitted light with uniform illuminance without recognizable patterns through each of the molded light-transmitting plates.

5,776,637

VINYLDENE FLUORIDE POLYMER-BASED BINDER SOLUTION AND ELECTRODE-FORMING COMPOSITION

Hidetora Kashio; Katsuo Horie; Aisaku Nagai; Tomoyuki Aita, and Hiroshi Kitagoh, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

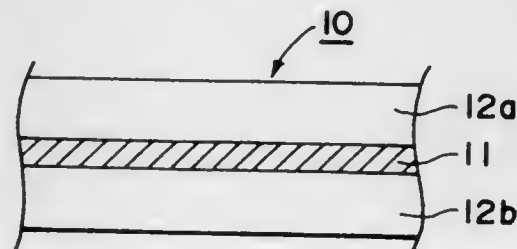
Filed Feb. 20, 1997, Ser. No. 804,150

Claims priority, application Japan, Feb. 22, 1996, 8-062040; Oct. 23, 1996, 8-297868

Int. Cl.⁶ H01M 4/64

U.S. Cl. 429—217

11 Claims



1. An electrode-forming composition, comprising a solution of a vinylidene fluoride polymer having an inherent viscosity of above 2.0 dL/g and at most 20 dL/g in an organic solvent, and a powdery electrode material dispersed in the solution.

5,776,638

PROJECTION EXPOSURE METHOD AND MASK EMPLOYED THEREIN

Young-soh Park; Joo-young Lee, both of Kyungki-do, and Young-hun Yu, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

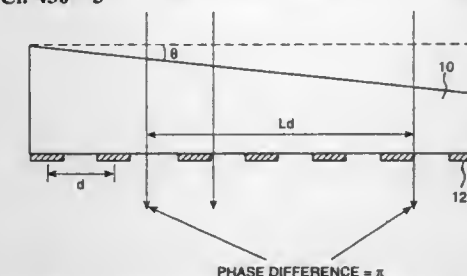
Filed Feb. 29, 1996, Ser. No. 609,124

Claims priority, application Rep. of Korea, Mar. 13, 1995, 95-5142

Int. Cl.⁶ G03F 9/00

U.S. Cl. 430—5

11 Claims



1. A method of projection exposure utilizing a mask comprising: exposing an object by utilizing a transparent mask substrate having an upper surface slanted at a predetermined angle from a direction perpendicular to the light path; and an opaque film pattern formed at regular intervals on a lower surface of said mask substrate; and wherein the phase difference between adjacent mask patterns occurs due to said slanted mask substrate.

5,776,639

EXPOSURE MASK, METHOD OF PRODUCING THE SAME, EXPOSURE MASK PRODUCING APPARATUS, AND METHOD OF FORMING SURFACE PROFILE ON MATERIAL USING EXPOSURE MASK

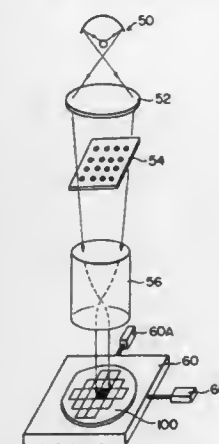
Kazuhiro Umeki, and Shosen Sato, both of Hanamaki, Japan, assignors to Ricoh Optical Industries, Co., Ltd., Hanamaki, Japan

Filed Apr. 8, 1996, Ser. No. 629,224

Int. Cl.⁶ G03F 9/00

U.S. Cl. 430—5

6 Claims



1. A method of producing an exposure mask having a target two-dimensional distribution of transmittance, the method comprising the steps of:
 - (a) calculating, as write data, a two-dimensional shape of a dotted pattern and optical densities of dots or sizes of dots having the same optical density in accordance with the target distribution of transmittance which varies with position in the dotted pattern;
 - (b) optically writing the calculated write data on a photosensitive medium by varying an amount of beam from a light source in a stepwise or continuous manner; and
 - (c) developing a latent dotted pattern written on the photosensitive medium so as to obtain an exposure mask having the

target two-dimensional distribution of transmittance expressed by the two-dimensional shape of the dotted pattern and the optical densities of dots or the sizes of dots having the same optical density.

5,776,640

PHOTO MASK FOR A PROCESS MARGIN TEST AND A METHOD FOR PERFORMING A PROCESS MARGIN TEST USING THE SAME

Sang Man Bae, Kyongki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyongki-do, Rep. of Korea

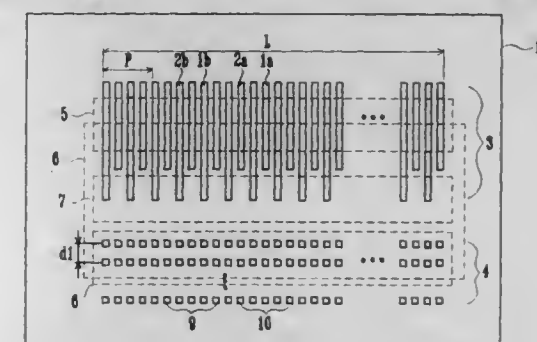
Filed Jun. 2, 1997, Ser. No. 867,457

Claims priority, application Rep. of Korea, Jun. 24, 1996, 96-23264

Int. Cl.⁶ G03F 9/00

U.S. Cl. 430—5

13 Claims



1. A photo mask comprising:
 - a first process margin test pattern including a plurality of line/space patterns consisting of a first pair of line/space patterns having different lengths and a second pair of line/space patterns having different lengths while having a linewidth different from that of the first line/space pattern pair, the first and second line/space patterns being laterally arranged in a repeated manner, and a plurality of contact holes consisting of a first pair of contact holes and a second pair of contact holes, the first and second contact hole pairs being laterally and longitudinally arranged in a repeated manner while being longitudinally spaced from the line/space patterns by a desired distance;
 - a second process margin test pattern including two sets of line/space patterns formed in a symmetrical manner on upper and lower portions of the second process margin test pattern, respectively, each of the line/space pattern sets including a plurality of line/space patterns consisting of a first pair of line/space patterns having different lengths and a second pair of line/space patterns having different lengths while having a linewidth different from that of the first line/space pattern pair, the first and second line/space patterns being laterally arranged in a repeated manner, the longer of the first and second line patterns in the upper line/space pattern set being in contact with the correspondingly longer of the lower line/space pattern set at their facing ends, respectively, whereby the second process margin test pattern has a symmetrical pattern structure; and
 - a third process margin test pattern including two sets of line/space patterns formed in a symmetrical manner on upper and lower portions of the second process margin test pattern, respectively, each of the line/space pattern sets including a plurality of line/space patterns consisting of a first pair of line/space patterns having different lengths and a second pair of line/space patterns having different lengths while having a linewidth different from that of the first line/space pattern pair, the first and second line/space patterns being laterally arranged in a repeated manner, the longer ones of the first and second line patterns in the upper line/space pattern set being spaced from the correspondingly longer ones in the lower line/space pattern set by a desired distance at their facing

ends, respectively, whereby the second process margin test pattern has a symmetrical pattern structure.

5,776,641

METHOD OF MAKING COLOR FILTER ARRAYS BY COLORANT TRANSFER USING CHEMICAL MECHANICAL POLISHING

Luther C. Roberts, Rochester, and David L. Losee, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 24, 1997, Ser. No. 787,732

Int. Cl.⁶ G02B 5/20

U.S. Cl. 430—7

28 Claims

1. A method of making a color filter array on a first substrate having an array of pixels, comprising the steps of:

- depositing and patterning a photoresist layer on the substrate layer to form selected openings over pixels in the array;
- providing a transferable colorant layer on a second substrate and positioning such transferable layer in transferable relationship with, but spaced from, the first substrate;
- transferring the colorant material to the photoresist layer on the first substrate;
- removing the patterned photoresist layer by chemical mechanical polishing, leaving behind the colorant material in the position of the openings over the selected pixels.

5,776,642

METHOD FOR MANUFACTURING A MULTICOLOR FILTER ARRAY ELEMENT

Jean-Pierre Tahon, Leuven; Johan Loccufer, Zwijnaarde; Herman Van Gorp, Tienen, and Bart Ramandt, Brugge, all of Belgium, assignors to Agfa Gevaert, N.V., Mortsel, Belgium

Filed Jun. 3, 1996, Ser. No. 657,111

Claims priority, application European Pat. Off., Jun. 27, 1995, 95201742

Int. Cl.⁶ G02B 5/20

U.S. Cl. 430—7

6 Claims

1. A method for manufacturing a multicolour filter array element, firmly associated with a transparent electrode layer in a multicolour liquid crystal display device, comprising the steps of:

- exposing a photographic silver halide colour material comprising a plurality of differently spectrally sensitive silver halide emulsion layers on a glass support, by a single step multicolour pixelwise exposure;
- colour processing said exposed colour material producing thereby in each silver halide emulsion layer a differently coloured pixel pattern;
- coating said colour processed colour material at its silver halide emulsion layer side with a hydrophobic water-impermeable organic resin layer;
- curing said organic resin layer by heating said layer at temperatures between 100° C. and 250° C.;
- depositing a transparent electrode layer on said organic resin layer; and
- coating an alignment layer on top of said transparent electrode layer,

characterized in that said colour processing comprises the steps of:

- developing said exposed colour material;
- bleaching and fixing said developed material;
- rinsing said material with water; and
- treating said material in an aqueous solution consisting essentially of a member selected from the group of single salts and mixed salts of a group III metal.

5,776,643

LIGHT-SENSITIVE MATERIAL FOR COLOR FILTER AND PROCESS FOR PRODUCING COLOR FILTER USING THE SAME

Hiroyuki Hirai, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

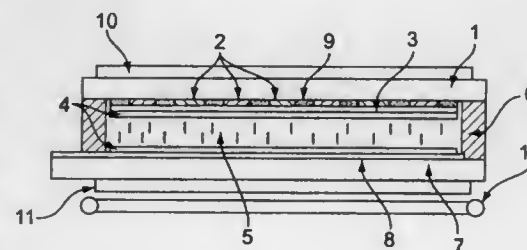
Continuation of Ser. No. 370,878, Jan. 10, 1995. This application May 6, 1997, Ser. No. 852,122

Claims priority, application Japan, Jan. 11, 1994, 6-001363; Dec. 7, 1994, HEI 6-303977

Int. Cl.⁶ G03C 1/74; 1/76

U.S. Cl. 430—7

7 Claims



1. A micro color filter prepared by a process comprising the steps of:

- adhering an emulsion side of a light-sensitive material to a light-transmitting substrate by heating; wherein the light-sensitive material comprises a support having provided thereon a peeling layer and further provided thereon at least three silver halide emulsion layers which are different in color sensitivity; and wherein the light-transmitting substrate is a glass substrate having a first side and a second side, the side on which the light-sensitive material is to be adhered being pre-coated with gelatin or a gelatin derivative and colloidal silica;
- peeling the support off the light-sensitive material;
- pattern-exposing the emulsion side of the light-sensitive material;
- hardening processing; and
- subjecting the light-sensitive material to development processing and desilvering processing.

5,776,644

PHOTOLITHOGRAPHIC METHOD FOR HIGH RESOLUTION CIRCLE PATTERNING UTILIZING CALIBRATED OPAQUE MICROSPHERES

Jean-Frédéric Clerc, Saint Egreve, and Denis Randet, Meylan, both of France, assignors to Commissariat à l'Energie Atomique, Paris Cedex, France

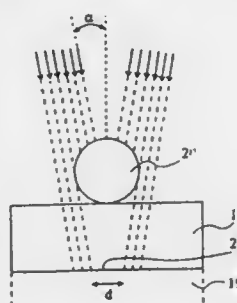
Filed Oct. 23, 1995, Ser. No. 551,914

Claims priority, application France, Oct. 24, 1994, 94 12925

Int. Cl.⁶ G03C 5/00

U.S. Cl. 430—8

7 Claims



1. A photolithographic method for forming small diameter, dense and substantially identical circular patterns on a layer, comprising the steps of:

- depositing a resist layer on said layer;

depositing calibrated microspheres that are opaque to radiation on said resist layer, wherein said calibrated microspheres are substantially identical in diameter; and irradiating said resist layer.

5,776,645

LITHOGRAPHIC PRINT BIAS/OVERLAY TARGET AND APPLIED METROLOGY

Roger Lawrence Barr, Milton, and Patrick J. Couillard, Jericho, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

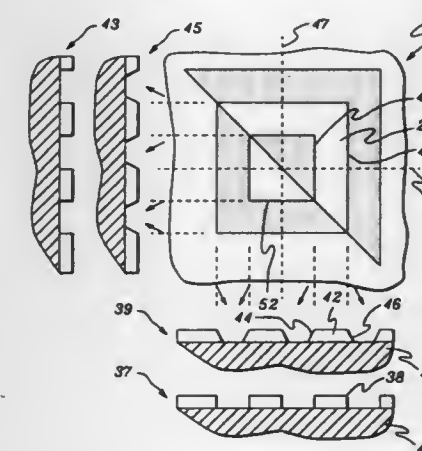
Continuation of Ser. No. 333,110, Nov. 1, 1994, abandoned.

This application May 16, 1997, Ser. No. 857,346

Int. Cl.⁶ G03F 9/00

U.S. Cl. 430—22

33 Claims



19. A method for identifying an imaging aberration in an image created in a lithographic system, said method comprising steps of: imaging a print bias target matrix from a design image in a single lithographic level of light-sensitive material, said print bias target matrix including a plurality of binary print bias targets of varying exposure and focus, each of said plurality of binary print bias targets comprising an inner binary target and an outer binary target encompassing said inner binary target, wherein when properly imaged said inner binary target and said outer binary target comprise a pair of concentric geometric shapes, each divided into equal halves along the same axis, said inner binary target comprising an area of a first polarity as a first half thereof and a second half of a second polarity, and said outer binary target comprising a first half of said second polarity adjacent said first half of said inner binary target and a second half of said first polarity adjacent said second half of said inner binary target;

determining, for each of said plurality of print bias targets, how accurately said inner binary target is centered within said outer binary target, thereby determining print bias; creating a print bias/focus plot of said determined print bias against focus setting for each of said plurality of plurality of binary print bias targets in a first orientation and in a second orientation; and identifying said imaging aberration based on said print bias/focus plot.

5,776,646

NEGATIVELY CHARGEABLE TONER WITH SPECIFIED FINE PARTICLES ADDED EXTERNALLY

Masayuki Hagi, Takatsuki; Takeshi Arai, Akashi; Junichi Tamaoki, Sakai, and Hiroyuki Fukuda, Kobe, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jun. 20, 1997, Ser. No. 879,330

Claims priority, application Japan, Jun. 21, 1996, 8-161629; Jun. 21, 1996, 8-161630

Int. Cl.⁶ G03G 9/097; 9/107

U.S. Cl. 430—106.6

20 Claims

11. A developing agent comprising: magnetic carrier particles; toner particles; first inorganic fine particles having: a number-mean particle size of from 10 to 30 nm; and a blow-off charge of from -2000 to -500 μ C; second inorganic fine particles having: a number-mean particle size of from 10 to 90 nm; and a blow-off charge of from -300 to +50 μ C; and third inorganic fine particles having: a number-mean particle size of from 100 to 1000 nm; and a blow-off charge of from -10 to +100 μ C.

5,776,647

NEGATIVELY CHARGEABLE TONER FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

Kenichi Kido; Tetsuo Sano, both of Amagasaki; Yoshitaka Sekiguchi, Amagasaki, and Hiroyuki Fukuda, Kobe, all of Japan, assignors to Minolta Co. Ltd., Osaka, Japan

Filed Oct. 9, 1997, Ser. No. 948,525

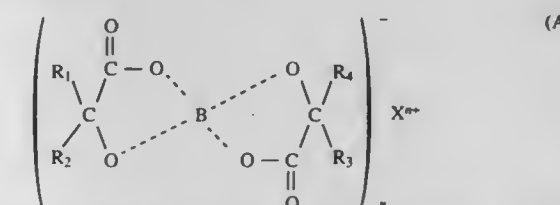
Claims priority, application Japan, Mar. 4, 1997, 9-049122; Mar. 4, 1997, 9-049124; Mar. 4, 1997, 9-049125

Int. Cl.⁶ G03G 9/097

U.S. Cl. 430—110

35 Claims

1. A negatively chargeable toner for developing electrostatic latent images comprising: negatively chargeable toner particles including a binder resin, a carbon black, an boron compound; said binder resin including a polyester resin and having an acid value of 5 to 50 KOHmg/g, said carbon black having a pH of 1 to 6, and said boron compound represented by a structural formula (A):



wherein R₁ and R₃ respectively represent substituted or non-substituted aryl group, R₂ and R₄ respectively represent hydrogen atom, alkyl group, substituted or non-substituted aryl group, X represents a cation, and n is an integer of either 1 or 2.

5,776,648

ELECTROSTATIC LATENT IMAGE DEVELOPING METHOD

Jun Ikami, Nagoya, and Kouji Inaishi, Okazaki, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 22, 1996, Ser. No. 635,686

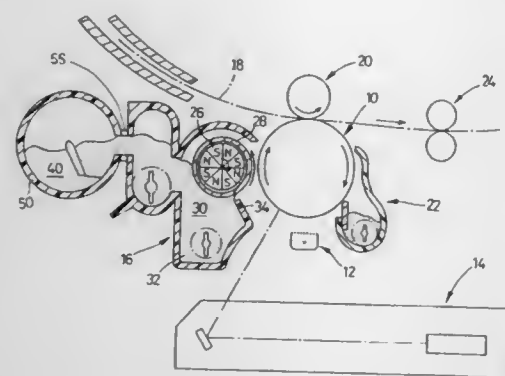
Claims priority, application Japan, May 16, 1995, 7-116973

Int. Cl.⁶ G03G 13/22

U.S. Cl. 430—120

10 Claims

1. An electrostatic latent image developing method using an electrostatic latent image developing apparatus to develop an electrostatic latent image, comprising



providing the electrostatic latent image apparatus with an initial developing agent comprising at least one carrier and toner containing at least one missing-middle-prevention agent, forming an electrostatic latent image on a photosensitive body of the developing apparatus, developing the electrostatic latent image on the photosensitive body by contacting the electrostatic latent image with the developing agent to produce a developed toner image, transferring the developed toner image formed on the photosensitive body to a recording medium, fixing the developed toner image to the recording medium, and supplying replacement toner to compensate for the toner consumed from the initial developing agent in developing the electrostatic latent image, wherein the replacement toner does not contain missing-middle-prevention agent.

5,776,649

METHOD OF TRANSFERRING TONER TO RECEIVER WITH COPOLYMER BLEND

Louis Joseph Sorriero, Rochester, and John J. Fitzgerald, Clifton Park, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 572,213, Dec. 13, 1995. This application Sep. 3, 1997, Ser. No. 922,770

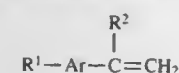
Int. Cl.⁶ G03G 13/16

U.S. Cl. 430—126

6 Claims

1. A method of nonelectrostatically transferring toner particles of small size from the surface of a photoconductive element to an electrophotographic toner receiver comprising a substrate having a layer of a thermoplastic polymer composition on the surface thereof, said polymer composition comprising a miscible blend of a first addition copolymer and a second addition copolymer, each said addition copolymer having a weight-average molecular weight of about 30,000 to 100,000 and a number-average molecular weight of about 5,000 to 50,000 and each comprising repeating units of

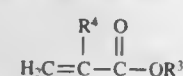
(1) at least one of an aromatic vinyl monomer of the structure,



wherein Ar is phenylene or naphthylene and R¹ and R² are H or lower alkyl; and

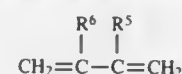
(2) at least one of

(A) an acrylic ester of the structure



wherein R is linear or branched C₁-C₁₀ alkyl and R⁴ is H or lower alkyl, or

(B) a divinyl compound of the structure



wherein R⁵ and R⁶ are H, Cl, or CH₃, said first addition copolymer further comprising repeating units of an acidic vinyl monomer and said second addition copolymer further comprising repeating units of a basic vinyl monomer comprising the steps of:

- contacting said toner particles with said layer of thermoplastic polymer composition of said receiver;
- heating said receiver to a temperature such that the temperature of said layer of thermoplastic polymer composition of said receiver during said transferring is at least about 5° C. above the glass transition temperature, T_g, of said thermoplastic composition; and
- separating said receiver from said photoconductive element at a temperature above the T_g of said thermoplastic composition, but below the sticking temperature at which said thermoplastic composition begins to adhere to said photoconductive element, whereby virtually all of said toner particles are transferred from the surface of said element to the layer of thermoplastic polymer composition of said receiver.

5,776,650

METHOD OF MANUFACTURING ORGANIC PHOTOCONDUCTOR FOR ELECTROPHOTOGRAPHY

Kei Hashimoto, and Nobuyoshi Mori, both of Nagano, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 26, 1996, Ser. No. 621,585

Claims priority, application Japan, Mar. 29, 1995, 7-071123

Int. Cl.⁶ G03G 5/06

U.S. Cl. 430—134

3 Claims

1. A method of manufacturing a charge generation layer of an organic photoconductor for electrophotography, said method comprising:

- dispersing and pulverizing, with ball-shaped pulverizing media, an organic pigment or an organic dye and a resin binder in a dispersing solvent to an average particle size of from about 0.1 to about 0.3 μm, to form a dispersion liquid;
- said organic pigment's ratio or said organic dye's ratio to said dispersion liquid's solid components being from about 5 to about 95 weight %;
- said ball-shaped pulverizing media being from about 0.1 to about 0.3 mm in diameter;
- said ball-shaped pulverizing media's total weight used in said step of dispersing being from about 0.25 to about 5 times said dispersion liquid's total weight liquid; and
- forming said charge generation layer by coating a surface with said dispersion.

5,776,651

LAMINABLE PROOFING ELEMENTS

Ying-Yuh Lu, Woodbury; Bruce W. Weeks, Lake Elmo, and Paul J. Wang, Woodbury, all of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Jan. 31, 1996, Ser. No. 594,162

Int. Cl.⁶ G03C 5/18

U.S. Cl. 430—143

12 Claims

1. A photosensitive proofing element comprising a carrier layer, a release layer, a colored photosensitive resist layer(s), a barrier layer, and an adhesive layer, wherein said adhesive layer is formed by coating a film forming core/shell latex adhesive comprising a thermally softenable polymeric shell having a T_g of greater than 20° C. and a thermally softenable, crosslinked polymeric core having a T_g of less than 20° C., the difference between the T_g of the core and the shell being at least 10° C.

5,776,652

AROMATIC HEXAFLUOROPROPANESULFONATE DIAZONIUM SALTS AND THEIR USE IN RADIATION-SENSITIVE MIXTURES

Mathias Eichhorn, Niedernhausen, and Gerhard Buhr, Koenigstein, both of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Continuation of Ser. No. 430,070, Apr. 27, 1995, abandoned.

This application Oct. 14, 1997, Ser. No. 949,777

Claims priority, application Germany, Apr. 28, 1994, 44 14 897.6

Int. Cl.⁶ G03F 7/021; 7/023

U.S. Cl. 430—163

22 Claims

1. A radiation-sensitive mixture which contains

- a compound which forms acid on exposure to actinic radiation,
- for a positive-working mixture, a compound whose solubility in aqueous alkaline solution increases on exposure to the radiation or the acid, or
- for a negative-working mixture, a compound whose solubility in aqueous alkaline solution decreases on exposure to the acid,
- wherein the compound a) is an aromatic or heteroaromatic mono- or bisdiazonium 1,1,2,3,3,3-hexafluoropropanesulfonate.

5,776,653

ON THE PRESS DEVELOPMENT OF A DIAZO BASED PRINTING PLATE

Joan Vermeersch, Deinze; Eric Verschuere, Merksplas, and Dirk Kokkelenberg, St. Niklaas, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsels, Belgium

Filed Dec. 4, 1996, Ser. No. 760,341

Claims priority, application European Pat. Off., Dec. 7, 1995, 95203377

Int. Cl.⁶ G03F 7/30; 7/11; 7/021

U.S. Cl. 430—169

10 Claims

1. A method for making a lithographic printing plate comprising the steps of:

- image-wise exposing an imaging element having on a flexible film support in the order given (i) a uniform ink-repellant layer comprising a cross-linked hydrophilic binder and (ii) a photosensitive layer comprising a diazonium salt or a diazo resin;
- and developing a thus obtained image-wise exposed imaging element by mounting it on a print cylinder of a printing press and wiping it with a disposable absorbing tissue moistened with water or fountain solution.
- A method for making multiple copies of an original comprising the steps of:
 - image-wise exposing an imaging element having on a flexible support in the order given (i) a uniform ink-repellant layer comprising a cross-linked hydrophilic binder and (ii) a photosensitive layer comprising a diazonium salt or a diazo resin;
 - mounting a thus obtained image-wise exposed imaging element without development on a print cylinder of a printing press and wiping it with a disposable absorbing tissue moistened with water or fountain solution,
 - rotating said print cylinder while supplying an aqueous dampening liquid and/or supplying ink to said photosensitive layer of said imaging element and
 - transferring ink from said imaging element to a receiving element.

5,776,654

ON THE PRESS DEVELOPMENT OF A DIAZO BASED PRINTING PLATE

Joan Vermeersch, Deinze; Eric Verschuere, Merksplas; Guido Hauquier, Nijlen, and Willem Cortens, Boischot, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsels, Belgium

Filed Sep. 30, 1996, Ser. No. 721,849

Claims priority, application European Pat. Off., Oct. 11, 1995, 95202740; Feb. 1, 1996, 96200222

Int. Cl.⁶ G03F 7/30; 7/11; 7/021

U.S. Cl. 430—169

11 Claims

1. A method for making a lithographic printing plate comprising the steps of:

- image-wise exposing an imaging element having on a plastic film support in the order given (i) a uniform ink-repellant layer comprising a cross-linked hydrophilic binder and (ii) a photosensitive layer comprising a diazonium salt or a diazo resin;
- and developing a thus obtained image-wise exposed imaging element by mounting it on a print cylinder of a printing press and supplying an aqueous dampening liquid and/or ink to said photosensitive layer while rotating said print cylinder.
- A method for making multiple copies of an original comprising the steps of:
 - image-wise exposing an imaging element having on a support in the order given (i) a uniform ink-repellant layer comprising a cross-linked hydrophilic and (ii) a photosensitive layer comprising a diazonium salt or a diazo resin;
 - mounting a thus obtained image-wise exposed imaging element without development, on a print cylinder of a printing press;
 - rotating said print cylinder while supplying an aqueous dampening liquid and/or supplying ink to said photosensitive layer of said imaging element and
 - transferring ink from said imaging element to a receiving element.

5,776,655

PEEL-DEVELOPABLE LITHOGRAPHIC PRINTING PLATE

Paul Richard West, Fort Collins, and Jeffery Allen Gurney, Greeley, both of Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 11, 1996, Ser. No. 613,931

Int. Cl.⁶ G03C 11/12; 1/492

U.S. Cl. 430—256

27 Claims

1. A peel-developable lithographic printing plate comprising:

- a substrate;
- a hydrophilic layer comprising a polymeric acid overlying said substrate;
- a radiation-sensitive image-forming layer overlying said hydrophilic layer; said image-forming layer comprising (A) a polymeric binder, (B) a plurality of addition-polymerizable ethylenically-unsaturated compounds at least one of which possesses phosphorus-derived acidic functionality, said one or more compounds possessing phosphorus-derived acidic functionality comprising 5 to 50% of the total weight of addition-polymerizable ethylenically unsaturated compound, and (C) a photopolymerization initiator; and
- a stripping layer that is strippably adhered to said image-forming layer; the adhesive and cohesive strengths of each of said stripping layer, image-forming layer and hydrophilic layer being such that upon imagewise exposure of said image-forming layer to activating radiation which causes photopolymerization said stripping layer is capable of being stripped from said image-forming layer with the unexposed regions of said image-forming layer adhering thereto so as to reveal said underlying hydrophilic layer while the exposed regions of said image-forming layer remain adhered to said hydrophilic layer and said hydrophilic layer remains adhered to said substrate.

24. A method for the preparation of a lithographic printing plate; said method comprising the steps of:

- (1) providing an element comprising a substrate, a hydrophilic layer overlying said substrate, a radiation-sensitive image-forming layer overlying said hydrophilic layer, and a stripping layer overlying said image-forming layer, said hydrophilic layer comprising a polymeric acid and said image-forming layer comprising (A) a polymeric binder, (B) a plurality of addition-polymerizable ethylenically-unsaturated compounds at least one of which possesses phosphorus-derived acidic functionality, said one or more compounds possessing phosphorus-derived acidic functionality comprising 5 to 50% of the total weight of addition-polymerizable ethylenically unsaturated compound, and (C) a photopolymerization initiator;
- (2) imagewise-exposing said element to activating radiation which hardens said image-forming layer in exposed regions thereof; and
- (3) peeling said stripping layer from said element with only the unexposed regions of said image-forming layer adhering to said stripping layer.

5,776,656

OPTICAL RECORDING MEDIUM

Masahiro Shinkai, Chiba; Sumiko Kitagawa, Saitama; Kenryo Namba, Tokyo; Emiko Yoshimura, Chiba; Atsushi Monden, Chiba, and Takahiko Suzuki, Chiba, all of Japan, assignors to TDK Corporation, Tokyo, Japan

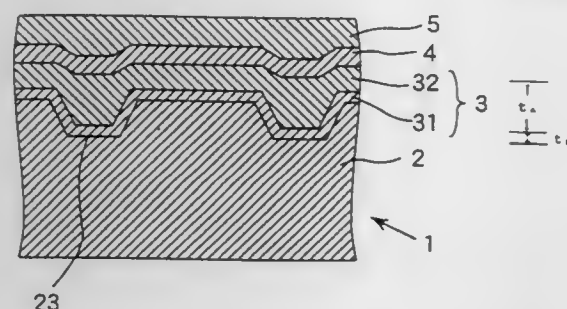
Filed Jul. 26, 1996, Ser. No. 686,658

Claims priority, application Japan, Jul. 28, 1995, 7-212343; Nov. 8, 1995, 7-314844; Jun. 6, 1996, 8-166885

Int. Cl.⁶ G11B 7/24

U.S. Cl. 430—270.19

10 Claims

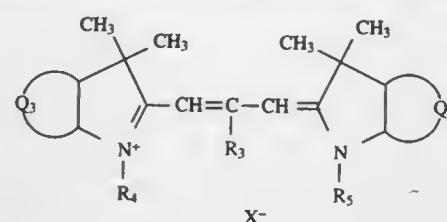


1. An optical recording medium comprising at least two recording layers containing a dye on a substrate and a reflective layer thereon, comprising:

at least two layers of said recording layers have different optical constants, and at least one among said recording layers having different optical constants contains a dye which forms a thin film having an absorption spectrum with a half-value width up to 170 nm;

among said recording layers having different optical constants, at least one layer contains a dye A having a complex index of refraction at 780 nm with a real part n 1.8 to 2.8 and an imaginary part k up to 0.15 and forming a thin film having an absorption spectrum with a half-value width up to 170 nm and at least one distinct layer contains a dye B having a complex index of refraction at 630 nm or 650 nm with a real part n 1.8 to 2.8 and the imaginary part k is up to 0.4;

said dye B is a trimethinecyanine dye of the following formula:



wherein

X^- is a monovalent anion;

each of Q_3 and Q_4 is a group of atoms necessary to complete an indolenine or benzoindolenine ring with the pyrrole ring, the rings completed by Q_3 and Q_4 may be the same or different; and

R_3 is a hydrogen atom or monovalent substituent; each of R_4 and R_5 is an alkyl radical.

5,776,657

WET-CHEMICAL DEVELOPABLE, ETCH-STABLE PHOTORESIST FOR UV RADIATION WITH A WAVELENGTH BELOW 200 NM

Ulrich Schaedeli, Plasselb; Manfred Hofmann, Marly, both of Switzerland; Norbert Muenzel, Heltersheim, Germany, and Arnold Grubenmann, Marly, Switzerland, assignors to OCG Microelectronic Materials, Inc., Norwalk, Conn.

Filed Mar. 14, 1996, Ser. No. 614,613

Claims priority, application European Pat. Off., Mar. 15, 1995, 95810170

Int. Cl.⁶ G03F 7/033

U.S. Cl. 430—281.1

8 Claims

1. A photoresist composition comprising:

(A) a compound which forms an acid under the effect of radiation;

(B) a film-forming binding agent that is sufficiently transparent for radiation of approximately 193 nm wavelength to provide a photoresist from said composition having an extinction value of at most 0.8/ μ m in a solvent free state and which has groups that can be cleaved by acid catalysis; and

(C) a compound with latent aromatic groups.

4. The photoresist composition of claim 1 wherein the component (C) is bicyclo[3.2.2]nona-6,8-dien-3-one.

5,776,658

SILICONE-COMPATIBLE PHOTOINITIATORS, AND PHOTSENSITIVE MIXTURES COMPRISING THEM

Claus-Peter Niesert, Frankfurt, Germany; Georg Pawlowski, Tokyo, Japan; Willi-Kurt Gries, Wiesbaden, Germany, and Klaus-Juergen Przybilla, Frankfurt, Germany, assignors to AGFA-Gevaert AG, Leverkusen, Germany

Filed Sep. 29, 1995, Ser. No. 536,738

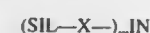
Claims priority, application Germany, Oct. 4, 1994, 44 35 487.8

Int. Cl.⁶ G03F 7/075; C08J 3/28; C08G 77/06; 77/18

U.S. Cl. 430—281.1

21 Claims

1. A compound which forms radicals when irradiated with actinic radiation of the formula I



(I),

in which

SIL is a radical of the formula $\text{Si}(\text{R}^1)(\text{R}^2)(\text{R}^3)$,

where

R^1 is selected from the group consisting of an alkyl, haloalkyl or alkoxy radical of 1 to 8 carbon atoms, an alkenyl radical, an alkenyloxy or acyloxy radical of 2 to 8 carbon atoms, an aryl or aryloxy radical of 6 to 10 carbon atoms, or a dialkyl-

diaryl- or alkylaryl-methyleneaminoxy radical having C_1 - C_4 -alkyl or C_6 -aryl groups, and

R^2 and R^3 are identical or different radicals with the meaning of R^1 or $\text{X}-\text{IN}$.

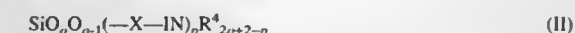
X is a group C_nH_{2n} .

IN is the radical of a compound which has one or more of a photoinitiator or photosensitizer activity and which has at least one carbonyl group located on an aromatic nucleus,

m is a number from 1 to 4, and

n is a number from 2 to 12,

or a compound of the formula II



in which

R^4 is a radical with the meaning of R^1 , and two or more radicals

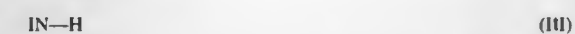
R^4 are identical or different from one another,

x is a number from 2 to 20,000, and

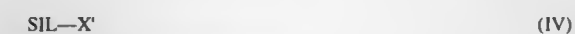
p is a number from 1 to x ,

wherein the symbols X and IN are defined as above, and wherein the group X is attached to an aromatic carbon atom which is positioned ortho to the carbonyl group of IN .

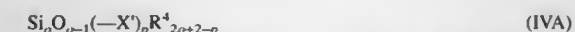
16. A process for the preparation of a compound of the formula I or II as claimed in claim 1, which comprises reacting a compound of the formula III



in which the hydrogen atom is on an aromatic carbon atom positioned ortho to a carbonyl group, in the presence of a catalytic amount of a ruthenium compound, with a compound of the formula IV



or a compound of the formula IVA



in which X' is an ω -alkenyl radical of 2 to 12 carbon atoms and IN , SIL , R^4 , x , y and p are as defined in claim 1.

19. A photosensitive mixture comprising

a) a polysiloxane,

b) a free-radically polymerizable compound having at least one terminal ethylenically unsaturated group, and

c) a compound as claimed in claim 1 which forms radicals when irradiated with actinic radiation.

21. A two-stage process for curing silicone, comprising crosslinking silicone resins which contain at least one of the compounds according to claim 1 by a condensation reaction to produce a silicone rubber, and

further polymerizing the silicone rubber by exposure to actinic radiation.

5,776,659

IONIZING RADIATION EXPOSURE METHOD UTILIZING WATER SOLUBLE ANILINE ANTISTATIC POLYMER LAYER

Keiji Watanabe; Ei Yano; Takahisa Namiki; Keiko Yano; Takashi Maruyama, all of Kawasaki; Tomio Nakamura, Tokyo; Shigeru Shimizu, Tokyo; Takashi Saitoh, Tokyo; Masashi Uzawa, Tokyo, and Masami Ishikawa, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, and Nitto Chemical Industry Co., Ltd., Tokyo, both of Japan

Continuation of Ser. No. 542,193, Oct. 12, 1995, abandoned.

This application Dec. 12, 1996, Ser. No. 762,877

Claims priority, application Japan, Oct. 12, 1994, 6-246511

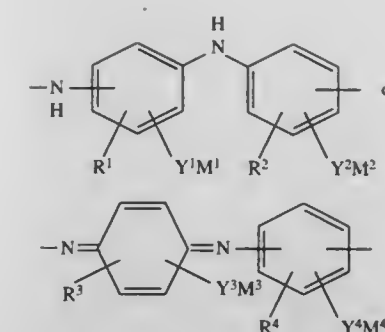
Int. Cl.⁶ G03F 7/30

U.S. Cl. 430—296

8 Claims

1. A method for forming a pattern on an object, which comprises:

coating a composition on a resist film on the object to be coated, said composition comprising 100 parts by weight of a solvent and 0.01 to 30 parts by weight of a soluble aniline polymer comprising at least one of the repeating units:



wherein R^1 , R^2 , R^3 and R^4 are each an electron-donating group; Y^1 , Y^2 , Y^3 and Y^4 are each $-\text{SO}_3-$ or $-\text{COO}-$; and M^1 , M^2 , M^3 and M^4 are each a hydrogen ion, an ammonium ion, a C_1 - C_8 alkyl ammonium ion, an aromatic ammonium ion or a quaternary ion of an aromatic heterocyclic ring; wherein,

the polymer contains at least 80% of the repeating units, has a weight average molecular weight of not less than 10,000, is soluble in water or a water-containing organic solvent, and is solid at room temperature;

exposing the coated object pattern-wise to ionizing radiation; and dissolving the coating and developing the resist film to form a pattern on the object.

5,776,660

FABRICATION METHOD FOR HIGH-CAPACITANCE STORAGE NODE STRUCTURES

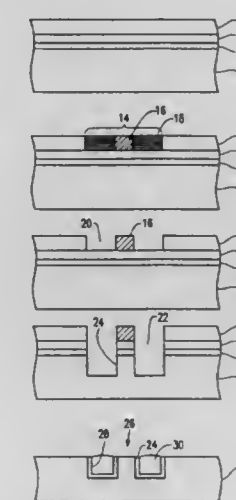
Mark C. Hakey; Steven J. Holmes, both of Milton; David V. Horak, Essex Junction, all of Vt., and William H. Ma, Fishkill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 715,287, Sep. 19, 1996. This application Feb. 3, 1997, Ser. No. 790,876

Int. Cl.⁶ G03C 5/16

U.S. Cl. 430—296

12 Claims



1. A method for fabricating a high capacitance storage node structure in a substrate, comprising the steps of: coating a substrate with a hybrid resist which functions either as a positive tone resist or a negative tone resist depending upon radiant energy exposure intensity; patterning said hybrid resist with radiant energy of first and second intensities, where said first and second intensities are not equal, to simultaneously produce a pattern with an exposed region having both a positive tone resist area surrounding a negative tone resist area, and an unexposed region;

removing hybrid resist from said positive tone resist area of said exposed region to expose said substrate under said positive tone resist area in said exposed region of said pattern; etching said substrate using said hybrid resist in said unexposed region and in said negative tone resist area of said exposed region as a mask, said etching step creating a trench in said substrate which surrounds a projection positioned under said hybrid resist material in said negative tone resist area of said exposed region; coating sidewalls of said trench and said projection with a dielectric material; and filling said trench with a conductive material.

5,776,661
PROCESS FOR IMAGING OF LIQUID PHOTOPOLYMER PRINTING PLATES

Nicola Casaletto; Wayne M. Gibbons, and Joseph F. Rach, all of New Castle County, Del., assignors to MacDermid Imaging Technology, Inc., Wilmington, Del.

Filed Aug. 24, 1994, Ser. No. 295,326
Int. Cl.⁶ G03F 7/00

U.S. Cl. 430—306

13 Claims

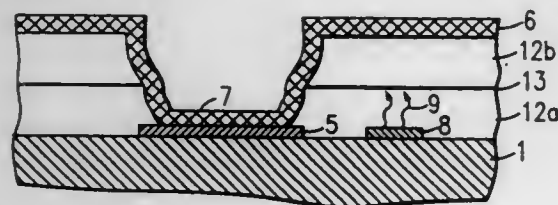
1. A method for preparing a photopolymer printing plate comprising the steps of placing a photopolymerizable resin composition between a transparent substrate film and a cover sheet formed of a polymeric film, placing a negative between said cover sheet and a first source of actinic radiation, said negative formed of transparent and opaque regions in an image to be transferred to said plate, supporting said negative on a first sheet of glass placed between said negative said first source of actinic radiation, placing a second sheet of glass on said substrate, positioning a second source of actinic radiation to shine through said second glass sheet and said transparent substrate onto said composition, forming a vacuum between said substrate film and said second sheet of glass, exposing said composition to actinic radiation from said second source followed by replacing said vacuum with a gas at a pressure equal to or greater than atmospheric pressure, separating said second sheet of glass from said substrate by a distance of at least 0.025 inch followed by exposing said composition to actinic radiation from said first source of actinic radiation, wherein said composition adjacent to said cover sheet has an induction time of greater than 8 seconds.

5,776,662
METHOD FOR FABRICATING A CHIP CARRIER WITH MIGRATION BARRIER, AND RESULATING CHIP CARRIER

Masaharu Shirai, Kusatsu, and Yutaka Tsukada, Shiga-ken, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 14, 1996, Ser. No. 647,513
Claims priority, application Japan, Aug. 8, 1995, 7-201985
Int. Cl.⁶ G03C 5/00; H05K 7/00
U.S. Cl. 430—313

18 Claims



1. A chip carrier, comprising:
a substrate;
a first layer of electrically conductive material overlying said substrate;
a second layer of electrically conductive material overlying said first layer of electrically conductive material; and

a layer of electrically insulating material sandwiched between said first and second layers of electrically conductive material, said layer of electrically insulating material including a barrier to metal migration between said first and second layers of electrically conductive material in a z-direction perpendicular to said first and second layers of electrically conductive material.

9. A method for fabricating a chip carrier, comprising the steps of:

forming a first layer of electrically conductive material on a substrate;
forming a layer of electrically insulating material on said first layer of electrically conductive material;
forming a barrier to metal migration in and/or on said layer of electrically insulating material; and
forming a second layer of electrically conductive material on said layer of electrically insulating material, said barrier preventing metal migration between said first and second layers of electrically conductive material in a z-direction perpendicular to said first and second layers of electrically conductive material.

5,776,663

METHOD FOR ELECTROPLATING A CONDUCTIVE LAYER ON A SUBSTRATE

Jae-Woo Roh, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

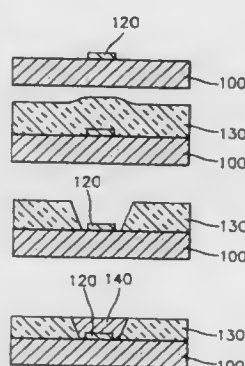
Filed Feb. 6, 1996, Ser. No. 596,026

Claims priority, application Rep. of Korea, Jun. 30, 1995, 95-18637

Int. Cl.⁶ G03F 7/00

U.S. Cl. 430—315

7 Claims



1. A method for forming a conductive layer on a substrate having a top surface, said method comprising the steps of:

(a) forming a seed layer on the top surface of the substrate;
(b) patterning the seed layer in a predetermined configuration;
(c) depositing a polyimide layer on the patterned seed layer and a part of the substrate which is not covered with the patterned seed layer;
(d) directing a light beam onto a portion of the polyimide layer formed on top of the patterned seed layer;
(e) developing the portion of the polyimide layer to expose the patterned seed layer;
(f) curing the remaining portion of the polyimide layer under appropriate conditions to form an insulator; and
(g) electroplating the conductive layer on the exposed patterned seed layer.

5,776,664

SILVER HALIDE PHOTOGRAPHIC MATERIAL
Seiji Yamashita; Koki Nakamura, and Koichi Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 17, 1996, Ser. No. 664,586

Claims priority, application Japan, Jun. 15, 1995, 7-171602
Int. Cl.⁶ G03C 1/295; 1/42

U.S. Cl. 430—405

14 Claims

1. A silver halide photographic material comprising:
(a) a silver chloride-containing emulsion comprising a dispersion medium and a silver halide grain, wherein the silver halide grain contains a tabular grain having an aspect ratio of not less than 2 accounting for at least 50% of the entire projected area thereof and has a silver chloride content of not less than 20 mol %;
(b) a developing agent; and
(c) a compound capable of forming a dye image upon development.

5,776,665

PHOTOGRAPHIC PROCESSING COMPOSITION AND METHOD USING ORGANIC CATALYST FOR PEROXIDE BLEACHING AGENT

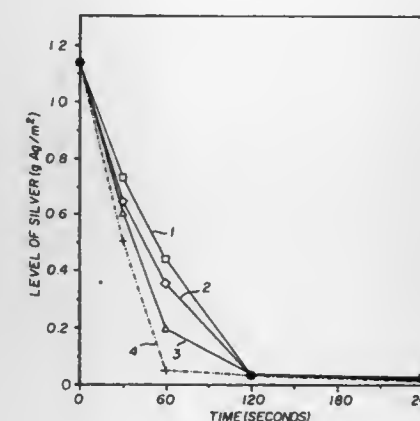
Terrence Robert O'Toole, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 569,406, Dec. 6, 1995, Pat. No. 5,656,416, which is a continuation-in-part of Ser. No. 362,384, Dec. 22, 1994, abandoned. This application Nov. 12, 1996, Ser. No. 745,532

Int. Cl.⁶ G03C 7/42

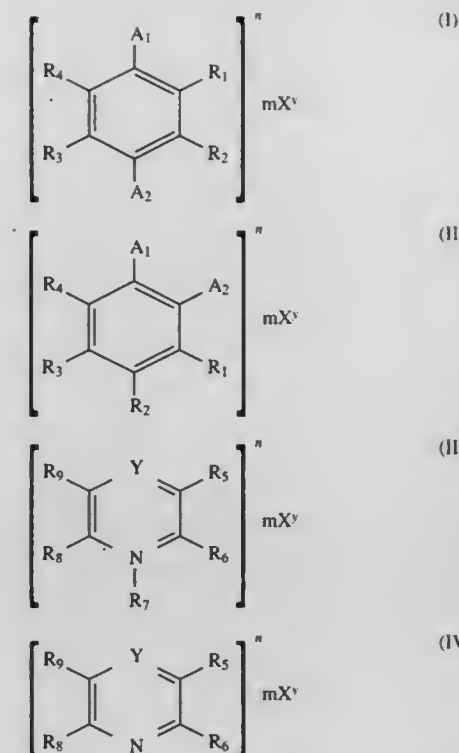
U.S. Cl. 430—418

15 Claims



1. A method for processing a photographic element comprising:
A) treating an imagewise exposed and developed photographic element with a prebath solution that is substantially free of ferric ions, has a pH of from about 1 to about 7, and consists essentially of from about 0.0005 to about 0.1 mol/l of an organic carbocyclic or heterocyclic compound which has the following properties:

a) a reduced form which is oxidizable by peroxide or a peroxide precursor at a pH of from about 1 to about 7,
b) an oxidized form which is reducible by silver metal in the presence of bromide or chloride at a pH of from about 1 to about 7, and
c) a chemically reversible redox couple, versus a saturated calomel electrode, of from about -0.20 to about +1.5 volts at a pH of from about 1 to about 7,
said organic carbocyclic or heterocyclic compound having a neutral or net positive charge, and being represented by any of the structures:



wherein

A₁ and A₂ are independently hydroxy or primary, secondary or tertiary amino,

R₁, R₂, R₃, R₄, R₅, R₆, R₇, R₈ and R₉ are independently hydrogen, halo, cyano, nitro, amide, sulfonamide, hydroxy, an ester, an ether, a primary, secondary or tertiary amino, an alkyl group of 1 to 12 carbon atoms, an aryl group of 6 to 12 carbon atoms in the ring structure, a cycloalkyl group of 5 to 12 carbon atoms in the ring structure or a quaternized aliphatic or aromatic amine or imine, or
any two adjacent groups chosen from R₁, R₂, R₃, R₄, R₅, R₆, R₇, R₈ and R₉, can represent the carbon, nitrogen, oxygen and sulfur atoms necessary to complete a 5- to 12-membered fused carbocyclic or heterocyclic ring structure connected to the primary nucleus of structures (I)-(IV),

Y is a sulfur, oxygen or nitrogen atom,

X is an anion with charge y of -1 to -3,
m is the absolute value of the ratio of n to y, and
n is 0 or a positive integer up to 3, and

B) bleaching said element with a peroxide bleaching solution comprising from about 0.1 to about 2 mol/l of hydrogen peroxide or perborate or percarbonate peroxide precursor bleaching agent.

5,776,666

TRIAZOLIUM THIOLATE BATHS FOR SILVER HALIDE DEVELOPMENT ACCELERATION

John Texter; Arthur Herman Herz, and Henry Wolf Altland, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

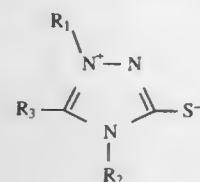
Continuation-in-part of Ser. No. 763,029, Sep. 20, 1991, abandoned. This application Mar. 3, 1993, Ser. No. 25,474
Int. Cl.⁶ G03C 5/00; 1/295

U.S. Cl. 430—445

19 Claims

1. A method of accelerating image formation during black and white development of a negative type silver halide photographic element comprising the steps of:

exposing said negative type silver halide photographic element to actinic radiation; and
contacting said negative-type silver halide photographic element during processing with a developer prebath or a developer bath comprising an accelerator compound of the formula:



wherein

R₁ is a substituted or unsubstituted alkyl group having from 1 to 28 carbon atoms, a substituted or unsubstituted alkenyl group having from 1 to 28 carbon atoms, a substituted or unsubstituted cycloalkyl group having from 3 to 28 carbon atoms, a substituted or unsubstituted aryl group having from 6 to 33 carbon atoms, an alkyl, cycloalkyl, alkenyl, alkoxyalkyl, aryl, or phenoxy group, connecting to a substituted or unsubstituted aryl group, having 6 to 33 carbon atoms, or an alkyl, cycloalkyl, alkenyl, alkoxyalkyl, aryl, or phenoxy group connecting to a substituted or unsubstituted heterocyclic ring containing two or more heteroatoms having 1 to 25 carbon atoms;

R₂ is a substituted or unsubstituted amine group having from 0 to 25 carbon atoms, a substituted or unsubstituted alkyl group having from 1 to 28 carbon atoms, a substituted or unsubstituted alkenyl group having from 1 to 28 carbon atoms, a substituted or unsubstituted cycloalkyl group from 3 to 28 carbon atoms, a substituted or unsubstituted acyloxy group having from 2 to 25 carbon atoms, a substituted or unsubstituted alkoxy group having from 1 to 28 carbon atoms, a substituted or unsubstituted aryl group having from 6 to 33 carbon atoms, a substituted or unsubstituted heterocyclic ring having from 1 to 28 carbon atoms and one or more heteroatoms, an alkyl, cycloalkyl, alkenyl, alkoxyalkyl, aryl, or phenoxy group, connecting to a substituted or unsubstituted aryl group, having 6 to 33 carbon atoms, or an alkyl, cycloalkyl, alkenyl, alkoxyalkyl, aryl, or phenoxy group connecting to a substituted or unsubstituted heterocyclic ring containing two or more heteroatoms having 1 to 25 carbon atoms;

R₃ is a substituted or unsubstituted amine group having from 0 to 25 carbon atoms, a substituted or unsubstituted alkyl group having from 1 to 28 carbon atoms, a substituted or unsubstituted alkenyl group having from 1 to 28 carbon atoms, a substituted or unsubstituted cycloalkyl group having from 3 to 28 carbon atoms, a substituted or unsubstituted acyloxy group having from 2 to 25 carbon atoms, a substituted or unsubstituted alkoxy group having from 1 to 28 carbon atoms, a substituted or unsubstituted aryl group having from 6 to 33 carbon atoms, a substituted or unsubstituted heterocyclic ring having from 1 to 28 carbon atoms and one or more heteroatoms, an alkyl, cycloalkyl, alkenyl, alkoxyalkyl, aryl, or phenoxy group, connecting to a substituted or unsubstituted aryl group, having 6 to 33 carbon atoms, or an alkyl, cycloalkyl, alkoxyalkyl, aryl, or phenoxy group connecting to a substituted or unsubstituted heterocyclic ring containing two or more heteroatoms;

said R₁, R₂, and R₃ may further combine with each other to form a 5-, 6-, or 7-membered ring; and wherein

said developer prebath and developer bath do not contain any iron(III) ion complex salt having bleaching activity or any nucleating agent capable of chemically fogging a negative-type silver halide emulsion.

5,776,667
COLOR PHOTOGRAPHIC RECORDING MATERIAL
HAVING A YELLOW FILTER LAYER WHICH CONTAINS
AN ARYLIDENE DYE OF ISOXAZOLONE AS THE
YELLOW FILTER DYE

Hans Öhlschlager, Bergisch Gladbach; Hans Langen, Bonn, and Klaus Sinzger, Leverkusen, all of Germany, assignors to AGFA AG, Germany

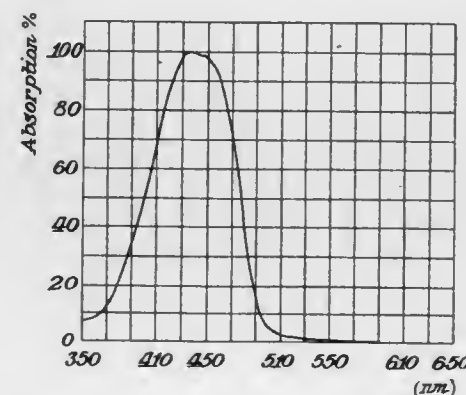
Filed Jan. 7, 1997, Ser. No. 779,915

Claims priority, application Germany, Jan. 12, 1996, 196 00 903.0; Nov. 11, 1996, 196 46 402.1

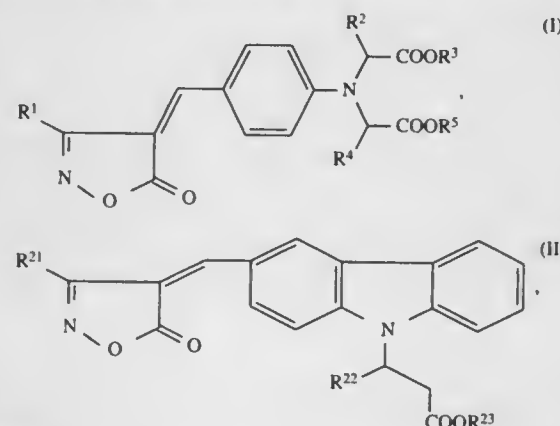
Int. Cl.⁶ G03C 1/83

U.S. Cl. 430—517

20 Claims



I. Color photographic recording material which comprises on a film support at least one red-sensitive silver halide emulsion layer with a cyan coupler, at least one green-sensitive silver halide emulsion layer with a magenta coupler, at least one blue-sensitive silver halide emulsion layer with a yellow coupler and at least one yellow coloured non-photosensitive layer which is arranged beneath a blue-sensitive silver halide emulsion layer and above a green-sensitive silver halide emulsion layer (yellow filler layer), wherein the material comprises in the yellow filter layer at least one dye of one of the formulae I and II,



in which

R¹, R³, and R⁵ (mutually independently) mean alkyl or cycloalkyl;

R² and R⁴ (mutually independently) mean hydrogen or alkyl;

R²¹ means a residue as R¹;

R²² means a residue as R²;

R²³ means a residue as R¹;

provided that in formula I none of the residues R¹ to R⁵ contains an alkyl chain of more than 3 carbon atoms.

5,776,668
ABRASIVE LUBRICATING OVERCOAT LAYERS
George Leslie Oltean, Rochester; Mridula Nair, Penfield, and Tamara Kay Osburn, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 30, 1996, Ser. No. 724,720

Int. Cl.⁶ G03C 11/06; 1/76

U.S. Cl. 430—523

10 Claims

1. A photographic element comprising:
a photographic support,
at least one light-sensitive layer,
a transparent magnetic recording layer containing magnetic particles; and
an outermost lubricating layer comprising
a lubricant,
a water-dispersible polymer as a film-forming binder, and
abrasive particles having a Moh's scale hardness of at least 6.

5,776,669
PHENOL SUBSTITUTED PYRAZOLO 1, 5-A
BENZIMIDAZOLE COUPLERS

Michael William Crawley, Kingswood; Andrew William Gibson, Woodhead, and Hugh Martin Williamson, Hanwell, all of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 557,673, Nov. 13, 1995, abandoned, which is a continuation of Ser. No. 996,234, Dec. 23, 1992, abandoned. This application Feb. 11, 1997, Ser. No. 798,673

Claims priority, application United Kingdom, Jun. 28, 1990, 9014435

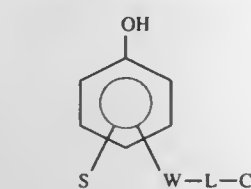
Int. Cl.⁶ G03C 1/08; 7/26; 7/32

U.S. Cl. 430—558

10 Claims

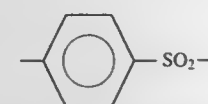
1. A photographic element comprising a light-sensitive photographic silver halide emulsion layer having associated therewith a coupler compound of formula (III)

(III)



wherein

W is an electron withdrawing group having the formula (V):

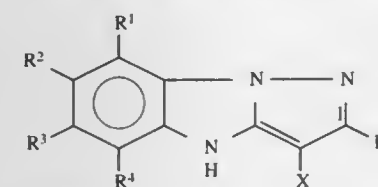


(V)

wherein the phenyl ring of (V) is linked to L;

L is a linking group that links to any one of the moieties R¹ to R⁴ of the residue of the coupler (C) which has the formula:

(I)



wherein

R is selected from the group consisting of H, and substituted or unsubstituted alkoxy, anilino, aryl, and amide groups;

R¹ to R⁴ are independently selected from the group consisting of alkyl and the selection group for R;

X is H or a coupling-off group

and S is an optional substituent.

5,776,670
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE
MATERIAL

Mitsuhiro Uchida, Minami-Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

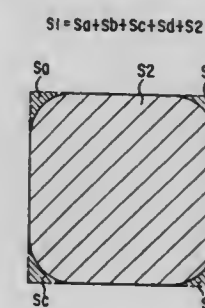
Continuation of Ser. No. 631,826, Apr. 10, 1996, abandoned, which is a continuation of Ser. No. 351,150, Nov. 30, 1994, abandoned, which is a continuation of Ser. No. 84,995, Jul. 2, 1993, abandoned. This application Feb. 10, 1997, Ser. No. 796,475

Claims priority, application Japan, Jul. 6, 1992, 4-200163

Int. Cl.⁶ G03C 1/035; 1/34

U.S. Cl. 430—567

9 Claims



1. A silver halide photographic light-sensitive material comprising at least one silver halide emulsion layer on a support, and containing an imidazole compound, said silver halide emulsion layer containing silver halide grains, wherein all of the silver halide grains in the silver halide emulsion layer are substantially perfect cubic silver halide grains having a perfection ratio of 0.96 or more, wherein said substantially perfect cubic silver halide grains have a silver chloride content of not more than 3 mol % and a silver iodide content of not less than 0.5 mol %, and are chemically sensitized, and also are spectrally sensitized with a sensitizing dye.

5,776,671
DIAGNOSTIC AND PROGNOSTIC ELISA ASSAYS OF
SERUM α-N-ACETYL GALACTOSAMINIDASE FOR
INFLUENZA

Nobuto Yamamoto, 1040 66th Ave., Philadelphia, Pa. 19126

Continuation-in-part of Ser. No. 779,729, Jan. 6, 1997, Pat.

No. 5,712,104, which is a continuation-in-part of Ser. No.

618,485, Mar. 19, 1996, abandoned. This application Sep. 26,

1997, Ser. No. 938,553

Int. Cl.⁶ C12Q 1/70

U.S. Cl. 435—5

2 Claims

1. A method for detecting α-N-acetylgalactosaminidase in plasma or serum to screen for influenza comprising the steps of:

- providing polyclonal or monoclonal antibodies against influenza virus α-N-acetylgalactosaminidase;
- providing a microtiter plate coated with the antibodies;
- adding the serum or plasma to the microtiter plate;
- providing alkaline phosphatase-antibody conjugates reactive with influenza virus α-N-acetylgalactosaminidase to the microtiter plate;
- providing p-nitrophenyl-phosphate to the microtiter plate; and
- comparing the reaction which occurs as a result of steps (a) to (e) with a standard curve to determine the level of influenza virus α-N-acetylgalactosaminidase compared to a normal individual.

1. A method for diagnosing for *Pneumocystis carinii* which comprises detecting the presence of a nucleic acid sequence con-

taining the 26S rRNA gene specific for *Pneumocystis carinii* in a sample which comprises the steps of:

- treating the sample with an oligodeoxyribonucleotide polymerase chain reaction primer for each strand of the nucleic acid sequence, four different nucleoside triphosphates, and an agent for polymerization under hybridizing conditions, such that for each strand an extension product of each primer is synthesized which is sufficiently complementary to each strand of the nucleic acid sequence being detected to hybridize therewith and contains the 26S rRNA gene specific for *Pneumocystis carinii*, wherein the primers are selected such that the extension product synthesized from one primer, when it is separated from its complement, can serve as a template for synthesis of the extension product of the other primer;
- treating the sample from step (a) under denaturing conditions to separate the primer extension products from the templates on which they are synthesized if the sequence to be detected is present;
- treating the product from step (b) with oligodeoxyribonucleotide primers, four different nucleoside triphosphates, and an agent for polymerization such that a primer extension product is synthesized using each of the single strands produced in step (b) as a template, resulting in amplification of the sequence to be detected if present;
- hybridizing the primer extension products from step (c) with a labeled oligodeoxyribonucleotide probe complementary to the 26S rRNA gene specific for *Pneumocystis carinii*;
- determining whether hybridization in step (d) has occurred to diagnose for *Pneumocystis carinii*, wherein hybridization is directly proportional to the amount of nucleic acid sequence containing the 26S rRNA gene specific for *Pneumocystis carinii* present in the sample wherein the primers and probes are selected from the group of polynucleotides consisting of SEQ ID NOs: 6, 7, 13, 14, 17, 19-26, and 28-30.

5,776,681

METHOD FOR DETERMINING A METAL PRESENT IN A SAMPLE

Marko Virta, Hämeenkatu 12 B 27, Turku, Finland, 20500, and Matti Karp, Tapulikatku 6 A 22, Turku, Finland, 20810
PCT No. PCT/FI95/00017, § 371 Date Sep. 15, 1995, § 102(e)
Date Sep. 15, 1995, PCT Pub. No. WO95/19446, PCT Pub. Date Jul. 20, 1995

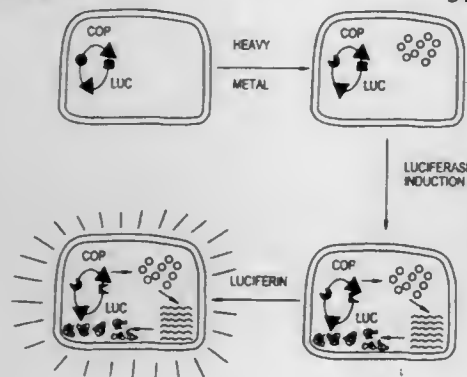
PCT Filed Jan. 17, 1995, Ser. No. 525,532

Claims priority, application Finland, Jan. 17, 1994, 940225

Int. Cl.⁶ C12Q 1/68; C07H 21/04; C12N 15/63

U.S. Cl. 435-6

34 Claims



1. A method for determining a heavy metal in a sample comprising:

- providing a cell comprising a recombinant DNA plasmid, said plasmid comprising a gene coding for an insect luciferase or a green fluorescent protein (GFP) marker protein, wherein the copy number of said plasmid is under the control of a promoter regulatable by a heavy metal, and wherein said promoter controls the origin of replication of said plasmid;
- contacting said cell with a sample which contains said heavy metal;

- allowing said heavy metal to affect said cell, whereafter the amount of said marker protein is determined;
- comparing the amount of said marker protein with a control in which no metal was present or in which the heavy metal was present in a known amount, whereby the presence and/or amount of said heavy metal is determined.

5,776,682

MALE INFERTILITY Y-DELETION DETECTION BATTERY

Marijo Kent First, Madison, Wis.; Alexander I. Agoulnik, Houston, Tex., and Ariege Muallem, Madison, Wis., assignors to Promega Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 472,416, Jun. 7, 1995. This application Sep. 18, 1995, Ser. No. 531,556

Int. Cl.⁶ C12Q 1/68; C12P 19/34; C07H 21/04; C12N 15/00
U.S. Cl. 435-6

40 Claims

1. A method for detecting deletions in a Y chromosome which are indicative of male infertility comprising:

- combining at least one plurality of distinct oligonucleotide primer pairs capable of priming at least one corresponding plurality of human X and Y chromosome loci selected from the group consisting of:
DYS209, DYF43S1, DYS210, DYS211, DYS33, DYS1, SMCX, DAZ(1);
DYS218, DYS219, DYS212, DYF53S1, DYS205, DYS281, MIC2;
DYS201, DYS241, DYS198, SRY, DYS197, DYS196, MIC2;
DYS240, DYS271, DYS221, KAL182, DAZ(2), MIC2;
DYS224, DYS226, DYS222, DYS227, MIC2;
DYF53S1, DYS229, DY21, DYS230, DAZ(3), DAZ(4), DAZ(5), MIC2;
SMCY, DYS217, DYS220, DYS223, DYS7, DYS237, DYS215, MIC2;
SMCY, DYS217, DYS220, DYS7, DYS237, DYS215, DAZ(6), MIC2;
DAZ(7), DAZ(8), DAZ(9), DAZ(10), DAZ(11), MIC2; and YRRM1, SMCY, ZFY, BKM, SMCX;
with isolated genomic DNA of a test subject; then
- amplifying the at least one plurality of distinct oligonucleotide primer pairs by at least one corresponding multiplex polymerase chain reaction to yield locus-specific amplified chromosomal DNA fragments; then
- separating the amplified chromosomal DNA fragments; and then
- comparing the amplified chromosomal DNA fragments to corresponding amplified chromosomal DNA fragments from normal male subjects, whereby deletions in the Y chromosome of the test subject are detected.

5,776,683

METHODS FOR IDENTIFYING GENES AMPLIFIED IN CANCER CELLS

Helene S. Smith, San Francisco, and Ling-Chun Chen, Fremont, both of Calif., assignors to California Pacific Medical Center, San Francisco, Calif.

Filed Jul. 11, 1996, Ser. No. 678,280

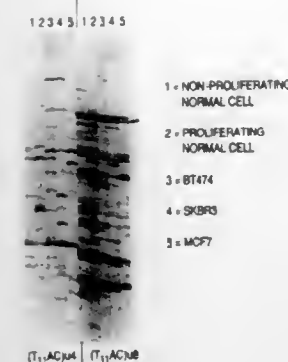
Int. Cl.⁶ C12Q 1/68; C12P 19/34; C07H 21/04; 21/02

U.S. Cl. 435-6

22 Claims

1. A method for obtaining cDNA from a gene that is duplicated or overexpressed in cancer, comprising the steps of:

- supplying an RNA preparation from control cells;
- supplying RNA preparations from at least two cancer cells from different individuals, wherein the two cancer cells share a duplicated gene;
- displaying cDNA reverse transcribed from the RNA preparations of step a) and step b) such that cDNA from different RNA in each preparation are displayed separately;
- isolating cDNA from step c) that is preferentially displayed in the cancer cells relative to the control cells;



- supplying a digested DNA preparation from control cells;
- supplying digested DNA preparations from at least two cancer cells from different individuals;
- hybridizing the cDNA isolated in step d) with each of the digested DNA preparations of step e) and step f); and
- identifying cDNA that hybridizes preferentially in step g) with the DNA from the cancer cells relative to the DNA of the control cells.

5,776,684

METHOD FOR STAINING BIOMOLECULES USING A GELLED MATRIX

Jack C. Chirikjian, Potomac, and Gordon Bruce Collier, Gaithersburg, both of Md., assignors to Edvotek, West Bethesda, Md.

Filed Dec. 28, 1995, Ser. No. 580,253

Int. Cl.⁶ C12Q 1/68; G01N 33/48

U.S. Cl. 435-6

3 Claims

1. A method for staining biomolecules with a desired stain, said method comprising the steps of:

- applying a gelled matrix containing the desired stain distributed evenly therein to a gel or support containing said biomolecules;
- allowing said stain to diffuse from the gelled matrix to said biomolecules; and
- removing said gelled matrix from said gel or support.

5,776,685

PROTEIN KINASE C ASSAY

Heimo Riedel, Jamaica Plain, Mass., assignor to Joslin Diabetes Center, Boston, Mass.

Continuation of Ser. No. 293,744, Aug. 22, 1994, abandoned, which is a continuation of Ser. No. 89,043, Jul. 19, 1993, abandoned. This application Nov. 19, 1996, Ser. No. 752,047

Int. Cl.⁶ C12Q 1/68; C12N 15/00; 9/12; C07H 21/02

U.S. Cl. 435-6

15 Claims

1. A method of screening a compound for the ability to modulate a PKC-mediated growth response comprising, supplying a yeast cell transformed to express a mammalian PKC,

contacting said yeast cell with a compound to be screened, wherein said compound binds to said mammalian PKC; and

determining the rate of growth of said yeast cell, an effect on said rate of growth being indicative of the ability of said compound to modulate said PKC-mediated growth response.

5,776,686

DEVELOPMENT OF A PCR-BASED METHOD FOR IDENTIFICATION OF *TILLETIA INDICA*, CAUSAL AGENT OF KARNAL BUNT OF WHEAT

Oney P. Smith, Frederick; Gary L. Peterson, Walkersville; Raymond J. Beck, Frederick; Morris R. Bonde, Middletown, and Norman W. Schaad, Myersville, all of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 24, 1996, Ser. No. 772,961

Int. Cl.⁶ C12Q 1/68; C07H 21/02; 21/04; C12N 15/00

U.S. Cl. 435-6

18 Claims

13. A method of detecting *Tilletia indica* in a sample comprising:

- releasing DNA from a test sample;
- amplifying said DNA with a pair of oligonucleotide primers selected from the group consisting of:
(i) primers comprising at least 17 consecutive bases of the DNA sequences 5'-TCCCTTGGATCAGAACGTA-3' (SEQ ID NO. 1) and 5'-AGAAGTCTAACTCCCCCTCT-3' (SEQ ID NO. 2), and
(ii) primers comprising at least 17 consecutive bases of the DNA sequences 5'-TTTCCCTCTCTCCTTTTTC-3' (SEQ ID NO. 3) and 5'-AGCAAAGACAAAGTAGGCTTCC-3' (SEQ ID NO. 4); and
- detecting the presence of amplified DNA.

5,776,687

RETINOID INDUCED GENE

Sunil Nagpal, Lake Forest; Daniel DiSepio, Corona del Mar, and Roshantha A. Chandraratna, Mission Viejo, all of Calif., assignors to Allergan, Irvine, Calif.

Filed Feb. 28, 1997, Ser. No. 808,303

Int. Cl.⁶ C12Q 1/68; C12P 19/34; C07H 21/02; 21/04

U.S. Cl. 435-6

17 Claims

1. A method of identifying a compound for treatment of a hyperproliferative disorder of skin, comprising the steps:

- obtaining a control sample containing RNA from an untreated control culture of skin cells;
- obtaining a sample containing RNA from a test culture of said skin cells, wherein said test culture has been treated with a test compound;
- quantitating the amount of Tazarotene Inducible Gene-3 (TIG3) RNA present in each of said samples, said TIG3 RNA encoding a polypeptide sequence comprising SEQ ID NO:12;
- comparing the amount of TIG3 RNA in each of said samples to determine if the amount of TIG3 RNA in said test sample is greater or lesser than the amount of TIG3 RNA in said control sample, wherein said test compound is identified as a compound for the treatment of the hyperproliferative disorder if the amount of TIG3 RNA in said test sample is greater than the amount of TIG3 RNA in said control sample.

5,776,688

METHODS FOR DETECTION BY IN SITU
HYBRIDIZATION OF MULTIPLE CHROMOSOMES OR
REGIONS THEREOFMichael L. Bittner, Naperville; Larry E. Morrison, Glen Ellyn,
and Mona S. Legator, Chicago, all of Ill., assignors to Vysis,
Inc., Downers Grove, Ill.Continuation of Ser. No. 476,694, Jun. 7, 1995, Pat. No.
5,663,319, which is a division of Ser. No. 222,167, Apr. 4,
1994, Pat. No. 5,491,224, which is a continuation of Ser. No.
762,913, Sep. 19, 1991, abandoned, which is a continuation-
in-part of Ser. No. 585,876, Sep. 20, 1990, abandoned. This
application Jan. 10, 1997, Ser. No. 781,682Int. Cl.⁶ C12Q 1/68; C07H 21/02; 21/04

U.S. Cl. 435—6

10 Claims

1. A method for the detection by in situ hybridization of a
plurality of target chromosomes or a plurality of target regions of
chromosomes comprising:(a) contacting under hybridizing conditions a plurality of target
chromosomes or a plurality of target regions of chromosomes,
which are contained within a cytological or histological
preparation or specimen, with a multiple probe composition
comprising a plurality of direct label DNA probe composi-
tions, wherein:(i) each of the direct label DNA probe compositions is detect-
able by use of a different fluorescent label, each label being
detectable in the presence of the other fluorescent label or
labels, and(ii) each of the direct label DNA probe compositions com-
prises direct label DNA segments which:(1) are complementary to different target chromosomes or
target regions of a chromosome to be detected,
(2) have multiple fluorescent labels covalently attached
thereto, and(3) have 0.3 to 6 mole percent of total nucleotides in each
direct label DNA segment fluorescently labeled, and(b) detecting the presence or absence of hybridization of each of
the direct label DNA probe compositions to the chromosomes
or regions of a chromosome by fluorescent techniques.

5,776,689

PROTEIN RECRUITMENT SYSTEM

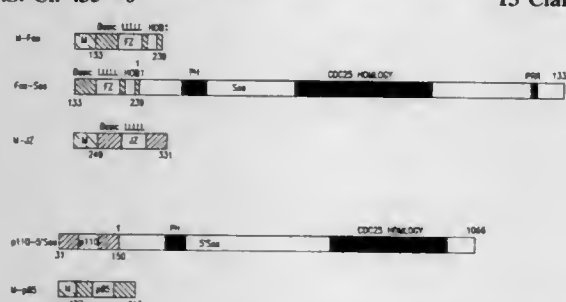
Michael Karin, San Diego, Calif.; Stephen J. Elledge, Houston,
Tex., and Ami Aronheim, San Diego, Calif., assignors to The
Regents of the University of California, Oakland, Calif., and
Baylor College of Medicine, Houston, Tex.

Filed Jul. 19, 1996, Ser. No. 683,877

Int. Cl.⁶ C12Q 1/68; C12N 15/81; 15/63; 21/04

U.S. Cl. 435—6

13 Claims

1. A method for identifying protein-protein binding using the
protein recruitment system, comprising the steps of:a) expressing in a cell a first nucleic acid molecule encoding a
first fusion protein comprising an effector protein, which is
not a transcription factor, fused to a target protein;
b) further expressing in said cell a second nucleic acid molecule
encoding a second fusion protein comprising a cell membrane
localization domain fused to a second protein; and
c) detecting activation of a reporter molecule by detecting signal
that identifies a protein-protein binding between said target
protein and said second protein.

5,776,690

DETECTION OF CHRONIC FATIGUE SYNDROME BY
DECREASED LEVELS OF RNASE L INHIBITOR MRNA
Aristo Vojdani, and Eli Mordechai, both of 8730 Wilshire Blvd.
305, Beverly-Hills, Calif. 90211

Filed Oct. 7, 1996, Ser. No. 727,708

Int. Cl.⁶ C12Q 1/68; C12N 15/10

U.S. Cl. 435—6

4 Claims

1. A method for detecting an increased likelihood of the pres-
ence of chronic fatigue syndrome (CFS) in an individual, compris-
ing:isolating peripheral blood mononuclear cells (PBMCs) from said
individual; anddetermining the amount of RNase L inhibitor (RLI) mRNA
present in said PBMCs from said individual, wherein the
presence of an amount of RLI mRNA less than about
750copies/μg RNA indicates an increased likelihood of the
presence of CFS.

5,776,691

GENOMIC DNA FRAGMENT OF *STREPTOCOCCUS*
PNEUMONIAE, HYBRIDIZATION PROBE,
AMPLIFICATION PRIMER, REAGENT AND METHOD
FOR THE DETECTION OF *STREPTOCOCCUS*
*PNEUMONIAE*Jean-Pierre Claverys, Toulouse, and Claude Mabilat, Villeur-
banne, both of France, assignors to Bio Merieux, Marcy
L'Etoile, France

Continuation of Ser. No. 15,850, Feb. 10, 1993, abandoned.

This application Apr. 10, 1995, Ser. No. 419,765

Claims priority, application France, Feb. 10, 1992, 92 01655

Int. Cl.⁶ C12Q 1/68

U.S. Cl. 435—6

51 Claims

1. A single-stranded nucleotide fragment consisting of at least
one member selected from the group consisting of nucleotide
sequences SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4 and their
respective complementary sequences.

5,776,692

MYCOBACTERIAL GENUS-SPECIFIC DNA PROBE AND
ITS EXPRESSED PRODUCTFouad A. K. El-Zaatari, Pearland, Tex.; Saleh Naser, Orlando,
Fla., and David Y. Graham, Houston, Tex., assignors to
Baylor College of Medicine, Houston, Tex.

Filed May 23, 1995, Ser. No. 447,965

Int. Cl.⁶ C12Q 1/68; C12P 19/34; C07H 21/04; C12N 15/00

U.S. Cl. 435—6

5 Claims

4. A method for assessing the presence in a sample of nucleotide
sequences which bind with a mycobacterial genus-specific nucleic
acid probe comprising:contacting a nucleic acid extract from said sample with a nucleic
acid probe comprising nucleotides in a sequence selected
from the group consisting of the sequence of nucleotides
1-1402 of SEQ ID NO. 1 and the sequences of fragments
thereof at least 15 nucleotides in length;allowing sufficient time for hybridization to occur between said
nucleic acid probe and any complementary sequences in said
sample of nucleotide sequences; anddetecting the presence of any hybridization between said nucleic
acid probe and complementary sequences in said sample of
nucleotide sequences.

5,776,693

SPECIFIC DETECTION OF THE MYCOBACTERIUM
TUBERCULOSISJean-Luc Guesdon, Sèvres, and Dominique Thierry, Boulogne,
both of France, assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 983,552, Feb. 8, 1993, abandoned.

This application Jun. 5, 1995, Ser. No. 461,773

Claims priority, application France, Jun. 8, 1990, 90 07192

Int. Cl.⁶ C12Q 1/68; C12P 19/34; C07H 21/04; 21/02

U.S. Cl. 435—6

18 Claims

1. Isolated nucleic acid fragment comprising a sequence I, II, III
or IV whereinI is a sequence selected from the group consisting of one of the
sequences A to H:

A: 5'-CCCGCGGCAAGCCCGCAGGACCACGATCG-3' SEQ

ID NO: 1

B: 5'-CGACCCGCCAGCCAGGATCCTGCGAGCGT-3' SEQ

ID NO: 2

C: 5'-GGCGGGTCCAGATGGCTTGTCTCGATCGCGT-3' SEQ

ID NO: 3

D: 5'-GTTGGCGGGTCCAGATGGCTTGTCTCGATCG-3' SEQ

ID NO: 4

E: 5'-TCAAAGGGTTTGACAAATTMTGATTGGTC-3' SEQ

ID NO: 5

F: 5'-TCGTGTACAAAATGTGGACMGTA-3' SEQ ID NO: 6

G: 5'-TCGACGGAGCTCGTGACAGAAAGTC-3' SEQ ID NO:

7

H: 5'-GTCGACACGCCTTCTGACGGGTCCTT-3' SEQ

ID NO: 8

II is a sequence including at least 10 consecutive bases of one of
the sequences A, C, D, E, F, G and H and consisting of a total
length of about 20 to 40 bases;III is a sequence consisting of a length of 20 to 40 bases which
specifically hybridizes under highly stringent conditions, with
sequence I or with sequence II at a hybridization region
within sequence I or sequence II; andIV is a sequence fully complementary to one of the sequences I,
II or III.

5,776,694

DIAGNOSTIC KITS USEFUL FOR SELECTIVELY
DETECTING MICROORGANISMS IN SAMPLESDiana K. Sheiness, Bothell, Wash.; Trevor H. Adams, Bucking-
hamshire, England; Michael R. Stamm, Bothell, Wash.; Ger-
ard A. Cangelosi; Theresa B. Britschgi, both of Seattle,
Wash., and Connie K. Dix, Arlington, Wash., assignors to
Becton Dickinson Company, Franklin Lakes, N.J.Continuation of Ser. No. 458,319, Jun. 2, 1995, abandoned,
which is a division of Ser. No. 133,598, Oct. 8, 1993, Pat. No.
5,700,636, which is a continuation-in-part of Ser. No. 896,094,
May 29, 1992, abandoned, which is a continuation-in-part of
Ser. No. 600,334, Oct. 19, 1990, abandoned. This application
Jul. 2, 1997, Ser. No. 886,999Int. Cl.⁶ C12Q 1/68; C07H 21/04

U.S. Cl. 435—6

2 Claims

1. A kit for simultaneously detecting *Gardnerella vaginalis*,
Candida albicans and *Trichomonas vaginalis*, comprising:(a) a dipstick comprising a nonporous solid support having at
least three capture oligonucleotide-coated beads attached
thereto, wherein a first bead specifically hybridizes with
Gardnerella vaginalis nucleic acid wherein the capture oligo-
nucleotide is selected from the group consisting of SEQ ID
NOS: 18-26, a second bead specifically hybridizes with *Can-
dida albicans* nucleic acid wherein the capture oligonucleo-
tide is SEQ ID NO: 13, and a third bead specifically hybrid-
izes with *Trichomonas vaginalis* nucleic acid wherein the
capture oligonucleotide is selected from the group consisting
of SEQ ID NOS: 48-50(b) a lysis solution capable of releasing nucleic acid from
Gardnerella vaginalis, *Candida albicans* and *Trichomonas
vaginalis* microorganisms; and(c) a container having therein at least three signal oligonucleo-
tides, wherein a first signal oligonucleotide specifically
hybridizes with *Gardnerella vaginalis* nucleic acid, a second
signal oligonucleotide specifically hybridizes with *Candida
albicans* nucleic acid, and a third signal oligonucleotide spec-
ifically hybridizes with *Trichomonas vaginalis* nucleic acid.

5,776,695

BIOSYNTHETIC GENE DDI *STREPTOCOCCUS*
*PNEUMONIAE*Paul L. Skatrud, Indianapolis, and Robert B. Peery, Browns-
burg, both of Ind., assignors to Eli Lilly and Company,
Indianapolis, Ind.Division of Ser. No. 690,413, Jul. 25, 1996. This application
Apr. 15, 1997, Ser. No. 842,540Int. Cl.⁶ G01N 33/53; C07K 14/315

U.S. Cl. 435—7.1

5 Claims

1. A substantially pure DDL protein from *Streptococcus pneu-
moniae* having the amino acid sequence:

Met	Lys	Gln	Thr	Ile	Ile	Leu	Leu	Tyr	Gly
1				5					10
Gly	Arg	Ser	Ala	Glu	Arg	Glu	Val	Ser	Val
				15					20
Leu	Ser	Ala	Glu	Ser	Val	Met	Arg	Ala	Val
				25					30
Asp	Tyr	Asp	Arg	Phe	Thr	Val	Lys	Thr	Phe
				35					40
Phe	Ile	Ser	Gln	Ser	Gly	Asp	Phe	Ile	Lys
				45					50
Thr	Gln	Glu	Phe	Ser	His	Ala	Pro	Gly	Gln
				55					60

-continued

Glu	Asp	Arg	Leu	Met	Thr	Asn	Glu	Thr	Ile
				65					70
Asp	Trp	Asp	Lys	Lys	Val	Ala	Pro	Ser	Ala
				75					80
Ile	Tyr	Glu	Glu	Gly	Ala	Val	Val	Phe	Pro
				85					90
Val	Leu	His	Gly	Pro	Met	Gly	Glu	Asp	Gly
				95					100
Ser	Val	Gln	Gly	Phe	Leu	Glu	Val	Leu	Lys
				105					110
Met	Pro	Tyr	Val	Gly	Cys	Asn	Ile	Leu	Ser
				115					120
Ser	Ser	Leu	Ala	Met	Asp	Lys	Ile	Thr	Thr
				125					130
Lys	Arg	Val	Leu	Glu	Ser	Ala	Gly	Ile	Ala
				135					140
Gln	Val	Pro	Tyr	Val	Ala	Ile	Val	Glu	Gly
				145					150
Asp	Asp	Val	Thr	Ala	Lys	Ile	Ala	Glu	Val
				155					160
Glu	Glu	Lys	Leu	Ala	Tyr	Pro	Val	Phe	Thr
				165					170
Lys	Pro	Ser	Asn	Met	Gly	Ser	Ser	Val	Gly
				175					180
Ile	Ser	Lys	Ser	Glu	Asn	Gln	Glu	Glu	Leu
				185					190
Arg	Gln	Ala	Leu	Lys	Leu	Ala	Phe	Arg	Tyr
				195					200
Asp	Ser	Arg	Val	Leu	Val	Glu	Gln	Gly	Val
				205					210
Asn	Ala	Arg	Glu	Ile	Glu	Val	Gly	Leu	Leu
				215					220
Gly	Asn	Tyr	Asp	Val	Lys	Ser	Thr	Leu	Pro
				225					230
Gly	Glu	Val	Val	Lys	Asp	Val	Ala	Phe	Tyr
				235					240
Asp	Tyr	Asp	Ala	Lys	Tyr	Ile	Asp	Asn	Lys
				245					250
Val	Thr	Met	Asp	Ile	Pro	Ala	Lys	Ile	Ser
				255					260
Asp	Asp	Val	Val	Ala	Val	Met	Arg	Gln	Asn
				265					270
Ala	Glu	Thr	Ala	Phe	Arg	Ala	Ile	Gly	Gly
				275					280
Leu	Gly	Leu	Ser	Arg	Cys	Asp	Phe	Phe	Tyr
				285					290
Thr	Asp	Lys	Gly	Glu	Ile	Phe	Leu	Asn	Glu
				295					300
Leu	Asn	Thr	Met	Pro	Gly	Phe	Thr	Gln	Trp
				305					310
Ser	Met	Tyr	Pro	Leu	Leu	Trp	Glu	Asn	Met
				315					320
Gly	Ile	Ser	Tyr	Pro	Glu	Leu	Ile	Glu	Arg
				325					330

-continued

Leu	Val	Asp	Leu	Ala	Lys	Glu	Ser	Phe	Asp
				335					340
Lys	Arg	Glu	Ala	His	Leu	Ile			
				345					

which is SEQ ID NO 2.

5,776,696

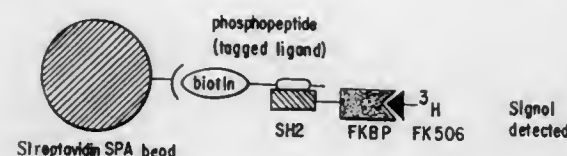
HIGH THROUGHPUT ASSAY USING FUSION PROTEINS
Scott P. Salowe, Dayton, N.J., assignor to Merck & Co., Inc.,
Rahway, N.J.

Filed Sep. 4, 1996, Ser. No. 707,793

Int. Cl.⁶ G01N 33/53; 33/546; 33/566; 33/60; 33/68

U.S. Cl. 435—7.1

10 Claims



1. A method of screening for compounds capable of binding to a fusion protein, which is defined as an FK506-binding protein linked to a target protein through a peptide linker, which comprises the steps of:

- a) mixing a test compound, a tagged ligand for the target protein, which is selected from a biotinylated ligand or an epitope-tagged ligand, the fusion protein, a radiolabeled ligand selected from [³H]- or [¹²⁵I]-labeled FK506 analog and coated scintillation proximity assay (SPA) beads selected from streptavidin-coated or anti-antibody coated or protein A-coated beads;
- b) incubating the mixture from between about 1 hour to about 24 hours;
- c) measuring the SPA bead-bound counts attributable to the binding of the tagged ligand to the fusion protein in the presence of the test compound using scintillation counting; and
- d) determining the binding of the tagged ligand to the fusion protein in the presence of the test compound relative to a control assay run in the absence of the test compound.

5,776,697

CHARACTERIZATION OR DETERMINATION OF THE AMOUNT OF BLOOD CELLS BY MEANS OF POULTRY ANTIBODIES

Tomas Lindahl, S-528, 63 Linköping, and Anders Larsson, S-752, 30 Uppsala, both of Sweden

PCT No. PCT/SE92/00451, § 371 Date Feb. 7, 1994, § 102(e) Date Feb. 7, 1994, PCT Pub. No. WO93/00585, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 22, 1992, Ser. No. 167,877

Claims priority, application Sweden, Jun. 28, 1991, 9102014 Int. Cl.⁶ G01N 33/53

17 Claims

1. A process for detection of blood cells in activated form and/or determination of a proportion of activated blood cells which comprises performing said detection and/or determination with poultry antibodies, whereby interfering interactions which change expression of antigen on a surface of blood cells are eliminated.

5,776,698

REGULATION OF GENE TRANSCRIPTION

Jennifer L. Hillman, San Jose; Surya K. Goli, Sunnyvale, and David G. Streeter, Boulder Creek, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Apr. 14, 1997, Ser. No. 839,710

Int. Cl.⁶ C12P 21/06; C12N 15/00; 5/00; C07H 21/02

U.S. Cl. 435—69.1

5 Claims

1. An isolated and purified polynucleotide sequence encoding a regulator of gene transcription which has the amino acid sequence as set forth in SEQ ID NO:1 or the complement thereof.

5,776,699

METHOD OF IDENTIFYING NEGATIVE HORMONE AND/OR ANTAGONIST ACTIVITIES

Elliott S. Klein, Marina Del Rey; Sunil Nagpal, Lake Forest, and Roshantha A. Chandraratna, Mission Viejo, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Mar. 11, 1996, Ser. No. 613,863

Int. Cl.⁶ G01N 33/567

U.S. Cl. 435—7.2

20 Claims

1. A method of identifying retinoid negative hormones, comprising the following steps:

- obtaining transfected cells containing a recombinant retinoid receptor and a reporter gene transcriptionally responsive to binding of the recombinant retinoid receptor, said recombinant retinoid receptor comprising a ligand regulated transactivation domain and a dimerization domain;
- measuring a basal level of reporter gene expression in said transfected cells when propagated in the absence of an added retinoid;
- treating the transfected cells with a retinoid compound to be tested for negative hormone activity, thereby obtaining treated cells;
- measuring a lower level of reporter gene expression in treated cells compared to said basal level, thereby identifying said retinoid compound as a retinoid negative hormone.

5,776,700

THROMBIN RECEPTOR ACTIVATION ASSAY FOR USE IN IDENTIFYING THROMBIN RECEPTOR ANTAGONISTS

Lawrence Brass, Bala Cynwyd, Pa., and Ram Ramachandran, Newark, Del., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Sep. 5, 1996, Ser. No. 709,558

Int. Cl.⁶ C12N 15/12

U.S. Cl. 435—7.2

2 Claims

1. A method of measuring thrombin receptor activation comprising:

- (a) exposing non-adherent megakaryoblastic cells which express thrombin receptors to a labeled thrombin receptor antibody specific for SEQ ID NO: 2 or so that the labeled thrombin receptor antibody binds to thrombin receptors on the cells to form an antibody-receptor complex;
- (b) incubating the cells with an agonist peptide comprising SEQ ID NO: 1 which activates the thrombin receptors on the cells so that the antibody-receptor complex is internalized by the cell;
- (c) washing the cells to remove any antibody remaining on the surface of the cells; and
- (d) measuring labeled antibody internalized by the cells which is an index of thrombin receptor activation.

5,776,701

MATERIALS AND METHODS FOR DETECTING OXALATE

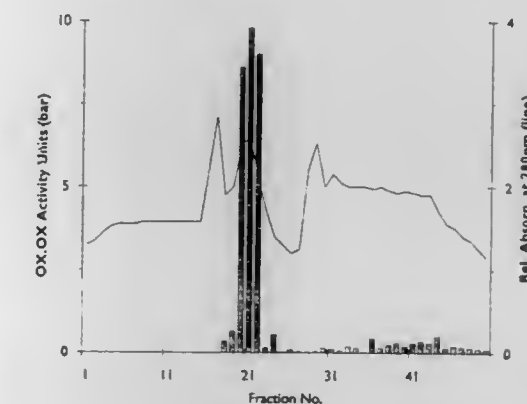
Rusty Jay Mans; Christopher D. Batich, both of Gainesville, Fla., and Ian McFetridge, Brookline, Mass., assignors to University of Florida, Gainesville, Fla.

Filed May 31, 1996, Ser. No. 656,798

Int. Cl.⁶ G01N 33/573; C12Q 1/28; 1/26; 1/00

U.S. Cl. 435—7.4

13 Claims



1. A process for preparing an oxalate oxidase composition comprising the steps of preparing an extract from plant tissue, wherein phenylmethylsulfonyl fluoride is included during preparation of said extract, precipitating proteins in said extract by bringing said extract to at least about 30% saturation with ammonium sulfate, removing said precipitated proteins and bringing said extract to at least about 60% saturation with ammonium sulfate to precipitate said oxalate oxidase present in said extract, and recovering said oxalate oxidase.

5,776,702

PROCESS FOR THE DETERMINATION OF AN IMMUNOLOGICALLY DETECTABLE SUBSTANCE AND A SUITABLE REACTION VESSEL THEREFOR

Urban Schmitt, Oberhausen; Eberhard Maurer, Weilheim; Wolfgang Rüdinger, Birkenau, and Rolf Deeg, Bernried, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Division of Ser. No. 925,300, Aug. 5, 1992, Pat. No. 5,362,624, which is a continuation of Ser. No. 691,685, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 356,336, May 24, 1989, abandoned. This application Jul. 7, 1994, Ser. No. 271,855

Claims priority, application Germany, May 25, 1988, 38 17 716.1; Jan. 20, 1989, 39 01 638.2

Int. Cl.⁶ G01N 33/547; 33/574

U.S. Cl. 435—7.5

13 Claims

1. A method for immunologically determining an immunologically determinable substance selected from the group consisting of: prolactin, carcinoembryonic antigen (CEA), thyroxine, and an antibody against human immunodeficiency virus comprising:

- (a) adding a sample containing said immunologically determinable substance to a reaction vessel which has an inner surface and an outer surface, the inner surface of which had immobilized therein from 0.1 ug to 2.5 ug per ml of reaction volume of avidin or streptavidin, said avidin or streptavidin being immobilized on said inner surface, adding a biotinylated substance which binds to said immunologically bindable substance to form complexes of immobilized avidin or streptavidin, biotinylated substance and immunologically detectable substance, and determining any binding of said immunologically detectable substance to said biotinylated substance.

5,776,703
IMMUNOASSAY

Seymon Bystriak, 62, Hagibor Haalmoni St., Tel-Aviv, Israel, 67222

Continuation of Ser. No. 10,705, Jan. 29, 1993, abandoned.

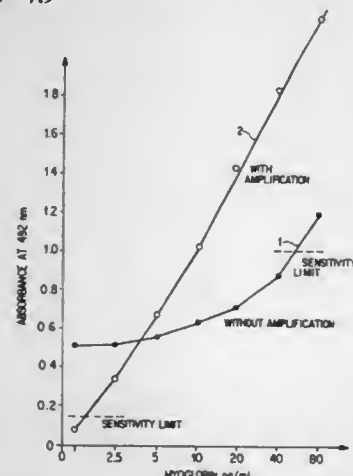
This application Mar. 2, 1995, Ser. No. 580,397

Claims priority, application Israel, Jan. 31, 1992, 100841

Int. Cl.⁶ C12Q 1/26; G01N 33/53

U.S. Cl. 435—7.9

11 Claims



1. A heterologous assay for the determination of an analyte in an aqueous sample which comprises:

- binding a first entity having an affinity for the analyte to a solid support;
- bonding the first entity with the analyte to form a complex;
- reacting the first entity:analyte complex with a second entity, which is tagged by an enzyme, to produce a second entity: first entity:analyte complex;
- contacting the second complex with oPD (orthophenylenediamine) and H₂O₂ by which oPD is converted to DAP (2,3-diamino-phenazine);
- irradiating the sample with light energy that includes radiation in the range of wavelengths from about 400 to about 500 nm, thereby initiating further production of DAP in the sample; and
- after irradiating, measuring to quantitate the analyte.

5,776,704

METHOD OF DETECTING ANGIOGENIC PROTEIN
Michael S. O'Reilly, Winchester, and M. Judah Folkman, Brookline, both of Mass., assignors to The Children Medical Center Corporation

Division of Ser. No. 248,629, Apr. 26, 1994, Pat. No. 5,639,725.

This application May 26, 1995, Ser. No. 452,260

Int. Cl.⁶ G01N 33/536; C07K 1/20; 14/435

U.S. Cl. 435—7.21

21 Claims

10. A method of isolating and detecting angiostatin protein in a sample, wherein the angiostatin protein contains approximately kringle regions 1 through 4 of a plasminogen molecule and has endothelial cell proliferation inhibiting activity, comprising:

- a. fractionating the sample containing angiostatin protein over a reverse phase high performance liquid phase chromatography column by eluting with an acetonitrile gradient to yield a fraction containing angiostatin protein;
- b. detecting the presence of angiostatin protein in the fraction by performing an endothelial cell proliferation inhibiting assay with the fraction, wherein inhibition of endothelial cell proliferation is indicative of the presence of angiostatin protein.

5,776,705

Patent Not Issued For This Number

5,776,706

POLYMERIC PARTICLES HAVING A BIODEGRADABLE GELATIN OR AMINODEXTRAN COATING AND PROCESSES FOR MAKING SAME

Olavi Siiman, Davie; Alexander Burshteyn, Hialeah, and Ravinder K. Gupta, Pembroke Pines, all of Fla., assignors to Coulter Corporation, Miami, Fla.

Division of Ser. No. 336,725, Nov. 9, 1994, Pat. No. 5,639,620, which is a continuation of Ser. No. 961,157, Oct. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 607,253, Oct. 31, 1990, Pat. No. 5,169,754. This application

Mar. 6, 1997, Ser. No. 813,022

Int. Cl.⁶ G01N 33/569; 33/545; 33/553

U.S. Cl. 435—7.21

9 Claims

1. A process for the preparation of colloidal particles having (A) a hydrophobic non-gelatin, non-aminodextran polymeric core coated with a substance selected from the group consisting of type A, acid cured gelatin of Bloom in the range 60 to 300 and an aminodextran having a molecular weight in the range of 10,000 to 2 million, and (B) a plurality of functional groups pendent from said gelatin or aminodextran coating, said process comprising:

- (a) coating said gelatin or aminodextran onto the surface of a polymeric core selected from the group consisting of a polymeric substance having amine-reactive functional groups and a polymeric core not having amine-reactive functional groups, said coating being by the method of:
 - (i) adsorbing said gelatin or aminodextran onto the surface of said core or
 - (ii) covalently coupling said aminodextran to said core by reaction of aminodextran amine groups and said amine-reactive groups present on said core;
- (b) (i) crosslinking the gelatin or aminodextran coating of step (a) (i) by reaction of said coating with a chemical crosslinking agent, or
- (ii) selectively crosslinking or not crosslinking the aminodextran coating of step (a) (ii), said crosslinking being by reaction of said coating with a chemical crosslinking agent;
- (c) blocking free, unreacted crosslinking agent functional groups present on the surface of any step (b) crosslinked product by reaction of said groups with a polyamine such that at least one polyamine —NH₂ group reacts with the unreacted crosslinking agent functional groups and at least one polyamine —NH₂ group remains unreacted; and
- (d) washing the particles of step (c) or the uncrosslinked particles of step (b) (ii) to obtain colloidal particles having a solid polymer core coated with gelatin or aminodextran and having pendent amine groups.

5,776,707

METHOD FOR IDENTIFYING AND ISOLATING CELLS EXPRESSING LEUKOCYTE ADHESION MOLECULE-1
Thomas F. Tedder, Wellesley, and Olivier G. Spertini, Newton, both of Mass., assignors to Dana-Farber Cancer Institute, Boston, Mass.

Continuation of Ser. No. 215,366, Mar. 21, 1994, which is a continuation of Ser. No. 720,602, Jun. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 313,109, Feb. 21, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 478,949

Int. Cl.⁶ G01N 33/53; C12N 5/06

U.S. Cl. 435—7.24

3 Claims

1. A method of identifying leukocytes with abnormal or decreased expression of LAM-1 for diagnosis and detection of leukocyte activation, said method comprising:

- (1) incubating an anti-LAM1-3 monoclonal antibody produced by hybridoma cell line having deposit No. ATCC HB 10771 which binds to LAM-1, with a sample containing or thought to contain leukocytes having abnormal or decreased expression of LAM-1; and

- (2) identifying leukocytes with said abnormal or decreased expression of LAM-1 by an immunological assay selected from the group consisting of flow cytometry and radioimmunoassay.

5,776,708

METHOD FOR IDENTIFYING T CELLS INVOLVED IN AUTOIMMUNE DISEASE

Brian L. Kotzin; Philippa Marrack; John Kappler, and Xavier Paliard, all of Denver, Colo., assignors to National Jewish Center for Immunology and Respiratory Medicine, Denver, Colo.

Continuation of Ser. No. 732,114, Jul. 18, 1991, Pat. No. 5,298,396, which is a continuation-in-part of Ser. No. 488,353, Mar. 2, 1990, abandoned, which is a continuation-in-part of

Ser. No. 437,370, Nov. 15, 1989, Pat. No. 5,336,598. This

application Dec. 20, 1993, Ser. No. 170,114

Int. Cl.⁶ C12Q 1/68; G01N 33/564

U.S. Cl. 435—7.24

22 Claims

1. A method for identifying a T-cell population implicated in an autoimmune disease, comprising:

- (i) assaying a T-cell containing sample of a patient taken from a site characterized by deterioration thereof associated with said autoimmune disease to determine the expression of a particular V β element; and
- (ii) comparing said V β element expression with V β element expression from a comparable T-cell containing sample of a non-deteriorated body fluid or tissue from said patient, wherein variation therefrom is indicative of a T-cell population involved in said autoimmune disease.

5,776,709

METHOD FOR PREPARATION AND ANALYSIS OF LEUKOCYTES IN WHOLE BLOOD

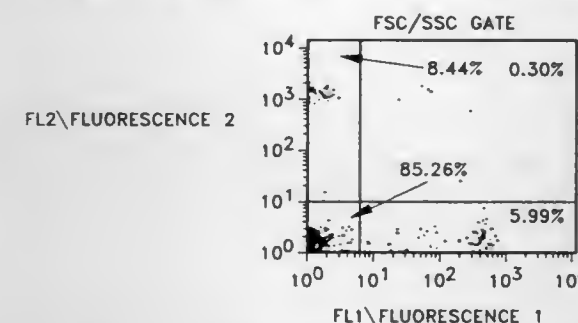
Anne Louise Jackson, Ridgefield, Wash.; Robert Alan Hoffman, Livermore, Calif.; Andrew D. Blidy, Redwood City, Calif.; Kenneth Earl Murchison, Ben Lomond, Calif.; Pierre Pierre, Redwood City, Calif., and Dan E. Thiel, Pleasanton, Calif., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 15,759, Feb. 10, 1993, abandoned, Continuation-in-part of Ser. No. 846,316, Mar. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 751,020, Aug. 28, 1991, abandoned. This application Aug. 4, 1994, Ser. No. 286,094

Int. Cl.⁶ G01N 33/533

U.S. Cl. 435—7.24

2 Claims



1. A method of determining a preselected lymphocyte subpopulation in a population of leukocytes in a blood sample comprising classifying the preselected lymphocyte subpopulation into one of at least two or more cell clusters by flow cytometry, comprising:

- a) labeling the leukocytes in the sample with a fluorochrome-labeled primary antibody which specifically binds to a leukocyte antigen present in different amounts on each leukocyte subpopulation in said population of leukocytes whereby the labeled primary antibody binds to the preselected lymphocyte

subpopulation and at least one additional leukocyte subpopulation with a different fluorescent intensity;

- b) lysing erythrocytes in the sample by addition of a lysing reagent;
- c) analyzing the labeled leukocytes in the lysed sample on a flow cytometer without separating the labeled leukocytes from the lysing reagent, triggering on fluorescence emission from the labeled primary antibody;
- d) acquiring fluorescence intensity and light scattering data for the labeled leukocytes;
- e) classifying the labeled leukocytes by establishing a geometric boundary surface based on the acquired labeled primary antibody fluorescence versus light scatter data for each of said two or more cell cluster by
- i) manually positioning a first geometric boundary surface on a series of two-dimensional scatterplots for at least one cell cluster expected to contain the preselected lymphocyte subpopulation of interest, said first geometric boundary surface having a user-defined center location, shape, size, radius, and orientation;
- ii) displaying the acquired fluorescence intensity and light scatter data for each cell in the scatterplots;
- iii) defining a vector for each cell analyzed and testing if the vector is contained within the first geometric boundary surface;
- iv) summing each vector contained within the first geometric boundary surface to calculate a vector mean;
- v) after a user-defined number of vectors are summed to calculate the vector mean, calculating a new center location for the first geometric boundary surface using the calculated vector mean;
- vi) moving the first geometric boundary surface on the set of said two-dimensional scatterplots to relocate the first geometric boundary surface about the new center location;
- vii) repeating steps iii)–vi) until a user-defined number of vectors or all available vectors have been included in the calculation of a final center location;
- viii) moving the first geometric boundary surface on the set of the two-dimensional scatterplots to relocate the first geometric boundary surface about the final center location; and
- ix) classifying all subsequently received blood cells by comparing the subsequent blood cells with the first geometric boundary surface for inclusion within or exclusion outside the cluster associated with the first geometric boundary surface about the final center location; and
- f) determining the presence or amount of the preselected lymphocyte subpopulation in the blood sample based upon the presence or amount of cells included within the cluster of step e) ix).

5,776,710

ASSAY OF BLOOD OR OTHER BIOLOGIC SAMPLES FOR TARGET ANALYTES

Robert A. Levine, Guilford; Stephen C. Wardlaw, Old Saybrook, both of Conn.; Leon W. M. Terstappen, Palo Alto; Kristen L. Manion, Benecia, both of Calif.; Rodolfo R. Rodriguez, Owings Mills, Md.; Adrien P. Malick, Granite, Md.; Subhash Dhanesar, Owings Mills, Md.; Stephen J. Lovell, Baltimore, Md., and Alvydas J. Ozinskas, Dayton, Md., assignors to Becton Dickinson and Co., Franklin Lakes, N.J.

Division of Ser. No. 247,336, May 23, 1994, Pat. No. 5,635,362, which is a continuation-in-part of Ser. No. 969,379, Oct. 30, 1992, Pat. No. 5,342,790. This application Dec. 23, 1996, Ser. No. 771,507

Int. Cl.⁶ G01N 33/543; 33/558

U.S. Cl. 435—7.24

13 Claims

1. A method for detecting a target analyte in an anticoagulated whole blood sample in a transparent tube, said method comprising the steps of:

- a) adding a group of capture bodies to the sample, which capture bodies have a specific gravity which ensures that said capture

5,776,719

**DIAGNOSTIC COMPOSITIONS AND DEVICES
UTILIZING SAME**

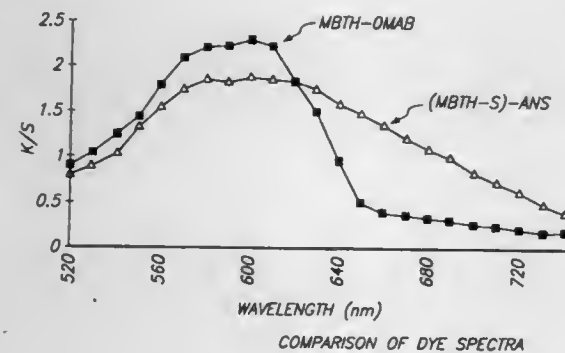
Joel S. Douglas, Santa Clara, and Karen R. Drexler, Los Altos Hills, both of Calif., assignors to Mercury Diagnostics, Inc., Mountain View, Calif.

Filed Apr. 5, 1996, Ser. No. 628,794

Int. Cl.⁶ C12Q 1/28; 1/26; 1/54; G01N 33/53

U.S. Cl. 435—28

8 Claims



1. A device for testing the presence or concentration of an analyte in a fluid sample comprising:

a support member;

a composition positioned on or impregnated in said support said composition comprising a composition for a dry chemistry reagent indicator comprising 3-Methyl-6-(M sulfonate)-benzothiazolinone-(2)-hydrazine, wherein M is a positive charge ion providing a stable aqueous salt thereof, a second dye component selected from the group consisting of 3,3-dimethylaminobenzoic acid, 3,5-dichloro-2-hydroxybenzenesulfonic acid, 8-anilino-1-naphthalenesulfonate and N-(3-sulfopropyl)aniline and an oxidase enzyme or a peroxidase enzyme;

whereby the support member is adapted for receiving a fluid sample which contacts said composition and adapted for the support to provide for inspection or reading of the color change produced by said composition after contact with the fluid sample.

5,776,720

ASSAY REAGENT

Gerald E. Jaffe, Pembroke Pines; Frank J. Lucas, Boca Raton, and James H. Carter, Plantation, all of Fla., assignors to Coulter Corporation, Miami, Fla.

Filed May 18, 1995, Ser. No. 443,776

Int. Cl.⁶ C12Q 1/00; 1/02

U.S. Cl. 435—29

47 Claims

1. An assay reagent for determining the activity of an enzyme in a metabolically active whole cell, said assay reagent comprising at least one water soluble assay compound having the ability to pass through a cell membrane or a water soluble physiologically acceptable salt thereof having the ability to pass through a cell membrane, said assay compound having an unblocked leaving group selected for cleavage by an enzyme to be analyzed and a fluorogenic indicator group being selected for its ability to have a non-fluorescent first state when joined to the leaving group, and a fluorescent second state excitable at a wavelength above 450 nm when the leaving group is cleaved from the indicator group by the enzyme, wherein said fluorogenic indicator group is selected from the group consisting of rhodamine 110, and rhodol, and derivatives thereof; and said assay reagent having a fluorescence less than the auto-fluorescence of a metabolically active cell and being stable for a minimum of 30 days when stored at 4° C., wherein said stability is defined as the compound having an increase in background fluorescence of less than 10%.

5,776,721

**IN VITRO MODEL FOR STUDY OF THE
PHARMACODYNAMICS OF INTRACELLULAR
KILLING OF BACTERIA AND VIRUSES**

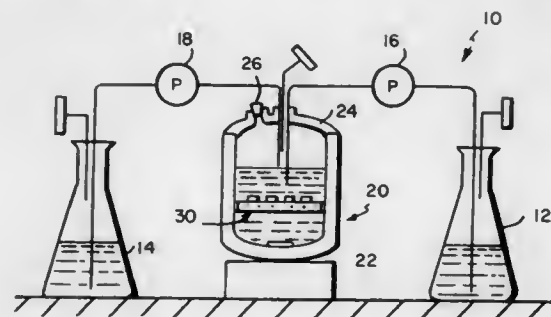
Michael N. Dudley; Sean F. Donnelly, both of North Kingston, R.I., and Andrew Strayer, Olathe, Kans., assignors to The Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, Providence, R.I.

Filed Aug. 8, 1995, Ser. No. 512,458

Int. Cl.⁶ C12Q 1/02; 1/04; 1/00; C12N 7/00

U.S. Cl. 435—29

3 Claims



1. A method for the in vitro assay of intracellular pathogenic infected adherent cell lines which comprises:

providing cover slips having at least one surface;

adhering the cell lines on the surfaces of the cover slips in substantially uniform quantities on each of said surfaces;

placing the cover slips in a common culture media in a culture compartment;

introducing a drug into the culture media;

varying the concentration of the drug in the media;

removing at least one of the cover slips from the media at time T_1 when the drug is at a first concentration; assaying the cells removed at time T_1 ;

removing another of the cover slips at time T_2 when the drug is at a second concentration; and

assaying the cells removed at time T_2 from the cover slips for intracellular pathogens.

5,776,722

**METHOD OF TESTING A BODY SPECIMEN TAKEN
FROM A PATIENT FOR THE PRESENCE OR ABSENCE
OF A MICROORGANISM A FURTHER ASSOCIATED
METHOD AND ASSOCIATED APPARATUS**

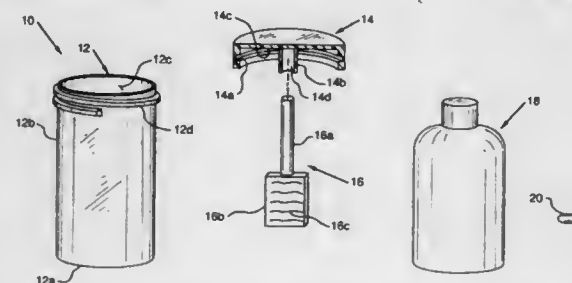
Robert A. Ollar, Milford, Pa., assignor to Infetech, Inc., Sharon, Pa.

Filed Sep. 25, 1997, Ser. No. 936,924

Int. Cl.⁶ C12Q 1/02; 1/00; 1/04; 1/14

U.S. Cl. 435—29

40 Claims



1. A method of testing a body specimen taken from a patient for the presence or absence of a microorganism, said method comprising:

providing a transport/isolator assembly including (i) a receptacle and (ii) a baiting assembly including a baiting section having disposed thereon a coating material;

introducing a baiting liquid into said receptacle;

introducing said body specimen into said receptacle;

securing said baiting assembly to said receptacle so that at least a portion of said baiting section is introduced into said baiting liquid;

transporting said transport/isolator assembly containing said baiting liquid and said body specimen to a laboratory; and

observing said baiting section at said laboratory for growth or lack thereof of said microorganism.

5,776,723

**RAPID DETECTION OF MYCOBACTERIUM
TUBERCULOSIS**

Christopher D. Herold, 205 12th St., Del Mar, Calif. 92014, and Michael O'Hagan, 1160 Via Espana, La Jolla, Calif. 92037

Filed Feb. 8, 1996, Ser. No. 598,255

Int. Cl.⁶ C12Q 1/04

U.S. Cl. 435—34

16 Claims

1. A method for detecting the presence of *M. tuberculosis* in a sample, comprising the step of analyzing said sample for the presence of either or both of two characterizing compounds having m/e values of 484 and 486 and GC retention times relative to a d₃₇-octadecyl alcohol internal standard of about 1.022 and about 1.032, respectively, when derivatized with pentafluorobenzoyl chloride.

5,776,724

CHAPERONIN-MEDIATED PROTEIN FOLDING

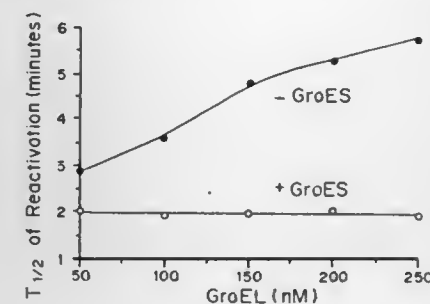
Franz-Ulrich Hartl, Unterschleissheim, Germany, and Arthur L. Horwich, Westport, Conn., assignors to Yale University, New Haven, Conn.

Division of Ser. No. 247,652, May 23, 1994, abandoned, which is a continuation of Ser. No. 721,974, Jun. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 673,158, Mar. 18, 1991, which is a continuation of Ser. No. 261,573, Oct. 24, 1988, abandoned. This application May 25, 1995, Ser. No. 451,066

Int. Cl.⁶ C12P 21/00

U.S. Cl. 435—68.1

9 Claims



1. A method for folding or refolding proteins in a cell free solution or in cells comprising providing in combination with the protein to be folded a chaperonin protein system comprising isolated groEL or hsp60 14mer, in a ratio of approximately 1:1 to the protein, and Mg²⁺-ATP, at a pH of between 7.0 to 8.0 and a temperature of between 1° C. and 40° C., wherein the chaperonin system is provided at a ratio of at least 1:1 chaperonin system to protein to be folded, the magnesium is present in solution at a concentration of at least 5 mM and the ATP is present in solution at a concentration of at least 1 mM or the magnesium and ATP are present in the concentrations normally present in the cells.

5,776,725

**RECOMBINANT PRODUCTION OF GLUCAGON
RECEPTORS**

Wayne R. Kindsvogel; Laura J. Jelinek, both of Seattle; Paul O. Sheppard, Redmond; Francis J. Grant, Seattle; Joseph L. Kuijper, Bothell; Donald C. Foster, Seattle; Si Lok, Seattle, and Patrick J. O'Hara, Seattle, all of Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 938,331, Aug. 28, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 86,631

Int. Cl.⁶ C12N 15/12; C07K 14/72

U.S. Cl. 435—69.1

38 Claims

1. An isolated nucleic acid molecule comprising a nucleotide sequence encoding a glucagon receptor polypeptide having seven transmembrane domains, an N-terminal extracellular domain, three extracellular loop domains, and three intracellular loop domains, wherein the receptor polypeptide is capable of binding glucagon with a K_D no greater than 100 nM and is capable of transducing signal in a suitable host cell in response to such binding, and wherein the nucleic acid molecule hybridizes under high stringency hybridization conditions to a probe having the nucleotide sequence of the complement of the sequence shown in SEQ ID NO: 14, from nucleotide 145 to 1599, or the sequence shown in SEQ ID NO: 24, from nucleotide 53 to 1483.

5,776,726

Patent Not Issued For This Number

5,776,727

**DNA, POLYPEPTIDES, MONOCLONAL ANTIBODY AND
METHODS THEREOF**

Shuichi Ikeyama; Masaru Koyama, both of Osaka; Masayuki Miyake, Kyoto, and Masaharu Senoo, Okayama, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 254,493, Jun. 6, 1994, Pat. No. 5,439,886, which is a continuation of Ser. No. 856,552, Apr. 9, 1992, abandoned. This application Mar. 22, 1995, Ser. No. 408,222

Claims priority, application Japan, Apr. 12, 1991, 3-079996; Apr. 17, 1991, 3-085396; Feb. 7, 1992, 4-022321

Int. Cl.⁶ C12N 15/12; 15/00

U.S. Cl. 435—69.1

6 Claims

1. A recombinant DNA having a nucleotide sequence coding for the amino acid sequence of amino acid residue numbers 138-191 of SEQ ID NO: 1, or a portion thereof which can express cell motility modulating activity.

5,776,728

Patent Not Issued For This Number

5,776,729

HUMAN G-PROTEIN RECEPTOR HGBER32

Daniel R. Soppet, Centerville, Va.; Yi Li, Gaithersburg, Md.; Craig A. Rosen, Laytonsville, Md., and Steven M. Ruben, Olney, Md., assignors to Human Genome Sciences, Inc., Rockville, Md.

Filed Jun. 5, 1995, Ser. No. 461,244

Int. Cl.⁶ C12N 15/00; 15/63; 15/85; C07H 21/04

U.S. Cl. 435—69.1

21 Claims

1. An isolated polynucleotide comprising a polynucleotide coding sequence having at least 95% identity to a member selected from the group consisting of:

- (a) a polynucleotide sequence encoding a polypeptide comprising amino acids 2 to 355 of SEQ ID NO:2; and
(b) the complement of (a), providing that when said isolated polynucleotide comprises a polynucleotide sequence encoding amino acids 2 to 355 of SEQ ID NO:2, said isolated polynucleotide is separated from one or more of its neighboring genes from the same chromosome gene.

2. The isolated polynucleotide of claim 1 wherein said member is (a).

9. A recombinant vector comprising the isolated polynucleotide of claim 2, wherein said isolated polynucleotide is DNA.

10. A recombinant host cell comprising the isolated polynucleotide of claim 2, wherein said isolated polynucleotide is DNA.

11. A method for producing a polypeptide comprising expressing from the recombinant cell of claim 10 the polypeptide encoded by said isolated polynucleotide.

5,776,730

NEUROSPORA HOSTS FOR THE PRODUCTION OF RECOMBINANT PROTEINS, AND METHODS FOR PRODUCING SAME

W. Dorsey Stuart, Kanedite, Hi., assignor to University of Hawaii, Honolulu, Hi.

Filed Dec. 15, 1995, Ser. No. 573,020

Int. Cl.⁶ C12N 15/63; 1/14; 1/15

U.S. Cl. 435—69.1

2 Claims

1. A mutant *Neurospora* strain produced from a parent *Neurospora* strain, wherein said mutant *Neurospora* strain is selected to produce from about 27 to 125 times the amount of recombinant protein as that produced by the parent strain.

5,776,731

DNA ENCODING TYPE-I INTERLEUKIN-1 RECEPTOR-LIKE PROTEIN DESIGNATED 2F1

Patricia Parnet, Bordeaux, France, and John E. Sims, Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

Filed Feb. 21, 1996, Ser. No. 604,333

Int. Cl.⁶ C12N 15/09

U.S. Cl. 435—69.1

22 Claims

1. An isolated DNA encoding a 2F1 polypeptide, wherein said 2F1 comprises an amino acid sequence selected from the group consisting of residues -19 to 522 of SEQ ID NO:2, residues 1 to 522 of SEQ ID NO:2, residues -19 to 310 of SEQ ID NO:2, residues 1 to 310 of SEQ ID NO:2, residues -18 to 519 of SEQ ID NO:4, residues 1 to 519 of SEQ ID NO:4, residues -18 to 307 of SEQ ID NO:4, and residues 1 to 307 of SEQ ID NO:4.

5,776,732

HUMAN INDUCED TUMOR PROTEIN

Janice Au-Young, Berkeley, and Phillip R. Hawkins, Mountain View, both of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Aug. 16, 1996, Ser. No. 689,974

Int. Cl.⁶ C12P 21/00

U.S. Cl. 435—69.1

7 Claims

1. An isolated and purified polynucleotide sequence encoding the polypeptide comprising the amino acid sequence of SEQ ID NO:1.

5,776,733

BIOSYNTHETIC GENE DD1 FROM *STREPTOCOCCUS PNEUMONIAE*

Paul L. Skatrud, Indianapolis, and Robert B. Peery, Brownsburg, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 25, 1996, Ser. No. 690,413

Int. Cl.⁶ C12N 1/21; 15/63; 9/00; C07K 14/315

U.S. Cl. 435—69.1

10 Claims

1. An isolated nucleic acid compound consisting of a compound encoding the protein having the amino acid sequence which is SEQ ID NO 2.

5,776,734

DNA ENCODING THE β SUBUNIT OF A MAMMALIAN MAXI-K POTASSIUM CHANNEL

Gregory J. Kaczorowski; Maria L. Garcia; Reid J. Leonard; Owen B. McManus; Richard J. Swanson, and Kimberly L. Folander, all of Rahway, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

PCT No. PCT/US95/05768, § 371 Date Nov. 12, 1996, § 102(e) Date Nov. 12, 1996, PCT Pub. No. WO95/31543, PCT Pub. Date Nov. 23, 1995

Continuation-in-part of Ser. No. 389,668, Feb. 16, 1995, Pat. No. 5,637,470, which is a continuation-in-part of Ser. No. 242,811, May 13, 1994, abandoned. This PCT application May 9, 1995, Ser. No. 732,506

Int. Cl.⁶ C12N 15/12; C07K 14/705

U.S. Cl. 435—69.1

24 Claims

1. An isolated and purified nucleic acid molecule comprising a nucleotide sequence encoding a native bovine maxi-K potassium channel β -subunit polypeptide, wherein the nucleotide sequence is not directly linked to the sequences which adjoin the corresponding gene in native bovine genomic DNA, and wherein the polypeptide specifically binds to a monoclonal antibody which specifically binds to the maxi-K β -subunit polypeptide having the amino acid sequence shown in SEQ ID NO: 2.

13. An isolated and purified nucleic acid molecule comprising a nucleotide sequence encoding a native human maxi-K potassium channel β -subunit polypeptide, wherein the nucleotide sequence is not directly linked to the sequences which adjoin the corresponding gene in native human genomic DNA, and wherein the polypeptide specifically binds to a monoclonal antibody which specifically binds to the maxi-K β -subunit polypeptide having the amino acid sequence shown in SEQ ID NO: 4.

5,776,735

PROCESS FOR DIENONE MACROLIDES

Claudio D. Denoya; Edmund W. Hafner, and Hamish A. I. McArthur, all of Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 6, 1996, Ser. No. 744,474

Int. Cl.⁶ C12P 19/62; C12N 15/00; 1/20; C07H 17/08

U.S. Cl. 435—76

22 Claims

1. A process for preparing a microorganism that produces an olefinic macrolide comprising inactivating epoxidase activity of a wild-type epoxy macrolide producing microorganism.

5,776,736

DEBLOCKING THE COMMON PATHWAY OF AROMATIC AMINO ACID SYNTHESIS

John W. Frost, Okemos, Mich.; Kristi D. Snell, Belmont, Mass., and Karen M. Frost, Okemos, Mich., assignors to Purdue Research Foundation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 994,194, Dec. 21, 1992, abandoned. This application Jun. 9, 1994, Ser. No. 257,354

Int. Cl.⁶ C12P 13/22; C12N 1/21; 15/70; C07H 21/04

U.S. Cl. 435—108

14 Claims

12. A method of using a DNA construct for enhancing the production of compounds synthesized by the common aromatic amino acid biosynthesis pathway, in an *E. coli* host cell, said method comprising the steps of

introducing said DNA construct into the *E. coli* host cell, said DNA construct comprising genes encoding for common aromatic amino acid pathway enzymes, wherein the DNA sequences encoding the common aromatic amino acid pathway enzymes consist of genes encoding the enzymes 3-dehydroquinate synthase, shikimate kinase, 5-enolpyruvyl-shikimate-3-phosphate synthase, and chorismate synthase; and culturing the cell transformant in media containing an assimilable carbon source under conditions conducive to the assimilation of said carbon source and wherein production of compounds synthesized by the common aromatic amino acid biosynthesis pathway is enhanced.

5,776,737

METHOD AND COMPOSITION FOR INTERNAL IDENTIFICATION OF SAMPLES

James M. Dunn, Scarborough, Canada, assignor to Visible Genetics Inc., Toronto, Canada

Filed Dec. 22, 1994, Ser. No. 361,757

Int. Cl.⁶ C12P 19/34; C12Q 1/68; 1/70; C07M 21/04

U.S. Cl. 435—91.1

19 Claims

1. A method for providing internal identification of a sample containing nucleic acid polymers to be analyzed by nucleic acid sequencing, comprising

selecting a plurality of identification polynucleotides, each of said identification polynucleotides being selected from one of a plurality of distinct sets of identification polynucleotides having no common members among the sets, wherein each set contains at least 12 different identification polynucleotides; adding the selected identification polynucleotides to the sample prior to analysis to form a mixture of the sample and the selected plurality of polynucleotides, wherein the identification polynucleotides do not hybridize with DNA from the sample; and

determining the sequence of the identification polynucleotides and the nucleic acid polymers to be analyzed.

5,776,738

METHOD OF HUMAN PROHIBITIN GENE ANALYSIS

Robert Thomas Dell'Orco, Sr., Edmond; J. Keith McClung; Eldon Jupe, both of Norman; Xiao-Tie Liu, Edmond, and Robert King, Oklahoma City, all of Okla., assignors to Oklahoma Medical Research Foundation, Oklahoma City, Okla. Division of Ser. No. 473,486, Jun. 7, 1995. This application Oct. 8, 1996, Ser. No. 728,259

Int. Cl.⁶ C12P 19/34; C12Q 1/68

U.S. Cl. 435—91.2

4 Claims

1. A method of prohibitin gene analysis in a human patient comprising the steps of:

- analyzing the prohibitin genotype of said patient for the occurrence of the prohibitin gene B allele, and;
- analyzing the 3'UTR of the prohibitin gene from said patient for the occurrence of mutations by determining the sequence of the 3'UTR of the prohibitin gene from said patient.

5,776,739

PROCESS FOR PRODUCING DISACCHARIDES AND NOVEL DISACCHARIDES

Kazuo Aisaka; Yutaka Saitoh, and Youichi Uosaki, all of Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/02060, § 371 Date Jul. 5, 1996, § 102(e) Date Jul. 5, 1996, PCT Pub. No. WO95/34570, PCT Pub. Date Dec. 21, 1995

PCT Filed Dec. 8, 1994, Ser. No. 596,262

Claims priority, application Japan, Jun. 10, 1919, 6-128483

Int. Cl.⁶ C12P 19/12; C07H 3/04

U.S. Cl. 435—100

8 Claims

1. A process for producing a disaccharide, which comprises: condensing beta-glucose-1-phosphate in an aqueous medium with

- a monosaccharide selected from the group consisting of D-fucose and D-xylose in the presence of trehalose phosphorylase which is derived from a microorganism belonging to the genus *Catellatospora* and which acts on D-fucose and D-xylose, or
- a monosaccharide selected from the group consisting of D-mannose, D-allose D-tagatose, D-sorbose and L-Fucose in the presence of maltose phosphorylase which is derived from a microorganism belonging to the genus *Propionibacterium* and which acts on D-mannose, D-allose, D-tagatose, D-sorbose and L-fucose; and recovering the disaccharide formed in the aqueous medium.

6. Glucosyl (α , 1-1) D-fucose.

7. Glucosyl (α , 1-4) L-fucose.

5,776,740

PROCESS FOR THE PREPARATION OF L-TRYPTOPHAN

Kazuhiisa Hatakeyama; Makoto Goto; Masato Terasawa, and Hideaki Yukawa, all of Ibaraki-ken, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jul. 17, 1996, Ser. No. 682,193

Claims priority, application Japan, Jul. 18, 1995, 7-181730

Int. Cl.⁶ C12P 13/22

U.S. Cl. 435—108

18 Claims

1. A process for producing L-tryptophan in a single-stage reaction, comprising carrying out an L-tryptophan producing reaction with glycine, formaldehyde and indole as raw materials in an aqueous solution in the presence of microbial cells having serine transhydroxymethylase or a treated product thereof and microbial cells having tryptophan synthase or tryptophanase, or a treated product thereof; and recovering produced L-tryptophan from the reaction solution.

5,776,741

METHOD OF ENZYME IMMOBILIZATION ON A PARTICULATE SILICA CARRIER FOR SYNTHESIS INORGANIC MEDIA

Sven Pedersen, Gentofte; Anne Mørkeberg Larsen, Charlottenlund, and Per Aasmul, Holte, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK95/00076, § 371 Date Jul. 19, 1996, § 102(e) Date Jul. 19, 1996, PCT Pub. No. WO95/22606, PCT Pub. Date Aug. 24, 1995

PCT Filed Feb. 21, 1995, Ser. No. 676,367

Claims priority, application Denmark, Feb. 21, 1994, 0207/94

Int. Cl.⁶ C12P 7/64; 7/62; C12N 11/14; 9/98

U.S. Cl. 435—134

24 Claims

1. A method for producing an immobilized enzyme preparation applicable for organic synthesis in a mainly organic medium devoid of free water, comprising: introducing an enzyme and a binder in liquid form by atomization onto a particulate silica carrier having a particle size below 100 μ m in a granulator, and

simultaneously carrying out a granulation to form the immobilized enzyme preparation.

5,776,742

ALDEHYDE DEHYDROGENASE ENZYME

Tatsuo Hoshino, Kamakura, and Teruhide Sugisawa, Yokohama, both of Japan, assignors to Roche Vitamins Inc., Parsippany, N.J.

Filed Feb. 6, 1997, Ser. No. 796,125

Claims priority, application European Pat. Off., Feb. 19, 1996, 96102440

Int. Cl.⁶ C12P 7/60

U.S. Cl. 435—138

14 Claims

1. A purified aldehyde dehydrogenase having the following physico-chemical properties:

- Molecular weight: 91,000±5,000 (consisting of two homologous subunits, each having a molecular weight of 44,000±2,000)
- Substrate specificity: active on aldehyde compounds
- Inhibition: by Cu²⁺, Zn²⁺, Ni²⁺ and ethylenediamine tetraacetic acid
- Optimum pH: 6.0–8.5
- Optimum temperature: 20°–40° C.
- Stimulator: Ca²⁺ and pyrroloquinoline quinone.

5,776,743

METHOD OF SENSITIZING TUMOR CELLS WITH ADENOVIRUS ELA

Steven M. Frisch, Del Mar, Calif., assignor to La Jolla Cancer Research Foundation, La Jolla, Calif.

Filed Sep. 6, 1994, Ser. No. 301,316

Int. Cl.⁶ C12N 5/10; 5/08; 5/22

U.S. Cl. 435—172.3

7 Claims

1. A method of treating a human tumor cell, comprising the steps of:

- introducing in vitro into a tumor cell which does not express functional p53, nucleic acid encoding a polypeptide having E1A activity, said polypeptide derived from a type 5 adenovirus;
- expressing said polypeptide in said tumor cell;
- contacting said tumor cell with a chemotherapeutic agent; and
- enhancing the sensitivity of said tumor cell expressing said polypeptide to said chemotherapeutic agent.

5,776,744

METHODS AND COMPOSITIONS FOR EFFECTING HOMOLOGOUS RECOMBINATION

Peter M. Glazer, Guilford, Conn.; L. Michael Lin, Wilmington, Del., and Jay George, Gaithersburg, Md., assignors to Yale University, New Haven, Conn., and Codon Pharmaceuticals, Inc., Gaithersburg, Md.

Filed Jun. 7, 1995, Ser. No. 467,126

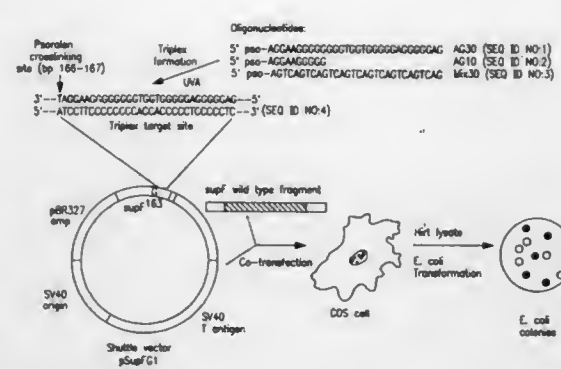
Int. Cl.⁶ C12N 15/63; C12Q 1/70; 1/68; C12P 19/34

U.S. Cl. 435—172.3

34 Claims

1. A method for effecting homologous recombination between a native nucleic acid segment in a cell and a donor nucleic acid segment introduced into the cell, which comprises:

- introducing into a cell: i) an oligonucleotide third strand which comprises a base sequence capable of forming a triple helix at a binding region on one or both strands of a native nucleic acid segment in the vicinity of a target region where the recombination is to occur, said oligonucleotide being capable of inducing homologous recombination at the target region of the native nucleic acid, and ii) a donor nucleic acid which comprises a nucleic acid sequence sufficiently homologous to the native nucleic acid segment such that the donor sequence is capable of undergoing homologous recombination with the native sequence at the target region;



- allowing the oligonucleotide to bind to the native nucleic acid segment to form a triple stranded nucleic acid, thereby inducing homologous recombination at the native nucleic acid segment target region; and
- allowing homologous recombination to occur between the native and donor nucleic acid segments wherein the oligonucleotide third strand has a dissociation constant for the binding region of less than or equal to about 10⁻⁷ M.

5,776,745

RECOMBINANTLY TARGETED CLONING IN YEAST ARTIFICIAL CHROMOSOMES

Gary Wayne Ketner, Columbia; Philip Andrew Hieter, Baltimore, and Janice E. Clements, Columbia, all of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 96,771, Jul. 23, 1993, abandoned. This application Oct. 11, 1995, Ser. No. 540,721

Int. Cl.⁶ C12N 15/10; 1/19

U.S. Cl. 435—172.3

15 Claims

1. A method of producing a yeast artificial chromosome (YAC) containing a foreign target DNA sequence comprising combining at least three DNA segments by homologous recombination under conditions which allow homologous recombination to occur, wherein the DNA segments comprise:

- a target DNA sequence;
- a first vector which contains a first targeting segment DNA sequence homologous to the 5' terminal region of the target DNA sequence; and
- a second vector which contains a second targeting segment DNA sequence homologous to the 3' terminal region of the target DNA sequence, wherein the combination of a), b) and c) produces a YAC.

5,776,746

GENE AMPLIFICATION METHODS

Dan W. Denney, Jr., Lebanon, Tenn., assignor to Genitope Corporation, San Francisco, Calif.

Filed May 1, 1996, Ser. No. 644,664

Int. Cl.⁶ C12N 5/10; 15/69; 15/87

U.S. Cl. 435—172.3

98 Claims

1. A method for co-amplifying a first recombinant oligonucleotide having a sequence which encodes the amino acid sequence of a protein of interest and a second recombinant oligonucleotide having a sequence encoding an inhibitable enzyme operably linked to a heterologous promoter, comprising:

- providing:
 - at least one expression vector comprising said first recombinant oligonucleotide having a sequence encoding the amino acid sequence of a protein of interest;
 - an amplification vector comprising said second recombinant oligonucleotide having a sequence encoding a first inhibitable enzyme operably linked to a heterologous promoter; and
 - a T lymphoid parent cell line;

5,776,749

DNA ENCODING CYSTEINYL TRNA SYNTHETASE FROM STAPHYLOCOCCUS AUREUS

John Edward Hodgson, and Elizabeth Jane Lawlor, both of Malvern, Pa., assignors to SmithKline Beecham p.l.c., Brentford, United Kingdom

Filed Jan. 17, 1997, Ser. No. 785,066

Int. Cl.⁶ C12N 9/00; 15/00; 1/20; C07H 21/04

U.S. Cl. 435—183

24 Claims

1. An isolated polynucleotide comprising a polynucleotide sequence selected from the group consisting of:

- a polynucleotide having at least a 95% identity to a polynucleotide encoding a polypeptide comprising amino acids 1 to 466 of SEQ ID NO:2; and
- a polynucleotide which is complementary to the polynucleotide of (a).

5,776,747

METHOD FOR CONTROLLING THE DISTRIBUTION OF CELLS WITHIN A BIOARTIFICIAL ORGAN USING POLYETHYLENE OXIDE-POLY (DIMETHYLSILOXANE) COPOLYMER

Malcolm Schinstine, Bensalem, Pa.; Molly S. Shoichet, Toronto, Canada; Frank T. Gentile, Warwick; Joseph P. Hammang, Barrington, both of R.I.; Laura M. Holland, Hingham, Pa.; Brian M. Cain, Everett; Edward J. Doherty, Mansfield, both of Mass.; Shelley R. Winn, Smithfield, R.I., and Patrick Aebischer, Lutry, Switzerland, assignors to Cytotherapeutics, Inc.

Division of Ser. No. 432,692, May 9, 1995. This application May 23, 1995, Ser. No. 447,778

Int. Cl.⁶ C12N 11/02; 11/08; 11/06; 11/04

U.S. Cl. 435—177

2 Claims

1. A method for controlling the distribution of cells within a bioartificial organ which comprises a biocompatible jacket which encloses a core of living cells, and has at least one surface within the jacket comprising: derivatizing or adsorbing polyethylene oxide-poly(dimethylsiloxane) copolymer onto the at least one surface within the jacket to inhibit cellular attachment thereto.

5,776,748

METHOD OF FORMATION OF MICROSTAMPED PATTERNS ON PLATES FOR ADHESION OF CELLS AND OTHER BIOLOGICAL MATERIALS, DEVICES AND USES THEREFOR

Rahul Singhvi, Cambridge, Mass.; Amit Kumar, Sacramento, Calif.; George M. Whitesides, Newton; Donald E. Ingber, Boston, both of Mass.; Gabriel P. Lopez, Albuquerque, N. Mex.; Daniel I. C. Wang, Belmont, and Gregory N. Stephanopoulos, Winchester, both of Mass., assignors to President and Fellows of Harvard College; Massachusetts Institute of Technology, both of Cambridge, and Children's Medical Center Corporation, Boston, all of Mass.

Continuation of Ser. No. 131,838, Oct. 4, 1993, abandoned.

This application Jun. 6, 1996, Ser. No. 659,537

Int. Cl.⁶ B32B 31/00; C12N 11/14; 11/08

U.S. Cl. 435—180

26 Claims

1. A device for adhering at least one cell in a specific and predetermined position comprising:

- a plate defining a surface, and
- a plurality of cytophilic islands that adhere cells on said surface isolated by cytophobic regions to which cells do not adhere contiguous with said cytophilic islands, wherein said cytophilic islands are formed of a self-assembled monolayer and said cytophobic regions are sufficiently wide such that less than 10 percent of cells adhered to said cytophilic islands form bridges across said cytophobic regions and contact each other.

5,776,750

ALANYL TRNA SYNTHETASE POLYNUCLEOTIDES OF STAPHYLOCOCCUS

John Edward Hodgson, and Elizabeth Jane Lawlor, both of Malvern, Pa., assignors to SmithKline Beecham p.l.c., Brentford, England

Filed Jan. 17, 1997, Ser. No. 785,071

Claims priority, application United Kingdom, Jan. 19, 1996, 9601099; Oct. 30, 1996, 9622617

Int. Cl.⁶ C12N 9/00; 15/00; 1/20; C07H 21/04

U.S. Cl. 435—183

27 Claims

1. An isolated polynucleotide comprising a polynucleotide sequence selected from the group consisting of:

- a polynucleotide having at least a 95% identity to a polynucleotide encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2;
- a polynucleotide having at least a 97% identity to a polynucleotide encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2;
- a polynucleotide encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2;
- a polynucleotide hybridizing under stringent conditions to a polynucleotide encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2;
- a polynucleotide having at least a 95% identity to a polynucleotide encoding the same mature polypeptide expressed by the alanyl tRNA synthetase gene contained in NCIMB Deposit No. 40771;
- a polynucleotide having at least a 97% identity to a polynucleotide encoding the same mature polypeptide expressed by the alanyl tRNA synthetase gene contained in NCIMB Deposit No. 40771;
- a polynucleotide encoding the same mature polypeptide expressed by the alanyl tRNA synthetase gene contained in NCIMB Deposit No. 40771;
- a polynucleotide which is complementary to the polynucleotide of (a), (b), (c), (d), (e), (f) or (g).

5,776,751

FAMILY OF MAP2 PROTEIN KINASES

Teri G. Boulton, Irving; Melanie H. Cobb, Dallas, both of Tex.; George D. Yancopoulos, Elmhurst, N.Y.; Steven Nye, New York, N.Y., and Nikos Panayotatos, Orangeburg, N.Y., assignors to Regeneron Pharmaceuticals, Inc., Tarrytown, N.Y., and Board of Regents, Univ Of Texas, Austin, Tex. Division of Ser. No. 178,488, Jan. 7, 1994, abandoned, which is a continuation of Ser. No. 701,544, May 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 532,004, Jun. 1, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 463,862

Int. Cl.⁶ C12N 15/00; C07H 21/04

U.S. Cl. 435—194

4 Claims

1. A purified polypeptide comprising the amino acid sequence as set forth in SEQ. I.D. No. 4.

5,776,752

ISOLATED AND PURIFIED CALCIUM/CALMODULIN STIMULATED CYCLIC NUCLEOTIDE PHOSPHODIESTERASES

Joseph A. Beavo; J. Kelley Bentley, both of Seattle, Wash.; Harry Charbonneau, W. Lafayette, Ind., and William K. Sonnenburg, Mountlake Terrace, Wash., assignors to The Board of Regents of The University of Washington, Seattle, Wash.

Division of Ser. No. 297,494, Aug. 29, 1994, Pat. No. 5,580,771, which is a division of Ser. No. 872,644, Apr. 20, 1992, Pat. No. 5,389,527, which is a continuation-in-part of Ser. No. 688,356, Apr. 19, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 479,532

Int. Cl.⁶ C12N 9/16

U.S. Cl. 435—196

12 Claims

1. An isolated and purified Ca²⁺/calmodulin stimulated cyclic nucleotide phosphodiesterase polypeptide wherein said polypeptide comprises the amino acid sequence set forth in SEQ ID NO: 6.

5,776,753

HUMAN PEROXISOMAL THIOESTERASE

Jennifer L. Hillman, Mountain View; Purvi Shah, Sunnyvale, and Neil C. Corley, Mountain View, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Jun. 11, 1997, Ser. No. 872,784

Int. Cl.⁶ C12N 15/55; 15/63; 1/00; 5/10

U.S. Cl. 435—796

9 Claims

1. An isolated and purified polynucleotide sequence which encodes the peroxisomal thioesterase of SEQ ID NO:1 or a variant thereof which differs by one amino acid and retains enzymatic activity.

5,776,754

PRESERVED CELL PREPARATIONS FOR FLOW CYTOMETRY AND IMMUNOLOGY

Charles William Caldwell, Columbia, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Division of Ser. No. 652,095, Feb. 17, 1991. This application Apr. 19, 1994, Ser. No. 229,959

Int. Cl.⁶ C12N 5/06; 5/02; A01N 1/00

U.S. Cl. 435—240.2

16 Claims

1. A composition of matter comprising a population of preserved mammalian leukocytes stored in an unfrozen aqueous liquid, wherein:

- the preserved leukocytes are non-viable, metabolically inert, and free of proteolytic enzyme activity;
- the preserved leukocyte population does not contain monoclonal antibodies that have become bound to, or which can bind to, antigenic surface proteins on the preserved leukocytes;

c. when compared using flow cytometry to antigenic surface proteins on untreated viable leukocytes from the same population, the antigenic surface proteins on the preserved leukocytes have comparable affinity for monoclonal antibodies that bind in a complementary manner to such surface proteins; and

d. the antigenic surface proteins of the preserved leukocytes have sufficient long-term stability to remain substantially unchanged for at least one month when stored at 4° C. in buffered saline solutions when measured by flow cytometry, and wherein the leukocytes have been treated by at least one protease inhibitor, and by a method which causes molecular crosslinking.

5,776,755

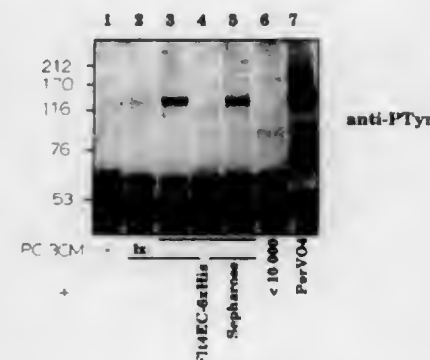
FLT4, A RECEPTOR TYROSINE KINASE

Kari Alitalo, Espoo; Olga Aprelikova, Helsinki; Katri Pajusola, Helsinki; Elina Armstrong, Helsinki; Jaana Korhonen, Helsinki, and Arja Kaipainen, Helsinki, all of Finland, assignors to Helsinki University Licensing, Ltd., Helsinki, Finland. Continuation-in-part of Ser. No. 959,951, Oct. 9, 1992, abandoned. This application Nov. 14, 1994, Ser. No. 340,011

Int. Cl.⁶ C12N 9/12; 15/54; 15/63; 15/58

U.S. Cl. 435—194

45 Claims



1. An isolated polynucleotide comprising a nucleotide sequence encoding an human FLT4 receptor tyrosine kinase protein or FLT4 receptor tyrosine kinase precursor protein having an amino acid sequence selected from the group consisting of the amino acid sequence of SEQ ID NO: 2 from amino acid 1 to amino acid 1298, the amino acid sequence of SEQ ID NO: 4 from amino acid 1 to amino acid 1363, the amino acid sequence of SEQ ID NO: 2 from about amino acid 21 to about amino acid number 1298, and the amino acid sequence of SEQ ID NO: 4 from about amino acid 21 to about amino acid 1363.

5,776,756

FERMENTATION COMPOSITIONS HAVING SUPEROXIDE DISMUTATING ACTIVITY AND AN ANTIHYPERTENSIVE AGENT FOR TREATMENT OF CONSTIPATION EACH HAVING THE SUPEROXIDE DISMUTATING ACTIVITY

Akihiko Kimura; Atsushi Takada, and Naoto Ishikawa, all of Aichi, Japan, assignors to Toyo Hakkō Co., Ltd., Obu, Japan. Filed Aug. 31, 1995, Ser. No. 522,150

Int. Cl.⁶ C12N 9/02; A01N 43/08

U.S. Cl. 435—189

16 Claims

1. A composition having superoxide dismutating activity comprising:

- vitamin C; and
- a fermentation composition, wherein said fermentation composition is obtained by:
 - inoculating a microorganism on a culture medium, wherein said microorganism is selected from the group consisting of *Bacillus natto* and *Bacillus subtilis*;

(2) cultivating said inoculated microorganism, under aerating and agitating conditions, in a fermentation liquid medium, wherein said medium comprises rice bran, soybean, carbon, and water, and wherein the pH of the medium is about 7.5 to about 10; and

(3) filtering the resultant cultivation broth, or an evaporation residue of said fermentation liquid, to obtain the fermentation composition.

5,776,757

FUNGAL CELLULASE COMPOSITION CONTAINING ALKALINE CMC-ENDOGLUCANASE AND ESSENTIALLY NO CELLOBIOHYDROLASE AND METHOD OF MAKING THEREOF

Martin Schülein, Copenhagen, and Kirsten Bøegh Levring, Lyngby, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 295,364, Aug. 24, 1994, abandoned, which is a continuation of Ser. No. 409,498, Sep. 13, 1989, abandoned. This application May 30, 1995, Ser. No. 452,943

Claims priority, application Denmark, Mar. 24, 1988, 1634/88; Mar. 24, 1988, 1635/88

Int. Cl.⁶ C12N 9/42; 1/20; C12P 21/06; C07H 21/04

U.S. Cl. 435—209

21 Claims

1. A method for producing a cellulase preparation which comprises a substantially homogeneous endoglucanase, comprising:

- introducing a recombinant DNA vector carrying a first DNA sequence encoding the endoglucanase operably linked to control sequences permitting the expression of said first DNA sequence into a host cell;
- cultivating the host cell in a culture medium under conditions permitting the expression of the endoglucanase; and
- recovering the endoglucanase from the culture medium; wherein the endoglucanase is endogenous to a strain of *Myceliophthora*, *Fusarium* or *Humicola* and
 - has a pH optimum of about 7.5–10.0;
 - exhibits a carboxymethylcellulose (CMC) endoase activity of at least about 10 CMC-endoase units per mg of total protein;
 - exhibits a cellulose affinity viscosity unit (CAVU) activity of at least about 50% at a pH of 7.0–12.0; and
 - has essentially no cellobiohydrolase activity.

5,776,758

CYSTEINE PROTEASE DERIVED FROM PARASITIC HELMINTHS

Fusanori Hamajima, 2-1-704, Hikarigaoka 5-Chome, Nerima-ku, Tokyo; Mikio Yamamoto, 2-4-503, Namiki 3-Chome, Tokorozawa-shi, Saitama-ken; Sumiaki Tsuru, 9-7-303, Tagara 3-Chome, Nerima-ku, Tokyo, and Kazuo Yamagami, 16-309, Hirotsawa 1-Chome, Wako-shi, Saitama-ken, all of Japan

Continuation of Ser. No. 246,917, May 20, 1994, abandoned, which is a continuation of Ser. No. 920,092, Jun. 24, 1992, abandoned. This application May 26, 1995, Ser. No. 451,409. Claims priority, application Japan, Jul. 25, 1991, 3-208546; Feb. 12, 1992, 4-057189

Int. Cl.⁶ C12N 9/50

U.S. Cl. 435—219

13 Claims

1. A composition comprising a biologically active cysteine protease derived from parasitic helminths wherein the amino acid sequence is at least 90% identical to the amino acid sequence of SEQ ID No. 1.

5,776,759

TWO NOVEL HUMAN CATHEPSIN PROTEINS

Olga Bandman, and Roger Coleman, both of Mountain View, Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Sep. 26, 1996, Ser. No. 723,938

Int. Cl.⁶ C12N 5/10; 15/57; 15/63; C12P 21/02

U.S. Cl. 435—226

8 Claims

1. An isolated polynucleotide sequence encoding the polypeptide comprising the amino acid sequence of SEQ ID NO:1.

5,776,760

GLYPHOSATE TOLERANT PLANTS

Gerard Francis Barry, St. Louis, and Ganesh Murthy Kishore, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 391,339, Feb. 21, 1995, Pat. No. 5,463,175, which is a continuation of Ser. No. 156,968, Nov. 23, 1993, abandoned, which is a continuation of Ser. No. 717,370, Jun. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 543,236, Jun. 25, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 484,274

Int. Cl.⁶ C07H 21/04; C12N 9/02

U.S. Cl. 435—252.3

2 Claims

1. An isolated double-stranded DNA molecule which hybridizes to the DNA sequence of SEQ ID NO:3, wherein said DNA molecule encodes a glyphosate oxidoreductase enzyme.

5,776,761

NUCLEIC ACIDS ENCODING ALLERGENIC PROTEINS FROM RAGWEED

Bruce Rogers, Cambridge, Mass.; David G. Klapper, Chapel Hill, N.C.; Thorunn Rafnar, Baltimore, Md., and Mei-chang Kuo, Winchester, Mass., assignors to ImmunoLogic Pharmaceutical Corporation, Waltham, Mass., and the University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Division of Ser. No. 529,951, May 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 325,365, Mar. 17, 1989, abandoned. This application Dec. 29, 1993, Ser. No. 175,069

Int. Cl.⁶ C12N 1/21; 15/29; 15/63

U.S. Cl. 435—252.3

20 Claims

1. An isolated nucleic acid comprising a nucleotide sequence which encodes a protein comprising an amino acid sequence selected from the group consisting of: the amino acid sequence of Amb a 1A, as represented by amino acid residues 1–387 in SEQ ID NO: 72, or a polymorphic variant thereof; the amino acid sequence of Amb a 1B, as represented by amino acid residues 1–441 in SEQ ID NO: 74, or a polymorphic variant thereof; the amino acid sequence of Amb a 1C, as represented by amino acid residues 1–434 in SEQ ID NO: 76, or a polymorphic variant thereof; and the amino acid sequence of Amb a 1D, as represented by amino acid residues 1–383 in SEQ ID NO: 78, or a polymorphic variant thereof.

5,776,762

OBESITY ASSOCIATED GENES

Michael North, La Jolla, Calif.; Patsy Nishina; Konrad Noben-Trauth, both of Bar Harbor, Me., and Juergen Naggert, Bar Harbor, Me., assignors to Sequana Therapeutics, Inc., La Jolla, Calif., and The Jackson Laboratory, Bar Harbor, Me. Continuation-in-part of Ser. No. 630,592, Apr. 10, 1996. This application Sep. 17, 1996, Ser. No. 714,991

Int. Cl.⁶ C07H 21/04; C12Q 1/68; C12N 15/70; 15/74

U.S. Cl. 435—252.3

4 Claims

1. An isolated nucleic acid molecule comprising a sequence encoding a mammalian tubby protein consisting of the amino acid sequence of SEQ ID NO:27.

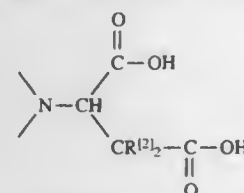
4. A hybridization probe consisting of at least 18 contiguous nucleotides of SEQ ID NO:28, nucleotides 209-396.

5,776,763
ANALYTICAL PROCESS TO DETERMINE BIODEGRADABILITY OF CHELANTS CONTAINING A DOUBLE CARBOXY CONTAINING MOIETY
Alan D. Strickland, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Continuation of Ser. No. 281,060, Jul. 27, 1994, abandoned.
This application Mar. 4, 1996, Ser. No. 607,253
Int. Cl.⁶ C12S 13/00; C07D 207/00

U.S. Cl. 435-262

3 Claims

1. An analytical process for determining biodegradability of compounds having a moiety of the Formula:



wherein each R is independently hydrogen or an unsubstituted alkyl, aryl, alkaryl, or aralkyl group or an alkyl, aryl, alkaryl, or aralkyl group substituted with a hydroxyl, carboxyl, sulfonyl, phosphoryl, imide, or amino group and wherein the distance between the carboxyl carbon atoms is designated "Distance A", the distance between carboxyl double bonded oxygen atoms is designated "Distance B", and the distance between carboxyl hydroxy oxygen atoms is designated "Distance C", comprising: determining in at least one energetically feasible conformation of a compound having a moiety corresponding to the Formula, that the compound is biodegradable when all of the following conditions are met:

- Distance A is within a range of from about 3.81×10^{-10} m to about 3.86×10^{-10} m;
- Distance B is within a range of from about 5.13×10^{-10} to about 5.52×10^{-10} m;
- Distance C is within a range of from about 5.28×10^{-10} m to about 6.09×10^{-10} m; and
- the lowest unoccupied molecular orbital (LUMO) is on at least one carboxyl carbon atom of the moiety.

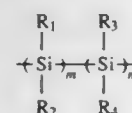
5,776,764
POLYSILANE TYPE PHOTOSENSITIVE RESIN COMPOSITION AND METHOD FOR FORMING PATTERN USING THE SAME
Emi Ueta, Osaka; Hiroshi Tsushima, Takatsuki, and Iwao Sumiyoshi, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Japan

Continuation-in-part of Ser. No. 326,314, Oct. 20, 1994, abandoned. This application Sep. 30, 1996, Ser. No. 723,387
Claims priority, application Japan, Oct. 20, 1993, 5-262287
Int. Cl.⁶ G03C 1/73; C08J 3/28

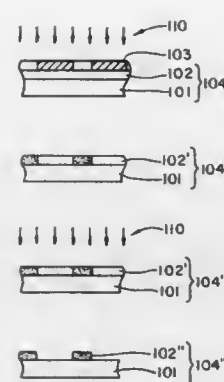
U.S. Cl. 430-270.1

3 Claims

1. A photosensitive resin composition consisting essentially of:
(a) a polysilane having a structure of the formula:



wherein R₁, R₂, R₃ and R₄, the same or different, are selected from the group consisting of a substituted or non-substituted aliphatic hydrocarbon group, an alicyclic hydrocarbon group, an aromatic hydrocarbon group, and wherein at least one of m and n are positive integers.



(b) a photoradical generator, and

(c) an oxidizing agent which functions as an oxygen supply source.

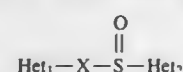
5,776,765
METHOD FOR PREPARING A PHARMACEUTICALLY ACTIVE ENANTIOMERIC OR ENANTIOMERICALLY ENRICHED SULFOXIDE COMPOUND BY ENANTIOSELECTIVE BIOREDUCTION OF A RACEMATE SULFOXIDE COMPOUND
Daniel Graham, Childwall Valley; Robert Holt, Fleetham, both of United Kingdom; Per Lindberg, Mölndal, Sweden, and Stephen Taylor, Darlington, United Kingdom, assignors to Astra Aktiebolag, Sodertälje, Sweden

PCT No. PCT/SE95/01416, § 371 Date Dec. 18, 1995, § 102(e)
Date Dec. 18, 1995
PCT Filed Nov. 27, 1995, Ser. No. 569,083
Claims priority, application United Kingdom, Nov. 28, 1994, 9423968

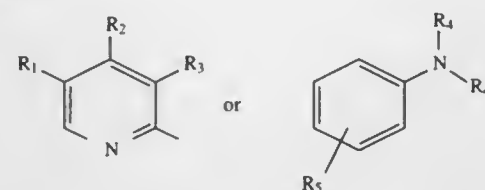
Int. Cl.⁶ C12P 11/00; C07D 401/12
U.S. Cl. 435-280

9 Claims

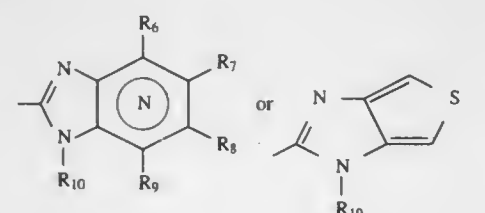
1. A method of obtaining a pharmaceutically active compound as a single sulfoxide enantiomer or an enantiomerically enriched sulfoxide form having the formula (II):



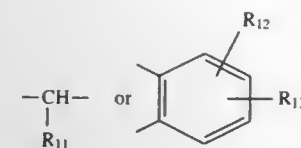
wherein:



and



and



wherein:

N in the benzimidazole moiety of Het₂ means that one of the carbon atoms substituted by any one of R₆ to R₉ is exchanged for an unsubstituted nitrogen atom;

R₁, R₂ and R₃ are the same or different and selected from the group consisting of hydrogen, alkyl, alkoxy which is unsubstituted or substituted by fluorine, alkylthio, alkoxyalkoxy, dialkylamino, piperidino, morpholino, halogen, phenylalkyl and phenylalkoxy;

R₄ and R₄ are the same or different and selected from the group consisting of hydrogen, alkyl and aralkyl;

R₅ is hydrogen, halogen, trifluoromethyl, alkyl or alkoxy;

R₆-R₉ are the same or different and selected from the group consisting of hydrogen, alkyl, alkoxy, halogen, haloalkoxy, alkylcarbonyl, alkoxyalkoxy, oxazolyl and trifluoroalkyl; or adjacent groups among substituents R₆-R₉ together with the carbon atoms to which they are attached form an unsubstituted or a substituted ring;

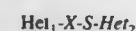
R₁₀ is hydrogen or alkoxyalkoxyoxymethyl;

R₁₁ is hydrogen or forms an alkylene chain together with R₃;

R₁₂ and R₁₃ are the same or different and selected from the group consisting of hydrogen, halogen and alkyl;

which method comprises the steps of:

enantioselectively bioreducing a racemic sulfoxide compound of the formula (II) to the corresponding sulfide compound of formula (I):



(I)

by means of a microbial organism or a microbial enzyme system; and
isolating the pharmaceutically active single enantiomeric or enantiomerically enriched sulfoxide compound.

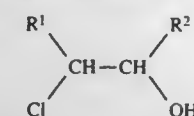
5,776,766
OPTICAL RESOLUTION OF CHLOROHYDRIN WITH MICROORGANISM
Naoya Kasai; Toshio Suzuki, both of Osaka-fu, and Hideaki Idogaki, Hyogo-ken, all of Japan, assignors to Daiso Co., Ltd., Osaka, Japan

Filed May 21, 1996, Ser. No. 651,935
Claims priority, application Japan, May 29, 1995, 7-130182
Int. Cl.⁶ C12P 41/00

U.S. Cl. 435-280

16 Claims

1. A process for the optical resolution of a racemic chlorohydrin compound, which comprises treating a racemic mixture of a chlorohydrin compound of the formula:

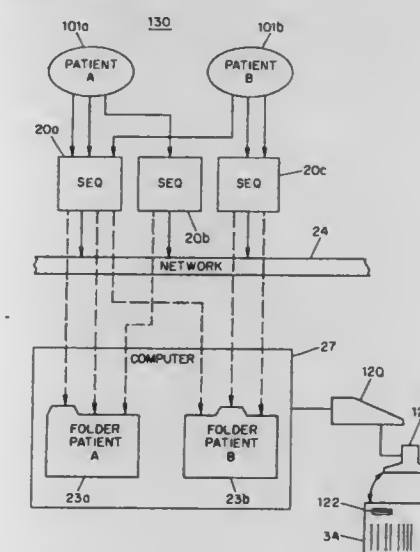


wherein R¹ is a hydrogen atom or a lower alkyl group and R² is (i) a substituted or unsubstituted lower alkyl group when R¹ is a hydrogen atom, provided that a hydroxymethyl group is excluded, or (ii) R² is a hydrogen atom when R¹ is a lower alkyl group, with a culture broth or cells of a microorganism, having an ability of selectively degrading one of the optically active isomers of the racemic chlorohydrin compound of the formula [1], selected from the group of bacterial genera consisting of *Pseudomonas*, *Enterobacter*, *Citrobacter*, and *Bacillus*, or a processed product of the cells, and thereby degrading, selectively, only one of the optically active isomers in the racemic mixture, the other optically active isomer remaining in the reaction system.

5,776,767
VIRTUAL DNA SEQUENCER
John K. Stevens, Toronto; James M. Dunn, Scarborough; Gregory Dee, Toronto, and James W. Cassidy, Waterloo, all of Canada, assignors to Visible Genetics Inc., Ontario, Canada

Filed Dec. 12, 1995, Ser. No. 570,994
Int. Cl.⁶ C12M 3/00
U.S. Cl. 435-287.2

18 Claims



1. A virtual nucleic acid sequencer for use in sequencing respective samples of nucleic acids from first and second subjects, the virtual sequencer comprising:

at least first and second individual nucleic acid sequencers, each of said individual sequencers comprising at least two lanes, each of said lanes having a respective analysis region, each of said individual sequencers further comprising detector means optically coupled with said at least two lanes, said detector means having an output indicative of optical activity in its respective analysis regions, each of said individual sequencers further comprising buffer means associated with the respective detector means, said buffer sized to accommodate substantially all the output from the sequencing of the nucleic acid sample from one of the subjects;

a host;

an input terminal communicatively coupled with the host;

a data store communicatively coupled with the host;

a communications channel communicatively coupling the buffer means associated with the detector means of the first and second individual sequencers with the host;

first means within the host for responding to inputs at the terminal for storing, within the data store, first records associating the first subject with a first particular lane of the first individual sequencer and with a first particular lane of the second individual sequencer, and associating the second subject with a second particular lane of the first individual sequencer and with a second particular lane of the second individual sequencer; and

second means within the host for receiving the outputs of the detector means of the first and second individual sequencers and storing, within the data store, second records representative of the outputs and indicative of the lanes of the individual sequencers providing the outputs;

third means within the host for receiving the first and second records, and in response thereto, for storing third records, each of said third records comprising data from particular lanes corresponding to a particular one of the subjects.

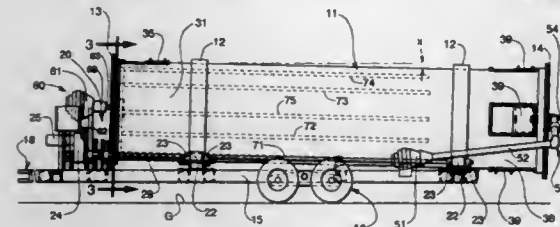
5,776,768

COLD WEATHER COMPOSTING APPARATUS
Shaun A. Seymour, New Holland, Pa., and Mark E. Singley, Belle Meade, N.J., assignors to New Holland North America, Inc., New Holland, Pa.

Filed Dec. 6, 1996, Ser. No. 761,417
Int. Cl.⁶ C05F 9/02

U.S. Cl. 435—290.3

9 Claims



1. In a rotary composter having a vessel rotatably supported for rotation about a longitudinal axis, said vessel comprising an infeed end, a discharge end below said infeed end and an outer wall, said vessel further comprising longitudinally spaced baffles for dividing said vessel into an infeed compartment, a remote discharge compartment and a plurality of intermediate digesting compartments, drive means for rotating said vessel about said longitudinal axis to move material from said infeed compartment through said digesting compartments to said discharge compartment, and an air infeed means in the vicinity of said discharge end for forcing a flow of air from a first source of air through said vessel toward air exit means in said infeed end under conditions where said material is being moved through said vessel, the improvement comprising secondary air infeed means comprising an air distribution assembly disposed in said vessel, and a blower for introducing a secondary supply of air into said distribution assembly, said air distribution assembly including means for discharging said secondary supply of air into said vessel for flow toward said air exit means, and means for preheating said secondary supply of air in said air distribution assembly prior to discharge thereof into said vessel.

5,776,769

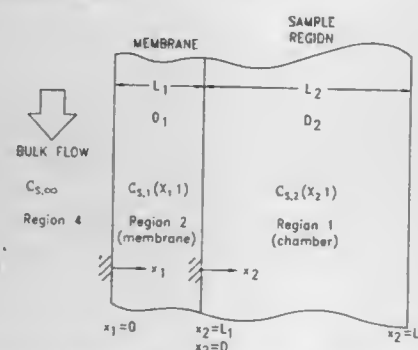
CELL-TYPE SPECIFIC METHODS AND DEVICES FOR THE LOW TEMPERATURE PRESERVATION OF THE CELLS OF AN ANIMAL SPECIES

John K. Critser, Carmel; D. Y. Gao, Indianapolis, and Robert J. Demeter, Mooresville, all of Ind., assignors to Methodist Hospital of Indiana, Indianapolis, Ind.

Continuation-in-part of Ser. No. 250,675, May 27, 1994, Pat. No. 5,595,866. This application Jun. 7, 1995, Ser. No. 485,311
Int. Cl.⁶ C12M 3/06; 1/12

U.S. Cl. 435—307.1

36 Claims



1. A device for adding or removing a cryoprotective agent to or from a biological cell sample, comprising:
a housing and a membrane dividing said housing into a first compartment and a second compartment; said first compart-

ment adapted to receive a biological cell sample and said second compartment adapted to receive isotonic fluid or a cell-membrane-permeable cryoprotective agent; said membrane having pores therein, said pores sized to substantially retain a biological cell, said membrane having a predetermined pore area that regulates the amount of cryoprotective agent and water around the biological cells within predetermined concentrations, said predetermined concentrations substantially preventing the volumetric excursion of said cells beyond predetermined limits, said predetermined concentrations being predetermined by analysis of the water permeability coefficient of said cells and the cryoprotective agent permeability coefficient of said cells.

5,776,770

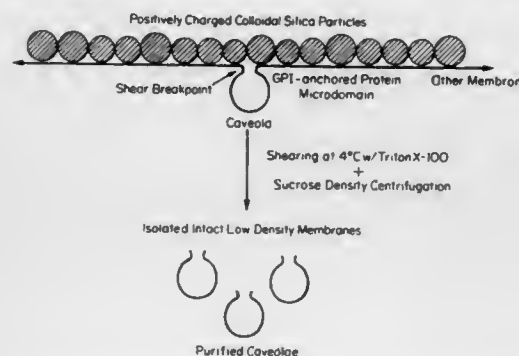
ISOLATION AND USES OF CAVEOLAE
Jan E. Schnitzer, Boston, Mass., assignor to Beth Israel Deaconess Medical Center, Boston, Mass.

Filed Jan. 4, 1996, Ser. No. 582,917

Int. Cl.⁶ C12N 11/02; C08G 18/00; C07H 1/36

U.S. Cl. 435—317.1

30 Claims



1. A method of producing purified caveolae, comprising the steps of:
a) producing purified plasma membranes which comprise caveolae and G domains and are coated with colloidal silica particles, the particles being present on the side of the plasma membranes opposite to that on which the caveolae occur;
b) subjecting the purified plasma membranes coated with colloidal silica particles to a membrane disruption method, whereby caveolae are stripped from purified plasma membranes, and purified plasma membrane fragments comprising caveolae which are no longer attached to the purified plasma membranes and G domains are produced;
c) subjecting the product of b) to a separation technique which is based on density, whereby caveolae are separated from other purified plasma membrane fragments; and
d) removing the caveolae separated in step c) from the other purified plasma membrane fragments, thereby producing purified caveolae.

5,776,771

KANAMYCIN RESISTANCE GENE DERIVED FROM MICROORGANISMS OF THE GENUS RHODOCOCCLUS
Fujio Yu, and Mami Kato, both of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1995, Ser. No. 510,878

Claims priority, application Japan, Aug. 4, 1994, 6-201582

Int. Cl.⁶ C12N 1/21; 15/31; 15/70; 15/74

U.S. Cl. 435—320.1

12 Claims

1. An isolated DNA molecule which encodes the amino acid sequence of Sequence No. 1.
5. A plasmid vector comprising a DNA according to claim 1 and a DNA region capable of replicating in microorganisms of the genus Rhodococcus.

5,776,772

METHOD FOR PRODUCING SECRETABLE GLYCOSYLTRANSFERASES AND OTHER GOLGI PROCESSING ENZYMES

James G. Paulson, Del Mar; Eryn Ujita-Lee, Redondo Beach, both of Calif.; Karen J. Colley, Oak Park, Ill.; Beverly Adler, Newbury Park, Calif.; Jeffrey K. Browne, Camarillo, Calif., and Jasinder Weinstein, Westlake Village, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 209,604, Mar. 10, 1994, Pat. No. 5,541,083, which is a continuation of Ser. No. 849,045, May 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 426,577, Oct. 24, 1989, Pat. No. 5,032,517. This application Jan. 30, 1996, Ser. No. 593,865

Int. Cl.⁶ C12N 15/63; 15/00; 15/54; 15/79

U.S. Cl. 435—320.1

5 Claims

1. An expression cassette comprising a promoter operably linked to a DNA sequence, said DNA sequence encoding a secreted glycosyltransferase which lacks the membrane anchor and golgi retention signal.

5,776,773

YEAST ARTIFICIAL CHROMOSOMES AND THEIR USE IN THE CONTROL OF GENE EXPRESSION

Marianne Bruggemann, Foxton, United Kingdom, assignor to The Babraham Institute, Cambridge, United Kingdom

PCT No. PCT/GB92/01651, § 371 Date Mar. 7, 1994, § 102(e)

Date Mar. 7, 1994, PCT Pub. No. WO93/05165, PCT Pub.

Date Mar. 18, 1993

PCT Filed Sep. 10, 1992, Ser. No. 204,294

Claims priority, application United Kingdom, Sep. 10, 1991, 9119338

Int. Cl.⁶ C12N 5/16; 15/06; 15/64

U.S. Cl. 435—325

7 Claims

1. A method for transforming an embryonic stem cell, which comprises transforming said cell by protoplast fusion with a yeast artificial chromosome (YAC) vector that includes a foreign gene or gene locus of at least 100 kb and at least two copies of a marker gene, separate from the foreign gene or gene locus, which allows selection by one or more properties in said cell; and selecting transformed cells which are essentially free of yeast DNA.

5,776,775

ANTI-LAM 1-3 ANTIBODY AND HYBRIDOMA

Thomas F. Tedder, Wellesley, and Olivier G. Spertini, Newton, both of Mass., assignors to Dana-Farber Cancer Institute, Boston, Mass.

Continuation of Ser. No. 720,602, Jun. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 313,109, Feb. 21, 1989, abandoned. This application Mar. 21, 1994, Ser. No. 215,366

Int. Cl.⁶ C07K 16/18; 16/28; C12N 5/12

U.S. Cl. 435—343.2

5 Claims

1. A hybridoma cell line which has American Type Culture Collection Deposit No. HB 10771 and produces anti-LAM1-3 monoclonal antibody.

5,776,776

DTEF-1 ISOFORMS AND USES THEREOF

Charles P. Ordahl; Anthony Azakie; Sarah B. Larkin, all of San Francisco, and Iain K. G. Farrance, El Cerrito, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 191,493, Feb. 4, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 615,170

Int. Cl.⁶ C12N 5/10; 1/00; 15/12; 15/63

U.S. Cl. 435—366

5 Claims

1. A purified and isolated recombinant nucleic acid which comprises the sequence of SEQ ID NO:18.

5,776,777

Patent Not Issued For This Number

5,776,778

GROWTH FACTOR PREPARATION OF THYMOCYTE CELL CULTURE MEDIUM ITS PRODUCTION AND USE

Olavi Kajander, FIN-71310, Vehmersalmi; Ilpo Kuronen, Lataajanpolku 1F 43, FIN-070460 Kuopio, and Kaarina Tikkanen, Maaherrankatu 35 as 9, FIN-70100 Kuopio, all of Finland

Filed Dec. 10, 1996, Ser. No. 762,830

Claims priority, application Finland, Jun. 10, 1994, 942773

Int. Cl.⁶ C12N 5/02; 5/06; 5/08; C07K 14/475

U.S. Cl. 435—405

12 Claims

1. A plasma cell-stimulating growth factor preparation which stimulates proliferation of antibody-producing B lymphocytes, said preparation consisting of cell culture medium recovered from a mixed thymocyte culture comprising thymocytes originating from different species of mammals.

5,776,779

INTEGRAL MULTI-LAYER ELEMENT FOR ANALYZING BILE ACID SULFATE

Hiroshi Tamura; Satoshi Chosa, and Satoshi Yonehara, all of Kyoto, Japan, assignors to Kyoto Daiichi Kagaku Co., Ltd., Kyoto, Japan

PCT No. PCT/JP95/01808, § 371 Date Mar. 13, 1997, § 102(e)

Date Mar. 13, 1997, PCT Pub. No. WO96/08581, PCT Pub.

Date Mar. 21, 1996

PCT Filed Sep. 12, 1995, Ser. No. 809,108

Claims priority, application Japan, Sep. 13, 1994, 6-218662;

Sep. 27, 1994, 6-231111

Int. Cl.⁶ G01N 33/72

U.S. Cl. 436—56

5 Claims

1. An integral multi-layer analytical element for analyzing bile acid sulfate comprising a support member, a reagent layer on said

5,776,774

AMINO ACID TRANSPORTERS AND USES

Susan G. Amara, and Jeffrey L. Arriza, both of Portland, Oreg., assignors to State of Oregon, Portland, Oreg.

Division of Ser. No. 140,729, Oct. 20, 1993. This application

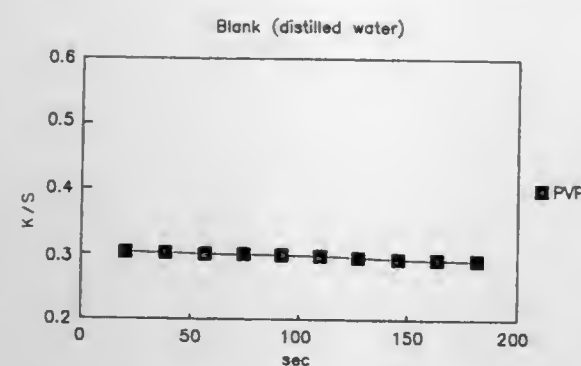
Oct. 23, 1995, Ser. No. 546,666

Int. Cl.⁶ C12N 5/00; 1/20; 15/00; C07H 21/04

U.S. Cl. 435—325

4 Claims

1. An isolated nucleic acid wherein the nucleotide sequence of the nucleic acid comprises the sequence of the human excitatory amino acid transporter EAAT3 (SEQ ID No.8).



support member and a porous developing layer on said reagent layer, at least one of said reagent layer and said developing layer containing

bile acid sulfate sulfatase,

3 β -hydroxysteroid dehydrogenase and

a combination of thio-NAD⁺ and reduced NADs or reduced NADPs,

wherein said reagent layer contains

a water-soluble polymer,

a buffer and

at least one component selected from the group consisting of sugar alcohols and Mn²⁺.

5,776,780

METHOD FOR QUANTITATIVELY MEASURING WHITE BLOOD CELLS ESTERASE ACTIVITY IN URINE

Jack V. Smith, St. Petersburg, and Jesse M. Carter, Tampa, both of Fla., assignors to Chimera Research & Chemical, Inc., Largo, Fla.

Continuation-in-part of Ser. No. 429,292, Apr. 24, 1995, Pat. No. 5,516,700, which is a continuation-in-part of Ser. No. 68,956, May 28, 1993, abandoned. This application Apr. 12, 1996, Ser. No. 631,581

Int. Cl.⁶ G01N 33/493

U.S. Cl. 436—63

11 Claims

1. A method for quantitatively measuring white blood cell esterase activity in a patient's urine comprising

placing an aliquot of the urine to be tested in an automated analyzer sampling cup,

placing the cup in a sampling tray within the automated analyzer, transferring the urine to a cuvette mounted within the automated analyzer, injecting at least one reagent composition in an aqueous medium into the cuvette,

wherein said at least one reagent composition comprises a buffer to adjust the pH of the urine to 7 to 9, an activator and surfactant selected from the group consisting of benzalkonium chloride, 2,5-dimethylbenzene sulfonic acid, and benzethonium chloride, and an indicator to determine leucocyte esterase activity in the patient's urine,

reading the aliquot of urine at specified intervals, in accordance with a preprogrammed code introduced into the automated analyzer, at a preprogrammed monochromatically specified wavelength, to compare absorbance of the patient's urine and reagent composition complex with that of a standard containing a known concentration of leucocyte esterase and thereby determining the quantitative amount of leucocyte esterase in the patient's urine.

5,776,781 STERILE FLOW CYTOMETER AND SORTER WITH MECHANICAL ISOLATION BETWEEN FLOW CHAMBER AND STERILE ENCLOSURE AND METHODS FOR USING SAME

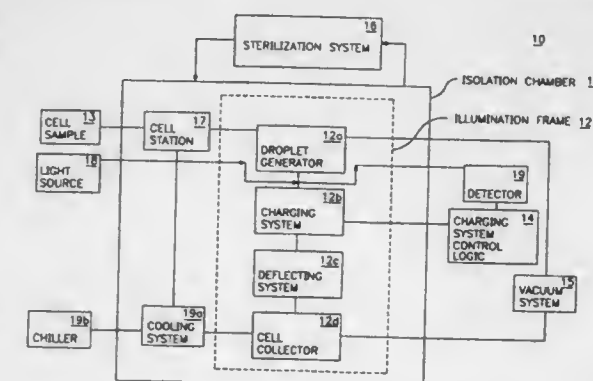
Michael H. Vardanega, Livermore; Raymond Swan, Fremont; John Joubran, Santa Clara; David J. Medeiros, S. San Francisco; Edie Tichenor, Portola Valley, and Hugh Lewis, San Francisco, all of Calif., assignors to Systemix, Palo Alto, Calif.

Division of Ser. No. 428,693, Apr. 25, 1995, Pat. No. 5,641,457. This application Feb. 20, 1997, Ser. No. 803,439

Int. Cl.⁶ G01N 29/00

U.S. Cl. 436—63

41 Claims



1. A sterile system for measuring at least one property of a sample of cells, said sterile system comprising:

an isolation chamber for providing an enclosed sterile environment;

a sterilization system coupled to said isolation chamber, said sterilization system sterilizing an area located within said isolation chamber;

a pressurization system coupled to said isolation chamber, said pressurization system pressurizing said isolation chamber during said measuring of at least one property such that said pressure in said isolation chamber is not substantially equivalent to atmospheric pressure;

a cell station for holding said sample of cells;

an illumination frame located within said isolation chamber, said illumination frame being coupled to said cell station wherein said cell station provides said illumination frame with a stream of cells from said sample of cells;

a light source coupled to said illumination frame wherein said light source provides said illumination frame with at least one beam of light for measurement of said at least one property;

a detector coupled to said illumination frame, said detector collects light from said stream of cells flowing through said illumination frame, said detector further transforms said light into electrical pulses to be measured.

5,776,782

METHOD FOR MEASURING FLUORESCENCE RESONANCE ENERGY TRANSFER

Akihiko Tsuji, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Shizuoka-ken, Japan

Continuation of Ser. No. 389,391, Feb. 16, 1995, abandoned.

This application Jul. 17, 1996, Ser. No. 684,268

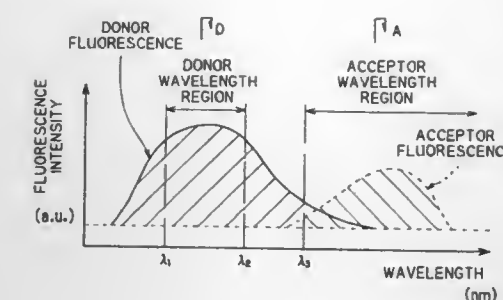
Claims priority, application Japan, Feb. 16, 1994, 6-019500

Int. Cl.⁶ G01N 21/62; 21/64; 33/00

U.S. Cl. 436—171

26 Claims

1. A method of measuring energy transfer between donor fluorophores and acceptor fluorophores under energy-transfer condition included in a sample, the sample also including donor fluorophores and acceptor fluorophores under non-energy-transfer condition, the method comprising the steps of:



irradiating, with excitation light, a sample including donor fluorophores and acceptor fluorophores both under non-energy-transfer condition and under energy-transfer condition, so that the donor fluorophores and the acceptor fluorophores emit fluorescence, the donor fluorophores and the acceptor fluorophores emitting fluorescence of different wavelength bands which are partly overlapped with each other, the donor fluorophores having fluorescence lifetime longer than a fluorescence lifetime of the acceptor fluorophores,

wherein intensity of fluorescence from the acceptor fluorophores attenuates over time after the irradiation of the excitation light, in accordance with its fluorescent lifetime, the attenuation occurring so that the intensity of fluorescence from the acceptor fluorophores is below a predetermined threshold at a first timing, intensity of fluorescence from the donor fluorophores attenuates over time after the irradiation of the excitation light, in accordance with its fluorescent lifetime, the attenuation occurring so that the intensity of fluorescence from the donor fluorophores is below a second predetermined threshold at a second timing, the fluorescence lifetime of the donor fluorophores varies when energy transfer occurs from the donor fluorophores to the acceptor fluorophores so that the intensity of fluorescence from the donor fluorophores attenuates over time when the energy transfer occurs after the irradiation of the excitation light, in accordance with its varied fluorescent lifetime, the attenuation occurring so that the intensity of fluorescence from the donor fluorophores is below a third predetermined threshold at a third timing different from the second timing;

dividing light, emitted from the sample, into a first light of a first wavelength and a second light of a second wavelength, the first wavelength region being only within the fluorescence wavelength band of the donor fluorophores, the second wavelength region being set not only within the fluorescence wavelength band of the acceptor fluorophores but also within a predetermined amount of a part of the fluorescence wavelength band of the donor fluorophores;

measuring an intensity of the first light and an intensity of the second light over a first time period, which is determined between the first timing and the third timing, to thereby obtain a total intensity I_{D1} of the first light over the first time period and a total intensity I_{A1} of the second light over the first time period;

measuring an intensity of the first light and an intensity of the second light over a second time period, which is determined between the third timing and the second timing, to thereby obtain a total intensity I_{D2} of the first light over the second time period and a total intensity I_{A2} of the second light over the second time period; and

determining energy transfer, occurring between the donor fluorophores and the acceptor fluorophores based on a ratio between the amounts I_{D2} and I_{D1} and a ratio between the amounts I_{A2} and I_{A1} .

5,776,783

METHOD OF MONITORING THERAPEUTIC AGENT CONSUMPTION

Michael Kell, Atlanta, Ga., assignor to Private Clinic Laboratories, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 675,863, Jul. 5, 1996, Pat. No. 5,652,146, which is a division of Ser. No. 248,102, May 24, 1994, Pat. No. 5,547,878, which is a continuation-in-part of Ser. No. 145,821, Nov. 2, 1993. This application Sep. 17, 1996, Ser. No. 715,016

Int. Cl.⁶ G01N 33/48

U.S. Cl. 436—111

20 Claims

1. A method of monitoring compliance of a patient who has been placed on a medication maintenance program with a prescribed medication dosage, and with the method comprising the steps of:

(a) physically associating a compliance marker with a prescribed medication dosage prior to ingestion,

(b) obtaining a sample of the patient's urine,

(c) measuring the concentration of the compliance marker and its metabolites in the urine and the urine specific gravity,

(d) calculating a normalized urine compliance marker and its metabolite concentration as a function of the measured compliance marker and its metabolite concentration in the urine and the urine specific gravity adjusted to account for the difference between the urine measured specific gravity and a preselected reference urine specific gravity,

(e) comparing the normalized urine compliance marker and its metabolite concentration with an expected normalized urine compliance marker and its metabolite concentration for the amount of compliance marker prescribed, as an indication of compliance or non-compliance.

5,776,784

APPARATUS AND METHOD FOR REAGENT SEPARATION IN A CHEMICAL ANALYZER

Joseph Edward Kegelman; Diane Kathleen Stille, both of Wilmington; Robert Kyle Wiedenmann, New Castle, all of Del., and Paul John Zuk, Lincoln University, Pa., assignors to Dade International Inc., Deerfield, Ill.

Filed Jan. 11, 1996, Ser. No. 585,333

Int. Cl.⁶ G01N 33/553

U.S. Cl. 436—526

9 Claims

1. A method for separating magnetically responsive particles from a liquid dispersion disposed in a reaction vessel, the method comprising:

providing a single magnet to subject the reaction vessel to a magnetically effective magnetic field for a first time interval, said first time interval being less than a time interval required to effect a complete separation of the particles from the dispersion;

subjecting the vessel to a magnetically ineffective magnetic field within the vessel for a second time interval; and,

using said single magnet to subject the vessel to the magnetically effective magnetic field within the vessel for a third time interval greater than a time interval required to effect a complete separation of the particles from the dispersion.

5,776,785

METHOD AND APPARATUS FOR IMMUNOASSAY USING FLUORESCENT INDUCED SURFACE PLASMA EMISSION

Jinn-nan Lin, Cerritos, and Christopher J. Wilson, Redondo Beach, both of Calif., assignors to Diagnostic Products Corporation, Los Angeles, Calif.

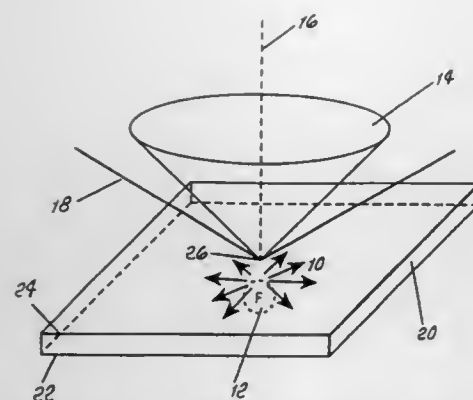
Filed Dec. 30, 1996, Ser. No. 777,406

Int. Cl.⁶ G01N 33/552

U.S. Cl. 436—527

27 Claims

1. An immunoassay method for determining the presence or amount of an analyte in a body fluid which comprises:



- (a) providing an optical structure comprising in sequence (i) a transparent solid phase substrate coated with (ii) a metal, film which supports surface plasmon resonance, wherein (iii) a first specific binding partner for said analyte is directly or indirectly immobilized on said metal film;
- (b) contacting said first specific binding partner with said body fluid and a tracer comprising a fluorescent label conjugated to either (i) said analyte or an immunological analog thereof or (ii) a second specific binding partner for said analyte;
- (c) irradiating said substrate with excitation radiation of a wavelength, polarization and angle of incidence sufficient to produce said surface plasmon resonance and to induce an emission cone of fluorescence from any specifically bound tracer;
- (d) measuring any change in rate or amount of said fluorescence emission over a predetermined time period using a fluorescence collection means which captures essentially all said fluorescence in said emission cone, said means having a substrate geometry which collects said fluorescence emission along two angular dimensions in a spherical coordinate space; and
- (e) determining the presence or amount of said analyte in said body fluid from said measured change in the rate or the amount of said fluorescence emission.

5,776,786

METHOD FOR WIRE-BONDING A COVERED WIRE
Osamu Nakamura, Kokubunji, and Kazumasa Sasakura, Musashi Murayama, both of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

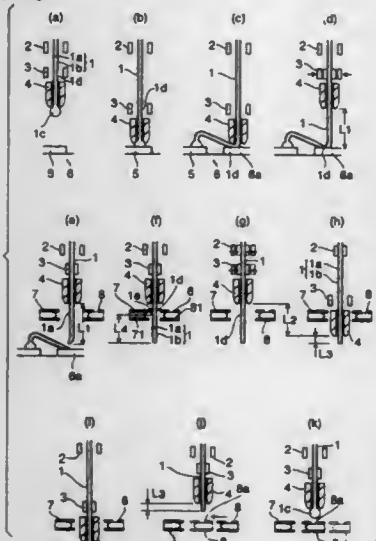
Filed Dec. 5, 1996, Ser. No. 759,229

Claims priority, application Japan, May 12, 1995, 7-344553

Int. Cl.⁶ H01L 21/283; 21/603

U.S. Cl. 437—8

2 Claims



1. A method for wire-bonding a covered wire comprising the steps of:

removing beforehand a covering-film on an intended lead bonding portion of the covered wire having a length required for next wiring operation;

bonding a ball formed at a tip of the covered wire to a pad of a semiconductor pellet, and

feeding the covered wire out of a capillary and bonding an exposed-core portion of the covered wire from which the covering-film has been removed to a lead of a lead frame; wherein

setting a length of the covered wire required for a next wiring operation by means of a formula which combines a first-order function of a wiring distance, a first-order reciprocal function of the wiring distance and a constant,

removing a covering-film at a corresponding position, and

bonding an exposed-core portion of the covered wire from which the covering-film has been removed to a lead of the lead frame with a loop height fixed even if the wiring distance is changed.

5,776,787

SPACER FLASH CELL PROCESS

Parviz Keshtbod, Los Altos Hills, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

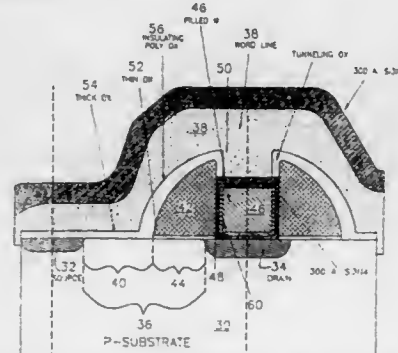
Division of Ser. No. 413,349, Mar. 30, 1995, Pat. No.

5,640,031, which is a continuation-in-part of Ser. No. 129,866, Sep. 30, 1993, Pat. No. 5,479,368. This application May 20, 1996, Ser. No. 650,785

Int. Cl.⁶ H01L 21/8247

U.S. Cl. 437—43

2 Claims



1. A method of forming a nonvolatile memory cell comprising the steps of:

- a. forming a planar substrate of a semiconductor material having a surface, wherein the substrate is doped to a first conductivity type having a drain region and a source region spaced apart from one another and formed within the surface;
- b. forming a first conductive material having at least one planar first sidewall perpendicular to the substrate, wherein the first conductive material is formed over the drain region and spaced apart from the drain by a first insulating layer wherein the first insulating layer includes a substantially planar second insulating layer along a first sidewall that is coupled to the first insulating layer;
- c. forming a second conductive material having a substantially planar second sidewall, wherein the second conductive material is formed over the substrate adjacent the first conductive material and between the drain and the source regions but spaced apart from the source region such that the second sidewall is coupled to the second insulating layer and further wherein the second conductive material is surrounded by a third insulating layer and wherein the second conductive material extends further from the substrate than the first conductive material leaving an exposed and insulated portion of the second sidewall; and
- d. forming a third conductive material formed over the substrate and extending from the source region to the drain region such that the second conductive material is between the third conductive material and the substrate such that the third conductive material is spaced apart from the second conduc-

tive material by a first distance along a surface of the second conductive material away from the substrate and the second sidewall and a second distance along the exposed and insulated portion of the second sidewall wherein the second distance is less than the first distance.

5,776,788

METHOD FOR FORMING A STRONG DIELECTRIC FILM BY THE SOL-GEL TECHNIQUE AND A METHOD FOR MANUFACTURING A CAPACITOR

Katsuhiko Aoki, Tsukuba; Yukio Fukuda, Toukai-mura, and Akitoshi Nishimura, Tsuchiura, all of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 228,536, Apr. 15, 1994, abandoned.

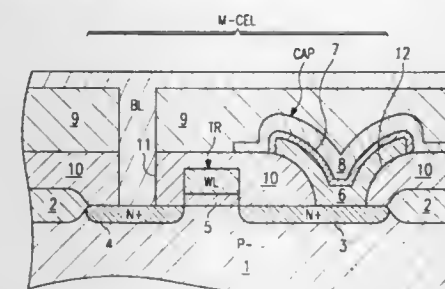
This application Feb. 15, 1996, Ser. No. 601,884

Claims priority, application Japan, Apr. 16, 1993, 5-113974

Int. Cl.⁶ H01L 21/70

U.S. Cl. 437—60

9 Claims



1. A method of forming a film of ferroelectric material with a perovskite crystalline structure by the sol-gel technique, said method comprising:

- preparing a raw material solution containing an organo metallic compound of a metallic element from which the film of ferroelectric material is to be formed, a stabilizer taken from one or a combination of substances of the group consisting of an alkanolamine and a β -diketone, and a solvent;
- providing a coating of the raw material solution on a substrate;
- drying the coating of the raw material solution at a temperature higher than the boiling point of the solvent included in said raw material solution and lower than the boiling point of the stabilizer included in said raw material solution to form a dried gel film, the drying of the coating of the raw material solution in forming the dried gel film being carried out at a temperature in the range of 130°–200° C.; and
- oxidatively sintering the dried gel film under controlled conditions at a temperature sufficient for forming perovskite crystals to provide a strong dielectric film of ferroelectric material with a perovskite crystalline structure and having a thickness no greater than 1000 Å.

5,776,789

METHOD FOR FABRICATING A SEMICONDUCTOR MEMORY DEVICE

Shunji Nakamura, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 4, 1996, Ser. No. 660,324

Claims priority, application Japan, Jun. 5, 1995, 7-137968

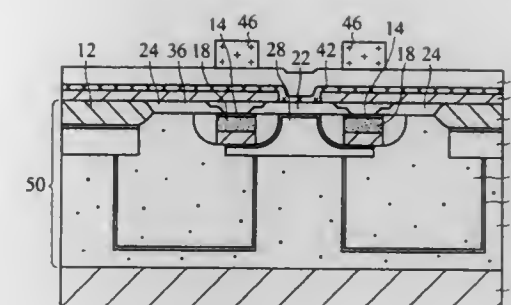
Int. Cl.⁶ H01L 21/70

U.S. Cl. 437—60

13 Claims

1. A method for fabricating a semiconductor memory device comprising:

- a gate electrode forming step of forming a gate electrode on one side of a semiconductor substrate;
- a diffused region forming step of implanting an impurity into the semiconductor substrate with the gate electrode as a mask to form a first diffused region and a second diffused region;



- a capacitor forming step of forming a capacitor having a storage electrode connected to the first diffused region on the semiconductor substrate with the first and the second diffused regions formed therein;

- a support substrate forming step of forming a support substrate on the semiconductor substrate with the capacitor formed thereon; and

- a semiconductor layer forming step of removing the semiconductor substrate at the other side of the semiconductor substrate until bottoms of the second and the first diffused regions are exposed, to form a semiconductor layer.

5,776,790

C4 PB/SN EVAPORATION PROCESS

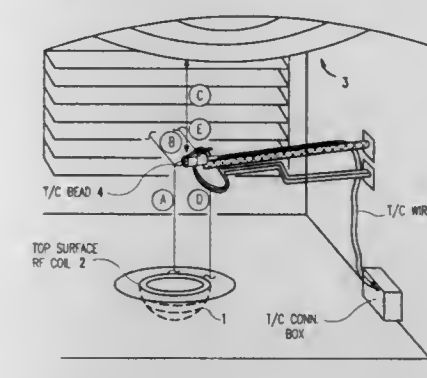
Stephen George Starr; John Conrad Kutt, both of Essex Junction, and Robert Henry Zalokar, Jr., Colchester, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1996, Ser. No. 608,162

Int. Cl.⁶ H01L 21/285

U.S. Cl. 438—6

3 Claims



1. A process of Pb/Sn evaporation to form solder bump interconnects and reduce critical molybdenum mask sensitivity comprising the steps of:

- sensing in situ process temperature at a wafer surface and a mask surface; and
- in response to the sensed process temperature, maintaining parallel temperature gradients between the molybdenum mask and the wafer during vacuum evaporation through which Pb/Sn pads are deposited, thus resulting in elimination of connecting halos and yield losses.

1. A method of encapsulating a semiconductor device, comprising the steps of:

disposing a spacer layer between a top surface of a sheet-like substrate and a contact bearing surface of a semiconductor chip, wherein the substrate has terminals thereon and bonding windows such that conductive leads electrically connected to the terminals extend at least partially thereacross and are juxtaposed with respective chip contacts; bonding the leads to respective chip contacts; attaching a protective layer on a bottom surface of the substrate so as to cover the bonding windows; depositing flowable encapsulation material around at least a portion of the periphery of the chip after attaching the protective layer so as to encapsulate the bonded leads; and at least partially curing the encapsulation material.

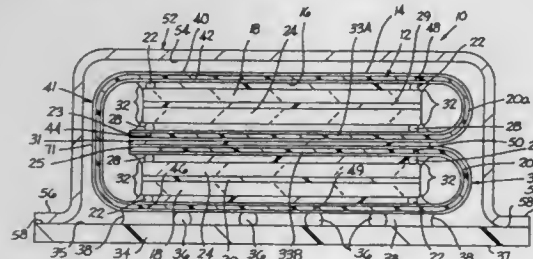
5,776,797

THREE-DIMENSIONAL FLEXIBLE ASSEMBLY OF INTEGRATED CIRCUITS

Earl R. Nicewarner, Jr., Gaithersburg, and Steven L. Frinak, Middletown, both of Md., assignors to Fairchild Space and Defense Corporation, Germantown, Md.
Division of Ser. No. 577,843, Dec. 22, 1995, Pat. No. 5,646,446. This application Jul. 2, 1997, Ser. No. 887,430
Int. Cl.⁶ H01L 21/60

U.S. Cl. 438—107

6 Claims



1. A method of manufacturing an integrated circuit package comprising the steps of:

- A. providing a flexible substrate with electrical connections for chips and having end portions;
- B. providing a plurality of chips having a back;
- C. connecting said plurality of chips to the electrical connections located on said flexible substrate;
- D. folding said flexible substrate in such a manner that said chips have their backs located adjacent to the back of another chip and end portions are located within or surrounded by other portions of said flexible substrate; and
- E. connecting the backs of said adjacently located chips together to form a combined flexible substrate and chips assembly.

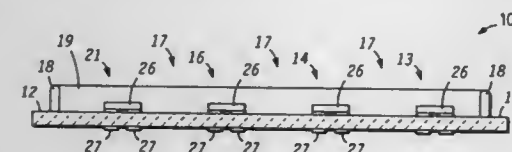
5,776,798

SEMICONDUCTOR PACKAGE AND METHOD THEREOF

Son Ky Quan, Fountain Hills; Samuel L. Coffman, Scottsdale; Bruce Reid, Mesa; Keith E. Nelson, Tempe, all of Ariz., and Deborah A. Hagen, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 4, 1996, Ser. No. 708,296
Int. Cl.⁶ H01L 21/44

U.S. Cl. 438—112

12 Claims



1. A method of forming a semiconductor package comprising:

forming a substrate having a plurality of package sites and an electronic component attached to the plurality of package sites; encapsulating the plurality of package sites wherein the encapsulating forms a continuous encapsulating material covering the plurality of package sites; and singulating through the encapsulating material to singulate each package site into an individual package.

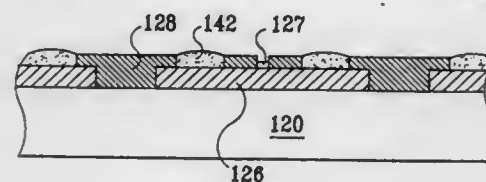
5,776,799

LEAD-ON-CHIP TYPE SEMICONDUCTOR CHIP PACKAGE USING AN ADHESIVE DEPOSITED ON CHIP ACTIVE SURFACES AT A WAFER LEVEL AND METHOD FOR MANUFACTURING SAME

Young-Jae Song, Seongnam; Jeong-Woo Seo, Suwon, and Kyung-Seop Kim, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Nov. 8, 1996, Ser. No. 745,358
Int. Cl.⁶ H01L 21/60

U.S. Cl. 438—118

16 Claims



1. A method for manufacturing a lead-on-chip type semiconductor chip package, said method comprising steps of:

- providing a wafer having an upper surface where a plurality of semiconductor chips are formed, each of said plurality of semiconductor chips having an active surface where a plurality of electrode pads are centrally disposed;
- depositing a protection layer on the upper surface of the wafer;
- depositing an insulating adhesive on lead attaching regions located at both sides of the centrally disposed electrode pads;
- separating said plurality of semiconductor chips from the wafer;
- performing a die bonding step for attaching an inner lead portion of a lead frame to the lead attaching regions by using the deposited insulating adhesive, said lead frame having leads for supporting the plurality of separated semiconductor chips and for electrically interconnecting the plurality of separated semiconductor chips to an external circuit device;
- electrically interconnecting the inner lead portion of the lead frame to the plurality of electrode pads of the separated semiconductor chip; and
- forming a protective package body.

5,776,800

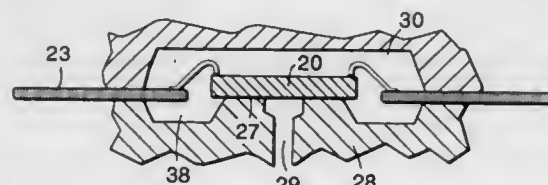
PADDLELESS MOLDED PLASTIC SEMICONDUCTOR CHIP PACKAGE

William Riis Hamburg, 4039 Manzanita La., Palo Alto, Calif. 94306; John Stuart Fitch, 36640 Sequoia Ct., Newark, Calif. 94560, and Yezdi Naval Dordi, 55B Upland Rd., Cambridge, Mass. 02140
Division of Ser. No. 269,294, Jun. 30, 1994, Pat. No. 5,604,376. This application Oct. 11, 1996, Ser. No. 730,536
Int. Cl.⁶ H01L 21/60

Filed Sep. 4, 1996, Ser. No. 708,296
Int. Cl.⁶ H01L 21/44

U.S. Cl. 438—122

13 Claims



1. A method of forming a molded semiconductor chip package, the method comprising the steps of:

positioning a semiconductor chip, having an active front side and a nonactive backside, within an opening of a lead frame; attaching bonding wires between the active front side of the semiconductor chip and bonding pads carried by the lead frame;

holding said semiconductor chip and said lead frame within a package mold by supporting the back side of said semiconductor chip; and

forming a molded body within said package mold to encase said semiconductor chip and said lead frame while leaving a substantial portion of the nonactive back side of said semiconductor chip exposed and facing outside the molded semiconductor chip package, said molded body including a stress relief feature which is a ring surrounding the outside edges of the semiconductor chip.

5,776,802

SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD OF THE SAME

Takao Ochi; Hisashi Funakoshi; Kenzo Hatada, and Takashi Wakabayashi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

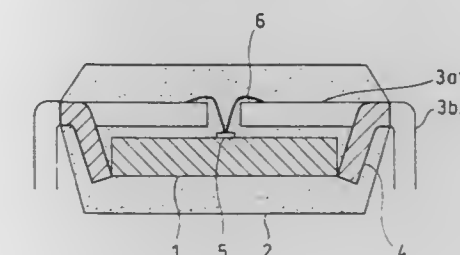
Continuation of Ser. No. 350,665, Dec. 7, 1994. This application Oct. 31, 1996, Ser. No. 741,555

Claims priority, application Japan, Dec. 8, 1993, 5-307932; Aug. 29, 1994, 6-203843

Int. Cl.⁶ H01L 21/60

U.S. Cl. 438—123

12 Claims



5,776,801

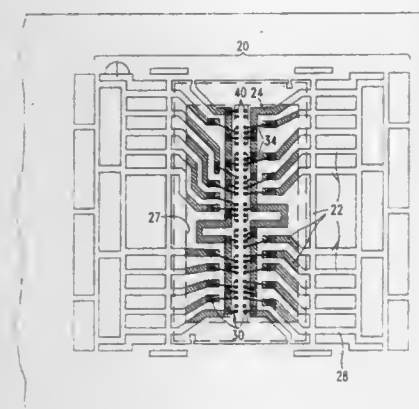
LEADFRAME HAVING CONTACT PADS DEFINED BY A POLYMER INSULATING FILM

James L. Carper, Colchester; Gary H. Irish, Jericho, both of Vt.; Sheldon C. Rieley, St. Thomas, Virgin Islands (U.S.); Robert M. Smith, Jericho, Vt., and Robert L. Jackson, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 366,633, Dec. 30, 1994, Pat. No. 5,608,260. This application Feb. 23, 1996, Ser. No. 606,513
Int. Cl.⁶ H01L 21/60

U.S. Cl. 438—123

14 Claims



1. A method of fabricating a semiconductor package comprising the steps of:

- (a) providing a leadframe having a first finger and a second finger, said second finger adjacent said first finger, a space being therebetween, a first portion of said fingers for encapsulation within the package;
- (b) coating said first portion with an insulating film, and providing an opening in said insulating film in one said first finger said insulating film being a polymer;
- (c) forming a contact metal in said opening to form a leadframe contact pad on said first finger, said insulating film protecting other regions of said first portion from said contact metal during said forming step; and

1. A method of manufacturing a semiconductor device comprising:

- (1) a first step of providing a lead frame having: a lead frame main body; a plurality of connecting leads each of which is composed of an outer lead extending inward from said lead frame main body and an inner lead extending inward from said outer lead, said outer lead extending inward from said outer lead serving as an electrode for external connection and said inner lead being electrically connected for providing an electrical connection with an electrode of a semiconductor chip; and a plurality of fixing leads for holding said semiconductor chip, each of said fixing leads being composed of a main portion extending inward from said lead frame main body and a distal end bent with elasticity against said main portion at a right angle and confronting another distal end extending from another main portion that confronts said main portion with a clearance that is slightly smaller than a corresponding size of said semiconductor chip, said fixing leads being supported elastically against said lead frame main body;

(2) a second step of:

- (2-1) expanding said mutually confronting distal ends of said fixing leads so that the clearance between said confronting distal ends becomes larger than the corresponding size of the semiconductor chip;
- (2-2) placing said semiconductor chip between said mutually confronting ends of said fixing ends; and
- (2-3) returning said confronting distal ends of said fixing ends,

whereby said semiconductor chip is clamped by said confronting distal ends with the aid of elasticity that each of said fixing leads has against said lead frame main body;

(3) a third step of molding said semiconductor chip, said connecting leads and said fixing leads with resin to form a resin package; and

(4) a fourth step of cutting said outer leads of said connecting leads and said fixing leads off said lead frame main body.

5,776,803

**MANUFACTURE OF ELECTRONIC DEVICES
COMPRISING THIN-FILM CIRCUITRY ON A POLYMER
SUBSTRATE**

Nigel D. Young, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

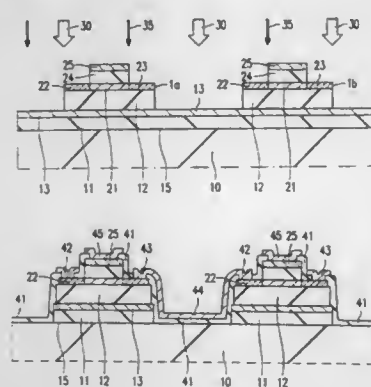
Filed Oct. 15, 1996, Ser. No. 731,626

Claims priority, application United Kingdom, Oct. 25, 1995, 9521855

Int. Cl.⁶ H01L 21/84

U.S. Cl. 438—149

11 Claims



1. A method of manufacturing an electronic device comprising thin-film circuitry formed with separate semiconductor islands, in which a semiconductor film is patterned into the separate semiconductor islands at a surface of a polymer substrate, and in which the semiconductor film is subjected to an energy beam treatment while masking the polymer substrate against exposure to the energy beam by means of a masking layer on a first insulating layer on said surface, characterised by the steps of:

- pre-shrinking the polymer substrate by prolonged heating at a temperature below the maximum usable temperature for the polymer material of the substrate,
- thereafter depositing sequentially the first insulating layer and the masking layer, the first insulating layer being deposited on the pre-shrunk polymer substrate at a lower temperature than the prolonged heating temperature of step (a), the masking layer being deposited on the first insulating layer as a continuous layer over the whole of said surface,
- subjecting the semiconductor film to the energy beam treatment while the masking layer is present as the continuous layer over the whole of said surface of the polymer substrate, and
- thereafter removing the masking layer and the first insulating layer from most of said surface of the polymer substrate except where the separate semiconductor islands of the semiconductor film are present.

5,776,804

**PROCESS OF FABRICATING SEMICONDUCTOR
DEVICE HAVING NON-SINGLE CRYSTAL THIN FILM
TRANSISTOR FREE FROM RESIDUAL HYDROGEN
LEFT THEREIN DURING HYDROGEN TREATMENT
STAGE**

Fumihiko Hayashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 25, 1996, Ser. No. 736,933

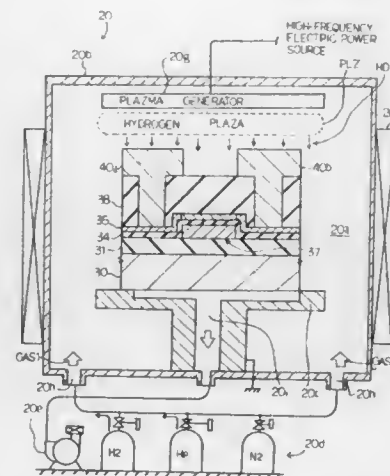
Claims priority, application Japan, Oct. 31, 1995, 7-282955

Int. Cl.⁶ H01L 21/00; 21/322

U.S. Cl. 438—162

13 Claims

1. A process of fabricating a semiconductor device, comprising the steps in sequence of:
- providing a structure having an upper surface covered with a first insulating layer;
 - fabricating a thin film transistor having a non-single crystal semiconductor layer on said first insulating layer;



- completing a semiconductor structure having at least a second insulating layer covering said thin film transistor;
- exposing said semiconductor structure to hydrogen ion radiated from plasma created from gaseous mixture containing hydrogen at 300 degrees to 400 degrees centigrade so as to deactivate trapping levels in said non-single crystal semiconductor layer; and
- evacuating residual hydrogen from said semiconductor structure except for said non-single crystal semiconductor layer at 200 degrees to 300 degrees centigrade.

5,776,805

METHOD FOR MANUFACTURING MESFET

Chang Tae Kim, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-Do, Rep. of Korea

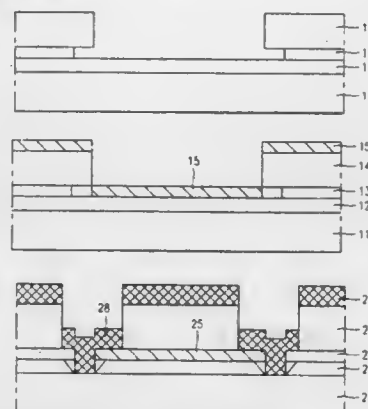
Filed Dec. 24, 1996, Ser. No. 772,834

Claims priority, application Rep. of Korea, Dec. 29, 1995, 1995-67257

Int. Cl.⁶ H01L 21/338; 21/28

U.S. Cl. 438—182

12 Claims



1. A method for manufacturing a MESFET, comprising the steps of:

- forming an n-type GaAs layer and a heavily doped n⁺-type GaAs layer on a substrate, sequentially;
- forming a first insulating layer on the heavily doped n⁺-type GaAs layer;
- forming a first photoresist layer having a first aperture on the first insulating layer;
- removing the first insulating layer of the first aperture so that the first insulating layer below both ends of the first photoresist layer is under-cut;
- forming a second insulating layer on the substrate in the first aperture to form a second aperture at each of under-cut portions and simultaneously removing the first photoresist layer;

- forming a third aperture in each of the second apertures and forming a second photoresist layer on the first and second insulating layers;
- removing the heavily doped n⁺-type GaAs layer in each of the second apertures to expose the n-type GaAs layer; and,
- forming a gate electrode in the second and third apertures to contact the n-type GaAs layer and simultaneously removing the second photoresist layer.

5,776,806

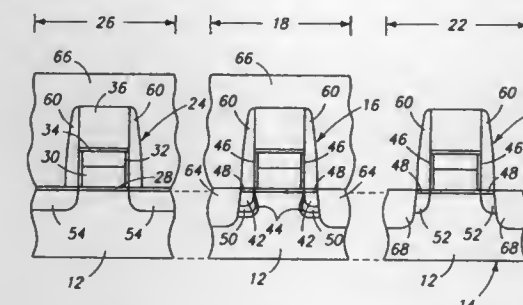
**METHOD OF FORMING CMOS INTEGRATED
CIRCUITRY HAVING HALO REGIONS**

Charles H. Dennison, Meridian, and Mark Helm, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id. Continuation of Ser. No. 631,249, Apr. 12, 1996, Pat. No. 5,683,927, which is a continuation of Ser. No. 503,419, Jul. 17, 1995, Pat. No. 5,534,449. This application May 30, 1997, Ser. No. 866,887

Int. Cl.⁶ H01L 21/8238

U.S. Cl. 438—199

5 Claims



1. A method of forming CMOS circuitry comprising:
- forming NMOS halo regions, NMOS LDD regions and NMOS source/drain regions;
 - forming PMOS halo regions and PMOS source/drain regions;
 - at least one maskless blanket doping step to form at least one of the NMOS regions and at least one of the PMOS regions; and
 - no more than two masking layer provision steps to collectively form the NMOS halo regions, the NMOS LDD regions, the NMOS source/drain regions, the PMOS halo regions, and the PMOS source/drain regions.

5,776,807

**METHOD FOR FABRICATING A TRIPLE WELL FOR
BICMOS DEVICES**

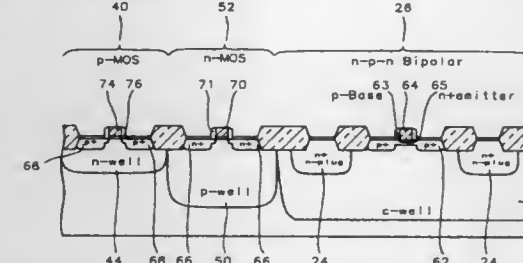
Hannu Ronkainen, Sovkantic, Finland, and Gao Minghui, Singapore, Singapore, assignors to Tritech Microelectronics, Ltd., Singapore, Singapore

Filed Aug. 13, 1997, Ser. No. 910,270

Int. Cl.⁶ H01L 21/8238

U.S. Cl. 438—202

13 Claims



1. A method of fabricating a collector well in a semiconductor device comprising:
- providing a substrate having c-well areas, N-well areas, and P-well areas, said substrate having n-plug doped regions in said c-well areas,

- growing a stress release oxide layer over said substrate,
- forming a first nitride layer over said stress release oxide layer,
- forming a C-well mask having C-well mask openings over C-well areas in said substrate,
- etching said first nitride layer through said C-well mask openings forming C-well nitride openings in said first nitride layer thereby exposing said n-plug regions,
- implanting impurities in said substrate through said C-well nitride openings forming C-well regions,
- removing said C-well mask,
- annealing said C-well regions,
- forming a n-well mask over said first nitride layer and said C-well regions, said n-well mask having n-well mask openings over said n-well areas;
- etching said first nitride layer using said n-well mask as a mask forming n-well nitride openings in said first nitride layer over N-well areas,
- implanting impurities through said n-well nitride openings forming n-well regions in said n-well area in said substrate, and
- removing said n-well mask.

5,776,808

**PAD STACK WITH A POLY SI ETCH STOP FOR TEOS
MASK REMOVAL WITH RIE**

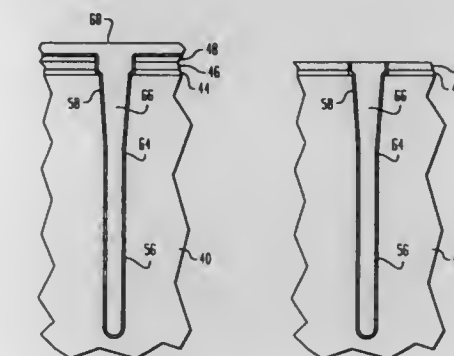
Karl Paul Muller, Wappinger Falls, N.Y.; Bernhard Poschenrieder, Saint-Cloud, France, and Klaus Roithner, Wappinger Falls, N.Y., assignors to Siemens Aktiengesellschaft, Munich, Germany, and International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1996, Ser. No. 777,156

Int. Cl.⁶ H01L 21/8242

U.S. Cl. 438—243

30 Claims



1. In device fabrication, a process for forming device structures, the process comprising:

- providing a substrate of semiconductor material;
- forming a mask on the substrate, the mask comprising a plurality of layers including a hard mask etch stop layer overlying the substrate, and a hard mask layer overlying the hard mask etch stop layer;
- patterning the mask to define a selected region on the substrate, the patterning forming edges of the plurality of layers of the mask within the selected region;
- removing a portion of the substrate in the selected region; and
- performing an anisotropic process to remove the portions of the hard mask layer that are not located in the selected region, the anisotropic process being selective to the hard mask etch stop layer to effectively prevent the removal of layers underlying the hard mask etch stop layer, at least part of the anisotropic process being performed when the edges of the plurality of layers of the mask are exposed.

5,776,809

METHOD FOR FORMING A CAPACITOR

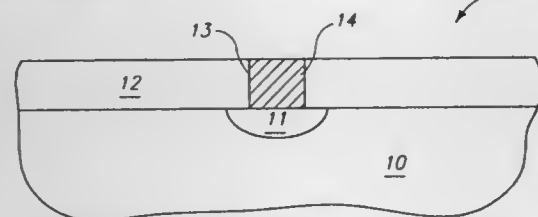
Klaus Florian Schuegraf, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 10, 1996, Ser. No. 660,847

Int. Cl.⁶ H01L 21/8242

U.S. Cl. 438—255

34 Claims



1. A method for forming a capacitor on a semiconductor substrate structure, comprising:

providing a generally amorphous silicon layer on the semiconductor structure, the silicon layer having an outermost surface;

determining the atomic smoothness of the outermost surface of the amorphous silicon layer, the absence of micrograins indicating that an atomically smooth outermost surface has been achieved;

providing a dielectric layer over the amorphous silicon layer, and wherein the step of providing the dielectric layer does not substantially decrease the atomic smoothness of the outermost surface of the amorphous silicon layer nor substantially change the amorphous silicon layer to a crystalline phase; after providing the dielectric layer, providing conditions effective to cause the amorphous silicon layer to become substantially polycrystalline and electrically conductive.

5,776,810

METHOD FOR FORMING EEPROM WITH SPLIT GATE SOURCE SIDE INJECTION

Daniel C. Guterman, Fremont; Gheorghe Samachisa, San Jose; Yupin Kawing Fong, Fremont, and Eliyabou Harari, Los Gatos, all of Calif., assignors to Sandisk Corporation, Sunnyvale, Calif.

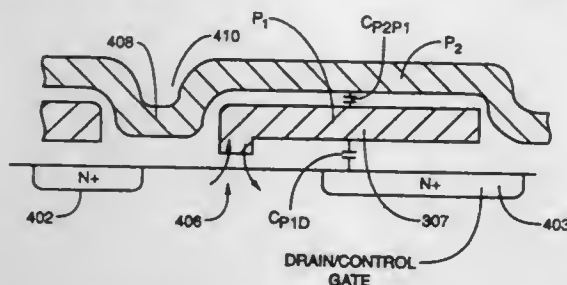
Division of Ser. No. 820,364, Jan. 14, 1992, Pat. No. 5,313,421.

This application Feb. 9, 1994, Ser. No. 193,707

Int. Cl.⁶ H01L 21/336

U.S. Cl. 438—258

3 Claims



1. A method for forming a semiconductor structure comprising the steps of:

forming in a semiconductor substrate of a first conductivity type a plurality of spaced apart strips of doped regions of a second conductivity type opposite said first conductivity type and running in a first direction;

forming a first gate oxide above said semiconductor substrate;

forming a first patterned polycrystalline silicon layer on said first gate oxide as a plurality of strips extending in said first direction, said step of forming said first patterned polycrystalline silicon layer comprising the steps of:

forming a first sublayer of said first polycrystalline silicon layer; patterning said first sublayer of said first polycrystalline silicon layer to define its lateral extent;

forming a tunnel oxide at a desired location adjacent said first sublayer of said first polycrystalline silicon layers; and forming a second sublayer of said first polycrystalline silicon layer above said tunnel oxide, said second sublayer being connected to said patterned first sublayer of said first polycrystalline silicon layer;

forming a first dielectric layer on said first polycrystalline silicon layer;

forming a second gate oxide above the channel regions of a plurality of select transistors; and

forming a second patterned layer of conductive material above said second gate oxide and overlying said first polycrystalline silicon layer as a plurality of strips extending in a second direction generally perpendicular to said first direction, said second layer of conductive material serving as both a plurality of control gates of a plurality of memory cell transistors and gate electrodes of a plurality of corresponding select transistors.

5,776,811

SIMPLIFIED PROCESS FOR FABRICATING FLASH EEPROM CELLS

Hsingya Arthur Wang, Saratoga; Jian Chen, San Jose, and Paul J. Steffan, Elk Grove, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

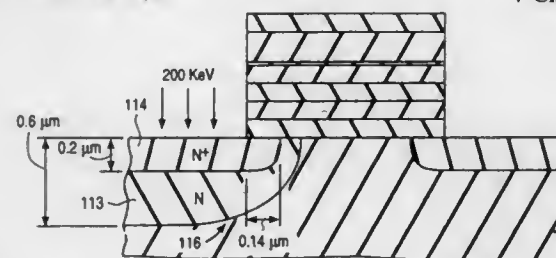
Division of Ser. No. 480,876, Jun. 7, 1995, abandoned. This

application Jan. 4, 1996, Ser. No. 582,720

Int. Cl.⁶ H01L 21/8247

U.S. Cl. 438—264

7 Claims



1. A process of forming a semiconductor device on a wafer, comprising the steps of:

(a) forming a plurality of layers of semiconductor material on said wafer, said plurality of layers providing a floating gate and a control gate;

(b) implanting a shallow source junction on said wafer by diffusing a first dopant into the substrate, said shallow source junction having a surface;

(c) oxidizing the surface of said shallow source junction directly subsequent to step (b); and

(d) implanting a high energy double diffuse source junction on said wafer by diffusing a second dopant into the substrate directly subsequent to step (c), said double diffuse source junction including said shallow source junction and a deep source junction below said shallow source junction.

5,776,812

MANUFACTURING METHOD OF SEMICONDUCTOR DEVICE

Shigeki Takahashi, Okazaki; Mitsuhiro Kataoka, Kariya; Tsuyoshi Yamamoto, Chiryu; Yuuchi Takeuchi, Chita-gun, and Norihito Tokura, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 30, 1995, Ser. No. 413,410

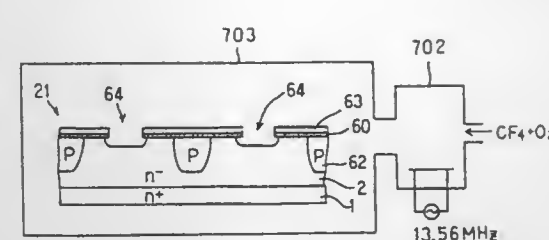
Claims priority, application Japan, Mar. 30, 1994, 6-060693; Mar. 31, 1994, 6-062448; Mar. 31, 1994, 6-063220; Sep. 9, 1994, 6-215769; Dec. 27, 1994, 6-324694

Int. Cl.⁶ H01L 21/336

U.S. Cl. 438—268

57 Claims

1. A method of manufacturing a semiconductor device comprising steps of:



providing a semiconductor layer disposed on a semiconductor substrate;

forming a mask having an opening part within a specified region on a main surface of the semiconductor layer;

generating plasma within a plasma generation chamber containing an etching gas to form a chemically active etching gas, the plasma generation chamber being physically separated from a reaction chamber in which the semiconductor substrate and the semiconductor layer are disposed;

introducing the chemically active etching gas into the reaction chamber by transporting the chemically active gas from the plasma generation chamber to the reaction chamber via a passageway between the plasma generation chamber and the reaction chamber, the chemically active gas performing a chemical dry etching process to define a groove in the semiconductor layer, the groove including:

an inlet part wider than the opening part of the mask, a bottom surface generally parallel to the main surface, and a side surface connecting the inlet part and the bottom surface;

forming an oxide film to a specified thickness on the bottom surface and the side surface of the groove by oxidizing a region of the semiconductor layer including the groove;

performing an impurity introduction process comprising the steps of:

forming a base layer of a second conductivity type within the semiconductor layer by introducing impurities of the second conductivity type, from the main surface including the surface of the semiconductor layer adjacent to the oxide film,

forming a source layer of the first conductivity type within the base layer by introducing impurities of the first conductivity type from the main surface, and

forming a channel region at a surface of a side wall of the base layer concurrently with the step of forming the source layer;

performing a wet etching process to remove the oxide film; and

performing an electrode formation process including steps of:

forming a gate electrode at least on a surface of the groove between the source layer and the semiconductor layer with a gate insulating film interposed therebetween,

forming a source electrode which contacts the source layer and the base layer electrically, and forming a drain electrode which contacts the semiconductor substrate electrically.

5,776,813

PROCESS TO MANUFACTURE A VERTICAL GATE-ENHANCED BIPOLAR TRANSISTOR

Tzuen-Hsi Huang, Tou Liu, and Chwan-Ying Lee, Tainan, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 6, 1997, Ser. No. 944,574

Int. Cl.⁶ H01L 21/265

U.S. Cl. 438—309

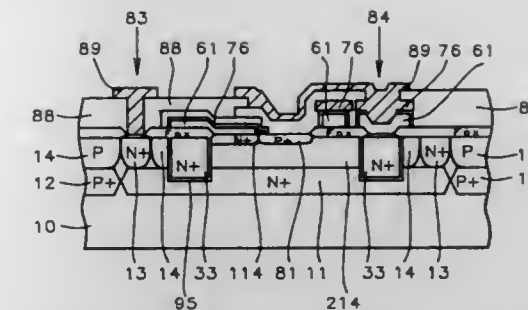
21 Claims

1. A process for manufacturing a gate-enhanced bipolar transistor, comprising the sequential steps of:

providing a silicon body having an upper surface;

by means of ion implantation, forming N⁺ and P⁺ buried layer regions, located a distance below said upper surface;

depositing a layer of epitaxial silicon on said upper surface;



by means of ion implantation followed by thermal drive-in, forming N-type collector sink and P-well regions that extend from said upper surface to said buried layer regions;

growing a first layer of silicon oxide on said upper surface;

depositing a first layer of silicon nitride on the first layer of silicon oxide;

depositing a second layer of silicon oxide on said first layer of silicon nitride;

anisotropically etching a trench, having the shape of a hollow square, located within said P-well region and having an inside surface, to a depth such that the trench extends through the second layer of silicon oxide, the first layer of silicon nitride, the first layer of silicon oxide, and the P-well region, and partially through the N⁺ buried layer;

growing a third layer of silicon oxide on the trench's inside surface;

filling the trench with N⁺ polysilicon, thereby forming a gate electrode;

growing a fourth layer of silicon oxide on the N⁺ polysilicon, said fourth oxide layer being thicker than said second oxide layer;

removing the second layer of silicon oxide and the first layer of silicon nitride, thereby exposing the first layer of silicon oxide;

depositing a second layer of silicon nitride on the first and fourth layers of silicon oxide;

selectively etching the second layer of silicon nitride;

increasing the thickness of said first and fourth layers of silicon oxide, wherever they are not covered by silicon nitride, thereby forming regions of field oxide;

removing said second layer of silicon nitride and the oxide layer that is immediately beneath it, thereby exposing said upper surface wherever it is not covered by field oxide;

depositing a first layer of undoped polysilicon;

implanting arsenic ions, said ions having a range of energies such that the layer of undoped polysilicon is transformed into a layer of N-type polysilicon;

depositing a fifth silicon oxide layer on said layer of N-type polysilicon;

depositing a third layer of silicon nitride on said fifth silicon oxide layer;

patterning and etching the fifth silicon oxide layer and the third silicon nitride layer in an area located inside the hollow square, thereby forming a base window opening mask;

growing a sixth silicon oxide layer on both sides of the N-type polysilicon layer and the exposed upper surface;

depositing a fourth layer of silicon nitride;

depositing a second polysilicon layer;

anisotropically etching said layers of polysilicon and silicon nitride until the sixth silicon oxide layer is exposed, thereby forming self-aligned spacers;

lightly etching exposed portions of the sixth silicon oxide layer, thereby forming a fully opened base window;

depositing a third layer of polysilicon;

implanting boron ions, said ions having a range of energies such that said third layer of polysilicon is converted to P type;

patterning and etching the third layer of polysilicon so as to define circuit connections and then heating it so that boron ions are driven into the silicon at the base window opening, thereby forming a P⁺ base contact;

depositing a layer of low temperature oxide over all exposed surfaces;

heating the silicon body to a sufficient extent as to cause the low temperature oxide layer to flow, thereby providing for improved planarity;
etching contact holes through said layer of low temperature oxide, said fourth layer of silicon nitride, and said fifth layer of silicon oxide; and
depositing and then selectively etching a metal layer to form wiring that contacts the gate, the base window opening, the emitter, and the N-type collector sink.

5,776,814

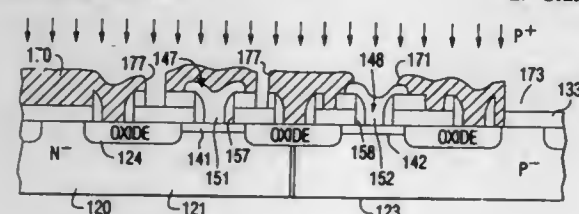
PROCESS FOR DOPING TWO LEVELS OF A DOUBLE POLY BIPOLAR TRANSISTOR AFTER FORMATION OF SECOND POLY LAYER

James D. Beasom, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 405,660, Mar. 17, 1995, Pat. No. 5,614,422. This application Jan. 3, 1997, Ser. No. 775,360 Int. Cl.⁶ H01L 21/331

U.S. Cl. 438—364

29 Claims



1. A method of manufacturing a semiconductor device comprising the steps of:

- selectively forming a first layer on a surface of a second layer of semiconductor material, so as to leave a surface area region of said second layer exposed by an aperture through said first layer, said first layer containing material having a diffusion coefficient for impurities at least an order of magnitude greater than that of said second layer;
- forming a third layer, of semiconductor material, in said aperture and upon said surface area region of said second layer; and
- after the formation of said third layer upon said surface area region of said second layer in step (b), doping said first layer with conductivity type determining impurities.

5,776,815

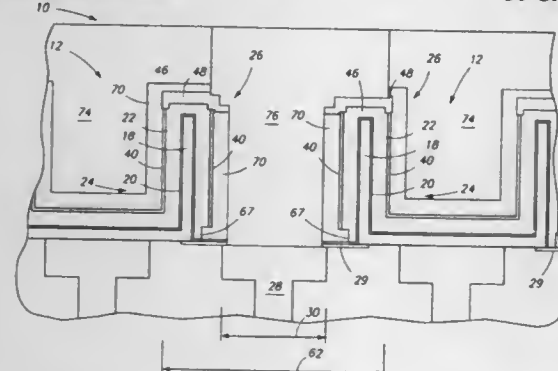
METHOD FOR FORMING A CONTACT INTERMEDIATE TWO ADJACENT ELECTRICAL COMPONENTS

Pai-Hung Pan, and Thomas Arthur Figura, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Sep. 1, 1995, Ser. No. 523,072 Int. Cl.⁶ H01L 21/20

U.S. Cl. 438—396

30 Claims



5,776,819

DEPOSITION OF DEVICE QUALITY, LOW HYDROGEN CONTENT, AMORPHOUS SILICON FILMS BY HOT FILAMENT TECHNIQUE USING "SAFE" SILICON SOURCE GAS

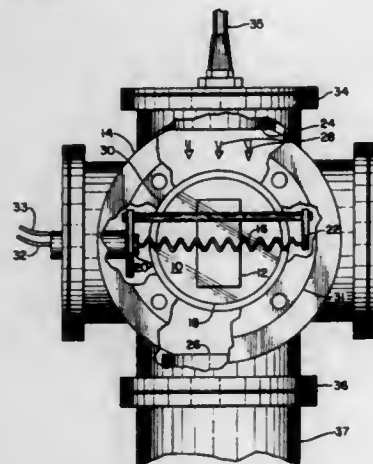
Archie Harvin Mahan, Golden; Edith C. Molenbroek, Boulder, and Brent P. Nelson, Golden, all of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Continuation-in-part of Ser. No. 878,585, May 5, 1992, abandoned. This application May 25, 1994, Ser. No. 222,720

Int. Cl.⁶ H01L 21/203

U.S. Cl. 438—482

7 Claims



1. A method of producing hydrogenated amorphous silicon on a substrate, comprising the steps of:

positioning the substrate in a deposition chamber at a distance of about 1 to 7 cm from a heatable filament in the deposition chamber;

maintaining a pressure in said deposition chamber in the range of about 60 to 300 millitorr, heating the filament to a temperature in the range of about 1,800° to 2,100° C., and heating the substrate to a surface temperature in the range of about 200° to 400° C.; and

flowing a stream of gas mixture from a source comprising less than one percent (1%) silicohydride gas and more than ninety-nine percent (99%) inert gas into contact with said heated filament to decompose said silicohydride gas into silicon and hydrogen atomic species and allowing said silicon and hydrogen atomic species to migrate to and deposit on said substrate while adjusting and maintaining said pressure in said deposition chamber at a value in relation to the distance between said filament and said substrate that produces statistically about 5 to 100 atomic collisions among the silicon and hydrogen species migrating to said substrate and undecomposed molecules of the silicohydride gas or inert gas in the deposition chamber.

5,776,820

METHOD OF FORMING A HIGH-FREQUENCY TRANSISTOR T GATE ELECTRODE

Tomoyuki Kamiyama, and Yamato Ishikawa, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1996, Ser. No. 588,636

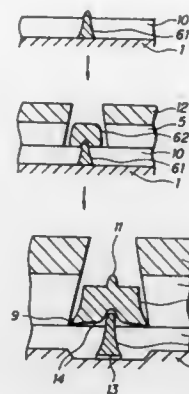
Claims priority, application Japan, Jan. 30, 1995, 7-048940

Int. Cl.⁶ H01L 21/28

U.S. Cl. 438—574

5 Claims

1. A method of forming a T gate electrode of a high-frequency transistor comprising the steps of: forming a first resist pattern having a first opening on a semiconductor substrate and forming a leg portion of the electrode in the first opening by depositing electrode metal on the substrate within the first opening; removing the first resist pattern and deposited electrode metal on the first resist pattern; forming a resist layer on said substrate and said leg



portion of the electrode; etching a portion of said resist layer to expose a tip of said leg portion of the electrode; forming a second resist pattern having a second opening wider than said first opening over the electrode leg portion for locating said exposed tip of the electrode leg portion in the bottom of the second opening and forming a head portion of the electrode by depositing electrode metal in the second opening; etching the head portion for removing a protrusion formed on the head portion; and removing the second resist pattern to form the T gate electrode.

5,776,821

METHOD FOR FORMING A REDUCED WIDTH GATE ELECTRODE

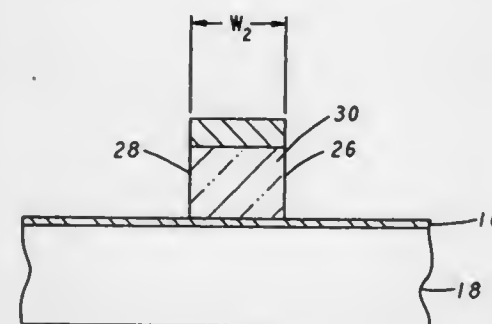
Jacob Haskell, Palo Alto; Satyendra Sethi, Pleasanton, and Calvin Todd Gabriel, Cupertino, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Aug. 22, 1997, Ser. No. 916,696

Int. Cl.⁶ H01L 21/3205

U.S. Cl. 438—585

26 Claims



1. A method, comprising:

providing a semiconductor substrate with an insulating layer and a conductive layer deposited on the insulating layer, the conductive layer having a first non-zero thickness;

applying a mask having a first transistor electrode width to the conductive layer;

etching the conductive layer to reduce an unmasked region of the conductive layer to a second non-zero thickness less than the first non-zero thickness and to define a conductive layer side wall corresponding to the mask;

forming an oxide layer by consuming a portion of the conductive layer side wall;

removing the oxide layer; and

etching the conductive layer to define a transistor electrode having a second width less than the first width after said removing.

5,776,822

METHOD FOR FABRICATING SEMICONDUCTOR DEVICE HAVING TITANIUM SILICIDE FILM

Kunihiro Fujii, and Hiroshi Ito, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 582,343, Jan. 19, 1996, abandoned.

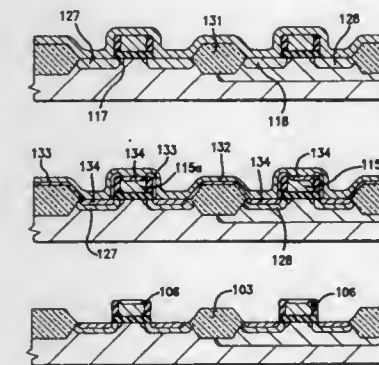
This application Jan. 23, 1997, Ser. No. 785,279

Claims priority, application Japan, Jan. 30, 1995, 7-013149

Int. Cl.⁶ H01L 21/28

U.S. Cl. 438—586

21 Claims



1. A method for producing a semiconductor device comprising the steps of: forming a field oxide film in an element separating region on the surface of a silicon substrate having a region of one conductivity type; forming a gate oxide film in an element forming region on the surface of said silicon substrate; forming a polycrystalline silicon film pattern in a region on the surface of said silicon substrate where a gate electrode is formed; forming a side-wall spacer consisting of an insulating film on the side wall of said polycrystalline silicon film pattern; forming a diffusion layer of an opposite conductivity type and self-aligned with said side-wall spacer on the surface of said region of one conductivity type; forming a titanium film over the surface of said field oxide film, said polycrystalline silicon film pattern, said diffusion layer, and said sidewall spacer; forming a titanium disilicide film of the C49 structure selectively on an upper surface of said polycrystalline silicon pattern and a surface of said diffusion layer of the opposite conductivity type by a first rapid thermal annealing in a nitrogen atmosphere; removing a titanium nitride film by a first wet etching; converting said titanium disilicide film of the C49 structure to a titanium disilicide film of the C54 structure by a second rapid thermal annealing; and selectively removing a titanium silicide film formed on the surface of said field oxide film and the surface of said side-wall spacer by a second wet etching after said converting step.

5,776,823

TASIN OXYGEN DIFFUSION BARRIER IN MULTILAYER STRUCTURES

Paul David Agnello, Wappingers Falls; Cyril Cabral, Jr., Ossining; Alfred Grill, White Plains; Christopher Vincent Jahnes, Monsey; Thomas John Licata, Lagrangeville, and Ronnen Andrew Roy, Briarcliff Manor, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 371,627, Jan. 12, 1995, Pat. No. 5,576,579.

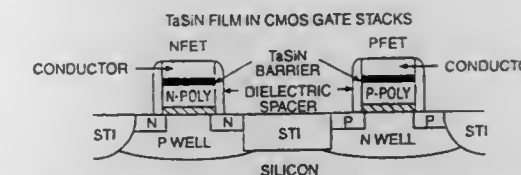
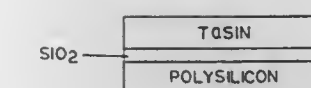
This application May 8, 1996, Ser. No. 646,583

Int. Cl.⁶ H01L 21/28

U.S. Cl. 438—592

6 Claims

1. A method of preventing oxidation of a silicon substrate in a semiconductor device comprising the step of depositing a diffusion barrier layer of refractory metal-silicon-nitrogen film between said silicon structure and an oxygen source, wherein said deposition step for the diffusion barrier layer further comprises the deposition



of alternating refractory metal-nitrogen and silicon-nitrogen sub-layers each having a thickness of not more than 10 nm.

5,776,824

METHOD FOR PRODUCING LAMINATED FILM/METAL STRUCTURES FOR KNOWN GOOD DIE ("KGD") APPLICATIONS

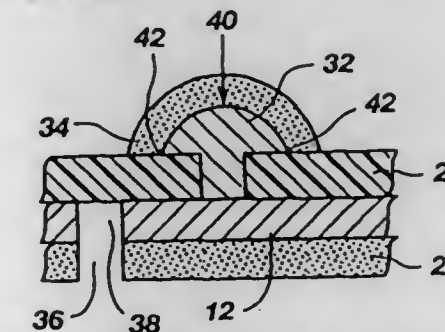
Warren M. Farnworth, Nampa, and David R. Hembree, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Dec. 22, 1995, Ser. No. 577,187

Int. Cl.⁶ H01L 21/441

U.S. Cl. 438—614

18 Claims



1. A method of producing a substrate, said substrate including a plurality of circuit traces laminated to a nonconductive film and including conductive contact bumps for making contact with bond pads of a semiconductor die, said contact bumps in electrical contact with said circuit traces through said film and protruding above said film on the opposite side thereof from said circuit traces, comprising:

laminating an electrically conductive sheet to said nonconductive film;

forming said contact bumps over and through said nonconductive film onto said conductive sheet; applying a coating of resist over said contact bumps; and

subtractively forming said circuit traces after forming said contact bumps.

5,776,825

METHOD FOR FORMING A SEMICONDUCTOR DEVICE HAVING REDUCED STEPPED PORTIONS

Toshifumi Suganaga, and Eiichi Ishikawa, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 632,193, Apr. 15, 1996, abandoned, which is a division of Ser. No. 397,341, Mar. 2, 1995, Pat. No. 5,539,231. This application Jun. 5, 1997, Ser. No. 870,233

Claims priority, application Japan, Jul. 11, 1994, 6-158779

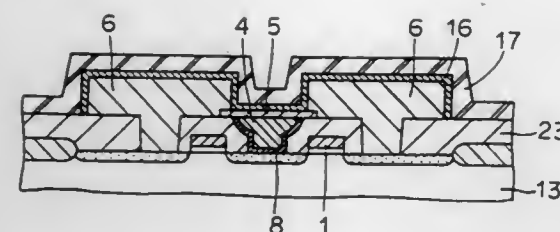
Int. Cl.⁶ H01L 21/44

U.S. Cl. 438—618

11 Claims

7. A method of manufacturing a semiconductor device, comprising the steps of:

forming a first conductive layer and a second conductive layer apart from each other on a surface of a semiconductor substrate;



forming an interlayer insulating film on said semiconductor substrate;

forming in said interlayer insulating film a first contact hole exposing a surface of said first conductive layer and a second contact hole for exposing a surface of said second conductive layer;

forming on said semiconductor substrate a buried first interconnection layer to be connected to said first conductive layer, the position of the surface of said buried first interconnection layer is the same as or lower than the position of the surface of said interlayer insulating film;

covering the surface of said buried first interconnection layer with an insulating film;

forming on said interlayer insulating film a second interconnection layer to be connected to said second conductive layer through said second contact hole.

5,776,826

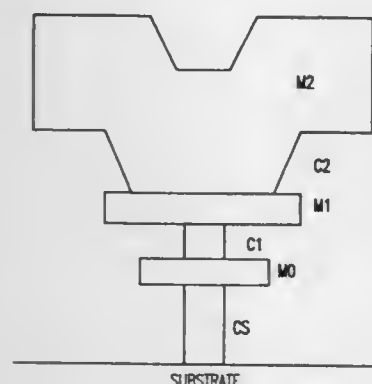
CRACK STOP FORMATION FOR HIGH-PRODUCTIVITY PROCESSES

Alexander Mitwalsky, Dutchess County, N.Y., and James Gardner Ryan, Newtown, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 6, 1996, Ser. No. 642,983

Int. Cl.⁶ H05K 3/06

U.S. Cl. 438—622



1. A method of forming a crack stop in high-productivity manufacture of integrated circuit chips on a wafer substrate comprising the step of creating a metal stack line along a crack stop line, said metal stack line comprising a lower level metallization reaching from the wafer substrate to an upper metallization level and including contact and via levels preformed as connected lines, said metal stack line defining a line between a dicing channel and chip areas of the integrated circuit chips.

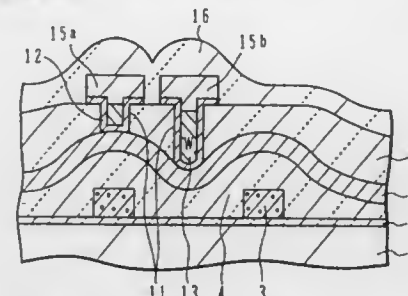
5,776,827
WIRING-FORMING METHOD
Satoshi Hibino, and Tetsuya Kuwajima, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation-in-part of Ser. No. 296,022, Aug. 25, 1994, Pat. No. 5,529,955. This application May 2, 1996, Ser. No. 643,044
Claims priority, application Japan, Aug. 27, 1993, 5-213239; Jul. 15, 1994, 6-164349

Int. Cl.⁶ H01L 21/44

U.S. Cl. 438—627

19 Claims



1. A wiring-forming method comprising:
forming an insulating layer covering an underlying layer including a contact portion exposed to an upper surface;
forming a contact hole in said insulating layer at a position registered with said contact portion;
sputtering at least one adhesion layer on the surface of said contact portion exposed in said contact hole and said insulating layer;
depositing a blanket tungsten layer on said adhesion layer by CVD;
etching the whole surface of said blanket tungsten layer until a small gap is formed at an upper end portion of the contact hole, to leave a tungsten film only in the inside of said contact hole; and
forming a wiring layer on the whole surface of said insulating layer and the inside of the contact hole filled with said tungsten film by reflow-sputtering said wiring layer.

5,776,828

REDUCED RC DELAY BETWEEN ADJACENT SUBSTRATE WIRING LINES

John H. Givens, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

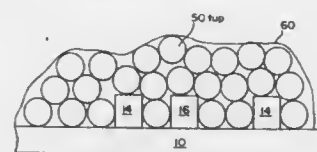
Continuation of Ser. No. 550,916, Oct. 31, 1995, abandoned.

This application Oct. 1, 1996, Ser. No. 724,319

Int. Cl.⁶ H01L 21/4763

U.S. Cl. 438—631

6 Claims



1. A method for controllably-defining a void in spacing between adjacent wiring lines of a semiconductor substrate, comprising the steps of:

applying a plurality of discrete hollow objects to the spacing, each one of the plurality of objects comprising a first material and defining a void;

removing said objects from areas other than the spacing; and

depositing second material over the wiring lines and plurality of objects.

5,776,829

METHOD FOR FORMING MULTILEVEL INTERCONNECTIONS IN A SEMICONDUCTOR DEVICE

Tetsuya Homma, and Makoto Sekine, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

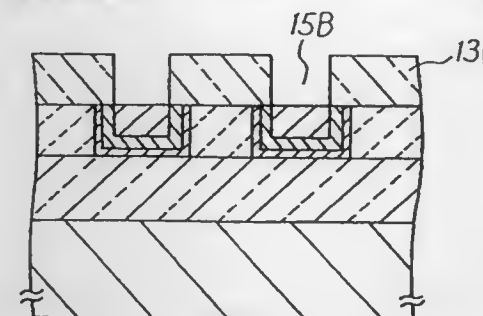
Filed Nov. 22, 1995, Ser. No. 561,881

Claims priority, application Japan, Nov. 22, 1994, 6-287741

Int. Cl.⁶ H01L 21/441

U.S. Cl. 438—641

4 Claims



1. A method for forming multilevel interconnections in a semiconductor device, comprising the sequential steps of:
forming a first silicon oxide film on a semiconductor substrate;
forming a first photo-resist film pattern on the first silicon oxide film;
exposing the surface of the silicon oxide film not covered with the photo-resist film pattern to a super-saturated hydrosilicofluoric acid solution to selectively deposit a first fluoro-containing silicon oxide film on the silicon oxide film using the first photo-resist film pattern as a mask;
removing the first photo-resist film pattern to form first grooves in the fluoro-containing silicon oxide film;
forming a first metal film extending within said first grooves and over said first fluoro-containing silicon oxide film;
subjecting said first metal film to a first chemical and mechanical polishing to leave said metal film only within said first grooves so that a remaining first metal film has a top surface at a same level as a top surface of said first fluoro-containing silicon oxide film to form a first flat top surface of said substrate;
forming a second silicon oxide film on the first flat top surface of device; said substrate;
selectively forming a second photo-resist film pattern on said second silicon oxide film;
exposing an entire surface of the device covered with the second photo-resist film pattern to a super-saturated hydrosilicofluoric acid solution to selectively deposit a second fluoro-containing silicon oxide film on the second silicon oxide film using the second photo-resist film pattern as a mask;
removing the second photo-resist film pattern to form second grooves in the second fluoro-containing silicon oxide film;
removing the second silicon oxide film from within the second grooves;
forming a second metal film extending within said second grooves and over said second fluoro-containing silicon oxide film;
subjecting said second metal film to a second chemical and mechanical polishing to leave said second metal film only within said second grooves so that a remaining second metal film has a top surface at a same level as a top surface of said second fluoro-containing silicon oxide film to form a second flat top surface of said substrate;
selectively forming a third photo-resist film pattern on said second fluoro-containing silicon oxide film;
exposing an entire surface of the device covered with the third photo-resist film pattern to a super-saturated hydrosilicofluoric acid solution to selectively deposit a third fluoro-

containing silicon oxide film on the second fluoro-containing silicon oxide film using the third photoresist film pattern as a mask;

removing the third photo-resist film pattern to form third grooves in the third fluoro-containing silicon oxide film;
forming a third metal film extending within said third grooves and over said third fluoro-containing silicon oxide film; and
subjecting said third metal film to a third chemical and mechanical polishing to leave said third metal film only within said third grooves so that a remaining third metal film has a top surface at a same level as a top surface of said third fluoro-containing silicon oxide film to form a third flat top surface of said substrate.

5,776,830

PROCESS FOR FABRICATING CONNECTION STRUCTURES

Hirofumi Sumi; Keiichi Maeda; Yukiyasu Sugano; Kazuhide Koyama, all of Kanagawa; Mitsuru Taguchi, Tokyo, and Kazuhiro Hoshino, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

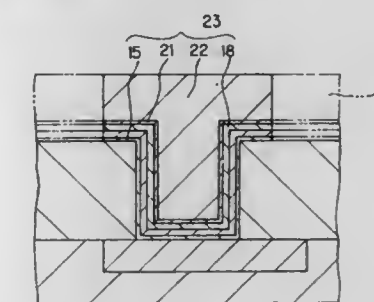
Continuation of Ser. No. 654,755, May 29, 1996, abandoned, which is a continuation of Ser. No. 480,951, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 205,246, Mar. 3, 1994, abandoned. This application Oct. 9, 1997, Ser. No. 947,704

Claims priority, application Japan, Mar. 5, 1993, 5-070957

Int. Cl.⁶ H01L 21/283

U.S. Cl. 438—643

3 Claims



1. A process for fabricating a connection structure for a semiconductor, wherein the semiconductor provides a contact hole through an insulator film to a semiconductor substrate, having an anti-reaction layer formed on side walls and a bottom of said contact hole, consisting of the steps of:

depositing a first anti-reaction layer onto said semiconductor substrate within said contact hole by using a film deposition process including generating a plasma;

temporarily ceasing the generating of the plasma;

resuming the generating of the plasma again, without changing deposition process conditions to define the first anti-reaction layer having a first pattern of grain boundaries to form a second anti-reaction layer on the surface of the previously deposited first anti-reaction layer having a second pattern of grain boundaries discontinuous from said first pattern; and then

subjecting the first and second anti-reaction layers to heat treatment which is performed under an inert gas atmosphere containing oxygen or in air only after the deposition of the second anti-reaction layer.

5,776,831

METHOD OF FORMING A HIGH ELECTROMIGRATION RESISTANT METALLIZATION SYSTEM

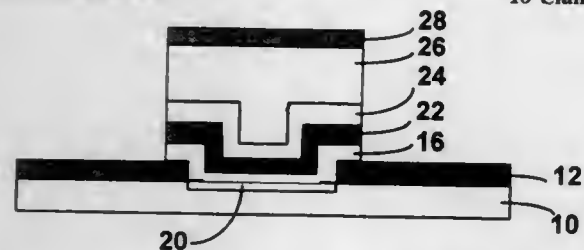
Gobi R. Padmanabhan, Sunnyvale, and Prabhakar P. Tripathi, Santa Clara, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Dec. 27, 1995, Ser. No. 578,118

Int. Cl.⁶ H01L 21/283

U.S. Cl. 438—653

18 Claims



1. A method of forming a multiple layer metallization system for making ohmic contact to a silicon surface, comprising:

- depositing a first layer of titanium over the silicon surface,
- annealing the first titanium layer in a nitrogen bearing atmosphere to convert a first portion of the first titanium layer which is adjacent the silicon surface to a titanium silicide layer, and to convert a second portion of the first titanium layer which is exposed to the nitrogen bearing atmosphere to a first titanium nitride layer with a (111) orientation,
- depositing a second titanium nitride layer with a (200) orientation over the first titanium nitride layer,
- depositing a second titanium layer with a (002) orientation over the second titanium nitride layer,
- depositing an aluminum or aluminum alloy layer with a (111) orientation over the second titanium layer, and
- depositing a third titanium nitride layer over the aluminum or aluminum alloy layer.

5,776,832

ANTI-CORROSION ETCH PROCESS FOR ETCHING METAL INTERCONNECTIONS EXTENDING OVER AND WITHIN CONTACT OPENINGS

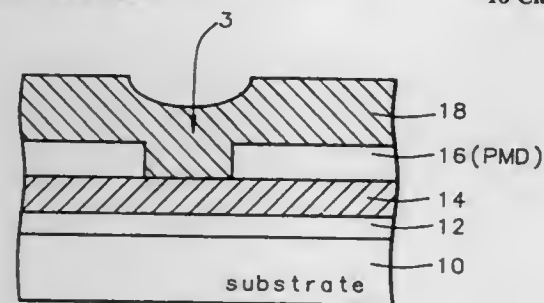
Chia-Dar Hsieh, Tainan; Yun-Hung Shen, Taipei; Sheng-Liang Pan, Hsin-Chu, and Jen Song Liu, Taipei, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Jul. 17, 1996, Ser. No. 682,481

Int. Cl.⁶ H01L 21/31

U.S. Cl. 438—669

18 Claims



1. A method for anti-corrosion plasma etching of metal interconnections for integrated circuits comprising the steps of:

- providing a semiconductor substrate having a patterned polysilicon layer forming in part semiconductor devices and interconnections on said substrate;
- depositing an insulating layer on said patterned polysilicon layer thereby forming a polysilicon/metal dielectric (PMD) layer;
- etching contact openings in said insulating layer to said patterned polysilicon layer;
- depositing a conformal metal layer over said insulating layer;
- patterning said metal layer using a photoresist mask and anisotropic plasma etching in an etching chamber using chlorine-

containing gas thereby forming inter-connecting lines extending over and into said contact openings making contact to said patterned polysilicon layer; and further, in situ oxygen ashing at zero substrate bias in said etching chamber immediately after said patterning of said metal layer and prior to removing said substrate from said etching chamber, thereby passivating said metal interconnections by removing chlorine residue and removing residual polymers on said patterned metal sidewalls and further making removal of said photoresist masking easier in a solvent stripping process.

5,776,833

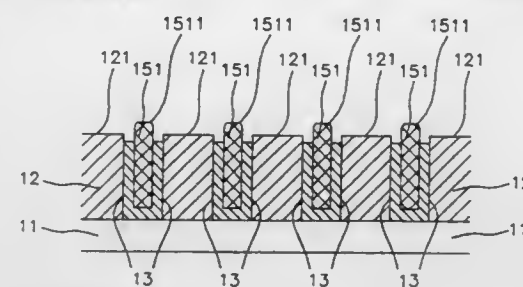
METHOD FOR FORMING METAL PLUG
Hsi-Chieh Chen; Champion Yi, both of Chu Tung Town; Pel-Jan Wang, and Yeong-Ruey Shue, both of Hsin Chu, all of Taiwan, assignors to Mosel Vitelic Inc., Hsin Chu, Taiwan

Filed Sep. 4, 1996, Ser. No. 707,758

Int. Cl.⁶ H01L 21/44

U.S. Cl. 438—672

22 Claims



- A method for forming a metal plug, comprising:
- forming a metal contact window in a substrate having an oxide layer,
- forming a barrier layer having a top surface portion covering a top surface of said oxide layer and a wall portion covering a wall defining said metal contact window;
- forming a metal layer having a first portion covering said top surface portion of said barrier layer and a second portion filling up said metal contact window to form a metal plug;
- chemical mechanical polishing said metal layer until said first portion of said metal layer is removed and said top surface portion of said barrier layer is exposed; and
- etching said barrier layer to remove said top surface portion of said barrier layer wherein a side portion of said metal plug is exposed and protrudes above said top surface of said oxide layer, and to remove a portion of said wall portion of said barrier layer below said top surface of said oxide layer.

5,776,834

BIAS PLASMA DEPOSITION FOR SELECTIVE LOW DIELECTRIC INSULATION

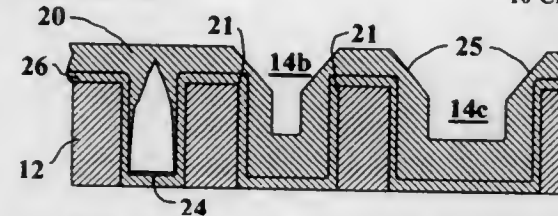
Steven Avanzino, Cupertino; Darrell M. Erb, Los Altos; Robin Cheung, Cupertino; Rich Klein, Mountain View, and Pervaiz Sultan, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 7, 1995, Ser. No. 478,315

Int. Cl.⁶ H01L 21/471

U.S. Cl. 438—692

10 Claims



1. A method of depositing silicon containing insulating material on a patterned surface of conductive lines separated by gaps on a

5,776,836

SELF ALIGNED METHOD TO DEFINE FEATURES SMALLER THAN THE RESOLUTION LIMIT OF A PHOTOLITHOGRAPHY SYSTEM

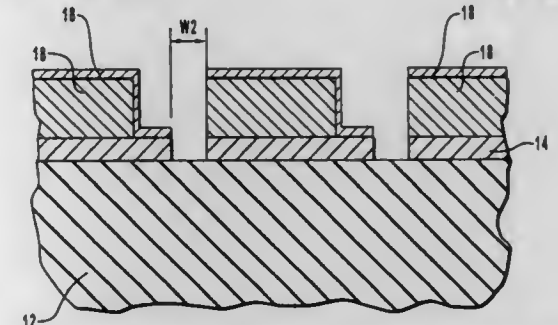
Gurtej Singh Sandhu, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Feb. 29, 1996, Ser. No. 608,691

Int. Cl.⁶ H01L 21/00

U.S. Cl. 438—717

50 Claims



1. A method for defining features smaller than a feature defined by a given photolithography system used in the manufacture of a semiconductor device, said method comprising the steps of:

- providing a semiconductor wafer having on a surface thereof a layer to be etched;
- forming over said layer to be etched a first mask layer;
- removing portions of said first mask layer by the use of a given photolithography system having an inherent resolution limit so as to leave a remaining portion of said first mask layer, and so as to expose thereby through said first mask layer an exposed pattern of said layer to be etched;
- anisotropically depositing a second mask layer, over said first mask layer and said layer to be etched, in a deposition direction relative to the surface of the semiconductor wafer such that the remaining portion of said first mask layer substantially shield from the anisotropic deposition a shielded portion of said exposed pattern of said layer to be etched, said shielded portion having a width less than the width of said exposed pattern, leaving said shielded portion of said exposed pattern of said layer to be etched substantially exposed; and
- etching the layer to be etched with an etch process selective to a material of which the second mask layer is comprised, such that the layer to be etched is removed at said shielded portion of said exposed pattern of said layer to be etched, whereby a feature is defined in said layer to be etched having a width not greater than the width of said exposed pattern of said layer to be etched.

5,776,835

METHOD OF MAKING A GROOVED GATE STRUCTURE OF SEMICONDUCTOR DEVICE

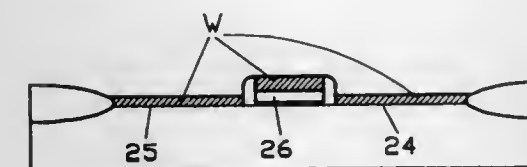
Ching-Fa Yeh, and Jwinn Lein Su, both of Hsinchu, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Feb. 9, 1996, Ser. No. 599,135

Int. Cl.⁶ H01L 21/00

U.S. Cl. 438—712

5 Claims



1. A method of making a grooved gate of semiconductor device, said method comprises the steps of:

- coating a photo-resist layer on a doped polysilicon layer formed on a silicon substrate;
- defining a gate area of said doped polysilicon layer by photolithography, wherein the photo-resist are stripped except the portion on said gate area;
- etching vertically the doped polysilicon layer by an anisotropic etching for stripping the doped polysilicon of all areas except the gate area covered by the photo-resist;
- growing by means of a liquid phase deposition a silicon dioxide layer on the surfaces of the Si substrate and the photo-resist/doped polysilicon;
- etching vertically the silicon dioxide layer by an anisotropic etching until the silicon substrate and the photo-resist are exposed and spacers are formed on the side walls of the photo-resist/doped polysilicon; and
- forming a grooved gate structure by stripping the photo-resist.

5,776,837

METHOD OF OBTAINING HIGH QUALITY SILICON DIOXIDE PASSIVATION ON SILICON CARBIDE AND RESULTING PASSIVATED STRUCTURES

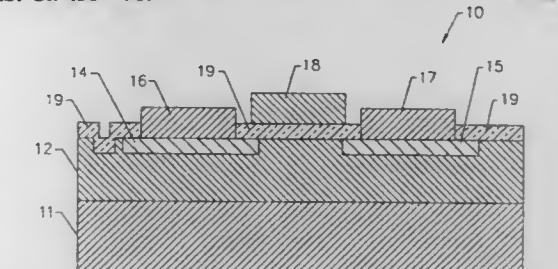
John W. Palmour, Cary, N.C., assignor to Cree Research, Inc., Durham, N.C.

Division of Ser. No. 352,887, Dec. 9, 1994, Pat. No. 5,629,531, which is a division of Ser. No. 893,642, Jun. 5, 1992, Pat. No. 5,459,107. This application Nov. 19, 1996, Ser. No. 752,716

Int. Cl.⁶ H01L 21/316

U.S. Cl. 438—767

5 Claims



1. A method of obtaining high quality gate oxide layers on aluminum-doped, p-type silicon carbide surfaces, the method comprising:

- depositing a gate oxide layer of silicon dioxide of a desired thickness on an aluminum-doped p-type silicon carbide portion of a device structure and without oxidizing the p-type silicon carbide portion; and thereafter;
- oxidizing the device structure and the gate silicon dioxide portion of the device structure to slightly extend the interface between the silicon dioxide and the aluminum-doped p-type silicon carbide into the aluminum-doped p-type silicon carbide portion.

5,776,838

BALLISTIC FABRIC

Allan Marcus Dellinger, Matthews, N.C., assignor to Hoechst Celanese Corporation, Charlotte, N.C.

Continuation of Ser. No. 593,643, Jan. 29, 1996, abandoned. This application Feb. 28, 1997, Ser. No. 808,134

Int. Cl.⁶ B32B 5/12

U.S. Cl. 442—200

4 Claims

1. A ballistic fabric, comprising plies of woven or knitted high strength fibers and woven or knitted bicomponent fibers, said high strength fibers have a modulus greater than or equal to 150 grams/denier and a tenacity greater than or equal to 6 grams/denier, said bicomponent fibers comprise a sheath and a core, said sheath being made of a polymer having a melting point and said core being made of a polymer having a melting point less than said melting point of said core, wherein said bicomponent fibers and said high strength fibers are bonded together by said sheath polymer to form a ballistic resistant fabric.

5,776,839

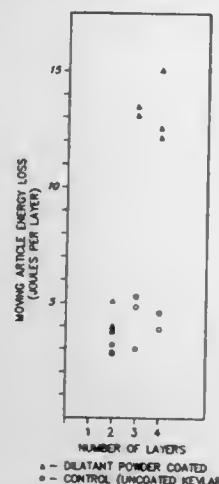
DILATANT POWDER COATED FABRIC AND CONTAINMENT ARTICLES FORMED THEREFROM
Louis Dischler, Spartanburg, S.C.; Terry T. Moyer, Tryon, N.C., and Jimmy B. Henson, Pacolet Mills, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 10, 1996, Ser. No. 728,638

Int. Cl.⁶ B32B 5/30; F41H 1/02

U.S. Cl. 442—239

18 Claims



1. A fabric for dissipating the kinetic energy of a moving object, the fabric comprising a plurality of high tenacity polymer fibers, said fibers having a tenacity of about 15 grams/denier or greater and a tensile modulus of about 300 grams/denier or greater and wherein said fibers are at least partially coated with a powder comprising a multiplicity of substantially non-plate-like particles disordered from said fibers and disposed in contacting relation with said fibers wherein said powder exhibits dilatant properties upon impact by a moving object.

5,776,840

Patent Not Issued For This Number

5,776,841

SHEET FELT

Alfredo A. Bondoc, Somerset, and Charles J. Horner, Jr., South Bound Brook, both of N.J., assignors to Building Materials Corporation of America, Wayne, N.J.

Continuation of Ser. No. 552,901, Nov. 3, 1995, Pat. No. 5,717,012. This application Sep. 30, 1997, Ser. No. 940,346

Int. Cl.⁶ B32B 5/28

U.S. Cl. 442—320

13 Claims

1. An insulating board having a foam core laminated to a felt sheet having the composition of a light weight felt composition suitable for siding and roofing underlayment and insulation board facing which comprises, on a dry basis,

- (a) 60–80 wt. % cellulose fibers;
- (b) 15–30 wt. % glass fibers having a diameter not less than 5 and not in excess of 16.5 microns and a fiber length of $\frac{1}{8}$ – $\frac{3}{4}$ inch;
- (c) 4–10 wt. % binder and
- (d) 0.5–10 wt. % of non-asphaltic water repellent sizing agent having a flash point higher than 150° F. and an evaporation rate less than one which is selected from the group of anionic/rosinous sizes and C₁₆ to C₃₀ amphipathic sizes and mixtures thereof.

5,776,842

CELLULOSIC WEB WITH A CONTAMINANT BARRIER OR TRAP

Willard E. Wood, Arden Hills, and Neil J. Beaverson, Hugo, both of Minn., assignors to Cellresin Technologies, LLC, Minneapolis, Minn.

Continuation-in-part of Ser. No. 264,771, Jun. 23, 1994, Pat. No. 5,492,947. This application Feb. 20, 1996, Ser. No. 603,337

Int. Cl.⁶ B32B 27/00

U.S. Cl. 442—394

40 Claims

1. A nonwoven cellulosic fiber web, having improved barrier or trap properties in the presence of a permeant or contaminant, the web comprising:

- (a) a layer comprising a continuous array of randomly oriented cellulosic fiber; and
- (b) a layer comprising an effective permeant absorbing amount of a cyclodextrin compound;

wherein the cyclodextrin compound is substantially free of an inclusion complex compound and can act as a barrier to the passage of a permeant from the ambient environment or act as a trap of a contaminant arising from the web.

5,776,843

PROCESS FOR THE PRODUCTION OF SPONGIOSA BONE CERAMIC HAVING LOW CALCIUM OXIDE CONTENT

Franz Zorn, Ober Ramstadt; Frank Weber, Groß-Umstadt; Antonia Almolda, Reinheim; Ilona Taubert, Seeheim-Jugenheim; Rolf Wagenknecht, and Wilhelm Eberle, both of Darmstadt, all of Germany, assignors to Merck Patent Gesellschaft mit Beschränkter Haftung, Germany

PCT No. PCT/EP95/04285, § 371 Date May 7, 1997, § 102(e) Date May 7, 1997, PCT Pub. No. WO96/14886, PCT Pub. Date May 23, 1996

PCT Filed Nov. 2, 1995, Ser. No. 836,381

Claims priority, application Germany, Nov. 10, 1994, 44 40 149.3

Int. Cl.⁶ C04B 35/00; A61L 27/00

U.S. Cl. 501—1

10 Claims

1. In a process for the production of spongiosa bone ceramic, comprising demineralizing spongiosa bones cut into pieces by removing all organic components and sintering the de-mineralized bone to produce a ceramic, the improvement comprising removing calcium oxide components from the bone pieces by subjecting the bone pieces, prior to sintering, to extractive washing with demineralized water for a time and at a temperature effective to remove calcium oxide.

5,776,844

COMPOSITIONS OF SILICO-SODO-CALCIC GLASSES AND THEIR APPLICATIONS

Stephanie Koch, Mountain View, Calif.; Didier Jousse, Leu-la-Forêt, France; Rene Gy, Bondy, France, and Gilles Courtemanche, Paris, France, assignors to Saint-Gobain Vitrage, Courbevoie, France

PCT No. PCT/FR95/01347, § 371 Date Dec. 13, 1996, § 102(e) Date Dec. 13, 1996, PCT Pub. No. WO96/11887, PCT Pub. Date Apr. 25, 1996

PCT Filed Oct. 13, 1995, Ser. No. 646,337

Claims priority, application France, Oct. 13, 1994, 94 12210; Nov. 30, 1994, 94 14352

Int. Cl.⁶ C03C 3/087

U.S. Cl. 501—70

12 Claims

1. A glass composition consisting essentially of the following constituents in the following proportions by weight:

SiO ₂	45 to 63%
ZrO ₂	6.5 to 20%
Al ₂ O ₃	0 to 18%
Na ₂ O	4 to 12%
K ₂ O	3.5 to 7%
CaO	1 to 13%
MgO	0 to 8%

wherein the sum of SiO₂, ZrO₂ and Al₂O₃ is equal to or less than 70%, the sum of Na₂O and K₂O is equal to or greater than 8%, said composition containing, optionally, the oxides BaO and/or SrO in proportions such that:

$$11\% \leq \text{MgO} + \text{CaO} + \text{BaO} + \text{SrO} \leq 24\%$$

said composition has a strain point equal to or greater than approximately 530° C. and a coefficient of thermal expansion ($\alpha_{25^\circ-300^\circ \text{C.}}$) between 80 and 95 $\times 10^{-7}/^\circ \text{C.}$

5,776,845

HIGH TRANSMITTANCE GREEN GLASS WITH IMPROVED UV ABSORPTION

Edward Nashed Boulos, Troy, Mich., and James Victor Jones, Toledo, Ohio, assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 762,474, Dec. 9, 1996, abandoned. This application Dec. 17, 1996, Ser. No. 767,768

Int. Cl.⁶ C03C 3/087

U.S. Cl. 501—70

32 Claims

1. A green ultra violet absorbing glass composition having a base glass composition comprising by weight: 68 to 75% SiO₂, 10 to 18% Na₂O, 5 to 15% CaO, 0 to 10% MgO, 0 to 5% Al₂O₃, and 0 to 5% K₂O, where CaO+MgO is 6 to 15% and Na₂O+K₂O is 10 to 20%; and colorants consisting essentially of: greater than 0.5 to 1.5 wt. % total iron oxide as Fe₂O₃, wherein the weight ratio of Fe²⁺/Fe³⁺ is less than 0.35; 0.10 to 2.00 wt. % manganese compound as MnO₂, and optionally any of: up to 1.00 wt. % titanium oxide as TiO₂; up to 1.00 wt. % cerium oxide as CeO₂; up to 1.00 wt. % vanadium oxide as V₂O₅; and up to 0.20 wt. % chromium oxide as Cr₂O₃; the glass having at a 4.0 mm. thickness: 55 to 80% light transmittance using Illuminant A with less than 46% ultra violet transmittance measured over the range of 300 to 400 nanometers.

5,776,846

ULTRAVIOLET- AND INFRARED-ABSORBING GLASS
Koichi Sakaguchi; Yukihito Nagashima; Isamu Kuroda, and Shigekazu Yoshii, all of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Jan. 14, 1997, Ser. No. 782,173

Int. Cl.⁶ C03C 3/087

U.S. Cl. 501—70

15 Claims

1. Ultraviolet- and infrared- absorbing glass comprising: as basic glass components, 65 to 80% by weight of SiO₂, 0 to 5% by weight Al₂O₃, 0 to 10% by weight of MgO, 5 to 15% by weight of CaO, 10 to 18% by weight of Na₂O, 0 to 5% by weight of K₂O, 5 to 15% by weight in total of MgO and CaO, 10 to 20% by weight in total of Na₂O and K₂O, and 0 to 5% by weight of B₂O₃; and as coloring components, 25 to 0.45% by weight, in terms of Fe₂O₃, of total iron oxide (T-Fe₂O₃) having an FeO/T-Fe₂O₃ ratio, in terms of Fe₂O₃, of 0.155 to 0.174, 0.8 to 2.0% by weight of CeO₂, 0 to 1.0% by weight of TiO₂, 0 to 0.005% by weight of CoO, and 0.0005 to 0.005% by weight of Se, wherein said glass with a thickness of 4 mm has an excitation purity of less than 11% as measured with the CIE standard illuminant C.

5,776,847

STABILIZED VAPOUR-DEPOSITION MATERIALS BASED ON TITANIUM OXIDE

Karl-Friedrich Kraebe, Darmstadt, Germany, assignor to Merck Patent Gesellschaft mit Beschränkter Haftung, Germany

Filed Feb. 28, 1997, Ser. No. 808,434

Claims priority, application Germany, Mar. 1, 1996, 196 07 833.4

Int. Cl.⁶ C04B 35/28

U.S. Cl. 501—134

7 Claims

1. Stabilized sintered vapor-deposition materials, based on titanium oxide, having the general formula TiO_x where x=1.4 to 1.8,

and containing from 0.1 to 10% by weight of an oxide selected from the group consisting of zirconium oxide, hafnium oxide, yttrium oxide and ytterbium oxide.

5,776,848

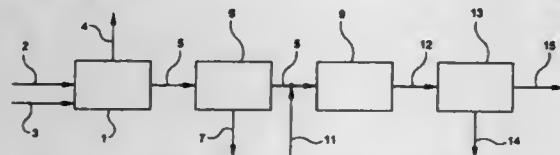
MOLYBDENUM EPOXIDATION CATALYST RECOVERY
Thomas I. Evans, Glenmoore, Pa., and Robert L. Cannon, Wilmington, Del., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Filed Jul. 30, 1997, Ser. No. 903,082

Int. Cl.⁶ B01Z 38/60; C01G 39/00

U.S. Cl. 502—27

3 Claims



1. The process for separation of molybdenum epoxidation catalyst values from a molybdenum and sodium containing epoxidation process stream which comprises incinerating the said stream, separating an aqueous stream from the incineration containing the molybdenum and sodium, acidifying the separated aqueous stream to a pH of about 5.1–6.5 and separating formed CO₂, reacting the remaining solution with a calcium compound at 80° C. to the boiling point, the ratio of added Ca to Mo in the solution being at least 1/1, and separating formed CaMoO₄ solid.

5,776,849

REGENERATION OF SEVERELY DEACTIVATED REFORMING CATALYSTS

Shun Chong Fung, Bridgewater, N.J.; Yao-Jyh Robert Huang; John Francis Walsh, both of Houston, Tex.; Gary Brice McVicker, Calton, N.J., and Kenneth Ray Clem, Humble, Tex., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 709,154, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 432,221, Nov. 6, 1989, abandoned, which is a continuation of Ser. No. 205,567, Jun. 15, 1988, Pat. No. 4,925,819, which is a continuation of Ser. No. 814,027, Dec. 23, 1985, abandoned, which is a continuation of Ser. No. 550,951, Nov. 10, 1983, abandoned. This application Sep. 9, 1992, Ser. No. 942,694

Int. Cl.⁶ B01J 29/38; 38/44; 38/42; C10G 35/095

U.S. Cl. 502—37

21 Claims

1. A process for regenerating a deactivated monofunctional, non-acidic reforming catalyst comprising a Group VIII catalytic metal and zeolite L, said process comprising:

(a) contacting the deactivated catalyst with a gaseous stream comprising oxygen, inert gas and water under oxidation conditions comprising a temperature of from 400° C. to 600° C. for a time sufficient to burn coke off the deactivated catalyst and convert the metal to agglomerated particles which are accessible to chlorine-containing gas in subsequent process step (b) and a substantial portion of said agglomerated particles are located outside the channels of said zeolite L and have particle size greater than 200 Angstrom;

(b) contacting the substantially decoked catalyst with a gaseous stream comprising water, a source of chlorine, oxygen, and an inert gas under oxychlorination conditions comprising a temperature of from 450° C. to 550° C. and a partial pressure of chlorine derived from the source of chlorine which is greater than 0.03 psia for a time sufficient for at least one member selected from the group consisting of hydrogen chloride and chlorine to breakthrough the catalyst to an HCl/Cl₂ partial pressure greater than 0.02 psia so as to chlorinate and disperse the metal and result in a chlorinated catalyst comprising substantially completely dispersed chlorinated catalytic metal;

(c) contacting the chlorinated catalyst with a gaseous stream comprising water, oxygen, and an inert gas under chlorine removal conditions comprising a temperature of from 450° C. to 550° C., a low total pressure of less than 300 psia, and a time effective to remove excess chlorine from the chlorinated catalyst and result in a gaseous stream after contact with the catalyst comprising hydrogen chloride at a partial pressure of less than 0.004 psia; and

(d) contacting the chlorinated catalyst from step (c) with a gaseous stream comprising inert gas and hydrogen under reducing conditions comprising a low total pressure of less than 300 psia and a temperature of from 350° C. to 550° C. for a time effective to reduce at least some of the catalytic metal in the catalyst to the metallic state and result in a regenerated catalyst comprising dispersed catalytic metal and zeolite.

5,776,850

CHEMICALLY IMPREGNATED ZEOLITE AND METHOD FOR ITS PRODUCTION AND USE

Fred Klatte, San Francisco, Calif.; James Aamodt, Wilsonville, Oreg., and David Biswell, Kingsburg, Calif., assignors to Klatte Inc., Petaluma, Calif., a part interest

Continuation-in-part of Ser. No. 382,601, Feb. 2, 1995, which is a continuation-in-part of Ser. No. 150,438, Nov. 10, 1993, Pat. No. 5,464,598, which is a continuation-in-part of Ser. No. 975,680, Nov. 13, 1992, Pat. No. 5,278,112. This application

May 19, 1995, Ser. No. 445,275

Int. Cl.⁶ B01J 29/04

U.S. Cl. 502—64

2 Claims

1. A zeolite crystal having channels uniformly impregnated with an impregnating agent, wherein the impregnating agent is sodium sulfite.

5,776,851

METALLOCENES, PROCESS FOR THEIR PREPARATION AND THEIR USE AS CATALYSTS

Frank Küber, Oberursel; Michael Aulbach, Hofheim; Bernd Bachmann, Eppstein; Walter Spaleck, Liederbach, and Andreas Winter, Glashütten, all of Germany, assignors to Targor GmbH, Germany

Division of Ser. No. 344,730, Nov. 23, 1994. This application Jun. 7, 1995, Ser. No. 480,165

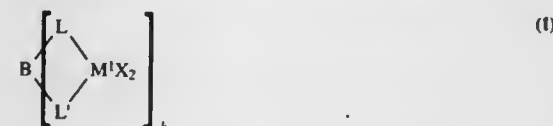
Claims priority, application Germany, Nov. 24, 1993, 43 40 018.3; Dec. 27, 1993, 43 44 708.2; Dec. 27, 1993, 43 44 687.6

Int. Cl.⁶ B01J 31/00; C07F 17/00; 7/00

U.S. Cl. 502—103

21 Claims

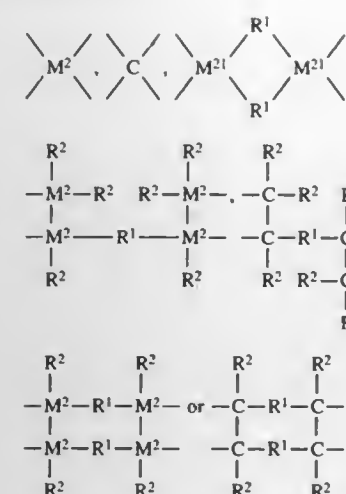
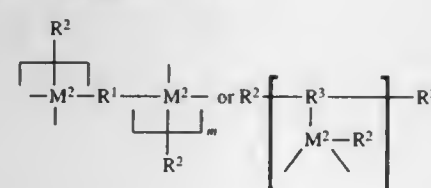
1. A catalyst comprising the combination comprising a cocatalyst combined with at least one polynuclear metallocene compound of the formula I



where

M¹ are identical or different and are a metal of group IVb, Vb or Vlb of the Periodic Table,

X are identical or different and are hydrogen, a C₁–C₁₀-alkyl group, a C₁–C₁₀-alkoxy group, a C₆–C₁₀-aryl group, a C₆–C₁₀-aryloxy group, a C₂–C₁₀-alkenyl group, a C₇–C₄₀-arylalkyl group, a C₇–C₄₀-alkylaryl group, a C₈–C₄₀-arylalkenyl group, a OH group, a halogen atom or pseudohalogen, L and L' are identical or different and are π ligand or another electron donor,

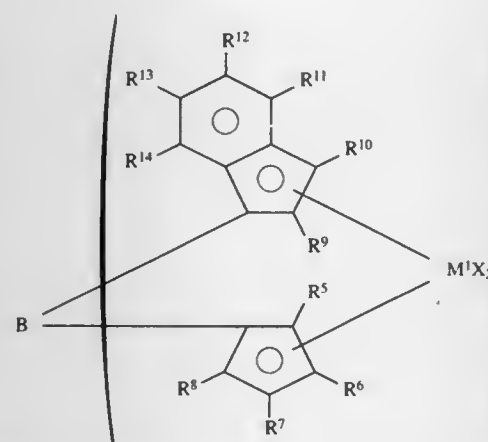
k is 2 if B¹ isand k is an integer >1 if B¹ is

where R¹ are identical or different and are a divalent hydrocarbon-containing bridge structure, the radicals R² are identical or different and are a hydrogen atom, a halogen atom or a hydrocarbon-containing radical,

R³ is trivalent hydrocarbon-containing radical, and n is k and m is k–1 and

M² is silicon, germanium or tin.

21. A catalyst which comprises at least one polynuclear metallocene and at least one cocatalyst, wherein the polynuclear metallocene is of the formula II



where

M¹ are identical or different and are a metal of group IVb, Vb or Vlb of the Periodic Table,

X are identical or different and are hydrogen, a C₁–C₁₀-alkyl group, a C₁–C₁₀-alkoxy group, a C₆–C₁₀-aryl group, a C₆–C₁₀-aryloxy group, a C₂–C₁₀-alkenyl group, a C₇–C₄₀-arylalkyl group, a C₇–C₄₀-alkylaryl group, a C₈–C₄₀-arylalkenyl group, an OH group, a halogen atom or pseudohalogen,

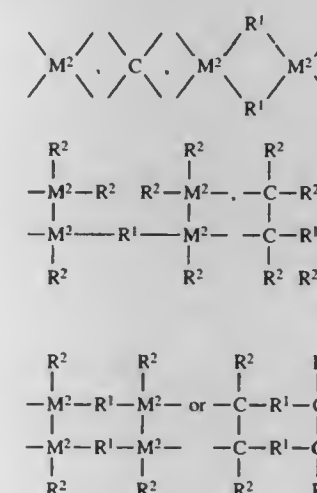
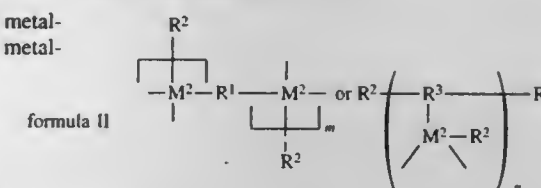
the radicals R⁵, R⁶, R⁷ and R⁸ are identical or different and are a hydrogen atom, a halogen atom, a C₁–C₁₀-alkyl group which can be halogenated, a C₆–C₂₀-aryl group, a C₇–C₄₀-arylalkyl

group, a C₇–C₄₀-alkylaryl group, a C₂–C₁₀-alkenyl group, a C₈–C₄₀-arylalkenyl group, a —NR¹⁵, —SR¹⁵, —OSiR¹⁵, —SiR¹⁵, or —PR¹⁵ radical, where R¹⁵ is identical or different and is a C₁–C₁₀-alkyl group or a C₆–C₁₀-aryl group, or two or more adjacent radicals, R⁵, R⁶, R⁷ and R⁸ together with the atoms connecting them form a ring system,

R⁹ to R¹⁴ are identical or different and are a hydrogen atom, a halogen atom, a C₁–C₁₀-alkyl group which can be halogenated, a C₆–C₂₀-aryl group, a C₇–C₄₀-arylalkyl group, a C₇–C₄₀-alkylaryl group, a C₂–C₁₀-alkenyl group, a C₈–C₄₀-arylalkenyl group, a —NR¹⁵, —SR¹⁵, —OSiR¹⁵, —SiR¹⁵, or —PR¹⁵ radical,

where R¹⁵ is identical or different and is a C₁–C₁₀-alkyl group or a C₆–C₁₀-aryl group, or two or more adjacent radicals R⁹, R¹⁰, R¹¹, R¹², R¹³ and R¹⁴ together with the atoms connecting them form a ring system,

k is 2, if B¹ is

and k is an integer >2 if B¹ is

where

R¹ are identical or different and are a divalent hydrocarbon-containing C₁–C₄₀ bridge structure,

the radicals R² are identical or different and are a hydrogen atom, a halogen atom or a hydrocarbon-containing C₁–C₄₀ radical,

R³ is a trivalent hydrocarbon-containing C₁–C₄₀ radical, and n is k and m is k–1 and M² is silicon, germanium or tin.

5,776,852

ZEOLITE CATALYST COMPOSITION COMPRISING TUNGSTEN CARBIDE AND PROCESS THEREFOR AND THEREWITH

An-hsiang Wu, Bartlesville, and Charles A. Drake, Nowata, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 4, 1997, Ser. No. 826,619

Int. Cl.⁶ B01J 29/076; 27/22; C07C 5/22

U.S. Cl. 502—177

20 Claims

1. A process comprising: (1) contacting a beta zeolite with an effective amount of a mixture comprising a tungsten-containing compound under a condition sufficient to effect the incorporation of said tungsten-containing compound into said zeolite to produce a tungsten-incorporated zeolite; and (2) calcining said tungsten-

incorporated zeolite under a condition sufficient to effect the conversion of said tungsten-containing compound into tungsten carbide.

5,776,853

THERMAL TRANSFER IMAGE-RECEIVING SHEET
Shino Takao, Tokyo, Japan, assignor to Dai Nippon Printing Co., Ltd., Japan

Filed Dec. 19, 1995, Ser. No. 574,896

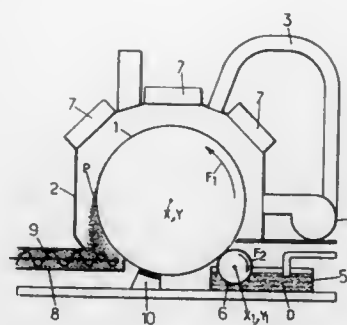
Claims priority, application Japan, Dec. 20, 1994, 6-334656

Int. Cl.⁶ B41M 5/035; 5/38

U.S. Cl. 503—227

9 Claims

1. A thermal transfer image-receiving sheet, comprising:
a substrate sheet;
an intermediate layer formed on at least one surface of said substrate sheet, and consisting essentially of polyvinyl alcohol having an active hydrogen; and
a receptive layer formed on said intermediate layer, and comprising at least one thermoplastic resin and a curing agent reactive with the active hydrogen.



5,776,854

THERMAL TRANSFER SHEET AND THERMALLY TRANSFERRED IMAGE RECEIVING SHEET
Masafumi Hayashi, Shinjuku-ku, Japan, assignor to Dai Nippon Printing Co., Ltd., Japan

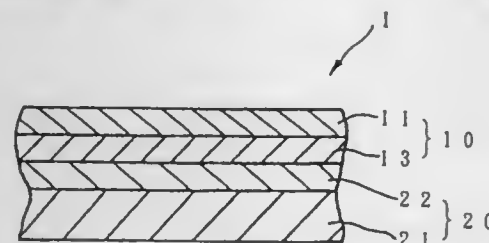
Filed Oct. 3, 1996, Ser. No. 720,770

Claims priority, application Japan, Oct. 6, 1995, 7-284352

Int. Cl.⁶ B41M 5/035; 5/38

U.S. Cl. 503—227

8 Claims



1. A thermal transfer sheet which comprises:
a thermal transfer film comprising a first substrate sheet and a heat-fusible ink layer formed on one surface of said first substrate sheet; and
a thermally imageable receiving sheet comprising a second substrate sheet and a receptor layer formed on one surface of said second substrate sheet, said receptor layer containing resin and at least one powder of a solid solution of a synthetic resin and a fluorescent dye,
said receptor layer of said thermally imageable receiving sheet being detachably adhered to said heat-fusible ink layer of said thermal transfer film.

5,776,855

PHYTOSANITARY FLAKE COMPOSITIONS
Joseph Schapira, Paris; Jacques Vincent, Mareil Marly; Ange-Claude Guerin, Le Plessis Bouchard, and Jean-Paul Fournials, Cergy Pontoise, all of France, assignors to CFPI AGRO, Gennevilliers, France

Filed Jul. 10, 1996, Ser. No. 679,757

Claims priority, application France, Jul. 13, 1995, 95 08569

Int. Cl.⁶ A01N 25/34; 37/34; 33/18

U.S. Cl. 504—116

9 Claims

1. Phytosanitary composition consisting of thin flakes whose thickness is from 50 to 400 μm and whose largest dimension is

from 2 to 20 mm, said thin flakes which are based on a water-soluble film-forming material which provides after drying a shrinking brittle film comprising therein dispersed particles of at least one active substance which is little soluble or insoluble in water and solid at ambient temperature, the largest dimension of said particles being from 1 to 10 μm.

5,776,856

SOLUBLE POLYMER BASED MATRIX FOR CHEMICALLY ACTIVE WATER INSOLUBLE COMPONENTS

Kolazi S. Narayanan, Wayne, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Filed Feb. 4, 1997, Ser. No. 795,022

Int. Cl.⁶ A01N 25/30; C05G 5/00; C08L 33/00

U.S. Cl. 504—116

18 Claims

1. A water soluble, free flowing solid matrix composition which comprises:
(a) between about 20 and about 40 wt. % of a C₆ to C₁₈ alkyl lactam,
(b) between about 25 and about 75 wt. % urea,
(c) between about 3 and about 20 wt. % of an anionic surfactant and
(d) between about 5 and about 15 wt. % of a water insoluble copolymer of N-vinyl lactam monomer containing not more than 50 wt. % of a comonomer selected from the group, consisting of an α-olefin, vinyl acetate, an acrylic acid ester, a methacrylic acid ester, methacrylamide and mixtures thereof; wherein said urea is complexed with said copolymer and said free-flowing solid has a particle diameter of from about 10 to about 350 μm.

5,776,857

HERBICIDAL MIXTURES COMPRISING ET-751 AND EITHER FLURTAMONE OR ACLONIFEN

Alan Gamblin, Ongar Essex, England, and Jacques Rognon, Lyon, France, assignors to Rhone-Poulenc Agrochimie, Lyon Cedex, France

Division of Ser. No. 580,209, Dec. 28, 1995, Pat. No.

5,674,809, which is a division of Ser. No. 246,287, May 19, 1994, Pat. No. 5,502,026. This application May 16, 1997, Ser.

No. 858,044

Claims priority, application France, May 19, 1993, 93 06271

Int. Cl.⁶ A01N 31/14; 43/08; 43/56

U.S. Cl. 504—139

29 Claims

1. A herbicidal mixture comprising 1-methyl-3,4-chloro-5-difluoromethoxy-pyrazole (I) and a second herbicide (II) selected from the group consisting of flurtamone, and aclonifen.

5,776,858

1-AZINYL-TETRAZOLINONES

Toshio Goto, Shimotsuga-gun; Seishi Ito, Tochigi; Natsuko Minegishi, Tochigi; Tatsuya Yamaoka, Oyama; Chieko Ueno, Tochigi; Koichi Moriya, Kawachigun; Fritz Maurer, Tochigi, and Ryo Watanabe, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

Filed Oct. 25, 1996, Ser. No. 736,867

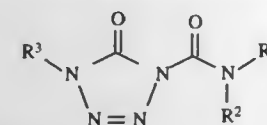
Claims priority, application Japan, Oct. 31, 1995, 7-305187; Mar. 7, 1996, 8-78069

Int. Cl.⁶ A01N 43/58; 43/60; 43/66; C07D 403/02

U.S. Cl. 504—225

10 Claims

1. A compound of the formula



wherein

R¹ and R² each independently is C₁₋₁₄ alkyl, C₁₋₄ haloalkyl, cyclopropyl, cyclopentyl, cyclohexyl, C₂₋₄ alkenyl, C₂₋₄ haloalkenyl, C₃₋₄ alkynyl or phenyl or

R¹ and R², together with the nitrogen atom to which they are bonded, form pyrrolidin-1-yl, 2,5-dimethyl pyrrolidin-1-yl, 3-pyrrolin-1-yl, 2,5-dimethyl-3-pyrrolin-1-yl, piperidino, 2-methylpiperidino, 2,6-dimethylpiperidino, piperazin-1-yl, morpholino, 1,2,3,4-tetrahydroquinolin-1-yl or 2-methyl-1,2,3,4-tetrahydroquinolin-1-yl, and

R³ is pyrimidinyl, pyrazinyl, pyridazinyl or 1,3,5-triazinyl, which may optionally be substituted by chlorine, C₁₋₄ alkyl, C₁₋₄ alkoxy, C₁₋₄ alkylthio, di(C₁₋₄ alkyl)amino or phenyl.

5,776,859

SODIUM CHANNEL ACTIVE NOVEL COMPOUNDS AND RELATED PROCESSES AND BIOASSAY TECHNIQUES
Alfred A. Nickel, 3535 Spring Hill Rd., Lafayette, Calif. 94549

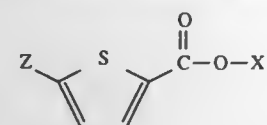
Filed Nov. 15, 1995, Ser. No. 559,215

Int. Cl.⁶ A01N 43/10; A61K 31/38; C07D 333/20

U.S. Cl. 504—28

6 Claims

1. An ester thiophene of the formula:



wherein:

X is —CH₂N(C₂H₅)₂; —CH₂N(CH₃)₂; and
Z is NH₂ or an alkylamino radical.

5,776,860

PLANT GROWTH PROMOTER

Yasuo Kamuro, Ichinomiya; Shinichi Hirakawa, Fujisawa, and Hiroshi Fujisawa, Kawasaki, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/00303, § 371 Date Aug. 25, 1995, § 102(e) Date Aug. 25, 1995, PCT Pub. No. WO94/18833, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 25, 1994, Ser. No. 507,453

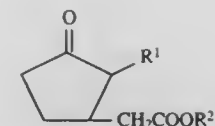
Claims priority, application Japan, Feb. 26, 1993, 5-063324; Feb. 26, 1993, 5-063325; Feb. 26, 1993, 5-063326

Int. Cl.⁶ A01N 37/00

U.S. Cl. 504—313

13 Claims

1. A method of promoting plant growth which comprises applying to plants in the growth and development stage a plant growth promoter composition comprising an effective growth promoting 0.01 to 500 ppm amount of a jasmonic acid compound represented by the following formula:



wherein R¹ represents a pentyl group or a pentenyl group and R² represents a hydrogen atom or an alkyl group of 1 to 10 carbon atoms, and a carrier.

5,776,861

HIGH TEMPERATURE MERCURY-CONTAINING SUPERCONDUCTORS AND METHOD OF MAKING THE SAME

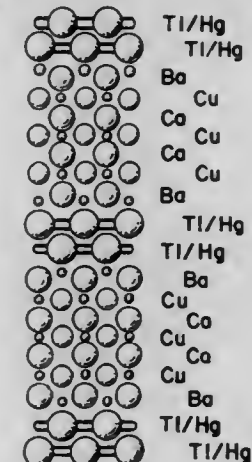
Louis E. Toth, Washington, D.C.; William Lechter, New Market, Md.; Earl F. Skelton, Washington, D.C., and Michael Osofsky, Burtonsville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 28, 1995, Ser. No. 430,955

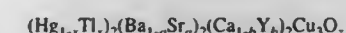
Int. Cl.⁶ C04B 35/50; H01B 12/00

U.S. Cl. 505—120

6 Claims



1. An essentially single phase superconducting material having the nominal composition:



where 0 ≤ x ≤ 0.95, 0 ≤ a ≤ 1, 0 ≤ b ≤ 1, and z is sufficient to provide said phase with a magnetic superconducting transition of 100K or above and R=0 of 100K or above; and wherein said phase has a double (Ti,Hg)-O layer.

5,776,862

OXIDE SUPERCONDUCTOR AND PROCESS OF PRODUCING THE SAME

Ryo Usami; Kazuyuki Isawa; Hiroshi Kubota; Roman Puzniak; Hisao Yamauchi, and Shoji Tanaka, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo; Tohoku Electric Power Company, Incorporated, Sendai; Toshiba Corporation, and International Superconductivity Technology Center, both of Tokyo, all of Japan

Continuation of Ser. No. 326,262, Oct. 20, 1994, abandoned.

This application Jul. 22, 1996, Ser. No. 684,985

Claims priority, application Japan, Oct. 25, 1993, 5-266534

Int. Cl.⁶ H01L 39/12; C04B 35/45

U.S. Cl. 505—125

13 Claims

1. An oxide superconductor having holes as carriers, said oxide superconductor being characterized by a hole density at which the oxide superconductor exhibits its highest superconductivity critical temperature, said oxide superconductor having an actual hole den-

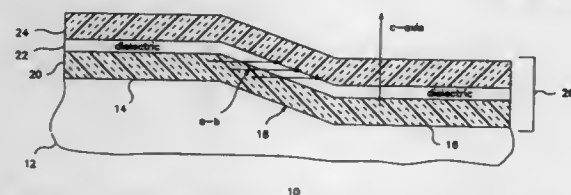
sity higher than the hole density at which the oxide superconductor would otherwise exhibit its highest superconductivity critical temperature.

5,776,863
IN-SITU FABRICATION OF A SUPERCONDUCTOR HETERO-EPITAXIAL JOSEPHSON JUNCTION
Arnold H. Silver, Rancho Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 8, 1996, Ser. No. 676,793
Int. Cl.⁶ H01L 39/24

U.S. Cl. 505—329

18 Claims



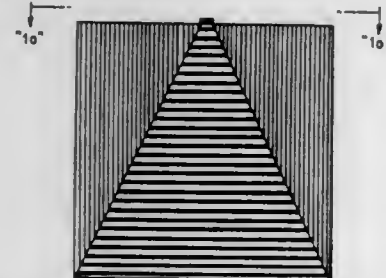
1. A method of fabricating a Josephson junction having a laminar structure, the method comprising the steps of:
 - (a) etching a planar substrate to yield a first planar segment, a second planar segment, and a ramp segment, the ramp segment connecting the two planar segments at an angle thereto, the substrate being thinner in the second planar segment than in the first planar segment, and the substrate having a constantly-decreasing thickness in the ramp segment;
 - (b) depositing a first superconductive layer on the substrate;
 - (c) depositing a non-superconductive layer on the first superconductive layer; and
 - (d) depositing a second superconductive layer on the non-superconductive layer;
 wherein both superconductive layers and the non-superconductive layer are deposited in-situ and are epitaxial with a c-axis in a direction substantially normal to the plane of the first and second planar segments; and wherein the layers are of substantially uniform thickness in the three segments.

5,776,864
LARGE SINGLE DOMAIN 123 MATERIAL PRODUCED BY SEEDING WITH SINGLE CRYSTAL RARE EARTH BARIUM COPPER OXIDE SINGLE CRYSTALS
Volker Todt, Lemont; Dean J. Miller, Darien, both of Ill.; Donglu Shi, Oak Park, and Suvankar Sengupta, Columbus, both of Ohio, assignors to The University of Chicago, Chicago, Ill.

Continuation of Ser. No. 371,931, Jan. 12, 1995, abandoned.
This application Apr. 1, 1997, Ser. No. 834,687
Int. Cl.⁶ H01L 39/12; C04B 35/653

U.S. Cl. 505—450

22 Claims



1. A method of fabricating bulk YBa₂Cu₃O_x comprising heating compressed powder oxides and/or carbonates of Y and Ba and Cu present in mole ratios to form YBa₂Cu₃O_x in the presence of a Nd_{1-x}Ba_{2-x}Cu₃O_x seed crystal to a temperature sufficient to form a liquid phase in the YBa₂Cu₃O_x while maintaining the seed crystal

solid and thereafter cooling to provide a YBa₂Cu₃O_x material having a predetermined number of domains between 1 and 5.

5,776,865
EMULSIFIABLE OIL
Maria Manuel De Castro Loureiro Barreto Rosa; Arend Kuindert Van Helden, and Herman Mathieu Muijs, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 17, 1995, Ser. No. 444,084
Claims priority, application European Pat. Off., May 25, 1994, 94201469

Int. Cl.⁶ C09K 7/00; C08G 63/00; 67/02; C07G 45/00

U.S. Cl. 507—103

14 Claims

1. Oil-based drilling fluids comprising an oil phase, and an aqueous phase dispersed therein, and one or more drilling fluid additives wherein said oil phase or substantial part thereof comprises an emulsifiable oil consisting of at least one ketone, wherein said at least one ketone has a flashpoint of at least 55° C.

8. Drilling fluid as claimed in claim 1, wherein said at least one ketone comprises one or more co-oligomers of carbon monoxide and one or more C₄—C₈ olefins.

11. Drilling fluid as claimed in claim 8, wherein said one or more co-oligomers have been prepared by contacting carbon monoxide and one or more C₄—C₈ olefins under polymerization conditions with a catalyst composition comprising a metal from Group VII of the Periodic Table, a bidentate ligand of the general formula R¹R²—M¹—R—M²—R³R⁴ wherein M¹ and M² independently represent a phosphorus, arsenic or antimony atom, R¹, R², R³ and R⁴ independently represent substituted or non-substituted aliphatic hydrocarbyl groups and R represents a bivalent organic bridging group having at least two carbon atoms in the bridge connecting M¹ and M².

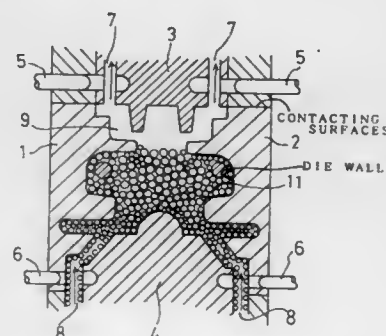
5,776,866
PARTING AGENT FOR DIE-CASTING
Mithuhiro Karaki, Okazaki; Mikiya Nozaki, Toyota; Masato Hakoima, Yokaichiba, and Toshiaki Midorikawa, Katori-gun, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, and Hitachi Powdered Metals Co., Ltd., Matsudo, both of Japan

Filed Oct. 11, 1996, Ser. No. 729,506
Claims priority, application Japan, Oct. 12, 1995, 7-264368

Int. Cl.⁶ C10M 1/11/00; B22C 3/00

U.S. Cl. 508—122

12 Claims



1. A parting agent for die-casting, comprising:
 - a parting component;
 - a dispersing component for dispersing said parting component through water; and
 - a surface active agent as a foaming agent, said parting component, said dispersing component and said surface active agent being mixed with water and foamed into a foamy state.

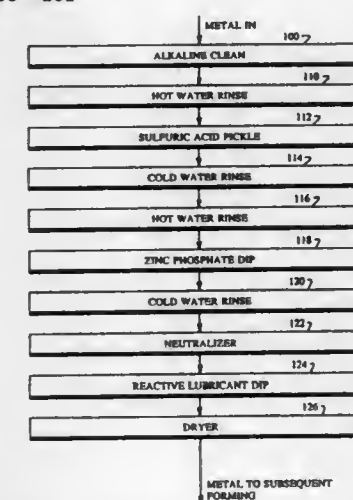
5,776,867
PROCESS AND PRODUCT FOR LUBRICATING METAL PRIOR TO COLD FORMING

Gerald W. Przybylski, Naperville, Ill.; Patrick J. Connor, Brighton, and David W. Peters, Rochester, both of Mich., assignors to Century Chemical Corporation, Naperville, Ill.
Continuation of Ser. No. 523,819, Sep. 6, 1995, Pat. No. 5,624,888, which is a division of Ser. No. 245,244, May 17, 1994, Pat. No. 5,484,541. This application Apr. 21, 1997, Ser. No. 840,508

Int. Cl.⁶ C10M 125/24

U.S. Cl. 508—161

15 Claims



1. A process for lubricating a metal workpiece outer surface prior to cold forming, the process comprising the steps of: applying an iron phosphate/oxide conversion coating to the surface, the outer surface having been acid pickled and cold water rinsed, wherein the coating composition consists essentially of:
 - an inorganic acidic salt for laying down the coating;
 - an inorganic accelerator for increasing the amount of coating laid down; and
 - buffering material present in an amount sufficient to render a predetermined pH;
 wherein the iron phosphate/oxide conversion coating provides a barrier for the subsequent lubrication; and disposing a non-reactive lubricating composition on the workpiece outer surface.

5,776,868

Patent Not Issued For This Number

5,776,869
TIN STABILIZERS FOR AVIATION LUBRICANTS
Thomas J. Karol, Norwalk, Conn., assignor to R.T. Vanderbilt Company, Inc., Norwalk, Conn.

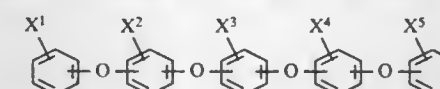
Filed Jul. 29, 1997, Ser. No. 903,030

Int. Cl.⁶ C10M 155/00

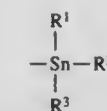
U.S. Cl. 508—384

6 Claims

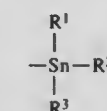
1. An aviation lubricating composition comprising a major amount of a synthetic lubricating base oil and an oxidation inhibiting amount of an organotin compound of the formula



wherein X¹, X², X³, X⁴ and X⁵ are independently selected from hydrogen and a tin group



and R¹, R² and R³ are independently selected from phenyl and phenoxyphenyl groups, and isomeric mixtures thereof with the proviso that at least one of X¹, X², X³, X⁴ and X⁵ is the tin group



5,776,870

Patent Not Issued For This Number

5,776,871
SHAMPOOS WITH INSOLUBLE SILICONE CONDITIONING AGENT AND CATIONIC POLYMER
Philip Earl Cothran, Loveland; Thomas Francis Gauthier, Milford, and Timothy Woodrow Coffindaffer, Loveland, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 428,923, Apr. 21, 1995, abandoned.

This application May 8, 1997, Ser. No. 852,935

Int. Cl.⁶ C11D 1/82

U.S. Cl. 510—122

19 Claims

1. A conditioning shampoo composition comprising:
 - (a) from about 8% to about 40%, by weight, of detergent surfactant, said composition containing at least about 5%, by weight, of anionic detergent surfactant;
 - (b) from about 0.05% to about 5%, by weight, of an insoluble silicone conditioning agent said conditioning agent being in the form of dispersed droplets of insoluble silicone having an average particle size of at least 2 microns;
 - (c) from about 0.01% to about 1%, by weight, of a stabilizing agent for said silicone conditioning agent, said stabilizing agent being a shampoo soluble cationic polymer;
 - (d) from about 50% to about 91.5%, by weight, water;
 wherein said shampoo composition is substantially free of suspending agents selected from the group consisting of crystalline suspending agents, crosslinked acrylic/acrylate polymer suspending agents and anionic, amphoteric, and nonionic polymeric thickening agents.

5,776,872
CLEANSING COMPOSITIONS TECHNICAL FIELD
Michel Joseph Giret; Anne Langlois, and Roland Philip Duke, all of Egham, England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/02411, § 371 Date Sep. 22, 1994, § 102(e) Date Sep. 22, 1994, PCT Pub. No. WO93/19149, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 18, 1993, Ser. No. 307,673

Claims priority, application United Kingdom, Mar. 25, 1992, 9206465; Jan. 23, 1993, 9301303

Int. Cl.⁶ C11D 1/29; 1/88; 1/94

U.S. Cl. 510—124

15 Claims

1. A personal cleansing composition comprising:
 - (a) from about 5% to about 50% by weight of a mixed surfactant system which comprises:
 - (i) from about 1% to about 20% by weight of composition of anionic surfactant, wherein the anionic surfactant com-

prises at least 50% thereof of ethoxylated C8-C22 alkyl sulfate and wherein the surfactant counterions are selected from magnesium and mixtures of magnesium with one or more counterions selected from alkali metal, ammonium and alkanolammonium,

- (ii) from about 1% to about 20% by weight of composition of amphoteric surfactant,
(b) from about 5% to about 40% by weight of an insoluble, nonionic oil or wax or mixture of insoluble, nonionic oils or waxes, and
(c) water,

wherein the anionic surfactant and amphoteric surfactant together comprise from about 5% to about 30% by weight of the composition, the weight ratio of anionic surfactant:amphoteric surfactant is in the range from about 1:5 to about 5:1, the weight ratio of total surfactant: nonionic oil or wax is in the range from about 10:1 to about 1:3, and wherein the composition is in the form of an oil-in-water emulsion having a viscosity (Brookfield RVT, Helipath, Spindle TB, 5 rpm, 25° C., 1 min) in the range from 10,000 to 40,000 cps and a yield point of at least 50 dynes/cm² (Brookfield RVT, Spindle CP52, Plate Code A, 25°), and wherein are excluded personal cleansing compositions which comprise an adduct prepared from vegetable oils containing non-conjugated polyunsaturated fatty acid esters which are conjugated and elaidinized and then modified via Diels-Alder addition with a member of the group consisting of acrylic acid, fumaric acid and maleic anhydride.

5,776,873

Patent Not Issued For This Number

5,776,874

ANTI-TARNISHING MACHINE DISHWASHING DETERGENT COMPOSITIONS CONTAINING A PARAFFIN OIL

Fiona Susan MacBeath; Lynda Anne Jones, and John Christopher Turner, all of Newcastle upon Tyne, Great Britain, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US94/00355, § 371 Date Apr. 18, 1996, § 102(e) Date Apr. 18, 1996, PCT Pub. No. WO94/16047, PCT Pub. Date Jul. 21, 1994

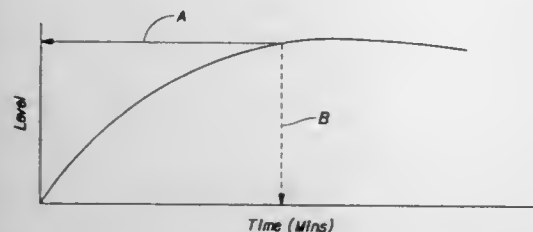
PCT Filed Jan. 11, 1994, Ser. No. 491,936

Claims priority, application European Pat. Off., Jan. 18, 1993, 93870004

Int. Cl.⁶ C11D 7/24; 7/54

U.S. Cl. 510—220

9 Claims



1. An anti-tarnishing machine dishwashing detergent composition comprising
from 1% to 80% by weight of a detergent builder compound;
from 0.05% to 2.5% by weight of a paraffin oil selected from predominantly branched aliphatic hydrocarbons having from 20 to 50 carbon atoms with a ratio of cyclic to noncyclic hydrocarbons of from 1:5 to 1:1;
an oxygen-releasing bleaching agent such that the level of available oxygen in the composition is from 0.3% to 2.5%,

wherein the rate of release of available oxygen is such that the available oxygen is completely released from the composition in a time interval of from 3.5 minutes to 10.0 minutes.

5,776,875

USE OF BIODEGRADABLE POLYMERS IN PREVENTING SCALE BUILD-UP

Jiansheng Tang, Naperville, and Ronald V. Davis, Geneva, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jul. 16, 1996, Ser. No. 683,001

Int. Cl.⁶ C02F 5/10

U.S. Cl. 510—247

20 Claims

14. A solution comprising:

an industrial process water; and

a polymer comprising at least one N-oxygenatedhydricarbonamide monomer unit and at least one amino acid monomer unit, or derivative thereof wherein the amino acid is selected from the group consisting of alanine, arginine, aspartic acid, asparagine, cysteine, glutamine, glutamic acid, glycine, histidine, isoleucine, leucine, lysine, methionine, serine, threonine, tryptophan, tyrosine, valine, proline, phenylalanine, hydroxyproline, γ-carboxyglutamic acids, salts of γ-carboxyglutamic acids, o-phosphoserine, o-phosphotyrosine, o-sulfoserine, o-sulfotyrosine, o-phosphothreonine, o-sulfothreonine, s-sulfocysteine, s-phosphocysteine, side chain N-substituted asparagine with C₁ to C₃₀ alkyl, aryl, sulfoalkyl, o-sulfoaryl, o-phosphoaryl, o-phosphoalkyl, c-sulfonoalkyl, —(—CH₂CH₂O—)_x—R¹, o—(—CH₂CH₂NR²—)_y—R³, where R¹ and R² are H or a C₁ to C₄ alkyl group and R³ is a C₁ to C₄ alkyl group, both x and y range from 1 to 50.

5,776,876

AQUEOUS ACIDIC FILTER CLEANING COMPOSITION FOR REMOVING ORGANIC BIGUANIDE DEPOSITS

John P. Garriss, Cumming, Ga., assignor to Bio-Lab, Inc., Decatur, Ga.

Filed Jul. 18, 1996, Ser. No. 683,168

Int. Cl.⁶ C11D 1/88; 7/08; 7/16

U.S. Cl. 510—247

7 Claims

1. A filter cleaning composition consisting essentially of:

- (a) from 5% to 60% by weight of one or more acids selected from the group consisting of hydrochloric, hydrofluoric, hydrobromic, sulfuric, sulfamic, sulfonic, phosphoric and nitric acids;
(b) from 1% to 40% of an alkyl iminodipropionic acid amphoteric surfactant;
(c) from 0.5% to 20% of a sequesterant/builder selected from the group consisting of glucono delta lactone (GDL), citric acid, phosphonobutane tricarboxylic acid (PBTC), and hydroxyethylidenediphosphonic acid (HEDP); and
(d) water.

5,776,877

LIQUID PERACID PRECURSOR COLLOIDAL DISPERSIONS: MACROEMULSIONS

David Peterson, Pleasanton; James D. McManus, Tracy; Thomas B. Ottoboni, Belmont; Charles B. Ungermann, Livermore; Gregory van Buskirk, Danville, and Boli Zhou, Antioch, all of Calif., assignors to The Clorox Company, Del.

Filed May 25, 1995, Ser. No. 450,740

Int. Cl.⁶ C11D 7/38; 7/54; D06L 3/02

U.S. Cl. 510—277

6 Claims

1. A container for providing a bleaching or cleaning product, said container comprising a first and a second chamber for delivering a first and second delivery portion therein, said first delivery portion comprising a liquid peracid precursor system combining:

5,776,880

AQUEOUS CLEANING COMPOSITIONS WHICH MAY BE IN MICROEMULSION FORM COMPRISING ETHOXYLATED SECONDARY ALCOHOL COSURFACTANT

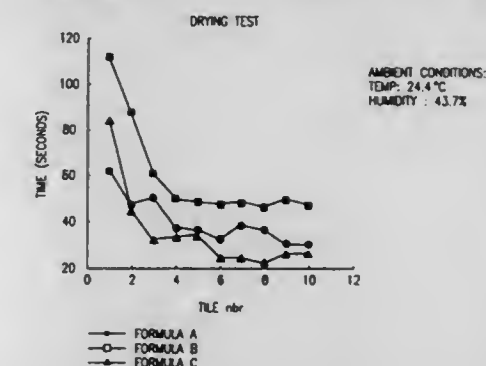
Myriam Mondin, Seraing; Nicole Andries, Voroux-lex-Liers, and Jean Massaux, Olne, all of Belgium, assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 336,936, Nov. 15, 1994, Pat. No. 5,549,840, which is a continuation-in-part of Ser. No. 192,118, Feb. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 155,317, Nov. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 102,314, Aug. 4, 1993, abandoned. This application Aug. 16, 1996, Ser. No. 698,606

Int. Cl.⁶ C11D 3/20; 3/60; 17/00

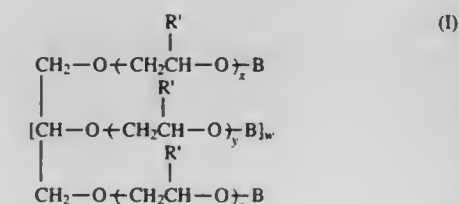
U.S. Cl. 510—365

5 Claims

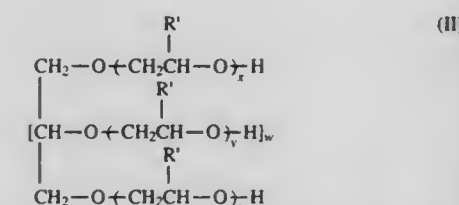


1. A cleaning composition comprising:

- (a) 0.1 to 10 wt. % of a secondary alcohol of the formula H(C₂H₄O)_xC₂H₄+2O wherein x is 5 to 9 and y is 7 to 11;
(b) 0.1 wt. % to 20 wt. % of an anionic surfactant;
(c) 0.1 wt. % to 10 wt. % of an ethoxylated nonionic surfactant formed from the condensation of C₈ to C₁₈ straight chain alcohol with 5 to 30 moles of ethylene oxide and/or a mixture of:



and



wherein w equals one to four, and B is selected from the group consisting of hydrogen and a group represented by:



wherein R is selected from the group consisting of alkyl group having 6 to 22 carbon atoms, and alkenyl groups having 6 to 22 carbon atoms, wherein at least one of the B groups is represented by said



- (a) a bleaching effective amount of a hydrophobic peracid precursor of a hydrotropic or hydrophobic peroxyacid;
(b) an emulsifier to disperse said peracid precursor; and
(c) a stabilizing effective amount of a liquid matrix;

wherein said second delivery portion comprises an alkalinity source, said liquid matrix comprises at least 50 wt. % water and said peracid precursor composition is characterized as a macro-emulsion.

5,776,878

LIQUID DETERGENT COMPOSITIONS CONTAINING BRIGHTENERS AND POLYMERS FOR PREVENTING FABRIC SPOTTING

Christiaan Arthur J. K. Thoen, Tyne & Wear, United Kingdom, assignor to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US95/00396, § 371 Date Jul. 10, 1996, § 102(e) Date Jul. 10, 1996, PCT Pub. No. WO95/19419, PCT Pub. Date Jul. 20, 1995

PCT Filed Jan. 11, 1995, Ser. No. 669,522

Claims priority, application European Pat. Off., Jan. 13, 1994, 94300227

Int. Cl.⁶ C11D 3/37; 3/42; 3/395; 1/83

U.S. Cl. 510—307

20 Claims

1. A method of reducing brightener spotting comprising the step of washing fabric with a composition comprising a polymer selected from the group consisting of polyamine N-oxide containing polymers, N-vinylimidazole N-vinylpyrrolidone copolymers and mixtures thereof, a stilbene brightener, and from 5% to 7% hydrogen peroxide, wherein the weight ratio of the polymer to the brightener is from 1:20 to 20:1 and the pH of the composition is from 2 to 6.

5,776,879

WATER SOLUBLE DYE COMPLEXING POLYMERS

Jenn S. Shih, Paramus; Bala Srinivas, Hasbrouck Heights, and John C. Hornby, Washington Township, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

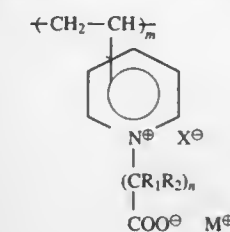
Filed Sep. 19, 1997, Ser. No. 932,448

Int. Cl.⁶ C11D 3/37

U.S. Cl. 510—361

17 Claims

1. A laundry detergent composition comprising at least 1% by weight of a surfactant selected from the group consisting of anionic surfactants, cationic surfactants and mixtures thereof; and a dye transfer inhibiting amount of a water soluble poly(vinylpyridine betaine) containing a quaternary nitrogen and a carboxylate salt having dye transfer inhibitor properties having the formula:



where

- m defines a repeating unit;
X is an anion;
R₁ and R₂ are independently hydrogen, alkyl or aryl;
n is 1-5; and
M is a cation; and copolymers thereof.

R' is selected from the group consisting of hydrogen and methyl groups; x, y and z have a value between 0 and 60, provided that (x+y+z) equals 2 to 100, wherein in Formula (I) the weight ratio of monoester/diester/triester is 40 to 90/5 to 35/1 to 20, wherein the weight ratio of Formula (I) and Formula (II) is a value between 3 to 0.02;

- (d) 0 to 10 wt. % of a water insoluble hydrocarbon, essential oil or a perfume; and
(e) the balance being water.

5,776,881

ENHANCED SOLVENT COMPOSITION

Esfandiar Kiany, Chicago, Ill., assignor to Safety-Kleen Corp., Elgin, Ill.

Continuation of Ser. No. 271,847, Jul. 7, 1994, abandoned.

This application Jul. 3, 1996, Ser. No. 678,467

Int. Cl.⁶ C11D 3/44; 7/50; B01D 21/01

U.S. Cl. 510—407

19 Claims

1. A treated cleaning solvent composition for providing accelerated and enhanced settling of dispersed contaminants accruing through use in said treated cleaning solvent composition, said composition consisting of, in combination, a cleaning solvent component and an additive component, said cleaning solvent component consisting of more than about 25% aromatic hydrocarbon solvent and the balance C₆—C₁₄ aliphatic hydrocarbon solvents, said cleaning solvent component having a flashpoint of at least 100° F.; said additive component being dissolved in said cleaning solvent component to accelerate settling of finely divided contaminant particles tending to create turbidity in said cleaning solvent component, said treated cleaning solvent composition consisting of 100 parts of said cleaning solvent component, and from about 0.01 to about 10 parts of an additive component alone or together with up to 5 parts of water, said additive component being selected from the group consisting of C₆—C₁₄ alcohols, diols, polyols, and glycol ethers, and mixtures of said alcohols, diols, polyols, and glycol ethers, said additive component in the presence of said dispersed contaminants introduced by using said treated cleaning solvent composition as a washing agent, causing said contaminants in said solvent composition to be partitioned between a lower, contaminant rich-layer and a supernatant layer, said supernatant layer being of substantially greater visual clarity than said lower layer and having a total solids concentration significantly lower than the solids concentration of said lower layer.

5,776,882

ISOTROPIC LIQUIDS INCORPORATING HYDROPHOBICALLY MODIFIED POLAR POLYMERS WITH HIGH RATIOS OF HYDROPHILE TO HYDROPHOBIC

Tirucheral Varahan Vasudevan, West Orange, N.J., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Jan. 14, 1997, Ser. No. 782,185

Int. Cl.⁶ C11D 3/22; 1/72; 3/37; 1/83

U.S. Cl. 510—434

8 Claims

1. An isotropic liquid detergent composition comprising:
(a) greater than about 17% by wt. to 85% by wt. of a surfactant selected from the group consisting of anionic, nonionic, cationic, amphoteric and zwitterionic surfactants and mixtures thereof;
wherein nonionic comprises at least 10% by wt. of the total surfactant composition; and
wherein at least 25% of total nonionic comprises a sugar surfactant;

- (b) 0 to 25% electrolyte;

- (c) 0.1 to 10% by wt. polymer having

- (1) a hydrophilic backbone comprising monomer units selected from:

- (a) one ethylenically unsaturated hydrophilic monomers selected from the group consisting of unsaturated C₁₋₆ acids, ethers, alcohols, aldehydes, ketones or esters; and/or

- (b) one polymerizable hydrophilic cyclic monomer units; and/or

- (c) one or more non-ethylenically unsaturated polymerizable hydrophilic monomers selected from the group consisting of glycerol and other polyhydric alcohols;

wherein said polymer is optionally substituted with one or more amino, amine amide, sulphonate, sulphate, phosphonate, hydroxy, carboxyl or oxide groups to specify one monomer only; and

- (2) a tail comprising a monomer comprising a hydrophobic pendant group;

said polymer having a MW of 1,000 to 20,000;

wherein molar ratio of backbone hydrophilic group to pendant hydrophobic group is greater than 20:1; and

- (d) 0 to 20% hydrotrope.

5,776,883

STRUCTURED LIQUID DETERGENT COMPOSITIONS CONTAINING NONIONIC STRUCTURING POLYMERS PROVIDING ENHANCED SHEAR THINNING BEHAVIOR

Tirucheral Varahan Vasudevan, West Orange, N.J., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 402,669, Mar. 13, 1995, abandoned.

This application Jun. 20, 1996, Ser. No. 667,315

Int. Cl.⁶ C11D 3/37

U.S. Cl. 510—470

4 Claims

1. A liquid detergent composition comprising:

- (a) 30% and up to about 80% by wt. of one or more surfactants predominantly present as lamellar drops dispersed in an aqueous medium containing at least 1% by wt. electrolyte;

- (b) 0.1% to 20% by wt. deflocculating polymer;

- (c) about 0.5% to about 10% by weight of a sucrose epichlorohydrin copolymer;

wherein the composition has a Sisko Index of 0.40 or less as measured by Sisko rheological model;

wherein said sucrose epichlorohydrin polymer does not decrease the viscosity of the composition as measured at 21 sec⁻¹, relative to viscosity prior to addition of said polymer;

wherein said sucrose epichlorohydrin copolymer does not increase the viscosity, as measured at 21 sec⁻², above 5,000 mPas; and

wherein said composition results in no more than 5% bottom clear layer separation by volume upon storage at 37° C. for 30 days.

5,776,884

CYCLOPENTYLIDENE-CYCLOPENTANOL IN PEREUMERY

Angela Martin, Ashford, Great Britain, assignor to Quest International B.V., Naarden, Netherlands

Filed Nov. 1, 1996, Ser. No. 742,843

Claims priority, application European Pat. Off., Nov. 3, 1995, 95307853

Int. Cl.⁶ A61K 7/46

U.S. Cl. 512—8

5 Claims

1. A perfume comprising known fragrance materials together with an effective amount of 2-cyclopentylidene-cyclopentanol.

5,776,885

SUSTAINED AND CONTROLLED RELEASE OF WATER INSOLUBLE POLYPEPTIDES

Piero Orsolini, Martigny; Roland-Yves Mauvernay, and Romano Deghenghi, both of Lausanne, all of Switzerland, assignors to Debio Recherche Pharmaceutique SA, Martigny, Switzerland

Continuation of Ser. No. 915,491, Jul. 16, 1992, abandoned, which is a division of Ser. No. 247,060, Sep. 20, 1988, Pat. No. 5,192,741. This application Feb. 10, 1994, Ser. No. 196,872

Claims priority, application United Kingdom, Sep. 21, 1988, 8722134

Int. Cl.⁶ A61K 38/04; 9/52

U.S. Cl. 514—2

12 Claims

1. A dry pharmaceutical composition designed for sustained release of a water-insoluble peptide salt comprising a polylactide polymer, a polymer of lactic and glycolic acid, or a mixture of said polymers and a therapeutically active peptide in the form of its pamoate salt, which composition, when placed in an aqueous physiological environment, releases the peptide in a continuous manner for a period of at least one week followed by maintenance of activity of the peptide for at least one month.

5,776,886

INTRAVAGINAL PREPARATION CONTAINING PHYSIOLOGICALLY ACTIVE PEPTIDE

Shigeyuki Inamoto; Masaaki Uchida, and Yukiko Inamoto, all of Kagawa-ken, Japan, assignors to Teikoku Seiyaku Kabushiki Kaisha, Kagawa-ken, Japan

PCT No. PCT/JP94/00894, § 371 Date Dec. 6, 1995, § 102(e) Date Dec. 6, 1995, PCT Pub. No. WO94/28918, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 2, 1994, Ser. No. 557,104

Claims priority, application Japan, Jun. 7, 1993, 5-135738

Int. Cl.⁶ A61K 9/02; 38/00; 47/12; 47/14

U.S. Cl. 514—2

3 Claims

1. A method of administering a preparation containing a physiologically active peptide to a patient in need thereof, wherein the preparation comprises a physiologically active peptide, a sucrose fatty acid ester and an organic acid which is selected from the group consisting of:

- (i) a hydroxycarboxylic acid group which is tartaric acid,
(ii) a polycarboxylic acid group which is selected from succinic acid, malonic acid, glutaric acid and adipic acid,
(iii) an unsaturated aliphatic carboxylic acid group which is selected from fumaric acid and maleic acid,
(iv) an aromatic carboxylic acid group which is selected from benzoic acid, phthalic acid and hydroxybenzoic acid, and
(v) an ascorbic acid group which is selected from ascorbic acid and isoascorbic acid,

or a pharmaceutically acceptable salt thereof in a pharmaceutically acceptable carrier or diluent, and which preparation has a pH value of 3 to 7; said method comprising administering the preparation to the patient intravaginally.

5,776,887

DIABETIC NUTRITIONAL PRODUCT HAVING CONTROLLED ABSORPTION OF CARBOHYDRATE

Gregory J. Wibert, Martinez, Calif.; Harry L. Greene, West Palm Beach, Fla.; Kim R. Keating, and Yung-Hsiung Lee, both of Evansville, Ind., assignors to Bristol-Myers Squibb Company, Evansville, Ind.

Filed Oct. 10, 1996, Ser. No. 722,446

Int. Cl.⁶ A61K 38/00; 31/70

U.S. Cl. 514—2

14 Claims

1. A nutritional composition for the dietary management of diabetics comprising

- (a) a protein component comprising 1 to 50% of total caloric value;

- (b) a fat component comprising 0 to 45% of total caloric value;
(c) a carbohydrate component comprising 5 to 90% of total caloric value wherein said carbohydrate component comprises
(i) a rapidly absorbed fraction comprising glucose, one or more rapidly absorbed disaccharides containing a glucose unit, or a mixture thereof, wherein said fraction includes sucrose;

- (ii) a moderately absorbed fraction comprising one or more moderately absorbed monosaccharides, disaccharides, glucose-containing polysaccharides, or mixture thereof;

- (iii) a slowly absorbed fraction comprising one or more slowly absorbed glucose-containing polysaccharides; and

- (d) fiber.

5,776,888

COMPOUNDS AND COMPOSITIONS FOR DELIVERING ACTIVE AGENTS

Andrea Leone-Bay, Ridgefield, Conn.; Eric Wang, Yonkers, N.Y.; Donald J. Sarubbi, Bronxville, N.Y., and Harry Leopold, Elmsford, N.Y., assignors to Emsphere Technologies, Inc., Hawthorne, N.Y.

Filed Feb. 7, 1997, Ser. No. 796,338

Int. Cl.⁶ A61K 38/17; 38/29

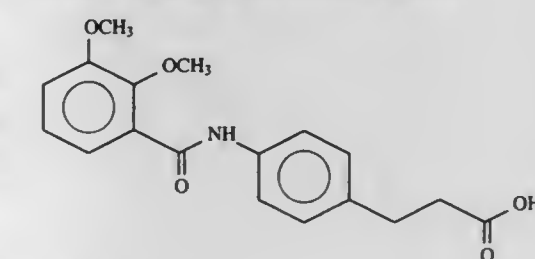
U.S. Cl. 514—2

21 Claims

1. A composition comprising:

- (A) at least one active agent; and

- (B) a compound having the following formula



or a salt thereof.

5,776,889

HYPERSENSITIVE RESPONSE INDUCED RESISTANCE IN PLANTS

Zhong-Min Wei, and Steven V. Beer, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 475,775, Jun. 7, 1995, abandoned.

This application Jul. 10, 1997, Ser. No. 891,254

Int. Cl.⁶ A01N 37/18; 63/00; 65/00; A61K 38/00

U.S. Cl. 514—2

26 Claims

1. A method of imparting pathogen resistance to plants comprising:

applying externally to a plant a hypersensitive response eliciting bacterium, which does not cause disease in that plant, or a hypersensitive response eliciting polypeptide or protein, wherein the hypersensitive response eliciting polypeptide or protein corresponds to that derived from a pathogen selected from the group consisting of *Erwinia amylovora*, *Erwinia chrysanthemi*, *Pseudomonas syringae*, *Pseudomonas solanacearum*, *Xanthomonas campestris*, and mixtures thereof.

5,776,890

HEMOGLOBINS WITH INTERSUBUNIT DISULFIDE BONDS

Stephen J. Hoffman, Denver, Colo., and Kiyoshi Nagai, Cambridge, England, assignors to Somatogen, Inc., Boulder, Colo.

Continuation of Ser. No. 158,483, Nov. 29, 1993, Pat. No. 5,449,759, which is a continuation of Ser. No. 443,950, Dec. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 194,338, May 10, 1988, Pat. No. 5,028,588. This application May 30, 1995, Ser. No. 453,666

Claims priority, application United Kingdom, May 16, 1987, 8711614

Int. Cl.⁶ C07K 14/805

U.S. Cl. 514—6

24 Claims

1. A non-naturally occurring hemoglobin-like protein characterized by a plurality of subunits and by the presence of an intersubunit disulfide bond, said protein comprising at least one tetramer or pseudotetramer of two alpha globin-like subunits and two beta globin-like subunits.

5,776,891

COMPOSITIONS FOR REDUCING MULTIDRUG RESISTANCE

John S. Coon, Oak Park, Ill.; Mannarsamy Balasubramanian, Roswell, Ga.; R. Martin Emanuele, Alpharetta, Ga., and Himanshu Shah, Atlanta, Ga., assignors to Rush Presbyterian-St. Luke Medical Center, Chicago, Ill.

Division of Ser. No. 445,191, May 19, 1995, abandoned, which is a continuation-in-part of Ser. No. 246,037, May 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 982,766, Dec. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 805,186, Dec. 10, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 480,582

Int. Cl.⁶ A61K 38/16; A01N 43/04

U.S. Cl. 514—10

3 Claims

1. A composition for reversing multidrug resistance comprising:



wherein "a" is between approximately 20 through 60 and "b" is between approximately 10 and 30, and a chemotherapeutic agent.

5,776,892

ANTI-INFLAMMATORY PEPTIDES

David F. Counts, Coram, and Ronald G. Duff, East Moriches, both of N.Y., assignors to Curative Health Services, Inc., Hauppauge, N.Y.

Continuation-in-part of Ser. No. 80,371, Jun. 18, 1993, abandoned, and a continuation-in-part of Ser. No. 37,486, Mar. 24, 1993, Pat. No. 5,470,831, which is a continuation of Ser. No. 631,823, Dec. 21, 1990, abandoned. This application Jun. 16, 1994, Ser. No. 259,550

Int. Cl.⁶ A61K 38/07; 38/08; 38/12; C07K 7/06

U.S. Cl. 514—11

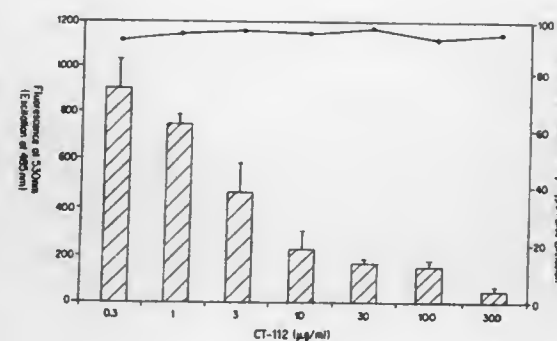
24 Claims

22. A method of inhibiting an inflammatory response that is associated or caused by a disease selected from the group consisting of ulcerative colitis, rheumatoid arthritis, scleroderma, mixed connective tissue disease and systemic lupus erythematosus, in a tissue of a subject in need of such treatment, comprising exposing the subject to an effective amount of a peptide selected from the group consisting of:

Thr-Thr-Ser-Gln-Val-Arg-Pro-Arg (SEQ. ID NO: 1);

Val-Lys-Thr-Thr-Ser-Gln-Val-Arg-Pro-Arg (SEQ. ID NO: 2);

Ser-Gln-Val-Arg-Pro-Arg (SEQ. ID NO: 3);



Val-Arg-Pro-Arg (SEQ. ID NO: 4);

Thr-Thr-Ser-Gln-Val-Arg-Pro-Arg-His-Ile-Thr (SEQ. ID NO: 5);

Thr-Thr-Ser-Gln-Val (SEQ. ID NO: 6);

Thr-Ser-Gln-Val-Arg (SEQ. ID NO: 7); and

Thr-Thr-Ser-Gly-Ile-His-Pro-Lys (SEQ. ID NO: 8).

5,776,893

CRYSTALLINE HYDRATED LAYERED SODIUM AND POTASSIUM SILICATES AND METHOD OF PRODUCING SAME

Eric Von Rehren Borgstedt, Louisville, Ky., and Raymond P. Denkwicz, Jr., Providence, R.I., assignors to PQ Corporation, Valley Forge, Pa.

Division of Ser. No. 334,269, Nov. 3, 1994, Pat. No. 5,643,358, which is a continuation-in-part of Ser. No. 258,466, Jun. 10, 1994, Pat. No. 5,614,160, and a continuation-in-part of Ser. No. 270,489, Jul. 5, 1994. This application Jun. 6, 1995, Ser. No. 467,616

Int. Cl.⁶ C11D 3/08; C01B 33/32

U.S. Cl. 510—511

13 Claims

2. A cleaning composition comprising a surfactant and a builder comprising a composite of crystalline hydrated layered sodium and potassium silicate and amorphous sodium and potassium silicate wherein said crystalline hydrated layered sodium and potassium silicate has an x-ray diffraction pattern having d-spacings of 10.30 Å, 5.13 Å, 4.02 Å, 3.63 Å, 3.43 Å, 3.16 Å, 3.09 Å, 2.47 Å, 2.42 Å, and 2.09 Å.

10. A detergent builder comprising a crystalline hydrated layered sodium and potassium silicate produced by a process comprising the steps of:

heating an amorphous sodium/potassium silicate, wherein the molar ratio of SiO₂ to Na₂O and K₂O in said sodium/potassium silicate is between 1.7 and 3.22, for a time of at least about fifteen minutes and at a temperature between about 500° C. and about 800° C. in the optional presence of water to produce a material comprising predominantly crystalline disilicate;

hydrolyzing said material with a hydrolyzing agent selected to provide hydrolyzing ions selected from the group consisting of H₃O⁺ and OH⁻ to produce a crystalline hydrated layered sodium and potassium silicate product; and separating by filtering or spray drying said product from said hydrolyzing agent.

5,776,894

CHELATED SOMATOSTATIN PEPTIDES AND COMPLEXES THEREOF, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND THEIR USE IN TREATING TUMORS

Rainer Albert, Basel, Switzerland; Eric P. Krenning; Steven W. J. Lamberts, both of Rotterdam, Netherlands, and Janos Pless, Basel, Switzerland, assignors to Novartis AG, Basel, Switzerland

Continuation of Ser. No. 328,296, Oct. 24, 1994, abandoned, which is a continuation of Ser. No. 34,336, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 709,868, Jun. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 445,815, Dec. 4, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 479,052

Claims priority, application United Kingdom, Dec. 5, 1988, 8828364; Jul. 13, 1989, 8916115; Jul. 21, 1989, 8916761; May 23, 1991, 9111199

Int. Cl.⁶ A61K 38/04; 38/31; C07K 7/08; 14/655

U.S. Cl. 514—11

19 Claims

1. A somatostatin peptide having a physiologically acceptable chelating group for a detectable element covalently linked directly or indirectly to the N-terminal amino group of the somatostatin peptide, in free form or in pharmaceutically acceptable salt form.

5,776,895

COMPOSITIONS OF G-CSF AND TNF-BP FOR PROPHYLAXIS AND TREATMENT OF SEPTIC SHOCK

Gottfried Alber, Grenzach-Whyllen, Germany, and Peter Angehrn, Bockten, Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed Jan. 23, 1995, Ser. No. 376,267

Claims priority, application European Pat. Off., Feb. 4, 1994, 94810059

Int. Cl.⁶ C07K 14/715; 14/53; A61K 38/16; 38/19

U.S. Cl. 514—12

2 Claims

1. A composition which contains G-CSF or a pharmaceutically acceptable salt thereof and a TNF binding protein which is a chimeric polypeptide which comprises the soluble part of the p55 TNF receptor and all domains except the first domain of the constant region of the heavy chain of human immunoglobulin IgG1 or IgG3 or a pharmaceutically salt thereof, in a combined amount effective to prevent or treat septic shock, and a pharmaceutically acceptable carrier.

5,776,896

ANALGESIC PEPTIDES FROM VENOM OF GRAMMOSTOLA SPATULATA AND USE THEREOF

Richard Alexander Lampe, Pennsville, N.J., assignor to Zeneca Limited, London, England

Filed Dec. 30, 1996, Ser. No. 775,476

Int. Cl.⁶ A61K 38/00; A01N 37/18; A61M 21/00; C07C 245/00

U.S. Cl. 514—12

3 Claims

1. A method of treating pain comprising administering to a mammal in need of such treatment an effective analgesic amount of a peptide having the amino acid sequence of SEQ ID. NO.: 1 or SEQ ID. NO.: 2.

5,776,897

TREATING DISORDERS BY APPLICATION OF INSULIN-LIKE GROWTH FACTORS AND ANALOGS

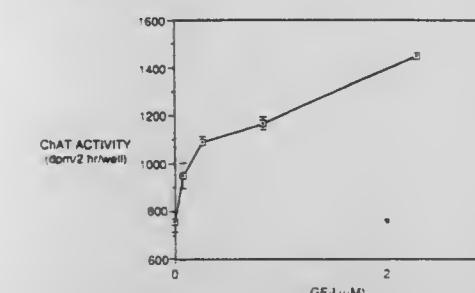
Michael E. Lewis, West Chester; James C. Kauer, Kennet Square; Kevin R. Smith, Parkesburg, all of Pa.; Kathleen V. Callison, Merchantville, N.J.; Frank Baldino, Landenberg, Pa.; Nicola Neff, Wallingford, Pa., and Mohamed Iqbal, Malvern, Pa., assignors to Cephalon, Inc., West Chester, Pa.

Continuation of Ser. No. 958,903, Oct. 7, 1992, Pat. No. 5,652,214, which is a continuation-in-part of Ser. No. 869,913, Apr. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 534,139, Jun. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 361,595, Jun. 5, 1989, Pat. No. 5,093,317. This application Mar. 24, 1997, Ser. No. 823,245

Int. Cl.⁶ A61K 38/30

U.S. Cl. 514—12

6 Claims



1. A method of treating a mammal subjected to a neurological disease by enhancing the survival of non-mitotic neurons of the brain or spinal cord of said mammal, said neurons being at risk of dying due to such disease, said method comprising administering to said mammal a therapeutically effective amount of insulin-like growth factor I.

5,776,898

METHOD FOR TREATING A TUMOR WITH A CHEMOTHERAPEUTIC AGENT

Beverly A. Teicher, Needham; Carl W. Rausch, Medford, and Robert E. Hopkins, II, Scituate, all of Mass., assignors to Dana-Farber Cancer Institute, Boston, and Biopure Corporation, Cambridge, both of Mass.

Continuation-in-part of Ser. No. 94,501, Jul. 20, 1993, which is a continuation-in-part of Ser. No. 699,769, May 14, 1991.

This application Jun. 7, 1995, Ser. No. 477,110

Int. Cl.⁶ A61K 38/42; 38/17; C07K 14/47; 14/805

U.S. Cl. 514—6

14 Claims

1. A method for treating a tumor in a host with a chemotherapeutic agent which, when administered to said host, has an antitumor effect on said tumor, comprising:

a) administering to said host a nonemulsified ultrapurified polymerized hemoglobin solution in an amount sufficient to significantly increase the antitumor effect of said agent; and
b) administering to said host an effective amount of said chemotherapeutic agent.

5,776,899

POLYPEPTIDE AND ANTI-HIV AGENT PREPARED THEREFROM

Akiyoshi Matsumoto, Hino, and Michioori Waki, Higashimura, both of Japan, assignors to Seikagaku Corporation, Tokyo, Japan

PCT No. PCT/JP94/01706, § 371 Date Jun. 13, 1995, § 102(e) Date Jun. 13, 1995, PCT Pub. No. WO95/10534, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 12, 1994, Ser. No. 454,235

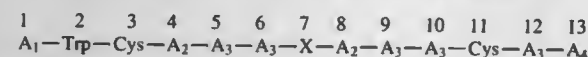
Claims priority, application Japan, Oct. 14, 1993, 5-280346

Int. Cl.⁶ A61K 38/00; 38/04; C07K 5/00; 7/00

U.S. Cl. 514—14

7 Claims

1. A polypeptide represented by the following formula



or salt thereof in which

A₁ is a basic amino acid residue, or a peptide residue having at least two basic amino acids, selected from the group consisting of lysine, arginine and ornithine, said basic amino acid residue or peptide residue in which N-α hydrogen atom of amino terminal end of said amino acid residue may be replaced with an acyl group or a substituted thiocarbamoyl group, forming N-α acyl substituted basic amino acid residue, N-α acyl substituted peptide residue, N-α substituted thiocarbamoyl group substituted basic amino acid residue or N-α substituted thiocarbamoyl group substituted peptide residue;

A₂ is a tyrosine or phenylalanine residue;A₃ is a lysine or arginine residue;A₄ is an —OH (derived from a carboxyl group) or an —NH₂ (derived from an acid amide group);

X is a peptide residue selected from the group consisting of the peptides represented by D-ornithyl-proline, prolyl-D-ornithine, D-lysyl-proline, prolyl-D-lysine, D-arginyl-proline, prolyl-D-arginine, glycyl-ornithine, ornithyl-glycine, glycyl-lysine, lysyl-glycine, glycyl-arginine and arginyl-glycine, in which the hydrogen atom of the ω-amino group of D-lysine, L-lysine, D-ornithine and L-ornithine may be replaced by an ω-amino acyl group, and said peptide residue is connected to the amino acid residues at the 6th and the 8th positions via peptide bond per se;

Trp is a tryptophan residue; and

Cys is a cysteine residue.

5,776,900

HEMOREGULATORY PEPTIDES

Pradip Kumar Bhatnagar, Exton; William Francis Huffman, Malvern, both of Pa., and James Edward Talmadge, Bellevue, Nebr., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

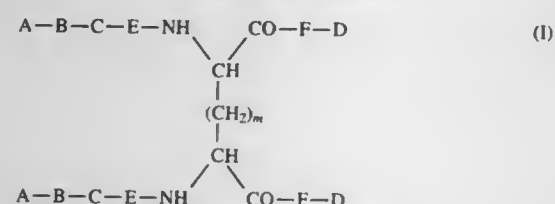
Continuation of Ser. No. 1,905, Jan. 8, 1993, Pat. No. 5,620,957, which is a continuation-in-part of Ser. No. 819,024, Jan. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 547,730, Jul. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 380,578, Jul. 14, 1989, abandoned. This application May 30, 1995, Ser. No. 453,123

Int. Cl.⁶ A61K 38/00; 38/02; C07K 5/00; 7/00

U.S. Cl. 514—15

10 Claims

1. A method of preventing viral, fungal and bacterial infections which comprises administering to a subject in need thereof, an effective amount of a compound of Formula (I):



wherein:

m is 1, 2 or 4;

A is pyroglutamic acid, proline, glutamine, glutamic acid, picolinic acid, pipecolinic acid, pyrrole carboxylic acid, isopyrrole carboxylic acid, pyrazole carboxylic acid, isoimidazole carboxylic acid, triazole carboxylic acid, pyrimidine carboxylic acid, pyridine carboxylic acid, pyridazine carboxylic acid, pyrazine carboxylic acid, piperazine carboxylic acid, triazine carboxylic acid or morpholine carboxylic acid;

B is serine, threonine, glutamic acid, or aspartic acid;

C is glutamic acid or aspartic acid;

D is lysine or the carboxamide derivative thereof;

E is glutamic acid, aspartic acid or a peptide bond;

F is tyrosine or a peptide bond;

or a pharmaceutically acceptable salt thereof.

5,776,901

POLYPEPTIDE ANALOGUES HAVING GROWTH HORMONE RELEASING ACTIVITY

Cyril Y. Bowers, and David Coy, both of New Orleans, La., assignors to Administrators of the Tulane Educational Fund, New Orleans, La.

Continuation-in-part of Ser. No. 748,350, Aug. 22, 1991. This application Aug. 20, 1992, Ser. No. 932,494

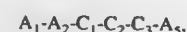
The portion of the term of this patent subsequent to Aug. 22, 2011, has been disclaimed.

Int. Cl.⁶ A61K 38/00; C07K 5/00; 7/00

U.S. Cl. 514—16

45 Claims

1. A peptide of the formula



where

A₁ is Gly, DAla, β-Ala, Met, Pro, Sar, Ava, Aib, a N-lower alkyl aminocarboxylic acid, a N,N-bis-lower alkyl aminocarboxylic acid, an azole carboxylic acid or a lower alkyl aminocarboxylic acid, wherein the lower alkyl group comprises 2 to about 10 straight-chain carbon atoms; A₂ is DTrp, D^βNal, D-4-Y-Phe or 5-Y-D-Trp, wherein Y is OH, Cl, Br, F or H;

A₅ is A₃-A₄-A₅, A₃-A₅, A₄-A₅, or A₅, wherein(a) A₃ is Ala, Gly, DAla, Pro or desAla;(b) A₄ is Ala, Gly, DAla, Pro, a linear lower alkyl aminocarboxylic acid, or desAla; and

(c) A₅ is Lys(ξ-R₁,R₂)-Z, Orn(δ-R₁,R₂)-Z, NH(CH₂)₂N(R₃,R₄), Lys-Z, Orn-Z or Arg-Z; wherein R₁ is a linear lower alkyl group or H atom; R₂ is a linear lower alkyl group or H atom; but when R₁ is H, R₂ is not H; and when R₂ is H, R₁ is not H; R₃ is a linear lower alkyl group or H atom; R₄ is a linear lower alkyl group or H atom; Z is NH(linear lower alkyl group), N(linear lower alkyl group)₂, O(linear lower alkyl group), NH₂ or OH, wherein the linear lower alkyl group is as defined as the lower alkyl group alkyl; x is 2 through 15;

C₁ is Ala;C₂ is Trp, Phe or ChxAla;C₃ is DPhe, DPAl or DChxAla

and organic or inorganic addition salts of the above.

5,776,902

BORONOPHENYL ANALOGS OF PHOSPHOLYROSINES

William W. Bachovchin, Melrose, Mass., assignor to Trustees of Tufts University, Medford, Mass.

Continuation-in-part of Ser. No. 214,643, Mar. 15, 1994, Pat. No. 5,580,979. This application May 31, 1995, Ser. No. 454,920

Int. Cl.⁶ A61K 38/05; 38/07; C07K 5/06; 5/08

U.S. Cl. 514—18

15 Claims

1. A peptidomimetic including one or more amino acid residues having sidechains represented by the formula:

5,776,904

DISPERSION PREPARATION

Junzo Seki, Hyogo, and Hirofumi Yamamoto, Kyoto, both of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

PCT No. PCT/JP91/01564, § 371 Date Jun. 3, 1993, § 102(e) Date Jun. 3, 1993, PCT Pub. No. WO92/08467, PCT Pub. Date May 29, 1992

PCT Filed Nov. 15, 1991, Ser. No. 50,217

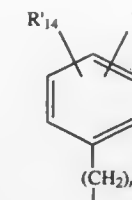
Claims priority, application Japan, Nov. 16, 1990, 2-312057

Int. Cl.⁶ A61K 31/70

U.S. Cl. 514—31

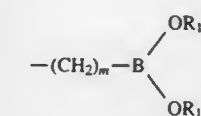
16 Claims

1. A liquid dispersion suspension consisting essentially of amphotericin B having a particle size of approximately 1 μm or less, persistently dispersed and suspended in water.



wherein

Y' represents a substitution at one of the meta, ortho or para positions of the phenyl moiety, Y' being a borono given by the general formula



R₁₅ and R₁₆ each independently represent hydrogen, a lower alkyl, or a pharmaceutically acceptable salt, or R₁₅ and R₁₆ taken together with the O—B—O atoms to which they are attached complete a heterocyclic ring having from 5 to 8 atoms in the ring structure;

R'14 is absent or represents one or more substituents at remaining ring positions, which substituents are selected from halogens, lower alkyls, lower alkoxy, a hydroxyl; amino, nitro, thiol, amines, imines, amides, carbonyls, carboxyls, silyls, esters, or —(CH₂)_m—R₇, —CF₃, or —CN and R₇ represents an aryl, a cycloalkyl, a cycloalkenyl, a heterocycle or a polycycle;

m, independently for each occurrence, is zero or an integer in the range of 1 to 8; and

n is 1, 2 or 3,

wherein the peptidomimetic is at least a dipeptide in length.

5,776,903

PEPTIDE DERIVATIVES USABLE AS ZINC ENDOPEPTIDASE 24-15 INHIBITORS

Vincent Dive, Vincennes, France; Jiri Jiracek, Prague, Czechoslovakia, and Athanasios Yiotakis, Athens, Greece, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 24, 1996, Ser. No. 590,483

Claims priority, application France, Feb. 6, 1995, 95 01328

Int. Cl.⁶ A61K 38/07; C07K 5/10

U.S. Cl. 514—18

6 Claims

1. Peptide derivative according to the formula:



in which

Z represents the benzyloxycarbonyl group,

ψ(PO₂CH₂) indicates that the peptide bond (CO—NH) has been replaced by the phosphine bond (PO₂—CH₂),

Xaa' represents Gly, Ala or Leu,

Zaa' represents Met, Nle, Phe, Leu or Ile, and

R¹ represents a hydrogen atom, NH₄⁺ or a pharmaceutically acceptable metal.

5,776,905

APOPTOTIC REGRESSION OF INTIMAL VASCULAR LESIONS

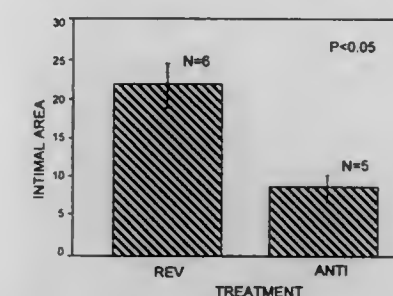
Gary H. Gibbons, Palo Alto, and Matthew J. Pollman, San Francisco, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Aug. 8, 1996, Ser. No. 694,927

Int. Cl.⁶ A61K 48/00

U.S. Cl. 514—44

11 Claims



1. A method of reducing the dimensions of a neointimal vascular lesion in a patient, the method comprising:

administering an effective amount of a synthetic anti-sense oligonucleotide that specifically blocks expression of bcl-x; wherein apoptosis is induced in said neointimal cells, thereby reducing the dimensions of said neointimal vascular lesion.

5,776,906

METHOD FOR PROMOTING FAT-DEGRADATION IN FAT CELLS

Keizo Sekiya, Zentsuji, Japan, assignor to Director General of Shikoku National Agricultural Experiment Station, Ministry of Agriculture, Forestry and Fisheries, Zentsuji, Japan

Filed Nov. 22, 1996, Ser. No. 755,257

Claims priority, application Japan, Sep. 13, 1996, 8-263773

Int. Cl.⁶ A61K 31/70; 31/35

U.S. Cl. 514—27

6 Claims

1. A method for promoting fat degradation in a fat cell comprising the step of administering to a human a composition containing an effective amount of an isoflavone, thereby promoting fat degradation in the fat cell.

5,776,907

MITOMYCIN OLIGONUCLEOTIDE CONJUGATES
Harold L. Kohn, Nam Huh, both of Houston; Timothy P. Kogan, Sugar Land, and Ajay A. Rege, Houston, all of Tex., assignors to Texas Biotechnology Corporation, Houston, Tex.

Filed May 20, 1996, Ser. No. 650,289

Int. Cl.⁶ A61K 48/00;31/74; C07H 21/00; C07D 487/14

U.S. Cl. 514—44 16 Claims

1. A conjugate comprising an antisense oligonucleotide conjugated to the carbon atom at position 10 of mitomycin C or a derivative thereof.

5,776,908

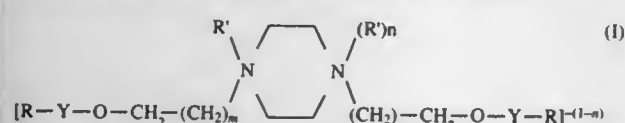
AMPHIPHILIC DERIVATIVES OF PIPERAZINE
Timothy D. Heath, and Igor Solodin, both of Madison, Wis., assignors to Megabios Corp., Burlingame, Calif.

Division of Ser. No. 255,319, Jun. 7, 1994, Pat. No. 5,665,879, which is a continuation-in-part of Ser. No. 157,637, Nov. 24, 1993, abandoned. This application Mar. 20, 1997, Ser. No. 822,336

Int. Cl.⁶ C12Q 1/68; A01N 61/00;43/04

U.S. Cl. 514—44 30 Claims

1. A method of transforming cells comprising contacting said cells with a plurality of complexes comprising an expression cassette and a heterocyclic amphiphilic cation of formula



wherein each R independently is a straight-chain, aliphatic hydrocarbyl group of from 5 to 29 carbon atoms inclusive, each Y is —CH₂— or —CO—, each R' independently is a lower alkyl group, each m independently is an integer from 0 to 7 inclusive and n is zero or 1, with the proviso that the total number of carbon atoms in R and —CH₂— is at least 10, said cation when complexed to a nucleic acid construct and administered in vivo to a mammal provide for transformation of cells in one or more tissues of said mammal.

5,776,909

Patent Not Issued For This Number

5,776,910

METHODS OF STIMULATING PHAGOCYTOSIS
Alan D. Schreiber, Philadelphia, and Jong-Gu Park, Drexel Hill, both of Pa., assignors to University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 129,391, Sep. 30, 1993, abandoned.

This application Jun. 6, 1995, Ser. No. 468,091

Int. Cl.⁶ C12N 15/00;5/00; A61K 48/00; C07H 21/02

U.S. Cl. 514—44 20 Claims

1. A method of increasing the phagocytic activity of lung cells of a mammal comprising introducing into said cells, via direct administration to said cells, a DNA molecule coding for an Fc receptor, wherein said DNA molecule is present as an insert in a viral vector, is present in a liposome or is present in a non-infectious bacterium, and wherein said administration is effected under conditions such that said DNA molecule is expressed and said Fc receptor thereby produced and the phagocytic activity of said cells thereby increased,

wherein said Fc receptor has the extracellular domain of FcγRIIA, FcγRI or the α chain of FcγRIIA, the transmembrane domain of FcγRIIA or of the γ chain of FcγRIIA, and the cytoplasmic domain of FcγRIIA or of the γ chain of FcγRIIA.

5,776,911

USE OF (S)-ADENOSYL-L-METHIONINE (SAME) AND ITS PHYSIOLOGICALLY TOLERATED SALTS FOR TREATING REPERFUSION DAMAGE CAUSED BY TEMPORARY FOCAL ISCHEMIA

Laszlo Szabo, Dossenheim, Germany, assignor to Knoll Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/02598, § 371 Date Jan. 16, 1997, § 102(e)

Date Jan. 16, 1997, PCT Pub. No. WO96/02252, PCT Pub.

Date Feb. 1, 1996

PCT Filed Jul. 5, 1995, Ser. No. 776,006

Claims priority, application Germany, Jul. 16, 1994, 44 25 280.3

Int. Cl.⁶ A61K 31/70

U.S. Cl. 514—46

2 Claims

1. A method of treating a patient suffering from reperfusion damage caused by temporary focal ischemia, which comprises administering to the patient an effective amount of (S)-adenosyl-L-methionine (SAME) or a physiologically tolerated salt thereof.

5,776,912

LIPOPHILIC OLIGOSACCHARIDE ANTIBIOTIC COMPOSITIONS

Mahesh G. Patel, Verona; Vincent P. Gullo, Liberty Corner; Roberta S. Hare, Gillette, all of N.J.; David Loebenberg, Monsey, N.Y.; Heewon Y. Kwon, Warren, and George H. Miller, Montville, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

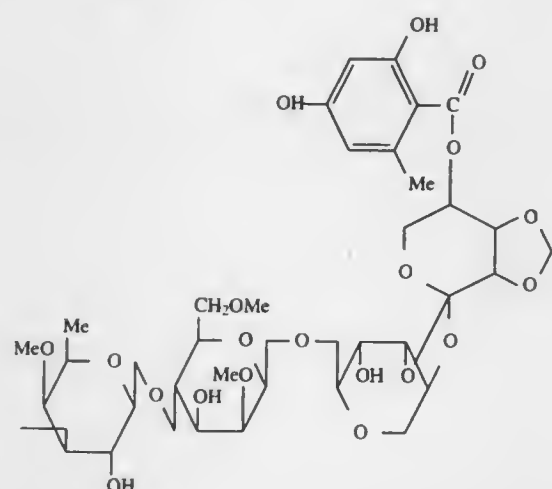
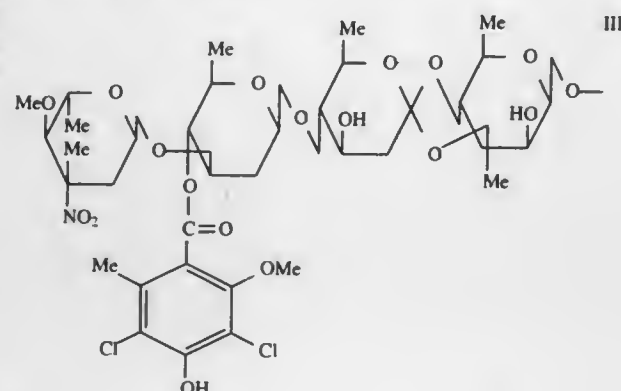
Filed Dec. 20, 1996, Ser. No. 770,470

Int. Cl.⁶ A61K 31/70

U.S. Cl. 514—54

27 Claims

20. A composition of matter comprising
(a) the lipophilic oligosaccharide antibiotic represented by Formula III.



5,776,915

PHOSPHOCHOLINES OF RETINOIDS

Andrew C. Peterson, Madison, Wis., and Haridasan K. Nair, Williamsville, N.Y., assignors to Clarion Pharmaceuticals Inc., Madison, Wis.

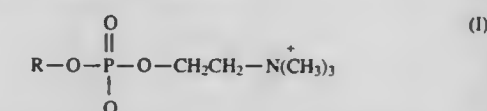
Filed Aug. 12, 1997, Ser. No. 910,191

Int. Cl.⁶ A61K 31/685;9/127; C07F 9/10;9/09

U.S. Cl. 514—77

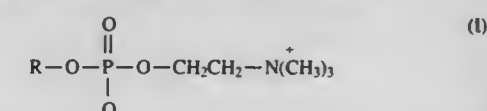
19 Claims

1. A retinyl- or retinoylphosphocholine selected from the group consisting of Formula (I) compounds:



wherein R represents a retinyl or retinoyl moiety, and pharmaceutically-acceptable salts thereof.

4. A method of treating inflammation, tumors, or psoriasis in a mammal which comprises administering to the mammal an effective anti-inflammatory, anti-tumor or anti-psoriatic amount, respectively, of one or more retinyl- or retinoylphosphocholines selected from the group consisting of formula (I) compounds:



wherein R represents a retinyl moiety, and pharmaceutically-acceptable salts thereof.

5,776,916

MEDICAMENT FOR REDUCING THE INTRAOCULAR PRESSURE

Eugen Gramer, An den Muhlthannen 16, D-8700 Wurzburg, Germany

Continuation of Ser. No. 961,678, Jan. 8, 1993, abandoned.

This application Jun. 7, 1995, Ser. No. 478,182

Claims priority, application Germany, Jul. 10, 1990, 40 21 885.6

Int. Cl.⁶ A61K 31/685

U.S. Cl. 514—78

20 Claims

1. A medicament for reducing intraocular pressure comprising a therapeutically effective amount of the fixed combination of carbachol and a locally applicable betablocker.

5,776,914

PREVENTION OF HEMOLYSIS

Paul B. Weisz, Yardley, and Edward J. Macarak, Glen Mills, both of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 762,606, Sep. 19, 1991, Pat. No.

5,446,030. This application Nov. 30, 1994, Ser. No. 346,804

Int. Cl.⁶ A61K 31/70

U.S. Cl. 514—58

34 Claims

1. A composition for storing and preserving erythrocytes which comprises erythrocytes and a polyanionic oligosaccharide comprising a cyclodextrin having at least two anionic substituents selected from the group consisting of sulfate, carboxylate, and phosphate, said polyanionic oligosaccharide being present in an amount effective for substantially inhibiting hemolysis of said erythrocytes.

9. A composition having reduced hemolytic activity which comprises a pharmaceutically active compound having hemolytic activity and a polyanionic oligosaccharide comprising a cyclodextrin having at least two anionic substituents selected from the group consisting of sulfate, carboxylate, and phosphate, said polyanionic oligosaccharide being present in an amount effective for substantially reducing said hemolytic activity of said pharmaceutically active compound.

Int. Cl.⁶ A61K 31/60;7/42;7/00

U.S. Cl. 514—159

14 Claims

1. A composition for regulating wrinkles or atrophy in mammalian skin comprising:

- (a) a safe and effective amount of salicylic acid;
- (b) a skin protectant; and
- (c) a pharmaceutically-acceptable carrier.

5,776,918

COMPOSITIONS FOR REGULATIONS SKIN WRINKLES
AND/OR SKIN ATROPHY

Roy Lonnie Blank, Spring Valley, N.Y.; Darrell Gene Doughty, Orange, and Carlos Gabriel Linares, Stamford, both of Conn., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 342,673, Nov. 21, 1994, Pat. No. 5,605,894, which is a continuation of Ser. No. 47,602, Apr. 14, 1993, abandoned, which is a continuation of Ser. No. 796,749, Nov. 25, 1991, abandoned. This application Dec. 16, 1996, Ser. No. 771,332

Int. Cl.⁶ A61K 31/60; 7/42; 7/44; 7/00

U.S. Cl. 514—159

12 Claims

1. A composition for regulating wrinkles or atrophy in mammalian skin comprising:

- (a) a safe and effective amount of salicylic acid;
- (b) a benzofuran derivative; and
- (c) a pharmaceutically-acceptable carrier.

5,776,919

POTENTIATORS OF ANTIMICROBIAL ACTIVITY

Masayuki Sukigara, Suzuka, Japan, and Isao Kubo, Moraga, Calif., assignors to Asahi Kasai Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 239,671, May 9, 1994, Pat. No. 5,587,358. This application Apr. 5, 1996, Ser. No. 634,759

Int. Cl.⁶ A61K 31/045; 31/395; 31/43; 31/62

U.S. Cl. 514—161

5 Claims

1. A pharmaceutical composition having antibacterial activity against methicillin-resistant *Staphylococcus aureus* comprising methicillin and a potentiator of antibacterial activity having the structure 2-hydroxy-6-R-benzoic acid, where R is an 8(Z), 11(Z), 14 - pentadecatrienyl group.

5,776,920

METHOD FOR TREATMENT OF PSORIASIS

Ruth Quarles, 1306 Karen Oval, Vienna, Ohio 44473

Filed Aug. 2, 1995, Ser. No. 510,389

Int. Cl.⁶ A61K 31/615; 31/19; 31/17

U.S. Cl. 514—162

20 Claims

1. A method for the treatment of psoriasis comprising the application of an effective amount of a composition comprising:

- (a) from about 10% to about 40% by weight of salicylic acid,
- (b) from about 1% to about 20% by weight of urea, and
- (c) from about 0.5% to about 20% by weight of lactic acid; the composition being applied at least once per day for a period of at least 4 days.

5,776,921

COMPOSITIONS FOR REGULATION OF IMMUNE
RESPONSES

Stephen Gates, 200 Carolina Ave. #403, Winter Park, Fla. 32789, and Roger M. Loria, 3219 Brook Rd., Richmond, Va. 23227

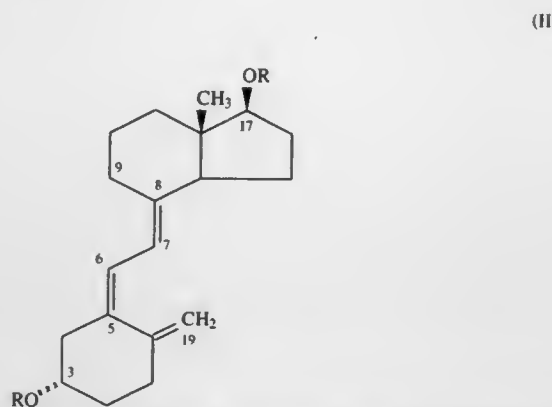
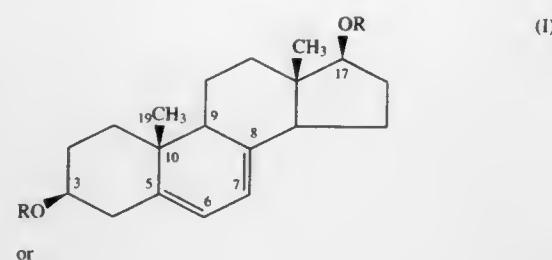
Continuation-in-part of Ser. No. 325,151, Oct. 20, 1994, Pat. No. 5,559,107. This application Sep. 23, 1996, Ser. No. 717,799

Int. Cl.⁶ A61K 31/59; 31/56

U.S. Cl. 514—167

12 Claims

1. A composition comprising as an active agent at least one compound of the formula:



wherein each R individually is chosen from the group consisting of hydrogen, alkyl having from 1–8 carbons, alkenyl having from 2–8 carbons, phenylalkyl wherein the substituted alkyl has from 1–4 carbons, phenyl, and COR₁, wherein each R₁ individually is chosen from the group consisting of alkyl having from 1 to about 8 carbons, alkenyl having from 2 to about 8 carbons, phenylalkyl wherein the alkyl has from 1 to about 4 carbons, and phenyl, wherein any phenyl group has have up to three substituents chosen from the group consisting of hydroxy, carboxy having from 1 to about 4 carbons, halo, alkoxy having from 1 to about 4 carbons or alkenyl having from 2 to about 4 carbons and wherein any alkyl is chosen from the group consisting of straight chain, branched chain or wholly or partially cyclized, in a pharmaceutically acceptable carrier.

5,776,922

CORTICOID DERIVATIVES AND PHARMACEUTICAL
AND COSMETIC COMPOSITIONS

Kazumi Ogata, Toyonaka; Hideki Tsuruoka, Kawanishi; Takahiro Sakaue, and Hidetoshi Nakao, both of Itami, all of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 365,004, Dec. 28, 1994, abandoned.

This application Jul. 29, 1996, Ser. No. 688,227

Claims priority, application Japan, Jan. 28, 1994, 6-008236

Int. Cl.⁶ C07F 9/09; A61K 31/665

U.S. Cl. 514—172

5 Claims

1. A corticoid derivative selected from the group consisting of 21-(L-ascorbyl-2-phosphoryl) dexamethasone, 21-(L-ascorbyl-2-phosphoryl)hydrocortisone, 21-(L-ascorbyl-2-phosphoryl) triamcinolone acetone and physiologically acceptable salts thereof.

5,776,923

METHOD OF TREATING OR PREVENTING
OSTEOPOROSIS BY ADMINISTERING
DEHYDROPIANDROSTERONE

Fernand Labrie, Quebec, Canada, assignor to Endorecherche, Inc., Quebec, Canada

Continuation-in-part of Ser. No. 5,619, Jan. 19, 1993, abandoned. This application Jan. 18, 1994, Ser. No. 180,361

Int. Cl.⁶ A61K 31/58; 31/565

U.S. Cl. 514—176

8 Claims

1. A method for the prevention or treatment of osteoporosis comprising administering to a patient in need of such prevention or treatment a therapeutically effective amount of DHEA.

5,776,924

Patent Not Issued For This Number

5,776,925

METHODS FOR CANCER CHEMOSENSITIZATION
Stuart W. Young, and Richard A. Miller, both of Portola Valley, Calif., assignors to Pharmacyclics, Inc., Sunnyvale, Calif.

Filed Jan. 25, 1996, Ser. No. 591,318

Int. Cl.⁶ A61K 31/40

U.S. Cl. 514—185

34 Claims

1. A method of chemosensitization comprising administering a chemotherapeutic agent and a texaphyrin to a subject in need thereof.

5,776,926

CEFIXIME COMPOSITION

Joachim Bolz; Gertraud Wagner, both of Darmstadt; Eckhard Oelrich, Rossdorf, and Dirk Radtke, Darmstadt, all of Germany, assignors to Merck Patent GmbH, Germany

Continuation of Ser. No. 453,812, May 30, 1995, abandoned.

This application Mar. 3, 1997, Ser. No. 806,757

Claims priority, application Germany, May 31, 1994, 44 18 957.5

Int. Cl.⁶ A61K 31/545

U.S. Cl. 514—200

11 Claims

1. A pharmaceutical composition, comprising (1) 0.1–5% by weight of micronized cefixime; (2) a non-aqueous suspending media; and (3) a microfine powder of a bulking agent containing a particle size distribution of 80% by weight or greater of a particle size diameter of 32 μm or less; and 5% by weight or less of a particle size diameter of 50 μm or greater, wherein the composition comprises less than 0.1 weight % of a thickening ancillary substance.

5,776,927

METHIONINE SULFONE AND S-SUBSTITUTED
CYSTEINE SULFONE DERIVATIVES AS ENZYME
INHIBITORS

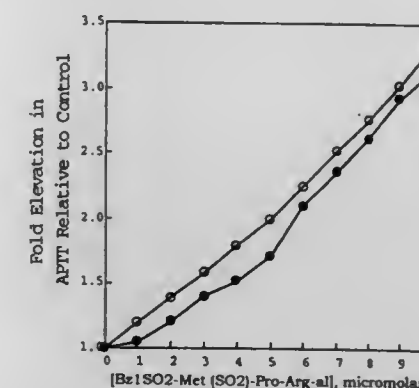
Matthew M. Abelman, Solana Beach, and Robert J. Ardecky, Encinitas, both of Calif., assignors to Corvas International, Inc., San Diego, Calif.

Filed Apr. 18, 1994, Ser. No. 229,298

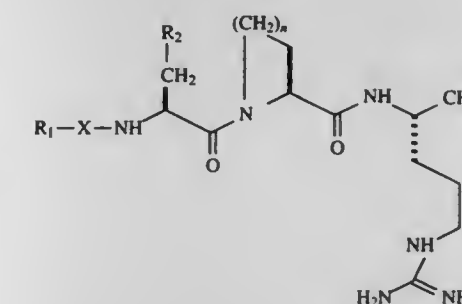
Int. Cl.⁶ A61K 31/395; 31/40; C07D 207/09; 205/04

U.S. Cl. 514—210

23 Claims



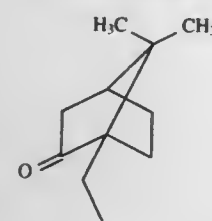
1. A compound of the formula:



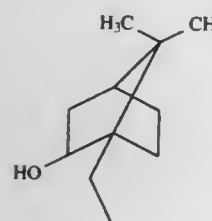
wherein

- (a) X is selected from the group consisting of —C(O)—, —S(O₂)—, —O—S(O₂)—, —NH—S(O₂)— and —N(R')—S(O₂)—, wherein R' is alkyl of 1 to about 4 carbon atoms, aryl of about 6 to about 14 carbon atoms, or aralkyl of about 6 to about 15 carbon atoms;
- (b) R₁ is selected from the group consisting of:
 - (1) alkyl of about 3 to about 10 carbon atoms,
 - (2) alkyl of 1 to about 3 carbon atoms substituted with cyclic alkyl of about 5 to about 8 carbon atoms,
 - (3) alkenyl of about 3 to about 6 carbon atoms which is optionally substituted with cyclic alkyl of about 5 to about 8 carbon atoms,
 - (4) aryl of about 6 to about 14 carbon atoms which is optionally mono-substituted with Y₁ or optionally di-substituted with Y₁ and Y₂,
 - (5) aralkyl of about 6 to about 15 carbon atoms which is optionally mono-substituted in the aryl ring with Y₁ or optionally di-substituted in the aryl ring with Y₁ and Y₂,
 - (6) aralkenyl of about 8 to about 15 carbon atoms which is optionally mono-substituted in the aryl ring with Y₁ or optionally di-substituted in the aryl ring with Y₁ and Y₂,
 - (7) perfluoroalkyl of 1 to about 12 carbon atoms,
 - (8) perfluoroaryl of about 6 to about 14 carbon atoms,

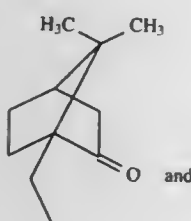
(9) trimethylsilylalkyl of about 4 to about 8 carbon atoms,



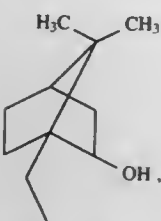
(10)



(11)

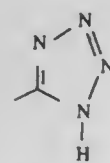


(12)



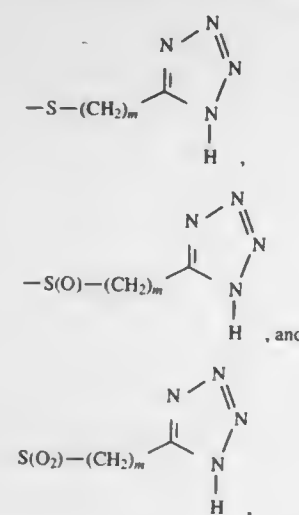
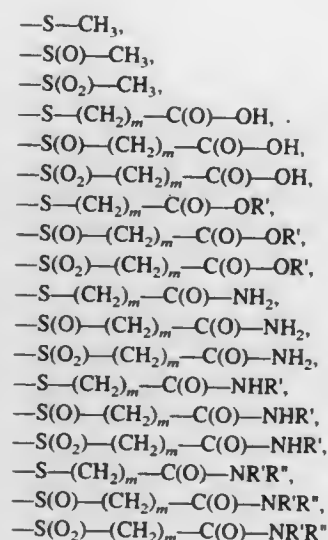
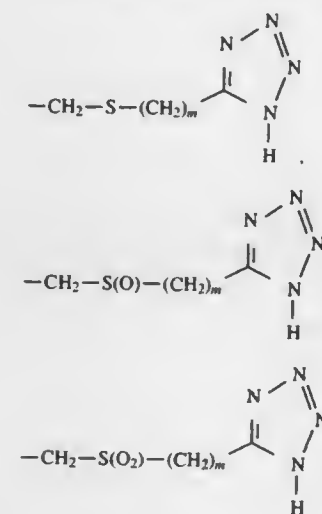
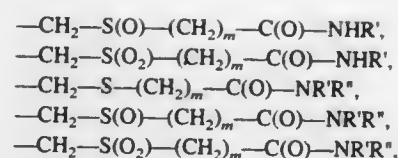
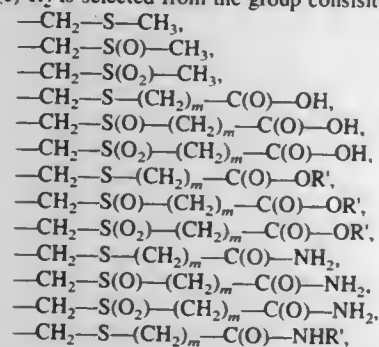
(13)

wherein Y_1 and Y_2 are independently selected from the group consisting of bromo, chloro, fluoro, $-Z_1$, $-OH$, $-OZ_1$, $-NH_2$, $-NHZ_1$, $-NZ_1Z_2$, $-NH-C(O)-Z_1$, $-N(Z_1)-C(O)-Z_2$, $-NH-C(O)-OZ_1$, $-N(Z_1)-C(O)-OZ_2$, $-NH-C(O)-NH_2$, $-NH-C(O)-NHZ_1$, $-NH-C(O)-NZ_1Z_2$, $-N(Z_1)-C(O)-NHZ_2$, $-N(Z_1)-C(O)-NZ_2Z_3$, $-C(O)-OH$, $-C(O)-OZ_1$, $-C(O)-NHZ_1$, $-C(O)-NZ_1Z_2$, $-SH$, $-SZ_1$, $-S(O)-Z_1$, $-S(O_2)-Z_1$, $-S(O_2)-OH$, $-S(O_2)-OZ_1$, $-S(O_2)-NH_2$, $-S(O_2)-NHZ_1$, $-S(O_2)-NZ_1Z_2$ and



wherein Z_1 , Z_2 and Z_3 are independently selected from the group consisting of trifluomethyl, pentafluoroethyl, alkyl of 1 to about 12 carbon atoms, aryl of about 6 to about 14 carbon atoms, and aralkyl of about 6 to about 15 carbon atoms;

(c) R_2 is selected from the group consisting of



wherein m is 1, 2, 3, 4, 5 or 6, and R' is alkyl of 1 to about 4 carbon atoms, aryl of about 6 to about 14 carbon atoms, or aralkyl of about 6 to about 15 carbon atoms; and
(d) n is 1; or pharmaceutically acceptable salts thereof.

5,776,928

METHOD FOR TREATING DYSKINESIAS WITH OLANZAPINE

Charles M. Beasley, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 21, 1995, Ser. No. 422,177

Int. Cl.⁶ A61K 31/55

U.S. Cl. 514—220

11 Claims

1. A method for treating a dopaminergic-mediated dyskinesia selected from drug-induced dyskinesia, athetosis, chorea, choreoathetosis, tardive dyskinesia and tardive dystonia comprising administering to a mammal in need of such treatment, an effective amount of olanzapine, or a pharmaceutically acceptable salt thereof.

5,776,929

BENZODIAZEPINE DERIVATIVE

Sanji Hagishita, Gose; Susumu Kamata, Takarazuka; Kaoru Seno, Nishinomiya; Nobuhiro Haga, Osaka, and Yasunobu Ishihara, Kyoto, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

PCT No. PCT/JP94/02132, § 371 Date Jun. 25, 1996, § 102(e)

Date Jun. 25, 1996, PCT Pub. No. WO95/18110, PCT Pub. Date Jul. 6, 1995

PCT Filed Dec. 19, 1994, Ser. No. 663,304

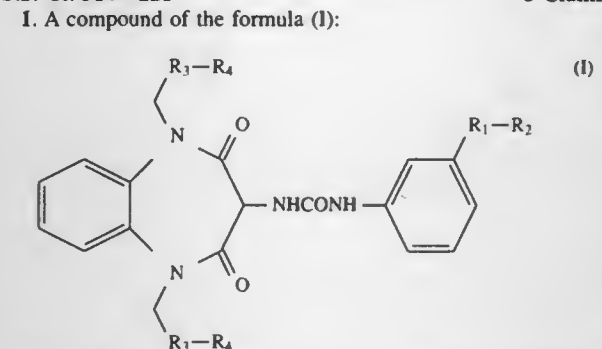
Claims priority, application Japan, Dec. 28, 1993, 5-336168

Int. Cl.⁶ A61K 31/55; C07D 243/12

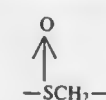
U.S. Cl. 514—221

5 Claims

1. A compound of the formula (I):



wherein R_1 is a bond, $-CH_2-$, $-CH_2O-$, $-OCH_2-$, $-SCH_2-$ or a group of the formula:



R_2 is a lower alkyl, $-COOR_5$, $-CONH(CH_2)_nCOOR_5$, $-CONHSO_2R_5$, $-SO_2NHCOR_5$, or a heterocyclic group selected from the group consisting of furyl, thienyl, tetrazolyl, pyrrolyl, pyrazolyl, imidazolyl, oxazolyl, thiazolyl, pyridinyl, oxadiazolyl, triazinyl, pyrrolidinyl, thiazolidinyl, oxazolidinyl, imidazolidinyl, thiazolidinyl, oxazolidinyl, imidazolidinyl, piperidinyl, piperidinyl, thiomorpholinyl, oxadiazolyl and dioxanyl, which is unsubstituted or substituted with one or more substituents selected from the group consisting of hydroxy, carbonyl, amino, amino protected with an amino-protecting group, halogen, lower alkyl and lower alkoxy (R_5 is a hydrogen atom, lower alkyl or benzyl and n is an integer of 1 to 5); R_3 is a bond, $-CO-$ or $-CONH-$; and R_4 is a heterocyclic group selected from the group consisting of furyl, thienyl, tetrazolyl, pyrrolyl, pyrazolyl, imidazolyl, oxazolyl, thiazolyl, pyridinyl, oxadiazolyl, triazinyl, pyrrolidinyl, thiazolidinyl, oxazolidinyl, imidazolidinyl, thiazolidinyl, oxazolidinyl, imidazolidinyl, piperidinyl, piperidinyl, thiomorpholinyl, oxadiazolyl and dioxanyl, which is unsubstituted or substituted with one or more substituents selected from the group consisting of hydroxy, carbonyl, amino, amino protected with an amino-protecting group, halogen, lower alkyl and lower alkoxy.

lower alkyl which is unsubstituted or substituted with one or more substituents selected from the group consisting of hydroxy, carbonyl, amino, amino protected with an amino-protecting group, halogen, lower alkyl and lower alkoxy, lower cycloalkyl, which is unsubstituted or substituted with one or more substituents selected from the group consisting of hydroxy, carbonyl, amino, amino protected with an amino-protecting group, halogen, lower alkyl and lower alkoxy, aryl selected from the group consisting of phenyl and naphthyl which is unsubstituted or substituted with one or more substituents selected from the group consisting of hydroxy, carbonyl, amino, amino protected with an amino-protecting group, halogen, lower alkyl and lower alkoxy, a lower alkoxy carbonyl group, or a pharmaceutically acceptable salt thereof, and wherein R_3 is the same at each instance in said compound, and wherein R_4 is the same at each instance in said compound.

5. A pharmaceutical composition comprising a therapeutically effective amount of at least one compound of claim 1 and at least one pharmaceutically acceptable carrier therefor.

5,776,930

PHARMACEUTICAL PREPARATION

Joseph J. Lynch, Jr., and Joseph J. Salata, both of Lansdale, Pa., assignors to Merck & Company, Inc., Rahway, N.J.

Filed Jun. 24, 1997, Ser. No. 881,399

Int. Cl.⁶ A61K 31/545; 31/38; 31/16; 31/135

U.S. Cl. 514—221

27 Claims

1. A method of treating arrhythmia which comprises the co-administration to a patient in need of such treatment of an effective amount of a beta-adrenergic receptor blocking agent and a selective I_{Ks} antagonist.

5,776,931

NAPHTHIMIDAZOLYL NEUROPEPTIDE Y RECEPTOR ANTAGONISTS

Anne Marie Nunes, Andover, Mass., and Hamideh Zarrinmayeh, Carmel, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

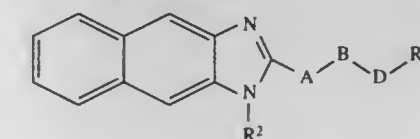
Filed Jan. 9, 1997, Ser. No. 775,533

Int. Cl.⁶ A61K 31/535; 31/445; 31/415; C09D 413/00; 421/00; 235/02

U.S. Cl. 514—232.8

30 Claims

1. A method of treating a physiological disorder associated with an excess of neuropeptide Y, which method comprises administering to a mammal in need of said treatment an effective amount of a compound of the formula



wherein:

A is C_1-C_6 alkylenyl;

B is $-O-$, $-NH-$, or $-S-$;

D is a bond or C_1-C_6 alkylenyl;

R^1 is C_3-C_8 cycloalkyl, C_3-C_8 cycloalkenyl, phenyl, phenoxy, naphthyl, or naphthylloxy, any one of which phenyl, C_3-C_8 cycloalkyl, phenoxy, naphthyl, or naphthylloxy moieties may be substituted with one or more moieties selected from the group consisting of halo, trifluoromethyl, C_1-C_6 alkyl, C_2-C_7 alkenyl, C_2-C_7 alkynyl, C_1-C_6 alkoxy, C_1-C_6 alkylthio, C_1-C_6 alkylamino, C_2-C_7 alkanoyl, hydroxy, heterocyclic, unsaturated heterocyclic, C_3-C_8 cycloalkyl, C_3-C_8 cycloalkenyl, phenyl, phenoxy, benzyl, benzyloxy, and benzoyl;

R² is C₁-C₁₂ alkyl, C₂-C₇ alkenyl, C₂-C₇ alkynyl, heterocyclic(C₁-C₆ alkylenyl)-, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkenyl, unsaturated heterocyclic(C₁-C₆ alkylenyl)-, phenyl, phenyl(C₁-C₆ alkylenyl)-, naphthyl, naphthyl(C₁-C₆ alkylenyl)-, phenoxy(C₁-C₆ alkylenyl)-, naphthoxy(C₁-C₆ alkylenyl)-, or benzoyl(C₁-C₆ alkylenyl)-, which C₁-C₁₂ alkyl, C₂-C₇ alkenyl, or C₂-C₇ alkynyl may be substituted with halo or hydroxy, and any one of which heterocyclic(C₁-C₆ alkylenyl)-, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkenyl, unsaturated heterocyclic(C₁-C₆ alkylenyl)-, phenyl, phenyl(C₁-C₆ alkylenyl)-, naphthyl, naphthyl(C₁-C₆ alkylenyl)-, phenoxy(C₁-C₆ alkylenyl)-, naphthoxy(C₁-C₆ alkylenyl)-, or benzoyl(C₁-C₆ alkylenyl)- groups may be substituted with one or more moieties selected from the group consisting of C₁-C₆ alkyl, hydroxy, C₁-C₆ alkoxy, phenyl, naphthyl, phenyl(C₁-C₆ alkylenyl)-, naphthyl(C₁-C₆ alkylenyl)-, halo, trifluoromethyl, C₂-C₇ alkenyl, C₂-C₇ alkynyl, C₁-C₆ alkoxy, heterocyclic, unsaturated heterocyclic, heterocyclic(C₁-C₆ alkylenyl)-, unsaturated heterocyclic(C₁-C₆ alkylenyl)-, heterocyclic(C₁-C₆ alkoxy)-, unsaturated heterocyclic(C₁-C₆ alkoxy)-, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkenyl, C₂-C₇ alkanoyl, C₂-C₇ alkanoyloxy, C₁-C₆ alkylamino, C₁-C₆ alkylthio, amino, nitro, and an amino-protecting group;

or a pharmaceutically acceptable salt or solvate thereof.

5,776,932

1,3,5-TRISUBSTITUTED INDAZOLE DERIVATIVES, PROCESSES FOR PREPARING, AND FOR PHARMACOLOGICAL TREATMENT THEREWITH

Rudolf Schindler, Dresden; Ilona Fleischhauer, Offenbach, and István Szélenyi, Schwaig, all of Germany, assignors to Arzneimittelwerk Dresden G.m.b.H., Radebeul, Germany
Filed Mar. 20, 1997, Ser. No. 821,740

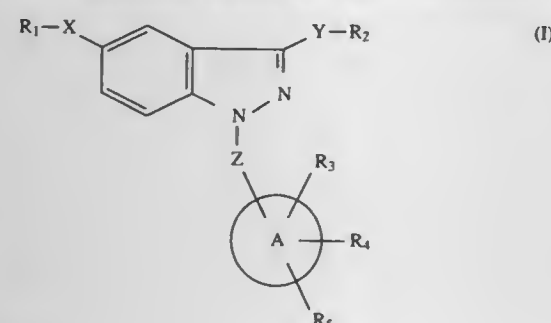
Claims priority, application Germany, Mar. 20, 1996, 196 10 882.9

Int. Cl.⁶ A61K 31/535; 31/505; 31/47; 31/44; 31/42; 31/415; C07D 413/12; 413/06; 409/12; 409/06; 403/12; 403/06; 401/12, 401/06; 231/56

U.S. Cl. 514—235.2

13 Claims

1. A 1,3,5-trisubstituted indazole derivative of the formula



wherein

R¹ is

- (a) H;
- (b) a C₁₋₆ straight or branched alkyl residue, unsubstituted, mono- or polysubstituted by
 - (i) a hydroxyl residue,
 - (ii) a C₁₋₆ alkoxy residue,
 - (iii) a phenyl, naphthyl, anthranyl, or fluorenyl residue optionally substituted by a halogen atom, a nitro, or a straight or branched C₁₋₄ alkoxy residue,
 - (iv) a phenyloxy, naphthyloxy, anthraniloxy, or fluorenyloxy residue optionally substituted by a halogen atom, nitro, or straight or branched C₁₋₄ alkoxy residue,
 - (v) a quinolin-2-yl, or pyridine-2-yl residue,
 - (vi) an amino residue,
 - (vii) a —CN residue, or
 - (viii) a halogen atom,

(c) a C₃₋₇ cycloalkyl residue,

(d) an unsubstituted phenyl, naphthyl, anthranyl, or fluorenyl residue optionally monosubstituted, or disubstituted by a halogen atom, a nitro, a straight or branched C₁₋₄ alkylcarboxylic, a straight or branched C₁₋₈ alkyl or alkoxy, a hydroxyl, a C₁₋₆ thioether, a straight or branched C₁₋₆ alkanoyl, or a benzyl residue, or

(e) a quinolin-2-ylmethoxy, or pyridin-2-ylmethoxy residue; X is O, or a —NH—, —NH—(C=O)—NH—, —NH—(C=O)—O—, —NH—(C=O)—, or —NH—CH₂—(C=O)— residue, wherein the last three groups are joined to the aromatic ring through the N-atom;

Y is O, or S;

R₂ is H;

Z is a SO, SO₂, —(CH₂)_p—, —(CH₂)—O—, —O—(CH₂)_p—, —(CH₂)_p—(C=O)—, —(C=O)—(CH₂)_p—, —(CH₂)_p—(C=O)—NH—, —NH—(C=O)—(CH₂)_p—, —(CH₂)_p—CHOH—, —CHOH—(CH₂)_p—, —(CH₂)_p—CH=CH—, or —CH=CH—(CH₂)_p— residue, wherein p is a cardinal number between 1 and 6;

A is a phenyl, naphthyl, anthranyl, fluorenyl, thiophenyl, pyridinyl, isoxazolyl, benzimidazolyl, benz[1,3]dioxolyl, pyrimidyl, pyrimidine-2,4-dionyl, quinolinyl, quinoxazolyl, morpholinyl, or pyrrolidinyl residue; and

R₃, R₄, and R₅ are the same or different, being

(a) H, provided that when Z is (CH₂)_p when p=1, and A is phenyl, then R₃, R₄, and R₅ are not H;

(b) an unsubstituted straight or branched C₁₋₆ alkyl residue, optionally monosubstituted, or polysubstituted with

(i) a hydroxyl residue,

(ii) a straight or branched C₁₋₈ alkoxy residue,

(iii) a phenyl, naphthyl, anthranyl, or fluorenyl residue, optionally substituted with a halogen atom, a nitro, or straight or branched C₁₋₄ alkoxy,

(iv) apenyloxy, naphthyloxy, anthraniloxy, or fluorenyloxy residue, said last four residues being optionally substituted with a halogen atom, a nitro, a straight or branched C₁₋₄ alkoxy,

(v) a quinolin-2-ylmethoxy, or a pyridin-2-ylmethoxy residue,

(vi) an amino residue optionally substituted with a straight or branched C₁₋₄ alkyl, phenyl, naphthyl, anthranyl, fluorenyl, straight or branched C₁₋₄ alkylphenyl, straight or branched C₁₋₄ alkylphenyl, straight or branched C₁₋₄ alkylphenyl, straight or branched C₁₋₄ alkylphenyl, a straight or branched C₁₋₄ fluorenyl residue,

(vii) a CN residue, or

(ix) a halogen atom,

(c) a straight or branched C₃₋₇ cycloalkyl residue;

(d) an unsubstituted phenyl, naphthyl, anthranyl, fluorenyl, quinolin-2-methoxy, or a pyridin-2-ylmethoxy residue, or monosubstituted or disubstituted with a halogen atom, a straight or branched C₁₋₆ alkyl, straight or branched C₁₋₆ alkoxy, hydroxyl, C₁₋₆ thioether, C₁₋₆ alkanoyl, or benzyl residue;

(e) a CF₃ residue;

(f) an NO₂ residue;

(g) a COOH residue;

(h) a (CH₂)_p—COOH residue in which p is a cardinal number between 1 and 6;

(i) an SO₂-phenyl, SO₂-naphthyl, SO₂-anthranyl, or SO₂-fluorenyl residue;

(j) a hydroxyl residue;

(k) a halogen atom; or

(m) R₃ and R₄ form an —O—(CH₂)_n—O— bridge wherein n is a cardinal number between 1 and 3;

and pharmaceutically acceptable salts, stereoisomers, racemates, racemic modifications, and enantiomers thereof.

5,776,933

METHOD OF INHIBITING PROTEASE

Eric M. Gordon, Palo Alto, Calif.; Joel C. Barrish, Holland, Pa.; Gregory S. Bisacchi, Lawrenceville, N.J.; Chong-Qing Sun, East Windsor, N.J.; Joseph A. Tino, Lawrenceville, N.J.; Gregory D. Vite, Trenton, N.J., and Robert Zahler, Pennington, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

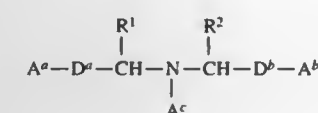
Division of Ser. No. 79,978, Jun. 25, 1993, Pat. No. 5,559,256, which is a continuation-in-part of Ser. No. 927,027, Aug. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 916,916, Jul. 20, 1992, abandoned. This application May 31, 1995, Ser. No. 456,125

Int. Cl.⁶ A61K 31/445; 31/535

U.S. Cl. 514—237.5

15 Claims

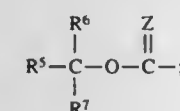
1. A method for inhibiting HIV protease in a subject in need thereof, comprising the step of administering to said subject a compound of the following formula I, or a pharmaceutically acceptable salt thereof, in an amount effective therefor:



where

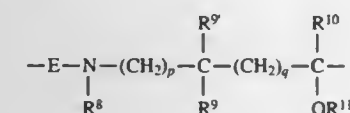
A^c is hydrogen or alkyl;

A^a and A^b are independently



where

R⁵, R⁶ and R⁷ are independently hydrogen, alkyl, aryl, carbocyclo, fluorenyl, alkynyl or alkenyl, and Z is oxygen or sulfur; D^a and D^b are independently selected from groups of the formula:



where

D^a and D^b are bonded to the groups A^a and A^b, respectively, through the moiety —E—N(R⁸)—, where E is a single bond; R¹ and R² are independently:

- (1) hydrogen;
- (2) alkyl;
- (3) alkenyl;
- (4) aryl; or
- (5) carbocyclo;

R³ is:

- (a) hydrogen; or
- (b) alkyl;

R⁹ in one of D^a or D^b is:

- (a) hydrogen;
- (b) alkyl;
- (c) alkenyl;
- (d) alkynyl;
- (e) aryl;
- (f) carbocyclo; or
- (g) arylalkyl;

and, in the other of D^a or D^b, R⁹ is alkyl substituted by aryl, where said aryl is itself substituted by morpholinylcarbonylalkoxy or piperidinylcarbonylalkoxy;

R⁹ is:

- (a) hydrogen;
- (b) alkyl;
- (c) alkenyl;
- (d) alkynyl;
- (e) aryl; or
- (f) carbocyclo;

R¹⁰ is:

- (a) hydrogen;
- (b) alkyl;
- (c) alkenyl;
- (d) alkynyl;
- (e) carbocyclo; or
- (f) aryl;

R¹¹ is:

- (a) hydrogen; or
- (b) a hydroxyl protecting group;

(1) p and q are, independently, integers from 0 to 4;

the terms "alk" or "alkyl", where they appear alone or as part of another group, denote a straight or branched chain saturated radical containing 1 to 12 carbons in the normal chain;

the term "alkenyl" denotes a straight or branched chain radical containing 2 to 12 carbons in the normal chain which contains at least one carbon to carbon double bond and which is directly attached through one of the carbons composing said double bond;

the term "alkynyl" denotes a straight or branched chain radical containing 2 to 12 carbons in the normal chain which contains at least one carbon to carbon triple bond and which is directly attached through one of the carbons composing said triple bond;

term "carbocyclo" denotes a saturated or partially unsaturated, homocyclic carbon ring system containing from 1 to 3 rings and from 3 to 12 carbons per homocyclic ring; and

the term "aryl", where it appears alone or as part of another group, denotes a homocyclic, aromatic group containing 1 or 2 rings and from 6 to 12 carbons.

5,776,934

USE OF 1,3,5-TRIAZINE-2,4,6-TRIS-ALKYLAMINOCARBOXYLIC ACID DERIVATIVES AS BIOCHAL AGENTS IN AQUEOUS SYSTEMS AND COOLING LUBRICANTS COMPRISING THESE

Jörg Lesmann, and Hermann Georg Schäfer, both of Hamburg, Germany, assignors to CG-Chemie GmbH, Hamburg, Germany

PCT No. PCT/EP92/02248, § 371 Date May 19, 1994, § 102(e) Date May 19, 1994, PCT Pub. No. WO93/09670, PCT Pub. Date May 27, 1993

PCT Filed Sep. 29, 1992, Ser. No. 244,115

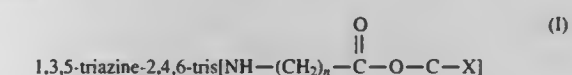
Claims priority, application Germany, Nov. 19, 1991, 41 38 090.8

Int. Cl.⁶ A01N 43/68

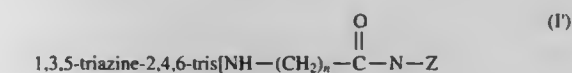
U.S. Cl. 514—245

7 Claims

1. A method comprising using 1,3,5-triazine-2,4,6-tris-alkylaminocarboxylic acid amino esters and amides of the general formula



or



in which

n denotes a number in the range from 4 to 11,

C—X is a radical of an alkanolamine of the general formula

4-phenyl-1-piperazine,
4-(2-pyridinyl)-1-piperazine,
2,6-dimethyl-4-morpholine,
1-pyrrolidine,
4-methyl-1-piperazine,
1-piperidine,
4-phenyl-1-piperidine thiazolidine,
4-phenyl-1,2,3,6-tetrahydropyridine,
4-phenylpiperidine,
ethyl proline,
tetrahydrofurylamine,
3-pyrroline,
thiazolidine-4-carboxylic acid,
thiomorpholine,
nipecotamide,
2-methylpiperidine,
3-methylpiperidine,
4-methylpiperidine,
N-methylpiperazine,
1-methylhomopiperazine,
1-acetylpiperazine and
N-carboethoxypiperazine;

R₄ and R₅, being the same or different, are selected from C₁-C₇ alkyl, cyclo(C₃-C₈)alkyl, phenyl or when taken together with N, form a saturated heterocyclic amine ring selected from the group consisting of

4-morpholine,
4-phenyl-1-piperazine,
4-(2-pyridinyl)-1-piperazine,
2,6-dimethyl-4-morpholine,
1-pyrrolidine,
4-methyl-1-piperazine,
1-piperidine,
4-phenyl-1-piperidine thiazolidine,
4-phenyl-1,2,3,6-tetrahydropyridine,
4-phenylpiperidine,
ethyl proline,
tetrahydrofurylamine,
3-pyrroline,
thiazolidine-4-carboxylic acid,
thiomorpholine,
nipecotamide,
2-methylpiperidine,
3-methylpiperidine,
4-methylpiperidine,
N-methylpiperazine,
1-methylhomopiperazine,
1-acetylpiperazine and
N-carboethoxypiperazine;

X is O or S;

R₂ and R₃, being the same or different, are selected from C₁-C₇ alkyl, phenyl, C₁-C₇ alkoxy, thio(C₁-C₇)alkoxy, phenoxy, thiophenoxy, —NR₇R₈, or taken together with P form a 4- to 7-membered heterocyclic ring selected from the group consisting of 1,3-dioxo-2-phosphorinane, 1-aza-3-oxa-2-phospholane, 1,3-diaza-2-phospholane and 1-thia-3-oxa-2-phospholane;

R₆ is C₁-C₇ alkyl, haloC₁-C₇alkyl, carboC₁-C₇alkoxy, —NR₉R₁₀ where R₉ and R₁₀, being the same or different, are C₁-C₇ alkyl or phenyl (optionally substituted with 1 or 2 groups selected from halo, lower alkyl, haloC₁-C₇alkyl, nitro, cyano, C₁-C₇ alkoxy);

R₂₄ is hydrogen, halogen or C₁-C₇ alkoxy;

R₂₅ is hydrogen or halogen;

R_{18a} is hydrogen, C₁-C₇ alkyl, C₂-C₈ alkoxyalkyl, C₂-C₈ alk- enyl, C₂-C₈ alkynyl or benzyl;

the broken line between carbons 24 and 25 represents a single or double bond; and pharmaceutically acceptable salts and hydrates thereof; with the overall proviso that, when W is O, R₄ and R₅ are not both C₁-7 alkyl.

5,776,937

ADHESION RECEPTOR ANTAGONISTS

Joachim Gante, Darmstadt; Horst Juraszyk; Peter Raddatz, both of Seeheim; Hanns Wurziger, Darmstadt; Sabine Bernotat-Danielowski, Bad Nauheim, and Gulde Melzer, Hofheim/Ts., all of Germany, assignors to Merck Patent Gesellschaft mit Beschränkter Haftung, Germany

Filed Nov. 7, 1995, Ser. No. 551,743

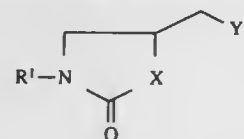
Claims priority, application Germany, Nov. 8, 1994, 44 39 846.8

Int. Cl.⁶ A61K 31/495; C07D 413/14

U.S. Cl. 514—252

22 Claims

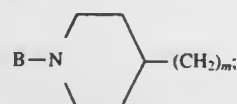
1. A compound of formula I



X is O;

Y is piperazino substituted by R²;

R¹ is



R² is —CH₂—COOR³;

R³ is H, A or Ar;

A is alkyl having 1 to 6 C atoms;

B is H, A, cycloalkyl having 3 to 7 C atoms, Ar—C₆H₄— or amidino;

Ar is unsubstituted phenyl, unsubstituted benzyl, phenyl mono- or disubstituted by A, Cl, Br, I, NO₂, CN, OA, NH₂, NHA, NA₂ or combinations thereof, or benzyl mono- or disubstituted by A, Cl, Br, I, NO₂, CN, OA, OH, NH₂, NHA, NA₂ or combinations thereof;

k is 1, 2, 3 or 4;

m and r are, in each case independently, 0, 1, 2, 3 or 4;

n is 2, 3 or 4; or a physiologically acceptable salt thereof,

wherein free amino or amidino groups are, in each case, optionally protected by an amino protective group which is an unsubstituted or substituted acyl, aryl, aralkoxymethyl, or alkyl group having 1-20 C atoms.

5,776,938

Patent Not Issued For This Number

5,776,939

DRUG RESISTANCE AND MULTIDRUG RESISTANCE MODULATORS

Julian Stanley Kroin, and Bryan Hurst Norman, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

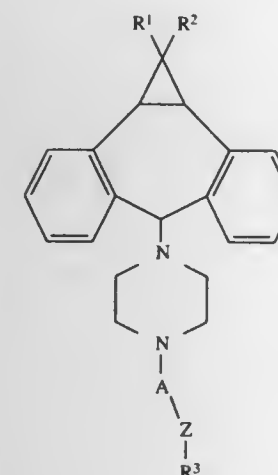
Filed Jun. 12, 1997, Ser. No. 873,583

Int. Cl.⁶ A01N 43/60; C07D 241/04

U.S. Cl. 514—255

18 Claims

1. A compound of Formula (C):



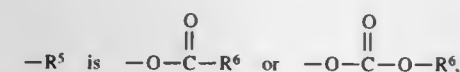
where:

R¹ and R² are independently hydrogen or halo;

A is —CH₂—CH₂— or —CH₂—CHR⁴—(CH₂)_n—; where n is 1 or 2;

R⁴ is —H,

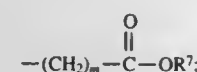
—OH, or —R⁵;



or —R⁵;

—R⁵ is

—R⁶ is C₁-C₄ or



where: m is 1, 2, 3, 4, 5 or 6, and R⁷ is —H or C₁-C₆ alkyl; providing when A is —CH₂—CHR⁴—(CH₂)_n—, A and Z are oriented as —CH₂—CHR⁴—(CH₂)_n—Z—;

Z is selected from the group consisting of —S—, —S(O)_w—, and —CH₂—, where w is 1 or 2;

R³ is an aryl moiety selected from the group consisting of phenyl, substituted phenyl, heteroaryl, substituted heteroaryl, polynuclear aryl and substituted polynuclear aryl; with the proviso that Z is connected to R³ at a ring carbon atom of R³; and pharmaceutically acceptable salts or solvates thereof.

5,776,940

PHENYLXANTHINE DERIVATIVES

Susan Mary Daluge, and Helen Lyng White, both of Chapel Hill, N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

PCT No. PCT/GB95/01808, § 371 Date Jan. 24, 1997, § 102(e) Date Jan. 24, 1997, PCT Pub. No. WO96/04280, PCT Pub. Date Feb. 15, 1996

PCT Filed Jul. 31, 1995, Ser. No. 776,454

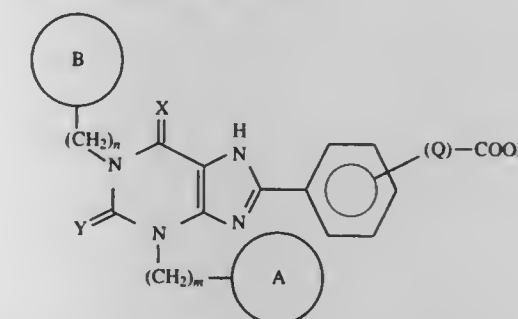
Claims priority, application United Kingdom, Aug. 1, 1994, 9415529

Int. Cl.⁶ A61K 31/52; C07D 473/06; 239/54; 239/56

U.S. Cl. 514—263

6 Claims

1. A compound of the formula (I):



Wherein m and n are independently integers from 0 to 10;

X and Y are independently oxygen or sulphur;

(—Q—) is (—CH₂—)_p or (—CH=CH—)_p, where p is an integer of from 1 to 4; and

A and B are independently methyl, branched C₃₋₆ alkyl C₃₋₈ cycloalkyl or C₃₋₈ cycloalkenyl;

with the proviso that at least one of A and B is either C₃₋₈ cycloalkyl or C₃₋₈ cycloalkenyl;

or a salt, solvate, or pharmaceutically acceptable ethyl ester, methyl ester, or benzyl amide thereof.

5,776,941

4-ALKYLTHIO-PYRIMIDIN-5-YLACETIC ACID DERIVATIVES

Gerald Wayne Craig, Basel; Martin Eberle, Bottmingen, and Fritz Schaub, Aesch, all of Switzerland, assignors to Sandoz Ltd, Basel, Switzerland

Filed Feb. 26, 1996, Ser. No. 606,911

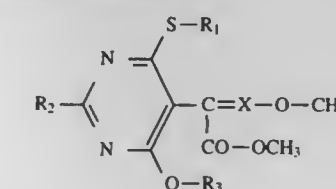
Claims priority, application United Kingdom, Mar. 10, 1995, 9504920

Int. Cl.⁶ C07D 239/46; A01N 43/54

U.S. Cl. 514—269

17 Claims

1. Compounds of formula I



wherein

R₁ is C₁₋₄alkyl,

R₂ is hydrogen, C₁₋₄alkyl, or C₃₋₇cycloalkyl,

5,776,947

USE OF QUINOLINE-3-CARBOXAMIDE COMPOUNDS FOR INHIBITING THE PRODUCTION OF TUMOR NECROSIS FACTOR (TNF) AND/OR FOR THE TREATMENT OF SEPTIC SHOCK

Guido Peter Kroemer; José Angel Gonzalo; Carlos Martinez Alonso, all of Madrid, Spain, and Terje Kalland, Löödeköpinge, Sweden, assignors to Pharmacia AB, Stockholm, Sweden

PCT No. PCT/SE94/00565, § 371 Date May 20, 1996, § 102(e) Date May 20, 1996, PCT Pub. No. WO95/03051, PCT Pub. Date Feb. 2, 1995

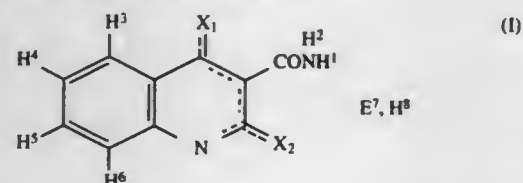
PCT Filed Jun. 10, 1994, Ser. No. 586,857

Claims priority, application Sweden, Jul. 26, 1993, 9302490 Int. Cl.⁶ A61K 31/47

U.S. Cl. 514—312

5 Claims

1. Method for inhibiting the production of tumour necrosis factor (TNF) in a living body suffering from said production by administration of an effective amount of a quinoline-3-carboxamide compound or a pharmaceutically acceptable salt thereof to a living body suffering from said production, wherein said compound comprises the structure 1, optionally with substituents for the hydrogen atoms shown (H¹⁻⁹)



where

- (a) ----- represents that there are two conjugated double bonds between the atoms comprised by the dashed line,
 (b) X₁ and X₂ are separately selected from an oxygen atom or an NH⁹ group, said X₁ and X₂ being bound by a single bond to the ring when attached to H⁷ or H⁸ and by a double bond when not bound to H⁷ or H⁸,
 (c) H¹⁻⁹ are hydrogens, with the provision that H⁹ is only present when at least one of X₁ and X₂ is NH⁹ group,
 (d) H⁷ and H⁸ are hydrogens that are attached to different atoms selected among X₁, X₂ and the nitrogen atom (N) in the quinoline ring.

5,776,948

FLUOROQUINOLINE DERIVATIVE

Takeshi Yokota, Chiba; Masayuki Haramura, Shizuoka; Akira Okamachi, Shizuoka, and Toshihiko Makino, Shizuoka, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 411,802, Apr. 10, 1995. This application Oct. 9, 1996, Ser. No. 728,431

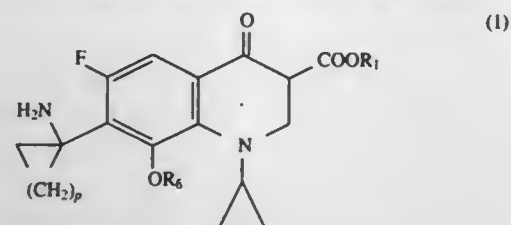
Claims priority, application Japan, Oct. 9, 1992, 4-312588

Int. Cl.⁶ A61K 31/47; C07D 215/233; 215/18; 215/56

U.S. Cl. 514—312

8 Claims

1. A fluoroquinoline derivative represented by the formula (I):



wherein R₁ represents hydrogen or a lower alkyl;
 R₆ represents lower alkyl; and
 P represents 1, 2, 3 or 4.

5,776,949

2-(1H) QUINOLINONE COMPOUNDS

Alex Cordi, Suresnes; Patrice Desos, Courbevoie; Jean Lepagnot, Chaudon; Philippe Morain, Issy les Moulineaux, and Pierre Lestage, La Celle Saint Cloud, all of France, assignors to Adir et Compagnie, Courbevoie, France

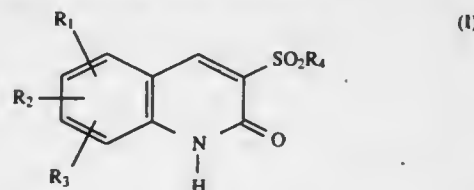
Filed Jul. 10, 1997, Ser. No. 889,920

Int. Cl.⁶ A61K 31/47; C07D 215/36

U.S. Cl. 514—312

8 Claims

1. A compound select from those of formula (I):



in which:

R₁, R₂, R₃, which are identical or different, represent hydrogen, halogen, linear or branched (C₁—C₆) alkyl (substituted or not with one or more halogen), nitro, cyano, aminosulfonyl, imidazolyl (substituted or not with one or more linear or branched (C₁—C₆) alkyl or linear or branched amino(C₁—C₆) alkyl), or pyrrolyl (substituted or not with one or more linear or branched (C₁—C₆) alkyl or linear or branched amino(C₁—C₆) alkyl),

R₄ represents hydroxyl, linear or branched (C₁—C₆) alkoxy, phenoxy (substituted or not with one or more halogen, linear or branched (C₁—C₆) alkyl, linear or branched (C₁—C₆) alkoxy, or trihalomethyl), or amino (substituted or not with one or two linear or branched (C₁—C₆) alkyl),

their optical isomers as well as their addition salts with a pharmaceutically-acceptable base provided that at least one of R₁, R₂ and R₃ is other than hydrogen.

5,776,950

CYCLOANTHELMINTIC INHIBITORS

Byung H. Lee; Pil H. Lee, both of Kalamazoo; William W. McWhorter, Jr., Parchment, and Fred E. Dutton, Kalamazoo, all of Mich., assignors to Pharmacia & Upjohn Company, Kalamazoo, Mich.

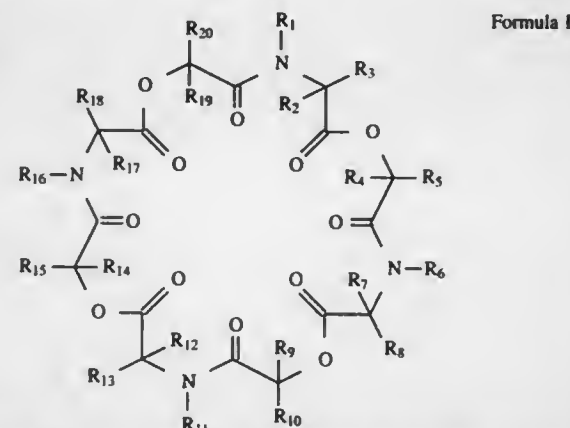
Filed Sep. 5, 1996, Ser. No. 708,768

Int. Cl.⁶ A01N 43/40; A61K 38/12

U.S. Cl. 514—317

57 Claims

1. A compound comprising the compounds represented by formula I, below.



where, R₁, R₆, R₁₁ and R₁₆ are independent and selected from,

- a) H,
 b) C₁₋₄ optionally substituted alkyl, the alkyl optionally terminally substituted with, hydroxy or C₁₋₂alkoxy,
 where, R₂, R₃, R₄, R₅, R₇, R₈, R₉, R₁₀, R₁₂, R₁₃, R₁₄, R₁₅, R₁₇, R₁₈, R₁₉ and R₂₀, are independent and selected from,
 a) H

- b) C₁₋₁₁ alkyl,
 c) C₂₋₁₁ alkenyl
 d) C₃₋₆ cycloalkyl,
 e) C₁₋₁₁ alkoxy,
 f) C₁₋₁₁ alkyl-C₁₋₁₁ alkoxy,
 g) C₁₋₁₁ alkyl-O-C₁₋₆ alkyl,
 h) C₆₋₁₂ aryl,
 i) C₁₋₁₁ alkyl-C₆₋₁₂ aryl,
 j) heterocyclic group
 k) C₁₋₁₁ alkyl-heterocyclic group,

where, the heterocyclic group is morpholino, piperidino, piperazino, imidazolyl, indolyl or guanidino,
 where, at least one of the following combinations of two R groups, R₁ with R₃, R₆ with R₈, R₁₁ with R₁₃, and R₁₆ with R₁₈, are taken together, to form a single or double heterocyclic ring structure, to form,

- 1) an optionally substituted heterocyclic ring of 5 to 9 members, or
 2) a heterocyclic ring having the Nitrogen as shown in Formula I plus the additional optionally substituted ring atoms, where the ring atoms other than the N shown in Formula I may be either entirely C, or at least two carbon atoms plus one to three N, O or S substituted with 0-6 groups selected from,
 i) C₁₋₆ alkyl,
 ii) C₂₋₆ alkenyl
 iii) C₃₋₆ cycloalkyl,
 iv) phenyl,
 v) heterocyclic group,
 where the heterocyclic group is as defined above,

or

- 3) a double ring system where the two R groups (R₁ with R₃, R₆ with R₈, R₁₁ with R₁₃, or R₁₆ with R₁₈) may be taken together to form a double ring system where each ring contains 5, 6 or 7 members (allowing double counting of common members),

where

- i) the first ring is attached to the second ring directly with no covalent bonds (spiral type) or through a single covalent bond, (such as biphenyl type) between the two rings,
 ii) the first ring is attached to the second ring with one point of attachment on the first and second ring with either no carbons but one covalent bond (biphenyl type) or one carbon atom and two covalent bonds between the two rings, or
 iii) the first ring shares a covalent bond with the second ring such that common ring members are counted twice, as with an indole type structures,

where either the cyclic carbon ring, the heterocyclic ring or the double ring system may be optionally substituted with,

- 1) C₁₋₄ alkyl, or
 2) C₂₋₄ alkenyl;

and pharmaceutically acceptable salts thereof.

5,776,951

ANTI-ATHEROSCLEROTIC DIARYL COMPOUNDS

Richard James Arrowsmith; John Gordon Dann; Karl Witold Franzmann; Simon Teanby Hodgson, and Peter John Wates, all of Beckenham, Great Britain, assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

PCT No. PCT/GB94/01409, § 371 Date Apr. 11, 1996, § 102(e) Date Apr. 11, 1996, PCT Pub. No. WO95/01326, PCT Pub. Date Jan. 12, 1995

PCT Filed Jun. 29, 1994, Ser. No. 564,281

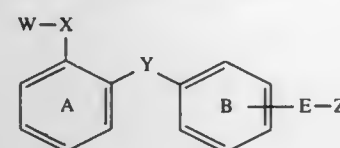
Claims priority, application United Kingdom, Jun. 30, 1993, 9313459; Mar. 25, 1994, 9406005

Int. Cl.⁶ A01N 43/40

U.S. Cl. 514—328

1. A compound of formula (I)

11 Claims



or a pharmaceutically acceptable salt, solvate, or physiologically functional derivative thereof, wherein:

W is hydrogen, or a C₁₋₁₂ hydrocarbyl group optionally substituted by one or more groups independently selected from halo, C₁₋₄ alkyl, C₁₋₄ alkoxy, hydroxy, C₁₋₄ haloalkyl, C₁₋₄ haloalkoxy, and RC(O)— (wherein R is selected from hydrogen, C₁₋₄ alkyl, C₁₋₄ alkoxy, hydroxy, C₁₋₄ haloalkyl, and C₁₋₄ haloalkoxy);

X is —NR¹C(O)NR²—, —NR¹C(O)—, —NR¹C(O)O—, —C(O)NR²—, or —OC(O)NR²— (wherein R¹ and R² are independently selected from hydrogen, C₁₋₄ alkyl, and

Y is a bond, C₂₋₄ alkenylene, C₂₋₄ alkenylene (cis or trans), C₁₋₄ alkenylene, —(CH₂)_n—O—(CH₂)_p—, or —(CH₂)_nS(O)_q—(CH₂)_p—, (wherein n and p are integers independently selected from 0, 1, 2, 3, and 4; providing that n+p is not greater than 4; and q is an integer selected from 0, 1, and 2), and Y is optionally substituted by one or more groups independently selected from halo, C₁₋₄ alkyl, and C₁₋₄ haloalkyl;

E is a bond, C₁₋₄ alkenylene, —(CH₂)₂O—(CH₂)₂—, —(CH₂)₂—S(O)—(CH₂)₂—, —(CH₂)₂C(O)—(CH₂)₂— (wherein r and s are integers independently selected from 0, 1, 2, 3 and 4; providing that r+s is not greater than 4; and t is an integer selected from 0, 1, and 2), —OC(O)—, —C(O)O—, —S(O)₂N(R³)—, —(R³)NS(O)₂—, —C(O)N(R³)—, —(R³)NC(O)N(R⁴)—, or —(R³)NC(O)— (wherein R³ and R⁴ are independently selected from hydrogen, C₁₋₄ alkyl, and C₁₋₄ haloalkyl);

Z is an aliphatic heterocyclic ring system,

and Z is optionally substituted by one or more groups independently selected from halo, cyano, —CO₂R⁶, —C(O)NR⁶R⁷, —NR⁶R⁷ (wherein R⁶ and R⁷ are independently selected from hydrogen, C₁₋₄ alkyl, and C₁₋₄ haloalkyl), C₁₋₄ alkyl, C₁₋₄ haloalkyl, C₁₋₄ alkoxy, C₁₋₄ haloalkoxy, hydroxy, and C₂₋₈ polyether,

phenyl rings A and B are optionally substituted by one or more groups independently selected from halo, C₁₋₄ alkyl, C₁₋₄ haloalkyl, C₁₋₄ alkoxy, C₁₋₄ haloalkoxy, hydroxy, cyano, R⁸R⁹NC(O)—, R⁸C(O)N(R⁹)—, R⁸C(O)O—, and R⁸C(O)— (wherein R⁸ and R⁹ are independently selected from hydrogen, C₁₋₄ alkyl, and C₁₋₄ haloalkyl).

5,776,952

METHOD AND COMPOSITION FOR TOPICAL THERAPY OF BACK PAIN AND MUSCLE TENSION

Rainer K. Liedtke, Munich, Germany, assignor to American Pharmed Labs, Inc., New York, N.Y.

Filed Jul. 17, 1996, Ser. No. 682,352

Claims priority, application Germany, Jul. 17, 1995, 195 26 031.7

Int. Cl.⁶ A61K 31/445; 31/24; 31/16; 31/135

U.S. Cl. 514—330

10 Claims

1. A method for topical therapy for symptoms of back pain, muscle tension or myofascial pain or a combination thereof, which comprises administering to a mammal in need thereof a topical carrier system for intact mammalian skin of the back or outer synovial membranes or both, which topical carrier system comprises an analgesically effective dose of a local anesthetic, whereby the local anesthetic is administered to a region of skin lying beneath the topical carrier system.

5,776,953

Patent Not Issued For This Number

5,776,954

SUBSTITUTED PYRIDYL PYRROLES, COMPOSITIONS
CONTAINING SUCH COMPOUNDS AND METHODS OF
USEStephen E. de Laszlo, Rumson; Linda L. Chang, Wayne;
Dooseop Kim, Westfield, all of N.J., and Nathan B. Mantlo,
Lafayette, Colo., assignors to Merck & Co., Inc., Rahway,
N.J.

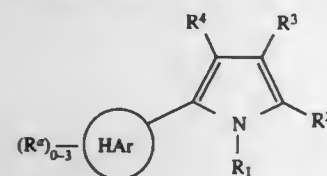
Filed Oct. 30, 1996, Ser. No. 742,428

Int. Cl.⁶ A61K 31/44; C07D 403/04

U.S. Cl. 514—340

39 Claims

1. A compound represented by formula I:



or a pharmaceutically acceptable salt, solvate, hydrate or tautomer thereof, wherein:

represents pyridyl which is unsubstituted or substituted with 1-3 R⁵ groups;

each R^a independently represents a member selected from the group consisting of: halo, aryl(R^b)₀₋₂, heteroaryl(R^b)₀₋₂, CF₃, OCF₃, CN, NO₂, R²¹, OR²³, SR²³, S(O)R²³, SO₂R²¹, NR²⁰R²³, NR²⁰COR²¹, NR²⁰CO₂R²¹, NR²⁰CONR²⁰R²³, NR²⁰SO₂R²¹, NR²⁰C(NR²⁰)NHR²³, COR²⁰, CO₂R²³, CONR²⁰R²³, SO₂NR²⁰R²³, SO₂NR²⁰COR²¹, SO₂NR²⁰CONR²⁰R²³, SO₂NR²⁰CO₂R²¹, OCONR²⁰R²³, OCONR²⁰SO₂R²¹, C(NR²⁰)NR²⁰R²³, C(O)OCH₂OC(O)R²⁰, CONR²⁰SO₂R²¹ and SO₂NR²⁰CO₂R²²;

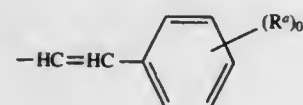
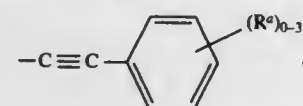
when present, each R^b independently represents a member selected from the group consisting of: halo, CF₃, OCF₃, CN, NO₂, OR²³, SR²³, S(O)R²³, SO₂R²¹, NR²⁰R²³, NR²⁰COR²¹, NR²⁰CO₂R²¹, NR²⁰CONR²⁰R²³, NR²⁰SO₂R²¹, NR²⁰C(NR²⁰)NHR²³, COR²⁰, CO₂R²³, CONR²⁰R²³, SO₂NR²⁰R²³, SO₂NR²⁰COR²¹, SO₂NR²⁰CONR²⁰R²³, SO₂NR²⁰CO₂R²¹, OCONR²⁰R²³, OCONR²⁰SO₂R²¹, C(NR²⁰)NR²⁰R²³, C(O)OCH₂OC(O)R²⁰, CONR²⁰SO₂R²¹ and SO₂NR²⁰CO₂R²²;

R¹ is selected from the group consisting of: H, aryl, C₁₋₁₅ alkyl, C₃₋₁₅ alkenyl, C₃₋₁₅ alkynyl and heterocyclyl, said aryl, alkyl, alkenyl, alkynyl and heterocyclyl being optionally substituted with from one to three members selected from the group consisting of: aryl, heteroaryl, heterocyclyl, halo, OR²³, SR²³, N(R²³)₂, S(O)R²¹, SO₂R²¹, SO₂NR²⁰R²³, SO₂NR²⁰COR²¹, SO₂NR²⁰CONR²⁰R²³, NR²⁰COR²¹, NR²⁰CO₂R²¹, NR²⁰CONR²⁰R²³, N(R²⁰)C(NR²⁰)NHR²³, COR²⁰, CO₂R²³, CONR²⁰R²³, CONR²⁰SO₂R²¹, NR²⁰SO₂R²¹, SO₂NR²⁰CO₂R²¹, OCONR²⁰R²³, OCONR²⁰SO₂R²¹, OCONR²⁰R²³ and C(O)OCH₂OC(O)R²⁰;

R² is selected from the group consisting of: aryl (with the proviso that heteroaryl is not unsubstituted pyridyl), C₇₋₁₅ alkenyl, C₂₋₁₅ alkynyl, CONR²⁰R²³, SO₂R²¹ (wherein R²¹ is not alkyl or C₁₋₆ alkenyl), SO₂N(R²⁰)₂, SO₂NR²⁰CO₂R²¹, SO₂NR²⁰CONR²⁰R²³, COR²⁰, CO₂R²⁰ (wherein R²⁰ is not C₁₋₆ alkyl or hydrogen), CONR²⁰SO₂R²¹, SO₂NR²⁰CO₂R²¹ and heterocyclyl, said alkenyl, alkynyl, aryl, heteroaryl and heterocyclyl being optionally substituted with from one to three members selected from the group consisting of: halo, C₁₋₁₅ alkyl, OCF₃, CF₃, CN, aryl, NO₂, heteroaryl, OR²⁰, SR²⁰, N(R²⁰)₂, S(O)R²², SO₂R²², SO₂N(R²⁰)₂, SO₂NR²⁰CO₂R²², SO₂NR²⁰CONR²⁰R²³, NR²⁰COR²², NR²⁰CO₂R²², NR²⁰CONR²⁰R²³, NR²⁰C(NR²⁰)NHR²², COR²⁰, CO₂R²⁰, CONR²⁰R²⁰, CONR²⁰SO₂R²², NR²⁰SO₂R²², SO₂NR²⁰CO₂R²², OCONR²⁰SO₂R²², and OCONR²⁰R²³;

R³ is selected from the group consisting of: H, aryl, C₁₋₁₅ alkyl, C₂₋₁₅ alkenyl, C₂₋₁₅ alkynyl, halo, NO₂, CN, CONR²⁰R²³, SO₂R²¹, SO₂N(R²⁰)₂, SO₂NR²⁰CO₂R²¹, SO₂NR²⁰CONR²⁰R²³, COR²⁰, CO₂R²⁰, CONR²⁰SO₂R²¹, SO₂NR²⁰CO₂R²¹ and heterocyclyl, said alkyl, alkenyl, alkynyl, aryl, and heterocyclyl being optionally substituted with from one to three members selected from the group consisting of: halo, C₁₋₁₅ alkyl, CF₃, OCF₃, CN, aryl, NO₂, heteroaryl, OR²³, SR²³, N(R²³)₂, S(O)R²², SO₂R²², SO₂N(R²⁰)₂, SO₂NR²⁰CO₂R²², SO₂NR²⁰CONR²⁰R²³, NR²⁰COR²², NR²⁰CO₂R²², NR²⁰CONR²⁰R²³, NR²⁰C(NR²⁰)NHR²², COR²⁰, CO₂R²⁰, CONR²⁰R²⁰, CONR²⁰SO₂R²², NR²⁰SO₂R²², SO₂NR²⁰CO₂R²², OCONR²⁰SO₂R²², OR²⁰ and OCONR²⁰R²³;

R⁴ is selected from the group consisting of: COR²⁰, COOR²⁰, CONR²⁰R²³, aryl, heterocyclyl, C₁₋₁₅ alkyl, C₃₋₁₅ alkenyl, C₃₋₁₅ alkynyl, said alkyl, alkenyl and alkynyl group optionally interrupted by 1-2 oxo or heteroatoms selected from O, S, S(O), SO₂ or NR²⁴ and said C₁₋₁₅ alkyl, aryl, heterocyclyl, C₃₋₁₅ alkenyl, C₃₋₁₅ alkynyl being optionally substituted with from 1-3 of R²¹, halo, aryl(R^b)₀₋₃, heteroaryl(R^b)₀₋₃, heterocyclyl, CN, CF₃, NO₂, OR²³, SR²³, NR²⁰R²³, S(O)R²¹, SO₂R²¹, SO₂NR²⁰R²³, SO₂NR²⁰COR²¹, OR²⁰CO₂R²¹, SO₂NR²⁰CONR²⁰R²³, NR²⁰COR²¹, NR²⁰CO₂R²¹, NR²⁰CONR²⁰R²³, N(R²⁰)C(NR²⁰)NHR²³, CO₂R²³, COR²⁰, CONR²⁰R²³, CONR²⁰SO₂R²¹, NR²⁰SO₂R²¹, SO₂NR²⁰CO₂R²¹, OCONR²⁰R²³, OCONR²⁰SO₂R²¹, OCONR²⁰R²³;



—C≡C—Heteroaryl(R^a)₀₋₃, —HC≡HC—Heteroaryl(R^a)₀₋₃ and C(O)OCH₂OC(O)R²⁰;

R²⁰ represents a member selected from the group consisting of: H, C₁₋₁₅ alkyl, C₃₋₁₅ alkenyl, C₃₋₁₅ alkynyl, heterocyclyl, aryl and heteroaryl, said alkyl, alkenyl and alkynyl being optionally substituted with 1-3 groups selected from halo, aryl and heteroaryl;

R²¹ represents a member selected from the group consisting of: C₁₋₁₅ alkyl, C₃₋₁₅ alkenyl, C₃₋₁₅ alkynyl, aryl, heterocyclyl and heteroaryl; said alkyl, alkenyl or alkynyl being optionally interrupted by 1-2 heteroatoms selected from O, S, S(O), SO₂ or NR²⁴ and said alkyl, alkenyl, alkynyl, aryl, heterocyclyl and heteroaryl being optionally substituted with from 1-3 of halo, heterocyclyl, heteroaryl, aryl(R^b)₀₋₂, heteroaryl(R^b)₀₋₂, CN, OR²⁰, O((CH₂)_n)_mR²⁰, NR²⁰((CH₂)_n)_mR²⁰ wherein n represents an integer of from 1 to 4, and m represents an integer of from 1 to 4; SR²⁰, N(R²⁰)₂, S(O)R²², SO₂R²², SO₂N(R²⁰)₂, SO₂NR²⁰CO₂R²², SO₂NR²⁰CONR²⁰R²³, NR²⁰COR²², NR²⁰CO₂R²², NR²⁰CONR²⁰R²³, NR²⁰C(NR²⁰)NHR²², CO₂R²⁰, CONR²⁰R²⁰, CONR²⁰SO₂R²², NR²⁰SO₂R²², SO₂NR²⁰CO₂R²², OCONR²⁰SO₂R²², OCONR²⁰R²³ and OCONR²⁰R²³;

R²² is selected from the group consisting of: C₁₋₁₅ alkyl, C₃₋₁₅ alkenyl, C₃₋₁₅ alkynyl, heterocyclyl, aryl and heteroaryl, said alkyl, alkenyl, and alkynyl being optionally substituted with 1-3 halo, aryl or heteroaryl groups;

R²³ is R²¹ or H;

R²⁴ is selected from aryl, COR²², CO₂R²², CONR²⁰R²³ and SO₂R²²; and

when two R²⁰ groups are present, R²⁰ and R²¹ are present, or R²⁰ and R²³ are present, said two R²⁰ groups, R²⁰ and R²¹ or said R²⁰ and R²³ may be taken in combination with the atoms to which they are attached and any intervening atoms and represent heterocyclyl containing from 5-10 atoms, at least one atom of which is a heteroatom selected from O, S or N.

said heterocyclyl optionally containing 1-3 additional N atoms and 0-1 additional O or S atom.

5,776,955

USE OF UNSUBSTITUTED AND SUBSTITUTED
N-(PYRROL-1-YL)PYRIDINAMINES AS
ANTICONVULSANT AGENTSFrancis Parker Huger, Milford; Craig Paul Smith, Hillsbor-
ough; Sathapana Kongsamut, Madison, and Lei Tang, Prin-
ceton, all of N.J., assignors to Hoechst Marion Roussel, Inc.

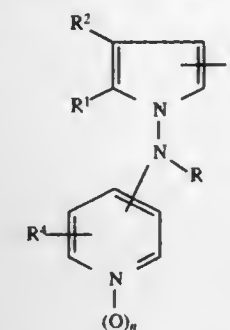
Filed Jul. 8, 1996, Ser. No. 676,608

Int. Cl.⁶ A61K 31/44

U.S. Cl. 514—343

76 Claims

1. A method of treating convulsions in a patient in need thereof which comprises administering to such a patient a convulsion alleviating amount of a compound of the formula



wherein

R is hydrogen, (C₁₋₆)alkyl, (C₂₋₆)alkenyl, (C₂₋₆)alkynyl or phenyl(C₁₋₆)alkyl;

R¹ is hydrogen, halogen or (C₁₋₆)alkyl;

R² is hydrogen, halogen or (C₁₋₆)alkyl; or

R¹ and R² taken together with the carbons to which they are attached form a benzene ring fused to the pyrrole ring wherein the benzene ring is optionally substituted by one or two substituents independently selected from the group of halogen, (C₁₋₆)alkyl, (C₁₋₆)alkoxy, aryl (C₁₋₆)alkoxy, hydroxy, nitro, amino, (C₁₋₆)alkylamino or di (C₁₋₆)alkylamino;

R³ is hydrogen, halogen or (C₁₋₆)alkyl;

R⁴ is hydrogen, halogen, amino or (C₁₋₆)alkyl;

n is 0 or 1; or a pharmaceutically acceptable acid addition salt thereof.

5,776,956

USE OF COTININE IN TREATING PSYCHIATRIC
DISORDERSDavid Rolf, Minneapolis, Minn., assignor to Lectec Corpora-
tion, Minnetonka, Minn.

Filed Jul. 30, 1996, Ser. No. 688,363

Int. Cl.⁶ A61K 31/44; 31/445

U.S. Cl. 514—343

19 Claims

1. A method for treating a patient suffering from obsessive-compulsive disorder, the method comprising, administering to the patient an effective amount of cotinine or a pharmaceutically acceptable salt thereof, which amount is effective to reduce or alleviate at least one of the symptoms of obsessive-compulsive disorder in a human or other mammal.

5,776,957

NORNICOTINE ENANTIOMERS FOR USE AS A
TREATMENT FOR DOPAMINE RELATED CONDITIONS
AND DISEASE STATESPeter A. Crooks; Linda Phyllis Dwooskin, and Michael Thomas
Bardo, all of Lexington, Ky., assignors to The University of
Kentucky Research Foundation, Lexington, Ky.

Filed Nov. 15, 1996, Ser. No. 749,404

Int. Cl.⁶ A61K 31/44

U.S. Cl. 514—343

16 Claims

1. A method of treating dopamine mediated disease states comprising administering to an individual in need of such treatment an effective amount of a composition comprising a compound selected from the group consisting of S-(−) nornicotine or R-(+) nornicotine, free base forms, inorganic acid salts and organic acid salt forms thereof, said composition being administered outside the central nervous system and in an amount effective to cross the blood-brain barrier.

5,776,958

TRISUBSTITUTED PHENYL DERIVATIVES AND
PROCESSES FOR THEIR PREPARATIONGraham John Warrelow, Northwood; Ewan Campbell Boyd,
Tullibody; Rikki Peter Alexander, High Wycombe, and
Michael Anthony William Eaton, Watlington, all of United
Kingdom, assignors to Celltech Therapeutics, Limited,
Slough, United Kingdom

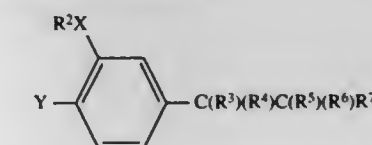
Filed Dec. 21, 1994, Ser. No. 360,563

Claims priority, application United Kingdom, Dec. 22, 1993,
9326600Int. Cl.⁶ A61K 31/44; C07D 211/86

U.S. Cl. 514—345

24 Claims

1. A compound of formula (1):



wherein:

Y is a halogen atom or a group —OR¹ where R¹ is an optionally substituted alkyl group;

X is —O—, —S— or —N(R⁸)—, where R⁸ is a hydrogen atom or an alkyl group;

R² is an optionally substituted alkyl, alkenyl, cycloalkyl or cycloalkenyl group;

R³ is a hydrogen or halogen atom or an —OR⁹ group, where R⁹ is a hydrogen atom or an optionally substituted alkyl, alkenyl, alkoxyalkyl or alkanoyl group, or a formyl, carboxamido or thiocarboxamido group;

R⁴ is a group —(CH₂)_nAr, where Ar is a monocyclic or bicyclic aryl group optionally containing one or more heteroatoms selected from oxygen, sulfur or nitrogen atoms, and n is zero or an integer 1, 2 or 3;

R⁵ is a C₃₋₉ carbocyclic ketone optionally containing one or more heteroatoms selected from oxygen, sulphur or nitrogen atoms;

R⁶ is a hydrogen atom or an optionally substituted alkyl group; R⁷ is a hydrogen atom or an optionally substituted alkyl group; and

the salts, solvates and hydrates thereof;

with the proviso that R⁴ is a 6-membered nitrogen-containing heteroaryl group or R⁵ is a 6-membered nitrogen-containing-heterocyclic ketone.

5,776,959

ANTICONVULSANT AND ANXIOLYTIC LACTAM AND THIOLACTAM DERIVATIVES

Douglas F. Covey, Ballwin; P. Amruta Reddy, and James A. Ferrendelli, both of Clayton, all of Mo., assignors to Washington University, St. Louis, Mo.

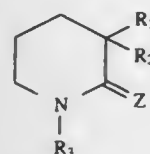
Filed Jun. 5, 1995, Ser. No. 462,102

Int. Cl.⁶ A01N 43/40

U.S. Cl. 514—345

49 Claims

45. A pharmaceutical composition having anticonvulsant or anxiolytic activity which comprises a pharmaceutical carrier and one or more anticonvulsant or anxiolytic compounds having the formula:



and pharmaceutically acceptable salts thereof wherein:

Z is an oxygen or a sulfur atom;

R₁ and R₂ are selected from the group consisting of an optionally substituted alkyl or an optionally substituted alkenyl group wherein R₁ and R₂ are not both methyl groups or both ethyl groups; and

R₃ is selected from the group consisting of a hydrogen, an optionally substituted alkyl or alkenyl group, and a phenylmethyl group;

said compound or mixture of compounds present in said composition in an amount effective for preventing or ameliorating convulsant seizures or anxiety in a mammal.

5,776,960

SYNERGISTIC ANTIMICROBIAL COMPOSITIONS CONTAINING AN IONENE POLYMER AND A PYRITHIONE SALT AND METHODS OF USING THE SAME

David Oppong; Russel E. Fues, both of Memphis, Tenn., and Garciela H. Vunk, Olive Branch, Miss., assignors to Buckman Laboratories International, Inc., Memphis, Tenn.

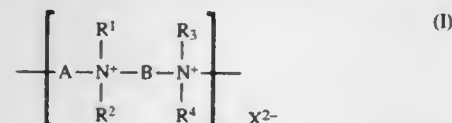
Filed Oct. 16, 1996, Ser. No. 731,578

Int. Cl.⁶ A01N 43/40; 52/02

U.S. Cl. 514—345

41 Claims

1. A composition comprising (a) an ionene polymer and (b) a pyrithione salt, wherein components (a) and (b) are present in a synergistically microbially effective combined amount to control the growth of at least one microorganism, wherein the ionene polymer comprises the repeating unit of formula I:



wherein

R¹, R², R³, and R⁴ are identical or different, and are selected from hydrogen, C₁-C₂₀, alkyl optionally substituted with at least one hydroxyl group, or benzyl optionally substituted on the benzene moiety with at least one C₁-C₂₀, alkyl group;

A is a divalent radical selected from C₁-C₁₀ alkyl, C₂-C₁₀ alkenyl, C₂-C₁₀ alkynyl, C₁-C₁₀ hydroxyalkyl, symmetric or asymmetric di-C₁-C₁₀-alkylether, aryl, aryl-C₁-C₁₀-alkyl, or C₁-C₁₀-alkylaryl-C₁-C₁₀-alkyl;

B is a divalent radical selected from C₁-C₁₀ alkyl, C₂-C₁₀ alkenyl, C₂-C₁₀ alkynyl, C₁-C₁₀ hydroxyalkyl, symmetric or asymmetric di-C₁-C₁₀-alkylether, aryl, aryl-C₁-C₁₀-alkyl, or C₁-C₁₀-alkylaryl-C₁-C₁₀-alkyl; and

X²⁻ is a divalent counter ion, two monovalent counter ions, or a fraction of a polyvalent counter ion sufficient to balance the cationic charge in the repeating unit which forms the ionene polymer backbone.

5,776,961

PREPARATION AND USE OF ORTHO-SULFONAMIDO ARYL HYDROXAMIC ACIDS AS MATRIX METALLOPROTEINASE AND TACE INHIBITORS

Jeremy Ian Levin, Nanuet; Mila T. Du, Suffern; Aranapakam Mudumbai Venkatesan, Rego Park; Frances Christy Nelson, Wyckoff; Arie Zask, New York, and Yansong Gu, Pearl River, all of N.Y., assignors to American Cyanamid Company, Madison, N.J.

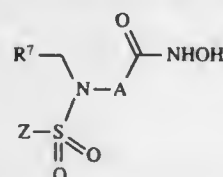
Filed Oct. 6, 1997, Ser. No. 944,593

Int. Cl.⁶ C07D 213/02; A61K 31/44; 31/18; C07C 311/08

U.S. Cl. 514—351

11 Claims

1. A compound having the formula



where the hydroxamic acid moiety and the sulfonamido moiety are bonded to adjacent carbons on the phenyl or naphthyl ring of group A where:

A is phenyl or naphthyl, optionally substituted by R¹, R², R³ and R⁴;

Z is aryl, heteroaryl, or heteroaryl fused to a phenyl, where aryl is phenyl or naphthyl optionally substituted by R¹, R², R³ and R⁴;

heteroaryl is a 5-6 membered heteroaromatic ring having from 1 to 3 heteroatoms independently selected from N, O, and S, and optionally substituted by R¹, R², R³ and R⁴; and when heteroaryl is fused to phenyl, either or both of the rings can be optionally substituted by R¹, R², R³ and R⁴;

R¹, R², R³ and R⁴ are independently —H, —COR⁵, —F, —Br, —Cl, —I, —C(O)NR⁶OR⁶, —CN, —OR⁵, —C₁-C₆-perfluoroalkyl, —S(O)₂R⁵ where x is 0-2, —OPO(OR⁵)OR⁶, —PO(OR⁵)R⁶, —OC(O)NR⁶R⁶, —COOR⁵, —CONR⁵R⁶, —SO₂H, —NR⁵R⁶, —NR⁵COR⁶, —NR⁵COOR⁶, —SO₂NR⁵R⁶, —NO₂, —N(R⁵)SO₂R⁶, —NR⁵CONR⁶R⁶, —NR⁵C(=NR⁶)NR⁶R⁶, 3-6 membered cycloheteroalkyl having one to three heteroatoms independently selected from N, O, and S and optionally having 1 or 2 double bonds and optionally substituted by one to three groups each selected independently from R⁵, —aryl or heteroaryl as defined above, biphenyl optionally substituted by one to four groups each selected independently from R⁵, —SO₂NHCONR⁵ or —CONHSO₂R⁵ where R⁵ is not H, —tetrazol-5-yl, —SO₂NHCN, —SO₂NHCONR⁵R⁶ or straight chain or branched —C₁-C₆-alkyl, —C₂-C₆-alkenyl, or —C₂-C₆-alkynyl, or —C₃-C₆-cycloalkyl optionally having 1 or 2 double bonds each optionally substituted with —COR⁵, —CN, —C₂-C₆-alkenyl, —C₂-C₆-alkynyl, —OR⁵, —C₁-C₄-perfluoroalkyl, —S(O)₂R⁵ where x is 0-2, —OC(O)NR⁵R⁶, —COOR⁵, —CONR⁵R⁶, —SO₂H, —NR⁵R⁶, —NR⁵COR⁶, —NR⁵COOR⁶, —SO₂NR⁵R⁶, —NO₂, —N(R⁵)SO₂R⁶, —NR⁵CONR⁶R⁶, —NR⁵C(=NR⁶)NR⁶R⁶, 3-6 membered cycloheteroalkyl having one to three heteroatoms independently selected from N, O, and S and optionally having 1 or 2 double bonds and optionally substituted by one to three groups each selected independently from R⁵, —aryl or heteroaryl as defined above, biphenyl optionally substituted by one to four groups each selected independently from R⁵, —SO₂NHCONR⁵ or —CONHSO₂R⁵ where R⁵ is not H, —tetrazol-5-yl, —SO₂NHCN, —SO₂NHCONR⁵R⁶ or straight chain or branched —C₁-C₆-alkyl, —C₂-C₆-alkenyl, or —C₂-C₆-alkynyl, or —C₃-C₆-cycloalkyl optionally having 1 or 2 double bonds each optionally substituted with —COR⁵, —CN, —C₂-C₆-alkenyl, —C₂-C₆-alkynyl, —OR⁵, —C₁-C₄-perfluoroalkyl, —S(O)₂R⁵ where x is 0-2, —OC(O)NR⁵R⁶, —COOR⁵, —CONR⁵R⁶, —SO₂H, —NR⁵R⁶, —NR⁵COR⁶, —NR⁵COOR⁶, —SO₂NR⁵R⁶, —NO₂, —N(R⁵)SO₂R⁶, —NR⁵CONR⁶R⁶, —NR⁵C(=NR⁶)NR⁶R⁶, 3-6 membered cycloheteroalkyl having one to three heteroatoms independently selected from N, O, and S and optionally having 1 or 2 double bonds and optionally substituted by one to three groups each selected independently from R⁵, —aryl or heteroaryl as defined above, biphenyl optionally substituted by one to four groups each selected independently from R⁵, —SO₂NHCONR⁵ or —CONHSO₂R⁵ where R⁵ is not H, —tetrazol-5-yl, —SO₂NHCN, —SO₂NHCONR⁵R⁶ or straight chain or branched —C₁-C₆-alkyl, —C₂-C₆-alkenyl, or —C₂-C₆-alkynyl, or —C₃-C₆-cycloalkyl optionally having 1 or 2 double bonds each optionally substituted with —COR⁵, —CN, —C₂-C₆-alkenyl, —C₂-C₆-alkynyl, —OR⁵, —C₁-C₄-perfluoroalkyl, —S(O)₂R⁵ where x is 0-2, —OC(O)NR⁵R⁶, —COOR⁵, —CONR⁵R⁶, —SO₂H, —NR⁵R⁶, —NR⁵COR⁶, —NR⁵COOR⁶, —SO₂NR⁵R⁶, —NO₂, —N(R⁵)SO₂R⁶, —NR⁵CONR⁶R⁶, —NR⁵C(=NR⁶)NR⁶R⁶, 3-6 membered cycloheteroalkyl having one to three heteroatoms independently selected from N, O, and S and optionally having 1 or 2 double bonds and optionally substituted by one to three groups each selected independently from R⁵, —aryl or heteroaryl as defined above, biphenyl optionally substituted by one to four groups each selected independently from R⁵, —SO₂NHCONR⁵ or —CONHSO₂R⁵ where R⁵ is not H, —tetrazol-5-yl, —SO₂NHCN, —SO₂NHCONR⁵R⁶ or straight chain or branched —C₁-C₆-alkyl, —C₂-C₆-alkenyl, or —C₂-C₆-alkynyl, or —C₃-C₆-cycloalkyl optionally having 1 or 2 double bonds each optionally substituted with —COR⁵, —CN, —C₂-C₆-alkenyl, —C₂-C₆-alkynyl, —OR⁵, —C₁-C₄-perfluoroalkyl, —S(O)₂R⁵ where x is 0-2, —OC(O)NR⁵R⁶, —COOR⁵, —CONR⁵R⁶, —SO₂H, —NR⁵R⁶, —NR⁵COR⁶, —NR⁵COOR⁶, —SO₂NR⁵R⁶, —NO₂, —N(R⁵)SO₂R⁶, —NR⁵CONR⁶R⁶, —NR⁵C(=NR⁶)NR⁶R⁶, 3-6 membered cycloheteroalkyl having one to three heteroatoms independently selected from N, O, and S and optionally having 1 or 2 double bonds and optionally substituted by one to three groups each selected independently from R⁵, —aryl or heteroaryl as defined above, biphenyl optionally substituted by one to four groups each 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—C₂-C₆-alkenyl, —C₂-C₆-alkynyl, —OR⁵, —C₁-C₄-perfluoroalkyl, —S(O)₂R⁵ where x is 0-2, —OC(O)NR⁵R⁶, —COOR⁵, —CONR⁵R⁶, —SO₂H, —NR⁵R⁶, —NR⁵COR⁶, —NR⁵COOR⁶, —SO₂NR⁵R⁶, —NO₂, —N(R⁵)SO₂R⁶, —NR⁵CONR⁶R⁶, —NR⁵C(=NR⁶)NR⁶R⁶, 3-6 membered cycloheteroalkyl having one to three heteroatoms independently selected from N, O, and S and optionally having 1 or 2 double bonds and optionally substituted by one to three groups each selected independently from R⁵, —aryl or heteroaryl as defined above, biphenyl optionally substituted by one to four groups each selected independently from R⁵, —SO₂NHCONR⁵ or —CONHSO₂R⁵ where R⁵ is not H, —tetrazol-5-yl, —SO₂NHCN, —SO₂NHCONR⁵R⁶ or straight chain or branched —C₁-C₆-alkyl, —C₂-C₆-alkenyl, or —C₂-C₆-alkynyl, or —C₃-C₆-cycloalkyl optionally having 1 or 2 double bonds each optionally substituted with —COR⁵, —CN, —C₂-C₆-alkenyl, —C₂-C₆-alkynyl, —OR⁵, —C₁-C₄-perfluoroalkyl, —S(O)₂R⁵ where x is 0-2, —OC(O)NR⁵R⁶, —COOR⁵, —CONR⁵R⁶, —SO₂H, —NR⁵R⁶, —NR⁵COR⁶, —NR⁵COOR⁶, —SO₂NR⁵R⁶, —NO₂, —N(R⁵)SO₂R⁶, —NR⁵CONR⁶R⁶, —NR⁵C(=NR⁶)NR⁶R⁶, 3-6 membered cycloheteroalkyl having one to three heteroatoms independently selected from N, O, and S and optionally having 1 or 2 double bonds and optionally substituted by one to three groups each selected independently from R⁵, —aryl or heteroaryl as defined above, biphenyl optionally substituted by one to four groups each selected independently from R⁵, —SO₂NHCONR⁵ or —CONHSO₂R⁵ where R⁵ is not H, —tetrazol-5-yl, —SO₂NHCN, —SO₂NHCONR⁵R⁶ or straight chain or branched —C₁-C₆-alkyl, —C₂-C₆-alkenyl, or —C₂-C₆-alkynyl, or —C₃-C₆-cycloalkyl optionally having 1 or 2 double bonds each optionally substituted with —COR⁵, —CN, —C₂-C₆-alkenyl, —C₂-C₆-alkynyl, —OR⁵, —C₁-C₄-perfluoroalkyl, —S(O)₂R⁵ where x is 0-2, —OC(O)NR⁵R⁶, —COOR⁵, —CONR⁵R⁶, —SO₂H, —NR⁵R⁶, —NR⁵COR⁶, —NR⁵COOR⁶, —SO₂NR⁵R⁶, —NO₂, —N(R⁵)SO₂R⁶, —NR⁵CONR⁶R⁶, —NR⁵C(=NR⁶)NR⁶R⁶, 3-6 membered cycloheteroalkyl having one to three heteroatoms independently selected from N, O, and S and optionally having 1 or 2 double bonds and optionally substituted by one to three groups each selected independently from R⁵, —aryl or heteroaryl as defined above, biphenyl optionally substituted by one to four groups each selected independently from R⁵, —SO₂NHCONR⁵ or —CONHSO₂R⁵ where R⁵ is not H, —tetrazol-5-yl, —SO₂NHCN, —SO₂NHCONR⁵R⁶ or straight chain or branched —C₁-C₆-alkyl, —C₂-C₆-alkenyl, or —C₂-C₆-alkynyl, or —C₃-C₆-cycloalkyl optionally having 1 or 2 double bonds each optionally substituted with —COR⁵, —CN, —C₂-C₆-alkenyl, —C₂-C₆-alkynyl, —OR⁵, —C₁-C₄-perfluoroalkyl, —S(O)₂R⁵ where x is 0-2, —OC(O)NR⁵R⁶, —COOR⁵, —CONR⁵R⁶, —SO₂H, —NR⁵R⁶, —NR⁵COR⁶, —NR⁵COOR⁶, —SO₂NR⁵R⁶, —NO₂, —N(R⁵)SO₂R⁶, —NR⁵CONR⁶R⁶, —NR⁵C(=NR⁶)NR⁶R⁶, 3-6 membered cycloheteroalkyl having one to three heteroatoms independently selected from N, O, and S and optionally having 1 or 2 double bonds and optionally substituted by one to three groups each selected independently from R⁵, —aryl or heteroaryl as 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—tetrazol-5-yl, —SO₂NHCN, —SO₂NHCONR⁵R⁶ or straight chain or branched —C₁-C₆-alkyl, —C₂-C₆-alkenyl, or —C₂-C₆-alkynyl, or —C₃-C₆-cycloalkyl optionally having 1 or 2 double bonds each optionally substituted with —COR⁵, —CN, —C₂-C₆-alkenyl, —C₂-C₆-alkynyl, —OR⁵, —C₁-C₄-perfluoroalkyl, —S(O)₂R⁵ where x is 0-2, —OC(O)NR⁵R⁶, —COOR⁵, —CONR⁵R⁶, —SO₂H, —NR⁵R⁶, —NR⁵COR⁶, —NR⁵COOR⁶, —SO₂NR⁵R⁶, —NO₂, —N(R⁵)SO₂R⁶, —NR⁵CONR⁶R⁶, —NR⁵C(=NR⁶)NR⁶R⁶, 3-6 membered cycloheteroalkyl having one to three heteroatoms independently selected from N, O, and S and optionally having 1 or 2 double bonds and optionally substituted by one to three groups each selected independently from R⁵, —aryl or heteroaryl as defined above, biphenyl optionally substituted by one to four groups each selected independently from R⁵, —SO₂NHCONR⁵ or —CONHSO₂R⁵ where R⁵ is not H, —tetrazol-5-yl, —SO₂NHCN, —SO₂NHCONR⁵R⁶ or straight chain or branched —C₁-C₆-alkyl, —C₂-C₆-alkenyl, or —C₂-C₆-alkynyl, or —C₃-C₆-cycloalkyl optionally having 1 or 2 double bonds each optionally substituted with —COR⁵, —CN, —C₂-C₆-alkenyl, —C₂-C₆-alkynyl, —OR⁵, —C₁-C₄-perfluoroalkyl, —S(O)₂R⁵ where x is 0-2, —OC(O)NR⁵R⁶, —COOR⁵, —CONR⁵R⁶, —SO₂H, —NR⁵R⁶, —NR⁵COR⁶, —NR⁵COOR⁶, —SO₂NR⁵R⁶, —NO₂, —N(R⁵)SO₂R⁶, —NR⁵CONR⁶R⁶, —NR⁵C(=NR⁶)NR⁶R⁶, 3-6 membered cycloheteroalkyl having one to three heteroatoms independently selected from N, O, and S and optionally having 1 or 2 double bonds and optionally substituted by one to three groups each selected independently from R⁵, —aryl or heteroaryl as defined above, biphenyl optionally substituted by one to four groups each selected independently from R⁵, —SO₂NHCONR⁵ or —CONHSO₂R⁵ where R⁵ is not H, —tetrazol-5-yl, —SO₂NHCN, —SO₂NHCONR⁵R⁶ or straight chain or branched —C₁-C₆-alkyl, —C₂-C₆-alkenyl, or

5,776,963

3-(HETEROARYL)-1-[(2,3-DIHYDRO-1H-ISINDOL-2-
YL)ALKYL]PYRROLIDINES AND 3-(HETEROARYL)-1-
[(2,3-DIHYDRO-1H-INDOL-1-YL)ALKYL]PYRROLIDINES
AND RELATED COMPOUNDS AND THEIR
THERAPEUTIC UTILITY

Joseph T. Strupczewski, Flemington; Grover C. Helsley, Stock-
ton; Edward J. Glamkowski, Warren; Yulin Chiang, Covent
Station, all of N.J.; Kenneth J. Bordeau, Kintnersville, Pa.;
Peter A. Nemoto, Raritan, and John J. Tegeler, Bridgewater,
both of N.J., assignors to Hoechst Marion Roussel, Inc.,
Kansas City, Mo.

Continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, aban-
doned, which is a continuation-in-part of Ser. No. 969,383,
Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-
part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a
continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, aban-
doned, which is a continuation of Ser. No. 619,825, Nov. 29,
1990, abandoned, which is a continuation of Ser. No. 456,790,
Dec. 29, 1989, abandoned, which is a continuation-in-part of
Ser. No. 354,411, May 19, 1989, abandoned. This application

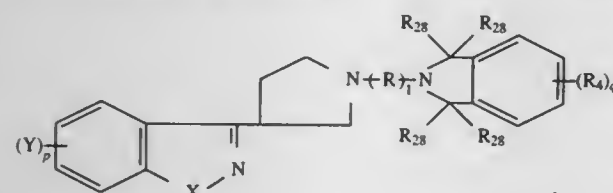
Oct. 25, 1994, Ser. No. 329,000

Int. Cl.⁶ A61K 31/495; 31/55; 31/505; 31/44

U.S. Cl. 514—373

15 Claims

1. A compound of the formula:



wherein, X is —O—, —S—, —NH—, or



R₂ is selected from the group consisting of lower alkyl, aryl
lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, and phenylsul-
fonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine,
iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R₁ is —CR₂₄R₂₇—(CR₂₃R₂₄)_n—CR₂₄R₂₇—, where n is 0, 1, 2,
or 3; or

—CHR₂₄CH=CH—CHR₂₄—,

—CHR₂₄C≡C—CHR₂₄—,

—CHR₂₄CH=CH—CR₂₃R₂₄—CHR₂₄—,

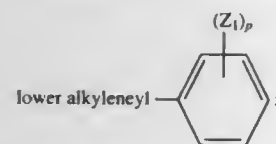
—CHR₂₄—CR₂₃R₂₄—CH=CH—CHR₂₄—,

—CHR₂₄C≡C—CR₂₃R₂₄—CHR₂₄—, or

—CHR₂₄—CR₂₃R₂₄—C≡C—CHR₂₄—,

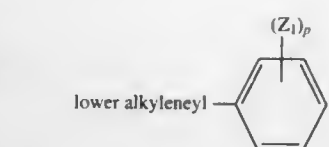
the —CH=CH— bond being cis or trans;

R₂₃ is hydrogen, (C₁–C₁₈)linear alkyl, phenyl, hydroxy,
(C₁–C₁₈)alkoxy, aryloxy, aryl (C₁–C₁₈)alkyloxy,
(C₁–C₁₈)alkanoyloxy, hydroxy (C₁–C₆)alkyl, (C₁–C₁₈) alkoxy
(C₁–C₆)alkyl, phenyl(C₁–C₆)alkyloxy, aryl (C₁–C₁₈)alkyloxy
(C₁–C₆)alkyl, (C₁–C₁₈)alkanoyloxy (C₁–C₆)alkyl, or



where Z₁ is lower alkyl, —OH, lower alkoxy, —CF₃, —NO₂,
—NH₂, or halogen, and p is as previously defined;

R₂₄ is hydrogen, (C₁–C₁₈)linear alkyl, phenyl,
hydroxy(C₁–C₆)alkyl, (C₁–C₁₈)alkoxy (C₁–C₆)alkyl,
phenyl(C₁–C₆)alkyloxy, aryl(C₁–C₁₈)alkyloxy (C₁–C₆)alkyl
(C₁–C₁₈)alkanoyloxy (C₁–C₆)alkyl, or



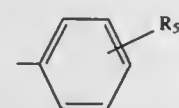
where Z₁ and p are as previously defined;

R₂₇ is hydrogen, or R₂₄ and R₂₇ taken together with the carbon
to which they are attached form C=O or C=S;

R₂₈ is hydrogen, (C₁–C₆)alkyl, aryl (C₁–C₆)alkyl, or aryl;

R₄ is hydrogen, lower alkyl, lower alkoxy, hydroxy,
tri(C₁–C₆)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy
lower alkyl, amino, mono- or dialkylamino, (C₁–C₁₈)acyl
amino, (C₁–C₁₈)alkanoyl, trifluoromethyl, chlorine, fluorine,
bromine, nitro, —O—C(=O)—(C₁–C₁₈ straight or branched
chain)alkyl or —C(=O)—aryl;

aryl is phenyl or



where R₅ is hydrogen, lower alkyl, lower alkoxy, hydroxy,
chlorine, fluorine, bromine, iodine, lower monoalkylamino,
lower dialkylamino, nitro, cyano, trifluoromethyl, or trif-
luoromethoxy;

q is 1, 2, 3, or 4;

and, any hydroxyl group attached to an aliphatic or aromatic
carbon atom, or any primary or secondary nitrogen atom may
be acylated with a (C₄–C₁₈)carboxylic group, in addition, any
nitrogen atom may alternatively be acylated with a (C₄–
C₁₈)alkoxycarbonyl group;

all geometric, optical, and stereoisomers thereof; or a phar-
maceutically acceptable acid addition salt thereof.

5,776,964

HETEROCYCLICALLY SUBSTITUTED PHENYLACETIC
ACID DERIVATIVES AND THEIR USE IN
MEDICAMENTS

Ulrich Müller; Klaus Mohrs; Jürgen Dressel, all of Wuppertal;
Rudolf Hanko, Duesseldorf; Walter Hübsch; Michael
Matzke, both of Wuppertal; Ulrich Niewöhner, Wermel-
skirchen; Siegfried Raddatz, Cologne; Thomas Krämer,
Wuppertal; Matthias Müller-Gliemann, Wuppertal; Hans-
Peter Bellemann, Wuppertal; Martin Beuck, Erkrath;
Stanislav Kazda, Wuppertal, and Stefan Wohlfeil, Hilden, all
of Germany, assignors to Bayer Aktiengesellschaft,
Leverkusen, Germany

Division of Ser. No. 227,913, Apr. 15, 1994, Pat. No. 5,521,206,
which is a continuation of Ser. No. 870,130, Apr. 15, 1992,
abandoned. This application Mar. 1, 1996, Ser. No. 609,366

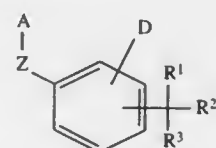
Claims priority, application Germany, Apr. 26, 1991, 41 13
693.4; Jan. 16, 1992, 42 00 954.5

Int. Cl.⁶ A61K 31/415; C07D 235/10; 235/14; 235/12

U.S. Cl. 514—394

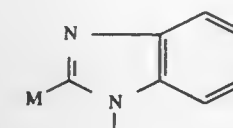
6 Claims

1. A heterocyclically substituted phenylacetic acid compound of
the formula:



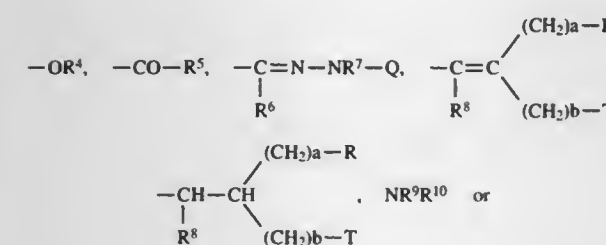
in which

A represents a heterocyclic radical of the formula:



in which

M represents cycloalkyl having 3 to 8 carbon atoms, hydrogen,
halogen, perfluoroalkyl having up to 6 carbon atoms or a
group of the formula



—CONH—CH(C₆H₅)—CH₂OH

in which

R⁴ represents hydrogen, straight-chain or branched alkyl or
acyl having up to 8 carbon atoms or phenyl which is in turn
monosubstituted or disubstituted by identical or different
halogen, hydroxyl or nitro or by straight-chain or branched
alkyl or alkoxy each having up to 8 carbon atoms, or
represents methoxyethoxymethyl.

R⁵ represents hydrogen, hydroxyl or straight-chain or
branched alkyl or alkoxy each having up to 8 carbon atoms
or a group of the formula —NR⁹R¹⁰ or —NR⁹—SO₂R¹¹, in
which

R⁹ and R¹⁰ are identical or different and represent hydro-
gen, straight-chain or branched alkyl or acyl each having
up to 8 carbon atoms or phenyl which is optionally
substituted by nitro, cyano, halogen, trifluoromethyl or
by straight-chain or branched alkyl having up to 6 carbon
atoms,

R¹¹ is straight-chain or branched alkyl having up to 8
carbon atoms, benzyl, 2-phenylvinyl or phenyl which is
optionally monosubstituted or disubstituted by identical
or different halogen or trifluoromethyl or by straight-
chain or branched alkyl or alkoxy each having up to 6
carbon atoms,

R⁶, R⁷ and R⁸ independently represent hydrogen, hydroxyl,
acetoxyl, straight-chain or branched alkyl having up to 8
carbon atoms or phenyl.

Q represents a group of the formula —CN, —CO—NR¹²R¹³,
—SO₂—NR¹⁴R¹⁵ or —CO—NR¹⁶—SO₂R¹⁷, in which
R¹², R¹³, R¹⁴, R¹⁵ and R¹⁶ independently have the above-
mentioned meaning of R⁹ and R¹⁰,

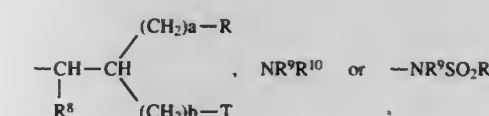
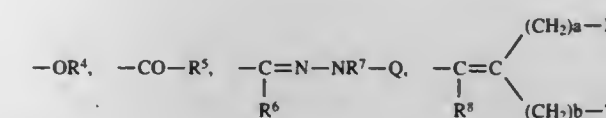
R¹⁷ has the abovementioned meaning of R¹¹,

a and b independently represent a number 0, 1, 2, 3 or 4,

R represents hydrogen or phenyl, which is optionally mono-
substituted or trisubstituted by identical or different car-
boxyl, straight-chain or branched alkyl, alkoxy or alkoxy-
carbonyl each having up to 8 carbon atoms, nitro, hydroxyl,
halogen, trifluoromethyl or trifluoromethoxy,

T represents hydrogen or a group of the formula —OR⁴ or
—CO—R⁵, or

M represents straight-chain or branched alkyl, alkenyl or
alkadienyl each having up to 10 carbon atoms which are
optionally monosubstituted or disubstituted by halogen,
phenyl or cycloalkyl having 3 to 8 carbon atoms or by one
of the groups



Z represents unbranched alkylene, alkenylene or alkynylene
each having up to 4 carbon atoms,

D represents hydrogen, halogen, nitro, hydroxyl, trifluorom-
ethyl, trifluoromethoxy, straight-chain or branched alkyl,
alkoxy or alkoxycarbonyl each having up to 6 carbon atoms,
cyano, carboxyl or the group —NR⁹R¹⁰,

R¹ and R² are identical or different and represent hydrogen,
hydroxyl or straight-chain or branched alkyl having up to 10
carbon atoms, which is optionally substituted by halogen,
cycloalkyl having 3 to 8 carbon atoms or phenyl, which can in
turn be substituted by halogen, nitro, hydroxyl or by straight-
chain or branched alkyl or alkoxy each having up to 8 carbon
atoms, or

represent cycloalkyl or cycloalkenyl having 3 to 12 carbon
atoms or phenyl, which are optionally substituted by halo-
gen or by straight-chain or branched alkyl or alkoxy each
having up to 6 carbon atoms, or

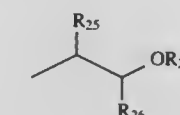
R¹ and R², together with the carbon atom, form a 3- to
7-membered, saturated or unsaturated carbocycle which is
optionally monosubstituted or disubstituted by identical or
different straight-chain or branched alkyl or alkoxy each hav-
ing up to 6 carbon atoms, phenyl, hydroxyl or halogen.

R³ represents CO—NR¹⁹R²⁰, in which

R¹⁹ and R²⁰ are identical or different, have the abovement-
ioned meaning of R⁹ and R¹⁰ or

R¹⁹ has the abovementioned meaning, and

R²⁰ represents a group of the formula



in which

R²⁵ and R²⁶ independently represent hydrogen, or phenyl
or benzyl, which can in turn be monosubstituted or
disubstituted by halogen, nitro, cyano, hydroxyl, car-
boxyl, or by straight-chain or branched alkyl, alkoxy or
alkoxycarbonyl each having up to 8 carbon atoms,

R²⁷ represents hydrogen or straight-chain or branched alkyl
or acyl each having up to 8 carbon atoms, or a physi-
ologically acceptable salt thereof.

5,776,965

PROPENOIC ESTER DERIVATIVES HAVING
4-HYDROXYPYRAZOLE GROUP AND THE USE
THEREOFSung Soo Kim; Byung Sup Kim, and Ki Jun Hwang, all of
Daejeon, Rep. of Korea, assignors to Korea Research Insti-
tute of Chemical Technology, Rep. of KoreaPCT No. PCT/KR95/00020, § 371 Date Nov. 1, 1996, § 102(e)
Date Nov. 1, 1996, PCT Pub. No. WO95/25095, PCT Pub.
Date Sep. 21, 1995

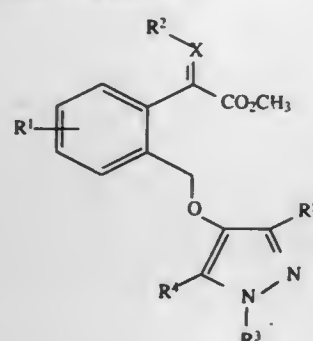
PCT Filed Mar. 14, 1995, Ser. No. 702,634

Claims priority, application Rep. of Korea, "ar. 15, 1994,
1994-5088Int. Cl.⁶ A01N 43/56; C07D 231/18

U.S. Cl. 514-407

8 Claims

1. A compound of formula (I):



wherein:

- R¹ represents hydrogen or chlorine;
R² represents a methoxy group or a methylthio group;
R³ represents a methyl group or a phenyl group;
R⁴ represents hydrogen or a methyl group;
R⁵ represents hydrogen a methyl group, or a trifluoromethyl
group; and
X represents a CH group or nitrogen.

5,776,967

PYRANOINDOLE INHIBITORS OF COX-2

Anthony F. Kreft, Langhorne, Pa.; Craig E. Caulfield; Amedeo
A. Failli, both of Princeton Junction, N.J.; Thomas J. Cag-
giano, Morrisville, Pa.; Alexander A. Greenfield, Princeton
Junction, N.J., and Dennis M. Kubrak, Philadelphia, Pa.,
assignors to American Home Products Corporation, Madl-
son, N.J.

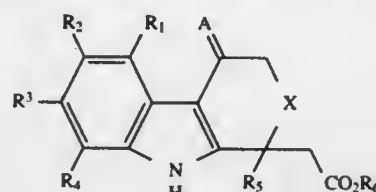
Filed Jul. 7, 1997, Ser. No. 888,983

Int. Cl.⁶ A61K 31/40;31/35; C07D 209/80;311/78

U.S. Cl. 514-411

10 Claims

1. A compound of formula I having the structure



wherein

- R₁, R₂, R₃ and R₄ are, each, independently, hydrogen, alkyl of
1-6 carbon atoms, alkenyl of 2-7 carbon atoms, alkynyl of
2-7 carbon atoms, alkoxy of 1-6 carbon atoms, aralkoxy of 7
to 12 carbon atoms, trifluoroalkoxy, alkanoyloxy of 2-6 car-
bon atoms, hydroxy, halo, trifluoromethyl, cyano, amino,
mono- or di-alkylamino in which each alkyl group has 1-6
carbon atoms, alkanamido of 2-6 carbon atoms, or alkane-
sulfonamido of 1-6 carbon atoms;
R₅ is hydrogen, alkyl of 1-6 carbon atoms, alkenyl of 2-7
carbon atoms, alkoxyalkyl in which each alkyl moiety has 1-6
carbon atoms or alkylcycloalkyl in which the alkyl moiety has
1-6 carbon atoms and the cycloalkyl moiety has 3-8 carbon
atoms;
R₆ is hydrogen, alkyl of 1-6 carbon atoms or alkenyl of 2-7
carbon atoms;
X is oxygen;
A is NZ;
Z is hydroxyl, alkoxy, aryloxy, carboxyalkyloxy of 2-7 carbon
atoms, arylamino, or alkylsulfonamino of 1-6 carbon atoms;
or a pharmaceutically acceptable salt thereof.

5,776,968

THERAPEUTIC USES OF MELANIN

David L. Berliner, Atherton; Robert L. Erwin, and David R.
McGee, both of Vacaville, all of Calif., assignors to Biosource
Technologies, Inc., Vacaville, Calif.Division of Ser. No. 609,311, Nov. 5, 1990, Pat. No. 5,210,076,
which is a continuation-in-part of Ser. No. 331,123, Mar. 31,
1989, abandoned, which is a continuation-in-part of Ser. No.
243,736, Sep. 13, 1988, abandoned. This application Jun. 7,
1995, Ser. No. 488,419Int. Cl.⁶ A61K 31/40;31/38;38/00

U.S. Cl. 514-414

18 Claims

1. A method for treating a disease of a tissue which exhibits a
melanin deficiency and which has a common embryological basis
as the nervous system in a mammal in need thereof, comprising
administering to the mammal an effective amount of an active
substance selected from the group consisting of melanin, melanin
derivatives, melanin analogs, melanin variants, tyrosinase, tyrosi-
nase gene, melanin-concentrating hormone and combinations
thereof, which causes an increase in the concentration of melanin
in the tissue.

5,776,966

SELECTIVE CELL INACTIVATION IN BLOOD

Janice North, Vancouver, Canada, assignor to University of
British Columbia, and Quadra Logic Technologies Inc., both
of Vancouver, Canada

Filed May 27, 1992, Ser. No. 889,707

Int. Cl.⁶ A61K 31/40

U.S. Cl. 514-410

12 Claims

1. A method for selectively reducing the activated leukocyte cell
population in the leukocyte-containing fluid of a subject in need of
such reduction, which method comprises:

- treating said fluid or an activated leukocyte-containing fraction
thereof with an effective amount of a green porphyrin (Gp)
compound, and
irradiating said treated fluid or fraction with light comprising at
least one wavelength absorbed by said Gp compound.

5,776,969

TREATMENT OF SLEEP DISORDERS

Steven Parker James, Scotsdale, Ariz., assignor to Eli Lilly and
Company, Indianapolis, Ind.

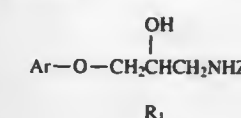
Filed Feb. 27, 1997, Ser. No. 806,729

Int. Cl.⁶ A61K 31/40

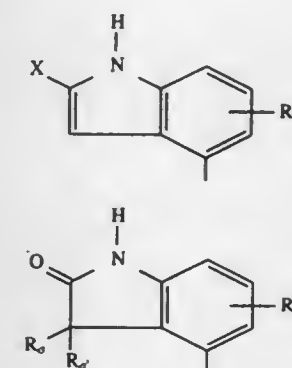
U.S. Cl. 514-418

11 Claims

1. A method of treating disorders of sleep comprising adminis-
tering to a patient in need of such treatment a first component
chosen from the group consisting of fluoxetine, venlafaxine, citalo-
pram, fluvoxamine, paroxetine, milnacipran and duloxetine in
combination with a second component chosen from the group
consisting of alprenolol, WAY 100135, WAY 100635, spiperone,
pindolol, (S)-UH- 301, penbutolol, propranolol, tertatolol, and a
compound of the formula



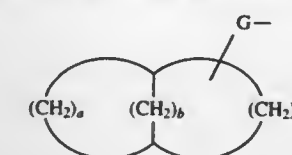
wherein Ar is



R₁ is an optional methyl group substituted on one of the three
connecting carbon atoms;

R₂ is hydrogen, C₁-C₄ alkyl, trifluoromethyl, hydroxy, (C₁-C₄
alkyl)-O-, (C₁-C₄ alkyl)-S(O)_p-, or halo;

Z is a straight or branched C₄-C₁₀ alkane, alkene, or alkyne
group; (C₄-C₈ cycloalkyl) optionally substituted with C₁-C₄
alkyl or phenyl; a bicycloalkyl group of the formula



wherein a and c are independently 1-5, b is 0-5, and (a+c) is
greater than 2; optionally phenyl substituted C₂-C₁₀ alkyl
where the phenyl group can be optionally substituted with R₂
as previously defined; or (C₁-C₄ alkylidene)-T-(C₁-C₄ alkyl),
where T is -O-, -S-, -SO-, or -SO₂-;

where

G is independently a bond or C₁-C₄ alkylidene;

X is -H-, -COY-, -CN-, or C₁-C₄ alkyl,

Y is -OH, O (C₁-C₄ alkyl), or -NH₂;

R_a and R_b are independently hydrogen or C₁-C₃ alkyl, or when
taken together with the carbon atom to which they are
attached form a C₃-C₈ cycloalkyl ring; and

p is 0, 1, or 2;
or a pharmaceutically acceptable salt thereof.

5,776,970

TRYPTOPHAN DERIVATIVES AS PROTEIN TYROSINE
KINASE BLOCKERS AND THEIR USE IN THE
TREATMENT OF NEOPLASTIC DISEASESYoram Shechter, Rehovot, and David Naor, Jerusalem, both of
Israel, assignors to Yeda Research and Development Co.
Ltd., Rehovot, and Yissum Research Development Co.,
Jerusalem, both of Israel

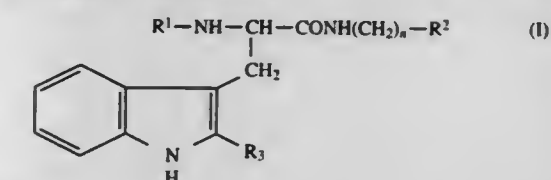
Filed Apr. 28, 1994, Ser. No. 234,159

Int. Cl.⁶ C07D 401/02;209/10; A61K 31/47;31/405

U.S. Cl. 514-419

8 Claims

1. A compound of the formula I:



wherein

R¹ is a hydrophobic group which is a radical selected from the
group consisting of C₅-C₂₀ alkyl, C₅-C₂₀ alkenyl, C₅-C₂₀
carboxylic acyl, C₃-C₈ alkoxy carbonyl, C₅-C₈ cycloalkoxy-
carbonyl, and unsubstituted or chloro-substituted benzyloxy-
carbonyl;

R² is a radical selected from -COOH, -SO₃H and -PO₃H;
R³ is H, or a radical selected from phenylthio and pyridylthio
substituted by one or two nitro groups;

n is 1 to 3, and

pharmaceutically acceptable salts thereof.

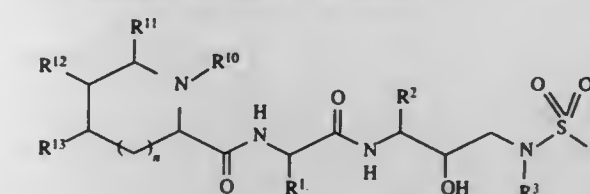
5,776,971

HETEROCYCLECARBONYL AMINO ACID
HYDROXYETHYLAMINO SULFONAMIDE
RETROVIRAL PROTEASE INHIBITORSDaniel P. Getman, Chesterfield; Gary A. DeCrescenzo, St.
Peters; John N. Freskos, Clayton, all of Mo.; Michael L.
Vazquez, Gurnee, Ill.; James A. Sikorski, Des Peres, Mo.;
Balekudru Devadas, Chesterfield, Mo.; Srinivasan Nagara-
jan, Chesterfield, Mo.; David L. Brown, Chesterfield, Mo.,
and Joseph J. McDonald, Ballwin, Mo., assignors to G.D.
Searle & Co., Skokie, Ill.Continuation-in-part of Ser. No. 402,419, Mar. 10, 1995,
abandoned. This application Jun. 7, 1995, Ser. No. 474,117Int. Cl.⁶ A61K 31/40; C07D 207/48

U.S. Cl. 514-422

14 Claims

1. Compound represented by the formula:



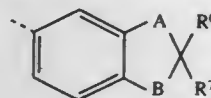
or a pharmaceutically acceptable salt thereof, wherein n represents
0 or 1;

R¹ represents hydrogen, an alkyl of 1-5 carbon atoms, an
alkenyl of 2-5 carbon atoms, an alkynyl of 2-5 carbon atoms,
a hydroxyalkyl of 1-3 carbon atoms, an alkoxyalkyl of 1-3
alkyl and 1-3 alkoxy carbon atoms, a cyanoalkyl of 1-3 alkyl
carbon atoms, imidazolylmethyl, -CH₂CONH₂,
-CH₂CH₂CONH₂, -CH₂S(O)₂NH₂, -CH₂SCH₃,
-CH₂S(O)CH₃, -CH₂S(O)₂CH₃, -C(CH₃)₂SCH₃,
-C(CH₃)₂S(O)CH₃ or -C(CH₃)₂S(O)₂CH₃;

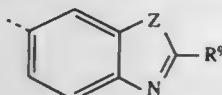
R² represents an alkyl of 1-5 carbon atoms, an aralkyl of 1-3
alkyl carbon atoms, an alkylthioalkyl of 1-3 alkyl carbon
atoms, an arylthioalkyl of 1-3 alkyl carbon atoms, or a
cycloalkylalkyl of 1-3 alkyl carbon atoms and 3-6 ring mem-
ber carbon atoms;

R³ represents an alkyl of 1-5 carbon atoms, a cycloalkyl of 5-8 ring members or a cycloalkylmethyl radical of 3-6 ring members;

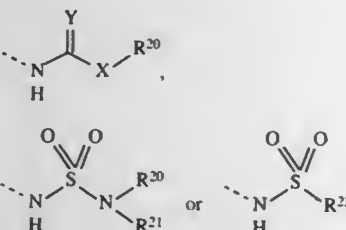
R⁴ represents an aryl, a benzo fused 5 to 6 ring member heteroaryl; a benzo fused 5 to 6 ring member heterocyclo; a radical of the formula:



wherein A and B each independently represent O, S, SO or SO₂; R⁶ represents deuterium, an alkyl of 1-5 carbon atoms, fluoro or chloro; R⁷ represents hydrogen, deuterium, methyl, fluoro or chloro; or a radical of the formula



wherein Z represents O, S or NH; and R⁹ represents a radical of formula



wherein Y represents O, S or NH; X represents a bond, O or NR²¹; R²⁰ represents hydrogen, an alkyl of 1 to 5 carbon atoms, an alkenyl of 2 to 5 carbon atoms, an alkynyl of 2 to 5 carbon atoms, an aralkyl of 1 to 5 alkyl carbon atoms, a heteroaralkyl of 5 to 6 ring members and 1 to 5 alkyl carbon atoms, a heterocycloalkyl of 5 to 6 ring members and 1 to 5 alkyl carbon atoms, an aminoalkyl of 2 to 5 carbon atoms, an N-mono- substituted or N,N-disubstituted aminoalkyl of 2 to 5 alkyl carbon atoms wherein said substituents are selected from radicals of an alkyl of 1 to 3 carbon atoms, an aralkyl of 1 to 3 alkyl carbon atoms, a carboxyalkyl of 1 to 5 carbon atoms, an alkoxyalkyl of 1 to 5 alkyl carbon atoms, a cyanoalkyl of 1 to 5 carbon atoms and a hydroxyalkyl of 2 to 5 carbon atoms;

R²¹ represents hydrogen; or an alkyl of 1 to 3 carbon atoms; or the radical of formula -NR²⁰R²¹ represents a 5 to 6 ring member heterocyclo radical; and

R²² represents an alkyl of 1 to 3 carbon atoms or a R²⁰R²¹N-alkyl of 1 to 3 alkyl carbon atoms;

R¹⁰ represents hydrogen, an alkyl of 1-3 carbon atoms, benzyl, phenylmethoxycarbonyl, tert-butoxycarbonyl or (4-methoxyphenylmethoxy) carbonyl radical;

R¹¹ represents hydrogen, a hydroxyalkyl or an alkoxyalkyl radical, wherein alkyl is 1-3 carbon atoms; and

R¹² and R¹³ each independently represent hydrogen, hydroxy, an alkoxy, 2-hydroxyethoxy, a hydroxyalkyl or an alkoxyalkyl radical, wherein alkyl is 1-3 carbon atoms; or R¹¹ and R¹² or R¹² and R¹³ along with the carbon atoms to which they are attached represent a benzo radical, which is optionally substituted with at least one hydroxy or alkoxy radical of 1-3 carbon atoms.

5,776,972 KAPPA-OPIATE AGONISTS FOR INFLAMMATORY BOWEL DISORDERS

Andrew Barber, Weiterstadt; Christoph Seyfried, Seehelm; Gerd Bartoszyk, Weiterstadt, and Rudolf Gottschlich, Reinheim, all of Germany, assigns to Merck Patent Gesellschaft mit Beschränkter Haftung, Germany
Filed Jun. 27, 1996, Ser. No. 671,502

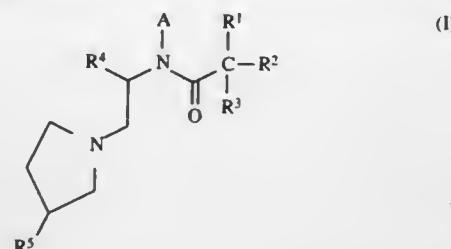
Claims priority, application Germany, Jun. 28, 1995, 195 23 502.9

Int. Cl.⁶ A61K 31/40

U.S. Cl. 514-424

6 Claims

1. A method for the treatment of inflammatory bowel disorders, which comprises administering an effective amount of a composition exhibiting kappa-opiate agonist activity which composition comprises a physiologically acceptable excipient or auxiliary and a compound of the formula I

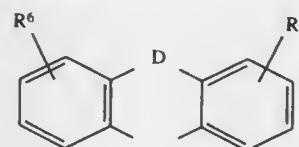


in which

R¹ is Ar, cycloalkyl having 3-7 C atoms or cycloalkylalkyl having 4-8 C atoms.

R² is Ar, or

R¹ and R² together are



R³ is H, OH, OA or A.

R⁴ is A or phenyl which is optionally mono- or disubstituted by Hal, OH, OA, CF₃, NO₂, NH₂, NHA, NHCOA, NHCO₂A and/or NA₂.

R⁵ is OH, CH₂OH.

R⁶ and R⁷ in each case independently of one another are H, Hal, OH, OA, CF₃, NH₂, NHA, NA₂, NHCOA, NHCONH₂, NO₂ or methylenedioxy with the oxy groups bonded to adjacent carbons on the ring.

A is alkyl having 1-7 C atoms.

Ar is a mono- or bicyclic aromatic radical optionally containing an N, O or S atom in the ring and optionally mono-, di- or trisubstituted by A, Hal, OH, OA, CF₃, NH₂, NHA, NA₂, NHCOA and/or NHCONH₂.

D is CH₂, O, S, NH, NA, -CH₂-CH₂-, -CH=CH-, -CH₂NH-, -CH₂-NA- or a bond

and

Hal is F, Cl, Br or I; a physiologically acceptable salt thereof or a glycosylated derivative thereof.

5,776,973 PALLADIUM COMPLEXES AND METHODS FOR USING SAME IN THE TREATMENT OF PSORIASIS

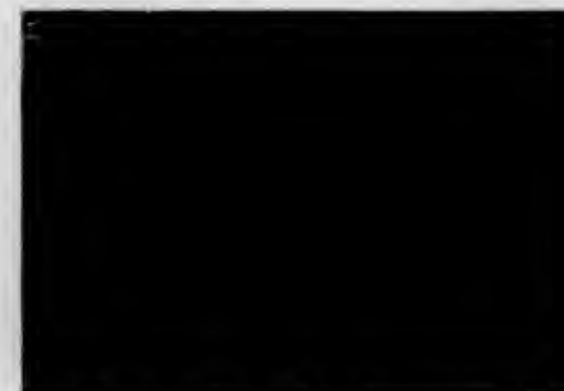
Merrill Garnett, 178 W. Main St., East Islip, N.Y. 11730
Division of Ser. No. 157,570, Nov. 26, 1993, Pat. No. 5,463,093. This application Oct. 18, 1995, Ser. No. 544,458

Int. Cl.⁶ A01N 43/26

U.S. Cl. 514-440

10 Claims

1. A method of treatment of psoriasis comprising administering a complex of palladium or a palladium salt and lipoic acid in an



amount effective for reduction of maculopapules associated with psoriasis to a patient in need of such treatment.

5,776,974

IMMUNOSUPPRESSANT COMPOUNDS

Barrie Walsham Bycroft, Nottingham; Herbert Fitzgerald Sewell; Gordon Sydney Anderson Birnie Stewart, both of Leicester, and Paul Williams, Nottingham, all of United Kingdom, assigns to The University of Nottingham, Nottingham, United Kingdom

PCT No. PCT/GB94/01437, § 371 Date Feb. 5, 1996, § 102(e) Date Feb. 5, 1996, PCT Pub. No. WO95/01175, PCT Pub. Date Jan. 12, 1995

PCT Filed Jul. 1, 1994, Ser. No. 569,257

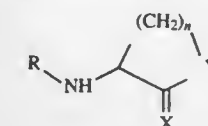
Claims priority, application European Pat. Off., Jul. 2, 1993, 93305221

Int. Cl.⁶ C07D 307/33; A61K 31/335;31/38

U.S. Cl. 514-445

14 Claims

1. A method for treating an allergic or autoimmune disease, comprising administering to a patient in need thereof an effective amount of a compound having the following formula:



wherein n is 2; Y is O or S; X is O, S or NH; and R is C₁-C₁₈ alkyl or acyl which may be substituted; provided that in the treatment of allergic diseases, when Y is S and X is O, R is not acetyl.

5,776,975

Patent Not Issued For This Number

5,776,976

FUNGICIDAL ACTIVE COMPOUND COMBINATIONS
Heinz-Wilhelm Dehne, Monheim; Wilhelm Brandes, Leichlingen; Karl-Heinz Kuck, and Thomas Seitz, both of Langenfeld, all of Germany, assigns to Bayer Aktiengesellschaft, Leverkusen, Germany

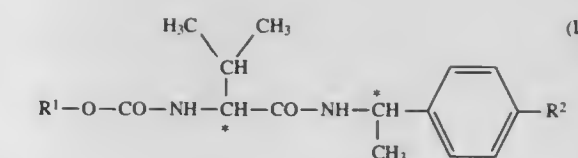
Division of Ser. No. 554,142, Nov. 6, 1995, Pat. No. 5,650,423, which is a division of Ser. No. 192,333, Feb. 4, 1994, Pat. No. 5,491,165. This application Feb. 19, 1997, Ser. No. 802,157
Claims priority, application Germany, Feb. 12, 1993, 43 04 172.8

Int. Cl.⁶ A01N 41/02;47/10

U.S. Cl. 514-479

2 Claims

1. A fungicidal composition comprising synergistic effective amounts of a valinamide derivative of the formula (I):

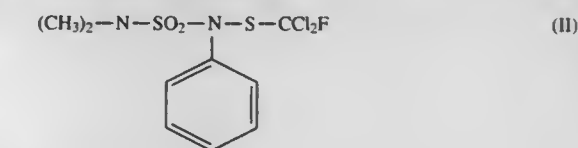


in which

R¹ represents i-propyl or s-butyl; and

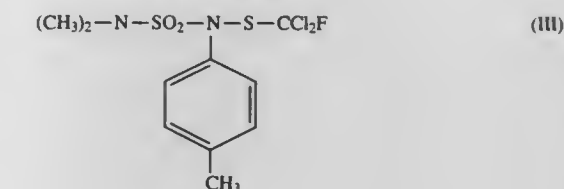
R² represents chlorine, methyl, ethyl or methoxy; and at least one component selected from the group consisting of:

(A) dichloroanid of the formula (II):



and

(B) tolylfuanid of the formula (III):



5,776,977

ARYLCYCLOALKYL DERIVATIVES, THEIR PRODUCTION AND THEIR USE

Ramachandra Ganapati Naik; Vilas Narayan Mumbaikar; Rangarajan Vasumathy; Aftab Dawoodbhai Lakdawala, all of Bombay; Mandakini Vithairao Shirole, Thane; Bansi Lal, Bombay, all of India; Jürgen Blumbach, Niedernhausen, Germany; Klaus Ulrich Weithmann, Hofheim am Taunus, Germany, and Robert Ryder Bartlett, Darmstadt, Germany, assigns to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 444,518, May 19, 1995, Pat. No. 5,589,514, which is a continuation of Ser. No. 2,863, Jan. 14, 1993, abandoned. This application Aug. 5, 1996, Ser. No. 692,129

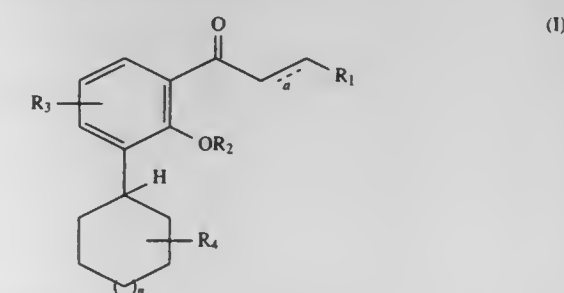
Claims priority, application European Pat. Off., Jan. 16, 1992, 92 100 664

Int. Cl.⁶ A61K 31/235;31/215; C07C 65/32;69/84

U.S. Cl. 514-532

9 Claims

1. Compounds of the formula I

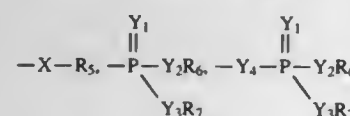
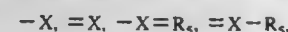


wherein

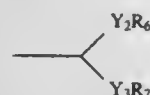
R₁ denotes C₁-C₆-alkyl, substituted C₁-C₆-alkyl, C(O)O-1-C₁-C₄-alkyl, C(O)OH, or the residue

Y_1 and Y_4 are independently oxygen or sulfur, Y_2 and Y_3 are independently oxygen, sulfur, amino or a covalent bond, R_6 and R_7 are independently hydrogen or substituted or unsubstituted alkyl, polyhaloalkyl, phenyl or benzyl in which the permissible substituents are the same or different and are one or more hydrogen, halogen, alkylcarbonyl, alkylcarbonylalkyl, alkoxy carbonylalkyl, alkoxy carbonylalkylthio, polyhaloalkenylthio, thiocano, progar-gylthio, hydroxyimino, alkoxyimino, trialkylsilyloxy, aryldialkylsilyloxy, triarylsilyloxy, foramidino, alkylsulfamido, dialkylsulfamido, alkoxysulfonyl, polyhaloalkoxysulfonyl, hydroxy, amino, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, aminothiocarbonyl, alkylaminothiocarbonyl, dialkylaminothiocarbonyl, nitro, cyano, hydroxycarbonyl and derivative salts, formamido, alkyl, alkoxy, polyhaloalkyl, polyhaloalkoxy,

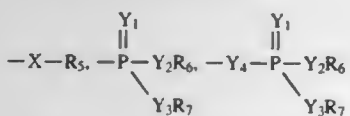
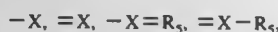
alkoxycarbonyl, substituted amino in which the permissible substituents are the same or different and are one or two propargyl, alkoxyalkyl, alkylthioalkyl, alkyl, alkenyl, haloalkenyl or polyhaloalkenyl; alkylthio, polyhaloalkylthio, alkylsulfinyl, polyhaloalkylsulfinyl, alkylsulfonyl, polyhaloalkylsulfonyl, alkylsulfonylamino, alkylcarbonylamino, polyhaloalkylsulfonylamino, polyhaloalkylcarbonylamino, trialkylsilyl, arylalkylsilyl, triarylsilyl, sulfonic acid and derivative salts, phosphonic acid and derivative salts, alkoxycarbonylamino, alkylaminocarbonyloxy, dialkylaminocarbonyloxy, alkenyl, polyhaloalkenyl, alkenyloxy, alkynyl, alkynyloxy, polyhaloalkenyloxy, polyhaloalkynyl, polyhaloalkynyloxy, polyfluoroalkanol, cyanoalkylamino, semicarbazonomethyl, alkoxycarbonylhydrazonomethyl, alkoxyiminomethyl, unsubstituted or substituted aryloxyiminomethyl, hydrazonomethyl, unsubstituted or substituted arylhydrazonomethyl, a hydroxy group condensed with a mono-, di- or polysaccharide,



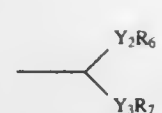
or



X is a covalent single bond or double bond, a substituted or unsubstituted heteroatom or substituted carbon atom, or a substituted or unsubstituted, branched or straight chain containing two or more carbon atoms or heteroatoms in any combination in which the permissible substituents are the same or different and are one or more hydrogen, halogen, alkylcarbonyl, alkylcarbonylalkyl, alkoxycarbonylalkyl, alkoxycarbonylalkylthio, polyhaloalkenylthio, thiocarbonyl, propargylthio, hydroxyimino, alkoxyimino, trialkylsilyloxy, arylalkylsilyloxy, triarylsilyloxy, formamido, alkylsulfamido, dialkylsulfamido, alkoxysulfonyl, polyhaloalkoxy-sulfonyl, hydroxy, amino, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, aminothiocarbonyl, alkylaminothiocarbonyl, dialkylaminothiocarbonyl, nitro, cyano, hydroxycarbonyl and derivative salts, formamido, alkyl, alkoxy, polyhaloalkyl, polyhaloalkoxy, alkoxycarbonyl, substituted amino in which the permissible substituents are the same or different and are one or two propargyl, alkoxyalkyl, alkylthioalkyl, alkyl, alkenyl, haloalkenyl or polyhaloalkenyl; alkylthio, polyhaloalkylthio, alkylsulfinyl, polyhaloalkylsulfinyl, alkylsulfonyl, polyhaloalkylsulfonyl, alkylsulfonylamino, alkylcarbonylamino, polyhaloalkylsulfonylamino, polyhaloalkylcarbonylamino, trialkylsilyl, arylalkylsilyl, triarylsilyl, sulfonic acid and derivative salts, phosphonic acid and derivative salts, alkoxycarbonylamino, alkylaminocarbonyloxy, dialkylaminocarbonyloxy, alkenyl, polyhaloalkenyl, alkenyloxy, alkynyl, alkynyloxy, polyhaloalkenyloxy, polyhaloalkynyl, polyhaloalkynyloxy, polyfluoroalkanol, cyanoalkylamino, semicarbazonomethyl, alkoxycarbonylhydrazonomethyl, alkoxyiminomethyl, unsubstituted or substituted aryloxyiminomethyl, hydrazonomethyl, unsubstituted or substituted arylhydrazonomethyl, a hydroxy group condensed with a mono-, di- or polysaccharide,



or

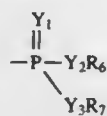
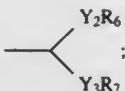
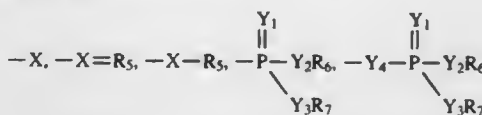


-continued

or R₄ is hydrogen;

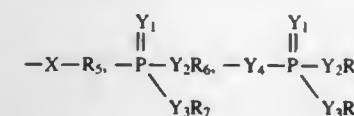
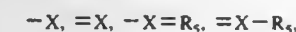
Y is oxygen or sulfur; and

R₂ and R₃ are independently hydrogen, alkyl, substituted alkyl in which the permissible substituents are the same or different and are one or more halogen, alkoxy, alkylthio, or cyano; cycloalkyl, cycloalkenyl, substituted benzyl in which the permissible substituents are the same or different and are one or more halogen, hydroxy, nitro, cyano, alkyl, polyhaloalkyl, alkoxy or polyhaloalkoxy; hydroxy, alkoxy, polyhaloalkoxy, alkylthio, polyhaloalkylthio, acyl, alkoxycarbonyl, alkoxycarbonyl, alkylsulfonyl, substituted phenylsulfonyl in which the permissible substituents are the same or different and are one or more halogen, nitro, cyano or polyhaloalkyl; substituted phenylthio in which the permissible substituents are the same or different and are one or more halogen, alkyl, nitro, cyano, polyhaloalkyl, or substituted or unsubstituted alkoxycarbonyl, alkenoxycarbonyl, alkynoxycarbonyl, cycloalkoxycarbonyl, phenoxycarbonyl, hydroxycarbonyl or the alkali metal salt or ammonium salt thereof, alkyl, alkoxy, alkylthio, cycloalkyl, cycloalkyloxy, cycloalkylthio, alkenyl, alkenylthio, alkanoyl, alkylsulfonyl, alkynyl, phenyl, phenoxy, phenylthio or amino; N-(alkylcarbonyl)-N-alkylaminothio, alkoxycarbonylthio, trialkylsilyl, dialkylarylsilyl, thiarylsilyl,

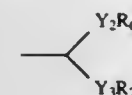
or R₂ and R₃ are independently

or R₂ and R₃ may be linked together to form a substituted or unsubstituted, heterocyclic ring system which may be saturated or unsaturated and in which the permissible substituents are the same or different and are one or more hydrogen, halogen, alkylcarbonyl, alkylcarbonylalkyl, alkoxycarbonylalkyl, alkoxycarbonylalkylthio, polyhaloalkenylthio, thiocarbonyl, propargylthio, hydroxyimino, alkoxyimino, trialkylsilyloxy, arylalkylsilyloxy, triarylsilyloxy, formamido, alkylsulfamido, dialkylsulfamido, alkoxysulfonyl, polyhaloalkoxysulfonyl, hydroxy, amino, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, aminothiocarbonyl, alkylaminothiocarbonyl, dialkylaminothiocarbonyl, nitro, cyano, hydroxycarbonyl and derivative salts, formamido, alkyl, alkoxy, polyhaloalkyl, polyhaloalkoxy, alkoxycarbonyl, substituted amino in which the permissible substituents are the same or different and are one or two propargyl, alkoxyalkyl, alkylthioalkyl, alkyl, alkenyl, haloalkenyl or polyhaloalkenyl; alkylthio, polyhaloalkylthio, alkylsulfinyl, polyhaloalkylsulfinyl, alkylsulfonyl, polyhaloalkylsulfonyl, alkylsulfonylamino, alkylcarbonylamino, polyhaloalkylsulfonylamino, polyhaloalkylcarbonylamino, trialkylsilyl, arylalkylsilyl, triarylsilyl, sulfonic acid and derivative salts, phosphonic acid and derivative salts, alkoxycarbonylamino, alkylaminocarbonyloxy, dialkylaminocarbonyloxy, alkenyl, polyhaloalkenyl, alkenyloxy, alkynyl, alkynyloxy, polyhaloalkenyloxy, polyhaloalkynyl, polyhaloalkynyloxy, polyfluoroalkanol, cyanoalkylamino, semicarbazonomethyl, alkoxycarbonylhydrazonomethyl, alkoxyiminomethyl, unsubstituted or substituted aryloxyiminomethyl, hydrazonomethyl, unsubstituted or substituted

arylhydrazonomethyl, a hydroxy group condensed with a mono-, di- or polysaccharide,



or



5,776,983

CATECHOLAMINE SURROGATES USEFUL AS β_3 AGONISTS

William N. Washburn, Titusville; Ravindar N. Girotra, Lawrenceville; Philip M. Sher, Plainsboro, all of N.J.; Amarendra B. Mikkilineni, Easton, Pa.; Kathleen M. Poss, Lawrenceville, N.J.; Arvind Mathur, Basking Ridge, N.J.; Gregory S. Bisacchi, Ringoes, N.J., and Ashvinkumar V. Gavai, Plainsboro, N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

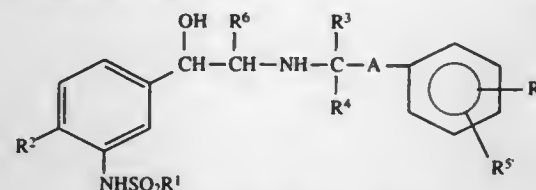
Continuation-in-part of Ser. No. 171,285, Dec. 21, 1993, abandoned. This application Dec. 2, 1994, Ser. No. 346,543

Int. Cl.⁶ A61K 31/18;31/22;31/275;31/38

U.S. Cl. 514—605

14 Claims

1. A compound of the formula

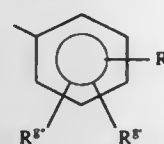


or pharmaceutically acceptable salts thereof wherein:

A is a bond, $-(\text{CH}_2)_n-$ or $-\text{CH}(\text{B})-$, where n is an integer of 1 to 3 and B is $-\text{CN}$, $-\text{CON}(\text{R}^7)\text{R}^8$ or $-\text{CO}_2\text{R}^7$;

R¹ is lower alkyl, aryl or arylalkyl;

R² is hydrogen, hydroxy, alkoxy, $-\text{CH}_2\text{OH}$, cyano, $-\text{C}(\text{OOR})^7$, $-\text{CO}_2\text{H}$, $-\text{CONH}_2$, tetrazole, $-\text{CH}_2\text{NH}_2$ or halogen;

R³ isR⁴ is hydrogen, alkyl or B;

R⁵, R⁶, R⁷, R⁸ or R⁹ are independently hydrogen, alkoxy, lower alkyl, halogen, $-\text{OH}$, $-\text{CN}$, $-(\text{CH}_2)_n\text{R}^9\text{COR}^7$, $-\text{CON}(\text{R}^6)\text{R}^8$, $-\text{CON}(\text{R}^6)\text{OR}^6$, $-\text{CO}_2\text{R}^6$, $-\text{SR}^7$, $-\text{SOR}^7$, $-\text{SO}_2\text{R}^7$, $-\text{N}(\text{R}^6)\text{SO}_2\text{R}^1$, $-\text{N}(\text{R}^6)\text{R}^6$, $-\text{NR}^6\text{COR}^7$, $-\text{OCH}_2\text{CON}(\text{R}^6)\text{R}^8$, $-\text{OCH}_2\text{CO}_2\text{R}^7$ or aryl; or R⁵ and R⁶ or R⁶ and R⁸ may together with the carbon atoms to which they are attached form an aryl or heterocycle;

R⁶ and R⁸ are independently hydrogen or lower alkyl; andR⁷ is lower alkyl;

R⁹ is hydrogen, lower alkyl, alkyl, cycloalkyl, arylalkyl, aryl, heteroaryl; or R⁹ and R⁹ may together with the nitrogen atom to which they are attached form a heterocycle.

5,776,984

PROSTAGLANDIN SYNTHASE-2 INHIBITORS

Joseph F. Dellaria, Lindenhurst, and Todd H. Gane, Waukegan, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 744,906, Nov. 8, 1996, Pat. No. 5,681,842.

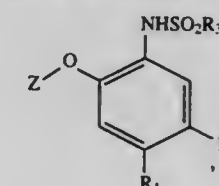
This application May 30, 1997, Ser. No. 862,950

Int. Cl.⁶ A61K 31/245;31/135; C07C 309/02

U.S. Cl. 514—605

9 Claims

1. A compound having the formula:



wherein

Z is selected from the group consisting of:

(a) naphthyl; and

(b) substituted naphthyl wherein the hydrogen atom attached to one to four of the carbon atoms is replaced with a substituent independently selected from R₄ wherein R₄ is $-\text{F}$, $-\text{CN}$, $-\text{Cl}$, or $-\text{CF}_3$;

R₁ is selected from the group consisting of $-\text{NO}_2$, $-\text{CN}$, $-\text{Cl}$, and CF_3 ;

R₂ is $-\text{H}$ or R₁ and R₂ taken together with the atoms to which they are attached define a 5-, 6- or 7-membered saturated carbocyclic or saturated heterocyclic ring having a single heteroatom which is oxygen, nitrogen or sulfur wherein the carbocyclic or heterocyclic ring is unsubstituted or substituted with one or two substituents selected from the group consisting of oxo, alkyl and hydroxy; and

R₃ is selected from the group consisting of lower alkyl and $\text{CH}_2\text{F}_{(3-n)}$ wherein n is 0, 1, 2 or 3; or a pharmaceutically acceptable salt or prodrug thereof.

5,776,985

FLUORINATED PROPRANOLOL AND RELATED METHODS

William B. Weglicki, Potomac; I. T. Mak, Germantown, both of Md., and Hassan Y. Aboul-Enein, Riyadh, Saudi Arabia, assignors to The George Washington University, Washington, D.C.

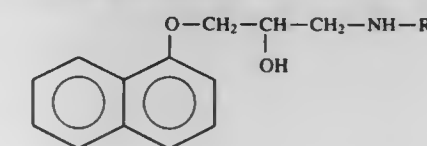
Filed Nov. 14, 1996, Ser. No. 748,894

Int. Cl.⁶ A61K 31/135; C07C 217/64

U.S. Cl. 514—652

21 Claims

1. A compound of formula



wherein R represents a straight or branched chain alkyl group of 1-6 carbon atoms which is substituted with at least one fluorine atom.

wherein R¹, R², R⁷ and R⁸ each represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted alkenyl group, R³, R⁴, R⁵ and R⁶ each represents a hydrogen atom, a halogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group or a substituted or unsubstituted alkoxy carbonyl group, R¹ and R² may be combined with each

other to form a ring together with the nitrogen atom or R¹ and R⁵ or R² and R³ may be combined with each other to form a ring together with the carbon atoms and the nitrogen atom, R³ and R⁴ or R⁵ and R⁶ may be combined with each other to form a ring together with the two carbon atoms, X¹ represents an oxygen atom or a sulfur atom, and n represents 0, 1 or 2.

5,776,997

PROCESS FOR POLYMERIZING CYCLICAL OLEFINS AN PHOTOPOLYMERIZABLE COMPOSITION

Andreas Hafner, Laupen; Andreas Mühlebach, Belfaux, and Paul Adriaan Van Der Schaaf, Fribourg, all of Switzerland, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

PCT No. PCT/EP95/04364, § 371 Date May 22, 1997, § 102(e) Date May 22, 1997, PCT Pub. No. WO96/16105, PCT Pub. Date May 30, 1996

PCT Filed Nov. 6, 1996, Ser. No. 817,624

Claims priority, application Switzerland, Nov. 17, 1994, 3460/94

Int. Cl.⁶ C08G 61/08; C08F 2/50

U.S. Cl. 522—65

30 Claims

1. Process for the photocatalytic polymerization of a cyclical olefin or at least two different cyclical olefins in the presence of a metal compound as the catalyst, characterized in that a photochemical ring-opening metathesis polymerization is carried out in the presence of a catalytic amount of at least one heat-stable titanium(IV), niobium(V), tantalum(V), molybdenum(VI) or tungsten(VI) compound in which a silylmethyl group and at least one halogen are bonded to the metal.

5,776,998

NON-AQUEOUS SOLVENT FREE PROCESS FOR MAKING UV CURABLE ADHESIVES AND SEALANTS FROM EPOXIDIZED MONOHYDROXYLATED DIENE POLYMERS

Jeffrey George Southwick, Waterloo, Belgium; Kathleen Suzanne Kibler, and James Robert Erickson, both of Kathy, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 26, 1996, Ser. No. 638,476

Int. Cl.⁶ C09J 163/08; C08L 63/08; C08F 2/50

U.S. Cl. 522—111

9 Claims

1. A process, which does not utilize a non-aqueous solvent, for producing a ultraviolet (UV) curable adhesive or sealant composition comprising a monohydroxylated epoxidized polydiene block polymer prepared from at least two polymerizable ethylenically unsaturated hydrocarbon monomers, wherein at least one block having a molecular weight from 100 to 15,000 is prepared from a diene monomer which provides unsaturation suitable for epoxidation, and wherein the polymer contains from 0.1 to 7.0 milliequivalents of epoxy per gram of polymer, and a tackifying resin, said process comprising mixing the epoxidized polymer and the tackifying resin with a photoinitiator which is insoluble in a mixture of the polymer and the tackifying resin under high shear conditions in a high shear mixer at a shear rate of at least 38,000 S⁻¹ or in a sonicator at a power density of at least 4 watts per milliliter.

5,776,999

METHODS OF USING AND SCREENING EXTENDED WEAR OPHTHALMIC LENSES

Paul Clement Nicolson, Dunwoody; Richard Carlton Baron, Alpharetta, both of Ga.; Peter Chabreck, Basel, Switzerland; John Court, Ultimo, Australia; Angelika Domschke, Lörrach, Germany; Hans Jörg Griesser, Victoria; Arthur Ho, Randwick, both of Australia; Jens Höpken, Lörrach, Germany; Bronwyn Glenice Laycock, Victoria, Australia; Qin Liu, Duluth, Ga.; Dieter Lohmann, Munchestein, Switzerland; Gordon Francis Meijs, Victoria; Eric Papaspiliotopoulos, Paddington, both of Australia; Judy Smith Riffe, Blacksburg, Va.; Klaus Schindhelm, Cherrybrook; Deborah Sweeney, Roseville, both of Australia; Wilson Leonard Terry, Jr., Alpharetta, Ga.; Jürgen Vogt, Fribourg, Switzerland, and Lynn Cook Winterton, Alpharetta, Ga., assignors to CIBA Vision Corporation, Duluth, Ga.

Division of Ser. No. 569,816, Dec. 8, 1995, which is a continuation-in-part of Ser. No. 301,166, Sep. 6, 1994. This application Jul. 17, 1996, Ser. No. 682,496

Claims priority, application Germany, Apr. 4, 1995, 958 10 221.1; Switzerland, May 19, 1995, 1496/95

Int. Cl.⁶ G02C 7/04

U.S. Cl. 523—106

26 Claims

1. A method of using a contact lens as an extended wear lens, said lens having ophthalmically compatible inner and outer surfaces, said lens being suited to extended periods of wear in continuous, intimate contact with ocular tissue and ocular fluids, said lens comprising a polymeric material which has a high oxygen permeability and a high water permeability, said polymeric material being formed from polymerizable materials including:

- (a) at least one oxypem polymerizable material; and
 - (b) at least one ionperm polymerizable material,
- wherein said lens allows oxygen permeation in an amount sufficient to maintain corneal health and wearer comfort during a period of extended, continuous contact with ocular tissue and ocular fluids,
- wherein said lens allows ion or water permeation via ion or water pathways in an amount sufficient to enable the lens to move on the eye such that corneal health is not substantially harmed and wearer comfort is acceptable during a period of extended, continuous contact with ocular tissue and ocular fluids,

wherein said ionperm polymerizable material, if polymerized alone, would form a hydrophilic polymer having a water content of at least 10 weight percent upon full hydration, and wherein said ophthalmic lens has an oxygen transmissibility of at least about 70 barrers/mm and an ion permeability characterized either by (1) an Ionon Ion Permeability Coefficient of greater than about 0.2×10⁻⁶ cm²/sec or (2) an Ionoflux Diffusion Coefficient of greater than about 1.5×10⁻⁶ mm²/min, wherein said ion permeability is measured with respect to sodium ions,

said method comprising the steps of:

- (a) applying said lens to the ocular environment; and
- (b) allowing said lens to remain in intimate contact with the ocular environment for a first period of at least 24 hours.

5,777,000

PLASTIC LENS AND PRODUCTION PROCESS THEREOF

Teruo Sakagami, and Akira Saito, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP95/00421, § 371 Date Oct. 16, 1996, § 102(e) Date Oct. 16, 1996, PCT Pub. No. WO95/30161, PCT Pub. Date Nov. 9, 1995

PCT Filed Mar. 15, 1995, Ser. No. 727,608

Claims priority, application Japan, Apr. 28, 1994, 6-111692

Int. Cl.⁶ C08F 20/20

U.S. Cl. 523—106

12 Claims

1. A plastic lens formed of a crosslinked polymer obtained by cast copolymerizing a monomer composition comprising as essen-

tial components the following component (A) and the following component (B), and optionally a component (C) composed of at least one monomer copolymerizable with the essential component comprising the component (A) and the component (B):

Component (A):

an ester obtained from (1)(a) a diol which is obtained by reducing a dimer of an unsaturated fatty acid having 16–18 carbon atoms and/or (b) a diol which is obtained by reducing a dimer of a lower alcohol ester of an unsaturated fatty acid having 16–18 carbon atoms, and (2) acrylic acid or methacrylic acid; and

Component (B):

an ester obtained from (1)(a) a triol which is obtained by reducing a trimer of an unsaturated fatty acid having 16–18 carbon atoms and/or (b) a triol which is obtained by reducing a trimer of a lower alcohol ester of an unsaturated fatty acid having 16–18 carbon atoms, and (2) acrylic acid or methacrylic acid.

5,777,001

GRAFT POLYMERIZED METAL OXIDE COMPOSITIONS AND METHODS

Charles E. Seeney, Edmond, and Tanna K. Watson, Oklahoma City, both of Okla., assignors to Kerr McGee Chemical Corp., Oklahoma City, Okla.

Filed Aug. 4, 1997, Ser. No. 905,706

Int. Cl.⁶ C08K 9/00; 9/04

U.S. Cl. 523—205

37 Claims

1. A method of producing a modified particulate metal oxide having desired properties comprising the steps of:

- (a) reacting said particulate metal oxide in an aqueous solution or emulsion containing ceric ion to produce hydroxyl free radicals on the surfaces of said particulate metal oxide; and then
- (b) reacting said particulate metal oxide containing surface hydroxyl free radicals with a polymerizable vinyl monomer in the presence of said ceric ion to graft said monomer to said particulate metal oxide and polymerize said monomer.

5,777,002

METHOD FOR PREPARING ORGANOPOLYSILOXANE BASES AND COMPOSITIONS THEREFROM

Lori Jean Conway; Thomas Edward Gray; Phillip Joseph Griffith, and William James Schulz, Jr., all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 542,206, Oct. 12, 1995, abandoned, which is a continuation-in-part of Ser. No. 272,502, Jul. 8, 1994, abandoned. This application Nov. 13, 1996, Ser. No. 748,435

Int. Cl.⁶ C08K 9/06

U.S. Cl. 523—213

15 Claims

1. A method for preparing an organosiloxane base, the method comprising: forming a mixture comprising

- (i) 100 parts by weight of a vinylidiorganosiloxy end-terminated polysiloxane fluid having a viscosity within a range of about 30 mPa.s to 1,000 mPa.s at 25° C.,
- (ii) 40 parts to 120 parts by weight of ground quartz having an average particle size within a range of about one to 20 microns,
- (iii) up to about 50 parts by weight of silica,
- (iv) five to 20 parts by weight of disilazane, and
- (v) one to ten parts water;

where components (i) through (v) are mixed at a temperature below about 60° C. for a period of time sufficient to effect silation of the ground quartz and the silica by hydrolysis product of the disilazane.

5,777,003

REDISPERSIBLE POLYMER POWDER COMPOSITION COMPRISING CYCLODEXTRINS OR CYCLODEXTRIN DERIVATIVES

Wolfgang Haas, Altötting, and Reiner Figge, Ampfing, both of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

PCT No. PCT/EP95/04412, § 371 Date Mar. 19, 1997, § 102(e) Date Mar. 19, 1997, PCT Pub. No. WO96/15187, PCT Pub. Date May 23, 1996

PCT Filed Nov. 9, 1995, Ser. No. 809,386

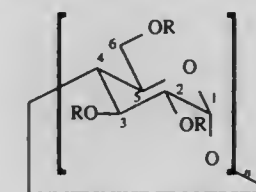
Claims priority, application Germany, Nov. 10, 1994, 44 40 236.8

Int. Cl.⁶ C08K 7/16; C08L 3/02

U.S. Cl. 523—223

12 Claims

1. A redispersible polymer powder composition which comprises a homo- or copolymer of ethylenically unsaturated monomers and a cyclodextrin or cyclodextrin derivative of the general formula



(1)

in which n = 6, 7 or 8 and R is identical or different and has the meaning of H or R¹, where R¹ is identical or different and has the meaning of optionally substituted C₁–C₄-alkyl, hydroxy-C₁–C₄-alkyl, carboxy-C₁–C₄-alkyl or C₂–C₄-carboxyl radicals.

5,777,004

METHOD OF NEUTRALIZING PROTEIN ALLERGENS IN NATURAL RUBBER LATEX PRODUCT FORMED THEREBY

Jack C. Trautman, Middleton, Wis., assignor to Allergen Reduction Inc., Middleton, Wis.

Filed Apr. 30, 1997, Ser. No. 846,733

Int. Cl.⁶ C09F 6/00; C08J 3/00; A61J 7/00; A61M 35/00

U.S. Cl. 523—310

29 Claims

1. A method of neutralizing protein allergens in natural rubber latex comprising treating the natural rubber latex with a protease enzyme and a peptidase enzyme such that the protein allergens contained within the natural rubber latex are degraded to polypeptide fragments and amino acids which are non-allergenic to humans.

5,777,005

CORRUGATING ADHESIVES EMPLOYING TAPIOCA FIBER

J. E. Todd Giesfeldt, La Grange, and Jack R. Wallace, Bolingbrook, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Mar. 18, 1996, Ser. No. 619,287

Int. Cl.⁶ C08L 3/02; 3/04

U.S. Cl. 524—53

16 Claims

1. A starch-based corrugating adhesive comprising a carrier phase and a suspended phase, the suspended phase comprising starch, a boron containing compound and water and the carrier phase comprising from about 70 wt. % to about 0 wt. % of a carrier starch and from about 30 wt. % to about 100 wt. % of a carrier starch replacement composition, the carrier starch replacement composition comprising

from about 100 wt. % to about 25 wt. % tapioca fiber; from about 0 wt. % to about 75 wt. % corn fiber; and from about 0 wt. % to about 5 wt. % polyvinyl alcohol and/or polyvinyl acetate.

5,777,006

Patent Not Issued For This Number

5,777,007

BROMINATED P-CUMYLPHENOL FLAME-RETARDANTS FOR RESIN COMPOSITION

Takumi Kagawa; Norihisa Kondo, both of Shin-Nanyo; Noriyuki Kasai, Tokuyama, and Hideo Sakka, Kudamathu, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Mar. 10, 1997, Ser. No. 814,462

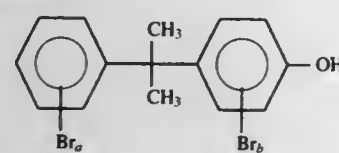
Claims priority, application Japan, Mar. 13, 1996, 8-055951

Int. Cl.⁶ C08K 5/136; C07C 39/367; 43/23; C07D 303/14

U.S. Cl. 524-114

15 Claims

1. A brominated p-cumylphenol represented by the following formula (I):



wherein a is an integer of 1 to 3 and b is an integer of 1 to 2.

5,777,008

OLIGOMERIC HALS PHOSPHITES AND HALS PHOSPHONITES AS STABILISERS

Rita Pitteloud, Praroman, Switzerland, assignor to Clba Specialty Chemicals Corporation, Tarrytown, N.Y.

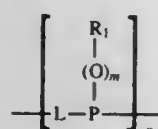
Filed May 25, 1995, Ser. No. 451,114

Claims priority, application Switzerland, Jun. 2, 1994, 01734/94-8

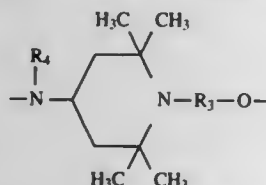
Int. Cl.⁶ C08K 5/3435; 5/5353

U.S. Cl. 524-103

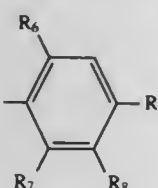
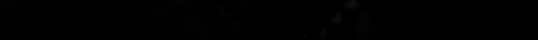
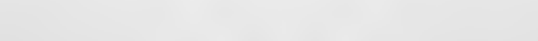
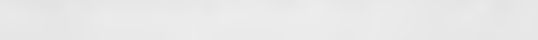
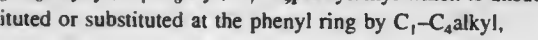
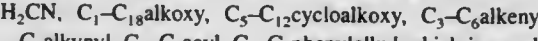
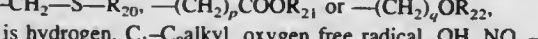
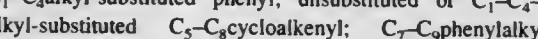
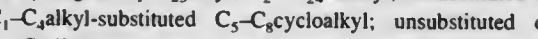
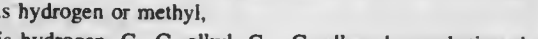
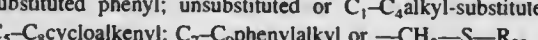
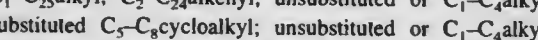
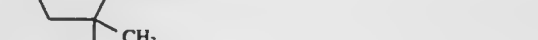
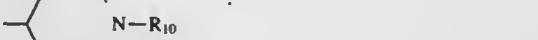
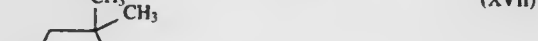
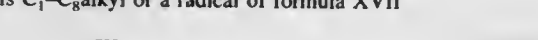
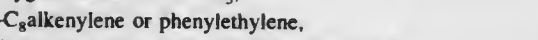
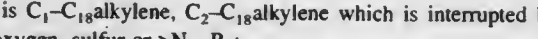
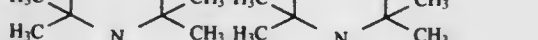
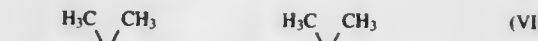
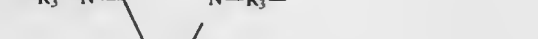
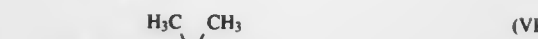
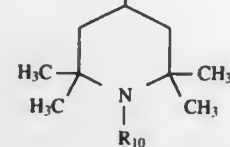
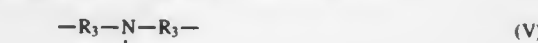
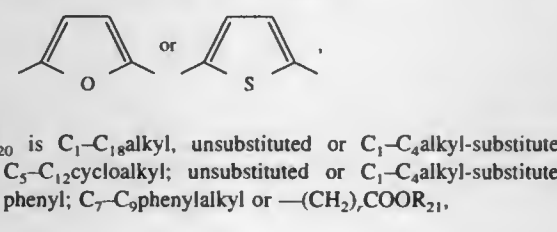
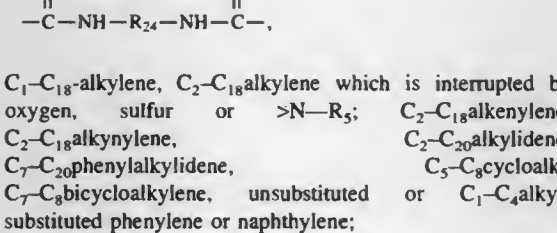
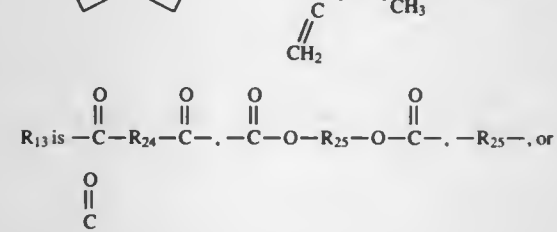
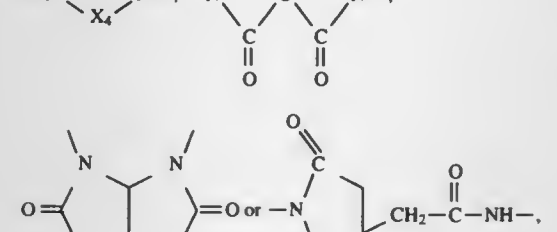
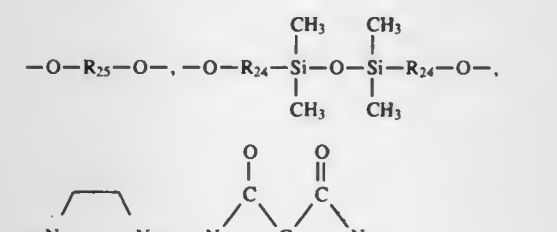
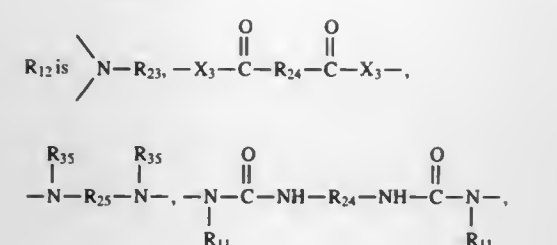
1. An oligomeric compound of formula I



wherein L is a group of formula II or III



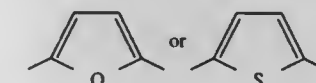
R₁ is C₁-C₂₅alkyl, C₂-C₂₅alkyl which is interrupted by oxygen, sulfur or >N-R₅; C₂-C₂₄alkenyl, unsubstituted or C₁-C₄alkyl-substituted C₅-C₁₅cycloalkyl; unsubstituted or C₁-C₄alkyl-substituted C₅-C₁₅cycloalkenyl; C₇-C₉phenylalkyl which is unsubstituted or substituted at the phenyl ring by C₁-C₄alkyl; or tetrahydroabietyl; or R₁ is a radical of formula IV

R₂ is a group of formula V to VIII and XIIR₁₁ is C₁-C₈alkyl or a radical of formula XVII

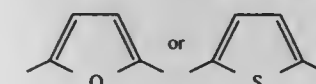
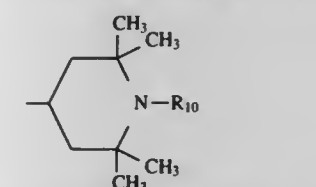
R₂₁ is C₁-C₁₈ alkyl, unsubstituted or C₁-C₄alkyl-substituted C₅-C₁₂cycloalkyl; unsubstituted or C₁-C₄alkyl-substituted phenyl; or C₇-C₉phenylalkyl,

R₂₂ is C₁-C₂₅alkyl, unsubstituted or C₁-C₄ alkyl-substituted phenyl; C₇-C₉phenylalkyl, C₁-C₂₅alkanoyl, C₃-C₂₅alkenoyl, C₃-C₂₅alkanoyl which is interrupted by oxygen, sulfur or >N-R₅; C₆-C₉cycloalkylcarbonyl, unsubstituted or C₁-C₁₂alkyl-substituted benzoyl; thenoyl or furoyl,

R₂₃ is C₁-C₈alkyl, R₂₄ is a direct bond, C₁-C₁₈alkylene, C₂-C₁₈alkylene which is interrupted by oxygen, sulfur or >N-R₅; C₂-C₁₈alkenylene, C₂-C₂₀alkylidene, C₇-C₂₀phenylalkylidene, C₅-C₈cycloalkylene, C₇-C₈bicycloalkylene, unsubstituted or C₁-C₄alkyl-substituted phenylene or naphthylene;



R₂₅ is C₁-C₁₈alkylene, C₂-C₁₈alkylene which is interrupted by oxygen, sulfur or >N-R₅; C₂-C₁₈alkenylene, C₂-C₂₀alkylidene, C₇-C₂₀phenylalkylidene, C₅-C₈cycloalkylene, C₇-C₈bicycloalkylene, unsubstituted or C₁-C₄alkyl-substituted phenylene or naphthylene;

R₃₃ is hydrogen, C₁-C₈alkyl or a radical of formula XVII

R₃₄ is hydrogen, C₁-C₂₀alkyl, C₅-C₁₂cycloalkyl, unsubstituted or C₁-C₄alkyl-substituted phenyl;

R₃₅ is C₁-C₂₅alkanoyl, unsubstituted or C₁-C₄alkyl-substituted benzoyl;

X₃ is oxygen or >N-R₃;

X₄ is >C=O, >C=S or >CH-R₃₄;

m is 0 or 1,

n is an integer from 2 to 25,

p is 0, 1 or 2,

q is an integer from 3 to 8, and

r is 1 or 2, with the proviso that in the structural repeating units of formula I the group L, the radical R₁, and the indices m are identical or different.

5,777,009

FLAME RETARDANT LOW TG POLYESTERCARBONATE

Wie-Hin Pan, Evansville, Ind.; Dwight J. Patterson, Murfreesboro, Tenn.; Omar M. Boutni, Haslett, Mich., and Luca P. Fontana, Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

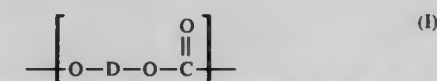
Filed Oct. 25, 1996, Ser. No. 738,213

Int. Cl.⁶ C08J 5/42

U.S. Cl. 524-164

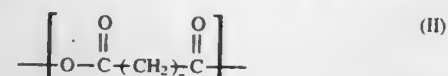
11 Claims

1. A moldable thermoplastic blend of a copolyestercarbonate having a polymer backbone made up of recurring carbonate structural units of the formula:



wherein D is a divalent aromatic radical residue of the dihydric phenol employed in the preparative polymerization reaction; and

repeating or recurring carboxylic chain units of the formula:



wherein n is a whole number integer of from 0 to 36; and

a fire-retarding proportion of a mixture of:

- a halogenated polycarbonate resin;
- substantially acid free potassium diphenylsulfone sulfonate; and
- a drip-inhibiting proportion of polytetrafluoroethylene.

5,777,010

MELT-EXTRUDABLE COMPOSITIONS CONTAINING ANTIMICROBIAL SILOXANE QUATERNARY AMMONIUM SALTS

Ronald Sinclair Nohr, Roswell, and John Gavin MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

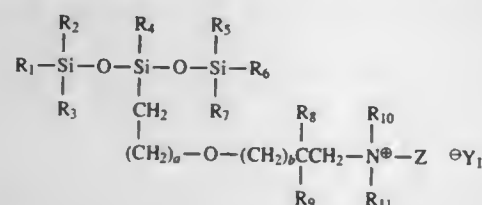
Division of Ser. No. 450,451, May 25, 1995, Pat. No. 5,569,732, which is a division of Ser. No. 249,788, May 26, 1994, Pat. No. 5,569,372, which is a continuation-in-part of Ser. No. 76,529, Jun. 11, 1993, abandoned. This application Jul. 23, 1996, Ser. No. 686,228

Int. Cl.⁶ C08K 5/54; C08L 23/02; 23/06; 23/12

U.S. Cl. 524—188

10 Claims

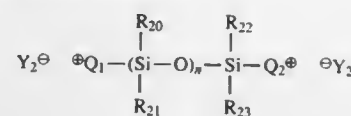
1. A melt-extrudable composition which comprises: at least one thermoplastic polyolefin capable of being shaped into a product by melt extrusion; and at least one additive which surface segregates upon extrusion of said composition to impart antimicrobial properties to a surface of said product, wherein said additive has either the general formula A,



wherein:

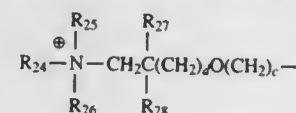
- each of R_1 - R_7 is independently selected from the group consisting of monovalent C_1 - C_{20} alkyl, phenyl, and phenyl-substituted C_1 - C_{20} alkyl groups, in which each phenyl can be substituted or unsubstituted;
- each of R_8 and R_9 is a monovalent group independently selected from the group consisting of (a) hydrogen and (b) monovalent alkyl, cydoalkyl, aryl, and heterocyclic groups and combinations thereof having up to about 30 carbon atoms, except that both R_8 and R_9 cannot be hydrogen; or, when taken together in combination with the carbon atom to which they are attached, R_8 and R_9 represent a carbonyl group;
- each of R_{10} and R_{11} is a methyl group;
- a represents an integer from 1 to about 20;
- b represents an integer from 1 to about 20;
- Z is a monovalent group having from about 8 to about 30 carbon atoms and selected from the group consisting of alkyl, cydoalkyl, aryl, and heterocyclic groups, and combinations thereof, wherein Z is terminated by an alkyl moiety which includes at least about 8 carbon atoms in a single continuous chain;
- Y_1 is an anion which does not cause the thermal instability of the additive to be more than about 35 weight percent decomposition during melt extrusion; and
- said additive has a molecular weight of from about 600 to about 1,700;

or the general formula B,



wherein:

- each of R_{20} - R_{23} is independently selected from the group consisting of monovalent C_1 - C_{20} alkyl, phenyl, and phenyl-substituted C_1 - C_{20} alkyl groups, in which each phenyl can be substituted or unsubstituted;
- n represents an integer of from 1 to about 19;
- each of Q_1 and Q_2 represents an independently selected quaternary ammonium group having the general formula,



in which:

- R_{24} is a monovalent alkyl group having from about 8 to about 30 carbon atoms, at least about 8 carbon atoms of which make up a single continuous chain;
- R_{25} and R_{26} are methyl groups;
- each of R_{27} and R_{28} is a monovalent group independently selected from the group consisting of (i) hydrogen and (ii) monovalent alkyl, cydoalkyl, aryl, and heterocyclic groups and combinations thereof having up to about 30 carbon atoms, except that both R_{27} and R_{28} cannot be hydrogen; or, when taken together in combination with the carbon atom to which they are attached, R_{27} and R_{28} represent a carbonyl group;
- c represents an integer of from 2 to about 20; and
- d represents an integer of from 2 to about 20;
- Y_2 represents an anion which does not cause the thermal instability of the additive to be more than about 35 weight percent decomposition during melt extrusion; and
- said additive has a polydispersity of up to about 3.0 and a weight-average molecular weight of from about 800 to about 2,000;

wherein said additive is present in said melt-extrudable composition in an amount sufficient to impart antimicrobial activity to the surfaces of a shaped article prepared therefrom by a melt-extrusion process.

5,777,011

STABILIZED FORMAZIN COMPOSITION

Michael J. Sadar, Fort Collins, Colo., assignor to Hach Company, Loveland, Colo.

Filed Dec. 1, 1995, Ser. No. 566,166

Int. Cl.⁶ C08J 5/10; C08K 3/20

U.S. Cl. 524—253

12 Claims

1. A shelf-stable aqueous formazin composition having a pH not less than 7 and exhibiting an NTU less than 400, said composition comprising:

- 100 parts by weight water;
- up to about 0.03 parts by weight formazin polymer;
- up to about 0.4 part by weight of sulfate ion;
- 4 to about 20 parts by weight hexamethylenetetramine.

5,777,012

POLYSULFIDES OF N-METHYLPYRROLIDINONE

Lawson Gibson Wideman, Tallmadge, and Shingo Futamura, Wadsworth, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

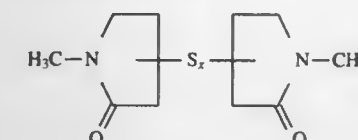
Filed Jul. 30, 1997, Ser. No. 902,791

Int. Cl.⁶ C08J 5/24; C08G 63/91; 2/16; C07D 207/12

U.S. Cl. 524—261

11 Claims

1. A compound of the formula:



where x is an integer of from 2 to 30.

5,777,013

DISPERSION AND ADHESION OF SILICA IN ELASTOMERIC MATERIALS

Eric S. Gardiner, Westtown, and Xinya Lu, Spring Valley, both of N.Y., assignors to Arizona Chemical Company, Panama City, Fla.

Filed Jan. 24, 1997, Ser. No. 788,931

Int. Cl.⁶ C08L 25/10

U.S. Cl. 524—274

33 Claims

1. An elastomeric composition comprising an elastomeric matrix including from about 1 to about 40 wt. % silica and from about 0.1 to about 20 weight % of an A-B-A block copolymer additive having A-blocks derived from the group consisting of rosin acids and fatty acids and a B-block having a number average molecular weight in the range of from about 200 to about 2500 daltons derived from the group consisting of a polyethylene glycol (PEG) and a polyepichlorohydrin (PECH) polyol.

5,777,014

PVC SHEET MATERIAL HAVING IMPROVED WATER-BASED COATING RECEPTIVITY

Steven P. Hopper, Glen Ellyn; Kimberly L. Stefanisin, Oak Lawn, and Ronald D. Svoboda, Hickory Hills, all of Ill., assignors to The C.P. Hall Company, Chicago, Ill.

Filed Dec. 3, 1996, Ser. No. 753,925

Int. Cl.⁶ C08J 5/10

U.S. Cl. 524—308

28 Claims

1. A plasticized polyvinyl chloride resin composition comprising polyvinyl chloride resin; a polymeric polyester plasticizer for said polyvinyl chloride resin; a monomeric C_3 or less diacid ester plasticizer in a weight ratio of monomeric plasticizer to polymeric plasticizer of 95/5 to 5/95, said plasticizers included in a total amount of about 20% to about 100% by weight, based on the weight of polyvinyl chloride resin; and a metal salt additive selected from metal oxides and metal hydroxides, wherein the metal has an oxidation state selected from the group consisting of plus two, plus three, and plus four, said metal salt included in the composition in an amount of at least about 0.1%, based on the weight of polyvinyl chloride resin.

5,777,015

DISPERSION POWDERS FOR WATER-RESISTANT ADHESIVES

Martin Jakob, Kelkheim; Volker Matz, Frankfurt, and Hermann Schindler, Eppstein, all of Germany, assignors to Clariant GmbH, Frankfurt, Germany

Filed Dec. 4, 1996, Ser. No. 760,074

Claims priority, application Germany, Dec. 7, 1995, 195 45 608.4

Int. Cl.⁶ C08K 5/07; C08L 29/04

U.S. Cl. 524—354

11 Claims

1. A redispersible dispersion powder comprising: a) a base polymer selected from the group consisting of vinyl ester homo- and copolymers, b) from 2 to 20% by weight, based on the overall mass of the base polymer a), of polyvinyl alcohol, said polyvinyl alcohol having a degree of hydrolysis of from 70 to 100 mol-% and a viscosity in a 4% aqueous solution of from 2 to 70 mPa.s, c) from 0 to 50% by weight, based on the overall mass of the components a) and b), of anticaking agent, d) from 0.001 to 5% by weight, based on the overall mass of the components a) and b), of water-soluble, at least bifunctional, masked aldehydes having at least 3 carbon atoms, said masked aldehydes being capable of controllably releasing aldehyde groups in an acidic medium, e) from 0 to 25% by weight, based on the overall mass of the base polymer a), of additives selected from the group consisting of film-forming auxiliaries and plasticizers, and f) from 0 to 10% by weight, based on the overall mass of the components a) and b), of free Brønsted or Lewis acids which are present as solids or adsorbed on a carrier material, wherein the base polymer a) is a homo- or copolymer having a vinyl ester fraction of at least 50% by weight.

5,777,016

Patent Not Issued For This Number

5,777,017

AQUEOUS ORGANOPOLYSILOXANE EMULSIONS AND EMULSIFIERS FOR THEIR PREPARATION

Enno Funk, Neuhauser, and Christine Kuermeier, Ahornweg, both of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Sep. 11, 1996, Ser. No. 712,062

Claims priority, application Germany, Sep. 21, 1995, 195 35 005.7

Int. Cl.⁶ C08K 5/06; C08L 29/04; C09K 3/18; B01J 13/00

U.S. Cl. 524—375

12 Claims

1. An aqueous emulsion, comprising one or more organopolysiloxanes, an alkylphenyl polyglycol ether, and polyvinyl alcohol with a degree of hydrolysis of not more than 85 mol-% and a molecular weight of from 2000 to 500,000 g/mol.

5,777,018

LOW-TEMPERATURE-RESISTANT, HALOGEN-FREE, FLAME RETARDANT POLYOLEFIN-BASED RESIN COMPOSITION

Takeshi Imahashi, Nagao-machi, Japan, assignor to Kyowa Chemical Industry Co., Ltd., Kagawa-ken, Japan

Filed Feb. 23, 1996, Ser. No. 606,056

Claims priority, application Japan, Mar. 7, 1995, 7-072459

Int. Cl.⁶ C08K 3/22; 5/098; C09K 21/02; 21/06

U.S. Cl. 524—397

6 Claims

1. A low-temperature-resistant halogen-free flame-retardant polyolefin-based resin composition containing (a) 100 parts by weight of a polyolefin resin.

- (b) 15 to 250 parts by weight of a dihydric or trihydric metal hydroxide surface-treated with a saturated fatty acid having 10 to 30 carbon atoms or an alkali metal salt thereof, or, when the metal hydroxide is aluminum hydroxide, 15 to 250 parts by weight of aluminum hydroxide surface-treated with a saturated or unsaturated fatty acid having 10 to 30 carbon atoms or an alkali metal salt thereof, and
- (c) 0.5 to 10 parts by weight of an aluminum salt of an unsaturated fatty acid having 10 to 30 carbon atoms.

5,777,019

POLYACETAL RESIN COMPOSITION

Sachio Anada, Shizuoka, Japan, assignor to Polyplastics Co., Ltd., Japan

Filed Sep. 27, 1996, Ser. No. 721,656

Claims priority, application Japan, Sep. 29, 1995, 7-252534; Dec. 27, 1995, 7-340401

Int. Cl.⁶ C08K 3/00

U.S. Cl. 524—404

5 Claims

1. A polyacetal resin composition consisting essentially of:
- (A) 100 parts by weight of a polyacetal resin,
- (B) between 3 to 200 parts by weight of inorganic glass filler, and
- (C) between 0.001 to 3.0 parts by weight of a boric acid compound.

5,777,020

THERMOPLASTIC RESIN COMPOSITION

Takayuki Nagai, Yasutoshi Jagawa, both of Toyota; Takeyoshi Nishio, Okazaki; Yukihito Zanka, Yokkaichi; Ikuo Tsutsumi, Yokkaichi; Izumi Ishii, Yokkaichi; Hiroki Sato, Yokkaichi, and Hironari Sano, Yokkaichi, all of Japan, assignors to Japan Polychem Corporation, Tokyo-To, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Nov. 15, 1996, Ser. No. 749,506

Claims priority, application Japan, Nov. 17, 1995, 7-300030; Sep. 11, 1996, 8-240790

Int. Cl.⁶ C08J 3/34

U.S. Cl. 524—451

9 Claims

1. A thermoplastic resin composition comprising the following components (A) to (D):
- component (A): 50 to 75% by weight of a propylene/ethylene block copolymer wherein said block copolymer has a melt flow rate, MFR, of 10 to 100 g/10 min at 230° C. under a load of 2.16 kg;
- wherein the ratio (Mw/Mn) of the weight-average molecular weight (Mw) to the number-average molecular weight (Mn) of the block copolymer is from 5 to 7;
- wherein said propylene moiety has MFR of 20 to 200 g/10 min at 230° C. under a load of 2.16 kg; and
- wherein said propylene moiety has an isotactic pentad rate of 0.98 or higher;
- component (B): comprising (B-1) or (B-2) where
- (B-1) comprises the following two copolymers (B-1-1) and (B-1-2):
- (B-1-1): 5 to 10% by weight of an ethylene/butene random copolymer resin having a melting temperature, measured by a differential scanning calorimeter, of 60 to 100° C. and an MFR of 0.5 to 10 g/10 min at 230° C. under a load of 2.16 kg, and
- (B-1-2): 5 to 10% by weight of an ethylene/butene random copolymer rubber which does not have a melting temperature measured by a differential scanning calorimeter of higher than 30° C. and has an MFR of 0.5 to 10 g/10 min at 230° C. under a load of 2.16 kg or
- (B-2): comprising the following two copolymers (B-2-1) and (B-2-2):
- (B-2-1): 7 to 15% by weight of an ethylene/octene random copolymer rubber having a melting temperature measured

by a differential scanning calorimeter of 60 to 90° C. and an MFR of 1.0 to 20 g/10 min at 230° C. under a load of 2.16 kg, and

(B-2-2): 1 to 5% by weight of an ethylene/propylene copolymer rubber having a melting temperature measured by a differential scanning calorimeter of lower than 30° C., being substantially amorphous, having an MFR of 0.5 to 10 g/10 min at 230° C. under a load of 2.16 kg;

component (C): 0.3 to 5% by weight of a block elastomer represented by the following formula I:

polyethylene crystalline moiety (ethylene/butene random elastomer moiety) polyethylene moiety (I) or formula II:

polyethylene crystalline moiety (ethylene/butene random elastomer moiety) (II)

wherein said block elastomer has melting temperature measured by a differential scanning calorimeter of 80° to 110° C. and an MFR of 0.5 to 20 g/10 min at 230° C. under a load of 2.16 kg, wherein said block elastomer consists of 20 to 40% by weight of polyethylene crystalline moiety and 60 to 80% by weight of random elastomer moiety; and

component (D): 15 to 25% by weight of talc having an average particle diameter of 5 micrometers or less and a specific surface area of 3.5 m²/g or more.

5,777,021

COMPOSITION OF STYRENE POLYMER AND POLAR GROUP-CONTAINING POLYPHENYLENE ETHER

Akikazu Nakano, Osaka, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 662,507, Jun. 13, 1996, abandoned, which is a continuation of Ser. No. 424,232, Apr. 19, 1995, abandoned, which is a continuation of Ser. No. 340,818, Nov. 17, 1994, abandoned, which is a continuation of Ser. No. 15,306, Feb. 9, 1993, abandoned, which is a continuation of Ser. No. 581,115, Sep. 12, 1990, abandoned. This application Sep. 30, 1997, Ser. No. 941,322

Claims priority, application Japan, Oct. 13, 1989, 1-264996; Oct. 13, 1989, 1-264997

Int. Cl.⁶ C08K 3/22; 7/14; C08L 25/06; 25/08

U.S. Cl. 524—508

19 Claims

1. A styrene polymer composition comprising:
- (A) 99 to 75% by weight of a styrene polymer having a syndiotactic configuration,
- (B) 1 to 25% by weight of a polyphenylene ether modified by not less than 0.01% by weight of the polyphenylene ether of at least one compound selected from the group consisting of an unsaturated carboxylic acid, an unsaturated carboxylic acid derivative and an unsaturated epoxy compound, and
- (D) 1 to 200 parts by weight of a filler surface-treated with a coupling agent based on 100 parts by weight of the components (A) and (B).

5,777,022

ONE-COAT, WATERBORNE COATING SYSTEM FOR UNTREATED POLYPROPYLENE-BASED SUBSTRATES

James Bugajski, Crete; Robert Kooy, Lansing, both of Ill.; Raymond J. Moeller, Cedar Lake, Ind., and Michael L. Jackson, LaGrange, Ill., assignors to Bee Chemical Company, Lansing, Ill.

Filed May 16, 1996, Ser. No. 648,783

Int. Cl.⁶ C08L 27/00; C08F 8/32; C08C 19/22

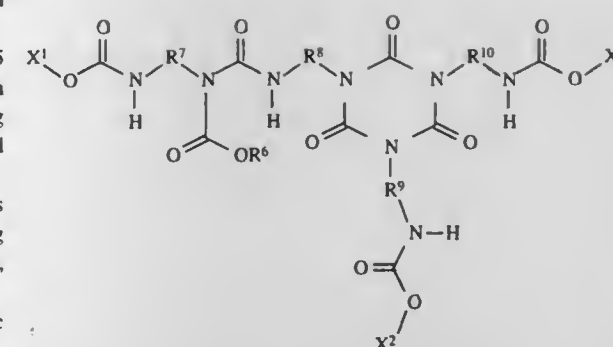
U.S. Cl. 524—527

5 Claims

1. A one-coat, non-plasticized coating composition consisting essentially of
- A) dispersed particulates of chlorinated polyolefin resin dispersed in an aqueous medium, said chlorinated polyolefin resin being free of carboxylic acid functionality, and
- B) separate dispersed particulates of an acrylic resin dispersed in said aqueous medium, said acrylic resin having carboxylic

acid functionality so as to provide an acid number between about 10 and about 250 and a T_g of at least about 10° C., said chlorinated polyolefin resin comprising between about 35 and about 65 wt % of the total of said chlorinated polyolefin resin plus said acrylic resin, and said acrylic resin comprising between about 35 and about 65 wt % of the total of said chlorinated polyolefin resin plus said acrylic resin

- C) between about 0.01 and about 5 phr based on total of A) plus B) of a cross-linking agent selected from the group consisting of carbodiimide and oxazoline-functional polymer emulsion, and
- D) between about 3 and about 25 phr of a volatile organic component for promoting film-forming.



wherein

X¹, X², X³ are independently —(R¹—O)_n—R²—(O—R³)_p, —(R⁴—C(O)—O)_m—R⁵—(O—R¹¹)_r, or —CH₂—C(R¹²)=CHR¹³;

R¹, R², R⁴, and R⁵ are independently C2–C12 alkylene;

R³ and R¹¹ are independently —C(R¹⁴)=CHR¹⁵, —CH₂—C(R¹⁶)=CHR¹⁷, or —C(O)—C(R¹⁸)=CHR¹⁹;

R⁶ is C1–C8 alkyl or C3–C8 cycloalkyl;

R⁷, R⁸, R⁹, and R¹⁰ are independently C2–C12 alkylene;

R¹², R¹³, R¹⁴, R¹⁵, R¹⁶, R¹⁷, R¹⁸, and R¹⁹ are independently H or C1–C4 alkyl;

n is an integer from 0 to 12;

m is an integer from 1 to 4;

p is an integer from 1 to 3; and

r is an integer from 1 to 3.

5,777,025

PROCESS FOR PREPARING POLYALKENYL SUBSTITUTED C₄ TO C₁₀ DICARBOXYLIC ACID PRODUCING MATERIALS

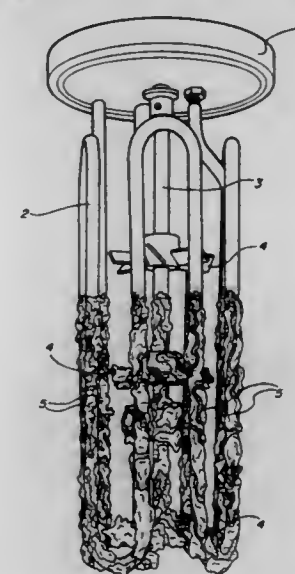
Jeremy R. Spencer, Didcot; Robert W. Russell, Abingdon, both of United Kingdom, and Ronald P. Wagner, Garden City, N.Y., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Feb. 9, 1996, Ser. No. 599,220

Int. Cl.⁶ C08K 5/01; C08F 2/00; C08G 63/48

U.S. Cl. 524—745

20 Claims



1. A process for preparing a polyalkenyl derivative of a monounsaturated C₄ to C₁₀ dicarboxylic acid producing compound, the process comprising the step of reacting the monounsaturated C₄ to C₁₀ dicarboxylic acid producing compound with a polyalkene having a number average molecular weight of from about 300 to 5000 in the presence of a sediment-inhibiting amount of an oil soluble hydrocarbyl substituted sulfonic acid at a reaction temperature of from about 200° to 300° C. under an inert gas partial

5,777,024

URETHANE RESINS AND COATING COMPOSITIONS AND METHODS FOR THEIR USE

T. Howard Killilea, Brooklyn Park; Donald W. Boespflug, Lino Lakes, and Paul H. Stenson, Plymouth, all of Minn., assignors to The Valspar Corporation, Minneapolis, Minn.

Filed Apr. 30, 1997, Ser. No. 846,758

Int. Cl.⁶ C08J 3/00; C08K 3/20; C08L 75/00; C07D 251/000

U.S. Cl. 524—590

27 Claims

1. A resin comprising an allophanate-modified urethane resin having the formula:

pressure in the range of from about 200 to 1000 kPa and in a mole ratio of monounsaturated dicarboxylic acid producing compound to polyalkene of from about 0.9:1 to 3:1, the process being characterized by the substantial absence of tar formation and the polyalkenyl derivative being characterized by containing sediment in an amount of no more than about 0.1 volume percent.

5,777,026

SURFACE MODIFIED SILICONE ELASTOMERS FROM AQUEOUS SILICONE EMULSIONS

Daniel Trent Berg, Wauwatosa, Wis.; Leon Grant Anthony Hides, New South Wales, Australia; Eric Jude Joffe, Midland, Mich.; Virginia Kay O'Neill, Midland, Mich.; Arthur James Tselepis, Midland, Mich., and Andreas Thomas Franz Wolf, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 28, 1995, Ser. No. 579,799

Int. Cl.⁶ C08L 83/00

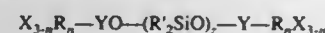
U.S. Cl. 524—837

24 Claims

1. An aqueous silicone emulsion for forming elastomeric silicone material, the silicone emulsion comprising:

(A) water;

(B) a plurality of particles dispersed in the water comprising a crosslinked product of a diorganosiloxane polymer having the general formula



where

n is 0, 1, 2 or 3,

z is an integer from 200 to 10,000,

X is a hydroxyl group, an alkenyl group or any hydrolyzable group,

Y is a Si atom or a $-Si-(CH_2)_mSiR'_2-$ group with m being a positive integer,

R is individually selected from the group consisting of substituted and unsubstituted monovalent hydrocarbon radicals having from 1-15 carbon atoms, and

R' is individually selected from the group consisting of X and substituted and unsubstituted monovalent hydrocarbon radicals having from 1-15 carbon atoms, provided, at least 90% of the R' groups are selected from unsubstituted monovalent hydrocarbon radicals having from 1-15 carbon atoms;

(C) a surfactant for stabilizing the particles dispersed in the water; and

(D) an amount of an oxygen curing compound or a salt thereof effective for surface modification of the silicone elastomeric material formed from the silicone emulsion upon evaporation of the water.

5,777,027

CURABLE RESIN COMPOSITION WHICH COMPRISES A LACTONE-MODIFIED POLYVINYL ACETAL RESIN

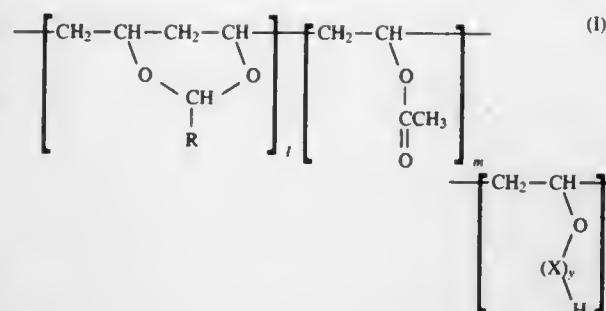
Toshio Endo; Takaaki Fujiwa, both of Otake; Tomohisa Isobe, Iwakuni, and Kazushi Watanabe, Otake, all of Japan, assignors to Daicel Chemical Industries, Ltd., Tokyo, Japan Division of Ser. No. 448,325, May 23, 1995, abandoned, which is a division of Ser. No. 319,452, Oct. 6, 1994, Pat. No. 5,574,098. This application Oct. 30, 1995, Ser. No. 550,025 Claims priority, application Japan, Oct. 7, 1993, 5-251887; Jan. 10, 1994, 6-761; Jan. 10, 1994, 6-764; Aug. 1, 1994, 6-180333; Sep. 12, 1994, 6-217564

Int. Cl.⁶ C08F 8/00

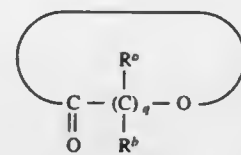
U.S. Cl. 525—58

10 Claims

1. A curable resin composition which comprises (a) a lactone-modified polyvinyl acetal resin represented by the following formula (I),



wherein the molar ratio l/m/n is from 81.5 to 50% from 0 to 10%/from 10 to 50%, respectively, y is an integer ranging from more than 0 to 50, R is any one of hydrogen, a methyl group, and a propyl group, and X is a structural unit derived from the ring-opening reaction of a lactone compound represented by the following formula,



wherein g is an integer ranging from 4 to 8, and R^a and R^b is each an independent hydrogen atom or a methyl group and (b) a compound having functional groups capable of reacting with hydroxyl groups.

5,777,028

IMPACT MODIFIED SYNDIOTACTIC POLYSTYRENE BLEND

Akihiko Okada, Ichihara, and Nobuyuki Sato, Tokyo, both of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan PCT No. PCT/JP95/02029, § 371 Date May 31, 1996, § 102(e) Date May 31, 1996, PCT Pub. No. WO96/11233, PCT Pub. Date Apr. 18, 1996

PCT Filed Oct. 4, 1995, Ser. No. 648,017

Claims priority, application Japan, Oct. 5, 1994, 6-240972

Int. Cl.⁶ C08L 25/06; 53/02; 9/00; 23/16

U.S. Cl. 525—86

3 Claims

1. An impact resistant polystyrene composition which comprises:

5 to 97% by weight of (a) styrenic polymer having syndiotactic configuration;

2 to 95% by weight of (b) at least one rubber selected from the group consisting of polyolefin, natural rubber, modified natural rubber, polybutadiene, polyisoprene, neoprene, hydrogenated styrene/butadiene/styrene block copolymer (SEBS), styrene/isoprene styrene block copolymer (SIS), hydrogenated styrene/isoprene/styrene block copolymer (SEPS), ethylene/propylene rubber (EPM), ethylene/propylene/diene rubber (EPDM), modified polybutadiene, modified polyisoprene, modified neoprene, modified SIS, modified SEPS, modified EPM, modified EPDM; and

0.5 to 10% by weight of (c) at least one rubber selected from the group consisting of maleic anhydride-modified SEBS, epoxy-modified SEBS, styrene/butadiene block copolymer (SBR) and styrene/butadiene/styrene block copolymer (SBS), said component (c) having a micro-phase separation temperature of 180° C. at the highest when diluted with dioctyl phthalate to a solution with a concentration of 60% by weight.

5,777,029

CO-CURED RUBBER-THERMOPLASTIC ELASTOMER COMPOSITIONS

Jacques Horrion, Tilff, Belgium; Raman Patel, Akron, Ohio; Sabet Abdou-Sabet, Akron, Ohio, and Krishna Venkataswamy, Akron, Ohio, assignors to Advanced Elastomer Systems, L.P., Akron, Ohio

Filed Jul. 26, 1996, Ser. No. 686,799

Int. Cl.⁶ C08L 53/00; C08F 8/00

U.S. Cl. 525—92 F

15 Claims

1. A thermoplastic elastomer composition, comprising: a thermoplastic ester polymer phase and a crosslinked rubber phase, said rubber phase comprising at least two dynamically vulcanized functional acrylic rubbers one of which is a terpolymer, said terpolymer being an ethylene-alkyl acrylate-carboxylic acid terpolymer, said rubbers vulcanized with a curing agent, and wherein the thermoplastic elastomer composition has a single low temperature brittle point.

5,777,030

BLENDS OF A STYRENIC POLYMER AND MONOVINYLALENE/CONJUGATED DIENE BLOCK COPOLYMERS

Mark D. Hanes; William H. Beever, and David L. Hartsock, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 27, 1996, Ser. No. 720,406

Int. Cl.⁶ C08L 53/02

U.S. Cl. 525—93

23 Claims

1. A polymer blend composition comprising (A) a monovinylarene/conjugated diene block copolymer present in the polymer blend in an amount in the range of from about 90 weight percent to about 25 weight percent based on the total weight of the polymer blend,

wherein the monovinylarene is present in the block copolymer in an amount in the range of from about 95 weight percent to about 71 weight percent based on the weight of the monovinylarene/conjugated diene block copolymer,

wherein the conjugated diene is present in the block copolymer in an amount in the range of from about 5 weight percent to about 29 weight percent based on the weight of the monovinylarene/conjugated diene block copolymer, and

wherein the monovinylarene/conjugated diene block copolymer has a melt flow rate in the range of from about 12 g/10 min. to about 25 g/10 min., measured according to ASTM D-1238 (1994) condition G; and

(B) a styrenic copolymer of styrene/methyl methacrylate wherein the styrenic copolymer is present in the polymer blend in an amount in the range of from about 10 weight percent to about 75 weight percent based on the total weight of the polymer blend,

wherein the methyl methacrylate is present in the styrenic copolymer in an amount in the range of from about 5 weight percent to about 50 weight percent based on the weight of the styrenic copolymer, and

wherein the styrene is present in the styrenic copolymer in an amount in the range of from about 95 weight percent to about 50 weight percent based on the weight of the styrenic copolymer.

5,777,031

HIGH 1,2 CONTENT THERMOPLASTIC ELASTOMER/OIL/POLYOLEFIN COMPOSITION

Lie Khong Djiauw, and Michael John Modic, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex. Continuation-in-part of Ser. No. 675,637, Jul. 3, 1996, abandoned. This application Jul. 25, 1997, Ser. No. 898,001

Int. Cl.⁶ C08L 53/02; 9/06; 47/00

U.S. Cl. 525—98

19 Claims

1. A thermoplastic elastomer composition comprising:

(a) a base composition comprising:

(i) 15 to 55 weight percent of a block copolymer having at least two resinous polymerized monovinyl aromatic end-blocks and a midblock of hydrogenated polymerized butadiene wherein at least 51 mole percent of said butadiene has polymerized at the 1,2-position,

(ii) 5 to 80 weight percent of a paraffinic oil, and

(iii) 5 to 20 weight percent of a crystalline polyolefin; and

(b) a stabilizer, such stabilizer being present in an amount within the range of 0.01 to 4 weight percent based on the weight of said base composition.

5,777,032

OCULAR LENS AND A METHOD FOR ITS PRODUCTION

Yasuhiro Yokoyama; Yuriko Watanabe; Sadayasu Tanikawa, all of Kasugai; Shoji Ichinohe, and Toshio Yamazaki, both of Gunma-ken, all of Japan, assignors to Menicon Co., Ltd., Nagoya, Japan

Filed Feb. 25, 1997, Ser. No. 805,575

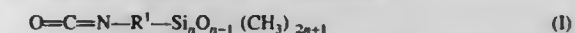
Claims priority, application Japan, Mar. 4, 1996, 8-046403

Int. Cl.⁶ C08F 8/30

U.S. Cl. 505—123

8 Claims

1. An ocular lens obtained by reacting a hydroxyl group-containing polymer shaped to have an ocular lens shape, with a silicon-containing compound of the formula (I):



wherein R¹ is a C₁₋₆ linear or branched alkylene group, and n is an integer of from 1 to 15.

5,777,033

CO-CURED RUBBER-THERMOPLASTIC ELASTOMER COMPOSITIONS

Krishna Venkataswamy; Sabet Abdou-Sabet; Raman Patel, all of Akron, Ohio, and Jacques Horrion, Tilff, Belgium, assignors to Advanced Elastomer Systems, L.P., Akron, Ohio

Filed Jul. 26, 1996, Ser. No. 686,798

Int. Cl.⁶ C08F 8/30; C08L 31/00; 77/00

U.S. Cl. 525—182

13 Claims

1. A thermoplastic elastomer composition, comprising:

a polyamide thermoplastic phase and a crosslinked rubber phase, said rubber phase comprising at least two dynamically vulcanized functional acrylic rubbers one of which is a terpolymer, said terpolymer being an ethylene-alkyl acrylate-carboxylic acid terpolymer, said rubbers vulcanized with a curing agent, and wherein the thermoplastic elastomer composition has a single low temperature brittle point.

5,777,034

METHACRYLATE RESIN BLENDS

Nilesh Shah, and Manhua Lin, both of Maple Glen, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 8, 1996, Ser. No. 745,393

Int. Cl.⁶ C08L 33/12; 33/20; 33/08; 33/10

U.S. Cl. 525—228

10 Claims

1. A methacrylate resin blend composition, comprising:

- with the proviso that at least one of R^5 and R^6 is selected from the group consisting of $-OR^9$ and $-SR^{10}$.



wherein
Q is an alkylene group of 2 to 7 carbon atoms,
R⁷ is selected from the group consisting of hydrogen, a hydrocarbyl, —OR⁹ and —SR¹⁰, and
R⁸ is selected from the group consisting of hydrogen and a hydrocarbyl,

wherein
each R⁹ is independently selected from the group consisting of hydrogen and a hydrocarbyl, or together with R¹¹ forms a hydrocarbylene group,
each R¹⁰ is a hydrocarbyl, or together with R¹² forms a hydrocarbylene group,
each R¹¹ is independently selected from the group consisting of hydrogen and a hydrocarbyl, or together with R⁹ forms a hydrocarbylene group,
each R¹² is a hydrocarbyl, or together with R¹⁰ forms a hydrocarbylene group,
with the proviso that, other than in a group of the formula (II), (III) or (IV), X contains no olefinic unsaturation; and
wherein each of Y and Z is independently selected from the group consisting of a group of the formula (II), a group of the formula (III) and a group of the formula (IV); and
(b) a polyfunctional material containing on average at least two groups with active hydrogen functionality and/or functionality convertible thereto.

5,777,041

SATURATED POLYOLEFINS HAVING TERMINAL ALDEHYDE OR HYDROXY SUBSTITUENTS AND DERIVATIVES THEREOF

Jacob Emert, Brooklyn, N.Y.; Istvan T. Horvath, High Bridge, N.J.; Richard H. Schlosberg, Bridgewater, N.J.; Warren A. Thaler, Flemington, N.J.; David A. Young, Seattle, Wash., and Stephen Zushma, Clinton, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 662,835, Jun. 12, 1996, and Ser. No. 206,993, Mar. 7, 1994, abandoned. This application Jan. 22, 1997, Ser. No. 787,360
Int. Cl.⁶ C08F 8/32

U.S. Cl. 525—333.7 5 Claims
1. A saturated polymer having a terminal aldehyde or hydroxyl substituent, a M_n of about 300 to 10,000, and derived from a polyolefin derived from a monomer of the formula H₂C=CHR⁴ wherein R⁴ is hydrogen or a straight or branched chain alkyl radical, said polyolefin having at least about 30 % terminal vinylidene unsaturation.

5,777,042

Patent Not Issued For This Number

5,777,043

SEALANT FORMULATIONS CONTAINING HIGH VINYL CONTENT HYDROGENATED STYRENE-BUTADIENE-STYRENE BLOCK COPOLYMERS

David Lee Shafer, Houston; Linda Joanne Oliveri, Katy, and Glenn Roy Himes, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 5, 1997, Ser. No. 811,487
Int. Cl.⁶ C08C 19/02

U.S. Cl. 525—339 3 Claims
1. A high service temperature sealant composition which comprises:

(a) 100 parts by weight of a hydrogenated styrene-butadiene-styrene block copolymer which has an overall weight average molecular weight of from 30,000 to 300,000, a styrene block weight average molecular weight of from 4000 to 35,000, and wherein the diene block has a vinyl content of 45% to 90% by weight, and

(b) at least 20 parts by weight of an adhesion promoting resin.

5,777,044

COUPLING OF POLYMERS MADE BY CATIONIC POLYMERIZATION

Rudolf Faust, Lexington, Mass., assignor to University of Massachusetts Lowell, Lowell, Mass.

Division of Ser. No. 398,953, Mar. 2, 1995, Pat. No. 5,690,861.

This application Nov. 24, 1997, Ser. No. 979,451

Int. Cl.⁶ C08F 10/10

U.S. Cl. 525—353 7 Claims

1. A method for coupling an isopropenyl polyisobutylene, comprising the steps of:

a) forming a reaction mixture of an oxo-acid and an isopropenyl polyisobutylene; and

b) exposing the reaction mixture to a temperature below about -30° C., whereby the oxo-acid reacts with the isopropenyl polyisobutylene, thereby coupling said isopropenyl polyisobutylene.

5,777,045

POLYGLYCIDYL ESTER-BASED POWER COATINGS

Lawrence J. Carr, Elk Grove Village, Ill., assignor to Amoco Corporation, Chicago, Ill.

PCT No. PCT/US94/14101, § 371 Date Aug. 23, 1996, § 102(e) Date Aug. 23, 1996, PCT Pub. No. WO95/16753, PCT Pub. Date Jun. 22, 1995

Continuation-in-part of Ser. No. 169,974, Dec. 17, 1993, abandoned. This PCT application Dec. 8, 1994, Ser. No. 640,827
Int. Cl.⁶ C08F 20/00; C08L 63/00

U.S. Cl. 525—438 38 Claims

1. A powder coating composition comprising:

(a) a resin comprising a polyglycidyl-terminated polyester formed from the reaction of a diglycidyl compound with a carboxylated polyester (I) having an average of about 2.0 equivalents of carboxyl groups and a number average molecular weight of at least about 1500, wherein said carboxylated polyester (I) is linear or slightly branched, wherein the amount of diglycidyl compound reacted with the carboxylated polyester (I) is sufficient to provide one mole of diglycidyl compound per carboxyl group of the carboxylated polyester (I), wherein said resin does not self-cure within 20 minutes at 200° C., and wherein the carboxyl group degree of reaction is greater than about 85%, and

(b) a carboxylated polyester (II) having greater than about 2.5 free carboxyl groups per molecule and an acid number between about 50 and about 150 mg KOH/g.

5,777,046

AMPHIPHILIC POLYESTERS, PREPARATION THEREOF, AND USE THEREOF IN LAUNDRY DETERGENTS

Dieter Boeckh, Limburgerhof; Hans-Ulrich Jäger, Neustadt, and Gunnar Schornick, Neuleiningen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/00300, § 371 Date Aug. 5, 1996, § 102(e) Date Aug. 5, 1996, PCT Pub. No. WO95/21880, PCT Pub. Date Aug. 17, 1995

PCT Filed Jan. 28, 1995, Ser. No. 687,322

Claims priority, application Germany, Feb. 8, 1994, 44 03 866.6

Int. Cl.⁶ C08F 20/00

U.S. Cl. 525—444 7 Claims

1. Amphiphilic polyester comprising interspersed blocks of

(a) ester units derived from a polyalkylene glycol having a weight average molecular weight of from 500 to 7500 and an aliphatic dicarboxylic acid and/or a monohydroxymonocarboxylic acid and

(b) ester units derived from an aromatic dicarboxylic acid and a polyhydric alcohol and having weight average molecular weights of from 1500 to 25,000.

5,777,047

ORGANOSILOXANE COMPOSITIONS WITH FLUORINATED RESINS CURABLE TO SILICONE ELASTOMERS HAVING LOW WEEP

Kyuha Chung, and Stephen Clay Warren, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 30, 1996, Ser. No. 777,474

Int. Cl.⁶ C08F 283/00

U.S. Cl. 525—478 30 Claims

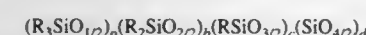
1. An organosiloxane composition curable to a silicone elastomer, the composition comprising:

(A) an alkenyl-containing polydiorganosiloxane having an average of at least two silicon-bonded alkenyl groups per molecule;

(B) an organohydrogensiloxane having an average of at least two silicon-bonded hydrogen atoms per molecule, the amount of organohydrogensiloxane present being sufficient to provide a ratio of silicon-bonded hydrogen atoms in component (B) to silicon-bonded alkenyl groups in component (A) of 0.8:1 to 3:1;

(C) a platinum group catalyst sufficient for curing the organosiloxane composition; and

(D) a resinous organosiloxane copolymer having at least one fluorine atom-containing group per molecule, an average of at least two alkenyl groups per molecule, a number average molecular weight (M_n) between about 400 and about 15,000 g/mole and having the empirical formula:



wherein a>0, d>0, b≥0, c≥0, a+b+c+d=1, 0≤(b+c)≤0.2, and R is a monovalent radical independently selected from the group consisting of hydrogen, hydroxyl, alkyl, alkenyl, alkoxy, —OZ and Z; wherein Z is a fluorine atom-containing group; and wherein the sum of the average number of silicon-bonded alkenyl groups per molecule in component (A) and the average number of silicon-bonded hydrogen atoms per molecule in component (B) is greater than four.

5,777,048

METHOD FOR MODIFIED AMINOPLAST COMPOUNDS, AMINOPLASTS OBTAINED THEREBY AND COATINGS CONTAINING THE SAME

Walter H. Ohrbom, Commerce Township; Donald H. Campbell, Farmington, and Donald L. St. Aubin, Commerce Township, all of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Jun. 20, 1996, Ser. No. 667,261

Int. Cl.⁶ C08F 8/30

U.S. Cl. 525—509 20 Claims

1. A method for reducing molecular weight growth of aminoplast compounds comprising reacting

(a) an aminoplast compound, having a total number (y) of reactive substituents on the amino nitrogens of the aminoplast, where y=(E×M) and E= equivalents of reactive substituents per mole of aminoplast and M=total number of moles of aminoplast, wherein the reactive substituents are selected from the group consisting of —NH, alkylol, alkoxy, alkoxy-alkyl, and mixtures thereof and

(b) at least one carbamate compound selected from the group consisting of unsubstituted and substituted primary carbamate compounds, unsubstituted and substituted secondary carbamate compounds and mixtures thereof, wherein the carbamate is substituted with functionality selected from the group consisting of ethylenic unsaturation, hydroxy, amino and isocyanate functionality,

in the presence of primary or secondary alcohols, at temperatures under 150° C., and at pressures ranging between atmospheric pressure and 20 atm pressure, to form a modified aminoplast compound, wherein at least one equivalent and up to E-1/E of the total number of reactive substituents on the aminoplast nitrogens are substituted with carbamate functionality, and the carbamate functionality on the melamine is either not involved in a crosslinking reaction, or reacts at a higher temperature than the temperature at which the methylol and/or methylalkoxy substituents react.

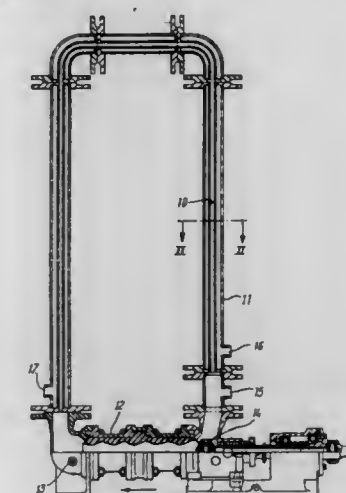
5,777,049

POLYMERISATION PROCESSES AND REACTORS

Kenneth Raymond Geddes, 4 Denbigh Drive, Clitheroe BB2 2BH, United Kingdom, and Mohammed Bashair Khan, 155 Henthorn Road, Clitheroe BB7 2QF, United Kingdom
Continuation of Ser. No. 243,431, May 16, 1994, which is a continuation of Ser. No. 905,213, Jun. 29, 1992, abandoned, which is a continuation of Ser. No. 556,469, Jul. 24, 1990, abandoned. This application Apr. 10, 1995, Ser. No. 421,154
Claims priority, application United Kingdom, Aug. 8, 1989, 8918131; Nov. 9, 1989, 8925375

Int. Cl.⁶ C08F 2/18

U.S. Cl. 526—64 4 Claims



1. In a process for the polymerisation of vinyl and related monomers in a medium in which the resulting polymer is

insoluble, the process being a continuous loop process in which reagents are continuously fed to a loop and caused to flow continuously around the loop to react, and reacted product and possibly some not fully reacted product are continuously withdrawn from the loop, the flow path in the loop being open throughout the full loop such as to permit circulation and recirculation of reagents, the improvement wherein the flow path employs multiple parallel flow paths over substantially all of the loop length to enable enhanced shear while sustaining laminar flow, the flow paths in the loop and the operation of the loop being such that the shear rate is in excess of 800 s^{-1} while the flow is maintained as laminar.

5,777,050

PROCESS FOR POLYMERIZING ETHYLENE IN THE PRESENCE OF A CATALYST COMPOSITION

Nicolaas H. Friederichs, Brunssum; Johannus A. M. van Beek, Maastricht; Rutgerus A. J. Postema, Geleen, and Joseph A. J. Hahnraaths, Heerlen, all of Netherlands, assignors to DSM N.V., Heerlen, Netherlands

Continuation of Ser. No. 622,673, Mar. 26, 1996, abandoned.

This application Sep. 15, 1997, Ser. No. 929,467

Claims priority, application Belgium, Sep. 27, 1993, 09301005

Int. Cl.⁶ C08F 4/06; 4/44; 4/60; B01J 31/00

U.S. Cl. 526—123.1

14 Claims

1. A process for the homopolymerization of ethylene or copolymerization of ethylene with one or more α -olefins having 3 to 12 carbon atoms and optionally one or more non-conjugated dienes in solution, comprising conducting said homopolymerization or said copolymerization under effective polymerization conditions in the presence of a catalyst composition which consists essentially of a catalyst composition A and a cocatalyst component B, wherein catalyst component A is obtained by a reaction whose reactants consist essentially of the following components:

- one or more organomagnesium compounds with alkyl groups, alkoxy groups or a combination of alkyl groups and alkoxy groups bonded to the magnesium,
- at least one member selected from the group consisting of chlorine-containing organoaluminum compounds and chlorine-containing organoboron compounds,
- one or more oxygen-containing compounds selected from the group consisting of alcohols, glycols, silanols and ethers,
- one or more transition metal compounds having bonded thereto alkyl, alkoxy, halogenide groups or a combination thereof wherein the transition metal is at least one selected from the group consisting of titanium, zirconium, hafnium and vanadium

in the order (a), (b), (c), (d), or (a), (b), (d), (c), or (a), (b) and a reaction product of (c) and (d)=(e); wherein the components (a)–(e) or combinations thereof are used in such a quantity that in the preparation of said catalyst component (A) the atomic ratio of aluminum and boron of (b) to magnesium of (a) is between 2 and 15, the atomic ratio of magnesium of (a) to transition metal from (d) or (e) is between 3 and 100, the atomic ratio of oxygen from (c) or (e) to the magnesium of (a) is between 0.1 and 5; following which catalyst A is washed and said cocatalyst component B is at least one member selected from the group consisting of organoaluminum compounds and boron compounds.

5,777,051 PHOTOLUMINESCENT SILACYCLOBUTENE MONOMERS AND POLYMERS

Norbert Auner, Berlin, Germany, and Udo C. Pernisz, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

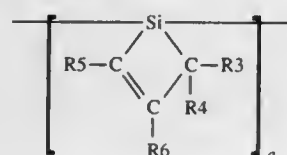
Filed Jun. 16, 1997, Ser. No. 874,469

Int. Cl.⁶ C08F 130/08; C08G 77/00; C07F 7/08

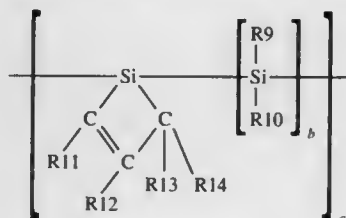
U.S. Cl. 526—279

7 Claims

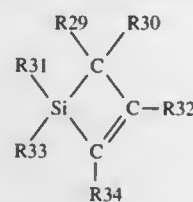
1. Photoluminescent silacyclobutene monomers and silacyclobutene polymers having a repeating unit or formula selected from the group consisting of



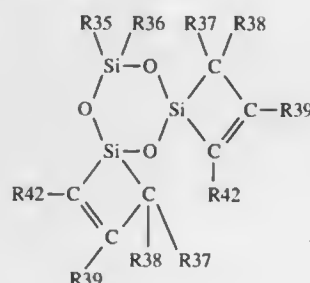
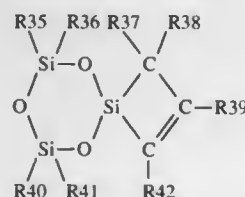
where a is an integer having a value of 3 to 20; R3 and R4 represent hydrogen or an alkyl group containing 2 to 10 carbon atoms; and R5 and R6 represent aryl groups;



where b is an integer having a value of 1 to 15; c is an integer having a value of 2 to 20; R9 and R10 represent an alkyl group containing 1 to 10 carbon atoms or an aryl group; R11 and R12 represent an aryl group; and R13 and R14 represent hydrogen or an alkyl group containing 2 to 10 carbon atoms;



where R29 and R30 represent hydrogen or an alkyl group containing 2 to 10 carbon atoms; R31 and R33 represent hydroxyl, an alkyl, aryl, alkenyl, or alkynyl group; and R32 and R34 represent an aryl group;



5,777,053 IN-MOLD COATING COMPOSITIONS SUITABLE AS IS FOR AN END USE APPLICATION

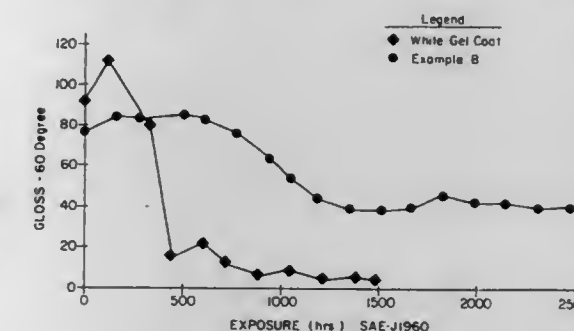
Douglas S. McBain, Norton; David S. Cobbledick, Kent; Henry Shanoski, Akron, and Brian J. Sullivan, Mogadore, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Filed Jan. 17, 1997, Ser. No. 785,514

Int. Cl.⁶ C08F 226/02; 220/18; 212/06; B29B 11/08

U.S. Cl. 526—301

20 Claims



- An in-mold coating composition, comprising:
 - a saturated aliphatic polyester urethane acrylate, said polyester portion being derived from at least a saturated carboxylic acid or an anhydride thereof and a saturated diol, said urethane portion being derived from an aliphatic saturated polyisocyanate;
 - an aliphatic or cycloaliphatic (meth)acrylate wherein said aliphatic or said cycloaliphatic group is saturated and has from 1 to 50 carbon atoms;
 - a hydroxyalkyl (meth) acrylate wherein said alkyl group has from 1 to 10 carbon atoms;
 - a vinyl substituted aromatic having from 8 to 12 carbon atoms, and
 - a polyacrylate ester of an alkylene polyol wherein said alkylene group has from 2 to 30 carbon atoms.

5,777,052

SILICONE MODIFIED VINYL POLYMERS AND METHOD FOR THE PREPARATION THEREOF

Hideki Kobayashi, and Toru Masatomi, both of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., LTD., Tokyo, Japan

Filed Jun. 30, 1997, Ser. No. 886,123

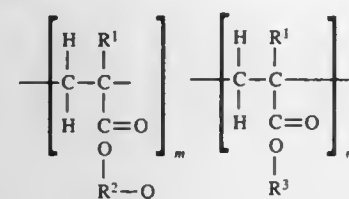
Claims priority, application Japan, Jun. 28, 1996, 8-188886

Int. Cl.⁶ C08F 30/08

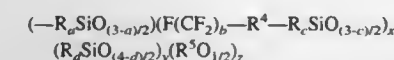
U.S. Cl. 526—279

15 Claims

1. A silicone-modified vinyl polymer comprising units having the formula:



wherein R¹ is selected from the group consisting of hydrogen and an alkyl group, R² denotes a divalent hydrocarbon group, R³ is selected from the group consisting of hydrogen, a substituted monovalent hydrocarbon group, and an unsubstituted monovalent hydrocarbon group, Q is a siloxane group having the formula



wherein R denotes a monovalent hydrocarbon group free of unsaturated bonding, R⁴ is selected from the group consisting of an alkylene group and an alkyleneoxyalkylene group, R⁵ is selected from the group consisting of hydrogen and an alkyl group, a is an integer from 0 to 2, b is an integer with a value of at least 4, c is an integer from 0 to 2, d is an integer from 0 to 3, x is a number greater than 0, y and z are each numbers with values of 0 or more, and m and n are each numbers from 1 to 10,000.

5,777,054

PROCESS FOR PRODUCING AN OIL SORBENT POLYMER AND THE PRODUCT THEREOF

Milan F. Sojka, Algonquin, Ill., assignor to AMCOL International Corporation, Arlington Heights

Division of Ser. No. 486,107, Jun. 7, 1995, abandoned. This application Mar. 3, 1997, Ser. No. 811,122

Int. Cl.⁶ C08F 20/10

U.S. Cl. 526—323.2

16 Claims

1. A process for producing a microporous oil sorbent terpolymer comprising the steps of:

- dissolving three monomers: butyl methacrylate, allyl methacrylate, and an ethylene glycol dimethacrylate in a mole ratio of about 1:3 to 5:5 to 7 respectively, along with an effective amount of an organic polymerization initiator in a volatile and substantially water immiscible organic solvent to provide a monomer mixture;
- combining said monomer mixture with a larger volume of an aqueous solution having an effective amount of a suspension stabilizer dissolved therein to form a biphasic liquid system; vigorously stirring said biphasic liquid system at a rate sufficient to cause said water immiscible organic phase to be suspended as microdroplets in said aqueous phase;
- allowing polymerization to occur in said suspended microdroplets under vigorous stirring to produce a microporous, terpolymer microparticle therein; and
- separating said microporous terpolymer microparticle from said volatile and substantially water immiscible organic solvent to produce a microporous and oil sorbent terpolymer microparticle characterized by having a mean unit diameter of less than 25 microns and a total sorptive capacity for mineral oil that is 72% by weight or greater.

5,777,055

RESIN-CONTAINING, BIAXIALLY ORIENTED POLYPROPYLENE FILM, PROCESS FOR THE PRODUCTION THEREOF, AND THE USE THEREOF
Herbert Peiffer, Mainz; Ursula Murschall, Nierstein, and Thomas Dries, Schwabenheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany
Continuation of Ser. No. 326,082, Oct. 19, 1994, abandoned.
This application Jul. 10, 1995, Ser. No. 500,136
Claims priority, application Germany, Oct. 21, 1993, 43 35 960.4

Int. Cl.⁶ C08F 10/06

U.S. Cl. 526—348.1

11 Claims

1. A film having a permanent set in the longitudinal and transverse directions of greater than 50%, said film consisting essentially of a single layer comprising a propylene polymer component and a resin component, the resin of said resin component having a mean molecular weight M_w , within the range of 1800 to 8000 and a proportion of resin of molecular weight M_w of <1000 which is at most 35% by weight, based on the weight of the resin component.

5,777,056

POLYOLEFINIC RESIN AND A RESIN COMPOSITION COMPRISING SAID RESIN

Masayuki Tsuruoka; Akira Tanaka, and Masaru Nakagawa, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 632,130, Apr. 15, 1996, abandoned, which is a continuation of Ser. No. 536,678, Sep. 29, 1995, abandoned, which is a continuation of Ser. No. 387,379, Feb. 13, 1995, abandoned, which is a continuation of Ser. No. 171,159, Dec. 22, 1993, abandoned. This application Nov. 25, 1996, Ser. No. 755,151

Claims priority, application Japan, Dec. 25, 1992, 4-345640; Dec. 25, 1992, 4-345641

Int. Cl.⁶ C08F 110/06; 10/06

U.S. Cl. 526—351

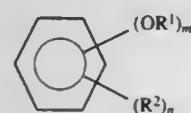
4 Claims

1. A polyolefinic resin which is a homopolymer or a copolymer of propylene, has (i) intrinsic viscosity $[\eta]$ measured in decaline at the temperature of 135° C. in the range of 0.5 to 10 deciliter/g and (ii) content of insoluble fraction in boiling n-heptane (W) in the range of 10 to 99 weight % and shows (iii) relation between relaxation time of rubber component measured by pulse NMR at the temperature of 30° C. $[T_{2H}^R(30)]$, relaxation time of rubber component measured by pulse NMR at the temperature of 80° C. $[T_{2H}^R(80)]$ and the content of insoluble fraction in boiling n-heptane (W) satisfying the following equations:

$$T_{2H}^R(80) \leq 670 - 2.2 \times W$$

$$T_{2H}^R(80)/T_{2H}^R(30) \leq 8.8 + 0.086 \times W$$

wherein the polyolefinic resin is obtained by homopolymerization or copolymerization of propylene in the presence of a catalyst system comprising (a) a solid component consisting essentially of magnesium, titanium, silicon, a halogen atom or a compound comprising a halogen and dialkyl phthalate, (b) triisobutylaluminum, (c) an aromatic compound containing alkoxy group represented by the following general formula (I):



wherein R^1 is an alkyl group having 1 to 20 carbon atoms, R^2 is a hydrocarbon group having 1 to 10 carbon atoms, a hydroxyl group or a nitro group, m is an integer of 1 to 6 and n is an integer of 0 to (6-m) and (d) an organosilicon compound.

5,777,057

VISCOUS LIQUID SUITABLE FOR PRODUCING GEL THREADS OR FIBRES, PROCESS FOR THE PRODUCTION THEREOF AND ITS USE FOR PRODUCING OXIDIC, INORGANIC FIBRES

Walter Glaubitt, Veitshöchheim, and Rainer Jahn, Würzburg, both of Germany, assignors to Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V., Munich, Germany

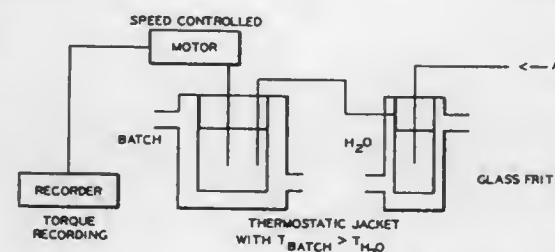
Continuation-in-part of Ser. No. 112,580, Aug. 25, 1993, abandoned. This application Oct. 18, 1995, Ser. No. 544,665

Claims priority, application Germany, Oct. 5, 1992, 42 33 477.2

Int. Cl.⁶ C08G 79/00

U.S. Cl. 528—9

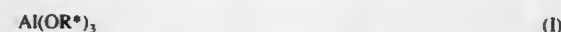
17 Claims



APPARATUS FOR THE SYNTHESIS OF SOL-GEL SPINNING MASSES

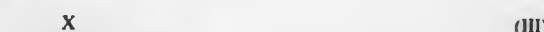
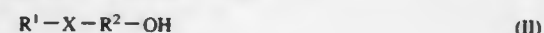
1. A viscous liquid for producing gel threads or fibres, said liquid prepared by a process comprising the steps of:

(a) providing an aluminum compound of formula (I)



in which the radicals R^* is the same or different and stand for propyl or butyl;

(b) reacting the $Al(OR^*)_3$ of formula (I) with 0.5 to 2.5 mole, based on 1 mole of $Al(OR^*)_3$ of an alcohol or a mixture of alcohols of formulas (II) or (III):



in which R^1 is a straight-chain, branched or cyclic alkyl radical with 1 to 10 C-atoms, R^2 an alkylene radical with 2 to 4 C-atoms and X stands for O, S or NR^3 , with R^3 being hydrogen or alkyl with 1 to 4 C-atoms;

(c) adding to the resulting reaction mixture 3 to 7 moles, based on 1 mole of $Al(OR^*)_3$, a carboxylic acid having 1 to 26 carbon atoms, a mixture of carboxylic acids, or the corresponding anhydrides to form a complexed aluminum compound; and

(d) hydrolytically condensing said complexed aluminum compound to form a viscous liquid, said viscous liquid suitable for further processing to produce gel threads or fibers.

5,777,058

METALLO-OXOMERIC SCRUBBER COMPOSITIONS
H. Eric Fischer, Monsey, N.Y., assignor to ATMI Ecosys Corporation, San Jose, Calif.

Continuation of Ser. No. 179,441, Jan. 10, 1994, abandoned. This application May 29, 1996, Ser. No. 654,780

Int. Cl.⁶ C01G 67/00

U.S. Cl. 528—9

29 Claims

1. A metallic macromer, having utility for gas contacting to remove acidic or corrosive gaseous components therefrom, comprising a coordinated complex of (i) metal coordination atoms M, each of which is covalently linked to (ii) at least two chains of oxygen-containing groups, wherein each of the chains contains at least one oxygen-containing unit and each oxygen-containing unit is independently selected from the group consisting of carbonate

(—O—C(O)—O—), sulfite (—O—S(O)—O—), carboxylate (—O—C(O)—), and silicate (—O—Si(O)₂—O—), wherein oxygen-containing units that are present as successive units in a chain are optionally interconnected by a divalent organo group therebetween, wherein the metal coordination atoms M are covalently linked to each of said at least two chains of oxygen-containing units through an oxo moiety (—O—) of an oxygen-containing unit in each said chain, wherein the metallic macromer comprises at least two differing types of said oxygen-containing units, and wherein the metal of the metal coordination atoms M is selected from the group consisting of Group IB, IIB, IVB, VIB, VIIIB, and VIIIIB metals of the Periodic Table, with the proviso that when the metal atom M is iron, M is Fe^{+2} ; wherein said metallic macromer is characterized by at least one of the characteristics of:

- (a) all of the metal atoms being the same; and
- (b) at least one of the oxygen-containing units including a carboxylate (—O—C(O)—) unit.

5,777,059

SILICONE COMPOSITIONS AND USES THEREOF
Teresa Lynn Datz-Slegel, and Kenneth Christopher Fey, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 19, 1996, Ser. No. 635,043

Int. Cl.⁶ C08G 77/08

U.S. Cl. 528—14

20 Claims

1. A silicone composition prepared by reacting at a temperature of 25° C. to 300° C. a mixture comprising:

- (i) 1 to 100 parts by weight of a polyisobutylene compound;
- (ii) 5 to 100 parts by weight of a polyorganosiloxane having a viscosity of 200 to about 100 million mm²/s at 25° C. expressed by the general formula $R^1_a(R^2O)_bSiO_{(4-a-b)/2}$ in which R^1 a monovalent hydrocarbon or halogenated hydrocarbon group having 1 to 10 carbon atoms, R^2 is hydrogen or a monovalent hydrocarbon group having 1 to 10 carbon atoms, a has an average value of 1.9 to 2.2 and b has a sufficiently large value to give at least one —OR² group in each molecule, at least one such —OR² group being present at the end of the molecular chain;
- (iii) 0.5 to 20 parts by weight of at least one silicon compound selected from

- (a) an organosilicon compound of the general formula R^3SiX_{4-n} in which R^3 is a monovalent hydrocarbon group having 1 to 5 carbon atoms, X is selected from a halogen atom or a hydrolyzable group and c has an average value of one or less;
- (b) a partially hydrolyzed condensate of said compound (a);
- (c) a siloxane resin comprising $(CH_3)_3SiO_{1/2}$ units and $SiO_{2/2}$ units wherein the ratio of $(CH_3)_3SiO_{1/2}$ units to $SiO_{2/2}$ units is 0.4:1 to 1.2:1; or
- (d) a condensate of said compound (c) with said compound (a) or (b); and
- (iv) a catalytic amount of a catalyst selected from the group consisting of alkali metal hydroxides, alkali metal silanates, alkali metal alkoxides, quaternary ammonium hydroxides, quaternary ammonium silanates, quaternary phosphonium hydroxides, quaternary phosphonium silanates, mineral acids, acetic acid, organosulfonic acids, ammonium carbonate, and ammonium hydroxide.

5,777,060

SILICON-CONTAINING BIOCOMPATIBLE MEMBRANES
William Peter Van Antwerp, Valencia, Calif., assignor to Minimed, Inc., Sylmar, Calif.

Continuation-in-part of Ser. No. 410,775, Mar. 27, 1995. This application Sep. 26, 1996, Ser. No. 721,262

Int. Cl.⁶ C08G 77/04

U.S. Cl. 528—28

9 Claims

1. A biocompatible membrane formed from a reaction mixture of:

5,777,061

BLOCKED POLYISOCYANATE CROSSLINKERS FOR PROVIDING IMPROVED FLOW PROPERTIES TO COATING COMPOSITIONS

Kenneth P. Yonek, McMurray, Pa.; Lanny D. Venham, Paden City, W. Va.; Philip E. Yeske, and Edward P. Squiller, both of Pittsburgh, Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Feb. 14, 1996, Ser. No. 601,597

Int. Cl.⁶ C08G 18/28

U.S. Cl. 528—45

20 Claims

1. A powder coating composition containing as binder A) a polyisocyanate component which contains blocked isocyanate groups, is present in powder form, is solid below 40° C. and liquid above 150° C., and contains one or more polyisocyanates

- i) having a blocked NCO content (calculated as NCO, MW 42) of 5 to 25% by weight of (cyclo)aliphatically-bound isocyanate groups and
- ii) containing fluorine (calculated as F, AW 19) in an amount of 0.01 to 20% by weight, wherein the preceding percentages are based on the solids content of the polyisocyanate mixture and
- B) a polyhydroxyl component comprising one or more high molecular weight polyols.

5,777,062

DIPHOSPHINES BONDED TO SIDE CHAINS OF POLYMERS, AND METAL COMPLEXES THEREOF
Benoit Pugin, Münchenstein, Switzerland, assignor to Novartis Corporation, Summit, N.J.

Filed Feb. 23, 1996, Ser. No. 606,158

Int. Cl.⁶ C08G 18/28

U.S. Cl. 528—72

31 Claims

1. A polymer having recurring structural elements of at least one monomer MM which contains a hydroxyl group or a primary or secondary amine group as a functional group bonded directly or in a side chain, wherein the functional group is bonded via a bridge group Q formed by a diisocyanate to the hydroxyl group or primary or secondary amino group of an aliphatic, cycloaliphatic, heterocycloaliphatic, aromatic or heteroaromatic ditertiary diphosphine, the phosphine groups of which are bonded to a carbon chain in the 1,2-, 1,3-, 1,4- or 1,5-position relative to one another; wherein the hydroxyl-, or primary or secondary amino-functional monomer participates from 5 to 100 mol per cent in the build-up of the polymer and wherein the molecular weight of the polymer is 2,000 to 5,000,000 Dalton.

5,777,063

OPTICALLY ACTIVE INDANE POLYMERS
Janet L. Gordon, Clifton Park; Kevin R. Stewart, Schenectady, and Kwok Pong Chan, Troy, all of N.Y., assignors to Molecular Optoelectronics Corporation, Watervliet, N.Y.

Filed Oct. 24, 1997, Ser. No. 957,567

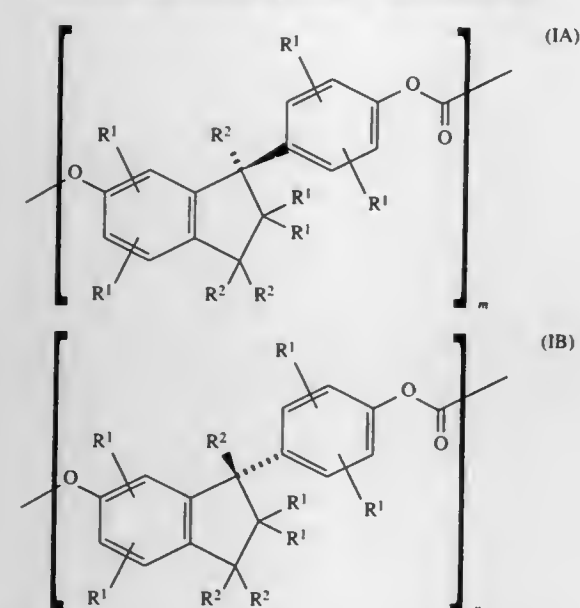
Int. Cl.⁶ C08G 18/28

U.S. Cl. 528—74

21 Claims

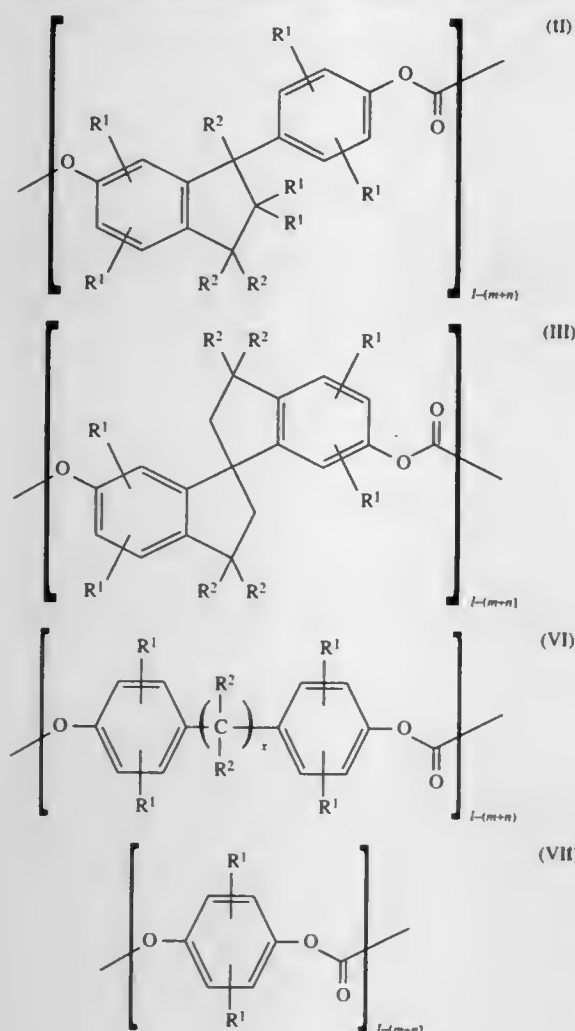
1. An optically active linear polymer comprising

(a) structural units having formula (IA) and formula (IB)



and

(b) structural units selected from the group having formula (II), formula (III), formula (VI), formula (VII), formula (VIII), formula (IX), formula (X), formula (XI), or formula (XII)



wherein m is the mole fraction of said structural units (IA) in said polymer, and n is the mole fraction of said structural units (IB) in said polymer, m and n each independently having a numerical value from 0 to 1.0, wherein the numerical value of m differs from the numerical value of n , and wherein the sum of m and n is less than or equal to 1.0;

wherein x is 0 or 1; y is 1 to 20;

wherein f and f' are each 1 except if the sum of m and n is about 0.5, then f and f' may each independently have a value greater than 1 but less than 2, and both formulas (IX) and (X) are selected as structural units of part (b);

wherein when said structural units of part (b) have formula (IX), (X), (XI), or (XII), then each said structural unit of part (b) is separated by at least one structural unit of part (a); and

wherein each R^1 and each R^2 is independently hydrogen, deuterium, alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl, alkoxyaryl, alkylaryl, arylalkyl, alkoxy, alkoxyalkyl, aryloxyalkyl, haloalkyl, haloaryl, nitro, halogen, cyano, hydroxy, or deuterated equivalents thereof.

5,777,064

PRODUCTION METHOD OF POLYCARBONATE

Katsushige Hayashi; Tsutomu Kawakami; Yuji Takeda, and Katuhiro Iura, all of Ibaraki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 14, 1996, Ser. No. 615,466

Claims priority, application Japan, Mar. 22, 1995, 7-062994; Mar. 22, 1995, 7-062995

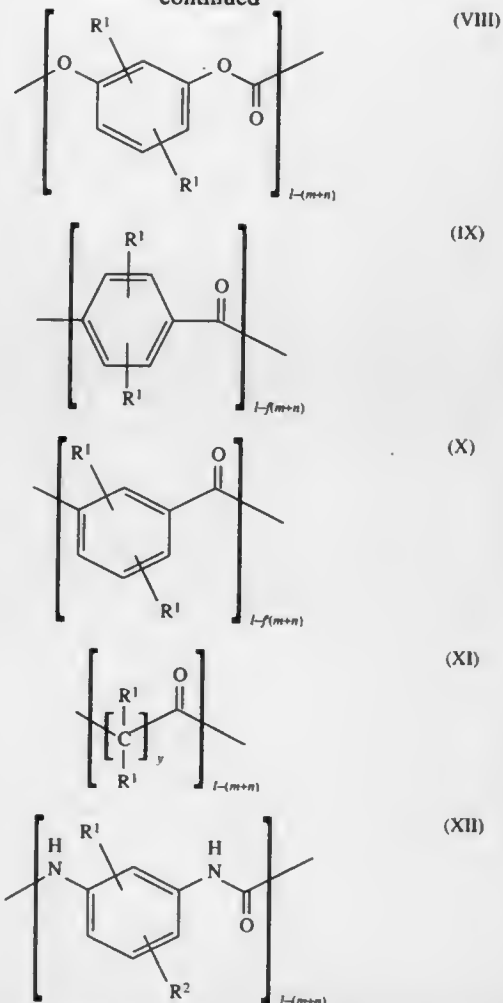
Int. Cl.⁶ C08G 64/00

U.S. Cl. 528—196

15 Claims

1. A method of producing a polycarbonate, which comprises supplying a polycarbonate obtained by polycondensation reaction

-continued



of a carbonic acid diester and a dihydroxyaryl compound in the presence of a transesterification catalyst to an extruder having at least one vent, melting the polycarbonate, and adding an acidic compound to the molten resin before the vent nearest the resin supplying inlet of said extruder to continuously devolatilize low molecular weight compounds remaining in the resin; wherein the acidic compound is at least one member selected from the group consisting of an inorganic acid, a carboxylic acid, sulfonic acid, sulfinic acid, a carboxylic acid ester, a sulfonic acid ester, and a sulfinic acid ester.

5,777,065

POLYESTERS FROM DILUTE DICYCLOPENTADIENE

Kam Wah Ho, Calgary, Canada, assignor to Nova Chemicals Ltd., Calgary, Canada

Filed Jul. 22, 1996, Ser. No. 686,084

Int. Cl.⁶ C08G 63/02

U.S. Cl. 528—272

14 Claims

1. A process to reduce the formation of gel in the manufacture of a polyester alkyd resin having an acid number from 15 to 40, comprising heating a mixture comprising from 0.5 to 2.5 moles of a dicarboxylic acid or an anhydride of a dicarboxylic acid; from 0.5 to 1.5 moles of a glycol and from 0.5 to 1.5 moles based on the dicyclopentadiene content of a dicyclopentadiene stream which comprises from 75 to 90 weight % of dicyclopentadiene, from 2 to 5 weight % of C_{4-6} alkenes or dialkenes up to about 1 weight % of a C_{15} component and the balance C_{9-11} , dimers and co-dimers of one or more alkenes selected from the group consisting of penta-diene and C_{4-8} dienes which comprises adding to said dicyclopentadiene stream prior to reaction from 10 to 300 ppm based on the weight of said dicyclopentadiene stream of an aromatic inhibitor.

5,777,066

METHOD FOR THE PRODUCTION OF POLY-O-HYDROXYAMIDES

Recai Sezi; Hellmut Ahne, both of Röttenbach, and Eva Rissel, Forchheim, all of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Filed Jun. 19, 1996, Ser. No. 666,182

Claims priority, application Germany, Jun. 19, 1995, 195 22 157.5

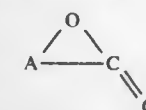
The portion of the term of this patent subsequent to Jun. 19, 2016, has been disclaimed.

Int. Cl.⁶ C08G 73/00; 69/08

U.S. Cl. 528—310

11 Claims

1. A method for producing poly-o-hydroxyamides comprising: mixing a solution of an activated dicarboxylic acid derivative with a solution of a bis-o-aminophenol in a lactone, wherein the lactone has the following structure:



where A is $-(CR^1R^2)_m-$ or $-(CR^3R^4)_n-NR^5-$, R^1 to R^5 have independent of one another the following meaning.

R^1 and R^2 are hydrogen, alkyl with 1 to 7 carbon atoms (linear or branched), $-CO(CH_2)_pCH_3$, or $-COO(CH_2)_pCH_3$ with $p=0$ or 1

R^3 and R^4 are hydrogen or alkyl with 1 to 3 carbon atoms (linear or branched)

R^5 is hydrogen or methyl,

m is a whole number from 2 to 11,

n is a whole number from 1 to 3, and

adding a tertiary amine to the mixture.

5,777,067

METHOD FOR PRODUCING POLYAMIDE RESIN FROM CAPROLACTAM

Shinichi Sato; Masaaki Miyamoto, and Kenji Tsurubara, all of Kitakyushu, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Oct. 29, 1996, Ser. No. 739,296

Claims priority, application Japan, Nov. 6, 1995, 7-286935; Oct. 3, 1996, 8-262917

Int. Cl.⁶ C08G 73/10; 69/08; 69/16

U.S. Cl. 528—310

19 Claims

1. A method for producing a polyamide resin which comprises the steps of extracting with water a polyamide resin derived from polymerizing caprolactam in the presence of water; condensing the extracted aqueous solution containing unreacted caprolactam and its oligomers at a water partial pressure of 10 to 30 kg/cm²G and at a temperature of at least 230° C.; and polymerizing the condensate directly obtained in a molten state by adding an additional amount of caprolactam, wherein

(a) among the oligomers of caprolactam, a cyclic dimer is supplied to a polymerization reactor after subjecting it to ring-opening reaction to give a ring-opened polymer in an amount of 15% to 40% by weight, based on the total amount of the cyclic dimer, and then

(b) said additional amount of caprolactam is added to the polymerization reactor, and the procedures are repeatedly performed.

5,777,068

PHOTOSENSITIVE POLYIMIDE RESIN COMPOSITION

Akira Tanaka; Satoshi Tazaki; Kel Sakamoto; Yasuhiro Yoneda; Kishio Yokouchi; Daisuke Mizutani, and Yoshikatsu Ishizuki, all of Kawasaki, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, and Fujitsu Limited, Kanagawa, both of Japan

Filed Sep. 12, 1995, Ser. No. 527,057

Claims priority, application Japan, Sep. 13, 1994, 6-247109; Sep. 26, 1994, 6-256222

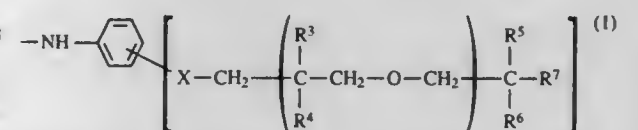
Int. Cl.⁶ C08G 73/10; 69/26

U.S. Cl. 528—353

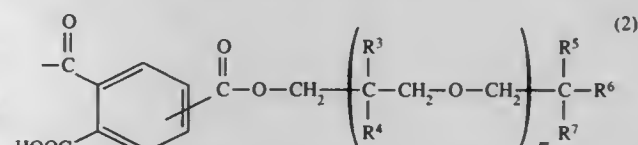
25 Claims

1. A photosensitive resin composition comprising:

(A) a polyamic compound having, at each terminal thereof, at least one actinic ray-sensitive functional group selected from the group consisting of a group Z^1 represented by the following formula (1) and a group Z^2 represented by the following formula (2):



wherein X is $-COO-$, $-O-$, $-COCH_2O-$, $-OCOO-$, $-SOO-$, $-SO_2O-$ or a single bond, R^3 , R^4 , R^5 , R^6 and R^7 are, independently of one another, a substituent group having a photopolymerizable carbon-carbon double bond, m is 0 or 1, and n is an integer of 1-3;



wherein R^3 , R^4 , R^5 , R^6 and R^7 are, independently of one another, a substituent group having a photopolymerizable carbon-carbon double bond, and m is 0 or 1;

(B) a photosensitive auxiliary having a photopolymerizable functional group; and

(C) a solvent.

5,777,069

METHOD OF MANUFACTURING A TUBULAR EXTRUSION MOLDING PRODUCT COMPRISING A HIGH MOLECULAR WEIGHT POLYARYLENE SULFIDE
Takashi Tsuda; Hidenori Yamanaka, and Osamu Komiyama, all of Ichihara, Japan, assignors to Tonen Chemical Corporation, Tokyo, Japan

Division of Ser. No. 383,519, Feb. 3, 1995, abandoned. This application Jun. 5, 1996, Ser. No. 658,645
Claims priority, application Japan, Feb. 7, 1994, 6-033210; Feb. 8, 1994, 6-34267

Int. Cl.⁶ C08G 75/16

U.S. Cl. 528—388 7 Claims
1. A method of manufacturing a tubular extrusion molding product consisting essentially of a polyarylene sulfide having a melt viscosity of from 5,000 poise to 60,000 poise, comprising: reacting an alkali metal sulfide and a dihaloaromatic compound in the presence of an organic amide solvent in a reaction zone provided with a cooling means to form a product at least partially in a gaseous phase, cooling said gaseous phase product in said reaction zone by said cooling means during the reaction, thereby condensing at least a part of the gaseous phase product, refluxing the resultant condensate to a liquid phase in said reaction zone to produce a polyarylene sulfide, and extruding said polyarylene sulfide to form a tubular extrusion molding product consisting essentially of said polyarylene sulfide having a melt viscosity of from 5,000 to 60,000 poise.

5,777,070

PROCESS FOR PREPARING CONJUGATED POLYMERS
Michael Inbasekaran; Weishi Wu, and Edmund P. Woo, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 23, 1997, Ser. No. 956,797

Int. Cl.⁶ C08G 79/08

U.S. Cl. 528—394 23 Claims
1. A process for preparing a conjugated polymer which comprises contacting (i) monomers having two reactive groups selected from boronic acid, C₁–C₆ boronic acid ester, C₁–C₆ borane, and combinations thereof, with aromatic dihalide-functional monomers or (ii) monomers having one reactive boronic acid, boronic acid ester, or borane group and one reactive halide-functional group, with each other; wherein the monomers are selected so that the polymerization reaction products of such have conjugated unsaturated internal groups; in a reaction mixture which contains:
(a) an organic solvent in which the polymer forms at least a 1 percent solution;
(b) an aqueous solution of an inorganic base having a pKa in the range of from 9 to 13, said solution having a concentration of at least 0.1N;
(c) a catalytic amount of a palladium complex; and
(d) at least 0.01 mole percent of a phase transfer catalyst, based on the number of moles of boronic acid, boric acid ester, and borane groups in the reaction mixture; under reaction conditions sufficient to form the corresponding conjugated polymer.

5,777,071

WATER REDUCIBLE CURING AND SEALING COMPOUND

Paul A. Smith, Mentor-on-the-Lake, Ohio, assignor to Chem-Masters, Madison, Ohio

Filed Oct. 4, 1996, Ser. No. 725,971

Int. Cl.⁶ C08F 8/30; C08L 33/06

U.S. Cl. 528—492 11 Claims
1. A water-reducible curing and sealing compound for concrete substrates consisting of the products of the reaction of:

17 to 36 parts by weight of a polymer resin that comprises from about 60 to 80 percent by weight of a vinyl aromatic monomer, about 5 to 35 percent by weight of an ester of acrylic or methacrylic acid, wherein the alcohol portion of the ester has from 1 to 18 carbon atoms, and about 10 to 20 percent by weight of acrylic or methacrylic acid, in a water-miscible solvent;

1 to 3 parts by weight of an alkanolamine; and
61 to 82 parts by weight of water.

5,777,072

Patent Not Issued For This Number

5,777,073

CYCLIC CRF ANTAGONIST PEPTIDES

Jean E. F. Rivier, La Jolla, Calif., assignor to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 556,578, Nov. 13, 1995, which is a continuation-in-part of Ser. No. 353,928, Dec. 12, 1994, Pat. No. 5,663,292. This application May 30, 1997, Ser. No. 865,773

Int. Cl.⁶ A61K 38/28; 38/35; C04K 5/00; 7/00

U.S. Cl. 530—306 20 Claims
1. A cyclic CRF antagonist peptide which binds to CRF receptors but has an intrinsic activity with respect to such receptors equal to 20% or less than that of native CRF, which peptide has the formula Y-A-D-Xaa-B-Xaa_n-Xaa_m-Xaa_p-C-NH₂, wherein: Y is an acyl group having up to 15 carbon atoms; A is des-A, Thr, Ser, Leu-Thr, Leu-Ser, Asp-Leu-Thr or Asp-Leu-Ser; D-Xaa is D-Phe, D-2Nal or D-Leu; B is a sequence of 17 amino acid residues of a peptide of the CRF family selected from the group of sequences consisting of residues 13-29 of mammalian and fish CRFs or fish urotensins or residues 12-28 of sauvagine; Xaa_n represent a pair of amino acid residues, the side chains of which are linked in a cyclizing bond; Xaa_m is a natural α-amino acid residue other than Cys; Xaa_p is a residue of either (a) a D-isomer amino acid from the group consisting of D-isomers of natural α-amino acids other than Cys and unnatural aromatic α-amino acids, or (b) a natural L-isomer α-amino acid other than Cys; and C is a sequence of the last 8 amino acid residues of the C-terminal portion of a peptide of the CRF family selected from the group of sequences consisting of residues 13-29 of mammalian and fish CRFs or fish urotensins or residues 12-28 of sauvagine and wherein Nle may be substituted for Met in said peptide sequences provided that CML may be present as residue-27, or as residue-26 in the sauvagine sequence.

5,777,074

HUMAN MONOCLONAL ANTIBODIES DIRECTED AGAINST THE TRANSMEMBRANE GLYCOPROTEIN (GP41) OF HUMAN IMMUNODEFICIENCY VIRUS-1 (HIV-1)

Joseph P. Cotropia, Philadelphia, Pa., assignor to BioClonetics Incorporated, Philadelphia, Pa.

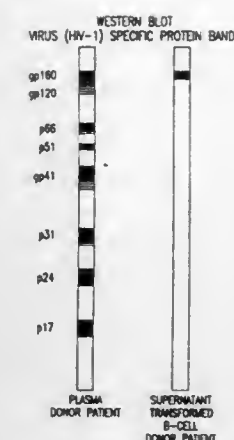
Continuation of Ser. No. 633,964, Dec. 26, 1990. This application Feb. 10, 1995, Ser. No. 386,956

Int. Cl.⁶ A61K 38/04; 39/42; C07K 5/00; C12P 21/06

U.S. Cl. 530—328 40 Claims
1. An antigenic/immunogenic peptide of HIV-1 of the formula:

(I) X-R-Leu-Ile-Cys-R'-Y-Z

where X is either an H of the amino terminal NH₂ group of the peptide or an additional amino acid bonded to the amino terminal NH₂ group of the peptide, the additional amino acid being selected to facilitate coupling of the peptide to a carrier protein; Y is absent or Cys; Z is OH or NH₂; and R is either



absent or a sequence of 1–5 amino acids; and R' is either absent or a sequence of 1–2 amino acids.

5,777,075

OCTACYCLODEPSIPEPTIDES HAVING AN ENDOPARASITICIDAL ACTION

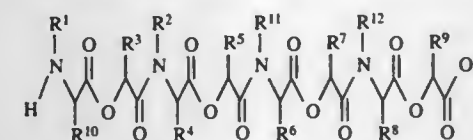
Jürgen Scherckenbeck; Peter Jeschke, both of Leverkusen; Hans-Georg Lerchen, Köln; Hermann Hagemann, Leverkusen; Achim Harder, Köln; Norbert Mencke, Leverkusen, and Andrew Plant, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Division of Ser. No. 246,029, May 19, 1994. This application Aug. 1, 1995, Ser. No. 510,084

Claims priority, application Germany, May 26, 1993, 43 17 457.4

Int. Cl.⁶ C07K 11/00; A61K 38/15

U.S. Cl. 530—330 5 Claims

1. An open-chain octadepsipeptide of the formula (II):



wherein

R¹ represents C₁₋₈-alkyl;
R² represents C₁₋₈-alkyl;
R³ represents hydrogen or aralkyl optionally substituted by halogen or nitro;
R⁴ represents straight-chain C₁₋₅-alkyl, isopropyl, sec-butyl or t-butyl;
R⁵ represents hydrogen, straight-chain C₁₋₅-alkyl or branched C₄₋₇-alkyl;
R⁶ represents straight-chain C₁₋₅-alkyl, isopropyl, sec-butyl, t-butyl or aralkyl;
R⁷ represents aralkyl optionally substituted by halogen or nitro;
R⁸ represents straight-chain C₁₋₅-alkyl, isopropyl, sec-butyl or t-butyl;
R⁹ represents straight-chain C₁₋₅-alkyl or branched C₄₋₇-alkyl;
R¹⁰ represents straight-chain C₁₋₅-alkyl, isopropyl, sec-butyl or t-butyl;
R¹¹ represents C₁₋₈-alkyl; and
R¹² represents C₁₋₈-alkyl.

5,777,076

METHOD FOR PEPTIDE SYNTHESIS STARTING FROM N-(N'-NITROSCARBAMOYL) AMINO ACIDS

Auguste Commeyras, Clapiers; Hélène Collet, Montpellier; Louis Mion, Montpellier; Sylvie Benéfice, Montpellier; Patrick Calas, Montpellier; Henri Choukroun; Jacques Tallades, both of Clapiers, and Catherine Bled, Montpellier, all of France, assignors to Université Montpellier II Sciences et Techniques du Languedoc, Montpellier Cedex, France

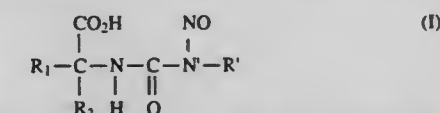
PCT No. PCT/FR95/01380, § 371 Date May 19, 1997, § 102(e) Date May 19, 1997, PCT Pub. No. WO96/12729, PCT Pub. Date May 2, 1996

PCT Filed Oct. 19, 1995, Ser. No. 809,445

Claims priority, application France, Oct. 24, 1994, 94/12779
Int. Cl.⁶ A61K 38/00; C07K 1/00

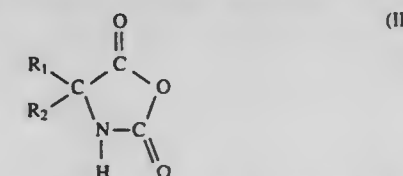
U.S. Cl. 530—333 11 Claims

1. A method for peptide synthesis, comprising preparing an N-{N'-nitroso-N'-(R')carbamoyl}amino acid having the formula:



where R₁ and R₂ are a hydrogen or an alkyl, cycloalkyl, aryl or aryl alkyl radical, substituted or unsubstituted by one or more alcohol, thiol, amine, sulfide, acid or amide functional groups.

and R' is a radical from the group: H, CH₃, CH₂CH₂Cl, decomposing the compound (I) into N₂, R'OH and an N-carboxyanhydrideamino acid having the formula:



carrying out an addition reaction between the compound (II) and an amino acid or a peptide having at least one free α-amino functional group, to obtain a dipeptide or a higher peptide than the added peptide.

5,777,077

AUTOMATED ALLYL DEPROTECTION IN SOLID-PHASE SYNTHESIS

Fernando Albericio, Boston, and Steven A. Kates, Newton, both of Mass., assignors to PerSeptive Biosystems, Inc., Framingham, Mass.

Continuation of Ser. No. 324,370, Oct. 17, 1994, abandoned, which is a continuation of Ser. No. 45,273, Apr. 5, 1993, abandoned. This application Feb. 20, 1997, Ser. No. 803,557

Int. Cl.⁶ C07K 1/06

U.S. Cl. 530—335 22 Claims

1. A method for selectively removing an allyl protecting group from an allyl-protected derivative of a biologically relevant amino acid or from a peptide derivative in which said biologically relevant amino acid is one component, comprising the steps of:

a) providing to an allyl-protected peptide derivative or amino acid derivative bound to a solid support a single phase liquid solution comprising an organopalladium catalyst dissolved in a single phase liquid solvent mixture, said single phase liquid solvent mixture comprising a solvent, a carboxylic acid and an acceptor selected from the group consisting of dimedone, N-methylaniline, N,N'-dimethylbarbituric acid, morpholine and N-methylmorpholine, wherein the carboxylic acid is chosen such that:
i) protecting groups attached to the peptide derivative or amino acid derivative remain stably attached thereto when the allyl-protecting group is removed; and

- ii) functional groups within the peptide derivative or amino acid derivative remain unreactive when the allyl protecting group is removed;
- b) contacting said single phase liquid solution with the allyl-protected peptide derivative or amino acid derivative;
- c) incubating the allyl-protected peptide derivative or amino acid derivative with said single phase liquid solution for a sufficient period of time for the allyl-protecting groups to be catalytically removed from the peptide derivative or amino acid derivative, such that an allyl-deprotected peptide derivative or amino acid derivative is obtained; and
- d) separating the allyl-deprotected peptide derivative or amino acid derivative from the single phase liquid solution.

5,777,078

TRIGGERED PORE-FORMING AGENTS

Hagan Bayley, Grafton; Barbara J. Walker, Auburn; Chung-yu Chang, Worcester, all of Mass.; Brett Niblack, Nashville, Tenn., and Rekha Panchal, Shrewsbury, Mass., assignors to Worcester Foundation for Experimental Biology, Shrewsbury, Mass.

Continuation-in-part of Ser. No. 364,429, Dec. 27, 1994, which is a continuation of Ser. No. 54,898, Apr. 28, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,913

Int. Cl.⁶ C07K 14/31; 14/195

U.S. Cl. 530—350

2 Claims

1. An inactive staphylococcal α -toxin protein which is activated by exposure to light, wherein said protein is selected from the group consisting of R104C, E11C, K168C, and D183C.

5,777,079

MODIFIED GREEN FLUORESCENT PROTEINS

Roger Y. Tsien, La Jolla, and Roger Helm, Del Mar, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 727,452, Oct. 18, 1996, which is a continuation-in-part of Ser. No. 337,915, Nov. 10, 1994, Pat. No. 5,625,048. This application Nov. 20, 1996, Ser. No. 753,143

Int. Cl.⁶ C07K 1/00; C12P 21/04; C12N 15/00; 9/02

U.S. Cl. 530—350

64 Claims

1. A composition of matters comprising:
a fluorescent modified form of an Aequorea wild-type GFP polypeptide,

characterized in that upon oxidation and cyclization of amino acid residues in said fluorescent modified form corresponding to positions 65 to 67 of wild-type GFP polypeptide sequence (SEQ ID NO:2) said fluorescent modified form exhibits a different excitation and/or emission spectrum from a corresponding product of said wild-type GFP polypeptide sequence,

with the proviso that when said fluorescent modified form comprises a mutation at S65, said mutation at S65 is selected from the group consisting of S65A, S65C, S65T, S65L, S65V, and S65I.

5,777,080

HIGHLY SOLUBLE PROTEIN, METHOD FOR MAKING, AND FOOD PRODUCTS MADE THEREOF

William L. Boatright, Fayetteville, Ark., assignor to The Board of Trustees of The University of Arkansas, Little Rock, Ark. Continuation of Ser. No. 241,272, May 9, 1994, abandoned.

This application Jul. 22, 1996, Ser. No. 684,817

Int. Cl.⁶ A61K 35/78; A23J 1/00

U.S. Cl. 530—378

4 Claims

1. A method of extracting a highly soluble food grade plant protein from defatted plant material, comprising:

- (a) contacting together defatted plant material comprising protein, with antioxidant and water to form a mixture of soluble and insoluble components, wherein a portion of the protein is solubilized in the water;
- (b) adjusting the pH of the mixture to above 7 to increase the portion of the protein solubilized in the water;
- (c) removing insoluble components from the mixture;
- (d) adjusting the pH to below 7 to precipitate at least a portion of the protein solubilized in the water;
- (e) recovering the protein precipitated in step (d);
- (f) adjusting the pH of the mixture to a suitable lower pH to precipitate at least a portion of the protein solubilized in the water;
- (g) recovering at least a portion of the protein precipitated in step (f);
- (h) neutralizing the pH of the protein recovered in step (g); and
- (i) recovering at least a portion of the protein neutralized in step (h).

5,777,081

PROCESS FOR PRODUCING AN INTER-ALPHA-TRYPSIN INHIBITOR CONCENTRATE FOR THERAPEUTIC USE AND CONCENTRATE THUS OBTAINED

Catherine Michalski, Lille, and Jacques Mizon, Lambertsart, both of France, assignors to Association Pour L'Essor de la Transfusion Sanguine Dans la Region Du Nord, Lille, France PCT No. PCT/FR94/01197, § 371 Date May 17, 1996, § 102(e) Date May 17, 1996, PCT Pub. No. WO95/11260, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 17, 1994, Ser. No. 632,460

Claims priority, application France, Oct. 18, 1993, 93 12346

Int. Cl.⁶ C07K 14/81; A61K 38/17

U.S. Cl. 530—380

7 Claims

4. A process for producing an inter-alpha trypsin inhibitor (ITI) concentrate for therapeutic use, comprising the following sequential steps:

- a) subjecting a supernatant of a cryoprecipitated plasma to anion exchange chromatography on a DEAE-grafted gel, in about 0.01 mM sodium citrate buffer at pH 7;
- b) eluting a prothrombin complex concentrate (PCC) and ITI containing fraction from the chromatography column of step a) by adding 0.5M NaCl into the buffer;
- c) subjecting the fraction which is eluted in b) to viral inactivation treatment with solvent-detergent followed by anion exchange chromatography on a DEAE-grafted gel, in about 6 mM sodium phosphate buffer at pH 6;
- d) eluting an ITI containing fraction from the chromatography column of step c) by adding 5 mM trisodium phosphate and 0.28M NaCl into the buffer;
- e) subjecting the fraction eluted in d) to chromatography on immobilized heparin in about 40 mM sodium citrate buffer at pH 7.45;
- f) eluting a concentrated ITI containing fraction from the chromatography column of step e) by adding 0.2M NaCl into the buffer, wherein ITI represents 90% of the total protein; and
- g) concentrating the fraction eluted in f) by ultrafiltration, and then dispensing the concentrate into portions and freeze drying the portions, wherein the ITI in said concentrate consists of three peptidic chains and has a molecular mass of about 220 kDa as determined by SDS polyacrylamide gel electrophoresis.

5,777,082

METHOD OF MAKING A COMPOSITION COMPRISING A FIBRIN MONOMER

Peter A. D. Edwardson, Chester; John E. Fairbrother; Ronald S. Gardner, both of Clwyd; Derek A. Hollingsbee, South Wirral, and Stewart A. Cederholm-Williams, Oxford, all of United Kingdom, assignors to Bristol-Myers Squibb Company, Skillman, N.J.

Division of Ser. No. 450,829, May 25, 1995, which is a division of Ser. No. 138,674, Oct. 18, 1993, which is a continuation-in-part of Ser. No. 958,212, Oct. 8, 1992, abandoned. This application Mar. 26, 1997, Ser. No. 832,320

Int. Cl.⁶ A61K 38/36; 35/14

U.S. Cl. 530—382

12 Claims

1. A method for the preparation of a composition comprising fibrin monomer from fibrinogen which comprises:

- (a) contacting a composition comprising fibrinogen with a thrombin-like enzyme to convert said fibrinogen to a non-crosslinked fibrin polymer;
- (b) separating said noncrosslinked fibrin polymer from said composition comprising fibrinogen; and
- (c) solubilizing said noncrosslinked fibrin polymer to form a composition comprising fibrin monomer.

5,777,083

STRESS PROTEIN EPITOPES

James Peter Burnie, and Ruth Christine Matthews, both of Wilmslow, Great Britain, assignors to NeuTec Pharma Plc, United Kingdom

PCT No. PCT/GB93/01745, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/04676, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 17, 1993, Ser. No. 387,790

Claims priority, application United Kingdom, Aug. 18, 1992, 9217542

Int. Cl.⁶ C12P 21/08

U.S. Cl. 530—387.3

12 Claims

1. An isolated epitope of up to nine amino acids from human HSP90 which cross-reacts with an antibody against at least one other HSP90 protein, said epitope comprising the amino acid sequence Lys Ile Arg Tyr or Asn Asn Leu Gly Thr Ile.

5,777,084

ANTIBODY BV10A4H2 SPECIFIC FOR HUMAN FLT3/FLK2 RECEPTOR AND MYBRIDOMA

Hans-Jorg Buhning, Tübingen, Germany, assignor to Eberhard-Karls-Universität Tübingen, Tübingen, Germany Filed Jan. 31, 1997, Ser. No. 792,626

Claims priority, application Germany, Mar. 7, 1996, 196 08 769.4

Int. Cl.⁶ A61K 39/395

U.S. Cl. 530—388.22

2 Claims

1. A monoclonal antibody that binds specifically to the human FLT3/FLK2 receptor protein, wherein the antibody is produced and released by hybridoma cells that were deposited on Dec. 19, 1995 under No. DSM ACC2248 at the German Collection of Microorganisms and Cell Cultures Ltd. (DSMZ) in accordance with the Budapest Treaty, and designated BV10A4H2.

5,777,085

HUMANIZED ANTIBODIES REACTIVE WITH GPIIB/IIIa Man Sung Co, Cupertino, and J. Yun Tso, Menlo Park, both of Calif., assignors to Protein Design Labs, Inc., Mountain View, Calif.

Continuation of Ser. No. 59,159, May 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 944,159, Sep. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 895,952, Jun. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 812,111, Dec. 20, 1991, abandoned. This application May 17, 1995, Ser. No. 458,516

Int. Cl.⁶ C07K 16/18; 16/28; C12P 5/10; C07H 21/04

U.S. Cl. 530—388.23

17 Claims

1. A humanized immunoglobulin which specifically binds to GPIIb/IIIa comprising:

- a humanized light chain comprising three complementarity determining regions from the mouse C4G1 antibody and a light chain variable region framework sequence from a human immunoglobulin light chain, and
- a humanized heavy chain comprising three complementarity determining regions from the mouse C4G1 antibody and a heavy chain variable region framework sequence from a human immunoglobulin heavy chain, wherein the mouse C4G1 antibody has a mature light chain variable domain designated SEQ. ID. No. 9, and a mature heavy chain variable domain designated SEQ. ID. No. 11.

5,777,086

METHOD OF RECOVERING LIGNIN FROM PULP AND PAPER SLUDGE

Anatole A. Klyosov, Newton; George P. Philippidis, Boston, and Yiannis A. Monovoukas, Waltham, all of Mass., assignors to Thermo Fibrogen, Inc., Bedford, Mass.

Filed May 12, 1997, Ser. No. 854,627

Int. Cl.⁶ C07G 1/00

U.S. Cl. 530—500

15 Claims

1. A method of extracting lignin from an aqueous mixture comprising plant fiber, the method comprising the steps of:

- a. combining the mixture with an alkaline solution;
- b. heating the alkaline-containing mixture to extract lignin;
- c. adjusting the pH so as to precipitate the extracted lignin; and
- d. recovering the precipitated lignin.

5,777,087

ARYL DIPHOSPHINES AND CATALYSTS CONTAINING THE SAME

Christian W. Kohlpaintner, Corpus Christi, Tex.; Brian E. Hanson, and Hao Ding, both of Blacksburg, Va., assignors to Celanese International Corporation, Dallas, Tex.

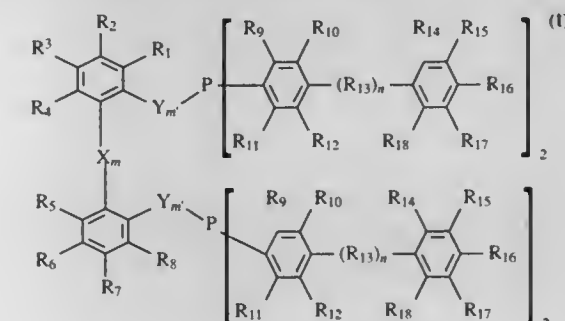
Filed Apr. 18, 1996, Ser. No. 634,487

Int. Cl.⁶ C07F 13/00

U.S. Cl. 534—14

22 Claims

1. An aryl diphosphine having the formula



wherein:

- (a) X and Y are each independently selected from the group consisting of alkyl C₁-C₂₀, alkenyl C₁-C₂₀, alkynyl C₁-C₂₀, phenyl, naphthyl, —NR—, oxygen and sulfur;
- (b) m and m' are each separate integers of 0 or 1;
- (c) R₁-R₈ are each independently selected from the group consisting of hydrogen, halogen, nitro, amino, alkyl C₁-C₂₀, alkoxy, hydroxy, —C(O)—OR, —CN, —N⁺(R)₃ X⁻, and aryl;
- (d) R₁ and R₂, R₃ and R₄, R₅ and R₆, R₇ and R₈ may also (in addition to the above) form a cyclic ring containing a total of 2 to 6 atoms selected from the group consisting of carbon atoms, oxygen atoms, nitrogen atoms, sulfur atoms, and mixtures thereof, with the proviso that said ring can be substituted or unsubstituted;
- (e) R₉-R₁₂ and R₁₄-R₁₈ are each independently selected from the group consisting of hydrogen, halogen, —SO₃M, alkyl C₁-C₂₀, —CO₂M, —N⁺(R)₃ X⁻, —CN, —OR, —C(O)—OR, and —P(R)₂;
- (f) R₁₃ is selected from the group consisting of a straight chain or branched chain alkyl C₁-C₂₀, alkenyl C₁-C₂₀, alkynyl C₁-C₂₀, phenyl, naphthyl, anthracyl, and substituted phenyl, naphthyl, and anthryl; and
- (g) n is an integer from 1 to 20; where M is selected from the group consisting of alkali metal, alkaline earth metals, and N(R)₄⁺, R is H, alkyl C₁-C₂₀ or phenyl, and X⁻ is a halide.

5,777,088

Patent Not Issued For This Number

5,777,089

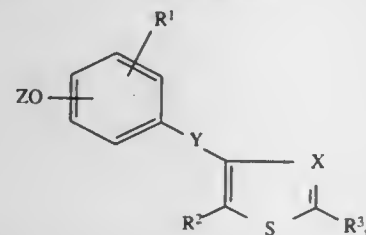
PHENOL DERIVATIVES, THEIR PREPARATION AND THEIR USE, IN PARTICULAR IN NONLINEAR OPTICS
Stefan Beckmann, Bad Dürkheim; Karl-Heinz Eitzbach, Frankenthal, and Rüdiger Sens, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/01290, § 371 Date Jan. 5, 1996, § 102(e) Date Oct. 15, 1996, PCT Pub. No. WO95/28396, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 7, 1995, Ser. No. 722,141
Claims priority, application Germany, Apr. 15, 1994, 44 12 983.1

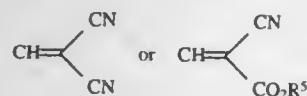
Int. Cl.⁶ C09B 29/033; 29/042; C07D 333/38; G02F 1/35
U.S. Cl. 534—765 11 Claims

1. A phenol derivative of the formula I



where

R¹ and R², independently of one another, are each hydrogen, C₁-C₁₀-alkyl, C₃-C₈-cycloalkyl, C₁-C₁₀-alkoxy, OH, NR⁵R⁶, CN, NO₂, halogen, CHO,



X is N or CR⁴,

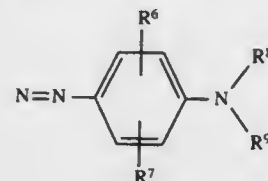
Y is a chemical bond, S,



SO₂, O or NR⁶,

Z is hydrogen, acryloyl or methacryloyl,

R³ is NH₂, N=N—G, where G is a heterocyclic coupling component, or



R⁴ is hydrogen, CN, NO₂ or CO₂R⁵.

R⁵ is hydrogen, alkyl, cycloalkyl, unsubstituted or substituted phenyl, benzyl or alkoxy,

R⁶ and R⁷, independently of one another, are each hydrogen, C₁-C₁₀-alkyl, C₃-C₈-cycloalkyl or C₁-C₆-alkoxy which is unsubstituted or substituted by phenyl or by C₁-C₄-alkoxy, and

R⁸ and R⁹ are each hydrogen, alkyl, cycloalkyl or a crosslinkable group, or R⁸ and R⁹ together with the nitrogen atom linking them may form a ring with the proviso that if R³ is NH₂, Y is a bond and R² is hydrogen, halogen or C₁-C₁₀-alkyl then Z is not hydrogen.

5,777,090

CARBOXYMETHYL INULIN

Dorine Lisa Verraest, Boskoop; Jan Gerardus Batelaan, Arnhem; Johannes Andreas Peters, Voorburg, and Herman van Bekkum, Vlaardingen, all of Netherlands, assignors to Akzo Nobel NV, Arnhem, Netherlands

PCT No. PCT/EP94/04097, § 371 Date Jun. 6, 1996, § 102(e) Date Jun. 6, 1996, PCT Pub. No. WO95/15984, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 9, 1994, Ser. No. 663,037
Claims priority, application Netherlands, Dec. 10, 1993, 9302163

Int. Cl.⁶ C08B 37/18; C02F 5/10
U.S. Cl. 536—4.1 13 Claims

1. Carboxymethyl inulin having a degree of substitution (DS) ranging from 0.15 to 2.5.

5,777,091

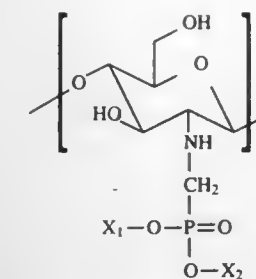
PHOSPHONOMETHYLATED CHITOSANS

Martin Kuhn, Dornach, Switzerland; Thomas Maier, Schliengen, Germany, and Albert Stehlin, Rosenau, France, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

Filed Nov. 21, 1995, Ser. No. 560,264
Claims priority, application Switzerland, Nov. 24, 1994, 03 544/94

Int. Cl.⁶ C08B 37/08; C11D 3/395
U.S. Cl. 536—20 4 Claims

1. A phosphonomethylated chitosan containing repeating units of formula



wherein

X₁ and X₂ are each independently of the other hydrogen, C₁-C₃-alkyl or an alkali metal ion or ammonium ion and n is 50 to 4000.

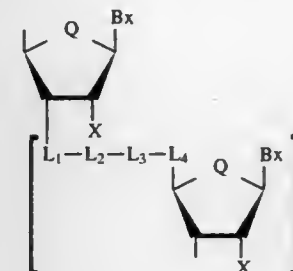
5,777,092

HETEROATOMIC OLIGONUCLEOSIDE LINKAGES
Phillip Dan Cook, Escondido, and Yogesh Shantil Sanghvi, Encinitas, both of Calif., assignors to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Division of Ser. No. 395,168, Feb. 27, 1995, Pat. No. 5,623,070, which is a continuation of Ser. No. 903,160, Jun. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 703,619, May 21, 1991, Pat. No. 5,378,825, which is a continuation-in-part of Ser. No. 566,836, Aug. 13, 1990, Pat. No. 5,223,618, and a continuation-in-part of Ser. No. 558,663, Jul. 27, 1990, Pat. No. 5,138,045. This application Feb. 4, 1997, Ser. No. 795,282

Int. Cl.⁶ C07H 21/00; 21/02; 21/04; A61K 31/70
U.S. Cl. 536—23.1 31 Claims

1. A macromolecule, at least a portion of which is of the structure:



wherein

one of L₁ or L₂ is O or S, and the other of L₁ or L₂ is N—R; and L₃ and L₄, combined, are CH₂, or L₃ is CH₂ and L₄ is CR'R"; or
one of L₃ or L₄ is O or S, and the other of L₃ or L₄ is N—R; and L₁ and L₂, combined, are CH₂, or L₂ is CH₂ and L₁ is CR'R"; or
one of L₁ and L₄ is O, S or N—R, and the other of L₁ and L₄ is CR'R"; and L₂ and L₃ are CH₂; or
L₁, L₂, L₃ and L₄, together, are O—N=CH—CH₂ or CH₂—CH=2 N—O; or
L₁ is O; L₂ is N; L₃ is CH₂; and L₄ is C or CH; and together with at least two additional carbon or hetero atoms, L₂, L₃ and L₄ form a 5 or 6 membered ring; or
L₁ is C or CH; L₂ is CH₂; L₃ is N; and L₄ is O; and together with at least two additional carbon or hetero atoms, L₁, L₂ and L₃ form a 5 or 6 membered ring;
R is H; C₁ to C₁₀ straight or branched chain lower alkyl or substituted lower alkyl; C₂ to C₁₀ straight or branched chain lower alkenyl or substituted lower alkenyl; a ¹⁴C containing lower alkyl, lower alkenyl or lower alkynyl; C₇ to C₁₄ alkaryl or aralkyl; a ¹⁴C containing C₇ to C₁₄ alkaryl or aralkyl; alicyclic; heterocyclic; a reporter molecule; or an RNA cleaving group;

(2)

R' and R" are H; or R' is H and R" is O—R; or R' and R", combined, are =O;
X is H; O—R; S—R; NH—R; F, Cl, Br; CN; CF₃; OCF₃; OCN; SOCH₃; SO₂CH₃; ONO₂; NO₂; N₃; NH₂; heterocycloalkyl; heterocycloalkaryl; aminoalkylamino; polyalkylamino; substituted silyl; a reporter molecule; or an RNA cleaving group;
Q is O or CH₂;
n is an integer greater than 0; and
Bx is a variable heterocyclic base moiety.

5,777,093

CDNAS ASSOCIATED WITH ATAXIA-TELANGELECTASIA
Yosef Shiloh, Tel Aviv, Israel; Danilo A. Tagle, Galtherburg, and Francis S. Collins, Rockville, both of Md., assignors to RAMOT-University Authority for Applied Research & Industrial Development Ltd., Tel Aviv, Israel

Continuation-in-part of Ser. No. 493,092, Jun. 21, 1995, which is a continuation-in-part of Ser. No. 441,822, May 16, 1995.

This application Jul. 28, 1995, Ser. No. 508,836
Int. Cl.⁶ C12N 15/00

U.S. Cl. 536—23.5 15 Claims

1. A purified and isolated cDNA having a sequence selected from the group consisting of SEQ ID No:1, SEQ ID No:3 and SEQ ID No:9, mutations in which cause ataxia-telangiectasia.

5,777,094

CDNA OF DOCK180 GENE AND DOCK180 PROTEIN
Michiyuki Matsuda, and Takeshi Kurata, both of Tokyo, Japan, assignors to Research Development Corporation of Japan, Saltama, Japan

Filed Jan. 19, 1996, Ser. No. 588,985
Int. Cl.⁶ C12N 15/12

U.S. Cl. 536—23.5 6 Claims

1. A cDNA of a DOCK180 gene which encodes a DOCK180 protein having the amino acid sequence according to SEQ ID NO: 2.

5,777,095

OSP A AND B SEQUENCE OF BORRELIA BURGDONFERI STRAINS ACA1 AND IP90

Alan George Barbour, San Antonio, Tex.; Sven Bergstrom, and Lennart Hansson, both of Umea, Sweden, assignors to Sym-bicom Aktiebolag, Umea, Sweden

PCT No. PCT/US92/08972, § 371 Date Oct. 26, 1993, § 102(e) Date Oct. 26, 1993, PCT Pub. No. WO93/08306, PCT Pub. Date Apr. 29, 1993

Continuation-in-part of Ser. No. 79,601, Jun. 22, 1993, Pat. No. 5,523,089, which is a continuation of Ser. No. 924,798, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 422,881, Oct. 18, 1989, abandoned. This PCT application Oct. 22, 1992, Ser. No. 137,175

Claims priority, application Denmark, Oct. 24, 1988, 5902/88
Int. Cl.⁶ C07H 21/02; 21/04; C12Q 1/68; C12P 19/34

U.S. Cl. 536—23.7 34 Claims

1. An isolated DNA molecule consisting of a nucleotide sequence as shown in FIG. 3 for ACA1 (SEQ ID NO: 5), or a sequence exactly complementary thereto.

5,777,096

PROBE COMPOSITION CONTAINING A BINDING DOMAIN AND POLYMER CHAIN AND METHODS OF USE

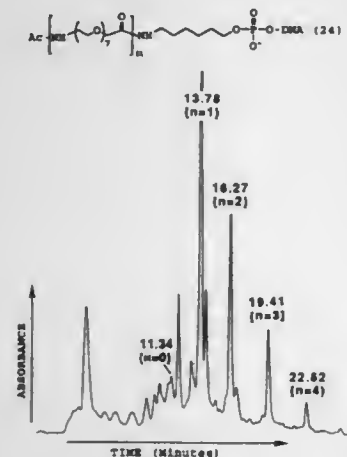
Paul David Grossman, Burlingame; Steven Fung, Palo Alto; Steven Michael Menchen, Fremont; Sam Lee Woo, Redwood City, and Emily Susan Winn-Deen, Foster City, all of Calif., assignors to The Perkin-Elmer Corporation, Foster City, Calif.

Continuation of Ser. No. 102,372, Aug. 4, 1993, Pat. No. 5,514,543, which is a continuation-in-part of Ser. No. 973,118, Nov. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 866,018, Apr. 7, 1992, Pat. No. 5,470,705, which is a continuation-in-part of Ser. No. 862,642, Apr. 3, 1992, abandoned. This application May 6, 1996, Ser. No. 643,709

Int. Cl.⁶ C07H 21/04

U.S. Cl. 536—24.3

10 Claims



1. A probe composition for use in detecting one or more of a plurality of different target sequences in a polynucleotide sample, comprising

a mixture of sequence-specific probes, each capable of binding specifically to a different target sequence, wherein each probe is characterized by (a) an oligonucleotide binding polymer having a probe-specific sequence of subunits designed for base-specific binding of the polymer to one of the target sequences under selected binding conditions, and (b) attached to the binding polymer, a polymer chain which imparts to each probe, an electrophoretic mobility in a sieving matrix that is distinctive relative to the electrophoretic mobilities of the other probe(s) in said mixture.

5,777,097

OLIGONUCLEOTIDES COMPRISING A REGION OF A CYTOKINE SUPPRESSIVE ANTI-INFLAMMATORY DRUG BINDING PROTEIN

John C. Lee, Berwyn; Jerry L. Adams, Wayne; Timothy F. Gallagher, Harleysville; David W. Green, Bryn Mawr; John Richard Heys, Malvern; Peter C. McDonnell, Elkins Park; Dean E. McNulty, Philadelphia, all of Pa.; Peter R. Young, Lawrenceville, N.J., and James E. Strickler, Milton, Mass., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 250,975, May 31, 1994, which is a continuation-in-part of Ser. No. 123,175, Sep. 17, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,421

Int. Cl.⁶ C07H 21/04

U.S. Cl. 536—24.31

1 Claim

1. An oligonucleotide capable of screening for cDNAs encoding a region of Cytokine Suppressive Anti-Inflammatory Drug binding proteins, the oligonucleotide comprising SEQ ID NO: 9 or NO: 10, wherein

5,777,098

DNA PURIFICATION PROCEDURE

Thomas Kevin Gray, and Mark A. Doll, both of Grand Forks, N. Dak., assignors to University of North Dakota Medical Education Research Foundation, Grand Forks, N. Dak.

Filed Jul. 23, 1996, Ser. No. 685,050

Int. Cl.⁶ C12P 19/34; C07H 21/00

U.S. Cl. 536—25.41

16 Claims

1. A method for isolating and purifying DNA from a biological sample comprising:

- contacting a DNA-containing biological sample with a hypotonic solution in an amount sufficient to lyse red blood cells and/or remove lipid material contained in the sample;
- removing lysed red blood cells and/or lipid material from the sample;
- resuspending any remaining cells in the sample with the hypotonic solution;
- lysing DNA-containing cells in the sample with a solution consisting essentially of a detergent;
- precipitating the proteins from the sample with a salt;
- removing the supernatant from the sample wherein the supernatant comprises substantially purified DNA.

5,777,099

RNA SEPARATION

Manmohan Mehra, Friendswood, Tex., assignor to Biotech Laboratories, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 393,668, Feb. 24, 1995, abandoned. This application Sep. 4, 1996, Ser. No. 706,260

Int. Cl.⁶ C07H 21/02

U.S. Cl. 536—25.42

15 Claims

1. In the process of separating RNA from biological samples containing RNA by contacting the sample with a two-phase composition wherein the upper phase is predominately phenol and the lower phase is an aqueous solution containing at least one water-soluble guanidinium salt, a buffer and urea, the improvement which comprises separating RNA from a substantially liquid biological sample with the two-phase composition wherein the phenol is present in a quantity not more than about 40% by weight based on total composition and the water is present in a quantity from about 10% by weight to about 25% by weight, inclusive, based on total composition.

5,777,100

AICA RIBOSIDE ANALOGS

David A. Bullough; Harry E. Gruber, both of San Diego; Ernest K. Metzger; Kevin M. Mullane, both of Del Mar; Bheemarao G. Ugarkar, Escondido, and Clinton E. Browne, Vista, all of Calif., assignors to GenSia Inc., San Diego, Calif.

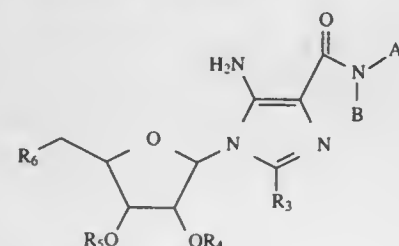
Continuation of Ser. No. 732,182, Jul. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 566,196, Aug. 10, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 485,665

Int. Cl.⁶ C07H 19/052; A61K 31/70

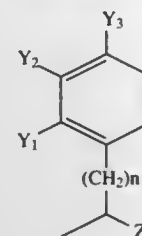
U.S. Cl. 536—26.9

16 Claims

1. A compound of the formula:



A is selected from the group consisting of hydrogen, aryl, alkyl, aralkyl, a cycloalkyl or bicycloalkyl ring of from 3 to 8 carbons, and the group



wherein

n is 0 to 3 and Y₁, Y₂ and Y₃ are each independently selected from hydrogen, halogen, lower alkyl, hydroxy, lower alkoxy, methoxy, lower perhaloalkyl, dialkylamino, lower dialkylaminoalkyl, nitro, sulfonamide, and trifluoromethyl, and Z is selected from hydrogen and lower alkyl;

B is hydrogen or lower alkyl;

R₃ is selected from hydrogen, halogen, and S—W, where W is hydrogen, alkyl, phenyl or substituted phenyl;

R₄ and R₅ are each selected from hydrogen, acyl and lower alkyl or together form a cyclic carbonate; and

R₆ is selected from, hydroxy, phosphate ester, —OSO₂NH₂, sulfhydryl, halogen, —OCOV, —SV, —SOV, N₃ and NVV', where V and V' are independently selected from hydrogen, aryl, lower alkyl, —CH₂—φ and substituted —CH₂—φ, and pharmaceutically acceptable salts thereof, provided that when A is hydrogen, para-iodophenyl, or —CH₂—φ, B is hydrogen, R₃ is hydrogen, halogen, or sulfhydryl, and R₄ and R₅ are hydrogen acyl, or together form a cyclic carbonate, then R₆ is not OH, halogen, phosphate ester, or —O-acyl.

5,777,101

ACETYLATION OF LIGNOCELLULOSIC MATERIALS

Helen Louise Nelson, and David Ian Richards, both of Humberston, Great Britain, assignors to A-Cell Acetyl Cellulosics AB, Sweden

PCT No. PCT/GB95/00371, § 371 Date Jul. 25, 1996, § 102(e)

Date Jul. 25, 1996, PCT Pub. No. WO95/23168, PCT Pub. Date Aug. 31, 1995

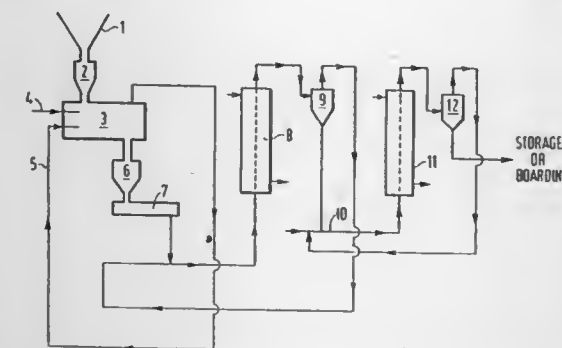
PCT Filed Feb. 23, 1995, Ser. No. 682,786

Claims priority, application United Kingdom, Feb. 24, 1994, 9403509

Int. Cl.⁶ C08B 3/00; C07H 1/00

U.S. Cl. 536—56

14 Claims



1. A process for the acetylation of lignocellulosic materials (LM) comprising

- bringing the LM into intimate contact in a reactor with an acetylating agent comprising acetic anhydride as the major component and acetic acid as a minor component at a temperature from 80°–140° C. and
- bringing the acetylated LM from step (a) into contact with a heated gas inert under the reaction conditions in a stripper at a temperature above 140°

C. and reducing the acetic acid or acetic anhydride content of the acetylated LM produced in step (a) to below 10% by weight by stripping.

5,777,102

CARRAGEENAN-CONTAINING PRODUCT AND A METHOD OF PRODUCING SAME

Peter Fromholt Larsen, Højbjerg, Denmark, assignor to

Grindsted Products A/S (Danisco), Copenhagen, Denmark

PCT No. PCT/DK93/00127, § 371 Date Jun. 28, 1995, § 102(e)

Date Jun. 28, 1995, PCT Pub. No. WO94/22921, PCT Pub.

Date Oct. 13, 1995

PCT Filed Apr. 6, 1993, Ser. No. 432,205

Int. Cl.⁶ C07H 1/06; 1/08; C07G 3/00

U.S. Cl. 536—124

35 Claims

1. A method of producing a semi-refined carrageenan comprising the steps of:

- reacting a seaweed starting material containing carrageenan, in a substantially homogeneous alkaline mixture of a solvent in which carrageenan is substantially insoluble, and an aqueous phase comprising an alkaline substance, to obtain at least partial formation in the carrageenan of 3,6-anhydro units,
- separating the seaweed material from the reaction mixture of step (1) and subjecting the seaweed material to at least one washing step with a solvent/water mixture, and
- subjecting the seaweed material resulting from step (2) to shear stress.

5,777,103

PROCESS FOR PRODUCING CYCLOHEXYLAZETIDINONE

Takaji Matsumoto; Toshiyuki Murayama; Shigeru Mitsuhashi, and Takashi Miura, all of Kanagawa, Japan, assignors to

Takasago International Corporation, Tokyo, Japan

Filed Feb. 28, 1997, Ser. No. 808,270

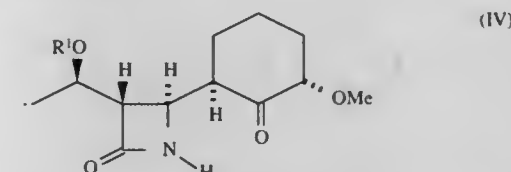
Claims priority, application Japan, Dec. 12, 1996, 8-332021

Int. Cl.⁶ C07F 205/08; C07B 49/00

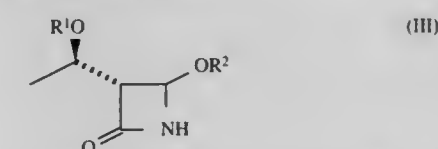
U.S. Cl. 540—200

6 Claims

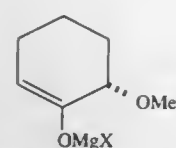
1. A process for producing a cyclohexylazetidinone derivative of the following formula (IV)



in which Me is methyl group, R¹ is a hydroxyl-protecting group, wherein said process comprises, reacting (3R,4R)-4-acyloxy-3-[(1R)-1-hydroxyethyl]-azetidin-2-one derivative of the following formula (III)



in which R¹ is the same group as described above and R² is, an alkanoyl group having 1 to 9 carbon atoms, a cycloalkanoyl group having 4 to 7 carbon atoms or a benzoyl group, with a magnesium enolate compound of the following formula (II)



in which Me is a methyl group and X is a halogen atom.

5,777,104
CEPHEM DERIVATIVES AS ANTI-METASTATIC AGENTS

Marco Alpegiani, Milan; Pierluigi Bissolino, San Giorgio di Lomellina; Ettore Perrone, Boffalora Ticino, and Enrico Pesenti, Cologno Monzese, all of Italy, assignors to Pharmacia & Upjohn S.p.A., Milan, Italy

PCT No. PCT/EP94/02059, § 371 Date Mar. 8, 1995, § 102(e) Date Mar. 8, 1995, PCT Pub. No. WO95/02603, PCT Pub. Date Jan. 26, 1995

PCT Filed Jun. 24, 1994, Ser. No. 392,744

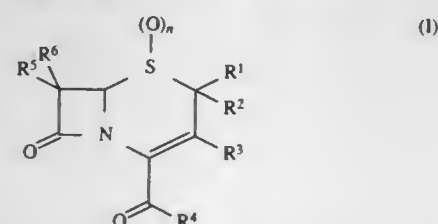
Claims priority, application United Kingdom, Jul. 14, 1993, 9314562

Int. Cl. 6 A61K 31/545

U.S. Cl. 540—215

3 Claims

1. A method of inhibiting the metastatic spread of tumors comprising administering to a patient in need thereof an effective amount of a compound of formula (I)



wherein n is zero, one or two;

R¹ is hydrogen or a C₁-C₁₂ alkyl, C₂-C₁₂ alkenyl, C₂-C₁₂ alkynyl, C₆-C₁₀ aryl, C₃-C₈ cycloalkyl, C₅-C₈ cycloalkenyl, C₇-C₁₄ aralkyl, C₈-C₁₄ aralkenyl, C₈-C₁₄ aralkynyl, (cycloalkyl)alkyl, (cycloalkyl)alkenyl, heterocyclyl, (heterocyclyl)alkyl, (heterocyclyl)alkenyl, each of which may be substituted by one or more substituents selected from:

halo;

hydroxy or oxo;

nitro;

azido;

mercapto;

amino, selected from —NH₂, —NHR' or —NR'R'', wherein R' and R'', which are the same or different, are C₁-C₁₂ straight or branched alkyl, phenyl or benzyl;

formyl;

cyano;

carboxy(alkyl), selected from (CH₂)_tCOOH or (CH₂)_tCOOR', wherein R' is as defined above and t is 0, 1, 2, or 3;

sulpho;

acyl selected from —C(O)R', wherein R' is as defined above or trifluoroacetyl;

carbamoyl, N-methylcarbamoyl or N-carboxymethylcarbamoyl;

carbamoyloxy;

acyloxy of the formula —OC(O)R', wherein R' is as defined above, or formyloxy;

alkoxycarbonyl or benzyloxycarbonyl of the formula —C(O)OR', wherein R' is as defined above;

alkoxycarbonyloxy or benzyloxycarbonyloxy of the formula —OC(O)OR', wherein R' is as defined above;

alkoxy, phenoxy or benzyloxy of the formula —OR', wherein R' is as defined above;

alkylthio, phenylthio or benzylthio of the formula —SR', wherein R' is as defined above;

alkylsulphinyl, phenylsulphinyl or benzylsulphinyl of the formula —S(O)R', wherein R' is as defined above;

alkylsulphonyl, phenylsulphonyl or benzylsulphonyl of the formula —S(O)₂R', wherein R' is as defined above;

acylamino of the formula —NHC(O)R'' or —NHC(O)OR'', wherein R'' is C₁-C₁₂ straight or branched alkyl, phenyl, benzyl, CH₂CH₂COOH or CH₂CH₂CH₂COOH;

sulphonamido of the formula —NHSO₂R', wherein R' is as defined above;

guanidino;

C₁-C₄ alkyl, C₂-C₄ alkenyl or alkynyl;

C₃-C₆ cycloalkyl;

phenyl

substituted methyl selected from the group consisting of chloromethyl, fluoromethyl, difluoromethyl, trifluoromethyl, aminomethyl, N,N-dimethylaminomethyl, azidomethyl, cyanomethyl, carboxymethyl, sulphomethyl, carbamoylmethyl, carbamoyloxymethyl, hydroxymethyl, C₁-C₄ alkoxy-carbonylmethyl, and guanidinomethyl;

R² represents an atom or group selected from the following:

(1) halogen

(2) R¹ as defined above

(3) an ether OR¹ wherein R¹ is as defined above

(4) a thioether, sulfoxide or sulphone —S(O)_nR¹ wherein n and R¹ are as defined above

(5) acyloxy —OC(O)R¹ wherein R¹ is as defined above;

(6) sulphonyloxy —OS(O)₂R¹ wherein R¹ is as defined above; or R¹ and R² taken together form a methylene group of formula —CHR¹ or —CH—CO₂R¹ or —CH—COR¹ wherein R¹ is as defined above; or R¹ and R² taken together with the C-2 carbon atom of the cephem nucleus constitute a carbocyclic or heterocyclyl group;

R³ represents one of the following:

(1) R² as defined above

(2) an acyl group —C(O)R¹, —C(O)OR¹ or —CO₂H wherein R¹ is as defined above

(3) an oxymethyl group —CH₂—OR¹ wherein R¹ is as defined above

(4) a thiomethyl group or a derivative thereof of formula —CH₂S(O)_nR¹ wherein n and R¹ are as defined above

(5) an acyloxymethyl group —CH₂OC(O)R¹ wherein R¹ is as defined above or a —CH₂O—R² wherein R² is a mono, di- or tripeptide composed of D or L α-amino acids chosen from Ala, Gly, Val, Leu, Ile, Phe and with the terminal amino group either free or protected as an amide —NHCOR¹ or sulfonamide —NHSO₂R¹ wherein R¹ is as defined above

(6) an acylthiomethyl group —CH₂SC(O)R¹ wherein R¹ is as defined above

(7) a sulphonyloxymethyl group —CH₂—OSO₂R¹ wherein R¹ is as defined above

(8) a group of formula —CH₂—Z—NR¹R⁸ wherein Z is a bond, —O C(O)— or —OS(O)₂—, R¹ is as defined above and R⁸, being the same or different, is as defined above for R¹; or R¹ and R⁸ taken together with the nitrogen atom to which they are attached represent a heterocyclic ring;

(9) ammoniomethyl —CH₂N⁺R¹R⁸R⁹ wherein R¹ and R⁸ are as defined above and R⁹, being the same or different, is as defined for R¹; or R¹ is alkyl and R⁸ and R⁹ together with the nitrogen atom to which they are attached represent a heterocyclic ring;

R⁴ is either:

(1) a group R¹ wherein R¹ is as defined above

(2) a group OR¹ wherein R¹ is as defined above

(3) a group SR¹ wherein R¹ is as defined above

(4) a group NR¹R⁵ wherein R¹ and R⁵ are as defined above;

R⁵ is either R¹ as defined above or halogen or C₁-C₆ alkoxy, C₁-C₆ alkylthio or C₁-C₆ acylamino;

R⁶ is a group selected from the following:

(1) R² as defined above

(2) a group of formula —Z—N(R¹)R⁸ wherein Z, R¹ and R⁸ are as defined above

(3) a group of formula —NR⁸C(O)R¹ wherein R¹ and R⁸ are as defined above, or R¹ and R⁸ taken together with the aminocarbonyl group to which they are attached constitute a heterocyclic ring

(4) an acylamino group —NHR⁷ wherein R⁷ is as defined above

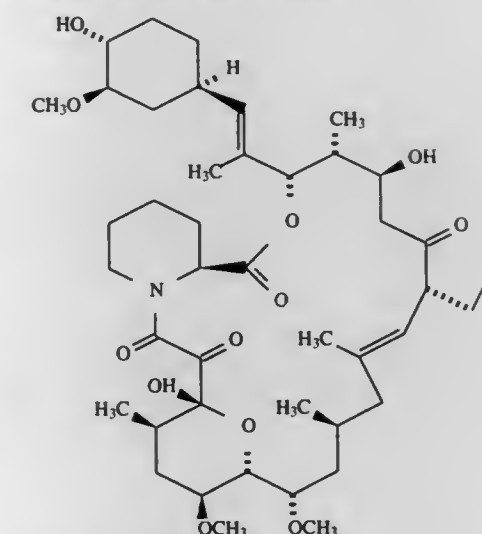
(5) an ammonio group —N⁺R¹R⁸R⁹ wherein R¹, R⁸ and R⁹ are as defined above;

or R¹ and R⁶ taken together with the C-7 carbon atom of the cephem nucleus constitute a carbocyclic or heterocyclic ring;

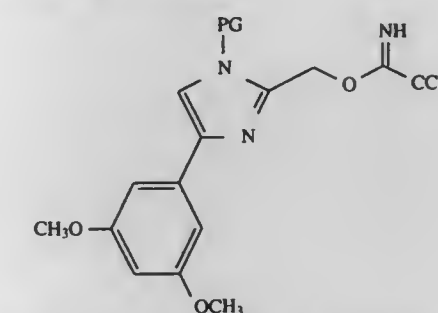
or R⁵ and R⁶ taken together constitute a methylene group of formula —CHR¹, —CH—CO—R¹ or —CH—SO₂R¹, wherein R¹ is as defined above;

with the proviso that when R³ is a group of the formula CH₂S(O)_nR¹, wherein n is zero and R¹ is a C₁-C₁₂ alkyl substituted with an amino substituent, said amino substituent has the formula —NH₂, —NHR' or NR'R'', wherein R' and R'', which may be the same or different, are C₁-C₁₂ straight or branched alkyl, phenyl or benzyl; or a pharmaceutically acceptable salt thereof.

(1) reacting the compound of formula II:



with a compound of formula III:



in an inert organic solvent comprising acetonitrile, and an amide of the formula R¹CONR²R³ or a carbamate of the formula R¹OCONR²R³, and in the presence of an acid; wherein PG is an imidazole protecting group, R¹, R² and R³ are independently C₁₋₇ alkyl or R¹ and R² together form —(CH₂)₂₋₃—; and
(2) removing the imidazole protecting group.

5,777,105

PROCESS FOR THE PREPARATION OF IMIDAZOLYL MACROLIDE IMMUNOSUPPRESSANTS

David J. Mathre, Skillman; Richard F. Shuman, Westfield; Paul Sohar, Warren, and Zhiguo Song, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

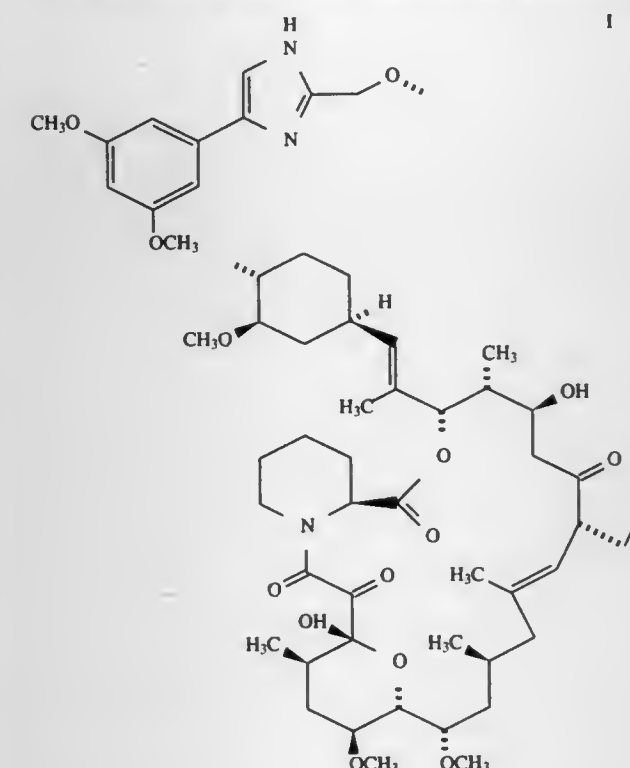
Filed Jul. 23, 1996, Ser. No. 649,255

Int. Cl. 6 C07D 491/16

U.S. Cl. 540—456

7 Claims

1. A process for the preparation of the compound of formula I:



which comprises

5,777,106

Patent Not Issued For This Number

5,777,107

Patent Not Issued For This Number

5,777,108

GALANTHAMINE DERIVATIVES AS
ACETYLCHOLINESTERASE INHIBITORS

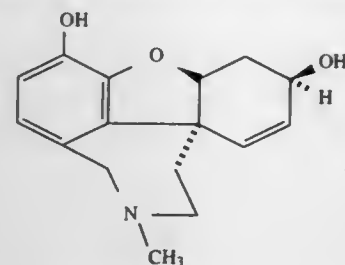
Raymond W. Kosley, Jr., Bridgewater; Larry Davis, Sergeantsville, and Veronica Taberna, Union, all of N.J., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Division of Ser. No. 137,440, Oct. 18, 1993. This application
May 22, 1995, Ser. No. 445,921Int. Cl.⁶ C07D 491/06; C07B 41/04

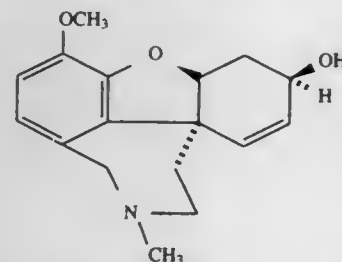
U.S. Cl. 540—546

9 Claims

1. A process for the preparation of the compound of the formula



which comprises treating the galanthamine of formula III



with an alkylthio salt of sodium, potassium, lithium or cesium, in a polar protic solvent at a temperature of from about 80° C. to about 135° C.

5,777,109

Patent Not Issued For This Number

5,777,110

WOOD PRESERVATIVE OXATHIAZINES

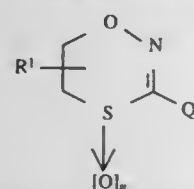
Robert Allan Davis, Cheshire, Conn.; Alex R. A. Valcke, Wechelderzande, Belgium, and Walter Gerhard Brouwer, Guelph, Canada, assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn., and Uniroyal Chemical Ltd./Ltee, Elmira, Canada

Continuation-in-part of Ser. No. 111,386, Aug. 24, 1993, abandoned. This application Aug. 24, 1994, Ser. No. 295,117

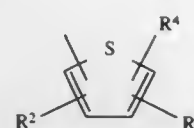
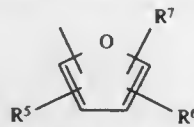
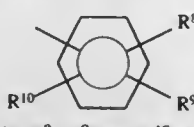
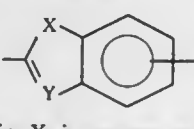
Int. Cl.⁶ C07D 291/00

U.S. Cl. 544—2

1. A compound of the formula

wherein n is 0, 1 or 2; R₁ is hydrogen, C₁–C₄ linear or branched alkyl, or benzyl; and

Q is:

wherein R², R³ and R⁴ are, individually, hydrogen, alkyl, alkoxy, alkylthio, alkoxy carbonyl, halogen, trihalomethyl, cyano, acetyl, formyl, benzoyl, nitro, alkoxyaminomethyl, phenyl or phenylaminocarbonyl, wherein the alkyl or alkoxy moieties are all C₁–C₄, linear or branched, with the proviso that at least one of R², R³ or R⁴ must be other than hydrogen;wherein R⁵, R⁶ and R⁷ are, individually, hydrogen, C₁–C₄ alkoxy, C₁–C₄ alkylthio, halogen, trihalomethyl, cyano, acetyl, formyl, benzoyl, nitro, phenyl or phenylaminocarbonyl, with the proviso that at least one of R⁵, R⁶ or R⁷ must be other than hydrogen;wherein R⁸, R⁹ and R¹⁰ are, individually, hydroxyl, halo, C₁–C₁₂ alkyl, C₃–C₆ cycloalkyl, trihalomethyl, phenyl, C₁–C₃ alkoxy, C₁–C₅ alkylthio, tetrahydropyranyloxy, phenoxy, (C₁–C₄ alkyl) carbonyl, phenyl carbonyl, C₁–C₄ alkylsulfinyl, C₁–C₄ alkylsulfonyl, carboxy or its alkali metal salt, (C₁–C₄ alkoxy) carbonyl, (C₁–C₄ alkyl) aminocarbonyl, phenylaminocarbonyl, tolylaminocarbonyl, morpholinocarbonyl, amino, nitro, cyano, dioxolanyl, or (C₁–C₄ alkoxy) iminomethyl; orwherein X is oxygen or sulfur; Y is nitrogen, —CH—, or —C(C₁–C₄ alkoxy)—; and R is hydrogen or C₁–C₄ alkyl.

5,777,111

PROCESS FOR THE PREPARATION OF 3-(N-ARYL-AMINO)-PROPYL-2'-SULFATO-ETHYLSULFONYL COMPOUNDS

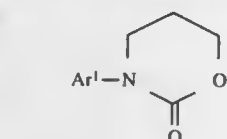
Christian Schumacher; Michael Meier, both of Frankfurt am Main, and Werner Hubert Russ, Flörsheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Division of Ser. No. 560,539, Nov. 17, 1995, Pat. No.

5,672,738. This application May 23, 1997, Ser. No. 862,549
Claims priority, application Germany, Nov. 18, 1994, 44 41 147.2Int. Cl.⁶ C07D 413/12

U.S. Cl. 544—97

1. A compound of the formula (2a)



in which

Ar¹ is 2-sulfo-phenyl, 3-sulfo-phenyl, 4-sulfo-phenyl, 2,5-disulfo-phenyl, 3-sulfo-4-aminophenyl, 4-sulfo-3-aminophenyl, 3-methoxy-5-sulfo-phenyl, 3-sulfo-4-methylphenyl, 3-sulfo-4-methoxyphenyl, 2,5-disulfo-4-methylphenyl, 2,5-disulfo-4-methoxyphenyl, 2,5-disulfo-4-aminophenyl, 5,7-disulfo-naphth-2-yl, 4,8-disulfo-naphth-2-

yl, 3,6,8-trisulfo-naph-2-yl, 4,6,8-trisulfo-naphth-2-yl, 8-sulfonaphth-1-yl, 6-sulfo-naphth-1-yl or 7-sulfo-naphth-1-yl.

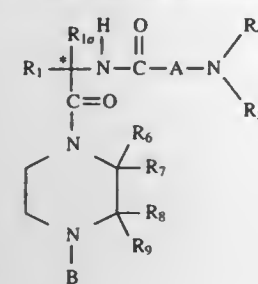
5,777,112

PIPERAZINE COMPOUNDS PROMOTE RELEASE OF
GROWTH HORMONERavi Nargund, East Brunswick, N.J.; Khaled Barakat, Brooklyn, N.Y.; Meng Hsin Chen, and Arthur Patchett, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
PCT No. PCT/US95/07001, § 371 Date Dec. 12, 1996, § 102(e)
Date Dec. 12, 1996, PCT Pub. No. WO95/34311, PCT Pub. Date Dec. 21, 1995Continuation of Ser. No. 258,644, Jun. 13, 1994, abandoned.
This PCT application Jun. 9, 1995, Ser. No. 750,759Int. Cl.⁶ C07D 413/00; 403/00; 241/04; 295/00

U.S. Cl. 544—121

7 Claims

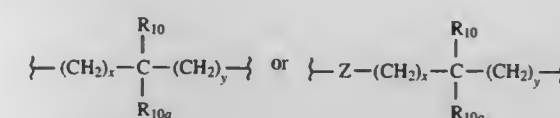
1. A compound of the formula:



wherein:

R₁ is selected from the group consisting of: C₁–C₁₀ alkyl-, aryl-, aryl(C₁–C₆ alkyl)-, heteroaryl-, heteroaryl(C₁–C₆ alkyl)-, (C₃–C₇ cycloalkyl)-(C₁–C₆ alkyl)-, (C₁–C₅ alkyl)-K—(C₁–C₅ alkyl)-, aryl-(C₁–C₅ alkyl)-K—(C₁–C₅ alkyl)-, heteroaryl-(C₁–C₅ alkyl)-K—(C₁–C₅ alkyl)-, and (C₃–C₇ cycloalkyl)-(C₁–C₅ alkyl)-K—(C₁–C₅ alkyl)-, wherein K is —O—, —S(O)_m—, —N(R₂)C(O)—, —C(O)N(R₂)—, —OC(O)—, —C(O)O—, —CR₂=CR₂— or —C≡C—,wherein R₂ and the alkyl groups may be further substituted with 1 to 9 halo, —S(O)_mR_{2a}, 1 to 3 of —OR_{2a} or —C(O)OR_{2a}, and wherein aryl is phenyl or naphthyl, and heteroaryl is selected from indolyl, thiophenyl, furanyl, benzothiophenyl, benzofuranyl, pyridinyl, quinolinyl, triazolyl, imidazolyl, thiazolyl, and benzimidazolyl, wherein aryl and heteroaryl are unsubstituted or substituted with phenyl, phenoxy, halophenyl, 1 to 3 of —C₁–C₆ alkyl, 1 to 3 of halo, 1 to 2 of —OR₂, methylenedioxy, —S(O)_mR₂, 1 to 2 of —CF₃, —OCF₃, nitro, —N(R₂)(R₂), —N(R₂)C(O)(R₂), —C(O)OR₂, —C(O)N(R₂)(R₂), —SO₂N(R₂)(R₂), —N(R₂)SO₂-aryl, or —N(R₂)SO₂R₂;R_{1a} is hydrogen or C₁–C₄ alkyl;R₂ is selected from the group consisting of: hydrogen, —C₁–C₆ alkyl, —C₃–C₇ cycloalkyl, and —CH₂-phenyl, wherein the alkyl or the cycloalkyl is unsubstituted or substituted with hydroxyl, C₁–C₃ alkoxy, thioalkyl, C(O)OR_{2a}, and wherein, if two —C₁–C₆ alkyl groups are present on one atom, the groups may be optionally joined to form a C₃–C₈ cyclic ring optionally including oxygen, sulfur, or —NR_{2a}, the C₃–C₈ cyclic ring being selected from the group consisting of pyrrolidine, piperidine, piperazine, morpholine, thiomorpholine;R_{2a} is hydrogen or C₁–C₆ alkyl;R₄ and R₅ are independently selected from the group consisting of: hydrogen, C₁–C₆ alkyl, substituted C₁–C₆ alkyl wherein the substituents may be 1 to 5 halo, 1 to 3 hydroxy, 1 to 3 C₁–C₁₀ alkanoyloxy, 1 to 3 C₁–C₆ alkoxy, phenyl, phenoxy, 2-furyl, C₁–C₆ alkoxy carbonyl, —S(O)_m(C₁–C₆ alkyl); or wherein R₄ and R₅ may be taken together to form —(CH₂)_qL_a(CH₂)_r—, wherein L_a is —C(R₂)₂—, —O—, —S(O)_m— or —N(R₂)—, wherein r and s are independently 1 to 3, and R₂ is as defined above;R₆ and R₈ are independently selected from the group consisting of: hydrogen, —C₁–C₁₀ alkyl, —(CH₂)_r-aryl, —(CH₂)_qC(O)OR₂, —(CH₂)_qC(O)N(R₂)(R₂), —(CH₂)_q(C₃–C₆ cycloalkyl), —(CH₂)_q-K—(C₁–C₆ alkyl), —(CH₂)_q-K—(CH₂)_r-aryl, —(CH₂)_q-K—(CH₂)_r-(C₃–C₇ cycloalkyl), wherein K is —O—, —S(O)_m—, —CH=CH—, —C≡C—, —N(R₂)C(O)—, —C(O)NR₂—, —C(O)O—, or —OC(O)—, wherein the alkyl, —R₂, —(CH₂)_q— and —(CH₂)_r— groups may be optionally substituted by —C₁–C₄ alkyl, hydroxyl, —C₁–C₄ alkoxy, carboxyl or carboxylate, C₁–C₄ esters, and wherein aryl is phenyl, unsubstituted or substituted with 1 to 3 halo, 1 to 3 —OR₂, —C(O)OR₂, 1 to 3 —C₁–C₄ alkyl, —S(O)_mR₂, or 1H-tetrazol-5-yl;R₇ and R₉ are independently selected from the group consisting of: hydrogen, —C₁–C₁₀ alkyl, —(CH₂)_r-aryl, wherein aryl is phenyl, unsubstituted or substituted with 1 to 3 halo, 1 to 3 —OR₂, —C(O)OR₂, 1 to 3 —C₁–C₄ alkyl, —S(O)_mR₂, or 1H-tetrazol-5-yl;

A is:

wherein x and y are independently 0, 1, 2 or 3; Z is —N(R₉)— or —O—, wherein R₉ is hydrogen or C₁–C₆ alkyl; R₁₀ and R_{10a} are independently selected from the group consisting of: hydrogen, —C₁–C₆ alkyl, trifluoromethyl, phenyl, and substituted C₁–C₆ alkyl wherein the substituents are selected from the group consisting of: imidazolyl, phenyl, indolyl, p-hydroxyphenyl, —OR₂, —S(O)_mR₂, —C(O)OR₂, —C₃–C₇ cycloalkyl, —N(R₂)(R₂), and —C(O)N(R₂)(R₂);or R₁₀ and R_{10a} may independently be joined to one or both of R₄ and R₅ groups to form alkylene bridges between the terminal nitrogen and the alkyl portion of the R₁₀ or R_{10a} groups, wherein the bridge contains 1 to 5 carbons atoms;B is selected from the group consisting of: phenyl, naphthyl, indolyl, thiophenyl, furanyl, benzothiophenyl, benzofuranyl, pyridinyl, quinolinyl, triazolyl, imidazolyl, thiazolyl, and benzimidazolyl, which is unsubstituted or substituted with one or more substituents selected from the group consisting of: hydrogen, —C₁–C₆ alkyl, —(CH₂)_r-(C₃–C₆ cycloalkyl), —(CH₂)_r-aryl, —O—R₂, —O—(CH₂)_r-aryl, —C(O)(CH₂)_r-aryl, cyano, nitro, halo, —(CH₂)_qOR₂, —(CH₂)_qCH(OR₂)R₂, —(CH₂)_qCH(OR₂)(CH₂)_r-aryl, —(CH₂)_qC(O)OR₂, —(CH₂)_qC(O)O(CH₂)_r-aryl, —(CH₂)_qC(O)O(CH₂)_r-(C₃–C₆ cycloalkyl), —(CH₂)_qC(O)N(R₂)(R₂), —(CH₂)_qC(O)N(R₂)(CH₂)_r-aryl, —(CH₂)_qC(O)N(R₂)(CH₂)_r-(C₃–C₆ cycloalkyl), —(CH₂)_qN(R₂)C(O)(R₂), —(CH₂)_qN(R₂)C(O)(CH₂)_r-aryl, —(CH₂)_qN(R₂)C(O)N(R₂)(R₂), —(CH₂)_qN(R₂)C(O)N(R₂)(CH₂)_r-aryl, —(CH₂)_qN(R₂)C(O)OR₂, —(CH₂)_qN(R₂)SO₂(CH₂)_r-aryl, —(CH₂)_qSO₂R₂, —(CH₂)_qSO₂(CH₂)_r-aryl, —(CH₂)_qSO₂N(R₂)(R₂), —(CH₂)_qSO₂N(R₂)(CH₂)_r-aryl, —(CH₂)_qSO₂N(R₂)C(O)R₂, —(CH₂)_qSO₂N(R₂)C(O)-aryl, —(CH₂)_qC(O)NHSO₂R₂, —(CH₂)_q(1H-tetrazol-5-yl), —(CH₂)_q(imidazol-2-yl), —(CH₂)_q(1,2,4-triazol-1-yl), —(CH₂)_qCONH(1H-tetrazol-5-yl), —(CH₂)_qCONH(imidazol-2-yl), and —(CH₂)_qCONH(1,2,4-triazol-1-yl), wherein aryl is phenyl unsubstituted or substituted with 1 to 2 halo, amino, 1 to 2 —OR₂, or 1 to 2 —C₁–C₄ alkyl);m is 0, 1, or 2;
n is 1 or 2;
q is 0, 1, 2, 3 or 4;
r is 0, 1, 2 or 3;

and pharmaceutically acceptable salts and individual diastereomers thereof.

5,777,113

HALS PHOSPHORINANES AS STABILISERS

Rita Pitteloud, Praroman, Switzerland, assignor to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

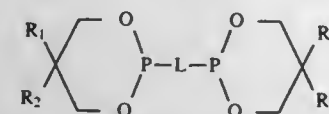
Filed Oct. 10, 1995, Ser. No. 540,513

Int. Cl.⁶ C07D 401/14

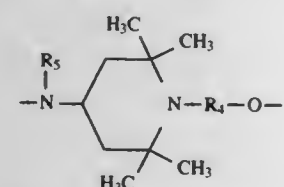
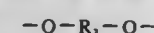
U.S. Cl. 544-198

7 Claims

1. A compound of formula I

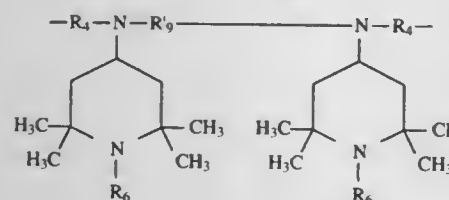
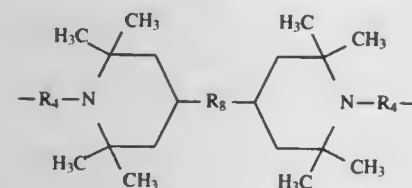
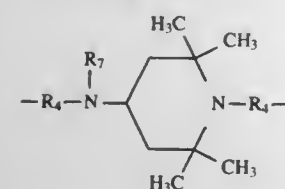
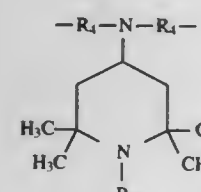
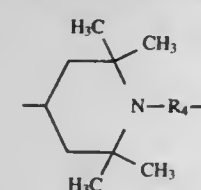


wherein L is a group of formula II or III



wherein

R₁ and R₂ are each independently of the other hydrogen or C₁-C₄alkyl or, together with the linking carbon atom, are a 3,4-dehydrocyclohexylidene ring or 5-norbornenylidene ring.
R₃ is a group of formulae IV to XVI



(I)

(II)

(III)

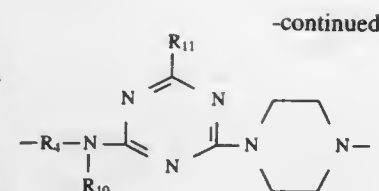
(IV)

(V)

(VI)

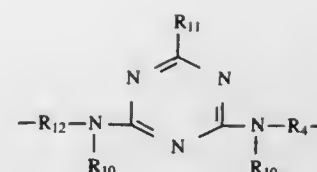
(VII)

(VIII)

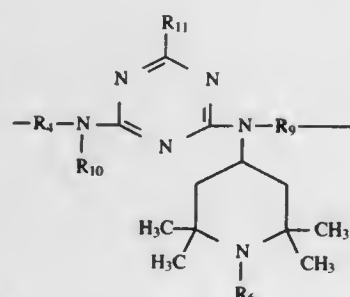


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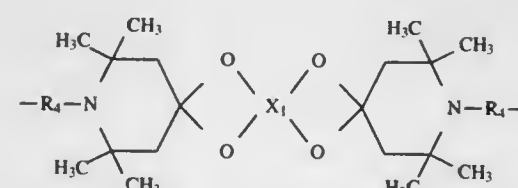
(IX)



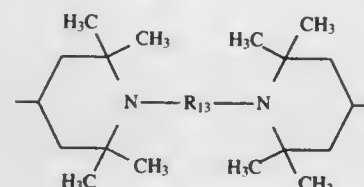
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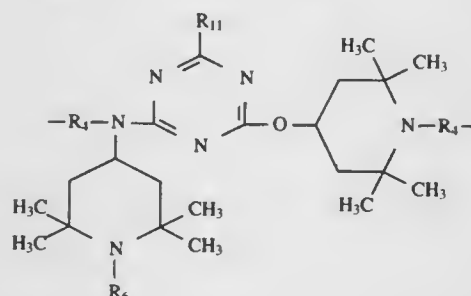
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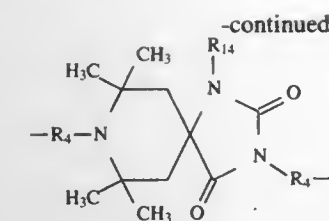
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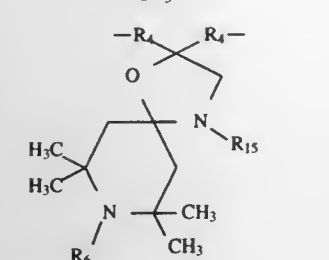
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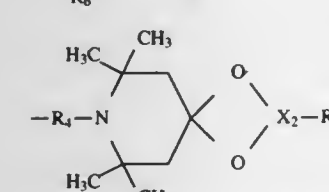
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(XIV)

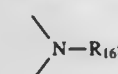
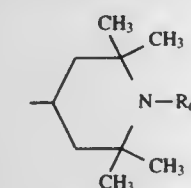


(XV)



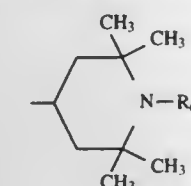
(XVI)

R₄ is C₁-C₁₈alkylene, C₂-C₁₈alkylene which is interrupted by oxygen, sulfur or

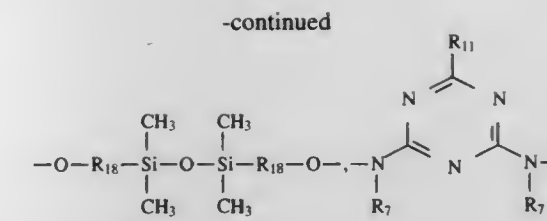
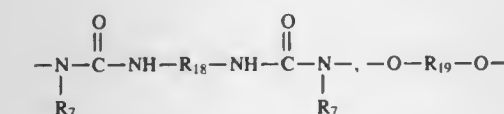
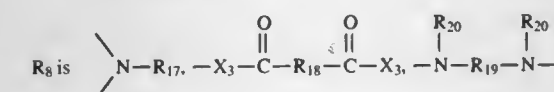
C₄-C₈ alkenylene or phenylethylenylene.R₅ is C₁-C₈alkyl or a radical of formula XVII

(XVII)

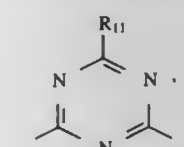
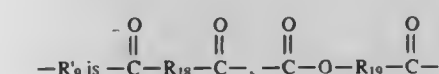
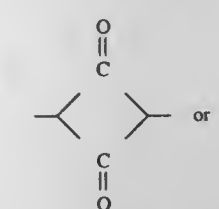
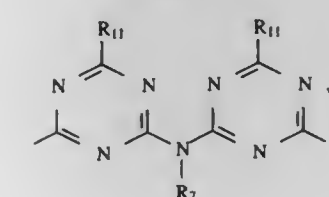
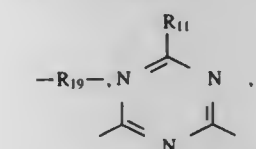
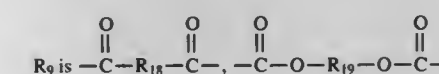
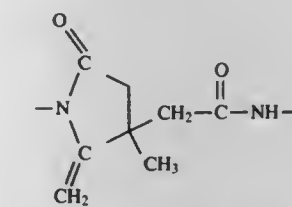
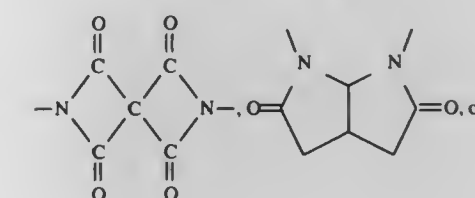
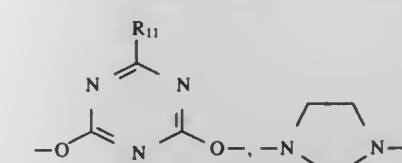
R₆ is hydrogen, C₁-C₈alkyl, O¹⁰⁸, OH, NO, -CH₂CN, C₁-C₁₈alkoxy, C₅-C₁₂cycloalkoxy, C₃-C₆alkenyl, C₃-C₆alkynyl, C₁-C₈acyl, C₇-C₉phenylalkyl which is unsubstituted or substituted at the phenyl ring by C₁-C₄alkyl;

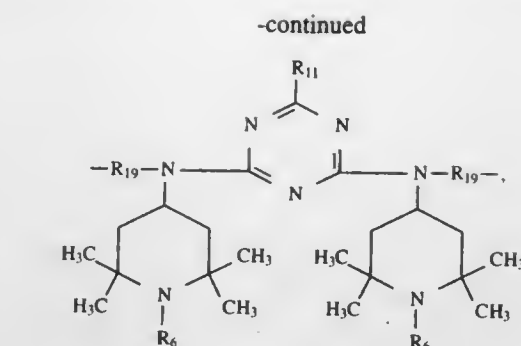
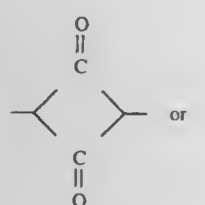
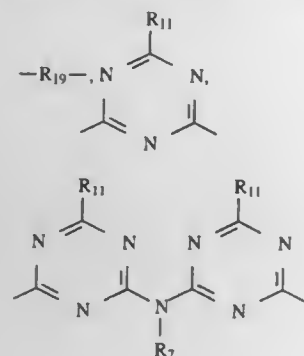
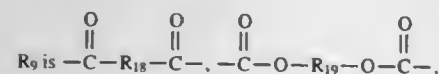
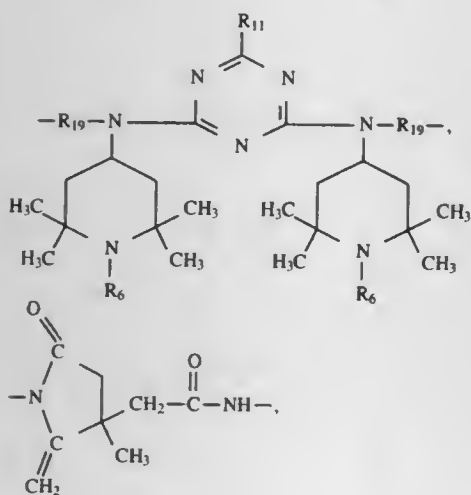
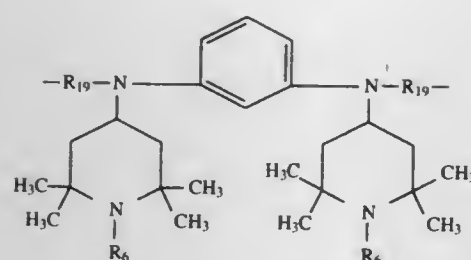
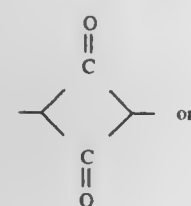
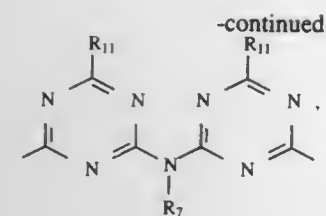
R₇ is C₁-C₈alkyl or a radical of formula XVII

(XVIII)

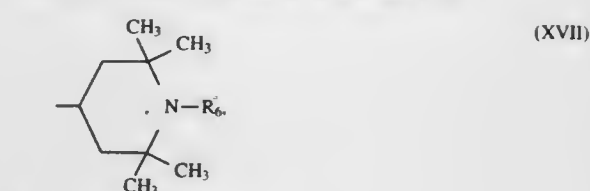


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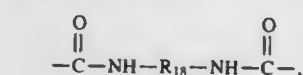


R₁₀ is C₁–C₈alkyl or a radical of formula XVII

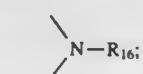


R₁₁ is —OR_{21} , —NHR_{22} , $\text{—N(R}_{23}\text{)(R}_{24}\text{)}$, $\text{—N(R}_{23}\text{)(R}_{24}\text{)O—}$, $\text{—N(R}_{23}\text{)(R}_{24}\text{)N—R}_{25}$, or —SR_{21} .

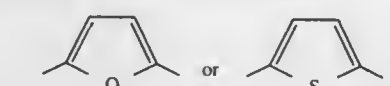
R₁₂ and R₁₃ are each independently of the other



C₁–C₁₈alkylene, C₂–C₁₈alkylene which is interrupted by oxygen, sulfur or



C₂–C₁₈alkenylene, C₂–C₁₈alkynylene, C₂–C₂₀alkylidene, C₇–C₂₀phenylalkylidene, C₅–C₈cycloalkylene, C₇–C₈bicycloalkylene; phenylene or naphthylene which are unsubstituted or substituted by C₁–C₄alkyl;

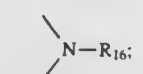


R₁₄ and R₁₅ are each independently of the other hydrogen or C₁–C₈alkyl,

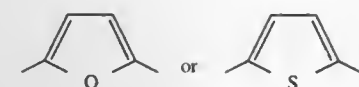
R₁₆ is hydrogen or C₁–C₈alkyl,

R₁₇ is C₁–C₈alkyl,

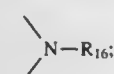
R₁₈ is a direct bond, C₁–C₁₈alkylene, C₂–C₁₈alkylene which is interrupted by oxygen, sulfur or



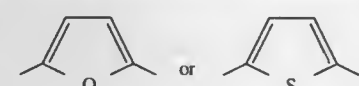
C₂–C₁₈alkenylene, C₂–C₂₀alkylidene, C₇–C₂₀phenylalkylidene, C₅–C₈cycloalkylene, C₇–C₈bicycloalkylene, phenylene or naphthylene which are unsubstituted or substituted by C₁–C₄alkyl;



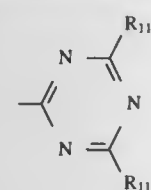
R₁₉ is C₁–C₁₈alkylene, C₂–C₁₈alkylene which is interrupted by oxygen, sulfur or



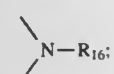
C₂–C₁₈alkenylene, C₂–C₂₀alkylidene, C₇–C₂₀phenylalkylidene, C₅–C₈cycloalkylene, C₇–C₈bicycloalkylene, phenylene or naphthylene which are unsubstituted or substituted by C₁–C₄alkyl;



R₂₀ is C₁–C₂₅alkanoyl, benzoyl which is unsubstituted or substituted by C₁–C₁₂alkyl; or

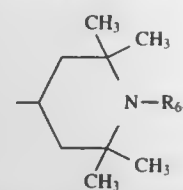


R₂₁ is C₁–C₂₅alkyl, C₂–C₂₅alkyl which is interrupted by oxygen, sulfur or



C₂–C₂₄alkenyl, C₅–C₁₅cycloalkyl which is unsubstituted or substituted by C₁–C₄alkyl; C₅–C₁₅cycloalkenyl which is unsubstituted or substituted by C₁–C₄alkyl; C₇–C₉phenylalkyl which is unsubstituted or substituted at the phenyl ring by C₁–C₄alkyl; phenyl which is unsubstituted or substituted by C₁–C₄alkyl;

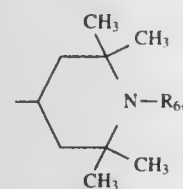
R₂₂, R₂₃, R₂₄ and R₂₅ are each independently of one another hydrogen, C₁–C₁₈alkyl or a radical of formula XVII



R₂₆ is C₁–C₄alkyl or hydroxymethyl,

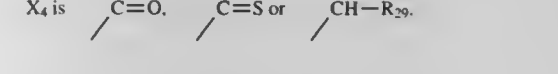
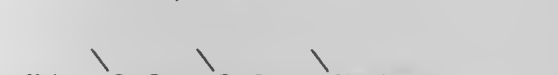
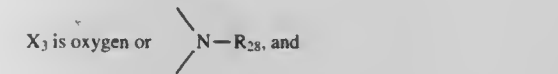
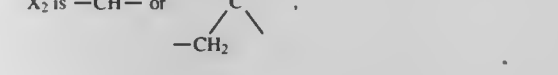
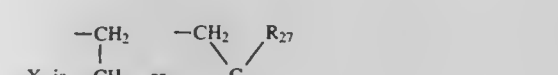
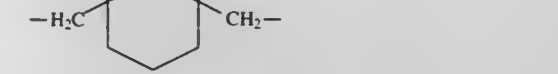
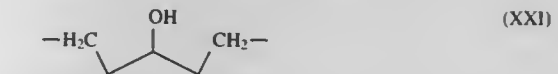
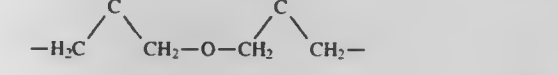
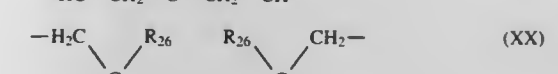
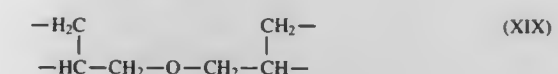
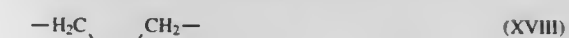
R₂₇ is hydrogen or C₁–C₈alkyl,

R₂₈ is hydrogen, C₁–C₈alkyl or a radical of formula XVII



R₂₉ is hydrogen, C₁–C₂₀alkyl, C₅–C₁₂cycloalkyl, unsubstituted or C₁–C₄alkyl-substituted phenyl,

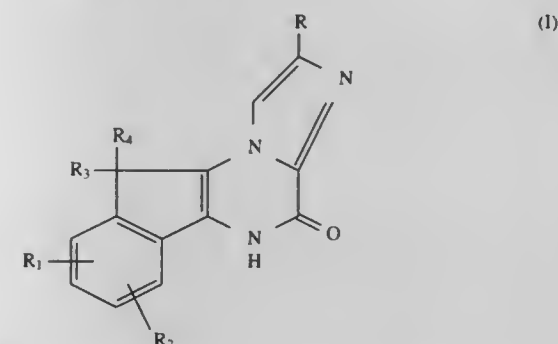
X₁ is a group of formula XVIII, XIX, XX or XXI



5,777,114
SPIRO[HETEROCYCLE-IMIDAZO[1,2-A]INDENO[1,2-E]PYRAZINE]-4'-ONES, PREPARATION THEREOF AND DRUGS CONTAINING SAME

Jean-Claude Aloup, Villeneuve-le-Roi; François Audiau, Charenton-le-Pont; Michel Barreau, Montgeron; Dominique Damour, Orly; Arielle Genevois-Borella, Thiais; Patrick Jimonet, Villepreux; Serge Mignani, Châtenay-Malabry, and Yves Ribeill, Villemoisson-sur-Orge, all of France, assignors to Rhône-Poulenc Rorer S.A., Antony Cedex, France
PCT No. PCT/FR95/01430, § 371 Date Jun. 30, 1997, § 102(e) Date Jun. 30, 1997, PCT Pub. No. WO96/14318, PCT Pub. Date May 17, 1996

PCT Filed Oct. 30, 1995, Ser. No. 836,410
Claims priority, application France, Nov. 2, 1994, 94 13060
Int. Cl.⁶ C07D 487/20; 471/20; 487/241; 471/235
U.S. Cl. 544—230 23 Claims
1. A compound of formula (I):



in which
R represents a hydrogen atom or a carboxyl, alkoxycarbonyl or carboxamido radical;

R₁ and R₂, which may be identical or different, represent hydrogen or halogen atoms or alkyl, alkoxy, amino, —N=CH—N(alk)alk', nitro, cyano, phenyl, imidazolyl, SO₃H, hydroxyl, polyfluoroalkoxy, carboxyl, alkoxy, carbonyl, —NH—CO—NR₆R₆, —N(alk)—CO—NR₆R₆, —N(alk)—Ar—CO—NR₆R₆, —NH—CS—NR₆R₆, —N(alk)—CS—NR₆R₆, —NH—CO—R₅, —NH—CS—R₇, —NH—C(=NR₆)—NR₆R₆, —N(alk)—C(=NR₆)—NR₆R₆, —CO—NR₆R₆, —NH—SO₂—NR₆R₆, —N(alk)—SO₂—NR₆R₆, —NH—SO₂—CF₃, —NH—SO₂—alk, —NH—SO₂—Ar, —NR₆R₁₀, —S(O)_m—alk—Ar or —SO₂—NR₆R₆ radicals, or a 2-oxo-1-imidazolidinyl radical in which the 3-position is optionally substituted with an alkyl radical, or a 2-oxoperhydro-1-pyrimidinyl radical in which the 3-position is optionally substituted with an alkyl radical;

R₃ and R₄, together with the carbon atom to which they are attached, form

(a) a 2- or 3-pyrrolidine ring, a 2- or 4-piperidine ring or a 2-azacycloheptane ring, said rings optionally being substituted on the nitrogen thereof with an alkyl, —CHO, —COOR₁₁, —CO—alk—COOR₆, —CO—alk—NR₆R₁₂, —CO—alk—CONR₆R₆, —CO—COOR₆, —CO—CH₂—O—CH₂—COOR₆, —CO—CH₂—S—CH₂—COOR₆, —CO—CH=CH—COOR₆, CO—alk, —CO—Ar, —CO—alk—Ar, —CO—NH—Ar, —CO—NH—alk—Ar, —CO—Het, —CO—alk—Het, —CO—NH—Het, —CO—NH—alk—Het, —CO—NH—alk, —CO—N(alk)alk', —CS—NH₂, —CS—NH—alk, —CS—NH—Ar, —CS—NH—Het, —alk—Het, —alk—NR₆R₆, —alk—COOR₆, —alk—CO—NR₆R₆, —alk—Ar, —SO₂—alk or —SO₂—Ar radical, or a —CO—cycloalkyl radical in which the cycloalkyl is optionally substituted in the 2-position with a carboxyl radical, or

(b) a 2-pyrrolidin-5-one ring;

R₅ represents a hydrogen atom, a straight or branched alkyl chain having from 1 to 9 carbon atoms, an —alk—COOR₆, —alk—Het or —alk—NR₆R₆ radical, a phenylalkyl radical in which the phenyl ring is optionally substituted with one or more substituents selected from halogen and alkyl, alkoxy, nitro, amino, hydroxyl, —alk—NH₂, carboxyl, alkoxy, carbonyl, cyano and —alk—COOR₆ radicals, a phenyl radical which is optionally substituted with one or more substituents selected from halogen atoms and alkyl, alkoxy, nitro, amino, hydroxyl, —alk—NH₂, carboxyl, alkoxy, carbonyl, cyano and —alk—COOR₆ radicals, or a —Het radical;

R₆ represents a hydrogen atom or an alkyl radical;

R₇ represents an alkyl or phenyl radical;

R₈ represents a hydrogen atom or an alkyl radical;

R₉ represents a hydrogen atom or an alkyl radical;

R₁₀ represents an alkyl, Het or alkoxy, carbonyl radical;

R₁₁ represents an alkyl or phenylalkyl radical;

R₁₂ represents a hydrogen atom or an alkyl or —CO—NH—alk radical;

alk represents an alkyl or alkylene radical;

alk' represents an alkyl radical;

m is equal to 0, 1 or 2;

Ar represents a phenyl radical;

Ar' is an unsubstituted phenyl radical or a phenyl radical substituted with one or more substituents selected from halogen and alkyl, alkoxy, nitro, amino, hydroxyl, cyano, —alk—NH₂, COOR₆ and —alk—COOR₆ radicals;

Het represents (a) a saturated or unsaturated mono- or polycyclic heterocycle containing 1 to 9 carbon atoms and one or more heteroatoms, said heteroatoms being selected from O, S and N, said heterocycle being optionally substituted with one or more alkyl, phenyl, carboxyl or phenylalkyl radicals, or (b) a phthalimido radical;

it being understood that, except where otherwise mentioned, the alkyl, alkylene and alkoxy radicals and portions of radicals contain 1 to 6 carbon atoms and are in a straight or branched chain, and the cycloalkyl radicals contain 3 to 6 carbon atoms; an enantiomer or diastereoisomer of said compound of formula

(I) for which R₃ and R₄, together with the carbon atom to which they are attached, form a 2- or 3-pyrrolidine ring, a 2-piperidine ring, a 2-pyrrolidin-5-one ring or a

2-azacycloheptane ring, a cis or trans isomer of said compound of formula (I) containing a radical —CO—CH=CH—COOR₆, or a salt of said compound of formula (I).

5,777,115

ACETAL-AND KETAL-SUBSTITUTED PYRIMIDINE COMPOUNDS

Alistair Leigh, and Gail Underiner, both of Brier, Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 4,353, Jan. 14, 1993, abandoned. This application Feb. 7, 1994, Ser. No. 193,331

Int. Cl.⁶ C07D 239/26; A61K 31/505

U.S. Cl. 544—242

13 Claims

1. A therapeutic compound having the formula:

CORE MOIETY—(R),

including resolved enantiomers, diastereomers, hydrates, salts, and solvates, wherein:

j is an integer from one to three;

the core moiety is pyrimidinyl;

R is selected from the group consisting of hydrogen, halogen, hydroxyl, amino, C₍₁₋₆₎ alkyl, C₍₂₋₆₎ alkenyl, and formula I, with the proviso that the halogen cannot be bound to the nitrogen atom of the core moiety; and

at least one R has a structure according to the following formula I

—(CH₂)_n—C—(R)₃

wherein:

n is an integer from five to twenty;

R₁ is selected from the group consisting of hydrogen, halogen, hydroxide, C₍₁₋₆₎ alkyl, C₍₁₋₆₎ alkoxy, C₍₂₋₆₎ alkenyl, or —OR₂, R₂ being hydrogen, C₍₁₋₆₎ alkyl, C₍₂₋₆₎ alkenyl or —(CH₂)_p—C(R₃)₃, p being zero or an integer from one to ten, R₃ being hydrogen, halogen, hydroxide, C₍₁₋₆₎ alkyl, C₍₁₋₆₎ alkoxy, C₍₂₋₆₎ alkenyl, or —OR₂, R₂ being defined above;

at least two R₁ or two R₃ are —OR₂ or jointly form —(CH₂)₅—O—C(R₄)₂—O—(CH₂)_t, s and t independently being zero, one or two, a sum of s and t being less than three, and R₄ being selected from the group consisting of hydrogen, halogen, C₍₁₋₆₎ alkyl, or C₍₂₋₆₎ alkenyl;

no more than one R₂, corresponding to the at least two R₁ or two

R₃ which are —OR₂ is hydrogen; and

a third R₁ or third R₃, bonded to the same —C as the at least two R₁ or two R₃, is other than —OR₂.

5,777,116

CYCLOPROPANE DERIVATIVES AND METHOD OF PREPARING THE SAME

Tomoyuki Onishi; Takashi Tsuji, and Toshihiro Matsuzawa, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Division of Ser. No. 413,226, Mar. 30, 1995, Pat. No.

5,556,994. This application May 15, 1996, Ser. No. 648,407

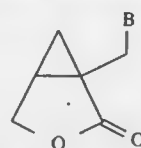
Claims priority, application Japan, Mar. 30, 1994, 6-061250; Jul. 27, 1994, 6-175495

Int. Cl.⁶ C07D 473/02; 473/04; 473/06; 473/26

U.S. Cl. 544—264

1 Claim

1. A cyclopropane derivative represented by formula (I):



wherein B is guanin-9-yl, 2-amino-6-chloropurin-9-yl, xanthin-9-yl, hypoxanthin-9-yl, 2,6-diaminopurin-9-yl, 2-acetoamino-6-2-

aminopurin-9-yl chloropurin-9-yl, 2-acetoamino-6-N,N-diphenylcarbonyl)oxypurin-9-yl, 2-amino-6-benzoyloxypurin-9-yl, 2-amino-6-(methoxyethoxy)purin-9-yl or adenin-9-yl.

5,777,117

METHOD FOR PREPARING SUBSTITUTED AMINO ALCOHOL COMPOUNDS

J. Peter Klein, Vashon; Gail E. Underiner, Brier, and Anil M. Kumar, Seattle, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

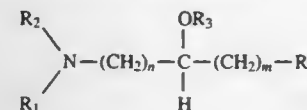
Division of Ser. No. 303,842, Sep. 8, 1994, which is a continuation-in-part of Ser. No. 152,650, Nov. 12, 1993, and Ser. No. 164,081, Dec. 8, 1993, which is a continuation-in-part of Ser. No. 40,820, Mar. 31, 1993, abandoned, said Ser. No. 152,650 is a continuation-in-part of Ser. No. 40,820. This application Jun. 7, 1995, Ser. No. 472,569

Int. Cl.⁶ C07D 473/10; 239/80; 211/94; 209/48

U.S. Cl. 544—267

22 Claims

1. A method for preparing a compound, including resolved enantiomers and/or diastereomers, hydrates, salts, solvates and mixtures thereof, the compound having a straight or branched aliphatic hydrocarbon structure of formula I:



wherein:

n is an integer from one to four;

m is an integer from four to twenty;

independently, R₁ and R₂ are hydrogen, a straight or branched chain alkyl, alkenyl or alkynyl of up to twenty carbon atoms in length or —(CH₂)_n—R₅, w being an integer from one to twenty and R₅ being an hydroxyl, halo, C₁₋₈ alkoxy group or a substituted or unsubstituted carbocycle or heterocycle; or jointly R₁ and R₂ form a substituted or unsubstituted, saturated or unsaturated heterocycle having from four to eight carbon atoms, N being a hetero atom;

R₃ is hydrogen or C₁₋₃; or

jointly one of R₁ or R₂ and R₃ form a substituted or unsubstituted linking carbon chain, having from one to four carbon atoms, joining the O and N in a cyclic structure, an integer sum equal to n+a number of carbon atoms in the linking carbon chain being less than six;

a total sum of carbon atoms comprising R₁ or R₂, (CH₂)_n and (CH₂)_m does not exceed forty; and

R₄ is a terminal moiety comprising a carbocycle or heterocycle having one ring or two-fused rings, each ring having five or six ring atoms, wherein a ring atom of the terminal moiety is attached to a terminal carbon atom of (CH₂)_m, the method comprising:

reacting a terminal moiety-containing compound with a suitable base, solvent and substituted olefin to obtain an intermediate product, the intermediate product having a composite structure of the terminal moiety-containing compound and substituted olefin; either:

A) converting the intermediate product to a terminal moiety-containing epoxide in a reaction with organic peracid; or

B) first, converting the intermediate product to a corresponding diol in a reaction with a suitable oxidizing agent; second, reacting the corresponding diol using a halogenating agent in the presence of an organic acid to obtain a haloester; and third, converting the haloester to a terminal moiety-containing epoxide by reaction of the haloester and a basic ester-hydrolyzing reagent; and

reacting the terminal moiety-containing epoxide with a substituted or unsubstituted amine to obtain the compound.

5,777,118

PROCESS OF MAKING 2-SALICYL(THIO)R OXO PYRIMIDINE

Joachim Rheinheimer; Uwe Josef Vogelbacher, both of Ludwigshafen; Ernst Baumann, Dudenhofen; Hartmann König; Matthias Gerber, both of Limburgerhof; Karl-Otto Westphalen, Speyer, and Helmut Walter, Obrigheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 332,083, Nov. 1, 1994, Pat. No. 5,569,640.

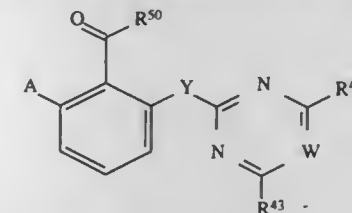
This application Jul. 12, 1996, Ser. No. 679,660

Int. Cl.⁶ C07D 239/38; 239/34

U.S. Cl. 544—318

1 Claim

1. A process for preparing a compound of the formula IV



where,

Y represents oxygen or sulfur;

A represents a radical A' to A⁶;

A' represents hydroxyl;

A² represents a halogen atom, C₁₋₄-haloalkylsulfonyloxy, C₁₋₄-alkylsulfonyloxy or fluoroalkylsulfonyloxy;

A³ represents cyano, nitro or formyl;

A⁴ represents a phenyl ring; a 5- or 6-membered saturated or unsaturated heterocycle having up to four heteroatoms in the ring, the heteroatoms being selected from the group consisting of nitrogen, sulfur and oxygen, each of which can be substituted by up to five radicals R³¹ to R³⁵; naphthyl; or a benzo-fused 5- or 6-membered heteroaromatic having 1 to 3 heteroatoms selected from the group consisting of nitrogen, sulfur and oxygen in the ring, each of which can be substituted by up to five radicals R³¹ to R³⁵; A⁵ represents a C₂₋₆-alkenyl, C₃₋₈-cycloalkenyl, C₃₋₈-cycloalkadienyl or C₂₋₆-alkynyl group, each of which can carry up to seven substituents R³¹ to R³⁷;

A⁶ represents a C₁₋₈-alkyl or C₃₋₈-cycloalkyl group, each of which can carry up to seven substituents R³¹ to R³⁷;

where radicals R³¹, R³², R³³, R³⁴, R³⁵, R³⁶ and R³⁷ represent:

hydrogen;

nitro, halogen, cyano or tri-C₁₋₄-alkylsilyl

a C₃₋₈-cycloalkyl group which can carry one to three C₁₋₄-alkyl radicals;

a C₁₋₈-alkyl group which can carry one to five halogen atoms and/or one of the following radicals: C₁₋₄-alkoxy, C₁₋₄-haloalkoxy, C₁₋₄-alkylthio, cyano, C₃₋₈-cycloalkyl or di-C₁₋₄-alkylamino;

a C₁₋₈-alkoxy group or a C₃₋₈-cycloalkoxy group, each of which can carry one to five halogen atoms and/or one of the following radicals: C₁₋₄-alkoxy, C₁₋₄-haloalkoxy, C₁₋₄-alkylthio, C₃₋₈-cycloalkyl or di-C₁₋₄-alkylamino;

a C₁₋₄-alkylthio group which can carry one to five halogen atoms and/or one of the following radicals: C₁₋₄-alkoxy, C₁₋₄-haloalkoxy, C₁₋₄-alkylthio, C₃₋₈-cycloalkyl or di-C₁₋₄-alkylamino;

a di-C₁₋₄-alkylamino or di-C₁₋₄-alkylaminooxy group, a C₃₋₈-cycloalkaniminooxy group or a C₁₋₁₀-alkaniminooxy group;

a C₂₋₆-alkenyl or a C₂₋₆-alkynyl group, which can carry one to five halogen atoms and/or one of the following radicals:

C₁₋₄-alkoxy, C₁₋₄-haloalkoxy or C₁₋₄-alkylthio;

and the other radicals have the following meanings:

R⁵⁰ represents:

a 5-membered heteroaromatic linked via a nitrogen atom, containing two to three nitrogen atoms, which can carry one to two halogen atoms and/or one to two of the following radicals: C₁₋₄-alkyl, C₁₋₄-haloalkyl, C₁₋₄-alkoxy, C₁₋₄-haloalkoxy and/or C₁₋₄-alkylthio;

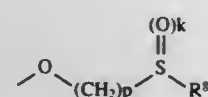
a radical $-(O)-_m-NR^6R^7$, in which m represents 0 or 1, and R^6 and R^7 , which can be identical or different, have the following meanings:

hydrogen;

C_1-C_8 -alkyl, C_3-C_6 -alkenyl, C_3-C_6 -alkynyl or C_3-C_8 -cycloalkyl, which may carry one to five halogen atoms and/or one or two of the following groups: C_1-C_4 -alkoxy; C_3-C_6 -alkenyloxy; C_3-C_6 -alkynyloxy; C_1-C_4 -alkylthio; C_3-C_6 -alkenylthio; C_3-C_6 -alkynylthio; C_1-C_4 -haloalkoxy; C_1-C_4 -alkylcarbonyl; C_3-C_6 -alkenylcarbonyl; C_3-C_6 -alkynylcarbonyl; C_1-C_4 -alkoxycarbonyl; C_3-C_6 -alkenyloxy carbonyl; C_3-C_6 -alkynyloxy carbonyl; di- C_1-C_4 -alkylamino; C_3-C_8 -cycloalkyl; phenyl; phenyl which is mono- or polysubstituted by halogen, nitro, cyano, C_1-C_4 -alkyl, C_1-C_4 -haloalkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkoxy or C_1-C_4 -alkylthio; phenyl which can be substituted by one or more of the following radicals: halogen, nitro, cyano, C_1-C_4 -alkyl, C_1-C_4 -haloalkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkoxy or C_1-C_4 -alkylthio;

R^6 and R^7 together form an unsubstituted or substituted C_4-C_7 -alkylene chain which is closed to give a ring; or R^6 and R^7 together form an unsubstituted or substituted C_3-C_6 -alkylene chain which is closed to give a ring; the ring containing a heteroatom selected from the group consisting of oxygen, sulfur and nitrogen;

a group



where R^8 represents C_1-C_4 -alkyl, phenyl, phenyl which is mono- or polysubstituted by halogen, nitro, cyano, C_1-C_4 -alkyl, C_1-C_4 -haloalkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkoxy or C_1-C_4 -alkylthio, or represents C_1-C_4 -haloalkyl, C_3-C_6 -alkenyl or C_3-C_6 -alkynyl, p assumes the values 1, 2, 3 or 4 and k assumes the values 0, 1 or 2;

a radical OR^9 , where R^9 represents:

a C_3-C_8 -cycloalkyl group which can carry one to three C_1-C_4 -alkyl radicals;

a C_1-C_8 -alkyl group which can carry one to five halogen atoms and/or one of the following radicals: C_1-C_4 -alkoxy, C_1-C_4 -alkylthio, cyano, C_1-C_4 -alkylcarbonyl, C_3-C_8 -cycloalkyl, C_1-C_4 -alkoxycarbonyl, phenyl, or phenyl or phenoxy which is mono- or polysubstituted by halogen, nitro, cyano, C_1-C_4 -alkyl, C_1-C_4 -haloalkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkoxy and/or C_1-C_4 -alkylthio;

a C_1-C_8 -alkyl group which can carry one to five halogen atoms and carries one of the following radicals: a 5-membered heteroaromatic, containing one to three nitrogen atoms, or a 5-membered heteroaromatic containing a nitrogen atom and an oxygen or sulfur atom which can carry one to four halogen atoms and/or one to two of the following radicals: nitro, cyano, C_1-C_4 -alkyl, C_1-C_4 -haloalkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkoxy and/or C_1-C_4 -alkylthio;

a C_2-C_6 -alkyl group which in the 2-position carries one of the following radicals: C_1-C_4 -alkoxyimino, C_3-C_6 -alkenyloxyimino, C_3-C_6 -haloalkenyloxyimino or benzyloxyimino;

a C_3-C_6 -alkenyl group or a C_3-C_6 -alkynyl group, where these groups in turn can carry one to five halogen atoms;

a phenyl radical which can carry one to five halogen atoms and/or one to three of the following radicals: nitro, cyano, C_1-C_4 -alkyl, C_1-C_4 -haloalkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkoxy and/or C_1-C_4 -alkylthio;

a 5-membered heteroaromatic linked via a nitrogen atom, containing one to three nitrogen atoms, which can carry one to two halogen atoms and/or one to two of the following radicals: nitro, cyano, C_1-C_4 -alkyl, C_1-C_4 -haloalkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkoxy and/or C_1-C_4 -alkylthio;

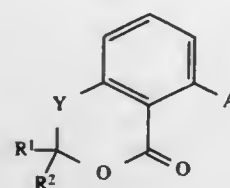
a group $-N=CR^{10}R^{11}$, where R^{10} and R^{11} , which are identical or different, are:

C_1-C_{12} -alkyl, C_3-C_6 -alkenyl, C_3-C_6 -alkynyl, C_3-C_8 -cycloalkyl, where these radicals can carry a C_1-C_4 -alkoxy or C_1-C_4 -alkylthio radical and/or a phenyl radical; phenyl, which can be substituted by one or more of the following radicals: halogen, nitro, cyano, C_1-C_4 -alkyl, C_1-C_4 -haloalkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkoxy or C_1-C_4 -alkylthio; or R^{10} and R^{11} together form a C_3-C_{12} -alkylene chain, which can carry one to three C_1-C_4 -alkyl groups; or

a radical $-NH-SO_2-R^{12}$, where R^{12} represents:

C_1-C_4 -alkyl, C_3-C_6 -alkenyl, C_3-C_6 -alkynyl or C_3-C_8 -cycloalkyl, where these radicals can carry a C_1-C_4 -alkoxy or C_1-C_4 -alkylthio radical and/or a phenyl radical; phenyl, which can be substituted by one or more of the following radicals: halogen, nitro, cyano, C_1-C_4 -alkyl, C_1-C_4 -haloalkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkoxy or C_1-C_4 -alkylthio;

which process comprises reacting a cyclic acetal of formula I

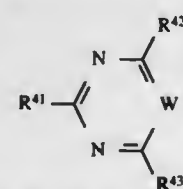


where R^1 and R^2 each represent hydrogen; a C_1-C_4 -alkyl radical which is able to carry one to five halogen atoms and/or one to two C_1-C_4 -alkoxy groups; phenyl, which is able to carry one to five halogen atoms and one or two of the following groups: C_1-C_4 -alkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkyl or nitro; or R^1 and R^2 can together can be a C_2-C_6 -alkylene chain which can be substituted by one to five halogen atoms and/or C_1-C_4 -alkyl radicals; and Y and A have the meanings indicated above;

with a salt of the formula II



where R^{50} has the meaning indicated above, and M represents an alkali metal cation or an equivalent of an alkaline earth metal cation; and then with a pyrimidine compound of the formula III



where the radicals have the following meanings:

R^{41} represents halogen, alkylsulfonyl or haloalkylsulfonyl;

R^{42} represents halogen, C_1-C_4 -alkyl, C_1-C_4 -haloalkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkoxy or C_1-C_4 -alkylthio;

W represents nitrogen or CR^{13} , where R^{13} represents hydrogen or R^{13} and R^{43} together form a 3- to 4-membered alkylene or alkenylene chain in which in which one methylene group in each case is replaced by an oxygen atom;

R^{43} represents halogen, C_1-C_4 -alkyl, C_1-C_4 -haloalkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkoxy, C_1-C_4 -alkylthio or R^{43} is linked with R^{13} as indicated above to give a 5- or 6-membered ring; in an inert solvent.

5,777,119 PROCESS FOR THE PREPARATION OF 2,3-DIHALOGENOQUINOXALINES

Jens Uwe Zarnack, Brunsbüttel; Bernd Düsselkämper, Marne, both of Germany; Wolfgang Lorenz, New Martinsville, W. Va., and Jörg-Michael Borchers, Neufeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of Ser. No. 230,049, Apr. 19, 1994, abandoned.
This application Nov. 21, 1995, Ser. No. 561,217

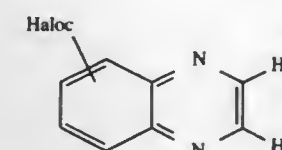
Claims priority, application Germany, Apr. 26, 1993, 43 13 586.2

Int. Cl. C07D 241/44

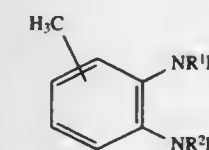
U.S. Cl. 544-356

6 Claims

1. Process for the preparation of dihalogenoquinoxalines of the formula (I)



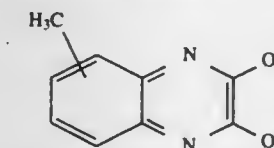
by condensation of the diamine II



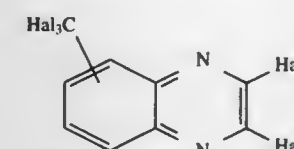
with oxalic acid (III)



to form compounds of the formula (IV),



followed by halogenation of (IV) with chlorine and thionyl chloride, in a one-step reaction wherein thionyl chloride is used as both a solvent and a halogenating agent, to form compounds of the formula (V)



and oxidation of the compounds of formula (V) to form the compounds of formula (I), wherein

R^1 and R^2 independently of one another denote hydrogen or C_1-C_4 alkyl, followed by, Hal denotes Cl.

5,777,120 CATIONIC ALUMINUM ALKYL COMPLEXES INCORPORATING AMIDINATE LIGANDS AS POLYMERIZATION CATALYSTS

Richard F. Jordan, and Martyn P. Coles, both of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

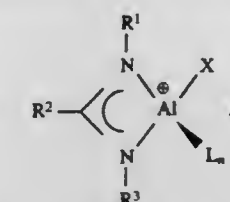
Filed Mar. 14, 1997, Ser. No. 818,297

Int. Cl. C07F 7/02; 5/06; 9/02; C07D 305/00

U.S. Cl. 546-2

8 Claims

1. Aluminum amidinate compounds of the formula:



wherein R^1 , R^2 , and R^3 are selected from the group consisting of C_1 to C_{50} alkyl, aryl and silyl groups, X is an anionic ligand, $n=0$ or 1, L , if present, is a labile Lewis-base or donor ligand, and A^- is a counterbalancing non-coordinating or weakly coordinating anion.

5,777,121

FLUOROUS REACTION SYSTEMS

Dennis P. Curran; Sabine Hadida; Masahide Hoshino, and Armido Studer, all of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Jun. 28, 1996, Ser. No. 671,945

Int. Cl. C07F 7/00; C07C 17/00

U.S. Cl. 546-2

18 Claims

1. A method for carrying out a chemical reaction, comprising the steps of:

forming an organic/fluorous solubilizing liquid phase comprising a solvent system, the solvent system adapted to substantially solubilize a fluorine reaction component, the fluorine reaction component functionalized to comprise at least one fluorine moiety having the formula $(R)_d(Rf)_e$, wherein R_d is an organic spacer group and may be present or absent and d is an integer equal to at least zero and $(Rf)_e$ is at least one fluorine group and e is a whole number, the solvent system also being selected to substantially solubilize at least one organic reaction component convertible in the presence of the fluorine reaction component to a product;

contacting the fluorine reaction component and the organic reaction component in the organic/fluorous solubilizing liquid phase under conditions suitable to produce the product; and after production of the product, causing a phase separation into a fluorine liquid phase and an organic phase, the fluorine reaction component comprising a sufficient number of fluorine moieties to render any excess of the fluorine reaction component and any fluorine byproduct of the fluorine reaction component preferentially partitionable into the fluorine phase.

12. A chemical compound of the formula



wherein X is H, F, Cl, Br, N_3 , OR^1 , OH , OOH , OR^1SR^1 , SeR^1 , CN , NC , NR^1R^2 , a cyclic group, a heterocyclic group, an alkenyl group, an alkynyl group, an acyl group, $M'[(R')(R'')]_3$, $OM'[(R')(R'')]_3$ or $OOM'[(R')(R'')]_3$, wherein M' is Si, Ge, and Sn, and wherein R^1 and R^2 are each independently the same or different H, a linear or branched alkyl group, a cyclic alkyl group, an alkylsulfonyloxy group, a perfluoroalkylsulfonyloxy group, an acyl group, or a perfluoroalkoxy group, and wherein M is Ge or Sn, and wherein R and R' are each independently the same or different an alkylene group of 1 to 6 carbons and wherein Rf and Rf are each independently

a linear perfluoroalkyl group of 3 to 20 carbons, a branched perfluoroalkyl group of 3 to 20 carbons, and a hydrofluoroalkyl group of 3 to 20 carbons, the hydrofluoroalkyl group comprising up to one hydrogen atom for each two fluorine atoms.

5,777,122

ENANTIOMERICALLY PURE QUINUCLIDINE DERIVATIVES AND METHODS FOR THEIR PRODUCTION AND USE

H. Martin R. Hoffmann, Hannover, Germany, assignor to Buchler GmbH, Braunschweig, Germany

Filed Feb. 5, 1997, Ser. No. 795,199

Claims priority, application Germany, Feb. 7, 1996, 196 04 395.6

Int. Cl.⁶ C07D 453/02; 453/04; C07F 7/08

U.S. Cl. 546—133

10 Claims

1. A process for cleaving cinchona alkaloids to a quinoline derivative and an enantiomerically pure, functionalized 1-azabicyclo(2.2.2)octane, which comprises treating a cinchona alkaloid with a complex metal hydride while simultaneously oxidizing by exposure to air in an anhydrous organic solvent.

5,777,123

PROCESS FOR REGIOSELECTIVE SUBSTITUTION OF TRIFLUOROBENZOATE OR TRIFLUOROBENZONITRILE

Joseph E. Lynch, Plainfield; Yao-Jun Shi, Edison, and Kenneth M. Wells, Somerville, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

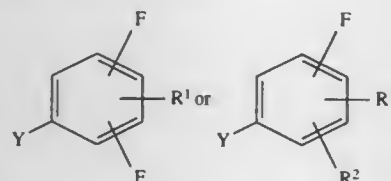
Filed Feb. 27, 1997, Ser. No. 806,502

Int. Cl.⁶ C07D 211/44; A61K 31/445

U.S. Cl. 546—216

5 Claims

1. A compound of the formula



wherein Y is selected from CN, CO₂H or CO₂—C₁₋₆ alkyl; R¹ and R² are each independently selected from OR³, SR³, or a 6-membered monocyclic nitrogen containing heterocyclic ring containing one nitrogen atom; R³ is 6-membered monocyclic nitrogen containing heterocyclic ring containing one nitrogen atom wherein the nitrogen containing heterocyclic ring is either unsubstituted or substituted with R⁵ and R⁶; R⁴ is C₁₋₁₀ alkyl; R⁵ and R⁶ are each independently selected from CO₂R⁴, COR⁴ or C₁₋₁₀ alkyl.

5,777,124 PROCESS FOR PREPARING LEVOBUPIVACAINE AND ANALOGUES THEREOF

Hooshang Shahriari Zavareh, and Graham Anthony Charles Frampton, both of Cambridge, United Kingdom, assignors to Chiroscience Limited, Cambridge, United Kingdom

PCT No. PCT/GB95/02514, § 371 Date Apr. 25, 1997, § 102(e) Date Apr. 25, 1997, PCT Pub. No. WO96/12700, PCT Pub. Date May 2, 1996

PCT Filed Oct. 23, 1995, Ser. No. 836,449

Claims priority, application United Kingdom, Oct. 25, 1994, 9421478; Mar. 10, 1995, 9504925

Int. Cl.⁶ C07D 211/60

U.S. Cl. 546—225

12 Claims

1. A process for preparing a 1-alkyl-N-(2,6-dimethylphenyl)-2-piperidinecarboxamide, as the free base or a salt thereof, which comprises the steps of:

- reacting pipecolic acid hydrochloride with an excess of a P-free chlorinating agent in a solvent, and distilling off said chlorinating agent;
- reacting the resultant pipecolyl chloride hydrochloride in solvent, without isolation, with excess 2,6-dimethylaniline;
- raising the pH to separate the resultant pipecolic acid 2,6-xylylide from excess 2,6-dimethylaniline;
- alkylating said 2,6-xylylide; and
- isolating the product from the reaction mixture.

5,777,125

PROCESS FOR THE PREPARATION OF TERTIARY CARBINOLS CONTAINING AN AMINO SUBSTITUENT

Elvio Bellasio, Como, Italy, assignor to Gruppo Lepetit SpA, Gerenzano, Italy

Continuation of Ser. No. 351,898, Dec. 8, 1994, abandoned, which is a continuation of Ser. No. 270,102, Jul. 1, 1994, abandoned, which is a continuation of Ser. No. 146,773, Nov. 1, 1993, abandoned, which is a continuation of Ser. No. 60,883, May 12, 1993, abandoned, which is a continuation of Ser. No. 989,997, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 821,266, Jan. 10, 1992, abandoned, which is a continuation of Ser. No. 644,756, Jan. 24, 1991, abandoned, which is a continuation of Ser. No. 317,414, Mar. 1, 1989, abandoned. This application May 24, 1995, Ser. No. 449,027

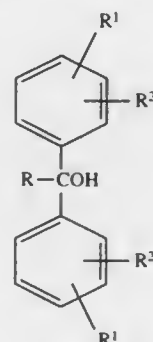
Claims priority, application United Kingdom, Mar. 3, 1988, 8805113

Int. Cl.⁶ C07B 49/00; C07D 211/22

U.S. Cl. 546—241

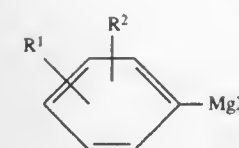
9 Claims

1. A process for the manufacture of tertiary diphenyl carbinols of the formula (I) Formula I



wherein,

- R is 4-piperidinyl, R¹ and R² are both hydrogen or
- R is 4-piperidinyl, R¹ is hydrogen and R² is a methyl in a para position to the phenyl ring, and the acid addition salts thereof characterized in that one mole of free acid of the formula R—COOH is added to an amount of four to six moles of a Grignard reagent of the formula



wherein,

R, R¹, and R², have the same meanings as above and X represents chloro or bromo in a mixture of tetrahydrofuran and toluene and during the addition of the acid the temperature of the reaction mixture is kept between 20° and 100° C. and, when the addition is complete the reaction mixture is heated under atmospheric pressure at a temperature between 70° C. and the boiling temperature of the mixture for a period of 12 to 25 hours, or alternately, the reaction mixture is heated under a pressure of from 0.2 to 2.0 atmospheres above atmospheric pressure at a temperature between 80° and 120° C. for a period of 6 to 12 hours and then the reaction mixture is poured into an excess of water while adding and excess of concentrated mineral acid thereby keeping the pH between 1 and 2.5, and additionally, transforming the so obtained mineral acid addition salt of the compound of Formula I into a non-salt form or into another acid addition salt.

5,777,126

CARBONATE-MEDIATED HYDROGEN PEROXIDE OXIDATION OF 4-ACYLAMINO-2,2,6,6-TETRAMETHYLPYPERIDINE

Stephen Daniel Pastor, Danbury, Conn., and Andrea R. Smith, Wingdale, N.Y., assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

Filed Apr. 21, 1997, Ser. No. 847,520

Int. Cl.⁶ C07D 211/58

U.S. Cl. 546—244

21 Claims

1. An environmentally friendly process for the preparation of 4-acyl-amino-2,2,6,6-tetramethylpiperidine-N-oxyl which comprises

oxidizing 4-acylamino-2,2,6,6-tetramethylpiperidine with an aqueous hydrogen peroxide solution in the presence of an effective catalytic amount of an ammonium or alkali metal carbonate or bicarbonate catalyst which is from 0.05 to 0.3 mole % based on the starting 4-acylamino-2,2,6,6-tetramethylpiperidine at a temperature range of 70°–99° C.

13. An environmentally friendly process for the preparation of 4-acylamino-2,2,6,6-tetramethylpiperidine-N-oxyl which comprises

oxidizing 4-acylamino-2,2,6,6-tetramethylpiperidine with an aqueous hydrogen peroxide solution in the absence of any catalyst at a temperature range of 80°–99° C.

5,777,127

THIOHETEROCYCLIC NEAR-INFRARED DYES

Dietrich Max Fabricius, Hendersonville, N.C., and Gregory Charles Weed, Towanda, Pa., assignors to Sterling Diagnostic Imaging, Inc., Brevard, N.C.

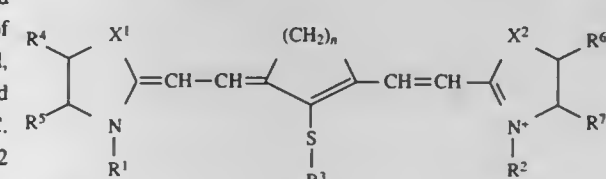
Division of Ser. No. 413,530, Mar. 30, 1995, Pat. No. 5,576,443, which is a continuation-in-part of Ser. No. 72,851, May 26, 1993, Pat. No. 5,440,042. This application Oct. 18, 1996, Ser. No. 733,419

Int. Cl.⁶ C07D 277/04; 401/00

U.S. Cl. 548—146

26 Claims

1. A dye of formula:



wherein

X¹ is —S—, and X² represents —CR⁸R⁹—, —S—, —CH=CH— or —O—;

n is an integer of 2 or 3;

R¹ and R² independently represent alkyl of 1 to 10 carbons or an alkyl of 1 to 10 carbons substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL¹, where L¹ is an alkyl of 1–10 carbons;

R³ represents a heterocyclic ring containing atoms chosen from a group consisting of C, N, O, S and Se;

R⁴ and R⁵ independently represent hydrogen, alkyl of 1–10 carbons or an alkyl of 1–10 carbons substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL³, where L³ is an alkyl of 1–10 carbons, or R⁴ and R⁵ taken together represent atoms necessary to form a 5 or 6-membered aliphatic ring, an aromatic six-membered ring, an aromatic 10-membered ring, aromatic six-member ring substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL⁴, where L⁴ is an alkyl of 1–10 carbons or an aromatic 10-member ring substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL⁵, where L⁵ is an alkyl of 1–10 carbons;

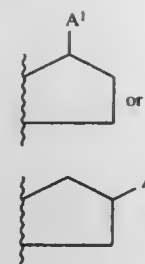
R⁶ and R⁷ independently represent hydrogen, alkyl of 1–10 carbons or an alkyl of 1–10 carbons substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL⁶, where L⁶ is an alkyl of 1–10 carbons, or R⁶ and R⁷ taken together represent atoms necessary to form a 5 or 6-membered aliphatic ring, an aromatic six-membered ring, an aromatic 10-membered ring, an aromatic six-member ring substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL⁷, where L⁷ is an alkyl of 1–10 carbons or an aromatic 10-member ring substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL⁸, where L⁸ is an alkyl of 1–10 carbons;

R⁸ and R⁹ independently represent alkyl of 1–10 carbons, alkyl of 1–10 carbons substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL⁹, where L⁹ is an alkyl of 1–10 carbons, aryl of 6–10 carbons or aryl of 6–10 carbons substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL¹⁰, where L¹⁰ is an alkyl of 1–10 carbons; and

Z is an anion or cation suitable to balance the charge.

X is oxygen;
R¹ is hydrogen and C₁₋₅ alkyl;
R² is selected from CH₃, CH₂OR³, and H;
R³ is selected from: C₁₋₅ alkyl;

Z is

A¹ is selected from:

- (1) —H,
- (2) keto,
- (6) carboxy,
- (7) protected amino,
- (8) amino,
- (9) C₁₋₁₀ alkyl,
- (10) substituted or unsubstituted C₂₋₁₀alkenyl,
- (11) aryl-substituted C₁₋₁₀ alkyl,
- (12) aryl,
- (13) substituted aryl,
- (14) aryl carbamoyl-substituted C₁₋₁₀alkyl,
- (15) isobutylcarbonyl,
- (16) aryl carbonyl,
- (17) ether-substituted C₁₋₁₀alkyl,
- (18) thioether-substituted C₁₋₁₀alkyl,
- (19) keto-substituted C₁₋₁₀alkyl,
- (20) isopropylcarbonyl,
- (21) carboxylic ester,
- (22) carboxamide, including substituted and unsubstituted anilide derivatives,
- (23) urea,
- (24) C₁₋₁₀ alkylureido C₀₋₅ alkyl,
- (25) substituted or unsubstituted arylureido C₀₋₅ alkyl,
- (26) C₁₋₁₀alkanoxyloxyC₁₋₂alkyl,
- (27) C₁₋₁₀ alkylcarbonylamino,
- (28) alkanoylamidoalkyl
- (29) ether,
- (30) thio ether, and
- (31) substituted and unsubstituted aryl ether;

A² is selected from:

- (1) —H,
- (2) keto,
- (3) protected hydroxy,
- (4) acetate,
- (5) hydroxy,
- (6) carboxy,
- (7) protected amino,
- (8) amino,
- (9) C₁₋₁₀ alkyl,
- (10) substituted or unsubstituted C₂₋₁₀alkenyl,
- (11) aryl-substituted C₁₋₁₀ alkyl,
- (12) aryl or,
- (13) substituted aryl,
- (14) aryl carbamoyl-substituted C₁₋₁₀alkyl,
- (15) C₁₋₁₀alkylcarbonyl,
- (16) aryl carbonyl,
- (17) ether-substituted C₁₋₁₀alkyl,
- (18) thioether-substituted C₁₋₁₀alkyl,
- (19) keto-substituted C₁₋₁₀alkyl,
- (20) thioether,
- (21) carboxylic ester,
- (22) carboxamide, including substituted and unsubstituted anilide derivatives,
- (23) urea,
- (24) C₁₋₁₀ alkylureido C₀₋₅ alkyl,
- (25) substituted or unsubstituted arylureido C₀₋₅ alkyl,
- (26) C₁₋₁₀alkanoxyloxyC₁₋₂alkyl,
- (27) C₁₋₁₀ alkylcarbonylamino,

- (28) alkanoylamidoalkyl,
- (29) ether, and
- (30) substituted and unsubstituted aryl-ether.

5,777,135

DI-SUBSTITUTED 1,2-DIOXETANE COMPOUNDS
HAVING INCREASED WATER SOLUBILITY AND ASSAY
COMPOSITIONS

Hashem Akhavan-Tafti, Sterling Heights; Renuka De Silva, Northville, and A. Paul Schaap, Grosse Pointe Park, all of Mich., assignors to Lumigen, Inc., Southfield, and Board of Governors Wayne State Univ., Detroit, both of Mich.

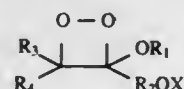
Filed Jul. 31, 1995, Ser. No. 509,305

Int. Cl.⁶ C07D 321/00; C07C 69/76; C07F 9/02

U.S. Cl. 549—332

10 Claims

1. A stable dioxetane of the formula:



wherein R₁ is a hydrophilic organic group comprising a substituted alkyl, heteroalkyl, alkenyl or alkynyl group containing 1 to 20 carbon atoms and at least two groups which provide increased solubility in aqueous solution and optionally containing at least one oxygen atom, wherein R₂ and R₃ are each selected from the group consisting of acyclic, cyclic and polycyclic organic groups which can optionally be substituted with heteroatoms and which can optionally be joined together to form a cyclic or polycyclic ring group spiro-fused to the dioxetane ring, wherein R₂ is an aryl ring group selected from the group consisting of phenyl and naphthyl groups which can include additional substituents and wherein X is a protecting group which can be removed by an activating agent to produce light.

5,777,136

PROCESS FOR THE GLYCOSIDATION OF COLCHICINE
DERIVATIVES AND THE PRODUCTS OBTAINED
THEREBY

Ezio Bombardelli, Milan, Italy, assignor to Indena S.p.A., Milan, Italy

Filed Feb. 7, 1997, Ser. No. 796,317

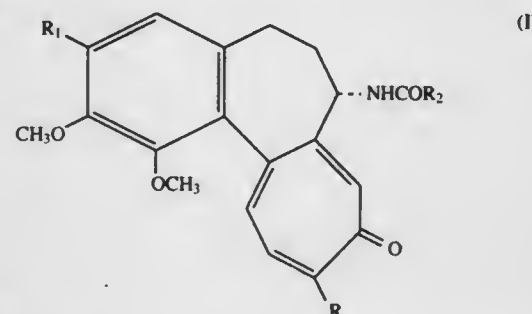
Claims priority, application Italy, Feb. 8, 1996, MI96A0236

Int. Cl.⁶ C07D 309/02

U.S. Cl. 549—417

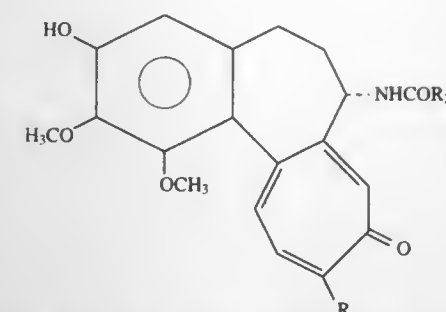
20 Claims

1. A process for the preparation of compounds having the formula



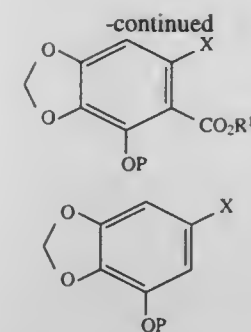
wherein:

R is a methoxy or methylthio group;
R₁ is a β-D-glycopyranosyloxy or 6-deoxygalactopyranosyloxy residue; and
R₂ is a C₁–C₇ alkyl group
which process comprises reacting a protected material selected from the group consisting of derivatives of 1-fluoroglucose and 1-fluorofucose with a compound having the formula



wherein R and R₂ are as defined above to form a crude reaction product containing at least one compound of formula (I).

(II)



V

VI

where R¹ is as before, P is a protecting group, and X is a cuprate, selected from the group consisting of CuI, CuCN, and mixed cuprates, to form compound I.

5,777,137

PANCRASTATINS AND PROCESSES FOR THEIR
PRODUCTION

Tomas Hudkicky, Gainesville, Fla.; Kurt Königsberger, Oberndorf, Austria; Sherita D. McLamore, Gainesville, Fla., and Rakesh Maurya, Jammu, India, assignors to University of Florida, Gainesville, Fla.

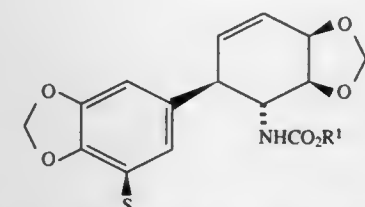
Filed Nov. 1, 1995, Ser. No. 548,367

Int. Cl.⁶ C07D 307/00; 317/00; 323/02

U.S. Cl. 549—435

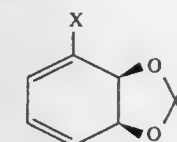
1 Claim

1. A process for the preparation of a compound having the formula

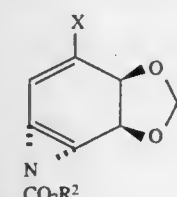


where R₁ is C₁–C₆ alkyl, S is alkoxy or carboalkoxy or hydrogen, comprising the steps of:

- a) treating a compound having the formula II with TsSO₂ONHCO₂R²;

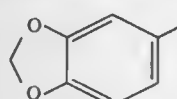


where X is hydrogen or halogen and R² is C₁–C₆ allyl, to form III;



where R² is as before; and

- b) condensing compound III with a cuprate selected from a group consisting of compound IV, V, and VI:



5,777,138

RING-OPENING AMIDATION PROCESS

Robin Mark Bannister; Neil Henderson, and Graham Ruecroft, all of Cambridge, United Kingdom, assignors to Chiroscience Limited, Cambridge, United Kingdom

PCT No. PCT/GB95/02183, § 371 Date Mar. 12, 1997, § 102(e) Date Mar. 12, 1997, PCT Pub. No. WO96/08465, PCT Pub. Date Mar. 21, 1996

PCT Filed Sep. 12, 1995, Ser. No. 793,617

Claims priority, application United Kingdom, Sep. 12, 1994, 9418357

Int. Cl.⁶ C07D 317/44

U.S. Cl. 549—436

13 Claims

1. A process for preparing a cis-1-amino-3-carboxyamidocyclopentane or a cis-1-amino-3-carboxyamidocyclopent-4-ene, comprising reacting a 2-azabicyclo[2.2.1]heptan-3-one or a 2-azabicyclo[2.2.1]hept-5-en-3-one with an acid salt of an amine at atmospheric pressure.

5,777,139

TAXOIDS, THEIR PREPARATION AND
PHARMACEUTICAL COMPOSITIONS CONTAINING
THEM

Hervé Bouchard, Thiais; Jean-Dominique Boureat, Vincennes, and Alain Commercon, Vitry-sur-Seine, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR95/00736, § 371 Date Dec. 6, 1996, § 102(e) Date Dec. 6, 1996, PCT Pub. No. WO95/33737, PCT Pub. Date Dec. 14, 1995

PCT Filed Jun. 7, 1995, Ser. No. 750,090

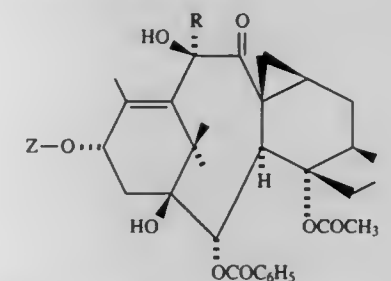
Claims priority, application France, Jun. 9, 1994, 94 07050

Int. Cl.⁶ C07D 305/14; A61K 31/335

U.S. Cl. 549—510

16 Claims

1. A taxoid of the formula (I):

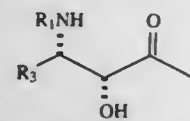


(I)

wherein:

R represents an unbranched or branched alkyl radical comprising 1 to 6 carbon atoms, an unbranched or branched alkenyl radical comprising 2 to 6 carbon atoms, an unbranched or branched alkynyl radical comprising 2 to 6 carbon atoms, a cycloalkyl radical comprising 3 to 6 carbon atoms, a cycloalk-

enyl radical comprising 4 to 6 carbon atoms, an aryl radical, or a 5- to 6-membered aromatic heterocyclic radical;
Z represents a hydrogen atom or a radical of the formula (II):



wherein:

R₁ represents a benzoyl radical unsubstituted or substituted with at least one substituent selected from a halogen atom, an alkyl radical comprising 1 to 4 carbon atoms, an alkoxy radical comprising 1 to 4 carbon atoms, a trifluoromethyl radical, a thenoyl radical, a furyl radical, or a radical R₂-O-CO- in which R₂ represents:

an alkyl radical comprising 1 to 8 carbon atoms, an alkenyl radical comprising 2 to 8 carbon atoms, an alkynyl radical comprising 3 to 8 carbon atoms, a cycloalkyl radical comprising 3 to 6 carbon atoms, a cycloalkenyl radical comprising 4 to 6 carbon atoms, or a bicycloalkyl radical comprising 7 to 10 carbon atoms, these radicals being unsubstituted or substituted with at least one substituent selected from the group consisting of a halogen atom, a hydroxyl radical, an alkoxy radical comprising 1 to 4 carbon atoms, a dialkylamino radical in which each alkyl portion comprises 1 to 4 carbon atoms, a piperidino radical, a morpholino radical, a 1-piperazinyl radical (unsubstituted or substituted at the 4 position with an alkyl radical comprising 1 to 4 carbon atoms or with a phenylalkyl radical in which the alkyl portion comprises 1 to 4 carbon atoms), a cycloalkyl radical comprising 3 to 6 carbon atoms, a cycloalkenyl radical comprising 4 to 6 carbon atoms, a phenyl radical (unsubstituted or substituted with at least one substituent selected from the group consisting of a halogen atom, an alkyl radical comprising 1 to 4 carbon atoms, and an alkoxy radical comprising 1 to 4 carbon atoms), a cyano radical, a carboxyl radical, and an alkoxycarbonyl radical in which the alkyl portion comprises 1 to 4 carbon atoms;

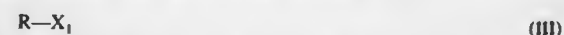
a phenyl or α - or β -naphthyl radical unsubstituted or substituted with at least one substituent selected from the group consisting of a halogen atom, an alkyl radical comprising 1 to 4 carbon atoms, an alkoxy radical comprising 1 to 4 carbon atoms, and a 5-membered aromatic heterocyclic radical; or

a saturated heterocyclic radical comprising 4 to 6 carbon atoms, unsubstituted or substituted with at least one alkyl radical comprising 1 to 4 carbon atoms;

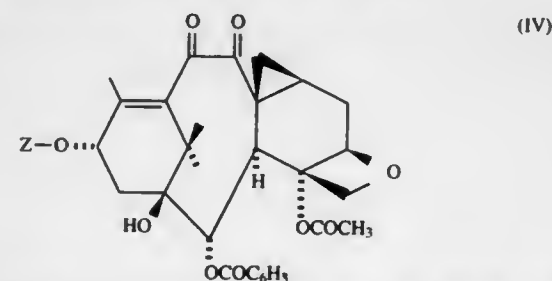
R₂ represents an unbranched or branched alkyl radical comprising 1 to 8 carbon atoms, an unbranched or branched alkenyl radical comprising 2 to 8 carbon atoms, an unbranched or branched alkynyl radical comprising 2 to 8 carbon atoms, a phenyl or α - or β -naphthyl radical unsubstituted or substituted with at least one substituent selected from the group consisting of a halogen atom and an alkyl, alkenyl, alkynyl, aryl, aralkyl, alkoxy, alkylthio, aryloxy, arylthio, hydroxyl, hydroxyalkyl, mercapto, formyl, acyl, acylamino, aroylamino, alkoxycarbonylamino, amino, alkylamino, dialkylamino, carboxyl, alkoxycarbonyl, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, cyano, nitro, and trifluoromethyl radical, or a 5-membered aromatic heterocycle comprising at least one heteroatom, identical or different, selected from nitrogen, oxygen or sulphur atoms and unsubstituted or substituted with at least one substituent, identical or different, selected from the group consisting of a halogen atom and an alkyl, aryl, amino, alkylamino, dialkylamino, alkoxycarbonylamino, acyl, arylcarbonyl, cyano, carboxyl, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, and alkoxycarbonyl radical, wherein for the substituents of the phenyl, α - or β -naphthyl and aromatic heterocyclic radicals, the alkyl radicals and alkyl portions of the other radicals comprise 1 to 4 carbon atoms, the

alkenyl and alkynyl radicals comprise 2 to 8 carbon atoms, and the aryl radicals are phenyl or α - or β -naphthyl radicals.

4. A process for preparing a taxoid according to claim 1 wherein an organometallic derivative of the formula (III):



wherein R is defined as in claim 1 and X₁ represents a metal atom or an organomagnesium residue; is reacted with a compound of the formula (IV):

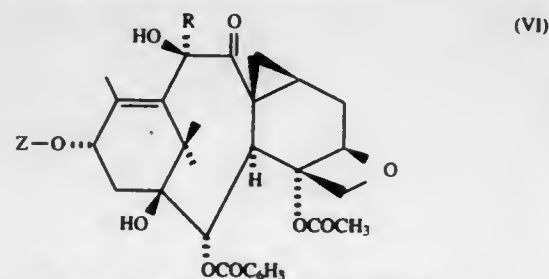


wherein Z₁ represents a hydrogen atom or a radical of the formula (V):



wherein R₁ and R₃ are defined as in claim 1, and either R₄ represents a hydrogen atom and R₅ represents a group protecting the hydroxyl function or R₄ and R₅ together form a heterocycle;

to obtain a product of the formula (VI):



wherein Z₁ and R are defined as in claim 1; and the protective groups represented by R₅ or R₄ and R₅ are, where appropriate, replaced by hydrogen atoms.

5,777,140 PROCESS FOR THE PREPARATION OF ACYLOXYALKANESULFONATES HAVING IMPROVED PROPERTIES

Dirk Bühring, Braunschweig, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Mar. 27, 1996, Ser. No. 624,884

Claims priority, application Germany, Mar. 29, 1995, 195 11 459.0

Int. Cl.⁶ C07C 303/22

U.S. Cl. 554-92

8 Claims

1. A process for the preparation of an acyloxyalkanesulfonate having improved properties by esterification of fatty acids with hydroxyalkanesulfonates, which comprises esterifying at least one fatty acid of the formula 1 RCOOH (1) in which R is a hydrocarbon radical having 5 to 31 carbon atoms with an aqueous solution containing at least one ammonium hydroxyalkanesulfonate of the formula 2 HO-A-SO₃⁻NR¹R²R³R⁴ (2) in which A is a C₂-C₄-alkylene and R¹, R², R³ and R⁴ are identical or different and are hydrogen or a C₁-C₄-alkyl group in the presence of an esterifica-

tion catalyst and in the essential absence of a consistency regulator by heating the reaction mixture at a temperature of from 170° C. to 200° C., while removing the water present, to give a product having a content of acyloxyalkanesulfonate of from 75-90%.

5,777,141

PROCESS FOR RECOVERING UNSATURATED FATTY ACIDS AND DERIVATIVES THEREOF

Gerd Brunner, Hamburg, and Frank Reichmann, Burgdorf, both of Germany, assignors to Roche Vitamins Inc., Parsippany, N.J.

Filed Aug. 16, 1996, Ser. No. 699,883

Claims priority, application Switzerland, Aug. 17, 1995, 2355/95

Int. Cl.⁶ C07C 51/47; 67/56

U.S. Cl. 554-175

14 Claims

1. A process for recovering ω -3- and ω -6-polyunsaturated fatty acid entities having at least 16 carbon atoms from a mixture containing the fatty acid entities, which comprises passing the mixture containing the fatty acid entities through a column using an untreated or alkaline pre-treated aluminum oxide stationary phase and a liquid-containing CO₂ mobile phase.

5,777,142

UNSATURATED HYDROXYCARBOXYLIC COMPOUNDS USEFUL AS INTERMEDIATES FOR PREPARING LUBRICANT AND FUEL ADDITIVES

Paul E. Adams, Willoughby Hills; Mark R. Baker, Lyndhurst, and Jeffery G. Dietz, University Heights, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

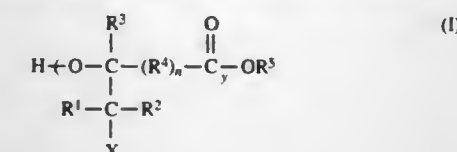
Filed Aug. 22, 1995, Ser. No. 518,629

Int. Cl.⁶ C07C 59/00

U.S. Cl. 554-213

42 Claims

1. A composition comprising a compound of the formula



wherein each of

R¹ and R² is H or a hydrocarbon based group,

R³ is H or hydrocarbyl;

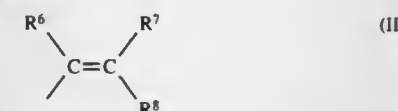
R⁴ is a divalent hydrocarbylene group;

n=0 or 1;

y is an integer ranging from 1 to about 200;

R⁵ is H or hydrocarbyl; and

X is a group of the formula



wherein R⁶ is an aliphatic group containing from about 10 to about 300 carbon atoms, each of R⁷ and R⁸ is independently H or a hydrocarbon based group.

5,777,143

HYDROCARBON SOLUBLE ALKYLALUMINOXANE COMPOSITIONS FORMED BY USE OF NON- HYDROLYTIC MEANS

Dennis B. Malpass, La Porte, Tex.; Stanley W. Palmaka, Yonkers, N.Y.; Gregory M. Smith, Bethel, Conn., and Jonathan S. Rogers, Rochester, N.Y., assignors to Akzo Nobel NV, Arnhem, Netherlands

Continuation-in-part of Ser. No. 576,892, Dec. 22, 1995, and a continuation-in-part of Ser. No. 651,290, May 22, 1996, Pat. No. 5,728,855. This application Oct. 25, 1996, Ser. No. 736,075

Int. Cl.⁶ C07F 5/06; B01J 31/06

U.S. Cl. 556-179

23 Claims

1. A process for making a hydrocarbon-soluble alkylaluminum composition which comprises:

(a) preparing an alkylaluminum precursor via non-hydrolytic means; and
(b) adding to that precursor an effective amount of an organoaluminum compound which prevents formation of insoluble species; and
(c) converting that modified precursor to an alkylaluminum.

7. A process for making a hydrocarbon-soluble alkylaluminum composition that comprises:

(a) preparing a modified alkylaluminum precursor via non-hydrolytic means; and
(b) converting that modified precursor to an alkylaluminum, wherein the modified alkylaluminum precursor is formed by treating a mixture of trimethylaluminum and an organoaluminum compound, where the alkyl moieties contain two or more carbon atoms, with a compound containing an oxygen-carbon bond.

11. A process for making a hydrocarbon-soluble alkylaluminum composition that comprises:

(a) preparing a methylaluminum precursor via non-hydrolytic means; and
(b) converting that precursor to a methylaluminum; and
(c) treating the methylaluminum material with a solubilizing amount of an alkylaluminum wherein the alkyl moieties contain two or more carbon atoms.

5,777,144

BI-FUNCTIONAL SILOXANE COMPOUNDS

Slawomir Rubinsztajn, Niskayuna; Gary M. Lucas, Scotia, and Brian P. Bayly, Middle Grove, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

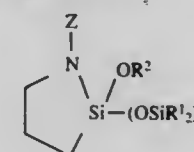
Filed Sep. 30, 1997, Ser. No. 940,589

Int. Cl.⁶ C07F 7/10

U.S. Cl. 556-407

21 Claims

1. A silicon containing compound comprising a monovalent functional group having the structure:



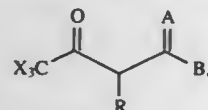
where Z is selected from the group of monovalent radicals consisting of SiR³, (CH₂)_p(CR¹R²)_mNH(SiR³)_{2-r}, and (CH₂)_p(CR¹R²)_mNH(CH₂)_q(CR¹R²)_{r-q}NH(SiR³)_{2-r}, where each R¹, each R² and each R³ are independently a monovalent hydrocarbon radical having from one to forty carbon atoms; each t is independently 0, 1, or 2; each m and each r independently range from 1 to 8; each p ranges from zero to m and each q independently ranges from zero to r; and the subscript d ranges from 1 to about 1,000.

R, R¹, R², R³, R⁴, R⁵ and R⁶ are each independently H, (C₁-C₆)alkyl, (C₂-C₆)alkenyl, (C₂-C₆)alkynyl, phenyl or phen(C₁-C₆)alkyl; or (C₁-C₆)alkyl, (C₂-C₆)alkenyl, (C₂-C₆)alkynyl, phenyl or phen(C₁-C₆)alkyl substituted with one or more groups independently selected from halo, CN,

NO_2 , $(\text{C}_1\text{--C}_6)\text{alkyl}$, $(\text{C}_2\text{--C}_6)\text{alkenyl}$, $(\text{C}_2\text{--C}_6)\text{alkynyl}$, phenyl, $\text{phen}(\text{C}_1\text{--C}_6)\text{alkyl}$, $(\text{C}_1\text{--C}_6)\text{alkoxy}$, $(\text{C}_2\text{--C}_6)\text{alkenyloxy}$, and phenoxy; or R^1 and R^2 , and R^3 and R^4 may each independently be taken together with the nitrogen to which they are attached to form a five, six, or seven membered heterocyclic ring; or when A is NR^5 and B is OR^6 , R^5 and R^6 may be taken together with the $\text{A}=\text{C}=\text{B}$ group to which they are attached to form a five, six, or seven membered heterocyclic ring; or when A is NR^5 and B is NR^3R^4 , R^3 or R^4 and R^5 may be taken together with the $\text{A}=\text{C}=\text{B}$ group to which they are attached to form a five, six, or seven membered heterocyclic ring;

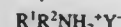
comprising the steps of

- i) forming a mixture, without a solvent being present, comprising a 4,4,4-trihaloacetate derivative of formula II



wherein

X, R, A and B are the same as defined for formula I, and an amine or ammonium salt of a weak acid of the formula



wherein

R^1 and R^2 are the same as defined for formula I and Y^- is the anion of a weak acid; and
ii) heating the mixture without a solvent being present.

5,777,155

PROCESS FOR PRODUCING UNSATURATED GLYCOL DIESTER

Masato Sato, Kanagawa; Hironobu Ohno, Tokyo; Nobuyuki Murai, and Hiroshi Iwasaka, both of Mie, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan
Continuation of Ser. No. 321,039, Oct. 6, 1994, abandoned.

This application Mar. 17, 1997, Ser. No. 819,199
Claims priority, application Japan, Oct. 6, 1993, 5-272961
Int. Cl.⁶ C07C 67/05; 67/04

U.S. Cl. 560—244

18 Claims

1. A process for producing an unsaturated glycol diester which comprises reacting a conjugated diene with a carboxylic acid and molecular oxygen in the presence of a solid catalyst comprising (1) palladium and (2) tellurium as active components supported on a carrier, wherein said carrier is a solid carrier in which a proportion of the volume of pores having a pore radius in the range of from 5 to 50 nm is 80% or more relative to the total volume of pores having a pore radius in the range of from 1.8 to 10,000 nm.

5,777,156

CARRIER CATALYST, PROCESS FOR THE PRODUCTION THEREOF FOR THE PREPARATION OF VINYL ACETATE

Roland Abel, Oberhausen, and Karl-Fred Wörner, Hofheim, both of Germany, assignors to Hoechstaktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 443,338, May 17, 1995, abandoned, which is a division of Ser. No. 276,438, Jul. 18, 1994, Pat. No. 5,571,771. This application Apr. 7, 1997, Ser. No. 835,344
Claims priority, application Germany, Jul. 16, 1993, 43 23 978.1

Int. Cl.⁶ C07C 67/05

U.S. Cl. 560—245

9 Claims

1. A process for preparing vinyl acetate in the gas phase from ethylene, acetic acid and oxygen or oxygen-containing gases in the presence of a surface impregnated catalyst comprising palladium, potassium and cadmium on porous support particles, wherein the

support particles are impregnated once or a plurality of times with at least one solution of at least one salt of each of the three elements, and said solutions are not atomized by ultrasound prior to the impregnation and the support particles are immediately dried after each impregnation, with the dynamic viscosity of the solution being at least 0.003 Pa.s and the solution volume in each impregnation being from more than 80% of the pore volume of the support particles, and the duration of each impregnation and also the time until commencement of the drying following this impregnation being selected so as to be sufficiently short for, after completion of the last drying, the specified metal salts to be present in an outer layer of from 5% to 80% of the pore volume of the support particles.

5,777,157

PROCESS FOR PRODUCTION AND PURIFICATION OF TRIACETIN

Mikhail Khramov, San Luis Potosi, Mexico, assignor to Industrias Monfel S.A. de C.V., Mexico

Filed Jan. 11, 1996, Ser. No. 584,955

Int. Cl.⁶ C07C 69/18

U.S. Cl. 560—248

18 Claims

1. A process for purifying a composition of triacetin and impurities comprising the steps of:
separating the triacetin from the composition forming a partially purified triacetin solution comprising at least one of acetic acid and acetic anhydride; and
contacting the partially purified triacetin solution with an oxidant solution forming purified triacetin.

5,777,158

NON-HYGROSCOPIC CRYSTALS OF P-AMINOMETHYLBENZOIC ACID AND PROCESS FOR PREPARING THE SAME

Motoo Miura; Hideo Miyata, and Kohei Morikawa, all of Kanagawa, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Aug. 26, 1997, Ser. No. 917,688

Claims priority, application Japan, Aug. 27, 1996, 8-225397
Int. Cl.⁶ C07C 229/00

U.S. Cl. 562—442

2 Claims

1. Non-hygroscopic crystals of p-aminomethylbenzoic acid.

5,777,159

N-(3,3-DIMETHYLBUTYL)-L-ASPARTYL-D-AMINOALKANOIC ACID N-(S)-1-PHENYL-1-ALKANAMIDE USEFUL AS A SWEETENING AGENT

Claude Nofre, 119 Cours Albert Thomas, 69003 Lyon, France, and Jean-Marie Tinti, 5 Impasse de la Drelatière, 69680 Chassieu, France

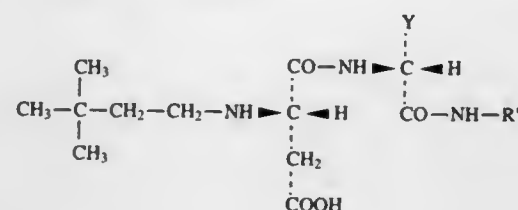
Filed Feb. 5, 1997, Ser. No. 796,034

Claims priority, application France, Feb. 7, 1996, 96 01491
Int. Cl.⁶ C07C 229/00

U.S. Cl. 562—450

5 Claims

1. A compound of formula:



in which:

Y is C_2H_5 , $\text{CH}(\text{CH}_3)_2$ or $(\text{R})\text{CH}(\text{OH})\text{CH}_3$; and
 R' is $(\text{S})\text{CH}(\text{C}_2\text{H}_5)_2$, $(\text{S})\text{CH}(\text{CH}_3)_2$, or $(\text{R})\text{CH}(\text{CH}_2\text{OCH}_3)_2$.

5,777,160

1, 4, 4-(TRISUBSTITUTED) CYCLOHEX-1-ENE DIMERS, AND RELATED COMPOUNDS

Siegfried B. Christensen, IV, Philadelphia, and Joseph M. Karpinski, Pottstown, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/US95/13322, § 371 Date Jun. 23, 1997, § 102(e) Date Jun. 23, 1997, PCT Pub. No. WO96/20162, PCT Pub. Date Jul. 4, 1997

Continuation of Ser. No. 363,179, Dec. 23, 1994, abandoned.

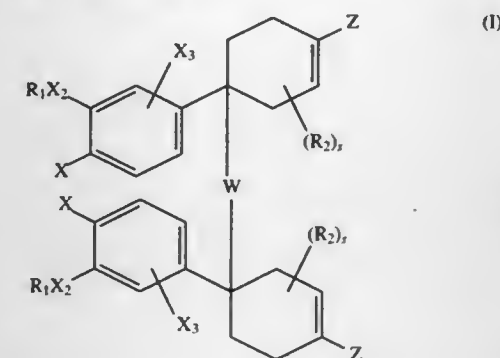
This PCT application Oct. 10, 1995, Ser. No. 860,295

Int. Cl.⁶ C07C 229/00; 69/76; 59/00; 55/28

U.S. Cl. 562—465

5 Claims

1. A compound of Formula (I)



wherein:

R_1 is independently $-(\text{CR}_4\text{R}_5)_m\text{C}(\text{O})\text{O}(\text{CR}_4\text{R}_5)_m\text{R}_6$, $-(\text{CR}_4\text{R}_5)_n\text{C}(\text{O})\text{NR}_4(\text{CR}_4\text{R}_5)_m\text{R}_6$, $-(\text{CR}_4\text{R}_5)_n\text{O}(\text{CR}_4\text{R}_5)_m\text{R}_6$, or $-(\text{CR}_4\text{R}_5)_r\text{R}_6$ wherein the alkyl moieties are unsubstituted or substituted with one or more halogens;

m is 0 to 2;

n is 1 to 4;

r is 0 to 6;

R_4 and R_5 are independently hydrogen or a C_{1-2} alkyl;

R_6 is independently hydrogen, methyl, hydroxyl, aryl, halo substituted aryl, aryloxy C_{1-3} alkyl, halo substituted aryloxy C_{1-3} alkyl, indenyl, indenyl, C_{7-11} polycycloalkyl, tetrahydrofuran, furanyl, tetrahydropyran, pyran, tetrahydrothienyl, thienyl, tetrahydrothiopyran, thiopyran, C_{3-6} cycloalkyl, or a C_{4-6} cycloalkyl containing one or two unsaturated bonds, wherein the cycloalkyl or heterocyclic moiety may be unsubstituted or substituted by 1 to 3 methyl groups, one ethyl group or an hydroxyl group;

provided that:

a) when R_6 is hydroxyl, then m is 2; or

b) when R_6 is hydroxyl, then r is 2 to 6; or

c) when R_6 is 2-tetrahydropyran, 2-tetrahydrothiopyran, 2-tetrahydrofuran, or 2-tetrahydrothienyl, then m is 1 or 2; or

d) when R_6 is 2-tetrahydropyran, 2-tetrahydrothiopyran, 2-tetrahydrofuran, or 2-tetrahydrothienyl, then r is 1 to 6;

e) when n is 1 and m is 0, then R_6 is other than H in $-(\text{CR}_4\text{R}_5)_n\text{O}(\text{CR}_4\text{R}_5)_m\text{R}_6$;

X is independently YR_2 , fluorine, NR_4R_5 , or formyl amine;

Y is independently O or $\text{S}(\text{O})_m$;

m' is 0, 1, or 2;

X_2 is O or NR_8 ;

X_3 is independently hydrogen or X;

R_2 is independently $-\text{CH}_3$ or $-\text{CH}_2\text{CH}_3$ unsubstituted or substituted by 1 or more halogen

s is 0 to 4;

W is alkyl of 2 to 6 carbons, alkenyl of 2 to 6 carbons or alkynyl of 2 to 6 carbons;

Z is independently $\text{S}(\text{O})_m\text{R}_9$, $\text{OS}(\text{O})_2\text{R}_9$, OR_9 , $\text{OC}(\text{O})\text{NR}_7\text{R}_7$, $\text{OC}(\text{O})\text{O}(\text{R}_7)_2$, $\text{O}(\text{CR}_4\text{R}_5)_4\text{OR}_9$, or NR_5R_6 ;

q is 0 or 1;

R_7 is independently hydrogen or R_9 ;

R_8 is independently hydrogen or C_{1-4} alkyl unsubstituted or substituted by one to three fluorines, or when R_8 and R_{10} are as $-\text{NR}_8\text{R}_{10}$ they may together with the nitrogen form a 5 to 7 membered ring comprised only of carbon atoms or carbon atoms and at least one heteroatom selected from O, N, or S;

R_9 is independently C_{1-10} alkyl, C_{2-10} alkenyl, C_{3-7} cycloalkyl, C_{4-6} cycloalkenyl, aryl, arylalkyl, heteroaryl, heteroarylalkyl, each of which may be unsubstituted or substituted by one or more fluorine atoms, or two R_9 terms appearing as NR_9R_9 may together with the nitrogen form a 5 to 7 membered ring comprised only of carbon atoms or carbon atoms and at least one heteroatom selected from O, N, or S;

R_{10} is independently OR_8 or R_8 ;

provided that:

f) when q is 1 in $\text{OC}(\text{O})\text{O}(\text{R}_7)_2$, then R_7 is not hydrogen; or the pharmaceutically acceptable salts thereof.

5,777,161

PROCESS FOR PRODUCING HIGHLY PURE TEREPHTHALIC ACID BY USE OF DISPERSION MEDIUM REPLACEMENT APPARATUS

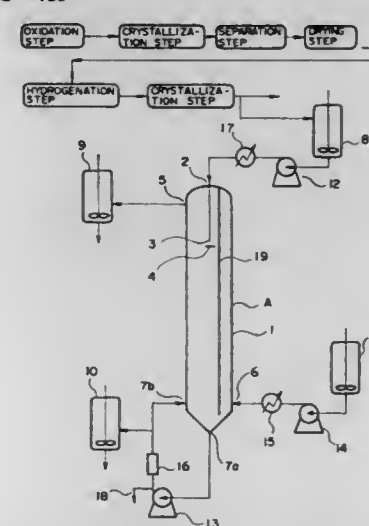
Masato Inary, Okayama-ken, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo; Toyo Boseki Kabushiki Kaisha, Osaka, and Mizushima Aromas, Kurashiki, all of Japan

Filed Jul. 7, 1997, Ser. No. 888,419

Claims priority, application Japan, Jul. 29, 1996, 8-199142
Int. Cl.⁶ C07C 51/42

U.S. Cl. 562—485

4 Claims



1. A process for producing highly pure terephthalic acid by the use of a dispersion medium replacement apparatus equipped with a stirring unit at the bottom portion thereof for uniform dispersion therein, wherein an original slurry comprising a first dispersion medium and terephthalic acid crystals is introduced into a dispersion medium replacement apparatus at the top portion thereof, a second dispersion medium is introduced into said apparatus at the bottom portion thereof, a replaced slurry comprising principally the second dispersion medium and the terephthalic acid crystals is taken out from said apparatus at the bottom portion thereof, and the first dispersion medium as a major component is taken out from said apparatus at the upper portion thereof, which process comprises maintaining a uniformly dispersed slurry at the bottom portion of the apparatus at a concentration higher than that of a slurry at the intermediate portion thereof; maintaining the top portion thereof at a higher temperature in a vertical temperature distribution therein to form a temperature change zone; and con-

trolling at least one of the feed rate of the second dispersion medium and the takeout rate of the replaced slurry in accordance with the location of said temperature change zone.

5,777,162
INTERMEDIATES FOR THE PREPARATION OF FUNGICIDES

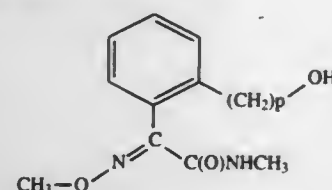
Ian Richard Matthews, Wokingham; Christopher Richard Ayles Godfrey, Great Hollands, and John Martin Clough, Marlow, all of England, assignors to Zeneca Limited, London, England

Division of Ser. No. 211,390, Aug. 18, 1994. This application Nov. 12, 1996, Ser. No. 748,088

Claims priority, application United Kingdom, Sep. 30, 1991, 9120771; Oct. 29, 1991, 9122875; WIPO, Sep. 9, 1992, PCT/GB92/01644

Int. Cl.⁶ C07C 233/00; 235/00; 249/04
U.S. Cl. 564—167

1. A compound of formula (XX)



wherein p is 0.

5,777,163
PREPARATION OF HYDROXYLAMINES FROM AMMONIA OR THE CORRESPONDING AMINES, HYDROGEN AND OXYGEN

Ulrich Müller, Neustadt, and Daniel Heineke, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/03771, § 371 Date Apr. 4, 1997, § 102(e) Date Apr. 4, 1997, PCT Pub. No. WO96/10535, PCT Pub. Date Apr. 11, 1996

PCT Filed Sep. 23, 1995, Ser. No. 809,709
Claims priority, application Germany, Oct. 4, 1994, 44 35 239.5

Int. Cl.⁶ C07C 239/00; 239/08; C01B 21/14
U.S. Cl. 564—301

1. A process for preparing a hydroxylamine, comprising: reacting ammonia or an amine with hydrogen and oxygen under heterogeneous catalysis in the presence of an oxidation catalyst comprising titanium silicalite or vanadium silicalite having a zeolite structure and 0.01 to 20% by weight of one or more platinum metals selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium and platinum, wherein each platinum metal is present in at least two different bond energy states.

5,777,164
PROCESS FOR THE PREPARATION OF HIGH PURITY O-SUBSTITUTED HYDROXYLAMINE DERIVATIVES

Neil Warren Boaz, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Apr. 14, 1997, Ser. No. 837,134
Int. Cl.⁶ C07C 239/20; 259/00; 259/06; 259/10
U.S. Cl. 564—301

1. A method comprising the steps of:

a) forming in an aqueous solution a hydroxamic acid from a hydroxylamine free base and anhydride having the formula

(RCO)₂O wherein R is H or a substituted or unsubstituted C₂₋₆ alkyl, C₂₋₆ alkenyl, C₆₋₁₀ aryl, or C₄₋₁₀ heteroaryl; and, without isolation,

b) treating said hydroxamic acid with an alkylating agent in the presence of at least one proton scavenger under conditions sufficient to consume substantially all of said alkylating agent to form O-substituted hydroxamate wherein the solvent used for the aqueous solution of steps (a) and (b) is water without a co-solvent.

5,777,165
PROCESS FOR PREPARING AMIDES OF N-ALKYL POLYHYDROXYALKYL AMINES

Junan Kao, Kobe, Japan; Ephraim Lamar Kelly, Batavia, Ohio; Vicki Lynn Weber, Cincinnati, Ohio; Michael Steven Gibson, Loveland, Ohio; Donald Benjamin Appleby, Cincinnati, Ohio; Joseph Fredrick Sherman, Cincinnati, Ohio; Ronald Edward Pegoli; Mary Celine Schneider, both of Batavia, Ohio; Terry Franklin Formyduval, and Larry Nelson Hawkins, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 7, 1995, Ser. No. 474,858

Int. Cl.⁶ C07C 209/00

U.S. Cl. 564—487

5 Claims

1. In a process for regenerating a strong base ion exchange resin containing fatty acyl anion groups comprising acidifying the resin to form fatty acids corresponding to the fatty acyl anion groups and removing the fatty acids by dissolving them in organic solvent to provide an intermediate resin, free of fatty acyl anion groups, which can then be converted back to a strong base ion exchange resin.

5,777,166
PROCESS FOR THE CATALYTIC HYDROGENATION OF NITRILES TO AMINES IN THE PRESENCE OF A CATALYST OF DOPED RANEY NICKEL TYPE

Georges Cordier, Francheville; Pierre Fouilloux, Caluire-et-Cuire; Nathalie Laurain, and Jean-François Spindler, both of Lyons, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

PCT No. PCT/FR94/01478, § 371 Date Nov. 25, 1996, § 102(e) Date Nov. 25, 1996, PCT Pub. No. WO95/18090, PCT Pub. Date Jul. 6, 1995

PCT Filed Dec. 16, 1994, Ser. No. 663,097
Claims priority, application France, Dec. 28, 1993, 93 16008
Int. Cl.⁶ C07C 209/00; B01J 25/00

U.S. Cl. 564—491

25 Claims

1. A process for the hydrogenation of nitriles to amines, said process comprising:

a) doping a Raney nickel type catalyst with at least one additional metal element selected from Group IVb of the Periodic Classification of the Elements which is derived from a Ni/Al/doping element metallurgical precursor alloy and wherein the doping element/Ni ratio by weight is between 0.05 and 10%; and

b) exposing said catalyst to a nitrile in a liquid reaction medium which dissolves the nitrile along with at least one inorganic base selected from the group consisting of LiOH, NaOH, KOH, RbOH, and CsOH and thereby hydrogenate said nitrile.

5,777,167
PROCESS FOR THE REMOVAL OF ODOR FROM REACTION PRODUCT MIXTURES OF ALKYTHIOETHANAMINES AND THEIR ACID SALTS

Charles D. Gartner, and George A. Paul, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 14, 1996, Ser. No. 714,872
Int. Cl.⁶ C07C 209/84

U.S. Cl. 564—497

23 Claims

1. A process for removing odor from an alkythioethanamine hydrohalide reaction product mixture having an odor resulting from the presence of odiferous compounds in said reaction product mixture which comprises:

- (1) contacting said alkythioethanamine reaction product mixture with a neutralizing amount of an aqueous alkali metal hydroxide sufficient to neutralize the alkythioethanamine hydrohalide and the odiferous compounds therein and to form an organic phase and an aqueous phase;
- (2) separating the organic phase from the aqueous phase; and then
- (3) adding a sufficient amount of an aqueous hydrohalic acid to the organic phase to cause the alkythioethanamine to form an aqueous solution of alkythioethanamine hydrohalide having a reduced odor.

5,777,168
PROCESS FOR PRODUCING N-ALKYL-DINITROALKYLANILINES

Stefan Kwiatkowski; Krzysztof Pupek; Brenda L. Lawrence, and Lowell J. Lawrence, all of Richmond, Ky., assignors to SRM Chemical, Ltd. Co., League City, Tex.

Continuation-in-part of Ser. No. 496,774, Jun. 29, 1995, Pat. No. 5,689,006. This application Jun. 3, 1997, Ser. No. 868,321
Int. Cl.⁶ C07C 209/18

U.S. Cl. 564—399

11 Claims

1. A process for producing N-sec-butyl-4-tert-butyl-2,6-dinitroaniline, comprising:

- reacting 4-tert-butylphenol with a halide free methylating agent to produce 4-tert-butylanisole;
- reacting 4-tert-butylanisole with nitric acid to produce 2-nitro-4-tertbutylanisole;
- reacting 2-nitro-4-tertbutylanisole with an acid mixture of nitric acid and sulfuric acid to produce 2,6-dinitro-4-tertbutylanisole; and
- reacting 2,6-dinitro-4-tertbutylanisole with sec-butylamine to produce N-sec-butyl-4-tert-butyl-2,6-dinitroaniline.

5,777,169
PRODUCTION OF HIGH PURITY ALKALI METAL DIARYLPHOSPHIDE AND CYCLOALKYLDIARYLPHOSPHINES

William J. Layman, Jr., and George W. Welsh, both of Orangeburg, S.C., assignors to Albemarle Corporation, Richmond, Va.

Filed Jul. 1, 1997, Ser. No. 886,629
Int. Cl.⁶ C07F 9/50

U.S. Cl. 568—17

25 Claims

1. A process of preparing at least one alkali metal diarylphosphide which comprises mixing together at least one triarylphosphine optionally dissolved in an anhydrous organic liquid solvent, and a two-phase mixture of at least one alkali metal in an anhydrous organic liquid diluent, in the presence of molecular hydrogen and under conditions effective to produce at least one alkali metal diarylphosphide.

5,777,170
PROCESS FOR THE PREPARATION OF A NAPHTHYLBUTANONE

Piero Bellani, Rho, Italy, assignor to Archimica SpA, Italy

Filed Jul. 24, 1997, Ser. No. 900,224

Claims priority, application Italy, Jul. 29, 1996, MI96A1605
Int. Cl.⁶ C07C 45/59

U.S. Cl. 568—322

10 Claims

1. Process for the preparation of nabumetone, characterised in that:

- (a) 6-methoxy-2-bromonaphthalene is treated with 3-ethylenedioxybutene in the presence of a bivalent palladium salt as a catalyst and a phosphine as a co-catalyst
- (b) the 6-methoxy-2-(3-ethylenedioxybuten-1-yl)naphthalene so obtained (b₁) is subjected to catalytic hydrogenation and then (b₂) to acid hydrolysis.

10. 6-Methoxy-2-(3-ethylenedioxybuten-1-yl)-naphthalene.

5,777,171
METHOD OF PURIFYING ARYLPHENONES

John V. Swearingin, 2012 Gaines, El Dorado, Ark. 71730

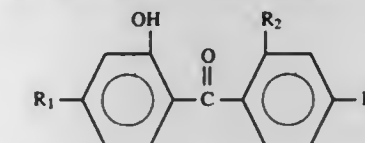
Filed Oct. 17, 1997, Ser. No. 953,558

Int. Cl.⁶ C07C 45/80

U.S. Cl. 568—324

37 Claims

1. A method for the decolorization and purification of an impure arylphenone of the following formula:



wherein R₂ is H or OH, R₁, and R₃ are H, OH or OR, and R is a C₁ to C₁₂ alkyl group, comprising contacting the impure arylphenone with a non-polar solvent and an inorganic phosphorous compound selected from the group of phosphoric acid, phosphorous acid, or phosphorous pentoxide.

5,777,172
PROCESS FOR THE PREPARATION OF BENZOPHENTHIONES AND BENZOPHENONES

Michael Charles Henry Standen, Clackmannan, and Nicholas Charles Evens, Edinburgh, both of Scotland, assignors to Zeneca Limited, London, England

PCT No. PCT/GB95/01101, § 371 Date Nov. 18, 1996, § 102(e) Date Nov. 18, 1996, PCT Pub. No. WO95/31435, PCT Pub. Date Nov. 23, 1995

PCT Filed May 16, 1995, Ser. No. 737,863
Claims priority, application United Kingdom, May 16, 1994, 9409735; Aug. 18, 1994, 9415589
Int. Cl.⁶ C07C 45/42; 325/02

U.S. Cl. 568—332

8 Claims

1. A process for the preparation of an optionally substituted benzophenone which comprises reacting the equivalently substituted benzophenthione with an aqueous solution of HCl in methanol.

5,777,173

PREPARATION OF PURE TRANS- AND CIS-4-HYDROXY-2,2,6-TRIMETHYLCYCLOHEXAN-1-ONE FROM ISOMERIC MIXTURES

Joachim Paust, Neuhofen; Wolfgang Kriegl, Ludwigshafen, and Horst Hartmann, Böhl-Iggelheim, all of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 19, 1996, Ser. No. 751,947

Claims priority, application Germany, Nov. 23, 1995, 195 43 619.9

Int. Cl.⁶ C07C 45/82

U.S. Cl. 568—366

16 Claims

1. A process for the substantial purification of 4-R, 6R-4-hydroxy-2,2,6-trimethylcyclohexan-1-one or 4S, 6R-4-hydroxy-2,2,6-trimethylcyclohexan-1-one comprising the steps of:

- (a) providing a mixture containing 4R, 6R-4-hydroxy-2,2,6-trimethylcyclohexan-1-one and 4S, 6R-4-hydroxy-2,2,6-trimethylcyclohexan-1-one;
- (b) fractionally rectifying the mixture; and
- (c) obtaining 4R, 6R-4-hydroxy-2,2,6-trimethylcyclohexan-1-one or 4S, 6R-4-hydroxy-2,2,6-trimethylcyclohexan-1-one in substantially pure form,

wherein the mixture is fractionally rectified in a rectification apparatus comprising a flask, a separation column having a distillation head, a condenser, and product-carrying pipework, wherein the column comprises from about 30 to 80 theoretical separation stages,

wherein the mixture is fractionally rectified at a temperature of from about 50° to 130° C., and at a pressure of from about 0.1 to 5 mbar.

5,777,174

PROCESS FOR PREPARING PERFLUOROPOLYETHERS WITH BROMO- OR IODO-CONTAINING END GROUPS

Giuseppe Marchionni, Milan, and Pier Antonio Guarda, Nole, both of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Apr. 21, 1997, Ser. No. 845,146

Claims priority, application Italy, Apr. 23, 1996, MI96A0798

Int. Cl.⁶ C07C 41/01

U.S. Cl. 568—615

8 Claims

1. Process for preparing perfluoropolyethers with bromo- or iodo-containing end groups, respectively, by subjecting a peroxidic perfluoropolyether to thermal treatment, in absence of UV radiations, at temperatures from 120° C. to 280° C. in the presence of bromo- or iodo-containing compounds having respectively the following general formulas:



wherein T, T*, equal to or different from each other are selected from Br, F, H or R', wherein R' is a perfluoroalkyl chain from 1 to 8 carbon atoms;



wherein R, R', R*, equal to or different from each other can be I, H, F or R', wherein R' has the meaning indicated above.

5,777,175

PREPARATION OF POLYOXYALKYLENE POLYOOLS, POLYMER POLYOOLS AND FLEXIBLE POLYURETHANE FOAMS

Kazuhiko Ohkubo, Kanagawa; Tomoki Tsutsui, Aichi; Yoshitsugu Sakaki, Aichi; Tamotsu Kunihito, Aichi; Aiko Nishikawa, Aichi; Tsukuru Izukawa, Aichi; Kaoru Ueno, Kanagawa; Seiji Sakai, Kanagawa, and Yukichi Tanaka, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Apr. 12, 1995, Ser. No. 420,596

Int. Cl.⁶ C07C 41/03

U.S. Cl. 568—619

5 Claims

1. A process for preparing a polyoxyalkylene polyol having a hydroxyl value of from 10 to 35 mgKOH/g, a monool content less than or equal to 15 mol % and a Head-to-Tail bond selectivity of at least 96 percent, which comprises adding propylene oxide to an active hydrogen compound and carrying out addition polymerization in the presence of an alkali metal hydroxide catalyst containing cesium hydroxide and/or rubidium hydroxide which has a purity of at least 90 wt %, said catalyst being in an amount of from 0.05 to 0.5 mole per mole of the active hydrogen compound at a temperature of 60° to 98° C. at a reaction pressure less than or equal to 490 kPa.

5. A polyoxyalkylene polyol having a hydroxyl value of from 10 to 35 mgKOH/g, a monool content less than or equal to 15 mol % and a Head-to-Tail bond selectivity of at least 96 percent resulting from addition polymerization of propylene oxide.

5,777,176

4,4-(DISUBSTITUTED)CYCLOHEXAN-1-OL DIMERS AND RELATED COMPOUNDS

Siegfried B. Christensen, IV, Philadelphia, and Joseph M. Karpinski, Pottstown, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/US95/13321, § 371 Date Jun. 23, 1997, § 102(e)

Date Jun. 23, 1997, PCT Pub. No. WO96/20161, PCT Pub.

Date Jul. 4, 1997

Continuation of Ser. No. 362,710, Dec. 23, 1994, abandoned.

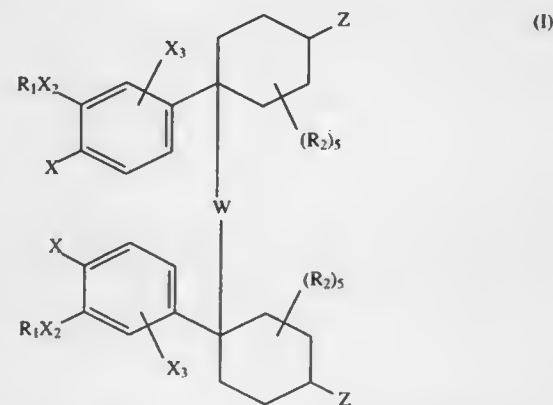
This PCT application Oct. 10, 1995, Ser. No. 860,293

Int. Cl.⁶ C07C 229/00; 69/76; 59/00; 55/28

U.S. Cl. 568—631

4 Claims

1.



wherein:

R₁ is independently —(CR₂R₃)_nC(O)(CR₂R₃)_mR₆, —(CR₂R₃)_nC(O)NR₄(CR₂R₃)_mR₆, —(CR₂R₃)_nO(CR₂R₃)_mR₆, or —(CR₂R₃)_nR₆ wherein the alkyl moieties may be unsubstituted or substituted with one or more fluorines;

m is 0 to 2;

n is 1 to 4;

r is 0 to 6;

R₄ and R₅ are independently selected from hydrogen or a C₁₋₂ alkyl;

R₆ is independently hydrogen, methyl, hydroxyl, aryl, halo substituted aryl, aryloxyC₁₋₃ alkyl, halo substituted

5,777,177

PREPARATION OF DOUBLE METAL CYANIDE-CATALYZED POLYOOLS BY CONTINUOUS ADDITION OF STARTER

José F. Pazos, Havertown, Pa., assignor to Arco Chemical Technology, L.P., Greenville, Del.

Filed Feb. 7, 1996, Ser. No. 597,781

Int. Cl.⁶ C07C 41/03

U.S. Cl. 568—679

19 Claims

1. A process which comprises making a polyether polyol by polymerizing an epoxide in the presence of:

- (a) a double metal cyanide (DMC) catalyst;
- (b) a continuously added starter (S₁); and
- (c) optionally, an initially charged starter (S₂); wherein the S₁ comprises at least about 2 eq. % of the total starter used; and wherein the epoxide and the S₂ are continuously added to the reactor during the polymerization.

5,777,178

PROCESS FOR THE PREPARATION OF POLYOXYALKYLENE ETHER SURFACTANT COMPOSITIONS

Ming Shen, Guilford, Conn., assignor to Olin Corporation, Cheshire, Conn.

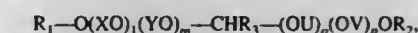
Filed Dec. 18, 1996, Ser. No. 769,619

Int. Cl.⁶ C07C 41/03

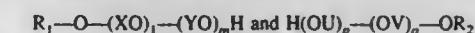
U.S. Cl. 568—679

12 Claims

1. A process for the preparation of polyoxyalkylene ether surfactant compositions having the formula



comprising the steps of: providing an admixture of alkoxyated alcohols selected from the group consisting of



wherein

R₁ and R₂ are independently selected from the group consisting of an alkyl or alkenyl groups having from 3 to 22 carbon atoms and a mono, di or trialkyl phenyl radical having from 14 to 26 carbon atoms;

1, m, p, o are each integers from 0 to 30, and 1+m and o+p are at least 3; and

X, Y, U, V are alkyl radicals;

combining said admixture of alkoxyated alcohols with an acid catalyst and aldehyde of the formula R₃—C(O)H wherein R₃ is H, an alkyl group, an alkenyl group, or an aryl group, said aldehyde being present in about 1–6 molar equivalents over the total moles of said alkoxyated alcohols; and

reacting said combination at between about 500° and about 180° C. and at between about 1.2 atm and 10 atm pressure in the absence of a distillation step that removes water from the reaction, to produce said polyoxyalkylene ether surfactant composition.

5,777,179

CO-PRODUCTION OF PERFLUOROMETHYL PERFLUOROVINYL ETHER AND PERFLUOROETHYL PERFLUOROVINYL ETHER

Baishen Liang, Newark; Ming-Hong Hung, Wilmington, both of Del., and Paul Raphael Resnick, Cary, N.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 24, 1996, Ser. No. 655,347

Int. Cl.⁶ C07C 41/02

U.S. Cl. 568—685

18 Claims

1. A process for producing perfluoromethyl perfluorovinyl ether (PMVE) and perfluoroethyl perfluorovinyl ether (PEVE) comprising the steps of:

aryloxyC₁₋₃ alkyl, indanyl, indenyl, C₇₋₁₁ polycycloalkyl, tetrahydrofuran, furanyl, tetrahydropyranyl, pyranyl, tetrahydrothienyl, thienyl, tetrahydrothiopyranyl, thiopyranyl, C₃₋₆ cycloalkyl, or a C₄₋₆ cycloalkyl containing one or two unsaturated bonds, wherein the cycloalkyl or heterocyclic moiety may be unsubstituted or substituted by 1 to 3 methyl groups, an ethyl group, or an hydroxyl group;

provided that:

- a) when R₆ is hydroxyl, then m is 2; or
- b) when R₆ is hydroxyl, then r is 2 to 6; or
- c) when R₆ is 2-tetrahydropyranyl, 2-tetrahydrothiopyranyl, 2-tetrahydrofuran, or 2-tetrahydrothienyl, then m is 1 or 2; or
- d) when R₆ is 2-tetrahydropyranyl, 2-tetrahydrothiopyranyl, 2-tetrahydrofuran, or 2-tetrahydrothienyl, then r is 1 to 6; or
- e) when n is 1 and m is 0, then R₆ is other than H in —(CR₂R₃)_nO(CR₂R₃)_mR₆;

X is independently YR₂, fluorine, NR₄R₅, or formyl amine;

Y is independently O or S(O)_m;

m' is a number having a value of 0, 1, or 2;

W is alkyl of 2 to 6 carbons, alkenyl of 2 to 6 carbon atoms or alkynyl of 2 to 6 carbon atoms;

X₂ is independently or NR₄;

X₃ is independently hydrogen or X;

R₂ is independently selected from —CH₃ or —CH₂CH₃ unsubstituted or substituted by 1 or more fluorines;

s is 0 to 4;

Z is independently OR₁₄, OR₁₅, SR₁₄, S(O)_nR₇, S(O)₂NR₁₀R₁₄, NR₁₀R₁₄, NR₁₀C(O)R₉, NR₁₀C(Y)R₁₄, NR₁₀C(O)OR₇, NR₁₀C(Y)NR₁₀R₁₄, NR₁₀S(O)₂NR₁₀R₁₄, NR₁₀C(NCN)NR₁₀R₁₄, NR₁₀S(O)₂R₇, NR₁₀C(CR₂NO₂)NR₁₀R₁₄, NR₁₀C(NCN)SR₉, NR₁₀C(CR₂NO₂)SR₉, NR₁₀C(NR₁₀)NR₁₀R₁₄, NR₁₀C(O)C(O)NR₁₀R₁₄, or NR₁₀C(O)C(O)OR₁₄;

Y' is independently O or S;

R₇ is —(CR₂R₃)_nR₁₂ or C₁₋₆ alkyl wherein the R₁₂ or C₁₋₆ alkyl group is unsubstituted or substituted one or more times by methyl or ethyl unsubstituted or substituted by 1–3 fluorines, —F, —Br, —Cl, —NO₂, —NR₁₀R₁₁, —C(O)R₈, —CO₂R₈, —O(CH₂)₂R₈, —CN, —C(O)NR₁₀R₁₁, —O(CH₂)₂C(O)NR₁₀R₁₁, —O(CH₂)₂C(O)R₉, —NR₁₀C(O)NR₁₀R₁₁, —NR₁₀C(O)R₁₁, —NR₁₀C(O)OR₉, —NR₁₀C(O)R₁₃, —C(NR₁₀)NR₁₀R₁₁, —C(NCN)NR₁₀R₁₁, —C(NCN)SR₉, —NR₁₀C(NCN)SR₉, —NR₁₀C(NCN)NR₁₀R₁₁, —NR₁₀S(O)₂R₉, —S(O)_mR₉, —NR₁₀C(O)C(O)NR₁₀R₁₁, —NR₁₀C(O)C(O)R₁₀, or R₁₃;

q is 0, 1 or 2;

R₁₂ is independently R₁₃, (CH₂)_q, C₃₋₇ cycloalkyl, (2-, 3- or 4-pyridyl), pyrimidyl, pyrazolyl, (1- or 2-imidazolyl), pyrrolyl, piperazinyl, piperidinyl, morpholinyl, furanyl, (2- or 3-thienyl), quinolinyl, naphthyl, or phenyl;

R₈ is independently selected from hydrogen or R₉;

R₉ is independently C₁₋₄ alkyl unsubstituted or substituted by one to three fluorines;

R₁₀ is independently OR₈ or R₁₁;

R₁₁ is independently hydrogen, or C₁₋₄ alkyl unsubstituted or substituted by one to three fluorines; or when R₁₀ and R₁₁ are as NR₁₀R₁₁, they may together with the nitrogen form a 5 to 7 membered ring optionally containing at least one additional heteroatom selected from O, N, or S;

R₁₃ is independently oxazolidinyl, oxazolyl, thiazolyl, pyrazolyl, triazolyl, tetrazolyl, imidazolyl, imidazolidinyl, thiazolidinyl, isoxazolyl, oxadiazolyl, or thiadiazolyl, and each of these heterocyclic rings is connected through a carbon atom and each may be unsubstituted or substituted by one or two C₁₋₂ alkyl groups;

R₁₄ is independently hydrogen or R₇; or when R₁₀ and R₁₄ are as NR₁₀R₁₄, they may together with the nitrogen form a 5 to 7 membered ring comprised only of carbon atoms or carbon atoms and at least one 1 heteroatom selected from O, N, or S;

R₁₅ is independently C(O)R₁₄, C(O)NR₁₄, S(O)₂R₇, or S(O)₂NR₁₄;

or the pharmaceutically acceptable salts thereof.

- (a) contacting an initial mixture comprising carbonyl fluoride (CF) and perfluoroacetyl fluoride (PAF) with hexafluoropropylene epoxide (HFPO) under conditions which form a mixture comprising 2,3,3,3-tetrafluoro-2-(trifluoromethoxy)propionic acid fluoride (PMPF) and 2,3,3,3-tetrafluoro-2-(pentafluoroethoxy)propionic acid fluoride (PEPF); and
- (b) dehalocarbonylating an intermediate mixture comprising 2,3,3,3-tetrafluoro-2-(trifluoromethoxy)propionic acid fluoride (PMPF) and 2,3,3,3-tetrafluoro-2-(pentafluoroethoxy)propionic acid fluoride (PEPF) formed in step (a) to form a product mixture comprising perfluoromethyl perfluorovinyl ether (PMVE) and perfluoroethyl perfluorovinyl ether (PEVE).

5,777,180

PROCESS FOR THE PRODUCTION OF BISPHENOLS
Raymond Lawrence June; Robert Lawrence Blackburn, both of Houston; Edgar Donald Allan, Katy, and James Laurel Buechele, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 18, 1996, Ser. No. 773,805
Int. Cl.⁶ C07C 39/12

U.S. Cl. 568—728

14 Claims

1. A method for making bisphenol comprising:
- removing alkyl alcohol from a reactant stream comprising a ketone and a phenol such that said feed stream comprises less than 50 ppm of said alkyl alcohol;
 - reacting said reactant stream in the presence of a cation exchange resin and a sulfur-containing cocatalyst to produce a reaction product comprising cocatalyst, cocatalyst derivatives, and a bisphenol liquor comprising bisphenol and phenol;
 - separating said bisphenol from said reaction products;
 - removing cocatalyst derivatives from said reaction products;
 - returning cocatalyst to said reactor; and
 - recovering bisphenol.

5,777,181

2, 4, 5-TRIHALOGENO- AND 2, 3, 4, 5-TETRAHALOGENOBENZENE DERIVATIVES
Erich Klauke, Odenthal; Uwe Petersen, Leverkusen, and Klaus Grohe, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 409,282, Mar. 24, 1995, Pat. No. 5,530,158, which is a division of Ser. No. 284,331, Aug. 2, 1994, abandoned, which is a division of Ser. No. 968,603, Oct. 29, 1992, Pat. No. 5,362,909, which is a division of Ser. No. 763,027, Sep. 20, 1991, Pat. No. 5,200,548, which is a division of Ser. No. 459,876, Jan. 2, 1990, Pat. No. 5,072,038, which is a continuation of Ser. No. 735,502, May 17, 1985, abandoned.

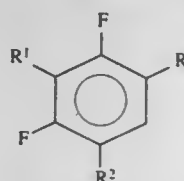
This application Apr. 10, 1996, Ser. No. 631,732
Claims priority, application Germany, Jun. 4, 1984, 34 20 796.1

Int. Cl.⁶ C07C 33/46; 47/52; 255/00; 233/00

U.S. Cl. 568—812

3 Claims

1. A 2,4,5-trihaloeno- benzene derivative of the formula



in which

R is —CN, —CONH₂, —CH₂OH, —CH₂Cl, —CHCl₂, —CCl₃, or —CHO.

R¹ is H, Cl or F, and
R² is Cl or F,
it only being possible for one of R¹ or R² to be F.

5,777,182

COBALT-CATALYZED PROCESS FOR PREPARING 1,3-PROPANEDIOL

Joseph Brown Powell; Lynn Henry Slaugh, both of Houston; Thomas Clayton Forschner, Richmond; Jiang-Jen Lin, Houston; Terry Blane Thomason, Houston; Paul Richard Weider, Houston; Thomas Carl Semple, Friendswood; Juan Pedro Arhancet, Katy; Howard Lam-Ho Fong, Sugar Land; Stephen Blake Mullin; Kevin Dale Allen, both of Katy; David Cleve Eubanks, Houston, and David William Johnson, Richmond, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 316,676, Sep. 30, 1994, and a continuation-in-part of Ser. No. 316,660, Sep. 30, 1994, Pat. No. 5,585,528, and a continuation-in-part of Ser. No. 316,669, Sep. 30, 1994, Pat. No. 5,576,471, and a continuation-in-part of Ser. No. 316,680, Sep. 30, 1994, Pat. No. 5,563,302. This application Aug. 26, 1996, Ser. No. 703,295

Int. Cl.⁶ C07C 27/04

U.S. Cl. 568—862

18 Claims

1. A process for preparing 1,3-propanediol comprising the steps of:
- contacting, at a temperature within the range of about 50° to about 100° C. and a pressure within the range of about 500 to about 5000 psig, ethylene oxide with carbon monoxide and hydrogen in an essentially non-water miscible solvent in the presence of an effective amount of a non-phosphine-ligated cobalt catalyst and an effective amount of a catalyst promoter under reaction conditions effective to produce an intermediate product mixture comprising less than 15 wt % 3-hydroxypropanal;
 - adding an aqueous liquid to said intermediate product mixture and extracting into said aqueous liquid a major portion of the 3-hydroxypropanal at a temperature less than about 100° so as to provide an aqueous phase comprising 3-hydroxypropanal in greater concentration than the concentration of 3-hydroxypropanal in the intermediate product mixture, and an organic phase comprising at least a portion of the cobalt catalyst or a cobalt-containing derivative thereof;
 - separating the aqueous phase from the organic phase;
 - contacting the aqueous phase comprising 3-hydroxypropanal with hydrogen in the presence of a hydrogenation catalyst at a pressure of at least about 100 psig and a temperature during at least a portion of the hydrogenation step of at least about 40° C. to provide a hydrogenation product mixture comprising 1,3-propanediol; and
 - recovering 1,3-propanediol from the hydrogenation product mixture.

5,777,183

PROCESS FOR THE PRODUCTION OF GUERBET ALCOHOLS

Gerd Mueller, Duesseldorf; Bernhard Gutsche, Hilden; Lutz Jeromin, Hilden; Udo Steinberger, Hilden; Reinhold Sedelies, Schifferstadt; Ralf Bohlander; Richard Ridinger, both of Duesseldorf; Dirk Springer, Haan; Franz Buettgen, Hilden, and Frank Bartschik, Neuss, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Filed Jul. 5, 1996, Ser. No. 676,029

Claims priority, application Germany, Jul. 4, 1995, 195 24 245.9

Int. Cl.⁶ C07C 27/00

U.S. Cl. 568—905

20 Claims

1. A process for the production of Guerbet alcohols comprising the steps of

- A) initiating the condensation of at least one aliphatic alcohol in the presence of at least one alkali metal hydroxide and/or alkaline earth metal hydroxide as catalyst, wherein the initial reaction pressure corresponds to about the vapor pressure of the at least one aliphatic alcohol; and
- B) continuing the condensation of the at least one aliphatic alcohol while continually reducing the reaction pressure to about the vapor pressure of the reaction mixture during the course of the reaction.

5,777,184

PREPARATION OF FLUOROALKYL COMPOUNDS AND THEIR DERIVATIVES

Michael Van Der Puy, Amherst, and Alagappan Thenappan, Cheektowaga, both of N.Y., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Jun. 25, 1997, Ser. No. 882,061

Int. Cl.⁶ C07C 21/18

U.S. Cl. 570—135

20 Claims

1. A process for producing a fluoromethylated vinyl chloride compound having the formula:



where a=1, 2 or 3, said process comprising:

catalytically reacting a starting material with a fluorination agent under conditions sufficient to form said fluoromethylated vinyl chloride compound, said starting material having the formula:



where b=0, 1 or 2; c=0, 1, 2, or 3; d=0, 1, 2 or 3; and e=1 or 2 with the provisos that b+c+d=3, c+e>1, and b+e<4.

5,777,185

PRODUCTION OF ORGANIC FLUORINE COMPOUNDS
Randolph K. Belter, Zachary, La., assignor to LaRoche Industries Inc., Atlanta, Ga.

Filed Sep. 9, 1997, Ser. No. 925,999

Int. Cl.⁶ C07C 17/08

U.S. Cl. 570—164

13 Claims

1. A process for hydrofluorinating an olefinic hydrocarbon of the formula



where X, X' and X'' are the same or different and are hydrogen or halo and R' is hydrogen or C₁ to C₆ alkyl, with hydrogen fluoride, wherein said process is carried out by admixing the olefinic hydrocarbon with hydrogen fluoride in an imido-fluoride hydrogen fluoride solvent having the formula



where R is hydrogen, C₁ to C₆ alkyl, C₁ to C₆ alkyl substituted with halo or C₆ to C₁₀ aryl either unsubstituted or substituted with alkyl and η is 0 or an integer that is at least 1.

5,777,186

PROCESS FOR HYDROGENATING BENZENE IN HYDROCARBON OILS

Toshio Shimizu, Saitte, Japan, assignor to Cosmo Research Institute, and Cosmo Oil Co., Ltd., both of Tokyo, Japan
Continuation of Ser. No. 514,385, Aug. 11, 1995, abandoned.

This application Oct. 6, 1997, Ser. No. 944,789

Claims priority, application Japan, Aug. 29, 1994, 7-203353
Int. Cl.⁶ C07C 5/10

U.S. Cl. 585—269

22 Claims

1. A process for selectively hydrogenating benzene in a hydrocarbon oil containing benzene and at least one aromatic compound containing one or more alkyl groups which comprises reacting the hydrocarbon oil with hydrogen gas in the presence of an alkaline aqueous layer comprising (1) a hydrogenation catalyst consisting essentially of at least one metal in Group VIII of the Periodic Table, or compound thereof which is converted into a Group VIII metal in the reaction system, either supported on a carrier or as particles of the metal or the compound, and (2) zinc or a zinc compound, to produce hydrogenated benzene, wherein the conversion rate of benzene to hydrogenated benzene is greater than the conversion rate of said at least one aromatic compound to any hydrogenated said compound.

5,777,187

TWO-STEP PROCESS FOR ALKYLATION OF BENZENE TO FORM LINEAR ALKYL BENZENES

John F. Knifton, and Prakasa Rao Anantaneni, both of Austin, Tex., assignors to Huntsman Petrochemical Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 598,692, Feb. 8, 1996. This application Jun. 12, 1996, Ser. No. 662,786

Int. Cl.⁶ C10C 2/64

U.S. Cl. 585—449

22 Claims

1. A process useful for the production of monoalkylated benzene, comprising:
- contacting benzene with an olefin of from about 5 to about 30 carbons in the presence of fluorine-containing mordenite under conditions such that monoalkylated benzene is formed; and
 - contacting the effluent from step (a) with benzene in the presence of a fluorine-containing clay catalyst such that the product of step (b) has a bromine number less than the bromine number of the product of step (a).

5,777,188

THERMAL CRACKING PROCESS

Larry E. Reed; Kenneth E. Inkrott, and James E. Shaw, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 31, 1996, Ser. No. 656,571

Int. Cl.⁶ C07C 4/02; 7/10; 7/17; C10G 9/12

U.S. Cl. 585—648

29 Claims

1. A process comprising contacting a cracking tube of a thermal cracking furnace, used in a thermal cracking process for converting a saturated hydrocarbon to an olefinic compound, with a fluid stream which comprises steam and a polysulfide in said cracking tube under conditions sufficient to effect the suppression of carbon monoxide formation during a thermal cracking process wherein said contacting is carried out before said saturated hydrocarbon is introduced into said cracking tube.

5,777,189

PROCESS FOR THE ALKYLATION OF OLEFINS

Georgy G. Alexanyan; Nikolay B. Librovitch, both of Moscow, and Yuri A. Prochukhane, UFA, all of Russian Federation, assignors to Orgral International Technologies Corporation, St. Michael, Barbados

Division of Ser. No. 101,302, Aug. 3, 1993, Pat. No. 5,443,799.

This application May 25, 1995, Ser. No. 450,615

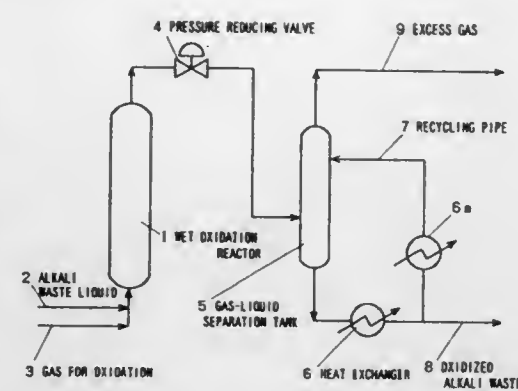
Int. Cl.⁶ C07C 2/56; 2/58; 2/62

U.S. Cl. 585—709

8 Claims

1. A process for the sulphuric acid alkylation of at least one olefin with at least one isoparaffin, said process comprising the steps of:

- feeding sulphuric acid into an emulsion preparation zone having a longitudinal axis;
- injecting said at least one isoparaffin through a plurality of nozzles that extend into said emulsion preparation zone in a direction generally parallel to said longitudinal axis, in order to form a homogeneous emulsion of said at least one isoparaffin within said sulphuric acid within said emulsion preparation zone;
- feeding the so-prepared emulsion into a separate reaction zone from said emulsion preparation zone, and injecting said at least one olefin into the so-prepared emulsion in said reaction zone in a generally radial direction relative to said longitudinal axis, whereby a reaction mixture is formed;
- allowing said reaction mixture to react within said reaction zone and;
- recovering from said reaction zone the so-reacted mixture.



mainly comprising hydrogen sulfide and carbon dioxide so as to absorb said acidic substances; separating said reduced-pressure mixture of the oxidized alkali waste liquid and surplus gas into a gas phase portion and a liquid phase portion in a gas-liquid separation tank; cooling at least a part of said separated liquid phase to a temperature in the range from 10° C. to 80° C. to form a cooled liquid phase portion; and contacting at least a part of said cooled liquid phase portion with said gas phase portion so as to cool said gas phase portion.

5,777,190

METHOD OF CONTROLLED REDUCTION OF NITROAROMATICS BY ENZYMATIC REACTION WITH OXYGEN SENSITIVE NITROREDUCTASE ENZYMES

Manish M. Shah, Richland, and James A. Campbell, Pasco, both of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed May 29, 1997, Ser. No. 865,140

Int. Cl.⁶ A62D 3/00

U.S. Cl. 588—202

4 Claims

1. A method for reducing nitroaromatic compounds comprising the steps of:

- providing a nitroaromatic compound,
- providing an oxygen sensitive nitroreductase enzyme,
- combining said nitroaromatic compound and said oxygen sensitive nitroreductase enzyme in an environment substantially free of oxygen, thereby causing the catalytic reduction of said nitroaromatic compound.

5,777,191

WET OXIDIZING PROCESS OF WASTE SODA

Isoo Shimizu, and Jun-ichi Kohhashi, both of Yokohama, Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Jan. 28, 1997, Ser. No. 789,388

Claims priority, application Japan, Jan. 31, 1996, 8-038863

Int. Cl.⁶ A62D 3/00; C02F 1/74

U.S. Cl. 588—205

11 Claims

1. In the wet oxidation of an alkali waste liquid obtained by contacting an aqueous alkali and a hydrocarbon fluid containing acidic substances mainly comprising hydrogen sulfide and carbon dioxide, a process comprising:

bringing an alkali waste liquid into contact with excess molecular oxygen so as to oxidize said alkali waste liquid at a temperature of from 150° C. to 350° C. and at a pressure of from 15 atmospheres to 100 atmospheres under conditions in which said alkali waste liquid can exist in liquid phase, said alkali waste liquid being obtained by contacting an aqueous alkali and a hydrocarbon fluid containing acidic substances

5,777,192

METHOD OF DECOMPOSING POLYCHLORODIBENZO-P-DIOXINS AND/OR POLYCHLORODIBENZOFURANS

Takeshi Sako; Masahito Sato; Tsutomu Sugeta; Katsuo Otake, all of Tsukuba, and Masayuki Tsugumi, Tokyo, all of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Japan

Filed Mar. 21, 1997, Ser. No. 822,703

Claims priority, application Japan, Jun. 10, 1996, 8-146940

Int. Cl.⁶ A62D 3/00; C02F 1/68; F23J 3/00

U.S. Cl. 588—208

6 Claims

1. A method of decomposing dioxin compounds contained in a solid combustion residue selected from the group consisting of ash and fly ash, comprising dispersing said combustion residue in water to form a dispersion and heating said dispersion at a temperature higher than the critical temperature of water and a pressure higher than the critical pressure of water to decompose the dioxin compounds.

5,777,193

ANIMALS WITH TARGETED GENE DISRUPTION

Ashley Roger Dunn, Parkville, Australia; Edouard Guy Stanley, London, United Kingdom; Graham John Lieschke, Parkville, Australia; Dianne Grall, Parkville, Australia, and Kerry J. Fowler, Parkville, Australia, assignors to Ludwig Institute For Cancer Research, New York, N.Y.

PCT No. PCT/AU94/00103, § 371 Date Oct. 24, 1994, § 102(e) Date Oct. 24, 1994, PCT Pub. No. WO92/16060, PCT Pub. Date Sep. 17, 1992

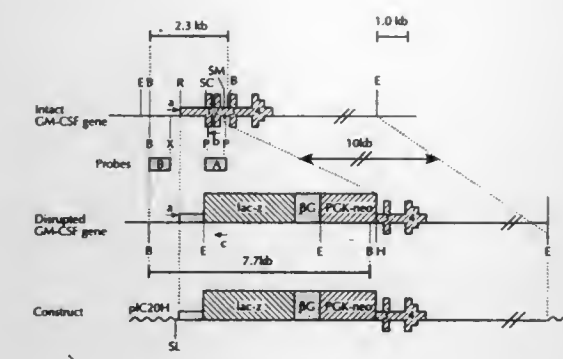
PCT Filed Mar. 4, 1994, Ser. No. 211,651

Int. Cl.⁶ A61K 49/00; C12N 5/00; 15/11; C12Q 1/00

U.S. Cl. 800—2

15 Claims

3. A compound homozygous transgenic mouse comprising homozygous disruptions in its somatic and germ cells in both the gene encoding GM-CSF and the gene encoding M-CSF, wherein



said disruptions result in an inability of said compound homozygous transgenic mouse to produce detectable levels of GM-CSF and M-CSF, and further wherein said mouse has osteopetrosis.

5,777,194

GENE-TARGETED MICE WITH HUMANIZED Aβ SEQUENCE AND SWEDISH FAD MUTATION

Richard W. Scott, Wallingford; Andrew G. Reaume, West Chester; Stephen P. Trusko, Avondale, all of Pa., and Robert Siman, Wilmington, Del., assignors to Cephalon, Inc., West Chester, Pa.

Continuation-in-part of Ser. No. 429,207, Apr. 26, 1995, abandoned. This application Apr. 23, 1996, Ser. No. 636,876

Int. Cl.⁶ C12N 5/00; 15/00; A61K 49/00

U.S. Cl. 800—2

5 Claims

1. A gene-targeted mouse whose somatic and germ cells are homozygous for a chimeric amyloid precursor protein (APP) gene, wherein said gene comprises an endogenous mouse APP gene where at least one Swedish mutation has been introduced into said endogenous gene and where a sequence encoding human Aβ peptide replaces the corresponding region of said endogenous gene, and wherein the expression of said gene results in the formation of a detectable amount of human Aβ protein in the brain of said mouse.

5,777,195

KNOCKOUT MUTANT MOUSE FOR DARPP-32 AND USE THEREOF

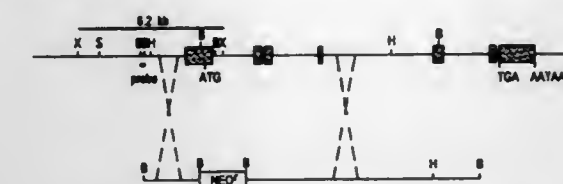
Allen A. Fienberg, and Paul Greengard, both of New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Filed May 17, 1996, Ser. No. 649,103

Int. Cl.⁶ C12N 5/00; 5/06; 15/09; A61K 49/00

U.S. Cl. 800—2

15 Claims



1. A transgenic knockout mouse comprising a homozygous disruption in its endogenous DARPP-32 gene, wherein said disruption prevents the expression of a functional DARPP-32 protein, and further wherein the phenotype of said knockout mouse relative to a mouse having a wild type DARPP-32 gene comprises:

- a diminished response to dopamine wherein said diminished response includes a failure of dopamine to inhibit the activity of brain sodium-potassium ATPase;

- a diminished release of dopamine in response to amphetamine administration; and
- an increased level of substance P in the striatum and cortex.

5,777,196

INBRED CORN PLANT 01CSI6 AND SEEDS THEREOF

Michael A. Hall, Spencer, Iowa, assignor to Dekalb Genetics Corporation, Dekalb, Ill.

Filed Feb. 5, 1997, Ser. No. 795,040

Int. Cl.⁶ A01H 5/00; 4/00; 1/00; C12N 5/04

U.S. Cl. 800—200

39 Claims

1. The inbred corn seed designated 01CSI6, wherein a sample of said seed has been deposited under ATCC Accession No. 209650.

5,777,197

INBRED CORN PLANT 31NI2 AND SEEDS THEREOF

Dale S. Wickersham, Sycamore, Ill., assignor to Dekalb Genetics Corporation, Dekalb, Ill.

Filed Feb. 5, 1997, Ser. No. 795,042

Int. Cl.⁶ A01H 5/00; 4/00; 1/00; C12N 5/04

U.S. Cl. 800—200

39 Claims

4. An inbred corn plant produced by growing the seed of an inbred corn plant designated 31NI2, wherein a sample of said seed has been deposited under ATCC Accession No. 209649.

5,777,198

SOYBEAN CULTIVAR 91348793300

Roger Lussenden, Redwood Falls, Minn., assignor to Asgrow Seed Company, Kalamazoo, Mich.

Filed Feb. 12, 1997, Ser. No. 797,920

Int. Cl.⁶ A01H 5/00; 5/10; C12N 5/04

U.S. Cl. 800—200

10 Claims

1. A soybean seed designated 91348793300 deposited as ATCC Accession Number 209355.

2. A plant or plants of the soybean cultivar designated 91348793300 produced by growing the seed of claim 1.

5,777,199

Patent Not Issued For This Number

5,777,200

CHEMICALLY REGULATABLE AND ANTI-PATHOGENIC DNA SEQUENCES AND USES THEREOF

John A. Ryals, Durham; Danny C. Alexander, Cary, both of N.C.; Robert M. Goodman, Madison, Wis., and Jeffrey R. Stinson, Davie, Fla., assignors to Novartis Finance Corporation, New York, N.Y.

Division of Ser. No. 181,271, Jan. 13, 1994, Pat. No. 5,614,395, and a continuation-in-part of Ser. No. 42,847, Apr. 6, 1993, abandoned, Ser. No. 848,506, Mar. 6, 1992, abandoned, and Ser. No. 45,957, Apr. 12, 1993, abandoned, said Ser. No. 181,271 is a continuation-in-part of Ser. No. 93,301, Jul. 16, 1993, abandoned, which is a continuation of Ser. No. 973,197, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 678,378, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 305,566, Feb. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 165,667, Mar. 8, 1988, abandoned, said Ser. No. 42,847 is a continuation of Ser. No. 632,441, Dec. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 425,504, Oct. 20, 1989, abandoned, and Ser. No. 165,667, said Ser. No. 848,506 is a continuation-in-part of Ser. No. 768,122, Sep. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 580,431, Sep. 7, 1990, which is a continuation-in-part of Ser. No. 425,504, which is a continuation-in-part of Ser. No. 368,672, Jun. 20, 1989, which is a continuation-in-part of Ser. No. 329,018, Mar. 24, 1989. This application May 31, 1995, Ser. No. 455,416

Int. Cl.⁶ C12N 15/00; C12Q 1/68

U.S. Cl. 800—205

10 Claims

1. A method for differential screening and enrichment of cDNA populations from non-infected plant tissue or chemically-induced plant tissue, comprising:

- providing single-stranded cDNA from induced and uninduced populations, the single-stranded cDNA from the induced and uninduced populations having opposite DNA polarity, and the cDNA from the uninduced population having a biotin-affinity tag;
- hybridizing the single-stranded cDNA populations of step (a) with each other and
- separating the hybridization mixture of step b by biotin-avidin chromatography to enrich for single stranded cDNAs from the induced population which are not hybridized to the cDNA from the uninduced population.

5,777,201

MODIFICATION OF VEGETABLE OILS USING DESATURASE

Candace Gloria Poutre, and Asha Mehra-Palta, both of Madison, Wis., assignors to Agrigenetics, Inc., San Diego, Calif. Continuation of Ser. No. 222,553, Apr. 4, 1994, abandoned, which is a continuation of Ser. No. 850,714, Mar. 13, 1992, abandoned. This application Oct. 31, 1996, Ser. No. 742,273

Int. Cl.⁶ A01H 5/00; S10; 15/00; 15/82

U.S. Cl. 800—250

25 Claims

1. A plant seed comprising DNA encoding yeast delta-9 desaturase and means for expressing said DNA in said plant seed.

ELECTRICAL

5,777,202

REFERENCE SOLUTION CONTAINER HAVING IMPROVED GAS RETENTION

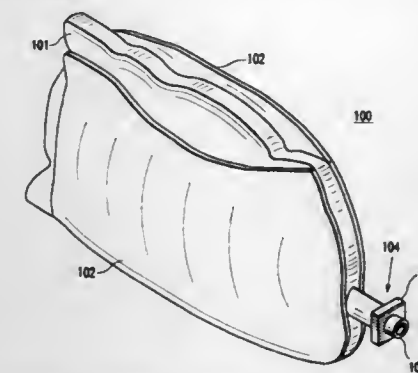
Ronald E. Betts, La Jolla; Douglas R. Savage, Del Mar, and Michael C. Weinzierl, San Diego, all of Calif., assignors to SenDx Medical, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 650,465, May 20, 1996. This application Jul. 31, 1996, Ser. No. 690,042

Int. Cl.⁶ G01N 33/49

U.S. Cl. 73—1.03

12 Claims



1. A reference solution container with improved oxygen gas partial pressure retention, the reference solution container for holding a reference solution in an analyzer for measuring gas levels in a fluid, the reference solution container having an interior surface, comprising:

- a polypropylene sealing layer forming substantially all the interior surface of the reference solution container, the polypropylene sealing layer being in contact with the reference solution and
- a substrate layer secured to the polypropylene sealing layer.

5,777,203

METHOD AND DEVICE FOR GAS EMISSION

Hans Stymne, Idungatan 7, Gavle S-802 67, Sweden PCT No. PCT/SE95/00162, § 371 Date Aug. 15, 1996, § 102(e) Date Aug. 15, 1996, PCT Pub. No. WO95/22747, PCT Pub. Date Aug. 24, 1995

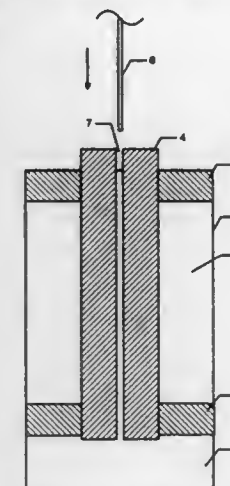
PCT Filed Feb. 16, 1995, Ser. No. 700,466

Claims priority, application Sweden, Feb. 17, 1994, 9400538

Int. Cl.⁶ G01M 3/20; G01F 25/00

U.S. Cl. 73—1.04

8 Claims



1. A method for emission of small amounts of gas from a substance in condensed form to the surroundings with a controllable rate, characterized by enclosing the condensed substance in a container and emission of the condensed substance from the container to the surroundings via first a membrane (3), which is permeable to the gas, and then a capillary (7), the rate of emission of the gas to the surroundings being determined by means of the geometry of the capillary.

5,777,204

AIR-FUEL RATIO DETECTING DEVICE AND METHOD THEREFOR

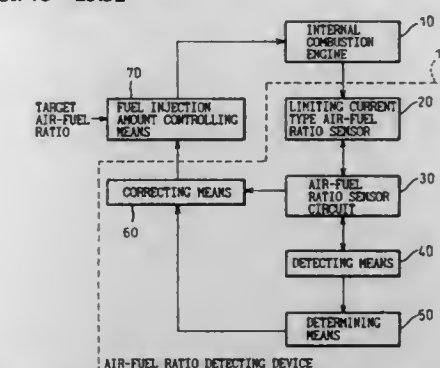
Shinichi Abe, Aichi-gun, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 13, 1997, Ser. No. 785,147

Claims priority, application Japan, Jan. 16, 1996, 8-005004 Int. Cl.⁶ G01N 27/12; 31/00; F02M 51/00

U.S. Cl. 73—23.32

3 Claims



1. An air-fuel ratio detecting device for detecting an air-fuel ratio in an internal combustion engine comprising:

- a limiting current type air-fuel ratio sensor arranged in an exhaust system of the engine, wherein the air-fuel ratio sensor is made from solid electrolyte and generates an electric current when a voltage is applied thereto;
- an air-fuel ratio sensor circuit for applying a voltage to the air-fuel ratio sensor within a range of a limiting current, wherein the air-fuel ratio sensor circuit detects a concurrent limiting current and outputs a voltage proportional to a magnitude of the detected current;
- a detecting means for detecting a change in the voltage output from the air-fuel ratio sensor circuit when a voltage applied to the sensor is changed from a voltage within the range of the limiting current to a voltage outside the range of the limiting current, wherein the voltage applied to the air-fuel ratio sensor is changed from a voltage within the range of the limiting current to a voltage outside the range of the limiting current a predetermined time after the engine has been started;
- a determining means for determining that the air-fuel ratio sensor is in an inactive state when the change in the voltage output from the air-fuel ratio sensor circuit detected by the detecting means is less than a predetermined value; and
- a correcting means for correcting an output error of the air fuel ratio sensor circuit based on the voltage output from the air-fuel ratio sensor circuit when the determining means determines that the air-fuel ratio sensor is in the inactive state when the change in the voltage output from the air-fuel ratio sensor is less than the predetermined value.

5,777,205

APPARATUS FOR ANALYSIS OF MIXED GAS COMPONENTS

Kazuo Nakagawa; Hiromi Yamazaki; Kenichi Uchida, and Yukio Naruse, all of Shizuoka-ken, Japan, assignors to Nikkiso Company Limited, Tokyo, Japan

Filed Sep. 26, 1996, Ser. No. 721,524

Claims priority, application Japan, Sep. 29, 1995, 7-252993

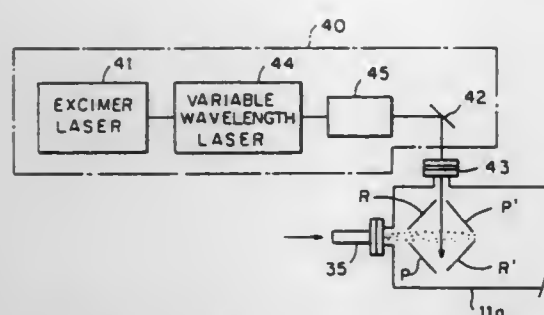
Int. Cl.⁶ G01N 21/00; 7/00; B01D 59/44

U.S. Cl. 73—24.02

2 Claims

1. A method for analyzing components of a gas mixture, the method including Fourier transform ion cyclotron resonance mass spectrometry,

- the spectrometry including the steps of providing a vacuum cell, creating a static magnetic field within the cell;
- ionizing the gas,
- creating a high-frequency electric field within the cell to induce ion cyclotron resonance, and
- detecting a high-frequency decaying electric signal; and



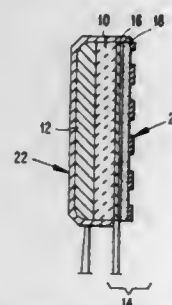
Fourier-transforming the electric signal into a frequency-domain spectrum;
wherein the step of ionizing further comprises irradiating the gas mixture within the cell with monochromatic light having a first predetermined wavelength at which one component of the mixture is ionized, and irradiating the gas mixture within the cell with monochromatic light having a second predetermined wavelength at which one component of the mixture is not ionized;
the method further comprising the steps of obtaining by the spectrometry a second frequency-domain spectrum of the gas mixture;
obtaining by the spectrometry a first frequency-domain spectrum of the gas mixture; and
subtracting the second frequency-domain spectrum from the first frequency-domain spectrum to obtain an isolated frequency-domain spectrum of the one component.

5,777,206
METHOD AND MEASURING DEVICE FOR DETERMINING THE WATER CONTENT OF A GAS
Klaus Züchner, Angerstrasse 12 a, D-37073 Göttingen, Germany; Thomas Schulze, Sackstrasse 13, D-37191 Katlenburg, Germany, and Gerrit Kahle, Bramwaldstrasse 6, D-37081 Göttingen, Germany

PCT No. PCT/DE96/01163, § 371 Date Feb. 26, 1997, § 102(e) Date Feb. 26, 1997, PCT Pub. No. WO97/02486, PCT Pub. Date Jan. 23, 1997

PCT Filed Jun. 26, 1996, Ser. No. 776,929
Claims priority, application Germany, Jun. 30, 1995, 195 23 601.7

Int. Cl.⁶ G01W 1/00; G01N 25/64; H01L 7/00
U.S. Cl. 73—29.01



1. An instrument for determining the water content of a gas comprising a capacitive sensor for making measurements of an electrical capacity that varies as a function of water content or humidity of the gas, where said capacitive sensor is thermally coupled to a heating element and a temperature probe, a source of energy connected to the heating element, a first signal processing circuit connected to the capacitive sensor, and a second signal-processing circuit connected to the temperature probe, wherein the heating element and the temperature probe comprise a single temperature-dependent resistor, the second signal-processing circuit, the temperature-dependent resistor, and the source of energy comprise a regulating circuit that maintains the temperature of the capacitive sensor constant by automatic control of said heating element, the first signal processing circuit interpolates or extrapolates in accordance with measurements for the capacity of the

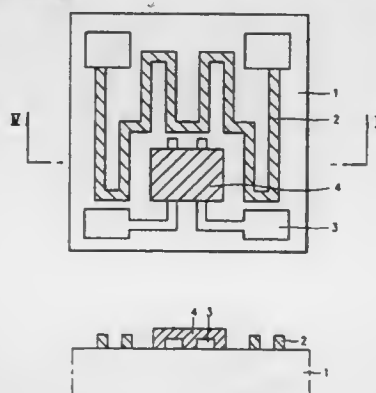
capacitive sensor a single variable in the form of the actual value of the relative or absolute humidity of the gas obtained from previously determined calibration values at the same constant temperature and/or determines the absolute humidity of the gas from its relative humidity or its relative humidity from its absolute humidity in conjunction with the partial pressure of the water vapor.

5,777,207
GAS SENSOR AND METHOD FOR FABRICATING THE SAME

Dong Hyun Yun, Kyungki-do; Kyuchung Lee, Seoul; Chul Han Kwon, Keungki-do, and Hyung-Ki Hong, Kyungki-do, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Oct. 11, 1996, Ser. No. 728,757
Claims priority, application Rep. of Korea, Nov. 27, 1995, 43917/1995

Int. Cl.⁶ G01N 27/12; H01L 7/00; 29/66
U.S. Cl. 73—31.05

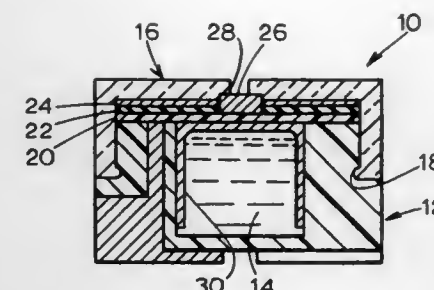


1. A gas sensor comprising:
a substrate;
a heater formed on said substrate;
electrodes each formed on said substrate electrically insulated from the heater; and
a sensing layer formed of SnO₂ including WO₃ added in a chemical mixture to be disposed on said substrate including said electrodes;
wherein a ratio of the mixture of WO₃ with respect to SnO₂ is between 1 and 10 wt %.

5,777,208
GAS SENSOR WITH PRESSURIZED SEAL
Dennis Martell, Naperville, Ill.; Richard Grove Warburton, Coraopolis, Pa.; Laura Ann Lindner, Oakdale, Pa., and Juergen Lindner, Bethel Park, Pa., assignors to J and N Associates, Inc., Valparaiso, Ind., and National Draeger Incorporated, Pittsburgh, Pa.

Division of Ser. No. 515,688, Aug. 16, 1995, Pat. No. 5,744,697. This application Oct. 22, 1996, Ser. No. 734,899
Int. Cl.⁶ G01N 27/26

U.S. Cl. 73—31.06
1. A gas sensor assembly comprising:
a first housing portion having a receptacle formed therein;
a gas-sensing agent disposed in said receptacle;
a plurality of electrodes disposed in fluid contact with said gas-sensing agent;
a plurality of conductive members, each of said conductive members being associated with a respective one of said electrodes;

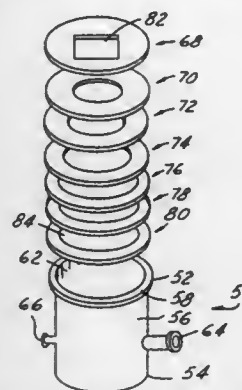


a second housing portion;
a sealing member disposed between said first housing portion and said second housing portion; and
an electrode support sheet disposed between said sealing member and said receptacle, said electrodes being formed on said electrode support sheet.

5,777,209
LEAKAGE DETECTION APPARATUS EQUIPPED WITH UNIVERSAL ADAPTER HEAD AND METHOD OF TESTING

Fu-Kang Tien, Hsin-chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

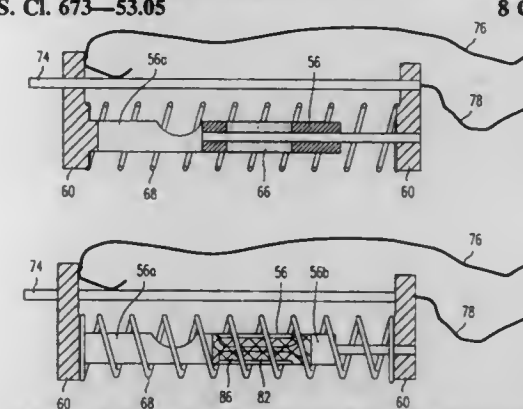
Filed Dec. 13, 1996, Ser. No. 764,197
Int. Cl.⁶ G01M 3/04; 3/20; B05D 3/00
U.S. Cl. 73—40.7



1. A leakage detection apparatus for testing components of a semiconductor processing equipment for vacuum tightness comprising:

a leakage detection chamber generally of a drum shape having two ends connected by a cylindrical sidewall wherein the first end is sealed and the second end is open and is equipped with a flange having a predetermined dimension adapted for receiving any one of a plurality of mounting plates,
a plurality of mounting plates each having substantially the same outside dimension and shape as said flange for fitting snugly on top of said flange and a cavity of different shapes and dimensions, each of said mounting plates is adapted for mounting a component in said semiconductor processing equipment such that the vacuum tightness of the component used can be tested, and
a first and a second port opened in said cylindrical sidewall of said leakage detection chamber, said first port is in fluid communication with a vacuum pump and a helium detector while said second port is in fluid communication with a vacuum gauge.

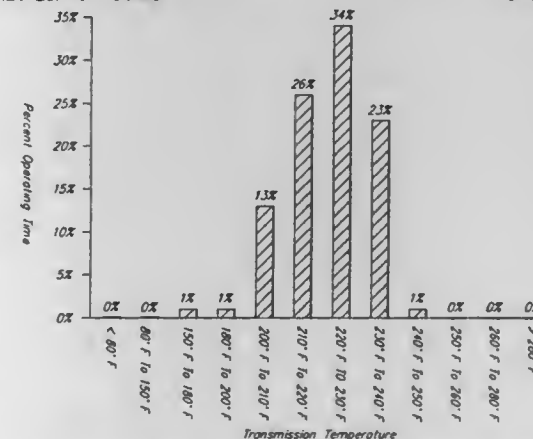
5,777,210
OIL QUALITY SENSOR MEASURING BEAD VOLUME
Paul J. Voelker, Fremont, and Joe D. Hedges, Portola Valley, both of Calif., assignors to Voelker Sensors, Inc., Palo Alto, Calif.
Continuation-in-part of Ser. No. 637,878, Apr. 25, 1996. This application Oct. 15, 1996, Ser. No. 730,109
Int. Cl.⁶ G01N 27/26; 33/30
U.S. Cl. 673—53.05



1. A method of measuring an electrical characteristic of a fluid, comprising the steps of:
providing a quantity of resin beads holding charged groups, the beads each being in a known state;
exposing the beads to a fluid;
allowing a size of the beads to change upon exposure to the fluid, a change in the size of the beads moving a spring loaded member; and
measuring a position of the member.

5,777,211
METHOD TO DETERMINE THE REMAINING USEFUL LIFE OF AUTOMATIC TRANSMISSION FLUID
Gary J. Binienda, Troy; Nabil M. Issa, Detroit; Hans Dourra, Dearborn; Spyros E. Drutis, Clarkston, and Samer H. Halawi, Madison Heights, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Nov. 25, 1996, Ser. No. 758,140
Int. Cl.⁶ G01N 33/26

U.S. Cl. 73—53.05



1. A method of determining the remaining useful life of automatic transmission fluid used in an automatic transmission or automatic transaxle controlled by a programmable electronic controller, comprising the steps of:

a. monitoring in-vehicle operation of a multiplicity of the same type of automatic transmissions or automatic transaxles as the first recited automatic transmission or automatic transaxle and collecting data on factors that bear on the useful life of automatic transmission fluid wherein one factor is time during electronic modulation of converter clutch (EMCC);

- b. deriving weighted constants for each factor based on the accumulated data;
- c. programming the programmable electronic controller to monitor the operation of the first recited automatic transmission or automatic transaxle and collect data on the factors that bear on the useful life of automatic transmission fluid including time during EMCC; and
- d. programming the programmable electronic controller to determine the remaining useful life of the automatic transmission fluid in the first recited automatic transmission or transaxle based on the collected data and weighted constants, including the collected data and weighted constant for time during EMCC factor.

5,777,212

SPRING RELAXATION METHOD AND ROTARY VISCOMETER FOR MEASURING RHEOLOGICAL FLOW PROPERTIES OF A LIQUID SAMPLE BY THE METHOD

Koji Sekiguchi, Komae, and Hattori Sadayoshi, Yokohama, both of Japan, assignors to Toki Sangyo Co., Ltd., Tokyo, Japan

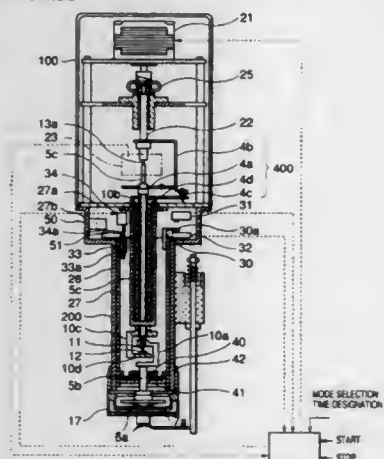
Filed Feb. 28, 1997, Ser. No. 808,103

Claims priority, application Japan, Mar. 1, 1996, 8-045106

Int. Cl.⁶ G01N 11/14

U.S. Cl. 73—54.33

9 Claims



1. A rotary viscometer which measures information regarding rheological properties of a liquid sample using a spring relaxation method, comprising:

- a rotor which is driven to rotate while contacting with a sample liquid to be measured;
- a rotor shaft which supports said rotor and is a first drive shaft for transmitting a rotational drive force to said rotor;
- rotational driving means having a drive power source, for driving said rotor to rotate and an output shaft for outputting the drive power;
- a second drive shaft for transmitting the drive power to said rotor shaft;
- a first linking means having an elastic member for elastically linking said output shaft with said second drive shaft via said elastic member so as to transmit the drive power therebetween;
- support means having a pivot and a bearing for rotatably bearing and supporting said rotor shaft;
- a second linking means which bypasses said support means for linking said rotor shaft with said second drive shaft;
- indicated value detecting means for detecting an indicated value of said viscometer;
- viscosity calculating means for calculating the viscosity from resultant indicated values during a measurement state;
- pivot protecting means having a locking mechanism for locking and unlocking said rotor shaft against and for rotating, respectively, and a pivot separating mechanism for separating and

contacting the pivot of said support means from and with the bearing, respectively; and

control means for controlling operations of said rotational driving means and said pivot protecting means, wherein said indicated value detecting means detects rotational angular displacements between said rotor shaft and said second driving shaft, which correspond to said indicated values of said viscometer;

said pivot protecting means realizes three states, a first state in which said rotor shaft is locked against rotating and said pivot of said support means is separated from said bearing, a second state in which said pivot of said support means is in contact with said bearing and locking of said rotor shaft is released, and a third state in which said rotor shaft is locked against rotating and said pivot of said support means is in contact with said bearing; and

said control means at least has a control mode for measuring the viscosity using the spring relaxation method, in which said elastic member is tightened up to a preset indicated value of said viscometer by operating said rotational driving means and said pivot protecting means is brought into said third state before a measurement starts, and at a start of the measurement said pivot protecting means is further brought into said second state to execute the measurement of the spring relaxation method.

5,777,213

PREPARATIVE LIQUID CHROMATOGRAPHY APPARATUS

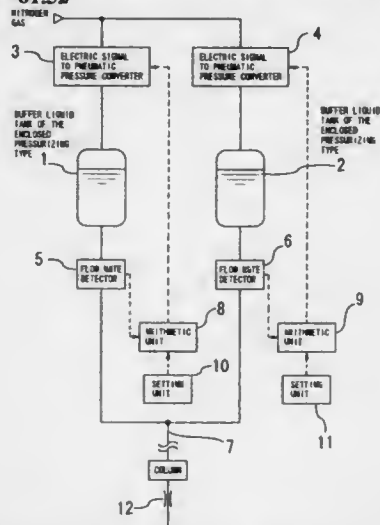
Hideo Tsukazaki, Toride, and Kazuya Akaike, Tokyo, both of Japan, assignors to TFC Corporation, Tokyo, Japan

Filed Nov. 21, 1996, Ser. No. 752,589

Int. Cl.⁶ G01N 31/08; B01D 15/08

U.S. Cl. 73—61.52

6 Claims



1. A preparative liquid chromatography apparatus for detecting, comparing and controlling the flow rates of a plurality of buffer liquids to be delivered towards a chromatography column, comprising:

- a plurality of buffer liquid tanks of the enclosed pressurizing type;
- a pressurization apparatus for supplying gas to apply a pneumatic pressure to the insides of said buffer liquid tanks;
- a plurality of electric signal to pneumatic pressure converters for individually adjusting pneumatic pressures of the gas to be applied actually to said buffer liquid tanks by said pressurization apparatus in response to respective electric signals;
- a plurality of flow rate detectors for individually detecting flow rates of liquid forced out from said buffer liquid tanks by the pneumatic pressures of the gas; and
- arithmetic unit means for comparing the flow rates detected by said flow rate detectors with respective preset values to pro-

duce electric signals to be outputted individually to said electric signal to pneumatic pressure converters.

5,777,214

IN-SITU CONTINUOUS WATER ANALYZING MODULE

Cyril V. Thompson, Knoxville, and Marcus B. Wise, Kingston, both of Tenn., assignors to Lockheed Martin Energy Research Corporation, Oak Ridge, Tenn.

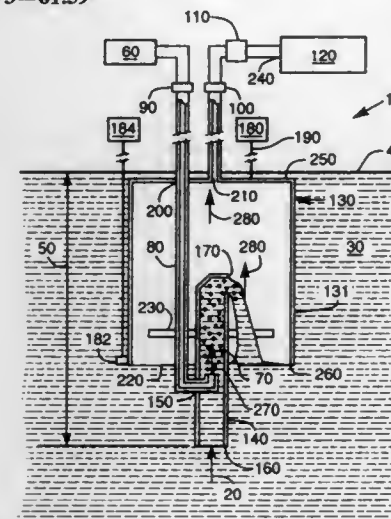
Continuation of Ser. No. 712,741, Sep. 12, 1996, abandoned.

This application Sep. 18, 1997, Ser. No. 975,412

Int. Cl.⁶ G01N 1/22; 33/18

U.S. Cl. 73—61.59

21 Claims



1. An in-situ continuous liquid analyzing system for continuously analyzing volatile components of a liquid in a liquid source having a surface and a sampling depth comprising: a carrier gas supply for continuously supplying a carrier gas, a carrier gas directing means, a first mass flow control means, a second mass flow control means, a sample gas delivering means, a mass spectrometer for continuously analyzing said volatile components contained in said liquid, an extraction container, a liquid directing means having a carrier gas inlet port, a liquid inlet port and a liquid outlet port and an extraction container depth positioning means, said extraction container having a carrier gas inlet port, a sample gas outlet port, a liquid outlet port and a support means for supporting said liquid directing means, said mass spectrometer having a sample gas inlet port, said extraction container having a first end and a second end, said carrier gas inlet port and said sample gas outlet port of said extraction container being located at said first end of said extraction container and said liquid outlet port of said extraction container being located at said second end of said extraction container, said first mass flow control means controls the flow of said carrier gas from said carrier gas supply means to said carrier gas directing means and said second mass flow control means controls the flow of said sample gas from said extraction chamber to said mass spectrometer, said liquid outlet port at said second end of said extraction container being positioned parallel to and below said surface of said liquid source, said liquid directing means extends into said extraction container through said liquid outlet port of said extraction container and being supported by said support means of said extraction container, said liquid outlet port of said liquid directing means being positioned within said extraction container and said liquid inlet port of said liquid directing means being positioned outside said extraction container, said carrier gas supply being in communication with said first mass flow control valve, said first mass flow control means being in communication with said carrier gas inlet port of said extraction container, said carrier gas directing means being in communication with and attached to said carrier gas inlet port, said

carrier gas directing means having a carrier gas outlet port, said sample gas outlet port of said extraction container being in communication with said second mass flow control means, said second mass flow control means being in communication with said sample gas delivering means, said sample gas delivering means being in communication with said sample gas inlet port of said gas analyzing means, said liquid directing means being connected to and being supported by said support means of said extraction container, said first and second mass flow control means being miniature mass flow controllers and said extraction container further containing a liquid level detection means, in communication with a liquid level indicating means, positioned on an outside surface of said extraction container.

5,777,215

APPARATUS FOR MEASURING THE COAGULATION CHARACTERISTICS OF TEST LIQUIDS

Alexander Calatzis; Andreas Calatzis, both of Donnersbergerstrasse 42, 80634 München, and Pablo Fritzsche, Adalbertstrasse 55, 80799 München, all of Germany

PCT No. PCT/EP95/04041, § 371 Date Sep. 12, 1996, § 102(e)

Date Sep. 12, 1996, PCT Pub. No. WO96/12954, PCT Pub.

Date May 2, 1996

PCT Filed Oct. 13, 1995, Ser. No. 669,465

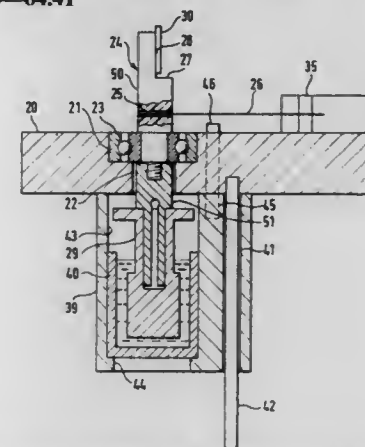
Claims priority, application Germany, Oct. 19, 1994, 44 37

475.; Apr. 4, 1995, 295 05 764.5

Int. Cl.⁶ G01N 33/49

U.S. Cl. 73—64.41

17 Claims



1. Apparatus for measuring the coagulation characteristics of test liquids, in particular of blood samples, said apparatus comprising a plate means defining a plane,

- bearing means having an axis of symmetry, said bearing means being disposed in said plate means with said axis of symmetry extending substantially perpendicular to said plane,
- shaft means having a longitudinal axis, a first end and a second end, said shaft means being rotatably supported in said bearing means to extend substantially perpendicular to said plane with said first end being disposed on one side of said plate and said second end on the other side of said plate,
- means for sensing a rotational movement of said shaft means, a stem being provided at said second end and having an outer contour,
- a cup for receiving said test liquid, said cup having an inner contour which is larger than said outer contour of said stem and receiving at least part of said stem,
- means for rotating said cup and said stem relative to each other, and
- spring means arranged at said shaft.

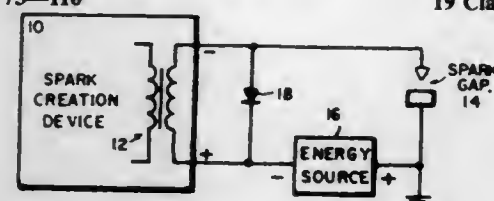
5,777,216

IGNITION SYSTEM WITH IONIZATION DETECTION
Edward Van Duyne, Ashland, and Paul Porreca, Millis, both of Mass., assignors to Adrenaline Research, Inc., Marlborough, Mass.

Filed Feb. 1, 1996, Ser. No. 595,558
Int. Cl.⁶ G01M 15/00

U.S. Cl. 73-116

19 Claims



PRIMARY SECONDARY

1. An ignition system with ionization detection comprising: a step-up transformer having a primary and secondary winding; a first energy source electrically connected to the primary winding; a spark gap electrically connected with the secondary winding in such a way that energy released from the first energy source creates a spark across the gap; a second energy source electrically connected with the spark gap and secondary winding, the second energy source being substantially decoupled from the first energy source and providing energy to the spark gap via a low impedance path thereby sustaining an arc across the spark gap; and an ionization detection circuit which utilizes the second energy source to supply voltage across the spark gap, the detection circuit measuring the resulting ionization current through the spark gap and providing an ionization signal.

5,777,217

ROTATION-DIRECTION SIGNAL INCLUSION DEVICE
Hisashi Misato, Ibo-gun, and Tukasaka Motobayashi, Akoo-gun, both of Japan, assignors to Kabushiki Kaisha Telkoku Denki Seisakusho, Osaka, Japan

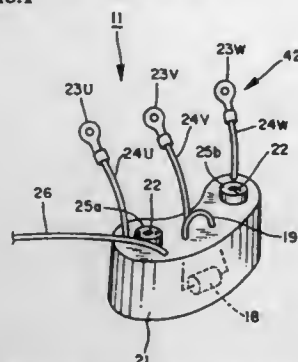
Filed Oct. 18, 1996, Ser. No. 734,037

Claims priority, application Japan, Oct. 19, 1995, 7-270907

Int. Cl.⁶ G01M 19/00

U.S. Cl. 73-118.1

19 Claims



1. A rotation-direction signal inclusion device for detecting a bearing wear and a rotation-direction of a motor, comprising: a rotation-direction detecting circuit for receiving three-phase voltage supply signals input to said motor and for outputting a rotation-direction signal; said rotation-direction detecting circuit including at least two impedances; a comparator circuit; a bearing-wear means for generating a bearing-wear signal;

said comparator circuit including means for receiving said rotation-direction signal and said bearing-wear signal; said bearing-wear means including a plurality of detection coils; said comparator circuit including means for outputting a larger one of said rotation-direction signal and said bearing-wear signal; a signal adjustment device connected between said bearing-wear detecting circuit and said comparator circuit; and said signal adjustment device including a short-circuit device connecting one end of said signal adjustment device to another end thereof to bypass said signal adjustment device when said short-circuit wire is intact and to activate said signal adjustment device when said short-circuit wire is cut.

5,777,218

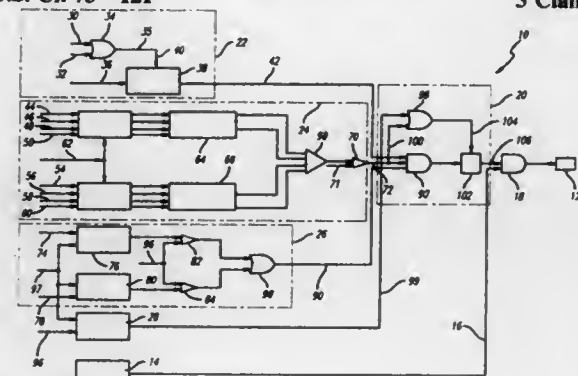
MONITOR FOR UNCOMMANDED BRAKING
Bijan Salamat, Santa Clarita; Robert D. Cook, Valencia, and Raymond Kwong, West Covina, all of Calif., assignors to Hydro-Aire Division of Crane Company, Burbank, Calif.

Filed Mar. 12, 1996, Ser. No. 615,856

Int. Cl.⁶ B60Q 1/00; G01L 5/28

U.S. Cl. 73-121

3 Claims



1. Apparatus for monitoring uncommanded braking for a vehicle having a wheel and a hydraulically operated wheel braking system with a brake pedal for controlling operation of said wheel braking system and a shut off valve for preventing communication of brake pressure to prevent braking by said wheel braking system, comprising: means for determining brake pedal application and for generating a pedal application signal indicating whether said brake pedal has been applied; means for measuring brake pressure; means for comparing said brake pressure with a selected threshold brake pressure and for generating a brake pressure signal when said brake pressure exceeds said threshold brake pressure; fault latch means for receiving said pedal application signal and said brake pressure signal, and for generating a fault latch output signal for controlling said shut off valve responsive to said pedal application signal and said brake pressure signal; and means for sensing weight on said wheel and for generating a test inhibit signal when weight is not applied on said wheel.

5,777,219

APPARATUS AND RELATED METHODS FOR AUTOMATICALLY TESTING AND ANALYZING TIRES UTILIZING A TEST POD WITH A SLIDABLY MOVABLE COVER PLATE AND A GRAY SCALE NORMALIZATION TECHNIQUE

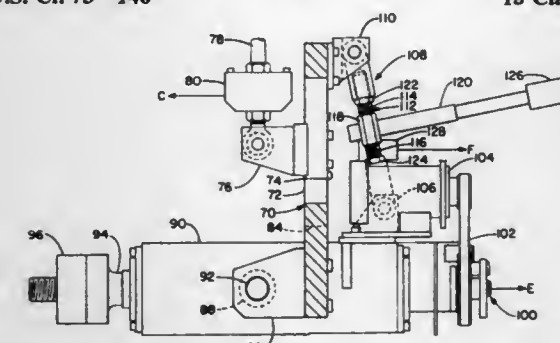
James A. Popio, Mogadore; John L. Turner, Akron; Richard J. Macioce, Massillon; Wayne A. Indorf, Canton; Fu-Min Chen, Tallmadge; Stanley J. Olesky, and Vladimir Roth, both of Akron, all of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Oct. 16, 1996, Ser. No. 729,358

Int. Cl.⁶ G01M 17/02

U.S. Cl. 73-146

18 Claims



11. Apparatus for testing tires, comprising: a frame having a pair of opposed slide tracks; a loading plate mounted within said frame; a tire spindle pivotably extending from said loading plate, said tire spindle receiving a tire to be tested; means for imparting a camber to the tire carried by said spindle; a motor coupled to said imparting means for selectively rotating said tire spindle and the mounted tire about an axis through a hub of the tire; and a test pod slidably received on said pair of opposed slide tracks, said loading plate coupling the tire to said test pod to generate tire test data.

5,777,220

DEVICE FOR A BRAKING AND TRACTION TEST OF A WHEEL COMPRISING A RIM AND A TIRE

Giuseppe Matrasia, Seregno, and Carlo Monguzzi, Monza, both of Italy, assignors to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy

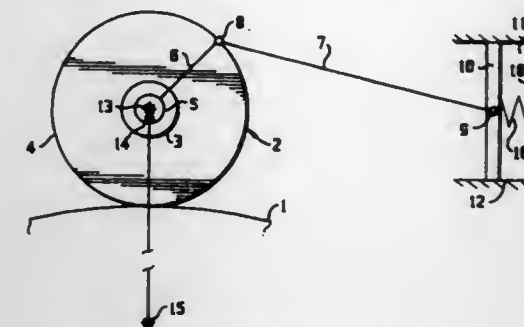
Filed Nov. 18, 1996, Ser. No. 752,256

Claims priority, application Italy, Nov. 21, 1995, MI95A2397

Int. Cl.⁶ G01M 17/02

U.S. Cl. 73-146

2 Claims



1. A device for a braking and traction test of a wheel comprising a rim and a tire, integral with a hub that is free to rotate, said device comprising a road-wheel rotating at preselected speeds, a crank integral with said hub, a connecting rod connected by means of a pivot to said crank and by means of a pin to a piston sealingly sliding in a chamber of a cylinder containing air, closed by a head, first deformation transducer associated with said hub, capable of

measuring the longitudinal force transmitted by said tire to said hub, a slipping speed measuring means comprising a second speed transducer associated with said hub and a third speed transducer associated with said road-wheel, said tire being caused to rotate by said road-wheel and driving said piston, through said crank and connecting rod, to execute a reciprocating movement inside said cylinder performing a compression stroke and an expansion stroke of said air in said chamber so as to exert on said wheel and on said tire a sinusoidal torque consisting of a braking torque during said compression stroke and a traction torque during said expansion stroke.

5,777,221

VOLUME DETECTION APPARATUS AND METHOD
Kurukundi Ramesh Murthy, Fairview Park, and Ying Cha, N. Olmsted, both of Ohio, assignors to Chiron Diagnostics Corporation, E. Walpole, Mass.

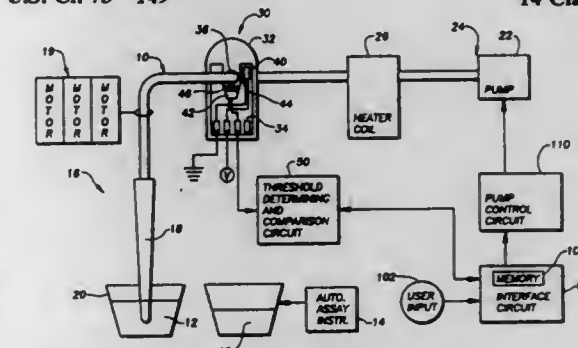
Continuation of Ser. No. 499,820, Jul. 10, 1995, abandoned.

This application Mar. 27, 1997, Ser. No. 826,330

Int. Cl.⁶ G01F 17/00

U.S. Cl. 73-149

14 Claims



1. A detector apparatus for measuring a liquid volume aspirated within a tube by a pump, the apparatus comprising: a housing having an aperture for passage of said tube there-through; an optical source within said housing and proximate said tube; a photodetector within said housing, proximate said tube, and disposed approximately ninety degrees about a circumference of said tube from said source, wherein said photodetector detects changes in light reflection due to tube contents; and a volume measuring circuit for detecting the volume of a liquid drawn into said tube by said pump as a function of a temporal point of detection of an air to liquid boundary and a liquid to air boundary, each causing changes in light reflection within said tube and detected by said photodetector, wherein a first time is logged by said volume measuring circuit when said photodetector detects a first change in light reflection within said tube, a second time is logged by said volume measuring circuit when said photodetector detects a second change in light reflection within said tube, and the liquid volume aspirated is determined by said volume measuring circuit using said first and second times and known tube volume and aspiration rate information.

5,777,222

FLUID METER WITH MODULAR AUTOMATIC METER READING UNIT

John A. Roberts, Camberley, England, assignor to UGI Meters Limited, and Smith Meters Limited, both of London, United Kingdom

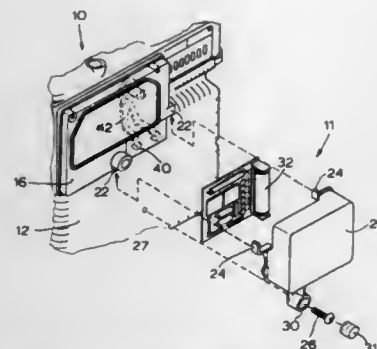
Filed Apr. 10, 1997, Ser. No. 833,922

Int. Cl.⁶ G01F 3/08

U.S. Cl. 73-273

25 Claims

1. A fluid meter adapted to have an automatic meter reader coupled to an exterior thereof, comprising:



a casing having an attachment mechanism adapted to accept the automatic meter reader;
a lever that moves in response to a fluid flow in the fluid meter; and
means for creating an electromagnetic field external to the casing coupled to and moving with the lever so that the electromagnetic field is detected by the automatic meter reader when the automatic meter reader is coupled to the fluid meter.

5,777,223

MEASURING SYSTEMS FOR LINEAR OR ANGULAR MOVEMENTS

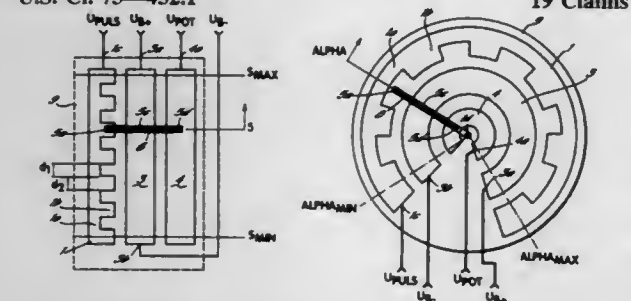
Jens Peter Kohrt, Koblenz, Germany, assignor to Lucas Industries public limited company, Solihull

Filed Sep. 12, 1996, Ser. No. 712,903

Claims priority, application Germany, Apr. 15, 1994, 44 13 098.8

Int. Cl.⁶ G01F 15/14; H01C 10/16

U.S. Cl. 73—432.1



1. A measuring system for linear and angular movements, comprising

a first length or angle sensor (3) which operates in accordance with a first measuring method and which converts an input value (s, alpha) in the form of a linear or angular movement into an electrically processible first output value (UPOT);
a second length or angle sensor (1) which is mechanically coupled with the first length or angle sensor (3) and which operates in accordance with a measuring method that is different from the first measuring method and which converts the linear and angular movement (s, alpha) into an electrically processible second output value (UPULS), with
the first and second output value (UPOT, UPULS) being available for subsequent processing and evaluation, characterized in that the output value (UPOT) of the first length or angle sensor (3) also serves as an input value for the second length or angle sensor (1).

5,777,224 ROTATABLE DRIVE SPINDLE FOR QUICK MOUNTING, AND MACHINE COMPRISING SUCH A SPINDLE

Paul Coetsier, Pomponne, and Olivier Sauzay, Coudray, both of France, assignors to Muller BEM, Chartres Cedex, France

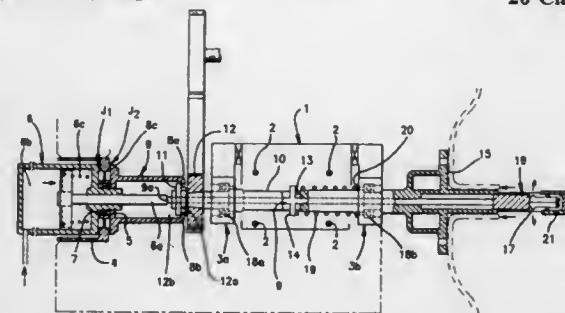
Filed Oct. 2, 1996, Ser. No. 724,918

Claims priority, application France, Oct. 4, 1995, 95.11653

Int. Cl.⁶ G01M 1/06

U.S. Cl. 73—487

20 Claims



1. A rotatable drive spindle for quick mounting, comprising a hollow support shaft (10) mounted for rotation in two spaced bearings (3a, 3b) and carrying at a first end means (12) for starting and driving the shaft in rotation and at the second end a mounting flange (15) fixing a reference and holding plane for a body driven in rotation; a control rod (9) passing through said hollow support shaft (10) and displaceable between two positions of which a first position effects the extension of a locking means (17) of the body on said mounting flange (15) and a second unlocked position effects the release of said locking means (17) and the freeing of the body; first prestressed resilient means (19) to urge continuously the control rod (9) toward the first locking position and second means (6, 7, 8) that act against said first resilient means (19) and press the control rod (9) toward the second unlocked position; wherein the second means (6, 7, 8) is mounted to contact the hollow support shaft (10) and the control rod (9) in a manner such that by pulling on a configuration (11) secured to the hollow support shaft (10) to press on the control rod (9), no force is exerted on the bearings (3a, 3b).

5,777,225

CRASH SENSOR

Hiroyuki Sada, and Hiroshi Moriyama, both of Chiyoda-machi, Japan, assignors to Sensor Technology Co., Ltd., Kobe, Japan

PCT No. PCT/JP94/01724, § 371 Date Jun. 24, 1996, § 102(e) Date Jun. 24, 1996, PCT Pub. No. WO95/12505, PCT Pub. Date May 11, 1995

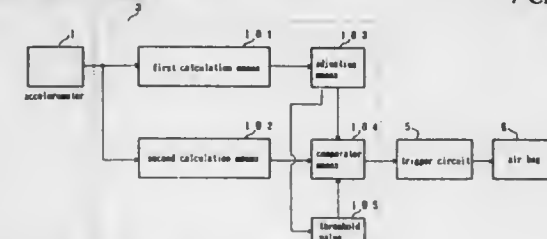
PCT Filed Oct. 13, 1994, Ser. No. 633,759

Claims priority, application Japan, Nov. 2, 1993, 5-297221

Int. Cl.⁶ B60R 21/32

U.S. Cl. 73—488

7 Claims



1. A crash sensor, comprising:
an accelerometer for developing an acceleration signal;
calculation means for calculating a first value on a basis of said acceleration signal from said accelerometer, the first value corresponds to a magnitude of deceleration;

comparator means for comparing said first value with a threshold value and outputting a trigger signal when judging an occurrence of a crash from said first value exceeding said threshold value;
a trigger circuit for actuating a protective device on receipt of said trigger signal from said comparator means;
physical quantity calculation means for calculating a magnitude of physical quantities in a first wave, said first wave being defined by acceleration signals measured during times when a sign of a variation regarding said acceleration signals changes, and then becomes zero again in an initial stage of a crash, said measuring starts when said accelerometer initially develops a deceleration signal; and
adjusting means for adjusting at least one of the following two parameters to be used in said comparator means in accordance with said magnitude of physical quantities in said first wave;
(a) said first value corresponding to the magnitude of deceleration and
(b) said threshold value.

5,777,226

SENSOR STRUCTURE WITH L-SHAPED SPRING LEGS

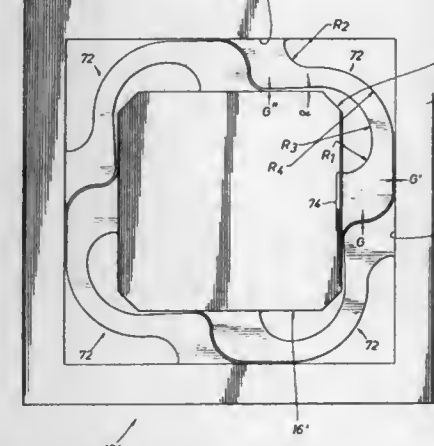
Matthew W. Ip, Austin, Tex., assignor to I/O Sensors, Inc., Austin, Tex.

Continuation of Ser. No. 516,501, Aug. 17, 1995, abandoned, which is a continuation-in-part of Ser. No. 218,525, Mar. 28, 1994, abandoned. This application Jun. 9, 1997, Ser. No. 871,591

Int. Cl.⁶ G01P 15/13

U.S. Cl. 73—514.24

13 Claims



1. An improved sensor structure having
a frame,
a moveable mass,
four L-shaped springs which include a first leg joined to a second leg at a juncture region, where said first leg of each L-shaped spring is connected only to a side of the frame but not to said mass at a frame connection region and said second leg of said each L-shaped spring is connected only to a side of said mass but not to said frame at a mass connection region, and
said juncture region of each of said L-shaped springs is positioned in a juncture space formed between the frame and the mass, and
said frame connection region and said mass connection are characterized by widths which are greater than a width which characterizes said juncture region,
where said four L-shaped springs are characterized by a lateral deflection breaking distance, and wherein
an outer edge of each of said four L-shaped springs is separated by a lateral spring—spring gap distance from an inner edge of an adjacent spring, where said lateral spring—spring gap distance is less than said lateral deflection breaking distance.

5,777,227

SELF-DIAGNOSTIC ACCELEROMETER WITH SYMMETRIC PROOF-MASS AND ITS PREPARATION METHOD

Young-Ho Cho; Byung Man Kwak; Kwyro Lee, all of Taejon, and Kwanhum Park, Kyungsangnam-do, all of Rep. of Korea, assignors to Hyundai Motor Company, Seoul, and Korea Advanced Institute of Science and Technology, Taejon, both of Rep. of Korea

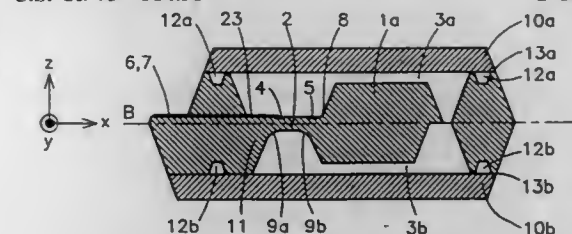
Filed Oct. 6, 1995, Ser. No. 539,521

Claims priority, application Rep. of Korea, Oct. 7, 1994, 1994-25687

Int. Cl.⁶ G01P 15/00

U.S. Cl. 73—514.38

2 Claims



1. A symmetrical proof-mass accelerometer, comprising:
a cantilever beam having a first and second end and having an upper flat surface and a bottom surface with a curved portion at said first and second end;
upper and lower proof-masses supported by said cantilever beam at said first end, said upper and lower proof-masses having a same area and mass;
a supporter supporting said cantilever beam at said second end; and
supporting plates supporting said supporter with damping control gaps formed between said upper and lower proof masses and said supporting plates, said damping control gaps being adjusted to control a damping level of said cantilever beam.

5,777,228

METHOD AND APPARATUS FOR MEASURING CHANGE IN STATE OF OBJECT TO BE MEASURED USING FLEXURAL AND TORSIONAL VIBRATIONS

Kiyoshi Tsuboi, Musashino, and Shigeharu Yamamoto, Yokohama, both of Japan, assignors to Iwatsu Electric Co., Ltd., and All Nippon Airways Co., Ltd., both of Tokyo, Japan

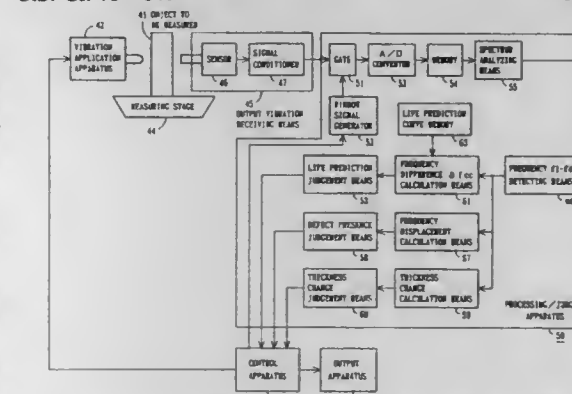
Division of Ser. No. 646,067, May 7, 1996, Pat. No. 5,696,324. This application Feb. 25, 1997, Ser. No. 805,299

Claims priority, application Japan, May 11, 1995, 7-137293; May 11, 1995, 7-137294; May 11, 1995, 7-137295; Apr. 19, 1996, 7-122218

Int. Cl.⁶ G01N 29/04

U.S. Cl. 73—579

4 Claims



1. A method of detecting a change in the state of a part of an object to be measured that has a section comprising a first plate part and a second plate part which has a plate surface opposite to a plate surface of said first plate part with a gap between said plate

surfaces and is integral with said first plate part or is connected to said first plate part, comprising the steps of
 applying vibrations to said object to be measured at a site at said section to generate flexural, torsional and stationary vibration waves in said object;
 subjecting the stationary vibration waves generated in said object to be measured to a spectral analysis;
 calculating the frequency difference of spectra divided into two by high order torsional vibrations generated at said section out of the group of spectra by said stationary vibration waves, and detecting a change in thickness between said first plate part and said second plate part or a defect formed in said first plate part or said second plate part based on the calculated frequency difference.

5,777,229

SENSOR TRANSPORT SYSTEM FOR COMBINATION FLASH BUTT WELDER

Daniel P. Geier, Lynchburg, and Kenneth R. Camplin, Forest, both of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

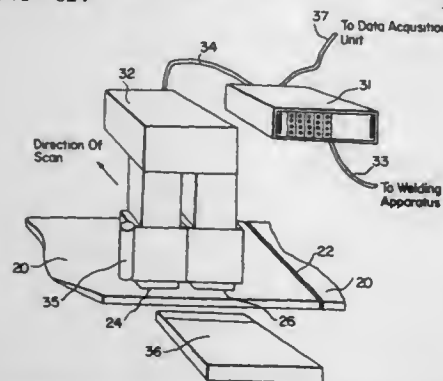
Continuation of Ser. No. 276,230, Jul. 18, 1994, abandoned.

This application Jun. 21, 1996, Ser. No. 668,957

Int. Cl.⁶ G01N 29/10

U.S. Cl. 73—624

12 Claims



1. An automated sensor transport system for non-destructively examining a butt weld used to join together a first and a second coil of sheet metal end-to-end, the system comprising:

- a computer control unit for coordinating a making of the weld by a welding apparatus and an inspection of the weld by the sensor transport system;
- a transport apparatus having a first and a second electromagnetic acoustic transducer (EMAT) attached to and housed within the transport apparatus; and
- an edge detection sensor which is affixed to the transport apparatus in proximity of either the first or second EMAT and which is in electrical communication with the computer control unit and which is capable of discerning a lateral edge of the first of the two sheet metal coils.

5,777,230

DELAY LINE FOR AN ULTRASONIC PROBE AND METHOD OF USING SAME

Leon C. Vandervalk, Prescott, Canada, assignor to DeFelsko Corporation, Ogdensburg, N.Y.

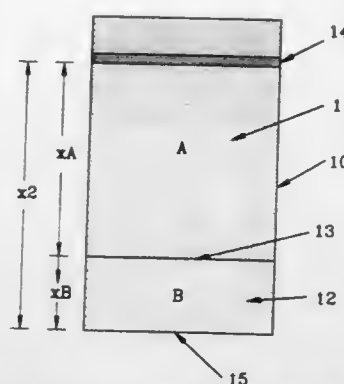
Filed Feb. 23, 1995, Ser. No. 392,507

Int. Cl.⁶ G01N 29/24

U.S. Cl. 73—632

27 Claims

- 1. An ultrasonic probe, comprising:
 an ultrasonic transducer;
 a delay line acoustically coupled to said transducer so that ultrasonic vibrations can be transmitted into said delay line from said ultrasonic transducer in a first direction, said delay line includes a first section comprised of a first material and a second section comprised of a second material;



said first and second sections forming an interface having distinct acoustic properties that is substantially perpendicular to said first direction;

said second section including a surface for coupling with a material to be investigated; and

control means for receiving signals from said ultrasonic transducer corresponding to said interface having distinct acoustic properties and for calibrating the ultrasonic probe for variations in temperature.

5,777,231

ULTRASONIC SENSOR FOR ON-LINE DETECTION OF CUTTING TOOL INSERT FAILURE

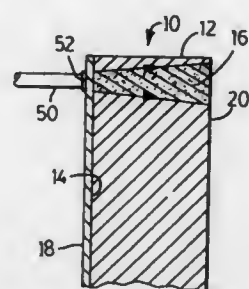
Narendra D. Patel, 3 Benemar Ct., Hamilton, Ontario, Canada, L8W 2R1, and Mohamed A. Elbestawi, 1394 Saddler Circle, Oakville, Ontario, Canada, L6M 2X5

Filed Oct. 24, 1996, Ser. No. 735,648

Int. Cl.⁶ G01N 29/22

U.S. Cl. 73—660

21 Claims



1. A method for on-line monitoring a tool insert having an edge portion which contacts a workpiece during use, comprising:

- a) producing ultrasonic signal pulses in a coating of piezoelectric material contacting a tool insert and directing the ultrasonic signal pulses through the tool insert toward said edge portion of the tool insert;
- b) detecting ultrasonic signal pulses reflected from said edge portion of the tool insert back into the piezoelectric coating; and
- c) comparing said ultrasonic signal pulses reflected from said edge portion of the tool insert to reference ultrasonic signal pulses reflected from said edge portion before the tool insert is initially contacted to said workpiece.

5,777,232

CONTROL SYSTEM FOR VIBRATORY APPARATUS

Yutaka Kurita, Hikone; Yasushi Muragishi, and Hitoshi Yasuda, both of Ise, all of Japan, assignors to Shinko Electric Co., Ltd., Japan

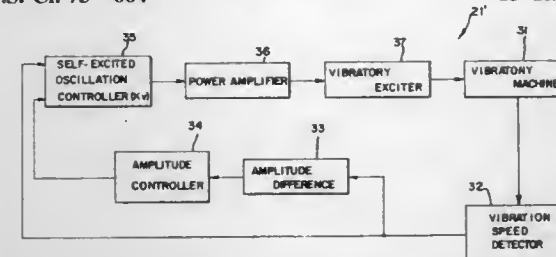
Filed Mar. 26, 1996, Ser. No. 620,674

Claims priority, application Japan, Mar. 29, 1995, 7-097739; Mar. 29, 1995, 7-097740; Mar. 31, 1995, 7-100466

Int. Cl.⁶ G01M 7/02; B65G 25/04

U.S. Cl. 73—664

13 Claims



- 1. In a control system for a vibratory apparatus including:
 (A) vibratory speed detecting means for detecting a vibratory speed of a vibratory machine;
 (B) a self-excited oscillation controller for amplifying the output of said vibratory speed detecting means at a feed-back gain K, said oscillation controller receiving the output of said vibratory speed detecting means as a positive feed-back signal;
 (C) a power amplifier for power-amplifying the output of said self-excited oscillation controller; and
 (D) a vibratory exciter receiving the output of said power amplifier for vibrating said vibratory machine, the improvements in which said feed back gain K is changed in accordance with the equation: $K = K_1 \Delta r + K_2 (\Delta r)^{2N+1} + K_{cr}$, where Δr represents the amplitude difference between a predetermined amplitude and the present amplitude, K_1 , K_2 are constants, N is an integer, and K_{cr} is critical stability gain.

5,777,233

GAS-FRICTION VACUUM INDICATOR WITH A GAS-FRICTION SENSOR ROTATING ABOUT A FIXED AXIS OF ROTATION

Bernd Lindenau, Jülich; Johan K. Fremerey, Bonn, and Klaus Witthauer, Aachen, all of Germany, assignors to Forschungszentrum Jülich GmbH, Jülich, and RWD-Datentechnik GmbH, Aachen, both of Germany

PCT No. PCT/DE94/01482, § 371 Date Jun. 19, 1996, § 102(e) Date Jun. 19, 1996, PCT Pub. No. WO95/17654, PCT Pub. Date Jun. 29, 1995

PCT Filed Dec. 14, 1994, Ser. No. 663,090

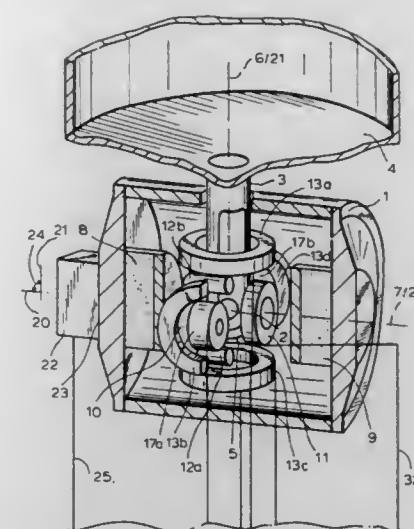
Claims priority, application Germany, Dec. 21, 1993, 43 43 575.0

Int. Cl.⁶ G01L 9/00

U.S. Cl. 73—753

6 Claims

- 1. A gas-friction vacuum meter comprising:
 means for forming an evacuable measuring chamber connectable to a vacuum to be measured;
 a gas-friction sensor rotatable in said chamber about a generally horizontal fixed rotation axis at an actual angle of inclination to a vertical;
 means for producing a magnetic field symmetrical about said axis and contactlessly supporting said sensor whereby a change in rotation of said sensor represents a measurement of said vacuum;
 means responsive to said change in rotation for producing a measured pressure value representing pressure of said vacuum;
 means for determining, by eddy current braking of said gas-friction sensor, at least one eddy-current-conditioned braking value for a certain inclination angle of said rotation axis; and
 means for measuring said actual inclination angle and producing an output signal for correction of said measured pressure



value by comparison of said output signal with said eddy-current-conditioned braking value.

5,777,234

PRE-STRAINING APPARATUS AND METHOD FOR STRAIN SENSORS

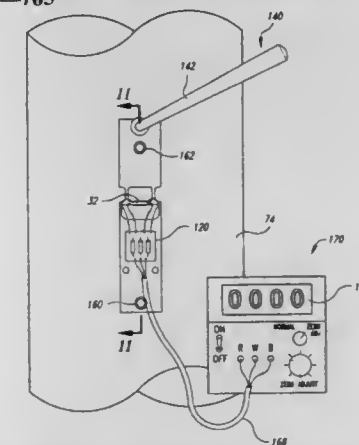
Alfred J. Kosmal, Mt. Vernon, Wash., assignor to Kistler-Morse Corporation, Bothell, Wash.

Filed Aug. 1, 1996, Ser. No. 690,757

Int. Cl.⁶ G01R 7/16; G01L 1/100

U.S. Cl. 73—765

24 Claims



1. A pre-strainable, strain sensor adapted to be attached to a structural member, comprising:

- a sensor body having first and second mounting locations positioned along an axis of sensitivity, said first and second mounting location adapted to be attached to said structural member;
- a strain sensing element mounted on said sensor body between said first and second mounting locations, said first strain sensing element generating an electrical output indicative of the relative position between said first and second mounting locations along said axis of sensitivity; and
- a strain adjusting aperture formed in said sensor body at a location along said axis of sensitivity, said strain adjusting aperture and said structural member being engagable with an adjusting tool to apply a force to said sensor body along said axis of sensitivity to adjust the strain on said strain sensor.

5,777,235

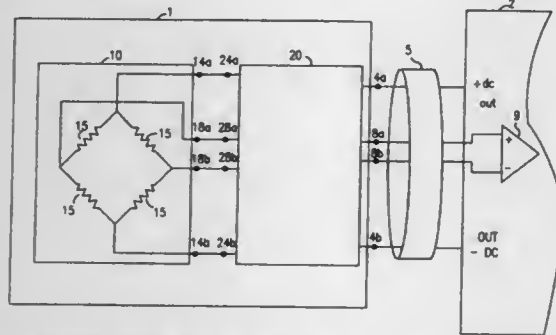
STRAIN GAGE MEASURING ARRANGEMENT, USE OF SAME, AND MODULATION AMPLIFIER FOR SUCH MEASURING ARRANGEMENTS

Michael Altwein, Schbertweg 13, DE-64287 Darmstadt, Germany

Continuation of Ser. No. 542,129, Oct. 12, 1995, abandoned, which is a continuation of Ser. No. 280,883, Jul. 27, 1994, abandoned. This application Jun. 7, 1996, Ser. No. 665,049
Claims priority, application Germany, May 17, 1994, 44 17 228.1Int. Cl.⁶ G01L 1/16

U.S. Cl. 73—769

15 Claims



1. A unitary strain gage pickup device, comprising: a measurement pickup member having first and second opposite edges; the measurement pickup member including a strain gage section positioned adjacent the first edge of the pickup member, said strain gage section including at least one strain gage having a bridge with a pair of input arms and a pair of output arms, said output arms for conducting measurement output signals, said strain gage section having a first end adjacent the first edge of the measurement pickup member and a second end opposite the first end; the measurement pickup member including an additional circuit positioned between the second edge of the pickup member and the second end of the strain gage section, said additional circuit being oriented so that a first side thereof opposes the second end of the strain gage section, said additional circuit including an amplifier, having an input, for amplifying the measurement output signals of the strain gage section, and including a modulator for supplying the input arms of the strain gage section with an alternating voltage; a first plurality of connecting points adjacent the second end of the strain gage section and the opposing first side of the additional circuit connecting the alternating voltage of the modulator to the input arms of the bridge of the strain gage section and connecting the measurement signals from the output arms of the bridge of the strain gage section to the input of the amplifier of the additional circuit, and a second plurality of connecting points adjacent the second edge of the measurement pickup member and the second side of the additional circuit for connecting the additional circuit to a voltage source external of the base member.

5,777,236

METHOD FOR ANALYZING STRUCTURES HAVING DEFORMABLE RIGID ELEMENTS

William T. Walls, Gurley, Ala., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.

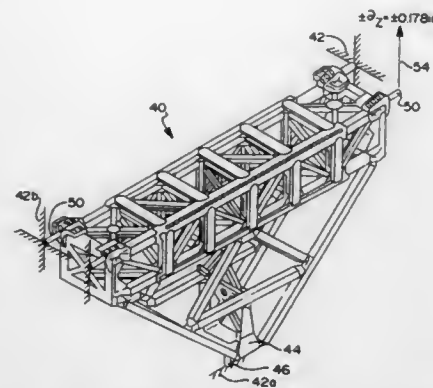
Division of Ser. No. 723,104, Oct. 1, 1996, abandoned. This application Apr. 3, 1997, Ser. No. 832,311

Int. Cl.⁶ G01M 5/00; G01D 1/16

U.S. Cl. 73—786

13 Claims

1. A method for analyzing a structure having a deformable rigid element, the method comprising the steps of:



- defining a set of displacement factors to be imposed on a structure model;
- calculating a set of structure stress defining equations based on said set of displacement factors, wherein said structure stress defining equations include: provision for calculating a load vector representing externally applied forces applied to the structure model; provision for inputting a value of a known magnitude of rigid element deformation experienced by said structure before said load vector is applied; provision for modifying the load vector to compensate for said known magnitude of rigid element deformation experienced by said structure before calculating stresses on the structure model resulting from said load vector; applying the set of displacement factors to the structure stress defining equations; outputting data generated from said step of applying the set of displacement factors to the structure stress defining equations; evaluating stresses on the structure model; and wherein said structure stress defining equations include a formula:

$$\{u_m\} = [R_m]^{-1} \{\delta_G\} + [G_m] \{u_n\} \quad (4)$$

where:

- $[R_m]^{-1}$ is the inverse of a partition of a dependent multi-point constraint co-efficient matrix;
- $\{\delta_G\}$ is a user defined displacement term;
- $[R_n]$ is the partition of the multi-point constraint coefficient matrix; and
- $\{u_n\}$ is an independent set of displacements.

5,777,237

FLUID FLOW METER

James Digby Yartet Collier; Christopher Davies, both of Cambridge; Christopher James Newton Fryer, and Alain Henri Waba, both of Buckinghamshire, all of United Kingdom, assignors to G. Kromschroder Aktiengesellschaft, Osnabruck, Germany

PCT No. PCT/GB94/00157, § 371 Date Aug. 28, 1995, § 102(e)

Date Aug. 28, 1995, PCT Pub. No. WO94/17372, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 27, 1994, Ser. No. 492,058

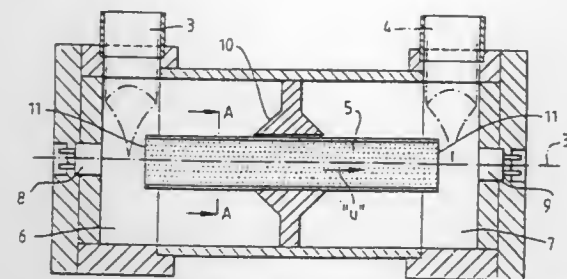
Claims priority, application United Kingdom, Jan. 30, 1993, 9301873; Aug. 2, 1993, 9316001

Int. Cl.⁶ G01F 1/00

U.S. Cl. 73—861.28

9 Claims

1. A fluid flow meter comprising: a flow structure having a plurality of parallel fluid flow passages which extend axially along a direction of fluid flow, wherein all the passages are spaced at substantially equal radial distances from a central axis extending along said direction of fluid flow; a pair of transducers spaced apart along the direction of fluid flow; transmitting means for causing acoustic signals to be transmitted in both directions through the fluid by the transducers, said



- transducers being positioned so that said acoustic signals are transmitted along said passages; and processing means for determining information relating to the fluid flow by monitoring the time of flight of acoustic signals received by said transducers, wherein the cross-sectional diameters of the passages and the acoustic signals generated by said transducers are such that substantially plane acoustic waves only are transmitted through the passages by the fluid, and wherein under working conditions the fluid flows through each passage such that the ratio of the volume flow rate through the passage to the total volume flow rate remains substantially constant with respect to the total volume flow rate.

5,777,238

DRIVER-RECEIVER APPARATUS FOR USE WITH ULTRASONIC FLOWMETERS

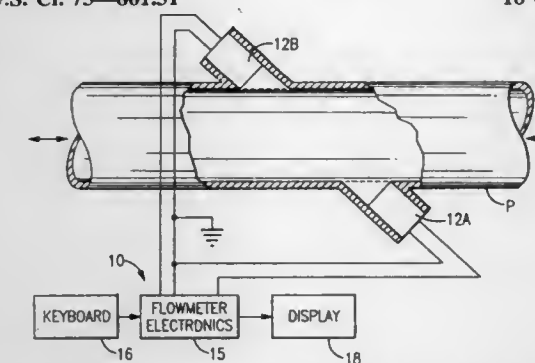
Peter Fletcher-Haynes, Lakewood, Colo., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jun. 12, 1996, Ser. No. 662,064

Int. Cl.⁶ G01L 3/02

U.S. Cl. 73—861.31

18 Claims



1. In a fluid parameter measuring apparatus of the type including first and second transducers for transmitting and receiving acoustic pulses along a path through said fluid, each of said transducers serving to transmit an acoustic output signal when driven by a suitable electrical drive signal and to generate an AC output signal when driven by a suitable acoustic input signal, said apparatus having a first state in which said first transducer is a transmitting transducer and said second transducer is a receiving transducer, and a second state in which said second transducer is a transmitting transducer and said first transducer is a receiving transducer, in combination: a driver circuit coupled to said first and second transducers for alternately applying bursts of electrical drive pulses to said first and second transducers to establish the first and second states of said apparatus; said driver circuit including first and second tri-state buffers for connecting said driver circuit to said first and second transducers, respectively; a receiver circuit coupled to said first and second transducers for alternately generating received signals having transitions that correspond to the zero crossings of the AC output signals of said transducers;

5,777,239

PIEZOELECTRIC PRESSURE/FORCE TRANSDUCER

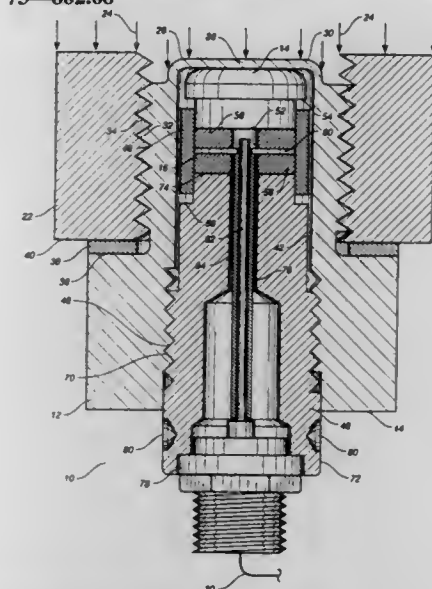
Daniel P. Fuglewicz, 106 Prospect Ave., Buffalo, N.Y. 14201-2358

Filed Oct. 29, 1996, Ser. No. 740,437

Int. Cl.⁶ G01L 1/16

U.S. Cl. 73—862.68

16 Claims



1. A pressure/force transducer comprising: a sensor body having a load-receiving member at one end; a load button positioned within said sensor body, said load button having a curved surface extending across an end of said load button, a substantial majority of an area of said curved surface being in surface-to-surface continuous contact with said load-receiving member; piezoelectric plate means positioned within said sensor body and in contact with said load button, said piezoelectric plate means for converting a load applied to said load-receiving member into an electrical charge; output means electrically connected to said piezoelectric plate means for converting said electrical charge into a humanly perceivable signal; and preloading means connected to said sensor body, said preloading means for adjustably forcing said load button into surface-to-surface contact with said load-receiving member, said preloading means comprising: a threaded member extending into said sensor body from an end of said sensor body opposite said load-receiving member, said threaded member having an end in surface-to-surface contact with said piezoelectric plate means.

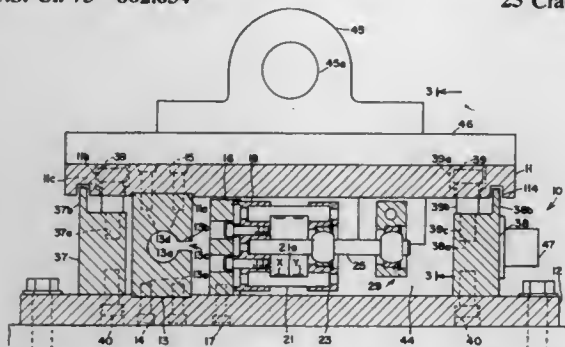
5,777,240

LOAD CELL AND LOAD CELL BEAM ASSEMBLY
Garett E. Lefebvre, Raymond, and Lee E. Nelson, Gray, both
of Me., assignors to The Montalvo Corporation, Portland,
Mass.

Filed Aug. 25, 1995, Ser. No. 519,489
Int. Cl.⁶ G01L 1/00

U.S. Cl. 73—862.634

25 Claims



1. A load cell for sensing mechanical force and producing a corresponding electrical voltage signal, comprising: parallel and elongated top and base plates and a deformable member secured to each of said plates adjacent one end thereof, said deformable member having deformation means extending along one side thereof facing the opposite ends of said plates, a support member adjacent said deformation means of said deformable member and affixed to said base plate, at least two gauged beams extending substantially parallel to the longitudinal axes of said top and base plates toward said opposite ends of said plates, said gauged beams being affixed at one end to said support member and at the other end to a collar member and having strain gauge means mounted thereon for sensing said mechanical force and producing said corresponding electrical voltage signal, and a load transfer rod affixed at one end to said support member and extending between and substantially parallel to said gauged beams through said collar member to a link member affixed to said top plate, whereby when said deformable member deforms along said deformation means, said top plate tilts towards said base plate and said load transfer rod and gauged beams deflect.

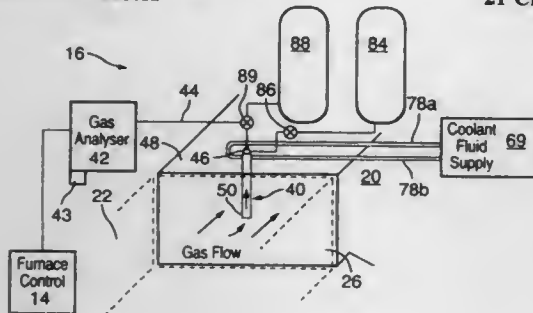
5,777,241

METHOD AND APPARATUS FOR SAMPLING AND ANALYSIS OF FURNACE OFF-GASES
Euan J. Evenson, 484 Donegal Drive, Burlington, Ontario,
Canada, L7L 2M7

Filed Feb. 6, 1997, Ser. No. 795,861
Int. Cl.⁶ G01N 1/22

U.S. Cl. 73—863.11

21 Claims



1. An apparatus for sampling high temperature furnace off-gases from an off-gas stream and for delivering sample gas substantially free of particulate matter to gas analyzer means, the apparatus including:

an elongated sampling probe, gas conduit means providing gaseous communication between said probe and said gas analyzer means and means for vacuum drawing said sample gas to said gas analyzer via said conduit means, the sampling probe including:

an inner sidewall substantially defining an elongated, vertically extending substantially cylindrical sample gas passage, said passage open to the stream at a lowermost open end,

an upper opening spaced above said open end and permitting gas flow between said passage and said conduit means,

an outer sidewall spaced radially outwardly about at least part of said inner sidewall and defining a generally annular chamber therebetween,

upper chamber wall means extending radially from said inner sidewall to said outer sidewall,

lower chamber wall means extending radially from said inner sidewall to said outer sidewall and closing a lowermost end of the annular chamber,

first and second partition means, each extending across said annular chamber between said inner sidewall and said outer sidewall, and being spaced from said lower wall means to divide the annular chamber into at least two fluid communicating coolant fluid channels for cooling said sample gas in said passage,

means for introducing coolant fluid into said coolant fluid channels,

filter means disposed in said cylindrical sample gas passage said filter means provided across said upper opening for filtering particulate matter from said sample gas as said sample gas is drawn through said upper opening,

the lowermost open end substantially unobstructing downward movement of said particulate matter filtered from said sample gas, outwardly from said gas passage.

9. An apparatus for obtaining a high temperature gas sample from an electric arc furnace off-gas stream and for delivering said sample to a gas analyzer, the apparatus comprising:

a hollow sampling probe defining a vertically oriented elongated cylindrical sample gas passage, said passage opening downwardly at its lowermost end into a bottom opening of said off-gas stream, said probe including an upper opening through which said sample gas moves from said gas passage to the gas analyzer,

vacuum means in gaseous communication with said upper opening for drawing said sample from said off-gas stream into said passage via said bottom end opening and outwardly from said passage through said upper opening to said gas analyzer,

filter means disposed in said cylindrical sample gas passage said filter means provided across said upper opening for filtering particulate matter from said sample as said sample is drawn through said upper opening,

vent port means for venting backflow gas directly into said gas passage said vent port means spaced towards said upper opening and

backflow gas supply means selectively operable to supply backflow gas to said passage through said vent port means and through the filter means via the upper opening, whereby said backflow gas supplied to said passage flows downwardly along said passage to dislodge particulate matter retained on said inner sidewall.

5,777,242

SOIL ANALYSIS AND SAMPLING SYSTEM
Herman Maria Zuidberg, Rijnsburg, and Willem Henricus Schrier, Delft, both of Netherlands, assignors to Fugro Engineers B.V., SG Leidschendam, Netherlands

PCT No. PCT/NL96/00019, § 371 Date Jul. 11, 1997, § 102(e)
Date Jul. 11, 1997, PCT Pub. No. WO96/21772, PCT Pub. Date Jul. 18, 1997

PCT Filed Jan. 10, 1996, Ser. No. 875,551
Claims priority, application Netherlands, Jan. 11, 1995, 9500049

Int. Cl.⁶ G01N 1/04

U.S. Cl. 73—864.45

12 Claims

1. A soil analysis and sampling system comprising:

(a) an outer tube having near its outer end a part with a decreased inside diameter and at its outer end a drilling head having an opening in the centre;



(b) a series of extension tubes which are connected to the top end of the outer tube;

(c) an upward seal for the extension tubes;

(d) a pump system for introducing compressed fluid under the upward seal, wherein the pump system is connected to the extension tubes such that, under the upward seal, fluid in the outer tube and the extension tubes can be compressed; and

(e) a tool comprising:

(1) a hydraulic cylinder cooperating with the outer tube, which cylinder includes a piston movable in a linear motion when fluid pressure is exerted onto one side of the piston, and

(2) a rod, connected at one outer end with the piston and at the other outer end with a scientific device which is a sampling tube or a bottom hole analysis probe, whereby downward movement of the piston pushes the scientific device below the drilling head into the ground;

wherein the hydraulic cylinder is provided with a passage at the top to allow said fluid under pressure to enter above the piston; and

the cylinder and piston are provided with a control device which causes the fluid under pressure to pass through at one side of the piston with a substantially constant rate when the fluid in the extension tubes is compressed.

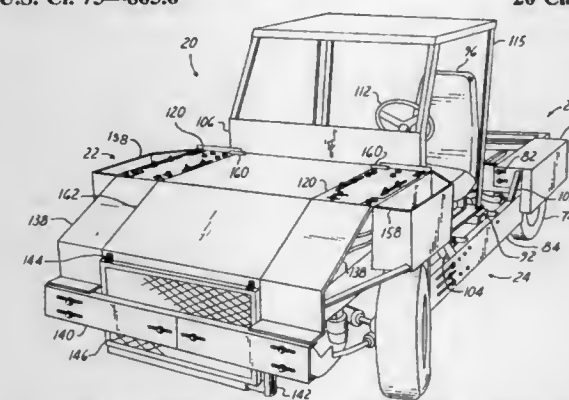
5,777,243

ADJUSTABLE VEHICLE SIMULATOR RIG FOR CHASSIS DYNAMOMETER TESTING
Richard Dean Kewish, Novi, Mich., assignor to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Mar. 31, 1997, Ser. No. 829,386
Int. Cl.⁶ G01M 15/00

U.S. Cl. 73—865.6

20 Claims



1. A vehicle simulator for testing a test vehicle drivetrain including at least one of an engine, transmission, exhaust system, fuel system, front suspension system, rear suspension systems and wheels, the vehicle simulator comprising:

a front module having four portions, a front portion, a right side portion, a left side portion and a rear portion, with at least one of the four portions including engine mounting means adapted for mounting the engine and the transmission, and with the right side portion and the left side portion each including suspension mounting means adapted for variably mounting the front suspension system; the right side portion and the left side portion each including fore/aft extension means for selectively varying the length of the front module, and the front portion and the rear portion each including side extension means for selectively varying the width of the front module; and

a rear-center module removably connected to the front module and having a front section, a right side section, a left side section and a rear section; with the right side section and the left side section each including second fore/aft extension means for selectively varying the length of the rear-center module, and the front section and the rear section each including second side extension means for selectively varying the width of the rear-center module.

5,777,244

METHOD FOR INSPECTING THE OUTER APPEARANCE OF A GOLF BALL AND ILLUMINATING MEANS USED THEREFOR

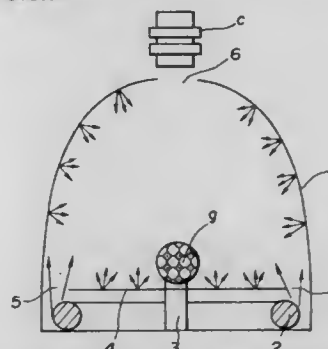
Hiroki Kumagai, and Fumio Fukazawa, both of Chichibu, Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1996, Ser. No. 705,261

Claims priority, application Japan, Aug. 29, 1995, 7-243684
Int. Cl.⁶ B07C 5/02

U.S. Cl. 73—865.8

6 Claims



1. A method for inspecting the outer appearance of a golf ball, comprising the steps of:

operating a camera to take a picture of the surface of a golf ball to produce a two-dimensional image while illuminating light to the ball surface, and

detecting any flaw or deformation on the ball surface from the two-dimensional image,

wherein a housing selected from a dome shape, a flask shape, a rectangular box shape and a polyhedral dome shape is formed of a white diffuse reflecting plate having fine irregularities on a surface for receiving the ball therein, a light source is disposed in the housing, and a white diffuse transmitting plate having fine irregularities on a surface is interposed between the golf ball and the light source,

said method further comprising the step of operating the light source to emit light which is reflected by the inner surface of the housing into diffuse reflection light, and also transmitted by the diffuse transmitting plate into diffuse transmission light so that the golf ball surface is illuminated with both the diffuse reflection light and the diffuse transmission light, and wherein the golf ball is directly photographed from outside the housing through at least one opening in the peripheral wall of the housing for performing inspection of the outer appearance of the golf ball.

5,777,245

PARTICLE DISPERSING SYSTEM AND METHOD FOR TESTING SEMICONDUCTOR MANUFACTURING EQUIPMENT

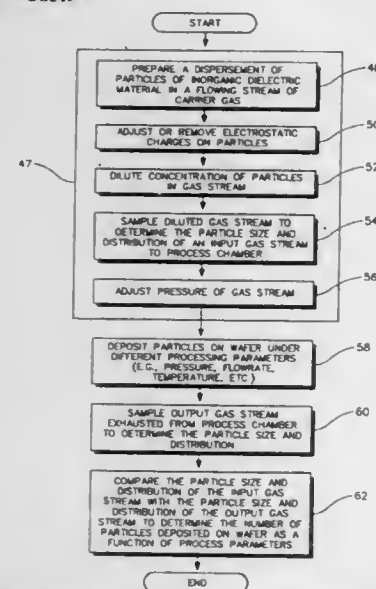
Madhavi Chandrachood; Steve G. Ghanayem, both of Sunnyvale; Nancy Cantwell, Milpitas, all of Calif.; Daniel J. Rader, and Anthony S. Geller, both of Albuquerque, N. Mex., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Sep. 13, 1996, Ser. No. 710,216

Int. Cl.⁶ G01N 19/00; 15/02

U.S. Cl. 73—865.9

3 Claims



1. A method for testing of semiconductor manufacturing equipment comprising the steps of:
 - preparing a dispersion of particles in a first stream of carrier gas;
 - diluting the concentration of the particles in the first stream of carrier gas;
 - splitting the first stream to form second and third streams of carrier gas;
 - sampling the second stream of carrier gas to determine the particle size distribution and concentration of the second stream;
 - adjusting the pressure of the third stream to a selected pressure in the equipment under test;
 - supplying the equipment with the pressure-adjusted third stream of gas;
 - sampling an outlet stream of gas exhausted from the equipment to determine the particle size distribution and concentration of the outlet stream; and
 - comparing the particle size distribution and concentration of the second stream with the particle size distribution and concentration of the outlet stream in order to determine the number of particles lodged within the equipment as a function of selected operating parameters of the equipment under test.

5,777,246

FASTENER MEASUREMENT SYSTEM

Mark Allen Woods, Renton; Bruce Stanley Howard, Bellevue, and Victor Gary Hart, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.

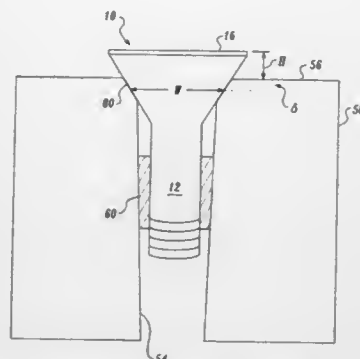
Filed Sep. 19, 1996, Ser. No. 710,699

Int. Cl.⁶ G01M 19/00

U.S. Cl. 73—865.8

9 Claims

1. A fastener head height measurement system comprising:
 - a gauge block having a bore disposed therein in which a fastener whose head height is to be measured is inserted, the bore having a beveled surface at a point where the bore meets a top surface of the gauge block;



- a transducer for producing an output signal that is indicative of a height of the fastener above the top surface of the gauge block; and
- a computer system coupled to receive the output signal of the transducer and for displaying the head height of the fastener.

5,777,247

CARBON STEEL POWDERS AND METHOD OF MANUFACTURING POWDER METAL COMPONENTS THEREFROM

Diwakar Garg, Emmaus; Kerry Renard Berger, Lehighton, and James Garfield Marsden, Lenhartsville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 19, 1997, Ser. No. 820,737

Int. Cl.⁶ C22C 33/02; B22F 3/12

U.S. Cl. 75—246

20 Claims

15. A powdered metal part produced by:
 - preparing a powder mixture consisting essentially of, by weight, 0.2 to 1.2% graphite powder, 0.1 to 0.9% copper powder, 0.0 to 2.0% lubricant, balance iron powder, said graphite, copper and iron powders having particles selected so that at least 65% of each of said particles will pass through a 325 U.S. mesh sieve;
 - pressing said powder mixture to shape where said pressed shape has a green density of between 6.4 and 7.4 g/cc; and
 - sintering said pressed shape in a furnace maintained at a temperature of at least about 2000° F. under an atmosphere containing a maximum of 15% hydrogen for a period of time to achieve the desired physical properties.

5,777,248

TUNING INDICATOR FOR MUSICAL INSTRUMENTS

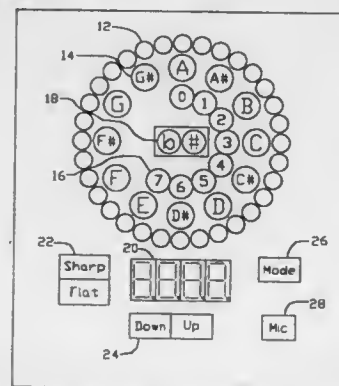
James A. Campbell, 7136 Plymouth Rd., Ann Arbor, Mich. 48105

Filed Jul. 22, 1996, Ser. No. 684,631

Int. Cl.⁶ G10G 7/02

U.S. Cl. 84—454

13 Claims



1. A tuning aid for musical instruments comprising:

- (a) a note/octave display comprising indication elements arranged in a pattern around two concentric circles to resemble a clock face having an inside pattern corresponding to an hour hand designating an octave and an outside pattern corresponding to a minute hand designating the twelve notes of a chromatic scale;
- (b) a strobe display array consisting of a plurality of luminous elements arranged in a circular pattern;
- (c) a reference frequency generating means of generating a reference frequency;
- (d) a control means of controlling the reference frequency to a desired note to be tuned and controlling the note/octave display accordingly;
- (e) a means of enabling each element of said strobe display sequentially at a rate such that said strobe display cycles once for each two periods of said reference frequency, each enabled element having an intensity;
- (f) a means of inputting a signal having a peak level for analysis;
- (g) a level control means of automatically controlling the peak level of said signal to a predetermined level and producing a level controlled output;
- (h) a filtering means of receiving the level controlled output and producing a filtered output;
- (i) a positive rectifying means of positive rectification of the filtered output of said filtering means and producing a positive rectified output having an instantaneous magnitude;
- (j) a means of controlling the intensity of the enabled element of said strobe display according to the instantaneous magnitude of the positive rectified output of said positive rectifying means.

5,777,249

ELECTRONIC MUSICAL INSTRUMENT WITH REDUCED STORAGE OF WAVEFORM INFORMATION

Hideo Suzuki, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

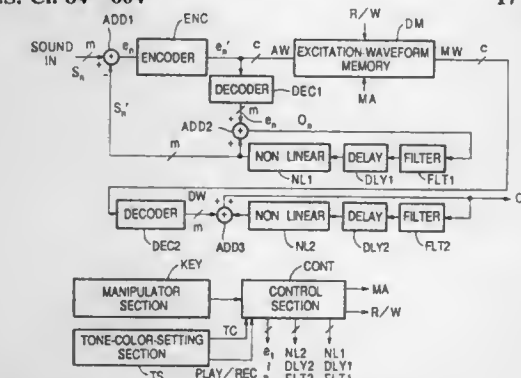
Filed Oct. 26, 1995, Ser. No. 548,434

Claims priority, application Japan, Oct. 31, 1994, 6-288575

Int. Cl.⁶ G10H 1/00; 1/02

U.S. Cl. 84—604

17 Claims



9. An electronic musical instrument comprising:
 - a subtracter for performing subtraction using target-sound data of m bits where m is an integer arbitrarily selected, representative of a target sound, so as to produce difference data of m bits;
 - an encoder for performing compressive coding on the difference data of m bits so as to produce compressed data of c bits where "c" is an integer arbitrarily selected and is less than "m", the compressed data being provided as excitation-waveform data stored by an excitation-waveform memory;
 - a first decoder for expanding the compressed data of c bits to reproduce data of m bits which are used as an excitation signal;
 - an analysis loop which provides at least first delay means which provides a delay corresponding to a pitch of the target sound and which is driven by the excitation signal so as to produce

- output data of m bits which are subtracted from the target-sound data of m bits by the subtracter;
 - a second decoder for expanding the excitation-waveform data, read out from the excitation-waveform memory, so as to produce data of m bits; and
 - a synthesis loop which provides at least second delay means which provides a delay corresponding to a pitch of the target sound,
- wherein output of the synthesis loop is added to the data of m bits, outputted from the second decoder, so as to produce musical tone data representative of a musical tone to be generated which corresponds to the target sound.

5,777,250

ELECTRONIC MUSICAL INSTRUMENT WITH SEMI-AUTOMATIC PLAYING FUNCTION

Toru Aoyama, Iwata; Mineo Kitamura, Hamamatsu; Yasushi Sato, Hamamatsu, and Satoshi Fujimoto, Hamamatsu, all of Japan, assignors to Kawai Musical Instruments Manufacturing Co., Ltd., Shizuoka, Japan

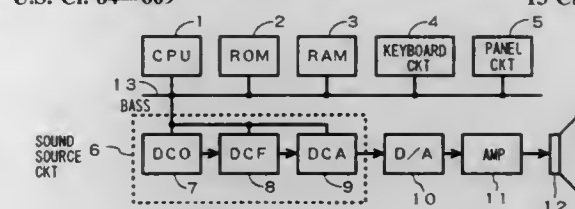
Filed Sep. 27, 1996, Ser. No. 720,298

Claims priority, application Japan, Sep. 29, 1995, 7-275138; Sep. 29, 1995, 7-275139

Int. Cl.⁶ G10H 7/00; 1/36

U.S. Cl. 84—609

13 Claims



1. An electronic musical instrument comprising:
 - playing data generating means for production of playing data in response to an action on a playing controller;
 - musical piece data memory means for storing musical piece data comprising a series of musical sound data units;
 - separating means for dividing the playing data into a plurality of groups according to a predetermined reference; and
 - at least one semi-automatic playing means responsive to each said production of playing data in at least one of the plurality of groups, for reading a sequence of sound data units of the musical piece data out of the musical piece data memory means, said sound data units which are read out being determined by the group that the playing data belongs to, and for generating musical tones on the basis of said sound data units which are read out in synchronism with the production of playing data.

5,777,251

ELECTRONIC MUSICAL INSTRUMENT WITH MUSICAL PERFORMANCE ASSISTING SYSTEM THAT CONTROLS PERFORMANCE PROGRESSION TIMING, TONE GENERATION AND TONE MUTING

Harumichi Hotta; Kazuhide Iwamoto; Hiroyuki Torimura, and Masanobu Chibana, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 3, 1996, Ser. No. 759,745

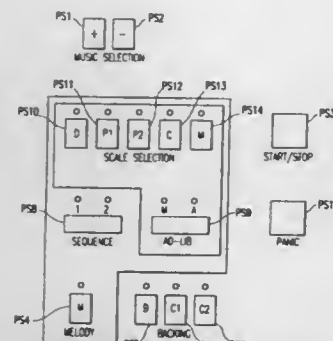
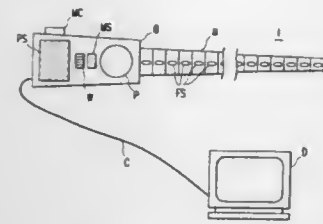
Claims priority, application Japan, Dec. 7, 1995, 7-345718

Int. Cl.⁶ A63H 5/00; G04B 13/00; G10H 7/00

U.S. Cl. 84—609

28 Claims

1. An electronic musical instrument comprising:
 - a first operation member;
 - a second operation member;
 - a memory device that stores performance data for a performance;
 - a sound source circuit;



a reading device that reads out the performance data from the memory device in response to operation of the first operation member and instructs the sound source circuit to generate a tone based on the performance data, wherein, at each operation of the first operation member, the reading device renews a progression position of the performance and gives an instruction to mute a tone that has already been instructed to generate; and

a mute instructing device that instructs the sound source circuit to mute the tone in response to operation of the second operation member.

5,777,252

ATMOSPHERE DATA GENERATOR AND KARAOKE MACHINE

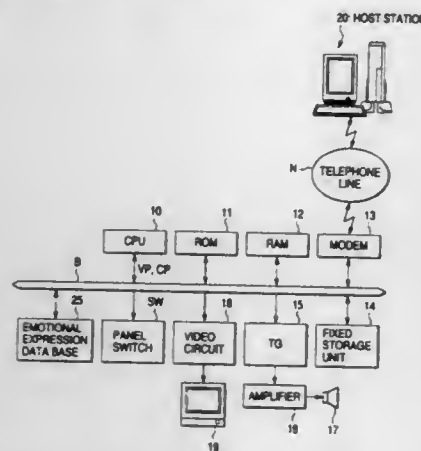
Yukio Tada, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jan. 22, 1997, Ser. No. 787,437

Int. Cl.⁶ A63H 5/00; G04B 13/00; G10H 7/00

U.S. Cl. 84-609

6 Claims



3. An atmosphere data generator, comprising:

music data storage means for storing performance data corresponding to lyrics data indicating lyrics of a piece of music and music data of the piece of music;

word emotion data storage means for storing word emotion data indicating the attribute of an emotion with respect to a predetermined plurality of words;

lyrics data reading means for reading lyrics data in accordance with a progress of the piece of music from the music data storage means;

word emotion data searching means, when a lyrics read by the reading means coincides with words stored in the word emotion data storage means, for reading word emotion data corresponding to the words from the word emotion data storage means;

performance data reading means for reading performance data in accordance with a progress of the piece of music from the music data storage means;

performance emotion data generating means for generating performance emotion data indicating the attribute of an emotion in accordance with a predetermined algorithm with respect to performance data read by the performance data reading means; and

atmosphere data generating means for generating atmosphere data based on the word emotion data read by the word emotion data searching means and the performance emotion data generated by the performance emotion data generating means.

5,777,253

AUTOMATIC ACCOMPANIMENT BY ELECTRONIC MUSICAL INSTRUMENT

Kiyomi Kurebayashi, Shimada, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan

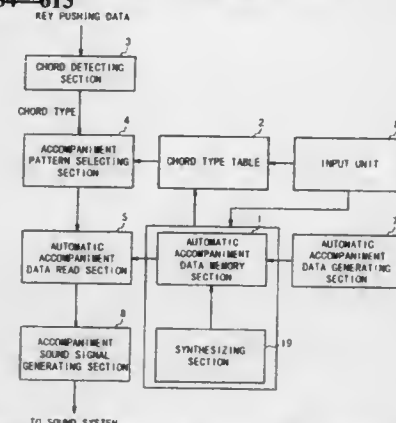
Filed Dec. 18, 1996, Ser. No. 769,725

Claims priority, application Japan, Dec. 22, 1995, 7-350470

Int. Cl.⁶ G10H 1/38

U.S. Cl. 84-613

23 Claims



13. A method of performing automatic accompaniment comprising the steps of:

detecting at least one of a content of a melody or a chord of a music to be performed, and producing a specifying data based on the detected at least one content or chord;

selecting at least one of a plurality of accompaniment patterns, which are stored in a storage means, based on said specifying data;

selecting at least one of a plurality of accompaniment data corresponding to said selected accompaniment pattern, each of said plurality of accompaniment data corresponding to one accompaniment pattern; and

generating an accompaniment sound signal based on said selected automatic accompaniment data.

5,777,254

SYSTEM AND METHOD FOR CONTROLLING NOTE INVERSIONS DURING COMPUTER BASED MUSICAL PERFORMANCES

Todor C. Fay, and David G. Yackley, both of Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 23, 1997, Ser. No. 880,870

Int. Cl.⁶ G10H 1/38; 7/00

U.S. Cl. 84-613

12 Claims

1. A method for dynamically changing the boundaries of a no-inversion zone during a performance of musical data, the musi-

5,777,256

SEALING DEVICE FOR A WEAPON FIRING CASELESS AMMUNITION

Françoise Simon, Plaimpied, and Franck Bouvard, Bourges, both of France, assignors to Giat Industries, Versailles, France

Continuation of Ser. No. 568,502, Dec. 7, 1995, abandoned.

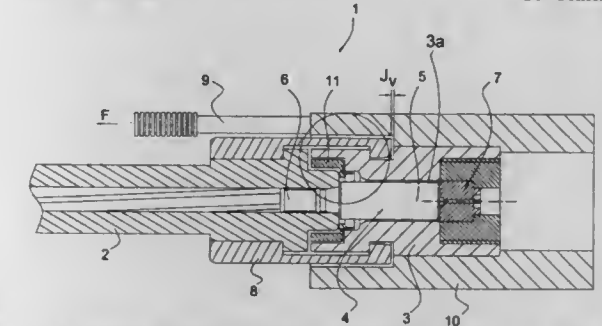
This application May 1, 1997, Ser. No. 848,752

Claims priority, application France, Dec. 12, 1994, 94 14911

Int. Cl.⁶ F41A 3/76

U.S. Cl. 89-26

18 Claims

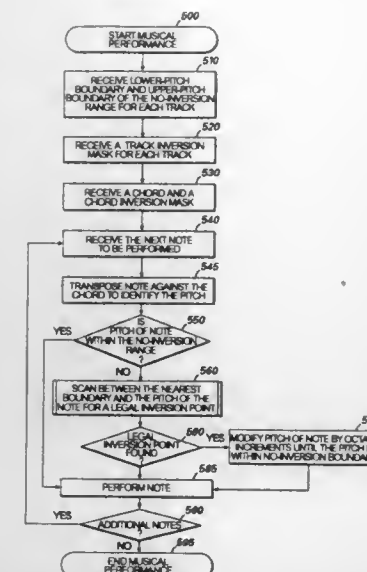


1. A sealing device for sealing combustible gases of a caseless munition, said sealing device being mounted between a barrel and a firing chamber defined by a breech block of a weapon, said sealing device comprising:

a ring-shaped sealing element having a first end defining a radially extending sealing surface for contacting a rear face of the barrel, and a second end having an outwardly facing axially extending lip surface for contacting an axially extending inner wall of the firing chamber;

a cooling element that compensates for thermal expansion of the sealing element upon firing of the combustible gases to reduce a rise in temperature of the sealing element; and

a ring-shaped radial connecting wall extending perpendicular to and connecting the ring-shaped sealing element to the cooling element, wherein the cooling element is ring-shaped and coaxial with an axis of the sealing element and wherein the ring-shaped cooling element is located externally of the sealing element.



cal data being received from a source and including a plurality of notes with each note being associated with one of a plurality of tracks, an upper-pitch boundary, a lower-pitch boundary, and a plurality of inversion masks, comprising the steps of:

selecting active inversion masks from the plurality of inversion masks, the active inversion masks being associated with the portion of the musical data currently being performed;

functionally merging the active inversion masks to form a master inversion mask;

defining an upper boundary of the no-inversion zone as the first point in the master inversion mask where inversions are allowed above the upper-pitch boundary; and

defining a lower boundary of the no-inversion zone as the first point in the master inversion mask where inversions are allowed below the lower-pitch boundary.

5,777,255

EFFICIENT SYNTHESIS OF MUSICAL TONES HAVING NONLINEAR EXCITATIONS

Julius O. Smith, III, Palo Alto, and Scott A. Van Duyne, Stanford, both of Calif., assignors to Stanford University, Stanford, Calif.

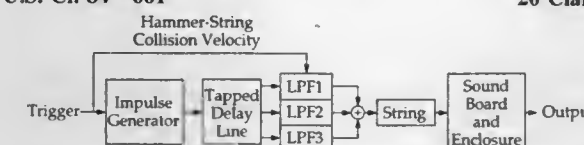
Continuation of Ser. No. 438,744, May 10, 1995, abandoned.

This application May 2, 1997, Ser. No. 850,652

Int. Cl.⁶ G10H 1/12

U.S. Cl. 84-661

20 Claims



1. A device for electronically synthesizing a tone as physically produced by an excited vibrating element coupled with a resonator, the device comprising:

an excitation means for producing an excitation pulse determined by the characteristics of the resonator;

an excitation filtering means for producing from the excitation pulse a filtered excitation pulse, the excitation filtering means having an impulse response which varies in dependence upon information contained in a trigger signal for the tone; and

a waveguide simulating means for simulating the vibrating element and producing the tone, the waveguide simulating means being driven by the filtered excitation pulse and comprising a delay line means and a waveguide filtering means, the waveguide filtering means having a linear impulse response dependent upon the characteristics of the vibrating element.

5,777,257

SHAPED CHARGE ASSEMBLY WITH TRUNCATED LINER

John J. Kenny, Marrero, La., assignor to Senior Power Services, Inc., Demex Division, Lyman, S.C.

Filed Mar. 14, 1997, Ser. No. 818,336

Int. Cl.⁶ F42B 3/00; F42D 3/00

U.S. Cl. 102-312

20 Claims

1. An apparatus for severing tubular members, comprising:

an outer shell;

an explosive charge carrier mounted in said shell, said carrier comprising a pair of parallel plates, a circular shaped charge casing carried by circumferential edges of said plates, a truncated liner mounted in a spaced-apart relationship to said casing, said liner comprising an inner wall extending in a transverse relationship to said plates and a pair of outwardly inclined side walls, and wherein a chamber for housing an explosive material is formed between said liner and said casing;

a means for lowering said shell and said carrier to a predetermined position within said tubular member; and

hemispherically-shaped, rearwardly-facing, and removable wiper moves therealong; said at least one wad includes a fifth wad impregnated with a muzzle flash and barrel erosion reduction composition that is contained in said second internal sub-chamber of said six internal sub-chambers of said internal chamber in said hollow, cylindrically-shaped, closed back, and open front shell casing when said propellant in said first sub-chamber of said six sub-chambers of said internal chamber in said hollow, cylindrically-shaped, closed back, and open front shell casing is activated, so that said fifth wad of said at least one wad that is contained in said second internal sub-chamber of said six internal sub-chambers of said internal chamber in said hollow, cylindrically-shaped, closed back, and open front shell casing provides a layer of said muzzle flash and barrel erosion reduction composition on the interior surface of the barrel of the typical firearm as said fifth wad moves therealong; said first expandable, generally hemispherically-shaped, rearwardly-facing, and removable wiper of said five expandable, generally hemispherically-shaped, rearwardly-facing, and removable wipers is tenth to exit from said hollow, cylindrically-shaped, closed back, and open front shell casing when said propellant in said first sub-chamber of said six sub-chambers of said internal chamber in said hollow, cylindrically-shaped, closed back, and open front shell casing is activated, so that said first expandable, generally hemispherically-shaped, rearwardly-facing, and removable wipers that is contained in said hollow, cylindrically-shaped, closed back, and open front shell casing smooths out said layer of said muzzle flash and barrel erosion reduction composition on the interior surface of the barrel of the typical firearm as said first expandable, generally hemispherically-shaped, rearwardly-facing, and removable wiper moves therealong and provides a smooth coating thereon; said muzzle flash and barrel erosion reduction composition being an aqueous solution of a material selected from the group consisting of Na_2O , SiO_2 , K_2O , SiO_2 , and combinations thereof, wherein x is 3-5, and which can be impregnated at ambient temperature and at atmospheric pressure, and wherein SiO_2 acts as an erosion reducer; said material being about 5%-20% by weight and being a loose dry powder; said muzzle flash and barrel erosion reduction composition further containing small quantities of an additional material selected from the group consisting of talc, TiO_2 , and combinations thereof; said muzzle flash and barrel erosion reduction composition further containing a flash suppressant selected from the group consisting of volatile and non-volatile; said volatile flash suppressant being selected from the group consisting of NH_4HCO_3 , $(\text{NH}_4)_2\text{CO}_3$, and KHCO_3 ; said flash suppressant being about 3%-6% by weight.

5,777,259

HEAT EXCHANGER ASSEMBLY AND METHOD FOR MAKING THE SAME

Joseph P. Mennucci, Manville, R.I., and Charles R. Mead, Newbury, Mass., assignors to Brush Wellman Inc., Cleveland, Ohio

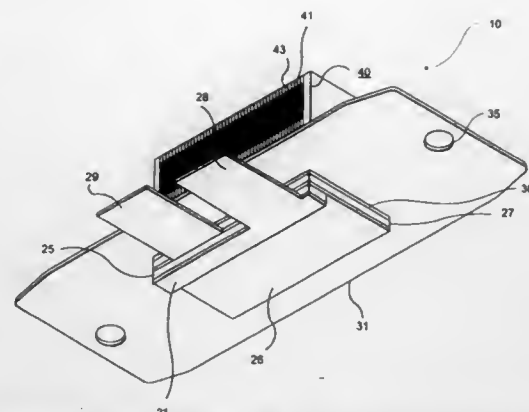
Continuation-in-part of Ser. No. 470,987, Jun. 6, 1995, Pat. No. 5,525,753, which is a continuation of Ser. No. 182,288, Jan. 14, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 599,614

Int. Cl.⁶ H05K 7/20; H01L 23/26

U.S. Cl. 174-16.3

33 Claims

1. A heat exchanger assembly, which comprises:
 - a first base layer of oxygen-rich copper joined to a first layer of beryllium oxide;
 - a first oxygen-rich copper layer joined to the first beryllium oxide layer;



- a second beryllium oxide layer joined to the first oxygen-rich copper layer;
- a second oxygen-rich copper layer joined to the second beryllium oxide layer;
- a second base layer of oxygen-rich copper joined to the second oxygen-rich copper layer; and
- a heat exchanger structure joined to the second base layer, the structure comprising a plurality of oxygen-rich copper fins stacked upon one another, each of the fins having a channel at a selected location therein, and material to material interfaces between adjacent stacked fins being joined to one another so as to form a solidified block structure, each channel forming a cooling chamber.

5,777,260

COAXIAL CABLE ADDITIONALLY HAVING AT LEAST ONE LIGHT WAVEGUIDE

Karl-Heinz Klumps, Saterland; Hermann Goessling, Boesel; Franz-Josef Wichmann, Friesoythe, and Lothar Finzel, Unterschleissheim, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

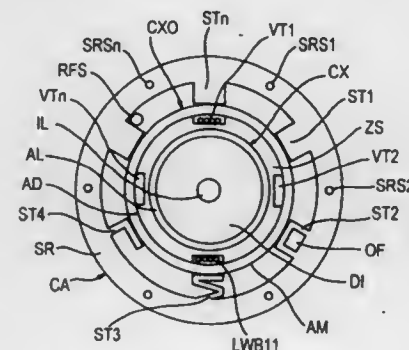
Filed Mar. 1, 1996, Ser. No. 609,801

Claims priority, application Germany, Mar. 14, 1995, 19 509 125.6; Mar. 23, 1995, 19 510 548.6

Int. Cl.⁶ H02G 3/00; G02B 6/44

U.S. Cl. 174-24

19 Claims



1. A coaxial cable, comprising:
 - an inner conductor, a dielectric around the inner conductor, and an outer conductor on the dielectric surrounding the inner conductor;
 - an intermediate layer provided on the outer conductor;
 - at least one channel-shaped depression provided in the intermediate layer;
 - the at least one channel-shaped depression proceeding helically with reference to a longitudinal axis of the coaxial cable, and the depression being outwardly open;
 - at least one light waveguide arranged in the channel-shaped depression;
 - the depression being closed by a film wrapping;

an outside envelope being applied on an outside of the wrap-ping;
a protective pipe surrounding the outside envelope at a spacing therefrom; and
the protective pipe having spacer elements between the outer envelope and the protective pipe to provide said spacing, no light waveguides being provided between the protective pipe and the outside envelope so that no damage occurs to any light waveguides, and so that the spaced protective pipe isolates the at least one light waveguide in the at least one depression in the intermediate layer from external compressive forces exerted on the protective pipe.

5,777,261

ASSEMBLY FOR ATTENUATING EMISSIONS FROM PORTABLE TELEPHONES

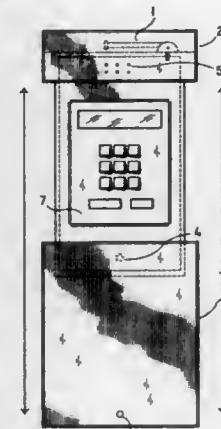
Joseph M. Katz, 11 Meadow Rd., Old Westbury, N.Y. 11568

Continuation-in-part of Ser. No. 285,798, Aug. 4, 1994, Pat. No. 5,535,439, which is a continuation-in-part of Ser. No. 13,399, Feb. 4, 1993, Pat. No. 5,336,896. This application Jul. 8, 1996, Ser. No. 677,720

Int. Cl.⁶ H05K 9/00

U.S. Cl. 174-35 R

1 Claim



1. An assembly for attenuating and diverting electromagnetic, radio frequency and microwave-radiation emitted from cellular and marine band telephones, said assembly comprising:

- a) a completely lined EMI/RF and microwave radiation shielded protective case to fully enclose a cellular or marine band telephone, the case including at least two telescoping parts slidably connected to each other to permit insertion or extraction of a telephone, wherein an opening is formed in one of the at least two telescoping parts to permit operating the telephone inserted therein, and a shielded section formed in one of the at least two telescoping parts thereby preventing a base of an antenna from touching a user's head during use;
- b) said antenna being a telescoping, antenna with the base adapted to engage antenna circuitry of the telephone; and
- c) a removable handle attached to the outside of the shielded case, the removable handle being configured and dimensioned to permit telescoping of the case and holding of the parts together for security and comfort.

5,777,262 APPARATUS AND METHOD FOR INCREASING ELECTRICAL CLEARANCES OF ENERGIZED CONDUCTORS

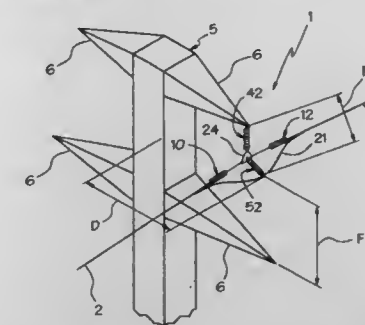
Ali Nourai, Dublin; Albert J. F. Keri, Columbus, and Ronald Marsico, Worthington, all of Ohio, assignors to AEP Energy Services, Inc., Columbus, Ohio

Filed Jul. 26, 1996, Ser. No. 687,715

Int. Cl.⁶ H02G 7/00

U.S. Cl. 174-40 R

21 Claims



1. An apparatus for increasing electrical conductor clearances from a grounded support structure, ground and underlying objects, said apparatus including:

- first and second insulators dead-end clamped at first ends to the electrical conductor and extending substantially in line with said conductor, a section of said conductor forming an outwardly extending upgrade loop between the first ends of said first and second insulators;
- attachment means for mounting said first and second insulators on the support structure at second ends of the insulators;
- insulator means for insulating the attachment means from said grounded support structure; and
- a third insulator adapted to extend from the insulated attachment means for maintaining the upgrade loop a predetermined distance from the grounded support structure.

5,777,263

GROUND PLATE ADAPTERS

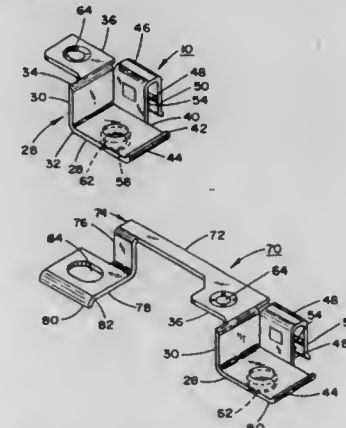
Paul A. Maehler, South Bend, Ind., and Bryan Sholly, El Paso, Tex., assignors to Hubbell Incorporated, Orange, Conn.

Filed Apr. 18, 1997, Ser. No. 837,490

Int. Cl.⁶ H05K 5/02

U.S. Cl. 174-51

9 Claims



1. A ground plate adapter for attachment to at least one single-gang non-metallic electrical box; said ground plate adapter comprising:

- (a) an inverted U-shaped bracket member adapted to be clampingly mounted on an upper end of an upstanding wall of an electrical box;
- (b) a generally Z-shaped plate structure having an upstanding flange located adjacent one upwardly extending side edge of

one wall portion of said bracket member, a lower plate element extending at right angles from a lower edge of said flange and having a side edge fastened to a lower end of said one wall portion of said bracket member, an upper plate element extending from an upper edge of said flange in parallel spaced opposite direction from said upper and lower plate element, and an aperture formed in each of said plate elements for the passage therethrough of fastener means.

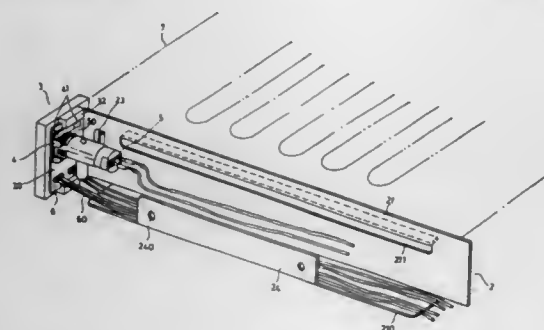
5,777,264 GROUNDING STRUCTURE FOR EXTRACTABLE HARDDISK

Chih-Kung Chen, 2Fl., No. 1-16, Tung Shih Street, Nuan Nuan Dist. Chi Lung City, Taiwan

Filed Apr. 28, 1997, Ser. No. 845,277
Int. Cl.⁶ H05K 5/02

U.S. Cl. 174—51

6 Claims



1. A grounding structure for an extractable harddisk, comprising: an L-shape first conductor bent from an open end of a rack frame, and a first lock head hole located on said first conductor and first LED holes located under the first lock head hole; a second conductor on the rack frame located on a rear side of said first conductor and parallel to the first conductor, said second conductor raised on the rack frame; a third conductor located to a rear side of said second conductor said third conductor having a plurality of screw holes, the rack frame joined with a panel by insertion of the first conductor into inverted L-shaped setting rails of the panel, the panel having a second lock head hole and second LED holes aligned with the first lock head hole and first LED holes, respectively; a lock head placed through the first and second lock head holes; a pin engaging a threaded section of the lock head having an opening along a side of said first conductor to fix the lock head to the panel and the rack frame such that the lock head is in contact with the second conductor; an LED mounted through said first and second LED holes from the first conductor to the panel, a cord connected to the LED laying flat on the rack frame.

5,777,265 MULTILAYER MOLDED PLASTIC PACKAGE DESIGN

Bidyut K. Bhattacharyya; Debendra Mallik, both of Chandler; Ron Vitt, Phoenix, and David B. Kline, Tempe, all of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 7,246, Jan. 21, 1996, abandoned.

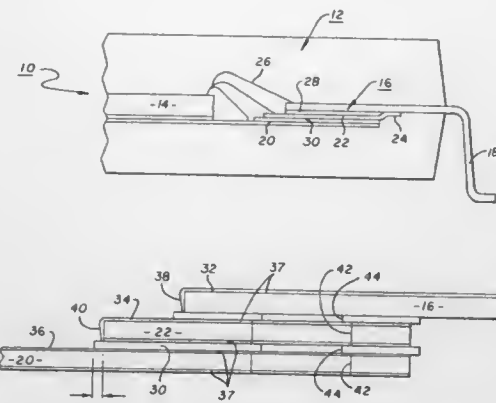
This application May 21, 1997, Ser. No. 861,242

Int. Cl.⁶ H01L 23/02; 23/48; 23/52

U.S. Cl. 174—52.4

6 Claims

1. An electronic package for an integrated circuit, comprising: a first baseplate; a lead frame that has a lead frame edge; a second baseplate located between said first baseplate and said lead frame, said second baseplate having a second baseplate edge; a first dielectric layer located between said second baseplate and said lead frame, said first dielectric layer having a first dielectric layer edge which extends beyond said lead frame edge;



a second dielectric layer located between said first baseplate and said second baseplate and second dielectric layer having a second dielectric layer edge that extends beyond said second baseplate; and, a layer of plating that extends from said second baseplate edge to a point under said first dielectric layer.

5,777,266 MODULAR CABLE PROTECTION SYSTEM

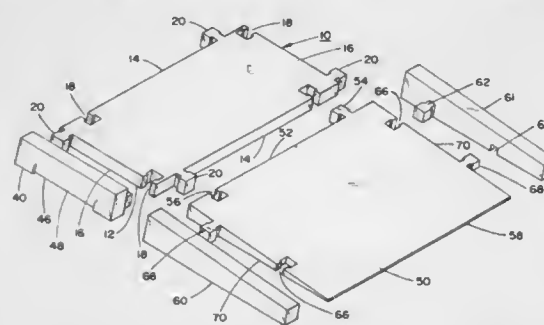
Wallace U. Herman, Fairfield, and David L. Lutz, North Branford, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.

Filed Apr. 7, 1997, Ser. No. 835,380

Int. Cl.⁶ H02G 9/04

U.S. Cl. 174—68.1

20 Claims



1. A modular cable protection system which is expandable in both crossover length and cable capacity, comprising:

(a) at least one cable protector including a generally planar base member resting on the terrain; and a cover structure covering said base member so as to form an interspace therewith adapted to enable electrical cables, data cables and fluid hoses to extend through said interspace; and male and female connector means spaced about the periphery of said base member so as to enable both parallel or series assembling;

(b) and ramp structure arranged at least at one side of said base member, said ramp structure including female and male connector means connectable to complementary said male and female connector means at said at least one side of said base member so as to form said modular cable protection system.

5,777,267 HARNESS ASSEMBLY TO PROVIDE SIGNALS TO END EFFECTOR

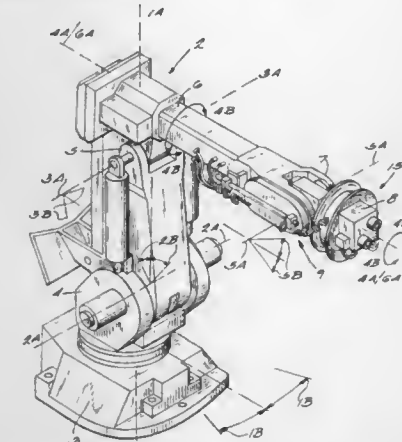
James J. Szydel, West Allis, Wis., assignor to ABB Flexible Automation, Inc., New Berlin, Wis.

Filed Jun. 28, 1996, Ser. No. 668,511

Int. Cl.⁶ H02G 3/00

U.S. Cl. 174—72 A

25 Claims



1. A harness assembly for use with a robot having an arm and a wrist, the arm capable of having an end effector connected thereto, the harness assembly comprising:

a first spiral conduit wound in a helical-shape having a first end and a second end, the first end for being coupled to a first signal transmission point positioned on the robot arm, and the second end for being coupled to the end effector when the end effector is mounted on the robot wrist; and a conduit guide for being mounted on the wrist of the robot; the conduit guide including a core having a first end and a second end; and a first disk mounted on the first end of the core; where, in operation, the first spiral conduit is arranged so that a portion of it is positioned on the first disk and wrapped around a portion of the core.

5,777,268 SPLICE CLOSURE FOR BURIED TELECOMMUNICATIONS CABLES

Barry Wayne Allen, Siler City; Terry Edward Frye, Gary, both of N.C.; Michael Earle Labonge, Orlando, Fla., and Linda Jones Joyner, Fuquay Varina, N.C., assignors to Raychem Corporation, Menlo Park, Calif.

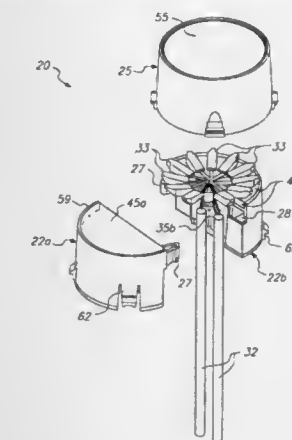
Filed Sep. 17, 1996, Ser. No. 718,081

Int. Cl.⁶ H02G 15/02

U.S. Cl. 174—74 A

24 Claims

1. An environmentally sealed splice closure for buried telecom-



munications cables, comprising:

a) a base having port means defining at least one entry port for receiving at least one telecommunications cable therethrough;

b) a cap having at least one wall and being receivable on said base opposite said port means to complement said base to form therewith a cavity within said splice closure;

c) said base, port means, and cap being dimensioned such that said cavity is substantially isolated from the exterior of said closure when said entry port is blocked by one or more cables passing therethrough;

d) a predetermined volume of sealant substantially filling said cavity, and

e) volumetric and pressure accommodation means in said closure to compensate automatically for variations:

i) in the volume of cables and splices installed into said closure to assure that said sealant continues to substantially fill said cavity, and

ii) in the pressure of said sealant resulting from thermal expansion and contraction thereof and from external pressure changes to assure that said sealant continues to substantially fill said cavity substantially at ambient pressure, while maintaining said sealant substantially within said cavity to achieve a reliable and long-lasting environmental seal for cables and splices therewithin.

5,777,269 TERMINATION FOR A SHIELDED CABLE

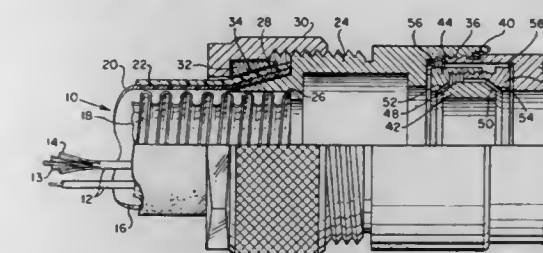
James O. Handley, Thousand Oaks, Calif., assignor to G & H Technology, Inc., Camarillo, Calif.

Filed Sep. 13, 1996, Ser. No. 712,934

Int. Cl.⁶ H02G 15/02

U.S. Cl. 174—78

2 Claims



1. Terminating apparatus for a plurality of cable conductors each having an individual sheathlike conductive shield and a common conductive shield within which the conductors are carried, comprising:

a first termination ring having opposite sides received about said cable conductors and underneath the common shield including first and second circular tapered surfaces;

second and third cylindrical conductive termination rings received onto the cable conductors, one at each of said opposite sides of the first termination ring, said second and third rings each having threaded parts for conjunctive assembly about said first termination ring to clampingly hold portions of the common shield and each said individual conductive shield in physical and conductive engagement with said first termination ring, said second and third termination rings each including a further internal circular tapered surface which is positioned opposed to one of the first and second tapered surfaces of the first termination ring, said further tapered surface and said one of the first and second tapered surfaces being moved toward each other as the second and third termination rings are threaded together clamping the individual shields and the common shield against the first termination ring; and

a hollow termination housing and cylindrical member are each received about the second and third termination rings and include complementary threading for being engaged bringing the housing and cylindrical member into respective contact with the second and third termination rings.

5,777,270

DEVICE FOR CHANGING THE RUN DIRECTION OF A PRE-BUSSED RIGID CONDUIT ELECTRICAL DISTRIBUTION SYSTEM

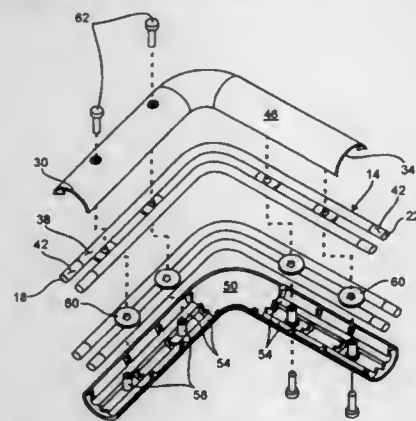
Rodney Joe West, 309 East Vine St., Liberty, Ind. 47353; Robert I. Whitney, 16170 St. Mary's Rd., Brookville, Ind. 47012, and Glenn S. O'Nan, 788 Franklin St., Hamilton, Ohio 45013

Filed Nov. 5, 1993, Ser. No. 147,611

Int. Cl.⁶ H01R 4/60

U.S. Cl. 174—99 B

12 Claims



1. An elbow for changing the run direction of an electrical distribution system, said elbow comprising:

- a) a plurality of electrical conductors, each said conductor having a first end and a second end, said conductors being formed such that a predetermined angle is maintained between said first and second ends;
- b) a housing having a first end and a second end and defining a hollow interior for receiving a significant portion of said electrical conductors, said housing being formed such that said predetermined angle is maintained between said first and second ends of said housing;
- c) a plurality of retaining washers for retaining said conductors in fixed relationship to said housing during assembly of said elbow; and
- d) means for continuously and uniformly supporting said significant portion of each said conductor which is enclosed within said housing.

5,777,271

CABLE HAVING AN AT LEAST PARTIALLY OXIDIZED ARMOR LAYER

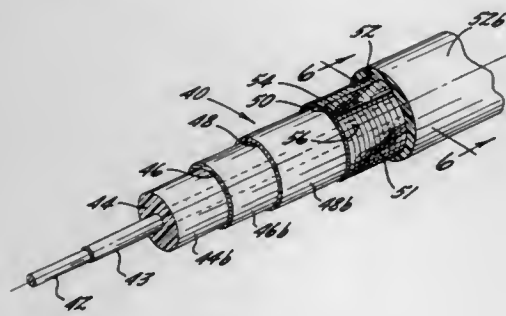
Bruce Carlson, Hickory; David C. Esker, Conover, and Jana Horsa, Hickory, all of N.C., assignors to CommScope, Inc., Catawba, N.C.

Filed Jan. 18, 1996, Ser. No. 588,560

Int. Cl.⁶ H01B 7/18

U.S. Cl. 174—107

12 Claims



1. An elongate cable comprising:
an elongate cable core;

an armor layer surrounding and adjacent said cable core, said armor layer comprising:

- a pair of opposing longitudinal edge portions overlapping to define a longitudinally extending seam; and
- inner and outer surfaces, said inner surface facing said cable core;
- a protective jacket surrounding said armor layer;
- an adhesive layer disposed between said armor layer and said protective jacket for securing said protective jacket to said armor layer; and
- oxidation disposed on said armor layer along said longitudinally extending seam to thereby reduce adherence between said protective jacket and said armor layer along said longitudinally extending seam and to allow relative movement therebetween.

5,777,272

COLOR BANDED JACKET ASSEMBLY FOR AN ANTENNA FEED CABLE

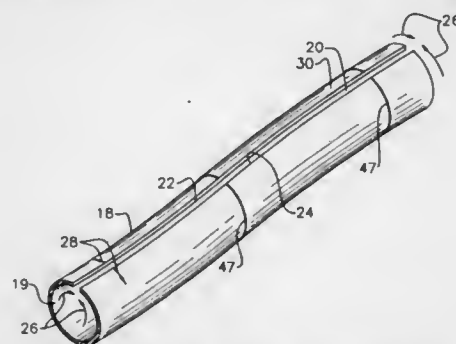
Nick Rouskey, 423 SE. 18th Ter., Cape Coral, Fla. 33990

Filed Nov. 12, 1996, Ser. No. 745,651

Int. Cl.⁶ H01B 7/36

U.S. Cl. 174—112

18 Claims



1. A color banded jacket assembly in combination with an antenna feed cable, said assembly comprising:

- a plurality of generally tubular, one-piece first jacket segments, each including a longitudinal split through which an antenna feed cable is selectively introduced into and removed from the first jacket segment, each said first jacket segment being sufficiently large to wrap at least partially about the cable and further including a band of a first color exclusively, which is formed circumferentially about said first jacket segment; and
- a plurality of generally tubular, one-piece second jacket segments, each including a longitudinal split through which the antenna cable is selectively introduced into and removed from the second jacket segment, each said second jacket segment being sufficiently large to wrap at least partially about the cable and further including a band of a distinct second color exclusively, which is formed circumferentially about said second jacket segment; each said jacket segment being composed of a flexibly resilient material that urges said split to maintain a width that is normally more narrow than the diameter of the cable, said resilient material permitting said jacket segment to be expanded and said split to be widened sufficiently to selectively introduce the cable into and remove the cable from the jacket segment through the split, said resilient material urging said jacket segment into gripping interengagement with the cable about which said jacket segment is wrapped;

each said jacket segment being separate and distinct from each other jacket segment and said first and second jacket segments being arranged alternately along the cable to mark the cable with an alternating color pattern.

5,777,273

HIGH FREQUENCY POWER AND COMMUNICATIONS CABLE

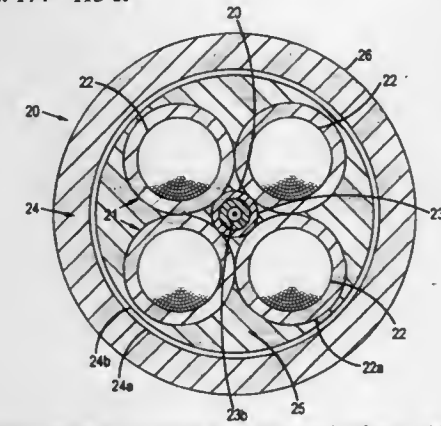
George R. Woody, Redondo Beach, and Scott D. Downer, Torrance, both of Calif., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Jul. 26, 1996, Ser. No. 686,808

Int. Cl.⁶ H01B 11/02

U.S. Cl. 174—113 R

12 Claims



1. A high frequency power and communications cable comprising:

- a coaxial cable for carrying bidirectional RF communication signals;
- a plurality of separately insulated stranded wire power cables for carrying high frequency AC power, said stranded wire power cables being twisted around said coaxial cable to form a pseudo-Litz wire architecture;
- an EMI shield surrounding said coaxial cable and said stranded wire power cables, said EMI shield comprising an inner layer of metalized MYLAR and an outer layer of tinned-copper braid;
- polytetrafluoroethylene filler material disposed around the coaxial cable and stranded wire power cables within the EMI shield; and
- an outer cover surrounding said EMI shield.

5,777,274

GROMMET HAVING AN IDENTIFYING PORTION FOR CHECKING THE GROMMET

Kiyotaka Kawase, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd, Japan

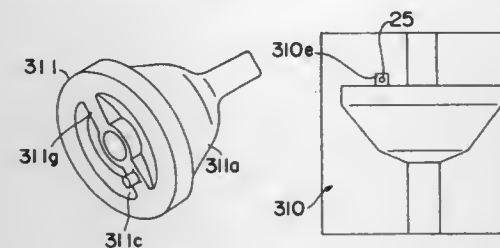
Filed Mar. 25, 1996, Ser. No. 618,063

Claims priority, application Japan, Mar. 28, 1995, 7-069871

Int. Cl.⁶ H01B 17/26

U.S. Cl. 174—153 G

3 Claims



1. A grommet for sealed passage of a wire harness through a hole in a panel, said grommet having opposed first and second ends and comprising:

- a substantially tubular wire insertion portion (11b) extending from the first end of the grommet to a location between said first and second ends;
- a tapered mount portion (11a) having a small diameter end at said wire insertion portion (11b) and a large diameter end between the wire insertion portion (11b) and the second end of the grommet, said large diameter end of said mount portion

(11a) defining an outside diameter for sealed engagement with the panel at the hole therethrough;

an annular rim (11f) extending from the large diameter end of the tapered mount portion (11a) to the second end of the grommet and having an outer circumferential surface disposed radially outwardly from the large diameter end of the tapered mount portion (11a), the annular rim (11f) including a diametrically disposed support rib (11g) extending thereacross; and

at least one identifying portion (11c) formed on and projecting from the rib (11g) and protecting substantially perpendicular to said rib (11g) and away from said first end.

5,777,275

BENDABLE CIRCUIT BOARD HAVING IMPROVED RESISTANCE TO BENDING STRAIN AND INCREASED ELEMENT MOUNTING AREA

Yoshitaka Mizutani, Hyogo, and Tetsuro Washida, Tokyo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

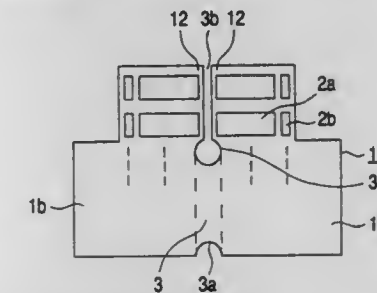
Filed May 16, 1996, Ser. No. 648,953

Claims priority, application Japan, Sep. 25, 1995, 7-245877

Int. Cl.⁶ H05K 1/00

U.S. Cl. 174—254

17 Claims



1. A printed circuit board comprising:
first and second flat portions, each flat portion including first and second sides for mounting a plurality of elements; and

a bending portion joining the first and second flat portions and bending to place the first and second flat portions in a superposed state wherein the first side of the first flat portion faces the first side of the second flat portion, the bending portion having a first width and including:

- a first cutout including an elongate portion having a second width narrower than the first width, and an end portion having a third width substantially equal to the first width,
- a first end, and
- an opposing second end.

5,777,276

MOTHER BOARD WITH AUXILIARY CONDUCTORS IN PARALLEL WITH POWER CONNECTORS

Xiao Feng Zhu, Fremont, Calif., assignor to Micronics Computers Inc., Fremont, Calif.

Filed Jul. 26, 1996, Ser. No. 686,552

Int. Cl.⁶ H01R 9/09

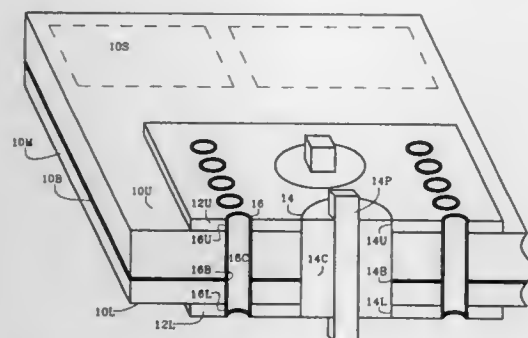
U.S. Cl. 174—263

19 Claims

1. A motherboard for mounting within a computer apparatus having an off-board power source, comprising:

- a monolithic conductive layer buried within the motherboard between the upper surface and the lower surface thereof, and selectively extending throughout the motherboard for selectively distributing electrical power to component sites on the motherboard;

local electrode means on at least one surface of the motherboard; a post bore penetrating through the local electrode means into the motherboard for exposing a small post contact region in the local electrode means, and penetrating further into the



motherboard for exposing a small post contact region in the buried layer, the penetration of the post bore forming a side wall along the post bore;

a connector post positioned within the post bore for connection to the off-board power source;

post bore conductor means within the post bore for establishing electrical continuity between the connector post and the small post contact region in the buried layer defining a post electric circuit from the connector post to the buried layer, and for establishing electrical continuity between the connector post and the small post contact region in the local electrode means and establishing an electrical resistance into the motherboard from the off-board power source;

at least one auxiliary bore proximate the post bore penetrating through the local electrode means into the motherboard for exposing a small auxiliary contact region in the local electrode means, and penetrating further into the motherboard for exposing a small auxiliary contact region in the buried layer, the penetration of the auxiliary bore forming a side wall along the auxiliary bore;

an auxiliary bore conductor means within the auxiliary bore for establishing electrical continuity along the auxiliary bore from the small auxiliary contact region in the local electrode means to the small auxiliary contact region in the buried layer, the local electrode means in series with the auxiliary bore conductor means defining an auxiliary electric circuit from the connector post to the buried layer;

the post electric circuit and the auxiliary electric circuit in parallel relationship between the connector post and the buried layer for reducing the electrical resistance into the motherboard from the off-board power supply.

5,777,277 PRINTED CIRCUIT BOARD

Hideho Inagawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1996, Ser. No. 714,442

Claims priority, application Japan, Sep. 21, 1995, 7-243376; Jan. 9, 1996, 8-001395

Int. Cl.⁶ H01R 9/09

U.S. Cl. 174-265

12 Claims

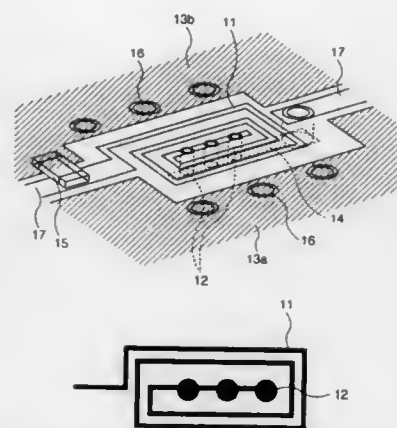
1. A printed circuit board comprising:
a power source line which is formed on a first layer of the circuit board;

a spiral circuit pattern element which is formed between one end and the other end of said power source line on the first layer of the circuit board, an inner side edge portion of said spiral circuit pattern element being discontinuous to said one end of said power source line and an outer side edge portion being continuous to said other end of said power source line;

ground connecting patterns which are formed on the first layer of said circuit board so as to be separated by said power source line and said spiral circuit pattern element;

a lead line which is formed on a second layer of said circuit board so as to correspond to said power source line and said spiral circuit pattern element;

through holes for electrically connecting the discontinuous portion between the inner side edge portion of said spiral circuit



pattern element and said one end of said power source line through said lead line; and
connecting means for electrically connecting said separate ground connecting patterns.

5,777,278

MULTI-PHASE FLUID FLOW MEASUREMENT

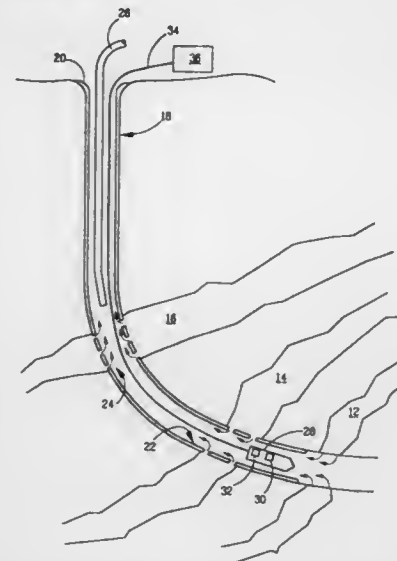
Adam Bednarczyk, Carrollton; Robert E. Maute, Richardson, and Laird B. Thompson, Dallas, all of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 11, 1996, Ser. No. 764,404

Int. Cl.⁶ G01V 1/40

U.S. Cl. 181-102

17 Claims



1. A method to identify fluid hydrocarbon flow rates in a fluid flow line having a multi-phase fluid flow comprising the steps of:
moving an acoustic tool through the flow line;

transmitting acoustic energy into the fluid flow toward the flow line wall;

receiving said acoustic energy when it is reflected back from the flow line wall and interfaces within said fluid flow;

transforming said reflected acoustic energy into electrical signals;

rectifying said electrical signals;

identifying amplitude peaks of said rectified electrical signals;

determining the return time of said amplitude peaks; and
using said amplitude peaks and said return time values to distinguish gas flow and liquid flow in the hydrocarbon fluid flow in the flow line.

5,777,279

SOUND ATTENUATING STRUCTURE

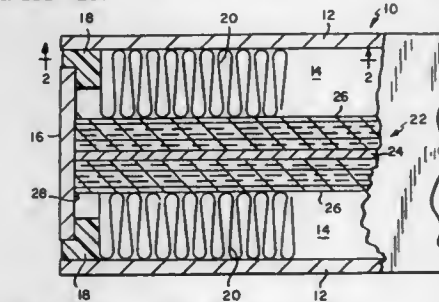
Murray M. Parker, Newport RR#1, Hants County, Nova Scotia, Canada, B0N 2A0, and Arthur J. Hustins, Jr., 1550 Bedford Highway #220, Bedford, Nova Scotia, Canada, B4A 1E6

Filed Dec. 5, 1995, Ser. No. 567,595

Int. Cl.⁶ G10K 11/00

U.S. Cl. 181-287

14 Claims



1. Sound attenuating structure comprising:

spaced apart first and second stiffened metal panels, each metal panel including a metal plate and stiffening elements affixed to the metal plate and disposed in a geometric grid pattern, the geometric grid pattern comprising horizontally disposed bars and vertically disposed bars to form squares or rectangles and diagonal bars disposed along diagonals of the squares or rectangles to form triangular regions;

a spring connection structure adapted to connect the first and second stiffened panels to form a sealed cavity therebetween; and

a sound attenuating material disposed within the cavity.

5,777,280

CALIBRATION ROUTINE WITH ADAPTIVE LOAD COMPENSATION

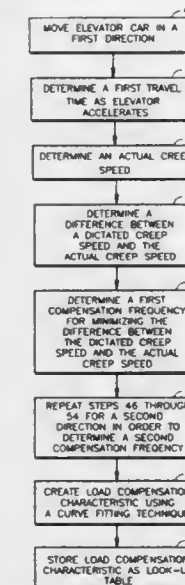
Burkhard Braasch; Marvin Dehmow; Jürgen Dieluwiet; Christoph M. Ernecke; Thomas Gietzold, all of Berlin, Germany, and Alberto Vecchiotti, Middletown, Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Aug. 27, 1996, Ser. No. 708,137

Int. Cl.⁶ B66B 1/34; 3/00; 1/40

U.S. Cl. 187-393

4 Claims



1. A load compensation calibration method for an elevator controller, comprising the steps of:

moving an elevator car in a first direction, the first direction including a first creep speed region;

determining a first time to travel a known distance as the elevator car accelerates in the first direction;

determining a first actual creep speed of the first creep speed region;

determining a difference between a dictated creep speed and the first actual creep speed;

determining a first compensation frequency for minimizing the difference between the dictated creep speed and the first actual creep speed;

moving the elevator car in a second direction, the second direction including a second creep speed region;

determining a second time to travel said known distance as the elevator car accelerates in the second direction;

determining a second actual creep speed of the second creep speed region;

determining a difference between the dictated creep speed and the second actual creep speed;

determining a second compensation frequency for minimizing the difference between the dictated creep speed and the second actual creep speed; and

creating a load compensation characteristic in response to the first travel time, the second travel time, the first compensation frequency and the second compensation frequency.

5,777,281

KEY ASSEMBLY

Martin Philip Riddiford, London, United Kingdom, assignor to Pstion Computers PLC, London, United Kingdom

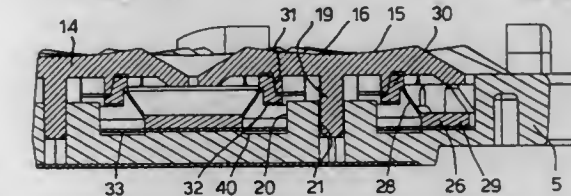
Filed Sep. 23, 1996, Ser. No. 723,881

Claims priority, application United Kingdom, Sep. 26, 1995, 9519557

Int. Cl.⁶ H01H 13/70

U.S. Cl. 200-5 A

20 Claims



1. A key assembly comprising a base; a manually operable key secured to, and mounted above said base by, a resilient key mat having an upstanding wall, the key having a depending neck and being moveable against the resilience of said upstanding wall towards said base; a guide assembly extending between said base and said key to guide movement of said key; a membrane supported on said base and carrying a pair of electrically insulated first contacts, each of said first contacts of the pair being connected to a respective electrical track supported on said membrane and extending to a connection location; and a second contact provided on an underside of one of said depending necks and a portion of said key mat in contact with said depending neck and having a size and position such that movement of said key towards said base causes said second contact to engage both of said first contacts and thereby electrically connect said first contacts.

5,777,282

PUSH-BUTTON SWITCH

Kazuyoshi Ishiguro; Masuo Noda; Hiroshi Kataoka, and Shinji Iwama, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, and Denso Corporation, Kariya, both of Japan

Filed Oct. 9, 1996, Ser. No. 728,065

Claims priority, application Japan, Oct. 9, 1995, 7-288050

Int. Cl.⁶ H01H 9/26

U.S. Cl. 200-5 E

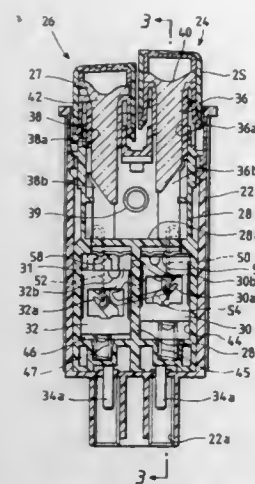
11 Claims

1. A push-button switch comprising:

a switch mechanism including:

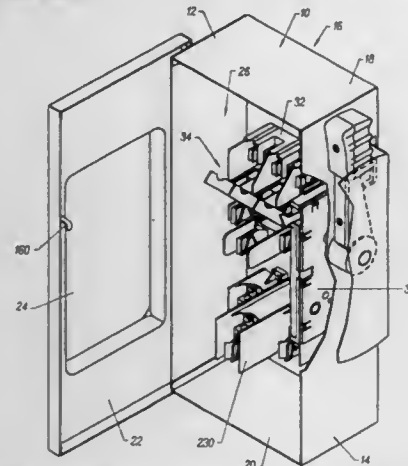
a casing;

a spring, a movable member accommodated in a region which is defined in said casing, wherein when a knob is depressed as



required, said movable member is moved from an initial position to a forward position against the elastic force of said spring, and when a predetermined condition is satisfied, the elastic force of said spring causes said movable member to return to said initial position; and
a flexible stopper, provided at said initial position, for stopping said movable member when said movable member is returned, said stopper being formed integral with a wall of said casing which defines said region, serving as an elastic piece for absorbing an impact on said movable member when said movable member is returned by said spring.

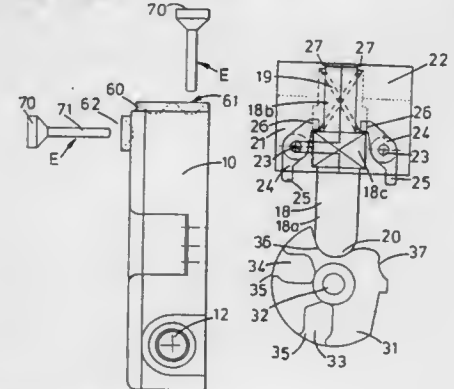
5,777,283
SWITCH MECHANISM AND BASE FOR A DISCONNECT SWITCH
David Emerson Greer, Lexington, Ky., assignor to Square D Company, Palatine, Ill.
Division of Ser. No. 359,977, Dec. 20, 1994, Pat. No. 5,609,245. This application Jun. 7, 1995, Ser. No. 475,264
Int. Cl.⁶ H01H 9/00; 85/00
U.S. Cl. 200—18
20 Claims



1. A switch mechanism module for an interior assembly of an electrical distribution device having a plurality of modules, the electrical distribution device having an enclosure with a handle external to the enclosure for operator control, the switch mechanism module comprising:
a modular housing having a generally planar first base with upstanding side walls around the circumference of the first base, the side walls having a top edge defining a mating surface, the modular housing having a generally planar second base with upstanding side walls having a top edge for abutting the mating surface of the first base;
means for demountably fastening the first base to the second base, the fastening means being integrally formed with the first and second base;

a shaft having two ends, the first end being adapted to connect with the handle external to the modular housing, the second end being adapted to connect to the adjacent module of the interior assembly through the modular housing;
an operating mechanism being connected to the shaft and the first and second bases without discrete fasteners; and
means for demountably securing the housing to at least one adjacent module having a line base, the securing means being manually operated and integrally formed with the modular housing.

5,777,284
SAFETY SWITCH ASSEMBLY WITH A LATCH MECHANISM
Medi Mohtasham, Manchester, United Kingdom, assignor to E.J.A. Engineering plc, Lancaster, Great Britain
PCT No. PCT/GB94/02306, § 371 Date Oct. 21, 1996, § 102(e) Date Oct. 21, 1996, PCT Pub. No. WO95/18457, PCT Pub. Date Jul. 6, 1995
PCT Filed Oct. 20, 1994, Ser. No. 669,334
Claims priority, application United Kingdom, Dec. 24, 1993, 9326394
Int. Cl.⁶ H01H 27/00; 1/52
U.S. Cl. 200—43.04
2 Claims

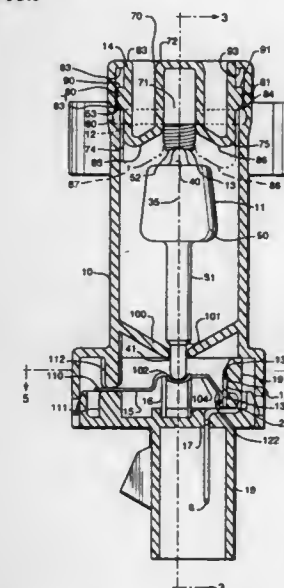


1. A safety switch comprising:
electrical contacts switchable between power supply OFF and power supply ON conditions;
an actuating cam rotatable about a predetermined axis by an actuator of a predetermined configuration which may be inserted into and withdrawn from the safety switch, rotation of the cam resulting from insertion of the actuator causing movement of a cam plunger which moves the electrical contacts from the OFF position to the ON position and rotation of the cam resulting from withdrawal of the actuator causing movement of the cam plunger which moves the electrical contacts from the ON condition to the OFF condition; and
a latch mechanism coupled to a solenoid, the latch mechanism being disposed to engage the cam plunger such that, when an attempt is made to withdraw the actuator from the safety switch, movement of the cam plunger is prevented by engagement between the cam plunger and the cam unless the solenoid is de-energized,
wherein the latch mechanism is coupled to the solenoid by a linkage such that when the solenoid is de-energized, the latch mechanism is biased towards a cam plunger-engaging condition by the solenoid and, when the solenoid is energized, the latch mechanism is displaced by the solenoid to a cam plunger-releasing condition, the condition of the electrical contacts being independent of the energization state of the solenoid.

the linkage includes a plate slidable between a first position and a second position and defines a cut-out which co-operates with the latch mechanism such that when the plate is in the first position, the latch mechanism is locked in the plunger-engaging condition and, when the plate is in the second position, the latch mechanism is in the cam plunger-releasing condition.

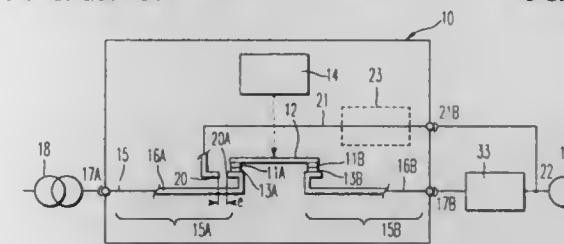
the plate is coupled to a plunger of the solenoid by a pivotal arm, the plunger having a surface, and
the latch mechanism comprises at least one pivotally supported latch which is engageable with a surface of the plunger.

5,777,285
AUTOMOTIVE INERTIA SWITCH
Carl Frank, Sharon, and James A. Mallett, East Milton, both of Mass., assignors to Joseph Pollak Corporation, Boston, Mass.
Filed Mar. 24, 1997, Ser. No. 823,787
Int. Cl.⁶ H01H 35/02
U.S. Cl. 200—61.5
18 Claims



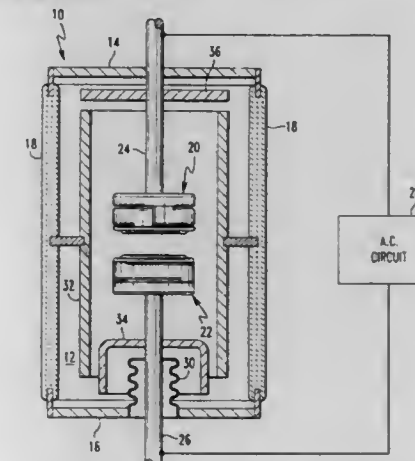
1. An automotive inertia switch for controlling electrical input to a fuel pump comprising:
a switch body;
a weight disposed in said body, said weight having a first end and a second end;
a nest disposed in said body adjacent said first end of said weight;
a spring acting on said weight, said spring biasing said weight toward said nest; and
a wiper contact adjacent said second end of said weight, said wiper contact being movable with respect to at least two contact terminals in dependence of movement of said weight, wherein, in an untripped state of said switch, a tip of said weight is biased by said spring into said nest, and said wiper contact makes an electrical connection between a pair of said at least two contact terminals; and wherein, upon a rapid change in the acceleration of said switch, said switch moves to a tripped state wherein said tip is dislodged from said nest and said electrical connection between said pair of said at least two contact terminals is broken.

5,777,286
ELECTRIC DEVICE HAVING SEPARABLE CONTACTS WITH ARC SWITCHING
Jean Abot, L'Isle Adam; Michel Ledroit, Yverres, and Nicolas Hertzog, Ruell Malmaison, all of France, assignors to Schneider Electric SA, Boulogne Billancourt, France
Filed Dec. 23, 1996, Ser. No. 773,534
Claims priority, application France, Dec. 21, 1995, 95 15464
Int. Cl.⁶ H02H 3/00
U.S. Cl. 218—36
6 Claims



1. An electrical arc switching device, comprising:
a main conductor path divided into a supply side part and a load side part;
a fixed supply side contact connected to said supply side part;
a fixed load side contact connected to said load side part;
a mobile bridge having supply side and load side contacts configured to connect respectively with said fixed supply side and fixed load side contacts;
a mobile bridge opening device for moving the mobile bridge and opening the supply side and load side contacts from the fixed contacts;
a parallel current path; and
an arc transfer electrode connected to said parallel current path that shunts the mobile bridge when the supply side and load side contacts are opened, said arc transfer electrode comprising a fixed gap between said fixed supply side contact and said parallel current path.

5,777,287
AXIAL MAGNETIC FIELD COIL FOR VACUUM INTERRUPTER
Stephen D. Mayo, Horseheads, N.Y., assignor to Eaton Corporation, Cleveland, Ohio
Filed Dec. 19, 1996, Ser. No. 769,810
Int. Cl.⁶ H01H 33/66
U.S. Cl. 218—123
23 Claims



1. An electrode assembly for a vacuum interrupter comprising:
a contact plate defining an axial direction of the electrode assembly; and
an electrode coil connected to the contact plate including a base for attachment to a terminal post of the vacuum interrupter and at least one arcuate arm between the base and the contact plate extending along a curved path in a plane substantially

perpendicular to the axial direction of the electrode assembly, wherein the at least one arcuate arm has a radial cross section measured from the axial direction of the electrode assembly which tapers radially inward from a portion of the arcuate arm adjacent the contact plate toward a portion of the arcuate arm adjacent the base.

5,777,288

Patent Not Issued For This Number

5,777,289

RF PLASMA REACTOR WITH HYBRID CONDUCTOR AND MULTI-RADIUS DOME CEILING

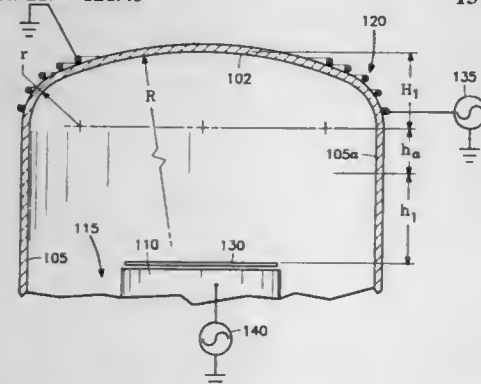
Hiroji Hanawa; Gerald Zheyao Yin, both of Sunnyvale; Diana Xiaobing Ma, Saratoga; Philip M. Salzman, San Jose; Peter K. Loewenhardt, Santa Clara, and Allen Zhao, Mountain View, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 389,889, Feb. 15, 1995. This application Feb. 2, 1996, Ser. No. 597,445

Int. Cl.⁶ B23K 10/00

U.S. Cl. 219—121.43

13 Claims



1. A plasma reactor for processing a workpiece, comprising:
a pedestal defining thereon a workstation of diameter d to support a workpiece of a similar diameter on said pedestal within the reactor;
a chamber enclosure including a side wall having a top and a ceiling having a base over said top of said side wall;
an inductive coil adjacent said ceiling and capable of being coupled to an RF power supply;
said base being at a height h above said pedestal and said ceiling having an apex at a height H above said base, wherein H/h is in the angle of approximately 4° to 7° for said workstation diameter d within a range between about 6° and about 12° .

5,777,290

BANK ANGLE SENSOR

Oleg A. Tzanov, Waukesha, Wis., assignor to Harley-Davidson Motor Company, Milwaukee, Wis.

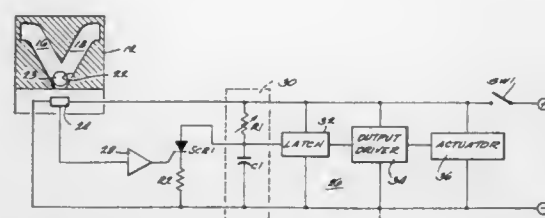
Filed Jul. 8, 1996, Ser. No. 679,376

Int. Cl.⁶ H01H 35/02

U.S. Cl. 200—61.52

12 Claims

1. A tilt angle sensor for a motor vehicle, including:
a body, a cavity formed in said body and having a pair of inclined surfaces which intersect to define a lower end of said cavity;
roller means formed of a magnetic material disposed in said cavity;
a Hall effect sensor for sensing the presence of said roller means in the lower end of said cavity and being operative for changing a first signal when said roller means is displaced from the lower end of the cavity;



a timing circuit coupled to the sensor for commencing a timing cycle upon the occurrence of said first signal and for providing a second signal after a predetermined time delay; and a latching circuit coupled to the timing circuit for latching an output device upon the occurrence of the second signal.

5,777,291

PROCESS FOR PREPARING PEROXIDIC PERFLUOROPOLYETHERS

Giuseppe Marchionni, Milan, and Pier Antonio Guarda, Nole, both of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Feb. 13, 1997, Ser. No. 799,260

Claims priority, application Italy, Feb. 14, 1996, MI96 A 0280

Int. Cl.⁶ C07F 1/00; C07C 21/00; 409/00

U.S. Cl. 204—157.6

9 Claims

1. Tetrafluoroethylene oxidation process comprising the step of oxidizing tetrafluoroethylene in solution at temperatures comprised between -80°C . and -40°C . in contact with ultraviolet (UV) radiation and oxygen and perfluoropropane as solvent to obtain peroxidic perfluoropolyethers.

5,777,292

MATERIALS HAVING HIGH ELECTRICAL CONDUCTIVITY AT ROOM TEMPERATURES AND METHODS FOR MAKING SAME

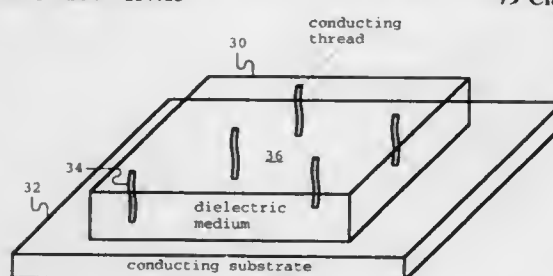
Leonid N. Grigorov, Moscow, Russian Federation, and Kevin P. Shambrook, Forestville, Calif., assignors to Room Temperature Superconductors Inc., Sebastopol, Calif.

Filed Feb. 1, 1996, Ser. No. 595,305

Int. Cl.⁶ H01B 1/14; 1/20; 1/06; C08J 3/28

U.S. Cl. 204—157.15

79 Claims



22. A method for producing a material comprising stable regions having a conductivity greater than 10^6 S/cm at near room temperature, the method comprising:
forming a medium comprising a macromolecular substance;
generating macromolecular ions and free electrons in the medium;
inducing the free electrons to form conducting threads; and
thereafter
increasing the Young's Modulus of the medium by greater than 0.1 MPa to stabilize the conductivity.

5,777,293

Patent Not Issued For This Number

5,777,294

LASER BEAM MACHINING SYSTEM AND METHOD USING PRELIMINARY WORK COMMANDS

Masayuki Sugahara, and Toshihiro Mori, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

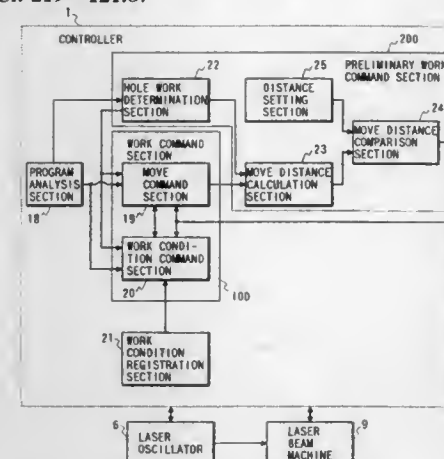
Filed Jan. 23, 1996, Ser. No. 589,949

Claims priority, application Japan, Jan. 31, 1995, 7-013808

Int. Cl.⁶ B23K 26/08

U.S. Cl. 219—121.67

11 Claims



1. A laser beam machining system, comprising:

- a controller;
 - a laser oscillator for generating and outputting a laser beam upon reception of a work command for laser oscillation from said controller; and
 - a laser beam machine for receiving and gathering the laser beam, irradiating a workpiece with the gathered laser beam, and moving the workpiece relative to a work head upon reception of a work command for a work path movement from said controller;
- said controller, comprising:
- a program analysis section for analyzing a work program in accordance with a control program procedure and generating and outputting work program commands;
 - a work condition registration section for storing work condition data selected from a group of piercing, preliminary work, and cutting, and selectively outputting the work condition data in response to a request;
 - a work command section for, upon reception of a work program command from said program analysis section, calling corresponding work condition data from said work condition registration section, and generating and outputting the work command for laser oscillation and the work command for a work path movement; and
 - a preliminary work command section for detecting a piercing instruction of the work program analyzed by said program analysis section, and generating and outputting a preliminary work command signal to said work command section;
- said work command section, in conjunction with said preliminary work command section, for processing a predetermined amount of work program commands after receiving a work program command based on the piercing instruction and generating a work command;
- said work command section for replacing specified work condition data with preliminary work condition data and generating a preliminary work command for forming a groove in the workpiece, then generating a work command for returning said laser beam machine to a piercing position during zero laser oscillator output and causing said work command section to output the work command for laser oscillation and the work command for a work path movement;
- wherein said groove permits flow of molten metal during a transition from piercing to cutting the workpiece.

5,777,295

ARC WELDER WITH AUTOMATIC SENSING OF REMOTE CURRENT CONTROL DEVICE

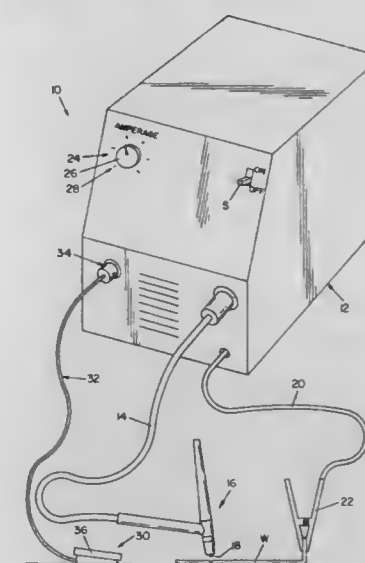
Joel D. Kneisley, Painesville, and Trang D. Nguyen, Mentor, both of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Filed Jan. 31, 1997, Ser. No. 792,040

Int. Cl.⁶ B23K 9/10

U.S. Cl. 219—132

23 Claims



1. Arc welding apparatus comprising a power supply for causing a welding current to flow between a workpiece and an electrode, first control means for producing a first control signal having a magnitude representative of a value for said welding current, second control means operable during a welding operation for producing a second control signal having a magnitude representative of a value for said welding current, means for selectively connecting one of said first and second control signals with said power supply, means for connecting said first control signal to said second control means for limiting the magnitude of said second control signal to that of said first control signal when said second control signal is connected to said power supply, and means for disconnecting said first control signal from said second control means when said first control signal is connected to said power supply.

5,777,296

ELECTRICALLY HEATED GARMENT

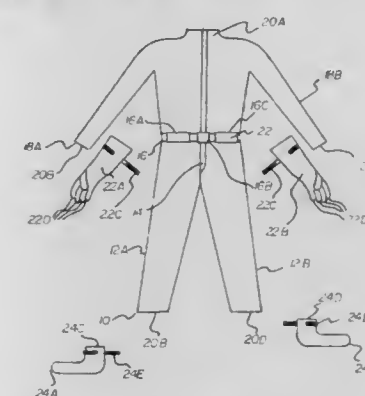
Jerome Bell, 5731 S. Princeton, Chicago, Ill. 60621

Filed Sep. 16, 1996, Ser. No. 714,691

Int. Cl.⁶ H05B 3/34

U.S. Cl. 219—211

18 Claims



1. A heated outer garment comprising:

- a. a body portion composing of flexible material having a neck opening located at a top middle distal end of the heated outer garment, the body portion further having a securable opening providing ease of access into and out of the heated outer garment;
- b. a plurality of sleeves consisting of a left and a right sleeve having proximal ends attached to the body portion and terminal distal ends having openings which a person's hands are extended there-through;
- c. a plurality of pant legs consisting of a left and right pant leg having proximal ends attached to the body portion and terminal distal ends having openings which a person's feet are extended there-through;
- d. a plurality of heating elements securely fastened within an interior lining positioned throughout the heated outer garment, the heated outer garment having an exterior portion;
- e. powering means for providing electric current to the plurality of heating elements to produce heat in the heated outer garment;
- f. means for controlling output of the electrical current to the plurality of heating elements;
- g. a belt positioned circumferentially around the body portion of the heated outer garment and including a buckle clasp; and
- h. switching means for connecting and disconnecting the powering means to the plurality of heating elements, the switching means disposed in the buckle clasp of the belt so that the electric current to the plurality of heating elements flows when the buckle clasp of the belt is fastened to allow the plurality of heating elements to generate heat and the electric current to the plurality of heating elements does not flow when the buckle clasp of the belt is unfastened so as not to allow the plurality of heating elements to generate heat.

5,777,297

HEATING STRUCTURE IN THE FORM OF A SANDWICH AND HOUSEHOLD ELECTRICAL APPLIANCE INCORPORATING SUCH STRUCTURE

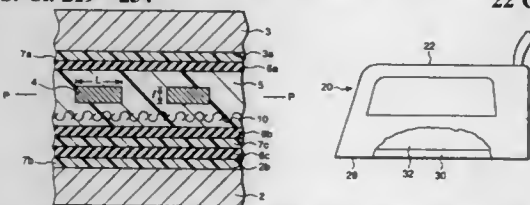
Dominique Gelus, Eyzin, and Jean-Louis Brandolini, Saint Etienne, both of France, assignors to SEB S.A., Ecully, France

Filed Mar. 4, 1996, Ser. No. 610,652

Claims priority, application France, Mar. 2, 1995, 95 02666
Int. Cl. H05B 3/30; D06F 75/08

U.S. Cl. 219—254

22 Claims



1. Heating structure in the form of a sandwich, said structure comprising first and second external elements, each having a face which is directed toward the other element, with said first external element constituting a heating plate, and said heating structure further comprising a heating unit interposed between said first and second external elements, wherein said heating unit comprises:
 - at least one substantially flat resistive heat generating element; a first layer of thermoplastic resin in which said heat generating element is embedded;
 - an upper electrical insulating sheet and a lower electrical insulating sheet between which said resistive heat generating element and said first layer of thermoplastic resin are interposed to form a sandwich structure, with said first layer of thermoplastic resin adhering to each of said electrical insulating sheets; and
 - at least one second layer of thermoplastic resin contacting one of said external elements and adhering said one of said external elements to said heating unit, and wherein said heating unit further comprises:

at least one further electrical insulating sheet contacting, and adhering to, said at least one second layer of thermoplastic resin; and
an intermediate layer of adhesive material interposed between, and adhering to, one of said upper and lower electrical insulating sheets and said at least one further electrical insulating sheet.

5,777,298

Patent Not Issued For This Number

5,777,299

INDUCTION GENERATOR TO HEAT METALLIC PIPES WITH A CONTINUOUS PROCESS UNDER A CONTROLLED ATMOSPHERE

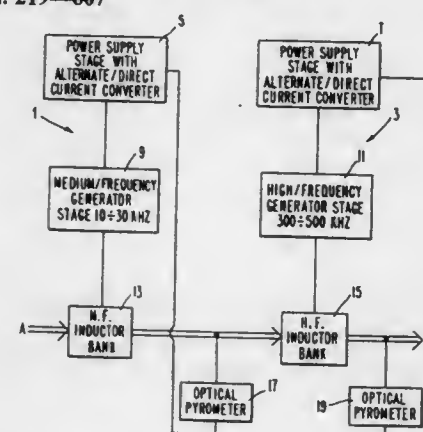
Erasmus Dominici, Pianezza, Italy, assignor to Emmedi, S.p.A., Turin, Italy

Filed Nov. 22, 1996, Ser. No. 755,779

Claims priority, application Italy, Dec. 22, 1995, TO95A1035
Int. Cl. H05B 6/08

U.S. Cl. 219—607

13 Claims



1. An apparatus for braze-welding a metallic pipe in a continuous process under a controlled atmosphere through inductively directly heating said pipe, comprising:
 - a) at least one heating inductor;
 - b) a generator for feeding said inductor;
 - c) means for maintaining said metallic pipe under a controlled atmosphere;
 - d) wherein said at least one inductor is comprised of two half-inductors in series, a winding direction of a first one of said two half inductors being opposite with respect to a winding direction of a second one of said two half inductors;
 - e) wherein said means for maintaining said metallic pipe under a controlled atmosphere comprises a quartz tube placed inside said inductor and containing a gas, with the pipe to be welded being advanced through said tube; and
 - f) a sealing insert removably placed in a fitting point of two sections of said quartz tube corresponding to two contiguous inductors.

5,777,300

PROCESSING FURNACE FOR OXIDIZING OBJECTS

Kenji Homma, Sagami, and Koichi Yomiya, Tama, both of Japan, assignors to Tokyo Electron Kabushiki Kaisha, Tokyo, and Tokyo Electron Tohoku Kabushiki Kaisha, Iwate-ken, both of Japan

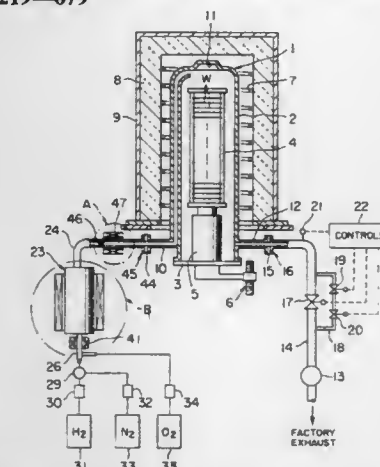
Filed Nov. 16, 1994, Ser. No. 341,052

Claims priority, application Japan, Nov. 19, 1993, 5-314356; Nov. 19, 1993, 5-314357; Nov. 24, 1993, 5-317407; Jan. 28, 1994, 6-026084

Int. Cl. H05B 6/80; H01L 21/31

U.S. Cl. 219—679

12 Claims



1. A reduced pressure and wet oxidation system comprising: a processing furnace for oxidizing object to be processed at a high temperature and under reduced pressure; pressure reducing means for evacuating the interior of the processing furnace and reducing a pressure therein; burning means disposed outside the processing furnace for burning hydrogen gas and oxygen gas to generate water vapor; water vapor supply means interconnecting the burning means and the processing furnace operating at a reduced pressure; and throttle means disposed on the water vapor supply means for generating a pressure difference in the water vapor supply means between a side of the burning means and a side of the processing furnace so that the pressure in the burning means is higher than the pressure in the processing furnace.

5,777,301

RELAY DRIVING APPARATUS FOR MICROWAVE OVEN AND METHOD THEREOF

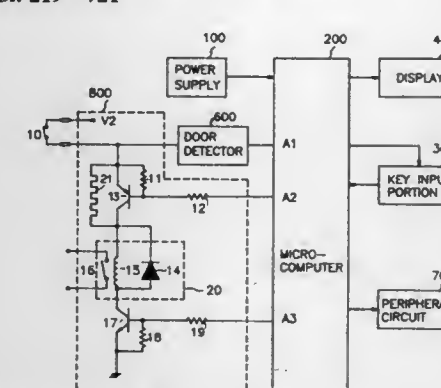
Tae Woo Kim, Kyungsangnam-Do, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed Dec. 28, 1995, Ser. No. 580,299

Int. Cl. H05B 6/68

U.S. Cl. 219—721

4 Claims



1. A circuit for a microwave oven comprising: a power supply for supplying power, a microprocessor for receiving the power from said power supply to execute an

overall controlling operation of the circuit, a door detector for detecting a door state, a key input portion for selecting a function of said microwave oven through a user's key input portion for selecting a function of said microwave oven through a user's key manipulation, a display for displaying said selected function and the operation state of said micro-computer in accordance with the function; and a relay driving portion for reducing the operating time deviation between relay parts, the relay driving portion including a component that applies a high relay driving voltage for a predetermined time at an initial relay driving time in response to a control signal of said microcomputer and the component lowers the high relay driving voltage to a normal relay driving voltage after the initial relay driving time, the component including a damping capacitor.

5,777,302

TOKEN CHUTE DEVICE

Toshiaki Nakagawa, and Hideo Tsumura, both of Zama, Japan, assignors to Konami Co., Ltd., Hyogo-ken, Japan

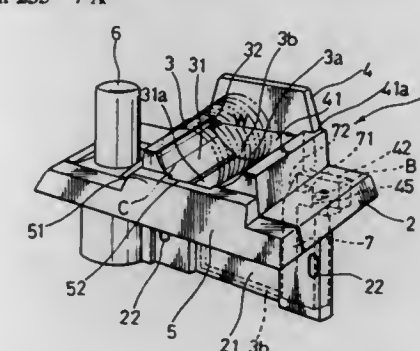
Filed Feb. 12, 1996, Ser. No. 600,385

Claims priority, application Japan, Feb. 13, 1995, 7-024292

Int. Cl. G07G 1/00; G07F 1/04

U.S. Cl. 235—7 A

11 Claims



1. A token chute device for selectively chuting one of a plurality of sizes of tokens, the token chute device comprising: a main body formed within a first token chute passage extending in a substantially vertical direction, said first token chute passage having first and second fixed inner side walls spaced from one another to define therebetween an original space width to allow a largest token among a plurality of sizes of tokens to pass through said first token chute passage; a space width adjusting member having a width smaller than the original space width of the first token chute passage; and means detachably mounting said space width adjusting member on said first inner side wall of the first token chute passage such that said adjusting member along with the second inner side wall define a second token chute passage having a second space width less than said original space width to preclude said largest token from passing through said second token chute passage.

5,777,303

DEVICE FOR ASSOCIATING TEST TUBE SAMPLES WITH ELECTRONIC LABELS FOR STORAGE OF IDENTIFYING DATA

Jean Claude Berney, Les Charbonnières, Switzerland, assignor to Gay Freres, Vente et Exportation S.A., Geneva, Switzerland

PCT No. PCT/CH95/00190, § 371 Date Apr. 24, 1996, § 102(e) Date Apr. 24, 1996, PCT Pub. No. WO96/07479, PCT Pub. Date Mar. 14, 1996

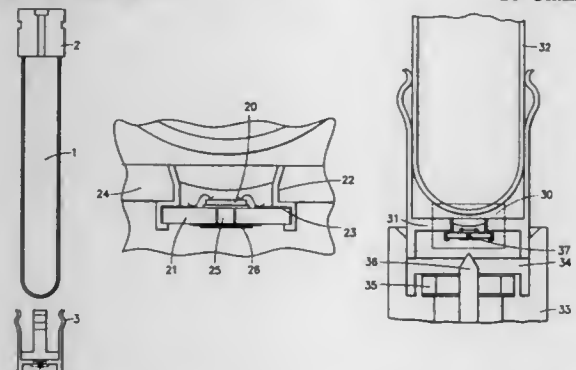
PCT Filed Sep. 5, 1995, Ser. No. 633,747

Claims priority, application Switzerland, Sep. 9, 1994, 2767/94-6

Int. Cl.⁶ G06F 17/00

U.S. Cl. 235—375

10 Claims



1. Device for registering and for transferring information relating to test tube analyses, comprising at least one electronic memory label mounted on a metallic case, a metallic support formed with a metallic hole therein, said label being electrically accessible via said metallic hole, and means for reading or reading/writing said label, wherein said labels are mounted on supports which secure each label onto a respective test tube during time of analysis and to assure positioning and connection of said labels to said means for reading/writing during the registration and the transfer of said information.

5,777,304

CASH PROCESSING SYSTEM FOR AUTOMATICALLY PERFORMING CASH HANDLING OPERATIONS ASSOCIATED WITH BANKING SERVICES

Kiyotaka Awatsu, Masahiko Wada, Akemi Oda, and Yasuko Shibata, all of Utsunomiya, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 813,733, Dec. 27, 1991. This application Jun. 1, 1995, Ser. No. 456,697

Claims priority, application Japan, Dec. 28, 1990, 2-417250; Dec. 28, 1990, 2-417251; Dec. 28, 1990, 2-417252; Dec. 28, 1990, 2-417253; Dec. 28, 1990, 2-417254

Int. Cl.⁶ G06F 17/60

U.S. Cl. 235—379

6 Claims

1. A method for managing a cash safe in a cash handling apparatus comprising:

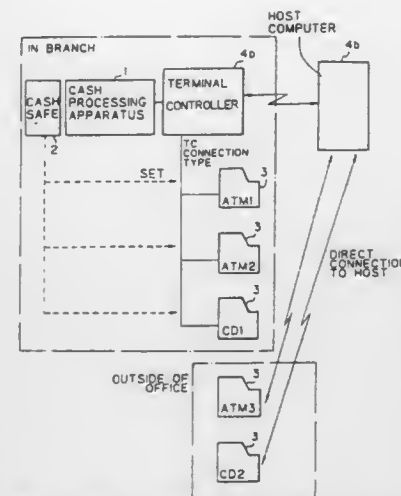
inputting available apparatus information representing at least one of a plurality of cash handling apparatus which can use the cash safe through an operator input section of the cash safe;

storing the available apparatus information in a memory in the cash safe;

reading out the available apparatus information from the memory of said cash safe upon placement of the cash safe in the cash handling apparatus;

checking whether the cash safe set in the cash handling apparatus is available for use;

permitting use of the cash safe upon availability; and inhibiting use of the cash safe upon unavailability of the cash safe for use.



wherein the available apparatus information which is input can be set to an open setting by the operator, so that the cash safe can be used with more than one of the plurality of cash handling apparatus.

5,777,305

PACKAGE ASSEMBLY AND METHOD FOR ACTIVATING PREPAID DEBIT CARDS

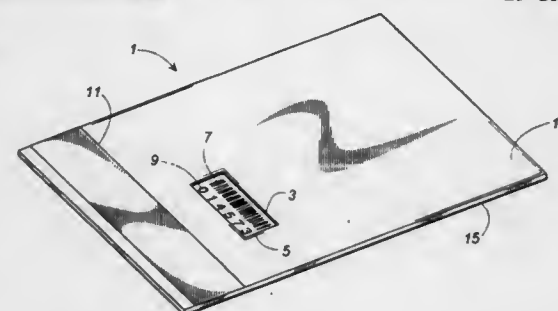
M. Brooks Smith, Atlanta, and David M. Wilkie, Marietta, both of Ga., assignors to Incomm, Atlanta, Ga.

Filed Jan. 24, 1996, Ser. No. 590,999

Int. Cl.⁶ G06K 5/00; H04M 15/00

U.S. Cl. 235—380

23 Claims



1. A package assembly for permitting activation and deactivation of a prepaid debit card at a point of sale, said package assembly comprising:

a prepaid debit card with an identification number that identifies a debit account associated with said debit card and a card number that identifies said card exclusively;

a package for securing said prepaid debit card;

a machine readable marking on said package for encoding data that identifies said debit account, and

whereby said data on said machine readable marking is read to activate and deactivate said debit account at the point of sale prior to removal of said debit card from said package.

5,777,306

CREDIT CARD SYSTEM AND METHOD OF USING CREDIT CARD WITH SUCH CREDIT CARD SYSTEM

Hidehiro Masuda, Tokyo, Japan, assignor to Nippon Shuppan Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1996, Ser. No. 628,866

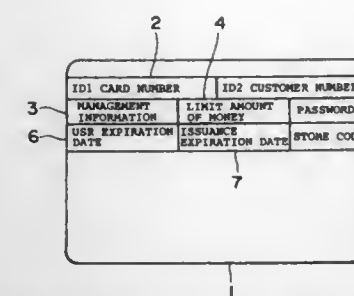
Claims priority, application Japan, May 2, 1995, 7-131206

Int. Cl.⁶ G06K 5/00

U.S. Cl. 235—380

8 Claims

1. A credit card system comprising:



a card having at least identification information and management information recorded thereon;

a first system for determining whether a credit card can be used; and

a second system for determining whether a credit card can be used;

the first system comprising:

recording means for recording management information on the credit card, where the management information allows the first system to refer to a reference date ahead of an issuance date;

communications means for communicating with the second system;

reader means for reading the identification information and the management information recorded on the credit card; decision means for determining whether the credit card can be used;

judgement means for judging whether usability of the credit card is to be determined by the first system or the second system based on the management information recorded on the credit card;

means for inquiring of the second system the usability of the credit card through the communication means if the judgement means determines the second system should make the decision; and

means for indicating whether the credit card can be used; and the second system comprising:

generating means for generating a member master file;

decision means for determining whether the credit card can be used based on the member master file;

means for indicating to the first system whether the member master file is completed; and

means for indicating whether the credit card can be used.

5,777,307

OPTICAL INFORMATION RECORDING WITH PREFORMATTED SYNCHRONIZATION SIGNALS AND INFORMATION RECORDING AND REPRODUCING METHOD

Koichi Yamazaki, Sakado, Japan, assignor to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1996, Ser. No. 610,253

Claims priority, application Japan, Mar. 10, 1995, 7-079632

Int. Cl.⁶ G06K 7/10

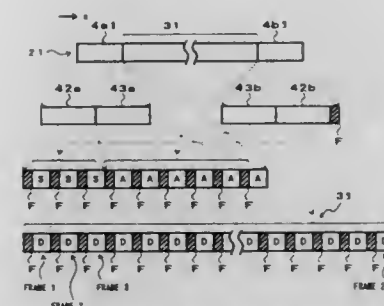
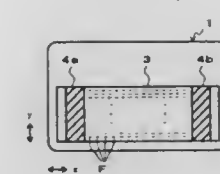
U.S. Cl. 235—454

12 Claims

1. A information recording medium comprising:

a plurality of information recording tracks, each said track being comprised of a plurality of storing areas for a plurality of frames each corresponding to a predetermined data size; and

a pair of header sections pre-formatted at fore and rear ends of each said recording track, each of said header sections of each said track containing at least address information identifying said track.



a predetermined synchronization signal being pre-formatted in said storing area for each of the frames.

5,777,308

RESOLUTION GAIN ON WIDTH MODULATED BAR CODES BY USE OF ANGLED SAMPLING IN TWO DIMENSIONS

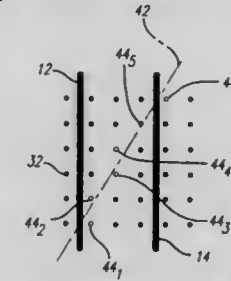
Mark Yukio Shimizu, Seattle, and Larry Lingnan Liu, Mill Creek, both of Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Aug. 14, 1995, Ser. No. 515,035

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—462

21 Claims



1. A bar code imaging system comprising:

an imaging element adapted to receive light reflected from a bar code symbol and provide a two-dimensional image of said bar code symbol;

means for decoding said two-dimensional image into data representative of said bar code symbol, said decoding means comprising means for measuring spacing between elements of said bar code symbol by sampling along a diagonal line segment that intersects said elements; and

means for selecting an angle of said diagonal line with respect to said elements of said bar code symbol.

5,777,309

METHOD AND APPARATUS FOR LOCATING AND DECODING MACHINE-READABLE SYMBOLS

Pavel A. Maltsev, Edmonds, and H. Sprague Ackley, Seattle, both of Wash., assignors to Intermec Corporation, Everett, Wash.

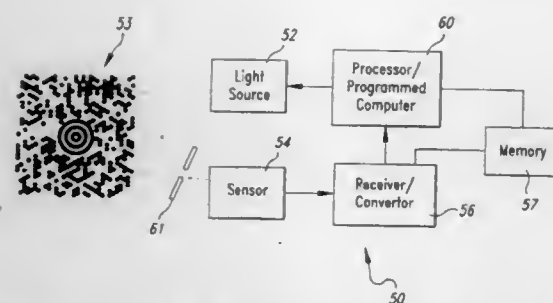
Filed Oct. 30, 1995, Ser. No. 549,916

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—462

24 Claims

1. A method of locating within a two-dimensional stored image and decoding a machine-readable symbol representing encoded information in two-dimensions, the symbol including a plurality of selectively spaced two-dimensional geometric shapes, the shapes



and spaces between the shapes having at least a first width in at least one dimension, the symbol having a predetermined location pattern of shapes and spaces identifying the symbol, the method comprising the steps of:

producing a reflectance signal from the two-dimensional stored image based on light reflected from the symbol, the reflectance signal having valleys and peaks that represent the reflectance of the shapes and spaces, respectively, comprising the symbol, the signal including a regular series of peaks and valleys corresponding to the predetermined location pattern; identifying a plurality of portions in the reflectance signal that correspond to the valleys and peaks of the shapes and spaces; measuring distances between the plurality of portions in the reflectance signal, including an approximately regular series of measured distances corresponding to the regular series of peaks and valleys;

identifying the predetermined location pattern based on the approximately regular series of measured distances in the reflectance signal;

determining a location orientation of the symbol based on the identified predetermined location pattern; and decoding the information encoded in the symbol based on the location of the symbol.

5,777,310

PROBLEM REDUCTION WITH LOW LEVEL INFORMATION INTEGRATION IN BAR CODE DECODING

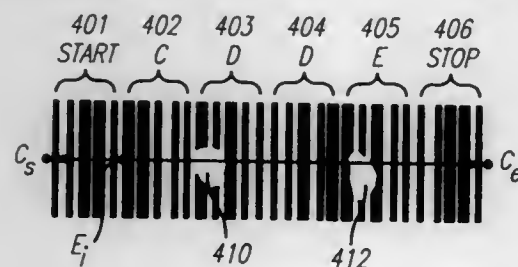
Lingnan Liu, Mill Creek, and Mark Yukio Shimizu, Seattle, both of Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Nov. 6, 1995, Ser. No. 554,184

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—462

26 Claims



1. A method for processing data representing a bar code comprising the steps of:

sampling and validating along a first scan line groups of elements comprising said bar code until one of said groups fails to validate; and

beginning at a point associated with a last valid one of said groups, sampling and validating along a second scan line remaining ones of said groups of elements comprising said bar code without repeating sampling and validating of said groups of elements already determined to be valid.

5,777,311 OPTOELECTRONIC DEVICE EMPLOYING DIGITAL FILTER WHICH OPERATES IN DIFFERENT COEFFICIENT SETS

Armin Keinath, Dettingen, and Jörg Wörner, Fieldersstadt, both of Germany, assignors to Leuze electronics GmbH +Co., Owen-Teck, Germany

PCT No. PCT/EP95/00992, § 371 Date Dec. 21, 1995, § 102(e) Date Dec. 21, 1995, PCT Pub. No. WO95/29457, PCT Pub. Date Nov. 2, 1995

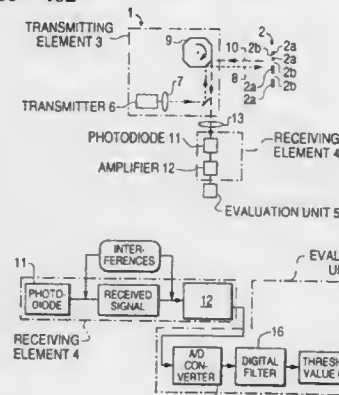
PCT Filed Mar. 16, 1995, Ser. No. 564,157

Claims priority, application Germany, Apr. 26, 1994, 44 14 449.0

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—462

10 Claims



1. An optoelectronic device for identifying a mark having a defined contrast pattern, comprising:

a transmitting element for emitting a beam of transmitted light; a deflector unit for periodically guiding the transmitted light beam over the mark;

a receiving element for receiving the transmitted light beam after being reflected by the mark and producing an analog received signal which exhibits an amplitude modulation impressed by the contrast pattern of the mark and dependent on the spatial intensity distribution of the transmitted light beam;

a n-bit analog-digital converter having a word width greater than 1 for converting the analog received signal into a digital received signal;

a digital filter including an input for receiving the digital received signal, the digital filter operating in successive time intervals according to different coefficient sets, wherein the coefficients of each coefficient set are selected so that a transmission characteristic of the filter for each coefficient set essentially corresponds to an inverse of the frequency spectrum of the spatial intensity distribution of the transmitted light beam at a respectively different distance from the device.

5,777,312

PHASED ARRAY LASER SCANNER

George E. Hanson, Andover, Kans., assignor to Norand Corporation, Cedar Rapids, Iowa

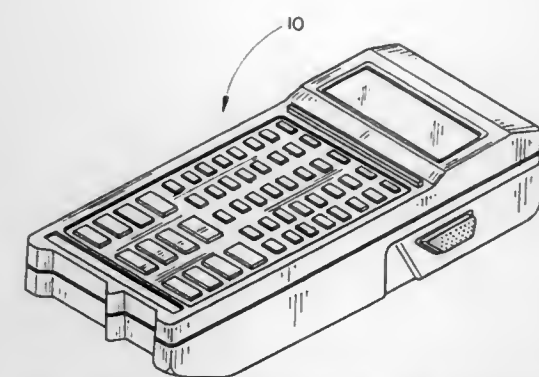
Continuation of Ser. No. 339,972, Nov. 15, 1994, abandoned, which is a continuation of Ser. No. 53,080, Apr. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 23,901, Feb. 19, 1993, abandoned. This application Jan. 22, 1996, Ser. No. 589,214

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—462

6 Claims

1. A phased array laser scanner for reading optically readable information sets, comprising at least, two phased array lasers for producing a moving light beam spot over optically readable information sets, said at least two phased array lasers providing direct illumination of an optically readable information set by driving said lasers at differing phases to cause constructive interference so as to provide a location of maximum interference; and



reading sensor means for converting the reflected light image of said moving light beam spot over an optically readable information set into an electrical signal.

5,777,313

OPTICAL CODE READING APPARATUS

Tobru Watanabe, Ogaki, and Takashi Tanimoto, Gifu-ken, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

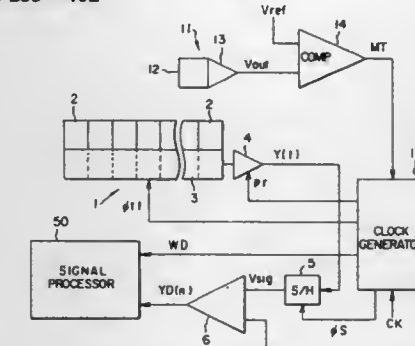
Filed Mar. 14, 1996, Ser. No. 616,007

Claims priority, application Japan, Mar. 29, 1995, 7-071988; Mar. 29, 1995, 7-071989

Int. Cl.⁶ G06K 7/00

U.S. Cl. 235—462

3 Claims



1. An apparatus for optically reading a code pattern consisting of a plurality of code elements, said apparatus comprising:

A) a light receiving unit for receiving light reflected on said code pattern to generate signal voltages, said light receiving unit including:

a plurality of first pixels associated with said plurality of code elements of said code pattern, each first pixel producing and retaining charges based on light reflected on said first pixel's associated code element,

a charge transfer section for sequentially transferring charges retained by said plurality of first pixels, and

a first charge converting section, coupled to output of said charge transfer section, for receiving said charges transferred from each of said first pixels to generate a first signal voltage proportional to an amount of said charges received;

B) a photometer for detecting a strength of said light reflected on said code pattern, said photometer including:

a second pixel, arranged adjacent to said plurality of first pixels, for producing and retaining charges based on said light reflected on said code pattern, and

a second charge converting section, coupled to said second pixel, for generating a second signal voltage proportional to an amount of said charges retained by said second pixel; and

C) a controller, operatively coupled to said light receiving unit and to said photometer, for controlling charge transfer operation of said charge transfer section, said controller including: a comparator for comparing said value of said second signal voltage with a predetermined voltage level, and

clock generator, coupled to said charge transfer section, for supplying a drive clock signal to said charge transfer section when said comparator determines that said second signal voltage is greater than said predetermined voltage level.

5,777,314

OPTICAL SCANNER WITH FIXED FOCUS OPTICS
Alexander Roustaei, San Marcos, Calif., assignor to Symbol, Holtville, N.Y.

Continuation of Ser. No. 363,985, Dec. 27, 1994, abandoned, which is a continuation of Ser. No. 59,322, May 7, 1993, abandoned, which is a continuation-in-part of Ser. No.

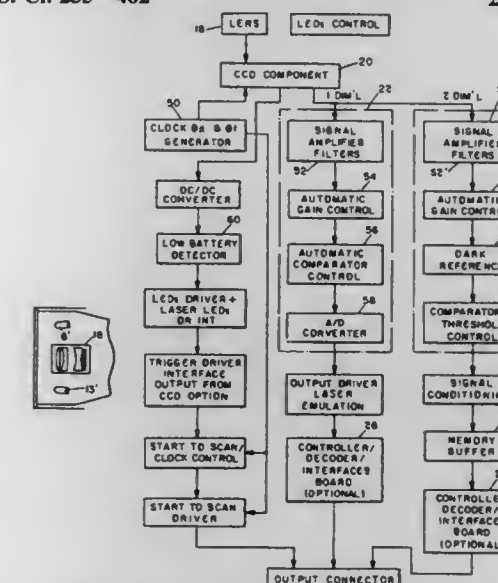
965,991, Oct. 23, 1992, Pat. No. 5,354,977, which is a continuation-in-part of Ser. No. 956,646, Oct. 2, 1992, Pat. No. 5,349,172, which is a continuation-in-part of Ser. No.

843,266, Feb. 27, 1992, Pat. No. 5,291,009. This application Nov. 5, 1996, Ser. No. 743,977

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—462

20 Claims



1. An optical assembly within an optical scanner for scanning a symbol comprising a plurality of contrasting regions representative of encoded information, each contrasting region having a bar width, wherein said symbol is illuminated by incident light to produce modulated reflected light providing a square wave input representative of said plurality of contrasting regions, said optical assembly comprising:

at least two LEDs for generating the incident light;

a detector array for detecting the square wave input and generating an electrical signal representative of the square wave input, said detector array comprising a plurality of CCDs and having an array area;

a fixed focus multi-element lens system having a pre-selected magnification for receiving the modulated reflected light and providing focused reflected light to said detector array, the pre-selected magnification being selected so that the focused reflected light impinges upon a substantial portion of said array area over a range of distances to said symbol;

wherein said at least two LEDs, said detector array, and elements of said multi-element lens system are selected by determining a spatial frequency of said plurality of contrasting regions, calculating a square wave modulation transfer function using the Fourier transform of the square wave input to determine an initial optical resolution, comparing the initial optical resolution to a minimum required optical resolution for a given density of the plurality of contrasting regions to determine whether a particular symbol with the given density can be read at a given distance from the symbol, and varying the elements of said multi-element lens system to provide an

adjusted magnification and an adjusted optical resolution greater than the minimum required optical resolution at the given distance and to obtain equal resolvability for an entire field of view.

5,777,315

METHOD AND APPARATUS FOR PROGRAMMING SYSTEM FUNCTION PARAMETERS IN PROGRAMMABLE CODE SYMBOL READERS

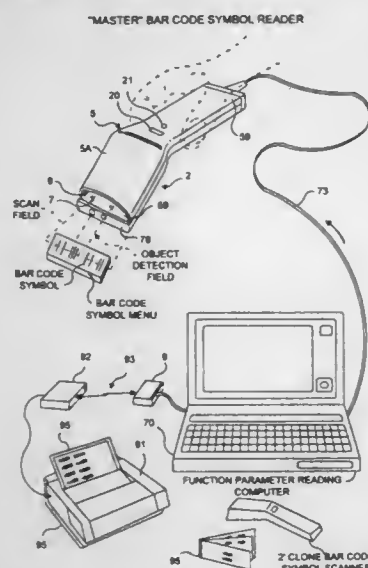
David M. Wilz, Sewell; Donald T. Hudrick, Sicklerville; John A. Furlong, Woodbury, and Carl H. Knowles, Moorestown, all of N.J., assignors to Metrologic Instruments, Inc., Blackwood, N.J.

Continuation of Ser. No. 389,320, Feb. 16, 1995, abandoned, which is a continuation-in-part of Ser. No. 292,237, Aug. 17, 1994, and a continuation-in-part of Ser. No. 293,695, Aug. 19, 1994, Pat. No. 5,468,951, which is a continuation of Ser. No. 848,919, Mar. 10, 1992, Pat. No. 5,286,672, said Ser. No. 389,320 is a continuation-in-part of Ser. No. 293,492, Aug. 19, 1994, abandoned, which is a continuation of Ser. No. 761,123, Sep. 17, 1991, Pat. No. 5,340,971. This application Aug. 21, 1996, Ser. No. 697,154

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—472

5 Claims



1. A method of programming functionalities in a clone code symbol reader using the programmed functionalities of a master code symbol reader compatible with said clone code symbol reader, said method comprising the steps of:

- providing a master code symbol reader having a first function parameter memory, and a plurality of programmable functionalities, wherein each said programmable functionality is implementable by setting a corresponding function parameter in said function parameter memory by reading a function-encoded bar code symbol preassigned to said function parameter;
- providing a clone code symbol reader, having a second function parameter memory, and said plurality of programmable functionalities, wherein each said programmable functionality is implementable by setting a corresponding function parameter in said second function parameter memory by reading a function-encoded code symbol preassigned to said function parameter;
- programming a particular set of functionalities in said master code symbol reader by reading a particular set of function-encoded code symbols and setting a corresponding set of function parameters in the first function parameter memory of said master code symbol reader;

- using a computer system to read said corresponding set of function parameters set in the first function parameter memory of said master code symbol reader;
- storing said corresponding set of function parameters read in step (d);
- using said stored function parameters to produce a function parameter programming file;
- using said function parameter programming file to print a list of code symbol programming instructions, each said code symbol programming instruction including a reference to a specified function-encoded code symbol preprinted in a code symbol programming guide;
- following said list of said code symbol programming instructions printed during step (g) by reading each said specified function-encoded code symbol using said clone bar code symbol reader, whereby the function parameters in said second function parameter memory are automatically set to the identical values of the function parameters set in the first function parameter memory of said master code symbol reader.

5,777,316

IC MEMORY CARD HAVING AN IMPROVED ENGAGING MEANS FOR HOLDING A BATTERY HOLDER

Naoya Horie, Neyagawa; Akira Nezu, Nara, and Yoshiaki Imanishi, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

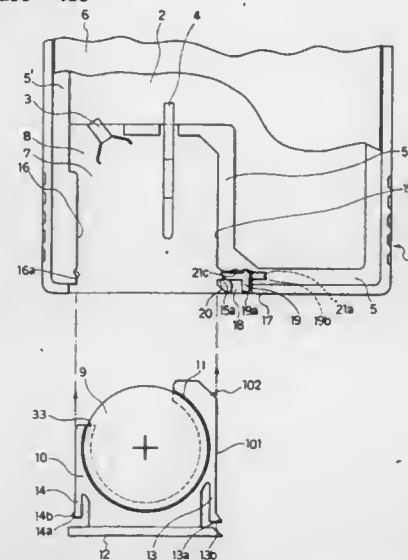
Filed Feb. 23, 1996, Ser. No. 605,888

Claims priority, application Japan, Feb. 24, 1995, 7-036842

Int. Cl.⁶ G06K 7/00

U.S. Cl. 235—486

4 Claims



1. An IC memory card comprising:

- a casing for containing a memory means therein and having a pocket-shaped insertion space,
- a battery holder to be slidably inserted so as to be held in said insertion space for holding at least one battery for feeding electric power to said memory means,
- a resilient engaging member provided on a side part of said battery holder and having an engaging projection for making an engagement with an engaging spot in said casing, and
- an engagement releasing member provided in said casing for pushing said resilient engaging member thereby displacing said resilient engaging member and releasing the engagement of said engaging projection from said engaging spot.

5,777,317

BOOSTING CIRCUIT AND SOLID-STATE IMAGE-SENSING DEVICE EMPLOYING SAID BOOSTING CIRCUIT

Yasuhito Maki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 452,577, May 25, 1995, abandoned.

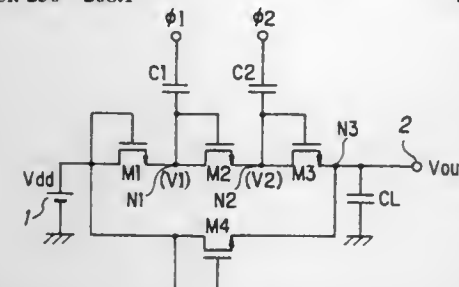
This application Apr. 11, 1997, Ser. No. 827,778

Claims priority, application Japan, May 27, 1994, 6-138150

Int. Cl.⁶ H01J 40/14

U.S. Cl. 250—208.1

20 Claims



1. A boosting circuit comprising:

- a power supply terminal connected to only one power supply source for receiving a supply voltage;
- an output terminal;
- clock terminals for receiving clock pulses;
- a one-way boosting element comprising a plurality of stages connected in series across the power supply terminal and the output terminal in a forward direction going from the power supply terminal to the output terminal to generate a boosting voltage having a rise time, each one-way boosting element stage being formed as a MOS transistor having a threshold voltage, a gate, a source and a drain connected to the gate; wherein respective ones of said clock terminals are connected between successive one-way boosting element stages to provide respective clock pulses; and wherein the supply voltage is reduced by the threshold voltage of each stage of said one-way boosting element; and
- a one-way element for charging connected in parallel with the one-way boosting element in the forward direction, whereby the one-way boosting element operates simultaneously with the one-way element for charging to shorten the rise time of said boosting voltage.

5,777,318

SMART PIXEL ARRAY USING SINGLE DIODE FOR DETECTION AND MODULATION

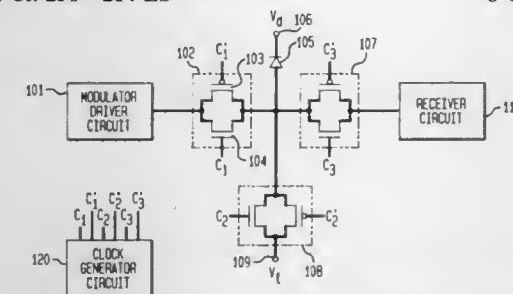
Ashok V. Krishnamoorthy, Middletown, and David A. B. Miller, Fair Haven, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 17, 1996, Ser. No. 588,155

Int. Cl.⁶ H01J 40/14

U.S. Cl. 250—214 LS

8 Claims



1. A pixel array for use in optically connecting a VLSI circuit to other VLSI circuits comprising a plurality of subareas each one of which subareas comprises an optical device capable of operating as a detector or modulator, a transmitter circuit for providing a transmit signal representing information to be transmitted from said each one of said subareas, a first gate having a control input

for coupling said transmit signal to said optical device in response to an enabling pulse at its control input, a receiver circuit for providing an output signal representing information optically presented to said each one of said subareas, a second gate having a control input for connecting said optical device to said receiver circuit in response to an enabling pulse at its control input, a third gate having a control input for coupling a reset potential to said optical device in response to an enabling pulse at its control input, and a clock generator for providing the enabling pulse to said third gate during the time intervals between the enabling pulses to said first and second gates.

5,777,319

METHOD OF ROTATIONALLY ALIGNING MULTISPOT DIODE LASERS IN RASTER OUTPUT SCANNERS

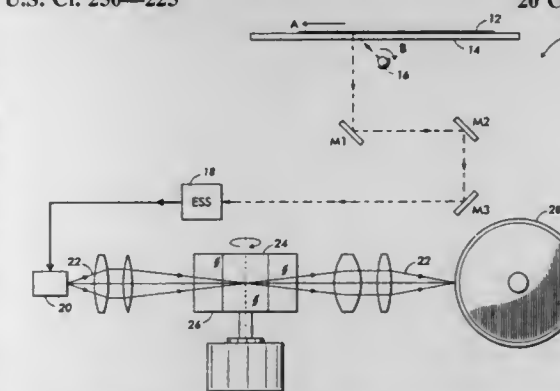
John R. Andrews, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 26, 1997, Ser. No. 827,077

Int. Cl.⁶ G02F 1/01

U.S. Cl. 250—225

20 Claims



1. A method of aligning a laser transmission device for use in a raster output scanner, comprising:

- determining a polarization direction of the laser transmission device;
- locating an inter-beam axis of the laser transmission device;
- aligning said inter-beam axis with respect to said polarization direction;
- mapping a path traveled by a laser beam as said beam is transmitted from the laser transmission device to a rotating polygon;
- placing a polarizer in said path in a direction dependent upon said polarization determination step, such that said polarizer is oriented orthogonal to said laser transmission device polarization direction;
- detecting a light intensity of said laser beam passing through said polarizer; and
- adjusting a rotational placement of the laser transmission device by an angle dependent upon said light intensity, thereby regulating a transmission of light through said polarizer to insure that the laser transmission device is properly aligned for imaging.

5,777,320

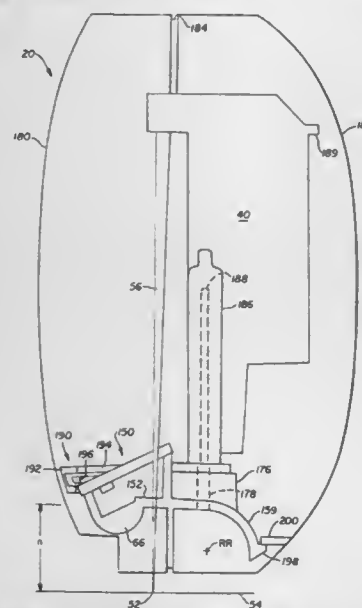
Patent Not Issued For This Number

5,777,321
SCANNING DEVICE WITH NON-CONTACT OPTICAL COMPONENTS
 Ronald K. Kerschner, and David K. Campbell, both of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 29, 1996, Ser. No. 592,904
 Int. Cl.⁶ H01J 3/14

U.S. Cl. 250—235

16 Claims



1. A photoelectric imaging apparatus for producing machine-readable data representative of imaged objects comprising:
 - (a) a photosensor assembly;
 - (b) optical components arranged along a light path extending between an object which is to be imaged and said photosensor assembly;
 - (c) a light supplying mechanism positioned in illuminating relationship with said object;
 - (d) a window assembly comprising:
 - (i) a window portion located within said light path between said optical components and said object;
 - (ii) a lens portion operatively associated with said light supplying mechanism; and
 - (e) wherein said light supplying mechanism includes a light generating mechanism which is supported by said window assembly.

5,777,322
PHOTO-ELECTRIC POSITION MEASURING SYSTEM HAVING A SCANNING GRATING WITH TRANSVERSE GRADUATIONS

Wolfgang Holzapfel, Obing, Germany, assignor to Dr. Johannes Heldenhain GmbH, Traunreut, Germany
 Filed Mar. 15, 1996, Ser. No. 616,184

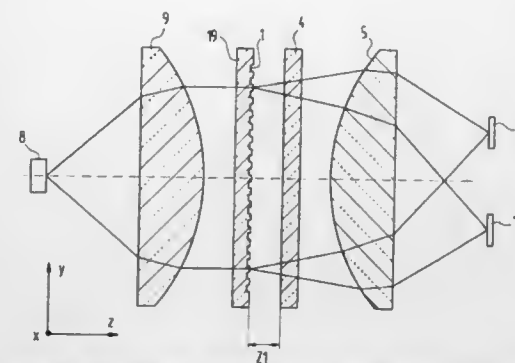
Claims priority, application Germany, Mar. 25, 1995, 195 11 068.4

Int. Cl.⁶ G01B 11/00

U.S. Cl. 250—237 G

47 Claims

1. A photo-electric position measuring system comprising:
 - a source of light;
 - a first grating located downstream of the source of light;
 - a second grating displaceable with respect to the first grating in a measuring direction, the second grating located downstream of the first grating; and
 - a plurality of photo-detectors located downstream of the second grating;
 wherein at least one of said first or second grating has at least a first and a second transverse grating areas disposed adjacent to one another in the measuring direction, these transverse



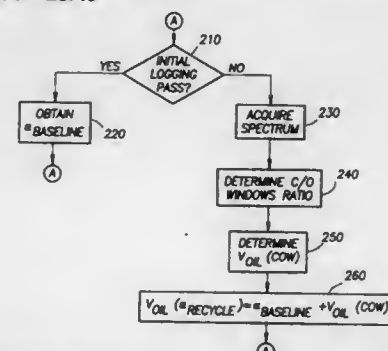
grating areas having substantially the same transverse graduation period, the first and second transverse grating areas are phase shifted in a direction transverse to the measuring direction with respect to each other by a phase shift which deviates from 180°, and light from the light source is diffracted at the first and second transverse grating areas so that a diffraction order from the first transverse grating areas and a diffraction order from the second transverse grating areas impinge on at least a common photo-detector.

5,777,323
METHOD FOR LOGGING AN EARTH FORMATION USING RECYCLED ALPHA DATA
 James L. Hemingway, Bakersfield, Calif., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed May 9, 1997, Ser. No. 853,816
 Int. Cl.⁶ G01V 5/10

U.S. Cl. 250—269.6

13 Claims



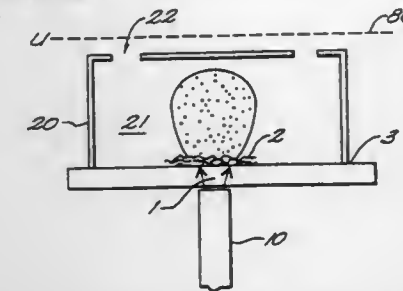
1. A method for determining a characteristic of an earth formation traversed by a borehole, comprising the steps of:
 - a) passing a logging tool through the borehole, the logging tool having a neutron source and at least one detector longitudinally spaced from the source;
 - b) irradiating the formation with the source of neutrons using sufficient energy to interact with atoms of the formation and the borehole;
 - c) detecting the gamma rays resulting from the interaction of the atoms at at least one location longitudinally spaced from the source;
 - d) forming inelastic gamma ray spectrum signals from the detected gamma rays and deriving from the signals a first attribute of the formation;
 - e) generating count rate signals responsive to the detected gamma rays and deriving from the count rate signals a second attribute of the formation;
 - f) determining a value for the linear correlation between the first attribute and the second attribute;
 - g) irradiating the formation on a subsequent logging pass with the source of neutrons;
 - h) generating gamma ray count rate signals responsive to the subsequent logging pass and deriving from the count rate signals a subsequent attribute of the formation; and
 - i) combining the linear correlation value with the subsequent attribute of the formation to derive a formation characteristic.

5,777,324
METHOD AND APPARATUS FOR MALDI ANALYSIS
 Franz Hillenkamp, Münster, Germany, assignor to Sequenom, Inc., San Diego, Calif.

Filed Sep. 19, 1996, Ser. No. 710,565
 Int. Cl.⁶ H01J 49/04; 49/16

U.S. Cl. 250—288

22 Claims



1. An improved method for matrix assisted laser desorption/ionization (MALDI) of an analyte material, such method comprising the steps of
 - preparing a specimen comprised of a major portion of matrix material and a minor portion of analyte material, wherein said matrix and analyte are deposited as a sample on a support
 - illuminating said matrix such that material including the analyte is desorbed from a surface of the sample and ionized, and initially confining said desorbed material such that desorption momentum is at least partially directionally randomized by collisional interaction
 - thereby conditioning the desorbed analyte to control its initial conditions for analysis.

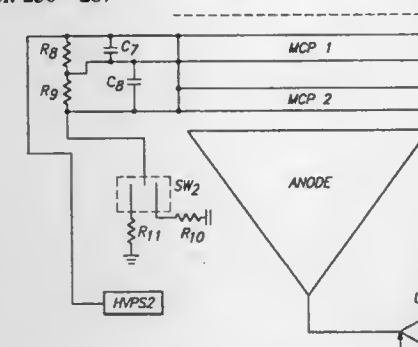
5,777,325
DEVICE FOR TIME LAG FOCUSING TIME-OF-FLIGHT MASS SPECTROMETRY

Scott R. Weinberger, Montara; Edward P. Donlon, San Jose; Yevgeny Kaplun, Mountain View; Tor C. Anderson, Palo Alto, all of Calif.; Liang Li, Edmonton, Canada; Larry Russon, Edmonton, Canada, and Randy Whittall, Edmonton, Canada, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 6, 1996, Ser. No. 643,708
 Int. Cl.⁶ H01J 49/40

U.S. Cl. 250—287

34 Claims



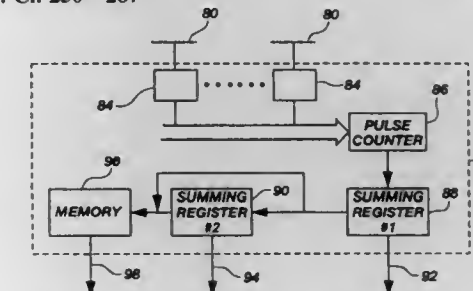
1. An apparatus for measuring the mass of molecules desorbed and ionized by laser irradiation of a sample, the apparatus comprising:
 - a) detector means for detecting said desorbed and ionized molecules and generating an electrical signal therefrom;
 - b) ion gate means including a pulsed ion gate assembly for gating preselected ion populations to said detector, and
 - c) ion optic assembly including an ion optics acceleration means for directing desorbed and ionized molecules to said detector means, said acceleration means switchable between continuous DC and time lag focusing mode, wherein said ion optic assembly receives samples introduced in a plurality of prede-

termined positions on a cylindrical sample probe, and said probe is closely associated with said ion optic assembly during operation.

5,777,326
MULTI-ANODE TIME TO DIGITAL CONVERTER
 Alan Rockwood, Provo, and Larry J. Davis, Highland, both of Utah, assignors to Sensor Corporation, Provo, Utah
 Filed Nov. 15, 1996, Ser. No. 751,509
 Int. Cl.⁶ H01J 37/252

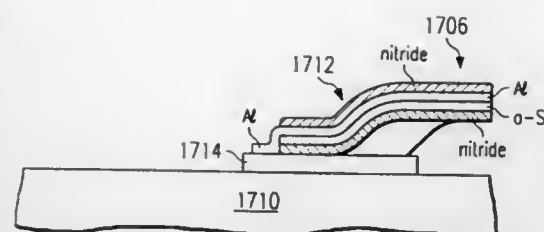
U.S. Cl. 250—287

40 Claims



1. A time-to-digital (TDC) converter having increased dynamic range and time resolution for more accurately determining time relevant characteristics of a stream of particles, said TDC comprising:
 - a first detector means for detecting impact of the stream of particles on a surface thereof, wherein the impact generates a first electrical signal from the first detector means;
 - a second detector means for detecting impact of the stream of particles on a surface thereof, wherein the impact generates a second electrical signal from the second detector means;
 - at least another detector means for detecting impact of the stream of particles on a surface thereof, wherein the impact generates at least another electrical signal from the at least another detector means,
 - wherein the first detector means, the second detector means and the at least another detector means are members of a plurality of detector means for detecting the impact of the stream of particles on surfaces thereof, and
 - wherein the detection of the stream of particles generates a first plurality of electrical signals from the plurality of detector means and
 - wherein the stream of particles impacting on each of the plurality of detector means is characterized as a repetitive transient signal wherein each of the plurality of detector means is further comprised of:
 - a microchannel plate disposed to thereby receive the stream of particles on a surface thereof, and generate the first plurality of electrical signals in response to the stream of particles;
 - a first anode electrically coupled to the microchannel plate to thereby receive and process the first electrical signal to thereby generate a first processed electrical signal;
 - a second anode electrically coupled to the microchannel plate to thereby receive and process the second electrical signal to thereby generate a second processed electrical signal;
 - at least another anode electrically coupled to the microchannel plate to thereby receive and process the at least another electrical signal to thereby generate at least another processed electrical signal; and
 - wherein the first processed electrical signal, the second processed electrical signal and the at least another processed electrical signal represent the time relevant characteristics of the stream of particles and
 - wherein the first anode, the second anode and the at least another anode are members of a plurality of anodes which process the first plurality of electrical signals to thereby generate a second plurality of processed electrical signals; and

a means for processing the first electrical signal, the second electrical signal, and the at least another electrical signal by receiving said first, said second, and said at least another electrical signals and determining the time relevant characteristics of the stream of particles generally without distortion of the time relevant characteristics which occurs with large signals, and generally without obscuring by noise of the time relevant characteristics which occur with small signals wherein the means for processing the first plurality of electrical signals is further comprised of a plurality of threshold detector means for enabling each of the first plurality of electrical signals which exceeds a selectable threshold energy level to be generated from the plurality of anodes as the second plurality of processed electrical signals.



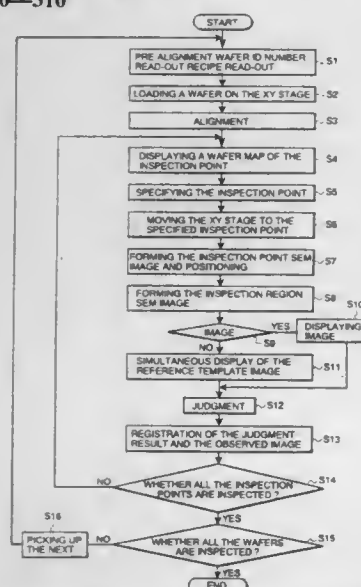
eter to said circuitry, each of said arms extending from said substrate with the contact of said arm with said substrate forming a concave contact area having a V-shaped indentation.

5,777,327
PATTERN SHAPE INSPECTION APPARATUS FOR FORMING SPECIMEN IMAGE ON DISPLAY APPARATUS
Fumio Mizuno, Tokorozawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 20, 1996, Ser. No. 771,748
Claims priority, application Japan, Dec. 28, 1995, 7-343083
Int. Cl.⁶ H01J 37/00

U.S. Cl. 250—310

9 Claims



1. A pattern shape inspection apparatus for displaying a specimen image on a display apparatus, and inspecting a pattern shape of said specimen image, comprising:

- a memory for memorizing a reference image corresponding to an observation region;
- a display for simultaneously displaying said reference image and said specimen image on said display apparatus; and
- a correcting means for correcting an image parameter of at least one of said specimen image and said reference image.

5,777,328
RAMPED FOOT SUPPORT
Roland W. Gooch, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 19, 1996, Ser. No. 690,275
Int. Cl.⁶ H01L 27/144; 31/18

U.S. Cl. 250—338.4

10 Claims

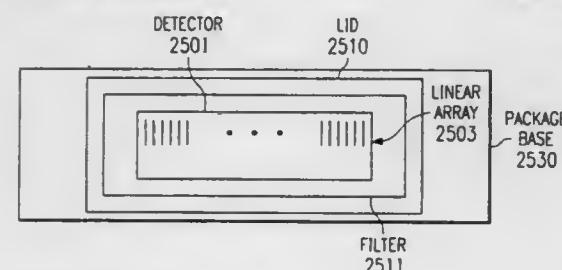
1. A radiation detector, comprising:
- (a) a substrate containing circuitry;
 - (b) a bolometer suspended over said substrate, said bolometer with resistance dependent upon temperature; and
 - (c) a plurality of arms supporting said bolometer on said substrate, said arms including conductors connecting said bolom-

5,777,329
BOLOMETER ARRAY SPECTROMETER
Glenn H. Westphal, Plano, and Mark V. Wadsworth, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 19, 1996, Ser. No. 683,997
Int. Cl.⁶ G01J 3/26

U.S. Cl. 250—339.02

6 Claims



1. A spectrometer, comprising:

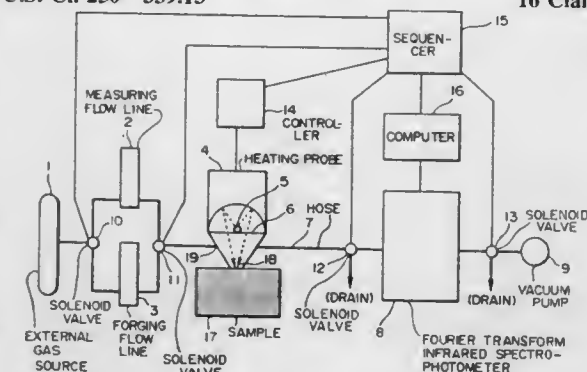
- (a) a first array of bolometers, said first array including at least one row of N bolometers with N a positive integer; and
- (b) a first radiation filter over said array, said first filter a bandpass filter with the band center wavelength varying in the direction along said at least one row of bolometers.

5,777,330
METHOD OF RAPIDLY IDENTIFYING RESINS BY INFRARED SPECTROSCOPY AND SYSTEM THEREFOR
Atsushi Murase; Norio Sato, both of Nagoya; Takayuki Kato, Aichi-ken, and Kazumasa Sumi, Nagoya, all of Japan, assignors to Nicolet Japan Corporation, Tokyo, Japan

Filed Nov. 12, 1996, Ser. No. 747,926
Claims priority, application Japan, Nov. 13, 1995, 7-319566
Int. Cl.⁶ G01N 21/35; 33/44

U.S. Cl. 250—339.13

16 Claims



1. A method of rapidly identifying a resin by infrared spectroscopy, said method comprising the steps of: pyrolyzing a surface of the resin partially in a short time to produce a pyrolysis product gas;

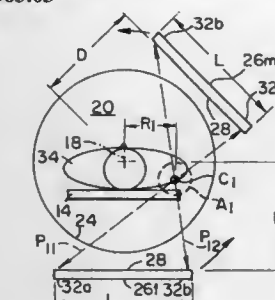
introducing said pyrolysis product gas into an infrared spectrophotometer; obtaining an infrared absorption spectrum of said pyrolysis product gas by said infrared spectrophotometer; and collating said obtained spectrum with a pyrolysis infrared absorption spectrum of a standard sample, whereby identifying said resin rapidly.

5,777,331
TOMOGRAPHIC EMISSION SCANNER HAVING OFFSET HIGH DETECTION EFFICIENCY AREA
Gerd Muehlechner, Wayne, Pa., assignor to UGM Laboratory, Inc., Philadelphia, Pa.

Filed Nov. 22, 1996, Ser. No. 754,357
Int. Cl.⁶ G01T 1/164

U.S. Cl. 250—363.03

28 Claims



1. A positron emission coincidence detection scanner comprising:

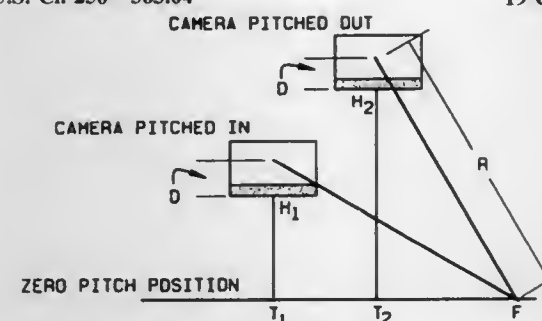
- a detection chamber having an axial center line and an axial periphery;
- a positron emission coincidence detection circuit; and
- a plurality of positron emission detector units positioned around the axial periphery of the detection chamber, each detector unit being operatively coupled to the detection circuit and having a detection face oriented toward the detection chamber, each detector unit being circumferentially movable about the axial periphery of the detection chamber, at least one of the detector units being independently movable with respect to any other detector unit.

5,777,332
AUTOMATIC PATIENT ALIGNMENT DURING NUCLEAR IMAGING BODY CONTOUR TOMOGRAPHY SCANS
Albert Henry Roger Lonn, Beaconsfield, United Kingdom, and Alan Thompson, Pewaukee, Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Aug. 13, 1996, Ser. No. 689,664
Int. Cl.⁶ G01T 1/166; 1/164

U.S. Cl. 250—363.04

19 Claims



1. A method for performing a tomographic scan of an organ of interest of a patient with an emission tomographic system including a gantry having a detector secured thereto, a movable patient table, and a computer system coupled to the gantry and to the table

to detect and control the position of the detector and table, the detector including a collimator, said method comprising the steps of:

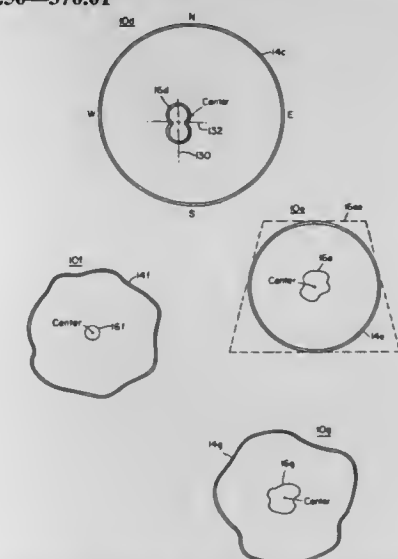
- establishing a non-circular orbit detector path by varying detector pitch at a plurality of reference positions; and
- performing a scan by:
 - controlling detector pitch so that the detector substantially follows the non-circular orbit path;
 - controlling detector tilt so that the collimator face is substantially parallel with a detector axis of rotation;
 - controlling longitudinal table motion so that the organ of interest is imaged in substantially the same transverse slices; and
 - collecting data at a plurality of views on the non-circular orbit path.

5,777,333
ASYMMETRIC RADIATION DETECTOR SYSTEM
Mario Pierangelo Martini; Dale A. Gedcke; Thomas W. Raudorf, all of Oak Ridge, and Pat Sangsingkeow, Knoxville, all of Tenn., assignors to EG&G Instruments, Inc., Oak Ridge, Tenn.

Filed Mar. 26, 1997, Ser. No. 824,514
Int. Cl.⁶ G01N 23/04

U.S. Cl. 250—370.01

31 Claims



1. An asymmetric radiation detector system comprising: a semiconductor diode including an outer electrode at the outer periphery of said diode; and an inner electrode disposed in said diode at a position in which each shortest path between any point on the inner electrode and the outer electrode has a different length for generating a pulse rise time uniquely representative of the azimuthal and radial location of a radiation detection event occurring in said diode.

5,777,334

Patent Not Issued For This Number

5,777,335

IMAGING APPARATUS

Chiori Mochizuki, Zama; Akira Funakoshi, Atsugi; Akira Tago, Utsunomiya; Shinichi Takeda, Atsugi; Eiichi Takami, Chigasaki; Masakazu Morishita, Hiratsuka; Shinichi Hayashi, Ebina; Tadao Endo, Atsugi, and Toshikazu Tamura, Utsunomiya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

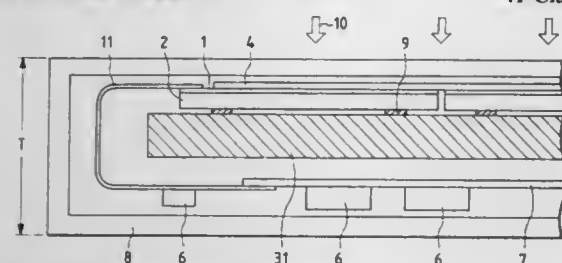
Filed Sep. 27, 1996, Ser. No. 721,947

Claims priority, application Japan, Sep. 28, 1995, 7-250510; Sep. 12, 1996, 8-241562

Int. Cl.⁶ G01T 1/29

U.S. Cl. 250—370.09

41 Claims



1. An imaging apparatus comprising:
a substrate capable of absorbing or shielding radiation;
a sensor array having a plurality of photoelectric conversion elements provided on said substrate to perform photoelectric conversion of radiation carrying information;
a semiconductor circuit provided for said photoelectric conversion elements, and
a wavelength conversion element for converting a wavelength of the radiation to a wavelength in a photosensitive area of said photoelectric conversion elements provided on an incident side of the radiation on said substrate,
wherein said semiconductor circuit is provided on a side opposite to the incident side of said substrate.

5,777,336

BROADBAND HIGH RESOLUTION X-RAY SPECTRAL ANALYZER

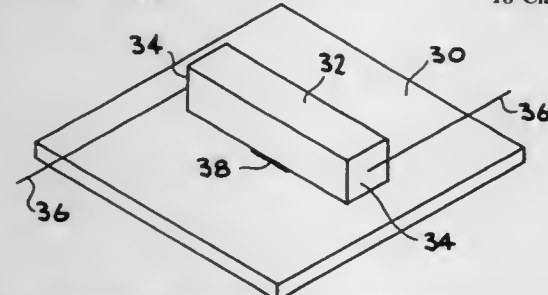
Eric H. Silver; Mark Legros, both of Berkeley; Norm W. Madden, Livermore; Fred Goulding, Lafayette, and Don Landis, Pinole, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Oct. 3, 1995, Ser. No. 538,323

Int. Cl.⁶ G01T 1/36; 1/24

U.S. Cl. 250—370.15

18 Claims



1. A broadband, high resolution, X-ray spectral analyzer, comprising
a refrigeration system; and
at least one microcalorimeter comprising:
an x-ray absorber;
a neutron transmutation-doped (NTD) germanium thermistor with two electrical circuit nodes, wherein said thermistor is fixedly and thermally connected to said x-ray absorber;
an electrical contact fixedly and electrically connected to each electrical circuit node of said two electrical circuit nodes of said thermistor, wherein said electrical contact comprises boron ion implants and further comprises a layer of aluminum; and

a superconducting wire bonded to each said electrical contact, wherein said microcalorimeter is located within said refrigeration system, wherein said two electrical circuit nodes, said aluminum layer and said superconducting wire are fixedly and thermally connected to said thermistor and said refrigeration system.

5,777,337

Patent Not Issued For This Number

5,777,338

IONIZATION DETECTOR, ELECTRODE CONFIGURATION AND SINGLE POLARITY CHARGE DETECTION METHOD

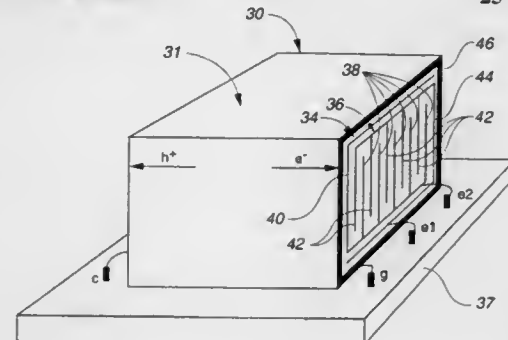
Zhong He, Ann Arbor, Mich., assignor to Regents of the University of Michigan, Ann Arbor, Mich.

Filed Dec. 11, 1996, Ser. No. 763,675

Int. Cl.⁶ G01T 1/185; 1/24

U.S. Cl. 250—385.1

25 Claims



1. An ionization detector electrode configuration comprising:
a first central electrode disposed at a first surface of an ionization substrate, the first central electrode being adapted to receive a first voltage potential of a first polarity type, the first surface disposed opposing a second surface of the ionization substrate wherein the second surface has disposed thereat an opposing electrode adapted to receive a voltage potential of a second polarity type;
a second central electrode disposed at the first surface of the ionization substrate, the second central electrode being adapted to receive a second voltage potential of the first polarity type, the first and second central electrodes being positioned at the first surface of the ionization substrate in a substantially interlaced and symmetrical pattern; and
a boundary electrode disposed at the first surface of the ionization substrate surrounding the first and second central electrodes, the boundary electrode being adapted to receive a third voltage potential of the first polarity type such that signals generated by at least one charge carrier of the second polarity type moving within the ionization substrate between the first and second surfaces toward the first and second central electrodes and away from the opposing electrode are of substantially equal strength with respect to both the first and second central electrodes until the at least one charge carrier moves to within close proximity of the first and second central electrodes.

5,777,339

Patent Not Issued For This Number

5,777,340

OPHTHALMIC PHOTOGRAPHIC DEVICE

Yasunori Ueno, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 445,101, May 19, 1995, abandoned.

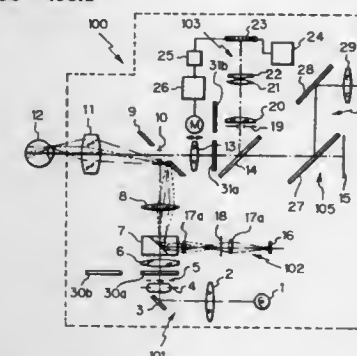
This application Jun. 18, 1997, Ser. No. 877,726

Claims priority, application Japan, May 20, 1994, 6-131174

Int. Cl.⁶ A61B 3/14; G03B 3/00

U.S. Cl. 250—458.1

7 Claims



1. An ophthalmic photographic device comprising:
an illumination optical system for irradiating a fundus oculi to be examined with illuminating light said illumination system comprising a wavelength separating member;
a photographic optical system for photographing the fundus oculi;
an indicator projecting optical system for projecting an indicator on the fundus oculi via said wavelength separating member of said illumination optical system;
a focusing detection optical system which has a photoelectric converter receiving light of the indicator projected on the fundus oculi and detects focusing information based on an output from said photoelectric converter, said focusing detection optical system including a dichroic mirror which reflects light having substantially longer wavelengths than a center wavelength of infrared fluorescent light for use in detecting focusing information;
a barrier filter for fluorescent photography which cuts off exciting light in fluorescent photography and transmits, over a predetermined wavelength range, fluorescent light and light having a longer wavelength than fluorescent light, both of which are emitted from the fundus oculi;
a barrier filter for infrared fluorescent photography which cuts off exciting light in infrared fluorescent photography and transmits, over a predetermined wavelength range, infrared fluorescent light and light having a longer wavelength than infrared fluorescent light, both of which are emitted from the fundus oculi; and
said barrier filters being adapted to be selectively used according to photographic conditions;
wherein a luminescence center wavelength of a light source of said indicator projecting optical system is substantially longer than a center wavelength of infrared fluorescent light in infrared fluorescent photography, so that said barrier filters for fluorescent photography and for infrared fluorescent photography transmit light emitted from the light source of said indicator projecting optical system.

5,777,341

METHOD FOR MANUFACTURING CALIBRATED RADIATION DOSIMETER

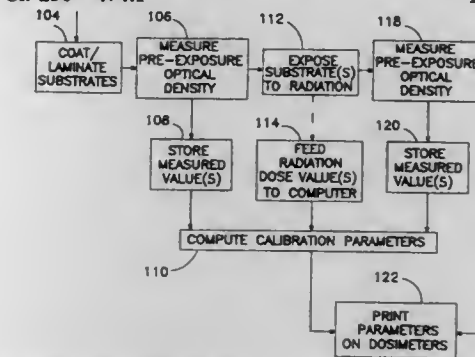
Henry Seiwatz, Wayne, N.J.; Carl A. Listl, New Hyde Park, N.Y.; J. Michael Donahue, Oakland, N.J., and David F. Lewis, Monroe, Conn., assignors to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 554,540, Nov. 7, 1995, Pat. No. 5,637,876. This application Apr. 30, 1996, Ser. No. 640,088

Int. Cl.⁶ G01J 1/02

U.S. Cl. 250—474.1

13 Claims



1. A method for manufacturing a calibrated dosimeter, comprising
providing a substrate,
applying a layer of radiation sensitive material to the substrate, said radiation sensitive material having an optical density which varies in accordance with a degree of radiation exposure;
optically measuring a pre-exposure optical density of said layer of radiation sensitive material;
after measuring said pre-exposure optical density, exposing said layer of radiation sensitive material to a known dose of radiation;
after exposure of said layer of sensitive material to said known dose of radiation, optically measuring a post-exposure optical density of said layer of radiation sensitive material;
computing, at least from said pre-exposure optical density, said post-exposure optical density, and said known dose of radiation, mathematical parameters defining a predetermined mathematical function; and
applying the computed mathematical parameters in encoded form to said substrate and which further comprises automatically generating an identification code for said substrate, to distinguish said substrate from other substantially similar substrates under manufacture.

5,777,342

METHOD AND APPARATUS FOR MICROLITHOGRAPHY

Stephen C. Baer, 10 Poplar Rd., Cambridge, Mass. 02138

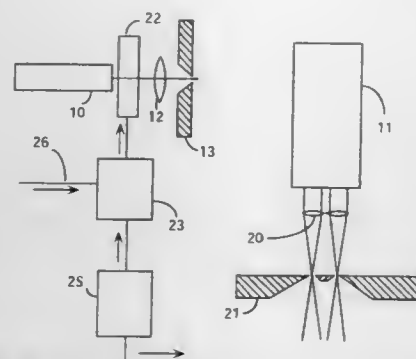
Continuation-in-part of Ser. No. 275,967, Jul. 15, 1994, abandoned. This application Dec. 29, 1995, Ser. No. 581,185

Int. Cl.⁶ H01L 21/268

U.S. Cl. 250—492.2

20 Claims

1. In apparatus adapted for photolithography for irradiating a selected region of a radiationally sensitive layer containing a radiationally excitable species, members of said species being adapted, within a brief interval after becoming so excited, to produce a change in at least one local property in said layer, including a source of exciting radiation adapted to excite said members and focusing means to focus said radiation to a pattern having a central maximum at said selected region, a method of increasing the resolution of said apparatus including the steps of:
providing an excitable species, such that in addition to being adapted to becoming excited by the exciting radiation, members of the species are also adapted to losing their excitation by exposure to quenching radiation of an appropriate wave-



length during the interval between excitation and the production of said change in local properties; providing quenching radiation adapted to radiationally deexcite the excitation of said members, thereby preventing them from leading to said change in local properties in said layer; shaping said quenching radiation into a pattern with a central minimum, whereby within the central minimum, the intensity of quenching radiation generally increases with distance from the center of the central minimum; overlapping said central minimum with said central maximum, whereby the center of said central minimum substantially coincides with the center of said central maximum and whereby, within said central minimum, an excited member of said species is quenched by said quenching radiation with an efficiency which generally increases with the distance of said member from the center of said central minimum; and scanning said irradiated region over a chosen part of said radiationally sensitive layer, while said central maximum of exciting radiation and said central minimum of quenching radiation remain overlapping, thereby creating a high resolution image in the layer.

5,777,343

URANIUM HEXAFLUORIDE CARRIER

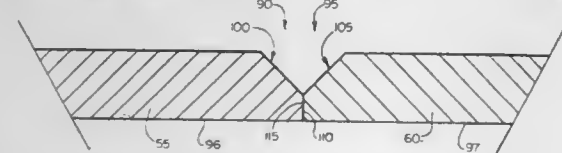
Gerald E. Rasel, Columbiana; Alan Eckert, and Trevor M. Rummel, both of Leetonia, all of Ohio, assignors to The Columbiana Boiler Company, Columbiana, Ohio

Filed May 8, 1996, Ser. No. 646,977

Int. Cl.⁶ G21F 5/12

U.S. Cl. 250—506.1

7 Claims



1. A container complying with ANSI® N14.1 for containing uranium hexafluoride (UF₆) which minimizes entrapment of contaminants thereby increasing the decontaminability of the container comprising:

- a cylindrical shell;
- two cylinder heads, each head closing one end of the shell;
- the shell and at least one of the heads each having an annular land with an inner diameter, the inner diameter of the land of the shell being substantially the same as the inner diameter of the land of the one of the heads and the lands of the shell and head being positioned to abut each other so as to provide a smooth transition in the interior of the container from the shell to the one of the heads;
- the shell and the one of the heads being joined together by a weld fully penetrating the opposing lands, the weld being formed by a plasma arc welding process;
- the shell and the one of the heads also having beveled weld faces radially outward of the respective lands, the beveled weld faces on the shell and the one of the heads cooperating to define a generally V-shaped groove and a submerged arc weld radially outward of the plasma weld and substantially filling

the remainder of the V-shaped groove, and wherein each land has an outer diameter, the outer diameter of the land of the shell and the outer diameter of the land of the one of the heads being substantially the same, thereby cooperating to form a point at the base of the V-shaped groove.

5,777,344

OPHTHALMIC APPARATUS

Akihiro Hayashi, Toyokawa, Japan, assignor to Nidek Co., Ltd., Aichi, Japan

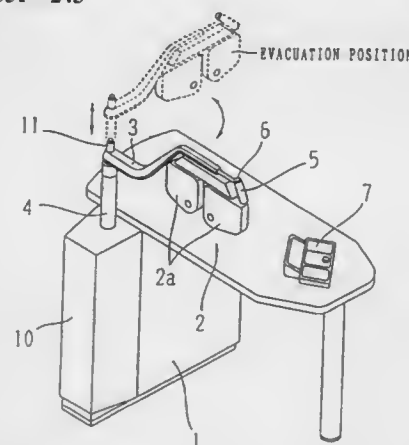
Filed Jun. 2, 1997, Ser. No. 867,449

Claims priority, application Japan, Jun. 28, 1996, 8-188566; Apr. 30, 1997, 9-127878

Int. Cl.⁶ A61B 3/00

U.S. Cl. 351—245

12 Claims



1. An ophthalmic apparatus comprising: optical unit for changing-over and disposing optical elements having various kinds of optical characteristics to an inspection window;
- holding means for holding said optical unit;
- gyrating means for making said holding means gyrate between an evacuation position and an inspection position;
- vertical motive means for making said holding means move vertically; and
- locking means for preventing electromagnetically said holding means from working.

5,777,345

MULTI-CHIP INTEGRATED CIRCUIT PACKAGE

William G. Loder, Chandler, and John Francis McMahon, Phoenix, both of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

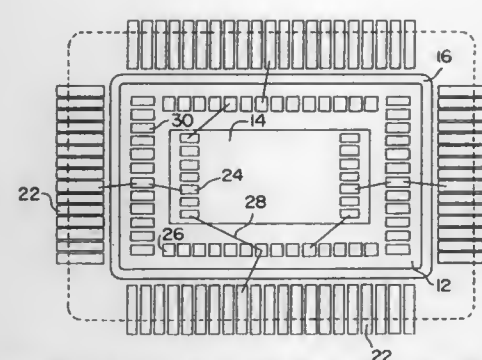
Filed Jan. 3, 1996, Ser. No. 581,021

Int. Cl.⁶ H01L 23/48; 23/52; 29/40

U.S. Cl. 257—777

17 Claims

1. An electronic package, comprising: a first die that has a plurality of bonding pads on a first end, a second end, a third end and a fourth end;
- a second die mounted to said first die, wherein said second die has a plurality of bonding pads located only on a first end and an opposite second end;
- a package that encloses said first and second dies;
- a conductive routing circuit that is located within said package and is connected to said first die;
- a plurality of first wire bonds that connect said bonding pads on said first and second ends of said second die to said bond pads of said first, second, third and fourth ends of said first die; and



a plurality of second wire bonds that connect said bonding pads of said first die to said conductive routing circuit.

5,777,346

METAL OXIDE SEMICONDUCTOR CONTROLLED THYRISTOR WITH AN ON-FIELD EFFECT TRANSISTOR IN A TRENCH

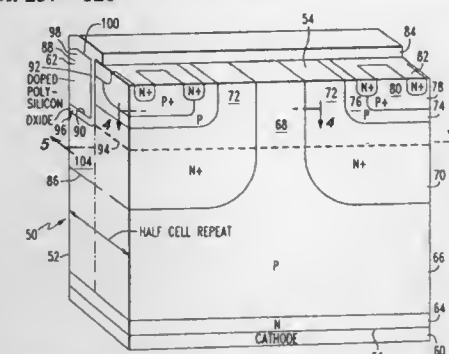
Victor Albert Keith Temple, Clifton Park, N.Y., assignor to Harris Corporation, Palm Bay, Fla.

Filed Jan. 16, 1996, Ser. No. 586,613

Int. Cl.⁶ H01L 29/74

U.S. Cl. 257—120

54 Claims



1. A metal oxide semiconductor controlled thyristor comprising: a semiconductor wafer having opposing first and second surfaces, said wafer comprising first through sixth sequential regions which are disposed one over the other with said first region including the second surface and each of the second through sixth regions having at least a portion extending up to the first surface, wherein said first, third, and sixth regions have a first type of conductivity and said second, fourth, and fifth regions have a second type of conductivity; and a trench with a bottom and sidewalls, said trench extending from the first surface and passing through said fourth, fifth, and sixth regions and into said third region with a dielectric material coating said bottom and said sidewalls and a conductive material filling said trench.

5,777,348

ACTIVE MATRIX SUBSTRATE AND INSPECTING METHOD THEREOF

Takashi Kurihara, Taki-gun, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

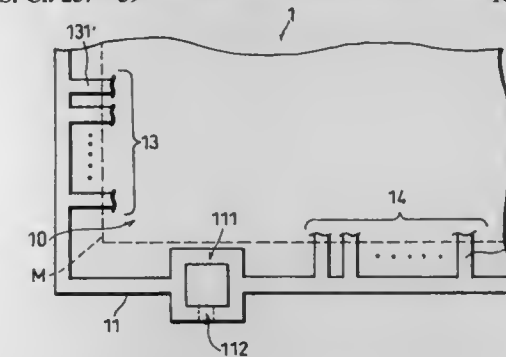
Filed Jun. 17, 1996, Ser. No. 664,574

Claims priority, application Japan, Jul. 27, 1995, 7-191626; Dec. 28, 1995, 7-343077

Int. Cl.⁶ H01L 29/04; 31/036

U.S. Cl. 257—59

16 Claims

5,777,347
VERTICAL CMOS DIGITAL MULTI-VALUED RESTORING LOGIC DEVICE

Dirk J. Bartelink, Chapel Hill, N.C., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 400,223, Mar. 7, 1995, abandoned.

This application Jul. 18, 1997, Ser. No. 896,895

Int. Cl.⁶ H01L 29/06

U.S. Cl. 257—24

19 Claims

1. A quantum inverter circuit with three stable output states, the quantum inverter circuit, comprising: an input;
- an output;
- a first transistor comprising:

1. An active matrix substrate, comprising:
a plurality of pixel switches arranged in a matrix;
a gate line block and a source line block for supplying signals to said pixel switches; and
a short circuit conductor electrically coupled to said gate line block and said source line block,
wherein said short circuit conductor includes a first segment connecting gate and source line blocks, and a second segment initially insulated from said line blocks, and both first and second segments provided parallelly to each other between said gate line block and said source line block, said first segment changing the line blocks from a short-circuiting state to an insulating state with laser radiation, and said second segment changing the line blocks from an insulating state to a short-circuiting state with laser radiation.

5,777,349

SEMICONDUCTOR LIGHT EMITTING DEVICE

Junichi Nakamura, and Hiroshi Nakatsu, both of Tenri, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

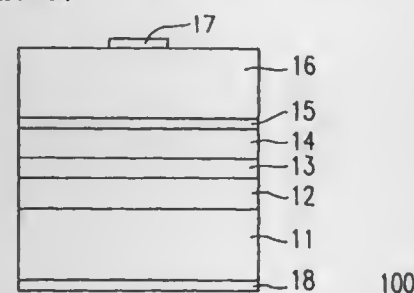
Filed Jul. 12, 1996, Ser. No. 678,954

Claims priority, application Japan, Mar. 22, 1996, 8-066879

Int. Cl.⁶ H01L 33/00

U.S. Cl. 257—94

15 Claims



1. A semiconductor light emitting device comprising:
a compound semiconductor substrate of a first conductive type;
a multilayer structure formed on the compound semiconductor substrate, the multilayer structure including at least an active layer for emitting light, a lower cladding layer of the first conductive type and an upper cladding layer of a second conductive type with the active layer interposed therebetween;
an intermediate layer of the second conductive type formed on the multilayer structure; and
a current diffusion layer of the second conductive type formed on the intermediate layer,
wherein the current diffusion layer and the upper cladding layer have an energy junction relationship of Type II in an energy band profile, and
wherein the intermediate layer alleviates a difference in energy positions at at least one of a lower end of a conduction band and an upper end of a valence band in the energy band profile which is exhibited before forming a junction between the upper cladding layer and the current diffusion layer.

5,777,350
NITRIDE SEMICONDUCTOR LIGHT-EMITTING DEVICE
Shuji Nakamura, Tokushima; Shinichi Nagahama, Komatsushima; Naruhito Iwasa, Tokushima, and Hiroyuki Kiyoku, Tokushima-ken, all of Japan, assignors to Nichia Chemical Industries, Ltd., Japan

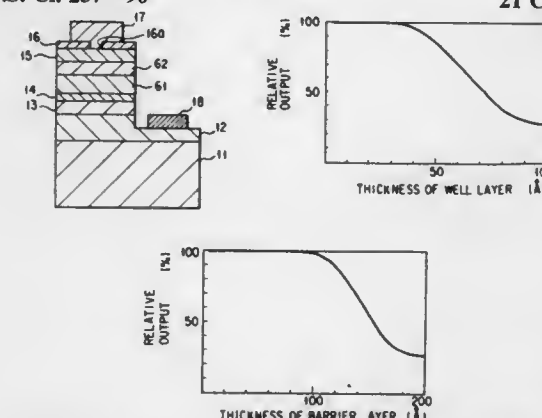
Filed Nov. 30, 1995, Ser. No. 565,101

Claims priority, application Japan, Dec. 2, 1994, 6-299446; Dec. 2, 1994, 6-299447; Dec. 22, 1994, 6-320100; Feb. 23, 1995, 7-034924; Mar. 16, 1995, 7-057050; Mar. 16, 1995, 7-057051; Apr. 14, 1995, 7-089102

Int. Cl.⁶ H01L 33/00

U.S. Cl. 257—96

21 Claims



1. A nitride semiconductor light-emitting device comprising:
an active layer of a quantum well structure comprising a nitride semiconductor containing indium and gallium, and having first and second main surfaces;
a first p-type clad layer comprising a p-type nitride semiconductor containing aluminum and gallium, and provided in contact with said second main surface of the active layer;
a second p-type clad layer comprising a p-type nitride semiconductor containing aluminum and gallium, having a larger band gap than that of said first p-type clad layer, and provided on said first p-type clad layer; and
an n-type semiconductor layer provided in contact with said first main surface of the active layer.

5,777,351

COMPRESSION BONDED TYPE SEMICONDUCTOR ELEMENT AND SEMICONDUCTOR DEVICE

Kazunori Taguchi, and Yuzuru Konishi, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 580,086, Dec. 20, 1995, abandoned.

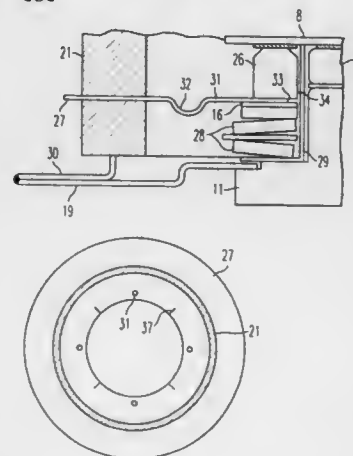
This application Jan. 7, 1997, Ser. No. 777,007

Claims priority, application Japan, May 31, 1995, 7-133919

Int. Cl.⁶ H01L 23/48

U.S. Cl. 257—181

30 Claims



1. A compression bond type semiconductor element comprising:
a disk-shaped semiconductor substrate having a front surface on which a electrode is disposed at an outer circumferential portion, and wherein a cathode electrode is disposed inside the gate electrode on said front surface, said disk-shaped semiconductor substrate including a back surface on which an anode electrode is disposed;
a cathode post electrode disposed to be compression bondable to the cathode electrode via a cathode distortion buffer disk, said cathode post electrode having a first flange;
an anode post electrode disposed to be compression bondable to the anode electrode via an anode distortion buffer disk, said anode post electrode having a second flange;
an insulating cylinder which contains said semiconductor substrate, the cathode distortion buffer disk, and the anode distortion buffer disk, said insulating cylinder including end portions which are hermetically fixed to the first and second flanges;
an annular ring gate electrode which contacts the gate electrode;
a ring-shaped gate terminal which is formed as an annular disks said ring-shaped gate terminal projecting through a side of said insulating cylinder and being hermetically fixed to said insulating cylinder such that said ring-shaped gate terminal includes a first annular portion disposed radially outside of said insulating cylinder and a second annular portion disposed radially inside of said insulating cylinder, wherein said second annular portion of said ring-shaped gate terminal includes an inner circumferential portion which is slidably disposed on said ring gate electrode such that said inner circumferential portion is slidable relative to said ring gate electrode;
an elastic body which is separate from said ring-shaped gate terminal and which provides a pressing force for pressing said ring gate electrode against the gate electrode, and wherein said elastic body further provides a pressing force for pressing said ring-shaped gate terminal against said ring gate electrode; and
an insulator which electrically insulates said ring-shaped gate terminal and said ring gate electrode from said cathode post electrode.

5,777,352

PHOTODETECTOR STRUCTURE

Samuel Reele, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

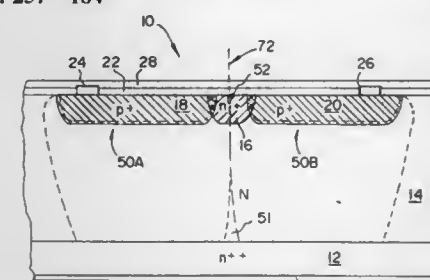
Continuation of Ser. No. 715,982, Sep. 19, 1996, abandoned.

This application Nov. 21, 1997, Ser. No. 975,878

Int. Cl.⁶ H01L 31/0328

U.S. Cl. 257—184

18 Claims



1. A semiconductor photodetector device, comprising:
an n doped support layer having first and second opposing surfaces;
at least one n+ region formed on the first surface of said n doped support layer at location(s) defining desired gap(s);
at least two p+ doped regions being formed in the n doped layer and separated by at least one of the n+ regions;
an n++ region formed on the second surface of said n doped layer; and
ohmic contacts connected to each p+ doped region and to said n++ region for receiving operating potentials that bias each p+ region, with respect to the n++ region, to act as a photodiode.

5,777,353

MULTIPLE-FUNCTION GAAS TRANSISTORS WITH VERY STRONG NEGATIVE DIFFERENTIAL RESISTANCE PHENOMENA

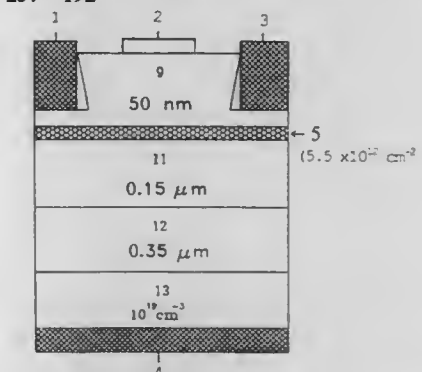
Wei-Chou Hsu, and Chang-Luen Wu, both of Tainan, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Nov. 9, 1995, Ser. No. 556,135

Int. Cl.⁶ H01L 29/78; 29/812

U.S. Cl. 257—192

1 Claim



1. A multiple-function GaAs transistor structure comprising:
a n+-GaAs (10^{19} cm^{-3}) substrate,
a n-type GaAs ($2 \times 10^{15} \text{ cm}^{-3}$) buffer layer of $0.35 \mu\text{m}$ thickness,
a n-type GaAs ($5 \times 10^{14} \text{ cm}^{-3}$) barrier layer of $0.15 \mu\text{m}$ thickness,
a n-type silicon delta-doping ($5.5 \times 10^{12} \text{ cm}^{-2}$) active channel layer, and
a n-type GaAs ($5 \times 10^{14} \text{ cm}^{-3}$) cap layer of 50 nm thickness,
each of said layers situated in this order on said substrate.

5,777,354

LOW PROFILE VARIABLE WIDTH INPUT/OUTPUT CELLS

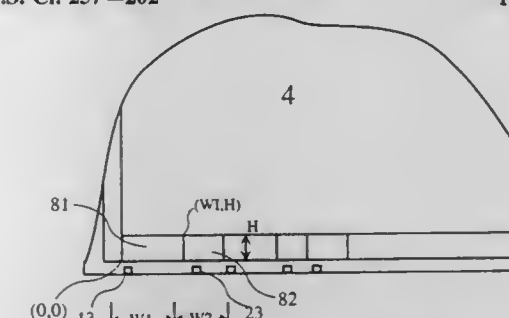
Gary H. Cheung, Fremont; Elias Lozano, Sunnyvale; Trung Nguyen, San Jose; Michael J. Colwell, Livermore, all of Calif., and Kevin Atkinson, Eden Prairie, Minn., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 668,084, Jun. 19, 1996, abandoned, which is a division of Ser. No. 307,942, Sep. 16, 1994, Pat. No. 5,552,333. This application Apr. 21, 1997, Ser. No. 837,570

Int. Cl.⁶ H01L 27/118

U.S. Cl. 257—202

19 Claims



1. Apparatus for maximizing gate density in an integrated circuit chip having a predetermined die size, comprising:
an input/output band along a periphery of said integrated circuit chip defining an area on which a plurality of input/output cells are defined, said input/output band being divided into grid units, each of said grid units having a predetermined width, each of said plurality of input/output cells have a width that varies based on the number of grid units contained within each of said plurality of input/output cells, the number of grid units being associated with a strength requirement of an input/output circuit contained within each of said plurality of input/output cells, wherein said plurality of input/output cells cumulatively vary in height,

a plurality of bonding pads formed outside of said plurality of input/output cells and along the input/output band, each of said plurality of bonding pads having a pitch that is variable, and
whereby each of said plurality of bonding pads are respectively connected to selected ones of said plurality of input/output cells.

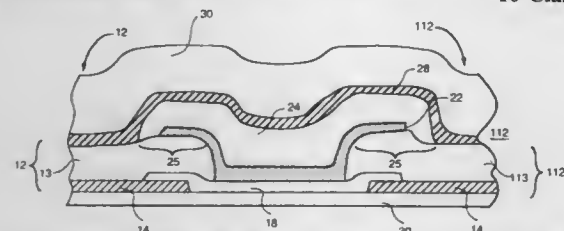
5,777,355
RADIATION IMAGER WITH DISCONTINUOUS DIELECTRIC

George Edward Possio; Robert Forrest Kwasnick, both of Niskayuna, and Jianqiang Liu, Clifton, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 23, 1996, Ser. No. 772,446
Int. Cl.⁶ H01L 27/148; 31/00

U.S. Cl. 257—233

10 Claims



I. A radiation imager including a plurality of respective photodiode islands and
a common electrode overlying at least a portion of each of said photodiode islands and the region between the photodiode islands, the imager comprising:
a photodiode passivation layer disposed between adjacent photodiode islands and extending over at least a portion of said adjacent photodiode islands; and
a plurality of bridge members disposed over said photodiode passivation layer and so as to underlie portions of said common electrode extending between adjacent photodiode islands, each of said bridge members being isolated from one another so that electrical leakage in one bridge member is limited to said one bridge member.

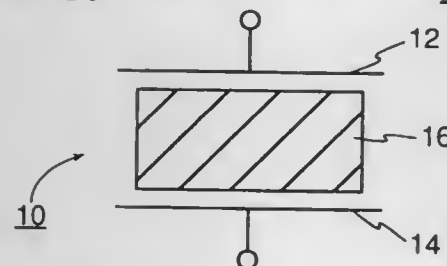
5,777,356
PLATINUM-FREE FERROELECTRIC MEMORY CELL WITH INTERMETALLIC BARRIER LAYER AND METHOD OF MAKING SAME

Anil M. Dhote, College Park, and Ramamoorthy Ramesh, Burtonsville, both of Md., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed Jan. 3, 1996, Ser. No. 582,545
Int. Cl.⁶ H01L 29/76

U.S. Cl. 257—295

21 Claims



I. A ferroelectric element, comprising:
a substrate;
a barrier layer comprising an intermetallic alloy formed over said substrate;
a first electrode layer comprising a metal oxide formed over said barrier layer; and
a ferroelectric layer formed over said first electrode layer; and
a second electrode layer formed over said ferroelectric layer;

wherein said intermetallic alloy consists essentially of one of AB, A₂B, A₃B, A₂, and AB₃, A and B being metallic elements, and
wherein said intermetallic alloy does not deviate from stoichiometry from one of said AB, A₂B, A₃B, AB₂, and AB₃ by more than 5 atomic percent.

5,777,357

Patent Not Issued For This Number

5,777,358
STACKED CAPACITOR SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR FABRICATING THE SAME

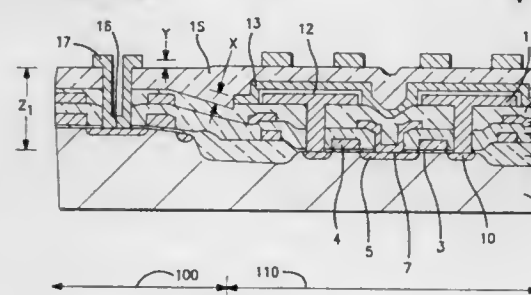
Takashi Yajima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 28, 1995, Ser. No. 535,857

Claims priority, application Japan, Sep. 28, 1994, 6-258937
Int. Cl.⁶ H01L 27/108; 29/76; 29/94; 31/119

U.S. Cl. 257—306

4 Claims



I. A semiconductor memory device comprising:
a silicon substrate;
a first area of said substrate including stacked capacitor memory cells comprising top and bottom electrodes sandwiching a dielectric film;
a second area of said substrate including a contact hole in which at least a wiring layer is formed; and
a plurality of inter-layer insulators extending over both of said first and second areas, said plurality of inter-layer insulators having a total thickness over said first area larger than a total thickness of said plurality of inter-layer insulators over said second area,
said silicon substrate being recessed by a range of 3000 to 4000 angstroms in a portion of said first area to reduce a difference in surface level of a top one of said plurality of inter-layer insulators between said first and second areas, thereby reducing an aspect ratio of the contact hole on the second area to a range of 1.5 to 1.8 for allowing the wiring layer in the contact hole to have a good step coverage as well as allowing the top inter-layer insulator to have a gentle slope with a good step coverage at a boundary between the first and second areas.

5,777,359
SEMICONDUCTOR FLASH MEMORY DEVICE AND FABRICATION METHOD OF SAME

Kyeong Man Ra, Cheonju, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-Do, Rep. of Korea

Filed Dec. 27, 1996, Ser. No. 777,384
Claims priority, application Rep. of Korea, Dec. 27, 1995, 58733/1995

U.S. Cl. 257—314

Int. Cl.⁶ H01L 29/76

8 Claims

I. A semiconductor flash memory device, comprising:
a substrate;

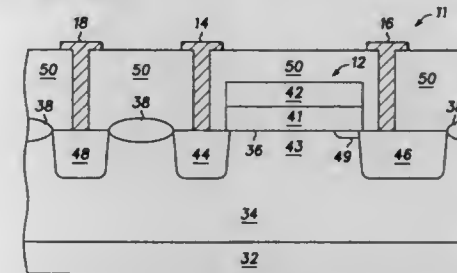
5,777,361
SINGLE GATE NONVOLATILE MEMORY CELL AND METHOD FOR ACCESSING THE SAME

Patrice M. Parris, and Yee-Chaung See, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 3, 1996, Ser. No. 657,127
Int. Cl.⁶ H01L 29/788; 29/76; 29/792

U.S. Cl. 257—322

19 Claims



a plurality of buried bit lines each having first and second regions, the first region having a depth greater than the second region;
an insulation layer on the substrate between the buried bit lines, the insulation layer having an indentation in a lower portion therein so that a first portion adjacent to the first region of the buried bit lines is thinner than a second portion adjacent to the second region of the buried bit lines;
a floating gate on the insulation layer and asymmetrical to the left and right thereof;
an inter-layer insulation layer on the floating gate and the substrate over the buried bit lines; and
a control gate on the inter-layer insulation layer, a portion of the control gate being positioned below the floating gate.

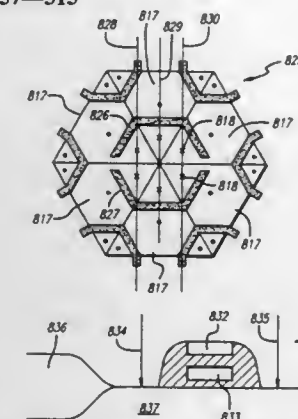
5,777,360
HEXAGONAL FIELD PROGRAMMABLE GATE ARRAY ARCHITECTURE

Michael D. Rostoker, Boulder Creek; James S. Koford, Mountain View; Ranko Scepanovic, San Jose; Edwin R. Jones; Gobi R. Padmanabhan, both of Sunnyvale; Ashok K. Kapoor, Palo Alto, all of Calif.; Valeriy B. Kudryavtsev, Moscow, Russian Federation; Alexander E. Andreev, Moskovskaya Oblast, Russian Federation; Stanislav V. Aleshin, and Alexander S. Podkolzin, both of Moscow, Russian Federation, assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 333,367, Nov. 2, 1994, Pat. No. 5,578,840. This application Aug. 21, 1995, Ser. No. 517,508

U.S. Cl. 257—315

49 Claims



I. A hexagonal field programmable gate array architecture, comprising:
six closely packed triangular semiconductor structures on a semiconductor substrate arranged in a hexagonal configuration, one or more of the triangular structures including three potential transistor regions having a common source/drain region; and,
at least one transistor region comprising an electrically erasable electrically programmable read only memory (E²PROM).

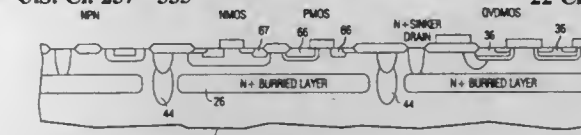
5,777,362
HIGH EFFICIENCY QUASI-VERTICAL DMOS IN CMOS OR BICMOS PROCESS

Lawrence George Pearce, Palm Bay, Fla., assignor to Harris Corporation, Palm Bay, Fla.

Filed Jun. 7, 1995, Ser. No. 474,559
Int. Cl.⁶ H01L 29/76; 27/01

U.S. Cl. 257—335

22 Claims



I. An integrated circuit comprising a quasi-vertical DMOS (QVDMOS) transistor comprising:
a substrate of a first type of conductivity;
a buried layer in said substrate of a second type of conductivity opposite in polarity to the first type and heavily doped;
an epitaxial layer of a second type of conductivity on said substrate and over said buried layer;
a drain region extending from the surface of the epitaxial layer to the buried layer and having a second type of conductivity;
a body region formed in the surface of the epitaxial layer, spaced from said drain region and having a first type of conductivity;
a source region formed in said body region, having a shallow depth and having a second type of conductivity;
a body tie formed in the source region, having a first type of conductivity, a conductivity greater than the conductivity of the body region a depth slightly greater than the depth of the source region and extending under and not beyond the source region;
a gate insulated from the epitaxial layer and extending over the source and body regions.

5,777,363

SEMICONDUCTOR DEVICE WITH COMPOSITE DRIFT REGION

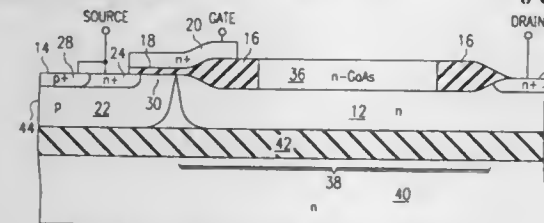
Satwinder Malhi, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 663,859, Jun. 19, 1996, abandoned, which is a continuation of Ser. No. 474,275, Jun. 7, 1995, abandoned, which is a division of Ser. No. 158,670, Nov. 29, 1993, Pat. No. 5,510,275. This application Mar. 17, 1997, Ser. No. 819,495

Int. Cl.⁶ H01L 29/76

U.S. Cl. 257—343

6 Claims



1. A field-effect semiconductor device comprising:
 - a semiconductor substrate;
 - a source region disposed in the semiconductor substrate;
 - a drain region disposed in the semiconductor substrate;
 - a gate conductor disposed adjacent to and insulated from the semiconductor substrate;
 - a channel region disposed in the semiconductor substrate adjacent to the source region and proximate to and insulated to the gate conductor; and
 - a composite drift region disposed between the drain region and the channel region, the composite drift region comprising first and second drift regions, the first drift region comprising a portion of the semiconductor substrate disposed between the channel region and the drain region, the second drift region disposed adjacent the first drift region, the second drift region comprising a layer of semiconductor material different than the material of the first drift region, the second drift region physically insulated from the drain region, and the second drift region insulated from the gate conductor.

5,777,364

GRADED CHANNEL FIELD EFFECT TRANSISTOR

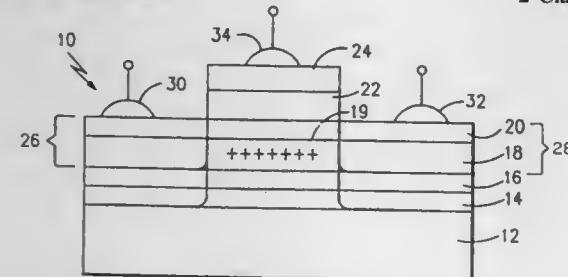
Emmanuel Crabbé, Chappaqua; Bernard Steele Meyerson; Johannes Maria Cornelis Stork, both of Yorktown Heights, and Sophie Verdonck-Vandebroek, Geneva, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 985,344, Nov. 30, 1992. This application May 2, 1997, Ser. No. 850,556

Int. Cl.⁶ H01L 27/12

U.S. Cl. 257—347

2 Claims



1. A semiconductor device comprising:
 - a substrate of a first semiconductor material;
 - a channel layer formed of an alloy of said first semiconductor material and a second semiconductor material, said channel layer being disposed over said substrate, wherein said second semiconductor material is graded within said channel layer to position carriers located within said channel layer away from upper and lower interfaces thereof; and

first and second regions of one conductivity type formed in said channel layer.

5,777,365

SEMICONDUCTOR DEVICE HAVING A SILICON-ON-INSULATOR STRUCTURE

Hitoshi Yamaguchi, Nagoya; Toshiyuki Morishita, Iwakura, and Hiroaki Himi, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

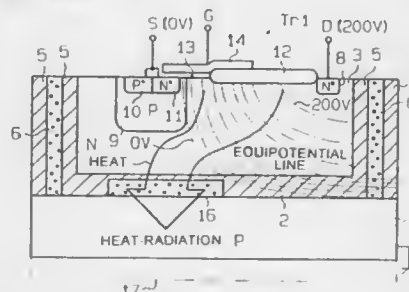
Filed Sep. 26, 1996, Ser. No. 721,626

Claims priority, application Japan, Sep. 28, 1995, 7-251612

Int. Cl.⁶ H01L 27/02

U.S. Cl. 257—347

19 Claims



1. A semiconductor device comprising:
 - a semiconductor substrate;
 - an insulation film disposed on said semiconductor substrate; and
 - a semiconductor layer disposed on said semiconductor substrate with said insulation film interposed therebetween; and
 - a semiconductor element formed in said semiconductor layer, said semiconductor element including a high potential region applied with a relatively higher voltage and a low potential region applied with a relatively lower voltage when said semiconductor element is brought into an operative state, wherein said insulation film has a thin portion where a thickness thereof is locally made thin, and said thin portion of said insulation film is located only on a low potential region side rather than at a point at which an equipotential line extending from said low potential region intersects said insulation film.

5,777,366

INTEGRATED DEVICE WITH A STRUCTURE FOR PROTECTION AGAINST HIGH ELECTRIC FIELDS

Claudio Contiero, Buccinasco, and Riccardo Depetro, Domo-dossola, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

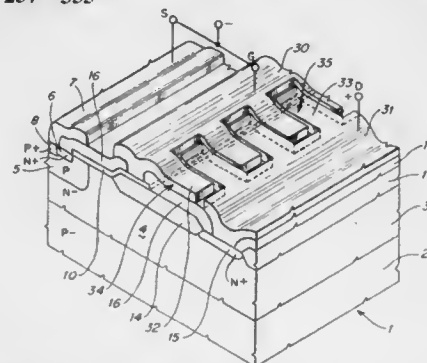
Filed Nov. 7, 1995, Ser. No. 553,154

Claims priority, application European Pat. Off., Nov. 8, 1994, 94830530

Int. Cl.⁶ H01L 23/62

U.S. Cl. 257—355

38 Claims



1. An integrated device, comprising:
 - a semiconductor material having a surface, the semiconductor material including a first portion and a second portion;

5,777,368

ELECTROSTATIC DISCHARGE PROTECTION DEVICE AND ITS METHOD OF FABRICATION

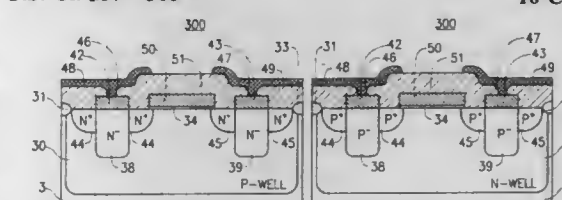
Chau-Neng Wu, Kaoshiung Hsien; Ta-Lee Yu, Hsinchu Hsien, and Alex Wang, Hsinchu, all of Taiwan, assignors to Winbond Electronics Corp., Taiwan

Filed May 13, 1996, Ser. No. 648,225

Int. Cl.⁶ H01L 23/62; 29/41

U.S. Cl. 257—360

10 Claims



a first device region disposed in the first portion of the semiconductor material, the first device region being at a first potential;

a second device region disposed in the second portion of the semiconductor material, the second device region being at a second potential, the second potential being different than the first potential, the second device region being parallel to the first device region; and

first and second potential distribution regions extending over the surface of the semiconductor material, the first potential distribution region including a first region of conducting material electrically connected to the first device region, the first region of conducting material having a first plurality of fingers disposed perpendicular to the first device region, wherein a gap is disposed between adjacent fingers of the first plurality of fingers, and the second potential distribution region includes a second region of conducting material including a second plurality of fingers disposed perpendicular to the second device region, each finger of the second plurality of fingers being located within the gap between adjacent fingers of the first plurality of fingers, the first and second potential distribution regions forming a pair of interdigitated comb structures and at an intermediate potential between the first potential and the second potential.

5,777,367

INTEGRATED STRUCTURE ACTIVE CLAMP FOR THE PROTECTION OF POWER DEVICES AGAINST OVERVOLTAGES

Raffaele Zambrano, San Giovanni La Punta, Italy, assignor to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Continuation of Ser. No. 306,647, Sep. 15, 1994, abandoned.

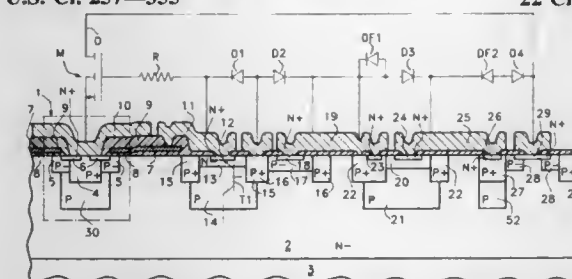
This application Sep. 11, 1997, Ser. No. 927,304

Claims priority, application European Pat. Off., Sep. 30, 1993, 93830397

Int. Cl.⁶ H01L 23/62

U.S. Cl. 257—355

22 Claims



1. An integrated structure active clamp for the protection of a power device against overvoltages, comprising a plurality of serially connected diodes, each having a first and a second electrode, and each defined in a first lightly doped epitaxial layer of a first conductivity type in which the power device is also obtained, a first diode of said plurality of diodes having the first electrode connected to a gate layer of the power device and the second electrode connected to the second electrode of at least one second diode of the plurality, the second diode having its first electrode coupled to a drain region of the power device, wherein the first electrode of said first diode comprises a heavily doped contact region of the first conductivity type included in a second lightly doped epitaxial layer region of the first conductivity type which is isolated from said first lightly doped epitaxial layer by a buried region of a second conductivity type and by a heavily doped annular region of the second conductivity type extending from a semiconductor top surface to said buried region.

5,777,369

BIT-LINE PULL-UP CIRCUIT OR STATIC RANDOM ACCESS MEMORY (SRAM) DEVICES

Shi-Tron Lin, Taipei; Ming-Tsan Yeh, Hsinchu; Chau-Neng Wu, Fen Shan, and Chi-Hsi Wu, Taichung, all of Taiwan, assignors to Winbond Electronics Corporation, Taiwan

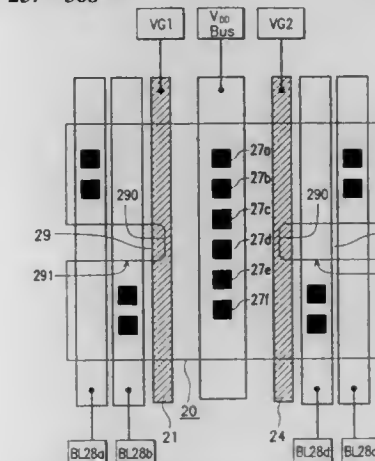
Filed Jan. 2, 1997, Ser. No. 778,264

Claims priority, application Taiwan, Jul. 16, 1996, 85108585

Int. Cl.⁶ H01L 29/76; 29/94; 31/062; 31/113

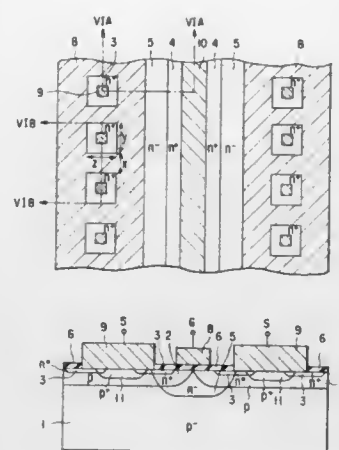
U.S. Cl. 257—368

21 Claims



1. A bit-line pull-up circuit for an SRAM device having a plurality of bit lines and at least a power bus and a control voltage bus, said bit-line pull-up circuit comprising:
 - (a) a drain diffusion region having a pair of recessed diffusion edges formed on opposite sides thereof;

- (b) a plurality of metal contact windows for electrically connecting said drain diffusion region to the power bus, wherein at least one of said metal contact windows is disposed substantially between the pair of recessed diffusion edges;
- (c) a plurality of source diffusion regions, each electrically connected to one of the bit lines; and
- (d) at least a pair of gate layers arranged substantially symmetrically about a center line of the drain diffusion region and electrically coupled to the control voltage bus;
- wherein said drain diffusion region, said gate layers, and said plurality of source diffusion regions in combination form a plurality of MOS transistors, in which said drain diffusion region serves as a common drain for said plurality of MOS transistors.



5,777,370

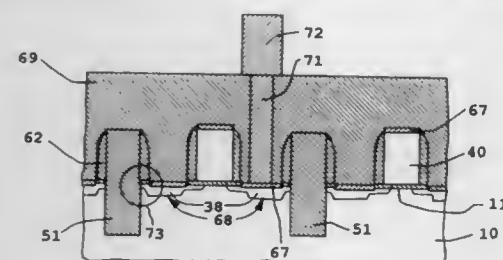
TRENCH ISOLATION OF FIELD EFFECT TRANSISTORS
Farrokh Kia Omid-Zohoor, Sunnyvale; André Stolmeijer, Santa Clara; Yowjuang W. Liu, San Jose, and Craig Steven Sander, Mt. View, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 12, 1996, Ser. No. 662,217

Int. Cl.⁶ H01L 29/76; 29/94

U.S. Cl. 257—374

10 Claims



1. An integrated circuit in a semiconductor substrate with field effect transistors in active regions isolated by trenches comprising: isolating trenches in a semiconductor substrate, each having isolating material with its top extending above said substrate; gate electrodes of field effect transistors on a gate insulator in contact with a semiconductor substrate having tops extending above said substrate, the tops of said gate electrodes being in the same plane as the top of the isolating material; source and drain regions on opposite sides of each of the gate electrodes; and metallization layers and vias to interconnect the source and drain regions and gates of the field effect transistors to form an integrated circuit.

5,777,371

HIGH-BREAKDOWN-VOLTAGE SEMICONDUCTOR DEVICE

Yusuke Kawaguchi, Kanagawa-ken; Yoshihiro Yamaguchi, Urawa, and Hideyuki Funaki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 20, 1996, Ser. No. 716,863

Claims priority, application Japan, Sep. 29, 1995, 7-253290

Int. Cl.⁶ H01L 29/76; 29/94

U.S. Cl. 257—409

18 Claims

1. A high-breakdown-voltage semiconductor device comprising: a high-resistance semiconductor layer; a drift layer of a first conductivity type selectively formed in a surface of said high-resistance semiconductor layer; a drain layer formed in a surface of said drift layer of the first conductivity type; base layers of a second conductivity type selectively formed in said surface of said high-resistance semiconductor layer;

- a plurality of island-shaped source layers of the first conductivity type formed in surfaces of said base layers of the second conductivity type;
- a gate electrode formed entirely on said base layers of the second conductivity type between said source layers of the first conductivity type and said drift layer of the first conductivity type and between adjacent source layers of the first conductivity type via a gate insulating film;
- a drain electrode which contacts said drain layer; and source electrodes which contact both said source layers of the first conductivity type and said base layers of the second conductivity type.

5,777,372

DIAMOND FILM BIOSENSOR

Koji Kobashi, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

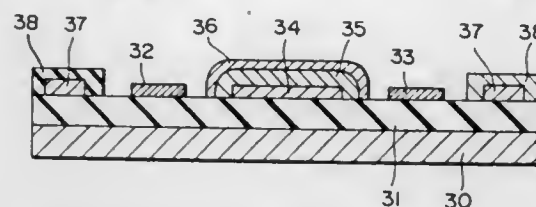
Filed Mar. 1, 1996, Ser. No. 609,613

Claims priority, application Japan, Mar. 1, 1995, 7-042211

Int. Cl.⁶ H01L 27/14; 29/82; B05D 5/12

U.S. Cl. 257—414

19 Claims



1. A diamond film biosensor comprising: a transducer having a semiconducting diamond film and/or undoped diamond film; and a bioidentifier fixed to and covering at least a portion of a surface of said semiconducting diamond film and/or undoped diamond film.

5,777,373

SEMICONDUCTOR STRUCTURE WITH FIELD-LIMITING RINGS AND METHOD FOR MAKING

Paul J. Groenig, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

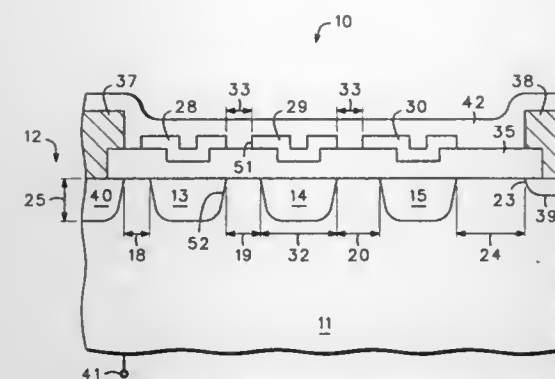
Continuation of Ser. No. 489,658, Jun. 12, 1995, abandoned, which is a continuation of Ser. No. 177,818, Jan. 4, 1994, abandoned. This application Dec. 16, 1996, Ser. No. 767,438

Int. Cl.⁶ H01L 23/58

U.S. Cl. 257—495

16 Claims

1. A semiconductor device comprising: a semiconductor region including a device body; a plurality of substantially concentric field-limiting rings including an innermost field-limiting ring, an outermost field-



- limiting ring, and at least one remaining field-limiting ring between the innermost field-limiting ring and the outermost field-limiting ring, the plurality of substantially concentric field-limiting rings formed in the semiconductor region surrounding the device body, a first edge of the innermost field-limiting ring laterally separated from an edge of the device body by a distance Δ_1 , a first edge of the one remaining field-limiting ring or a first edge of each of a plurality of remaining field-limiting rings laterally separated from a second edge of its respective nearest substantially concentric field-limiting ring toward a direction of the device body by respective distances Δ_2 through Δ_{f-2} when f is greater than four, said first edge of the one remaining field-limiting ring laterally separated from a second edge of the innermost field-limiting ring by distance Δ_2 when f equals four, f being the total number of the plurality of substantially concentric field-limiting rings plus one, $f-2$ being the one remaining field-limiting ring or the total number of the remaining field-limiting rings plus one, a first edge of the outermost field-limiting ring being separated from a second edge of its nearest remaining field-limiting ring toward the direction of the device body by a distance Δ_{f-1} , wherein the distances Δ_1 through Δ_{f-1} are increasing by a constant additive amount; and a channel-stopping region having an edge separated from a second edge of the outermost field-limiting ring toward the direction of the device body by a distance Δ_f wherein the sum of the distances Δ_1 through Δ_f substantially equals X_v , X_v being defined as:

$$X_v = \left[\frac{2(BV)(\epsilon_s)}{q N_D} \right]^{\frac{1}{2}}$$

- and wherein BV is a breakdown voltage of the semiconductor device, ϵ_s is a permittivity of the semiconductor region, q is the electronic charge constant, and N_D is a doping of the semiconductor region.

5,777,374

INTEGRATED CIRCUIT INTERCONNECT STRUCTURE WITH BACK REFLECTION SUPPRESSING ELECTRONIC "SPEED BUMPS"

Michael D. Rostoker, Boulder Creek, and Nicholas F. Pasch, Pacifica, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

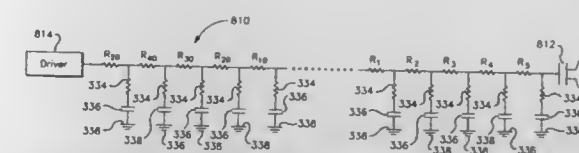
Continuation of Ser. No. 483,113, Jun. 7, 1995, Pat. No. 5,567,988, which is a continuation-in-part of Ser. No. 106,175, Aug. 13, 1993, Pat. No. 5,422,225. This application Dec. 26, 1995, Ser. No. 578,324

Int. Cl.⁶ H01L 29/00; 23/58; 23/48; 23/52

U.S. Cl. 257—533

21 Claims

2. A microelectronic structure including a semiconductor substrate having formed thereon at least one driver and one contact, comprising:



- an interconnect formed on the substrate for electrically coupling said driver to said contact; and a first signal altering element disposed on said interconnect for reducing back reflection and ringing in signals propagating along the interconnect; and a second signal altering element disposed on said interconnect for further reducing back reflection and ringing in signals propagating along the interconnect.

5,777,375

SEMICONDUCTOR DEVICE IMPROVED IN A STRUCTURE OF AN L-PNP TRANSISTOR

Norihiko Shishido, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 385,432, Feb. 8, 1995, abandoned.

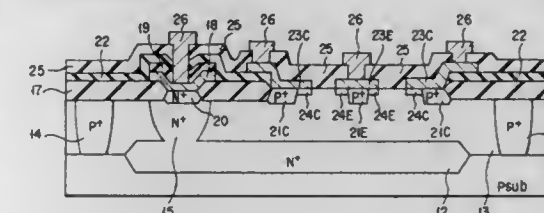
This application Nov. 8, 1996, Ser. No. 745,368

Claims priority, application Japan, Feb. 21, 1994, 6-022487

Int. Cl.⁶ H01L 29/00

U.S. Cl. 257—550

2 Claims



1. A semiconductor device of improved L-PNP transistor structure, comprising: a semiconductor substrate of a first conductivity type; a base region of a second conductivity type which is opposite the first conductivity type; the base region having at least two first diffusion layers having impurity ions of the first conductivity type, said at least two first diffusion layers having a first impurity concentration level and providing collector and emitter regions; polysilicon layers respectively formed on and having respective portions overhanging the first diffusion layers in the base region and having impurity ions of the first conductivity type; and respective second diffusion layers, underlying the respective overhang portions of said polysilicon layers, having impurity ions of the first conductivity type diffused therein from said overhang portions of said polysilicon layers, having a second impurity concentration level, and being provided around the collector region and around the emitter region, each of said second diffusion layers, and an associated first diffusion layer providing an adjacent parallel structure, and an effective base width between an end of the second diffusion layer constituting the collector region and an opposing end of the second diffusion layer constituting the emitter region being fixed in relation to a distance between opposing ends of the polysilicon layers.

1. A package for a semiconductor chip, said package comprising:

- a first layer having a first surface including a first level and a second level, said second level defining a chip receptacle area, said chip receptacle area located on said top surface;
- a plurality of conductive chip interface terminals disposed within said chip receptacle;

a board interface including an array of a plurality of conductive board interface terminals, said array located on a second surface of the package, said second surface opposite from said first surface; and

a plurality of interconnect layers disposed with the package, said layers including electrical connections to said chip interface terminals and electrical connections to said board interface terminals, wherein at least one of said interconnect layers within said plurality of interconnect layers contains an active component selected from the group consisting of diodes, zener diodes, transistors, FET's MOSFET's, LED's, and voltage regulators.

5,777,384

TUNABLE SEMICONDUCTOR DEVICE

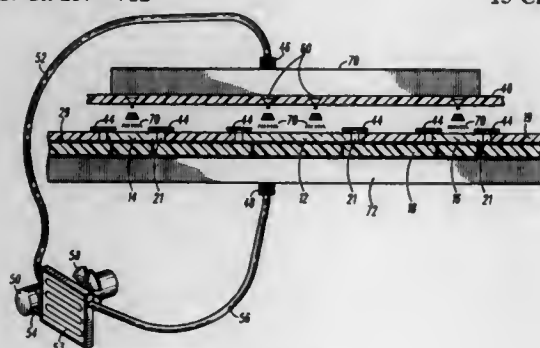
Loren F. Root, McHenry, and Kevin J. McDunn, Lake in the Hills, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 11, 1996, Ser. No. 729,130

Int. Cl.⁶ H01L 23/473;23/433

U.S. Cl. 257—712

15 Claims



1. An electronic device, comprising:

a substrate;

a first semiconductor die disposed on the substrate, the first semiconductor die having a major surface, at least a portion of the major surface is positioned to receive a cooling medium;

a signal input region, an active region and a conductive region disposed on the major surface, the conductive region electrically coupling the signal input region and the active region; and

an electrically reactive metal region in communication with the signal input region, sized to allow real-time iterative tuning of the electronic device.

5,777,385

CERAMIC BALL GRID ARRAY (CBGA) PACKAGE STRUCTURE HAVING A HEAT SPREADER FOR INTEGRATED-CIRCUIT CHIPS

Leon Li-Heng Wu, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 3, 1997, Ser. No. 811,459

Int. Cl.⁶ H01L 23/06;23/10;23/34;23/48

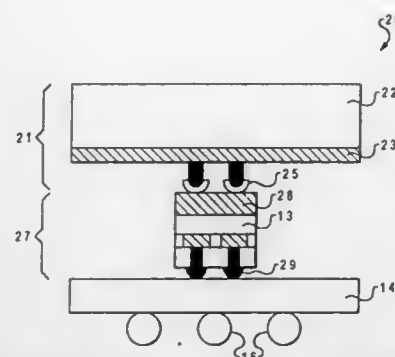
U.S. Cl. 257—712

5 Claims

1. A packaged integrated-circuit chip comprising:

a wiring substrate;

an integrated-circuit chip having a first surface and a second surface, wherein said first surface is electrically and mechanically connected to said wiring substrate via a first set of solder joints; and



a heat spreader connected to said second surface of said integrated-circuit chip via a second set of solder joints, wherein said heat spreader includes an adhesion-promotion layer on a silicon layer, such that heat generated from said integrated-circuit chip can be efficiently transmitted to and subsequently dissipated by said heat spreader.

5,777,386

SEMICONDUCTOR DEVICE AND MOUNT STRUCTURE THEREOF

Mitsutoshi Higashi; Hajime Iizuka, and Kei Murayama, all of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

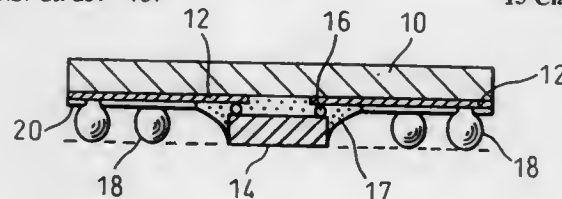
Filed Aug. 16, 1996, Ser. No. 698,624

Claims priority, application Japan, Aug. 23, 1995, 7-214466

Int. Cl.⁶ H01L 23/48

U.S. Cl. 257—737

15 Claims



1. A semiconductor device comprising:

a semiconductor element having first and second surfaces, said semiconductor element having connecting terminals on said first surface;

a substrate having a surface from which external connecting terminals comprising solder balls extend, and on which conductive patterns are formed, so that said connecting terminals of the semiconductor element are electrically connected to said external connecting terminals by means of said conductive patterns;

said connecting terminals of the semiconductor element each being connected to one end of respective ones of said conductive patterns of the substrate by a flip-chip bonding; and

a resin for hermetically sealing said connecting terminals of the semiconductor element, so that said second surface of the semiconductor element is exposed;

wherein the semiconductor element and the connecting terminals have a thickness which is substantially the same as the diameters of the solder balls.

5,777,387
SEMICONDUCTOR DEVICE CONSTRUCTED BY MOUNTING A SEMICONDUCTOR CHIP ON A FILM CARRIER TAPE

Chikara Yamashita, and Akira Yoshigai, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 719,982, Sep. 24, 1996, abandoned.

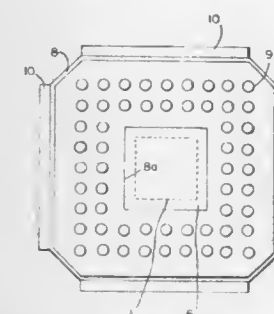
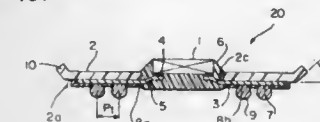
This application Nov. 21, 1997, Ser. No. 975,658

Claims priority, application Japan, Sep. 29, 1995, 7-253629

Int. Cl.⁶ H01L 23/00;23/12;23/48;29/44

U.S. Cl. 257—737

6 Claims



1. A semiconductor device comprising:

a film carrier tape comprising a base film, in which a device hole is formed, and metal foil wiring which is bonded onto said base film, said metal foil wiring having one end portion projecting into said device hole and forming inner leads and having an outer side of another end portion thereof forming lands;

a cover resist covering said film carrier tape including said metal foil wiring, said cover resist having openings corresponding to said lands on said metal foil wiring and having an open portion of substantially the same shape as said device hole;

a semiconductor chip having electrodes connected to said inner leads of said metal foil wiring which is disposed in said device hole;

encapsulation resin for protecting said semiconductor chip; and

bumps of conductive material which are formed in each of the openings of said cover resist on said lands of said metal foil wiring;

wherein said base film includes an outer region which extends beyond the metal foil wiring;

wherein an edge of each of a plurality of sides of said base film is folded back so that a corresponding folded portion of said base film is formed; and

wherein a crease of said corresponding folded portion of said base film is included in said outer region.

5,777,388

SEMICONDUCTOR DEVICE OF THE TYPE SEALED IN GLASS HAVING A SILVER-COPPER BONDING LAYER BETWEEN SLUGS AND CONNECTION CONDUCTORS

Timotheus J. M. Van Aken, Stadskanaal, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 14, 1996, Ser. No. 615,924

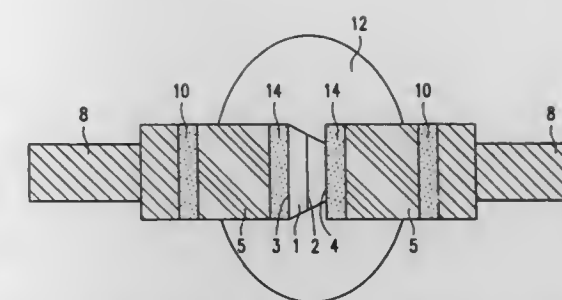
Claims priority, application European Pat. Off., Mar. 20, 1995, 95200661

Int. Cl.⁶ H01L 23/48;23/52;29/40

U.S. Cl. 257—742

11 Claims

1. A semiconductor device, comprising a semiconductor body having a pn-junction between opposing faces, a slug of a transition metal, a copper-containing connection conductor and a bonding layer, said semiconductor body being coupled to said slug, said slug being connected to said copper-containing connection conductor by said bonding layer, and said bonding layer containing silver



as a largest constituent in wt. %, copper as a second largest constituent in wt. %, more than 1 wt. % and less than 5 wt. % germanium, and more than 0 wt. % and less than 1 wt. % of cobalt.

5,777,389

SEMICONDUCTOR DEVICE INCLUDING OHMIC CONTACT TO-N-TYPE GAAS

Ryo Hattori, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

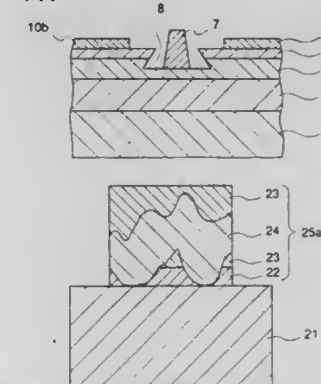
Filed Feb. 1, 1996, Ser. No. 595,220

Claims priority, application Japan, Jul. 27, 1995, 7-191572

Int. Cl.⁶ H01L 29/43

U.S. Cl. 257—744

5 Claims



1. A semiconductor device comprising:

an n type GaAs layer;

an electrode disposed on the n type GaAs layer, the electrode including at least one pair of Ti and Al films and an Al₃Ti alloy in contact with the n type GaAs layer; and

a high dopant impurity concentration region in the n type GaAs layer proximate a junction interface of the n type GaAs layer and the electrode wherein the electrode is in ohmic contact with the n type GaAs layer.

5,777,390

TRANSPARENT AND OPAQUE METAL-SEMICONDUCTOR-METAL PHOTODETECTORS

Paul R. Berger, Newark, Del., and Wei Gao, Woburn, Mass., assignors to The University of Delaware, Newark, Del.

Filed Oct. 10, 1995, Ser. No. 541,525

Int. Cl.⁶ H01L 31/12

U.S. Cl. 257—749

20 Claims



19. A photodetector comprising:

a semiconductor substrate selected from the group consisting of GaAs, InP, and silicon, said substrate having an active region, a barrier enhancement layer on said active region,

a first set of electrodes deposited on the barrier enhancement layer comprising a first conducting material which has a transparency greater than 50%;

a second set of electrodes deposited on the barrier enhancement layer comprising a second conducting material which has a transparency of less than 20%;

an antireflective coating deposited on the top of the photodetector,

wherein the photodetector has a mesa structure.

5,777,391

SEMICONDUCTOR DEVICE HAVING AN IMPROVED CONNECTION ARRANGEMENT BETWEEN A SEMICONDUCTOR PELLET AND BASE SUBSTRATE ELECTRODES AND A METHOD OF MANUFACTURE THEREOF

Atsushi Nakamura, Fuchu, and Kunihiko Nishi, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

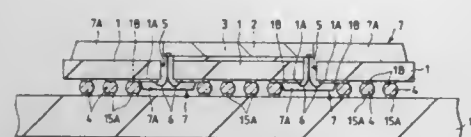
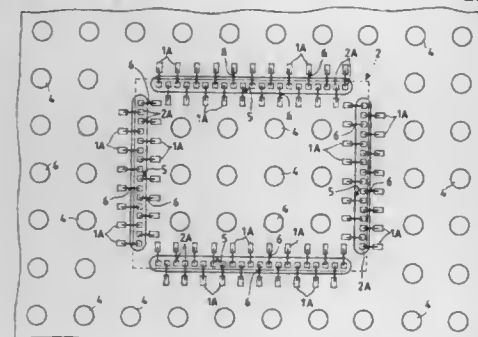
Filed Dec. 11, 1995, Ser. No. 570,646

Claims priority, application Japan, Dec. 20, 1994, 6-316444; May 25, 1995, 7-126405

Int. Cl.⁶ H01L 23/49

U.S. Cl. 257—778

25 Claims



1. A semiconductor device comprising:
- a rigid substrate having a first main surface and a second main surface opposite to the first main surface;
 - a semiconductor pellet mounted on the first main surface of the rigid substrate, the semiconductor pellet having a plurality of semiconductor circuit elements and a plurality of bonding pads;
 - a plurality of electrode pads formed on the second main surface of the rigid substrate; and
 - a plurality of bonding wires for electrically connecting the bonding pads of the semiconductor pellet with the electrode pads;
- wherein the semiconductor pellet is mounted facedown on the rigid substrate, the rigid substrate has slits that extend from the first main surface to the second main surface and expose the bonding pads of the semiconductor pellet, the bonding wires extend through the slits in the rigid substrate to connect the bonding pads and the electrode pads, and bump electrodes are formed on said electrode pads.

5,777,392 SEMICONDUCTOR DEVICE HAVING IMPROVED ALIGNMENT MARKS

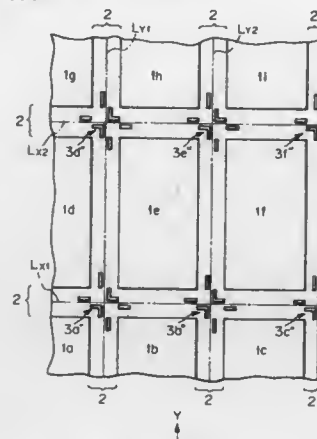
Hideki Fujii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 28, 1996, Ser. No. 623,638

Int. Cl.⁶ H01L 23/544

U.S. Cl. 257—797

8 Claims



1. A semiconductor device comprising:
- a plurality of chip areas arranged in a matrix along an X direction and a Y direction;
 - a grid-like scribe area partitioning said chip areas, a dicing area being defined within said scribe area;
 - a plurality of L-shaped alignment segments, each located within one of first quadrants defined by first center lines of said scribe area along said X direction and second center lines of said scribe area along said Y direction; and
 - a plurality of pairs of L-shaped alignment segments, each pair being located within one of second quadrants defined by said first center lines and second center lines, said second quadrants being adjacent to said first quadrants, said L-shaped alignment segments and said I-shaped alignment segments being located within said dicing area.

5,777,393

STARTER WITH PINION RETREAT PREVENTING STRUCTURE

Masahiro Katoh, Kariya; Takeshi Araki, Nishikasugai-gun; Masami Niimi, Handa, and Tsutomu Shiga, Nukata-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 6, 1996, Ser. No. 642,942

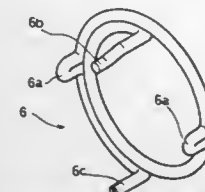
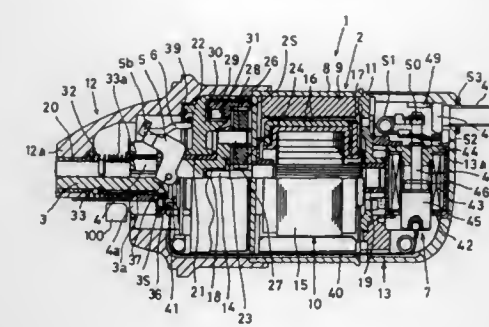
Claims priority, application Japan, May 10, 1995, 7-112119; May 26, 1995, 7-128646; Feb. 14, 1996, 8-026549; Apr. 18, 1996, 8-097064

Int. Cl.⁶ F02N 11/08; H02P 9/04

U.S. Cl. 290—48

20 Claims

1. A starter comprising:
- a starter motor;
 - an output shaft driven by said starter motor and having a helical spline on an outer circumference thereof;
 - a movable cylindrical member having a pinion gear for meshing with a ring gear of an engine and engaged with said helical spline of said output shaft, said movable cylindrical member being capable of advancing and retreating axially along said helical spline of said output shaft;
 - rotation restriction means adapted to come into abutment with said movable cylindrical member to restrict a rotation of said movable cylindrical member, thereby causing said movable cylindrical member to advance by virtue of both a rotating force of said starter motor and an action of said helical spline;
 - drive means for moving said rotation restriction means to a position of abutment with said movable cylindrical member;
 - retreat restricting means for restricting a retreat of said movable cylindrical member in an advanced state of said pinion gear by a predetermined distance in mesh with said ring gear; and



a first abutting portion formed on said retreat restricting means to abut said movable cylindrical member at locations which are between a first and second parallel tangential lines tangential to an outer circumference of said helical spline of said output shaft and opposing to each other with respect to said output shaft as a center.

5,777,394

SEAT ADJUSTING SWITCH PARTICULARLY FOR VEHICLE SEATS

Klaus Aroid, Sindelfingen, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

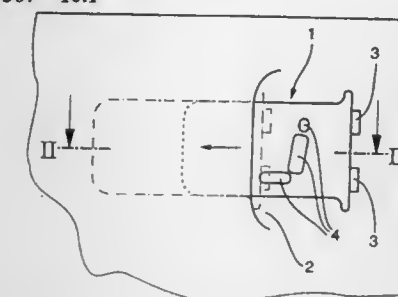
Filed Jan. 14, 1997, Ser. No. 783,001

Claims priority, application Germany, Jan. 15, 1996, 196 01 920.6

Int. Cl.⁶ B60R 27/00

U.S. Cl. 307—10.1

13 Claims



1. A seat adjusting switch assembly for vehicle seats comprising: manually operable manual setting and display elements accommodating manual setting of seat part positions, and manually operable memory setting and display elements accommodating storing, setting and retrieval of memory stored seat part positions, wherein said seat adjusting switch assembly is selectively operable switchable between first and second operating conditions, said first condition providing occupant accessibility to only the memory setting and display elements and said second condition providing occupant accessibility to said manual setting and display elements.

5,777,395

SAFETY ACTUATION OF VEHICLE DOOR-HANDLE OPERATED DOOR LOCKS USING SERIES CONNECTED SWITCHES AND ELECTRIC ACTUATOR

Klaus Rathmann, Frankfurt, Germany, assignor to VDO Adolf Schindling AG, Frankfurt, Germany

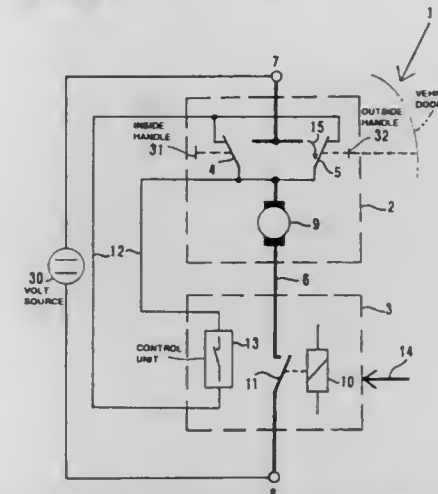
Filed Oct. 25, 1996, Ser. No. 738,392

Claims priority, application Germany, Dec. 20, 1995, 195 47 728.6

Int. Cl.⁶ E05B 53/00

U.S. Cl. 307—10.2

8 Claims



1. A circuit for actuating a lock in a vehicle, the lock being coupled to an inside handle and an outside handle for operation of the lock, the circuit comprising:

a control device, an electric actuator for actuating the lock, and at least an operating device, the operating device serving to operate the electric actuator and connecting with the control device; wherein the operating device comprises a plurality of switches connected to respective ones of said handles; and the operating device and the electric actuator are connected in a series circuit.

5,777,396

CIRCUIT CONNECTING DEVICE

Shinji Kikuchi, Tokyo, Japan, assignor to Asahi Kogyo Kabushiki Kaisha, Tokyo, Japan

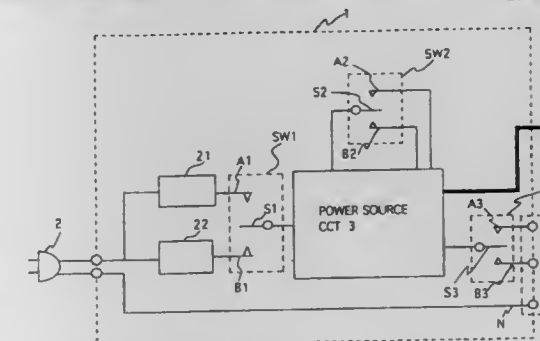
Filed Mar. 9, 1995, Ser. No. 401,114

Claims priority, application Japan, Mar. 11, 1994, 6-067833

Int. Cl.⁶ H01H 1/04

U.S. Cl. 307—112

19 Claims



1. A circuit characteristic setting device used to set a characteristic of a circuit, said circuit including a plurality of selector switches that set said characteristic of said circuit, each of said selector switches defined by a source terminal and a plurality of receptor terminals, said circuit characteristic setting device comprising:
- a connector that is electrically connected to each of said source terminals of said plurality of selector switches;

a plurality of distinct sets of receptors, each of said distinct sets of receptors being electrically connected to distinct ones of each of said plurality of receptor terminals of each of said plurality of selector switches;

whereby selective connection of said connector to one of said plurality of distinct sets of receptors sets the condition of the plurality of selector switches simultaneously.

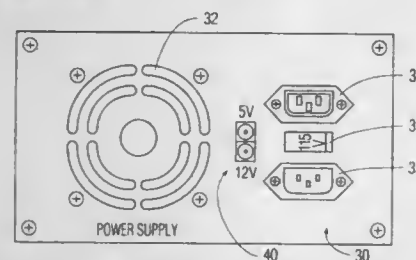
5,777,397

HOST ELECTRONIC EQUIPMENT WITH INTERNAL POWER SUPPLY ADAPTED FOR SUPPLYING POWER TO PERIPHERALS

Phillip Lam, 28262 Driza, Mission Viejo, Calif. 92692
Continuation-in-part of Ser. No. 734,959, Oct. 23, 1996. This application Jan. 29, 1997, Ser. No. 789,841
Int. Cl.⁶ H02J 3/12

U.S. Cl. 307—28

10 Claims



1. Electronic apparatus having a plurality of internal components which require different DC voltages for operation including a low voltage, said apparatus also including an internal power supply having a plurality of outputs for supplying said components with said voltage requirements including said low voltage, said apparatus having a housing and including at the face of said housing connectors electrically connected via a resistor network to said outputs for providing thereat said voltages including said low voltage, said connectors being of a configuration to mate with connectors from peripherals associated therewith, said apparatus including means electrically coupled to at least one of said connectors at the face of said housing for varying the voltage at said connector.

5,777,398

INTERNAL BACKUP POWER DEVICE FOR A COMPUTER

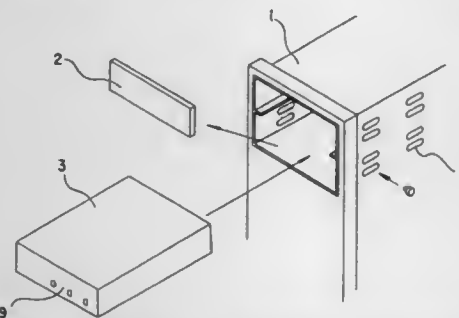
Jyrki Valkeakari, Helsinki, and Seppo Suoranta, Lapiokyla, both of Finland, assignors to Compower Oy, Vantaa, Finland
PCT No. PCT/FI94/00555, § 371 Date Jun. 5, 1996, § 102(e)
Date Jun. 5, 1996, PCT Pub. No. WO95/17777, PCT Pub. Date Jun. 29, 1995

PCT Filed Dec. 8, 1994, Ser. No. 647,895

Claims priority, application Finland, Dec. 15, 1993, 935628
Int. Cl.⁶ H02J 9/00

U.S. Cl. 307—66

10 Claims



1. A back-up power device for installation inside an industrial-standard microcomputer which supplies electricity to the micro-

computer upon occurrence of a normal external power failure, wherein the device is sized to fit in a standard disc or hard disc drive slot of the microcomputer, the device comprising:

an energy store separate from a power source of said microcomputer; and
fastening means for fastening the device in a standard disc or hard disc drive slot of said microcomputer.

5,777,399

PORTABLE ELECTRONIC APPARATUS AND CHARGE CONTROLLING METHOD FOR PORTABLE ELECTRONIC APPARATUS

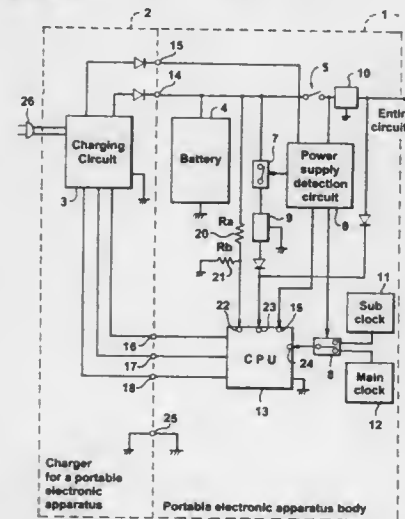
Toshiyuki Shibuya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 10, 1996, Ser. No. 763,987

Claims priority, application Japan, Dec. 14, 1995, 7-325670
Int. Cl.⁶ H02J 9/06

U.S. Cl. 307—66

4 Claims



1. A portable electronic apparatus having a portable electronic apparatus body, a rechargeable battery, a CPU, and a portable electronic apparatus charger for charging said battery;

said portable electronic apparatus charger comprising quick charging means having a function of quickly charging said battery, and
slow charging means having a function of slowly charging said battery,

said portable electronic apparatus body comprising a power supply switch for switching on or off a connection from said battery to the entire circuitry of said portable electronic apparatus,

connection detection means for detecting connection of said portable electronic apparatus body to said portable electronic apparatus charger,

open/close detection means for detecting an on/off state of said power supply switch, and
auxiliary power supply means for directly supplying an electric current from said battery to said CPU when said power supply switch is off while charging of said battery is proceeding,

said CPU having a charge completion detection function of detecting a charged state of said battery from an output voltage of said battery, and
a quick/slow switching controlling function of controlling said quick charging means to an on state and controlling said slow charging means to an off state when the charged state detected by said charge completion detection function is insufficient charge but controlling said quick charging means to an on state when the charged state detected by said charge completion detection function is sufficient charge.

5,777,400

SHIELDED COMPUTER NETWORK SWITCH

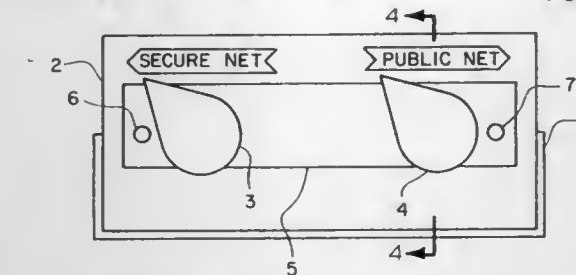
Stephen W. Bouthillier, 1263 Primrose St., Ridgecrest, Calif. 93555

Filed Jul. 22, 1996, Ser. No. 687,102

Int. Cl.⁶ H01B 7/34

U.S. Cl. 307—91

4 Claims



1. A secure network switch assembly comprising:

means for mounting at least one multi-layer electrical switch capable of alternately connecting and disconnecting a first and second computer network to a computer;

means for electromagnetically isolating said first computer network from said second computer network;

said isolating means further comprising a conductive non-woven fabric material capable of absorbing as well as reflecting electromagnetic waves;

said mounting means further comprising a nonconductive box having a front mounting plate and a rear mounting plate;

said nonconductive box is made of a high impact plastic;

said front mounting plate having an inner surface which is covered by said conductive non-woven fabric and has at least one multi-layer electrical switch mounted thereon;

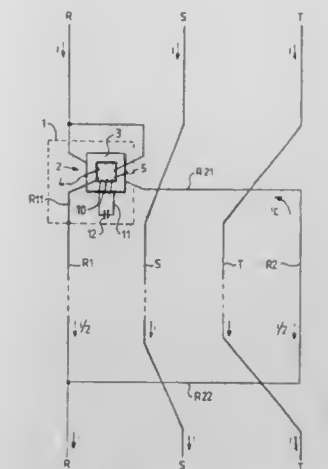
said rear mounting plate having an inner and outer surface both surfaces being covered by said conductive non-woven fabric and having at least two electrical connectors mounted thereon;

said rear mounting plate further comprises means for effectively grounding and electrically connecting said conductive non-woven fabrics on its inner and outer surfaces;

said grounding and electrical connection of said inner and outer surfaces of conductive non-woven fabric is accomplished by a metallic nut and bolt extending through said rear mounting plate and said conductive non-woven fabric;

said multi-layer electrical switch is encased in the conductive non-woven fabric;

said fabric is mechanically supported by a nonconductive cylindrical tube positioned between said conductive non-woven fabric and said switch.



separate circuit, which is coupled to said closed loop via a transformer designed to substantially transfer said circulating current but not said partial phase currents to said compensation device.

5,777,402

TWO-AXIS MOTOR WITH HIGH DENSITY MAGNETIC PLATEN

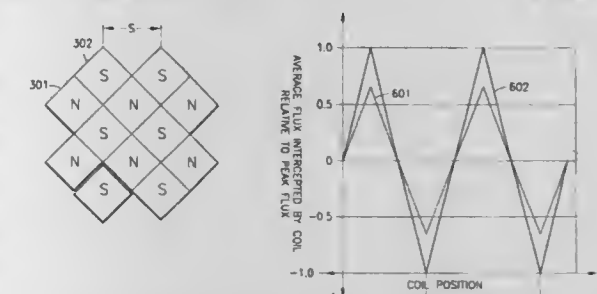
Anwar Chitayat, Fort Salanga, N.Y., assignor to Anorad Corporation, Hauppauge, N.Y.

Filed Jun. 24, 1996, Ser. No. 668,704

Int. Cl.⁶ H02K 41/00

U.S. Cl. 310—12

6 Claims



1. A positioning system, comprising:

a motor platen with a planar array of substantially parallelogram-shaped magnets;

said planar array having first magnets with their north poles facing in a first direction perpendicular to a plane of said planar array;

said planar array having second magnets with their north poles facing in a second direction, opposite said first direction;

said first magnets forming a first regular array of parallel columns and a first regular array of parallel rows;

said second magnets forming a second regular array of parallel columns and a second regular array of parallel rows;

said first regular array of parallel columns being parallel to said second regular array of parallel columns and said first regular array of parallel rows being parallel to said second regular array of parallel rows;

said planar array being characterized by a packing density of approximately 100%;

a stage movably connected to said motor platen;

said stage having a first longitudinal coil with a long axis parallel to said first axis; and
said stage having a second longitudinal coil with a long axis parallel to said second axis.

5,777,401

CIRCUITRY FOR REDUCTION OF THE MAGNETIC FIELD IN THE VICINITY OF MULTIPHASE POWER LINES

Jan-Olov Sjödin, Vällingby, Sweden, assignor to Vattenfall AB (Publ.), Stockholm, Sweden

PCT No. PCT/SE96/00493, § 371 Date Dec. 20, 1996, § 102(e)
Date Dec. 20, 1996, PCT Pub. No. WO96/33541, PCT Pub. Date Oct. 24, 1996

PCT Filed Apr. 17, 1996, Ser. No. 750,963

Claims priority, application Sweden, Apr. 21, 1995, 9501473
Int. Cl.⁶ H02G 7/20

U.S. Cl. 307—91

10 Claims

1. Circuitry for reducing the magnetic field in the vicinity of a multiphase power line for the transfer of alternating electrical current, wherein at least one of the phases is split into two branches, each transferring a partial phase current and forming along a line portion a closed loop in an unsymmetrical arrangement which induces a circulating current so as to reduce the magnetic field and to which a compensation device is coupled for adjusting the self-reactance of the closed loop in such a way that the magnetic field in the vicinity of the power line is minimized, characterized in that the compensation device is included in a

5,777,403
VOICE COIL MOTOR WITH AIR GUIDE AND AIR BELLOWS

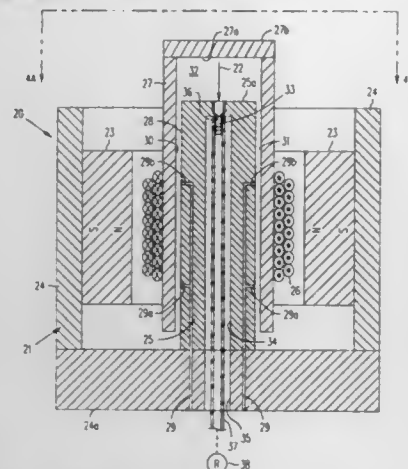
Bausan Yuan, San Jose, Calif., assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 30, 1996, Ser. No. 692,904

Int. Cl.⁶ H02K 41/02

U.S. Cl. 310—12

12 Claims



1. A voice coil motor comprising:

- a magnet assembly including a housing providing a flux return path and a ferromagnetic core and at least one magnet attached to said housing and spaced from said core;
- a movable coil assembly including a coil holder having an open end, a side and closed end and an electrical wire coil on a surface of said side, said coil holder being telescoped with respect to said core with an air gap between said side and said core and with a chamber between said closed end and said core, said coil being spaced from said at least one magnet;
- a first pressurized air supply for supplying air to the air gap such that pressurized air is introduced into said air gap to provide an air bearing; and
- a second pressurized air supply extending to said chamber to support said coil holder with respect to a distal end of said core.

5,777,404
ROTATING ACTUATOR

Peter Victor Has, Veldmaterstraat 194, NL-7481 AE Haaksbergen, Netherlands

PCT No. PCT/NL95/00383, § 371 Date Jul. 14, 1997, § 102(e) Date Jul. 14, 1997, PCT Pub. No. WO96/16463, PCT Pub. Date May 30, 1996

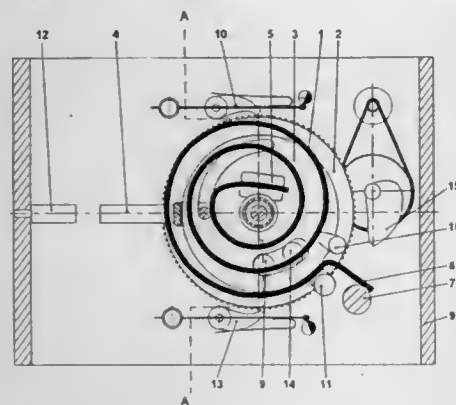
PCT Filed Nov. 7, 1995, Ser. No. 836,218

Claims priority, application European Pat. Off., Nov. 7, 1994, 94203245

Int. Cl.⁶ H02K 33/02; 41/00

U.S. Cl. 310—12

18 Claims



1. An actuator for displacing a movable pin between two end positions, at least one of which two end positions is a stop, comprising at least one energy buffer, components mutually connecting the energy buffer and the movable pin, a mass adapted to store energy of the energy buffer as kinetic energy, wherein at the end of displacement of the mass in at least one direction the kinetic energy of the mass is stored in one energy buffer, locking means which block the actuator in at least one extreme position when the remaining kinetic energy has been substantially transferred to the energy buffer, and means with which energy can be supplied at the end of the movement cycle.

wherein

between the energy buffer and the movable pin is situated an actuating element which drives the movable pin between two end positions, and the mass which moves along partly parallel with the actuating element, wherein kinetic energy is stored in the mass over a part of the movement, on the basis of which kinetic energy the movement of the actuating element can be completed without other energy sources having to be applied for this purpose and whereof at the end of the movement the mass can rotate further relative to the actuating element, wherein the remaining kinetic energy of the mass is relinquished to the energy buffer.

5,777,405

DAMPING MEMBER FOR MINIMOTOR AND MINIMOTOR EQUIPPED WITH THE SAME

Seiji Kurozumi; Yukio Honda, both of Osaka-fu; Kazuaki Sato, Tottori-ken; Masao Nakamura, Saitama-ken; Nobuharu Suzuki, Saitama-ken; Tokio Fujita, Saitama-ken, and Hitoshi Matsuoka, Gunma-ken, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., and Nitto Denko Corporation, both of Japan

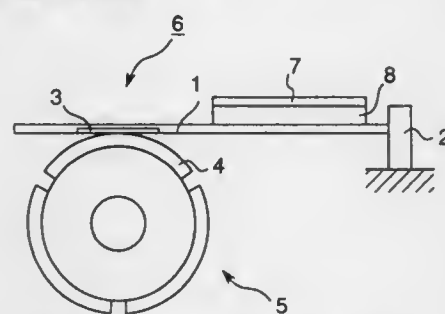
Filed Oct. 3, 1995, Ser. No. 538,803

Claims priority, application Japan, Oct. 5, 1994, 6-241242

Int. Cl.⁶ H02K 5/24; B32B 5/16

U.S. Cl. 310—40 MM

2 Claims



1. A damping member for a minimotor, comprising:

- a brush made of a thin metal plate,
- a viscoelastic member having a thickness of 50-200 μm on the brush, and
- a constraint member having a thickness of 20-90 μm on the viscoelastic member,
- a total thickness of the viscoelastic member and constraint member being within the range between 75-250 μm,
- the viscoelastic member containing an adhesive mass comprising, 82-92% by weight of alkyl acrylate represented by the general formula of $\text{CH}_2=\text{CHCOOR}$ in which R represents an alkyl group having 8-12 carbon atoms and 8-18% by weight of acrylic acid represented by the chemical formula of $\text{CH}_2=\text{CHCOOH}$, and wherein
- the damping member has a dissipation factor of 0.1 or more at a temperature between 0°-40°C.

5,777,406
CONDUCTOR BAR CONFIGURATION AND ROTOR ASSEMBLY HAVING THE CONDUCTOR BAR CONFIGURATION

Ralf Bomba, Recklinghausen, and Wilhelm Westendorf, Mülheim/Ruhr, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

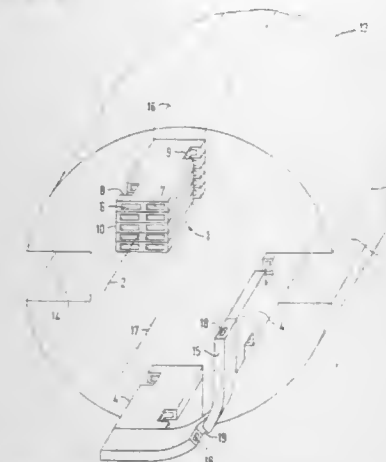
Filed Feb. 11, 1997, Ser. No. 798,608

Claims priority, application Germany, Aug. 11, 1994, 44 28 370.9

Int. Cl.⁶ H02K 3/24

U.S. Cl. 310—61

9 Claims



1. A conductor bar configuration, comprising:

- a longitudinal axis, a vertical axis, and a transverse axis perpendicular to the longitudinal axis and to the vertical axis;
- ends having orifices in vicinity thereof;
- two gas outlet zones disposed approximately centrally relative to the longitudinal axis, said gas outlet zones having an outlet duct directed at an acute angle relative to the vertical axis;
- a multiplicity of conductor bars extended along the longitudinal axis and stacked on one another along the vertical axis;
- each of said conductor bars having four cooling ducts aligned parallel to the longitudinal axis, disposed next to one another in pairs in direction of the transverse axis and disposed one behind another in pairs along the longitudinal axis;
- each of said cooling ducts reaching from an associated one of said orifices into one of said gas outlet zones and merging at said one gas outlet zone into said outlet duct;
- said orifice of one of said cooling ducts disposed directly at one of said ends and said orifice of the other of said cooling ducts spaced from said one end, for each pair of said cooling ducts disposed next to one another in each of said conductor bars; and
- said orifice of one of said cooling ducts disposed directly at said end to which it leads and said orifice of the other of said cooling ducts spaced from said end to which it leads, for each pair of said cooling ducts disposed one behind another in each of said conductor bars.

5,777,407

ALTERNATOR FOR VEHICLE

Hiroshi Ishida, Anjyo, and Tooru Ooiwa, Toyota, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 401,919, Mar. 9, 1995, abandoned.

This application Dec. 11, 1996, Ser. No. 764,596

Claims priority, application Japan, Mar. 11, 1994, 6-067894; Feb. 3, 1995, 7-017240

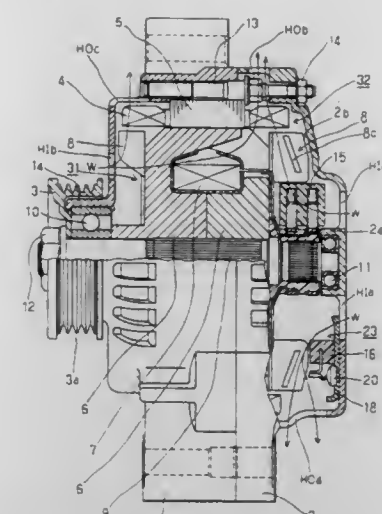
Int. Cl.⁶ H02N 9/06; 11/00

U.S. Cl. 310—64

31 Claims

1. An alternator for a vehicle comprising:

- a rotor disposed about a shaft;
- a cooling fan having fan blades and secured to a rear end of said rotor;
- a front housing journaling said shaft;



a rear housing journaling said shaft and having a rear wall which includes a fan shroud portion adjacent an outer edge of said fan blades when rotated by said rotor, an air discharging window disposed at a portion around an outer periphery of said fan blades, and an air intake window; and

a rectifying unit having diodes and heat dissipating fins, said rectifying unit being disposed between said outer edge of said fan blades and said rear wall of said rear housing, at least a portion of said heat dissipating fins having an elongation extending axially around said fan blades.

said rectifying unit having a fan shroud member disposed on the opposite side of said shaft as said fan shroud portion and being adjacent said outer rear edge of said fan blades when rotated by said rotor,

said fan shroud member forming with said fan shroud portion a generally common plane for decreasing air turbulence and increasing cooling air for said rectifying unit.

5,777,408

EXCITER CURRENT LINE IN THE ROTOR OF AN ELECTRIC MACHINE

Ernst Brem, Schlieren, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland

Filed Sep. 29, 1994, Ser. No. 314,904

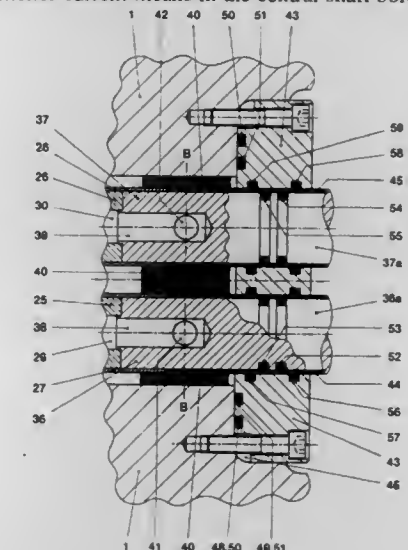
Claims priority, application Germany, Sep. 29, 1993, 43 33 094.0

Int. Cl.⁶ H02K 9/00; 13/00

U.S. Cl. 310—71

12 Claims

1. An exciter current means in the central shaft bore in the rotor



of an electric machine, comprising:

current supply bolts, an exciter current source and exciter current conductors, said exciter current conductors extending axially in the central shaft bore of the rotor and being provided with a cooling channel in the axial direction of the conductors for connecting said current supply bolts, arranged radially in the rotor shaft, for the rotor winding to said exciter current source, said exciter current source being arranged on a shaft stub, said shaft stub being attached to a non-drive-side shaft end of the rotor by means of a releasable coupling, wherein coupling-side ends of the exciter current conductors are permanently connected to coupling-side connection elements, wherein the said connection elements have an essentially circular cross-section and extend axially through a sealing plate and are electrically insulated therefrom, the sealing plate being screwed in the region of the coupling to the shaft end, and wherein means for gas-tight sealing of the sealing plate with respect to the rotor shaft and with respect to the ends of the coupling-side connection elements, which penetrate the sealing plate, are provided, wherein bolt-side connection elements are provided in the central shaft bore, said current supply bolts being releasably attached to said connection elements, wherein the exciter current conductors are metallic pipes with an orbicular cross-section and are permanently connected to the bolt-side connection elements, wherein these pipes are permanently connected at the coupling-side end to the coupling side connection elements and penetrate the sealing plate with their ends, wherein the bolt-side connection elements are provided with channels, and wherein the coupling-side connection elements are provided with through-bores which penetrate an insulating element so that a connection is produced from the current supply bolts via the interior of the metallic pipes into a space between the shaft bore and said metallic pipes.

5,777,409

METHODS AND APPARATUS FOR COUPLING AN ELECTRIC MOTOR AND A MOTOR LEAD PROTECTIVE CONDUIT

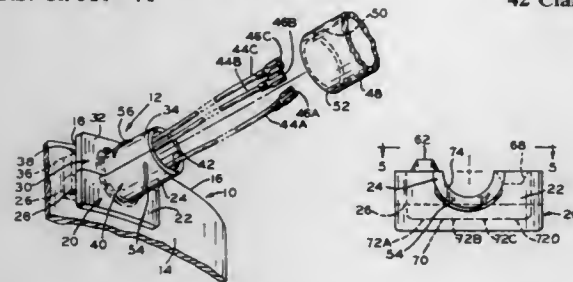
Arthur Carl Keck, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 13, 1996, Ser. No. 600,900

Int. Cl.⁶ H02K 11/00

U.S. Cl. 310—71

42 Claims



1. A connector for coupling a conduit to an electric motor, the motor including a motor shell having a first end and an endshield for closing the first end of the shell, the motor shell and endshield at least partially forming a motor housing, a stator assembly located in the motor housing and at least one motor lead extending from the stator assembly, a notch formed in the motor shell so that the motor lead can extend therethrough, the notch having an open end and a portion of the endshield closing the open end of the notch when assembled to the motor shell, said connector comprising:

a first connector member comprising a protective cover portion and a boss portion extending from said protective cover portion, said first connector member further comprising a notch interfitted portion including an engagement surface for contacting an edge surface of the motor housing at an outer periphery of the notch formed therein;

a second connector member comprising a protective cover portion and a boss portion extending from said protective cover portion, said second connector member further comprising a notch interfitted portion including an engagement surface for contacting an edge surface of the motor housing at an outer periphery of the notch formed therein; and said first and second connector members totally separable from each other and configured to be assembled in the motor shell notch so that said boss portions form a boss and so that said protective cover portions substantially cover the motor shell notch at least between said boss and the motor shell notch edges.

5,777,410

MOTOR ACTUATOR AND METHOD OF MAKING THE SAME

Yasunori Asakura, and Naohisa Shinmura, both of Kosai, Japan, assignors to ASMO Co., Ltd., Kosai, Japan

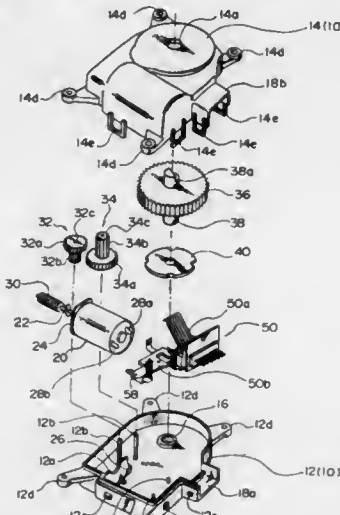
Filed Dec. 4, 1996, Ser. No. 760,301

Claims priority, application Japan, Dec. 4, 1995, 7-339961

Int. Cl.⁶ H02K 11/00

U.S. Cl. 310—71

12 Claims



1. A motor actuator comprising:

a gear rotated by a motor;

a pattern conductor provided on one surface of said gear and rotating together with said gear; and

a conducting unit, said conducting unit comprising a first conductive plate and a second conductive plate molded into an integral unit by an insulating resin,

said first conductive plate comprising a plurality of brushes sliding over said pattern conductor and a first pattern portion, said first pattern portion forming a first predetermined wiring pattern, said first pattern portion comprising a plurality of first link portions, said first predetermined wiring pattern being formed to suit the drive of said motor,

said second conductive plate comprising a plurality of external connection terminals for connections with other components and a second pattern portion, said second pattern portion forming a second predetermined wiring pattern, said second pattern portion comprising a plurality of second link portions, said second predetermined wiring pattern being formed to suit the drive of said motor,

said conducting unit comprising a pair of power supply terminals, said power supply terminals being parts of said first and second conductive plates.

5,777,411

GEARED ELECTRIC MOTOR

Fumio Nakajima; Takeo Furuya; Sumio Furukawa, and Toshihiro Negishi, all of Yokohama, Japan, assignors to Jidosha Denki Kogyo Kabushiki Kaisha, Yokohama, Japan

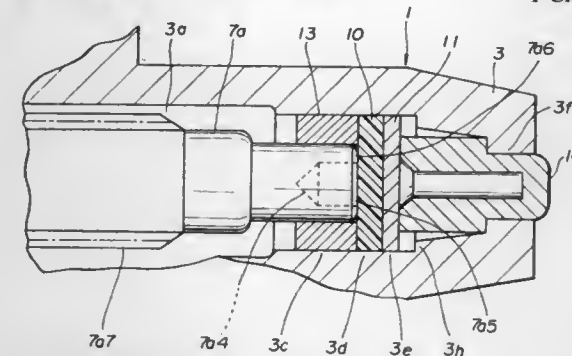
Filed Feb. 29, 1996, Ser. No. 609,907

Claims priority, application Japan, Mar. 1, 1995, 7-042117

Int. Cl.⁶ H02K 7/10

U.S. Cl. 310—83

1 Claim



1. A geared electric motor comprising:

a case comprised of a motor housing provided with a pair of magnets secured on an inner peripheral surface thereof and a gear housing in which a worm wheel with an output shaft is disposed;

first and second bearings, said first bearing being supported in said motor housing and said second bearing being supported in said gear housing;

an armature disposed radially inwardly of the pair of magnets and including an armature shaft rotatably supported at opposite ends by said first and second bearings, said armature shaft being provided with a worm gear disposed in meshing engagement with said worm wheel in said gear housing and being formed with a concavity having a predetermined depth in an end face and being formed with a ring shaped end face about said concavity adjacent said second bearing;

a friction plate disposed between said gear housing and the ring shaped end face of said armature shaft for applying friction force to said armature shaft, said friction plate having a backing plate made of metal disposed between said friction plate and said gear case;

said end face of said armature shaft of the armature being further provided with a bevel edge out of contact with said friction plate at an outer periphery of the end face and surrounding said ring shaped end face; and

a damper member made of elastic material disposed between said backing plate and said gear housing.

5,777,412

THROTTLE ACTUATOR

Kyouhei Yamamoto, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

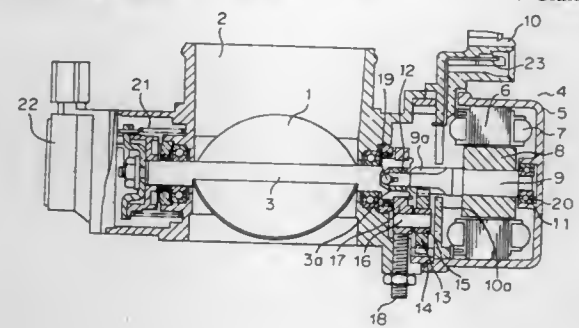
Filed May 19, 1997, Ser. No. 858,563

Claims priority, application Japan, Jan. 13, 1997, 9-003932

Int. Cl.⁶ H02K 7/14; F02D 9/08

U.S. Cl. 310—83

7 Claims



1. A throttle actuator comprising:

driving means having a stator provided with a stator winding and a rotor provided with a sun gear at a rotating shaft thereof;

planetary speed reducing means having the sun gear at the rotating shaft, a stationary gear installed at an outer periphery side of the sun gear and a planet gear in mesh with the sun gear and the stationary gear for performing a planetary motion by rotating the rotor;

a planetary gear support pin supporting the planet gear and performing a revolutionary motion along with the planet gear; and

a planetary arm disposed between the planetary gear support pin and a valve shaft of a throttle valve.

5,777,413

BEARING INSTALLATION IN A FLOPPY DISK DRIVER MOTOR

Toshihiko Nagata, Ogasa-gun; Hiroshi Sano, Iwata-gun; Takayuki Yamawaki, Kakegawa, and Kunitake Matsushita, Toyohashi, all of Japan, assignors to Minebea Co., Ltd., Kitasaku-gun, Japan

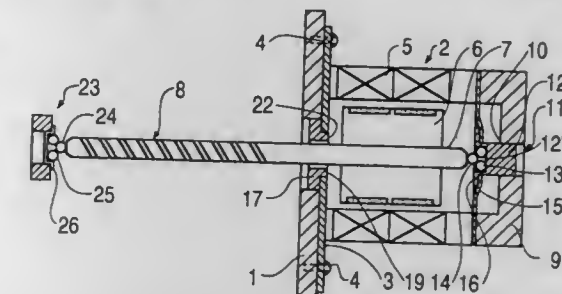
Filed Dec. 28, 1995, Ser. No. 580,255

Claims priority, application Japan, Dec. 29, 1994, 6-339116

Int. Cl.⁶ F16C 19/10

U.S. Cl. 310—90

17 Claims



1. A bearing installation in a floppy disk drive motor comprising: a protective cap mounted to one side of the motor;

a first pivot bearing having a base provided with a recess where one end of a rotary shaft is pivotally accepted, said first pivot bearing being arranged for free and axial movements on the rotary shaft of the motor relative to the protective cap;

a thrust spring urging the first pivot bearing axially of the rotary shaft of the motor;

the rotary shaft fixedly mounted on a rotor of the motor, and supported pivotally at the one end by the first pivot bearing and at the other end by a second pivot bearing fixedly mounted to a platform on which the motor is installed;

a lead screw to move a magnetic head threaded to an outwardly extending portion of the rotary shaft from the motor;

a positioning bushing located between the two pivot bearings, arranged through which the rotary shaft extends without direct contact with the positioning bushing and closely fitted into a positioning hole provided in a plate to which the motor is secured; and

a flange portion disposed around said base, said flange portion being directly supported by the thrust spring.

5,777,414

MAGNETIC BEARING ARRANGEMENT FOR A ROTOR
Armin Conrad, Herborn, Germany, assignor to Balzers-Pfeiffer GmbH, Asslar, Germany

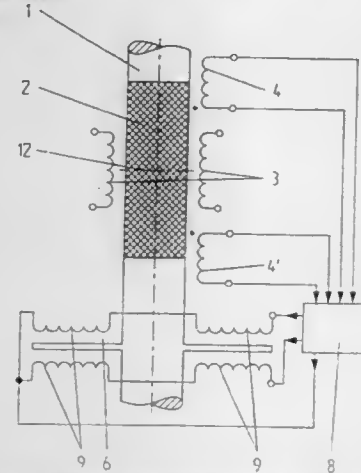
Filed Aug. 8, 1996, Ser. No. 694,087

Claims priority, application Germany, Aug. 8, 1995, 195 29 038.0

Int. Cl.⁶ H02K 7/09

U.S. Cl. 310—90.5

7 Claims



1. A magnetic bearing arrangement for a rotor of D.C. electric motor, the rotor having a longitudinal axis, a longitudinal extent defined by axial end surfaces thereof and permanent magnetic means provided along a portion of the longitudinal extent thereof, the rotor being disposed within a stator of the D.C. electric motor having coil means surrounding the portion of the rotor provided with the permanent magnetic means, and the rotor being rotatable due to cooperation of the permanent magnetic means with the stator coil means, the magnetic bearing arrangement comprising: stationary coil means comprising two coil elements arranged along the rotor on opposite sides of the stator coil means in a spaced relationship with respect to the stator coil means and spaced from a middle of the permanent magnetic means a same predetermined distance; and a thrust magnetic bearing for supporting the rotor and provided in one of said axial end surfaces of the rotor spaced from a respective stationary coil element, wherein at least one of amplitude and phase of voltage, which are induced in the stationary coil means by the permanent magnetic means upon rotation of the rotor, depends on a relative axial position between the stator and the rotor, the at least one of amplitude and phase being used as a sensor signal for stabilizing the thrust magnetic bearing, and wherein the sensor signal is generated upon an axial displacement of the rotor from a predetermined axial position thereof relative to the stator.

5,777,415

TWO-PHASE UNIPOLAR DRIVE TYPE BRUSHLESS DC MOTOR

Yuzuru Suzuki, Sakae Fujitani, and Kenichi Makino, all of Asaba-cho, Japan, assignors to Minebea Co., Ltd., Nagano-ken, Japan

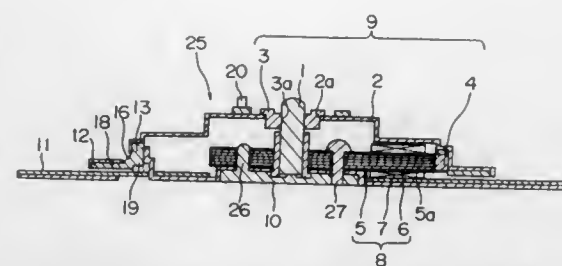
Filed Mar. 3, 1997, Ser. No. 810,300

Claims priority, application Japan, Apr. 8, 1996, 8-110580 Int. Cl.⁶ H02K 21/12

U.S. Cl. 310—156

12 Claims

1. A two-phase unipolar drive type brushless DC motor including: (1) an armature comprising a stator yoke, salient poles extending radially outward from said stator yoke, and coils wound around said salient poles;



(2) a rotor having a rotor yoke, said rotor being arranged coaxially with respect to said armature with a predetermined small gap defined between said rotor and said armature; (3) an annular shaped retainer provided on said rotor, said retainer being disposed coaxially with respect to said armature, and said retainer being made of a polymeric material containing magnetic powder; (4) insertion windows formed in said retainer at circumferential intervals; and (5) segment type magnet pieces made of a rare earth magnetic material, said segment type magnet pieces being arranged in said insertion windows at predetermined vertical and circumferential positions along said retainer.

5,777,416

SWITCHED RELUCTANCE MOTOR WITH LOW MUTUAL INDUCTANCE BETWEEN PHASES

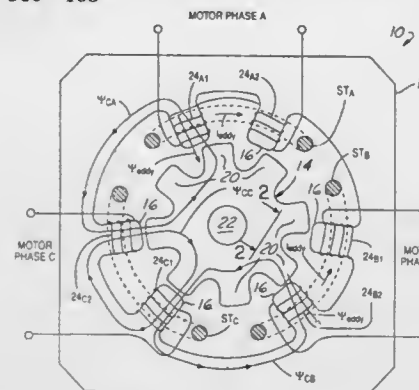
Sergei Kolomeitsev, Saline, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 23, 1996, Ser. No. 771,813

Int. Cl.⁶ H02K 17/42; 1/00; 3/00

U.S. Cl. 310—168

6 Claims



1. An electric motor having a plurality of motor phases comprising: a stator including a plurality of stator poles each having a stator energizing winding provided on a body portion thereof wherein energizing windings of adjacent stator poles are connected to define a respective one of said plurality of motor phases; a rotor supported for rotation relative to said stator, and including a plurality of rotor poles; and an electrical conductor having first and second ends disposed about said adjacent stator poles for each one of said plurality of motor phases wherein respective first and second ends of each electrical conductor are shorted together to thereby minimize induced flux linkage in non-energized motor phases when at least one of said motor phases is energized.

5,777,417

TRANPOSED STATOR WINDING BAR WITH EXTENDED FIELD COMPENSATION

Johann Haldemann, Birr, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland

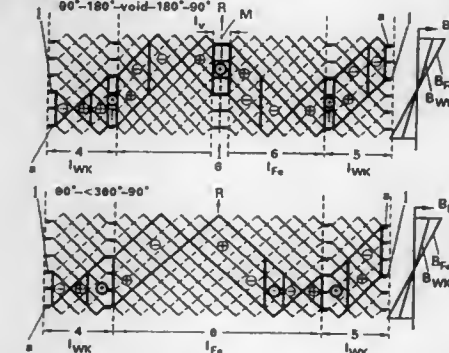
Filed Nov. 14, 1996, Ser. No. 748,784

Claims priority, application Germany, Dec. 5, 1995, 195 45 307.7

Int. Cl.⁶ H02K 3/14

U.S. Cl. 310—201

4 Claims



1. A winding bar for an AC machine with extended field compensation, comprising a plurality of mutually electrically insulated conductor elements which are transposed according to a Roebel principal, the conductor elements forming two end clip sections and an active part section between the two end clip sections, the conductor elements in the two end clip sections having a transposition of between 60° and 120° and the conductor elements in the active part section having an incomplete transposition which is uniform and less than 360°.

5,777,418

TRANSVERSE FLUX MOTOR WITH MAGNETIC FLOOR GAP

Andreas Lange, Heidenheim, and Stefan Koll, Ulm, both of Germany, assignors to Voith Turbo GmbH, Heidenheim, Germany

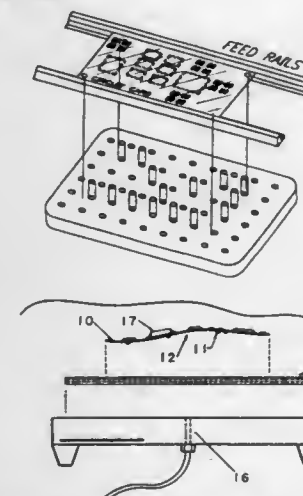
Filed Jun. 17, 1996, Ser. No. 664,826

Claims priority, application Germany, Jun. 23, 1995, 195 22 382.9

Int. Cl.⁶ H02K 1/12

U.S. Cl. 310—255

13 Claims



1. A transverse flux motor comprising: a) an outer stator further comprising a plurality of outer stator soft iron elements, the outer stator being void of any anchor windings, the outer stator soft iron elements being disposed in such a way that at least two neighboring outer stator soft iron elements define a gap region therebetween, said gap region being larger than gaps defined between the remaining said

stator soft iron elements, other than said two neighboring elements, being disposed substantially uniformly with respect to one another; b) an inner stator having a plurality of inner stator soft iron elements and at least one anchor winding; c) a rotor further comprising alternating magnets and soft iron elements; and d) means assigned to the gap region for compensation of magnetic end effects.

5,777,419

SURFACE ACOUSTIC WAVE DEVICE WITH MINIMIZED BULK SCATTERING

David Penunuri, Fountain Hills, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

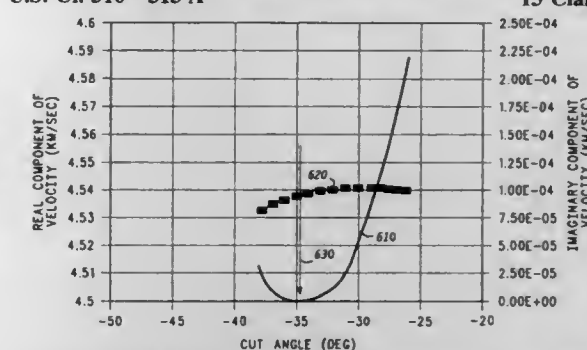
Division of Ser. No. 515,399, Aug. 15, 1995. This application

Jan. 15, 1997, Ser. No. 783,962

Int. Cl.⁶ H03H 9/72; H01L 41/08

U.S. Cl. 310—313 A

13 Claims



1. A surface acoustic wave device with reduced bulk acoustic wave scattering, comprising: a piezoelectric substrate having a first substantially planar surface oriented to Euler angles chosen to provide boundary conditions matched to a partially-metallized surface so as to minimize an imaginary acoustic wave velocity of an acoustic wave propagating in the substrate; and a transducer with interdigitated electrodes disposed on the substrate in line with a direction of acoustic wave propagation.

5,777,420

SUPERCONDUCTING SYNCHRONOUS MOTOR CONSTRUCTION

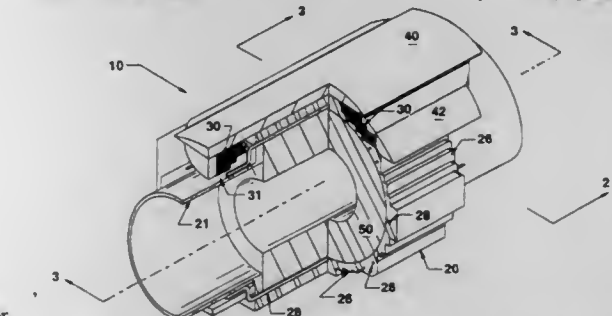
Bruce B. Gamble, Wellesley, and Gregory L. Snitchler, Shrewsbury, both of Mass., assignors to American Superconductor Corporation, Westborough, Mass.

Filed Jul. 16, 1996, Ser. No. 682,923

Int. Cl.⁶ H02K 9/00

U.S. Cl. 310—261

18 Claims



1. A rotor assembly for use within a superconducting electric motor comprising: at least one superconducting winding formed of high temperature superconductor, the superconducting winding, during operation, generating a flux path within the rotor assembly;

a support member having an inner surface which defines an internal volume and an outer surface, the support member formed of a non-magnetic, high-strength resilient material, said outer surface having a discontinuous cross-sectional profile for supporting the superconducting winding; and
a high permeability magnetic material, positioned within the internal volume of the support member and at least a portion of the flux path so as to decrease the overall reluctance of the flux path generated by the superconducting winding.

5,777,421

DISC-TYPE ELECTRICAL MACHINE

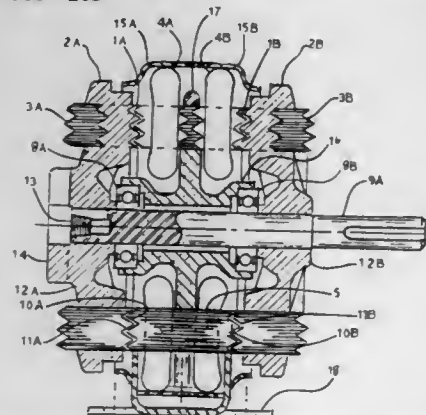
Richard C. Woodward, Jr., 1119 N. Oakdale, Fullerton, Calif. 92831

Continuation-in-part of Ser. No. 279,013, Jul. 22, 1994, abandoned. This application Feb. 24, 1997, Ser. No. 803,864

Int. Cl.⁶ H02K 1/06

U.S. Cl. 310—268

8 Claims



1. An improved disc-type, electrical machine having an air-gap with increased surface area comprising a housing unit, stator sections attached to the housing unit, a shaft rotatively attached to the housing unit with rotation means, rotor sections attached to the shaft, wherein each stator and rotor sections are separated by an axial air gap and each stator and rotor section have serrated face surface areas which define the axial air gap between the stator and rotor sections.

5,777,422

DIAMOND-ZNO SURFACE ACOUSTIC WAVE DEVICE HAVING RELATIVELY THINNER ZNO PIEZOELECTRIC LAYER

Hiroyuki Kitabayashi; Hideaki Nakahata; Kenjiro Higaki; Satoshi Fujii, and Shin-ichi Shikata, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

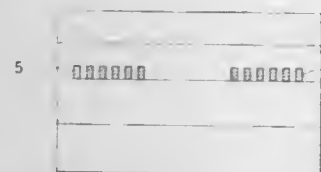
Filed Sep. 27, 1996, Ser. No. 720,369

Claims priority, application Japan, Sep. 29, 1995, 7-276260

Int. Cl.⁶ H01L 41/08

U.S. Cl. 310—313 A

4 Claims



1. A surface acoustic wave device comprising:
(i) a diamond layer;
(ii) an aluminum (Al) interdigital transducer (IDT) formed on said diamond layer, said Al IDT having a thickness of t_3 ;

(iii) a polycrystalline c-axis oriented ZnO layer formed over said Al IDT and on said diamond layer, said ZnO layer having a thickness of t_1 ; and

(iv) a SiO_2 layer formed on said ZnO layer, said SiO_2 layer having a thickness of t_2 .

wherein, for 0th mode surface acoustic wave having a wavelength λ , a parameter $kh_3=(2\pi/\lambda)t_3$ satisfies: $0.0470 \leq kh_3 \leq 0.0625$, and

wherein a parameter $kh_1=(2\pi/\lambda)t_1$ and a parameter $kh_2=(2\pi/\lambda)t_2$ are given within a region A-B-C-D-E-F-A in a two-dimensional Cartesian coordinate graph having ordinate axis of kh_1 and abscissa axis of kh_2 , the outer edge of said region A-B-C-D-E-F-A being given by a closed chain in said Cartesian coordinate, consisting of points A, B, C, D, E, and F, and lines A-B, B-C, C-D, D-E, E-F and F-A,

said point A being given by a coordinate point ($kh_2=0.280$, $kh_1=0.300$);

said point B being given by a coordinate point ($kh_2=0.200$, $kh_1=0.221$);

said point C being given by a coordinate point ($kh_2=0.250$, $kh_1=0.200$);

said point D being given by a coordinate point ($kh_2=0.570$, $kh_1=0.200$);

said point E being given by a coordinate point ($kh_2=0.575$, $kh_1=0.214$); and

said point F being given by a coordinate point ($kh_2=0.475$, $kh_1=0.300$).

5,777,423

CERAMIC MOTOR

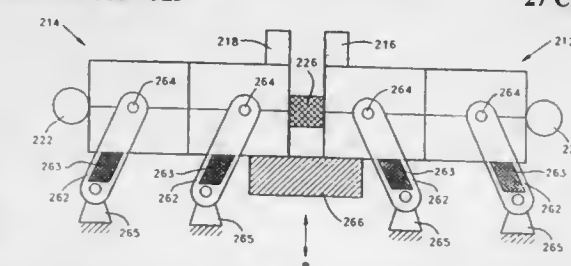
Jona Zumeris, Neshet, Israel, assignor to Nanomotion Ltd., Haifa, Israel

Division of Ser. No. 374,435, Jan. 19, 1995, Pat. No. 5,682,076, which is a continuation-in-part of Ser. No. 272,921, Jul. 8, 1994, Pat. No. 5,616,980, which is a continuation-in-part of Ser. No. 101,174, Aug. 3, 1993, Pat. No. 5,453,653. This application May 15, 1996, Ser. No. 644,975

Int. Cl.⁶ H01L 41/08

U.S. Cl. 310—323

27 Claims



1. A paired piezoelectric micromotor for providing motion relative to a body comprising:

first and second rectangular piezoelectric plates, each plate having:

first and second long edges;
first and second short edges;
front and back faces;

electrodes attached to the front and back faces thereof;
a ceramic spacer attached to the first long edge at the end thereof near the first short edge, the ceramic spacer engaging a surface of the body;

a source of resilient force applied to a portion of each plate and pressing the ceramic spacer against the surface of the body;
a voltage source which electrifies at least some of the electrodes with an excitation voltage; and

wherein the first short edge of the first plate is substantially parallel and adjacent to the first short edge of the second plate.

5,777,424

VIBRATION ACTUATOR

Mitsuhiko Okazaki, and Michihiro Tobe, both of Kawasaki, Japan, assignors to Nikon Corporation, Tokyo, Japan

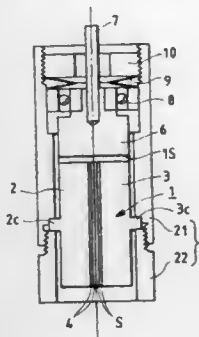
Filed Jan. 3, 1996, Ser. No. 580,973

Claims priority, application Japan, Jan. 6, 1995, 7-000804; Dec. 26, 1995, 7-339640

Int. Cl.⁶ H02N 2/00

U.S. Cl. 310—323

26 Claims



1. A vibration actuator comprising:

a vibration member including two substantially semi-cylindrical elastic members;

a relative moving member disposed on an end face of said vibration member;

a first electro-mechanical converting element for generating a torsional vibration about an axis of said vibration member;

a second electro-mechanical converting element for generating a longitudinal vibration in an axial direction of said vibration member;

a pressing member for pressing said relative moving member and said vibration member against each other; and

a support portion which is disposed on an outer circumferential portion of said vibration member to protrude therefrom in a radial direction of said vibration member; and
a housing disposed outside said vibration member, said support portion cooperating with said housing to support said vibration member.

5,777,425

VOLTAGE CONVERTER FOR USE WITH A PIEZOELECTRIC TRANSFORMER

Yoshihiro Ino; Tetsuo Yoshida; Yoshiaki Fuda; Naoki Wako; Katsunori Kumasaka, and Hutoshi Shiotani, all of Miyagi, Japan, assignors to Tokin Corporation, Miyagi, Japan

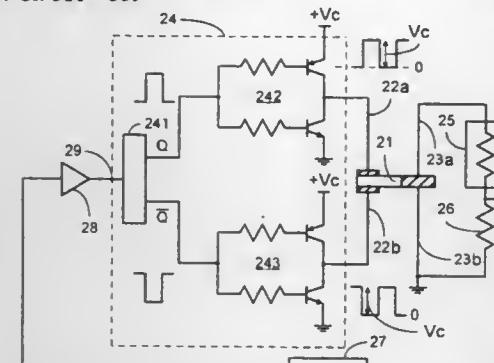
Division of Ser. No. 503,848, Jul. 18, 1995, abandoned. This application Sep. 3, 1996, Ser. No. 707,144

Claims priority, application Japan, Jul. 18, 1994, 6-165636; Aug. 1, 1994, 6-180329; Aug. 1, 1994, 6-180344

Int. Cl.⁶ H01L 41/08

U.S. Cl. 310—359

8 Claims



1. A voltage converter device comprising:
a piezoelectric transformer having a primary input terminal pair and a secondary output terminal pair, said transformer com-

prising a piezoelectric vibrator element vibrating at a predetermined resonant frequency and having an exciting input terminal pair as said primary input terminal pair and an additional terminal pair as said secondary output terminal pair provided thereto to be isolated from said primary input terminal pair, and

a pulse generating circuit for repeatedly switching a DC voltage to produce two voltage pulse signals which have a frequency equal to said resonant frequency but is reverse to each other in phase, said two voltage pulses being applied to said primary input terminal pair, respectively, to provide an AC output voltage across said secondary output terminal pair.

5,777,426

Patent Not Issued For This Number

5,777,427

ELECTRON EMISSION CATHODE HAVING A SEMICONDUCTOR FILM; A DEVICE INCLUDING THE CATHODE; AND A METHOD FOR MAKING THE CATHODE

Hiroyoshi Tanaka, Kyoto; Koichi Kotera, Osaka, and Masao Uchida, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

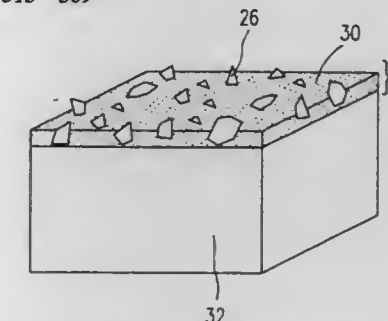
Filed Oct. 5, 1995, Ser. No. 539,699

Claims priority, application Japan, Oct. 5, 1994, 6-241221; Mar. 15, 1995, 7-056016; Mar. 20, 1995, 7-060755

Int. Cl.⁶ H01J 1/02

U.S. Cl. 313—309

39 Claims



1. An electron emission cathode comprising: an n-type semiconductor film including diamond particles partially projecting from a surface of the n-type semiconductor film,

wherein electrons are emitted by applying a voltage between an anode and the n-type semiconductor film.

5,777,428

ALUMINUM-CARBON COMPOSITE ELECTRODE

C. Joseph Farahmandi, and John M. Dispennette, both of Auburn, Ala., assignors to Maxwell Energy Products, Inc., San Diego, Calif.

Division of Ser. No. 319,493, Oct. 7, 1994, Pat. No. 5,621,607.

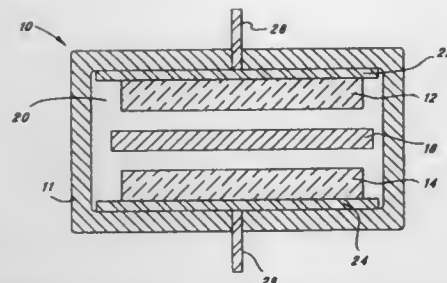
This application Jul. 26, 1996, Ser. No. 686,579

Int. Cl.⁶ H01J 1/02; 3/14; 7/38; 1/48

U.S. Cl. 313—352

13 Claims

1. An aluminum/carbon composite electrode comprising:
an activated carbon fiber preform;
a non-fibrous aluminum impregnant within said activated carbon fibers; and



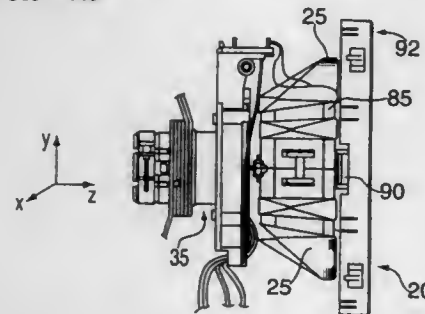
a conductive foil current collector pressed against a surface of said activated carbon fiber preform so as to be in contact with said aluminum impregnant.

5,777,429
DEVICE FOR CORRECTION OF NEGATIVE DIFFERENTIAL COMA ERROR IN CATHODE RAY TUBES

Kent L. Headley, San Diego, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Park Ridge, N.J.

Filed Feb. 22, 1996, Ser. No. 605,695
Int. Cl.⁶ H01J 29/70; H01F 7/00; H04N 5/645
U.S. Cl. 313-440

33 Claims



1. A device for correction of differential negative coma misconvergence of the type caused by a deflection yoke which is used for converging at a point on a photon-emitting screen, a plurality of electron beams generated by cathode ray tube, said cathode ray tube having a screen and a neck extending in a direction away from said screen, wherein said deflection yoke encloses a portion of said cathode ray tube, including a portion of said cathode ray tube neck, and wherein said deflection yoke includes a separator around which is wound a horizontal deflection coil for providing a horizontal magnetic deflection field, a core around which is wound a vertical deflection coil for providing a vertical magnetic deflection field, said core encircling said separator, and wherein said deflection yoke is attached to said cathode ray tube by a rear cover, said rear cover being disposed around said neck of said cathode ray tube and having a first side facing the direction of said screen and resting against a rear end of said separator, said device comprising a plurality of arcuate shunts disposed on said first side of said rear cover for correction of negative differential coma misconvergence.

5,777,430
FUNNEL FOR A CATHODE RAY TUBE HAVING A FLARE ZONE

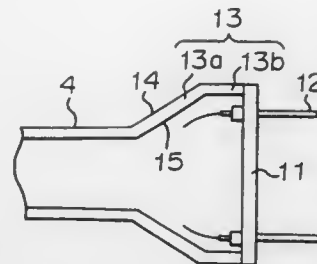
Yuichi Ueda; Shinie Inamura, and Yukio Morisawa, all of Funabashi, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Sep. 26, 1996, Ser. No. 721,377
Claims priority, application Japan, May 9, 1996, 8-115073
Int. Cl.⁶ H01J 31/00

U.S. Cl. 313-477 R

7 Claims

1. A funnel for a cathode ray tube, comprising:
a neck tube;



the neck tube having an end enlarged to provide a flare zone; and
the flare zone having an opened end coupling a stem supporting stem pins thereto;
wherein the flare zone has an outer shape comprising one of a tapered outer surface and a cup shaped outer surface connected to a substantially straight outer surface continuous therewith.

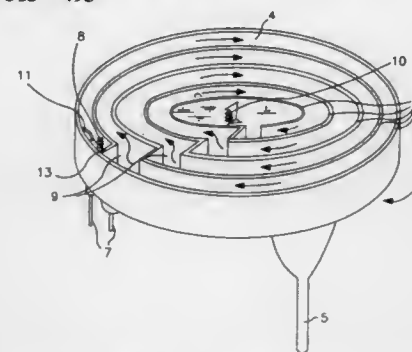
5,777,431
SUBSTANTIALLY FLAT COMPACT FLUORESCENT LAMP

Jakob Maya, Brookline, and Munisamy Anandan, Burlington, both of Mass., assignors to Matsushita Electric Works R&D Lab., Woburn, Mass.

Filed Aug. 17, 1994, Ser. No. 291,887
Int. Cl.⁶ H01J 17/04; 61/067

U.S. Cl. 313-493

5 Claims



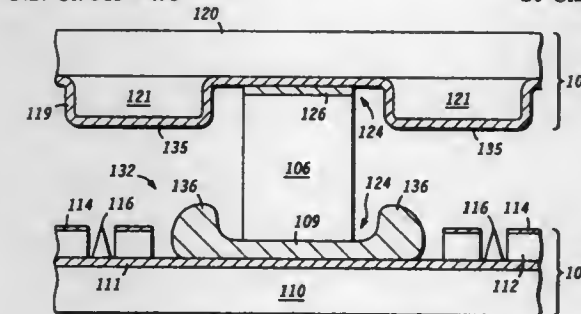
1. A substantially flat, arc discharge, fluorescent lamp structure comprising:
means defining a gas filled chamber, which is atmospheric-sealed and has a top glass wall with inner and outer surfaces and a peripheral edge, said top wall being opaque to fluorescent light,
means defining a bottom glass wall of the chamber with inner and outer surface, said bottom wall being transparent to fluorescent light
means defining a phosphor layer on the inner sides of both said top and bottom walls,
means defining a side-wall glass structure sealingly connecting the top and bottom walls at an enclosing periphery of said walls and within such periphery in a tortuous path, said side wall structure being constructed, arranged to form a discharge path having a surface layer of phosphor thereon, and
means defining two electrodes dispersed in operative relation to said chamber for establishing and maintaining an arc therein, all the said lamp structure, as a whole, being constructed and arranged so that said arc between said electrodes is directed along said discharge path.

5,777,432
HIGH BREAKDOWN FIELD EMISSION DEVICE WITH TAPERED CYLINDRICAL SPACERS
Chenggang Xie, Phoenix, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Apr. 7, 1997, Ser. No. 838,494
Int. Cl.⁶ H01J 1/62

U.S. Cl. 313-495

20 Claims



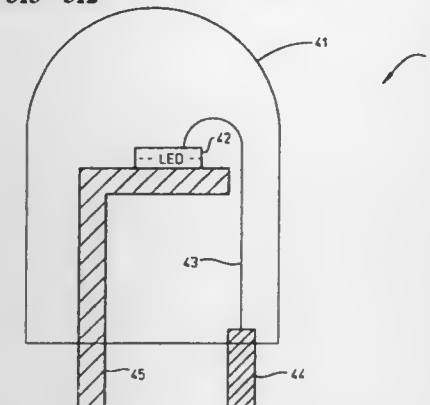
18. A field emission display (300, 400) comprising:
a cathode plate (102);
an anode plate (104) opposing the cathode plate (102) and having a plurality of cathodoluminescent deposits (121), the plurality of cathodoluminescent deposits (121) defining a depression (130);
a conductive layer (119) being disposed on the plurality of cathodoluminescent deposits (121) to define a plurality of shielding lands (135); and
a spacer (106) having first and second opposed edges and extending between the cathode plate (102) and the anode plate (104), the first opposed edge being disposed within the depression (130) and being in abutting engagement with the anode plate (104), the shielding lands (135) being spaced from the spacer (106), the second opposed edge being in abutting engagement with the cathode plate (102).

5,777,433
HIGH REFRACTIVE INDEX PACKAGE MATERIAL AND A LIGHT EMITTING DEVICE ENCAPSULATED WITH SUCH MATERIAL
Steven D. Lester, Palo Alto; Jeffrey N. Miller, Los Altos Hills, and Daniel B. Roltman, Menlo Park, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 11, 1996, Ser. No. 678,276
Int. Cl.⁶ H01J 1/62

U.S. Cl. 313-512

8 Claims



1. A light emitting device, comprising:
(A) a light emitting diode (LED) chip that emits light;
(B) a high refractive index package material that encapsulates the LED chip and is transparent to the light, the package material including
(a) a host material having a refractive index lower than that of the LED chip and being transparent to the light;

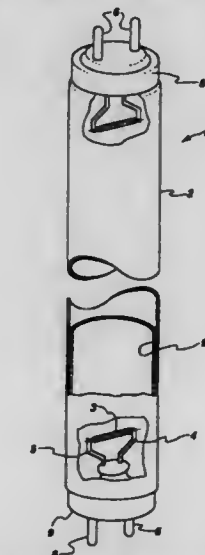
(b) nanoparticles (1) of a material having a refractive index higher than that of the host material, (2) being substantially smaller in size than the wavelength of the light, and (3) being included in the host material at such a density that the refractive index of the package material is higher than that of the host material without decreasing transparency of the package material.

5,777,434
COMPLEXING AGENT CONTROL OF LEACHABLE MERCURY IN FLUORESCENT LAMPS
David Key Dietrich, Schenectady; Donald Franklin Foust, Scotia, and Deborah Ann Haitko, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 3, 1996, Ser. No. 758,329
Int. Cl.⁶ H01J 61/00

U.S. Cl. 313-565

9 Claims



5. A mercury vapor discharge lamp comprising an envelope of light transmitting glass which contains, an inert gas and an amount of elemental mercury, a pair of electrodes for establishing an arc discharge, and an effective amount of a complexing agent selected from the group consisting of sodium gluconate and ethylenediamine tetraacetic acid (EDTA) or a salt thereof, nitriloacetic acid (NTA) and tiron.

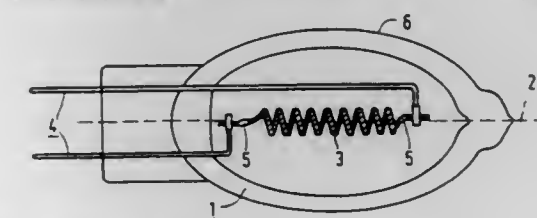
5,777,435
ELECTRIC LAMP HAVING A CURRENT CONDUCTOR WITH A KINKED LONGITUDINAL PORTION
Wilhelmus C. M. Claassen; Wilhelmus A. A. Martens, and Jacobus J. Boonekamp, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1996, Ser. No. 734,007
Claims priority, application European Pat. Off., Oct. 20, 1995, 95202850

U.S. Cl. 313-578

Int. Cl.⁶ H01K 1/50

7 Claims



1. An electric lamp comprising:
a light transmitting lamp vessel which is closed in a vacuumtight manner and which has an axis;

an electric element arranged in the lamp vessel; current conductors connected to the electric element and issuing from the lamp vessel to the exterior, wherein at least one of the current conductors has a kinked longitudinal portion inside the lamp vessel which is a solidified melt of said current conductor.

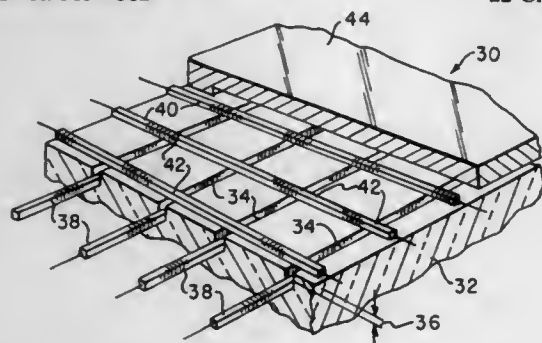
5,777,436
GAS DISCHARGE FLAT-PANEL DISPLAY AND METHOD FOR MAKING THE SAME

Martin P. Lepselter, Summit, N.J., assignor to Spectron Corporation of America, L.L.C., Summit, N.J.
PCT No. PCT/US94/06092, § 371 Date Mar. 11, 1996, § 102(e)
Date Mar. 11, 1996, PCT Pub. No. WO94/28570, PCT Pub. Date Dec. 8, 1994

PCT Filed May 25, 1994, Ser. No. 564,047
Int. Cl.⁶ H01J 17/20

U.S. Cl. 313—582

22 Claims



1. A flat-panel plasma display structure, comprising:
 - a substrate having a substantially planar surface;
 - a first set of conductors and a second set of conductors both being supported on said planar surface;
 - said second set of conductors having a multiplicity of first portions in contact with said planar surface and a multiplicity of second portions crossing over said first set of conductors at an angle thereto and at a preselected distance therefrom, said preselected distance defining a discharge space between said first and second sets of conductors at the crosspoints; and
 - gas in said discharge space, said gas being at substantially atmospheric pressure or above and having a pressure such that the flat-panel plasma display structure is substantially free of implosive forces.

5,777,437
ANNULAR CHAMBER FLASHLAMP INCLUDING A SURROUNDING, PACKED POWDER REFLECTIVE MATERIAL

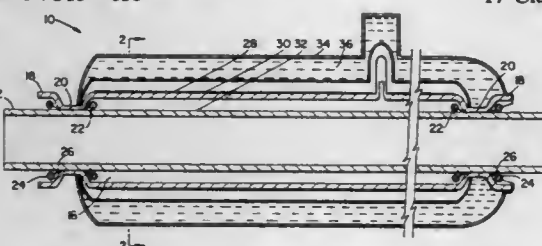
S. Edward Neister, New Durham, N.H., assignor to Lumenx Technologies Inc., New Durham, N.H.

Filed Jul. 1, 1996, Ser. No. 675,298

Int. Cl.⁶ H01J 17/16; 61/30

U.S. Cl. 313—635

17 Claims



1. A flashlamp for providing a source of light excitation in a tunable dye laser, said flashlamp comprising:
 - a pair of coaxially disposed inner and outer tubular members each having different diameters to define therebetween an

annular gas chamber, wherein the tubular members are fused together at a pair of longitudinally spaced positions to provide at each position a substantially gas-tight seal therebetween, a ring electrode positioned at each axial end of the gas chamber, and a connector extending from each of the electrodes for connection of the electrodes with a source of electrical energy;

- b. a reflective material surrounding and in contact with the outer tubular member, the reflective material providing diffuse reflectivity and having a reflectivity of at least about 0.98, wherein the reflective material is a packed powder.

5,777,438
APPARATUS FOR IMPLANTING METAL IONS IN METALS AND CERAMICS

Yasuo Suzuki, Kyoto, Japan, assignor to Nissin Electric Co., Ltd., Kyoto, Japan

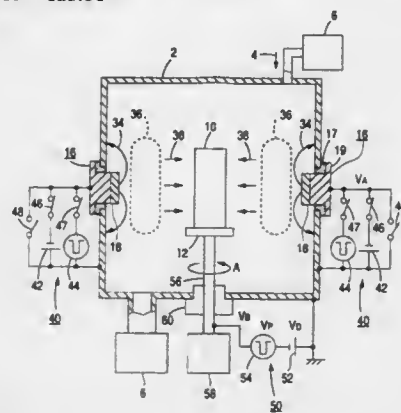
Filed Feb. 13, 1996, Ser. No. 600,524

Claims priority, application Japan, Feb. 15, 1995, 7-051896

Int. Cl.⁶ H05B 37/02

U.S. Cl. 315—111.81

14 Claims



1. A metal ion implanting apparatus comprising:
 - a vacuum vessel also serving as an anode;
 - a holder being disposed in said vacuum vessel for holding a substrate to be processed;
 - a plurality of arc evaporation sources being attached to said vacuum vessel to surround the substrate held by said holder in said vacuum vessel, each of said plurality of arc evaporation sources having a cathode comprising at least one of metal and a metal compound, said cathode evaporating cathode substance by arc discharge between said cathodes and said vacuum vessel also serving as the anode;
 - a plurality of arc power supplies each for supplying an arc discharge voltage between said cathode of said arc evaporation source corresponding to said arc power supply and said vacuum vessel with said cathode as a negative side, wherein each of said arc power supplies is a DC arc power supply for outputting a DC arc discharge voltage;
 - a bias power supply for applying a negative pulse-like bias voltage on a base of a potential of said vacuum vessel to said holder and the substrate held by said holder, wherein said bias power supply includes a DC bias power supply for outputting a negative DC bias voltage and a pulse bias power supply for superposing a negative pulse bias voltage on the negative DC bias voltage.

5,777,439
DETECTION AND PROTECTION CIRCUIT FOR FLUORESCENT LAMPS OPERATING AT FAILURE MODE

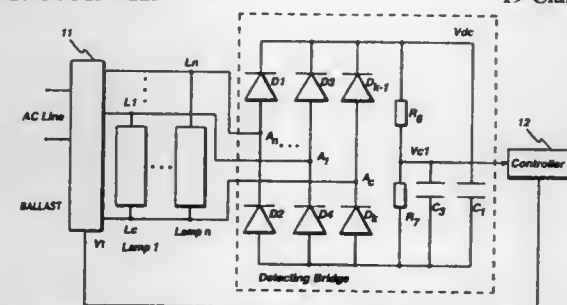
Jenkin P. Hua, Plainsboro, N.J., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed Mar. 7, 1996, Ser. No. 614,773

Int. Cl.⁶ H05B 37/02

U.S. Cl. 315—225

19 Claims



9. A protection circuit for protecting a plurality of fluorescent lamps connected to a ballast, each fluorescent lamp of said plurality of fluorescent lamps having a first and second terminal, said second terminal of each fluorescent lamp being connected to a common voltage, comprising:
 - a detecting bridge connected to said plurality of fluorescent lamps, an output of said detecting bridge varying linearly with a highest voltage across said plurality of fluorescent lamps, said detecting bridge comprising a plurality of pairs of nonlinear elements connected in series, a number of said plurality of pairs of nonlinear elements being equal to a number of said plurality of fluorescent lamps plus one pair, said plurality of pairs of nonlinear elements being connected in parallel, a node between nonlinear elements of all but said one pair of said plurality of pairs of nonlinear elements being connected to said first terminal of a corresponding fluorescent lamp, a node between nonlinear elements of said one pair being connected to said common voltage;

- a timer connected to said output of said detecting bridge;
 - a trigger connected to an output of said timer, said trigger being responsive to an over-voltage condition of a fluorescent lamp operating at failure mode; and
 - a controllable switch connected across said plurality of fluorescent lamps, said controllable switch being controlled by an output of said trigger,
- said controllable switch, when closed, shorting said first terminal of each of said plurality of fluorescent lamps to said common voltage, thereby shorting said ballast, to turn off said plurality of fluorescent lamps.

5,777,440
COMPACT ELECTRODELESS FLUORESCENT A-LINE LAMP

Joseph Christopher Borowiec, Schenectady, and Joseph Darryl Michael, University Hts., both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

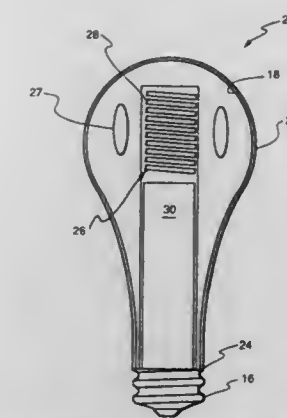
Filed Aug. 28, 1996, Ser. No. 705,098

Int. Cl.⁶ H05B 41/16

U.S. Cl. 315—248

5 Claims

1. A compact fluorescent lamp, comprising:
 - a gas-tight, light-transmissive envelope containing a fill for sustaining an arc discharge which emits ultraviolet radiation when the fill is subjected to an alternating frequency magnetic field, the envelope having a re-entrant cavity formed therein, an excitation coil being situated within the re-entrant cavity for providing the alternating magnetic field when excited by an alternating current energy source, the envelope having an interior phosphor coating for emitting visible radiation when excited by ultraviolet radiation, the envelope having an A-line



configuration comprising a globular upper portion which becomes narrower toward a lower portion, terminating in a narrow end;

- a ballast for electrically connecting the alternating current energy source to the excitation coil and thereby operating the lamp, the ballast being integral with the lamp and contained substantially within the re-entrant cavity; and
- a base connected to the narrow end of the envelope, the base being adapted for connecting the ballast to the alternating current energy source.

5,777,441
MOIRE REDUCING APPARATUS
Masahiro Yoshida, Katano; Katsuhisa Kitada, Mino, and Yoshio Seki, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

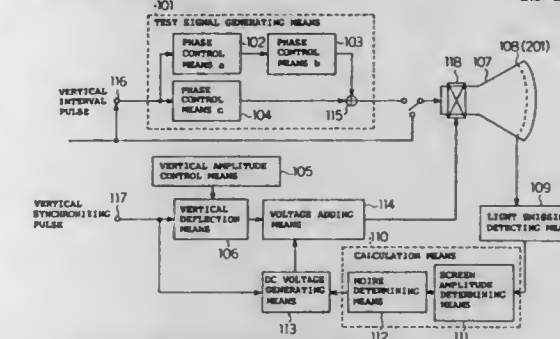
Filed Jul. 10, 1996, Ser. No. 677,939

Claims priority, application Japan, Jul. 10, 1995, 7-198004; May 8, 1996, 8-113601

Int. Cl.⁶ G09G 1/04; H01J 31/26; H04N 17/00; 3/22

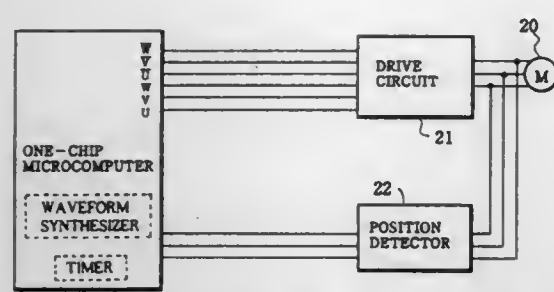
U.S. Cl. 315—371

12 Claims



1. A moire reducing apparatus comprising:
 - test signal generating means for generating a test signal which is synchronized with a vertical interval pulse, and supplying the test signal to a CRT;
 - light emission detecting means for detecting a scanning position of the test signal output by said test signal generating means, at the CRT;
 - calculation means for detecting an actual screen display height from an output of said light emission detecting means, and calculating a shift amount of scanning lines required for reducing moire;
 - DC voltage generating means for generating a DC voltage which is synchronized with a vertical synchronizing signal, based on an output of said calculation means;
 - vertical amplitude control means for supplying a DC voltage for adjusting the screen display height in a vertical direction;
 - vertical deflection means for generating a saw-tooth wave for deflecting electron beams in the vertical direction, by using an output voltage of said vertical amplitude control means and the vertical synchronizing signal; and

motor; and



a microcomputer connected to said position detector and said drive circuit for supplying said drive circuit with pulse width modulated (PWM) signals in order to control rotation of said brushless DC motor through said drive circuit in accordance with the current rotational position of said brushless DC motor detected by said position detector;

wherein said microcomputer compares the current rotational position of said brushless DC motor as detected by said position detector to a predetermined rotation position of said brushless DC motor in which said power signals should be switched, the comparing process by said microcomputer being initiated and terminated by interrupt signals utilizing a timer.

5,777,449 TORQUE RIPPLE REDUCTION USING BACK-EMF FEEDBACK

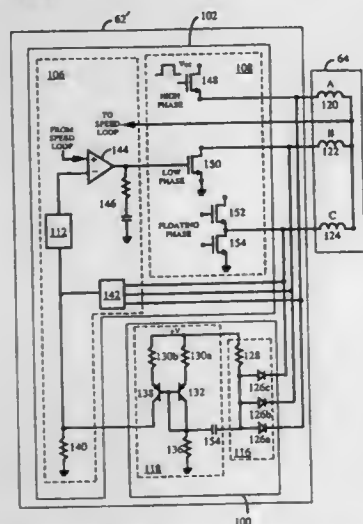
Karl Michael Schlager, Campbell, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 31, 1996, Ser. No. 775,288

Int. Cl.⁶ H02P 6/10

U.S. Cl. 318—459

22 Claims



1. A motor controller that reduces torque ripple in an electric motor, the motor controller comprising:

a torque ripple reducer arranged to receive a back-emf signal from the electric motor, extract a torque ripple signal from the back-emf signal, and output an AC component signal; and a controller arranged to receive the AC component and back-emf signals and output a drive signal suitable for driving the electric motor.

18. A method for reducing the effects of torque ripple in an electric motor, the method comprising:

generating a drive signal suitable for driving the electric motor; driving the electric motor with the drive signal; sampling a back-emf signal generated by the electric motor; extracting a torque ripple signal from the back-emf signal; generating an AC component signal proportional to the torque ripple signal; generating a feedback control signal based on the back-emf and AC component signals; and

modifying the drive signal based on the feedback control signal such that the torque ripple in the motor is reduced.

5,777,450 METHOD AND APPARATUS FOR CONTROL IN POWER FAILURE

Shinichi Kono, and Shigeki Hanyu, both of Minamitsuru-gun, Japan, assignors to Fanuc Ltd., Yamanashi, Japan
PCT No. PCT/JP96/00309, § 371 Date Sep. 17, 1996, § 102(e) Date Sep. 17, 1996, PCT Pub. No. WO96/26471, PCT Pub. Date Aug. 29, 1996

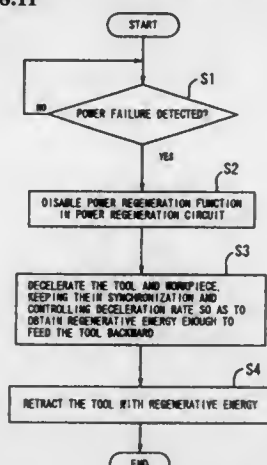
PCT Filed Feb. 8, 1996, Ser. No. 704,601

Claims priority, application Japan, Feb. 12, 1995, 7-32072

Int. Cl.⁶ H02P 3/26; G05B 19/18; G05D 13/00

U.S. Cl. 318—568.11

9 Claims



1. A method of controlling, in a power failure, a machine in which a tool and a workpiece are numerically controlled in synchronization with each other, comprising the steps of:

disabling, in response to detection of a power failure, a power regeneration function in a power regeneration circuit disposed between a main power source and amplifiers for driving a tool drive motor, a workpiece drive motor, and a tool feed motor; issuing a braking control command to decelerate the tool drive motor and the workpiece drive motor at such a deceleration rate that the tool drive motor and the workpiece drive motor will produce regenerative energy necessary for driving the tool feed motor, while maintaining synchronization thereof, the braking control command being produced by a numerical control whose power source is backed up with an uninterruptible power supply system; and

retracting the tool to an area where the tool is not engaged with the workpiece, by driving the tool feed motor with the regenerative energy produced by deceleration of the tool drive motor and the workpiece drive motor.

5,777,451 VEHICLE LONGITUDINAL SPACING CONTROLLER

Masanori Kobayashi, and Taketoshi Kawabe, both of Ageo, Japan, assignors to Nissan Diesel Motor Co., Ltd., Ageo, Japan

Filed Sep. 25, 1996, Ser. No. 719,676

Claims priority, application Japan, Mar. 8, 1996, 8-051829

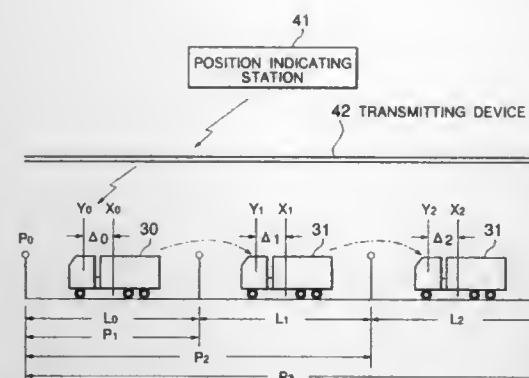
Int. Cl.⁶ G08G 1/00; B60K 31/00

U.S. Cl. 318—587

13 Claims

1. A vehicle longitudinal spacing controller for controlling a travel of a group of vehicles traveling in a line, each of said vehicles having a travel speed varying mechanism for varying a travel speed of said vehicle, said controller comprising:

means for setting a virtual cell for each vehicle allowing a predetermined distance in front of and behind said vehicle,



first transmitting means for transmitting a signal indicative of a virtual cell front end position of a frontmost vehicle in the group to said frontmost vehicle,

means for calculating a virtual cell front end position of a (i+1)th vehicle from said frontmost vehicle, from a virtual cell front end position and a virtual cell of a ith vehicle, where i ranges from 1 to the total number of vehicles in said group, second transmitting means for transmitting a signal indicative of the virtual cell front end position of said (i+1)th vehicle to said (i+1)th vehicle,

means for setting a target position of each vehicle in said virtual cell,

means for detecting a real position of each vehicle in said virtual cell, and

means for controlling said travel speed varying mechanism such that said real position coincides with said target position of each vehicle.

5,777,452 CORRECTOR, APPARATUS, AND A METHOD FOR CONTROLLING THE ELECTROMAGNETIC TORQUE OF AN ASYNCHRONOUS MACHINE

Jean-Luc Thomas, Thomery, France, assignor to Alcatel Alsthom Compagnie Generale D'Electricite, Paris, France
PCT No. PCT/FR96/00317, § 371 Date Nov. 5, 1996, § 102(e) Date Nov. 5, 1996, PCT Pub. No. WO96/28884, PCT Pub. Date Sep. 19, 1996

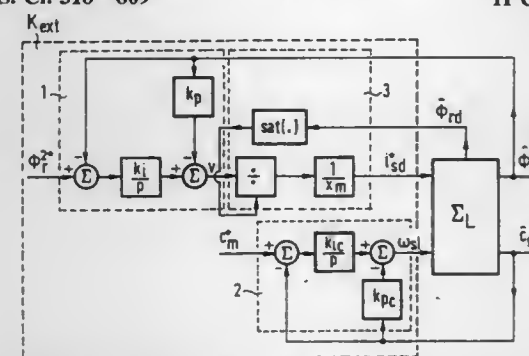
PCT Filed Feb. 29, 1996, Ser. No. 737,166

Claims priority, application France, Mar. 9, 1995, 95 02768

Int. Cl.⁶ H02P 21/00

U.S. Cl. 318—809

11 Claims



1. Apparatus for controlling the electromagnetic torque of an asynchronous machine by regulating magnetic flux Φ and by controlling electromagnetic torque C_m , said apparatus including a corrector K_{ext} characterized by:

a regulator circuit (3) for regulating the rotor magnetic flux Φ , having non-linear control using input/output linearization by static looping, defined by the equation:

$$i_{sd}^* = \frac{1}{x_m} \frac{\Phi_r^{2*}}{\Phi_{rd}}$$

in which: i_{sd}^* is the stator current reference value on the d-axis, Φ_r^{2*} is the reference value for the modulus of the rotor flux, Φ_{rd} is the d-component of the rotor flux, and x_m is the mutual inductance, and in which the output controls the d-component of the stator current i_s ;

a first linear corrector (1) of the proportional, integral type whose output v is the input of said regulator circuit; and

a second linear corrector (2) of the proportional, integral type whose output controls the angular frequency of the rotor currents ω_{r1} .

5,777,453

METHOD AND APPARATUS FOR RECHARGING BATTERIES USING A STEP SHAPED VOLTAGE PULSE

Eisuke Imanaga, Tokyo, Japan, assignor to Kabushiki Kaisha JNT, Tokyo, Japan

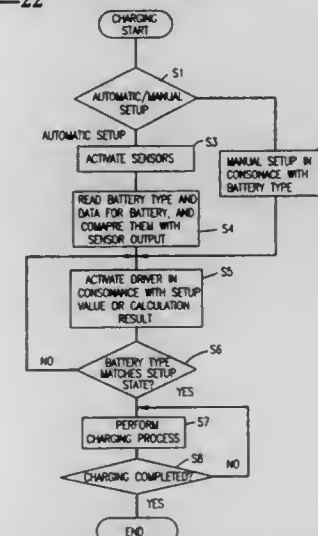
Filed Mar. 27, 1996, Ser. No. 624,864

Claims priority, application Japan, Sep. 26, 1995, 7-270654; Dec. 8, 1995, 7-013968

Int. Cl.⁶ H01M 10/44

U.S. Cl. 320—22

9 Claims



1. A second battery charging method comprising the steps of: applying, to positive and negative terminals of a secondary battery, a voltage pulse having a step shape, whose voltage is reduced as time elapses and in consonance with a characteristic of said secondary battery, and supplying a corresponding current, with said voltage pulse having a pulse height of at least 1.3 times a pulse height of a terminal voltage for said secondary battery;

detecting said terminal voltage of said secondary battery during a pulse halted period and a charging current during a pulse duration;

comparing detected results with standard characteristic data concerning said secondary battery, and making a determination concerning a waveform for said voltage pulse and said pulse duration by employing results obtained from such comparisons;

continuing a charging process in consonance with results obtained by said determination; and

performing rapid charging while preventing occurrence of overcharging, overheating, and memory effect in said secondary battery.

5,777,454

BACK-UP BATTERY MANAGEMENT SYSTEM FOR A DC POWER SUPPLY

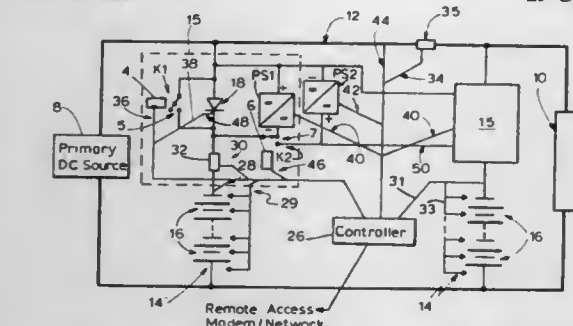
Joseph M. McAndrews, Freeport, N.Y., and Richard H. Jones, Marietta, Ga., assignors to Peco II, Inc., Galion, Ohio

Filed May 29, 1996, Ser. No. 654,835

Int. Cl.⁶ H02J 7/00; 7/04

U.S. Cl. 320—51

29 Claims



1. A battery management system for a battery connected to a load bus wherein the load bus is further connected to a primary DC source, comprising:

variable isolation impedance means having high reverse impedance and variable forward impedance connected in circuit with said battery for electrically isolating said battery from said system load bus without loss of battery back-up capability;

control means coupled to the variable isolation impedance means for controlling the forward impedance of the variable isolation impedance means in dependence upon a sensed condition; and

a shunt and connecting means responsive to said control means for selectively connecting said shunt across said variable impedance means to selectively connect said battery to said load bus.

5,777,455

SWITCH FOR A BATTERY CHARGING SYSTEM

Paul Gary Vickery, and Iain Wallace Waugh, both of Hamilton, New Zealand, assignors to Glorywin International Group Limited

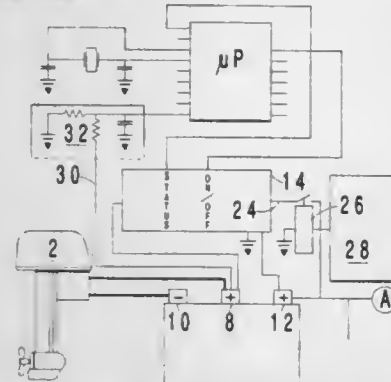
Filed Jan. 16, 1996, Ser. No. 587,371

Claims priority, application New Zealand, Jan. 16, 1995, 270 344

Int. Cl.⁶ H01M 10/46

U.S. Cl. 320—104

14 Claims



1. A switch for a battery charging system for a motorized vehicle including a starter motor, a battery with a CRA part and an AUX part, and a battery charging generator, the switch comprising:

a series connector between the CRA and AUX parts; and

a sensing means which senses at least a state of charge of the CRA part and prioritizes the generator current to the CRA part through the series connector.

**5,777,456
NICAD DEEP CYCLE CHARGING/DISCHARGING SYSTEM**

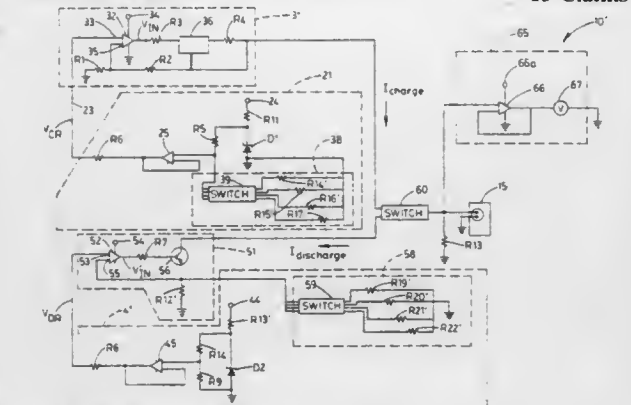
Lynn R. Kern, 1020 N. Sherri St., Ridgecrest, Calif. 93555

Filed Sep. 30, 1996, Ser. No. 730,138

Int. Cl.⁶ H01M 10/44

U.S. Cl. 320—128

15 Claims



1. A charger for a battery comprising:

a current source to receive supply voltage to couple constant current to said battery;

an amplifier to receive reference voltage from a source and feedback voltage from said battery to connect said supply voltage to said current source when said reference voltage is greater than said feedback voltage; and

said current source maintains said constant current to said battery independently of the magnitude of voltage of said battery.

5,777,457

BATTERY CHARGER FOR CHARGING BATTERIES REQUIRING A CONSTANT CURRENT SOURCE ONLY AND THE CONSTANT CURRENT SOURCE FOLLOWED BY CONSTANT VOLTAGE SOURCE

Kyeoung-Su Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

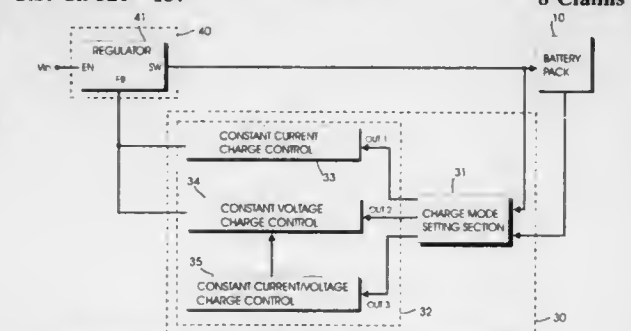
Filed Dec. 5, 1996, Ser. No. 759,226

Claims priority, application Rep. of Korea, Dec. 5, 1995, 1995 46781

Int. Cl.⁶ H01M 10/46

U.S. Cl. 320—137

8 Claims



1. A universal battery recharging circuit, comprising:

a constant current recharging circuit;

a constant voltage recharging circuit;

a voltage supply;

an input terminal for receiving a battery voltage;

a voltage comparative circuit having an output signal;

a controller; and

a regulator, wherein said universal battery recharging circuit can recharge batteries requiring a constant current for recharging, a constant voltage for recharging, or a constant current followed by a constant voltage for recharging, said constant current recharging circuit and said constant voltage recharging circuit both providing feedback to said regulator, said controller having as input signals a battery sensing signal and said

output signal from said voltage comparative circuit, and having as output signals a first output signal, a second output signal, and a third output signal, said first output signal activating said constant current recharging circuit, said second output signal activating said constant voltage recharging circuit, said third output signal activating said voltage comparative circuit.

5,777,458

Patent Not Issued For This Number

5,777,459

INDUCTION ELECTRICAL POWER GENERATING SYSTEM WITH VARIABLE NUMBERS OF POLES AND EXCITATION FREQUENCY

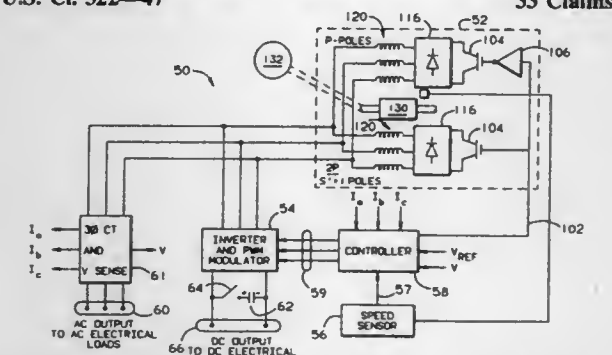
Madan Bansal; Gregory I. Rozman, and Pierre Thollot, all of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 18, 1996, Ser. No. 748,731

Int. Cl.⁶ H02P 9/00

U.S. Cl. 322—47

33 Claims



1. An induction electrical power generation system for generating alternating current varying within a frequency range comprising:

an induction electrical generator for generating the alternating current and having a rotor and a stator, the stator having at least one phase winding for outputting the generated alternating current and a plurality of poles with at least two different numbers of poles within the plurality of poles being selected to generate the alternating current, an exciter winding which is driven by AC excitation which varies in frequency during generation of the alternating current and the rotor operating with slip during the generation of the alternating current, and wherein the rotor is driveably coupled to an external variable speed drive which drives the rotor in a speed range during generation of the alternating current;

an exciter generator coupled to the exciter winding for generating the variable frequency AC excitation;

an exciter generator coupled to the exciter for generating the variable frequency AC excitation;

a sensor for producing a signal which is a function of rotor speed; and

a controller, coupled to the inverter and responsive to the signal, for commanding variation of the excitation frequency as a function of the signal, a selection of the at least two different numbers of poles within the plurality of poles as a function of the rotor speed signal to control generation of the alternating current within the frequency range and a magnitude of excitation current produced by the exciter generator.

5,777,460

VOLTAGE STEP-UP CIRCUIT WITH OUTPUT VOLTAGE REGULATION

Cristiano Calligaro; Piero Malcovati, and Guido Torelli, all of Pavia, Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 292,343, Aug. 17, 1994, abandoned.

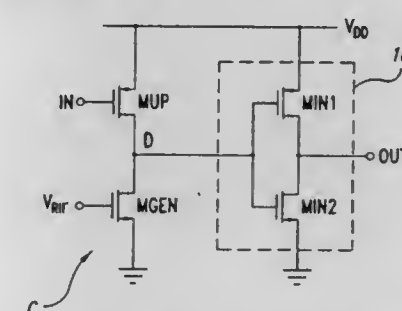
This application Apr. 29, 1997, Ser. No. 846,539

Claims priority, application European Pat. Off., Aug. 18, 1993, 93830353.4

Int. Cl.⁶ G11C 7/00

U.S. Cl. 323—222

22 Claims



1. A voltage circuit that regulates a boosted voltage that is generated from a supply voltage, the supply voltage less than said boosted voltage, said boosted voltage provided between a circuit output terminal and ground, said voltage circuit comprising:

a supply terminal that is coupled to receive said supply voltage;

a voltage divider that is coupled between said supply terminal and ground, said divider having an intermediate terminal;

a control circuit having a first input terminal coupled to said intermediate terminal, a second input terminal coupled to receive a reference voltage, and an output terminal; and

a controllable current-absorption circuit coupled between said circuit output terminal and ground and having a control terminal coupled to said output terminal of said control circuit, said current-absorption circuit operable to draw a current from said circuit output terminal to ground when a voltage on said intermediate terminal is greater than a predetermined value, said current-absorption circuit operable to draw substantially zero current when said voltage on said intermediate terminal is less than said predetermined value.

5,777,461

DC-DC CONVERTER FOR MOBILE APPLICATION

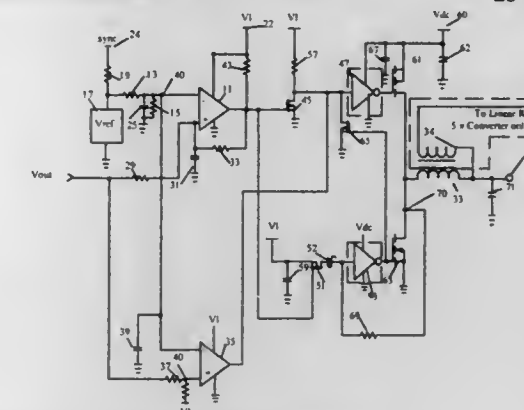
Harold L. Massie, West Linn, and G. Mark Johnston, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 31, 1996, Ser. No. 799,385

Int. Cl.⁶ G05F 1/56

U.S. Cl. 323—282

28 Claims



1. A DC-DC converter circuit comprising:

a. a voltage input terminal;

b. a voltage output terminal;

said metallic center having a circumference composed of a superelastic material;
a plurality of coils surrounding said slideable core means;
said coils having implanting means for positioning said coils within said housing; and
said coils further having a circuitry attachment unit.

5,777,468

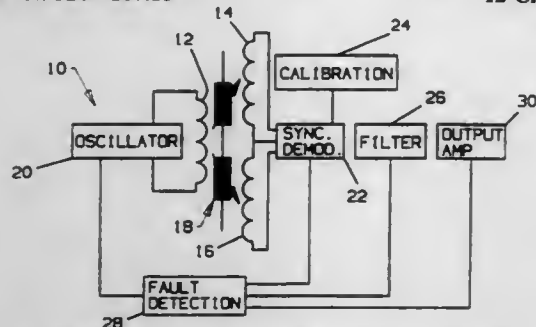
VARIABLE DIFFERENTIAL TRANSFORMER SYSTEM AND METHOD PROVIDING IMPROVED TEMPERATURE STABILITY AND SENSOR FAULT DETECTION APPARATUS

Thomas R. Maher, Plainville, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1996, Ser. No. 769,918

Int. Cl.⁶ G01B 7/14; 7/30; G01R 31/06; G08C 19/08
U.S. Cl. 324—207.18

12 Claims



1. A variable differential transformer system comprising a primary winding and first and second secondary windings interconnected to one another and having a common point therebetween, the primary winding magnetically coupled to the first and second secondary windings to form magnetic loops, a ferromagnetic sensor element movably mounted within the magnetic loops, an AC power source coupled to the primary winding to produce electrical signals in the first and second secondary windings which are dependent upon the position of the sensor element, and conditioning circuitry having an input stage and an output stage coupled to the secondary windings to convert the electrical signals into an output signal, the input stage comprising first and second load resistors each having a first resistance of the same value connected across the secondary windings and having a common point connected to analog ground, and load resistor means having a second, greater resistance value connected between the common point of the first and second secondary windings and analog ground.

5,777,469

METHOD AND APPARATUS FOR DETECTING FLAWS IN CONDUCTIVE MATERIAL

Ronald L. Hockey, and Douglas M. Riechers, both of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

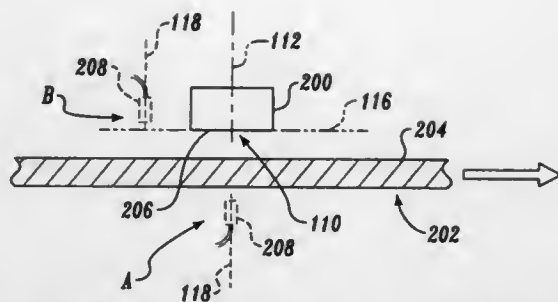
Continuation-in-part of Ser. No. 509,551, Jul. 31, 1995, abandoned. This application Aug. 1, 1996, Ser. No. 691,052

Int. Cl.⁶ G01N 27/82; G01R 33/12

U.S. Cl. 324—240

16 Claims

1. An apparatus for detecting flaws in conductive material having a material surface, the apparatus having a sensing unit having a magnet having a substantially constant magnetic field, the magnet placed adjacent to one side of the conductive material, the magnet having a datum point that is a point located on a line through a center of the magnet and perpendicular to said material surface and on a plane defined by a magnet surface(s) facing the material surface, a sensing coil that is stationary with respect to the magnet wherein the magnet and sensing coil are in relative motion with respect to the conductive material, said sensing coil having a



datum orientation with a longitudinal axis of the sensing coil perpendicular to the material surface, wherein the improvement comprises:

the sensing coil spaced apart from the magnet at a spacing that is less than one magnet dimension, the sensing coil further positioned away from a datum, the position selected from the group consisting of an antidatum position, an antidatum orientation and a combination thereof.

5,777,470

BROADBAND PROBE FOR DETECTING THE MAGNETIC FIELD COMPONENT OF AN ELECTROMAGNETIC FIELD

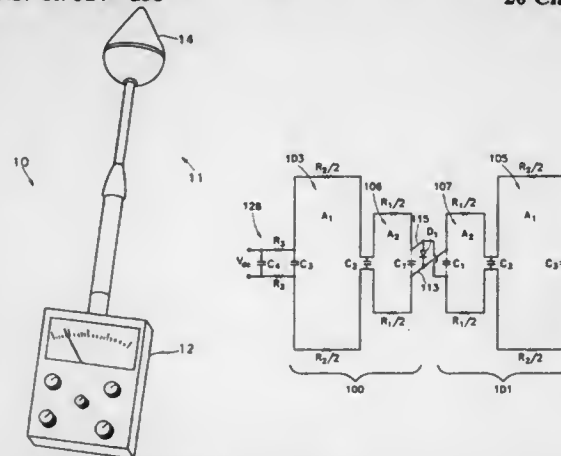
Zdenek (Danny) Adler, West Hempstead, and Refael Popovich, Bellmore, both of N.Y., assignors to General Microwave Corporation, Amityville, N.Y.

Continuation-in-part of Ser. No. 260,337, Jun. 15, 1994, Pat. No. 5,512,824. This application Mar. 8, 1996, Ser. No. 613,051

Int. Cl.⁶ G01R 33/02; 33/025

U.S. Cl. 324—258

20 Claims



1. A magnetic field probe comprising:

first and second symmetrical electrical detecting means mounted in close proximity defining a symmetric detecting pair in a fixed relationship to each other; said detecting means comprising at least two electrical loops having means for capacitively coupling said loops, each loop having a different circumference;

means for electrically coupling said first and second detecting means such that:

a current induced in said first detecting means from exposure of said detecting pair to an electric field is offset by the current induced in said second detecting means from exposure of said detecting pair to the electric field; and

a current induced in said first detecting means from exposure of said detecting pair to a magnetic field is combined with the current induced in said second detecting means from exposure of said detecting pair to the magnetic field; and

lead means for measuring the current induced in said detecting pair from exposure of said detecting pair to an electromagnetic field whereby the measurement is substantially equal to the amount of current induced by the magnetic field portion of the electromagnetic field.

5,777,471

DEVICE FOR DETECTING ANGULAR POSITIONS OF A SHAFT

Kurt Stoll, Esslingen; Michael Streck, Korb, and Klaus Keirad, K ngen, all of Germany, assignors to Festo KG, Esslingen, Germany

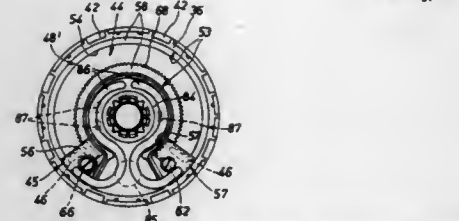
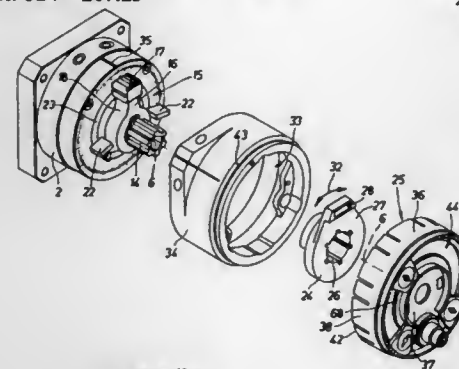
Filed Dec. 12, 1996, Ser. No. 763,930

Claims priority, application Germany, Dec. 12, 1995, 195 46 240.8

Int. Cl.⁶ G01B 7/30

U.S. Cl. 324—207.25

20 Claims



1. A device for detecting the angular position of a shaft able to be driven about its longitudinal axis, comprising an actuating member connected with the shaft, in such a manner as to prevent relative rotation, at a radial distance from said longitudinal axis and at least one sensor for responding to the actuating member, said sensor being arranged by means of a holding member in such a longitudinally adjustable fashion on a circularly arcuate guide forming part of a sensor carrier which is stationary in relation to the shaft when rotating that the sensor may be positioned in different working positions along the arcuate track of movement defined by the actuating member, wherein on the sensor carrier gear tooth means are arranged which comply with the curvature of the circularly arcuate guide and are engaged by a setting gear wheel rotatably mounted on the holding means such that the rotation of the gear wheel results in a shift of the holding means connected with the sensor along the circularly arcuate guide.

5,777,472

RECONSTRUCTION OF IMAGES FROM MR SIGNALS OBTAINED IN THE PRESENCE OF NON-UNIFORM FIELDS

Oliver Heid, Bern, Switzerland, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 6, 1995, Ser. No. 499,036

Claims priority, application Germany, Jul. 6, 1994, 442 38 06.1

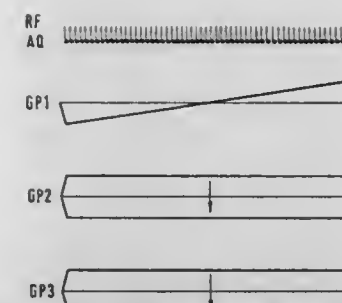
Int. Cl.⁶ G01V 3/00

U.S. Cl. 324—309

10 Claims

1. A method for acquiring magnetic resonance signals for reconstructing an image from said magnetic resonance signals of an examination subject comprising the steps of:

conducting a measurement sequence by generating at least one excitation pulse in an excitation phase which excites nuclear spins in an examination subject, phase-coding said nuclear spins in a coding phase by generating a phase-coding gradient, and reading out a nuclear magnetic resonance signal from said examination subject in a read-out phase the nuclear



magnetic resonance signal being allocated by a preceding phase-coding gradient to a point in a k-space; entering each nuclear magnetic resonance signal acquired in said read-out phase into a k-space matrix; repeating said measurement sequence n times with different phase coding for completely scanning the k-space and thereby completely filling the k-space matrix; and implementing said different phase-coding in the respective measurement sequences by generating a time-extended phase-coding gradient, having an amplitude, and maintaining said time-extended phase-coding gradient activated during a group of chronologically contiguous measurement sequences and changing the amplitude of said time-extended phase-coding gradient from measurement sequence-to-measurement sequence.

5,777,473

MAGNETIC RESONANCE IMAGING APPARATUS

Hiroshi Takai, Tochigi-ken, and Yoshimori Kassai, Otawara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-Ken, Japan

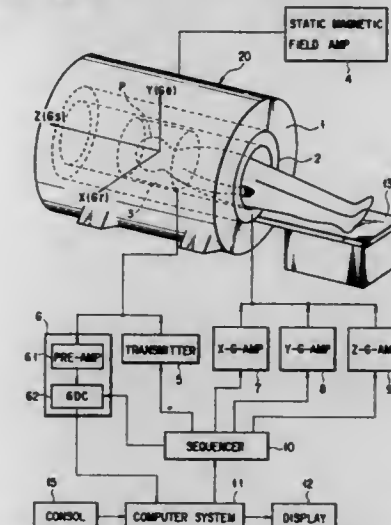
Filed Apr. 25, 1996, Ser. No. 637,550

Claims priority, application Japan, Apr. 28, 1995, 7-106322

Int. Cl.⁶ G01V 3/00

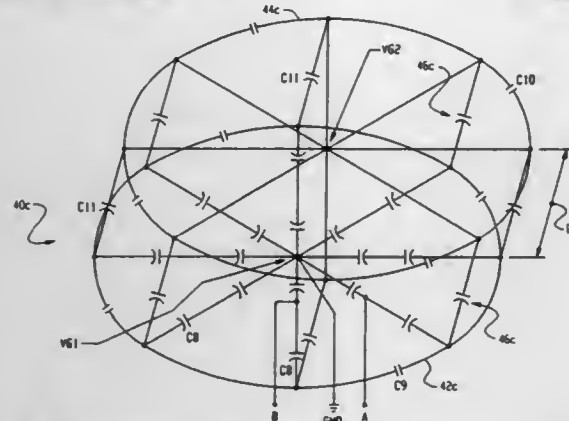
U.S. Cl. 324—309

6 Claims



1. A magnetic resonance imaging apparatus comprising: means for repeatedly exciting magnetization spins by excitation pulses; means for repeatedly generating echoes after each of the excitation pulses; means for acquiring the echoes generated by said generating means, as echo signals; means for reconstructing image data based on the echo signals acquired by said acquiring means; input means for receiving the number of times of excitation the magnetization spins are excited by the excitation pulses; and means for determining the number of echoes generated by one excitation based on the number of times of excitation received by said inputting means.

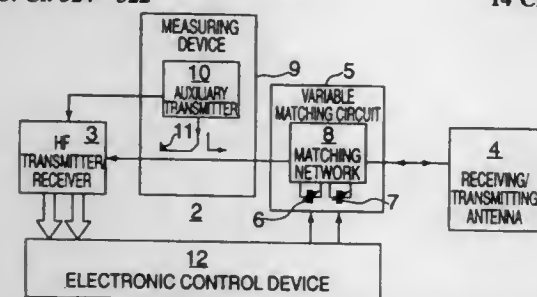
5,777,474
**RADIO-FREQUENCY COIL AND METHOD FOR
 RESONANCE IMAGING/ANALYSIS**
 Ravi Srinivasan, Richmond Heights, Ohio, assignor to
 Advanced Imaging Research, Inc., Cleveland, Ohio
 Filed Nov. 8, 1996, Ser. No. 745,893
 Int. Cl.⁶ G01V 3/00
 U.S. Cl. 324—318 17 Claims



1. A radio-frequency (RF) coil for resonance imaging/analysis, comprising:
 - an RF coil primary sensitive to RF signals produced during resonance imaging/analysis, the RF coil primary having a usable field of view;
 - an RF coil secondary positioned physically adjacent the RF coil primary at a predetermined distance apart and mutually coupled to the RF coil primary at a frequency of the RF signals; and
 - coupling impedances electrically connecting the RF coil primary to the RF coil secondary to regulate an amount of current induced in the RF coil secondary at the frequency to provide screening relative to the RF coil primary, and to form current loops between the RF coil primary and the RF coil secondary serving to redirect at least a substantial portion of flux back into the useable field of view which would otherwise impinge on the RF coil secondary in the absence of the coupling impedances.

5,777,475
**AUTOMATIC IMPEDANCE ADAPTER FOR A H.F.
 EMITTER OR RECEIVER IN A NUCLEAR SPIN
 TOMOGRAPHY INSTALLATION AND PROCESS FOR
 OPERATING THE DEVICE**

Markus Vester, Erlangen, Germany, assignor to Siemens
 Aktiengesellschaft, Munich, Germany
 PCT No. PCT/DE94/01449, § 371 Date Jun. 20, 1996, § 102(e)
 Date Jun. 20, 1996, PCT Pub. No. WO95/17683, PCT Pub.
 Date Jun. 29, 1995
 PCT Filed Dec. 6, 1994, Ser. No. 669,277
 Claims priority, application Germany, Dec. 21, 1993, 43 43
 700.1; Nov. 23, 1994, 44 41 754.3
 Int. Cl.⁶ G01R 33/36
 U.S. Cl. 324—322 14 Claims

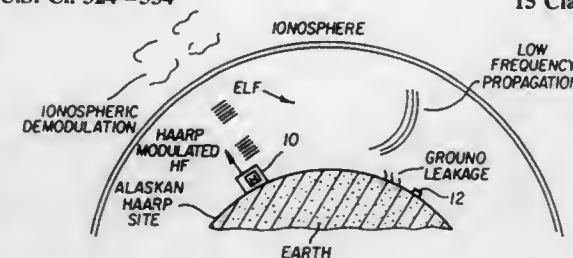


1. In a nuclear spin tomography installation, a device for performing an automatic impedance matching of a radio frequency

apparatus to a coupled antenna via a variable matching circuit including a matching network coupled to a plurality of adjustable actuators, said device comprising:

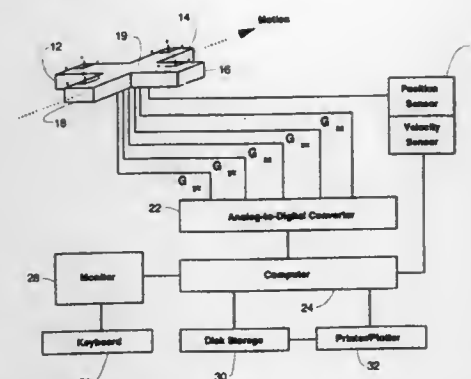
- means for detecting a reflection factor at an input of the variable matching circuit, wherein the matching network comprises a linear four-port network, a first port of said matching network corresponding to an input of the matching network, a second port of said matching network corresponding to an output of the matching network, a third port of said matching network corresponding to a first connection-point of the plurality of actuators, and a fourth port of said matching network corresponding to a second connection point of the plurality of actuators; and
- control means, coupled to the means for detecting, for calculating an antenna reflection factor on the basis of the detected reflection factor and for adjusting a plurality of setting points corresponding to the plurality of actuators, the control means comprising:
 - a calculating unit for calculating:
 - the antenna reflection factor on the basis of the detected reflection factor, and
 - the plurality of setting points of the actuators, the plurality of setting points being calculated so as to reduce the reflection factor at the input of the variable matching circuit substantially to zero;
 - a first memory unit for storing an actuating characteristic of each actuator in accordance with a relationship existing between a setting point of each actuator and an impedance of each actuator; and
 - a second memory unit for storing electrical characteristics of the matching network as a four-port matrix.

5,777,476
**GROUND GLOBAL TOMOGRAPHY (CGT) USING
 MODULATION OF THE IONOSPHERIC ELECTROJET**
 Konstantinos Papadopoulos, 3705 Raymond St., Chevy Chase,
 Md. 20815
 Filed Dec. 8, 1995, Ser. No. 569,774
 Int. Cl.⁶ G01V 3/08; 3/12
 U.S. Cl. 324—334 15 Claims



1. An apparatus comprising:
 - transmitting means for transmitting a signal into the ionosphere of the Earth, wherein the transmitted signal generates heating of ionospheric electrons to cause current in an overhead electrojet to be modulated, thereby injecting an EM signal into the Earth-ionosphere waveguide;
 - sensing means for measuring vector values of at least one of electric and magnetic fields affected by the EM signal in an area of the earth to be surveyed; and
 - processing means for processing the vector values of the electric and magnetic fields measured by the sensing means in order to generate a map of the subsurface physical properties of the surveyed area.

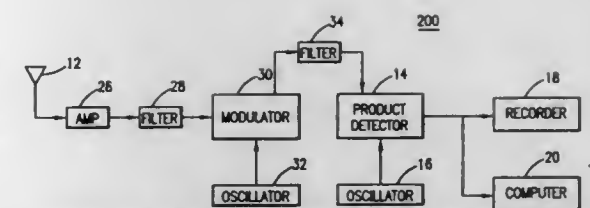
5,777,477
**METHOD OF MAGNETIC SOURCE LOCALIZATION
 USING GRADIENT TENSOR COMPONENTS AND RATE
 TENSOR COMPONENTS**
 William M. Wynn, Panama City, Fla., assignor to The United
 States of America as represented by the Secretary of the
 Navy, Washington, D.C.
 Filed Jun. 3, 1996, Ser. No. 668,453
 Int. Cl.⁶ G01V 3/40; 3/165
 U.S. Cl. 342—345 5 Claims



1. A method for analyzing the signals from a moving tensor magnetic gradiometer to determine the direction, therefrom to a magnetic source, comprising the steps of:
 - converting a series of analog measurements from said moving tensor magnetic gradiometer to a corresponding series of digital values;
 - using said digital values to construct a complete gradient tensor matrix;
 - computing mathematical derivatives of said gradient tensor matrix to produce a gradient-rate tensor matrix;
 - inverting said gradient tensor matrix to produce a first plurality of vector values indicative of a bearing from said moving tensor magnetic gradiometer to said magnetic source, wherein data indicative of range from said moving tensor magnetic gradiometer to said magnetic source is implicit in said first plurality of vector values;
 - inverting said gradient-rate tensor matrix based on a direction of motion of said moving tensor magnetic gradiometer to produce a second plurality of vector values indicative of a bearing from said moving tensor magnetic gradiometer to said magnetic source, wherein data indicative of range from said moving tensor magnetic gradiometer to said magnetic source is implicit in said second plurality of vector values; and
 - correlating said first plurality of vector values with said second plurality of vector values, wherein a highest correlation therebetween identifies one vector value indicative of a bearing and range from said moving tensor magnetic gradiometer to said magnetic source.

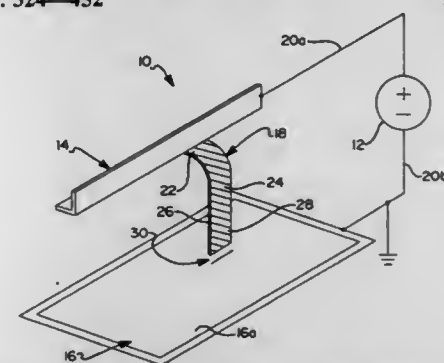
5,777,478
**PASSIVE GEOPHYSICAL PROSPECTING APPARATUS
 AND METHOD BASED UPON DETECTION OF
 DISCONTINUITIES ASSOCIATED WITH EXTREMELY
 LOW FREQUENCY ELECTROMAGNETIC FIELDS**
 John R. Jackson, 1403 Blalock 7, Houston, Tex. 77055, assignor
 to John R. Jackson, and Andres M. Arismendi, Jr., both of
 Spring, Tex.
 Filed Aug. 27, 1996, Ser. No. 703,485
 Int. Cl.⁶ G01V 3/12; 3/40
 U.S. Cl. 324—348 6 Claims

1. An apparatus for passive geophysical prospecting based upon detection of discontinuities associated with low frequency electromagnetic fields, the apparatus comprising:
 - an antenna to pick up an extremely low frequency signal emanating from the Earth's surface, wherein the signal contains a range of frequencies and wherein each of the frequencies



- contained in the signal corresponds to a certain depth in the Earth and wherein the antenna generates a received signal corresponding to the signal emanating from the Earth's surface;
- an amplifier and a first filter which in combination amplify and filter the received signal and generate an amplified, filtered signal;
- a modulator for modulating the amplified, filtered signal onto a carrier wave and generating a modulated signal having the carrier wave, an upper side band and a lower sideband;
- a second filter for eliminating one of the sidebands;
- an oscillator which generates a tuning frequency, wherein the oscillator is capable of generating and sweeping through the frequencies contained in the remaining sideband; and
- a product detector which receives the remaining sideband and multiplies it with the tuning frequency generated by the oscillator generating a tuned signal, the tuned signal containing information regarding subterranean geologic formations at a certain depth corresponding to the tuning frequency.

5,777,479
LIGHTING TEST METHOD AND APPARATUS
 Brian P. Kuhlman, Long Beach, Calif., assignor to McDonnell
 Douglas Corporation, Huntington Beach, Calif.
 Filed Oct. 29, 1996, Ser. No. 741,379
 Int. Cl.⁶ G01N 27/60
 U.S. Cl. 324—452 18 Claims



18. A method of simulating a lightning strike, comprising the steps of:
 - generating a high current test charge using an electrode responsive to said test charge to transmit said test charge;
 - using an ionizing element having a paper substrate and an ionizing paint deposited thereon, said paper substrate being electrically coupled to said electrode, for receiving said test charge and transmitting said test charge to a test specimen; and
 - using a test specimen spaced apart from a distal end of said ionizing element to receive said test charge, wherein said test charge causes said distal end of said ionizing element to be repelled away from said test specimen as said test charge is applied to said test specimen while simulating a lightning strike on said test specimen.

5,777,480

CONNECTOR CONDUCTION TESTER, AND TERMINAL LOCKING METHOD FOR CONNECTOR CONDUCTION TEST

Yuji Hatagishi; Toshihiko Yamamoto; Kimihiro Abe, and Toshiaki Okabe, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

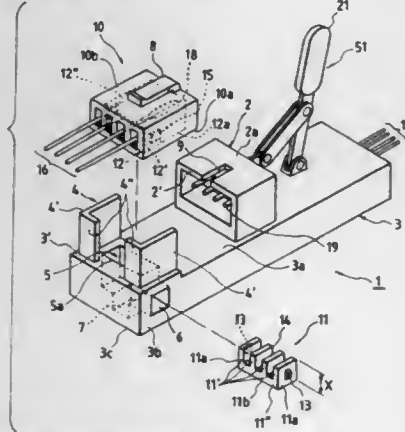
Filed Jul. 3, 1996, Ser. No. 675,051

Claims priority, application Japan, Jul. 6, 1995, 7-171045

Int. Cl.⁶ G01R 31/04

U.S. Cl. 324—538

4 Claims



1. A connector conduction tester, comprising:
- a stand frame;
 - a connector holding section, for holding a connector having terminals, arranged on said stand frame;
 - a conduction testing section arranged on said stand frame, said conduction testing section having testing pins;
 - an operation section for moving said conducting testing section towards said connector holding section to abut the testing pins against the terminals in the connector; and
 - a spacer pushing member, wherein said stand frame has a spacer supplying hole located below said connector holding section and in alignment with a spacer inserting hole provided in the connector and wherein said spacer pushing member is used to push a spacer through said spacer supplying hole and into said spacer inserting hole.

5,777,481

ICE DETECTION USING RADIOMETERS

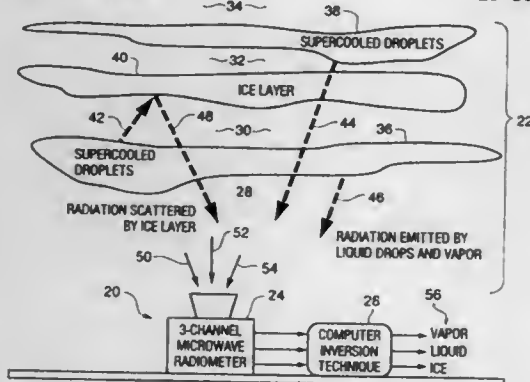
Jothiram Vivekanandan, Boulder, Colo., assignor to University Corporation for Atmospheric Research, Boulder, Colo.

Filed Apr. 1, 1996, Ser. No. 626,358

Int. Cl.⁶ G01W 1/02

U.S. Cl. 324—640

25 Claims



1. A microwave radiometer system for use in measuring atmospheric water content, comprising:
- means for passively detecting an intensity of atmospheric radiation in a plurality of frequency bands, and for providing signals representative of said intensity in each band;

means responsive to receipt of said signals for converting said signals to brightness temperature values corresponding to said plurality of bands;

means for simultaneously processing said brightness temperature values to produce data indicative of atmospheric water content including water vapor, cloud water, and ice.

5,777,482

CIRCUIT ARRANGEMENT AND METHOD FOR MEASURING A DIFFERENCE IN CAPACITANCE BETWEEN A FIRST CAPACITANCE C₁ AND A SECOND CAPACITANCE C₂

Reinhard Tielert, Winnweiler, and Andreas Hildebrandt, Speyer, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

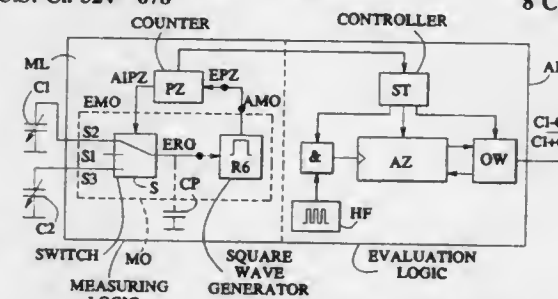
Filed Jul. 3, 1996, Ser. No. 675,590

Claims priority, application Germany, Jul. 4, 1995, 195 24 387.0

Int. Cl.⁶ G01R 27/26

U.S. Cl. 324—678

8 Claims



1. A circuit arrangement for measuring a difference in capacitance between a first capacitance and a second capacitance, comprising:
- a switch unit that, dependent on a switch position of the switch unit, is connected to the first capacitance, the second capacitance or to neither of the first and second capacitances, said switch unit being controlled by a period counter via a first output of the period counter;
 - a square-wave generator connected to the switch unit, said square-wave generator supplying a square-wave signal having a frequency dependent on a capacitance of the first or second capacitor that is selected by the switch unit;
 - an input of the period counter being coupled to an output of the measuring oscillator;
 - the plurality of square-wave signals supplied by the measuring oscillator in a sub-cycle of N clocks of a measuring cycle being made available via a second output of the period counter; and
 - an evaluation logic coupled to the second output of the period counter for calculating a difference in capacitance between the first capacitance and the second capacitance, whereby a value is allocated to a time duration of the respective sub-cycle, the value being proportional to the time duration, the difference in capacitance being determined from said value.

5,777,483

SENSING DEVICE TO SENSE CONTAMINANTS IN WATER

David F. Bailey, Riverview, Fla., assignor to Jack Baxter, Marco Island, Fla.

Filed May 29, 1996, Ser. No. 654,639

Int. Cl.⁶ G01R 27/26

U.S. Cl. 324—686

6 Claims

1. A sensing device to detect a contaminant to generate a contaminant detection signal in response thereto, said sensing device comprises a sensing means and a detection signal generator means mounted on the front surface and the rear surface respectively of a substrate panel and electrically coupled by plate through

5,777,485

PROBE METHOD AND APPARATUS WITH IMPROVED PROBE CONTACT

Hideaki Tanaka, Nirasaki; Shinji Akaike, Kofu, and Yoshihito Marumo, Yamanashi-ken, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

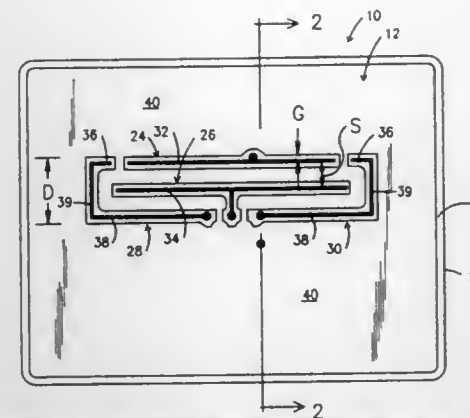
Filed Mar. 19, 1996, Ser. No. 617,551

Claims priority, application Japan, Mar. 20, 1995, 7-087475; Aug. 2, 1995, 7-216595; Jan. 18, 1996, 8-024586

Int. Cl.⁶ G01R 1/06

U.S. Cl. 324—757

8 Claims



holes formed in said substrate panel, said sensing means comprises an array of capacitive members including a first, second, third and fourth capacitive members, the separation between adjacent capacitive members at least three times the gap between a ground and each said capacitive member, the vertical distance between the upper most capacitive surface and the lower most capacitive surface determines the minimum thickness of the contaminant requirement to generate said contaminant detection signal, said first capacitive member and said second capacitive member each comprises a substantially horizontal flat capacitive element disposed in substantially parallel relationship relative to each other with said second capacitive member having a greater surface area than said first capacitive member, said third capacitive member and said fourth capacitive member each comprises an upper substantially horizontal flat capacitive element and a lower substantially vertical flat capacitive element extending therebetween, said upper and lower substantially horizontal capacitive elements are substantially parallel to said substantially horizontal flat capacitive elements and said intermediate substantially vertical flat capacitive elements are inclined relative to said substantial horizontal flat capacitive elements and said upper and lower substantially horizontal flat capacitive element.

5,777,484

DEVICE FOR TESTING INTEGRATED CIRCUIT CHIPS DURING VIBRATION

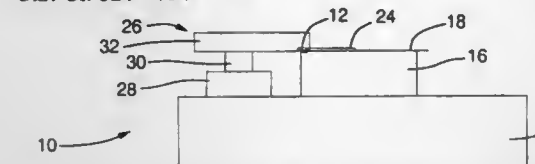
Blake F. Woith, Santa Ana; Haim Feigenbaum, Irvine, and John Steven Szalay, Corona Del Mar, all of Calif., assignors to Packard Hughes Interconnect Company, Irvine, Calif.

Filed Sep. 30, 1996, Ser. No. 720,589

Int. Cl.⁶ G01R 31/02

U.S. Cl. 324—754

5 Claims



1. A testing apparatus for testing integrated circuit chips during vibration comprising:
- a vibration fixture base constructed and arranged to be vibrated vertically and horizontally;
 - a holding fixture mounted on the base for supporting a flexible circuit having electrical traces whose ends terminate in raised contact features, a clamp for securing the flexible circuit to position the raised contact features, a holder and clamp unit for holding a plurality of integrated circuit chips and clamping the chips against the raised contact features of the flexible circuit with predetermined pressure to make electrical contact between contact pads on the integrated circuit chips and the raised contact features, the holder and clamp unit being capable of being raised, lowered and rotated, and a compressible pad carried by the fixture and located underneath the raised contact feature.

5,777,486

ELECTROMIGRATION TEST PATTERN SIMULATING SEMICONDUCTOR COMPONENTS

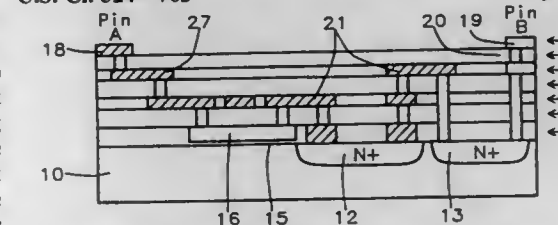
Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corporation, Taiwan

Division of Ser. No. 317,017, Oct. 3, 1994, abandoned. This application Dec. 30, 1996, Ser. No. 777,119

Int. Cl.⁶ G01R 1/04

U.S. Cl. 324—763

9 Claims



1. A method of predicting electromigration failures in a multi-layer semiconductor device, the method comprising: providing a substrate;

providing on the substrate a test pattern, the test pattern comprising first, second and third test pattern elements connected in series between a first test pin and a second test pin, the first test pin connected to a first contact of the first test pattern element, a second contact of the first test pattern element connected to a first contact of the second test pattern element, a second contact of the second test pattern element connected to a first contact of the third test pattern element, a second contact of the third test pattern element connected to the second test pin, the test pattern also including at least one intermediate test pin coupled to the test pattern between the first and second test pins;

applying a test current to the test pattern by applying a test voltage between the first and second test pins until the test pattern fails; and

probing the test pattern to identify which of the first, second and third test pattern elements failed under the test voltage.

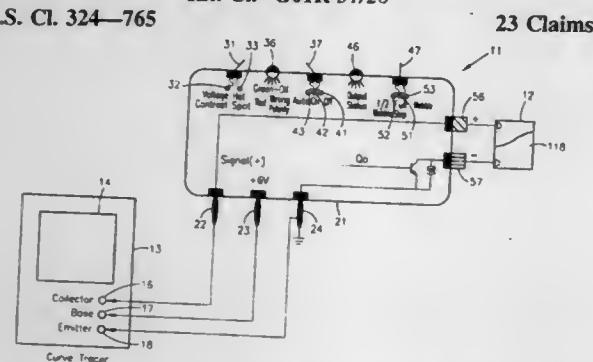
5,777,487
METHOD FOR DETECTING FAILURES IN ELECTRIC CIRCUITS AND TESTER, LIQUID CRYSTAL FOR USE THEREWITH

David L. Burgess, 470 Laurel Ave., Half Moon Bay, Calif. 94019, and Orlin D. Trapp, 51 Hillbrook Dr., Portola Valley, Calif. 94028

Filed May 2, 1996, Ser. No. 641,958

Int. Cl.⁶ G01R 31/26

U.S. Cl. 324—765



1. A method for detecting a failure in an electronic device having an electric circuit therein comprising coating the electric circuit with a liquid crystal having a transition temperature between nematic and isotropic phases, applying a voltage across the electric circuit so that the temperature of the liquid crystal at the failure approximates the transition temperature of the liquid crystal and cycling the voltage being applied across the electric circuit between a first nonzero voltage which causes the liquid crystal at the failure to have a temperature that is greater than the transition temperature and a second nonzero voltage which causes the liquid crystal at the failure to have a temperature that is less than the transition temperature whereby said cycling of the voltage reduces transient optical effects in the liquid crystal which have an appearance similar to the isotropic phase of the liquid crystal.

5,777,488
INTEGRATED CIRCUIT I/O NODE USEABLE FOR CONFIGURATION INPUT AT RESET AND NORMAL OUTPUT AT OTHER TIMES

Stephen F. Dryer, Los Altos, and Rong-Hui Hu, Fremont, both of Calif., assignors to Seq Technology, Inc., Fremont, Calif.

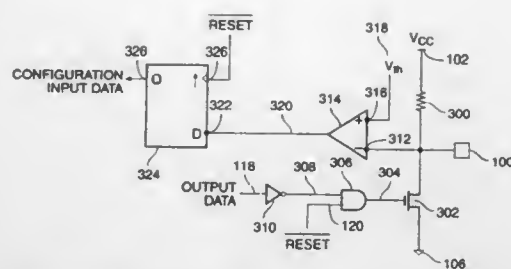
Filed Apr. 19, 1996, Ser. No. 634,879

Int. Cl.⁶ H03K 19/173

U.S. Cl. 326—38

4 Claims

1. Apparatus comprising:
an on-chip circuit integrated onto a semiconductor wafer, said circuit comprising a node disposed for coupling to an external pin, said node coupled to a driving circuit, said driving circuit



including a transistor coupled between said node and a reference voltage and a logic gate coupled to a control input for said transistor, said logic gate being coupled to receive said reset signal and to receive a data signal, wherein said driving circuit is coupled to a source of a reset signal, said node is coupled to a memory, and said memory is coupled to said source of a reset signal.

5,777,489
FIELD PROGRAMMABLE GATE ARRAY WITH INTEGRATED DEBUGGING FACILITIES

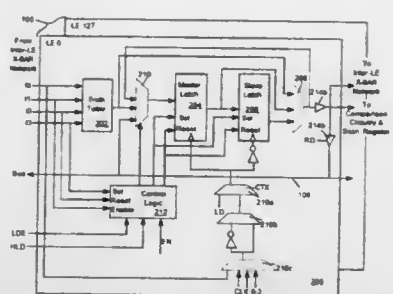
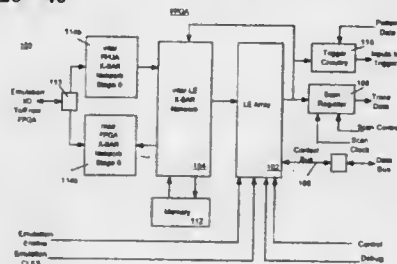
Jean Barbier, Chatillon; Olivier LePape, Paris, and Frederic Reblewski, Les Molières, all of France, assignors to Mentor Graphics Corporation, Wilsonville, Oreg.

Filed Oct. 13, 1995, Ser. No. 542,838

Int. Cl.⁶ H03K 19/177

U.S. Cl. 326—40

18 Claims



1. A single integrated circuit comprising
a plurality of logic elements (LEs) for generating a plurality of output signals in response to a plurality of input signals correspondingly applied to the LEs, each of the LEs being equipped to hold constant the LE's output signal on demand;
a context bus coupled to the LEs for outputting individual signal state values of the LEs out of the integrated circuit, and for initializing the LEs with individual signal state values provided to the integrated circuit while the output signals of the LEs are being held constant; and
read/write control circuitry coupled to the LEs and the context bus for controlling said outputting of individual signal state values of the LEs and said initializing of the LEs with individual signal state values.

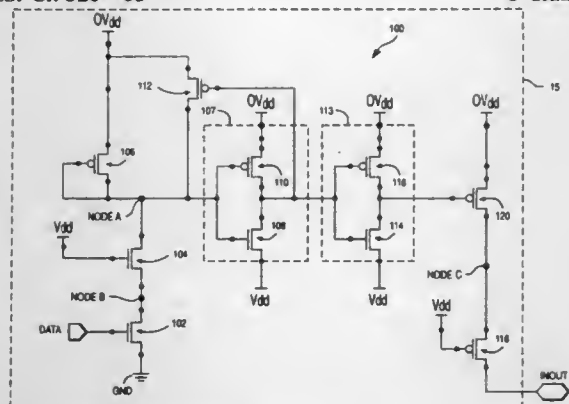
5,777,490
CIRCUITRY AND METHOD FOR TRANSLATING VOLTAGES
Moises Cases, and Fabb Hinedi, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1996, Ser. No. 757,978

Int. Cl.⁶ H03K 19/094; 19/0185

U.S. Cl. 326—68

8 Claims



1. Circuitry, comprising:
first semiconductor circuitry for receiving a first signal having a first voltage between a voltage A and a voltage B;
second semiconductor circuitry integral with said first semiconductor circuitry for outputting a second signal having a second voltage between a voltage C and a voltage D in response to said first signal, wherein C is greater than A, and D is greater than B; and
third semiconductor circuitry coupled to said second semiconductor circuitry for outputting a third signal having either a tri-state condition or a third voltage in response to said second signal.

5,777,491
HIGH-PERFORMANCE DIFFERENTIAL CASCODE VOLTAGE SWITCH WITH PASS GATE LOGIC ELEMENTS
Wei Hwang, Armonk, N.Y., and Fang-Shi Lai, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

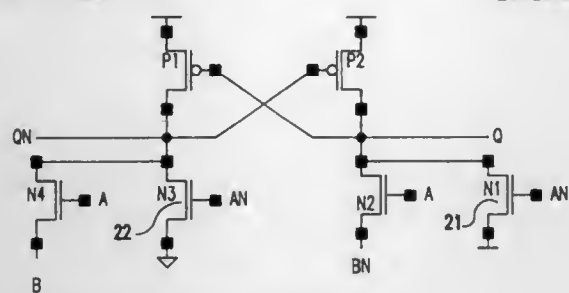
Continuation of Ser. No. 414,069, Mar. 31, 1995, abandoned.

This application Jun. 10, 1996, Ser. No. 660,836

Int. Cl.⁶ H03K 19/0948

U.S. Cl. 326—113

20 Claims



1. A dual rail logic circuit comprising
a symmetrical pair of logic trees comprising a first logic tree and a second logic tree, both said first logic tree and said second logic tree comprising pass gates of equal stack height, said symmetrical pair of logic trees including input means for deriving any of the logic functions including AND, OR, NAND, NOR, XOR and XNOR from the combined function of said first logic tree and said second logic tree, wherein said first and second logic trees each include two transistors, each of said two transistors having a control terminal and first and second conduction terminals, said first conduction terminal

of each of said two transistors being connected to an output node of said dual rail logic circuit, and wherein said input means includes said control terminals and said second conduction terminals of said first and second transistors, said control terminals of said first and second transistors being connected to receive true and complement signals corresponding to a first logic variable, respectively, and wherein said second conduction terminal of said first transistor of said first and second logic trees may be selectively connected to receive true and complement signals corresponding to a second logic variable or logical combination of further logic variables, respectively, and said second conduction terminal of said second transistor of said first and second logic trees being respectively connected to a power supply voltage and a reference voltage, whereby said first and second transistors of said first logic tree provide a NAND function and said first and second transistors of said second logic tree provide an AND function, said second conduction terminal of said first transistor of said first and second logic trees may be selectively connected to a reference voltage and a power supply voltage, respectively, and said second conduction terminal of said second transistor of said first and second logic trees being respectively connected to receive complement and true signals corresponding to a second logic variable or logical combination of further logic variables, whereby said first and second transistors of said first logic tree provide a NOR function and said first and second transistors of said second logic tree provide an OR function, and said second conduction terminal of said first transistor of said first and second logic trees may be selectively connected to receive true and complement signals corresponding to a second logic variable or logical combination of further logic variables, whereby said first and second transistors of said first logic tree provide an XNOR function and said first and second transistors of said second logic tree provide an XOR function.

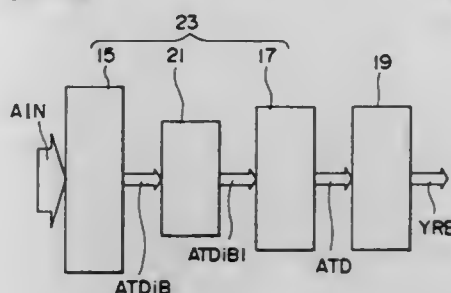
5,777,492
ADDRESS TRANSITION DETECTOR CIRCUIT
Junichi Suyama, and Kazukiyo Fukudome, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1996, Ser. No. 664,546

Int. Cl.⁶ H03K 5/19

U.S. Cl. 327—18

9 Claims



1. An ATD circuit, comprising:
(a) first circuit means for generating a first output signal having a first pulse width, in response to a change in an external address signal and generating, when the external address signal includes a first sawtooth signal, a second sawtooth output signal having a peak value smaller than a peak value of the first sawtooth signal;
(b) a pulse width amplifier circuit for amplifying the first pulse width or a pulse width of the second sawtooth output signal generated by said first circuit means, said pulse width ampli-

fier circuit generating a third output signal having a second pulse width corresponding to the first pulse width when the first output signal is provided thereto, and generating a fourth output signal having a third pulse width when the second sawtooth output signal is provided thereto; and
(c) second circuit means for receiving the third output signal or the fourth output signal generated by said pulse width amplifier circuit and waveform-shaping the third output signal or the fourth output signal so as to generate an ATD signal therefrom.

5,777,493
DRIVE SIGNAL GENERATING CIRCUIT FOR SENSE AMPLIFIER

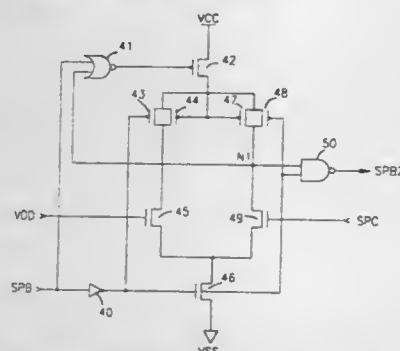
Kye Hyung Lee, Seoul, and Jin Hong Ahn, Kyungki-Do, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 28, 1995, Ser. No. 581,355

Claims priority, application Rep. of Korea, Dec. 31, 1994, 40472/1994

Int. Cl.⁶ H03K 5/24
U.S. Cl. 327—52

4 Claims



1. A drive signal generating circuit for a sense amplifier comprising:

an inverter for inverting control signal outputted from a sense amplifier control circuit;

a NOR gate having one end to which the control signal is applied;

a first PMOS transistor having a gate coupled to an output of said NOR gate, and having a source to which voltage applied from the outside is applied;

a second PMOS transistor having a source to which a drain of the first PMOS transistor is connected, and having a gate to which signal outputted from the inverter is applied;

a third PMOS transistor having a source to which the source of the second PMOS transistor is connected, having a drain to which a drain of the second PMOS transistor is connected, and having a gate to which the drain of the second PMOS transistor is connected;

a first NMOS transistor having a drain connected to the drains of said second and third PMOS transistors, and having a gate coupled for receiving a voltage outputted from a voltage generator;

a second NMOS transistor having a drain to which a source of the first NMOS transistor is connected, having a gate to which the signal outputted from the inverter is applied, and having a source to which ground voltage V_{SS} is applied;

a fourth PMOS transistor having a source to which the drain of the first PMOS transistor is connected, and having a gate to which the gate of the third PMOS transistor is connected;

a fifth PMOS transistor having a source to which the source of the fourth PMOS transistor is connected, having a drain to which a drain of the fourth PMOS transistor is connected, and having a gate to which the signal outputted from the inverter is applied;

a third NMOS transistor having a drain to which each drain of the fourth and fifth PMOS transistors and another end of said NOR gate are connected, said third NMOS transistor having a

gate coupled for receiving a signal from the sense amplifier, and having a source to which the drain of the second NMOS transistor is connected; and

a NAND gate having one end coupled to the drains of said fourth and fifth PMOS transistors and said third NMOS transistor, and having the other end to which the signal outputted from the inverter is applied.

5,777,494
SIGNAL DISCRIMINATION CIRCUIT FOR UNKNOWN SIGNAL AMPLITUDE AND DISTORTION

Toshiro Takahashi, Kohnosu, Japan, assignor to Advantest Corp., Tokyo, Japan

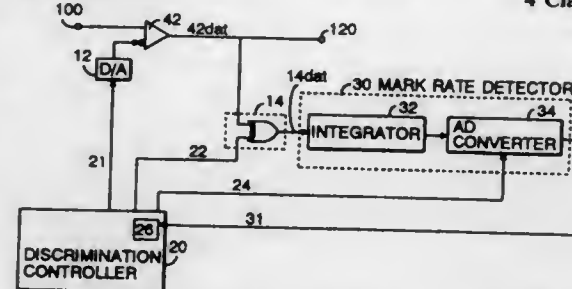
Filed Apr. 4, 1996, Ser. No. 627,643

Claims priority, application Japan, Apr. 4, 1995, 7-102957

Int. Cl.⁶ G01R 31/28; H03K 5/153

U.S. Cl. 327—72

4 Claims



1. A discrimination circuit for discriminating a signal (100) to be tested which has an unknown voltage amplitude by applying a threshold level voltage to a comparator from a DA converter, said discrimination circuit comprising:

mark detection means for measuring a mark rate of said signal (100) to be tested for a unit time by applying said threshold level voltage which has a wider voltage range than said signal (100) to said comparator from said DA converter; and

discrimination control means for specifying an average low level voltage of said signal (100) which shows the highest mark rate when said threshold level voltage is in a low voltage range and an average high level voltage of said signal (100) which shows the highest mark rate when said threshold level voltage is in a high voltage range and for calculating an optimum threshold voltage to be set in said DA converter which is an intermediate voltage between said average low level voltage and said average high level voltage;

wherein said mark detection means includes an integrator circuit (32) and an AD converter (34) whereby detecting said mark rate on the basis of a ratio of a high level voltage and a low level voltage of said signal (100).

5,777,495
METHOD FOR THE HIGH-LINEARITY COPYING OF VOLTAGE

Marc Arques, Grenoble, and Thierry Ducourant, Voiron, both of France, assignors to Thomson Tubes Electroniques, Meudon La Foret, France

Filed Feb. 26, 1996, Ser. No. 606,842

Claims priority, application France, Mar. 7, 1995, 95 02632

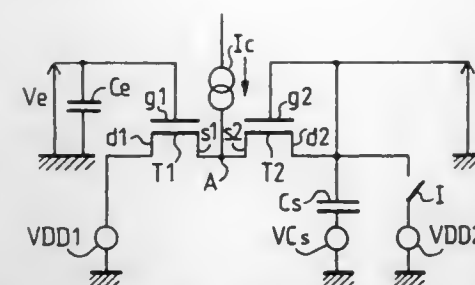
Int. Cl.⁶ H03K 17/00

U.S. Cl. 327—94

20 Claims

1. A device for copying a voltage (V_e) comprising a pair of series-connected MOS transistors, the voltage (V_e) to be copied being applied between the gate of a first one of said pair of series-connected MOS transistors and a reference, said device comprising:

means to inject a flux of electrons at a point common to the sources of the pair of transistors,



a storage capacitor having a first terminal connected to the drain of the second one of said pair of MOS transistors and having a second terminal connected to a first potential,

means to provide a second potential at the drain of the second MOS transistor of the pair and vary said second potential so that the flux of electrons is stored in the storage capacitor while at the same time decreasing in the second MOS transistor to the benefit of the first transistor, a copied voltage (V_s) being available, after stabilization, between the first terminal and the reference, wherein said drain of said second transistor is connected to the gate of said second transistor and said drain of said first transistor is connected to a bias potential circuit.

5,777,496
CIRCUIT FOR PREVENTING MORE THAN ONE TRANSISTOR FROM CONDUCTING

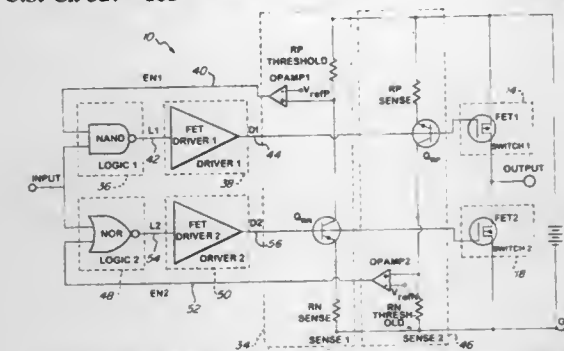
Jerard I. Herman, Nashua, N.H., assignor to AEG Schneider Automation, Inc., No. Andover, Mass.

Filed Mar. 27, 1996, Ser. No. 622,744

Int. Cl.⁶ H03B 1/00

U.S. Cl. 327—108

8 Claims



1. A switching stage for switching an output signal (OUTPUT) between a first voltage level and a second voltage level in response to an input signal (INPUT), said switching stage comprising:

a. first switch means (SWITCH1), responsive to a first control signal (CTRL1) for switching the output signal (OUTPUT) to the first voltage level and for providing a first switch status signal (SW1), indicative of the conductive state of said first switch means (SWITCH1);

b. second switch means (SWITCH2), responsive to a second control signal (CTRL2) for switching the output signal (OUTPUT) to the second voltage level and for providing a second switch status signal (SW2), indicative of the conductive state of said second switch means (SWITCH2);

c. first control means (CONTROL1), responsive to the input signal (INPUT) and the second switch status signal (SW2), for providing the first control signal (CTRL1); and

d. second control means (CONTROL2), responsive to the input signal (INPUT) and the first switch status signal (SW1) for providing the second control signal (CTRL2),

whereby the output signal (OUTPUT) is switched to either the first or second voltage level in response to the input signal (INPUT), but not both voltage levels simultaneously, and wherein the output signal (OUTPUT) is switched to the first voltage level only when said second switch status signal (SW2) indicates that said second switch means (SWITCH2) is not conducting and wherein the

output signal (OUTPUT) is switched to the second voltage level only when said first switch status signal (SW1) indicates that said first switch means (SWITCH1) is not conducting; and

wherein said first switch means (SWITCH1) includes a PFET type field effect transistor (FET) and wherein said second switch means (SWITCH2) includes an NFET type field effect transistor (FET) and wherein said first and second switch means (SWITCH1, SWITCH2) are arranged in series between the first and second voltage levels and the output signal (OUTPUT) signal is connected to the drains of the PFET and NFET type field effect transistors (FETs); and

wherein said first control means (CONTROL) comprises,

first sensing means (SENSE1), responsive to the second switch status signal (SW2) for providing a first enable signal (EN1), first logic means (LOGIC1), responsive to the input signal (INPUT) and the first enable signal (EN1) signal, for providing a first logic signal (L1), and

first driving means (DRIVER1), responsive to the first logic signal (L1) for providing the first control signal (CTRL1) and wherein said second control means (CONTROL2) comprises, second sensing means (SENSE2), responsive to the first switch status signal (SW1) for providing a second enable signal (EN2),

second logic means (LOGIC2), responsive to the input signal (INPUT) and the first enable signal (EN1) for providing a second logic signal (L2), and

second driving means (DRIVER1), responsive to the second logic signal (L2) for providing the second control signal (CTRL2); and

wherein said first logic means (LOGIC1) comprises a NAND gate and wherein said second logic means (LOGIC2) comprises a NOR gate; and

wherein said first sensing means (SENSE1) comprises a first operational amplifier (OPAMP1), a first resistor ($R_{P_{threshold}}$), a second resistor ($R_{N_{sense}}$) and a first transistor (Q_{RN}) and wherein said second sensing means (SENSE2) comprises a second operational amplifier (OPAMP2), a resistor ($R_{P_{sense}}$) and a fourth resistor ($R_{N_{threshold}}$) and a second transistor (Q_{RP}).

5,777,497
CMOS OUTPUT CIRCUIT WITH PRECHARGE CIRCUIT

Tae-Hyun Han, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Choongcheongbuk-do, Rep. of Korea

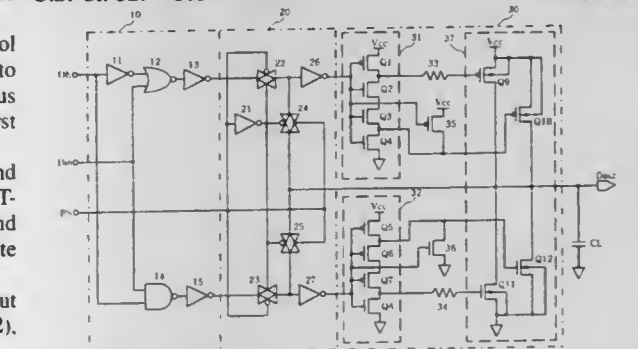
Filed Dec. 19, 1996, Ser. No. 770,230

Claims priority, application Rep. of Korea, Dec. 21, 1995, 1995 53431

Int. Cl.⁶ H03K 17/04; 19/094

U.S. Cl. 327—108

22 Claims



1. A circuit comprising:

an output unit for receiving an enable signal and an input data and producing an output signal;

a transmission gate unit for receiving a precharge signal and the output signal from the output unit and transmitting first, second, and third corresponding signals in accordance with the precharge signal; and

a precharge unit having a data output terminal for receiving the first corresponding signal from the transmission gate unit and

storing an electric charge, the precharge unit maintaining the electric charge at an intermediate level in accordance with the first corresponding signal of the transmission gate unit and outputting a signal at the intermediate level.

5,777,498

DATA COMPENSATION/RESYNCHRONIZATION CIRCUIT FOR PHASE LOCK LOOPS

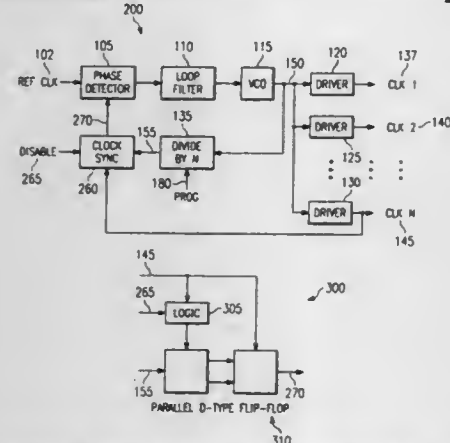
Aldo Giovanni Cometti, Phoenix, and R. Frank O'Brien, Glendale, both of Ariz., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 2, 1996, Ser. No. 758,962

Int. Cl.⁶ H03L 7/06

U.S. Cl. 327—156

21 Claims



1. A circuit that compensates for delays induced by clock generation logic and distributed clock drivers in phase lock loop applications, comprising:

- a phase detector element which receives a reference clock signal as a first input signal and which generates a voltage signal representative of a phase difference between the reference clock signal and a second input signal to the phase detector element;
- a filter element that has the voltage signal generated by the phase detector element as an input signal and that generates an output signal;
- a voltage controlled oscillator element that has the output signal of the filter element as an input signal and that generates a frequency signal, wherein the frequency signal varies according to the input signal of the voltage controlled oscillator element;
- a frequency divider element that receives the frequency signal generated by the voltage controlled oscillator element as a first input signal, a programming signal as a second input signal, and that generates a frequency divider signal as an output signal;
- a clock output driver element that receives the frequency signal generated by the voltage controlled oscillator element as an input signal and that generates a distributed clock signal; and
- a clock synchronization element that receives the frequency divider signal generated by the frequency divider element as a first input signal, the distributed clock signal of the clock output driver element as a second input signal, a control signal as a third input signal, and that generates an output signal which is the second input signal to the phase detector element, wherein the clock synchronization element operates to synchronize a transition edge of the frequency divider signal generated by the frequency divider element using the distributed clock signal generated by the clock output driver element unless the clock synchronization element is disabled by the control signal.

5,777,499 DIGITAL FREQUENCY CONTROL CIRCUIT PHASE CONTROL CIRCUIT AND PLL CIRCUIT

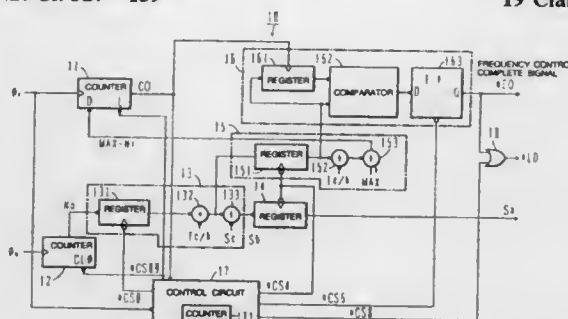
Toru Takaishi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 10, 1996, Ser. No. 630,594

Claims priority, application Japan, Sep. 19, 1995, 7-240320
Int. Cl.⁶ H03L 7/06; 7/08

U.S. Cl. 327—159

19 Claims



1. A digital frequency control circuit for controlling in such a way that a frequency of an output signal of an oscillating circuit approaches a frequency of a reference signal, a pulse cycle T of said output signal being approximately a linear function of a control input value S, namely $T = kS + m$, comprising:

- a first counter counting pulses of said reference signal;
- a second counter counting pulses of said output signal as a feedback signal;
- a register holding said control input value S; and
- a calculation and control circuit, when said first counter have counted a number Nr of pulses, calculating $S = N_r - m/k$, where N_r being a count of said second counter, making said register hold S, equalizing said number Nr for a next value to N_r and initializing the count No.

5,777,500

MULTIPLE CLOCK SOURCE GENERATION WITH INDEPENDENTLY ADJUSTABLE DUTY CYCLES

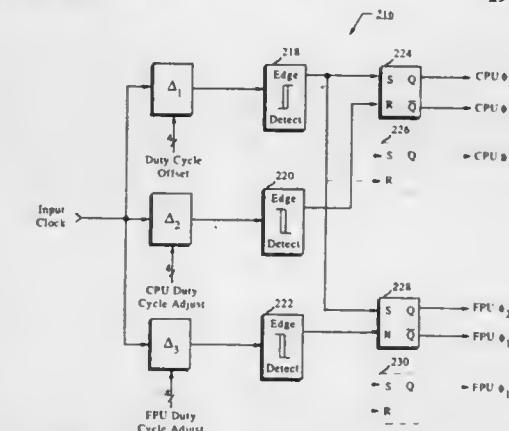
John K. Eitrlhelm, Plano, Tex., assignor to Cyrix Corporation, Richardson, Tex.

Filed Jan. 16, 1996, Ser. No. 587,095

Int. Cl.⁶ H03K 3/017

U.S. Cl. 327—174

19 Claims



1. A multiple phase clock generator comprising:

- (a) delay line means, coupled to receive an input clock having leading and trailing edges, for generating at least two clock signals delayed a predetermined time from the input clock;
- (b) edge detector means, coupled to the delay line means, for generating a pulse responsive to a predetermined edge on the at least two clock signals; and,
- (c) S-R means, coupled to the edge detector means, for generating at least two clock signals having a temporally common first edge and an independently adjustable second edge.

5,777,501

DIGITAL DELAY LINE FOR A REDUCED JITTER DIGITAL DELAY LOCK LOOP

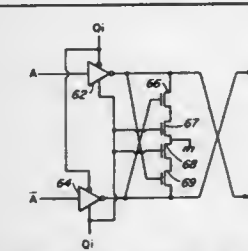
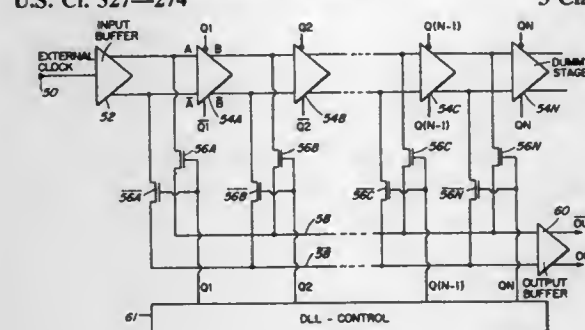
Maamoun AbouSeido, Ottawa, Canada, assignor to Mosaid Technologies Incorporated, Kanata, Canada

Filed Apr. 29, 1996, Ser. No. 638,809

Int. Cl.⁶ H03K 5/15

U.S. Cl. 327—274

3 Claims



1. A digital delay line having variable delay comprising means for receiving an input clock signal and for providing an inverted and non-inverted version thereof, a plurality of serially connected delay cells each comprising of a pair of inverters, each delay cell having a fixed delay and providing an inverted and a non-inverted output, a first delay cell for receiving and translating the inverted and non-inverted versions of the input clock signal, successive delay cells each receiving and translating the inverted and non-inverted output of a preceding stage, inverted and non-inverted outputs of each of the delay cells except a last delay cell in said plurality being directly cross-connected to inputs of an immediately following delay cell, and means for shunting outputs of a delay cell to a pair of output nodes.

5,777,502

METHOD TO PROTECT GATE-SOURCE ELEMENTS OF EXTERNAL POWER FETS FROM LARGE PRE-DRIVE CAPACITY

Wayne T. Chen, Plano; Steven C. Jones, Garland, and Stephen C. Kwan, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 7, 1996, Ser. No. 693,765

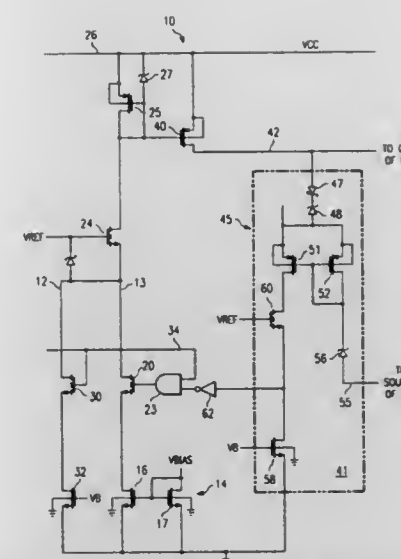
Int. Cl.⁶ H03K 5/08; 17/687

U.S. Cl. 327—309

20 Claims

1. A circuit for protecting gate-source elements of an FET comprising:

- a circuit for providing a pullup gate drive current to the gate-source elements of said FET;
- a voltage clamp connected to a circuit to sense a voltage on said gate-source elements of said FET, said voltage clamp having a predetermined allowable maximum current withstanding level;
- said circuit to sense a voltage on the gate-source elements of the FET producing an indication when said voltage on said gate-source elements has exceeded a predetermined level;



and a circuit for reducing the pullup gate drive current when the circuit to sense a voltage produces said indication that the voltage on said gate-source elements has exceeded the predetermined level.

5,777,503

PULSE WIDTH MODULATION BIAS TO MINIMIZE EFFECT OF NOISE DUE TO RAMP SWITCHING

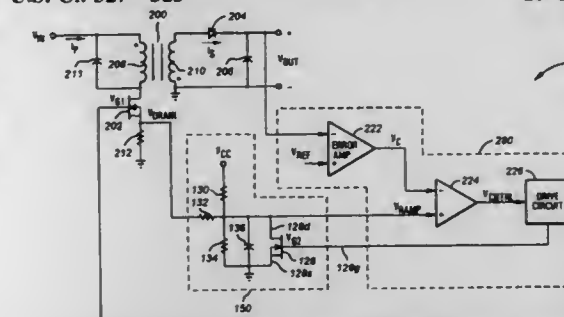
Richard A. Faulk, Cypress, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Feb. 22, 1996, Ser. No. 605,394

Int. Cl.⁶ H03K 5/08

U.S. Cl. 327—323

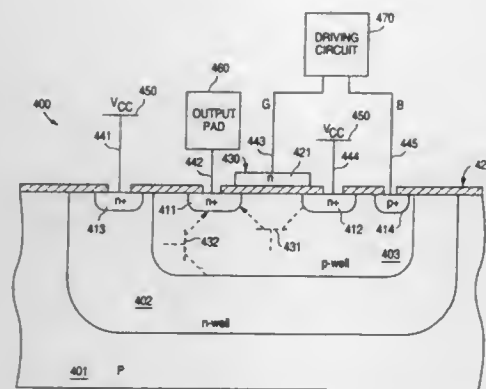
10 Claims



1. A control system for regulating a switching power supply that provides an output voltage, the power supply including an inductive element and a first switch having a series switched path for controlling current through the inductive element, the switch having a control terminal for activating the series switched path, the control system comprising:

- a sensor coupled to the inductive element for providing a first signal indicative of the current in the inductive element, the first signal having an associated noise voltage;
- a ramp generator circuit for receiving the first signal and generating a second signal, the second signal including a control region in which the slope of the second signal follows the first signal without the associated noise voltage, said ramp generator circuit comprising:
- a first resistor for receiving the first signal and providing the second signal;
- a bias voltage source;
- a second resistor having a first terminal coupled to said bias voltage source and a second terminal providing the second signal; and
- a third resistor having a first terminal providing the second signal and a second terminal coupled to ground; and
- a control circuit for receiving the second signal and the output voltage and for providing a control signal to the first switch,

1. An output driver circuit comprising:
 - a first semiconductor region having a first conductivity type;
 - a well region located in the first semiconductor region, the well region having a second conductivity type opposite the first conductivity type;
 - a field effect transistor having a drain region and a source region located in the well region, the drain and source regions each having the first conductivity type, and a gate electrode located over the drain and source regions;
 - a lateral parasitic bipolar transistor having an emitter formed by the source region, a collector formed by the drain region and a base formed by the well region; and
 - a driving circuit coupled to the well region, wherein the driving circuit applies a first voltage to the well region to reduce a



threshold voltage of the field effect transistor and wherein the driving circuit applies a second voltage to the well region to increase the threshold voltage of the field effect transistor.

5,777,511

DATA DEMODULATION APPARATUS

Takahiko Masumoto, Gunma-ken; Kazuhiro Kimura, Fukaya, and Hiroshi Kaneko, Gunma-ken, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

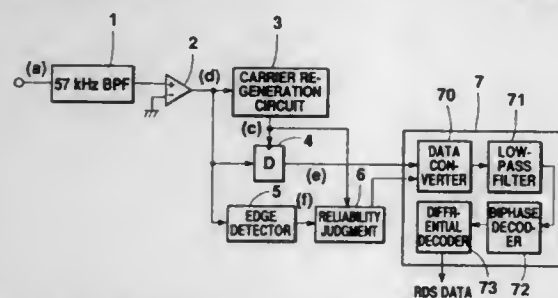
Filed Apr. 21, 1997, Ser. No. 840,477

Claims priority, application Japan, Apr. 22, 1996, 8-100368

Int. Cl.⁶ H03D 3/00; H04L 27/22

U.S. Cl. 329—304

6 Claims



1. A data demodulation apparatus for demodulating a signal, which is a predetermined carrier wave modulated with digital data, comprising:

- a carrier regeneration circuit for regenerating a clock signal that is synchronized with the frequency of said carrier wave;
- a sampling circuit for sampling a modulated signal using said regenerated clock signal;
- an edge detection circuit for detecting edges of said modulated signal;
- a reliability judgment circuit for comparing the edges detected by said edge detection circuit with the edges of said clock signal and outputting reliability data expressing the reliability of said sampling output; and
- a data regeneration circuit for regenerating said digital data from said reliability data and said sampling output.

5,777,512

METHOD AND APPARATUS FOR OVERSAMPLED, NOISE-SHAPING, MIXED-SIGNAL PROCESSING

Adya S. Tripathi, and Cary L. Delano, both of San Jose, Calif., assignors to Tripath Technology, Inc., Santa Clara, Calif.

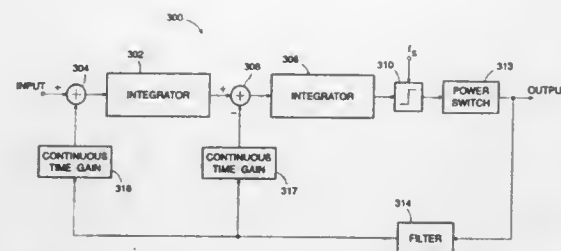
Filed Jun. 20, 1996, Ser. No. 667,925

Int. Cl.⁶ H03F 3/217

U.S. Cl. 330—207 A

50 Claims

22. A signal processing method comprising the steps of: introducing an input signal to a frequency selective network thereby generating a frequency-selected signal;



sampling the frequency-selected signal only at discrete time intervals at a predefined sample frequency, thereby generating a sampled signal;

switching the sampled signal thereby generating a continuous-time output signal; and

feeding back the continuous-time output signal to the frequency selective network thereby generating a noise-shaped signal.

5,777,513

VOLTAGE AMPLIFIER HAVING A LARGE RANGE OF VARIATIONS, AND A/D CONVERTER COMPRISING SUCH AN AMPLIFIER

Benoit Guyot, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

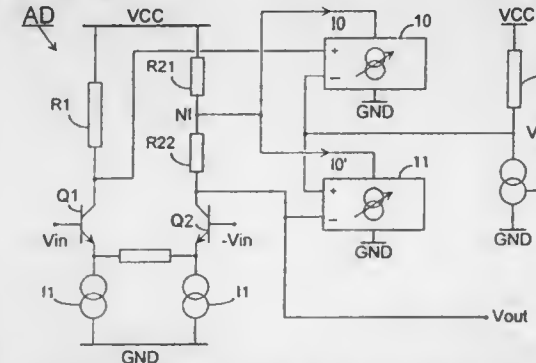
Filed Nov. 25, 1996, Ser. No. 755,685

Claims priority, application France, Nov. 29, 1995, 95 14130

Int. Cl.⁶ H03F 3/45; H03M 1/36

U.S. Cl. 330—252

20 Claims



1. A voltage amplifier receiving an input voltage and supplying an output voltage, which voltage amplifier comprises an amplifier stage including a first and a second transistor arranged as a differential pair, the base of the first transistor receiving the input voltage, the base of the second transistor receiving a voltage opposed to said input voltage, the collector of the first transistor being connected to a positive power supply terminal by means of a first branch comprising a resistive load, the collector of the second transistor supplying the output voltage being connected to the same positive power supply terminal by means of a second branch comprising a resistive load, characterized in that the second branch is constituted by at least two series-arranged resistive elements having at least a first intermediate node between the positive power supply terminal and the collector of the second transistor, in that said voltage amplifier is provided with a third branch comprising a resistive element arranged in series with a current source, said third branch being arranged between the positive power supply terminal and a negative power supply terminal and featuring a second intermediate node between the resistive element and the current source, and in that the voltage amplifier is provided with means for comparing the potential of the second intermediate node with that of the collector of the first transistor, on the one hand, and the potential of the second intermediate node with that of the collector of the second transistor, on the other hand, and for adding to the current supplied in a portion of the resistive load of the second branch, a first current which is progressively reduced to zero when the potential of the collector of the first transistor falls below that of the second intermediate node, and a second current which is

progressively reduced to zero when the potential of the collector of the second transistor exceeds that of the second intermediate node.

5,777,514

DIFFERENTIAL TO SINGLE ENDED CONVERSION TECHNIQUE FOR AN OPERATIONAL AMPLIFIER HAVING LOW INPUT OFFSET VOLTAGE, HIGH SPEED AND HIGH GAIN

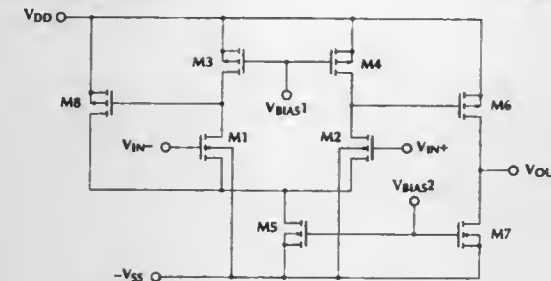
Rohit Mittal, Milpitas, and Carlos Alberto Laber, Los Altos, both of Calif., assignors to Micro Linear Corporation, San Jose, Calif.

Filed Sep. 27, 1996, Ser. No. 721,910

Int. Cl.⁶ H03F 3/45; 3/16

U.S. Cl. 330—253

36 Claims



1. An operational amplifier comprising:

- a. an input stage having a first input transistor and a second input transistor wherein the first input transistor is coupled to the second input transistor, the first input transistor and the second input transistor for accepting a differential input voltage and the input stage having a third transistor coupled to the first input transistor wherein the third transistor has a first width-to-length ratio and a first quiescent current level and the input stage having first and second biasing transistors, the first biasing transistor for biasing the first input transistor with a first constant current and the second biasing transistor for biasing the second input transistor with a second constant current wherein a control terminal of each of the first and second biasing transistors is coupled to receive a first constant biasing voltage; and
- b. an output transistor coupled to the input stage wherein the output transistor has a second width-to-length ratio and a second quiescent current level wherein a ratio of the first width-to-length ratio to the second width-to-length ratio is equal to a ratio of the first quiescent current level to the second quiescent current level whereby the operational amplifier has substantially no input offset voltage.

5,777,515

OPERATIONAL AMPLIFIER APPARATUS

Hiroshi Kimura, Amagasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 8, 1996, Ser. No. 646,623

Claims priority, application Japan, May 11, 1995, 7-112899

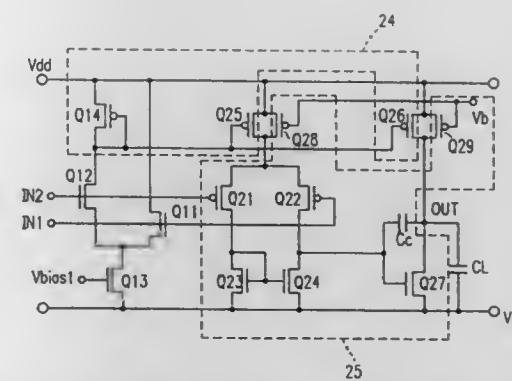
Int. Cl.⁶ H03F 3/45

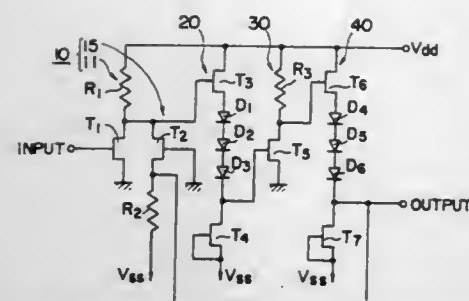
U.S. Cl. 330—257

9 Claims

1. An operational amplifier apparatus for outputting to an output terminal a voltage corresponding to a difference between a voltage in a first input terminal and a voltage in a second input terminal, comprising:

- an operational amplifying section for outputting to the output terminal a voltage corresponding to $k(V_2 - V_1)$, where V_1 is the voltage in the first input terminal, V_2 is the voltage in the second input terminal and k is a constant, and
- a current supply section for supplying a current corresponding to the difference between the voltage in the first input terminal and the voltage in the second input terminal,





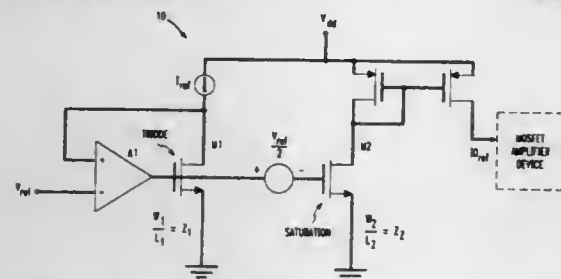
and a drain connected to an output terminal of said first inversion amplifier circuit;
a first level shift circuit for shifting level of an output of said input section;
a second inversion amplifier circuit for inversion-amplifying an output of said first level shift circuit; and
a second level shift circuit for shifting level of an output of said second inversion amplifier circuit, an output of said second level shift circuit being applied to said feedback circuit as the feedback signal.

5,777,518
METHOD OF BIASING MOSFET AMPLIFIERS FOR CONSTANT TRANSCONDUCTANCE
James A. Bailey, Allentown, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 30, 1996, Ser. No. 741,067
Int. Cl.⁶ H03F 1/30

U.S. Cl. 330—296

12 Claims



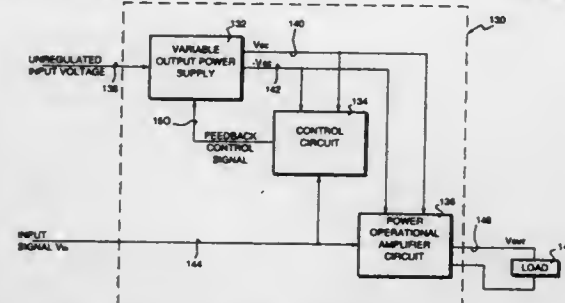
1. A method of biasing an amplifier device to obtain a constant transconductance, comprising:
operating a first field effect device having source, drain and gate terminals in a triode operating region;
operating a second field effect device having source, drain and gate terminals in a saturation region;
deriving a source of a first reference voltage;
deriving a source of a first reference current;
biasing the first field effect device with first circuit means responsive to the first reference voltage so that a voltage level between the drain and the source terminals of the first field effect device is substantially equal to said first reference voltage while applying said first reference current to its drain terminal, and the first field effect device is biased in the triode operating region over a certain range of ambient operating conditions;
biasing the second field effect device with second circuit means to obtain a gate-to-source terminal voltage on said second device which voltage is derived from a voltage at the gate terminal of the first device and said first reference voltage, such that a second reference current flows into the drain terminal of the second field effect device, and the second field effect device is biased in the saturation region over said range of ambient operating conditions; and
deriving an amplifier bias current for an amplifier device which is subject to said range of ambient operating conditions according to the second reference current in said second field effect device, for maintaining a substantially constant transconductance for the amplifier device over said range.

5,777,519
HIGH EFFICIENCY POWER AMPLIFIER
Anastasios V. Simopoulos, 2 Otis Pratt La., Middleboro, Mass. 02346

Filed Jul. 18, 1996, Ser. No. 683,172
Int. Cl.⁶ H03F 3/04

U.S. Cl. 330—297

18 Claims



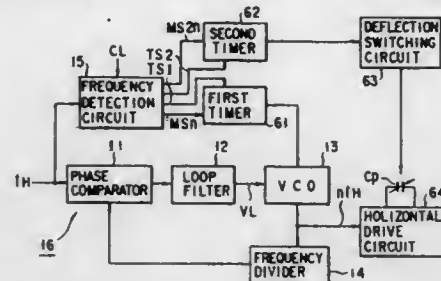
1. A power amplifier system, comprising:
a variable output pulse modulated power supply which receives an unregulated voltage signal, and conditions and regulates said unregulated voltage signal to provide a regulated voltage signal value V_{cc} ;
an operational amplifier powered by said regulated voltage signal value V_{cc} and responsive to an input signal value V_{in} , for providing an output signal value V_{out} which is proportional to said input signal value V_{in} ;
a control circuit responsive to said regulated voltage signal value V_{cc} and said input signal value V_{in} for providing a feedback control signal; and
wherein, said variable output pulse modulated power supply receives said feedback control signal, and in response thereto drives said regulated voltage signal value V_{cc} to maintain the value $(V_{cc} - V_{out})$ equal to a predetermined value.

5,777,520
HORIZONTAL OSCILLATION CIRCUIT CAPABLE OF CHANGING FREQUENCY
Takaaki Kawakami, Kamakura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1996, Ser. No. 722,460
Claims priority, application Japan, Sep. 28, 1995, 7-250552
Int. Cl.⁶ H03L 7/00; H03B 5/20; G09G 1/04

U.S. Cl. 331—1 R

23 Claims



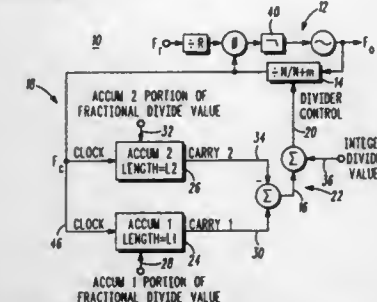
1. A semiconductor integrated circuit having an oscillation circuit, comprising:
frequency detection means for detecting a frequency of a horizontal sync signal, the frequency changing over a wide range, said frequency detection means generating a switching signal in accordance with the detected frequency; and
a voltage-controlled oscillator which has a plurality of oscillation modes obtained by dividing a frequency equal to an integer multiple of the frequency of the horizontal sync signal into a plurality of frequency ranges, and oscillates signals in the respective frequency ranges in accordance with control voltages, the oscillation modes of said voltage-controlled oscillator being switched in accordance with a switching signal output from said frequency detection means.

5,777,521
PARALLEL ACCUMULATOR FRACTIONAL-N FREQUENCY SYNTHESIZER
Steven F. Gillig, Roselle, and Michael L. Bushman, Hanover Park, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Aug. 12, 1997, Ser. No. 910,000
Int. Cl.⁶ H03L 7/197

U.S. Cl. 331—16

23 Claims



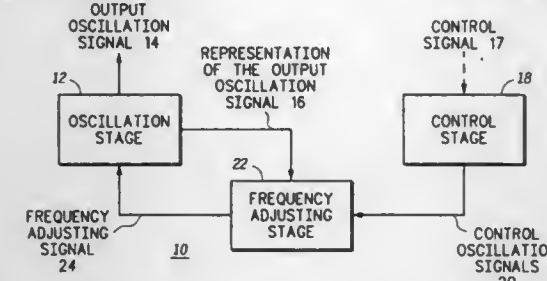
1. A frequency synthesizer, comprising:
a synthesizer loop including a programmable divider;
a divider control circuit providing a divider value to the programmable divider, the divider control circuit providing a variable divide value to the programmable divider for fractional division to produce a desired output frequency, and including a combining circuit and at least a first and second pulse generator connected in parallel;
the first pulse generator including a first output for varying a first portion of the divide value to produce a first change in an average of the divide value;
the second pulse generator including a second output for varying a second portion of the divide value to produce a second change in the average of the divide value; and
the first and second outputs being combined and coupled to the programmable divider via the combining circuit.

5,777,522
ELECTRONIC DEVICE FOR CONTROLLING A REACTANCE VALUE FOR A REACTIVE ELEMENT
Mathew A. Rybicki, Austin, and Michael D. Cave, Pflugerville, both of Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jan. 3, 1997, Ser. No. 775,991
Int. Cl.⁶ H03L 7/00; H03B 5/20; 1/00

U.S. Cl. 331—36 R

31 Claims



1. An electronic device comprising:
an oscillation stage capable of generating an output oscillation signal, the oscillation stage comprising an oscillation element having a first node and a second node, and a reactive element having a first node coupled to the first node of the oscillation element, and a second node of the reactive element having an actual reactance;
a frequency adjust stage having an input node for receiving a representation of the output oscillation signal, and an output node, wherein the frequency adjust stage is capable of processing the representation of the output oscillation signal to provide a frequency adjust signal at the output node, the frequency adjust signal capable of being phase shifted by one

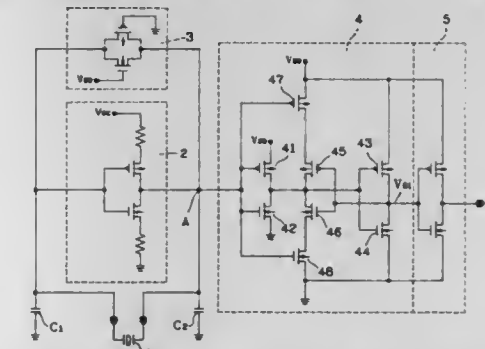
of approximately 0° and approximately 180° with respect to the representation of the output oscillation signal and being amplified; and
whereby the frequency adjust stage output node is coupled to the second node of the reactive element for changing an effective reactance of the reactive element to a reactance different from the actual reactance, the effective reactance capable of affecting a frequency of the output oscillation signal.

5,777,523
POWER-SAVING IC-TYPE OSCILLATION CIRCUIT
Chao-kuo Lee, Yunlin Hsien, and Chu-Liung Hsieh, Taichung, both of Taiwan, assignors to Holtek Micro Electronics, Inc., Hsin chu

Filed Oct. 10, 1996, Ser. No. 729,246
Int. Cl.⁶ H03B 5/36; H03K 3/012; 5/12

U.S. Cl. 331—74

6 Claims



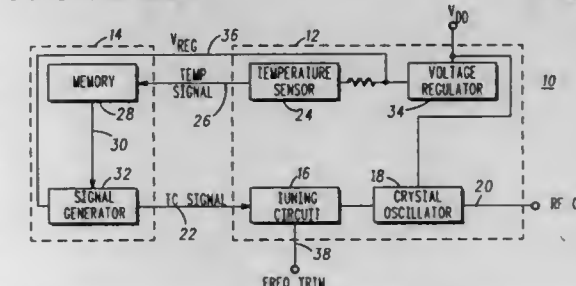
1. A power-saving IC-type oscillation circuit comprising:
a quartz oscillator circuit which contains an inverter and a feedback circuit;
an output modulation circuit connected to an output terminal of said quartz oscillator circuit;
wherein said output modulation circuit is structured such that after a sinusoidal wave is received from said output terminal, said output modulation circuit will judge the level of said sinusoidal wave in a manner that when said level is high, a high state signal will be sent out, and when said level is low, a low state signal will be sent out so as to enable a CMOS transistor, which is connected to and is to be driven by said oscillation circuit to quickly move out of a power-consuming condition to thus reduce electrical current consumption.

5,777,524
TEMPERATURE COMPENSATION CIRCUIT FOR A CRYSTAL OSCILLATOR AND ASSOCIATED CIRCUITRY
Carl E. Wojewoda, Lake Zurich; James F. Caruba, Bartlett, and Richard N. Sutliff, Hampshire, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 29, 1997, Ser. No. 901,892
Int. Cl.⁶ H03L 1/02; 5/00; H04B 1/40

U.S. Cl. 331—116 R

11 Claims



1. A temperature compensation circuit for a crystal oscillator, comprising:

a tuning circuit electrically coupled to the crystal oscillator, the tuning circuit adjusting an output frequency of the crystal oscillator in response to a temperature compensation signal; a temperature sensor providing a temperature signal in response to an ambient temperature of the crystal oscillator; a memory being electrically coupled to the temperature sensor and programmed to provide predetermined digital data in response to the temperature signal, the predetermined digital data programmed to vary as a function of a deviation of the crystal oscillator and the tuning circuit over temperature, the memory inhibiting changes to the provided predetermined digital data while an associated radio circuit is transmitting or receiving;

a signal generator being electrically coupled to the memory, the signal generator providing the temperature compensation signal corresponding to the predetermined digital data to the tuning circuit; and

a voltage regulator providing a regulated voltage to the signal generator, the voltage regulator being electrically coupled to the temperature sensor.

5,777,525

OSCILLATING APPARATUS HAVING VARIABLY CONTROLLED VIBRATION CANCELLATION

Shinji Tanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

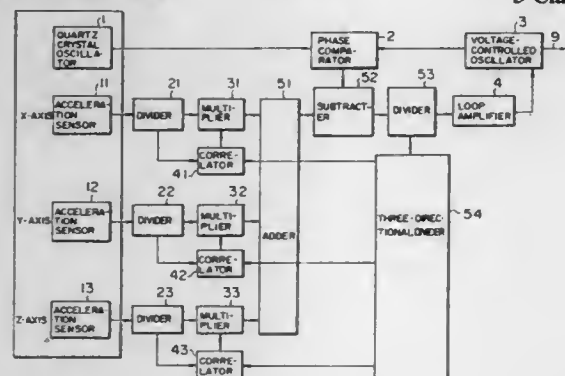
Continuation of Ser. No. 363,943, Dec. 27, 1994, Pat. No. 5,659,271. This application Dec. 10, 1996, Ser. No. 762,945

Claims priority, application Japan, Dec. 24, 1993, 5-327032

Int. Cl.⁶ H03B 5/04

U.S. Cl. 331—158

3 Claims



1. An oscillating apparatus comprising:
a circuit board,
a quartz crystal oscillator, mounted on the circuit board, for outputting a reference frequency signal,
a voltage controlled oscillator,
a phase-locked loop coupling said quartz crystal oscillator and said voltage controlled oscillator,
vibration sensor means mounted on said circuit board for detecting vibration components added to said quartz crystal oscillator,
multiplier means for variably controlling phases and levels of the detected vibration components,
correlator means for obtaining a correlation value between the detected vibration components and vibration components in said phase-locked loop to provide a control signal to the multiplier means, and
means for controlling said phase-locked loop on the basis of the output of said multiplier means.

5,777,526 METHOD OF MANUFACTURING A MICROSTRIP TRANSMISSION DEVICE

Kazuhiro Kawasaki, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 520,745, Aug. 29, 1995, abandoned.

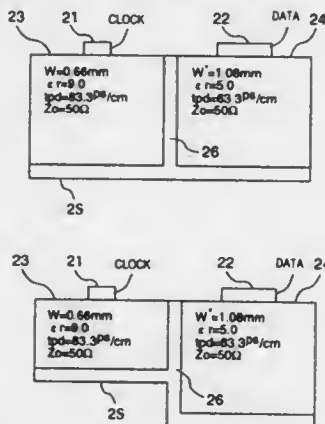
This application Apr. 2, 1997, Ser. No. 831,774

Claims priority, application Japan, Sep. 1, 1994, 6-208874

Int. Cl.⁶ H01P 3/08; 5/00

U.S. Cl. 333—1

2 Claims



1. A method of manufacturing a microstrip transmission line device, comprising the steps of:

providing a dielectric substrate having a first portion of a first dielectric having a first thickness and a first dielectric constant and a second portion of a second dielectric having a second thickness and a second dielectric constant different from the first dielectric constant, the first and second portions being in contact with each other;

forming a ground plane conductor on one face of the dielectric substrate so as to contact said first and second dielectric portions;

forming a first strip conductor having a first width upon another face of the dielectric substrate which is in contact with said first portion, wherein said another face of the dielectric substrate lies in a plane substantially parallel to a plane defined by said one face of the dielectric substrate, and wherein a clock signal is transmitted over the first strip conductor; and
forming a second strip conductor having a second width upon said another face of the dielectric substrate which is in contact with said second portion, the second strip conductor being substantially parallel to the first strip conductor, wherein a data signal is transmitted over the second strip conductor;

wherein values of the first and second dielectric constants are determined according to absolute transmission delay times of signals to be transmitted over the first and second strip conductors, and

wherein a characteristic impedance of the first strip conductor is matched with a characteristic impedance of the second strip conductor by varying values of the first and second thicknesses and values of the first and second widths.

5,777,527

METHOD AND APPARATUS FOR COUPLING A DIFFERENTIAL SIGNAL TO AN UNBALANCED PORT

Stuart B. Sanders, Lindenhurst, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1996, Ser. No. 742,069

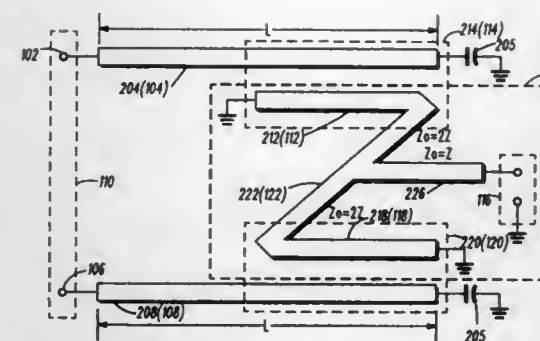
Int. Cl.⁶ H01P 5/10

U.S. Cl. 333—26

18 Claims

1. An apparatus comprising:

a first resonator resonant at a frequency of a differential signal and having a first resonator port;
a first matching element coupled to the first resonator;



a phasing element coupled at a first phase of the differential signal to the first matching element, the phasing element having an unbalanced port;
a second matching element coupled at a second phase of the differential signal to the phasing element, the second matching element parallel to the first matching element; and
a second resonator resonant at the frequency of the differential signal and having a second resonator port, coupled to the second matching element, the first resonator port and the second resonator port forming a balanced port adapted to receive the differential signal,
wherein the phasing element is coupled diagonally between the first matching element and the second matching element.

5,777,528

MODE SUPPRESSING COPLANAR WAVEGUIDE TRANSITION AND METHOD

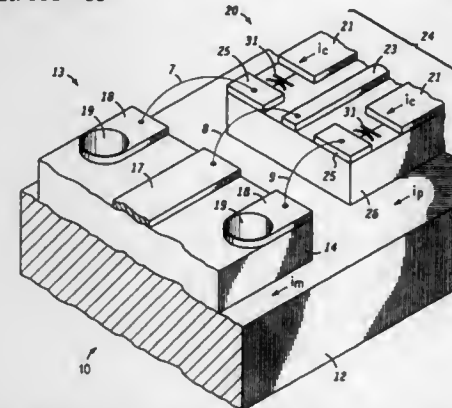
Lawrence James Schumacher, Chandler, and Michael L. Fraser, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 26, 1995, Ser. No. 452,215

Int. Cl.⁶ H01P 5/08

U.S. Cl. 333—33

13 Claims



1. An apparatus for reducing microstrip modes when transitioning from a microstrip line to a coplanar waveguide, wherein said coplanar waveguide is defined by a center signal conductor in-between first and second ground signal conductors disposed on an insulating substrate, said center signal conductor being parallel to and planar with said ground signal conductors, and wherein said microstrip line has a signal conductor disposed on a side of a circuit board and a ground plane adjacent to an opposite side of said circuit board, said circuit board having first and second conductive vias respectively electrically coupling said ground plane with first and second bonding pads, said apparatus comprising:

first and second conductive plates disposed on said insulating substrate and electrically coupled to said first and second ground signal conductors, respectively;
a dielectric layer disposed over said first and second conductive plates; and
first and second conductive regions disposed at least partially over said dielectric layer, said dielectric layer including a first

portion in-between said first conductive region and said first conductive plate, and a second portion in-between said second conductive region and said second conductive plate,
wherein said first and second portions provide first and second series capacitors respectively, said first and second conductive regions for electrically coupling respectively with said first and second bonding pads, and
wherein said first and second series capacitors, said first and second conductive regions and said first and second conductive plates provide respectively first and second ground signal paths for said coplanar waveguide.

5,777,529

INTEGRATED CIRCUIT ASSEMBLY FOR DISTRIBUTED BROADCASTING OF HIGH SPEED CHIP INPUT SIGNALS

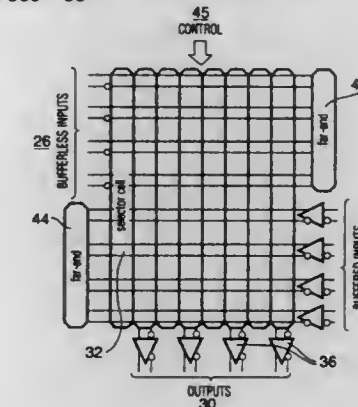
Kerry S. Lowe, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 10, 1996, Ser. No. 728,428

Int. Cl.⁶ H01P 5/00

U.S. Cl. 333—33

22 Claims



1. An integrated circuit assembly comprising a distributed broadcast data path from an input port of an integrated circuit to a plurality of destination cells of the integrated circuit for generating an output signal at an output port, comprising:

input means for coupling a high speed input signal to the input port of the integrated circuit, and forming a first transmission line having a characteristic impedance Z_p ,
a conductive trace of the integrated circuit extending from the input port to the plurality of destination cells, the conductive trace being terminated by a load resistor element and forming a second transmission line having a characteristic impedance Z_o ,
the characteristic impedances Z_p and Z_o of the first and second transmission lines being matched to provide for bufferless coupling of the input signal directly to the conductive trace of the integrated circuit.

5,777,530

SWITCH ATTENUATOR

Tadayoshi Nakatuka, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 23, 1997, Ser. No. 788,036

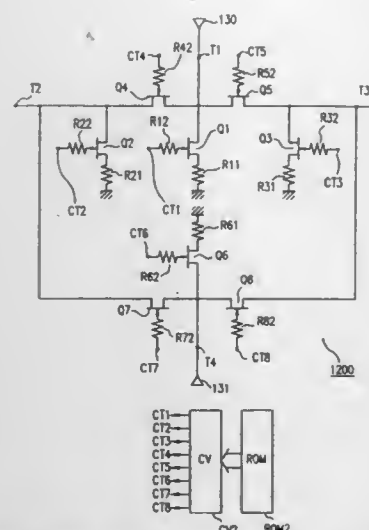
Claims priority, application Japan, Jan. 31, 1996, 8-014940

Int. Cl.⁶ H01P 1/15; 5/12

U.S. Cl. 333—104

10 Claims

1. A switch attenuator comprising: a first terminal connected to an antenna; a second terminal connected to a transmitter; and a



third terminal connected to a receiver, thereby switching a first state and a second state, wherein in the first state, the first terminal is connected to the second terminal, the first terminal is electrically isolated from the third terminal, the third terminal is connected to a ground and the switch attenuator is electrically controllable so as to vary an attenuation amount between the first terminal and the second terminal, while maintaining such a relationship that an impedance Z1 viewed from the first terminal is substantially equal to an impedance Z2 viewed from the second terminal, and wherein in the second state, the first terminal is connected to the third terminal, the first terminal is electrically isolated from the second terminal, the second terminal is connected to a ground and the switch attenuator is electrically controllable so as to vary an attenuation amount between the first terminal and the third terminal, while maintaining such a relationship that the impedance Z1 viewed from the first terminal is substantially equal to an impedance Z3 viewed from the third terminal.

5,777,531

SEMICONDUCTOR COPLANAR WAVEGUIDE PHASE SHIFTER

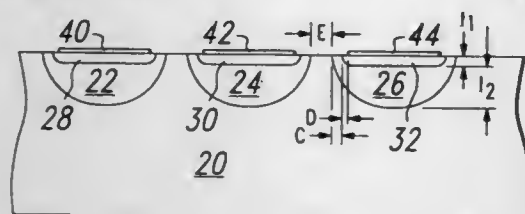
James Minh Tran, and Choon Sae Lee, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 26, 1996, Ser. No. 670,485

Int. Cl.⁶ H01P 9/00

U.S. Cl. 333—164

2 Claims



1. A transmission line for varying the propagation speed of a signal comprising:
a semiconductor region of the first conductivity type;
conductor regions on the semiconductor region, the conductor regions form a coplanar transmission line;
first doped areas of a second conductivity type in the semiconductor region;
second doped areas of the first conductivity type adjacent the first doped areas and between the conductor regions and the first doped areas; and

a variable bias voltage coupled to one of the conductor regions for varying a propagating speed of a signal in the transmission line.

5,777,532
INTERDIGITAL SLOW WAVE COPLANAR TRANSMISSION LINE

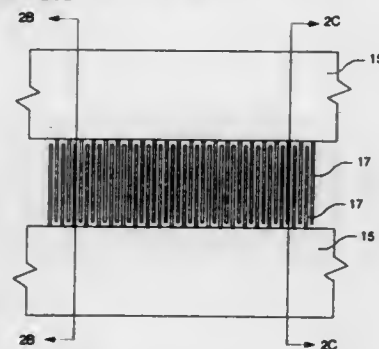
Kenneth Meade Lakin, Redmond, Oreg., assignor to TFR Technologies, Inc., Bend, Oreg.

Filed Jan. 15, 1997, Ser. No. 783,047

Int. Cl.⁶ H01P 1/18; 3/08

U.S. Cl. 333—161

17 Claims



1. An electromagnetic wave transmission line comprising:
a substantially non-conducting substrate having an upper surface,
a first conducting strip located on the upper surface of the substrate and having a plurality of lateral conducting fingers electrically connected to the first conducting strip and located on the upper surface of the substrate, said plurality of conducting fingers, wherein said first set and second set of conducting fingers being positioned substantially transverse to the direction of electromagnetic wave propagation constituting a first set of conducting fingers,
a second conducting strip located on the upper surface of the substrate and having a plurality of lateral conducting fingers electrically connected to the second conducting strip and located on the upper surface of the substrate, said plurality of conducting fingers constituting a second set of conducting fingers, the second conducting strip being located in a position substantially parallel to the first conducting strip and the first set of conducting fingers being interlaced with the second set of conducting fingers but without the first set of conducting fingers being conductively connected to the second set of conducting fingers,
the first set of conducting fingers being interlaced with the second set of conducting fingers to the extent that the location of the first set of conducting fingers substantially overlaps the location of the second set of conducting fingers and the spacing on both sides of the fingers between adjacent interlaced fingers being less than the length of the overlap of the adjacent interlaced fingers.

5,777,533

LC FILTER WITH EXTERNAL ELECTRODES ONLY ON A SMALLER LAYER

Noboru Kato, Sabae; Kouji Nosaka, and Atsushi Tojyo, both of Fukui, all of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed May 15, 1996, Ser. No. 648,401

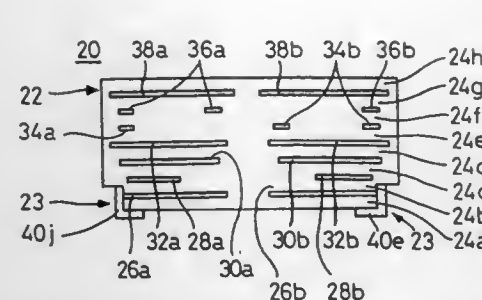
Claims priority, application Japan, May 16, 1995, 7-142620

Int. Cl.⁶ H03H 7/01

U.S. Cl. 333—185

10 Claims

1. An LC filter comprising:
a plurality of ceramic layers, wherein one of said plurality of ceramic layers is smaller in outside planar dimensions in its major plane than other ceramic layers;



a plurality of pattern electrodes;
a plurality of via holes formed in the ceramic layers for interconnecting said pattern electrodes; and
a plurality of external electrodes, wherein said plurality of electrodes is located only on said ceramic layer which is smaller in planar dimensions.

5,777,534

INDUCTOR RING FOR PROVIDING TUNING AND COUPLING IN A MICROWAVE DIELECTRIC RESONATOR FILTER

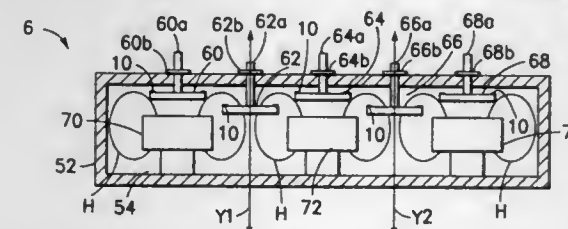
William H. Harrison, Payson, Ariz., assignor to L-3 Communications Narda Microwave West, Rancho Cordova, Calif.

Filed Nov. 27, 1996, Ser. No. 757,147

Int. Cl.⁶ H01P 1/20; 7/10

U.S. Cl. 333—202

33 Claims



16. A system of disks for use in a filter comprising a set of resonators, said resonators being spaced sufficiently apart to enable magnetic coupling to be provided between adjacent ones of said set of resonators, said system of disks comprising:

a first disk located above and spaced apart from a first one of said resonators for tuning said resonator;
a second disk located above and spaced apart from a second one of said resonators for tuning said second resonator; and
a third disk having a center axis that is located between said first and second resonators, said third disk being spaced apart from said first and second resonators, said third disk for coupling said first and second resonators, wherein each of said first, second, and third disks comprises a dielectric base and a ring, wherein said ring comprises an electrically-conductive material and is supported by a circumferential region of said base.

5,777,535

COAXIAL CABLE WITH INTEGRATED GROUND DISCHARGE WIRE

Simon H. Farfoud, and Robert W. Nunn, both of Jackson, Miss., assignors to Triology Communications Inc., Pearl, Miss.

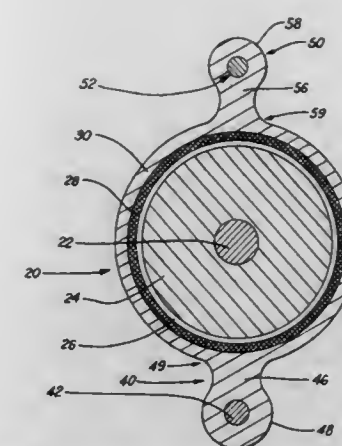
Filed May 21, 1996, Ser. No. 651,023

Int. Cl.⁶ H01P 3/06

U.S. Cl. 333—243

14 Claims

1. An electrical cable comprising:
a coaxial cable member comprising at least a center conductor, dielectric insulation and an outer conductor, said outer conductor having a flooding compound applied for added protection, said member having a longitudinal axis and an outer jacket formed from a jacketing material;



5,777,536

SEALED ELECTRIC SWITCH ASSEMBLY

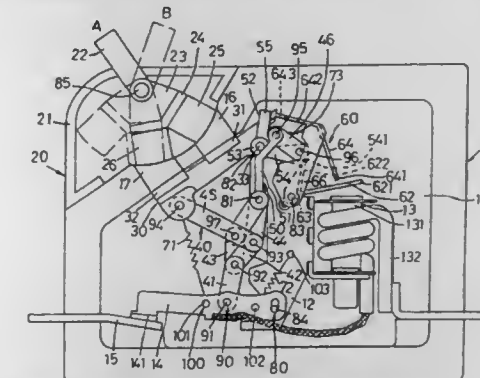
Wen-Fong Lee, No. 13-2, Lane 79, Sec. 1, Taichung Kang Rd., Taichung; Ming-Hung Lee, No. 34, Alley 56, Lane 5, Shu-I, Taichung; Ming-Tung Lee, and Ming-Yu Lee, both of No. 13-2, Lane 79, Sec. 1, Taichung Kang Rd., Taichung, all of Taiwan

Filed May 16, 1997, Ser. No. 857,867

Int. Cl.⁶ H01H 9/00

U.S. Cl. 335—172

5 Claims



1. A sealed electric switch assembly, comprising:
a sealed casing having a receiving space therein, a mounting frame connected fixedly to the internal wall of said casing in said receiving space by means of first, second, third, fourth stationary pins, an electromagnet fixed adjacent to said mounting frame, a movable arm having a first end which is connected pivotally to said fourth stationary pin and a second end which has a movable contact, and a stationary contact fixed to the lower wall of said casing under said movable contact, said movable contact contacting normally said stationary contact;
a magnetic control assembly mounted to a subcasing fixed on a top wall of said casing and having a fifth stationary pin fixed to said subcasing.

- in said subcasing, an actuating lever connected pivotally to said fifth stationary pin at its lower end, said lower end of said actuating lever having first and second magnetic members connected respectively thereto, said first and second magnetic members being of different magnetic polarities;
- an elongated plate member having a lower end and an upper end which is connected pivotally to said second stationary pin in said casing, and an upper side which faces said magnetic control assembly and which has third and fourth magnetic members of different magnetic polarities, said first and third magnetic members being of different magnetic polarities, said second and fourth magnetic members being of different magnetic polarities so that said first and third magnetic members and said second and fourth magnetic members can be attracted magnetically to one another when they are aligned with one another;
- a linkage mechanism including a first linkage having a lower end which is connected pivotally to said movable arm, a second linkage having a lower end which is connected pivotally to an upper end of said first linkage, a third linkage having a lower end which is connected pivotally to the upper end of said first linkage, a fourth linkage having a lower end which is connected pivotally to an upper end of said second linkage and an upper end which is connected pivotally to said first stationary pin, a fifth linkage having an upper end which is connected pivotally to said lower end of said elongated plate member and a lower end which is connected pivotally to said lower end of said fourth linkage, and a sixth linkage connected pivotally to an upper portion of said casing;
- a rotary assembly including a Z-shaped lever and an L-shaped lever, said Z-shaped lever having an upper end connected pivotally to an upper end of said sixth linkage, an intermediate portion which is connected pivotally to said first stationary pin, and a lower end connected pivotally to the upper end of said third linkage, said L-shaped lever having a bent portion which is connected pivotally to said second stationary pin, a first arm portion which has a distal end that is connected pivotally to a lower end of said sixth linkage, and a second arm portion extending upwardly from said bent portion;
- a tripping assembly including an L-shaped catch member and an inverted V-shaped member, said L-shaped catch member having a connecting seat which is connected pivotally to said third stationary pin, a first arm portion having a distal end which abuts against said distal end of said first arm portion of said L-shaped lever in order to prevent said L-shaped lever from being rotated clockwise, and a second arm portion which extends over said electromagnet, said inverted V-shaped member having an engaging seat which extends from a bent portion thereof and which has a distal end that is connected pivotally to said third stationary pin, a right arm portion having a distal end which extends over said second arm portion of said L-shaped catch member, and a left arm portion having a distal end which abuts said second arm portion of said L-shaped lever;
- a first tension spring interconnection said lower end of said elongated plate member and said movable arm in order to facilitate the movement of said movable contact away from said stationary contact when said actuating lever is rotated to permit said first and fourth magnetic members to align with and repulse one another;
- a second tension spring interconnecting said mounting frame and said movable arm in order to urge said movable contact to contact said stationary contact; and
- a third tension spring interconnecting said upper end of said sixth linkage and said right arm portion of said inverted V-shaped member in order to urge said distal end of said left arm portion of said inverted V-shaped member to abut said second arm portion of said L-shaped lever.

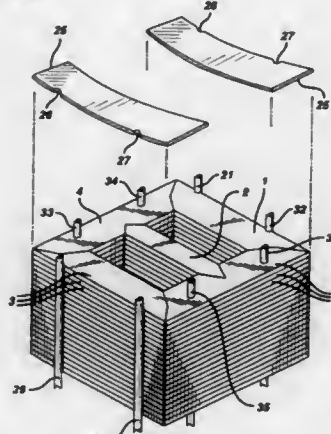
5,777,537
QUIET MAGNETIC STRUCTURES SUCH AS POWER TRANSFORMERS AND REACTORS
 George M. Allen, Middle Grove; Harold F. O'Connor, Greenfield Center, and Seymour Saslow, Saratoga Springs, all of N.Y., assignors to Espey Mfg. & Electronics Corp., Saratoga Springs, N.Y.

Filed May 8, 1996, Ser. No. 646,589

Int. Cl.⁶ H01F 27/24; 27/26

U.S. Cl. 336—96

3 Claims



1. In a quiet transformer; a laminated core having each laminate formed as a flat layer from highly grain oriented silicon steel which is fabricated by laser cutting techniques; each of said layers including a plurality of segments in intimate contact with each other; each of said segments having mitered butt lap joints where each segment contacts the other for reducing the reluctance of the gaps between adjacent lamination segments, each of said mitered butt lap joints being increased in length and having asymmetrical angles at opposite ends of the lamination segment; said core including a center leg segment having V joints of different angles on opposite ends; each segment of said lamination being cut so that all gaps have long length thereby presenting a larger cross sectional area to reduce the flux density at the gaps; clamping holes formed in the element of said lamination having the largest cross section; said holes being formed at a location in said segment away from said gaps to prevent magnetic flux crowding and increased local flux density; indexing pins on opposite faces of said lamination segments for closing and locking in the gaps of said core assembly; each of said layers being 100% interleaved for producing low joint reluctance and to minimize magnetostrictive forces; said core being pressurized by clamping bracket means and bolts connected to opposite ends of said core; leaf spring means connected between said brackets and said laminations for applying pressure to portions of said laminations; and resin means covering said core for providing insulation and thermal enhancement for said core.

5,777,538
APPARATUS COMPRISING INDUCTIVE AND/OR POWER TRANSFER AND/OR MULTIPLICATION COMPONENTS

Marlin Niles Schuetz, Raleigh, N.C., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 428,615, Apr. 25, 1995, Pat. No. 5,604,352. This application Dec. 21, 1996, Ser. No. 781,973

Int. Cl.⁶ H01F 38/20

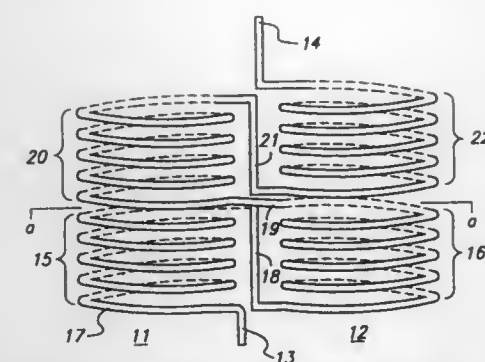
U.S. Cl. 336—173

22 Claims

1. Electrical apparatus comprising an inductor having opposing ends and an air core; including:

(i) a pair of high voltage terminals, and

(ii) a first inductive component having a first inductance and a second inductive component having a second inductance, said



inductive components being spaced close together and substantially parallel to one another and each comprising a plurality of turns,

the turns of said second inductive component being wound in an opposite clockwise sense to the turns in said first inductive component, and

the turns of said first and second inductive components being electrically connected in series between said high voltage terminals to form said inductor, which has a total inductance and is so configured that said high voltage terminals are spatially remote from each other and the total inductance is greater than either said first inductance or said second inductance and including at least one set of turns forming end loops and positioned at each end of said inductor and being positioned to aid in confining the magnetic field in the inductor.

5,777,539
INDUCTOR USING MULTILAYERED PRINTED CIRCUIT BOARD FOR WINDINGS

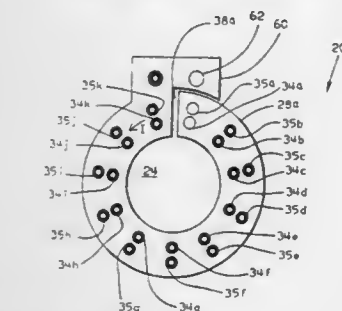
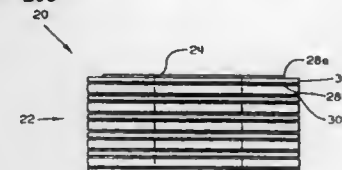
Donald Victor Folker, Fort Wayne, Ind.; Randhir Singh Malik, Colchester, Vt., and Robert Sterling Rowland, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 27, 1995, Ser. No. 535,302

Int. Cl.⁶ H01F 5/00; 27/28

U.S. Cl. 336—200

31 Claims



1. An inductor comprising:

a multilayer printed circuit board comprising at least four layers wherein each layer comprises a fiberglass reinforced epoxy resin dielectric sheet and an elongated conductor printed on said sheet, each of the conductors having approximately a same shape as each other, being closed on itself except for a gap between two ends of said each conductor and being superimposed on the other conductors, the gap in each conductor being angularly offset from the gaps of the other conductors, a multiplicity of plated through-hole vias being successively positioned around said conductors, each of said

vias passing through the conductors on all said four sheets and interconnecting a different combination of only two of said conductors such that current passes in a same clockwise or counterclockwise direction through all of said conductors.

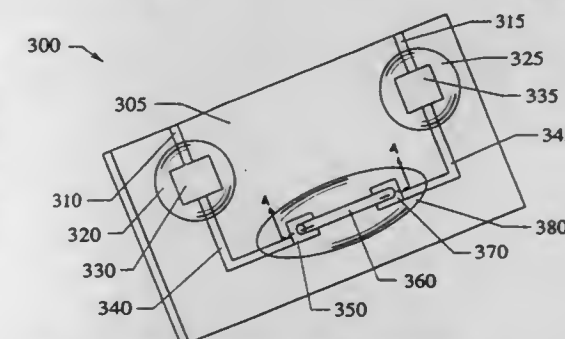
5,777,540
ENCAPSULATED FUSE HAVING A CONDUCTIVE POLYMER AND NON-CURED DEOXIDANT
 Ronald J. Dedert; Steven J. Hreha, both of Geneva, and William A. Hollinger, Jr., Monroe, all of Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Jan. 29, 1996, Ser. No. 592,907

Int. Cl.⁶ H01H 85/00

U.S. Cl. 337—142

6 Claims



1. An electrothermal fusing circuit comprising:

two terminations;

a meltable fuse link extending between said two terminations;

a conductive polymer interconnecting said two terminations to said meltable fuse link;

a non-cured deoxidant protecting said fuse link from oxidation;

an encapsulant, said encapsulant encapsulating said fuse link and said non-cured deoxidant.

5,777,541
MULTIPLE ELEMENT PTC RESISTOR
 Guy O. A. Vekeman, Gent, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

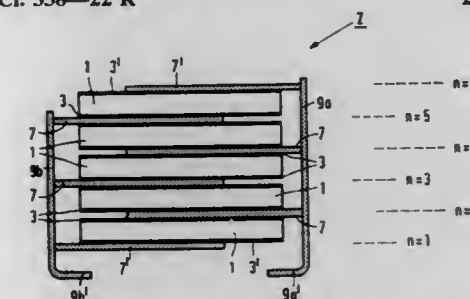
Filed Aug. 5, 1996, Ser. No. 692,144

Claims priority, application European Pat. Off., Aug. 7, 1995, 95202149

Int. Cl.⁶ H01C 7/10

U.S. Cl. 338—22 R

20 Claims



1. A two-terminal resistor having a positive temperature coefficient of resistivity, characterised in that the resistor is comprised of a plurality of disc-shaped resistive elements which are arranged and held together in a stack, whereby:

each resistive element has two oppositely-situated principal surfaces, each of which is metallised substantially in its entirety;

a metallic arm is situated between each pair of adjacent resistive elements, and is soldered to a principal surface of each element in the pair;

a metallic arm is soldered to the terminating principal surface at each end of the stack;

part of each metallic arm protrudes outward beyond the boundary of the stack;

the protruding parts of the metallic arms with an even ordinal are rigidly connected to a first terminal, and the protruding parts of the metallic arms with an odd ordinal are rigidly connected to the second terminal; and

moving successively from the resistive element on one side of the stack to the resistive element on the opposite side of the stack, each resistive elements in the stack has a higher switching temperature and electrical resistivity than the preceding resistive element in the stack.

5,777,542

MAGNETORESISTANCE EFFECT DEVICE AND MANUFACTURING METHOD THEREOF

Yuichi Ohsawa, Tokyo, and Hiroaki Yoda, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

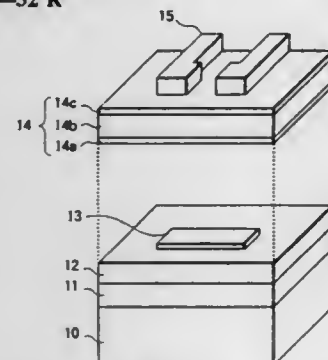
Filed Aug. 26, 1996, Ser. No. 702,894

Claims priority, application Japan, Aug. 28, 1995, 7-219200

Int. Cl.⁶ H01L 43/00

U.S. Cl. 338—32 R

10 Claims



1. A magnetoresistance effect device, comprising:
 - a magnetoresistance effect film;
 - a pair of leads composed of a conductor layer for supplying a current to said magnetoresistance effect film;
 - an insulation film formed in at least edge portions of said leads oppositely formed;
 - a magnetic gap layer for coating the surface of said magnetoresistance effect film formed between said leads and said insulation film; and
 - a magnetic shield layer formed on said magnetic gap layer.
6. A manufacturing method of a magnetoresistance effect device, comprising the steps of:
 - (a) forming a conductor layer on a magnetoresistance effect film;
 - (b) forming a mask layer composed of an insulation layer with a predetermined pattern on the conductor layer;
 - (c) ion-milling the conductor layer with the mask layer so as to form the conductor layer in a lead shape;
 - (d) forming a magnetic gap layer composed of a nonmagnetic substance so as to coat the magnetoresistance effect film exposed in the step (c) and the remaining mask layer; and
 - (e) forming a magnetic shield layer composed of a magnetic substance on the magnetic gap layer.

5,777,543

CERAMIC RESISTOR AND ELECTROSTATIC CHUCK HAVING AN ALUMINUM NITRIDE CRYSTAL PHASE

Hiroshi Alda, Kazuhiko Mikami, and Kenji Kitazawa, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

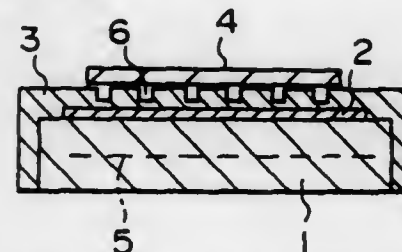
Division of Ser. No. 385,774, Feb. 9, 1995, Pat. No. 5,668,524. This application Apr. 30, 1997, Ser. No. 841,605

Claims priority, application Japan, Jan. 9, 1994, 6-208375; Feb. 9, 1994, 6-15200; Aug. 9, 1994, 6-187044; Aug. 11, 1994, 6-189217; Sep. 30, 1994, 6-237115; Nov. 29, 1994, 294256; Nov. 30, 1994, 296386

Int. Cl.⁶ H01C 1/012

U.S. Cl. 338—308

3 Claims



1. A ceramic resistor comprising an aluminum nitride crystal phase, wherein the resistor is doped with at least one kind of atom selected from the group consisting of elements of Groups 2b, 4b and 6b of the periodic table, which exhibits a volume resistivity of not larger than about 10^{14} Ω -cm at 25° C., wherein the ceramic resistor is doped with an element of Group 4b of the periodic table in an amount of from 0.005 to 30 atomic %, and the lattice constants in the aluminum nitride crystal phase are shifted from the lattice constants of the non-doped aluminum nitride single phase by 0.003 to 0.030 angstroms on the a-axis and by 0.004 to 0.080 angstroms on the c-axis.

5,777,544

APPARATUS AND METHOD FOR CONTROLLING DATA COMMUNICATIONS HAVING COMBINATION OF WIDE AND NARROW BAND FREQUENCY PROTOCOLS

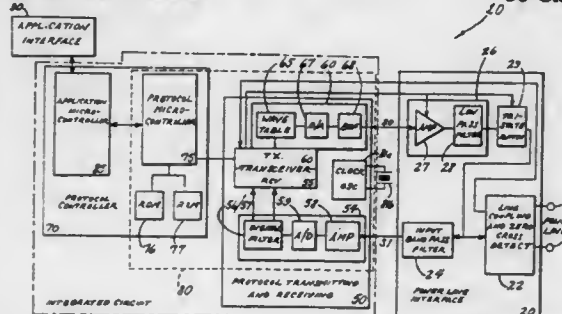
James E. Vander Mey, and Bruce A. Denton, both of Ocala, Fla., assignors to Intellon Corporation, Ocala, Fla.

Filed Mar. 17, 1997, Ser. No. 818,457

Int. Cl.⁶ H04M 11/04

U.S. Cl. 340—310.06

58 Claims



1. A data communications controlling apparatus for controlling data communications across a power line, the apparatus comprising:
 - power line interfacing means for interfacing with the power line so as to detect both a wide bandwidth data communications protocol being initiated across the power line and a narrow bandwidth data communications protocol being initiated across the power line synchronously with a power line mains frequency and so as to initiate either the wide bandwidth data communications protocol onto the power line or the narrow bandwidth data communications protocol onto the power line synchronously with the power line mains frequency, a narrow bandwidth of the narrow bandwidth data communications

protocol falling within a wide bandwidth of the wide bandwidth data communications protocol;

wide and narrow bandwidth protocol transmitting and receiving means responsive to said power line interfacing means for selectively transmitting either the wide bandwidth protocol or the narrow bandwidth protocol onto the power line and for receiving both the wide bandwidth protocol and the narrow bandwidth protocol; and

protocol controlling means responsive to said protocol transmitting and receiving means for controlling the receipt of and the transmission of said wide bandwidth and narrow bandwidth data communications protocols.

5,777,545

REMOTE CONTROL APPARATUS FOR POWER LINE COMMUNICATIONS SYSTEM

Chandrakant Bhailalbhai Patel, Hopewell, N.J.; Joseph Robert Ader, Yardley, Pa.; Henry Charles Klein, West Chester, Pa., and John Artman, Berwyn, Pa., assignors to Elcom Technologies Corporation, Malvern, Pa.

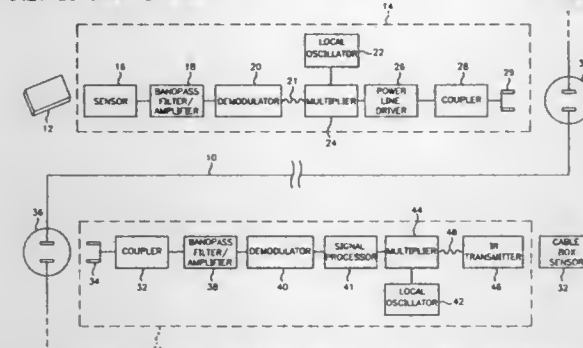
Continuation of Ser. No. 437,941, May 9, 1995, abandoned.

This application Mar. 26, 1997, Ser. No. 825,147

Int. Cl.⁶ H04M 11/04

U.S. Cl. 340—310.06

5 Claims



1. A remote control apparatus for a power line communication system comprising:
 - a power line;
 - a first signal transmitter for transmitting a first pulse code modulated control signal having one of a plurality of carrier frequencies;
 - a first transmitter/receiver including:
 - (1) sensing means for sensing said first pulse code modulated control signal and other pulse code modulated control signals having other carrier frequencies within the plurality of carrier frequencies;
 - (2) means for demodulating said first pulse code modulated control signal to develop a first pulse code control signal;
 - (3) means for pulse code modulating a first carrier signal with said first pulse code control signal to develop a second pulse code modulated control signal; and
 - (4) means for coupling said second pulse code modulated control signal from said first transmitter/receiver to said power line for transmission of said second pulse code modulated control signal along said power line;
 - a second transmitter/receiver including:
 - (1) means for coupling said second pulse code modulated control signal from said power line to said second transmitter/receiver;
 - (2) means for pulse code demodulating said second pulse code modulated control signal to develop a second pulse code control signal substantially identical to said first pulse code control signal;
 - (3) means for modulating a second carrier signal with said second pulse code control signal to develop a third pulse code modulated control signal; and
 - (4) a second signal transmitter for transmitting said third pulse code modulated control signal; and
 - a sensor for sensing said third pulse code modulated control signal.

5,777,546

METHOD OF SELECTION OF DESELECTION OF AUTOMATIC POWER DOOR LOCKS

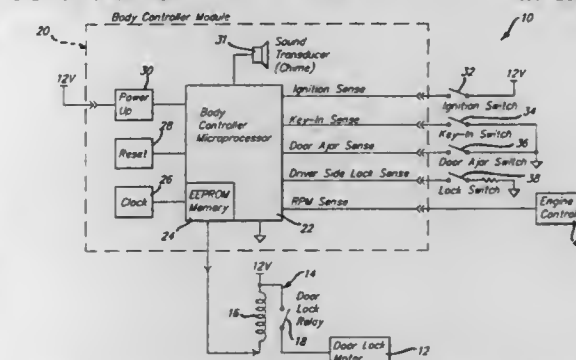
Patrick D. Dean, Armada, and Stephen L. Hyde, Clarkston, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Feb. 8, 1996, Ser. No. 598,554

Int. Cl.⁶ B60Q 1/00

U.S. Cl. 340—438

20 Claims



1. A method of selection or deselection of automatic door locks for an automotive vehicle, said method comprising the steps of:
 - inserting a key into an ignition switch of the automotive vehicle;
 - rotating the key a predetermined number of times;
 - determining whether a power door lock switch was actuated; and
 - sounding an audible tone to verify selection or deselection of automatic power door locks if the power door lock switch was actuated.

5,777,547

CAR IDENTIFICATION AND ORDERING SYSTEM

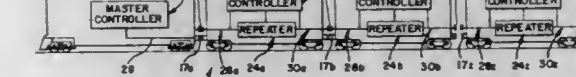
Jeremy S. Waldrop, Aurora, Ill., assignor to Zefftron, Inc., Montgomery, Ill.

Filed Nov. 5, 1996, Ser. No. 744,086

Int. Cl.⁶ B60Q 1/00; G08B 1/08; B61L 3/00

U.S. Cl. 340—438

19 Claims



1. A car identification and ordering system for a train having a locomotive and a plurality of cars attached to the locomotive, said system comprising:
 - master controller means on the locomotive for initiating and controlling the car identification and ordering system;
 - car controller means on each car of the train for responding to commands from the master controller means;
 - communication means on the locomotive and on each of said cars for establishing communication between the master controller means on the locomotive and said car controller means on each car in the train; said communication means including repeater means on each car for transferring signals to a directly trailing car in the train; said repeater means adapted to be selectively temporarily disabled to cut off communication to said trailing car and thereby all successive cars in the train; such that an identification request signal from the master controller is not communicated to the trailing car or any of said successive cars in said train
 - means on the car controller means for selectively temporarily disabling the repeater means on each car to cut off communication to said trailing car and thereby all said successive cars in said train;
 - and means on the car controller means for selectively reenabling the repeater means on each car to reestablish communication to said trailing car when said car sends an identification signal to said master controller;

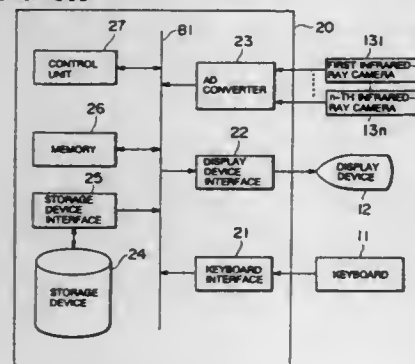
wherein said system is adapted to identify each car in the train, the physical order of said cars in the train, the number of cars in the train, and the identification of the last car in the train.

5,777,548 FIRE MONITORING APPARATUS AND COMPUTER READABLE MEDIUM RECORDED WITH FIRE MONITORING PROGRAM

Yoshishige Murakami; Kanji Hirota, and Yoshiharu Kanzaki,
all of Kawasaki, Japan, assignors to Fujitsu Limited, Kana-
gawa, Japan

Filed Jul. 14, 1997, Ser. No. 891,899
Claims priority, application Japan, Dec. 12, 1996, 8-332307
Int. Cl.⁶ G08B 29/00

U.S. Cl. 340—506 10 Claims



1. A fire monitoring apparatus comprising:
 - an infrared-ray photographing device for photographing a monitoring target plane with infrared-rays;
 - detecting means for detecting an abnormal area exhibiting a temperature over a fixed temperature in an infrared-ray image photographed by said infrared-ray photographing device;
 - calculating means for calculating an azimuth and an angle of elevation toward the sun from an abnormal location on the monitoring target plane which corresponds to the abnormal area;
 - comparing means for comparing an azimuth toward the abnormal location from said infrared-ray photographing device with an azimuth toward the sun from the abnormal location, and for comparing an angle of depression toward the abnormal location from said infrared-ray photographing device with the angle of elevation toward the sun from the abnormal location; and
 - judging means for judging that fire occurs if any one of these comparisons does not result in coincident.

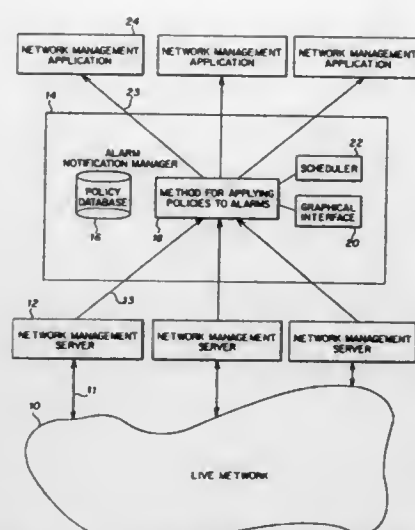
5,777,549 METHOD AND APPARATUS FOR POLICY-BASED ALARM NOTIFICATION IN A DISTRIBUTED NETWORK MANAGEMENT ENVIRONMENT

Russell Arrowsmith, Merrimack, N.H., and William Tracy,
Chelmsford, Mass., assignors to Cabletron Systems, Inc.,
Rochester, N.H.

Filed Mar. 29, 1995, Ser. No. 412,955
Int. Cl.⁶ G08B 29/00

U.S. Cl. 340—506 49 Claims

1. A method of alarm notification comprising the steps of:
 - (a) receiving alarms from multiple network management servers;
 - (b) assigning policy-based filters to associated network management applications; and
 - (c) applying the assigned policy-based filters to the alarms and for the alarms which pass the filters, generating an alarm notification and forwarding the same to the associated network management applications;



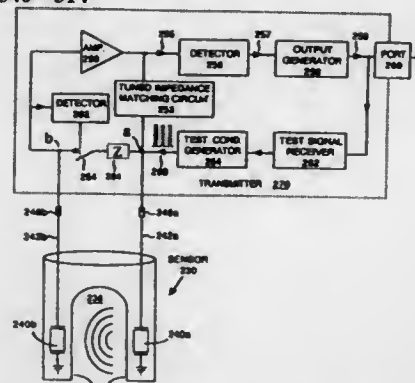
wherein each filter comprises at least one filter parameter, and the applying step comprises performing a logical AND of all parameters within one filter and performing a logical OR between all filters within one policy.

5,777,550 HIGH RELIABILITY INSTRUMENT SYSTEM

Frederick L. Maltby, Jenkintown; Glen L. Mitchell, Dresher,
both of Pa., and Mort Gorowitz, Syosset, N.Y., assignors to
Drexelbrook Controls, Inc., Horsham, Pa.

Continuation of Ser. No. 286,482, Aug. 3, 1994, abandoned.
This application Jan. 3, 1997, Ser. No. 778,587
Int. Cl.⁶ G08B 29/00; H04R 17/00

U.S. Cl. 340—514 6 Claims



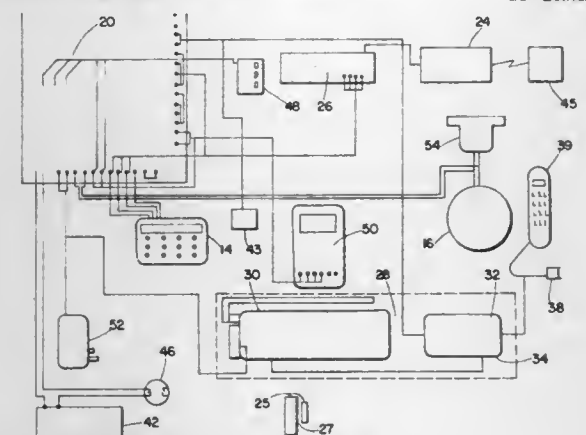
1. A gap-type acoustic instrument having a sensor having first and second piezoelectric crystals mounted in a support structure adjacent a gap in the support structure which may be filled with a material to be monitored, and having test apparatus comprising:
 - a test signal generator coupled to said first crystal;
 - a detector coupled to said second crystal, said detector producing an output which is responsive to alternating signals generated in said second crystal in response to test signals applied by said test signal generator to said first crystal;
 - an amplifier having an amplifier input coupled to one of said crystals and an amplifier output coupled to the other of said crystals; and
 - a controlled amplifier feedback element coupled to said detector and to said amplifier, said feedback element providing feedback to said amplifier which is responsive to the detector output.

5,777,551 PORTABLE ALARM SYSTEM

Brian K. Hess, 403 Aylesbury Dr. South, Westerville, Ohio
43081

Continuation-in-part of Ser. No. 303,950, Sep. 9, 1994, Pat.
No. 5,587,701. This application Sep. 23, 1996, Ser. No. 717,569
Int. Cl.⁶ G08B 13/00

U.S. Cl. 340—541 13 Claims



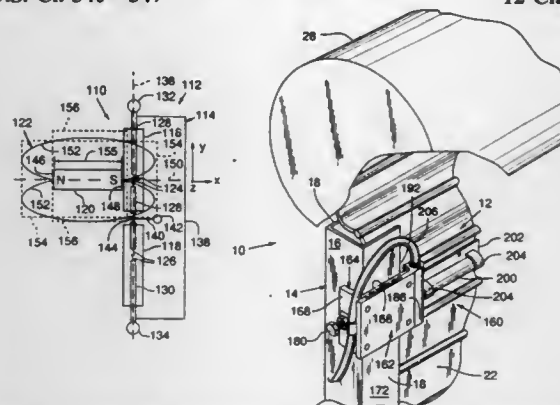
1. A portable alarm system, comprising:
 - a portable enclosure;
 - a microprocessor secured within said enclosure;
 - a wireless receiver adapted to receive an alarm signal from at least one zone at a structure being monitored, said wireless receiver secured within said enclosure and electrically connected to said microprocessor; and
 - a communications device secured within said enclosure and in electrical communication with said microprocessor and independent of any hard-wired telephone lines connected to said structure, said communication device adapted to initiate and complete a wireless transmission when said receiver receives said signal, to a location apart from said structure.

5,777,552 CURTAIN DOOR ALARM

Robert G. Fischette, and Scot R. Newport, both of Portland,
Oreg., assignors to Sentrol, Inc., Tualatin, Oreg.

Filed Aug. 2, 1995, Ser. No. 510,460
Int. Cl.⁶ G08B 13/08

U.S. Cl. 340—547 12 Claims



10. A magnetic alarm sensor for a movable barrier, comprising:
 - a magnet that generates a magnetic field;
 - a pair of magnetic switches each having electrical contacts positioned along a common switch axis, the sensor having a nonalarm state whenever one of the contacts interacts with the magnetic field when the movable barrier is in a closed position and an alarm state when neither of the contacts interacts with the magnetic field; and
 - an electrically parallel connection between the magnetic switches such that the alarm sensor assumes an alarm state

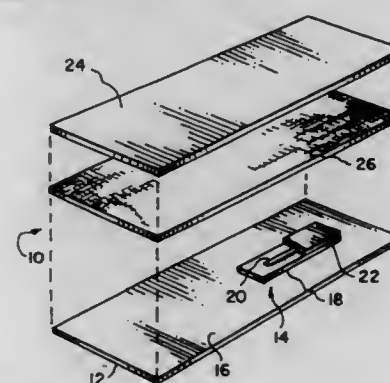
whenever both contacts assume an alarm state, the sensor being constructed and arranged so that the range of interaction between the magnetic field and the contacts of the first and second switches is increased to prevent an unintentional alarm state.

5,777,553 ELECTRONIC ARTICLE SURVEILLANCE PROTECTION FOR PRINTED CIRCUIT BOARDS

Benoit Perreau, Boca Raton, Fla., and Paul A. Kluttz, Discovery
Bay, Calif., assignors to Sensormatic Electronics Corpora-
tion, Boca Raton, Fla.

Filed Sep. 6, 1996, Ser. No. 709,075
Int. Cl.⁶ G08B 13/187

U.S. Cl. 340—551 27 Claims



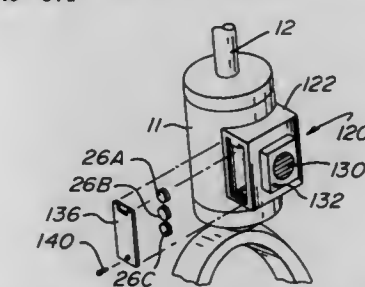
1. A printed circuit board comprising:
 - (a) a first layer;
 - (b) a second layer;
 - (c) an electronic article surveillance tag positioned between said first and second layers; and
 - (d) bonding material positioned between said first and second layers to bond said first layer, second layer, and electronic article surveillance tag together.

5,777,554 MOTION SENSITIVE REMINDER

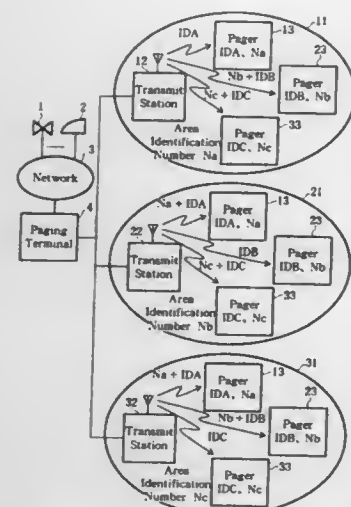
Roger W. Lehmann, 808 Ashley Ave., Brielle, N.J. 08730, and
Michael I. Satten, 26 Cow Ln., Kings Point, N.Y. 11024

Continuation-in-part of Ser. No. 764,823, Dec. 12, 1996. This
application Feb. 18, 1997, Ser. No. 801,447
Int. Cl.⁶ G08B 13/14

U.S. Cl. 340—571 24 Claims



1. A motion sensitive reminder apparatus being part of any item that is movable, said motion sensitive reminder comprising:
 - a housing being formed as an integral portion of the movable item, said housing comprising:
 - a speaker for emitting an audio signal;
 - a motion sensor for detecting movement of the movable item;
 - electronic control means, electrically coupled to said speaker and to said motion sensor, for controlling said speaker emission, said electronic control means activating said speaker to emit said audio signal for a predetermined period of time whenever the movable item is initially



and which, when it pages a pager which has another paging area as its local area, transmits the area identification number of the paging area which is the local area of that pager and the address of that pager; and

each pager contains a means which, when it receives a paging signal in its own local area, detects that its own address is contained in that paging signal without the accompanying area identification number, and when it receives a paging signal in another paging area, detects that the area identification number of its own local area and its own address are both contained in that paging signal.

5,777,561

METHOD OF GROUPING RF TRANSPONDERS

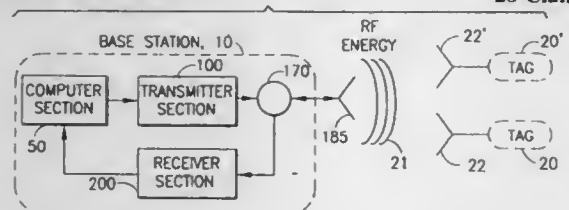
Trieu Can Chieu, Scarsdale; Thomas Anthony Cofino, Rye; Harley Kent Heinrich, Brewster, all of N.Y.; Paul Jorge Sousa, Peabody, Mass., and Li-Cheng Richard Zal, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1996, Ser. No. 720,598

Int. Cl.⁶ H04Q 1/00

U.S. Cl. 340—825.54

28 Claims



1. A method for communicating between a base station and a set of radio frequency (RF) transponders (tags), comprising:

selecting a plurality of groups of tags from the set of RF tags, the selection according to a physical attribute of the response of the tags to a first RF signal sent from the base station; and communicating with tags in each group.

5,777,562

CENTERING DEVICE AND METHOD FOR CENTERING

David J. Hoffman, 2814 W. Dale Rd., NW., Canton, Ohio 44708

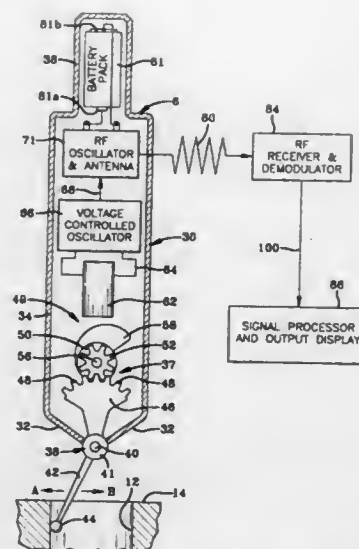
Filed Aug. 19, 1996, Ser. No. 699,805

Int. Cl.⁶ G01B 7/02

U.S. Cl. 340—870.07

25 Claims

1. A centering device for determining the concentricity of a workpiece relative to a machine tool, said centering device comprising:



sensing means mounted to the machine tool adjacent the workpiece for sensing the position of the centering device relative to the workpiece;

a stylus pivotally mounted on the sensing means and having a first end which is biased outwardly away from a center axis of the workpiece, said first end of the stylus being adapted to maintain continuous contact with the workpiece while the sensing means is sensing the position of the centering device relative to the workpiece;

modulated signal generating means for generating a modulated signal proportionate to the position of the sensing means;

oscillating means for converting the modulated signal to an oscillating signal;

converting means for converting the oscillated signal to a transmittable signal;

transmission means for transmitting the transmittable signals; and

receiver means for receiving the transmittable signal which receiver means is positioned at a discrete location relative to the sensing means and for outputting a signal to convey the position of the workpiece relative to the machine tool.

5,777,563

METHOD AND ASSEMBLY FOR OBJECT DETECTION BY A VEHICLE

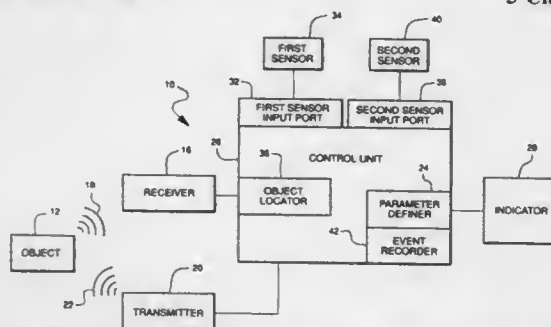
Ernest P. Minissale, Livonia; Tova Fry, Detroit, and Wilbur J. Hull, III, Grand Blanc, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Oct. 10, 1995, Ser. No. 541,548

Int. Cl.⁶ G08G 1/16

U.S. Cl. 340—903

5 Claims



1. An object detection system for indicating to a vehicle operator the presence of an object within an area of interest comprising:

a speed sensor for generating a signal indicative of the speed at which the vehicle is traveling;

a transmission gear sensor for generating a signal indicative of the gear in which the vehicle is being operated;

a control unit operatively coupled to said speed sensor and said gear sensor, said control unit including a parameter definer for adaptively defining a set of spatial parameters based on said speed sensor signal in combination with said gear sensor signal, said spatial parameters including parameters which define said area of interest;

a receiver operatively coupled to said control unit for receiving a signal indicative of the presence of an object within said area of interest, said control unit generating an output signal in response to a received signal indicating the presence of an object within said area of interest; and

an indicator for providing at least two discernable indications to an operator of the vehicle in response to receipt of said control unit output signal, said indications being varied with the speed at which said vehicle is traveling.

5,777,564

TRAFFIC SIGNAL SYSTEM AND METHOD

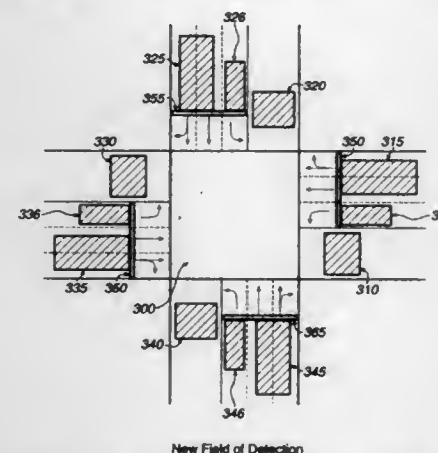
Edward L. Jones, P.O. Box 329287, Cocoa Beach, Fla. 32932

Filed Jun. 6, 1996, Ser. No. 659,275

Int. Cl.⁶ G08G 1/017

U.S. Cl. 340—917

22 Claims



means or a write of said data into said storage portion of said control card, for performing second processing so as to read said data from said storage portion of said control card and write said read data into said storage means when said judging means judges that said control card is inserted and said identifying means identifies that said control card requests at least either a write of said data into said storage means or a read of said data from said storage portion of said control card, and for performing third processing so as to process data stored by said general card when said judging means judges that said general card is inserted.

5,777,566

ENCODING METHOD FOR PRML SYSTEM, METHOD OF AND APPARATUS FOR DEMODULATING CODE THEREOF, AND PRML SYSTEM

Kaneyasu Shimoda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

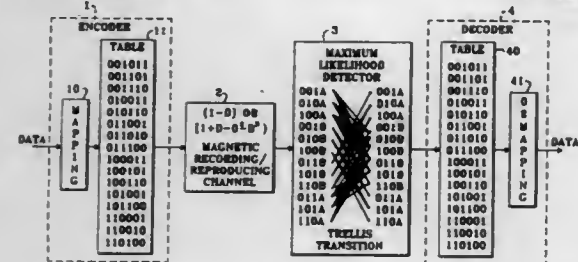
Filed Mar. 18, 1996, Ser. No. 617,238

Claims priority, application Japan, Mar. 20, 1995, 7-060279

Int. Cl. G11B 20/18

U.S. Cl. 341-58

14 Claims



1. An encoding method for a PRML system for maximum-likelihood-detecting and demodulating an encoded partial response signal in which 4-bit data are encoded into 6-bit code words $Y = \{001011, 001101, 001110, 010011, 010110, 011001, 011010, 011100, 100011, 100101, 100110, 101001, 101100, 110010, 110100\}$, said method comprising:

a step of segmenting an input data string into 4-bit data; and
a step of converting the 4-bit data into 6-bit code words Y , excluding 6-bit words $\{000000, 000001, 000010, 000011, 000100, 000101, 000110, 000111, 111000, 111001, 111010, 111011, 111100, 111101, 111110, 111111\}$ in which no clock signal is received for a long period in an EPR4 channel, excluding 6-bit words $\{001001, 001010, 001100, 010100, 100100, 011011, 011010, 011110, 101101, 101110, 101110\}$ having small gain, and excluding 6-bit words $\{010101, 101010\}$ in which the signal is 0 in the EPR4 channel.

5,777,567

SYSTEM AND METHOD FOR SERIAL TO PARALLEL DATA CONVERSION USING DELAY LINE

David M. Murata; Robert J. Bosnyak, both of San Jose, and Robert J. Drost, Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

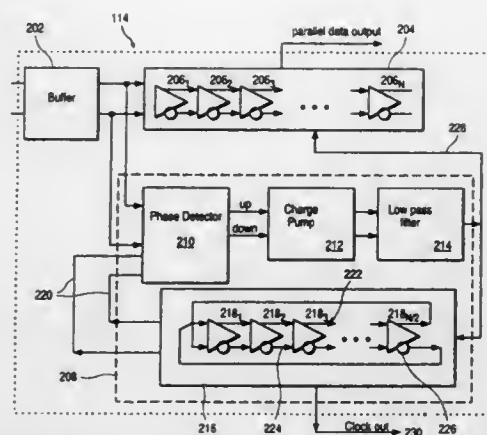
Filed Jun. 14, 1996, Ser. No. 663,583

Int. Cl. H03M 9/00

U.S. Cl. 341-100

25 Claims

1. A method for receiving data comprising the steps of:
receiving serial data elements;
measuring the rate at which said serial data elements are received;



5,777,572

DEVICE FOR DAMAGING ELECTRONIC EQUIPMENT USING UNFOCUSSED HIGH POWER MILLIMETER WAVE BEAMS

Saulius Janusas, Sea Cliff, N.Y., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

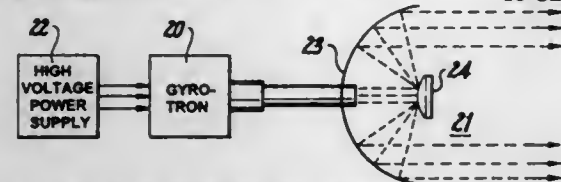
Continuation of Ser. No. 277,238, Jul. 19, 1994, abandoned.

This application Jun. 12, 1996, Ser. No. 662,813

Int. Cl.⁶ G01S 7/38

U.S. Cl. 342—13

16 Claims



1. A device for producing very high power millimeter wave beams, said device comprising:
an electron gun type millimeter wave generating means for producing RF power;
beam forming means, coupled to said wave generating means for forming said RF power into narrow axial beams; and
antenna means, having a primary and a secondary reflector, coupled to said beam forming means for receiving and redirecting said narrow axial beams, and for transmitting unfocused substantially parallel narrow axial beams substantially parallel narrow axial beams to selected targets located at remote distances from said device, said selected targets being encompassed by said unfocused substantially parallel narrow axial beams.

5,777,573

DEVICE FOR MOTION ERROR COMPENSATION FOR A RADAR WITH SYNTHETIC APERTURE BASED ON ROTATING ANTENNAS (ROSAR) FOR HELICOPTERS

Helmut Klausung, Wessling/Hochstadt, and Aribert Wolfram, Landsberg, both of Germany, assignors to Daimler-Benz Aerospace AG, Ottobrunn, Germany

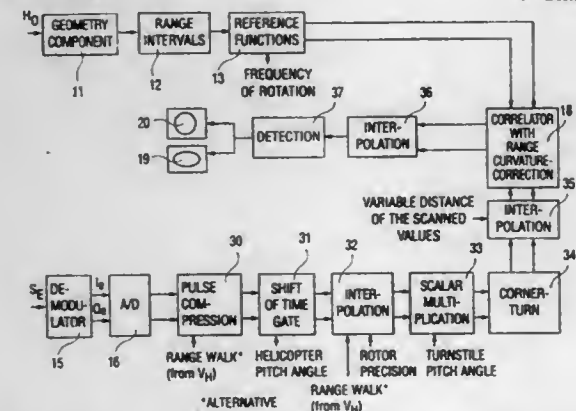
Filed Aug. 2, 1996, Ser. No. 691,715

Claims priority, application Germany, Aug. 4, 1995, 195 28 613.8

Int. Cl.⁶ G01S 13/90

U.S. Cl. 342—25

9 Claims



1. A device for motion error compensation of a synthetic aperture radar based on a rotating antenna of a helicopter and flight guidance, the device comprising:
transmitting and receiving antennas arranged on a rotating arm for transmitting successive transmitted pulses and for receiving reflected said transmitted pulses as received signals;
correlation means for correlating said received signals with preset reference functions;
correction means for correcting motion and curvature errors;
demodulation means for demodulating raw data;
A/D converter for digitizing data from said demodulation means;

a pulse compression means for pulse compression of data from said A/D, said pulse compression means transforming data by means of an FFT;
index shifting means for receiving data from said pulse compression means and for shifting a time gate of the data received from said pulse compression means;
first interpolation means for receiving data from said index shifting means and cooperating with said index shifting means for fine shifting of said time gate;
scaler multiplication means for receiving data from said interpolation means and for compensating variations in amplitude;
memory means for receiving and storing data from said scaler multiplication means;
second interpolation means for receiving data from said Corner Turn means;
said correlation means receiving data from said second interpolation means;
third interpolation means for receiving data from said correlation means, said second interpolation means, said correlation means and said third interpolation means compensating for a data shift caused by a tangential velocity component;
detection means for receiving complex data from said third interpolation means and for converting said complex data into real amplitude data;
a memory and a monitor for receiving data from said third interpolation component.

5,777,574

HIGH RESOLUTION IMAGING RADAR LINEAR FREQUENCY MODULATION BANDWIDTH MULTIPLIER

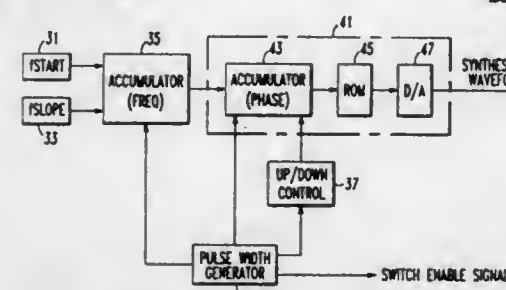
John P. Robinson, Newton, Conn., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Dec. 18, 1996, Ser. No. 769,091

Int. Cl.⁶ G01S 13/90; 7/282

U.S. Cl. 342—25

25 Claims



1. A linear frequency modulation waveform multiplier comprising:
digital waveform synthesis means for generating a chirp signal having an upchirp component varying linearly from a frequency f_1 to a frequency f_2 during a first half of a signal duration of the chirp signal and a downchirp component varying linearly from the frequency f_2 to the frequency f_1 during a second half of the signal duration of the chirp signal;
a first mixer, coupled to said digital waveform synthesizing means, for mixing the chirp signal with an upconversion signal having a frequency f_{upc} to output an upconverted chirp signal;
a bandpass filter, coupled to said first mixer, for passing only a selected band of the upconverted chirp signal as a filtered chirp signal;
a second mixer, coupled to said bandpass filter, for mixing the filtered chirp signal with a local oscillation signal to output a linear frequency modulated signal; and
local oscillator means, coupled to said second mixer, for outputting the local oscillation signal as having a frequency f_{lo1} when an upchirp component of a first half of the signal duration of the filtered chirp signal is input to said second mixer and as having a frequency f_{lo2} when a downchirp

5,777,575

RADAR SWITCHING SYSTEM

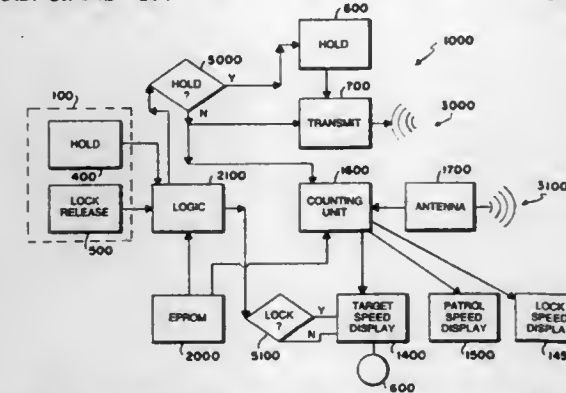
Maurice E. Shelton, and Thomas E. Mitchell, both of Chanute, Kans., assignors to Kustom Signals, Inc., Lenexa, Kans.

Filed Oct. 9, 1996, Ser. No. 731,057

Int. Cl.⁶ G01S 13/58

U.S. Cl. 342—104

12 Claims



1. In a Doppler traffic radar having transmission, standby and vehicle tracking modes, a counting unit for converting transmitted waves reflected from a target vehicle into a target speed and a screen for displaying a target vehicle speed and target locked speed thereon, an improved switching mechanism comprising:

first switch means in circuitry of the radar unit for placing the radar unit in either a standby or a microwave transmission mode;

a second switch means in circuitry of the radar unit for changing a radar unit from a standby mode to a transmission mode to direct radar waves onto a target vehicle, the tracking mode calculating a speed of a target vehicle from transmitted waves being reflected off said target vehicle, said second switch means further including means for locking the vehicle speed on the screen display and returning said radar unit to a standby mode;

said second switch means further including means for clearing said vehicle speed from said display while maintaining said radar unit in said standby mode.

5,777,576

APPARATUS AND METHODS FOR NON IMPACT IMAGING AND DIGITAL PRINTINGAlbert Zur, Givat Savion, and Benjamin Sas, Rehovot, both of Israel, assignors to Imagine Ltd., Ra Anana, Israel
Continuation-in-part of Ser. No. 398,621, Mar. 1, 1995, which is a continuation-in-part of Ser. No. 306,052, Sep. 14, 1994, Pat. No. 5,508,727, which is a continuation-in-part of Ser. No. 944,157, Sep. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 766,691, Sep. 27, 1991, Pat. No. 5,289,214, which is a continuation-in-part of Ser. No. 697,166, May 8, 1991, Pat. No. 5,157,423. This application Jun. 7, 1995, Ser. No. 487,416

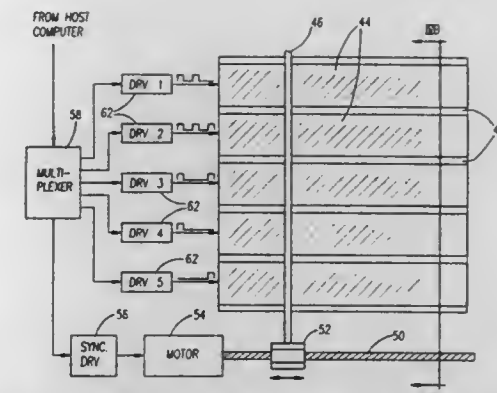
Claims priority, application Israel, May 5, 1995, 113622

Int. Cl.⁶ B41T 2/415; 2/385

U.S. Cl. 347—120

22 Claims

1. Imaging apparatus comprising:
a dielectric substrate with at least two generally opposite surfaces;
a plurality of elongate electrodes underlying a first surface of said dielectric substrate;
imaging circuitry for application of voltage signals to said plurality of electrodes;
a charge source operative to supply a flow of charges to a second surface of said dielectric substrate and including:



an electrostatic shield transversing said plurality of electrodes, said shield having an edge defining a generally linear boundary disposed along said second surface; and
wherein, following said supply of charges, said second surface retains a charge image.

5,777,577

SATELLITE SELECTION

Vinod Kumar, Paris, France, assignor to Alcatel Mobile Communication France, Paris, France

PCT No. PCT/FR94/00669, § 371 Date Dec. 6, 1995, § 102(e) Date Dec. 6, 1995, PCT Pub. No. WO94/29969, PCT Pub. Date Dec. 22, 1994

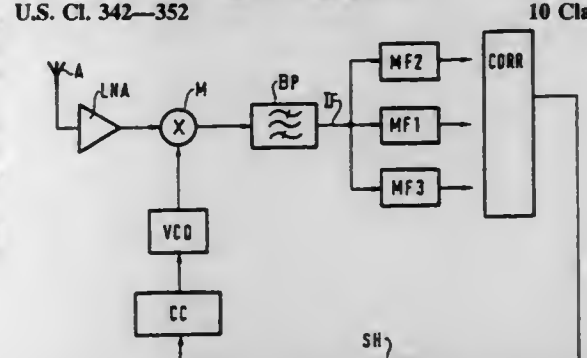
PCT Filed Jun. 7, 1994, Ser. No. 557,081

Claims priority, application France, Jun. 7, 1993, 93 06793

Int. Cl.⁶ H04B 7/185

U.S. Cl. 342—352

10 Claims



1. Device for selecting a satellite for a terminal (T) of a radio-communication system comprising a plurality of non-geostationary satellites, characterized in that it comprises measuring means for establishing location information (D) dependent on the position of the terminal relative to each of a plurality of proximity satellites (S1, S2, S3) to which it has acquired synchronization, estimator means for estimating the time in view of each of said satellites from said location information and selector means for selecting that one of said satellites (S2) having the greatest estimated time in view.

5,777,578

GLOBAL POSITIONING SYSTEM (GPS) COMPASS

Fan-Ren Chang; Li-Sheng Wang; Chi-Hsuan Tu; Yen-Weay Shi; Kun-Yuan Tu, all of Taipei, and Ching-Di Chang, Yung Kung, all of Taiwan, assignors to National Science Council, Taipei, Taiwan

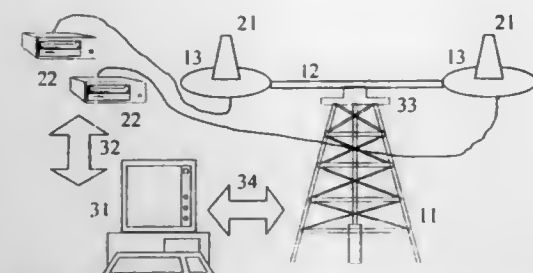
Filed Feb. 10, 1997, Ser. No. 796,479

Int. Cl.⁶ G01S 5/02

U.S. Cl. 342—357

5 Claims

1. A global positioning system compass, comprising:
a pointer unit,



a sensor unit, and a controller unit, wherein the pointer unit includes a supporting frame, a metal bar supported by the supporting frame, and metal plates engaged with the metal bar and the sensor unit includes global positioning system antennas and global positioning system receivers.

5,777,579

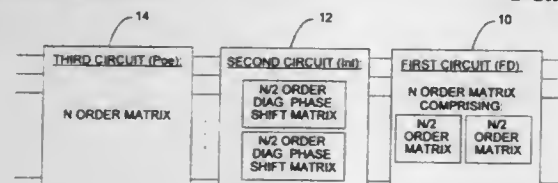
LOW COST BUTLER MATRIX MODEFORMER CIRCUIT
Allan C. Goetz, La Jolla, and Robert G. Riddle, II, San Diego, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Feb. 13, 1997, Ser. No. 799,750

Int. Cl.⁶ H01Q 3/22; 3/24; 3/26

U.S. Cl. 342—373

2 Claims



1. An antenna modeforming circuit with reduced circuit complexity, for transforming N analytic signals appearing at antenna ports to N mode signals, where N is a power of two, the mode-forming circuit comprising:

- a first circuit implementing a matrix manipulation by a decomposed matrix of Nth order, comprising two matrices of (N/2)th order;
- a second circuit implementing a matrix manipulation by a second matrix of Nth order, comprising two diagonal phase shift matrices of (N/2)th order; and
- a third circuit implementing a matrix manipulation by a third matrix of Nth order, which is cascaded with the first and second circuits to produce a desired Butler matrix transformation with fewer circuit components.

5,777,580

VEHICLE LOCATION SYSTEM

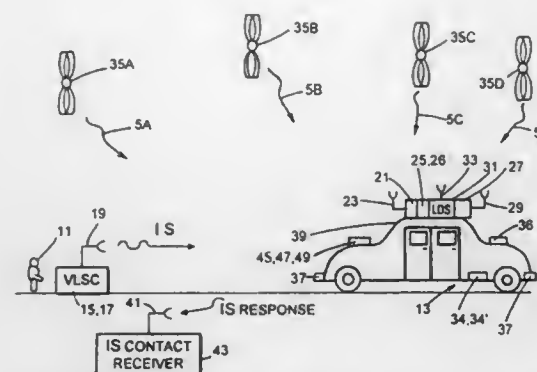
James M. Janky, Los Altos, and David G. Bird, Sunnyvale, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 978,272, Nov. 18, 1992, Pat. No. 5,418,537. This application Mar. 1, 1995, Ser. No. 396,977
Int. Cl.⁶ G01S 3/02

U.S. Cl. 342—457

8 Claims

- 1. Apparatus for determining the present location of a vehicle, the apparatus comprising:
 - an activatable location determination (LD) system, carried on or in a vehicle, to receive and process LD signals from LD signal sources spaced apart from the vehicle and to determine present location of the LD system;
 - a vehicle interrogation signal (IS) receiver that receives a vehicle interrogation signal and, in response thereto, issues a location interrogation signal that commands the LD system to



determine and issue, as an output signal, information on the present location of the LD system; an IS responder, connected to the LD system, that receives the LD system output signal and transmits this signal to a selected IS contact receiver that is spaced apart from the vehicle; and an activatable power supply that delivers electrical power to the LD system, to the IS receiver and to the IS responder, where power from power supply is delivered to the LD system for a short time interval at one or more selected times to allow estimation of the present location of the LD system; wherein said IS responder selects said IS contact receiver, from a plurality of IS contact receivers, to receive said LD system output signal, based upon said LD system present location relative to the locations of the IS contact receivers; and wherein at least one of said IS receiver and said IS responder is part of an LAN station in a WAN/LAN communications network, and the LAN station comprises an LAN packet radio that communicates using a frequency range with, and is part of, a WAN network that serves a geographic region in which said vehicle is likely to be located.

5,777,581

TUNABLE MICROSTRIP PATCH ANTENNAS

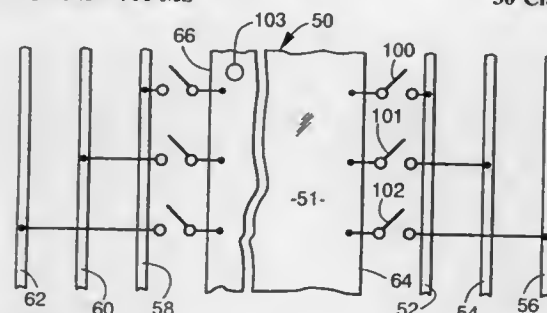
James D. Lilly, Silver Spring, and Andrew Humen, Jr., Crofton, both of Md., assignors to Atlantic Aerospace Electronics Corporation, Greenbelt, Md.

Filed Dec. 7, 1995, Ser. No. 568,940

Int. Cl.⁶ H01Q 1/38

U.S. Cl. 343—700 MS

30 Claims



- 1. An antenna including:
 - a ground plane that is electrically conductive having a first side surface;
 - a first patch that is electrically conductive having:
 - at least one edge; and
 - a first side surface;
 - a dielectric layer positioned between said first patch and said ground plane, said dielectric layer including:
 - a first side surface in contact with said first side surface of said first patch; and
 - a second side surface in contact with said first side surface of said ground plane;
 - at least one tuning strip that is electrically conductive spaced from said at least one edge of said first patch and spaced from said ground plane by said dielectric layer;

an RF lead connected to said first patch; switch means to electrically connect and disconnect RF energy, in correspondence with an applied DC bias, between said at least one tuning strip and said first patch; a center hole through said patch, said dielectric layer and said ground plane; and lines for supplying said applied DC bias to said switch means that pass through said center hole.

5,777,582

DEPLOYABLE DOUBLE-MEMBRANE SURFACE ANTENNA

Anthony Raab, Kanata, Canada, assignor to CAL Corporation, Ottawa, Canada

Filed May 7, 1996, Ser. No. 646,092

Claims priority, application Canada, May 16, 1995, 2149492

Int. Cl.⁶ H01Q 1/38; 15/20

U.S. Cl. 343—700 MS

12 Claims



1. A deployable double membrane surface planar antenna system having:

- (a) a pair of independently flexible membranes carrying elements of the antenna system, comprising an upper membrane provided with radiating patches, a lower membrane uniformly spaced from the upper membrane and forming an excitation cavity between said upper and lower membranes, said lower membrane having a conducting film on the surface thereof proximal said upper membrane, said conducting film forming a ground plane, with coupling slots, each slot being excited by a microstrip transmission line positioned on said lower membrane on the side of said lower membrane distal said upper membrane;
- (b) means fixed to corresponding extremity locations of the membranes for stretching the membranes taught and flat;
- (c) spacers rigidly fixed to corresponding facing locations on said upper and lower membranes, the locations being selected such that a line passing through each of the spacers is orthogonal to the surface of the membranes when the membranes are stretched, and at another angle to the surface when the membranes are either relaxed or one membrane is shifted laterally to the other.

5,777,583

HIGH GAIN BROADBAND PLANAR ANTENNA

Frank J. Canora, Millbrook, N.Y.; William Burrell Nunnery, Cary, N.C.; Salla Ponnappalli, Fishkill, N.Y.; Brian Scott Oakley, Burlington, N.C., and Modest Michael Oprysko, Mahopac, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

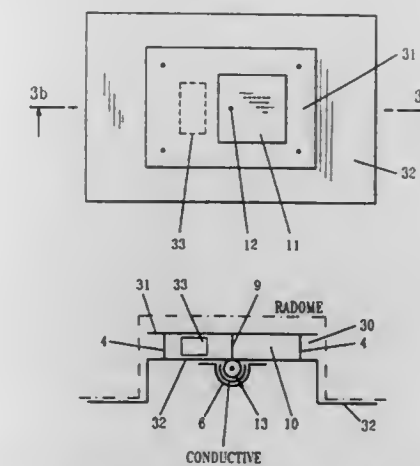
Filed Apr. 26, 1995, Ser. No. 428,977

Int. Cl.⁶ H01Q 1/38

U.S. Cl. 343—700 MS

7 Claims

- 1. An antenna, comprising:
 - a planar insulating substrate;
 - a conductive patch secured to a upper surface of the substrate;
 - a ground plane coupled to a lower surface of the substrate by insulating connecting means;
 - the substrate and ground plane defining therebetween an airgap for controlling the bandwidth and gain of the antenna;
 - a feed mechanism having means for coupling the patch and a receiver/transmitter, the mechanism comprising a coaxial cable extending transversely along a bottom surface of said ground plane, an outer conductor of which is electrically coupled to the ground plane, and an inner conductor of which is electrically coupled to the patch; and



a conductive strap secured to the bottom surface of the ground plane by means of one or more fasteners, the coaxial cable being disposed between the strap and the ground plane, the strap thereby facilitating electrical contact between the outer conductor and the ground plane;

wherein the inner conductor is coupled to the patch via a feed pin disposed between the substrate and the ground plane, the feed pin passing through a hole in the substrate and coupling the patch, the feed pin being coupled to the inner conductor through a hole in the ground plane, and the feed pin and the inner conductor are electrically insulated from the ground plane.

5,777,584

PLANAR ANTENNA

Lutz Rothe, Halle, Germany, assignor to Pates Technology GmbH, Lubeck, Germany

PCT No. PCT/EP94/03957, § 371 Date May 31, 1996, § 102(e) Date May 31, 1996, PCT Pub. No. WO95/15591, PCT Pub. Date Jun. 8, 1995

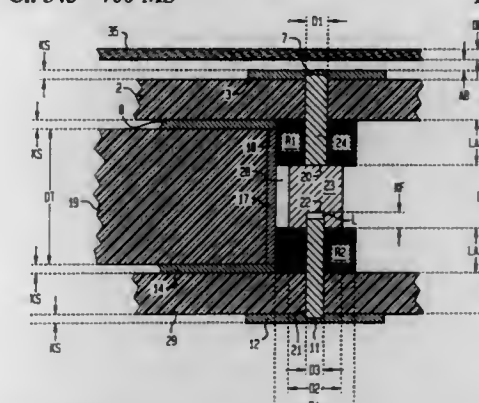
PCT Filed Nov. 29, 1994, Ser. No. 652,454

Claims priority, application Germany, Dec. 1, 1993, 43 40 825.7

Int. Cl.⁶ H01Q 1/38

U.S. Cl. 343—700 MS

18 Claims



- 1. Planar antenna (1) with surface resonators (5), which are connected to a feedpoint (7) by means of a supply network (6), the feedpoint (7) of the planar antenna (1) being connected to a terminal and connection point (11) of a connected electronic circuit (12) by means of a coupling element (13), wherein the coupling element (13) is a coaxial conductor, in which the ratio, of the outer diameter of the inner conductor to the inner diameter of the outer conductor (17), changes between the feedpoint (7) of the supply network (6) and the terminal (11) of the connected electronic circuit (12), characterized in that

I. A matrix display apparatus comprising:
a plurality of pixels arranged in a form of a matrix, divided into a plurality of pixel groups each having at least two columns of the pixels;
a plurality of data signal lines for applying a data signal to the plurality of the pixels, the plurality of data signal lines being parallel with each other and being disposed between the plurality of pixels along a direction of a column;

a plurality M of scanning signal lines for applying a scanning signal to the plurality of the pixels, the plurality of scanning signal lines being parallel with each other and being disposed between the plurality of pixels along a direction of a row;

first switching means, disposed for each of the plurality of pixels, for allowing the data signal to be applied to the corresponding pixel based on the scanning signal, the first switching means being connected to the corresponding pixel, data signal line and scanning signal line;

second switching means, disposed for each of the pixels in at least one of the plurality of the pixel groups, for controlling a timing for allowing the data signal to be applied to the corresponding pixel, the second switching means being connected in series to the first switching means between the first switching means and the data signal line and

data signal line driving means for sampling an image signal for each of the plurality of scanning signal lines at a predetermined timing within a horizontal scanning period for the corresponding data signal line and for outputting the sampled image signal to the corresponding data signal line as the data signal, said data signal being applied to the pixels connected to the mth scanning signal line for a period including the horizontal scanning period for the mth scanning signal line and a portion of the horizontal scanning period for an (m+1)th scanning signal line, where $1 \leq m \leq M-1$.

5,777,592

LIQUID CRYSTAL APPARATUS

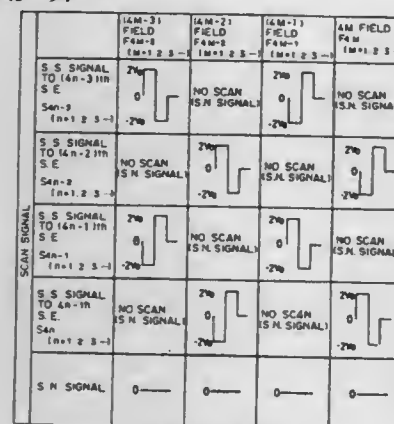
Tadashi Mihara, Kawasaki; Hiroshi Inoue, Yokohama; Atsushi Mizutome, Fujisawa; Akira Tsuboyama, Sagamiyohara; Osamu Taniguchi, Chigasaki, and Yoshihiro Onitsuka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 220,572, Mar. 31, 1994, Pat. No. 5,506,601, which is a continuation of Ser. No. 735,613, Jul. 24, 1991, abandoned, which is a division of Ser. No. 271,240, Nov. 14, 1988, Pat. No. 5,058,994. This application May 25, 1995, Ser. No. 450,217

Claims priority, application Japan, Nov. 12, 1987, 62-287172; Jan. 6, 1988, 63-001531; Oct. 21, 1988, 63-266715

Int. Cl.⁶ G09G 3/36

U.S. Cl. 345—94



S.S. = SCANNING SELECTION
S.E. = SCANNING ELECTRODE

1. A liquid crystal apparatus, comprising:
 - a liquid crystal device comprising an electrode matrix composed of scanning electrodes, data electrodes, and a liquid crystal; and
 - driving means including a scanning drive means and a data drive means;
 - means for applying to the scanning electrodes a first scanning selection signal and a second scanning selection signal having mutually different voltage waveforms in one vertical scanning period; (ii) means for selecting scanning electrodes N scanning electrodes apart in a first vertical scanning period and

selecting scanning electrodes not selected in the first vertical scanning period N scanning electrodes apart (N is an integer such as 1, 2, 3, ...) in a second vertical scanning period so that each scanning electrode is supplied with the first and second scanning selection signals in a frame period including at least the first and second vertical scanning periods, and (iii) means for exchanging the first and second scanning selection signals applied to each scanning electrode for each frame period so that, in a subsequent frame period, the scanning electrodes having received the first and second scanning selection signals, respectively, in a preceding frame period, receive the second and first scanning selection signals, respectively;

said data drive means being a means for applying data signals in synchronism with the scanning selection signals.

5,777,593

DRIVING METHOD AND SYSTEM FOR ANTIFERROELECTRIC LIQUID-CRYSTAL DISPLAY DEVICE

Shinya Kondoh, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

PCT No. PCT/JP96/01229, § 371 Date Jan. 7, 1997, § 102(e) Date Jan. 7, 1997, PCT Pub. No. WO96/35976, PCT Pub. Date Nov. 14, 1996

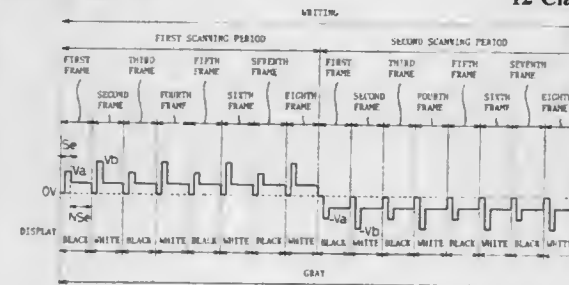
PCT Filed May 9, 1997, Ser. No. 765,768

Claims priority, application Japan, May 11, 1995, 70112741

Int. Cl.⁶ G09G 3/36

U.S. Cl. 345—97

12 Claims



1. A driving method for an antiferroelectric liquid-crystal display device including pixels in the form of a matrix and having an antiferroelectric liquid crystal interposed between a pair of substrates, characterized in that:

said antiferroelectric liquid crystal assumes a first ferroelectric state, a second ferroelectric state to be set with application of a voltage that is opposite in polarity to a voltage to be applied to set the first, ferroelectric state, and an antiferroelectric state;

writing of pixels is carried out during at least two consecutive scanning periods, each scanning period being composed of a plurality of frames;

an average value of amounts of light transmitted during said plurality of frames is set as an amount of light transmitted by pixels; and

both frames during which said antiferroelectric liquid crystal assumes the first ferroelectric state and frames during which said antiferroelectric liquid crystal assumes the second ferroelectric state are not included in the same scanning period.

5,777,594

LIQUID CRYSTAL DISPLAY APPARATUS

Mamoru Miyawaki, Isehara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1996, Ser. No. 713,220

Claims priority, application Japan, Sep. 13, 1995, 7-259582

Int. Cl.⁶ G09G 3/36

U.S. Cl. 345—102

9 Claims

1. A transmission-type liquid crystal display device comprising:

5,777,597

INTERACTION SUPPORT SYSTEM AND METHOD

Masayuki Tani; Toshifumi Arai; Koichiro Tanikoshi, and Shinya Tanifuji, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

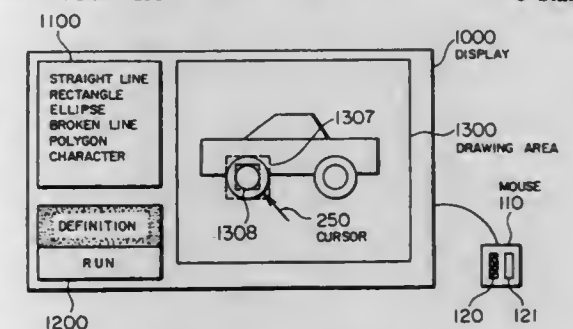
Continuation of Ser. No. 86,360, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 926,390, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 325,377, Mar. 20, 1989, abandoned. This application Aug. 15, 1994, Ser. No. 290,117

Claims priority, application Japan, Mar. 23, 1988, 63-67132

Int. Cl.⁶ G09G 5/36

6 Claims

U.S. Cl. 345—133



- a liquid crystal panel having a displaying portion and a non-displaying portion, said non-displaying portion being arranged at a peripheral portion of said displaying portion, said liquid crystal panel comprising an active matrix substrate having a light-intercepting layer and a driving circuit arranged at the non-displaying portion;
- a light source for irradiating the liquid crystal with a light through said active matrix substrate; and
- a heat-radiating plate located between the light source and the active matrix substrate, wherein said heat-radiating plate prevents the irradiation of said non-displaying portion with the light from said light source.

5,777,595

Patent Not Issued For This Number

5,777,596

TOUCH SENSITIVE FLAT PANEL DISPLAY

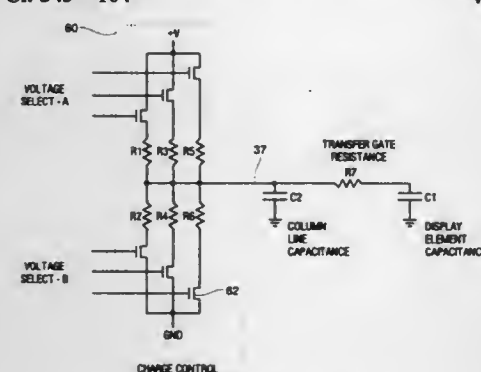
Brian K. Herbert, Colorado Springs, Colo., assignor to Symbolics, Inc., Ft. Collins, Colo.

Filed Nov. 13, 1995, Ser. No. 556,689

Int. Cl.⁶ G09G 3/36

U.S. Cl. 345—104

41 Claims



1. A touch sensitive liquid crystal display (LCD) system comprising:

a plurality of LCD elements, each of said elements having a corresponding charge time which changes when an external touch is applied to said element by a user;

means for selectively applying a charge to each of said LCD elements in said plurality;

means for monitoring a voltage across each of said LCD elements in said plurality and for using said voltage to compare said charge time of each of said LCD elements to a reference charge time value; and

means, responsive to said means for monitoring, for determining which, if any, of said LCD elements in said plurality are currently being touched by a user, based on said comparison.

5,777,598

COMPUTER-GENERATED DISPLAY PERMITTING ALIGNMENT OF ONE SCALE OF EACH OF A PLURALITY OF GRAPHS

Anil K. Gowda, Eden Prairie; Timothy J. McCarthy, Plymouth; Jeffrey C. Randall, Eden Prairie, and George J. Tate, Edina, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

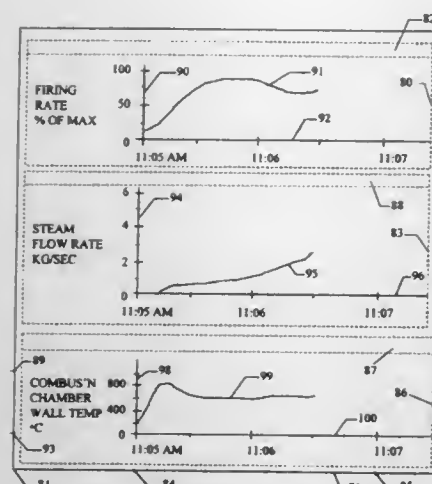
Filed Dec. 30, 1996, Ser. No. 774,478

Int. Cl.⁶ G09G 5/36

5 Claims

U.S. Cl. 345—133

1. A display system for simultaneously visually displaying on a screen having a rectangular pixel matrix, first through Nth graphs having conformed and vertically aligned X axis scales indicating a range of values of an independent variable and a plot in each graph displaying the respective one of first through Nth distinct dependent variable data sets encoded in first through Nth data signals respectively, each data set comprising a plurality of data values, each data value in each data set corresponding to a value indicated in the X axis scale, said display system comprising:



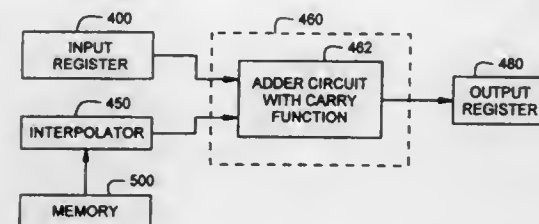
- a first register for recording an X axis scale factor, and providing a scale factor signal encoding the recorded scale factor value;
- a second register for recording an X axis origin point scale value from the independent variable value range, and corresponding to a value in each of the dependent variable data sets, and providing a scale value signal encoding the recorded scale value;
- a third register for recording an origin point pixel X coordinate value and providing an origin point X coordinate signal encoding the recorded origin point pixel X coordinate value;
- first through Nth Y coordinate registers associated respectively with the first through Nth data sets, each for recording for the associated one of the first through Nth data sets, a Y axis pixel coordinate, each of said Y axis pixel coordinates recorded by the one through Nth Y coordinate registers different from every other Y axis pixel coordinate, and each Y coordinate register providing one of first through Nth Y pixel signals encoding the coordinate value recorded by that Y coordinate register;
- a display memory having a plurality of pixel bytes each assigned to a pixel in the pixel matrix, and recording display data values in the pixel bytes responsive to first through Nth graph signals, said display memory providing a display signal encoding the recorded display data values;
- a display unit receiving the display signal and including the screen having rectangular pixel matrix for providing a visual indication based on the display signal, each pixel in the matrix in association with a particular pixel byte of the display memory, and each pixel providing a visual indication dependent on the display data value recorded in the associated display memory pixel byte; and
- first through Nth graph generators associated respectively with the first through Nth data signals and the first through Nth Y pixel signals, each graph generator receiving the scale factor signal, the scale value signal, the origin point X coordinate signal, the associated one of the first through Nth Y pixel signals, and the associated one of the first through Nth data signals, each said graph generator providing a graph signal from which the data memory records values in pixel bytes, from which the display unit generates an X axis scale having the scale factor encoded in the scale factor signal, the origin point scale value encoded in the scale value signal, the origin point pixel X coordinate value encoded in the origin point X coordinate signal, and the Y coordinate value encoded in the associated one of the first through Nth Y pixel signals, and each graph generator further providing a graph signal from which the data memory records values in pixel bytes from which the display unit generates a data plot representing the data encoded in the one of the first through Nth data signals with which is associated each said graph generator, each of said data plot Y pixel coordinates being relative to the Y axis pixel coordinate value encoded in the one of the Y pixel signals received by each said graph generator.

5,777,599
IMAGE GENERATION DEVICE AND METHOD USING DITHERING
John W. Poduska, Jr., Belmont, Mass., assignor to Oki Electric Industry Co., Ltd., Japan

Filed Feb. 14, 1992, Ser. No. 837,240
Int. Cl.⁶ G09G 5/36

U.S. Cl. 345—136

24 Claims



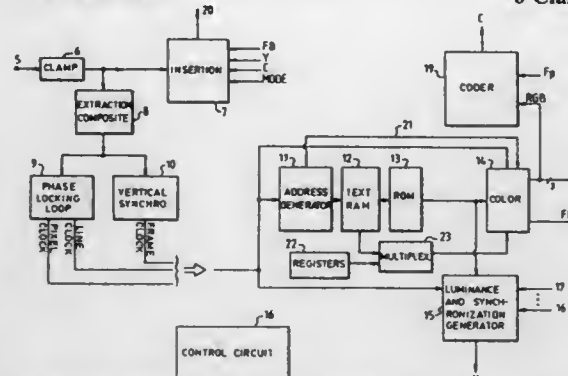
1. An image processing device comprising:
an input register coupled to receive input data which includes location and intensity information of images to be displayed;
an interpolator register coupled to receive a dithering value which is dependent on the location information of the input data in the input register;
an adder coupled to said input register and said interpolator register and configured to provide a resultant value of the addition of the intensity information of the input data and the dithering value; and
an output register coupled to said adder for receiving a selected number of bits of the resultant value,
wherein the dithering value is dependent on the location information of a next input data.

5,777,600
PROCESS FOR CODING CHARACTER COLORS IN VIDEO SYSTEMS AND DEVICE USING THIS PROCESS
Olivier Queinnec, Grenoble, France, assignor to Thomson Consumer Electronics, Courbevoie, France

Continuation of Ser. No. 207,138, Mar. 7, 1994, abandoned.
This application Feb. 22, 1996, Ser. No. 605,644
Claims priority, application France, Mar. 12, 1993, 93 02868
Int. Cl.⁶ G09G 5/22

U.S. Cl. 345—141

6 Claims



1. Process for coding the colors of characters in a video system which includes a character generator making use of character models comprising at least two zones, and wherein a single color attribute having an attribute level higher than page level is substituted as a replacement for color attributes of zones of all of the characters corresponding to said attribute level, luminance values chosen for each of the character zones being such that for a given character, said character zones can be visually distinguished when they are of the same color.

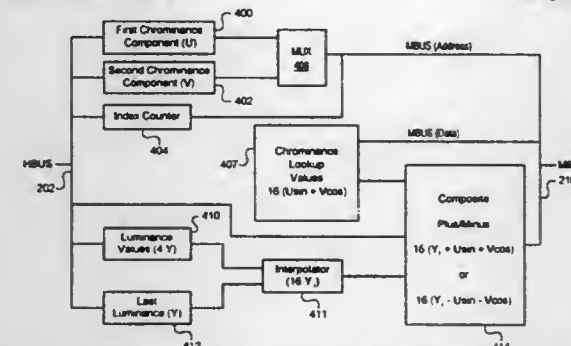
5,777,601
SYSTEM AND METHOD FOR GENERATING VIDEO IN A COMPUTER SYSTEM

David C. Baker; Daniel P. Mulligan, and Eric J. Schell, all of Austin, Tex., assignors to Brooktree Corporation, San Diego, Calif.

Division of Ser. No. 337,350, Nov. 10, 1994. This application
Jul. 25, 1996, Ser. No. 687,274
Int. Cl.⁶ G09G 5/02

U.S. Cl. 345—154

18 Claims



5,777,604

TOUCH PANEL INPUT APPARATUS PERFORMING A SAMPLING OPERATION INTERMITTENTLY

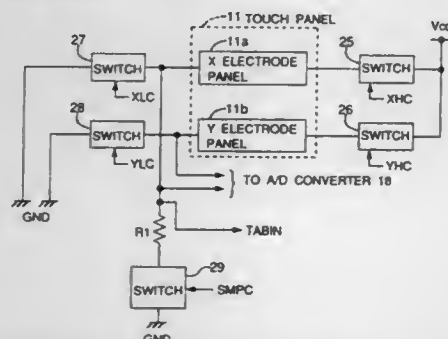
Yoshio Okajima, Nara; Kazumasa Kimura, and Tazo Nishida, both of Yamatokooryama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1995, Ser. No. 467,294

Claims priority, application Japan, Oct. 31, 1994, 6-266622 Int. Cl.⁶ G09G 3/00

U.S. Cl. 345—173

20 Claims



1. A touch panel input apparatus comprising:
 - a touch panel including two electrode panels one of which has a resistance distribution uniform in an X-direction and the other of which has a resistance distribution uniform in a Y-direction;
 - a touch panel control circuit for, in a power-off state of the apparatus, applying a first voltage to one end of one of the two electrode panels, and at the same time, applying a second voltage to one end of the other electrode panel via an output resistance, and sampling a voltage which is developed between both terminals of the output resistance when the two electrode panels have been brought into contact with each other; and
 - wherein the touch panel control circuit includes:
 - electrode panel control means for, in the power-off state of the apparatus, intermittently applying the first voltage to the one end of the one electrode panel synchronously with a clock signal, and at the same time, intermittently applying the second voltage to the one end of the other electrode panel via the output resistance; and
 - sampling means for, in the power-off state of the apparatus, performing the sampling of the voltage synchronously with the clock signal and outputting a signal indicating whether or not the sampled voltage is equal to or higher than a predetermined level, wherein when the signal indicates that the sampled voltage is equal to or higher than the predetermined level, the signal is a power-on instruction signal.

5,777,605

COORDINATE INPUTTING METHOD AND APPARATUS, AND INFORMATION PROCESSING APPARATUS

Hitoshi Yoshinobu, Kanagawa; Masahiro Nakano, Tokyo, and Kazuhiro Akaiki, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

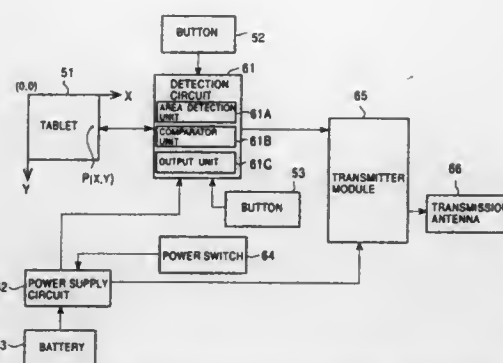
Filed May 9, 1996, Ser. No. 647,044

Claims priority, application Japan, May 12, 1995, 7-113483 Int. Cl.⁶ G09G 3/00

U.S. Cl. 345—173

11 Claims

1. A coordinate inputting apparatus for inputting a coordinate, said apparatus comprising:
 - operation means which is operable with a finger or pen;
 - position detecting means for detecting a position where said finger or pen contacts said operation means;
 - area detecting means for detecting the area value of the contact area where said finger or pen contacts said operation means;
 - comparison means for comparing said contact area value detected by said area detecting means with a predefined reference value; and



output means for outputting relative coordinate information corresponding to said position detected by said position detecting means or absolute coordinate information corresponding to said position detected by said position detecting means according to the comparison result given by said comparison means, thereby automatically switching between said relative coordinate information and said absolute coordinate information on the basis of said comparison result.

5,777,606

TOUCH PANEL

Shigemi Kurashima; Akihiko Sakaguchi, and Katsuhiko Kurasawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 524,575, Sep. 7, 1995, Pat. No. 5,640,258.

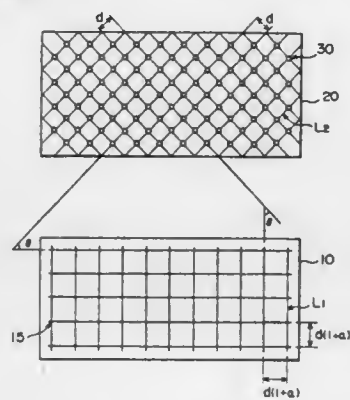
This application Feb. 25, 1997, Ser. No. 805,774

Claims priority, application Japan, Jan. 27, 1995, 7-011755

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345—173

1 Claim



1. A touch panel comprising:
 - a display unit having display elements which are arranged in a first lattice; and
 - an input panel, disposed on said display unit, having a structure comprising transparent resistive films maintained at a predetermined distance by insulating dot spacers and provided on a transparent substrate, the insulating dot spacers being arranged in a second lattice, wherein a relative angle θ between a direction in which the display elements are arranged in the first lattice and a direction in which the insulating dot spacers are arranged in the second lattice falls in a range of:

$$0^\circ < \theta < 15^\circ.$$

wherein a value "a" ($a \geq 0$) representing a relationship between a lattice interval of the first lattice and a lattice interval of the second lattice satisfies a condition of

$$\frac{d(1+a)}{\sqrt{(1+a-\cos\theta)^2 + \sin^2\theta}} \leq 2 \text{ millimeters,}$$

the lattice interval being an interval between adjacent lines of the lattice, the lattice intervals of the first lattice and the second lattice respectively having values d and $d(1+a)$ or $d(1+a)$ and d .

5,777,607

LOW-COST RESISTIVE TABLET WITH TOUCH AND STYLUS FUNCTIONALITY

Gerardus J. K. M. Koolen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

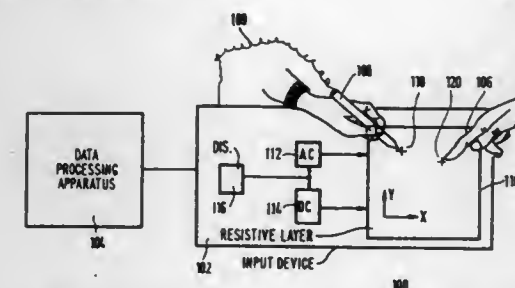
Filed Feb. 20, 1996, Ser. No. 602,547

Claims priority, application European Pat. Off., Feb. 22, 1995, 95200433

Int. Cl.⁶ G06F 3/02

U.S. Cl. 345—174

6 Claims



1. A data processing system with a data input device for enabling a user to enter data into the system both by touching the device and by manipulating a stylus in the proximity of the device, wherein the device comprises a resistive layer and an AC driver for driving the layer with a time-varying voltage to enable capacitive detection of the user's touch, wherein the stylus is electrically connected to the device, wherein the device comprises a DC driver for driving the layer with a substantially constant voltage to enable resistive detection of the stylus; and wherein the system comprises disabling means to selectively disable the AC driver upon detection of the user intending to use the stylus to enter the data.

5,777,608

APPARATUS AND METHOD FOR IN-PARALLEL SCAN-LINE GRAPHICS RENDERING USING CONTENT-SEARCHABLE MEMORIES

G. Jack Lipovski, and David M. Mielke, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 987,008, Dec. 7, 1992, which is a continuation-in-part of Ser. No. 577,991, Sep. 5, 1990, Pat. No. 5,184,325, which is a continuation-in-part of Ser. No. 321,847, Mar. 10, 1989, Pat. No. 4,989,180. This application Mar. 1, 1994, Ser. No. 203,898

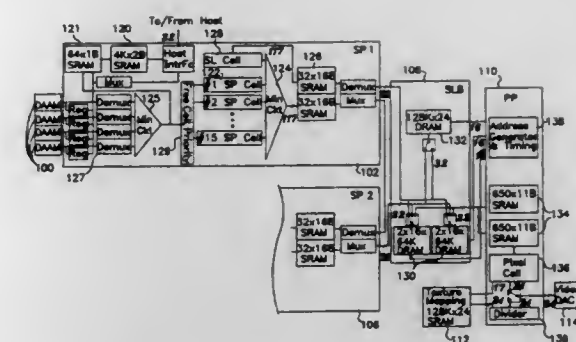
Int. Cl.⁶ G09G 5/36

U.S. Cl. 345—189

25 Claims

1. A graphics apparatus suitable for rendering, on a display driven by display signals, a scene in at least three dimensions containing multiple objects, comprising:

- (a) memory means for storing a plurality of multiple-bit words in multiple-bit word storage locations, each of which words contains data identifying the multi-axis location of the vertices of a polygonal facet of an object in a scene; and
- (b) control means, electronically coupled to the memory means and to the display, for (1) controlling the selection and the outputting from the memory means of a word that contains data representing the select facet at least a portion of which is visible at a selected pixel of the display, regardless of the



order in which the facet data are stored in the words of the memory means, and regardless of the numbers of pixels to which the facet will be displayed, (2) generating display signals corresponding to the select facet, and (3) controlling the transmittal of the display signals to drive the display.

5,777,609

METHOD OF EXPLOITING COLORS ON SCREEN

Dominique Coquelet; Jean-Francois Meffre, both of Pau, and Neamen Kesks, Mont, all of France, assignors to Societe Nationale Elf Aquitaine, Paris La Defense, France

Continuation of Ser. No. 866,164, Aug. 31, 1992, abandoned.

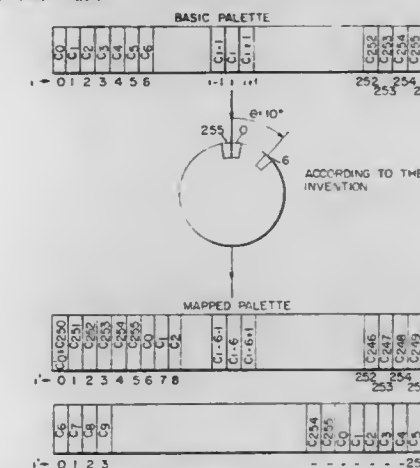
This application Dec. 1, 1994, Ser. No. 352,185

Claims priority, application France, Oct. 29, 1990, 90 13384

Int. Cl.⁶ G09G 5/06

U.S. Cl. 345—199

25 Claims



1. A method of exploiting colours by modifying a colour palette comprising the steps of:
 - splitting a continuous range of colours into 2^B slices of equal size, where B is an integer and beginning and end colours of the range of colours are nearly the same, thereby creating a first palette;
 - assigning a serial number between 1 and 2^B to each of the slices;
 - choosing a lighting angle value;
 - determining the serial number of the slice to which the lighting angle value corresponds;
 - creating a second palette by shifting each of the 2^B slices in response to the determination of the serial number to which the lighting angle value corresponds, such that said second palette includes a continuous range of colours divided into 2^B color values; and
 - displaying an image as a function of the second palette.

5,777,610

SMALL-SIZED, LIGHTWEIGHT DISPLAY DEVICE EASY TO REWORK AND METHOD OF ASSEMBLING THE SAME

Shinichi Sugimoto, Nara; Katsunori Nagata, Ikoma-gun, and Yasunobu Tagusa, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

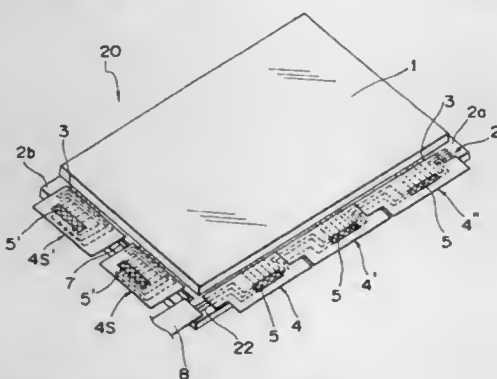
Filed Oct. 27, 1994, Ser. No. 331,362

Claims priority, application Japan, Oct. 28, 1993, 5-270335; Dec. 24, 1993, 5-327507

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345—206

11 Claims



1. A display panel assembly, comprising:

a display panel having a plurality of electrode terminals extending perpendicular to sides of the display panel and arranged along the sides in a peripheral portion of the display panel, wherein the electrode terminals are divided into groups and the groups of the electrode terminals are spaced from each other;

flexible wiring boards overlapping the display panel at the peripheral portion, each of which is mounted with a drive circuit for driving the display panel, each flexible wiring board having (a) a wiring layer which is connected with the drive circuit and which includes input terminals, output terminals and junction terminals and (b) circuit wirings connecting the input terminals with the junction terminals of the flexible wiring board; and

circuit wirings connected with the input terminals of only one of the flexible wiring board for transmitting a control signal received from outside to the drive circuits,

said output terminals of each flexible wiring board are connected in a superposed manner with an associated group of the electrode terminals, and said junction terminals of at least one flexible wiring board are connected in a superposed manner with the input terminals of the adjacent flexible wiring board, connected portions of the junction and input terminals of the adjacent flexible wiring boards being located on the peripheral portion of the display panel in a space between the adjacent groups of the electrode terminals.

5,777,611

APPARATUS FOR CONTROLLING POWER SEQUENCE OF AN LCD MODULE

Yoon Seok Song, Kyoungkido, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed May 17, 1996, Ser. No. 649,509

Claims priority, application Rep. of Korea, May 17, 1995, 1995-12294

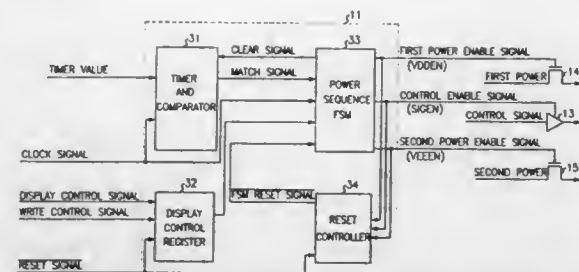
Int. Cl.⁶ G09G 5/00

U.S. Cl. 345—212

21 Claims

1. An apparatus for sequentially controlling enable signals to supply power to a display, comprising:

a timing and comparing means for receiving a timer value and a clock signal from an external circuit and outputting a match



signal to control a time interval to sequentially generate said enable signals and to sequentially disable said enable signals; a display control means for controlling said display responsive to a display control signal, a write control signal and a reset signal from said external circuit;

a power sequence FSM (finite state machine) for receiving the output of said display control means, said match signal from said timing and comparing means, said clock signal from an external circuit and a FSM reset signal, and outputting a clear signal to said timing and comparing means or outputting a first and second power enable signals and a control enable signal to said display; and

a FSM reset signal generating means for receiving said reset signal from said external circuit and said first and second power enable signals and said control enable signal from said power sequence FSM, and outputting said FSM reset signal to said power sequence FSM in order to mask said first and second power enable signals and said control enable signal.

5,777,612

MULTIMEDIA DYNAMIC SYNCHRONIZATION SYSTEM

Hiroshi Kataoka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

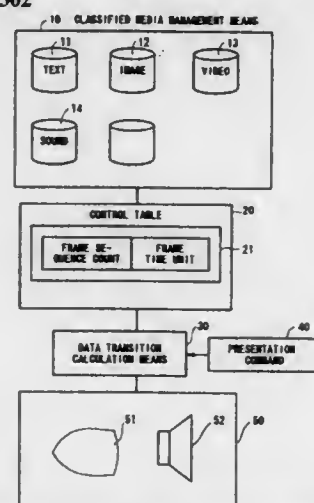
Filed Nov. 22, 1995, Ser. No. 562,179

Claims priority, application Japan, Mar. 20, 1995, 7-059597

Int. Cl.⁶ G06T 13/00

U.S. Cl. 345—302

4 Claims



1. A multimedia dynamic synchronization system which represents a plurality of multimedia data objects in synchronization with transition of time, location and frame number, the system comprising:

classified media management means for storing a plurality of data being classified by the types of the media, which data are specific to respective types of media;

sequence data memory means for separately storing in control table form a frame sequence count that represents a sequential data length in a count of frames after starting of a data presentation, and a frame unit time that represents a unit time length for one frame during which the data presentation is continuously performed; and

data transition calculation means for dynamically calculating a sequence length indicative of a data length measured from a starting time of the data presentation each time a presentation of the media is performed, the sequence length being obtained by calculating a product of the frame sequence count and the frame unit time stored in said sequence data memory means.

5,777,613

Patent Not Issued For This Number

5,777,614

EDITING SUPPORT SYSTEM INCLUDING AN INTERACTIVE INTERFACE

Haru Ando, Kokubunji, and Nobuo Hataoka, Kanagawa-ken, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

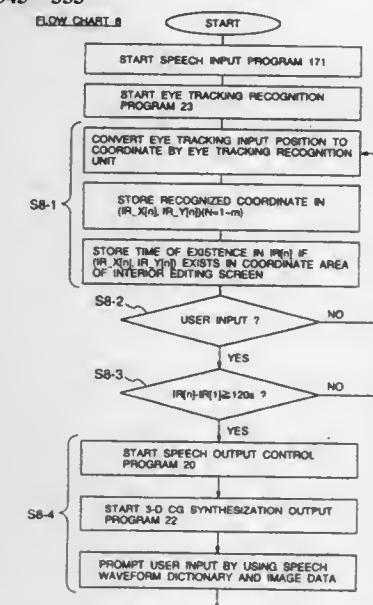
Filed Oct. 13, 1995, Ser. No. 542,736

Claims priority, application Japan, Oct. 14, 1994, 6-249072

Int. Cl.⁶ G06F 3/00

U.S. Cl. 345—333

20 Claims



1. In an information processing apparatus utilizing speech comprising:

information display means for displaying information;

position information input means for user inputting continuous position information by a pointing gesture;

speech information input means for inputting speech information;

input information storing means for temporarily storing the position information and the speech information inputted by said input means;

language information storing means for storing an acoustic standard pattern representing vocal sound/syllable or word information and grammar information;

speech information storing means for storing content of speech to be used to output speech;

draw information storing means for storing draw or display information to be used for drawing;

speech information analysis means for comparing the speech inputted by said input means by using at least one of the acoustic standard pattern representing the vocal sound/syllable or the word information and the grammar information stored in said language information storing means;

speech output means for outputting speech information by speech information waveform stored in said speech information storing means;

5,777,615

MULTIPLE DISPLAY POINTERS FOR COMPUTER GRAPHICAL USER INTERFACES

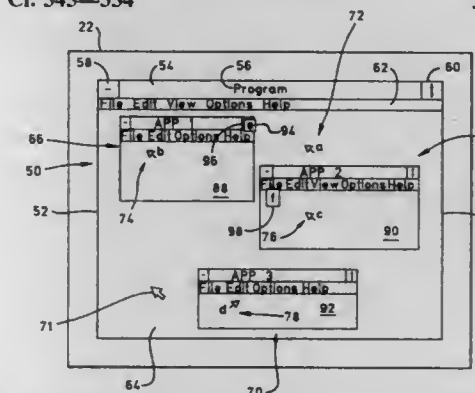
Ronald Jason Barber; Daniel Alexander Ford, both of San Jose, and Edwin Joseph Selker, Palo Alto, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 631,110, Apr. 12, 1996, Pat. No. 5,699,534, which is a continuation of Ser. No. 227,939, Apr. 15, 1994, Pat. No. 5,586,243. This application May 1, 1997, Ser. No. 846,447

Int. Cl.⁶ G06F 3/00

U.S. Cl. 345—334

34 Claims



24. A pointer control system for use in a computer system having a host processor, a display device, and an operating system that permits applications to be opened and represented on the display device, the pointer control system comprising:

display driver means for permitting a computer system user to define and identify multiple display pointers on the display device that can be moved about in the displayed applications by a pointer control device and for permitting one of the display pointers to be designated an active pointer; and

graphical interface control means for associating each display pointer with a pointer context comprising a particular application title and location of the display pointer within that application and recalling the pointer context when the user returns to the active application for which there are one or more previously defined display pointers.

1. A method for creating a representation of a scene displayable on a graphical output device, comprising the steps of:
providing a representation of a first object;

means for prohibiting writing of data in a memory element corresponding to the area not re-writable when the result of comparison in the comparing means indicates that a non-re-writable area is contained in the bit width designated by the supplied memory address.

5,777,633
IMAGE COMMUNICATING APPARATUS WITH INK JET
PRINTER HAVING CONTROLLED CAPPING
OPERATION

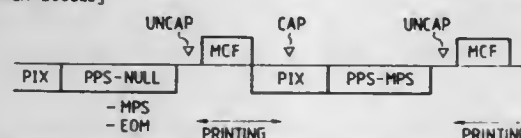
Seisbi Ejiri, Kawasaki, and Yasuyuki Shinada, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 944,113, Sep. 11, 1992, abandoned, which is a division of Ser. No. 846,739, Mar. 5, 1992, Pat. No. 5,175,566, which is a continuation of Ser. No. 619,515, Nov. 29, 1990, abandoned. This application Sep. 6, 1994, Ser. No. 301,032

Claims priority, application Japan, Feb. 23, 1990, 2-41058
Int. Cl.⁶ B41J 2/05

U.S. Cl. 347—3
[BUFFER: DOUBLE]

35 Claims



1. An image communicating apparatus comprising: communication means for enabling communication of procedure signals and image data signals with a transmitting unit, said communication means being operable in an error correction mode for requesting the transmitting unit to re-send image data involved in a transmission error, the image data being processed in the error correction mode in units of blocks where a predetermined amount of image data comprises one block; memory means for storing image data received by said communication means; a recording head for discharging ink onto a recording material in accordance with the image data received by said communication means; capping means for capping said recording head; discriminating means for discriminating reception of a first procedure signal indicating the predetermined amount of image data being transmitted from the transmitting unit and reception of a second procedure signal, different from the first procedure signal, indicating one page of image data being transmitted from the transmitting unit; capping control means for controlling said capping means to separate from said recording head so that said capping means is separated from said recording head both after reception of the first procedure signal and after reception the second procedure signal; and recording control means for controlling said recording head so as to record the image data stored in said memory means after separation from said capping means.

5,777,634
APPARATUS OR INSTRUMENT INCLUDING SCANNING
TYPE FUNCTIONAL ELEMENT

Yoshitaka Okamura, Kawasaki; Yoichi Tosaka, Yokohama; Kenichiro Hashimoto, Yokohama; Hirofumi Hirano, Yokohama; Kosuke Yamamoto, Yokohama; Hiroshi Nakai, Yokohama, and Yoshinori Watanabe, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

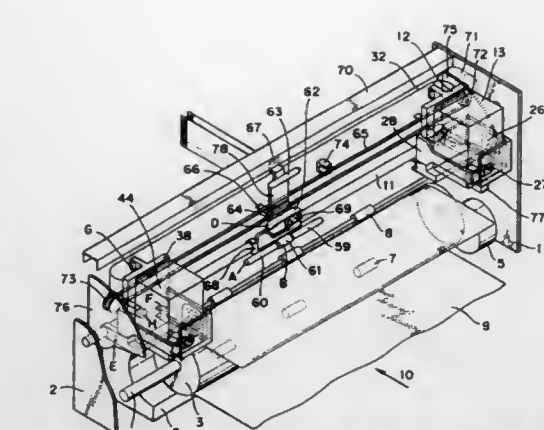
Filed Sep. 26, 1995, Ser. No. 534,040
Claims priority, application Japan, Sep. 26, 1994, 6-230086; Sep. 14, 1995, 7-237098; Sep. 14, 1995, 7-237187; Sep. 22, 1995, 7-244892

Int. Cl.⁶ B41J 2/195; 2/398

U.S. Cl. 347—7

45 Claims

1. A recording apparatus comprising: a carriage for mounting a recording head and an ink tank, said carriage being movable within a displacement range divided into a recording range for performing recording by said recording head and a range outside of the recording range; and



detecting means for directly detecting the weight of an ink tank corresponding to a quantity of ink received in said ink tank, said detecting means being located outside of said recording range.

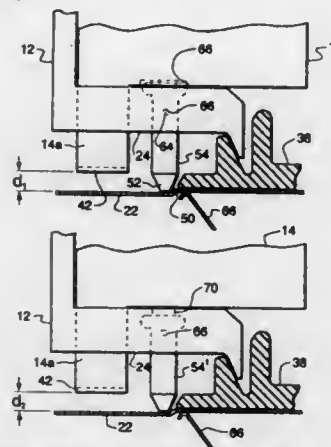
5,777,635
AUTOMATIC PRINTHEAD-TO-PAPER GAP
ADJUSTMENT

Edmund Hulin James, III, Lexington, Ky., and Gregory Willis Peterson, Mainville, Ohio, assignors to Lexmark International, Inc., Lexington, Ky.

Filed Jan. 31, 1996, Ser. No. 593,311
Int. Cl.⁶ B41J 25/308

U.S. Cl. 347—8

12 Claims



11. An ink-jet printer cartridge having an ink reservoir therein and having a nozzle array for ejecting ink onto a surface of a record, said cartridge having a surface feature thereon configured to automatically adjust the nozzle to record gap distance when the cartridge is mounted in a printer, said surface feature consisting one of the group of features consisting of a surface recess and a surface projection.

5,777,636
LIQUID JET RECORDING APPARATUS CAPABLE OF
RECORDING BETTER HALF TONE IMAGE DENSITY

Tohru Naganuma, Kanagawa, and Masayuki Sato, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

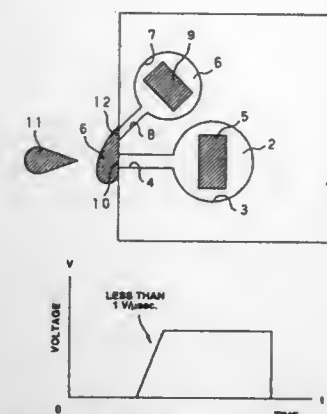
Filed Mar. 26, 1996, Ser. No. 622,005
Claims priority, application Japan, Mar. 29, 1995, 7-071420; Jul. 28, 1995, 7-193367

Int. Cl.⁶ B41J 29/38; 2/045

U.S. Cl. 347—10

4 Claims

1. A liquid jet recording apparatus for mixing a dilution liquid with ink quantified by utilizing displacement of a piezoelectric device in response to print data, and for ejecting a mixture fluid



made by mixing the ink with the dilution fluid so as to perform a recording operation, wherein:

when the ink is quantified, a rising speed of a signal applied to said piezoelectric device is selected to be lower than, or equal to 1V/microsecond.

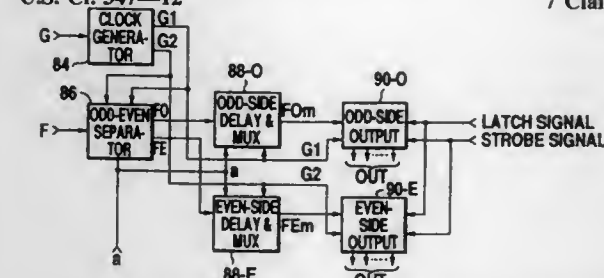
5,777,637
NOZZLE ARRANGEMENT STRUCTURE IN INK JET
PRINT HEAD

Shinsaku Takada; Hisayoshi Fujimoto; Nobuhisa Ishida; Yasushi Ema; Toshio Amao, and Akihiro Shimokata, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Division of Ser. No. 26,550, Mar. 4, 1993, Pat. No. 5,552,813.

This application Jun. 7, 1995, Ser. No. 478,946
Claims priority, application Japan, Mar. 11, 1992, 4-52844; Aug. 27, 1992, 4-228528; Sep. 10, 1992, 4-241766
Int. Cl.⁶ B41J 29/38

U.S. Cl. 347—12

7 Claims



1. A driving method of a head for ink jet printing by input serial data, the print head moving along print lines in a reciprocating printing direction, the head including a plurality of nozzles arranged on a flat surface for discharging ink; and discharge means for causing discharge of the ink from the nozzles,

the nozzles being arranged in an inclined zig zag arrangement, the inclined zig zag arrangement satisfying the following conditions

- (1) the nozzles being arranged on first and second straight lines positioned on the flat surface;
- (2) the nozzles arranged on the first straight line being offset with respect to the nozzles arranged on the second straight line along a direction perpendicular to the printing direction; and
- (3) the first and second straight lines being inclined with respect to the printing direction and the direction perpendicular to the printing direction such that a distance between adjacent nozzles on the same straight line in the printing direction is greater than a distance between said adjacent nozzles on the same straight line in the direction perpendicular to the printing direction,
- (4) odd number nozzles being arranged on the first straight line along the direction perpendicular to the printing direction; and
- (5) even number nozzles being arranged on the second straight line along the direction perpendicular to the printing direction, the driving method comprising the steps of:

a first step for separating the input serial data into odd-side data and even-side data;

a second step for delaying the odd-side data a first predetermined time when the first straight line is positioned ahead of the second straight line with respect to movement in the printing direction and the even-side data the first predetermined time when the second straight line is positioned ahead of the first straight line with respect to movement in the printing direction; the first predetermined time corresponding to a printing direction interval between nozzles adjacent in the direction perpendicular to the printing direction;

a third step for delaying the odd-side data and the even-side data a second predetermined time; when the first straight line is positioned ahead of the second straight line with respect to movement in the printing direction, a delay target in the third step being the odd-side data delayed in the second step and the even-side data separated in the first step; when the second straight line is positioned ahead of the first straight line with respect to movement in the printing direction, a delay target in the third step being the odd-side data separated in the first step and the even-side data delayed in the second step; the second predetermined time being proportional to a product of the printing direction interval between two nozzles arranged adjacently on the same straight line and the nozzle position along the direction perpendicular to the printing direction arranged on the same straight line; an order of the second predetermined time of the data to be delayed being changed depending on the printing direction so that the second predetermined time of the nozzles positioned ahead of other nozzles with respect to movement in the printing direction is relatively large and the second predetermined time of the nozzles positioned behind with respect to movement of other nozzles in the printing direction is relatively small;

a fourth step for carrying out a serial/parallel conversion of the odd-side and even-side data delayed in the third step to obtain odd-nozzle parallel data and even-nozzle parallel data; the odd-nozzle parallel data and even-nozzle parallel data having bit arrangements corresponding to the positions of the nozzles on the first and second straight lines along the direction perpendicular to the printing direction; and

a fifth step for selectively discharging the ink from the nozzles by driving the discharge means on the basis of the odd-nozzle parallel data and the even-nozzle parallel data; the driving executing so that, when the bits of the odd-nozzle parallel data and the even-nozzle parallel data are a predetermined value, the ink is discharged from the nozzles located in positions corresponding to the bits, and when the bits are not the predetermined value, the ink is not discharged.

5,777,638
PRINT MODE TO COMPENSATE FOR MICROBANDING

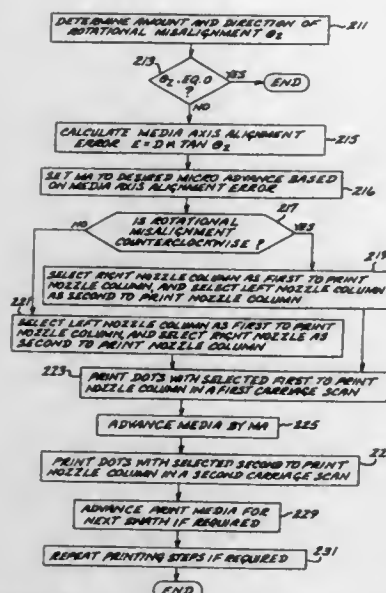
James G. Salter, San Diego, and B. Michael Eckard, Cardiff, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 22, 1996, Ser. No. 603,997
Int. Cl.⁶ B41J 29/38; 2/15

U.S. Cl. 347—12

6 Claims

1. A method for ink jet printing with an ink jet printhead supported by carriage that is movable along a carriage axis, the ink jet printhead having a left nozzle column and a right nozzle column that are parallel to a longitudinal axis, spaced apart by a distance D, and generally aligned with a media advance axis and having a rotational misalignment relative to the media advance axis, wherein the left nozzle column includes a plurality of nozzles spaced apart by a distance 2P and the right nozzle column includes a plurality of nozzles spaced apart by 2P, wherein the nozzles of the left nozzle column are staggered along the longitudinal axis relative to the nozzles of the right nozzle column such that the distance along the longitudinal axis between diagonally adjacent nozzles is P, and wherein the nozzles of the left nozzle column and the nozzles of the right nozzle column are in a sequence of a first nozzle through Nth nozzle and a print medium first encounters the



first nozzle when the print medium is advanced in a media advance direction, the method comprising the steps of:

determining an amount of the rotational misalignment of the left nozzle column and the right nozzle column relative to the media scan axis, and a direction of the rotational misalignment;

selecting one of the left nozzle column and the right nozzle column as a first to print nozzle column;

determining a media advance correction to compensate the rotational misalignment;

printing dots on the print medium with the first to print nozzle column in a first carriage scan of the carriage along the carriage axis;

moving the print medium by the media advance correction; and

printing dots on the print medium with another of the left nozzle column and the right nozzle column in a second carriage scan of the carriage along the carriage axis.

5,777,639

INK-JET RECORDING METHOD AND APPARATUS USING A LIGHT-TONABLE RECORDING LIQUID

Tetsuto Kageyama, Koshigaya; Shigeru Yoshimura, Yokohama; Takayoshi Hanagata, Yamato; Nagao Hosono, Hachioji, and Takashi Saito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 912,172, Jul. 13, 1992, abandoned.

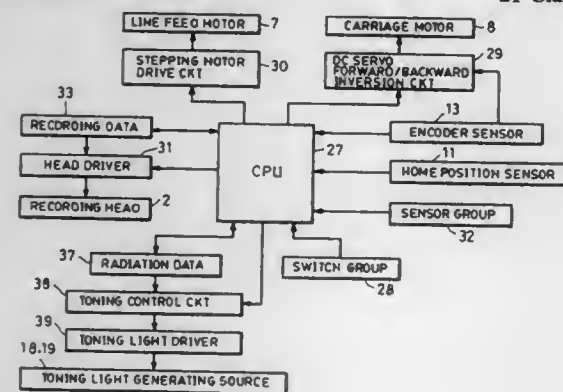
This application Oct. 20, 1994, Ser. No. 326,344

Claims priority, application Japan, Jul. 17, 1991, 3-176733

Int. Cl.⁶ B41J 2/205

U.S. Cl. 347—15

21 Claims



1. A method of creating a variety of half-tones using ink-jet recording, comprising the steps of:

providing an irreversibly light-tonable recording liquid with a component having a chemical structure which is permanently altered by an exposure to at least one of visible light and near-infrared light such that an optical property of said liquid is changed;

ejecting the irreversibly light-tonable recording liquid onto a recording member, thereby forming at least one colored portion on the recording member; and

toning by radiating at least one of visible light and near-infrared light onto a desired part of the at least one colored portion, so that said at least one colored portion is irreversibly toned to form a half-tone image.

5,777,640

LIQUID JET RECORDING METHOD USING PLURAL SCANNING NOZZLES AND INCLUDING FIRST MAIN SCAN, SUB-SCAN, AND SECOND MAIN-SCAN STEPS FOR RECORDING PIXELS IN TONE

Makoto Shioya, Tokyo; Yasuyuki Tamura; Hiroto Takahashi, both of Yokohama; Masayoshi Tachibara, Chofu; Tadashi Yamamoto; Genji Inada, both of Yokohama; Tatsuo Kimura, Kawasaki, and Jun Ashiwa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 893,086, Jun. 3, 1992, Pat. No. 5,430,469.

This application Jun. 5, 1995, Ser. No. 465,101

Claims priority, application Japan, Jun. 5, 1991, 3-134202;

Jun. 7, 1991, 3-136519; Jun. 7, 1991, 3-136526; Jun. 7, 1991,

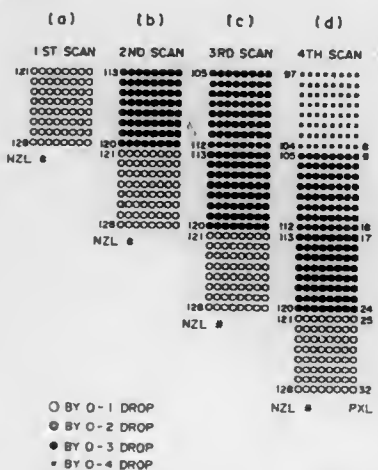
3-136529; Jun. 7, 1991, 3-136607; Jun. 7, 1991, 3-136609; Jun.

7, 1991, 3-136610; Jun. 7, 1991, 3-136611

Int. Cl.⁶ B41J 2/205

U.S. Cl. 347—15

8 Claims



1. A liquid jet recording method of recording on a recording material with liquid droplets discharged through n ($n \geq 2$) scanning nozzles arranged at a first pitch p in a width measured in a direction of a sub-scan, comprising the steps of:

performing a first main scan by relative movement between the n scanning nozzles and the recording material in which each of a plurality of pixels are recorded with at least one of the liquid droplets through one of the n scanning nozzles, wherein a number of the liquid droplets used to record each pixel corresponds to respective tone level signals and is not more than k where $k \geq 1$;

performing a sub-scan by a relative movement between the n scanning nozzles and the recording material in a direction

substantially transverse to a direction of the first main scan, in which a distance s of the relative movement in the substantially transverse direction is less than the width; and

performing a second main scan in which each of the plurality of pixels is recorded with at least one of the liquid droplets through a different one of the n scanning nozzles, the number of the liquid droplets used to record each of the plurality of pixels in the second main scan corresponding to the respective tone level signals and being not more than k ;

wherein g is a number of tone levels and $g \geq 3$, and wherein the steps of performing the sub-scan and the second main scan are performed for at least $(g-1)/(k-1)$ times so as to record g tone images by discharging substantially a same volume of the liquid droplets of which a maximum number is $g-1$, for each of the plurality of pixels.

5,777,641

RECORDING APPARATUS AND SHADING CORRECTION METHOD

Akio Suzuki, Yokohama, and Toshimitsu Danzuka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 385,380, Feb. 7, 1995, abandoned,

which is a continuation of Ser. No. 917,428, Jul. 23, 1992,

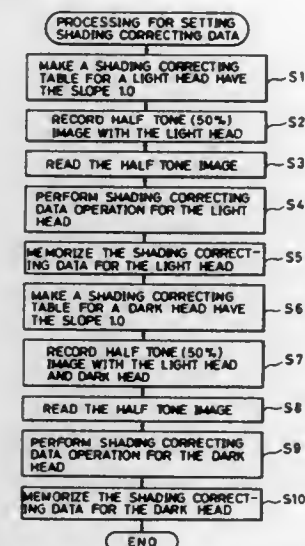
abandoned. This application Jun. 27, 1997, Ser. No. 884,617

Claims priority, application Japan, Jul. 26, 1991, 3-187743

Int. Cl.⁶ B41J 2/205; 29/393

U.S. Cl. 347—15

13 Claims



8. A shading correcting method of a recording apparatus for performing recording by using a plurality of recording heads which can record in a superposed manner, each of the recording heads having a plurality of recording elements, at least some of which may have variations in recording characteristics therebetween, comprising the steps of:

a first recording step of recording a first predetermined image by using a first recording head of the plurality of recording heads;

a first shading data setting step of setting a plurality of first shading correcting data which are respectively used for correcting a first shading corresponding to a plurality of the recording elements of the first recording head used in said first recording step, based on said first predetermined image, said first shading arising due to the variations in recording characteristics of the recording elements of the first recording head;

a second recording step of recording a second predetermined image by recording a first portion of said second predetermined image by means of the first recording head using said first shading correcting data set by said first shading data setting step, and successively recording a second portion of said second image using a second recording head in a super-

5,777,642

Patent Not Issued For This Number

5,777,643

Patent Not Issued For This Number

5,777,644

INK JET RECORDING APPARATUS AND RECORDING METHOD FOR USING INK WALLS IN DISCHARGING INK

Takashi Yamaguchi; Tadayoshi Ohno; Shinichi Itoh, and Hisatoshi Tanaka, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

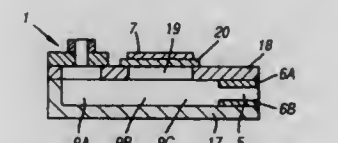
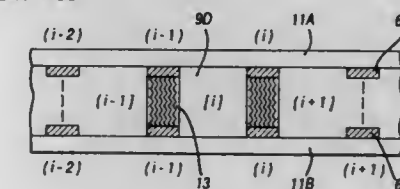
Filed Mar. 31, 1995, Ser. No. 414,094

Claims priority, application Japan, Mar. 31, 1994, 6-085550

Int. Cl.⁶ B41J 2/045

U.S. Cl. 347—68

15 Claims



1. An ink jet recording apparatus comprising:

a housing containing ink and having an opening through which the ink discharges, the ink including fine particles;

ink wall forming means for forming a plurality of ink walls in the ink, said ink walls constituting respective portions of the ink and fine particles, by applying an electric field to the respective portions of the ink to cause the fine particles in the respective portions of the ink to line-up; and

means for discharging remaining ink that lies between the ink walls when the ink walls are formed.

5,777,645

Patent Not Issued For This Number

5,777,646

SELF-SEALING FLUID INERCONNECT WITH DOUBLE SEALING SEPTUM

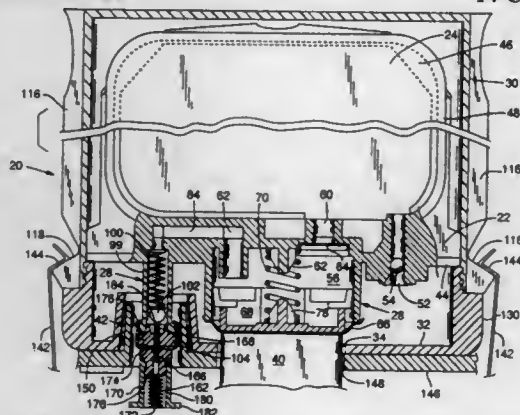
John A. Barinaga, Corvallis; James E. Clark, Albany; David O. Merrill, Corvallis, all of Oreg.; Ngoc-Diep T. Nguyen, Vancouver, Wash., and David R. Otis, Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 4, 1995, Ser. No. 566,821

Int. Cl.⁶ B41J 2/175

U.S. Cl. 347—86

14 Claims



11. A fluid outlet for an ink supply containing a quantity of ink that is removably insertible into a docked position within a docking bay of an ink-jet printer, the docking bay having a fluid inlet for coupling with the fluid outlet to form a fluid connection between the removable ink supply and the ink-jet printer, the fluid outlet comprising:

- a hollow housing having a first end in fluid communication with said quantity of ink;
 - a septum positioned to seal a second end of the housing; and
 - a sealing member positioned within the housing, the sealing member being movable between a first position in which the sealing member seals against the septum and a second position in which ink can flow past the sealing member to the septum,
- the septum capable of being pierced by a portion of the fluid inlet, upon piercing the septum said portion of the fluid inlet moving the sealing member from the first position to the second position to allow ink flow between the fluid inlet and fluid outlet.

5,777,647

SIDE-LOADED PRESSURE REGULATED FREE-INK INK-JET PEN

Norman Pawlowski, Jr., and Melissa D. Boyd, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 518,847, Aug. 24, 1995, and a continuation-in-part of Ser. No. 331,453, Oct. 31, 1994, Pat. No. 5,583,545. This application Mar. 5, 1996, Ser. No. 611,111

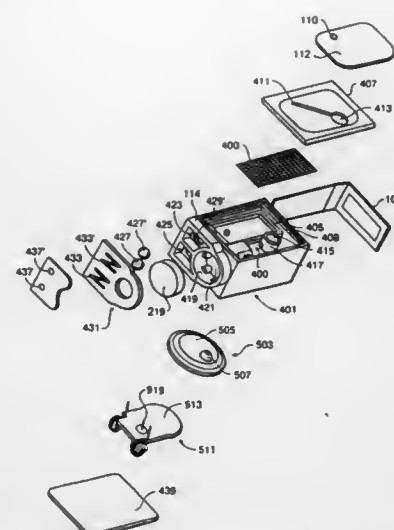
Int. Cl.⁶ B41J 2/01

U.S. Cl. 347—86

20 Claims

1. A free-ink, ink-jet pen for coupling to an off-axis ink reservoir, comprising:

- a housing, having a means for fluidically coupling said pen to said reservoir; and
- within said housing,
- a first ink accumulation chamber, having a first ink accumulation chamber ink inlet means for in-flow of ink from said reservoir via said means for fluidically coupling said pen to said reservoir and a first ink accumulation chamber ink outlet means for out-flow of ink from said first ink accumulation chamber,
- a second ink accumulation chamber, fluidically coupled to said first ink accumulation chamber ink outlet means for in-flow of ink from said first ink accumulation chamber, having a second ink accumulation chamber ink outlet means for out-flow of ink from said second ink accumulation chamber,



a negative pressure printhead mechanism, fluidically coupled to said second ink accumulation chamber, mounted on said housing and having a printhead ink inlet means for in-flow of ink from said second ink accumulation chamber, and regulating means for regulating both a predetermined negative pressure set point in said pen and the in-flow of ink from said reservoir into said first ink accumulation chamber.

5,777,648

INKJET PRINT CARTRIDGE HAVING AN INK FILL PORT FOR INITIAL FILLING AND A RECHARGE PORT WITH RECLOSABLE SEAL FOR RECHARGING THE PRINT CARTRIDGE WITH INK

Joseph E. Scheffelin; David S. Hunt, both of San Diego; Mark E. Young, Escondido; Elizabeth Zapata, San Diego; Alfred Zepeda, San Marcos; Christopher J. Schultz, San Diego, and Jon Fong, Manhattan Beach, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

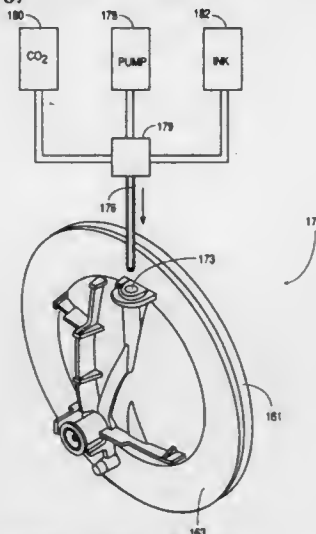
Continuation-in-part of Ser. No. 322,848, Oct. 13, 1994, Pat. No. 5,621,445, and Ser. No. 503,756, Jul. 18, 1995, abandoned, which is a continuation-in-part of Ser. No. 717,735, Jun. 16, 1991, said Ser. No. 322,848 is a continuation-in-part of Ser. No. 171,321, Dec. 21, 1993, abandoned, which is a continuation of Ser. No. 750,360, Aug. 27, 1991, Pat. No. 5,280,300.

This application Mar. 14, 1996, Ser. No. 615,903

Int. Cl.⁶ B41J 2/175

U.S. Cl. 347—87

23 Claims



1. An inkjet printing system comprising:
a print cartridge having a print cartridge body;
a first reservoir for ink within said body;

a printhead supported on said body in fluid communication with said first reservoir;
a first ink fill port on said body for initially filling said first reservoir with ink, said first ink fill port being blocked with a first seal after initially filling said first reservoir with ink; and
a recharge port on said body for recharging said first reservoir with ink after said ink in said first reservoir has been at least partially depleted, said recharge port being sealed with a second seal, different from said first seal, said second seal being selectively actuated to be in an opened state or a closed state, said closed state providing a fluid seal of said first reservoir, said opened state providing fluid communication between an external ink reservoir and said first reservoir when said external ink reservoir is connected to said recharge port.

5,777,649

INK JET PRINTING HEAD WITH BUFFERING CHAMBER WALL HAVING GAS TRANSMITTING PROPERTY AND PRINTING APPARATUS USING SAME
Naoji Otsuka, Yokohama; Atsushi Arai, Kawasaki; Kentaro Yano, Yokohama; Kiihiro Takahashi; Hitoshi Nishikori, both of Kawasaki, and Osamu Iwasaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 133,313, Oct. 8, 1993, abandoned.

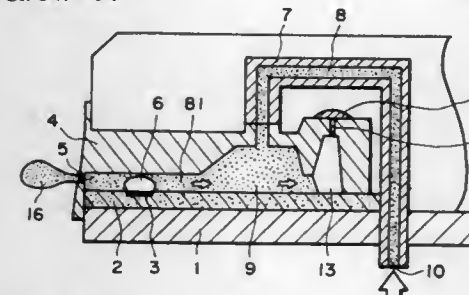
This application Aug. 19, 1996, Ser. No. 699,201

Claims priority, application Japan, Oct. 9, 1992, 4-271964

Int. Cl.⁶ B41J 2/19;2/17

U.S. Cl. 347—94

14 Claims



1. An ink jet print head comprising:
ink ejection outlets for ejecting ink;
flow passages communicating with said ejection outlets;
a common chamber for supplying the ink to said flow passages;
ejection energy generating elements for producing energy for ejecting the ink;
an ink supply passage for supplying the ink to said common chamber;
a buffering chamber disposed in direct fluid communication with said common chamber at a position where a pressure wave resulting from driving of said ejection energy generating elements propagates, said buffering chamber containing a gas for attenuating the pressure wave; and
a gas transmitting member forming a part of a wall of said buffering chamber said gas transmitting member having a gas transmitting property permitting introduction of external gas of said print head into said buffering chamber and preventing passage of ink from said common chamber through said gas transmitting member.

5,777,650

PRESSURE ROLLER

Jeffrey K. Blank, Tigard, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

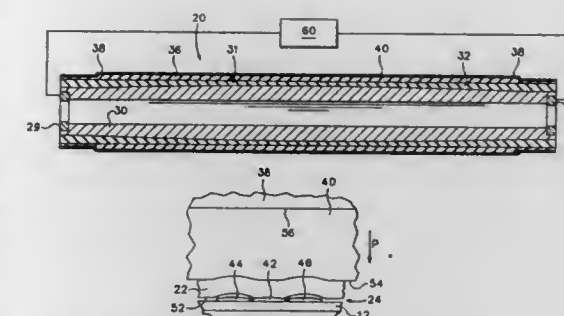
Filed Nov. 6, 1996, Ser. No. 744,803

Int. Cl.⁶ B41J 2/01;2/05

U.S. Cl. 347—103

24 Claims

1. A roller for applying pressure to a final receiving medium to fix an ink image formed by ink pixels thereon, the roller comprising:



a tubular elastomeric sleeve having a first hardness of between about 70 and about 85 Shore D;

a core positioned within and spaced from the tubular elastomeric sleeve;

an inner elastomeric layer interposed between the core and the tubular elastomeric sleeve; and

an outer compliant elastomeric layer affixed to the tubular elastomeric sleeve, the outer compliant elastomeric layer having a second hardness that is less than the first hardness of the tubular elastomeric sleeve, the outer compliant elastomeric layer being sufficiently compliant to contact ink pixels having at least first and second heights so as to fix the ink pixels to the final receiving medium,

whereby the ink image is effectively fused to the final receiving medium to achieve maximum image quality while minimizing wrinkling or other degradation of the ink image on the final receiving medium.

5,777,651

IONOGRAPHIC CHARGING APPARATUS AND PROCESSES

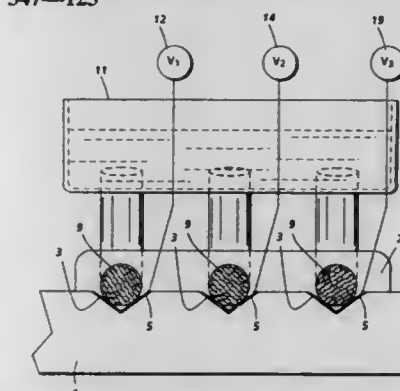
John S. Facci, Webster; Milan Stolka, Fairport; Michael J. Levy; Martin A. Abkowitz, both of Webster, and James M. Markovics, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 30, 1995, Ser. No. 452,807

Int. Cl.⁶ G03G 15/02;13/02

U.S. Cl. 347—123

29 Claims



24. An electrostatic printing apparatus including a charging device for applying an electrical charge to an ionographic imaging member, which charging device is comprised of a substrate containing affixed thereto a plurality of electroded grooves each capable of retaining a single wettable fiber, thereby forming a collection of fibers in contact with the substrate; a resin layer that isolates said fibers from each other, and that adheres the fibers to the electroded grooves; and means for providing an ionically conductive fluid to said collection of fibers; means for applying an electrical bias to said fibers thereby transporting ions through the fibers to the surface of said ionographic member, and which ions charge said member.

5,777,652

THERMAL TRANSFER PRINTER

Minoru Takeuchi, Tamayama-mura, Japan, assignor to Alps Electric Co., Ltd., Japan

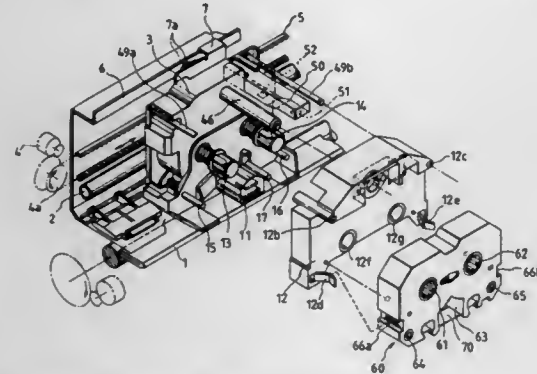
Filed Apr. 28, 1995, Ser. No. 431,247

Claims priority, application Japan, May 13, 1994, 6-099833; Aug. 31, 1994, 6-207202; Sep. 1, 1994, 6-208765; Sep. 2, 1994, 6-210123; Sep. 2, 1994, 6-210124; Sep. 2, 1994, 6-210125

Int. Cl.⁶ B41J 2/325;35/22

U.S. Cl. 347—171

4 Claims



1. A thermal transfer printer comprising:

- a platen;
- a carriage which carries a thermal head thereon and which reciprocates along said platen;
- a cassette carrier disposed on said carriage for loading a ribbon cassette thereon;
- a cassette holding portion formed oppositely to said carriage for holding a plurality of ribbon cassettes in predetermined positions;
- a sensor disposed on said carriage for detecting, in accordance with movement of said carriage, an ink ribbon identification mark provided on each of said plurality of ribbon cassettes held by said cassette holding portion;
- a control section for receiving an output signal provided from said sensor, for determining whether there is any ribbon cassette held by said cassette holding portion, and for determining a type of ink ribbon contained in the ribbon cassettes held by the cassette holding portion in accordance with the received output signal; and
- a cassette replacement mechanism which loads a desired ribbon cassette selected by said control section onto said cassette carrier automatically by reciprocating the cassette carrier toward and away from said cassette holding portion.

5,777,653

THERMAL IMAGE TRANSFER RECORDING METHOD

Yoji Ide, Mishima; Tetsuji Kunitake, Numazu; Mihoko Matsumoto, Susono, and Yasumitsu Kuga, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 24, 1995, Ser. No. 518,979

Claims priority, application Japan, Aug. 26, 1994, 6-225677; Dec. 5, 1994, 6-329935

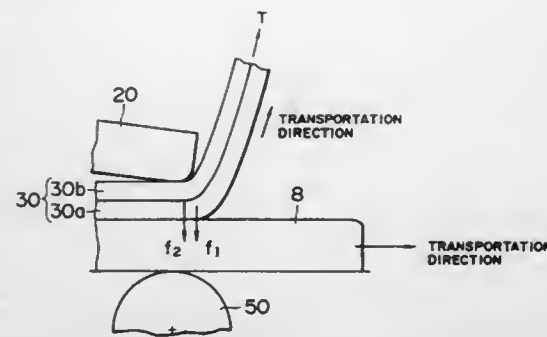
Int. Cl.⁶ B41J 2/315;2/32; G01D 15/10

U.S. Cl. 347—171

4 Claims

1. A thermal image transfer recording method comprising the steps of:

- (1) holding (a) a thermal image transfer recording medium comprising a support material and a thermal image transfer layer having a shearing and a peeling strength at 70° C., provided on said support material, and (b) an image recording material between a line edge thermal head and a platen roller, with a contact pressure being applied therebetween to form a close contact adhesion;
- (2) driving said platen roller and transferring said thermal image transfer recording layer imagewise from said thermal image



transfer recording medium to said image recording material with imagewise application of heat by use of said line edge thermal head; and

- (3) applying tension so as to take-up said thermal image transfer recording medium after said image transfer, wherein the take-up tension applied to said thermal image transfer recording medium is larger than both the shearing strength and peeling strength of said thermal image transfer layer as measured at 70° C.

5,777,654

PRINTING METHOD AND APPARATUS IN WHICH A PRINT SHEET IS PRESSED TO A DRUM BY AN INK FILM

Keun-yong Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 314,770, Sep. 29, 1994, abandoned.

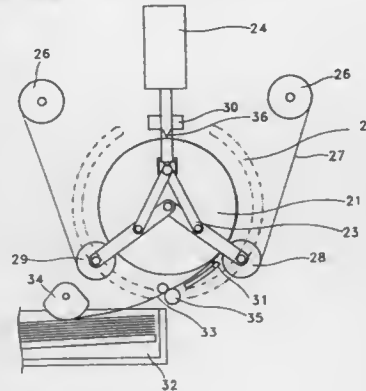
This application Oct. 2, 1996, Ser. No. 724,914

Claims priority, application Rep. of Korea, Sep. 29, 1993, 93-20546

Int. Cl.⁶ B41J 2/325

U.S. Cl. 347—176

6 Claims



4. A printing apparatus comprising:

- a drum for conveying a sheet;
- a pair of guiding rollers placed around said drum for pressing said sheet onto said drum;
- printing means for printing an image onto said sheet; and
- an ink film located between said sheet and said printing means; wherein said apparatus further comprises guiding means for guiding said guiding rollers so that said ink film is contact-wound around said drum through a predetermined angle by said pair of guiding rollers.

5,777,655

THERMAL RECORDING DEVICE

Shinji Imai, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

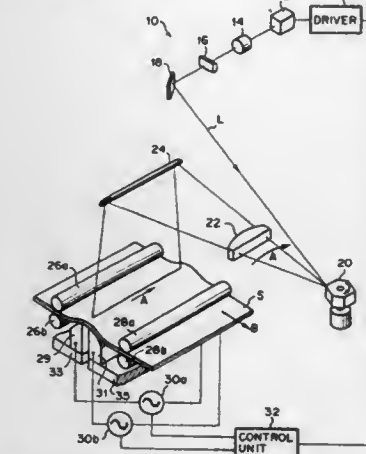
Filed Jul. 9, 1996, Ser. No. 677,213

Claims priority, application Japan, Jul. 10, 1995, 7-173370

Int. Cl.⁶ B41J 2/44;2/38

U.S. Cl. 347—187

3 Claims



1. A thermal recording device for recording information on a heat-sensitive recording material, said recording material comprising a color forming agent, a developing agent and a light absorbing dyestuff, which develops color in a density according to heat energy supplied thereto, by supplying predetermined color developing heat energy to the heat-sensitive recording material according to the information to be recorded, said device comprising:

- a pre-heating means which supplies pre-heat energy which is less than the color developing heat energy, to the heat-sensitive recording material and is disposed upstream of a recording position where a recording means supplies developing heat energy to the heat-sensitive recording material; and
- a cooling means which is disposed in said recording position or the vicinity of the recording position downstream thereof and cools the heat-sensitive recording material; and

at least one of the following:

said pre-heating means includes a heating block which transfers said pre-heat energy to said heat-sensitive recording material and is stationary relative to movement of said recording material; and

said cooling means includes a cooling block which cools said heat-sensitive recording material to a temperature below the glass transition temperature of said recording material and is stationary relative to movement of said recording material.

5,777,656

TONE REPRODUCTION MAINTENANCE SYSTEM FOR AN ELECTROSTATOGRAPHIC PRINTING MACHINE

Thomas A. Henderson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 475,706

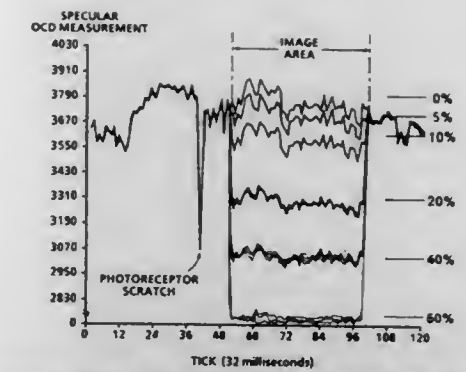
Int. Cl.⁶ B41J 2/47; G01D 15/14

U.S. Cl. 347—251

18 Claims

1. A method of maintaining tone reproduction for printing of a final halftone image in a printer, comprising the steps of:

- marking representative halftone targets on an imageable surface with toner;
- sensing an amount of toner on each of the representative halftone targets, said sensing step includes the step of adjusting the amount of toner sensed to compensate for deviation in said imageable surface;
- generating a representative tone reproduction curve base on the amount of toner sensed on the representative halftone targets;
- producing a feedback signal by comparing the representative tone reproduction curve to a setup calibration tone curve; and



adjusting pixel data of each pixel of the final halftone image to compensate for deviation between representative tone reproduction curve and the setup calibration tone curve during printer operation to achieve the desired tonality of the final halftone image.

5,777,657

THERMAL PRINTER AND THERMAL PRINTER HEAD DRIVING SYSTEM

Kiyoshi Negishi; Mikio Horie; Katsumi Kawamura; Minoru Suzuki; Hiroshi Orita, and Katsuyoshi Suzuki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

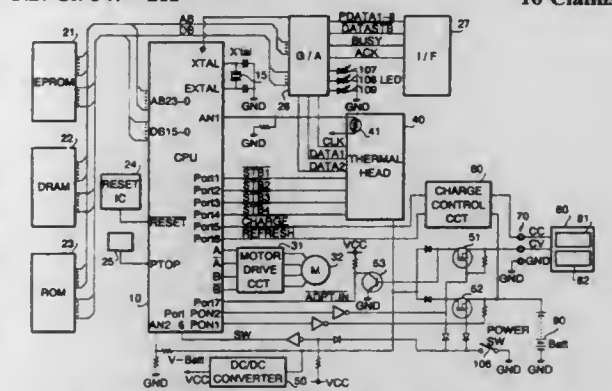
Filed Oct. 16, 1995, Ser. No. 543,576

Claims priority, application Japan, Oct. 14, 1994, 6-276123

Int. Cl.⁶ B41J 2/355

U.S. Cl. 347—211

16 Claims



1. A thermal printer for forming an image on a sheet, said thermal printer comprising:

- a thermal head having a plurality of linearly arranged thermal elements;
- means for converting image information into bit-map image data;
- means for storing said bit-map image data;
- means for transmitting a predetermined portion of said stored bit-map image data to said thermal head;
- means for detecting a remaining amount of said stored bit-map image data which has not been transmitted to said thermal head; and
- means for setting a time interval between a transmission of said predetermined portion of said stored bit-map image and a subsequent transmission of said predetermined portion of said stored bit-map image data, in response to said detected remaining amount of said stored bit-map image; said setting means increasing said time interval between successive transmissions of said predetermined portion of said bit-map image data as the amount of remaining data decreases.

5,777,658

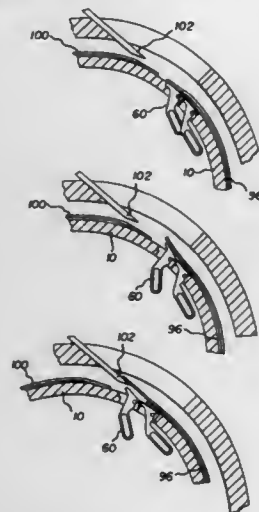
MEDIA LOADING AND UNLOADING ONTO A VACUUM DRUM USING LIFT FINS

Roger Stanley Kerr, Brockport, and Douglas Alvin Hons, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1996, Ser. No. 612,732
Int. Cl.⁶ B41J 17/00

U.S. Cl. 347—215

14 Claims



1. Apparatus for selectively loading sheets on a hollow imaging drum mounted for rotation about an axis and arranged to mount a receiver sheet and a donor sheet in superposed relationship thereon; said apparatus comprising:

- means for providing a vacuum to the interior of the imaging drum;
- openings through the surface of the drum for communicating the vacuum from the interior to the exterior surface of the drum;
- means for advancing a leading edge of a receiver sheet into alignment with a predetermined position on the drum surface;
- means for holding the leading edge of the receiver sheet radially off of the drum surface until aligned with the predetermined position;
- means for rotating the drum to thereby draw the receiver sheet into contact with the drum surface;
- means for advancing a leading edge of a donor sheet into alignment with a second predetermined position on the drum surface not covered by the receiver sheet;
- means for holding the leading edge of the donor sheet radially off of the drum surface until aligned with the second predetermined position; and
- means for rotating the drum to thereby draw the donor sheet into contact with the drum surface in superposed relation with the receiver sheet adhered thereto.

5,777,659

DUAL-BEAM, REFLEX-CONTROLLED LASER CIRCUIT FOR AN ELECTROPHOTOGRAPHIC PRINTER

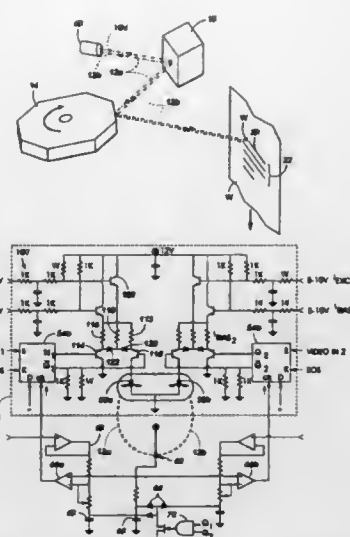
Frank C. Genovese, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 29, 1996, Ser. No. 624,272
Int. Cl.⁶ H04N 1/21

U.S. Cl. 347—252

12 Claims

1. A raster output scanner for an electrophotographic printer, comprising:
- a first light source adapted to output a first beam and a second light source adapted to output a second beam;
 - means for scanning the first beam and the second beam across a photosensitive surface to form a first scan line and a second scan line respectively to expose pixel spots thereon, the first scan line being parallel to the second scan line and spaced from the second scan line by a predetermined number of scan lines; and



a controller providing an alternating duty cycle whereby the first light source is disabled from exposing a pixel spot on the photosensitive surface during a first portion of the duty cycle, and the second light source is disabled from exposing a pixel spot on the photosensitive surface during a second portion of the duty cycle.

5,777,660

SCANNER ASSEMBLY

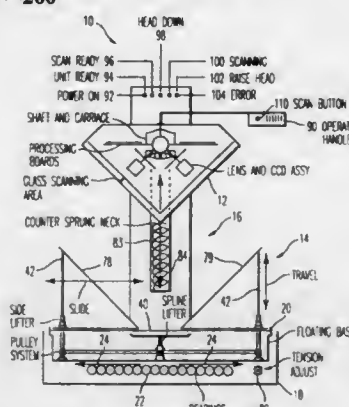
Mark Duan Ard, Santa Clara, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan, and Ricoh Corporation, San Jose, Calif.

Filed Feb. 26, 1996, Ser. No. 607,047

Int. Cl.⁶ H04N 1/04

U.S. Cl. 347—260

30 Claims



1. A scanner, comprising:
- a scanning head including a pair of scanning surfaces angles relative to each other to form a V-shaped scanning face, and image capturing means for capturing at least one image received through the scanning face;
 - processing circuitry for processing the signals received from the image capturing means;
 - a block support; and
 - a neck slidably connecting the scanning head to the book support for moving the scanning head towards and away from the book support.

5,777,661

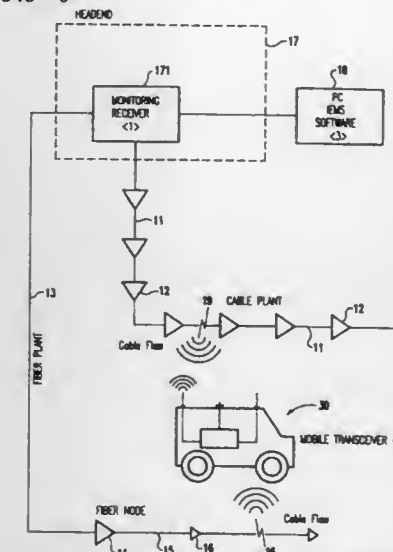
Patent Not Issued For This Number

5,777,662

INGRESS/EGRESS MANAGEMENT SYSTEM
Dennis A. Zimmerman, Rockingham County, Va., assignor to Comsonics, Inc., Harrisonburg, Va.Filed Aug. 27, 1996, Ser. No. 703,773
Int. Cl.⁶ H04N 7/10; 7/00

U.S. Cl. 348—6

17 Claims



1. An RF (radio frequency) ingress/egress management system for a coaxial cable communications plant comprising:
- a headend monitoring receiver that is frequency tunable from 5 to 50 MHz, capable of decoding and reading a unique tone that is transmitted and enters a cable flaw and is returned upstream to the headend monitoring receiver;
 - a mobile transceiver and global positioning satellite (GPS) system capable of receiving egress in the 50 MHz to 1 GHz region and stamping a GPS coordinate and storing that information;
 - a 5 to 50 MHz transmitter modulated with GPS coordinates that can transmit sufficient power to enter the cable flaw and be received at the headend monitoring receiver; and
 - a computer software system that receives information from the mobile transceiver and GPS system and the headend monitoring receiver and quantifies detected cable flaws at egress and ingress frequencies and assigns coordinates and figures of merit so that a repair technician can expedite repair of the coaxial cable communications plant.

5,777,663

PICTURE CODEC AND TELECONFERENCE TERMINAL EQUIPMENT

Yoji Shibata, Yokosuka; Masaaki Takizawa, Tokyo; Hitoshi Matsushima, Tachikawa; Hiroshi Yoshikawa, Fujisawa; Atsuo Yoshida, Kokubunji; Toru Ebihara, Higashimurayama; Jun Furuya, Kokubunji; Yukinobu Maruyama, Tokyo, and Takehiko Yamada, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 509,591, Jul. 31, 1995, which is a continuation of Ser. No. 913,402, Jul. 15, 1992, and a continuation-in-part of Ser. No. 384,955, Feb. 7, 1995, Pat. No. 5,677,727, which is a continuation of Ser. No. 838,348, Feb. 20, 1992, Pat. No. 5,396,269. This application Jan. 10, 1997, Ser. No. 782,495

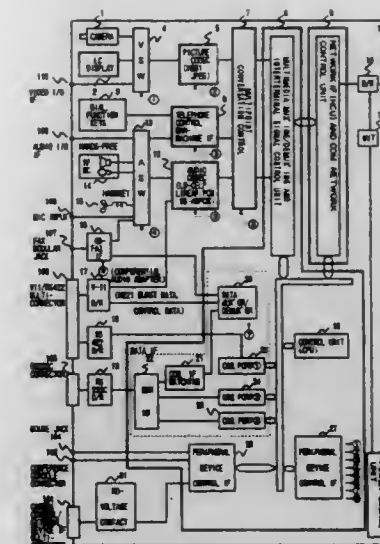
Claims priority, application Japan, Feb. 20, 1991, 3-025987; Feb. 20, 1991, 3-025991; Jul. 15, 1991, 3-174049; Jan. 24, 1992, 4-011196

Int. Cl.⁶ H04M 11/00

U.S. Cl. 348—15

3 Claims

1. An equipment for a teleconference comprising: an image input apparatus;



- an image display apparatus coupled at least to the image input apparatus;
- a communication control apparatus coupled at least to the image display apparatus;
- a key console apparatus coupled to the communication control apparatus;
- a telephone control apparatus coupled to the communication control apparatus; and
- an image codec coupled to the image input apparatus, the image display apparatus and the communication control apparatus; wherein the display apparatus enables simultaneous display of a received image at one portion of the display apparatus and an input image at another portion of the display apparatus and enables reversal of the portion of the received image and the input image so that the input image is displayed at the one portion of the display apparatus and the received image is simultaneously displayed at the other portion of the display apparatus.

5,777,664

VIDEO COMMUNICATION SYSTEM USING A REPEATER TO COMMUNICATE TO A PLURALITY OF TERMINALS

Tsuguhide Sakata, Sagami, and Masato Sugawara, Tama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1995, Ser. No. 558,186

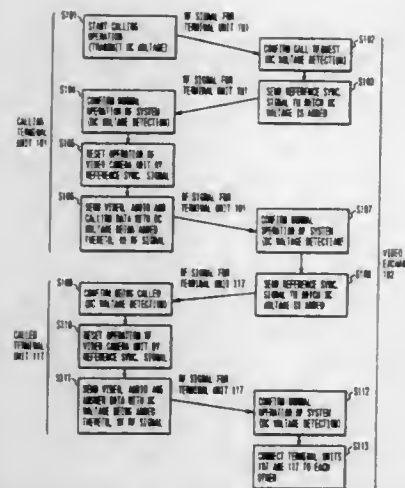
Claims priority, application Japan, Nov. 18, 1994, 6-285258; Dec. 6, 1994, 6-302075

Int. Cl.⁶ H04N 7/14

U.S. Cl. 348—16

25 Claims

1. A video communication system having a transmission line, said system comprising:
- (A) a plurality of terminal units for transmitting/receiving information signals, each said terminal unit including DC voltage signal addition means for adding a DC voltage signal to a terminal output information signal, each terminal unit being arranged to cause said DC voltage signal addition means to add or not to add a DC voltage signal to a blanking period of said terminal output information signal depending on whether said each terminal unit is transmitting said terminal output information signal to another terminal unit; and
 - (B) a repeater to which the plurality of terminal units are connected, said repeater (i) forming a transmission signal to be sent to the transmission line by frequency-multiplexing the terminal output information signals respectively transmitted from the plurality of terminal units, or (ii) receiving a transmission signal supplied from the transmission line and sup-



plying a plurality of terminal output information signals frequency-multiplexed with the received transmission signal to a terminal unit.

5,777,665

IMAGE BLOCKING TELECONFERENCING EYE CONTACT TERMINAL

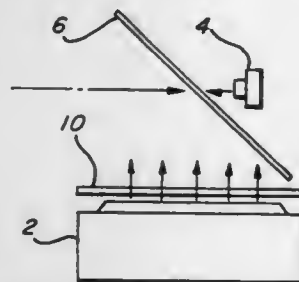
Steve H. McNeley, San Juan Capistrano, and Jeffrey S. Machtig, Lake Forest, both of Calif., assignors to Videotronic Systems, San Juan Capistrano, Calif.

Filed Sep. 20, 1995, Ser. No. 530,880

Int. Cl.⁶ H04N 7/12

U.S. Cl. 348—20

12 Claims



6. An improved eye contact teleconferencing terminal for allowing a first conferee to maintain eye contact with a second conferee imaged by the teleconferencing terminal, the teleconferencing terminal comprising:

- a substantially planar image display for producing an image of the second conferee;
- a semireflective transparent panel forming an angle of between about 30 and 60 degrees with the image display thereby defining a first surface of the semireflective transparent panel which faces the image display and a second surface of the semireflective transparent panel which faces away from the image display;
- a video camera disposed on a side of the semireflective transparent panel opposite the image display, the video camera capturing an image of the first conferee through the second surface of the semireflective transparent panel an image of the first conferee who is disposed on the image display-side of; and
- a layer of image blocking film disposed between a front surface of the image display and the semireflective transparent panel allowing the image of the second conferee to pass through and reflect from the semireflective panel while blocking a direct view of the image display from the first conferee.

5,777,666

METHOD OF CONVERTING TWO-DIMENSIONAL IMAGES INTO THREE-DIMENSIONAL IMAGES

Susumu Tanase, Hirakata; Toshiyuki Okino, Kadoma; Toshiya Inuma, Moriguchi; Syugo Yamashita, Kadoma; Hidekazu Uchida, Hirakata; Yukio Mori; Akihiro Maenaka, both of Kadoma; Seiji Okada, Moriguchi, and Kanzi Ihara, Higashiosaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

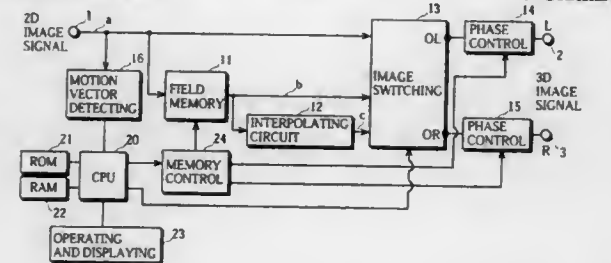
Filed Apr. 16, 1996, Ser. No. 633,036

Claims priority, application Japan, Apr. 17, 1995, 7-091022; Jul. 24, 1995, 7-187314; Mar. 22, 1996, 8-066054

Int. Cl.⁶ H04N 13/00

U.S. Cl. 348—43

5 Claims



1. A method of converting two-dimensional images into three-dimensional images, a main image signal and a sub-image signal delayed from the main image signal being produced from a two-dimensional image signal, and a field delay indicating how many fields are there from a field corresponding to the main image signal to a field corresponding to the sub-image signal being changed depending on horizontal components of motion vectors detected from the main image signal, wherein

the upper limit of the field delay is determined on the basis of vertical components of motion vectors detected from the main image signal, and the field delay is so determined that it is not more than the determined upper limit, wherein an increase in the vertical distance of an object moving vertically between the main image signal and the sub-image signal is avoided, said method further comprising

- a first step of calculating for each field an average value of absolute values of vertical components of all or parts of motion vectors respectively detected from a plurality of motion vector detecting areas set in an image area of the main image signal and storing the calculated average value in storing means,
- a second step of setting a variable indicating how many continuous fields correspond to average values including the latest average value which are to be accumulated out of average values corresponding to a predetermined number of past fields which are stored in the storing means to a predetermined maximum field delay,
- a third step of reading out the average values corresponding to the set variable out of the average values corresponding to the predetermined number of past fields which are stored in the storing means in the order starting from the latest average value and calculating the sum of the average values,
- a fourth step of determining the variable currently set as the upper limit of the field delay when the calculated sum is less than a predetermined reference value, and decrementing the variable currently set by one when the calculated sum is not less than the predetermined reference value, and
- a fifth step of repeatedly performing the processing in said third and fourth steps using, when the variable is updated in the fourth step, the updated variable.

5,777,667

ELECTRONIC CAMERA OPERABLE IN A DUAL SHOOT MODE TOGETHER WITH A CAMERA WITH A FILM

Izumi Miyake, and Ryuji Kawaguchi, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 596,399, Feb. 2, 1996, abandoned.

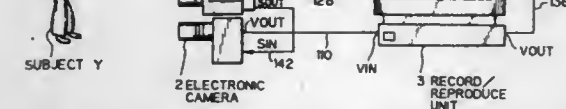
This application Jun. 3, 1997, Ser. No. 867,819

Claims priority, application Japan, Feb. 14, 1995, 7-025290

Int. Cl.⁶ H04N 7/18; G03B 29/00

U.S. Cl. 348—64

27 Claims



1. An electronic camera for shooting a subject and recording a still picture representative of the subject, comprising:

first releasing means for outputting a first release signal commanding a start of independent shooting of said electronic camera;

imaging means for opening, in response to a first drive signal, an electronic shutter to thereby store charges representative of the subject in a cell array, and for reading, in response to a second drive signal, at least one frame of analog video signal corresponding to the charges out of said cell array, wherein said imaging means is capable of performing a pinning operation;

dual shoot control means for receiving a stimulating signal commanding a start of dual shooting from the outside of said electronic camera at a first input terminal thereof, developing the received stimulating signal on a first control line, receiving a third release signal at a second input terminal thereof over a second control line, and receiving a select signal indicative of either the independent shooting or the dual shooting at a third input terminal thereof, and for outputting the received stimulating signal through the second input terminal to the second control line if said select signal is indicative of the dual shooting, or for outputting said third release signal to the first control line if said select signal is indicative of the independent shooting;

synchronizing signal generating means, connected to said first control line, for outputting, upon receiving the stimulating signal or said third release signal from said first control line, said first drive signal synchronous to the signal received, and for outputting said second drive signal synchronous to a synchronizing signal, generated by reference signal generating means included in said synchronizing signal generating means, and asynchronous to said first drive signal; and

control means for controlling said electronic camera in response to the stimulating signal received over said second control line, and for outputting, in response to said first release signal received from said first releasing means, said third release signal on said second control line while controlling said electronic camera,

wherein said control means feeds said select signal indicative of the dual shooting to said dual shoot control means, and wherein said synchronizing signal generating means feeds, upon receiving the stimulating signal, said first drive signal to said imaging means and thereby opens said electronic shutter for shooting the subject, and then feeds to said imaging means said second drive signal starting at a predetermined position of said synchronizing signal, which appears after said electronic shutter has been closed by said first drive signal, and which is synchronous to said synchronizing signal to thereby cause at least one frame of analog video signal to be read out of said cell array.

5,777,668

FURNACE MONITORING CAMERA WITH PIVOTING ZOOM LENS

Hiro Amano, Kisarazu, Japan, assignor to Amano & Associates Incorporated, Tokyo, Japan

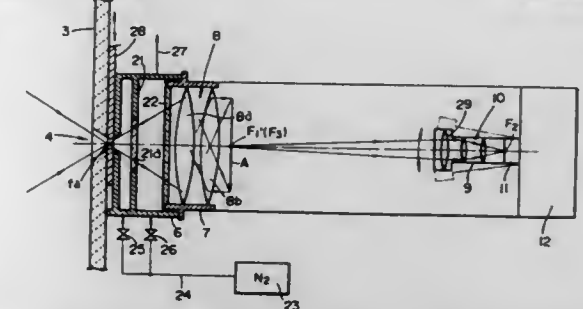
Continuation of Ser. No. 295,397, Aug. 25, 1994, abandoned.

This application Jul. 26, 1996, Ser. No. 687,769

Int. Cl.⁶ H04N 7/18

U.S. Cl. 348—83

10 Claims



1. A monitoring camera for monitoring a condition of a side of a wall through an opening defined in the wall, comprising:

- a wide-angle lens system being disposed adjacent to the opening in the wall for producing an optical image;
- a zoom lens system for varying a size of the optical image produced by said wide-angle lens system;
- a close-up lens operatively positioned between said wide-angle lens and said zoom lens system;
- an imaging device for capturing the optical image varied in size by said zoom lens system, said imaging device being disposed adjacent to said zoom lens;
- tilting means for angularly moving said close-up lens, said zoom lens system and said imaging device in unison with each other to observe any area of the optical image produced by said wide-angle lens systems;
- a cylindrical attachment having one end surrounding said opening;
- said close-up lens, said wide-angle lens system, said zoom lens system, and said imaging device being housed in an outer sleeve, said outer sleeve being fitted in an opposite end of said cylindrical attachment closely to said wide-angle lens system; and
- an inert gas supply means for introducing an inert gas into said cylindrical attachment and discharging at least part of said inert gas through said opening into a throat;
- said cylindrical attachment having a partition dividing an interior space thereof into a first space defined between said opening and said partition and a second space defined between said partition and said outer sleeve, said partition having an optical path for said wide-angle lens system and said zoom lens system, said inert gas supply means comprising means for introducing the inert gas under a higher pressure into said first space and then discharging the inert gas through said opening into said throat, and passing the inert gas under a lower pressure through said second space.

5,777,669

IMAGE READING DEVICE

Koki Uwatoko, and Hiroyuki Miyake, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 198,813, Feb. 18, 1994, abandoned.

This application Feb. 26, 1996, Ser. No. 607,106

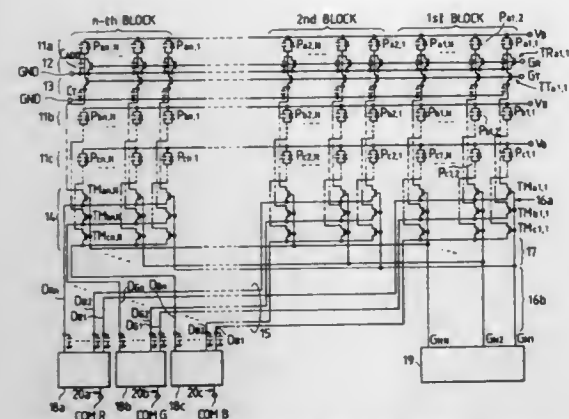
Claims priority, application Japan, Feb. 19, 1993, 5-053210

Int. Cl.⁶ H04N 5/335

U.S. Cl. 348—308

7 Claims

1. An image reader device, comprising:
at least one photo sensing element array having a plural number of blocks each consisting of plural bits of photo sensing elements, said photo sensing elements generating charges in response to light received during a predetermined time period;



- a plural number of first switching elements, serially connected to respective anodes of said photo sensing elements, for transferring, en bloc, the charges of all bits in said photo sensing element array after said predetermined time period;
- a plural number of second switching elements, respectively connected between the anodes of said photo sensing elements and ground, for resetting, en bloc, the charges of all bits left in said photo sensing elements after transferring the charges by said plural number of first switching elements, so that said charges of all bits left in said photo sensing elements are discharged;
- a plural number of capacitor portions, connected to said first switching elements, for retaining the transferred charges;
- a plural number of third switching elements, connected to said first switching elements and said capacitor portions, for transferring the charges which are stored in said capacitor portions after resetting the charges by said plural number of second switching elements, said third switching elements being grouped into a plurality of groups and being controlled to transfer the charges at timings corresponding to positions in respective groups;
- a plural number of wiring capacitor portions, formed in connection with said third switching elements, for retaining the charges transferred by said third switching elements;
- a plurality of common signal lines provided for connection to said respective groups of said third switching elements for receiving the charges transferred through said respective groups of said third elements; and
- drive ICs for receiving the charges through the common signal lines and outputting the charges in the form of image signals.

5,777,670

DEVICE FOR CONTROLLING TRANSFER IN A CCD-TYPE IMAGING DEVICE

Keiji Sawanobori, and Nobuhiro Tani, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

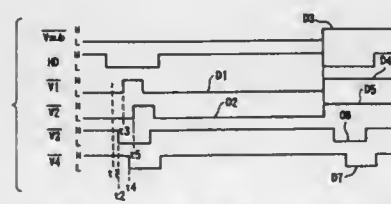
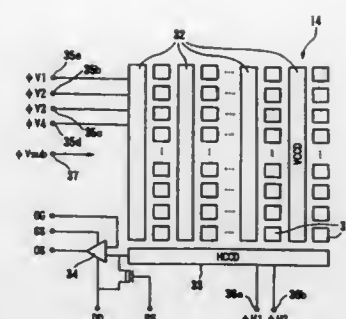
Continuation of Ser. No. 140,418, Oct. 25, 1993, abandoned. This application Sep. 13, 1995, Ser. No. 527,435

Claims priority, application Japan, Oct. 26, 1992, 4-311030 Int. Cl.⁶ H04N 5/335

U.S. Cl. 348—311

14 Claims

1. A device for controlling an imaging device for a still video camera having an aperture, said imaging device having a light receiving part and a transfer part, comprising:
- means for transferring an electric charge accumulated in said light receiving part through said transfer part, in accordance with drive signals;
- means for controlling said transferring means for fixing some of the drive signals at predetermined voltage values, with the remainder of the drive signals comprising variable voltage drive signals, while an entire exposure period on said light receiving part is carried out, said entire exposure period extending from a discharge of residual electric charges from said light receiving part to a closure of said aperture, to form



an accumulation area in which an electric charge can be accumulated in said transfer part during said exposure, wherein a residual part of the accumulated electric charge is transferred in a similar manner to the transfer of the accumulated electric charge by said means for transferring.

5,777,671

SOLID STATE IMAGER HAVING HIGH FREQUENCY TRANSFER MODE

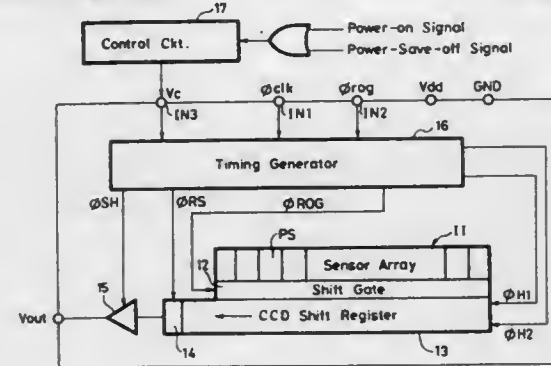
Yasuhito Maki, Kanagawa; Tetsuro Goto, Chiba; Tadao Takagi, Kanagawa, and Hiroyuki Iwasaki, Tokyo, all of Japan, assignors to Sony Corporation, and Nikon Corporation, both of Tokyo, Japan

Continuation of Ser. No. 268,571, Jul. 6, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 586,304

Claims priority, application Japan, Jul. 8, 1993, 5-194315 Int. Cl.⁶ H04N 3/14; 5/335

U.S. Cl. 348—312

24 Claims



1. A solid state imager comprising:
- a solid state imaging section including:
- a sensor having a plurality of pixels, said sensor comprising an at least linear array of photoelectric transducers representing said pixels, respectively;
- a charge transfer section for transferring signal charges read from the respective pixels of said sensor;
- a charge detector for detecting signal charges transferred by said charge transfer section, converting the detected signal charges into electric signals, and outputting the electric signals;
- a signal processor for processing said electric signals output from said charge detector; and
- a timing generator for generating a plurality of timing signals for directly driving said charge transfer section, said charge detector and said signal processor respectively, said timing

signals including a first transfer clock signal for driving said charge transfer section at a first rate and a second transfer clock signal for driving said charge transfer section at a second rate higher than said first rate, at least one of said timing signals other than said first and second transfer clock signals being fixed to a DC level in a transfer mode governed by said second transfer clock signal.

5,777,672

PHOTOSENSITIVE DEVICE WITH JUXTAPOSED READING REGISTERS

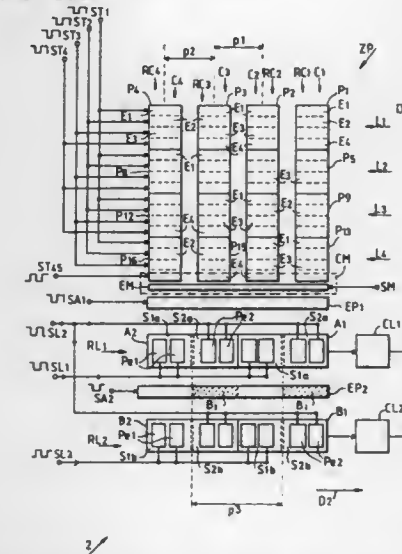
Yvon Cazaux, Grenoble; Louis Brissot, Saint Egreve, and Bruno Gill, Grenoble, all of France, assignors to Thomson Composants Militaires Et Spatiaux, Courbevoie, France

Continuation of Ser. No. 877,135, May 1, 1992, abandoned. This application Apr. 19, 1994, Ser. No. 744,197

Claims priority, application France, May 3, 1991, 91 05470 Int. Cl.⁶ H04N 5/335

U.S. Cl. 348—316

11 Claims



1. A photosensitive charged-coupled device, comprising a matrix arrangement of elementary photosensitive zones or pixels, at least two distinct reading registers, wherein each stage of the reading registers comprises at least two sub-stages that succeed each other in a transfer direction perpendicular to the columns, each first and second sub-stages of the first reading register respectively facing a corresponding first and second sub-stages of the second reading register, wherein photosensitive charges coming from first columns are transferred in the second reading register through the first sub-stages of the first reading register during one loading operation of charges of a line of the matrix into the registers, while charges of second columns are transferred only into the first register during the same loading operation, said first and second columns alternating in the matrix along said transfer direction, each sub-stage having a respective control electrode and the control electrode of first sub-stage of the first reading register being electrically independent of the control electrode of corresponding first sub-stage of the second reading register, and wherein means are provided for applying different potentials respectively to the control electrodes of the first sub-stages of the first reading register and to the control electrodes of the first sub-stages of the second reading register during said loading operation.

5,777,673

COLOR SEPARATION PRISM

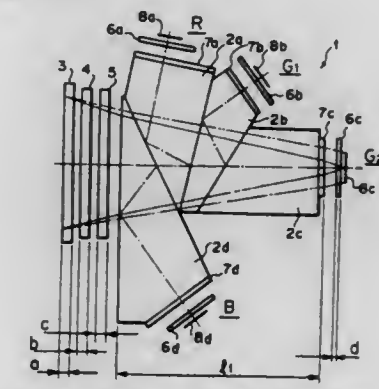
Kazuo Yoshikawa, Saitama-ken, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Filed Aug. 23, 1995, Ser. No. 518,360

Claims priority, application Japan, Aug. 24, 1994, 6-199545 Int. Cl.⁶ H04N 9/07

U.S. Cl. 348—337

4 Claims



1. A color separation prism to be incorporated in an image pick-up camera comprising:
- two prism blocks for separating an incident ray into a green color;
- one prism block for separating the incident ray into a red color;
- one prism block for separating the incident ray into a blue color; and
- an F-number which is substantially the same as an F-number of an image pick-up lens used together with the color separation prism.

5,777,674

FOUR COLOR SEPARATION OPTICAL DEVICE

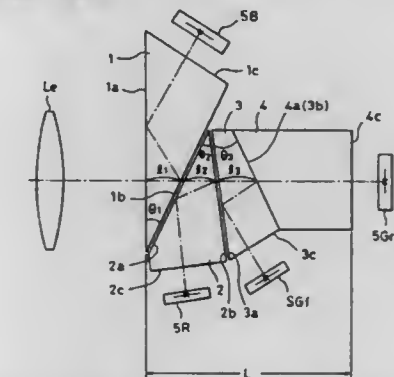
Ryuji Ohmuro, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1995, Ser. No. 419,233

Claims priority, application Japan, Apr. 11, 1994, 6-072032 Int. Cl.⁶ H04N 9/07; 5/225

U.S. Cl. 348—338

13 Claims



1. A color separation optical system for effecting color separation on light from an objective, said color separation optical system comprising, in an arrangement in the order according to a direction in which the light travels: a first prism which has a predetermined apex angle and which serves to extract a predetermined wavelength component; a first air gap; a second prism having a predetermined apex angle; a second air gap; a third prism having a predetermined apex angle; and a fourth prism, wherein the third and fourth prisms are joined to each other through the intermediation of a joint plane, which is a semi-transmissive plane, the light reflected by this semi-transmissive plane being totally reflected by a surface adjacent to the second air gap of said third prism, and wherein an image taking device is provided in a light emission section of each color separation prism, and wherein, assuming that an effective image taking dimension in a plane including emission

luminous flux of an effective image taking range of said image taking device is h , the following conditions are satisfied:

$$0.95 < \frac{l_1}{h} < 1.3$$

$$0.75 < \frac{l_2}{h} < 1.3$$

$$0.4 \leq \frac{l_3}{l_1 + l_2} \leq 0.6$$

$$5.5 \leq \frac{L}{h} \leq 7.5$$

where l_1 , l_2 and l_3 : respective lengths, in an optical axis of the objective, of the first, second and third prisms; and L : length, in the optical axis of the objective, of a luminous flux separation prism.

5,777,675

AUTOMATIC LIGHT MEASURING DEVICE FOR IMAGE PICKUP DEVICE

Takashi Miida; Kazuhiro Kawajiri; Jun Hasegawa, and Isao Taniguchi, all of Miyagi-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

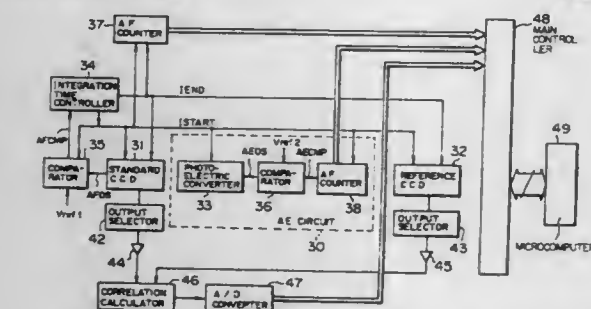
Filed Dec. 9, 1992, Ser. No. 988,334

Claims priority, application Japan, Dec. 10, 1991, 3-326201

Int. Cl.⁶ H04N 5/232; 5/335

U.S. Cl. 348—350

15 Claims



1. An automatic light measuring device for an image pickup device comprising:

a pair of line sensors suitable for performing an automatic focusing adjustment, said pair of line sensors being spaced apart by a predetermined distance and mounted on a single semiconductor chip;

integration time controlling means for generating an integration control signal for controlling charge accumulation by incident light, by detecting the amount of charge accumulated on each of said line sensors;

first exposure amount detecting means for calculating the intensity of the incident light from said integration control signal; second exposure amount detecting means inclusive of photoelectric conversion elements formed on said semiconductor chip, for detecting the amount of incident light;

a pair of lenses mounted above said pair of line sensors for focusing the image of substantially the same subject within the central area of a field of view; and

an optical system for applying light within an area broader than the central area of the field of view to the surface of said semiconductor chip inclusive of said photoelectric conversion elements.

5,777,676

Patent Not Issued For This Number

5,777,677 APPROXIMATE MPEG DECODER WITH COMPRESSED REFERENCE FRAMES

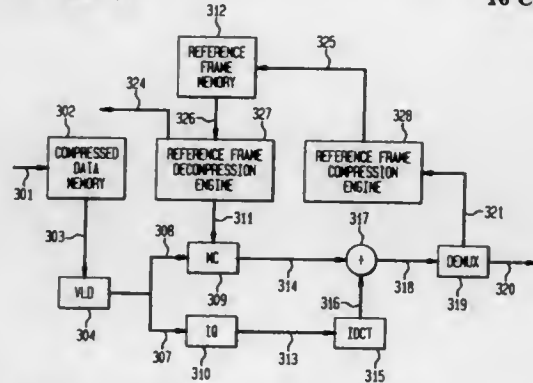
Elliot Neil Linzer, Bronx, N.Y.; Roderick Michael Peters West, Colchester, Vt., and Peter Hans Westerink, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 9, 1996, Ser. No. 599,695

Int. Cl.⁶ H04N 7/12; 11/02; 11/04

U.S. Cl. 348—397

16 Claims



1. A method for decoding a digital video sequence comprising the steps of:

decoding a first picture in the sequence;
compressing the first picture so that a compression ratio thereof includes non-integer numbers;

storing a compressed representation of the picture to a memory;
decompressing a region of the compressed representation of the first picture; and

responsive to the decompressing, decoding a region of a second picture in the sequence.

5,777,678

PREDICTIVE SUB-BAND VIDEO CODING AND DECODING USING MOTION COMPENSATION

Masami Ogata, Kanagawa; Teruhiko Suzuki, Chiba, and Tak Yen Tong, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

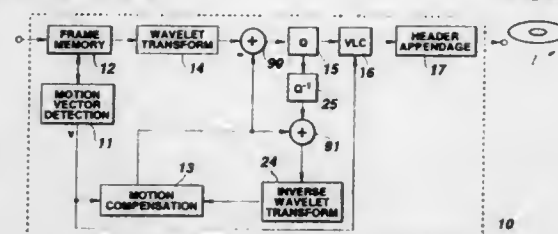
Filed Oct. 24, 1996, Ser. No. 740,285

Claims priority, application Japan, Oct. 26, 1995, 7-279425

Int. Cl.⁶ H04N 7/32

U.S. Cl. 348—398

15 Claims



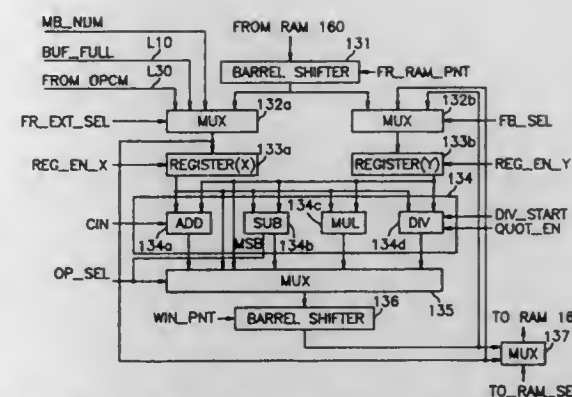
7. A method for encoding a picture said defining a picture, comprising the steps of:

detecting a motion vector from said picture signal;
spectrum dividing said picture signal using a sub-band transform to generate a number of sub-band coefficients;
calculating a difference value between the sub-band coefficients and respective predicted sub-band coefficients;
encoding said difference value and generating an encoded signal based on the encoded difference value;
locally decoding the generated encoded signal to generate a decoded difference value;

generating the predicted sub-band coefficients based on said motion vector and a picture that has been previously restored, said step of generating the predicted sub-band coefficients including determining on said picture a position corresponding to one of the predicted sub-band coefficients, obtaining on said picture a number of positions neighboring the determined position, determining a picture value corresponding to each of the obtained positions, calculating a sub-band coefficient corresponding to each of the determined picture values, and calculating a predicted sub-band coefficient as a function of the calculated sub-band coefficients;

adding the predicted sub-band coefficients and the decoded difference value to generate respectively restored sub-band coefficients; and

inverse sub-band transforming the restored sub-band coefficients and generating the restored picture.



5,777,679 VIDEO DECODER INCLUDING POLYPHASE FIR HORIZONTAL FILTER

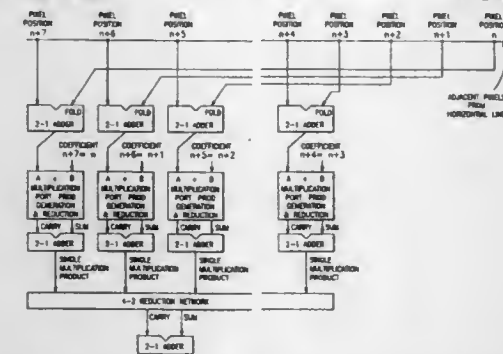
Dennis Phillip Cheney, Vestal; David Allen Hruscecky, Johnson City, both of N.Y., and Mihailo M. Stojancic, Sunnyvale, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 15, 1996, Ser. No. 616,327

Int. Cl.⁶ H04N 7/12

U.S. Cl. 348—401

4 Claims



1. In a digital video decoder comprising a data buffer, a variable length decoder, a dequantizer, an inverse discrete cosine transform decoder, a motion compensator, a polyphase finite impulse response horizontal digital filter having four folded parallel multiplier units with an adder above the multiplier for display output processing, a display unit video output, and a controller the improvement wherein each of the folded parallel multiplier units with an adder thereabove comprises a folding serial adder with the output of the folding serial adder going to the multiplier input of the multiplier unit and wherein said decoder further includes 4-2 counters arranged in an array configuration wherein each of the four multipliers contributes one partial product for the pre-addition portion of the 4-2 counter.

5,777,680

VIDEO SIGNAL ENCODING SYSTEM CONTROLLER FOR DECIDING AN INTER/INTRA MODE, A FIELD/FRAME DCT MODE, AND A QUANTIZATION PARAMETER

Sung-Jung Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 27, 1996, Ser. No. 671,187

Claims priority, application Rep. of Korea, Jun. 30, 1995, 95-19181

Int. Cl.⁶ H04N 7/12

U.S. Cl. 348—405

14 Claims

1. A controller, for use in a video signal encoding system, for deciding an inter/intra mode, a field/frame DCT mode and a quantization parameter, wherein the video signal contains a multi-

plicity of GOP's, each of the GOP's being classified into three types of pictures, with each of the pictures being divided into a multiplicity of macroblocks, and the encoding system has means for generating a differential pulse code modulated (DPCM) macroblock for each macroblock to be encoded and means for generating buffer state data representing the occupation level of a buffer for temporarily storing predetermined encoded video data, the controller comprising:

a state machine for generating a control sequence which includes a plurality of control signals in response to the type of a picture currently encoded and a signal denoting a start of the picture;

an arithmetic unit for generating, in response to the control sequence, a selected calculation result or a temporary value for each of the macroblocks in the picture, wherein the arithmetic unit includes:

a first input means, in response to the control sequence, for selecting a first input value among the sequential number of a target macroblock, the buffer state data, a DPCM macroblock corresponding to the target macroblock, initial constant values and the temporary value;

a second input means, in response to the control sequence, for selecting a second input value among the initial constant values, the temporary values and the first input value;

a first and a second register, in response to the control sequence, for storing and providing the first and the second input values, respectively;

a calculation means, in response to the control sequence, for performing an addition, a subtraction, a multiplication, a division and a comparison of the first with the second input values, to thereby provide a set of calculation results consisting of an addition result, a multiplication result, a subtraction result, a division result and a comparison result;

a selection means, in response to the control sequence, for selecting one of the calculation results; and

an output means, in response to the control sequence, for providing the selected calculation result or the first input value as the temporary value either to the second input means or to a memory and input/output unit; and

the memory and input/output unit for storing the initial constant values, providing the initial constant values to the arithmetic unit, for storing temporary values determined at the arithmetic unit and, in response to the control sequence, for providing a set of control values for each of the macroblocks in the picture based on the temporary values, the set of control values denoting the inter/intra mode, the field/frame DCT mode and the quantization parameter to be used in encoding the video signal.

1. A method of forming an output video signal composed of successive images, the output video signal forming a plurality of

windows, each of which contains image information from a respective input video signal in each frame, said method comprising the steps:

writing the image information from the input video signals into a memory; and
reading successive frames of an output video signal from a respective series of locations of the memory,
characterized in that said step of reading successive frames comprises:

forming a sequence of locations in said memory inclusive of said respective series of locations, said sequence of locations having a number m of locations which is greater than the number f of locations in said respective series of locations, said sequence of locations including an end and a beginning of more than one of said respective series of locations, in which a predetermined number of locations at the end of said sequence of locations, forming an ending of a series of locations corresponding to a present frame, are coincident in an overlapping fashion with a corresponding number of locations at a beginning of the series of locations corresponding to a directly preceding frame.

5,777,688

SIGNAL PROCESSOR

Jiro Miyake; Kazuki Ninomiya, both of Osaka; Miki Urano, Wakayama; Shintaro Tsubata, and Tamotsu Nishiyama, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

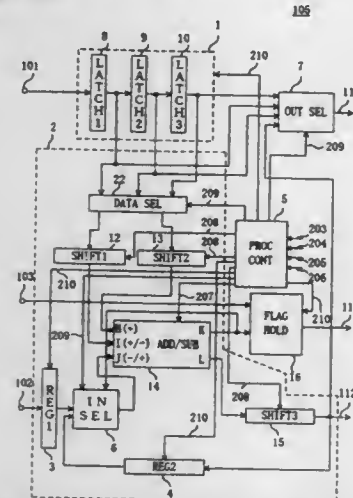
Filed May 10, 1996, Ser. No. 644,784

Claims priority, application Japan, May 11, 1995, 7-112902

Int. Cl.⁶ H04N 5/14; 9/64

U.S. Cl. 348—571

6 Claims



1. A signal processor having a plurality of processing elements, said plurality of processing elements being connected in cascade so as to form a first path for transferring an input data signal of said signal processor, and second and third paths each for transferring a data signal indicative of a processing result of said input data signal,

each of said plurality of processing elements comprising:
a first input disposed on said first path for providing a first data signal;
a second input disposed on said second path for providing a second data signal;
a third input disposed on said third path for providing a third data signal;
a data holding circuit for holding said first data signal provided from said first input, and for providing the first data signal thus held;
an arithmetic circuit for obtaining an operation result of addition-and-subtraction of said first data signal provided from said data holding circuit and said second data signal provided from said second input, for transferring a data signal which indicates the operation result thus obtained to said

second path, and for providing a flag signal which indicates a sign of the operation result thus obtained;

an output selecting circuit for transferring, to said first path, either one of said first data signal provided from said data holding circuit and said data signal provided from said arithmetic circuit;

a flag holding circuit for merging said flag signal provided from said arithmetic circuit to said third data signal provided from said third input, for holding a merged flag signal thus obtained, and for transferring the merged flag signal thus held to said third path; and

a processing control circuit for controlling respective operations of said data holding circuit, said arithmetic circuit, said output selecting circuit and said flag holding circuit, said arithmetic circuit comprising;

an input shifter for performing a specified amount of shift processing on said first data signal provided from said data holding circuit, and for providing a data signal which indicates a result of the shift processing thus performed;

an adder-subtractor for executing an addition-subtraction operation of said data signal provided from said input shifter and another data signal, and for providing a data signal which indicates an operation result of the addition-subtraction operation thus executed;

a result shifter for performing a specified amount of shift processing on said data signal provided from said adder-subtractor, and for providing a data signal which indicates a result of the shift processing thus performed;

a result register for holding said data signal provided from said result shifter, and for providing the data signal thus held; and
an input selecting circuit for providing, to said adder-subtractor, either one of said second data signal provided from said second input and said data signal provided from said result register.

5,777,689

METHOD AND APPARATUS FOR VIDEO SIGNAL SHARPENING

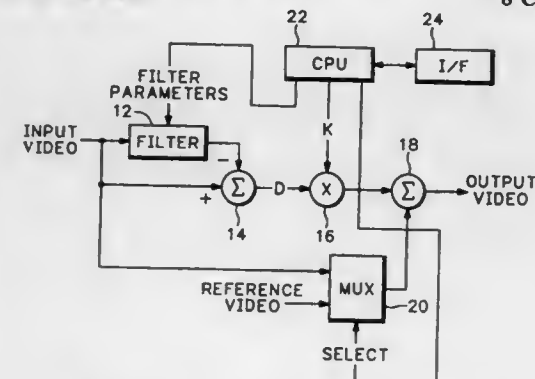
Brian Dunbar, Grass Valley, Calif., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Apr. 10, 1996, Ser. No. 630,319

Int. Cl.⁶ H04N 5/208

U.S. Cl. 348—625

8 Claims



5. A video sharpening method comprising the steps of:
obtaining from an input video signal an enhanced high frequency portion of the input video signal; and
combining the enhanced high frequency portion with a desired video signal selected from the group consisting of the input video signal and a reference video signal to produce a sharpened video signal.

5,777,690

DEVICE AND METHOD FOR DETECTION OF MOVING OBSTACLES

Nobuyuki Takeda, and Mutsumi Watanabe, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

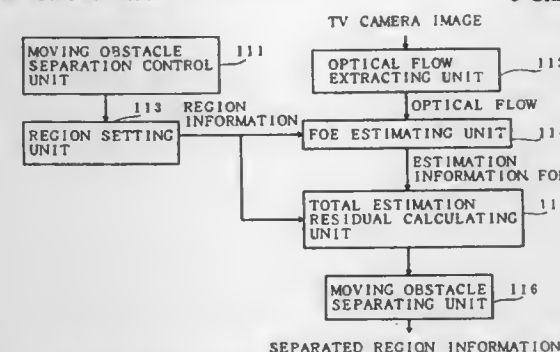
Filed Jan. 19, 1996, Ser. No. 588,845

Claims priority, application Japan, Jan. 20, 1995, 7-007446; Mar. 15, 1995, 7-055292

Int. Cl.⁶ H04N 5/14; 9/64; 7/18

U.S. Cl. 348—699

8 Claims



5,777,693

DIVERSITY RECEIVING APPARATUS FOR A MOBILE UNIT

Takaaki Kishigami, Kawasaki; Masahiro Mimura; Makoto Hasegawa, both of Tokyo; Tadaaki Ushiyama, Yokohama; Masahiko Nakamura, Ebina, and Yoshinori Takagi, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

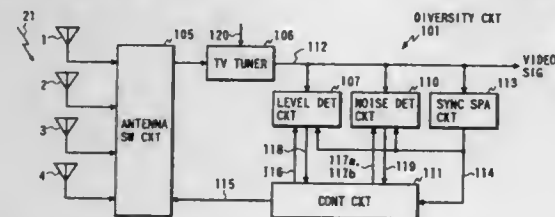
Division of Ser. No. 535,580, Sep. 28, 1995, abandoned. This application Aug. 1, 1996, Ser. No. 690,904

Claims priority, application Japan, Oct. 4, 1994, 6-240064; Jun. 13, 1995, 7-145991

Int. Cl.⁶ H04N 5/44

U.S. Cl. 348—731

12 Claims



1. A diversity receiving apparatus for a mobile unit, comprising: a plurality of antennas for receiving a radio wave television signal; switching means for selecting one of said plurality of antennas and supplying said radio wave television signal from one of said plurality of antennas; receiving means for receiving said radio wave television signal from said switching means and supplying a television signal including a synchronizing signal; level detection means for detecting a level of said television signal; noise level detection means for detecting a noise level included in said television signal; and control means responsive to said synchronizing signal for determining one of plurality of antennas selected by said switching means for the following vertical scanning period of said television signal wherein said control means controls said switching means and said level detection means to successively supply said radio wave television signal from each of said plurality of antennas to said receiving means during a vertical retrace period of said television signal to detect said level derived from said each of plurality of antennas, controls said switching means and said noise level detection means to detect noise levels from a first antenna of said plurality of antenna selected for previous vertical scanning period of said television signal and a second antenna currently providing a largest level except said first antenna, and determines either of said first and second antennas to be selected by said switching means for the following vertical scanning period of said television signal in accordance with the detected noise levels.

5,777,694

COLOR WHEEL WITH PLASTIC FILM FILTERS

Frank Poradish, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

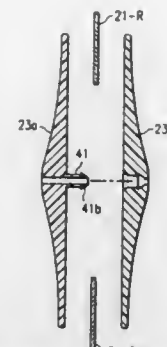
Filed Jun. 13, 1995, Ser. No. 489,979

Int. Cl.⁶ H04N 9/12

U.S. Cl. 348—743

20 Claims

1. A color wheel for a display system, comprising: a hub having a generally circulate shape and being made from a rigid material; and two or more color filter segments made from a plastic material, said filter segments being substantially pie-shaped and attached to said hub such that circular edges of said filter segments extend from said hub and opposing edges of said



filter segments are secured to said hub and such that each of said filter segments abuts other of said filter segments.

5,777,695

LIGHTING DEVICE TRANSFORMED IN THE DIRECTION OF POLARIZATION AND PROJECTION TYPE IMAGE DISPLAY DEVICE USING THE SAME

Shigekazu Yamagishi, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

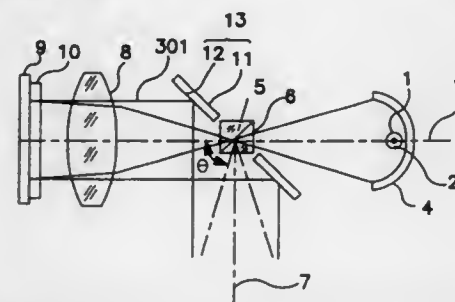
Filed May 31, 1996, Ser. No. 655,807

Claims priority, application Japan, Jun. 2, 1995, 7-136470; Mar. 8, 1996, 8-051242

Int. Cl.⁶ H04N 5/74; 9/31

U.S. Cl. 348—744

5 Claims



1. A lighting device transformed in the direction of polarization comprising: a light source, polarization selecting means for separating a light from the light source into a first polarized light and a second polarized light, polarization transforming means for transforming the first polarized light into a transformed second polarized light, and optical path transforming means for reflecting the transformed second polarized light, wherein the optical path transforming means has a central region containing an aperture, the polarization selecting means is positioned at the aperture, and the reflected transformed second polarized light and the second polarized light are combined mutually in a same direction.

5,777,696

COMPACT PROJECTION APPARATUS FOR GENERATING HIGH-QUALITY IMAGES

Shingo Inoue, Kawasaki; Tetsuo Hattori, Yokohama, and Sampei Esaki, Sagami-hara, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Dec. 15, 1995, Ser. No. 573,495

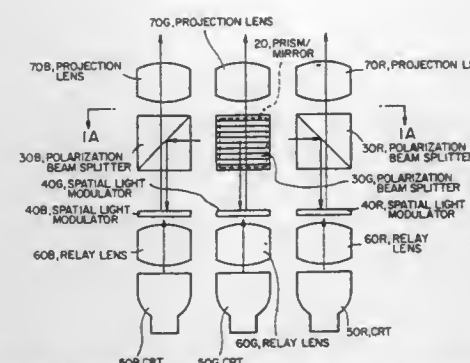
Claims priority, application Japan, Dec. 15, 1994, 6-311971; Apr. 26, 1995, 7-102501

Int. Cl.⁶ H04N 9/31

U.S. Cl. 348—752

11 Claims

1. A projection apparatus, comprising: a light source;



- a three color separation means which separates source light from said light source into a red light beam, a green light beam, and a blue light beam;
- three first polarization beam splitters, each of which separates a corresponding one of said three red, green, and blue light beams from said three color separation means into two linearly polarized light beams, one of which is emitted as a first transmitted light beam and the other of which is emitted as a first reflected light beam;
- three spatial light modulation means, each of which modulates said reflected light beam emitted by each of said three first polarization beam splitters to a modulated light beam;
- three write image formation means, each of which forms a write image upon a corresponding one of said three spatial light modulation means; and
- a projection means which projects upon a screen transmitted light beams of said modulated light beams, wherein said modulated light beams are incident upon said three first polarization beam splitters from said three spatial light modulation means, respectively, wherein said three color separation means and said three first polarization beam splitters all lie in a single plane, and said three first polarization beam splitters are so arranged that said first reflected light beam is emitted from each of said three polarization beam splitters in the same direction, perpendicular to said plane.

5,777,697

LINEARITY COMPENSATION CIRCUIT FOR WIDE-SCREEN TELEVISION RECEIVER

Kwan Seung Baek, Kyungsangbuk-Do, Rep. of Korea, assignor to LG Electronics, Inc., Seoul, Rep. of Korea

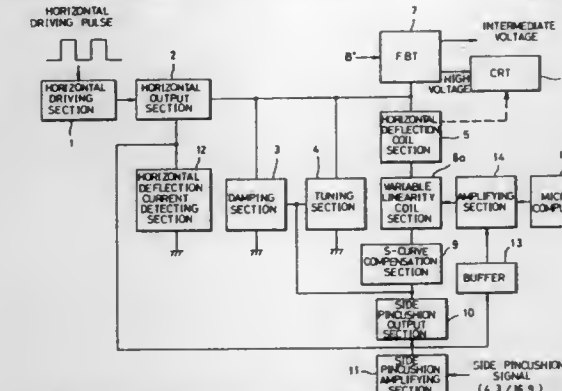
Filed Jan. 11, 1996, Ser. No. 584,745

Claims priority, application Rep. of Korea, Jan. 11, 1995, 1995-00321U

Int. Cl.⁶ H04N 3/32; 3/37

U.S. Cl. 348—806

4 Claims



1. A linearity compensation circuit for a wide-screen television receiver which adjusts a horizontal deflection current supplied to a horizontal deflection coil in accordance with a display mode which is determined by an aspect ratio, the linearity compensation circuit comprising:

- a variable linearity compensation coil coupled to said horizontal deflection coil, an inductance value of said variable linearity compensation coil being varied;
- a microcomputer for providing a control signal in accordance with a determined display mode; and
- a control circuit for controlling variation of said inductance value in response to said control signal, said control circuit comprising a horizontal deflection current detector for detecting a level of said horizontal deflection current supplied to said horizontal deflection coil.

5,777,698

APPARATUS FOR REDUCING MOIRE INTERFERENCE IN COLOR CATHODE RAY TUBES

Kwang Ho Park, Kyungsangbuk-Do, Rep. of Korea, assignor to Intelpros, Seoul, Rep. of Korea

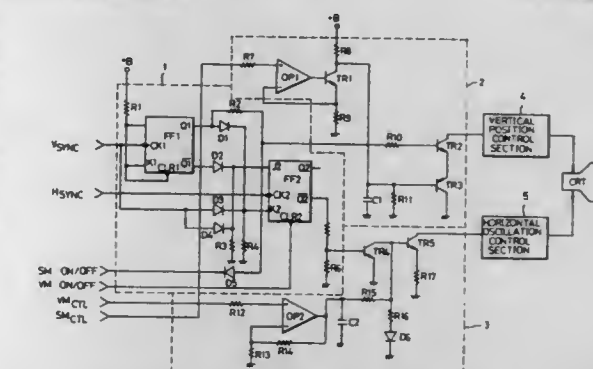
Filed Mar. 14, 1996, Ser. No. 615,447

Claims priority, application Rep. of Korea, Mar. 17, 1995, 1995-05619

Int. Cl.⁶ H04N 5/21

U.S. Cl. 348—809

9 Claims



1. An apparatus for reducing Moire interference in a color cathode ray tube comprising: sync signal dividing means for dividing a vertical sync signal and a horizontal sync signal separated from an input video signal with a predetermined dividing rate; vertical position control means for controlling a vertical position of even or odd scanning lines on a screen of said cathode ray tube in accordance with a first voltage signal inputted thereto; horizontal oscillation control means for controlling a horizontal position of even or odd image dots on said cathode ray tube in accordance with a second voltage signal inputted thereto; vertical position control signal output means, connected between said sync signal dividing means and said vertical position control means, for providing to said vertical position control means said first voltage signal for varying said vertical position of said even or odd scanning lines in accordance with a scanning Moire control signal inputted by a user in a specific period of said vertical sync signal divided by said sync signal dividing means; and horizontal position control signal output means, connected between said sync signal dividing means and said horizontal oscillation control means, for providing to said horizontal oscillation control means said second voltage signal for varying said horizontal position of said even or off image dots in accordance with a video Moire control signal inputted by a user in a specific period of said horizontal sync signal divided by said sync signal dividing means.

5,777,699

CATHODE RAY TUBE NECK FIXING STRUCTURE
Jae Su Shim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

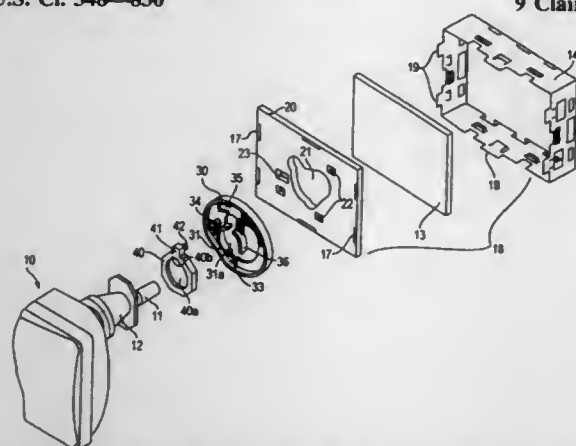
Filed May 26, 1995, Ser. No. 451,467

Claims priority, application Rep. of Korea, May 30, 1994, 1994-12085

Int. Cl.⁶ H04N 5/645

U.S. Cl. 348—830

9 Claims



1. An attachment structure for affixing a circuit board to a cathode ray tube having a neck in which one end of the neck of the cathode ray tube is connected electrically and mechanically to a circuit pattern formed on the circuit board, said structure comprising:

- a shield case assembly for housing the circuit board;
 - neck attachment means mounted on one side of said shield case assembly for securely attaching the neck to said shield case assembly so as to dispose the end of the neck in sufficient proximity to the circuit board housed therein to accomplish a connection; and
 - tightening means operatively coupled to said neck attachment means so that said neck inserted thereto is secured to said neck attachment means,
- wherein said neck attachment means comprises:
- a retainer;
 - a plurality of assembly clips integral with said retainer, said assembly clips disposed to engage a plurality of corresponding assembly slots formed on one side of said shield case assembly;
 - a pair of arcuate ribs defining therebetween a support aperture integral with said retainer, said support aperture defining an inner diameter into which the neck is inserted; and
 - a control cam integrally formed with said retainer to control the inner diameter of said support aperture.

5,777,700

LIQUID CRYSTAL DISPLAY WITH IMPROVED VIEWING ANGLE DEPENDENCE

Setsuo Kaneko; Ken Sumiyoshi, and Yoriko Hatada, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 273,123, Jul. 14, 1994, abandoned.

This application Aug. 14, 1996, Ser. No. 696,100

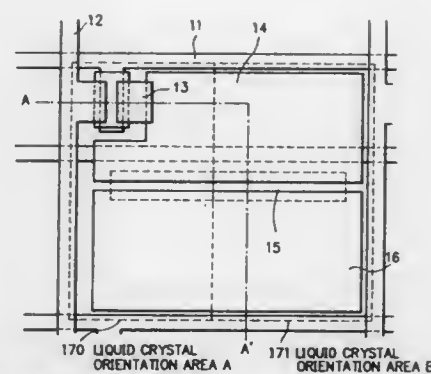
Claims priority, application Japan, Jul. 14, 1993, 5-174529; Jul. 14, 1993, 5-174531

Int. Cl.⁶ G02F 1/133; 1/1343

U.S. Cl. 349—39

10 Claims

1. A liquid crystal display, comprising:
- scanning electrodes and signal electrodes arranged in a matrix on a transparent insulator substrate;
 - thin-film transistors disposed at respective intersections between the scanning electrodes and the signal electrodes;
 - first pixel electrodes connected to respective signal electrodes via the thin-film transistors;



- connecting capacitor electrodes, arranged on the transparent insulator substrate, and connected to respective first pixel electrodes;
 - a gate insulator film extending over the connecting capacitor electrodes;
 - at least one second pixel electrode capacitively connected to the first pixel electrodes via the connecting capacitor electrodes;
 - an opposing electrode opposing the first pixel electrodes; and
 - a liquid crystal layer interposed between the first pixel electrodes and the opposing electrode;
- wherein:
- the connecting capacitor electrodes are formed to apply mutually different voltages to the first and second pixel electrodes; and
 - the first and second pixel electrodes are disposed on the gate insulator film.

5,777,701

DISPLAY DEVICE

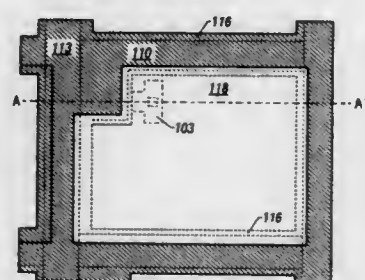
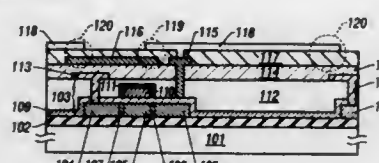
Hoogyong Zhang, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan
Filed May 7, 1996, Ser. No. 646,512

Claims priority, application Japan, May 8, 1995, 7-134810; Feb. 21, 1996, 8-058500

Int. Cl.⁶ G02F 1/1343; 1/136

U.S. Cl. 349—44

10 Claims



6. A display device comprising:
- a thin film transistor formed on a substrate, said thin film transistor having source, drain and channel regions and a gate electrode adjacent to said channel region with a gate insulating film therebetween;
 - a gate line electrically connected to said gate electrode and configured to extend in a first direction on a substrate;
 - a first interlayer insulating film formed over said thin film transistor and said gate line;
 - a source line formed on said first interlayer insulating film and electrically connected to the source region of said transistor through a first contact hole of said first interlayer insulating

- film wherein said source line extends in a second direction substantially orthogonal to said gate line to define a pixel region;
 - a second interlayer insulating film formed on said first interlayer insulating film and said source line;
 - a light shielding layer formed on said second interlayer insulating film to shield at least said source line and said gate line;
 - a third interlayer insulating film formed on said second interlayer insulating film and said light shielding layer; and
 - a pixel electrode formed on said third interlayer insulating film and electrically connected to said drain region of the transistor,
- wherein a part of said light shielding layer overlaps with a periphery of said pixel electrode with said third interlayer insulating film interposed therebetween to form a storage capacitor and said second interlayer insulating film provides a leveled upper surface for said pixel electrode.

5,777,702

LIQUID CRYSTAL DISPLAY DEVICE AND METHOD OF FABRICATING THE SAME BY PATTERNING SEMICONDUCTOR, INSULATOR, AND GATELINES WITH SINGLE MASK

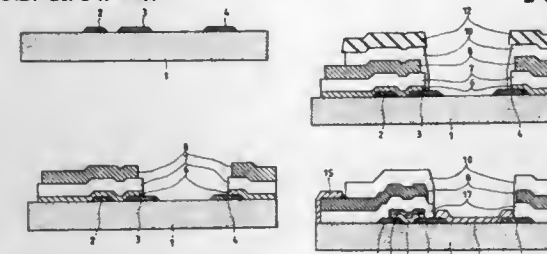
Masatoshi Wakagi, Hitachi; Kenichi Onisawa, Hitachinaka; Masahiko Ando, Hitachi; Toshiki Kaneko, Chiba; Tetsurob Minemura, Hitachiohta, and Tomohiro Okada, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 18, 1996, Ser. No. 588,446

Claims priority, application Japan, Jan. 30, 1995, 7-012298

Int. Cl.⁶ G02F 1/136; 1/1345; H01L 21/00

U.S. Cl. 349—47

2 Claims



1. A method of fabricating a liquid crystal display device comprising the steps of:
- forming source electrodes and drain wirings on a substrate;
 - forming a semiconductor film, an insulating film, and a metallic film in succession on said substrate, source electrodes and drain wirings,
 - patterning said semiconductor film, said insulating film and said metallic film using a mask pattern, to thereby form gate wirings;
 - forming a protective insulating film on said gate wirings and forming a photoresist on the protective insulating film;
 - patterning said protecting insulating film using said photoresist and then forming a transparent conductive film thereon; and
 - removing said transparent conductive film at the region where said photoresist pattern was formed to thereby form terminal portions of said gate wirings and drain wirings, and pixel electrodes.

5,777,703

ACTIVE MATRIX TYPE LIQUID CRYSTAL DISPLAY APPARATUS WITH A PROJECTION PART IN THE DRAIN LINE

Ryuji Nishikawa, Hashima-Gun, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

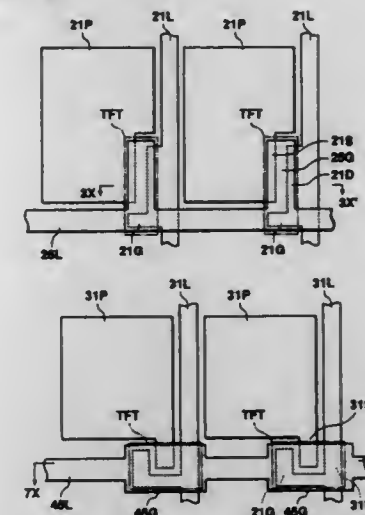
Filed Aug. 28, 1995, Ser. No. 519,961

Claims priority, application Japan, Sep. 30, 1994, 6-237484; Sep. 30, 1994, 6-237485

Int. Cl.⁶ G02F 1/136

U.S. Cl. 349—47

19 Claims



1. An active matrix type liquid crystal display apparatus comprising:
- a plurality of pixel electrodes arranged on a substrate in a matrix array;
 - drain lines formed between columns of said pixel electrodes;
 - gate lines formed between rows of said pixel electrodes;
 - an insulation layer and a semi-conductor layer formed under each of said gate lines; and
 - a thin film transistor formed in the vicinity of each intersection of said drain lines and said gate lines,
- wherein each of said thin film transistors includes:
- a source electrode section constituting a part of one of said pixel electrodes;
 - a drain electrode section constituting a part of one of said drain lines;
 - a channel layer constituting a part of one of said semi-conductor layers and formed to cross over said source electrode section and said drain electrode section;
 - a gate insulation layer formed on said channel layer and constituting a part of one of said insulation layers; and
 - a gate electrode section that is formed on said gate insulation layer and constitutes a part of one of said gate lines, said gate electrode section including an extending portion of said one gate line that is formed so as to extend from the main portion of said one gate line,
- wherein said one drain line includes a projection part, said projection part being disposed in the vicinity of where the extending portion extends from the main portion of said one gate line.
7. An active matrix type liquid crystal display apparatus comprising:
- a plurality of pixel electrodes formed on a substrate in a matrix array;
 - drain lines formed between the columns of said pixel electrodes;
 - gate lines formed between the rows of said pixel electrodes;
 - an insulation layer and a semi-conductor layer formed under each of said gate lines; and
 - a thin film transistor formed in the vicinity of each intersection of said drain lines and said gate lines,
- wherein each of said thin film transistors includes:
- a source electrode section constituting a part of one of said pixel electrodes;

a drain electrode section constituting a part of one of said drain lines;
 a channel layer constituting a part of one of said semiconductor layers and formed to cross over said source electrode section and said drain electrode section;
 a gate insulation layer formed on said channel layer and constituting a part of one of said insulation layers; and
 a gate electrode section formed on said gate insulation layer and constituting a part of one of said gate lines,
 wherein said source electrode section includes an extending portion of said pixel electrode that is formed so as to extend from the main portion of said pixel electrode towards said one gate line,
 said one drain line includes a projection part disposed in the vicinity of the intersection of said one drain line and said one gate line, said projection part being formed within the region covered by said gate electrode section and being formed so as to substantially surround said source electrode section,
 said one gate line is widened in the part constituting said gate electrode section, and
 the edges of said one gate line that do not extend in the direction of said one gate line are arranged outside the regions where said one drain line, said drain electrode section, and said projection part are formed, so that said edges do not overlap these regions.

5,777,704

BACKLIGHTING AN LCD-BASED NOTEBOOK COMPUTER UNDER VARYING AMBIENT LIGHT CONDITIONS

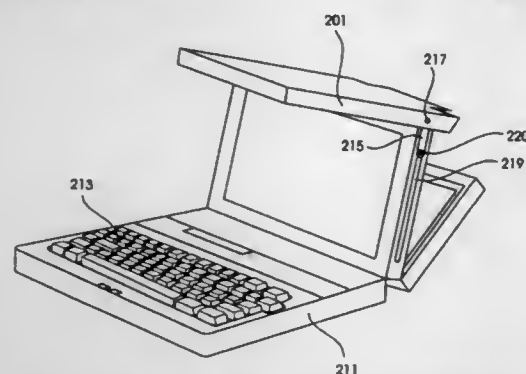
Edwin Joseph Selker, Palo Alto, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1996, Ser. No. 741,488

Int. Cl.⁶ G02F 1/1333; 1/13; H05K 5/00

U.S. Cl. 349—58

9 Claims



1. In a computer of the notebook type comprising a planar, light-transmissive, multicolored liquid crystal display (LCD) rotationally coupling a base, and information entry and processing means residing in said base for electrically and logically operating said LCD, the combination comprising:

first means for forming a mechanically separable outer protective cover for the LCD, said first means including means for providing diffused artificial backlighting of the LCD when said first means are mechanically engaged as the LCD cover;
 second means for positioning the first means in a plane, apart from, yet forming a dihedral angle with the plane of the LCD and for opportunistically reflecting ambient light and projecting the reflected light through the LCD; and
 third means for positioning the first means so as to project at least a portion of the first means beyond said LCD for providing either an ambient light shroud to the LCD or an unobstructed light path through the LCD.

5,777,705 WIRE BOND ATTACHMENT OF A LIQUID CRYSTAL DISPLAY TILE TO A TILE CARRIER

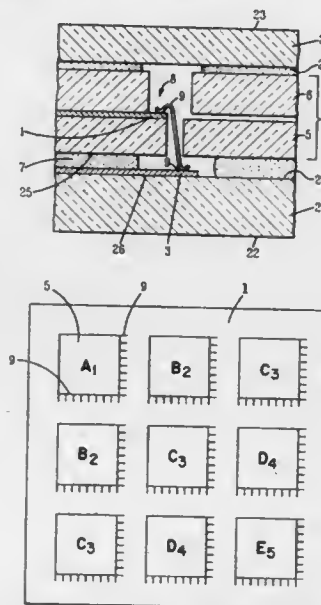
Mark Vincent Pierson, Binghamton; Steven F. Arndt, Endwell; Michael Anthony Gaynes, Vestal; Lawrence Richard Cutting, and David Brian Stone, both of Owego, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1997, Ser. No. 865,713

Int. Cl.⁶ G02F 1/1345

U.S. Cl. 349—73

22 Claims



1. A liquid crystal display comprising a plurality of liquid crystal display tiles arranged in a matrix electrically interconnected to a tile carrier, wherein each of said liquid crystal display tiles is attached to said tile carrier with an adhesive and is electrically interconnected to said tile carrier by wire bonds on at least one side of each of said liquid crystal display tiles and extending to said tile carrier.

5,777,706

NEMATIC LIQUID CRYSTAL PHASE SPATIAL LIGHT MODULATOR FOR ENHANCED DISPLAY RESOLUTION

Diana Chen, Gilbert; Fred V. Richard, and Phil Wright, both of Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

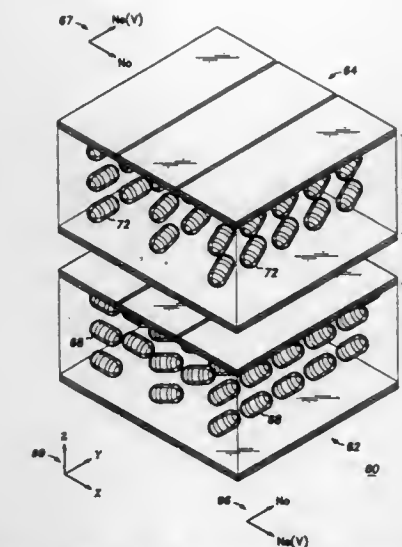
Filed May 17, 1996, Ser. No. 651,188

Int. Cl.⁶ G02F 1/1347; 1/1335; 1/13

U.S. Cl. 349—74

31 Claims

9. A phase spatial light modulator comprising:
 a first liquid crystal cell including a substrate with a control circuit formed therein, the control circuit including control terminals adjacent an outer edge of the substrate and at least one electrical contact formed therein, each of the at least one electrical contact defining a liquid crystal pixel and a first electrical contact for the liquid crystal pixel, at least one molecular alignment layer positioned in overlying relationship to at least one first electrical contact, a layer of nematic liquid crystal material comprised of a plurality of molecules each defining a long axis, positioned in overlying relationship to the at least one molecular alignment layer fabricated to align the long axis of each of the plurality of molecules of the nematic liquid crystal material along one of a x-axis and a y-axis, a layer of electrically conductive material positioned to form a second electrical contact and a glass plate positioned overlying the layer of electrically conductive material; and
 at least one additional liquid crystal cell including a substrate with a control circuit formed therein, the control circuit including control terminals adjacent an outer edge of the



substrate and at least one electrical contact formed therein, each of the at least one electrical contact defining a liquid crystal pixel and a first electrical contact for the liquid crystal pixel, at least one molecular alignment layer positioned in overlying relationship to at least one first electrical contact, a layer of nematic liquid crystal material comprised of a plurality of molecules each defining a long axis, positioned in overlying relationship to the at least one molecular alignment layer fabricated to align the long axis of each of the plurality of molecules of the nematic liquid crystal material along one of a x-axis and a y-axis so as to align orthogonal to the long axis of the plurality of molecules of the first liquid crystal cell, a layer of electrically conductive material positioned to form a second electrical contact and a glass plate positioned overlying the layer of electrically conductive material.

5,777,707

COLOR LIQUID CRYSTAL DISPLAY DEVICE AND PROCESS FOR PRODUCING SAME

Yulchi Masaki, Kawasaki; Kazuya Ishiwata, Yokosuka; Masaaki Suzuki, and Yuko Yokoyama, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

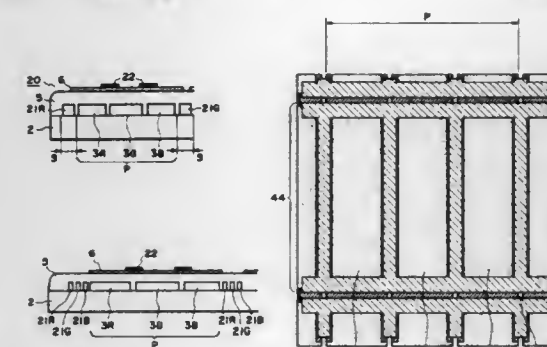
Filed Jul. 15, 1996, Ser. No. 679,988

Claims priority, application Japan, Jul. 14, 1995, 7-179165; Jul. 10, 1996, 8-181033

Int. Cl.⁶ G02F 1/1333; 1/1335

U.S. Cl. 349—110

24 Claims



1. A color liquid crystal display device, comprising:
 a first substrate having thereon a layer of plural color filter segments and a layer of first transparent electrodes disposed in superposition with the layer of color filter segments; a second substrate disposed opposite to and spaced apart from the first substrate and having thereon a layer of second transparent electrodes intersecting with the first transparent electrodes

trodes; and a liquid crystal disposed between the first and second substrates so as to form plural color pixels each at a region of intersection of the first and second transparent electrodes superposed with one of the color filter segments while leaving a pixel spacing between the plural color pixels, wherein the first substrate is provided with a first light-interrupting layer comprising a material identical to that of at least one of the plural color filter segments and disposed at a portion of the pixel spacing so as to mask the portion, and at least one of the first and second substrates is provided with a second light-interrupting layer masking a remaining portion of the pixel spacing.

5,777,708

Patent Not Issued For This Number

5,777,709

LIQUID CRYSTAL DISPLAY WITH TWO POSITIVE TILTED RETARDATION FILMS AND TWO NEGATIVE RETARDANT FILMS

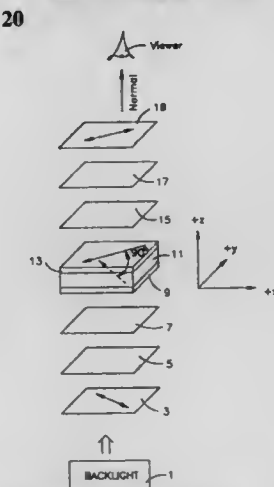
Gang Xu, Northville, Mich., assignor to OIS Optical Imaging Systems, Inc., Northville, Mich.

Continuation of Ser. No. 383,200, Feb. 3, 1995, Pat. No. 5,638,200. This application Oct. 7, 1996, Ser. No. 726,654

Int. Cl.⁶ G02F 1/1335

U.S. Cl. 349—120

5 Claims



1. A liquid crystal display comprising:
 a liquid crystal layer;
 a rear polarizer having a transmission axis;
 a front polarizer disposed on the viewer side of the liquid crystal layer so that the liquid crystal layer is disposed between the front and rear polarizers;
 first and second tilted retardation films on opposite sides of the liquid crystal layer, said first and second tilted retardation films being positively birefringent and uniaxial, and each having an optical axis tilted or at an oblique angle relative to a normal axis that is substantially perpendicular to a surface of one of said tilted retardation films;
 first and second negative retarders located on opposite sides of the liquid crystal layer, said first and second negative retarders each having an optical axis substantially parallel to the normal axis; and
 wherein said negative retarders and said tilted retardation films have retardation values and axis alignment such that the display exhibits a contrast ratio, when a 550 nm wavelength is used, of at least about 10:1 over a horizontal angular span of at least about 120° and over a vertical angular span of at least about 80°.

5,777,710

ELECTRODE SUBSTRATE, MAKING THE SAME, LIQUID CRYSTAL DEVICE PROVIDED THEREWITH, AND MAKING THE SAME

Shinjiro Okada, Isehara; Haruo Tomono, Machida, and Yuji Matsuo, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

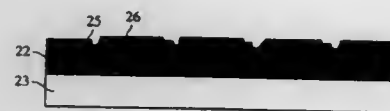
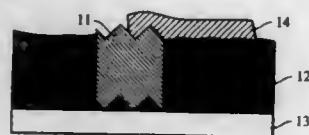
Filed Apr. 24, 1996, Ser. No. 637,180

Claims priority, application Japan, Apr. 28, 1995, 7-106692

Int. Cl.⁶ G02F 1/1333; 1/1343

U.S. Cl. 349—138

35 Claims



1. An electrode substrate comprising: at least a transparent electrode and a metal electrode provided on a transparent substrate, said metal electrode being formed on said transparent substrate through a dielectric layer having an irregular surface such that light incident on the dielectric layer from a transparent substrate side is reflected at random or scattered.
16. An electrode substrate comprising: at least a transparent electrode and a metal electrode provided on a transparent substrate, said metal electrode being formed on said transparent substrate through a dielectric layer comprising an organic resin having an irregular surface.
24. An electrode substrate comprising: a transparent substrate, a plurality of first electrodes disposed with a spacing therebetween on the transparent substrate through a first dielectric layer having an irregular surface, a second dielectric layer filling the spacing, and a plurality of second electrodes disposed so as to be in contact with the associated first electrodes, respectively, wherein the irregular surface comprises a surface oblique to the surface of the transparent substrate.

5,777,711

LIQUID CRYSTAL DISPLAY HAVING BALANCED CUTS IN ELECTRODES

Takashi Sugiyama, Kawasaki, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

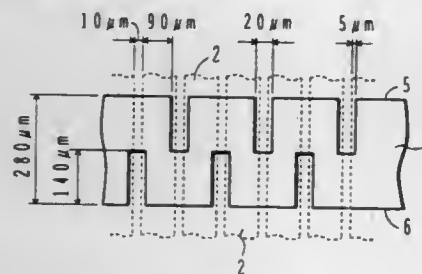
Filed Feb. 25, 1997, Ser. No. 805,560

Claims priority, application Japan, Feb. 27, 1996, 8-040163

Int. Cl.⁶ G02F 1/1343

U.S. Cl. 349—143

9 Claims



1. A liquid crystal display comprising: a pair of substrates disposed to face each other; two groups of crossing electrodes mounted on the pair of substrates, the two crossing electrode groups facing each other at a first distance at a crossing area; and

a liquid crystal layer disposed between the two groups of crossing electrodes, a display being controlled by voltage applied across the two groups of crossing electrodes which cross and face each other,

wherein:

- elongate cut portions are formed in each electrode of one of the two crossing electrode groups, at opposite edge portions of the electrode along a direction of an edge of an electrode of the other of the two crossing electrode groups,
- the cut portions are formed alternately at the opposite edge portions, and
- the position of each cut portion is at a central portion between neighboring cut portions on the other edge portion, and the position of each cut portion is overlapped with the edge of an electrode of the other crossing electrode group.

5,777,712

DIVING MASK

Salvatore N. Sansalone, 12 Paradise Gardens, Bramalea, Ontario, Canada, L6S 5C7

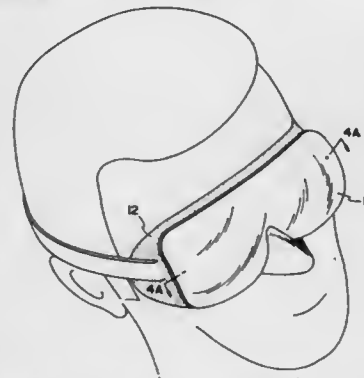
Continuation of Ser. No. 47,131, Apr. 15, 1993, Pat. No. 5,502,515, which is a continuation-in-part of Ser. No. 606,457,

Oct. 31, 1990, Pat. No. 5,204,700, which is a continuation-in-part of Ser. No. 276,470, Nov. 25, 1988, abandoned. This application Mar. 6, 1996, Ser. No. 611,854

Int. Cl.⁶ G02C 1/00

U.S. Cl. 351—43

17 Claims



1. An underwater vision device, comprising:
 - a) a supporting member arranged for sealing engagement with the face of a user;
 - b) a lens mounted in said supporting member, said lens having an optical surface; and
 - c) said optical surface being curved in the central portion and further continuously generally curved so that multiple radii of curvature are incorporated on said optical surface such that the radius of curvature changes progressively with increasing distance away from one or more points on said optical surface.

5,777,713

LIQUID CRYSTAL DISPLAY UNIT WITH SPACERS FORM IN THE LIGHT SHIELDING REGIONS

Atsuo Kimura, Ohtsu, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

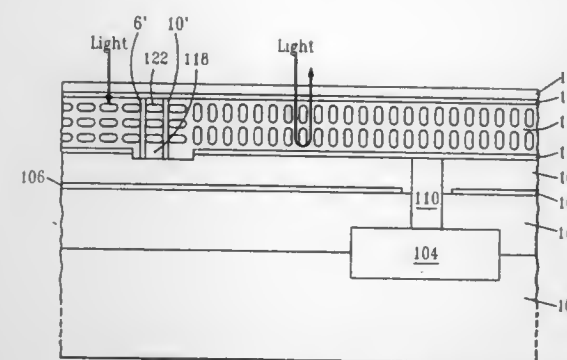
Filed Jun. 17, 1996, Ser. No. 666,682

Int. Cl.⁶ G02F 1/1333; 1/1339

U.S. Cl. 349—156

4 Claims

1. A liquid crystal display unit comprising: a substrate having a plurality of display electrodes, on which a pixel array region having light shielding regions between said display electrodes,
- a transparent counter substrate on which a transparent electrode facing to said pixel array region is formed, and
- spacers formed in said light shielding regions on said substrate in a width smaller than the width of said light shielding



regions, and adapted to bond said substrate to said transparent counter substrate maintaining a prescribed cell gap.

5,777,714

EYEWEAR FRAME CONSTRUCTION

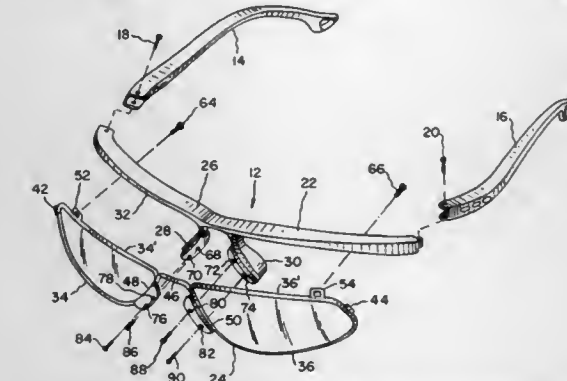
Simon M. Conway, Lima, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed May 2, 1997, Ser. No. 850,883

Int. Cl.⁶ G02C 9/00; 7/08

U.S. Cl. 351—47

13 Claims



1. In an eyewear frame, a method for attaching a first front frame component having an elongated brow bar to a second frame component having first and second members defining first and second eye openings, respectively, said first and second members each having an upper extent, said method comprising the steps of:
 - a) providing first and second nose pads on and extending downwardly from said brow bar;
 - b) providing first and second nose pad overlays on said first and second members of said second frame component;
 - c) aligning said first and second nose pad overlays over said first and second nose pads, respectively; and
 - d) securing said nose pad overlays to said first and second nose pads, respectively, thereby establishing primary attachment points between said first and second frame components.

5,777,715

LOW VISION REHABILITATION SYSTEM

Herman A. Kruegle, and Allen Blumenthal, both of River Vale, N.J., assignors to Allen Vision Systems, Inc., Haverford, Pa.

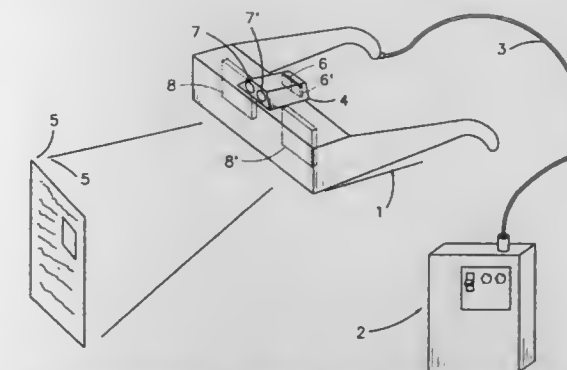
Filed Jan. 21, 1997, Ser. No. 786,200

Int. Cl.⁶ G02C 1/00; G06K 9/40

U.S. Cl. 351—158

12 Claims

1. A head-mounted vision rehabilitation system for aiding in the rehabilitation of a visually impaired individual comprising: a headset, said headset having an anterior portion extending over said individual's eyes and a posterior portion partially encircling said individual's head, said anterior portion of said headset having a spacing means to allow said headset to be worn in conjunction with other eyewear;



- a camera for imaging an image source located at a distance from said camera, said camera comprising a focusing means and an electro-optical sensor, wherein said focusing means focuses incident light from said image source onto said electro-optical sensor, said sensor creating an image signal based upon said incident light;
- a coherent video display, located within said anterior portion of said headset for receiving said image signal from said camera and recreating said image from said image source onto said individual's eyes;
- a disengageable connector for removably attaching said camera to said anterior portion of said headset;
- a control unit, in communication with said camera, said video display and said headset, for controlling the operation of said head-mounted vision rehabilitation system.

5,777,716

PROGRESSIVE POWER PRESBYOPIA-CORRECTING OPHTHALMIC LENSES

Hitoshi Miura, Okazaki, Japan, assignor to Tokai Kogaku Kabushiki Kaisha, Japan

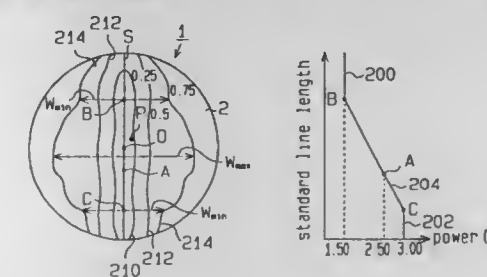
Filed Aug. 22, 1995, Ser. No. 518,026

Claims priority, application Japan, Aug. 26, 1994, 6-202539

Int. Cl.⁶ G02C 7/06

U.S. Cl. 351—169

25 Claims



1. An ophthalmic lens comprising: a refractive surface partitioned into a first area, a second area located above said first area and a third area located below said first area, said refractive surface having a vertically extending principal meridional line; said first area including a reading point providing a first refractive focal power on said meridional line, said second area providing a surface refractive focal power less than that of said reading point, and said third area providing a surface refractive focal power greater than that of said reading point; wherein the refractive focal power in said first area progressively changes between the second and third areas as an additional refractive focal power;
- wherein said first area includes a quasi-clear vision area that has an absolute maximum horizontal width in an area defined between horizontal lines located 10 mm above and below a geometrical center of said lens, and a clear vision area having a substantially uniform width in a vertical direction in said first area; and

wherein said quasi-clear vision area satisfies the relationship $(n-1) \times (C1-C2) \leq 0.75$ D and said clear vision area satisfies the relationship $(n-1) \times (C1-C2) \leq 0.50$ D, where n represents the refractive index of the lens material, and where $C1$ and $C2$ represent principal curvatures of cross curves at their point of intersection at any given point in said first area; and wherein said clear vision area has a horizontal width of at least 10 mm throughout the area defined by horizontal lines located 10 mm above and 10 mm below the geometrical center of the lens.

5,777,717

METHOD FOR SIMULATION OF VISUAL DISABILITIES

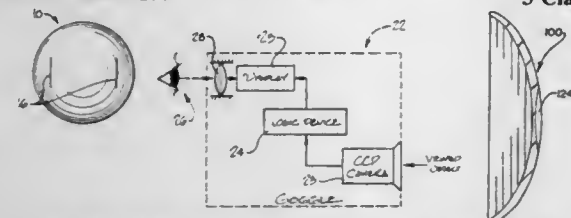
Neil F. Martin, Potomac, and Howard N. Robinson, Luther-ville, both of Md., assignors to Bloom & Kreten, Towson, Md., a part interest

Continuation-in-part of Ser. No. 331,029, Oct. 27, 1994, Pat. No. 5,495,305. This application Jan. 30, 1996, Ser. No. 593,880

Int. Cl.⁶ G02C 7/04

U.S. Cl. 351-177

3 Claims



1. A method for obtaining informed consent from a patient prior to ophthalmologic surgery comprising applying to the eye or eyes of said patient contemplating ophthalmologic surgery, a contact lens whose anterior surface has been contoured to mimic the contours of the cornea of the eye which may result from said ophthalmologic surgery and then obtaining informed consent from said patient.

5,777,718

EYE REFRACTOMETER

Yoshimi Kohayakawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 174,024, Dec. 28, 1993, abandoned.

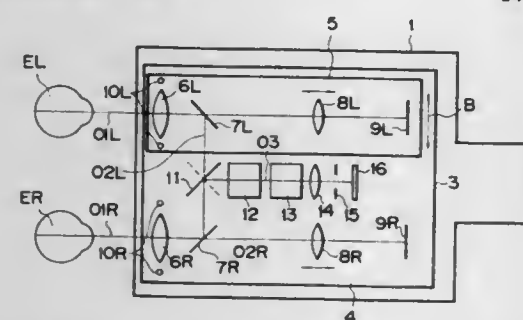
This application Feb. 20, 1997, Ser. No. 803,104

Claims priority, application Japan, Dec. 31, 1992, 4-361043; Jan. 25, 1993, 5-029873; Sep. 21, 1993, 5-259208

Int. Cl.⁶ A61B 3/10

U.S. Cl. 351-211

14 Claims



1. An eye refractometer comprising: at least two visual target systems, wherein each of said at least two visual target systems has a visual target and diopter varying means for making said visual target variable in diopter; eye refractive power measuring means for projecting light to an eye to be examined and receiving the reflected light to measure the refractive power of the eye; optical path coupling means for coupling at least one of the optical paths of said visual targets and an optical path of said

eye refractive power measuring means at a position between the eye and said diopter varying means; and switchover means for switching over at least part of said eye refractive power measuring means from one to another between both eyes of an examinee.

5,777,719

METHOD AND APPARATUS FOR IMPROVING VISION AND THE RESOLUTION OF RETINAL IMAGES

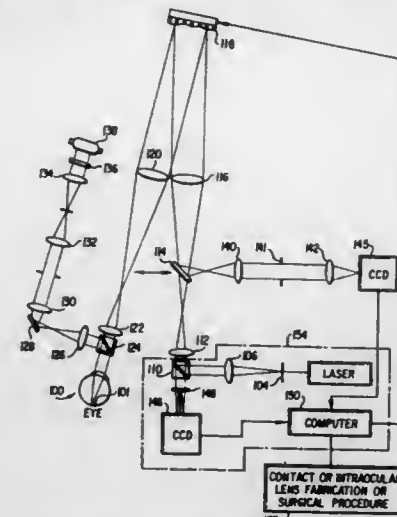
David R. Williams, and Junzhong Liang, both of Rochester, N.Y., assignors to University of Rochester, Rochester, N.Y.

Filed Dec. 23, 1996, Ser. No. 772,977

Int. Cl.⁶ A61B 3/10; 3/00

U.S. Cl. 351-212

25 Claims



1. A wavefront sensor for determining the wave aberrations of the living eye, said wavefront sensor receiving a reflected point source image of the retina of said eye, comprising: a plurality of lenslets which form a lenslet array for receiving said reflected point source image of said retina and for creating an aerial image of the retinal point source; said lenslet array being configured such that it is capable of providing resolution for at least fifth order aberrations; a camera located adjacent to said lenslet array for viewing said aerial image of the retinal point source formed on each of said plurality of lenslets of said lenslet array; and a digital data processor connected to receive video output signals from said camera and for converting said video output signals to digital signals representative of said retinal point source aerial images, said digital data processor further calculating the wave aberrations of said eye so as to include at least fifth order modes, using said representative digital signals.

5,777,720

METHOD OF CALIBRATING AN OBSERVER TRACKING DISPLAY AND OBSERVER TRACKING DISPLAY

Larry Saul Shapiro, Middlesex; Basil Arthur Omar, Oxfordshire; Richard Robert Moseley, Oxford, and Graham John Woodgate, Oxfordshire, all of United Kingdom, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 17, 1996, Ser. No. 733,623

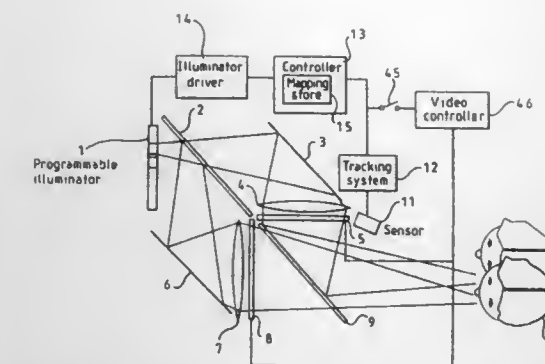
Claims priority, application United Kingdom, Oct. 18, 1995, 9521390

Int. Cl.⁶ A61B 3/02; 3/00

U.S. Cl. 351-237

37 Claims

1. A method of calibrating an observer tracking display of the type forming a steerable viewing zone and comprising a tracking



system for tracking the position of an observer and a controller for controlling the direction of the viewing zone in response to the tracking system, the method comprising the steps of: steering the viewing zone in a plurality of directions in turn; establishing an optimum viewing position for each of the directions; determining each of the optimum positions by means of the tracking system; and associating in the controller each of the determined optimum positions with the corresponding direction.

5,777,721

EXPOSURE METHOD AND APPARATUS WITH CONTROL OF A LINEAR MOTOR

Susumu Makinouchi, Zama, Japan, assignor to Nikon Corporation, Tokyo, Japan

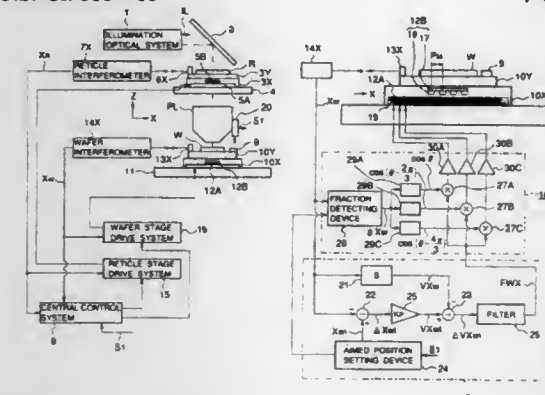
Filed Aug. 28, 1995, Ser. No. 520,245

Claims priority, application Japan, Mar. 8, 1995, 7-048310

Int. Cl.⁶ G03B 27/42

U.S. Cl. 355-53

7 Claims



1. A method for driving a stage for supporting a mask or a photosensitive substrate, comprising the steps of: detecting the position of said stage to obtain phase information of a coil and a magnet of a linear motor for driving said stage based on said detected position; and controlling an exciting current of said coil according to said phase information.

5,777,722

SCANNING EXPOSURE APPARATUS AND METHOD

Seiji Miyazaki, Yokohama; Tsuyoshi Narabe, Ohmiya; Kei Nara; Tomohide Hamada, both of Yokohama; Kazuaki Saiki, Tokyo; Hideji Goto, Kawasaki, and Muneyasu Yokota, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

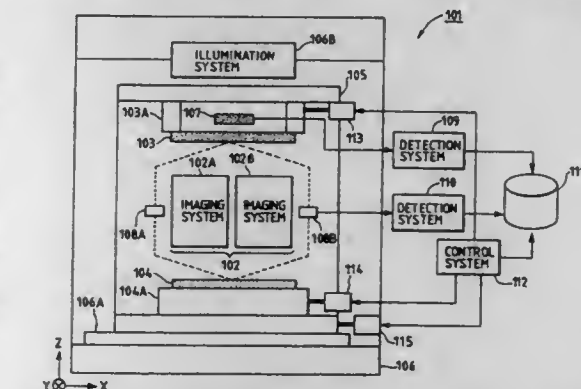
Continuation-in-part of Ser. No. 422,954, Apr. 17, 1995, abandoned. This application May 28, 1996, Ser. No. 654,382

Claims priority, application Japan, Apr. 28, 1994, 6-114782; May 16, 1994, 6-125691; Jun. 2, 1995, 7-160063

Int. Cl.⁶ G03B 27/42; 27/32; G01B 11/00

U.S. Cl. 355-53

34 Claims



1. A scanning exposure apparatus, which is arranged to illuminate a mask, to project an image of said mask through a projection optical system onto a photosensitive substrate, and to move said mask and said photosensitive substrate relative to said projection optical system, thereby effecting exposure of an entire surface of said mask on said photosensitive substrate, and which comprises: a holding member which holds said mask and said photosensitive substrate integrally; a position detector which detects a relative positional relation between said mask and said photosensitive substrate while said mask and said photosensitive substrate are carried by driving said holding member past a projection region of said projection optical system to an exposure start position; a position correcting device which corrects the relative positional relation between said mask and said photosensitive substrate; and a controller which is connected to said position correcting device and controls said position correcting device to correct the relative positional relation between said mask and said photosensitive substrate, based on positional information obtained by said position detector, while said mask and said photosensitive substrate are stopped at said exposure start position and/or during said exposure.

5,777,723

PHOTOGRAPHIC PRINTING APPARATUS AND METHOD

Ryuichi Iwasaki; Mitsuru Miyauchi, and Toshiro Akira, all of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Continuation of Ser. No. 258,159, Jun. 10, 1994, abandoned.

This application Nov. 13, 1995, Ser. No. 558,978

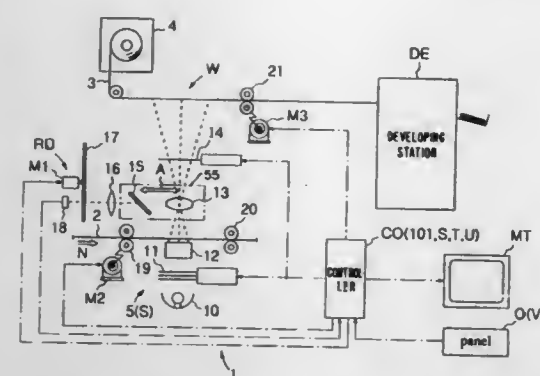
Claims priority, application Japan, Jun. 15, 1993, 5-143850

Int. Cl.⁶ G03B 27/54

U.S. Cl. 355-67

8 Claims

1. A photographic printing apparatus comprising: read means for reading an image of each frame of a film; memory means capable of storing a plurality of images of a plurality of film frames as read by said read means; exposure condition computing means for computing exposure conditions for exposing a photosensitive material based on the images read by said read means;



an exposure unit for exposing the photosensitive material based on the exposure conditions computed by said exposure condition computing means;

image converting means for converting the frame image retrieved from said read means into an expected image which is expected to be printed on the photosensitive material if the photosensitive material is exposed to the frame image under said exposure conditions computed by said exposure condition computing means;

a monitor for displaying said expected image;

a control panel for providing to said exposure condition computing means a command whether or not to manually correct said exposure conditions of the film frame corresponding to the expected image displayed on said monitor; and

a control unit for allowing, when said command has been given to at least one of frame images stored at said memory means, said exposure unit to effect a printing on to the photosensitive material of a film frame corresponding to the frame image, concurrently with correction operations of the exposure conditions for the other film frames corresponding to the other frame images.

5,777,724

Information Not Available At This Time

5,777,725

Patent Not Issued For This Number

5,777,726

SPECTROPHOTOMETRIC SUPERCRITICAL FLUID CONTAMINATION MONITOR

Wilfried Krone-Schmidt, Fullerton, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed May 12, 1992, Ser. No. 881,941

Int. Cl.⁶ G01N 1/00

U.S. Cl. 356—38

15 Claims

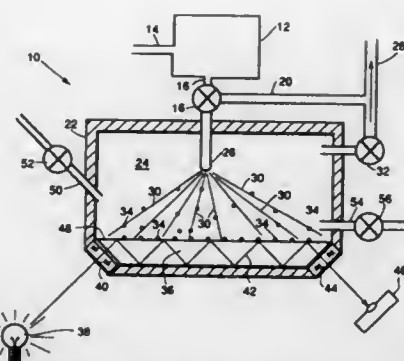
1. A system for detecting the presence of contaminants in supercritical fluid, said system comprising:

a processing vessel which contains supercritical fluid;

sampling means for removing at least a portion of supercritical fluid from said processing vessel and introducing said portion as a sample stream of supercritical fluid into a vessel having walls defining a contaminant measurement zone;

pressure releasing means for maintaining the pressure within said measurement zone at or below the level required to convert said sample stream into a gas wherein said contaminants present in said sample stream remain in a non-gaseous form;

an attenuated total reflectance plate having an exterior surface located within said measurement zone wherein said non-



gaseous contaminants deposit on said exterior surface, said attenuated total reflectance plate having an electromagnetic radiation inlet and an electromagnetic radiation outlet;

means for introducing electromagnetic radiation into said attenuated total reflectance plate at said inlet wherein said radiation introduced into said plate remains within said plate, but interacts with said contaminants present on said exterior surface of said plate to produce altered electromagnetic radiation which exits said plate at said outlet; and

means for detecting said altered electromagnetic radiation as it exits said attenuated total reflectance plate at said outlet to thereby provide real-time detection of said contaminants present in said supercritical fluid.

5,777,727

OTDR MEASUREMENT DEVICE

Yasushi Sato, and Haruyoshi Uchiyama, both of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan

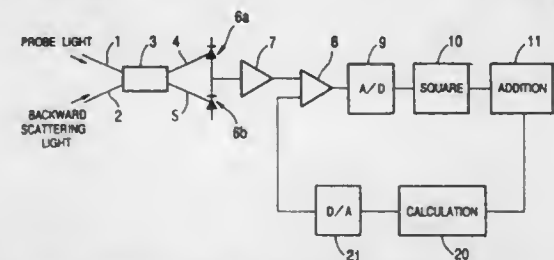
Filed May 28, 1997, Ser. No. 864,446

Claims priority, application Japan, May 30, 1996, 8-137200

Int. Cl.⁶ G01N 21/84; 21/88

U.S. Cl. 356—73.1

5 Claims



1. An OTDR measurement device comprising:

optical wave detection means for performing optical heterodyne wave detection on incident light thereof, which is given from a measuring optical fiber, to produce a wave detection signal;

an A/D converter for converting an input signal thereof to a digital signal;

first calculation means for performing square addition on the digital signal to produce a mean square signal;

second calculation means for calculating an offset value for the A/D converter on the basis of the mean square signal which is outputted from the first calculation means under a state where the optical wave detection means does not output the wave detection signal; and

a differential amplifier for performing differential amplification on a difference between the wave detection signal and an output of the second calculation means, so that an output thereof is provided as the input signal of the A/D converter.

5,777,728

LIGHT METER

Richard Friedrich Schiller, Basingstoke, United Kingdom, assignor to Sony Corporation, Tokyo, Japan, and Sony United Kingdom Limited, Weybridge, England

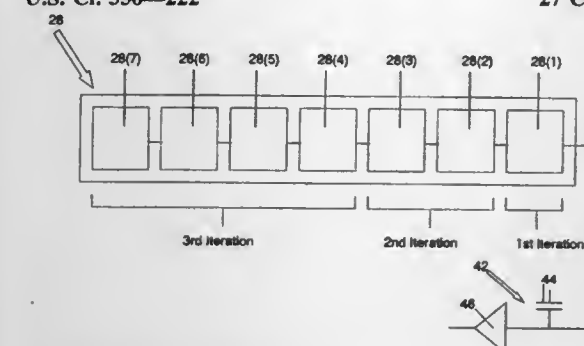
Filed Nov. 8, 1996, Ser. No. 745,857

Claims priority, application United Kingdom, Nov. 10, 1995, 9523055

Int. Cl.⁶ C01J 1/42

U.S. Cl. 356—222

27 Claims



1. A light meter, comprising:

a light sensitive charge storage array having a plurality of charge storage cells, each of the charge storage cells having a substantially identical area exposed to incident light; and

a reading circuit connected to said light sensitive charge storage array for reading charges from an exponentially increasing number of the charge storage cells during each reading operation and for generating from the read charges a light reading indicative of the incident light, wherein said reading circuit collects the charges from the charge storage cells and compares the collected charges to a threshold value to generate said light reading.

5,777,729

WAFER INSPECTION METHOD AND APPARATUS USING DIFFRACTED LIGHT

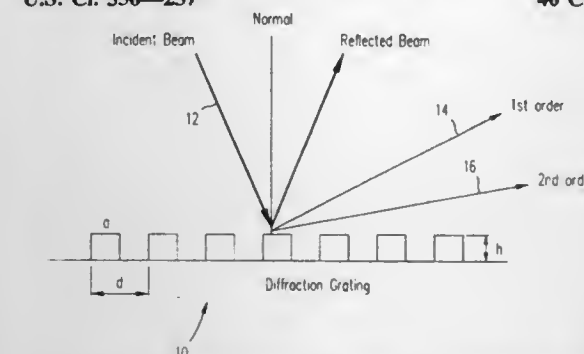
Arun A. Aiyer, Fremont; John H. McCoy, San Carlos, both of Calif.; Kyoichi Suwa, Tokyo, Japan, and Henry K. Chau, San Francisco, Calif., assignors to Nikon Corporation, Japan

Filed May 7, 1996, Ser. No. 644,649

Int. Cl.⁶ G01N 21/00

U.S. Cl. 356—237

40 Claims



1. A method of inspecting for defects in features having a periodic structure defined on a surface of a substrate, comprising the steps of:

directing light incident onto the surface of the substrate;

detecting light diffracted from the surface of the substrate wherein the diffraction is of first order or greater;

determining an efficiency of diffraction of the diffracted light; and

determining a presence or absence of a local defect in the features on the substrate from the determined efficiency.

5,777,730

SYSTEMS, METHODS AND APPARATUS FOR INSPECTING STATOR CORES

Robert A. Dunlap, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

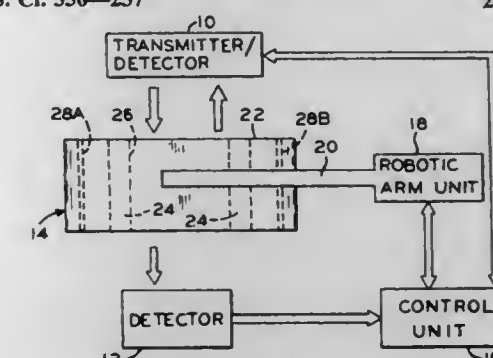
Continuation of Ser. No. 547,588, Oct. 24, 1995, abandoned.

This application Oct. 14, 1997, Ser. No. 949,813

Int. Cl.⁶ G01N 21/00

U.S. Cl. 356—237

20 Claims



9. Apparatus for performing an inspection of a stator core, the stator core having a plurality of slots, said apparatus comprising:

an optical signal transmitter for flooding at least one stator core slot with an optical signal;

an optical signal detector positioned so that when the optical signal emitted from said transmitter is substantially uninterrupted, at least a portion of said detector is within at least a portion of a path of the optical signal, said detector spaced from said transmitter so that at least a portion of the stator core can be positioned therebetween;

a robotic arm unit comprising at least one movable arm member; and

a control unit coupled to said robotic arm unit for controlling relative movement between said optical signal transmitter and the core during the inspection so that data obtained during the inspection is representative of a plurality of core characteristics, said control unit further coupled to said transmitter and said detector, said control unit configured to control said robotic arm unit to move at least a portion of the stator core between said transmitter and said detector and to enable said transmitter so that an optical signal may be emitted therefrom while the stator core is moved between said transmitter and said detector, said control unit comprising a central processing unit and a memory storage, standard data for at least one core configuration stored in said memory storage.

5,777,731

CALIBRATION OF OPTICAL PROPERTIES TO MEASURE DEPTH OF A LIQUID

Donald Dean McBride, Albuquerque, N. Mex., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

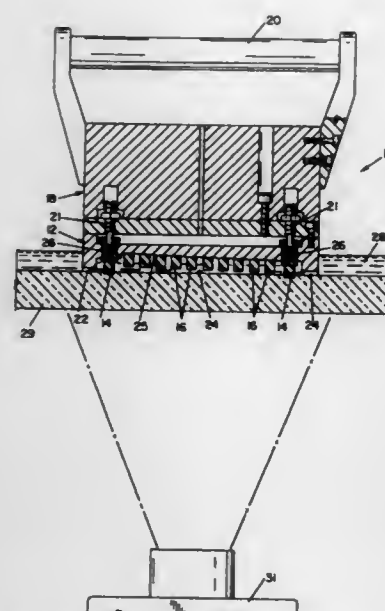
Filed Feb. 21, 1997, Ser. No. 804,721

Int. Cl.⁶ G01B 11/00

U.S. Cl. 356—243

5 Claims

1. A calibration fixture for optical measurement of liquid depth comprising a base consisting of a flat contact surface around the perimeter of a first side of said base and a recessed area within said perimeter, and calibration markers of various heights within said recessed area wherein at least one calibration marker is spring



loaded such that when placed on a flat surface said spring loaded calibration marker will have the same height as said contact surface around said perimeter.

5,777,732

LUMINESCENCE-SCANNING MICROSCOPY PROCESS AND A LUMINESCENCE SCANNING MICROSCOPE UTILIZING PICOSECOND OR GREATER PULSE LASERS

Pekka Hanninen, Korkeavuorenkatu 2 as 25, 20100 Turku, Finland, and Stefan Hell, Nadlerstr. 1, 69117 Heidelberg, Germany

PCT No. PCT/DE95/00566, § 371 Date Apr. 25, 1996, § 102(c) Date Apr. 25, 1996, PCT Pub. No. WO95/30166, PCT Pub. Date Nov. 9, 1995

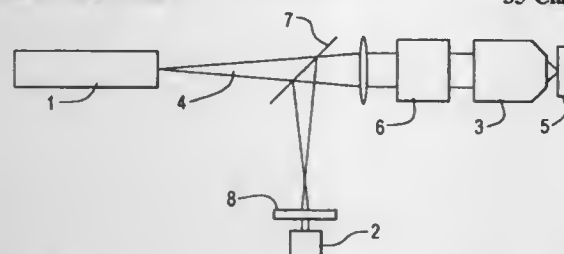
PCT Filed Apr. 27, 1995, Ser. No. 571,839

Claims priority, application Germany, Apr. 28, 1994, 44 14 940.9

Int. Cl.⁶ G01N 21/64

U.S. Cl. 356—318

33 Claims



1. Process for luminescence-scanning microscopy with two-photon excitation of an object in which a laser pulse excites luminescing and/or fluorescing molecules of the object, and the luminescence light emitted by the object is measured and evaluated, wherein the excitation of the luminescing molecules present in the object results from laser pulses whose duration is greater than 10^{-12} seconds.

5,777,733 SPECTROMETER WITH WAVELENGTH CALIBRATION

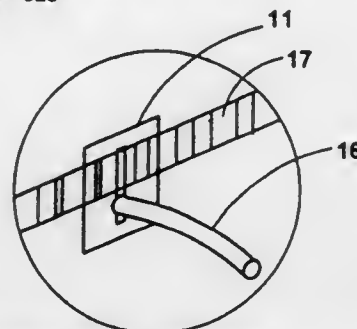
Bernhard Radziuk, Frickingen, Germany, assignor to Bodenseewerk Perkin-Elmer GmbH, Überlingen, Germany
Filed Dec. 3, 1996, Ser. No. 753,869

Claims priority, application Germany, Dec. 4, 1995, 195 45 178.3

Int. Cl.⁶ G01J 3/18

U.S. Cl. 356—328

23 Claims



1. A spectrometer device comprising:
a monochromator means (1), a light-measuring means (6) receiving light from said monochromator means, and a calibration means comprising a calibration light source, wherein the light-measuring means (6) comprises a plurality of light-measuring elements (22) in a matrix array including light-measuring element lines which extend in a direction of dispersion of the monochromator means and light measuring element columns which extend at right angles to said lines, the calibration means providing an association between the light-measuring elements and wavelengths of spectral light which are detected by the respective light-measuring elements, wherein light from the calibration light source is fed into a slit of said monochromator so that light from a sample light source to be examined and light from said calibration light source fall simultaneously but separately onto light-measuring elements of different light-measuring element lines.

5,777,734

METHOD AND APPARATUS FOR CALIBRATING A PARTICLE EMISSIONS MONITOR

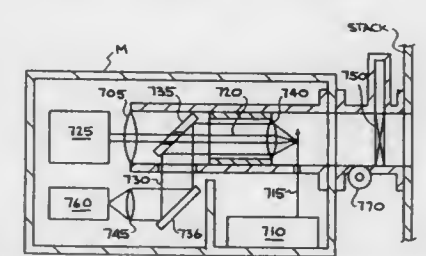
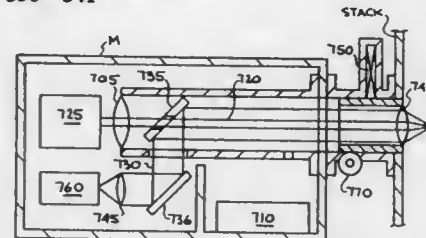
William L. Flower, Livermore, and Ronald F. Renzi, Tracy, both of Calif., assignors to Sandia Corporation, Livermore, Calif.

Continuation-in-part of Ser. No. 228,974, Apr. 15, 1994. This application Jan. 11, 1996, Ser. No. 585,341

Int. Cl.⁶ G01N 21/00

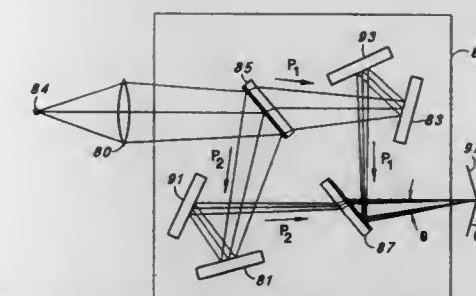
U.S. Cl. 356—341

8 Claims



1. A method of calibrating a particulate monitor, comprising the steps of:

a.) translating a focusing lens from a position known as an operation position wherein the lens can be brought to focus on at least some particles in an environment being monitored to a position known as a calibration position whereby a calibration stream can be monitored;
b.) introducing a calibration stream, the stream comprising particles having a known composition;
c.) focusing an input light beam through the focusing lens onto at least some of the particles in the calibration stream;
d.) generating an output light response
e.) collecting and collimating the output light response thereby forming a collimated output light beam response;
f.) separating the input light beam from the collimated output light beam response; and
g.) comparing the collimated output light beam response from the calibration position to a collimated output light beam response from the operation position.



5,777,735

IN SITU ANALYSIS APPARATUS

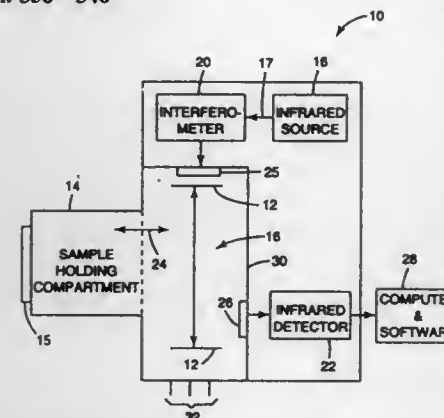
William K. Reagen, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 30, 1996, Ser. No. 723,433

Int. Cl.⁶ G01B 9/02; G01N 1/10; 21/01; 21/00

U.S. Cl. 356—346

8 Claims



1. An apparatus for use in analyzing off-gases of a sample, comprising:

an optical source for providing an optical signal;
an optical signal detector;
a first housing which comprises a measurement volume, the first housing having folded path optical elements positioned therein, the folded path optical elements defining a sample path through which the optical signal passes, the first housing further having a sample introduction opening; and
a second housing defining substantially only a sample holding volume, the second housing sealingly positioned with respect to the first housing for fluidly connecting the sample path and the measurement volume of the first housing with the sample holding volume of the second housing through the sample introduction opening, wherein the first housing and second housing form at least a portion of a sealed closed system, and further wherein the second housing includes a sealable access port through which the sample is introduced into the sample holding volume.

5,777,736

HIGH ETENDUE IMAGING FOURIER TRANSFORM SPECTROMETER

Richard F. Horton, Los Lunas, N. Mex., assignor to Science Applications International Corporation, San Diego, Calif.

Filed Jul. 19, 1996, Ser. No. 684,925

Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—346

30 Claims

1. A high etendue imaging Fourier transform spectrometer comprising:

an image forming optical element for converging radiation received from a defined target having a plurality of scene areas into a target wavefront;

an image plane interferometer adapted to receive said target wavefront and create a pair of wavefronts oriented at an angle with respect to one another, said angled wavefronts converging to an image plane where said angled wavefronts interfere to produce an interference wavefront such that an intensity of said radiation at each of said scene areas on said interference wavefront as a function of time as each scene area moves across said image plane corresponds to an autocorrelation function of each of said scene areas at an offset prescribed by said angle and a spatial position of said scene area;

an imaging detector disposed proximate said image plane and adapted for recording said intensity of said radiation at each of said scene areas on said interference wavefront as a function of time as each scene area moves across said image plane; and

an image data analyzer for processing said intensity data to produce an autocorrelation function data set for each of said scene areas and for determining a Fourier transform of said autocorrelation function data set for each of said scene areas, said image data analyzer comprising

means for collection of raw image data, said raw image data representing the time history of said intensity as measured by said imaging detector for each scene area,

means for calibrating said raw image data for each scene area using dark field and flat field calibration data,

means for array processing said calibrated image data to produce the autocorrelation function data set for each scene area,

means for Fourier transforming said autocorrelation function data set for each of said scene areas to produce an output of spectrum data for each scene area, and

means for displaying said output of spectrum data for each scene area.

5,777,737

APPARATUS AND METHOD FOR PROCESSING SIGNALS OUTPUT FROM FIBER OPTIC RATE GYROSCOPE HAVING 3×3 COUPLER

John F. Priest, Tomball, Tex., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Continuation of Ser. No. 608,767, Feb. 29, 1996, abandoned, which is a continuation of Ser. No. 279,151, Jul. 22, 1994, abandoned. This application Feb. 5, 1997, Ser. No. 795,808

Int. Cl.⁶ G01C 19/72

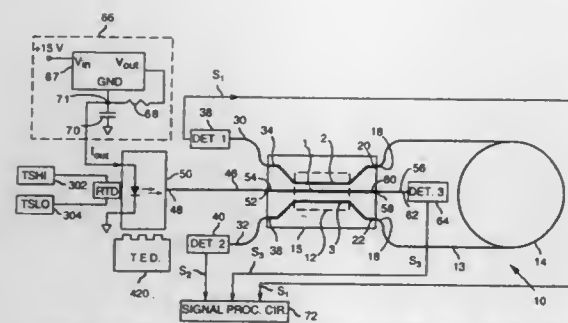
U.S. Cl. 356—350

6 Claims

1. A fiber optic rotation sensor for sensing rotation of a sensing loop of optical fiber about a sensing axis perpendicular to the plane of the sensing loop, comprising:

a 3×3 optical coupler that includes first, second and third optical waveguides formed in a substrate and arranged to have coupling ratios such that the fractions of light coupled from any one of the first, second and third optical waveguides to the other two optical waveguides are constant, independent of temperature changes in the 3×3 optical coupler;

an optical signal source arranged to provide an input optical signal to the first optical waveguide such that portions of the



input optical signal are coupled from the first optical waveguide into the second and third optical waveguides; and the optical fiber in which the sensing loop is formed having ends that are coupled to the second and third optical waveguides to receive optical signals that form counterpropagating optical waves in the sensing loop and to combine the counterpropagating optical waves after they have traversed the sensing loop;

- a first photodetector arranged to produce a first signal S_1 indicative of a first optical signal output from the sensing loop due to interference of the counterpropagating waves in the sensing loop to a first one of the optical waveguides;
- a second photodetector arranged to produce a first signal S_2 indicative of a second optical signal output from the sensing loop due to interference of the counterpropagating waves in the sensing loop to a second one of the optical waveguides;
- a third photodetector arranged to produce a signal S_3 indicative of the optical signal input to the coupler; and
- an analog signal processor connected to the first, second and third photodetectors to receive the signals S_1 , S_2 and S_3 , the analog signal processor being arranged to calculate the rate of rotation of the sensing loop as a function of the signals S_1 , S_2 and S_3 .

5,777,738

INTERFEROMETRIC MEASUREMENT OF ABSOLUTE DIMENSIONS OF CYLINDRICAL SURFACES AT GRAZING INCIDENCE

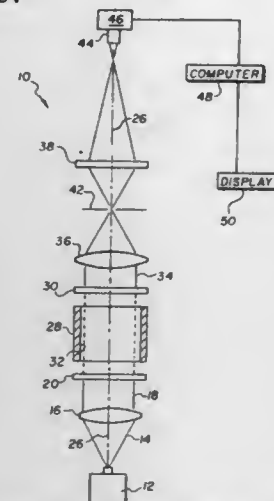
Andrew W. Kulawiec, Fairport, N.Y., assignor to Tropel Corporation, Fairport, N.Y.

Filed Mar. 17, 1997, Ser. No. 818,913

Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—354

34 Claims



1. A method for measuring absolute dimensions of cylindrical surfaces with a grazing incidence interferometer comprising the steps of:

- mounting a master cylinder having a known absolute dimension in an interferometer;

directing a first test beam at grazing incidence to a cylindrical surface of the master cylinder spanning at least two angularly related diameters of the master cylinder;

combining the first test beam with a first reference beam creating a first interference pattern representative of topographical variations in the cylindrical surface of the master cylinder with respect to a theoretical cylindrical surface;

evaluating the first interference pattern to determine positioning differences between the master cylinder's cylindrical surface and the theoretical cylindrical surface;

relating the topographical variations and positioning differences between the master cylinder's cylindrical surface and the theoretical cylindrical surface to the known absolute dimension of the master cylinder for assigning absolute values to phase measurements in the first interference pattern;

mounting a test cylinder in place of the master cylinder in the interferometer;

directing a second test beam at grazing incidence to a cylindrical surface of the test cylinder spanning at least two angularly related diameters of the master cylinder;

combining the second test beam with a second reference beam creating a second interference pattern representative of topographical variations between the cylindrical surface of the test cylinder and the theoretical cylindrical surface;

evaluating the second interference pattern to determine positioning differences between the test cylinder's cylindrical surface and the theoretical cylindrical surface; and

relating the topographical variations and positioning differences between the test cylinder's cylindrical surface and the theoretical cylindrical surface to the absolute values assigned to the phase measurements in the first interference pattern for obtaining absolute dimensional measurements of the test cylinder's cylindrical surface from the phase measurements in the second interference pattern.

5,777,739

ENDPOINT DETECTOR AND METHOD FOR MEASURING A CHANGE IN WAFER THICKNESS IN CHEMICAL-MECHANICAL POLISHING OF SEMICONDUCTOR WAFERS

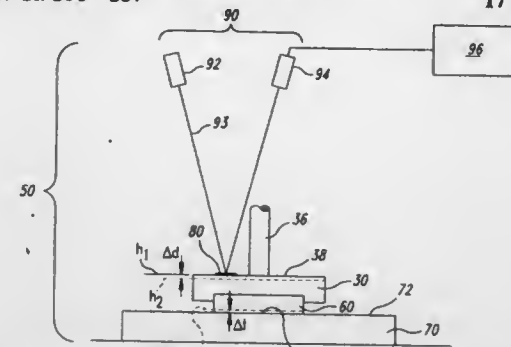
Gurtej Singh Sandhu, and Trung Tri Doan, both of Boise, Id., assignors to Micon Technology, Inc., Boise, Id.

Filed Feb. 16, 1996, Ser. No. 602,617

Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—357

17 Claims



1. An endpoint detector for measuring a change in wafer thickness of a semiconductor wafer that is attached to a wafer carrier of a polishing machine during chemical-mechanical polishing of the wafer, comprising:

- a reference platform positioned proximate to the wafer carrier, the wafer being engageable with the reference platform;
- a measuring face fixedly positioned with respect to the wafer carrier; and
- a distance measuring device engageable with the measuring face when the wafer is engaged with the reference platform, wherein the measuring device and the reference platform are positioned apart from each other by a constant distance for all measurements of the wafer, and wherein the measuring device

measures the displacement of the measuring face with respect to the measuring device.

5,777,740

COMBINED INTERFEROMETER/POLARIMETER

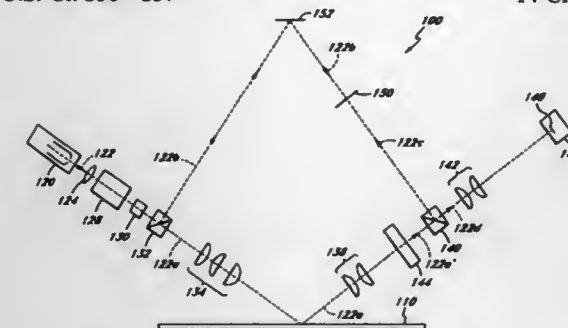
Christopher A. Lacey, and Kenneth H. Womack, both of San Diego, Calif., assignors to Phase Metrics, San Diego, Calif.

Filed Feb. 27, 1997, Ser. No. 807,669

Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—357

14 Claims



1. An apparatus for measuring a topographic profile of a reflective member having an index of refraction, comprising:
 - a first optical system that reflects a light beam from the reflective member and detects the reflected light beam;
 - a second optical system that directs the light beam to interfere with the reflected light beam and detects the resulting interference pattern; and
 - a processor that computes the index of refraction of the reflective member from the detected reflected light beam and provides the topographic profile of the reflective member from the index of refraction and the interference pattern.

5,777,741

METHOD AND APPARATUS FOR OPTICAL INTERFEROMETRIC MEASUREMENTS WITH REDUCED SENSITIVITY TO VIBRATION

Leslie L. Deck, Middletown, Conn., assignor to Zygo Corporation, Middletown, Conn.

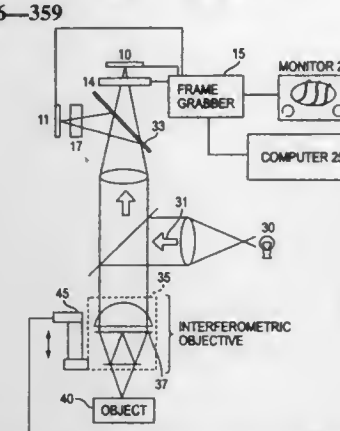
Continuation-in-part of Ser. No. 499,969, Jul. 10, 1995, Pat. No. 5,589,938. This application Dec. 19, 1996, Ser. No.

770,741

Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—359

30 Claims



1. A method for providing interferometric measurements having reduced sensitivity to vibration comprising the steps of:
 - amplitude splitting an interference pattern into a first and a second interferogram;
 - imaging said first interferogram onto a first detector having a first data acquisition rate for acquiring a first data set of interferograms;

5,777,742

SYSTEM AND METHOD FOR HOLOGRAPHIC IMAGING WITH DISCERNIBLE IMAGE OF AN OBJECT

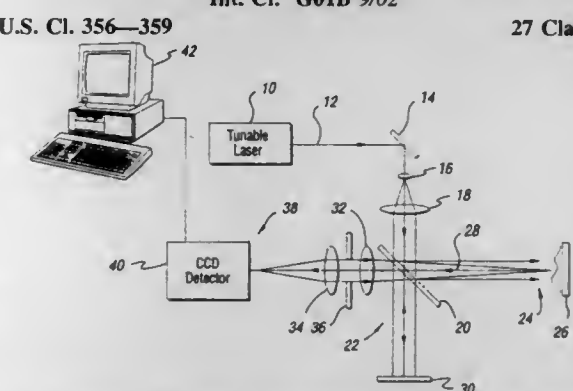
Joseph C. Marron, Brighton, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 29,627, Mar. 11, 1993, abandoned. This application Feb. 4, 1994, Ser. No. 282,781

Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—359

27 Claims



1. A method of forming an image of an object, the method comprising:

- a) directing an object energy beam substantially coherent in space and in time along a predetermined path, the object energy beam impinging upon and interacting with the object so as to scatter the energy beam to form scattered energy rays;
- b) directing a reference energy beam substantially coherent in space and in time, and substantially coherent with the object energy beam, along a predetermined path, the reference energy beam combining with the scattered energy rays so as to form an interference pattern;
- c) transforming the interference pattern so as to produce a discernible image, the image being recognizable as a likeness of the object;
- d) detecting the discernible image for previewing and positioning the object;
- e) storing a numerical representation of the discernible image for processing by a computer;

- f) repeating steps a) through e) for each of a plurality of relative phase differences, the relative differences being between the phase of the object energy beam and the phase of the reference energy beam so as to determine the complex values representative of the interference pattern;
- g) repeating step f) for each of a plurality of frequencies of the object energy beam and the reference energy beam, the object and reference energy beams having a substantially common frequency for each repetition; and
- h) processing the stored numerical representations to generate an image of the object.

5,777,743

SCRIBE MARK READER

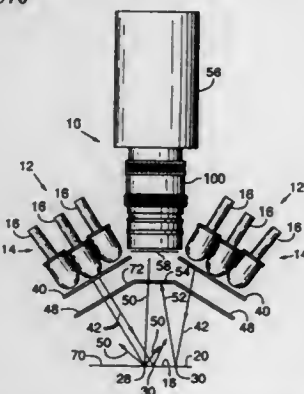
Paul E. Bacchi, Novato, and Paul S. Filipski, Greenbrae, both of Calif., assignors to Kensington Laboratories, Inc., Richmond, Calif.

Continuation of Ser. No. 261,440, Jun. 17, 1994, abandoned. This application Oct. 3, 1996, Ser. No. 726,847

Int. Cl.⁶ G06K 7/10

U.S. Cl. 356—370

9 Claims



1. A method of forming a machine interpretable static image of a three dimensional scribe mark formed on a specimen by a pattern of depressions in a substrate having nonuniform reflectivity, comprising:

providing a source of light;

forming the light into a beam having a shape related to that of the scribe mark and having a spatial intensity distribution substantially free from significant local nonuniformities;

illuminating with the light beam a field of illumination that includes a portion of the substrate that includes the scribe mark, the field of illumination being substantially stationary in relation to the substrate;

passing through a polarizer light propagating from the substrate to preferentially attenuate light propagating from the scribe mark or light propagating from the substrate around the scribe mark by using the different polarization characteristics of the light propagating from the scribe mark and the light propagating from the substrate around the scribe mark; and

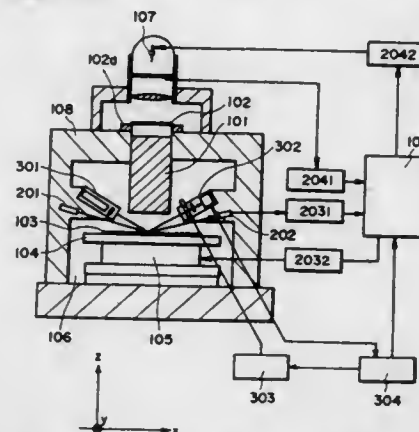
forming a machine-interpretable light pattern representative of the scribe mark from light propagating from the substrate by automatically forming a consistently machine-readable image of the scribe mark by automatically adjusting the gain of a light detector so that multiple specimens within a processing lot and in various stages of processing are machine readable without manual adjustment.

5,777,744
EXPOSURE STATE DETECTING SYSTEM AND EXPOSURE APPARATUS USING THE SAME
Minoru Yoshii, Tokyo; Masanobu Hasegawa, Utsunomiya; Kyoichi Miyazaki, Utsunomiya, and Seiji Takeuchi, Utsunomiya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1996, Ser. No. 648,417
Claims priority, application Japan, May 16, 1995, 7-141307
Int. Cl.⁶ G01B 11/00

U.S. Cl. 356—372

24 Claims



1. A state-of-formation detecting system for detecting a state of formation of a periodic pattern, said system comprising: light projecting means for projecting input light, having a pre-determined state of polarization, onto the periodic pattern; and determining means for receiving signal light from the periodic pattern and for detecting a change in the state of polarization of the input light, to determine the state of formation of the periodic pattern on the basis of the change in the state of polarization.

5,777,745

METHOD AND APPARATUS FOR COMPENSATING FOR NOISE GENERATED BY FLUCTUATION OF A MEDIUM AROUND AN OBJECT TO BE MEASURED

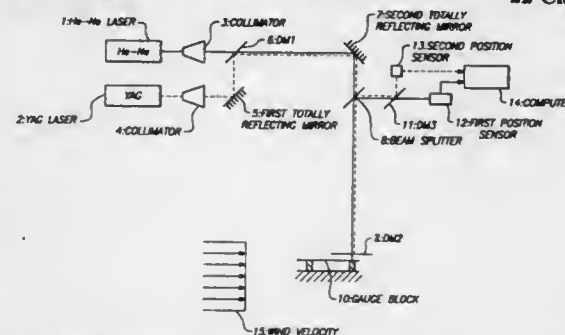
Lijiang Zeng; Hirokazu Matsumoto, both of Ibaraki, and Keiji Kawachi, Tokyo, all of Japan, assignors to Japan Science and Technology Corporation, Saitama, Japan

Filed Dec. 20, 1996, Ser. No. 770,461

Int. Cl.⁶ G01B 11/14

U.S. Cl. 356—373

22 Claims



1. A method for compensating for noise generated by fluctuation of a medium that surrounds an object to be measured, said method comprising the steps of:

(a) simultaneously generating first laser beam and a second laser beam;

(b) combining said first laser beam and said second laser beam;

(c) causing said first laser beam to reflect off an object to be measured thereby creating a first reflected laser beam;

(d) reflecting said second laser beam in close proximity to where said first laser beam reaches said object thereby causing a second reflected laser beam;

- (e) separating said first reflected laser beam and said second reflected laser beam from each other;
- (f) detecting said first reflected laser beam through use of a first position sensor;
- (g) detecting said second reflected laser beam through use of a second position sensor; and
- (h) based on detection values from said first position sensor and said second position sensor, compensating for noise generated by fluctuation of the medium around the object.

5,777,746

APPARATUS AND METHOD FOR DIMENSIONAL WEIGHING UTILIZING A MIRROR AND/OR PRISM

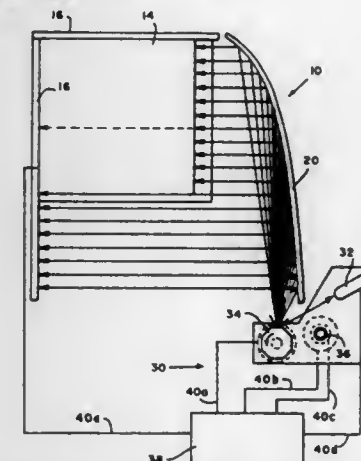
Daniel F. Dlugos, Shelton, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 31, 1996, Ser. No. 775,674

Int. Cl.⁶ G01B 11/02

U.S. Cl. 356—380

13 Claims



1. A method for measuring the dimensions of a parcel, for use in a parcel processing application of a data processing system, comprising the steps of:

(a) placing a parcel in a corner of a field of measurement; said field of measurement comprising a flat surface; said flat surface meeting at substantially right angles with two upright adjacent walls; said adjacent walls having at their base a corresponding calibrated reflective strip;

(b) activating a laser scanner emitter wherein said laser scanner emitter is generally disposed in a position directly opposite said substantially right angles formed by said meeting of said two upright adjacent walls and outside said field of measurement;

(c) emitting a beam from said laser scanner emitter wherein said beam is directed toward a rotating polygonal mirror;

(d) rotating said polygonal mirror so as to deflect said beam directed thereupon toward a parabola capable of further deflecting said beam toward a first one of said two upright adjacent walls and then toward a second one of said two upright adjacent walls, and such that said beam moves across said reflective strip located on said one wall, across said parcel, and then across said second wall in continuous waves of said beam;

(e) reflecting said beam from said corresponding calibrated reflective strip back toward said parabola such that said beam is further reflected back toward said polygonal mirror and to said emitter scanner;

(f) recording, at said emitter scanner, a pattern of reflected light such that said pattern is demonstrative of the location of said parcel within said field of measurement;

5,777,747

PROCESS FOR POSITIONING A MASK-RELATIVE TO A WORKPIECE AND DEVICE FOR PERFORMING THE PROCESS

Yoneta Tanaka, Yokohama, Japan, assignor to Ushiodenki Kabushiki Kaisha, Tokyo, Japan

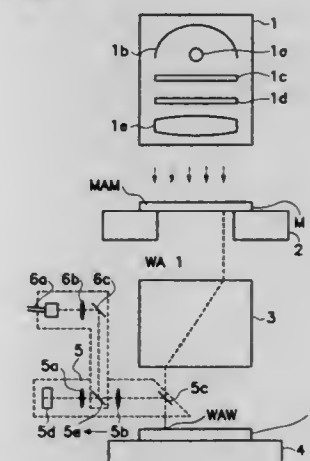
Filed Nov. 29, 1995, Ser. No. 564,005

Claims priority, application Japan, Nov. 29, 1994, 6-294278; Nov. 29, 1994, 6-294279

Int. Cl.⁶ G01B 11/00

U.S. Cl. 356—401

4 Claims



1. Device for positioning of a mask relative to a workpiece, comprising a mask with alignment marks, a mask carrier for moving the mask, a projection lens, a workpiece with alignment marks, a workpiece carrier for moving the workpiece, a first light irradiation part for irradiation of the alignment marks of the mask with alignment light, a second light irradiation part for irradiation of the alignment marks of the workpiece with alignment light, a camera means for recording projected images of the alignment marks of the mask produced by alignment light emitted from the first light irradiation part and for recording the workpiece alignment marks illuminated by alignment light emitted from the second light irradiation part, and a control means for controlling movement of the mask carrier and the workpiece carrier as a function of video data recorded by the camera means; wherein the control means comprises means for image processing said video data, for recording, determining and storing relative positions of the mask alignment marks when alignment light is emitted from the first light irradiation part, further for recording determining and storing relative positions of the workpiece alignment marks when emission of the alignment light from the first light irradiation part stops and alignment light is emitted from the second light irradiation part, and for computing data of the relative positions of the mask and workpiece alignment marks and for producing relative movement of the workpiece and the mask via movement of at least one of said carriers on the basis of the computed data until the mask and workpiece alignment marks are aligned one on top of the other.

5,777,748
DEVICE FOR DETERMINING DENSITY AND CONCENTRATION OF VISIBLE CONSTITUENTS IN FLUIDS

Karl Stengel, Deizisau, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/01443, § 371 Date May 29, 1996, § 102(e) Date May 29, 1996, PCT Pub. No. WO95/17664, PCT Pub. Date Jun. 29, 1995

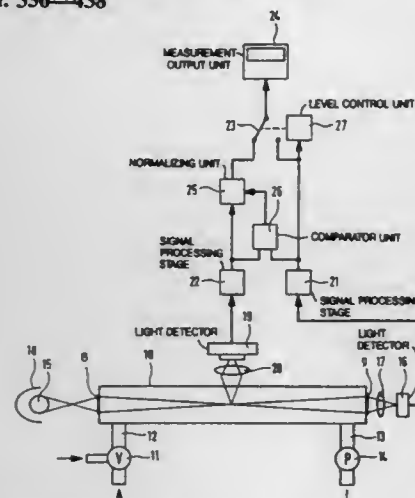
PCT Filed Dec. 3, 1994, Ser. No. 647,933

Claims priority, application Germany, Dec. 22, 1993, 43 43 897.0

Int. Cl.⁶ G01N 21/00

U.S. Cl. 356—438

15 Claims



1. An arrangement for determining density and concentration of visible constituents in motor vehicle exhaust gas, comprising:

a light source (15);
a first light detector (16);
a measuring chamber (10) through which flows the exhaust gas, the light source (15) and the first light detector (16) being provided at two oppositely disposed points of the measuring chamber (10);

an evaluation means for evaluating a signal generated by the first light detector (16) as a first measure of the density and concentration; and

a second light detector (19), disposed outside a radiation path through the measuring chamber (10) between the light source (15) and the first light detector (16), for capturing scattered light.

wherein the evaluation means further comprises means for evaluating a signal generated by the second light detector (19) independently of the signal generated by the first light detector (16) as a second measure of the density and concentration, and normalizing means (25) for normalizing the signal of one of the first and second light detectors (16, 19) as a function of the signal of the other of the first and second light detectors (16, 19) so as to match the first and second measures of the density and concentration.

5,777,749
METHOD AND DEVICE FOR COMPRESSING BIT-MAP DATA

Tsugio Noda, and Kenichiro Sakai, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 423,634, Apr. 17, 1995, abandoned.

This application Feb. 19, 1997, Ser. No. 802,096

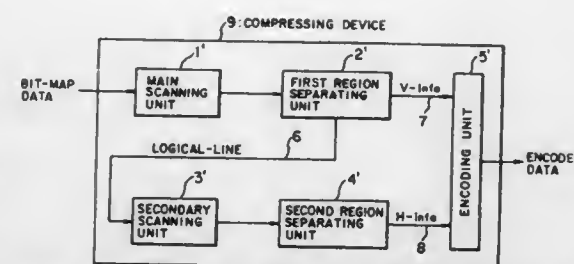
Claims priority, application Japan, Aug. 3, 1994, 6-182643

Int. Cl.⁶ H04N 4/415

U.S. Cl. 358—261.3

34 Claims

1. A bit-map data compressing method, comprising:
a main scanning step for scanning bit-map data in a main scanning direction by performing a pixel by pixel analysis of said bit-map data, with the exception of a last pixel analyzed



in a line extending in the main scanning direction, each subsequent pixel analyzed being in the main scanning direction with respect to the previously analyzed pixel;

a first region separating step for separating a region including black pixels and a region including no black pixels every K lines which extend in the main scanning direction, where K is an integer having a value of at least 1, by performing said main scanning step;

a secondary scanning step for scanning a logical line in a secondary direction perpendicular to the main scanning direction by performing a pixel by pixel analysis of said bit-map data, with the exception of a last pixel analyzed in a line extending in the main scanning direction, each subsequent pixel analyzed being in the secondary scanning direction with respect to the previously analyzed pixel, said logical line being composed of N lines extending in the main scanning direction including black pixels, where N is an integer having a value of at least 1;

a second region separating step for separating a region including black pixels in column units and a region including no black pixels, by performing said secondary scanning step; and

an encoding step for encoding as an element each of regions obtained by said first region separating step and said second region separating step.

5,777,750
IMAGE PROCESSING METHOD AND APPARATUS WHICH INCLUDES A COLOR REVERSING FUNCTION FOR A TWO-COLOR IMAGE

Yasuhiro Takiyama, Kawasaki; Ryosuke Miyamoto, Urayasu; Hideaki Shimizu, Yokohama; Hiroyuki Yaguchi, Inagi, and Tadashi Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

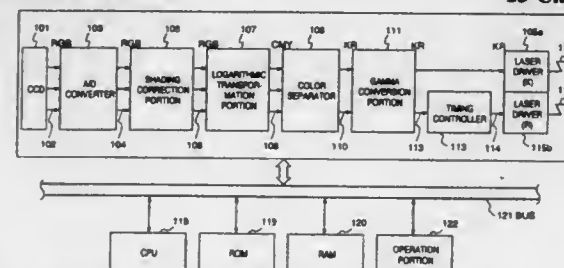
Filed Jun. 21, 1996, Ser. No. 660,337

Claims priority, application Japan, Jun. 26, 1995, 7-159250

Int. Cl.⁶ H04N 1/40; 1/46; G03F 3/08; G06K 9/60

U.S. Cl. 358—298

25 Claims



1. An image processing apparatus which comprises:
reverse means for reversing color density of image data;
separation means for separating image data into two colors and obtaining image data consisting of two colors; and
output means for outputting the image data consisting of two colors to an image forming apparatus which forms a visible image consisting of two colors based on the two-color image data.

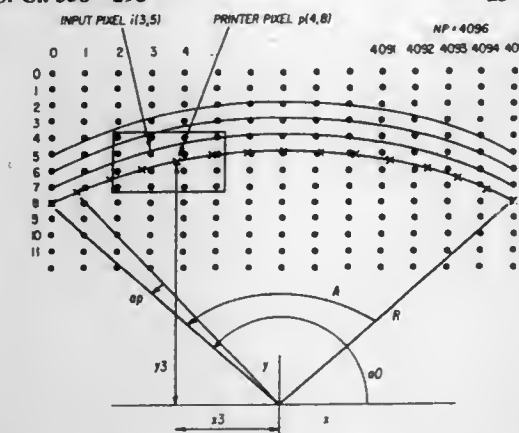
5,777,751
CORRECTION OF CURVED SCAN LINES IN AN OPTICAL SCANNING SYSTEM
Joseph Ward, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 20, 1996, Ser. No. 667,264

Int. Cl.⁶ H04N 1/40; 1/29; G06K 9/36; G01D 9/42

U.S. Cl. 358—298

23 Claims



1. A process for producing an image along curved scan paths from a source of input image pixel value data with pixels located in a rectangular coordinate system with a constant distance in an x-direction between adjacent input pixels, said process comprising the steps of:

determining a position along the curved scan paths of a pixel to be printed;

determining the difference between the position of the pixel to be printed and the positions in the rectangular coordinate system of associated input pixels; and

determining a value for the pixel to be printed as a function of (1) the value data of the associated input pixels and of (2) the determined difference between the position of the pixel to be printed and the positions of the associated input pixels.

5,777,752

Patent Not Issued For This Number

5,777,753
METHOD AND APPARATUS FOR MAXIMIZING THE NUMBER OF RADIOLOGICAL IMAGES PRINTED ON SHEET OF FILM

James F. McShane, Kennett Square, and Bruce T. Robinson, Telford, both of Pa., assignors to Axsys Corporation, Greenville, Del.

Continuation of Ser. No. 602,352, Feb. 16, 1996, abandoned.

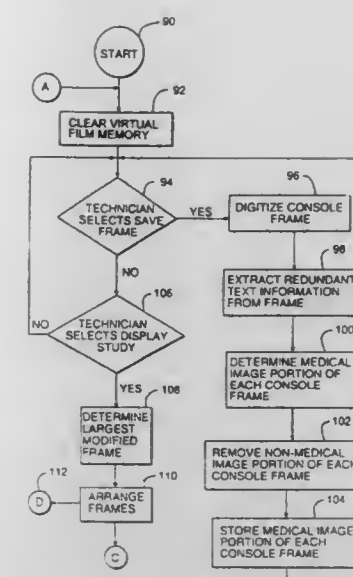
This application Sep. 18, 1997, Ser. No. 932,460

Int. Cl.⁶ H04N 1/23; 1/387; G06K 9/36

U.S. Cl. 358—302

3 Claims

1. A method of maximizing the number of radiological images printed on a sheet of film, which comprises the steps of:
serially storing a plurality of digital radiological frames made up of digital information, with each said plurality of stored digital radiological frames having an image portion and a non-image portion;
identifying the radiological image portion of each said plurality of stored digital radiological frames;
reducing the non-image portion of each stored digital radiological frame so as to create a plurality of modified radiological frames each having a modified length and a modified width;
arranging the plurality of modified radiological frames relative to one another into a plurality of rows and columns of modified radiological frames occupying a predetermined area corresponding to the area of the sheet of film; and



printing the arranged plurality of modified radiological prints on the sheet of film;

said step of identifying the image portion of each said plurality of stored digital frames comprising the sub steps of:
determining the outer boundaries of each said plurality of stored digital radiological frames; and
analyzing, line-by-line digital information parallel to each of the outer boundaries of each said plurality of stored digital radiological frames until said analysis detects the radiological image.

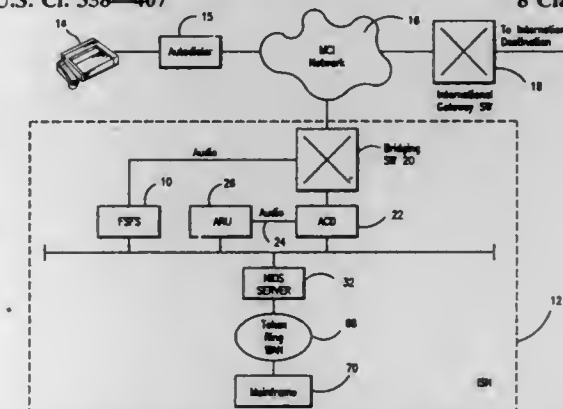
5,777,754
INTELLIGENT NETWORK-BASED STORE AND FORWARD FAX SYSTEM
John Charles Gavan, Colorado Springs, Colo., assignor to MCI Communications Corporation, Washington, D.C.

Filed Jun. 21, 1996, Ser. No. 669,257

Int. Cl.⁶ H04N 1/32

U.S. Cl. 358—407

8 Claims



1. A fax store and forward system (FSFS) installed in a telephone network and comprising:

an autodialer connected to a customer's fax for calling an intelligent services network (ISN), connected to the telephone network, and in which the FSFS is located, the autodialer calling the ISN via a preselected stored 800 number and further providing customer information and the international destination number;

the ISN including

(a) a bridging switch for connecting the ISN to the telephone network when the autodialer places a call to the ISN;
(b) an automatic call distributor (ACD) for responding to the 800 number called and connecting an incoming fax message

from the customer to an automated response unit (ARU) for completing communicating handshaking with the customer's fax machine;

- (c) the FSFS connected to the ARU and controlled by the ARU, the FSFS also connected by a bi-directional switched telephone line to the bridging switch, once the handshaking is successfully completed, for receiving and storing the customer's fax message;
- (d) a domestic and international switched telephone network transporting the customer's fax message to the international destination with a preselected number of delivery attempts provided by the FSFS, if necessary, until complete transmission is successful;
- (e) a network information distribution system (NIDS) server for transferring preselected customer record data, from a database, to the FSFS, necessary to complete store and forward fax transmission to the international destination, and storing a billing data record (BDR) upon completion of the transmission.

5,777,755

INFORMATION INPUT DEVICE

Mikio Aoki, and Takashi Nitta, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

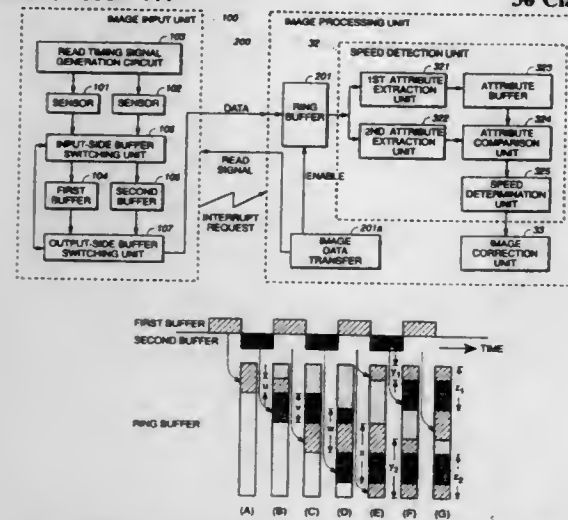
Filed Jul. 7, 1995, Ser. No. 499,537

Claims priority, application Japan, Jul. 8, 1994, 6-157451

Int. Cl.⁶ H04N 1/024

U.S. Cl. 358—444

36 Claims



1. An information input device that scans in character and graphical information, corrects the scanned information, and outputs the corrected scan information in computer-readable form, comprising:

an image input circuit to acquire the character and graphical information from a manuscript, said image input circuit including an image sensor capable of reading the character and graphical information from the manuscript when illuminated by a light source and converting the read in character and graphical information into corresponding image data; and an image processing device coupled to said image input circuit, said image processing device comprising:

a ring buffer to receive and store plural blocks of the image data generated by said image input circuit on a per block basis, said ring buffer having a predetermined depth and each block of image data having a specified data size, said ring buffer comprising means for storing a received one of the image data blocks in:

plural, non-contiguously addressed areas of said ring buffer, when sequentially storing the received image data block exceeds the depth of said ring buffer; and

a sequential, contiguously addressed area of said ring buffer when sequentially storing the received image data block fails to exceed the depth of said ring buffer; and

an image correction mean coupled to said ring buffer for performing image correction on the image data stored in said ring buffer.

5,777,756

VIDEO PROCESSING APPARATUS WITH MULTIPLE IMAGE SIGNAL INTEGRATION AND REDUCTION FOR DECREASING NOISE

Hirofumi Hidari, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 54,213, Apr. 30, 1993, abandoned.

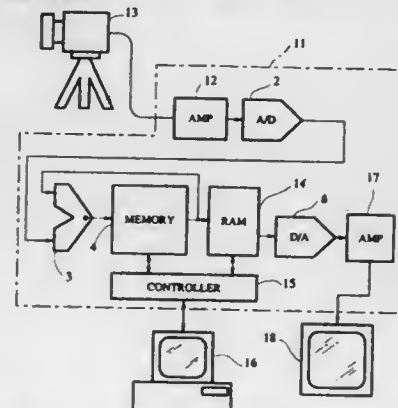
This application May 19, 1995, Ser. No. 444,519

Claims priority, application Japan, May 20, 1992, 4-127652

Int. Cl.⁶ H04N 1/40

U.S. Cl. 358—455

3 Claims



1. An image processing apparatus for reducing noise in an analog image signal corresponding to a plurality of repetitive images of a still object scene output by a television camera comprising:

an A/D converter for converting the analog image signal to a digital image signal;

a memory for storing the digital image signals;

an adder, having inputs connected to the output of the A/D converter and the output of the memory, which adds each outputted digital image signal from the A/D converter to the contents stored in the memory, and the output of the adder being connected to the input of the memory such that the output of the adder is stored in the memory;

a pallet RAM connected to the output of the memory which divides each sum of digital image signals by a denominator equal to the number of times the adder has performed addition and outputs a resultant image signal having a brightness level approximately equal to a brightness level of the image signals and a noise level less than a noise level of the image signals, every time the adder performs addition; and

a controller which sets the denominator in the pallet RAM based upon the number of times the adder has performed additions for each still object scene.

5,777,757

METHOD AND SYSTEM FOR HALFTONING

Magnus L. Karlsson, Milpitas, and Kok S. Chen, Sunnyvale, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

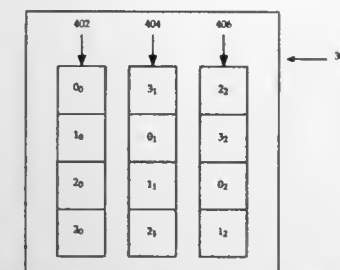
Filed Jun. 5, 1995, Ser. No. 464,925

Int. Cl.⁶ H04N 1/40; G06K 9/36

U.S. Cl. 358—456

33 Claims

1. A method for halftoning multi-level pixels in a halftone cell that corresponds to a threshold array divided into two or more classes, wherein the classes are ordered in a visitation order, and wherein each class contains at least one element having an associated threshold value, said method comprising the step of determining the intensity of a particular pixel based upon the location of its



corresponding element in the class visitation order and the threshold value assigned to the element.

5,777,758

IMAGE PROCESSING APPARATUS AND METHOD FOR EXPANDING COLOR IMAGES BASED ON BLOCK PIXEL AND EDGE DETECTION

Ritsushi Tanabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

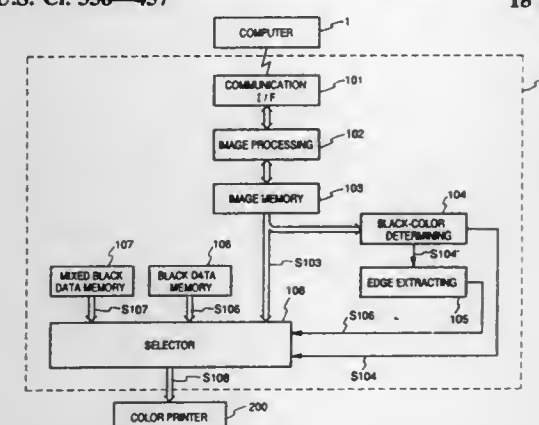
Filed Mar. 30, 1993, Ser. No. 39,746

Claims priority, application Japan, Mar. 31, 1992, 4-076512

Int. Cl.⁶ H04N 1/21; 1/40; 1/46; G06F 15/00

U.S. Cl. 358—457

18 Claims



1. A printer interface comprising:

receiving means for receiving command data from an external computer, said command data being expressed by page description language and being converted into color image data for a plurality of pixels;

developing means for developing color image data for said plurality of pixels corresponding to the received command data;

determining means for determining whether the developed color image data represents a specific-color pixel;

extracting means for extracting a pixel in an edge portion represented by the developed color image data; and processing means for processing the developed color image data and outputting the processed color image data to a printer, wherein said processing means performs a first process on a pixel that is determined as the specific-color pixel and is in the edge portion of the developed color image data, and performs a second process, different from the first process, on a pixel that is determined as the specific-color pixel and is not in the edge portion.

5,777,759

IMAGE PROCESSING METHOD AND APPARATUS
Hiroshi Kaburagi, Yokohama, and Hiroyuki Ichikawa, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

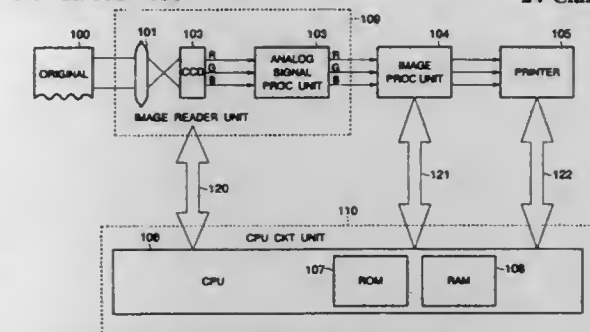
Filed Apr. 25, 1996, Ser. No. 637,442

Claims priority, application Japan, Apr. 28, 1995, 7-105789; Feb. 21, 1996, 8-033623; Feb. 27, 1996, 8-039859

Int. Cl.⁶ H04N 1/21

U.S. Cl. 358—536

24 Claims



1. An image processing apparatus comprising:

input means for inputting image information; and conversion means for comparing said input image information with a plurality of threshold values and converting said input image information into data of three or more levels,

wherein said conversion means converts said input image information so as to form a dot at the central area of a screen mask if said input image information is low in density, and converts said input image information so as to form dots at the whole area of a screen mask if said input image information is middle and high in density.

5,777,760

POSITION FEEDBACK SYSTEM FOR VOLUME HOLOGRAPHIC STORAGE MEDIA

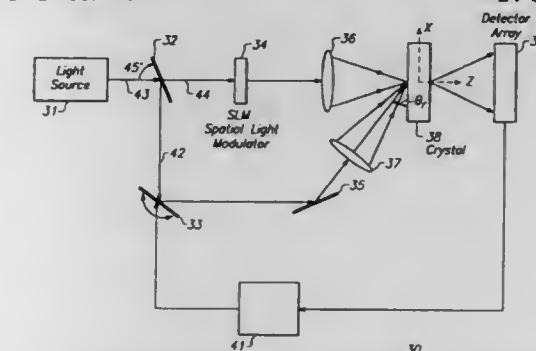
Nathan J. Hays, San Francisco; James A. Henson, Morgan Hill; Christopher M. Carpenter, Sunnyvale; William R. Akin, Jr., Morgan Hill; Richard M. Ehrlich, Saratoga, and Lance D. Beazley, San Jose, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Filed May 10, 1996, Ser. No. 644,810

Int. Cl.⁶ G03H 1/02; 1/28; G11C 13/04; G11B 7/24

U.S. Cl. 359—7

24 Claims



1. A method of holographic recording in a photorefractive medium comprising the steps of: recording a plurality of servo patterns within an image space in the medium;

recording a plurality of data pages within the image space in the medium; and providing a closed loop position feedback system for reconstructing the data pages, wherein each servo pattern provides continuous position feedback information and each pattern is generated by illuminating the medium

with a servo reference beam and a servo object beam, each servo reference beam and servo object beam being incident upon a face of the medium at a servo reference angle, the servo reference angle defining the angle between the servo reference beam and the servo object beam and being approximately half of a minimum angular spacing of the medium.

5,777,761

SYSTEM AND METHOD FOR PHOTONIC FACILITY AND LINE PROTECTION SWITCHING USING WAVELENGTH TRANSLATION

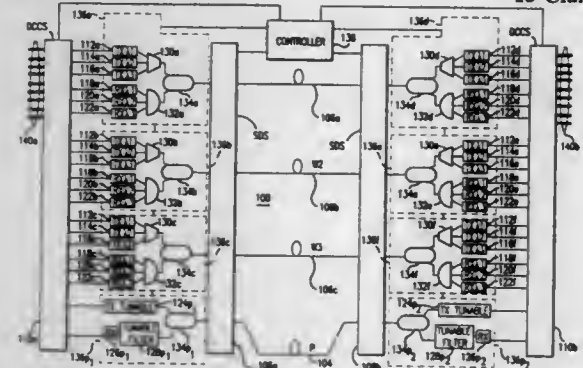
John A. Fee, Plano, Tex., assignor to MCI Communications Corporation

Continuation-in-part of Ser. No. 577,663, Dec. 22, 1995. This application Jun. 28, 1996, Ser. No. 672,808

Int. Cl.⁶ H04B 10/08

U.S. Cl. 359—110

15 Claims



1. An optical network comprising:
 - an optical transmission line;
 - a space division switch coupled to said optical transmission line;
 - a protect optical transmission line coupled to said space division switch;
 - an optical transmitter coupled to said space division switch;
 - an optical receiver coupled to said space division switch;
 - a controller coupled to said space division switch, said optical transmitter, and said optical receiver, wherein said controller routes optical signals through said space division switch to said protect optical transmission line when said controller determines that said optical transmission line has failed;
 - a digital cross-connect switch coupled to said optical transmitter and said optical receiver; and
 - a protect tunable optical transmitter coupled between said space division switch and said digital cross-connect switch, wherein, when said controller determines that said optical transmission line has failed, said controller routes an electrical input signal through said digital cross-connect switch to said protect tunable optical transmitter such that electrical input signals originally destined for said optical transmitter are sent to said protect tunable transmitter and routes a corresponding optical signal output from said protect optical transmitter through said space division switch to said optical transmission line; whereby, a facility protect ratio can be set independent of a line protect ratio.

5,777,762

NETWORK SYSTEM FOR PERFORMING BIDIRECTIONAL TRANSMISSION, AND NODE DEVICE AND TRANSMISSION CONTROL METHOD USED IN THE SYSTEM

Mitsuru Yamamoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 658,776, Jun. 5, 1996, abandoned.

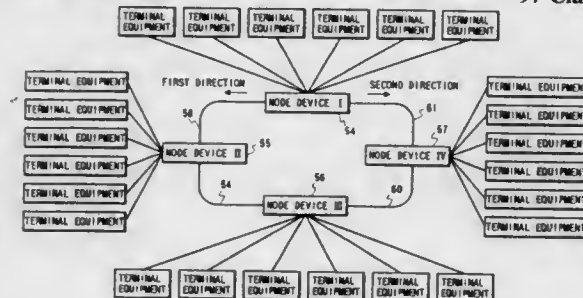
This application Sep. 24, 1997, Ser. No. 937,783

Claims priority, application Japan, Jun. 6, 1995, 7-162876; May 25, 1996, 8-153369

Int. Cl.⁶ H04J 4/00; 14/00

U.S. Cl. 359—123

97 Claims



1. A network system which connects a plurality of node devices via a transmission path for transmitting a plurality of channels, and transmits packets between the node devices in a first direction and a second direction opposite to the first direction, comprising:
 - a transmission path; and
 - a node device comprising:
 - first communication means constituted by first receiving means for receiving a first channel, transmitted in the first direction, of the plurality of channels, and first buffer means for temporarily storing a packet received by said first receiving means;
 - second communication means constituted by second receiving means for receiving a second channel, transmitted in the second direction, of the plurality of channels, and second buffer means for temporarily storing a packet received by said second receiving means;
 - third communication means constituted by third receiving means for receiving a third channel different from the first and second channels, and third buffer means for temporarily storing a packet received by said third receiving means;
 - fourth communication means constituted by fourth receiving means for receiving a fourth channel different from the first, second, and third channels, and fourth buffer means for temporarily storing a packet received by said fourth receiving means;
 - first output means for connecting said first and fourth buffer means to different channels of the first and third channels, wherein said first output means can switch the channels to which said first and fourth buffer means are connected;
 - second output means for connecting said second and third buffer means to different channels of the second and fourth channels, wherein said second output means can switch the channels to which said second and third buffer means are connected; and
 - buffer control means for controlling said first, second, third, and fourth buffer means so that packets to be output by the channels to which said first, second, third, and fourth buffer means are connected are read out from said first, second, third, and fourth buffer means.

5,777,763

IN-LINE OPTICAL WAVELENGTH REFERENCE AND CONTROL MODULE

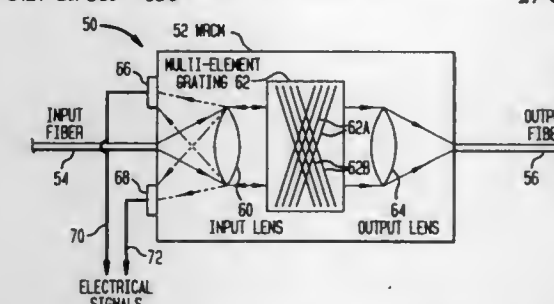
Walter John Tomlinson, III, Holmdel, N.J., assignor to Bell Communications Research, Inc., Morristown, N.J.

Filed Jan. 16, 1996, Ser. No. 586,591

Int. Cl.⁶ H04J 14/02

U.S. Cl. 359—130

27 Claims



1. An apparatus for monitoring an optical signal in an optical communications system where the optical signal is transmitted over an optical signal path, the apparatus comprising:
 - an input optical coupler arranged within the optical signal path to receive the optical signal;
 - an output optical coupler arranged within the optical signal path;
 - an optical detector configured to convert optical signals into electrical signals; and
 - a multi-element grating arranged to receive the optical signal from the input coupler, wherein the multi-element grating directs a first portion of the optical signal to the optical detector for signal monitoring and directs a second portion of the optical signal to the output optical coupler for coupling the second portion to the optical signal path.

5,777,764

TRANSMISSION STATION, INTERMEDIATE REPEATER AND RECEIVER STATION FOR A FIBRE-OPTIC COMMUNICATIONS-TRANSMISSION SYSTEM

Ulrich Kohn, Backnang, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/01065, § 371 Date Mar. 13, 1996, § 102(e) Date Mar. 13, 1996, PCT Pub. No. WO95/09492, PCT Pub. Date Apr. 6, 1995

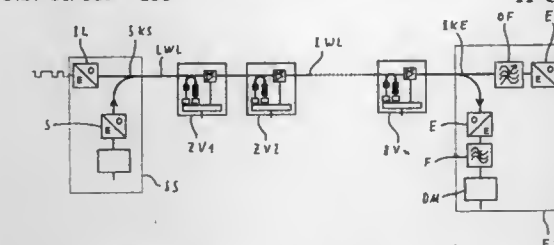
PCT Filed Sep. 15, 1994, Ser. No. 615,328

Claims priority, application Germany, Sep. 30, 1993, 43 33 367.2

Int. Cl.⁶ H04J 14/02; H04B 10/16

U.S. Cl. 359—133

11 Claims



1. A transmitting station for an optical communications-transmitting system with at least one intermediate repeater, which contains a first transmitter for transmitting useful data of a high bit rate by means of at least one optically narrow-band carrier signal, and a second transmitter for transmitting additional data of a low bit rate, wherein the useful data and the additional data are transmitted in the same direction, characterized in that the second transmitter (S) is designed in such a way that the additional data of a low bit rate are transmitted over at least one optical wide-band carrier signal, and that the narrow-band and the wide-band carrier signals are located in the same wavelength range.

5,777,765

OPTICAL DELAY UNIT, OPTICAL LINE EMULATOR INCLUDING SUCH A UNIT AND METHODS REALIZED BY SUCH AN OPTICAL DELAY UNIT AND BY SUCH AN OPTICAL LINE EMULATOR

Chris Frans Philippe Deloddere, Knokke-Heist, and Stefan Mathieu Alphon Vaes, Houthalen, both of Belgium, assignors to Alcatel N.V., Rijswijk, Netherlands

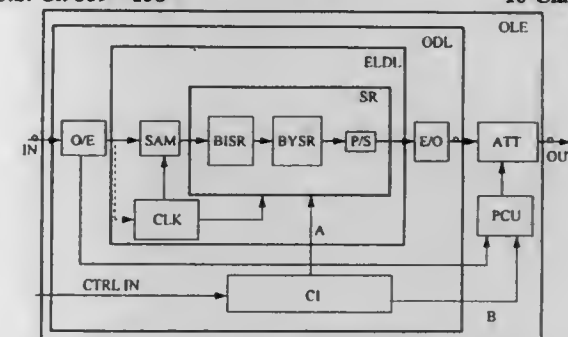
Filed Aug. 29, 1996, Ser. No. 697,738

Claims priority, application European Pat. Off., Sep. 20, 1995, 952025401

Int. Cl.⁶ H04B 10/02

U.S. Cl. 359—158

10 Claims



1. A device (ODL) to delay an incoming optical signal (IN) with a predetermined optical delay value, characterized in that said device includes:
 - an optical/electrical converter (O/E) to convert said incoming optical signal (IN) into an electrical signal;
 - an electrical delay unit (ELDL) coupled to said optical/electrical converter (O/E) to delay said electrical signal, thereby generating a delayed electrical signal, said electrical delay unit having:
 - a sampling device (SAM) coupled to said optical/electrical converter (O/E) to sample said electrical signal at regular intervals of time, thereby generating serial electrical data;
 - a shift register (SR) with a programmable tap coupled to said sampling device (SAM) to delay said serial electrical data, thereby generating said delayed electrical signal; and
 - a clock generator coupled to said sampling device and to said shift register (SR) to provide a clock signal to both said sampling device and said shift register;
 - at least one electrical/optical converter (E/O) coupled to said electrical delay unit (ELDL) to convert said delayed electrical signal into an outgoing delayed optical signal; and
 - a control interface (CI) coupled to a control input of said electrical delay unit and via which control data (A) is provided to control the delay of said electrical signal, said control data (A) being determined by said optical delay value and being applied to an input of said shift register (SR).

5,777,766

METHOD AND DEVICE FOR OPTICALLY RECOVERING THE SYNCHRONISM OF AN OPTICAL DIGITAL SIGNAL

Flavio Fontana, Corman; Pierluigi Franco, Padua, and Ilaria Cristiani, Pavia, all of Italy, assignors to Pirelli Cavi S.p.A., Italy

Filed Oct. 30, 1996, Ser. No. 739,166

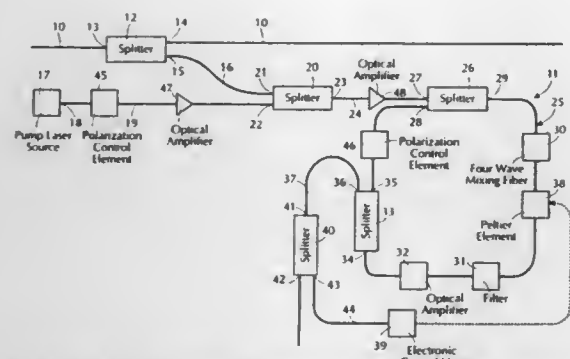
Claims priority, application Italy, Nov. 14, 1995, MI95A2332

Int. Cl.⁶ H04B 10/00

U.S. Cl. 359—158

12 Claims

8. An optical clock recovery device for recovering the synchronism of an optical digital line signal which comprises a sequence of digital pulses travelling through a fiber optics line at a preset pulse repeat frequency, by the construction of an optical clock signal which comprises a sequence of pulses having an identical repeat frequency, the device comprising:
 - a first splitter, on the line for tapping a fraction of the line signal therefrom;



a generator of continuous pumping radiation having a predetermined power and predetermined pumping wavelength, the value of the pumping wavelength being related to the wavelength of the line signal pulses to produce a four-wave mixing (FWM) effect therewith;

a second splitter for coupling the tapped line signal fraction with the pumping radiation;

a resonant cavity;

a third splitter for inputting the tapped line signal fraction and pumping radiation to the resonant cavity;

within the resonant cavity, a non-linear wave guide of sufficient length to have a clone signal generated therein by FWM effect which duplicates the pulse sequence of the line signal at a clone wavelength;

an optical filter means within the resonant cavity to admit circulation inside the resonant cavity of the clone signal only;

a means for adjusting the length of the resonant cavity; and

a fourth splitter on the resonant cavity for tapping, off the resonant cavity, a fraction of the clone signal travelling through the resonant cavity, the pulse sequence of the clone signal being the clock signal sought.

5,777,767

Patent Not Issued For This Number

5,777,768

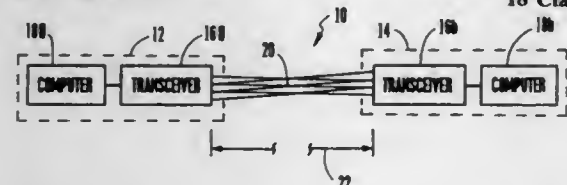
MULTIPLE TRANSMITTER LASER LINK
Eric Korevaar, San Diego, Calif., assignor to Astroterra Corporation, San Diego, Calif.

Filed Aug. 29, 1996, Ser. No. 705,515

Int. Cl.⁶ H04B 10/00

U.S. Cl. 359—172

18 Claims



1. A system for reducing scintillations in two-way laser link communication through free space which includes a first terminal and a second terminal, wherein at least one terminal comprises:

a support member;

a steering assembly mounted on said support member;

a plurality of laser light transmitters for generating a respective plurality of transmitted laser beams, with each said transmitted laser beam carrying a communications signal, said plurality of laser light transmitters being mounted on said steering assembly for pointing said plurality of transmitted laser beams along respective substantially parallel beam paths to allow said transmitted laser beams to overlap in a far field at said other terminal; and

a receiver mounted on said support member for incoherently summing signal-carrying light received from a plurality of overlapping individual laser beams emanating from said other terminal.

5,777,769

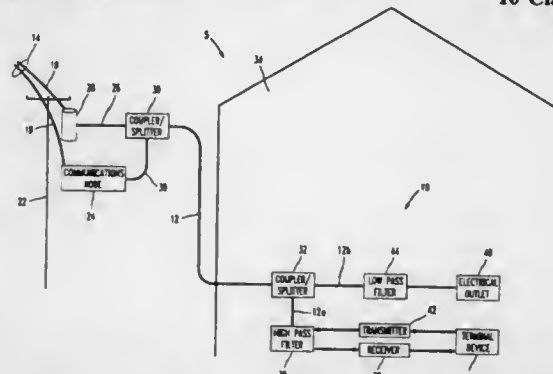
DEVICE AND METHOD FOR PROVIDING HIGH SPEED DATA TRANSFER THROUGH A DROP LINE OF A POWER LINE CARRIER COMMUNICATION SYSTEM
Roy S. Coutinho, Carmel, Ind., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 28, 1995, Ser. No. 579,752

Int. Cl.⁶ H04B 10/00; 10/12

U.S. Cl. 359—173

10 Claims



1. A device for use in a communication network for increasing a data transmission rate on a drop line having an entry point and containing a signal having low frequency power components and high frequency data components, said device comprising:

a splitter connected to the drop line for dividing the drop line into a first section and a second section with each said section containing both the low frequency power components and the high frequency data components;

a first filter connected to said first section for removing the low frequency power components therefrom while passing the high frequency data components through said first filter;

a receiver connected to said first filter for receiving said high frequency data components passed through said first filter for input to a terminal device; and

a second filter connected to said second section for removing the high frequency data components from said second section while passing said low frequency power components through said second filter for use by appliances operatively generating high frequency noise, said second filter being positioned proximate the drop line entry point for blocking said high frequency noise and thus inhibiting said high frequency noise from reaching said drop line.

5,777,770

OPTICAL PHASE CONJUGATOR AND OPTICAL RECEPTION APPARATUS AND OPTICAL TRANSMISSION APPARATUS FOR USE WITH OPTICAL COMMUNICATION SYSTEM EMPLOYING THE OPTICAL PHASE CONJUGATOR

Takao Naito, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

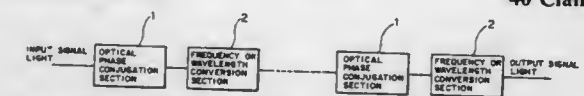
Filed Feb. 9, 1996, Ser. No. 599,588

Claims priority, application Japan, Mar. 20, 1995, 7-061224

Int. Cl.⁶ H04B 10/18

U.S. Cl. 359—179

40 Claims



1. An optical phase conjugator, comprising:

an optical phase conjugation section for outputting signal light having a frequency or spectrum inverted from that of input signal light thereto; and

a frequency or wavelength conversion section for outputting signal light having a frequency or wavelength converted from that of the signal light inputted thereto from said optical phase conjugation section;

said optical phase conjugation section and said frequency or wavelength conversion section being combined by a plural number so that a frequency or wavelength of output signal light of said optical phase conjugator coincides with a frequency or wavelength of input signal light to said optical phase conjugator.

5,777,771

GENERATION OF OPTICAL SIGNALS WITH RF COMPONENTS

Ian Christopher Smith, Suffolk, United Kingdom, assignor to British Telecommunications PLC, London, England

PCT No. PCT/GB94/00675, § 371 Date Jan. 16, 1996, § 102(e)

Date Jan. 16, 1996, PCT Pub. No. WO94/23507, PCT Pub. Date Oct. 13, 1994

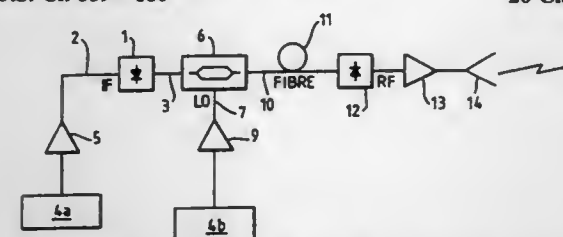
PCT Filed Mar. 30, 1994, Ser. No. 530,158

Claims priority, application United Kingdom, Mar. 31, 1993, 93302537; Mar. 31, 1993, 93302540

Int. Cl.⁶ H04B 10/04

U.S. Cl. 359—180

26 Claims



1. A method of generating an optical signal having a first RF component including a first RF carrier frequency and an information component, the method comprising the steps of:

- generating a first optical signal having a second RF component including a second RF carrier frequency different from said first RF carrier frequency;
- generating a control signal having a third non-zero RF component including a third RF carrier frequency different from said first RF carrier frequency;
- said second or said third RF component including the information component;
- applying the first optical signal to an optical modulator; and
- applying the control signal to the optical modulator to modulate the first optical signal so as to produce an output optical signal modulated by said first RF carrier frequency and said information component, said first carrier frequency being said second carrier frequency up-converted by said third carrier frequency or by an integer multiple of said third carrier frequency, wherein an amplitude of said control signal is controlled to control a desired harmonic output.

5,777,772

OPTICAL TRANSMITTER

Soichiro Araki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 17, 1996, Ser. No. 633,298

Claims priority, application Japan, Apr. 21, 1995, 6-120756

Int. Cl.⁶ H04B 10/04

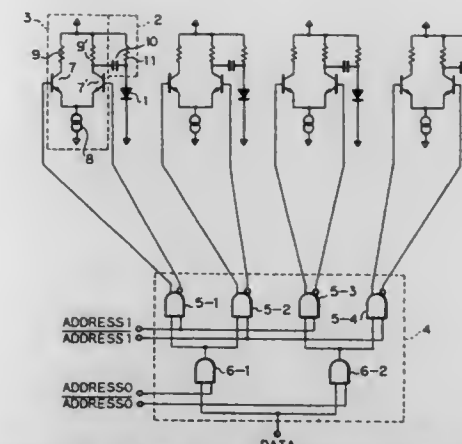
U.S. Cl. 359—180

8 Claims

1. An optical transmitter comprising:

a plurality of LDs;

a current source; and



a channel select circuit connected between said plurality of LDs and said current source and comprising a plurality of differential amplifiers connected in a binary tree configuration from said current source toward said plurality of LDs, wherein data signals are input to input terminals of the differential amplifiers located at one end adjoining said current source, and wherein address signals are input to input terminals of the differential amplifiers, said binary tree configuration being connected from the differential amplifiers adjoining said current source toward said plurality of LDs.

5,777,773

OPTICAL FREQUENCY CONTROL SYSTEM AND METHOD

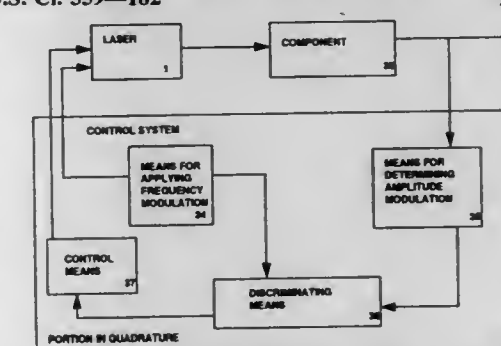
Richard Epworth, Sawbridgeworth, and Duncan John Forbes, Bishops Stortford, both of United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 31, 1996, Ser. No. 741,587

Int. Cl.⁶ H04B 10/04

U.S. Cl. 359—182

25 Claims



1. A control system for controlling the frequency of a laser in an optical transmission system in which the optical output of the laser is passed through an optical component whose output amplitude is dependent on input frequency and input amplitude, the control system comprising:

- means for applying a modulation to the laser which produces frequency modulation and amplitude modulation in an optical output of the laser;
- means for detecting an amplitude modulation present at the output of the component;
- means for determining a portion of the detected amplitude modulation which is substantially in phase quadrature with the amplitude modulation in the optical output of the laser; and
- means for controlling the frequency of the laser on the basis of the quadrature portion.

5,777,774

REFLECTION SCANNING OPTICAL SYSTEM
Takashi Iizuka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

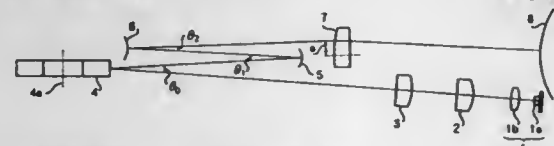
Filed Nov. 7, 1996, Ser. No. 744,425

Claims priority, application Japan, Nov. 8, 1995, 7-314729

Int. Cl.⁶ G02B 26/08

U.S. Cl. 359—208

14 Claims



1. A reflecting type scanning optical system comprising:
a rotatable polygonal mirror for reflecting and deflecting a light beam emitted from a light source portion;
a first curved mirror that has negative power in a main scanning direction, said first curved mirror reflecting the light beam, reflected from said polygonal mirror back toward said polygonal mirror;
a second curved mirror that has positive power in the main scanning direction, said second curved mirror reflecting the light beam reflected by said first curved mirror toward a surface to be scanned; and
a toric lens that has positive power at least in an auxiliary scanning direction perpendicular to said main scanning direction, said light beam reflected from said second curved mirror transmitting through said toric lens to form an image on said surface to be scanned,
wherein said first curved mirror, said second curved mirror, and said polygonal mirror are arranged such that the reflected light beam therefrom is separated from each respective incident light beam in the auxiliary scanning direction.

5,777,775

MECHANICAL BEAM ISOLATOR FOR HIGH-POWER LASER SYSTEMS

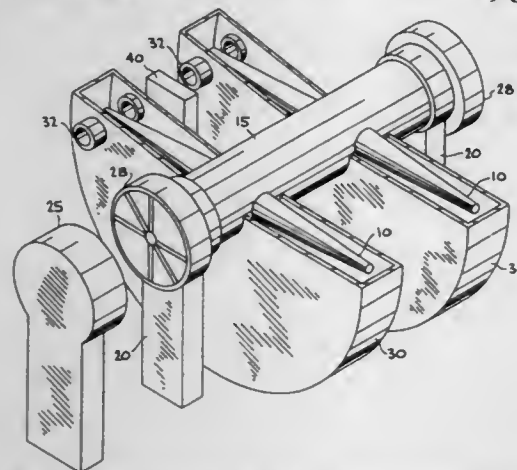
Richard F. Post, Walnut Creek, and Charles S. Vann, Fremont, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Oct. 18, 1996, Ser. No. 732,734

Int. Cl.⁶ G02B 26/02

U.S. Cl. 359—234

9 Claims



1. An apparatus for blocking photon or particle beams, comprising:
a rotatable central shaft;
means for rotating said rotatable central shaft; and
at least one tapered rod attached to and penetrating through said rotatable central shaft, wherein both half-lengths of each rod of said at least one tapered rod are tapered in near accordance with a mathematical Gaussian function, wherein the rotation

speed and angular position of said at least one tapered rod is synchronized to coincide with the time when a shuttering action is desired.

5,777,776

FULL OPTICAL TYPE OPTICAL ELEMENT
Takashi Hiraga; Tetsuo Moriya, both of Tsukuba; Norio Tanaka, Tokyo, and Ichiro Ueno, Yokohama, all of Japan, assignors to Agency of Industrial Science and Technology; Japan Science and Technology Corporation; Dainichiseika Color & Chemicals MFG., Co., Ltd., and Victor Company of Japan, Limited, all of Japan

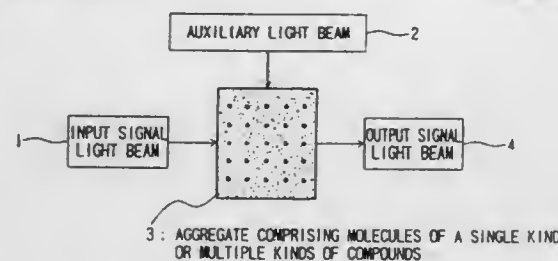
Filed Dec. 6, 1996, Ser. No. 761,204

Claims priority, application Japan, Dec. 8, 1995, 7-320631

Int. Cl.⁶ G02F 1/03

U.S. Cl. 359—244

10 Claims



1. A full optical type optical element for effecting an information processing on an input signal light beam through use of only light beams including said signal light beam and an auxiliary light beam for assisting operation, said optical element comprising a pair of optically transparent substrates with parallel facing surfaces, a plurality of light-shielding film strips on one of the parallel facing surfaces, a transparent polymer film sandwiched between said parallel facing surfaces, and aggregates which are dispersed within said transparent polymer film as optical functional aggregates, wherein said optical function aggregates are each composed of a plurality of molecules of one or more compounds responsive to said auxiliary light beam to perform a function on said input signal light beam.

5,777,777

LINEARIZATION CIRCUIT DEVICE
Norbert Kaste, and Reinhard Wegener, both of Berlin, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

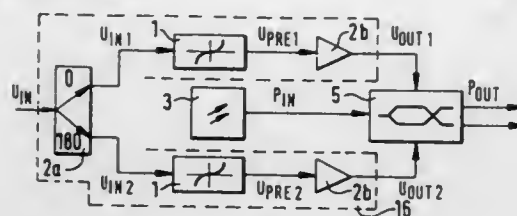
Filed Dec. 6, 1996, Ser. No. 761,471

Claims priority, application Germany, Dec. 6, 1995, 195 45 435.9

Int. Cl.⁶ G02F 1/03; 1/035

U.S. Cl. 359—245

9 Claims



1. A linearization circuit device for an electro-optical modulator, comprising:
an anti-phase dividing element, the anti-phase dividing element splitting an incoming electrical modulation signal into a first anti-phase signal and a second anti-phase signal; and
first and second distortion elements coupled to the anti-phase dividing element, each of the first and second distortion elements receiving a respective one of the first and second anti-phase signals to generate a first distorted signal and a

second distorted signal, respectively, the first and second distorted signals being applied to a differential input of the electro-optical modulator for modulating an optical input signal.

5,777,778

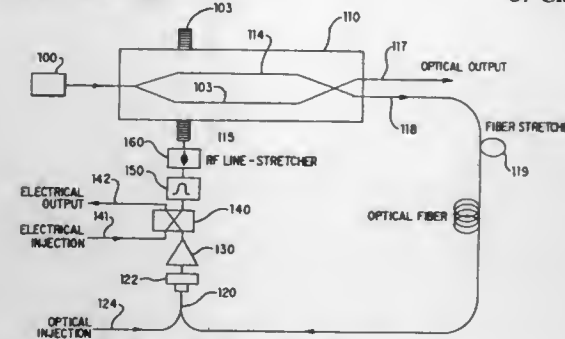
MULTI-LOOP OPTO-ELECTRONIC MICROWAVE OSCILLATOR WITH A WIDE TUNING RANGE
Xiaotian S. Yao, Diamond Bar, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Aug. 1, 1996, Ser. No. 693,798

Int. Cl.⁶ G02F 1/03

U.S. Cl. 359—245

87 Claims



1. An opto-electronic system, comprising:
an electro-optical modulator having an electrical input port and an optical output port, operating to generate an optical signal that is modulated at an oscillating frequency related to an electrical driving signal from said electrical input port;
a first feedback loop, operating to receive a first portion of said optical signal and to produce a first electrical feedback signal to said electrical input port with a first amount of delay and a first positive feedback; and
a second feedback loop, operating to receive a second portion of said optical signal and to produce a second electrical feedback signal to said electrical input port with a second amount of delay and second positive feedback,
wherein said first electrical feedback signal and said second electrical feedback signal cooperatively affect said electrical driving signal and said first and second feedback loops have a total open loop gain greater than unity.

5,777,779

ELECTROCHROMIC DEVICE AND METHOD FOR MANUFACTURING THE SAME
Shigeru Hashimoto, Yokohama, and Junji Terada, Hiratsuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

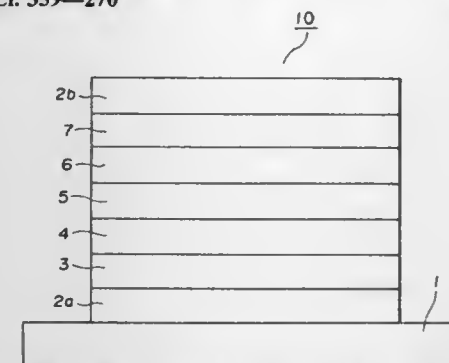
Filed Sep. 27, 1996, Ser. No. 722,952

Claims priority, application Japan, Sep. 29, 1995, 7-275053

Int. Cl.⁶ G02F 1/153

U.S. Cl. 359—270

18 Claims



1. An electrochromic device comprising at least;

5,777,780

ELECTROCHROMIC DEVICE AND METHOD FOR MANUFACTURING THE SAME

Junji Terada, Hiratsuka, and Shigeru Hashimoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

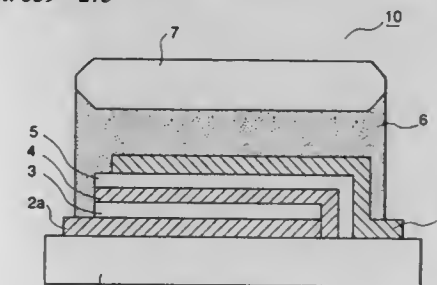
Filed Aug. 29, 1996, Ser. No. 705,295

Claims priority, application Japan, Aug. 30, 1995, 7-243889; Sep. 12, 1995, 7-258293

Int. Cl.⁶ G02F 1/153

U.S. Cl. 359—273

11 Claims



1. An electrochromic device comprising a pair of transparent substrates facing each other, a pair of transparent electrodes facing each other between said pair of transparent substrates, and an electrochromic layer and a transparent ion conductive layer sandwiched by said pair of transparent electrodes, wherein at least said electrochromic layer and said transparent ion conductive layer are coated with a resin having a Young's modulus of 8-60 Kg/cm².

5,777,781

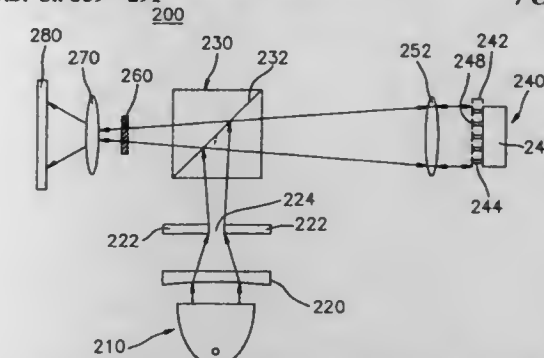
OPTICAL PROJECTION SYSTEM
Seong-Woo Nam, and Zu-Seong Hwang, both of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 29, 1996, Ser. No. 739,251

Int. Cl.⁶ G02B 26/00

U.S. Cl. 359—291

7 Claims



1. An optical projection system for displaying an image having MxN pixels, M and N being positive integers, respectively, on a projection screen comprising:
a device for generating a collimated light beam, wherein the collimated light beam has a first, a second and a third primary

light components, each of the primary light components being one of primary colors;

a filter for filtering the collimated light beam into each of primary light beams of primary light components, wherein the filter is made of a set of red, green and blue color sections; and

an array of MxN actuated mirrors provided with an active matrix, each of the actuated mirrors operable to reflect the collimated light beam from the generating means to any one of the color sections and modulating an intensity of the reflected light beam passing through the filter in response to an electric signal applied to the actuated mirrors by the active matrix, wherein the electric signal from the active matrix includes a plurality of time intervals, wherein each of the time intervals is divided into a first time slot S_{1r} , a second time slot S_{1g} , and a third time slot S_{1b} , each time slot being allocated for adjusting the reflection of the actuated mirrors to a position substantially aligned with each corresponding color section, respectively, thereby displaying the image on the projection screen.

5,777,782

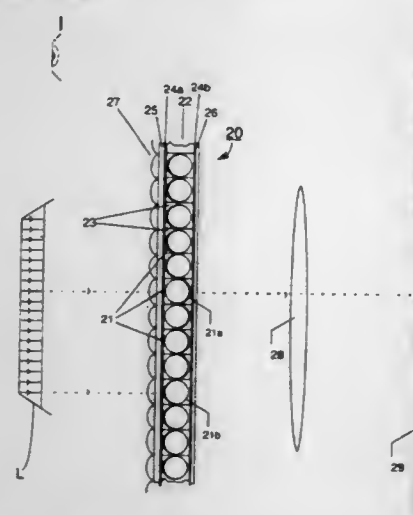
AUXILIARY OPTICS FOR A TWISTING BALL DISPLAY
Nicholas K. Sheridan, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 24, 1996, Ser. No. 777,225

Int. Cl.⁶ G02B 26/00

U.S. Cl. 359—296

21 Claims



1. Apparatus comprising:

a substrate having an optically transmissive window;

a plurality of particles disposed in the substrate,

each particle having an anisotropy for providing an electrical dipole moment, the electrical dipole moment rendering the particle electrically responsive such that when the particle is rotatably disposed in an electric field while the electrical dipole moment of the particle is provided, the particle tends to rotate to an orientation in which the electrical dipole moment aligns with the field,

a rotatable disposition of each particle being achievable while said particle is thus disposed in the substrate, said particle, when in said rotatable disposition, not being attached to the substrate,

each particle, when rotatably disposed in the substrate, being disposable in first and second rotational orientations with respect to the optically transmissive window,

each particle providing a first optical modulation characteristic when disposed in said first orientation with respect to a flux of optical energy through the window,

each particle further providing a second optical modulation characteristic when disposed in said second orientation with respect to a flux of optical energy through the window; and

an optical focusing element optically coupled to the window.

5,777,783

MICROSCOPE

Itaru Endou, Yasushi Kaneko, Yoshihiro Kawano, and Kazuo Kajitani, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 243,632, May 16, 1994, abandoned.

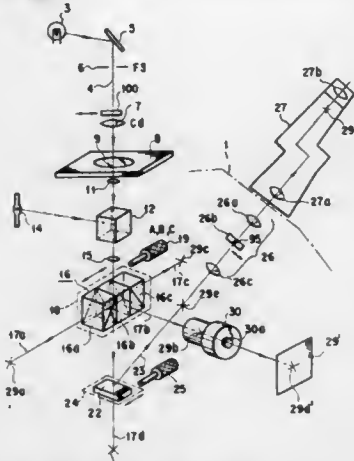
This application Feb. 14, 1997, Ser. No. 799,865

Claims priority, application Japan, May 17, 1993, 5-114835; May 2, 1994, 6-093427

Int. Cl.⁶ G02B 21/06; 21/00; 21/36

U.S. Cl. 359—385

18 Claims



1. An inverted microscope comprising:

a first light source for emitting illuminating light;

an illuminating optical system for radiating the illuminating light emitted by the first light source to a sample;

an infinity correction objective lens arranged under the sample, for outputting a light beam forming an enlarged image of the sample;

an imaging lens for focusing the light beam output from the objective lens so as to output a light beam forming an image of the sample;

a fluorescent cube having:

a dichroic mirror arranged at an angle of 45° with respect to an optical axis between the objective lens and the imaging lens, and

a filter set in which an exciting filter and an absorbing filter are combined so as to allow fluorescent observation;

a second light source for emitting illuminating light so as to illuminate the sample by reflecting the light on the dichroic mirror of the fluorescent cube;

a movable first beam splitting unit for splitting the light beam output from the imaging lens into two light beams, said two light beams including a light beam traveling in an optical path extending in a downward transmission direction of the first beam splitting unit, and a light beam traveling in an optical path which is selected from among a plurality of optical paths extending in directions different from said transmission direction by moving the first beam splitting unit by a moving mechanism;

a second beam splitting unit for guiding the light beam traveling in the optical path extending in the transmission direction of the first beam splitting unit into a plurality of light beams, said plurality of light beams including at least one of:

(a) a light beam traveling in an optical path extending in a downward transmission direction of the second beam splitting unit, and

(b) a light beam traveling in an optical path extending in directions different from said transmission direction of the second beam splitting unit;

a main microscope housing for housing the first and second beam splitting units;

a straight image-pickup optical path formed in the optical path into which the light beam transmitted downward through the first and second beam splitting units is directed, a first image-pickup plane which is in said straight image-pickup optical path being arrangeable at a first primary image of the imaging lens, and the first primary image being formed under a base surface of the main microscope housing;

a bias image-pickup optical path formed in such a manner as to include the optical path into which the light beam split by the first beam splitting unit is selectively directed by moving the first beam splitting unit by said moving mechanism, a second image-pickup plane which is in said selected image-pickup optical path being arrangeable at a second primary image of the same imaging lens as for the first primary image, and the second primary image being formed outside of a side surface of the main microscope housing;

an observation optical path formed by the optical path to which the light beam is split by the second beam splitting unit and extending in a direction different from said transmission direction of the second beam unit, and extending outside of the main microscope housing, the observation optical path including a relay system; and

an eyepiece, arranged in the observation optical path, for permitting observation of a sample image formed in the observation optical path.

5,777,784

REFLECTING ILLUMINATION OPTICAL SYSTEM FOR MICROSCOPES

Takaaki Tanaka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

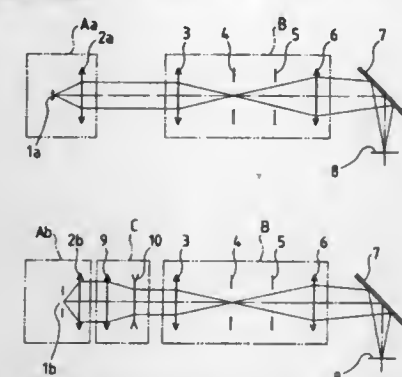
Filed Mar. 30, 1994, Ser. No. 219,927

Claims priority, application Japan, Mar. 31, 1993, 5-074462

Int. Cl.⁶ G02B 21/06; G03B 13/06

U.S. Cl. 359—388

12 Claims



1. A reflecting illumination optical system for microscopes, comprising:

a reflecting projection tube section including a projection optical system for projecting an image of a light source disposed therefore, at a position adjacent to a pupil of an objective lens of a microscope;

a first lamp house section having a first light source and a first collector lens, said first lamp house section being selectively settable before said reflecting projection tube section;

a second lamp house section having a second light source different from said first light source in size and a second collector lens, said second lamp house section being selectively settable before said reflecting projection tube section in place of said first lamp house section; and

a variable magnification section including a substantially afocal variable magnification lens unit, said variable magnification section being selectively insertable in and removable from an optical path at a position after one of said first lamp house section and said second lamp house section set in place before said reflecting projection tube section, said position of said variable magnification section being before an optical element

disposed nearest to the pupil of the objective lens, of said reflecting projection tube section, said variable magnification section allowing a change in magnification of projection of the image of the light source disposed before said reflecting projection tube section, said image being projected at said position adjacent to the pupil of the objective lens of the microscope, so that an optimum magnification of projection of the image of the light source disposed before said reflecting projection tube section is attained, with said image being projected at said position adjacent to the pupil of said objective lens by inserting or removing said variable magnification section in or out of the optical path at each time said first lamp house section and said second lamp house section are replaced by each other.

5,777,785

BINOCULARS

Yasuaki Ishikawa, Sagami, Japan, assignor to Nikon Corporation, Tokyo, Japan

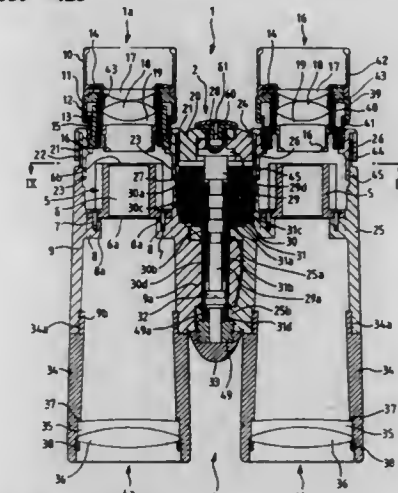
Filed Jan. 18, 1996, Ser. No. 588,510

Claims priority, application Japan, May 30, 1995, 7-131263

Int. Cl.⁶ G02B 23/00; 27/02; 5/04

U.S. Cl. 359—425

5 Claims



1. Binoculars comprising:

first and second objective lens barrels respectively having objective lenses at one end thereof;

first and second intermediate lens barrels fixed to a second end of said first and second objective lens barrels;

first and second eyepiece lens barrels respectively having eyepiece lenses and adapted to be slidably fitted in the other ends of said first and second intermediate lens barrels;

prisms provided in respective prism holders between said objective lenses and said eyepiece lenses and said holders are positioned respectively in said first and second intermediate lens barrels; and

a focusing mechanism provided with a focusing member and adapted to displace said first and second eyepiece lens barrels in the direction of an optical axis by rotation of said focusing mechanism;

wherein each of said prisms is composed of a roof prism having an entrance face for receiving the light beam from said objective lens and an exit face for directing said received light beam to said eyepiece lens; and

in said prism holder, said exit face is formed as to be insertable into said eyepiece lens barrel and the periphery of said entrance face is fixed to said objective lens barrel so that said exit face enters said eyepiece lens barrel when said eyepiece lens barrel is axially displaced toward said holder by means of said focusing mechanism.

5,777,786

Patent Not Issued For This Number

5,777,787

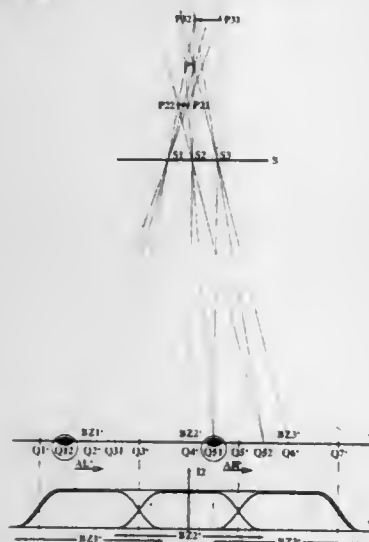
APPARATUS AND PROCESS FOR AUTOSTEREOSCOPIC VIEWING OF A THREE-DIMENSIONAL STRUCTURE
Ernst Lüder, Stuttgart, and Gerhard Bader, Neuffen, both of Germany, assignors to Ernst Lueder, Stuttgart, Germany
Filed Feb. 22, 1996, Ser. No. 605,815

Claims priority, application Germany, Feb. 25, 1995, 195 06 648.0

Int. Cl.⁶ G02B 27/22; 35/00

U.S. Cl. 359—462

3 Claims



1. An apparatus for providing an autostereoscopic view of three dimensional structures, said apparatus comprising a display device for viewing a plurality of different two-dimensional views of a three-dimensional structure, a plurality of optical image forming devices arranged in front of the display device and a screen for forming images in an observation plane from light rays issuing from the optical image forming devices so that images of said two-dimensional views appear in respective observation zones in said observation plane, said observation zones being observable either with a right eye or with a left eye of an observer; wherein said optical image forming devices (AE) have aperture stops which comprise means for overlapping said observation zones (BZ6) to form overlapping zones (UZ6) and means for reducing lighting intensity (I6) at edges of said aperture stops; and wherein each of said aperture stops (AB) is provided with an aperture and a continuous transitional change of light transmission through an edge region thereof bordering said aperture for reduction of said lighting intensity (I6).

5,777,788

POLARIZER AND METHOD FOR USING SAME
Masato Noguchi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 7, 1996, Ser. No. 612,293

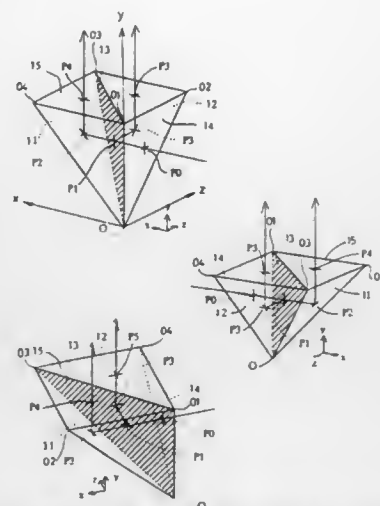
Claims priority, application Japan, Mar. 9, 1995, 7-078201

Int. Cl.⁶ G02B 5/30

U.S. Cl. 359—487

14 Claims

1. A polarizer comprising:
first and second reflecting surfaces which define an angle of 120° therebetween; and
a polarization beam splitting surface which lies in a bisectonal plane of the first and second reflecting surfaces;
wherein said first and second reflecting surfaces and said polarization beam splitting surface are positioned such that light



parallel to said second reflecting surface is incident on said polarization beam splitting surface at an angle of 45°.

5,777,789

EFFICIENT OPTICAL SYSTEM FOR A HIGH RESOLUTION PROJECTION DISPLAY EMPLOYING REFLECTION LIGHT VALVES

George Liang-Tai Chiu, Cross River; Thomas Mario Cipolla; Fuad Elias Doany, both of Katonah; Derek Brian Dove, Mt. Kisco; Alan Edward Rosenbluth, Yorktown Heights, all of N.Y.; Rama Nand Singh, Bethel, Conn., and Janusz Stanislaw Wilczynski, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

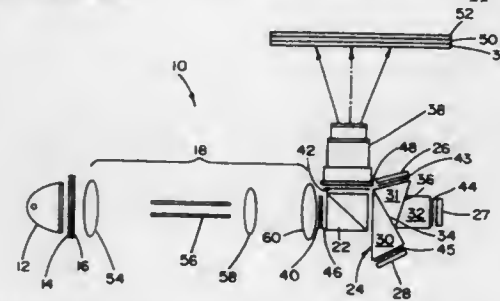
Continuation of Ser. No. 410,430, Mar. 23, 1995, abandoned.

This application Sep. 19, 1997, Ser. No. 934,300

Int. Cl.⁶ G02B 5/30; 27/28; G03B 21/00; G02F 1/00

U.S. Cl. 359—494

11 Claims



1. An apparatus for projecting an image onto a screen comprising:

- a light source for providing light;
- a polarizing beam splitting means for splitting the light into first and second polarizations;
- a prism assembly having a plurality of output faces for splitting the light from said polarizing beam splitting means of said first polarization into a plurality of colors and directing each color through a corresponding one of said output faces and for recombining said plurality of colors reflected back into said prism assembly through each of said respective output faces to form a recombined colored light;
- a plurality of spatial light modulators, one of said plurality of spatial light modulators having a face defining a geometrical shape;
- a light tunnel between said light source and said plurality of spatial light modulators for providing light from said light source exiting said tunnel with a uniform light intensity, said light tunnel having a cross-sectional shape corresponding to said geometrical shape;
- said plurality of spatial light modulators being positioned adjacent said output faces of said prism assembly for rotating the polarization of said plurality of colors directed through each

of said output faces of said prism assembly to form rotated colored lights and reflecting said rotated colored lights back into said prism assembly through said output faces for recombining therein to form said recombined colored light; and
a projection lens, said polarizing beam splitting means splitting said recombined colored light directed therein from said prism assembly into first and second polarizations and directing light of said second polarization into said projection lens for projecting said light of said second polarization as the image onto the screen.

5,777,790

MICROSPHERE-BASED RETROREFLECTIVE ARTICLE
Toshitaka Nakajima, Yamagata pref., Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
PCT No. PCT/US95/04288, § 371 Date Oct. 4, 1996, § 102(e) Date Oct. 4, 1996, PCT Pub. No. WO95/27913, PCT Pub. Date Oct. 19, 1995

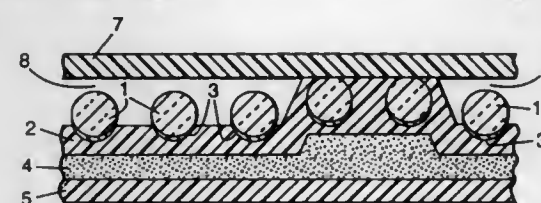
PCT Filed Apr. 6, 1995, Ser. No. 721,982

Claims priority, application Japan, Apr. 7, 1994, 6-069426

Int. Cl.⁶ G02B 5/128

U.S. Cl. 359—536

10 Claims



1. A retroreflective article comprising a monolayer of microspheres (1) partially embedded in and protruding from a binder layer (2) and specular reflector (3) underlying said microspheres, characterized in that said monolayer of microspheres comprises a mixture of a first class of microspheres having a first refractive index between about 1.9 and about 2.1, and a second class of microspheres having a second refractive index of less than 1.9.

5,777,791

WET RETROREFLECTIVE PAVEMENT MARKING ARTICLES

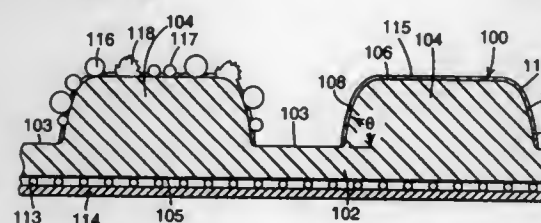
Thomas P. Hedblom, Eagan, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 26, 1996, Ser. No. 756,866

Int. Cl.⁶ G02B 5/128

U.S. Cl. 359—536

12 Claims



1. A retroreflective pavement marker comprising:

- a) a base sheet having a front surface and a back surface;
- b) a plurality of protrusions projecting from said front surface of said base sheet, each of said protrusions having a top surface and at least one side surface connecting said top surface to said front surface of said base sheet;
- c) a binder layer comprising particles of specular reflector pigment, said binder layer covering a portion of said protrusions; and
- d) partially embedded in said binder layer, a plurality of Type A microspheres and a plurality of Type B microspheres, wherein at least 10 percent by weight of the total microspheres are Type A and at least 10 percent by weight of the total micro-

spheres are Type B, said Type A microspheres have a different average refractive index than do said Type B microspheres, and said Type B microspheres have an average refractive index of about 2.2 to about 2.3.

5,777,792

OPTICAL FILM, AN ANTIREFLECTION FILM, A REFLECTION FILM, A METHOD FOR FORMING THE OPTICAL FILM, THE ANTIREFLECTION FILM OR THE REFLECTION FILM AND AN OPTICAL DEVICE

Nobumasa Okada; Sigeo Ohsaka, and Shuichi Miura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

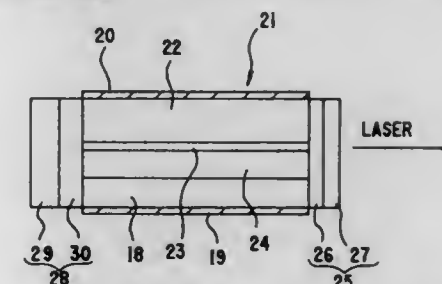
Filed Jul. 20, 1994, Ser. No. 278,074

Claims priority, application Japan, Aug. 25, 1993, 5-210047; Dec. 20, 1993, 5-320458

Int. Cl.⁶ G02B 1/10; H01S 3/19

U.S. Cl. 359—584

24 Claims



1. An optical film of multi-layered structure comprising a high-refractive-index layer composed of titanium oxynitride and a low-refractive-index layer, said optical film being formed on an optical input/output portion of a semiconductor laser.

5,777,793

POLARIZATION INSENSITIVE MULTILAYER PLANAR REFLECTION FILTERS WITH NEAR IDEAL SPECTRAL RESPONSE

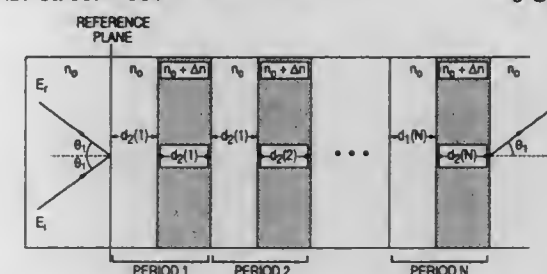
Brent E. Little, Boston, Mass., and Chi Wu, Nepean, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 25, 1996, Ser. No. 686,355

Int. Cl.⁶ G02B 1/10

U.S. Cl. 359—584

6 Claims



1. A multilayer planar reflection filter having a filtered bandwidth at a selected central wavelength λ_0 , and a specified out-of-band sidelobe suppression ratio S, the filter comprising:

- a multilayer stack comprising N periods of alternating layers of a first dielectric medium of index n_0 and a second dielectric medium of index $n_0 + \Delta n$, the value of N being odd, the thicknesses of each layer in period j of refractive index n_0 having a thickness $d_1(j)$, and of each layer in period j of refractive index $n_0 + \Delta n$ having a thickness $d_2(j)$, for each period, $j=1$ through N, the layers of first dielectric medium and second dielectric medium are provided with respective thicknesses $d_1(j)$ and $d_2(j)$ whereby, for the specified sidelobe suppression ratio S, a minimum width of the filtered bandwidth is achieved.

5,777,794

IMAGE DISPLAY APPARATUS

Masaya Nakaoka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

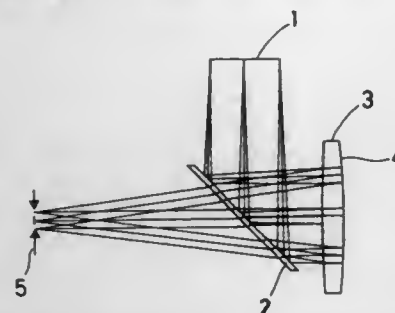
Filed Sep. 25, 1996, Ser. No. 719,445

Claims priority, application Japan, Sep. 26, 1995, 7-247736

Int. Cl.⁶ G02B 27/14; G09G 5/00

U.S. Cl. 359—632

9 Claims



1. A head- or face-mounted image display apparatus, comprising:
- an image display device;
 - an optical system for leading an image displayed by said image display device to an observer's eyeball without effecting image formation on the way to said observer's eyeball; and
 - means for retaining said image display device and said optical system on an observer's head or face,
- said optical system comprising a back-coated mirror and a plane-parallel plate having a semitransparent surface, wherein said back-coated mirror satisfies the following condition:

$$0 < R/r < 0.5$$

(4)

where R is a radius of curvature of a reflecting surface of said back-coated mirror, and r is a radius of curvature of a transmitting surface of said back-coated mirror at an obverse side thereof, and where curvature in a direction away from said observer's eyeball is defined as being positive.

5,777,795

OPTICAL PATH EXTENDER FOR COMPACT IMAGING DISPLAY SYSTEMS

D'Nardo Colucci, Durham, N.C., assignor to University of North Carolina, Chapel Hill, N.C.

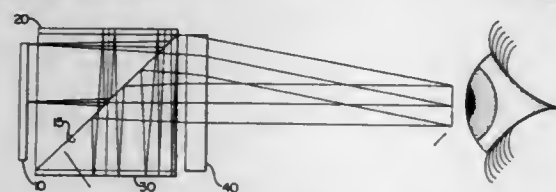
Division of Ser. No. 323,848, Oct. 17, 1994, Pat. No. 5,610,765.

This application Mar. 10, 1997, Ser. No. 814,802

Int. Cl.⁶ G02B 27/14

U.S. Cl. 359—633

13 Claims



1. An image display unit having an optical path extender incorporated therein, said image display unit comprising:
- a) an image source for emitting polarized light in the form of an image;
 - b) a polarizing beam splitter positioned in front of said image source and at an angle thereto, with said polarizing beam splitter having a front surface portion and a back surface portion, and with said beam splitter positioned so that said image is reflected by said front surface portion;
 - c) first polarization-rotation and reflecting means facing said polarizing beam splitter front surface portion for projecting said image back through said polarizing beam splitter;
 - d) second polarization-rotation and reflecting means facing said polarizing beam splitter back surface portion for projecting

said image onto said polarizing beam splitter back surface portion so that said image is reflected thereby;

e) a focusing lens positioned so that said image reflected by said beam splitter back surface portion is projected therethrough.

5,777,796

PENTAPRISM COMBINER/SPLITTER

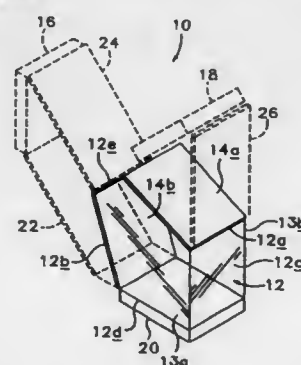
Herschel Burstyn, Plainsboro, N.J., assignor to Delta America Ltd., Fremont, Calif.

Filed Jul. 25, 1996, Ser. No. 686,381

Int. Cl.⁶ G02B 27/14; 5/04

U.S. Cl. 359—634

27 Claims



1. An optical device for processing light beams, the device comprising:

- a first optical interface, wherein the first optical interface is configured to transmit light beams of a first color and to reflect light beams not of the first color;
 - a first light beam structure having a first end and a second end, the second end of the first light beam structure being operatively coupled to the first optical interface, wherein the first light beam structure is configured to guide a substantially monochrome light beam of the first color in a path intersecting the first optical interface, wherein the substantially monochrome light beam of the first color is transmitted through the first optical interface;
 - a second optical interface, wherein the second optical interface is configured to transmit light beam of a second color and to reflect light beams of not of the second color;
 - a second light beam structure having a first end and a second end, the second end of the second light beam structure being operatively coupled to the second optical interface, wherein the second light beam structure is configured to guide a substantially monochrome light beam of the second color in a path intersecting the second optical interface, wherein the substantially monochrome light beam of the second color is transmitted through the second optical interface; and
 - a third optical interface, wherein the third optical interface is configured to transmit light beams of a third color and to reflect light beams not of the third color,
- wherein the first, second and third optical interfaces are disposed to define three faces of a pentaprism so that a first optical path between a fourth face of the pentaprism and the first end of the first light beam structure has a number of reflections equal to a number of reflections of a second optical path between the fourth face of the pentaprism and the first end of the second light beam structure.

5,777,797

OBJECTIVE LENS SYSTEM FOR ENDOSCOPES HAVING AN IMAGE TRANSFER OPTICAL FIBER BUNDLE

Hitoshi Miyano, Saitama, Japan, assignor to Fujii Photo Optical Co., Ltd., Saitama, Japan

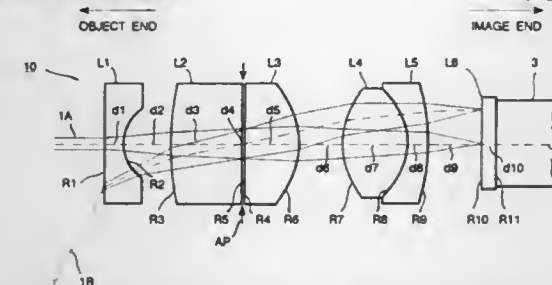
Filed Sep. 5, 1996, Ser. No. 708,674

Claims priority, application Japan, Sep. 11, 1995, 7-259434

Int. Cl.⁶ G02B 21/02; A61B 1/06

U.S. Cl. 359—660

8 Claims



1. An objective lens system for an endoscope having an image transfer optical fiber bundle, which comprises from the object end to the image end a negative powered first lens element L1 having a concave image side surface, a positive powered second lens element L2 having a radius of curvature greater on an image side than on an object side, a positive powered third lens element L3 having a radius of curvature greater on the object side than on the image side, a positive powered doublet lens component comprising fourth lens element L4 and fifth lens element L5, and an aperture diaphragm interposed between the second lens element and the third lens element, said objective lens system satisfying the following relations:

$$|d/f_f R^2| < 0.11$$

$$v2 < 45.0$$

where f is the equivalent focal length of the entire objective lens system, f_R is the equivalent focal length of the rear lens group including the third, fourth and fifth lens elements; d is the axial distance between the aperture diaphragm and the front focal point of the rear lens group, and v2 is the Abbe number of glass for the second lens element.

5,777,798

VARIABLE MAGNIFICATION LASER IMAGING SYSTEM

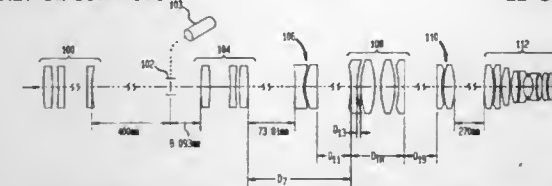
Candace Joy Freedberg, Holly Ridge, N.C.; Frederick Albert Herring, Wappingers Falls, and Uldis Artis Ziemins, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 457,550, Jun. 1, 1995, Pat. No. 5,543,963, which is a division of Ser. No. 923,284, Jul. 31, 1992, Pat. No. 5,448,410. This application Mar. 25, 1996, Ser. No. 618,022

Int. Cl.⁶ G02B 15/14

U.S. Cl. 359—676

22 Claims



1. A process for providing variable magnification image on an image plane comprising, passing a light beam in sequence through a beam shaping lens system, an aperture, a variable field lens system, an objective lens system onto an image plane, and wherein additional demagnification is obtained from a system comprising a Barlow lens, and thereby forming said variable magnification image onto said image plane.

5,777,799

THREE-LENS-GROUP ZOOM LENS SYSTEM HAVING A ZOOM RATIO EXCEEDING 3.5

Yuji Miyauchi, Machida, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

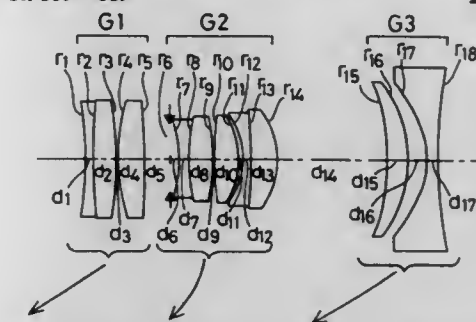
Filed Jul. 19, 1996, Ser. No. 684,927

Claims priority, application Japan, Jul. 21, 1995, 7-185872

Int. Cl.⁶ G02B 15/14

U.S. Cl. 359—689

22 Claims



1. A three-lens-group zoom lens system comprising, in order from an object side:
- a first lens group having positive refracting power;
 - a second lens group having positive refracting power; and
 - a third lens group having negative refracting power,
- wherein in zooming from a wide-angle end to a telephoto end, an air separation between the first and second lens groups increases while an air separation between the second and third lens groups decreases,
- a zoom ratio from said wide-angle end to said telephoto end exceeds 3.5, and
- said first lens group consists of, in order from the object side, a first subgroup consisting of a cemented lens of a double convex lens and a double concave lens, and a second subgroup consisting of a double convex lens, three lenses in all.

5,777,800

ZOOM LENS

Susumu Yamaguchi, and Nobuyoshi Mori, both of Hachioji, Japan, assignors to Konica Corporation, Japan

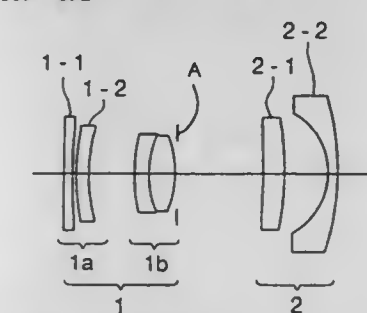
Filed Sep. 24, 1996, Ser. No. 717,813

Claims priority, application Japan, Sep. 28, 1995, 7-251171

Int. Cl.⁶ G02B 15/14

U.S. Cl. 359—692

15 Claims



1. A zoom lens comprising:
- (a) a first lens group having a positive refracting power; and
 - (b) a second lens group provided closer to an image side than said first lens group, having a negative refracting power,
- wherein a magnification change is conducted by changing a distance between said first and the second lens groups, and wherein the zoom lens satisfies the following conditional expressions,

$$2.5 < f_1/f_2$$

$$3.0 < f_1/f_3 < 5.0$$

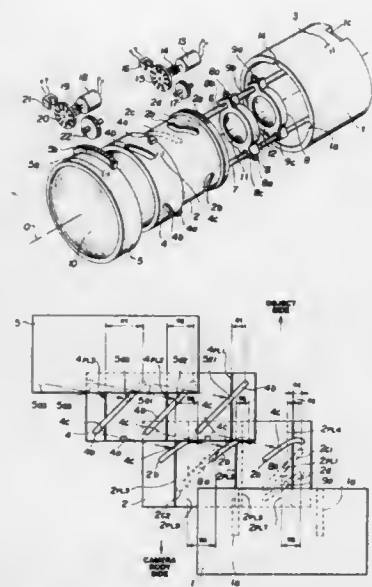
where f_w represents a focal length at a wide-angle end position of an entire system of the zoom lens, f_t represents a focal length at a telephoto end position of the entire system of the zoom lens, and f_1 represents a focal length of said first lens group,

wherein said first lens group comprising, in the order named from an object side,

- (1) a 1a lens component having a negative refracting power, including a 1-1 lens element having a negative refracting power and a 1-2 lens element made of plastic, at least one surface of the 1-2 lens being an aspherical surface, and
- (2) a 1b lens component having a positive refracting power; and

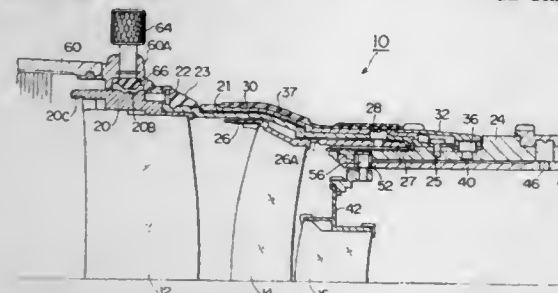
said second lens group comprising, in the order named from the object side,

- (1) a 2-1 lens element made of plastic having a positive refracting power, at least one surface of which is an aspherical surface, and
- (2) a 2-2 lens element having a negative refracting power.



a movable frame that is formed by molding plastic, having a first cam groove engaged with the first cam follower; a second lens having a second cam follower; a cam ring that is formed by molding plastic, having a second cam groove engaged with the second cam follower; a third cam follower formed on one of the movable frame and the cam ring and a third cam groove formed on the other of the movable frame and the cam ring, the third cam groove engaged with the third cam follower, wherein cam faces of at least two cam grooves of the first, second and third cam grooves have discontinuities arising from any of a projection, a dent and a step at ends of a plurality of parting lines that are generated in a molding process and wherein the plurality of parting lines on the cam faces of the cam grooves are arranged such that no two of the cam followers are simultaneously positioned at the respective parting lines.

5,777,801
INTERNAL FOCUSING ZOOM LENS WITH MEANS PREVENTING LENS WARPING EFFECTS
Hisao Takemae, and Nobuo Matsui, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan
Filed Feb. 13, 1997, Ser. No. 800,194
Claims priority, application Japan, Feb. 16, 1996, 8-029592
Int. Cl.⁶ G02B 15/14
U.S. Cl. 359—694 12 Claims



1. An internal focusing zoom lens which performs focusing by extending, forward and backward, a movable focus lens group provided behind a fixed focus lens group, said internal focusing zoom lens comprising:

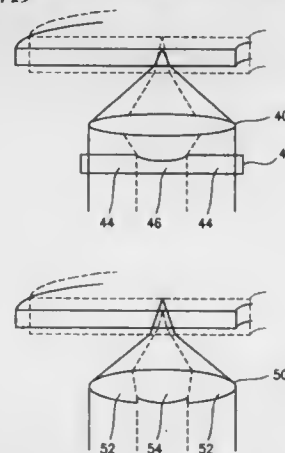
- a first fixing lens barrel in which a helicoid is formed to extend said movable focus lens in the direction of the optical axis;
- a focusing lens barrel supporting said movable focus lens group and connecting to said first fixing lens barrel in such a manner as to move forward and backward;
- a second fixing lens barrel in which a fixed focus lens frame for supporting said fixed focus lens frame is fixed at a point thereof; and

wherein when at least one of a lens hood, a wide convertor lens or a tele-convertor lens is attached to said second fixing lens barrel, said second fixing lens barrel is warped, but said helicoid of said first fixing lens barrel is not warped.

5,777,802
LENS BARREL WITH A CAM MECHANISM COMPRISED OF PLASTIC MATERIAL
Tamotsu Koiwai, Akiruno, and Mitsuhiro Sato, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 22, 1997, Ser. No. 787,239
Claims priority, application Japan, Jan. 24, 1996, 8-010310
Int. Cl.⁶ G02B 15/14
U.S. Cl. 359—700 11 Claims

1. A lens barrel comprising:
- a first lens having a first cam follower;

5,777,803
OBJECTIVE LENS FOR OPTICAL PICK-UP HEAD OF OPTICAL DISK DRIVE
Jau-Jiu Ju, Hsinchu; Tsung-Ming Yang, Chilong, and Tsung-Kai Chang, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed Feb. 23, 1996, Ser. No. 605,915
Int. Cl.⁶ G02B 13/18; 3/08
U.S. Cl. 359—719 20 Claims



1. An objective lens comprising:

a first portion having a first aspherical surface with a given surface curvature characteristic and aspherical coefficient, and focusing a light beam having a designated wavelength to a first focal point;

a second portion having a second aspherical surface with another given surface curvature characteristic and another aspherical coefficient, and focusing said light beam with designated wavelength to a second focal point;

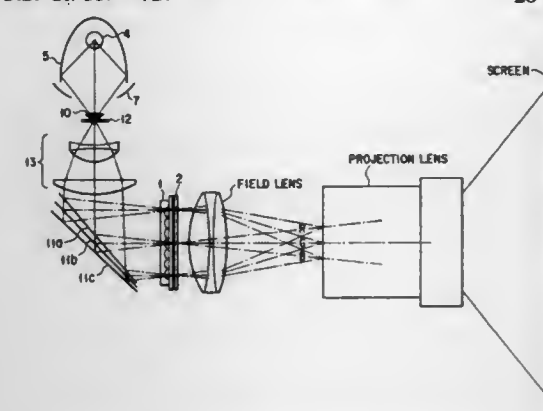
a third portion having a third aspherical surface having substantially the same given surface curvature characteristics and aspherical coefficients as that of said first aspherical surface and focusing said light beam with the designated wavelength to said first focal point;

a fourth portion having a fourth aspherical surface having substantially the same another given surface curvature characteristic and another aspherical coefficient as that of said second aspherical surface and focusing said light beam with designated wavelength to said second focal point;

wherein in a transparent substrate, said first focal point and said second focal point are spaced from one another at different depth; and

wherein the first and third portions have substantially the same first thickness and the second and fourth portions have substantially the same second thickness to facilitate a single lens construction having two different focal lengths.

5,777,804
PROJECTION-TYPE DISPLAY APPARATUS
Hiroki Nakamura, Chigasaki, and Yoshihiro Watanabe, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 27, 1995, Ser. No. 549,569
Claims priority, application Japan, Oct. 28, 1994, 6-264329
Int. Cl.⁶ G02B 17/00
U.S. Cl. 359—727 28 Claims



1. A projection-type display apparatus comprising:
- an elliptical condenser mirror having a concave reflecting surface which is part of a substantially elliptical surface;
- a light source arranged near a first focal point of said elliptical surface;
- a collimator lens having a focal point near a second focal point of said elliptical surface;
- an optical modulation element array having a lens array on said collimator lens side, the array including a plurality of optical modulation elements each having an area S and which are two-dimensionally arranged; and
- a projection lens,

wherein the following relations are satisfied:

$$m \cdot Q_1 / (f \cdot n) < 2 \sqrt{S/\pi}$$

$$Q_1 = L \cdot \frac{(2 - \mu)^2}{2\mu \sqrt{1 - \mu}} \quad \text{—continued}$$

(when said light source is arranged perpendicular to the elliptical condenser mirror)

$$Q_1' = L \cdot \frac{1 + \sqrt{1 - \mu}}{1 - \sqrt{1 - \mu}}$$

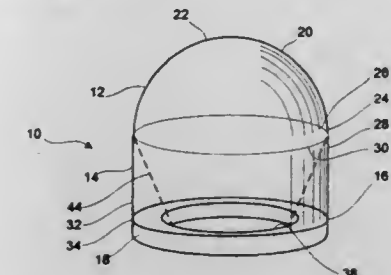
(when said light source is arranged parallel to the elliptical condenser mirror)

$$\mu = (B/A)^2$$

(A: major axis, B: minor axis)

where L is the length of a light-emitting portion of said light source, μ is the square of a ratio of the minor axis to the major axis of an ellipse of said elliptical condenser mirror, f is the focal length of said collimator lens, m is the distance between said lens array and an opening portion of said modulation element, n is the refractive index between said lens array and said modulation element, and each of Q_1 and Q_1' represents a diameter of an image in a direction perpendicular to an optical axis of said elliptical condenser mirror, formed at said second focal point of said elliptical surface.

5,777,805
MAGNIFYING DEVICE
Gary Duane Gilman, P.O. Box 19990, Denver, Colo. 80219
Filed Feb. 19, 1997, Ser. No. 800,525
Int. Cl.⁶ G02B 27/02
U.S. Cl. 359—803 11 Claims



6. A magnifying device, which includes:
- a first translucent portion of a predetermined size which includes a first end of a predetermined convex shape and a second end defining a circular cross-section surface portion;
- a generally cylindrical translucent second portion of a predetermined size and having a diameter substantially equal in diameter to said second end of said first portion and having a first end generally defining a circular cross-section surface portion concentrically integrally formed adjacent with said second end of said first portion and having second end defining an annular cross-section surface portion; and
- a third translucent portion of a predetermined size having a first end generally defining a circular cross-section surface portion concentrically integrally formed adjacent with said second end of said second portion and having a second end of a predetermined smaller diameter than said second end of said second portion and defining a generally planar circular surface portion, wherein a frustoconical angle is formed between about said second end of said first portion and said second end of said third portion such that when viewing from said convex end of said first portion through to said second end of said third portion a substantially magnified focused region is formed substantially at said second end of said third portion by virtue of said predetermined sizes.

5,777,806
OPTICAL SYSTEM SUPPORTING DEVICE WITH FLOWABLE DAMPING MATERIAL

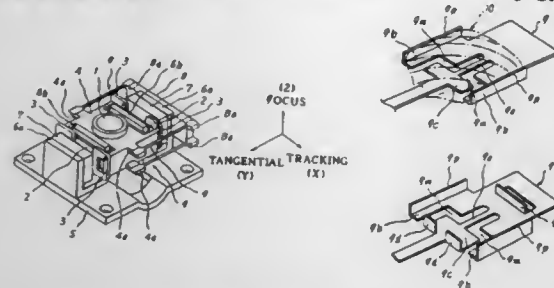
Tetsuo Ikegame, Masayasu Kanazawa, and Izumi Yamazaki, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Japan

Continuation-in-part of Ser. No. 236,566, Apr. 29, 1994, Pat. No. 5,579,176. This application Jun. 4, 1996, Ser. No. 658,152 Claims priority, application Japan, Apr. 30, 1993, 5-104395; Jun. 14, 1993, 5-167466

Int. Cl.⁶ G02B 7/02

U.S. Cl. 359—823

3 Claims



1. An optical system supporting device, comprising: an optical element, a holding member for holding the optical element, a supporting member for displaceably supporting the holding member, the supporting member, at at least one location thereof, including a bent part and at least one wall part so as to form an integral holding part thereon, the holding part for receiving a flowable damping material therein, and a driving means for driving the holding member in a predetermined direction.

5,777,807
DEFORMABLE MIRROR, IN PARTICULAR FOR A LASER BEAM MATERIAL MACHINING APPARATUS

Klaus Bar, Lauf; Reinhard Schmiedl, Weissenburg, and Brigitte Freisleben, Nurnberg, all of Germany, assignors to Diehl GmbH & Co., Nurnberg, Germany

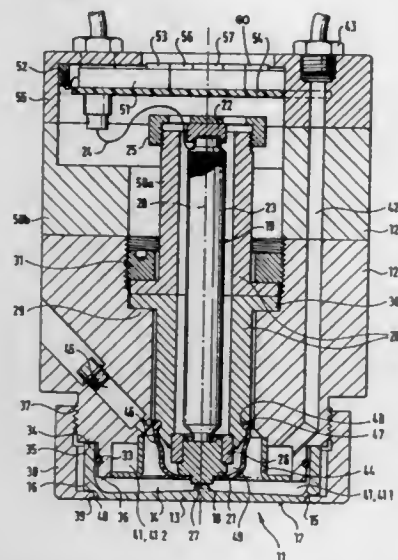
Filed Jun. 16, 1995, Ser. No. 491,025

Claims priority, application Germany, Jun. 17, 1994, 94 09 869 U

Int. Cl.⁶ G02B 7/182; 7/185; 7/195; 7/198

U.S. Cl. 359—845

17 Claims



1. A deformable mirror, for a laser beam material machining apparatus, including at least one translator; a housing for supporting said mirror, said at least one translator having a pressure

member for causing said at least one translator to be clamped between a rear side of a mirror plate and said housing; an electro-mechanical actuator enclosed in a jacket tube for operatively acting upon said pressure member, the combination of the jacket tube and the housing and the combination of elements comprising the pressure member, and a rear-end adaptor of said at least one translator in conjunction with the actuator each, respectively, being constituted of materials possessing linear coefficients of thermal expansion such that changes in temperature cause both of said combinations of elements to linearly expand to the same extent.

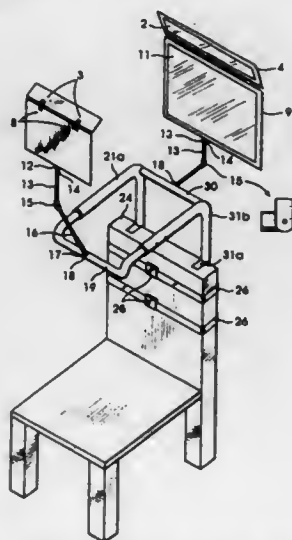
5,777,808
DUAL MIRROR BEAUTY ENSEMBLE
Robin Winona Rashad, Windy Hill Br 8000, Windy Hill Rd., Marietta, Ga. 30067

Filed Mar. 16, 1995, Ser. No. 439,221

Int. Cl.⁶ G02B 5/08; 7/182

U.S. Cl. 359—855

3 Claims



1. A dual mirror beauty ensemble for use in combination with a chair comprising: a base; a first mirror assembly having a first end and a second end, said first mirror assembly including a first frame and a first mirror positioned in said first frame; a first adjustable support having first and second ends, the first end of said first adjustable support is connected to said base and the second end of said first adjustable support is rigidly connected to a central portion of the first end of said first mirror assembly; a second mirror assembly having a first end and a second end, said second mirror assembly including a second frame and a second mirror positioned in said second frame; a second adjustable support having first and second ends, the first end of said second adjustable support is connected to said base and the second end of said second adjustable support is rigidly connected to a central portion of the first end of said second mirror assembly; said base including a blade at a right angle to a portion of said base for positioning said base onto a top shoulder of said chair; and at least one strap means for securing said base to a middle section of said chair; wherein the first ends of said first and second adjustable supports are mounted separately opposite each other on the top portion of said base and the first mirror of said first mirror assembly opposes the second mirror of said second mirror assembly, whereby a person sitting in said chair can view three front and back portions of a person's head in said first mirror assembly.

5,777,809
REFLECTION MIRROR FOR A VEHICLE LAMP AND A METHOD OF FORMING THE SAME
Norimasa Yamamoto, and Masahiro Maeda, both of Shizuoka, Japan, assignors to Kotto Manufacturing Co., Ltd., Tokyo, Japan

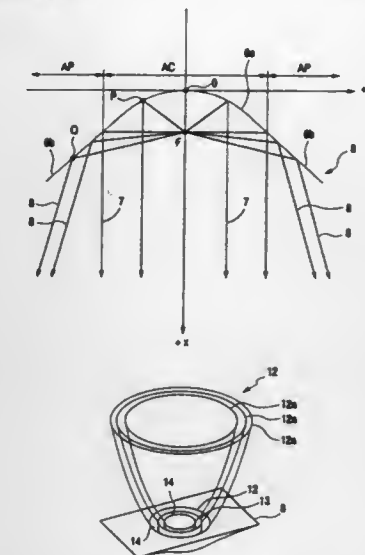
Filed Jul. 26, 1996, Ser. No. 686,675

Claims priority, application Japan, Jul. 28, 1995, 7-212399

Int. Cl.⁶ G02B 5/10; 5/08; 7/182; B60Q 1/04

U.S. Cl. 359—869

15 Claims



1. A reflection mirror for a vehicle lamp, the reflection mirror having a principal optical axis and comprising a reflection surface which includes a number of reflection steps defined by portions of respective paraboloids of revolution and disposed between adjacent ones of closed curves formed as lines of intersection of a group of the number of paraboloids of revolution with different focal distances and a fundamental surface for the reflection surface, wherein

- (1) the fundamental surface for said reflection surface comprises a first curved surface portion and a second curved surface portion connected to said first curved surface portion in a n-th order continuity ($N \geq 1$),
- (2) said first curved surface portion having a shape such that when a light beam, which is emitted from a point light source assumed to lie on said principal optical axis of said reflection mirror, is reflected at a reflection point on said first curved surface portion, the light beam reflected thereat being directed substantially parallel to said principal optical axis of said reflection mirror, and
- (3) said second curved surface portion having a shape such that when a light beam, which is emitted from said point light source, is reflected at a reflection point on said second curved surface portion, the light beam reflected thereat is diffused in a given direction.

5,777,810
REINFORCED SIGNAL MIRROR
Malcolm G. Murray, Jr., 220 E. Texas Ave., Baytown, Tex. 77520-5257

Continuation of Ser. No. 454,765, May 31, 1995, abandoned.

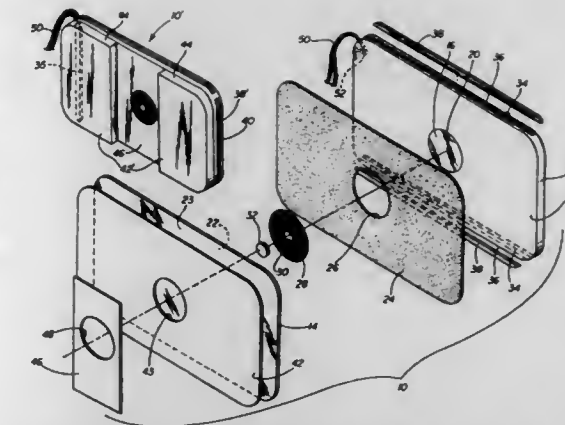
This application Nov. 12, 1996, Ser. No. 745,521

Int. Cl.⁶ G02B 5/08; 7/82; 5/12

U.S. Cl. 359—883

16 Claims

1. A signal mirror assembly, comprising: a first clear sheet having inner and outer faces; a layer of mirror reflective material covering said inner face of said first sheet and leaving a clear aperture in the center of said first sheet, said aperture defining a sighting window;



a second clear sheet having substantially the same shape as said first sheet, said second sheet having an inner face in laminated engagement with said inner face of said first sheet, wherein said mirror reflective layer is sandwiched between said inner faces of said first and second sheets; and a pliable reinforce engaging said first sheet to resist warping of said mirror assembly and allow reshaping of said assembly by back-bend correction to remove any previously induced warpage and prevent the warpage from returning fully.

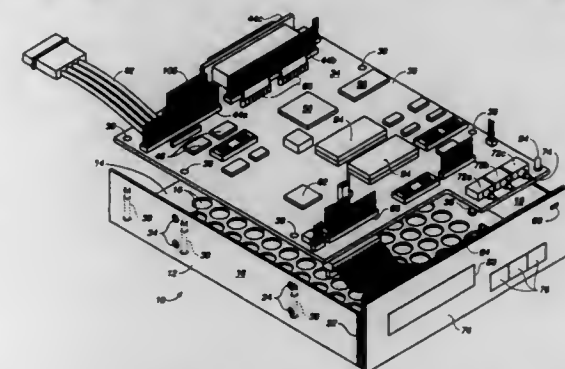
5,777,811
DIGITAL DATA DUPLICATING SYSTEM
Martin J. Bodo, Mountain View, Calif., assignor to Computer Performance, Inc., Santa Clara, Calif.

Filed Jul. 17, 1996, Ser. No. 680,640

Int. Cl.⁶ G11B 5/86

U.S. Cl. 360—15

27 Claims



1. A first data-duplicating system for copying digital data from a first information storage device to a second information storage device, the data-duplicating system being adapted for mounting in a space no larger than that required for a 5 1/4 inch, half-height Winchester hard disk drive, the data-duplicating system comprising:

- a tray-shaped chassis having opposing side walls that are spanned at one end by a front panel, said chassis having overall dimensions no larger than overall dimensions of the 5 1/4 inch, half-height Winchester hard disk drive, the side walls respectively including means for mechanically securing the data-duplicating system within such a space;
- an electronic circuit, mechanically secured within said chassis, that includes an electrical-power connector for supplying electrical power to said electronic circuit, a first-information-storage-device connector for coupling the first information storage device to said electronic circuit, a second-information-storage-device connector for coupling the second information storage device to said electronic circuit, said electronic circuit also including a digital logic circuit for reading digital data from the first information storage device and writing the read digital data to the second information storage device, and a

in the cylinder containing the selected data track by a track offset comprising a predetermined number of track spacings that will compensate for misalignment between the selected data head and the servo head that exceeds a track spacing; moving the servo head to the optimum track; and subsequently positioning the servo head with respect to the optimum track to displace the servo head from the optimum track in accordance with a predetermined thermal calibration relation that will compensate for misalignments between the data and servo heads and tracks that are less than a track spacing.

5,777,817

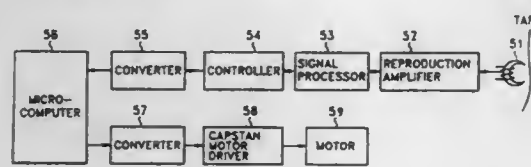
VCR TRACKING CONTROL METHOD AND APPARATUS COMPRISING A MICROCOMPUTER FOR GENERATING A CAPSTAN SPEED COMMAND BASED ON A TRACKING ERROR EXPRESSED AS A DIFFERENCE VALUE OF FREQUENCY COMPONENTS OF A PILOT SIGNAL

Jeong-tae Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea
Division of Ser. No. 278,137, Jul. 21, 1994. This application Nov. 8, 1996, Ser. No. 745,624
Claims priority, application Rep. of Korea, Jul. 21, 1993, 93-13793

Int. Cl.⁶ G11B 5/584; 15/52

U.S. Cl. 360—77.14

4 Claims



1. A tracking control apparatus in an 8 mm image device that includes a capstan motor and capstan driving means for controlling the motion of recording media, said apparatus comprising: detecting means for detecting a pilot signal and discriminating tracks recorded on said media; automatic track finding control means for outputting an automatic track finding error signal determined by a difference value based on frequency components of said detected pilot signal, as a tracking error signal; means for generating a variable capstan speed command from the tracking control value obtained by performing a predetermined gain control operation on said tracking error signal; means for performing a predetermined gain control operation on the capstan motor speed error obtained by comparing an actual capstan speed and said capstan speed command; and means for outputting a capstan speed control signal to said capstan driving means.

5,777,818

MAGNETIC HEAD POSITION DETECTING APPARATUS OF TAPE RECORDER

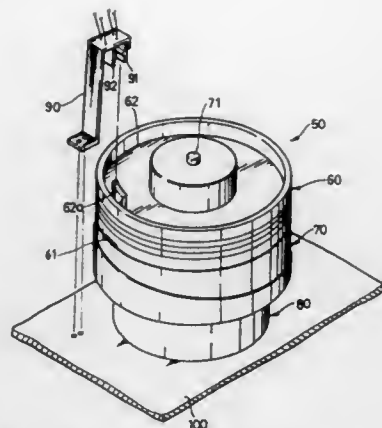
Ju-hyung Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Jan. 8, 1997, Ser. No. 780,223
Claims priority, application Rep. of Korea, Jan. 17, 1996, 1996-858; Jan. 17, 1996, 1996-861; Jan. 17, 1996, 1996-864
Int. Cl.⁶ G11B 15/14

U.S. Cl. 360—84

4 Claims

1. A magnetic head position detecting apparatus of a tape recorder having a deck, and a rotary drum including a plurality of magnetic heads therein and a rib at the circumference of an upper surface of the rotary drum, said magnetic head position detecting apparatus comprising:

a blocking plate having a predetermined width, formed on the upper surface of said rotary drum in vertical alignment with a corresponding one of said magnetic heads;



sensing means for sensing said blocking plate; and
a support, fixed on the deck, for supporting said sensing means.

5,777,819

MAGNETIC TAPE CASSETTE

Masato Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

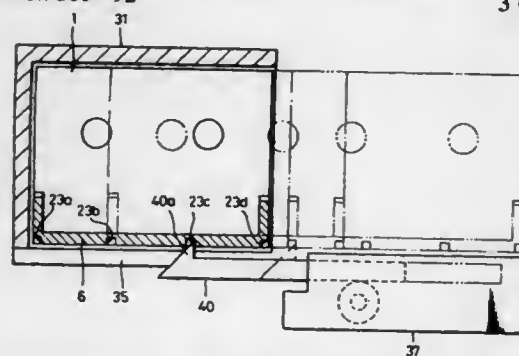
Continuation of Ser. No. 366,987, Dec. 30, 1994, abandoned, which is a division of Ser. No. 186,823, Jan. 26, 1994, Pat. No. 5,432,668, which is a continuation of Ser. No. 955,918, Oct. 2, 1992, abandoned, which is a continuation of Ser. No. 622,781, Dec. 6, 1990, abandoned. This application Mar. 18, 1997, Ser. No. 820,704

Claims priority, application Japan, Dec. 6, 1989, 1-141175 U

Int. Cl.⁶ G11B 15/68; 23/04; 23/087

U.S. Cl. 360—92

3 Claims



1. A cassette magazine and a plurality of cassettes for use with a cassette changer having a withdrawing member, comprising:
a cassette magazine having a plurality of accommodating portions, each said accommodating portion having a bottom wall with a slit formed therethrough for insertion therinto of a withdrawing member of a cassette changer; and
a plurality of magnetic tape cassettes adapted to be respectively accommodated in said plurality of accommodating portions of said cassette magazine and to cooperate with the withdrawing member inserted into said slit so that each cassette can be withdrawn from said cassette magazine during use, each of said magnetic tape cassettes being of a predetermined size and having front and rear portions spaced apart in a front-to-back direction and left and right portions spaced apart in a lateral direction, and including
a lid pivotally attached to said front portion; and
a plurality of cut-away portions formed on a front portion of said lid, each of said cut-away portions having straight sides in said front-to-back direction for engagement with the withdrawing member, so that any of said cassettes with said respective lid adjacent said bottom wall can be withdrawn from said cassette magazine.

5,777,820

CASSETTE HOLDER

Torsten Bieck, Waldachtal, Germany, assignor to fischerwerke, Artur Fischer GmbH & Co. KG, Waldachtal, Germany

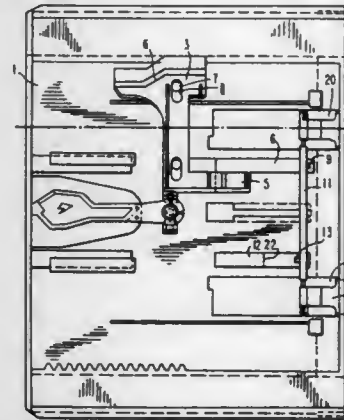
Filed Feb. 14, 1997, Ser. No. 800,479

Claims priority, application Germany, Mar. 14, 1996, 196 09 998.6

Int. Cl.⁶ G11B 17/00; 5/027

U.S. Cl. 360—96.5

7 Claims



1. A cassette holder for transverse storage of a magnetic tape cassette, digital cassette or a compact cassette, each of said cassette having two tape reel hubs and a thickened portion, said cassette holder comprising

a base plate (1);
a slider element (2) mounted on the base plate (1) so as to be extendable from a storage position to a removal position in a slider element movement direction;
a shaft (11) mounted on the slider element (2) and extending transverse to the slider element movement direction, said shaft (11) having at least one first turning pin (9) protruding therefrom;
a plurality of locking members (10) extending from the shaft (11) and engageable with the two tape reel hubs (17) when said slider element (1) with said cassette thereon is in the storage position; and
a movable actuating device (3) comprising control elements arranged on a lower-lying portion (15) of the slider element (2) and slidably mounted on the base plate (1) so that said actuating device (3) is movable on the base plate (1) transversely to the slider element movement direction by said thickened portion (18) of said cassette when said slider element (2) with said cassette is moved into the storage position, wherein said control elements include a control edge (4) and a control wedge (5), said control edge (4) on the actuating device (3) is arranged on said lower-lying portion (15) of the slider element (2) and projects through an opening (14) provided in the slider element (2) and, during insertion of said slider element (2) with said cassette (19) thereon into the storage position, said control edge (4) comes into contact with the slider element (2) to cause transverse movement of the actuating device (3), and the control wedge (5), during said transverse movement of the actuating device (3), comes into contact with the at least one first turning pin (9) protruding from said shaft (11) and, as a result of said contact, rotates and locks the locking members (10) extending from the shaft (11) in the tape reel hubs (17) of the cassette (19).

5,777,821

LOW SWAY SPACE CHASSIS FOR A DISC DRIVE HAVING A VIBRO-ACOUSTIC ISOLATOR

Kenneth L. Pottebaum, Yukon, Okla., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

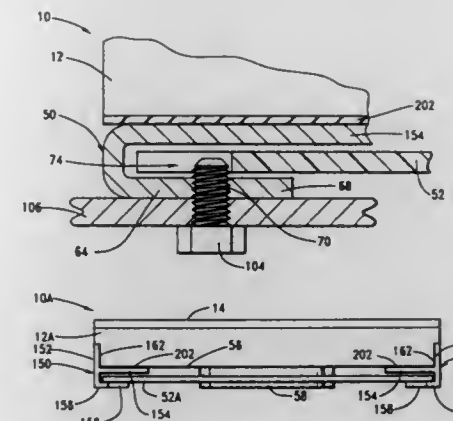
Filed Jun. 28, 1996, Ser. No. 671,704

Int. Cl.⁶ G11B 33/08

U.S. Cl. 360—97.02

12 Claims

1. A low sway space disc drive assembly having a rotatable disc assembly and a controllably positionable actuator adjacent the disc



assembly, the actuator including a head for reading and writing data from and to the disc assembly, respectively, the disc drive comprising:

a base deck having a base portion and side walls extending from the base portion, the base portion having an interior surface, an exterior surface, and a cross-sectional thickness, wherein the disc assembly and the actuator are mounted to the interior surface of the base;
a top cover engageable with the base deck to form a sealed environment for the disc assembly and the actuator;
a printed circuit board providing control electronics for the disc drive;
a vibro-acoustic isolator abuttingly adjacent the exterior surface of the base portion of the base deck, the vibro-acoustic isolator comprising a layer of damping material having a cross-sectional thickness substantially less than the cross-sectional thickness of the base portion of the base deck; and
a chassis supporting the disc drive, the chassis being substantial coextensive with the exterior surface of the base portion of the base deck and vibro-acoustic isolator while abutting the vibro-acoustic isolator, wherein the chassis, the vibro-acoustic isolator and the exterior surface of the base portion of the base deck form a laminate to facilitate constraint layer damping for the disc drive.

5,777,822

DISK STORAGE DRIVE

Bernhard Schuh, Baidt, Germany, assignor to Papst Licensing GmbH, Germany

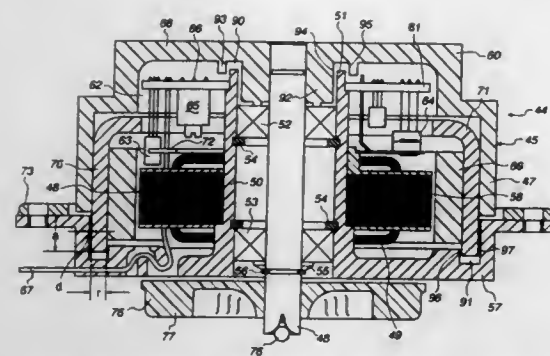
Continuation of Ser. No. 106,801, Aug. 16, 1993, Pat. No. 5,424,887, which is a continuation of Ser. No. 799,363, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 764,941, Sep. 24, 1991, abandoned, which is a continuation of Ser. No. 517,623, May 1, 1990, abandoned, which is a continuation of Ser. No. 208,864, Jun. 15, 1988, Pat. No. 4,922,406, which is a continuation of Ser. No. 16,469, Feb. 17, 1997, abandoned, which is a continuation of Ser. No. 765,376, Aug. 13, 1985, abandoned, which is a continuation of Ser. No. 335,483, Dec. 29, 1981, Pat. No. 4,535,373, which is a continuation-in-part of Ser. No. 127,404, Mar. 5, 1980, abandoned. This application Jun. 2, 1995, Ser. No. 458,339
Claims priority, application Germany, Dec. 29, 1980, 30 49 334.6

Int. Cl.⁶ G11B 5/012

U.S. Cl. 360—97.03

4 Claims

1. A disk storage device, comprising in combination:
a housing which surrounds a clean room;
a support member integral with said housing;
at least one rigid storage disk having a central opening;
at least one read/write head mounted on said housing for movement in operative relation to said at least one disk within said clean room; and
a brushless direct current motor for moving said at least one disk in operative relation to said at least one read/write head to



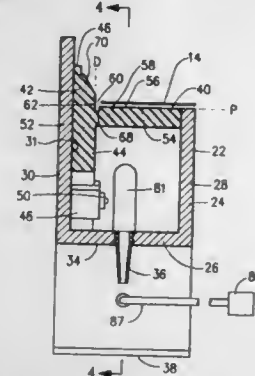
allow information to be stored on and retrieved from said at least one disk, said motor including a stator, a bearing and shaft assembly which includes a shaft aligned on a disk rotation axis and bearings affixed to said shaft, and a rotor supported on said bearing and shaft assembly for rotation about said disk rotation axis, said rotor being separated from said stator by a circular cylindrical air gap, the rotor including an operatively-engaged disk-support member extending through the central opening of the at least one disk to mount said at least one disk for rotation about the disk rotation axis in the clean room, said motor being mounted on said support member concentric with said disk rotation axis wherein said at least one disk, said disk support member, and said motor are positioned on the same side of said support member and said rotor is formed to cooperate with a portion of said housing to substantially enclose said stator and said air gap to minimize the transfer of contaminants from said stator and said bearings into said clean room.

5,777,823
TAPE TRANSPORT APPARATUS INCORPORATING POROUS AIR BEARING
Stephan E. Gavitt, 11480 W. Bear Creek Dr., Lakewood, Colo. 80227

Filed Feb. 27, 1996, Ser. No. 607,638
Int. Cl.⁶ G11B 15/60

U.S. Cl. 360—102

27 Claims



1. An air bearing adapted for use on a tape transport apparatus and connectable to an air source and operative to support a tape on a cushion of air as said tape is transported in a transport direction thereacross, comprising:

- (a) a housing including a channel piece having a bottom and a pair of spaced-apart sidewalls and including end closures disposed on each opposite end of said channel piece and extending between said sidewalls thereby to define an interior for said housing, said housing including an air inlet in fluid communication with the interior and adapted for connection to said air source; and
- (b) a bearing member having a non-helical bearing surface, said bearing member disposed on said housing and extending between said sidewalls from one end closure to another end closure in spaced relation to the bottom of said channel piece thereby to enclose the interior to form a plenum chamber in

fluid communication with said air inlet, said bearing member located so that said tape is transported across the non-helical bearing surface in a transport direction from one end closure to another, said bearing member being fabricated out of a porous material that allows pressurized air in the plenum chamber to pass therethrough and out of the bearing surface to produce the cushion of air.

5,777,824
SIDE-DISPOSED THIN FILM MAGNETIC HEAD AND METHOD OF FABRICATION THEREOF

G. Robert Gray, Fremont, Calif., assignor to AIWA Research and Development, Inc., Fremont, Calif.

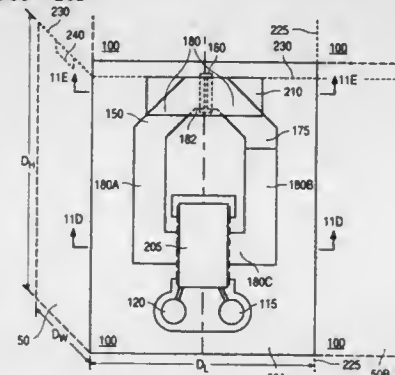
Continuation of Ser. No. 297,191, Aug. 26, 1994, abandoned.

This application May 13, 1996, Ser. No. 645,182

Int. Cl.⁶ G11B 5/127; 5/60; 15/64; 17/32

U.S. Cl. 360—103

32 Claims



1. A slider/head assembly comprising:

- a slider substrate having a generally hexahedral structure with five substantially flat surfaces including a base surface, a leading end surface, a trailing end surface, a first side surface and a second side surface, and a top surface including a rectangular groove extending from the leading end surface to the trailing end surface, the first side surface abutting the top surface at a common edge;
- a magnetic core coupled to the first side surface of the slider substrate, the magnetic core forming a solid, substantially annular structure with substantially the same cross-section and thickness throughout the structure, the substantially annular structure being plated from a magnetically plateable material, the substantially annular structure being opened by a gap region extending from an inner edge of the substantially annular structure to an outer edge of the substantially annular structure, the gap region opening onto the common edge of the slider substrate;
- a hard protective layer covering the gap region and covering a portion of the magnetic core substantially from the inner edge of the substantially annular structure to the outer edge of the substantially annular structure at the common edge of the slider substrate, the hard protective layer extending to a substantially planar edge that is substantially coplanar with the top surface of the slider substrate; and
- a substantially helically-shaped coil, the coil is plated encircling a portion of the magnetic core removed from the portion of the magnetic core covered by the hard protective layer.

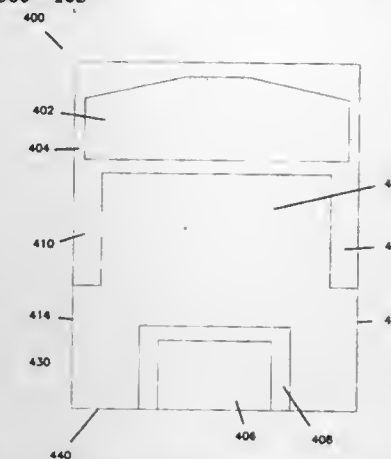
5,777,825
NEGATIVE PRESSURE STEP PAD AIR BEARING DESIGN AND METHOD FOR MAKING THE SAME
Lee K. Dorius, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1996, Ser. No. 706,244

Int. Cl.⁶ G11B 5/60

U.S. Cl. 360—103

32 Claims



1. A slider with reduced altitude sensitivity having a first side, a second side and a leading and trailing edge, comprising: a leading step surface, formed at a first etch depth, the leading step surface having two side rails joined together adjacent to the leading edge and extending toward the trailing edge, forming a negative pressure pocket there between; a trailing step surface, formed at the first etch depth; a front pad, formed on the leading step surface at a second etch depth, the first etch depth being greater than the second etch depth; and a trailing pad, formed on the trailing step surface at the second etch depth.

5,777,826
LOAD BEAM FOR SUPPORTING A TRANSDUCER HEAD IN A DISK DRIVE

Hiroyasu Tsuchida, Yokohama; Akihiko Aoyagi, and Tatsuya Endo, both of Kanagawa-ken, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

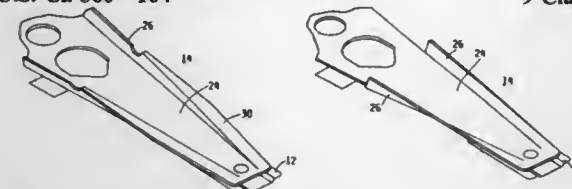
Filed Mar. 29, 1996, Ser. No. 623,944

Claims priority, application Japan, Mar. 31, 1995, 7-075213

Int. Cl.⁶ G11B 5/48

U.S. Cl. 360—104

9 Claims



6. A system for storing data, comprising:
 - (a) a housing;
 - (b) a data storage disk having a mating surface;
 - (c) a spindle motor mounted to the housing and adapted for rotating the data storage disk;
 - (d) an actuator movably mounted to the housing;
 - (e) a transducer; and
 - (f) a load beam having a first end operatively coupled to the actuator and a second end supporting the transducer, the load beam including a flat base surface and flanges extending along longitudinal sides of the flat base surface for reinforcing the load beam, the flanges including standing portions intersecting the base at a first angle and bent portions that project at a second angle from the standing portion laterally outward with respect to the flat base surface, wherein the flat base

surface and at least portions of the bent portions converge at the second end of the load beam, the bent portions being substantially flush with the flat base surface at the second end of the load beam.

5,777,827
HORIZONTAL TYPE MAGNETO-RESISTIVE HEAD USING FLUX GUIDE

Yoshifumi Mizoshita; Takao Koshikawa; Hitoshi Kanai; Junichi Kane; Yoshinori Otsuka, and Yukinori Ikegawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

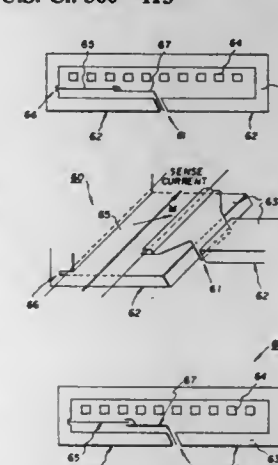
Division of Ser. No. 435,379, May 5, 1995, Pat. No. 5,583,726, which is a continuation of Ser. No. 938,163, Dec. 3, 1992, abandoned. This application Sep. 6, 1996, Ser. No. 709,270

Claims priority, application Japan, Oct. 21, 1991, 3-272370

Int. Cl.⁶ G11B 5/33

U.S. Cl. 360—113

4 Claims

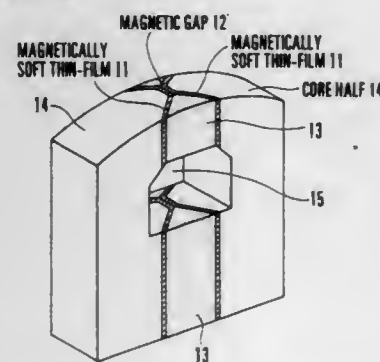


1. A horizontal composite magneto-resistive head for magnetically performing recording in a recording mode and reproducing in a reproducing mode, including a guide surface for guiding a recording medium, a gap for making magnetic flux pass through the gap in the recording mode and the reproducing mode and a recording coil used in the recording mode, said head being fabricated on a substrate so that the guide surface is in parallel to a surface of the substrate, said head comprising:

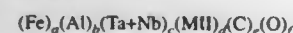
- magnetic shield substance layers used as a magnetic core in the recording mode by a recording current flowing through the recording coil provided nearby said magnetic shield substance layers and as a magnetic shield in the reproducing mode, forming the guide surface at the outside of said magnetic shield substance layers and the gap at the guide surface;
- a magneto-resistive layer operating under a magneto-resistive effect in the reproducing mode, for performing the reproducing by causing a sense current to flow through the magneto-resistive layer in response to magnetic flux coming from the recording medium through the gap, said magneto-resistive layer having an effective area valid for the magneto-resistive effect;
- a magnetic flux guide layer provided between the guide surface and the magneto-resistive layer through the gap for guiding the magnetic flux received at the gap to the magneto-resistive layer in the reproducing mode, said magnetic flux guide layer being formed so that an end of said magnetic flux guide layer is extended to the gap and has a width equal to or narrower than a width of a track of the recording medium and another end of said magnetic flux guide layer is magnetically connected with the magneto-resistive layer and has a width approximately equal to a side of the effective area;
- a space formed by the magnetic shield substance layers for placing the effective area of said magneto-resistive layer in the middle thereof said space having a size enough to prevent

the magnetic flux flowing through the magneto-resistive layer from leaking to the magnetic shield substance layers; and a narrow space provided at a corner of said space for accepting a side of the magneto-resistive layer, opposite to the side connected with said magnetic flux guide layer, said narrow space having a size larger than a size of said opposite side of the magneto-resistive layer, wherein a part of said magnetic shield substance layers is between the gap and said magneto-resistive layer and expanded wider than the effective area of said magneto-resistive layer and another part of said magnetic shield substance layers is narrowed so that the edge of said another part has a width wider than the end width of said magnetic flux guide layer at the gap.

5,777,828
MAGNETIC ALLOY AND MAGNETIC HEAD HAVING AT LEAST A PART MADE OF THE MAGNETIC ALLOY
Makoto Kameyama, Chiba-ken; Masaaki Matsushima, Kanagawa-ken, and Michio Yanagi, Saitama-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 4, 1996, Ser. No. 627,266
Claims priority, application Japan, Apr. 11, 1995, 7-084988
Int. Cl.⁶ G11B 5/147; H01F 10/00
U.S. Cl. 360—126



1. A magnetic alloy characterized by being made of a magnetically soft material of a composition expressed by the following composition formula:

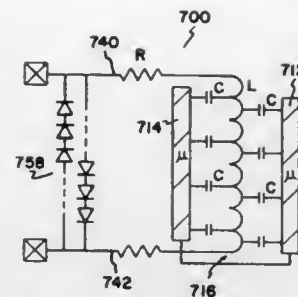


where a, b, c, d, e and f respectively represent values of composition ratio in atomic percentage, Mn represents at least one of elements Ag and Cu, and said values a, b, c, d, e and f satisfy the following conditions:

$$\begin{aligned} a+b+c+d+e+f &= 100 \\ 0.5 \leq b &\leq 20 \\ 2 \leq c &\leq 25 \\ 0.05 \leq d &\leq 5 \\ 0.5 \leq e &\leq 25 \\ 0.2 \leq f &\leq 8. \end{aligned}$$

5,777,829
METHOD AND APPARATUS FOR PROVIDING ELECTROSTATIC DISCHARGE PROTECTION FOR AN INDUCTIVE COIL OF A MAGNETIC TRANSDUCER
Steven H. Voldman, South Burlington, Vt., and Albert J. Wal-lash, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 8, 1996, Ser. No. 728,297
Int. Cl.⁶ G11B 5/10; 5/17

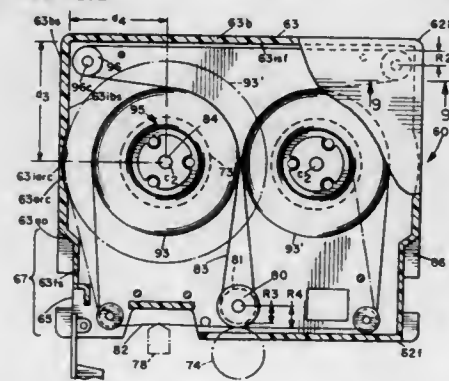
U.S. Cl. 360—128 35 Claims
1. A inductive head assembly, comprising:
an inductive coil having a first turn and a last turn; and
an electrostatic discharge element, electrically coupled to the inductive coil, for dissipating electrostatic charge from the



inductive coil, the electrostatic discharge element being electrically coupled across the first and last turns of the inductive coil.

5,777,830
BELT-DRIVEN TAPE CARTRIDGE HAVING INCREASED TAPE CAPACITY
Andrew Wrobel, La Jolla; James A. Eggebeen, San Diego, and Robert L. Derhaag, Temecula, all of Calif., assignors to Gigatek Memory Systems, La Costa, Calif.
Filed Oct. 9, 1996, Ser. No. 728,312
Int. Cl.⁶ G11B 23/02

U.S. Cl. 360—132 27 Claims

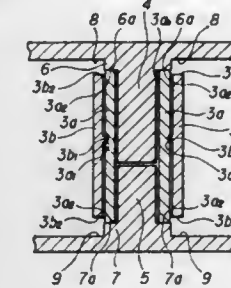


1. A data storage tape cartridge positionable in a drive having drive means, the cartridge comprising:

a cover having a front, back, top, and first and second sides, each of the first and second side having at least a front section and a back section that is offset from the front section by an offset section disposed between the front and back sections, wherein the distance between the first side's back section to the second side's back section is wider than the distance between the first side's front section to the second side's front section;
a base plate having a front and a back being of substantially equal width, and a first and second side being of substantially equal length, the base plate further having a top surface, the base plate top surface having mounted to it the cover with the front of the cover substantially aligned with the front of the base plate and the back of the cover substantially aligned with the back of the base plate, the cover and the base plate forming a housing having a front formed at the front of the base plate and the front of the cover, the housing having a height whereby the cartridge is sized to fit in the drive;
a media access opening formed in the front of the housing;
a drive opening formed in the front of the housing;
two hubs rotatably mounted on the base plate in the housing, each hub having a respective center axis that is parallel to the other hub's respective center axis, and each hub being disposed such that at least one cover side offset section is located between the front of the housing and a straight line passing parallel to the housing front and passing from the first and second side of the baseplate through the hub center axis of both hubs;
tape media wrapped around the two hubs in the housing to form two tape packs, the tape media being accessible from the outside of the housing through the media access opening;

a belt driving roller rotatably mounted in the housing at the front of the base plate and accessible to the drive means through the drive opening;
a pair of belt guide rollers rotatably mounted in the housing at the rear of the base plate; and
an elastic belt wrapped around the belt driving roller, belt guide rollers, and the two tape packs for rotating the hubs in response to rotation of the belt driving roller by the drive means.

5,777,831
TAPE CASSETTE
Toshikazu Konno, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 295,221, Aug. 24, 1994, abandoned, which is a continuation of Ser. No. 18,441, Feb. 16, 1993, abandoned. This application Nov. 6, 1996, Ser. No. 746,153
Claims priority, application Japan, Feb. 18, 1992, 4-061015
Int. Cl.⁶ G11B 23/02; 23/04
U.S. Cl. 360—132 8 Claims

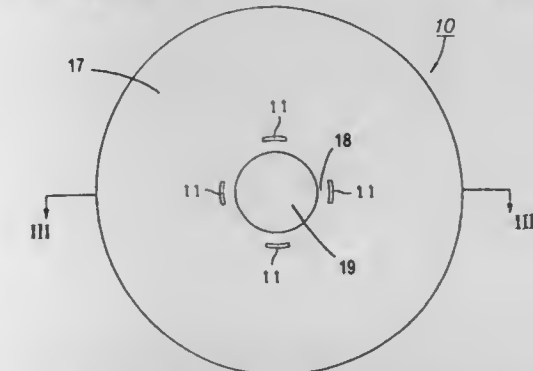


1. A tape cassette in which a tape is accommodated in a frame body comprising upper and lower half members and is wound around a pair of reels, comprising:

tape guide means for guiding the running position of the tape, said tape guide means having a substantially cylindrical fixed member having an axial bore and a substantially cylindrical tubular rotating member concentrically arranged around said fixed member, said fixed member having a height greater than a height of said rotating member,
first and second bosses projected from respective inner flat surfaces of the upper and lower half members into said bore of said fixed member in respective first and second directions for securing said fixed member to the cassette, said rotating member being freely rotatably mounted on the outer peripheral surface of said fixed member and being prevented from shifting axially relative to said fixed member by a projection formed on an inner peripheral surface of said rotating member and extending inwardly in a radial direction thereof and a groove formed on an outer peripheral surface of said fixed member and extending inwardly in a radial direction thereof, said projection being engageable with said groove for preventing axial shifting,
first and second raised step means arranged peripherally around said first and second bosses and having respective heights projecting beyond the respective inner flat surfaces of the upper and lower half members in said first and second directions for contacting respective end surfaces of said fixed member, said first and second raised step means extending respectively radially from a central axis of said first and second bosses a distance less than an inner peripheral radius of said tubular rotating member, wherein the heights of said first and second raised step means and said height of said fixed member determine a distance between said inner flat surfaces of said upper and lower half members so that A distance is created between respective end surfaces of said tubular rotating member and said inner flat surfaces of said upper and lower half members.

5,777,832
DISK HAVING STRESS RELIEVING ZONES FOR USE WITH A DISK CLAMPING DEVICE IN A HARD DISK DRIVE

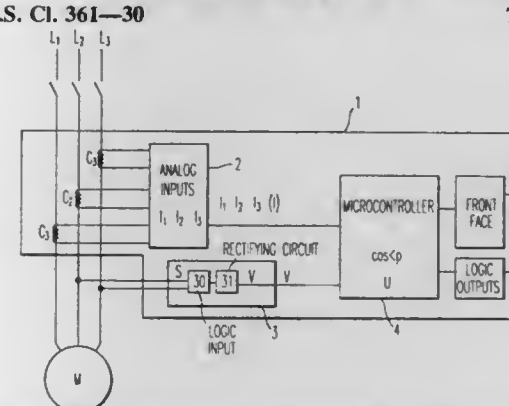
Seung-Young Yi, and Woo-Cheol Jeong, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Jan. 10, 1997, Ser. No. 781,632
Claims priority, application Rep. of Korea, Jan. 11, 1996, 1996 441; Aug. 6, 1996, 1996 32755
Int. Cl.⁶ G11B 5/82
U.S. Cl. 360—135 25 Claims



1. A disk for a hard disk drive, said disk being clamped to a shaft of the hard disk drive having a hollow center and an outer periphery, said disk comprising:
an annular clamped zone centered and located adjacent to the center of a circular disk surrounded by an annular memory containing representations of digital information;
a stress and strain relieving zone positioned on said disk in an annular ring adjacent to said clamped zone; and
a magnetic head landing zone positioned between said outer periphery of said disk and said stress and strain relieving zone, said stress and strain relieving zone attenuating the transmission of deformation, warpage, stress and strain from said clamped zone to said magnetic head landing zone when said disk is clamped to the shaft of said hard disk drive.

5,777,833
ELECTRONIC RELAY FOR CALCULATING THE POWER OF A MULTIPHASE ELECTRIC LOAD BASED ON A RECTIFIED WAVE SIGNAL AND A PHASE CURRENT

Jean-Marc Romillon, Longnes, France, assignor to Schneider Electric SA, Boulogne Billancourt, France
Filed Jan. 24, 1997, Ser. No. 789,181
Claims priority, application France, Feb. 2, 1996, 96 01466
Int. Cl.⁶ H02H 5/04
U.S. Cl. 361—30 7 Claims



1. An electronic relay for a multiphase electric load, said electronic relay comprising:
a plurality of sensor devices that supply a phase current for each phase;

5,777,840

NON POLAR TANTALUM CAPACITOR

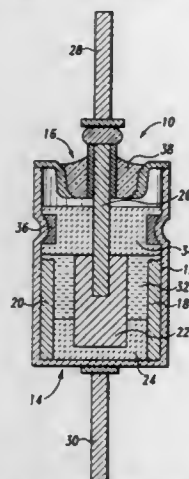
Thomas A. Oney, Greencastle, Ind., assignor to Yosemite Investment, Inc., Indianapolis, Ind.

Filed Oct. 29, 1996, Ser. No. 740,500

Int. Cl.⁶ B65D 51/00

U.S. Cl. 361—519

4 Claims



1. A capacitor having a tantalum outer case with a bottom and an open end, an electrode including a tantalum shell carried within and against an inner wall of the case, an additional electrode including a tantalum slug carried within and electrically isolated from the tantalum shell, a liquid electrolyte disposed between the tantalum shell and tantalum slug, closing means closing the open end, and electrical terminals electrically connecting the tantalum outer case and the tantalum slug, the electrode tantalum shell and the tantalum slug anodized to substantially the same capacitance to effect a non-polar capacitor and wherein such capacitance is at least twice a rated capacitance of the capacitor.

5,777,841

METHOD OF QUALIFICATION TESTING OF DC-DC CONVERTERS

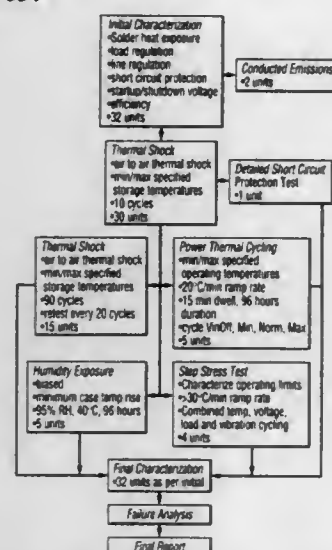
Kevin Patrick Stone, and Ken David Ellacott, both of Nepean, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 7, 1997, Ser. No. 813,263

Int. Cl.⁶ G06F 15/00

U.S. Cl. 364—554

12 Claims



10. A method of qualification testing of a group of DC—DC converters, comprising the steps of:

(1) testing operation performance of all of the DC—DC converters the group, under the conditions of normal temperature;

- (2) testing thermal coefficients of expansion of a certain number of the DC—DC converters tested at step (1), upon application of thermal shock;
- (3) retesting thermal coefficients of expansion of a certain number of the DC—DC converters tested at step (2) at a specific number of cycling;
- (4) testing functionality of a certain number of the DC—DC converters tested at step (2), upon application of power and thermal cycling;
- (5) testing design margin of a certain number of the DC—DC converters tested at step (2), under step changes in temperature;
- (6) testing manufacturing flaws of a certain number of the DC—DC converters tested at step (2), under the conditions of biased humidity;
- (7) testing RF and/or audio emission of a certain number of the DC—DC converters tested at step (1);
- (8) testing short circuit protection of a certain number of the DC—DC converters tested at step (2); and
- (9) performing analysis using capability ratios to determine whether the failures of the group of the DC—DC converters are failed to be qualified, on the basis of short term and mid term capability ratios which are defined by upper and lower specification limits, mean and standard deviation.

5,777,842

TRANSFORMER STATION AND BREAKER APPARATUS

Masanori Tsukushi, Hitachi; Youichi Ohshita, Hitachinaka; Ken'ichi Natsui; Yuzuru Kamata, both of Hitachi; Makoto Yano, Mito; Noriyuki Yaginuma, and Katsuhiko Shiraishi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

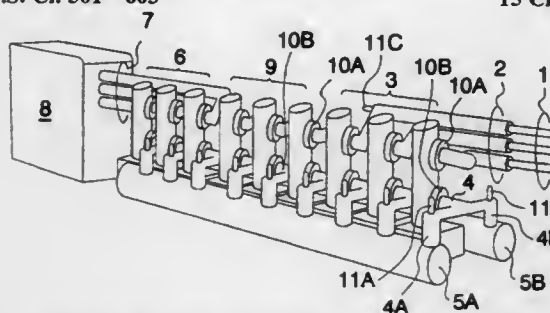
Filed Apr. 24, 1996, Ser. No. 636,266

Claims priority, application Japan, Apr. 26, 1995, 7-101883; Jun. 20, 1995, 7-152966

Int. Cl.⁶ H02B 1/04

U.S. Cl. 361—603

15 Claims



1. A transformer station comprising, at least two power transmission lines adapted to receive electric power, a first bus bar connected to said power transmission lines to receive the electric power therefrom, a transformer connected to said first bus bar to transform voltage of the electric power supplied from said first bus bar, and a first breaker electrically connected between one of said power transmission lines and said first bus bar and a second breaker electrically connected between said transformer and said first bus bar, and wherein said breakers are aligned along an imaginary line extending substantially parallel to said first bus bar.

5,777,843

POWER DISTRIBUTION BOX AND HOUSING ASSEMBLY

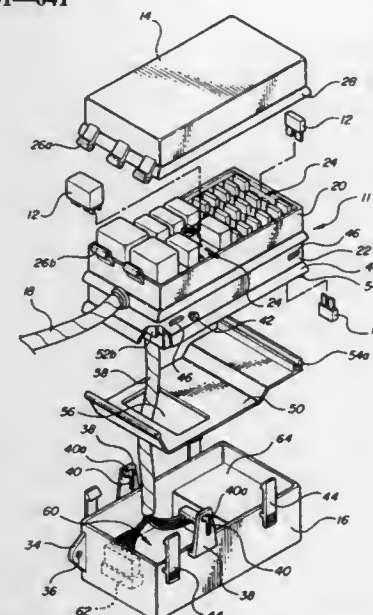
Thomas Matthew Younce, Livonia, Mich., assignor to Yazaki Corporation, Tokyo, Japan

Filed Jul. 12, 1996, Ser. No. 678,812

Int. Cl.⁶ H02B 1/26

U.S. Cl. 361—641

10 Claims



1. A power distribution box and housing assembly for mounting within an engine compartment, the assembly comprising: a power distribution box having an upper surface and an opposite lower surface, the upper and lower surfaces both having means for receiving electrical components; an upper housing attachable to the power distribution box to restrict access to the power distribution box upper surface; a lower housing having means for fixedly mounting the lower housing within the engine compartment; and hinge means connecting the lower housing with the power distribution box, the power distribution box pivotable about the hinge means between a closed position wherein the lower surface of the power distribution box is enclosed by the lower housing and an open position wherein the lower surface of the power distribution box is not enclosed by the lower housing.

5,777,844

ELECTRONIC CONTROL WITH HEAT SINK

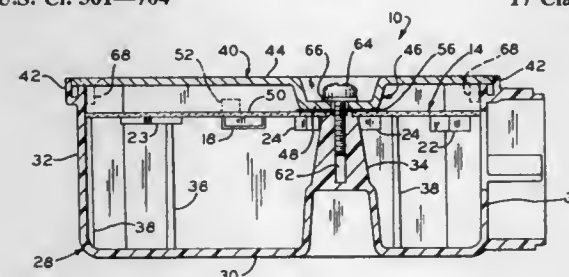
James R. Kiefer, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Aug. 30, 1996, Ser. No. 705,605

Int. Cl.⁶ H05N 7/20

U.S. Cl. 361—704

17 Claims



1. An electronic control comprising: a printed circuit board made of electrically insulating material and having circuitry thereon including at least one electrical component which generates heat in operation that must be

dissipated to prevent failure, the heat-generating electrical component being mounted on a first face of the printed circuit board;

a heat sink for transferring heat from the heat-generating electrical component on the printed circuit board, the heat sink comprising a plate made of thermally conductive material, the plate including a depression having a bottom wall lying generally in a plane, at least portions of the plate adjacent to the depression being disposed out of the plane to one side thereof;

the heat sink being disposed adjacent to a second face of the printed circuit board, the bottom wall of the depression being in thermal contact with the second face of the printed circuit board generally opposite the heat-generating electrical component on the first face of the printed circuit board, the heat sink and printed circuit board being constructed and arranged for transferring heat through the printed circuit board generally from the first face to the second face and thence to the heat sink, the printed circuit board electrically isolating the heat sink from the circuitry on the printed circuit board.

5,777,845

HIGH DENSITY REDUNDANT ARRAY OF INDEPENDENT DISKS IN A CHASSIS HAVING A DOOR WITH SHOCK ABSORBERS HELD AGAINST THE DISKS WHEN THE DOOR IS CLOSED

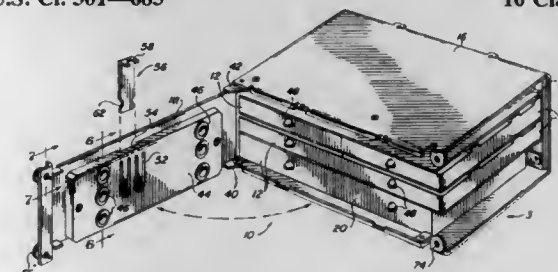
Richard G. Krum, Thousand Oaks, and Virat Thantrakul, La Crescenta, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed May 24, 1995, Ser. No. 448,761

Int. Cl.⁶ G06F 1/16; H05K 7/10; G11B 33/08

U.S. Cl. 361—685

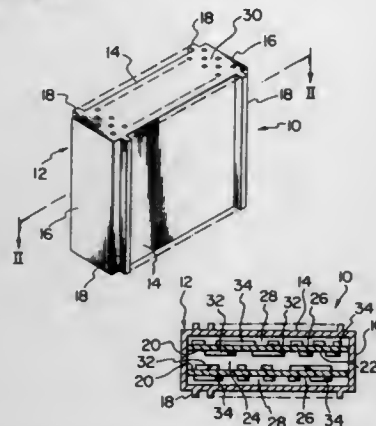
16 Claims



1. A disk array, comprising: a plurality of electronic modules; a mainframe chassis including an access door pivotable between a first position permitting the electronic modules to be placed within the chassis, and a second position wherein the access door encloses and supports the electronic modules in connection with the remainder of the chassis, wherein the access door includes means for controlling mechanical shock between the chassis and the electronic modules, wherein the mechanical shock controlling means includes shock absorbing means for engaging at least one of the electronic modules when the access door is closed to its second position, and wherein the shock absorbing means includes a spring-loaded pad adjacent to an interior surface of the access door, configured to engage a keeper extending from a respective one of the electronic modules; a mother board fixed within the chassis opposite the access door, including means for interconnecting electrical signals between the electronic modules, wherein at least some of the electronic modules comprise disk drives forming a redundant array of independent, or inexpensive, disks (RAID); and a RAID controller within the chassis, electrically connected to the interconnecting means.

5,777,846
CIRCUIT PACKS AND CIRCUIT PACK AND SHELF ASSEMBLIES
 Hasler R. Hayes, Munster; Michael H. Daniels, Kanata, and John C. Atkinson, Ottawa, all of Canada, assignors to North-ern Telecom Limited, Montreal, Canada
 Filed May 30, 1996, Ser. No. 655,401
 Int. Cl.⁶ H05K 7/20
 U.S. Cl. 361—690

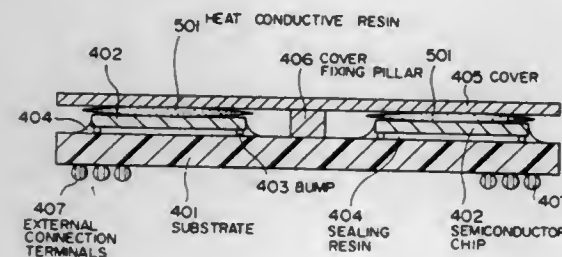
9 Claims



1. A circuit pack comprising two printed circuit boards within a housing, each Printed circuit board having a first surface and a second surface, the printed circuit boards being spaced apart with the first surfaces confronting each other and with the second surfaces facing and spaced from walls of the housing to provide air flow passages between the confronting first surfaces and between each second surface and a spaced wall of the housing, the passages having openings at each end of the housing, high temperature operating electronic components providing a first group of components, and relatively low temperature operating components comprising a second group of components with one of the groups of components being located on a first board surface and the other group of components being disposed on at least one second board surface, and wherein the passage between the confronting first surfaces and the passage between the at least one second board surface and its spaced wall of the housing are of different widths so as to balance thermal drag over the two groups of components.

5,777,847
MULTICHIP MODULE HAVING A COVER WITH SUPPORT PILLAR
 Kenichi Tokuno, and Akihiro Dohya, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
 Continuation of Ser. No. 534,863, Sep. 27, 1995, abandoned.
 This application Mar. 6, 1997, Ser. No. 812,859
 Int. Cl.⁶ H05K 7/20
 U.S. Cl. 361—705

49 Claims



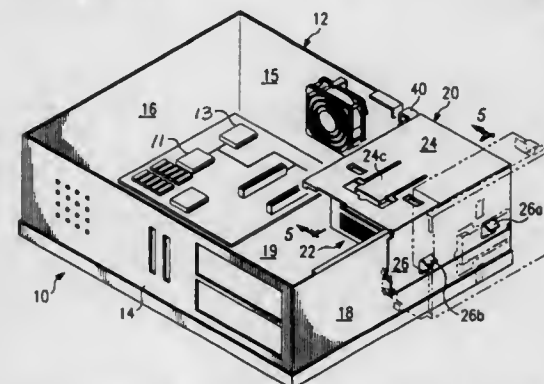
1. A device comprising:
 a substrate having a plurality of circuit chips fixed in a predetermined pattern of locations on a side of said substrate, each of said circuit chips being electrically connected to electrodes of said substrate;
 a cover for covering said circuit chips, said cover comprising at least one plate element; and

a fixing and supporting means located in a central location of said substrate for fixing said cover to said substrate at a predetermined level over said circuit chips and providing a sole support for said cover, wherein, said fixing and supporting means comprises at least one pillar.

5,777,848
POWER SUPPLY MOUNTING ASSEMBLY FOR ELECTRONIC EQUIPMENT
 Andrew McAnally, and Stephen Cook, both of Georgetown, Tex., assignors to Dell Computer Corporation, Round Rock, Tex.

Filed Dec. 20, 1996, Ser. No. 771,012
 Int. Cl.⁶ G06F 1/16; H05K 7/16
 U.S. Cl. 361—725

21 Claims



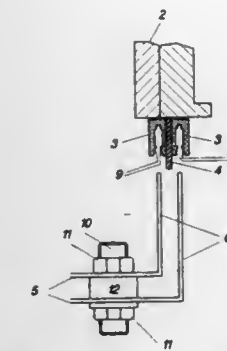
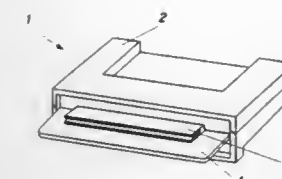
1. A computer system comprising an enclosure: a microprocessor mounted in the enclosure; a memory module operably connected to the microprocessor; a power supply; a mounting bracket adapted to receive the power supply; at least one retaining member on the bracket engaging the power supply for retaining the power supply in the bracket; means for pivotally mounting the bracket to the enclosure for movement between a position in which the power supply is mounted in the enclosure and a position in which the power supply extends out of the enclosure, the enclosure having a floor and four walls extending perpendicular to the floor, the power supply being supported by the bracket above the floor in a mounted position; a portion of two walls of the enclosure being cut-away to receive the mounting bracket and the power supply; and the mounting bracket comprising two sections extending in a perpendicular relationship and, in the mounted position, the bracket and power supply respectively form a portion of the two walls of the enclosure.

5,777,849
POWER SEMICONDUCTOR MODULE HAVING ELONGATE PLUG CONTACTS
 Reinhold Bayerer, Reichelsheim; Gerald Hilpert, Lauchringen, both of Germany, and Rolf Schifferli, Mandach, Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

Filed Feb. 6, 1996, Ser. No. 597,133
 Int. Cl.⁶ H01L 23/48; 23/12
 U.S. Cl. 361—730

7 Claims

1. A power semiconductor module comprising:
 a module housing;
 a power semiconductor circuit provided in the module housing;
 at least two elongate plug contacts for providing at least two electrical connections, said at least two elongate plug contacts extending out of the module housing; and

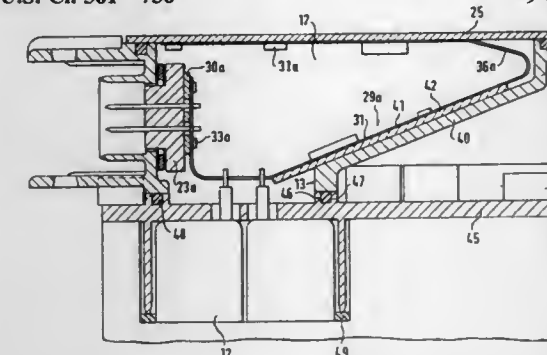


wherein an insulating plate is provided between the at least two elongate plug contacts.

5,777,850
BUILT-IN CONTROL DEVICE FOR ACTUATING LOADS WITH CONDUCTOR FOIL-COVERED PRINTED CIRCUIT BOARD
 Gert Jakob, Stuttgart, and Ralph Schmitz, Moeckmühl, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
 PCT No. PCT/DE94/00648, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO95/00363, PCT Pub. Date Jan. 5, 1995
 PCT Filed Jun. 10, 1994, Ser. No. 553,680
 Claims priority, application Germany, Jun. 26, 1993, 43 21 331.6

Int. Cl.⁶ H05K 1/14; 5/02; H01R 9/09
 U.S. Cl. 361—736

9 Claims

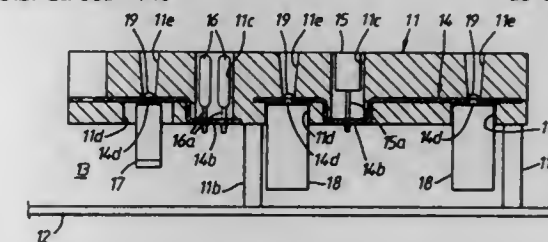


1. A built-in control device for actuating loads, comprising a housing; a power output stage received in said housing and having at least one printed circuit board extending in a longitudinal direction and provided with an electronic circuit; connection elements adapted to connect said printed circuit board and loads and projecting into said housing, said housing being formed so that it opens toward the loads and bears on the loads; at least one plug element connected to the circuit and accessible from outside of said housing for connecting sensors, said printed circuit board being provided with a conductor foil, said connection elements and said plug elements being directly connected to said conductor foil, said housing having two housing components, said printed circuit board including a plurality of rigid parts and flexible parts, at least two of said rigid parts being connected by one of said flexible parts, one of said two parts of said printed circuit board formed by

an inside of one of said housing components, said conductor foil projecting beyond said printed circuit board in said longitudinal direction of said printed circuit board and being connected in a projecting region directly to said connection elements of the loads.

5,777,851
CIRCUIT BOARD HAVING A WIRING STRUCTURE BURIED IN A RESIN LAYER
 Osamu Yamamoto, Mie-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Filed Jan. 3, 1996, Ser. No. 582,285
 Claims priority, application Japan, Jan. 13, 1995, 7-004228
 Int. Cl.⁶ H05K 1/11; 1/16
 U.S. Cl. 361—748

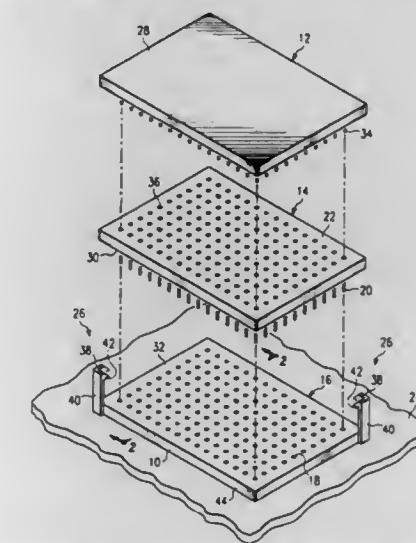
18 Claims



1. A circuit board, comprising:
 a resin layer; and
 a wiring structure buried in said resin layer for forming an electric circuit;
 said wiring structure being provided with a connecting part for soldering a first electrical part;
 said wiring structure being provided with a connecting hole for connecting a second electrical part by inserting a fastening member; and
 said connecting part being positioned on a surface of said resin layer.

5,777,852
CLAMPING DEVICE FOR SECURING AN ELECTRICAL COMPONENT TO A CIRCUIT BOARD
 James S. Bell, 2405 Dijon Dr., Cedar Park, Tex. 78613
 Continuation of Ser. No. 504,812, Jul. 20, 1995, abandoned.
 This application Dec. 12, 1996, Ser. No. 764,147
 Int. Cl.⁶ H05K 7/10; 7/12; H01R 9/09
 U.S. Cl. 361—769

12 Claims



1. A clamping device for securing an electrical component to a pin grid array (PGA) socket mounted on a component board, said board having pin receiving apertures formed therein, said device comprising:

a planar, substantially flat base member mounted on the board and having a plurality of conductor pin apertures extending therethrough and aligned with the pin apertures in the board, the PGA socket mounted on the base member and having pins extending therefrom and through the pin apertures in the base member and attached in the pin apertures in the board, an electrical component mounted on the PGA socket and having a plurality of pin connections with the PGA socket, and clamping means attached to the base member and extending therefrom for releasably retaining the electrical component in stacked relationship on the board with the PGA socket and the base member.

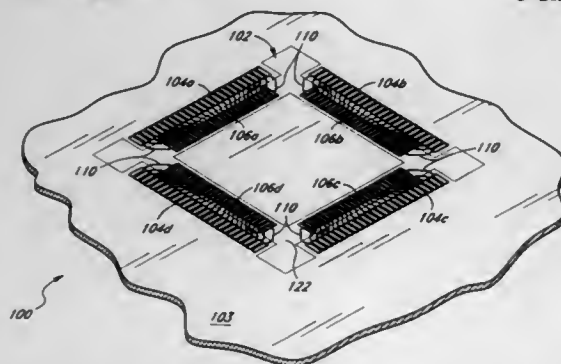
5,777,853
PRINTED CIRCUIT BOARD HAVING A DUAL SQUARE PATTERN FOOTPRINTS FOR RECEIVING ONE OF TWO ELECTRONIC COMPONENTS HAVING EQUAL PRINTOUTS PER SIZE

Mitchell G. Dorfmeier, Corona, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed May 3, 1996, Ser. No. 642,572
Int. Cl.⁶ H05K 7/02; 1/11

U.S. Cl. 361—777

8 Claims



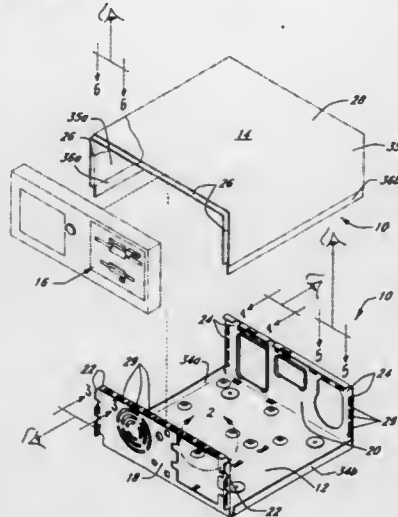
1. A printed circuit board comprising:

- a first plurality of pin receptors formed in a first area of said board, wherein said first plurality of pin receptors define the outer boundary of a second area of said printed circuit board and wherein said first plurality of pin receptors are configured to receive a plurality of pins on a first integrated circuit package so that, when said first integrated circuit package is positioned on said printed circuit board, said first integrated circuit package covers said second area;
- a second plurality of pin receptors formed entirely in said second area of said printed circuit board wherein said second plurality of pin receptors are configured to receive a plurality of pins on a second integrated circuit package wherein both said first and said second integrated circuit package contain integrated circuits that perform the same function and have corresponding input and output pins;
- a plurality of traces interconnecting pin receptors in said first plurality of pin receptors with corresponding pin receptors in said second plurality of pin receptors;
- wherein both said first and said second plurality of pin receptors are formed in said printed circuit board generally in the form of a square;
- wherein said first integrated circuit package has a first number of pins that are oriented so as to form a generally square footprint and wherein said second integrated circuit package also has a first number of pins also oriented so as to form a generally square footprint; and
- wherein said first plurality of pin receptors and said second plurality of pin receptors each have said first number of pin receptors and wherein both said first and said second plurality of pin receptors have equal number of pin receptors on each side of said square.

5,777,854
INTEGRATE FLEXIBLE CONTACTS GROUNDING SYSTEM FOR A COMPUTER SYSTEM CHASSIS
Randall S. Welch, Lake Forest, and Bao Gia Le, Orange, both of Calif., assignors to AST Research, Inc., Irvine, Calif.
Continuation of Ser. No. 445,430, May 19, 1995, abandoned.
This application May 30, 1997, Ser. No. 866,397
Int. Cl.⁶ H05K 7/14

U.S. Cl. 361—800

19 Claims



1. A chassis for housing electronic devices, said housing comprising:

- a base formed from a base material,
- a cover formed from a cover material,
- said cover configured to attach to said base, with certain cover regions contacting certain base regions, and wherein said contact between said base and said cover is less than continuous, and
- a plurality of flexible contacts integrally formed from the material of at least one of said base regions and said cover regions and shaped to contact the other of said base regions and said cover regions, said flexible contacts improving electrical contact between said base regions and said cover regions and reducing the size of any gaps that form between the cover regions and base regions, and said flexible contacts having sufficient flexibility to enable more than one contact to contact said other region.

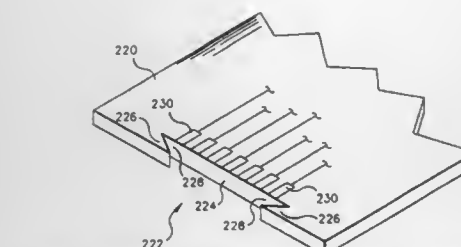
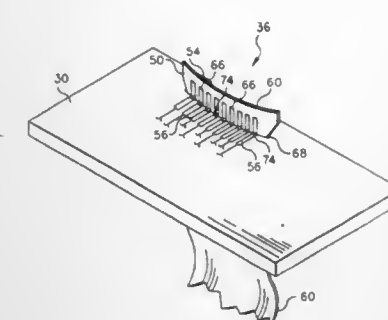
5,777,855
METHOD AND APPARATUS FOR CONNECTING FLEXIBLE CIRCUITS TO PRINTED CIRCUIT BOARDS
Joseph E. Yokajty, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 18, 1996, Ser. No. 664,611
Int. Cl.⁶ H05K 1/11

U.S. Cl. 361—803

8 Claims

1. A device for connecting a flexible circuit to a printed circuit board comprising:

- (a) a cut-out in a side edge of the printed circuit board, said cut-out having an arcuate bearing rim located between a pair of opposing notches, the printed circuit board including a plurality of solder pads adjacent said arcuate bearing rim, said arcuate bearing rim having a predetermined length;
- (b) a pair of opposing notches in the flexible circuit, said pair of opposing notches located one each in a lateral edge of the flexible circuit, the flexible circuit including a plurality of solder pads proximate to said pair of opposing notches, the flexible circuit having a predetermined width at said opposing



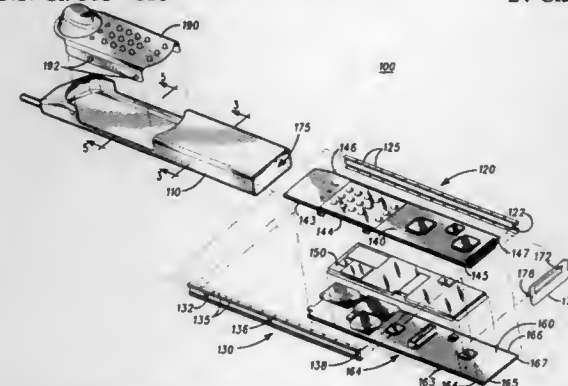
notches which is substantially equal to said predetermined length of said arcuate bearing rim.

5,777,856
INTEGRATED SHIELDING AND MECHANICAL SUPPORT

James P. Phillips, Lake In The Hills; Thomas J. Walczak, Woodstock; Michael W. Schellinger, Arlington Heights; Scott Semenik, Lake Zurich, and Thomas Carey Reardon, deceased, late of Marengo, all of Ill., by Mary Ann K. Reardon, assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 6, 1996, Ser. No. 692,548
Int. Cl.⁶ H05K 9/00

U.S. Cl. 361—816

24 Claims



1. An integrated shielding and mechanical support for an electronic device having a highest frequency of interest for operation comprising:

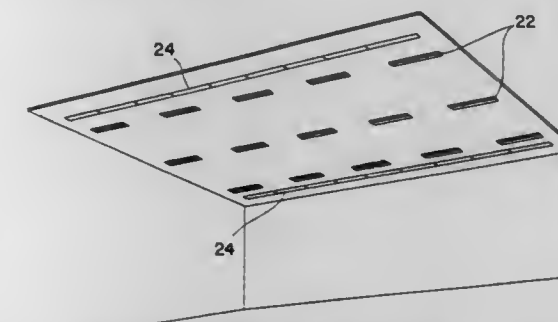
- A. a shielding box comprising:
 - a first printed circuit board having a first conductive layer;
 - a second printed circuit board having a second conductive layer;
 - a first conductive rail connected to the first conductive layer and the second conductive layer;
 - a second conductive rail connected to the first conductive layer and the second conductive layer, the second conductive rail being separate and distinct from the first conductive rail, wherein the second conductive rail does not mechanically contact the first conductive rail, wherein a maximum distance between the first conductive layer and the second conductive layer is less than a half-wavelength of the highest frequency of interest, and a maximum distance between the first conductive rail and the second

conductive rail is less than the half-wavelength of the highest frequency of interest; and
B. a housing surrounding a portion of the shielding box and supported by the shielding box.

5,777,857
ENERGY EFFICIENT LIGHTING SYSTEM
Paul G. Degelmann, Americus, Ga., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Oct. 16, 1995, Ser. No. 543,824
Int. Cl.⁶ F21S 1/02

U.S. Cl. 362—150

23 Claims



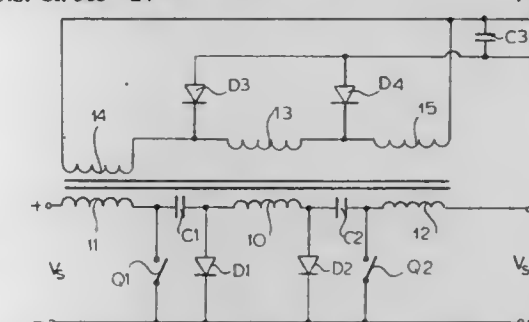
1. A modular lighting system adaptable for use in a variety of lighting applications, comprising:

- a plurality of lighting fixtures, each of said lighting fixtures including a housing sized to be received in a six inch wide ceiling grid planning module of a suspended ceiling grid, said lighting fixtures configured to be received from above in the suspended ceiling grid and supported by an equal interval spaced grid of transverse and longitudinal ceiling grid suspension members and an electrical connection adapted to receive a T8 fluorescent lamp.

5,777,858
DC TO DC TRANSFORMER-BASED CONVERTER WITH PUSH PULL ELECTRONIC SWITCHING
Philip Rodolfo, Norwich, Great Britain, assignor to Advanced Power Conversion Ltd., Farnborough, England
Filed Jun. 11, 1996, Ser. No. 661,456
Claims priority, application United Kingdom, Aug. 18, 1995, 9516913
Int. Cl.⁶ H02M 3/335

U.S. Cl. 363—24

7 Claims



- 1. A converter for converting an input voltage to an output voltage, the converter comprising:**
 - voltage input means receiving an input voltage;
 - voltage output means for outputting an output voltage;
 - a transformer assembly comprising a primary section and a secondary section, the primary section being coupled to the voltage input means for receiving the input voltage therefrom, and the secondary section being coupled to the voltage output means for producing the output voltage, the primary section

comprising first and second choke windings, having reverse phasings, and a transformer winding, and the secondary section comprising first and second choke windings and a transformer winding, and means for inductively coupling the respective windings of the primary and secondary sections to each other;

the primary section further comprising a first charge storage means series coupled between the first primary choke winding and the primary transformer winding, a second charge storage means series coupled between the secondary primary choke winding and the primary transformer winding, a first switch means coupled across the voltage input means and to the first primary choke winding and first storage means, a second switch means coupled across the voltage input means and to the second primary choke winding and second charge storage means, a first diode means coupled in parallel with the first switch means and a second diode means coupled in parallel with the second switch means;

the secondary section further comprising third diode means coupled across the current output means and to the first secondary winding and the secondary transformer winding and fourth diode means coupled across the current output means and to the second secondary winding and the secondary transformer winding;

said means for inductively coupling comprising a core assembly, the primary and secondary windings being wound on said core assembly;

the first and second switch means being operable in a continuous four phase cycle in which the switch means are cyclically switched on and off such that, in a first phase of the cycle, for a predetermined period, the first switch means is on, and the second switch means is off, in the second and fourth phases of the cycle, both switches are off, and in the third phase, the first switch is off and the second switch is on, whereby, with the input voltage coupled to the converter, throughout all the phases of the cycle, flux flow through the primary section induces current flow in the windings of the secondary section such the output voltage is continuous.

5,777,859

VOLTAGE CONVERTER

Hubert Raets, Landgraaf, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

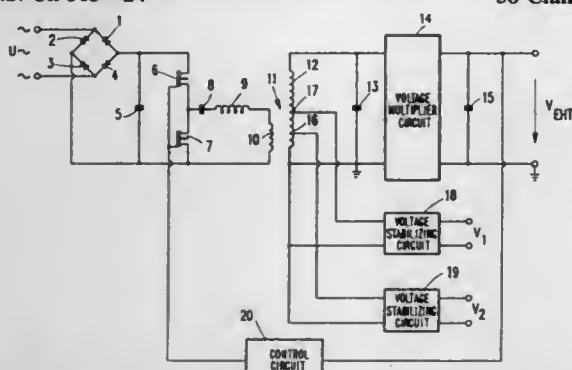
Filed Aug. 6, 1996, Ser. No. 693,035

Claims priority, application Germany, Aug. 16, 1995, 195 29 941.8

Int. Cl.⁶ H02M 3/335; 7/538

U.S. Cl. 363—24

38 Claims



1. The voltage converter for converting an AC input voltage into a DC high voltage and further DC power supply voltages, in which the AC voltage applied to the converter is applied to a rectifier arrangement (1, 2, 3, 4) whose output signal is coupled to two consecutively switched electronic switches (6, 7), and in which this DC voltage is converted into the DC high voltage and into the DC

power supply voltages, characterized in that a series arrangement of a capacitance (8), an inductance (9) and a primary winding (10) of a transformer (11) is arranged in parallel with one of the electronic switches (6, 7), in that a secondary winding (12) of the transformer (11) precedes a capacitance (15) at the output end, in that a control circuit (20) is provided which controls the switching frequency of the electronic switches (6, 7) in such a way that a DC voltage of the desired value decreases across the capacitance (15) at the output end, and in that the transformer (11) is provided with additional taps (16, 17) at the secondary end, from which the DC power supply voltages can be derived.

5,777,860

ULTRASONIC FREQUENCY POWER SUPPLY

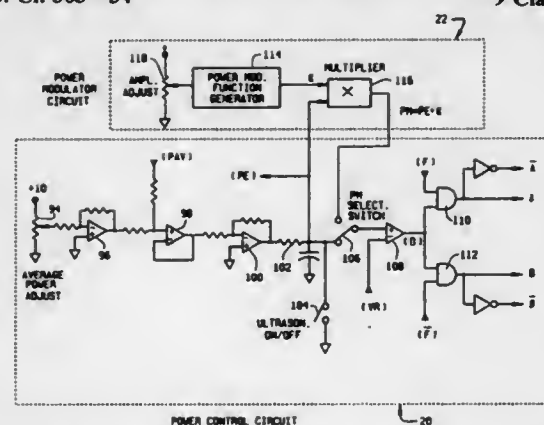
Robert C. Halbert, Bethel, Conn., assignor to Branson Ultrasonics Corporation, Danbury, Conn.

Filed Oct. 16, 1996, Ser. No. 733,117

Int. Cl.⁶ H01L 41/08; H02M 5/40

U.S. Cl. 363—34

9 Claims



1. An ultrasonic frequency power supply for driving transducer means providing ultrasonic energy to a cleaning liquid, comprising:

means for receiving alternating current input and providing substantially unfiltered full wave rectified direct current output, the undulations of the direct current voltage output having substantially the same phase and amplitude as the voltage of said alternating current input;

inverter means coupled for receiving said direct current output and producing responsive to power control means acting upon said inverter means and series connected impedance matching means an alternating current voltage for driving said transducer means;

said power control means operating said inverter means responsive to:

- (a) power measuring means and power adjustable means connected to said control means for causing said transducer means to operate at a set average power level;
- (b) phase detection means and frequency control means connected to said control means for causing said transducer means to operate substantially at its resonant frequency; and
- (c) power modulation means connected to said control means for optionally providing to said transducer means peak power pulses of a set amplitude but at constant said set average power level.

5,777,861

POWER SUPPLY APPARATUS HAVING HIGH POWER-FACTOR AND LOW DISTORTION-FACTOR CHARACTERISTICS

Keiichi Shimizu, Yokohama; Noriyuki Kitamura, Yokosuka; Tsutomu Kakitani, Yokohama; Nanjou Aoi, Yokohama; Fumihiko Nagasaki, Yokohama, and Yuji Takahashi, Hachioji, all of Japan, assignors to Toshiba Lighting & Technology Corporation, Tokyo, Japan

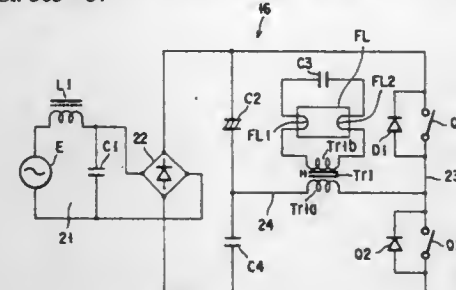
Filed Apr. 28, 1995, Ser. No. 430,367

Claims priority, application Japan, Apr. 28, 1994, 6-092761; Jul. 29, 1994, 6-178925; Feb. 28, 1995, 7-041120

Int. Cl.⁶ H02M 5/458; H05B 37/02

U.S. Cl. 363—37

29 Claims



1. A power supply apparatus comprising: a rectification device for rectifying an input voltage from an AC power source and outputting a nonsmoothed DC voltage from a pair of output terminals; first and second switching devices connected in series between the pair of output terminals of said rectification device, and alternately turning on/off at a frequency higher than a frequency of the AC power source; a series circuit, including a first capacitor and an inductor, connected between two terminals of said first switching device, for smoothing the nonsmoothed DC voltage output from said rectification device; a second capacitor configured to resonate with said inductor in accordance with ON/OFF operations of said first and second switching devices; and an output circuit for obtaining a high-frequency output on a basis of the resonance caused by said inductor and said second capacitor.

5,777,862

FAULT CONTROL CIRCUIT FOR SWITCHED POWER SUPPLY

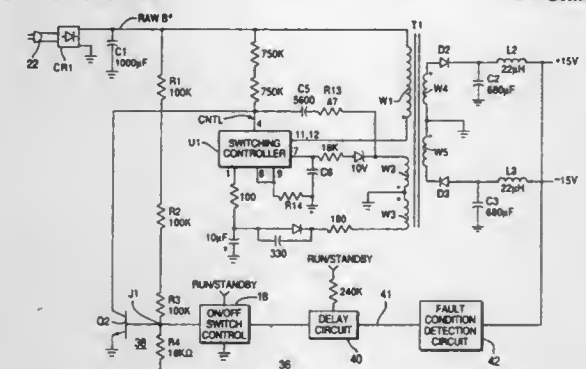
Kevin Michael Williams, Indianapolis, and John Barrett George, Carmel, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Nov. 15, 1996, Ser. No. 749,701

Int. Cl.⁶ H02H 7/122; H02M 3/335

U.S. Cl. 363—56

14 Claims



1. An arrangement for detecting a fault condition in a power supply which is switchable between operational and non-operational states in the absence of said fault condition, said arrangement comprising:

- a switch control circuit for switching said power supply between said operational and non-operational states responsive to a control signal;
- a first switch device coupled to said switch control circuit for providing a conduction path between a control terminal of said power supply and a source of reference voltage potential; a source of an output voltage;
- means for shifting the level of said output voltage; and,
- a second switch device responsive to said shifting means and coupled to said switch control circuit for determining a conductive condition of said conduction path.

5,777,863

LOW-FREQUENCY MODULATED CURRENT MODE POWER SUPPLY FOR MAGNETRON SPUTTERING CATHODES

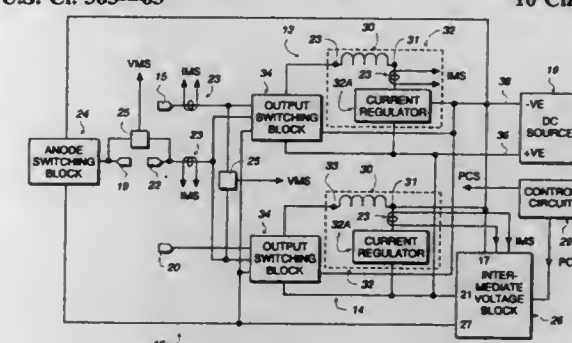
Dmitri Kowalevskii, and Michael Kishinevsky, both of Madison, Wis., assignors to Photran Corporation

Filed Jun. 14, 1996, Ser. No. 664,129

Int. Cl.⁶ H02M 7/02

U.S. Cl. 363—63

10 Claims



6. Apparatus for providing a train of electrical current pulses from a DC source of electrical power, the pulses for driving an electrical device, the apparatus comprising: means for converting voltage output from said source of DC power to a supply of regulated direct current, said voltage converting means having first and second input means connected to respectively first and second voltage outputs of said DC power source; said voltage converting means including an output inductor, said output inductor periodically connectable via current regulating circuitry to said first voltage output of said DC electrical power source; and output switching circuitry having first and second inputs connected respectively to an output end of said output inductor and to said second voltage output of said DC power source, and having an output terminal connectable to a device to be driven, said output switching circuitry including means for alternately switching said output terminal thereof to said output end of said output inductor or to said second voltage output of said DC electrical power source, thereby providing the train of current pulses at said output terminal of said output switching circuitry.

5,777,864

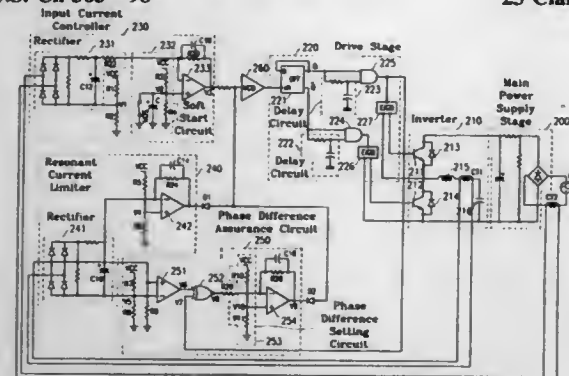
**RESONANT CONVERTER CONTROL SYSTEM HAVING
RESONANT CURRENT PHASE DETECTION**
Hwan-Ho Seong, and Jin-Ho Shin, both of Seoul, Rep. of
Korea, assignors to Samsung Electronics Co., Ltd., Suwon,
Rep. of Korea

Filed Nov. 12, 1996, Ser. No. 745,706

Claims priority, application Rep. of Korea, Dec. 28, 1995,
95-61865Int. Cl.⁶ H02M 3/24

U.S. Cl. 363—98

23 Claims



1. A resonant converter control system comprising:

a power section including:

- a main power supply having an output port for supplying a DC power signal; and
- an inverter having an input port coupled to the output port of the main power supply to receive the DC power signal and a switch that turns on and off responsive to a drive signal to convert the DC power signal to a resonating AC current signal;
- a drive stage coupled to the inverter, the drive stage generating the drive signal responsive to a frequency signal;
- a current controller coupled to the power section to receive a first sense signal that indicates the power consumed by the power supply section, the current controller generating a first control signal responsive to the first sense signal;
- a phase difference assurance circuit coupled to the inverter to receive a second sense signal that indicates the resonating AC current signal and coupled to the drive stage to receive the drive signal, the phase difference assurance circuit generating a second control signal responsive to a phase difference between the second sense signal and the drive signal; and
- a frequency stage coupled to the current controller to receive the first control signal and coupled to the phase difference assurance circuit to receive the second control signal, the frequency stage generating the frequency signal responsive to the first and second control signals.

5,777,865

**POWER CONVERSION APPARATUS AND ITS
CONTROLLING METHOD**

Minchiro Nemoto; Hideki Miyazaki, and Yoshitaka Sugawara,
all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo,
Japan

Filed Aug. 15, 1995, Ser. No. 515,334

Claims priority, application Japan, Aug. 23, 1994, 6-198161

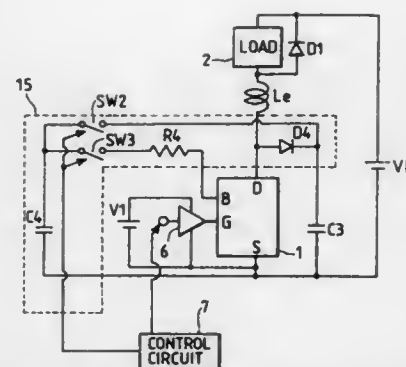
Int. Cl.⁶ H02M 3/335; 3/24; 7/00; H03K 17/687

U.S. Cl. 363—124

10 Claims

1. A power conversion apparatus which by switching a semicon-
ductor device converts direct current power into alternating current
power, comprising:

- the semiconductor device having a pair of main terminals, an
insulated gate terminal for controlling current flowing
between the main terminals, and a control terminal into which
a signal current for controlling an on-state voltage between
the main terminals flows;



wherein one of the main terminals is connected to a load through
energy storage means that stores energy derived from current
flowing through the load;

wherein the signal current is supplied to the control terminal of
the semiconductor device using the energy stored in the
energy storage means, and
wherein the control terminal is connected to a charge injection
layer in the semiconductor device.

5,777,866

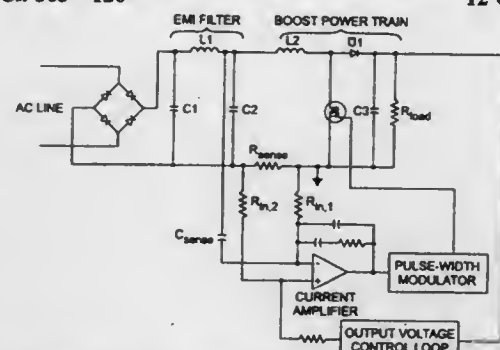
**POWER FACTOR CONTROL FOR SWITCHED MODE
RECTIFIERS WITH IMPROVED REPRESENTING OF
CURRENTS IN EMI CAPACITIVE ELEMENTS**

Mark Elliott Jacobs, Dallas; Yimin Jiang, Plano; Vijayin
Joseph Thottuvellil, Plano, and Rui Liu, Plano, all of Tex.,
assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 452,482, May 26, 1995, aban-
doned. This application Jan. 27, 1997, Ser. No. 789,125Int. Cl.⁶ H02M 7/06; 5/42; G05F 1/652

U.S. Cl. 363—126

12 Claims

1. A switched-mode rectifier powered from an AC line source
having current and voltage components, said switched-mode recti-
fier comprising:

- an AC rectifier bridge having an input and an output;
- an EMI line filter having its input connected to said AC line
source and having a connection to said input of said AC
rectifier bridge, said EMI line filter comprising a plurality of
differentially connected capacitor legs wherein one of said
legs is connected across said output of said AC rectifier
bridge;
- a switching power converter connected to said output of said AC
rectifier bridge and comprising:
- an inductor;
- an output capacitor for creating a filtered output voltage for a
load; and
- a power switch having a variable on-off duty cycle for con-
trolling current in said inductor; and
- a power factor correction circuit comprising:
- means connected to said load for regulating the level of said
filtered output voltage;
- a voltage-sensing capacitor connected to the output of said
AC rectifier bridge;

5,777,868

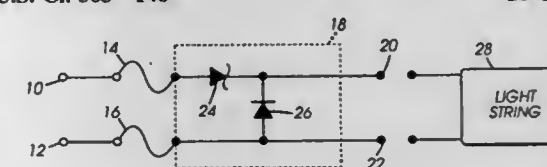
ELECTRICAL PLUG

James W. Gibboney, Jr., Conyers, Ga., assignor to Ventur
Research & Development Inc, St Augustine, Fla.
Filed Apr. 24, 1997, Ser. No. 847,345

Int. Cl.⁶ H02M 1/00; 7/06; H02H 1/125; H01R 13/66

U.S. Cl. 363—146

20 Claims

1. A plug adapted to be connected to an electrical outlet and to
receive alternating current, said plug being adapted to be part of an
electrical circuit that delivers direct current to an electrical load,
said plug comprising:

- a housing;
- a first contact and an opposing second contact, said first and said
second contacts carried by said housing and extending there-
from so as to be insertable into the electrical outlet to connect
said plug with said outlet;
- a pair of electrically conducting wires running into said housing;
and
- a solid state rectifying fuse diode, carried by said housing in
electrical connection with said first and said second contacts
and said pair of electrically conducting wires, for rectifying
and limiting said alternating current from said first and second
contacts so that only direct current flows to said pair of wires,
and if a preselected current level is reached, said diode will
open said circuit and thereby stop it from conducting any
current to said load.

5,777,867

ELECTRIC DISCHARGE METHOD AND APPARATUS

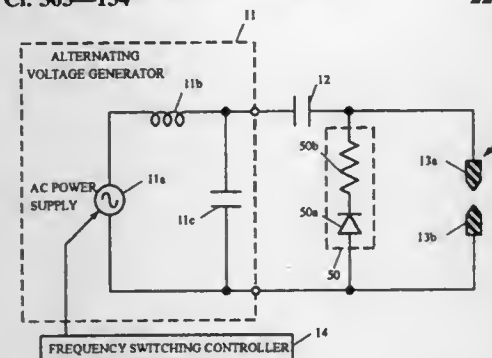
Hidetoshi Hongu; Masahiro Hamada, both of Yokohama;
Masumi Fukai, and Kazuo Iizuka, both of Tokyo, all of
Japan, assignors to Suitomo Electric Industries, Ltd., Osaka,
and Sumiden Opcom, Ltd., Tokyo, both of Japan

Filed Aug. 7, 1996, Ser. No. 694,494

Claims priority, application Japan, Sep. 14, 1995, 7-236546;
Sep. 14, 1995, 7-236547; Sep. 14, 1995, 7-236548; Sep. 14, 1995,
7-236549Int. Cl.⁶ H02M 7/538

U.S. Cl. 363—134

22 Claims

9. An apparatus for supplying a electrical energy to a pair of
discharge electrodes spaced apart from each other to cause an
electric discharge in a gap between said discharge electrodes,
comprising:

- a capacitor connected to said discharge electrodes in series;
- an alternating voltage generator for generating, as said electrical
energy, an alternating voltage having a frequency to apply
said alternating voltage to said discharge electrodes through
said capacitor, said alternating voltage generator having a
series resonant frequency;
- frequency setting means for setting the frequency of said alter-
nating voltage approximately to said series resonant fre-
quency of said alternating voltage generator to cause a dielec-
tric breakdown in and allow an electric discharge current to
flow through the gap between said discharge electrodes; and
- clamping means for clamping said alternating voltage applied to
said discharge electrodes through said capacitor to add a
direct current component to said alternating voltage.

5,777,869

**RELAY LADDER CONTROL SYSTEM FOR
STIMULATION AND MONITORING**

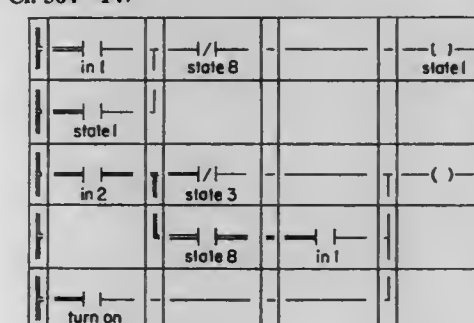
John T. Welch, Akron, Ohio, assignor to The University of
Akron, Akron, Ohio

Filed Dec. 9, 1994, Ser. No. 353,181

Int. Cl.⁶ G06F 19/00; 9/305

U.S. Cl. 364—147

8 Claims

1. A method of implementing and solving relay ladder logic
comprising the steps of:

- providing a relay ladder diagram;
- recording the structure of said relay ladder diagram by means of
a ladder coding convention which specifies adjacent relay
ladder connections in said diagram, represented as an array of
cells, each of said cells comprising at least one connector and
at least one contact element, wherein said at least one connec-
tor and at least one contact element of each cell along with the
relative locations of said cells define the geometry of said
diagram, and each of said contact elements being associated
with a variable of a logic system;
- processing a set of input and state events by toggling all ladder
contacts associated with said events between open and closed
positions by following precomputed lists of contact coordi-

notes identifying the location in said diagram of contacts effected by a change in said input or state event; and computing changes in ladder power flow by propagating flow changes within said diagram, wherein, no processing is performed on relay ladder structure on which power flow does not change, and wherein no flow change is reversed during a current scan.

5,777,870

DRIVE CONTROL COMMANDING UNIT, A SYNCHRONOUS CONTROL SYSTEM FOR A PLURALITY OF DRIVE CONTROL COMMANDING UNITS, AND A SYNCHRONOUS CONTROL METHOD FOR THE UNITS
Hideaki Takaku, and Nobuyasu Takaki, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

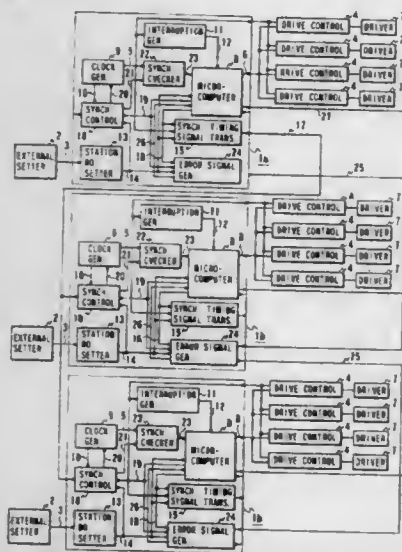
Filed Sep. 13, 1995, Ser. No. 527,069

Claims priority, application Japan, Oct. 25, 1994, 6-260155

Int. Cl.⁶ H04B 3/54

U.S. Cl. 364-132

16 Claims



1. A drive control commanding unit comprising: operation clock generating means for generating an operation clock signal; interruption generating means for outputting an interruption signal at every cycle of the operation clock signal; station number setting means for setting a station number indicating whether said unit is operated as a first drive control commanding unit or a second drive control commanding unit; synchronous timing signal transmitting means for, only when said unit is operated as said first drive control commanding unit, outputting a synchronous timing signal based on the operation clock signal; synchronous control means for, only when said unit is operated as said second drive control commanding unit, outputting a synchronous operation starting signal based on an error state signal indicative of a synchronous operation ready state and a synchronous state, and the synchronous timing signal received from said first drive control commanding unit; synchronous check means for judging whether the operation of said second drive control commanding unit is synchronized with the operation of said first drive control commanding unit; error signal generating means for outputting an error signal based on the error state signal; and a microcomputer which, when said unit is operated as said first drive control commanding unit, outputs a movement starting signal and conducts a synchronous control, and which, when said unit is operated as said second drive control commanding unit, conducts a synchronous control in accordance with an input of a movement starting signal.

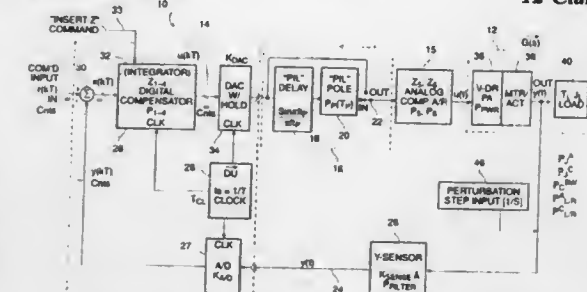
5,777,871
METHOD AND APPARATUS FOR COMPENSATION FOR OPERATOR IN A CLOSED-LOOP CONTROL SYSTEM
William L. Wise, P.O. Box 1382, Mountain View, Calif. 94042, assignor to William L. Wise, Mountain View, Calif.

Filed Jun. 4, 1996, Ser. No. 658,975

Int. Cl.⁶ G05B 13/04

U.S. Cl. 364-149

12 Claims



1. A feedback control system for a use with an operator that is in position to intermittently intervene in the control loop, the feedback system comprising:

means for modeling the operator as a delay in series with an operator pole, said operator delay and pole being introduced in concert upon intervention of the operator; motor/actuator means coupled to receive a compensated error signal and to drive a load; position sensor means for generating a position feedback signal representative of said load; summing junction means coupled to receive a representation of said position feedback signal and an input command signal for generating an error signal from said input command signal and said position feedback signal; a digital compensator coupled to said summing junction means to receive said error signal and to add compensating zeroes, said digital compensator including input means for receiving a command to add a switchable zero, said switchable zero for compensating for said operator pole wherein said switchable zero in combination with said added zeroes provide a loop phase margin result of at least +70° against a worst case end-of-range operator pole-and-delay and means for coupling said digital compensator to said motor/actuator means to establish said control loop.

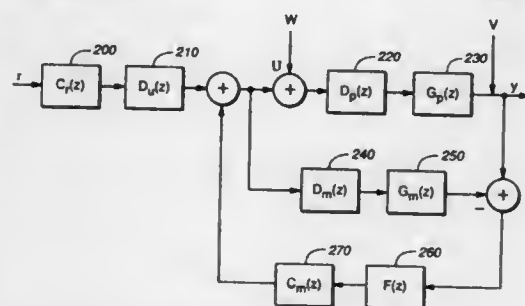
5,777,872
METHOD AND SYSTEM FOR CONTROLLING A MULTIPLE INPUT/OUTPUT PROCESS WITH MINIMUM LATENCY
Xiaohua George He, Menlo Park, Calif., assignor to Honeywell-Mesurex Corporation, Cupertino, Calif.

Filed Sep. 13, 1996, Ser. No. 713,461

Int. Cl.⁶ G06F 19/00; F05B 13/04

U.S. Cl. 364-149

16 Claims



1. A control system for a process, comprising: a first controller for receiving at least a first input variable and a second input variable and producing at least a first control variable and a second control variable, wherein said first controller introduces a first delay to one of the first and

second control variables, the first delay being determined as a function of a second delay associated with another of the first and second control variables, and outputting first and second control variables with unified delay; a processor for modelling effects of the process on the first and second control variables, said processor receiving the delayed first and second control variables output by said first controller, and producing estimated process output variables; and a second controller for processing a difference between measured process output variables and the estimated process output variables to correct for disturbances, wherein the processed difference is added to the delayed first and second control variables output by said first controller, and the sum is received by said processor and the process being controlled.

5,777,873

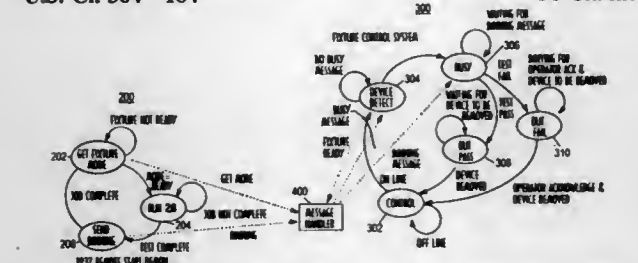
AUTOMATED TEST FIXTURE CONTROL SYSTEM
John Cox, Durham, and Waite R. Warren, Jr., Raleigh, both of N.C., assignors to Mitsubishi Semiconductor America, Inc., Durham, N.C.

Filed Apr. 29, 1996, Ser. No. 639,817

Int. Cl.⁶ G01R 31/00

U.S. Cl. 364-184

36 Claims



24. A method for controlling at least one test fixture comprising the steps of: locking an electronic module in the test fixture to test the module, determining whether the module passes or fails a test, automatically releasing the module from the test fixture if the module passes the test, and keeping the module locked in the test fixture if the module fails the test.

5,777,874

PROGRAMMABLE CONTROLLER BACKUP SYSTEM
Mark A. Flood, Mayfield Heights; Bradley J. Bittorf, Novelty; William B. Cook, Northfield Center; D. Alan Graham, Mentor; Robert D. Law, Independence; David E. Mohnke, Willoughby; Robert R. Sepsl, Richmond Heights, and Jack F. Toma, Willoughby Hills, all of Ohio, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Feb. 12, 1996, Ser. No. 599,843

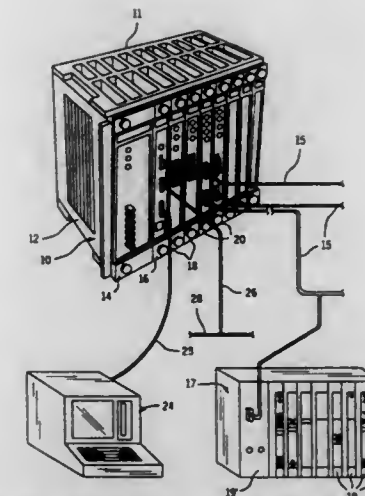
Int. Cl.⁶ G06F 11/16; 11/20

U.S. Cl. 364-187

12 Claims

1. A backup system for use with a first programmable controller system including a first remote scanner module and a first processor module mounted in a first rack having a first backplane for facilitating communications between said modules, said backup system comprising:

- a first backup module mounted in said first rack having a first high speed data communications port;
- a second programmable controller system including a second remote scanner module and a second processor module mounted in a second rack having a second backplane for facilitating communications between the second modules;
- a second backup module mounted in said second rack having a second high speed data communications port connected to said first high speed communications port to form a high speed communications link between said racks; and



- means for synchronously crossloading information between the modules in said first rack and the modules in said second rack on a prioritized basis including:
 - means for prioritizing the crossloading of information between said modules over said communications link so that program step data for use in program synchronization and I/O data is passed over said link on a high priority basis before other types of data; and
 - means for triggering the synchronous crossload of program data from said first processor module from said first remote scanner module upon changes in said data.

5,777,875

DRIVING SIMULATION APPARATUS CAPABLE OF SCROLLING AT OPTIMUM SPEED

Kazuhiko Miyano, Akashi, Japan, assignor to Fujitsu Ten Limited, Hyogo, Japan

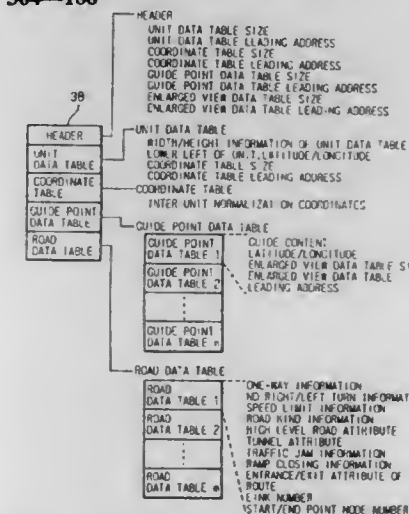
Filed Jul. 25, 1996, Ser. No. 684,906

Claims priority, application Japan, Jul. 26, 1995, 7-190444

Int. Cl.⁶ G05B 9/02

U.S. Cl. 364-188

6 Claims



1. A driving simulation apparatus comprising:
 - means for retrieving a route based on digital map data obtained by digitizing a road network;
 - means for displaying the route so retrieved on a display unit;
 - means for scrolling the map while tracing the route displayed on said display unit for simulation driving; and
 - means for automatically setting an updating distance in accordance with a reduced scale of a map to be displayed.

5,777,876

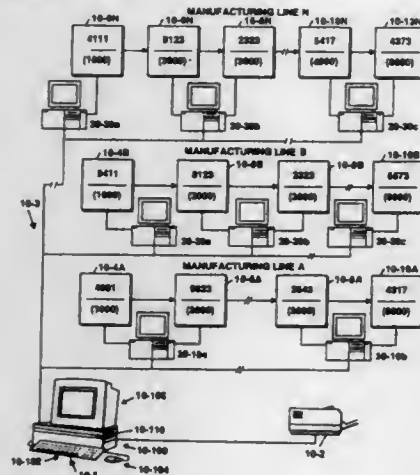
DATABASE MANUFACTURING PROCESS
MANAGEMENT SYSTEMRobert C. Beauchese, Brockton, Mass., assignor to Bull HN
Information Systems Inc., Billerica, Mass.

Filed Dec. 29, 1995, Ser. No. 580,565

Int. Cl.⁶ G06F 19/00

U.S. Cl. 364—468.01

35 Claims



1. A database implemented method for managing processes within a manufacturing factory environment for manufacturing a number of board products, the factory environment including a complement of equipment units physically partitioned into a number of manufacturing lines whose operation are controlled by a database system including a memory, the method comprising the steps of:

- assigning each unit of equipment at each physical location, a unique unit designation code which is different from the designation codes assigned to all other equipment units within the complement of equipment units;
- assigning each unit of equipment, an operation code identifying the process step performed by the unit of equipment in manufacturing a hypothetical product wherein same operation code may be assigned to another equipment unit;
- initializing the database system memory to contain a predetermined set of database table structures and a control mechanism, each table structure including a plurality of memory locations, the predetermined set of database table structures including line equipment, product, recipe and parameter list table structures;
- invoking the control mechanism for storing in an initial number of memory locations of the line equipment list table structure, coded entries defining those units of equipment of the complement of equipment units which are to be used in manufacturing board products and their assigned operations codes;
- next, invoking the control mechanism for storing in a number of the memory locations of the product table structure, a number of coded entries defining a corresponding number of board products to be manufactured which contain coded recipe code values used to relate product memory location entries to memory locations in the recipe table structure by identifying which recipe step operations are to be used in manufacturing the board products; and,
- next, invoking the control mechanism for storing in a number of the memory locations of the recipe table structure, a unique set of coded entries designating a sequence of step operation of the recipe for manufacturing the board product derived from using the units of equipment stored in the line list table structure to perform designated operations, each coded entry containing a parameter key value used to relate the recipe steps to memory locations in the parameter table structure containing sets of parameters for setting up the designated unit of equipment for performing the recipe step operations in manufacturing the specific board products.

5,777,877

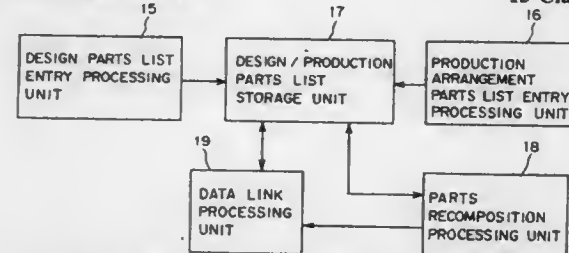
PROCESSING DEVICE AND METHOD FOR MAKING
ARRANGEMENTS FOR PARTS USED IN PRODUCTSMitsuo Beppu; Mitsuru Yasue; Akihiro Nishio, and Eiji Ohta,
all of Kawasaki, Japan, assignors to Fujitsu Limited,
Kawasaki, Japan

Filed Nov. 2, 1995, Ser. No. 556,853

Claims priority, application Japan, Dec. 13, 1994, 6-308489
Int. Cl.⁶ G06F 19/00

U.S. Cl. 364—468.03

15 Claims



1. A processing device for making arrangements for parts composing a product, comprising:
- design parts list entry means for creating a design parts list indicating necessary parts in accordance with the results of design in product design;
 - production arrangement parts list entry means for creating a production parts list indicating parts for arrangements for production, in accordance with said design parts list, in product manufacturing;
 - design/production parts list storage means for storing said design parts list and said production parts list;
 - recomposition processing means for recomposing a hierarchical relationship among said parts in said production parts list, said hierarchical relationship corresponding to a process of said product manufacturing; and
 - data link processing means for establishing a correspondence between the numbers of parts, in said production parts list, subjected to recomposition and the numbers of corresponding parts, in said design parts list, whereby exchange of part data, between a design section and a production section, is facilitated, even after the recomposition of parts has been performed.

5,777,878

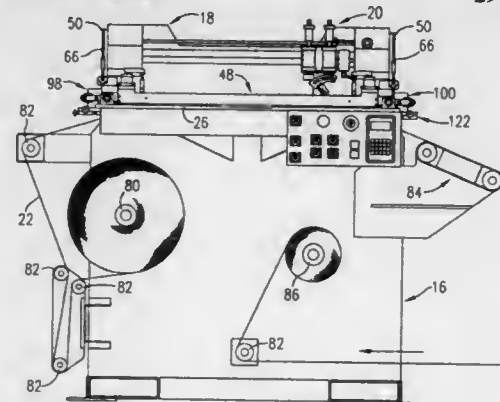
SCREEN PRINTING PRESS HAVING LONGITUDINAL,
LATERAL AND ANGULAR SCREEN FRAME
REGISTRATION SYSTEM AND METHODIvan B. Helmrich, Kansas City, Mo., and Charles C. Raney,
Lenexa, Kans., assignors to Preco Industries, Inc., Lenexa,
Kans.

Filed Jun. 4, 1996, Ser. No. 658,025

Int. Cl.⁶ B41F 15/00; 15/14; 15/24; 15/34

U.S. Cl. 364—469.03

29 Claims



1. In a screen printing press for a web having defined, successive areas and indicia provided in predetermined positions relative to each of the defined areas, the press including a base defining a

work station, a screen supported on the base for movement between a printing position overlying the work station and an interrupted position spaced from the work station, and a feeding means for intermittently advancing the web along a path of travel to successively feed the defined areas of the web toward the work station, a registration system for successively positioning the defined areas of the web in a desired predetermined relationship to the screen as successive defined areas are brought into a position to be printed, the registration system comprising:

- a longitudinal shifting means for adjusting the longitudinal alignment between the screen and the web along an X axis coincident with the path of travel of the web;
- a lateral and angular shifting means for adjusting the lateral alignment between the screen and the web along a Y axis in a direction transverse to the path of travel of the web and for adjusting the angular alignment between the screen and the web through an angle θ about a reference axis perpendicular to a plane containing the web;
- a first X axis sensing means for sensing the correct X axis position of indicia associated with a defined area as each defined area is moved toward the work station;
- a second Y axis and θ angle sensing means movable with the screen at said printing station for sensing the correct Y axis and θ angle positions and orientation of the indicia that are occupied when the defined areas of the web are in the predetermined relationship relative to the screen; and
- a control means responsive to the first and second sensing means for selectively controlling the longitudinal and the lateral and angular shifting means to adjust the alignment between the screen and the web until correct positions and orientation of the indicia are sensed.

5,777,879

PROCESS-TO-MARK CONTROL SYSTEM

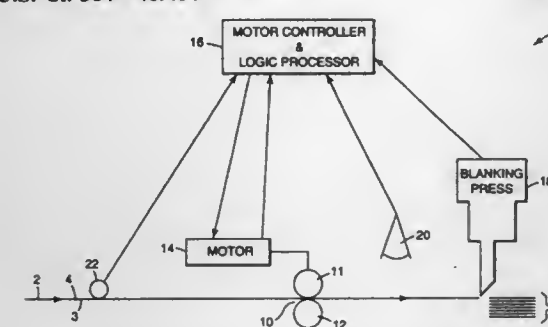
Frank A. Sommerfeldt, New Richmond, Wis., assignor to Min-
nesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 5, 1995, Ser. No. 523,471

Int. Cl.⁶ G06F 19/00

U.S. Cl. 364—469.04

17 Claims



1. A processing control system in a processing apparatus having processing means for repetitive processing of a plurality of marked sections of uniform length forming a continuous elongate material fed to the processing means, said processing control means outputting a corrected material feed length signal for maintaining registration between marks on said sections and processing positions on said sections within a tolerance, said processing control system comprising:

- first means for calculating a value of a representative length of at least one processed section of elongate material and for outputting said representative section length value;
- second means for calculating a first distance between a reference mark on the last processed section and either the leading or trailing end of that section and for outputting a first predetermined constant correction factor if the absolute difference between the first distance and a desired distance between any mark and the corresponding end exceeds a first predetermined amount, and

said processing control system determining a feed length signal for the next section to be processed based on a combination of the outputs of the first and second calculating means.

5,777,880

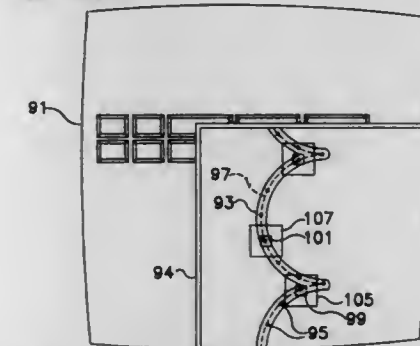
METHOD AND APPARATUS FOR CORRECTIVELY
GUIDING A CUTTING DEVICE ON A PREDETERMINED
PATH ALONG A SHEET MATERIALDale Thomas Bowen, Timberlake; Timothy Gladstone Clapp,
New Hill; Douglas Martin Pendergraph, Jr., Bahama, and
Frank Warren Taylor, II, Cary, all of N.C., assignors to
Albani Bayeux, Inc., Henderson, N.C.

Filed Feb. 21, 1996, Ser. No. 604,174

Int. Cl.⁶ G06F 19/00; G06K 9/00; B23Q 15/22

U.S. Cl. 364—470.14

35 Claims



1. A method of correctly guiding an item on a path along a material, said method comprising the steps of:

- inputting into a computer a guide path comprising predetermined points thereamong, said guide path matching a desired path for an item to be guided along a material wherein inputting said guide path comprises inputting into said computer at each of said predetermined points a template containing an image of said material and inputting a search area surrounding each inputted template;
- guiding said item along said material in a path following said inputted guide path;
- at each of said predetermined points of said guide path, identifying whether said item is on or off of said desired path along said material, said identifying comprising said computer scanning templates containing images of said material within each search area whereby said computer locates a matching template within each search area that matches an inputted template for that search area; and
- at each of said predetermined points of said guide path, correcting a position of said item when said item is off of said desired path to allow said item to follow said desired path along said material.

5,777,881

METHOD OF DECIDING CONTROL PARAMETERS OF
HEAT TREATMENT INSTRUMENT AND APPARATUS
THEREOFSoichi Kanno, Shiroyamamachi, Japan, assignor to Tokyo
Electron Limited, Tokyo, Japan

Filed Jan. 22, 1997, Ser. No. 787,110

Claims priority, application Japan, Jan. 23, 1996, 8-028481

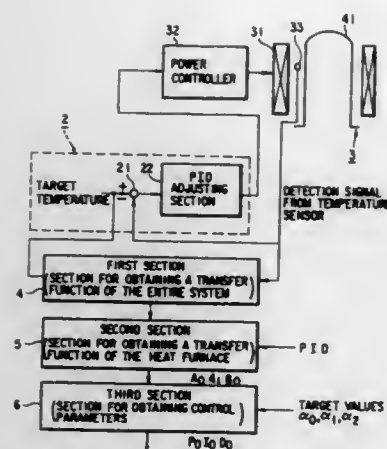
Int. Cl.⁶ G06F 19/00; G05B 11/42

U.S. Cl. 364—477.03

6 Claims

1. A method of deciding temperature control parameters of a heat treatment instrument for performing a heat treatment on a target object, comprising steps of:

- initializing temperature control parameters required for temperature-controlling the heat treatment instrument;
- increasing a temperature of a heat furnace of the heat treatment instrument, in accordance with the temperature control parameters initialized;



obtaining a transfer function of an entire system of the heat treatment instrument, based on a heat treatment temperature of the heat furnace of the heat treatment instrument;
obtaining a transfer function of the heat furnace on the basis of the transfer function of the entire system and the initialized temperature control parameters;
obtaining temperature control parameters to be adopted in actual processing, based on a target transfer function of the entire system of the heat treatment instrument and the transfer function of the heat furnace.

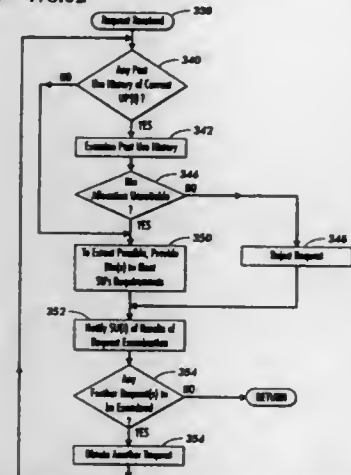
5,777,882 CONTROL SYSTEM FOR MAILBOXING ARRANGEMENT

David L. Salgado, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 26, 1996, Ser. No. 721,520
Int. Cl.⁶ B65H 39/10

U.S. Cl. 364—478.02

32 Claims



9. In a sheet handling system having a mailboxing system in which a controller communicates with a mailbox bin subsystem including a print receiving bin set with a plurality of print receiving bins, the plurality of print receiving bins being corresponded with a set of bin users, a method of adjusting the correspondence of print receiving bins to bin set users when usage of the print receiving bin set fluctuates from an accepted norm, comprising:

- assigning one or more print receiving bins of the plurality of print receiving bins to one of the bin set users;
- determining, for the one bin set user, a frequency of use value varying as a function of a degree to which the one bin set user uses the one or more print receiving bins to which the one bin set user is assigned;
- reassigning one of the one or more print receiving bins to which the one bin set user is assigned when the frequency of use value drops below a preselected threshold and a selected condition is met.

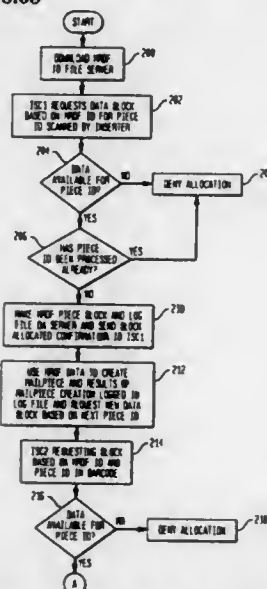
5,777,883 SYSTEM AND METHOD FOR MAIL RUN PROCESSING ON MULTIPLE INSERTERS

Mariano R. Lau, Ossining, N.Y., and Clare E. Woodman, Norwalk, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 25, 1996, Ser. No. 637,881
Int. Cl.⁶ G06F 17/00

U.S. Cl. 364—478.08

11 Claims



1. A method of processing a mail run on a plurality of inserter systems, said plurality of inserter systems including first and second inserter systems, the method comprising the steps of:
generating a mail run data file (MRDF) reflecting mailpieces of a mail run to be processed;
downloading the MRDF to a file server;
scanning documents at each of the plurality of inserter systems, each of the documents being scanned for an MRDF ID and a mailpiece ID;
requesting respectively an MRDF data block from the file server based on the scanned MRDF ID and mailpiece ID at each of the plurality of inserter systems;
verifying for the respective requests from each of the inserter systems that data is available for the requested mailpiece ID and that the requested mailpiece ID has not been processed by any of the plurality of inserter systems;
allocating the requested MRDF data block respectively to each of the inserter systems when the data is available and the requested mailpiece has not been processed;
using mailpiece data from the respective MRDF data block to create a mailpiece at each of the plurality of inserter systems.

5,777,884 ARTICLE INVENTORY TRACKING AND CONTROL SYSTEM

Anthony M. Belka, Stillwater, and Thomas J. Brace, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

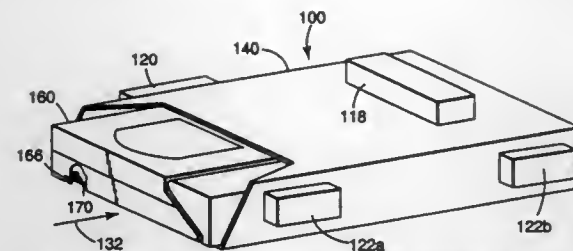
Filed Oct. 16, 1995, Ser. No. 543,364
Int. Cl.⁶ G08B 13/24

U.S. Cl. 364—478.13

18 Claims

1. An article inventory tracking and control system which tracks and controls transactions of articles out of or into a protected area, comprising:

- a receiving compartment adapted to receive a single article of a plurality of articles, each of the plurality of articles containing prerecorded magnetic data, each article of the plurality of articles having a same predefined configuration with a marker located at a same predetermined position at or near a surface of each article, the receiving compartment sized and adapted



to accept the article in a predetermined orientation within the receiving compartment;
means associated with the receiving compartment for changing the status of the marker of an article inserted into the receiving compartment;
user id code reading means for receiving user information from a user identification code;
article id code reading means for receiving article information from an article identification code attached to the article;
sensing means for determining whether the article is properly placed within the receiving compartment; and
means for validating a transaction based on the user information and the article information, the status changing means including means for creating a magnetic field of sufficient magnitude proximate only the marker to change the status of the marker as the article is removed after the transaction is validated, wherein the magnetic field is of a lesser magnitude at a distance from the marker such that the prerecorded magnetic data of the article is not detectably degraded.

5,777,885

DEVICES AND SYSTEMS WITH PROTECTIVE TERMINAL CONFIGURATION, AND METHODS

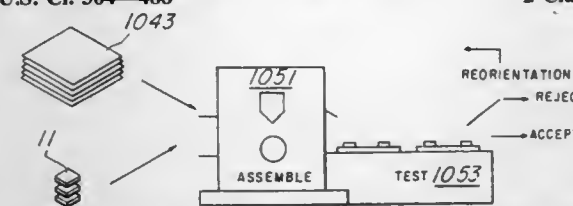
Peter N. Ehlig, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 918,902, Jul. 22, 1992, which is a continuation of Ser. No. 347,969, May 4, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 484,401

Int. Cl.⁶ G06F 11/30

U.S. Cl. 364—488

2 Claims



1. A method for selecting pin locations for an electronic device, comprising:
determining the rotational positions of said electronic device;
selecting symmetrical pin locations for preselected functions of said electronic device so that a preselected pin location for a selected function rotationally maps into another pin location for said selected pin function or rotationally maps into a no voltage pin location.

5,777,886

PROGRAMMABLE LEAD CONDITIONER

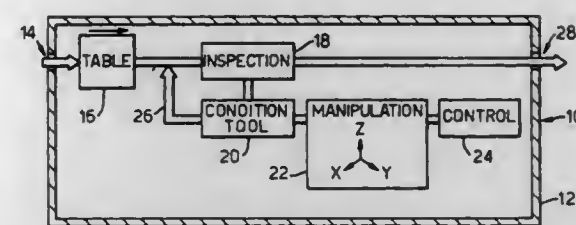
Michael D. Glucksman, Plano; Weerakiat Wahawisan, Carrollton; Troy D. Moore, Garland; Paul H. Hasten, Dallas; Dennis M. Botkin, Seagoville; James E. Loveless, Carrollton; Joseph Antao, Plano; Michael C. Zemek, Rowlett; and Rajiv Roy, Plano, all of Tex., assignors to Semiconductor Technologies & Instruments, Inc., Dallas, Tex.

Filed Jul. 14, 1994, Ser. No. 275,162
Int. Cl.⁶ H05K 3/30

U.S. Cl. 364—489

22 Claims

1. A lead conditioning system for an electronic component package having a set of leads for connecting electronic circuits of



the electronic component package to external circuitry, the lead conditioning system comprising:
a table for holding the electronic component package and providing access to said set of leads by a conditioning tool for conditioning respective leads of said set of leads;
a lead inspection system for inspecting said set of leads of said electronic component package held on said table;
a conditioning tool for selectively contacting only one lead of said set of leads to condition said one lead with said electronic component package held on said table;
a manipulator for moving said conditioning tool to a position to selectively move only said one lead of said set of leads to condition said one lead of said set of leads; and
a control system for controlling the operation of said manipulator.

5,777,887

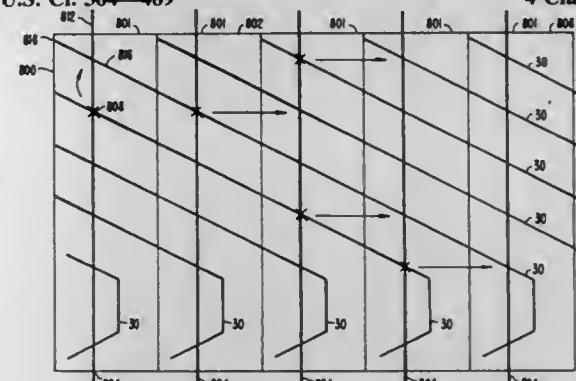
FPGA REDUNDANCY

David P. Marple, Palo Alto, and Laurence H. Cooke, San Jose, both of Calif., assignors to Crosspoint Solutions, Inc., Santa Clara, Calif.

Filed May 12, 1995, Ser. No. 439,675
Int. Cl.⁶ H03K 19/177; H04B 17/00

U.S. Cl. 364—489

4 Claims



1. In an integrated circuit having an array of functional units and conducting line segments, each functional unit including a plurality of ports, said conducting line segments including line segments connected to said ports of said functional units and unconnected line segments, said line segments crossing each other in a predetermined pattern at intersections, said intersections having programmable devices connected to said crossing line segments programmable to connect said crossing line segments, said array being divided into a plurality of columns of individual functional units and surrounding programmable devices, wherein one or more of said columns are preselected to be redundant, a method of programming said integrated circuit to perform a desired function by programming selected ones of said programmable devices, said method comprising the steps of:

- testing said integrated circuit to obtain column defect information identifying a defective column;
- generating a first interconnection pattern of programmable devices to be programmed for said integrated circuit to perform said desired function, none of said programmable devices being included in said redundant columns;
- modifying said first interconnection pattern by displacing programmable devices to be programmed in said defective column by one column toward a redundant column and displacing columns between said defective column and said

redundant column by one column toward said redundant column, thereby obtaining a second interconnection pattern of programmable devices to program for said integrated circuit to perform said desired function; and programming the programmable devices in said second interconnection pattern.

5,777,888

SYSTEMS FOR GENERATING AND ANALYZING STIMULUS-RESPONSE OUTPUT SIGNAL MATRICES

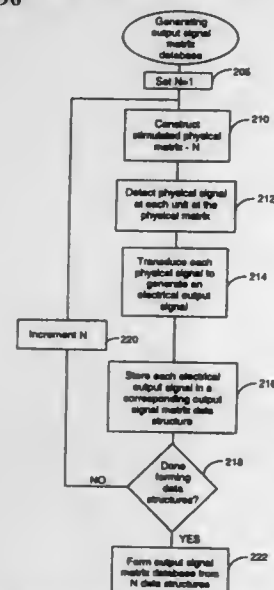
Jasper Rine, Moraga, and Matthew Ashby, San Anselmo, both of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Aug. 9, 1995, Ser. No. 512,753

Int. Cl.⁶ G06F 19/00

U.S. Cl. 364—496

28 Claims



1. A method for analyzing an output signal matrix by comparison to an output signal matrix database useful in expert systems and neural networks for correlating candidate stimuli and systemic responses of a living thing, comprising steps:

- constructing a stimulated physical matrix comprising an ordered array of units having X and Y coordinates, each unit confining a different responder of a living thing comprising a plurality of different responders or a probe corresponding to said different responder, and an identifier for said different responder or said probe, said living thing provided a stimulus repressing said different responder of a plurality of said units, said identifier providing a physical signal corresponding to the repression of said different responder, and said array comprising a predetermined functional class of said plurality of different responders;
- detecting the physical signal at each said unit of the physical matrix;
- transducing each said physical signal to generate a corresponding electrical output signal;
- storing each electrical output signal in an output signal matrix data structure associating each output signal with the X and Y coordinates of the corresponding physical matrix unit and said stimulus;
- determining the effect of said stimulus on said living thing by comparing the output signal matrix data structure of step (d) with an output signal matrix database produced by a method comprising steps:
 - constructing a stimulated physical matrix comprising an ordered array of units having X and Y coordinates, each unit confining a different responder of a living thing comprising a plurality of different responders or a probe corresponding to said different responder, and an identifier for said different responder or said probe, said living thing

provided a stimulus repressing said different responder of a plurality of said units, said identifier providing a physical signal corresponding to the repression of said different responder, and said array comprising a predetermined functional class of said plurality of different responders;

- detecting the physical signal at each said unit of the physical matrix;
- transducing each said physical signal to generate a corresponding electrical output signal;
- storing each electrical output signal in an output signal matrix data structure associating each output signal with the X and Y coordinates of the corresponding physical matrix unit and said stimulus;
- repeating steps (i)–(iv) to iteratively store output signal matrix data structures for a plurality of stimuli to form an output signal matrix database indexing output signal matrix data structures by stimuli.

16. A method for generating an output signal matrix database useful for correlating candidate stimuli and systemic responses, comprising steps:

- constructing a stimulated physical matrix comprising an ordered array of units having X and Y coordinates, each unit confining a different responder of a living thing comprising a plurality of different responders or a probe corresponding to said different responder and an identifier for said different responder or said probe, said living thing provided a stimulus repressing said different responder of a plurality of said units, said identifier providing a physical signal corresponding to the repression of said different responder, and said array comprising a predetermined functional class of said plurality of different responders;
- detecting the physical signal at each said unit of the physical matrix;
- transducing each said physical signal to generate a corresponding electrical output signal;
- storing each electrical output signal in an output signal matrix data structure associating each output signal with the X and Y coordinates of the corresponding physical matrix unit and said stimulus;
- repeating steps (a)–(d) to iteratively store output signal matrix data structures for a plurality of stimuli to form an output signal matrix database indexing output signal matrix data structures by stimuli.

5,777,889

METHOD AND APPARATUS FOR EVALUATING MOLECULAR STRUCTURES USING RELATIVISTIC INTEGRAL EQUATIONS

Ajaya Kumar Mohanty, Red Hook, N.Y., and Surya Narayan Panigrahy, Woodridge, Ill., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 22, 1994, Ser. No. 310,460

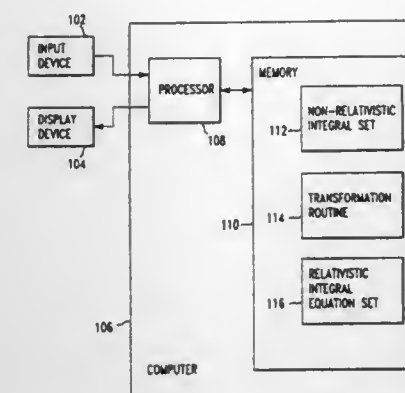
Int. Cl.⁶ G06F 19/00

U.S. Cl. 364—499

14 Claims

1. A method of generating and displaying a relativistic physical description of a predetermined molecular structure using a computer system containing a memory, a processor, an input device and a display device, said predetermined molecular structure containing heavy elements having relativistic features, said method comprising the steps of:

- inputting to said computer system a non-relativistic physical description of said predetermined molecular structure;
- storing within said memory, in response to said inputting step, a first data set comprising non-relativistic, Cartesian, two-electron repulsion integrals functionally related to said non-relativistic physical description of said predetermined molecular structure;
- transforming said first data set into a second data set, said second data set comprising relativistic integrals functionally related to said non-relativistic physical description of said predetermined molecular structure;



numerically solving said relativistic integrals to generate relativistic numerical parameters of said predetermined molecular structure; evaluating said relativistic numerical parameters and said non-relativistic physical description; generating, in response to said evaluating step, said relativistic physical description of said predetermined molecular structure, said relativistic physical description including at least one of said relativistic features of said predetermined molecular structure; and displaying said relativistic physical description, including said at least one of said relativistic features, of said predetermined molecular structure on said display device.

5,777,890

CONTROL OF MOISTURE ADDITION TO BULK SOLIDS

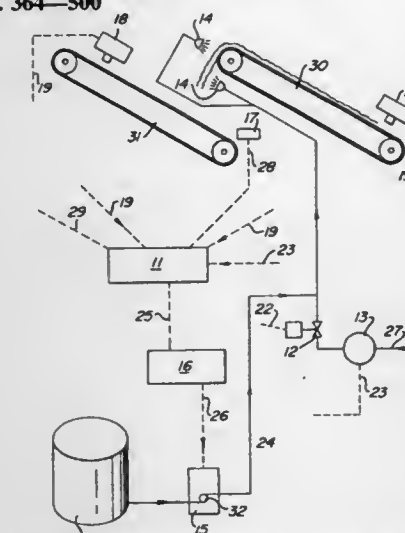
James D. Halley, Cedar Rapids, Iowa; Michael J. Mowbray, Eden Prairie, Minn., and Rodger D. Kurtz, Franklin, Tenn., assignors to BetzDearborn Inc., Trevose, Pa.

Filed Jan. 11, 1996, Ser. No. 585,337

Int. Cl.⁶ C10L 5/24; 7/00

U.S. Cl. 364—500

17 Claims



1. In a material handling system in which a chemical treatment including a glycol and water are added to a bulk solid, an apparatus for minimizing the amount of moisture added to said bulk solid while effectively controlling dust in said system, comprising:

- a moisture analyzing means, which monitors the surface moisture level of the bulk solid;
- calibration/measuring means for determining the proper amount of chemical and water to be fed to the system for dust control, said calibration/measuring means receiving the moisture level of the bulk solid from the moisture analyzing means;

means for feeding the chemical treatment and water to the bulk solid; and a dust analyzing means, which monitors dust levels in the system and sends a signal to the calibration/measuring means in order to adjust chemical feed and water flow in the system.

5,777,891

METHOD FOR REAL-TIME ULTRASONIC TESTING SYSTEM

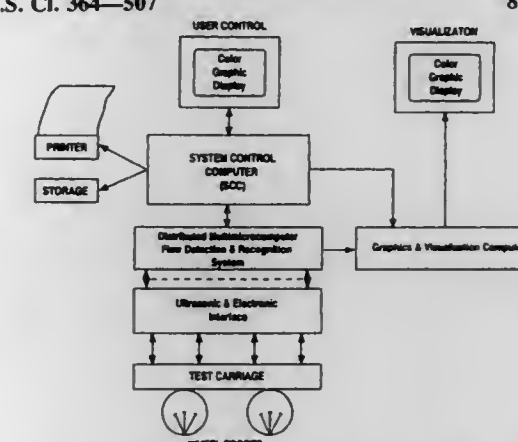
Dominick Pagano, Weston; Brian Mackay, Bethel, and James Norris, Georgetown, all of Conn., assignors to Dapco Industries Inc., Ridgefield, Conn.

Continuation of Ser. No. 393,943, Feb. 22, 1995, abandoned, which is a continuation of Ser. No. 257,933, Jun. 9, 1994, abandoned, which is a continuation of Ser. No. 124,837, Sep. 21, 1993, abandoned, which is a continuation of Ser. No. 696,505, May 7, 1991, abandoned. This application Aug. 23, 1996, Ser. No. 703,616

Int. Cl.⁶ G01N 29/06; 29/18

U.S. Cl. 364—507

8 Claims



1. A method for examining railroad rails for flaws using ultrasonic investigation techniques and for identifying flaws in the rail on a real-time basis, comprising the steps of:

- repetitively and regularly injecting pulses of a plurality of ultrasonic beams into the rails from test devices mounted on a vehicle traveling along the rails, and detecting within the test devices acoustic echoes caused at rail discontinuities by the ultrasonic-beams to produce electrical signals representative of the magnitude of the acoustic echoes;
- determining travel times of the acoustic echoes to the place of injection into the rails of the beams which caused the acoustic echoes;
- while said ultrasonic beams are repetitively and regularly injected into the rails, deriving from said travel times, angles of travel, beam pulse speeds, and beam spreads of the ultrasonic beams inside the rails, spatial signals representative of the locations of the discontinuities along the rails;
- combining spatial signals located within slices of the rails to identify and locate flaws in and along the rails while said ultrasonic beams are repetitively and regularly activated including the steps of storing information representative of normal patterns of known rail discontinuities and manufactured contexts, comparing combined spatial signals with said stored information to detect and identify unknown discontinuities and to one of eliminate and reclassify those discontinuities inconsistent with recognized context; and indicating the locations of said rail discontinuities.

5,777,892

DOPPLER SHIFT VELOCITY MEASURING SYSTEM WITH CORRECTION FACTORS

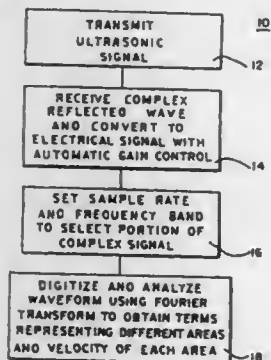
Frederick Alan Nabity; Larry Lee Fritz; Douglas Timothy Carson, all of Lincoln, Nebr., and Ralph Setter, Edmond, Okla., assignors to Isco, Inc., Lincoln, Nebr.

Continuation-in-part of Ser. No. 347,282, Nov. 30, 1994, Pat. No. 5,557,536, which is a division of Ser. No. 860,325, Mar. 30, 1992, Pat. No. 5,371,686. This application Sep. 16, 1996, Ser. No. 710,373

Int. Cl.⁶ G01H 5/00

U.S. Cl. 364—510

23 Claims



1. A method of determining the average velocity of a fluid stream that changes velocity, comprising the steps of: transmitting an ultrasonic signal from a probe into the fluid stream in a first direction; transmitting an ultrasonic signal from the probe into the fluid stream in a second direction whereby reflected ultrasonic signals are received from at least a representative portion of a cross section of the fluid stream; receiving reflected ultrasonic signals from said at least a representative portion of the cross section of the fluid stream; converting the received reflected ultrasonic signals to electrical signals representing reflection from said at least a representative portion of the cross section of the fluid stream; and utilizing substantially all of the electrical signals representing reflection from said at least a representative portion of the cross section of the fluid stream to calculate an approximate average velocity of the fluid stream; the step of utilizing substantially all of the electrical signals representing reflection from at least a representative portion of the cross section of the fluid stream to calculate an approximate average velocity of the fluid stream including the sub-step of determining the average energy of signals in each of several frequency ranges corresponding to different velocity ranges of the fluid stream.

5,777,893

INDUCTIVE LOOP DIAGNOSTIC INTERFACE

Cyril Arthur Farrow, Pietermaritzburg, and John Brass, Kwa-zulu Natal, both of South Africa, assignors to Electromatic (Proprietary) Limited, Pietermaritzburg, South Africa

Continuation-in-part of Ser. No. 285,119, Aug. 3, 1994, Pat. No. 5,621,661. This application Jun. 17, 1996, Ser. No. 665,285

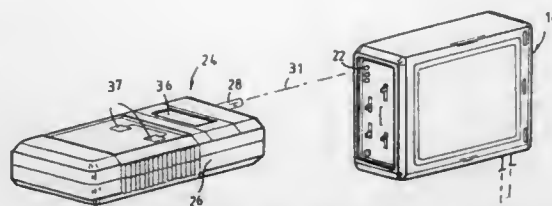
Claims priority, application South Africa, Aug. 4, 1993, 93/5634

Int. Cl.⁶ G08G 1/048

U.S. Cl. 364—551.01

12 Claims

1. A method of transferring diagnostic data from an inductive loop vehicle detector comprising an inductive loop and a detector unit connected to the loop, the method comprising the steps of: continuously generating within the detector unit diagnostic test data relating to performance of the loop; storing the generated data in a memory arrangement of the detector to produce stored data comprising at least historic diagnostic data generated over a period of time;



- repetitively modulating at least one optical signal output means with the stored data at such a rate that the data is not discernible to a human;
- detecting by means of a portable data reading device the signal emitted;
- storing data extracted from the signal; and
- retrieving the extracted data.

5,777,894

MONITORING AND PROTECTING DRIVES CONTROLLED WITH MICROCONTROLLER

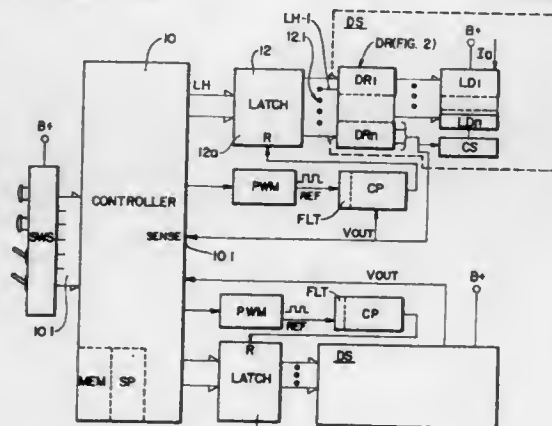
Steven Ray Settles, Sterling Heights; John Andrew Barrs, Clawson, and Darrell James Kolomyski, Chesterfield, all of Mich., assignors to UT Automotive Dearborn, Inc., Dearborn, Mich.

Filed Oct. 26, 1992, Ser. No. 967,465

Int. Cl.⁶ H04B 3/46

U.S. Cl. 364—550

4 Claims



1. A control system comprising: a plurality of loads; a drive for each load; and a switch means for operating each drive; characterized by: means for providing a reference signal with a magnitude that is a function of a received reference control signal; means for providing a sense signal indicating total current through the loads; means for comparing the sense signal and said reference signal to produce a reset signal when the sense signal is at least as great as said reference signal; means for producing first output signals that activate each drive simultaneously in response to a first control signal, for producing second output signals that activate each drive sequentially in response to a second control signal and for removing the first output in response to the reset signal; signal processing means for providing said first control signal in response to operation of switch means, for providing said second control signal in response to said reset signal, for providing said reference control signal in response to said switch means, for controlling the magnitude of the reference signal as function of the drives that are operated by the switches based on stored parameters for each drive, and for disabling the second signal for a specific drive when the current to the drive exceeds the value stored for the drive.

5,777,895

REMOTE MANAGEMENT SYSTEM

Kiyomitsu Kuroda, Otsu; Ichiro Fukuoka, Kusatsu, and Akira Takenaka, Kameoka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

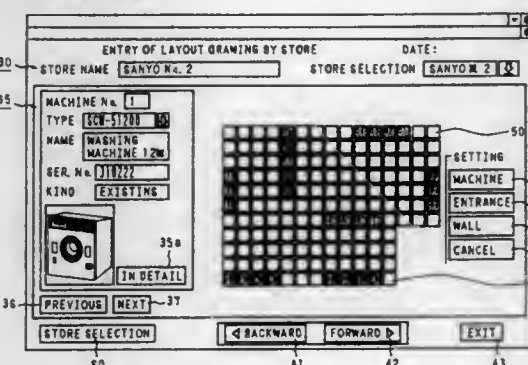
Filed May 17, 1996, Ser. No. 650,059

Claims priority, application Japan, May 19, 1995, 7-121893; Mar. 12, 1996, 8-055195

Int. Cl.⁶ G06F 15/00; H04M 11/00

U.S. Cl. 364—550

18 Claims



1. A remote management system where a central control apparatus manages a machine remotely based on data concerning the machine which is transmitted from the machine to said central control apparatus, said central control apparatus comprising: layout setting means for setting a machine layout of an area indicating the arrangement where said machine is installed in said area; and layout displaying means for displaying a picture of said machine layout of said area.

5,777,896

PLANT OPERATING AND MONITORING APPARATUS
Setsuo Arita, Hitachiota; Tetsuo Ito, Hitachi; Yukihiro Ohga; Fumio Murata, both of Katsuta; Yulchi Higashikawa, Hitachi; Hideyuki Sato, Hitachi; Mitsuru Kudo, Hitachi, and Yuuzi Yamasawa, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

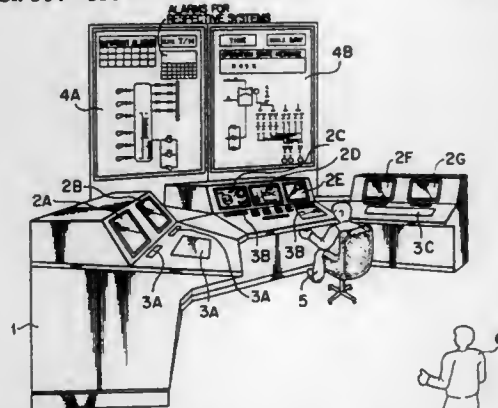
Continuation of Ser. No. 453,337, May 30, 1995, which is a continuation of Ser. No. 631,443, Dec. 21, 1990, abandoned.

This application Jun. 9, 1997, Ser. No. 871,548

Claims priority, application Japan, Dec. 22, 1989, 1-331327 Int. Cl.⁶ G05B 19/00

U.S. Cl. 364—550

15 Claims



1. An apparatus for operating and monitoring a plant, comprising: manipulating and monitoring panel means, including manipulating means and a first display device, for operating the plant which includes a plurality of systems; first display data producing means for displaying on said first display device plant information needed for an operator to

perform manipulation or monitoring of components constituting the plant by said manipulating means;

second display device, placed behind said manipulating and monitoring panel means and having a display screen whose size is larger than a size of a display screen of said first display device, for displaying a general configuration diagram of the plant and process variables indicative of operation states of said components of the plant;

abnormality decision means for determining, when an abnormality occurs in the plant, a system wherein the abnormality has occurred; and

second display data producing means controlling a display content of said second display device,

wherein said second display data producing means controls said second display device in a manner that, when the plant is in a normal state, said second display device displays said general configuration diagram of the plant and said process variables, and when an occurrence of an abnormality in the plant is determined by said abnormality decision means, said second display device displays an alarm for each of said systems in which an abnormal condition has occurred in addition to said general configuration diagram of the plant and said process variables.

5,777,897

METHOD FOR OPTIMIZING THE ROTATIONAL SPEED OF COOLING FANS

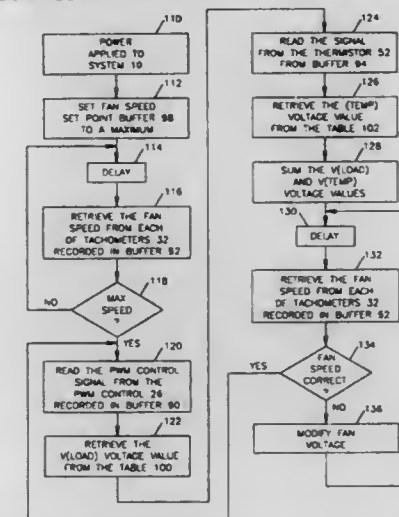
Paul J. Giorgio, Providence, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 26, 1996, Ser. No. 759,825

Int. Cl.⁶ F24F 7/00

U.S. Cl. 364—557

17 Claims



1. A method for controlling the temperature within an electrical device disposed in an environment having an ambient temperature by directing air past the electrical device, said method comprising the steps of:

monitoring the electrical load of the electrical device;

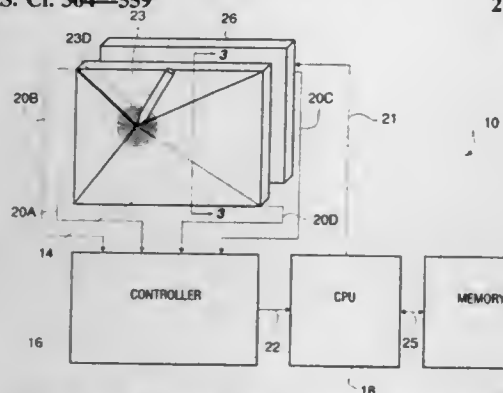
monitoring the ambient temperature;

monitoring the air flow past the electrical device; and

adjusting the air flow past the electrical device in response to the monitored electrical load, ambient temperature and air flow.

5,777,898
METHOD AND APPARATUS FOR ALIGNING A DIGITIZING PANEL WITH A DISPLAY DEVICE
 Jerzy A. Teterwak, Colorado Springs, Colo., assignor to Symbols Logic Inc., Fort Collins, Colo.
 Filed Aug. 19, 1996, Ser. No. 704,456
 Int. Cl.⁶ G09G 5/00

U.S. Cl. 364-559

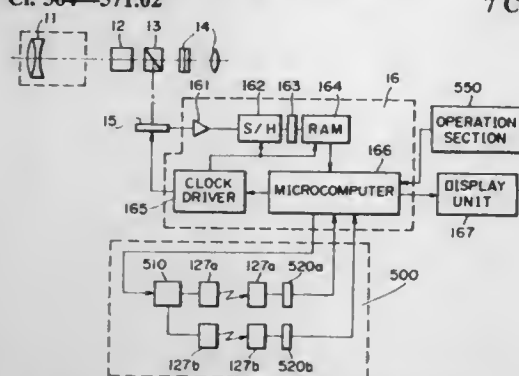


1. A method for aligning a first coordinate system of a digitizing panel with a second coordinate system of a display device, comprising the steps of:

- displaying a plurality of reference points on the display device, each of said reference points having a X_{ref} , Y_{ref} coordinate value;
- determining a plurality of first X_r , Y_r coordinate values from the digitizing panel which are indicative of a plurality of positions of an object positioned relative to said plurality of reference points;
- determining a plurality of channel gain correction values from said plurality of first X_r , Y_r coordinate values and said plurality of X_{ref} , Y_{ref} coordinate values; and
- storing said plurality of channel gain correction values for use in correcting a second X_r , Y_r coordinate value which is indicative of a position of an object relative to said digitizing panel.

5,777,899
HORIZONTAL POSITION ERROR CORRECTION MECHANISM FOR ELECTRONIC LEVEL
 Kaoru Kumagai, Tokyo, Japan, assignor to Kabushiki Kaisha TOPCON, Tokyo, Japan
 Filed Nov. 22, 1996, Ser. No. 755,031
 Claims priority, application Japan, Nov. 24, 1995, 7-329768
 Int. Cl.⁶ G01C 3/08; 9/00

U.S. Cl. 364-571.02



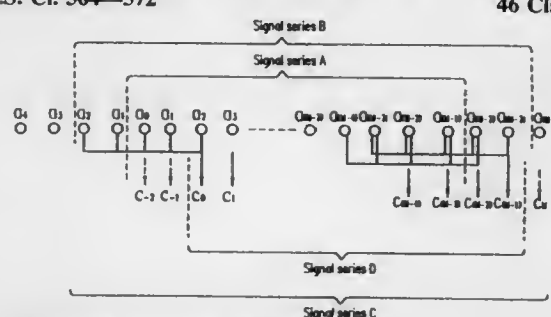
1. A horizontal position error correction mechanism for an electronic level wherein a level rod is collimated to automatically detect a difference of elevation of said level rod, comprising a telescope optical system including a measurement optical system including a photoelectric converter for forming a signal of a pattern of said level rod and a collimation optical system for collimating said level rod, calculation processing means for processing an output signal of said photoelectric converter by calculation, said

21 Claims

telescope optical system having compensator means formed thereon for correcting an inclination of said electronic level to maintain a horizontal position of said electronic level, said compensator means including a suspended optical member suspended for rocking motion in forward and backward directions and leftward and rightward directions in response to an inclination of said compensator means, and inclination angle detection means for detecting an inclined angle of said suspended optical member, said calculation processing means calculating an inclination angle data signal of said compensator means based on a detection signal of said inclination angle detection means to correct a horizontal position error of said suspended optical member.

5,777,900
FILTERING PROCESSOR AND FILTER METHOD
 Seichi Takeuchi, Neyagawa, and Shinya Kadono, Kobe, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
 Filed Mar. 9, 1995, Ser. No. 401,363
 Claims priority, application Japan, Mar. 10, 1994, 6-039745
 Int. Cl.⁶ H04N 17/00; 19/00

U.S. Cl. 364-572



46 Claims

1. A filtering processor, comprising:
 computer implemented transformation means for transforming a first signal series $\{a_0, a_1, \dots, a_i, \dots, a_{(M-1)}\}$ having M signals (M is a natural number) into a second signal series $\{b_{-K}, \dots, b_{-1}, b_0, b_1, \dots, b_{M-1}, b_M, \dots, b_{M+K-1}\}$ having $(M+2K)$ signals; and
 an N -tap filter (N is a natural number and $N \leq M$) for filtering the second signal series,
 wherein the transformation means transforms the first signal series into the second signal series based on equations:

$$b_i = a_{-i} \quad (\text{when } -K \leq i < 0)$$

$$b_i = a_i \quad (\text{when } 0 \leq i < M)$$

$$b_i = a_{2M-i-2} \quad (\text{when } M \leq i \leq M+K-1)$$

where i is an integer, and K is a natural number; $K=N/2$ when N is an even number, and $K=(N-1)/2$ when N is an odd number.

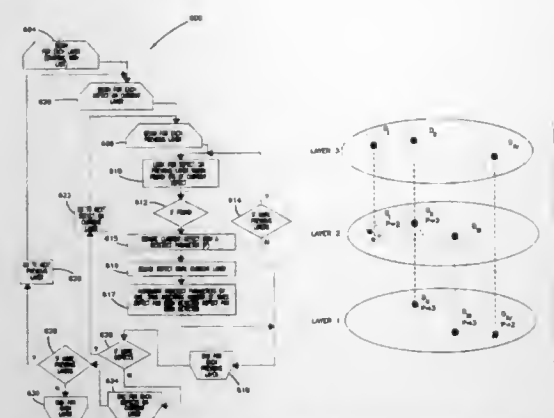
5,777,901
METHOD AND SYSTEM FOR AUTOMATED DIE YIELD PREDICTION IN SEMICONDUCTOR MANUFACTURING
 Alan Berezin, and Reuben Quintanilla, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
 Filed Sep. 29, 1995, Ser. No. 536,830
 Int. Cl.⁶ G06G 7/48; G06F 15/00

U.S. Cl. 364-578

27 Claims

21. A computer program for analyzing data associated with defects on a substrate, the substrate including multiple layers and multiple die, the computer program stored on a computer-readable medium, comprising:

- instructions for reading files containing defect data for selected layers of said substrate, said defect data including defect type and defect size information;



instructions for estimating, from said defect data, defect type codes for unclassified ones of said defects on said substrate, extrapolated from classified ones of said defects on said substrate;

instructions for stacking said defect data to identify a layer of first occurrence of each defect and a count of layers upon which each defect is redetected, said defect data pertaining to occurrences on layers other than said layer of first occurrence being discarded;

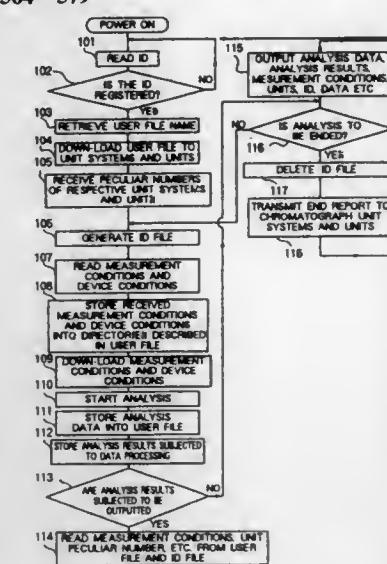
instructions for assigning a kill factor to each that remains after stacking, according to a set of rules, each said rule specifying defect parameters that include layer of first occurrence, redetect count, defect size, and defect type;

instructions for determining failure probabilities of the die according to kill factors assigned to said defects; and
 instructions for determining from said failure probabilities the estimated die loss for said substrate.

5,777,902
ANALYZER
 Takayuki Ono, and Kiyotoshi Mori, both of Hitachinaka, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Continuation of Ser. No. 371,325, Jan. 11, 1995, abandoned.
 This application Nov. 1, 1996, Ser. No. 743,412
 Claims priority, application Japan, Mar. 16, 1994, 6-045362
 Int. Cl.⁶ G06F 17/40

U.S. Cl. 364-579

6 Claims



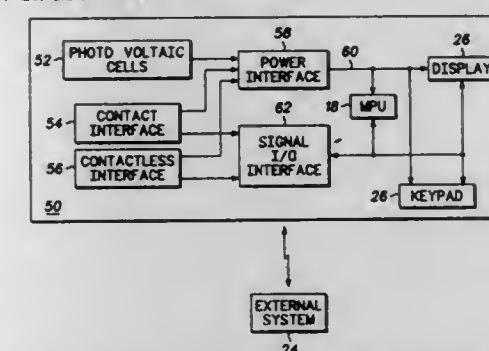
1. An automatic analyzer comprising:
 a) a plurality of analysis portions each having a plurality of processing element units;
 b) a data processing unit including storage; and
 c) an output device, wherein:

- d) a unit identification code is assigned to each of said analysis portions and to each of said processing element units, said unit identification code being stored in said data processing unit;
- e) a user identification code corresponding to a user is stored in said data processing unit;
- f) unit identification codes corresponding to particular analysis portions and to particular processing element units, which the user is permitted to use for executing an analysis operation, are assigned to each of said user identification codes in said data processing unit; and
- g) analysis results, and identification of analysis portions and processing element units used for analysis are output by said data processing unit to said output device after analysis operation is completed.

5,777,903
SOLAR CELL POWERED SMART CARD WITH INTEGRATED DISPLAY AND INTERFACE KEYPAD
 Gerald V. Piosenka, Scottsdale; Thomas M. Fox, Gilbert, and Kenneth H. Schmidt, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
 Filed Jan. 22, 1996, Ser. No. 589,684
 Int. Cl.⁶ G06F 7/12

U.S. Cl. 364-700

14 Claims



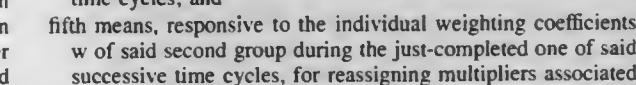
1. A smart card for transferring information between the smart card and an external system, the smart card having the capability of being accessed by a user, the smart card comprising:
 a controller unit for controlling an operation of the smart card;
 a display, coupled to said controller unit, for displaying information;
 a keypad, coupled to said controller unit and to said display, for entering data by the user;
 an interface for transferring signals between the smart card and the external system when the smart card is coupled to the external system, wherein power may be provided to the smart card from the external system through said interface;
 a power source for providing power to the smart card when the smart card is exposed to light; and
 a power interface for selectively powering the smart card with either power from said power source or power from the external system via said interface.

5,777,904
SYSTEM COMPRISING AN APPARATUS AND A PERIPHERAL DEVICE FOR THE APPARATUS, AND AN APPARATUS AND A PERIPHERAL DEVICE FOR SUCH A SYSTEM
 Gerhard Schneider, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
 Filed Feb. 23, 1996, Ser. No. 606,120
 Claims priority, application Austria, Feb. 23, 1995, 329/95
 Int. Cl.⁶ G06F 3/03

U.S. Cl. 364-709.11

20 Claims

1. A system comprising:
 an apparatus having a plurality of apparatus contacts, and



179-282 O.G.- 98 - 32 : OL 3

implementing a $P_{field}(H(i-1), H(i-1))$ operation in using a multiplier of the coprocessor, and the storage of the result referenced $R(i)$ in the memory or in the register of the coprocessor, if the bit with the place value 2^{p-i-1} of the data element m^*k is equal to 1, then performing a $P_{field}(H(i-1), H(0))$ operation by using a multiplier of the coprocessor and the storage of the result $H(i)$ in the memory or in the register of the coprocessor.

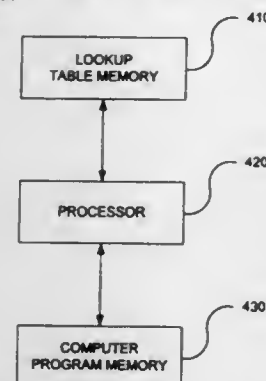
5,777,917

SIMPLIFICATION OF LOOKUP TABLE

Shine Chien Chung, San Jose, Calif., assignor to Hitachi Micro Systems, Inc., San Jose, Calif.

Filed Mar. 21, 1996, Ser. No. 621,726
Int. Cl.⁶ G06F 7/52

U.S. Cl. 364—767



1. A process for reducing the size of a lookup table used to determine a partial quotient from a first partial remainder and a divisor, the process comprising the steps of:
subtracting a number from the first partial remainder for computing a second partial remainder; and
looking up in the reduced-size lookup table stored in a memory a partial quotient associated with the second partial remainder and the divisor, wherein the lookup table is reduced in size since a plurality of partial quotients associated with partial remainders all have a like sign.

5,777,918

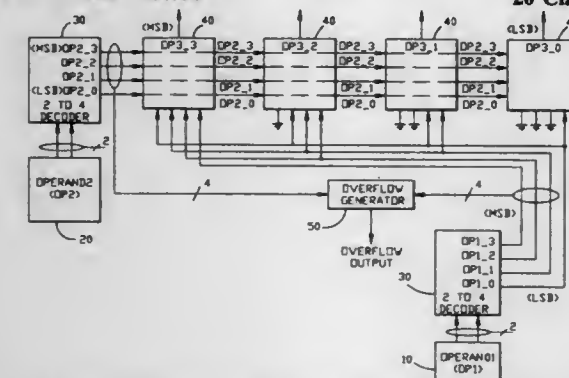
FAST MULTIPLE OPERANDS ADDER/SUBTRACTOR BASED ON SHIFTING

Kin Shing Chan, Austin, Tex.; Chiao-Mei Chuang, Cupertino, Calif.; Sang Hoo Dhoong, Austin, Tex., and Alessandro Marchioro, Ferney-Voltaire, France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 13, 1996, Ser. No. 600,691
Int. Cl.⁶ G06F 7/50

U.S. Cl. 364—786.04

20 Claims



1. A circuit for performing multiple operand arithmetic operations, comprising:

a pair of n -to- 2^n decoders for decoding a first and a second n -bit binary operand into a respective first decoded operand and a second decoded operand; and
first shifting means coupled to said first and second decoded operands for shifting said first decoded operand to the left according to said second decoded operand to generate a first decoded sum representing the addition of said second decoded operand to said first decoded operand.

5,777,919

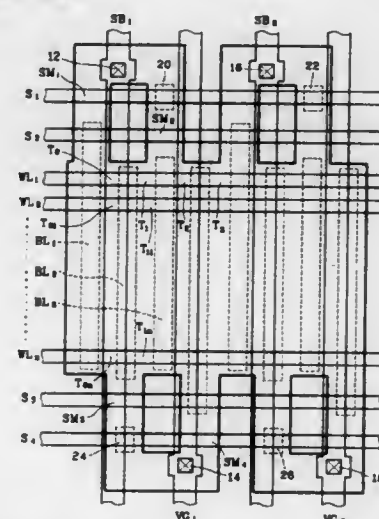
SELECT GATE ENHANCED HIGH DENSITY READ-ONLY-MEMORY DEVICE

Wu Chi-Yung, Hsin Chu, Taiwan; Ling Chen, Sunnyvale, Calif., and Tony Peng, Miaoli, Taiwan, assignors to Holtek Microelectronics, Inc., Hsinchu, Taiwan

Filed Sep. 13, 1996, Ser. No. 713,741
Int. Cl.⁶ G11C 17/00

U.S. Cl. 365—104

5 Claims



1. A select gate enhanced high density read-only-memory device, comprising:

- a plurality of word lines which are formed by a set of parallel horizontal polysilicon lines;
- a plurality of bit lines which are formed by a set of parallel vertical buried N^+ bit lines, wherein said bit lines are perpendicular to said word lines to form a ROM cell matrix;
- a plurality of metal lines which are deposited above every other said N^+ buried lines;
- a plurality of select lines which are formed from polysilicon and located on top and bottom sides of said ROM cell matrix to select desired word lines and bit lines;
- a thin oxide layer which is deposited above said ROM cell matrix;
- an extended region in said thin oxide layer wherein said extended region includes an upper extension portion and a lower extension portion, said upper extension portion has a grating structure at positions corresponding to and at least partially overlapping every other said N^+ buried lines, said lower extension portion has a similar grating structure at positions corresponding to and at least partially overlapping every other said N^+ buried lines in an alternative manner; further each of said buried N^+ lines alternatively has an upwardly or downwardly extension to provide said overlapping with either said upper extension portion or said lower extension portion, respectively.

5,777,920

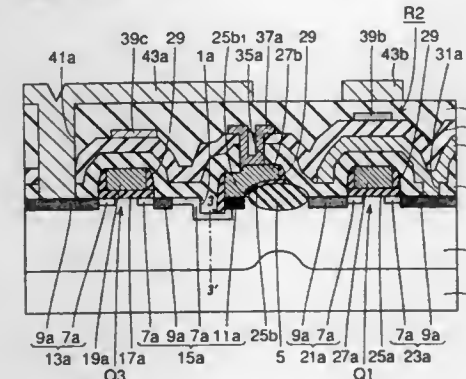
SEMICONDUCTOR MEMORY DEVICE AND METHOD OF MANUFACTURING THE SAME

Yoshiyuki Ishigaki, and Kazuhito Tsutsumi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1996, Ser. No. 648,605
Claims priority, application Japan, Dec. 7, 1995, 7-319347
Int. Cl.⁶ G11C 11/00

U.S. Cl. 365—154

22 Claims



1. A semiconductor memory device provided with static memory cells comprising:
a semiconductor substrate having a main surface and provided at said main surface with a groove; and
an access transistor having a pair of source/drain regions formed at said main surface and spaced from each other, wherein one of said source/drain regions of said access transistor has:
a first impurity region formed at said main surface and having a first diffusion depth from said main surface,
a second impurity region formed at said main surface, being in contact with an end of said first impurity region on the side of the other of said source/drain regions, and having a smaller impurity concentration than said first impurity region, and
a third impurity region spaced from said second impurity region with said first impurity region therebetween, formed at a whole bottom surface of said groove, and having a second diffusion depth from the bottom surface of said groove smaller than said first diffusion depth.

5,777,922

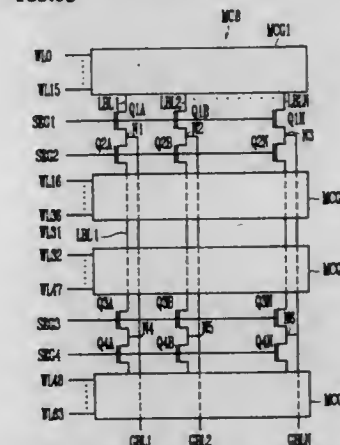
FLASH MEMORY DEVICE

Young Jung Choi, Choongcheongbuk-Do, and Joo Weon Park, Seoul, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 18, 1996, Ser. No. 730,873
Int. Cl.⁶ G11C 16/04

U.S. Cl. 365—185.05

2 Claims



1. A flash memory device comprising:
a plurality of memory cell groups having a plurality of local bit lines and word lines which are arranged in the form of a matrix;
a pair of segmentation transistors connecting corresponding local bit lines between two memory cell groups;
a plurality of connection nodes formed by the connecting of corresponding local bit lines by said pair of segmentation transistors;
a row address buffer which generates an address signal;
a pre-decoder which generates a pre-decoded signal by pre-decoding said address signal;

a segmentation signal generator to selectively turn on said segmentation transistors, wherein said segmentation signal generator operates in response to said pre-decoded signal; and a plurality of global bit lines connected to corresponding connection nodes of said segmentation transistors.

5,777,923

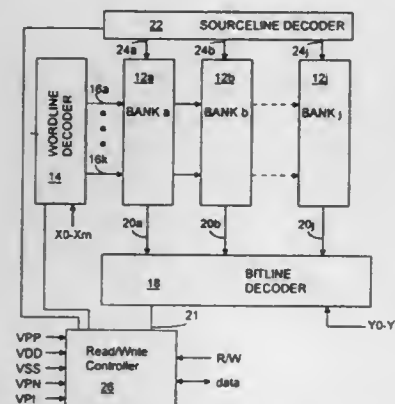
FLASH MEMORY READ/WRITE CONTROLLER
Peter W. Lee, Saratoga, Calif.; Hsing-Ya Tsao, and Fu-Chang Hsu, both of Taipei, Taiwan, assignors to Aplus Integrated Circuits, Inc., Saratoga, Calif.

Filed Jun. 17, 1996, Ser. No. 664,639

Int. Cl.⁶ G11C 11/34

U.S. Cl. 365—185.11

22 Claims



1. A flash memory read/write controller for use with a flash memory including a flash transistor array, a wordline decoder, a bitline decoder and a sourceline decoder, said controller comprising:

- a voltage terminal to receive an input voltage;
- a data terminal to receive a new data signal;
- a sense amplifier coupled to said bitline decoder and configured to sense a signal on a selected bitline and to generate an old data signal;
- a data comparator coupled to said data terminal and said sense amplifier and configured to compare said new data signal to said old data signal and to generate a comparator signal; and
- a voltage generator coupled to said voltage terminal, said wordline decoder, said bitline decoder and said sourceline decoder and configured to selectively provide a read set of voltages to read a selected cell in said flash transistor array, a program set of voltages to program a selected cell in said flash transistor array and an erase set of voltages to erase a selected cell in said flash transistor array; and

wherein said wordline decoder, said bitline decoder and said sourceline decoder are configured to selectively apply said voltages based at least in part on said comparator signal.

5,777,924

FLASH MEMORY ARRAY AND DECODING ARCHITECTURE

Peter Wung Lee, Saratoga, Calif.; Fu-Chang Hsu, and Hsing-Ya Tsao, both of Taipei, Taiwan, assignors to Aplus Integrated Circuits, Inc., Saratoga, Calif.

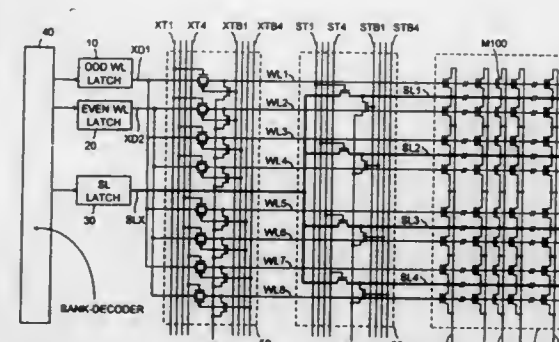
Filed Jun. 5, 1997, Ser. No. 872,475

Int. Cl.⁶ G11C 11/34; 7/00

U.S. Cl. 365—185.11

41 Claims

1. A flash memory array comprising:
a plurality of flash memory cells being arranged in a plurality of rows and a plurality of columns, each of said flash memory cells having a control gate, a drain source;



- a plurality of odd word lines each connecting the control gates of all the flash memory cells in a same odd row;
- a plurality of even word lines each connecting the control gates of all the flash memory cells in a same even row;
- a plurality of bit lines each connecting the drains of all the flash memory cells in a same column;
- and a plurality of source lines each connecting the sources of all the flash memory cells in an odd row and an associated even row next to the odd row.

5,777,925

SEMICONDUCTOR NON-VOLATILE MEMORY DEVICE

Kaoru Tokushige, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

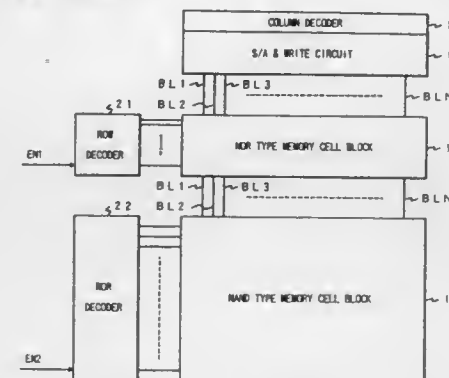
Filed Jul. 3, 1997, Ser. No. 888,073

Claims priority, application Japan, Jul. 11, 1996, 8-182453

Int. Cl.⁶ G11C 11/34

U.S. Cl. 365—185.11

9 Claims



1. A semiconductor non-volatile memory device comprising:
a column decoder supplied with a column address signal to select a bit line;
a row decoder supplied with a row address signal to select a word line;
at least one NOR type memory cell block; and
at least one NAND type memory cell block,
wherein the NOR type memory cell block and the NAND type memory cell block are connected to common bit lines, and are connected to different word lines.

5,777,926

ROW DECODER CIRCUIT FOR PMOS NON-VOLATILE MEMORY CELL WHICH USES CHANNEL HOT ELECTRONS FOR PROGRAMMING

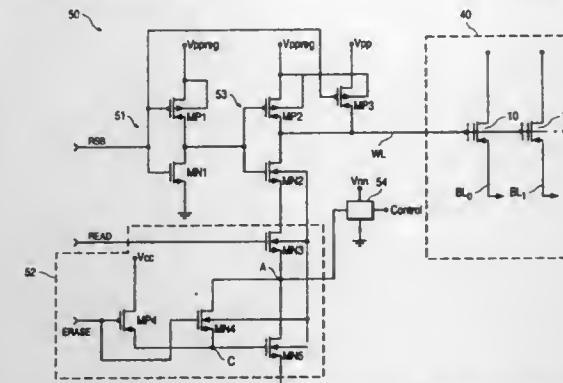
Jayson Gaii Trinh, Milpitas; Vikram Kowshik, San Jose, and Andy Teng-Feng Yu, Palo Alto, all of Calif., assignors to Programmable Microelectronics Corporation, San Jose, Calif.

Filed Oct. 24, 1996, Ser. No. 738,434

Int. Cl.⁶ G11C 11/34

U.S. Cl. 365—185.19

17 Claims



1. A row decoder circuit for selectively providing reading, programming, and erasing voltages to a word line of an associated memory array employing PMOS floating gate transistors as memory cells, said row decoder circuit comprising:

- a first transistor coupled between said word line and a first voltage line and having a gate coupled to receive a select control signal, said first transistor pulling said word line to a first potential on said first voltage line in response to said select control signal indicating said word line is selected for a reading, programming or erasing operation and electrically isolating said word line from said first voltage line in response to said select control signal indicating said word line is not selected for one of said operations; and
- a second transistor coupled between said word line and a second voltage line and having a gate coupled to receive said select control signal, said second transistor pulling said word line to a second potential on said second voltage line in response to said select control signal indicating said word line is not selected for one of said operations and electrically isolating said word line from said second voltage line in response to said select control signal indicating said word line is selected for one of said operations, wherein during said programming operation said first potential is ramped from a low potential to a high potential.

5,777,927

SEMICONDUCTOR MEMORY

Tsugio Takahashi, Ome; Goro Kitsukawa, Hinode-machi; Takesada Akiba, Tachikawa; Yasushi Kawase, Kokubunji, and Masayuki Nakamura, Nagoya, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Device Engineering Co., Ltd., Mobara, both of Japan

Continuation of Ser. No. 574,104, Dec. 20, 1995, Pat. No. 5,604,697. This application Jan. 7, 1997, Ser. No. 779,835

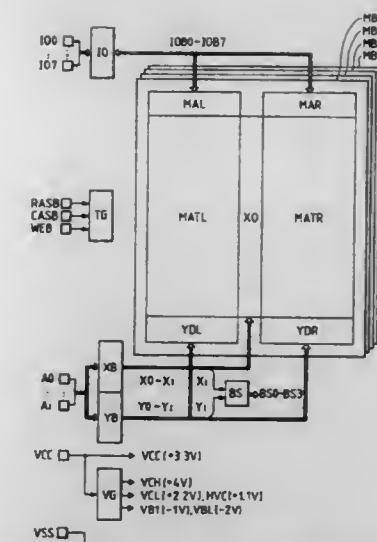
Claims priority, application Japan, Dec. 20, 1994, 6-334950

Int. Cl.⁶ G11C 13/00

U.S. Cl. 365—189.01

7 Claims

1. A semiconductor memory comprising:
a first memory array having a plurality of first main word lines, a plurality of sets of first sub-word lines, a plurality of pairs of first data lines and a plurality of first memory cells each of which is coupled to a corresponding one of said plurality of first sub-word lines and a corresponding one of said plurality of first data lines, each of said sets of first sub-word lines corresponding to one of said plurality of first main word lines;



- a second memory array having a plurality of second main word lines, a plurality of sets of second sub-word lines, a plurality of pairs of second data lines and a plurality of second memory cells each of which is coupled to a corresponding one of said plurality of second sub-word lines and a corresponding one of said plurality of second data lines, each of said sets of second sub-word lines corresponding to one of said plurality of second main word lines;
- a pair of first sub-common data lines extending in a first direction;
- a pair of second sub-common data lines extending in said first direction;
- a pair of main common data lines extending in a second direction perpendicular to said first direction;
- a first switching circuit coupled between said plurality of pairs of first data lines and said pair of first sub-common data lines;
- a second switching circuit coupled between said plurality of pairs of second data lines and said pair of second sub-common data lines;
- a third switching circuit coupled between said pair of first sub-common data lines and said pair of main common data lines; and
- a fourth switching circuit coupled between said pair of second sub-common data lines and said pair of main common data lines.

5,777,928

MULTI-PORT REGISTER

Robit A. Vidwans, Beaverton; Wesley D. McCullough, Aloha; Joel Huang, and Joseph F. Rohman, both of Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

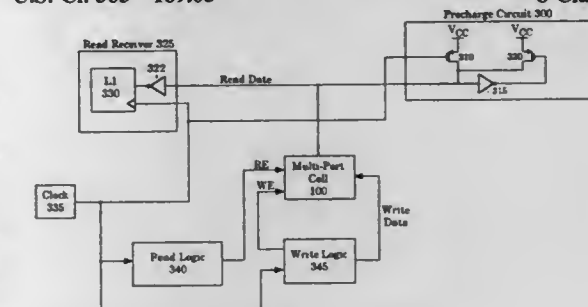
Continuation of Ser. No. 174,715, Dec. 29, 1993, abandoned.

This application Jan. 21, 1997, Ser. No. 785,575

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—189.05

8 Claims



1. An apparatus for storing data comprising:
a storage device for storing at least two states;

at least one read port coupled to said storage device, said at least one read port comprising:

- a read enable line for accessing said at least one read port;
- a read data line;
- a precharge circuit for charging said read data line to a predetermined voltage level;
- a first switching element coupled to said storage device and to ground such that a first logic state stored in said storage device biases said first switching element to conduct current; and
- a second switching element coupling said first switching element to said read data line, and being controlled by said read enable line, such that an active enable signal on said read enable line results in a conductive path from said read data line to said first switching element, wherein said first switching element pulls said read data line to ground when said first state is stored in said storage device, and said read data line retains said predetermined voltage level when a second state is stored in said storage device;

at least one write port coupled to said storage device, said at least one write port comprising:

- a write enable line;
- a write data line;
- a third switching element being controlled by said write data line and being coupled to ground such that a first state applied to said write data line results in conduction of current in said third switching element to ground;
- a fourth switching element coupling said third switching element to said storage device, and being controlled by said write enable line, such that when said fourth switching element receives an active signal on said write enable line, a conductive path is formed from said storage device to ground; and
- a fifth switching element coupling said storage device to said write data line, and being controlled by said write enable line such that when said fifth switching element receives an active signal on said write enable line, a second state applied to said write data line drives said storage device to said second state.

5,777,929

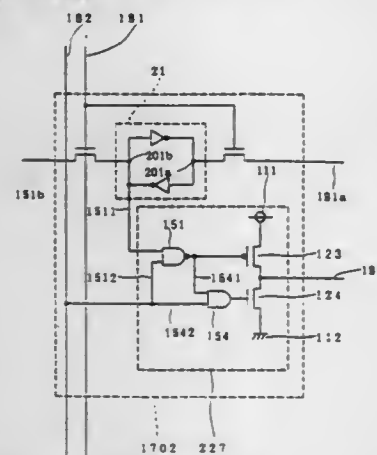
MULTI-PORT MEMORY CELL CIRCUIT HAVING READ BUFFER FOR REDUCING READ ACCESS TIME

Koji Nii, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 626,854, Apr. 2, 1996, Pat. No. 5,684,743, which is a division of Ser. No. 383,860, Feb. 6, 1995, Pat. No. 5,535,159, which is a division of Ser. No. 105,629, Aug. 13, 1993, Pat. No. 5,420,813. This application Jun. 6, 1997, Ser. No. 870,399

Claims priority, application Japan, Sep. 17, 1992, 4-2427723 Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—189.05 9 Claims



5,777,934

SEMICONDUCTOR MEMORY DEVICE WITH VARIABLE PLATE VOLTAGE GENERATOR

Sang-bo Lee, and Dong-il Seo, both of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

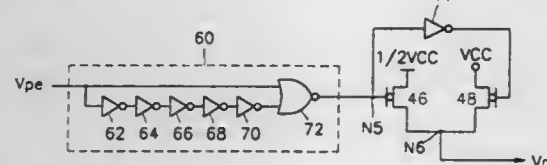
Filed Jul. 8, 1996, Ser. No. 674,705

Claims priority, application Rep. of Korea, Jul. 7, 1995, 95-19993

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—203

21 Claims



1. A semiconductor memory device comprising:
a memory cell having a plate node; and
a plate voltage generator coupled to the plate node, the plate voltage generator generating a first voltage signal at the plate node during a precharge operation and a second voltage signal at the plate node during an access operation and before a sensing operation.

5,777,935

MEMORY DEVICE WITH FAST WRITE RECOVERY AND RELATED WRITE RECOVERY METHOD

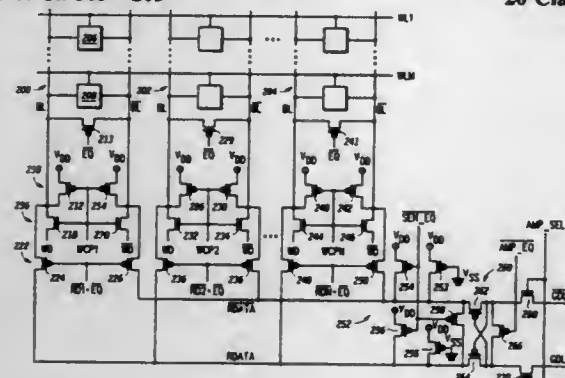
Dimitris C. Pantelakis; William L. Martino, Jr.; Derrick Leach; Frank A. Miller, and Wai T. Lau, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 12, 1997, Ser. No. 815,527

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—203

20 Claims



1. A memory device, comprising:
a plurality of memory cells, each memory cell of the plurality of memory cells coupled to a word line and to a bit line pair;
a bit line load, coupled to the bit line pair, for charging the bit line pair to a predetermined voltage in response to a first control signal;
a read data line pair for selectively coupling the bit line pair to output circuitry during a read cycle of the memory device; and
a precharge circuit, coupled to the read data line pair, and responsive to a second control signal, wherein following an access to a memory cell coupled to the bit line pair, the read data line pair is coupled to the bit line pair, and the first and second control signals are asserted at about the same time to recharge the bit line pair to the predetermined voltage.

5,777,936

Patent Not Issued For This Number

5,777,937

REGRESSIVE DRIVE SENSE AMPLIFIER

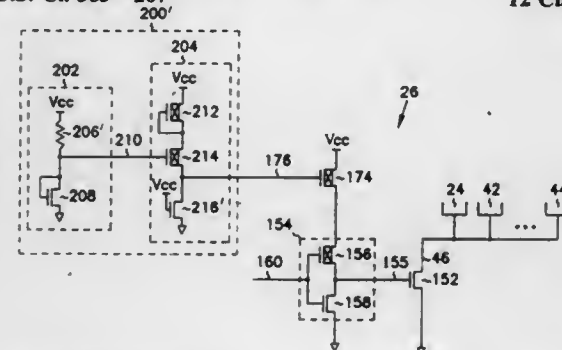
Brian M. Shirley, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 790,377, Jan. 28, 1997, Pat. No. 5,708,617. This application Sep. 9, 1997, Ser. No. 927,360

Int. Cl.⁶ G11C 7/02

U.S. Cl. 365—207

12 Claims



8. A pull-down circuit in a sense amplifier having a common node and receiving a power supply voltage, the pull-down circuit comprising:

- a pull-down transistor having a drain coupled to the common node, a gate, and a source coupled to ground;
- a pull-down gate control circuit having a power terminal and receiving an input signal and providing a gate control signal based on the input signal to the gate of the pull-down transistor;
- a choke transistor having a drain coupled to the power terminal of the pull-down gate control circuit, a gate, and source coupled to the power supply voltage;
- a first-stage transistor tree including:
 - a first N-channel transistor having a source coupled to ground, a gate, and a drain coupled to the gate and to a first node, and
 - a first resistive element coupled between the power supply and the first node; a second-stage transistor tree stage including:
 - a first P-channel transistor having a source coupled to the power supply, a gate, and a drain coupled to the gate, and
 - a second P-channel transistor having a source coupled to the gate and drain of the first P-channel transistor, a gate coupled to the first node, and a drain coupled to coupled to the gate of the choke transistor, and
 - a second resistive element coupled between ground and the drain of the second P-channel transistor; and
- wherein the first-stage and second-stage transistor trees operate to provide a gate voltage to the gate of the choke transistor, wherein the gate voltage decreases as the power supply voltage decreases to thereby increase a gate-to-source voltage on the choke transistor, and wherein the gate voltage increases as the power supply voltage increases to thereby decrease the gate-to-source voltage on the choke transistor.

5,777,938

SEMICONDUCTOR MEMORY DEVICE CAPABLE OF OUTPUTTING MULTI-BIT DATA USING A REDUCED NUMBER OF SENSE AMPLIFIERS

Kenichi Nakamura, Tokyo, and Takahiro Tsuruto, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

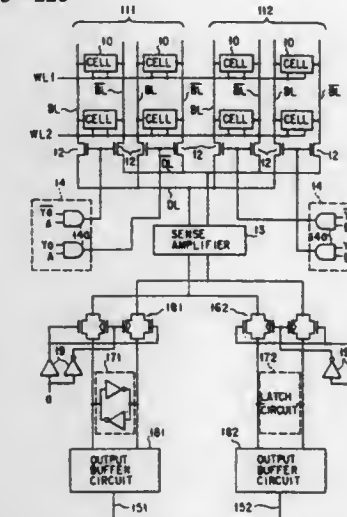
Filed Mar. 27, 1996, Ser. No. 625,394

Claims priority, application Japan, Mar. 28, 1995, 7-069157

Int. Cl.⁶ G11C 7/06

U.S. Cl. 365—220

16 Claims



1. A semiconductor memory device comprising:
a memory cell array having memory cells arranged in a matrix form such that a plurality of columns are divided into a plurality of column sections;
a plurality of column selection circuits coupled to the plurality of column sections, each of the column selection circuits for selecting one of said columns of a corresponding column section when that column selection circuit is enabled by a control signal;
a data line coupled in common to two or more of the column sections such that the data line is selectively connected to the columns of said two or more column sections, for transferring data read from one of said memory cells that is connected to the column selected by the column selection circuit that is enabled by the control signal;
a sense amplifier coupled to said data line, for sense-amplifying data transferred through said data line; and
a control signal generating circuit generating the control signal to enable one of the column selection circuits.

5,777,939

BIT LINE SENSE AMPLIFIER DRIVING CIRCUIT OF A SEMICONDUCTOR MEMORY DEVICE

Jang Kyu Won, Incheon, Rep. of Korea, assignor to Hyundai Electronics Industries Co. Ltd., Kyoungki-do, Rep. of Korea

Filed Dec. 27, 1996, Ser. No. 789,106

Claims priority, application Rep. of Korea, Dec. 29, 1995, 1995-66019

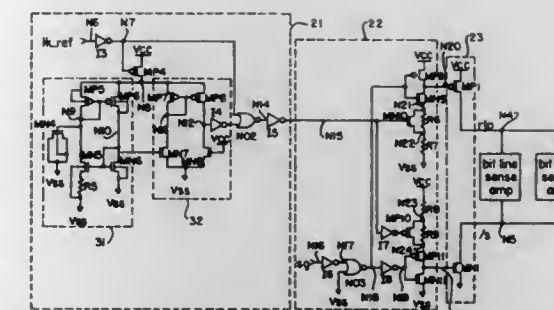
Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—222

10 Claims

1. A bit line sense amplifier driving circuit of a semiconductor memory device which has first and second refresh cycle functions, comprising:

- bit line sense amplifier driver means for supplying a pull-up bias potential signal and a pull-down bias potential signal to a bit line sense amplifier;
- bit line sense amplifier predriver means for controlling the current amount of the pull-up bias potential signal and the pull-down bias potential signal of said bit line sense amplifier driver means according to said first and second refresh cycle functions; and



bit line sense amplifier predriver control means for controlling said bit line sense amplifier predriver means and generating different logic states according to said first and second refresh cycle functions.

5,777,940

CIRCUIT WITH REGULATED POWER SUPPLY FOR REDUCING MEMORY DEVICE OPERATING POWER

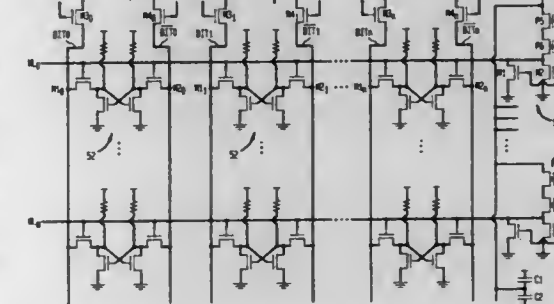
Yuan-Mou Su, Cupertino, Calif., assignor to Winbond Electronics Corp., Hsinchu, Taiwan

Filed Nov. 12, 1996, Ser. No. 747,699

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—226

4 Claims



1. A SRAM array having reduced power consumption comprising a plurality of SRAM cells arranged in an array of rows and columns, the gates of pass transistors of said cells in each row being connected to a regulated supply output voltage VCCR, said regulated supply output voltage output from a power supply, said regulated supply output voltage is below a threshold voltage V_t when said power supply voltage exceeds said threshold, a decoder circuit associated with each wordline for applying said regulated supply output voltage to each wordline when the wordline is selected, the regulated supply output voltage applied to said selected wordline thereby being below said threshold voltage when said power supply voltage exceeds said threshold so as to reduce the power consumption of said SRAM array.

5,777,941

COLUMN MULTIPLEXER

Luigi Pascucci, Giovanni, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate, Italy

Filed May 9, 1997, Ser. No. 853,732

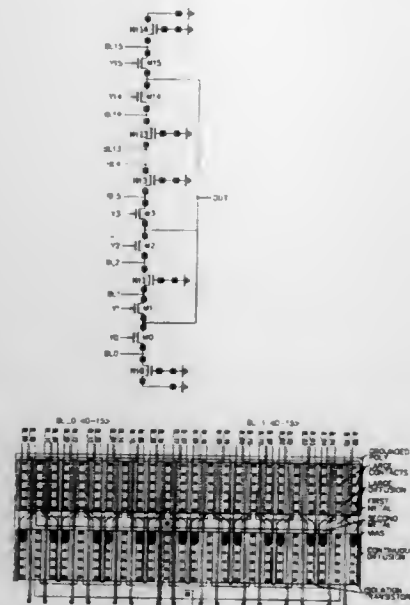
Claims priority, application European Pat. Off., May 13, 1996, 96830275.2

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—230.02

9 Claims

1. A semiconductor memory device comprising:
an array of memory cells organized in rows and columns respectively addressable through wordlines and bitlines; and



a plurality of multiplexer modules for individually selecting memory cells, each multiplexer module for a certain minimum bunch of columns comprising a corresponding number of select transistors, the current terminals of each select transistor being coupled to one of the bitlines and to a common output node, respectively, and an isolating transistor having current terminals respectively coinciding with a coupling node of the current terminal of a first select transistor to a respective first bitline and with a coupling node of a second select transistor, adjacent to said first select transistor, to a respective second bitline and a control terminal for being coupled to a source of a turn-off voltage for said isolating transistor.

5,777,942

SEMICONDUCTOR MEMORY DEVICE INCLUDING DYNAMIC TYPE MEMORY AND STATIC TYPE MEMORY FORMED ON THE COMMON CHIP AND AN OPERATING METHOD THEREOF

Katsumi Dosaka, Toshiyuki Omoto, and Masaki Kumanoya, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1993, Ser. No. 149,680

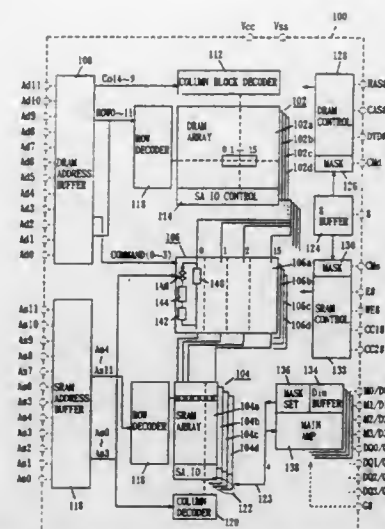
Claims priority, application Japan, Nov. 6, 1992, 4-322656; Jun. 4, 1993, 5-160265

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—230.03

25 Claims

1. A semiconductor memory device, comprising:
a DRAM array including a plurality of dynamic memory cells arranged in a matrix of rows and columns;
first control means including row selecting means responsive to a first address for selecting a row in said DRAM array and a column block selecting means responsive to a second address for selecting a column block including a plurality of columns of said DRAM, responsive to an external control signal for driving said DRAM array, said column block selecting means being capable of selecting different column blocks repeatedly while said row selecting means is in an active state and selecting a row;
an SRAM array including a plurality of static memory cells arranged in a matrix of rows and columns;
second control means including memory cell selecting means responsive to a third address applied independent from said first and second addresses for selecting a plurality of memory cell blocks in said SRAM array, responsive to an externally applied second control signal for driving said SRAM array independent from said first control means; and



data transfer means responsive to a one time asserting of a data transfer designation, for carrying out data transfer on block by block basis between the selected column blocks of said DRAM array and the selected memory cell blocks of said SRAM array.

5,777,943

COLUMN DECODER FOR A SEMICONDUCTOR MEMORY DEVICE

Gyu-Hong Kim, and Woo-Seoup Jeong, both of Seoul, Rep. of Korea, assignors to Samsung Electronic Co., Ltd., Suwon, Rep. of Korea

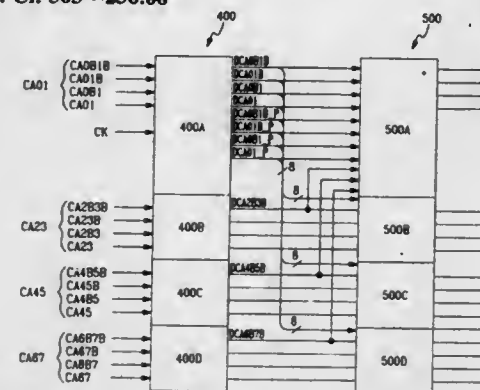
Filed Jul. 24, 1996, Ser. No. 686,062

Claims priority, application Rep. of Korea, Jul. 25, 1995, 95-22057

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—230.06

13 Claims



1. A column decoder for a semiconductor memory device, comprising:
a pre-decoder responsive to a column address signal and a clock signal, wherein said pre-decoder generates a plurality of synchronous pre-decoded signals and at least one enable signal; and
a main decoder connected to said pre-decoder and responsive to said pre-decoded signals and to said enable signal, wherein said main decoder generates a column select signal which becomes active in response to said at least one enable signal and which becomes inactive in response to said plurality of synchronous pre-decoded signals.

5,777,944

CIRCUIT AND METHOD FOR INSTRUCTION CONTROLLABLE SLEWRATE OF BIT LINE DRIVER

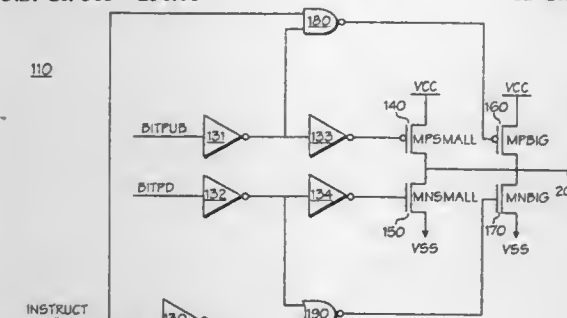
Roland T. Knaack, Starkville, Miss., and Shiva P. Gowri, Bangalore, India, assignors to Cypress Semiconductor Corp., San Jose, Calif.

Filed Sep. 27, 1996, Ser. No. 720,116

Int. Cl.⁶ G11C 8/00; H03K 19/0948

U.S. Cl. 365—230.06

12 Claims



1. A bit line driver circuit, comprising:
first driver means for driving a bit line at a first slew rate when said bit line driver circuit is in a first state; and
second driver means for driving said bit line at a second slew rate when said bit line driver circuit is in a second state.

5,777,945

COLUMN DECODING CIRCUIT FOR SEMICONDUCTOR MEMORY DEVICE

Jae-Kwang Sim, and Sang-Ho Lee, both of Choongchungbook-Do, Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

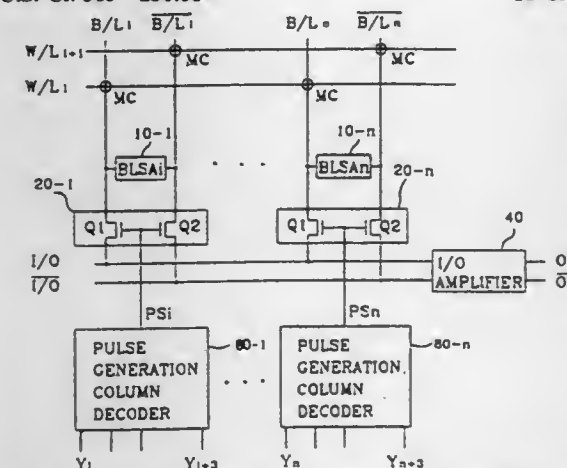
Filed Jul. 1, 1997, Ser. No. 886,445

Claims priority, application Rep. of Korea, Jul. 1, 1996, 26623/1996

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—230.06

18 Claims



1. A column decoding circuit for a semiconductor memory device, comprising:
a plurality of memory cells arranged in a plurality of columns and rows, wherein data in a set of memory cells is read based on a selected row address signal;
a plurality of column switches coupled to respective ones of the plurality of columns, wherein the column switches receive the data read from the set of memory cells;
a decoding unit for decoding a selected column address and generating a selection signal to select one of the column switches; and
a pulse generating unit proximate to the decoding unit that generates a pulse signal based on the selection signal and outputs the pulse signal to the selected column switch.

5,777,946

SEMICONDUCTOR MEMORY CIRCUIT EQUIPPED WITH A COLUMN ADDRESSING CIRCUIT HAVING A SHIFT REGISTER

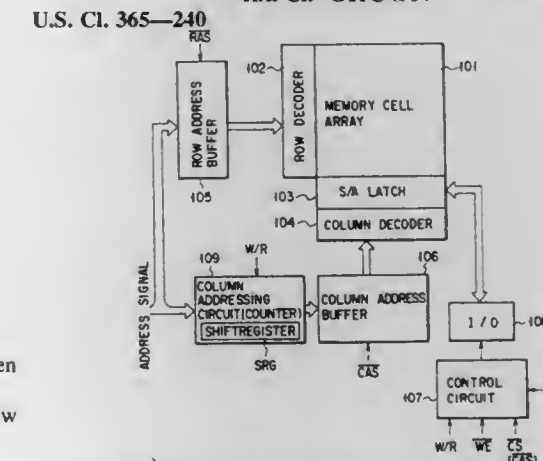
Kazuko Inuzuka, Tokyo; Shigeo Ohshima, Yokohama, and Katsushi Nagaba, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Dec. 20, 1996, Ser. No. 770,404

Claims priority, application Japan, Dec. 25, 1995, 7-337279

Int. Cl.⁶ G11C 8/04

17 Claims



1. A memory circuit having an address select mode and adapted to access a predetermined column portion, comprising:
a memory cell array having a plurality of memory cells;
means for designating an address signal corresponding to a head address for accessing a predetermined column portion of the memory cell array in synchronism with a clock signal; and
internal address signal generating means including a shift register for allowing access to the predetermined column portion in a corresponding address select mode from an address in synchronism with the clock signal.

5,777,947

APPARATUS AND METHODS FOR SOUND ABSORPTION USING HOLLOW BEADS LOOSELY CONTAINED IN AN ENCLOSURE

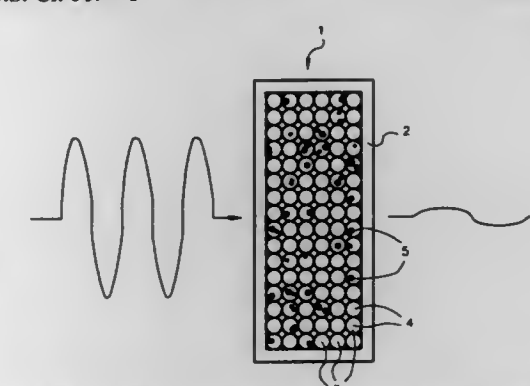
Krishan Kumar Abuja, Atlanta, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Mar. 27, 1995, Ser. No. 412,516

Int. Cl.⁶ F01N 1/24

U.S. Cl. 367—1

33 Claims



1. A device for receiving sound waves, the device comprising:
a plurality of beads, wherein each said bead includes an outer wall defining a hollow space within the bead, and an opening in the outer wall, allowing the hollow space to acoustically communicate with space outside the bead;
an enclosure loosely containing the beads and including an interior space which acoustically communicates with the bead hollow spaces through the bead outer wall openings, the enclosure further including at least one inlet for allowing the

interior space to acoustically communicate with a sound wave generating source which is exterior to said enclosure; wherein the enclosure allows the sound waves to travel through at least one inlet within the enclosure, through the bead outer wall openings, and into the hollow spaces within beads for damping sound waves which enter the enclosure; and wherein the hollow spaces among the plurality of beads differ in volume within a specified range to correspond to a predetermined frequency range of maximum sound absorption.

5,777,948

METHOD AND APPARATUS FOR PREFORMING MUTATIONS IN A GENETIC ALGORITHM-BASED UNDERWATER TARGET TRACKING SYSTEM

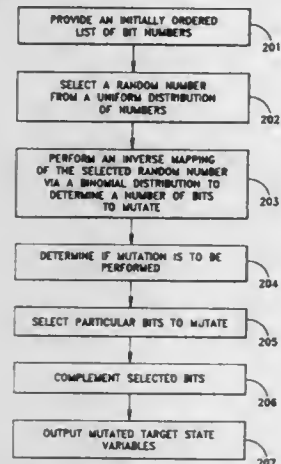
David J. Ferkinhoff, Middletown, and John G. Baylog, Tiverton, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 12, 1996, Ser. No. 747,469

Int. Cl.⁶ H04B 11/00; G01S 3/80

U.S. Cl. 367—131

10 Claims



1. In a process for tracking a target vehicle in an ocean environment, utilizing successively received acoustic sensor signals representative of contact state variables of the target vehicle, a combination of steps comprising:
providing binary coding of the contact state variables;
providing an initially ordered list of bit numbers from the coding;
selecting a random number from a uniform distribution of numbers;
performing an inverse mapping of said selected random number via a binomial distribution, to determine a number of bits to mutate;
determining if mutation is to be performed;
selecting particular bits to mutate;
complementing selected bits; and
outputting mutated contact state variables to generate tracking information for use in the target tracking process.

5,777,949

TRAJECTORY MATCHED PASSIVE DETECTION SYSTEM

Robert B. MacLeod, Newport, R.I., and Walter T. Schneider, New Bedford, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

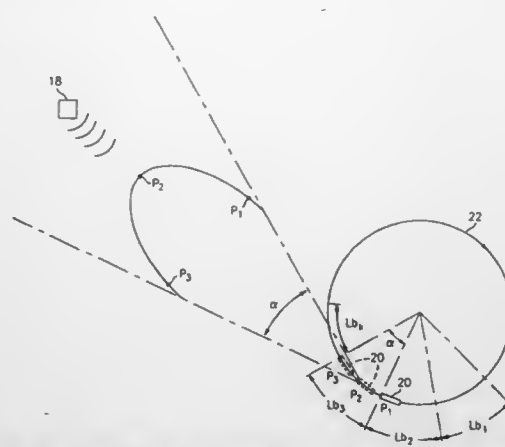
Filed Jan. 23, 1997, Ser. No. 787,834

Int. Cl.⁶ H04B 1/06

U.S. Cl. 367—136

15 Claims

1. A passive target detection system for use with a moving target detection system carrier, comprising:



means for postulating modeled target signals based upon a number of factors including frequency and at least one factor selected from the group consisting of signal beam pattern, non-linear signal progression and carrier movement;
means for receiving signals from a target; and
means for comparing said received signals with said modeled target signals for determining location of said target.

5,777,950

METHOD AND APPARATUS FOR TRANSFERRING TIME INFORMATION TO A WATCH

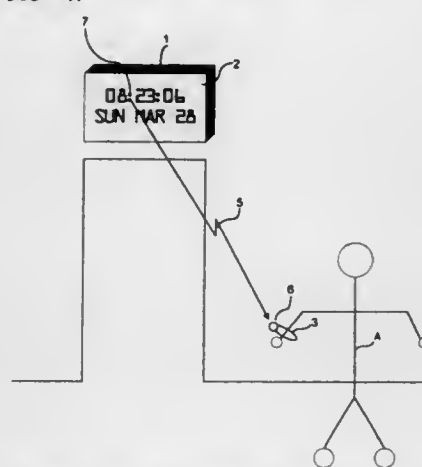
Walter Helm, Farmington, and Lance Becker, Weston, both of Conn., assignors to Timex Corporation, Middlebury, Conn.

Filed Nov. 21, 1996, Ser. No. 754,375

Int. Cl.⁶ G04C 11/02

U.S. Cl. 368—47

5 Claims



1. Method for setting a portable timepiece from a stationary timepiece, comprising:
providing a stationary timepiece having a time base oscillator, a stationary minutes counter, a stationary hours counter, a light source driver circuit and a stationary time display incorporating therein at least one controllable light source,
providing a portable timepiece having an optical sensor, a time base oscillator, a portable minutes counter, a portable hours counter, a minutes update circuit, an hours update circuit, and a portable electro optical time display indicating at least hours and minutes thereon,
sampling the count values of the stationary minutes counter and the stationary hours counter,
operating the light source driver circuit to cause the controllable light source to serially transmit the sampled count values by turning the controllable light source on and off,

positioning the portable timepiece so that the optical sensor faces the controllable light source,
receiving the sampled count values from the optical sensor, and
applying the count values to the minutes update circuit and the hours update circuit of the portable timepiece to cause the count values in the portable minutes counter and the portable hours counter to correspond to the count values in the stationary minutes counter and the stationary hours counter.

5,777,951

PARKING METER

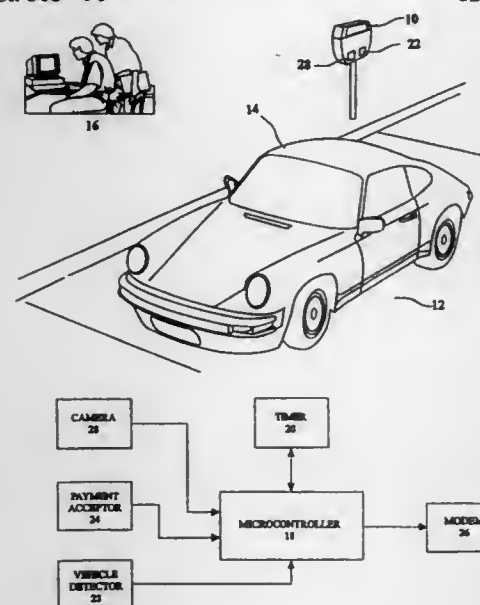
Frederick L. Mitschele, New Westminster, and Damien E. Reynolds, Vancouver, both of Canada, assignors to Digital Pioneer Technologies Corp., Vancouver, Canada

Filed Jan. 19, 1996, Ser. No. 588,941

Int. Cl.⁶ G07C 1/30

U.S. Cl. 368—90

12 Claims



1. A parking meter, comprising:
i) a microcontroller;
ii) a timer coupled with the microcontroller;
iii) payment acceptance means coupled with the microcontroller for accepting payment for use of an associated parking space, such that the microcontroller initiates the timer for a prepaid parking interval upon receiving a signal from the payment acceptance means;
iv) vehicle detection means coupled with the microcontroller for detecting the presence or absence of a vehicle in the associated parking space;
v) means for identifying a vehicle parked in the associated parking space, comprising digital camera means coupled with the microcontroller, said camera adapted to be focused at the associated parking space in the area of the parking space where the license plate of a parked vehicle is located, the microcontroller initiating the camera to take an image of a vehicle license plate upon determining the existence of a parking violation; and
vi) digital storage means for storing said digital image for subsequent retrieval or transmission.

5,777,952

THIN BIAS MAGNET UNIT FOR MAGNETO-OPTICAL RECORDING DEVICE

Hajime Nishimura, Chigasaki; Atsushi Ichikawa, Odawara; Akio Yabe, Fujisawa, and Yuji Yokoyama, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Computer Peripherals Co., Ltd., Kanagawa-ken, both of Japan

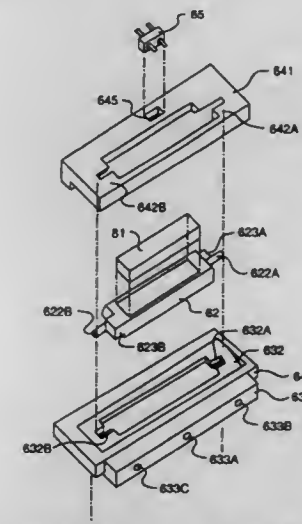
Filed Jul. 11, 1996, Ser. No. 678,267

Claims priority, application Japan, Jul. 12, 1995, 7-176263

Int. Cl.⁶ G11B 11/00

U.S. Cl. 369—13

15 Claims



1. A magneto-optical disk device having a housing including a base and a side cover fixed to said base, a cartridge holder for holding and transferring an optical disk cartridge, a spindle motor that rotates an optical disk in said optical disk cartridge, and an optical head that projects an optical spot onto a recording or playing back portion of an optical disk, comprising:

a loading mechanism that transfers said optical disk cartridge, when held by said cartridge holder, between an entry/exit position and a playing position by transferring said cartridge vertically;
a bias magnet unit that includes a permanent magnet that applies a bias magnetic field to said projected optical spot, a driving coil that rotates said permanent magnet in order to switch a polarity of said bias magnetic field as applied to said projected optical spot, and a sensor to detect said polarity of said bias magnetic field;
said driving coil of said magnet and said sensor are arranged within a thickness of said magnet with respect to a thickness direction of said optical disk; and
a stopper for limiting a rotational angle through which said magnet rotates so that a boundary plane between an S pole and an N pole of said magnet is not in parallel with a plane of said optical disk in a stopped position of said magnet.

5,777,953

ARRANGEMENT OF MAGNETO-OPTICAL RECORDING MEDIUM WHICH CAPABLE OF REPRODUCING AN INDIVIDUAL BIT

Junji Hirokane, Nara; Junichiro Nakayama, Shiki-gun; Jun-saku Nakajima, Kashiwara; Akira Takahashi, Nara, and Kenji Ohta, Kitakatsuragi-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1996, Ser. No. 769,254

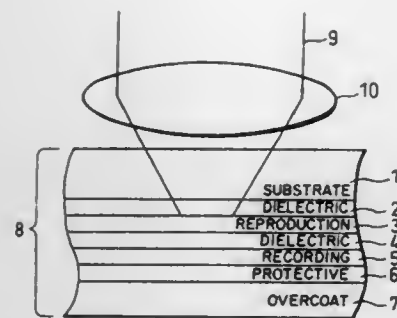
Claims priority, application Japan, Dec. 25, 1995, 7-336698

Int. Cl.⁶ G11B 11/00

U.S. Cl. 369—13

16 Claims

1. A magneto-optical recording medium comprising:
a substrate;
a first transparent dielectric layer;



- a reproduction layer, having a thickness of 5 nm to 30 nm, and showing in-plane magnetization at room temperature while showing perpendicular magnetization in response to temperature rise;
- a second transparent dielectric layer having a thickness of 6 nm to 40 nm;
- a recording layer, made of perpendicular magnetization film, having a thickness of 20 nm to 80 nm; and
- a protective layer,
- wherein said layers are laminated on said substrate in this order.

5,777,954

HYDROPHONE STREAMER HAVING WATER-BASED FILL FLUID AND METHOD OF MANUFACTURE THEREOF

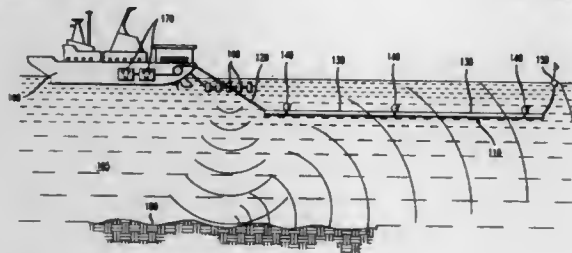
John Stephen Hepp, Irving, Tex., assignor to Hydrosience Technologies, Dallas, Tex.

Filed Feb. 14, 1997, Ser. No. 801,947

Int. Cl.⁶ G01V 1/38

U.S. Cl. 367—20

18 Claims



1. An air-bladder free hydrophone streamer for use in an aqueous environment, comprising:
- data acquisition equipment including a data bus interconnecting a plurality of hydrophones, said data acquisition equipment having a specific gravity greater than that of an environmental fluid constituting said aqueous environment;
- a jacket surrounding said data acquisition equipment, said jacket forming a void about said data acquisition equipment, said jacket having a specific gravity less than that of said environmental fluid; and
- a water-based fill fluid occupying said void, said jacket providing buoyancy for said data acquisition equipment to allow said hydrophone streamer to assume a near-neutral buoyancy with respect to said environmental fluid.

5,777,955

SIGNAL PROCESSING CIRCUIT FOR AN OPTICAL DISK PLAYER INCLUDING DATA DECODING BASED ON A REGENERATED BIT CLOCK

Osamu Ikeda; Naobumi Nagasawa, both of Gunma; Tsutomu Ishikawa, Ota, and Akira Tsukihashi, Gunma, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 271,837, Jul. 6, 1994, abandoned.

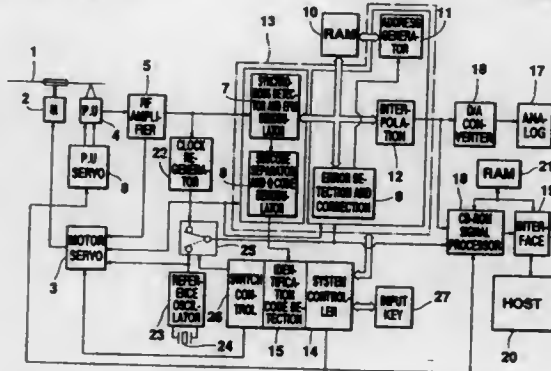
This application Jun. 21, 1996, Ser. No. 670,797

Claims priority, application Japan, Jul. 7, 1993, 5-167872

Int. Cl.⁶ G11B 17/22

U.S. Cl. 369—32

8 Claims



1. A signal processing circuit for an optical disk player, said signal processing circuit comprising:
- a clock regenerator for regenerating from a digital signal read from a disk a regenerated bit clock synchronized with each bit of the digital signal;
- a demodulating circuit for demodulating the digital signal in accordance with the regenerated bit clock;
- a decoding circuit for decoding main data in the digital signal in accordance with the regenerated bit clock, the decoding circuit including a first memory for rearranging the main data, the decoding circuit further including an error detection and correction circuit for detecting and correcting main data in accordance with the regenerated bit clock;
- a second memory for further processing the main data decoded in the decoding circuit, the second memory being different from the first memory;
- a CD-ROM signal processing circuit for a CD-ROM disk, said CD-ROM signal processing circuit being connected to the decoding circuit for further processing the main data decoded in the decoding circuit,
- wherein both the writing and reading of the main data into and from said first memory are synchronized with the regenerated bit clock, and
- said CD-ROM signal processing circuit includes the second memory, and the writing of the main data into the second memory is synchronized with the regenerated bit clock while the reading of the main data from the second memory is synchronized with a reference clock delivered from a reference oscillator.

5,777,956

CHANGER-TYPE DISC PLAYBACK DEVICE

Niro Nakamichi, Rancho Palos Verdes, Calif., assignor to Nakamichi Corporation, Tokyo, Japan

Continuation of Ser. No. 317,294, Oct. 3, 1994, Pat. No.

5,594,710, which is a continuation-in-part of Ser. No. 253,887, Jun. 3, 1994. This application Apr. 29, 1996, Ser. No. 639,738

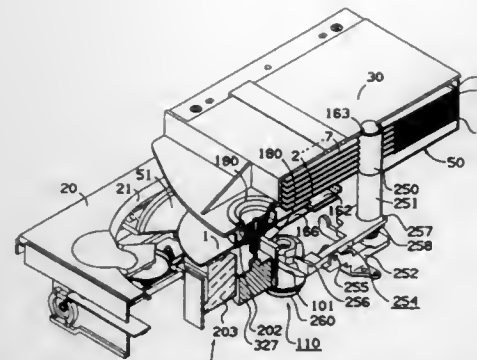
Claims priority, application Japan, Oct. 5, 1993, 5-273102

Int. Cl.⁶ G11B 17/26

U.S. Cl. 369—36

30 Claims

1. A disc playback device, comprising:
- a magazine;
- said magazine including at least one means for holding a disc of a second size;
- a playback position;



- each of said discs in said magazine having a store position disposed substantially in a plane defined by said playback position;
- a first shaft, extending downward from a top portion of said magazine, extending through said spindle holes of said discs disposed in said magazine above said plane to secure said discs in said magazine;
- a second shaft, extending upward from a bottom portion of said magazine coaxial with said first shaft, extending through said spindle holes of said discs disposed in said magazine below said plane to secure said discs in said magazine;
- a closeable gap aligned between said first and second shafts with said plane;
- retracting means, responsive for shifting said second shaft axially to lock with said first shaft to secure all discs in said magazine except when a disc is shifted into or out of said magazine; and
- means, responsive to a stop mode of operation, for moving said magazine to a rest position where one of said first and second shafts pierce said at least one means for holding a disc of a second size.

5,777,957

MULTIPLE COMPACT DISK CAROUSEL MECHANISM

Roy Patrick Lyman, North Syracuse, N.Y., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

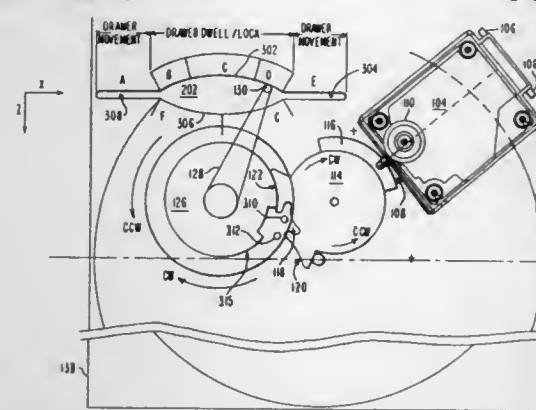
Continuation of Ser. No. 560,756, Nov. 21, 1995, abandoned.

This application Nov. 19, 1997, Ser. No. 974,147

Int. Cl.⁶ G11B 17/22

U.S. Cl. 369—37

5 Claims



1. A disk loading and unloading apparatus for loading and unloading informational disks into a multiple disk player, said apparatus comprising:
- a loading drawer adapted to be opened for loading disks by a user, and adapted to be closed in preparation for said disk player to play loaded disks;
- a motorized rotational arm member;
- a pin member coupled to said rotational arm member; and
- a pin member guide slot attached to said loading drawer which slidably receives said pin member;

wherein said pin member guide slot has a contour which provides an interplay between said pin member and the boundaries of said guide slot, facilitating opening and closing of said loading drawer when said rotational arm member is rotated, said contour comprising two end regions, one on each side of a curved middle region, said end regions providing drawer movement between open and closed positions and vice versa, said middle region providing drawer dwell and locking states for locking said drawer in a predetermined open loading drawer position and in a predetermined closed drawer position;

a pivotally mounted pickup bracket for raising and lowering a disk mounted thereon; and

a rotatable locking index coupled to a non-pivoting end of said pickup bracket, and operatively coupled to said rotational arm member;

wherein rotation of said locking index in a first direction causes said non-pivoting end of said pickup bracket to be raised, and rotation of said locking index in a second direction causes said non-pivoting end of said pickup bracket to be lowered.

5,777,958

DOOR STRUCTURE FOR A RECORDING MEDIUM REPRODUCING DEVICE

Sigeru Matumoto, and Yuhshi Kako, both of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

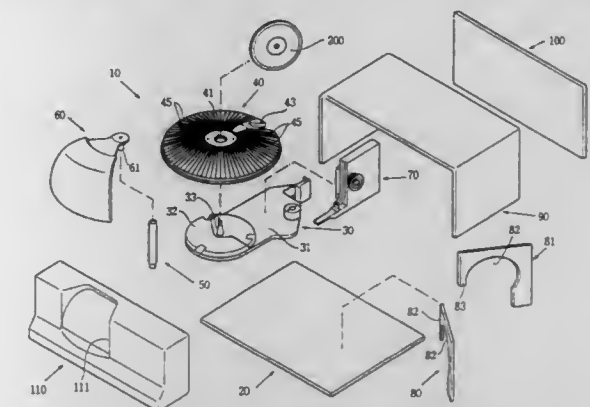
Filed Sep. 6, 1996, Ser. No. 708,949

Claims priority, application Japan, Sep. 11, 1995, 7-233031

Int. Cl.⁶ G11B 17/26;33/12

U.S. Cl. 369—37

8 Claims



1. A recording medium reproducing device, comprising:
- a casing;

a reproducing section provided within the casing;

a recording medium changer provided adjacent to the reproducing section within the casing, wherein said recording medium changer has a receiving section rotatable about a center shaft and adapted to receive a plurality of recording media; and

a door provided at an opening of the recording medium changer for a recording medium to be put into or taken out from the receiving section, said door being constructed such that when the door is opened or closed, the door turns about an axis which is coaxial with the center shaft of the receiving section.

5,777,959

OPTICAL DISK APPARATUS HAVING A PLURALITY OF OBJECTIVE LENSES

Takashi Nakagawa; Yukio Adachi, and Masayuki Fujita, all of Tokyo, Japan, assignors to NEC Corporation, Japan

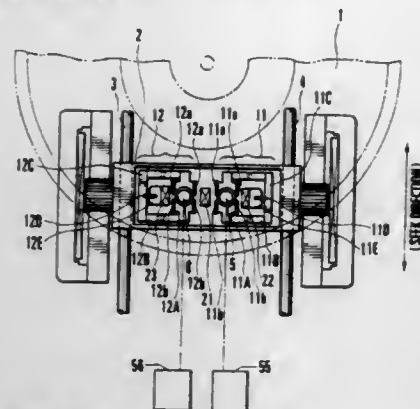
Filed Jun. 27, 1996, Ser. No. 670,153

Claims priority, application Japan, Jun. 28, 1995, 7-162563; Jun. 30, 1995, 7-166029

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—44.14

9 Claims



1. An optical disk apparatus comprising:

a carriage placed to oppose an optical disk and held to be reciprocally movable between an outer peripheral portion of the optical disk and a central portion thereof;

a plurality of objective lens support portions each having an objective lens elastically supported by an elastic member; and a plurality of magnetic field generating means for moving each of said objective lenses in a direction perpendicular to a surface of said optical disk and a radial direction of said optical disk.

wherein some of said magnetic field generating means which are used, in pairs, for said objective lens support portions are shared by said plurality of objective lens support portion; and wherein at least one of said magnetic field generating means is shared by said objective lenses.

5,777,960

OPTICAL HEAD DEVICE INCLUDING FIXED AND MOVABLE DEFLECTION MEANS

Takehide Ohno, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

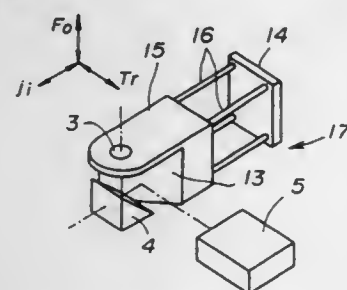
Filed May 3, 1996, Ser. No. 642,474

Claims priority, application Japan, May 9, 1995, 7-109864; Oct. 26, 1995, 7-279305; Oct. 31, 1995, 7-283028; Nov. 27, 1995, 7-307101; Jan. 30, 1996, 8-014434; Jan. 30, 1996, 8-014435; Jan. 30, 1996, 8-014436

Int. Cl.⁶ G11B 7/08

U.S. Cl. 369—44.14

24 Claims



1. An optical head device, movably supporting an objective lens which faces an optical disk to be movable in a tracking direction, causing light emitted from a fixed optical system to be converged through said objective lens and to be incident on said optical disk, causing the light reflected by said optical disk to be incident on

said fixed optical system via said objective lens, and controlling a position of said objective lens in the tracking direction using a tracking error detected by said fixed optical system;

said optical head device comprising:

movable deflection means for deflecting a bundle of light rays incident thereon in the tracking direction from said fixed optical system in a direction perpendicular to a focusing direction and also to the tracking direction;

fixed deflection means for deflecting the bundle of rays incident thereon from said movable deflection means in the focusing direction and for causing the bundle of rays to be incident on said optical disk via said objective lens; and a co-moving mechanism for moving said movable deflection means integrally with said objective lens.

5,777,961

ASTIGMATIC DIFFERENCE CORRECTING METHOD FOR OPTICAL HEAD AND APPARATUS THEREFOR

Tsutomu Matsui, Tokyo, Japan, assignor to NEC Corporation, Japan

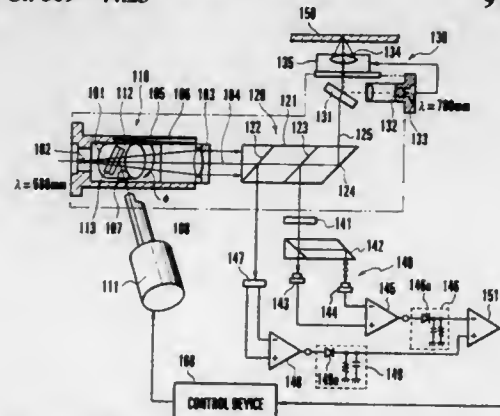
Filed Jun. 22, 1995, Ser. No. 493,840

Claims priority, application Japan, Jun. 27, 1994, 6-144282; Oct. 28, 1994, 6-265289

Int. Cl.⁶ G11B 7/09

U.S. Cl. 369—44.23

9 Claims



1. An astigmatic difference correcting method for an optical head, comprising the steps of:

rotating and adjusting a rotational optical member which is arranged between a first laser beam source having an astigmatic difference and a collimator lens to be rotatable around an optical path of a laser beam of a first wavelength emitted from said first laser beam source;

causing rotation and adjustment of said rotational optical member to set a minimum difference between focal positions in an X-axis direction and in a Y-axis direction which are perpendicular to the optical path of the laser beam;

irradiating the laser beam in which the difference between focusing offset positions is minimum on an optical disk having a recording density having a bit length not more than half a laser wavelength;

causing the laser beam of the first wavelength to be incident on and emerge from said optical disk through a dichroic mirror and an objective lens;

causing a laser beam of a second wavelength emitted from a second beam source to be incident on and emerge from said optical disk through said dichroic mirror and said objective lens, said dichroic mirror allowing one of the laser beams of the first and second wavelengths to be transmitted through said dichroic mirror and allowing the other to be reflected by the dichroic mirror; and

detected a focusing error between said optical disk and said objective lens using a beam of the second wavelength obtained through said dichroic mirror and reflected by said optical disk.

5,777,962

CALIBRATING AN OPTICAL DETECTOR TO MINIMIZE NOISE FROM UNDESIRABLE PERTURBATIONS IN DISK SURFACES

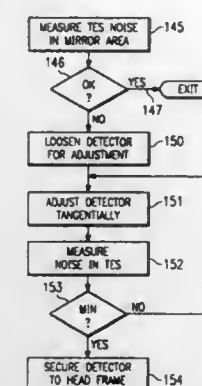
Timothy Stuart Gardner; Delbert Allen Hansen, and Ronald Paul Stahl, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 250,320, May 27, 1994, Pat. No. 5,627,818, which is a continuation of Ser. No. 960,033, Oct. 13, 1992, abandoned. This application Sep. 30, 1996, Ser. No. 723,155

Int. Cl.⁶ G11B 7/095

U.S. Cl. 369—44.27

16 Claims



1. In a method of adjusting an optical device for minimizing effects of shadow-causing surface perturbations on an optical surface of an optical member, the optical device having a laser supplying a laser beam to the optical surface of said optical member, the optical member having an optically sensible elongated groove opening at said surface, said elongated groove longitudinally extending on the optical surface and having a predetermined width at said optical surface, the optical surface reflecting the supplied laser beam as a reflected beam that is modulated by said elongated groove for indicating by such modulation a relative position of the supplied laser beam transversely to the elongated groove, mount means in the device for mounting an optical detector for position adjustments along and transverse to said elongated groove, said detector receiving said reflected laser beam for generating an electrical signal indicative of a predetermined sensed relative transverse position to the elongated groove;

the steps of:

selecting said member to have an optical surface with shadow-creating marker means that simulates undesired surface perturbations;

selecting said shadow-creating marker means to have an extent transverse to said elongated groove that is substantially greater than said predetermined width of said elongated groove;

relatively moving said optical member with respect to said mount means and to said detector as a predetermined relative movement,

actuating the laser to supply the laser beam to scan said marker means during said predetermined relative movement;

in a receiving and measurement step, receiving said reflected laser beam at said detector as the laser beam is scanning said marker means, in a noise measurement means connected to said detector, measuring and indicating an amplitude of signal noise introduced into said reflected laser beam as a noise signal;

repeatedly moving said detector with respect to said mount means in a direction along said elongated groove and after each said predetermined relative movement, performing said receiving and measurement step until said receiving and measurement step indicates a minimum amplitude noise signal output from the detector; and

securing the detector on said mount means against movement relative to said mount means at the position resulting in said minimum amplitude noise signal output.

5,777,963

DEVICE FOR OPENING AND CLOSING A TRACKING SERVO LOOP OF AN OPTICAL DISC REPRODUCTION DEVICE IN ACCORDANCE WITH THE VALUE OF AN ON-TRACK SIGNAL

Hiroyuki Fueki, and Wataru Hasegawa, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

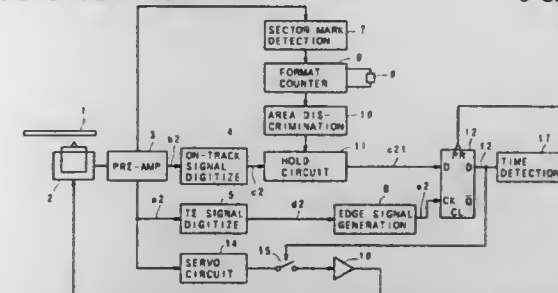
Continuation of Ser. No. 255,349, Jun. 8, 1994, abandoned.

This application Oct. 2, 1996, Ser. No. 724,924

Claims priority, application Japan, Jun. 10, 1993, 5-138292 Int. Cl.⁶ G11B 7/095

U.S. Cl. 369—44.34

5 Claims



1. A servo control device for controlling operation of a tracking servo loop, comprising:

on-track signal generating means for generating an on-track signal indicating whether a light beam irradiated on an optical disk is positioned on a track of the optical disk or not, on the basis of the light beam reflected by the optical disk;

tracking error signal generating means for generating a tracking error signal on the basis of the light beam reflected by the optical disk;

discriminating means for discriminating whether the light beam irradiated on the optical disk is positioned in a pre-pit area or not;

holding means for holding a value of the on-track signal immediately before entrance of the light beam to the pre-pit area on the basis of a discrimination result of the discriminating means; and

control means for opening and closing the tracking servo loop in accordance with a loop switch signal produced by latching the on-track signal based on the tracking error signal.

5,777,964

OPTICAL DISK APPARATUS

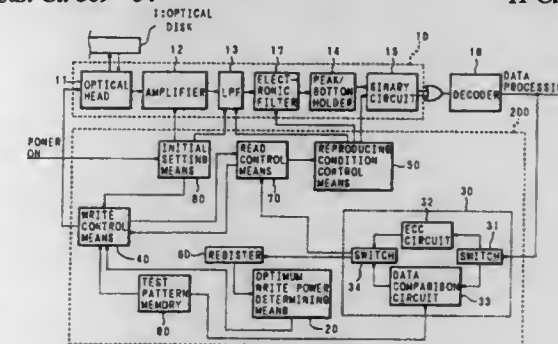
Satoshi Furuta; Toru Fujiwara, both of Kato-gun; Shigenori Yanagi, Kawasaki; Tadashi Sagawa, Higashine, and Masaharu Moritsugu, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 12, 1996, Ser. No. 745,425

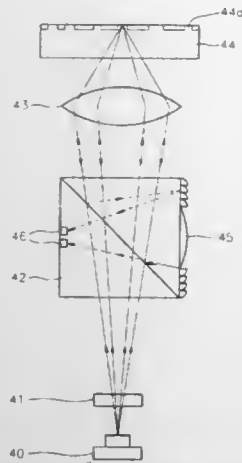
Claims priority, application Japan, Dec. 20, 1995, 7-331509 Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—54

11 Claims



1. An optical disk apparatus, comprising: writing means for writing a specific data pattern on a predetermined region of an optical disk with various write powers;



- a beam splitter having a polarization layer at an inclination thereof for transmitting said parallel light and for reflecting a reflected light from said optical disc;
 a $\lambda/4$ wavelength plate for transforming the transmitted light passed through said beam splitter and incident from said optical disc, from circular polarization into linear polarization, and from linear polarization into circular polarization;
 an objective lens for converging light from said $\lambda/4$ wavelength plate to form a focus on said optical disc and for forwarding light from said optical disc to said $\lambda/4$ wavelength plate;
 a micro fresnel lens attached on one side of said beam splitter, said micro fresnel lens generating astigmatism and converging the incident light from said beam splitter; and
 a photodetector for receiving light from said micro fresnel lens, reproducing an information recorded on said optical disc and detecting a focus error.

5,777,972

OPTICAL HEAD DEVICE

Kouji Furusawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

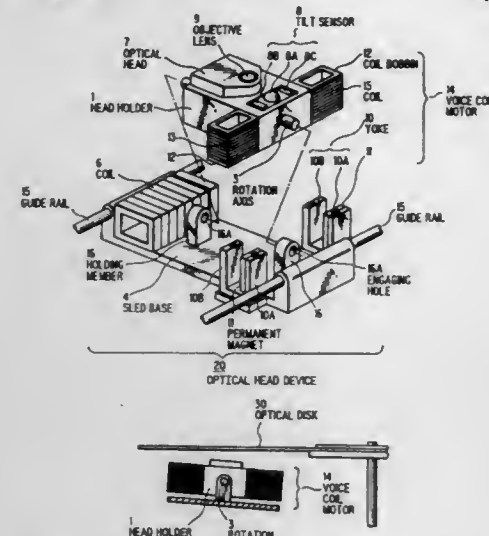
Filed Apr. 14, 1997, Ser. No. 834,165

Claims priority, application Japan, Apr. 15, 1996, 8-092161

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—112

4 Claims



1. An optical head device, comprising:
 an optical head for emitting a light beam to an optical disk;
 a head holder for holding said optical head;
 a base member which reciprocally moves said head holder along a radius direction of said optical disk while holding said head holder rotatable around an axis approximately along a tangential line and parallel to a track of said optical disk;

- a rotation energizing means for energizing the rotation of said head holder; and
 an inclination detecting means for detecting an emission angle of said light beam to a recording surface of said optical disk; wherein said head holder has a center axis for its rotation which passes through near a center of gravity of the entire composition of said head holder including said optical head.

5,777,973

REPRODUCING AND RECORDING OPTICAL PICKUP COMPATIBLE WITH DISCS HAVING DIFFERENT THICKNESS

Jang-hoon Yoo, Seoul; Chong-sam Chung, Seongnam; Chul-woo Lee, Seoul; Kyung-hwa Rim, and Kun-ho Cho, both of Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

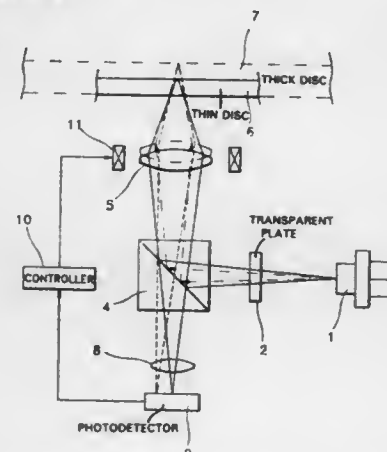
Filed Dec. 6, 1996, Ser. No. 761,826

Claims priority, application Rep. of Korea, Dec. 7, 1995, 1995-47452

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—109

23 Claims



1. A reproducing/recording optical pickup in an optical reproducing/recording device and compatible with discs having different thicknesses, comprising:

- a light source;
 an objective lens for focusing light generated from said light source onto one of said discs which is placed in the optical reproducing/recording device;
 a photodetector for detecting a signal by receiving the light reflected from the one disc; and
 a transparent plate having a central portion formed with a diffraction grating pattern for diffracting a first portion of light travelling from said light source through said diffraction grating pattern to said objective lens, and a transparent portion through which a second portion of the light from said light source passes,

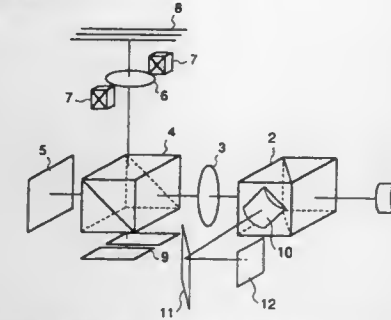
wherein said objective lens focuses a zero-order transmitted light separated by said diffraction grating pattern and the light passing through said transparent portion onto the one disc if the one disc has a first thickness, and focuses a positive first-order diffracted light diffracted by said diffraction grating pattern onto the one disc if the one disc has a second thickness greater than the first thickness.

5,777,974

OPTICAL HEAD AND MAGNETO-OPTICAL REPRODUCING APPARATUS USING THE SAME
Masakuni Yamamoto, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 352,227, Dec. 8, 1994, abandoned.
This application Jan. 30, 1996, Ser. No. 594,326
Claims priority, application Japan, Dec. 13, 1993, 5-311513
Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—112

24 Claims



1. An optical head for radiating a light spot on a magneto-optical recording medium and detecting light received via said medium, comprising:

- a light source;
 condensing means, having a lens, for condensing light from said light source onto said medium;
 photodetecting means for detecting interference light between light generated by a magneto-optical effect of said medium and light generated by diffraction on a curved surface of the lens; and
 deflecting means, arranged between said light source and said medium, for deflecting the light from said light source toward said medium, said deflecting means having a beam splitter with polarized light splitting characteristics.

5,777,975

OPTICAL PICKUP INCORPORATING AN INTEGRATED OPTICAL GUIDE MEMBER

Syogo Horinouchi, Fukuoka; Shigeki Takeuchi, Yamaga; Hideki Yoshinaka, Omata; Toshihiro Koga, Kurume; Kazuhiko Higo, Miyazaki; Hidehiro Kugisaki; Fumiaki Beppu, both of Omata, and Jiro Mimasa, Fukuoka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

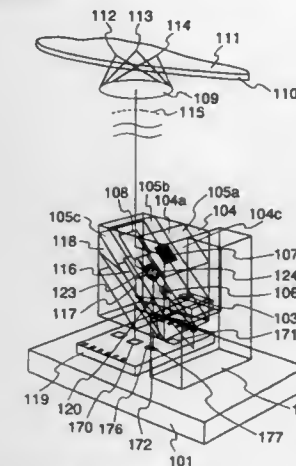
Filed Feb. 20, 1996, Ser. No. 603,766

Claims priority, application Japan, Feb. 20, 1995, 7-031143

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—112

10 Claims



6. An optical pickup comprising:
 light-emitting means;
 light-receiving means;

- an optical guide member having first, second, third and fourth parallel, inclined portions inclined with respect to light emitted from said light-emitting means, said optical guide member being defined by a block;
 diffusion angle conversion means formed on said second inclined portion for converting a diffusion angle of that portion of the light which is emitted from said light-emitting means and which is incident on said diffusion angle conversion means;
 reflecting means formed on said first inclined portion for reflecting the light converted in diffusion angle by said diffusion angle conversion means;
 a first beam splitter film formed on said second inclined portion, and having polarization selectivity for splitting the light, reflected by said reflecting means, into transmitted light and reflected light;
 condensing means for condensing the reflected light from said first beam splitter film on an information recording surface of an optical disk;
 a second beam splitter film formed on said third inclined portion, and having polarization selectivity for splitting the light, returned from said optical disk and transmitted through said first beam splitter film, into transmitted light and reflected light;
 a polarization plane conversion plate having a polarized light splitting portion provided between said third and fourth inclined portions for transmitting a P polarization component of the transmitted light from said second beam splitter film so as to direct said P polarization component to said light-receiving means while reflecting an S polarization component of said transmitted light, said polarization plane conversion plate having a reflecting surface for reflecting said reflected S polarization component so as to direct the same to said light-receiving means; and
 a focus error detection element formed on said second inclined portion for receiving the reflected light from said second beam splitter film;
 wherein an incident light-splitting point of said polarized light splitting portion is located between the center of said optical guide member and said light-receiving means.

5,777,976

HOLOGRAPHIC ELEMENT DIFFRACTING A REFLECTED LIGHT BEAM ONTO A SINGLE LIGHT SPOT OF A DETECTOR

Lieu Kim Dang, Villingen-Schwenningen, Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

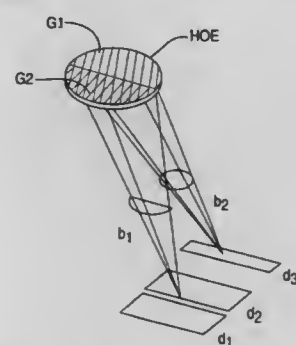
Filed Jun. 13, 1996, Ser. No. 662,626

Claims priority, application Germany, Aug. 22, 1995, 195 30 740.2

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—103

3 Claims



1. Arrangement for an optical scanning device for scanning information which is stored on a recording medium or for recording information on a recording medium, comprising:
 a radiation source or a light source for providing a scanning beam,

means for focusing the scanning beam to form a scanning spot, a detection system having a holographic optical element for receiving the scanning beam which has been influenced by the recording medium, a one dimensional grating which extends over the entire area of the holographic optical element is provided in the beam path in front of the detection system, the holographic optical element having a first one-dimensional grating which extends over the entire area of the holographic optical element and having a second one-dimensional grating which extends over half the holographic optical element, the first one-dimensional grating obtaining a light spot which represents the information of the recording medium, the second one-dimensional grating forming a two-dimensional grating with the first one-dimensional grating the two-dimensional grating forming a light spot which represents a focusing error.

5,777,977

RECORDING AND REPRODUCING APPARATUS

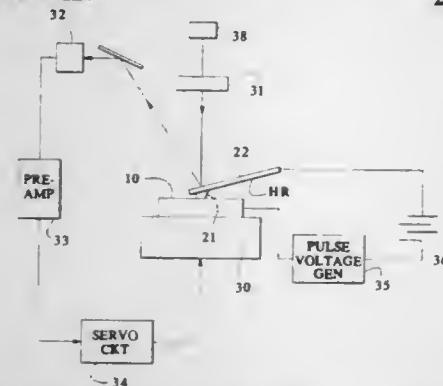
Ichiro Fujiwara; Akio Machida, and Shigeru Kojima, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 22, 1996, Ser. No. 701,687

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—126

26 Claims



1. A recording and reproducing apparatus for recording and/or reproducing information on a recording medium having an active layer being a ferroelectric layer or a hetero charge storage layer having a carrier trap therein with a head having a tip, comprising: means for recording and/or erasing information by way of a polarization reversal or transport of electric charges in a predetermined area of the active layer in response to application of a pulse voltage from a recording head, said means for recording and/or erasing comprising a scanning tunnel microscope apparatus, said means for recording and/or erasing information also comprising means for recording the information in said recording medium while holding said head in contact with said recording medium; and means for detecting the information recorded in said predetermined area with a reproducing head without contacting the recording medium as a change in the amount of electric charges or an electrostatic capacitance or a surface potential or their differential in said predetermined area for reproducing the information.

5,777,978

DISK UNIT AND PROCESS FOR ASSEMBLING TRANSMISSION MECHANISM USED FOR DRIVING HEAD CARRIAGE

Toshiro Ota, Kanagawa; Masakatsu Hosoya, Chiba, and Takashi Yamazaki, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP94/01510, § 371 Date Jun. 26, 1995, § 102(e)

Date Jun. 26, 1995, PCT Pub. No. WO95/08172, PCT Pub.

Date Mar. 23, 1995

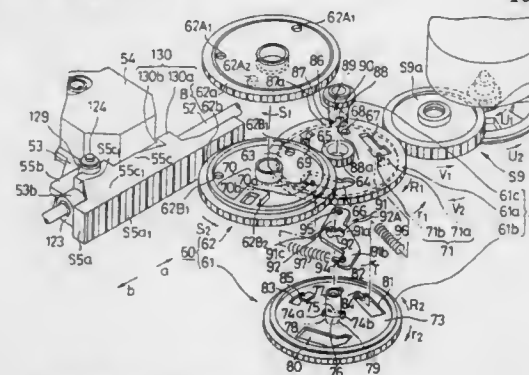
PCT Filed Sep. 12, 1994, Ser. No. 432,173

Claims priority, application Japan, Sep. 13, 1993, 5-226253

Int. Cl.⁶ G11B 21/02

U.S. Cl. 369—219

10 Claims



1. A disk unit, comprising:

a motor;

a drive gear mechanism having a drive gear which is driven by the motor;

an intermediate transmission mechanism linked to the drive gear mechanism and having a plurality of transmission gears rotated by rotation of the drive gear; and

a head carriage having a rack in meshed engagement with at least one of the transmission gears of the intermediate transmission mechanism and provided to be movable in a radial direction of a disk in accordance with rotation of the transmission gears;

wherein the intermediate transmission mechanism is equipped with a first backlash eliminating means for eliminating backlash between the drive gear mechanism and the intermediate transmission mechanism and with a second backlash eliminating means for eliminating backlash between the intermediate transmission mechanism and the rack;

wherein the intermediate transmission mechanism includes a driving-side transmission mechanism having the first backlash eliminating means, and a driven-side transmission mechanism linked to the driving-side transmission mechanism and to the rack;

wherein the transmission gears of the driven-side transmission mechanism include a first driven-side transmission gear and a second driven-side transmission gear, the first and second driven-side transmission gears being rotatable independently of each other; and

wherein the transmission gears of the driving-side transmission mechanism include a first stepped driving-side transmission gear in meshed engagement with both the drive gear and the second driven-side transmission gear, a second driving-side transmission gear linked to the first driving-side transmission gear through the first backlash eliminating means and being in meshed engagement with the drive gear, and a third driving-side transmission gear with a lever, the third driving-side transmission gear being rotatable attached to the second driving-side transmission gear, being linked to the first driving-side transmission gear through the second backlash eliminating means and being in meshed engagement with the first driven-side transmission gear.

5,777,979

APPARATUS FOR LASER EXPOSURE OF A SUBSTRATE DISK AND A METHOD FOR THE CENTERED MOUNTING OF A SUBSTRATE DISK

Bernd Hensel, Eschborn; Friedrich Hofmann, Büdingen; Hermann Koop, Ronnenberg; Eberhard Felck, München, and Franz Richter, Eichenau, all of Germany, assignors to Balzers Und Leybold Deutschland Holding AG, Hanau, Germany

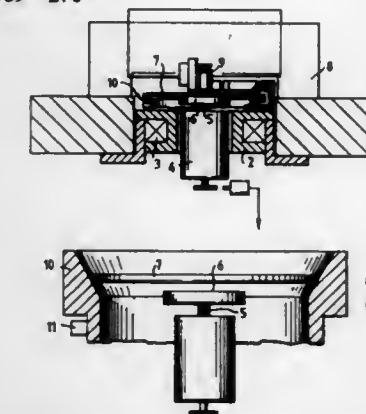
Filed Nov. 27, 1996, Ser. No. 753,796

Claims priority, application Germany, Nov. 28, 1995, 195 44 281.4

Int. Cl.⁶ G11B 23/00; 25/04

U.S. Cl. 369—270

7 Claims



1. Apparatus for the laser beam exposure of a substrate disk, said apparatus comprising

a turntable having a top surface for supporting a substrate disk, said top surface having a smaller diameter than said substrate disk,

means for rotating the turntable at high speed, and

a centering ring which is coaxial to said turntable and movable axially from a lower position to an upper position, said centering ring having a frustoconical inside surface which in the lower position is spaced from said substrate disk, and in the upper position supports the substrate disk circumferentially at an axial distance above said turntable said, centering ring including at least a portion of the frustoconical inside surface having an inner diameter larger than the outer edge diameter of the substrate disk to thereby center the substrate disk at the upper position by contacting the outer edge diameter of the substrate disk.

5,777,980

OPTICAL DISK RECORDING APPARATUS CAPABLE OF REDUCING CROSS-TALK BETWEEN PRE-PITS AND ADJACENT TRACKS

Tadashi Adachi, Tokyo, Japan, assignor to NEC Corporation, Japan

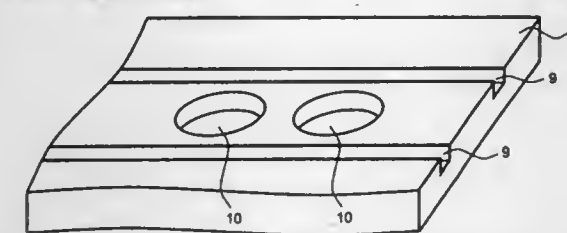
Filed May 23, 1996, Ser. No. 651,272

Claims priority, application Japan, May 23, 1995, 7-123518

Int. Cl.⁶ G11B 7/24; 9/00

U.S. Cl. 364—275.4

7 Claims



1. An apparatus for optical master disk exposure for exposing guide grooves and pre-pits with laser beams, comprising:

a reference signal generator for generating a reference signal designating a region constituted by sole guide grooves with the pre-pits not adjacent thereto;

a groove reference voltage generator for generating a groove reference voltage according to said reference signal;

a pre-pit designation signal generator for generating a pre-pit designation signal designating formation of said pre-pits;

a pre-pit region voltage generator for generating a pre-pit region voltage according to said pre-pit designation signal;

a bias voltage generator for generating a bias voltage during a period in which no pre-pit is formed according to said pre-pit designation signal; and

a guide groove exposure voltage supplier for adding together said groove reference voltage, said pre-pit region voltage and said bias voltage, and outputting a guide groove exposure voltage; and

a laser beam modulating means for modulating said laser beams according to said guide groove exposure voltage received from said guide groove exposure voltage supplier.

5,777,981

OPTICAL DISK WITH SECTIONAL TRAPEZOIDAL PITS AND OPTICAL DISK APPARATUS

Toshihiro Sugaya, Ibaraki-ken, and Yoshihori Honguh, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 541,598, Oct. 10, 1995, Pat. No.

5,602,825, which is a continuation-in-part of Ser. No. 475,494,

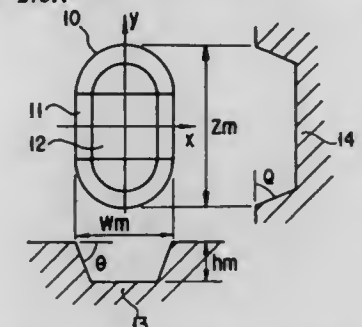
Jun. 7, 1995, Pat. No. 5,592,464, which is a continuation of Ser. No. 304,849, Sep. 13, 1994, Pat. No. 5,459,712. This application Jan. 2, 1997, Ser. No. 778,313

Claims priority, application Japan, Jan. 19, 1994, 6-004230; Mar. 29, 1994, 6-002934

Int. Cl.⁶ G11B 7/24

U.S. Cl. 369—275.4

48 Claims



1. An optical disk with sectional trapezoidal pits comprising: a substrate having information recorded by a plurality of pit trains formed thereon at a track pitch; and a reflective layer formed on the substrate, wherein the information is reproduced by being irradiated with a light beam via an objective lens, the track pitch is set within the range of $(0.72 \text{ to } 0.8) \times (\lambda/NA)/1.4 \mu\text{m}$ when a wavelength of the light beam is $\lambda \mu\text{m}$ and a numerical aperture of the objective lens is NA, each of the pits is scaled by the multiplication ratio α used to secure allowable disk tilt angles, an upper width of each of the pits is within the range of $(0.3 \text{ to } 0.50) \times (\lambda/NA)/1.14 \mu\text{m}$, a bottom width of the pits is within the range of $(0.2 \text{ to } 0.32) \times (\lambda/NA)/1.14 \mu\text{m}$ where λ is the wavelength and α is obtained by $2.623 \times 10^{-7} \times (d/\lambda)^2 - 1.706 \times 10^{-4} (d/\lambda) + 0.934$ where d is the thickness of the substrate in units of μm .

5,777,982

DISK CARTRIDGE HAVING A PARTICULAR BELT AND SLIDER CONFIGURATION

Takashi Koshiyoshi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

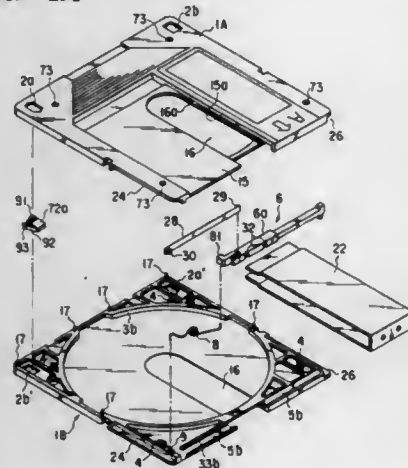
Filed Apr. 2, 1996, Ser. No. 626,366

Claims priority, application Japan, Apr. 28, 1995, 7-106239

Int. Cl.⁶ G11B 23/03

U.S. Cl. 369—291

7 Claims

**1. A disk cartridge comprising:**

- a case containing an optical disk and designed to be inserted into an optical disk drive, the case including an opening portion for exposing part of the optical disk;
- a shutter slidably attached to the case, for opening and closing the opening portion;
- a slider movably provided on one side of the case and connected to the shutter;
- an urging member connected to the slider, for urging the slider in a direction in which the shutter is closed; and
- a belt having an end portion connected to the slider and slidably mounted on the case, for pulling the slider against an urging force of the urging member to open the shutter in accordance with an operation of inserting the case into the optical disk drive;
- the slider having a slit extending in a moving direction of the slider and an engagement recess communicating with the slit and extending substantially perpendicularly to the moving direction of the slider, and the end portion of the belt being fitted in the slit and having a projection engaged with the engagement recess.

5,777,983

ASYNCHRONOUS MULTIPOINT CONTROLLING TECHNIQUE FOR A SINGLE SYSTEM OF A REMOTE SECURITY ADMINISTRATION SYSTEM

Chun-Sul Jung, Gumi, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 12, 1996, Ser. No. 747,918

Claims priority, application Rep. of Korea, Nov. 9, 1995, 40485/1995

Int. Cl.⁶ G01R 31/08; H04L 1/00

U.S. Cl. 370—216

2 Claims



- 1. A method of operating an asynchronous multipoint system having a single processor and including a scanning unit for scanning respective subscribers' lines to collect and transmit alarm data, a VAN (value added network) main unit for supervising and controlling an abnormal state to execute safety maintenance, an X.25 interface module for receiving said collected alarm data from said scanning unit to extract and provide only VAN-related data, and interfacing transmission and reception data of said scanning

unit, and a VAN interface module for receiving said VAN-related data extracted from said X.25 interface module to perform the asynchronous multipoint communication with said VAN main unit, comprising the steps of:

- collecting said extracted VAN-related data from said X.25 interface module;
- searching out a transmitting port after collecting said VAN-related data;
- determining whether or not the searched transmitting port is in a normal state;
- generating a request frame in a prescribed format when said transmitting port is determined to be in said normal state to transmit said request frame to said VAN main unit via said searched port; and
- receiving a number of result frames equal to an allotted number of ports after transmitting said request frames and storing said result frames in a single buffer.

5,777,984

METHOD AND APPARATUS FOR CONTROLLING CELL TRANSMISSION RATE IN A CELL BASED NETWORK IN THE PRESENCE OF CONGESTION

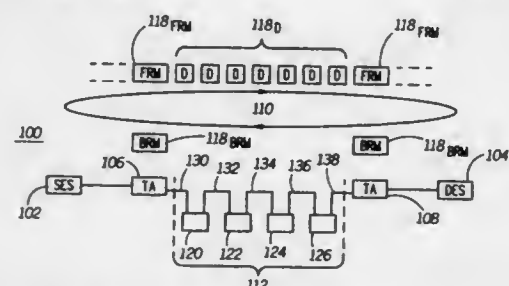
Levent Gun, Hopkinton; Krishnan Ramakrishnan, Plainville, and Richard B. Kline, E. Walpole, all of Mass., assignors to Motorola Inc., Schaumburg, Ill.

Filed Apr. 1, 1996, Ser. No. 625,329

Int. Cl.⁶ H04L 12/56

U.S. Cl. 370—230

29 Claims



- 1. In a cell based network that includes transmission paths, which each include at least one switch and at least one transmission link coupled to the at least one switch, each switch and transmission link having limited cell transmission resources and being susceptible to congestion, a method of controlling a user source transmission rate to reduce congestion comprising the steps of:

- transmitting user cells, including data cells and forward control cells, at predetermined cell transmission rates in a forward direction from a user source to a user destination through a virtual connection;
- in the forward direction of cell transmission through the virtual connection, determining whether the virtual connection is congested and providing an indication of congestion;
- sending backward control cells in a backward direction to the user source, the backward control cells defining a cell transmission explicit rate; and
- at a first switch in the virtual connection, and only when a congested virtual connection is indicated, determining a fair share cell transmission rate; and altering the cell transmission explicit rate defined in a first backward control cell using the fair share cell transmission rate.

5,777,985

APPARATUS AND METHOD FOR ABSORBING AN ARRIVAL TIME DELAY FLUCTUATION OF A FIXED LENGTH PACKET, AND ATM SWITCHING SYSTEM

Mikio Nakayama, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

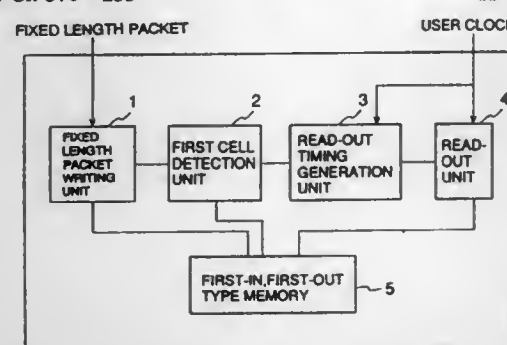
Filed Aug. 14, 1995, Ser. No. 514,987

Claims priority, application Japan, Jan. 18, 1995, 7-005748

Int. Cl.⁶ H04J 3/14

U.S. Cl. 370—235

11 Claims



- 1. An apparatus for absorbing an arrival time delay fluctuation of a fixed length packet which stores information that is required to be transmitted at a fixed speed, said apparatus have a first-in, first-out type memory, and comprising:

- a fixed length packet writing unit for reading out information stored within said fixed length packet and for writing into said first-in, first-out type memory;
- a first cell detection unit for detecting a fixed length packet which is first received, subsequent to each of the cases that power is applied to the apparatus, that data read-out is performed in a state of said first-in, first-out type memory being empty, and that data writing is performed in a state of said first-in, first-out type memory in which data is stored up to upper limit;
- a read-out timing generation unit for generating read-out timing that shows read-out initiation following a prescribed time lapse, in the case where said first cell detection unit detects the said fixed length packet received first, and
- a read-out unit for starting reading out of information stored in said first-in, first-out type memory, and for continuing the reading out of data in synchronized with a user clock, in the case where read-out timing is generated with said read-out timing generation unit.

5,777,986

METHOD AND APPARATUS FOR CONTROLLING QUALITY OF SERVICE IN AN ATM NETWORK

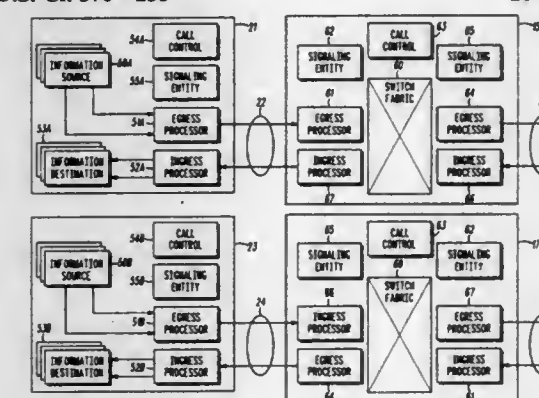
Daniel B. Grossman, Norwood, Mass., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 16, 1996, Ser. No. 698,714

Int. Cl.⁶ H04L 12/56

U.S. Cl. 370—235

26 Claims



- 25. An ATM switching node for use in a network in which communications links having predetermined transmission characteristics interconnect a plurality of such ATM switching nodes and in which a calling end system and a called end system connect to first and second of the ATM switching nodes, whereby the calling end system can establish a virtual connection through a network path in the ATM network for an information transfer having quality of service requirements, the ATM switching node comprises:

- A) an egress processor and an ingress processor connected to a first and second of the communications links, respectively, said egress processor including means for transferring the information over the first communications link to the ingress processor and the ingress processor including means for receiving information from the egress processor.
- A1) said egress processor having a plurality of correction means having different capabilities for transforming information transferred onto the first communications link and means for selecting one of the correction means in response to the predetermined transmission characteristics, quality of service requirements and correction means capabilities; and
- A2) said ingress processor having a plurality of processing means for processing received transformed information from the second communications link and means for selecting one of the processing means in response to the selection of said correction means by the egress processor, and
- B) switch fabric coupled to the egress and ingress processors, thereby enabling the transfer of information between said egress and ingress processors, whereby a call establishment message sent from the calling end system causes the egress processor and the ingress processor to select one of the plurality of correction means and corresponding processing means, respectively, according to a favorable match among the transmission characteristics, quality of service requirement and the correction means capabilities.

5,777,987

METHOD AND APPARATUS FOR USING MULTIPLE FIFOS TO IMPROVE FLOW CONTROL AND ROUTING IN A COMMUNICATIONS RECEIVER

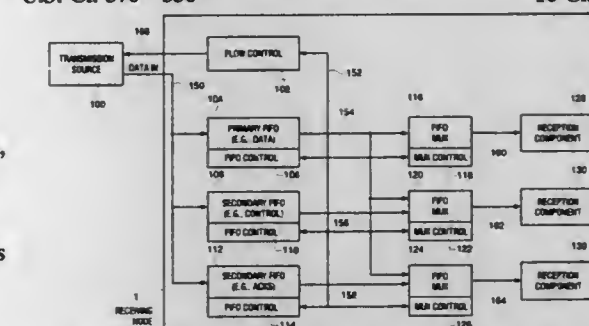
John M. Adams; Timothy E. Hoglund; Stephen M. Johnson; Mark A. Reber, all of Colorado Springs, and David M. Weber, Monument, all of Colo., assignors to Symbios, Inc., Fort Collins, Colo.

Filed Dec. 29, 1995, Ser. No. 580,947

Int. Cl.⁶ H04J 3/00

U.S. Cl. 370—336

16 Claims



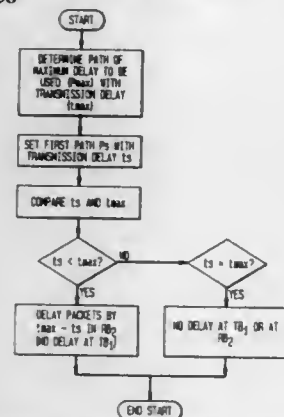
- 1. A flow control method, operable in a receiving node of a packetized communication system, comprising the steps of: applying a received packet from a transmitting node to a primary FIFO in said receiving node and to a secondary FIFO in said receiving node;
- determining whether said received packet is successfully applied to said secondary FIFO;
- purging said received packet from said secondary FIFO responsive to a determination that said received packet was not successfully applied to said secondary FIFO;
- purging said received packet from said primary FIFO responsive to a determination that said received packet was successfully applied to said secondary FIFO;

determining the readiness of said receiving node to receive another packet in accordance with status of said primary FIFO; and
applying a flow control signal to said transmitting node indicative of the readiness of said receiving node to receive another packet.

5,777,988
SYSTEM AND METHOD FOR EQUALIZING DELAY IN A DYNAMIC PACKET SWITCHING
Arturo Cisneros, Lincroft, N.J., assignor to Bell Communications Research, Inc., Morristown, N.J.
Filed Apr. 17, 1996, Ser. No. 632,813
Int. Cl.⁶ H04L 12/56

U.S. Cl. 370—238

30 Claims



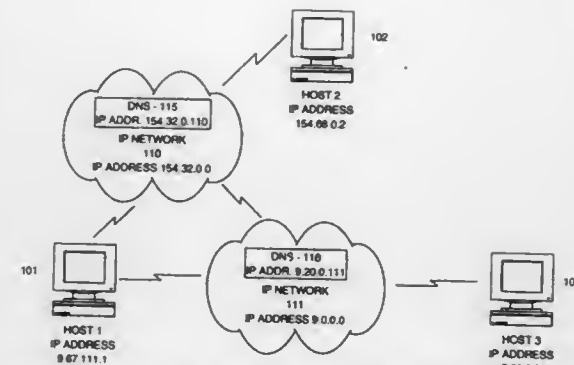
10. A dynamic packet switching network, comprising:
a first user access station having at least one buffer to delay a packet transmission;
a second user access station having at least one buffer to delay packet transmission;
a network of switches and communication links interconnecting the first and second user access stations; and
at least one control station having communication links to the switches and user access stations, said control station controlling the setting up and the changing of transmission paths through said switches between the first and second user access stations and controlling the buffers in the first and second user access stations for equalizing packet transmission delay through the network for different transmission paths between said first and second user stations, whereby a packet transmission is delayed for a variable time period depending on the delay time for the transmission path with the longest delay time and based on relative delay times among changing transmission paths.

5,777,989
TCP/IP HOST NAME RESOLUTION FOR MACHINES ON SEVERAL DOMAINS
John Ryan McGarvey, Apex, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 19, 1995, Ser. No. 574,488
Int. Cl.⁶ H04L 12/26

U.S. Cl. 370—254

10 Claims

1. In a TCP/IP communications network containing more than one domain and having at least one local TCP/IP host, said local TCP/IP host being connected to multiple of said more than one domains and configured to use a primary domain name server and zero or more alternate domain name servers for each of the multiple connected domains, said local TCP/IP host having a name resolver program, a method for host address resolution comprising sending a name resolution query for a specified name originating with an application program concurrently to each of the primary domain name servers by the name resolver program;

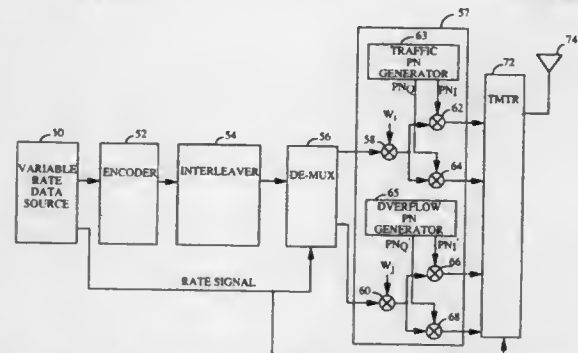


if a positive reply to the name resolution query is received from any of the primary domain name servers, returning the resolved host address information in the reply from the resolver program to the application program.

5,777,990
METHOD AND APPARATUS FOR PROVIDING VARIABLE RATE DATA IN A COMMUNICATIONS SYSTEM USING NON-ORTHOGONAL OVERFLOW CHANNELS
Ephraim Zehavi, Haifa, Israel; David S. Miller, Escondido, and Judith LaRocca, Del Mar, both of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.
Continuation of Ser. No. 395,960, Feb. 28, 1995, abandoned.
This application Apr. 16, 1997, Ser. No. 838,240
Int. Cl.⁶ H04J 13/04

U.S. Cl. 370—335

11 Claims



1. In code division multiple access (CDMA) communication system, wherein packets of data are transmitted using a plurality of orthogonal code sequences and wherein each user of said code division multiple is allocated an orthogonal code sequence for communication on a traffic channel, an apparatus for transmitting variable rate packets of data symbols comprising:

channel packetizer means for receiving said variable rate packets and, when a number of said data symbols included in ones of said variable rate packets exceeds a threshold value, splitting each of said ones of said variable rate packets into a traffic packet and at least one overflow packet;

first modulation means for receiving said traffic packet and for modulating said traffic packet in accordance with said orthogonal code sequence of said plurality of orthogonal code sequences and for modulating said orthogonal modulated traffic packet in accordance with a first pseudorandom noise (PN) sequence;

second modulation means for receiving said at least one overflow packet and for modulating said at least one overflow packet in accordance with an orthogonal code sequence of said plurality of orthogonal code sequences and for modulating said at least one orthogonal modulated overflow packet in accordance with at least one additional pseudorandom noise (PN) sequence wherein said at least one additional PN sequence is nonorthogonal to said first PN sequence; and

transmission means for transmitting said traffic packet on said traffic channel and for transmitting at least one overflow packet on said at least one overflow channel.

5,777,991
PERSONAL COMMUNICATION APPARATUS WITH CALL SWITCHING MODEM AND PACKET SWITCHING MODEM

Yoshinori Adachi; Kazuo Kobayashi, and Masaji Ebihara, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

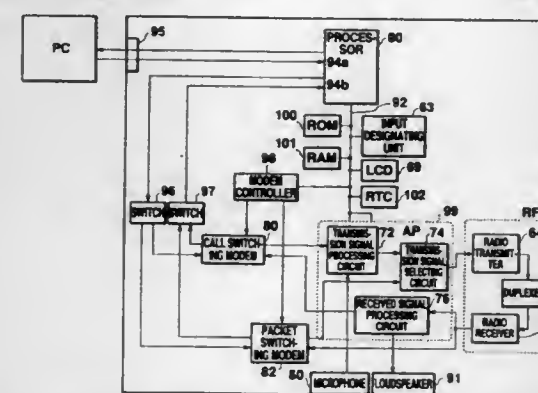
Filed Jan. 25, 1996, Ser. No. 591,133

Claims priority, application Japan, Jan. 27, 1995, 7-011826

Int. Cl.⁶ H04L 12/64; H04Q 7/32

U.S. Cl. 370—352

24 Claims



1. A personal communication set with a radio transmitter and a radio receiver for respectively transmitting and receiving at least speech, a microphone for receiving speech to be transmitted, and a loud speaker for outputting received speech, comprising:

a processor for controlling the personal communication set in operating modes including transmission and reception;

an input accepting portion for accepting an input from a user for designating an operating mode of the personal communication set;

a memory portion for storing various programs to be executed on and data to be referred to by the processor;

a call switching modem for executing modulation of digital data capable of being processed by the processor to obtain an analog signal in a speech frequency band and also demodulation in the converse way;

a packet switching modem for executing modulation of digital data capable of being processed by the processor to obtain an analog signal in a frequency band exceeding the speech frequency band, and also demodulation in the converse way; a transmission signal processing portion for carrying out bandwidth restriction processing of a speech base-band signal inputted from the microphone and an analog signal from the call switching modem;

a transmission signal selecting portion for selectively connecting either the transmission signal processing portion or the packet switching modem to the radio transmitter according to the operating mode of the personal communication set in transmission;

a transmission program for radio transmitting desired data stored in the memory portion via the packet switching modem when the packet switching modem is connected to the radio transmitter;

a received signal processing portion for carrying out bandwidth restriction processing of a signal received by the radio receiver;

a modem control portion for deciding whether the line switching modem and packet switching mode are to be operated according to the operating mode of the personal communication set in reception; and

a loudspeaker control portion for deciding whether the bandwidth restriction signal obtained in the received signal processing portion is to be outputted to the loudspeaker according to the operating mode of the personal communication set in reception; wherein elements set forth above are accommodated in a same housing.

5,777,992
DECODER FOR DECODING AND ENCODED DIGITAL SIGNAL AND A RECEIVER COMPRISING THE DECODER

Gerardus C. P. Lokhoff, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

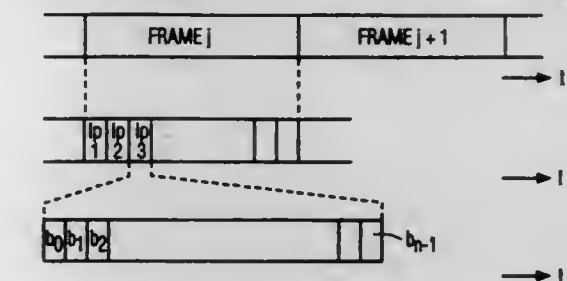
Continuation of Ser. No. 173,850, Dec. 27, 1993, Pat. No. 5,606,618, which is a continuation of Ser. No. 997,158, Dec. 21, 1992, Pat. No. 5,323,396, which is a continuation of Ser. No. 532,462, Jun. 1, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 488,322

Claims priority, application Netherlands, Jun. 2, 1989, 8901402; Feb. 13, 1990, 9000338

Int. Cl.⁶ H04J 3/24

U.S. Cl. 370—389

21 Claims



1. A decoder for decoding an encoded digital signal, wherein the encoded digital signal represents a wideband digital signal having a sampling frequency F_s , and the encoded digital signal comprises consecutive frames, each frame comprising a plurality of information packets, each information packet comprising N bits, N being larger than 1, a frame comprising at least a first frame portion including synchronization information; and wherein the decoder comprises:

an input for receiving the encoded digital signal, means for converting the encoded digital signal into a replica of the wideband digital signal, and

an output for supplying the replica of the wideband digital signal, characterized in that said converter is arranged for converting a signal having a number of information packets in one frame determined according to the formula

$$P = BR / N \times n_s \times F_s$$

where BR is the bitrate of the encoded digital signal and n_s is the number of samples of the wideband digital signal whose corresponding information in the encoded digital signal is included in one frame of the encoded digital signal, and

if P is an integer, the number of information packets in one frame is P , and

if P is not an integer, the number of information packets in a number v of the frames is P , where P is the highest integer whose value is less than P ; and the number of information packets in a number w of the other frames is equal to $P+1$, the numbers v and w being selected such that the average frame rate of the encoded digital signal is substantially equal to F_s/n_s .

5,777,993

Patent Not Issued For This Number

5,777,994

ATM SWITCH AND INTERMEDIATE SYSTEM

Masatoshi Takihiro; Toshihiko Murakami; Hidehiro Fukushima, all of Fujisawa; Osamu Takada, Sagami-hara, and Atsushi Kimoto, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

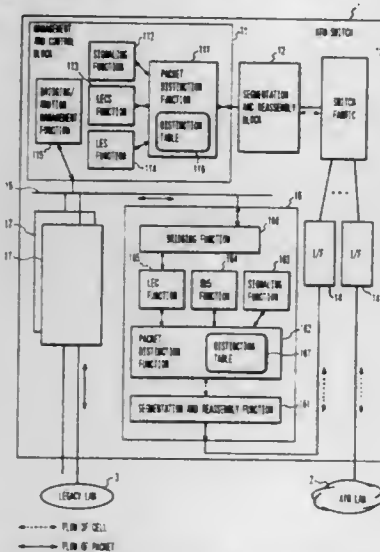
Filed Feb. 16, 1996, Ser. No. 601,354

Claims priority, application Japan, Feb. 17, 1995, 7-053289

Int. Cl.⁶ H04L 12/56

U.S. Cl. 370—395

11 Claims



1. An ATM switch for providing an interconnection between a connection-oriented ATM LAN of an ATM system and a connectionless legacy LAN, comprising:

- a switch fabric electrically connected to said ATM LAN;
- a segmentation and reassembly block electrically connected to said switch fabric, for providing an interchange between one of cells transmitted over said ATM LAN and a packet transmitted over said legacy LAN;
- a management and control block electrically connected to said switch fabric through said segmentation and reassembly block, for managing and controlling operations for electrical connections between networks;
- a first bridging/routing processor having a legacy LAN interface for providing electrical connections between said legacy LAN and said first bridging/routing processor;
- a second bridging/routing processor electrically connected to said switch fabric through at least one ATM interface; and
- a bus for connecting said management and control block, said first bridging/routing processor and said second bridging/routing processor to one another.

wherein said management and control block includes a signaling function and a bridging/routing management function for creating a bridging/routing table based on information about configurations of said ATM LAN and said legacy LAN and distributing said created bridging/routing table to said first and second bridging/routing processors, and said second bridging/routing processor includes a bridging function for bridging between said ATM LAN and said legacy LAN in accordance

with said bridging/routing table, a signaling function and a LAN emulation client function.

5,777,995

TRANSLATOR CHIP FOR A WIDEBAND NETWORK

Pedro Luis Chas Alonso; Luis Antonio Merayo Fernandez; Ana Altadill Arregui; Jose Manuel Suarez Martel, and Ignacio Carretero, all of Madrid, Spain, assignors to Telefonica De España, S.A., Madrid, Spain

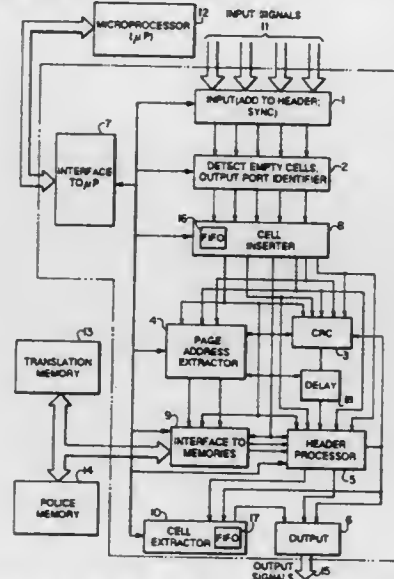
Continuation of Ser. No. 419,927, Apr. 11, 1995, abandoned. This application Mar. 10, 1997, Ser. No. 815,998

Claims priority, application Spain, Apr. 19, 1994, 9400814

Int. Cl.⁶ H04L 12/28; 12/56

U.S. Cl. 370—395

12 Claims



1. A translator for use in an element of a wideband network, for transforming a format restored by a CCITT information cell into other predetermined formats by inserting cells from a microprocessor into network data flow in asynchronous transfer mode (ATM) and by extracting from the network data flow cells addressed to the microprocessor, the translator comprising the following cooperatively interconnected elements:

- input means for receiving input data cells from the network data flow and for modifying a header of cells in the input data so as to adapt them to perform functions in the ATM layer;
- means for detecting empty cells and for identifying an output port;
- control calculus means for carrying out cyclic redundancy check (CRC) operations;
- means for extracting addresses related to external memories that permit modification of the cell headers;
- a header processor for modifying the cell headers in accordance with information stored in the external memories;
- a delay means for delaying the data flow so that the cells converge with cell headers that have been processed by the header processor;
- an interface with the microprocessor;
- an insertion means for inserting cells from the microprocessor into the data flow;
- an interface with the external memories;
- an extracting means for extracting cells addressed to the microprocessor; and
- an output means for providing an output data flow to the network.

5,777,996

INTER-REPEATER BACKPLANE FOR ALLOWING HOT-SWAPPING OF INDIVIDUAL REPEATER CIRCUITS

David T. Chan, Fair Oaks; Joseph E. Heldeman, Orangevale; Haim Shafir, Sacramento; Stefan M. Wurster, Livermore, and David S. Wong, Campbell, all of Calif., assignors to Level One Communications, Inc., Sacramento, Calif.

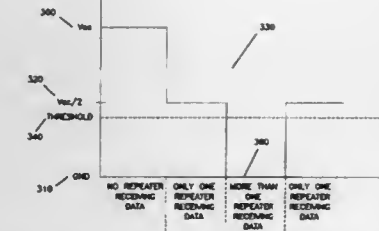
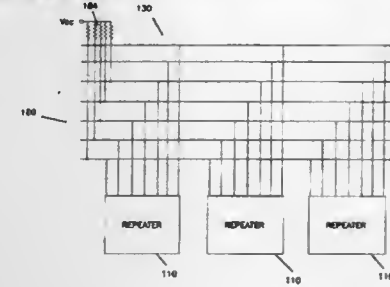
Continuation of Ser. No. 380,074, Jan. 30, 1995, abandoned.

This application Oct. 29, 1996, Ser. No. 741,338

Int. Cl.⁶ H04L 12/46; 12/66

U.S. Cl. 370—402

11 Claims



1. An inter-repeater backplane connecting multiple repeaters to form a hub system, the backplane allowing hot-swapping of a first repeater from the hub system without passing errors, causing hang-ups, and crashing a second repeater in the hub system, the backplane comprising:

- a data path, coupled between a plurality of repeaters, for passing data between multiple repeaters;
- an enable signal path, parallel to the data path, for indicating whether a repeater may transmit data over the data path; and
- collision signaling path, coupled between the plurality of repeaters, for conveying data path status information utilizing a distributed tri-state signal, the tri-state signal indicating more than one repeater is receiving data, one repeater is receiving data or no repeater is receiving data, the tri-state signal allowing a repeater to be removed or added to the hub system without interrupting the conveyance of data path status information.

5,777,997

METHOD AND SYSTEM FOR TRANSMITTING AUDIO-ASSOCIATED TEXT INFORMATION IN A MULTIPLEXED TRANSMISSION STREAM

Raynold Kahn, Los Angeles, and Alan Lopez, Torrance, both of Calif., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Filed Mar. 7, 1996, Ser. No. 612,133

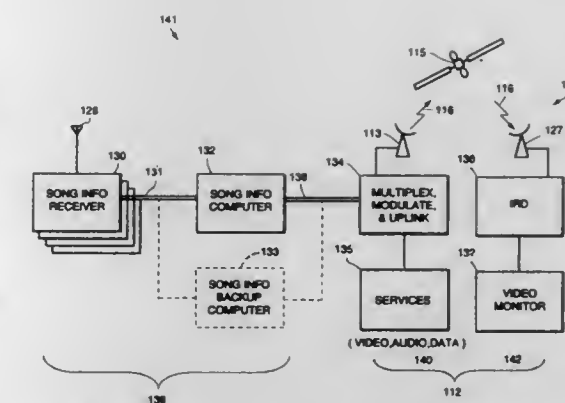
Int. Cl.⁶ H04J 1/02

U.S. Cl. 370—493

12 Claims

1. A method of transmitting text information associated with individual songs transmitted via a multiple-channel audio/video transmission network, said method comprising:

- receiving text information associated with a first song;
- formatting said text information into song data;



inserting said song data into a control data stream associated with an audio-only channel carrying said first song; multiplexing said control data stream with a data stream associated with said audio-only channel and a video data stream associated with a video channel to form a multiplexed data stream;

transmitting said multiplexed data stream; receiving said multiplexed data stream; decoding said multiplexed data stream with a decoder to obtain text associated with said text information; and displaying said text in association with output of the audio of said song.

5,777,998

METHOD AND CIRCUIT ARRANGEMENT FOR THE REALIZATION OF THE HIGHER PATH ADAPTATION/MAPPING FUNCTION IN SYNCHRONOUS DIGITAL HIERARCHY/OPTICAL NETWORK EQUIPMENT

Giovanni Traverso, Robbiate; Silvano Frigerio, Cantu', and Alberto Lometti, Merate, all of Italy, assignors to Alcatel N.V., Rijswijk, Netherlands

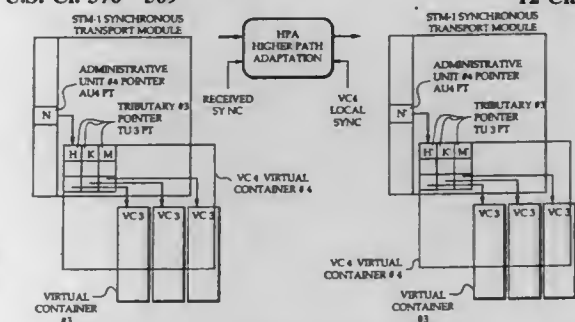
Filed Nov. 23, 1994, Ser. No. 344,083

Claims priority, application Italy, Dec. 22, 1993, MI93A2708

Int. Cl.⁶ H04J 3/06

U.S. Cl. 370—509

12 Claims



1. Method of realizing a higher path adaptation (HPA) function in synchronous digital hierarchy (SDH) equipment, wherein the method comprises the step of altering instants of justification of a read frame tributary unit pointer (TU-pointer) as a function of a value of a write frame auxiliary unit pointer (AU-pointer) by applying an alteration law to decision threshold values of the instants of justification.

1. In an integrated circuit (IC) test environment which employs a plurality of different IC testers for testing the same IC, a method for converting a portion of a first set of test vectors compatible with one of said plurality of testers into a second format compatible with a second of said plurality of testers, said method comprising the steps of:

- initiating user selections that identify all signals to be tested as said first set of test vectors and those that are to be tested in said second format by said second tester;
- generating user selections that identify a portion of said first set of test vectors which are to be converted into said second format to be used to test said IC on said second tester;
- proving said first set of test vectors to be satisfactory for test on said first and said second testers;

scanning the first pulse and the second pulse altered in said altering step, by changing the time delay of one of the first and second pulses in a predetermined manner.

5,778,017

METHOD AND DEVICE FOR CONTROLLING A SEMICONDUCTOR LASER

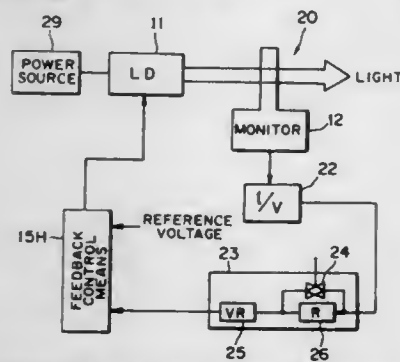
Shinichi Sato; Munenori Ohtsuki; Isao Iwaguchi, and Ichiro Shinoda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 633,025, Apr. 16, 1996, abandoned, which is a division of Ser. No. 458,193, Jun. 2, 1995, Pat. No. 5,636,233, which is a division of Ser. No. 113,109, Aug. 30, 1993, Pat. No. 5,511,087. This application Sep. 17, 1997, Ser. No. 936,185

Claims priority, application Japan, Mar. 19, 1993, 6-050732
Int. Cl.⁶ H01S 3/10

U.S. Cl. 372—38

5 Claims



1. A semiconductor laser control device comprising:
 - a semiconductor laser permitting a light amount control in accordance with current;
 - light amount monitoring means for monitoring a light amount of said semiconductor laser as a current value;
 - a current to voltage converter converting a monitoring current from said light amount monitoring means into a monitoring voltage;
 - monitoring voltage dividing means, having first and second resistors serially connected to each other, for dividing the monitoring voltage converted by said current to voltage converter;
 - feedback control means for controlling a feedback of said light amount of said semiconductor laser to equalize the monitoring voltage from said monitoring voltage dividing means to a reference voltage; and
 - a switch arranged in parallel to the first resistor in said monitoring voltage dividing means, for changing the resistance value of said monitoring voltage dividing means when said switch is turned on and off to change a range of a voltage division ratio with respect to said monitoring current.

5,778,018

VCSELS (VERTICAL-CAVITY SURFACE EMITTING LASERS) AND VCSEL-BASED DEVICESTakashi Yoshikawa; Kaori Kurihara, and Hideo Kosaka, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Sep. 15, 1995, Ser. No. 528,886

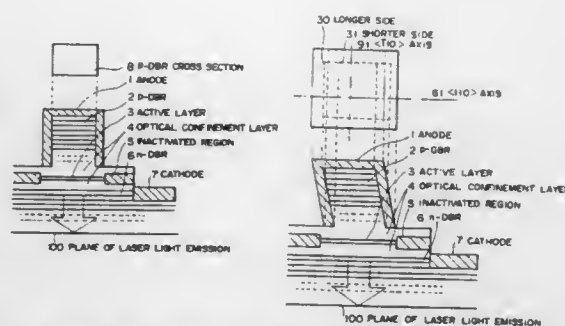
Claims priority, application Japan, Oct. 13, 1994, 6-247926; Oct. 19, 1994, 6-253324; Oct. 24, 1994, 6-258069; Mar. 9, 1995, 7-049638

Int. Cl.⁶ H01S 3/19; 3/08

U.S. Cl. 372—45

5 Claims

1. A vertical cavity surface emitting laser (VCSEL) comprising:
 - a semiconductor substrate having a plane of laser light emission;
 - an n-side GaAs/AlAs multi-layer reflector formed on said substrate, each reflector layer of said n-side semiconductor multi-layer reflector being parallel to said plane of laser light emission;
 - intermediate layers formed on said n-side GaAs/AlAs multi-layer reflector, comprising optical confinement layers and an active layer for generating laser light sandwiched between



- said optical confinement layers, each layer of said intermediate layers being parallel to said plane of laser light emission;
- a p-side GaAs/AlAs multi-layer reflector formed on said intermediate layers, each reflector layer of said p-side GaAs/AlAs multi-layer reflector being parallel to said plane of laser light emission, said p-side GaAs/AlAs multi-layer reflector being formed into a post vertical to said plane of laser light emission;
- an anode covering the outer surface of said post; and
- a cathode in contact with said n-side GaAs/AlAs multi-layer reflector;
- said post having a rectangular cross-section parallel to said plane of laser light emission and having longer sides and shorter sides, the length of said longer sides being substantially 6 μ m and the length of said shorter sides being less than or equal to substantially 5 μ m;
- a spacing being provided between a bottom surface of said post and said active layer of about one wavelength of said laser light; and
- a polarization plane of said laser light being parallel to said longer sides.

5,778,019

AUTODYNE LIDAR SYSTEM UTILIZING A HYBRID LASER

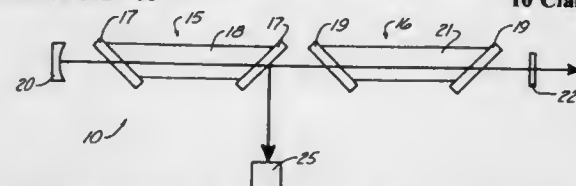
James H. Churnside, Boulder, Colo.; Evgenii P. Gordov, and Viktor M. Orlovskii, both of Tomsk, Russian Federation, assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Mar. 30, 1994, Ser. No. 220,012

Int. Cl.⁶ H01S 3/22; 3/223

U.S. Cl. 372—55

10 Claims



1. A hybrid laser for an autodyne lidar system comprising:
 - a laser cavity;
 - a continuous-wave (CW) optical gain section disposed within said laser cavity;
 - means for pumping said continuous-wave (CW) optical gain section in a continuous fashion;
 - a pulsed optical gain section disposed within said laser cavity;
 - means for pumping said pulsed optical gain section in a pulsed fashion;
 - highly reflecting mirror means disposed at one end of said laser cavity for reflecting light back through said continuous-wave (CW) optical gain section and said pulsed optical gain section;
 - partially reflecting mirror means disposed at the other end of said laser cavity for partially reflecting light back through said continuous-wave (CW) optical gain section and said pulsed optical gain section wherein the light not reflected back through the continuous-wave (CW) optical gain section and said pulsed optical gain section is allowed to escape; and

detector means for observing the light transmitted within said laser cavity.

5,778,020

ND: YAG LASER PUMP HEAD

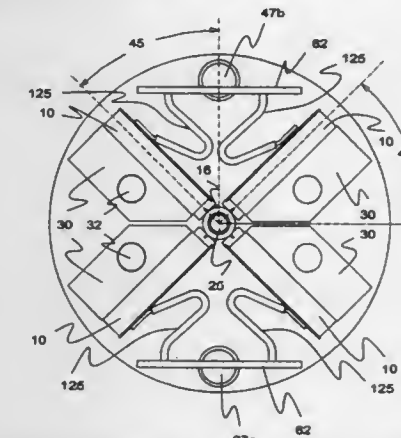
M. Cem Gokay, Centerville, Ohio, assignor to CJ Laser, Inc., Dayton, Ohio

Filed Oct. 30, 1996, Ser. No. 739,805

Int. Cl.⁶ H01S 3/091

U.S. Cl. 372—75

19 Claims



1. Apparatus for pumping a cylindrical laser rod extending along a rod axis for a rod length at a constant rod diameter, said apparatus comprising:
 - (a) a hollow, transparent tube extending along a tube axis for a tube length approximately equal to said rod length, said tube having an inside diameter slightly larger than said rod diameter and an outside diameter slightly larger than said inside diameter;
 - (b) Support means for supporting said laser rod inside said tube such that said tube axis is coincident with said rod axis, thereby defining an uniform crosssection annular passage between said laser rod and said tube;
 - (c) a multiplicity of laser diodes directed toward said laser rod and arranged closely adjacent said tube in a plurality of symmetrically positioned banks extending parallel to said tube axis and said rod axis;
 - (d) means for applying electrical power to said laser diodes, so that said laser diodes generate beams of illumination which pass through said tube and said annular passage for side pumping said laser rod; and
 - (e) circulation means for cooling said laser rod by circulating a flow of a cooling fluid through said annular passage.

5,778,021

SELF-BAKING CARBON ELECTRODE

Reidar Innvæ, Kristiansand, Norway, assignor to Elkem ASA, Norway

PCT No. PCT/N095/00123, § 371 Date Feb. 28, 1996, § 102(e) Date Feb. 28, 1996, PCT Pub. No. WO96/03849, PCT Pub. Date Feb. 8, 1996

PCT Filed Jul. 7, 1995, Ser. No. 602,848

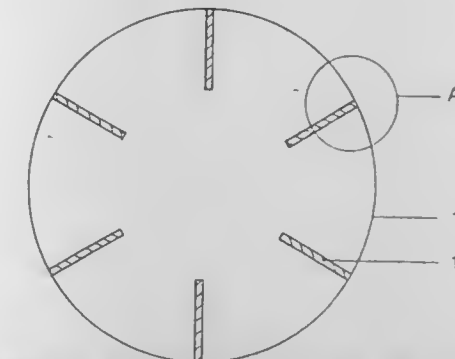
Claims priority, application Norway, Jul. 21, 1994, 942724

Int. Cl.⁶ H05B 7/06

U.S. Cl. 373—89

12 Claims

1. A self-baking carbon electrode produced in direct connection with a furnace wherein it is consumed, wherein said electrode comprises an outer casing (1) made from an electrical conducting material, and having inner radial, vertical ribs (11) and where carbonaceous unbaked paste (9) is supplied to the casing (1), wherein said paste (9) is baked to a solid electrode (8) by means of electric current supplied to the electrode, characterized in that the inner radial, vertical ribs (11) consist of solid carbon sheets (11)



being affixed to the inside of the casing (1), said carbon sheets having a ratio between radial length and thickness of above 5:1.

5,778,022

EXTENDED TIME TRACKING AND PEAK ENERGY IN-WINDOW DEMODULATION FOR USE IN A DIRECT SEQUENCE SPREAD SPECTRUM SYSTEM

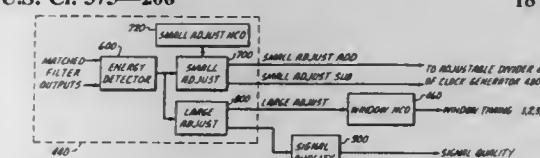
John S. Walley, Lake Forest, Calif., assignor to Rockwell International Corporation, Newport Beach, Calif.

Filed Dec. 6, 1995, Ser. No. 568,053

Int. Cl.⁶ H04R 1/707

U.S. Cl. 375—206

18 Claims



16. In a digital cordless telephone having a basestation connectable to a switched telephone network and a handset, said basestation and handset communicating over an RF link using direct sequence spread spectrum modulation, said basestation and said handset each connected to receive and demodulate digital in-phase and quadrature baseband signals using analog-to-digital converters and matched filters operating at a sample rate to produce complex in-phase and quadrature digital data, and a demodulation circuit, an improvement comprising:
 - extended time tracking means for defining and maintaining a multiple sample demodulation window around a centroid of correlation energy for each bit interval; and
 - means for demodulating the in-phase and quadrature digital data that has the highest energy content within at least a portion of the demodulation window, the portion including a sample at a predicted center of the multiple sample demodulation window and at least two adjacent samples; and
 - means for selecting one of the demodulated samples as best representing valid data.

5,778,023

DATA REPRODUCING APPARATUS FOR SPREAD SPECTRUM SIGNAL

Nobuhiko Ideta, and Ryuzo Nishi, both of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 6, 1996, Ser. No. 597,255

Claims priority, application Japan, Feb. 8, 1995, 7-021877
Int. Cl.⁶ H04B 15/00; H04K 1/00; H04L 27/30

U.S. Cl. 375—208

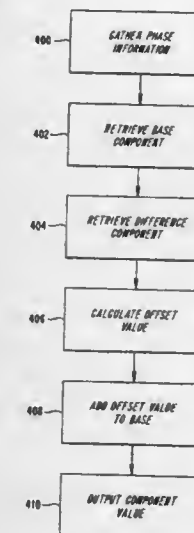
9 Claims

1. A data reproducing apparatus for a spread spectrum signal comprising:
 - correlation means for despreading a spread signal and outputting a correlation value;

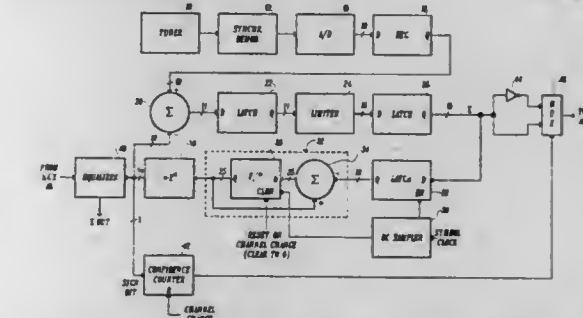
1. A dual-mode communications processor comprising:
- a dual-mode signal processor having an input port for receiving digitized data, said signal processor performing first and second signal processing operations upon said digitized data received during operation in first and second modes, respectively, said signal processor alternating between said first and second signal processing operations when in a hybrid mode;
 - a digital modulation network, coupled to said dual-mode signal processor, for generating digital modulation data using said digitized data processed by said dual-mode signal processor during said first mode;
 - a narrowband modulator, coupled to said dual-mode signal processor, for generating narrowband modulation data using said digitized data processed by said dual-mode signal processor during said second mode; and
 - a controller for selecting between operation in said first and second modes.

1. A transmitting-receiving circuit, comprising:
 - a) a transmitting block including:
 - 1) an inverter block including plural inverters; and
 - 2) two differential transmitters, responsive to a first subset of the plural inverters in the inverter block, and providing respective transmitted signals; and
 - b) a receiving block that is galvanically decoupled from the transmitting block, the receiving block including:
 - 1) two differential receivers for receiving respective received signals;
 - 2) two optocouplers, respectively responsive to the two differential receivers, and to which a second subset of the plural inverters in the transmitting block are responsive;
 - 3) two resistors, disposed between respective pairs of the differential receivers and the optocouplers; and
 - 4) a voltage regulator for providing to the differential receivers, a voltage and ground that are decoupled from the transmitting block.

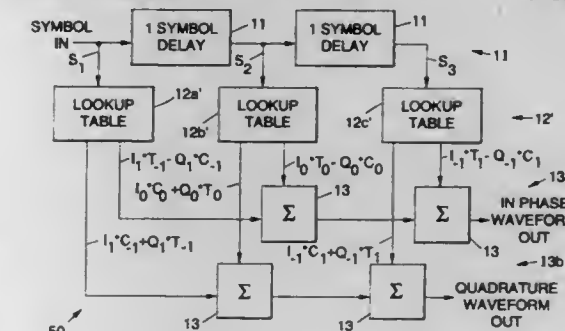
- (a) determining if the analog speech signals are present;
- (b) setting each of the digital parameter codes to at least one of determined or selected values for a predetermined number of frames when the analog speech signals are not present;
- (c) transmitting the determined or selected parameter code values, defining an artificial noise signal, to a base station when the analog speech signals are not present; and



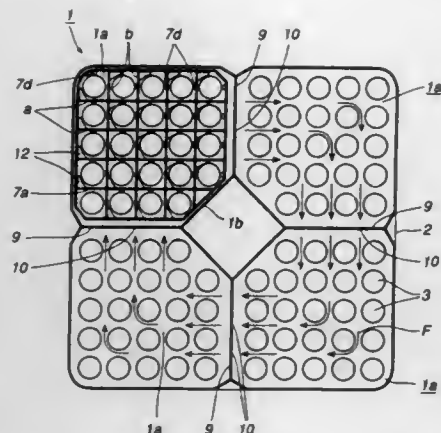
1. A method for determining a quadrature component of a signal, the method comprising the steps of:
- providing a first lookup table containing quadrature component base values arranged in consecutive value order;
 - providing a second lookup table containing differences between consecutive base component values in the first table;
 - determining phase angle data of the signal;
 - separating the phase angle data into a table address and an offset factor;
 - accessing the first lookup table using the table address to determine a base component value;
 - accessing the second lookup table using the table address to determine a corresponding difference value;
 - calculating an offset value using the offset factor in combination with the difference value; and



1. A method of removing DC from a digitally encoded input signal comprising a plurality of multi level data symbols received at a constant symbol rate comprising:
- subtracting a derived value from each of the data symbols for removing the DC component of each encoded input signal and producing a subtracted signal output;
 - sampling said subtracted signal output at said symbol rate or at one-half said symbol rate; and
 - accumulating the samples for generating said derived value.



1. A signal conditioner for use in a transmitter for processing input symbols to generate baseband pre-equalized and predistorted output waveforms comprising quantized in-phase and quadrature signal waveforms that are representative of the input symbols, said signal conditioner comprising:
- an input for receiving binary codes representing said input symbols;
 - an in-phase equalizer that comprises:
 - a plurality of serially coupled one symbol delay devices for sequentially delaying the input symbols;



elongated elements, arranged between said top tie plate and said bottom tie plate;
a mixing cross section having a mixing center, said mixing cross section extending through four orthogonally arranged fuel assemblies and having a size corresponding to at least that of two fuel assemblies; and
a plurality of spacers for retaining and mutually fixing said elongated elements, said plurality of spacers having flow control members for controlling coolant flow around said mixing center.

5,778,036

Patent Not Issued For This Number

5,778,037

METHOD FOR THE RESETTING OF A SHIFT REGISTER AND ASSOCIATED REGISTER

Sylvie Wuidart, Pourrières, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France

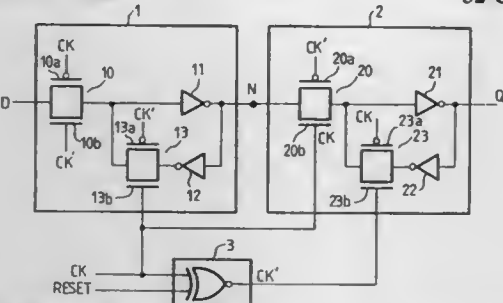
Filed Oct. 16, 1996, Ser. No. 732,601

Claims priority, application France, Oct. 16, 1995, 95 12104

Int. Cl.⁶ G06M 3/00

U.S. Cl. 377—26

32 Claims



I. A shift register comprising:

a plurality of series-connected, non-transparent synchronous memory cells, each memory cell of the plurality of memory cells being controlled by a first clock signal and a second clock signal that is in phase opposition to the first clock signal, each memory cell having a plurality of transfer gates, each transfer gate of the plurality of transfer gates receiving at least one of the first and second clock signals to turn certain: transfer gates of the plurality of transfer gates in each memory cell off and to turn remaining transfer gates of the plurality of transfer gates in each memory cell on dependent upon one of whether a new data element is to be memorized by each cell and whether a memorized data element is to be transferred to a next memory cell in the series; and
a reset circuit coupled to each memory cell of the plurality of series-connected, non-transparent synchronous memory cells

to make all of the plurality of series-connected, non-transparent synchronous memory cells transparent during a resetting phase, the reset circuit including at least one logic gate that receives a reset signal and modifies the second clock signal during an active state of the reset signal.

5,778,038 COMPUTERIZED TOMOGRAPHY SCANNER AND METHOD OF PERFORMING COMPUTERIZED TOMOGRAPHY

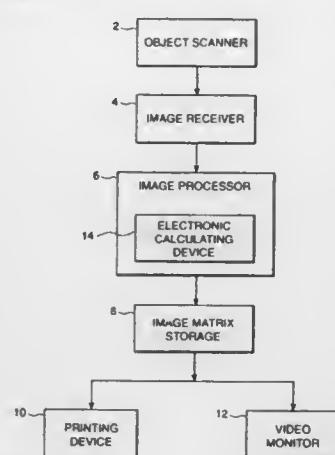
Achi Ezer Brandt, Rehovot, Israel; Jordan Mann, Cambridge, Mass., and Matvei Brodski, Willburn, N.J., assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed Jun. 6, 1996, Ser. No. 659,595

Int. Cl.⁶ A61B 6/03

U.S. Cl. 378—4

20 Claims



1. A method of computerized tomography, comprising the steps of:

- scanning a subject by projecting radiation toward the subject;
- sensing the projected radiation with a plurality of sensors;
- processing the output of the sensors to create a matrix of samples of an image by:
- filtering the samples of each Radon projection sample vector r' , where $i=1, \dots, Q$, by:
 - computing the discrete Fourier transform \hat{r} of r' using an algorithm of order $N \log N$, where N is the length of the vector;
 - multiplying the j th element of \hat{r} by j , for $j < N/2$, and multiplying the j th element of \hat{r} by $N-j$, for $j \geq N/2$, where the elements of r' are numbered 0 through $N-1$; and
 - computing the inverse discrete Fourier transform g of the modified \hat{r} using an algorithm of order $N \log N$; and
- performing the k th level of merges, for $k=1, \dots, \log_2 Q$, by computing the grid g_k , for $l=1, \dots, Q/2^k$, by merging g_{2l-1}^{k-1} and g_{2l}^{k-1} by means of rotation of coordinates, interpolation, and addition.

5,778,039

METHOD AND APPARATUS FOR THE DETECTION OF LIGHT ELEMENTS ON THE SURFACE OF A SEMICONDUCTOR SUBSTRATE USING X-RAY FLUORESCENCE (XRF)

Tim Z. Hossain, and John K. Lowell, both of Round Rock, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

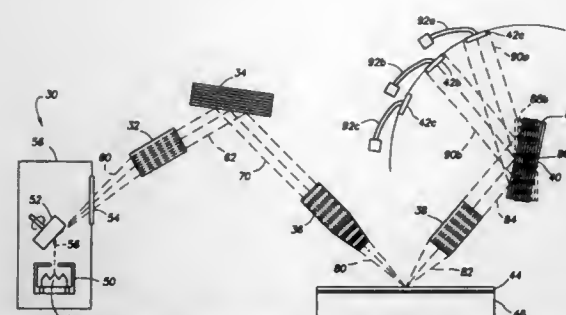
Filed Feb. 21, 1996, Ser. No. 604,257

Int. Cl.⁶ G01N 23/223

U.S. Cl. 378—45

13 Claims

1. A method of detecting the presence of an atom located on a surface of a semiconductor substrate, comprising:



producing a monochromatic primary X-ray beam comprising a plurality of primary X-ray photons, wherein the energy level of each of the plurality of primary X-ray photons is operably chosen to cause the atom to emit a secondary X-ray photon; focusing said monochromatic primary X-ray beam onto the surface of the semiconductor substrate; directing a secondary X-ray photon emitted by the atom to an X-ray detector; and detecting the presence of the atom by reading an output of the X-ray detector.

5,778,040

Patent Not Issued For This Number

5,778,041

SYSTEM AND PROCESS FOR MEASURING ASH IN PAPER

Lee Chase, Los Gatos; John Goss, and Philip Hegland, both of San Jose, all of Calif., assignors to Honeywell-Measurex Corporation, Cupertino, Calif.

Continuation of Ser. No. 892,595, May 28, 1992, abandoned,

which is a continuation of Ser. No. 552,338, Jul. 12, 1990,

abandoned, which is a continuation of Ser. No. 274,645, Nov.

17, 1988, abandoned, which is a continuation of Ser. No.

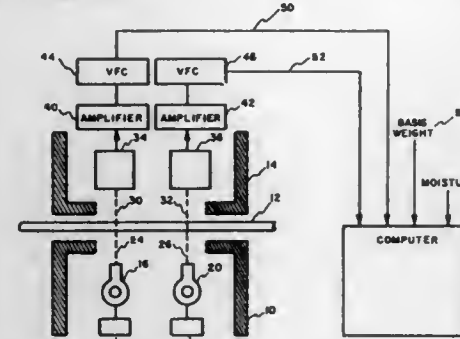
541,622, Oct. 13, 1983, abandoned. This application Jan. 27,

1993, Ser. No. 9,406

Int. Cl.⁶ G01N 23/06

U.S. Cl. 378—53

25 Claims



1. A process for determining the concentration of a first component of a mixture wherein the first component includes at least three materials, said process comprising:

- directing two beams of x-rays into the mixture, at least one beam having a spectrum of x-rays having a plurality of different energies, the first beam including x-rays having an energy above the K-edges of at least two of the materials and the second beam including x-rays having an energy below the K-edges of the same at least two materials, wherein the energy distributions of the two beams are different and are such that, for each beam, the mass absorption coefficient for the same two materials is substantially equal, but different from the mass absorption coefficient for the third material;
- receiving the portions of said two beams which are transmitted through the mixture; and

5,778,042

METHOD OF SOFT X-RAY IMAGING

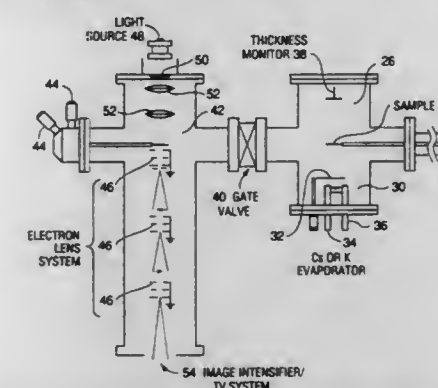
William Pong, Honolulu, Hi., assignor to University of Hawaii, Honolulu, Hi.

Filed Jul. 18, 1996, Ser. No. 690,189

Int. Cl.⁶ G01B 15/06

U.S. Cl. 378—58

11 Claims



1. A method of forming an image on a glass surface using soft x-rays, comprising the steps of:

- providing a source of soft x-rays, a mask and a glass surface;
- positioning said mask between said glass surface and said source of soft x-rays; and
- exposing said glass surface to soft x-rays from said source of soft x-rays, whereby said mask blocks a portion of said soft x-rays and an image is formed on said glass surface, said image corresponding to areas on said glass surface exposed to said soft x-rays.

5,778,043

RADIATION BEAM CONTROL SYSTEM

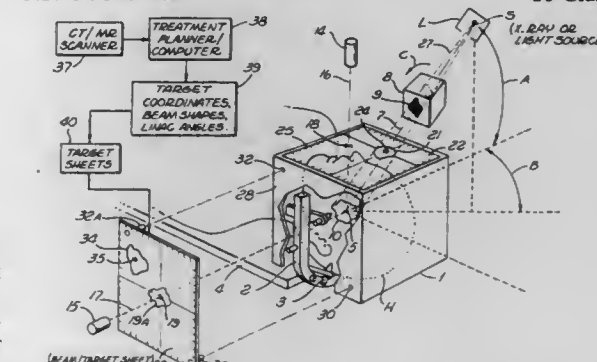
Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Filed Sep. 20, 1996, Ser. No. 718,288

Int. Cl.⁶ A61N 5/10

U.S. Cl. 378—65

10 Claims



1. A beam referencing system for radiation therapy equipment comprising:

- a collimator having an aperture to define a radiation beam from a radiation therapy source to irradiate a patient's body from a direction;
- a reference structure positioned in a known position with respect to said patient's body and comprising a beam contour representative of the projection of said radiation beam through said aperture from said direction.

5,778,044

X-RAY EXAMINATION APPARATUS INCLUDING AN IMAGE PICK-UP APPARATUS WITH A CORRECTION UNIT

Antonius J. C. Bruijns, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

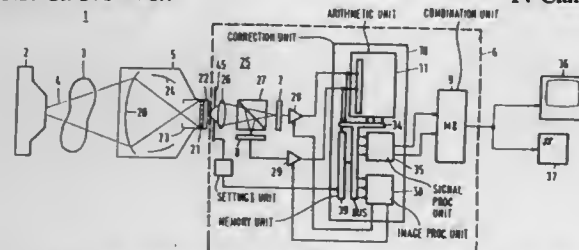
Filed Dec. 26, 1996, Ser. No. 773,118

Claims priority, application European Pat. Off., Dec. 27, 1995, 95203645

Int. Cl.⁶ H04N 1/00

U.S. Cl. 378—98.7

14 Claims



1. An X-ray examination apparatus, comprising an X-ray detector for deriving an optical image from an X-ray image, an image pick-up apparatus for deriving an image signal from the optical image, and a correction unit for correcting the image signal by means of correction values, characterized in that the image pick-up apparatus is arranged to form a dark image signal, and that the correction unit is arranged to derive one or more test image signals from the optical image, and to derive the correction values from said test image signals and the dark image signal.

5,778,045

SINGLE/DUAL-ENERGY X-RAY DENSITOMETRY SCANNING, INCLUDING OPERATOR SELECTED SCANNING SEQUENCES

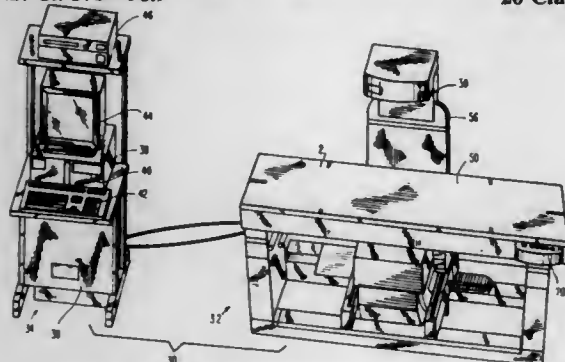
Eric von Stetten, Sudbury; Peter Steiger; Jay A. Stein, both of Framingham; Howard P. Weiss, Newton, and Thomas L. Kelly, Groveland, all of Mass., assignors to Hologic, Inc., Waltham, Mass.

Continuation of Ser. No. 345,069, Nov. 25, 1994, which is a continuation-in-part of Ser. No. 156,287, Nov. 22, 1993, Pat. No. 5,432,834. This application Jun. 7, 1995, Ser. No. 484,484

Int. Cl.⁶ H05G 1/64

U.S. Cl. 378—98.9

26 Claims



1. A medical radiological apparatus, comprising: a patient table for support of a patient, having a length extending along a Y-axis and a width extending along an X-axis; an x-ray source at one side of the patient table; an x-ray detector at an opposite side of the table and aligned with the x-ray source along a source-detector axis; the source, when selectively energized, emitting a beam of x-rays which conforms to a beam plane which is transverse to both the X-axis and the Y-axis, to scan selectively selected regions of a patient on the table with the beam of x-rays; a source controller selectively pulsing the source to emit therefrom single-energy and dual-energy x-rays; a processor responsive to detector outputs for the single- and dual-energy x-rays to derive therefrom diagnostic information

based solely on single energy x-rays as well as diagnostic information based on dual-energy x-rays; a scan motion controller storing scan sequences each corresponding to scanning a selected set of regions of interest in a patient on the patient table; an interface responsive to operator input to select a stored scan sequence, the scan motion controller being coupled to the interface to carry out a scan sequence selected by an operation through the interface to carry out the selected sequence; and an output device coupled with the processor to receive both the diagnostic information based on single-energy x-rays and the diagnostic information based on dual-energy x-rays.

5,778,046

AUTOMATIC X-RAY BEAM EQUALIZER

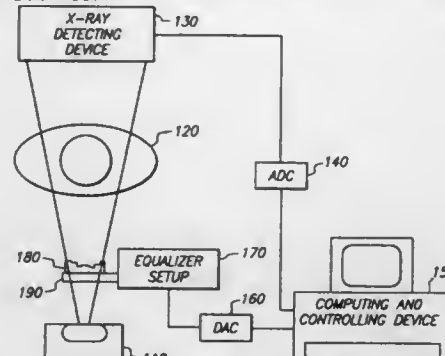
Sabee Molloy, Laguna Beach, and Jerry Tang, Irvine, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jan. 19, 1996, Ser. No. 588,814

Int. Cl.⁶ G21K 3/00

U.S. Cl. 378—159

6 Claims



1. A method of attenuating an x-ray beam, comprising the steps of:

- providing an x-ray source, an x-ray detector, an object, a processor, a plurality of nickel-titanium alloy wires coupled to an array of pistons, an interface means coupling said wires to said processor, and a mask;
- obtaining an initial image of said object using said x-ray source and said x-ray detector;
- calculating an appropriate attenuation pattern based on said initial image with said processor;
- forming an appropriate equalization pattern in said mask by i) advancing select pistons among said array of pistons with said nickel-titanium wires under control of said processor, and ii) pressing said array of pistons against said mask in order to create said equalization pattern in said mask; and
- placing said mask in a path of the x-ray beam between said x-ray source and said object, such that the beam is attenuated.

5,778,047

RADIOTHERAPY COUCH TOP

Stanley Mansfield, Sunnyvale, and Ross Bernald Hannibal, Saratoga, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Oct. 24, 1996, Ser. No. 735,902

Int. Cl.⁶ A61B 6/04

U.S. Cl. 378—209

11 Claims

1. A radiotherapy couch top comprising: a fixed frame having two side members; a pair of movable beams extending beyond said side members of said fixed frame parallel to each other in a longitudinal direction, each of said pair of movable beams having distal and proximal ends; a first and second linear slide bearing ways extending parallel to each other in a transverse direction perpendicular to said

5,778,049

SERVICE ENGINEERING TEMPLATE

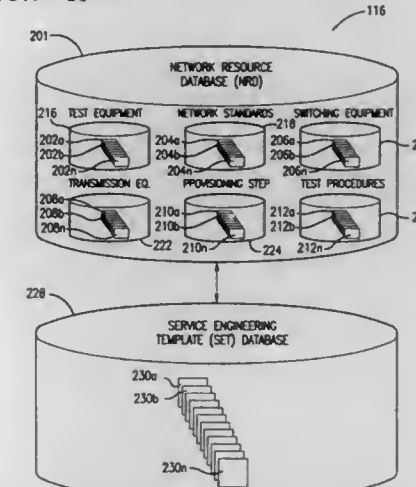
Jamie L. Young, Atlanta, Ga.; Rodney S. Britton, Allen, and Kevin J. Farley, Richardson, both of Tex., assignors to MCI Communications Corporation, Washington, D.C.

Filed Jun. 26, 1996, Ser. No. 673,744

Int. Cl.⁶ H04M 1/24;3/08

U.S. Cl. 379—10

21 Claims



1. A system for providing information related to telecommunication services comprising: first data entry means for defining and updating service engineering templates; second data entry means for defining and updating network resources including telecommunication transmission and switching equipment; first storage means for maintaining a plurality of service engineering templates; second storage means for maintaining a plurality of network resources; association means for selectively linking said network resources with said service engineering templates, thereby causing automatic updates of said service engineering templates whenever linked network resources are updated via said second data entry means; and presentation means for displaying said service engineering templates and said network resources.

5,778,048

FEED IMBALANCE DETECTOR IN REPEATED LINE
Geun-Ho Kim, Gumi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

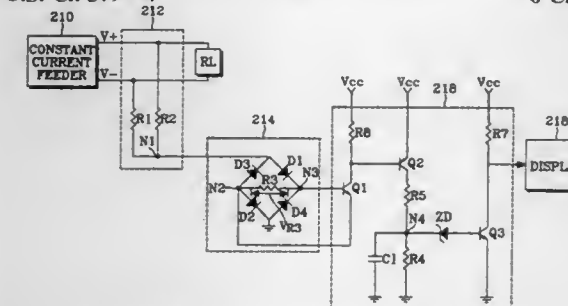
Filed Aug. 14, 1996, Ser. No. 689,778

Claims priority, application Rep. of Korea, Aug. 18, 1995, 1995-25487

Int. Cl.⁶ H04M 1/24;3/08;3/22

U.S. Cl. 379—4

6 Claims



3. A feed imbalance detector for detecting feed imbalance in a repeated line comprising: a constant current feeder, having plus and minus output ports, for transmitting a operating voltage to the repeated line; a virtual ground unit for detecting a voltage difference between output ports of said constant current feeder and comprising a first resistance disposed between said plus output port and a first node and a second resistance disposed between said minus output port and said first node; a comparator for comparing said voltage difference detected by said virtual ground unit with a ground voltage and comprising a diode bridge disposed between said first node and a ground port; a detector having means for measuring a predetermined detection time, for determining feed imbalance based on an output level value of said comparator after said predetermined detection time and for outputting a driving signal if feed imbalance has been detected; and a display for displaying an alarm upon receiving said driving signal output by said detector.

5,778,050

PORTABLE LINE TEST TELEPHONE

Young Park, 11, #916-19, Daerim-dong, Yungdeungpo-gu, Seoul 150-070, Rep. of Korea

Filed Jan. 27, 1995, Ser. No. 379,069

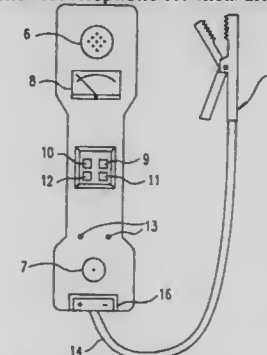
Claims priority, application Rep. of Korea, May 20, 1994, 1994-11263

Int. Cl.⁶ H04M 1/24;3/08;3/22

U.S. Cl. 379—21

1 Claim

1. A portable line test telephone for measuring the telephone line



receiving and transmitting with a subscriber or a central office using the lead wire connected to a TIP line and a RING line, comprising:

- a measuring switching means composed of three contact switches for measuring an insulation resistance and a telephone capacity, connecting the TIP line selectively to three terminals +, A or B;
- a call switching means composed of four contact switches for calling and talking with the subscriber, connecting the TIP line or the RING line selectively to four terminal E, F, G or H with connecting the RING line to said measuring switching means;
- a monitor switching means composed of four contact switches for amplifying the voice to be output through the terminal C, D at a call IC and for operating a ceramic microphone;
- a tone/pulse switching means which notifies the connecting condition of the pulse or tone terminal connecting the voltage passed the terminal A, B of said measuring switching means connecting the tone/pulse dial IC input through the hook switch terminal HS;
- a key pad means composed of the number keys 0 to 9, a hook switch, redial push switch and a dialing indicator that displays the working condition and connected to the tone/pulse dial IC; and
- an indicating means such as a meter for indicating the value of insulation resistance or telephone capacity with DC voltage, said DC voltage is converted from AC voltage which is alternated and boosted through a rectangular generator and transformer, through a power rectifier circuit consisted of diode and condenser.

5,778,051

Patent Not Issued For This Number

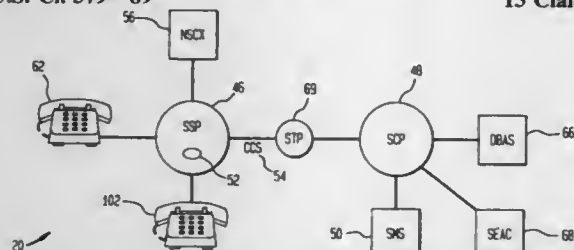
5,778,052

METHOD AND SYSTEM FOR STORING MESSAGES FOR LATER FORWARDING

Robert Michael Rubin, Morristown; James Michael Rulon, Randolph, both of N.J., and Stephen Wise, New Hope, Pa., assignors to AT&T Corp., Middletown, N.J.

Filed Feb. 23, 1996, Ser. No. 606,256
Int. Cl.⁶ H04M 1/64; 3/50

U.S. Cl. 379-89 13 Claims



I. A method for storing messages from a calling party in a telephone switching network for later forwarding, comprising the following steps:

- monitoring a telephone call to determine a busy or unanswered condition at a destination party telephone number;
- switching the telephone call being routed to the destination party telephone number to a service switching point; receiving at a service control point queries launched from the service switching point to determine authorization to access a network database;
- querying the network database, which is in the service switching point, to retrieve message recording instructions for the calling party;
- recording a message from the calling party within the network database;

- retrieving the message by the destination party at a later time, adding a comment to the message, and recording the message and added comment in the network database; and
- after recording the message and added comment in the network database, forwarding the message and added comment to at least one third party at a date and time selected by the destination party.

5,778,053

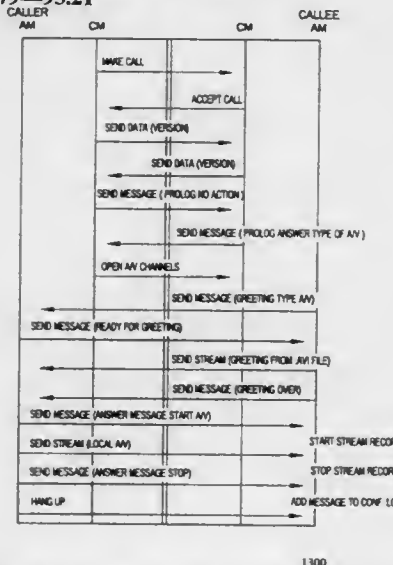
ANSWERING MACHINE SERVICES FOR DATA CONFERENCES

Rune A. Skarbo, Hillsboro, and Peter J. Kaufman, Banks, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 21, 1995, Ser. No. 576,288
Int. Cl.⁶ H04M 11/00

U.S. Cl. 379-93.21

32 Claims



1. A method for receiving, with a callee of a data conferencing system, a data conferencing call from a caller of the data conferencing system, the method comprising the steps of:

- answering the call with an answering means if the callee does not answer the call;
- displaying a callee greeting to the caller to notify the caller that the callee is not answering the call; and
- prompting the caller to leave a message with the callee; wherein: the answering means comprises a conference manager means for establishing a data conference between the caller and callee; and

step (a) further comprises the steps of:

- invoking, with the conference manager means, an answering machine means of the callee for controlling the displaying and prompting;
- determining with the conference manager means whether the caller is able to invoke an answering machine means of the caller that is compatible with the answering machine means of the callee; and
- establishing in accordance with the determination of step (a)(2), a conference between the answering machine means of the callee and the answering machine means of the caller, wherein the answering machine means of the callee and answering machine means of the caller control the displaying and prompting.

5,778,054

COMMUNICATION APPARATUS AND METHOD FOR DISPLAYING ON A SCREEN A NUMBER OF IMAGES CORRESPONDING TO RESPECTIVE ACCESS INFORMATION THAT IS OPERATIVE TO INITIATE ELECTRONIC COMMUNICATION

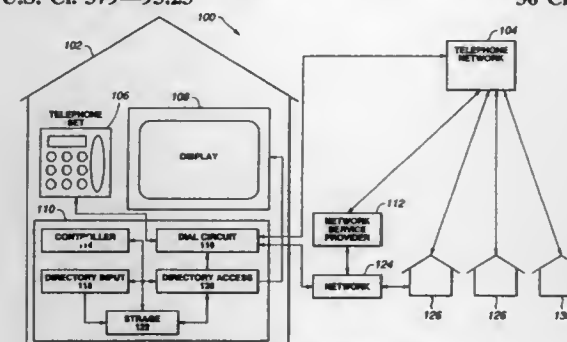
Yuji Kimura; Hisayoshi Moriwaki, and Hiroyuki Yasui, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 23, 1996, Ser. No. 685,090

Claims priority, application Japan, Jul. 24, 1995, 7-187011
Int. Cl.⁶ H04M 11/00

U.S. Cl. 379-93.23

36 Claims



- A communication terminal apparatus comprising: access information receiving means for receiving a plurality of access information; video information receiving means for receiving a plurality of video information corresponding to said plurality of access information; bandwidth limiting means for bandwidth limiting said plurality of video information; down sampling means for down sampling the bandwidth limited plurality of video information; storage means for storing said plurality of access information and for storing the bandwidth limited plurality of video information; video information retrieval means for retrieving from said storage means the bandwidth limited plurality of video information for display to a user; a display device, coupled to said video information retrieval means, for displaying to the user the retrieved plurality of video information simultaneously, said plurality of video information being comprised of a number of video images such that said down sampling means down samples said plurality of video information by a factor equal to said number of video images to facilitate a display of the retrieved plurality of video information; selection means for receiving from the user a selection of one of the retrieved plurality of video information; and access information retrieval means for retrieving from said storage means one of said plurality of access information corresponding to said one of the selected plurality of video information.

5,778,055

SYSTEM FOR, AND METHOD OF, TRANSMITTING AND RECEIVING THROUGH TELEPHONE LINES SIGNALS REPRESENTING DATA

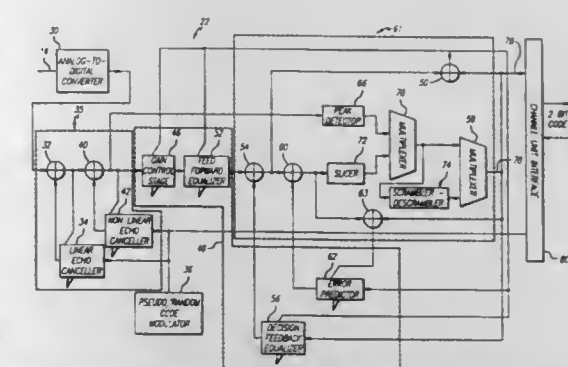
Eric Paneth, Givatayim; Mordechai Segal, Herzlia; Boaz Ripin, and Ehud H. Rokach, both of Tel-Aviv, all of Israel, assignors to Brooktree Corporation, San Diego, Calif.

Continuation of Ser. No. 195,628, Feb. 14, 1994, Pat. No. 5,627,885. This application Sep. 20, 1996, Ser. No. 717,248
Int. Cl.⁶ H04M 11/00

U.S. Cl. 379-93.31

6 Claims

- In combination at a receiver for receiving through telephone lines from a transmitter analog signals corresponding to digital signals produced at the transmitter and representing data in accordance with individual ones of a plurality of analog levels, the



analog signals being initially provided at the transmitter in accordance with a pseudo random code having a particular number of the analog levels less than the plurality,

first means for receiving the analog signals passing through the telephone lines from the transmitter and modulated in the pseudo random code having the particular number of the analog levels,

second means responsive to the received analog signals for converting such analog signals to corresponding digital signals representing the particular number of the analog levels, third means responsive to a limited number of the corresponding digital signals from the second means for generating digital signals in a pseudo random code corresponding to the pseudo random code at the transmitter for the particular number of the analog levels, and

fourth means responsive to the digital signals from the second and third means for operating upon such digital signals to synchronize the operation of the receiver with the operation of the transmitter before the transmission of the analog signals representing the data in accordance with the individual ones of the plurality of the analog levels.

5,778,056

BROADBAND NETWORK AND METHOD FOR CONNECTING INFORMATION PROVIDERS

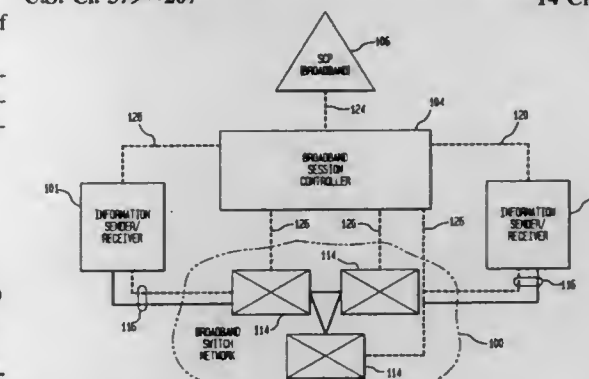
Thomas Chambers Ely, Bridgewater, and Darek Andrew Smyk, Piscataway, both of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed May 1, 1995, Ser. No. 432,580

Int. Cl.⁶ H04M 3/42; 7/00; H04N 7/14; H04J 3/24

U.S. Cl. 379-207

14 Claims



1. A broadband network for connecting information sender/receivers, comprising:

- a broadband switch network;
- a broadband session controller for communicating with said information sender/receivers; and
- a broadband service control point connected to said broadband session controller for providing processing instructions to said broadband session controller and/or information sender/receivers.

5,778,057
SERVICE CONTROL POINT CONGESTION CONTROL METHOD

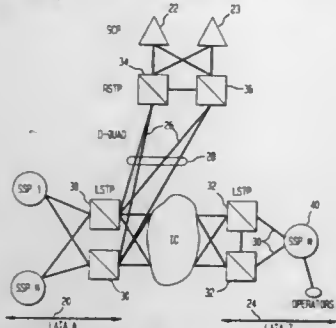
Amir Atai, Middletown, N.J., assignor to Bell Communications Research, Inc., Morristown, N.J.

Filed Feb. 9, 1996, Ser. No. 599,573

Int. Cl.⁶ H04M 15/08

U.S. Cl. 379—220

10 Claims



1. A method of managing focused overloads directed to a single subscriber telephone number in a network including service control points, said method comprising the steps of: sampling service control point calls for a fraction of all queries during successive management intervals; processing termination notification messages received during each current measurement interval; determining an amount of focused overload of said single subscriber telephone number following each measurement interval in accordance with a processed termination notification message; and invoking automatic code gapping on said subscriber telephone number at times when the determined amount of overloading exceeds a predetermined threshold.

5,778,058
METHOD OF ADDING A NEW PBX AND NEW PBX PORT TO AN EXISTING PBX NETWORK

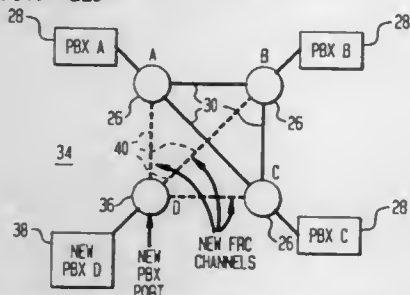
John Christopher Gavin, Maplewood, N.J., assignor to Timeplex, Inc., Woodcliff, N.J.

Filed Oct. 7, 1996, Ser. No. 726,631

Int. Cl.⁶ H04M 7/06

U.S. Cl. 379—225

6 Claims



4. A method of adding a new private branch exchange interface (PBX port) to a data communications network having a number of existing PBX ports, the network having a plurality of nodes each of which comprises a data transport for sending and receiving customer data at high speed to each of the other nodes, the nodes being interconnected with each other by high speed data links, the network being administered by a network management system computer having a database, each of the PBX ports being connected to a respective one of the nodes, each of the PBX ports having a respective multi-part address including an address of a node to which it is connected, the method comprising the steps of: manually determining with the aid of the system computer a suitable multi-part address for the new PBX port and storing the new address in memory; manually determining with the aid of the system computer a correct multi-part address for a selected arbitrary one of the existing PBX ports and storing the selected one PBX port address in memory;

instructing the system computer to search the database and to compile existing addresses of all other PBX ports which are coupled via the network to the existing selected PBX port; and instructing the system computer to establish a set of dedicated frame relay channels for communication between the address of the new PBX port and the addresses of each one of existing PBX ports, such that a PBX connected to any PBX port can communicate via the network of nodes to any PBX connected to any of the other PBX ports.

5,778,059
DISTRIBUTED PREDICTIVE AND EVENT-DRIVEN PROCESSING ENVIRONMENT

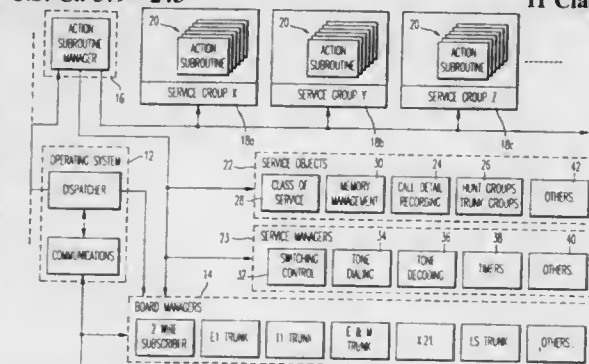
Masoud Loghmani; Steven Davis, both of Columbia, and Brian Bolon, Ellicott City, all of Md., assignors to Digital Technics, Inc., Columbia, Md.

Filed Aug. 30, 1996, Ser. No. 706,221

Int. Cl.⁶ H04M 3/42

U.S. Cl. 379—243

11 Claims



1. A control system for controlling a number of independent elements characterized by a plurality of states and events, comprising:

- a processor; and
- software stored in a machine-readable memory device comprising:
 - a plurality of element interface modules programmed to detect events created by respective ones of said independent elements, said plurality of element interface modules also programmed to report said events to said processor;
 - a plurality of service groups, said plurality of service groups each comprising at least one action subroutine, said action subroutine defining the behavior of at least one of said independent elements and the processing to be performed for corresponding said events and states;
 - an action subroutine manager programmed to invoke at least one of said service groups upon receipt of one of said events based on a service class; and
 - a dispatcher for dispatching said events from said processor to at least one of said plurality of element interface modules and said action subroutine manager, said plurality of element interface modules programmed to receive events from said dispatcher and to selectively invoke said action subroutine manager to process at least one of said events.

5,778,060
WORK AT HOME ACD AGENT NETWORK WITH COOPERATIVE CONTROL

Mary Rita Otto, Lisle, Ill., assignor to AT&T Corp., Middletown, N.J.

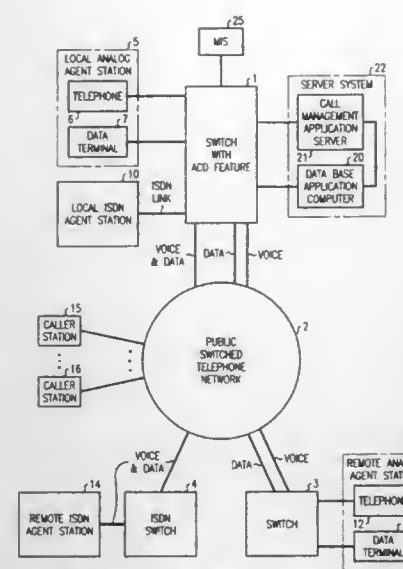
Filed Apr. 19, 1996, Ser. No. 635,141

Int. Cl.⁶ H04M 7/00

U.S. Cl. 379—265

24 Claims

1. A method of providing ACD (automatic call distributor) service for a call center, said ACD service provided by a first switching system, from a plurality of agent stations including a serving remote agent station served by a second switching system



different from said first switching system, said serving remote agent station being one of one or more remote agent stations serving callers of said call center, said method comprising the steps of:

- establishing data connections from one or more active remote agent stations to a server system for maintaining status information for said remote agent stations;
- responsive to receipt of an incoming ACD call for said ACD system, querying said server system to provide an identification of an available remote agent station;
- responsive to determining in said server system that one or more of said remote agent stations is available, responding from said server system to said first switching system with an identity of one or more available remote agent stations said identities including all identity of said serving remote agent station; and
- extending said incoming call to one of said serving remote agent stations via an audio connection from said first switching system, via said second switching system, and responsive to an indication of change of status of a remote agent station of said call center from unavailable to available, sending a message to said call center that a remote agent station is available for serving a call of said call center, said sending a message that a remote agent station is available being performed only if no other remote agent station is available.

5,778,061
SWITCHING DEVICE FOR A TELEPHONE SET WITH HANDSET, SWITCHING AN AUXILIARY DEVICE BY SUBSTITUTING FOR THE HANDSET

Philippe Parment, Versailles, and Dominique Dubournais, Jouy le Moutier, both of France, assignors to Prescom, Saint Quentin En Yvelines, France

PCT No. PCT/FR94/01400, § 371 Date May 29, 1996, § 102(e) Date May 29, 1996, PCT Pub. No. WO95/15642, PCT Pub. Date Jun. 8, 1995

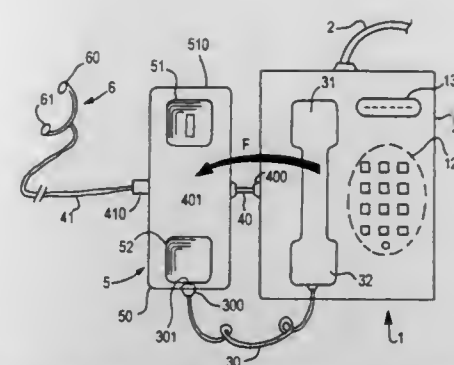
PCT Filed Nov. 30, 1994, Ser. No. 649,704

Claims priority, application France, Dec. 1, 1993, 93 14383 Int. Cl.⁶ H04M 1/00

U.S. Cl. 379—428

9 Claims

1. A switching device for connecting an auxiliary device to a telephone set having a handset, said auxiliary device thereby replacing said handset which is disconnectable from the telephone set, the telephone set having a housing, the switching device having a casing said switching device comprising first connecting means for electrically connecting said telephone set to said switching device, second connecting means for electrically connecting said handset to said switching device, third connecting means for



electrically connecting said auxiliary device to said switching device, and the switching device casing being entirely separate from the telephone set housing, the switching device casing including switching means having two switching states for mechanically receiving said handset when said handset is lifted off said telephone set housing, said switching means electrically switching from a first switching state in which only the handset is electrically connected to said telephone set through said first connecting means and second connecting means, to a second switching state in which only said auxiliary device is electrically connected to said telephone set through said first connecting means and third connecting means in response to mechanical placement of said handset on said casing of said switching device.

5,778,062
VOICE REFLECTOR FOR A COMMUNICATION DEVICE, IN PARTICULAR A CELLULAR TELEPHONE

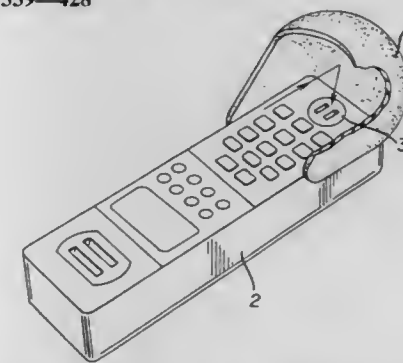
Arthur Vanmoor, 18761 W. Dixie Hwy. #209, North Miami Beach, Fla. 33180

Filed May 29, 1996, Ser. No. 654,532

Int. Cl.⁶ H04M 1/00

U.S. Cl. 339—428

17 Claims



1. In combination with a cellular telephone having a microphone, a voice reflector, comprising: a cap attached to the cellular telephone, said cap having an inner surface defining means for reflecting sound waves into the microphone of the cellular telephone, and said cap at least partly enclosing the microphone when in an operating position; said cap being formed of a flexible material; and said cap having a plurality of creases formed therein for folding said cap into itself when the cellular telephone is in storage.

denying the user access to the processing device in response to a determination that said first non-reversible code is inconsistent with said reference code;

- d) means for phase modulating said pilot signal in a random distribution at said transmitting end;
- e) means at said transmitting end for combining said phase modulated voice signal with said modulated pilot signal to form a signal;
- f) a preamble generator at said transmitting end for producing a preamble for synchronization at said receiving end and for information-signal equalization;
- g) a changeover switch at said transmitting end for sequentially emitting said preamble together with said signal to said front-end unit for transmitted signal conditioning;
- h) said changeover switch being operated in a defined clock sequence;
- i) a digital equalizing filter at a receiving end whose coefficients are calculated and set during the reception of said preamble for equalization of the transmission channel of the digitized received signal;
- j) means at said receiving end for detection of said preamble within said received information signal;
- k) said means for detection initiating, as a function of a defined section of said preamble, calculation of said filter coefficients for said equalizer filter in a higher-level computation unit to initialize decryption of said information signal by activating a clock synchronization device;
- l) a pilot-tone generator, a random-number generator and a modulator at said receiving end;
- m) said clock synchronization device supplying a control signal for sampling clock correction from said received demodulated pilot signal by complex multiplication by a pilot tone generated at said receiving end and, under control of said random number generator initialized with said clock synchronization, also supplying a phase-modulated pilot signal from said pilot tone from said pilot-tone generator via said modulator;
- n) means at said receiving end for subtracting said phase modulated pilot signal from said equalized signal to separate said transmitted pilot signal; and
- o) a phase demodulator controlled by said synchronized random number generator at said receiving end for converting said phase-modulated voice signal into said unmodulated, digital voice signal which is passed to said front-end unit for conversion into an audio signal.

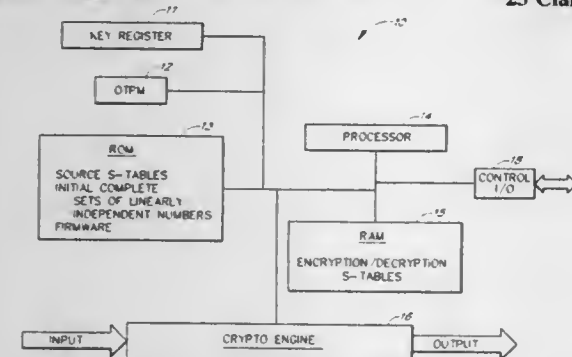
5,778,074

METHODS FOR GENERATING VARIABLE S-BOXES FROM ARBITRARY KEYS OF ARBITRARY LENGTH INCLUDING METHODS WHICH ALLOW RAPID KEY CHANGES

Knut T. Garcken, Ventura; Charles E. Strawbridge, Camarillo, and Andrew Philip Kisylia, Agoura Hills, all of Calif., assignors to Teledyne Industries, Inc., Newbury Park, Calif.
Filed Jun. 28, 1996, Ser. No. 673,437
Int. Cl.⁶ H04L 9/06

U.S. Cl. 380—37

23 Claims



1. A block cipher system, in which sub-blocks of data are replaced by other sub-blocks as defined by one or more mappings, wherein each snapping can be expressed as a substitution table, said system comprising:

- a first complete set of linearly independent numbers selected from a plurality of complete sets of linearly independent numbers;
- a key; and
- means for generating at least portions of a resulting n-bit encryption table (E) and a resulting n-bit decryption table (D) from a fixed n-bit source substitution table (R) stored in memory and said first complete set of linearly independent n-bit numbers.

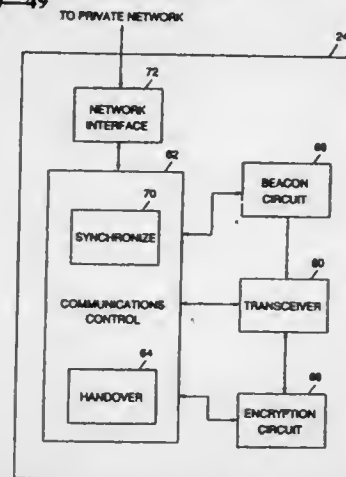
5,778,075

METHODS AND SYSTEMS FOR MOBILE TERMINAL ASSISTED HANDOVER IN AN PRIVATE RADIO COMMUNICATIONS NETWORK

Jacobus Cornelis Haartsen, Staffanstorps, Sweden, assignor to Telefonaktiebolaget, L.M. Ericsson, Sweden
Filed Aug. 30, 1996, Ser. No. 705,724
Int. Cl.⁶ H04L 9/00

U.S. Cl. 380—49

18 Claims



1. A private radio communications network with mobile assisted handover between linked base stations of the private radio communications network having a TDMA protocol of an encrypted traffic connection between the private radio communications network and a mobile terminal, comprising:

- a first base station including:
- communications control means for controlling radio communications according to said TDMA protocol including means for defining a traffic channel and a beacon channel corresponding to an idle frame of said traffic channel, said communications control means including means for handing over said encrypted traffic connection;
- encryption means for encrypting said traffic connection using an encryption algorithm having an output dependent on a reference TDMA frame number;
- transceiver means for transmitting and receiving said encrypted traffic connection on said traffic channel; and
- means for transmitting radio beacon transmissions free of a TDMA frame number on said beacon channel;
- a second base station of said private radio communications network linked to said first base station including:
- communications control means for controlling radio communications according to said TDMA protocol including means for defining a traffic channel and a beacon channel corresponding to an idle frame of said traffic channel and further including means for synchronizing said traffic channel and said beacon channel of said second base station with said traffic channel and said beacon channel of said first base station, said communications control means of said second base station including means for receiving said handed over encrypted traffic connection from said first base station;
- encryption means for encrypting said traffic connection using said encryption algorithm having an output dependent on a reference TDMA frame number;

5,778,077

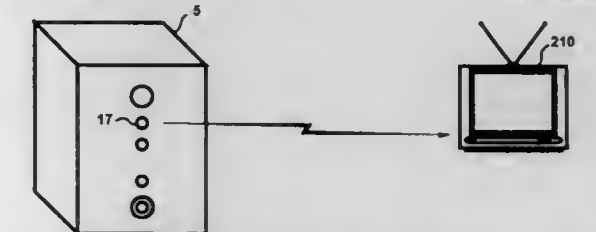
AUTOMATIC VOLUME ADJUSTING DEVICE AND METHOD

Dennis M. Davidson, 1915 Madison St., Muskegon, Mich. 49442

Filed Sep. 10, 1996, Ser. No. 711,610
Int. Cl.⁶ H03G 3/00

U.S. Cl. 381—57

16 Claims



1. An automatic volume adjusting device for adjusting the volume of a remotely controlled audio device, said automatic volume adjusting device comprising:

- a receiver for receiving control signals transmitted from a remote control transmitter associated with the audio device both during a training mode and an operational mode,
- a transmitter for transmitting control signals to a control signal receiver of the audio device;
- a microphone for continuously sensing an ambient noise level including any sounds simultaneously produced by any speakers connected to the controlled audio device during normal operation of the controlled audio device; and
- a controller coupled to said receiver, to said transmitter, and to said microphone, said controller being operative in a training mode and an operating mode for learning codes associated with main volume adjusting control signals transmitted by the remote control transmitter when in the training mode, and for determining when the ambient level of noise detected by said microphone is outside a predefined volume range and adjusting the main volume of the remotely controlled audio device to fall within the predefined range by transmitting the learned control signals to the audio device when said controller is in the operating mode.

5,778,078

Patent Not Issued For This Number

5,778,079

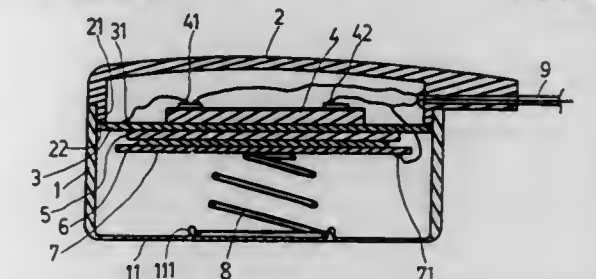
SKIN TOUCH-CONTROLLED PIEZOELECTRIC MICROPHONE

Yien Chen Wun, 4F, No. 5, Alley 75, Lian Chen Road, Chungto City, Taipei Hsien, Taiwan

Filed Jun. 27, 1997, Ser. No. 884,190
Int. Cl.⁶ H04R 25/00

U.S. Cl. 381—68.3

4 Claims



1. A skin touch-controlled piezoelectric microphone comprising: a bottom shell having a thin bottom wall that admits vibrating waves from the user's skin when the user talks, and a plurality of stub rods raised from said thin bottom;

- transceiver means transmitting and receiving said encrypted traffic connection on said traffic channel; and
- means for transmitting radio beacon transmissions free of a TDMA frame number on said beacon channel; and,
- a mobile terminal including:
- transceiver means for transmitting and receiving said encrypted traffic connection on said traffic channel of said first base station;
- encryption means for encrypting said traffic connection using said encryption algorithm having an output dependent on a reference TDMA frame number;
- means for receiving said transmitted radio beacon transmissions free of a TDMA frame number on said beacon channel of said second base station during an idle frame of said traffic connection with said first base station; and,
- wherein said means for initiating handover includes means for exchanging a current reference TDMA frame number with said second base station.

5,778,076

SYSTEM AND METHOD FOR CONTROLLING THE DISPENSING OF AN AUTHENTICATING INDICIA

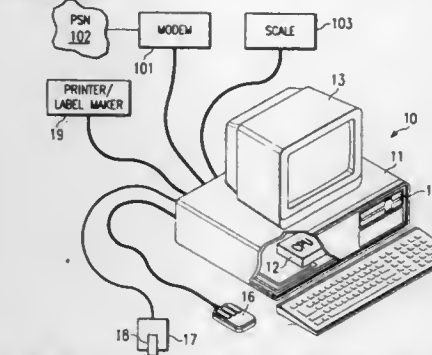
Salim G. Kara; David M. Gressett, and Jonathan W. Whitney, all of Houston, Tex., assignors to E-Stamp Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 263,751, Jun. 22, 1994, Pat. No. 5,606,507, which is a continuation-in-part of Ser. No. 176,716, Jan. 3, 1994, Pat. No. 5,510,992. This application Aug. 16, 1995, Ser. No. 516,010

Int. Cl.⁶ G09C 3/08; H04K 1/00; G06F 17/00

U.S. Cl. 380—51

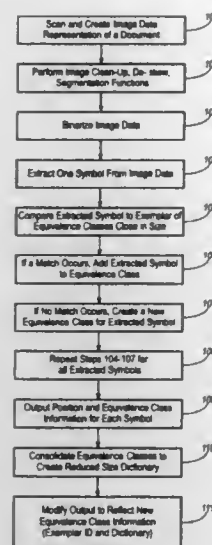
20 Claims



1. A method of establishing certain ones of a plurality of portable processors as valid processors for the subsequent generation of graphical security indicia, said method including the steps of:

- temporarily connecting one of a pool of said portable processors to a computing system having its own processor separate from said connected portable processor;
- sending a data stream from said computing system to said connected portable processor, said data stream interacting with data previously stored unalterably within an authentic one of said portable processors to produce a protocol internal to authentic ones of said portable processors;
- returning to said computing system from authentic ones of said portable processors under control of said produced protocol a data stream including a copy of at least a portion of said data unalterably stored within said portable processor;
- producing from said data stream a packet of information unique to both said computing system and said authentic one of said portable processors; and
- transmitting said-produced data stream packet of information to a database external to both said computing system and said authentic one of said portable processors for storage of at least a portion of said produced data stream in said external database, said stored portion of said produced data stream being utilized to establish said authentic one of said portable processors as a valid processor for the subsequent generation of graphical security indicia.

d2) if any of said first set of symbol features are not within said threshold ranges, indicating that the extracted symbol does not match the exemplar being compared to;



d3) if all the said first set of symbol features are within said threshold ranges, determining if run endpoints extracted symbol satisfy run endpoint ranges specified in the template of the exemplar being compared to;

e) if said comparison step d) yields a match, indicating said extracted symbol is in the equivalence class of the exemplar being compared;

f) if said comparison step d) does not yield a match, creating a new equivalence class with said extracted symbol as the exemplar; and

g) adding said new equivalence class to said dictionary.

5,778,096

DECOMPRESSION OF MPEG COMPRESSED DATA IN A COMPUTER SYSTEM

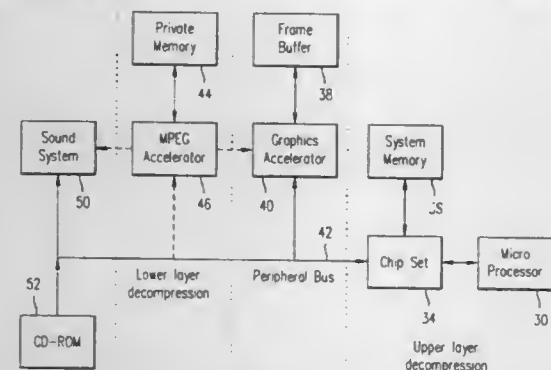
Charles C. Stearns, San Jose, Calif., assignor to S3, Incorporated, Santa Clara, Calif.

Filed Jun. 12, 1995, Ser. No. 489,488

Int. Cl.⁶ G06K 9/36; 9/46

U.S. Cl. 382—233

15 Claims



8. A computer system adapted for decompression of compressed data which is in a set of predetermined data layers, comprising: a host processor on a first integrated circuit chip; a peripheral bus connected to the host processor; a secondary processor on a second integrated circuit chip and connected to the peripheral bus; and means for decompressing in the host processor at least a system layer, which is a higher level layer than a video layer, of the compressed data, wherein other data layers of the set including the video layer are decompressed in the secondary processor.

5,778,097 TABLE-DRIVEN BI-DIRECTIONAL MOTION ESTIMATION USING SCRATCH AREA AND OFFSET VALVES

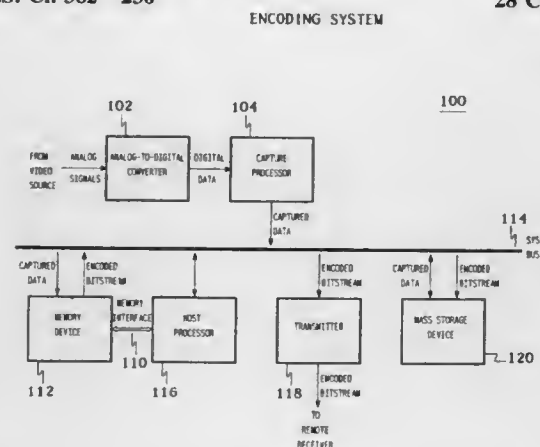
Brian R. Nickerson, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 7, 1996, Ser. No. 610,582

Int. Cl.⁶ G06K 9/36; 9/46

U.S. Cl. 382—236

28 Claims



1. A method for processing video signals, comprising the steps of:

(a) generating a prediction block using a first region of a first reference frame and a second region of a second reference frame;

(b) comparing a current block of a current frame to the prediction block, wherein the comparison is based on a set of match points from the current block and a corresponding set of match points from the prediction block; and

(c) processing the current block based on the comparison of the current block to the prediction block, wherein:

step (a) comprises the steps of initializing a scratch area larger than the second region to an offset value and copying the second region into a second region portion of the scratch area, whereby the scratch area comprises pixels of the second region in the second region portion of the scratch area and offset values elsewhere in the scratch area;

for each match point of the prediction block, step (a) comprises the steps of:

(1) generating a table index from a pixel of the first region and either a pixel of the second region or an offset value by adding a pixel of the first region and a pixel from the scratch area wherein the offset value is selected such that the set of possible values of table indices generated from the pixels of the first region and the pixels of the second region does not intersect the set of possible values of table indices generated from the pixels of the first region and the offset value;

and
(2) retrieving a corresponding entry from a lookup table using the table index, wherein:

when the table index is based on a pixel of the first region and a pixel of the second region, the corresponding entry of the lookup table represents the average of the pixel of the first region and the pixel of the second region; and
when the table index is based on a pixel of the first region and the offset value the corresponding entry of the lookup table represents only the pixel of the first region; and
the comparison of the current block to the prediction block is based on the lookup-table entries for the prediction block.

5,778,098 SPRITE CODING

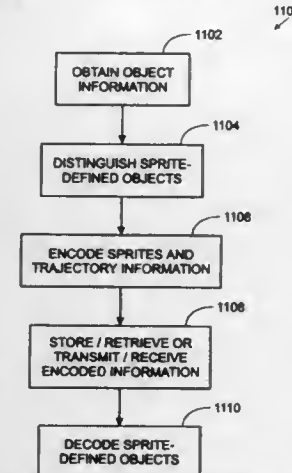
Ming-Chieh Lee, Bellevue, and Wei-ge Chen, Redmond, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Mar. 22, 1996, Ser. No. 621,012

Int. Cl.⁶ G06K 9/36

U.S. Cl. 382—236

22 Claims



1. A method of encoding in a compressed format information within a video image frame sequence having first and second video frames that include general arbitrary image objects with arbitrary configurations, the image objects undergoing changes between, and having different attributes in, the first and second video image frames, at least one of the image objects being a sprite-defined image object defined initially by a sprite and a trajectory, wherein the sprite-defined object includes a single instance of pixel information used to construct the object in at least two frames of the video sequence, and where one or more trajectories are used to compute the position of the pixel information in the frames of the video sequence, the method comprising:

distinguishing the sprite-defined image object from the general image objects;
for the general image objects, determining estimated image objects in the second video image frame; identifying differences between the estimated image objects in the second video image frame and the image objects in the first video image frame to determine transform errors for the image objects; and encoding the transform error in a first compressed format; and
for the sprite-defined object, encoding the sprite and the trajectory.

5,778,099

PICTURE BLOCK MOTION DETECTING APPARATUS

Mitsuyoshi Suzuki, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1996, Ser. No. 590,941

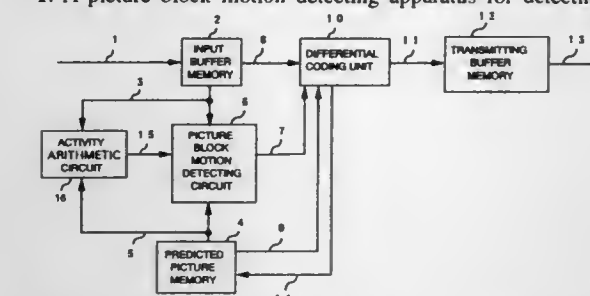
Claims priority, application Japan, Aug. 18, 1995, 7-210568

Int. Cl.⁶ G06K 9/36

U.S. Cl. 382—239

10 Claims

1. A picture block motion detecting apparatus for detecting a



motion vector from a preceding or succeeding picture frame by dividing a picture into blocks comprising:

a first memory for storing an input picture being divided into a plurality of blocks;

a second memory for storing a predicted picture divided into a plurality of blocks;

an activity calculating circuit coupled to the first and second memories for calculating, prior to searching for a block in the second memory most similar to a block in the first memory to determine a motion vector, an activity for a first block of the input picture, comparing the activity to first and second thresholds to determine a search range for the search, and outputting control signals indicative of the search range, wherein the activity calculating circuit outputs:

a first control signal indicative of a first search range when the activity is less than the first threshold;

a second control signal indicative of a second search range, larger than the first search range, when the activity is between the first and second thresholds; and

a third control signal indicative of a third search range, larger than the second range, when the activity is larger than the second threshold; and

a picture block motion detecting circuit coupled to the activity calculating circuit and the first and second memories for searching in a range determined by the control signals, and outputting a motion vector responsive to the searching.

5,778,100

METHOD AND APPARATUS FOR REDUCING THE BIT RATE IN A VIDEO OBJECT PLANES SEQUENCE CODER

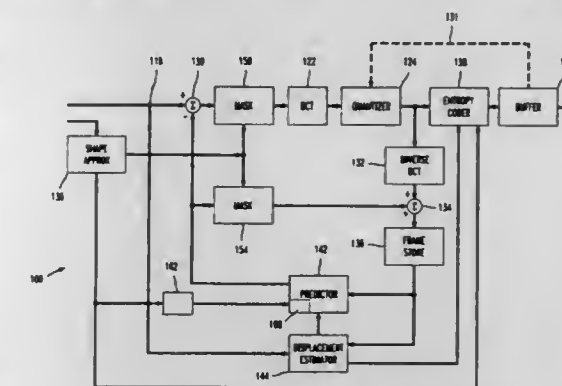
Homer H. Chen, Thousand Oaks, Calif.; Barin G. Haskell, Tinton Falls, and Joern Ostermann, Red Bank, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 8, 1996, Ser. No. 613,963

Int. Cl.⁶ G06K 9/36; H04N 7/12; 5/14

U.S. Cl. 382—243

28 Claims



1. A method for reducing an output bit rate in a video object planes sequence encoder which analyzes and codes an object image having texture and position components and represented by a video signal defined by a continuous stream of successive-in-time video frames having a plurality of picture elements, said method comprising the steps of:

approximating a shape of an object as it appears on a current frame, to define an approximate shape having a boundary and a size;

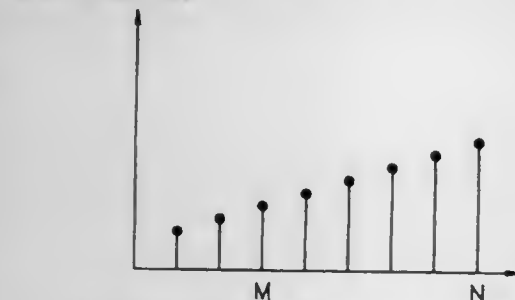
estimating frame-to-frame displacements of the object based on object position in a prior frame and the object position in the current frame;

predicting an image for the object in the current frame based on an image of the object on said prior frame, said approximate shape and said estimated object displacements;

generating an outline stripe having a width and containing picture elements, said stripe encompassing said predicted image so that the size of said predicted image and said stripe is at least equal in size to the size of said approximate shape;

assigning texture values to the picture elements in said stripe, said values being based on picture element values in said predicted image;
 subtracting said outline stripe and said predicted image from the current frame to form an error signal; and
 masking said error signal with said approximate shape to pass to an entropy coder substantially all picture elements that are active in both said error signal and said approximate shape.

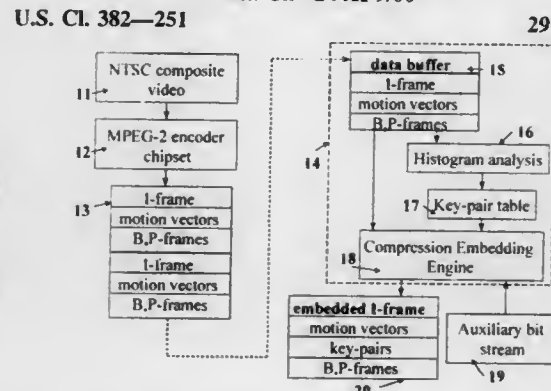
5,778,101
METHOD AND APPARATUS FOR PROCESSING AN IMAGE SIGNAL HAVING AN OBJECT BY USING AN EXTENSION-INTERPOLATION TECHNIQUE
 Duck-Dong Hwang, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
 Filed Apr. 8, 1996, Ser. No. 629,172
 Int. Cl.⁶ G06K 9/36; 9/46; 9/32
 U.S. Cl. 382—250 5 Claims



I. A method for converting a processing block included in an image frame signal having an object to an extended processing block, wherein the processing block consists of $N \times N$ pixels which are classified into object pixels and background pixels, N being a positive integer, the object pixels being located within the object and the background pixel being located outside the object, comprising the steps of:

- selecting L rows of the processing block, each of the L rows having at least one object pixels, L being an integer ranging from 0 to N ;
- for each row selected at step (A), determining M representing a number of object pixels included in said each row and providing a first vector, each element of the first vector being a value of each of the M object pixels included in said each row, M being an integer ranging from 1 to N ;
- for said each row, choosing an extension matrix among a multiplicity of predetermined extension matrices, based on the M and N values and multiplying the chosen extension matrix to the first vector to provide an extended first vector;
- providing a first extended processing block which includes L rows, each row having N pixels whose values are elements of each of the extended first vectors;
- for each column of the first extended processing block, providing an L -dimensional second vector, elements of the second vector being values of pixels included in said each column of the first extended processing block;
- choosing an extension matrix among a multiplicity of the predetermined extension matrices based on the L and N values;
- multiplying the extension matrix chosen at step (F) to each of the second vectors, to provide N extended second vectors and to thereby provide second extended processing block which includes N columns, each column having N pixels whose values are elements of each of the extended second vectors;
- counting the number of the object pixels in the processing block and determining a block scaling factor which is the number of the object pixels divided by the number of pixels in the processing block; and
- multiplying the block scaling factor to each pixels of the second extended processing block, to thereby provide the extended processing block.

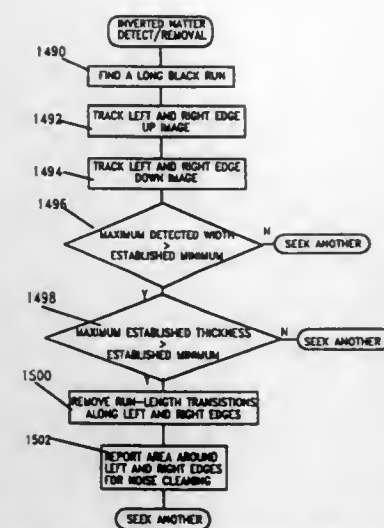
5,778,102
COMPRESSION EMBEDDING
 Maxwell T. Sandford, II; Theodore G. Handel, and Jonathan N. Bradley, all of Los Alamos, N. Mex., assignors to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.
 Continuation-in-part of Ser. No. 442,592, May 17, 1995, abandoned. This application Dec. 19, 1996, Ser. No. 772,188
 Int. Cl.⁶ G06K 9/00
 U.S. Cl. 382—251 29 Claims



I. A method of embedding auxiliary data into host data compressed by lossy compression ratio methods that use series expansion and quantization techniques comprising the steps of:
 creating a duplicate digital compression representation of said host data in terms of intermediate integer indices representing coefficients, said digital compression representation having certain statistical properties;
 creating a digital representation of said auxiliary data in the form of a sequence of individual bit values;
 evaluating said digital compression representation to determine pairs of integer indices differing by a specified number of units and occurring with similar frequency in said digital compression representation;
 replacing individual integer indices in said digital compression representation with values taken from a digital key comprising a schedule of said pairs of integer indices in order to embed individual bit values corresponding to said sequence of individual bit values of said auxiliary data; and
 outputting said digital compression representation with said auxiliary data embedded into a file format specified for said compressed data.

5,778,103
OCR IMAGE PRE-PROCESSOR
 Dana R. Allan, Redwood City, and Bruce B. Fast, San Carlos, both of Calif., assignors to TMSSequoia, Burlingame, Calif.
 Continuation of Ser. No. 445,724, May 22, 1995, Pat. No. 5,594,814, which is a division of Ser. No. 963,051, Oct. 19, 1992, abandoned. This application Jul. 15, 1996, Ser. No. 680,034
 Int. Cl.⁶ G06K 9/40 3 Claims

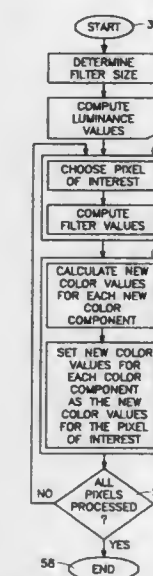
I. A process for enhancing an image of a scanned document, said image consisting of run-length coded scan lines and containing a plurality of lines of textual matter, and undesired printed matter including at least one horizontal line having an upper and a lower edge, said process comprising a step for detecting said undesired printed matter and listing said undesired printed matter;
 a step for processing said at least one horizontal line including
 a sub-step for detecting said at least one horizontal line,
 a sub-step for listing each of said at least one horizontal line by generating a first and a second array of addresses, said first array defining the upper edges of said at least one horizontal lines, said second array defining the associated lower edges of said horizontal lines; and



a step for deleting said undesired matter and all black run-length values between said upper edge and said lower edge of each of said horizontal lines as listed in said first and second array.

5,778,104
ADAPTIVE LUMINANCE-BASED FILTER
 Stephen Vincent Kowalski, Rancho Palos Verdes, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.
 Filed Jun. 19, 1996, Ser. No. 670,248
 Int. Cl.⁶ G06T 5/00 18 Claims

U.S. Cl. 382—261



3. A computer implemented process for adaptively filtering digital images comprised of a plurality of pixels, said implemented process comprising the steps of:

- selecting a filter size;
- determining a luminance value for each pixel in the digital image;
- selecting a pixel of interest having color components, wherein said pixel of interest is surrounded by a neighborhood of pixels corresponding to said filter size;
- calculating new color values of said pixel of interest by utilizing said luminance values;
- wherein step (d) comprises utilizing said luminance value to ascertain a maximum luminance value and a minimum luminance value;

(f) after step (d), the step of calculating a first filter value by utilizing said minimum luminance value, and the step of calculating a second filter value by utilizing said first filter value; and
 (g) setting said new color values for each color component in said pixel of interest.

8. A computer implemented process for filtering digital images comprised of a plurality of pixels, the process comprising the steps of:

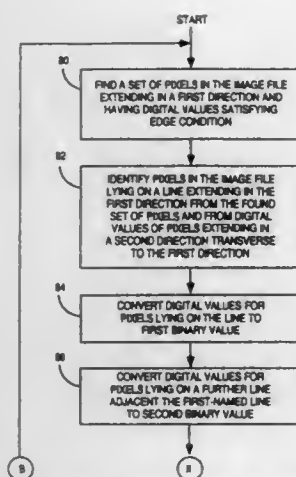
- selecting a filter size;
- selecting a pixel of interest, the pixel of interest being surrounded by a neighborhood of pixels corresponding to the selected filter size;
- determining a luminance value for the pixel with the minimum luminance in the neighborhood;
- determining a maximum possible luminance for the pixels comprising the image;
- selecting a first and a second filter value utilizing the minimum luminance value and the maximum possible luminance value;
- filtering the pixel of interest using the first filter value;
- filtering the pixels in the neighborhood using the second filter value;
- summing the filtered pixel of interest and the filtered pixels in the neighborhood; and
- setting the pixel of interest to a new value based on the sum of the filtered pixel of interest and the filtered pixels in the neighborhood.

12. A computer implemented process for filtering digital images comprised of a plurality of pixels, the process comprising the steps of:

- selecting a filter size;
- selecting a pixel of interest, the pixel of interest being surrounded by a neighborhood of pixels corresponding to the selected filter size;
- selecting a first filter value;
- selecting a second filter value;
- filtering the pixel of interest using the first filter value;
- filtering each pixel in the neighborhood using the second filter value;
- calculating a new value for the pixel of interest based on the filtered pixel of interest and the filtered pixels in the neighborhood; and
- setting the pixel of interest to the new value.

5,778,105
METHOD OF AND APPARATUS FOR REMOVING ARTIFACTS FROM A REPRODUCTION
 John Thomas Shively, Hinsdale, Ill., assignor to R.R. Donnelley & Sons Company, Chicago, Ill.
 Continuation of Ser. No. 182,794, Jan. 14, 1994, abandoned. This application Feb. 7, 1996, Ser. No. 598,064
 Int. Cl.⁶ G06K 9/40; H04N 1/40 36 Claims

I. A method of reducing aliasing effects in a reproduction of an original image wherein the reproduction is divided into a two-dimensional array of pixels and each pixel has a sampled value associated therewith representing any of a plurality of grayscale levels at an associated portion thereof, the sampled values being stored in a memory, the method comprising the steps of:
 programming a general purpose computer to access the memory and execute the program steps of:
 finding a first set of pixels extending in a first direction in the reproduction and satisfying a first condition indicating that an edge has been found;
 defining a number of second sets of pixels in the reproduction wherein each second set includes a pixel adjacent to a pixel of the first set and at least one additional pixel and wherein the pixels of each second set extend along a line transverse to the first direction;



analyzing the first set of pixels and the pixels of the second sets of pixels to determine whether a second condition is met indicating that a stroke has been found;

if the second condition is met identifying a third set of pixels extending in the first direction in the reproduction from the first set of pixels and from sampled values associated with the second set of pixels; and

reducing the number of grayscale levels by modifying the sampled values for pixels of the third set toward a first value and modifying the sampled values for pixels adjacent pixels of the third set toward a second value.

5,778,106

ELECTRONIC CAMERA WITH REDUCED COLOR ARTIFACTS

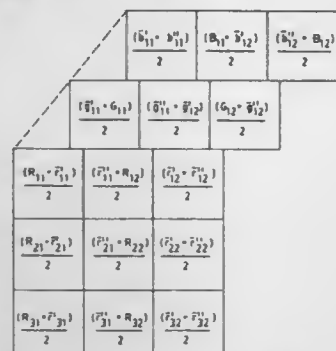
Andrew K. Juenger, Hudson, and Werner Metz, Stoughton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 14, 1996, Ser. No. 615,899

Int. Cl.⁶ G06K 9/00

U.S. Cl. 382—275

12 Claims



1. A method of processing an original image captured by an image acquisition device with a two-dimensional matrix of non-square pixels having a first aspect ratio which define a normal resolution to form a processed image for rendering on an output device having a square raster having a second aspect ratio which differs from the first aspect ratio, the method comprising the steps of:

sampling the image in a color sub-sampled manner such that fewer than three color measurements are known for each pixel location; and

constructing the processed image of the original image by processing the fewer than three color measurements known for each pixel to generate one or more interpolated color values at each of the pixel locations, the processed image being processed such that an aspect ratio of the original image captured on the non-square pixels is maintained on the output device.

5,778,107

POSITION RECOGNITION METHOD

Takayuki Kataoka, Osaka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 362,939, Dec. 23, 1994, abandoned.

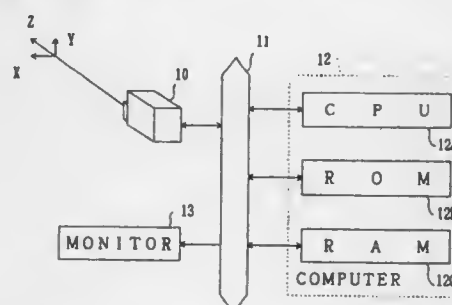
This application Oct. 17, 1997, Ser. No. 953,422

Claims priority, application Japan, Dec. 24, 1993, 5-328751

Int. Cl.⁶ G06K 9/36

U.S. Cl. 382—291

7 Claims



1. A position recognition method comprising the steps of: creating a filter of a feature to be recognized in a feature space; obtaining a range image of an object from a three dimensional camera; converting said range image from said camera into an image in feature space to obtain a converted image; overlaying the filter on an upper left part of the converted image such that a virtual center of the feature of the object is located on an upper left of a center of the converted image; subtracting each pixel of the filter from each pixel of the overlaid converted image; determining if a remainder is more than a predetermined value and assigning a first value to the pixel and if the remainder is not more than the predetermined value assigning a second value to the pixel; counting the number of two symmetric points with respect to virtual center, wherein a third value is set at a position corresponding to the virtual center; shifting the virtual center a predetermined number of pixels to the right and repeat the above operation; when the filter reaches the right end of the image, shifting the filter down by a predetermined number of pixels and repeating the above operation until the filter reaches the lower right end of the image; determining the virtual center having the highest count value for two symmetric points; and determining edges of the feature based upon symmetric points with respect to the virtual center having the highest count value and determining the coordinates in the center of the feature and diameter of the feature based upon the distribution of the values for the virtual center having the highest count value; and displaying results on a monitor.

5,778,108

METHOD AND SYSTEM FOR DETECTING TRANSITIONAL MARKERS SUCH AS UNIFORM FIELDS IN A VIDEO SIGNAL

E. North Coleman, Jr., Ortonville, Mich., assignor to Electronic Data Systems Corporation, Plano, Tex.

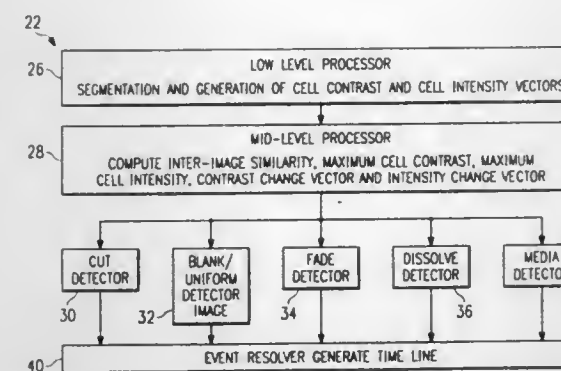
Filed Jun. 7, 1996, Ser. No. 660,641

Int. Cl.⁶ H04N 9/74

U.S. Cl. 382—305

14 Claims

1. A method of detecting a uniform image in a digital video signal made up of a series of video images, comprising: segmenting a plurality of the video images, each of the plurality of video images segmented into a first number of cells, each cell comprising a second number of pixels, a pixel having a pixel intensity value representing the intensity of the pixel;



generating a plurality of cell contrast vectors each associated with one of the segmented video images, each element of the cell contrast vector associated with one of the cells and comprising the standard deviation of the pixel intensity values for the pixels in that cell; calculating the maximum cell contrast for each of the segmented video images, the maximum cell contrast for an image comprising the value of the largest element of the cell contrast vector for that image; generating a plurality of cell intensity vectors each associated with one of the segmented video images, each element of the cell intensity vector associated with one of the cells and comprising the average of the pixel intensity values for the pixels in that cell; calculating the maximum cell intensity for each of the segmented video images, the maximum cell intensity for an image comprising the value of the largest element of the cell intensity vector for that image; and generating a blank image detect signal for a video image if the maximum cell intensity for that video image is below a first threshold and the maximum cell contrast for that video image is below a second threshold.

5,778,109

IMAGE PROCESSING APPARATUS

Masanori Morigami, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

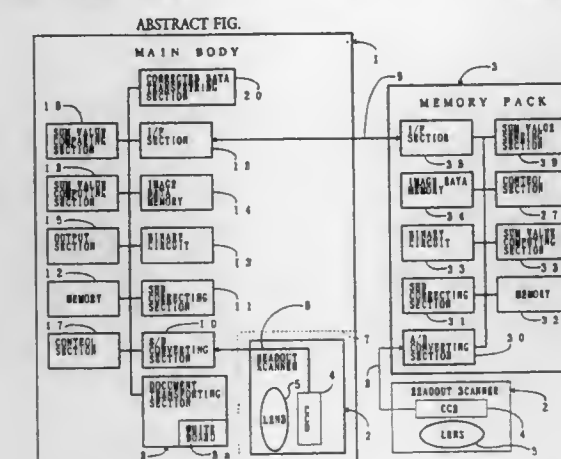
Filed Oct. 2, 1996, Ser. No. 725,309

Claims priority, application Japan, Oct. 6, 1995, 7-260524

Int. Cl.⁶ G06K 9/40

U.S. Cl. 382—274

19 Claims



1. An image processing apparatus comprising: a scanner for converting an image into image data; a main body including a first memory, said scanner being attachable to and detachable from said main body, said first memory storing first shading correction data for correcting distortion of the image data from said scanner; a portable memory pack including (1) a second memory for storing second shading correction data used to correct distortion of the image data from said scanner, (2) a correcting section for correcting distortion of the image data from said scanner based on the second shading correction data, and (3) a third memory for storing said corrected image data from said correcting section, said scanner being attachable to and detachable from said memory pack; and control means for controlling said main body and said memory pack in such a manner that, when said main body and said memory pack are connected to each other, said main body sends the first shading correction data to said memory pack to update the second shading correction data using said first shading correction data.

tion of the image data from said scanner, (2) a correcting section for correcting distortion of the image data from said scanner based on the second shading correction data, and (3) a third memory for storing said corrected image data from said correcting section, said scanner being attachable to and detachable from said memory pack; and

control means for controlling said main body and said memory pack in such a manner that, when said main body and said memory pack are connected to each other, said main body sends the first shading correction data to said memory pack to update the second shading correction data using said first shading correction data.

5,778,110

TWO-LAYERED STORAGE BAG AND TWO-LAYERED STORAGE BAG ATTACHED TO A DIAPER

Kyoko Furuya, 8-18, Haruecho, 2-Chome, Edogawa-ku Tokyo, Japan

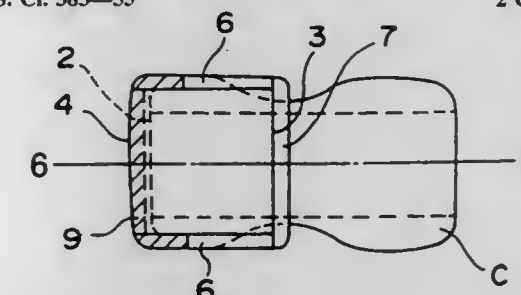
Filed Apr. 23, 1996, Ser. No. 636,536

Claims priority, application Japan, Jul. 18, 1995, 7-008297

Int. Cl.⁶ B65D 33/24

U.S. Cl. 383—35

2 Claims



1. A storage bag comprising:

a strip of flexible impermeable sheet material having two ends, said strip being folded into three sections to form three walls of the storage bag, with a first section and a second section of the three sections initially forming outermost sections and a third section of the three sections initially located between the first and second sections,

a first fold being formed between the first section and the second section,

a second fold being formed between the second section and the third section,

one of said two ends of said strip being located in the first section and the other of said two ends of said strip being located in the third section,

said other end of said strip being located between the first section and the second section and located adjacent to the first fold,

said one end of said strip extending beyond the second fold so as to form an identifiable opening for the hand of an individual between the first section and the third section at the second fold,

the first section being coextensive with and longer than the second section and the third section and the second section being coextensive with and longer than the third section, and only side edges of said sheet material being sealed at coextensive portions of the first, the second and the third sections so as to allow wrapping of the storage bag two times upon itself around an article with the third section blocking access to the wrapped article within the storage bag and with said one end being located adjacent to said second fold.

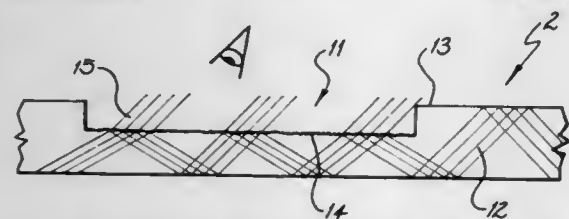
5,778,111

OPTICAL FIBRE FLAT SCREEN

Socrates Vasiliadis, Hunters Hill; Alan Weingarten, St Ives, and Riaz Mehta, Cremorne, all of Australia, assignors to Ramasoft Pty. Limited, Hunters Hill, Australia
Filed Jan. 18, 1996, Ser. No. 588,124
Int. Cl.⁶ G02F 1/035

U.S. Cl. 385—2

10 Claims



1. A flat screen panel apparatus comprising a base, a plurality of optical fibers positioned in parallel on said base, each said optical fiber having means for conducting light from said optical fiber on its side facing outwardly from said base, said means for conducting light being able to transmit light therethrough, a plurality of light sources connected to said optical fibres at one end thereof, each said optical fibre having at least one light source connected thereto, and drive circuit means connected to said plurality of light sources to drive said light sources to transmit light through said optical fibers and thence through said means for conducting light of said optical fibers.

5,778,112

WAVEGUIDE POLYMER ELECTRO-OPTIC MODULATOR/SWITCH

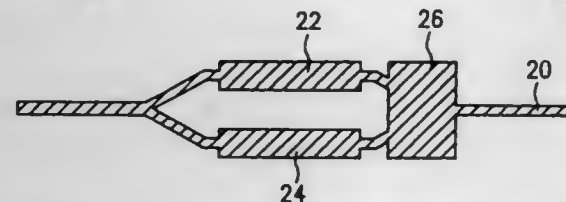
Wol-Yon Hwang, and Jang-Joo Kim, both of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea
Filed Sep. 27, 1996, Ser. No. 721,733

Claims priority, application Rep. of Korea, Dec. 21, 1995, 95-53638

Int. Cl.⁶ G02F 1/035

U.S. Cl. 385—2

3 Claims



1. A waveguide polymer electro-optic modulator comprising: a semiconductor substrate on which a lower electrode, a lower cladding layer, a waveguide, an upper cladding layer and an upper electrode are formed, wherein the waveguide is formed in one line, a signal electrode is formed at an upper input side of the waveguide, to which signal electrode a signal voltage is applied as an upper electrode, and an absorption electrode is formed at an upper portion of the waveguide for absorbing a higher order of modes which are not easily absorbed by the signal electrode and for increasing a dissipation ratio.

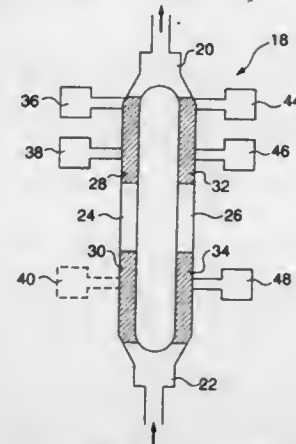
5,778,113

CONFIGURABLE CHIRP MACH-ZEHNDER OPTICAL MODULATOR

Jun Yu, Stittsville, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Nov. 7, 1996, Ser. No. 745,168
Int. Cl.⁶ G02B 6/10

U.S. Cl. 385—3

10 Claims



1. A multi-quantum-well Mach-Zehnder phase modulator for selectively generating positive and negative frequency chirp in an optical signal of a known free space wavelength comprising: an asymmetrical input y-junction waveguide coupler having an input waveguide for receiving said optical signal and first and second input branch waveguides; an asymmetric output y-junction waveguide coupler having an output waveguide for delivering said modulated optical signal and first and second output branch waveguides; a first interferometric arm between first branch waveguides of said input and output y-junction couplers defining a first optical path; a second interferometric arm between second branch waveguide of said input and output y-junction couplers defining a second optical path, one of said path lengths being greater than the other by a distance which generates a fixed phase difference of π at the known wavelength; electrode means on said first and second interferometric arms for applying an electric field to modulate the effective phase difference between said arms; and control electrode means on one of said first and second arms for selectively applying a control electric field to said one arm to selectively modulate the phase difference between said arms, whereby with no electric field on said control electrode a negative frequency chirp is generated and with a control electric field on said one arm equal to the voltage required to generate said fixed phase difference a positive frequency chirp is generated.

5,778,114

FIBER ANALYSIS METHOD AND APPARATUS

Hossein Eslambolchi, 24 Hartley La., Basking Ridge, N.J. 07920, and John Sinclair Huffman, 150 Clearview Cir., McDonough, Ga. 30208

Filed Apr. 18, 1997, Ser. No. 844,185

Int. Cl.⁶ G02B 6/00

U.S. Cl. 385—12

21 Claims

12. A system for analyzing a buried underground optical fiber, comprising: a light source for generating a beam of light; a four-port splitter for splitting the beam of light into two optical sub-signals injected into opposite ends of the fiber to traverse the fiber in opposite directions for receipt at the splitter which recombines the sub-signals into a combined beam; and a detector for detecting characteristics of the combined beam, WHEREIN THE IMPROVEMENT COMPRISES:

5,778,116

PHOTONIC HOME AREA NETWORK FIBER/POWER INSERTION APPARATUS

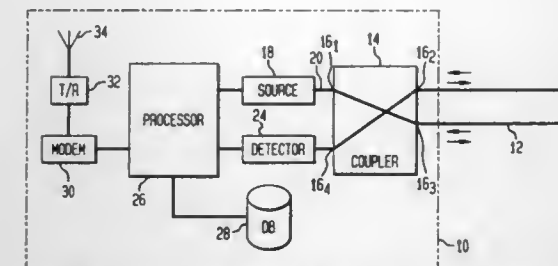
John L. Tomich, 614 Meadowview La., Coppell, Tex. 75019

Filed Jan. 23, 1997, Ser. No. 785,413

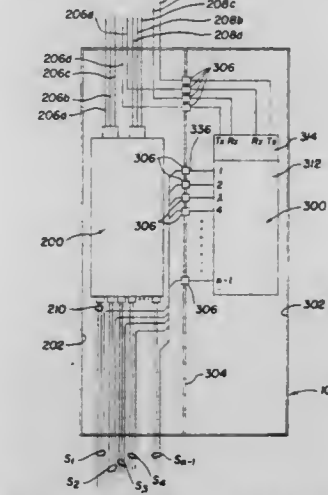
Int. Cl.⁶ G02B 6/26; H04J 14/02

U.S. Cl. 385—16

8 Claims



a data base containing reference values representing beam characteristics corresponding to different fiber conditions; and a processor for comparing the reference values in the data base to the detected beam characteristics to find a match therebetween to establish a fiber condition in accordance with said match.



1. A photonic distribution apparatus for a home area network having a plurality of subscribers, the apparatus comprising: an optical transmission medium having at least one transmit and one receive pathway, said optical transmission medium for conveying a communications data signal containing a plurality of distribution instruction segments; a microcontroller circuit having a photonic interface converting optical transmission to an electrical signal transmission, and an extractor for culling said distribution instruction segments from said electrical signal transmission; a communications routing circuit responsive to a distribution instruction from said microcontroller circuit, said routing circuit having a plurality of fiber optic switches in fiber optic communication with one another, wherein a first fiber optic switch of said plurality of fiber optic switches has an input terminal photonicallly connected to said one receive pathway, and a last fiber optic switch of said plurality of fiber optic switches has an output terminal photonicallly connected to said transmit pathway.

5,778,115

ARRANGEMENT FOR SWITCHING A HIGH-VOLTAGE SWITCH BY OPTICAL ENERGY

Walter Benedikt, Kornwestheim; Manfred Vogel, Ditzingen; Werner Herden, Gerlingen, and Johann Konrad, Tamm, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/00704, § 371 Date Nov. 4, 1996, § 102(e)

Date Nov. 4, 1996, PCT Pub. No. WO96/17169, PCT Pub.

Date Jun. 6, 1996

PCT Filed Jun. 2, 1995, Ser. No. 669,294

Claims priority, application Germany, Nov. 30, 1994, 44 42 545.7

Int. Cl.⁶ G02B 6/42

U.S. Cl. 385—16

6 Claims



1. An arrangement for switching an optoelectronic high-voltage switch by means of optical energy, the arrangement comprising semiconductor means which at a predetermined voltage change abruptly to a conducting state; a light-emitting element; a light-transmitting element which is disposed between said light-emitting element and the optoelectronic high-voltage switch, said light-transmitting element being arranged so that an angle formed by a longitudinal axis of the high-voltage switch and a longitudinal axis of said light-transmitting element is between 5° and 20°.

5,778,117

DEVICE FOR FAULT LOCALIZATION IN REPEATERLESS TRANSMISSION SYSTEM

Yoshiyuki Inoue, and Takashi Miyazaki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

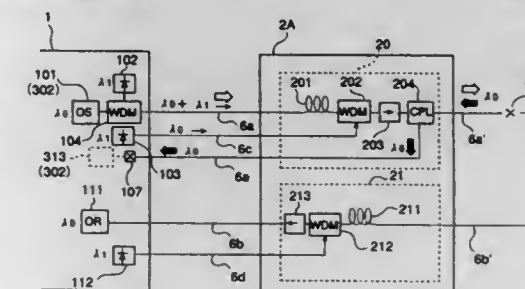
Filed Sep. 25, 1996, Ser. No. 724,960

Claims priority, application Japan, Mar. 19, 1996, 8-062663

Int. Cl.⁶ G02B 6/28

U.S. Cl. 385—24

20 Claims



→ : LIGHT PULSE FOR FAULT LOCALIZATION (A0)
→ : REFLECTED/SCATTERED LIGHT (A0)
→ : PUMP LIGHT (A1)

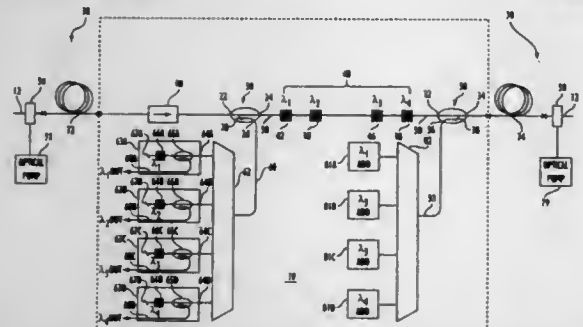
1. A device for receiving input signal light and pump light from a first remote site through a first optical fiber and a second optical fiber, respectively, and for sending amplified signal light through a third optical fiber to a second remote site, said device comprising: amplifier means for amplifying said input signal light by using said pump light to transmit said amplified signal light to said third optical fiber, said amplifier means having prevention means for preventing light coming back through said third optical fiber from entering said amplifier means; and path providing means for providing a path inside said device, said path leading reflection light coming through said third optical fiber to a connection point of said device, said connection point having optical connection with said first remote site, wherein said reflection light is a light pulse for fault localization reflected at a fault point on said third optical fiber, said light pulse for fault localization sent to said third optical fiber from said first remote site via said device.

5,778,118
OPTICAL ADD-DROP MULTIPLEXERS FOR WDM COMMUNICATION SYSTEMS
Balakrishnan Sridhar, Silver Spring, Md., assignor to CIENA Corporation, Linthicum, Md.

Filed Dec. 3, 1996, Ser. No. 759,965
Int. Cl.⁶ G02B 6/28

U.S. Cl. 385—24

13 Claims



13. An optical add-drop multiplexer for a wavelength division multiplexed optical communication system comprising: a first optical coupler having at least a first input port and at least first and second output ports, the first optical coupler configured such that optical signals which enter the first input port are output to both the first and second output port; a second optical coupler having at least first and second input ports and at least a first output port, the second optical coupler configured such that optical signals which enter the first and second input ports are combined and output to at least the first coupler output port; a first optical path optically communicating with the first input port of the first optical coupler, the first optical path configured to carry a wavelength division multiplexed optical communication signal including one or more optical wavelengths to be selected from the wavelength division multiplexed optical communication signal; a second optical path optically communicating with the first output port of the first optical coupler and optically communicating with the first input port of the second optical coupler, the second optical path having positioned therein a set of one or more Bragg gratings configured to reflect one or more optical wavelengths included in the wavelength division multiplexed optical communication signal carried by the first optical path, the set of one or more Bragg gratings and the first optical coupler being configured such that the reflected wavelengths are reflected towards the first output port of the first optical coupler where the reflected wavelengths exit the optical add-drop multiplexer, the reflected wavelengths corresponding to optical channels to be dropped from a wavelength division multiplexed optical communication signal, the remaining optical wavelengths in the wavelength division

multiplexed optical communication signal being transmitted by the second optical path to the first input port of the second optical coupler;

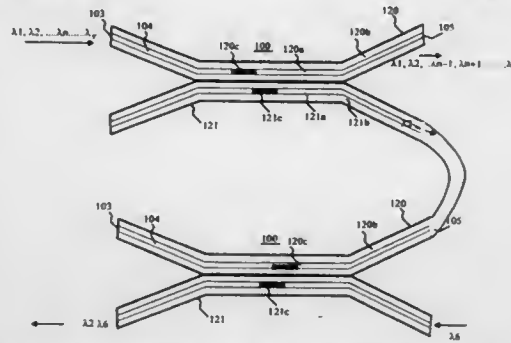
- a third optical path optically communicating with the second output port of the first optical coupler for receiving a portion of the wavelength division multiplexed optical signal input to the input port of the first optical coupler, the third optical path optically communicating with one or more wavelength selectors, each wavelength selector configured to select one or more optical wavelengths to be selected from the portion of the wavelength division multiplexed optical communication signal output to the second coupler output port;
- a fourth optical path optically communicating with the second input port of the second optical coupler, the fourth optical path optically communicating with one or more optical sources for adding optical wavelengths to the wavelength division multiplexed optical signal transmitted through the second optical path; and
- a fifth optical path optically communicating with the at least one output port of the second optical coupler, the fifth optical path configured to transmit the added optical wavelengths from the fourth optical path and the portion of the wavelength division multiplexed optical signal transmitted through the set of one or more Bragg gratings in the second optical path.

5,778,119
IN-LINE GRATING DEVICE FOR FORWARD COUPLING LIGHT
Mark Farries, Nepean, Canada, assignor to JDS Fitel Inc., Nepean, Canada

Filed Oct. 8, 1996, Ser. No. 727,011
Int. Cl.⁶ G02B 6/34

U.S. Cl. 385—37

10 Claims



1. A device for coupling light of a predetermined wavelength out of or into a transmission system which carries light signals, the device comprising:

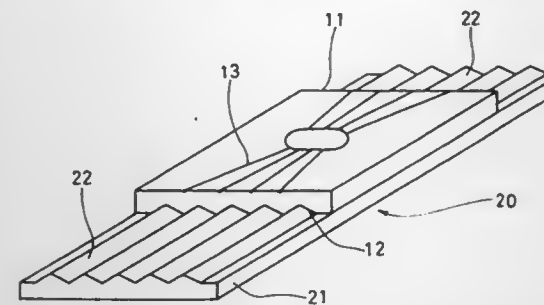
- a first optical waveguide having a core region and a cladding region, a portion of the core region having a first Bragg grating disposed therein;
- a second optical waveguide having a core region and a cladding region, a portion of the core region having a second Bragg grating disposed therein, the first and second grating each being long period gratings having a period of substantially about 50 μm or more;
- a portion of the cladding about the first Bragg grating being optically coupled to a portion of the cladding about the second Bragg grating so as to allow at least a predetermined wavelength of light incident upon the first Bragg grating to be forward coupled to the core region of the second optical waveguide via the second Bragg grating.

5,778,120
OPTICAL MODULE AND METHOD FOR MANUFACTURING THE OPTICAL MODULES
Hiroyuki Asakura, Osaka; Masanori Iida, and Masaki Kobayashi, both of Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 3, 1996, Ser. No. 642,480
Claims priority, application Japan, May 12, 1995, 7-114902
Int. Cl.⁶ G02B 6/30

U.S. Cl. 385—49

22 Claims



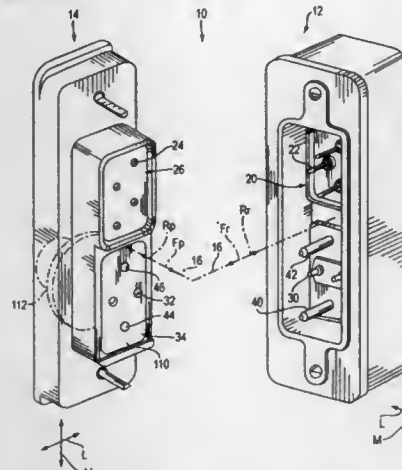
- 1. An optical module comprising: an optical waveguide substrate with optical waveguides formed on a first surface thereof and at least one positioning guide groove formed on a second surface opposing to said first surface; and an optical fiber arranging substrate having arranging guide grooves formed on a surface thereof and engaged with said positioning guide groove of said optical waveguide substrate for arranging and holding optical fibers and coupling the optical fibers to said optical waveguides; wherein a first pitch of said optical waveguides on end faces of said optical waveguide substrate coincides with a second pitch of said arranging guide grooves of said optical fiber arranging substrate.

5,778,121
CONNECTOR WITH OPTIC FIBER TERMINAL
Peter Joseph Hyzin, Lake Forest, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Nov. 5, 1996, Ser. No. 744,127
Int. Cl.⁶ G02B 6/38

U.S. Cl. 385—55

9 Claims



- 1. An optical fiber connector system comprising: first and second connectors that have means for holding mateable optical fiber ends, said connectors being mateable by moving the connectors together, said second connector having first and second alignment bores and said first connector having first and second alignment pins for projecting respectively into said first and second bores;

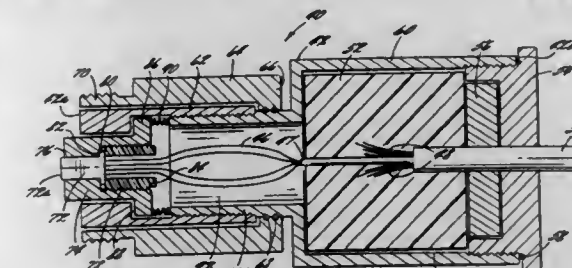
said first bore and said first pin each having interfitting cylindrical portions lying on a first axis to precisely fix the relative positions of said connectors at said first pin and first bore, in directions perpendicular to said first axis, said second bore and said second pin each being spaced in a radial direction from said first axis; said second bore and said second pin each having a pair of circumferentially opposite sides that are circumferentially spaced apart with respect to said first axis with small circumferential clearances (G) between them, but said second bore and said second pin have radially opposite ends that are radially spaced with respect to said first axis and that have clearances (F) between them that are each a plurality of times greater than each of said circumferential clearances, so said second bore and pin do not fix their radial positions with respect to said first axis.

5,778,122
FIBER OPTIC CABLE ASSEMBLY FOR INTERCONNECTING OPTICAL FIBERS WITHIN A RECEPTACLE MOUNTED WITHIN THE WALL OF AN ENCLOSURE
Markus A. Giebel; Terry L. Cooke; Thomas Theuerkorn, all of Hickory, N.C., and Douglas E. Wolfe, Corning, N.Y., assignors to Siecor Corporation, Hickory, N.C.

Filed Dec. 24, 1996, Ser. No. 773,012
Int. Cl.⁶ G02B 6/38

U.S. Cl. 385—55

8 Claims



- 1. A fiber optic interconnection apparatus comprising: a receptacle mounted at least partially within a wall of an enclosure, said receptacle comprising: a receptacle body having first and second opposed ends and defining a bore extending lengthwise therebetween, wherein the second end of said receptacle body opens into the enclosure; and a fiber optic connector disposed at least partially within the bore of said receptacle body, said fiber optic connector being adapted to be mounted on an end portion of a first optical fiber which extends through the second end of said receptacle body and into the enclosure; and a fiber optic cable assembly for mating with said receptacle, said fiber optic cable assembly comprising: a housing having first and second opposed ends and defining a bore extending lengthwise therebetween, wherein the second end of said housing is adapted to receive an end portion of a fiber optic cable containing the second optical fiber; and a fiber optic connector disposed at least partially within the first end of said housing, said fiber optic connector being adapted to be mounted on an end portion of the second optical fiber, wherein the respective fiber optic connectors of said receptacle and said fiber optic cable assembly are disposed in an aligned relationship upon mating of said fiber optic cable assembly with said receptacle such that the second optical fiber of the fiber optic cable is optically interconnected with the first optical fiber which extends into the enclosure.

5,778,123

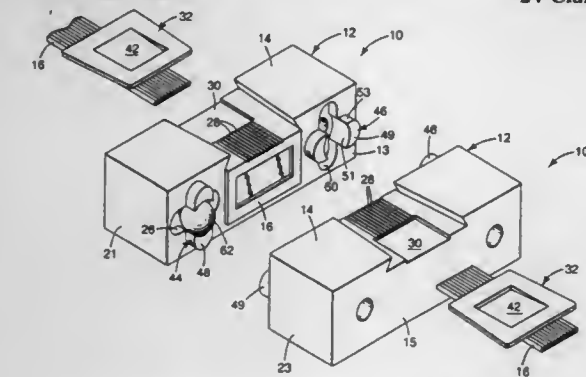
ALIGNMENT ASSEMBLY FOR MULTIFIBER OR SINGLE FIBER OPTICAL CABLE CONNECTOR

Richard Hagan, Bucks, England; Terry L. Smith, Roseville, Minn.; Robert G. Frey, White Bear Lake, Minn.; Gordon D. Henson, Lake Elmo, Minn., and Jack P. Blomgren, Red Wing, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 12, 1996, Ser. No. 614,412
Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—76

24 Claims



1. An optical fiber cable connector alignment assembly comprising:
a fiber alignment block having a top-loading fiber receiving surface for receiving at least one optical fiber from an optical fiber cable and a connector engagement surface, wherein the connector engagement surface is located to abut with another like connector alignment assembly;
first and second openings formed in the connector engagement surface, wherein the first opening has a depth d_1 and the second opening is generally cylindrical and has a diameter d_2 ; and
an alignment ball having a radius R retained in the first opening, wherein $R > d_1$.

5,778,124

DEVICE FOR OPTICAL CONNECTION OF AN OPTICAL ELEMENT, FOR EXAMPLE AN OPTICAL FIBRE, WITH A LENS

Bo Nedstedt, Parkgatan, Sweden, assignor to Formex AB, Anderstorp, Sweden

Continuation of Ser. No. 614,531, Mar. 13, 1996, abandoned.

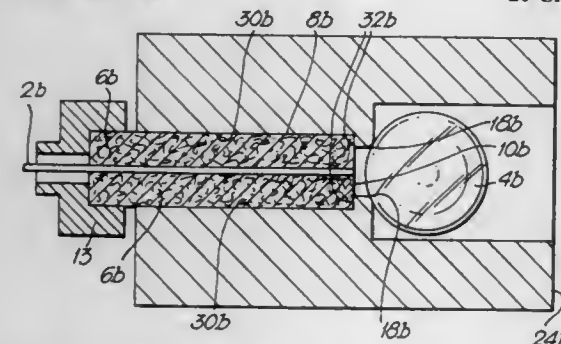
This application Nov. 4, 1997, Ser. No. 963,881

Claims priority, application Sweden, Aug. 18, 1995, 9502888

Int. Cl.⁶ G02B 6/32

U.S. Cl. 385—79

20 Claims



1. A device for optical connection of an optical element with a spherical lens, the device comprising:
a connector element having a first surface for defining the position of the spherical lens and a second surface for defining the position of the optical element in relation to the spherical lens thereby relatively positioning the optical element and the spherical lens, wherein the first surface of the connector

element for defining the position of the spherical lens comprises a circular edge surface, the circular edge surface defining a circular opening and having a cross sectional profile which defines an arc whereby the circular edge surface forms a convex rounded edge.

5,778,125

OPTICAL FIBER TERMINATIONS

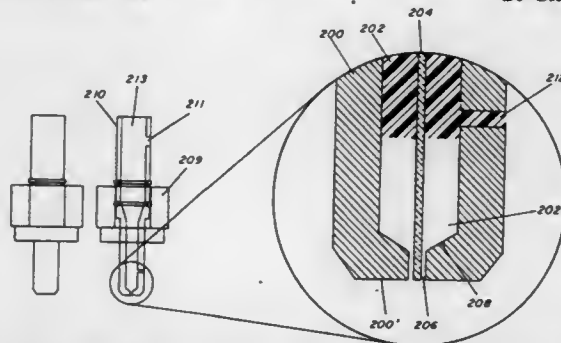
Lynda E. Busse, Lorton; Frederic H. Kung, Alexandria, both of Va.; Jasbinder S. Sanghera, Greenbelt, Md., and Ishwar D. Aggarwal, Fairfax, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 30, 1996, Ser. No. 739,985

Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—80

20 Claims



1. An optical fiber termination connector comprising a structure defining an elongated chamber open at both ends, said structure having first and second extremities; an optical fiber disposed in said chamber spaced from said structure and being flush with said structure at its first extremity; a material in solid form disposed in said chamber between said fiber and said structure; an air gap between said fiber and said structure in the chamber at the first extremity of said structure, said air gap is large enough to allow for independent thermal expansion of said fiber relative to thermal expansion of said structure surrounding and spaced from said fiber; an exit port in communication with the chamber in said structure near but removed from the first extremity of said structure; and an inlet port in communication with the chamber in said structure spaced from said exit port in the direction of the second extremity of said structure.

5,778,126

FERRULE FOR OPTICAL FIBER AND OPTICAL CONNECTOR USING A FERRULE

Yasuhiko Saitoh, Hokaido, Japan, assignor to Kyocera Corporation, Kyoto, Japan

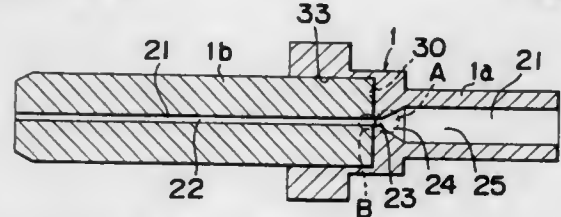
Filed Aug. 27, 1996, Ser. No. 703,649

Claims priority, application Japan, May 31, 1995, 7-50217; Aug. 31, 1995, 7-224120

Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—84

9 Claims



1. A ferrule for an optical fiber comprising a ceramic-made cylindrical main body having a penetration hole formed in the axial direction for inserting an optical fiber, and a metal-made or plastic-made back body for fixing and holding the rear and side of said cylindrical main body, wherein a penetration hole formed in the

5,778,129

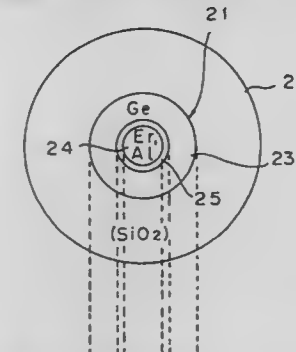
DOPED OPTICAL FIBER HAVING CORE AND CLAD STRUCTURE FOR INCREASING THE AMPLIFICATION BAND OF AN OPTICAL AMPLIFIER USING THE OPTICAL FIBER

Norifumi Shukunami, Sapporo, and Shinya Inagaki, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 8, 1996, Ser. No. 727,776

Claims priority, application Japan, Jan. 12, 1996, 8-004287
Int. Cl.⁶ G02B 6/22

58 Claims



30. An optical device comprising:
first, second and third regions each having a corresponding refractive index, the first, second and third regions being concentrically arranged with the second region around the first region and the third region around the second region, for propagating light, wherein the refractive index of the third region is higher than the refractive index of the first region, and the refractive index of the first region is higher than the refractive index of the second region, wherein the third region includes a dopant for providing the refractive index of the third region, the first region includes a first dopant for providing an amplification band and a second dopant for expanding the amplification band, and the second region has an impurity concentration which is lower than the concentration of the dopant in the third region and is lower than the concentrations of the first and second dopants in the first region.

5,778,127

OPTICAL TRANSCIEVER AND FILLER COMPOSITION

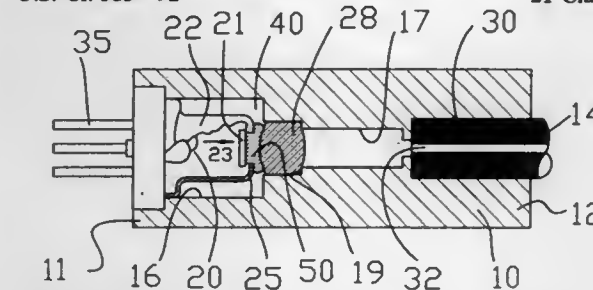
Patrick Gilliland, 5451 NE. River Rd., Chicago, Ill. 60656; Henning Backhaus, 924 Ontario St., Oak Park, Ill. 60303, and Daniel Poplawski, 22 Woodcliff Rd., Montgomery, Ill. 60538

Filed Jun. 7, 1995, Ser. No. 472,385

Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—92

21 Claims



1. An optical transmitter or receiver apparatus comprising:
a housing having a first end and a second end;
a diode package at the first end and a lens adjacent the diode package;
an optical waveguide receiving bore at the second end;
a communication channel between the diode package and the bore; and
an optical filler composition selected from the group consisting of a solid or a liquid adjacent the diode package said optical filler composition provides for attenuation of between 1 and 11 dB at a wavelength of 850 nm.

5,778,128

SYMMETRIC, DISPERSION-MANAGED FIBER OPTIC CABLE AND SYSTEM

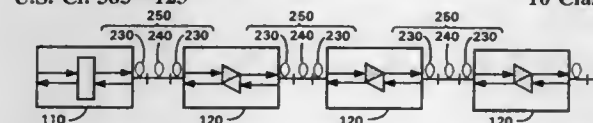
George F. Wildeman, Chardon, Ohio, assignor to Corning Incorporated, Corning, N.Y.

Filed Feb. 11, 1997, Ser. No. 799,652

Int. Cl.⁶ G02B 6/02

U.S. Cl. 385—123

10 Claims



1. A symmetric, dispersion-managed fiber optic cable comprising:
a conventional single mode fiber having a first effective area and a positive dispersion characteristic at a predetermined operating wavelength range, said conventional single mode fiber comprising two segments each having substantially the same length; and
a second optical fiber having a second effective area and a negative dispersion characteristic at the operating wavelength range, said second optical fiber coupled between the two segments of said first fiber, wherein an average total dispersion of the symmetric, dispersion-managed fiber optic cable at the operating wavelength range is a first average total dispersion value.

5,778,130

OPTICAL FIBER CONNECTOR HOUSING

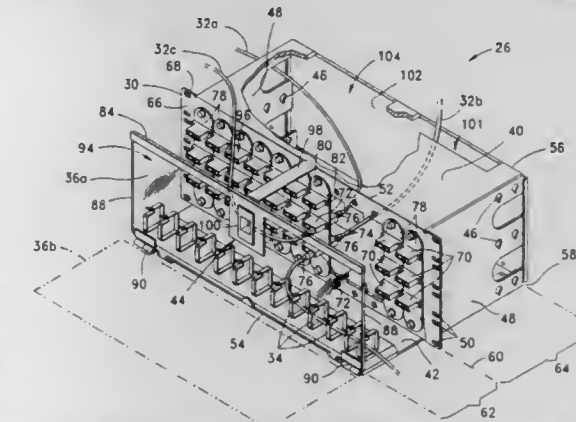
Mark D. Walters, Colleyville, and Kevin L. Morgan, Paradise, both of Tex., assignors to Siecor Corporation, Hickory, N.C.

Filed Dec. 31, 1996, Ser. No. 777,227

Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—134

11 Claims



1. An optical fiber connector housing for providing cross-connection functions for optical fibers terminated with connectors and having a minimum bend radius, said housing comprising:

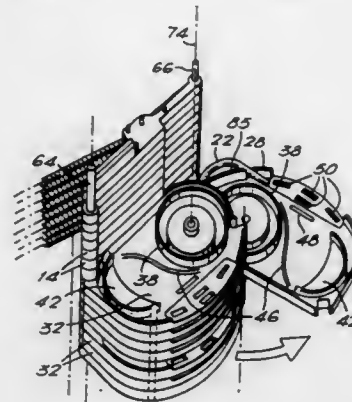
- (a) upper and lower plate members which are generally horizontal and spaced apart from one another;
said plate members being adapted for attachment to a supporting frame and each having front and rear edges;
the front edge of said lower plate member extending further forward than the front edge of said upper plate member;
(b) a connector panel depending generally vertically downward from the front edge of said upper plate member and connected to said lower plate member along an attachment line which is rearwardly disposed with respect to the front edge of said lower plate member, thereby defining a shelf portion and a rear portion of said lower plate member;
said shelf portion of said lower plate member being between the front edge of said lower plate member and said attachment line;
said rear portion of said lower plate member being between the attachment line and the rear edge of said lower plate member;
said connector panel having a front face and a rear face and being adapted for mounting a plurality of optical fiber adaptors therethrough wherein each said optical fiber adaptor has a front side and a rear side and is adapted for receiving and mounting in optical alignment a pair of optical fibers, said fibers being routed from opposite sides of said adaptor and each being terminated with a connector;
(c) a door having top, bottom and side edges;
said door being hingedly connected at the bottom edge to the front edge of said lower plate member and thereby movable between an open position and a closed position;
wherein, when in said closed condition, said door has a generally vertical orientation and is spaced from and parallel with said connector panel thereby defining a forward cable area, at least one side aperture, and at least one top aperture;
said forward cable area being bounded by said door, the front face of said connector panel, and the shelf portion of said lower plate member;
said side aperture being between the side edge of said door and the front face of said connector panel;
said top aperture being between the top edge of said door and the front face of said connector panel;
wherein, when in said open position, said door is not vertically oriented and vertically aligned with said connector panel, thereby allowing unrestricted access to said forward cable area; and
(d) a means for releasably securing said door in said closed position;

whereby, when said door is in the closed position, a plurality of optical fibers each being terminated with a connector and connected to the front side of an adaptor on said connector panel can be advantageously routed out of said forward cable area by routing a first portion of said plurality of fibers through at least one side aperture and routing a second portion of said plurality of fibers through at least one top aperture, thereby reducing the density of the cables routed in each direction while said door protects said connectors and optical fibers in said forward cable area from damage and maintains the minimum required bend radius of the optical fibers.

5,778,131
ASSEMBLY FOR USE IN CONNECTING OPTICAL FIBRES INCLUDING A MANIFOLD DEVICE
Laurence Llewellyn, Chepstow Gwent; Mark George Graveston, Gwent; Simon Charles Tristan Benton, Felixstowe; Ispran Sharma Kandasamy, Newport Gwent; Peter George Hale, Bristol, and Peter David Jenkins, Woodbridge, all of England, assignors to Pirelli General PLC, London, England
PCT No. PCT/GB94/02112, § 371 Date Mar. 28, 1996, § 102(e) Date Mar. 28, 1996, PCT Pub. No. WO95/09375, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 28, 1994, Ser. No. 624,365
Claims priority, application United Kingdom, Sep. 29, 1993, 9320101

U.S. Cl. 385—135 Int. Cl. G02B 6/00

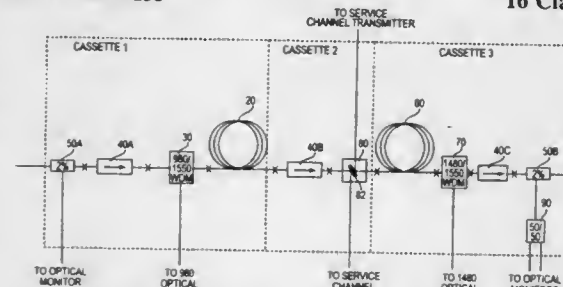
14 Claims



1. An assembly for use in connecting optical fibres to at least one optical device having input and output tails, comprising first housings for housing connections between the optical fibres and tails, a further housing having means for locating therein said at least one optical device, and routing means for guiding said optical fibre tails from said further housing to said first housings, said routing means including a manifold device providing tracks for routing said tails between said further housing and said first housings over predetermined paths, said first housings being arranged in an aligned bank adjacent said manifold device with each first housing being moveable out of such alignment with the others for providing access thereto.

5,778,132
MODULAR OPTICAL AMPLIFIER AND CASSETTE SYSTEM
Andrei Csiplkes, Columbia, and Henry H. Yaffe, Reisterstown, both of Md., assignors to Clena Corporation, Linthicum, Md.
Filed Jan. 16, 1997, Ser. No. 784,909
Int. Cl. G02B 6/00; 6/36
U.S. Cl. 385—135

16 Claims

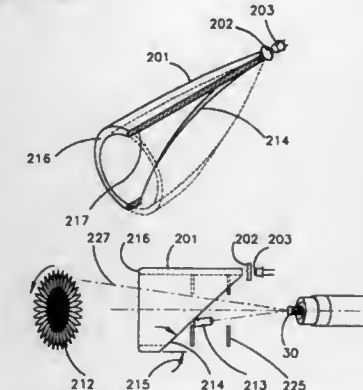


1. A modular optical amplifier comprising:
a first amplifier housing comprising a first optical cassette for holding a first stage of a multiple stage optical amplifier, the first cassette comprising retaining means for retaining a first

length of rare-earth doped optical amplifier used in a first stage of the optical amplifier and cassette regions for receiving one or more passive optical components used with the first stage of the optical amplifier;
a first length of rare-earth doped optical fiber retained in said retaining means and first pump interconnection means optically communicating with the first length of rare-earth doped optical fiber for allowing optical pump energy to pass into the rare-earth doped optical fiber;
a second amplifier housing comprising a second optical cassette for holding a second stage of a multiple stage optical amplifier, the second cassette being separated from the first cassette by at least one cassette wall, the second cassette comprising retaining means for retaining a first length of rare-earth doped optical amplifier used in a second stage of the optical amplifier and second cassette regions for receiving one or more passive optical components used with the first stage of the optical amplifier;
a first length of rare-earth doped optical fiber retained in said retaining means and second pump interconnection means optically communicating with the first length of rare-earth doped optical fiber for allowing optical pump energy to pass into the rare-earth doped optical fiber;
at least a first optical pump retained in an optical pump housing separate from the first and second optical cassettes, the at least one optical pump optically communicating with at least the first pump interconnection means for optically pumping at least the first stage of the optical amplifier.

5,778,133
NONIMAGING LIGHT COLLECTOR
George A. Plesko, Media, Pa., assignor to GEO Labs, Inc., Media, Pa.
Division of Ser. No. 235,493, Apr. 29, 1994, Pat. No. 5,519,198.
This application Mar. 7, 1996, Ser. No. 612,364
Int. Cl. G02B 6/10
U.S. Cl. 385—146

5 Claims



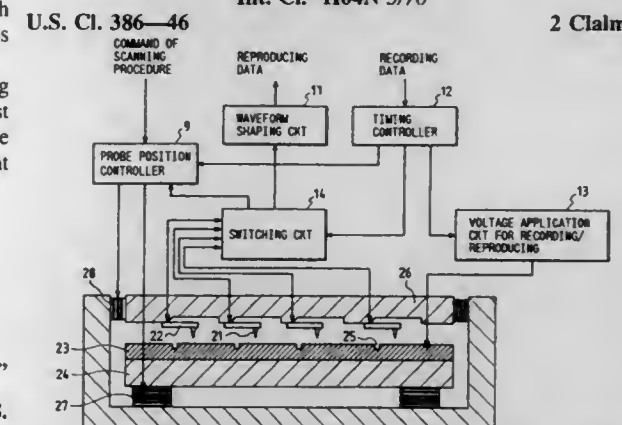
1. A light concentrator formed of solid transparent material for receiving incident light, concentrating received light, and emitting concentrated light, comprising:
a truncated shell having first and second ends,
said first end forming an input surface defining an aperture for receiving incident light;
said second end forming an output surface for emitting concentrated light; and
said shell including at least one surface intermediate said input and output surfaces, said intermediate surface guiding received incident light from said input surface toward said output surface by total internal reflection in said material, whereby a substantial portion of incident light to which said material is transparent is guided to and emitted from said output surface;

wherein said truncated shell has a shell cross-section disposed in a plane perpendicular to said first and second ends said, shell cross-section having an outer boundary defined by first, second, third and fourth sides, said first side being parallel to said second side and being disposed along said first end, said

second side being disposed along said second end, said third side intersecting and being perpendicular to said first and second sides, and said fourth side intersecting said first and second sides and being oriented at an acute angle with respect to said third side.

5,778,134
APPARATUS FOR RECORDING AND REPRODUCING IMAGE INFORMATION IN A RECORDING MEDIUM WHEREIN SCANNING PROBES ARE CONTROLLED BASED ON EDITING INFORMATION
Kunihiko Sakai, Isehara; Takahiro Oguchi, Yamato; Akihiko Yamano, and Shunichi Shido, both of Sagami-hara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 165,897, Dec. 14, 1993, abandoned.
This application Sep. 3, 1996, Ser. No. 711,306
Claims priority, application Japan, Dec. 21, 1992, 4-340753
Int. Cl. H04N 5/76

2 Claims

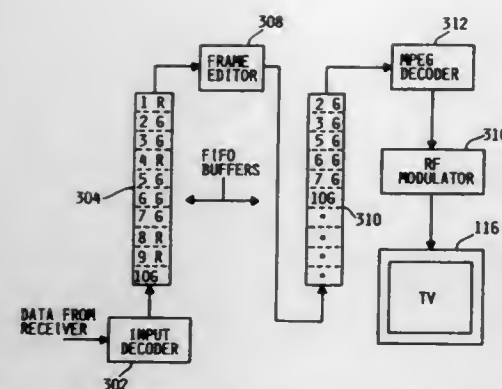


1. An apparatus for storing image information in a recording medium, and for outputting image information from the recording medium, comprising:
dividing means for dividing input image information;
memory means for storing each of the divided input image information, said memory means including:
a plurality of probes, each probe being arranged to oppose the recording medium;
scanning means for relatively moving said probes and the recording medium so that said probes scan a surface of the recording medium; and
recording and reproducing means for recording the divided information on the recording medium by using said probes, and for reproducing the divided information from the recording medium using said probes; and
control means including a writable memory for storing scanning procedures for said plurality of probes edited by a user, and for controlling said scanning means in accordance with the scanning procedures stored in said memory.

5,778,135
REAL-TIME EDIT CONTROL FOR VIDEO PROGRAM MATERIAL
Hal H. Ottesen, and Gordon J. Smith, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1994, Ser. No. 366,555
Int. Cl. H04N 5/93

4 Claims

1. A system for providing a viewer with edit control of video program material, comprising:
means for receiving the video program material, wherein said video program material is divided into a plurality of segments and each segment is tagged to indicate a rating for that segment;



means for providing the viewer with information regarding the percentage of material at a particular rating level in the program material; and
means for determining whether each segment is to be presented to the viewer based on said rating, comprising
means for examining said tag of each segment to determine said rating for that segment;
means for determining a selected rating level; and
means for comparing said rating of that segment to said selected rating level.

5,778,136

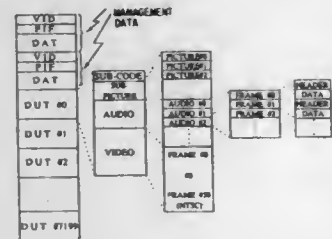
MULTI-SCENE RECORDING MEDIUM WHEREIN RELATED DATA SEGMENTS OF SIMULTANEOUSLY PROCEEDING SCENES ARE RECORDED ALTERNATINGLY AND CONTINUOUSLY THEREON

Koichi Hirayama, Kawasaki, and Masatoshi Nakai, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 454,289, Jun. 15, 1995, Pat. No. 5,630,006. This application Aug. 8, 1996, Ser. No. 694,430
Int. Cl.⁶ H04N 5/91; 7/08; 5/781

U.S. Cl. 386—52

6 Claims



1. A multi-scene recording medium comprising a disk having a management area and a data area,
said data area recording multiple program information items, at least two of said program information items representing simultaneously proceeding scenes, each of said program information items being divided into data segments, related data segments from each of said simultaneously proceeding scenes being recorded alternately and continuously on said recording medium, and

said management area recording multi-scene configuration information indicating a presence of said simultaneously proceeding scenes, where
when reproduction switches from a first of said simultaneously proceeding scenes to a second of said simultaneously proceeding scenes, reproduction begins at a head portion of a data unit of a program information item representing said second simultaneously proceeding scene.

5,778,137

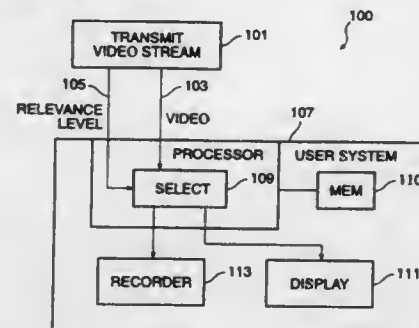
VIDEOSTREAM MANAGEMENT SYSTEM

Jakob Nielsen, Atherton, and Bruce Tognazzini, Woodside, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 28, 1995, Ser. No. 579,784
Int. Cl.⁶ H04N 5/91

U.S. Cl. 386—68

22 Claims



1. A method of recording and replaying a videostream comprising the steps of:
receiving a basic videostream;
in association with said basic videostream, developing a relevance level indicative of user interest;
forming a highlight videostream recording, said highlight videostream recording comprising selected portions of said basic videostream, said selected portions selected based on said relevance level; and
playing said highlight videostream for a user; and wherein said step of receiving a videostream is a step of receiving an NTSC videostream, said relevance level broadcast in a vertical blanking interval of said videostream.

5,778,138

MAGNETIC RECORDING AND REPRODUCTION APPARATUS FOR PREVENTING FIXED PATTERN NOISE FROM APPEARING IN A REPRODUCED IMAGE WHEN REPRODUCING AT HIGH SPEED

Junko Ishimoto, Sadayuki Inoue, and Makoto Kumano, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

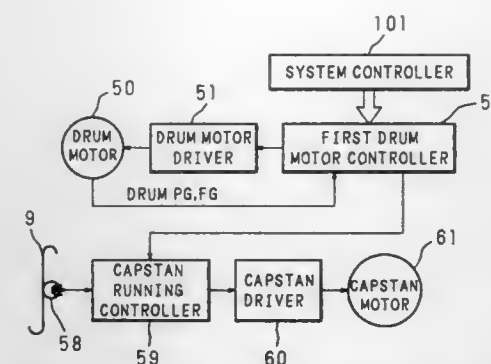
Continuation of Ser. No. 168,381, Dec. 17, 1993, abandoned.
This application May 22, 1996, Ser. No. 653,921

Claims priority, application Japan, Dec. 28, 1992, 4-360530
Int. Cl.⁶ H04N 5/91

U.S. Cl. 386—68

10 Claims

1. A magnetic recording and reproducing apparatus for preventing fixed pattern noise from appearing in a reproduced image when reproducing at a tape speed greater than a normal tape speed wherein digital video signals are divided into a plurality of segments S and are recorded in diagonal tracks on a magnetic tape by rotary heads which are mounted on a rotary drum, comprising:
a drum motor driving the rotary drum;
rotation number setting means for setting a rotation number of said drum motor; and
a drum motor rotation controller outputting a drum motor control signal to control said drum motor so that the rotation



number of said drum motor becomes the rotation number set by said rotation number setting means; wherein
when reproducing at an integer multiple N times a normal tape speed, said rotation number setting means sets the rotation number of said drum motor so as to satisfy $N \times Q \times k \neq 0 \pmod{S}$ so that the rotation number of said drum motor becomes the rotation number R utilized during normal tape speed reproducing multiplied by $(1+Q/Q)$ wherein Q and q are integers satisfying $1 \leq Q \leq Q$; and k is a natural number satisfying $k \leq S-1$.

5,778,139

DIGITAL VIDEO DATA RECORDING WITH OUTER-ERROR-CORRECTION CODING OF TRICK-PLAY DATA AND APPARATUS FOR USE THEREWITH

Tae-eung Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

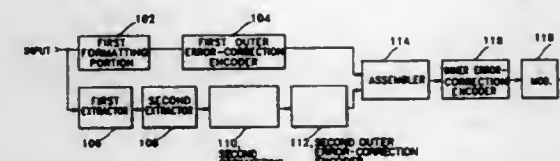
Filed May 23, 1996, Ser. No. 652,234

Claims priority, application Rep. of Korea, May 29, 1995, 1995-13686

Int. Cl.⁶ H04N 5/783

U.S. Cl. 386—81

30 Claims



1. A method for recording digital video data on a tape, which digital video data include independently decodable frame data and dependently decodable frame data, bytes of which said independently decodable frame data are supplied during predetermined intervals and bytes of which said dependently decodable frame data are supplied during intervening intervals between said predetermined intervals, said method comprising the steps of:
receiving said bytes of said independently decodable frame data supplied at said predetermined intervals and said bytes of said dependently decodable frame data supplied during said intervening intervals, for use as normal-play data;
extracting trick-play data for each of a prescribed number of trick-play speeds, the extracting being made from said bytes of said independently decodable frame data supplied at said predetermined intervals;

calculating bytes of trick-play outer parity for outer-error-correction coding of said trick-play data for each said trick-play speed, as formatted into a succession of trick-play reference blocks for that said trick-play speed, said bytes of outer parity for outer-error-correction coding of said trick-play data being calculated independently of data outside said trick-play data region of said trick-play reference block for that said trick-play speed, each said trick-play reference block consisting of a first predetermined number of data rows, each said trick-play reference block having a respective trick-play data region consisting of a plurality of data rows, a respective region of trick-play outer parity consisting of a plurality of

data rows, and a respective remainder region including other data rows of fixed pattern information;

calculating bytes of normal-play outer parity for outer-error-correction coding of said normal-play data as formatted into a succession of normal-play reference blocks, said bytes of outer parity for outer-error-correction coding of said normal-play data being calculated independently of data outside said normal-play data region and said video auxiliary data region, each said normal-play reference block consisting of a second predetermined number of data rows, each said normal-play reference block having a respective normal-play data region consisting of a plurality of data rows, a respective video auxiliary data region consisting of a plurality of data rows, a respective trick-play data region for each said trick-play speed consisting of a plurality of data rows of null information, and a respective outer parity region consisting of a plurality of data rows;

inserting successive rows of each successive one of said trick-play reference blocks into the respective trick-play data region for that trick-play speed in successive ones of said normal-play reference blocks, each of which said trick-play data regions has fewer data rows than are contained in said trick-play reference block for that said trick-play speed, thereby generating interleaved outer-error-correction encoded normal-play data and outer-error-correction encoded trick-play data; calculating bytes of inner parity for inner-error-correction coding of each row of said interleaved outer-error-correction encoded normal-play data and outer-error-correction encoded trick-play data;

generating from each said row of said interleaved outer-error-correction encoded normal-play data and outer-error-correction encoded trick-play data, a respective sync block of digital signal for recording, said step of generating including a substep of

appending to each said row of said interleaved outer-error-correction encoded normal-play data and outer-error-correction encoded trick-play data said bytes of inner parity for inner-error-correction coding thereof; and recording each said sync block of digital signal at a predetermined position of a track on said tape.

5,778,140

VIDEO SIGNAL PROCESSING APPARATUS

Hiroo Okamoto, Yokohama; Masuo Oku, Kamakura; Takaharu Noguchi, and Takao Arai, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 331,269, Oct. 28, 1994, Pat. No. 5,627,655, which is a continuation of Ser. No. 104,478, Jul. 28, 1993.

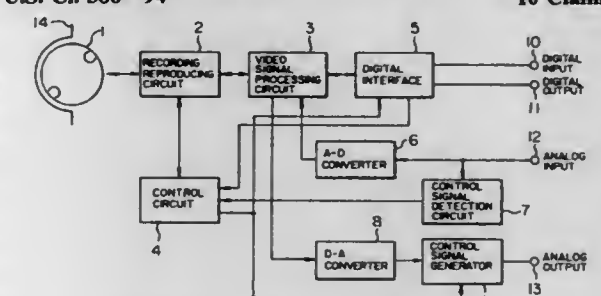
This application Mar. 7, 1997, Ser. No. 813,339

Claims priority, application Japan, Jul. 28, 1992, 4-201414

Int. Cl.⁶ H04N 5/91; 5/928; G11B 23/28

U.S. Cl. 386—94

10 Claims



1. A video signal processing apparatus with a control code generator arrangement, said apparatus comprising:
means for inputting a digital video signal;
a control code detection means for detecting a digital control code contained in the inputted digital video signal, said digital control code commanding at least copy information;

a control code reconstructing means for forming a reconstructed digital control code to be added to said video signal to command a subsequent at least copy information;

a video signal processing means for processing said digital video signal to produce at least one processed digital video signal;

a D/A converter of converting a processed digital video signal from said video signal processing means into an analog video signal;

a first adding means for adding said reconstructed digital control code from said control code reconstructing means to a portion of a vertical blanking period of said analog video signal to produce an analog video signal with said reconstructed digital control code to output said produced analog video signal; and

a second adding means for adding said reconstructed digital control code to video signal from said video signal processing means to produce a digital video signal with said reconstructed digital control code to output said produced digital video signal.

5,778,141

Patent Not Issued For This Number

5,778,142

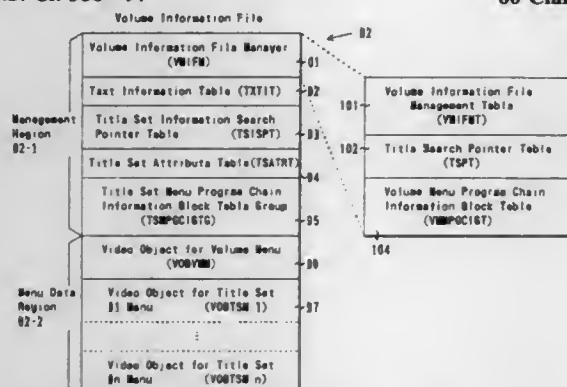
LARGE CAPACITY RECORDING MEDIUM, METHOD AND APPARATUS FOR REPRODUCING DATA FROM A LARGE-CAPACITY RECORDING MEDIUM, AND METHOD AND APPARATUS FOR RECORDING DATA ON A LARGE-CAPACITY RECORDING MEDIUM

Kazuhiko Taira; Shinichi Kikuchi; Hideki Mimura; Yuzo Tamada, all of Yokohama, and Masatoshi Nakai, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 22, 1995, Ser. No. 561,853
Claims priority, application Japan, Nov. 24, 1994, 6-289657;
Jan. 27, 1995, 7-012049

Int. Cl.⁶ H04N 5/76; 5/781

U.S. Cl. 386—97



1. A recording medium with information recorded in high density, comprising:

at least one title set area including at least one data file comprising a plurality of data cells each storing data to be reproduced; and

a volume management area including a volume management file comprising a volume information file manager portion, and a video object menu portion containing video objects, comprised of at least one menu data cell, for presenting menu information pertaining to the contents of title sets stored in the title set areas of the recording medium, the volume information file manager portion comprising:

a volume information file management table,

a title search pointer table identifying the start address of each title set area, the start address of the title search pointer table being identified in the volume information file management table, and

a volume menu program chain information block table, the start address of the volume menu program chain information block table being identified in the volume information file management table, the volume menu program chain information block table comprising:

volume menu program chain information block table information identifying the number of languages available for the menu information,

a volume menu language block search pointer table, and

a volume menu language block containing information pertaining to an order in which the menu data cells in the video objects in the video object menu portion are output to present the menu information, the start address of the volume menu language block being identified in the volume menu language block search pointer table.

5,778,143

METHOD AND APPARATUS FOR THE SELECTION OF DATA FOR USE IN VTR TRICK PLAYBACK OPERATION IN A SYSTEM USING PROGRESSIVE PICTURE REFRESH

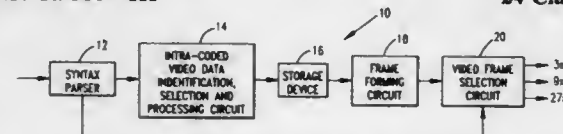
Jill MacDonald Boyce, Manalapan, N.J., assignor to Hitachi America, Ltd., Tarrytown, N.Y.

Continuation-in-part of Ser. No. 293,639, Aug. 19, 1994, Pat. No. 5,623,344, and Ser. No. 228,949, Apr. 18, 1994, which is a continuation of Ser. No. 4,158, Jan. 13, 1993, abandoned, said Ser. No. 293,639 is a continuation-in-part of Ser. No. 3,930, Jan. 13, 1994, abandoned, and Ser. No. 3,889, Jan. 13, 1993, Pat. No. 5,377,051. This application Aug. 30, 1994, Ser. No. 298,015

Int. Cl.⁶ H04N 5/76; 7/12; G11B 5/00

U.S. Cl. 386—111

24 Claims



1. A method of combining intra-coded macroblocks to form a single fully intra-coded video picture, from video data representing M inter-coded pictures, each inter-coded picture including N macroblocks, the first through Nth macroblocks in each set of N macroblocks corresponding to first through Nth macroblock positions within a video picture, respectively, each set of N macroblocks including at least one of an intra-coded macroblock and an inter-coded macroblock, the method comprising the steps of:

- providing a memory device including N memory locations, each one of the N memory locations being associated with one of the first through Nth macroblock positions within a video picture;
- receiving the video data representing M inter-coded pictures;
- identifying the intra-coded macroblocks included in the first of the M pictures and the macroblock positions within a video picture to which the identified intra-coded macroblocks correspond;
- recording, each one of the identified intra-coded macroblocks in the one of the N memory locations associated with the macroblock position within a video picture to which the one of the identified macroblocks being recorded corresponds; and
- combining intra-coded macroblocks from different inter-coded pictures by performing the steps of:
 - identifying the intra-coded macroblocks included in a next one of the M inter-coded pictures and the macroblock positions within a video picture to which the identified intra-coded macroblocks correspond;
 - recording, each one of the identified intra-coded macroblocks in the one of the N memory locations associated with the macroblock position within a video picture to which the one of the identified macroblocks being recorded corresponds; and
 - repeating steps (i) and (ii) to record an intra-coded macroblock in each one of the N memory locations, the mac-

roblocks recorded in the N memory locations forming the single fully intra-coded video picture.

portion thereof and adapted to move relative to each other to open and close said heating panel with respect to the inner side thereof.

5,778,144

ELECTRIC FAN HEATER

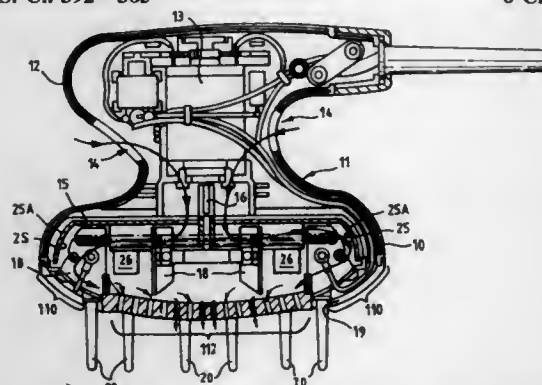
Greg McDougall, 5-C, Taichi Court, 132 Austin Road, Tsim Sha Tsui, Kowloon, Hong Kong

Continuation of Ser. No. 341,513, Nov. 17, 1994. This application Nov. 12, 1996, Ser. No. 748,004

Int. Cl.⁶ A45D 20/10

U.S. Cl. 392—385

6 Claims



1. An electric fan heater comprising a shallow housing having a central longitudinal axis and an apertured base, a cup shaped air impeller mounted to rotate within said housing about said axis with internal blades extending part way towards a periphery of said cup and arranged to draw air through apertures of said base and blow air radially towards an inside peripheral surface of said cup and out of a mouth of said housing, a separate circular member having a central region forming said mouth and a peripheral region extending outwards from said central axis between said central region to opposite said peripheral region of said cup to direct air from said impeller inwards towards said mouth, and electrical heating coils surrounding ends of said blades mounted adjacent and surrounded by said inside peripheral surface to heat said air before it is blown out of said housing.

5,778,145

THERMOFORMING APPARATUS WITH PIVOTABLE HEATING PANEL PORTIONS FOR EMERGENCY MOVING THEREOF

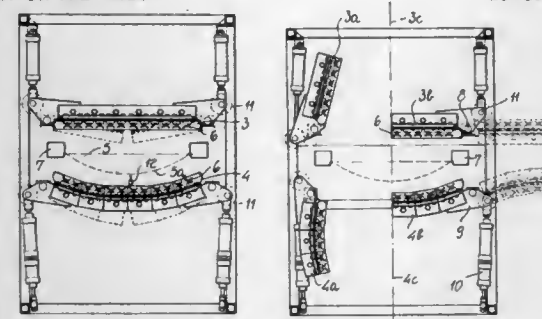
Giorgio De Nichilo, Via Aldo Moro, 49, 20066 Melzo (Milano), Italy

Filed May 21, 1996, Ser. No. 650,975

Claims priority, application Italy, Mar. 27, 1996, M196A0607
Int. Cl.⁶ F27B 9/06; 9/36; H05B 3/06

U.S. Cl. 392—416

13 Claims



1. An oven, in particular for heating stations of thermoforming apparatus, of the type comprising an assembly of heating elements for heating a layer of a plastic material, characterized in that said oven comprises a heating panel including two panel parts arranged head to head adjacent to each other at an inner side of the heating panel, each of said panel parts being articulated at an outer edge

5,778,146

LIGHT BEAM HEATING APPARATUS

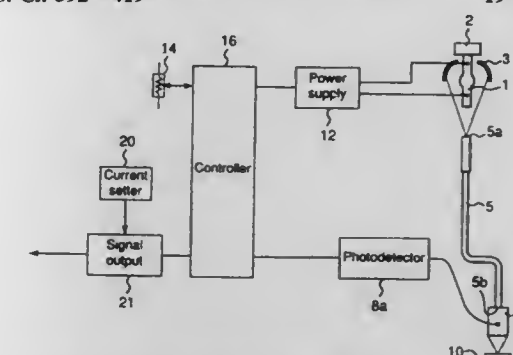
Moriaki Kawasaki, Habikino; Tamotsu Ikeda, Toyonaka; Nobuyuki Haji, Osaka, and Masayoshi Ueda, Ashiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Nov. 9, 1995, Ser. No. 552,475

Claims priority, application Japan, Nov. 15, 1994, 6-280578
Int. Cl.⁶ F21V 7/00

U.S. Cl. 392—419

19 Claims



1. A light beam heating apparatus comprising:

a light source including a lamp;

an optical propagation means for condensing light emitted by said light source and for generating a light beam for irradiating a workpiece;

an output power setter for setting an output power level of said optical propagation means;

a detector for detecting an actual output power of said optical propagation means;

a controller for setting a current value to be supplied to the lamp such that the actual output power detected by said detector becomes substantially equal in value to the output power level set by said output power setter;

a power supply which supplies a current to the lamp in correspondence to the current value set by said controller;

a reference current setter for setting a reference current lower than a rated current of the lamp; and

a signal output means for outputting a signal when the current supplied by said power supply becomes larger than the reference current set by said reference current setter.

5,778,147

DEW PREVENTING DEVICE FOR AIR CONDITIONERS

Yong-Gu Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

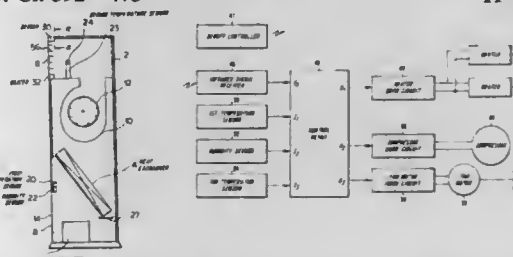
Filed Jul. 31, 1995, Ser. No. 509,575

Claims priority, application Rep. of Korea, Jul. 29, 1994, 94-19274

Int. Cl.⁶ F24F 13/06; 11/02

U.S. Cl. 392—473

11 Claims



1. In an air conditioner including a body for receiving incoming air from a room, a cooling mechanism for cooling the incoming air,

and a discharge port for discharging the cooled air back into the room, the discharge port including grilles, the improvement wherein the air conditioner comprises:

- a heating means for heating the grilles of the discharge port;
- a first temperature sensing means for detecting the temperature of incoming air and providing a first temperature signal in accordance therewith;
- a humidity sensing means for sensing the humidity of the incoming air and providing a humidity signal in accordance therewith;
- a second temperature sensing means for detecting the temperature of cooled air cooled by the cooling mechanism and providing a second temperature signal in accordance therewith; and
- a control means connected to the heating means, the first and second temperature sensing means, and the humidity sensing means for activating the heating means when said first and second temperature signals and said humidity signal indicate the presence of dew-forming conditions at said discharge port, wherein the control means is operable to calculate a dew point of the room temperature on the basis of the first temperature signal and the humidity signal, and activate said heating means when the second temperature is less than the room air dew point.

5,778,148

Patent Not Issued For This Number

5,778,149

DEFUZZIFICATION DEVICE FOR A HIGH-RESOLUTION FUZZY LOGIC CONTROLLER

Herbert Eichfeld, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE95/00946, § 371 Date Jan. 29, 1997, § 102(e) Date Jan. 29, 1997, PCT Pub. No. WO96/04601, PCT Pub. Date Feb. 15, 1996

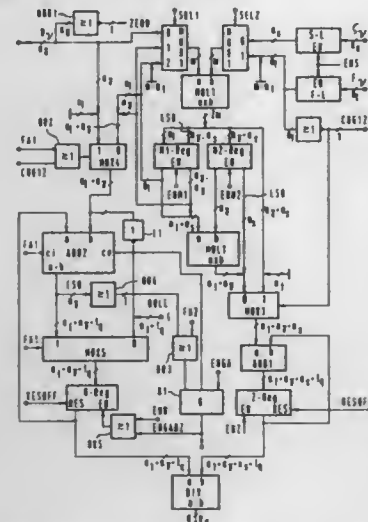
PCT Filed Jul. 18, 1995, Ser. No. 776,423

Claims priority, application Germany, Jul. 29, 1994, 44 27 020.8

Int. Cl. G06G 7/00

U.S. Cl. 395—3

4 Claims



1. A defuzzification device for a fuzzy logic controller which processes membership functions in the form of measurement figures, comprising:

- selecting means for selecting as a sharp output value one of a first maximum value and a last maximum value, said selection depending on selection signals and aggregated regulation weights in a maximum process, said selecting means selecting

a first maximum value of a fuzzy unification set to be defuzzified at which an associated aggregated regulation weight is a maximum, said selecting means selecting a last maximum value of the fuzzy unification set to be defuzzified at which an associated regulation weight is a maximum, said selecting means including means for forming a corresponding activation signal for a knowledge base memory interface,

means for forming a sharp output value in one of:

- a first center of gravity process from center of gravity coordinates and aggregated regulation weights of membership functions and
- a second center of gravity process from center of gravity coordinates, area measurement figures and aggregated regulation weights,

said selecting means including a first adder with downstream counter register, a second adder with downstream denominator register, a multiplier and a divider for the first and second center of gravity process and

the second adder being connected to form the activation signal if defuzzification is being carried out according to the maximum process, said second adder having an input connected to receive the aggregated regulation weights, depending on the first selection signal, said second adder having an output connected to an input of a first multiplexer,

an inverter-unit having an input connected to receive the aggregated regulation weights and having an output connected to a further input of the first multiplexer, the output of the first multiplexer being wired to the input of the denominator register downstream thereof, whose output is fed back to a further input of the second adder,

one of the selection signals being fed to a carry input of the second adder in inverted form and to a selection input of the first multiplexer in non-inverted form,

a first OR circuit connected to receive bit by bit the number of least significant bits, which corresponds to the word width of the aggregated regulation weights, with the second selection signal, and the output of the first OR circuit being connected to a first input of an AND circuit, whose second input is connected to a carry output of the second adder, whose third input has an activation signal applied to it and whose output supplies the activation signal for the knowledge base memory interface, and

a second OR circuit having a first input wired to the activation signal for the knowledge base memory interface, whose second input is wired to a further activation signal, and whose output is wired to an activation input of the denominator register.

5,778,150

FLEXIBLE PROCEDURAL ATTACHMENT TO SITUATE REASONING SYSTEMS

Hoi Yeung Chan, Stamford, Conn.; Benjamin Nathan Grosof, and David William Levine, both of New York, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

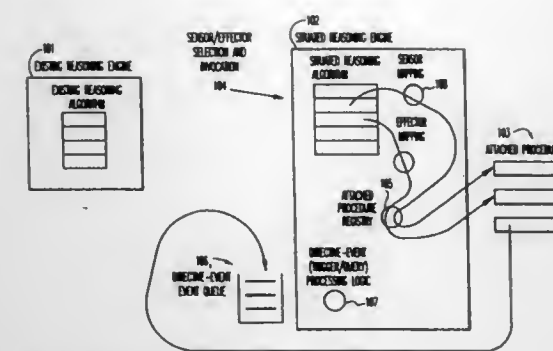
Filed Jul. 1, 1996, Ser. No. 673,880

Int. Cl. G06F 15/18

U.S. Cl. 395—10

27 Claims

1. A method for situating a given automated reasoning system, that given reasoning system having means for storing premises as knowledge representation expressions, each said knowledge representation expression including more than two argument positions to enable mapping from said more than two argument positions and concluding knowledge representation expressions during the process of reasoning, and evaluating or testing knowledge representation expressions during the process of reasoning, and responding to delivered directive events that request, explicitly or implicitly, the reasoning system to perform reasoning;



the method comprising:

- providing the given automated reasoning system;
- providing a set of attached procedures, whose procedural interfaces pass knowledge representation expressions of a kind compatible with the knowledge representation expressions of the given automated reasoning system;
- registering the names of, and explicit or implicit procedural interfaces of the attached procedures, making the situated reasoning system aware of the procedural interfaces in preparation for use of those attached procedures;
- providing a specified partial mapping between knowledge representation expressions and the attached procedures, such partial mapping comprising a set of mapping elements, each such element including:
- a knowledge representation expression including more than two argument positions, and a name of an attached procedure; and
- invoking the attached procedures during the process of situated reasoning, through use of said partial mapping.

5,778,151

METHOD AND CONTROL DEVICE FOR CONTROLLING A MATERIAL-PROCESSING PROCESS

Otto Gramckow, Erlangen; Thomas Martinetz; Thomas Poppe, both of München, and Günter Sörgel, Nürnberg, all of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

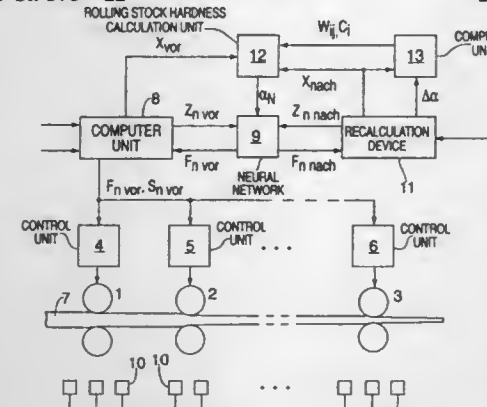
Filed May 16, 1994, Ser. No. 242,934

Claims priority, application European Pat. Off., May 17, 1993, 93108016

Int. Cl. G06F 15/18

U.S. Cl. 395—22

23 Claims



1. A method for controlling the processing of a material in a regulated system having at least one process cycle, the method comprising:

- performing a preliminary adjustment of the regulated system at a beginning of each process cycle of the material-processing process as a function of a precalculated process parameter, wherein precalculation of said process parameter includes a material property that is relevant to said material-processing process and is also dependent on a plurality of state variables of said material;

applying said plurality of state variables to a neural network prior to the beginning of the process cycle, said neural network including variable network parameters;

forming in said neural network a prediction value for said material property at an output of said neural network;

measuring said process parameter during said process cycle;

determining an actual value of said material property after said process cycle by recalculation;

adaptively changing said variable network parameters as a function of a deviation between said prediction value and the actual value of the material property in order to reduce said deviation.

5,778,152

TRAINING METHOD FOR NEURAL NETWORK

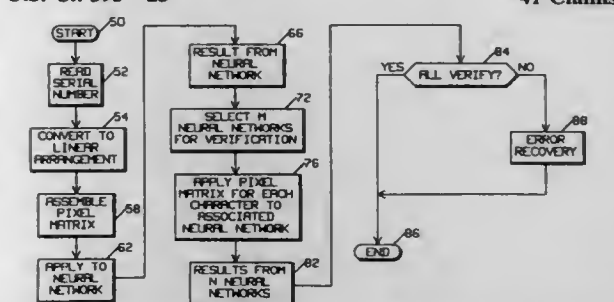
Toru Oki, Kunitachi, Japan, and Philip A. Paoella, Fort Lee, N.J., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Park Ridge, N.J.

Continuation-in-part of Ser. No. 955,526, Oct. 1, 1992, abandoned. This application May 13, 1994, Ser. No. 242,387

Int. Cl. G06E 1/00; 3/00

U.S. Cl. 395—23

41 Claims



1. A method for training a neural network to recognize a symbol represented by a binarized input array P(K) where K is a number of values in said input array, comprising the steps of:

- providing an input layer, an output layer and an intermediate layer of said neural network, said intermediate layer having three nodes;
- initializing an array of weights $W_1(K)$ relating to the input layer with one of said three nodes with excitatory weight values when $P(K)=1$ and inhibitory weight values when $P(K)=0$, with $P(K)$ containing a representation of a character to be verified;
- initializing an array of weights $W_2(K)$ relating the input layer with another of said three nodes with inhibitory weight values when $P(K)=1$ and excitatory weight values when $P(K)=0$, with $P(K)$ containing a representation of a character to be verified;
- initializing an array of weights $W_3(K)$ relating the input layer with another of said three intermediate nodes with random noise; and,
- applying a training sequence to said neural network.

5,778,153

NEURAL NETWORK UTILIZING LOGARITHMIC FUNCTION AND METHOD OF USING SAME

Shay-Ping Thomas Wang, Long Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 176,601, Jan. 3, 1994, abandoned.

This application Jan. 8, 1997, Ser. No. 780,532

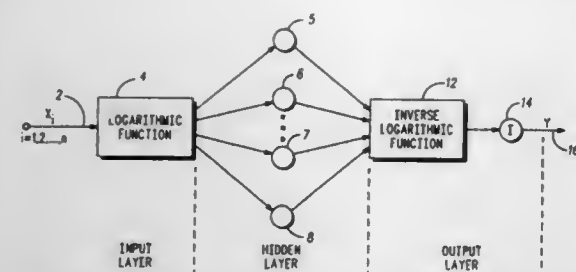
Int. Cl. G06F 15/18

U.S. Cl. 395—24

53 Claims

1. A neural network for generating at least one network output signal in response to a plurality of network input signals, said neural network comprising:

- a logarithmic function circuit generating a plurality of logarithmic input signals in response to said network input signals;



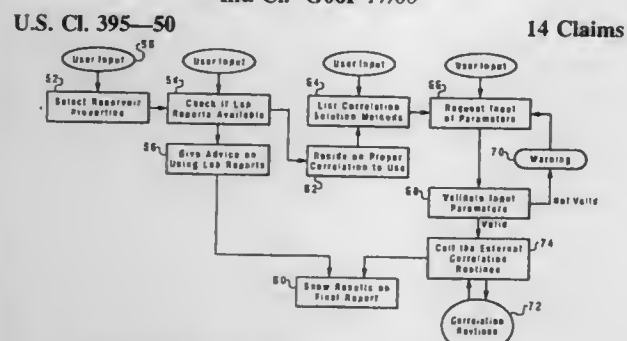
a plurality of neurons for generating a plurality of neuron output signals, each of said neurons generating a neuron output signal in response to said plurality of logarithmic input signals;

an inverse-logarithmic function circuit for generating a plurality of inverse-logarithmic output signals in response to said neuron output signals; and

a summing circuit for summing said inverse-logarithmic output signals to generate said at least one network output signal.

5,778,154
ADVISOR SYSTEM AND METHOD FOR DETERMINING RESERVOIR PROPERTIES
Russell L. Bone; Meri Lynn Gobran, and Tsai-Bao Kuo, all of Plano, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 1, 1993, Ser. No. 97,643
Int. Cl.⁶ G06F 17/00



1. A method for using an advisor system to determine reservoir properties of a site, comprising the steps of:

allowing user selection from a menu of choices of at least one reservoir property to be determined pertaining to the site;

receiving input of field operation conditions pertaining to the site into the advisor system;

determining whether or not a Pressure-Volume-Temperature laboratory report is available to the advisor system corresponding to the selected at least one reservoir property;

upon said determination that said report is available, indicating to said user where the at least one reservoir property is located in the report;

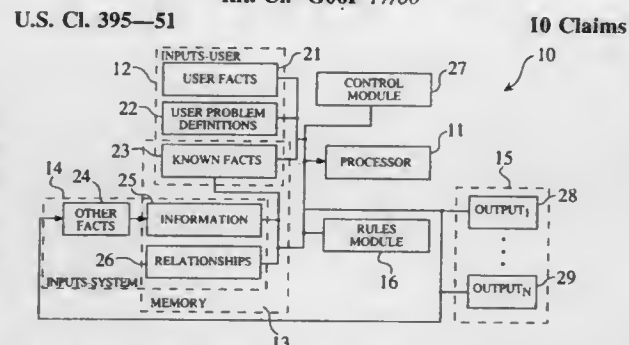
upon said determination that said report is not available, selecting at least one applicable correlation method for determining the at least one reservoir property, and when more than one method is selected, allowing the user to further select which of the applicable correlation methods to use;

calculating the at least one reservoir property using the selected correlation method; and

outputting the calculated value of the at least one reservoir property using the selected correlation method.

5,778,155
METHOD AND APPARATUS FOR SELECTING AMONG COMPETING FACTS TO ACHIEVE THE DESIRED CALCULATION
Daniel W. Hepner, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 10, 1995, Ser. No. 541,843
Int. Cl.⁶ G06F 17/00



8. A system for selecting among competing facts to solve a problem, comprising:

a processor;

a memory for providing storage for modules that provide said processor with known facts, information necessary as part of a problem solving process, definitions of relationships among information that are applied during said problem solving process, and other facts that are generated during earlier steps of said problem solving process;

a user input module includes means for user input of user facts, and means for user input of a problem definition, such that said processor is configured to solve a particular problem;

a system input module;

an output module; and

a rules module for examining all facts and for assigning scores to each fact based upon predetermined criteria, wherein said rules module comprises means for applying decision-making rules in any order to determine how said processor processes said inputs, wherein said rules comprise the following:

assigning a lower score to facts produced by combining an input and a fact which was based on that particular input;

assigning a lower score to a fact based on a single input and assigning a higher score to a fact based on more than one input; and

assigning a lower score to a fact based on a longer series of relationships and assigning a higher score to a fact based on a shorter series of relationships.

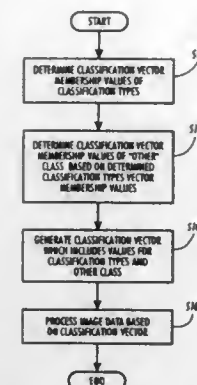
5,778,156
METHOD AND SYSTEM FOR IMPLEMENTING FUZZY IMAGE PROCESSING OF IMAGE DATA
Stuart A. Schweid, Henrietta; Thomas R. Beikirch, Rochester, and Leon C. Williams, Walworth, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 8, 1996, Ser. No. 646,608
Int. Cl.⁶ G06K 9/62; G06F 9/44

1. A method for electronically image processing a pixel belonging to a set of digital image data with respect to a membership of the pixel in a plurality of image classes and an other class, comprising the steps of:

(a) receiving a set of digital image data including the pixel;

(b) determining a membership value for the pixel for each image class and a membership value for the pixel for the other class, each image class being defined by a set of heuristic rules, the sets being non-mutually exclusive, the membership value for an image class being independent of the other membership values for the image classes, the membership value for the other class being dependent on the membership values of the image classes;



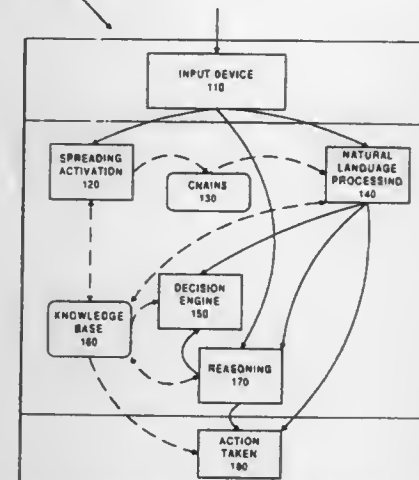
(c) generating a classification vector for the pixel based on the determination in said step (b); and

(d) image processing the pixel based on membership values in the classification vector of the pixel.

5,778,157
SYSTEM AND METHOD FOR EXPERT SYSTEM ANALYSIS USING QUIESCENT AND PARALLEL REASONING AND SET STRUCTURED KNOWLEDGE REPRESENTATION
Robert K. Oatman, La Honda; Peter J. Herrera, Sunnyvale; Remy D. Sanouillet, Mountain View, and Charles E. Zimmerman, San Carlos, all of Calif., assignors to YY Software Corporation, Palo Alto, Calif.

Filed Jun. 17, 1996, Ser. No. 666,887
Int. Cl.⁶ G06F 15/18

U.S. Cl. 395-51



1. An expert system for generating an output representation in response to at least one input, comprising:

a knowledge base that stores a plurality of linguistic and domain specific facts and statements from which are derived a plurality of associated concepts, each fact having at least one possible value;

an input module for receiving a plurality of user inputs:

a spreading activation module, coupled to the knowledge base and the input module to receive each input, and that generates at least one chain of the concepts to relate each input by selectively and iteratively associating each input with a plurality of facts and statements and applying constraints to the concepts associated with facts;

a decision module, coupled to the knowledge base and the input module for determining a value of fact from a plurality of possible values for a fact;

a natural language processing module, coupled to the knowledge base and spreading activation module, for evaluating linguistic

statements relative to facts within the knowledge base as the facts have been constrained by the spreading activation module;

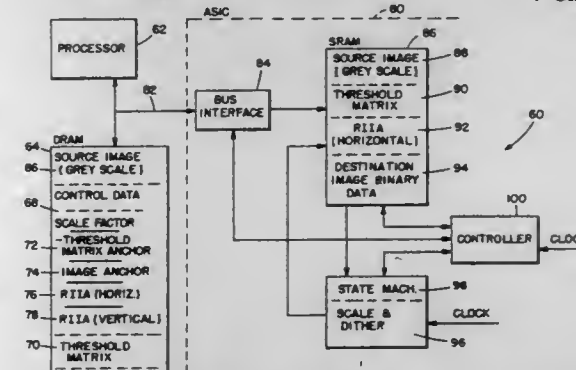
a reasoning module, coupled to the knowledge base and the decision module, for automatically executing the statements to update the facts in the knowledge base in response to changes in the value of other facts in the knowledge base; and

an output module coupled to the spreading activation module to receive the chains of concepts, and coupled to the knowledge base, to select one or more of the chains of concepts related to each input, and to generate an output representation of each input by determining the value for facts associated with the selected chains of concepts.

5,778,158
HIGH SPEED SYSTEM FOR IMAGE SCALING
David B. Fujii; Robert A. Rust, both of Boise, Id., and David Herschberger, Golden, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 4, 1996, Ser. No. 610,311
Int. Cl.⁶ G06K 15/00

U.S. Cl. 395-102



1. A scaling system for converting a source image of source pixels arranged in a first resolution of rows and columns, to a destination image of destination pixels arranged in a second resolution of rows and columns, said scaling system comprising:

memory means for storing at least a portion of a row of said source pixels, scaling data and a relative index input array (RTIA) comprising a single index bit for each column of said destination image, each index bit enabling a source pixel value to be identified for scaling of said source image to said second resolution;

scale logic means responsive to each index bit and said source pixels, to associate at least one said source pixel with each column of said destination image.

5,778,159
DATA OUTPUTTING WITH CONTROL OF NUMBER OF GRADATIONS EXPRESSED
Nobuyasu Ito, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

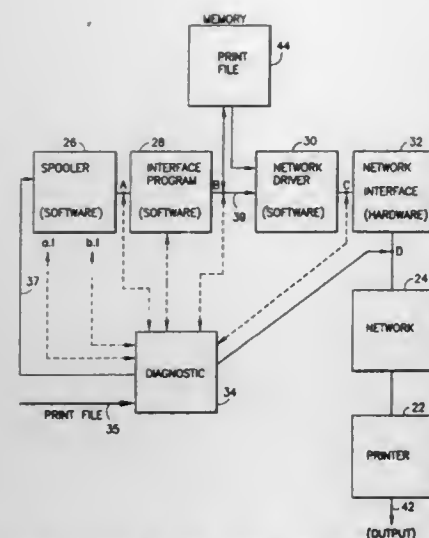
Continuation of Ser. No. 741,072, Aug. 6, 1991, abandoned.
This application Aug. 4, 1994, Ser. No. 285,528
Claims priority, application Japan, Aug. 8, 1990, 2-208056
Int. Cl.⁶ G06K 15/00; H04N 1/21; 1/40

U.S. Cl. 395-109

7. An output method of generating, from first information input from an information processing apparatus, second information and for outputting the second information, said method comprising the steps of:

distinguishing from each other binary data and multivalue data included in the input first information in mixture and controlling a memory to store the binary data and the multivalue data distinguishably;

1. A method of combining a first digital generated image and a prestored digital image, comprising the steps of:



processing module in said chain, said diagnostic procedure responding to said diagnostic indicator by causing an output of said selected data processing module to be stored in a memory test file; and

determining if said memory test file exists and, if yes, further checking operations of data processing modules between said selected data processing module and said output and, if no, checking operations of data processing modules between said selected data processing module and said input.

5,778,171

PROCESSOR INTERFACE CHIP FOR DUAL-MICROPROCESSOR PROCESSOR SYSTEM

Mizanur Mohammed Rahman, Cupertino; Fred C. Sabernick, Sunnyvale; Jeff A. Sprouse, Mountain View; Martin Jiri Grosz, Santa Clara; Peter Fu, Sunnyvale, and Russell Mark Rector, Oakland, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

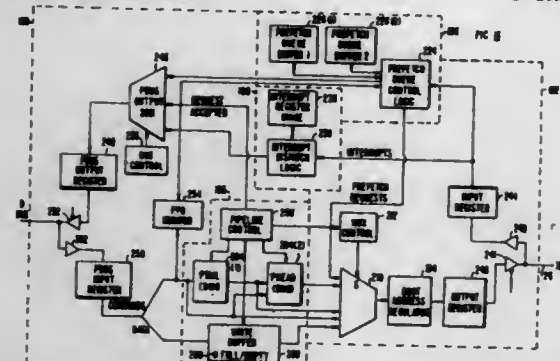
Division of Ser. No. 88,562, Jul. 6, 1993, Pat. No. 5,435,001.

This application Apr. 21, 1995, Ser. No. 426,335

Int. Cl.⁶ G06F 11/00; 12/00

U.S. Cl. 395—185.06

3 Claims



1. A boot address translation apparatus, wherein a microprocessor has an address space and requests instructions from the address space by issuing a request over a bus including an address, which is in the address space, of a desired instruction, wherein, following a microprocessor reset, the microprocessor requests a first boot instruction which is pointed to by a fixed address, and wherein the fixed address comprises a plurality of address bits, the apparatus comprising:

- a boot detector, which outputs a booting signal following a microprocessor reset;
- an address blocking means, responsive to said booting signal and coupled to the bus, for blocking a portion of said address bits of the fixed address;
- an address substitution means, responsive to said booting signal and coupled to the bus, for substituting a substituted plurality

of address bits for said blocked address bits, when the fixed address does not point to a physical address and said booting signal is asserted, said substituted plurality of address bits, when combined with unblocked address bits of the fixed address, forming a physical address in an instruction memory; and

means for disabling said address substitution means after the microprocessor is configured to only make requests from valid addresses.

5,778,172

ENHANCED REAL-TIME TOPOLOGY ANALYSIS SYSTEM OR HIGH SPEED NETWORKS

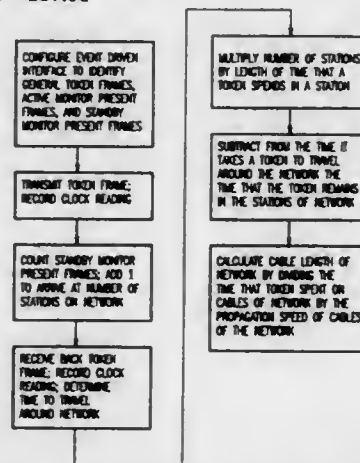
Christopher G. Riedle, Raleigh, N.C., and Paul C. Hershey, Manassas, Va., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed Apr. 22, 1996, Ser. No. 635,811

Int. Cl.⁶ G06F 11/30

U.S. Cl. 395—187.01

2 Claims



1. A method for determining the total length of cable on a token ring network, said token ring network periodically transmitting a token which, on an as needed basis, is captured by a station on said network in order for said station to transmit data on said network, comprising the steps of:

- determining the length of time that said token spends on the cables of said token ring network as said token makes a complete rotation around said token ring network;
- calculating said length of time that said token spends on the cables of said token ring network as a function of the propagation speed per unit length of cable of said token ring network; and
- determining the presence of a security breach on said network by comparing said cable length with the authorized length of cable on said network.

5,778,173

MECHANISM FOR ENABLING SECURE ELECTRONIC TRANSACTIONS ON THE OPEN INTERNET

Jitendra Apte, Woodbridge, N.J., assignor to AT&T Corp., Middletown, N.J.

Filed Jun. 12, 1996, Ser. No. 664,019

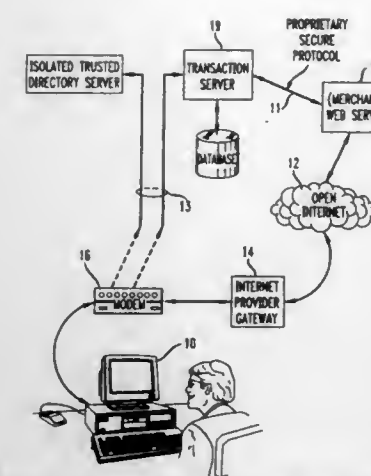
Int. Cl.⁶ H04K 1/00

U.S. Cl. 395—187.01

31 Claims

1. A method for performing a transaction initiated over an open communication network between a user and a remotely located server, comprising the steps of:

- a. receiving a transaction identification number from the remotely located server over the open network;
- b. automatically discontinuing communication between said user and said remotely located server responsive to a request from said user to complete the transaction;



c. automatically establishing communication between said user and a transaction server responsive to the request from said user to complete the transaction, said transaction server being operatively coupled to said user and said remotely located server over a communication network isolated from said open network contemporaneous with step (b) and substantially seamless to said user;

d. transmitting said transaction identification number to said transaction server over said communication network;

e. after the transaction server confirms validity of the transaction identification number, transmitting over said communication network, in response to a request from said transaction server, a transaction authorization number to said transaction server to complete the transaction.

5,778,174

METHOD AND SYSTEM FOR PROVIDING SECURED ACCESS TO A SERVER CONNECTED TO A PRIVATE COMPUTER NETWORK

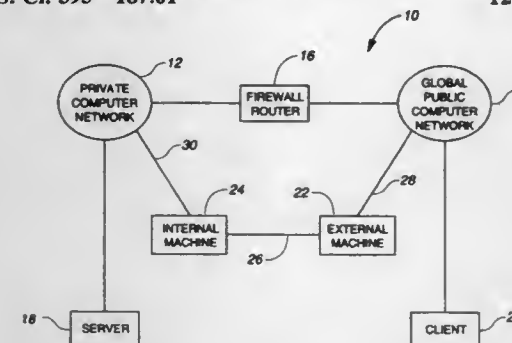
Michael Eugene Cain, Arvada, Colo., assignor to U S West, Inc., Englewood, Colo.

Filed Dec. 10, 1996, Ser. No. 762,761

Int. Cl.⁶ G06F 11/00

U.S. Cl. 395—187.01

12 Claims



1. A system for providing secured access to a server connected to a private computer network protected by a router acting as a firewall, the system comprising:

- an external machine located outside the firewall router, the external machine operated by an outside software program and barricaded such that only one network-aware application is run on the external machine;
- an external communication channel established between the external machine and a client via a global public computer network;
- an internal machine located inside the firewall router, the internal machine operated by an inside software program;

an internal communication channel established between the internal machine and a server via the private computer network; and

a dedicated private communication channel connected between the external machine and the internal machine.

5,778,175

METHOD IMPLEMENTED BY A COMPUTER NETWORK ADAPTER FOR AUTONOMOUSLY ADJUSTING A TRANSMIT COMMENCEMENT THRESHOLD VALVE UPON CONCURRENCE OF AN UNDERFLOW CONDITION

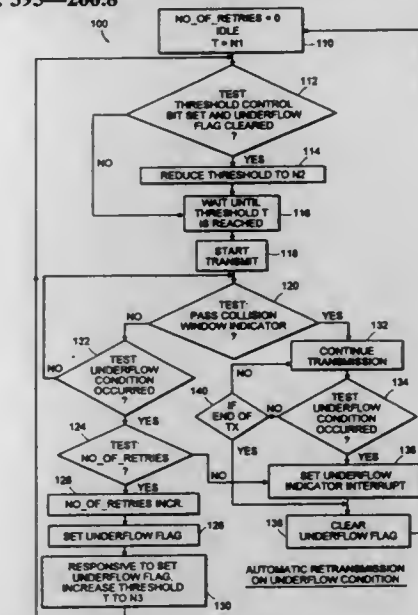
Gideon Paul, Gillo Jerusalem; Aviad Werthimer, Jerusalem, and Simoni Ben-Michael, Givat Zeev, all of Israel, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 22, 1995, Ser. No. 577,575

Int. Cl.⁶ G06F 15/176

U.S. Cl. 395—200.8

34 Claims



5,778,176

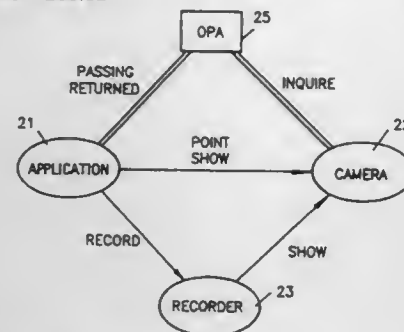
SYSTEM FOR AUTOMATICALLY TRANSFERRING ACCESS AUTHORIZATION OF THIRD NODE TO FIRST NODE EVEN THROUGH FIRST NODE IS NOT PREVIOUSLY AUTHORIZED TO ACCESS FUNCTION OF SECOND NODE IN COMPUTER NETWORK

Kurt Geihs, Bensheim; Ulf Hollberg, Wiesloch; Herbert Eberle, and Reinhard Heite, both of Heidelberg, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 385,400, Feb. 7, 1995, abandoned, which is a continuation of Ser. No. 900,029, Jun. 17, 1992, abandoned. This application Oct. 8, 1996, Ser. No. 727,208
Claims priority, application European Pat. Off., Jun. 21, 1991, 91110207

Int. Cl.⁶ G06F 9/44; 13/38

U.S. Cl. 395—200.12



11 Claims

1. Computer network comprising:
at least a first, a second, and third computer nodes interconnected for communication
computer means for performing at least one function in the second node,
means for the third node to access the function of the second node
computer means for performing at least one function in the third node which requires accessing the second node,
means for the first node to access the function of the second node, and
agent means for automatically storing an access authorization of the first node to access the second node and for automatically storing a transfer from the first node to the third node of access authorization to provide access for the second node to access the function of the third node to respond to the access of the first node to the function of the second node.

5,778,177

INTERACTIVE SCANNING DEVICE OR SYSTEM

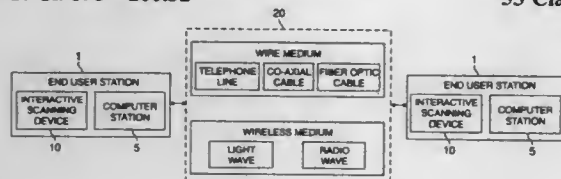
Kaveh Azar, Westwood, Mass., assignor to AT&T Corp., New York, N.Y.

Continuation of Ser. No. 752,970, Dec. 2, 1996, abandoned, which is a continuation of Ser. No. 314,116, Sep. 28, 1994, abandoned. This application Sep. 18, 1997, Ser. No. 933,198

Int. Cl.⁶ H04N 1/00

U.S. Cl. 395—200.32

53 Claims



1. An interactive scanning device, comprising:
means for scanning an object or surface to obtain information about the object or surface;
means for interactively displaying and changing the physical characteristics of a three-dimensional image of the object or surface from the information; and

means for interfacing with and transmitting the changed image and/or information about the changed image over a communication medium.

5,778,178

METHOD AND APPARATUS FOR ENABLING REAL-TIME BI-DIRECTIONAL TRANSACTIONS ON A NETWORK

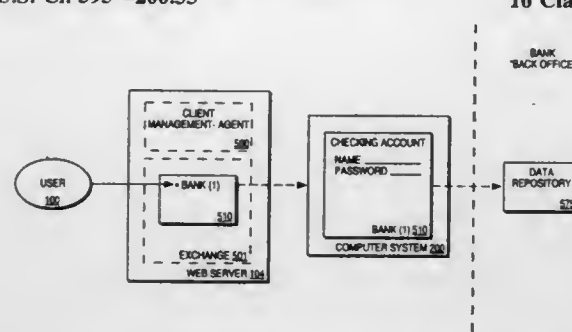
Lakshmi Arunachalam, 222 Stanford Ave., Menlo Park, Calif. 94025

Filed Aug. 5, 1996, Ser. No. 700,726

Int. Cl.⁶ G06F 13/38

U.S. Cl. 395—200.33

16 Claims



1. An object router on a World Wide Web, said object router comprising:
means for associating an object identity with information entries and attributes, wherein the object identity represents a networked object;
means for storing said information entries and said attributes in a virtual information store; and
means for assigning a unique network address to said object identity.

5,778,179

SYSTEM FOR FLEXIBLE DISTRIBUTED PROCESSING AND TRANSACTION PROCESSING SUITABLE FOR NESTED TRANSACTION

Tatsunori Kanai, and Toshio Shiraikihara, both of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 997,445, Dec. 28, 1992, abandoned.

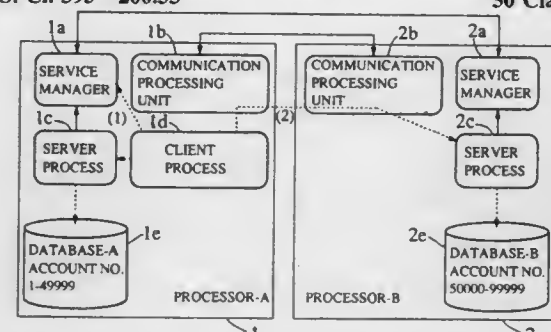
This application Apr. 7, 1997, Ser. No. 827,895

Claims priority, application Japan, Dec. 26, 1991, 3-344685

Int. Cl.⁶ G06F 15/163

U.S. Cl. 395—200.33

50 Claims



1. A method of distributed processing among processors having a plurality of server processes for providing services and a service manager for managing the services provided by the server processes, the method comprising the steps of:

5,778,181

ENHANCED VIDEO PROGRAMMING SYSTEM AND METHOD FOR INCORPORATING AND DISPLAYING RETRIEVED INTEGRATED INTERNET INFORMATION SEGMENTS

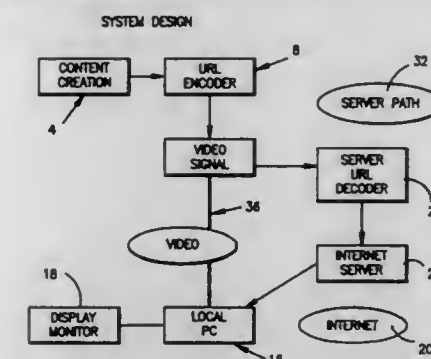
Jack D. Hidary, New York, and Craig Ullman, Brooklyn, both of N.Y., assignors to ACTV, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 613,144, Mar. 8, 1996, abandoned. This application Mar. 14, 1996, Ser. No. 615,143

Int. Cl.⁶ G06F 13/00; H04N 5/50

U.S. Cl. 395—200.48

23 Claims



1. A system for presenting integrated television programming and corresponding related Internet information segments obtained from Web sites on the Internet, the system comprising:

- a means for receiving programming, wherein the programming contains a video signal, an audio signal and one or more uniform resource locators, wherein the uniform resource locators specify one or more Internet addresses of the information segments which relate specifically to the content of the video and audio signals of the programming;
a means for decoding, connected to the receiving means, the uniform resource locators to determine the specified Internet addresses;
a controller means, connected to the decoding means, for interpreting the uniform resource locators;
a web browser, connected to the decoding means and the controller means, for sending message requests to specific Internet sites located at the Internet addresses corresponding to the uniform resource locators and consequently receiving the one or more requested Internet information segments residing at the determined Internet addresses, the browser retrieves the requested Internet information segments under the direction and control of the controller means; and
a display means, connected to the controller and receiving means, for presenting the video and audio signals concurrently with the Internet information segments;
whereby the Internet information segments are synchronized to the video signal and displayed at predetermined times during the program.

5,778,182

USAGE MANAGEMENT SYSTEM

Deborah Ann Cathey, Jersey City, N.J.; William Chau, New York, N.Y.; Krishna Ramachandran Mathis, Edison, N.J.; Paul Nema, Long Island City, N.Y., and Jonathan Yang, Bridgewater, N.J., assignors to AT&T Corp., Middletown, N.J.

Filed Nov. 7, 1995, Ser. No. 553,117

Int. Cl.⁶ H04N 7/173

U.S. Cl. 395—200.49

22 Claims

1. In a usage management system for tracking a sequence of events generated by a plurality of applications in response to usage activities of users of an interactive system, a usage processing system, comprising:

- a usage application server adapted to receive a plurality of event records generated in response to said usage activities of said users of said interactive system, said application server further

registering each of the services provided by said plurality of server processes of the processors to the service manager in correspondence with an executability condition for determining whether the respective server process is capable of executing a particular service;

transmitting an inquiry concerning a desired service to be received by a client process to the service manager on one of the processors;

selecting one of the server processes which is providing the desired service indicated by the inquiry transmitted at the transmitting step and which is determined to be a server process which is capable of being used to execute the desired service according to the executability condition registered at the service manager on said one of the processors; and
requesting the desired service from the client process to said one of the server processes selected at the selecting step.

5,778,180

MECHANISM FOR REDUCING DATA COPYING OVERHEAD IN PROTECTED MEMORY OPERATING SYSTEMS

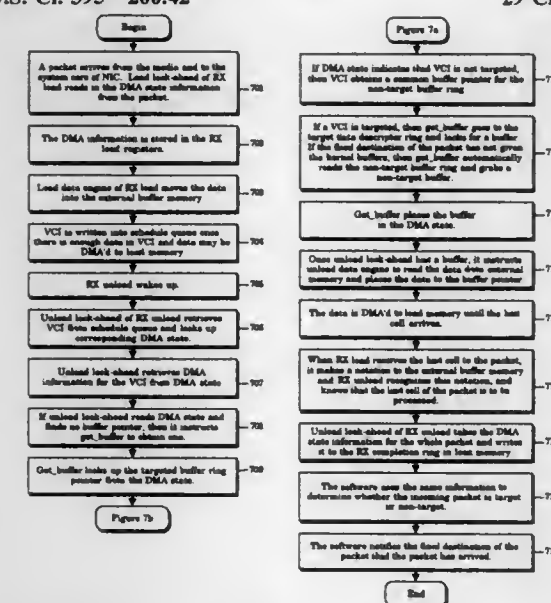
Denton E. Gentry, Palo Alto, and Rasoul M. Oskony, Fremont, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Nov. 6, 1995, Ser. No. 554,608

Int. Cl.⁶ G06F 13/14

U.S. Cl. 395—200.42

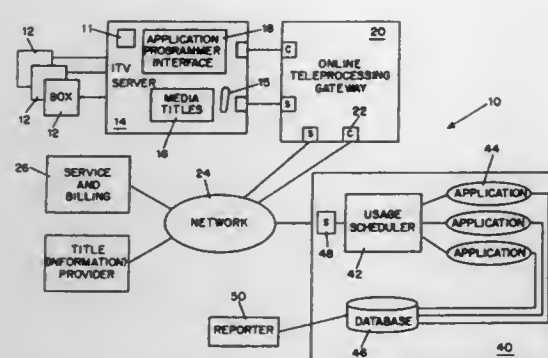
29 Claims



1. A method for reducing data copying overhead comprising the steps of:

receiving a packet to be routed to a final destination, said packet having routing information which includes direct memory access information; and

writing data of said packet to a private buffer associated with the final destination if said direct memory access information refers to a target buffer descriptor as being provided for said packet, said target buffer descriptor pointing directly to a private buffer of said packet's final destination.



adapted to track the time of occurrence of each one of said generated events, wherein said event records contain at least one domain identification, each domain representing a logical location corresponding to an application, and said usage application server tracking the time of occurrence of each domain; and
a database coupled to said usage application server adapted to store data corresponding to an identity of said generated events and corresponding times of occurrence.

5,778,183

APPARATUS AND METHOD OF AUTOMATICALLY TRANSMITTING EVENT-RELATED INFORMATION TO A USER OF A NETWORK PRINTING SYSTEM

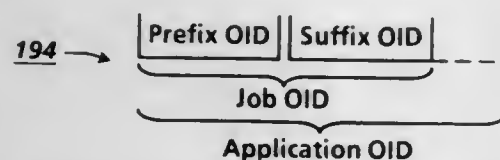
Joseph L. Filion, Fairport, N.Y.; Charles F. Evans, Norwood, Mass.; Kenneth E. Rohlfing, Honeoye Falls, N.Y.; Diane S. Rogerson, Greece, N.Y.; Kitty S. Koul; Mei-Yuei Lee, both of Pittsford, N.Y., and Craig W. Jacobs, Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 12, 1995, Ser. No. 489,347

Int. Cl.⁶ G06F 15/16

U.S. Cl. 395—200.53

5 Claims



1. In a network document processing system, a status reporting system using simple network management protocol ("SNMP") to report the occurrence of a selected event relative to the document processing system, comprising:

- (a) a first SNMP unique identifier;
- (b) an agent communicating with the network, the first SNMP being made accessible to said agent;
- (c) a document processing server communicating with the network;
- (d) a client communicating with the network, said client,
 - (i) registering at least an SNMP trap identifier with said agent, the SNMP trap identifier being associated with the selected event, and
 - (ii) transmitting a job written in a page description language ("PDL") to said document processing server, wherein a second SNMP unique identifier is embedded by said client in a PDL file representative of the job, and said server, upon receiving the job, extracts the second SNMP unique identifier from the PDL file representative of the job for storage in memory;
- (e) in response to the occurrence of the selected event, said document processing server causes the first and second SNMP unique identifiers to be combined for forming the SNMP trap identifier; and
- (f) in response to said combination, said agent transmits a copy of the SNMP trap identifier to said client for notifying said client of the occurrence of the selected event.

5,778,184 SYSTEM METHOD AND COMPUTER PROGRAM PRODUCT FOR PROCESSING FAULTS IN A HIERARCHICAL NETWORK

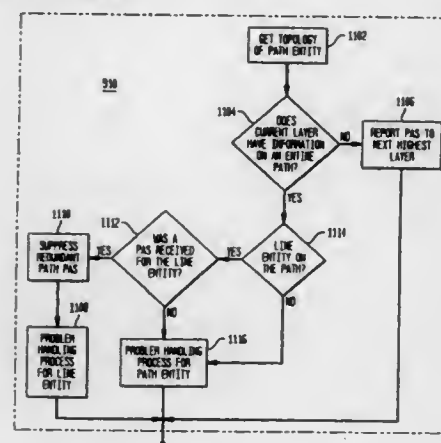
Curtis Brownmiller, Richardson; Michael Bencheck, Garland; Minh T. Tran, Plano; Robert Branton, Farmers Branch; Mark DeMoss, The Colony, and Steve Landon, Richardson, all of Tex., assignors to MCI Communications Corporation, Washington, D.C.

Filed Jun. 28, 1996, Ser. No. 673,271

Int. Cl.⁶ G06F 11/30

U.S. Cl. 395—200.54

15 Claims



1. A method for analyzing the performance of a hierarchical network, the network including a path entity that can include one or more line entities, the method comprising the steps of:

- (1) receiving a first problem alert signal from a monitoring point associated with a network facility;
- (2) determining whether the first problem alert signal identifies a path entity or a line entity of the network facility;
- (3) determining whether a second problem alert signal identifies a line entity of the path entity when the first problem alert signal identifies the path entity; and
- (4) initiating a problem handling process for the line entity and suppressing the first problem alert signal when a second problem alert signal identifies a line entity of the path entity.

5,778,185

METHOD FOR FINDING A RESOURCE IN A SCALABLE DISTRIBUTED COMPUTING ENVIRONMENT

Daniel P. Gregerson, Half Moon Bay; David R. Farrell, San Francisco; Sunil S. Gaitonde; Ratinder P. Ahuja, both of Daly City; Krish Ramakrishnan, Union City; Muhammad Shafiq, El Granada, and Ian F. Wallis, Cupertino, all of Calif., assignors to Peerlogic, Inc., San Francisco, Calif.

Continuation of Ser. No. 519,434, Aug. 28, 1995, abandoned, which is a division of Ser. No. 293,073, Aug. 19, 1994, Pat. No. 5,526,358. This application Jul. 21, 1997, Ser. No. 897,861

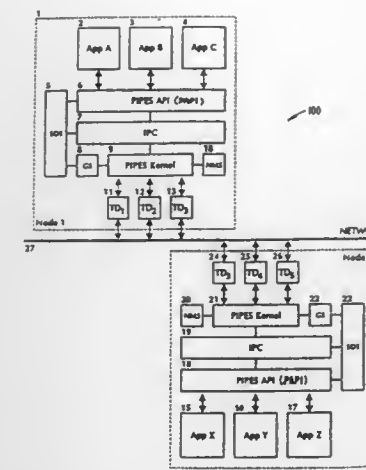
Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—200.56

7 Claims

1. A method for satisfying a request for a requested resource, the request made by a node in a scalable system interconnecting a plurality of nodes on a digital network, at least one of the plurality of nodes being associated with one or more resources, each resource having an active state in which the resource is available to other nodes and an inactive state in which the resource is not available, each resource having a name the method comprising the steps of:

- storing the request if the requested resource is not available;
- automatically identifying by the node a resource that becomes available when the resources switches from the inactive to the active state; and
- automatically informing the node that the requested resource has become available if the resource matches the requested resource;



such that before the node makes the request, the scalable system can be unaware of the name of the requested resource.

5,778,186

DATA SERVING APPARATUS WITH ACCESS REQUESTS QUANTIZED INTO VARIABLE SIZE DATA AND TIME QUANTIZATION UNITS

Koichi Funaya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

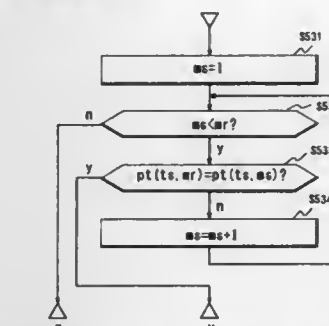
Filed Jan. 31, 1996, Ser. No. 594,446

Claims priority, application Japan, Jan. 31, 1995, 7-034560

Int. Cl.⁶ H04N 7/173; G06F 13/14

U.S. Cl. 395—200.61

23 Claims



1. A data delivery server apparatus to which a plurality of terminal equipments are connected, comprising:
storage means for storing a plurality of data, each of which comprises one or more data blocks;

quantizing means for receiving an access request as a pre-quantization access request from each of the plurality of terminal equipments, the pre-quantization access request requesting a data stored in said storage means, and for quantizing said access request in units of at least one of data region quantization units and time region quantization units to produce one or more post-quantization access requests associated with one or more data blocks of said data, wherein at least one of said data region quantization unit and said time region quantization unit is variable in size based on a number of said pre-quantization access requests;

reducing means for producing a collective access request from said post-quantization access requests;
access means for accessing said storage means in accordance with each of said collective access requests to read out the corresponding data block from said storage means; and
delivery means for delivering the data block to the plurality of terminal equipments which have issued said pre-quantization access requests corresponding to said each collective access request.

5,778,187

MULTICASTING METHOD AND APPARATUS

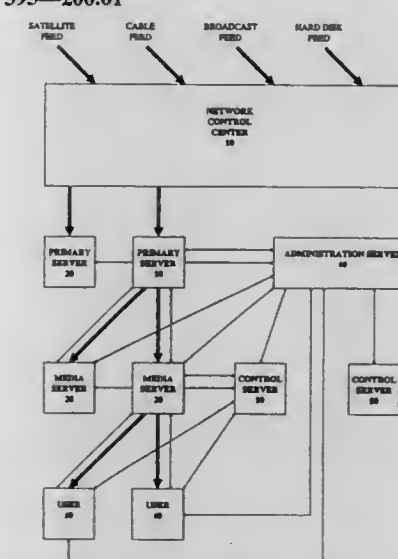
Antonio M. Monteiro, and James F. Butterworth, both of New York, N.Y., assignors to Netcast Communications Corp., New York, N.Y.

Filed May 9, 1996, Ser. No. 644,072

Int. Cl.⁶ H04L 12/00

U.S. Cl. 395—200.61

51 Claims



1. A method for transmitting message packets over a communications network comprising the steps of:

converting a plurality of streams of audio and/or visual information into a plurality of streams of addressed digital packets complying with the specifications of a network communication protocol,

for each stream, routing such stream to one or more users, controlling the routing of the stream of packets in response to selection signals received from the users, and monitoring the reception of packets by the users and accumulating records that indicate which streams of packets were received by which users, wherein at least one stream of Rackets comprises an audio and/or visual selection and the records that are accumulated indicate the time that a user starts receiving the audio and/or visual selection and the time that the user stops receiving the audio and/or visual selection.

5,778,188

SYSTEM FOR CONTROLLING DELAYS IN A RING BY ASSEMBLING SUBFRAMES WITH A VARIABLE-DELAY BY A MASTER NODE, AND WITH A FIXED-DELAY BY OTHER NODES

Kenji Taniguchi; Hidetoshi Amari; Masashi Hirome, and Keiichi Furukawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 2, 1995, Ser. No. 552,077

Claims priority, application Japan, Nov. 2, 1994, 6-269660

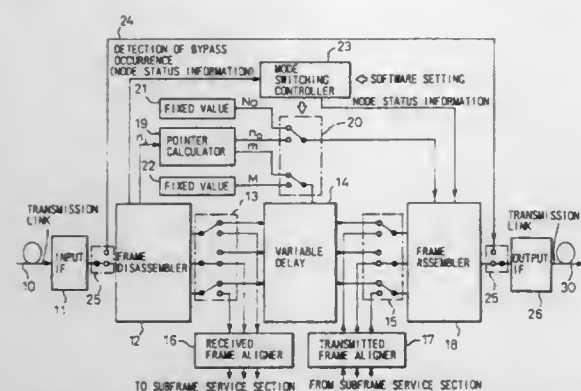
Int. Cl.⁶ G06F 13/00; 15/16; H04L 12/43

U.S. Cl. 395—200.66

12 Claims

1. A method of controlling a delay in a ring transmission path along which a plurality of nodes are connected in a ring, comprising the steps of:

- a) at least one of the plurality of nodes, which is a master node, performing a master node operation wherein a subframe in a frame having a control information field and a data field received from a node connected upstream is delayed by a variable delay determined so that the subframe can be transmitted to a node connected downstream with the subframe placed in a fixed position relative to a start of said data field in a transmitted frame regardless of the position of the subframe in the received frame; and

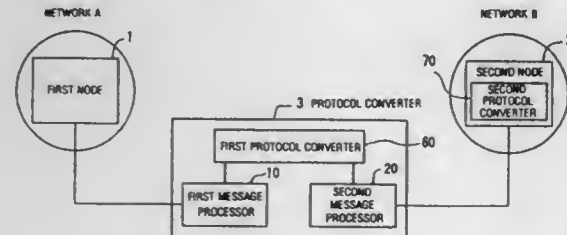


b) at each of remaining nodes of the plurality of nodes, which is a fixed-delay node, performing a fixed-delay node operation wherein a subframe in a frame received from a node connected upstream is transmitted to a node connected downstream with the subframe placed in a variable position relative to said start of said data field of said transmitted frame as determined so that the subframe can be delayed by a fixed delay.

5,778,189
SYSTEM AND METHOD FOR CONVERTING COMMUNICATION PROTOCOLS
Nobuko Kimura, Takashi Onodera, and Noriyuki Yokoshi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 21, 1997, Ser. No. 786,235
Claims priority, application Japan, May 29, 1996, 8-134700
Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—200.66 12 Claims



1. A protocol conversion system for converting communications protocols to enable two different networks to exchange data by transmitting and receiving messages, comprising:

a first node using a first communications protocol that defines a set of rules for communications in a first network;

a second node using a second communications protocol that defines a set of rules for communications in a second network, said second node comprising

second protocol conversion means for adding first control information to the messages to be sent out and for removing second control information from the messages received, said first control information being required in frame conversion to the first communications protocol, said second control information being required in frame conversion to the second communications protocol; and

a protocol converter, disposed between said first and second networks, for relaying the messages between said first and second nodes, comprising

first message processing means, coupled to said first node via the first network, for processing the messages according to layer definitions of the first communications protocol, second message processing means, coupled to said second node via the second network, for processing the messages according to layer definitions of the second communications protocol, and

first protocol conversion means, disposed between said first and second message processing means, for converting

the messages received from said second message processing means by using the first control information removed therefrom and passing to said first message processing means the converted messages having a frame format acceptable for the first node, and for adding the second control information to the messages received from the first message processing means and passing the messages with the second control information to said second message processing means.

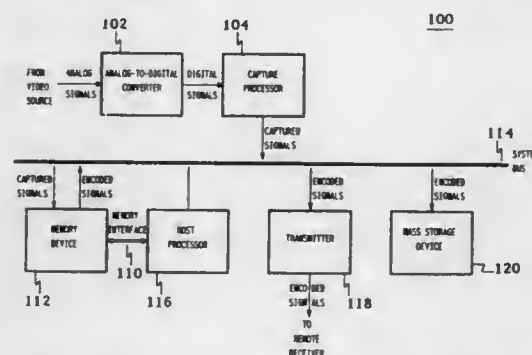
5,778,190
ENCODING VIDEO SIGNALS USING MULTI-PHASE MOTION ESTIMATION
Robit Agarwal, Hillsboro, Ore., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 1995, Ser. No. 537,298

Int. Cl.⁶ H04N 1/415

U.S. Cl. 395—200.77

36 Claims



1. A computer-implemented process for encoding video signals, comprising the steps of:

(a) generating a motion vector for a current block of video signals of a current frame by performing motion estimation relative to a reference frame; and

(b) generating encoded video signals for the current block using motion compensation based on the motion vector, wherein: the motion estimation of step (a) comprises a first phase and a second phase;

the first phase comprises the step of comparing a first subset of video signals of the current block to the reference frame at locations corresponding to a first set of motion vectors;

the second phase comprises the step of comparing a second subset of video signals of the current block to the reference frame at locations corresponding to a second set of motion vectors; and

the resolution of the first subset of video signals in the spatial domain is lower than the resolution of the second subset of video signals.

5,778,191
METHOD AND DEVICE FOR ERROR CONTROL OF A MACROBLOCK-BASED VIDEO COMPRESSION TECHNIQUE

Stephen N. Levine, Itasca; James C. Brailean, Park Ridge, and Mark R. Banham, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 26, 1995, Ser. No. 548,385

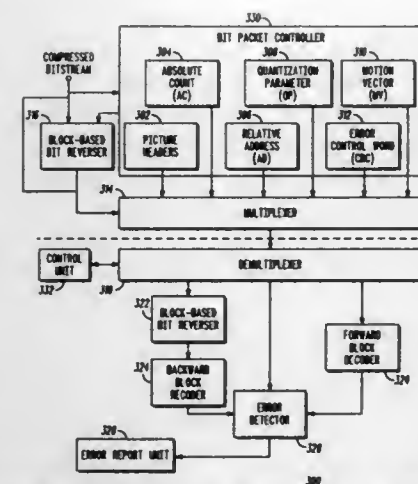
Int. Cl.⁶ H04N 1/415

U.S. Cl. 395—200.77

25 Claims

1. A method of error control of a macroblock-based video codec, wherein macroblocks are encoded using entropy coding, comprising:

A) utilizing, in a decoder, control information and a plurality of picture headers in fixed positions relative to a beginning of a



frame wherein the control information provides decoding information for decoding at least a forward sequence of macroblocks;

B) detecting errors in the frame and limiting propagation of errors in the frame utilizing the control information and the plurality of picture headers,

wherein the control information defines a boundary of individual packets and includes:

C) an absolute count of a next/previous macroblock within the frame;

D) a relative address of a start of a next macroblock in a next packet; and

E) absolute values for predetermined differentially encoded information,

where the relative address is quantized to bytes, and where a quantization remainder determines a number of bits available for an error detection code.

5,778,192
METHOD AND DEVICE FOR OPTIMAL BIT ALLOCATION BETWEEN DIFFERENT SOURCES OF INFORMATION IN DIGITAL VIDEO COMPRESSION

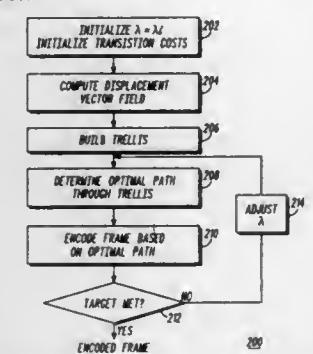
Guido M. Schuster, Evanston; Aggelos Katsaggelos, Chicago; Mark R. Banham, Arlington Heights, and James C. Brailean, Park Ridge, all of Ill., assignors to Motorola, Inc., Schaumburg, and Northwestern University, Evanston, both of Ill.

Filed Oct. 26, 1995, Ser. No. 548,785

Int. Cl.⁶ H04N 11/02

U.S. Cl. 395—200.77

40 Claims



1. A method for allocating bits for optimal rate/distortion performance in digital video compression, comprising the steps of:

A) mapping information for a current frame and information for a correlated frame that is stored in a memory unit into a set of information of A1-A4:

A1) displaced frame difference information and displacement vector field information;

A2) displaced frame difference information and segmentation information;

A3) displacement vector field information and segmentation information;

A4) displaced frame difference information, displacement vector field information, and segmentation information;

B) using the set of information to optimally represent the current frame based on rate/distortion characteristics.

5,778,193
MULTI-NODE DATA PROCESSING SYSTEM
John Richard Eaton, Salford, England, assignor to International Computers Limited, London, England

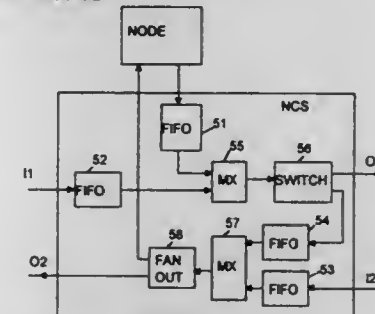
Filed Mar. 19, 1996, Ser. No. 617,609

Claims priority, application United Kingdom, Mar. 24, 1995, 9506765

Int. Cl.⁶ G06F 15/177

U.S. Cl. 395—200.81

7 Claims



1. A data processing system comprising:

(a) a generally U-shaped network comprising a first leg, a second leg, and a loopback connection connecting the first leg to the second leg; and

(b) a plurality of processing nodes each having an output connected to the first leg of the network for sending messages only on to said first leg of the network, towards said loopback connection, and an input connected to the second leg of the network, after said messages have passed through said loopback connection.

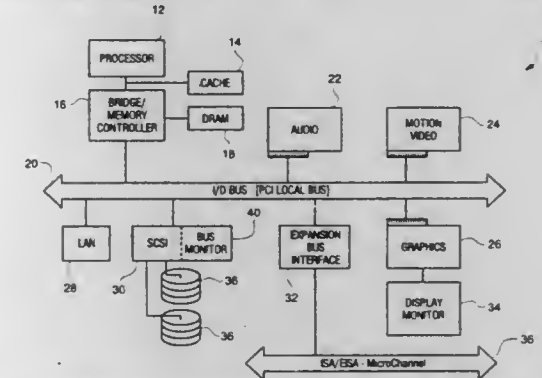
5,778,194
METHOD AND APPARATUS FOR MEASURING PERFORMANCE OF A COMPUTER BUS
Craig C. McCombs, Wichita, Kans., assignor to Symbolics, Inc., Fort Collins, Colo.

Filed Apr. 8, 1996, Ser. No. 629,154

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—280

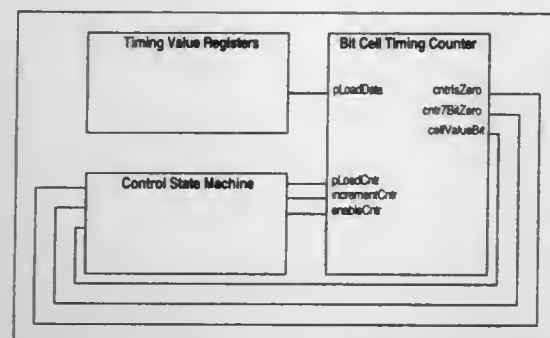
17 Claims



1. A method of measuring performance of an I/O bus, comprising the steps of:

(a) determining a number of I/O bus clock cycles that occur during I/O bus transactions involving a peripheral device during a time period, said determining step comprising the step of generating a first count value indicative of the number

1. A method for bit cell determination and timeout detection for an Apple Desktop Bus, using a counter clocked by a clock generator, comprising the steps of:



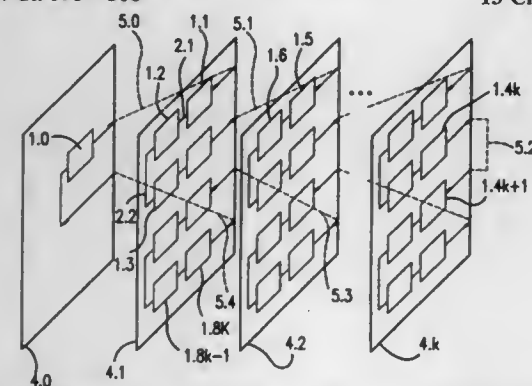
starting a bit cell when an input ADB signal moves from high to low;
at the start of the bit cell, loading an initial value into the counter and enabling the counter to count down as clocked by the clock generator;
counting down until a low to high transition in the input ADB signal is detected or a terminal count is reached; such that if the low to high transition is detected, then enabling the counter to count up,
else if the terminal count is reached, then indicating a timeout condition; and
if the counter is enabled to count up, then counting up until a high to low transition in the input ADB signal is detected or the terminal count is reached; such that if the high to low transition is detected, then stopping the counter and reading a final value to determine the bit cell value,
else if the terminal count is reached, then indicating a timeout condition.

5,778,202

RING BUS MULTIPROCESSOR SYSTEM AND PROCESSOR BOARDS FOR CONSTITUTING THE SAME
Norihiro Kuroishi; Tetsuro Kawata; Kenichi Kawauchi; Nobuaki Miyakawa, all of Nakai-machi; Reiji Aibara, Higashi-Hiroshima, and Mitsumasa Koyanagi, Sendai, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1996, Ser. No. 662,445
Claims priority, application Japan, Jun. 13, 1995, 7-145945
Int. Cl.⁶ G06F 13/00; 13/38

U.S. Cl. 395—306 13 Claims



5,778,208

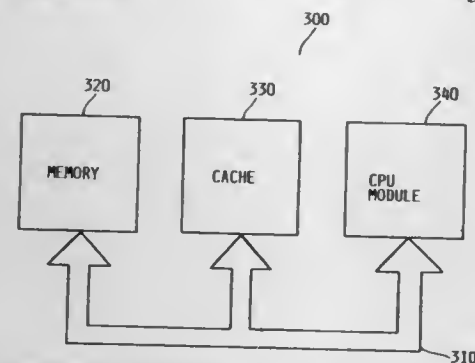
FLEXIBLE PIPELINE FOR INTERLOCK REMOVAL
Richard James Eickemeyer, Rochester, Minn.; Nadeem Malik, and Avijit Saha, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1995, Ser. No. 575,738

Int. Cl.⁶ G06F 9/38; 13/42

U.S. Cl. 395—379

38 Claims



I. A pipeline architecture wherein execution of an operation during an execution cycle, the pipeline architecture comprising: a first execution unit for performing a first and second type of executable function in a first execution cycle; and a second execution unit for performing the first type of executable function and a third type of executable function in a second execution cycle, the second execution unit being offset in the pipeline by at least one execution cycle from the first execution unit, the offset of the second execution unit allowing immediate execution of the first type of executable function during the second execution cycle by the second execution unit when the first type of executable function is not performed in the first execution unit.

5,778,209

Patent Not Issued For This Number

5,778,210
METHOD AND APPARATUS FOR RECOVERING THE STATE OF A SPECULATIVELY SCHEDULED OPERATION IN A PROCESSOR WHICH CANNOT BE EXECUTED AT THE SPECULATED TIME

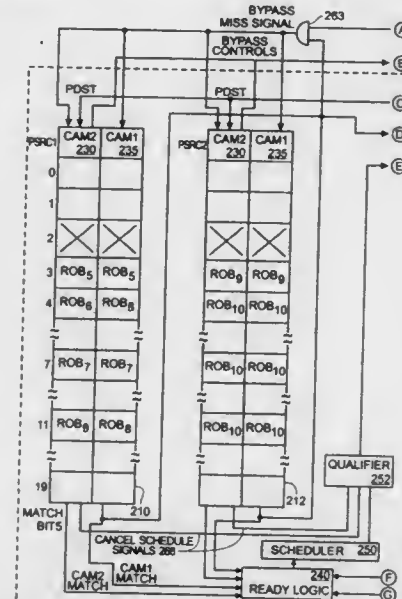
Alexander P. Henstrom, Beaverton, and Robert W. Martell, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 11, 1996, Ser. No. 585,361

Int. Cl.⁶ G06F 9/38

U.S. Cl. 395—394

26 Claims



I. In a processor, a method for recovering an operation which has speculatively begun a series of stages for dispatching and executing the operation and which cannot be completed at a speculated time, the method comprising the steps of:

- (a) receiving a signal indicating that the operation cannot be completed at the speculated time;
- (b) canceling execution of the operation in response to the receiving of the signal, if the operation has been dispatched;
- (c) generating a bypass miss signal in response to the receiving of the signal; and
- (d) preventing the operation from dispatching, in response to the bypass miss signal, if the operation has not been dispatched.

5,778,211

EMULATING A DELAYED EXCEPTION ON A DIGITAL COMPUTER HAVING A CORRESPONDING PRECISE EXCEPTION MECHANISM

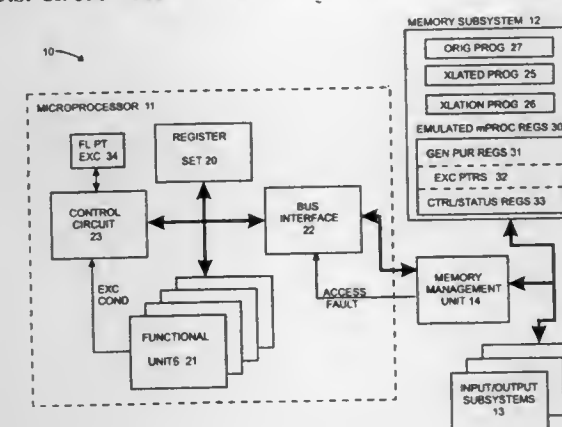
Paul H. Hohensee, Nashua, N.H., and David Dice, Foxboro, Mass., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Feb. 15, 1996, Ser. No. 602,158

Int. Cl.⁶ G06F 9/00; 9/46

U.S. Cl. 395—500

83 Claims



I. A digital computer system comprising:

A. a precise exception handling processor for performing processing operations under control of instructions, the processor being constructed in accordance with a precise exception handling model in which, if an exception condition is detected in connection with an instruction, the exception condition is processed in connection with the instruction, the processor further including a pending exception indicator having a pending exception indication state and a no pending exception indication state; and

B. a control subsystem for providing at least one instruction to the precise exception handling processor to facilitate emulation of an emulated program instruction, the emulated program instruction being constructed to be processed by a delayed exception handling processor which is constructed in accordance with a delayed exception handling model, in which if an exception is detected during processing of an instruction, the exception condition is processed in connection with a subsequent instruction, the instruction provided by said control subsystem controlling said precise exception handling processor to

- determine whether the pending exception indicator is in the pending exception indication state and, if so, to invoke a pending exception processing routine to process the pending exception;
- perform a processing operation in accordance with the emulated processing instruction; and
- if an exception condition is detected during the processing operation, to invoke an exception handler in accordance with the processor's precise exception handling model to condition said pending exception indicator to said pending exception indication state, so that the exception condition will be processed during a processing operation for a subsequent emulated program instruction.

5,778,212

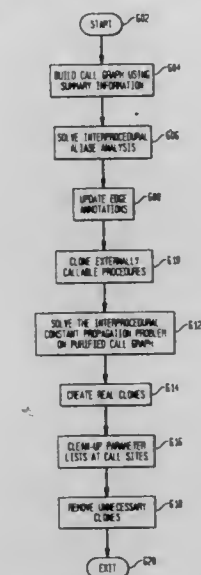
INTERPROCEDURAL ANALYSIS USER INTERFACE
James Craig Dehnert, Palo Alto; Seema Hiranandani, Menlo Park; Wingshun Wilson Ho, San Mateo, and Lilian H. Leung, Cupertino, all of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed Jun. 3, 1996, Ser. No. 657,196

Int. Cl.⁶ G06F 9/44

U.S. Cl. 395—500

23 Claims



I. A method for implementing interprocedural analysis on source code contained in a plurality of source files, each source file containing one or more program units, comprising the steps of:

- (a) receiving intermediate representations of the source files;
- (b) summarizing, for each of the source files, information contained in the one or more program units of each source file that could be affected by program units in other source files;
- (c) storing the intermediate representations of the source files and the summarized information for each source file into associated extended object format files;
- (d) storing compilation options for each of the source files in the associated extended object format files;
- (e) performing interprocedural analysis (IPA) functions on each of the associated extended object format files and generating an IPA output file for each of the associated extended object format files;
- (f) invoking a separate instance of a compiler back end for each of the IPA output files and using the compilation options to produce a standard format binary object file for each of the IPA output files;
- (g) linking the standard format binary object files to produce a final output; and
- (h) performing steps (e), (f) and (g) under the control of a linkage editor.

5,778,213

MULTILINGUAL STORAGE AND RETRIEVAL
Darren A. Shakib; Max L. Benson, both of Redmond, and Scott Norin, Newcastle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

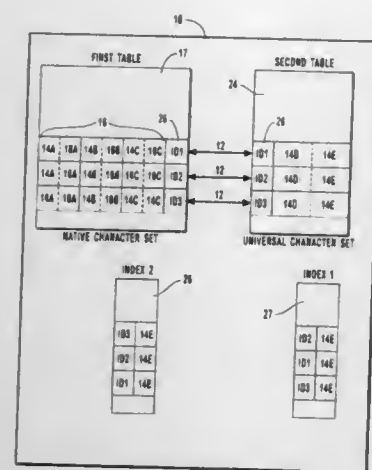
Filed Jul. 12, 1996, Ser. No. 678,994

Int. Cl.⁶ G06F 17/30

U.S. Cl. 395—500

12 Claims

I. In a networked system comprising a plurality of client stations interconnected to at least one server, and wherein database records are received at the server from the client stations in a plurality of written languages each using a designated character set for a given language, a method for generating at the server a database which permits (a) storing of multilingual data in the database using a universal character set but without having to translate the entirety



of each received data record into the universal character set, and which also permits (b) returning, in response to a client request, data in a requested one of said plurality of written languages using the designated character set for that language, the method comprising the steps of:

- receiving from one of said client stations a database record comprising a plurality of data fields containing data in a native character set for a given language;
- separating said plurality of data fields into a first set and a second set, said first set including only those data fields from which the database record is sorted, and said second set containing the remaining data fields of the database record;
- storing said data fields of said second set into the database such that the data of said second set is maintained in said native character set;
- translating said data fields of said first set from said native character set into a universal character set and then storing said data fields of said first set into the database;
- receiving at said server a request from a client station for an index of at least a portion of the database sorted according to user-specified language rules; and
- sorting at least a portion of said first set of data fields to generate said requested index and returning said requested index to the client station from which the request was received in said user-specified language.

5,778,214

BIT-PHASE ALIGNING CIRCUIT

Takashi Taya; Akira Yoshida; Shinsuke Yamaoka, and Shuichi Matsumoto, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

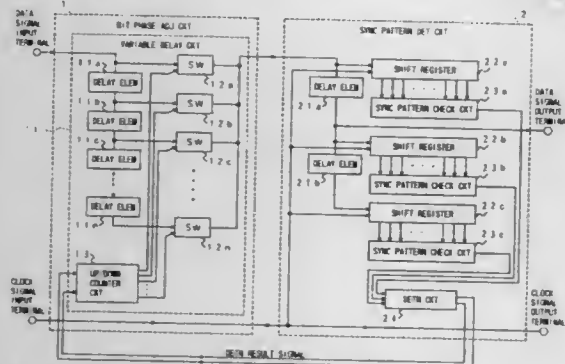
Filed Nov. 29, 1995, Ser. No. 564,657

Claims priority, application Japan, Dec. 9, 1994, 6-306007

Int. Cl.⁶ G06F 1/04

U.S. Cl. 395—551

11 Claims



8. A bit-phase alignment circuit, comprising: a bit-phase adjusting circuit for receiving input data containing therein a synchronizing pattern, adjusting a bit-phase differ-

ence between the input data and an input clock, and generating adjusted input data having the adjusted bit-phase difference; and

- a synchronizing pattern detection circuit for receiving the adjusted input data, for detecting the synchronizing pattern in the adjusted input data, determining whether a phase relationship between the adjusted input data and the input clock is proper or improper based on whether the synchronizing pattern is detected or not, and generating a determination result signal to the bit-phase adjusting circuit for controlling the bit-phase adjusting circuit to re-adjust the bit-phase difference based on the determination result signal.

5,778,215

Patent Not Issued For This Number

5,778,216

METHOD FOR HIERARCHICAL TIME DRIVE CIRCUIT LAYOUT BY REBUDGETING TIMING CONSTRAINTS OF PLURALITY OF LOGICAL BLOCKS AFTER PLACEMENT

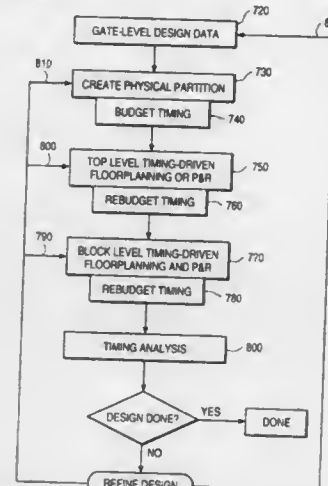
S. V. Venkatesh, San Jose, Calif., assignor to Cadence Design Systems, Inc., San Jose, Calif.

Filed Jun. 30, 1995, Ser. No. 497,699

Int. Cl.⁶ G06F 15/00

U.S. Cl. 395—558

37 Claims



1. In a computer system including a memory, a method for performing a hierarchical timing driven layout of a circuit based upon gate-level design data and circuit timing constraints, the circuit including a plurality of cells, the method comprising the steps of:

- partitioning the plurality of cells into a plurality of logical blocks, a first logical block including a first plurality of cells;
- budgeting a block timing constraint for each of the plurality of logical blocks in response to the gate-level design data, to the circuit timing constraints, and to the partitioning of the plurality of cells into the plurality of logical blocks;
- placing the plurality of logical blocks within a circuit floorplan, each logical block associated with a block location within the circuit floorplan;
- rebudgeting the block timing constraint for at least one of the plurality of logical blocks in response to the placement of the plurality of logical blocks within the circuit floorplan;
- placing the first plurality of cells within a block location associated with the first logical block; and
- rebudgeting the timing constraint for at least one of the plurality of logical blocks in response to the placement of the first plurality of cells within the first logical block.

5,778,217

PARALLEL SIGNAL PROCESSING DEVICE FOR HIGH-SPEED TIMING

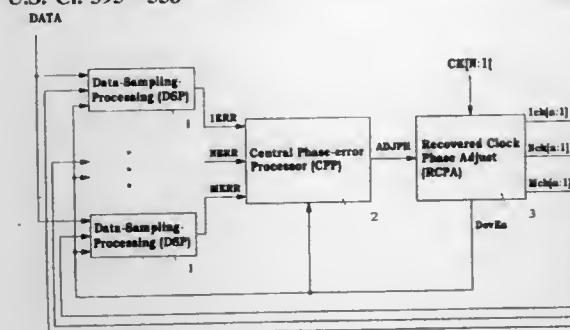
Ron Kao, Saratoga, Calif., assignor to Lite-On Communications Corp., Taipei, Taiwan, and Lite-On Communications, Inc., Milpitas, Calif.

Filed Apr. 2, 1996, Ser. No. 625,261

Int. Cl.⁶ G06F 1/04

U.S. Cl. 395—558

11 Claims



1. A parallel signal processing device for high speed timing recovery comprising a plurality of data sampling processors, a central phase-error processor and a recovery clock phase adjuster, wherein said sampling processors sample transfer data sequentially and process sampling data, and an error message derived from the processing the sampling data is transferred to the central phase-error processor, the central phase-error processor processing the error message for each data sampling processor to produce a terminal phase-error signal which is then transferred to the recovered clock phase adjuster which adjusts the phase of the sampling clock for each data sampling processor according to the terminal phase-error signal, whereby at the same time a set of said data sampling processors samples the transferred data, another set or sets of said data sampling processors processes the sampling data, and further a set or sets of said data sampling processors adjusts the sampling clocks to provide parallel signal processing and high speed updating of a recovered clock.

5,778,218

METHOD AND APPARATUS FOR CLOCK SYNCHRONIZATION ACROSS AN ISOCHRONOUS BUS BY ADJUSTMENT OF FRAME CLOCK RATES

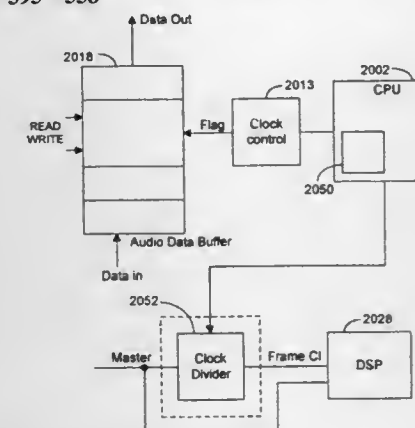
Dale E. Gulick, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 19, 1996, Ser. No. 770,016

Int. Cl.⁶ G06F 1/12

U.S. Cl. 395—558

20 Claims



1. A computer system, comprising: a central processing unit (CPU); a data buffer operably coupled to said CPU, wherein said CPU is configured to read data from said data buffer at a first predetermined clock rate;

- a clock controller coupled to said data buffer and configured to monitor levels of data in said data buffer, and to provide a signal indicative of said levels of data to said CPU;
- a peripheral device operably coupled to said data buffer and including a data generating unit configured to generate said data and write said data to said data buffer at a second predetermined clock rate, wherein said peripheral device further includes: a master clock coupled to said data generating unit and configured to provide a computational clock for said data generating unit; and a programmable clock divider coupled to said master clock; wherein said second predetermined clock rate is generated by programming a value into said programmable clock divider and dividing said master clock by said value; and wherein said value is programmed by said CPU responsive to said clock controller determining that said levels of data in said data buffer cross a predetermined threshold, such that said second predetermined clock rate approximates said first predetermined clock rate.

5,778,219

METHOD AND SYSTEM FOR PROPAGATING EXCEPTION STATUS IN DATA REGISTERS AND FOR DETECTING EXCEPTIONS FROM SPECULATIVE OPERATIONS WITH NON-SPECULATIVE OPERATIONS

Frederic C. Amerson, Santa Clara; Rajiv Gupta, Los Altos; Vinod K. Kathail, Cupertino; B. Ramakrishna Rau; Michael S. Schlansker, both of Los Altos, all of Calif., and William S. Worley, Jr., Denver, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 324,940, Oct. 18, 1994, Pat.

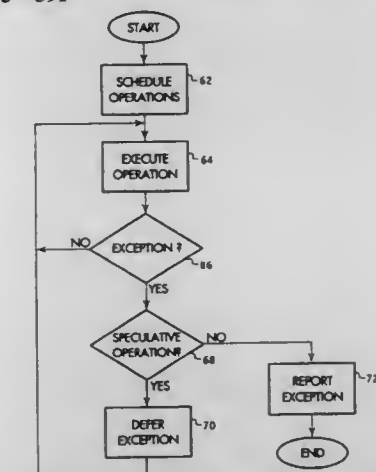
No. 5,692,169, which is a continuation-in-part of Ser. No. 192,758, Feb. 7, 1994, abandoned, which is a continuation of Ser. No. 628,241, Dec. 14, 1990, abandoned. This application

Feb. 7, 1996, Ser. No. 597,784

Int. Cl.⁶ G06F 9/38

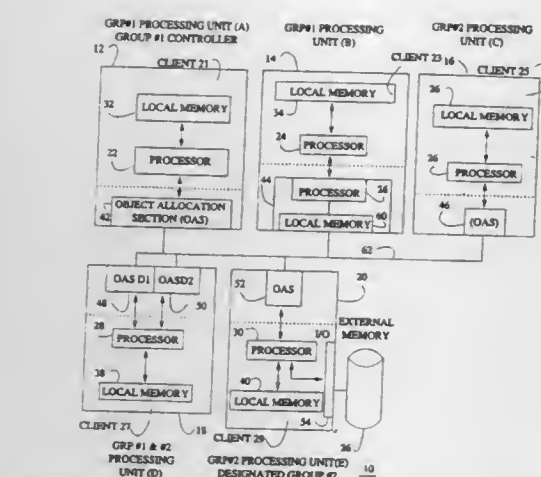
U.S. Cl. 395—591

20 Claims



17. A method for processing speculative operations in a processor comprising: issuing a speculative floating point operation in a processor; if execution of the speculative floating point operation requires calculating a denormalized result, then setting a tag bit in a result register of the speculative floating point operation to defer calculation of the denormalized result; while executing a non-speculative operation, checking whether the tag bit is set in an input register of the non-speculative operation; and if the tag bit is set, then calculating the denormalized result of the speculative floating point operation including re-executing a non-speculative version of the speculative floating point operation.

a) sending, by a process of the plurality of processes, an object request that includes identity of at least some objects of a set of needed objects and a request causal time stamp that indicates, as known by the process, current request value for each process of the plurality of processes;



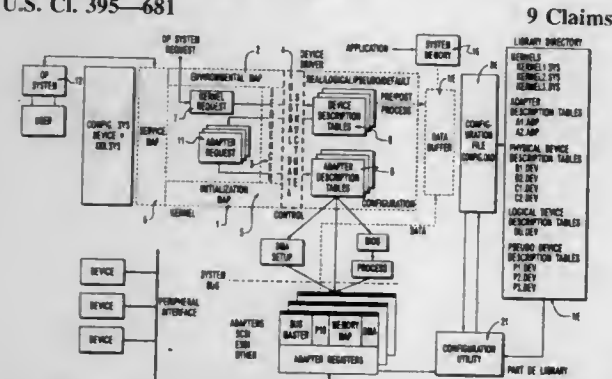
- entering, by the process, the request causal time stamp and the identity of the at least some objects of the object request into a grant causal list;
- updating, by the process, the grant causal list based on a causal connection order of request causal time stamps and a predetermined order;
- from time to time, receiving another object request from another process of the plurality of processes;
- when the another object request is received, updating, by the process, the grant causal list to include the another object request based on the causal connection order and the predetermined order;
- from time to time, receiving, by the process, an object grant, wherein the object grant includes an object and a grant causal time stamp from a granting process that sent the object grant;
- determining whether the process currently possesses a needed object identified by one of the object requests in the grant causal list and the one of the object requests is of a higher order for the needed object than the object request of the process;
- when the one of the object requests is of the higher order for the needed object, granting the needed object to a needing process affiliated with the one of the object requests.

5,778,226
KERNELS, DESCRIPTION TABLES AND DEVICE
DRIVERS

Phillip M. Adams, Parowan; Larry W. Holmstrom, Salt Lake; Steve A. Jacob, South Weber; Steven H. Powell, Ogden, all of Utah; Robert F. Condie, Tucson, and Martin L. Culley, Arizona, both of Ariz., assignors to Iomega Corporation, Roy, Utah

Continuation of Ser. No. 425,745, Oct. 20, 1989, Pat. No. 5,459,867. This application Sep. 21, 1995, Ser. No. 531,455
Int. Cl.⁶ G06F 13/10

U.S. Cl. 395—681



1. An article of manufacture for use with a digital computer system, said digital computer system including:

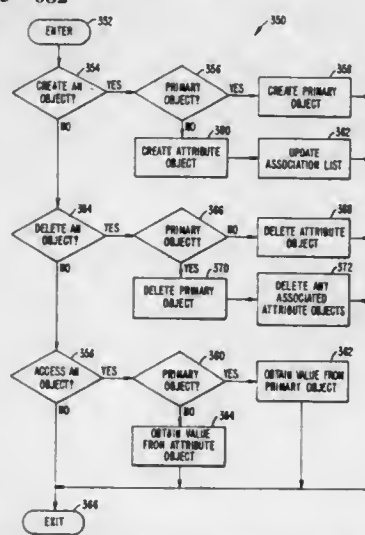
5,778,227
SYSTEM FOR ADDING ATTRIBUTES TO AN OBJECT AT
RUN TIME IN AN OBJECT ORIENTED COMPUTER
ENVIRONMENT

David A. Jordan, Madison, Ala., assignor to Intergraph Corporation, Huntsville, Ala.

Filed Aug. 1, 1995, Ser. No. 509,847
Int. Cl.⁶ G06F 9/40; 9/45

U.S. Cl. 395—682

7 Claims



1. A method for associating a property with an object in a computer system, wherein the computer system includes a processor coupled to a memory and a storage device, wherein the computer system includes objects, wherein an object includes one or more data members, wherein the computer system includes a

definition of a class that specifies one or more class properties of an object, the method comprising the steps of:

compiling a definition of a first object as a first instance of the class, wherein the first object has the class properties specified in the class;

compiling a definition of a second object as a second instance of the class, wherein the second object has the class properties specified in the class;

compiling a definition of a third object, wherein the third object includes an added property that is not specified in the class; performing the following steps subsequent to the compiling steps, above:

using the definition of a first object to create a first object; using the definition of a second object to create a second object; using the definition of a third object to create a third object;

associating the third object with the second object; executing instructions in a first application to access the first object and transfer information about the first object's class properties to the first application;

executing instructions in the first application to access the second object and transfer information about the second object's class properties to the first application; and

executing instructions in a second application to access the second object and transfer information about the added property of the third object associated with the second object to the second application.

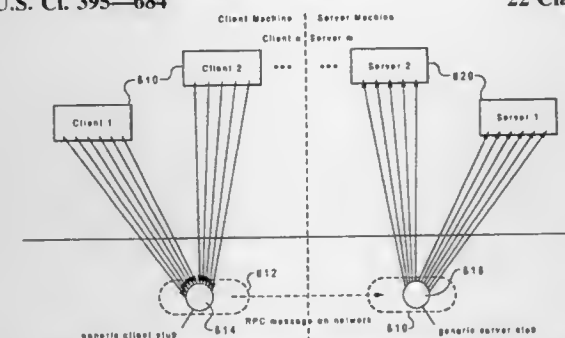
5,778,228
METHOD AND SYSTEM FOR TRANSFERRING REMOTE
PROCEDURE CALLS AND RESPONSES OVER A
NETWORK

Yi-Hsiu Wei, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1994, Ser. No. 291,228
Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—684

22 Claims



1. A method for using a generic client stub file associated with a plurality of clients residing at remote nodes in a computer network to request at least one of a plurality of application programs executing on a server node, wherein said application program utilizes a generic server stub file to respond to said request, said method comprising the steps of:

invoking said generic client stub file upon request of said application program;

passing information parameters to said generic client stub file; customizing said generic client stub file with said information parameters to perform as a dedicated client stub file message;

transmitting said dedicated client stub file message across said computer network to said generic server stub file;

customizing said generic server stub file with said information parameters to perform as a dedicated server stub file message; sending said dedicated server stub file message to retrieve said application program;

preparing said application program in order to be utilized by said client; and

returning control to said client, wherein said application program is utilized by said client.

5,778,229
Patent Not Issued For This Number

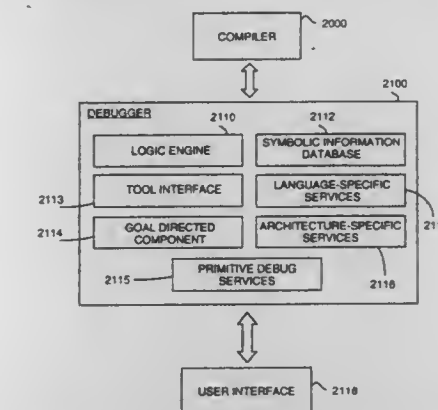
5,778,230
GOAL DIRECTED OBJECT-ORIENTED DEBUGGING
SYSTEM

Michael D. Wimble, Sunnyvale, and Lawrence L. You, San Jose, both of Calif., assignors to Object Technology Licensing Corp., Cupertino, Calif.

Filed Nov. 13, 1995, Ser. No. 557,768
Int. Cl.⁶ G06F 11/30

U.S. Cl. 395—704

49 Claims



1. An apparatus for goal directed debugging of an application program, the apparatus comprising:

(a) a user interface for receiving a request from a user for information concerning a cause of a observed problem in the application program;

(b) a goal developer for receiving the request and breaking the request down into one or more debugging goals, which, when accomplished, will provide information concerning the cause of the problem;

(c) a debug program control element responsive to the one or more debugging goals for selectively executing one or more debugging programs to accomplish each of the one or more debugging goals; and

(d) a reporting element for collecting information from the application program executing under control of the one or more debugging programs, determining a cause of the problem from the information and reporting the information to the user.

5,778,231
COMPILER SYSTEM AND METHOD FOR RESOLVING
SYMBOLIC REFERENCES TO EXTERNALLY LOCATED
PROGRAM FILES

Arthur A. van Hoff, Mountain View; James A. Gosling, Woodside, and Frank Yellin, Redwood City, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 20, 1995, Ser. No. 575,356
Int. Cl.⁶ G06F 9/45

U.S. Cl. 395—705

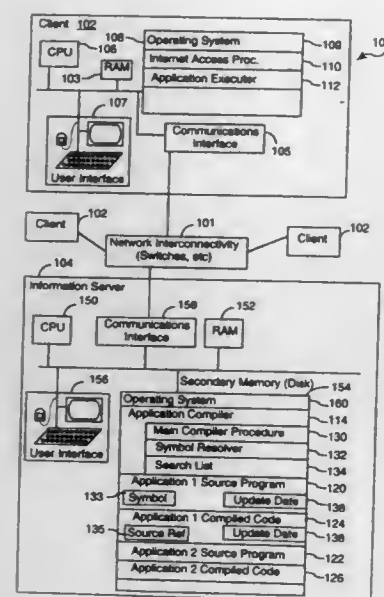
16 Claims

1. A method for compiling program source code on a computer to generate compiled code, said method comprising the steps of:

identifying each symbol in said source code that references another program;

for each identified symbol, determining whether said symbol is a reference to a remotely located file or to a locally stored file, and

if said identified symbol is a reference to a remotely located file, constructing a file location identifier for said identified symbol, performing a file location identifier based fetch of



said remotely locate file, and adding at least a portion of said fetched file to a set of program code to be compiled if said fetch is successfully performed, and otherwise aborting compilation of said source program; and
if said identified symbol is a reference to a locally stored file, performing a file fetch for said locally stored file, adding at least a portion of said fetched file to said set of program code to be compiled if said file fetch is successfully performed, and otherwise aborting compilation of said source program.

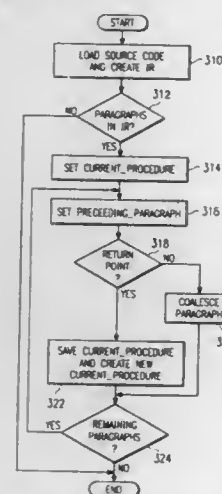
5,778,232

AUTOMATIC COMPILER RESTRUCTURING OF COBOL PROGRAMS INTO A PROC PER PARAGRAPH MODEL
Jeffrey B. Caldwell, Sunnyvale; Harry Charles Muttart, Cupertino, and David Henry Gross, Campbell, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 3, 1996, Ser. No. 675,174
Int. Cl.⁶ G06F 9/45

U.S. Cl. 395—707

20 Claims



1. A compiler adapted for execution on a computer system having a memory, the compiler comprising:
means executing on the computer system, for reading a source program from the memory, the source program comprised of a plurality of paragraphs, each paragraph having a plurality of instructions, the instructions defining a control flow;
means for coalescing the plurality of paragraphs to produce coalesced procedures;

means for slicing instructions from the coalesced procedures to produce sliced procedures;
means for generating a super-proc from the sliced procedures, wherein a call to the super-proc implements the control flow.

5,778,233

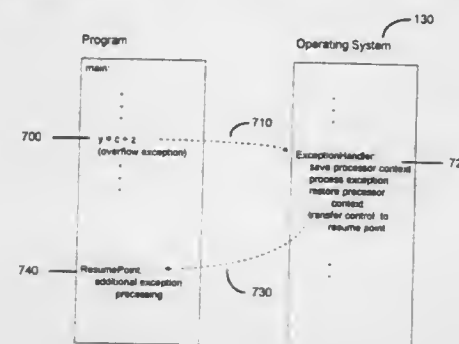
METHOD AND APPARATUS FOR ENABLING GLOBAL COMPILER OPTIMIZATIONS IN THE PRESENCE OF EXCEPTION HANDLERS WITHIN A COMPUTER PROGRAM

Keith Vernon Besaw, Saint Paul; Robert John Donovan, Rochester; Patrick Todd Haugen, Rochester; Mark Jonathon Hessler, Rochester, all of Minn.; Mikko Herman Lipasti, Pittsburg, Pa., and Robert Ralph Roediger, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 11, 1996, Ser. No. 729,609
Int. Cl.⁶ G06F 9/45

U.S. Cl. 395—709

14 Claims



1. A computer apparatus comprising:

(A) an optimizer for optimizing a first instruction stream that is used to generate a second instruction stream, the first instruction stream being generated by a compiler and comprising a plurality of variables, the optimizer including:

an exception range determiner, the exception range determiner determining at least one exception range of the first instruction stream during which at least one exception may occur;

a resume point identifier, the resume point identifier identifying at least one resume point within the first instruction stream, each resume point identifying a range of at least one instruction that is executed when the at least one exception occurs;

a live range calculator, the live range calculator determining the liveness of the plurality of variables, the liveness of a selected variable that is used in the at least one instruction in the exception handling range defined by a resume point before the selected variable is defined extending to at least one instruction within the at least one exception range defined by the exception range determiner; and

(B) a CPU, the CPU executing the second instruction stream.

5,778,234

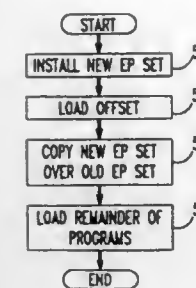
METHOD FOR DOWNLOADING PROGRAMS
Gideon Hecht, Seminole; Kurt Ervin Holmquist, Largo, and Donald C. Snoll, Clearwater, all of Fla., assignors to Paradyne Corporation, Largo, Fla.

Division of Ser. No. 880,257, May 8, 1992. This application
Jul. 24, 1997, Ser. No. 899,834
Int. Cl.⁶ G06F 9/44

U.S. Cl. 395—712

8 Claims

1. A method for installing a new set of communication programs P_{new} into a stored program controlled apparatus that includes a communication port and a memory by transmitting said set of



programs P_{new} to said apparatus via said port, with the aid of a set of communications programs P_{old} already resident in said memory, where said set of programs P_{old} contains a subset of programs EP_{old} that occupy less than half of the memory and said set of programs P_{new} also contains a subset of programs EP_{new} that, when installed, occupy less than half of the memory, comprising the steps of:

installing the EP_{new} programs in a first area of said memory that contains programs other than the EP_{old} programs, thereby overwriting at least a portion of one program in said P_{old} set of programs;

altering operation of said apparatus to execute the EP_{new} programs instead of the EP_{old} programs; and

installing the remaining programs of said P_{new} set of programs in a second area of said memory, said second area constituting memory locations not occupied by the EP_{new} programs.

5,778,235

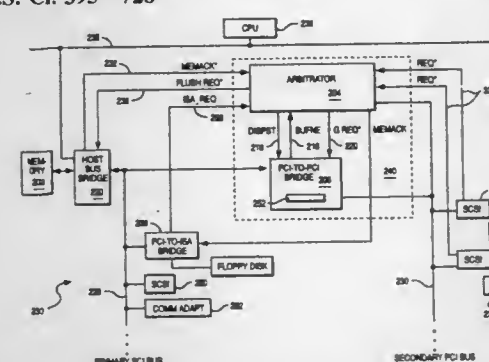
COMPUTER SYSTEM AND ARBITRATOR UTILIZING A BUS BRIDGE THAT AVOIDS LIVELOCK

Paul Gordon Robertson, 10911 Peale Ct., Austin, Tex. 78726-1347

Filed Feb. 26, 1996, Ser. No. 606,914
Int. Cl.⁶ G06F 13/14; 13/362

U.S. Cl. 395—728

8 Claims



1. A computer system utilizing a PCI bus bridge that prevents a livelock condition, comprising:

a central processing unit interconnected to a system memory via a host bus bridge, wherein the host bus bridge must complete all I/O requests before allowing access to the system memory;

at least one PCI bus bridge, each having an internal write buffer, connected between a secondary bus and the host bus bridge, wherein the PCI bus bridge must flush the internal write buffer before allowing the host bus bridge to access peripherals on the secondary bus; and

an arbitrator for masking a system memory request (REQ) signal generated by a first peripheral on the secondary bus from the host bus bridge until the host bus bridge generates a MEMACK signal guaranteeing that all existing I/O requests have been flushed and postponing any future I/O requests from the central processing unit.

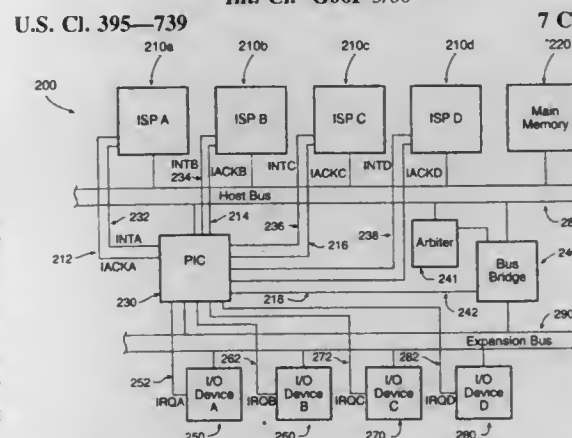
5,778,236
MULTIPROCESSING INTERRUPT CONTROLLER ON I/O BUS

Douglas D. Gephardt, and Rodney W. Schmidt, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 17, 1996, Ser. No. 649,787
Int. Cl.⁶ G06F 3/00

U.S. Cl. 395—739

7 Claims



1. A multiprocessing computer system, comprising:
a plurality of microprocessors coupled to a host bus;
one or more I/O devices coupled to an expansion bus;
a bus bridge coupled between said host bus and said expansion bus; and
a programmable interrupt controller coupled to said expansion bus for distributing interrupts from said one or more I/O devices to said plurality of microprocessors;
wherein said programmable interrupt controller includes a plurality of programmable task priority storage locations sharing a common address, wherein each of said plurality of programmable task priority storage locations is associated with a respective one of said plurality of microprocessors; and
wherein said bus bridge is configured to receive a write cycle from said host bus to write to one of said plurality of programmable task priority storage locations and to effectuate a corresponding write cycle on said expansion bus, wherein said bus bridge is configured to convey an ID code indicating which of said plurality of microprocessors initiated said write cycle on said host bus.

5,778,237

DATA PROCESSOR AND SINGLE-CHIP MICROCOMPUTER WITH CHANGING CLOCK FREQUENCY AND OPERATING VOLTAGE

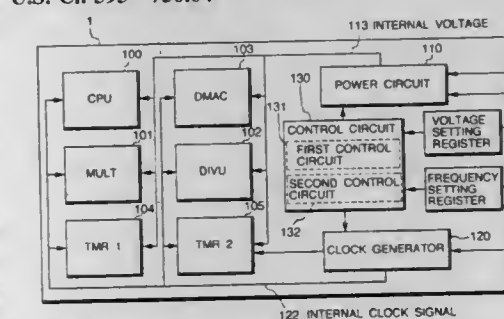
Mitsuyoshi Yamamoto, Higashimurayama; Ikuya Kawasaki, Kodaira; Hideo Inayoshi; Susumu Narita, both of Kokubunji, and Masaharu Kubo, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 14, 1995, Ser. No. 572,677

Claims priority, application Japan, Jan. 10, 1995, 7-018629
Int. Cl.⁶ G06F 1/00; 1/18; 1/26

U.S. Cl. 395—750.04

23 Claims



16. A single-chip microcomputer comprising:
a central processing unit;

a circuit module operating in synchronism with a clock signal;
a register stores control data for designating a frequency of the clock signal to be fed to said circuit module and an operating voltage to be fed to said circuit module;

a clock generator outputting a clock signal having a frequency according to the control data of said register to said circuit module;

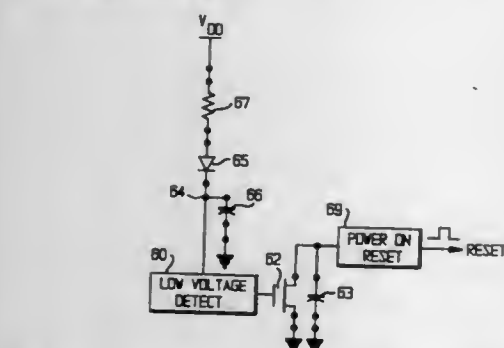
a power circuit outputting an operating voltage having an absolute value according to the control data of said register to said circuit module; and

a first control unit controlling changes in the frequency of the clock signals to be outputted by said clock generator and in the absolute value of the operating voltage to be outputted by said power circuit,

wherein the changes in the frequency of the clock signal and in the absolute value of the operating voltage are designated by changing the control data in the storage circuit, and wherein the operating voltage is prevented from being lowered in its absolute value prior to the lowering of the frequency of the clock signal if the change of the control data is an instruction to reduce the frequency of said clock signal and the absolute value of the operating voltage, and the frequency of the clock signal is prevented from being increased prior to the rise of the absolute value of the operating voltage if the change of the control data is an instruction to increase the clock signal frequency and the absolute value of the operating voltage, in which the operating voltage is lowered in its absolute value prior to the change in the frequency, when it detects an instruction to reduce the frequency of said clock signal and the operating voltage in its absolute value, and by blocking the state, in which the clock signal having its frequency increased is outputted prior to the rise of the operating voltage in its absolute value, when it detects an instruction to increase the clock signal frequency and the operating voltage in its absolute value, wherein the changes in the frequency of the clock signal and in the absolute value of the operating voltage are designated by changing the control data in the storage circuit, and wherein the first control circuit controls so as to prevent the absolute value of the operating voltage from being lowered prior to a lower in the frequency of the clock signal if the change of the control data instructs both of a lower in the frequency of the clock signal and a lower in the absolute value of the operating voltage, and so as to prevent the frequency of the clock signal from being risen prior to a rise in the absolute value of the operating voltage if the change of the control data instructs both of a rise in the frequency of the clock signal and a rise in the absolute value of the operating voltage.

5,778,238
POWER-DOWN RESET CIRCUIT
Paul H. Hoffine, Mesa, Ariz., assignor to Microchip Technology Incorporated, Chandler, Ariz.
Filed Jun. 19, 1996, Ser. No. 665,905
Int. Cl. G06F 1/30
U.S. Cl. 395-750.08

6 Claims



4. In a microcontroller device adapted to perform a control function in response to certain predetermined operating conditions

expressed in electrical parameters, including application to the microcontroller device of a power supply voltage within a predetermined range of values between upper and lower limits, and having a power-on reset (POR) circuit, a device-implemented method comprising the steps of:

generating an output pulse from said POR circuit upon initial application of said power supply voltage within said range of values after a predetermined period of time without power;

in response to a reduction of power supply voltage to a value below said lower limit at the microcontroller device for a sustained interval of time greater than said predetermined period of time, generating a reset pulse to interrupt operation of the microcontroller device, and thereupon discharging any timing capacitances in the POR circuit, so that when power is removed, the POR circuit is initialized to a fully discharged and power off condition, in preparation for generating a reset pulse when the power supply voltage is restored to a value above said lower limit;

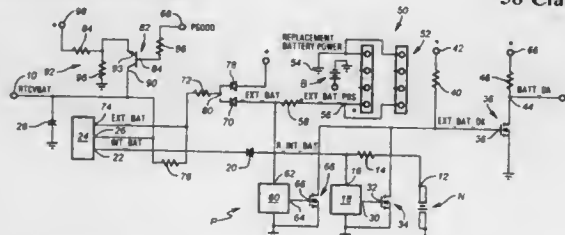
in response to restoration of the power supply voltage to the microcontroller device to a value above said lower limit, initiating a reset pulse to restore operation of the microcontroller device

storing energy while the power supply voltage is in said range, and retaining a store of energy after the power supply voltage falls to a value below said lower limit, to provide a store of available energy despite an absence or inadequacy of external power, and

using the stored energy to discharge timing capacitances in the POR circuit.

5,778,239
COMPUTER REAL TIME CLOCKPOWER SUPPLY CIRCUIT
B. Tod Cox, Houston, Tex., assignor to Compaq Computer Corporation
Continuation of Ser. No. 367,004, Dec. 30, 1994, abandoned.
This application Mar. 11, 1997, Ser. No. 814,557
Int. Cl. G06F 1/28
U.S. Cl. 395-750.08

58 Claims



1. A power supply circuit for a real time clock in a computer system for automatically substituting a replacement clock battery for an original clock battery providing electrical power at a supply outlet to the real time clock, comprising:

first voltage monitor means for sensing the output of an original clock battery and monitoring the status of such original clock battery output;

connector means for receiving a replacement clock battery to receive electrical power therefrom; and

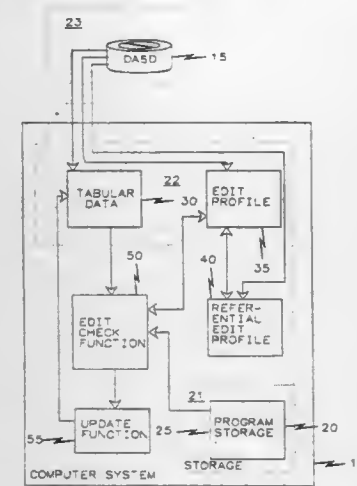
means for switching supply of power at the supply outlet from an original clock battery to a replacement clock battery once a replacement clock battery is attached to said connector means without removing said original clock battery from the computer system.

5,778,240
REFERENTIAL EDIT CHECKING TABULAR FORM DATA

David Alan Buchman, 186 Temple Hill Rd. Unit 1616, New Windsor, N.Y. 12553, and Kevin William Hall, 42 Sunnybrook Cir., Highland, N.Y. 12528
Continuation of Ser. No. 286,097, Aug. 4, 1994, abandoned, which is a continuation of Ser. No. 986,000, Dec. 4, 1992, abandoned. This application Dec. 13, 1996, Ser. No. 764,967
Int. Cl. G06F 3/00

U.S. Cl. 395-792

5 Claims



1. A method for managing tabular form data on a computer system, said method comprising the steps of:

storing said tabular form data so as to be able to access individual rows of said data, each of said rows including data from multiple columns;

defining, in a storage means of said computer system, a user-provided edit profile specifying at least one of said columns; defining, also in said storage means of said computer system, a user-provided referential edit profile linked to at least one of said specified columns, said referential edit profile specifying allowable entries in at least one of said specified columns based on at least one value contained in a different column of the tabular form data; and

controlling entry of user-provided data into a selected row and selected column in accordance with said allowable entries as specified by said referential edit profile.

5,778,241
SPACE VECTOR DATA PATH
Keith M. Bindloss; Kenneth E. Garey, both of Irvine; George A. Watson, Fullerton, and John Earle, Tustin, all of Calif., assignors to Rockwell International Corporation, Newport Beach, Calif.
Continuation of Ser. No. 238,558, May 5, 1994, abandoned.
This application Apr. 10, 1996, Ser. No. 630,231
Int. Cl. G06F 15/80

U.S. Cl. 395-800.2

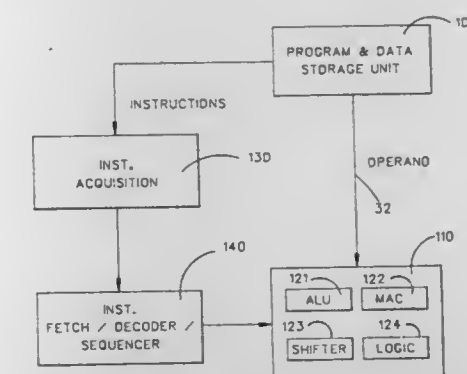
7 Claims

1. A programmable processor, said programmable processor executing instructions in a first sequence as determined by an instruction fetch/decode/sequencer means for processing at least one operand, said operand comprising at least one element, each of said instructions comprising at least one field of at least one bit, said programmable processor comprising:

a) Mode specifying means responsive to said field of at least one bit in each instruction for specifying whether said operand is processed in either one of vector or scalar modes:

i) said vector mode designating that there are a plurality of elements within said operand,

ii) said scalar mode designating that there is one element within said operand with said element comprising a plurality of sub-elements;



b) a processing unit coupled to said mode specifying means, comprising a plurality of sub-processing units, said processing unit receiving said one operand and, responsive to said instruction and to said mode specifying means, concurrently processing, in one cycle, said at least one operand in either one of vector or scalar modes as follows:

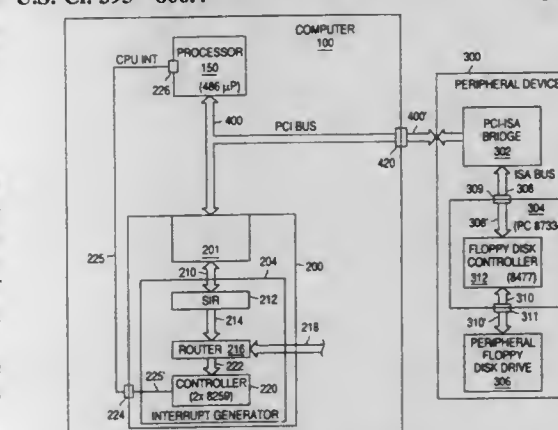
i) in said vector mode, each of said plurality of elements is received and processed by one of said sub-processing units configured in said vector mode to generate a vector output;

ii) in said scalar mode, each sub-element of said operand is received and processed by one of said sub-processing unit configured in said scalar mode to generate a scalar output,

wherein said operand also comprises at least one logic condition further comprising compare means coupled to said processing unit for comparing said at least one logic condition in said operand in one of said scalar and vector modes with a predetermined logic condition, wherein said at least one logic condition is either one of a single logic condition or a selective combination of logic conditions in an operand, and wherein a first operand is conditionally moved from a first storage location to a second storage location based on said compare means, wherein said compare means comprises a plurality of sub-compare with each comparing corresponding elements within a second and a third operand to determine whether the corresponding element within the first operand is moved.

5,778,242
SOFTWARE INTERRUPT GENERATOR FOR COMPUTER BUS INTERFACE
Hans Wang, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Continuation of Ser. No. 375,755, Jan. 20, 1995, abandoned.
This application Jul. 11, 1997, Ser. No. 893,903
Int. Cl. G06F 13/00
U.S. Cl. 395-800.4

6 Claims



1. A circuit for generating an interrupt signal to a processor from a peripheral device, said circuit comprising:
a bus interface connectable to a bus, wherein said bus may be coupled to said processor and said peripheral device;

an interrupt output terminal connectable to an interrupt input terminal of said processor;
a software-interrupt register coupled to said bus interface; and
an interrupt controller coupled to said software-interrupt register and said interrupt output terminal, said interrupt controller configured to output said interrupt signal on said interrupt output terminal in response to said software-interrupt register receiving a software-interrupt instruction from said peripheral device over said bus.

5,778,243

MULTI-THREADED CELL FOR A MEMORY

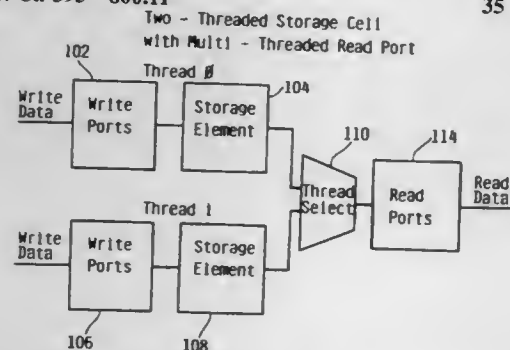
Anthony Gus Aipperspach; Todd Alan Christensen; Biota Minesh Patel; Nghia Van Phan; Michael James Rohn; Salvatore Nicholas Storino; Bryan Joe Talik, and Gregory John Uhlmann, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 3, 1996, Ser. No. 675,315

Int. Cl.⁶ G06F 12/02; 9/40

U.S. Cl. 395—800.11

35 Claims



1. In a multi-threaded computer system using plural threads with a single processor, said single processor processing one thread at a time, a multi-threaded memory comprising:
 - a plurality of multi-threaded storage cells;
 - at least one write decoder supplying information to a selected one of the multi-threaded storage cells;
 - at least one read decoder accessing information from a selected one of the multi-threaded storage cells;
 - each of the multi-threaded storage cells including:
 - N storage elements, where $N \geq 2$, each of said N storage elements having a thread-correspondent content,
 - a write interface, operatively connected to said at least one write decoder, and supplying information to said plural storage elements, and
 - a read interface, operatively connected to said at least one read decoder, and reading information from said plural storage elements,
 - at least one of said read and write interfaces selecting one of said thread-correspondent contents based at least in part by identifying the corresponding thread, thereby achieving intra-cell thread-correspondent content selection.

5,778,244

DIGITAL SIGNAL PROCESSING UNIT USING DIGITAL SIGNAL PROCESSOR ARRAY WITH RECIRCULATION

Zigmunds Andis Putnins, Ridgewood; Henry Christian Briel, III, Rochelle Park, both of N.J., and Michael James Luddy, Sea Cliff, N.Y., assignors to Timeplex, Inc., Woodcliff, N.J.

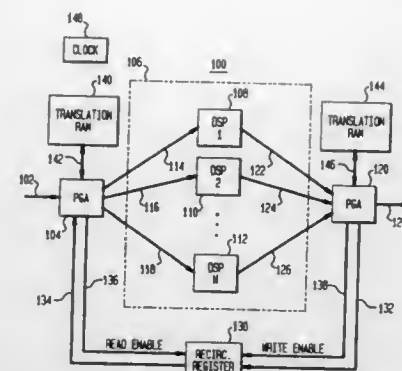
Filed Oct. 7, 1996, Ser. No. 726,632

Int. Cl.⁶ G06F 15/16

U.S. Cl. 395—800.5

7 Claims

1. A digital signal processing unit comprising:
 - at least one unit signal input line for receiving a serial succession of individual sequences of input data;



- an input programmable gate array (PGA) connected to said unit signal input line for supplying said input data as distributed data on a plurality of processor input lines;
- an array of digital signal processors (DSP), each of said DSPs connected to a corresponding one of said plurality of processor input lines, each of said array of DSPs processing an individual sequence of the distributed data received on the corresponding one of said processor input lines and outputting processed data on a corresponding one of a plurality of processor output lines, where each element of a processed data sequence includes, in addition to a data byte, a task designating field permitting identification of that sequence;
- an output PGA connected to said processor output lines for organizing and outputting the processed data;
- a recirculation path connected from said output PGA to said input PGA to pass any sequence of said processed data that requires further processing through said array of DSPs at least one more time, said data includes a task designating field and a destination designating field, said destination designating field controlling the one of said DSPs from which the associated data sequence receives additional processing and said task designating field identifying said associated data sequence;
- at least one unit signal output line for transmitting the processed data from said output programmable gate array; and
- a system clock for controlling timing of said DSPs, said input programmable gate array and said output programmable gate array.

5,778,245

METHOD AND APPARATUS FOR DYNAMIC ALLOCATION OF MULTIPLE BUFFERS IN A PROCESSOR

David B. Papworth, Beaverton; Andrew F. Glew, Hillsboro; Glenn J. Hinton; Robert P. Colwell, both of Portland; Michael A. Fetterman, Hillsboro; Shantanu R. Gupta, Beaverton, and James S. Griffith, Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

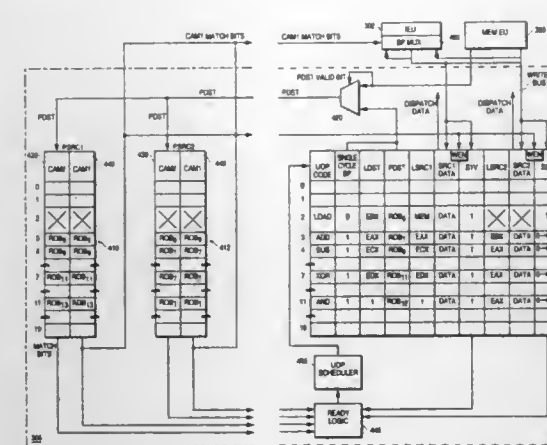
Filed Mar. 1, 1994, Ser. No. 204,861

Int. Cl.⁶ G06F 15/82

U.S. Cl. 395—800.23

22 Claims

1. A pipelined processor comprising:
 - a reorder buffer containing result information generated by speculative instructions;
 - a reservation station coupled to said reorder buffer, said reservation station containing information associated with instructions pending execution; and
 - an allocator coupled to said reorder buffer and said reservation station, said allocator allocating entries of said reorder buffer and said reservation station during an allocation pipestage of said pipelined processor, said allocation pipestage following a decode pipestage of said pipelined processor and preceding a dispatch pipestage of said pipelined processor, said allocator



locating entries of said reservation station for each pending instruction except for one or more register exchange instructions.

5,778,246

METHOD AND APPARATUS FOR EFFICIENT PROPAGATION OF ATTRIBUTE BITS IN AN INSTRUCTION DECODE PIPELINE

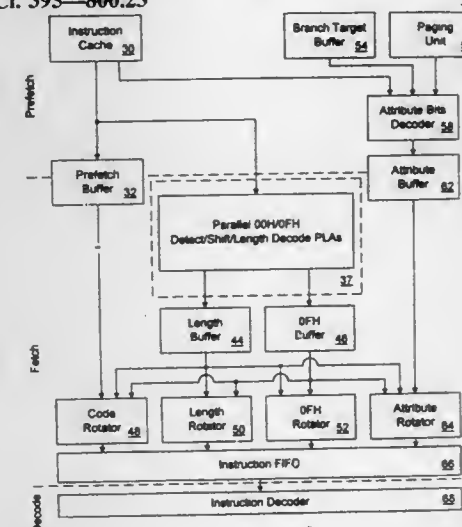
Bob Brennan, Saratoga, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 27, 1995, Ser. No. 579,420

Int. Cl.⁶ G06F 12/04

U.S. Cl. 395—800.23

15 Claims



1. An instruction decode pipeline for decoding instructions which appear in an instruction stream without differentiation, each instruction including one or more instruction blocks, the instruction decode pipeline comprising:
 - an instruction path for extracting a first and second instructions from a first plurality of instruction blocks;
 - an attribute bit decoder coupled to the instruction path, wherein the attribute bit decoder generates a first plurality of attribute bits corresponding to the first plurality of instruction blocks; and
 - an attributes path coupled to the instruction path, wherein the attribute path selects a first and second attribute bits corresponding to the first and second instructions, wherein the first and second attribute bits control one or more operations in decoding the first and second instructions.

5,778,247

MULTI-PIPELINE MICROPROCESSOR WITH DATA PRECISION MODE INDICATOR

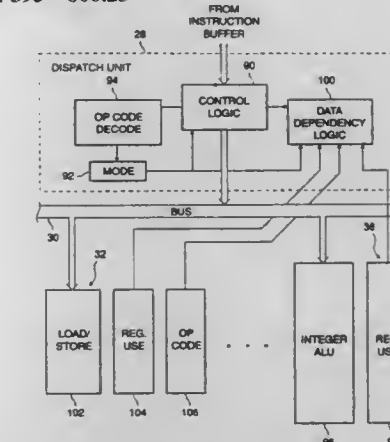
Marc Tremblay, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Mar. 6, 1996, Ser. No. 612,623

Int. Cl.⁶ G06F 9/38

U.S. Cl. 395—800.23

19 Claims



1. A microprocessor comprising:
 - a plurality of pipelined functional units configured to process instructions;
 - a dispatch unit configured to dispatch instructions to said functional units;
 - a precision mode indicator memory associated with a first group of at least one of said functional units; and
 - setting logic configured to set said precision mode indicator memory to a single-precision indication when a single precision instruction is dispatched to said first group of functional units and to set said precision mode indicator memory to a multiple-precision indication when a multiple-precision instruction is dispatched to said first group of functional units; wherein said multiple-precision instruction is a quad-precision instruction.

5,778,248

FAST MICROPROCESSOR STAGE BYPASS LOGIC ENABLE

Arthur T. Leung, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jun. 17, 1996, Ser. No. 664,478

Int. Cl.⁶ G06F 9/38

U.S. Cl. 395—800.23

19 Claims

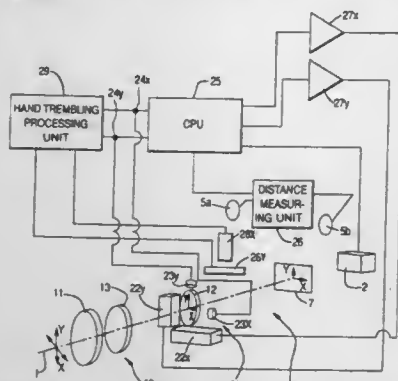
1. A microprocessor comprising:
 - a plurality of execution units, each execution unit having a plurality of stages;
 - a register file coupled to a plurality of said execution units;
 - bypass logic, coupled to a plurality of said stages, configured to provide data from one of said stages to another stage before said data is written to said register file;
 - data dependency check logic, associated with a given stage in a given execution unit, having an output coupled to an enable input of said bypass logic for said given stage, configured to compare a destination register of said given stage with a

5,778,261
CAMERA WITH A PARALLAX COMPENSATION APPARATUS

Etsuo Tanaka, Tokyo, and Yoichi Koizumi, Kawagoe, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 453,672, May 30, 1995, abandoned, which is a continuation of Ser. No. 175,509, Dec. 30, 1993, abandoned. This application Dec. 19, 1996, Ser. No. 770,577
Claims priority, application Japan, Jan. 6, 1993, 5-015864
Int. Cl.⁶ G03B 17/00

U.S. Cl. 396—55

10 Claims

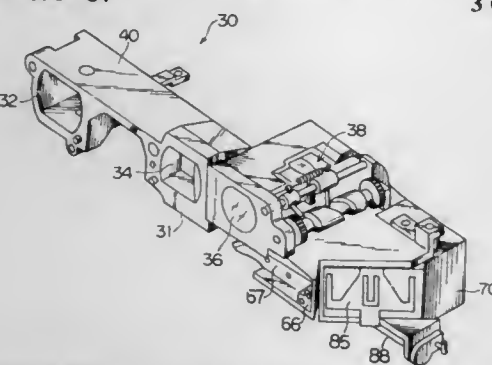


1. A parallax compensation apparatus for compensating for parallax in a camera used to photograph an object and having a viewfinder optical system with a first optical axis and a photographic lens system with a second optical axis different from the first optical axis, the parallax compensation apparatus comprising: a rangefinder measuring a distance of the object from the camera;
- a detection unit detecting movement of the camera prior to photographing the object;
- a moving unit moving the second optical axis; and
- a control unit driving the moving unit such that a picture plane of the camera matches a field of the viewfinder according to the distance measured by said rangefinder, and driving the moving unit to maintain a position of an image of the object on the picture plane according to the movement detected by the detecting unit.

5,778,262
ZOOM FINDER
Hideo Kobayashi, and Kazuaki Nagata, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan
Filed Sep. 23, 1996, Ser. No. 723,874
Claims priority, application Japan, Sep. 25, 1995, 7-246440
Int. Cl.⁶ G03B 13/10; 17/02

U.S. Cl. 396—84

3 Claims



1. A zoom finder comprising at least one movable lens arranged behind an objective lens, a cam member having a cam and a gear for producing rotation of the cam, a gear train having a plurality of gears and being connected to the gear of the cam member for driving said at least one movable lens by rotating said cam member for driving said at least one movable lens forward and backward in the direction of the optical axis of said at least one movable lens to

change the focal length of said zoom finder, and enabling a subject image passing through said objective lens and said at least one movable lens to be observed through an eyepiece;
wherein a finder body frame is provided, said finder body frame holding therein said objective lens, said at least one movable lens, and said cam member, and having means for attachment of the finder body frame to a camera body; and wherein the gears of said gear train are directly attached to said finder body frame.

5,778,263

Patent Not Issued For This Number

5,778,264
APPARATUS FOR REDIRECTING CAMERA FLASH LIGHT

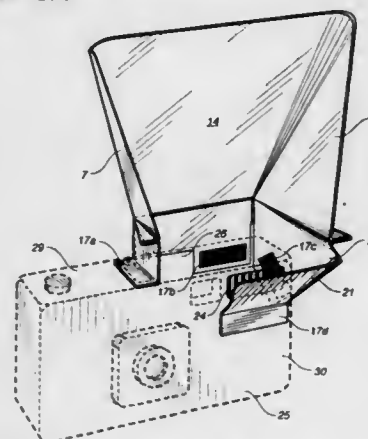
Brenda Kean, 5 Lingmoor Drive, Manor Park, Burnley, Lancashire, BB12 8UA, United Kingdom
PCT No. PCT/GB94/01588, § 371 Date May 22, 1996, § 102(e)
Date May 22, 1996, PCT Pub. No. WO95/04302, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 22, 1994, Ser. No. 581,618
Claims priority, application United Kingdom, Jul. 28, 1993, 9315577

Int. Cl.⁶ G03B 15/03; 15/06

U.S. Cl. 396—174

15 Claims



11. A photographic reflector for a flash unit for a camera to redirect the flash emanating from a light-emitting surface of the flash unit to illuminate a photographic subject comprising: a hood assembleable for use from a creased one-piece blank, said hood being provided with an interior reflective surface on at least a first portion of an interior side of said hood;
- a retaining means connected to said hood to retain the one-piece blank in a hood shape; and
- releaseable attachment means for securing the hood to the flash unit when in use such that said reflective surface is retained at an angle between 30° and 60° inclusive with respect to the light-emitting surface of the flash unit, said one-piece blank having a substantially rectangular shape and which is provided with a first transverse crease along which the hood can be folded flat when not in use, and which is provided with second and third creases to define two separate flaps, one of said flaps being at one side of the blank, another of said flaps being at an opposite side of said blank, said flaps being foldable so as to permit the blank to be folded into said hood shape, an area between said flaps defining said first portion of the hood, the blank having a pair of spaced parallel slots which extend from said one side of the blank at right angles thereto, said second and third creases extending from closed ends of said pair of spaced parallel slots respectively to corners at ends of the opposite side of the blank, said first transverse crease of said blank intersects said second and third

creases, another pair of creases being formed at intersections of said first crease with said second and third crease respectively, each of said another pair of creases radiates outwardly from the intersection towards an adjacent side of the blank at equal angles of substantially 30° to the first crease so as to define two triangular areas at each side of the first crease.

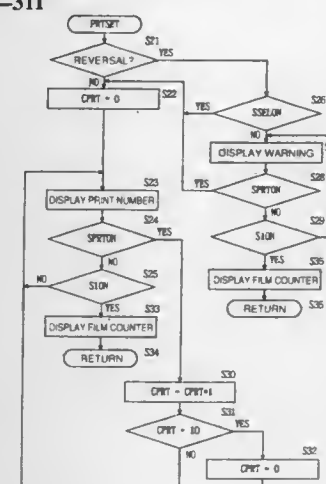
5,778,265
CAMERA ALLOWING SETTING OF PRINT NUMBER
Reiji Seki, Tondabayashi, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Dec. 30, 1996, Ser. No. 777,039

Claims priority, application Japan, Jan. 31, 1996, 8-014981
Int. Cl.⁶ G03B 17/24; 17/00

U.S. Cl. 396—311

24 Claims

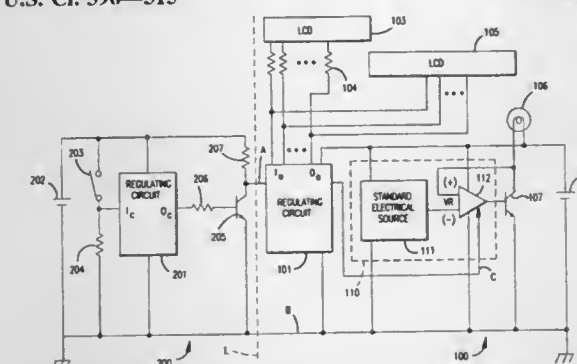


1. A camera, comprising: means for setting a print number;
- means for detecting a film; and
- means for performing a prescribed operation relating to the print number before allowing setting of the print number when said film detecting means detects said film to be a reversal film.

5,778,266
DATA TRANSCRIBING DEVICE FOR CAMERA
Tsutomu Wakabayashi, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 355,255, Dec. 9, 1994, abandoned.
This application May 21, 1997, Ser. No. 859,777
Claims priority, application Japan, Dec. 22, 1993, 5-324831
Int. Cl.⁶ G03B 17/24; 3/00

U.S. Cl. 396—315

19 Claims



5,778,268

STEREO CAMERA

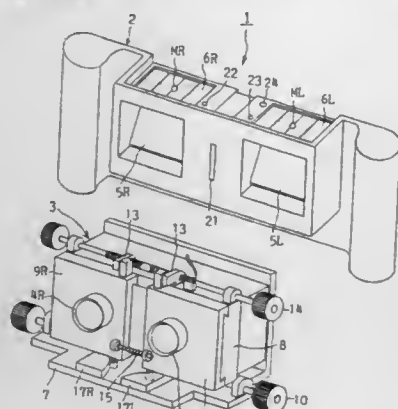
Minoru Inaba, No. 1116, Oaza Samukawa, Oyama-shi, Tochigi-ken, Japan

Filed Aug. 12, 1996, Ser. No. 695,626

Int. Cl.⁶ G03B 35/00

U.S. Cl. 396—326

10 Claims



1. A stereo camera of the reflex type comprising a camera body of the structure that two optical systems of a single-lens reflex camera bodies are integrated, two photographing lenses, a focal point adjusting mechanism for adjusting a focal point by interlocking a pair of lens boards for mounting said photographing lenses in parallel with the optical axis direction of the lenses, and a mechanism for adjusting the distance between the optical axes for adjusting the interval of said pair of lens boards, wherein lens shifting cams are symmetrically provided at a base frame for supporting said lens boards and said focal point adjusting mechanism so that cam surfaces thereof are faced, engaging portions brought into contact with said lens shifting cams are provided at said pair of lens boards, said pair of lens boards are urged by a spring in an interval increasing direction so that said engaging portions are pushed onto said lens shifting cams to constitute a mechanism for automatically adjusting the distance between the optical axes to bring the visual fields of right and left photographing lenses at a focal distance into agreement at all times irrespective of the feeding amounts of the photographing lenses by said lens shifting cams, an expanding and contracting mechanism for switching the interval of a pair of lens shifters by means such as a feed screw or the like is provided, said pair of lens boards are disposed between said pair of lens shifters to constitute a mechanism for manually adjusting the distance between the optical axes.

5,778,269

CAMERA AND ADVANCE-REWIND UNIT

Patricia L. Williams, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

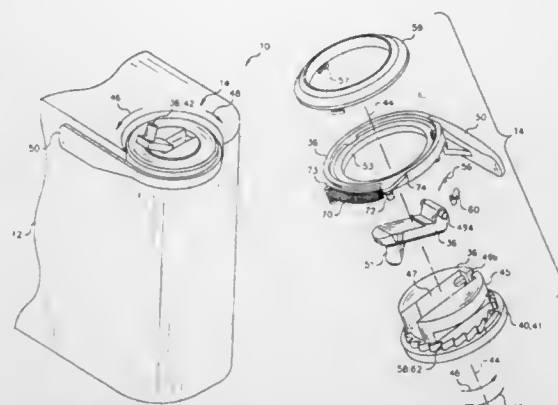
Filed Jun. 13, 1997, Ser. No. 874,901

Int. Cl.⁶ G03B 1/00

U.S. Cl. 396—387

20 Claims

1. A camera for use with photographic film, said camera comprising:
a body enclosing a film path;
a film drive disposed in said body in operative relation to said film path;
a crank engaging said film drive, said crank having a base and a handle, said crank defining a winding axis, said crank being rotatable about said winding axis in opposed first and second directions of rotation relative to said body;
a film winder coaxial with said crank, said film winder having a grip portion, said film winder being pivotable about said winding axis in said first and second directions; and
a one-way, overrunning clutch disposed between said crank and said film winder, said clutch being switchable between active and released states, said clutch, in said active state, coupling said film winder to said crank during rotation of said film



winder relative to said body in said first direction of rotation, decoupling said film winder from said crank during rotation of said crank relative to said film winder and said body in said first direction of rotation, and precluding rotation of said crank relative to said body in said second direction of rotation, said clutch, in said released state, permitting rotation of said crank relative to said body in said second direction of rotation.

5,778,270

ELECTRO-DEVELOPING TYPE CAMERA USING ELECTRO-DEVELOPING RECORDING MEDIUM

Tahei Morisawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

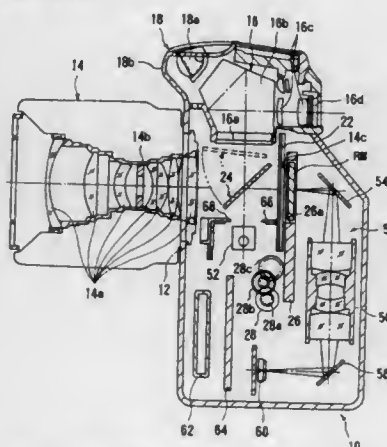
Filed May 10, 1996, Ser. No. 644,057

Claims priority, application Japan, May 11, 1995, 7-137256; May 11, 1995, 7-137257

Int. Cl.⁶ G03B 17/48

U.S. Cl. 396—429

15 Claims



1. An electro-developing type camera using an electro-developing recording medium, comprising:
photographing means for forming an optical image on said electro-developing recording medium to record and develop said optical image therein;
view-finder means for viewing said optical image obtained by said photographing means;
image-reader means for optically and electronically reading an image recorded and developed by said electro-developing recording medium, said image reader means comprising means for sensing an image, light source means for emitting a light beam, and optical guiding means for making said emitted light beam pass through said electro-developing recording medium and for guiding said emitted light beam to said image sensing means; and
mirror means disposed between said photographing means and said electro-developing recording medium and having a first reflecting surface and a second reflecting surface, said mirror means being movable between a first position at which said

5,778,272

PHOTOGRAPHIC PROCESSOR AND METHOD OF OPERATION

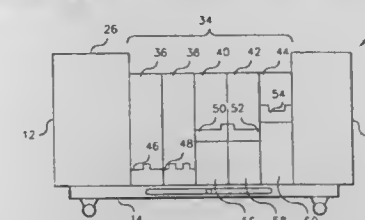
John Howard Rosenburgh, Hilton; David George Foster, West Henrietta, and Edgar Preston Gates, Honeoye, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 30, 1996, Ser. No. 723,337

Int. Cl.⁶ G03D 13/02; 13/04

U.S. Cl. 396—564

11 Claims



1. A photographic processor comprising:
a processing section containing a plurality of removable processing tanks containing a processing solution therein, at least one removable processing tank of said plurality of removable processing tanks having an access opening, an outlet port and an inlet port;
a recirculation system connected to said inlet port and said outlet port of said at least one removable processing tank for recirculating said processing solution through said tank; and
means for adjusting a size of said photographic processor such that said photographic processor can accommodate any desired number of removable processing tanks;
wherein said means for adjusting the size of said processor comprises an adjustable frame upon which said processing tanks are mounted.

5,778,273

PHOTOGRAPHIC PROCESSING SYSTEM

Shlomo Ben-Yaacov, 51 Lisperard St., New York, N.Y. 10013

Continuation-in-part of Ser. No. 348,981, Nov. 28, 1994, Pat. No. 5,579,073. This application Sep. 16, 1996, Ser. No. 716,797

Int. Cl.⁶ G03D 17/00

U.S. Cl. 396—598

19 Claims

1. A photographic processing apparatus comprising:
a generally rectangular housing having first and second generally parallel side walls, first and second end walls and a bottom side;
a plurality of chemical processing trays having first and second side walls, first and second end walls, and a bottom;
said chemical processing trays being slidably mounted to said generally parallel side walls of said generally rectangular housing for longitudinal movement parallel to said generally parallel side walls of said generally rectangular housing;
first and second covers having inner and outer surfaces pivotally mounted to said first and second end walls of said generally rectangular housing for enclosure thereof;
a light-blocking paper chamber affixed to said first cover for holding a roll of photographic paper;

optical image obtained by said photographing means is directed to said finder means by said first reflecting surface of said mirror means and a second position at which a formation of said optical image on said electro-developing recording medium by said photographing means is allowed without being hindered by said mirror means,
wherein said second reflecting surface of said mirror means forms a part of said optical guiding means of said image reader means during a positioning of said mirror means at said first position thereof.

5,778,271

BAYONET MOUNT AND PHOTO-TAKING LENS BARREL FOR INTERCHANGEABLE LENS CAMERA SYSTEM

Toyotoshi Kawasaki; Shinichi Suzuki, and Yoshiyuki Inoue, all of Osaka, Japan, assignors to Minolta Co., Ltd., Japan

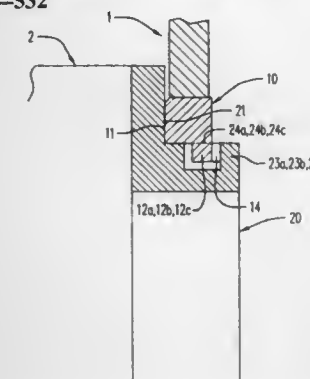
Filed Jan. 28, 1997, Ser. No. 790,318

Claims priority, application Japan, Jan. 31, 1996, 8-015249

Int. Cl.⁶ G03B 17/00

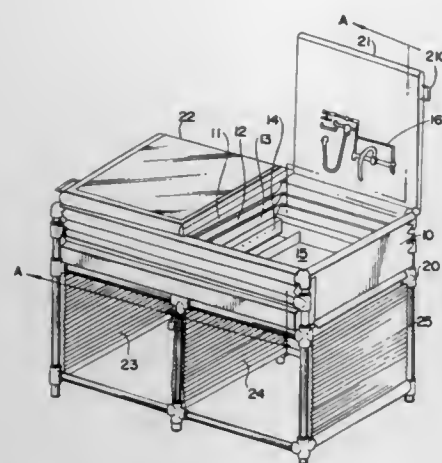
U.S. Cl. 396—532

11 Claims



1. A bayonet mount for detachably installing a photo-taking lens barrel on a camera body in an interchangeable lens camera system, said bayonet mount comprising:

- a body-side mount surface on the camera body;
- a lens-side mount surface on the lens barrel;
- a plurality of stop members severally provided on the interior surface of the body-side mount surface and on the interior surface of the lens-side mount surface, wherein the correspondent stop members of the body-side mount surface and stop members of the lens-side mount surface engage when the lens barrel is installed on the camera body so as to anchor the lens barrel to the camera body;
- electrical contact portions severally provided on the interior side of the body-side mount surface and on the interior side of the lens-side mount surface, wherein each of said electrical contact portions is provided with a plurality of electrical contact elements which connect through mutual contact when the lens barrel is installed on the camera body; and
- wherein one pair among correspondent pairs of mutually engaging stop members is disposed at a position which overlaps at least the electrical contact elements for supplying electrical power to actuators within the lens barrel among said plurality of electrical contact elements in a radial direction on the mount surfaces.



- a paper roller disposed above said inner surface of said first cover and adjacent said light-blocking paper chamber for rolling said photographic paper;
- a paper gripper disposed on said inner surface of said first cover adjacent said paper roller for transporting said photographic paper across said inner surface; and
- a photographic print enlarger disposed on said inner surface of said second cover for producing photographic prints on said photographic paper disposed on said inside surface of said first cover.

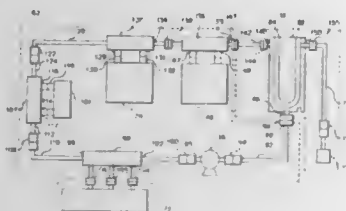
5,778,274

PHOTOGRAPHIC PROCESSOR AND METHOD OF OPERATION

David George Foster, West Henrietta; Edgar Preston Gates, Honeoye, and John Howard Rosenburgh, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 30, 1996, Ser. No. 724,096
Int. Cl.⁶ G03D 13/04

U.S. Cl. 396—636

24 Claims



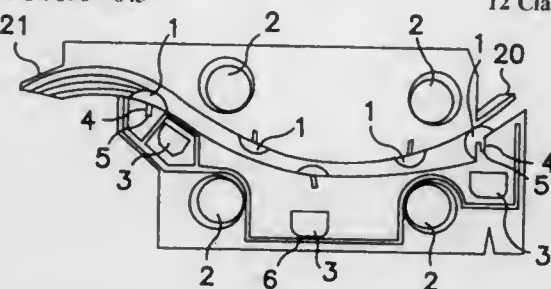
1. A photographic processor comprising:
- a processing section containing at least one removable processing tank containing a processing solution therein, said at least one removable processing tank having an access opening, an outlet port and an inlet port;
- a recirculation system having a first inlet end and a second outlet end, said first inlet end of said recirculation system being connected to said outlet of said at least one removable processing tank by a first substantially dripless valve connection, and said second outlet end of said recirculation system being connected to said inlet port of said at least one removable processing tank by a second substantially dripless valve connection; and
- a cover for mating with said access opening and providing a fluid sealing relationship with said access opening such that said at least one removable processing tank can be moved without spilling the processing solution contained therein through said access opening.

5,778,275
PROCESSING DEVICE FOR PHOTOGRAPHIC MATERIALS AND AUTOMATIC DEVELOPING MACHINE USING THE SAME

Miyuki Yamashita, Tokyo, Japan, assignor to Hirakawa Kogyo Sha Co., Ltd., Tokyo, Japan
Filed Sep. 23, 1996, Ser. No. 710,844
Int. Cl.⁶ G03D 13/04

U.S. Cl. 396—643

12 Claims



1. A processing device for photographic materials, comprising as the minimum unit of its parts a pair of sections;
- one of said sections being a tray section which is made of an integrally molded material, having an upper surface with a gently concave form and at least three indented zones for arranging thereon free-rotation rollers in the width direction to support the conveyance of photographic materials, each of which indented zones has in a bottom area small holes for draining a processing solution, and is provided with caves for putting therein shafts of the rollers; and
- the other of said sections being an upper section made of an integrally molded material, having a lower surface which has a gently convex form and at least two indented zones for arranging thereon free-rotation rollers in the width direction to support the conveyance of photographic materials, and is provided with caves for putting therein shafts of the rollers; wherein the upper section is arranged over the tray section so as to secure a space through which photographic materials are passed.

5,778,276

IMAGE FORMING APPARATUS HAVING AUTOMATIC PRELIMINARY SCANNING START FUNCTION

Yutaka Hasegawa, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Feb. 8, 1996, Ser. No. 598,684
Claims priority, application Japan, Feb. 8, 1995, 7-019626; Jan. 26, 1996, 8-011406

Int. Cl.⁶ G03G 15/00

U.S. Cl. 399—17

30 Claims

1. An image forming apparatus having a contact glass on which an original document is to be placed, comprising:
- means for holding an original document placed at a designated position on the contact glass;
- first detecting means for detecting an open state and a closed state of said means for holding;
- second detecting means for detecting an existence of an original document placed at the designated position on the contact glass;
- means for optically scanning an image of an original document placed at the designated position on the contact glass;
- means for executing an image data recognition and processing;
- means for forming an image onto a copy sheet in accordance with output signals generated from said means for executing an image data recognition and processing; and
- means for controlling said means for optically scanning to perform a preliminary scanning prior to a scanning process for forming an image onto a copy sheet, said preliminary scanning being performed automatically upon a detection by said first detecting means of movement of said means for holding from an open state to a closed state and upon a

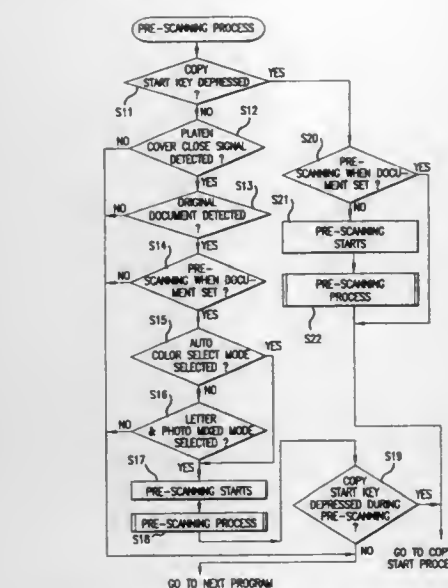
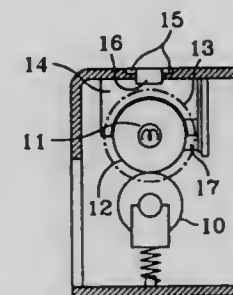
5,778,278
DEVICE FOR PREVENTING FIXING UNIT FROM OVERHEATING IN AN ELECTROPHOTOGRAPHIC SYSTEM

Nam-Gon Jeon, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Jun. 20, 1996, Ser. No. 667,921
Claims priority, application Rep. of Korea, Jun. 20, 1995, 1995-13969

Int. Cl.⁶ G03G 15/20

U.S. Cl. 399—33

18 Claims



detection by said second detecting means of existence of an original document placed at the designated position on the contact glass.

5,778,277

TILTED SCAN RAIL

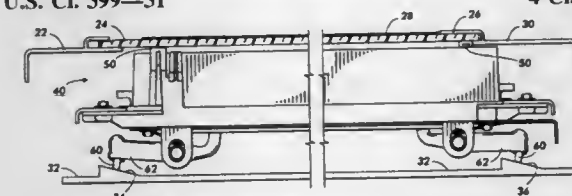
Stephen J. Wenthe, Jr., West Henrietta; Gordon B. Reid, Walworth; Frederick B. Clark, West Henrietta, and Jack K. Fullerton, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 25, 1996, Ser. No. 736,859

Int. Cl.⁶ H04N 1/04

U.S. Cl. 399—31

4 Claims



1. A moving carriage imaging system, comprised of:
- a frame having a registration member that extends in a first direction;
- a platen attached to said frame, said platen for receiving a substrate in a predetermined position relative to said registration member;
- a base disposed away from said platen, said base including a first tilted surface and a second tilted surface, wherein said first and second tilted surfaces extend substantially in said first direction;
- a moving carriage assembly disposed between said platen and said base, said moving carriage including:
- a housing;
- at least one button connected to said housing, said at least one button for contacting both said platen and said registration member;
- a first biased pivot arm attached to said housing;
- a second biased pivot arm attached to said housing;
- a first roller attached to said first biased pivot arm, said first roller for rolling on said first tilted surface; and
- a second roller attached to said second biased pivot arm, said second roller for rolling on said second tilted surface;
- a motion inducing system for moving said moving carriage assembly relative to said platen;
- wherein said moving carriage assembly is biased toward said registration member by said first and second rollers riding on said first and second tilted surfaces.

5,778,279

IMAGE FORMING APPARATUS ESTIMATING A CONSUMABLE LIFE OF A COMPONENT USING FUZZY LOGIC

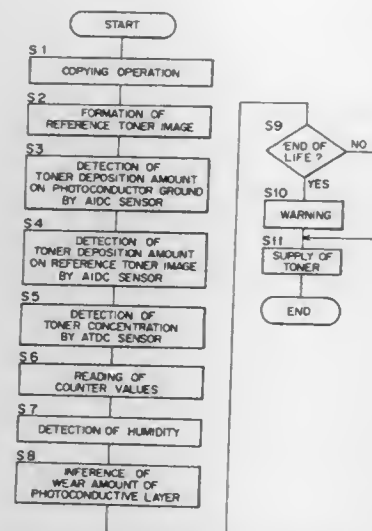
Atsushi Kawai, Aichi-ken, and Tetsuya Sakai, Toyokawa, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan
Filed Dec. 24, 1996, Ser. No. 773,736
Claims priority, application Japan, Dec. 25, 1995, 7-337532

Int. Cl.⁶ G03G 21/00

U.S. Cl. 399—42

26 Claims

1. An image forming apparatus for developing a latent image formed on a photoconductor into a toner image with a developer, and then transferring the toner image onto a sheet, the image forming apparatus comprising:
- detection means for detecting factors relating to degree of consumption of a consumable article; and



decision means for estimating the degree of consumption of the consumable article based on detected values of the detection means and then deciding whether the consumable article has reached an end of life, wherein the decision means utilizes a fuzzy inference method.

5,778,280

IMAGE FORMING APPARATUS WHICH CORRECTS FOR MISREGISTRATION

Kenichi Komiya; Koji Tanimoto, both of Kanagawa-ken, and Naoaki Ide, Shizuoka-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

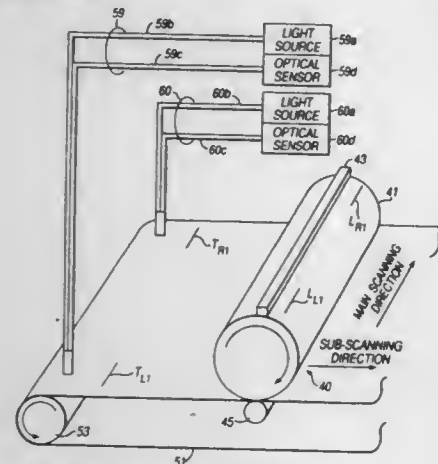
Filed Mar. 8, 1996, Ser. No. 613,238

Claims priority, application Japan, Mar. 24, 1995, 7-065502

Int. Cl.⁶ G03G 15/00

U.S. Cl. 399—49

26 Claims



1. An image forming apparatus comprising:
 - a plurality of latent image forming means for forming latent images on a plurality of image carriers;
 - a plurality of developing means, arranged corresponding to the image carriers, for forming developed images by developing the latent images formed by the latent image forming means;
 - means for conveying the developed images formed by the developing means;
 - means for detecting the developed images being conveyed on the image conveying means, the detecting means including a light source, a first optical fiber element for guiding a light from the light source and illuminating the image conveying means to obtain reflected light, a second optical fiber element for guiding the reflected light in a specified direction, and a light receiving element for converting the reflected light guided by the second optical fiber element into an electric signal;

means for computing a misregistration correcting amount to correct misregistration of each of the developed images conveyed by the image conveying means based on the detecting result of the detecting means; and means for executing correction of the misregistration based on the computed result of the computing means.

5,778,281

TRANSFER APPARATUS

Osamu Handa, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

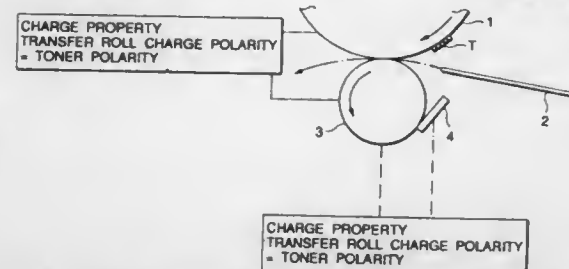
Filed Jan. 8, 1997, Ser. No. 780,296

Claims priority, application Japan, Jan. 22, 1996, 8-027324

Int. Cl.⁶ G03G 15/16

U.S. Cl. 399—101

20 Claims



1. A transfer apparatus for electrostatically transferring a toner image of a given polarity supported on an image support to a recording medium, said apparatus comprising:
 - a transfer roll coming in rolling contact with said image support in synchronization therewith and having a transfer electric field of an opposite polarity to toner formed in a gap between said transfer roll and said image support; and
 - a cleaning member abutting said transfer roll for removing residues on said transfer roll, wherein
 - a voltage is not directly applied to said cleaning member, and wherein a charge property of a contact surface portion between said cleaning member and said transfer roll is set so that a charge polarity on a surface of said transfer roll produced as said cleaning member abuts said transfer roll becomes the same as a toner polarity on said image support.

5,778,282

DEVELOPER SUPPLYING CONTAINER, DEVELOPING DEVICE HAVING SAME AND PROCESS CARTRIDGE

Toshiaki Nagashima, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 34,466, Mar. 19, 1993, abandoned.

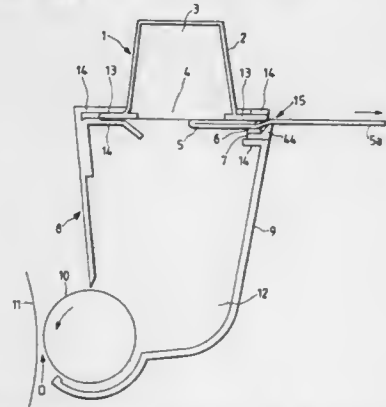
This application May 14, 1997, Ser. No. 856,012

Claims priority, application Japan, Mar. 23, 1992, 4-064842

Int. Cl.⁶ G03G 15/08

U.S. Cl. 399—106

58 Claims



1. A developer container to be used for an electrophotographic image forming apparatus, comprising:

- a container body including a container and having an opening through which the developer passes;
- a flexible seal member for openably closing said opening of said container body, said flexible seal member being pulled to be drawn out from an outlet portion of said container body to thereby open said opening;
- an elastic scraping member provided along a moving path of said flexible seal member for scraping said flexible seal member;
- a guide member provided at a downstream side where said flexible seal member contacts with said elastic scraping member in the moving path of said flexible seal member in order to reduce a contact pressure between said flexible seal member and said elastic scraping member, said guide member guiding said flexible seal member toward one surface thereof opposite to another surface thereof where said flexible seal member contacts with said elastic scraping member; and
- a regulating member disposed adjacent said opening and substantially opposite said guide member relative to the moving path of said flexible seal member for regulating a direction of movement of said flexible seal member and for facilitating sealing of said outlet portion when said flexible seal member is removed, said regulating member contacting said one surface of said flexible seal member as said another surface of said flexible seal member is guided by said guide member.

5,778,283

PROCESS CARTRIDGE INCLUDING A BANDING DEFECT PREVENTING WASTE TONER MOVING AUGER

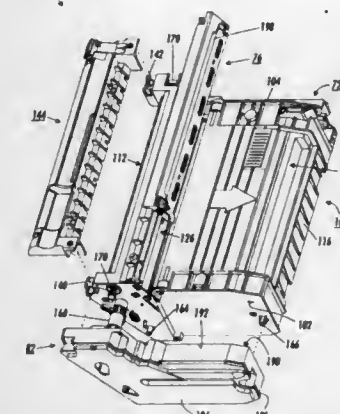
Dhirendra C. Damji, Webster, and Ajay Kumar, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 14, 1997, Ser. No. 970,320

Int. Cl.⁶ G03G 21/16

U.S. Cl. 399—111

5 Claims



1. An electrostatic process cartridge detachably mountable into a cavity defined by mated modules forming parts of an electrostatic reproduction machine, the process cartridge comprising:
 - (a) a housing having walls defining a partially enclosed process chamber;
 - (b) a rotatable cylindrical photoreceptive member mounted within a portion of said process chamber and to said walls, said photoreceptive member having a closed loop path within said process chamber, and an image bearing surface for holding a formed toner image;
 - (c) plural electrostatic process toner image forming and transferring components located along said closed loop path for forming a toner image on, and for transferring such toner image from, said image bearing surface; and
 - (d) a cleaning subassembly of said process cartridge located along said closed loop path downstream of said toner image forming and transferring components, for removing and transporting waste toner away from said image bearing surface; said cleaning subassembly including:

- (i) a curved portion of said walls including a blade mounting surface having a plane forming a blade mounting angle with a tangent to said image bearing surface;
- (ii) a cleaning blade mounted to said mounting surface and having a cleaning edge contacting said image bearing surface at a desired cleaning angle for removing waste toner from said image bearing surface;
- (iii) a seal member mounted into contact with said image bearing surface at a point upstream of said cleaning blade, said seal member, said blade, said image bearing surface and said curved portion of said walls, defining a cleaning chamber; and
- (iv) a troughless waste toner transporting auger mounted for rotation without a trough and directly over said image bearing surface within said cleaning chamber for transporting and moving waste toner axially relative to said photoreceptive member and out of said cleaning chamber, said troughless auger having a first end, a second end, a direction of waste toner movement over said image bearing surface from said first end to said second end, and a variable pitch for preventing image banding defects from undesirable waste toner accumulations on said image bearing surface.

5,778,284

ALL-IN-ONE PROCESS CARTRIDGE INCLUDING A PHOTORECEPTOR AND PROCESS COMPONENTS HAVING RELATIVE CRITICAL, IMAGE QUALITY ACTING REGIONS

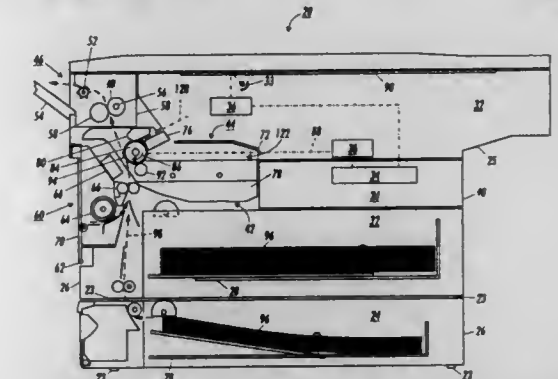
Ajay Kumar, Fairport; Dhirendra C. Damji, Webster, and Jerry W. Bryant, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 14, 1997, Ser. No. 970,847

Int. Cl.⁶ G03G 21/16

U.S. Cl. 399—111

3 Claims



1. An electrostatic process cartridge detachably mountable into a cavity defined by mated machine modules forming parts of an electrostatic reproduction machine, the process cartridge comprising:
 - (a) a housing having walls defining a process chamber;
 - (b) a rotatable cylindrical photoreceptor mounted to said walls and horizontally within said process chamber, said cylindrical photoreceptor including an imaging area, an imaging length and a fixed rotational closed loop path within said process chamber; and
 - (c) plural process components acting along said closed loop path for producing imaging affects on said photoreceptor to form on, and to transfer from, said photoreceptor, a toner image; said process components including:
 - (i) a charging component including a pin-array charge emitting device having an acting region precisely only as long as said length of said imaging area in order to avoid occurrence of "dark bands" towards edges of a formed and transferred toner image;
 - (ii) a developer roll for applying charged toner particles to the imaging area, said developer roll having an acting region

centered relative to, and extending slightly beyond, each end of said length of said imaging area; and

(iii) a cleaning component including a cleaning blade for removing waste toner from said imaging area and an auger for transporting the waste toner in a waste toner flow direction, said cleaning blade having an acting region slightly longer than said length of said imaging area, and offset relative to said imaging area in the direction of waste toner flow, thereby enabling said process cartridge to reliably and effectively produce and transfer high quality toner images.

5,778,285

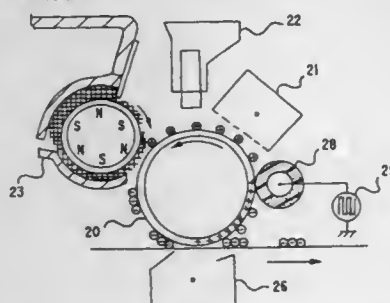
IMAGE FORMING APPARATUS FOR COLLECTING RESIDUAL TONER FROM A DRUM USING AN AC VOLTAGE

Akira Nagahara; Sachio Sasaki; Mitsuhiro Furukawa; Shigenobu Utaga; Yoshio Yamaguchi; Mitsuru Sato; Nobuo Kuwabara; Haruyasu Watanabe, all of Kawasaki, and Takefumi Takahashi, Inagi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 220,208, Mar. 30, 1994, Pat. No. 5,678,143. This application Jun. 13, 1997, Ser. No. 874,714
Claims priority, application Japan, Oct. 15, 1993, 5-281995
Int. Cl.⁶ G03G 15/24

U.S. Cl. 399—150

6 Claims



1. An image forming apparatus for forming an image on a sheet, comprising:

- a rotary endless latent image carrier;
- image forming means for forming an electrostatic latent image on said latent image carrier;
- developing means for developing said electrostatic latent image on said latent image carrier with powdery developers and collecting residual toners on said latent image carrier at a same time;
- transfer means for transferring said developed image on said latent image carrier onto a sheet;
- a distribution member comprising a roller having independent foam perforations for distributing residual toners on said latent image carrier when in contact with said latent image carrier after image transfer; and
- voltage supplying means for supplying an AC voltage to said distribution member,

wherein said roller rotates at a speed which causes discharging between said roller and said rotary endless latent image carrier for de-electrifying said rotary endless latent image carrier.

5,778,286

IMAGE FORMING APPARATUS AND PHOTORECEPTOR FOR USE THEREIN

Eiichi Kido, 556-204, Yanagimachi, Yamatokoriyama-shi Nara, Japan, 639-11; Yuhi Yui, 2-299, Fukigaoka, Nabari-shi Mie, Japan, 518-04; Toyokazu Mori, 763-1, Minosho-cho, Yamatokoriyama-shi Nara, Japan, 639-11, and Mamoru Nozomi, Tana-cho Aoba-ku, Yokohama-shi Kanagawa, Japan, 227

Continuation of Ser. No. 609,133, Feb. 29, 1996, abandoned.

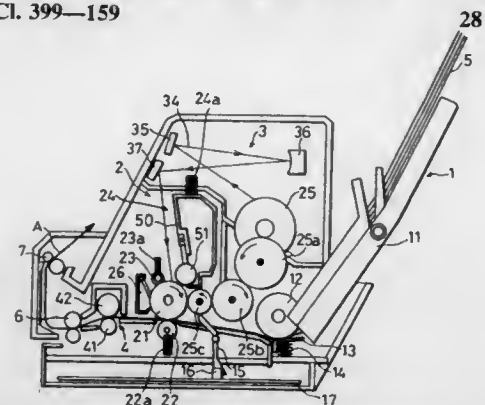
This application Sep. 4, 1997, Ser. No. 923,310

Claims priority, application Japan, Mar. 6, 1995, 7-045952

Int. Cl.⁶ G03G 15/00

U.S. Cl. 399—159

28 Claims



1. An electrophotographic image forming apparatus for forming an image by developing an electrostatic latent image formed on a photoreceptor using a developing material, said apparatus comprising:

- a cylindrical photoreceptor which is rotatably driven; and
- a developing material holding member having an elastic material for holding a developing material on a surface thereof during its rotary movement, said developing material holding member supplying a developing material on said photoreceptor while contacting a peripheral surface of said photoreceptor, wherein said photoreceptor is placed in such a manner that a coefficient of dynamic friction between said photoreceptor and said elastic material is not more than 0.5.

5,778,287

ELECTROPHOTOGRAPHIC IMAGING APPARATUS HAVING AN IMPROVED BELT DRIVE SYSTEM

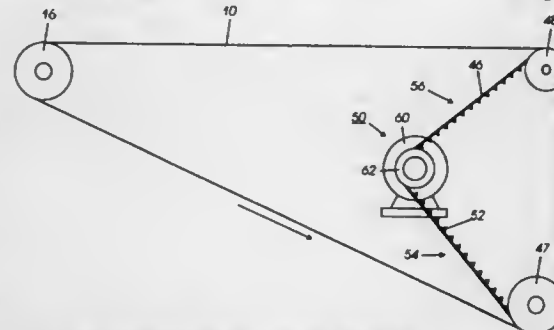
Robert C. U. Yu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 21, 1997, Ser. No. 786,542

Int. Cl.⁶ G03G 15/00

U.S. Cl. 399—167

13 Claims



1. An electrophotographic imaging apparatus comprising at least a first rotatable belt support roller and a second rotatable belt support roller, each of said first and second rotatable support rollers having an imaginary axis parallel to and spaced from the other, a flexible electrophotographic imaging belt in contact with and supported by said first and second rotatable rollers, a belt driving device and

at least one flexible non-stretchable drive belt extending from said belt driving device directly to each of said support rollers whereby activation of said belt driving device applies a pushing force directly to said drive belt in the region between said drive belt driving device and said first rotatable roller and simultaneously applies pulling force directly to said drive belt in the region between said driving device and said second rotatable support roller and both said first rotatable roller and said second rotatable roller simultaneously apply force to said imaging belt.

5,778,288

ERASE BEFORE A.C. RECHARGE IN COLOR ELECTROGRAPHIC PRINTING

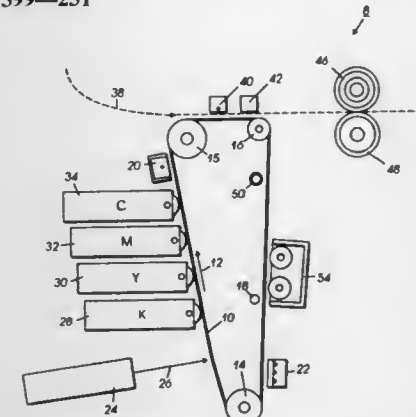
Charles H. Tabb; Jeffrey J. Folkins, both of Rochester, and Kenneth W. Pietrowski, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 14, 1997, Ser. No. 891,960

Int. Cl.⁶ G03G 15/01

U.S. Cl. 399—231

6 Claims



1. A color printing machine, comprising:

- a photoreceptor having an undeveloped area with an electrical charge of a first magnitude and a developed area having a first toner layer that is charged at a second magnitude;
- an erase lamp for illuminating said photoreceptor so as to discharge said photoreceptor such that the electrical charge on said undeveloped area is reduced to a third magnitude, wherein said third magnitude is less than said second magnitude;
- an AC charging device for charging said photoreceptor such that the electrical charge on said undeveloped area is increased from said third magnitude to a fourth magnitude;
- an exposure station for exposing said photoreceptor so as to produce a latent image on said photoreceptor; and
- a developing station for depositing a charged second toner layer on said latent image.

5,778,289

D.C. RECHARGE TO REDUCE CROSS CONTAMINATION IN THE READ-OUT PROCESS

Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 14, 1997, Ser. No. 892,863

Int. Cl.⁶ G03G 15/01

U.S. Cl. 399—231

10 Claims

1. A color printing machine, comprising:
a photoreceptor having a developed area with a first toner layer charged at a first magnitude and an undeveloped area charged at a second magnitude;
a DC charging device for charging said photoreceptor such that the electrical charges on said developed area and on said undeveloped area are increased to a third magnitude;
an exposure station for exposing said photoreceptor so as to produce a latent image on said photoreceptor, said latent

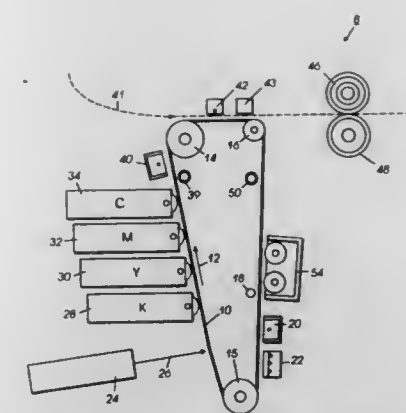


image comprised of an exposed area having a charge of a fourth magnitude that is less than said third magnitude; a developing station for depositing a charged second toner layer on said latent image; and a recharging station having an AC charging device, said recharging station for charging said first toner layer and said second toner layer to a predetermined magnitude that is greater than said fourth magnitude; wherein only said DC charging device charges said photoreceptor when said photoreceptor only has said first toner layer.

5,778,290

COMPOSITE COATED DEVELOPMENT ELECTRODES AND METHODS THEREOF

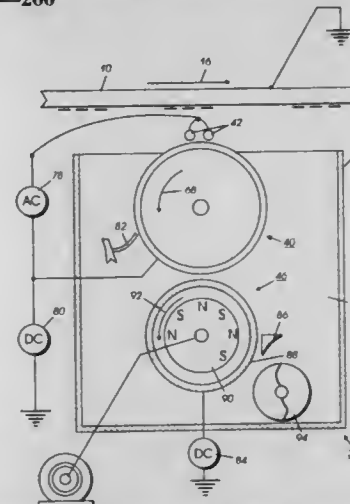
Santokh S. Badesha; Arnold W. Henry, both of Pittsford, and George J. Heeks, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1997, Ser. No. 841,034

Int. Cl.⁶ G03G 15/08

U.S. Cl. 399—266

21 Claims



1. An apparatus for developing a latent image recorded on a surface, comprising:

- wire supports;
- a donor member spaced from the surface and being adapted to transport toner to a region opposed from the surface;
- an electrode member positioned in the space between the surface and the donor member, the electrode member being closely spaced from the donor member and being electrically biased to detach toner from the donor member thereby enabling the formation of a toner cloud in the space between the electrode member and the surface with detached toner from the toner cloud developing the latent image, wherein opposed end regions of the electrode member are attached to wire supports adapted to support the opposed end regions of said electrode member; and

a composite coating on at least a portion of nonattached regions of said electrode member.

5,778,291
IMAGE FORMING APPARATUS HAVING A TRANSFER MEMBER POSITIONAL DOWNSTREAM OF A NIP PORTION

Masao Okubo; Noriaki Kojima, and Nobukazu Takahashi, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

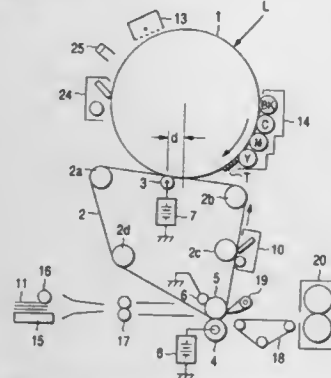
Filed Sep. 19, 1996, Ser. No. 716,567

Claims priority, application Japan, Sep. 26, 1995, 7-247993; Sep. 6, 1996, 8-236934

Int. Cl.⁶ G03G 15/16

U.S. Cl. 399—302

16 Claims



1. An image forming apparatus, comprising:
a latent image carrier for forming a latent image in accordance with each image signal of at least one color image;
a developing unit including a plurality of color units with each color unit containing a differently colored toner; the developing unit operative for developing the latent image with at least one predetermined color toner;
a belt member including an intermediate transfer member and arranged in such a manner that a portion of said belt member comes into contact with said latent image carrier, the intermediate transfer member operative to sequentially transfer a toner image appropriate to the latent image of each color of the at least one predetermined color for and carry multiple color latent images as a single laminated toner image, defined as at least two differently colored toner images superimposed on one another; and

transfer means for transferring the toner image held on the latent image carrier onto said belt member side, said transfer means being arranged on an opposite side to said latent image carrier with respect to said belt member, wherein said transfer means is arranged in the downstream close to a contact region in which said latent image carrier is contacted with said belt member.

5,778,292
METHOD AND DEVICE FOR CONTROLLING A SLEEP-MODE OF AN IMAGE FORMING APPARATUS

Antonius Henricus Arends, and Marijn Wilhelmus Petrus Gelten, both of Eindhoven, Netherlands, assignors to Océ-Nederland B.V., Ma Venlo, Netherlands

Filed Sep. 6, 1996, Ser. No. 706,711

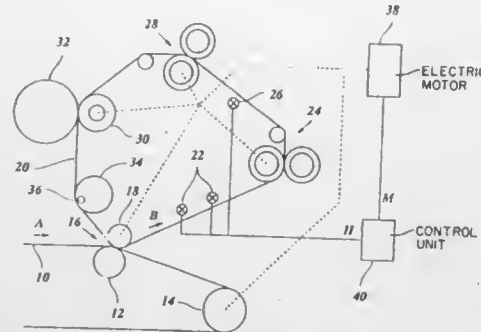
Claims priority, application European Pat. Off., Sep. 8, 1995, 95202431

Int. Cl.⁶ G03G 15/16

U.S. Cl. 399—307

25 Claims

1. A method for controlling the sleep-mode of an image forming apparatus comprising the following steps:



providing a movable and heatable element;
imparting movement to the movable element;
heating the movable element exclusively while it is moving;
controlling the movement and the heating to maintain the heatable element at a lower predetermined temperature relative to a normal operating temperature in order to reduce power consumption in the sleep-mode;
energizing the movement and the heating intermittently; and
energizing the heating with full power when activated.

5,778,293
IMAGE HEATING APPARATUS

Yasumasa Ohtsuka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 323,789, Oct. 17, 1994, Pat. No. 5,568,240.

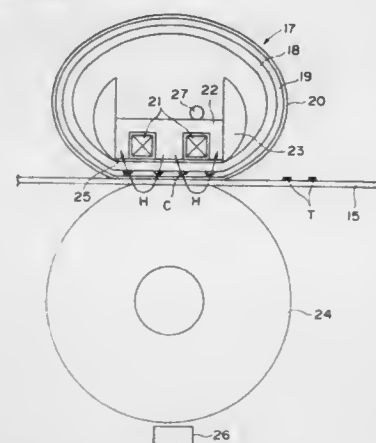
This application May 30, 1996, Ser. No. 656,428

Claims priority, application Japan, Oct. 18, 1993, 5-259972

Int. Cl.⁶ G03G 15/20

U.S. Cl. 399—329

4 Claims



1. An image heating apparatus comprising:
an endless film having a metal layer;
an excitation coil for producing magnetic flux, which produces eddy current in said film to generate heat therein, and wherein an image on said recording material is heated by heat from said film; and
a guiding member for guiding said film, wherein said film is extended around said guiding member, and a part of said film is tension-free.

5,778,294
ELECTROPHOTOGRAPHIC APPARATUS AND BELT FIXING DEVICE WITH NON-UNIFORM NIP PRESSURE
Chikara Hiraoka, Chiyoda-machi; Junichi Matsuno, Tsuchiura, and Hiromitsu Fukuda, Chiyoda-machi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

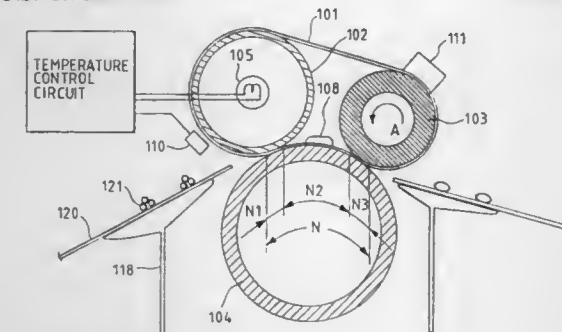
Filed Sep. 18, 1996, Ser. No. 710,507

Claims priority, application Japan, Sep. 20, 1995, 7-241243

Int. Cl.⁶ G03G 15/20

U.S. Cl. 399—329

21 Claims



1. A belt fixing device comprising:
an endless fixing belt;
a plurality of belt transport rollers for rotatably supporting said fixing belt;
a heat source for applying heat to a sheet on which an image is to be fixed, said heat source being provided inside one belt transport roller of said plurality of belt transport rollers, said one belt transport roller being disposed at a sheet entrance of the belt fixing device; and
a pressure roller mounted for pressing said sheet against said fixing belt,
wherein said belt transport rollers are disposed in contact with an external circumference of said pressure roller with said fixing belt being interposed therebetween, and a pressure between said pressure roller and said one belt transport roller is larger than a pressure between said pressure roller and another belt transport roller which is disposed downstream of said one belt transport roller in a direction of sheet transport.

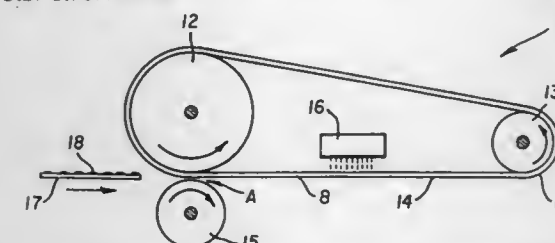
5,778,295
TONER FUSING BELT AND METHOD OF USING SAME
Jiann H. Chen, Fairport; Muhammed Aslam, Rochester; Wayne T. Ferrar, Fairport, and Andy H. Tsou, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 5, 1997, Ser. No. 812,370

Int. Cl.⁶ G03G 15/20

U.S. Cl. 399—329

11 Claims



1. A toner fusing belt that comprises: a seamless polyimide substrate belt; a cross-linked silicone resin intermediate layer formed on said polyimide substrate by curing a composition comprising siloxanes having a ratio of difunctional to trifunctional units of 1:1 to 1:2.7, at least 90% of the total number of functional units of said siloxanes being difunctional and trifunctional units,

the cross-linked silicone resin having a weight-average molecular weight of 5,000 to 50,000 and an alkyl to aryl ratio of 1:0.1 to 1:1.2; and, coated on said intermediate layer, a surface layer that comprises a silsesquioxane polymer.

5,778,296
XEROGRAPHIC CASSETTE WITH DUAL WASTE TONER STORAGE

Jan J. van der Steen, America; Ruud Vullers, Reuver; Marcel Kuipers, Venray; Jozef P. M. Logtens, Meerio, all of Netherlands; Roderick A. Cooley, Herts, United Kingdom; Derek J. Milton, Herts, United Kingdom; Andrew E. Taylor, Herts, United Kingdom, and Stephen J. Abbott, Beds, United Kingdom, assignors to Xerox Corporation, Stamford, Conn.

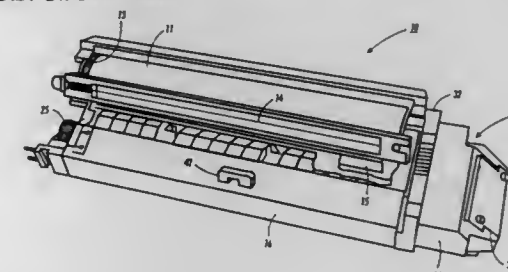
Filed Sep. 30, 1996, Ser. No. 720,522

Claims priority, application United Kingdom, Oct. 31, 1995, 95 222 80

Int. Cl.⁶ G03G 21/10; 21/12

U.S. Cl. 399—360

7 Claims



1. A xerographic cassette for a printing machine and a copying machine comprising:
an imaging surface, having an interior surface and an exterior surface opposed to one another;
a cleaning device for removing particles from said imaging surface;
means for conveying the particles removed from said imaging surface into the interior surface of the imaging surface, the interior surface of the imaging surface forming an interior imaging storage container for holding the particles collected therein; and
an auxiliary waste toner storage container being positioned adjacent to said interior imaging storage container, said conveying means passes through said auxiliary waste toner storage container, said conveying means being adapted to release particles into said auxiliary waste toner storage container until said auxiliary waste toner storage container is substantially full, whereafter the particles of said auxiliary waste toner storage container being conveyed into said interior imaging storage container, and said auxiliary waste toner storage container defining an aperture therein enabling emptying of said auxiliary waste toner storage container.

5,778,297

MULTI-FUNCTIONAL PRINTER DEVICE FOR PRINTING TAPE-SHAPED RECORDING MEDIA

Helmut Reichl, Fűstenfeldbruck; Hans Manzer, Seefeld, and Manfred Viechter, Walpertskirchen, all of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

PCT No. PCT/DE95/00604, § 371 Date May 20, 1996, § 102(e) Date May 20, 1996, PCT Pub. No. WO96/02871, PCT Pub. Date Feb. 1, 1996

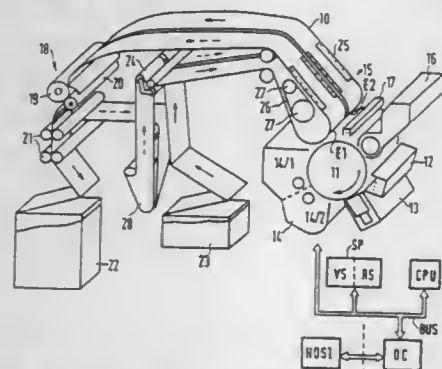
PCT Filed May 8, 1995, Ser. No. 624,462

Claims priority, application Germany, Jul. 15, 1994, 44 25 074.6

Int. Cl.⁶ G03G 21/00

U.S. Cl. 399—384

15 Claims



1. Multi-functional printer device for printing tape-shaped recording media with different tape widths, comprising:
 - a means that generates toner images that comprises a usable width of at least twice the tape width of a narrow recording medium;
 - a single fixing station arranged above said means and having an essentially horizontal passage of the recording medium webs, whereby the fixing station spans the recording medium webs;
 - a paper output channel via which the recording medium leaves the fixing station;
 - a return channel proceeding under the fixing station that accepts the narrow recording medium, that is in communication with a delivery channel for recording media of different tape widths in a delivery region to the means that generates toner images and that comprises a turn-over means;
 - a deflection means that can be arranged between the paper output channel and the input of the return channel and that has an allocated output channel for the recording media, whereby in a first operating mode of the printer device for multiple printing of the single, narrow recording medium, the recording medium—proceeding from a supply region—is conducted via the means for generating toner images to a use region of the fixing station and, from the latter, is conducted via the deflection means and the return channel back again to the means for generating toner images and a use region of the same fixing station neighboring said use region, and in a second operating mode of the printer device for single-sided printing of one or more recording media of different tape widths, the recording medium or media—proceeding from the supply region—are conducted only via the means for generating toner images to the single fixing station.

5,778,298

TRANSFER DEVICE HAVING A COPY MEDIUM GUIDE

Yoshihiro Enomoto; Nobuo Hyakutake; Hitoshi Funato; Teisuya Fujita, and Nobuyoshi Komatsu, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1996, Ser. No. 751,986

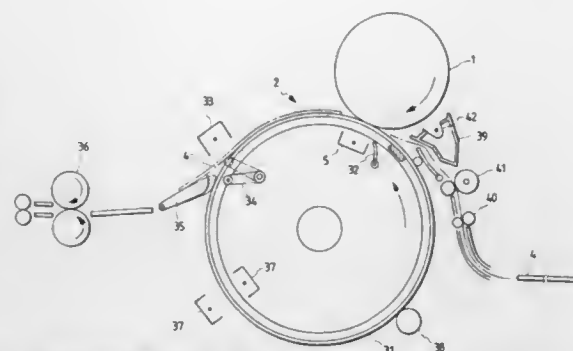
Claims priority, application Japan, Nov. 21, 1995, 7-303108

Int. Cl.⁶ G03G 15/00; 15/16

U.S. Cl. 399—388

5 Claims

1. A transfer device comprising:



- a photosensitive drum having an outer surface on which an image to be transferred is formed;
- a transfer drum having an outer surface and arranged in parallel to said photosensitive drum and substantially in contact with said outer surface of said photosensitive drum at a transfer position, said transfer drum capable of adsorbing a sheet on its outer surface; and
- sheet guiding means for guiding said sheet supplied toward said transfer drum to the transfer position between said photosensitive drum and said transfer drum, the sheet guiding means having a first end and a second end, the first end being closer to the transfer position than the second end, wherein at the first end of said sheet guiding means a hill-shaped guide is provided which flexes at a flexing point in a plane orthogonal to the rotary axis of each of both drums so as to be convex toward said photosensitive drum, and wherein a portion of said sheet guiding means extending from the first end to said flexing point forms an inclination angle with respect to a tangent of said photosensitive drum passing through the transfer position, the inclination angle being equal to or greater than 0° measured from the tangent toward said photosensitive drum.

5,778,299

Patent Not Issued For This Number

5,778,300

SHEET PROCESSING DEVICE

Koichi Murakami, Yokohama; Shigeru Sugita, Sayama; Masaaki Sato, Kawasaki; Yoshinori Isobe; Norifumi Miyake, both of Tokyo, and Hiromichi Tsujino, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

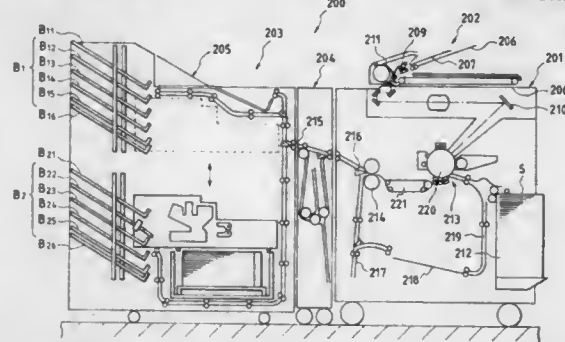
Filed Sep. 3, 1996, Ser. No. 706,776

Claims priority, application Japan, Sep. 4, 1995, 7-248314

Int. Cl.⁶ G03G 21/00

U.S. Cl. 399—403

21 Claims



1. A sheet processing device which is mounted on an image forming apparatus having a both-side copy mode for forming an image on each side of a sheet member, comprising a bin module provided with a plurality of bins for accepting sheet members discharged from said image forming apparatus, and processing

means for removing sheet members from said bin module and processing said sheet members, wherein, when the maximum number of sheet members continuously producible in said both-side copy mode of said image forming apparatus is N, and the number of bins is m, wherein m is set to satisfy the following relational expression:

$$m \geq N.$$

5,778,301

CEMENTED CARBIDE

Joonyong Hong, 834 Lakewood Dr., Rochester Hills, Mich. 48309

Continuation-in-part of Ser. No. 247,085, May 20, 1994, Pat. No. 5,482,670. This application Jan. 8, 1996, Ser. No. 584,516

Int. Cl.⁶ B22F 1/00

U.S. Cl. 419—15

12 Claims

1. A method for making a carbide composite comprising:
 - i) choosing a binder material from composite powdered metals;
 - ii) choosing a carbide powder mixture of one or more powders, the said powders being selected from the group consisting of (A) carbide powders of carbide forming metals, (B) solid solution carbide powders of said carbide forming metals, (C) powders of said carbide forming metals and their alloys with an appropriate amount of carbon or carbon producing materials, and (D) mixtures thereof;
 - iii) mixing and milling said binder material with said carbide powder mixture thereby forming a resultant mixture;
 - iv) forming a green compact with the resultant mixture;
 - v) sintering the green compact;

provided that:

- a sufficient amount of binder material is added to the carbide powder mixture to facilitate sintering and a significant amount of the binder material evaporates during sintering, thereby resulting in a sintered carbide composite containing less binder material than said resultant mixture, and wherein the amount of binder material present in the sintered carbide composite is less than about 1% by weight of said carbide composite, and the amount of binder material added to said carbide powder mixture is less than about 2% by weight of said resultant mixture.

5,778,302

METHODS OF MAKING CR-ME SPUTTER TARGETS AND TARGETS PRODUCED THEREBY

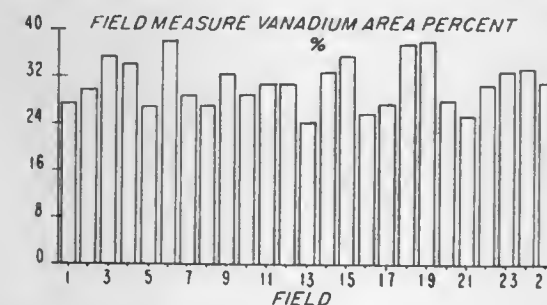
Eugene Y. Ivanov, Grove City, Ohio, assignor to Tosoh SMD, Inc., Grove City, Ohio

Filed Oct. 30, 1995, Ser. No. 550,256

Int. Cl.⁶ B22F 1/00; 3/14

U.S. Cl. 419—32

15 Claims



1. A method for making a Cr-Me containing sputter target comprising:

- (a) providing a blend including Cr powder of less than 100 mesh and Me powder of less than 100 mesh wherein Me is a metal;
- (b) mechanically alloying said blend of particles;
- (c) subjecting said mechanically alloyed blend to hot isostatic pressure conditions to consolidate said mechanically alloyed blend;

- (d) shaping said consolidated mechanically alloyed blend to a shape desired for use as a sputter target.

5,778,303

MULTIPLEXED AUDIO-VIDEO SIGNAL TRANSMISSION SYSTEM THROUGH PAIR-WIRE

Noboru Shinozaki, and Seichi Kubo, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Inc., Osaka-fu, Japan

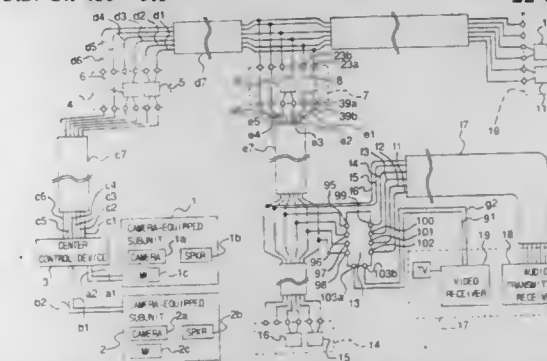
Filed Apr. 14, 1994, Ser. No. 227,341

Claims priority, application Japan, Apr. 16, 1993, 5-090289; Oct. 8, 1993, 5-253260

Int. Cl.⁶ H04N 1/00; 7/14; H03F 3/26; H03H 5/00

U.S. Cl. 455—5.1

22 Claims



1. A multiplexed audio-video signal transmission system for transmitting a multiplexed audio-video signal and DC power through a wire-pair, in which a video signal modulated to a predetermined frequency band does not overlap a frequency band of an audio signal said audio signal and said video signal being carried in said wire-pair in opposite phase in a balanced condition, and said DC power being carried between said wire-pair, said multiplexed audio-video signal transmission system comprising:
 - camera-equipped subunit means having a camera, a speaker and a microphone for producing a first balanced audio-video signal;
 - first wire-pair means connected to said subunit means for transmitting said first balanced audio-video signal;
 - a relay device connected to said first wire-pair means, said relay device separating a balanced video signal from said first balanced audio-video signal to refine said balanced video signal and for combining said refined balanced video signal with a separated audio signal to produce a second balanced audio-video signal, said relay device comprising:
 - (i) a balanced-to-unbalanced converter for converting said separated balanced video signal to an unbalanced video signal;
 - (ii) an automatic gain control unit for amplifying said unbalanced video signal;
 - and
 - (iii) a balanced transmitter for producing an amplified balanced video signal which is a refined version of said balanced video signal;
 - second wire-pair means connected to said relay device for transmitting said second balanced audio-video signal;
 - a door branching device connected to said second wire-pair means for receiving said second balanced audio-video signal and for separating said audio signal and said video signal; and
 - a television-equipped control unit connected to said door branching device for viewing an image captured by said camera using said video signal and for effecting a two-way communication with said camera-equipped subunit means using said audio signal.

5,778,304

METHOD FOR PROVIDING COMMUNICATION SERVICES BASED ON GEOGRAPHIC LOCATION
Gary W. Grube, Palatine; Marc C. Naddell, Schaumburg, and Mark L. Shaughnessy, Algonquin, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

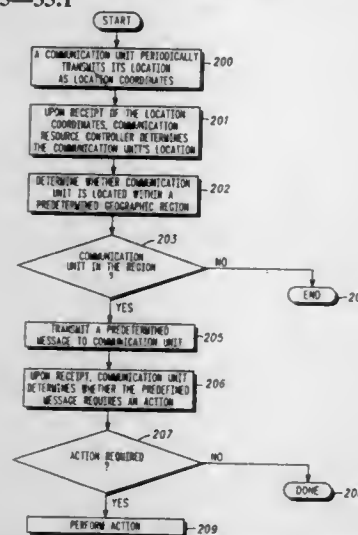
Continuation of Ser. No. 209,777, Mar. 10, 1994, abandoned.

This application Aug. 21, 1995, Ser. No. 517,180

Int. Cl.⁶ H04Q 7/38

U.S. Cl. 455—33.1

11 Claims



1. A method for a communication system controller to provide system features to a communication unit based on a geographic location of the communication unit, the method comprising the steps of:

receiving location coordinates of the communication unit and a request to use a system feature of a plurality of system features provided by the communication resource controller; determining a location of the communication unit based on the location coordinates; determining whether the location of the communication unit is within a predetermined geographic region; determining whether the system feature indicated in the request is restricted within the predetermined geographic region; and transmitting service restriction information to the communication unit when the system feature indicated in the request is restricted within the predetermined geographic region and the communication unit is located within the predetermined geographic region, wherein the service restriction information identifies limitations of using the system feature in the predetermined geographic region.

5,778,305

Patent Not Issued For This Number

5,778,306

LOW LOSS HIGH FREQUENCY TRANSMITTING/RECEIVING SWITCHING MODULE
Richard S. Komrusch, Albuquerque, N. Mex., assignor to Motorola Inc., Schaumburg, Ill.

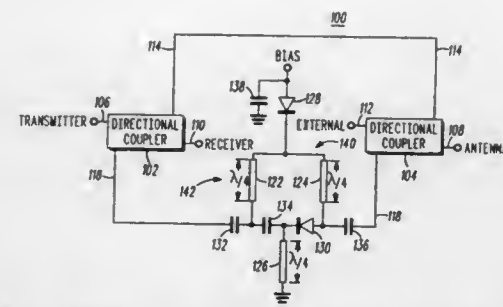
Filed Nov. 8, 1996, Ser. No. 745,345

Int. Cl.⁶ H04B 1/44

U.S. Cl. 455—78

25 Claims

1. A transmitting/receiving switching module, comprising: a first and second directional coupler, the first directional coupler having an input and output port, the second directional coupler having an antenna and external port; a delay circuit having an electrical length of about one-half wavelength;



a first coupling line electrically connecting the couplers, a second coupling line electrically connecting the couplers, the delay circuit being switchably coupled in series with the second coupling line; and

a switching circuit including a diode, a first, second and third DC blocking capacitor, a biasing element and a RF choke, the diode is connected in a series combination with the second DC blocking capacitor, the series combination is further connected in series with the second coupling line via the first and third DC blocking capacitors, the delay circuit is connected in parallel across the series combination, the RF choke is connected at a junction of the second blocking capacitor and the diode, the biasing element is coupled to the delay circuit; the delay circuit, when switched into a series connection with the second coupling line by the switching circuit, adding substantially one-half electrical wavelength to the second coupling line, the delay circuit, when switched out of the series connection with the second coupling line by the switching circuit, subtracting substantially one-half electrical wavelength from the second coupling line.

5,778,307

AMPLIFIER WITH ADAPTIVE OUTPUT ALLOCATION AND METHOD THEREOF

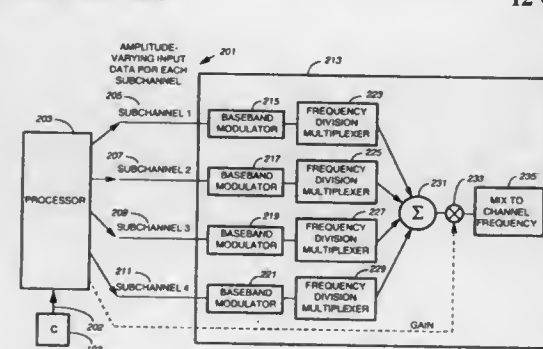
Brian J. Budnik, Watauga, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 29, 1996, Ser. No. 625,502

Int. Cl.⁶ H04B 1/02

U.S. Cl. 455—103

12 Claims



1. An amplifier with adaptive output capacity allocation, the amplifier comprising in combination;

a processor, coupled to a signal, for examining said signal to determine a first capacity requirement and a second capacity requirement, said signal including a first and a second amplitude varying subchannel and said processor examining said first and said second amplitude varying subchannel over a time period to determine said first and said second capacity requirement corresponding, respectively to a first and a second amplitude for said time period and

an amplifier, coupled to said processor and said signal, for processing said signal in accordance with said first capacity requirement and said second capacity requirement to provide an output signal, said first and said second amplitude varying subchannel are controlled to provide a composite amplitude corresponding to said first and said second amplitude, said

composite amplitude constrained such that said amplifier substantially maximizes said output signal.

5,778,308

ADAPTIVE ANTENNA MATCHING

Peter Sroka, Woking, and John Anthony Samuels, Camberley, both of England, assignors to Nokia Mobile Phones Limited, Salo, Finland

Continuation of Ser. No. 449,719, May 24, 1995, abandoned.

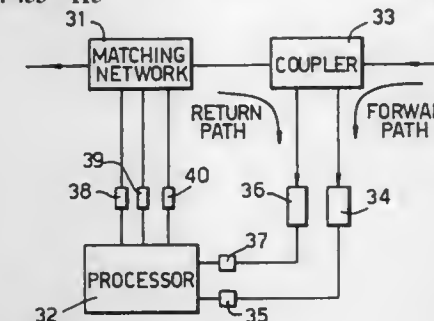
This application Dec. 26, 1996, Ser. No. 773,280

Claims priority, application United Kingdom, May 25, 1994, 9410513

Int. Cl.⁶ H04B 17/00

U.S. Cl. 455—115

28 Claims



1. An adaptive antenna-matching network for a radiotelephone, said network comprising:

first and second reactive circuits interconnected by a third reactive circuit, wherein each of said first and said second reactive circuits comprises a shunt element, and said third reactive circuit comprises a series reactance operative for reversal between capacitive and inductive values of reactance; means responsive to the operating environment of the radiotelephone for directly measuring the level of reflected signals produced by the radio telephone's environment; means responsive to said level of reflected signals for electronically adjusting the impedances of individual ones of said reactive circuits of the matching network; wherein said measuring means and said adjusting means are operative to effect repetitive measurements of the reflected signals and repetitive adjustments of the impedance.

5,778,309

GAIN ADJUSTMENT METHOD IN TWO-WAY COMMUNICATION SYSTEMS

John R. Tuttle, and Charles K. Snodgrass, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 430,711, Apr. 27, 1995, Pat. No. 5,613,228, which is a continuation of Ser. No. 206,471, Mar. 3, 1994, abandoned, which is a continuation of Ser. No. 909,370, Jul. 6, 1992, abandoned. This application Oct. 7, 1996, Ser. No. 726,612

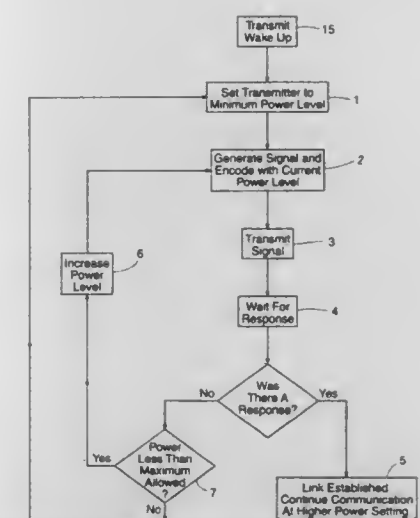
Int. Cl.⁶ H04B 1/02

U.S. Cl. 455—127

10 Claims

1. A method of interrogating a portable RF transceiver, comprising the steps of:

providing an interrogator RF transceiver; establishing a minimum power level; setting a current power level value equal to said minimum power level; the interrogator transceiver transmitting an interrogation RF signal at said current power level; after transmitting the interrogation signal, the interrogator transceiver waiting a period of time to receive a response RF signal; the interrogator transceiver determining whether said period of time has elapsed without the interrogator transceiver receiving said response signal and, only if so, then



increasing said current power level value, and repeating the steps of the interrogator transceiver transmitting, waiting, and determining; providing a portable RF transceiver which is substantially smaller and lighter than the interrogator transceiver; the portable RF transceiver waiting to receive the interrogation RF signal; and in response to receiving the interrogation signal, the portable transceiver transmitting the response RF signal.

5,778,310

CO-CHANNEL INTERFERENCE REDUCTION

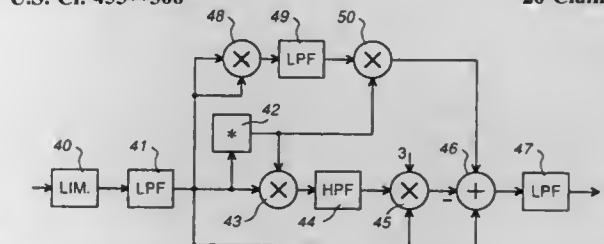
Wen Tong, and Rui Wang, both of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 30, 1995, Ser. No. 565,265

Int. Cl.⁶ H04B 1/10; H03D 3/00

U.S. Cl. 455—306

20 Claims



1. A method of reducing co-channel interference of a frequency modulated received signal, having a predetermined signal bandwidth, represented by a complex signal having samples $x(k)$ where k is an integer, comprising the steps of:

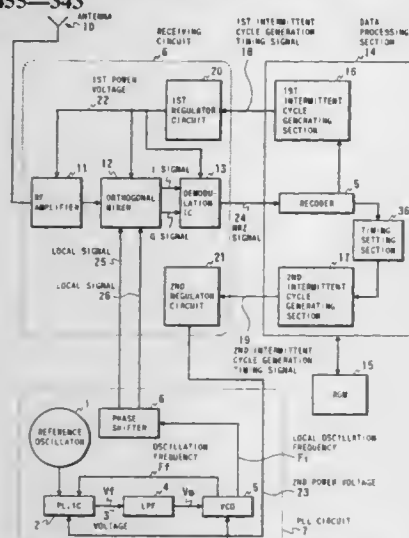
amplitude limiting each sample to produce a limited sample substantially equal to $x(k)/|x(k)|$; and non-linearly filtering the limited samples to enhance cancellation of co-channel interference, the step of non-linearly filtering comprising the steps of: producing different derivatives of the limited samples, the different derivatives including a derivative of at least one second or higher order power of the limited samples; combining the different derivatives in a manner to enhance the cancellation of co-channel interference in the combination; and low pass filtering at least one of the derivatives, the limited samples, and the combination in accordance with the predetermined signal bandwidth.

5,778,311 INTERMITTENT OPERATION RECEIVER WITH VARIABLE PRE-HEAT TIME FOR ITS PHASE-LOCKED CIRCUIT

Hideo Nakanishi, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 28, 1996, Ser. No. 671,597
Claims priority, application Japan, Jun. 30, 1995, 7-186627
Int. Cl.⁶ H04B 1/16

U.S. Cl. 455—343

4 Claims



1. An intermittent operation receiver comprising:
 - a receiving circuit for receiving a control signal including at least one of plural intermittent operating cycles and data transmitted from a base station, and for generating a demodulated signal;
 - a PLL circuit including a voltage-controlled oscillator for generating two kinds of local signals having a 90° phase difference which are sent to said receiving circuit to control processing of received signals; and
 - a data processing section for receiving said demodulated signal from said receiving circuit, decoding said data and processing said control signal to generate a first intermittent cycle generation timing signal including a period corresponding to a designated intermittent operating cycle of said control signal, and sending out said first intermittent cycle generation timing signal to said receiving circuit to control a power supply for said receiving circuit,
- said data processing section selectively determining a pre-heat time in accordance with an intermittent operating cycle derived from said control signal, and generating a second intermittent cycle generation timing signal for timing said pre-heat time and generating said second intermittent cycle generation timing signal to said PLL circuit to control a power supply for said PLL circuit,
- thereby changing said pre-heat time of said PLL circuit in accordance with any modified intermittent operating cycle sent from said base station.

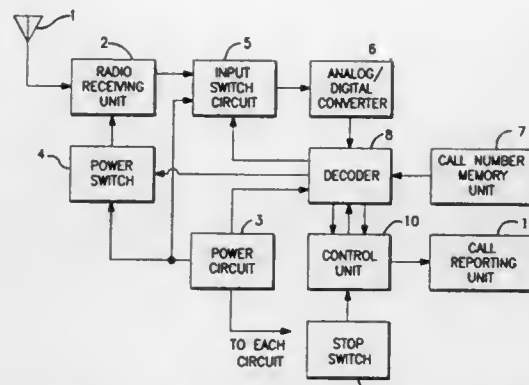
5,778,312 RADIO SELECTIVE CALL RECEIVER HAVING FUNCTION TO DETECT POWER VOLTAGE

Shinichi Kawashima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jul. 18, 1996, Ser. No. 683,414
Claims priority, application Japan, Jul. 21, 1995, 7-184548
Int. Cl.⁶ H04B 1/16

U.S. Cl. 455—343

9 Claims

4. A radio signal receiving and reporting method comprising the steps of:
 - applying power voltage to a radio receiving unit to retrieve or detect a call number during a period in which a radio signal is demodulated, the demodulated signal is converted into a digi-



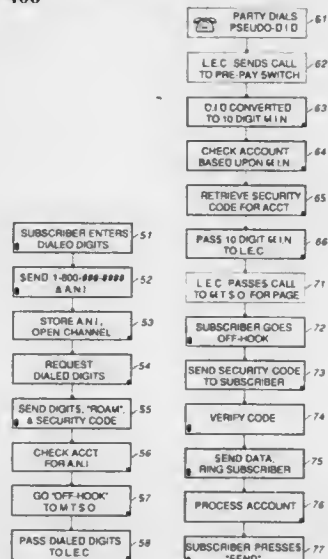
- tal demodulated signal by an analog/digital converter and a specific signal or frame is retrieved or detected from the signal;
- applying power voltage to the analog/digital converter during a period other than the above period to convert it into a digital voltage signal and detecting whether the voltage signal falls below a predetermined voltage value;
- making a call report when a call number matches the call number of the receiver included in the specific frame of the digital demodulated signal; and
- giving an alarm when the digital voltage signal falls below a predetermined voltage value.

5,778,313 PRE-PAID CELLULAR TELEPHONE SYSTEM

Douglas V. Fougnes, Tempe, Ariz., assignor to Cellexis International, Inc., Tempe, Ariz.
Filed Dec. 8, 1995, Ser. No. 569,961
Int. Cl.⁶ H04Q 7/00; 7/38

U.S. Cl. 455—406

6 Claims

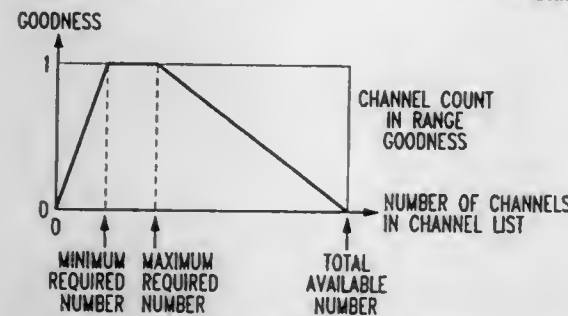


5,778,317
METHOD FOR ALLOCATING CHANNELS IN A RADIO NETWORK USING A GENETIC ALGORITHM
Alan Richard Kaminsky, Rochester, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed May 13, 1996, Ser. No. 645,098
Int. Cl.⁶ H04Q 7/20

U.S. Cl. 455-450

24 Claims



1. A method of planning allocation of channelized resources among networks of the resources, the method comprising the steps of:

- generating plural plans for allocating the resources to the networks, each of the plural plans having a random allocation of the resources to the networks;
- evaluating each of the plural plans to provide a vector for each of the plans which includes quality values on a scale which is continuous from best to worst; and
- iteratively ranking the evaluated plans from best to worst based on the vector, and using higher ranked plans to generate further plans which are also ranked until the top ranked one of the plans does not change for a predetermined period.

5,778,318
METHOD FOR ALLOCATING CHANNELS IN A RADIO SYSTEM

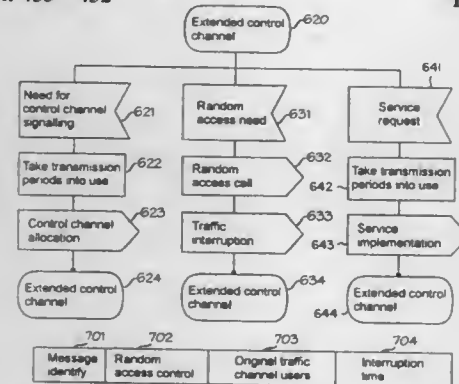
Reino Talarino, Riihimäki, and Mika Lehmusto, Espoo, both of Finland, assignors to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI95/00009, § 371 Date Sep. 18, 1996, § 102(e) Date Sep. 18, 1996, PCT Pub. No. WO95/19687, PCT Pub. Date Jul. 20, 1995

PCT Filed Jan. 13, 1995, Ser. No. 676,235
Claims priority, application Finland, Jan. 14, 1994, 940196
Int. Cl.⁶ H04Q 7/00

U.S. Cl. 455-452

16 Claims



1. A method for allocating control channels in a radio system comprising base stations and subscriber stations communicating with respective ones of the base stations over control channels and traffic channels, comprising the steps of:

- allocating in response to detection of interference on the control channels of the system, traffic channels for control channel use so as to distribute the control channel operation to a greater number of channels in a distributed manner so that the control channel operation is distributed temporarily between the allocated channels;

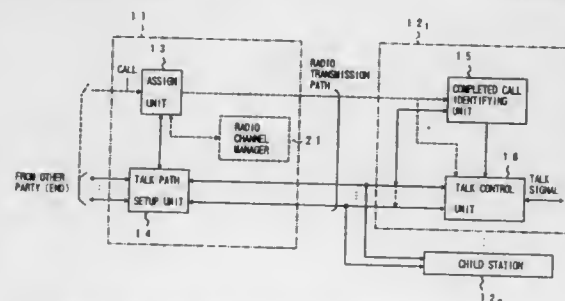
indicating the channels allocated for control channel use to the subscriber stations by transmitting control channel allocation messages to the subscriber stations via the base stations, the control channel allocation messages containing identities of the channels allocated in a distributed manner; receiving by the subscriber stations said control messages and storing the identities of said channels allocated in a distributed manner in memories of the subscriber stations; and performing control channel operation in a distributed manner on the distributed allocated control channels.

5,778,319
MOBILE STATION AND RADIO COMMUNICATION SYSTEM EMPLOYING MULTI-CHANNEL ACCESS
Takashi Sawaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 30, 1996, Ser. No. 723,024
Claims priority, application Japan, Feb. 26, 1996, 8-038063
Int. Cl.⁶ H04Q 7/20

U.S. Cl. 455-452

8 Claims



1. A radio communication system comprising: a parent station forming a radio zone; and one or a plurality of child stations located within said radio zone. said parent station comprising:

- assign means for discriminates a type of call based on a call processing procedure with respect to each call generated in said child stations, and out of radio channels forming said radio zone, making a general assignment of a number of free radio channels adapted to the discriminated type of call, based on a radio channel setup control procedure; and
- talk path setup means for setting up talk paths connecting said parent station with another party in parallel via the individual radio channels assigned by said assign means based on the call processing procedure, with respect to the individual calls,

each of said child stations comprising:

- completed call identifying means for exchanging a line signal with the other party via one representative channel out of the radio channels assigned by said assign means and the talk path which is set up by said talk path setup means in correspondence with the representative channel, and identifying a completed call of a child station to which said completed call identifying means belongs based on a line signal exchange procedure; and
- talk control means for sending or receiving a talk signal of the completed call which is identified by said completed call identifying means via all of the radio channels assigned by said assign means.

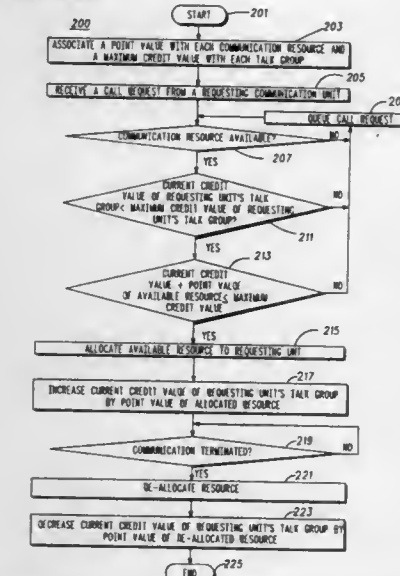
5,778,320
METHOD FOR ALLOCATING COMMUNICATION RESOURCES AMONG GROUPS OF COMMUNICATION UNITS

Peter M. Drozt, Bartlett; Paul M. Erickson, Palatine, and Glenn K. Lubin, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1996, Ser. No. 725,866
Int. Cl.⁶ H04B 1/06

U.S. Cl. 455-509

19 Claims



1. A method for a resource allocation device to allocate communication resources among groups of communication units, the method comprising the steps of:

- receiving a call request from a communication unit of a first group of communication units;
- determining whether a current credit value of the first group is less than a maximum credit value of the first group, the current credit value of the first group being equal to a summation of point values associated with communication resources currently being utilized by communication units of the first group and the maximum credit value of the first group being based on a cumulative point value associated with a predetermined quantity of communication resources that the first group is permitted to utilize for communications; and
- when the current credit value of the first group is less than the maximum credit value of the first group, allocating an available communication resource to the communication unit to produce an allocated communication resource.

5,778,321
PROCEDURE FOR AUTOMATICALLY REPLACING A USER IDENTIFICATION MODULE IN A MOBILE TERMINAL IN AN MOBILE RADIO NETWORK

Christophe Jouin, and Eric Desblancs, both of Paris, France, assignors to Alcatel Mobile Communication France, Paris, France

Filed Apr. 17, 1995, Ser. No. 423,633

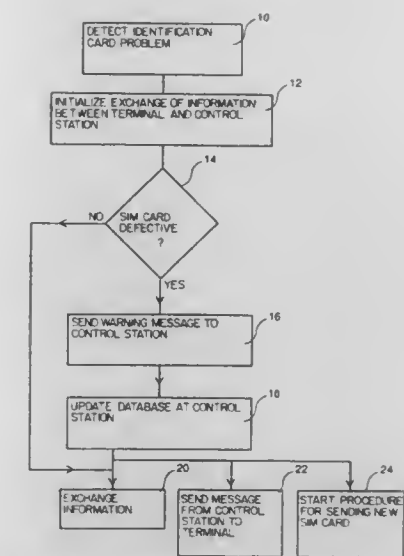
Claims priority, application France, Apr. 29, 1994, 94 05256
Int. Cl.⁶ H04B 1/38; H04M 1/00

U.S. Cl. 455-558

11 Claims

1. Procedure for automatically replacing a user identification module of a terminal in a communication network, said procedure including the following steps:

- storing in a memory of said terminal a message indicating the detection of a problem writing and/or reading said user identification module,
- transmitting a warning message from said terminal to a control station of said terminal during the first exchange of information following detection of said problem,



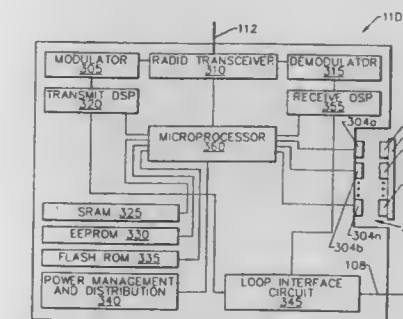
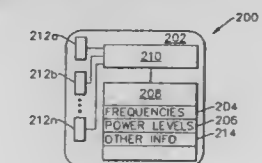
updating a database listing defective identification modules at said control station, and initializing a procedure for sending a new identification module to the user of said terminal.

5,778,322
METHOD AND APPARATUS FOR CONTROLLING TRANSCEIVER OPERATIONS IN A RADIO COMMUNICATIONS SYSTEM TO REDUCE SAME CHANNEL FREQUENCY INTERFERENCE
Nils Rutger Rydbeck, Cary, N.C., assignor to Ericsson Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 93,076, Jul. 16, 1993, abandoned.
This application Aug. 17, 1995, Ser. No. 516,254
Int. Cl.⁶ H04Q 7/22

U.S. Cl. 455-558

5 Claims



- A radio personal communications system comprising: a cellular network including a plurality of cells, each of which communicates over a set of assigned frequencies;
- a radio personal communications terminal including first radio transceiving means;
- a portable base station, electrically connected to a wire telephone network, and including second radio transceiving means for communicating with said first radio transceiving means, said base station being located within a first one of said plurality of cells having a first set of assigned frequencies, said base station including a smart card coupling interface; and

a smart card configured to removably couple to said base station, located within said first one of said plurality of cells, said smart card including:

interface means for electrically connecting said smart card to said smart card coupling interface of said portable base station;

memory means for storing indications of at least one radio transmission frequency and power level, said at least one radio transmission frequency being selected from said sets of frequencies assigned to the plurality of cells in the cellular network and being different from said first set of assigned frequencies; and

a controller operatively connected to said interface means of said smart card for providing said at least one radio transmission frequency and said power level to said portable base station;

said base station further comprising:

means for obtaining from the smart card signals representing said at least one radio transmission frequency and power level, said at least one radio transmission frequency being selected from said sets of frequencies assigned to the plurality of cells in the cellular network and being different from said first set of assigned frequencies; and

means for controlling said second transceiving means to operate at a frequency and a power level corresponding to the at least one radio transmission frequency and power level, said at least one radio transmission frequency being selected from said sets of frequencies assigned to the plurality of cells in the cellular network and being different from said first set of assigned frequencies, such that frequency interference between said second radio transceiving means and said cellular network is reduced.

5,778,323

METHOD AND APPARATUS FOR FACILITATING A RECOVERY FROM A CONFIGURATION ERROR IN A COMMUNICATION SYSTEM

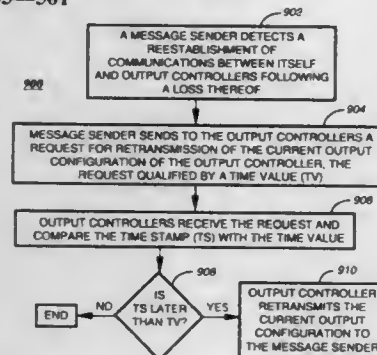
Jheroen P. Dorenbosch, Paradise; Xuming Chen, North Richland Hills, and R. Louis Breeden, Colleyville, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1996, Ser. No. 726,891

Int. Cl.⁶ H04B 1/06

U.S. Cl. 455-561

3 Claims



1. A method for facilitating a recovery from a configuration error in a communication system comprising a message sender and an output controller having an output configuration, comprising the steps of:

transmitting, from the output controller, a notification comprising a current output configuration in response to the output configuration of the output controller being changed to the current output configuration, the notification intended for reception by the message sender;

storing a time stamp in a memory element of the output controller indicating a time at which the notification was transmitted; sending from the message sender to the output controller, in response to a reestablishment of communications between the message sender and the output controller following a loss of communications, a request for a retransmission of the current

output configuration of the output controller, the request qualified by a time value representing a time at which the loss of communications occurred; and

retransmitting the current output configuration from the output controller to the message sender, in response to the request when the time stamp is later than the time value.

5,778,324

ANTENNA DOWNLINK BEAMSTEERING ARRANGEMENT

Martin Stevens Smith, Chelmsford, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

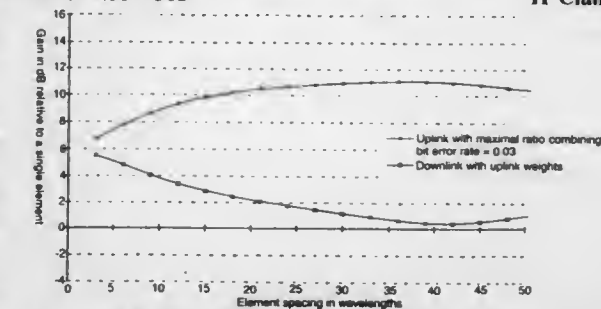
Filed Jul. 9, 1996, Ser. No. 677,284

Claims priority, application United Kingdom, Jul. 18, 1995, 9514659

Int. Cl.⁶ H04B 1/14; H01Q 1/12

U.S. Cl. 455-562

11 Claims



1. A cellular radio base station arrangement, comprising: an antenna array, wherein the antenna array comprises a first group of antenna elements and a second group of antenna elements;

wherein the first group of antenna elements have a small inter-element spacing of less than 1λ;

wherein the second group of antenna elements are spaced from the first group of antenna elements with a large inter-group spacing greater than 1λ; and

means to weight received uplink signals with complex array weights and derive directional information, and means to steer downlink signals with the directional information derived from the uplink signals.

5,778,325

SYSTEM FOR PROVIDING ELECTRICAL POWER TO MODULAR ELECTRONIC COMPONENTS

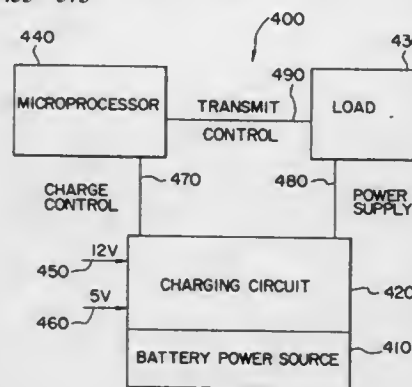
Bo Karl Liodell, Lindgö, and Roland Thomas Wilhelm Johansson, Hässelby, both of Sweden, assignors to Ericsson, Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 694,858, Jul. 30, 1996, abandoned, which is a continuation of Ser. No. 122,078, Sep. 15, 1993, abandoned. This application Jul. 3, 1997, Ser. No. 888,154

Int. Cl.⁶ H04B 1/40

U.S. Cl. 455-573

4 Claims



1. A system for providing electrical power to a modular electronic component for use in a host electronic equipment, comprising:

a battery pack having a battery power source, said battery pack being detachably attached to said modular electronic component;

means for conducting electrical power from said battery power source in said battery pack to said modular electronic component;

wherein said host electronic equipment includes an electrical power supply adapted for supplying electrical power to said modular electronic component;

wherein said modular electronic component includes a radio transmitter having a higher power consumption level mode for use with said battery power source, and a lower power consumption level mode for use without said battery power source, and including means for switching said radio transmitter between said higher power consumption level mode and said lower power consumption level mode;

said means for switching being adapted for sensing when said battery pack is attached or not attached to said modular electronic component; and

said means for switching also being adapted for switching said radio transmitter to operate at said higher power consumption level mode when said battery pack is attached to said modular electronic component, and to operate at said lower power consumption level mode when said battery pack is not attached to said modular electronic component.

5,778,326

HYBRID VEHICLE WITH BATTERY CHARGE CONTROL RELATIVE TO A DRIVING ROUTE

Shuzo Moroto, and Hideki Hisada, both of Aichi-ken, Japan, assignors to Kabushikikaisha Equos Research, Japan

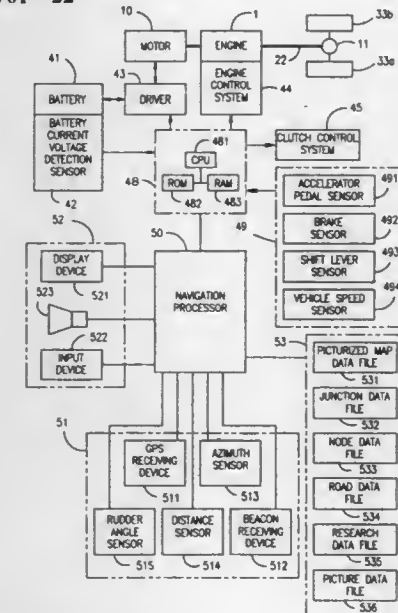
Filed Oct. 23, 1995, Ser. No. 546,956

Claims priority, application Japan, Oct. 25, 1994, 6-285834

Int. Cl.⁶ B60L 11/14

U.S. Cl. 701-22

7 Claims



1. A hybrid vehicle, comprising:

a motor;

an internal-combustion engine;

storage means for transferring electric power by supplying power to drive said motor and by receiving electric power generated by said motor;

storage residual charge detection means for detecting a residual charge of said storage means;

present location detection means for detecting a present location of the vehicle;

5,778,327

GUIDEWIRE CONTROLS FOR A MATERIAL HANDLING VEHICLE

James M. Simmons, Newark Valley; Christopher J. Hellmann, Apalachin, and Richard M. Day, Binghamton, all of N.Y., assignors to The Raymond Corporation, Greene, N.Y.

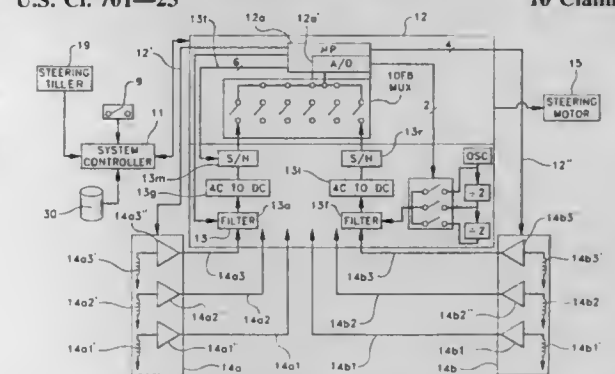
Continuation of Ser. No. 150,708, Nov. 10, 1993, abandoned.

This application Nov. 12, 1996, Ser. No. 747,244

Int. Cl.⁶ G06F 165/00

U.S. Cl. 701-23

10 Claims



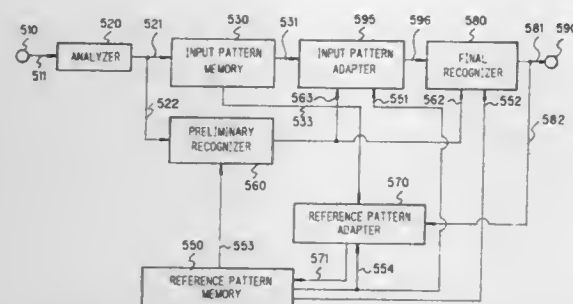
5. An apparatus to be used with a material handling vehicle that is operative in an automatic wire guidance mode, the vehicle used with a plurality of automatic wire guidance systems, each system transmitting guidance signals having a frequency and amplitude characteristic of the system, the guidance signals used to guide the vehicle, the vehicle including a steering control means, the steering control means including a frequency filter and a gain amplifier, the apparatus for automatically setting the filter frequency and the amplifier gain so that the steering control means is responsive to guidance signals from one of said guidance systems, said one of the guidance systems being a system with which the vehicle is to be used, the apparatus comprising:

(a) a sensor for sensing the guidance signal corresponding to the one of the guidance systems;

(b) a processor for processing the sensed signal to ascertain the characteristic frequency of the guidance signals and determine the amplitude gain required to alter the guidance signals for use by the control means; and

(c) means for setting the filter frequency and the amplifier gain so that the steering control means is responsive to signals having the characteristic amplitude and frequency of the guidance signals.

1. A speech recognition system comprising:
 - a speech waveform analyzer for converting an input speech waveform into feature vectors;
 - an input pattern memory for storing the feature vectors as an input pattern;
 - a reference pattern memory for storing reference patterns of recognition subject words;
 - a preliminary recognizer for obtaining a similarity measure between the input pattern and each of the reference patterns, determining at least one reference pattern as at least one candidate recognition result based on the similarity measures,



and outputting top N candidates, N being an integer greater than zero, using the obtained similarity measures;

a reference pattern adapter for:

(a) executing adaptation of the reference patterns based on (i) the reference patterns, (ii) the input pattern, and (iii) the top N candidates, and

(b) newly storing the adapted reference patterns as reference patterns in the reference pattern memory; and

a final recognizer for executing speech recognition to obtain one top candidate by using the adapted reference patterns and the input pattern.

5,778,341

METHOD OF SPEECH RECOGNITION USING DECODED STATE SEQUENCES HAVING CONSTRAINED STATE LIKELIHOODS

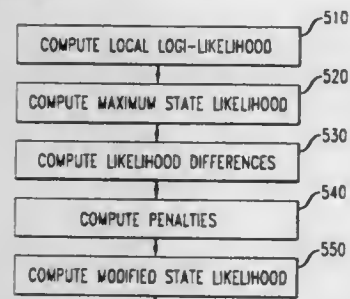
Ilija Zeljkovic, Westfield, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 26, 1996, Ser. No. 592,751

Int. Cl.⁶ G10L 5/06

U.S. Cl. 704—256

18 Claims



1. A method for transmitting information including the receipt and decoding of speech information, said speech information including at least one state sequence having a plurality of states and given state likelihoods of transitions from state to state, the decoding of said speech information comprising the steps of:

comparing the state likelihoods of said state sequences of said speech information to a corresponding maximum state likelihood;

modifying said state likelihoods of said state sequences of said speech information based on the differences between the state likelihoods of said state sequences and said corresponding maximum state likelihood; and

determining the state sequences of said speech information having the highest cumulative modified state likelihood.

5,778,342

PATTERN RECOGNITION SYSTEM AND METHOD

Adoram Erell, Herzelia, and David Burshtein, Tel Aviv, both of Israel, assignors to DSPC Israel Ltd., Givat Shmuel, Israel

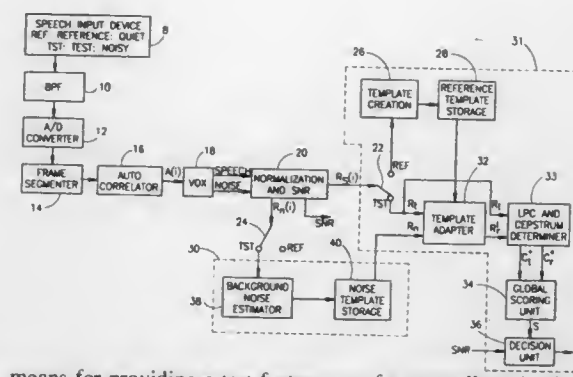
Filed Feb. 1, 1996, Ser. No. 595,357

Int. Cl.⁶ G10L 5/06

U.S. Cl. 704—256

18 Claims

1. A pattern recognition system comprising:



means for providing a test feature set of a generally noisy input signal characterizing at least a portion of an input pattern contained within said input signal;

means for providing a plurality of reference feature sets of reference templates produced in a quiet environment;

means for providing a background noise feature set of background noise present in said input signal;

a template adapter for producing adapted reference templates from said test feature set, said background noise feature set and said reference feature sets; and

a global scoring unit for determining match scores defining the match between each of said adapted reference templates and said test feature set,

wherein said feature sets are autocorrelation feature sets and said template adapter includes:

means for raising the gain level of a reference feature set to the value of the difference of the average energy of said test feature set and the average energy of said background noise feature set; and

means for adjusting said gain-raised reference feature set by adding to it said background noise feature set thereby to create said adapted reference templates.

5,778,343

Patent Not Issued For This Number

5,778,344

DATABASE ACCESS USING DATA FIELD TRANSLATIONS TO FIND UNIQUE DATABASE ENTRIES

David J. Attwater; Paul A. Olsen; Seamus A. Bridgeman, and Steven J. Whittaker, all of Ipswich, Great Britain, assignors to British Telecommunications public limited company, London, England

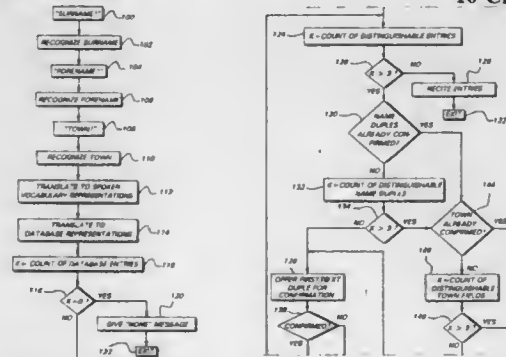
Filed Jun. 5, 1996, Ser. No. 659,526

Claims priority, application United Kingdom, Jan. 31, 1996, 9601925

U.S. Cl. 704—275

Int. Cl.⁶ G10L 9/00

10 Claims



1. A database access apparatus comprising:

- (a) a database containing entries each comprising a plurality of fields which contain machine representations of items of information pertaining to the entry, the said representations forming a first vocabulary;
- (b) announcement means responsive to machine representations falling within a second vocabulary of such representations to generate audio signals representing spoken announcements;
- (c) input means operable to receive signals and to produce machine representations falling within a third vocabulary of such representations;
- (d) translation means defining a relationship between the first vocabulary and the second vocabulary and between the first vocabulary and the third vocabulary; and
- (e) control means operable

- (i) to generate, in accordance with the defined relationship, for each representation produced by the input means, one or more representations according to the first vocabulary;
- (ii) to identify database entries containing the generated representations;
- (iii) to examine each representation or combination of representations which is contained in a selected field or combination of fields of the identified entries to identify unique one(s) of those representations or combinations, a unique representation or combination being one which, when translated using the translation means into representations of the second vocabulary, differs from every other such unique representation or combination when similarly translated; and
- (iv) to control the announcement means to generate an announcement including at least one word or combination of words which correspond(s) to one of the unique representations or combinations.

5,778,345

HEALTH DATA PROCESSING SYSTEM

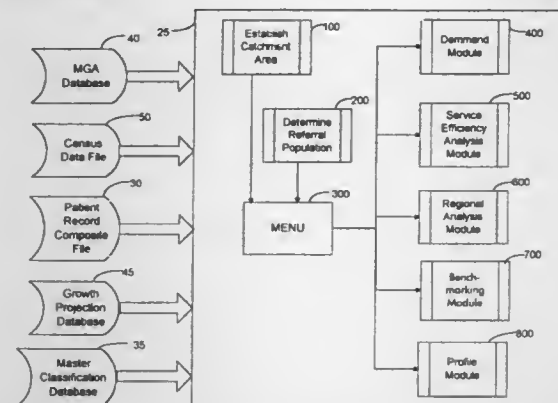
Michael J. McCartney, 131 Richmond Street, Richmond Hill, Ontario, Canada, L4C 3Y6

Filed Jan. 16, 1996, Ser. No. 586,246

Int. Cl.⁶ G06F 17/60

U.S. Cl. 705—2

32 Claims



1. A computer-implemented method of optimizing the allocation of health resources for at least one subject health care provider, comprising the steps of:

providing census data and patient discharge records for substantially all of the patient populations of the subject health care provider and other major health care providers within a boundary region, said patient discharge records including an address field indicating one of a plurality of micro-geographical areas (MGAs) where a patient resides, the MGAs for logically apportioning the boundary region into sub-areas having roughly equal population sizes;

establishing a referral population;

calculating occurrence rates of medical services for the referral population;

providing and applying population growth factors to the referral population thereby projecting it to a future time;

applying said occurrence rates to the projected referral population thereby forecasting the consumption of health resources for the subject health care provider; and

altering the composition of the health care provider's resources in accordance with said forecast.

5,778,346

SYSTEM AND METHODS FOR APPOINTMENT RECONCILIATION

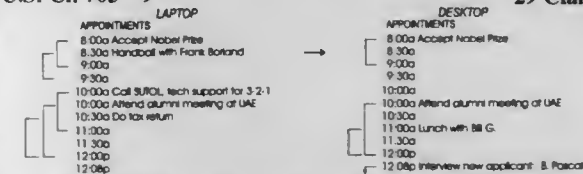
Martin Frid-Nielsen, Santa Cruz, Calif.; Richard Lee Schwartz, Paris, France, and Steven Ray Boye, Los Gatos, Calif., assignors to Starfish Software, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 823,567, Jan. 21, 1992, Pat. No. 5,519,606. This application May 17, 1996, Ser. No. 649,824

Int. Cl.⁶ G06F 15/00

U.S. Cl. 705—9

29 Claims



1. In a computer system having a display device, a method for displaying an interface for processing scheduling information, the method comprising:

receiving first and second sets of scheduling information said second set of scheduling information being received from a device other than said computer system;

displaying said first set of scheduling information on the display device;

while displaying said first set of scheduling information, displaying said second set of scheduling information on the display device, said computer system automatically adjusting display of said first and second sets so that items of said second set of scheduling information are aligned with like items of said first set;

receiving first user input for selecting a particular item from one of the sets;

receiving second user input for inserting the particular item into the other set; and

responsive to said first and second inputs, transferring a copy of said particular item from the one set to the other set.

5,778,347

ARRANGEMENT FOR AN ELECTRONIC POSTAGE METER MACHINE

Ulrich Hetzer, Berlin, Germany, assignor to Francotyp-Postalia AG & Co., Birkenwerder, Germany

Filed Jun. 12, 1996, Ser. No. 662,151

Claims priority, application Germany, Jun. 19, 1995, 195 22 600.3

Int. Cl.⁶ B41J 2/165; 2/01; G07B 17/00

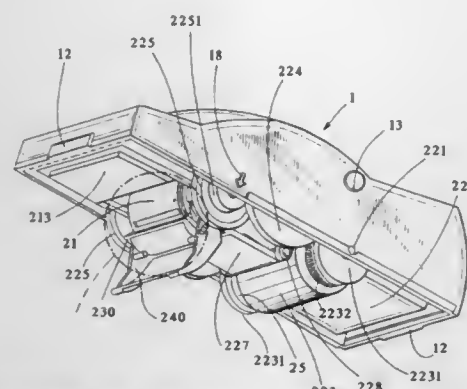
U.S. Cl. 705—408

33 Claims

1. An electronic manual postage meter machine comprising:

a housing;

a first assembly in said housing including an ink printer head having nozzles connected to a replaceable ink tank and cleaning means actuatable for cleaning ink from said nozzles, said cleaning means having a sealing cap and means for moving



said sealing cap upon actuation of said cleaning means for enclosing said nozzles with said sealing cap during cleaning of said nozzles, and a carriage on which said ink printer head and said ink tank and said cleaning part are mounted for moving said ink printer head over a medium onto which an ink imprint is to be printed; and

a second assembly in said housing containing at least one data entry means for recrediting postage values electronic control means connected to said means for recrediting and to said ink printer head for controlling said ink printer head to produce said imprint, and a battery connected to said control means.

5,778,348

REMOTE ACTIVATION OF RATING CAPABILITIES IN A COMPUTERIZED PARCEL MANIFEST SYSTEM

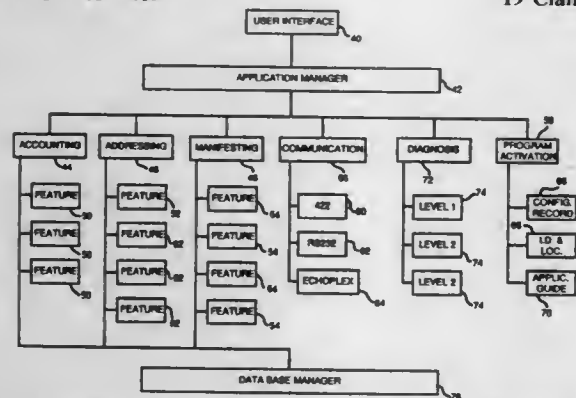
Flavio M. Manduley, Woodbury, and John A. Hofer, Ridgefield, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 24, 1991, Ser. No. 812,982

Int. Cl.⁶ G07F 17/02

U.S. Cl. 705-409

19 Claims



1. A method of activating a capability to access a selected rate table in a system for automatically calculating parcel shipment charges, said system comprising a microprocessor and memory means for storing data accessible to said microprocessor, the method comprising the steps of:

- storing in said memory means a plurality of rate tables, each of said rate tables containing data for calculating parcel shipment charges;
- disabling access by said microprocessor to one or more of said stored rate tables;
- transmitting an activation request to a data center, said request including information that identifies said system and selects one of said disabled rate tables;
- in response to said activation request, receiving an activation code from said data center; and activating access by said

microprocessor to said selected one of said disabled rate tables by entering said received activation code into said system.

5,778,349

METHOD OF PROCESSING INPUT/OUTPUT REQUEST IN COMPUTER SYSTEM INCLUDING A PLURALITY OF SUBSYSTEMS

Takahiro Okonogi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

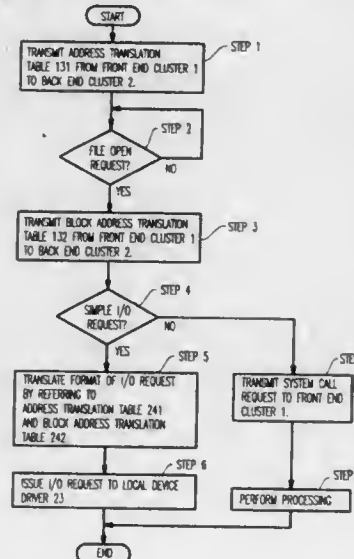
Filed Nov. 29, 1995, Ser. No. 564,554

Claims priority, application Japan, Nov. 30, 1994, 6-321738

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707-1

20 Claims



2. A method of processing an access request for accessing a device coupled to a computer system, said computer system comprising a first subsystem having information for translating an address included in said request and a function for changing said information, and a second subsystem being connected to said device, said method comprising the steps of:

- transferring said information from said first subsystem to said second subsystem;
- detecting the occurrence of said request in said second subsystem;
- determining in said second subsystem whether said address included in said request detected in step (2) can be translated by referring to said information transferred from said first subsystem in step (1);
- when step (3) determines that said address in said request can be translated, translating said address by referring to said information in said second subsystem;
- when step (3) determines that said address in said request cannot be translated by referring to said information in said second subsystem, sending said request from said second subsystem to said first subsystem, updating said information in said first subsystem in accordance with said request sent from said second subsystem, translating said address by referring to the updated information in said first subsystem, and sending from said first subsystem back to said second subsystem a modified request formed by replacing said address in said request with the translated address; and
- processing said modified request in said second subsystem to access said device.

5,778,350

DATA COLLECTION, PROCESSING, AND REPORTING SYSTEM

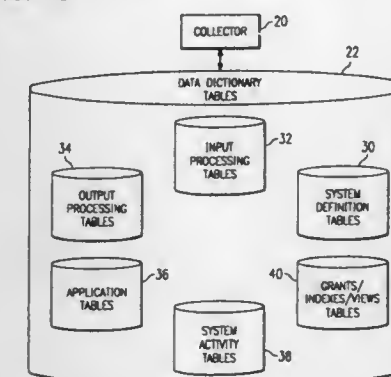
Raymond J. Adams, Frisco; Harriet E. Brichta, Plano; Roger J. Henn, Lucas, all of Tex.; Drew A. Hollander, Rochester, N.Y.; Robert W. Adas, McKinney, Tex.; Gerald R. Dolan, Melissa, Tex.; Donna M. Bermender, Leander, Tex., and William D. Hawthorne, Plano, Tex., assignors to Electronic Data Systems Corporation, Plano, Tex.

Filed Nov. 30, 1995, Ser. No. 566,429

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707-1

63 Claims



1. A system for collecting and processing input data and generating output data, comprising:

at least one input processing table having format and content information of said input data;

at least one output processing table having format and content information of said output data; and

a process spawning at least one subtask, said subtask accessing said input processing table for determining how said input data are to be read, and further accessing said output processing table for determining how to create and format said output data.

5,778,351

METHOD FOR STORING SYSTEM COMMUNICATIONS SYSTEM DATA USING MODULES AND TABLES

Juergen Peifer; Andreas Hammerschick, and Claus Ahlers, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

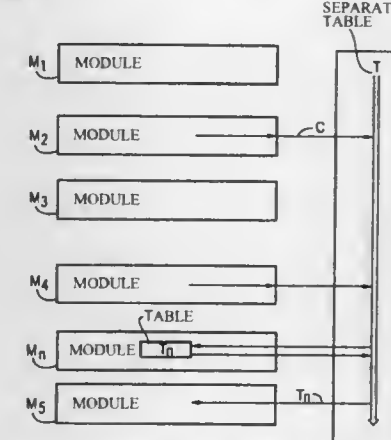
Filed Feb. 16, 1996, Ser. No. 603,028

Claims priority, application Germany, Mar. 16, 1995, 195 09 603.7

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707-1

4 Claims



1. A method for storing system data for a communication system, wherein a plurality of modules are converted into programs by a procedure that defines a generation process, said programs

then carrying out write/read operations on system data with at least one table during execution of said programs, comprising the steps of:

defining said procedure for generating said plurality of modules where each module will have a predetermined number of program steps, a last position of said procedure being assigned to a module having said at least one table in which system data are to be stored, and wherein a separate table is defined which will be constructed by said procedure;

generating said plurality of modules by said procedure wherein the procedure starts by generating a first of the plurality of modules and calculates whether accesses as read/write operations on said at least one table by a program generated from said first module should occur, and whether or not an entry is to be made in said separate table, and thereafter generating the remaining modules of said plurality of modules corresponding to the generation of the first module so that the separate table acquires all entries where said read/write operations are to be carried out; and

with said procedure, now generating said module having said at least one storage table by taking all of the entries from said separate table, and by use of said entries, defining said at least one table.

5,778,352

ELECTRONIC DOCUMENT RETRIEVAL AND DISPLAY SYSTEM AND METHOD OF RETRIEVING ELECTRONICALLY STORED DOCUMENTS

Shinji Inoue, Neyagawa; Takashi Kakiuchi, Osaka; Hiroki Nakamura; Hiroyuki Waki, both of Osaka, and Masahiro Oashi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 153,150, Nov. 15, 1993, Pat. No.

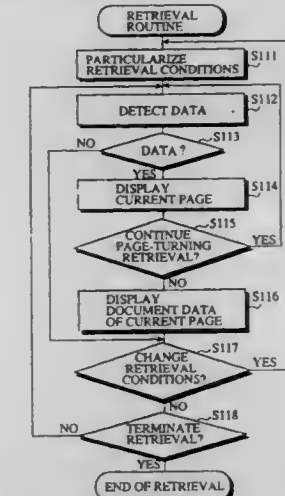
5,581,752. This application Jun. 7, 1996, Ser. No. 660,549

Claims priority, application Japan, Nov. 17, 1992, 4-307030

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707-1

27 Claims



1. An electronic document retrieval system for continuous retrieving and displaying a desired page from document data in an electronic file comprising:

document storing means for storing the document data;

input means for entering a page location specifying an area subject to retrieval, retrieval information specifying image characteristics of the area subject to retrieval, and a retrieval mode command for retrieving the document data page by page;

image data generating means for generating page image data for displaying the document data of a retrieved page;

data detecting means for retrieving data of the area subject to retrieval within the document data stored in said document data storing means in accordance with the retrieval mode command and said retrieval information from said input means to output the document data of a page containing a data

area that matches with said retrieval information to said image data generating means; and display means for displaying the page image data generated by said image data generating means.

5,778,353

COMPUTER PROGRAM PRODUCT FOR OPTIMIZING DATA RETRIEVAL USING INDEX SCANNING

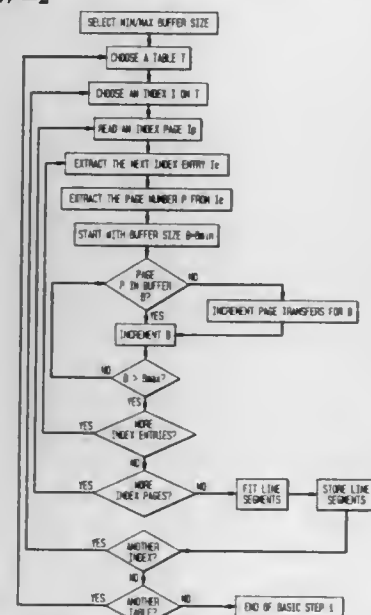
Bernhard Schiefer, Scarborough, Canada, and Arun Narasimha Swami, Cupertino, Calif., assignors to International Business Machines Corporation, Armonk, N.Y. Division of Ser. No. 440,558, May 12, 1995. This application Jun. 7, 1995, Ser. No. 472,215

Claims priority, application Canada, May 20, 1994, 2124094

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—2

6 Claims



1. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps, the machine having a processing unit and physical storage in which data is stored, said storage being operably connected to said processing unit for transferring pages of data to said processing unit, said storage containing at least one data base table stored on a plurality of pages, each said data base table having a plurality of rows of data, and one or more indexes composed of a sequence of entries which reference said rows, said processing unit having a memory associated with it, a portion of said memory comprising a buffer pool for caching data pages from said table, said method steps comprising:

scanning one or more selected indexes and determining the relationship between the number of data transfers required to traverse all or a portion of each selected index and a selected range of buffer pool sizes, and storing a description of said relationship;

for a query submitted by a data base user, determining the number of page transfers required to scan a whole table of interest;

for each index of said table relevant to said query, determining the number of page transfers required to scan each said relevant index in accordance with the size of buffer pool made available for said query, as determined from said relationship; scaling down the number of page transfers required in proportion to the selectivity of any starting and stopping conditions present in search criteria in said query;

applying a suitable correction factor to said number of page transfers if any of the following conditions are found: very few rows of data remain to be transferred after applying said search criteria;

said buffer pool to table size ratio is large;

an index being used has a low degree of clustering; accounting for the effect on said number of page transfers by any remaining index search criteria; comparing the number of page transfers required for scanning of said relevant indexes and for scanning said entire table; and selecting a search procedure from among said index scanning or table scanning that results in the least number of page transfers.

5,778,354

DATABASE MANAGEMENT SYSTEM WITH IMPROVED INDEXED ACCESSING

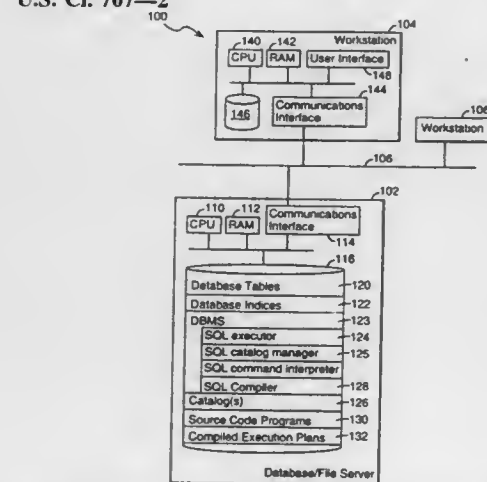
Harry A. Leslie, Los Altos Hills; David W. Birdsall, Santa Clara, both of Calif.; Rohit N. Jain, Rochester Hills, Mich., and Hedieh Yaghmai, San Jose, Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Jun. 7, 1995, Ser. No. 481,649

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—2

18 Claims



7. A computer system for storing and providing user access to data in stored database objects, said system comprising:

a memory for storing said database objects;

a communications interface through which user database queries are relayed to said computer system from a user workstation, and through which query results from said computer system are made available to the user workstation;

a processor for controlling interactions between said memory and said communications interface in response to a search query received from a user workstation and specifying predicate values corresponding to values of preselected columns of a multi-column table;

a computer program for causing said processor to construct individual search keys in accordance with a search query specifying predicate values corresponding to values of preselected columns of the table, the search keys including names of the preselected columns of the table and associated predicate values, said computer program including a first procedure for evaluating the predicate values specified by the search query;

a second procedure for assigning equivalent range values for each predicate value specified in the search query as a range of values, to the corresponding preselected column;

a third procedure for assigning equivalent values for each predicate value specified in the search query as an IN list of values, to the corresponding preselected column;

a fourth procedure for assigning a range of values to the corresponding preselected column for each unspecified predicate value; and

a fifth procedure for constructing individual search keys from the equivalent values assigned by the first through fourth procedures;

wherein a search query includes a plurality of disjuncts; and wherein said first procedure causes said processor to assign a unique disjunct number to each of the plurality of disjuncts in the search query.

5,778,355

DATABASE METHOD AND APPARATUS FOR INTERACTIVELY RETRIEVING DATA MEMBERS AND RELATED MEMBERS FROM A COLLECTION OF DATA

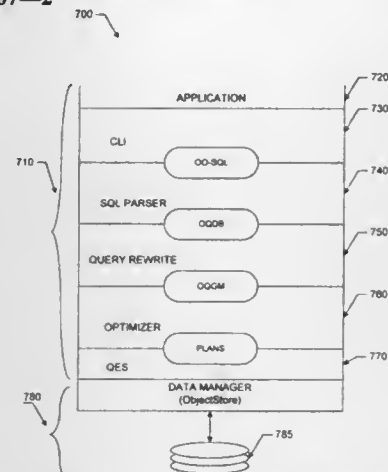
Philip L. Boyer; Michael James Carey, and Gerald G. Kiernan, all of San Jose, Calif., assignors to International Business Machines Corp., San Jose, Calif.

Filed Jun. 11, 1996, Ser. No. 664,212

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—2

19 Claims



1. A method of interactively accessing information stored in a memory in response to a user command having a predefined operator, the user command causing a computer system to operate on an object-oriented database including first data members of a first data member type, the first data members being composed of other data members and the database including second data members of a second data member type, the second data members not being composed of other data members, the method comprising the steps of:

A. analyzing the database to identify data members of the first data member type and data members of the second data member type;

B. using each data member of the second data member type to retrieve information from the database;

C. replacing each data member of the first data member type by data members which compose the data member of the first data member type; and

D. repeating steps B and C for each of the other data members of the first data member type.

5,778,356

DYNAMICALLY SELECTABLE LANGUAGE DISPLAY SYSTEM FOR OBJECT ORIENTED DATABASE MANAGEMENT SYSTEM

William C. Heiny, Arvada, Colo., assignor to Cadis, Inc., Boulder, Colo.

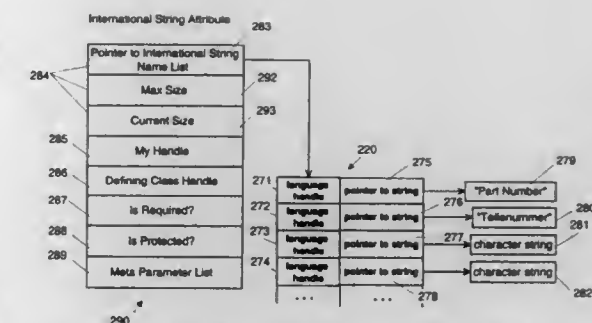
Continuation-in-part of Ser. No. 339,481, Nov. 10, 1994, and a continuation-in-part of Ser. No. 527,161, Sep. 12, 1995, and a continuation-in-part of Ser. No. 526,555, Sep. 12, 1995. This application Nov. 8, 1996, Ser. No. 745,255

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—2

1 Claim

1. A dynamically selectable language display system for object oriented database management systems, comprising: class objects having international string parameters that include a pointer to an international string list, said international string



list including a language handle structure linked to a plurality of character strings in different languages; and, a handle manager operative to select a character string corresponding to one of said plurality of character strings for display which corresponds to a dynamically selectable user specified language handle, whereby a representation of said class object may be simultaneously displayed to a plurality of users in different languages based upon a language handle individually selectable by each of said plurality of users.

5,778,357

MARKET INFORMATION MACHINE

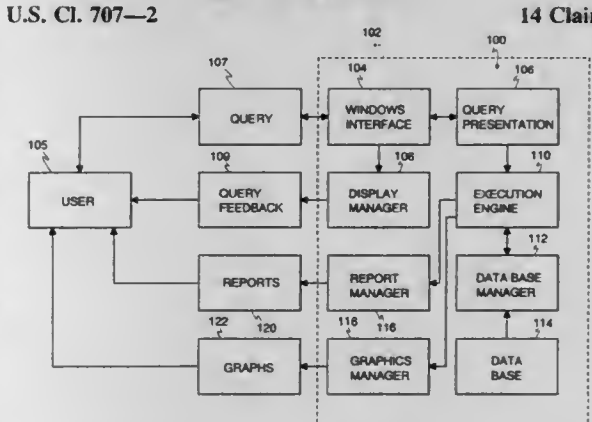
Anthony D. Kolton, Chicago, Ill.; Ruben A. Gamboa, and Danette S. Chimenti, both of Austin, Tex., assignors to Logical Information Machines, Inc., Chicago, Ill.

Continuation of Ser. No. 392,612, Feb. 22, 1995, Pat. No. 5,590,325, which is a continuation of Ser. No. 713,359, Jun. 11, 1991, abandoned. This application Dec. 30, 1996, Ser. No. 777,123

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—2

14 Claims



1. A computerized data retrieval system comprising:

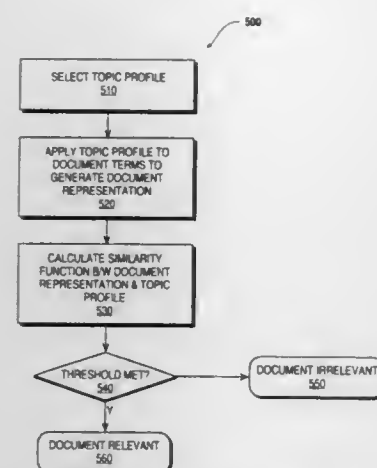
a data base containing information defining the fluctuation of commodity prices over time in combination with additional information designating the date of occurrence of events;

a windowing user search request creation and revision system embodying a formal search language that permits the definition of search requests in their entirety by means of windowing templates, that includes a facility for ANDing and ORing search request portions together, and that includes a facility for limiting any search request to commodity price information dated proximate in time to at least one said designated event;

search execution means for performing search requests formulated through the use of said windowing system; report generation means for generating reports presenting the results of searches executed by said search execution means; and

echo means connected to receive search request defining information from said windowing system for echoing a search request formulated with said windowing system to the user in the form of a near-natural-language search request while the user is formulating said search request using said windowing system.

augmenting the document tokens with a compound term token to provide a representation of the document, when a match is detected; and

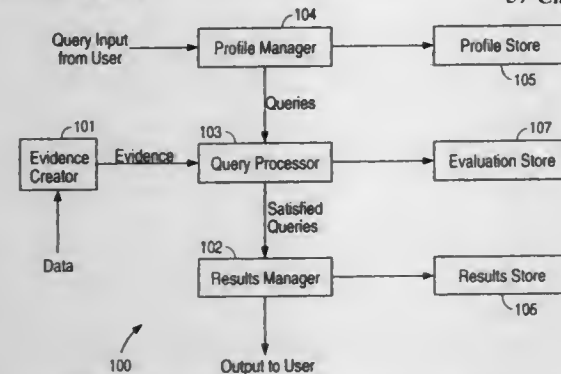


5,778,364
EVALUATION OF CONTENT OF A DATA SET USING MULTIPLE AND/OR COMPLEX QUERIES
Philip C. Nelson, Sunnyvale, Calif., assignor to Verity, Inc., Mountain View, Calif.

Filed Jan. 2, 1996, Ser. No. 581,853
Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—6

57 Claims



1. A method for evaluating a set of data to determine whether the set of data satisfies one or more of a plurality of queries, the contents of the set of data capable of being described by one or more pieces of evidence, the queries being arranged in an execution plan of queries in which each query is operably related to one or more other queries, each of the plurality of queries including one or more query terms, each query term including one or more evidence descriptors that can be related to a combination operator, each evidence descriptor describing a piece of evidence or the characteristics of a piece or pieces of evidence, the method comprising the steps of:

comparing each piece of evidence as the data set is received to one or more of the evidence descriptors;
identifying each evidence descriptor that is satisfied by a piece of evidence;
evaluating each query term that includes a satisfied evidence descriptor or another query term that has been satisfied to determine whether the query term is satisfied; and
identifying each query for which all query terms have been satisfied as a query that is satisfied by the set of data.

18. A method for evaluating a set of data to determine whether the set of data satisfies one or more of a plurality of queries, each query having a query term and an approximation of the query term, comprising the steps of:

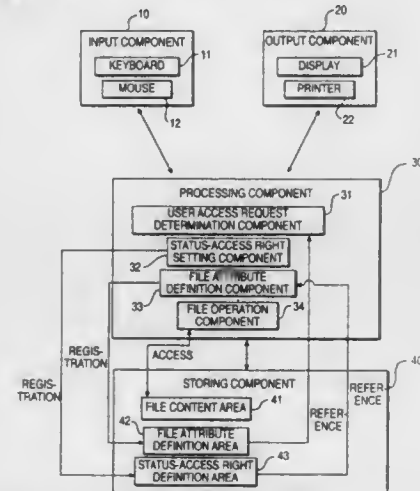
identifying one or more candidate queries that may be satisfied by the set of data using the approximation of the query term; and

evaluating each of the candidate queries using the query term to determine which, if any, of the candidate queries are satisfied by the set of data.

5,778,365
FILE MANAGEMENT DEVICE
Kenji Nishiyama, Kawasaki, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Mar. 15, 1995, Ser. No. 403,964
Claims priority, application Japan, Mar. 16, 1994, 6-045969
Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—9

2 Claims



1. A file management device for managing a file accessed by a plurality of users, comprising:
means for processing a file access request from one of said plurality of users;
means for processing a plurality of file attributes;
means for associating a user access right with a file status for the file in accordance with said file access request and said plurality of file attributes, said file status attribute indicating a stage of file generation;
means for storing said user access right associated with said file status; and
means for changing automatically said user access right when said file status changes.

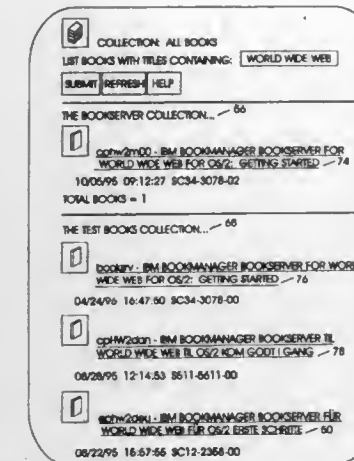
5,778,366
METHOD AND SYSTEM FOR ORGANIZING ON-LINE BOOKS USING COLLECTIONS
Dana L. Gillihan, Raleigh; Donald Ray Hyatt, Apex; Paul T. Leone, Raleigh; Kenneth M. Nordby, Cary; Victor Edward Pullizzi, Holly Springs; Thyra Lynne Rauch, Raleigh; Robert W. Rinda, Raleigh, and Paula J. Spoth, Raleigh, all of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 28, 1996, Ser. No. 672,879
Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—9

9 Claims

1. A method of searching electronic on-line books in a bounded on-line computer system library, comprising the steps of:
designating at least one collection name, said name providing an indication as to contents thereof;
assigning electronic on-line books within the bounded library meeting a predetermined criteria to a directory;
associating said directory with said collection name, initiating a search within the bounded library; and
presenting results from said search sorted by collection name, wherein a user may find a desired one of the electronic on-line books in the bounded library under an appropriate collection name such that said results may be examined without need to

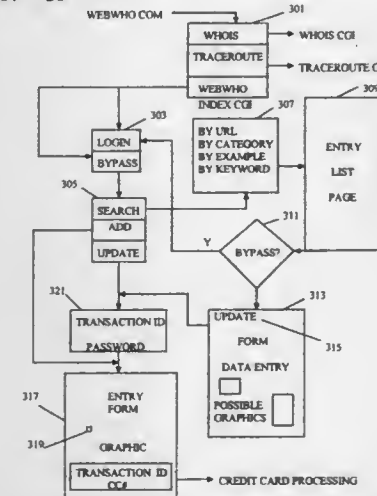


5,778,367
AUTOMATED ON-LINE INFORMATION SERVICE AND DIRECTORY, PARTICULARLY FOR THE WORLD WIDE WEB
Ralph E. Wesinger, Jr., San Jose, and Christopher D. Coley, Morgan Hill, both of Calif., assignors to Network Engineering Software, Inc., San Jose, Calif.

Filed Dec. 14, 1995, Ser. No. 572,543
Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—10

25 Claims



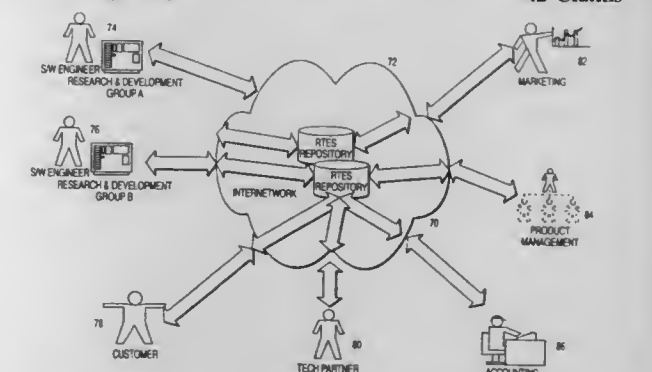
1. A method using a computer network and a database accessible through the computer network, comprising the steps of:
receiving requests from individual users of the computer network to electronically publish information;
accepting information from the individual users;
allowing the individual users to classify the accepted information to facilitate later searching of the accepted information: automatically collecting and storing in the database in searchable and retrievable form based on the user classifications entries from the individual users containing the accepted information;
password protecting the entries;
making the entries freely accessible on the computer network;
searching the database based on the user classifications and retrieving the entries in response to user requests;
serving entries to users in a hardware-independent page description language without altering the user classifications; and
retrieving and allowing users to update entries by supplying a correct password.

5,778,368
REAL-TIME EMBEDDED SOFTWARE RESPOSITORY WITH ATTRIBUTE SEARCHING APPARATUS AND METHOD
Keith Hogan, Olney; Thomas H. Scholl, and William E. Witowsky, both of Gaithersburg, all of Md., assignors to Telogy Networks, Inc., Germantown, Md.

Filed May 3, 1996, Ser. No. 642,060
Int. Cl.⁶ G06F 15/76

U.S. Cl. 707—10

42 Claims



1. A repository system for storage and retrieval of real-time embedded software comprising:

- at least one parent repository server, the parent repository server having storage means;
- at least one repository client having multimedia display means;
- means for generating a query to the parent repository server, the query generating means resident on the repository client to search for attributes of real-time embedded software stored on the parent repository server;
- real-time embedded software stored on the parent repository server storage means;
- attributes associated with the real-time embedded software;
- search means resident on the parent repository server, the search means having capabilities to respond to the repository client query generating means to search for certain of the real-time embedded software based on the attributes of the real-time embedded software;
- the multimedia display means displaying the results of the repository client query made to the parent repository server; and
- a first communication link which joins the repository client and the parent repository server.

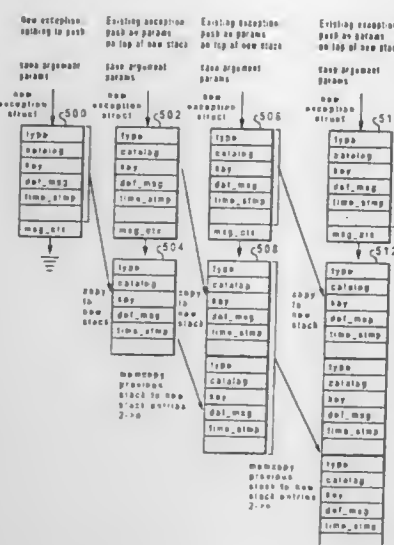
5,778,369
METHOD AND APPARATUS FOR MANAGING EXCEPTIONS
Christopher James Pascoe, Pflugerville, and Gregory Alan Wilson, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1995, Ser. No. 516,736
Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—100

19 Claims

1. A method in a data processing system for managing exceptions occurring during an execution of a plurality of objects in an object-oriented environment, the method comprising:
receiving a call from a calling object, the call requiring processing by the plurality of objects;
storing error information from each of the plurality of objects in which an error occurred in a data structure;



in response to an occurrence of an error and a presence of error information within the data structure, storing error information associated with the error in an exception structure; and returning said exception structure to the calling object.

5,778,370

DATA VILLAGE SYSTEM

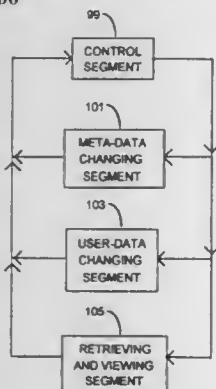
Mark L. Emerson, 3945 Michael Ave., Los Angeles, Calif. 90066

Filed Aug. 25, 1995, Ser. No. 519,347

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—100

160 Claims



1. A database management system comprising computer system hardware and database management software, the database management software causing the computer system hardware to perform specified functions and any other functions necessitated by the performance of the specified functions when commanded by a user either directly or through other software, the database management system comprising:

a means for adding, changing, deleting, and organizing meta-data and user-data according to predetermined static data organization rules, the data category called user-data comprising datums and compartments, a datum being a single item of information, a compartment being a place for receiving a plurality of associated datums, the data category called meta-data comprising tables, cables, and dynamic data organization rules, a table being a place for receiving a plurality of compartments, the datums in each of the compartments of a table being values of a set of a plurality of attributes, each cable connecting a first table to a second table, a cable being a representation of connections between the compartments in the first table and the compartments in the second table, the datums in connected compartments being called connected datums, a dynamic data organization rule being a user-defined constraint on user-data, a permissible dynamic data organiza-

tion rule being a formula-defined dynamic data organization rule wherein the values of one or more formula-input datums in one or more tables are required to collectively satisfy a specified formula the formula-input datums having the same or different values, no datum having its value automatically determined on the basis of the formula, the static data organization rules including all constraints imposed on meta-data and meta-data relationships, the static data organization rules and the meta-data collectively including all constraints imposed on user-data and user-data relationships, inconsistent meta-data and user-data being prohibited by the static data organization rules, inconsistent meta-data being meta-data that do not conform with the static data organization rules, inconsistent user-data being user-data that do not conform with the static data organization rules and the meta-data, any attempt to add, change, or delete meta-data or user-data wherein the addition, change, or deletion will result in a violation of any of the static data organization rules or meta-data being automatically rejected by the database management system;

a means for retrieving and viewing one or more selected datums together with one or more connected datums, the retrieving-and-viewing means automatically identifying the connected datums by tracing the cables connecting the tables, the retrieving-and-viewing means being activated by an external input, an external input being an input originating from within the database management system.

5,778,371

CODE STRING PROCESSING SYSTEM AND METHOD USING INTERVALS

Mutsumi Fujihara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

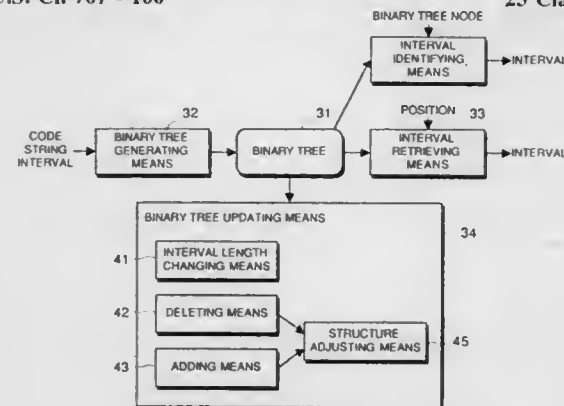
Filed Sep. 12, 1995, Ser. No. 526,872

Claims priority, application Japan, Sep. 13, 1994, 6-219145

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—100

25 Claims



1. A data processing system comprising:

a binary tree generating means for generating a binary tree representing a range of each interval based on the intervals in a code string including at least one interval, said binary tree having nodes each of which corresponds to an interval,

the end side of each node being connected to a preceding node corresponding to an interval preceding the interval of the node or to a following node corresponding to an interval following the interval of the node,

each node being assigned a partial interval length which is a sum of the interval length of the node itself and the interval length of at least one node in the end side of the node; and

an interval retrieving means for identifying an interval where a specified position indicating a position within said code string is included,

wherein said interval retrieving means sequentially moves a current node, pointed to by a specified pointer, from said root to said end side, calculates the range of the current node based

on the partial interval length of at least one of the current node and said preceding node and said following node directly connected to the end side of the current node, compares the calculated interval with said specified position, moves the current node to the preceding node when the specified position precedes the calculated interval; moves the current node to the following node when the specified position follows the calculated interval, and identifies that the specified position is included in the current node when the specified position is included in the calculated interval.

5,778,372

REMOTE RETRIEVAL AND DISPLAY MANAGEMENT OF ELECTRONIC DOCUMENT WITH INCORPORATED IMAGES

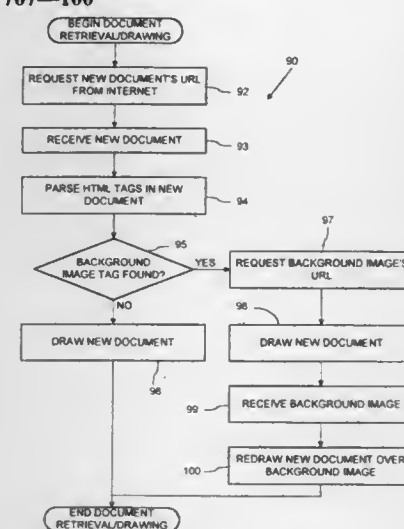
John Palmer Cordell, and Christopher Matthew Franklin, both of Bellevue, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Apr. 18, 1996, Ser. No. 634,380

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—100

19 Claims



1. A method of remotely browsing an electronic document residing at a remote site on a computer network and specifying a background image which is to be displayed with the electronic document superimposed thereon comprising in response to a user's request to browse to the electronic document:

requesting the electronic document from the remote site on the computer network;

receiving the electronic document from the remote site;

requesting the background image specified in the electronic document from the remote site on the computer network;

receiving the background image from the remote site;

drawing an initial display of the electronic document without the background image prior to receiving the background image from the remote site; and

redrawing the electronic document superimposed over the background image after receiving the background image from the remote site;

whereby the initial display of the electronic document is not delayed until the background image is received from the remote site.

5,778,373

INTEGRATION OF AN INFORMATION SERVER DATABASE SCHEMA BY GENERATING A TRANSLATION MAP FROM EXEMPLARY FILES

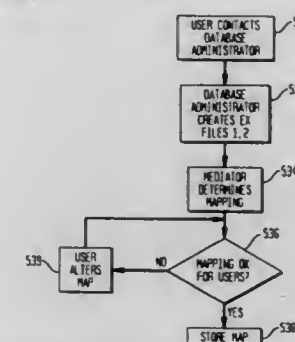
Alon Yitzchak Levy, Berkeley Heights, and Joann Janet Ordille, Maplewood, both of N.J., assignors to AT&T Corp., Middletown, N.J.

Filed Jul. 15, 1996, Ser. No. 680,090

Int. Cl.⁶ G06F 17/30; 7/00

U.S. Cl. 707—100

12 Claims



1. A method of integrating information from a database system with a computer system, comprising the steps of:

a) creating a first database example file comprising first attribute names having first values stored in a first format of a first database schema used in a database system;

b) creating a second database example file comprising second attribute names having second values, stored in a second format of a second database schema, used in a computer system, said second values in said second database example file corresponding to said first values of said first database example file;

c) generating a translation map between said first attribute names of said first database schema and said second attribute names of said second database schema, based on scoring possible mappings between said corresponding first and second values and formats; and

d) performing translations using said translation map of information queries issued from said computer system and composed using attribute names of said second database schema, to information queries using attribute names of said first database schema, making said second values stored in said database system accessible to said computer system.

5,778,374

COMPRESSED COMMON FILE DIRECTORY FOR MASS STORAGE SYSTEMS

Chi-Hung Dang, and Chi-Thanh Dang, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1995, Ser. No. 510,995

Int. Cl.⁶ G06F 17/30

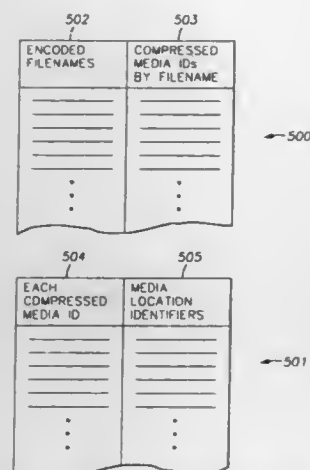
U.S. Cl. 707—101

36 Claims

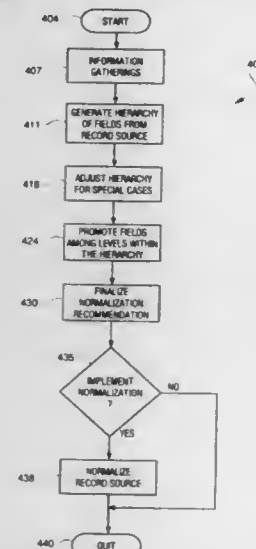
1. A compressed common file directory for use in a mass storage system that includes a plurality of physically separate media items, each media item being associated with a media ID and a media location identifier, said common file directory comprising:

a first data structure comprising a list of unique encoded filenames and a list of compressed media IDs, wherein each particular encoded filename comprises a filename of a particular file residing on at least one of the media items and encoded with a selected encoding scheme, and wherein each particular encoded filename is cross-referenced to a compressed media ID comprising a media ID encoded with a selected encoding scheme, said media ID uniquely identifying the particular media item containing the particular file; and

a second data structure including a list of all compressed media IDs, wherein each particular compressed media ID comprises a media ID of a particular item of the plurality of media items



5,778,375
DATABASE NORMALIZING SYSTEM
 Stephen C. Hecht, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.
 Filed Jun. 27, 1996, Ser. No. 673,818
 Int. Cl.⁶ G06F 17/30
 U.S. Cl. 707—101



17. A method for normalizing a record source in a database wherein said record source contains data organized as a plurality of records where each of said plurality of records is subdivided by at least one field that is common across each of said plurality of records, said method comprising a plurality of steps continuously executed during operation in a user transparent manner absent human intervention that include:

- selecting a subset of data in said record source from among a plurality of record sources in said database;
- generating a hierarchy of said at least one field based on a log-scaled field distinctiveness of said subset of said data in each of said at least one field;
- adjusting said hierarchy of said at least one field based on a scaled integer hash-value evaluation of said subset of said data and at least one correlation test of said subset of said data;
- promoting singleton fields and subdividing levels of said hierarchy containing non-correlating data among said at least one field; and

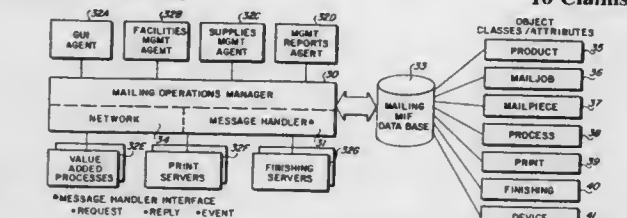
generating a normalization recommendation for said record source for review by a user of said database.

5,778,376

Patent Not Issued For This Number

5,778,377
TABLE DRIVEN GRAPHICAL USER INTERFACE
 James Warden Marlin, Longmont; Raymond Lowell Knudson; Thomas Michael Ruehle, both of Boulder; Anthony Franke Stuart, Jamestown, and Edward Thomas Hughes, III, Arvada, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Nov. 4, 1994, Ser. No. 334,810
 Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—103



16 Claims

1. A table driven graphical user interface (GUI) method for producing a display at a local node on a network, said display being defined at said local node by a user of the GUI generating a report definition comprising row blocks and column blocks, said table driven GUI method providing for machine-implemented steps comprising:

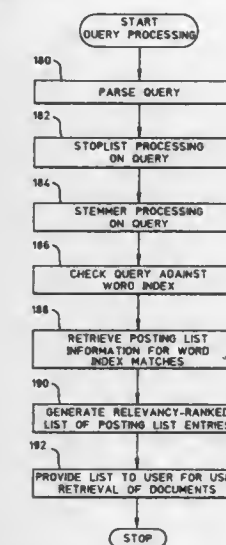
- providing for the utilization of a Desktop Management Interface (DMI) at a node on said network with an object-oriented database wherein objects are organized according to DMI standards with components in an object class, manageable attributes that have values associated with each component, and groups organizing similar attributes of the component, said row blocks and column blocks specifying those of said components, said groups and said attributes selected for display;
- providing for parsing said report definition into report row definitions and report column definitions to build a parse table for driving said GUI;
- providing for requesting data from said object-oriented database through said DMI to find a first component therein which matches with a report row definition, establishing a row instance array for a view table by getting row instances for said first component including matches of groups and attributes to add row instances for said display in accordance with said report definition;
- providing for requesting data from said database through said DMI to find a next component therein and if it matches with a report row definition, adding row instances to said row instance array by getting row instances for said next component including matches of groups and attributes to add row instances for said display in accordance with said report definition;
- providing for continuing to request data from said database until all report row definitions are processed;
- providing for requesting data from said database through said DMI to find elements for said view table by matching the attributes of the first row instance in said row instance array with the report column definitions of components, groups and attributes to add elements for said display in accordance with said report definitions;
- providing for requesting data from said database through said DMI to find elements for said view table by matching the attributes of a next row instance in said row instance array with report column definitions including matches of compo-

nents, groups and attributes to add elements for said display in accordance with said report definitions; and providing for continuing to search said database until all column definitions in said report definition have been processed.

5,778,378
OBJECT ORIENTED INFORMATION RETRIEVAL FRAMEWORK MECHANISM
 Bradley Scott Rubin, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
 Filed Apr. 30, 1996, Ser. No. 639,589
 Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—103

34 Claims

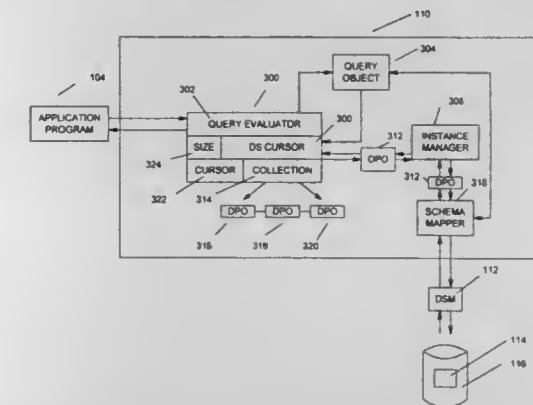


- 1. A computer system comprising:
 - a central processing unit;
 - a user interface; and
 - a main memory having an operating system that supports an object oriented programming environment containing a framework that provides an extensible information retrieval system that operates on documents stored in the computer system, the framework including:
 - index class objects having word index objects that map words contained in the stored documents to the documents that contain the words;
 - a build index object that responds to a user build index request by processing a stored document and creating the word index objects such that they contain the document word mapping and document-related information produced by a preprocessing operation;
 - a posting list class of objects that are pointed to by the word index objects and contain a frequency count that indicates the number of times a word appears in a word index object of a document;
 - a document table class of objects that map a word index object to the indexed document from which it was preprocessed; and
 - a query index object that processes a user query so as to produce a query result from comparison of the user query and the word index objects in response to a user query; wherein the query result identifies stored documents relevant to the user query.

5,778,379
QUERY SYNTAX FOR ACCESSING NON-RELATIONAL, NON-OBJECT-ORIENTED DATASTORES
 Kenneth R. Blackman, San Jose, and Jack L. Howe, III, Gilroy, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Oct. 25, 1996, Ser. No. 738,104
 Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—103

12 Claims

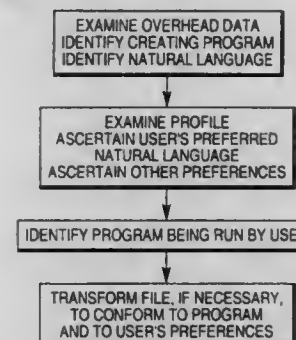


- 1. A computerized method for accessing non-relational, non-object-oriented datastores, comprising the steps of:
 - retrieving data from an external non-object-oriented datastore stored on a data storage device attached to a computer into a memory of the computer in response to a query request received from an application program, wherein the query request conforms to a syntax that provides for a qualified retrieval of one or more collections of datastore persistent objects; and
 - encapsulating the retrieved data in one or more of the datastore persistent objects, wherein the datastore persistent objects are materialized in the memory of the computer as members of one or more of the collections.

5,778,380
INTELLIGENT RESOURCE TRANSFORMATION ENGINE FOR TRANSLATING FILES
 David M. Siefert, Englewood, Ohio, assignor to NCR Corporation, Dayton, Ohio
 Continuation of Ser. No. 401,736, Mar. 9, 1995, abandoned, which is a continuation-in-part of Ser. No. 217,065, Mar. 24, 1994, abandoned. This application Apr. 9, 1997, Ser. No. 835,280
 Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—103

12 Claims



- 1. An information retrieval system, comprising:
 - a) a system having IAF characteristics, which allows a user to select a remote resource;
 - b) means for allowing a user to run a selected computer program; and

- c) transformation means for causing the selected remote resource to become compatible with the selected program, the transformation means including means for:
- identifying the program into which the user wishes to load the resource,
 - ascertaining whether the resource is compatible, and, if not,
 - locating user data within the resource, and
 - translating the user data into a form compatible with the program.

5,778,381

COMPUTER AIDED MAINTENANCE AND REPAIR INFORMATION SYSTEM FOR EQUIPMENT SUBJECT TO REGULATORY COMPLIANCE

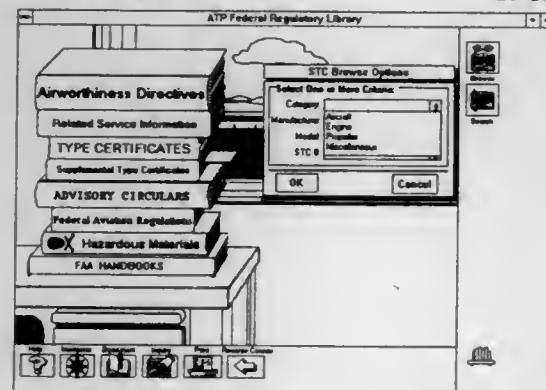
Michael A. Sandifer, Millbrae, Calif., assignor to Aircraft Technical Publishers, Brisbane, Calif.

Continuation of Ser. No. 885,262, May 18, 1992, abandoned. This application Aug. 4, 1995, Ser. No. 511,289

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—104

20 Claims



1. A system to provide information to maintain and repair equipment or provide services, comprising means for knowledge-based access to, and management of, a technical database comprising electronically stored publications which are displayable and which are searchable on a keyword basis, the technical database being structured to enable a plurality of access modes including name of publication, key word, and identified profile with migration capability between related records, including an authority file database comprised of all manufacturer make, model, and serial numbers for equipment and components including their synonyms to enable retrieval of all applicable publications.

5,778,382

DATA RETRIEVAL METHOD AND APPARATUS, AND STORAGE MEDIUM HOLDING PROGRAMS FOR EXECUTING SAID METHOD

Keiji Hatori, Hatogaya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1996, Ser. No. 667,607

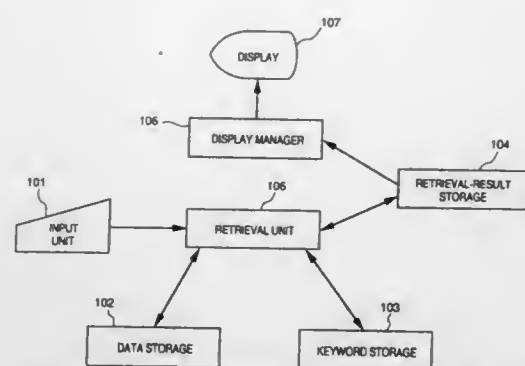
Claims priority, application Japan, Jun. 23, 1995, 7-157494

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—104

24 Claims

1. A data retrieval apparatus for retrieving desired data from a plurality of data stored in data storage means, comprising: retrieval means for retrieving data that satisfies a retrieval condition from said data storage means; display means for displaying an image, corresponding to the data retrieved by said retrieval means, within an area provided in correspondence with the retrieval condition; and control means for, if said display means displays a plurality of areas in correspondence with retrieval conditions respectively, displaying an image of data that simultaneously satisfies



retrieval conditions corresponding to the plurality of areas, within an overlap area between the areas.

5,778,383

SYSTEM FOR DYNAMICALLY CACHING AND CONSTRUCTING SOFTWARE RESOURCE TABLES

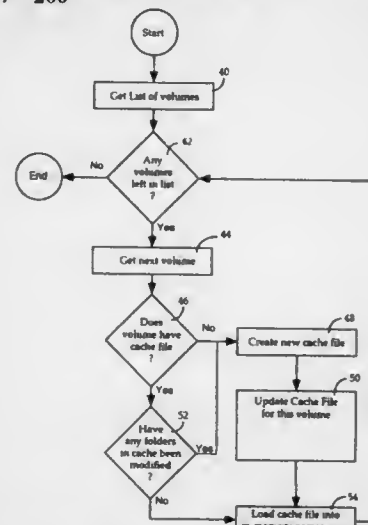
Caia Grisar, San Francisco; Tante Celik, Cupertino, and Jens Alfke, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 8, 1995, Ser. No. 512,327

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—200

19 Claims



8. In a computer system, a method for reducing the time required to construct a resource table prior to launching an executable computer program, said method comprising the steps of:

- searching a storage volume to identify each resource that may be utilized in support of program execution;
- storing resource identification information in a cache file associated with the storage volume, wherein said resource identification information includes information identifying when each resource was last modified;
- prior to launching the executable program, comparing the resource identification information stored in the cache file with resource identification information stored in the associated storage volume;
- loading the contents of the cache file into the resource table if the modification time for each resource stored in the cache file is the same as the corresponding modification time stored in the associated storage volume;
- updating the cache file only if a modification time stored in the cache file differs from the corresponding modification time stored in the associated storage volume, then loading the contents of the cache file into the resource table; and
- launching the executable program.

5,778,384

SYSTEM AND METHOD FOR AUTOMOUNTING AND ACCESSING REMOTE FILE SYSTEMS IN MICROSOFT WINDOWS IN A NETWORKING ENVIRONMENT

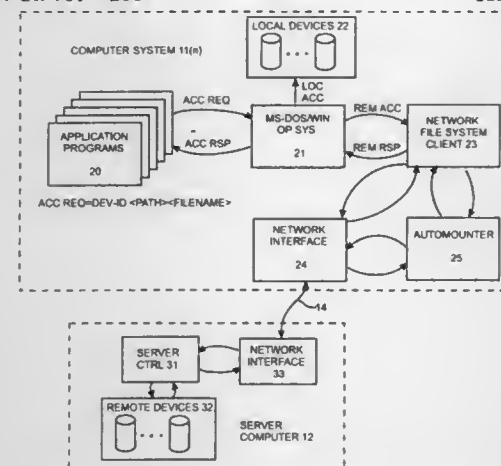
Joseph E. Provino, Cambridge, and Philip M. Rosenzweig, Acton, both of Mass., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Dec. 22, 1995, Ser. No. 577,822

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—200

111 Claims



1. A virtual file system accessing subsystem for use in connection with a computer system connected in a computer network, the computer system running a selected operating system, the virtual file system accessing subsystem facilitating accessing of a virtual logical storage device that is identified by a virtual logical storage device identifier and that has a virtual logical storage device file system that includes at least a portion of a remote file system maintained by another device connected in the computer network, the virtual file system accessing subsystem comprising:

- a remote access element for initiating an access operation in connection with the virtual logical storage device file system maintained by the virtual logical storage device in response to an access request that the remote access element receives from the operating system which includes the virtual logical storage device identifier, the remote access element during the access operation accessing the portion of said remote file system that is included in said virtual logical storage device file system; and
- an operating system request redirector for enabling the operating system to direct access requests which identify the virtual logical storage device to the remote access element.

5,778,385

LINK MANAGER FOR MANAGING LINKS INTEGRATING DATA BETWEEN APPLICATION PROGRAMS

John M. Pratt, Atkinson, N.H., assignor to Kodak Limited, Hemel Hempstead, England

Continuation of Ser. No. 309,824, Sep. 21, 1994, abandoned.

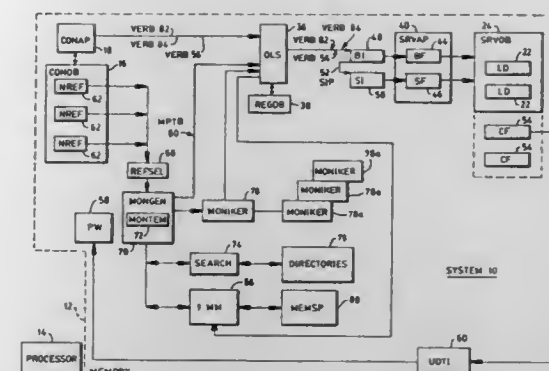
This application Jul. 10, 1997, Ser. No. 891,240

Int. Cl.⁶ G06F 9/40

U.S. Cl. 707—200

2 Claims

1. In a computer system including a plurality of data objects for storing data and a plurality of applications programs for performing operations on the data objects, the data objects including container objects and server objects and the container objects containing references to linked data residing in the server objects, a memory and processor for storing and executing the application programs, and an integrated operating environment including a link mechanism responsive to a moniker corresponding to a linked data reference and identifying a corresponding server object containing the linked data for loading and invoking a server application program for performing operations on the corresponding server object, the server application program being responsive to



the link server mechanism for providing the linked data to a presentation window, and a link manager including a reference selector responsive to a user input selecting a first single reference to linked data in the container object, and a moniker generator for storing a template of a moniker and responsive to the first selected reference to linked data for generating from the template and the selected reference a first moniker identifying a first server object containing the linked data identified by the first reference and providing to the link mechanism a moniker pointer identifying the moniker, the link mechanism being responsive to the moniker pointer for reading the moniker, identifying a first server application program corresponding to the first server object, and directing the first server application program for opening the first server object, opening a presentation window for presenting the linked data, and providing the linked data to the presentation window, the link manager including a search mechanism for locating unresolvable references, wherein each reference to linked data is comprised of a file name and a path name, comprising:

- the search mechanism responsive to the file name of a reference to linked data for
 - determining when a file name cannot be located and, when and only when a file name cannot be located, determining a directory path to the server object corresponding to the file name by
 - searching only local directories of the system to locate the server object corresponding to the file name when the file name cannot be located,
 - determining the directory path to the server object corresponding to the file name, and
 - providing the directory path to the moniker generator, and
 - the moniker generator responsive to the directory path provided from the search mechanism for generating the moniker including the directory path identifying the location in the system of the server object containing the linked data.

5,778,386

GLOBAL VIEW STORAGE MANAGEMENT SYSTEM FOR SEMICONDUCTOR MANUFACTURING PLANTS

Chin-Mou Lin, and Chin-Fu Lin, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed May 28, 1996, Ser. No. 654,365

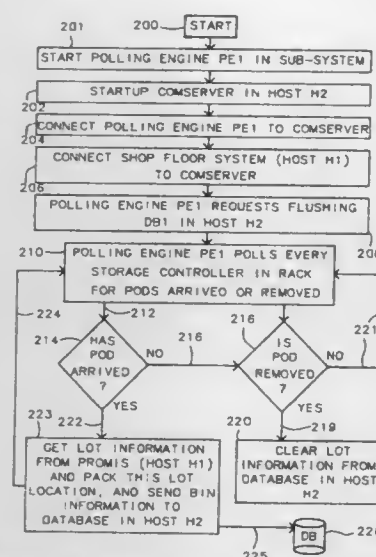
Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—200.1

20 Claims

1. A computer operated method of management of data in a database system, and workstations in several different functional locations configured to perform a specific task at each location comprising the steps as follows:

said database system being used for controlling a manufacturing operation, said manufacturing operation including a plurality of pods and a rack which holds at least one pod, said pods



being adapted to hold a wafer cassette and each of said pods having a tag attached thereto, said rack including a storage controller associated therewith, reading data from said tags on said pods for lots in said pods in said plant, sending said data through a polling engine which maintains correct lot information in said database system for transmission to a database system, supplying data from said database system to a plurality of programmable workstations linked lines in a star network to said database.

5,778,387

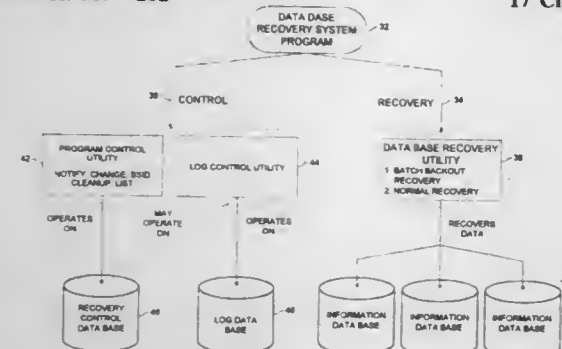
DATABASE AUTOMATED RECOVERY SYSTEM
Thomas Adam Wilkerson, Lenexa; Roger Lynn Bechtel, Shawnee; James Robert Cessna, Olathe; David Francis Costello, Overland Park; James Louis Frentrop, Kansas City; Edwin Lee Ryan, Overland Park, all of Kans., and Gary Douglas Shaw, Raytown, Mo., assignors to Sprint Communications Co., L.P., Kansas City, Mo.

Filed May 19, 1995, Ser. No. 444,624

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—202

17 Claims



1. A system for automatically recovering data from a database, the system comprising:
at least one information database stored in a direct access storage device that stores the data;
a log database that stores image copies of the data wherein the image copies are each loaded with a time stamp that corresponds to when that image copy was made;
an interface operational to allow a user to input an information database designation and a time stamp value which are both associated with particular data to be recovered;
a database recovery routine operational to create program control language based in part on the input; and

a processor operational to control the interface, to execute the database recovery routine, and to execute the program control language and restore an image copy of the particular data to the designated information database.

5,778,388

METHOD OF PROCESSING A SYNCHRONIZATION POINT IN A DATABASE MANAGEMENT SYSTEM TO ASSURE A DATABASE VERSION USING UPDATE LOGS FROM ACCUMULATED TRANSACTIONS

Nobuo Kawamura, Sagami-hara; Kazuo Masai; Nobuyuki Yamashita, both of Yokohama, and Hiroshi Nagai, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Software Engineering Company, Ltd., Yokohama, both of Japan

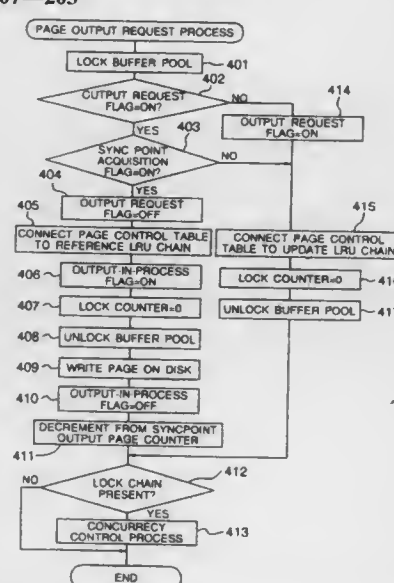
Filed Sep. 15, 1995, Ser. No. 529,176

Claims priority, application Japan, Sep. 19, 1994, 6-222930

Int. Cl.⁶ G06K 17/30

U.S. Cl. 707—203

13 Claims



1. In a database management system for performing a plurality of transactions concurrently, in which a restart recovery process is assumed at an occurrence of a system failure, a method for acquiring a synchronization point (syncpoint) for assuring a database version on an external storage, said syncpoint being determined at each interval at which database update logs from the transactions are accumulated (incremented) to a given amount, said method comprising the steps of:

assigning, at the beginning of acquisition of a syncpoint, a mark indicating that syncpoint acquisition is in progress, the tables controlling all updated pages in a buffer pool mapped onto a main storage, said buffer pool including a plurality of buffers for storing respective pages, said updated pages not having been written into a database of an external storage;
writing, during the syncpoint acquisition, the updated pages for the marked table to the database of the external storage;
executing a transaction for further updating specific ones of the updated pages for the marked tables during the syncpoint acquisition process, before the updated page or pages are accessed, writing the further updated specific page or pages to said database, removing the mark from the control table for the further updated specific pages to allow a request of access to the further updated specific pages; and

determining, in response to termination of the write operation to said database, that the syncpoint acquisition is completed at the end of the write operation for all updated pages for the marked tables.

5,778,389

METHOD AND SYSTEM FOR SYNCHRONIZING COMPUTER FILE DIRECTORIES

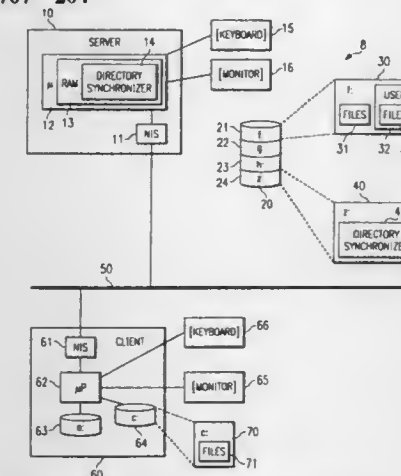
Paul S. Pruett, Columbia; Aaron W. Marshall, Nashville, and Joel R. Jensen, Franklin, all of Tenn., assignors to Electronic Data Systems Corporation

Filed May 23, 1996, Ser. No. 652,065

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—204

13 Claims



1. A system for synchronizing file directories in a computer system, said synchronizing system comprising:
a source file directory having a plurality of source files stored on a first storage medium;
a target file directory having a plurality of target files stored on a second storage medium;
a directory synchronizer for sequentially selecting each of the source files, for determining whether one of the target files is substantially identical to each selected source file, and for automatically copying each source file that is not substantially similar to a target file into the target file directory; and
wherein the directory synchronizer is operable to identify and delete any surplus files from the target directory.

5,778,390

METHOD AND SYSTEMS FOR CREATING DUPLICATING, AND ARCHIVING DATABASE FILES
Thomas J. Nelson, Lakewood, and Narendra S. Lulla, Broomfield, both of Colo., assignors to Electronic Data Systems Corporation, Plano, Tex.

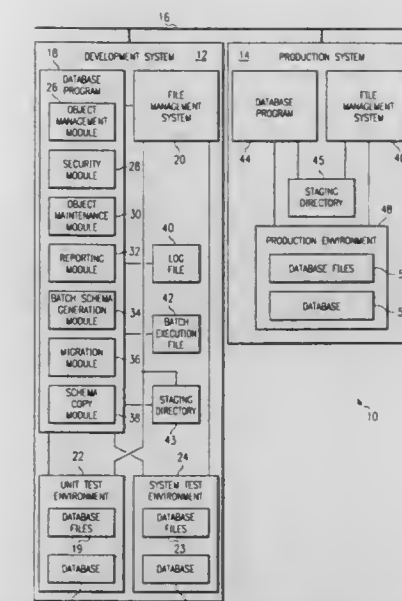
Filed Jun. 7, 1996, Ser. No. 660,636

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—204

21 Claims

1. A database system comprising:
a plurality of database files operable to automatically generate database objects; and



an object maintenance module operable to automatically generate a batch execution file, the batch execution file operable to execute at least two of the database files.

5,778,391

METHOD AND SYSTEM FOR RECLAIMING STACKED VOLUMES WITHIN A PERIPHERAL DATA STORAGE SUBSYSTEM

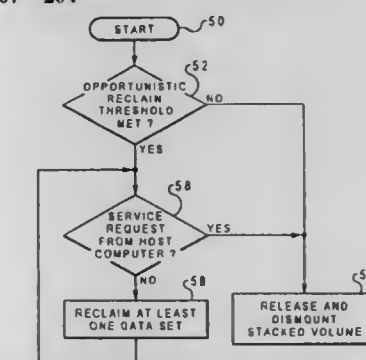
James Arthur Fisher; Frank David Gallo, both of Tucson, and Gregory Tad Kishi, Oro Valley, all of Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 19, 1996, Ser. No. 716,005

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—204

14 Claims



1. A method for reclaiming stacked volumes within a peripheral data storage subsystem, wherein said peripheral data storage subsystem includes a manager for controlling operations, a controller connected to said manager for attaching said subsystem to a host processor, a plurality of addressable media devices for removably receiving physical volumes of data storage media, a plurality of tape drives connected to said manager and to said media devices for mounting and dismounting said physical volumes of data storage media, said method comprising the steps of:

interrogating a database in said manager to determine if an opportunistic reclaim threshold of a stacked volume has been reached after an operation requested by said host computer has been performed on said stacked volume while said stacked volume is still mounted, wherein said opportunistic reclaim threshold specifies a minimum allowable amount of valid data on said stacked volume;
in response to a determination that said opportunistic reclaim threshold of said stacked volume has been reached, determining if a service request for said host computer is pending; and

5,778,397
AUTOMATIC METHOD OF GENERATING FEATURE
PROBABILITIES FOR AUTOMATIC EXTRACTING
SUMMARIZATION

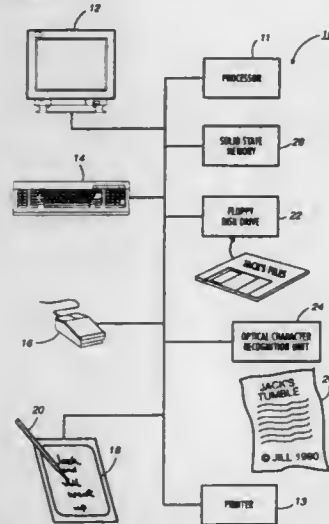
Julian M. Kupiec, Cupertino; Jan O. Pedersen, Palo Alto;
Francine R. Chen, San Mateo; Daniel C. Brotsky, Berkeley,
and Steven B. Putz, Santa Clara, all of Calif., assignors to
Xerox Corporation, Stamford, Conn.

Filed Jun. 28, 1995, Ser. No. 495,865

Int. Cl.⁶ G06F 17/21; 17/27

U.S. Cl. 707—500

8 Claims



1. A method of automatically generating feature probabilities from a document corpus, each document including a multiplicity of sentences, the method comprising the steps of:

- designating as a selected document a document of the document corpus;
- designating as a selected sentence a one of the sentences of the selected document;
- determining a value of a location feature for the selected sentence, the location feature having a first location value, a second location value, and a third location value, the first location value indicating that the selected sentence is included within a beginning portion of the selected document, the second location value indicating that the selected sentence is included within a middle portion of the selected document, and the third location value indicating that the selected sentence is included within an ending portion of the selected document;
- determining a value of an upper case feature for the selected sentence, the upper case feature having a first upper case value and a second upper case value, the first upper case value indicating that selected sentence does not include any of a multiplicity of selected upper case phrases, the selected upper case phrases forming a subset of upper case phrases included within the selected document, the second upper case value indicating the selected sentence includes a one of the selected upper case phrases;
- incrementing a location counter associated with the value of the location feature for the selected sentence;
- incrementing an upper case counter associated with the value of the upper case feature for the selected document;
- if all sentences of the selected document have not been designated as the selected sentence, repeating steps b) through f);
- if all documents of the document corpus have not been designated as the selected document, repeating steps a) through g);
- determining probabilities for each value of the location feature using the associated counter for each location feature value;
- determining the probabilities for each value of the upper case feature using the associated counter for each upper case feature value; and
- generating an extract for a first document presented in machine readable form to the user using the upper case

feature, the location feature and the probabilities for each value of the upper case feature and the location feature.

5,778,398
DOCUMENT PROCESSING TO PERMIT SHARING OF
CONTENT BY PLURAL DOCUMENTS

Masaaki Nagashima, Kawasaki; Tadashi Yamakawa, and Akihiro Kohno, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

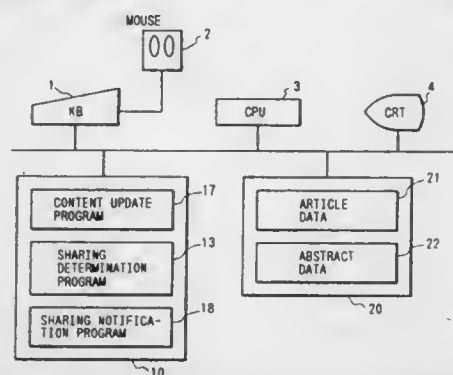
Filed Jul. 19, 1994, Ser. No. 277,005

Claims priority, application Japan, Jul. 20, 1993, 5-179233; Jul. 20, 1993, 5-179234; Jul. 20, 1993, 5-179238; Jul. 20, 1993, 5-179239

Int. Cl.⁶ G06F 17/00

U.S. Cl. 707—501

21 Claims



1. A document processing apparatus for managing a plurality of documents each containing a plurality of document elements, comprising:

- first designation means for designating, from a plurality of document elements of a source document, a first document element having a first pointer to a first content to be shared with a destination document;
- second designation means for designating from a plurality of document elements of a destination document, a second document element having a second pointer to a second content; and
- replacing means for replacing the second pointer with the first pointer so that the second document element designated by said second designation means should share the first content with the first document element designated by said first designation means.

5,778,399

Patent Not Issued For This Number

5,778,400
APPARATUS AND METHOD FOR STORING,
SEARCHING FOR AND RETRIEVING TEXT OF A
STRUCTURED DOCUMENT PROVIDED WITH TAGS

Masakazu Tateno, Nakai-machi, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1996, Ser. No. 605,795

Claims priority, application Japan, Mar. 2, 1995, 7-066727

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—513

10 Claims

- A structured document searching apparatus comprising: document inputting means for inputting a structured document including reference units delimited by tags; dividing means for dividing into reference units the structured document input by said document inputting means; word extracting means for extracting words from said reference units divided by said dividing means;

5,778,402
METHOD AND SYSTEM FOR AUTO-FORMATTING A
DOCUMENT USING AN EVENT-BASED RULE ENGINE
TO FORMAT A DOCUMENT AS THE USER TYPES

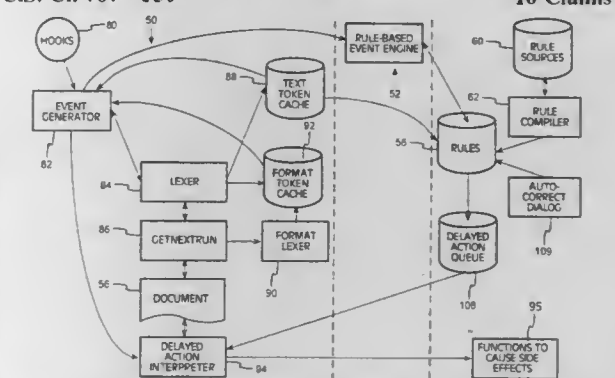
Dale L. Gipson, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jun. 7, 1995, Ser. No. 482,194

Int. Cl.⁶ G06F 7/00

U.S. Cl. 707—530

16 Claims



1. A method for interactively formatting a word processing document in a word processing system, the method comprising the following steps:

- storing interdependent rules and predefined events in a rule-base;
- as a user enters characters into a word processing document, scanning the characters from the word processing document;
- analyzing the characters to identify one or more predefined events;
- scheduling the one or more predefined events for evaluation on an evaluation queue;
- evaluating the one or more predefined events by scheduling rules or other predefined events that are dependent on the one or more predefined events;
- evaluating one or more rules including an autoformat action rule; and
- if the conditions of the action rule are satisfied, automatically formatting the word processing document according to an autoformat action while the user enters characters into the word processing document.

5,778,403
METHOD FOR DISPLAYING TEXT ON A RENDERING
DEVICE TO ACCURATELY REPRESENT THE TEXT AS
IF DISPLAYED ON A TARGET DEVICE

David L. Bangs, Kirkland, Wash., assignor to Microsoft Corporation, Redmond, Wash.

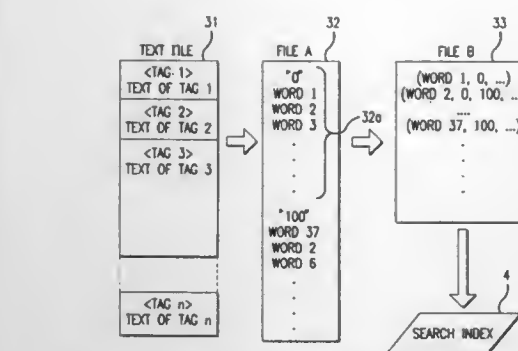
Filed Sep. 1, 1994, Ser. No. 299,939

Int. Cl.⁶ G06F 3/00

U.S. Cl. 707—527

7 Claims

- A method in a computer system for displaying a line of text on a rendering device, the line of text to be displayed in a manner that visually approximates a display of the line of text on a target device, the line of text comprising a plurality of characters, the target device having a target font with a target advance width for each character, the rendering device having a rendering font with a rendering advance width for each character, the method comprising: initializing a position of each character of the line of text in proportion to the target advance widths of the target font; and for each character of the line of text after a first character of the line of text, selecting the character; subtracting the position of a character immediately preceding the selected character from the position of the selected character to calculate a current advance width of the preceding character;



tuple generating means for generating tuples comprising the locations of said reference units divided by said dividing means and the words extracted by said word extracting means from said reference units;

search index generating means which, given the tuples generated by said tuple generating means out of the locations of said reference units and the words from said reference units, generates a search index comprising said words and said locations of said reference units including said words; and storing means for storing said search index, generated by said search index generating means, in conjunction with said structured document input by said document inputting means.

5,778,401

INSERTION BAR

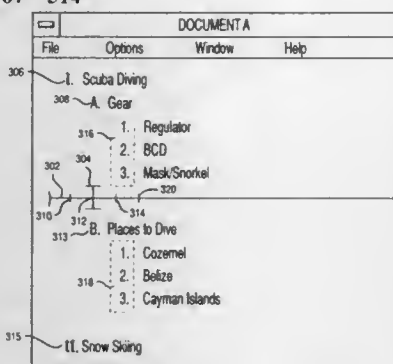
John Carl Beer, Oceanside, Calif.; Troy Lee Cline, Cedar Park; Ricky Lee Poston, Austin, both of Tex., and Jon Harald Werner, Oceanside, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1995, Ser. No. 551,014

Int. Cl.⁶ G06T 1/00

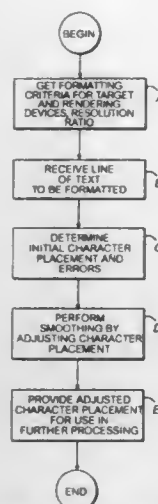
U.S. Cl. 707—514

6 Claims



1. A graphical method for directing a computer system to create in a window an insertion bar for inserting hierarchical level identifiers into existing hierarchically arranged data within said window, comprising the steps of:

- in response to detecting a graphical insert event at a location within said existing hierarchically arranged data in the window, inserting a blank line at the location of the graphical insert event;
- counting a number of hierarchical levels within said existing hierarchically arranged data above the blank line and placing a marker on the blank line corresponding to a position of each hierarchical level, thereby creating the insertion bar;
- in response to detecting graphical selection of one of the markers in the insertion bar, creating an additional hierarchical level identifier of the same level and in succession to the hierarchical level corresponding to the selected marker;
- automatically altering each subsequent hierarchical level identifier below said additional hierarchical level identifier within said same level of said existing hierarchically arranged data.



subtracting the current advance width of the preceding character from the rendering advance width of the preceding character to calculate an advance width error of the preceding character;

subtracting the position of the selected character from a character immediately following the selected character to calculate a current advance width of the selected character; subtracting the current advance width of the selected character from a rendering advance width of the selected character to calculate an advance width error of the selected character; subtracting the advance width error of the preceding character from the advance width error of the selected character to generate an overall error; and

when the overall error is not zero, adjusting the position of the selected character to apportion the overall error equally between the advance width of the preceding character and the advance width of the selected character, and wherein, when the selected character is a new character that is inserted into a line of text already displayed, the newly inserted character is treated as the first character of the line so that only the positions of characters following the newly inserted character are initialized and adjusted; and outputting the line of text to the rendering device based on the adjusted position of the characters.

5,778,404

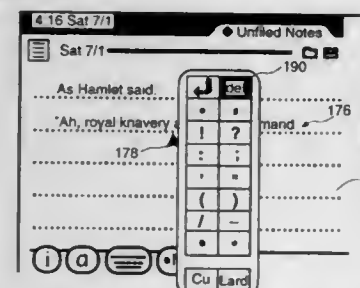
STRING INSERTER FOR PEN-BASED COMPUTER SYSTEMS AND METHOD FOR PROVIDING SAME

Stephen P. Capps; Ernest H. Beernink, both of San Carlos, and David T. Temkin, San Francisco, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 7, 1995, Ser. No. 512,269
Int. Cl.⁶ G06F 19/00

U.S. Cl. 707—531

32 Claims



1. A string inserter for a computer system having a graphical user interface and a pointer capable of interacting with said graphical user interface comprising:

an insertion marker displayed on a screen of a computer system having a graphical user interface at an insertion point for a string of text information being displayed on said screen, said

insertion marker designates said insertion point for the string of text information and is capable of activating an insertion menu;

an insertion initiator operative to detect an insertion selection of said insertion marker with a pointer of said computer system and, in response to said insertion selection of said insertion marker, to provide said insertion menu adjacent to said insertion marker on said screen, said insertion menu including a plurality of insertion labels; and

an insertion implementer responsive to a selection of an insertion label with said pointer and operative to insert an insertion string corresponding to said selection into said string of text information at said insertion point designated by said insertion marker.

5,778,405

APPARATUS AND METHOD FOR RETRIEVING DICTIONARY BASED ON LATTICE AS A KEY

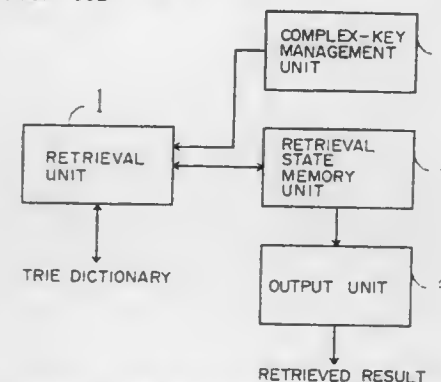
Tomoya Ogawa, Kawasaki, Japan, assignor to Fujitsu Ltd., Kawasaki, Japan

Filed Oct. 7, 1996, Ser. No. 725,955

Claims priority, application Japan, Nov. 10, 1995, 7-292989
Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—532

18 Claims



1. A dictionary retrieval apparatus for retrieving a Tree Retrieval dictionary by using a given retrieval key and outputting a retrieved result, comprising:

complex-key management means for managing information of a complex-key which includes plural data nodes combined organizationally and contains at least two retrieval keys;

retrieval means for retrieving a corresponding record in said Tree Retrieval dictionary by accessing said data nodes in said complex-key;

retrieval condition memory means for storing information, which indicates a position of an accessed data node in said complex-key, and a retrieval result obtained from said retrieval means; and

output means for outputting said retrieval result.

5,778,406

APPARATUS FOR DELIVERING CPU INDEPENDENT DATA FOR LITTLE AND BIG ENDIAN MACHINES

Pierre Mathias Willard, Redwood City, Calif., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jun. 30, 1995, Ser. No. 497,492

Int. Cl.⁶ G06F 13/00

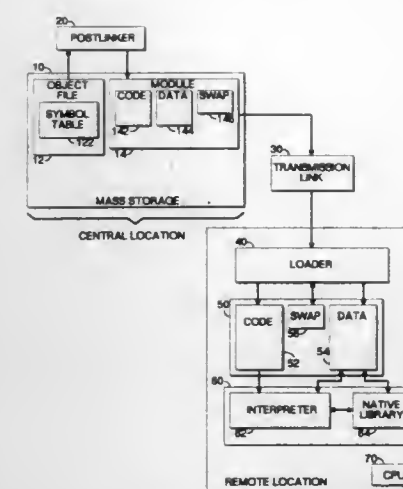
U.S. Cl. 711—1

17 Claims

1. A multimedia transmission system including a distributed computer system, comprising:

a central location computer for generating signal representing a module including:

a data section, comprising a plurality of data units, each data unit being one of a minimum addressable data unit and a longer data unit, each longer data unit comprising a plurality of minimum addressable data units; and



a swap section, comprising data identifying locations of respective longer data units within the data section; a remote location computer system, responsive to the module representative signal, and containing a loader for extracting the module and swapping the minimum addressable data units of longer data units in the data section at locations identified by the data in the swap section; and a transmission link, for transmitting the module representative signal from the central location computer system to the remote location computer system.

5,778,407

METHODS AND APPARATUS FOR DETERMINING OPERATING CHARACTERISTICS OF A MEMORY ELEMENT BASED ON ITS PHYSICAL LOCATION

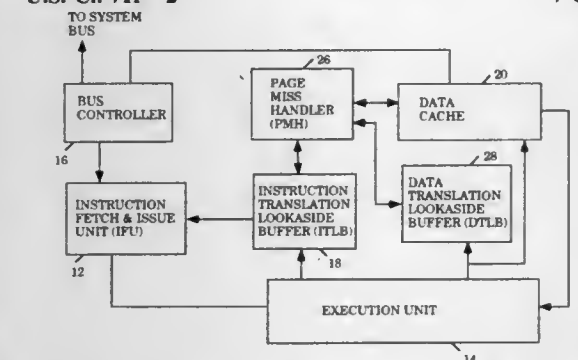
Andrew F. Glew, Hillsboro; Glenn J. Hinton, Portland; David B. Papworth, Beaverton; Michael Alan Fetterman, Hillsboro; Robert P. Colwell, and Frederick Jay Pollack, both of Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 171,528, Dec. 22, 1993, Pat. No. 5,561,814. This application Jun. 21, 1996, Ser. No. 667,241

Int. Cl.⁶ G06F 12/06

U.S. Cl. 711—2

7 Claims



1. In a processor comprising address means for generating physical addresses of memory locations having memory operating characteristic types, an apparatus for determining the memory operating characteristic type of a memory location based on its physical address, said apparatus comprising:

a) register means for storing a plurality of memory operating characteristic types for a plurality of address ranges, said memory operating characteristic types being stored in at least one of a plurality of address range description manners; and b) determination means coupled to said address and register means for receiving the physical address and determining the memory operating characteristic type of the memory location

using said stored memory operating characteristic types and in accordance to the at least one address range description manner they are stored.

5,778,408

CACHE ADDRESSING MECHANISM THAT ADAPTS MULTI-DIMENSIONAL ADDRESSING TOPOLOGY

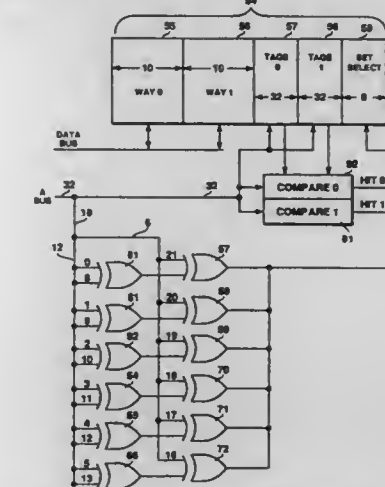
Robert Valentine, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 158,648, Nov. 29, 1993, abandoned.
This application Aug. 2, 1996, Ser. No. 691,451

Int. Cl.⁶ G06F 12/00

U.S. Cl. 711—3

5 Claims



1. A method for improving the operation of a spreadsheet computer program on a computer having a cache memory, the cache memory having a number of sets, each set having at least one location for storing data, where the program uses an address with a column field and a row field, the method comprising the steps of:

identifying n most active bits in the column field and n most active bits in the row field, where 2ⁿ is the number of sets in the cache memory; hashing together the n most active bits in the column field and the n most active bits in the row field to produce an n-bit set select word; using the n-bit select word to select a set in the cache memory; and storing data in a location in the selected set in the cache memory.

5,778,409

Patent Not Issued For This Number

5,778,410

Patent Not Issued For This Number

a data buffer for temporarily storing data to be transferred between a host and said storage medium;

an activation circuit for enabling the central processor to perform processing according to the first data when the first checking circuit decides according to the second data stored in the random access memory and the third data stored in the non-volatile storage device that the predetermined relationship exists.

said disk-like storage medium comprising an optical storage device, said secondary storage device case enclosing said disk-like storage medium, and housing said non-volatile storage device and said first checking circuitry, said read circuitry comprising optical reproduction circuitry for optically reading storage data in said optical storage medium.

5,778,422

DATA PROCESSING SYSTEM MEMORY CONTROLLER THAT SELECTIVELY CACHES DATA ASSOCIATED WITH WRITE REQUESTS

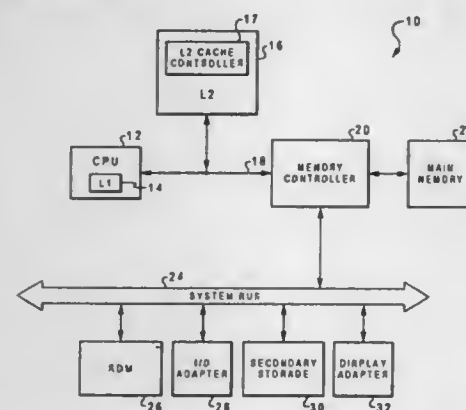
Thomas B. Genduso, Apex, N.C., and Edward R. Vanderslice, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 4, 1996, Ser. No. 628,230

Int. Cl.⁶ G06F 12/08; 13/00

U.S. Cl. 711—117

19 Claims



1. A memory controller for managing storage of data within a data processing system having a look aside cache configuration, said data processing system including a processor having an upper level cache associated therewith, a controller memory coupled to said memory controller, a main memory coupled to said memory controller, a processor bus coupled between said processor and said memory controller, and a lower level cache in a look aside configuration, said look aside configuration being defined by said lower level cache being coupled to said processor bus in parallel with said processor such that all write requests not serviced by said upper level cache are transmitted on said processor bus and are received concurrently by both said memory controller and said lower level cache, wherein said upper level cache and said lower level cache each include one or more cache lines, said memory controller comprising:

means, responsive to concurrent receipt at both said lower level cache and said memory controller of a write request and associated data for a specified address within said main memory, for determining if said write request will be serviced by said lower level cache and for determining if said associated data is a modified cache line replaced from either said upper level cache or said lower level cache;

means, responsive to a determination that said write request will not be serviced by said lower level cache and that said associated data is a modified cache line replaced from either said upper level cache or said lower level cache, for storing said associated data at said specified address within said main memory; and

means, responsive to a determination that said write request will not be serviced by said lower level cache and that said associated data is not a modified cache line replaced from said upper level cache or said lower level cache, for storing said associated data within said controller memory associated with said memory controller.

5,778,423

PREFETCH INSTRUCTION FOR IMPROVING PERFORMANCE IN REDUCED INSTRUCTION SET PROCESSOR

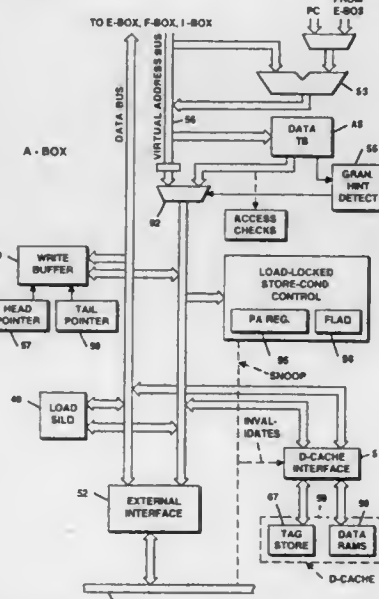
Richard Lee Sites, Boyleston, and Richard T. Witek, Littleton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 29, 1990, Ser. No. 547,630

Int. Cl.⁶ G06F 12/08

U.S. Cl. 711—118

16 Claims



1. A method of operating a processor system of the type having a CPU and a hierarchical memory, the hierarchical memory having a faster-access part and a slower-access part, wherein said faster-access part of said memory is a cache memory the CPU having a register set including a plurality of registers, comprising the steps of:

executing a sequence of instructions by said CPU, said sequence including a load or store instruction for accessing a given location of said memory and for transferring a information between a selected one of said registers and said given location in said memory, the step of executing said load or store instruction including sending an address from said CPU to said memory on a bus;

executing in said sequence a prefetch instruction to move a block of data including said given location from said slower-access part of said memory to said faster-access part, the step of executing said prefetch instruction including sending an address from said CPU to said memory on a bus, said prefetch instruction being executed a number of cycles prior to said load or store instruction, said step of executing said prefetch instruction not altering the content of any of said registers of said register set;

wherein said cache stores multi-word lines of data, and wherein said prefetch instruction moves a block of data larger than one of said multi-word lines.

5,778,424

DISTRIBUTED PLACEMENT, VARIABLE-SIZE CACHE ARCHITECTURE

Charles B. Guy, Hillsboro, Oreg., assignor to AVSYS Corporation, Hillsboro, Oreg.

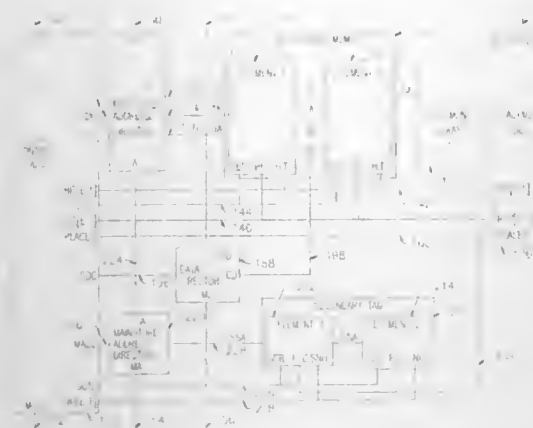
Filed Apr. 30, 1993, Ser. No. 56,366

Int. Cl.⁶ G06F 12/00

U.S. Cl. 711—118

17 Claims

15. A distributed cache architecture associated with a single processor interface for distributing and retrieving information in/from a cache comprising:



a variable-size cache having plural cache storage units (CSUs) therein, wherein each CSU includes a set associative memory having at least one memory element for storing information, and which further includes a distribution controller, said controllers being configured to collectively distribute within and receive information from the cache by selecting individual CSUs for placement and/or retrieval of information, wherein the number of CSUs is variable, thereby providing said variable size cache, and wherein said CSU is insertable into said variable-size cache without re-configuring the connectivity or settings of said variable-size cache;

a communications network between said plural CSUs operatively connecting each CSU directly to each of the other CSUs, whereby all memory elements in said plural CSUs are interconnected so as to collectively define the singular cache, said communications network providing a CSU-associated indication signal to all CSUs, wherein such a signal indicates a cache hit in one of said plural CSUs and identifies that one, wherein the controllers of said plural CSUs are operatively interconnected via said communications network;

wherein each CSU includes a distribution controller, and the controllers of said plural CSUs are operatively interconnected via said communications network, and are configured to collectively distribute within and receive information from the cache by sensing and selecting individual CSUs for placement and/or retrieval of information, wherein said distribution controller includes a placement mechanism which senses the presence of CSUs and which distributes data within said set associative memory to individual memory elements depending on the placement of said memory element within said set associative memory.

5,778,425

ELECTRONIC SYSTEM HAVING A FIRST LEVEL WRITE THROUGH CACHE MEMORY AND SMALLER SECOND-LEVEL WRITE-BACK CACHE MEMORY AND METHOD OF OPERATING THE SAME

Akio Shigeeda, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 404,702, Mar. 15, 1995. This application Jun. 7, 1995, Ser. No. 484,420

Int. Cl.⁶ G06F 13/00

U.S. Cl. 711—122

23 Claims

1. An electronic system comprising:

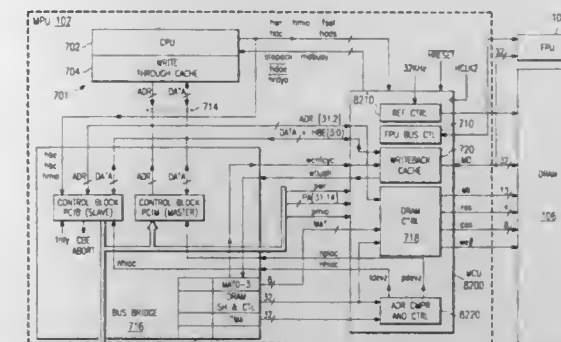
a memory;

a memory bus coupled to said memory; and

a microprocessor unit, comprising:

a microprocessor having a processing unit operable to process digital data in accordance with computer instructions, and having a first cache of a selected capacity, said first cache being of write-through type, and coupled to said processing unit;

a second cache having a plurality of cache entries of a cumulative capacity that is substantially smaller than the



capacity of said first cache, said second cache being of write-back type, and having a plurality of dirty bits, each associated with one of the plurality of cache entries for indicating, when set, that data in its associated cache entry has been modified, and said second cache coupled to said first cache at a higher cache level; and

a memory controller, coupled to the memory via the memory bus, for writing, to the memory, the contents of the plurality of entries of the second cache, responsive to all of the plurality of dirty bits of the second cache being set.

5,778,426

METHODS AND STRUCTURE TO MAINTAIN A TWO LEVEL CACHE IN A RAID CONTROLLER AND THEREBY SELECTING A PREFERRED POSTING METHOD

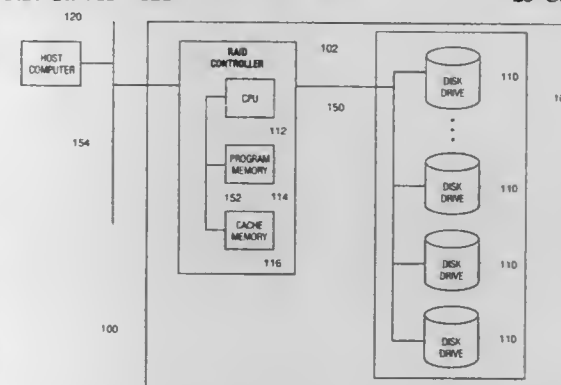
Rodney A. DeKoning; Donald R. Humlicek; Max L. Johnson, and Curtis W. Rink, all of Wichita, Kans., assignors to Symbios, Inc., Fort Collins, Colo.

Filed Oct. 23, 1995, Ser. No. 546,861

Int. Cl.⁶ G06F 13/00

U.S. Cl. 711—122

23 Claims



1. In a RAID storage subsystem including a plurality of disk drives organized into partitions, a RAID controller comprising:

a first level cache memory for storing buffers representing modified blocks stored on said plurality of disk drives;

a second level cache memory for storing control information which associates buffers in said first level cache memory with corresponding ones of said partitions; and

processing means connected to said first level cache memory, and connected to said second level cache memory, and connected to said disk drives for posting said buffers from said first level cache memory to said disk drives in accordance with the control information stored in said second level cache memory.

4. A computer system, comprising:

- a processor bus for carrying cycles, said processor bus including a plurality of lines for indicating the type of cycle being carried on said processor bus;
- a first level write-back cache coupled to said processor bus, wherein said first level cache executes a special flush acknowledge cycle indicating completion of flushing of said

5,778,439
PROGRAMMABLE LOGIC DEVICE WITH
HIERARCHICAL CONFIGURATION AND STATE
STORAGE

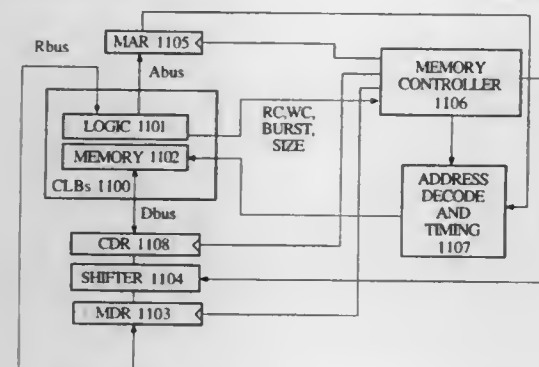
Stephen M. Trimberger, San Jose; Richard A. Carberry, Los Gatos; Robert Anders Johnson, San Jose, and Jennifer Wong, Fremont, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Aug. 18, 1995, Ser. No. 517,019

Int. Cl.⁶ G06F 12/02

U.S. Cl. 711—153

20 Claims



1. A programmable logic device with hierarchical configuration and state storage on an integrated chip, comprising:
 - an active storage for an active configuration and an active state;
 - an inactive storage for one or more inactive configurations and one or more inactive states;
 - logic and routing configured by the active configuration, wherein the logic includes a plurality of combinational elements and a plurality of sequential logic elements for providing the states; and
 - means to transfer the bits between active and inactive storage.

5,778,440
FLOATING GATE MEMORY DEVICE AND METHOD
FOR TERMINATING A PROGRAM LOAD CYCLE UPON
DETECTING A PREDETERMINED ADDRESS/DATA
PATTERN

Tom Dang-Hsing Yiu; Ray-Lin Wan, both of Milpitas, Calif.; Yao-Wu Cheng, Taipei, Taiwan; Chung-Hsiung Hung, Hsin-Chu, Taiwan, and Fuchia Shone, Hsinchu, Taiwan, assignors to Macronix International Co., Ltd., Hsinchu, Taiwan

PCT No. PCT/US95/06762, § 371 Date Feb. 16, 1996, § 102(e) Date Feb. 16, 1996

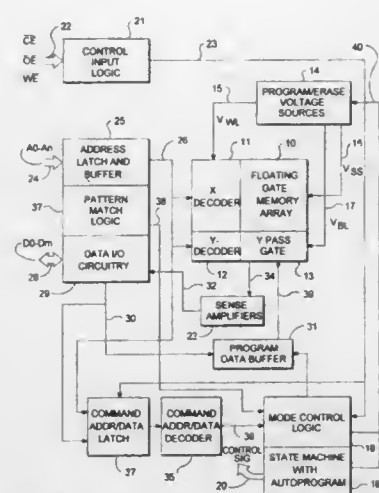
Continuation-in-part of Ser. No. 325,467, Oct. 26, 1994, Pat. No. 5,526,307. This PCT application May 26, 1995, Ser. No. 596,380

Int. Cl.⁶ G06F 13/00; G11C 16/06

U.S. Cl. 711—154

40 Claims

1. An integrated circuit memory, comprising:
 - an array of storage elements;
 - input/output circuitry, having inputs to receive addresses and data and coupled to the array, to read and store data segments in the array in response to the addresses and the data on the inputs; and
 - command logic, coupled to the input/output circuitry, which executes a process to store a block of data in response to a sequence of addresses and data segments received at the input/output circuitry, including logic to detect a last segment of the block of data in response to a pattern including at least



one of the addresses and the data received at the input/output circuitry.

5,778,441
METHOD AND APPARATUS FOR ACCESSING SPLIT
LOCK VARIABLES IN A COMPUTER SYSTEM

Michael W. Rhodehamel; Nitin V. Sarangdhar, and Matthew A. Fisch, all of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

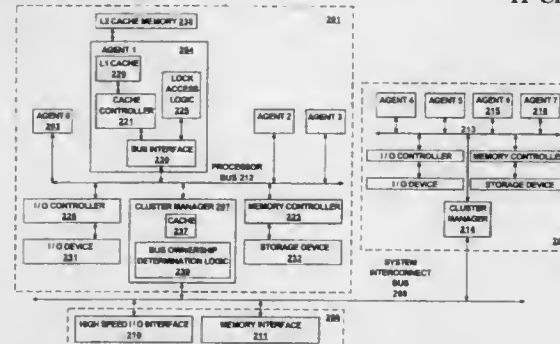
Continuation of Ser. No. 204,864, Mar. 1, 1994, abandoned.

This application Dec. 11, 1996, Ser. No. 764,663

Int. Cl.⁶ G06F 12/00; 13/00

U.S. Cl. 711—154

11 Claims



1. A computer system comprising:
 - a first bus operative to be coupled to a first memory;
 - a second bus operative to be coupled to a second memory;
 - a first agent, coupled to said first bus, to receive a lock operation via said first bus, said lock operation including a first request and a second request, said first agent being operative to receive both a first signal and a second signal via said first bus, said first signal indicating whether said first request is part of said lock operation and said second signal indicating whether said lock operation accesses a split lock variable, said first agent being further operative to determine, upon receipt of the first request, whether control of said second bus is available;
 - said first agent being further operative to determine, upon receipt of said first request, whether said first request can be satisfied by said first memory, and if said lock operation accesses said split lock variable, then to allow completion of said first request only if control of said second bus is available regardless of whether said first request can be satisfied by said first memory;
 - a second agent, coupled to said first bus, for indicating to said first agent, based on a state of said second signal, whether said first agent is to abort said lock operation;
 - wherein said second agent is operative to determine whether a possible deadlock situation exists between said first request and another request issued by another agent coupled to said second bus; and

said second agent is also operative to extend a period for determining whether control of said second bus is available.

5,778,442
METHOD AND APPARATUS FOR BUFFERING DATA IN
A COMPUTER SYSTEM

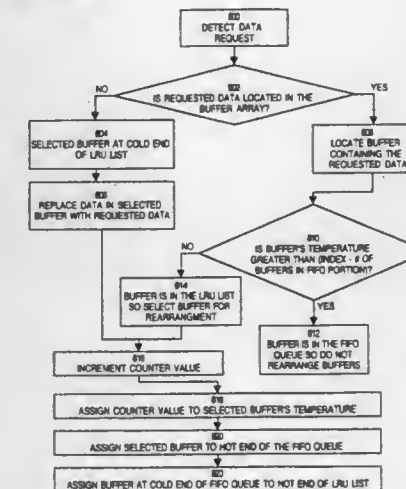
Ahmed Ezzat, Cupertino, and Juan R. Loaiza, San Carlos, both of Calif., assignors to Oracle Corporation, Redwood Shores, Calif.

Filed Mar. 25, 1996, Ser. No. 621,655

Int. Cl.⁶ C06F 13/00

U.S. Cl. 711—159

20 Claims



1. A method for replacing data in a list of buffers, the method comprising the steps of:
 - locating requested data;
 - if said requested data is located in a buffer that belongs to a first set of buffers in said list of buffers, then accessing said requested data without rearranging any buffers in said list of buffers;
 - if said requested data is located in a buffer that belongs to a second set of buffers in said list of buffers, then performing the steps of assigning the buffer that contains said requested data to said first set of buffers, and
 - assigning a buffer in said first set of buffers to said second set of buffers.

5,778,443
METHOD AND APPARATUS FOR CONSERVING POWER
AND SYSTEM RESOURCES IN A COMPUTER SYSTEM
EMPLOYING A VIRTUAL MEMORY

Randal Craig Swanberg, Round Rock, and Michael Stephen Williams, Austin, both of Tex., assignors to International Business Machines Corp., Armonk, N.Y.

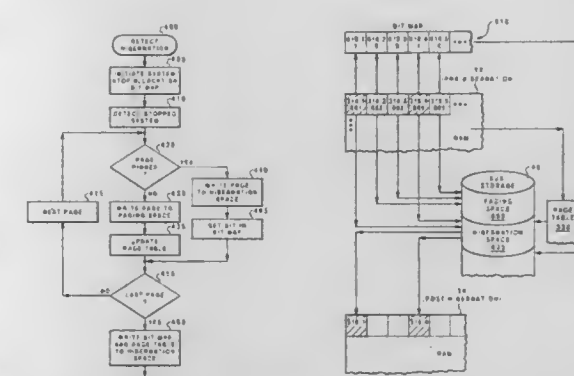
Filed Dec. 14, 1994, Ser. No. 355,881

Int. Cl.⁶ G06F 12/16; 1/32

U.S. Cl. 711—162

8 Claims

1. A method for conserving power consumption in a computer system having volatile random access memory ("RAM") and non-volatile auxiliary storage, a virtual memory operating system with some pages of virtual memory resident in RAM and other pages resident in a paging space in auxiliary storage, and further having a time varying operating state definable by reference to the memory, comprising the steps of:
 - (a) allocating a space in auxiliary storage (a "hibernation space") for storing a portion of RAM as a hibernation image;
 - (b) storing a first group of the RAM pages in the paging space;
 - (c) storing a second group of the RAM pages in the hibernation space;
 - (d) entering a hibernation state, including powering off the computer system with the computer at a certain operating state; and
 - (e) returning from the hibernation state, including:



- (i) powering on the computer system;
- (ii) reading the second group of pages into the RAM; and
- (iii) resuming the computer system operation at the certain operating state.

5,778,444
METHOD AND APPARATUS FOR RESET-SENSITIVE
AND CONTROLLED REGISTER WRITE ACCESSES IN A
DATA PROCESSING SYSTEM WITH USER AND TEST
MODES

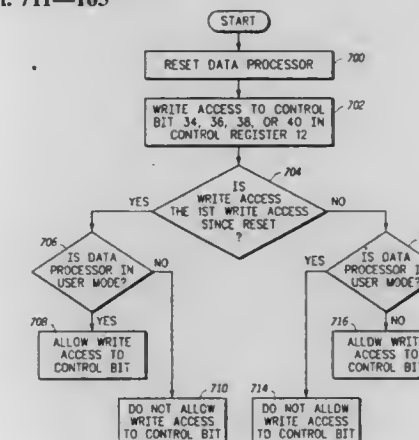
John A. Langan; Philip B. Drake, and Rebecca A. Leiser, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1996, Ser. No. 643,647

Int. Cl.⁶ G06F 13/00

U.S. Cl. 711—163

19 Claims



1. A method for operating a data processor, said method comprising the steps of:
 - performing a first write access to a first control bit, the first write access being an initial write access after a reset of the data processor, wherein the first control bit is for configuring at least one parameter of the data processor;
 - causing the first write access to the first control bit to have no effect on the first control bit;
 - performing a second write access to the first control bit, wherein the second write access is subsequent to the first write access; causing the second write access to the first control bit to affect the first control bit;
 - performing a third write access to the first control bit, wherein the third write access is subsequent to the second write access; and causing the third write access to the first control bit to affect the first control bit.

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FEMALE JOCK STRAP

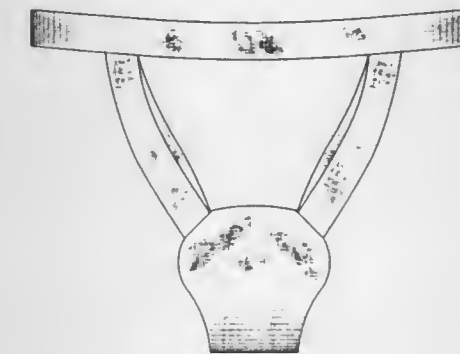
Ronald Paramore, Paramore Collections, Inc., P.O. Box Diane Nixon Johnson, 41 Moulton Ave., Tonawanda, N.Y.
223381, Hollywood, Fla. 33022 14223

Filed Mar. 31, 1997, Ser. No. 68,756

Term of patent 14 years

LOC (6) Cl. 24 - 04

U.S. Cl. D2—711



395,736

APRON ASSEMBLY

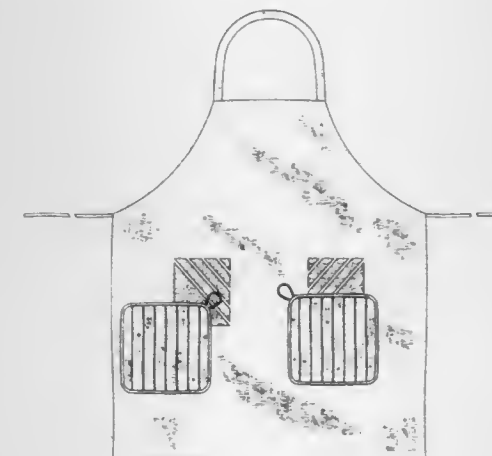
John Walters, 425 Friday Rd., Pittsburgh, Pa. 15209

Filed May 2, 1997, Ser. No. 70,208

Term of patent 14 years

LOC (6) Cl. 02 - 02

U.S. Cl. D2—864



395,737

AFRICAN AMERICAN HEADPIECE

Ronald Paramore, Paramore Collections, Inc., P.O. Box Diane Nixon Johnson, 41 Moulton Ave., Tonawanda, N.Y.
223381, Hollywood, Fla. 33022 14223

Filed Dec. 16, 1995, Ser. No. 32,366

Term of patent 14 years

LOC (6) Cl. 02 - 03

U.S. Cl. D2—365



395,738

PORTION OF A SHOE SOLE

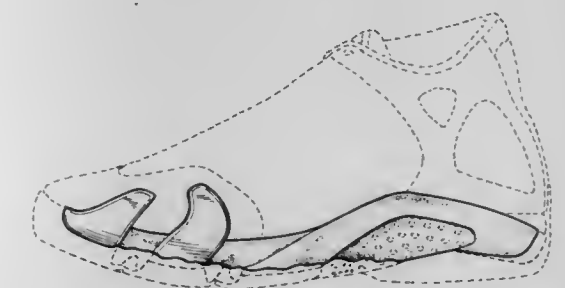
Tinker Linn Hatfield, Portland, and Mark J. Smith, Beaverton,
both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.

Filed Jan. 30, 1998, Ser. No. 65,759

Term of patent 14 years

LOC (6) Cl. 02 - 99

U.S. Cl. D2—947



395,739

PORTION OF A SHOE

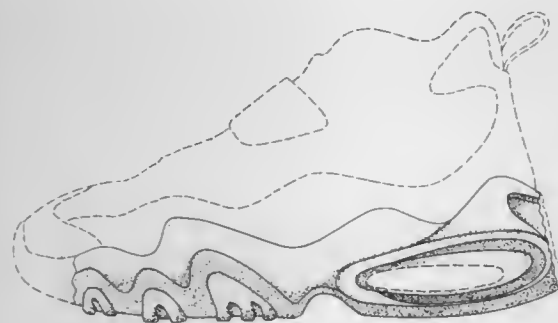
Robert Mervar, Hillsboro, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Mar. 13, 1997, Ser. No. 67,954

Term of patent 14 years

LOC (6) Cl. 02 - 99

U.S. Cl. D2—947



395,740

PORTION OF A BOTTOM SURFACE OF A SHOE
OUTSOLE

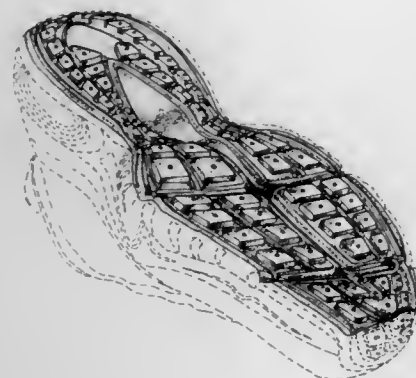
William J. Cass, Hillsboro, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Oct. 28, 1997, Ser. No. 78,849

Term of patent 14 years

LOC (6) Cl. 02 - 04

U.S. Cl. D2—951



395,741

PORTION OF A BOTTOM SURFACE OF A SHOE
OUTSOLE

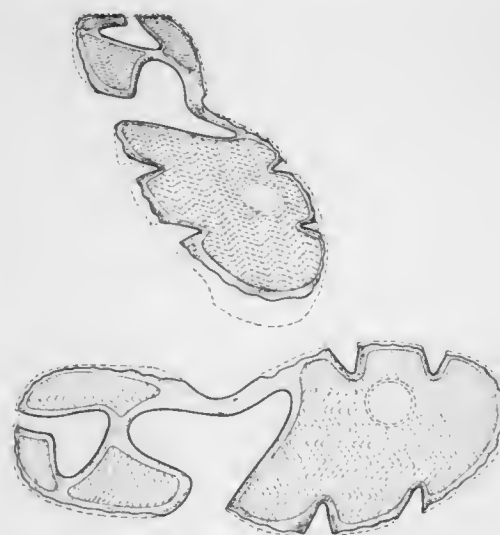
Tinker Linn Hatfield, Portland, and Mark J. Smith, Beaverton, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.

Filed Jan. 30, 1998, Ser. No. 65,760

Term of patent 14 years

LOC (6) Cl. 02 - 04

U.S. Cl. D2—953



395,742

SHOE SOLE

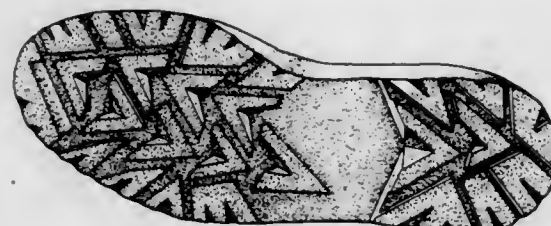
Diana A. Wurfbain, Athens, and Theodore A. Kastner, Lancaster, both of Ohio, assignors to Rocky Shoes & Boots, Inc., Nelsonville, Ohio

Filed May 21, 1996, Ser. No. 54,776

Term of patent 14 years

LOC (6) Cl. 02 - 04

U.S. Cl. D2—957



395,743

SHOE SOLE BOTTOM AND PERIPHERY

Kevin B. Ryan, Herzogenaurach, Germany, assignor to Adidas AG, Germany

Filed Nov. 22, 1995, Ser. No. 47,107

Term of patent 14 years

LOC (6) Cl. 02 - 04

U.S. Cl. D2—960



395,745

PORTION OF A SHOE UPPER

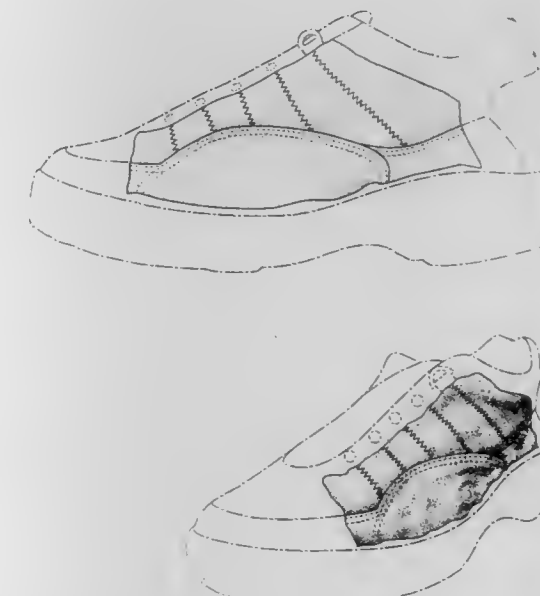
Matthew N. Rask, Boring, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Aug. 15, 1997, Ser. No. 75,033

Term of patent 14 years

LOC (6) Cl. 02 - 99

U.S. Cl. D2—972



395,746

SECURE HANDGUN MOUNTING APPARATUS

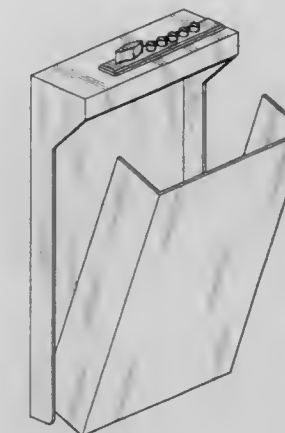
Ralph Barackman, 8228 E. Blackwillow Cir., #100, Anaheim Hills, Calif. 92808

Filed Sep. 9, 1997, Ser. No. 76,354

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—201



395,744

PORTION OF A BLADDER FOR A SHOE SOLE

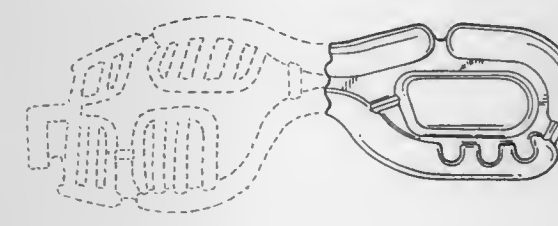
Rebecca Lynn Edington, Portland; Sergio G. Lozano, Beaverton; Robert J. Lucas, Portland; Christian Ebon Plein, Portland, and Craig E. Santos, Portland, all of Oreg., assignors to Nike, Inc., Beaverton, Oreg.

Filed Sep. 15, 1997, Ser. No. 76,480

Term of patent 14 years

LOC (6) Cl. 02 - 04

U.S. Cl. D2—961



395,747

COMBINED KEY RING AND VEHICLE WHEEL
ORNAMENT

Samuel Wilkins, 1154 Rayle Cir., Elberton, Ga. 30635

Filed Dec. 24, 1996, Ser. No. 64,201

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—211



395,749

CARRYING CASE FOR A CELLULAR TELEPHONE

Ali R. Jayez, 7950 Deering Ave., Unit B, Canoga Park, Calif. 91304

Filed Sep. 9, 1997, Ser. No. 76,365

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—218



395,750

INTEGRATED HANDLING BAG AND COMBINED TWO
FABRIC BEACH TOWELBernard Dominique, 4480, Côte-de-Liesse, bureau 224, Ville
Mont-Royal (QC), Canada, H4N 2R1

Filed Apr. 18, 1997, Ser. No. 69,480

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—233

395,748

PORTABLE CASE

Akira Akutsu, Itabashi 1-36-4 Itabashi-ku, Tokyo 173, Japan

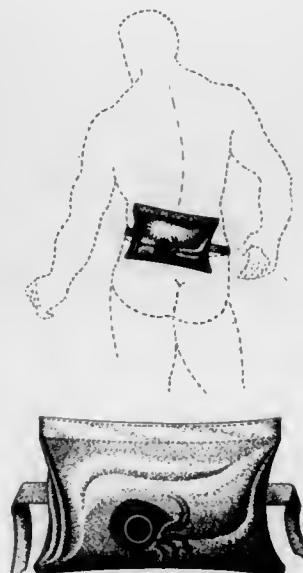
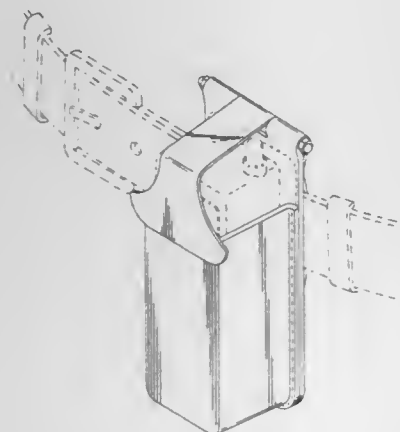
Filed Mar. 24, 1997, Ser. No. 68,570

Claims priority, application Japan, Nov. 26, 1996, 8-35636

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—218



395,751

CYLINDRICAL SHAPE HANDLING BAG AND A
COMBINED BEACH TOWELBernard Dominique, Protections Equinox Int'l Inc., 4480,
Cote-de-Liesse, Suite 224, Ville Mont-Royal (QC), Canada,
H4N 2R1

Filed Jun. 16, 1997, Ser. No. 72,384

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—233



395,753

TOOL BOX

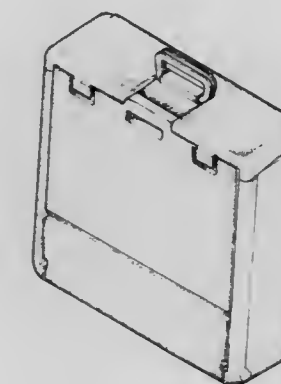
Zen-Chieh Fang, No. 2, Lane 565, Chung Cheng Rd., Wu Feng
Hsiang, Taichung Hsien, Taiwan

Filed Apr. 29, 1997, Ser. No. 69,576

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—291



395,752

SHOE CARRIER

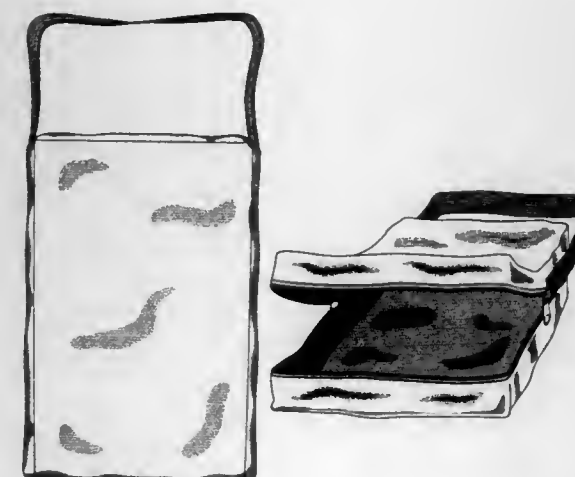
Barbara Ann Foster, San Francisco, Calif., assignor to Barbara
A. Foster, San Leandro, Calif.

Filed Sep. 17, 1996, Ser. No. 59,895

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—289



395,754

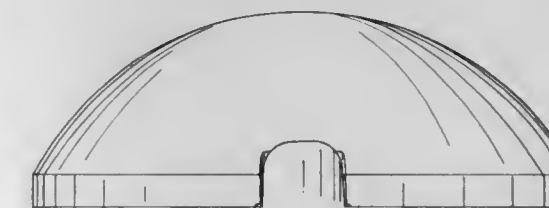
TRAVEL CASE FOR A NESTED PAIR OF BREAST SIZE
AND SHAPE ENHANCING FORMSWilliam T. Sautter, and Julie M. Sautter, both of Belmont,
Calif., assignors to Bodylines Incorporated, Belmont, Calif.

Filed Mar. 25, 1997, Ser. No. 68,277

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—294



395,755
COSMETIC CASE

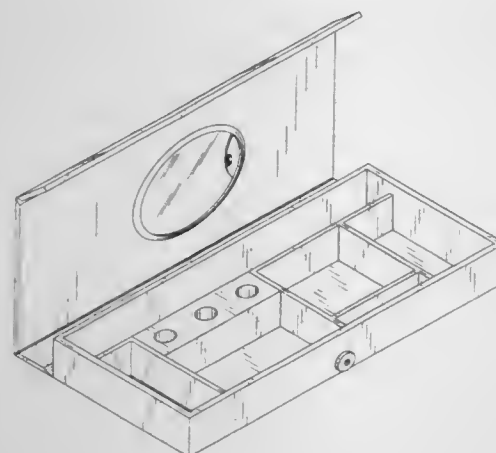
Barbara J. Hulin, 1400 E. West Highway #725, Silver Spring, Md. 29010

Filed Apr. 1, 1997, Ser. No. 68,845

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—295



395,756

STORAGE CONTAINER BODY

Hiroyuki Tanji, Kakuda, Japan, assignor to Iris U.S.A., Inc., Pleasant Prairie, Wis.

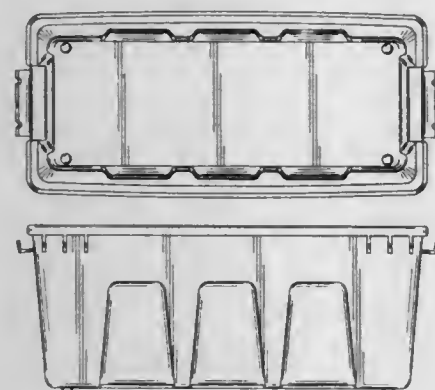
Filed Oct. 9, 1996, Ser. No. 62,947

Claims priority, application Japan, Apr. 9, 1996, 9913

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—312

395,757
CHILDREN'S TOOTHBRUSH

Carl Schiffer, Neustadt-Wied, Germany, assignor to M & C Schiffer GmbH, Neustadt-Wied, Germany

Filed May 3, 1996, Ser. No. 55,818

Claims priority, application Germany, Nov. 4, 1995, M 95 08 756.7

The portion of the term of this patent subsequent to Jan. 20, 2012, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 04 - 02

U.S. Cl. D4—107

395,758
CHAIR

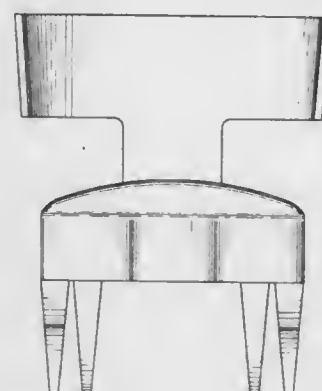
John Hutton, New York, N.Y., assignor to Donghia Furniture Co., Ltd., New York, N.Y.

Filed Jan. 10, 1997, Ser. No. 64,790

Term of patent 14 years

LOC (6) Cl. 06 - 01

U.S. Cl. D6—334

395,759
SEAT

Michael S. Smith, San Jose, Calif., assignor to American West Furniture Manufacturers, Inc., Santa Clara, Calif.

Filed Jul. 17, 1997, Ser. No. 73,773

Term of patent 14 years

LOC (6) Cl. 06 - 01

U.S. Cl. D6—334

395,761
CHAIR

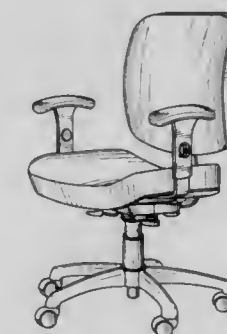
Greg Saul, Charlotte, N.C., assignor to O'Sullivan Industries, Inc., Lamar, Mo.

Filed Feb. 28, 1997, Ser. No. 68,947

Term of patent 14 years

LOC (6) Cl. 06 - 01

U.S. Cl. D6—366

395,760
CHAIR

David Patrick Hickey, 1025 SE. 30th Pl., Troutdale, Ore. 97060

Filed Jun. 5, 1997, Ser. No. 71,712

Term of patent 14 years

LOC (6) Cl. 06 - 01

U.S. Cl. D6—360

395,762
CHAIR

Greg Saul, Charlotte, N.C., assignor to O'Sullivan Industries, Inc., Lamar, Mo.

Filed Feb. 28, 1997, Ser. No. 68,949

Term of patent 14 years

LOC (6) Cl. 06 - 01

U.S. Cl. D6—366



395,763

COLLAPSIBLE ROCKING RECLINER

Stephen R. Machell, 3570 Mott Rd., Dover, Fla. 33527
Filed Jun. 2, 1997, Ser. No. 71,550

Term of patent 14 years

LOC (6) Cl. 06 - 01

U.S. Cl. D6—368



395,765

CHAIR

Stephan A. Preisig, Hütten, Switzerland, assignor to Giroflex
Entwicklungs AG, Koblenz, Switzerland

Filed Apr. 11, 1997, Ser. No. 69,198

Claims priority, application WIPO, Oct. 14, 1996,
DM/037.887

Term of patent 14 years

LOC (6) Cl. 06 - 01

U.S. Cl. D6—372



395,766

Patent Not Issued For This Number

395,764

CHAIR

Andras Dozsa-Farkas, Munich, Germany, assignor to Giroflex
Entwicklungs AG, Koblenz, Switzerland

Filed Apr. 11, 1997, Ser. No. 69,172

Claims priority, application Hague Agreement, Oct. 14,
1996, DM/037.887

Term of patent 14 years

LOC (6) Cl. 06 - 01

U.S. Cl. D6—372



395,767

CANOPY BED FRAME

Merrick Von Price, 3314 Branard, #20, Houston, Tex. 77098

Filed Feb. 18, 1997, Ser. No. 66,637

Term of patent 14 years

LOC (6) Cl. 06 - 01

U.S. Cl. D6—389



395,768

JEWELRY HOLDER

Lori Greiner, 1430 N. Astor St., Chicago, Ill. 60610

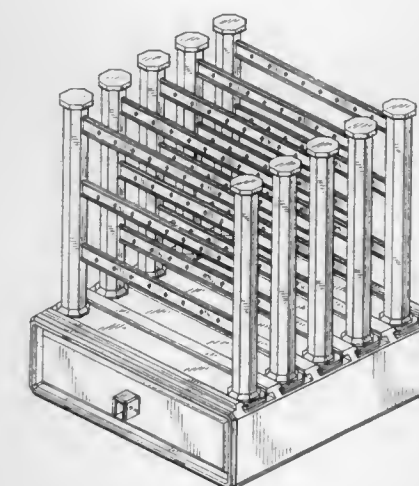
Filed Aug. 22, 1996, Ser. No. 58,790

The portion of the term of this patent subsequent to Aug. 30,
2008, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 06 - 04

U.S. Cl. D6—436



395,769

OIL FLOW RACK

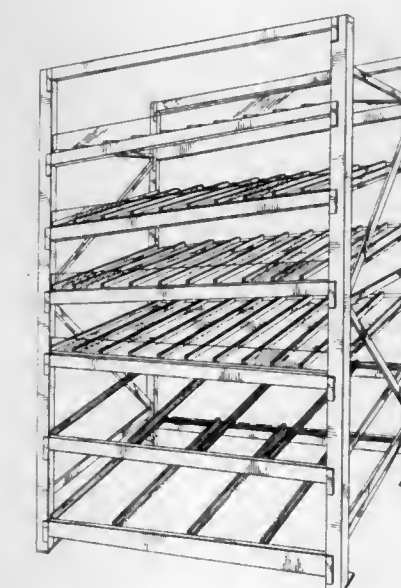
Dennis L. Reeves, 5189 Via de Mansion, La Verne, Calif. 91750

Filed Apr. 15, 1997, Ser. No. 69,436

Term of patent 14 years

LOC (6) Cl. 06 - 04

U.S. Cl. D6—463



395,770

MULTI-TIERED SHELF

Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex
Sarl, Oyonnax, France

Filed Aug. 6, 1997, Ser. No. 74,503

Claims priority, application WIPO, Feb. 10, 1997, DMA/
003587

Term of patent 14 years

LOC (6) Cl. 06 - 04

U.S. Cl. D6—479



395,771

TABLE

Ray G. Kelly, Kirkwood; Sharon A. Turnbough, Ellisville, both
of Mo., and Diane Taraskavage, Leucadia, Calif., assignors
to Angeles Group, Inc., Pacific, Mo.Division of Ser. No. 21,141, Apr. 11, 1994, Pat. No. Des.
383,017. This application Mar. 17, 1997, Ser. No. 68,025

Term of patent 14 years

LOC (6) Cl. 06 - 03

U.S. Cl. D6—480



395,772

RECREATIONAL TABLE

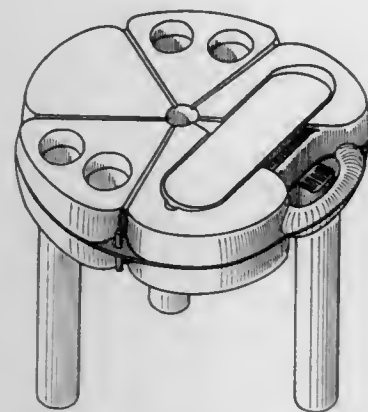
Giuseppe Malvasi, Via Montegabberi #1, Viareggio LU, Italy, 55049

Filed Sep. 10, 1997, Ser. No. 76,587

Term of patent 14 years

LOC (6) Cl. 06 - 03

U.S. Cl. D6—480



395,774

1 GALLON SOAP DISPENSER

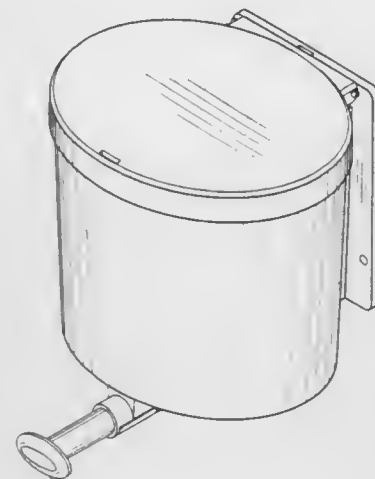
Brian Phillips, Joliet; Eric Wilmot, Chicago, and John Kaularich, Clarendon Hills, all of Ill., assignors to Steiner Company, Inc., Chicago, Ill.

Filed Sep. 12, 1997, Ser. No. 76,666

Term of patent 14 years

LOC (6) Cl. 07 - 07

U.S. Cl. D6—545



395,773

SHOWER CADDY

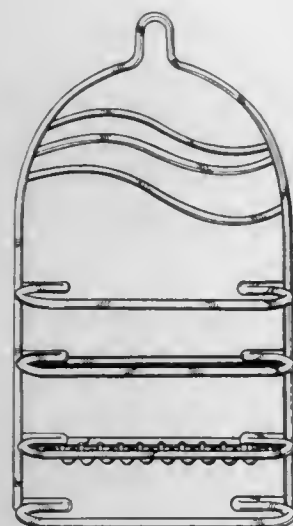
James A. Hofman, Hockessin, Del., assignor to Zenith Products Corp., New Castle, Del.

Filed Sep. 4, 1997, Ser. No. 76,168

Term of patent 14 years

LOC (6) Cl. 07 - 07

U.S. Cl. D6—525



395,775

LIQUID SOAP CONTAINER

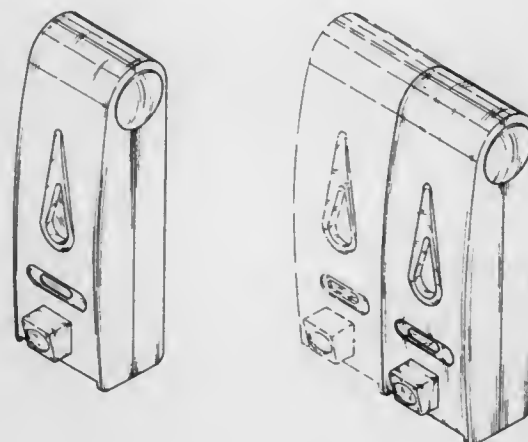
Yen Tang Lin, P.O. Box 63-99, Taichung, Taiwan

Filed Sep. 25, 1997, Ser. No. 76,895

Term of patent 14 years

LOC (6) Cl. 07 - 07

U.S. Cl. D6—545



395,776

GOLF BAG HOLDER

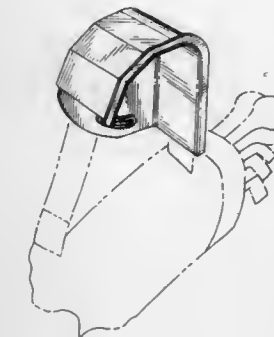
Thomas J. Porritt, 18 Lakewood, Danville, Ill. 61832

Filed Jan. 17, 1996, Ser. No. 51,320

Term of patent 14 years

LOC (6) Cl. 06 - 06

U.S. Cl. D6—552



395,778

BATHROOM CABINET

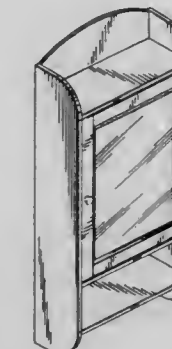
Joe Chen, 30 Bedminster Rd., Randolph, N.J. 07869

Filed Sep. 5, 1997, Ser. No. 76,239

Term of patent 14 years

LOC (6) Cl. 06 - 04

U.S. Cl. D6—559



395,777

COSMETICS RACK

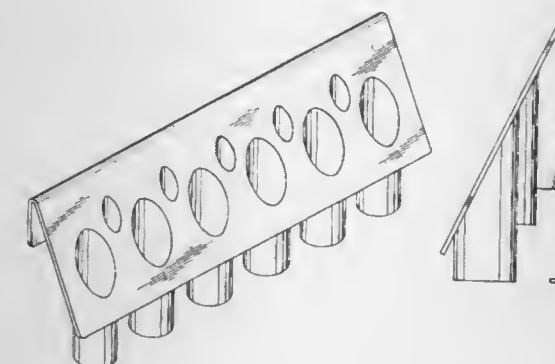
Paul Belokin; Martin P. Belokin, both of 7801 I-35 North, Denton, Tex. 76202, and Norman P. Belokin, 3341 Evers Pkwy., Denton, Tex. 76207

Filed Oct. 20, 1997, Ser. No. 78,172

Term of patent 14 years

LOC (6) Cl. 08 - 08

U.S. Cl. D6—567



395,779

BATHROOM CABINET

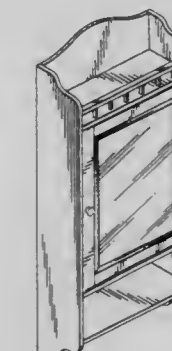
Joe Chen, 30 Bedminster Rd., Randolph, N.J. 07869

Filed Sep. 5, 1997, Ser. No. 76,240

Term of patent 14 years

LOC (6) Cl. 06 - 04

U.S. Cl. D6—559



395,780

MATTRESS TOPPER OR PAD

Denys Denney, Bear, Del., and Jose D. M. Contreras, Boothwyn, Pa., assignors to Foamex L.P., Linwood, Pa.

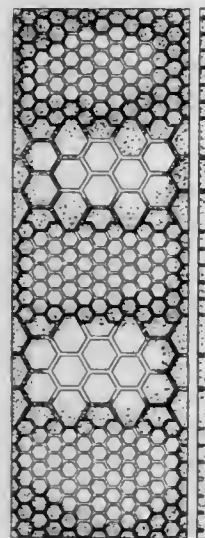
Filed May 8, 1997, Ser. No. 70,448

The portion of the term of this patent subsequent to Mar. 3, 2012, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 06 - 09

U.S. Cl. D6—596



395,782

CONTOUR MATERNITY PILLOW

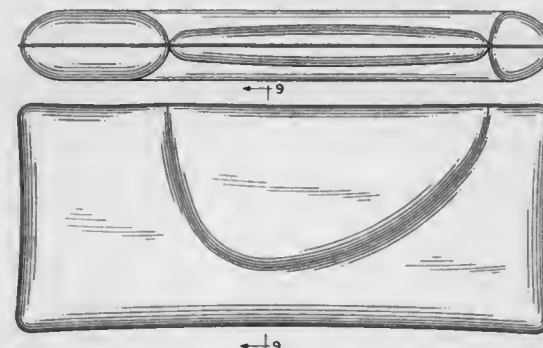
Juli M. Weddle, 20595 SW. Pike St., Aloha, Oreg. 97007

Filed Mar. 20, 1997, Ser. No. 68,708

Term of patent 14 years

LOC (6) Cl. 06 - 09

U.S. Cl. D6—601



395,783

CONTAINER WITH HANDLE

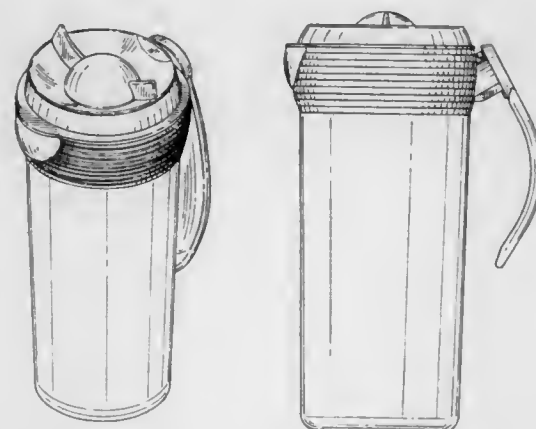
Victor J. J. Cautereels, Ranst, Belgium, assignor to Dart Industries Inc., Orlando, Fla.

Filed Apr. 3, 1997, Ser. No. 68,764

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—318



395,781

HEAD SUPPORT

Thomas J. Golder, 4200 Denbigh Dr., Charlotte, N.C. 28226

Filed Oct. 25, 1996, Ser. No. 61,645

Term of patent 14 years

LOC (6) Cl. 06 - 09

U.S. Cl. D6—599



395,784

MILK PITCHER

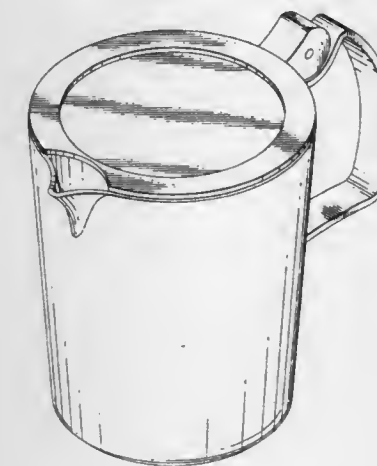
Joseph Michaeli, Larchmont, N.Y., assignor to Novelty Crystal Corporation, Elmhurst, N.Y.

Filed Jul. 14, 1997, Ser. No. 74,269

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—319



395,786

ELECTRIC FRYER

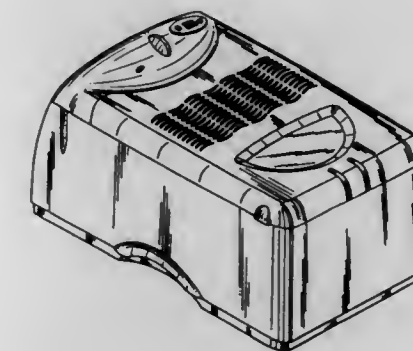
Fabrice Rossi, Fontaine Francaise, France, assignor to SEB, Selongey, France

Filed Jul. 17, 1997, Ser. No. 73,789

Term of patent 14 years

LOC (6) Cl. 07 - 02

U.S. Cl. D7—354



395,785

GRILL

Patrick Lin, 3rd Fl., No. 128, Sec. 3, Minsheng E. Rd., Taipei, Taiwan

Filed May 5, 1997, Ser. No. 70,283

Term of patent 14 years

LOC (6) Cl. 07 - 02

U.S. Cl. D7—332



395,787

COOKING KETTLE

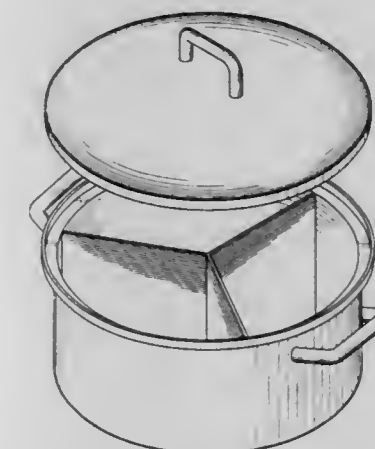
Elvira Wilks, 919 W. Main, Moore, Okla. 73160

Filed Apr. 24, 1997, Ser. No. 69,791

Term of patent 14 years

LOC (6) Cl. 07 - 02

U.S. Cl. D7—357



395,788

NON-ELECTRIC KETTLE

Nick Holland, Cardiff, United Kingdom, assignor to Le Creuset SA, Fresnoy le Grand, France

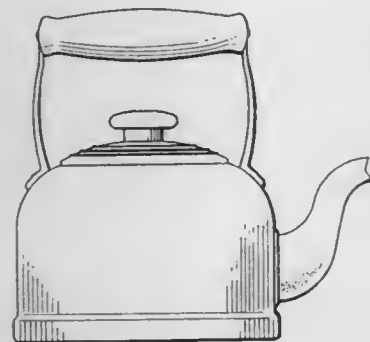
Filed Jun. 5, 1997, Ser. No. 71,663

Claims priority, application United Kingdom, Dec. 19, 1996, 2061897

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—321



395,790

MULTIPLE DRINK CONTAINER

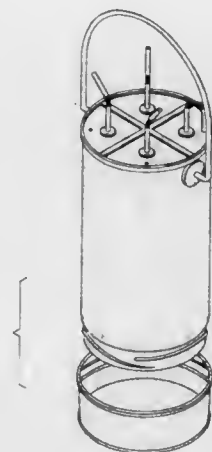
June D. Gaines, 112 Jennifer Way, Boothwyn, Pa. 19061

Filed May 16, 1997, Ser. No. 70,826

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—510



395,789

REMOVABLE HANDLE

Paul Dodane, Fesches-le-Chatel, France, assignor to DJA Cristel, Fesches-le-Chatel, France

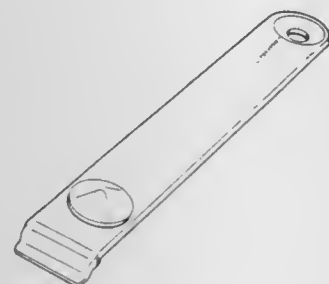
Filed Jun. 27, 1997, Ser. No. 72,986

Claims priority, application WIPO, Jan. 9, 1997, DM/038754

Term of patent 14 years

LOC (6) Cl. 07 - 02

U.S. Cl. D7—395



395,791

TRAY

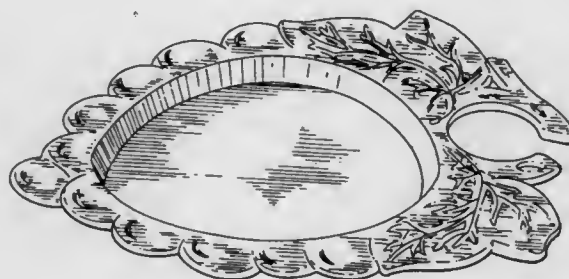
Christopher J. McArdle, Alta Loma, Calif., assignor to Prodyne Enterprises Inc., Ontario, Calif.

Filed Jul. 14, 1997, Ser. No. 73,483

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—551



395,792

MOBILE COOLER

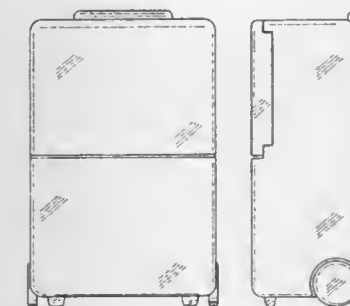
Gary Cretcher, 7669 Harrisburg Hollow Rd., Bath, N.Y. 14810

Filed Jun. 20, 1997, Ser. No. 72,608

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—605



395,794

LIQUID FLASK

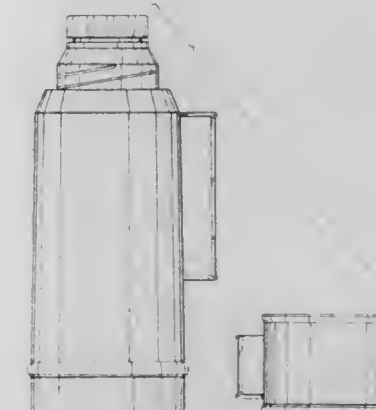
Jorge E. Moran, Nashville, Tenn., assignor to Megatrade International, Inc., Nashville, Tenn.

Filed Feb. 14, 1997, Ser. No. 67,821

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—608



395,793

VACUUM CONTAINER

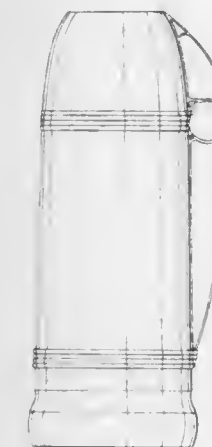
Jorge E. Moran, Nashville, Tenn., assignor to Megatrade International, Inc., Nashville, Tenn.

Filed Feb. 14, 1997, Ser. No. 67,820

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—608



395,795

EGG HOLDER AND TRAY

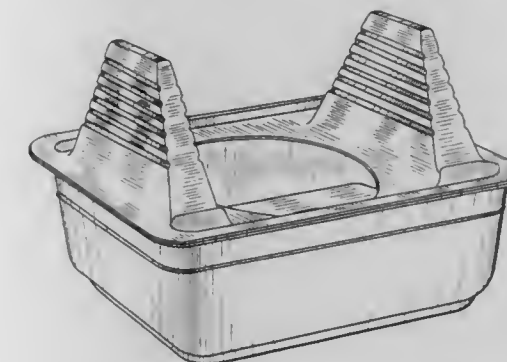
John C. Pender, Jamison, Pa.; Charles Wood Saunders, Jr., Memphis, Tenn.; Daniel Robert Williams, Naperville, Ill., and James S. Mandle, Woodcliff Lake, N.J., assignors to Schering-Plough Healthcare Products, Inc., Memphis, Tenn.

Filed May 29, 1997, Ser. No. 71,905

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—611



395,796

FOOD CONTAINER

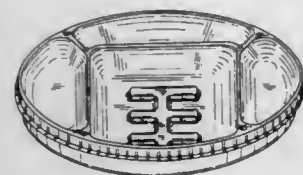
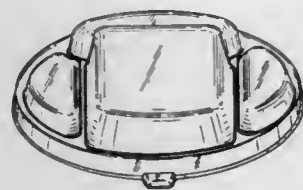
Calvin S. Krupa, Medina, and Robert Knoss, Anoka, both of Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139
Minn., assignors to Ultra Pac, Inc., Rogers, Minn.

Filed Apr. 18, 1997, Ser. No. 69,948

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—629



395,798

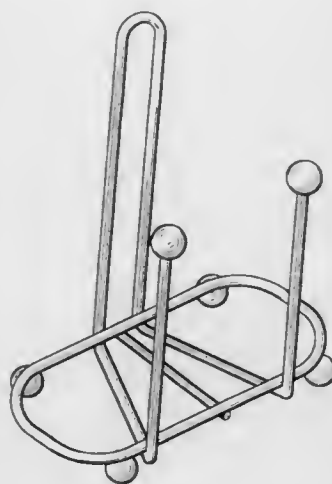
NAPKIN HOLDER

Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139
Filed Mar. 20, 1997, Ser. No. 68,679

Term of patent 14 years

LOC (6) Cl. 07 - 06

U.S. Cl. D7—631



395,797

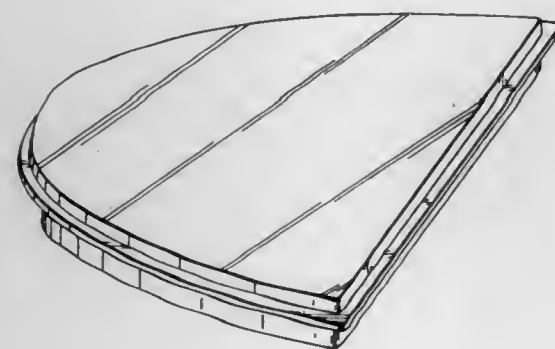
LEFTOVER PIZZA HOLDER

Arnie Sirlin, P.O. Box 526, Los Angeles, Calif. 90078
Filed Oct. 7, 1997, Ser. No. 77,618

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—629



395,799

TOOTHPICK DISPENSER

Richard W. Lowther, 133 Athabaska Road Barrie, Ontario,
Canada, L4N 8E3

Filed Jul. 10, 1997, Ser. No. 73,390

Term of patent 14 years

LOC (6) Cl. 07 - 09

U.S. Cl. D7—635



395,800

KNIFE RACK

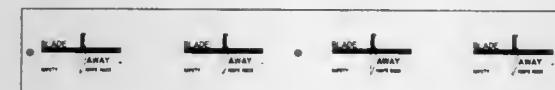
Paul D. Sampson, 19900 Hammond Road, Pitt Meadows, Susan Lynn Paz, 222 NW St., Waukegan, Ill. 60085
Canada, V3Y 2R7

Filed Apr. 17, 1997, Ser. No. 69,814

Term of patent 14 years

LOC (6) Cl. 07 - 07

U.S. Cl. D7—637



395,802

DOUBLE ENDED KNIFE

Susan Lynn Paz, 222 NW St., Waukegan, Ill. 60085
Filed Mar. 7, 1996, Ser. No. 51,876

Term of patent 14 years

LOC (6) Cl. 07 - 03

U.S. Cl. D7—644



395,801

UTENSIL KEEPER

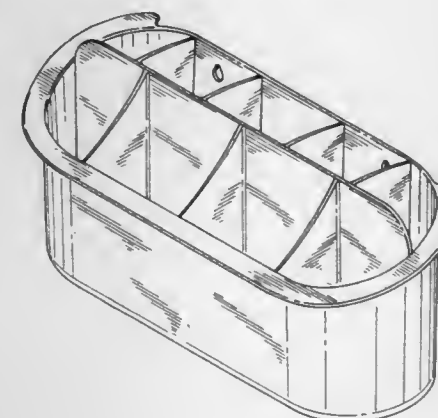
D. Scott Miller, Orlando, Fla., assignor to Dart Industries Inc.,
Orlando, Fla.

Filed Jun. 18, 1997, Ser. No. 72,078

Term of patent 14 years

LOC (6) Cl. 07 - 07

U.S. Cl. D7—641



395,803

JUICER

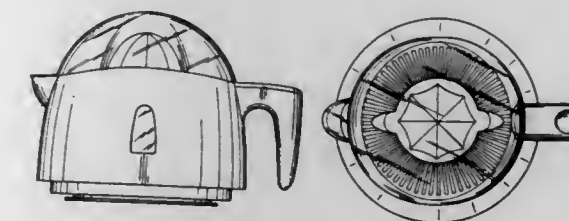
Thomas Lallemand, Paris, France, assignor to SEB, Sologney,
France

Filed Jun. 16, 1997, Ser. No. 72,363

Term of patent 14 years

LOC (6) Cl. 07 - 04

U.S. Cl. D7—665



395,804

PEPPER MILL

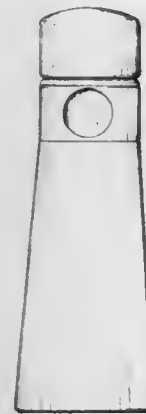
Tom David, Nantucket Island, Mass., assignor to Tom David, William R. Fischer, 2364 Forestmont Ct., Marietta, Ga. 30062 Inc., Nantucket Island, Mass.

Filed Nov. 29, 1994, Ser. No. 31,592

Term of patent 14 years

LOC (6) Cl. 07 - 04

U.S. Cl. D7—679



395,806

SEASONING ROLLER

Filed Jul. 29, 1997, Ser. No. 74,227

Term of patent 14 years

LOC (6) Cl. 07 - 06

U.S. Cl. D7—694



395,805

CULINARY SPATULA

Laurent Diulus, Rumilly, France, assignor to Tefal S.A., Rumilly, France

Filed Apr. 9, 1997, Ser. No. 68,893

Claims priority, application France, Oct. 25, 1996, 96 5996

Term of patent 14 years

LOC (6) Cl. 07 - 02

U.S. Cl. D7—692



395,807

GARDEN TOOL

Ricky Ray Beasley, 612 Kollar St., Elkart, Ind. 46514

Filed Oct. 21, 1997, Ser. No. 78,209

Term of patent 14 years

LOC (6) Cl. 08 - 01

U.S. Cl. D8—7



395,808

COMBINATION CAMP FIRE AND TENT STAKE TOOL

Mark Loucks, 16627 Lakeshore Dr. NE., Gowen, Mich. 49326

Filed Jul. 21, 1997, Ser. No. 73,824

Term of patent 14 years

LOC (6) Cl. 08 - 05

U.S. Cl. D8—14



395,810

CAP REMOVAL DEVICE

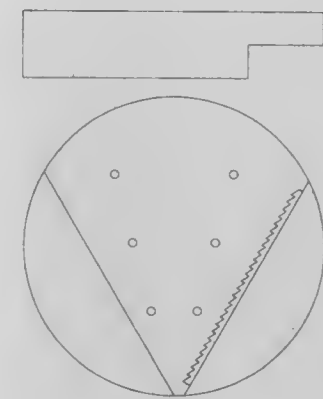
Michael C. Davis, 253 Kirby Rd., Honea Path, S.C. 29654

Filed Aug. 7, 1997, Ser. No. 74,423

Term of patent 14 years

LOC (6) Cl. 07 - 99

U.S. Cl. D8—40



395,811

INDICATOR HOLDING FIXTURE

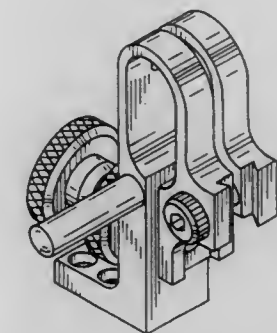
Kam Kin Li, 3387 Hunter Dr., North Olmsted, Ohio 44070-1264

Filed Feb. 20, 1997, Ser. No. 67,002

Term of patent 14 years

LOC (6) Cl. 08 - 05

U.S. Cl. D8—72



395,809

TIRE IRON

William P. Brown, Doylestown, and Jack A. Cameron, Hudson, both of Ohio, assignors to Summit Tool Company, Akron, Ohio

Filed May 2, 1997, Ser. No. 70,219

Term of patent 14 years

LOC (6) Cl. 08 - 05

U.S. Cl. D8—31



395,812

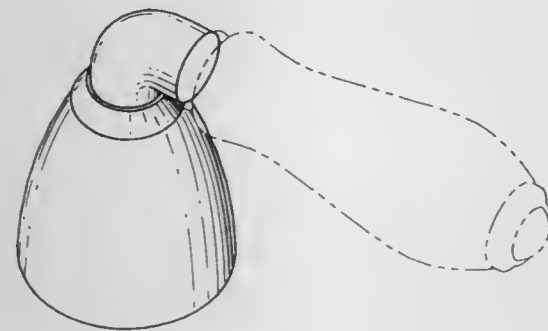
HANDLE HUB

Frederic C. Dougherty, South Pasadena, and Darren M. Mark, Valencia, both of Calif., assignors to Emhart Inc., Newark, Del.

Filed Jun. 16, 1997, Ser. No. 72,405
The portion of the term of this patent subsequent to Mar. 10, 2012, has been disclaimed.

Term of patent 14 years
LOC (6) Cl. 08 - 06

U.S. Cl. D8—321



395,814

COMBINATION PADLOCK BODY

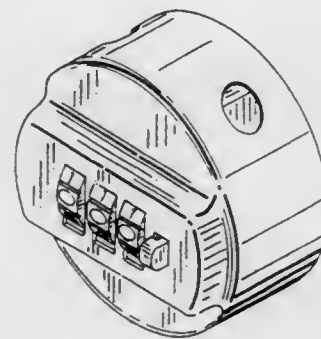
Yaw-Kuen Yang, No. 190-30, Chang Shoei Rd., Chang Hua, Taiwan

Filed Aug. 15, 1996, Ser. No. 58,434

Term of patent 14 years

LOC (6) Cl. 08 - 07

U.S. Cl. D8—334



395,813

ZIPPER LOCK

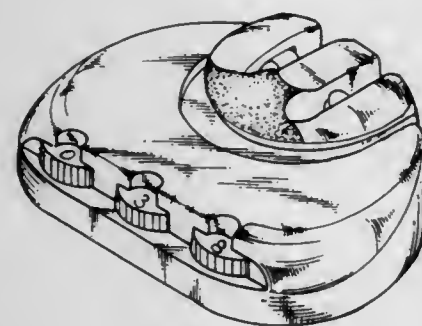
Yu Chun-Te, P.O. Box 55-175, Taichung, Taiwan

Filed Sep. 10, 1997, Ser. No. 76,573

Term of patent 14 years

LOC (6) Cl. 08 - 07

U.S. Cl. D8—330



395,815

SPACER FOR OPTICAL FIBER CABLES

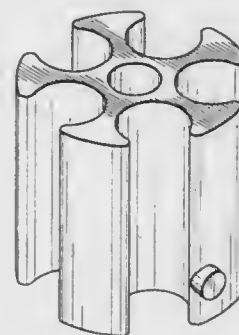
Mark D. Walters, Azle; Kevin L. Morgan, Paradise, and Robert W. Dennis, Haltom City, all of Tex., assignors to Siecor Corporation, Hickory, N.C.

Filed Jun. 16, 1997, Ser. No. 72,367

Term of patent 14 years

LOC (6) Cl. 08 - 05

U.S. Cl. D8—356



395,816

CABLE SUPPORT BRACKET

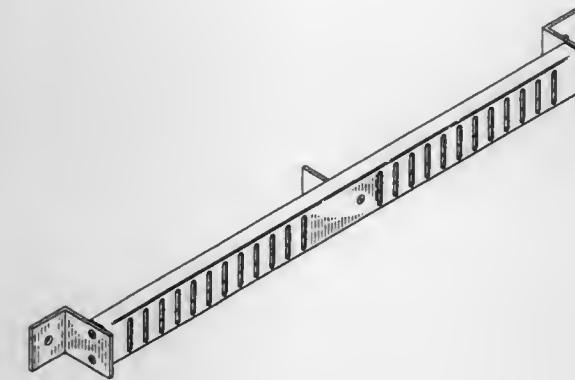
John D. Colodny, 9900 Stirling Rd., Ste. 202, Pembroke Pines, Fla. 33024

Filed Oct. 14, 1997, Ser. No. 77,964

Term of patent 14 years

LOC (6) Cl. 08 - 05

U.S. Cl. D8—356



395,818

WINDOW TREATMENT ACCESSORY

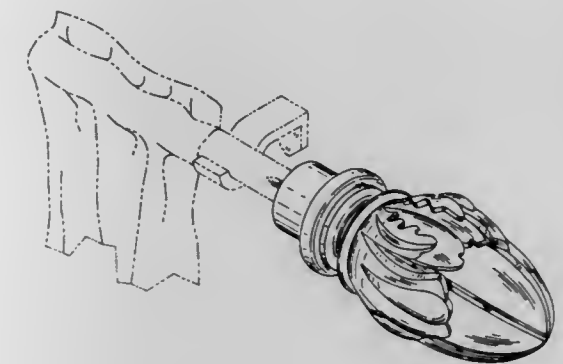
Charles F. Smiley, Waunakee; Cindy R. Jaggi, Verona, and Karen Retelle, Madison, all of Wis., assignors to Springs Window Fashions Division, Inc., Middleton, Wis.

Filed May 5, 1997, Ser. No. 69,867

Term of patent 14 years

LOC (6) Cl. 08 - 05

U.S. Cl. D8—378



395,819

BOTTLE

Russell Rowan Fenton, and Elmer (Chuck) H. Goss, both of East Amherst, N.Y., assignors to FWJ Plastic Packaging, Inc., Tonawanda, N.Y.

Filed Oct. 3, 1997, Ser. No. 77,555

Term of patent 14 years

LOC (6) Cl. 09 - 01

U.S. Cl. D9—337



395,817

CARRIER FOR CURTAIN

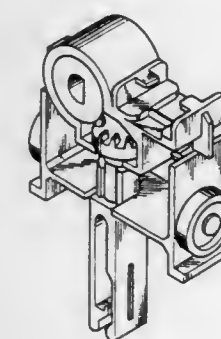
Junn Ming Wu, Kaohsiung, Taiwan, assignor to Bao Song Precision Industry Co., Ltd., Kaohsiung, Taiwan

Filed Oct. 7, 1997, Ser. No. 77,600

Term of patent 14 years

LOC (6) Cl. 08 - 05

U.S. Cl. D8—377

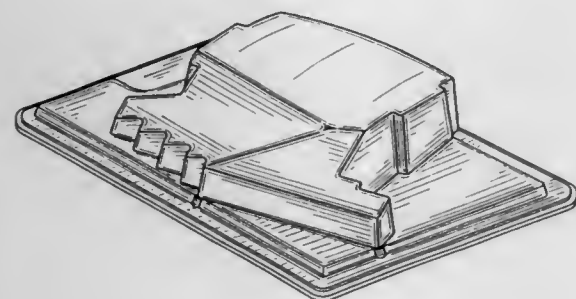


395,820
PACKAGE

Vincent C. Motta, West Norwalk, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Apr. 15, 1997, Ser. No. 67,968

Term of patent 14 years
LOC (6) Cl. 09 - 07

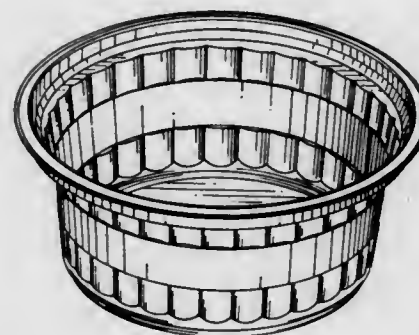
U.S. Cl. D9—415

395,822
CONTAINER

Maria Denise Keal, Chicago, and Anne Carole Bucher, Palatine, both of Ill., assignors to Kraft Foods, Inc., Northfield, Ill.

Filed Oct. 3, 1997, Ser. No. 77,544
Term of patent 14 years
LOC (6) Cl. 09 - 07

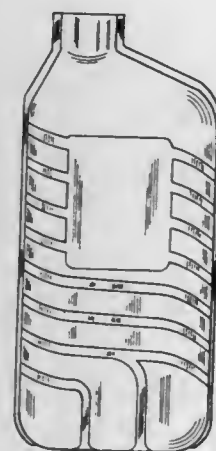
U.S. Cl. D9—429

395,821
CONTAINER FOR FLUID, POWDER OR GRANULATED PRODUCTS

Roberto Tabaroni, Bologna, and Andrea Bartoli, Emilia, both of Italy, assignors to Unifill S.P.A., Modena, Italy
Division of Ser. No. 33,098, Jan. 5, 1995, Pat. No. Des. 384,882. This application Jun. 19, 1997, Ser. No. 72,696
Claims priority, application Italy, Jul. 5, 1994, MO 94 0 00008

Term of patent 14 years
LOC (6) Cl. 09 - 07

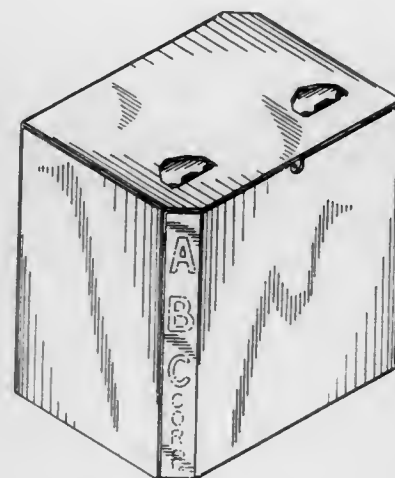
U.S. Cl. D9—416

395,823
CARTON HAVING ADDITIONAL RECTILINEAR CORNERS

Jean-Jacques Durand, La Butte, France, assignor to Verrerie Cristallerie d'Arques J.G. Durand et cie, Arques, France
Filed Mar. 25, 1997, Ser. No. 68,618

Term of patent 14 years
LOC (6) Cl. 09 - 07

U.S. Cl. D9—430



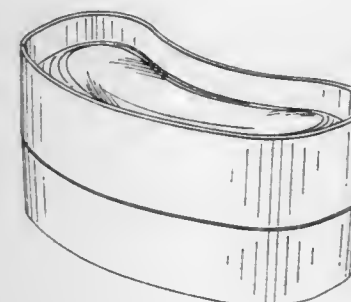
395,824

SOLID DEODORANT PACKAGE

Leonora M. Durliat, Toledo, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Filed Apr. 18, 1997, Ser. No. 69,956
Term of patent 14 years
LOC (6) Cl. 09 - 07

U.S. Cl. D9—430

395,826
BOTTLE

David Hygaard, Sr., Sherwood Park, Canada, assignor to Merlene Foods, Ltd., Alberta, Canada
Filed Nov. 15, 1995, Ser. No. 46,475

Claims priority, application Canada, Aug. 17, 1995, 1995-1829

Term of patent 14 years
LOC (6) Cl. 09 - 01

U.S. Cl. D9—520

395,827
CONTAINER

Jon R. Zogg, Westfield, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Feb. 20, 1997, Ser. No. 67,266
Term of patent 14 years
LOC (6) Cl. 09 - 01

U.S. Cl. D9—520



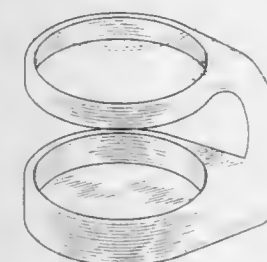
395,825

PAINT CAN HOLDER

Raymond A. Freitas, 851 Iredell St., Akron, Ohio 44310, assignor to Raymond A. Freitas, and William F. Klug, Akron, Ohio

Filed Mar. 13, 1997, Ser. No. 68,137
Term of patent 14 years
LOC (6) Cl. 09 - 07

U.S. Cl. D9—455



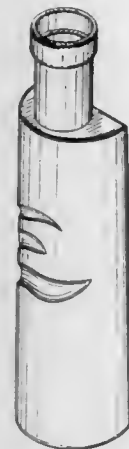
395,828
BOTTLEThierry Lecoule, Paris, France, assignor to Martell & Co.,
Cognac, France

Filed May 30, 1997, Ser. No. 71,523

Term of patent 14 years

LOC (6) Cl. 09 - 01

U.S. Cl. D9—522

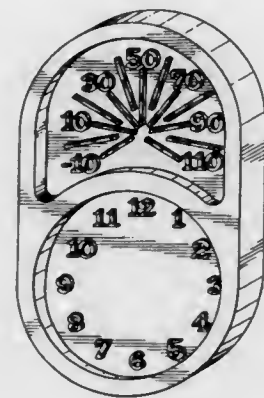
395,830
COMBINED CLOCK AND THERMOMETER HOUSINGMartin O. Riley, Glendale, Calif., assignor to M M Industries,
Glendale, Calif.

Filed Jul. 2, 1997, Ser. No. 73,891

Term of patent 14 years

LOC (6) Cl. 10 - 01

U.S. Cl. D10—4



395,829

COMBINED BOTTLE AND CAP

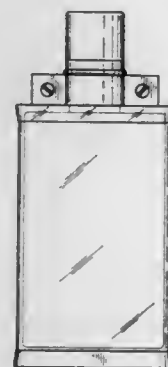
Susan Regina Wacker, New York, N.Y., and David Kerwin
Lyon, Norwalk, Conn., assignors to Elizabeth Arden Co.,
Division of Conopco, Inc., New York, N.Y.

Filed Jul. 17, 1997, Ser. No. 73,764

Term of patent 14 years

LOC (6) Cl. 09 - 01

U.S. Cl. D9—573



395,831

INSTRUMENT HOUSING

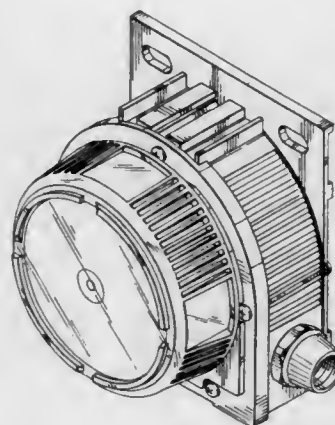
Albert Badgen, Northridge, Calif., assignor to Moore Indus-
tries, Inc., Sepulveda, Calif.

Filed Feb. 18, 1997, Ser. No. 68,072

Term of patent 14 years

LOC (6) Cl. 10 - 04

U.S. Cl. D10—52



395,832

THERMOMETER

Jon R. Rossman, Chelmsford; Bryan R. Hotaling, Arlington,
both of Mass., and Carl J. Conforti, Tiverton, R.I., assignors
to The First Years Inc., Avon, Mass.

Filed Apr. 25, 1997, Ser. No. 70,048

Term of patent 14 years

LOC (6) Cl. 10 - 04

U.S. Cl. D10—57



395,834

INSULATION RESISTANCE TESTER

Junji Kumai, and Seiji Onuma, both of Ueda, Japan, assignors
to Hioki Denki Kabushiki Kaisha, Ueda, Japan

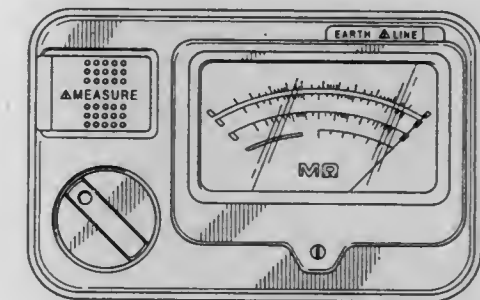
Filed Feb. 25, 1997, Ser. No. 67,131

Claims priority, application Japan, Aug. 29, 1996, 8-25769

Term of patent 14 years

LOC (6) Cl. 10 - 04

U.S. Cl. D10—46



395,835

PORTABLE PRESSURE GAUGE

Tomoyuki Okuyama, Toride; Tadao Nakajima, Ushiku, and
Koji Ouchi, Saitama-ken, all of Japan, assignors to SMC
Kabushiki Kaisha, Tokyo, Japan

Filed May 1, 1997, Ser. No. 70,134

Claims priority, application Japan, Nov. 13, 1996, 8-034269

Term of patent 14 years

LOC (6) Cl. 10 - 04

U.S. Cl. D10—85



395,833

COMPASS

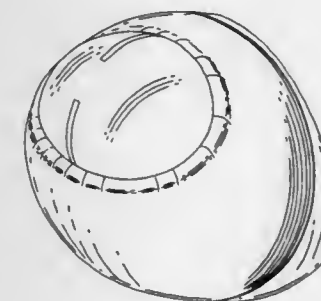
Herbert Richter, Drosselweg 8, 75331 Engelbrand, Germany

Filed Dec. 10, 1997, Ser. No. 80,498

Term of patent 14 years

LOC (6) Cl. 10 - 04

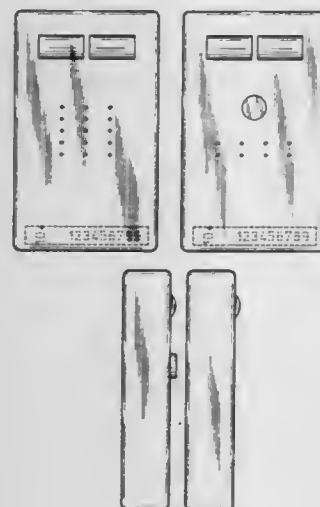
U.S. Cl. D10—68



395,836
COMBINED TRANSMITTER AND RECEIVER FOR AN
ALARM UNIT
John J. Morelli, Jr., 56072 Colerain Pike, Martins Ferry, Ohio
43935-1116

Filed Sep. 25, 1997, Ser. No. 77,059
Term of patent 14 years
LOC (6) Cl. 10 - 05

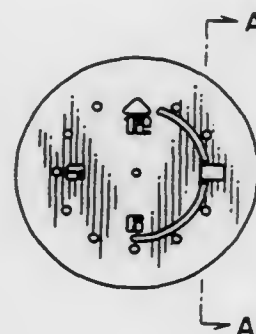
U.S. Cl. D10—106



395,838
WATCH DIAL
Jorg Hysek, Lussy-Sur-Morges, Switzerland, assignor to Seiko
Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 4, 1997, Ser. No. 71,701

Claims priority, application Japan, Dec. 13, 1996, 8-38102
Term of patent 14 years
LOC (6) Cl. 10 - 01

U.S. Cl. D10—126



395,839
COMBINED WATCH LENS SET AND DIAL INSERT
Giorgio Galli, Milan, Italy, assignor to Swatch AG, Bienne,
Switzerland
Continuation of Ser. No. 921,520, Jul. 29, 1992. This applica-
tion Jan. 5, 1996, Ser. No. 48,631
Claims priority, application WIPO, Jan. 31, 1992,
DM/021848

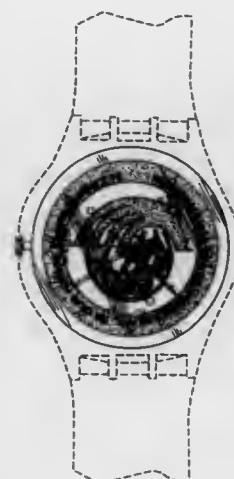
Term of patent 14 years
LOC (6) Cl. 10 - 02

U.S. Cl. D10—132

395,837
MULTI-FUNCTION GAME CALL
James D. Davis, Jr., Dover, Ark., assignor to Penline Produc-
tion L.L.C., Dover, Ark.

Filed Jul. 14, 1997, Ser. No. 73,648
Term of patent 14 years
LOC (6) Cl. 10 - 05

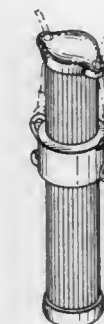
U.S. Cl. D10—119



395,840
PENDANT
Mary Lee Cato, 155 Battery Park Dr., Bridgeport, Conn. 06605
Filed Jun. 24, 1997, Ser. No. 72,856

Term of patent 14 years
LOC (6) Cl. 11 - 01

U.S. Cl. D11—79



395,842
LOCKET
Sean Kenna, Leixlip, Ireland, assignor to Cookson Precious
Metals, Ltd., Birmingham, United Kingdom
Filed Apr. 30, 1997, Ser. No. 70,866

Claims priority, application United Kingdom, Oct. 31, 1996,
2060522

Term of patent 14 years
LOC (6) Cl. 11 - 01

U.S. Cl. D11—81

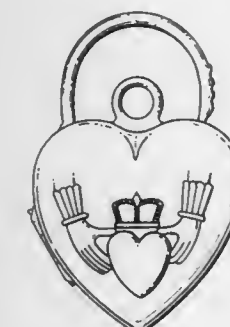


395,841
LOCKET
Sean Kenna, Leixlip, Ireland, assignor to Cookson Precious
Metals, Ltd., Birmingham, United Kingdom
Filed Apr. 30, 1997, Ser. No. 70,370

Claims priority, application United Kingdom, Oct. 31, 1996,
2060523

Term of patent 14 years
LOC (6) Cl. 11 - 01

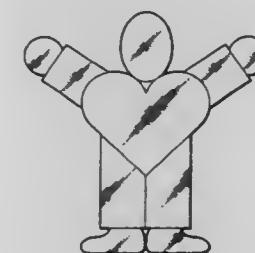
U.S. Cl. D11—81



395,843
JEWELRY CHARM
Michael D'Ambrosio, 71 Bayside Pl., S. Amityville, N.Y. 11701
Filed Jul. 29, 1997, Ser. No. 74,234

Term of patent 14 years
LOC (6) Cl. 11 - 01

U.S. Cl. D11—83



395,844

GEMSTONE

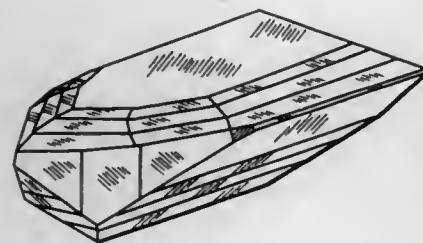
Betzael Ambar, 15824 Woodvale Rd., Encino, Calif. 91436

Filed Apr. 10, 1997, Ser. No. 68,922

Term of patent 14 years

LOC (6) Cl. 11 - 07

U.S. Cl. D11—90



395,846

INCENSE BURNER

David G. Taylor, 2019 54th St., San Diego, Calif. 92105,
assignor to David G. Taylor, San Diego, Calif.

Filed Apr. 15, 1997, Ser. No. 68,958

Term of patent 14 years

LOC (6) Cl. 11 - 02

U.S. Cl. D11—131.1



395,847

AUTOMOBILE BODY

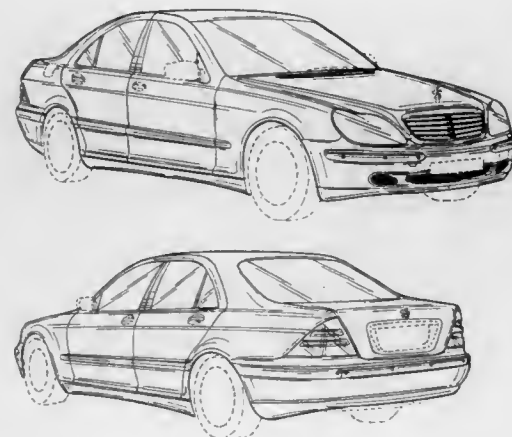
Bruno Sacco, Sindelfingen, and Peter Pfeiffer, Böblingen, both
of Germany, assignors to Daimler-Benz Aktiengesellschaft,
Stuttgart, Germany

Filed Jun. 5, 1997, Ser. No. 71,720

Term of patent 14 years

LOC (6) Cl. 12 - 08

U.S. Cl. D12—92



395,845

LIVING WILL MEDALLION

Christine Hickbert, Box 3955, Central Bedeque, P.E. I.,
Canada, C0B 1G0

Filed Mar. 14, 1997, Ser. No. 68,837

Term of patent 14 years

LOC (6) Cl. 11 - 03

U.S. Cl. D11—95



395,848

TRUCK CHASSIS FAIRING

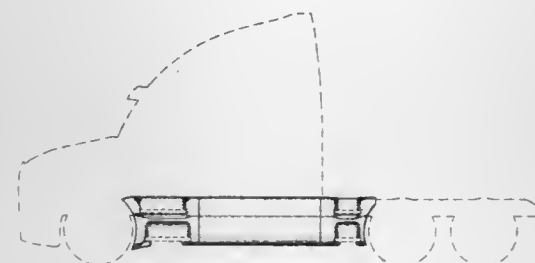
Roy L. Meryman, Renton, and Wayne K. Simons, Kent, both
of Wash., assignors to PACCAR Inc., Bellevue, Wash.

Filed May 1, 1996, Ser. No. 53,877

Term of patent 14 years

LOC (6) Cl. 12 - 08

U.S. Cl. D12—97



395,850

MULTIPLE BICYCLE STORAGE HANGER

John Brian Sweeney, and Anita Sweeney, both of 403 Lake Dr.,
Nesquehoning, Pa. 18240

Filed Aug. 29, 1997, Ser. No. 76,154

Term of patent 14 years

LOC (6) Cl. 12 - 17

U.S. Cl. D12—115



395,849

MOTORCYCLE

Takashi Maruyama, and Yukinori Kawaguchi, both of
Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki
Kaisha, Tokyo, Japan

Filed Jun. 11, 1997, Ser. No. 71,938

Claims priority, application Japan, Dec. 11, 1996, 8-37641

Term of patent 14 years

LOC (6) Cl. 12 - 11

U.S. Cl. D12—110



395,851

ROTATABLE PATIENT SUPPORT DEVICE

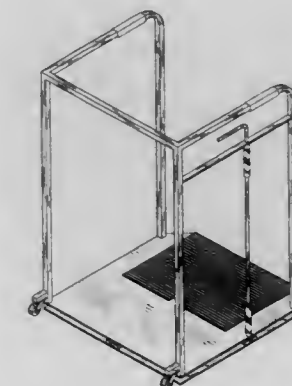
Mark B. Ostwalt, 244 Beech Brook La., Statesville, N.C. 28677

Filed May 2, 1997, Ser. No. 70,215

Term of patent 14 years

LOC (6) Cl. 12 - 12

U.S. Cl. D12—128



395,852

PATIENT TRANSFER SEAT

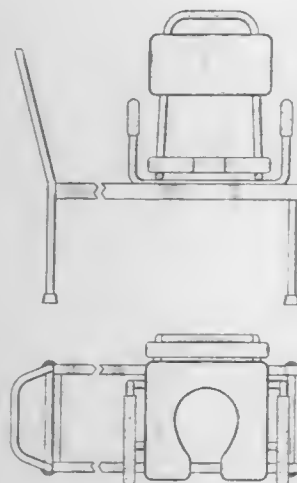
Antonio Ditommaso, 120 Country Club Drive, Hamilton, Ontario, Canada, L8K 5W2

Filed Jun. 19, 1997, Ser. No. 72,581

Term of patent 14 years

LOC (6) Cl. 12 - 12

U.S. Cl. D12—128



395,854

BASKETBALL SPORT WHEELCHAIR FRAME

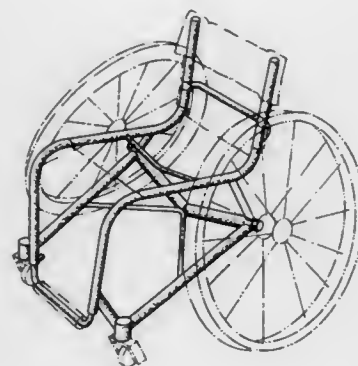
William N. Hernandez, Fort Worth, Tex., and Raul E. Ortego, Edo, Mexico, assignors to Per4maX Medical, Fort Worth, Tex.

Filed Sep. 30, 1997, Ser. No. 77,139

Term of patent 14 years

LOC (6) Cl. 12 - 12

U.S. Cl. D12—131



395,855

AUTOMOBILE TIRE

Hitoshi Horie, Hiratsuka; Hiroshi Tokizaki, Tokyo, and Sadakazu Takei, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1997, Ser. No. 69,071

Claims priority, application Japan, Sep. 25, 1996, 8-28402

Term of patent 14 years

LOC (6) Cl. 12 - 15

U.S. Cl. D12—147

395,853

AUXILIARY WALKER

Chung-I Luo, 9F, No. 108, Kuan-Chian E.Rd., Pan-Chiao City, Taipei Hsien, Taiwan

Filed Sep. 23, 1997, Ser. No. 76,845

Term of patent 14 years

LOC (6) Cl. 12 - 12

U.S. Cl. D12—130



395,856

AUTOMOBILE TIRE

Hitoshi Horie, Hiratsuka; Hiroshi Tokizaki, Tokyo, and Sadakazu Takei, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

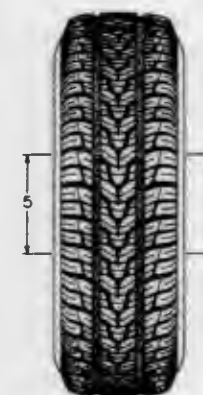
Filed Mar. 24, 1997, Ser. No. 69,072

Claims priority, application Japan, Sep. 25, 1996, 8-28401

Term of patent 14 years

LOC (6) Cl. 12 - 15

U.S. Cl. D12—147



395,858

AUTOMOBILE TIRE

Masahiro Hanyu, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

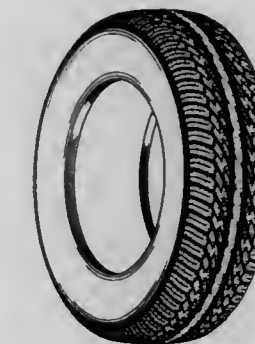
Filed Apr. 21, 1997, Ser. No. 69,963

Claims priority, application Japan, Oct. 24, 1996, 8-32164

Term of patent 14 years

LOC (6) Cl. 12 - 15

U.S. Cl. D12—147



395,857

AUTOMOBILE TIRE

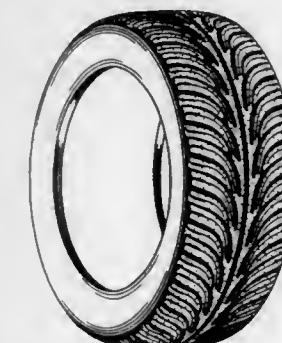
Atsushi Yamakage, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed May 6, 1997, Ser. No. 69,614

Term of patent 14 years

LOC (6) Cl. 12 - 15

U.S. Cl. D12—147



395,859

AUTOMOBILE TIRE

Tetsuhito Tsukagoshi, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

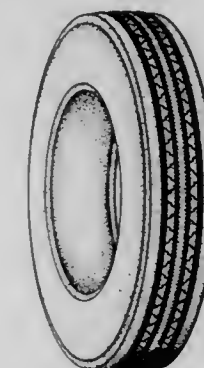
Filed May 14, 1997, Ser. No. 70,728

Claims priority, application Japan, Nov. 15, 1996, 8-34370

Term of patent 14 years

LOC (6) Cl. 12 - 15

U.S. Cl. D12—147



395,860

TRUCK HOOD

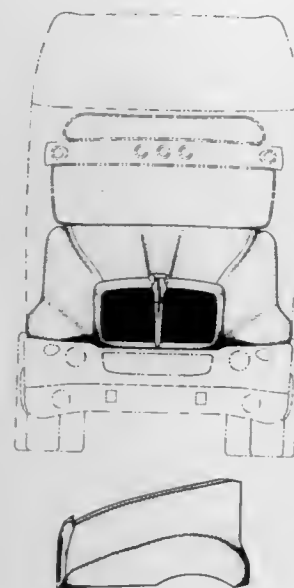
Roy L. Meryman, Renton, and Wayne K. Simons, Kent, both of Wash., assignors to PACCAR Inc., Bellevue, Wash.

Filed May 1, 1996, Ser. No. 53,900

Term of patent 14 years

LOC (6) Cl. 12 - 16

U.S. Cl. D12—173



395,862

VEHICLE WHEEL FRONT FACE

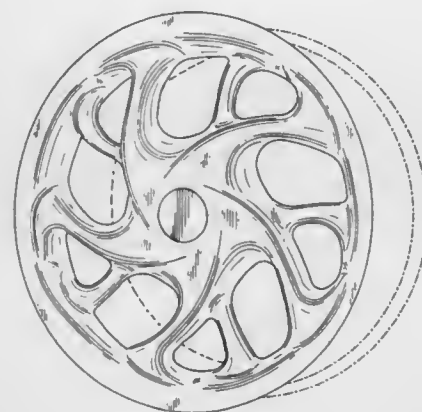
Murray S. Cullen, Irvine, Calif., assignor to Progressive Custom Wheels, Riverside, Calif.

Filed Feb. 27, 1997, Ser. No. 67,763

Term of patent 14 years

LOC (6) Cl. 12 - 16

U.S. Cl. D12—209



395,863

FRONT FACE OF A VEHICLE WHEEL

Bruno Sacco, Sindelfingen, and Peter Pfeiffer, Boblingen, both of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany

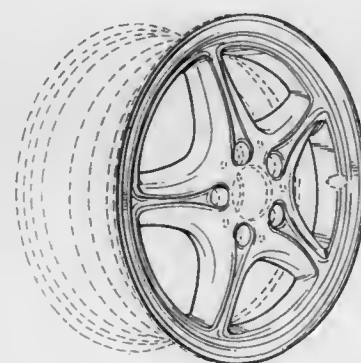
Filed Aug. 7, 1997, Ser. No. 74,556

Claims priority, application Germany, Feb. 7, 1997, M 97 01 190.8

Term of patent 14 years

LOC (6) Cl. 12 - 16

U.S. Cl. D12—211



395,861

MIRROR HOUSING

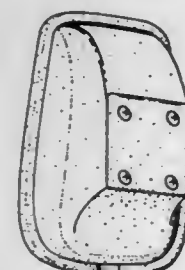
William P. Schmidt, 20950 Woodruff, Rockwood, Mich. 48173; Franklin D. Hutchinson, 28000 Bell Rd., New Boston, Mich. 48164, and Kirk Malcomson, 25287 E. Huron River Dr., Flat Rock, Mich. 48134

Filed Jul. 15, 1997, Ser. No. 73,674

Term of patent 14 years

LOC (6) Cl. 12 - 16

U.S. Cl. D12—187



395,864

WINDSHIELD WIPER BLADE LARGE HOOK CONNECTOR SHIM

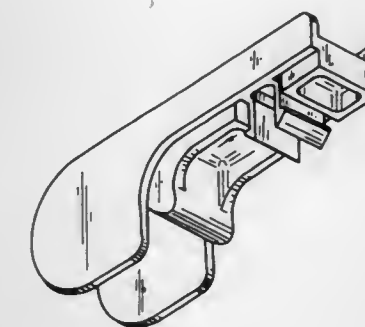
Alan Jeffrey Stahlhut, Valparaiso; William Arthur Powell, Winamac; James Patrick Witek, Michigan City, and Richard Allen Herring, Granger, all of Ind., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 22, 1997, Ser. No. 65,147

Term of patent 14 years

LOC (6) Cl. 12 - 16

U.S. Cl. D12—220



395,866

TRAILER FOR PERSONAL WATERCRAFT AND SUPPORT RACK THEREFOR

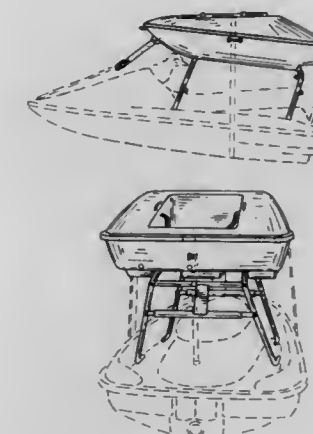
Margaret P. Fowler, and Candace G. Smith, both of 5926 S. Lagoon Dr., Panama City Beach, Fla. 32408

Filed Mar. 14, 1997, Ser. No. 69,234

Term of patent 14 years

LOC (6) Cl. 12 - 06

U.S. Cl. D12—317



395,865

WINDSHIELD WIPER BLADE STRAIGHT ARM CONNECTOR

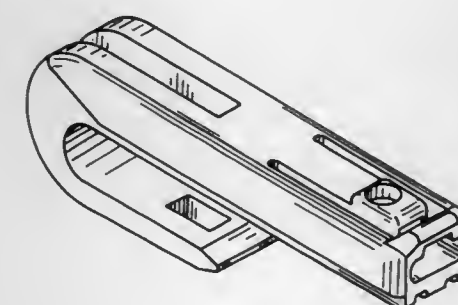
William Arthur Powell, Winamac; James Patrick Witek, Michigan City; Richard Allen Herring, Granger, and Alan Jeffrey Stahlhut, Valparaiso, all of Ind., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 22, 1997, Ser. No. 65,148

Term of patent 14 years

LOC (6) Cl. 12 - 16

U.S. Cl. D12—220



395,867

COMPOSITE-MOLDED COMPUTER CASE ASSEMBLY

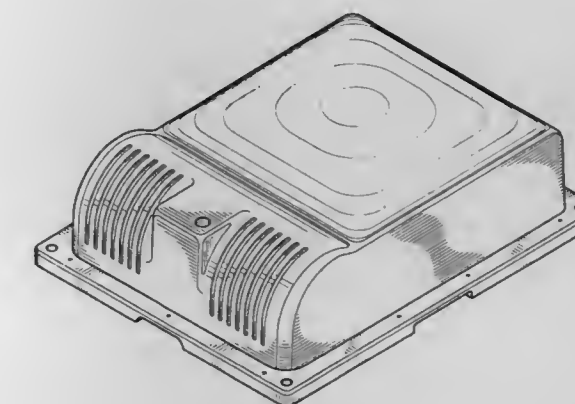
Theodore R. Windecker, Austin, Tex., assignor to Iron Computer Corporation, Austin, Tex.

Filed Jun. 12, 1997, Ser. No. 72,183

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—100



395,868

ELECTRONIC COMPUTER

Masaaki Iino, Saitama-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

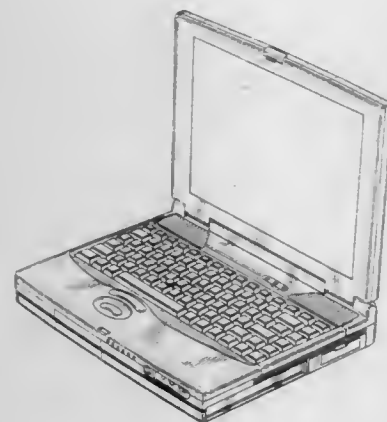
Filed Jun. 13, 1997, Ser. No. 72,268

Claims priority, application Japan, Jan. 23, 1997, 9-1230

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—106



395,870

PORTABLE CD ROM

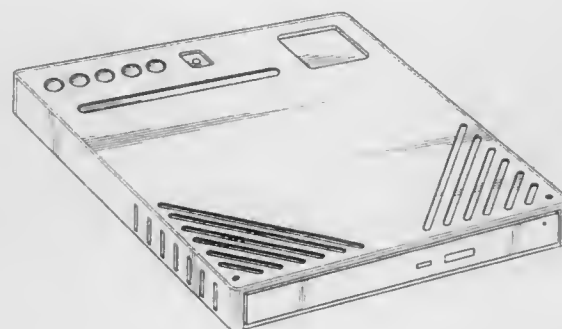
Henri Crohas, Verrieres-Le-Buisson, France, assignor to Archos S.A., Verrieres Le Buisson, France

Filed Mar. 12, 1997, Ser. No. 69,115

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—107



395,869

ELECTRONIC COMPUTER

Shogo Suzuki, Chiba-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

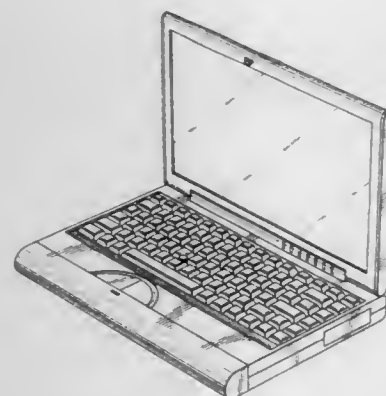
Filed Jun. 13, 1997, Ser. No. 72,306

Claims priority, application Japan, Jan. 24, 1997, 9-1401

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—106



395,871

UNIT FOR THE EXTENSION OF THE FUNCTIONS OF ELECTRONIC COMPUTERS

Masaaki Iino, Saitama-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

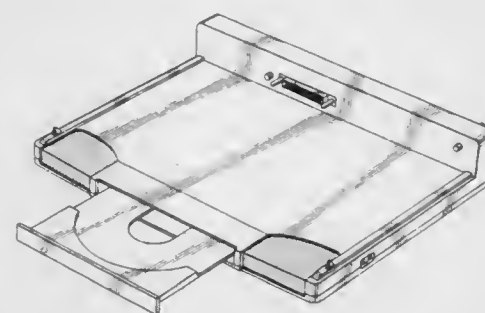
Filed Jun. 13, 1997, Ser. No. 72,269

Claims priority, application Japan, Jan. 24, 1997, 9-1400

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—107



395,872

IMAGE RETRIEVING DEVICE

Osamu Sakata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

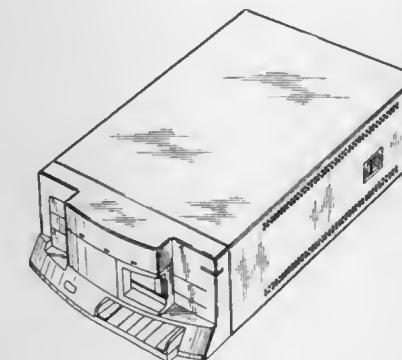
Filed Aug. 4, 1997, Ser. No. 74,522

Claims priority, application Japan, Feb. 19, 1997, 9-4722

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—107



395,874

GRIPPABLE MONITOR SUPPORT

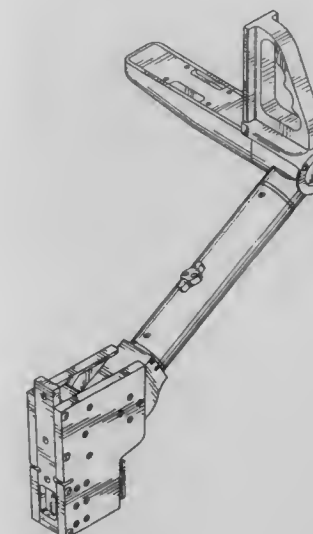
John B. Rosen, Eugene, Ore., assignor to Advanced Multimedia Products Corporation, Eugene, Ore.

Filed Mar. 14, 1997, Ser. No. 67,809

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—114



395,873

DISK DRIVE

Noriaki Yokoyama, and Miho Fujii, both of Ehime, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

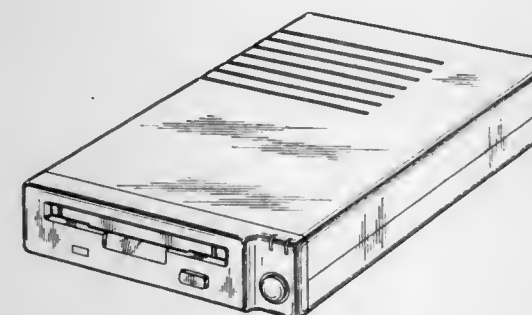
Filed Mar. 20, 1997, Ser. No. 68,547

Claims priority, application Japan, Oct. 7, 1996, 8-30118

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—109

395,875
STYLUS

Christopher Aiken, Oak Creek, Wis.; Robert Stinauer, Arlington Heights, and Daryl Harris, Evanston, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 13, 1997, Ser. No. 68,174

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—114



395,876

MOUSE PAD WITH TWO INTERLOCKING PIECES

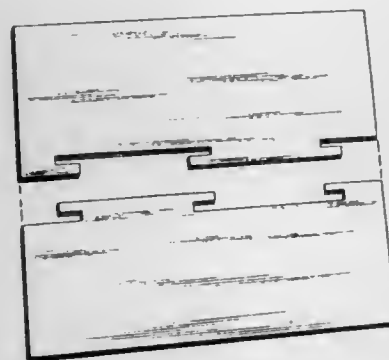
Diran A. Afarian, 2135 E. Brigden Rd., Pasadena, Calif. 91104

Filed May 13, 1997, Ser. No. 70,633

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—114



395,878

ICON FOR AN ACTUATION KEY FOR A SMART CARD READER

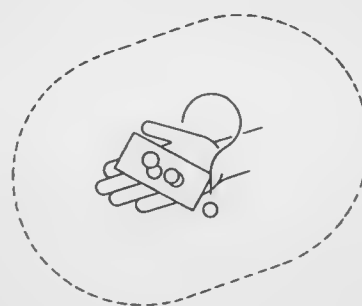
Jeffrey P. Copeland, Jefferson; Gerald W. Vandenengel, Grafton, both of Mass., and Paul Waihung Chau, Nashua, N.H., assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1997, Ser. No. 66,254

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—114.7



395,877

COMPUTER SCREEN WITH A SET OF ICONS

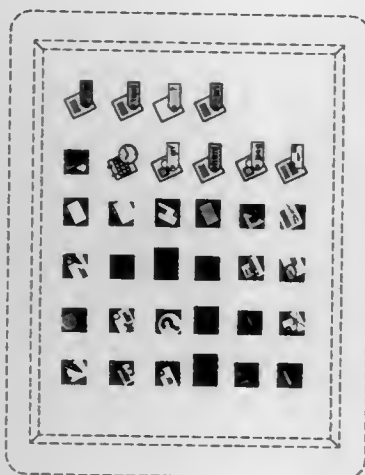
Chris Ryan, Mountain View, Calif., assignor to Sun Microsystems, Inc.

Filed Jun. 30, 1997, Ser. No. 73,121

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—114.1



395,879

TAPE DRIVE BEZEL

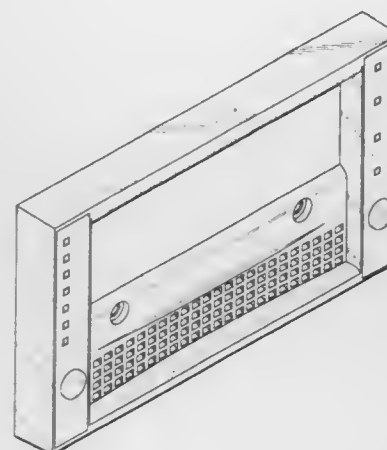
Thomas R. Drechsler, Hopkinton, Mass., and Kuni Masuda, Portland, Oreg., assignors to Quantum Corporation, Milpitas, Calif.

Filed Jan. 11, 1996, Ser. No. 48,679

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—115



395,880

KEYBOARD

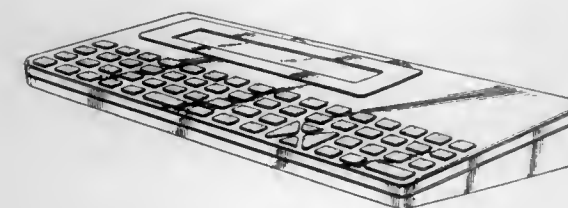
Chin-Jung Lee, Taipei Hsien, Taiwan, assignor to Taiwan Semiconductor Co., Ltd., Taipei, Taiwan

Filed Jul. 2, 1997, Ser. No. 72,813

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—115



395,882

HOUSING FOR A TWO-WAY COMMUNICATIONS DEVICE

Glen A. Oross, Sunrise; Frank M. Tyneski, Ft. Lauderdale, and William H. Robertson, Plantation, all of Fla., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 29, 1997, Ser. No. 77,215

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14—137



395,883

COMMUNICATION DEVICE

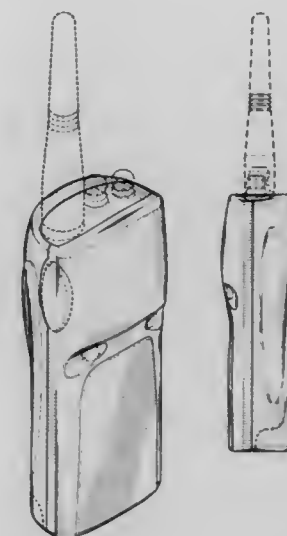
Andreas Haase, Sunrise, Fla.; Barry Mitchell, New Alresford, and Paul Masser, Andover, both of United Kingdom, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 20, 1997, Ser. No. 78,141

Claims priority, application United Kingdom, Apr. 22, 1997, 2065052

Term of patent 14 years
LOC (6) Cl. 14 - 03

U.S. Cl. D14—137



395,881

FACEPLATE FOR A COMPUTING DEVICE

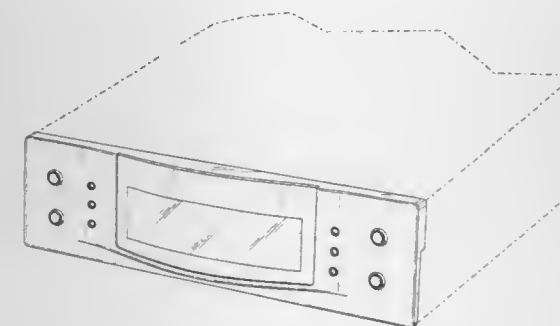
John M. Hartling, Longmont; Thomas John Lavan, Lafayette; Robert Arthur Hoxsey, Longmont; Victor Key Pecone, Lyons; Stanton Michael Manzanara, Niwot, all of Colo., and Randall D. Decker, Austin, Tex., assignors to Adaptec, Inc., Milpitas, Calif.

Filed Oct. 27, 1997, Ser. No. 78,463

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—115



395,884

INTEGRATED CAR DUBBING SYSTEM

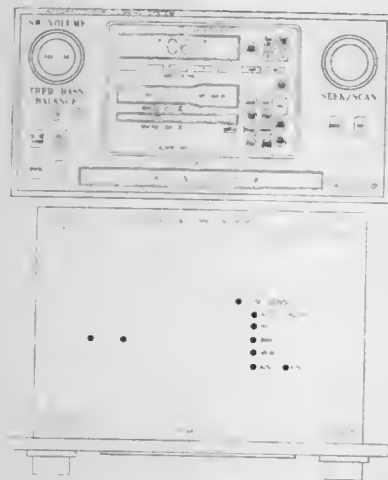
Phillip Igbinadolor, 240-27 Caney Rd., Rosedale, N.Y. 11422

Filed Sep. 18, 1997, Ser. No. 76,710

Term of patent 14 years

LOC (6) Cl. 14 - 01

U.S. Cl. D14-168



395,885

STEREO MONITOR RECEIVER

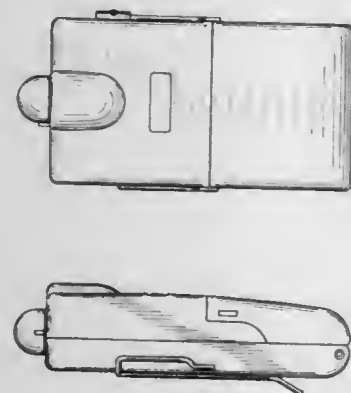
Jack Brian Hough, Chicago, and Stuart P. Bauman, Skokie, both of Ill., assignors to Shure Brothers Incorporated, Evanston, Ill.

Filed Feb. 18, 1997, Ser. No. 66,724

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14-188



395,886

REMOTE CONTROL CUSHION

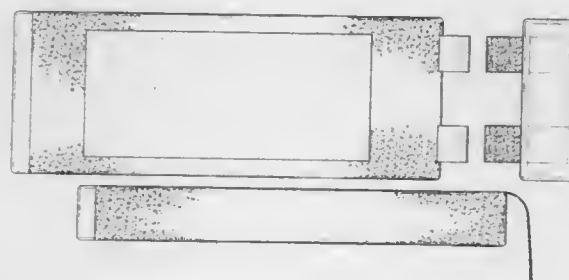
Shari Rawley, and Felice Guaiani, both of 100 Rideau St., Unit 172, Oshawa, Ontario, Canada, L1J 6P5

Filed May 30, 1996, Ser. No. 55,155

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14-217



395,887

REMOTE CONTROL UNIT

Eduardus Josephus Anna Maria Tonino, Nuenen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

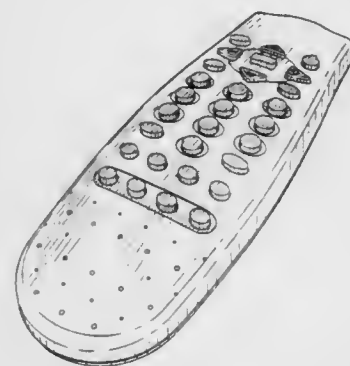
Filed Feb. 25, 1997, Ser. No. 66,834

Claims priority, application Switzerland, Aug. 26, 1996, DMA/003 438

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14-218



395,888

CENTER CHANNEL LOUDSPEAKER

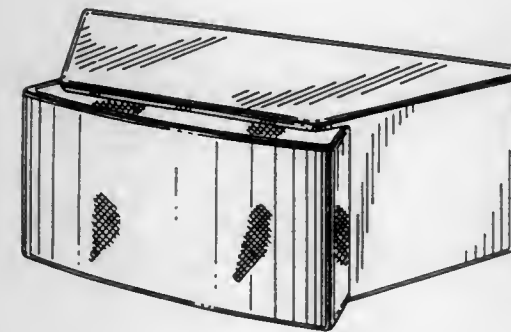
Knut T. Fenner, Westfield, N.J., and Daniel Anagnos, Grand View, N.Y., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Filed Sep. 9, 1997, Ser. No. 76,378

Term of patent 14 years

LOC (6) Cl. 14 - 01

U.S. Cl. D14-214



395,890

TWO SIDED REMOTE CONTROL

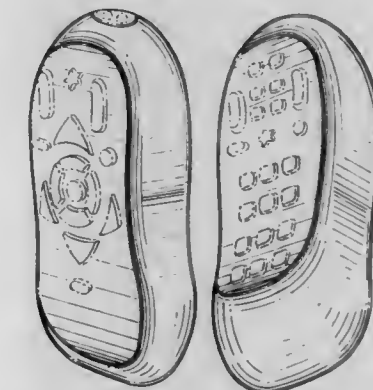
George Gerba, Venice; Michael Nichols, Altadena; Drew Takahashi, San Mateo, and Margeigh Joy, San Francisco, all of Calif., assignors to Corporate Media Partners, Los Angeles, Calif.

Filed Mar. 25, 1997, Ser. No. 68,609

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14-218



395,889

REMOTE CONTROL

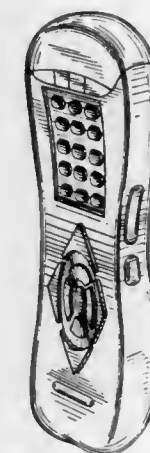
George Gerba, Venice; Michael Nichols, Altadena; Drew Takahashi, San Mateo, and Margeigh Joy, San Francisco, all of Calif., assignors to Corporate Media Partners, Los Angeles, Calif.

Filed Mar. 25, 1997, Ser. No. 68,508

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14-218



395,891

REMOTE CONTROL

George Gerba, Venice; Michael Nichols, Altadena; Drew Takahashi, San Mateo, and Margeigh Joy, San Francisco, all of Calif., assignors to Corporate Media Partners, Los Angeles, Calif.

Filed Mar. 25, 1997, Ser. No. 68,620

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14-218



395,892

UNIVERSAL SPEAKER MOUNTING DEVICE

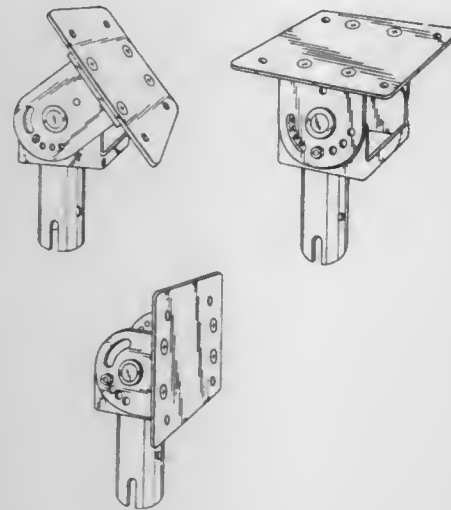
Allen Solomon, 2029 E. 17th St., Brooklyn, N.Y. 11229

Filed May 1, 1997, Ser. No. 70,177

Term of patent 14 years

LOC (6) Cl. 14 - 01

U.S. Cl. D14—224



395,894

MICROPHONE

Matthew D. Hern, San Francisco; Paul Bradley, Woodside, both of Calif.; Tom Lake, Eagan, and Mike Carpenter, Brooklyn Park, both of Minn., assignors to Telex Communications, Inc., Minneapolis, Minn.

Filed May 3, 1997, Ser. No. 71,913

Term of patent 14 years

LOC (6) Cl. 14 - 01

U.S. Cl. D14—227



395,895

MICROPHONE STAND CADDY

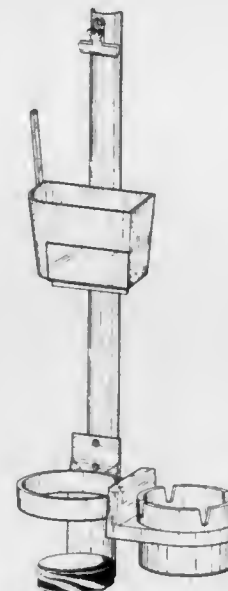
Robert W. Flinn, Rte. 11, Box 1159, Bedford, Ind. 47421

Filed Feb. 6, 1997, Ser. No. 68,087

Term of patent 14 years

LOC (6) Cl. 14 - 01

U.S. Cl. D14—229



395,893

MICROPHONE

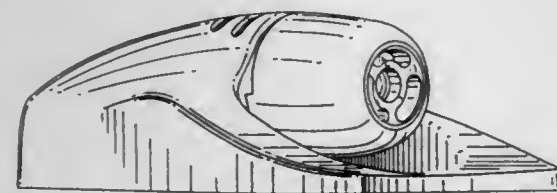
Matthew D. Hern, San Francisco; Paul Bradley, Woodside, both of Calif.; Tom Lake, Eagan, and Mike Carpenter, Brooklyn Park, both of Minn., assignors to Telex Communications, Inc., Minneapolis, Minn.

Filed May 30, 1997, Ser. No. 71,912

Term of patent 14 years

LOC (6) Cl. 14 - 01

U.S. Cl. D14—227



395,896

HANDLE GRIP

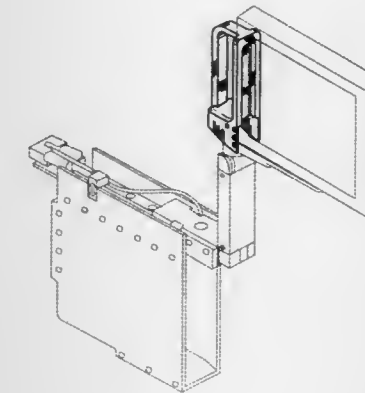
John B. Rosen, Eugene, Oreg., assignor to Advanced Multimedia Products Corporation, Eugene, Oreg.

Filed Mar. 14, 1997, Ser. No. 67,811

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14—239



395,898

SHIELD AGAINST ELECTROMAGNETIC WAVES FOR USE ON PORTABLE PHONE

Tatsuya Suzuki, 29-7, Kami-Ikedai 4-Chome, Ohta-ku, Tokyo, Japan

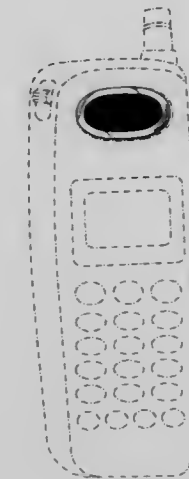
Filed Feb. 25, 1997, Ser. No. 67,075

Claims priority, application Japan, Aug. 30, 1996, 25648

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14—249



395,899

RECIPROCATING COMPRESSOR

Darrill L. Plummer, Charlotte; Mike Allen, Mooresville; Gregory W. Hallman, China Grove; Anthony W. Joy, Cornelius; Robert R. Gibson, and Christopher F. Yonge, both of Charlotte, all of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Apr. 23, 1996, Ser. No. 53,480

Term of patent 14 years

LOC (6) Cl. 15 - 02

U.S. Cl. D15—7

395,897

WIRELESS OUTDOOR RADIO PORT

Tomoyuki Honma, and Satoshi Nishide, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

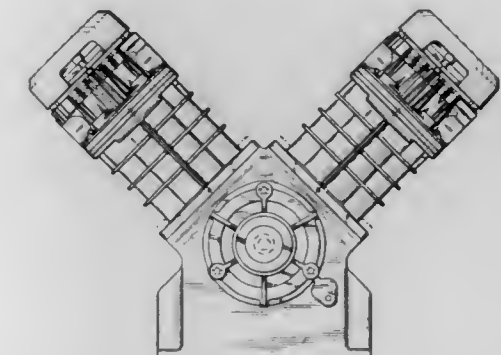
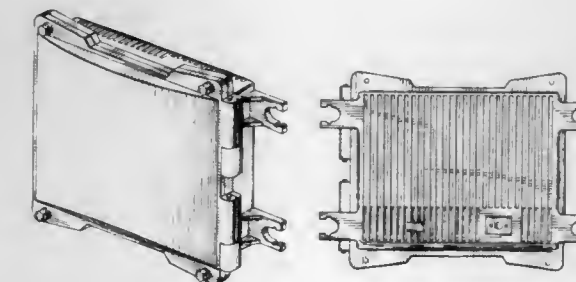
Filed Mar. 11, 1997, Ser. No. 71,008

Claims priority, application Japan, Sep. 11, 1996, 8-27109

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14—240



395,900

GREENS KEEPER

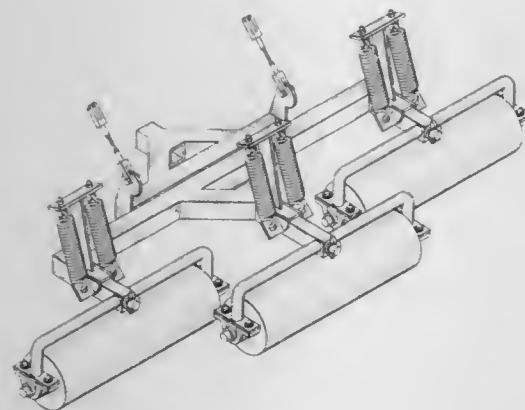
Michael S. Shannon, Alpine, and Robert W. Songer, Jackson, both of Wyo., assignors to Alpine Engineering, Inc., Alpine, Wyo.

Filed Apr. 8, 1997, Ser. No. 70,738

Term of patent 14 years

LOC (6) Cl. 15 - 03

U.S. Cl. D15—28



395,902

OIL COLLECTOR APPARATUS

Marvin D. Stewart, Jr., 4448 Hudson Rd., Osseo, Mich. 49266

Filed Apr. 10, 1997, Ser. No. 69,162

Term of patent 14 years

LOC (6) Cl. 15 - 99

U.S. Cl. D15—150



395,901

HUB FLANGE FOR CLUTCH ESPECIALLY FOR
AUTOMOTIVE RACING APPLICATIONS

Hiroshi Mizukami, Neyagawa, Japan, assignor to Exedy Corporation, Osaka, Japan

Continuation of Ser. No. 438,726, May 10, 1995, Pat. No.

5,638,932. This application Feb. 13, 1997, Ser. No. 66,615

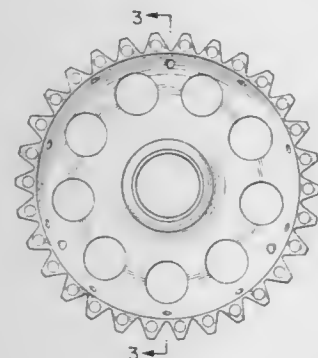
Claims priority, application Japan, May 17, 1994, 6-102499;

May 17, 1994, 6-102501; Jul. 11, 1994, 6-158922

Term of patent 14 years

LOC (6) Cl. 15 - 09

U.S. Cl. D15—148



395,903

SUNGLASS SCREEN LENS

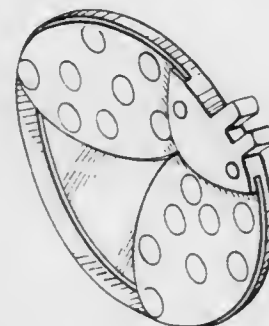
Ching-Jin Wang, 58, Ma Yuan West St., Taichung, Taiwan

Filed Jun. 12, 1997, Ser. No. 72,862

Term of patent 14 years

LOC (6) Cl. 16 - 06

U.S. Cl. D16—101



395,904

MICROSCOPE

Shoichi Omi, Tokyo, Japan, assignor to Lunax Company Limited, Akeno-Machi, Japan

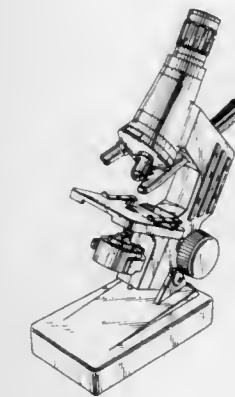
Filed May 27, 1997, Ser. No. 72,054

Claims priority, application Japan, Dec. 6, 1996, 8-37206

Term of patent 14 years

LOC (6) Cl. 16 - 06

U.S. Cl. D16—131



395,906

BINOCULARS

Jun Konno, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

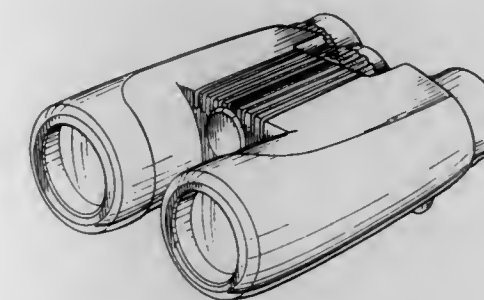
Filed Jun. 5, 1997, Ser. No. 71,870

Claims priority, application Japan, Dec. 24, 1996, 8-38926

Term of patent 14 years

LOC (6) Cl. 16 - 06

U.S. Cl. D16—133



395,905

BINOCULARS

Toshihiro Hamamura, Tokyo, Japan, assignor to Asahi Kogaku

Kogyo Kabushiki Kaisha, Tokyo, Japan

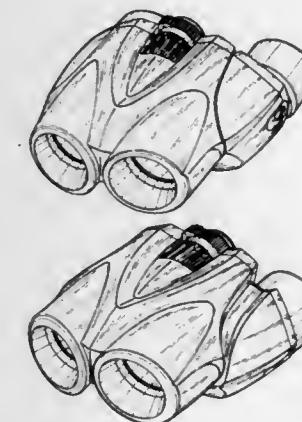
Filed May 22, 1997, Ser. No. 71,170

Claims priority, application Japan, Nov. 25, 1996, 8-35668

Term of patent 14 years

LOC (6) Cl. 16 - 06

U.S. Cl. D16—133



395,907

MAGNIFIER

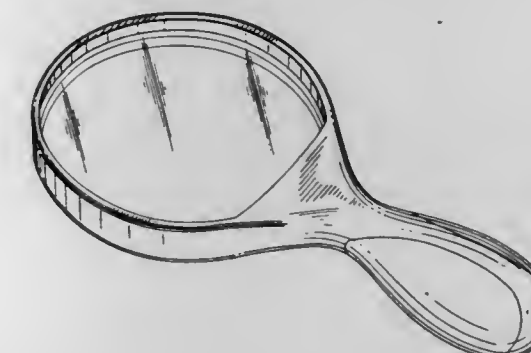
Patrick Calello, 93 Valley Rd., Montclair, N.J. 07042

Filed Aug. 4, 1997, Ser. No. 74,763

Term of patent 14 years

LOC (6) Cl. 16 - 06

U.S. Cl. D16—135



395,908
CAMERA

Shoko Ryuen, Ichikawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Aug. 11, 1997, Ser. No. 74,803

Term of patent 14 years

LOC (6) Cl. 16 - 01

U.S. Cl. D16—209

395,909
PROJECTOR MOUNT

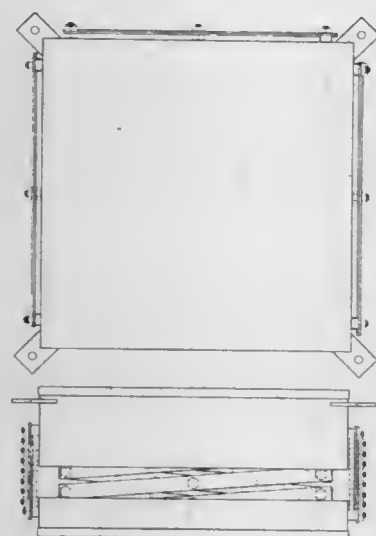
John E. Moss, New Palestine, and Franklin D. Smock, Plainfield, both of Ind., assignors to McDaniel & Lloyd, Inc., Indianapolis, Ind.

Filed Jan. 7, 1997, Ser. No. 64,637

Term of patent 14 years

LOC (6) Cl. 16 - 05

U.S. Cl. D16—242

395,910
EYEWEAR

Henri Brune, Fleurieux sur L'Abresle, France, and Simon M. Conway, Lima, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Mar. 12, 1997, Ser. No. 67,879

Term of patent 14 years

LOC (6) Cl. 16 - 06

U.S. Cl. D16—326

395,911
SUNGLASSES

Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop Eyewear S.p.A., Pederobba, Italy

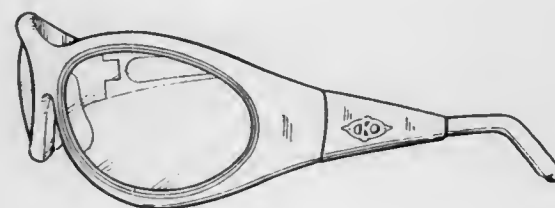
Filed May 16, 1997, Ser. No. 70,790

Claims priority, application Italy, Nov. 19, 1996, TV9600063

Term of patent 14 years

LOC (6) Cl. 16 - 06

U.S. Cl. D16—326

395,912
CELLO

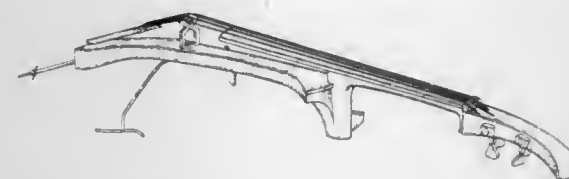
Kuno Schaub, 114, CH-4623 Neuendorf, Switzerland

Filed Apr. 28, 1997, Ser. No. 69,554

Term of patent 14 years

LOC (6) Cl. 17 - 03

U.S. Cl. D17—14



395,914

TONER CONTAINER

Masahiro Yoshino, Hamura, and Hiroshi Yamazaki, Hachioji, both of Japan, assignors to Konica Corporation, Tokyo, Japan

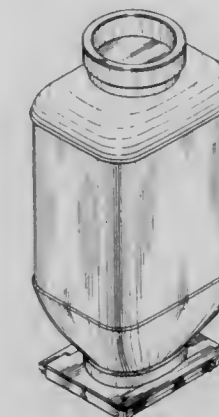
Filed May 14, 1997, Ser. No. 69,875

Claims priority, application Japan, Nov. 22, 1996, 8-35587

Term of patent 14 years

LOC (6) Cl. 16 - 03

U.S. Cl. D18—43

395,913
VIOLIN

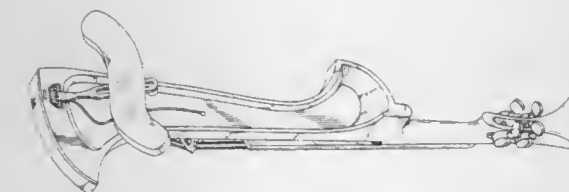
Kuno Schaub, 114, CH-4623 Neuendorf, Switzerland

Filed Apr. 28, 1997, Ser. No. 69,555

Term of patent 14 years

LOC (6) Cl. 17 - 03

U.S. Cl. D17—17



395,915

PRINTER FOR COMPUTER

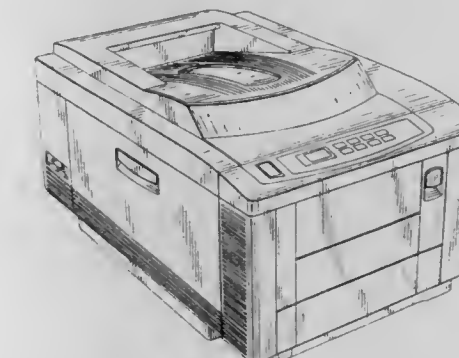
Kazuo Yoshida, and Hideki Enomoto, both of Tokyo, Japan, assignors to Oki Data Corporation, Tokyo, Japan

Filed Mar. 26, 1997, Ser. No. 68,520

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D18—55



395,916

COMBINED INK TANK HOLDER AND PRINTING HEAD
FOR PRINTERManabu Inoue, Yokohama; Toshiaki Hirose, Hiratsuka, and
Osamu Morita, Yokosuka, all of Japan, assignors to Canon
Kabushiki Kaisha, Tokyo, Japan

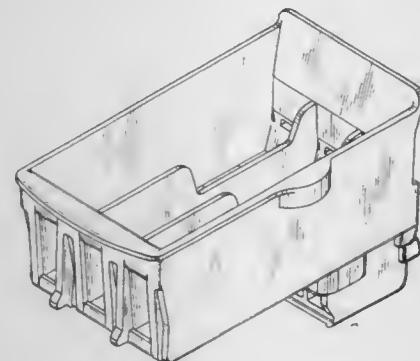
Filed Apr. 11, 1997, Ser. No. 69,121

Claims priority, application Japan, Oct. 16, 1996, 8-30937

Term of patent 14 years

LOC (6) Cl. 18 - 02

U.S. Cl. D18—56



395,918

WRITING INSTRUMENT

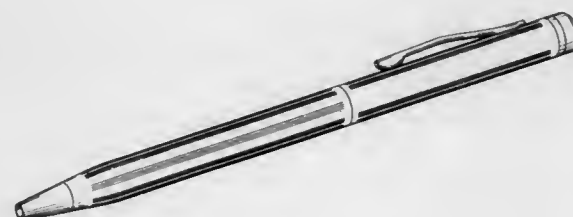
Barry Rosenbaum, West Bloomfield, Mich., assignor to
Advanced Watch Company, Southfield, Mich.

Filed Nov. 1, 1995, Ser. No. 45,887

Term of patent 14 years

LOC (6) Cl. 19 - 06

U.S. Cl. D19—49



395,917

WRITING INSTRUMENT

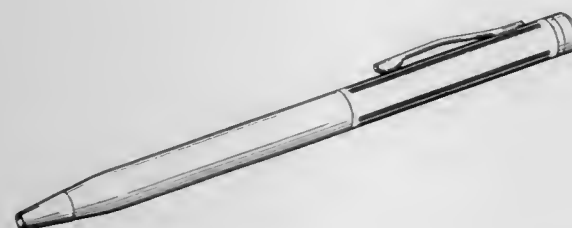
Barry Rosenbaum, West Bloomfield, Mich., assignor to
Advanced Watch Company, Southfield, Mich.

Filed Nov. 1, 1995, Ser. No. 45,884

Term of patent 14 years

LOC (6) Cl. 19 - 06

U.S. Cl. D19—49



395,919

WRITING INSTRUMENT

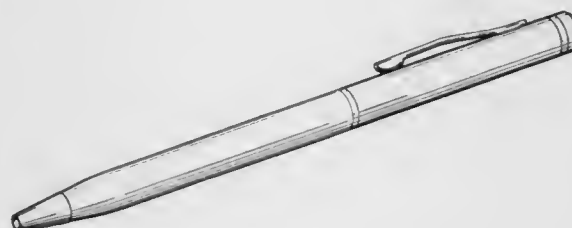
Barry Rosenbaum, West Bloomfield, Mich., assignor to
Advanced Watch Company, Southfield, Mich.

Filed Nov. 1, 1995, Ser. No. 45,886

Term of patent 14 years

LOC (6) Cl. 19 - 06

U.S. Cl. D19—51



395,920

NOVELTY CLIP

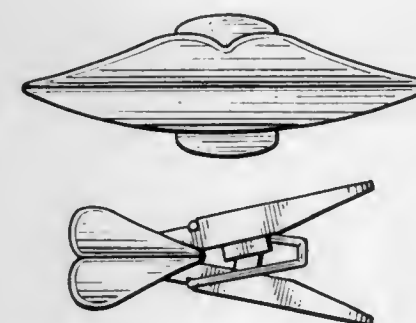
Arthur S. Kleinpell, II, 2565 Kent Ridge Ct., Bloomfield Town-
ship, Mich. 48301

Filed Oct. 31, 1997, Ser. No. 78,712

Term of patent 14 years

LOC (6) Cl. 19 - 02

U.S. Cl. D19—65



395,922

LIP SHAPED DECAL FOR A GOLF PUTTER FACE

Richard D. Wahlgren, 15260 E. Caley Ave., Aurora, Calif.
80016

Filed Jan. 17, 1997, Ser. No. 65,057

Term of patent 14 years

LOC (6) Cl. 19 - 08

U.S. Cl. D20—23



395,921

SET OF DECALS FOR SOCKS

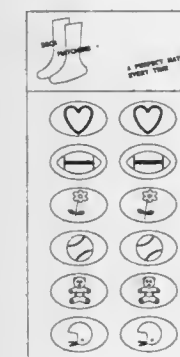
Debra J. Funk, and Thomas A. Funk, both of 4 Oakwood La.,
Lititz, Pa. 17543

Filed Jul. 11, 1997, Ser. No. 73,593

Term of patent 14 years

LOC (6) Cl. 19 - 08

U.S. Cl. D20—11



395,923

HOSPITAL WRIST BAND MICROCHIP ATTACHMENT
CLASPEdward A. Ely, 1015 Texas Trail, Roanoke, Tex. 76262
Division of Ser. No. 16,554, Dec. 20, 1993, Pat. No. Des.
363,315. This application Jul. 14, 1995, Ser. No. 41,453

Term of patent 14 years

LOC (6) Cl. 19 - 08

U.S. Cl. D20—28



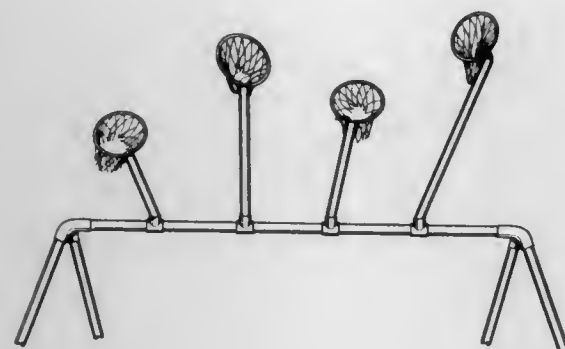
395,924

HOOP GAME

Howard Wilson, Sr., Box 10375, Norfolk, Va. 23513
Filed Dec. 9, 1996, Ser. No. 63,434

Term of patent 14 years
LOC (6) Cl. 21 - 01

U.S. Cl. D21—7



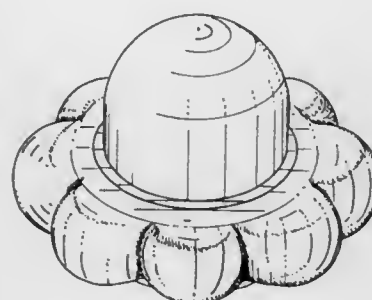
395,926

TOY ELEMENT

Jesper Lassen, Copenhagen, Denmark, assignor to Interlego AG, Baar, Switzerland

Filed Sep. 18, 1997, Ser. No. 76,732
Term of patent 14 years
LOC (6) Cl. 21 - 01

U.S. Cl. D21—108



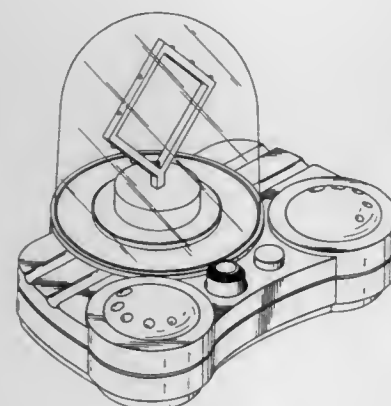
395,925

ELECTRONIC GAME

Wong Kwok Wai, Kowloon, Hong Kong, assignor to S. R. Mickelberg Company, Inc., Jenkintown, Pa.

Filed Apr. 7, 1997, Ser. No. 69,360
Term of patent 14 years
LOC (6) Cl. 21 - 01

U.S. Cl. D21—13



395,927

TOY SHOVEL

Michael S. Freeland, 46 Whisper Dr., Worcester, Mass. 01609
Filed Jan. 6, 1997, Ser. No. 64,554

Term of patent 14 years
LOC (6) Cl. 21 - 01

U.S. Cl. D21—120



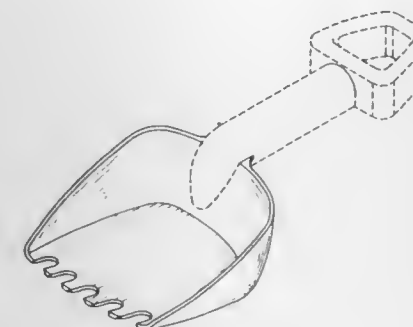
395,928

SCOOP BODY FOR A TOY SHOVEL

Michael S. Freeland, 46 Whisper Dr., Worcester, Mass. 01609
Filed Jan. 6, 1997, Ser. No. 64,556

Term of patent 14 years
LOC (6) Cl. 21 - 01

U.S. Cl. D21—120



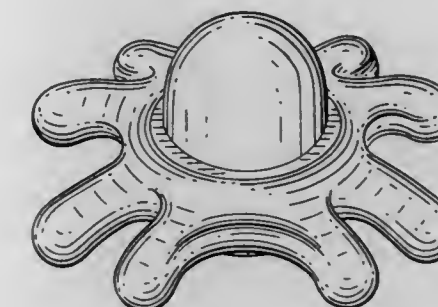
395,930

TOY ANIMAL

Paul Leadbetter, Søborg, Denmark, assignor to INTERLEGO AG, Baar, Switzerland

Filed Sep. 18, 1997, Ser. No. 76,733
Term of patent 14 years
LOC (6) Cl. 21 - 01

U.S. Cl. D21—157



395,931

FRONT PORTION OF A DOLL

Pearla J. Wallace, 4849 N. Durfee Ave., El Monte, Calif. 91732,
assignor to Pearla J. Wallace, El Monte, Calif.

Filed May 26, 1995, Ser. No. 39,536
Term of patent 14 years
LOC (6) Cl. 21 - 01

U.S. Cl. D21—180



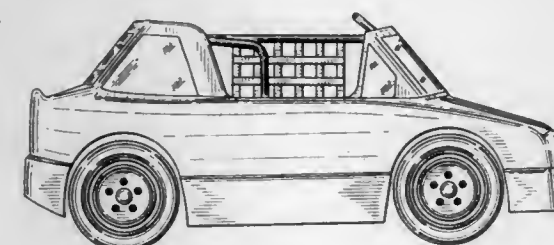
395,929

AMUSEMENT RIDE CAR

Mario Boifava, Vicenza, Italy, assignor to Antonio Zamperla s.p.a., Vicenza, Italy

Filed Feb. 4, 1997, Ser. No. 66,071
Term of patent 14 years
LOC (6) Cl. 21 - 01

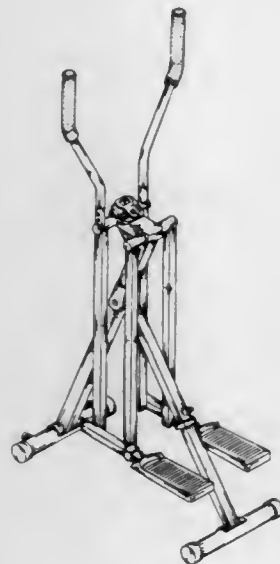
U.S. Cl. D21—136



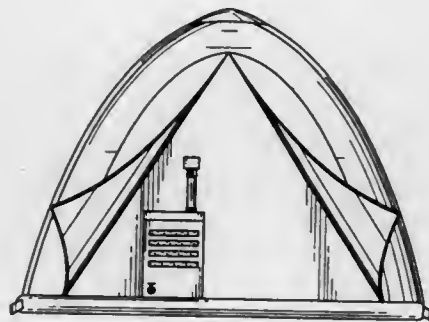
395,932
SPACE BABY DOLL
April R. McIntosh, 560 C St., North Powder, Oreg. 97867
Filed Nov. 26, 1996, Ser. No. 63,082
Term of patent 14 years
LOC (6) Cl. 21 - 02
U.S. Cl. D21—185



395,933
STRIDING EXERCISER
Michael Lin, 6F-4, No. 400, Fu Hsin North Road, Chong San
Chu, Taipei, Taiwan
Filed May 1, 1997, Ser. No. 70,131
Term of patent 14 years
LOC (6) Cl. 21 - 02
U.S. Cl. D21—191



395,934
PORTABLE SAUNA
Clark Lamppa, 409 Dakota Ave. W., Gilbert, Minn. 55741
Filed Feb. 20, 1996, Ser. No. 50,437
Term of patent 14 years
LOC (6) Cl. 23 - 03
U.S. Cl. D23—315



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 7th DAY OF JULY, 1998

NOTE— Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- A.C.T. Enterprises, Inc.: See—
Crawshaw, Alan W.; Katocs, Paul J.; and Watts, Nicholas J., 5,775,652, Cl. 248-230.600.
A-Cell Acetyl Cellulosics AB: See—
Nelson, Helen Louise; and Richards, David Ian, 5,777,101, Cl. 536-56.000.
A.T.K. Enterprises Inc.: See—
Kaczynski, Aureliusz Eric Tadeusz, 5,775,423, Cl. 166-178.000.
Aaker, Kenneth Dale; Behrens, Louis Edward; Culbertson, Bruce Richard; Kiel, Harvey Gene; Nelson, Eric John; Okimoto, Shohji; and Amell, Steven Joseph, to International Business Machines Corporation, Method and apparatus for displaying image and facsimile data on a non-programmable-terminal attached to a host computer by a work station controller, 5,777,630, Cl. 345-507.000.
Aamodt, James: See—
Klatte, Fred; Aamodt, James; and Biswell, David, 5,776,850, Cl. 502-64.000.
Aasman, Jan Rense, Methods and apparatus for peeling potatoes and similar produce, 5,776,531, Cl. 426-482.000.
Aasmul, Per: See—
Pedersen, Sven; Larsen, Anne Mørkeberg; and Aasmul, Per, 5,776,741, Cl. 435-134.000.
Abaxis, Inc.: See—
Buhl, Steven N.; Bhayani, Bhaskar; Yu, Chi-Sou; and Tang, Thuy N., 5,776,563, Cl. 428-34.100.
ABB Air Preheater, Inc.: See—
Boussa, Vong, 5,775,405, Cl. 165-8.000.
ABB Atom AB: See—
Nylund, Olov, 5,778,035, Cl. 376-361.000.
ABB Daimler-Benz Transportation (Deutschland) GmbH: See—
Kammerhofer, Gerd; Werner, Friedrich; Brendel, Thomas; and Huber, Max, 5,775,231, Cl. 105-413.000.
ABB Flexible Automation Inc.: See—
Gauci, Noel J.; and Prange, Paul T., 5,775,750, Cl. 293-2.000.
Szydel, James J., 5,777,267, Cl. 174-72.00A.
ABB Industry K.K.: See—
Takayama, Shinichi; and Katsunuma, Takehito, 5,775,598, Cl. 239-703.000.
Abbott, Jerome C.: See—
Rigsby, Donald R.; and Abbott, Jerome C., 5,775,153, Cl. 72-58.000.
Abbott, John H.; Kalidas, Navinchandra; and Thompson, Raymond W., to Texas Instruments Incorporated, Plastic packaging for a surface mounted integrated circuit, 5,777,382, Cl. 257-695.000.
Abbott Laboratories: See—
Dellaria, Joseph F.; and Gane, Todd H., 5,776,984, Cl. 514-605.000.
Grabenkort, Richard W., 5,775,506, Cl. 206-571.000.
Pan, Jeffrey Y.; and Lee, Donald Ver, 5,775,371, Cl. 137-597.000.
Abbott, Stephen J.: See—
van der Steen, Jan J.; Vullers, Roud; Kuipers, Marcel; Logtens, Jozef P. M.; Cooley, Roderick A.; Milton, Derek J.; Taylor, Andrew E.; and Abbott, Stephen J., 5,778,296, Cl. 399-360.000.
Abdesken, Fereydon: See—
Chong, Joshua Anthony; Abdesken, Fereydon; and Osei-Gyimah, Peter, 5,777,154, Cl. 560-172.000.
Abdou-Sabet, Sabet: See—
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Venkataswamy, Krishna; Abdou-Sabet, Sabet; Patel, Raman; and Horron, Jacques, 5,777,033, Cl. 525-182.000.
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- Akin, William R., Jr.: See—
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- Akzo Nobel NV: See—
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- Autoliv ASP, Inc.: *See—*
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Courtaigne, Bertrand, 5,775,830, Cl. 403-288.000.
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Melchior, Bernd, 5,776,262, Cl. 136-251.000.
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Dudley, Michael N.; Donnelly, Sean F.; and Strayer, Andrew, 5,776,721, Cl. 435-29.000.
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- Lipovski, G. Jack; and Mielke, David M., 5,777,608, Cl. 345-189.000.
- Thorpe, Philip E.; and Burrows, Francis J., 5,776,427, Cl. 424-1.490.
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Berglund, Kris A.; Dulebohn, Joel I.; and Torgerson, Beatrice A., 5,776,415, Cl. 422-82.090.
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Pothoff, Richard W.; and Burton, Alan C., 5,776,316, Cl. 202-158.000.
- Satchell, Donald Prentice, Jr.; Natarajan, Venkat; and Clarke, Richard Henry, 5,775,129, Cl. 62-643.000.
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- Bodo, Martin J., to Computer Performance, Inc. Digital data duplicating system. 5,777,811, Cl. 360-15.000.
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- Jessup, Jerry R.; and Perez, Richard, Sr., 5,776,579, Cl. 428-73.000.
- LaRue, George S., 5,777,505, Cl. 327-407.000.
- McMaster, Daniel; and Breidenthal, Robert Edward, Jr., 5,775,643, Cl. 244-130.000.
- Woods, Mark Allen; Howard, Bruce Stanley; and Hart, Victor Gary, 5,777,246, Cl. 73-865.800.
- Boespflug, Donald W.: *See—*
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Booker, Cedric J.; and Shinno, Douglas. Flexible high voltage terminal for electromechanical connection. 5,775,928, Cl. 439-246.000.

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Borchardt, Michael G.; and Williams, John W., to First Brands Corporation. Closure device providing tactile confirmation of occlusion. 5,774,955, Cl. 24-587.000.

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Born, Terry D.; and O'Connell, Daniel, to United States of America. Air Force. Coating chamber planetary gear mirror rotating system. 5,776,256, Cl. 118-730.000.

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Borsuck, Thomas; *See—*
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Bösl, Udo; and Kirchgessner, Michael, to Crown Cork AG. Closure cap with anti-tamper strip. 5,775,527, Cl. 215-252.000.

Bosnyak, Robert J.; *See—*
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Botkins, L. T. Device for applying a bait composition to a fishing lure. 5,775,023, Cl. 43-4.000.

Böttcher, Klaus; *See—*
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Botts, Robert R.; Joshi, Swati V.; and Nicholls, Louis W., to Mitsubishi Semiconductor America, Inc. Method and apparatus using an anode basket for electroplating a workpiece. 5,776,327, Cl. 205-96.000.

Bouchard, Hervé; Boureat, Jean-Dominique; and Commercon, Alain, to Rhone-Poulenc Rorer S.A. Taxoids, their preparation and pharmaceutical compositions containing them. 5,777,139, Cl. 549-510.000.

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Boulos, Edward Nashed; and Jones, James Victor, to Ford Motor Company. High transmittance green glass with improved UV absorption. 5,776,845, Cl. 501-70.000.

Boulton, Teri G.; Cobb, Melanie H.; Yancopoulos, George D.; Nye, Steven; and Panayotatos, Nikos, to Regeneron Pharmaceuticals, Inc.; and Board of Regents, Univ Of Texas. Family of MAP2 protein kinases. 5,776,751, Cl. 435-194.000.

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Boussa, Yong, to ABB Air Preheater, Inc. Air preheater basket assembly. 5,775,405, Cl. 165-8.000.

Bouthillier, Stephen W. Shielded computer network switch. 5,777,400, Cl. 307-91.000.

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Boutte, Kenneth J.; and Green, Ban D., to Pro Line Systems, Inc. Apparatus and method for adding dry materials to liquid drilling mud system. 5,775,852, Cl. 406-32.000.

Bouvard, Franck; *See—*
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Bowen, Dale Thomas; Clapp, Timothy Gladstone; Pendergraph, Douglas Martin, Jr.; and Taylor, Frank Warren, II, to Albani Bayeux, Inc. Method and apparatus for correctively guiding a cutting device on a predetermined path along a sheet material. 5,777,880, Cl. 364-470.140.

Bowen, Dale Thomas; *See—*
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Clapp, Timothy G.; Rust, Jon P.; Farrington, Carlos; and Bowen, Dale Thomas, 5,774,943, Cl. 19-240.000.

Bowers, Cyril Y.; and Coy, David, to Tulane Educational Fund. Administrators of the. Polypeptide analogues having growth hormone releasing activity. 5,776,901, Cl. 514-16.000.

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Bowser, Michael E.; *See—*
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Boyd, Kevin James; *See—*
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Boye, Steven Ray; *See—*

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Boyer, Wayne. Body garment including an outer protecting portion and an inner breathable portion. 5,774,891, Cl. 2-69.000.

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Braasch, Burkhard; Dehmlow, Marvin; Dieluweit, Jürgen; Ernecke, Christoph M.; Gietzold, Thomas; and Vecchiotti, Alberto, to Otis Elevator Company. Calibration routine with adaptive load compensation. 5,777,280, Cl. 187-393.000.

Braatz, Andreas; and Hanke, Hans, to Mercedes-Benz AG. Hydrodynamic heat generator for a motor vehicle. 5,775,583, Cl. 237-12.30B.

Brace, Thomas J.; *See—*
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Schuster, Guido M.; Katsaggelos, Aggelos; Banham, Mark R.; and Brailean, James C., 5,778,192, Cl. 395-200.770.

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Brandes, Gerd; *See—*
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Brandt, Achi Ezer; Mann, Jordan; and Brodski, Matvei, to Yeda Research and Development Co., Ltd. Computerized tomography scanner and method of performing computerized tomography. 5,778,038, Cl. 378-4.000.

Brannan, Fred; *See—*
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Braun, Randy W. Batting practice device. 5,776,017, Cl. 473-426.000.

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Gale, Winton James; Fabjanczyk, Mieczyslaw Wieslaw; and Renwick, Maxwell Thomas, 5,775,850, Cl. 405-259.500.
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Kato, Hiroyuki; and Takemoto, Takatoshi, 5,775,688, Cl. 271-167.000.
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Kishi, Motoshi, 5,775,164, Cl. 73-304.00R.
Morisaki, Hiroshi, 5,778,162, Cl. 395-113.000.
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Getman, Daniel P.; DeCrescenzo, Gary A.; Freskos, John N.; Vazquez, Michael L.; Sikorski, James A.; Devadas, Balekudru; Nagarajan, Srinivasan; Brown, David L.; and McDonald, Joseph J., 5,776,971, Cl. 514-422.000.
Brown, Jerry L. Three-dimensional folded carton action figures. 5,775,971, Cl. 446-376.000.
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Brunn, Erik, to O&K Rolltreppen GmbH. Drive system for curved escalator. 5,775,477, Cl. 198-328.000.
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Brush Wellman Inc.: *See—*
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Buehler GmbH: *See—*
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Budert, Günter H. Tool holding apparatus. 5,775,499, Cl. 206-379.000.
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Buehler, John D., to Comar, Inc. Dispensing bulb. 5,775,546, Cl. 222-209.000.
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Buhl, Steven N.; Bhayani, Bhaskar; Yu, Chi-Sou; and Tang, Thuy N., to Abaxis, Inc. Dried chemical compositions. 5,776,563, Cl. 428-34.100.
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Bullivant, Kenneth Walter. Automatic calibration process and apparatus for materials feeding. 5,775,532, Cl. 222-1.000.
Bullough, David A.; Gruber, Harry E.; Metzker, Ernest K.; Mullane, Kevin M.; Ugarkar, Bheemaroo G.; and Browne, Clinton E., to Gensia Inc. AICA riboside analogs. 5,777,100, Cl. 536-26.900.
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Burbank, Fred H.; Fogarty, Thomas J.; Maska, Wayne E.; Ritchart, Mark A.; Ryan, Timothy J.; and Zerhoui, Elias A., to Ethicon Endo-Surgery, Inc. Apparatus for automated biopsy and collection of soft tissue. 5,775,333, Cl. 128-754.000.
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Burgess, David L.; and Trapp, Orlin D. Method for detecting failures in electric circuits and tester, liquid crystal for use therewith. 5,777,487, Cl. 324-765.000.
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Bycroft, Barrie Walsham; Sewell, Herbert Fitzgerald; Stewart, Gordon Sydney Anderson Birnie; and Williams, Paul, to University of Nottingham. The. Immunosuppressant compounds. 5,776,974, Cl. 514-445.000.
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Raab, Anthony, 5,777,582, Cl. 343-700.0MS.
Calas, Patrick: *See—*
Commeyras, Auguste; Collet, Héène; Mion, Louis; Benefice, Sylvie; Calas, Patrick; Choukroun, Henri; Taillades, Jacques; and Bied, Catherine, 5,777,076, Cl. 530-333.000.
Calatzis, Alexander; Calatzis, Andreas; and Fritzsche, Pablo. Apparatus for measuring the coagulation characteristics of test liquids. 5,777,215, Cl. 73-64.410.
Calatzis, Andreas: *See—*
Calatzis, Alexander; Calatzis, Andreas; and Fritzsche, Pablo, 5,777,215, Cl. 73-64.410.
Caldwell, Charles William, to University of Missouri, The Curators of the. Preserved cell preparations for flow cytometry and immunology. 5,776,754, Cl. 435-240.200.
Caldwell, Jeffrey B.; Murtan, Harry Charles; and Gross, David Henry, to Hewlett-Packard Company. Automatic compiler restructuring of COBOL programs into a proc per paragraph model. 5,778,232, Cl. 395-707.000.
Caleffi, Antonio, deceased (by Gianfranco Caleffi, executor); Hecimovich, William A.; Wright, Timothy R.; and Hayden, Leo F., to American National Can Co. Staggered die method and apparatus for necking containers. 5,775,161, Cl. 72-356.000.
Caleffi, Gianfranco, executor: *See—*
Caleffi, Antonio, deceased; Hecimovich, William A.; Wright, Timothy R.; and Hayden, Leo F., 5,775,161, Cl. 72-356.000.

Calgon Corporation: *See—*
Miknevich, Joseph P.; and Hassick, Denis E., 5,776,350, Cl. 210-710.000.
Calgon Vestal, Inc.: *See—*
Osborne, David W.; and Kirchner, Fred, 5,776,430, Cl. 424-43.000.
Calhoun, Norman Lee, to Deere & Company, Hydraulic coupler dust cover, 5,775,375, Cl. 138-89.000.
California Institute of Technology: *See—*
Yao, Xiaotian S., 5,777,778, Cl. 359-245.000.
California Pacific Medical Center: *See—*
Smith, Helene S.; and Chen, Ling-Chun, 5,776,683, Cl. 435-6.000.
Callahan, Patrick C. Laryngoscope adapted to position and advance a fiberoptic bronchoscope, 5,776,052, Cl. 600-194.000.
Callahan, Steven E.: *See—*
Fitzsimmons, William T.; and Callahan, Steven E., 5,775,663, Cl. 248-450.000.
Callaway Golf Company: *See—*
Helmstetter, Richard C.; Hilton, Thomas R.; Bistline, Donald A.; and Dennis, Victor S., 5,776,010, Cl. 473-334.000.
Calligaro, Cristiano; Malcovati, Piero; and Torelli, Guido, to SGS-Thomson Microelectronics S.r.l. Voltage step-up circuit with output voltage regulation, 5,777,460, Cl. 323-222.000.
Callison, Kathleen V.: *See—*
Lewis, Michael E.; Kauer, James C.; Smith, Kevin R.; Callison, Kathleen V.; Baldino, Frank; Neff, Nicola; and Iqbal, Mohamed, 5,776,897, Cl. 514-12.000.
Calmar Inc.: *See—*
Hohmann, Thomas; and Schäfer, Ingo, 5,775,548, Cl. 222-376.000.
Cambridge Consultants Limited: *See—*
Griffin, David Peter, 5,775,389, Cl. 141-325.000.
Camilletti, Robert Charles; Haluska, Loren Andrew; and Michael, Keith Winton, to Dow Corning Corporation, Thick opaque ceramic coatings, 5,776,235, Cl. 106-287.100.
Caminos, Frank, Handle adapter, 5,774,937, Cl. 16-114.00R.
Campana, Patsie C., deceased (Dolores Jenee Campana, executrix), to P.C. Campana, Inc. Method of coating an iron-based structure and article produced thereby, 5,776,542, Cl. 427-250.000.
Campardo, Giovanni: *See—*
Branchetti, Maurizio; Golla, Carla; and Campardo, Giovanni, 5,778,012, Cl. 371-40.400.
Campbell, David K.: *See—*
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Campbell, Donald H.: *See—*
Ohrbom, Walter H.; Campbell, Donald H.; and St. Aubin, Donald L., 5,777,048, Cl. 525-509.000.
Campbell, James A. Tuning indicator for musical instruments, 5,777,248, Cl. 84-454.000.
Campbell, James A.: *See—*
Shah, Manish M.; and Campbell, James A., 5,777,190, Cl. 588-202.000.
Camplin, Kenneth R.: *See—*
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Candau, Didier; Khayat, Carine; Nadaud, Jean-François; and Agnus-Anciloti, Dominique, to L'Oréal, Cosmetic or dermatological composition containing a mixture of ceramides for moisturizing the skin, 5,776,480, Cl. 424-401.000.
Cangelosi, Gerard A.: *See—*
Sheiness, Diana K.; Adams, Trevor H.; Stamm, Michael R.; Cangelosi, Gerard A.; Britschgi, Theresa B.; and Dix, Connie K., 5,776,694, Cl. 435-6.000.
Cannavo, René Joseph Antoine: *See—*
Blanes, Gérard Antoine Gilbert; Cannavo, René Joseph Antoine; Forgue, Jean Bernard; Gamier, Francis Georges Albert; Hugues, Michel Georges; Massot, Gilles Claude Gabriel; Morel, Patrick Charles Georges; and Tournon, Carole Claudine, 5,776,229, Cl. 96-188.000.
Cannon, Robert L.: *See—*
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Asaba, Tetsuo; Kawasumi, Yasushi; Ohmi, Kazuaki; Sekine, Yasuhiro; and Hayakawa, Yukihiko, 5,776,255, Cl. 118-726.000.
Bekki, Toshihiko; Nakajima, Hiroharu; Wada, Toshihide; Sugiyama, Noriyuki; and Naito, Hisatsugu, 5,775,823, Cl. 400-629.000.
Billyard, Adam Michael, 5,777,620, Cl. 345-426.000.
Ejiri, Seishi; and Shinada, Yasuyuki, 5,777,633, Cl. 347-3.000.
Hashimoto, Shigeru; and Terada, Junji, 5,777,779, Cl. 359-270.000.
Hatori, Kenji, 5,778,382, Cl. 707-104.000.
Hiraoka, Mizuo; and Imataki, Hiroyuki, 5,776,575, Cl. 428-64.100.
Inagawa, Hideho, 5,777,277, Cl. 174-265.000.
Ito, Nobuyasu, 5,778,159, Cl. 395-109.000.
Kaburagi, Hiroshi; and Ichikawa, Hiroyuki, 5,777,759, Cl. 358-536.000.
Kageyama, Tetsuo; Yoshimura, Shigeru; Hanagata, Takayoshi; Hosono, Nagao; and Saito, Takashi, 5,777,639, Cl. 347-15.000.
Kameyama, Makoto; Matsushima, Masaaki; and Yanagi, Michio, 5,777,828, Cl. 360-126.000.
Kishimoto, Shinya, 5,777,617, Cl. 345-418.000.
Kohayakawa, Yoshimi, 5,777,718, Cl. 351-211.000.
Kubo, Ryoji; Horii, Hiroyuki; and Yamagishi, Yoichi, 5,777,691, Cl. 348-718.000.
Masaki, Yuichi; Ishiwata, Kazuya; Suzuki, Masaaki; and Yokoyama, Yuko, 5,777,707, Cl. 349-110.000.
Matsuyama, Shigeru, 5,778,396, Cl. 707-500.000.

Mihara, Tadashi; Inoue, Hiroshi; Mizutome, Atsushi; Tsuboyama, Akira; Taniguchi, Osamu; and Onitsuka, Yoshihiro, 5,777,592, Cl. 345-94.000.
Miyake, Hiroaki, 5,775,686, Cl. 271-127.000.
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Mochizuki, Chiori; Funakoshi, Akira; Tago, Akira; Takeda, Shinichi; Takami, Eiichi; Morishita, Masakazu; Hayashi, Shinichi; Endo, Tadao; and Tamura, Toshikazu, 5,777,335, Cl. 250-370.090.
Murakami, Koichi; Sugita, Shigeru; Sato, Masaaki; Isobe, Yoshinori; Miyake, Norifumi; and Tsujino, Hiromichi, 5,778,300, Cl. 399-403.000.
Nagashima, Masaaki; Yamakawa, Tadashi; and Kohno, Akihiro, 5,778,398, Cl. 707-501.000.
Nagashima, Toshiaki, 5,778,282, Cl. 399-106.000.
Nakatani, Noboru; Michel, Stéphane; Froger, Marie-Hélène; Dodge, Alexandre; and Truffaut, Christophe, 5,775,687, Cl. 271-145.000.
Ohkuma, Norio; Kuwayama, Tetsuro; Majima, Toshiaki; Taniguchi, Naosato; Toshida, Yomishi; Yoshinaga, Yoko; and Fukui, Tetsuro, 5,776,634, Cl. 430-2.000.
Ohmuro, Ryuji, 5,777,674, Cl. 348-338.000.
Ohtsuka, Yasumasa, 5,778,293, Cl. 399-329.000.
Okada, Shinjiro; Tomono, Haruo; and Matsuo, Yuji, 5,777,710, Cl. 349-138.000.
Okamura, Yoshitaka; Tosaka, Yoichi; Hashimoto, Kenichirou; Hirano, Hirofumi; Yamamoto, Kosuke; Nakai, Hiroshi; and Watanabe, Yoshinori, 5,777,634, Cl. 347-7.000.
Otsuka, Naoki; Arai, Atsushi; Yano, Kentaro; Takahashi, Kiichiro; Nishikori, Hitoshi; and Iwasaki, Osamu, 5,777,649, Cl. 347-94.000.
Sakai, Kunihiro; Oguchi, Takahiro; Yamano, Akihiko; and Shido, Shunichi, 5,778,134, Cl. 386-46.000.
Sakata, Tsuguhide; and Sugawara, Masato, 5,777,664, Cl. 348-16.000.
Shioya, Makoto; Tamura, Yasuyuki; Takahashi, Hiroto; Tachihara, Masayoshi; Yamamoto, Tadashi; Inada, Genji; Kimura, Tatsuo; and Ashiwa, Jun, 5,777,640, Cl. 347-15.000.
Small, Jonathan Andrew Stanley, 5,777,623, Cl. 345-430.000.
Suzuki, Akio; and Danzuka, Toshimitsu, 5,777,641, Cl. 347-15.000.
Takeuchi, Tatsuo; Inoue, Masahiro; and Ishizuka, Jiro, 5,776,543, Cl. 427-258.000.
Takiyama, Yasuhiro; Miyamoto, Ryosuke; Shimizu, Hideaki; Yaguchi, Hiroyuki; and Takahashi, Tadashi, 5,777,750, Cl. 358-298.000.
Tanabe, Ritsushi, 5,777,758, Cl. 358-457.000.
Terada, Junji; and Hashimoto, Shigeru, 5,777,780, Cl. 359-273.000.
Terajima, Hisao, 5,778,163, Cl. 395-113.000.
Yamamoto, Masakuni, 5,777,974, Cl. 369-112.000.
Yamamoto, Mitsuru, 5,777,762, Cl. 359-123.000.
Yoshii, Minoru; Hasegawa, Masanobu; Miyazaki, Kyoichi; and Takeuchi, Seiji, 5,777,744, Cl. 356-372.000.
Canora, Frank J.; Nunnery, William Burrell; Ponnappalli, Saila; Oakley, Brian Scott; and Oprysko, Modest Michael, to International Business Machines Corporation, High gain broadband planar antenna, 5,777,583, Cl. 343-700.0MS.
Canter, Paul: *See—*
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Cantwell, Nancy: *See—*
Chandrachood, Madhavi; Ghanayem, Steve G.; Cantwell, Nancy; Rader, Daniel J.; and Geller, Anthony S., 5,777,245, Cl. 73-865.900.
Cao, Zhaodan, to Tularik Inc. Ixk kinases, 5,776,717, Cl. 435-15.000.
Capilupi, Mario J., Jr. Manually operated, mechanically adjustable, quick lifter support arm for loading equipment onto pickup trucks, 5,775,865, Cl. 414-498.000.
Capogrosso, Andrew: *See—*
Enneking, John R.; Henby, Gary L.; Schebler, Wilbur A.; Saaf, Patrick M.; Ritter, Eugene A.; and Capogrosso, Andrew, 5,775,061, Cl. 53-445.000.
Caporusso, Alessandro; and Caporusso, Mario, to C.M.L. Costruzioni Meccaniche Liri S.R.L. Swinging self-positioning support for pipe bending machines, 5,775,157, Cl. 72-321.000.
Caporusso, Mario: *See—*
Caporusso, Alessandro; and Caporusso, Mario, 5,775,157, Cl. 72-321.000.
Capps, Stephen P.; Beermink, Ernest H.; and Temkin, David T., to Apple Computer, Inc. String inserter for pen-based computer systems and method for providing same, 5,778,404, Cl. 707-531.000.
Caputo, Anthony A.; and Amoroso, Victor P., to Information Resource Engineering, Inc. Pocket encrypting and authenticating communications device, 5,778,071, Cl. 380-25.000.
Car Mate Mfg. Co., Ltd.: *See—*
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Carberry, Richard A.: *See—*
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Cardiac Pacemakers, Inc.: *See—*
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Cardima, Inc.: *See—*
Randolph, Yvonne; and Dickens, Duane, 5,775,327, Cl. 128-642.000.
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Taylor, Charles S.; Frantzen, John J.; and Sepetka, Ivan, 5,776,154, Cl. 606-167.000.
Carefibres Oy: *See—*

Laurila, Maija; and Vapaaksa, Pekka, 5,776,474, Cl. 424-401.000.
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Carle & Montanari S.p.A.: *See—*
Carle, Marco Giovanni, 5,775,479, Cl. 198-468.800.
Carle, Marco Giovanni, to Carle & Montanari S.p.A. Lever device for actuating the lifting member and the counter-lifting member in automatic machines for wrapping sweets, chocolates or similar products, 5,775,479, Cl. 198-468.800.
Carlinsky, Herman; and Ackley, Raymond. Flotation system for buildings, 5,775,847, Cl. 405-229.000.
Carls, Thomas A.: *See—*
Johnson, Chris E.; Vendrely, Tim; Whiteside, Leo A.; Carls, Thomas A.; Steele, John; and Naraghian, Khosrow, 5,776,200, Cl. 623-20.000.
Carlsen, Daniel J.; and Parker, George F., to Black & Decker Inc. Method of making a sawblade tooth form, 5,775,181, Cl. 76-112.000.
Carlson, Bruce; Esker, David C.; and Horska, Jana, to CommScope, Inc. Cable having an at least partially oxidized armor layer, 5,777,271, Cl. 174-107.000.
Carlson, Gerrard M.: *See—*
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Carlson, Matt: *See—*
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Carnes, Melvin R., Sr.; and Carnes, Jeffrey S., to Binder Jac, L.C. Load binder tool, 5,775,673, Cl. 254-131.000.
Carpenter, Christopher M.: *See—*
Hays, Nathan J.; Henson, James A.; Carpenter, Christopher M.; Akin, William R., Jr.; Ehrlich, Richard M.; and Beazley, Lance D., 5,777,760, Cl. 359-7.000.
Carper, James L.; Irish, Gary H.; Rieley, Sheldon C.; Smith, Robert M.; and Jackson, Robert L., to International Business Machines Corporation, Lead-frame having contact pads defined by a polymer insulating film, 5,776,801, Cl. 438-123.000.
Carr, Lawrence J., to Amoco Corporation. Polyglycidyl ester-based power coatings, 5,777,045, Cl. 525-438.000.
Carrel, John; and Mullahy, Brian, to EMC Corporation, System and method for reassigning a storage location for reconstructed data on a persistent medium storage system, 5,778,167, Cl. 395-182.060.
Carretero, Ignacio: *See—*
Chas Alonso, Pedro Luis; Merayo Fernandez, Luis Antonio; Arregui, Ana Aladill; Suarez Martel, Jose Manuel; and Carretero, Ignacio, 5,777,995, Cl. 370-395.000.
Carriker, Richard W.; and Fuller, John M., to Claymax Corporation. Low permeability geosynthetic clay liner and method of manufacture thereof, 5,776,547, Cl. 427-403.000.
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Carson, Douglas Timothy: *See—*
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Carter, James H.: *See—*
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Carter, Jesse M.: *See—*
Smith, Jack V.; and Carter, Jesse M., 5,776,780, Cl. 436-63.000.
Carter, Nigel, to CCL Systems Limited. Thread formation, 5,776,001, Cl. 470-8.000.
Carty, Timothy A.: *See—*
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Caruba, James F.: *See—*
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Caruso, Andrew James: *See—*
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Potter, Michael Fred; Rotramel, George Lorton; Caruso, Andrew James; Chou, David Teh-Wei; and Cain, Paul Alfred, 5,776,982, Cl. 514-594.000.
Casaletto, Nicola; Gibbons, Wayne M.; and Rach, Joseph F., to MacDermid Imaging Technology, Inc. Process for imaging of liquid photopolymer printing plates, 5,776,661, Cl. 430-306.000.
Case Corporation: *See—*
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Peckham, Paul Hunter; Smith, Brian; Buckett, James Robert; Thrope, Geoffrey Bart; and Letechipia, Jorge Ernesto, 5,776,171, Cl. 607-48.000.
Cases, Moises; and Hinedi, Fahd, to International Business Machines Corporation. Circuitry and method for translating voltages, 5,777,490, Cl. 326-68.000.
Casimir, Douglas M. Dissolvable urn, 5,774,958, Cl. 27-1.000.
Casino Concepts Company: *See—*
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Cassell, Wendy; Chan, Edwin; and Russak, Stephen, to Cassell, Wendy, Modular rolling pin with dough storage means, 5,774,918, Cl. 7-111.000.
Cassidy, James W.: *See—*
Stevens, John K.; Dunn, James M.; Dee, Gregory; and Cassidy, James W., 5,776,767, Cl. 435-287.200.
Castelli, Luc: *See—*
Karst, Christian; Gozlan, Thierry; Derrieu, Guy; and Castelli, Luc, 5,776,481, Cl. 424-411.000.
Castor, Trevor P.; and Chu, Ling, to Aphios Corporation. Methods and apparatus for making liposomes containing hydrophobic drugs, 5,776,486, Cl. 424-450.000.
Caterpillar Inc.: *See—*
Dexter, Delbert D.; and Keedy, Dave E., 5,775,447, Cl. 180-9.100.
Cathey, Deborah Ann; Chau, William; Matis, Krishna Ramachandran; Nema, Paul; and Yang, Jonathan, to AT&T Corp. Usage management system, 5,778,182, Cl. 395-200.490.
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Cavalier, Neil N.: *See—*
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Cave, Michael D.: *See—*
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Cazaux, Yvon; Brisson, Louis; and Gili, Bruno, to Thomson Composants Militaires Et Spatiaux. Photosensitive device with juxtaposed reading registers, 5,777,672, Cl. 348-316.000.
CCL Systems Limited: *See—*
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CD Magic, Inc.: *See—*
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Cederholm-Williams, Stewart A.: *See—*
Edwardson, Peter A. D.; Fairbrother, John E.; Gardner, Ronald S.; Hollingsbee, Derek A.; and Cederholm-Williams, Stewart A., 5,777,082, Cl. 530-382.000.
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Montgomery, Clifford Stanley; Dearing, Michael P., Sr.; Vicknair, Bruce A.; Price, Randall R.; Baten, Robert A.; Cedillo, Greg L.; and Craig, John Howard, 5,775,803, Cl. 366-2.000.
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Celanese International Corporation: *See—*
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Celik, Tante: *See—*
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Cell Pathways, Inc.: *See—*
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Cell Therapeutics, Inc.: *See—*
Klein, J. Peter; Underiner, Gail E.; and Kumar, Anil M., 5,777,117, Cl. 544-267.000.
Leigh, Alistair; and Underiner, Gail, 5,777,115, Cl. 544-242.000.
Cellexis International, Inc.: *See—*
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Cellresin Technologies, LLC: *See—*
Wood, Willard E.; and Beaverson, Neil J., 5,776,842, Cl. 442-394.000.
Celltech Therapeutics, Limited: *See—*
Warrellow, Graham John; Boyd, Ewan Campbell; Alexander, Rikki Peter; and Eaton, Michael Anthony William, 5,776,958, Cl. 514-345.000.
Center for Innovative Technology, The: *See—*
Chu, Fu-Lin E.; and Ozkizilcik, Sureyya, 5,776,490, Cl. 424-451.000.
Centerpin Technology, Inc.: *See—*
McCarthy, Dale C., 5,775,934, Cl. 439-427.000.
Central Sprinkler Company: *See—*
Auvil, Andrew L.; Brannan, Fred; Dalal, Girish Trikamal; Evans, Thomas L.; Meyer, George G.; Meyer, Stephen J.; Schiavone, Carmine L.; and Schmitz, Theodore Joseph, 5,775,378, Cl. 138-143.000.
Century Chemical Corporation: *See—*
Przybylski, Gerald W.; Connor, Patrick J.; and Peters, David W., 5,776,867, Cl. 508-161.000.
Cephalon, Inc.: *See—*
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- Murthy, Kurukundi Ramesh; and Cha, Ying, 5,777,221, Cl. 73-149,000.
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Chadbourne, Richard; and Lasko, William J., to Burndy Corporation. Electrical wedge connector. 5,774,987, Cl. 29-897,350.
Chadha, Surjit S.; and Rasmussen, Robert T., to Micron Display Technology, Inc. Process for manufacturing a praseodymium oxide- and manganese oxide-containing baseplate for use in field emission displays. 5,776,540, Cl. 427-126,300.
Chadwick, Dennis P., to Chadwick Engineering Limited. Method and apparatus for wrapping coils, and the wrapped product. 5,775,515, Cl. 206-416,000.
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Chadwick, Dennis P., 5,775,515, Cl. 206-416,000.
Chambers, Thomas John: See—
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Chan, David T.; Heideman, Joseph E.; Shafr, Haim; Wurster, Stefan M.; and Wong, David S., to Level One Communications, Inc. Inter-repeater back-plane for allowing hot-swapping of individual repeater circuits. 5,777,996, Cl. 370-402,000.
Chan, Edwin: See—
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Chan, Hoi Yeung; Grosf, Benjamin Nathan; and Levine, David William, to International Business Machines Corporation. Flexible procedural attachment to simulate reasoning systems. 5,778,150, Cl. 395-10,000.
Chan, Kin Shing; Chuang, Chiao-Mei; Dhong, Sang Hoo; and Marchioro, Alessandro, to International Business Machines Corporation. Fast multiple operands adder/subtractor based on shifting. 5,777,918, Cl. 364-786,040.
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- Clapp, Timothy Gladstone: See—
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- Clariant GmbH: See—
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- Clark, Donald, Closable bag and method of making same, 5,776,044, Cl. 493-215,000.
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- Co, Man Sung; and Tso, J. Yun, to Protein Design Labs, Inc. Humanized antibodies reactive with GPIIb/IIIa, 5,777,085, Cl. 530-388,230.
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- Collier, James Digby Yaret; Davies, Christopher; Fryer, Christopher James Newton; and Waha, Alain Henri, to G. Kromschroder Aktiengesellschaft, Fluid flow meter, 5,777,237, Cl. 73-861,280.
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- Lonergan, Kevin; Cunha, Karl; Kosatschko, John; and Tusler, Ralph Michael, 5,775,418, Cl. 165-80.200.
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- Ward, Joseph, 5,777,751, Cl. 358-298,000.
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- West, Paul Richard; and Gurney, Jeffery Allen, 5,776,655, Cl. 430-256,000.
- Williams, Patricia L., 5,778,269, Cl. 396-387,000.
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Christian, Todd; and Franz, Thomas, 5,775,795, Cl. 362-66,000.
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- Mayo, Stephen D., 5,777,287, Cl. 218-123,000.
- Eaton, John Richard, to International Computers Limited. Multi-node data processing system, 5,778,193, Cl. 395-200,810.
- Eaton, Michael Anthony William: See—
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Buhning, Hans-Jorg, 5,777,084, Cl. 530-388,220.
- Eberle, Herbert: See—
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- Eberle, Martin: See—
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- Ebner, Rudolf: See—
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- Echelon Golf: See—
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- Eckhouse, Shimon; and Kreindel, Michael, to ESC Medical Systems Ltd. Method and apparatus for treatment of cancer using pulsed electromagnetic radiation, 5,776,175, Cl. 607-100,000.
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- Edqvist, Håkan. Package and method for producing said package, 5,775,486, Cl. 206-145,000.
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- Edwards, Brooks: See—
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- Edwards, Charles Christopher; and Kelton, Grady A., to Hurd Corporation. Lock with removable cylinder, 5,775,146, Cl. 70-369,000.
- Edwards, Michael Kay: See—
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- Edwards, Patrick A.: See—
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- Eggebeen, James A.: See—
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- Eggers, Philip E., to Hemostatic Surgery Corporation. Hemostatic bi-polar electrosurgical cutting apparatus, 5,776,128, Cl. 606-48,000.
- Eguchi, Katsuhiko: See—
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- Ehrlich, Richard M.: See—
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- Eickemeyer, Richard James; Malik, Nadeem; and Saha, Avijit, to International Business Machines Corporation. Flexible pipeline for interlock removal, 5,778,208, Cl. 395-379,000.
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- Eka Nobel AB: See—
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- Ekco Housewares, Inc.: See—

- Stein, Douglas W.; Ancona, Bruce E.; and Winograd, Daniel, 5,774,994, Cl. 30-342,000.
- ELA Medical S.A.: See—
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- Electrolux Zanussi Elettrodomestici, S.p.A.: See—
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- Electromatic (Proprietary) Limited: See—
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- Electronic Data Systems Corporation: See—
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- Pruett, Paul S.; Marshall, Aaron W.; and Jensen, Joel R., 5,778,389, Cl. 707-204,000.
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- Electronics and Telecommunications Research Institute: See—
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- Eli Lilly and Company: See—
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- James, Steven Parker, 5,776,969, Cl. 514-418,000.
- Kroin, Julian Stanley; and Norman, Bryan Hurst, 5,776,939, Cl. 514-255,000.
- Nunes, Anne Marie; and Zarrinmayeh, Hamideh, 5,776,931, Cl. 514-232,800.
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- Elledge, Stephen J.: See—
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- Ellis, Herbert S.; Delp, Thomas W.; Dunn, James F.; and Ellis, Kenneth L., to Aquatic Amusement Associates, Ltd. Wave pool curbing system, 5,774,906, Cl. 4-510,000.
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- Elul, Rafael. Rotary razor, 5,774,989, Cl. 30-43,600.
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- Emert, Jacob; Horvath, Istvan T.; Schlossberg, Richard H.; Thaler, Warren A.; Young, David A.; and Zushma, Stephen, to Exxon Chemical Patents Inc. Saturated polyolefins having terminal aldehyde or hydroxy substituents and derivatives thereof, 5,777,041, Cl. 525-333,700.
- Emisphere Technologies, Inc.: See—
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- Emmedi, S.p.A.: See—
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- Enmot, Darel N., to Hewlett-Packard Company. Multiple input two-level cache directory with mini-directory for initial comparisons and main directory for mini-directory misses, 5,778,410, Cl. 711-3,000.
- Empak, Inc.: See—
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- Emrich, John L.: See—
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- Encelle, Inc.: See—
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- Endo, Yoshishige: See—
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- Endotex Interventional Systems, Inc.: See—
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- Energy Research and Development Corporation, The: See—
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- Engelhard Corporation: See—
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- Engelhardt, Helmut: See—
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- Englehardt, Larry R. Bow holder, 5,775,658, Cl. 248-309,100.
- Englert, Heinrich; Mania, Dieter; Hartung, Jens; Gögelein, Heinz; Kaiser, Joachim; Linz, Wolfgang; and Wenlauffer, David, to Hoechst Aktiengesellschaft. Substituted benzenesulfonylureas and -thioureas-process for their preparation and their use as pharmaceuticals, 5,776,980, Cl. 514-586,000.
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- Engman, Anders: See—
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- Enneking, John R.; Henhy, Gary L.; Schebler, Wilbur A.; Saaf, Patrick M.; Ritter, Eugene A.; and Capogrosso, Andrew, to Batesville Casket Company, Inc. Method of shipping and assembling burial casket and casket shipped and assembled by such method, 5,775,061, Cl. 53-445,000.
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- Emecke, Christoph M.: See—
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- Esselte N.V.: See—
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- Nolan, Leo J.; Measamer, John P.; Staley, James D., Jr.; and Welch, Robert F., 5,776,150, Cl. 606-148.000.
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- Forgue, Jean Bernard: *See—*
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- Formyduval, Terry Franklin: *See—*
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- Forschner, Thomas Clayton: *See—*
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- Forschungszentrum Julich GmbH: *See—*
Lindenau, Bernd; Fremerey, Johan K.; and Withauer, Klaus, 5,777,233, Cl. 73-753.000.
- Overath, Horst, 5,776,335, Cl. 210-169.000.
- Fort James Corporation: *See—*
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- Foster, David George; Gates, Edgar Preston; and Rosenburgh, John Howard, to Eastman Kodak Company, Photographic processor and method of operation, 5,778,274, Cl. 396-636.000.
- Foster, David George: *See—*
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- Foster, Donald C.: *See—*
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- Foster, Donald D.; and Nelson, Philip L., to Continental Sprayers International, Inc. Lotion dispensing pump with sealing plug for sealing pump chamber, 5,775,547, Cl. 222-321.300.
- Fougny, Douglas V., to Cellex International, Inc. Pre-paid cellular telephone system, 5,778,313, Cl. 455-406.000.
- Fouilloux, Pierre: *See—*
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- Foulkes, J. Gordon; Franco, Robert; Leichtfried, Franz; Pieler, Christian; and Stephenson, John R., to Oncogene Science, Inc. Methods of transcriptionally modulating gene expression, 5,776,502, Cl. 424-617.000.
- Fountain, Mark: *See—*
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- Fourniaux, Jean-Paul: *See—*
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- Fournier, Michel Mark: *See—*
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- Fournier, Robert Gregory; Jain, Kailash Chandra; and Valdes, Carlos Augusto, to General Motors Corporation, Titania exhaust gas oxygen sensor, 5,776,601, Cl. 428-325.000.
- Foust, Donald Franklin: *See—*
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- Foveonics, Inc.: *See—*
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- Fowell, Richard A.: *See—*
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- Fowler, Kerry J.: *See—*
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- Fox, Barry A., to Babcock & Wilcox Company, The, Roll wheel stand, 5,775,650, Cl. 248-176.100.
- Fox, Thomas M.: *See—*
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- Frak, Robert D., to Badger Paper Mills, Inc. Method and apparatus for measuring and controlling the speed of papermaking fabrics, 5,776,309, Cl. 162-198.000.
- Frampton, Graham Anthony Charles: *See—*
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- Franchet, Mark Eugene: *See—*
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- Franco, Pierluigi: *See—*
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- Franco, Robert: *See—*
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- Francotyp-Postalia AG & Co.: *See—*
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- Frank, Andrew A.: *See—*
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- Frank, Carl; and Mallett, James A., to Joseph Pollak Corporation, Automotive inertia switch, 5,777,285, Cl. 200-61.500.
- Franklin, Christopher Matthew: *See—*
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- Franks, James W. Tissue preparation apparatus and method, 5,776,298, Cl. 156-390.000.
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- Frantzen, John J.: *See—*
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- Franz Grimme Landmaschinenfabrik GmbH & Co. KG: *See—*
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- Franz, Thomas: *See—*
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- Franzmann, Karl Witold: *See—*
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- Fraser, Michael L.: *See—*
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- Fredlund, John Randall: *See—*
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- Weber, Richard P., 5,775,796, Cl. 362-80.000.
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- French, John M.; and Wigger, Johannes G. F., to Michaels of Oregon Co. High-security buckle, 5,774,956, Cl. 24-625.000.
- Frentrop, James Louis: *See—*
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- Freshwater, Donley D.: *See—*
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- Freskos, John N.: *See—*
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- Freudenberg-NOK General Partnership: *See—*
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- Frinak, Steven L.: See—
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- Frström, Ola: See—
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- Fritzsche, Pablo: See—
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- Froger, Marie-Hélène: See—
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- Fryda, Georg: See—
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- Frye, David E.; and Cords, Frederick W., to Commercial Intertech Corp. Power-assisted hydraulic steering system. 5,775,102, Cl. 60-431.000.
- Frye, Terry Edward: See—
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- Fryer, Christopher James Newton: See—
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- Frymaster Corporation, The: See—
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- Fuchs, Ralf: See—
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- Fuji Machinery Co., Ltd.: See—
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- Fuji Photo Film Co., Ltd.: See—
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- Miida, Takashi; Kawajiri, Kazuhiro; Hasegawa, Jun; and Taniguchi, Isao, 5,777,675, Cl. 348-350.000.
- Miyake, Izumi; and Kawaguchi, Ryuji, 5,777,667, Cl. 348-64.000.
- Okamoto, Yasuo; and Sorori, Tadashi, 5,776,996, Cl. 522-26.000.
- Uchida, Mitsuhiro, 5,776,670, Cl. 430-567.000.
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- Miyano, Hitoshi, 5,777,797, Cl. 359-660.000.
- Takemae, Hisao; and Matsui, Nobuo, 5,777,801, Cl. 359-694.000.
- Yoshikawa, Kazuo, 5,777,673, Cl. 348-337.000.
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- Enomoto, Yoshihiro; Hyakutake, Nobuo; Funato, Hitoshi; Fujita, Tetsuya; and Komatsu, Nobuyoshi, 5,778,298, Cl. 399-388.000.
- Handa, Osamu, 5,778,281, Cl. 399-101.000.
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- Nashimoto, Keiichi, 5,776,621, Cl. 428-688.000.
- Nishiyama, Kenji, 5,778,365, Cl. 707-9.000.
- Okubo, Masao; Kojima, Noriaki; and Takahashi, Nobukazu, 5,778,291, Cl. 399-302.000.
- Tateno, Masakazu, 5,778,400, Cl. 707-513.000.
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- Hatta, Koichi, 5,778,010, Cl. 371-37.020.
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- Itami, Satoshi; Nakahara, Masaru; Nakada, Masahiro; Suzuki, Hiroshi; and Utsumi, Kenichi, 5,777,965, Cl. 369-58.000.
- Kataoka, Hiroshi, 5,777,612, Cl. 345-302.000.
- Kimura, Nobuko; Onodera, Takashi; and Yokoshi, Noriyuki, 5,778,189, Cl. 395-200.660.
- Kurashima, Shigemitsu; Sakaguchi, Akihiko; and Kurasawa, Katsuhiko, 5,777,606, Cl. 345-173.000.
- Kuroiwa, Koichi; and Taniguchi, Shoji, 5,778,251, Cl. 395-834.000.
- Mizoshita, Yoshifumi; Koshikawa, Takao; Kanai, Hitoshi; Kane, Junichi; Otsuka, Yoshinori; and Ikegawa, Yukinori, 5,777,827, Cl. 360-113.000.
- Murakami, Yoshishige; Hirota, Kanji; and Kanzaki, Yoshiharu, 5,777,548, Cl. 340-506.000.
- Nagahara, Akira; Sasaki, Sachio; Furukawa, Mitsuhiro; Utaka, Shigenobu; Yamaguchi, Yoshio; Sato, Mitsuru; Kuwabara, Nobuo; Watanabe, Haruyasu; and Takahashi, Takefumi, 5,778,285, Cl. 399-150.000.
- Naito, Takao, 5,777,770, Cl. 359-179.000.
- Nakamura, Shunji, 5,776,789, Cl. 437-60.000.
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- Noda, Tsugio; and Sakai, Kenichiro, 5,777,749, Cl. 358-261.300.
- Ogawa, Tomoya, 5,778,405, Cl. 707-532.000.
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- Ooe, Kazuichi; and Inano, Satoshi, 5,778,445, Cl. 711-167.000.
- Sato, Shinichi; Ohtsuki, Munenori; Iwaguchi, Isao; and Shinoda, Ichiro, 5,778,017, Cl. 372-38.000.
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- Sawaki, Takashi, 5,778,319, Cl. 455-452.000.
- Shimoda, Kaneyasu, 5,777,566, Cl. 341-58.000.
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- Shukunami, Norifumi; and Inagaki, Shinya, 5,778,129, Cl. 385-127.000.
- Sugita, Kiyoshi; and Yokoshi, Noriyuki, 5,778,360, Cl. 707-4.000.
- Takashi, Toru, 5,777,499, Cl. 327-159.000.
- Takazawa, Masahiro, 5,777,627, Cl. 345-469.000.
- Tamagawa, Koki; Takahashi, Kojiro; Suzuki, Takahiko; and Fukunishi, Ryuichi, 5,777,838, Cl. 361-234.000.
- Tanaka, Akira; Tazaki, Satoshi; Sakamoto, Kei; Yoneda, Yasuhiro; Yokouchi, Kishio; Mizutani, Daisuke; and Ishizuki, Yoshikatsu, 5,777,068, Cl. 528-353.000.
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- G & H Technology, Inc.: See—
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- G.D. Searle & Co.: See—
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Boldrini, Fulvio, 5,775,054, Cl. 53-149.000.
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- Hess, Gregory James: *See*—
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- Hessler, Mark Jonathan: *See*—
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Weber, Patrick O., 5,776,512, Cl. 425-116.000.
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- Barinaga, John A.; Clark, James E.; Merrill, David O.; Nguyen, Ngoc-Diep T.; and Otis, David R., 5,777,646, Cl. 347-86.000.
- Bartelink, Dirk J., 5,777,347, Cl. 257-24.000.
- Buck-Gengler, Joel, 5,777,628, Cl. 345-474.000.
- Caldwell, Jeffrey B.; Muttart, Harry Charles; and Gross, David Henry, 5,778,232, Cl. 395-707.000.
- Chao, Ken, 5,778,170, Cl. 395-183.160.
- Emmot, Darel N., 5,778,410, Cl. 711-3.000.
- Fujii, David B.; Rust, Robert A.; and Hershberger, David, 5,778,158, Cl. 395-102.000.
- Hepner, Daniel W., 5,778,155, Cl. 395-51.000.
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- Jedwab, Jonathan, 5,778,013, Cl. 371-53.000.
- Kaestle, Siegfried; and Guenther, Martin, 5,776,059, Cl. 600-340.000.
- Kerschner, Ronald K.; and Campbell, David K., 5,777,321, Cl. 250-235.000.
- Lester, Steven D.; Miller, Jeffrey N.; and Roitman, Daniel B., 5,777,433, Cl. 313-512.000.
- Marietta, Bryan Dale; and Oppedahl, Douglas Arnold, 5,778,415, Cl. 711-5.000.
- Pawlowski, Norman, Jr.; and Boyd, Melissa D., 5,777,647, Cl. 347-86.000.
- Platt, John S., 5,776,069, Cl. 600-515.000.
- Rossin, Theodore G., 5,777,625, Cl. 345-434.000.
- Salter, James G.; and Eckard, B. Michael, 5,777,638, Cl. 347-12.000.
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- Heys, John Richard: *See*—
- Lee, John C.; Adams, Jerry L.; Gallagher, Timothy F.; Green, David W.; Heys, John Richard; McDonnell, Peter C.; McNulty, Dean E.; Young, Peter R.; and Strickler, James E., 5,777,097, Cl. 536-24.310.
- Hibbs, George V.: *See*—
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- Hibino, Hideo: *See*—
Takano, Tetsuya; Yokonuma, Norikazu; Hibino, Hideo; Kazami, Kazuyuki; and Okutsu, Hisashi, 5,778,267, Cl. 396-319.000.
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- Hibino, Toshiro: *See*—
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- Hidano, Katsushi: *See*—
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- Hidari, Hirofumi, to Nikon Corporation. Video processing apparatus with multiple image signal integration and reduction for decreasing noise. 5,777,756, Cl. 358-455.000.
- Hidary, Jack D.; and Ullman, Craig, to ACTV, Inc. Enhanced video programming system and method for incorporating and displaying retrieved integrated internet information segments. 5,778,181, Cl. 395-200.480.
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- Hieter, Philip Andrew: *See*—
Ketner, Gary Wayne; Hieter, Philip Andrew; and Clements, Janice E., 5,776,745, Cl. 435-172.300.
- HIGA Development Corporation: *See*—
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- Higaki, Kenjiro: *See*—
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- Higashi, Mitsutoshi; Izuka, Hajime; and Murayama, Kei, to Shinko Electric Industries Co., Ltd. Semiconductor device and mount structure thereof. 5,777,386, Cl. 257-737.000.
- Higashikawa, Yuichi: *See*—
Arita, Setsuo; Ito, Tetsuo; Ohga, Yukiharu; Murata, Fumio; Higashikawa, Yuichi; Sato, Hideyuki; Kudo, Mitsuru; and Yamasawa, Yuuzi, 5,777,896, Cl. 364-550.000.
- Higgins, Graham Robert L.: *See*—
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- Higo, Kazuhiko: *See*—
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- Higuchi, Matsuo: *See*—
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- Higuchi, Minoru: *See*—
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- Hildebrandt, Andreas: *See*—
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- Hildén, Pekka: *See*—
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- Hill, Alan Robert: *See*—
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- Hill, David Eric William: *See*—
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- Hillenkamp, Franz; to Sequenom, Inc. Method and apparatus for maldi analysis. 5,777,324, Cl. 250-288.000.
- Hilliard, Alexander. Drinker's awareness device. 5,777,556, Cl. 340-576.000.
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- Hillman, Jennifer L.; Shah, Purvi; and Corley, Neil C., to Ineyte Pharmaceuticals, Inc. Human peroxisomal thioesterase. 5,776,753, Cl. 435-796.000.
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Bayerer, Reinhold; Hilpert, Gerald; and Schifferli, Rolf, 5,777,849, Cl. 361-730.000.
- Hilton, Thomas R.: *See*—
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- Himes, Glenn Roy: *See*—
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- Himi, Hiroaki: *See*—

- Yamaguchi, Hitoshi; Morishita, Toshiyuki; and Himi, Hiroaki, 5,777,365, Cl. 257-347,000.
- Hinedi, Fahd: *See—*
- Cases, Moises; and Hinedi, Fahd, 5,777,490, Cl. 326-68,000.
- Hines, William R., to General Electric Company. Variable size gas turbine engine, 5,775,092, Cl. 60-39,161.
- Hinton, Glenn J.: *See—*
- Glew, Andrew F.; Hinton, Glenn J.; Papworth, David B.; Fetterman, Michael Alan; Colwell, Robert P.; and Pollack, Frederick Jay, 5,778,407, Cl. 711-2,000.
- Papworth, David B.; Glew, Andrew F.; Hinton, Glenn J.; Colwell, Robert P.; Fetterman, Michael A.; Gupta, Shantanu R.; and Griffith, James S., 5,778,245, Cl. 395-800,230.
- Hiraga, Takashi; Moriya, Tetsuo; Tanaka, Norio; and Ueno, Ichiro, to Agency of Industrial Science and Technology; Japan Science and Technology Corporation; Dainichiseika Color & Chemicals MFG., Co., Ltd.; and Victor Company of Japan, Limited. Full optical type optical element, 5,777,776, Cl. 359-244,000.
- Hirahara, Hideto; Kano, Masaaki; Higuchi, Minoru; and Hosoya, Haruyuki, to Isuzu Motors Limited. Control device of a start-assist system, 5,775,448, Cl. 180-24,020.
- Hirai, Hiroyuki, to Fuji Photo Film Co., Ltd. Light-sensitive material for color filter and process for producing color filter using the same, 5,776,643, Cl. 430-7,000.
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- Jimbo, Hiroki; Oshikawa, Satoru; and Hiraiwa, Hiroyuki, 5,776,219, Cl. 65-31,000.
- Hirakawa Kogyo Sha Co., Ltd.: *See—*
- Yamashita, Miyuki, 5,778,275, Cl. 396-643,000.
- Hirakawa, Shinichi: *See—*
- Kamuro, Yasuo; Hirakawa, Shinichi; and Fujisawa, Hiroshi, 5,776,860, Cl. 504-313,000.
- Hiraki, Toshiyuki; Yamada, Akira; and Oki, Masashi, to Mitsubishi Denki Kabushiki Kaisha. Coded signal decoding circuit, and synchronous control method for the same, synchronous detecting method, and synchronization detecting circuit therefor, 5,777,999, Cl. 370-509,000.
- Hiramatsu, Tatsuo, to Sanyo Electric Co., Ltd. Decoding circuit for bi-phase BPSK signal having a high noise immunity, 5,778,031, Cl. 375-333,000.
- Hiramoto, Kazuyuki: *See—*
- Keefe, Gary L.; Weidner, Stanley C.; Hiranoto, Kazuyuki; and Hyatt, Gregory Aaron, 5,775,853, Cl. 408-1,00R.
- Hiranaga, Hajime; and Nakayama, Hidenori, to Pall Corporation. Filter assembly, 5,776,342, Cl. 210-442,000.
- Hiranandani, Seema: *See—*
- Dehnert, James Craig; Hiranandani, Seema; Ho, Wingshun Wilson; and Leung, Lilian H., 5,778,212, Cl. 395-500,000.
- Hirano, Hirofumi: *See—*
- Okamura, Yoshitaka; Tosaka, Yoichi; Hashimoto, Kenichiro; Hirano, Hirofumi; Yamamoto, Kosuke; Nakai, Hiroshi; and Watanabe, Yoshinori, 5,777,634, Cl. 347-7,000.
- Hirano, Hiroshi: *See—*
- Matsutani, Kanji; Hirano, Hiroshi; Satoh, Katsutoshi; and Matsumoto, Takayuki, 5,775,902, Cl. 433-102,000.
- Hirano Tecseed Co., Ltd.: *See—*
- Irie, Nobuaki; Ishida, Takao; Hashimoto, Akiyoshi; and Yoshimura, Yasutomi, 5,776,251, Cl. 118-411,000.
- Hiraoka, Chikara; Matsuno, Junichi; and Fukuda, Hiromitsu, to Hitachi, Ltd. Electrophotographic apparatus and belt fixing device with non-uniform nip pressure, 5,778,294, Cl. 399-329,000.
- Hiraoka, Jun; and Kodato, Setsuo, to Anritsu Corporation. Temperature sensor system using a micro-crystalline semiconductor thin film, 5,775,811, Cl. 374-185,000.
- Hiraoka, Mizuho; and Imataki, Hiroyuki, to Canon Kabushiki Kaisha. Information recording medium and process for production thereof, 5,776,575, Cl. 428-64,100.
- Hiraoka, Yasunobu: *See—*
- Ide, Takeo; Hiraoka, Yasunobu; Koizumi, Shoichi; Morita, Minoru; and Ueda, Kunio, 5,776,525, Cl. 426-36,000.
- Hirata, Nobutaka: *See—*
- Orito, Masaomi; Hirata, Nobutaka; Kimura, Satoshi; Asaka, Kazuo; and Uehara, Shigeo, 5,775,699, Cl. 273-371,000.
- Hirate, Takashi, to Amada America, Inc. Machine tool equipped with marking apparatus, 5,775,215, Cl. 101-4,000.
- Hirayama, Koichi; and Nakai, Masatoshi, to Kabushiki Kaisha Toshita. Multi-scene recording medium wherein related data segments of simultaneously proceeding scenes are recorded alternately and continuously thereon, 5,778,136, Cl. 386-52,000.
- Hirokane, Junji; Nakayama, Junichiro; Nakajima, Junsaku; Takahashi, Akira; and Ohta, Kenji, to Sharp Kabushiki Kaisha. Arrangement of magneto-optical recording medium which capable of reproducing an individual bit, 5,777,953, Cl. 369-13,000.
- Hirome, Masashi: *See—*
- Taniguchi, Kenji; Arai, Hidetoshi; Hirome, Masashi; and Furukawa, Keiichi, 5,778,188, Cl. 395-200,660.
- Hiromi, Keisuke: *See—*
- Ikematsu, Shinichi; Kawakami, Hiroshi; Nakano, Satoshi; Kouno, Tatsuya; Hiromi, Keisuke; and Yoshimoto, Masakazu, 5,775,998, Cl. 463-52,000.
- Hirose Electric Co., Ltd.: *See—*
- Tomioka, Shoichi, 5,775,923, Cl. 439-79,000.
- Hirose, Tsutomu: *See—*
- Kuma, Toshimi; Hirose, Tsutomu; and Kawakami, Yukito, 5,775,121, Cl. 62-314,000.
- Hirota, Kanji: *See—*
- Murakami, Yoshishige; Hirota, Kanji; and Kanzaki, Yoshiharu, 5,777,548, Cl. 340-506,000.
- Hirota Engineering Co., Ltd.: *See—*
- Kimura, Noboru, 5,775,197, Cl. 91-433,000.
- Hirschek, Herwig, to Autefa Maschinenfabrik GmbH. Process and device for packing pressed bales as well as packing material blank, 5,775,058, Cl. 53-399,000.
- Hisada, Hideki: *See—*
- Moroto, Shuzo; and Hisada, Hideki, 5,778,326, Cl. 701-22,000.
- Hitachi America, Ltd.: *See—*
- Boyce, Jill MacDonald, 5,778,143, Cl. 386-111,000.
- Hitachi Car Engineering Co., Ltd.: *See—*
- Ito, Takahashi; Fukatsu, Katsuaki; and Sugiura, Noboru, 5,775,310, Cl. 123-644,000.
- Hitachi Computer Peripherals Co., Ltd.: *See—*
- Nishimura, Hajime; Ichikawa, Atsushi; Yabe, Akio; and Yokoyama, Yuji, 5,777,952, Cl. 369-13,000.
- Hitachi Denshi Kabushiki Kaisha: *See—*
- Shimizu, Toshimichi; and Tanabe, Kazuhiro, 5,778,008, Cl. 371-25,100.
- Hitachi Device Engineering Co., Ltd.: *See—*
- Takahashi, Tsugio; Kitsukawa, Goro; Akiba, Takesada; Kawase, Yasushi; and Nakamura, Masayuki, 5,777,927, Cl. 365-189,010.
- Hitachi Koko Co., Ltd.: *See—*
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- Hitachi, Ltd.: *See—*
- Amada, Nobutaka; Takeuchi, Toshifumi; and Arai, Takao, 5,777,966, Cl. 369-59,000.
- Ando, Haru; and Hataoka, Nobuo, 5,777,614, Cl. 345-333,000.
- Arita, Setsuo; Ito, Tetsuo; Ohga, Yukiharu; Murata, Fumio; Higashikawa, Yuichi; Sato, Hideyuki; Kudo, Mitsuru; and Yamasawa, Yuuzi, 5,777,896, Cl. 364-550,000.
- Hiraoka, Chikara; Matsuno, Junichi; and Fukuda, Hiromitsu, 5,778,294, Cl. 399-329,000.
- Ito, Takahashi; Fukatsu, Katsuaki; and Sugiura, Noboru, 5,775,310, Cl. 123-644,000.
- Kawamura, Nobuo; Masai, Kazuo; Yamashita, Nobuyuki; and Nagai, Hiroshi, 5,778,388, Cl. 707-203,000.
- Kawasaki, Kazuhiro, 5,777,526, Cl. 333-1,000.
- Minowa, Toshimichi; Kimura, Hiroshi; Ishii, Junichi; Shiraishi, Takashi; and Ozaki, Naoyuki, 5,776,030, Cl. 477-109,000.
- Minowa, Toshimichi; Yoshida, Yoshiyuki; and Ishii, Junichi, 5,776,031, Cl. 477-155,000.
- Mizuno, Fumio, 5,777,327, Cl. 250-310,000.
- Nakamura, Atsushi; and Nishi, Kunihiko, 5,777,391, Cl. 257-778,000.
- Nemoto, Minehiro; Miyazaki, Hideki; and Sugawara, Yoshitaka, 5,777,865, Cl. 363-124,000.
- Okamoto, Hiroo; Oku, Masuo; Noguchi, Takaharu; and Arai, Takao, 5,778,140, Cl. 386-94,000.
- Ono, Takayuki; and Mori, Kiyotoshi, 5,777,902, Cl. 364-579,000.
- Shibata, Yoji; Takizawa, Masaaki; Matsushima, Hitoshi; Yoshikawa, Hiroshi; Yoshida, Atsuo; Ebihara, Toru; Furuya, Jun; Maruyama, Yukinobu; and Yamada, Takehiko, 5,777,663, Cl. 348-15,000.
- Sudo, Shigeyuki; Takahara, Yasuaki; and Tanaka, Toru, 5,778,314, Cl. 455-412,000.
- Sukegawa, Naonobu; Tarui, Tshiaki; Fujii, Hiroaki; and Akashi, Hideya, 5,778,429, Cl. 711-129,000.
- Takahashi, Tsugio; Kitsukawa, Goro; Akiba, Takesada; Kawase, Yasushi; and Nakamura, Masayuki, 5,777,927, Cl. 365-189,010.
- Takao, Kunihiko; Takebayashi, Masahiro; Endo, Yoshishige; Yoshitomi, Yuji; Machida, Shigeru; Tojo, Kenji; and Sekigami, Kazuo, 5,775,893, Cl. 418-55,200.
- Takihiro, Masatoshi; Murakami, Toshihiko; Fukushima, Hidehiro; Takada, Osamu; and Kimoto, Atsushi, 5,777,994, Cl. 370-395,000.
- Tani, Masayuki; Arai, Toshifumi; Tanikoshi, Koichiro; and Tanifuji, Shinya, 5,777,597, Cl. 345-133,000.
- Tobe, Akihiko; Nosaki, Hiroshi; Shinomoto, Manabu; and Miwa, Naoki, 5,778,224, Cl. 395-670,000.
- Tsukushi, Masanori; Ohshita, Yoichi; Natsui, Ken'ichi; Kamata, Yuzuru; Yano, Makoto; Yaginuma, Noriyuki; and Shiraishi, Katsuhiko, 5,777,842, Cl. 361-603,000.
- Wakagi, Masatoshi; Onisawa, Kenichi; Ando, Masahiko; Kaneko, Toshiaki; Minemura, Tetsuroh; and Okada, Tomohiro, 5,777,702, Cl. 349-47,000.
- Yamamoto, Mitsuyoshi; Kawasaki, Ikuya; Inayoshi, Hideo; Narita, Susumu; and Kubo, Masaharu, 5,778,237, Cl. 395-750,040.
- Hitachi Medical Corporation: *See—*
- Kamada, Kazushi; and Kondo, Shinichi, 5,776,067, Cl. 600-443,000.
- Hitachi Micro Systems, Inc.: *See—*
- Chung, Shine Chien, 5,777,917, Cl. 364-767,000.
- Hitachi Powdered Metals Co., Ltd.: *See—*
- Karaki, Mitsuhiro; Nozaki, Mikiya; Hakoima, Masato; and Midorikawa, Toshiaki, 5,776,866, Cl. 508-122,000.
- Hitachi Software Engineering Company, Ltd.: *See—*
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- Hitachi, Ltd.: *See—*
- Nishimura, Hajime; Ichikawa, Atsushi; Yabe, Akio; and Yokoyama, Yuji, 5,777,952, Cl. 369-13,000.

- Hitchiner, John A.: *See—*
- Kinney, Layton R.; and Hitchiner, John A., 5,775,819, Cl. 384-544,000.
- Hiyoshi, Yasumasa: *See—*
- Kato, Masatsugu; Sano, Shigeo; Kamibayashi, Atsushi; and Hiyoshi, Yasumasa, 5,775,155, Cl. 72-260,000.
- Hnizdor, Thomas A. Popping head attachment for artificial fly, 5,775,024, Cl. 43-42,370.
- Ho, Arthur: *See—*
- Nicolson, Paul Clement; Baron, Richard Carlton; Chabreck, Peter; Court, John; Domschke, Angelika; Griesser, Hans Jörg; Ho, Arthur; Höpken, Jens; Laycock, Bronwyn Glenice; Liu, Qin; Lohmann, Dieter; Meijs, Gordon Francis; Papaspiliotopoulos, Eric; Riffle, Judy Smith; Schindhelm, Klaus; Sweeney, Deborah; Terry, Wilson Leonard, Jr.; Vogt, Jürgen; and Winterton, Lynn Cook, 5,776,999, Cl. 523-106,000.
- Ho, Kam Wah, to Nova Chemicals Ltd. Polyesters from dilute dicyclopentadiene, 5,777,065, Cl. 528-272,000.
- Ho, Wingshun Wilson: *See—*
- Dehnert, James Craig; Hiranandani, Seema; Ho, Wingshun Wilson; and Leung, Lilian H., 5,778,212, Cl. 395-500,000.
- Hoag, Carol Anne: *See—*
- Gee, Ronald Paul; and Hoag, Carol Anne, 5,776,454, Cl. 424-70,500.
- Hochmuth, Peter. Goalkeeper's glove with improved finger fit, 5,774,896, Cl. 2-161,100.
- Hochmuth, Peter. Goalkeeper's glove with improved fingertip caps, 5,774,897, Cl. 2-161,100.
- Hockensmith, William L. Utility blade hitched to a vehicle, 5,775,012, Cl. 37-270,000.
- Hockey, Ronald L.; and Riechers, Douglas M., to Battelle Memorial Institute. Method and apparatus for detecting flaws in conductive material, 5,777,469, Cl. 324-240,000.
- Hodac, Hung; and Hussy, Karl, to Petri AG. Device for fastening an air bag housing comprising a housing bottom and a housing cover in the steering wheel, 5,775,725, Cl. 280-728,200.
- Hodges, Joe, to Micron Technology, Inc. UV light sensitive die-pac for securing semiconductor dice during transport, 5,775,510, Cl. 206-724,000.
- Hodgson, John Edward; and Lawlor, Elizabeth Jane, to SmithKline Beecham p.l.c. DNA encoding cysteinyl tRNA synthetase from *Staphylococcus aureus*, 5,776,749, Cl. 435-183,000.
- Hodgson, John Edward; and Lawlor, Elizabeth Jane, to SmithKline Beecham p.l.c. Alanine tRNA synthetase polynucleotides of staphylococcus, 5,776,750, Cl. 435-183,000.
- Hodgson, Simon Teanby: *See—*
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- Hodson, Simon K.: *See—*
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- Hoechst Aktiengesellschaft: *See—*
- Bühning, Dirk, 5,777,140, Cl. 554-92,000.
- Englert, Heinrich; Mania, Dieter; Hartung, Jens; Gögelein, Heinz; Kaiser, Joachim; Linz, Wolfgang; and Wettlaufer, David, 5,776,980, Cl. 514-586,000.
- Homung, Barbara; Wingen, Rainer; Morr, Michael; Löttsch, Detlef; and Heppke, Gerd, 5,776,363, Cl. 252-299,010.
- Jung, Siegfried; and Staendek, Horst, 5,776,992, Cl. 521-106,000.
- Kleber, Rolf, 5,776,206, Cl. 8-137,000.
- Naik, Ramachandra Ganapati; Mumbaikar, Vilas Narayan; Vasumathy, Rangarajan; Lakdawala, Aftab Dawoodbhai; Shirole, Mandakini Vithalrao; Lal, Bans; Blumbach, Jürgen; Weithmann, Klaus Ulrich; and Bartlett, Robert Ryder, 5,776,977, Cl. 514-532,000.
- Peiffer, Herbert; Mürschall, Ursula; and Dries, Thomas, 5,777,055, Cl. 526-348,100.
- Schumacher, Christian; Meier, Michael; and Russ, Werner Hubert, 5,777,111, Cl. 544-97,000.
- Hoechst Celanese Corporation: *See—*
- Dellinger, Allan Marcus, 5,776,838, Cl. 442-200,000.
- Hoechst Marion Roussel, Inc.: *See—*
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- Kosley, Raymond W., Jr.; Davis, Larry; and Taberna, Veronica, 5,777,108, Cl. 540-546,000.
- Strupczewski, Joseph T.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; Bordaue, Kenneth J.; Nemoto, Peter A.; and Tegeler, John J., 5,776,963, Cl. 514-373,000.
- Hoechst Research & Technology: *See—*
- Juneau, Kathleen Nelson; Vicari, Richard; and Murphy, Carl David, 5,777,129, Cl. 548-455,000.
- Hoechstaktiengesellschaft: *See—*
- Abel, Roland; and Wörner, Karl-Fred, 5,777,156, Cl. 560-245,000.
- Hofer, Donald Clifford: *See—*
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- Holden, Jerry Lee, to General Motors Corporation. Control arm alignment mechanism, 5,775,719, Cl. 280-661,000.
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- Holley, William Edward: *See—*
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- Hollinger, William A., Jr.: *See—*
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- Honda Giken Kogyo Kabushiki Kaisha: See—
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- Ichikawa, Katsuhisa; Kono, Masakatsu; Iriki, Kazunari; Kawabata, Tsuyoshi; Kuroiwa, Kenji; and Inui, Tsutomu, 5,775,437, Cl. 172-74.000.
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- Kamiyama, Tomoyuki; and Ishikawa, Yamato, 5,776,820, Cl. 438-574.000.
- Matsuda, Takahiro; and Teshima, Daihei, 5,776,028, Cl. 477-45.000.
- Miyasaka, Hajime; and Ikeda, Hideaki, 5,775,892, Cl. 418-55.200.
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- Honegger, Allen, to Wilson Greatbatch Ltd. Hermetic seal for an electrochemical cell, 5,776,632, Cl. 429-185.000.
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- Osterberg, David A.; and Davis, Lawrence P., 5,775,472, Cl. 188-378.000.
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- He, Xiaohua George, 5,777,872, Cl. 364-149.000.
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- Hong, Hyung-Ki: See—
Yun, Dong Hyun; Lee, Kyuchung; Kwon, Chul Han; and Hong, Hyung-Ki, 5,777,207, Cl. 73-31.050.
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- Horjo, Yutaka; and Omori, Kazumitsu, to Kabushiki Kaisha Meiki Seisakusho. Device for controlling temperature of a nozzle, 5,776,513, Cl. 425-143.000.
- Honma, Kenji: See—
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- Hons, Douglas Alvin: See—
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- Hoover, D. Lynn, to American Linc Corporation. Apparatus for imparting virtual twist to strand material and method of imparting same, 5,775,079, Cl. 57-59.000.
- Hoover, Richard D.; Borvca, Walter J.; and Hoying, Gary V., to Premark FEG L.L.C. Continuous-flow ware washing apparatus, 5,775,347, Cl. 134-56.00D.
- Höpken, Jens: See—
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- Hopkins, Robert E., II: See—
Teicher, Beverly A.; Rausch, Carl W.; and Hopkins, Robert E., II, 5,776,898, Cl. 514-6.000.
- Hoppe, Friedrich; and Engel, Heinz-Eckhard, to Hoppe Holding AG. Latch and lockset system, 5,775,745, Cl. 292-138.000.
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- Hopper, Steven P.; Stefanisin, Kimberly L.; and Svoboda, Ronald D., to C.P. Hall Company. The PVC sheet material having improved water-based coating receptivity, 5,777,014, Cl. 524-308.000.
- Horak, David V.: See—
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- Horibe, Ryusuke: See—
Ishibashi, Hiromichi; Shimada, Toshiyuki; Eda, Hiro, Yasuaki; Moriya, Mitsuru; Horibe, Ryusuke; and Miyachi, Hiroyuki, 5,777,967, Cl. 369-59.000.
- Horie, Katsuo: See—
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- Horie, Mikio: See—
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- Horie, Naoya; Nezu, Akira; and Imanishi, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. IC memory card having an improved engaging means for holding a battery holder, 5,777,316, Cl. 235-486.000.
- Horiata, Shuichi; and Akamatsu, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device capable of reading/writing data from/into arbitrary memory cell in an input/output compression test mode, 5,777,933, Cl. 365-201.000.
- Hori, Hiroyuki: See—
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- Horiike, Yoshio: See—
Tonooka, Masami; Horiike, Yoshio; and Watanabe, Mitutaka, 5,775,724, Cl. 280-728.200.
- Horinouchi, Syogo; Takeuchi, Shigeki; Yoshinaka, Hideki; Koga, Toshihiro; Higo, Kazuhiko; Kugisaki, Hidehiro; Beppu, Fumiaki; and Mimasu, Jiro, to Matsushita Electric Industrial Co., Ltd. Optical pickup incorporating an integrated optical guide member, 5,777,975, Cl. 369-112.000.
- Horiuchi, Kuniyasu: See—
Yokota, Masatoshi; Endo, Seijihiro; Moriyama, Keiji; and Horiuchi, Kuniyasu, 5,776,013, Cl. 473-377.000.
- Hormadaly, Jacob: See—
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- Horn, William E., Jr.: See—
Martin, Edward S.; Stinson, John M.; Cedro, Vito, III; and Horn, William E., Jr., 5,776,424, Cl. 423-593.000.
- Hornby, John C.: See—
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- Horner, Charles J., Jr.: See—
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- Horney, Kenneth; and Knowles, Thomas M., to Chrysler Corporation. Clamp device for attaching and positively orienting a vehicular component to a tubular member, 5,775,653, Cl. 248-230.800.
- Hornia, Lester; and Hornia, Osmany. Partnering game and method of playing same, 5,775,700, Cl. 273-459.000.
- Hornia, Osmany: See—
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- Hormung, Barbara; Wingen, Rainer; Morr, Michael; Löttsch, Detlef; and Heppke, Gerd, to Hoechst Aktiengesellschaft. Compounds having side chains with multiple methyl branches and their use in liquid-crystal mixtures, 5,776,363, Cl. 252-299.010.
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- Horion, Jacques: See—
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- Horska, Jana: See—
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- Horton, Paul L.: See—
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- Horton, Richard F., to Science Applications International Corporation. High etendue imaging fourier transform spectrometer, 5,777,736, Cl. 356-346.000.
- Horvath, Istvan T.: See—
Emert, Jacob; Horvath, Istvan T.; Schlosberg, Richard H.; Thaler, Warren A.; Young, David A.; and Zushma, Stephen, 5,777,041, Cl. 525-333.700.
- Horwich, Arthur L.: See—
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- Hosco Incorporated: See—
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- Hoshihara, Naoki; and Onodera, Kenzi, to Aisin Seiki Kabushiki Kaisha. Seat sliding mechanism provided with play mechanism, 5,775,662, Cl. 248-429.000.
- Hoshino, Akinori: See—
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- Hoshino, Kazuhiro: See—
Sumi, Hirofumi; Maeda, Keiichi; Sugano, Yukiyasu; Koyama, Kazuhide; Taguchi, Mitsuru; and Hoshino, Kazuhiro, 5,776,830, Cl. 438-643.000.
- Hoshino, Masahide: See—
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- Hoshino, Mitsunari: See—
Sasaki, Yasuhiko; Matsumura, Yukihiko; Imai, Susumu; Tooyama, Tetsuhiro; Orihara, Masamichi; Sugimoto, Yoshio; Yamazaki, Masaru; Hoshino, Mitsunari; Uchikawa, Masumasa; and Arai, Hiroshi, 5,776,484, Cl. 424-448.000.
- Hoshino, Tatsuo; and Sugisawa, Teruhide, to Roche Vitamins Inc. Aldehyde dehydrogenase enzyme, 5,776,742, Cl. 435-138.000.
- Hoshizaki America, Inc.: See—
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- Hosking, Steven Michael; and Simpson-Davis, Raymond William, to De La Rue International Limited. Sheet transfer member having at least one outwardly opening sheet-receiving slot and sheet withdrawal portion and apparatus including such a member, 5,775,682, Cl. 271-3.080.
- Hösler, Klaus: See—
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- Hosokawa, Takeshi: See—
Watanabe, Kenji; Kameda, Takanobu; Aida, Chieko; Shimmura, Tomoyuki; Toyosawa, Yoshiya; Kurashina, Hiroyasu; and Hosokawa, Takeshi, 5,778,161, Cl. 395-110.000.
- Hosono, Nagao: See—
Kageyama, Tetsuo; Yoshimura, Shigeru; Hanagata, Takayoshi; Hosono, Nagao; and Saito, Takashi, 5,777,639, Cl. 347-15.000.
- Hosoya, Hanuyuki: See—
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- Hosoya, Masakatsu: See—
Ota, Takashi; Hosoya, Masakatsu; and Yamazaki, Takashi, 5,777,978, Cl. 369-219.000.
- Hossain, Tim Z.; and Lowell, John K., to Advanced Micro Devices, Inc. Method and apparatus for the detection of light elements on the surface of a semiconductor substrate using x-ray fluorescence (XRF), 5,778,039, Cl. 378-45.000.
- Hotta, Harumichi; Iwamoto, Kazuhide; Torimura, Hiroyuki; and Chihana, Masanobu, to Yamaha Corporation. Electronic musical instrument with musical performance assisting system that controls performance progression timing, tone generation and tone muting, 5,777,251, Cl. 84-609.000.
- Hou, Liang-Yu; and Chuang, Kun-Huang. Instant hot water boiler structure, 5,775,267, Cl. 122-13.200.
- Houlahan, John A. Universal water and energy conservation system, 5,775,372, Cl. 137-624.120.
- Hourihan, Gweneth H. Location recorder process and assembly, 5,775,015, Cl. 40-495.000.
- House, Richard F.: See—
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- Hovis, Edward E.: See—
Cullen, D. Timothy; Hovis, Edward E.; and Marra, Joseph V., 5,776,343, Cl. 210-483.000.
- Hovland, Roy Sven: See—
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- Howard, Bruce Stanley: See—
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- Howard, John Avery: See—
Jackson, Richard C.; Howard, John Avery; Lada, Christopher O.; Minami, Donald S.; Hao-Jui, Lan; and Cheng-Liang, Tsai, 5,775,684, Cl. 271-9.070.
- Howe, Jack L., III: See—
Blackman, Kenneth R.; and Howe, Jack L., III, 5,778,358, Cl. 707-3.000.
- Blackman, Kenneth R.; and Howe, Jack L., III, 5,778,379, Cl. 707-103.000.
- Howe, William L.; and Alexander, John M., to ACC Automation Company. Shell molded article stripping machine, 5,776,520, Cl. 425-274.000.
- Howell, Glade: See—
Daugherty, Charles W.; Erskine, Timothy J.; and Howell, Glade, 5,776,113, Cl. 604-280.000.
- Howland, Robert S., to Advanced Spine Fixation Systems, Inc. Low-profile spinal fixation system, 5,776,134, Cl. 606-61.000.
- Howmedica Inc.: See—
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- Howser, Michael E. Connecting yoke apparatus, 5,775,668, Cl. 251-148.000.
- Hoying, Gary V.: See—
Hoover, Richard D.; Borvca, Walter J.; and Hoying, Gary V., 5,775,347, Cl. 134-56.00D.
- Hreha, Steven J.: See—
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- Hrusecky, David Allen: See—
Cheney, Dennis Phillip; Hrusecky, David Allen; and Stojancic, Mihailo M., 5,777,679, Cl. 348-401.000.
- HS Corporation: See—
Shin, Bong Sub; Lee, Jae Yeon; Kim, Dong Keun; Kim, Seoun Jun; and Cho, Sung Ok, 5,776,993, Cl. 521-140.000.
- HSC Research Development Corporation: See—
Tsui, Lap-Chee; Riordan, John R.; Collins, Francis S.; Rommens, Johanna M.; Iannuzzi, Michael C.; Kerem, Bat-Sheva; Drumm, Mitchell L.; and Buchwald, Manuel, 5,776,677, Cl. 435-6.000.
- Hsieh, Chu-Liung: See—
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- Hsieh, Chia-Dar; Shen, Yun-Hung; Pan, Sheng-Liang; and Liu, Jen Song, to Taiwan Semiconductor Manufacturing Company Ltd. Anti-corrosion etch process for etching metal interconnections extending over and within contact openings, 5,776,832, Cl. 438-669.000.
- Hsieh, Frank. Illuminating device having rotary switch, 5,775,800, Cl. 362-295.000.
- Hsieh, Shao Chung: See—
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- Iketani, Youzou: See—
Nakayama, Mikio; Tachibana, Tetsuo; Iketani, Youzou; Okuyama, Yuzo; and Makuma, Satoshi. 5,778,001, Cl. 370-516.000.
- Ikeyama, Shuichi; Koyama, Masaru; Miyake, Masayuki; and Senoo, Masaharu, to Takeda Chemical Industries, Ltd. DNA, polypeptides, monoclonal antibody and methods thereof. 5,776,727, Cl. 435-69.100.
- Ikoma, Kenji; and Arikita, Reiji, to Shima Seiki Manufacturing Limited. Cutting machine. 5,775,189, Cl. 83-76.100.
- Illinois Tool Works Inc.: See—
Merritt, Christopher R.; and Thorn, Robert M., 5,776,554, Cl. 427-478.000.
- Meyer, Charles. 5,775,860, Cl. 411-46.000.
- Ramsey, Ronald L.; and Share, Lawrence. 5,774,954, Cl. 24-587.000.
- Illumenex Corporation: See—
Van Tassel, Robert A., 5,776,174, Cl. 607-89.000.
- Ilmarinen, Antti, to Valmet Corporation. Method and apparatus for reducing wear of a belt mantle of an extended-nip roll. 5,775,564, Cl. 226-171.000.
- Imagine Ltd.: See—
Zur, Albert; and Sas, Benjamin. 5,777,576, Cl. 347-120.000.
- Imahashi, Takeshi, to Kyowa Chemical Industry Co., Ltd. Low-temperature-resistant, halogen-free, flame retardant polyolefin-based resin composition. 5,777,018, Cl. 524-397.000.
- Imai, Kiyoshi: See—
Edwards, Russell James; Funo, Masao; Abrams, Richard Wayne; Imai, Kiyoshi; Kitagawa, Hirokazu; Gundersen, Borge Peter; Holley, William Edward; Ravn, Thomas Christian; Schlagel, Mark Edward; and Wang, Daniel Tsu-Fang. 5,776,297, Cl. 156-379.000.
- Imai, Shinji, to Fuji Photo Film Co., Ltd. Thermal recording device. 5,777,655, Cl. 347-187.000.
- Imai, Susumu: See—
Sasaki, Yasuhiko; Matsumura, Yukihiko; Imai, Susumu; Tooyama, Tetsuhiro; Orihara, Masamichi; Sugimoto, Yoshio; Yamazaki, Masaru; Hoshino, Mitsunari; Uchikawa, Masumasa; and Arai, Hiroshi. 5,776,484, Cl. 424-448.000.
- Imamiya, Keniti: See—
Sugiyama, Yoshihisa; Iwata, Yoshihisa; and Imamiya, Keniti. 5,777,930, Cl. 365-189.110.
- Imamura, Yoshifumi: See—
Nagase, Hiroshi; Imamura, Yoshifumi; Ohno, Hiroshi; and Endo, Takashi. 5,776,945, Cl. 514-307.000.
- Imanaga, Eisuke, to Kabushiki Kaisha JNT. Method and apparatus for recharging batteries using a step shaped voltage pulse. 5,777,453, Cl. 320-22.000.
- Imanishi, Yoshiaki: See—
Horie, Naoya; Nezu, Akira; and Imanishi, Yoshiaki. 5,777,316, Cl. 235-486.000.
- ImaRx Pharmaceutical Corp.: See—
Unger, Evan C.; Fritz, Thomas A.; Matsunaga, Terry; Ramaswami, VaradaRajan; Yellowhair, David; and Wu, Guanli. 5,776,429, Cl. 424-9.520.
- Imataki, Hiroyuki: See—
Hiraoka, Mizuho; and Imataki, Hiroyuki. 5,776,575, Cl. 428-64.100.
- ImmuLogic Pharmaceutical Corporation: See—
Rogers, Bruce; Klapper, David G.; Rafnar, Thorunn; and Kuo, Meichang. 5,776,761, Cl. 435-252.300.
- Immunex Corporation: See—
Parnet, Patricia; and Sims, John E., 5,776,731, Cl. 435-69.100.
- Immuno Aktiengesellschaft: See—
Eibl, Johann; Philapitsch, Anton; and Schwarz, Hans Peter. 5,776,452, Cl. 424-94.640.
- Immunomedics, Inc.: See—
Goldenberg, Milton David. 5,776,093, Cl. 604-20.000.
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- Goldenberg, Milton David. 5,776,095, Cl. 604-20.000.
- IMPCO Technologies, Inc.: See—
Burrahni, Robert. 5,775,309, Cl. 123-575.000.
- Smith, David H.; and Mawle, Craig D., 5,775,599, Cl. 239-585.300.
- IMPLEX GmbH Spezialhergerte: See—
Leysieffer, Hans; and Lehner, Rolf. 5,776,144, Cl. 606-130.000.
- Implico B.V.: See—
Adams, Laurence Pentecost. 5,776,143, Cl. 606-130.000.
- INRA America, Inc.: See—
Akita, Tokihiko; and Frank, Andrew A., 5,775,782, Cl. 303-10.000.
- Sucha, Gregg D.; Fermann, Martin E.; and Harter, Donald J., 5,778,016, Cl. 372-38.000.
- Imra Material R&D Co., Ltd.: See—
Tsukahara, Makoto; Takahashi, Kunio; Mishima, Takahiro; Isomura, Akihito; Sakai, Tetsuo; Miyamura, Hiroshi; and Uehara, Itsuki. 5,776,626, Cl. 429-59.000.
- Imura, Satoshi: See—
Nagoh, Hironobu; Imura, Satoshi; and Kobayakawa, Takashi. 5,776,376, Cl. 252-586.000.
- INA Wälzlager Schaeffler KG: See—
Schmidt, Dieter; Eisenhardt, Günter; Geheeb, Norbert; Sailer, Peter; Engelhardt, Helmut; and Mayer, Wolfgang. 5,775,280, Cl. 123-90.410.
- Inaba, Minoru. Stereo camera. 5,778,268, Cl. 396-326.000.
- Inaba, Takuya: See—
Kanbe, Kazunari; Ishikawa, Takashi; Inaba, Takuya; and Katagiri, Masayoshi. 5,775,174, Cl. 74-542.000.
- Inada, Genji: See—
Shioya, Makoto; Tamura, Yasuyuki; Takahashi, Hiroto; Tachihara, Masayoshi; Yamamoto, Tadashi; Inada, Genji; Kimura, Tatsuo; and Ashiwa, Jun. 5,777,640, Cl. 347-15.000.
- Inagaki, Shinya: See—
Shukunami, Norifumi; and Inagaki, Shinya. 5,778,129, Cl. 385-127.000.
- Inagawa, Hideho, to Canon Kabushiki Kaisha. Printed circuit board. 5,777,277, Cl. 174-265.000.
- Inaishi, Kouji: See—
Ikami, Jun; and Inaishi, Kouji. 5,776,648, Cl. 430-120.000.
- Inamoto, Shigeyuki; Uchida, Masaaki; and Inamoto, Yukiko, to Teikoku Seiyaku Kabushiki Kaisha. Intravaginal preparation containing physiologically active peptide. 5,776,886, Cl. 514-2.000.
- Inamoto, Yukiko: See—
Inamoto, Shigeyuki; Uchida, Masaaki; and Inamoto, Yukiko. 5,776,886, Cl. 514-2.000.
- Inamura, Shinie: See—
Ueda, Yuichi; Inamura, Shinie; and Morisawa, Yukio. 5,777,430, Cl. 313-477.00R.
- Inano, Satoshi: See—
Ooe, Kazuichi; and Inano, Satoshi. 5,778,445, Cl. 711-167.000.
- Inary, Masato, to Mitsubishi Gas Chemical Company, Inc.; Toyo Boseki Kabushiki Kaisha; and Mizushima Aroma. Process for producing highly pure terephthalic acid by use of dispersion medium replacement apparatus. 5,777,161, Cl. 562-485.000.
- Inayoshi, Hideo: See—
Yamamoto, Mitsuyoshi; Kawasaki, Ikuya; Inayoshi, Hideo; Narita, Susumu; and Kubo, Masaharu. 5,778,237, Cl. 395-750.040.
- Inazuka, Toru; Nagao, Mitsuhiisa; and Takenaka, Takahiro, to Daikin Industries, Ltd. Compact air conditioner outdoor unit having high heat exchanging ability. 5,775,120, Cl. 62-259.100.
- Inbasekaran, Michael; Wu, Weishi; and Woo, Edmund P., to Dow Chemical Company, The. Process for preparing conjugated polymers. 5,777,070, Cl. 528-394.000.
- Incomm: See—
Smith, M. Brooks; and Wilkie, David M., 5,777,305, Cl. 235-380.000.
- Incyte Pharmaceuticals, Inc.: See—
Au-Young, Janice; and Hawkins, Phillip R., 5,776,732, Cl. 435-69.100.
- Bandman, Olga; and Coleman, Roger. 5,776,759, Cl. 435-226.000.
- Hillman, Jennifer L.; Goli, Surya K.; and Streeter, David G., 5,776,698, Cl. 435-69.100.
- Hillman, Jennifer L.; Shah, Purvi; and Corley, Neil C., 5,776,753, Cl. 435-796.000.
- Indena S.p.A.: See—
Bombardelli, Ezio. 5,777,136, Cl. 549-417.000.
- Indian Head Industries, Inc.: See—
Plantan, Ronald S.; and Choinski, Graydon. 5,775,202, Cl. 92-98.00R.
- Indorf, Wayne A.: See—
Popio, James A.; Turner, John L.; Macioce, Richard J.; Indorf, Wayne A.; Chen, Fu-Min; Olesky, Stanley J.; and Roth, Vladimir. 5,777,219, Cl. 73-146.000.
- Industri Ab Tizule: See—
Arvidsson, Jan-Ivar. 5,775,557, Cl. 224-310.000.
- Industrial Adhesives, Inc.: See—
Cyr, Gilles. 5,775,629, Cl. 242-551.000.
- Industrial Ceramics Limited: See—
Lawrence, Howard John. 5,775,269, Cl. 122-511.000.
- Industrial Research Limited: See—
Partridge, Ashton Cyril. 5,776,325, Cl. 204-518.000.
- Industrial Technology Research Institute: See—
Huang, Tzuen-Hsi; and Lee, Chwan-Ying. 5,776,813, Cl. 438-309.000.
- Ju, Jau-Jiu; Yang, Tsung-Ming; and Chang, Tsung-Kai. 5,777,803, Cl. 359-719.000.
- Industrias Monfel S.A. de C.V.: See—
Khramov, Mikhail. 5,777,157, Cl. 560-248.000.
- Infectech, Inc.: See—
Ollar, Robert A., 5,776,722, Cl. 435-29.000.
- Information Resource Engineering, Inc.: See—
Caputo, Anthony A.; and Amoroso, Victor P., 5,778,071, Cl. 380-25.000.
- Ingher, Donald E.: See—
Singhvi, Rahul; Kumar, Amit; Whitesides, George M.; Ingher, Donald E.; Lopez, Gabriel P.; Wang, Daniel I. C.; and Stephanopoulos, Gregory N., 5,776,748, Cl. 435-180.000.
- Ingersoll, David: See—

- Firsich, David W.; Ingersoll, David; and Delnick, Frank M., 5,776,384, Cl. 264-29.400.
- Ingersoll-Rand Company: See—
Sell, Leslie J., 5,775,199, Cl. 91-498.000.
- Ingvast, Hakan. Apparatus for purifying a fluid by vacuum treatment. 5,775,103, Cl. 60-453.000.
- Inhale Therapeutic Systems: See—
Patton, John S.; and Platz, Robert M., 5,775,320, Cl. 128-200.140.
- Inkrott, Kenneth E.: See—
Reed, Larry E.; Inkrott, Kenneth E.; and Shaw, James E., 5,777,188, Cl. 585-648.000.
- Innes, Mark E., to Eaton Corporation. Third phase reconstruction from a two current transformer sensor with three-phase true RMS and phase loss determination capabilities. 5,777,835, Cl. 361-93.000.
- InnoRatio Aktiengesellschaft für innovative umwelttechnische System i.G.R.: See—
Kardum, Iwe; and Ebner, Rudolf. 5,775,579, Cl. 232-43.100.
- Innovative Gaming Corporation of America: See—
Fentz, Barry W.; Olah, D. Brady; Lovely, Donald F.; and Hanscom, Cory James. 5,775,993, Cl. 463-17.000.
- Innvær, Reidar, to Elkem ASA. Self-baking carbon electrode. 5,778,021, Cl. 373-89.000.
- Ino, Yoshihiro; Yoshida, Tetsuo; Fuda, Yoshiaki; Wako, Naoki; Kumasaka, Katsunori; and Shiotani, Hutoshi, to Tokin Corporation. Voltage converter for use with a piezoelectric transformer. 5,777,425, Cl. 310-359.000.
- Inogai, Kazunori, to Matsushita Electric Industrial Co., Ltd. Comb filter with a smaller number of delay elements. 5,777,908, Cl. 364-724.100.
- Inokuchi, Tatsuya: See—
Tsukatani, Shigeki; Inokuchi, Tatsuya; and Ito, Hiroyuki. 5,778,257, Cl. 395-894.000.
- Inoue, Eiji, to Denso Corporation. Dual zone air conditioning apparatus with sealing portions on partition wall. 5,775,407, Cl. 165-42.000.
- Inoue, Hiroshi: See—
Mihara, Tadashi; Inoue, Hiroshi; Mizutome, Atsushi; Tsuboyama, Akira; Taniguchi, Osamu; and Onitsuka, Yoshihiro. 5,777,592, Cl. 345-94.000.
- Inoue, Masahiro: See—
Takeuchi, Tatsuo; Inoue, Masahiro; and Ishizuka, Jiro. 5,776,543, Cl. 427-258.000.
- Inoue, Michio: See—
Niwa, Minoru; Muramatsu, Kimio; Kanai, Makoto; Inoue, Michio; Mizutani, Junichi; Kanto, Takanori; and Yamamoto, Tadashi. 5,775,728, Cl. 280-728.300.
- Inoue, Sadayuki: See—
Ishimoto, Junko; Inoue, Sadayuki; and Kumano, Makoto. 5,778,138, Cl. 386-68.000.
- Inoue, Satoshi: See—
Sato, Hiedaki; Tanaka, Masaaki; Honda, Shin; Fujiwara, Kenichi; and Inoue, Satoshi. 5,775,126, Cl. 62-480.000.
- Inoue, Shingo; Hattori, Tetsuo; and Esaki, Sampei, to Nikon Corporation. Compact projection apparatus for generating high-quality images. 5,777,696, Cl. 348-752.000.
- Inoue, Shinichi, to Sony Corporation. Analog/digital and digital/analog converting apparatus. 5,777,568, Cl. 341-138.000.
- Inoue, Shinji; Kakiuchi, Takashi; Nakamura, Hiroki; Waki, Hiroyuki; and Oashi, Masahiro, to Matsushita Electric Industrial Co., Ltd. Electronic document retrieval and display system and method of retrieving electronically stored documents. 5,778,352, Cl. 707-1.000.
- Inoue, Tetsutaro: See—
Yamazaki, Toshio; Wakana, Shigeaki; Nagai, Satoshi; and Inoue, Tetsutaro. 5,776,596, Cl. 428-212.000.
- Inoue, Yoshiyuki; and Miyazaki, Takashi, to Fujitsu Limited. Device for fault localization in repeaterless transmission system. 5,778,117, Cl. 385-24.000.
- Inoue, Yoshiyuki: See—
Kawasaki, Toyotoshi; Suzuki, Shinichi; and Inoue, Yoshiyuki. 5,778,271, Cl. 396-532.000.
- Instent, Inc.: See—
Globerman, Oren. 5,776,161, Cl. 606-194.000.
- Institut Français Du Pétrole: See—
Chaumette, Patrick; Boucot, Pierre; and Morel, Frédéric. 5,776,988, Cl. 518-715.000.
- Durando, Pierre. 5,775,879, Cl. 417-45.000.
- Duret, Pierre; and Colliou, Thierry. 5,775,274, Cl. 123-73.00A.
- Marion, Marie-Claire; Viltard, Jean-Charles; Travers, Philippe; Harter, Isabelle; and Forestiere, Alain. 5,776,320, Cl. 203-29.000.
- Institut Pasteur: See—
Guesdon, Jean-Luc; and Thierry, Dominique. 5,776,693, Cl. 435-6.000.
- Institute of Occupational Safety and Health, Council of Labor Affairs: See—
Wu, Shih-Hsiung; Gau, Chung-Yun; Hsu, Yeh-Liang; and Tsay, Huoy-Shyi. 5,774,900, Cl. 2-411.000.
- Institute of Space and Astronautical Science, The Director-General of the: See—
Kawaguchi, Junichiro; Hashimoto, Tatsuki; and Morita, Yasuhiro. 5,775,094, Cl. 60-204.000.
- Integrated Device Technology, Inc.: See—
Lien, Chuen-Der. 5,777,510, Cl. 327-565.000.
- Integrated Surgical Systems, Inc.: See—
Sahay, Alind; and Yeh, Zhenghao. 5,776,136, Cl. 606-79.000.
- Intel Corporation: See—

- Abramson, Jeffrey M.; Konigsfeld, Kris G.; and Vidwans, Rohit A., 5,778,220, Cl. 395-591.000.
- Agarwal, Rohit. 5,778,190, Cl. 395-200.770.
- Bhattacharyya, Bidyut K.; Mallik, Debendra; Vitt, Ron; and Kline, David B., 5,777,265, Cl. 174-52.400.
- Brennan, Bob. 5,778,246, Cl. 395-800.230.
- Gafken, Andrew H., 5,778,412, Cl. 711-5.000.
- Gargiulo, Richard R., 5,775,951, Cl. 439-640.000.
- Glew, Andrew F.; Hinton, Glenn J.; Papworth, David B.; Fetterman, Michael Alan; Colwell, Robert P.; and Pollack, Frederick Jay. 5,778,407, Cl. 711-2.000.
- Henstrom, Alexander P.; and Martell, Robert W., 5,778,210, Cl. 395-394.000.
- Light, John. 5,778,363, Cl. 707-5.000.
- Loder, William G.; and McMahon, John Francis. 5,777,345, Cl. 257-777.000.
- Massie, Harold L.; and Johnston, G. Mark. 5,777,461, Cl. 323-282.000.
- Mattison, Phillip E., 5,778,070, Cl. 380-25.000.
- Merchant, Amit A., 5,778,438, Cl. 711-146.000.
- Munson, Bill A., 5,777,624, Cl. 345-431.000.
- Nickerson, Brian R., 5,778,097, Cl. 382-236.000.
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- Rhodehamel, Michael W.; Sarangdhar, Nitin V.; and Fisch, Matthew A., 5,778,441, Cl. 711-154.000.
- Simon, Allen Henry. 5,778,207, Cl. 395-376.000.
- Skarbo, Rune A.; and Kaufman, Peter J., 5,778,053, Cl. 379-93.210.
- Valentine, Robert. 5,778,408, Cl. 711-3.000.
- Vidwans, Rohit A.; McCullough, Wesley D.; Huang, Joel; and Rohlman, Joseph F., 5,777,928, Cl. 365-189.050.
- Intellon Corporation: See—
Vander Mey, James E.; and Denton, Bruce A., 5,777,544, Cl. 340-310.060.
- Intelpros: See—
Park, Kwang Ho. 5,777,698, Cl. 348-809.000.
- Intergraph Corporation: See—
Jordan, David A., 5,778,227, Cl. 395-682.000.
- INTERLEGO AG: See—
Pedersen, Lars. 5,775,969, Cl. 446-110.000.
- Intermec Corporation: See—
Liu, Lingnan; and Shimizu, Mark Yukio. 5,777,310, Cl. 235-462.000.
- Maltsev, Pavel A.; and Ackley, H. Sprague. 5,777,309, Cl. 235-462.000.
- Shimizu, Mark Yukio; and Liu, Larry Lingnan. 5,777,308, Cl. 235-462.000.
- International Business Machines Corporation: See—
Aaker, Kenneth Dale; Behrens, Louis Edward; Culbertson, Bruce Richard; Kiel, Harvey Gene; Nelson, Eric John; Okimoto, Shohji; and Amell, Steven Joseph. 5,777,630, Cl. 345-507.000.
- Afzali-Ardakani, Ali; and Buchwalter, Stephen Leslie. 5,776,370, Cl. 252-500.000.
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- Barr, Roger Lawrence; and Couillard, Patrick J., 5,776,645, Cl. 430-22.000.
- Bates, Cary L.; and Day, Paul R., 5,777,616, Cl. 345-339.000.
- Batson, Kevin A.; and Ross, Robert A., Jr., 5,778,428, Cl. 711-128.000.
- Baylor, Sandra Johnson; and Hsu, Yarsun. 5,778,437, Cl. 711-141.000.
- Beer, John Carl; Cline, Troy Lee; Poston, Ricky Lee; and Werner, Jon Harald. 5,778,401, Cl. 707-514.000.
- Besaw, Keith Vernon; Donovan, Robert John; Haugen, Patrick Todd; Hessler, Mark Jonathan; Lipasti, Mikko Herman; and Roediger, Robert Ralph. 5,778,233, Cl. 395-709.000.
- Blackman, Kenneth R.; and Howe, Jack L., III. 5,778,358, Cl. 707-3.000.
- Blackman, Kenneth R.; and Howe, Jack L., III. 5,778,379, Cl. 707-103.000.
- Blaum, Mario; Bruck, Jehoshua; Pestoni, Florian; Safar, Felix Gustavo Emilio; and Sanz, Jorge L. C., 5,778,011, Cl. 371-37.400.
- Blea, Donald Reynold; Kern, Ronald Maynard; McBride, Gregory Edward; and Shackelford, David Michael. 5,778,393, Cl. 707-205.000.
- Boyer, Philip L.; Carey, Michael James; and Kiernan, Gerald G., 5,778,355, Cl. 707-2.000.
- Canora, Frank J.; Nunnery, William Burrell; Ponnappalli, Saila; Oakley, Brian Scott; and Oprysko, Modest Michael. 5,777,583, Cl. 343-700.00S.
- Carper, James L.; Irish, Gary H.; Rieley, Sheldon C.; Smith, Robert M.; and Jackson, Robert L., 5,776,801, Cl. 438-123.000.
- Cases, Moises; and Hinedi, Fahd. 5,777,490, Cl. 326-68.000.
- Chan, Hoi Yeung; Groszof, Benjamin Nathan; and Levine, David William. 5,778,150, Cl. 395-10.000.

- Chan, Kin Shing; Chuang, Chiao-Mei; Dhong, Sang Hoo; and Marchioro, Alessandro, 5,777,918, Cl. 364-786.040.
Cheney, Dennis Phillip; Hruscky, David Allen; and Stojancic, Mihailo M., 5,777,679, Cl. 348-401.000.
Chieu, Trieu Can; Cofino, Thomas Anthony; Heinrich, Harley Kent; Sousa, Paul Jorge; and Zai, Li-Cheng Richard, 5,777,561, Cl. 340-825.540.
Chiu, George Liang-Tai; Cipolla, Thomas Mario; Doany, Fuad Elias; Dove, Derek Brian; Rosenbluth, Alan Edward; Singh, Rama Nand; and Wilczynski, Janusz Stanislaw, 5,777,789, Cl. 359-494.000.
Chu, Albert M.; and Piro, Ronald A., 5,777,504, Cl. 327-379.000.
Clark, Scott Douglas; Edwards, Michael Kay; and Moertl, Daniel Frank, 5,778,255, Cl. 395-888.000.
Crabbé, Emmanuel; Meyerson, Bernard Steele; Stork, Johannes Maria Cornelis; and Verdonck-Vandebroek, Sophie, 5,777,364, Cl. 257-347.000.
Cragun, Brian John, 5,775,493, Cl. 206-308.300.
Dang, Chi-Hung; and Dang, Chi-Thanh, 5,778,374, Cl. 707-101.000.
Dorius, Lee K., 5,777,825, Cl. 360-103.000.
Dunham, Scott Neil, 5,778,197, Cl. 395-284.000.
Eickemeyer, Richard James; Malik, Nadeem; and Saha, Avijit, 5,778,208, Cl. 395-379.000.
Fisher, James Arthur; Gallo, Frank David; and Kishi, Gregory Tad, 5,778,391, Cl. 707-204.000.
Folker, Donald Victor; Malik, Randhir Singh; and Rowland, Robert Sterling, 5,777,539, Cl. 336-200.000.
Freedenberg, Candace Joy; Herring, Frederick Albert; and Ziemins, Uldis Artis, 5,777,798, Cl. 359-676.000.
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Haakey, Mark C.; Holmes, Steven J.; Horak, David V.; and Ma, William H., 5,776,660, Cl. 430-296.000.
Hauser, Ralf; Janson, Philippe; Molva, Refik; Tsudik, Gene; and Van Herreweghen, Elsie, 5,778,065, Cl. 380-21.000.
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Herrick, Thomas R.; Lenharth, Scott A.; and Wadood, Syed A., 5,778,222, Cl. 395-609.000.
Hwang, Wei; and Lai, Fang-Shi, 5,777,491, Cl. 326-113.000.
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Kimura, Atsuo, 5,777,713, Cl. 349-156.000.
Lehr, Theodore Franklin, 5,777,622, Cl. 345-428.000.
Linzer, Elliot Neil; West, Roderick Michael Peters; and Westerink, Peter Hans, 5,777,677, Cl. 348-397.000.
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McGarvey, John Ryan, 5,777,989, Cl. 370-254.000.
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Pierson, Mark Vincent; Arndt, Steven F.; Gaynes, Michael Anthony; Cutting, Lawrence Richard; and Stone, David Brian, 5,777,705, Cl. 349-73.000.
Rubin, Bradley Scott, 5,778,378, Cl. 707-103.000.
Schiefer, Bernhard; and Swami, Arun Narasimha, 5,778,353, Cl. 707-2.000.
Selker, Edwin Joseph, 5,777,704, Cl. 349-58.000.
Shirai, Masaharu; and Tsukada, Yutaka, 5,776,662, Cl. 430-313.000.
Starr, Stephen George; Kutt, John Conrad; and Zalokar, Robert Henry, Jr., 5,776,790, Cl. 438-6.000.
Swanberg, Randal Craig; and Williams, Michael Stephen, 5,778,443, Cl. 711-162.000.
Temple, Joseph L., 5,778,221, Cl. 395-591.000.
Tsuchida, Hiroyasu; Aoyagi, Akihiko; and Endo, Tatsuya, 5,777,826, Cl. 360-104.000.
Velissaropoulos, T. Dora; and Shum, Peter K., 5,778,223, Cl. 395-611.000.
Voldman, Steven H.; and Wallash, Albert J., 5,777,829, Cl. 360-128.000.
Wei, Yi-Hsiu, 5,778,228, Cl. 395-684.000.
Wu, Leon Li-Heng, 5,777,385, Cl. 257-712.000.
International Computers Limited: See—
Eaton, John Richard, 5,778,193, Cl. 395-200.810.
International Paper Company: See—
Volpe, Raymond A.; and Lucas, Paul C., 5,776,565, Cl. 428-34.200.
International Superconductivity Technology Center: See—
Usami, Ryo; Isawa, Kazuyuki; Kubota, Hiroshi; Puzniak, Roman; Yamauchi, Hisao; and Tanaka, Shoji, 5,776,862, Cl. 505-125.000.
Intertactile Technologies Corporation: See—
Jaeger, Denny, 5,777,603, Cl. 345-172.000.
Interventional Innovations Corporation: See—
Forman, Michael R., 5,776,100, Cl. 604-102.000.
Intihar, Frank: See—
Ciccione, Vince; and Intihar, Frank, 5,776,517, Cl. 425-168.000.
Inui, Tsutomu: See—
Ichikawa, Katsuhisa; Kono, Masakatsu; Iriki, Kazunari; Kawabata, Tsuyoshi; Kuroiwa, Kenji; and Inui, Tsutomu, 5,775,437, Cl. 172-74.000.
Inukai, Hidekatsu; and Ogura, Toshihiko, to Colin Corporation, Blood pressure monitor apparatus, 5,776,071, Cl. 600-493.000.
Inuzuka, Kazuko; Ohshima, Shigeo; and Nagaba, Katsushi, to Kabushiki Kaisha Toshiba, Semiconductor memory circuit equipped with a column addressing circuit having a shift register, 5,777,946, Cl. 365-240.000.
Inuzuka, Masato: See—
Yamada, Wazo; Maeda, Hideo; Yoshida, Yoshinori; Okamoto, Yoshimi; Seki, Koichiro; Ohno, Keiko; Inuzuka, Masato; and Takayama, Hideyuki, 5,775,119, Cl. 62-259.100.
Invacare Corporation: See—
Obitts, Shane, 5,775,352, Cl. 135-69.000.
Iomega Corporation: See—
Adams, Phillip M.; Holmstrom, Larry W.; Jacob, Steve A.; Powell, Steven H.; Condie, Robert F.; and Culley, Martin L., 5,778,226, Cl. 395-681.000.
Ip, Matthew W., to I/O Sensors, Inc. Sensor structure with L-shaped spring legs, 5,777,226, Cl. 73-514.240.
Iqbal, Mohamed: See—
Lewis, Michael E.; Kauer, James C.; Smith, Kevin R.; Callison, Kathleen V.; Baldino, Frank; Neff, Nicola; and Iqbal, Mohamed, 5,776,897, Cl. 514-12.000.
Ireton, Mark A., to Advanced Micro Devices, Inc. Dispersed impulse generator system and method for efficiently computing an excitation signal in a speech production model, 5,778,337, Cl. 704-223.000.
Irie, Nobuaki; Ishida, Takao; Hashimoto, Akiyoshi; and Yoshimura, Yasutomi, to Hirano Tecseed Co., Ltd. Duplex type coating apparatus and coating system, 5,776,251, Cl. 118-411.000.
Irie, Nobuhiko, to Mitsubishi Jukogyo Kabushiki Kaisha, Apparatus for loading of green tire on bladderless tire vulcanizer, 5,776,508, Cl. 425-36.000.
Iriki, Kazunari: See—
Ichikawa, Katsuhisa; Kono, Masakatsu; Iriki, Kazunari; Kawabata, Tsuyoshi; Kuroiwa, Kenji; and Inui, Tsutomu, 5,775,437, Cl. 172-74.000.
Irish, Gary H.: See—
Carper, James L.; Irish, Gary H.; Rieley, Sheldon C.; Smith, Robert M.; and Jackson, Robert L., 5,776,801, Cl. 438-123.000.
Isawa, Kazuyuki: See—
Usami, Ryo; Isawa, Kazuyuki; Kubota, Hiroshi; Puzniak, Roman; Yamauchi, Hisao; and Tanaka, Shoji, 5,776,862, Cl. 505-125.000.
Iscar Ltd.: See—
Wentheim, Rafael, 5,775,854, Cl. 407-11.000.
Isco, Inc.: See—
Nabity, Frederick Alan; Fritz, Larry Lee; Carson, Douglas Timothy; and Setter, Ralph, 5,777,892, Cl. 364-510.000.
Ish, Mark; and Giovannetti, Federico, to ECCS, Inc. Method and apparatus for computer disk cache management, 5,778,430, Cl. 711-133.000.
Ishibashi, Hiromichi; Shimada, Toshiyuki; Edahiro, Yasuaki; Moriya, Mitsuru; Horibe, Ryusuke; and Miyachi, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Optical disk device, 5,777,967, Cl. 369-59.000.
Ishida, Hiroshi; and Ooiwa, Tooru, to Nippondenso Co., Ltd. Alternator for vehicle, 5,777,407, Cl. 310-64.000.
Ishida, Nobuhisa: See—
Takada, Shinsaku; Fujimoto, Hisayoshi; Ishida, Nobuhisa; Ema, Yasushi; Amano, Toshio; and Shimokata, Akihiro, 5,777,637, Cl. 347-12.000.
Ishida, Takao: See—
Irie, Nobuaki; Ishida, Takao; Hashimoto, Akiyoshi; and Yoshimura, Yasutomi, 5,776,251, Cl. 118-411.000.
Ishigaki, Yoshiyuki; and Tsutsumi, Kazuhito, to Mitsubishi Denki Kabushiki Kaisha, Semiconductor memory device and method of manufacturing the same, 5,777,920, Cl. 365-154.000.
Ishiguro, Kazuyoshi; Noda, Masuo; Kataoka, Hiroshi; and Iwama, Shinji, to Kabushiki Kaisha Tokai Rika Denki Seisakusho; and Denso Corporation, Push-button switch, 5,777,282, Cl. 200-5.00E.
Ishihara, Yasunobu: See—
Hagishita, Sanji; Kamata, Susumu; Seno, Kaoru; Haga, Nobuhiko; and Ishihara, Yasunobu, 5,776,929, Cl. 514-221.000.
Ishii, Izumi: See—
Nagai, Takayuki; Jagawa, Yasutoshi; Nishio, Takeyoshi; Zanka, Yukihiro; Tsutsumi, Ikuo; Ishii, Izumi; Sato, Hiroki; and Sano, Hironari, 5,777,020, Cl. 524-451.000.
Ishii, Junich: See—
Minowa, Toshimichi; Kimura, Hiroshi; Ishii, Junich; Shiraishi, Takashi; and Ozaki, Naoyuki, 5,776,030, Cl. 477-109.000.
Ishii, Junichi: See—
Minowa, Toshimichi; Yoshida, Yoshiyuki; and Ishii, Junichi, 5,776,031, Cl. 477-155.000.

- Ishii, Masayuki: See—
Ihara, Tomohiko; Ishii, Masayuki; and Yoshino, Hiroshi, 5,776,419, Cl. 422-177.000.
Ishii, Tomomi, to Kabushiki Kaisha Kyokuto, Apparatus for removing electrode tip from welding tool with vibrations, 5,774,978, Cl. 29-821.000.
Ishii, Yoshiyuki: See—
Osawa, Toshiaki; Obinata, Masuo; Ishii, Yoshiyuki; and Kobayashi, Yoshio, 5,776,446, Cl. 424-85.100.
Ishikawa, Atsuyumi: See—
Kawanabe, Takashi; Mukaida, Hideaki; Gotoh, Masanori; Tohya, Yoshinori; Kobayashi, Masahiro; Ishikawa, Atsuyumi; and Hara, Yoshitaka, 5,775,413, Cl. 165-151.000.
Ishikawa, Eiichi: See—
Suganaga, Toshifumi; and Ishikawa, Eiichi, 5,776,825, Cl. 438-618.000.
Ishikawa, Masami: See—
Watanabe, Keiji; Yano, Ei; Namiki, Takahisa; Yano, Keiko; Maruyama, Takashi; Nakamura, Tomio; Shimizu, Shigeru; Saitoh, Takashi; Uzawa, Masashi; and Ishikawa, Masami, 5,776,659, Cl. 430-296.000.
Ishikawa, Masato: See—
Okuda, Sadanao; Ishikawa, Masato; Suzuki, Takashi; and Hayashi, Yoshihiro, 5,776,232, Cl. 106-31.260.
Ishikawa, Naoto: See—
Kimura, Akihiko; Takada, Atsushi; and Ishikawa, Naoto, 5,776,756, Cl. 435-189.000.
Ishikawa, Takashi: See—
Kanbe, Kazunari; Ishikawa, Takashi; Inaba, Takuya; and Katagiri, Masayoshi, 5,775,174, Cl. 74-542.000.
Ishikawa, Tsutomu: See—
Ikeda, Osamu; Nagasawa, Naobumi; Ishikawa, Tsutomu; and Tsukishashi, Akira, 5,777,955, Cl. 369-32.000.
Ishikawa, Yamato: See—
Kamiyama, Tomoyuki; and Ishikawa, Yamato, 5,776,820, Cl. 438-574.000.
Ishikawa, Yasuaki, to Nikon Corporation, Binoculars, 5,777,785, Cl. 359-425.000.
Ishikawajima-Harima Heavy Industries Co., Ltd.: See—
Goto, Osamu; and Kimura, Koji, 5,775,409, Cl. 165-101.000.
Ishimori, Yoshio: See—
Hashimoto, Koji; Ito, Keiko; Ishimori, Yoshio; and Gotoh, Masanori, 5,776,672, Cl. 435-6.000.
Ishimoto, Junko; Inoue, Sadayuki; and Kumano, Makoto, to Mitsubishi Denki Kabushiki Kaisha, Magnetic recording and reproduction apparatus for preventing fixed pattern noise from appearing in a reproduced image when reproducing at high speed, 5,778,138, Cl. 386-68.000.
Ishiwata, Kazuya: See—
Masaki, Yuichi; Ishiwata, Kazuya; Suzuki, Masaaki; and Yokoyama, Yoko, 5,777,707, Cl. 349-110.000.
Ishizawa, Yoshinori: See—
Tanji, Isamu; and Ishizawa, Yoshinori, 5,775,201, Cl. 92-85.00R.
Ishizuka, Jiro: See—
Takeuchi, Tatsuo; Inoue, Masahiro; and Ishizuka, Jiro, 5,776,543, Cl. 427-258.000.
Ishizuki, Akihiro: See—
Tanaka, Akira; Tazaki, Satoshi; Sakamoto, Kei; Yoneda, Yasuhiro; Yokouchi, Kishio; Mizutani, Daisuke; and Ishizuki, Yoshikatsu, 5,777,068, Cl. 528-353.000.
Ish-Shalom, Ariel J.: See—
Galtzur, Sharon; and Ish-Shalom, Ariel J., 5,778,394, Cl. 707-205.000.
ISIS Pharmaceuticals, Inc.: See—
Cook, Phillip Dan; and Sanghvi, Yogesh Shantilal, 5,777,092, Cl. 536-23.100.
Islam, Mohammed N. Sagnac raman amplifiers and cascade lasers, 5,778,014, Cl. 372-6.000.
Isobe, Takashi; Miyashita, Kotaro; and Mutoh, Hirofumi, to Honda Giken Kogyo Kabushiki Kaisha, Evaporative fuel-processing system for internal combustion engines, 5,775,307, Cl. 123-520.000.
Isobe, Tomohisa: See—
Endo, Toshio; Fujiwa, Takaaki; Isobe, Tomohisa; and Watanabe, Kazushi, 5,777,027, Cl. 525-58.000.
Isobe, Yoshinori: See—
Murakami, Koichi; Sugita, Shigeru; Sato, Masaaki; Isobe, Yoshinori; Miyake, Norifumi; and Tsujino, Hiromichi, 5,778,300, Cl. 399-403.000.
Isomura, Akihito: See—
Tsukahara, Makoto; Takahashi, Kunio; Mishima, Takahiro; Isomura, Akihito; Sakai, Tetsuo; Miyamura, Hiroshi; and Uehara, Itsuki, 5,776,626, Cl. 429-59.000.
Isopp, Gottfried: See—
Waesche, Franz; Heep, Dieter; Winkhardt, Guido; and Isopp, Gottfried, 5,775,851, Cl. 406-14.000.
ISP Investments Inc.: See—
Narayanan, Kolazi S., 5,776,856, Cl. 504-116.000.
Seiwatz, Henry; Listl, Carl A.; Donahue, J. Michael; and Lewis, David F., 5,777,341, Cl. 250-474.100.
Shih, Jenn S.; Srinivas, Bala; and Hornby, John C., 5,776,879, Cl. 510-361.000.
Issa, Nabil M.: See—
Binienda, Gary J.; Issa, Nabil M.; Dourra, Hans; Drutis, Spyros E.; and Halawi, Samer H., 5,777,211, Cl. 73-53.050.
Isuzu Motors Limited: See—

- Hirahara, Hideto; Kano, Masaaki; Higuchi, Minoru; and Hosoya, Haruyuki, 5,775,448, Cl. 180-24.020.
Itami, Satoshi; Nakahara, Masaru; Nakada, Masahiro; Suzuki, Hiroshi; and Utsumi, Kenichi, to Fujitsu Limited, Optical disk having an erased-state indicator and optical disk apparatus for reducing frequency of disk-erasing operations, 5,777,965, Cl. 369-58.000.
Itani, Kazunori; Kihara, Kouhei; and Iijima, Shogo, to Aloka Co., Ltd. Physiological tissue treatment apparatus, 5,776,414, Cl. 422-67.000.
Ito, Hiroaki: See—
Murakami, Koyo; Ito, Hiroaki; and Narasaki, Tetsuji, 5,776,570, Cl. 428-36.800.
Ito, Hiroshi: See—
Fujii, Kunihiro; and Ito, Hiroshi, 5,776,822, Cl. 438-586.000.
Ito, Hiroyuki: See—
Tsukatani, Shigeki; Inokuchi, Tatsuya; and Ito, Hiroyuki, 5,778,257, Cl. 395-894.000.
Ito, Keiko: See—
Hashimoto, Koji; Ito, Keiko; Ishimori, Yoshio; and Gotoh, Masanori, 5,776,672, Cl. 435-6.000.
Ito, Kenzo: See—
Tokue, Wataru; Ito, Kenzo; and Tominaga, Naoki, 5,776,438, Cl. 424-59.000.
Ito, Nobuyasu, to Canon Kabushiki Kaisha, Data outputting with control of number of gradations expressed, 5,778,159, Cl. 395-109.000.
Ito, Osamu: See—
Kubota, Shizuo; Ito, Osamu; and Miyamoto, Hiroyuki, 5,776,989, Cl. 521-48.000.
Ito, Seishi: See—
Goto, Toshio; Ito, Seishi; Minegishi, Natsuko; Yamaoka, Tatsuya; Ueno, Chieko; Moriya, Koichi; Maurer, Fritz; and Watanabe, Ryo, 5,776,858, Cl. 504-225.000.
Ito, Tadami: See—
Otsuki, Tetsuya; and Ito, Tadami, 5,777,380, Cl. 257-675.000.
Ito, Takahashi; Fukatsu, Katsuki; and Sugiyama, Noboru, to Hitachi, Ltd.; and Hitachi Car Engineering Co., Ltd. Ignition device for an internal combustion engine, 5,775,310, Cl. 123-644.000.
Ito, Takeshi; Tauc, Jun; and Maebashi, Kosei, to Yamaha Hatsudoki Kabushiki Kaisha, Multiple cylinder engine control, 5,775,299, Cl. 123-436.000.
Ito, Tetsuo: See—
Arita, Setsuo; Ito, Tetsuo; Ohga, Yukiharu; Murata, Fumio; Higashikawa, Yuichi; Sato, Hideyuki; Kudo, Mitsuru; and Yamasawa, Yuuzi, 5,777,896, Cl. 364-550.000.
Ito, Toshikazu: See—
Yada, Yukihiko; and Ito, Toshikazu, 5,776,403, Cl. 264-259.000.
Ito, Yasushi; and Mashiki, Zenichiro, to Toyota Jidosha Kabushiki Kaisha, Method of purifying the exhaust of an internal combustion engine, 5,775,099, Cl. 60-274.000.
Ito, Yuji: See—
Yoshimi, Tomohisa; Kawai, Takayoshi; Ito, Yuji; Kawashima, Masafumi; Honda, Yuji; and Samukawa, Katsuhiko, 5,775,415, Cl. 165-202.000.
Ito, Yutaka, Size adjuster, 5,774,952, Cl. 24-585.000.
Itoh, Kazumasa: See—
Koike, Takashi; and Itoh, Kazumasa, 5,775,297, Cl. 123-422.000.
Itoh, Nobuyuki: See—
Kaminishi, Katsuji; and Itoh, Nobuyuki, 5,777,507, Cl. 327-514.000.
Itoh, Shinichi: See—
Yamaguchi, Takashi; Ohno, Tadayoshi; Itoh, Shinichi; and Tanaka, Hisatoshi, 5,777,644, Cl. 347-68.000.
Itoh, Yasuyuki: See—
Yokoyama, Seiichi; Itoh, Yasuyuki; Onishi, Shigeo; Kudo, Jun; Sakaiyama, Keizo; and Urashima, Hitoshi, 5,776,356, Cl. 216-76.000.
Itou, Tadashi: See—
Yamazaki, Toshio; Yoshizawa, Ken; Itou, Tadashi; Wakana, Shigeaki; and Shimizu, Satoshi, 5,776,590, Cl. 428-212.000.
Itoyama, Seiji: See—
Miki, Yuji; Itoyama, Seiji; Bessho, Nagayasu; Yamada, Sumio; and Nomura, Hiroshi, 5,775,404, Cl. 164-477.000.
ITT Automotive Europe GmbH: See—
Feigel, Hans-Joerg, 5,775,470, Cl. 188-299.000.
ITT Composants et Instruments: See—
Bricaud, Hervé Guy; and Pizard, Yves, 5,775,949, Cl. 439-630.000.
ITT Composants Et Instruments: See—
Bricaud, Hervé Guy; and Valcher, Fabrice, 5,775,937, Cl. 439-489.000.
ITT Corporation: See—
Hyazin, Peter Joseph, 5,778,121, Cl. 385-55.000.
Iura, Katuhiro: See—
Hayashi, Katsushige; Kawakami, Tsutomu; Takeda, Yuji; and Iura, Katuhiro, 5,777,064, Cl. 528-196.000.
Ivanov, Eugene Y., to Tosoh SMD, Inc. Methods of making Cr-Me sputter targets and targets produced thereby, 5,778,302, Cl. 419-32.000.
Iwaguchi, Isao: See—
Sato, Shinichi; Ohtsuki, Munenori; Iwaguchi, Isao; and Shinoda, Ichiro, 5,778,017, Cl. 372-38.000.
Iwama, Shinji: See—
Ishiguro, Kazuyoshi; Noda, Masuo; Kataoka, Hiroshi; and Iwama, Shinji, 5,777,282, Cl. 200-5.00E.
Iwamoto, Kazuhide: See—
Hotta, Harumichi; Iwamoto, Kazuhide; Torimura, Hiroyuki; and Chihana, Masanobu, 5,777,251, Cl. 84-609.000.

- Iwasa, Naruhito: *See—*
Nakamura, Shuji; Nagahama, Shinichi; Iwasa, Naruhito; and Kiyoku, Hiroyuki, 5,777,350, Cl. 257-96.000.
- Iwasaka, Hiroshi: *See—*
Sato, Masato; Ohno, Hironobu; Murai, Nobuyuki; and Iwasaka, Hiroshi, 5,777,155, Cl. 560-244.000.
- Iwasaki, Hidetake: *See—*
Okawa, Hirokazu; Iwasaki, Hidetake; Takahashi, Mitsuhiro; Maruyama, Hidekazu; Sakanaka, Hiroyuki; and Umeda, Sakae, 5,776,023, Cl. 474-243.000.
- Iwasaki, Hiroyuki: *See—*
Maki, Yasuhito; Goto, Tetsuro; Takagi, Tadao; and Iwasaki, Hiroyuki, 5,777,671, Cl. 348-312.000.
- Iwasaki, Osamu: *See—*
Otsuka, Naoki; Arai, Atsushi; Yano, Kentaro; Takahashi, Kiichiro; Nishikori, Hitoshi; and Iwasaki, Osamu, 5,777,649, Cl. 347-94.000.
- Iwasaki, Ryuichi; Miyauchi, Mitsuru; and Akira, Toshiro, to Noritsu Koki Co., Ltd. Photographic printing apparatus and method, 5,777,723, Cl. 355-67.000.
- Iwasawa, Yoshikazu: *See—*
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,777,150, Cl. 560-60.000.
- Iwase, Hiroo; Yamasaki, Yasuhiko; Takayanagi, Takeo; Rokutani, Tomohide; Nakatsuka, Saburo; and Yokoyama, Takashi, to Matsushita Electric Industrial Co., Ltd. Apparatus for drying an electrode plate for a battery, 5,775,002, Cl. 34-122.000.
- Iwata, Takashi: *See—*
Nanba, Shigenobu; Yaguchi, Hiroshi; Shimotsusa, Masataka; Ibaraki, Nobuhiko; Nakayama, Takenori; Iwata, Takashi; Yamamoto, Yoshinori; Ohkouchi, Norio; and Nagao, Mamoru, 5,776,267, Cl. 148-328.000.
- Iwata, Yasuo, to Tokyo Automatic Machinery Works, Ltd. Cartoning machine, 5,775,064, Cl. 53-466.000.
- Iwata, Yoshihisa: *See—*
Sugiura, Yoshihisa; Iwata, Yoshihisa; and Imamiya, Keniti, 5,777,930, Cl. 365-189.110.
- Iwatsu Electric Co., Ltd.: *See—*
Tsuboi, Kiyoshi; and Yamamoto, Shigeharu, 5,777,228, Cl. 73-579.000.
- Izukawa, Tsukuru: *See—*
Ohkubo, Kazuhiko; Tsutsui, Tomoki; Sakaki, Yoshitsugu; Kunihiro, Tamotsu; Nishikawa, Arika; Izukawa, Tsukuru; Ueno, Kaoru; Sakai, Seiji; and Tanaka, Yukichi, 5,777,175, Cl. 568-619.000.
- Izuo, Takashi: *See—*
Yanai, Akihiro; Maeda, Iwao; Izuo, Takashi; and Iida, Tatuo, 5,775,276, Cl. 123-90.110.
- J and N Associates, Inc.: *See—*
Martell, Dennis; Warburton, Richard Grove; Lindner, Laura Ann; and Lindner, Juergen, 5,777,208, Cl. 73-31.060.
- J. Muller International: *See—*
Sauvageot, Gerard A., 5,775,038, Cl. 52-167.800.
- J-Squared, LLC: *See—*
Chang, James Shih-Tsih; and Fanning, James Jay, 5,778,332, Cl. 701-117.000.
- Jaag, Dieter: *See—*
Sticker, Rolf; Muller, Karl; and Jaag, Dieter, 5,775,956, Cl. 439-719.000.
- Jabusch, Ronald; and Bissinger, Andreas, to Autoliv Development AB. Electrically controlled safety belt reeling device, 5,775,620, Cl. 242-383.100.
- Jack Baxter: *See—*
Bailey, David F., 5,777,483, Cl. 324-686.000.
- Jackovich, Steven J. Device for holding a container inverted for emptying, 5,775,651, Cl. 248-213.200.
- Jackson, Anne Louise; Hoffman, Robert Alan; Blidy, Andrew D.; Murchison, Kenneth Earl; Bierre, Pierre; and Thiel, Dan E., to Becton Dickinson and Company. Method for preparation and analysis of leukocytes in whole blood, 5,776,709, Cl. 435-7.240.
- Jackson, Brian G. Portable highway warning device with frangible retainer ring, 5,775,834, Cl. 404-15.000.
- Jackson, John R., to Jackson, John R.; and Arismendi, Jr., Andres M. Passive geophysical prospecting apparatus and method based upon detection of discontinuities associated with extremely low frequency electromagnetic fields, 5,777,478, Cl. 324-348.000.
- Jackson Laboratory, The: *See—*
North, Michael; Nishina, Patsy; Noben-Trauth, Konrad; and Naggert, Juergen, 5,776,762, Cl. 435-252.300.
- Jackson, Michael L.: *See—*
Bugajski, James; Kooy, Robert; Moeller, Raymond J.; and Jackson, Michael L., 5,777,022, Cl. 524-527.000.
- Jackson, Richard C.; Howard, John Avery; Lada, Christopher O.; Minami, Donald S.; Hao-Jui, Lan; and Cheng-Liang, Tsai, to Apple Computer, Inc. Apparatus for feeding distinct feed stock and maintaining the alignment of printable stock in a roller driven tray information transfer device, 5,775,684, Cl. 271-9.070.
- Jackson, Robert L.: *See—*
Carper, James L.; Irish, Gary H.; Rieley, Sheldon C.; Smith, Robert M.; and Jackson, Robert L., 5,776,801, Cl. 438-123.000.
- Jacob, Gary; and Applin, Charles J., III. Exercise device for use in the rehabilitative therapy of joint complexes, 5,776,083, Cl. 601-23.000.
- Jacob, Jon Kent, to Abington, Inc. Jacktop cleaner, 5,776,211, Cl. 55-356.000.
- Jacob, Steve A.: *See—*
Adams, Phillip M.; Holmstrom, Larry W.; Jacob, Steve A.; Powell, Steven H.; Condie, Robert F.; and Culley, Martin L., 5,778,226, Cl. 395-681.000.
- Jacobs, Craig W.: *See—*
Filion, Joseph L.; Evans, Charles F.; Rohlfing, Kenneth E.; Rogerson, Diane S.; Koul, Kitty S.; Lee, Mei-Yuei; and Jacobs, Craig W., 5,778,183, Cl. 395-200.530.
- Jacobs, Mark Elliott; Jiang, Yimin; Thottuvelil, Vijayin Joseph; and Liu, Rui, to Lucent Technologies Inc. Power factor control for switched mode rectifiers with improved representing of currents in EMI capacitive elements, 5,777,866, Cl. 363-126.000.
- Jacobs, Paul E.; Gardner, William R.; Lee, Chong U.; Gilhousen, Klein S.; Lam, S. Katherine; and Tsai, Ming-Chang, to Qualcomm Incorporated. Variable rate vocoder, 5,778,338, Cl. 704-223.000.
- Jacobsen, Janet L.: *See—*
Thome, Scott; Klitz, Kevin; Jacobsen, Janet L.; Kang, Kevin; and Hastings, Roger, 5,776,080, Cl. 600-585.000.
- Jacobson, Howard Wayne: *See—*
Bergmann, Oswald Robert; Feist, Thomas Paul; Hormadaly, Jacob; and Jacobson, Howard Wayne, 5,776,373, Cl. 252-518.100.
- Jacoby, John J. Graduated windshield wiper cleaning elements, 5,774,926, Cl. 15-250.001.
- Jaeger, Denny, to Intertactile Technologies Corporation. Flat panel display with optical signal transparent zone, 5,777,603, Cl. 345-172.000.
- Jaffe, Gerald E.; Lucas, Frank J.; and Carter, James H., to Coulter Corporation. Assay reagent, 5,776,720, Cl. 435-29.000.
- Jaffe, Stephen M.; Simpson, Matthew; Shepard, Cecil B.; and Heuser, Michael S., to Saint Gobain/Norton Industrial Ceramics Corp. Method for depositing diamond films by dielectric barrier discharge, 5,776,553, Cl. 427-577.000.
- Jagawa, Yasutoshi: *See—*
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- Johnson & Johnson Professional, Inc.: *See—*
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- Kanai, Tatsunori; and Shirakihara, Toshio, 5,778,179, Cl. 395-200,330.
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- Kawakami, Takaaki, 5,777,520, Cl. 331-1,00R.
- Komiya, Kenichi; Tanimoto, Koji; and Ide, Naoaki, 5,778,280, Cl. 399-49,000.
- Koshiyouchi, Takashi, 5,777,982, Cl. 369-291,000.
- Matsui, Nobuo, 5,777,448, Cl. 318-439,000.
- Mieda, Masumi, 5,776,208, Cl. 29-623,100.
- Nakamura, Hiroki; and Watanabe, Yoshihiro, 5,777,804, Cl. 359-727,000.
- Ohsawa, Yuichi; and Yoda, Hiroaki, 5,777,542, Cl. 338-32,00R.
- Okano, Haruo; Noguchi, Sadahisa; and Sekine, Makoto, 5,776,557, Cl. 427-579,000.
- Sasaki, Yasutaka; Matsuo, Mie; Nakata, Rempei; Wada, Junichi; Hayasaka, Nobuo; Yano, Hiroyuki; and Okano, Haruo, 5,775,980, Cl. 451-285,000.
- Seshita, Toshiki, 5,777,517, Cl. 330-277,000.
- Shishido, Norihiko, 5,777,375, Cl. 257-550,000.
- Sugaya, Toshihiro; and Honguh, Yoshinori, 5,777,981, Cl. 369-275,400.
- Sugiura, Yoshihisa; Iwata, Yoshihisa; and Imamiya, Keniti, 5,777,930, Cl. 365-189,110.
- Taira, Kazuhiko; Kikuchi, Shinichi; Mimura, Hideki; Tamada, Yuzo; and Nakai, Masatoshi, 5,778,142, Cl. 386-97,000.
- Takai, Hiroshi; and Kassai, Yoshimori, 5,777,473, Cl. 324-309,000.
- Takeda, Nobuyuki; and Watanabe, Mutsumi, 5,777,690, Cl. 348-699,000.
- Tani, Zenshin, 5,778,034, Cl. 376-353,000.
- Tokushige, Kaoru, 5,777,925, Cl. 365-185,110.
- Yamaguchi, Takashi; Ohno, Tadayoshi; Itoh, Shinichi; and Tanaka, Hisatoshi, 5,777,644, Cl. 347-68,000.
- Yamamoto, Osamu, 5,777,851, Cl. 361-748,000.
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- Moroto, Shuzo; and Hisada, Hideki, 5,778,326, Cl. 701-22,000.
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- Kaczynski, Aureliusz Eric Tadeusz, to A.T.K. Enterprises Inc. Valve for a two way hydraulic drilling jar and a two way hydraulic drilling jar. 5,775,423, Cl. 166-178,000.
- Kadee Quality Products Co.: See—
Dunham, Michael Nathan, 5,775,524, Cl. 213-75,07C.
- Kadono, Shinya: See—
Takeuchi, Seiichi; and Kadono, Shinya, 5,777,900, Cl. 364-572,000.
- Kadota, Masatoshi, to Brother Kogyo Kabushiki Kaisha. Data transferring method and system utilizing a transfer-related waiting time. 5,778,198, Cl. 395-286,000.
- Kaestle, Siegfried; and Guenther, Martin, to Hewlett-Packard Company. Sensor for performing medical measurements, particularly pulseoximetry measurements on the human finger. 5,776,059, Cl. 600-340,000.
- Kagawa, Takumi; Kondo, Norihisa; Kasai, Noriyuki; and Sakka, Hideo, to Tosoh Corporation. Brominated p-cumylphenol flame-retardants for resin composition. 5,777,007, Cl. 524-114,000.
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- Kageyama, Tetsuo; Yoshimura, Shigeru; Hanagata, Takayoshi; Hosono, Nagao; and Saito, Takashi, to Canon Kabushiki Kaisha. Ink-jet recording method and apparatus using a light-tonable recording liquid. 5,777,639, Cl. 347-15,000.
- Kahle, Gerrit: See—
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- Kahn, Raynold; and Lopez, Alan, to Hughes Electronics Corporation. Method and system for transmitting audio-associated text information in a multiplexed transmission stream. 5,777,997, Cl. 370-493,000.
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Alitalo, Kari; Aprelikova, Olga; Pajusola, Katri; Armstrong, Elina; Korhonen, Jaana; and Kaipainen, Arja, 5,776,755, Cl. 435-194,000.
- Kaiser Aluminum & Chemical Corporation: See—
Farrar, Larry E., Jr.; and Coats, Norman LeRoy, II, 5,776,269, Cl. 148-689,000.
- Kaiser, Joachim: See—
Englert, Heinrich; Mania, Dieter; Hartung, Jens; Gögelein, Heinz; Kaiser, Joachim; Linz, Wolfgang; and Wetlauffer, David, 5,776,980, Cl. 514-586,000.
- Kaiser, Robert J.: See—
Stowolitz, Mark L.; Kaiser, Robert J.; and Lund, Kevin P., 5,777,148, Cl. 558-399,000.
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- Kajiyama, Seiji; Tsuchiya, Yoichi; Ichiura, Shuichi; Toyama, Tateo; and Hibino, Katsutoshi, to Sanyo Electric Co., Ltd. Optical disk readout apparatus. 5,777,970, Cl. 369-94,000.
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- Kakiuchi, Takashi: See—
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- Kako, Yuhshi: See—
Matumoto, Sigeru; and Kako, Yuhshi, 5,777,958, Cl. 369-37,000.
- Kakuta, Naoki; and Miwa, Takeya, to Yazaki Corporation. Joining structure for box-shaped portion of terminal lug. 5,775,962, Cl. 439-852,000.
- Kalanish, Scott S.: See—
Bates, Darryle E.; and Kalanish, Scott S., 5,775,539, Cl. 222-1,000.
- Kalfas, Iain H.; Kormos, Donald W.; Piraino, David W.; Barnett, Gene H.; and Steiner, Charles P., to Cleveland Clinic Foundation. The Frameless stereotaxy system for indicating the position and axis of a surgical probe. 5,776,064, Cl. 600-414,000.
- Kalidas, Navinchandra: See—
Abbott, John H.; Kalidas, Navinchandra; and Thompson, Raymond W., 5,777,382, Cl. 257-695,000.
- Kalland, Terje: See—
Kroemer, Guido Peter; Gonzalo, José Angel; Alonso, Carlos Martinez; and Kalland, Terje, 5,776,947, Cl. 514-312,000.
- Kallis, Adrian G.: See—
Officer, Todd M.; Clausen, Scott A.; and Kallis, Adrian G., 5,778,329, Cl. 701-55,000.
- Kalloo, Anthony: See—
Pasricha, Pankaj Jay; and Kalloo, Anthony N., 5,776,160, Cl. 606-191,000.
- Kaloo, Anthony N.: See—
Pasricha, Pankaj Jay; and Kalloo, Anthony N., 5,776,160, Cl. 606-191,000.
- Kaloustian, John M.: See—
Bloemer, John M.; Kaloustian, John M.; and Lassanske, Todd W., 5,775,555, Cl. 224-531,000.
- Kalverkamp, Klemens; and Tepe, Richard, to Franz Grimme Landmaschinenfabrik GmbH & Co. KG. Apparatus for separating potatoes from other materials. 5,775,435, Cl. 171-126,000.
- Kalvinsh, Ivars: See—
Danysz, Wojciech; Gold, Markus; Kalvinsh, Ivars; Parsons, Christopher Graham Raphael; Piskunova, Irene; and Rozhkov, Eugene, 5,776,935, Cl. 514-248,000.
- Kamada, Kazushi; and Kondo, Shinichi, to Hitachi Medical Corporation. Method of displaying a biplane image in real time and an ultrasonic diagnosing apparatus for displaying the biplane in real time. 5,776,067, Cl. 600-443,000.
- Kamata, Kazushi: See—
Suzuki, Takao; Haga, Goro; and Kamata, Kazushi, 5,775,947, Cl. 439-608,000.
- Kamata, Susumu: See—
Hagishita, Sanji; Kamata, Susumu; Seno, Kaoru; Haga, Nobuhiro; and Ishihara, Yasunobu, 5,776,929, Cl. 514-221,000.
- Kamata, Yuzuru: See—
Tsukushi, Masanori; Ohshita, Yoichi; Natsui, Ken'ichi; Kamata, Yuzuru; Yano, Makoto; Yaginuma, Noriyuki; and Shiraiishi, Katsuhiko, 5,777,842, Cl. 361-603,000.
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- Kameda, Takanobu: See—
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- Kameswaran, Venkataraman, to American Cyanamid Company. Process for the manufacture of 2-aryl-5 perfluoroalkylpyrrole derivatives. 5,777,132, Cl. 548-561,000.
- Kameyama, Makoto; Matsushima, Masaaki; and Yanagi, Michio, to Canon Kabushiki Kaisha. Magnetic alloy and magnetic head having at least a part made of the magnetic alloy. 5,777,828, Cl. 360-126,000.
- Kamibayashi, Atsushi: See—
Kato, Masatsugu; Sano, Shigeo; Kamibayashi, Atsushi; and Hiyoshi, Yasumasa, 5,775,155, Cl. 72-260,000.
- Kamienski, Conrad W.: See—
Dover, B. Troy; Kamienski, Conrad W.; Morrison, Robert C.; Currin, R. Thomas, Jr.; and Schwindeman, James A., 5,776,369, Cl. 252-309,000.
- Kaminishi, Katsuji; and Itoh, Nobuyuki, to Kabushiki Kaisha Toshiba. Receiver and transceiver for a digital signal of an arbitrary pattern. 5,777,507, Cl. 327-514,000.
- Kaminsky, Alan Richard, to Harris Corporation. Method for allocating channels in a radio network using a genetic algorithm. 5,778,317, Cl. 455-450,000.
- Kamiyama, Hironori: See—
Sato, Koichi; Okabe, Masato; Kamiyama, Hironori; Shimizu, Osamu; and Yamashita, Yuudai, 5,778,260, Cl. 396-30,000.
- Kamiyama, Tomoyuki; and Ishikawa, Yamato, to Honda Giken Kogyo Kabushiki Kaisha. Method of forming a high-frequency transistor T gate electrode. 5,776,820, Cl. 438-574,000.
- Kamizawa, Koh: See—
Andoh, Akihiro; Shishido, Shinji; Koshi, Yutaka; and Kamizawa, Koh, 5,778,166, Cl. 395-182,040.

- Kammerhofer, Gerd; Werner, Friedrich; Brendel, Thomas; and Huber, Max, to ABB Daimler-Benz Transportation (Deutschland) GmbH. Rail vehicle with crossbeam elastically held to undercarriage. 5,775,231, Cl. 105-413.000.
- Kamstra, Loren G.: *See—*
Hauger, Todd; and Kamstra, Loren G., 5,775,337, Cl. 128-869.000.
- Kamuro, Yasuo; Hirakawa, Shinichi; and Fujisawa, Hiroshi, to Nippon Zeon Co., Ltd. Plant growth promoter. 5,776,860, Cl. 504-313.000.
- Kanai, Hiroshi: *See—*
Kono, Hiromi; Yoshino, Toshiyuki; and Kanai, Hiroshi, 5,775,304, Cl. 123-497.000.
- Kanai, Hitoshi: *See—*
Mizoshita, Yoshifumi; Koshikawa, Takao; Kanai, Hitoshi; Kane, Junichi; Otsuka, Yoshinori; and Ikegawa, Yukinori, 5,777,827, Cl. 360-113.000.
- Kanai, Makoto: *See—*
Niwa, Minoru; Muramatsu, Kimio; Kanai, Makoto; Inoue, Michio; Mizutani, Junichi; Kanto, Takanori; and Yamamoto, Tadashi, 5,775,728, Cl. 280-728.300.
- Kanai, Tatsunori; and Shirakihara, Toshio, to Kabushiki Kaisha Toshiba. System for flexible distributed processing and transaction processing suitable for nested transaction. 5,778,179, Cl. 395-200.330.
- Kanayama, Yoshiaki: *See—*
Tsuda, Shinichiro; Kanayama, Yoshiaki; Yamaura, Tomoya; and Kuroda, Shinichi, 5,777,585, Cl. 343-702.000.
- Kanazawa, Masayasu: *See—*
Ikegame, Tetsuo; Kanazawa, Masayasu; and Yamazaki, Izumi, 5,777,806, Cl. 359-823.000.
- Kanbe, Kazunari; Ishikawa, Takashi; Inaba, Takuya; and Katagiri, Masayoshi, to Aisin Seiki Kabushiki Kaisha. Vehicular foot-operated parking brake control apparatus. 5,775,174, Cl. 74-542.000.
- Kandasamy, Ispran Sharma: *See—*
Llewellyn, Laurence; Graveston, Mark George; Benton, Simon Charles; Kandasamy, Ispran Sharma; Hale, Peter George; and Jenkins, Peter David, 5,778,131, Cl. 385-135.000.
- Kane, Junichi: *See—*
Mizoshita, Yoshifumi; Koshikawa, Takao; Kanai, Hitoshi; Kane, Junichi; Otsuka, Yoshinori; and Ikegawa, Yukinori, 5,777,827, Cl. 360-113.000.
- Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Yamanaka, Yoshimichi; Fujisawa, Hiroshi; Chiba, Takeshi; Deguchi, Yoshikuni; and Yonezawa, Kazuya, 5,777,037, Cl. 525-288.000.
- Kaneko, Hiroshi: *See—*
Masumoto, Takahiko; Kimura, Kazuhiro; and Kaneko, Hiroshi, 5,777,511, Cl. 329-304.000.
- Kaneko, Setsuo; Sumiyoshi, Ken; and Hatada, Yoriko, to NEC Corporation. Liquid crystal display with improved viewing angle dependence. 5,777,700, Cl. 349-39.000.
- Kaneko, Takeshi; and Matuo, Akira, to Nabco Ltd. Fluid pressure control valve apparatus. 5,775,370, Cl. 137-505.250.
- Kaneko, Toshiaki: *See—*
Wakagi, Masatoshi; Onisawa, Kenichi; Ando, Masahiko; Kaneko, Toshiaki; Minemura, Tetsuro; and Okada, Tomohiro, 5,777,702, Cl. 349-47.000.
- Kaneko, Yasunori, to Mizuno Corporation. Soles for spiked track-and-field shoes. 5,775,010, Cl. 36-129.000.
- Kaneko, Yasushi: *See—*
Endou, Itaru; Kaneko, Yasushi; Kawano, Yoshihiro; and Kajitani, Kazuo, 5,777,783, Cl. 359-385.000.
- Kaneko, Yutaka, to Tetra Laval Holdings & Finance, S. A. Container filling system having fill-pipe with an extended sealing member for reducing mixing of product and air during container filling. 5,775,387, Cl. 141-263.000.
- Kanel, Jeffrey Scott: *See—*
Guelcher, Scott Arthur; and Kanel, Jeffrey Scott, 5,776,349, Cl. 210-703.000.
- Kanesaka, Nozomu; and Tashji, George A. Expandable stent. 5,776,183, Cl. 623-1.000.
- Kaneto Co., Ltd.: *See—*
Satō, Kōichi, 5,775,604, Cl. 241-24.220.
- Kang, Kevin: *See—*
Thome, Scott; Klitz, Kevin; Jacobsen, Janet L.; Kang, Kevin; and Hastings, Roger, 5,776,080, Cl. 600-585.000.
- Kang, Song D. Electrodynamical strut with associated bracing mechanism. 5,775,469, Cl. 188-267.000.
- Kang, Yun-Seok: *See—*
Park, Hae-Jin; Kim, Jae-In; and Kang, Yun-Seok, 5,775,124, Cl. 62-408.000.
- Kangas, Lars J.; and Keller, Paul E., to Battelle Memorial Institute. Neuro-metric assessment of intraoperative anesthetic. 5,775,330, Cl. 128-731.000.
- Kankyoheinzservice Co., Ltd.: *See—*
Satō, Kōichi, 5,775,604, Cl. 241-24.220.
- Kanno, Soichi, to Tokyo Electron Limited. Method of deciding control parameters of heat treatment instrument and apparatus thereof. 5,777,881, Cl. 364-477.030.
- Kano, Masaaki: *See—*
Hirahara, Hideto; Kano, Masaaki; Higuchi, Minoru; and Hosoya, Haruyuki, 5,775,448, Cl. 180-24.020.
- Kantoh, Takanori: *See—*
Niwa, Minoru; Muramatsu, Kimio; Kanai, Makoto; Inoue, Michio; Mizutani, Junichi; Kanto, Takanori; and Yamamoto, Tadashi, 5,775,728, Cl. 280-728.300.
- Kantor, Philip: *See—*
Stone, Leonard J.; and Kantor, Philip, 5,776,085, Cl. 601-99.000.
- Kanzaki, Yoshiharu: *See—*
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- Kao Corporation: *See—*
Yamazaki, Toshio; Yoshizawa, Ken; Itou, Tadashi; Wakana, Shigeaki; and Shimizu, Satoshi, 5,776,590, Cl. 428-212.000.
- Yamazaki, Toshio; Wakana, Shigeaki; Nagai, Satoshi; and Inoue, Tetsuro, 5,776,596, Cl. 428-212.000.
- Kao, Junan; Kelly, Ephraim Lamar; Weber, Vicki Lynn; Gibson, Michael Steven; Appleby, Donald Benjamin; Sherman, Joseph Fredrich; Pegoli, Ronald Edward; Schneider, Mary Celine; Formyduval, Terry Franklin; and Hawkins, Larry Nelson, to Procter & Gamble Company. The Process for preparing amides of N-alkyl polyhydroxyalkyl amines. 5,777,165, Cl. 564-487.000.
- Kao, Ron, to Lite-On Communications Corp.; and Lite-On Communications, Inc. Parallel signal processing device for high-speed timing. 5,778,217, Cl. 395-558.000.
- Kaplan, Aaron V.: *See—*
Klein, Enrique J.; Kaplan, Aaron V.; Clifford, Mark; and Overbeek-Bloem, Martin, 5,776,141, Cl. 606-108.000.
- Kaplun, Yevgeny: *See—*
Weinberger, Scot R.; Donlon, Edward P.; Kaplun, Yevgeny; Anderson, Tor C.; Li, Liang; Russon, Larry; and Whittall, Randy, 5,777,325, Cl. 250-287.000.
- Kapoor, Ashok K.: *See—*
Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanabhan, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Aleshin, Stanislav V.; and Podkolzin, Alexander S., 5,777,360, Cl. 257-315.000.
- Kappler, John: *See—*
Kotzin, Brian L.; Marrack, Philippa; Kappler, John; and Paliard, Xavier, 5,776,708, Cl. 435-7.240.
- Kara, Salim G.; Gressett, David M.; and Whitney, Jonathan W., to E-Stamp Corporation. System and method for controlling the dispensing of an authenticating indicia. 5,778,076, Cl. 380-51.000.
- Karaki, Mitsuhiro; Nozaki, Mikiya; Hakoima, Masato; and Midorikawa, Toshiaki, to Toyota Jidosha Kabushiki Kaisha; and Hitachi Powdered Metals Co., Ltd. Parting agent for die-casting. 5,776,866, Cl. 508-122.000.
- Karavakis, Konstantine; and Fjelstad, Joseph, to Tessera, Inc. Semiconductor assemblies with reinforced peripheral regions. 5,777,379, Cl. 257-668.000.
- Karavakis, Konstantine: *See—*
Distefano, Thomas H.; Smith, John W.; Fjelstad, Joseph; Mitchell, Craig S.; and Karavakis, Konstantine, 5,776,796, Cl. 438-106.000.
- Kardum, Iwe; and Ebner, Rudolf, to InnoRatio Aktiengesellschaft für innovative umwelttechnische Systeme i.G.R. Refuse airlock. 5,775,579, Cl. 232-43.100.
- Karin, Michael; Ellledge, Stephen J.; and Aronheim, Ami, to University of California, The Regents of the; and Baylor College of Medicine. Protein recruitment system. 5,776,689, Cl. 435-6.000.
- Karlsson, Magnus L.; and Chen, Kok S., to Apple Computer, Inc. Method and system for halftoning. 5,777,757, Cl. 358-456.000.
- Karol, Thomas J., to R.T. Vanderbilt Company, Inc. Tin stabilizers for aviation lubricants. 5,776,869, Cl. 508-384.000.
- Karp, Matti: *See—*
Virta, Marko; and Karp, Matti, 5,776,681, Cl. 435-6.000.
- Karpinski, Joseph M.: *See—*
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- Christensen, Siegfried B., IV; and Karpinski, Joseph M., 5,777,176, Cl. 568-631.000.
- Karst, Christian; Gozlan, Thierry; Derrieu, Guy; and Castelli, Luc, to Laboratoires Virbac. Controlled-release device and preparation process. 5,776,481, Cl. 424-411.000.
- Kasahara, Yasuhiro: *See—*
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- Kasai Koyco Co., Ltd.: *See—*
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- Kasai, Naoya; Suzuki, Toshio; and Idogaki, Hideaki, to Daiso Co., Ltd. Optical resolution of chlorohydrin with microorganism. 5,776,766, Cl. 435-280.000.
- Kasai, Noriyuki: *See—*
Kagawa, Takumi; Kondo, Norihisa; Kasai, Noriyuki; and Sakka, Hideo, 5,777,007, Cl. 524-114.000.
- Kashanchi, Behnam. Hypodermic needle storage apparatus. 5,775,498, Cl. 206-364.000.
- Kashat, Israel: *See—*
Kofman, Vladimir; Afek, Yachin; and Kashat, Israel, 5,777,516, Cl. 330-277.000.
- Kashio, Hidetora; Horie, Katsuo; Nagai, Aisaku; Aita, Tomoyuki; and Kitagoh, Hiroshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Vinylidene fluoride polymer-based binder solution and electrode-forming composition. 5,776,637, Cl. 429-217.000.

- Kasiraj, Prakash; Meeks, Steven Wayne; and Reiley, Timothy Clark, to International Business Machines Corporation. Disk drive with shock detection based on thermoresistive signal from magnetoresistive head. 5,777,815, Cl. 360-75.000.
- Kasper, Kazmier J., to Algonquin Industries, Inc. Lock assembly having a key operated removable plug. 5,775,145, Cl. 70-367.000.
- Kassai, Yoshimori: *See—*
Takai, Hiroshi; and Kassai, Yoshimori, 5,777,473, Cl. 324-309.000.
- Kaste, Norbert; and Wegener, Reinhard, to Robert Bosch GmbH. Linearization circuit device. 5,777,777, Cl. 359-245.000.
- Kasuya, Yoshihiro: *See—*
Sakuragi, Masaki; and Kasuya, Yoshihiro, 5,775,441, Cl. 173-200.000.
- Katagi, Kiyoshi: *See—*
Shimatani, Narutoshi; Katagi, Kiyoshi; and Sakamoto, Akihiko, 5,776,613, Cl. 428-427.000.
- Katagiri, Masayoshi: *See—*
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- Kataoka, Hiroshi, to Fujitsu Limited. Multimedia dynamic synchronization system. 5,777,612, Cl. 345-302.000.
- Kataoka, Hiroshi: *See—*
Ishiguro, Kazuyoshi; Noda, Masuo; Kataoka, Hiroshi; and Iwama, Shinji, 5,777,282, Cl. 200-5.000.
- Kataoka, Mitsuhiro: *See—*
Takahashi, Shigeki; Kataoka, Mitsuhiro; Yamamoto, Tsuyoshi; Takeuchi, Yuichi; and Tokura, Norihito, 5,776,812, Cl. 438-268.000.
- Kataoka, Takayuki, to Kabushiki Kaisha Komatsu Seisakusho. Position recognition method. 5,778,107, Cl. 382-291.000.
- Katashiba, Hideaki: *See—*
Kurishige, Masahiko; and Katashiba, Hideaki, 5,776,032, Cl. 477-175.000.
- Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, to Sumitomo Electric Industries, Ltd. Slide member and method of manufacturing the same. 5,776,600, Cl. 428-325.000.
- Kates, Steven A.: *See—*
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- Kathail, Vinod K.: *See—*
Amerson, Frederic C.; Gupta, Rajiv; Kathail, Vinod K.; Rau, B. Ramakrishna; Schlansker, Michael S.; and Worley, William S., Jr., 5,778,219, Cl. 395-591.000.
- Kato, Hiroshi; and Kikukawa, Hiroyasu, to W. L. Gore & Associates, Inc. Release liquid supply device and liquid-absorbing material for use therein. 5,776,043, Cl. 492-56.000.
- Kato, Hiroyuki; and Takemoto, Takatoshi, to Brother Kogyo Kabushiki Kaisha. Paper feed device. 5,775,688, Cl. 271-167.000.
- Kato, Mami: *See—*
Yu, Fujio; and Kato, Mami, 5,776,771, Cl. 435-320.100.
- Kato, Masaaki: *See—*
Koga, Hisamitsu; Kumagai, Naotake; Owada, Tomiji; Furukawa, Nobuya; Kato, Masaaki; and Kawamura, Nobuyuki, 5,775,784, Cl. 303-152.000.
- Kato, Masahiko; Motose, Hitoshi; and Nonaka, Kimihiro, to Sanshin Kogyo Kabushiki Kaisha. Feedback engine control. 5,775,311, Cl. 123-681.000.
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- Kato, Mitsuhide: *See—*
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- Kato, Takashi: *See—*
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- Kato, Takayuki: *See—*
Murase, Atsushi; Sato, Norio; Kato, Takayuki; and Sumi, Kazumasa, 5,777,330, Cl. 250-339.130.
- Kato, Teruyuki, to Kabushiki Kaisha Kato Seiko and Hosiden Corporation. Manufacturing method of switch sheet and apparatus thereof. 5,776,283, Cl. 156-249.000.
- Kato, Tokunori, to Brother Kogyo Kabushiki Kaisha. Ribbon cassette for a printing apparatus. 5,775,821, Cl. 400-191.000.
- Katocs, Paul J.: *See—*
Crawshaw, Alan W.; Katocs, Paul J.; and Watts, Nicholas J., 5,775,652, Cl. 248-230.600.
- Kato, Kenichi; and Yoneda, Hiroshi, to Sharp Kabushiki Kaisha. Matrix display apparatus employing dual switching means and data signal line driving means. 5,777,591, Cl. 345-92.000.
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- Katsaggelos, Angelos: *See—*
Schuster, Guido M.; Katsaggelos, Angelos; Banham, Mark R.; and Braillean, James C., 5,778,192, Cl. 395-200.770.
- Katsuki, Hikaru: *See—*
Matsumoto, Satoshi; Katsuki, Hikaru; and Shimizu, Masayuki, 5,775,116, Cl. 62-155.000.
- Katsumoto, Kiyoshi; and Ching, Ta Yen, to Chevron Chemical Company. Multi-component oxygen scavenging composition. 5,776,361, Cl. 252-188.280.
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- Katz, Joseph M. Assembly for attenuating emissions from portable telephones. 5,777,261, Cl. 174-35.00R.
- Katz, Lawrence. Method and apparatus for locating bone cuts at the distal condylar femur region to receive a knee prosthesis. 5,776,137, Cl. 606-88.000.
- Kauer, James C.: *See—*
Lewis, Michael E.; Kauer, James C.; Smith, Kevin R.; Callison, Kathleen V.; Baldwin, Frank; Neff, Nicola; and Iqbal, Mohamed, 5,776,897, Cl. 514-12.000.
- Kaufman, Arthur; and Terry, Peter L., to H Power Corporation. Hydrogen-air fuel cell. 5,776,625, Cl. 429-30.000.
- Kaufman, Peter J.: *See—*
Skarbo, Rune A.; and Kaufman, Peter J., 5,778,053, Cl. 379-93.210.
- Kaufmann, John, to Lockheed Martin Aerospace Corporation. Signal conditioner with symbol addressed lookup table producing values which compensate linear and non-linear distortion using transversal filter. 5,778,029, Cl. 375-296.000.
- Kaulin Mfg. Co., Ltd.: *See—*
Wen, Lin Yu, 5,775,246, Cl. 112-292.000.
- Kawabata, Junichi: *See—*
Tatsuki, Yuuichiro; Nishiyama, Shinichi; Kawabata, Junichi; Yamanaka, Toru; and Tanaka, Chiho, 5,776,365, Cl. 252-299.620.
- Kawabata, Tsuyoshi: *See—*
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- Kawabe, Takatoshi: *See—*
Kobayashi, Masanori; and Kawabe, Takatoshi, 5,777,451, Cl. 318-587.000.
- Kawachi, Keiji: *See—*
Zeng, Lijiang; Matsumoto, Hirokazu; and Kawachi, Keiji, 5,777,745, Cl. 356-373.000.
- Kawaguchi, Junichiro; Hashimoto, Tatsuki; and Morita, Yasuhiro, to Institute of Space and Astronautical Science, The Director-General of the. Apparatus and method for controlling thruster valve. 5,775,094, Cl. 60-204.000.
- Kawaguchi, Ryuji: *See—*
Miyake, Izumi; and Kawaguchi, Ryuji, 5,777,667, Cl. 348-64.000.
- Kawaguchi, Shinobu: *See—*
Sato, Shigeru; Ohshimizu, Hisao; and Kawaguchi, Shinobu, 5,776,362, Cl. 252-194.000.
- Kawaguchi, Yusuke; Yamaguchi, Yoshihiro; and Funaki, Hideyuki, to Kabushiki Kaisha Toshiba. High-breakdown-voltage semiconductor device. 5,777,371, Cl. 257-409.000.
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Yuuki, Akimasa; Kawahara, Takaaki; Makita, Tetsuro; Yamamuka, Mikio; Ono, Koichi; and Okudaira, Tomonori, 5,776,254, Cl. 118-725.000.
- Kawai, Atsushi; and Sakai, Tetsuya, to Minolta Co., Ltd. Image forming apparatus estimating a consumable life of a component using fuzzy logic. 5,778,279, Cl. 399-42.000.
- Kawai, Chihiro: *See—*
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,776,600, Cl. 428-325.000.
- Kawai, Eiichi: *See—*
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- Kawai Musical Instruments Manufacturing Co., Ltd.: *See—*
Aoyama, Toru; Kitamura, Mineo; Sato, Yasushi; and Fujimoto, Satoshi, 5,777,250, Cl. 84-609.000.
- Kawai, Takayoshi: *See—*
Yoshimi, Tomohisa; Kawai, Takayoshi; Ito, Yuji; Kawashima, Masafumi; Honda, Yuji; and Samukawa, Katsuhiko, 5,775,415, Cl. 165-202.000.
- Kawajiri, Kazuhiro: *See—*
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- Kawakami, Hiroshi: *See—*
Ikematsu, Shinichi; Kawakami, Hiroshi; Nakano, Satoshi; Kouno, Tatsuya; Hiromi, Keisuke; and Yoshimoto, Masakazu, 5,775,998, Cl. 463-52.000.
- Kawakami, Takaaki, to Kabushiki Kaisha Toshiba. Horizontal oscillation circuit capable of changing frequency. 5,777,520, Cl. 331-1.00R.
- Kawakami, Tsutomu: *See—*
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- Kawakami, Yukito: *See—*
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- Kawamoto, Mutsumi: *See—*
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- Kawamura, Katsumi: *See—*

Negishi, Kiyoshi; Horie, Mikio; Kawamura, Katsumi; Suzuki, Minoru; Orita, Hiroshi; and Suzuki, Katsuyoshi, 5,777,657, Cl. 347-211.000.
Kawamura, Nobuo; Masai, Kazuo; Yamashita, Nobuyuki; and Nagai, Hiroshi, to Hitachi, Ltd.; and Hitachi Software Engineering Company, Ltd. Method of processing a synchronization point in a database management system to assure a database version using update logs from accumulated transactions. 5,778,388, Cl. 707-203.000.
Kawamura, Nobuyuki: See—
Koga, Hisamitsu; Kumagai, Naotake; Owada, Tomiji; Furukawa, Nobuya; Kato, Masaaki; and Kawamura, Nobuyuki, 5,775,784, Cl. 303-152.000.
Kawanabe, Takashi; Mukaida, Hideaki; Gotoh, Masanori; Tohya, Yoshinori; Kobayashi, Masahiro; Ishikawa, Atsuyumi; and Hara, Yoshitaka, to Sanyo Electric Co., Ltd. Heat exchanger having corrugated fins and air conditioner having the same. 5,775,413, Cl. 165-151.000.
Kawano, Yoshihiro: See—
Endou, Itaru; Kaneko, Yasushi; Kawano, Yoshihiro; and Kajitani, Kazuo, 5,777,783, Cl. 359-385.000.
Kawasaki, Ikuya: See—
Yamamoto, Mitsuyoshi; Kawasaki, Ikuya; Inayoshi, Hideo; Narita, Susumu; and Kubo, Masaharu, 5,778,237, Cl. 395-750.040.
Kawasaki, Kazuhiro, to Hitachi, Ltd. Method of manufacturing a microstrip transmission device. 5,777,526, Cl. 333-1.000.
Kawasaki, Moriaki; Ikeda, Tamotsu; Haji, Nobuyuki; and Ueda, Masayoshi, to Matsushita Electric Industrial Co., Ltd. Light beam heating apparatus. 5,778,146, Cl. 392-419.000.
Kawasaki, Mutsumi: See—
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Kawasaki, Seiji, to K. K. Key & Kraft. Cleaning sterilization apparatus for topsoil. 5,776,422, Cl. 422-307.000.
Kawasaki Steel Corporation: See—
Miki, Yuji; Itoyama, Seiji; Bessho, Nagayasu; Yamada, Sumio; and Nomura, Hiroshi, 5,775,404, Cl. 164-477.000.
Kawasaki, Toyotoshi; Suzuki, Shinichi; and Inoue, Yoshiyuki, to Minolta Co., Ltd. Bayonet mount and photo-taking lens barrel for interchangeable lens camera system. 5,778,271, Cl. 396-532.000.
Kawase, Kiyotaka, to Sumitomo Wiring Systems, Ltd. Grommet having an identifying portion for checking the grommet. 5,777,274, Cl. 174-153.00G.
Kawase, Yasushi: See—
Takahashi, Tsugio; Kitsukawa, Goro; Akiba, Takesada; Kawase, Yasushi; and Nakamura, Masayuki, 5,777,927, Cl. 365-189.010.
Kawashima, Masafumi: See—
Yoshimi, Tomohisa; Kawai, Takayoshi; Ito, Yuji; Kawashima, Masafumi; Honda, Yuji; and Samukawa, Katsuhiko, 5,775,415, Cl. 165-202.000.
Kawashima, Shituchi, to NEC Corporation. Radio selective call receiver having function to detect power voltage. 5,778,312, Cl. 455-343.000.
Kawashima, Yasushi: See—
Haraga, Kosuke; Yagi, Naoki; Nakashima, Yoshinobu; Ganryu, Yuzi; Sasaki, Tsutomu; Takimoto, Atsushi; Komazawa, Yosiro; Okuda, Asao; Takagi, Shoji; Matsukawa, Akifumi; Urata, Hideaki; Kawashima, Yasushi; Masuo, Kazumi; Honma, Kenji; and Ikeda, Isao, 5,776,584, Cl. 428-132.000.
Kawasumi, Yasushi: See—
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Kawata, Tetsuro: See—
Kuroishi, Norihiko; Kawata, Tetsuro; Kawauchi, Kenichi; Miyakawa, Nobuaki; Aibara, Reiji; and Koyanagi, Mitsumasa, 5,778,202, Cl. 395-306.000.
Kawauchi, Kenichi: See—
Kuroishi, Norihiko; Kawata, Tetsuro; Kawauchi, Kenichi; Miyakawa, Nobuaki; Aibara, Reiji; and Koyanagi, Mitsumasa, 5,778,202, Cl. 395-306.000.
Kawaura, Hideaki: See—
Ono, Akira; Takubo, Hiroyuki; and Kawaura, Hideaki, 5,775,626, Cl. 242-437.000.
Kayaba Industry Co., Ltd.: See—
Hayashi, Tetsuji; and Osawa, Shinito, 5,775,360, Cl. 137-115.050.
Kayama, Kazuo, to Murata Manufacturing Co., Ltd. Method of producing ceramic green sheets. 5,776,282, Cl. 156-247.000.
Kazami, Kazuyuki: See—
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Kazda, Stanislav: See—
Müller, Ulrich; Mohrs, Klaus; Dressel, Jürgen; Hanko, Rudolf; Hübsch, Walter; Matzke, Michael; Niewöhner, Ulrich; Raddatz, Siegfried; Krämer, Thomas; Müller-Gliemann, Matthias; Bellemann, Hans-Peter; Beuck, Martin; Kazda, Stanislav; and Wohlfeil, Stefan, 5,776,964, Cl. 514-394.000.
Kazemzadeh, Farhad: See—
Kriesel, Marshall S.; Kazemzadeh, Farhad; Kriesel, Matthew B.; Feng, William W.; Barber, Steve C.; and Kluck, William J., 5,776,103, Cl. 604-132.000.
KDL Technologies Limited: See—
Deerwester, Scott, 5,778,362, Cl. 707-5.000.
Kean, Brenda. Apparatus for redirecting camera flash light. 5,778,264, Cl. 396-174.000.
Kear, Bernard: See—
McCandlish, Larry E.; Kear, Bernard; and Angastiniotis, Nicos C., 5,776,264, Cl. 148-237.000.

Keating, Kim R.: See—
Wibert, Gregory J.; Greene, Harry L.; Keating, Kim R.; and Lee, Yung-Hsiung, 5,776,887, Cl. 514-2.000.
Keck, Arthur Carl, to General Electric Company. Methods and apparatus for coupling an electric motor and a motor lead protective conduit. 5,777,409, Cl. 310-71.000.
Kedem, Gershon; and Alexander, Thomas, to Duke University. Predictive caching system and method based on memory access which previously followed a cache miss. 5,778,436, Cl. 711-137.000.
Keedy, Dave E.: See—
Dexter, Delbert D.; and Keedy, Dave E., 5,775,447, Cl. 180-9.100.
Keefer, Gary L.; Weidmer, Stanley C.; Hiramoto, Kazuyuki; and Hyatt, Gregory Aaron, to Makino Inc. Machining method and multi-function tool. 5,775,853, Cl. 408-1.00R.
Keel, Beat G.: See—
Maffitt, Kent N.; and Keel, Beat G., 5,774,975, Cl. 29-603.120.
Kegelman, Joseph Edward; Stille, Diane Kathleen; Wiedenmann, Robert Kyle; and Zuk, Paul John, to Dade International Inc. Apparatus and method for reagent separation in a chemical analyzer. 5,776,784, Cl. 436-526.000.
Keinath, Armin; and Wömer, Jörg, to Leuze electronics GmbH +Co. Optoelectronic device employing digital filter which operates in different coefficient sets. 5,777,311, Cl. 235-462.000.
Keinrad, Klaus: See—
Stoll, Kurt; Streck, Michael; and Keinrad, Klaus, 5,777,471, Cl. 324-207.250.
Kell, Michael, to Private Clinic Laboratories, Inc. Method of monitoring therapeutic agent consumption. 5,776,783, Cl. 436-111.000.
Keller, Paul E.: See—
Kangas, Lars J.; and Keller, Paul E., 5,775,330, Cl. 128-731.000.
Kelley, Mark David: See—
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Kelly, Ephraim Lamar: See—
Kao, Junan; Kelly, Ephraim Lamar; Weber, Vicki Lynn; Gibson, Michael Steven; Appleby, Donald Benjamin; Sherman, Joseph Fredrick; Pegoli, Ronald Edward; Schneider, Mary Celine; Formyduval, Terry Franklin; and Hawkins, Larry Nelson, 5,777,165, Cl. 564-487.000.
Kelly, Paul K.: See—
Possanza, Steven D.; Wooster, Daniel J.; Nicolai, Kenneth A.; and Kelly, Paul K., 5,776,515, Cl. 425-147.000.
Kelly, Thomas L.: See—
von Stetten, Eric; Steiger, Peter; Stein, Jay A.; Weiss, Howard P.; and Kelly, Thomas L., 5,778,045, Cl. 378-98.900.
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Noble, Philip C.; Hedley, Anthony K.; Schulzki, Michael J.; and Kelly, William J., Jr., 5,776,204, Cl. 623-23.000.
Kelpin, by Margaret L., administratrix: See—
Kelpin, Thomas G., deceased; and Kelpin, by Margaret L., administratrix, 5,775,073, Cl. 56-8.000.
Kelpin, Thomas G., deceased; and Kelpin, by Margaret L., administratrix. Rake compactor and helical paddle wheel for aquatic harvester. 5,775,073, Cl. 56-8.000.
Kelton, Grady A.: See—
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Kem-Wove Incorporated: See—
Baigas, Joseph Fredrick, Jr., 5,776,380, Cl. 261-107.000.
Kendall, Charles S. Integrated tripod riser. 5,775,233, Cl. 108-59.000.
Kendall, George; Yneta, Horacio; and Bearden, John, to Kendall, George. Putting practice device. 5,776,007, Cl. 473-258.000.
Kennametal Inc.: See—
Massa, Ted R.; Van Kirk, John S.; and Conley, Edward V., 5,776,593, Cl. 428-212.000.
Kennedy, Jennifer S.: See—
Buysse, Steven P.; Kennedy, Jennifer S.; Lands, Michael J.; Loeffler, Donald R.; Lukianow, S. Wade; and Ryan, Thomas P., 5,776,130, Cl. 606-48.000.
Kennedy, Linda. Waterproof swimming pouch. 5,775,561, Cl. 224-676.000.
Kenny, John J., to Senior Power Services, Inc., Demex Division. Shaped charge assembly with truncated liner. 5,777,257, Cl. 102-312.000.
Kenny, Trevor Lindsey. Jumping toy. 5,776,003, Cl. 472-135.000.
Kenquest, Inc.: See—
Meehan, Paula Kent, 5,775,033, Cl. 52-33.000.
Kensington Laboratories, Inc.: See—
Bacchi, Paul E.; and Filipski, Paul S., 5,777,743, Cl. 356-370.000.
Kent, Erma W.; Nietzold, Daniel R.; and Thomson, Loroazo H., to Kent, Erma W. Locking device for locking a closure in an open position. 5,774,938, Cl. 16-332.000.
Kentish, William Edmund Cranstoun; Konishi, Tetsuya; Harrison, Simon Irving; and East, John William, to Sony Corporation; and Sony United Kingdom Limited. Digital signal processing for audio mixing console with a plurality of user operable data input devices. 5,778,417, Cl. 711-100.000.
Kerckhof, Bart; Wohlfart, Artur; and Dobbelaere, Joris, to Siemens Aktiengesellschaft. Electrical plug-in connector. 5,775,954, Cl. 439-701.000.
Kerem, Bat-Sheva: See—
Tsui, Lap-Chee; Riordan, John R.; Collins, Francis S.; Rommens, Johanna M.; Iannuzzi, Michael C.; Kerem, Bat-Sheva; Drumm, Mitchell L.; and Buchwald, Manuel, 5,776,677, Cl. 435-6.000.

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Kern, Lynn R. NiCad deep cycle charging/discharging system. 5,777,456, Cl. 320-128.000.
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Deller, Klaus; Krause, Helmfried; Meyer, Juergen; Kerner, Dieter; Lansink-Rotgerink, Hans; and Hartmann, Werner, 5,776,240, Cl. 106-482.000.
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Kerr, Roger Stanley; and Hons, Douglas Alvin, to Eastman Kodak Company. Media loading and unloading onto a vacuum drum using lift fins. 5,777,658, Cl. 347-215.000.
Kerschner, Ronald K.; and Campbell, David K., to Hewlett-Packard Company. Scanning device with non-contact optical components. 5,777,321, Cl. 250-235.000.
Kerttula, Reima; and Yli-Kauppi, Jouko, to Valmet Corporation. Dryer sections of a paper machine. 5,775,001, Cl. 34-114.000.
Kerwin, Paul; Langley, Robert; and Walls, Arthur Stark, to Ciba Specialty Chemicals Corporation. Production of pigments. 5,776,238, Cl. 106-412.000.
Keshbod, Parviz, to Cirrus Logic, Inc. Spacer flash cell process. 5,776,787, Cl. 437-43.000.
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Coquelet, Dominique; Meffre, Jean-Francois; and Kesks, Neamen, 5,777,609, Cl. 345-199.000.
Ketner, Gary Wayne; Hieter, Philip Andrew; and Clements, Janice E., to Johns Hopkins University. The Recombinationally targeted cloning in yeast artificial chromosomes. 5,776,745, Cl. 435-172.300.
Kewish, Richard Dean, to Ford Global Technologies, Inc. Adjustable vehicle simulator rig for chassis dynamometer testing. 5,777,243, Cl. 73-865.600.
Khalid, Nageeb. Cardiac valvular support prosthesis. 5,776,189, Cl. 623-2.000.
Khan, Mohammed Bashair: See—
Geddes, Kenneth Raymond; and Khan, Mohammed Bashair, 5,777,049, Cl. 526-64.000.
Khare, Gyanesh P.; and Kubicek, Donald H., to Phillips Petroleum Company. Process to remove sulfur using zinc containing sorbent subjected to steam treatment. 5,776,331, Cl. 708-247.000.
Khayat, Carine: See—
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Khranov, Mikhail, to Industrias Monfel S.A. de C.V. Process for production and purification of triacetin. 5,777,157, Cl. 560-248.000.
Kia Motors Corporation: See—
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Kiany, Esfandiar, to Safety-Kleen Corp. Enhanced solvent composition. 5,776,881, Cl. 510-407.000.
Kidd, Ian Lewis; Rodda, Darren Paul; and Wellwood, Grant Ashley, to Comalco Aluminium Limited. Treatment of solid material containing fluoride and sodium including mixing with caustic liquor and lime. 5,776,426, Cl. 423-111.000.
Kido, Eiichi; Yui, Yuh; Mori, Toyokazu; and Nozomi, Mamoru. Image forming apparatus and photoreceptor for use therein. 5,778,286, Cl. 399-159.000.
Kido, Kenichi; Sano, Tetsuo; Sekiguchi, Yoshitaka; and Fukuda, Hiroyuki, to Minolta Co. Ltd. Negatively chargeable toner for developing electrostatic latent image. 5,776,647, Cl. 430-110.000.
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Kihara, Kouhei: See—
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Kikukawa, Hiroyasu: See—

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Kilbourn, Robert G.; Gross, Steven S.; and Griffith, Owen W., to Board of Regents, The University Of Texas System; and Cornell Research Foundation, Inc. Method of use of cardiotonic drugs and inhibitors of nitric oxide synthesis to alleviate pathologic hypotension. 5,776,979, Cl. 514-565.000.
Kilgore, Gary Hartman. Tactile dial. 5,775,252, Cl. 116-205.000.

Kilgrew, Donald C.; and Pederson, Melvin H. Compact tire deflator. 5,775,832, Cl. 404-6.000.

Killilea, T. Howard; Boespflug, Donald W.; and Stenson, Paul H., to Valspar Corporation. The Urethane resins and coating compositions and methods for their use. 5,777,024, Cl. 524-590.000.

Kilpatrick-Liverman, LaTonya; and Miller, Lynne Ann, to Colgate-Palmolive Company. Clear cosmetic stick composition containing sucrose esters and method of use. 5,776,475, Cl. 424-401.000.

Kilström, Lars, to Aktiebolaget Electrolux. Slip ring device for a cable reel. 5,775,922, Cl. 439-23.000.

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- Asakura, Hiroyuki; Iida, Masanori; and Kobayashi, Masaki, 5,778,120, Cl. 385-49.000.

- Kobayashi, Masanori; and Kawabe, Taketoshi, to Nissan Diesel Motor Co., Ltd. Vehicle longitudinal spacing controller. 5,777,451, Cl. 318-587.000.
- Kobayashi, Noboru; and Hattori, Toshiyuki, to Yamaha Hatsudoki Kabushiki Kaisha. Watercraft. 5,775,250, Cl. 114-258.000.
- Kobayashi, Noriaki: *See—*
- Wakayama, Takeshi; Komuro, Toshiyuki; Mori, Koji; Yamauchi, Motomi; Yamashita, Tetsushi; and Kobayashi, Noriaki. 5,775,123, Cl. 62-407.000.
- Kobayashi, Seishichi: *See—*
- Takeuchi, Norio; Morotomi, Masaki; Moriga, Toshinori; Takenouchi, Ken; and Kobayashi, Seishichi. 5,776,273, Cl. 156-62.200.
- Kobayashi, Tadashi: *See—*
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- Kobayashi, Yoshihiro: *See—*
- Shimazu, Hiroshi; Kobayashi, Yoshihiro; and Sakata, Eiji. 5,775,219, Cl. 101-123.000.
- Kobayashi, Yoshio: *See—*
- Osawa, Toshiaki; Obinata, Masuo; Ishii, Yoshiyuki; and Kobayashi, Yoshio. 5,776,446, Cl. 424-85.100.
- Sakamoto, Susumu; Komai, Yuji; Hidano, Katsushi; and Kobayashi, Yoshio. 5,775,888, Cl. 418-55.200.
- Koch, Jürgen: *See—*
- Fischer, Wolfgang; Koch, Jürgen; and McKee, Graham Edmund. 5,777,036, Cl. 525-285.000.
- Koch, Stephanie; Jousse, Didier; Gy, Rene; and Courtemanche, Gilles, to Saint-Gobain Vitrage. Compositions of silico-sodo-calcic glasses and their applications. 5,776,844, Cl. 501-70.000.
- Kochs, Karl-Josef; and Hagmann, Paul, to William Prym GmbH & Co. KG. Machine for the attachment of buttons, rivets or the like, preferably to articles of clothing. 5,775,566, Cl. 227-18.000.
- Kodak Limited: *See—*
- Pratt, John M. 5,778,385, Cl. 707-200.000.
- Kodato, Setsuo: *See—*
- Hiraoka, Jun; and Kodato, Setsuo. 5,775,811, Cl. 374-185.000.
- Koford, James S.: *See—*
- Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanabhan, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Aleshin, Stanislav V.; and Podkolzin, Alexander S. 5,777,360, Cl. 257-315.000.
- Koga, Hisamitsu; Kumagai, Naotake; Owada, Tomiji; Furukawa, Nobuya; Kato, Masaaki; and Kawamura, Nobuyuki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Braking control system for electric automobile. 5,775,784, Cl. 303-152.000.
- Koga, Toshihiro: *See—*
- Horinouchi, Syogo; Takeuchi, Shigeki; Yoshinaka, Hideki; Koga, Toshihiro; Higo, Kazuhiko; Kugisaki, Hidehiro; Beppu, Fumiaki; and Mimasa, Jiro. 5,777,975, Cl. 369-112.000.
- Kogan, Timothy P.: *See—*
- Kohn, Harold L.; Huh, Nam; Kogan, Timothy P.; and Rege, Ajay A. 5,776,907, Cl. 514-44.000.
- Koganei Corporation: *See—*
- Doi, Takashi; Homma, Naoki; and Hamada, Shinichiro. 5,775,374, Cl. 137-625.640.
- Koguchi, Yoshimi: *See—*
- Sato, Shuichi; and Koguchi, Yoshimi. 5,775,245, Cl. 112-260.000.
- Kohayakawa, Yoshimi, to Canon Kabushiki Kaisha. Eye refractometer. 5,777,718, Cl. 351-211.000.
- Kohhashi, Jun-ichi: *See—*
- Shimizu, Isao; and Kohhashi, Jun-ichi. 5,777,191, Cl. 588-205.000.
- Kohl, Thomas D.; and Mino, Kenneth Lucien. Jewelry clasp. 5,774,957, Cl. 24-701.000.
- Köhler, Karl-Hans: *See—*
- Jörg, Wolfgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Röhringer, Arno; Gall, Claus; Abt, Reinhold; Strass, Rainer; and Köhler, Karl-Hans. 5,775,459, Cl. 180-444.000.
- Kohler, Rudolph Hugo; Davis, Robert Bruce; and Steigman, Frederic Neal, to Praxair Technology, Inc. Low pressure ultra-high energy cryogenic impact system. 5,775,603, Cl. 241-23.000.
- Kohlmeier, Thomas: *See—*
- Sasse, Wilfried; Kuppen, Peter; Meier, Eckhard; Kolkhorst, Günter; Kohlmeier, Thomas; and Noske, Frank. 5,775,788, Cl. 312-334.380.
- Kohlpaintner, Christian W.; Hanson, Brian E.; and Ding, Hao, to Celanese International Corporation. Aryl diphosphines and catalysts containing the same. 5,777,087, Cl. 534-14.000.
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- Kohn, Ulrich, to Robert Bosch GmbH. Transmission station, intermediate repeater and receiver station for a fibre-optic communications-transmission system. 5,777,764, Cl. 359-133.000.
- Kohno, Akihiro: *See—*
- Nagashima, Masaaki; Yamakawa, Tadashi; and Kohno, Akihiro. 5,778,398, Cl. 707-501.000.
- Kohrt, Jens Peter, to Lucas Industries public limited company. Measuring systems for linear or angular movements. 5,777,223, Cl. 73-432.100.
- Koifman, Vladimir; Afek, Yachin; and Kashat, Israel, to Motorola, Inc. High frequency amplifier in CMOS. 5,777,516, Cl. 330-277.000.
- Koike, Mikio: *See—*
- Hara, Kazumasa; Kuramoto, Hidechika; Koike, Mikio; Tanaka, Haruhiko; Sasano, Akiyoshi; and Fukada, Shinichi. 5,775,240, Cl. 112-102.500.
- Koike, Takashi; and Itoh, Kazumasa, to Sanshin Kogyo Kabushiki Kaisha. Engine operation control system. 5,775,297, Cl. 123-422.000.
- Koistinen, Peter: *See—*
- Ramm-Schmidt, Leif; Eriksson, Hemmo; Koistinen, Peter; and Tiainen, Veli. 5,775,410, Cl. 165-110.000.
- Koito Manufacturing Co., Ltd.: *See—*
- Yamada, Atsushi; and Okuda, Tadayuki. 5,775,798, Cl. 362-226.000.
- Yamamoto, Norimasa; and Maeda, Masahiro. 5,777,809, Cl. 359-869.000.
- Koiwai, Tamotsu; and Sato, Mitsuhiro, to Olympus Optical Co., Ltd. Lens barrel with a cam mechanism comprised of plastic material. 5,777,802, Cl. 359-700.000.
- Koizumi, Kazuhiko: *See—*
- Ohtsuka, Tadashi; Koizumi, Kazuhiko; and Nobutani, Tsutomu. 5,778,254, Cl. 395-858.000.
- Koizumi, Satoru; and Mikame, Masami, to Nippondenso Co., Ltd. Boundary route setting device for a map display system. 5,778,333, Cl. 701-212.000.
- Koizumi, Shoichi: *See—*
- Ide, Takeo; Hiraoka, Yasunobu; Koizumi, Shoichi; Morita, Minoru; and Ueda, Kunio. 5,776,525, Cl. 426-36.000.
- Koizumi, Yasuyuki: *See—*
- Matsui, Shuichi; Koizumi, Yasuyuki; Kato, Takashi; Miyazawa, Kazutoshi; Hachiya, Norihisa; and Nakagawa, Etsuo. 5,776,367, Cl. 252-299.630.
- Koizumi, Yoichi: *See—*
- Tanaka, Etsuo; and Koizumi, Yoichi. 5,778,261, Cl. 396-55.000.
- Kojima, Hiroyuki; and Kawamoto, Mutsumi, to Aisin AW Co., Ltd. Prime mover control responsive to accelerator operation. 5,775,294, Cl. 123-399.000.
- Kojima, Kiyoshi; and Takahashi, Takeshi, to Matsushita Electric Industrial Co., Ltd. Method for producing alloy powder of the R2T17 system, a method for producing magnetic powder of the of the R2T17NX system, and a high pressure heat-treatment apparatus. 5,776,263, Cl. 148-122.000.
- Kojima, Masayuki, to Noritsu Koki Co., Ltd. Leader transport apparatus in automatic film processing apparatus. 5,775,563, Cl. 226-92.000.
- Kojima, Noriaki: *See—*
- Okubo, Masao; Kojima, Noriaki; and Takahashi, Nobukazu. 5,778,291, Cl. 399-302.000.
- Kojima, Shigeru: *See—*
- Fujiwara, Ichiro; Machida, Akio; and Kojima, Shigeru. 5,777,977, Cl. 369-126.000.
- Kojima, Shinji: *See—*
- Nakayama, Koichi; and Kojima, Shinji. 5,775,244, Cl. 112-226.000.
- Kokkelenberg, Dirk: *See—*
- Vermeersch, Joan; Verschueren, Eric; and Kokkelenberg, Dirk. 5,776,653, Cl. 430-169.000.
- Kokubo, Hiroyasu; and Tanaka, Takashi, to Shin-Etsu Chemical Co., Ltd. Coating base for solid enteric pharmaceutical preparations. 5,776,501, Cl. 424-494.000.
- Kokubu, Sadao, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Transmit-ceive system. 5,777,570, Cl. 341-173.000.
- Koleilat, Bashir M.: *See—*
- Skeels, Harold B.; Koleilat, Bashir M.; and Singeetham, Shiva. 5,775,427, Cl. 166-344.000.
- Kolkhorst, Günter: *See—*
- Sasse, Wilfried; Kuppen, Peter; Meier, Eckhard; Kolkhorst, Günter; Kohlmeier, Thomas; and Noske, Frank. 5,775,788, Cl. 312-334.380.
- Koll, Stefan: *See—*
- Lange, Andreas; and Koll, Stefan. 5,777,418, Cl. 310-255.000.
- Kolomeitsev, Sergei, to Dana Corporation. Switched reluctance motor with low mutual inductance between phases. 5,777,416, Cl. 310-168.000.
- Kolomyski, Darrell James: *See—*
- Settles, Steven Ray; Barrs, John Andrew; and Kolomyski, Darrell James. 5,777,894, Cl. 364-550.000.
- Kolton, Anthony D.; Gamboa, Ruben A.; and Chimenti, Danette S., to Logical Information Machines, Inc. Market information machine. 5,778,357, Cl. 707-2.000.
- Komai, Yuji: *See—*
- Sakamoto, Susumu; Komai, Yuji; Hidano, Katsushi; and Kobayashi, Yoshio. 5,775,888, Cl. 418-55.200.
- Komatsu, Nobuyoshi: *See—*
- Enomoto, Yoshihiro; Hyakutake, Nobuo; Funato, Hitoshi; Fujita, Tetsuya; and Komatsu, Nobuyoshi. 5,778,298, Cl. 399-388.000.
- Komatsu, Yasuyuki: *See—*
- Moriya, Takashi; Komatsu, Yasuyuki; Sono, Hiroshi; and Sugai, Takashi. 5,775,278, Cl. 123-90.110.
- Komazawa, Yosiro: *See—*
- Haraga, Kōsuke; Yagi, Naoki; Nakashima, Yoshinobu; Ganryu, Yuzi; Sasaki, Tsutomu; Takimoto, Atsushi; Komazawa, Yosiro; Okuda, Asao; Takagi, Shoji; Matsukawa, Akifumi; Urata, Hideaki; Kawashima, Yasushi; Masuo, Kazumi; Honma, Kenji; and Ikeda, Isao. 5,776,584, Cl. 428-132.000.
- Komiya, Kenichi; Tanimoto, Koji; and Ide, Naoki, to Kabushiki Kaisha Toshiba. Image forming apparatus which corrects for misregistration. 5,778,280, Cl. 399-49.000.
- Komiyama, Osamu: *See—*
- Tsuda, Takashi; Yamanaka, Hidenori; and Komiyama, Osamu. 5,777,069, Cl. 528-388.000.

- Kommrusch, Richard S., to Motorola Inc. Low loss high frequency transmitting/receiving switching module. 5,778,306, Cl. 455-78.000.
- Komura, Osamu: *See—*
- Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya. 5,776,600, Cl. 428-325.000.
- Komuro, Toshiyuki: *See—*
- Wakayama, Takeshi; Komuro, Toshiyuki; Mori, Koji; Yamauchi, Motomi; Yamashita, Tetsushi; and Kobayashi, Noriaki. 5,775,123, Cl. 62-407.000.
- Konami Co., Ltd.: *See—*
- Hamano, Takashi. 5,775,691, Cl. 273-138.200.
- Nakagawa, Toshiaki; and Tsumura, Hideo. 5,777,302, Cl. 235-7.00A.
- Kondo, Norihisa: *See—*
- Kagawa, Takumi; Kondo, Norihisa; Kasai, Noriyuki; and Sakka, Hideo. 5,777,007, Cl. 524-114.000.
- Kondo, Shinichi: *See—*
- Kamada, Kazushi; and Kondo, Shinichi. 5,776,067, Cl. 600-443.000.
- Kondoh, Shinya, to Citizen Watch Co., Ltd. Driving method and system for antiferroelectric liquid-crystal display device. 5,777,593, Cl. 345-97.000.
- Kongsamut, Sathapana: *See—*
- Huger, Francis Parker; Smith, Craig Paul; Kongsamut, Sathapana; and Tang, Lei. 5,776,955, Cl. 514-343.000.
- Konica Corporation: *See—*
- Yamaguchi, Susumu; and Mori, Nobuyoshi. 5,777,800, Cl. 359-692.000.
- Konieczka, Howard R.: *See—*
- Koper, Robert P.; and Konieczka, Howard R. 5,775,217, Cl. 101-93.180.
- König, Hartmann: *See—*
- Rheinheimer, Joachim; Vogelbacher, Uwe Josef; Baumann, Ernst; König, Hartmann; Gerber, Matthias; Westphalen, Karl-Otto; and Walter, Helmut. 5,777,118, Cl. 544-318.000.
- Königsberger, Kurt: *See—*
- Hudkicky, Tomas; Königsberger, Kurt; McLamore, Sherita D.; and Maurya, Rakesh. 5,777,137, Cl. 549-435.000.
- Konigsfeld, Kris G.: *See—*
- Abramson, Jeffrey M.; Konigsfeld, Kris G.; and Vidwans, Rohit A. 5,778,220, Cl. 395-591.000.
- Konishi, Tetsuya: *See—*
- Kenish, William Edmund Cranston; Konishi, Tetsuya; Harrison, Simon Irving; and East, John William. 5,778,417, Cl. 711-100.000.
- Konishi, Yuzuru: *See—*
- Taguchi, Kazunori; and Konishi, Yuzuru. 5,777,351, Cl. 257-181.000.
- Konno, Toshikazu, to Sony Corporation. Tape cassette. 5,777,831, Cl. 360-132.000.
- Kono, Hiromi; Yoshino, Toshiyuki; and Kanai, Hiroshi, to Zexel Corporation. High-pressure fuel injection system. 5,775,304, Cl. 123-497.000.
- Kono, Masakatsu: *See—*
- Ichikawa, Katsuhisa; Kono, Masakatsu; Iriki, Kazunari; Kawabata, Tsuyoshi; Kuroiwa, Kenji; and Inui, Tsutomu. 5,775,437, Cl. 172-74.000.
- Kono, Shinichi; and Hanyu, Shigeki, to Fanuc Ltd. Method and apparatus for control in power failure. 5,777,450, Cl. 318-568.110.
- Konrad, Johann: *See—*
- Benedikt, Walter; Vogel, Manfred; Herden, Werner; and Konrad, Johann. 5,777,115, Cl. 385-16.000.
- Kontants, Horst, to Siemens Aktiengesellschaft. Single-pin or multi-pin plug connector with an extruded housing. 5,776,564, Cl. 428-34.100.
- Koo, Kyoung Bong: *See—*
- Kim, Beom Soo; Lee, Jin Hak; and Koo, Kyoung Bong. 5,777,681, Cl. 348-416.000.
- Koolen, Gerardus J. K. M., to U.S. Philips Corporation. Low-cost resistive tablet with touch and stylus functionality. 5,777,607, Cl. 345-174.000.
- Koop, Hermann: *See—*
- Hensel, Bernd; Hofmann, Friedrich; Koop, Hermann; Feick, Eberhard; and Richter, Franz. 5,777,979, Cl. 369-270.000.
- Kooy, Robert: *See—*
- Bugajski, James; Kooy, Robert; Moeller, Raymond J.; and Jackson, Michael L. 5,777,022, Cl. 524-527.000.
- Koper, Robert P.; and Konieczka, Howard R., to Paymaster Technologies, Inc. Check writing machine having an inked ribbon. 5,775,217, Cl. 101-93.180.
- Kopylov, Nonna; and Kortan, Ahmet R., to Lucent Technologies Inc. Method of eliminating light scattering bubbles in optical fiber preforms. 5,776,222, Cl. 65-384.000.
- Korea Advanced Institute of Science and Technology: *See—*
- Cho, Young-Ho; Kwak, Byung Man; Lee, Kwyro; and Park, Kwanhum. 5,777,227, Cl. 73-514.380.
- Korea Institute of Footwear & Leather Technology: *See—*
- Shin, Bong Sub; Lee, Jae Yeon; Kim, Dong Keun; Kim, Seoun Jun; and Cho, Sung Ok. 5,776,993, Cl. 521-140.000.
- Korea Institute of Science and Technology: *See—*
- Kim, Dae Joon; and Lee, Myung Hyun. 5,776,382, Cl. 264-16.000.
- Kwon, Yong Moo; Kim, Hyoung Gon; and Kim, Jae Hyoung. 5,777,907, Cl. 364-757.000.
- Korea Research Institute of Chemical Technology: *See—*
- Kim, Sung Soo; Kim, Byung Sup; and Hwang, Ki Jun. 5,776,965, Cl. 514-407.000.
- Korevaar, Eric, to Astrotecra Corporation. Multiple transmitter laser link. 5,777,768, Cl. 359-172.000.
- Korhonen, Jaana: *See—*
- Alitalo, Kari; Aprelikova, Olga; Pajusola, Katri; Armstrong, Elina; Korhonen, Jaana; and Kaipainen, Arja. 5,776,755, Cl. 435-194.000.
- Kori, Masako: *See—*
- Kori, Mituru; and Kori, Masako. 5,776,560, Cl. 428-20.000.
- Kori, Mituru; and Kori, Masako. Units for building ornamental article. 5,776,560, Cl. 428-20.000.
- Kori, Teruhiko; and Ezaki, Tadashi, to Sony Corporation. Apparatus and method for processing a high definition video signal. 5,778,064, Cl. 380-5.000.
- Kormos, Donald W.: *See—*
- Kalfas, Iain H.; Kormos, Donald W.; Piraino, David W.; Barnett, Gene H.; and Steiner, Charles P. 5,776,064, Cl. 600-414.000.
- Kornumpf, William Paul: *See—*
- Krishnamurthy, Vikram Bidare; Paik, Kyung Wook; Ghezze, Mario; Kornumpf, William Paul; and Wildi, Eric Joseph. 5,776,275, Cl. 156-150.000.
- Kortan, Ahmet R.: *See—*
- Kopylov, Nonna; and Kortan, Ahmet R. 5,776,222, Cl. 65-384.000.
- Kosaka, Hideo: *See—*
- Yoshikawa, Takashi; Kurihara, Kaori; and Kosaka, Hideo. 5,778,018, Cl. 372-45.000.
- Kosatschkow, John: *See—*
- Lonergan, Kevin; Cunha, Karl; Kosatschkow, John; and Tusler, Ralph Michael. 5,775,418, Cl. 165-80.200.
- Kosco, John, Jr., to Tecumseh Products Company. Compressor ball valve. 5,775,894, Cl. 418-63.000.
- Koshi, Yutaka: *See—*
- Andoh, Akihiro; Shishido, Shinji; Koshi, Yutaka; and Kamizawa, Koh. 5,778,166, Cl. 395-182.040.
- Koshikawa, Takao: *See—*
- Mizoshita, Yoshifumi; Koshikawa, Takao; Kanai, Hitoshi; Kane, Junichi; Otsuka, Yoshinori; and Ikegawa, Yukinori. 5,777,827, Cl. 360-113.000.
- Koshiyoyji, Takashi, to Kabushiki Kaisha Toshiba. Disk cartridge having a particular belt and slider configuration. 5,777,982, Cl. 369-291.000.
- Koskinen, Jukka, to Valmet Corporation. Assembly for preventing striping in a short dwell time applicator. 5,776,252, Cl. 118-413.000.
- Kosley, Raymond W., Jr.; Davis, Larry; and Taberna, Veronica, to Hoechst Marion Roussel, Inc. Galanthamine derivatives as acetylcholinesterase inhibitors. 5,777,108, Cl. 540-546.000.
- Kosmal, Alfred J., to Kistler-Morse Corporation. Pre-straining apparatus and method for strain sensors. 5,777,234, Cl. 73-765.000.
- Köster, Ludger; and Wohlbrück, Ralf, to Westfalia Separator Aktiengesellschaft. Valve assembly for a milking machine. 5,775,254, Cl. 119-14.380.
- Kosuga, Masahiko; and Kurihara, Hideshi, to Teijin Limited. Laminated polyester film to be laminated on metal plate. 5,776,616, Cl. 428-480.000.
- Kotani, Kazuyuki, to Koyo. Method of manufacturing a rocker arm. 5,774,984, Cl. 29-888.200.
- Kotani, Kenji: *See—*
- Fujita, Hiroo; Hattori, Yukimitsu; Kasahara, Yasuhiro; and Kotani, Kenji. 5,774,934, Cl. 16-2.100.
- Kotera, Koichi: *See—*
- Tanaka, Hiroyoshi; Kotera, Koichi; and Uchida, Masao. 5,777,427, Cl. 313-309.000.
- Köttig, Thomas, to Walter Sarstedt Geräte und Verbrauchsmaterial für Medizin und Wissenschaft. Apparatus for measuring urine output. 5,776,077, Cl. 600-573.000.
- Kozin, Brian L.; Marrack, Philippa; Kappler, John; and Paliard, Xavier, to National Jewish Center for Immunology and Respiratory Medicine. Method for identifying T cells involved in autoimmune disease. 5,776,708, Cl. 435-7.240.
- Koul, Kitty S.: *See—*
- Fillon, Joseph L.; Evans, Charles F.; Rohlfing, Kenneth E.; Rogerson, Diane S.; Koul, Kitty S.; Lee, Mei-Yuei; and Jacobs, Craig W. 5,778,183, Cl. 395-200.530.
- Kouno, Tatsuya: *See—*
- Ikematsu, Shinichi; Kawakami, Hiroshi; Nakano, Satoshi; Kouno, Tatsuya; Hiromi, Keisuke; and Yoshimoto, Masakazu. 5,775,998, Cl. 463-52.000.
- Kovacic, Paul J., to PPG Industries, Inc. Method of and nozzle for filling compartment of a multisheet glazing unit. 5,775,393, Cl. 141-383.000.
- Kowalevskii, Dmitri; and Kishinevsky, Michael, to Photran Corporation. Low-frequency modulated current mode power supply for magnetron sputtering cathodes. 5,777,863, Cl. 363-63.000.
- Kowalski, Stephen Vincent, to Northrop Grumman Corporation. Adaptive luminance-based filter. 5,778,104, Cl. 382-261.000.
- Kowshik, Vikram: *See—*
- Trinh, Jayson Giai; Kowshik, Vikram; and Yu, Andy Teng-Feng. 5,777,926, Cl. 365-185.190.
- Koyama, Kazuhide: *See—*
- Sumi, Hirofumi; Maeda, Keiichi; Sugano, Yukiyasu; Koyama, Kazuhide; Taguchi, Mitsuru; and Hoshino, Kazuhiro. 5,776,830, Cl. 438-643.000.
- Koyama, Masaru: *See—*
- Ikeyama, Shuichi; Koyama, Masaru; Miyake, Masayuki; and Senoo, Masaharu. 5,776,727, Cl. 435-69.100.
- Koyama, Toshiki: *See—*
- Kimura, Mutsumi; Shirai, Hirofusa; Koyama, Toshiki; Hanabusa, Kenji; and Kubota, Yuichi. 5,776,576, Cl. 428-64.100.
- Koyanagi, Mitsumasa: *See—*
- Kuroishi, Norihiko; Kawata, Tetsuro; Kawauchi, Kenichi; Miyakawa, Nobuaki; Aibara, Reiji; and Koyanagi, Mitsumasa. 5,778,202, Cl. 395-306.000.

- Koyo: *See—*
Kotani, Kazuyuki, 5,774,984, Cl. 29-888.200.
Koyo Engineering Company, Ltd.: *See—*
Futami, Hiroshi; and Futami, Kenjiro, 5,775,226, Cl. 104-71.000.
Kraehe, Karl-Friedrich, to Merck Patent Gesellschaft mit Beschränkter Haftung. Stabilized vapour-deposition materials based on titanium oxide. 5,776,847, Cl. 501-134.000.
Kraft, Burkhard, to Volkswagen AG. Motor vehicle tank with filling tube vent. 5,775,392, Cl. 141-382.000.
Kraft, Glenn; and Czamara, Deborah, to Wilson Greatbatch Ltd. Flat-folded, multi-plate electrode assembly. 5,776,628, Cl. 429-94.000.
Kraft, James L. Modular cabling system and method for installing same. 5,774,979, Cl. 29-857.000.
Krambeck, Dagoberto, to AlliedSignal Inc. Tension controlled seat belt retractor. 5,775,618, Cl. 242-372.000.
Kramer, Linda S.; Dunn, Robin M.; Giles, Terrence R.; and Miller, Robert W., to Henkel Corporation. Process for activating a metal surface for conversion coating. 5,776,265, Cl. 148-241.000.
Krämer, Thomas: *See—*
Müller, Ulrich; Mohrs, Klaus; Dressel, Jürgen; Hanks, Rudolf; Hübsch, Walter; Matzke, Michael; Niewöhner, Ulrich; Raddatz, Siegfried; Krämer, Thomas; Müller-Gliemann, Matthias; Bellemann, Hans-Peter; Beuck, Martin; Kazda, Stanislav; and Wohlfeil, Stefan, 5,776,964, Cl. 514-394.000.
Krause, Helmfried: *See—*
Deller, Klaus; Krause, Helmfried; Meyer, Juergen; Kerner, Dieter; Lansink-Rotgerink, Hans; and Hartmann, Werner, 5,776,240, Cl. 106-482.000.
Krebs, Michael: *See—*
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- L. G. Electronics Inc.: See—
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- Lacey, John: See—
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Taya, Takashi; Yoshida, Akira; Yamaoka, Shinsuke; and Matsumoto, Shuichi, 5,778,214, Cl. 395-551,000.

Matsumoto, Tadashi; and Kawai, Eiichi, to Fuji Kiko Co., Ltd. Seat lifter for motor vehicles. 5,775,661, Cl. 248-421.000.
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Matsumura, Yukihiro: See—
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Matsunaga, Akio; Suzuki, Makoto; and Abe, Shizuo, to Toyota Jidosha Kabushiki Kaisha. Cylinder head for a multi-cylinder internal combustion engine. 5,775,272, Cl. 123-41.82R.
Matsunaga, Terry: See—
Unger, Evan C.; Fritz, Thomas A.; Matsunaga, Terry; Ramaswami, VaradaRajan; Yellowhair, David; and Wu, Guanli. 5,776,429, Cl. 424-9.520.
Matsuno, Junichi: See—
Hiraoka, Chikara; Matsuno, Junichi; and Fukuda, Hiromitsu. 5,778,294, Cl. 399-329.000.
Matsunuma, Kenji: See—
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya. 5,776,600, Cl. 428-325.000.
Matsuo, Mie: See—
Sasaki, Yasutaka; Matsuo, Mie; Nakata, Rempei; Wada, Junichi; Hayasaka, Nobuo; Yano, Hiroyuki; and Okano, Haruo. 5,775,980, Cl. 451-285.000.
Matsuo, Yuji: See—
Okada, Shinjiro; Tomono, Haruo; and Matsuo, Yuji. 5,777,710, Cl. 349-138.000.
Matsuoka, Hitoshi: See—
Kurozumi, Seiji; Honda, Yukio; Sato, Kazuaki; Nakamura, Masao; Suzuki, Nobuharu; Fujita, Tokio; and Matsuoka, Hitoshi. 5,777,405, Cl. 310-40.0MM.
Matsushima, Hitoshi: See—
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Matsushima, Masaaki: See—
Kameyama, Makoto; Matsushima, Masaaki; and Yanagi, Michio. 5,777,828, Cl. 360-126.000.
Matsushita Electric Industrial Co., Inc.: See—
Shinozaki, Noboru; and Kubo, Seichi. 5,778,303, Cl. 455-5.100.
Matsushita Electric Industrial Co., Ltd.: See—
Asakura, Hiroyuki; Iida, Masanori; and Kobayashi, Masaki. 5,778,120, Cl. 385-49.000.
Horie, Naoya; Nezu, Akira; and Imanishi, Yoshiaki. 5,777,316, Cl. 235-486.000.
Horinouchi, Syogo; Takeuchi, Shigeki; Yoshinaka, Hideki; Koga, Toshihiro; Higo, Kazuhiko; Kugisaki, Hidehiro; Beppu, Fumiaki; and Mimasa, Jiro. 5,777,975, Cl. 369-112.000.
Ideta, Nobuhiko; and Nishi, Ryuzo. 5,778,023, Cl. 375-208.000.
Inogai, Kazunori. 5,777,908, Cl. 364-724.100.
Inoue, Shinji; Kakiuchi, Takashi; Nakamura, Hiroki; Waki, Hiroyuki; and Oashi, Masahiro. 5,778,352, Cl. 707-1.000.
Ishibashi, Hiromichi; Shimada, Toshiyuki; Edahiro, Yasuaki; Moriya, Mitsuro; Horibe, Ryusuke; and Miyachi, Hiroyuki. 5,777,967, Cl. 369-59.000.
Iwase, Hiroo; Yamasaki, Yasuhiko; Takayanagi, Takeo; Rokutani, Tomohide; Nakatsuka, Saburo; and Yokoyama, Takashi. 5,775,002, Cl. 34-122.000.
Kawasaki, Moriaki; Ikeda, Tamotsu; Haji, Nobuyuki; and Ueda, Masayoshi. 5,778,146, Cl. 392-419.000.
Kimura, Hiroshi. 5,777,515, Cl. 330-257.000.
Kishigami, Takaaki; Mimura, Masahiro; Hasegawa, Makoto; Ushiyama, Tadaaki; Nakamura, Masahiko; and Takagi, Yoshinori. 5,777,693, Cl. 348-731.000.
Kojima, Kiyoshi; and Takahashi, Takeshi. 5,776,263, Cl. 148-122.000.
Kurozumi, Seiji; Honda, Yukio; Sato, Kazuaki; Nakamura, Masao; Suzuki, Nobuharu; Fujita, Tokio; and Matsuoka, Hitoshi. 5,777,405, Cl. 310-40.0MM.
Miyake, Jiro; Ninomiya, Kazuki; Urano, Miki; Tsubata, Shintaro; and Nishiyama, Tamotsu. 5,777,688, Cl. 348-571.000.
Naka, Teruyuki; Umeda, Yoshio; Yamamura, Toshiki; Kumon, Akira; Suzuki, Seichi; Nawama, Junichi; and Nagase, Hisanori. 5,776,544, Cl. 427-307.000.
Nakanishi, Hideo. 5,778,311, Cl. 455-343.000.
Nakatuka, Tadayoshi. 5,777,530, Cl. 333-104.000.
Niibo, Nario; Yoshida, Naoko; and Takamuku, Yoshinori. 5,776,358, Cl. 252-62.200.
Ochi, Takao; Funakoshi, Hisashi; Hatada, Kenzo; and Wakabayashi, Takashi. 5,776,802, Cl. 438-123.000.
Takeuchi, Seichi; and Kadono, Shinya. 5,777,900, Cl. 364-572.000.
Tanaka, Hiroyoshi; Kotera, Koichi; and Uchida, Masao. 5,777,427, Cl. 313-309.000.

Tanaka, Koichiro; Kimura, Tomohiro; Tatsuta, Akihiro; and Shiomi, Tomonori. 5,778,032, Cl. 375-355.000.
Tomiyama, Morio; and Kishi, Toshinori. 5,777,969, Cl. 369-94.000.
Tsuchida, Kensaku; Hattori, Takashi; and Miyagi, Rikio. 5,776,207, Cl. 29-623.100.
Ueda, Hideyuki; Kuwahara, Kenji; Seki, Hiroshi; Okazaki, Sadayuki; Odagiri, Masaru; Takahashi, Kiyoshi; and Murai, Mikio. 5,776,602, Cl. 428-332.000.
Watanabe, Hirosuke; Kimura, Takeo; Okazaki, Masatoshi; and Mizone, Shinya. 5,776,597, Cl. 428-297.400.
Yamagishi, Shigekazu. 5,777,695, Cl. 348-744.000.
Yoshida, Masahiro; Kitada, Katsuhisa; and Seki, Yoshio. 5,777,441, Cl. 315-371.000.
Matsushita Electric Works R&D Lab.: See—
Maya, Jakob; and Anandan, Munisamy. 5,777,431, Cl. 313-493.000.
Matsushita Electronics Corporation: See—
Naito, Hiroki; and Kume, Masahiro. 5,776,792, Cl. 438-31.000.
Matsushita Industrial Electric Co., Ltd.: See—
Sakai, Hirokazu; and Sugio, Takashi. 5,775,125, Cl. 62-410.000.
Matsushita, Izumi: See—
Sugimoto, Kazuaki; Matsushita, Izumi; and Yukawa, Chiaki. 5,775,820, Cl. 400-120.160.
Matsushita, Kunitake: See—
Nagata, Toshihiko; Sano, Hiroshi; Yamawaki, Takayuki; and Matsushita, Kunitake. 5,777,413, Cl. 310-90.000.
Matsushita, Tetsuya: See—
Tomi, Yoshitaka; Matsushita, Tetsuya; Takeshita, Fusayuki; Murashiro, Katsuyuki; and Nakagawa, Etsuo. 5,776,366, Cl. 252-299.630.
Matsutani, Kanji; Hirano, Hiroshi; Satoh, Katsutoshi; and Matsumoto, Takayuki, to Kabushiki Kaisha Matsutani Seiskusho. Root canal treatment instrument and manufacturing method for the root canal treatment instrument. 5,775,902, Cl. 433-102.000.
Matsuura, Yuichiro: See—
Fukunaga, Shintaro; Sueda, Taijiro; and Matsuura, Yuichiro. 5,776,047, Cl. 600-18.000.
Matsuyama, Shigeru, to Canon Kabushiki Kaisha. Electronic equipment such as an electronic typewriter having a relocation function and an extension function thereof. 5,778,396, Cl. 707-500.000.
Matsuzaki, Hiromi; Ojima, Satoshi; and Nakamura, Masashi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Prosthesis for spanning a space formed upon removal of an intervertebral disk. 5,776,196, Cl. 623-17.000.
Matsuzawa, Toshihiro: See—
Onishi, Tomoyuki; Tsuji, Takashi; and Matsuzawa, Toshihiro. 5,777,116, Cl. 544-264.000.
Matteucci, Mark D.: See—
Lin, Kuei-Ying; Lewis, Jason G.; Matteucci, Mark D.; and Wagner, Richard W. 5,777,153, Cl. 560-158.000.
Matthews, Denis: See—
Webb, Michael Reginald; and Matthews, Denis. 5,775,534, Cl. 220-269.000.
Matthews, Ian Richard; Godfrey, Christopher Richard Ayles; and Clough, John Martin, to Zeneca Limited. Intermediates for the preparation of fungicides. 5,777,162, Cl. 564-167.000.
Matthews, Robert Roger, to Legacy Systems, Inc. Apparatus for the treatment of semiconductor wafers in a fluid. 5,776,296, Cl. 156-345.000.
Matthews, Ruth Christine: See—
Burnie, James Peter; and Matthews, Ruth Christine. 5,777,083, Cl. 530-387.300.
Mattison, Phillip E., to Intel Corporation. Method and apparatus for protecting flash memory. 5,778,070, Cl. 380-25.000.
Mattson, Larry J.: See—
Hampton, Marshall B.; Mattson, Larry J.; and Simpson, Ronald O. 5,775,059, Cl. 53-429.000.
Matumoto, Sigeru; and Kako, Yuhshi, to Pioneer Electronic Corporation. Door structure for a recording medium reproducing device. 5,777,958, Cl. 369-37.000.
Matuo, Akira: See—
Kaneko, Takeshi; and Matuo, Akira. 5,775,370, Cl. 137-505.250.
Matyas, Melanie E. Replaceable flexible protective cover for an infusion device. 5,776,106, Cl. 604-180.000.
Matz, Volker: See—
Jakob, Martin; Matz, Volker; and Schindler, Hermann. 5,777,015, Cl. 524-354.000.
Matzke, Michael: See—
Müller, Ulrich; Mohrs, Klaus; Dressel, Jürgen; Hanko, Rudolf; Hübsch, Walter; Matzke, Michael; Niewöhner, Ulrich; Raddatz, Siegfried; Krämer, Thomas; Müller-Gliemann, Matthias; Bellemann, Hans-Peter; Beuck, Martin; Kazda, Stanislav; and Wohlfeil, Stefan. 5,776,964, Cl. 514-394.000.
Mauer GmbH: See—
Mauer, Gunter. 5,775,143, Cl. 70-355.000.
Mauer, Gunter, to Mauer GmbH. Resettable double-bit lock. 5,775,143, Cl. 70-355.000.
Maurmus, Jean-Pierre; and Martin, Guy, to Societe Europeene de Propulsion. Turbine of thermostructural composite material, in particular of small diameter, and a method of manufacturing it. 5,775,878, Cl. 416-186.00R.
Maurer, Eberhard: See—
Schmitt, Urban; Maurer, Eberhard; Rüdinger, Wolfgang; and Deeg, Rolf. 5,776,702, Cl. 435-7.500.
Maurer, Fritz: See—

Goto, Toshio; Ito, Seishi; Minegishi, Natsuko; Yamaoka, Tatsuya; Ueno, Chieko; Moriya, Koichi; Maurer, Fritz; and Watanabe, Ryo. 5,776,858, Cl. 504-225.000.
Maurya, Rakesh: See—
Hudkicky, Tomas; Königsberger, Kurt; McLamore, Sherita D.; and Maurya, Rakesh. 5,777,137, Cl. 549-435.000.
Maute, Robert E.: See—
Bednarczyk, Adam; Maute, Robert E.; and Thompson, Laird B. 5,777,278, Cl. 181-102.000.
Mauvrenay, Rolland-Yves: See—
Orsolini, Piero; Mauvrenay, Rolland-Yves; and Deghenghi, Romano. 5,776,885, Cl. 514-2.000.
Mawle, Craig D.: See—
Smith, David H.; and Mawle, Craig D. 5,775,599, Cl. 239-585.300.
Maxfield Wilson, Nancy; and Larue, Catherine, to Pasteur Sanofi Diagnostics. Liposome reagents for immunoassays. 5,776,487, Cl. 424-450.000.
Maxwell Energy Products, Inc.: See—
Farahmandi, C. Joseph; and Dispenette, John M. 5,777,428, Cl. 313-352.000.
May, Christopher P.: See—
Pemberton, Bradley E.; May, Christopher P.; Rossabi, Joseph; Riha, Brian D.; and Nichols, Ralph L. 5,775,424, Cl. 166-264.000.
May, Michael W. Replacement surface and method of installation. 5,776,605, Cl. 428-354.000.
Maya, Jakob; and Anandan, Munisamy, to Matsushita Electric Works R&D Lab. Substantially flat compact fluorescent lamp. 5,777,431, Cl. 313-493.000.
Mayer, Isabella V.: See—
Lazarov, Miladin P.; and Mayer, Isabella V. 5,776,556, Cl. 427-567.000.
Mayer, Johann: See—
Reihl, Peter; Wingen, Bernhard; Salz, Wolfgang; Mayer, Johann; Danzl, Martin; Fürst, Arpad; and Zirbs, Thomas. 5,775,769, Cl. 296-216.000.
Mayer, Wolfgang: See—
Schmidt, Dieter; Eisenhardt, Günter; Geheeb, Norbert; Sailer, Peter; Engelhardt, Helmut; and Mayer, Wolfgang. 5,775,280, Cl. 123-90.410.
Mayle, Robert L. Method of installing roofing material. 5,775,052, Cl. 52-746.110.
Mayo, Stephen D., to Eaton Corporation. Axial magnetic field coil for vacuum interrupter. 5,777,287, Cl. 218-123.000.
Mazzer, Luciano, to Tema Technologies & Materials S.R.I. Protective waterproofing membrane, particularly for coatings of walls and pavings. 5,775,839, Cl. 405-50.000.
Mazzocco, Thomas R., to Staar Surgical Company. Fixation system for intraocular lens structures. 5,776,191, Cl. 623-6.000.
McAnally, Andrew; and Cook, Stephen, to Dell Computer Corporation. Power supply mounting assembly for electronic equipment. 5,777,848, Cl. 361-725.000.
McAndrews, Joseph M.; and Jones, Richard H., to Peco II, Inc. Back-up battery management system for a DC power supply. 5,777,454, Cl. 320-51.000.
McArthur, Hamish A. I.: See—
Denoya, Claudio D.; Hafner, Edmund W.; and McArthur, Hamish A. I. 5,776,735, Cl. 435-76.000.
McAtee, Joseph P. Momentum generating golf club. 5,776,009, Cl. 473-333.000.
McBain, Douglas S.; Cobbledick, David S.; Shanoski, Henry; and Sullivan, Brian J., to GenCorp Inc. In-mold coating compositions suitable as is for an end use application. 5,777,053, Cl. 526-301.000.
McBride, Donald Dean, to Goodyear Tire & Rubber Company, The. Calibration of optical properties to measure depth of a liquid. 5,777,731, Cl. 356-243.000.
McBride, Gregory Edward: See—
Blea, Donald Reynold; Kern, Ronald Maynard; McBride, Gregory Edward; and Shackelford, David Michael. 5,778,393, Cl. 707-205.000.
McBride, William: See—
Dean, Richard T.; Buttram, Scott; McBride, William; Lister-James, John; and Civitello, Edgar R. 5,776,428, Cl. 424-1.690.
McCain Traffic Supply, Inc.: See—
Shaffer, Kevin Robert. 5,775,801, Cl. 362-310.000.
McCandlish, Larry E.; Kear, Bernard; and Angastiniotis, Nicos C., to Rutgers University. Method for producing amorphous based metals. 5,776,264, Cl. 148-237.000.
McCann, Patrick J., to University of Oklahoma, The Board of Regents of the. Method for fabricating semiconductor laser. 5,776,794, Cl. 438-46.000.
McCarthy, Dale C., to Centerpin Technology, Inc. Coaxial cable connector. 5,775,934, Cl. 439-427.000.
McCarthy, Timothy J.: See—
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McCartney, Damien: See—
Sherry, Adrian; McCartney, Damien; and Byrne, Michael. 5,777,911, Cl. 364-724.130.
McCartney, Michael David: See—
Supernaw-Issen, Daniel Aaron; and McCartney, Michael David. 5,778,225, Cl. 395-673.000.
McCartney, Michael J. Health data processing system. 5,778,345, Cl. 705-2.000.
McCarty, Donald J.; and Dobie, Keith, to Tetra Technologies Inc. Method for removing nitrogen from wastewater. 5,776,344, Cl. 210-605.000.
McCarty, Mark F., to Nutrition 21. Magnesium taurate as an adjuvant to rapid thrombolytic therapy. 5,776,498, Cl. 424-489.000.
McCarty, Mark F., to Nutrition 21. Magnesium taurate for prevention and treatment of pre-eclampsia/eclampsia. 5,776,504, Cl. 424-682.000.
McClelland, Larry W., to Wolverine World Wide Inc. Footwear sole with cleated window. 5,775,005, Cl. 36-31.000.
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Aiyer, Arun A.; McCoy, John H.; Suwa, Kyoichi; and Chau, Henry K. 5,777,729, Cl. 356-237.000.
McCullough, Francis Patrick. Flexible biregional carbonaceous fiber, articles made from biregional carbonaceous fibers, and method of manufacture. 5,776,607, Cl. 428-367.000.
McCullough, Francis Patrick. Flexible biregional carbonaceous fiber, articles made from biregional carbon fibers, and method of manufacture. 5,776,609, Cl. 428-375.000.
McCullough, Wesley D.: See—
Vidwans, Rohit A.; McCullough, Wesley D.; Huang, Joel; and Rohlman, Joseph F. 5,777,928, Cl. 365-189.050.
McCumber, Donald E.; and Angell, Charles Austen, to Placon Corporation. Blister package with pivotable door closure. 5,775,516, Cl. 206-470.000.
McDermott, Michael Anthony; and Schuetz, Jurgen Friedrich, to BetzDearborn Inc. Method for treatment of paper machine press section felts. 5,776,310, Cl. 162-199.000.
McDonald, Henry H., to McDonald, Henry H.; and Haeffiger, William W. Rocking lens implantation apparatus. 5,776,139, Cl. 606-107.000.
McDonald, Henry H., to Surgical Concepts, Inc. Artificial lens insertible between the iris and natural lens of the eye. 5,776,192, Cl. 623-6.000.
McDonald, Joseph J.: See—
Getman, Daniel P.; DeCrescenzo, Gary A.; Freskos, John N.; Vazquez, Michael L.; Sikorski, James A.; Devadas, Balekudru; Nagarajan, Srinivasan; Brown, David L.; and McDonald, Joseph J. 5,776,971, Cl. 514-422.000.
McDonald, Michael J.: See—
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Kuhlman, Brian P. 5,777,479, Cl. 324-452.000.
Walls, William T. 5,777,236, Cl. 73-786.000.
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Lee, John C.; Adams, Jerry L.; Gallagher, Timothy F.; Green, David W.; Heys, John Richard; McDonnell, Peter C.; McNulty, Dean E.; Young, Peter R.; and Strickler, James E. 5,777,097, Cl. 536-24.310.
McDonough, John G., to Qualcomm Incorporated. Dual-mode communications processor. 5,778,024, Cl. 375-216.000.
McDougall, Greg. Electric fan heater. 5,778,144, Cl. 392-385.000.
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Root, Loren F.; and McDunn, Kevin J. 5,777,384, Cl. 257-712.000.
McElhone, James J. Standby receptacles. 5,775,943, Cl. 439-528.000.
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Mowery, Jack T.; and McGarry, Benjamin L. 5,775,042, Cl. 52-520.000.
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McGeer, Patrick L.; Waterfield, J. Douglas; and McGeer, Edith G. 5,776,946, Cl. 514-307.000.
McGeer, Patrick L.; Waterfield, J. Douglas; and McGeer, Edith G. Peripheral benzodiazepine receptor ligands as antiinflammatory agents. 5,776,946, Cl. 514-307.000.
McGinness, Michael P.; and Short, Warren. Method for regeneration and closed loop recycling of contaminated cleaning solution. 5,776,351, Cl. 210-748.000.
McGrey, Fabiola B.; and McGrey, Steven J. Apparatus for cutting and serving baked goods. 5,774,990, Cl. 30-114.000.
McGrey, Steven J.: See—
McGrey, Fabiola B.; and McGrey, Steven J. 5,774,990, Cl. 30-114.000.
Mchra-Palta, Asha: See—
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Brownmiller, Curtis; Bencheck, Michael; Tran, Minh T.; Branton, Robert; DeMoss, Mark; and Landon, Steve. 5,778,184, Cl. 395-200.540.
Fee, John A. 5,777,761, Cl. 359-110.000.
Gavan, John Charles. 5,777,754, Cl. 358-407.000.
Young, Jamie L.; Britton, Rodney S.; and Farley, Kevin J. 5,778,049, Cl. 379-10.000.
McJames, William; Willis, Bernard M.; Smith, Daniel; Reynolds, Eugene; Gucker, Carl; and Nordmeyer, Michael, to Ethicon, Inc. Process for manufacturing surgical needles. 5,776,268, Cl. 148-656.000.
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- McKee, Kevin D., to Case Corporation. Microprocessor controlled neutral circuit for a power transmission. 5,778,330, Cl. 701-62.000.
- McKenna, Michael A.: See—
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- McLamore, Sherita D.: See—
Hudkicky, Tomas; Königsberger, Kurt; McLamore, Sherita D.; and Maurya, Rakesh, 5,777,137, Cl. 549-435.000.
- McLung, J. Keith: See—
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- McMahon, John Francis: See—
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- McManus, James D.: See—
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- McManus, Owen B.: See—
Kaczorowski, Gregory J.; Garcia, Maria L.; Leonard, Reid J.; McManus, Owen B.; Swanson, Richard J.; and Folander, Kimberly L., 5,776,734, Cl. 435-69.100.
- McMaster, Daniel; and Breidenthal, Robert Edward, Jr., to Boeing Company. The. Passive flow control aero-optical turret assembly. 5,775,643, Cl. 244-130.000.
- McMaster, Howard H.: See—
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- McMaster, Sandra A.: See—
Hull, Harold L.; McMaster, Howard H.; and McMaster, Sandra A., 5,775,451, Cl. 180-170.000.
- McNeilus Truck and Manufacturing, Inc.: See—
Christenson, Ronald E., 5,775,867, Cl. 414-408.000.
- McNelly, Steve H.; and Machtig, Jeffrey S., to Videotronic Systems. Image blocking teleconferencing eye contact terminal. 5,777,665, Cl. 348-20.000.
- McNulty, Dean E.: See—
Lee, John C.; Adams, Jerry L.; Gallagher, Timothy F.; Green, David W.; Heys, John Richard; McDonnell, Peter C.; McNulty, Dean E.; Young, Peter R.; and Strickler, James E., 5,777,097, Cl. 536-24.310.
- McPherson, Kevin, to Glenna Sue Bruns. Drainage device. 5,775,039, Cl. 52-169.500.
- McPhillips, J. Manning: See—
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- McPhillips Manufacturing Co. Inc.: See—
Tull, Michael; and McPhillips, J. Manning, 5,775,041, Cl. 52-455.000.
- McShane, James F.; and Robinson, Bruce T., to Axsys Corporation. Method and apparatus for maximizing the number of radiological images printed on sheet of film. 5,777,753, Cl. 358-302.000.
- McSheffrey, Brendan T., to MJA Industries, Inc. Electroluminescent signaling fire extinguisher. 5,775,430, Cl. 169-30.000.
- McVicker, Gary Brice: See—
Fung, Shun Chong; Huang, Yao-Jyh Robert; Walsh, John Francis; McVicker, Gary Brice; and Clem, Kenneth Ray, 5,776,849, Cl. 502-37.000.
- McWhorter, William W., Jr.: See—
Lee, Byung H.; Lee, Pil H.; McWhorter, William W., Jr.; and Dutton, Fred E., 5,776,950, Cl. 514-317.000.
- McWilliams, Dennis M. Automatic toilet seat cover closing device. 5,774,904, Cl. 4-246.200.
- Mead, Carver: See—
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- Mead, Charles R.: See—
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- Mead Corporation, The: See—
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van der Steen, Jan J.; Vullers, Ruud; Kuipers, Marcel; Logtens, Jozef P. M.; Cooley, Roderick A.; Milton, Derek J.; Taylor, Andrew E.; and Abbott, Stephen J., 5,778,296, Cl. 399-360,000.
Mimasa, Jiro: See—
Horinouchi, Syogo; Takeuchi, Shigeki; Yoshinaka, Hideki; Koga, Toshihiro; Higo, Kazuhiko; Kugisaki, Hidehiro; Beppu, Fumiaki; and Mimasa, Jiro, 5,777,975, Cl. 369-112,000.
Mimura, Hideki: See—
Taira, Kazuhiko; Kikuchi, Shinichi; Mimura, Hideki; Tamada, Yuzo; and Nakai, Masatoshi, 5,778,142, Cl. 386-97,000.
Mimura, Masahiro: See—
Kishigami, Takaaki; Mimura, Masahiro; Hasegawa, Makoto; Ushiyama, Tadaaki; Nakamura, Masahiko; and Takagi, Yoshinori, 5,777,693, Cl. 348-731,000.
Minami, Don Satoshi, to Bell Sports, Inc. Sport helmet retention apparatus, 5,774,901, Cl. 2-421,000.
Minami, Donald S.: See—
Jackson, Richard C.; Howard, John Avery; Lada, Christopher O.; Minami, Donald S.; Hao-Jui, Lan; and Cheng-Liang, Tsai, 5,775,684, Cl. 271-9,070.
Minarelli, Alessandro: See—
Ghini, Marco; Ferrari, Michele; and Minarelli, Alessandro, 5,775,062, Cl. 53-461,000.
Minebea Co., Ltd.: See—
Nagata, Toshihiko; Sano, Hiroshi; Yamawaki, Takayuki; and Matsushita, Kunitake, 5,777,413, Cl. 310-90,000.
Suzuki, Yuzuru; Fujitani, Sakae; and Makino, Kenichi, 5,777,415, Cl. 310-156,000.
Minegishi, Natsuko: See—
Goto, Toshio; Ito, Seishi; Minegishi, Natsuko; Yamaoka, Tatsuya; Ueno, Chieko; Moriya, Koichi; Maurer, Fritz; and Watanabe, Ryo, 5,776,858, Cl. 504-225,000.
Minemura, Tetsuroh: See—
Wakagi, Masatoshi; Onisawa, Kenichi; Ando, Masahiko; Kaneko, Toshiki; Minemura, Tetsuroh; and Okada, Tomohiro, 5,777,702, Cl. 349-47,000.
Miner, Paul Edward: See—
Vinski, Paul; and Miner, Paul Edward, 5,776,443, Cl. 424-70,120.
Minghui, Gao: See—
Ronkainen, Hannu; and Minghui, Gao, 5,776,807, Cl. 438-202,000.
Minimed, Inc.: See—
Van Antwerp, William Peter, 5,777,060, Cl. 528-28,000.
Minissale, Ernest P.; Fry, Tova; and Hull, Wilbur J., III, to Chrysler Corporation. Method and assembly for object detection by a vehicle, 5,777,563, Cl. 340-903,000.
Minnesota Mining and Manufacturing Company: See—

- Alband, Todd D., 5,775,321, Cl. 128-200,230.
Belka, Anthony M.; and Brace, Thomas J., 5,777,884, Cl. 364-478,130.
Follett, Gary J.; and George, Clayton A., 5,776,290, Cl. 156-279,000.
Hagan, Richard; Smith, Terry L.; Frey, Robert G.; Henson, Gordon D.; and Blomgren, Jack P., 5,778,123, Cl. 385-76,000.
Hedblom, Thomas P., 5,777,791, Cl. 359-536,000.
Lu, Ying-Yuh; Weeks, Bruce W.; and Wang, Paul J., 5,776,651, Cl. 430-143,000.
Mertens, Timothy A., 5,776,591, Cl. 428-195,000.
Nakajima, Toshitaka, 5,777,790, Cl. 359-536,000.
Reagen, William K., 5,777,735, Cl. 356-346,000.
Schultz, Robert K.; and Schultz, David W., 5,776,432, Cl. 424-45,000.
Sommerfeldt, Frank A., 5,777,879, Cl. 364-469,040.
Tzou, Tsi-Zong; Schultz, Robert K.; and Ross, Danna L., 5,776,433, Cl. 424-45,000.
Wood, William P., 5,776,214, Cl. 51-309,000.
Minnich, Thomas E.: See—
Smith, Matthew H.; Chipman, Russell A.; and Minnich, Thomas E., 5,776,060, Cl. 600-340,000.
Mino, Kenneth Lucien: See—
Kohl, Thomas D.; and Mino, Kenneth Lucien, 5,774,957, Cl. 24-701,000.
Minolta Co., Ltd.: See—
Hagi, Masayuki; Arai, Takeshi; Tamaoki, Junichi; and Fukuda, Hiroyuki, 5,776,646, Cl. 430-106,600.
Kawai, Atsushi; and Sakai, Tetsuya, 5,778,279, Cl. 399-42,000.
Kawasaki, Toyotoshi; Suzuki, Shinichi; and Inoue, Yoshiyuki, 5,778,271, Cl. 396-532,000.
Kido, Kenichi; Sano, Tetsuo; Sekiguchi, Yoshitaka; and Fukuda, Hiroyuki, 5,776,647, Cl. 430-110,000.
Seki, Reiji, 5,778,265, Cl. 396-311,000.
Minowa, Toshimichi; Kimura, Hiroshi; Ishii, Junichi; Shiraiishi, Takashi; and Ozaki, Naoyuki, to Hitachi, Ltd. Driving force control system for a vehicle, 5,776,030, Cl. 477-109,000.
Minowa, Toshimichi; Yoshida, Yoshiyuki; and Ishii, Junichi, to Hitachi, Ltd. Power train controller and control method, 5,776,031, Cl. 477-155,000.
Mintz, David; Mintz, Neil; and Tremblay, Pierre, to Machine Design Systems, Inc. Apparatus for inserting an insert into a cover, 5,774,965, Cl. 29-91,500.
Mintz, Morris Fred: See—
Schilling, Michael Ray; and Mintz, Morris Fred, 5,776,567, Cl. 428-34,500.
Mintz, Neil: See—
Mintz, David; Mintz, Neil; and Tremblay, Pierre, 5,774,965, Cl. 29-91,500.
Mion, Louis: See—
Comneyras, Auguste; Collet, Hélène; Mion, Louis; Benefice, Sylvie; Calas, Patrick; Choukroun, Henri; Taillades, Jacques; and Bied, Catherine, 5,777,076, Cl. 530-333,000.
Miply Equipment, Inc.: See—
Long, Eliot R., 5,776,546, Cl. 427-402,000.
Misato, Hisashi; and Motobayashi, Tukas, to Kabushiki Kaisha Teikoku Denki Seisakusho. Rotation-direction signal inclusion device, 5,777,217, Cl. 73-118,100.
Mishima, Takahiro: See—
Tsukahara, Makoto; Takahashi, Kunio; Mishima, Takahiro; Isomura, Akihito; Sakai, Tetsuo; Miyamura, Hiroshi; and Uehara, Itsuki, 5,776,626, Cl. 429-59,000.
Miskin, Michael J.; Scamands, Ed; and Ahmad, Munawar, to Molex Incorporated. Modular terminating connector with frame ground, 5,775,924, Cl. 439-98,000.
Mita Industrial Co., Ltd.: See—
Yamaoka, Masanori; Ban, Keiji; and Kobayashi, Hiroshi, 5,775,685, Cl. 271-10,130.
Mitamura, Hisashi: See—
Ureshino, Kashi; Takebayashi, Hiroyuki; Onishi, Hisaaki; and Mitamura, Hisashi, 5,776,507, Cl. 425-29,000.
Mitate, Takehito: See—
Yamada, Kazuo; Tanaka, Hideaki; Mitate, Takehito; and Yoshikawa, Masaharu, 5,776,610, Cl. 428-403,000.
Mitchell, Blair Orvel: See—
Mitchell, Morton Lindsay; Mitchell, Bryson James; and Mitchell, Blair Orvel, 5,775,420, Cl. 166-85,400.
Mitchell, Bryson James: See—
Mitchell, Morton Lindsay; Mitchell, Bryson James; and Mitchell, Blair Orvel, 5,775,420, Cl. 166-85,400.
Mitchell, Craig S.: See—
Distefano, Thomas H.; Smith, John W.; Fjellstad, Joseph; Mitchell, Craig S.; and Karavakis, Konstantine, 5,776,796, Cl. 438-106,000.
Mitchell, David W.: See—
Beckham, Danny A.; and Mitchell, David W., 5,774,924, Cl. 15-235,700.
Mitchell, Glen L.: See—
Maltby, Frederick L.; Mitchell, Glen L.; and Gorowitz, Mort, 5,777,550, Cl. 340-514,000.
Mitchell, Jonathan A.: See—
Timothy, Calvin M.; Osmond, Mark W.; and Mitchell, Jonathan A., 5,775,726, Cl. 280-730,100.
Mitchell, Kenneth Demell: See—
Spalding, Robert Tucker; Mitchell, Kenneth Demell; and Dipersio, Chris, 5,776,203, Cl. 623-21,000.
Mitchell, Morton Lindsay; Mitchell, Bryson James; and Mitchell, Blair Orvel. Dual string assembly for gas wells, 5,775,420, Cl. 166-85,400.

- Mitchell, Thomas E.: See—
Shelton, Maurice E.; and Mitchell, Thomas E., 5,777,575, Cl. 342-104,000.
Mitschele, Frederick L.; and Reynolds, Damien E., to Digital Pioneer Technologies Corp. Parking meter, 5,777,951, Cl. 368-90,000.
Mitsubishi Aluminum Co., Ltd.: See—
Kato, Masatsugu; Sano, Shigeo; Kamibayashi, Atsushi; and Hiyoshi, Yasumasa, 5,775,155, Cl. 72-260,000.
Mitsubishi Chemical Corporation: See—
Fautoux, Denis G.; Van Buren, Martin; and Massucco, Arthur A., 5,776,209, Cl. 29-623,500.
Hatakeyama, Kazuhisa; Goto, Makoto; Terasawa, Masato; and Yukawa, Hideaki, 5,776,740, Cl. 435-108,000.
Sato, Masato; Ohno, Hironobu; Murai, Nobuyuki; and Iwasaka, Hiroshi, 5,777,155, Cl. 560-244,000.
Sato, Shinichi; Miyamoto, Masaaki; and Tsuruhara, Kenji, 5,777,067, Cl. 528-310,000.
Mitsubishi Denki Kabushiki Kaisha: See—
Adachi, Yoshinori; Kobayashi, Kazuo; and Ebihara, Masaji, 5,777,991, Cl. 370-352,000.
Dosaka, Katsumi; Omoto, Toshiyuki; and Kumanoya, Masaki, 5,777,942, Cl. 365-230,030.
Gochi, Hidenobu, 5,778,195, Cl. 395-282,000.
Haraga, Kosuke; Yagi, Naoki; Nakashima, Yoshinobu; Ganryu, Yuzi; Sasaki, Tsutomu; Takimoto, Atsushi; Komazawa, Yosiro; Okuda, Asao; Takagi, Shoji; Matsukawa, Akifumi; Urata, Hideaki; Kawashima, Yasushi; Masuo, Kazumi; Honma, Kenji; and Ikeda, Isao, 5,776,584, Cl. 428-132,000.
Hattori, Ryo, 5,777,389, Cl. 257-744,000.
Hiraki, Toshiyuki; Yamada, Akira; and Oki, Masashi, 5,777,999, Cl. 370-509,000.
Horiata, Shuichi; and Akamatsu, Hiroshi, 5,777,933, Cl. 365-201,000.
Ishigaki, Yoshiyuki; and Tsutsumi, Kazuhiko, 5,777,920, Cl. 365-154,000.
Ishimoto, Junko; Inoue, Sadaaki; and Kumano, Makoto, 5,778,138, Cl. 386-68,000.
Kurachi, Kazuhiro; and Yamamoto, Masanori, 5,777,506, Cl. 327-440,000.
Kurishige, Masahiko; and Katashiba, Hideaki, 5,776,032, Cl. 477-175,000.
Matsumura, Mitsue; and Shinoki, Toshio, 5,776,421, Cl. 422-197,000.
Mizutani, Yoshitaka; and Washida, Tetsuro, 5,777,275, Cl. 174-254,000.
Nii, Koji, 5,777,929, Cl. 365-189,050.
Sugahara, Masayuki; and Mori, Toshihiro, 5,777,294, Cl. 219-121,670.
Suganaga, Toshifumi; and Ishikawa, Eiichi, 5,776,825, Cl. 438-618,000.
Suzuki, Mitsuyoshi, 5,778,099, Cl. 382-239,000.
Taguchi, Kazunori; and Konishi, Yuzuru, 5,777,351, Cl. 257-181,000.
Takaku, Hideaki; and Takaki, Nobuyasu, 5,777,870, Cl. 364-132,000.
Usami, Ryo; Isawa, Kazuyuki; Kubota, Hiroshi; Puzniak, Roman; Yamauchi, Hisao; and Tanaka, Shoji, 5,776,862, Cl. 505-125,000.
Yamaguchi, Yasuo, 5,776,818, Cl. 438-479,000.
Yamamoto, Kyouhei, 5,777,412, Cl. 310-83,000.
Yuuki, Akimasa; Kawahara, Takaaki; Makita, Tetsuro; Yamamuka, Mikio; Ono, Koichi; and Okudaira, Tomonori, 5,776,254, Cl. 118-725,000.
Mitsubishi Gas Chemical Company, Inc.: See—
Hayashi, Katsushige; Kawakami, Tsutomu; Takeda, Yuji; and Iura, Katuhiro, 5,777,064, Cl. 528-196,000.
Inary, Masato, 5,777,161, Cl. 562-485,000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: See—
Koga, Hisamitsu; Kumagai, Naotake; Owada, Tomiji; Furukawa, Nobuya; Kato, Masaaki; and Kawamura, Nobuyuki, 5,775,784, Cl. 303-152,000.
Mitsubishi Jukogyo Kabushiki Kaisha: See—
Irie, Nobuhiko, 5,776,508, Cl. 425-36,000.
Mitsubishi Materials Corporation: See—
Takeda, Yoshinobu, 5,776,407, Cl. 264-328,700.
Mitsubishi Semiconductor America, Inc.: See—
Cox, John; and Warren, Waite R., Jr., 5,777,873, Cl. 364-184,000.
Mitsubishi Semiconductor America, Inc.: See—
Botts, Robert R.; Joshi, Swati V.; and Nicholls, Louis W., 5,776,327, Cl. 205-96,000.
Mitsubishi Shigeru: See—
Matsumoto, Takaji; Murayama, Toshiyuki; Mitsuhashi, Shigeru; and Miura, Takashi, 5,777,103, Cl. 540-200,000.
Mitsui Chemicals, Inc.: See—
Tatsuki, Yuuichirou; Nishiyama, Shinichi; Kawabata, Junichi; Yamanaka, Tooru; and Tanaka, Chiho, 5,776,365, Cl. 252-299,620.
Mitsui Toatsu Chemicals, Inc.: See—
Ohkubo, Kazuhiko; Tsutsui, Tomoki; Sakaki, Yoshitsugu; Kunihiro, Tamotsu; Nishikawa, Aiko; Izukawa, Tsukuru; Ueno, Kaoru; Sakai, Seiji; and Tanaka, Yukichi, 5,777,175, Cl. 568-619,000.
Mitsuya, Morihoro: See—
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihoro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,777,150, Cl. 560-60,000.
Mittal, Rohit; and Laber, Carlos Alberto, to Micro Linear Corporation. Differential to single ended conversion technique for an operational amplifier having low input offset voltage, high speed and high gain, 5,777,514, Cl. 330-253,000.
Mituyasu, Tadashi: See—

- Sakuma, Kiyoshi; and Mituyasu, Tadashi, 5,776,271, Cl. 152-213.00R.
Mitwalsky, Alexander; and Ryan, James Gardner, to International Business Machines Corporation. Crack stop formation for high-productivity processes. 5,776,826, Cl. 438-622.000.
Miura, Hitoshi, to Tokai Kogaku Kabushiki Kaisha. Progressive power presbyopia-correcting ophthalmic lenses. 5,777,716, Cl. 351-169.000.
Miura, Motoo; Miyata, Hideo; and Morikawa, Kohei, to Showa Denko K.K. Non-hygroscopic crystals of p-aminomethylbenzoic acid and process for preparing the same. 5,777,158, Cl. 562-442.000.
Miura, Shuichi: See—
Okada, Nobumasa; Ohsaka, Sigeo; and Miura, Shuichi, 5,777,792, Cl. 359-584.000.
Miura, Takashi: See—
Matsumoto, Takaji; Murayama, Toshiyuki; Mitsuhashi, Shigeru; and Miura, Takashi, 5,777,103, Cl. 540-200.000.
Miura, Yasushi: See—
Sato, Tadayoshi; Nakayama, Shinichi; Mochizuki, Masahiro; Miura, Yasushi; and Miyazato, Kazuo, 5,775,362, Cl. 137-202.000.
Miwa, Naoki: See—
Tobe, Akihiko; Nosaki, Hiroshi; Shinomoto, Manabu; and Miwa, Naoki, 5,778,224, Cl. 395-670.000.
Miwa, Takeya: See—
Kakuta, Naoki; and Miwa, Takeya, 5,775,962, Cl. 439-852.000.
Miyachi, Hiroyuki: See—
Ishibashi, Hiromichi; Shimada, Toshiyuki; Edahiro, Yasuaki; Moriya, Mitsuru; Horibe, Ryusuke; and Miyachi, Hiroyuki, 5,777,967, Cl. 369-59.000.
Miyagi, Rikio: See—
Tsuchida, Kensaku; Hattori, Takashi; and Miyagi, Rikio, 5,776,207, Cl. 29-623.100.
Miyakawa, Nobuaki: See—
Kuroishi, Norihiko; Kawata, Tetsuro; Kawauchi, Kenichi; Miyakawa, Nobuaki; Aibara, Reiji; and Koyanagi, Mitsumasa, 5,778,202, Cl. 395-306.000.
Miyake, Hiroaki, to Canon Kabushiki Kaisha. Sheet feeding device with lifter member to hold sheets at predetermined height. 5,775,686, Cl. 271-127.000.
Miyake, Hiroyuki: See—
Uwatoko, Koki; and Miyake, Hiroyuki, 5,777,669, Cl. 348-308.000.
Miyake, Izumi; and Kawaguchi, Ryuji, to Fuji Photo Film Co., Ltd. Electronic camera operable in a dual shoot mode together with a camera with a film. 5,777,667, Cl. 348-64.000.
Miyake, Jiro; Ninomiya, Kazuki; Urano, Miki; Tsubata, Shintaro; and Nishiyama, Tamotsu, to Matsushita Electric Industrial Co., Ltd. Signal processor. 5,777,688, Cl. 348-571.000.
Miyake, Masaya: See—
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,776,600, Cl. 428-325.000.
Miyake, Masayuki: See—
Ikeyama, Shuichi; Koyama, Masaru; Miyake, Masayuki; and Senoo, Masaharu, 5,776,727, Cl. 435-69.100.
Miyake, Norifumi: See—
Murakami, Koichi; Sugita, Shigeru; Sato, Masaaki; Isobe, Yoshinori; Miyake, Norifumi; and Tsujino, Hiromichi, 5,778,300, Cl. 399-403.000.
Miyamoto, Hiroyuki: See—
Kubota, Shizuo; Ito, Osamu; and Miyamoto, Hiroyuki, 5,776,989, Cl. 521-48.000.
Miyamoto, Masaaki: See—
Sato, Shinichi; Miyamoto, Masaaki; and Tsuruhara, Kenji, 5,777,067, Cl. 528-310.000.
Miyamoto, Ryosuke: See—
Takiyama, Yasuhiro; Miyamoto, Ryosuke; Shimizu, Hideaki; Yaguchi, Hiroyuki; and Takahashi, Tadashi, 5,777,750, Cl. 358-298.000.
Miyamura, Hiroshi: See—
Tsukahara, Makoto; Takahashi, Kunio; Mishima, Takahiro; Isomura, Akihito; Sakai, Tetsuo; Miyamura, Hiroshi; and Uehara, Itsuki, 5,776,626, Cl. 429-59.000.
Miyano, Hitoshi, to Fuji Photo Optical Co., Ltd. Objective lens system for endoscopes having an image transfer optical fiber bundle. 5,777,797, Cl. 359-660.000.
Miyano, Kazuhiko, to Fujitsu Ten Limited. Driving simulation apparatus capable of scrolling at optimum speed. 5,777,875, Cl. 364-188.000.
Miyasaka, Hajime; and Ikeda, Hideaki, to Honda Giken Kogyo Kabushiki Kaisha. Process for anodizing aluminum materials and application members thereof. 5,775,892, Cl. 418-55.200.
Miyashita, Kotaro: See—
Isobe, Takashi; Miyashita, Kotaro; and Mutoh, Hirofumi, 5,775,307, Cl. 123-520.000.
Miyaso Chemical Co.: See—
Kubota, Shizuo; Ito, Osamu; and Miyamoto, Hiroyuki, 5,776,989, Cl. 521-48.000.
Miyata, Hideo: See—
Miura, Motoo; Miyata, Hideo; and Morikawa, Kohei, 5,777,158, Cl. 562-442.000.
Miyata, Syoichiro, to Yamaha Hatsudoki Kabushiki Kaisha. Control for electric power assisted vehicle. 5,777,442, Cl. 318-2.000.
Miyazaki, Mitsuru: See—
Iwasaki, Ryuichi; Miyazaki, Mitsuru; and Akira, Toshiro, 5,777,723, Cl. 355-67.000.
Miyazaki, Yuji, to Olympus Optical Co., Ltd. Three-lens-group zoom lens system having a zoom ratio exceeding 3.5. 5,777,799, Cl. 359-689.000.
Miyawaki, Mamoru, to Canon Kabushiki Kaisha. Liquid crystal display apparatus. 5,777,594, Cl. 345-102.000.
Miyazaki, Hideki: See—
Nemoto, Minehiro; Miyazaki, Hideki; and Sugawara, Yoshitaka, 5,777,865, Cl. 363-124.000.
Miyazaki, Kyoichi: See—
Yoshii, Minoru; Hasegawa, Masanobu; Miyazaki, Kyoichi; and Takeuchi, Seiji, 5,777,744, Cl. 356-372.000.
Miyazaki, Seiji; Narabe, Tsuyoshi; Nara, Kei; Hamada, Tomohide; Saiki, Kazuaki; Goto, Hideji; and Yokota, Muneyasu, to Nikon Corporation. Scanning exposure apparatus and method. 5,777,722, Cl. 355-53.000.
Miyazaki, Takashi: See—
Inoue, Yoshiyuki; and Miyazaki, Takashi, 5,778,117, Cl. 385-24.000.
Miyazato, Kazuo: See—
Sato, Tadayoshi; Nakayama, Shinichi; Mochizuki, Masahiro; Miura, Yasushi; and Miyazato, Kazuo, 5,775,362, Cl. 137-202.000.
Miyazawa, Kazushi; Hanamoto, Keiji; and Atake, Hiroyuki, to Dai Nippon Printing Co., Ltd. Simultaneous injection molding and patterning method using heating body with non-parallel heating and non-heating positions. 5,776,411, Cl. 264-511.000.
Miyazawa, Kazutoshi: See—
Matsui, Shuichi; Koizumi, Yasuyuki; Kato, Takashi; Miyazawa, Kazutoshi; Hachiya, Norihisa; and Nakagawa, Etsuo, 5,776,367, Cl. 252-299.630.
Mizon, Jacques: See—
Michalski, Catherine; and Mizon, Jacques, 5,777,081, Cl. 530-380.000.
Mizone, Shinya: See—
Watanabe, Hirotsuke; Kimura, Takeo; Okazaki, Masatoshi; and Mizone, Shinya, 5,776,597, Cl. 428-297.400.
Mizoshita, Yoshifumi; Koshikawa, Takao; Kanai, Hitoshi; Kane, Junichi; Otsuka, Yoshinori; and Ikegawa, Yukinori, to Fujitsu Limited. Horizontal type magneto-resistive head using flux guide. 5,777,827, Cl. 360-113.000.
Mizuki, Takayuki: See—
Sakai, Tsutomu; Ohashi, Setsuya; and Mizuki, Takayuki, 5,777,560, Cl. 340-825.440.
Mizuno Corporation: See—
Kaneko, Yasunori, 5,775,010, Cl. 36-129.000.
Mizuno, Fumio, to Hitachi, Ltd. Pattern shape inspection apparatus for forming specimen image on display apparatus. 5,777,327, Cl. 250-310.000.
Mizuno, Sadao; Hoshino, Akinori; and Morita, Tetsuya, to Aisin Seiki Kabushiki Kaisha. Method of lapping a bevel gear. 5,775,975, Cl. 451-47.000.
Mizusawa, Ryuma: See—
Obiya, Hiroyuki; and Mizusawa, Ryuma, 5,776,995, Cl. 522-15.000.
Mizushima Aroma: See—
Inary, Masato, 5,777,161, Cl. 562-485.000.
Mizuta, Hiroaki: See—
Mori, Yoshiyuki; Sagara, Kazuyoshi; Mizuta, Hiroaki; and Fujii, Akihiro, 5,776,488, Cl. 424-450.000.
Mizutani, Daisuke: See—
Tanaka, Akira; Tazaki, Satoshi; Sakamoto, Kei; Yoneda, Yasuhiro; Yokouchi, Kishio; Mizutani, Daisuke; and Ishizuki, Yoshikatsu, 5,777,068, Cl. 528-353.000.
Mizutani, Junichi: See—
Niwa, Minoru; Muramatsu, Kimio; Kanai, Makoto; Inoue, Michio; Mizutani, Junichi; Kanto, Takanori; and Yamamoto, Tadashi, 5,775,728, Cl. 280-728.300.
Mizutani, Yoshitaka; and Washida, Tetsuro, to Mitsubishi Denki Kabushiki Kaisha. Bendable circuit board having improved resistance to bending strain and increased element mounting area. 5,777,275, Cl. 174-254.000.
Mizutome, Atsushi: See—
Mihara, Tadashi; Inoue, Hiroshi; Mizutome, Atsushi; Tsuboyama, Akira; Taniguchi, Osamu; and Onitsuka, Yoshihiro, 5,777,592, Cl. 345-94.000.
Mjolsness, Eric: See—
Dittrich, Howard; Levene, Harold; and Mjolsness, Eric, 5,776,063, Cl. 600-408.000.
Mobil Oil Corporation: See—
Bednarczyk, Adam; Maute, Robert E.; and Thompson, Laird B., 5,777,278, Cl. 181-102.000.
Lu, Pang-Chia; Musclow, Gordon; and Sheppard, Robert Michael, 5,776,604, Cl. 428-343.000.
Lu, Pang-Chia, 5,776,618, Cl. 428-500.000.
Mochizuki, Chiori; Funakoshi, Akira; Tago, Akira; Takeda, Shinichi; Takami, Eiichi; Morishita, Masakazu; Hayashi, Shinichi; Endo, Tadao; and Tamura, Toshikazu, to Canon Kabushiki Kaisha. Imaging apparatus. 5,777,335, Cl. 250-370.090.
Mochizuki, Masahiro: See—
Sato, Tadayoshi; Nakayama, Shinichi; Mochizuki, Masahiro; Miura, Yasushi; and Miyazato, Kazuo, 5,775,362, Cl. 137-202.000.
Model, Michael; Bungo, Edward Martin; Chupak, John Marvin; Borsuck, Thomas; Sikora, Andreas; Halbach, Paul Gerhard; and Hsieh, Shao Chung, to General Motors Corporation; and Delphi Automotive Systems Deutschland. Electrical connector with locking connector position assurance member. 5,775,930, Cl. 439-352.000.
Modern Muzzleloading, Inc.: See—
Knight, William A., 5,776,378, Cl. 261-30.000.
Modic, Michael John: See—

- Djiauw, Lie Khong; and Modic, Michael John, 5,777,031, Cl. 525-98.000.
Moeller, Raymond J.: See—
Bugajski, James; Kooy, Robert; Moeller, Raymond J.; and Jackson, Michael L., 5,777,022, Cl. 524-527.000.
Moerenhout, Jacques: See—
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Gordon, Janet L.; Stewart, Kevin R.; and Chan, Kwok Pong, 5,777,063, Cl. 528-74.000.
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Jones, Timothy Lloyd; and Higgins, Graham Robert L., 5,778,067, Cl. 380-24.000.
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Morgan, Donald Albert, to Marks & Clerk. Clip. 5,774,946, Cl. 24-67.500.
Morgan, Kevin L.: See—
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Yamaguchi, Susumu; and Mori, Nobuyoshi, 5,777,800, Cl. 359-692.000.
Mori, Toshihiro: See—
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Mori, Yukio: See—
Tanase, Susumu; Okino, Toshiyuki; Inuma, Toshiya; Yamashita, Syugo; Uchida, Hidekazu; Mori, Yukio; Maenaka, Akihiro; Okada, Seiji; and Ihara, Kanzi, 5,777,666, Cl. 348-43.000.
Moriarty, Michael: See—
Stevens, Jeffrey C.; Larson, John E.; Thome, Gary W.; Collins, Michael J.; and Moriarty, Michael, 5,778,413, Cl. 711-5.000.
Moriga, Toshinori: See—
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- Morin, Pascal, to Valeo Systemes D'Essuyage. Screen wiper for a motor vehicel, having a bracket giving indexation for fitting purposes and location in the parked position of the wiper. 5,774,927, Cl. 15-250.190.
- Morino, Stefano. First reducing stage for a two-stage regulator. 5,775,368, Cl. 137-505.250.
- Morisaki, Hiroshi, to Brother Kogyo Kabushiki Kaisha. Image forming device capable of preventing loss of image data. 5,778,162, Cl. 395-113.000.
- Morisawa, Tahei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electro-developing type camera using electro-developing recording medium. 5,778,270, Cl. 396-429.000.
- Morisawa, Yukio: See—
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- Morishima, Akira: See—
- Hattori, Hitoshi; Ozu, Masao; Saito, Kazuo; Morishima, Akira; Otake, Toshio; and Futamura, Motonori. 5,775,883, Cl. 417-310.000.
- Morishita, Masakazu: See—
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- Morita, Minoru: See—
- Ide, Takeo; Hiraoka, Yasunobu; Koizumi, Shoichi; Morita, Minoru; and Ueda, Kunio. 5,776,525, Cl. 426-36.000.
- Morita, Nami, to Brother Kogyo Kabushiki Kaisha. Sewing machine. 5,775,241, Cl. 112-102.500.
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- Morita, Yasuhiro: See—
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- Moritz, Tyrone J.: See—
- Trsar, Dale A.; Shepherd, Richard H.; Taraki, Yosuf M.; Petersen, Mark H.; and Moritz, Tyrone J. 5,778,328, Cl. 701-29.000.
- Moriwaki, Hisayoshi: See—
- Kimura, Yuji; Moriwaki, Hisayoshi; and Yasui, Hiroyuki. 5,778,054, Cl. 379-93.230.
- Moriya, Koichi: See—
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- Moriya, Takashi; Komatsu, Yasuyuki; Sono, Hiroshi; and Sugai, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Energization control method, and electromagnetic control system in electromagnetic driving device. 5,775,278, Cl. 123-90.110.
- Moriya, Tetsuo: See—
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- Moriyama, Keiji; Asakura, Takeshi; and Yabuki, Yoshikazu, to Sumitomo Rubber Industries, Ltd. Solid golf ball. 5,776,012, Cl. 473-372.000.
- Moriyama, Keiji: See—
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- Moroto, Shuzo; and Hisada, Hideki, to Kabushikikaisha Equos Research. Hybrid vehicle with battery charge control relative to a driving route. 5,778,326, Cl. 701-22.000.
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- Hornung, Barbara; Wingen, Rainer; Morr, Michael; Löttsch, Detlef; and Heppke, Gerd. 5,776,363, Cl. 252-299.010.
- Morren, Karin Marie-Louise Renee: See—
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- Morris, Michael S., to Georgetown University. Tubular medical device. 5,775,336, Cl. 128-857.000.
- Morris, Michael W.: See—
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- Morris, Paul L. Low profile roofing torch. 5,776,299, Cl. 156-497.000.
- Morrison, Larry E.: See—
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- Morrison, Robert C.: See—
- Dover, B. Troy; Kamienski, Conrad W.; Morrison, Robert C.; Currin, R. Thomas, Jr.; and Schwindeman, James A. 5,776,369, Cl. 252-309.000.
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- Mortensen, Jason Gregory. Pipe saddle gauge. 5,774,998, Cl. 33-529.000.
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- Pripps, Steven R.; and Geisler, Claus. 5,775,730, Cl. 280-740.000.
- Morton International, Inc.: See—
- Timothy, Calvin M.; Osmond, Mark W.; and Mitchell, Jonathan A. 5,775,726, Cl. 280-730.100.
- Mosaid Technologies Incorporated: See—
- AbouSeido, Maamoun. 5,777,501, Cl. 327-274.000.
- Mosel Vitelic Inc.: See—
- Chen, Hsi-Chieh; Yi, Champion; Wang, Pei-Jan; and Shiue, Yeong-Ruey. 5,776,833, Cl. 438-672.000.
- Moseley, Richard Robert: See—
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- Moser, James R.; Dudash, Donald; Finnochio, Richard W.; and Lusk, Frank S., to Bell & Howell Mail Processing Systems. Accumulator apparatus and method. 5,775,689, Cl. 271-198.000.
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- Motan Fuller Verfahrenstechnik GmbH: See—
- Waesche, Franz; Heep, Dieter; Winkhardt, Guido; and Isopp, Gottfried. 5,775,851, Cl. 406-14.000.
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- Bruckert, Eugene J.; Sexton, Thomas A.; Love, Robert T.; and Bayer, William R. 5,778,030, Cl. 375-317.000.
- Budnik, Brian J. 5,778,307, Cl. 455-103.000.
- Chen, Diana; Richard, Fred V.; and Wright, Phil. 5,777,706, Cl. 349-74.000.
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- Gillig, Steven F.; and Bushman, Michael L. 5,777,521, Cl. 331-16.000.
- Groenig, Paul J. 5,777,373, Cl. 257-495.000.
- Grossman, Daniel B. 5,777,986, Cl. 370-235.000.
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- Levine, Stephen N.; Brailean, James C.; and Banham, Mark R. 5,778,191, Cl. 395-200.770.
- Pantelakis, Dimitris C.; Martino, William L., Jr.; Leach, Derrick; Miller, Frank A.; and Lau, Wai T. 5,777,935, Cl. 365-203.000.
- Parris, Patrice M.; and See, Yee-Chaung. 5,777,361, Cl. 257-322.000.
- Pennypacker, Frank; Corrigan, Richard J.; and Burke, Timothy M. 5,777,558, Cl. 340-635.000.
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- Piosenka, Gerald V.; Fox, Thomas M.; and Schmidt, Kenneth H. 5,777,903, Cl. 364-700.000.
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- Root, Loren F.; and McDunn, Kevin J. 5,777,384, Cl. 257-712.000.
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- Sanders, Stuart B. 5,777,527, Cl. 333-26.000.
- Schumacher, Lawrence James; and Fraser, Michael L. 5,777,528, Cl. 333-33.000.

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- Motose, Hitoshi: See—
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- Moulton, James P.: See—
- Scott, Gerald R.; Moulton, James P.; Seyl, V. Craig; Emrich, John L.; and Peterson, Wayne L. 5,774,915, Cl. 5-611.000.
- Mowbray, Michael J.: See—
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- Mowery, Jack T.; and McGarry, Benjamin L., to Associated Materials, Incorporated. Siding panel with interlocking projection. 5,775,042, Cl. 52-520.000.
- Mowry, Greg S.: See—
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- Moyer, Terry T.: See—
- Dischler, Louis; Moyer, Terry T.; and Henson, Jimmy B. 5,776,839, Cl. 442-239.000.
- MPath Interactive, Inc.: See—
- Othmer, Konstantin; Holland, Shannon A.; Perlman, Stephen G.; and Roskowski, Steven G. 5,775,996, Cl. 463-40.000.
- Mrotek, Edward N.; Reichman, Benjamin; and Yin, MengPing, to Johnson Controls Technology Company. Carbon/carbon composite materials and use thereof in electrochemical cells. 5,776,633, Cl. 429-218.000.
- Muallem, Ariege: See—
- First, Marijo Kent; Agoulnik, Alexander I.; and Muallem, Ariege. 5,776,682, Cl. 435-6.000.
- Mudgett, Dan S.: See—
- Rahman, Saba; Mudgett, Dan S.; and Andrade, Victor F. 5,778,431, Cl. 711-135.000.
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- Mueller, Gerd; Gutsche, Bernhard; Jeromin, Lutz; Steinberger, Udo; Sedelies, Reinhold; Bohlander, Ralf; Ridinger, Richard; Springer, Dirk; Buettgen, Franz; and Bartschik, Frank, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of gurbet alcohols. 5,777,183, Cl. 568-905.000.
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- Muenzel, Norbert: See—
- Schaeffeli, Ulrich; Hofmann, Manfred; Muenzel, Norbert; and Grubenmann, Arnold. 5,776,657, Cl. 430-281.100.
- Mühlebach, Andreas: See—
- Hafner, Andreas; Mühlebach, Andreas; and Van Der Schaaf, Paul Adrian. 5,776,997, Cl. 522-65.000.
- Muijs, Herman Mathieu: See—
- De Castro Loureiro Barreto Rosa, Maria Manuel; Van Helden, Arend Kuindert; and Muijs, Herman Mathieu. 5,776,865, Cl. 507-103.000.
- Mukai, Masataka; and Ohkuwa, Kazuki, to Sony Corporation. Method of and apparatus for diagnosing a device. 5,778,006, Cl. 371-22.500.
- Mukaida, Hideaki: See—
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- Mullahy, Brian: See—
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- Mullane, Kevin M.: See—
- Bullough, David A.; Gruber, Harry E.; Metzker, Ernest K.; Mullane, Kevin M.; Ugarkar, Bheemaroo G.; and Browne, Clinton E. 5,777,100, Cl. 536-26.900.
- Mullen, Charles F. Electric vehicle transport system. 5,775,227, Cl. 104-88.040.
- Mullenberg, Ralph. Connected component assembly having conical clamping sleeves. 5,775,831, Cl. 403-337.000.
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- Coetsier, Paul; and Sauzay, Olivier. 5,777,224, Cl. 73-487.000.
- Muller, Dieter: See—
- Farin, Gunter; Fischer, Klaus; and Muller, Dieter. 5,776,092, Cl. 604-22.000.
- Muller, Karl: See—
- Sticker, Rolf; Muller, Karl; and Jaag, Dieter. 5,775,956, Cl. 439-719.000.
- Muller, Karl Paul; Poschenrieder, Bernhard; and Roithner, Klaus, to Siemens Aktiengesellschaft; and International Business Machines, Corporation. Pad stack with a poly SI etch stop for TEOS mask removal with RIE. 5,776,808, Cl. 438-243.000.
- Müller, Ulrich; Mohrs, Klaus; Dressel, Jürgen; Hanko, Rudolf; Hübsch, Walter; Matzke, Michael; Niewöhner, Ulrich; Raddatz, Siegfried; Krämer, Thomas; Müller-Gliemann, Matthias; Bellemann, Hans-Peter; Beuck, Martin; Kazda, Stanislav; and Wohlfel, Stefan, to Bayer Aktiengesellschaft. Heterocyclically substituted phenylacetic acid derivatives and their use in medicaments. 5,776,964, Cl. 514-394.000.
- Müller, Ulrich; and Heineke, Daniel, to BASF Aktiengesellschaft. Preparation of hydroxylamines from ammonia or the corresponding amines, hydrogen and oxygen. 5,777,163, Cl. 564-301.000.
- Müller-Gliemann, Matthias: See—
- Müller, Ulrich; Mohrs, Klaus; Dressel, Jürgen; Hanko, Rudolf; Hübsch, Walter; Matzke, Michael; Niewöhner, Ulrich; Raddatz, Siegfried; Krämer, Thomas; Müller-Gliemann, Matthias; Bellemann, Hans-Peter; Beuck, Martin; Kazda, Stanislav; and Wohlfel, Stefan, to Bayer Aktiengesellschaft. 5,776,964, Cl. 514-394.000.
- Mulligan, Daniel P.: See—
- Baker, David C.; Mulligan, Daniel P.; and Schell, Eric J. 5,777,601, Cl. 345-154.000.
- Mullin, Stephen Blake: See—
- Powell, Joseph Brown; Slaugh, Lynn Henry; Forschner, Thomas Clayton; Lin, Jiang-Jen; Thomason, Terry Blanc; Weider, Paul Richard; Semple, Thomas Carl; Arhancet, Juan Pedro; Fong, Howard Lam-Ho; Mullin, Stephen Blake; Allen, Kevin Dale; Eubanks, David Cleve; and Johnson, David William. 5,777,182, Cl. 568-862.000.
- Mumbaikar, Vilas Narayan: See—
- Naik, Ramachandra Ganapati; Mumbaikar, Vilas Narayan; Vasumathy, Rangarajan; Lakdawala, Aftab Dawoodbhai; Shirole, Mandakini Vithalrao; Lal, Bans; Blumbach, Jürgen; Weithmann, Klaus Ulrich; and Bartlett, Robert Ryder. 5,776,977, Cl. 514-532.000.
- Münch, Udo: See—
- Nicolai, Walter; Strackbein, Heinrich; Münch, Udo; Pawlowski, Adam; Besserer, Horst; Schüler, Matthias; and Neuhof, Markus. 5,775,051, Cl. 52-731.100.
- Munson, Bill A., to Intel Corporation. Method and apparatus for eliminating visual artifacts caused by diffusing errors in a decimated video signal. 5,777,624, Cl. 345-431.000.
- Murabe, Kaoru: See—
- Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya. 5,776,600, Cl. 428-325.000.
- Muragishi, Yasushi: See—
- Kurita, Yutaka; Muragishi, Yasushi; and Yasuda, Hitoshi. 5,777,232, Cl. 73-664.000.
- Murai, Mikio: See—
- Ueda, Hideyuki; Kuwahara, Kenji; Seki, Hiroshi; Okazaki, Sadayuki; Odagiri, Masaru; Takahashi, Kiyoshi; and Murai, Mikio. 5,776,602, Cl. 428-332.000.
- Murai, Nobuyuki: See—
- Sato, Masato; Ohno, Hironobu; Murai, Nobuyuki; and Iwasaka, Hiroshi. 5,777,155, Cl. 560-244.000.
- Murakami, Daisuke: See—
- Moriguchi, Hideki; Murakami, Daisuke; Ikegaya, Akihiko; and Nomura, Toshio. 5,776,588, Cl. 428-210.000.
- Murakami, Koichi; Sugita, Shigeru; Sato, Masaaki; Isobe, Yoshinori; Miyake, Norifumi; and Tsujino, Hiromichi, to Canon Kabushiki Kaisha. Sheet processing device. 5,778,300, Cl. 399-403.000.
- Murakami, Koyo; Ito, Hiroaki; and Narasaki, Tetsuji, to Tokai Rubber Industries Ltd. Fuel hose and method of producing thereof. 5,776,570, Cl. 428-36.800.
- Murakami, Motoaki, to Noritsu Koki Co., Ltd. Film winder. 5,775,627, Cl. 242-526.000.
- Murakami, Motoaki, to Noritsu Koki Co., Ltd. Support shaft assembly for stably supporting rolls of material. 5,775,631, Cl. 242-573.900.
- Murakami, Mototake: See—
- Okamoto, Kiyotaka; Honda, Yoshihiko; Murakami, Mototake; Oniki, Shigeru; and Suzuki, Koji. 5,776,533, Cl. 426-515.000.
- Murakami, Toshihiko: See—
- Takihiro, Masatoshi; Murakami, Toshihiko; Fukushima, Hidehiro; Takada, Osamu; and Kimoto, Atsushi. 5,777,994, Cl. 370-395.000.
- Murakami, Yoshishige; Hirota, Kanji; and Kanzaki, Yoshiharu, to Fujitsu Limited. Fire monitoring apparatus and computer readable medium recorded with fire monitoring program. 5,777,548, Cl. 340-506.000.
- Muramatsu, Kimio: See—
- Niwa, Minoru; Muramatsu, Kimio; Kanai, Makoto; Inoue, Michio; Mizutani, Junichi; Kanto, Takanori; and Yamamoto, Tadashi. 5,775,728, Cl. 280-728.300.
- Murase, Atsushi; Sato, Norio; Kato, Takayuki; and Sumi, Kazumasa, to Nicolet Japan Corporation. Method of rapidly identifying resins by infrared spectroscopy and system therefor. 5,777,330, Cl. 250-339.130.
- Murashiro, Katsuyuki: See—
- Tomi, Yoshitaka; Matsushita, Tetsuya; Takeshita, Fusayuki; Murashiro, Katsuyuki; and Nakagawa, Etsuo. 5,776,366, Cl. 252-299.630.
- Murata, David M.; Bosnyak, Robert J.; and Drost, Robert J., to Sun Microsystems, Inc. System and method for serial to parallel data conversion using delay line. 5,777,567, Cl. 341-100.000.
- Murata, Fumio: See—
- Arita, Setsuo; Ito, Tetsuo; Ohga, Yukiharu; Murata, Fumio; Higashikawa, Yuichi; Sato, Hideyuki; Kudo, Mitsuru; and Yamasawa, Yuuzi. 5,777,896, Cl. 364-550.000.
- Murata Manufacturing Co., Ltd.: See—
- Kato, Noboru; Nosaka, Kouji; and Tojyo, Atsushi. 5,777,533, Cl. 333-185.000.
- Kayama, Kazuo. 5,776,282, Cl. 156-247.000.
- Murata Mfg. Co., Ltd.: See—
- Tsuru, Teruhisa; Mandai, Harufumi; and Kato, Mitsuhide. 5,777,587, Cl. 343-752.000.
- Murata, Shigeo: See—
- Nishimura, Fumitaka; Akiyoshi, Hideyasu; and Murata, Shigeo. 5,774,986, Cl. 29-893.320.
- Murayama, Kei: See—

- Higashi, Mitsutoshi; Iizuka, Hajime; and Murayama, Kei, 5,777,386, Cl. 257-737,000.
- Murayama, Toshiyuki: See—
Matsumoto, Takaji; Murayama, Toshiyuki; Mitsuhashi, Shigeru; and Miura, Takashi, 5,777,103, Cl. 540-200,000.
- Murchison, Kenneth Earl: See—
Jackson, Anne Louise; Hoffman, Robert Alan; Blidy, Andrew D.; Murchison, Kenneth Earl; Bierre, Pierre; and Thiel, Dan E., 5,776,709, Cl. 435-7,240.
- Murdock, Robby C.: See—
Pearce, Robert C.; Murdock, Robby C.; Thompson, Amy E.; Reed, Scott M.; and Wallace, Don E., 5,775,026, Cl. 43-132,100.
- Muroi, Ko. Underground construction, 5,775,043, Cl. 52-169,600.
- Murphy, Carl David: See—
Juneau, Kathleen Nelson; Vicari, Richard; and Murphy, Carl David, 5,777,129, Cl. 548-455,000.
- Murphy, Edward P.: See—
Vensland, David G.; and Murphy, Edward P., 5,775,880, Cl. 417-53,000.
- Murphy, Jeffrey Alan: See—
Vasquez, William M.; Murphy, Jeffrey Alan; and Sheldon, Jill Nicole, 5,775,505, Cl. 206-538,000.
- Murphy, Karl Andrew; Nini, James Peter; and Bell, Kreg S., to General Motors Corporation. Auxiliary vehicle seat support rail with dynamic seat belt and seat back anchoring, 5,775,780, Cl. 297-473,000.
- Murray, Andrew Malcolm: See—
Birtwistle, David Howard; and Murray, Andrew Malcolm, 5,776,444, Cl. 424-70,120.
- Murray, Malcolm G., Jr. Reinforced signal mirror, 5,777,810, Cl. 359-883,000.
- Murschall, Ursula: See—
Peiffer, Herbert; Murschall, Ursula; and Dries, Thomas, 5,777,055, Cl. 526-348,100.
- Murthy, Kurukundi Ramesh; and Cha, Ying, to Chiron Diagnostics Corporation. Volume detection apparatus and method, 5,777,221, Cl. 73-149,000.
- Musclow, Gordon: See—
Lu, Pang-Chia; Musclow, Gordon; and Sheppard, Robert Michael, 5,776,604, Cl. 428-343,000.
- Mutoh, Hirofumi: See—
Isobe, Takashi; Miyashita, Kotaro; and Mutoh, Hirofumi, 5,775,307, Cl. 123-520,000.
- Mutoh, Kaoru: See—
Morikawa, Takao; Sasaoka, Seiji; Saitoh, Shigeru; Sugawara, Masato; and Mutoh, Kaoru, 5,776,483, Cl. 424-438,000.
- Muttart, Harry Charles: See—
Caldwell, Jeffrey B.; Muttart, Harry Charles; and Gross, David Henry, 5,778,232, Cl. 395-707,000.
- Myer, John Mark; and Denlinger, Keith Robert, to Whitaker Corporation. The Electrical contact assembly, 5,775,961, Cl. 439-843,000.
- Myers, Jeffrey Robert: See—
Watkins, John Bruce; Myers, Jeffrey Robert; Fredlund, John Randall; Manico, Joseph Anthony; Berardi, Anthony Ronald; and Vandemark, Michael Lynn, 5,778,164, Cl. 395-117,000.
- N.V. Raychem S.A.: See—
Lagermans, Etienne; and Demesmaeker, Marc, 5,775,702, Cl. 277-314,000.
- Nabeke, Alain, 5,776,277, Cl. 156-158,000.
- Nabco Ltd.: See—
Kaneko, Takeshi; and Matuo, Akira, 5,775,370, Cl. 137-505,250.
- Nabi, Nuran: See—
Gaffar, Abdul; Nabi, Nuran; Afflitto, John; and Stringer, Orum, 5,776,435, Cl. 424-49,000.
- Nabity, Frederick Alan; Fritz, Larry Lee; Carson, Douglas Timothy; and Setter, Ralph, to Isco, Inc. Doppler shift velocity measuring system with correction factors, 5,777,892, Cl. 364-510,000.
- Nadaud, Jean-François: See—
Candau, Didier; Khayat, Carine; Nadaud, Jean-François; and Agnus-Anciloti, Dominique, 5,776,480, Cl. 424-401,000.
- Naddell, Marc C.: See—
Grube, Gary W.; Naddell, Marc C.; and Shaughnessy, Mark L., 5,778,304, Cl. 455-33,100.
- Nagaba, Katsushi: See—
Inuzuka, Kazuko; Ohshima, Shigeo; and Nagaba, Katsushi, 5,777,946, Cl. 365-240,000.
- Nagahama, Shinichi: See—
Nakamura, Shuji; Nagahama, Shinichi; Iwasa, Naruhito; and Kiyoku, Hiroyuki, 5,777,350, Cl. 257-96,000.
- Nagahara, Akira; Sasaki, Sachio; Furukawa, Mitsuhiro; Utaka, Shigenobu; Yamaguchi, Yoshio; Sato, Mitsuru; Kuwabara, Nobuo; Watanabe, Haruyasu; and Takahashi, Takafumi, to Fujitsu Limited. Image forming apparatus for collecting residual toner from a drum using an AC voltage, 5,778,285, Cl. 399-150,000.
- Nagai, Aisaku: See—
Kashio, Hidetora; Horie, Katsuo; Nagai, Aisaku; Aita, Tomoyuki; and Kitagoh, Hiroshi, 5,776,637, Cl. 429-217,000.
- Nagai, Hiroshi: See—
Kawamura, Nobuo; Masai, Kazuo; Yamashita, Nobuyuki; and Nagai, Hiroshi, 5,778,388, Cl. 707-203,000.
- Nagai, Kiyoshi: See—
Hoffman, Stephen J.; and Nagai, Kiyoshi, 5,776,890, Cl. 514-6,000.
- Nagai, Satoshi: See—
Yamazaki, Toshio; Wakana, Shigeaki; Nagai, Satoshi; and Inoue, Tetsutaro, 5,776,596, Cl. 428-212,000.
- Nagai, Takayuki; Jagawa, Yasutoshi; Nishio, Takeyoshi; Zanka, Yukihito; Tsutsumi, Ikuo; Ishii, Izumi; Sato, Hiroki; and Sano, Hironari, to Japan Polychem Corporation; and Toyota Jidosha Kabushiki Kaisha. Thermoplastic resin composition, 5,777,020, Cl. 524-451,000.
- Nagano, Masakazu; Tanaka, Kunihiko; Hibino, Toshiro; and Sato, Hiroshi, to Nintendo Co., Ltd. Information processing system which can check disk-like storage medium having prescribed relation therewith and disk-like storage medium therefor, 5,778,421, Cl. 711-115,000.
- Naganuma, Tohru; and Sato, Masayuki, to Sony Corporation. Liquid jet recording apparatus capable of recording better half tone image density, 5,777,636, Cl. 347-10,000.
- Nagao, Mamoru: See—
Nanba, Shigenobu; Yaguchi, Hiroshi; Shimotsusa, Masataka; Ibaraki, Nobuhiko; Nakayama, Takenori; Iwata, Takashi; Yamamoto, Yoshinori; Ohkouchi, Norio; and Nagao, Mamoru, 5,776,267, Cl. 148-328,000.
- Nagao, Mitsuha: See—
Inazuka, Toru; Nagao, Mitsuha; and Takenaka, Takahiro, 5,775,120, Cl. 62-259,100.
- Nagarajan, Srinivasan: See—
Getman, Daniel P.; DeCrescenzo, Gary A.; Freskos, John N.; Vazquez, Michael L.; Sikorski, James A.; Devadas, Balekudru; Nagarajan, Srinivasan; Brown, David L.; and McDonald, Joseph J., 5,776,971, Cl. 514-422,000.
- Nagasaki, Fumihiko: See—
Shimizu, Keiichi; Kitamura, Noriyuki; Kakitani, Tsutomu; Aoi, Nan-jou; Nagasaki, Fumihiko; and Takahashi, Yuji, 5,777,861, Cl. 363-37,000.
- Nagasawa, Naobumi: See—
Ikeda, Osamu; Nagasawa, Naobumi; Ishikawa, Tsutomu; and Tsukihashi, Akira, 5,777,955, Cl. 369-32,000.
- Nagase, Hiroshi; Imamura, Yoshifumi; Ohno, Hiroshi; and Endo, Takashi, to Toray Industries, Inc. 4A-aryldecahydroisoquinoline compound and medicinal use of the same, 5,776,945, Cl. 514-307,000.
- Nagase, Hisanori: See—
Naka, Teruyuki; Umeda, Yoshio; Yamamura, Toshiki; Kumon, Akira; Suzuki, Seiichi; Nawama, Junichi; and Nagase, Hisanori, 5,776,544, Cl. 427-307,000.
- Nagashima, Masaaki; Yamakawa, Tadashi; and Kohno, Akihiro, to Canon Kabushiki Kaisha. Document processing to permit sharing of content by plural documents, 5,778,398, Cl. 707-501,000.
- Nagashima, Toshiaki, to Canon Kabushiki Kaisha. Developer supplying container, developing device having same and process cartridge, 5,778,282, Cl. 399-106,000.
- Nagashima, Yukihito: See—
Sakaguchi, Koichi; Nagashima, Yukihito; Kuroda, Isamu; and Yoshii, Shigekazu, 5,776,846, Cl. 501-70,000.
- Nagata, Katsunori: See—
Sugimoto, Shinichi; Nagata, Katsunori; and Tagusa, Yasunobu, 5,777,610, Cl. 345-206,000.
- Nagata, Kazuaki: See—
Kobayashi, Hideo; and Nagata, Kazuaki, 5,778,262, Cl. 396-84,000.
- Nagata, Toshihiko; Sano, Hiroshi; Yamawaki, Takayuki; and Matsushita, Kunitake, to Minebea Co., Ltd. Bearing installation in a floppy disk driver motor, 5,777,413, Cl. 310-90,000.
- Nagata, Yasufumi: See—
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,777,150, Cl. 560-60,000.
- Nagel, Christopher J., to Molten Metal Technology, Inc. Apparatus for treating a gas formed from a waste in a molten metal bath, 5,776,420, Cl. 422-184,000.
- Nagel, Walter R., to Sartomer Company. Peroxide-cured elastomers with improved metal adhesion, 5,776,294, Cl. 156-307,700.
- Naggert, Juergen: See—
North, Michael; Nishina, Patsy; Noben-Trauth, Konrad; and Naggert, Juergen, 5,776,762, Cl. 435-252,300.
- Nagoh, Hironobu; Imura, Satoshi; and Kobayakawa, Takashi, to Tokuyama Corporation. Photochromic curable composition, 5,776,376, Cl. 252-586,000.
- Nagpal, Sunil; DiSepio, Daniel; and Chandraratna, Roshantha A., to Allergan. Retinoid induced gene, 5,776,687, Cl. 435-6,000.
- Nagpal, Sunil: See—
Klein, Elliott S.; Nagpal, Sunil; and Chandraratna, Roshantha A., 5,776,699, Cl. 435-7,200.
- Naik, Ramachandra Ganapati; Mumbaikar, Vilas Narayan; Vasumathy, Rangarajan; Lakdawala, Aftab Dawoodbhai; Shirole, Mandakini Vithalrao; Lal, Bansi; Blumbach, Jürgen; Weithmann, Klaus Ulrich; and Bartlett, Robert Ryder, to Hoechst Aktiengesellschaft. Arylcycloalkyl derivatives, their production and their use, 5,776,977, Cl. 514-532,000.
- Nair, Haridasan K.: See—
Peterson, Andrew C.; and Nair, Haridasan K., 5,776,915, Cl. 514-77,000.
- Nair, Mridula: See—
Oltean, George Leslie; Nair, Mridula; and Osburn, Tamara Kay, 5,776,668, Cl. 430-523,000.
- Naito, Hiroki; and Kume, Masahiro, to Matsushita Electronics Corporation. Method for forming semiconductor laser device, 5,776,792, Cl. 438-31,000.
- Naito, Hisatsugu: See—

- Bekki, Toshihiko; Nakajima, Hiroharu; Wada, Toshihide; Sugiyama, Noriyuki; and Naito, Hisatsugu, 5,775,823, Cl. 400-629,000.
- Naito, Takao, to Fujitsu Limited. Optical phase conjugator and optical reception apparatus and optical transmission apparatus for use with optical communication system employing the optical phase conjugator, 5,777,770, Cl. 359-179,000.
- Najafi, David: See—
Silverman, Ronald H.; Coleman, Donald Jackson; Reinstein, Dan Z.; Simoni, George; and Najafi, David, 5,776,068, Cl. 600-443,000.
- Naka, Teruyuki; Umeda, Yoshio; Yamamura, Toshiki; Kumon, Akira; Suzuki, Seiichi; Nawama, Junichi; and Nagase, Hisanori, to Matsushita Electric Industrial Co., Ltd. Charging device and an image forming apparatus using a charging device, 5,776,544, Cl. 427-307,000.
- Nakada, Masahiro: See—
Itami, Satoshi; Nakahara, Masaru; Nakada, Masahiro; Suzuki, Hiroshi; and Utsumi, Kenichi, 5,777,965, Cl. 369-58,000.
- Nakagawa, Etsuo: See—
Matsui, Shuichi; Koizumi, Yasuyuki; Kato, Takashi; Miyazawa, Kazutoshi; Hachiya, Norihisa; and Nakagawa, Etsuo, 5,776,367, Cl. 252-299,630.
- Tomii, Yoshitaka; Matsushita, Tetsuya; Takeshita, Fusayuki; Murashiro, Katsuyuki; and Nakagawa, Etsuo, 5,776,366, Cl. 252-299,630.
- Nakagawa, Kazuo; Yamazaki, Hiromi; Uchida, Kenichi; and Naruse, Yukio, to Nikkiso Company Limited. Apparatus for analysis of mixed gas components, 5,777,205, Cl. 73-24,020.
- Nakagawa, Masaru: See—
Tsuruoka, Masayuki; Tanaka, Akira; and Nakagawa, Masaru, 5,777,056, Cl. 526-351,000.
- Nakagawa, Takashi; Adachi, Yukio; and Fujita, Masayuki, to NEC Corporation. Optical disk apparatus having a plurality of objective lenses, 5,777,959, Cl. 369-44,140.
- Nakagawa, Toshiaki; and Tsumura, Hideo, to Konami Co., Ltd. Token chute device, 5,777,302, Cl. 235-7,00A.
- Nakahara, Masaru: See—
Itami, Satoshi; Nakahara, Masaru; Nakada, Masahiro; Suzuki, Hiroshi; and Utsumi, Kenichi, 5,777,965, Cl. 369-58,000.
- Nakahata, Hideaki: See—
Kitabayashi, Hiroyuki; Nakahata, Hideaki; Higaki, Kenjiro; Fujii, Satoshi; and Shikata, Shin-ichi, 5,777,422, Cl. 310-313,00A.
- Tanabe, Keiichi; Seki, Yuichiro; Ikegaya, Akihiko; Fujimori, Naoki; Nakahata, Hideaki; and Shikata, Shin-ichi, 5,776,246, Cl. 117-89,000.
- Nakai, Hiroshi: See—
Okamura, Yoshitaka; Tosaka, Yoichi; Hashimoto, Kenichirou; Hirano, Hirofumi; Yamamoto, Kosuke; Nakai, Hiroshi; and Watanabe, Yoshinori, 5,777,634, Cl. 347-7,000.
- Nakai, Masatoshi: See—
Hirayama, Koichi; and Nakai, Masatoshi, 5,778,136, Cl. 386-52,000.
- Taira, Kazuhiko; Kikuchi, Shinichi; Mimura, Hideki; Tamada, Yuzo; and Nakai, Masatoshi, 5,778,142, Cl. 386-97,000.
- Nakajima, Fumio; Furuya, Takeo; Furukawa, Sumio; and Negishi, Toshihiro, to Jidosha Denki Kogyo Kabushiki Kaisha. Geared electric motor, 5,777,411, Cl. 310-83,000.
- Nakajima, Hiroharu: See—
Bekki, Toshihiko; Nakajima, Hiroharu; Wada, Toshihide; Sugiyama, Noriyuki; and Naito, Hisatsugu, 5,775,823, Cl. 400-629,000.
- Nakajima, Junsaku: See—
Hirokane, Junji; Nakayama, Junichiro; Nakajima, Junsaku; Takahashi, Akira; and Ohta, Kenji, 5,777,953, Cl. 369-13,000.
- Nakajima, Kunihiko: See—
Sawai, Seiji; Nakajima, Kunihiko; and Watase, Jiro, 5,775,283, Cl. 123-184,530.
- Nakajima, Toshitaka, to Minnesota Mining and Manufacturing Company. Microsphere-based retroreflective article, 5,777,790, Cl. 359-536,000.
- Nakamichi Corporation: See—
Nakamichi, Niro, 5,777,956, Cl. 369-36,000.
- Nakamichi, Niro, to Nakamichi Corporation. Changer-type disc playback device, 5,777,956, Cl. 369-36,000.
- Nakamura, Atsushi; and Nishi, Kunihiko, to Hitachi, Ltd. Semiconductor device having an improved connection arrangement between a semiconductor pellet and base substrate electrodes and a method of manufacture thereof, 5,777,391, Cl. 257-778,000.
- Nakamura, Hideto: See—
Noro, Yutaka; Nakamura, Hideto; and Chishima, Masamitsu, 5,775,938, Cl. 439-495,000.
- Nakamura, Hiroki; and Watanabe, Yoshihiro, to Kabushiki Kaisha Toshiba. Projection-type display apparatus, 5,777,804, Cl. 359-727,000.
- Nakamura, Hiroki: See—
Inoue, Shinji; Kakiuchi, Takashi; Nakamura, Hiroki; Waki, Hiroyuki; and Oashi, Masahiro, 5,778,352, Cl. 707-1,000.
- Nakamura, Junichi; and Nakatsu, Hiroshi, to Sharp Kabushiki Kaisha. Semiconductor light emitting device, 5,777,349, Cl. 257-94,000.
- Nakamura, Kenichi; and Tsuruto, Takahiro, to Kabushiki Kaisha Toshiba. Semiconductor memory device capable of outputting multi-bit data using a reduced number of sense amplifiers, 5,777,938, Cl. 365-220,000.
- Nakamura, Koichi: See—
Yamashita, Seiji; Nakamura, Koki; and Nakamura, Koichi, 5,776,664, Cl. 430-405,000.
- Nakamura, Koki: See—
Yamashita, Seiji; Nakamura, Koki; and Nakamura, Koichi, 5,776,664, Cl. 430-405,000.
- Nakamura, Masahiko: See—
Kishigami, Takaaki; Mimura, Masahiro; Hasegawa, Makoto; Ushiyama, Tadaaki; Nakamura, Masahiko; and Takagi, Yoshinori, 5,777,693, Cl. 348-731,000.
- Nakamura, Masao: See—
Kurozumi, Seiji; Honda, Yukio; Sato, Kazuaki; Nakamura, Masao; Suzuki, Nobuharu; Fujita, Tokio; and Matsuoka, Hitoshi, 5,777,405, Cl. 310-40,0MM.
- Nakamura, Masashi: See—
Matsuzaki, Hiromi; Ojima, Satoshi; and Nakamura, Masashi, 5,776,196, Cl. 623-17,000.
- Nakamura, Masayuki: See—
Takahashi, Tsugio; Kitsukawa, Goro; Akiba, Takesada; Kawase, Yasushi; and Nakamura, Masayuki, 5,777,927, Cl. 365-189,010.
- Nakamura, Naomasa: See—
Honguh, Yoshinori; Taguchi, Toyoki; Hasegawa, Hiroshi; Kobayashi, Tadashi; Morishita, Naoki; and Nakamura, Naomasa, 5,776,574, Cl. 428-64,100.
- Nakamura, Osamu; and Sasakura, Kazumasa, to Kabushiki Kaisha Shinkawa. Method for wire-bonding a covered wire, 5,776,786, Cl. 437-8,000.
- Nakamura, Shigekazu: See—
Yoshikawa, Yukio; and Nakamura, Shigekazu, 5,775,791, Cl. 362-31,000.
- Nakamura, Shuji; Nagahama, Shinichi; Iwasa, Naruhito; and Kiyoku, Hiroyuki, to Nichia Chemical Industries, Ltd. Nitride semiconductor light-emitting device, 5,777,350, Cl. 257-96,000.
- Nakamura, Shunji, to Fujitsu Limited. Method for fabricating a semiconductor memory device, 5,776,789, Cl. 437-60,000.
- Nakamura, Tomio: See—
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- Nicolai, Walter; Strackbein, Heinrich; Münch, Udo; Pawlowski, Adam; Besserer, Horst; Schüller, Matthias; and Neuhof, Markus, to Rittal-Werk Rudolf Loh GmbH & Co. KG. Frame member for a switchgear cabinet frame. 5,775,051, Cl. 52-731.100.
- Nicolas, Gérard: *See—*
- Caillat, Patrice; Nicolas, Gérard; and Teoule, Robert, 5,776,791, Cl. 438-15.000.
- Nicolet Japan Corporation: *See—*
- Murase, Atsushi; Sato, Norio; Kato, Takayuki; and Sumi, Kazumasa, 5,777,330, Cl. 250-339.130.
- Nicoll, Robert Alexander: *See—*
- Vdoviak, John William; and Nicoll, Robert Alexander, 5,775,589, Cl. 239-127.100.

- Nicolson, Paul Clement; Baron, Richard Carlton; Chabreck, Peter; Court, John; Domschke, Angelika; Griesser, Hans Jörg; Ho, Arthur; Höpken, Jens; Laycock, Bronwyn Glenice; Liu, Qin; Lohmann, Dieter; Meijs, Gordon Francis; Papaspiliotopoulos, Eric; Riffle, Judy Smith; Schindhelm, Klaus; Sweeney, Deborah; Terry, Wilson Leonard, Jr.; Vogt, Jürgen; and Winter-ton, Lynn Cook, to CIBA Vision Corporation, Methods of using and screening extended wear ophthalmic lenses. 5,776,999, Cl. 523-106.000.
- Nidek Co., Ltd.: See—
Hayashi, Akihiro, 5,777,344, Cl. 351-245.000.
- Niederberger, Peter: See—
Baensch, Johannes; Gysler, Christof; and Niederberger, Peter, 5,776,526, Cl. 426-62.000.
- Nields, Morgan W., to Fischer Imaging Corporation, Enhanced breast imaging/biopsy system employing targeted ultrasound. 5,776,062, Cl. 600-407.000.
- Nielsen, Jakob; and Tognazzini, Bruce, to Sun Microsystems, Inc. Video-stream management system. 5,778,137, Cl. 386-68.000.
- Niemann, John: See—
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- Niemirowski, Adam F.: See—
Niemirowski, George E.; Harrell, John M.; and Niemirowski, Adam F., 5,775,752, Cl. 294-28.000.
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- Nierlich, Steven L.: See—
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- Niesert, Claus-Peter; Pawlowski, Georg; Gries, Willi-Kurt; and Przybilla, Klaus-Juergen, to AGFA-Gevaert AG, Silicone-compatible photoinitiators, and photosensitive mixtures comprising them. 5,776,658, Cl. 430-281.100.
- Nietzold, Daniel R.: See—
Kent, Erma W.; Nietzold, Daniel R.; and Thomson, Loranzo H., 5,774,938, Cl. 16-332.000.
- Niewöhner, Ulrich: See—
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- Nifco Inc.: See—
Asami, Goro; Eguchi, Tomoo; Takezawa, Osamu; Saito, Yuji; and Abe, Hideyuki, 5,775,761, Cl. 296-37.700.
- Kurachi, Katsuhito, 5,775,748, Cl. 292-341.150.
- Nihon Bayer Agrochem K.K.: See—
Goto, Toshio; Ito, Seishi; Minegishi, Natsuko; Yamaoka, Tatsuya; Ueno, Chieko; Moriya, Koichi; Maurer, Fritz; and Watanabe, Ryo, 5,776,858, Cl. 504-225.000.
- Nihon Plast Co., Ltd.: See—
Tonooka, Masami; Horiike, Yoshio; and Watanabe, Mitutaka, 5,775,724, Cl. 280-728.200.
- Nii, Koji, to Mitsubishi Denki Kabushiki Kaisha, Multiport memory cell circuit having read buffer for reducing read access time. 5,777,929, Cl. 365-189.050.
- Niibo, Nario; Yoshida, Naoko; and Takamuku, Yoshinori, to Matsushita Electric Industrial Co., Ltd. Electrolyte for driving electrolytic capacitor and electrolytic capacitor using the same. 5,776,358, Cl. 252-62.200.
- Niimi, Masami: See—
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- Niiyama, Satoshi; Yamada, Kazuhiko; and Kumai, Hiroshi, to AG Technology Co., Ltd. Liquid crystal optical element, a method for producing the same and a projection type liquid crystal display apparatus. 5,776,364, Cl. 252-299.010.
- Nikkiso Company Limited: See—
Nakagawa, Kazuo; Yamazaki, Hiromi; Uchida, Kenichi; and Naruse, Yukio, 5,777,205, Cl. 73-24.020.
- Nikolai, Zoubkov; and Alexander, Ovtchinnikov, Method and apparatus of producing a surface with alternating ridges and depressions. 5,775,187, Cl. 82-1.110.
- Nikon Corporation: See—
Aiyer, Arun A.; McCoy, John H.; Suwa, Kyoichi; and Chau, Henry K., 5,777,729, Cl. 356-237.000.
- Hidari, Hirofumi, 5,777,756, Cl. 358-455.000.
- Inoue, Shingo; Hattori, Tetsuo; and Esaki, Sampei, 5,777,696, Cl. 348-752.000.
- Ishikawa, Yasuaki, 5,777,785, Cl. 359-425.000.
- Jinbo, Hiroki; Oshikawa, Satoru; and Hiraiwa, Hiroyuki, 5,776,219, Cl. 65-31.000.
- Maki, Yasuhito; Goto, Tetsuro; Takagi, Tadao; and Iwasaki, Hiroyuki, 5,777,671, Cl. 348-312.000.
- Makinouchi, Susumu, 5,777,721, Cl. 355-53.000.
- Miyazaki, Seiji; Narabe, Tsuyoshi; Nara, Kei; Hamada, Tomohide; Saiki, Kazuaki; Goto, Hideji; and Yokota, Muneyasu, 5,777,722, Cl. 355-53.000.
- Motegi, Kiyoshi, 5,777,444, Cl. 318-114.000.
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- Ohtake, Motoyuki, 5,775,790, Cl. 362-18.000.
- Okazaki, Mitsuhiro; and Tobe, Michihiro, 5,777,424, Cl. 310-323.000.
- Takano, Tetsuya; Yokonuma, Norikazu; Hibino, Hideo; Kazami, Kazuyuki; and Okutsu, Hisashi, 5,778,267, Cl. 396-319.000.
- Tanaka, Etsuo; and Koizumi, Yoichi, 5,778,261, Cl. 396-55.000.
- Ueno, Yasunori, 5,777,340, Cl. 250-458.100.
- Wakabayashi, Tsutomu, 5,778,266, Cl. 396-315.000.
- Yuan, Bausan, 5,777,403, Cl. 310-12.000.
- Nilsson, Ake: See—
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- Nilsson, Eivor, to Kriss AB, Method for producing a knitted garment. 5,775,133, Cl. 66-176.000.
- Nini, James Peter: See—
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- Ninomiya, Kazuki: See—
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- Nintendo Co., Ltd.: See—
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- Nippon Conlux Co., Ltd.: See—
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- Nippon Electric Glass Co., Ltd.: See—
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- Nippon Mayer Co., Ltd.: See—
Otoe, Yoshinori; Narikiyo, Yasumasa; Yamagata, Shigeo; and Nosaka, Norimasa, 5,775,134, Cl. 66-204.000.
- Nippon Paint Co., Ltd.: See—
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- Nippon Petrochemicals Company, Limited: See—
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- Nippon Sheet Glass Co., Ltd.: See—
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- Nippon Shinpan Co., Ltd.: See—
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- Nippon Shinyaku Co., Ltd.: See—
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- Nippon Soda Co., Ltd.: See—
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- Nippon Thompson Co., Ltd.: See—
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- Saitoh, Masahide, 5,775,813, Cl. 384-15.000.
- Nippon Zeon Co., Ltd.: See—
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- Tanaka, Akira; Tazaki, Satoshi; Sakamoto, Kei; Yoneda, Yasuhiro; Yokouchi, Kishio; Mizutani, Daisuke; and Ishizuki, Yoshikatsu, 5,777,068, Cl. 528-353.000.
- Nippon Zoki Pharmaceutical Co., Ltd.: See—
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- Nippondenso Co., Ltd.: See—
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- Katoh, Masahiro; Araki, Takeshi; Niimi, Masami; and Shiga, Tsutomu, 5,777,393, Cl. 290-48.000.
- Koizumi, Satoru; and Mikame, Masami, 5,778,333, Cl. 701-212.000.
- Okano, Yoshiyuki, 5,777,447, Cl. 318-434.000.
- Takahashi, Shigeki; Kataoka, Mitsuhiro; Yamamoto, Tsuyoshi; Takeuchi, Yuichi; and Tokura, Norihito, 5,776,812, Cl. 438-268.000.
- Yamaguchi, Hitoshi; Morishita, Toshiyuki; and Himi, Hiroaki, 5,777,365, Cl. 257-347.000.
- Yoshimi, Tomohisa; Kawai, Takayoshi; Ito, Yuji; Kawashima, Masafumi; Honda, Yuji; and Samukawa, Katsuhiko, 5,775,415, Cl. 165-202.000.
- Nishi, Kunihiko: See—
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- Nishi, Ryuzo: See—
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- Nishida, Tazo: See—
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- Nishida, Toru, to Nissin Co., Ltd. Semiconductor devices method of connecting semiconductor devices and semiconductor device connectors. 5,777,381, Cl. 257-693.000.
- Nishihara, Tokihiro: See—
Satoh, Yoshio; Ikata, Osamu; Uchishiba, Hidema; Matsuda, Takashi; Nishihara, Tokihiro; Takanatsu, Mitsu; and Taniguchi, Hajime, 5,774,962, Cl. 29-25.350.
- Nishikawa, Aiko: See—
Ohkubo, Kazuhiko; Tsutsui, Tomoki; Sakaki, Yoshitsugu; Kunihiro, Tamotsu; Nishikawa, Aiko; Izukawa, Tsukuru; Ueno, Kaoru; Sakai, Seijiro; and Tanaka, Yukichi, 5,777,175, Cl. 568-619.000.
- Nishikawa Rubber Co., Ltd.: See—
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- Nishikawa, Ryuji, to Sanyo Electric Co., Ltd. Active matrix type liquid crystal display apparatus with a projection part in the drain line. 5,777,703, Cl. 349-47.000.
- Nishikawa, Satoshi; and Aoyama, Mihoko, to Sunstar Giken Kabushiki Kaisha, High dielectric graft copolymer. 5,777,038, Cl. 525-295.000.
- Nishikori, Hitoshi: See—

- Otsuka, Naoki; Arai, Atsushi; Yano, Kentaro; Takahashi, Kiichiro; Nishikori, Hitoshi; and Iwasaki, Osamu, 5,777,649, Cl. 347-94.000.
- Nishimura, Akitoshi: See—
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- Nishimura, Fumitaka; Akiyoshi, Hideyasu; and Murata, Shigeo, to Nissan Motor Co., Ltd. Method and apparatus for cold-forming of toothed wheels from sheet metal. 5,774,986, Cl. 29-893.320.
- Nishimura, Hajime; Ichikawa, Atsushi; Yabe, Akio; and Yokoyama, Yuji, to Hitachi, Ltd.; and Hitachi Computer Peripherals Co., Ltd. Thin bias magnet unit for magneto-optical recording device. 5,777,952, Cl. 369-13.000.
- Nishina, Patsy: See—
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- Nishio, Akihiro: See—
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- Nishio, Takeyoshi: See—
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- Nishiyama, Kenji, to Fuji Xerox Co., Ltd. File management device. 5,778,365, Cl. 707-9.000.
- Nishiyama, Shinichi: See—
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- Nishiyama, Tamotsu: See—
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- Nissan Diesel Motor Co., Ltd.: See—
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- Nissan Motor Co., Ltd.: See—
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- Nissin Industries, Inc.: See—
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- Nissso Corporation: See—
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- Nissin Co., Ltd.: See—
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- Nissin Electric Co., Ltd.: See—
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- Nita, Robert B.: See—
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- Nitinol Medical Technologies, Inc.: See—
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- Nitta, Takashi: See—
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- Nittel, Klaus-Dieter; and Nuss, Karl-Heinz, to Metallgesellschaft Aktiengesellschaft, Concentrate for the electrodeless deposition of copper coatings on iron and iron alloy surfaces. 5,776,231, Cl. 106-1.230.
- Nitto Chemical Industry Co., Ltd.: See—
Watanabe, Keiji; Yano, Ei; Namiki, Takahisa; Yano, Keiko; Maruyama, Takashi; Nakamura, Tomio; Shimizu, Shigeru; Saitoh, Takashi; Ujawa, Masashi; and Ishikawa, Masami, 5,776,659, Cl. 430-296.000.
- Yu, Fujio; and Kato, Mami, 5,776,771, Cl. 435-320.100.
- Nitto Denko Corporation: See—
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- Niwa, Minoru; Muramatsu, Kimio; Kanai, Makoto; Inoue, Michio; Mizutani, Junichi; Kantoh, Takanori; and Yamamoto, Tadashi, to Toyoda Gosei Co., Ltd. Pad for steering wheel including membrane switch. 5,775,728, Cl. 280-728.300.
- NKK Corporation: See—
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- Noben-Trauth, Konrad: See—
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- Noble, Philip C.; Hedley, Anthony K.; Schulzki, Michael J.; and Kelly, William J., Jr., to Howmedica Inc. Asymmetric hip stem. 5,776,204, Cl. 623-23.000.
- Nobutani, Tsutomu: See—
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- Nock, Levin F.; and Friemel, Barry H., to Siemens Medical Systems, Inc. Method and apparatus for creating adaptively focused ultrasound images. 5,776,066, Cl. 600-443.000.
- Noda, Masuo: See—
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- Noda, Takeshi: See—
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- Noda, Tsugio; and Sakai, Kenichiro, to Fujitsu Limited, Method and device for compressing bit-map data. 5,777,749, Cl. 358-261.300.
- Nofre, Claude; and Tinti, Jean-Marie, N-(3,3-Dimethylbutyl)-L-aspartyl-D- α -aminoalkanoic acid N-(S)-1-phenyl-1-alkanamide useful as a sweetening agent. 5,777,159, Cl. 562-450.000.
- Noguchi, Masato, to Asahi Kogaku Kogyo Kabushiki Kaisha, Polarizer and method for using same. 5,777,788, Cl. 359-487.000.
- Noguchi, Sadahisa: See—
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- Noguchi, Takaharu: See—
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- Nohr, Ronald Sinclair; and MacDonald, John Gavin, to Kimberly-Clark Worldwide, Inc. Melt-extrudable compositions containing antimicrobial siloxane quaternary ammonium salts. 5,777,010, Cl. 524-188.000.
- Nokia Mobile Phones Limited: See—
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- Nokia Telecommunications Oy: See—
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- Nolan, Bruce: See—
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- Nolan, Leo J.; Measamer, John P.; Staley, James D., Jr.; and Welch, Robert F., to Ethicon Endo Surgery, Inc. Suture assist device. 5,776,150, Cl. 606-148.000.
- Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, to Banyu Pharmaceutical Co., Ltd. Substituted amic acid derivatives. 5,777,150, Cl. 560-60.000.
- Nomura, Hiroshi: See—
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- Nomura, Toshio: See—
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- Nonaka, Kimihiko: See—
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- Nonoshita, Katsumasa: See—
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- Noonan, John V.: See—
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- Norand Corporation: See—
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- Nordby, Kenneth M.: See—
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- Nordica S.p.A.: See—
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- Nordmeyer, Michael: See—
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- Nørgaard, Luis: See—
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- Norin, Scott: See—
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- Nonitsu Koki Co., Ltd.: See—
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- Kojima, Masayuki, 5,775,563, Cl. 226-92.000.
- Murakami, Motoaki, 5,775,627, Cl. 242-526.000.
- Murakami, Motoaki, 5,775,631, Cl. 242-573.900.
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- Noro, Yutaka; Nakamura, Hideto; and Chishima, Masamitsu, to Sumitomo Wiring Systems, Ltd. Connector for flat cables. 5,775,938, Cl. 439-495.000.
- Norris, James: See—
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- North Carolina State University: See—
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- Clapp, Timothy G.; Rust, Jon P.; Farrington, Carlos; and Peykamian, Shahram, 5,774,942, Cl. 19-239.000.
- Clapp, Timothy G.; Rust, Jon P.; Farrington, Carlos; and Bowen, Dale Thomas, 5,774,943, Cl. 19-240.000.
- North, Janice, to University of British Columbia; and Quadra Logic Technologies Inc. Selective cell inactivation in blood. 5,776,966, Cl. 514-410.000.
- North, Michael; Nishina, Patsy; Noben-Trauth, Konrad; and Naggert, Juergen, to Sequana Therapeutics, Inc.; and Jackson Laboratory, The. Obesity associated genes. 5,776,762, Cl. 435-252.300.
- Northern Telecom Limited: See—
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- Hayes, Hasler R.; Daniels, Michael H.; and Atkinson, John C., 5,777,846, Cl. 361-690.000.
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Stone, Kevin Patrick; and Ellacott, Ken David, 5,777,841, Cl. 364-554.000.
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Tobe, Akihiko; Nosaki, Hiroshi; Shinomoto, Manabu; and Miwa, Naoki, 5,778,224, Cl. 395-670.000.
Noske, Frank: See—
Sasse, Wilfried; Kuppen, Peter; Meier, Eckhard; Kolkhorst, Günter; Kohlmeier, Thomas; and Noske, Frank, 5,775,788, Cl. 312-334.380.
Nourai, Ali; Keri, Albert J. F.; and Marsico, Ronald, to AEP Energy Services, Inc. Apparatus and method for increasing electrical clearances of energized conductors, 5,777,262, Cl. 174-40.000.
Nova Chemicals Ltd.: See—
Ho, Kam Wah, 5,777,065, Cl. 528-272.000.
Novak, Vance: See—
Hayler, John David; Grinter, Trevor John; Novak, Vance; and Lewis, Norman John, 5,777,128, Cl. 548-252.000.
Novartis AG: See—
Albert, Rainer; Krenning, Eric P.; Lamberts, Steven W. J.; and Pless, Janos, 5,776,894, Cl. 514-11.000.
Pearce, Robert C.; Murdock, Robby C.; Thompson, Amy E.; Reed, Scott M.; and Wallace, Don E., 5,775,026, Cl. 43-132.100.
Novartis Corporation: See—
Potter, Michael Fred; Rotramel, George Lorton; Caruso, Andrew James; Chou, David Teh-Wei; and Cain, Paul Alfred, 5,776,981, Cl. 514-594.000.
Potter, Michael Fred; Rotramel, George Lorton; Caruso, Andrew James; Chou, David Teh-Wei; and Cain, Paul Alfred, 5,776,982, Cl. 514-594.000.
Pugin, Benoit, 5,777,062, Cl. 528-72.000.
Novartis Finance Corporation: See—
Ryals, John A.; Alexander, Danny C.; Goodman, Robert M.; and Stinson, Jeffrey R., 5,777,200, Cl. 800-205.000.
Novibra GmbH: See—
Stahlecker, Gerd; and Braxmeier, Hans, 5,775,083, Cl. 57-135.000.
Novo Nordisk A/S: See—
Pedersen, Sven; Larsen, Anne Mørkeberg; and Aasmul, Per, 5,776,741, Cl. 435-134.000.
Schülein, Martin; and Levring, Kirsten Boegh, 5,776,757, Cl. 435-209.000.
Noyes, Thomas E., II; DeVries, Roelof H.; and Gerber, Glenn D., to Steiner Turf Equipment, Inc. Sod harvester with pivotable roll-forming unit, 5,775,436, Cl. 172-20.000.
Nozaki, Mikiya: See—
Karaki, Mitsuhiro; Nozaki, Mikiya; Hakoima, Masato; and Midorikawa, Toshiaki, 5,776,866, Cl. 508-122.000.
Nozomi, Mamoru: See—
Kido, Eiichi; Yui, Yui; Mori, Toyokazu; and Nozomi, Mamoru, 5,778,286, Cl. 399-159.000.
Nozzle Technology, Inc.: See—
Lott, W. Gerald, 5,775,443, Cl. 175-57.000.
Lott, W. Gerald, 5,775,446, Cl. 175-424.000.
NTN Corporation: See—
Sahashi, Koji, 5,777,466, Cl. 324-174.000.
NTT Mobile Communications Network Inc.: See—
Sakai, Tsutomu; Ohashi, Setsuya; and Mizuki, Takayuki, 5,777,560, Cl. 340-825.440.
Nunes, Anne Marie; and Zarrinmayeh, Hamideh, to Eli Lilly and Company, Naphthimidazolyl neuropeptide Y receptor antagonists, 5,776,931, Cl. 514-232.800.
Nunn, Robert W.: See—
Farfoud, Simon H.; and Nunn, Robert W., 5,777,535, Cl. 333-243.000.
Nunnery, William Burrell: See—
Canora, Frank J.; Nunnery, William Burrell; Ponnappalli, Saila; Oakley, Brian Scott; and Oprysko, Modest Michael, 5,777,583, Cl. 343-700.0MS.
Nupponen, Heikki: See—
Pohjala, Esko; Nupponen, Heikki; and Lehmuusaari, Kari, 5,776,499, Cl. 424-489.000.
Nuss, Karl-Heinz: See—
Nittel, Klaus-Dieter; and Nuss, Karl-Heinz, 5,776,231, Cl. 106-1.230.
Nutrition 21: See—
McCarty, Mark F., 5,776,498, Cl. 424-489.000.
McCarty, Mark F., 5,776,504, Cl. 424-682.000.
Nuttall, Alfred L.: See—
Ren, Tianying; and Nuttall, Alfred L., 5,776,179, Cl. 607-137.000.
Nuvana Medical Innovations, LLC: See—
Mikol, Edward John; and Chambers, Thomas John, 5,776,194, Cl. 623-16.000.
Nye, Steven: See—
Boulton, Teri G.; Cobb, Melanie H.; Yancopoulos, George D.; Nye, Steven; and Panayotatos, Nikos, 5,776,751, Cl. 435-194.000.
Nylund, Olov, to ABB Atom AB. Control of coolant flow in a nuclear reactor, 5,778,035, Cl. 376-361.000.
Nypro Inc.: See—
Cote, Andrew L., Sr., 5,775,671, Cl. 251-149.800.
O&K Rolltreppen GmbH: See—
Brunn, Erik, 5,775,477, Cl. 198-328.000.
Oakley, Brian Scott: See—
Canora, Frank J.; Nunnery, William Burrell; Ponnappalli, Saila; Oakley, Brian Scott; and Oprysko, Modest Michael, 5,777,583, Cl. 343-700.0MS.
Oashi, Masahiro: See—
Inoue, Shinji; Kakiuchi, Takashi; Nakamura, Hiroki; Waki, Hiroyuki; and Oashi, Masahiro, 5,778,352, Cl. 707-1.000.
Oatman, Robert K.; Herrera, Peter J.; Sanouillet, Remy D.; and Zimmerman, Charles E., to YY Software Corporation. System and method for expert system analysis using quiescent and parallel reasoning and set structured knowledge representation, 5,778,157, Cl. 395-51.000.
Obinata, Masuo: See—
Osawa, Toshiaki; Obinata, Masuo; Ishii, Yoshiyuki; and Kobayashi, Yoshio, 5,776,446, Cl. 424-85.100.
Obitts, Shane, to Invacare Corporation. Cam lock assembly for adjustable cane, 5,775,352, Cl. 135-69.000.
Obiya, Hiroyuki; and Mizusawa, Ryuma, to Tokyo Ohka Kogyo Co., Ltd. Photosensitive resin composition and photosensitive resin laminated film containing the same, 5,776,995, Cl. 522-15.000.
Object Technology Licensing Corp.: See—
Wimble, Michael D.; and You, Lawrence L., 5,778,230, Cl. 395-704.000.
O'Brieness, R. Frank: See—
Cometti, Aldo Giovanni; and O'Brieness, R. Frank, 5,777,498, Cl. 327-156.000.
Oce-Nederland B.V.: See—
Arends, Antonius Henricus; and Gelten, Marijn Wilhelmus Petrus, 5,778,292, Cl. 399-307.000.
OCG Microelectronic Materials, Inc.: See—
Schadeli, Ulrich; Hofmann, Manfred; Muenzel, Norbert; and Grubenmann, Arnold, 5,776,657, Cl. 430-281.100.
Ochi, Takao; Funakoshi, Hisashi; Hatada, Kenzo; and Wakabayashi, Takashi, to Matsushita Electric Industrial Co., Ltd. Semiconductor device and manufacturing method of the same, 5,776,802, Cl. 438-123.000.
O'Connell, Daniel: See—
Born, Terry D.; and O'Connell, Daniel, 5,776,256, Cl. 118-730.000.
O'Connor, Harold F.: See—
Allen, George M.; O'Connor, Harold F.; and Saslow, Seymour, 5,777,537, Cl. 336-96.000.
O'Connor, Ronald M.: See—
Greve, Christopher G.; Horton, Paul L.; and O'Connor, Ronald M., 5,774,967, Cl. 29-235.000.
Oda, Akemi: See—
Awatsu, Kiyotaka; Wada, Masahiko; Oda, Akemi; and Shibata, Yasuko, 5,777,304, Cl. 235-379.000.
Oda, Hiroyuki, to Tokuyama Corporation. Cyclone and fluidized bed reactor having same, 5,776,416, Cl. 422-145.000.
Odagiri, Hiroshi: See—
Kitazawa, Kouji; Hayakawa, Motomu; and Odagiri, Hiroshi, 5,776,070, Cl. 600-483.000.
Odagiri, Masaru: See—
Ueda, Hideyuki; Kuwahara, Kenji; Seki, Hiroshi; Okazaki, Sadayuki; Odagiri, Masaru; Takahashi, Kiyoshi; and Murai, Mikio, 5,776,602, Cl. 428-332.000.
Odneal, Stephen W.: See—
Blankinship, Willis J.; Hamilton, Daniel V.; and Odneal, Stephen W., 5,775,848, Cl. 405-244.000.
O'Donnell, Michael A.; Duda, Rosemary B.; DeWolf, William C.; Aldovini, Anna; and Young, Richard A., to Beth Israel Hospital Association; and Whitehead Institute for Biomedical Research. Recombinant mycobacterial vaccines, 5,776,465, Cl. 424-200.100.
Oelrich, Eckhard: See—
Bolz, Joachim; Wagner, Gertraud; Oelrich, Eckhard; and Radtke, Dirk, 5,776,926, Cl. 514-200.000.
Office National D'Etudes et de Recherches Aeronautiques: See—
Josso, Pierre; and Alperine, Serge, 5,776,620, Cl. 428-610.000.
Officer, Todd M.; Clausen, Scott A.; and Kallis, Adrian G., to AGCO Corporation; and Phoenix International Corporation. Powershift transmission system with torque-mapped shifts, 5,778,329, Cl. 701-55.000.

- Ogata, Kazumi; Tsuruoka, Hideki; Sakae, Takahiro; and Nakao, Hidetoshi, to Senju Pharmaceutical Co., Ltd. Corticoid derivatives and pharmaceutical and cosmetic compositions, 5,776,922, Cl. 514-172.000.
Ogata, Masami; Suzuki, Teruhiko; and Tong, Tak Yen, to Sony Corporation. Predictive sub-band video coding and decoding using motion compensation, 5,777,678, Cl. 348-398.000.
Ogata, Taizo, to Tokyo Automatic Machinery Works, Ltd. Device of regulating running position of unsealing tape for packing film, 5,776,300, Cl. 156-554.000.
Ogawa, Hideo; Teraji, Norihisa; and Terauchi, Isshu, to Nissho Corporation. Biaxial inclination sensor, 5,774,996, Cl. 33-366.000.
Ogawa, Kazumi; Eguchi, Katsuhiko; and Aoki, Kongo, to Aisin Seiki Kabushiki Kaisha. Valve timing control device, 5,775,279, Cl. 123-90.170.
Ogawa, Tomoya, to Fujitsu Ltd. Apparatus and method for retrieving dictionary based on lattice as a key, 5,778,405, Cl. 707-532.000.
Ogilvie, Gregory K.; Davenport, Deborah J.; Gross, Kathy L.; and Hand, Michael S., to Colgate Palmolive Company. Therapeutic diet for metabolic abnormalities found in animals with lymphoma, 5,776,913, Cl. 514-57.000.
Oguchi, Takahiro: See—
Sakai, Kunihiko; Oguchi, Takahiro; Yamano, Akihiko; and Shido, Shunichi, 5,778,134, Cl. 386-46.000.
Ogura, Toshihiko: See—
Inukai, Hidekatsu; and Ogura, Toshihiko, 5,776,071, Cl. 600-493.000.
O'Hagan, Michael: See—
Herold, Christopher D.; and O'Hagan, Michael, 5,776,723, Cl. 435-34.000.
O'Hara, Patrick J.: See—
Kindsvogel, Wayne R.; Jelinek, Laura J.; Sheppard, Paul O.; Grant, Francis J.; Kuiper, Joseph L.; Foster, Donald C.; Lok, Si; and O'Hara, Patrick J., 5,776,725, Cl. 435-69.100.
Ohashi, Setsuya: See—
Sakai, Tsutomu; Ohashi, Setsuya; and Mizuki, Takayuki, 5,777,560, Cl. 340-825.440.
Ohashi, Yoichi: See—
Yoshida, Hiroshi; Ohashi, Yoichi; Watanabe, Kazuo; and Shiozaki, Kazuyuki, 5,776,545, Cl. 427-356.000.
Ohga, Yukiharu: See—
Arita, Setsuo; Ito, Tetsuo; Ohga, Yukiharu; Murata, Fumio; Higashikawa, Yuichi; Sato, Hideyuki; Kudo, Mitsuru; and Yamasawa, Yuuzi, 5,777,896, Cl. 364-550.000.
Ohkouchi, Norio: See—
Nanba, Shigenobu; Yaguchi, Hiroshi; Shimotsusa, Masataka; Ibaraki, Nobuhiko; Nakayama, Takenori; Iwata, Takashi; Yamamoto, Yoshinori; Ohkouchi, Norio; and Nagao, Mamoru, 5,776,267, Cl. 148-328.000.
Ohkubo, Kazuhiko; Tsutsui, Tomoki; Sakaki, Yoshitsugu; Kunihiro, Tamotsu; Nishikawa, Ariko; Izukawa, Tsukuru; Ueno, Kaoru; Sakai, Seiji; and Tanaka, Yukichi, to Mitsui Toatsu Chemicals, Inc. Preparation of polyoxy-alkylene polyols, polymer polyols and flexible polyurethane foams, 5,777,175, Cl. 568-619.000.
Ohkuma, Norio; Kuwayama, Tetsuro; Majima, Toshiaki; Taniguchi, Naosato; Toshida, Yomishi; Yoshinaga, Yoko; and Fukui, Tetsuro, to Canon Kabushiki Kaisha. Photosensitive recording medium and method of preparing volume type phase hologram member using same, 5,776,634, Cl. 430-2.000.
Ohkuwa, Kazuki: See—
Mukai, Masataka; and Ohkuwa, Kazuki, 5,778,006, Cl. 371-22.500.
Ohlschlager, Hans; Langen, Hans; and Singer, Klaus, to AGFA AG. Color photographic recording material having a yellow filter layer which contains an arylidene dye of isoxazolone as the yellow filter dye, 5,776,667, Cl. 430-517.000.
Ohmi, Kazuaki: See—
Asaba, Tetsuo; Kawasumi, Yasushi; Ohmi, Kazuaki; Sekine, Yasuhiro; and Hayakawa, Yukihiko, 5,776,255, Cl. 118-726.000.
Ohmuro, Ryuji, to Canon Kabushiki Kaisha. Four color separation optical device, 5,777,674, Cl. 348-338.000.
Ohno, Hironobu: See—
Sato, Masato; Ohno, Hironobu; Murai, Nobuyuki; and Iwasaka, Hiroshi, 5,777,155, Cl. 560-244.000.
Ohno, Hiroshi: See—
Nagase, Hiroshi; Imamura, Yoshifumi; Ohno, Hiroshi; and Endo, Takashi, 5,776,945, Cl. 514-307.000.
Ohno, Keiko: See—
Yamada, Wazo; Maeda, Hideo; Yoshida, Yoshinori; Okamoto, Yoshimi; Seki, Koichiro; Ohno, Keiko; Inuzuka, Masato; and Takayama, Hideyuki, 5,775,119, Cl. 62-259.100.
Ohno, Tadayoshi: See—
Yamaguchi, Takashi; Ohno, Tadayoshi; Itoh, Shinichi; and Tanaka, Hisatoshi, 5,777,644, Cl. 347-68.000.
Ohno, Takehide, to Ricoh Company, Ltd. Optical head device including fixed and movable deflection means, 5,777,960, Cl. 369-44.140.
Ohrborn, Walter H.; Campbell, Donald H.; and St. Aubin, Donald L., to BASF Corporation. Method for modified aminoplast compounds, aminoplasts obtained thereby and coatings containing the same, 5,777,048, Cl. 525-509.000.
Ohsaka, Sigeo: See—
Okada, Nobumasa; Ohsaka, Sigeo; and Miura, Shuichi, 5,777,792, Cl. 359-584.000.
Ohsawa, Yuichi; and Yoda, Hiroaki, to Kabushiki Kaisha Toshiba. Magnetoresistance effect device and manufacturing method thereof, 5,777,542, Cl. 338-32.000.
Ohshima, Shigeo: See—
Inuzuka, Kazuko; Ohshima, Shigeo; and Nagaba, Katsushi, 5,777,946, Cl. 365-240.000.
Ohshimizu, Hisao: See—
Sato, Shigeru; Ohshimizu, Hisao; and Kawaguchi, Shinobu, 5,776,362, Cl. 252-194.000.
Ohshita, Youichi: See—
Tsukushi, Masanori; Ohshita, Youichi; Natsui, Ken'ichi; Kamata, Yuzuru; Yano, Makoto; Yaginuma, Noriyuki; and Shiraishi, Katsuhiko, 5,777,842, Cl. 361-603.000.
Ohta, Eiji: See—
Beppu, Mitsuo; Yasue, Mitsuru; Nishio, Akihiro; and Ohta, Eiji, 5,777,877, Cl. 364-468.030.
Ohta, Kenji: See—
Hirokane, Junji; Nakayama, Junichiro; Nakajima, Junsaku; Takahashi, Akira; and Ohta, Kenji, 5,777,953, Cl. 369-13.000.
Ohtaka, Kazuto: See—
Saito, Hitoshi; and Ohtaka, Kazuto, 5,775,932, Cl. 439-378.000.
Ohtake, Motoyuki, to Nikon Corporation. Illuminating optical system, 5,775,790, Cl. 362-18.000.
Ohtsuka, Tadashi; Koizumi, Kazuhiko; and Nobutani, Tsutomu, to Seiko Epson Corporation. Recording device with connection means to first and second recording device with switch means having a preset connection pattern connecting first and second selection signals, 5,778,254, Cl. 395-858.000.
Ohtsuka, Yasumasa, to Canon Kabushiki Kaisha. Image heating apparatus, 5,778,293, Cl. 399-329.000.
Ohtsuki, Munenori: See—
Sato, Shinichi; Ohtsuki, Munenori; Iwaguchi, Isao; and Shinoda, Ichiro, 5,778,017, Cl. 372-38.000.
OIS Optical Imaging Systems, Inc.: See—
Xu, Gang, 5,777,709, Cl. 349-120.000.
Ojima, Satoshi: See—
Matsuzaki, Hiromi; Ojima, Satoshi; and Nakamura, Masashi, 5,776,196, Cl. 623-17.000.
Okabe, Masato: See—
Sato, Koichi; Okabe, Masato; Kamiyama, Hironori; Shimizu, Osamu; and Yamashita, Yuudai, 5,778,260, Cl. 396-30.000.
Okabe, Toshiaki: See—
Hatagishi, Yuji; Yamamoto, Toshihiko; Abe, Kimihiko; and Okabe, Toshiaki, 5,777,480, Cl. 324-538.000.
Okada, Akihiko; and Sato, Nobuyuki, to Idemitsu Kosan Co., Ltd. Impact modified syndiotactic polystyrene blend, 5,777,028, Cl. 525-86.000.
Okada, Nobumasa; Ohsaka, Sigeo; and Miura, Shuichi, to Fujitsu Limited. Optical film, an antireflection film, a reflection film, a method for forming the optical film, the antireflection film or the reflection film and an optical device, 5,777,792, Cl. 359-584.000.
Okada, Seiji: See—
Tanase, Susumu; Okino, Toshiyuki; Inuma, Toshiya; Yamashita, Syugo; Uchida, Hidekazu; Mori, Yukio; Maenaka, Akihiro; Okada, Seiji; and Ihara, Kanzi, 5,777,666, Cl. 348-43.000.
Okada, Shinjiro; Tomono, Haruo; and Matsuo, Yuji, to Canon Kabushiki Kaisha. Electrode substrate, making the same, liquid crystal device provided therewith, and making the same, 5,777,710, Cl. 349-138.000.
Okada, Tomohiro: See—
Wakagi, Masatoshi; Onisawa, Kenichi; Ando, Masahiko; Kaneko, Toshiaki; Minemura, Tetsuro; and Okada, Tomohiro, 5,777,702, Cl. 349-47.000.
Okajima, Yoshio; Kimura, Kazumasa; and Nishida, Tazo, to Sharp Kabushiki Kaisha. Touch panel input apparatus performing a sampling operation intermittently, 5,777,604, Cl. 345-173.000.
Okamachi, Akira: See—
Yokota, Takeshi; Haramura, Masayuki; Okamachi, Akira; and Makino, Toshihiko, 5,776,948, Cl. 514-312.000.
Okamoto, Hiroo; Oku, Masuo; Noguchi, Takaharu; and Arai, Takao, to Hitachi, Ltd. Video signal processing apparatus, 5,778,140, Cl. 386-94.000.
Okamoto, Kiyotaka; Honda, Yoshihiko; Murakami, Motorake; Oniki, Shigeru; and Suzuki, Koji, to Snow Brand Milk Products Co., Ltd. Process and apparatus for preparing precur solid water-in-oil emulsion, 5,776,533, Cl. 426-515.000.
Okamoto, Ryusuke; and Anraku, Hideo, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Serum or plasma separating compositions, 5,776,357, Cl. 252-60.000.
Okamoto, Takeya. Interactive communication system for communicating video, 5,775,995, Cl. 463-40.000.
Okamoto, Yasuo; and Sorori, Tadashi, to Fuji Photo Film Co., Ltd. Photopolymerizable composition, 5,776,996, Cl. 522-26.000.
Okamoto, Yoshimi: See—
Yamada, Wazo; Maeda, Hideo; Yoshida, Yoshinori; Okamoto, Yoshimi; Seki, Koichiro; Ohno, Keiko; Inuzuka, Masato; and Takayama, Hideyuki, 5,775,119, Cl. 62-259.100.
Okamura, Yoshitaka; Tosaka, Yoichi; Hashimoto, Kenichiro; Hirano, Hirofumi; Yamamoto, Kosuke; Nakai, Hiroshi; and Watanabe, Yoshinori, to Canon Kabushiki Kaisha. Apparatus or instrument including scanning type functional element, 5,777,634, Cl. 347-7.000.
Okano, Haruo; Noguchi, Sadahisa; and Sekine, Makoto, to Kabushiki Kaisha Toshiba. Method for forming a film on a substrate by activating a reactive gas, 5,776,557, Cl. 427-579.000.
Okano, Haruo: See—

- Sasaki, Yasutaka; Matsuo, Mie; Nakata, Rempei; Wada, Junichi; Hayasaka, Nobuo; Yano, Hiroyuki; and Okano, Haruo, 5,775,980, Cl. 451-285.000.
- Okano, Hiroshi. Tilt mechanism for chairs. 5,775,774, Cl. 297-300.200.
- Okano, Yoshiyuki, to Nippondenso Co., Ltd. Control apparatus for brushless DC motor. 5,777,447, Cl. 318-434.000.
- Okawa, Hirokazu; Iwasaki, Hidetake; Takahashi, Mitsuhiro; Maruyama, Hidekazu; Sakanaka, Hiroyuki; and Umeda, Sakae, to Bando Chemical Industries, Ltd. Heavy-duty power transmission v-belt. 5,776,023, Cl. 474-243.000.
- Okawara, Chitoshi. *See—*
- Tasaki, Takaharu; Hayakawa, Shigeru; Sasazaki, Mitsuhiro; Okawara, Chitoshi; Watanabe, Seiichi; and Akutsu, Shigeru, 5,775,594, Cl. 239-343.000.
- Okazaki, Masatoshi. *See—*
- Watanabe, Hirosuke; Kimura, Takeo; Okazaki, Masatoshi; and Mizone, Shinya, 5,776,597, Cl. 428-297.400.
- Okazaki, Mitsuhiro; and Tobe, Michihiro, to Nikon Corporation. Vibration actuator. 5,777,424, Cl. 310-323.000.
- Okazaki, Sadayuki. *See—*
- Ueda, Hideyuki; Kuwahara, Kenji; Seki, Hiroshi; Okazaki, Sadayuki; Odagiri, Masaru; Takahashi, Kiyoshi; and Murai, Mikio, 5,776,602, Cl. 428-332.000.
- Oki Electric Industry Co., Ltd. *See—*
- Poduska, John W., Jr., 5,777,599, Cl. 345-136.000.
- Suyama, Junichi; and Fukudome, Kazukiyo, 5,777,492, Cl. 327-18.000.
- Taya, Takashi; Yoshida, Akira; Yamaoka, Shinsuke; and Matsumoto, Shuichi, 5,778,214, Cl. 395-551.000.
- Oki, Masashi. *See—*
- Hiraki, Toshiyuki; Yamada, Akira; and Oki, Masashi, 5,777,999, Cl. 370-509.000.
- Oki, Toru; and Paoletta, Philip A., to Sony Corporation; and Sony Electronics Inc. Training method for neural network. 5,778,152, Cl. 395-23.000.
- Okimoto, Shoji. *See—*
- Aaker, Kenneth Dale; Behrens, Louis Edward; Culbertson, Bruce Richard; Kiel, Harvey Gene; Nelson, Eric John; Okimoto, Shoji; and Amell, Steven Joseph, 5,777,630, Cl. 345-507.000.
- Okino, Toshiyuki. *See—*
- Tanase, Susumu; Okino, Toshiyuki; Iinuma, Toshiya; Yamashita, Syugo; Uchida, Hidekazu; Mori, Yukio; Maenaka, Akihiro; Okada, Seiji; and Ihara, Kanzi, 5,777,666, Cl. 348-43.000.
- Oklahoma Medical Research Foundation. *See—*
- Dell'Orco, Robert Thomas, Sr.; McClung, J. Keith; Jupe, Eldon; Liu, Xiao-Tie; and King, Robert, 5,776,738, Cl. 435-91.200.
- Okonogi, Takahiro, to NEC Corporation. Method of processing input/output request in computer system including a plurality of subsystems. 5,778,349, Cl. 707-1.000.
- Oku, Masuo. *See—*
- Okamoto, Hiroo; Oku, Masuo; Noguchi, Takaharu; and Arai, Takao, 5,778,140, Cl. 386-94.000.
- Okubo, Masao; Kojima, Noriaki; and Takahashi, Nobukazu, to Fuji Xerox Co., Ltd. Image forming apparatus having a transfer member positional downstream of a nip portion. 5,778,291, Cl. 399-302.000.
- Okuda, Asao. *See—*
- Haraga, Kosuke; Yagi, Naoki; Nakashima, Yoshinobu; Ganryu, Yuzi; Sasaki, Tsutomu; Takimoto, Atsushi; Komazawa, Yosiro; Okuda, Asao; Takagi, Shoji; Matsukawa, Akifumi; Urata, Hideaki; Kawashima, Yasushi; Masuo, Kazumi; Honma, Kenji; and Ikeda, Isao, 5,776,584, Cl. 428-132.000.
- Okuda, Sadanao; Ishikawa, Masato; Suzuki, Takashi; and Hayashi, Yoshihiro, to Riso Kagaku Corporation. Emulsion ink for stencil printing. 5,776,232, Cl. 106-31.260.
- Okuda, Tadayuki. *See—*
- Yamada, Atsushi; and Okuda, Tadayuki, 5,775,798, Cl. 362-226.000.
- Okudaira, Tomonori. *See—*
- Yuuki, Akimasa; Kawahara, Takaaki; Makita, Tetsuro; Yamamuka, Mikio; Ono, Koichi; and Okudaira, Tomonori, 5,776,254, Cl. 118-725.000.
- Okushima, Koji. *See—*
- Aoyama, Soichi; Sakai, Akira; and Okushima, Koji, 5,774,973, Cl. 29-526.200.
- Okutsu, Hisashi. *See—*
- Takano, Tetsuya; Yokonuma, Norikazu; Hibino, Hideo; Kazami, Kazuyuki; and Okutsu, Hisashi, 5,778,267, Cl. 396-319.000.
- Okuyama, Yuzo. *See—*
- Nakayama, Mikio; Tachibana, Tetsuo; Iketani, Youzou; Okuyama, Yuzo; and Makuma, Satoshi, 5,778,001, Cl. 370-516.000.
- Olah, D. Bradley. *See—*
- Fentz, Barry W.; Olah, D. Bradley; Lovely, Donald F.; and Hanscom, Cory James, 5,775,993, Cl. 463-17.000.
- Olashuk, Kenneth R.; and Shields, Lester R., to Weirton Steel Corporation. Continuous cleansing methods flat-roller steel strip. 5,776,258, Cl. 134-15.000.
- Olbrich, Armin. *See—*
- Krynitz, Ulrich; Olbrich, Armin; Kummer, Wolfgang; and Schloh, Martin, 5,776,329, Cl. 205-538.000.
- Olbye, Bendt; and Mærsk, Bent, to F. L. Smidth & Co. A/S. Plant for heat treatment of lumpy material. 5,775,890, Cl. 432-58.000.
- O'Leary, Dennis S. Bag holder. 5,775,649, Cl. 248-97.000.
- Olesky, Stanley J. *See—*
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- Nakaoka, Masaya, 5,777,794, Cl. 359-632.000.
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- Honjo, Yutaka; and Omori, Kazumitsu, 5,776,513, Cl. 425-143.000.
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- Orito, Masaomi; Hirata, Nobutaka; Kimura, Satoshi; Asaka, Kazuo; and Uehara, Shigeo, to Shibasaki Co., Ltd. Apparatus with shooting target and method of scoring target shooting. 5,775,699, Cl. 273-371.000.
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- Orthopedic Systems, Inc. *See—*
- Lamb, Steven R.; Wolf, Eugene M.; and Klein, Russel E., 5,775,334, Cl. 128-845.000.
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- Osborne, David W.; and Kirchner, Fred, to Calgon Vestal, Inc. Topical antimicrobial cleanser containing chlorhexidine gluconate and alcohol. 5,776,430, Cl. 424-43.000.
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- Osborne, Keith J., to Pisces by OPW, Inc. Double containment under ground piping system. 5,775,842, Cl. 405-154.000.
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- Hua, Jenkin P., 5,777,439, Cl. 315-225.000.
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- Belt, James S.; Wilgus, Frank R.; and Wilgus, Frank A., 5,776,541, Cl. 427-186.000.
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- Tabellini, Giorgio, 5,775,619, Cl. 242-372.000.
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- Plakinger, Frank J. Compound power socket wrench. 5,775,182, Cl. 81-57.300.
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- Neuman, George A.; Athey, Patricia Ruzakowski; and Stewart-Davis, Royann L., 5,776,236, Cl. 106-287.170.
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- Premier Farnell Corp.: *See—*
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- Price, Randall R.: *See—*
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- Blank, Roy Lonnie; Doughty, Darrell Gene; and Linares, Carlos Gabriel, 5,776,917, Cl. 514-159.000.
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- Rains, David. Long handle toenail clippers. 5,775,340, Cl. 132-73.500.
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- Ravn, Thomas Christian: See—
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- Rawkin-Delux, Inc.: See—
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- Rawlings, Anthony Vincent: See—
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- Redden, Galen H., to Exide Corporation. Rollerless plate-feeding apparatus. 5,775,871, Cl. 414-798.900.
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- Reed, Larry E.; Inkrott, Kenneth E.; and Shaw, James E., to Phillips Petroleum Company. Thermal cracking process. 5,777,188, Cl. 585-648.000.
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- Reele, Samuel, to Eastman Kodak Company. Photodetector structure. 5,777,352, Cl. 257-184.000.
- Rees, Michael Ralph, to Medical Miracles Company Limited. Angioplasty catheter with guidewire. 5,776,153, Cl. 606-159.000.
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- Rege, Ajay A.: See—
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- Reichental, Abraham N.; Shafr, Alexander; Bertram, George T.; and Corliss, James M., to Sealed Air Corporation. On-demand production of foam cushions with defined three-dimensional geometry. 5,776,510, Cl. 425-112.000.
- Reichl, Helmut; Manzer, Hans; and Viechter, Manfred, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Multi-functional printer device for printing tape-shaped recording media. 5,778,297, Cl. 399-384.000.
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- Reid, John D.: See—
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- Reihl, Peter; Wingen, Bernhard; Salz, Wolfram; Mayer, Johann; Danzl, Martin; Fürst, Arpad; and Zirbs, Thomas, to Webasto Karosseriesysteme GmbH. Motor vehicle roof. 5,775,769, Cl. 296-216.000.
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- Reill, Peter: See—
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- Reilly, William P.; and Tomaszek, John S., to Florida Power Corporation; and United Conveyor Corporation. Dry bottom ash handling system. 5,775,237, Cl. 110-234.000.
- Reimer, William R.: See—
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- Reindl, Markus: See—
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- Sakka, Hideo: *See—*
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- Salpaka, Glenn L.: *See—*
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- Salz, Wolfram: *See—*
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- Salzman, Philip M.: *See—*
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- Kim, Geun-Ho, 5,778,048, Cl. 379-4,000.
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- Kim, Jeong-tae, 5,777,817, Cl. 360-77,140.
- Kim, Tae-eung, 5,778,139, Cl. 386-81,000.
- Kim, Yong-Gu, 5,778,147, Cl. 392-473,000.
- Kwon, Ig-Soo; and Jung, Chul-Min, 5,777,931, Cl. 365-200,000.
- Lee, Ju-hyung, 5,777,818, Cl. 360-84,000.
- Lee, Kyeong-Su, 5,777,457, Cl. 320-137,000.
- Lee, Sang-bo; and Seo, Dong-il, 5,777,934, Cl. 365-203,000.
- Park, Hae-Jin; Kim, Jae-In; and Kang, Yun-Seok, 5,775,124, Cl. 62-408,000.
- Park, Keun-yong, 5,777,654, Cl. 347-176,000.
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- Seong, Hwan-Ho; and Shin, Jin-Ho, 5,777,864, Cl. 363-98,000.
- Shim, Jae Su, 5,777,699, Cl. 348-830,000.
- Shin, Dong-Hwa; and Ko, Young-Min, 5,776,250, Cl. 118-326,000.
- Song, Young-Jae; Seo, Jeong-Woo; and Kim, Kyung-Seop, 5,776,799, Cl. 438-118,000.
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- Samuel, David B. Adjustable camber inflatable sail, 5,775,249, Cl. 114-103,000.
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- Samukawa, Katsuhiko: *See—*
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- Sand, Kjell, to Aplicator System AB. Apparatus for feeding one or more fibre threads, 5,775,565, Cl. 226-187,000.
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- Sanders, Stuart B., to Motorola, Inc. Method and apparatus for coupling a differential signal to an unbalanced port, 5,777,527, Cl. 333-26,000.
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- Sandhu, Gurtej Singh, to Micron Technology, Inc. Self aligned method to define features smaller than the resolution limit of a photolithography system, 5,776,836, Cl. 438-717,000.
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Ahrens, Ernst H., 5,776,244, Cl. 106-737,000.
- Firsich, David W.; Ingersoll, David; and Delnick, Frank M., 5,776,384, Cl. 264-29,400.
- Flower, William L.; and Renzi, Ronald F., 5,777,734, Cl. 356-341,000.
- Sandifer, Michael A., to Aircraft Technical Publishers. Computer aided maintenance and repair information system for equipment subject to regulatory compliance, 5,778,381, Cl. 707-104,000.
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- Guterman, Daniel C.; Samachisa, Gheorghe; Fong, Yupin Kowing; and Harari, Eliyahou, 5,776,810, Cl. 438-258,000.
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- Sandula, Philip J.: *See—*
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- Sanghvi, Yogesh Shantilal: *See—*
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- Sangsingkeow, Pat: *See—*
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- Sangveraphunsiri, Vic; Pinai, Felix; Shu, Thomas; and Spears, Cameron, to Advanced Research Logic, Inc. On-board interface for concurrent seeks of multiple disk drives of a computer, 5,778,252, Cl. 395-841,000.
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- Sano, Hiroshi: *See—*
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- Sano, Shigeo: *See—*
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- Sano, Tetsuo: *See—*
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- Sano, Tsuyoshi: *See—*
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- Sanofi Pharmaceuticals, Inc.: *See—*
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- Sanouillet, Remy D.: *See—*
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- Sansulone, Salvatore N. Diving mask, 5,777,712, Cl. 351-43,000.
- Sanshin Kogyo Kabushiki Kaisha: *See—*
Kato, Masahiko; Motose, Hitoshi; and Nonaka, Kimihiro, 5,775,311, Cl. 123-681,000.
- Koike, Takashi; and Itoh, Kazumasa, 5,775,297, Cl. 123-422,000.
- Takahashi, Masanori, 5,775,285, Cl. 123-196,000A.
- Santer, Jean-Marie: *See—*
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- Santoni S.r.l.: *See—*
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- Santrade Ltd.: *See—*
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- Sanyo Chemical Industries Ltd.: *See—*
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- Sanyo Electric Co., Ltd.: *See—*
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- Sanyo Electric Co., Ltd.: *See—*
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- Ikeda, Osamu; Nagasawa, Naobumi; Ishikawa, Tsutomu; and Tsukihashi, Akira, 5,777,955, Cl. 369-32,000.
- Kajiyama, Seiji; Tsuchiya, Yoichi; Ichihara, Shuichi; Toyama, Tateo; and Hibino, Katsutoshi, 5,777,970, Cl. 369-94,000.
- Kawanabe, Takashi; Mukaide, Hideaki; Gotoh, Masanori; Tohya, Yoshinori; Kobayashi, Masahiro; Ishikawa, Atsuyumi; and Hara, Yoshitaka, 5,775,413, Cl. 165-151,000.
- Kiyokawa, Yasunori; and Saito, Jisuke, 5,775,882, Cl. 417-310,000.
- Kuroda, Kiyomitsu; Fukuoka, Ichiro; and Takenaka, Akira, 5,777,895, Cl. 364-550,000.
- Masumoto, Takahiko; Kimura, Kazuhiro; and Kaneko, Hiroshi, 5,777,511, Cl. 329-304,000.
- Matsumoto, Satoshi; Katsuki, Hikaru; and Shimizu, Masayuki, 5,775,116, Cl. 62-155,000.
- Nishikawa, Ryuji, 5,777,703, Cl. 349-47,000.
- Tanase, Susumu; Okino, Toshiyuki; Inuma, Toshiya; Yamashita, Syugo; Uchida, Hidekazu; Mori, Yukio; Maenaka, Akihiro; Okada, Seiji; and Ihara, Kanzi, 5,777,666, Cl. 348-43,000.
- Watanabe, Tohru; and Tanimoto, Takashi, 5,777,313, Cl. 235-462,000.
- Yamada, Wazo; Maeda, Hideo; Yoshida, Yoshinori; Okamoto, Yoshimi; Seki, Koichiro; Ohno, Keiko; Inuzuka, Masato; and Takayama, Hideyuki, 5,775,119, Cl. 62-259,100.
- Sanz, Jorge L. C.: *See—*
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- Sara Lee/DE N.V.: *See—*
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- Saraf, Ravi F.: *See—*
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- Sarangdhar, Nitin V.: *See—*
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- Sardo, Alberto, to Xeda International. Device for transporting products, such as fruit and vegetables in a station for sorting them, 5,775,475, Cl. 198-370,040.
- Sartomer Company: *See—*
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- Sarubbi, Donald J.: *See—*
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- Sas, Benjamin: *See—*
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- Sasahara, Masayuki: *See—*
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- Sasaki, Kiyoshi, to NEC Corporation. Audio conference device having echo canceller, 5,778,085, Cl. 381-169,000.
- Sasaki, Sachio: *See—*
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- Sasaki, Tsutomu: *See—*
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- Sasaki, Yasuhiko; Matsumura, Yukihiko; Imai, Susumu; Tooyama, Tetsuhiro; Orihara, Masamichi; Sugimoto, Yoshio; Yamazaki, Masaru; Hoshino, Mitsunari; Uchikawa, Masumasa; and Arai, Hiroshi, to Tokuhon Corporation. Analgesic anti-inflammatory adhesive plaster, 5,776,484, Cl. 424-448,000.
- Sasaki, Yasutaka; Matsuo, Mie; Nakata, Rempei; Wada, Junichi; Hayasaka, Nobuo; Yano, Hiroyuki; and Okano, Haruo, to Kabushiki Kaisha Toshiba. Polishing method and polishing apparatus, 5,775,980, Cl. 451-285,000.
- Sasakura, Kazumasa: *See—*
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- Sasano, Akiyoshi: *See—*
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- Sasaoka, Seiji: *See—*
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- Sasazaki, Mitsuhiro: *See—*
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- SASIB S.p.A.: *See—*
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- Saslow, Seymour: *See—*
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- Sasse, Wilfried; Kuppen, Peter; Meier, Eckhard; Kolkhorst, Günter; Kohlmeier, Thomas; and Noske, Frank, to Paul Hettich GmbH & Co. Track assembly for a drawer, 5,775,788, Cl. 312-334,380.
- Satchell, Donald Prentice, Jr.; Natarajan, Venkat; and Clarke, Richard Henry, to BOC Group, Inc., The. Heat exchanger, 5,775,129, Cl. 62-643,000.
- Sato, Hideyuki: *See—*
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- Sato, Hiroki: *See—*
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- Sato, Hiroshi: *See—*
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- Sato, Kazuaki: *See—*
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- Sato, Koichi; Okabe, Masato; Kamiyama, Hironori; Shimizu, Osamu; and Yamashita, Yuudai, to Asahi Kogaku Kogyo Kabushiki Kaisha; and Dai Nippon Printing Co., Ltd. Device for controlling developing operation of electro-developing type camera, 5,778,260, Cl. 396-30,000.
- Sato, Koichi, to Kaneto Co., Ltd., and Kankyoheizenservice Co., Ltd. Glassware crushing, grading, screening and collecting dry-type method and apparatus, 5,775,604, Cl. 241-24,220.
- Sato, Masaaki: *See—*
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- Sato, Masahito: *See—*
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- Sato, Masato; Ohno, Hironobu; Murai, Nobuyuki; and Iwasaka, Hiroshi, to Mitsubishi Chemical Corporation. Process for producing unsaturated glycol diester, 5,777,155, Cl. 560-244,000.
- Sato, Masayuki: *See—*
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- Sato, Mitsuhiro: *See—*
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- Sato, Mitsuru: *See—*

- Nagahara, Akira; Sasaki, Sachio; Furukawa, Mitsuhiro; Utaka, Shigenobu; Yamaguchi, Yoshio; Sato, Mitsuru; Kuwabara, Nobuo; Watanabe, Haruyasu; and Takahashi, Takefumi, 5,778,285, Cl. 399-150,000.
- Sato, Nobuyuki: *See—*
- Okada, Akihiko; and Sato, Nobuyuki, 5,777,028, Cl. 525-86,000.
- Sato, Norio: *See—*
- Murase, Atsushi; Sato, Norio; Kato, Takayuki; and Sumi, Kazumasa, 5,777,330, Cl. 250-339,130.
- Sato, Shigeru; Ohshimizu, Hisao; and Kawaguchi, Shinobu, to Kurita Water Industries Ltd.; and Sanyo Chemical Industries Ltd. Sludge dehydrating agent, 5,776,362, Cl. 252-194,000.
- Sato, Shinichi; Miyamoto, Masaaki; and Tsuruhara, Kenji, to Mitsubishi Chemical Corporation. Method for producing polyamide resin from caprolactam, 5,777,067, Cl. 528-310,000.
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- Umeki, Kazuhiro; and Sato, Shosen, 5,776,639, Cl. 430-5,000.
- Sato, Shuichi; and Koguchi, Yoshimi, to Singer Company N.V., The. Bed slide device of a sewing machine, 5,775,245, Cl. 112-260,000.
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- Sato, Takako: *See—*
- Yanagida, Masato; Sato, Takako; and Kagawa, Tetsuya, 5,775,918, Cl. 434-353,000.
- Sato, Yasushi; and Uchiyama, Haruyoshi, to Ando Electric Co., Ltd. OTDR measurement device, 5,777,727, Cl. 356-73,100.
- Sato, Yasushi: *See—*
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- Satoh, Katsutoshi: *See—*
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- Satoh, Yasuo: *See—*
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- Satten, Michael I.: *See—*
- Lehmann, Roger W.; and Satten, Michael I., 5,777,554, Cl. 340-571,000.
- Sattler, Martin: *See—*
- Christians, Uwe; Sewing, Karl F.; and Sattler, Martin, 5,776,943, Cl. 514-291,000.
- Sauber, Charles J., to We Cousins, Inc. Combination reel caddy and stand for cable spools, 5,775,621, Cl. 242-391,100.
- Sauer Inc.: *See—*
- Williams, Keith R.; Jansen, Lynn T.; and Jennings, Lon A., 5,775,453, Cl. 180-197,000.
- Saur, Roland: *See—*
- Huemer, Gerhart; Lemberger, Heinz; Leu, Peter; Kurz, Manfred; and Saur, Roland, 5,775,270, Cl. 123-41,100.
- Sauvageot, Gerard A., to J. Muller International. Fixed point seismic buffer system, 5,775,038, Cl. 52-167,800.
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- Savage, Douglas R.: *See—*
- Betts, Ronald E.; Savage, Douglas R.; and Weinzierl, Michael C., 5,777,202, Cl. 73-1,030.
- Savill, Karen: *See—*
- Wagland, Alison Mary; Savill, Karen; Li, Warren; Brewer, Jason Robert; and Collister, Brian John, 5,776,555, Cl. 427-487,000.
- Sawai, Seiji; Nakajima, Kunihiko; and Watase, Jiro, to Yamaha Hatsudoki Kabushiki Kaisha. Intake control system for engine, 5,775,283, Cl. 123-184,530.
- Sawaki, Takashi, to Fujitsu Limited. Mobile station and radio communication system employing multi-channel access, 5,778,319, Cl. 455-452,000.
- Sawanobori, Keiji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Voltage controller for controlling solid-state image sensor, 5,777,508, Cl. 327-534,000.
- Sawanobori, Keiji; and Tani, Nobuhiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for controlling transfer in a CCD-type imaging device, 5,777,670, Cl. 348-311,000.
- Sawayanagi, Masahiro: *See—*
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- Sawtell, Ralph R.: *See—*
- Premkumar, M. K.; Sawtell, Ralph R.; Phelps, Frankie E.; DerKacy, James A.; and Yun, David I., 5,775,403, Cl. 164-98,000.
- Sawtelle, Randy R.; and Mills, Ronald D., to Sawtelle, Randy R. Pavement marking removal tool and method, 5,775,781, Cl. 299-39,800.
- Saxena, Nirmal R.; and Manthani, Sridhar, to S3, Incorporated. Grayscale shading for liquid crystal display panels, 5,777,590, Cl. 345-89,000.
- Saxon Incorporated: *See—*
- Best, Scott D.; and Turner, James F., 5,776,287, Cl. 156-260,000.
- Saxon, Paul David, to Digital Equipment Corporation. Variable-level backup scheduling method and apparatus, 5,778,165, Cl. 395-182,020.
- Saxton, Loren: *See—*
- Bergmann, Kel; and Saxton, Loren, 5,776,090, Cl. 602-28,000.
- Scalise, Albert M. Clock and counter for bit cell determination and timeout timing for serial data signaling an apple on desktop bus, 5,778,201, Cl. 395-306,000.
- Scancarella, Neil; Pahlck, Harold; and Raouf, Maha, to Avon Products, Inc. Lip treatment containing live yeast cell derivative, 5,776,441, Cl. 424-61,000.
- Scarborough, Robert T.: *See—*
- Jones, Herbert D.; and Scarborough, Robert T., 5,775,698, Cl. 273-359,000.
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- Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanabhen, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Alexshin, Stanislav V.; and Podkolzin, Alexander S., 5,777,360, Cl. 257-315,000.
- Schaad, Norman W.: *See—*
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- Schaap, A. Paul: *See—*
- Akhavan-Tafti, Hashem; De Silva, Renuka; and Schaap, A. Paul, 5,777,135, Cl. 549-332,000.
- Schaedeli, Ulrich; Hofmann, Manfred; Muenzel, Norbert; and Grubenmann, Arnold, to OCG Microelectronic Materials, Inc. Wet-chemical developable, etch-stable photoresist for UV radiation with a wavelength below 200 NM, 5,776,657, Cl. 430-281,100.
- Schäfer, Hermann Georg: *See—*
- Lesmann, Jörg; and Schäfer, Hermann Georg, 5,776,934, Cl. 514-245,000.
- Schäfer, Ingo: *See—*
- Hohmann, Thomas; and Schäfer, Ingo, 5,775,548, Cl. 222-376,000.
- Schaible, Kurt; Seel, Holger; and Schenk, Bernahrd, to Mercedes-Benz AG. Convertible hardtop vehicle, 5,775,766, Cl. 296-107,000.
- Schaller, Günter; Endt, Tilo; Martin, Michael; and Scholz, Clemens, to Hüttinger Medizintechnik GmbH & Co., KG. Operating device for medical-technical system workplaces, 5,777,602, Cl. 345-157,000.
- Schamberg, Stefan: *See—*
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- Schapira, Joseph; Vincent, Jacques; Guerin, Ange-Claude; and Fournials, Jean-Paul, to CFPI AGRO. Phytosanitary flake compositions, 5,776,855, Cl. 504-116,000.
- Schaub, Fritz: *See—*
- Craig, Gerald Wayne; Eberle, Martin; and Schaub, Fritz, 5,776,941, Cl. 514-269,000.
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- Sensor Technology Co., Ltd.: See—
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- Sequana Therapeutics, Inc.: See—
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- Shields, John W., Jr. Louvered blind with removable cloth shades, 5,775,399, Cl. 160-176.10R.
- Shields, Lester R.: See—
Olashuk, Kenneth R.; and Shields, Lester R., 5,776,258, Cl. 134-15.000.
- Shiga, Tsutomu: See—
Katoh, Masahiro; Araki, Takeshi; Niimi, Masami; and Shiga, Tsutomu, 5,777,393, Cl. 290-48.000.
- Shigechika, Yuichi: See—
Fujiwara, Yoshinori; Noda, Takeshi; Shigechika, Yuichi; Taniguchi, Toshiharu; and Tani, Arata, 5,776,395, Cl. 264-146.000.
- Shigeeda, Akio, to Texas Instruments Incorporated. Electronic system having a first level write through cache memory and smaller second-level write-back cache memory and method of operating the same, 5,778,425, Cl. 711-122.000.
- Shih, Jenn S.; Srinivas, Bala; and Hornby, John C., to ISP Investments Inc. Water soluble dye complexing polymers, 5,776,879, Cl. 510-361.000.
- Shikata, Shin-ichi: See—
Kitabayashi, Hiroyuki; Nakahata, Hideaki; Higaki, Kenjiro; Fujii, Satoshi; and Shikata, Shin-ichi, 5,777,422, Cl. 310-313.00A.
- Tanabe, Keiichi; Seki, Yuichiro; Ikegaya, Akihiko; Fujimori, Naoki; Nakahata, Hideaki; and Shikata, Shin-ichi, 5,776,246, Cl. 117-89.000.
- Shikhman, Oleg, to United States Surgical Corporation. Endoscopic cutting instrument, 5,776,156, Cl. 606-170.000.
- Shiloh, Yosef; Tagle, Danilo A.; and Collins, Francis S., to RAMOT-University Authority for Applied Research & Industrial Development Ltd. cDNAs associated with ataxia-telangiectasia, 5,777,093, Cl. 536-23.500.
- Shim, Jae Su, to Samsung Electronics Co., Ltd. Cathode ray tube neck fixing structure, 5,777,699, Cl. 348-830.000.
- Shima Seiki Manufacturing Limited: See—
Ikoma, Kenji; and Arikita, Reiji, 5,775,189, Cl. 83-76.100.
- Shimada, Toshiyuki: See—
Ishibashi, Hiromichi; Shimada, Toshiyuki; Edahiro, Yasuaki; Moriya, Mitsuru; Horibe, Ryusuke; and Miyachi, Hiroyuki, 5,777,967, Cl. 369-59.000.
- Shimano, Inc.: See—
Furuta, Haruhisa, 5,775,168, Cl. 74-489.000.
- Shimatani, Narutoshi; Katagi, Kiyoshi; and Sakamoto, Akihiko, to Nippon Electric Glass Co., Ltd. Enamel frit composition for a low-expansion crystallized glass and enamel-coated low-expansion crystallized glass plate using the same, 5,776,613, Cl. 428-427.000.
- Shimazu, Hiroshi; Kobayashi, Yoshihiro; and Sakata, Eiji, to Kyushu Hitachi Maxell, Ltd. Squeegee for screen printing, 5,775,219, Cl. 101-123.000.
- Shimazu, Tomohisa: See—
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- Shimek, Daniel Curtis: See—
Shimek, Ronald John; and Shimek, Daniel Curtis, 5,775,408, Cl. 165-48.100.
- Shimek, Ronald John; and Shimek, Daniel Curtis, to Heat-N-Glo Fireplace Products Inc. Integrated gas fireplace and air conditioner system, 5,775,408, Cl. 165-48.100.
- Shimizu, Hideaki: See—
Takiyama, Yasuhiro; Miyamoto, Ryosuke; Shimizu, Hideaki; Yaguchi, Hiroyuki; and Takahashi, Tadashi, 5,777,750, Cl. 358-298.000.
- Shimizu, Isao; and Kohhashi, Jun-ichi, to Nippon Petrochemicals Company, Limited. Wet oxidizing process of waste soda, 5,777,191, Cl. 588-205.000.
- Shimizu, Keiichi; Kitamura, Noriyuki; Kakitani, Tsutomu; Aoi, Nanjou; Nagasaki, Fumihiko; and Takahashi, Yuji, to Toshiba Lighting & Technology Corporation. Power supply apparatus having high power-factor and low distortion-factor characteristics, 5,777,861, Cl. 363-37.000.
- Shimizu, Mark Yukio; and Liu, Larry Lingnan, to Intermec Corporation. Resolution gain on width modulated bar codes by use of angled sampling in two dimensions, 5,777,308, Cl. 235-462.000.
- Shimizu, Mark Yukio: See—
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- Shimizu, Masayuki: See—
Matsumoto, Satoshi; Katsuki, Hikaru; and Shimizu, Masayuki, 5,775,116, Cl. 62-155.000.
- Shimizu, Osamu: See—
Sato, Koichi; Okabe, Masato; Kamiyama, Hironori; Shimizu, Osamu; and Yamashita, Yuudai, 5,778,260, Cl. 396-30.000.
- Shimizu, Satoshi: See—
Yamazaki, Toshio; Yoshizawa, Ken; Itou, Tadashi; Wakana, Shigeaki; and Shimizu, Satoshi, 5,776,590, Cl. 428-212.000.
- Shimizu, Shigeru: See—
Watanabe, Keiji; Yano, Ei; Namiki, Takahisa; Yano, Keiko; Maruyama, Takashi; Nakamura, Tomio; Shimizu, Shigeru; Saitoh, Takashi; Uzawa, Masashi; and Ishikawa, Masami, 5,776,659, Cl. 430-296.000.
- Shimizu, Toshimichi; and Tanabe, Kazuhiro, to Hitachi Denshi Kabushiki Kaisha. Fault diagnosis method of television camera apparatus, 5,778,008, Cl. 371-25.100.
- Shimizu, Toshio, to Cosmo Research Institute; and Cosmo Oil Co., Ltd. Process for hydrogenating benzene in hydrocarbon oils, 5,777,186, Cl. 585-269.000.
- Shimmura, Tomoyuki: See—
Watanabe, Kenji; Kameda, Takanobu; Aida, Chieko; Shimmura, Tomoyuki; Toyosawa, Yoshiya; Kurashina, Hiroyasu; and Hosokawa, Takeshi, 5,778,161, Cl. 395-110.000.
- Shimoda, Kaneyasu, to Fujitsu Limited. Encoding method for PRML system, method of and apparatus for demodulating code thereof, and PRML system, 5,777,566, Cl. 341-58.000.
- Shimokata, Akihiro: See—

- Takada, Shinsaku; Fujimoto, Hisayoshi; Ishida, Nobuhisa; Ema, Yasushi; Amano, Toshio; and Shimokata, Akihiro, 5,777,637, Cl. 347-12.000.
- Shimomura, Hideo. Cover strip for facilitating pay off of line from a spool. 5,775,625, Cl. 242-422.600.
- Shimotsusa, Masataka: See—
Nanba, Shigenobu; Yaguchi, Hiroshi; Shimotsusa, Masataka; Ibaraki, Nobuhiko; Nakayama, Takenori; Iwata, Takashi; Yamamoto, Yoshinori; Ohkouchi, Norio; and Nagao, Mamoru, 5,776,267, Cl. 148-328.000.
- Shin, Bong Sub; Lee, Jae Yeon; Kim, Dong Keun; Kim, Seoun Jun; and Cho, Sung Ok, to Korea Institute of Footwear & Leather Technology; and HS Corporation. Thermoplastic PVC foam composition. 5,776,993, Cl. 521-140.000.
- Shin, Dong-Hwa; and Ko, Young-Min, to Samsung Electronics Co., Ltd. Device for recovering photoresist material exhausted from a spin coater. 5,776,250, Cl. 118-326.000.
- Shin-Etsu Chemical Co., Ltd.: See—
Kokubo, Hiroyasu; and Tanaka, Takashi, 5,776,501, Cl. 424-494.000.
- Shin, Hyeog-Soo, to Samsung Electric-Mechanics Co. Ltd. Ferrite device for sensing temperature. 5,775,810, Cl. 374-176.000.
- Shin, Jin-Ho: See—
Seong, Hwan-Ho; and Shin, Jin-Ho, 5,777,864, Cl. 363-98.000.
- Shinada, Yasuyuki: See—
Ejiri, Seishi; and Shinada, Yasuyuki, 5,777,633, Cl. 347-3.000.
- Shindo, Masahiro: See—
Asakawa, Toshifumi; Shindo, Masahiro; Yoshimizu, Toshikazu; and Ueyama, Sumiyoshi, 5,776,253, Cl. 118-723.0CB.
- Shinji, Osamu: See—
Kunisawa, Toshitaka; Shinji, Osamu; Yasuda, Kouzo; and Yoshikawa, Toshiyuki, 5,776,636, Cl. 430-5.000.
- Shinjo, Hiroshi, to Yugenkaisha Shinjo Seisakusho. Position regulating parts feeder. 5,775,478, Cl. 198-389.000.
- Shinkai, Masahiro; Kitagawa, Sumiko; Namba, Kenryo; Yoshimura, Emiko; Monden, Atsushi; and Suzuki, Takahiko, to TDK Corporation. Optical recording medium. 5,776,656, Cl. 430-270.190.
- Shinko Electric Co., Ltd.: See—
Kurita, Yutaka; Muragishi, Yasushi; and Yasuda, Hitoshi, 5,777,232, Cl. 73-664.000.
- Shinko Electric Industries Co., Ltd.: See—
Higashi, Mitsutoshi; Iizuka, Hajime; and Murayama, Kei, 5,777,386, Cl. 257-737.000.
- Shinma, Yasutoshi, to Makita Corporation. Hammer drill with an idling strike prevention mechanism. 5,775,440, Cl. 173-109.000.
- Shinmura, Naohisa: See—
Asakura, Yasunori; and Shinmura, Naohisa, 5,777,410, Cl. 310-71.000.
- Shinno, Douglas: See—
Booker, Cedric J.; and Shinno, Douglas, 5,775,928, Cl. 439-246.000.
- Shinoda, Ichiro: See—
Sato, Shinichi; Ohtsuki, Munenori; Iwaguchi, Isao; and Shinoda, Ichiro, 5,778,017, Cl. 372-38.000.
- Shinohara Machinery Co., Ltd.: See—
Saitou, Shigetoshi, 5,775,225, Cl. 101-415.100.
- Shinoki, Toshio: See—
Matsumura, Mitsue; and Shinoki, Toshio, 5,776,421, Cl. 422-197.000.
- Shinomoto, Manabu: See—
Tobe, Akihiko; Nosaki, Hiroshi; Shinomoto, Manabu; and Miwa, Naoki, 5,778,224, Cl. 395-670.000.
- Shinozaki, Noboru; and Kubo, Seichi, to Matsushita Electric Industrial Co., Inc. Multiplexed audio-video signal transmission system through pair-wire. 5,778,303, Cl. 455-5.100.
- Shiomi, Tomonori: See—
Tanaka, Koichiro; Kimura, Tomohiro; Tatsuta, Akihiro; and Shiomi, Tomonori, 5,778,032, Cl. 375-355.000.
- Shionogi & Co., Ltd.: See—
Hagishita, Sanji; Kamata, Susumu; Seno, Kaoru; Haga, Nobuhiro; and Ishihara, Yasunobu, 5,776,929, Cl. 514-221.000.
- Shiotani, Hutoshi: See—
Ino, Yoshihiro; Yoshida, Tetsuo; Fuda, Yoshiaki; Wako, Naoki; Kumasaka, Katsunori; and Shiotani, Hutoshi, 5,777,425, Cl. 310-359.000.
- Shioya, Makoto; Tamura, Yasuyuki; Takahashi, Hiroto; Tachihara, Masayoshi; Yamamoto, Tadashi; Inada, Genji; Kimura, Tatsuo; and Ashiwa, Jun, to Canon Kabushiki Kaisha. Liquid jet recording method using plural scanning nozzles and including first main scan, sub-scan, and second main-scan steps for recording pixels in tone. 5,777,640, Cl. 347-15.000.
- Shiozaki, Kazuyuki: See—
Yoshiba, Hiroshi; Ohashi, Yoichiro; Watanabe, Kazuo; and Shiozaki, Kazuyuki, 5,776,545, Cl. 427-356.000.
- Shirai, Hirofusa: See—
Kimura, Mutsumi; Shirai, Hirofusa; Koyama, Toshiki; Hanabusa, Kenji; and Kubota, Yuichi, 5,776,576, Cl. 428-64.100.
- Shirai, Masaharu; and Tsukada, Yutaka, to International Business Machines Corporation. Method for fabricating a chip carrier with migration barrier, and resulating chip carrier. 5,776,662, Cl. 430-313.000.
- Shirai, Takamasa: See—
Furuya, Mitsumasa, 5,775,805, Cl. 366-130.000.
- Shiraishi, Katsuhiko: See—
Tsukushi, Masanori; Ohshita, Youichi; Natsui, Ken'ichi; Kamata, Yuzuru; Yano, Makoto; Yaginuma, Noriyuki; and Shiraishi, Katsuhiko, 5,777,842, Cl. 361-603.000.
- Shiraishi, Takashi: See—
Minowa, Toshimichi; Kimura, Hiroshi; Ishii, Junichi; Shiraishi, Takashi; and Ozaki, Naoyuki, 5,776,030, Cl. 477-109.000.
- Shirakihara, Toshio: See—
Kanai, Tatsunori; and Shirakihara, Toshio, 5,778,179, Cl. 395-200.330.
- Shirasawa, Naomi: See—
Asawa, Hideo; and Shirasawa, Naomi, 5,775,178, Cl. 74-640.000.
- Shirley, Brian M., to Micron Technology, Inc. Regressive drive sense amplifier. 5,777,937, Cl. 365-207.000.
- Shirole, Mandakini Vithalrao: See—
Naik, Ramachandra Ganapati; Mumbaikar, Vilas Narayan; Vasumathy, Rangarajan; Lakdawala, Aftab Dawoodbhai; Shirole, Mandakini Vithalrao; Lal, Bansi; Blumbach, Jürgen; Weithmann, Klaus Ulrich; and Bartlett, Robert Ryder, 5,776,977, Cl. 514-532.000.
- Shiseido Co., Ltd.: See—
Tokue, Wataru; Ito, Kenzo; and Tominaga, Naoki, 5,776,438, Cl. 424-59.000.
- Shishido, Norihiko, to Kabushiki Kaisha Toshiba. Semiconductor device improved in a structure of an L-PNP transistor. 5,777,375, Cl. 257-550.000.
- Shishido, Shinji: See—
Andoh, Akihiro; Shishido, Shinji; Koshi, Yutaka; and Kamizawa, Koh, 5,778,166, Cl. 395-182.040.
- Shitara, Masataka; and Tanaka, Hideaki, to Fujitsu Limited. External storage device and external storage control device with means for optimizing buffer full/empty ratio. 5,778,420, Cl. 711-113.000.
- Shiue, Yeong-Ruey: See—
Chen, Hsi-Chieh; Yi, Champion; Wang, Pei-Jan; and Shiue, Yeong-Ruey, 5,776,833, Cl. 438-672.000.
- Shiuh, Jerome C.: See—
Palm, Scott K.; Smith, Timothy R.; Shiuh, Jerome C.; and Roulston, John S., 5,776,353, Cl. 210-777.000.
- Shively, John Thomas, to R.R. Donnelley & Sons Company. Method of and apparatus for removing artifacts from a reproduction. 5,778,105, Cl. 382-269.000.
- Shoichet, Molly S.: See—
Schinstine, Malcolm; Shoichet, Molly S.; Gentile, Frank T.; Hammang, Joseph P.; Holland, Laura M.; Cain, Brian M.; Doherty, Edward J.; Winn, Shelley R.; and Aebischer, Patrick, 5,776,747, Cl. 435-177.000.
- Sholly, Bryan: See—
Maehler, Paul A.; and Sholly, Bryan, 5,777,263, Cl. 174-51.000.
- Shone, Fuchia: See—
Yiu, Tom Dang-Hsing; Wan, Ray-Lin; Cheng, Yao-Wu; Hung, Chung-Hsiung; and Shone, Fuchia, 5,778,440, Cl. 711-154.000.
- Short Brothers PLC: See—
Addis, Stephen Robert, 5,775,381, Cl. 139-11.000.
- Short, Warren: See—
McGinness, Michael P.; and Short, Warren, 5,776,351, Cl. 210-748.000.
- Showa Denko K.K.: See—
Miura, Motoko; Miyata, Hideo; and Morikawa, Kohei, 5,777,158, Cl. 562-442.000.
- Shu, Thomas: See—
Sangveraphunsiri, Vic; Pinai, Felix; Shu, Thomas; and Spears, Cameron, 5,778,252, Cl. 395-841.000.
- Shukunami, Norifumi; and Inagaki, Shinya, to Fujitsu Limited. Doped optical fiber having core and clad structure for increasing the amplification band of an optical amplifier using the optical fiber. 5,778,129, Cl. 385-127.000.
- Shum, Albert Yiu-So: See—
Hu, Antonio Chung-Hua; and Shum, Albert Yiu-So, 5,775,707, Cl. 280-11.220.
- Shum, Peter K.: See—
Velissaropoulos, T. Dora; and Shum, Peter K., 5,778,223, Cl. 395-611.000.
- Shuman, Richard F.: See—
Mathre, David J.; Shuman, Richard F.; Sohar, Paul; and Song, Zhiguo, 5,777,105, Cl. 540-456.000.
- Sibley, Thomas. Silicon carbide carrier for wafer processing and method for making same. 5,776,391, Cl. 264-81.000.
- Sicking, Dean L.; Reid, John D.; and Rohde, John R., to Safety By Design, Inc. Sequential kinking guardrail terminal system. 5,775,675, Cl. 256-13.100.
- Sidlow, Peter; and Domsy, Norman, to Casino Concepts Company. Gaming table layout. 5,775,696, Cl. 273-274.000.
- Siebe North, Inc.: See—
Miller, Frederic Dickson, 5,775,826, Cl. 401-132.000.
- Sieber, Werner, to Chiron Diagnostics Corporation. Highly disperse magnetic metal oxide particles, processes for their preparation and their use. 5,776,360, Cl. 252-62.630.
- Siecor Corporation: See—
Giebel, Markus A.; Cooke, Terry L.; Theuerkorn, Thomas; and Wolfe, Douglas E., 5,778,122, Cl. 385-55.000.
- Walters, Mark D.; and Morgan, Kevin L., 5,778,130, Cl. 385-134.000.
- Siefert, David M., to NCR Corporation. Intelligent resource transformation engine for translating files. 5,778,380, Cl. 707-103.000.
- Siegel, Helen P.: See—
Siegel, Milton I., 5,775,398, Cl. 150-139.000.
- Siegel, Milton I., to Siegel, Helen P. Card holder. 5,775,398, Cl. 150-139.000.
- Siegfried, Theodor: See—
Burdet, Bruno; Rüttimann, August; Santer, Jean-Marie; and Siegfried, Theodor, 5,777,149, Cl. 558-460.000.
- Siemens Aktiengesellschaft: See—
Bomba, Ralf; and Westendorf, Wilhelm, 5,777,406, Cl. 310-61.000.

- Eichfeld, Herbert, 5,778,149, Cl. 395-3.000.
- Gramckow, Otto; Martinecz, Thomas; Poppe, Thomas; and Sörgel, Günter, 5,778,151, Cl. 395-22.000.
- Heid, Oliver, 5,777,472, Cl. 324-309.000.
- Kerckhof, Bart; Wohlfart, Artur; and Dobbelaere, Joris, 5,775,954, Cl. 439-701.000.
- Klumps, Karl-Heinz; Goessling, Hermann; Wichmann, Franz-Josef; and Finzel, Lothar, 5,777,260, Cl. 174-24.000.
- Kontants, Horst, 5,776,564, Cl. 428-34.100.
- Mueller, Karlheinz; and Poehle, Holger, 5,777,376, Cl. 257-557.000.
- Muller, Karl Paul; Poschenrieder, Bernhard; and Roithner, Klaus, 5,776,808, Cl. 438-243.000.
- Peifer, Juergen; Hammerschick, Andreas; and Ahlers, Claus, 5,778,351, Cl. 707-1.000.
- Sezi, Recai; Ahne, Hellmut; and Rissel, Eva, 5,777,066, Cl. 528-310.000.
- Tietel, Reinhard; and Hildebrandt, Andreas, 5,777,482, Cl. 324-678.000.
- Vester, Markus, 5,777,475, Cl. 324-322.000.
- Siemens Automotive S.A.: See—
Aubourg, Alain Michel-Jean; and Cosault, Jean, 5,775,295, Cl. 123-399.000.
- Siemens Matsushita Components GmbH & Co. KG: See—
Lampl, Ewald, 5,775,509, Cl. 206-714.000.
- Siemens Medical Systems, Inc.: See—
Nock, Levin F.; and Friemel, Barry H., 5,776,066, Cl. 600-443.000.
- Siemens Microelectronics, Inc.: See—
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- Siemens Nixdorf Informationssysteme Aktiengesellschaft: See—
Reichl, Helmut; Manzer, Hans; and Vichter, Manfred, 5,778,297, Cl. 399-384.000.
- Sifel, Lawrence J.; and Erikson, Charles W. Organic shell blank and method for making same. 5,776,581, Cl. 428-105.000.
- SIG Schweizerische Industrie-Gesellschaft: See—
Strasser, Thomas; Walz, Theo; and Kern, Werner, 5,775,068, Cl. 53-550.000.
- Sihi GmbH & Co KG: See—
Baranek, Bodo; Mann, Ralf; and Landowski, Rainer, 5,775,816, Cl. 384-278.000.
- Siiman, Olavi; Burshteyn, Alexander; and Gupta, Ravinder K., to Coulter Corporation. Polymeric particles having a biodegradable gelatin or amniodeextran coating and processes for making same. 5,776,706, Cl. 435-7.210.
- Sikora, Andreas: See—
Mödel, Michael; Bungo, Edward Martin; Chupak, John Marvin; Bor-suck, Thomas; Sikora, Andreas; Halbach, Paul Gerhard; and Hsieh, Shao Chung, 5,775,930, Cl. 439-352.000.
- Sikorski, James A.: See—
Getman, Daniel P.; DeCrescenzo, Gary A.; Freskos, John N.; Vazquez, Michael L.; Sikorski, James A.; Devadas, Balekudru; Nagarajan, Srinivasan; Brown, David L.; and McDonald, Joseph J., 5,776,971, Cl. 514-422.000.
- Sikorsky Aircraft Corporation: See—
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- Silicon Graphics, Inc.: See—
Brinsmead, Duncan R., 5,777,619, Cl. 345-419.000.
- Dehnert, James Craig; Hiranandani, Seema; Ho, Wingshun Wilson; and Leung, Lilian H., 5,778,212, Cl. 395-500.000.
- Silver, Arnold H., to TRW Inc. In-situ fabrication of a superconductor hetero-epitaxial Josephson junction. 5,776,863, Cl. 505-329.000.
- Silver, Brian H.; and Annis, Larry D., to Medela, Incorporated. Diaphragm pump and pump mounted in a carrying case useful in breast pumping. 5,776,098, Cl. 604-74.000.
- Silver, Eric H.; Legros, Mark; Madden, Norm W.; Goulding, Fred; and Landis, Don, to University of California, The Regents of the. Broadband high resolution X-ray spectral analyzer. 5,777,336, Cl. 250-370.150.
- Silverman, Ronald H.; Coleman, Donald Jackson; Reinstein, Dan Z.; Simoni, George; and Najafi, David, to Cornell Research Foundation. Ultrasonic scanning of the eye using a stationary transducer. 5,776,068, Cl. 600-443.000.
- Silverstein, Fred E.; Golden, Robert N.; and Somogyi, Christopher P., to Lucent Medical Systems, Inc. Tracheal tube and methods related thereto. 5,775,322, Cl. 128-207.140.
- Sim, Jae-Kwang; and Lee, Sang-Ho, to LG Semicon Co., Ltd. Column decoding circuit for semiconductor memory device. 5,777,945, Cl. 365-230.060.
- Sim, Kwan Bo; and Joung, Mun Chae, to LG Electronics Inc. Tape tension control apparatus for video cassette tape recorder. 5,775,616, Cl. 242-353.000.
- Siman, Robert: See—
Scott, Richard W.; Reaume, Andrew G.; Trusko, Stephen P.; and Siman, Robert, 5,777,194, Cl. 800-2.000.
- Simmons, James M.; Hellmann, Christopher J.; and Day, Richard M., to Raymond Corporation. The Guidewire controls for a material handling vehicle. 5,778,327, Cl. 701-23.000.
- Simmons, Stephen Patrick: See—
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- Simola, Charles H. Stabilized float drum. 5,775,248, Cl. 114-267.000.
- Simon, Allen Henry, to Intel Corporation. Assisting operating-system interrupts using application-based processing. 5,778,207, Cl. 395-376.000.
- Simon, Daniel R.: See—
Thomlinson, Matthew W.; Simon, Daniel R.; and Yee, Bennet, 5,778,069, Cl. 380-25.000.
- Simon, Françoise; and Bouvard, Franck, to Giat Industries. Sealing device for a weapon firing caseless ammunition. 5,777,256, Cl. 89-26.000.
- Simon, Pascal; and Gagnebien, Didier, to Societe L'Oreal S.A. UVA photo-protective cosmetic/dermatological compositions comprising iron chelating agents. 5,776,472, Cl. 424-401.000.
- Simoni, George: See—
Silverman, Ronald H.; Coleman, Donald Jackson; Reinstein, Dan Z.; Simoni, George; and Najafi, David, 5,776,068, Cl. 600-443.000.
- Simopoulos, Anastasios V. High efficiency power amplifier. 5,777,519, Cl. 330-297.000.
- Simpson, John B.; Simpson, John David; Dodson, Michael E.; Nash, Phillip T.; Kim, Sung H.; Brownell, Robert B.; and Smith, Ronald J., to Solo-Practice, Inc. Basketball collection, passing and shot analysis system. 5,776,018, Cl. 473-433.000.
- Simpson, John David: See—
Simpson, John B.; Simpson, John David; Dodson, Michael E.; Nash, Phillip T.; Kim, Sung H.; Brownell, Robert B.; and Smith, Ronald J., 5,776,018, Cl. 473-433.000.
- Simpson, Matthew: See—
Jaffe, Stephen M.; Simpson, Matthew; Shepard, Cecil B.; and Heuser, Michael S., 5,776,553, Cl. 427-577.000.
- Simpson, Ronald O.: See—
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- Simpson-Davis, Raymond William: See—
Hosking, Steven Michael; and Simpson-Davis, Raymond William, 5,775,682, Cl. 271-3.080.
- Sims, John E.: See—
Parnet, Patricia; and Sims, John E., 5,776,731, Cl. 435-69.100.
- Sinco Engineering S.p.A.: See—
Al Ghatta, Hussain; and Cobror, Sandro, 5,776,994, Cl. 521-182.000.
- Singeetham, Shiva: See—
Skeels, Harold B.; Koleilat, Bashir M.; and Singeetham, Shiva, 5,775,427, Cl. 166-344.000.
- Singer Company N.V., The: See—
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- Sato, Shuichi; and Koguchi, Yoshimi, 5,775,245, Cl. 112-260.000.
- Singh, Rama Nand: See—
Chiu, George Liang-Tai; Cipolla, Thomas Mario; Doany, Fuad Elias; Dove, Derek Brian; Rosenbluth, Alan Edward; Singh, Rama Nand; and Wilczynski, Janusz Stanislaw, 5,777,789, Cl. 359-494.000.
- Singhal, Ashok: See—
Hagersten, Erik; and Singhal, Ashok, 5,778,427, Cl. 711-128.000.
- Singhvi, Rahul; Kumar, Amit; Whitesides, George M.; Ingber, Donald E.; Lopez, Gabriel P.; Wang, Daniel I. C.; and Stephanopoulos, Gregory N., to President and Fellows of Harvard College; Massachusetts Institute of Technology; and Children's Medical Center Corporation. Method of formation of microstamped patterns on plates for adhesion of cells and other biological materials, devices and uses therefor. 5,776,748, Cl. 435-180.000.
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- Stanley, Jesse M., Sr. Alignment of objects, 5,775,036, Cl. 52-127.200.
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- Hagersten, Erik; and Singhal, Ashok, 5,778,427, Cl. 711-128.000.
- Hohensee, Paul H.; and Dice, David, 5,778,211, Cl. 395-500.000.
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- Beale, William T., 5,775,273, Cl. 123-46.00B.
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- Hango, Joseph W., 5,775,965, Cl. 441-75.000.
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- McDonald, Henry H., 5,776,192, Cl. 623-6.000.
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- Sweeney, Deborah: See—
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- DeKoning, Rodney A.; Humlicek, Donald R.; Johnson, Max L.; and Rink, Curtis W., 5,778,426, Cl. 711-122.000.
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- Herbert, Brian K., 5,777,596, Cl. 345-104.000.
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Amoretti, Andrea, 5,776,215, Cl. 55-223.000.
- Tabb, Charles H.; Folkins, Jeffrey J.; and Pietrowski, Kenneth W., to Xerox Corporation. Erase before A.C. recharge in color electrographic printing. 5,778,288, Cl. 399-231.000.
- Tabellini, Giorgio, to P.E.I. Protezioni Elaborazioni Industriali S.R.L. Roller for winding and unwinding a protective cover equipping a machine tool or the like. 5,775,619, Cl. 242-372.000.
- Taberna, Veronica: See—
Kosley, Raymond W., Jr.; Davis, Larry; and Taberna, Veronica, 5,777,108, Cl. 540-546.000.
- Table Top Engineering & Design: See—
Vercellone, Ferruccio; Sambonet, Sergio; and Rissone, Fausto, 5,775,535, Cl. 220-318.000.
- Tabor, Stanley; and Richardson, Charles C., to President and Fellows of Harvard College. Treatment and detection of tuberculosis, leprosy, and related diseases. 5,776,673, Cl. 435-6.000.
- Tachibana, Tetsuo: See—
Nakayama, Mikio; Tachibana, Tetsuo; Iketani, Youzou; Okuyama, Yuzo; and Makuma, Satoshi, 5,778,001, Cl. 370-516.000.
- Tachihara, Masayoshi: See—
Shioya, Makoto; Tamura, Yasuyuki; Takahashi, Hiroto; Tachihara, Masayoshi; Yamamoto, Tadashi; Inada, Genji; Kimura, Tatsuo; and Ashiwa, Jun, 5,777,640, Cl. 347-15.000.
- Tackett, Charles R., Sr. Process and system for changing oil. 5,775,385, Cl. 141-98.000.
- Tada, Yukio, to Yamaha Corporation. Atmosphere data generator and karaoke machine. 5,777,252, Cl. 84-609.000.
- Tagle, Danilo A.: See—
Shiloh, Yosef; Tagle, Danilo A.; and Collins, Francis S., 5,777,093, Cl. 536-23.500.
- Tago, Akira: See—
Mochizuki, Chiori; Funakoshi, Akira; Tago, Akira; Takeda, Shinichi; Takami, Eiichi; Morishita, Masakazu; Hayashi, Shinichi; Endo, Tadao; and Tamura, Toshikazu, 5,777,335, Cl. 250-370.090.

- Tago, Yasuo: See—
Kurokawa, Kenji; Tago, Yasuo; and Tsuboi, Seiji, 5,776,595, Cl. 428-212.000.
- Taguchi, Kazunori; and Konishi, Yuzuru, to Mitsubishi Denki Kabushiki Kaisha. Compression bonded type semiconductor element and semiconductor device. 5,777,351, Cl. 257-181.000.
- Taguchi, Mitsuru: See—
Sumi, Hirofumi; Maeda, Keiichi; Sugano, Yukiyasu; Koyama, Kazuhide; Taguchi, Mitsuru; and Hoshino, Kazuhiro, 5,776,830, Cl. 438-643.000.
- Taguchi, Toyoki: See—
Honguh, Yoshinori; Taguchi, Toyoki; Hasegawa, Hiroshi; Kobayashi, Tadashi; Morishita, Naoki; and Nakamura, Naomasa, 5,776,574, Cl. 428-64.100.
- Tagusa, Yasunobu: See—
Sugimoto, Shinichi; Nagata, Katsunori; and Tagusa, Yasunobu, 5,777,610, Cl. 345-206.000.
- Tahon, Jean-Pierre; Loccufer, Johan; Van Gorp, Herman; and Ramandt, Bart, to Agfa Gevaert, N.V. Method for manufacturing a multicolor filter array element. 5,776,642, Cl. 430-7.000.
- Taillades, Jacques: See—
Commeyras, Auguste; Collet, Hélène; Mion, Louis; Benefice, Sylvie; Calas, Patrick; Choukroun, Henri; Taillades, Jacques; and Bied, Catherine, 5,777,076, Cl. 530-333.000.
- Taira, Kazuhiko; Kikuchi, Shinichi; Mimura, Hideki; Tamada, Yuzo; and Nakai, Masatoshi, to Kabushiki Kaisha Toshiba. Large capacity recording medium, method and apparatus for reproducing data from a large-capacity recording medium, and method and apparatus for recording data on a large-capacity recording medium. 5,778,142, Cl. 386-97.000.
- Taiwan Semiconductor Manufacturing Company Ltd.: See—
Hsieh, Chia-Dar; Shen, Yun-Hung; Pan, Sheng-Liang; and Liu, Jen Song, 5,776,832, Cl. 438-669.000.
- Lin, Chin-Mou; and Lin, Chin-Fu, 5,778,386, Cl. 707-200.100.
- Tien, Fu-Kang, 5,777,209, Cl. 73-40.700.
- Tajima, Yoshitaka; Tsuruta, Sizuaki; Hatai, Hirotsugu; and Akashi, Takamitsu, to Bando Chemical Industries, Ltd. Power transmission belt and method of manufacturing the same. 5,776,026, Cl. 474-267.000.
- Takada, Atsushi: See—
Kimura, Akihiko; Takada, Atsushi; and Ishikawa, Naoto, 5,776,756, Cl. 435-189.000.
- Takada, Osamu: See—
Takahiro, Masatoshi; Murakami, Toshihiko; Fukushima, Hidehiro; Takada, Osamu; and Kimoto, Atsushi, 5,777,994, Cl. 370-395.000.
- Takada, Shinsaku; Fujimoto, Hisayoshi; Ishida, Nobuhisa; Ema, Yasushi; Amano, Toshio; and Shimokata, Akihiko, to Rohm Co., Ltd. Nozzle arrangement structure in ink jet print head. 5,777,637, Cl. 347-12.000.
- Takagi, Shoji: See—
Haraga, Kosuke; Yagi, Naoki; Nakashima, Yoshinobu; Ganryu, Yuzi; Sasaki, Tsutomu; Takimoto, Atsushi; Komazawa, Yosiro; Okuda, Asao; Takagi, Shoji; Matsukawa, Akifumi; Urata, Hideaki; Kawashima, Yasushi; Masuo, Kazumi; Honma, Kenji; and Ikeda, Isao, 5,776,584, Cl. 428-132.000.
- Takagi, Tadao: See—
Maki, Yasuhiro; Goto, Tetsuro; Takagi, Tadao; and Iwasaki, Hiroyuki, 5,777,671, Cl. 348-312.000.
- Takagi, Yoshinori: See—
Kishigami, Takaaki; Mimura, Masahiro; Hasegawa, Makoto; Ushiyama, Tadaaki; Nakamura, Masahiko; and Takagi, Yoshinori, 5,777,693, Cl. 348-731.000.
- Takahara, Yasuaki: See—
Sudo, Shigeyuki; Takahara, Yasuaki; and Tanaka, Toru, 5,778,314, Cl. 455-412.000.
- Takahashi, Akira: See—
Hirokane, Junji; Nakayama, Junichiro; Nakajima, Junsaku; Takahashi, Akira; and Ohta, Kenji, 5,777,953, Cl. 369-13.000.
- Takahashi, Hiroto: See—
Shioya, Makoto; Tamura, Yasuyuki; Takahashi, Hiroto; Tachihara, Masayoshi; Yamamoto, Tadashi; Inada, Genji; Kimura, Tatsuo; and Ashiwa, Jun, 5,777,640, Cl. 347-15.000.
- Takahashi, Kiichiro: See—
Otsuka, Naofumi; Arai, Atsushi; Yano, Kentaro; Takahashi, Kiichiro; Nishikori, Hitoshi; and Iwasaki, Osamu, 5,777,649, Cl. 347-94.000.
- Takahashi, Kiyoshi: See—
Ueda, Hideyuki; Kuwahara, Kenji; Seki, Hiroshi; Okazaki, Sadayuki; Odagiri, Masaru; Takahashi, Kiyoshi; and Murai, Mikio, 5,776,602, Cl. 428-332.000.
- Takahashi, Kojiro: See—
Tamagawa, Koki; Takahashi, Kojiro; Suzuki, Takahiko; and Fukunishi, Ryuichi, 5,777,838, Cl. 361-234.000.
- Takahashi, Kunio: See—
Tsukahara, Makoto; Takahashi, Kunio; Mishima, Takahiro; Isomura, Akihito; Sakai, Tetsuo; Miyamura, Hiroshi; and Uehara, Itsuki, 5,776,626, Cl. 429-59.000.
- Takahashi, Masanori, to Sanshin Kogyo Kabushiki Kaisha. Oil filter arrangement for engine. 5,775,285, Cl. 123-196.00A.
- Takahashi, Mitsuhiro: See—
Okawa, Hirokazu; Iwasaki, Hidetake; Takahashi, Mitsuhiro; Maruyama, Hidekazu; Sakanaka, Hiroyuki; and Umeda, Sakae, 5,776,023, Cl. 474-243.000.
- Takahashi, Nobukazu: See—
Okubo, Masao; Kojima, Noriaki; and Takahashi, Nobukazu, 5,778,291, Cl. 399-302.000.
- Takahashi, Shigeki; Kataoka, Mitsuhiro; Yamamoto, Tsuyoshi; Takeuchi, Yuuchi; and Tokura, Norihito, to Nippondenso Co., Ltd. Manufacturing method of semiconductor device. 5,776,812, Cl. 438-268.000.
- Takahashi, Susumu, to Olympus Optical Co., Ltd. Stereo endoscope and stereo endoscope imaging apparatus. 5,776,049, Cl. 600-111.000.
- Takahashi, Tadashi: See—
Takiyama, Yasuhiro; Miyamoto, Ryosuke; Shimizu, Hideaki; Yaguchi, Hiroyuki; and Takahashi, Tadashi, 5,777,750, Cl. 358-298.000.
- Takahashi, Takefumi: See—
Nagahara, Akira; Sasaki, Sachio; Furukawa, Mitsuhiro; Utaka, Shigenobu; Yamaguchi, Yoshio; Sato, Mitsuru; Kuwabara, Nobuo; Watanabe, Haruyasu; and Takahashi, Takefumi, 5,778,285, Cl. 399-150.000.
- Takahashi, Takeshi: See—
Kojima, Kiyoshi; and Takahashi, Takeshi, 5,776,263, Cl. 148-122.000.
- Takahashi, Toshiro, to Advantest Corp. Signal discrimination circuit for unknown signal amplitude and distortion. 5,777,494, Cl. 327-72.000.
- Takahashi, Tsugio; Kitsukawa, Goro; Akiba, Takesada; Kawase, Yasushi; and Nakamura, Masayuki, to Hitachi, Ltd.; and Hitachi Device Engineering Co., Ltd. Semiconductor memory. 5,777,927, Cl. 365-189.010.
- Takahashi, Yuji: See—
Shimizu, Keiichi; Kitamura, Noriyuki; Kakitani, Tsutomu; Aoike, Nanjou; Nagasaki, Fumihiko; and Takahashi, Yuji, 5,777,861, Cl. 363-37.000.
- Takai, Hiroshi; and Kassai, Yoshimori, to Kabushiki Kaisha Toshiba. Magnetic resonance imaging apparatus. 5,777,473, Cl. 324-309.000.
- Takaishi, Toru, to Fujitsu Limited. Digital frequency control circuit phase control circuit and PLL circuit. 5,777,499, Cl. 327-159.000.
- Takaki, Nobuyasu: See—
Takaku, Hideaki; and Takaki, Nobuyasu, 5,777,870, Cl. 364-132.000.
- Takaku, Hideaki; and Takaki, Nobuyasu, to Mitsubishi Denki Kabushiki Kaisha. Drive control commanding unit, a synchronous control system for a plurality of drive control commanding units, and a synchronous control method for the units. 5,777,870, Cl. 364-132.000.
- Takami, Eiichi: See—
Mochizuki, Chiori; Funakoshi, Akira; Tago, Akira; Takeda, Shinichi; Takami, Eiichi; Morishita, Masakazu; Hayashi, Shinichi; Endo, Tadao; and Tamura, Toshikazu, 5,777,335, Cl. 250-370.090.
- Takamuku, Yoshinori: See—
Niibo, Nario; Yoshida, Naoko; and Takamuku, Yoshinori, 5,776,358, Cl. 252-62.200.
- Takanabe, Eiichi: See—
Kobayashi, Junichi; Takanabe, Eiichi; Ushikawa, Harunori; and Shimazu, Tomohisa, 5,775,889, Cl. 432-18.000.
- Takanatsu, Mitsuo: See—
Satoh, Yoshio; Ikata, Osamu; Uchishiba, Hidema; Matsuda, Takashi; Nishihara, Tokihiro; Takanatsu, Mitsuo; and Taniguchi, Hajime, 5,774,962, Cl. 29-25.350.
- Takano, Tetsuya; Yokonuma, Norikazu; Hibino, Hideo; Kazami, Kazuyuki; and Okutsu, Hisashi, to Nikon Corporation. Film feed control apparatus. 5,778,267, Cl. 396-319.000.
- Takao, Hiromichi, to Asahi-Seiki Manufacturing Co., Ltd. Guide gib structure for press slide of mechanical press for metal working. 5,775,212, Cl. 100-214.000.
- Takao, Kunihiko; Takebayashi, Masahiro; Endo, Yoshishige; Yoshitomi, Yuji; Machida, Shigeru; Tojo, Kenji; and Sekigami, Kazuo, to Hitachi, Ltd. Scroll compressor having an orbiting scroll with volute wraps on both sides of a plate. 5,775,893, Cl. 418-55.200.
- Takao, Shino, to Dai Nippon Printing Co., Ltd. Thermal transfer image-receiving sheet. 5,776,853, Cl. 503-227.000.
- Takaoku, Hiroaki; and Hashida, Shingo, to Advantest Corporation. Spectrum analyzer. 5,777,464, Cl. 324-76.190.
- Takasago International Corporation: See—
Matsumoto, Takaji; Murayama, Toshiyuki; Mitsuhashi, Shigeru; and Miura, Takashi, 5,777,103, Cl. 540-200.000.
- Takashima, Akihiro; and Nakata, Tetsuro, to Sony Corporation. Video image special effect device. 5,777,626, Cl. 345-443.000.
- Takata, Hidekazu; and Tanaka, Hidehiko, to Sharp Kabushiki Kaisha. Non-volatile semiconductor memory device. 5,777,921, Cl. 365-145.000.
- Takatsuji, Kazuyori: See—
Kuroda, Ryunosuke; and Takatsuji, Kazuyori, 5,776,397, Cl. 264-161.000.
- Takayama, Hideyuki: See—
Yamada, Wazo; Maeda, Hideo; Yoshida, Yoshinori; Okamoto, Yoshimi; Seki, Koichiro; Ohno, Keiko; Inuzuka, Masato; and Takayama, Hideyuki, 5,775,119, Cl. 62-259.100.
- Takayama, Shinichi; and Katsunuma, Takehito, to ABB Industry K.K. Rotary atomizing head type coating machine. 5,775,598, Cl. 239-703.000.
- Takayanagi, Takeo: See—
Iwase, Hiroo; Yamasaki, Yasuhiko; Takayanagi, Takeo; Rokutani, Tomohide; Nakatsuka, Saburo; and Yokoyama, Takashi, 5,775,002, Cl. 34-122.000.
- Takazawa, Masahiro, to Fujitsu Limited. Outline character drawing apparatus with stem width adjustment according to user specified bit-map development rules. 5,777,627, Cl. 345-469.000.
- Takebayashi, Hiroyuki: See—
Ureshino, Kashiro; Takebayashi, Hiroyuki; Onishi, Hisaaki; and Mita-mura, Hisashi, 5,776,507, Cl. 425-29.000.
- Takebayashi, Masahiro: See—

- Takao, Kunihiro; Takebayashi, Masahiro; Endo, Yoshishige; Yoshitomi, Yuji; Machida, Shigeru; Tojo, Kenji; and Sekigami, Kazuo, 5,775,893, Cl. 418-55.200.
- Takeda Chemical Industries, Ltd.: *See—*
- Ikeyama, Shuichi; Koyama, Masaru; Miyake, Masayuki; and Senoo, Masaharu, 5,776,727, Cl. 435-69.100.
- Takeda, Nobuyuki; and Watanabe, Mutsumi, to Kabushiki Kaisha Toshiba. Device and method for detection of moving obstacles. 5,777,690, Cl. 348-699.000.
- Takeda, Shinichi: *See—*
- Mochizuki, Chiori; Funakoshi, Akira; Tago, Akira; Takeda, Shinichi; Takami, Eiichi; Morishita, Masakazu; Hayashi, Shinichi; Endo, Tadao; and Tamura, Toshikazu, 5,777,335, Cl. 250-370.090.
- Takeda, Yoshinobu, to Mitsubishi Materials Corporation. Injection molding apparatus and method for shutting gate and compressing mold material. 5,776,407, Cl. 264-328.700.
- Takeda, Yuji: *See—*
- Hayashi, Katsushige; Kawakami, Tsutomu; Takeda, Yuji; and Iura, Katuhiro, 5,777,064, Cl. 528-196.000.
- Takemae, Hisao; and Matsui, Nobuo, to Fuji Photo Optical Co., Ltd. Internal focusing zoom lens with means preventing lens warping effects. 5,777,801, Cl. 359-694.000.
- Takemoto, Takatoshi: *See—*
- Kato, Hiroyuki; and Takemoto, Takatoshi, 5,775,688, Cl. 271-167.000.
- Takenaka, Akira: *See—*
- Kuroda, Kiyomitsu; Fukuoka, Ichiro; and Takenaka, Akira, 5,777,895, Cl. 364-550.000.
- Takenaka, Takahiro: *See—*
- Inazuka, Toru; Nagao, Mitsuhsa; and Takenaka, Takahiro, 5,775,120, Cl. 62-259.100.
- Takenouchi, Ken: *See—*
- Takeuchi, Norio; Morotomi, Masaki; Moriga, Toshinori; Takenouchi, Ken; and Kobayashi, Seishichi, 5,776,273, Cl. 156-62.200.
- Takeshita, Fusayuki: *See—*
- Tomi, Yoshitaka; Matsushita, Tetsuya; Takeshita, Fusayuki; Murashiro, Katsuyuki; and Nakagawa, Etsuo, 5,776,366, Cl. 252-299.630.
- Takeuchi, Esther S.: *See—*
- Gan, Hong; and Takeuchi, Esther S., 5,776,635, Cl. 429-197.000.
- Takeuchi, Minoru, to Alps Electric Co., Ltd. Thermal transfer printer. 5,777,652, Cl. 347-171.000.
- Takeuchi, Norio; Morotomi, Masaki; Moriga, Toshinori; Takenouchi, Ken; and Kobayashi, Seishichi, to Toyo Seikan Kaisha, Ltd. Method for lining with powder. 5,776,273, Cl. 156-62.200.
- Takeuchi, Seiichi; and Kadono, Shinya, to Matsushita Electric Industrial Co., Ltd. Filtering processor and filter method. 5,777,900, Cl. 364-572.000.
- Takeuchi, Seiji: *See—*
- Yoshii, Minoru; Hasegawa, Masanobu; Miyazaki, Kyoichi; and Takeuchi, Seiji, 5,777,744, Cl. 356-372.000.
- Takeuchi, Shigeki: *See—*
- Horinouchi, Syogo; Takeuchi, Shigeki; Yoshinaka, Hideki; Koga, Toshihiro; Higo, Kazuhiko; Kugisaki, Hidehiro; Beppu, Fumiaki; and Mimasa, Jiro, 5,777,975, Cl. 369-112.000.
- Takeuchi, Tatsuo; Inoue, Masahiro; and Ishizuka, Jiro, to Canon Kabushiki Kaisha. Transfer paper for outputting color images and method of forming color images by using same. 5,776,543, Cl. 427-258.000.
- Takeuchi, Toshifumi: *See—*
- Amada, Nobutaka; Takeuchi, Toshifumi; and Arai, Takao, 5,777,966, Cl. 369-59.000.
- Takeuchi, Yukihisa; and Nanakita, Tsutomu, to NGK Insulators, Ltd. Method of producing piezoelectric/electrostrictive film element. 5,774,961, Cl. 29-25.350.
- Takeuchi, Yuuchi: *See—*
- Takahashi, Shigeki; Kataoka, Mitsuhiro; Yamamoto, Tsuyoshi; Takeuchi, Yuuchi; and Tokura, Norihito, 5,776,812, Cl. 438-268.000.
- Takezawa, Osamu: *See—*
- Asami, Goro; Eguchi, Tomoo; Takezawa, Osamu; Saito, Yuji; and Abe, Hideyuki, 5,775,761, Cl. 296-37.700.
- Takihiro, Masatoshi; Murakami, Toshihiko; Fukushima, Hidehiro; Takada, Osamu; and Kimoto, Atsushi, to Hitachi, Ltd. ATM switch and intermediate system. 5,777,994, Cl. 370-395.000.
- Takimoto, Atsushi: *See—*
- Haraga, Kosuke; Yagi, Naoki; Nakashima, Yoshinobu; Ganryu, Yuzi; Sasaki, Tsutomu; Takimoto, Atsushi; Komazawa, Yosiro; Okuda, Asao; Takagi, Shoji; Matsukawa, Akifumi; Urata, Hideaki; Kawashima, Yasushi; Masuo, Kazumi; Honma, Kenji; and Ikeda, Isao, 5,776,584, Cl. 428-132.000.
- Takiyama, Yasuhiro; Miyamoto, Ryosuke; Shimizu, Hideaki; Yaguchi, Hiroyuki; and Takahashi, Tadashi, to Canon Kabushiki Kaisha. Image processing method and apparatus which includes a color reversing function for a two-color image. 5,777,750, Cl. 358-298.000.
- Takizawa, Masaaki: *See—*
- Shibata, Yoji; Takizawa, Masaaki; Matsushima, Hitoshi; Yoshikawa, Hiroshi; Yoshida, Atsuo; Ebihara, Toru; Furuya, Jun; Maruyama, Yukinobu; and Yamada, Takehiko, 5,777,663, Cl. 348-15.000.
- Tako Payen S.p.A.: *See—*
- Martini, Gino, 5,775,701, Cl. 277-207.00R.
- Takubo, Hiroyuki: *See—*
- Ono, Akira; Takubo, Hiroyuki; and Kawaura, Hideaki, 5,775,626, Cl. 242-437.000.
- Tal Apparel, Ltd.: *See—*
- Wong, John, 5,775,394, Cl. 112-441.000.
- Talarmo, Reino; and Lehmusto, Mika, to Nokia Telecommunications Oy. Method for allocating channels in a radio system. 5,778,318, Cl. 455-452.000.
- Talik, Bryan Joe: *See—*
- Aipperspach, Anthony Gus; Christensen, Todd Alan; Patel, Binta Minesh; Van Phan, Nghia; Rohn, Michael James; Storino, Salvatore Nicholas; Talik, Bryan Joe; and Uhlmann, Gregory John, 5,778,243, Cl. 395-800.110.
- Talmadge, James Edward: *See—*
- Bhatnagar, Pradip Kumar; Huffman, William Francis; and Talmadge, James Edward, 5,776,900, Cl. 514-15.000.
- Tamada, Yuzo: *See—*
- Taira, Kazuhiko; Kikuchi, Shinichi; Mimura, Hideki; Tamada, Yuzo; and Nakai, Masatoshi, 5,778,142, Cl. 386-97.000.
- Tamagawa, Koki; Takahashi, Kojiro; Suzuki, Takahiko; and Fukunishi, Ryueichi, to Fujitsu Limited. Electrostatic chuck and method of attracting wafer. 5,777,838, Cl. 361-234.000.
- Tamaoki, Junichi: *See—*
- Hagi, Masayuki; Arai, Takeshi; Tamaoki, Junichi; and Fukuda, Hiroyuki, 5,776,646, Cl. 430-106.600.
- Tamarack International, Inc.: *See—*
- Nelson, Ronald E.; and Lussenhop, Stefan, 5,776,087, Cl. 602-19.000.
- Tamarack Products, Inc.: *See—*
- Steidinger, Donald J., 5,776,289, Cl. 156-273.100.
- Tammer, Olev: *See—*
- Hong, Juehui; Tammer, Olev; and Valencia, Salomon X., 5,775,825, Cl. 400-693.000.
- Tamrac, Inc.: *See—*
- Cyr, Ryan, 5,775,496, Cl. 206-316.100.
- Tamrock Oy: *See—*
- Salo, Timo, 5,775,458, Cl. 180-374.000.
- Tamura, Hiroshi; Chosa, Satoshi; and Yonehara, Satoshi, to Kyoto Daiichi Kagaku Co., Ltd. Integral multi-layer element for analyzing bile acid sulfate. 5,776,779, Cl. 436-56.000.
- Tamura, Toshikazu: *See—*
- Mochizuki, Chiori; Funakoshi, Akira; Tago, Akira; Takeda, Shinichi; Takami, Eiichi; Morishita, Masakazu; Hayashi, Shinichi; Endo, Tadao; and Tamura, Toshikazu, 5,777,335, Cl. 250-370.090.
- Tamura, Yasuyuki: *See—*
- Shioya, Makoto; Tamura, Yasuyuki; Takahashi, Hiroto; Tachihara, Masayoshi; Yamamoto, Tadashi; Inada, Genji; Kimura, Tatsuo; and Ashiwa, Jun, 5,777,640, Cl. 347-15.000.
- Tanabe, Kazuhiro: *See—*
- Shimizu, Toshimichi; and Tanabe, Kazuhiro, 5,778,008, Cl. 371-25.100.
- Tanabe, Kei, to Alpine Electronics, Inc. Electronic device connection terminal. 5,778,086, Cl. 381-192.000.
- Tanabe, Keiichi; Seki, Yuichiro; Ikegaya, Akihiko; Fujimori, Naoki; Nakahata, Hideaki; and Shikata, Shin-ichi, to Sumitomo Electric Industries, Ltd. Diamond wafer and method of producing a diamond wafer. 5,776,246, Cl. 117-89.000.
- Tanabe, Keiichi; and Fujimori, Naoki, to Sumitomo Electric Industries, Ltd. Process for the vapor phase synthesis of diamond and highly crystalline diamond. 5,776,552, Cl. 427-577.000.
- Tanabe, Ritsushi, to Canon Kabushiki Kaisha. Image processing apparatus and method for expanding color images based on block pixel and edge detection. 5,777,758, Cl. 358-457.000.
- Tanabe, Shinji, to NEC Corporation. Oscillation apparatus having variably controlled vibration cancellation. 5,777,525, Cl. 331-158.000.
- Tanahashi, Hiroaki: *See—*
- Tsukamoto, Hiroshi; and Tanahashi, Hiroaki, 5,775,666, Cl. 248-634.000.
- Tanaka, Akira; Tazaki, Satoshi; Sakamoto, Kei; Yoneda, Yasuhiro; Yokouchi, Kishio; Mizutani, Daisuke; and Ishizuki, Yoshikatsu, to Nippon Zeon Co., Ltd.; and Fujitsu Limited. Photosensitive polyimide resin composition. 5,777,068, Cl. 528-353.000.
- Tanaka, Akira: *See—*
- Tsuruoka, Masayuki; Tanaka, Akira; and Nakagawa, Masaru, 5,777,056, Cl. 526-351.000.
- Tanaka, Chiho: *See—*
- Tatsuki, Yuuichirou; Nishiyama, Shinichi; Kawabata, Junichi; Yamanaka, Toru; and Tanaka, Chiho, 5,776,365, Cl. 252-299.620.
- Tanaka, Etsuo; and Koizumi, Yoichi, to Nikon Corporation. Camera with a parallax compensation apparatus. 5,778,261, Cl. 396-55.000.
- Tanaka, Haruhiko: *See—*
- Hara, Kazumasa; Kuramoto, Hidechika; Koike, Mikio; Tanaka, Haruhiko; Sasano, Akiyoshi; and Fukada, Shinichi, 5,775,240, Cl. 112-102.500.
- Tanaka, Hideaki; Akaiki, Shinji; and Marumo, Yoshihito, to Tokyo Electron Limited. Probe method and apparatus with improved probe contact. 5,777,485, Cl. 324-757.000.
- Tanaka, Hideaki: *See—*
- Shitara, Masataka; and Tanaka, Hideaki, 5,778,420, Cl. 711-113.000.
- Yamada, Kazuo; Tanaka, Hideaki; Mitate, Takehito; and Yoshikawa, Masaharu, 5,776,610, Cl. 428-403.000.
- Tanaka, Hidehiko: *See—*
- Takata, Hidekazu; and Tanaka, Hidehiko, 5,777,921, Cl. 365-145.000.
- Tanaka, Hiroyoshi; Kotera, Koichi; and Uchida, Masao, to Matsushita Electric Industrial Co., Ltd. Electron emission cathode having a semiconductor film; a device including the cathode; and a method for making the cathode. 5,777,427, Cl. 313-309.000.
- Tanaka, Hisatoshi: *See—*

- Yamaguchi, Takashi; Ohno, Tadayoshi; Itoh, Shinichi; and Tanaka, Hisatoshi, 5,777,644, Cl. 347-68.000.
- Tanaka Kikinzoku Kogyo K.K.: *See—*
- Watanabe, Masahiro; and Hara, Noriaki, 5,776,539, Cl. 427-113.000.
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- Harper, Howard E.; and Tarr, Robert D., Jr., 5,776,046, Cl. 493-342.000.
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- Vaught, Earl D., 5,775,488, Cl. 206-306.000.
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- Tien, Fu-Kang, to Taiwan Semiconductor Manufacturing Company, Ltd. Leakage detection apparatus equipped with universal adapter head and method of testing. 5,777,209, Cl. 73-40.700.
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- Tinti, Jean-Marie: See—
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- Tipp, Raymond P. Flexible bag handle hand grip. 5,775,757, Cl. 294-171.000.
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- Tipton, Gary: See—
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- TNS Mills Inc.: See—
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- Tobe, Michihiro: See—
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- Tobin, Albert G., to Northrop Grumman Corporation. Oxidation protection method for titanium. 5,776,266, Cl. 148-277.000.
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- Tohya, Yoshinori: See—
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- Toillon, Pahice: See—
- Pain, Isabelle; Toillon, Pahice; and Colas, Gerard. 5,778,206, Cl. 395-309.000.
- Tojo, Kenji: See—
- Takao, Kunihiro; Takebayashi, Masahiro; Endo, Yoshishige; Yoshitomi, Yuji; Machida, Shigeru; Tojo, Kenji; and Sekigami, Kazuo. 5,775,893, Cl. 418-55.200.
- Tojoy, Atsushi: See—
- Kato, Noboru; Nosaka, Kouji; and Tojoy, Atsushi. 5,777,533, Cl. 333-185.000.
- Tokai Kogaku Kabushiki Kaisha: See—
- Miura, Hitoshi. 5,777,716, Cl. 351-169.000.
- Tokai Rubber Industries Ltd.: See—
- Murakami, Koyo; Ito, Hiroaki; and Narasaki, Tetsuji. 5,776,570, Cl. 428-36.800.
- Tsukamoto, Hiroshi; and Tanahashi, Hiroaki. 5,775,666, Cl. 248-634.000.
- Toki Sangyo Co., Ltd.: See—
- Sekiguchi, Koji; and Sadayoshi, Hattori. 5,777,212, Cl. 73-54.330.
- Tokico Ltd.: See—
- Sakamoto, Susumu; Komai, Yuji; Hidano, Katsushi; and Kobayashi, Yoshio. 5,775,888, Cl. 418-55.200.
- Tokin Corporation: See—
- Ino, Yoshihiro; Yoshida, Tetsuo; Fuda, Yoshiaki; Wako, Naoki; Kumasaka, Katsunori; and Shiotani, Hutoshi. 5,777,425, Cl. 310-359.000.
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- Tokuho Corporation: See—
- Sasaki, Yasuhiko; Matsumura, Yukihiro; Imai, Susumu; Tooyama, Tetsuhiro; Orihara, Masamichi; Sugimoto, Yoshio; Yamazaki, Masaru; Hoshino, Mitsunari; Uchikawa, Masumasa; and Arai, Hiroshi. 5,776,484, Cl. 424-448.000.
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- Tokura, Norihito: See—
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- Tokushige, Kaoru, to Kabushiki Kaisha Toshiba. Semiconductor non-volatile memory device. 5,777,925, Cl. 365-185.110.
- Tokuyama Corporation: See—
- Nagoh, Hironobu; Imura, Satoshi; and Kobayakawa, Takashi. 5,776,376, Cl. 252-586.000.
- Oda, Hiroyuki. 5,776,416, Cl. 422-145.000.
- Tokyo Automatic Machinery Works, Ltd.: See—
- Iwata, Yasuo. 5,775,064, Cl. 53-466.000.
- Ogata, Taizo. 5,776,300, Cl. 156-554.000.
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- Homma, Kenji; and Yomiya, Koichi. 5,777,300, Cl. 219-679.000.
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- Kanno, Soichi. 5,777,881, Cl. 364-477.030.
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- Tanaka, Hideaki; Akaike, Shinji; and Marumo, Yoshihito. 5,777,485, Cl. 324-757.000.
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- Homma, Kenji; and Yomiya, Koichi. 5,777,300, Cl. 219-679.000.
- Tokyo Ohka Kogyo Co., Ltd.: See—
- Obiya, Hiroyuki; and Mizusawa, Ryuma. 5,776,995, Cl. 522-15.000.
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- Billmers, Robert L.; Solarek, Daniel B.; Tolchinsky, Maria; Ronco, Donna L.; and Pasapane, Joseph. 5,776,476, Cl. 424-401.000.
- Toll, Duncan M. Gravity dispenser with improved shut-off feature. 5,775,550, Cl. 222-481.500.
- Tolman, Richard L.: See—
- Bakshi, Raman K.; Patel, Gool F.; Rasmussen, Gary H.; and Tolman, Richard L. 5,777,134, Cl. 549-276.000.
- Tolson, Sidney S., to Ossid Corporation. Method and apparatus for transverse cutting and sealing film wrapped around a product. 5,775,065, Cl. 53-479.000.
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- Flood, Mark A.; Bittorf, Bradley J.; Cook, William B.; Graham, D. Alan; Law, Robert D.; Mohnke, David E.; Seps, Robert R.; and Toma, Jack F. 5,777,874, Cl. 364-187.000.
- Tomaszek, John S.: See—
- Reilly, William P.; and Tomaszek, John S. 5,775,237, Cl. 110-234.000.
- Tomblin, Melvin Jerry: See—
- Gottmoller, Paul; and Tomblin, Melvin Jerry. 5,775,817, Cl. 384-434.000.
- Tomi, Yoshitaka; Matsushita, Tetsuya; Takeshita, Fusayuki; Murashiro, Katsuyuki; and Nakagawa, Etsuo, to Chisso Corporation. Liquid crystal composition and electro-optic display device. 5,776,366, Cl. 252-299.630.
- Tomich, John L. Photonic home area network fiber/power insertion apparatus. 5,778,116, Cl. 385-16.000.
- Tominaga, Naoki: See—
- Tokue, Wataru; Ito, Kenzo; and Tominaga, Naoki. 5,776,438, Cl. 424-59.000.
- Tomioka, Shoichi, to Hirose Electric Co., Ltd. PC card connector. 5,775,923, Cl. 439-79.000.
- Tomiya, Nobuyuki; and Hayashi, Mikio, to Toyo Ink Manufacturing Co., Ltd. Process for preparing pigment composition, pigment composition and its use. 5,776,237, Cl. 106-412.000.
- Tomiya, Morio; and Kishi, Toshinori, to Matsushita Electric Industrial Co., Ltd. Dual-layered optical disc and pickup head. 5,777,969, Cl. 369-94.000.
- Tomlinson, Walter John, III, to Bell Communications Research, Inc. In-line optical wavelength reference and control module. 5,777,763, Cl. 359-130.000.
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- Okada, Shinjiro; Tomono, Haruo; and Matsuo, Yuji. 5,777,710, Cl. 349-138.000.
- Tondreault, Robert J., to Robinson Nugent, Inc. Electrical connector socket with daughtercard ejector. 5,775,925, Cl. 439-157.000.
- Tonen Chemical Corporation: See—
- Tsuda, Takashi; Yamanaka, Hidenori; and Komiya, Osamu. 5,777,069, Cl. 528-388.000.
- Tong, Tak Yen: See—
- Ogata, Masami; Suzuki, Teruhiko; and Tong, Tak Yen. 5,777,678, Cl. 348-398.000.
- Tong, Wen; and Wang, Rui, to Northern Telecom Limited. Co-channel interference reduction. 5,778,310, Cl. 455-306.000.

- Tonooka, Masami; Horiike, Yoshio; and Watanabe, Mitutaka, to Nihon Plast Co., Ltd. Airbag restraint unit and method of producing same. 5,775,724, Cl. 280-728.200.
- Tooyama, Tetsuhiro: See—
- Sasaki, Yasuhiko; Matsumura, Yukihiro; Imai, Susumu; Tooyama, Tetsuhiro; Orihara, Masamichi; Sugimoto, Yoshio; Yamazaki, Masaru; Hoshino, Mitsunari; Uchikawa, Masumasa; and Arai, Hiroshi. 5,776,484, Cl. 424-448.000.
- Top Grade Machining Ltd.: See—
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- Toray Industries, Inc.: See—
- Nagase, Hiroshi; Imamura, Yoshifumi; Ohno, Hiroshi; and Endo, Takashi. 5,776,945, Cl. 514-307.000.
- Torsen, Gordon John. Caulking nozzle. 5,775,551, Cl. 222-567.000.
- Torelli, Guido: See—
- Calligaro, Cristiano; Malcovati, Piero; and Torelli, Guido. 5,777,460, Cl. 323-222.000.
- Torgerson, Beatrice A.: See—
- Berglund, Kris A.; Dulebohn, Joel I.; and Torgerson, Beatrice A. 5,776,415, Cl. 422-82.090.
- Torimura, Hiroyuki: See—
- Hotta, Harumichi; Iwamoto, Kazuhide; Torimura, Hiroyuki; and Chihana, Masanobu. 5,777,251, Cl. 84-609.000.
- Tomabene, Dean G.: See—
- Perez, Charles B., Jr. 5,776,039, Cl. 482-97.000.
- Torres, Miguel Grajales. Simulated necktie knot and necktie combination. 5,774,893, Cl. 2-148.000.
- Tosaka, Yoichi: See—
- Okamura, Yoshitaka; Tosaka, Yoichi; Hashimoto, Kenichiro; Hirano, Hirofumi; Yamamoto, Kosuke; Nakai, Hiroshi; and Watanabe, Yoshinori. 5,777,634, Cl. 347-7.000.
- Toshiba Corporation: See—
- Usami, Ryo; Isawa, Kazuyuki; Kubota, Hiroshi; Puzniak, Roman; Yamauchi, Hisao; and Tanaka, Shoji. 5,776,862, Cl. 505-125.000.
- Toshiba Lighting & Technology Corporation: See—
- Shimizu, Keiichi; Kitamura, Noriyuki; Kakitani, Tsutomu; Aoi, Nanjo; Nagasaki, Fumihiko; and Takahashi, Yuji. 5,777,861, Cl. 363-37.000.
- Toshida, Yomishi: See—
- Ohkuma, Norio; Kuwayama, Tetsuro; Majima, Toshiaki; Taniguchi, Naosato; Toshida, Yomishi; Yoshinaga, Yoko; and Fukui, Tetsuro. 5,776,634, Cl. 430-2.000.
- Tosoh Corporation: See—
- Kagawa, Takumi; Kondo, Norihisa; Kasai, Noriyuki; and Sakka, Hideo. 5,777,007, Cl. 524-114.000.
- Tosoh SMD, Inc.: See—
- Ivanov, Eugene Y. 5,778,302, Cl. 419-32.000.
- Toter, Inc.: See—
- Prout, J. Timothy; Wright, Todd E.; Trent, Smith E., III; Brescia, Anthony J.; and Lambert, Jerry E. 5,776,405, Cl. 264-310.000.
- Toth, Louis E.; Lechter, William; Skelton, Earl F.; and Osofsky, Michael, to United States of America, Navy. High temperature mercury-containing superconductors and method of making the same. 5,776,861, Cl. 505-120.000.
- Touron, Carole Claudine: See—
- Blanes, Gérard Antoine Gilbert; Cannavo, René Joseph Antoine; Forgeue, Jean Bernard; Garnier, Francis Georges Albert; Hugues, Michel Georges; Massot, Gilles Claude Gabriel; Morel, Patrick Charles Georges; and Touron, Carole Claudine. 5,776,229, Cl. 96-188.000.
- Townley, Jeffrey Kent: See—
- Rush, Heath; and Townley, Jeffrey Kent. 5,775,348, Cl. 134-72.000.
- Townsend, Christopher P.: See—
- Arms, Steven W.; and Townsend, Christopher P. 5,777,467, Cl. 342-207.180.
- Toyama, Tateso: See—
- Kajiyama, Seiji; Tsuchiya, Yoichi; Ichijima, Shuichi; Toyama, Tateso; and Hibino, Katsutoshi. 5,777,970, Cl. 369-94.000.
- Toyo Boseki Kabushiki Kaisha: See—
- Inari, Masato. 5,777,161, Cl. 562-485.000.
- Toyo Hakko Co., Ltd.: See—
- Kimura, Akihiko; Takada, Atsushi; and Ishikawa, Naoto. 5,776,756, Cl. 435-189.000.
- Toyo Ink Manufacturing Co., Ltd.: See—
- Tomiya, Nobuyuki; and Hayashi, Mikio. 5,776,237, Cl. 106-412.000.
- Toyo Seikan Kaisha, Ltd.: See—
- Takeuchi, Norio; Morotomi, Masaki; Moriga, Toshinori; Takenouchi, Ken; and Kobayashi, Seishichi. 5,776,273, Cl. 156-62.200.
- Toyoda Gosei Co., Ltd.: See—
- Hamabata, Mitsuo. 5,775,030, Cl. 49-377.000.
- Niwa, Minoru; Muramatsu, Kimio; Kanai, Makoto; Inoue, Michio; Mizutani, Junichi; Kanto, Takanori; and Yamamoto, Tadashi. 5,775,728, Cl. 280-728.300.
- Toyoda, Osamu; Betsui, Keiichi; Fukuta, Shiriya; and Nakatani, Tadashi, to Fujitsu Limited. Cathode device having smaller opening. 5,775,968, Cl. 445-24.000.
- Toyosawa, Yoshiya: See—
- Watanabe, Kenji; Kameda, Takanobu; Aida, Chieko; Shimmura, Tomoyuki; Toyosawa, Yoshiya; Kurashina, Hiroyasu; and Hosokawa, Takeshi. 5,778,161, Cl. 395-110.000.
- Toyota Jidosha Kabushiki Kaisha: See—
- Abe, Shinichi. 5,777,204, Cl. 73-23.320.
- Hayashi, Hironao; and Watanabe, Tomoyuki. 5,777,565, Cl. 340-928.000.
- Ito, Yasushi; and Mashiki, Zenichiro. 5,775,099, Cl. 60-274.000.
- Karaki, Mitsuhiro; Nozaki, Mikiya; Hakiwa, Masato; and Midorikawa, Toshiaki. 5,776,866, Cl. 508-122.000.
- Matsunaga, Akio; Suzuki, Makoto; and Abe, Shizuo. 5,775,272, Cl. 123-41.82R.
- Nagai, Takayuki; Jagawa, Yasutoshi; Nishio, Takeyoshi; Zanka, Yuki-hito; Tsutsumi, Ikuo; Ishii, Izumi; Sato, Hiroki; and Sano, Hironari. 5,777,020, Cl. 524-451.000.
- Yanai, Akihiro; Maeda, Iwao; Izuo, Takashi; and Iida, Tatuo. 5,775,276, Cl. 123-90.110.
- Tracy, William: See—
- Arrowsmith, Russell; and Tracy, William. 5,777,549, Cl. 340-506.000.
- Traini, Carlo; and Failla, Giuseppe, to De Nora Permelec S.p.A. Apparatus and process for electrochemically decomposing salt solutions to form the relevant base and acid. 5,776,328, Cl. 205-514.000.
- Trajber, Zoltan: See—
- Coinon, André; and Trajber, Zoltan. 5,774,931, Cl. 15-431.000.
- Tramonte, Joseph J., Jr.: See—
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- Tsugumi, Masayuki: See—
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- Tsukada, Yutaka: See—
Shirai, Masaharu; and Tsukada, Yutaka, 5,776,662, Cl. 430-313.000.
- Tsukahara, Makoto; Takahashi, Kunio; Mishima, Takahiro; Isomura, Akihito; Sakai, Tetsuo; Miyamura, Hiroshi; and Uehara, Itsuki, to Imra Material R&D Co., Ltd.; and Agency of Industrial Science and Technology. Hydrogen-occluding alloy and hydrogen-occluding alloy electrode. 5,776,626, Cl. 429-59.000.
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- Tsukamoto, Hisashi: See—
Saito, Hitoshi; and Tsukamoto, Hisashi, 5,775,960, Cl. 439-843.000.
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- Tsuruto, Takahiro: See—
Nakamura, Kenichi; and Tsuruto, Takahiro, 5,777,938, Cl. 365-220.000.
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- Tsutsui, Tomoki: See—
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- Tuch, Ronald J., to Medtronic, Inc. Intravascular stent and method. 5,776,184, Cl. 623-1.000.
- Tucker, Edward B., to First Brands Corporation. Compacted bentonite-based absorbents. 5,775,259, Cl. 119-173.000.
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- Tularik Inc.: See—
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- Tunney, John P. Portable baby carrier. 5,775,770, Cl. 297-183.100.
- Turboair S.p.A.: See—
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- Turck, William Benjamin: See—
Kmic, Daniel F.; and Turck, William Benjamin, 5,775,720, Cl. 280-667.000.
- Turcotte, Joseph Eric: See—
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- Turner, James F.: See—
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- Turner, John Christopher: See—
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- Turner, John L.: See—
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- Turner, Rudolf, to Zenith Electronics Corporation. DC removal circuit for digital signal. 5,778,028, Cl. 375-229.000.
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- Tuthill Corporation: See—
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- Tuttle, John R.; and Snodgrass, Charles K., to Micon Technology, Inc. Gain adjustment method in two-way communication systems. 5,778,309, Cl. 455-127.000.
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- Uchida, Kenichi: See—
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- Uchida, Masaaki: See—
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- Uchida, Masao: See—
Tanaka, Hiroyoshi; Kotera, Koichi; and Uchida, Masao, 5,777,427, Cl. 313-309.000.
- Uchida, Mitsuhiro, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 5,776,670, Cl. 430-567.000.
- Uchikawa, Masumasa: See—
Sasaki, Yasuhiko; Matsumura, Yukihiko; Imai, Susumu; Tooyama, Tet-suhiro; Orihara, Masamichi; Sugimoto, Yoshio; Yamazaki, Masaru; Hoshino, Mitsunari; Uchikawa, Masumasa; and Arai, Hiroshi, 5,776,484, Cl. 424-448.000.
- Uchishiba, Hidema: See—
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- Uchiyama, Haruyoshi: See—
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- Ueda, Hideyuki; Kuwahara, Kenji; Seki, Hiroshi; Okazaki, Sadayuki; Odagiri, Masaru; Takahashi, Kiyoshi; and Murai, Mikio, to Matsushita Electric Industrial Co., Ltd. Magnetic recording medium having a carbon protective film containing nitrogen and oxygen and overcoated with a lubricant. 5,776,602, Cl. 428-332.000.
- Ueda, Kunio: See—
Ide, Takeo; Hiraoka, Yasunobu; Koizumi, Shoichi; Morita, Minoru; and Ueda, Kunio, 5,776,525, Cl. 426-36.000.
- Ueda, Masayoshi: See—
Kawasaki, Moriaki; Ikeda, Tamotsu; Haji, Nobuyuki; and Ueda, Masayoshi, 5,778,146, Cl. 392-419.000.
- Ueda, Yuichi; Inamura, Shinie; and Morisawa, Yukio, to Asahi Glass Company Ltd. Funnel for a cathode ray tube having a flare zone. 5,777,430, Cl. 313-477.00R.
- Uehara, Itsuki: See—
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- Uehara, Shigeo: See—
Orito, Masaomi; Hirata, Nobutaka; Kimura, Satoshi; Asaka, Kazuo; and Uehara, Shigeo, 5,775,699, Cl. 273-371.000.
- Ueno, Chieko: See—
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- Ueno, Ichiro: See—
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- Ueno, Kaoru: See—
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- Ueno, Yasunori, to Nikon Corporation. Ophthalmic photographic device. 5,777,340, Cl. 250-458.100.
- Ueta, Emi; Tsushima, Hiroshi; and Sumiyoshi, Iwao, to Nippon Paint Co., Ltd. Polysilane type photosensitive resin composition and method for forming pattern using the same. 5,776,764, Cl. 430-270.100.
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Bullough, David A.; Gruber, Harry E.; Metzger, Ernest K.; Mullane, Kevin M.; Ugarkar, Bheemarao G.; and Browne, Clinton E., 5,777,100, Cl. 536-26.900.
- UGI Meters Limited: See—
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- UGM Laboratory, Inc.: See—
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- Uhlmann, Gregory John: See—
Aipperspach, Anthony Gus; Christensen, Todd Alan; Patel, Binta Minesh; Van Phan, Nghia; Rohn, Michael James; Storino, Salvatore Nicholas; Talik, Bryan Joe; and Uhlmann, Gregory John, 5,778,243, Cl. 395-800.110.
- Ujita-Lee, Eryn: See—
Paulson, James G.; Ujita-Lee, Eryn; Colley, Karen J.; Adler, Beverly; Browne, Jeffrey K.; and Weinstein, Jasminder, 5,776,772, Cl. 435-320.100.
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Hidary, Jack D.; and Ullman, Craig, 5,778,181, Cl. 395-200.480.
- Ulmer, Kevin M., to SEQ, Ltd. Chemical biochemical and biological processing in thin films. 5,776,674, Cl. 435-6.000.
- Ultra-Mek, Inc.: See—
Hoffman, D. Stephen, 5,775,775, Cl. 297-316.000.
- Ultradent Products, Inc.: See—
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- Ultraseal Technologies Corporation: See—
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- University of Alabama in Huntsville: See—
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- University of Arkansas, The Board of Trustees of The: See—
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- University of British Columbia: See—
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- University of California at Los Angeles: See—
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- Kreder, Karl J., 5,776,081, Cl. 600-593.000.
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- University of Kentucky Research Foundation, The: See—
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- University of Nottingham, The: See—
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- McCann, Patrick J., 5,776,794, Cl. 438-46.000.
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- Upton, W. Lovelle, to Upton Limited Partnership. Flexible hose take-up assembly. 5,775,354, Cl. 137-1.000.
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- Ureshino, Kashihiro; Takebayashi, Hiroyuki; Onishi, Hisaaki; and Mitamura, Hisashi, to Kabushiki Kaisha Kobe Seiko Sho. Center mechanism for tire vulcanizer. 5,776,507, Cl. 425-29.000.
- Urologix Inc.: See—
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- UroMed Corporation: See—
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- Urrutia, Hector. Drip chamber for intravenous fluid delivery system. 5,776,109, Cl. 604-251.000.
- Usala, Anton-Lewis, to Encelle, Inc. Electrochemical biosensors. 5,776,324, Cl. 204-403.000.
- Usami, Ryo; Isawa, Kazuyuki; Kubota, Hiroshi; Puzniak, Roman; Yamauchi, Hisao; and Tanaka, Shoji, to Mitsubishi Denki Kabushiki Kaisha; Tohoku Electric Power Company, Incorporated; Toshiba Corporation; and International Superconductivity Technology Center. Oxide superconductor and process of producing the same. 5,776,862, Cl. 505-125.000.
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- Ushiodenki Kabushiki Kaisha: See—
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- Ushiyama, Tadaaki: See—
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- Usui Kokusai Sangyo Kaisha Limited: See—
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- UT Automotive Dearborn, Inc.: See—
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- Utaka, Shigenobu: See—
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- Valencia, Salomon X.: See—
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- Valenite Inc.: See—
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- Valles Pousa, Ana Marie, to Valfor, S.A. End joiner for continuous belts for conveyors. 5,775,829, Cl. 403-119.000.
- Valleylab, Inc.: See—
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- Valmet Corporation: See—
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- Kerttula, Reima; and Yli-Kaupila, Jouko, 5,775,001, Cl. 34-114.000.
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- Valpsar Corporation, The: See—
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- Van Aken, Timotheus J. M., to U.S. Philips Corporation. Semiconductor device of the type sealed in glass having a silver-copper bonding layer between slugs and connection conductors. 5,777,388, Cl. 257-742.000.
- Van Antwerp, William Peter, to Minimed, Inc. Silicon-containing biocompatible membranes. 5,777,060, Cl. 528-28.000.
- van Beek, Johannes A. M.: See—
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- Van Brunt, Roger W.; and Opreus, Florin, to Apple Computer, Inc. High-speed dominant mode bus for differential signals. 5,778,204, Cl. 395-308.000.
- Van Buren, Martin: See—
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- van Buskirk, Gregory: See—
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- Vandelinde, Henry. Link ladder system. 5,775,461, Cl. 182-93.000.
- Vandemark, Michael Lynn: See—
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- Vandenbark, Arthur A., to Connetics Corporation. TCR V beta 5 peptides. 5,776,459, Cl. 424-185.100.
- Van Den Elshout, Wilhelmus Hendricus Hubertus. Deodorant composition containing a compound which yields formaldehyde. 5,776,453, Cl. 424-65.000.
- Vandergrift, James A., to K-2 Corporation. Piezoelectric damper for a board such as a snow ski or snowboard. 5,775,715, Cl. 280-602.000.
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- van der Meer, Abele Broer; Schomaker, Elwin; Bos, Johannes; and Middelhoeck, Erik Leonard, to Akzo Nobel NV. Use of a porous, particulate material in a packed filter bed for liquid/gas and/or liquid/liquid separation. 5,776,354, Cl. 210-806.000.

- Vander Mey, James E.; and Denton, Bruce A., to Intellon Corporation. Apparatus and method for controlling data communications having combination of wide and narrow band frequency protocols. 5,777,544, Cl. 340-310.060.
- Van Der Puy, Michael; and Thenappan, Alagappan, to AlliedSignal Inc. Preparation of fluoroalkyl compounds and their derivatives. 5,777,184, Cl. 570-135.000.
- Van Der Schaaf, Paul Adriaan; See—
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- Vanderslice, Edward R.; See—
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- van der Steen, Jan J.; Vullers, Ruud; Kuipers, Marcel; Logtens, Jozef P. M.; Cooley, Roderick A.; Milton, Derek J.; Taylor, Andrew E.; and Abbott, Stephen J., to Xerox Corporation. Xerographic cassette with dual waste toner storage. 5,778,296, Cl. 399-360.000.
- Vandervalk, Leon C., to DeFelsco Corporation. Delay line for an ultrasonic probe and method of using same. 5,777,230, Cl. 73-632.000.
- Van Dijk, Cornelis Martinus; Grotenhuis, Paulus Alexander Maria; and Sonderman, Marc Stephen, to Shell Oil Company. Process for purification of starting materials for metal catalyzed reactions and a purification reagent to be used therefor. 5,777,035, Cl. 525-274.000.
- Vandiver, J. Kim; and Li, Li, to Massachusetts Institute of Technology. Method for connecting a slender structure to a reference body and for suppressing the vibration of such slender structures. 5,775,471, Cl. 188-378.000.
- Van Duyne, Edward; and Porreca, Paul, to Adrenaline Research, Inc. Ignition system with ionization detection. 5,777,216, Cl. 73-116.000.
- Van Duyne, Scott A.; See—
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- Van Gorp, Herman; See—
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- Van Goubergen, Herman; See—
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- Van Helden, Arend Kuindert; See—
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- Van Herreweghen, Elsie; See—
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- van Hoff, Arthur A.; Gosling, James A.; and Yellin, Frank, to Sun Microsystems, Inc. Compiler system and method for resolving symbolic references to externally located program files. 5,778,231, Cl. 395-705.000.
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- Westphal, Glenn H.; and Wadsworth, Mark V., 5,777,329, Cl. 250-339.020.
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- Wagner, Richard W.: See—
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- Waki, Michinori: See—
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- Walker, Barbara J.: See—
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- Wyatt, Karl W.: See—
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- Filion, Joseph L.; Evans, Charles F.; Rohlfing, Kenneth E.; Rogerson, Diane S.; Koul, Kitty S.; Lee, Mei-Yuei; and Jacobs, Craig W., 5,778,183, Cl. 395-200.530.
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- Salgado, David L., 5,777,882, Cl. 364-478.020.
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- Xiang, Xiaodong: See—
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- Xilinx, Inc.: See—
Trimberger, Stephen M.; Carberry, Richard A.; Johnson, Robert Anders; and Wong, Jennifer, 5,778,439, Cl. 711-153.000.
- Xu, Gang, to OIS Optical Imaging Systems, Inc. Liquid crystal display with two positive tilted retardation films and two negative retardant films, 5,777,709, Cl. 349-120.000.
- Y-Z Industries Sales, Inc.: See—
Westmoreland, Dennis F.; and Zeck, Mark V., 5,775,884, Cl. 417-383.000.
- Yabe, Akio: See—
Nishimura, Hajime; Ichikawa, Atsushi; Yabe, Akio; and Yokoyama, Yuji, 5,777,952, Cl. 369-13.000.
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- Yackley, David G.: See—
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- Yaffe, Henry H.: See—
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Leslie, Harry A.; Birdsall, David W.; Jain, Rohit N.; and Yaghamai, Hedieh, 5,778,354, Cl. 707-2.000.
- Yagi, Naoki: See—
Haraga, Kosuke; Yagi, Naoki; Nakashima, Yoshinobu; Ganryu, Yuzi; Sasaki, Tsutomu; Takimoto, Atsushi; Komazawa, Yosiro; Okuda, Asao; Takagi, Shoji; Matsukawa, Akifumi; Urata, Hideaki; Kawashima, Yasushi; Masuo, Kazumi; Honma, Kenji; and Ikeda, Isao, 5,776,584, Cl. 428-132.000.
- Yaginuma, Noriyuki: See—
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- Yaguchi, Hiroshi: See—
Namba, Shigenobu; Yaguchi, Hiroshi; Shimotsusa, Masataka; Ibaraki, Nobuhiko; Nakayama, Takenori; Iwata, Takashi; Yamamoto, Yoshinori; Ohkouchi, Norio; and Nagao, Mamoru, 5,776,267, Cl. 148-328.000.
- Yaguchi, Hiroyuki: See—
Takiyama, Yasuhiro; Miyamoto, Ryosuke; Shimizu, Hideaki; Yaguchi, Hiroyuki; and Takahashi, Tadashi, 5,777,750, Cl. 358-298.000.
- Yajima, Takashi, to NEC Corporation. Stacked capacitor semiconductor memory device and method for fabricating the same, 5,777,358, Cl. 257-306.000.
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- Hartl, Franz-Ulrich; and Horwich, Arthur L., 5,776,724, Cl. 435-68.100.
- Yamada, Akira: See—
Hiraki, Toshiyuki; Yamada, Akira; and Oki, Masashi, 5,777,999, Cl. 370-509.000.
- Yamada, Atsushi; and Okuda, Tadayuki, to Koito Manufacturing Co., Ltd. Insert molded article for use in a motor vehicle interior lamp or the like, 5,775,798, Cl. 362-226.000.
- Yamada, Kazuhiko: See—
Niiyama, Satoshi; Yamada, Kazuhiko; and Kumai, Hiroshi, 5,776,364, Cl. 252-299.010.
- Yamada, Kazuo; Tanaka, Hideaki; Mitate, Takehito; and Yoshikawa, Masaharu, to Sharp Kabushiki Kaisha. Carbon composite electrode material and method of making thereof, 5,776,610, Cl. 428-403.000.
- Yamada, Sumio: See—
Miki, Yuji; Itoyama, Seiji; Bessho, Nagayasu; Yamada, Sumio; and Nomura, Hiroshi, 5,775,404, Cl. 164-477.000.
- Yamada, Takehiko: See—
Shibata, Yoji; Takizawa, Masaaki; Matsushima, Hitoshi; Yoshikawa, Hiroshi; Yoshida, Atsuo; Ebihara, Toru; Furuya, Jun; Maruyama, Yukinobu; and Yamada, Takehiko, 5,777,663, Cl. 348-15.000.
- Yamada, Wazo; Maeda, Hideo; Yoshida, Yoshinori; Okamoto, Yoshimi; Seki, Koichiro; Ohno, Keiko; Inuzuka, Masato; and Takayama, Hideyuki, to Sanyo Electric Co., Ltd. Air conditioner outdoor unit housing, 5,775,119, Cl. 62-259.100.
- Yamagami, Kazuo: See—
Hamajima, Fusanori; Yamamoto, Mikio; Tsuru, Sumiaki; and Yamagami, Kazuo, 5,776,758, Cl. 435-219.000.
- Yamagata, Shigeo: See—
Otohe, Yoshinori; Narikiyo, Yasumasa; Yamagata, Shigeo; and Nosaka, Norimasa, 5,775,134, Cl. 66-204.000.
- Yamagishi, Shigekazu, to Matsushita Electric Industrial Co., Ltd. Lighting device transformed in the direction of polarization and projection type image display device using the same, 5,777,695, Cl. 348-744.000.
- Yamagishi, Yoichi: See—
Kubo, Ryoji; Horii, Hiroyuki; and Yamagishi, Yoichi, 5,777,691, Cl. 348-718.000.
- Yamaguchi, Hitoshi; Morishita, Toshiyuki; and Himi, Hiroaki, to Nippondenso Co., Ltd. Semiconductor device having a silicon-on-insulator structure, 5,777,365, Cl. 257-347.000.
- Yamaguchi, Koza: See—
Moroto, Shuzo; and Yamaguchi, Koza, 5,775,449, Cl. 180-65.200.
- Yamaguchi, Naoki; and Akamatsu, Osamu, to Westinghouse Air Brake Company. Solenoid valve control device, 5,775,367, Cl. 137-487.500.
- Yamaguchi, Nobuyuki, to Daiwa Seiko, Inc. Fishing reel with spool supported between two side plates, level wind device and means for linking spool drive clutch with level wind device, 5,775,614, Cl. 242-261.000.
- Yamaguchi, Susumu; and Mori, Nobuyoshi, to Konica Corporation. Zoom lens, 5,777,800, Cl. 359-692.000.
- Yamaguchi, Takashi; Ohno, Tadayoshi; Itoh, Shinichi; and Tanaka, Hisatoshi, to Kabushiki Kaisha Toshiba. Ink jet recording apparatus and recording method for using ink walls in discharging ink, 5,777,644, Cl. 347-68.000.
- Yamaguchi, Yasuo, to Mitsubishi Denki Kabushiki Kaisha. Method of fabricating silicon-on-insulator pressure detecting device, 5,776,818, Cl. 438-479.000.
- Yamaguchi, Yoshihiro: See—
Kawaguchi, Yusuke; Yamaguchi, Yoshihiro; and Funaki, Hideyuki, 5,777,371, Cl. 257-409.000.
- Yamaguchi, Yoshio: See—
Nagahara, Akira; Sasaki, Sachio; Furukawa, Mitsuhiro; Utaka, Shigenobu; Yamaguchi, Yoshio; Sato, Mitsuru; Kuwabara, Nobuo; Watanabe, Haruyasu; and Takahashi, Takefumi, 5,778,285, Cl. 399-150.000.
- Yamaha Corporation: See—
Hibino, Satoshi; and Kuwajima, Tetsuya, 5,776,827, Cl. 438-627.000.
- Hotta, Harumichi; Iwamoto, Kazuhide; Torimura, Hiroyuki; and Chihana, Masanobu, 5,777,251, Cl. 84-609.000.
- Suzuki, Hideo, 5,777,249, Cl. 84-604.000.
- Tada, Yukio, 5,777,252, Cl. 84-609.000.
- Yamaha Hatsudoki Kabushiki Kaisha: See—
Ito, Takeshi; Tane, Jun; and Maebashi, Kosei, 5,775,299, Cl. 123-436.000.
- Kobayashi, Noboru; and Hattori, Toshiyuki, 5,775,250, Cl. 114-258.000.
- Miyata, Syoichiro, 5,777,442, Cl. 318-2.000.
- Sawai, Seiji; Nakajima, Kunihiko; and Watase, Jiro, 5,775,283, Cl. 123-184.530.
- Suzuki, Yuichi; and Serizawa, Akira, 5,775,288, Cl. 123-298.000.
- Yoshida, Takeo; and Suzuki, Takahiro, 5,775,289, Cl. 123-305.000.
- Yamakawa, Akira: See—
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,776,600, Cl. 428-325.000.
- Yamakawa, Tadashi: See—
Nagashima, Masaaki; Yamakawa, Tadashi; and Kohno, Akihiro, 5,778,398, Cl. 707-501.000.
- Yamamoto, Hirofumi: See—
Seki, Junzo; and Yamamoto, Hirofumi, 5,776,904, Cl. 514-31.000.
- Yamamoto, Kosuke: See—
Okamura, Yoshitaka; Tosaka, Yoichi; Hashimoto, Kenichirou; Hirano, Hirofumi; Yamamoto, Kosuke; Nakai, Hiroshi; and Watanabe, Yoshinori, 5,777,634, Cl. 347-7.000.
- Yamamoto, Kyouhei, to Mitsubishi Denki Kabushiki Kaisha. Throttle actuator, 5,777,412, Cl. 310-83.000.
- Yamamoto, Masakuni, to Canon Kabushiki Kaisha. Optical head and magneto-optical reproducing apparatus using the same, 5,777,974, Cl. 369-112.000.
- Yamamoto, Masanori: See—
Kurachi, Kazuhiro; and Yamamoto, Masanori, 5,777,506, Cl. 327-440.000.
- Yamamoto, Mikio: See—
Hamajima, Fusanori; Yamamoto, Mikio; Tsuru, Sumiaki; and Yamagami, Kazuo, 5,776,758, Cl. 435-219.000.
- Yamamoto, Mitsuru, to Canon Kabushiki Kaisha. Network system for performing bidirectional transmission, and node device and transmission control method used in the system, 5,777,762, Cl. 359-123.000.
- Yamamoto, Mitsuyoshi; Kawasaki, Ikuya; Inayoshi, Hideo; Narita, Susumu; and Kubo, Masaharu, to Hitachi, Ltd. Data processor and single-chip microcomputer with changing clock frequency and operating voltage, 5,778,237, Cl. 395-750.040.

- Yamamoto, Nobuto. Diagnostic and prognostic ELISA assays of serum α -N-acetylgalactosaminidase for influenza, 5,776,671, Cl. 435-5.000.
- Yamamoto, Norimasa; and Maeda, Masahiro, to Koito Manufacturing Co., Ltd. Reflection mirror for a vehicle lamp and a method of forming the same, 5,777,809, Cl. 359-869.000.
- Yamamoto, Osamu, to Kabushiki Kaisha Toshiba. Circuit board having a wiring structure buried in a resin layer, 5,777,851, Cl. 361-748.000.
- Yamamoto, Ronald K.: See—
Kwan, Michael K.; Pacetti, Stephen D.; and Yamamoto, Ronald K., 5,776,193, Cl. 623-16.000.
- Yamamoto, Shigeharu: See—
Tsuboi, Kiyoshi; and Yamamoto, Shigeharu, 5,777,228, Cl. 73-579.000.
- Yamamoto, Tadashi: See—
Niwa, Minoru; Muramatsu, Kimio; Kanai, Makoto; Inoue, Michio; Mizutani, Junichi; Kanto, Takahiro; and Yamamoto, Tadashi, 5,775,728, Cl. 280-728.300.
- Shioya, Makoto; Tamura, Yasuyuki; Takahashi, Hiroto; Tachihara, Masayoshi; Yamamoto, Tadashi; Inada, Genji; Kimura, Tatsuo; and Ashiwa, Jun, 5,777,640, Cl. 347-15.000.
- Yamamoto, Toshihiko: See—
Hatagishi, Yuji; Yamamoto, Toshihiko; Abe, Kimihiro; and Okabe, Toshiaki, 5,777,480, Cl. 324-538.000.
- Yamamoto, Tsuyoshi: See—
Takahashi, Shigeki; Kataoka, Mitsuhiro; Yamamoto, Tsuyoshi; Takeuchi, Yuichi; and Tokura, Norihito, 5,776,812, Cl. 438-268.000.
- Yamamoto, Yoshinori: See—
Namba, Shigenobu; Yaguchi, Hiroshi; Shimotsusa, Masataka; Ibaraki, Nobuhiko; Nakayama, Takenori; Iwata, Takashi; Yamamoto, Yoshinori; Ohkouchi, Norio; and Nagao, Mamoru, 5,776,267, Cl. 148-328.000.
- Yamamuka, Mikio: See—
Yuuki, Akimasa; Kawahara, Takaaki; Makita, Tetsuro; Yamamuka, Mikio; Ono, Koichi; and Okudaira, Tomonori, 5,776,254, Cl. 118-725.000.
- Yamamura, Toshiaki: See—
Naka, Teruyuki; Umeda, Yoshio; Yamamura, Toshiaki; Kumon, Akira; Suzuki, Seiichi; Nawawa, Junichi; and Nagase, Hisanori, 5,776,544, Cl. 427-307.000.
- Yamanaka, Hidenori: See—
Tsuda, Takashi; Yamanaka, Hidenori; and Komiyama, Osamu, 5,777,069, Cl. 528-388.000.
- Yamanaka, Toru: See—
Tatsuki, Yuuichirou; Nishiyama, Shinichi; Kawabata, Junichi; Yamanaka, Toru; and Tanaka, Chihito, 5,776,365, Cl. 252-299.620.
- Yamanaka, Yoshimichi; Fujisawa, Hiroshi; Chiba, Takeshi; Deguchi, Yoshikuni; and Yonezawa, Kazuya, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for producing isobutylene polymer, 5,777,037, Cl. 525-288.000.
- Yamanashi, Makoto; and Sawayanagi, Masahiro, to Yazaki Corporation. Low-insertion-force connector assembly, 5,775,953, Cl. 439-701.000.
- Yamane, Tadanao, to Nishikawa Rubber Co., Ltd. Sealing structure for front door, 5,775,768, Cl. 296-146.900.
- Yamano, Akihiko: See—
Sakai, Kunihiko; Oguchi, Takahiro; Yamano, Akihiko; and Shido, Shunichi, 5,778,134, Cl. 386-46.000.
- Yamaoka, Masanori; Ban, Keiji; and Kobayashi, Hiroshi, to Mita Industrial Co., Ltd. Sheet member conveying mechanism, 5,775,685, Cl. 271-10.130.
- Yamaoka, Shinsuke: See—
Taya, Takashi; Yoshida, Akira; Yamaoka, Shinsuke; and Matsumoto, Shuichi, 5,778,214, Cl. 395-551.000.
- Yamaoka, Tatsuya: See—
Goto, Toshio; Ito, Seishi; Minegishi, Natsuko; Yamaoka, Tatsuya; Ueno, Chieko; Moriya, Koichi; Maurer, Fritz; and Watanabe, Ryo, 5,776,858, Cl. 504-225.000.
- Yamartino, Stephen J.: See—
Eacobacci, Michael J., Jr.; Yamartino, Stephen J.; Stein, Martin L.; and Khederian, Robert E., 5,775,109, Cl. 62-6.000.
- Yamasaki, Yasuhiko: See—
Iwase, Hiroo; Yamasaki, Yasuhiko; Takayanagi, Takeo; Rokutani, Tomohide; Nakatsuka, Saburo; and Yokoyama, Takashi, 5,775,002, Cl. 34-122.000.
- Yamasawa, Yuuzi: See—
Arita, Setsuo; Ito, Tetsuo; Ohga, Yukiharu; Murata, Fumio; Higashikawa, Yuichi; Sato, Hideyuki; Kudo, Mitsuru; and Yamasawa, Yuuzi, 5,777,896, Cl. 364-550.000.
- Yamashita, Chikara; and Yoshigai, Akira, to NEC Corporation. Semiconductor device constructed by mounting a semiconductor chip on a film carrier tape, 5,777,387, Cl. 257-737.000.
- Yamashita, Hideo, to Chuo Hatsujo Kabushiki Kaisha. Wire type teleoperational system, 5,775,764, Cl. 296-76.000.
- Yamashita, Miyuki, to Hirakawa Kogyo Sha Co., Ltd. Processing device for photographic materials and automatic developing machine using the same, 5,778,275, Cl. 396-643.000.
- Yamashita, Nobuyuki: See—
Kawamura, Nobuo; Masai, Kazuo; Yamashita, Nobuyuki; and Nagai, Hiroshi, 5,778,388, Cl. 707-203.000.
- Yamashita, Seiji; Nakamura, Koki; and Nakamura, Koichi, to Fuji Photo Film Co., Ltd. Silver halide photographic material, 5,776,664, Cl. 430-405.000.
- Yamashita, Syugo: See—
Tanase, Susumu; Okino, Toshiyuki; Inuma, Toshiya; Yamashita, Syugo; Uchida, Hidekazu; Mori, Yukio; Maenaka, Akihiro; Okada, Seiji; and Ihara, Kanzi, 5,777,666, Cl. 348-43.000.
- Yamashita, Tetsushi: See—
Wakayama, Takeshi; Komuro, Toshiyuki; Mori, Koji; Yamauchi, Motomi; Yamashita, Tetsushi; and Kobayashi, Noriaki, 5,775,123, Cl. 62-407.000.
- Yamashita, Yuudai: See—
Sato, Koichi; Okabe, Masato; Kamiyama, Hironori; Shimizu, Osamu; and Yamashita, Yuudai, 5,778,260, Cl. 396-30.000.
- Yamauchi, Hisao: See—
Usami, Ryo; Isawa, Kazuyuki; Kubota, Hiroshi; Puzniak, Roman; Yamauchi, Hisao; and Tanaka, Shoji, 5,776,862, Cl. 505-125.000.
- Yamauchi, Motomi: See—
Wakayama, Takeshi; Komuro, Toshiyuki; Mori, Koji; Yamauchi, Motomi; Yamashita, Tetsushi; and Kobayashi, Noriaki, 5,775,123, Cl. 62-407.000.
- Yamaura, Tomoya: See—
Tsuda, Shinichiro; Kanayama, Yoshiki; Yamaura, Tomoya; and Kuroda, Shinichi, 5,777,585, Cl. 343-702.000.
- Yamawaki, Takayuki: See—
Nagata, Toshihiko; Sano, Hiroshi; Yamawaki, Takayuki; and Matsushita, Kunitake, 5,777,413, Cl. 310-90.000.
- Yamazaki, Hiromi: See—
Nakagawa, Kazuo; Yamazaki, Hiromi; Uchida, Kenichi; and Naruse, Yukio, 5,777,205, Cl. 73-24.020.
- Yamazaki, Izumi: See—
Ikegame, Tetsuo; Kanazawa, Masayasu; and Yamazaki, Izumi, 5,777,806, Cl. 359-823.000.
- Yamazaki, Koichi, to Nippon Conlux Co., Ltd. Optical information recording with preformatted synchronization signals and information recording and reproducing method, 5,777,307, Cl. 235-454.000.
- Yamazaki, Masaru: See—
Sasaki, Yasuhiko; Matsumura, Yukihiko; Imai, Susumu; Tooyama, Tetsuhiro; Orihara, Masamichi; Sugimoto, Yoshio; Yamazaki, Masaru; Hoshino, Mitsunari; Uchikawa, Masumasa; and Arai, Hiroshi, 5,776,484, Cl. 424-448.000.
- Yamazaki, Takashi: See—
Ota, Toshiro; Hosoya, Masakatsu; and Yamazaki, Takashi, 5,777,978, Cl. 369-219.000.
- Yamazaki, Toshio; Yoshizawa, Ken; Ito, Tadashi; Wakana, Shigeaki; and Shimizu, Satoshi, to Kao Corporation. Magnetic recording medium, 5,776,590, Cl. 428-212.000.
- Yamazaki, Toshio; Wakana, Shigeaki; Nagai, Satoshi; and Inoue, Tetsutaro, to Kao Corporation. Magnetic recording medium having a magnetic layer and intermediate layer each containing a specified fatty acid and fatty acid ester, 5,776,596, Cl. 428-212.000.
- Yamazaki, Toshio: See—
Yokoyama, Yasuhiro; Watanabe, Yuriko; Tanikawa, Sadayasu; Ichinohe, Shoji; and Yamazaki, Toshio, 5,777,032, Cl. 505-123.000.
- Yanagi, Michio: See—
Kameyama, Makoto; Matsushima, Masaaki; and Yanagi, Michio, 5,777,828, Cl. 360-126.000.
- Yanagi, Shigenori: See—
Furuta, Satoshi; Fujiwara, Toru; Yanagi, Shigenori; Sagawa, Tadashi; and Moritsugu, Masaharu, 5,777,964, Cl. 369-54.000.
- Yanagida, Masato; Sato, Takako; and Kagawa, Tetsuya, to Ricoh Company, Ltd. System for making examination papers and having an automatic marking function, 5,775,918, Cl. 434-353.000.
- Yanagisawa, Ken, to Yugen Kaisha Sozoan. Agitator, 5,775,137, Cl. 68-133.000.
- Yanagisawa, Masahiro, to NEC Corporation. Magnetic recording disk having a lubricant reservoir on the inner circumferential surface, 5,776,577, Cl. 428-65.400.
- Yanai, Akihiro; Maeda, Iwao; Izuo, Takashi; and Iida, Tatuo, to Toyota Jidosha Kabushiki Kaisha. Valve driving apparatus using an electromagnetic coil to move a valve body with reduced noise, 5,775,276, Cl. 123-90.110.
- Yancopoulos, George D.: See—
Boulton, Teri G.; Cobb, Melanie H.; Yancopoulos, George D.; Nye, Steven; and Panayotatos, Nikos, 5,776,751, Cl. 435-194.000.
- Yang, Jonathan: See—
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- Yang, Luyu. Cooling attachment for a grinder, 5,775,606, Cl. 241-65.000.
- Yang, Maw-Chyuan. Air die grinder, 5,775,981, Cl. 451-295.000.
- Yang, Tsung-Ming: See—
Ju, Jau-Jiu; Yang, Tsung-Ming; and Chang, Tsung-Kai, 5,777,803, Cl. 359-719.000.
- Yang, Vince W. H., to Vanguard International Semiconductor Corporation. Vacuum pump filter for use in a semiconductor system, 5,776,216, Cl. 55-385.100.
- Yang, Wen Chin: See—
Bannister, Ronald Leo; Newby, Richard Allen; and Yang, Wen Chin, 5,775,091, Cl. 60-39.050.
- Yang, Zhijun: See—
Ryan, Patrick J.; Yang, Zhijun; and Mowry, Greg S., 5,776,537, Cl. 427-8.000.
- Yano, Ei: See—

Watanabe, Keiji; Yano, Ei; Namiki, Takahisa; Yano, Keiko; Maruyama, Takashi; Nakamura, Tomio; Shimizu, Shigeru; Saitoh, Takashi; Uzawa, Masashi; and Ishikawa, Masami, 5,776,659, Cl. 430-296.000.
Yano, Hiroyuki: *See—*
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Yano, Keiko: *See—*
Watanabe, Keiji; Yano, Ei; Namiki, Takahisa; Yano, Keiko; Maruyama, Takashi; Nakamura, Tomio; Shimizu, Shigeru; Saitoh, Takashi; Uzawa, Masashi; and Ishikawa, Masami, 5,776,659, Cl. 430-296.000.
Yano, Kentaro: *See—*
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Yano, Makoto: *See—*
Tsukushi, Masanori; Ohshita, Youichi; Natsui, Ken'ichi; Kamata, Yuzuru; Yano, Makoto; Yaginuma, Noriyuki; and Shiraiishi, Katsuhiko, 5,777,842, Cl. 361-603.000.
Yao, Xiaotian S., to California Institute of Technology. Multi-Loop optoelectronic microwave oscillator with a wide tuning range, 5,777,778, Cl. 359-245.000.
Yapp, Steven G.: *See—*
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Yaroshevskiy, Georgiy V.: *See—*
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Yasuda, Hitoshi: *See—*
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Yasuda, Kouzo: *See—*
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Yasuoka, Norio: *See—*
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chiharu; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,776,600, Cl. 428-325.000.
Yates, James W.; and Yates, Ronnie L. Thermal mitten for golfers, 5,774,894, Cl. 2-158.000.
Yates, Paul M. Fabric article and method of manufacture, 5,774,966, Cl. 29-91.500.
Yates, Ronnie L.: *See—*
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Yavelberg, Simon: *See—*
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Saito, Hitoshi; and Ohtaka, Kazuo, 5,775,932, Cl. 439-378.000.
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Yeda Research and Development Co., Ltd.: *See—*
Brandt, Achi Ezer; Mann, Jordan; and Brodski, Matvei, 5,778,038, Cl. 378-4.000.
Shechter, Yoram; and Naor, David, 5,776,970, Cl. 514-419.000.
Yee, Abraham F.: *See—*
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Yee, Bennet: *See—*
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Yeh, Ching-Fa; and Su, Jwinn Lein, to National Science Council. Method of making a grooved gate structure of semiconductor device, 5,776,835, Cl. 438-712.000.
Yeh, Jang-Hun; Wyatt, Karl W.; and Rohde, Terry, to Motorola, Inc. Hologram manufacturing process and method for efficiently providing a multi-holographic optical element substrate unit, 5,776,286, Cl. 156-256.000.
Yeh, Ming-Tsan: *See—*
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Yeh, Min-Yen: *See—*
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Yellowhair, David: *See—*

Unger, Evan C.; Fritz, Thomas A.; Matsunaga, Terry; Ramaswami, VaradaRajan; Yellowhair, David; and Wu, Guanli, 5,776,429, Cl. 424-9.520.
Yeske, Philip E.: *See—*
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Yesnik, Marc A.: *See—*
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Yi, Champion: *See—*
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Yi, Seung-Young; and Jeong, Woo-Cheol, to Samsung Electronics Co., Ltd. Disk having stress relieving zones for use with a disk clamping device in a hard disk drive, 5,777,832, Cl. 360-135.000.
Yin, Gerald Zheyao: *See—*
Hanawa, Hiroji; Yin, Gerald Zheyao; Ma, Diana Xiaobing; Salzman, Philip M.; Loewenhardt, Peter K.; and Zhao, Allen, 5,777,289, Cl. 219-121.430.
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Yiu, Tom Dang-Hsing; Wan, Ray-Lin; Cheng, Yao-Wu; Hung, Chung-Hsiung; and Shone, Fuchia, to Macronix International Co., Ltd. Floating gate memory device and method for terminating a program load cycle upon detecting a predetermined address/data pattern, 5,778,440, Cl. 711-154.000.
Yli-Kaupilla, Jouko: *See—*
Kerttula, Reima; and Yli-Kaupilla, Jouko, 5,775,001, Cl. 34-114.000.
Yocum, John F., Jr.; Fowell, Richard A.; and Lee, Raymond S., to Hughes Electronics Corporation. Controlled-emission solar tabs for attitude solar sailing, 5,775,645, Cl. 244-168.000.
Yoda, Hiroaki: *See—*
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Yokajty, Joseph E., to Eastman Kodak Company. Method and apparatus for connecting flexible circuits to printed circuit boards, 5,777,855, Cl. 361-803.000.
Yokonuma, Norikazu: *See—*
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Yokota, Masatoshi; Endo, Seichiro; Moriyama, Keiji; and Horuchi, Kuniyasu, to Sumitomo Rubber Industries, Ltd. Solid golf ball, 5,776,013, Cl. 473-377.000.
Yokota, Muneyasu: *See—*
Miyazaki, Seiji; Narabe, Tsuyoshi; Nara, Kei; Hamada, Tomohide; Saiki, Kazuaki; Goto, Hideji; and Yokota, Muneyasu, 5,777,722, Cl. 355-53.000.
Yokota, Takeshi; Haramura, Masayuki; Okamachi, Akira; and Makino, Toshihiko, to Chugai Seiyaku Kabushiki Kaisha. Fluoroquinoline derivative, 5,776,948, Cl. 514-312.000.
Yokouchi, Kishio: *See—*
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Yokoyama, Yuji: *See—*
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Yoneda, Yasuhiro: *See—*
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Yonck, Kenneth P.; Venham, Lanny D.; Yeske, Philip E.; and Squiller, Edward P., to Bayer Corporation. Blocked polyisocyanate crosslinkers for providing improved flow properties to coating compositions, 5,777,061, Cl. 528-45.000.
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Yoo, Jang-hoon; Chung, Chong-sam; Lee, Chul-woo; Rim, Kyung-hwa; and Cho, Kun-ho, to Samsung Electronics Co., Ltd. Reproducing and recording optical pickup compatible with discs having different thickness, 5,777,973, Cl. 369-109.000.
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Oney, Thomas A., 5,777,840, Cl. 361-519.000.
Yoshida, Hiroshi; Ohashi, Yoichiro; Watanabe, Kazuo; and Shiozaki, Kazuyuki, to Dai Nippon Printing Co., Ltd. Nozzle coating method and equipment, 5,776,545, Cl. 427-356.000.
Yoshida, Akira: *See—*
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Yoshida, Masahiro; Kitada, Katsuhisa; and Seki, Yoshio, to Matsushita Electric Industrial Co., Ltd. Moisture reducing apparatus, 5,777,441, Cl. 315-371.000.
Yoshida, Naoko: *See—*
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Yoshida, Takeo; and Suzuki, Takahiro, to Yamaha Hatsudoki Kabushiki Kaisha. Direct cylinder fuel injected engine, 5,775,289, Cl. 123-305.000.
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Yoshii, Minoru; Hasegawa, Masanobu; Miyazaki, Kyoichi; and Takeuchi, Seiji, to Canon Kabushiki Kaisha. Exposure state detecting system and exposure apparatus using the same, 5,777,744, Cl. 256-372.000.
Yoshii, Shigekazu: *See—*
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Yoshikawa, Takashi; Kurihara, Kaori; and Kosaka, Hideo, to NEC Corporation. VCSELs (vertical-cavity surface emitting lasers) and VCSEL-based devices, 5,778,018, Cl. 372-45.000.
Yoshikawa, Toshiyuki: *See—*
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Yoshikawa, Yukio; and Nakamura, Shigekazu, to Copal Company Limited. Surface emission apparatus, 5,775,791, Cl. 362-31.000.
Yoshimi, Tomohisa; Kawai, Takayoshi; Ito, Yuji; Kawashima, Masafumi; Honda, Yuji; and Samukawa, Katsuhiko, to Nippondenso Co., Ltd. Air conditioning system, 5,775,415, Cl. 165-202.000.
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Yoshino Kogyosho Co., Ltd.: *See—*
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Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
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Yoshitomi, Yuji: *See—*
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Young, Jamie L.; Britton, Rodney S.; and Farley, Kevin J., to MCI Communications Corporation. Service engineering template, 5,778,049, Cl. 379-10.000.
Young, Mark E.: *See—*
Scheffelin, Joseph E.; Hunt, David S.; Young, Mark E.; Zapata, Elizabeth; Zepeda, Alfred; Schultz, Christopher J.; and Fong, Jon, 5,777,648, Cl. 347-87.000.
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Young, Roderick A., to General Surgical Innovations, Inc. Combination dissector and expander, 5,776,159, Cl. 606-190.000.
Young, Stuart W.; and Miller, Richard A., to Pharmacies, Inc. Methods for cancer chemosensitization, 5,776,925, Cl. 514-185.000.
Young, Stuart W.: *See—*
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Yu, Fujio; and Kato, Mami, to Nitto Chemical Industry Co., Ltd. Kanamycin resistance gene derived from microorganisms of the genus rhodococcus, 5,776,771, Cl. 435-320.100.
Yu, Jun, to Northern Telecom Limited. Configurable chirp Mach-Zehnder optical modulator, 5,778,113, Cl. 385-3.000.
Yu, Robert C. U., to Xerox Corporation. Electrophotographic imaging apparatus having an improved belt drive system, 5,778,287, Cl. 399-167.000.
Yu, Ta-Lee: *See—*
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- Park, Young-soh; Lee, Joo-young; and Yu, Young-hun, 5,776,638, Cl. 430-5,000.
- Yuan, Bausan, to Nikon Corporation. Voice coil motor with air guide and air bellows. 5,777,403, Cl. 310-12,000.
- Yue, Jingxing, to Hughes Electronics Corporation. Mode configurable DC power supply. 5,777,462, Cl. 323-285,000.
- Yugen Kaisha Sozoan: *See—*
- Yanagisawa, Ken, 5,775,137, Cl. 68-133,000.
- Yugenkaisha Shinjo Seisakusho: *See—*
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- Yui, Yui: *See—*
- Kido, Eiichi; Yui, Yui; Mori, Toyokazu; and Nozomi, Mamoru, 5,778,286, Cl. 399-159,000.
- Yukawa, Chiaki: *See—*
- Sugimoto, Kazuaki; Matsushita, Izumi; and Yukawa, Chiaki, 5,775,820, Cl. 400-120,160.
- Yukawa, Hideaki: *See—*
- Hatakeyama, Kazuhisa; Goto, Makoto; Terasawa, Masato; and Yukawa, Hideaki, 5,776,740, Cl. 435-108,000.
- Yun, David I.: *See—*
- Premkumar, M. K.; Sawtell, Ralph R.; Phelps, Frankie E.; DerKacy, James A.; and Yun, David I., 5,775,403, Cl. 164-98,000.
- Yun, Dong Hyun; Lee, Kyuchung; Kwon, Chul Han; and Hong, Hyung-Ki, to LG Electronics Inc. Gas sensor and method for fabricating the same. 5,777,207, Cl. 73-31,050.
- Yuuki, Akimasa; Kawahara, Takaaki; Makita, Tetsuro; Yamamuka, Mikio; Ono, Koichi; and Okudaira, Tomonori, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for forming thin film by chemical vapor deposition. 5,776,254, Cl. 118-725,000.
- YY Software Corporation: *See—*
- Oatman, Robert K.; Herrera, Peter J.; Sanouillet, Remy D.; and Zimmerman, Charles E., 5,778,157, Cl. 395-51,000.
- Zagdoun, Georges; and Corinne, Victor, to Saint-Gobain Vitrage. Glazing pane equipped with at least one thin film and method of manufacturing the same. 5,776,603, Cl. 428-336,000.
- Zahler, Robert: *See—*
- Gordon, Eric M.; Barrish, Joel C.; Bisacchi, Gregory S.; Sun, Chong-Qing; Tino, Joseph A.; Vite, Gregory D.; and Zahler, Robert, 5,776,933, Cl. 514-237,500.
- Zahn, James B.; Knight, Paul B.; and Zahn, Larry D., to Hosco Incorporated. Multi-functional, hitch mounted carrying apparatus. 5,775,560, Cl. 224-524,000.
- Zahn, Larry D.: *See—*
- Zahn, James B.; Knight, Paul B.; and Zahn, Larry D., 5,775,560, Cl. 224-524,000.
- Zai, Li-Cheng Richard: *See—*
- Chieu, Trieu Can; Cofino, Thomas Anthony; Heinrich, Harley Kent; Sousa, Paul Jorge; and Zai, Li-Cheng Richard, 5,777,561, Cl. 340-825,540.
- Zak, Robert Allen, to Ericsson Inc. Reducing electrical power consumption in a radio transceiver by de-energizing selected components when speech is not present. 5,778,026, Cl. 315-219,000.
- Zalokar, Robert Henry, Jr.: *See—*
- Starr, Stephen George; Kutt, John Conrad; and Zalokar, Robert Henry, Jr., 5,776,790, Cl. 438-6,000.
- Zambrano, Raffaele, to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno. Integrated structure active clamp for the protection of power devices against overvoltages. 5,777,367, Cl. 257-355,000.
- Zamoyski, Mark. Photography booth for digital image capture. 5,778,258, Cl. 396-2,000.
- Zane, Arthur, to Zane, Arthur. Wallpaper border roll holder. 5,775,633, Cl. 242-599,100.
- Zanka, Yukihito: *See—*
- Nagai, Takayuki; Jagawa, Yasutoshi; Nishio, Takeyoshi; Zanka, Yukihito; Tsutsumi, Ikuo; Ishii, Izumi; Sato, Hiroki; and Sano, Hironari, 5,777,020, Cl. 524-451,000.
- Zapata, Elizabeth: *See—*
- Scheffelin, Joseph E.; Hunt, David S.; Young, Mark E.; Zapata, Elizabeth; Zepeda, Alfred; Schultz, Christopher J.; and Fong, Jon, 5,777,648, Cl. 347-87,000.
- Zarn, Patricia Smith. Hair-styling device and method for braiding hair. 5,775,343, Cl. 132-210,000.
- Zarnack, Jens Uwe; Diesselkamp, Bernd; Lorenz, Wolfgang; and Borchers, Jörg-Michael, to Bayer Aktiengesellschaft. Process for the preparation of 2,3-dihalogenoquinoxalines. 5,777,119, Cl. 544-356,000.
- Zarrinmayeh, Hamideh: *See—*
- Nunes, Anne Marie; and Zarrinmayeh, Hamideh, 5,776,931, Cl. 514-232,800.
- Zask, Arie: *See—*
- Levin, Jeremy Ian; Du, Mila T.; Venkatesan, Arnapakam Mudumbai; Nelson, Frances Christy; Zask, Arie; and Gu, Yansong, 5,776,961, Cl. 514-351,000.
- Zaso, Robert Augustine: *See—*
- Meiller, Thomas Charles; Beadnell, Timothy Michael; Covert, Charles Henry; Zaso, Robert Augustine; and Paddock, Gordon Richard, 5,776,227, Cl. 96-134,000.
- Meiller, Thomas Charles; Beadnell, Timothy Michael; Covert, Charles Henry; Zaso, Robert Augustine; and Paddock, Gordon Richard, 5,776,228, Cl. 96-134,000.
- Zavareh, Hooshang Shahriari; and Frampton, Graham Anthony Charles, to Chiroscience Limited. Process for preparing levobupivacaine and analogues thereof. 5,777,124, Cl. 546-225,000.
- Zebco Division of Brunswick Corporation: *See—*
- Zwayer, Kent; and Davis, Dale, 5,775,613, Cl. 242-247,000.
- Zeck, Mark V.: *See—*
- Westmoreland, Dennis F.; and Zeck, Mark V., 5,775,884, Cl. 417-383,000.
- Zeftron, Inc.: *See—*
- Waldrop, Jeremy S., 5,777,547, Cl. 340-438,000.
- Zehavi, Ephraim; Miller, David S.; and LaRocca, Judith, to Qualcomm Incorporated. Method and apparatus for providing variable rate data in a communications system using non-orthogonal overflow channels. 5,777,990, Cl. 370-335,000.
- Zeljko, Ilija, to Lucent Technologies Inc. Method of speech recognition using decoded state sequences having constrained state likelihoods. 5,778,341, Cl. 704-256,000.
- Zellweger Luwa AG: *See—*
- Baechler, François, 5,775,085, Cl. 57-264,000.
- Zemek, Michael C.: *See—*
- Glucksman, Michael D.; Wahawisan, Weerakiat; Moore, Troy D.; Haslen, Paul H.; Botkin, Dennis M.; Loveless, James E.; Antao, Joseph; Zemek, Michael C.; and Roy, Rajiv, 5,777,886, Cl. 364-489,000.
- Zeneca Limited: *See—*
- Broad, Peter Michael, 5,776,675, Cl. 435-6,000.
- Lampe, Richard Alexander, 5,776,896, Cl. 514-12,000.
- Matthews, Ian Richard; Godfrey, Christopher Richard Ayles; and Clough, John Martin, 5,777,162, Cl. 564-167,000.
- Standen, Michael Charles Henry; and Evens, Nicholas Charles, 5,777,172, Cl. 568-332,000.
- Zeng, Lijiang; Matsumoto, Hirokazu; and Kawachi, Keiji, to Japan Science and Technology Corporation. Method and apparatus for compensating for noise generated by fluctuation of a medium around an object to be measured. 5,777,745, Cl. 356-373,000.
- Zenith Electronics Corporation: *See—*
- Turner, Rudolf, 5,778,028, Cl. 375-229,000.
- Zepeda, Alfred: *See—*
- Scheffelin, Joseph E.; Hunt, David S.; Young, Mark E.; Zapata, Elizabeth; Zepeda, Alfred; Schultz, Christopher J.; and Fong, Jon, 5,777,648, Cl. 347-87,000.
- Zerhouni, Elias A.: *See—*
- Burbank, Fred H.; Fogarty, Thomas J.; Maska, Wayne E.; Ritchart, Mark A.; Ryan, Timothy J.; and Zerhouni, Elias A., 5,775,333, Cl. 128-754,000.
- Zexel Corporation: *See—*
- Kono, Hiromi; Yoshino, Toshiyuki; and Kanai, Hiroshi, 5,775,304, Cl. 123-497,000.
- Zhang, Hongyong, to Semiconductor Energy Laboratory Co., Ltd. Display device. 5,777,701, Cl. 349-44,000.
- Zhang, Qinghua: *See—*
- Qin, Bai-Lin; Barbosa-Canovas, Gustavo V.; Swanson, Barry G.; Pedrow, Patrick D.; Olsen, Robert G.; and Zhang, Qinghua, 5,776,529, Cl. 426-231,000.
- Zhao, Allen: *See—*
- Hanawa, Hiroji; Yin, Gerald Zheyao; Ma, Diana Xiaobing; Salzman, Philip M.; Loewenhardt, Peter K.; and Zhao, Allen, 5,777,289, Cl. 219-121,430.
- Zhou, Boli: *See—*
- Peterson, David; McManus, James D.; Ottoboni, Thomas B.; Ungermann, Charles B.; van Buskirk, Gregory; and Zhou, Boli, 5,776,877, Cl. 510-277,000.
- Zhu, Sarah Shuangxia: *See—*
- Leung, Ka; and Zhu, Sarah Shuangxia, 5,777,909, Cl. 364-724,011.
- Zhu, Xianing: *See—*
- MacLeod, Peter S.; Vincent, Luc; and Zhu, Xianing, 5,778,092, Cl. 382-176,000.
- Zhu, Xiao Feng, to Micronics Computers Inc. Mother board with auxiliary conductors in parallel with power connectors. 5,777,276, Cl. 174-263,000.
- Ziegler, Georg, to Asea Brown Boveri AG. Steam generator. 5,775,266, Cl. 122-7,000.
- Zielinski, Edward J.: *See—*
- Tuttle, David J.; and Zielinski, Edward J., 5,775,198, Cl. 91-433,000.
- Zielinski, Frank D.: *See—*
- Flaherty, Dennis K.; Gordon, Russell P.; Taylor, Paul M.; and Zielinski, Frank D., 5,776,213, Cl. 55-482,000.
- Ziemins, Uldis Artis: *See—*
- Freedenberg, Candace Joy; Herring, Frederick Albert; and Ziemins, Uldis Artis, 5,777,798, Cl. 359-676,000.
- Zietlow, Philip K.: *See—*
- Christensen, John C.; Cremers, Thomas G.; Stinson, James L.; and Zietlow, Philip K., 5,776,534, Cl. 426-516,000.
- Zimmer, Johannes. Self-cleaning apparatus for the application of a substance on a fabric train and process of operation thereof. 5,775,218, Cl. 101-120,000.
- Zimmerman, Charles E.: *See—*
- Oatman, Robert K.; Herrera, Peter J.; Sanouillet, Remy D.; and Zimmerman, Charles E., 5,778,157, Cl. 395-51,000.
- Zimmerman, Dennis A., to Comsonics, Inc. Ingress/egress management system. 5,777,662, Cl. 348-6,000.

- Zinsmeyer, Herbert G. Combination nozzle and valve with variable geometry for increased power recovery from internal combustion engine exhaust gas. 5,775,105, Cl. 60-597,000.
- Zirbs, Thomas: *See—*
- Reihl, Peter; Wingen, Bernhard; Salz, Wolfram; Mayer, Johann; Danzl, Martin; Fürst, Arpad; and Zirbs, Thomas, 5,775,769, Cl. 296-216,000.
- Zito, Richard R. High dispersion carbon dioxide snow apparatus. 5,775,127, Cl. 62-603,000.
- Zooth, Inc.: *See—*
- Harrison, Susan; and Crossley, David W., 5,774,921, Cl. 15-145,000.
- Zoppitelli, Elio: *See—*
- Vuillet, Alain; and Zoppitelli, Elio, 5,775,637, Cl. 244-17,110.
- Zorn, Franz; Weber, Frank; Almeida, Antonia; Taubert, Ilona; Wagenknecht, Rolf; and Eberle, Wilhelm, to Merck Patent Gesellschaft mit Beschränkter Haftung. Process for the production of spongiosa bone ceramic having low calcium oxide content. 5,776,843, Cl. 501-1,000.
- Zuccato, Giuliano. Modular model vehicle assembly. 5,774,969, Cl. 29-407,050.
- Züchner, Klaus; Schulze, Thomas; and Kahle, Gerrit. Method and measuring device for determining the water content of a gas. 5,777,206, Cl. 73-29,010.
- Zuercher, Erwin: *See—*
- Guignard, Mireille; Cottenceau, Remi; and Zuercher, Erwin, 5,776,104, Cl. 604-132,000.
- Zuidberg, Herman Maria; and Schrier, Willem Henricus, to Fugro Engineers B.V. Soil analysis and sampling system. 5,777,242, Cl. 73-864,450.
- Zuk, Paul John: *See—*
- Kegelman, Joseph Edward; Stille, Diane Kathleen; Wiedenmann, Robert Kyle; and Zuk, Paul John, 5,776,784, Cl. 436-526,000.
- Zumeris, Jona, to Nanomotion Ltd. Ceramic motor. 5,777,423, Cl. 310-323,000.
- Zur, Albert; and Sas, Benjamin, to Imagine Ltd. Apparatus and methods for non impact imaging and digital printing. 5,777,576, Cl. 347-120,000.
- Zushma, Stephen: *See—*
- Emert, Jacob; Horvath, Istvan T.; Schlosberg, Richard H.; Thaler, Warren A.; Young, David A.; and Zushma, Stephen, 5,777,041, Cl. 525-333,700.
- Zwayer, Kent; and Davis, Dale, to Zebco Division of Brunswick Corporation. Anti-reverse system for a fishing reel. 5,775,613, Cl. 242-247,000.
- Zweifel, Johann; and Treuthardt, Thomas, to Maschinenfabrik WIFAG. Individually driven folder for a rotary printing press. 5,775,222, Cl. 101-227,000.
- Zwolinski, Joseph John: *See—*
- Abu-Isa, Ismat Ali; Jaynes, Craig Bryant; Tishbi, Youssef; and Zwolinski, Joseph John, 5,775,779, Cl. 297-452,560.
- Zygo Corporation: *See—*
- Deck, Leslie L., 5,777,741, Cl. 356-359,000.
- Zygo Mould Limited: *See—*
- Wright, John B.; and Burrows, Mark W., 5,776,521, Cl. 425-556,000.
- ZymoGenetics, Inc.: *See—*
- Kindsvogel, Wayne R.; Jelinek, Laura J.; Sheppard, Paul O.; Grant, Francis J.; Kuijper, Joseph L.; Foster, Donald C.; Lok, Si; and O'Hara, Patrick J., 5,776,725, Cl. 435-69,100.
- Zysman, Steven H.; Lord, Wesley K.; and Barber, Thomas J., to United Technologies Corporation. Method of noise suppression for a turbine engine. 5,775,095, Cl. 60-204,000.
- 3D Systems, Inc.: *See—*
- Almquist, Thomas A.; and Smalley, Dennis R., 5,776,409, Cl. 264-401,000.
- 3dLabs Inc. Ltd.: *See—*
- Baldwin, David Robert, 5,777,629, Cl. 345-506,000.
- 3V Inc.: *See—*
- Raspanti, Giuseppe; and Malpede, Alverio, 5,776,439, Cl. 424-59,000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 7th DAY OF JULY, 1998

NOTE— Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- Applegate, Edward V.: *See—*
Kosich, Joseph; and Applegate, Edward V., RE. 35,837, Cl. 315-241.00S.
- Asai, Toshinori; and Kawahori, Masaki, to Kabushiki Kaisha Sega Enterprises. CD-ROM disk and security check method for the same. RE. 35,839, Cl. 380-3.000.
- C. P. Clare Corporation: *See—*
Rodriguez, Edward T., RE. 35,836, Cl. 250-551.000.
- Eidam, Manfred; Flanhardt, Michael; Rauschenbach, Stefan; and Roth, Andreas, to GKN Walterscheid GmbH. Device for attaching an agricultural implement to a tractor. RE. 35,835, Cl. 180-14.400.
- Flanhardt, Michael: *See—*
Eidam, Manfred; Flanhardt, Michael; Rauschenbach, Stefan; and Roth, Andreas, RE. 35,835, Cl. 180-14.400.
- Frank, Thomas P.; and Patzer, Charles R., to Medex, Inc. Needleless connector sample site. RE. 35,841, Cl. 604-256.000.
- GKN Walterscheid GmbH: *See—*
Eidam, Manfred; Flanhardt, Michael; Rauschenbach, Stefan; and Roth, Andreas, RE. 35,835, Cl. 180-14.400.
- Itoh, Yasuo: *See—*
Momodomi, Masaki; Masuoka, Fujio; Shiota, Riichiro; Itoh, Yasuo; Ohuchi, Kazunori; and Kirisawa, Ryouhei, RE. 35,838, Cl. 365-185.170.
- Jacobsen, Eric Jon; and TenBrink, Ruth Elizabeth, to Pharmacia & Upjohn Company. Imidazo[1,5-a]quinolines for treatment of anxiety and sleep disorders. RE. 35,840, Cl. 544-126.000.
- Kabushiki Kaisha Sega Enterprises: *See—*
Asai, Toshinori; and Kawahori, Masaki, RE. 35,839, Cl. 380-3.000.
- Kabushiki Kaisha Toshiba: *See—*
Momodomi, Masaki; Masuoka, Fujio; Shiota, Riichiro; Itoh, Yasuo; Ohuchi, Kazunori; and Kirisawa, Ryouhei, RE. 35,838, Cl. 365-185.170.
- Kawahori, Masaki: *See—*
Asai, Toshinori; and Kawahori, Masaki, RE. 35,839, Cl. 380-3.000.
- Kirisawa, Ryouhei: *See—*
Momodomi, Masaki; Masuoka, Fujio; Shiota, Riichiro; Itoh, Yasuo; Ohuchi, Kazunori; and Kirisawa, Ryouhei, RE. 35,838, Cl. 365-185.170.
- Kosich, Joseph; and Applegate, Edward V., to Wheelock Inc. Microprocessor-controlled strobe light. RE. 35,837, Cl. 315-241.00S.
- Masuoka, Fujio: *See—*
Momodomi, Masaki; Masuoka, Fujio; Shiota, Riichiro; Itoh, Yasuo; Ohuchi, Kazunori; and Kirisawa, Ryouhei, RE. 35,838, Cl. 365-185.170.
- Medex, Inc.: *See—*
Frank, Thomas P.; and Patzer, Charles R., RE. 35,841, Cl. 604-256.000.
- Miller, William R. Article warmer with heated frame and flexible enclosure. RE. 35,834, Cl. 219-521.000.
- Momodomi, Masaki; Masuoka, Fujio; Shiota, Riichiro; Itoh, Yasuo; Ohuchi, Kazunori; and Kirisawa, Ryouhei, to Kabushiki Kaisha Toshiba. Electrically erasable programmable read-only memory with NAND cell structure. RE. 35,838, Cl. 365-185.170.
- Ohuchi, Kazunori: *See—*
Momodomi, Masaki; Masuoka, Fujio; Shiota, Riichiro; Itoh, Yasuo; Ohuchi, Kazunori; and Kirisawa, Ryouhei, RE. 35,838, Cl. 365-185.170.
- Patzer, Charles R.: *See—*
Frank, Thomas P.; and Patzer, Charles R., RE. 35,841, Cl. 604-256.000.
- Pharmacia & Upjohn Company: *See—*
Jacobsen, Eric Jon; and TenBrink, Ruth Elizabeth, RE. 35,840, Cl. 544-126.000.
- Rauschenbach, Stefan: *See—*
Eidam, Manfred; Flanhardt, Michael; Rauschenbach, Stefan; and Roth, Andreas, RE. 35,835, Cl. 180-14.400.
- Rodriguez, Edward T., to C. P. Clare Corporation. Solid state optically coupled electrical power switch. RE. 35,836, Cl. 250-551.000.
- Roth, Andreas: *See—*
Eidam, Manfred; Flanhardt, Michael; Rauschenbach, Stefan; and Roth, Andreas, RE. 35,835, Cl. 180-14.400.
- Shiota, Riichiro: *See—*
Momodomi, Masaki; Masuoka, Fujio; Shiota, Riichiro; Itoh, Yasuo; Ohuchi, Kazunori; and Kirisawa, Ryouhei, RE. 35,838, Cl. 365-185.170.
- TenBrink, Ruth Elizabeth: *See—*
Jacobsen, Eric Jon; and TenBrink, Ruth Elizabeth, RE. 35,840, Cl. 544-126.000.
- Wheelock Inc.: *See—*
Kosich, Joseph; and Applegate, Edward V., RE. 35,837, Cl. 315-241.00S.

LIST OF REEXAMINATION PATENTEEES

TO WHOM

CERTIFICATES WERE ISSUED

- Bolduc, Lee R.: *See—*
Neuwirth, Robert S.; and Bolduc, Lee R., B1 105,808, Cl. 606-28.000.
- Endevco Corporation: *See—*
Karolys, Alexis G.; Miake, Gen; and Kapadia, Nikul S., B1 935,846, Cl. 361-684.000.
- Gynelab Products: *See—*
Neuwirth, Robert S.; and Bolduc, Lee R., B1 105,808, Cl. 606-28.000.
- Ish, Arthur B.: *See—*
Johnson, Jeffrey B.; and Ish, Arthur B., B1 034,572, Cl. 482-99.000.
- Johnson, Jeffrey B.; and Ish, Arthur B., to Vectra Fitness, Inc. Exercise machine with multiple exercise stations. B1 034,572, Cl. 482-99.000.
- Kapadia, Nikul S.: *See—*
Karolys, Alexis G.; Miake, Gen; and Kapadia, Nikul S., B1 935,846, Cl. 361-684.000.
- Karolys, Alexis G.; Miake, Gen; and Kapadia, Nikul S., to Endevco Corporation. Electronic assembly. B1 935,846, Cl. 361-684.000.
- Lonardo, Robert, to Restorative Care of America Incorporated. Therapeutic leg and foot device. B1 269,748, Cl. 602-27.000.
- Lonardo, Robert, to Restorative Care of America Incorporated. Method of healing the decubitus on the heel of a bedfast patient. B1 298,013, Cl. 602-28.000.
- Miake, Gen: *See—*
Karolys, Alexis G.; Miake, Gen; and Kapadia, Nikul S., B1 935,846, Cl. 361-684.000.
- Neuwirth, Robert S.; and Bolduc, Lee R., to Gynelab Products. Intrauterine cauterizing method. B1 105,808, Cl. 606-28.000.
- Restorative Care of America Incorporated: *See—*
Lonardo, Robert, B1 269,748, Cl. 602-27.000.
- Lonardo, Robert, B1 298,013, Cl. 602-28.000.
- Vectra Fitness, Inc.: *See—*
Johnson, Jeffrey B.; and Ish, Arthur B., B1 034,572, Cl. 482-99.000.

LIST OF DESIGN PATENTEEES

- Adaptec, Inc.: *See—*
Hartling, John M.; Lavan, Thomas John; Hoxsey, Robert Arthur; Pecone, Victor Key; Manzanares, Stanton Michael; and Decker, Randall D., 395,881, Cl. D14-115.000.
- Adidas AG: *See—*
Ryan, Kevin B., 395,743, Cl. D2-960.000.
- Advanced Multimedia Products Corporation: *See—*
Rosen, John B., 395,874, Cl. D14-114.000.
- Rosen, John B., 395,896, Cl. D14-239.000.
- Advanced Watch Company: *See—*

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- Rosenbaum, Barry, 395,917, Cl. D19-49.000.
- Rosenbaum, Barry, 395,918, Cl. D19-49.000.
- Rosenbaum, Barry, 395,919, Cl. D19-51.000.
- Afarian, Diran A. Mouse pad with two interlocking pieces. 395,876, Cl. D14-114.000.
- Aiken, Christopher; Stinauer, Robert; and Harris, Daryl, to Motorola, Inc. Stylus. 395,875, Cl. D14-114.000.
- Akutsu, Akira. Portable case. 395,748, Cl. D3-218.000.
- Allen, Mike: *See—*
Plummer, Darrill L.; Allen, Mike; Hallman, Gregory W.; Joy, Anthony W.; Gibson, Robert R.; and Yonge, Christopher F., 395,899, Cl. D15-7.000.
- Alpine Engineering, Inc.: *See—*
Shannon, Michael S.; and Songer, Robert W., 395,900, Cl. D15-28.000.
- Ambar, Betzalel. Gemstone. 395,844, Cl. D11-90.000.
- American West Furniture Manufacturers, Inc.: *See—*
Smith, Michael S., 395,759, Cl. D6-334.000.
- Anagnos, Daniel: *See—*
Fenner, Knut T.; and Anagnos, Daniel, 395,888, Cl. D14-214.000.
- Angeles Group, Inc.: *See—*
Kelly, Ray G.; Turnbough, Sharon A.; and Taraskavage, Diane, 395,771, Cl. D6-480.000.
- Antonio Zamperla s.p.a.: *See—*
Boifava, Mario, 395,929, Cl. D21-136.000.
- Archos S.A.: *See—*
Crohas, Henri, 395,870, Cl. D14-107.000.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Hamamura, Toshihiro, 395,905, Cl. D16-133.000.
- Badgen, Albert, to Moore Industries, Inc. Instrument housing. 395,831, Cl. D10-52.000.
- Bao Song Precision Industry Co., Ltd.: *See—*
Wu, Jann Ming, 395,817, Cl. D8-377.000.
- Barackman, Ralph. Secure handgun mounting apparatus. 395,746, Cl. D3-201.000.
- Bartoli, Andrea: *See—*
Tabaroni, Roberto; and Bartoli, Andrea, 395,821, Cl. D9-416.000.
- Bauman, Stuart P.: *See—*
Hough, Jack Brian; and Bauman, Stuart P., 395,885, Cl. D14-188.000.
- Bausch & Lomb Incorporated: *See—*
Brune, Henri; and Conway, Simon M., 395,910, Cl. D16-326.000.
- Beasley, Ricky Ray. Garden tool. 395,807, Cl. D8-7.000.
- Belokin, Martin P.: *See—*
Belokin, Paul; Belokin, Martin P.; and Belokin, Norman P., 395,777, Cl. D6-567.000.
- Belokin, Norman P.: *See—*
Belokin, Paul; Belokin, Martin P.; and Belokin, Norman P., 395,777, Cl. D6-567.000.
- Belokin, Paul; Belokin, Martin P.; and Belokin, Norman P. Cosmetics rack. 395,777, Cl. D6-567.000.
- Bodylines Incorporated: *See—*
Sautter, William T.; and Sautter, Julie M., 395,754, Cl. D3-294.000.
- Boifava, Mario, to Antonio Zamperla s.p.a. Amusement ride car. 395,929, Cl. D21-136.000.
- Bradley, Paul: *See—*
Hern, Matthew D.; Bradley, Paul; Lake, Tom; and Carpenter, Mike, 395,893, Cl. D14-227.000.
- Hern, Matthew D.; Bradley, Paul; Lake, Tom; and Carpenter, Mike, 395,894, Cl. D14-227.000.
- Bridgestone Corporation: *See—*
Tsukagoshi, Tetsuhito, 395,859, Cl. D12-147.000.
- Brown, William P.; and Cameron, Jack A., to Summit Tool Company. Tire iron. 395,809, Cl. D8-31.000.
- Brune, Henri; and Conway, Simon M., to Bausch & Lomb Incorporated. Eyewear. 395,910, Cl. D16-326.000.
- Bucher, Anne Carole: *See—*
Keal, Maria Denise; and Bucher, Anne Carole, 395,822, Cl. D9-429.000.
- Calello, Patrick. Magnifier. 395,907, Cl. D16-135.000.
- Cameron, Jack A.: *See—*
Brown, William P.; and Cameron, Jack A., 395,809, Cl. D8-31.000.
- Canon Kabushiki Kaisha: *See—*
Inoue, Manabu; Hirotsawa, Toshiaki; and Morita, Osamu, 395,916, Cl. D18-56.000.
- Sakata, Osamu, 395,872, Cl. D14-107.000.
- Carpenter, Mike: *See—*
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- Hern, Matthew D.; Bradley, Paul; Lake, Tom; and Carpenter, Mike, 395,894, Cl. D14-227.000.
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- Oross, Glen A.; Tyneski, Frank M.; and Robertson, William H., 395,882, Cl. D14-137.000.
- Motta, Vincent C., to Warner-Lambert Company. Package. 395,820, Cl. D9-415.000.
- Nakajima, Tadao: *See—*
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- NEC Corporation: *See—*
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- Nichols, Michael: *See—*
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- Hatfield, Tinker Linn; and Smith, Mark J., 395,738, Cl. D2-947.000.
- Hatfield, Tinker Linn; and Smith, Mark J., 395,741, Cl. D2-953.000.
- Mervar, Robert, 395,739, Cl. D2-947.000.
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- Nishide, Satoshi: *See—*
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- Stahlhut, Alan Jeffrey; Powell, William Arthur; Witek, James Patrick; and Herring, Richard Allen, 395,864, Cl. D12-220.000.
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- Richter, Herbert. Compass. 395,833, Cl. D10-68.000.
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- Rosen, John B., to Advanced Multimedia Products Corporation. Handle grip. 395,896, Cl. D14-239.000.
- Rosenbaum, Barry, to Advanced Watch Company. Writing instrument. 395,917, Cl. D19-49.000.
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- Rossman, Jon R.; Hotaling, Bryan R.; and Conforti, Carl J., to First Years Inc. The. Thermometer. 395,832, Cl. D10-57.000.
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- Saul, Greg, to O'Sullivan Industries, Inc. Chair. 395,762, Cl. D6-366.000.
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- Hern, Matthew D.; Bradley, Paul; Lake, Tom; and Carpenter, Mike, 395,894, Cl. D14-227.000.
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- Wahlgren, Richard D. Lip shaped decal for a golf putter face. 395,922, Cl. D20-23.000.
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- Yoshino, Masahiro; and Yamazaki, Hiroshi, to Konica Corporation. Toner container. 395,914, Cl. D18-43.000.
- Zenith Products Corp.: See—
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Conard-Pyle Company, The: See—
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de Maistre, Jean: See—
Nadori, El Bachir, 10,480, Cl. Plt.-45,000.
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Pieters, Luc; DeMeyer, Caroline; Stofbergen, Arie; and Stofbergen, Leendert, 10,488, Cl. Plt.-88,800.
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Flemer, William, III, to Tresearch (Partnership). Clethra alnifolia plant named 'September Beauty'. 10,481, Cl. Plt.-54,100.
Gardner, Leith Marie: See—
Zaiger, Chris Floyd; Gardner, Leith Marie; Zaiger, Gary Neil; and Zaiger, Grant Gene, 10,479, Cl. Plt.-40,100.
Harkness, Robert, to Weeks Wholesale Rose Grower, Inc. Floribunda rose plant named 'Harflow'. 10,478, Cl. Plt.-22,000.
Holtkamp, Reinhold, Sr., to International Plant Breeding A.G. African violet plant named Rosalie, 10,482, Cl. Plt.-69,100.
Holtkamp, Reinhold, Sr., to International Plant Breeding A.G. African violet plant named Centennial, 10,483, Cl. Plt.-69,100.
International Plant Breeding A.G.: See—
Holtkamp, Reinhold, Sr., 10,482, Cl. Plt.-69,100.
Holtkamp, Reinhold, Sr., 10,483, Cl. Plt.-69,100.
Jepsen, Knud, to Knud Jepsen A/S. Kalanchoe plant named 'Caroline'. 10,486, Cl. Plt.-87,150.
John Bodger & Sons Company: See—
Lemon, David, 10,484, Cl. Plt.-87,120.
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Lemon, David, to John Bodger & Sons Company. Variety of geranium plant named 'Patriot Light Pink'. 10,484, Cl. Plt.-87,120.
Martins, Mario Luciano, to Bay City Flower Company, Inc. Cactaceae plant named Rudolph II. 10,487, Cl. Plt.-88,500.
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Nadori, El Bachir, to de Maistre, Jean. Mandarin tangerine called Nadorcott. 10,480, Cl. Plt.-45,000.
Pieters, Luc; DeMeyer, Caroline; Stofbergen, Arie; and Stofbergen, Leendert. Vriesea cultivar 'Cathy'. 10,488, Cl. Plt.-88,800.
Stofbergen, Arie: See—
Pieters, Luc; DeMeyer, Caroline; Stofbergen, Arie; and Stofbergen, Leendert, 10,488, Cl. Plt.-88,800.
Stofbergen, Leendert: See—
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7th DAY OF JULY, 1998

Cruts, Melvin Lee, to Tandem Computers Corporation. Method and apparatus for pattern sensitivity stress testing of memory systems. H1,741, Cl. 371-21.300.
Powell, Rodney M., to United States of America, Air Force. Synchronized rotating prism and CCD electrical readout color camera. H1,740, Cl. 348-207.000.
Procter & Gamble Company, The: See—
Reinhart, Richard Nicholas, Jr., H1,738, Cl. 2-49.100.

Reinhart, Richard Nicholas, Jr., to Procter & Gamble Company. The. Tear resistant disposable bib. H1,738, Cl. 2-49.100.
Tandem Computers Corporation: See—
Cruts, Melvin Lee, H1,741, Cl. 371-21.300.
United States of America
Air Force: See—
Powell, Rodney M., H1,740, Cl. 348-207.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 7, 1998

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2			CLASS 29			CLASS 49			CLASS 62			CLASS 87		
16	5,774,889	25.35	5,774,960	248	5,775,028	226.3	5,775,098	53.05	5,777,211	44	5,775,195			
22	5,774,890		5,774,961	360	5,775,029	274	5,775,099	54.33	5,777,212					
69	5,774,891		5,774,962	377	5,775,030	299	5,775,100	61.52	5,777,213					
	5,774,892	33 L	5,774,963			396	5,775,101	61.59	5,777,214	CLASS 89				
148	5,774,893	33 R	5,774,964		CLASS 51	431	5,775,102	64.41	5,777,215	26	5,777,256			
158	5,774,894	91.5	5,774,965	309	5,776,214	453	5,775,103	116	5,777,216	CLASS 91				
161.1	5,774,895		5,774,966		CLASS 52	539	5,775,104	118.1	5,777,217					
	5,774,896	235	5,774,967			597	5,775,105	121	5,777,218	299	5,775,196			
	5,774,897	243.54	5,774,968	3	5,775,031	605.1	5,775,106	146	5,777,219	433	5,775,197			
239	5,774,898	407.05	5,774,969	28	5,775,032	641.8	5,775,107	149	5,777,220		5,775,198			
326	5,774,899	447	5,774,970	33	5,775,033	752	5,775,108	273	5,777,221	498	5,775,199			
411	5,774,900	458	5,774,971	36.1	5,775,034	CLASS 62			304 R	5,777,222	CLASS 92			
421	5,774,901	525.06	5,774,972	100	5,775,035	6	5,775,109	432.1	5,777,223		5,775,200			
458	5,774,902	526.2	5,774,973	127.2	5,775,036	50.2	5,775,110	487	5,777,224	58.1	5,775,201			
		596	5,774,974	163	5,775,037	74	5,775,111	488	5,777,225	85 R	5,775,202			
		603.12	5,774,975	167.8	5,775,038	77	5,775,112	514.24	5,777,226	98 R	5,775,203			
227.1	5,774,903	623.1	5,774,976	169.5	5,775,039	89	5,775,113	514.38	5,777,227	128	5,775,203			
246.2	5,774,904		5,774,977	169.6	5,775,043	121	5,775,114	579	5,777,228	CLASS 96				
309	5,774,905	623.5	5,774,978	173.2	5,775,044	133	5,775,115	624	5,777,229	134	5,776,227			
510	5,774,906	732	5,774,979	211	5,775,045	155	5,775,116	632	5,777,230		5,776,228			
606	5,774,907	753	5,774,977	311.2	5,775,040	196.3	5,775,117	660	5,777,231	188	5,776,229			
617	5,774,908	821	5,774,978	455	5,775,041	225	5,775,118	664	5,777,232	CLASS 99				
622	5,774,909	857	5,774,979	520	5,775,042	259.1	5,775,119	753	5,777,233					
			5,774,980	590.1	5,775,046		5,775,120	765	5,777,234	299	5,775,204			
			5,774,981	596	5,775,047	314	5,775,121	769	5,777,235	322	5,775,205			
236.1	5,774,911	861	5,774,982	712	5,775,048	373	5,775,122	786	5,777,236	323	5,775,206			
419	5,774,912	888.2	5,774,983	720.1	5,775,049	407	5,775,123	861.28	5,777,237	394	5,775,207			
504.1	5,774,913	890.06	5,774,984	731.1	5,775,051	408	5,775,124	861.31	5,777,238	422	5,775,208			
602	5,774,914	893.32	5,774,985	746.11	5,775,052	410	5,775,125	862.634	5,777,240	426	5,775,209			
611	5,774,915	897.35	5,774,986		CLASS 53	488.126	5,775,126	862.68	5,777,239	CLASS 100				
632	5,774,916	898.03	5,774,987			603	5,775,127	863.11	5,777,241					
715	5,774,917		5,774,988		5,775,053	632	5,775,128	864.45	5,777,242	35	5,775,211			
				136.4	5,775,054	643	5,775,129	865.6	5,777,243	214	5,775,212			
				149	5,775,055	CLASS 65			865.8	5,777,244	215	5,775,213		
				371.2	5,775,056	31	5,776,219	865.9	5,777,245	306	5,775,214			
				397	5,775,057	112	5,776,220	CLASS 74			CLASS 101			
				399	5,775,058	121	5,776,221	473.28	5,775,165	27	5,775,215			
				429	5,775,059	121	5,776,222	475	5,775,166	4	5,775,216			
				445	5,775,061	384	5,776,223	480 R	5,775,167	93.18	5,775,217			
				453	5,775,062	437	5,776,223	489	5,775,168	120	5,775,218			
				463	5,775,063	CLASS 66			490.01	5,775,169	123	5,775,219		
				466	5,775,064	9 R	5,775,132	490.01	5,775,170	127.1	5,775,220			
				479	5,775,065	176	5,775,133	490.04	5,775,171	128.1	5,775,221			
				502	5,775,066	204	5,775,134	490.06	5,775,172	227	5,775,222			
				543	5,775,067	219	5,775,135	492	5,775,173	232	5,775,223			
				550	5,775,068	CLASS 68			502.2	5,775,173	415.1	5,775,225		
				567	5,775,069	15	5,775,136	542	5,775,174	CLASS 102				
					CLASS 54	133	5,775,137	545	5,775,175					
				71	5,775,071	140	5,775,138	572	5,775,176	312	5,777,257			
					CLASS 55			575.17	5,775,177	442	5,777,258			
				223	5,776,215	14	5,775,139	640	5,775,178	CLASS 104				
				356	5,776,216	85	5,775,140	CLASS 75			71	5,775,226		
				385.1	5,776,217	237	5,775,141	246	5,777,247	88.04	5,775,227			
				417	5,776,218	278	5,775,142	304	5,776,225	CLASS 105				
				482	5,776,219	355	5,775,143	500	5,776,226	73	5,775,228			
				495	5,776,218	367	5,775,144	CLASS 76			157.1	5,775,229		
					CLASS 56	369	5,775,145	61	5,775,179	199.20	5,775,230			
				8	5,775,073	379 R	5,775,146	85	5,775,180	413	5,775,231			
				10.2 R	5,775,072	408	5,775,147	112	5,775,181	458	5,775,232			
				11.9	5,775,074	416	5,775,149	CLASS 81			CLASS 106			
				15.2	5,775,075	1	5,776,224	57.3	5,775,182	1.23	5,776,231			
				109	5,775,076			57.36	5,775,183	31.26	5,776,232			
				212	5,775,077			60	5,775,184	31.43	5,776,233			
				255	5,775,078	CLASS 72			474	5,775,186	35	5,776,233		
				400.07	5,775,080	10.4	5,775,151			277.34	5,776,234			
					CLASS 57	39	5,775,152			28.1	5,776,235			
				59	5,775,079	58	5,775,153	1.11	5,775,187	287.17	5,776,236			
				90	5,775,082	248	5,775,154		5,775,188	437	5,776,237			
				135	5,775,083	260	5,775,155	CLASS 82			437	5,776,238		
				260	5,775,084	319	5,775,156			482	5,776,239			
				264	5,775,085	321	5,775,157	CLASS 83			482	5,776,240		
				408	5,775,086	325	5,775,158	76.1	5,775,189	498	5,776,241			
				908	5,775,087	348	5,775,159	92	5,775,190	617	5,776,242			
					5,775,087	349	5,775,160	488	5,775,191	737	5,776,243			
					CLASS 59	356	5,775,161	597	5,775,192	781	5,776,244			
				23	5,775,088	389.3	5,775,162	659	5,775,193		5,776,245			
					CLASS 60	405.12	5,775,163	698.31	5,775,194	CLASS 108				
				39.03	5,775,089	CLASS 73			454	5,777,248	59	5,775,233		
				39.05	5,775,091	1.03	5,777,202			147	5,775,234			
				39.161	5,775,092		5,777,203	604	5,777,249	CLASS 109				
				39.463	5,775,093	23.32	5,777,204	609	5,777,250	25	5,775,235			
				204	5,775,094	29.01	5,777,206			CLASS 110				
				209	5,775,095	31.05	5,777,207	613	5,777,253	185	5,775,236			
				226.2	5,775,096	31.06	5,777,208		5,777,254	234	5,775,237			
					5,775,097	40.7	5,777,209	661	5,777,255	282	5,775,238			

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CLASS 112		91 A	5,775,317	328	5,776,267	CLASS 172		CLASS 203	123	5,777,287	
65	5,775,239	110 R	5,775,318	656	5,776,268		5,775,436	1	5,776,319	CLASS 219	
102.5	5,775,240	299 R	5,775,319	689	5,776,269	20	5,775,437	29	5,776,320	121.43	5,777,289
	5,775,241			696	5,776,270	74	5,775,438	57	5,776,321	121.67	5,777,294
	5,775,242					831			5,776,322	132	5,777,295
CLASS 128						CLASS 173		CLASS 204		211	5,777,296
186	5,775,243	200.14	5,775,320	139	5,775,398	1	5,775,439	157.15	5,777,292	254	5,777,297
226	5,775,244	200.23	5,775,321			109	5,775,440	157.6	5,777,291	521	RE. 35.834
260	5,775,245	202.27	5,775,323			200	5,775,441	294	5,776,323	607	5,777,299
292	5,775,246	205.12	5,775,325	213 R	5,776,271			403	5,776,324	679	5,777,300
441	5,775,249	207.14	5,775,327	453	5,776,272			518	5,776,325	721	5,777,301
CLASS 114						CLASS 174		CLASS 205		CLASS 220	
103	5,775,249	662.06	5,775,328	62.2	5,776,273	16.3	5,777,259		5,776,327	4.22	5,775,530
258	5,775,250	695 R	5,775,329	89	5,776,276	34	5,777,260		5,776,328	212.5	5,775,531
267	5,775,248	731	5,775,330	150	5,776,275	35 R	5,777,261	96	5,776,329	269	5,775,534
363	5,775,251	741	5,775,331	158	5,776,277	40 R	5,777,262	687	5,776,330	318	5,775,535
CLASS 116						CLASS 175		CLASS 206		CLASS 221	
63 T	5,775,253	754	5,775,333	150	5,776,275	51	5,777,263		5,775,484	5	5,775,536
205	5,775,252	774	5,775,332	158	5,776,277	52.4	5,777,264	6.1	5,775,485	8	5,775,537
		845	5,775,334	213	5,776,278	61.1	5,777,266	38	5,775,486	307	5,775,538
CLASS 117						CLASS 176		CLASS 207		CLASS 222	
89	5,776,246	857	5,775,336	244.17	5,776,281	72 A	5,777,267		5,775,487	1	5,775,532
CLASS 118						74 A	5,777,268	308.1	5,775,488	95	5,775,533
202	5,776,248	869	5,775,337	247	5,776,282	78 A	5,777,269	308.2	5,775,489	102	5,775,534
308	5,776,249	898	5,775,338	256	5,776,283	99 B	5,777,270	308.3	5,775,490	105	5,775,541
326	5,776,250			260	5,776,284	107	5,777,271	312	5,775,491	175	5,775,542
411	5,776,251	73.5	5,775,340	263	5,776,285	112	5,777,272	315.1	5,775,492	181.1	5,775,543
413	5,776,252	201	5,775,341	279	5,776,286	113 R	5,777,273	315.3	5,775,493	207	5,775,544
723 CB	5,776,253	204	5,775,342	290	5,776,287	151 G	5,777,274	316.1	5,775,494	321.3	5,775,547
725	5,776,254	210	5,775,343	299	5,776,288	254	5,777,275	320	5,775,495	376	5,775,548
726	5,776,255	218	5,775,344	304.6	5,776,289	263	5,777,276	364	5,775,496	389	5,775,549
730	5,776,256	278	5,775,345	307.7	5,776,290	265	5,777,277	379	5,775,497	481.5	5,775,550
		329	5,775,346	324	5,776,291			387.1	5,775,500	567	5,775,551
CLASS 119						CLASS 180		CLASS 208		CLASS 223	
14.38	5,775,254	11	5,776,257	345	5,776,292	9.1	5,775,447		5,775,501	85	5,775,553
51.5	5,775,255	15	5,776,258	379	5,776,296	14.4	RE. 35.835	416	5,775,502	96	5,775,554
57.8	5,775,256	18	5,776,259	390	5,776,297	24.02	5,775,448	423	5,775,503		
	5,775,257	26	5,776,261	399	5,776,298	65.2	5,775,449	427	5,775,504		
161	5,775,258	56 D	5,775,262	497	5,776,299	68.1	5,775,450	470	5,775,505	270	5,775,556
173	5,775,259	72	5,775,347	554	5,776,300	181	5,775,451	495	5,775,506	310	5,775,557
246	5,775,260	183	5,775,350	577	5,776,301	187	5,775,452	508	5,775,507	324	5,775,558
482	5,775,261			583.1	5,776,303	214	5,775,453	511	5,775,508	521	5,775,559
706	5,775,263							514	5,775,509	637	5,775,560
771	5,775,264							517	5,775,510	676	5,775,561
CLASS 122						CLASS 181		CLASS 209		CLASS 224	
6 A	5,775,265	69	5,775,352	4	5,776,304	102	5,777,278		5,775,511	21	5,775,562
7 R	5,775,266	96	5,775,353	251	5,776,305	287	5,777,279	95	5,775,512	92	5,775,563
13.2	5,775,267							104	5,775,513	171	5,775,564
16	5,775,268					CLASS 182		138	5,775,514	187	5,775,565
511	5,775,269					22	5,775,454	169	5,775,515		
CLASS 123						93	5,775,455	206	5,775,516		
41.1	5,775,270	43	5,775,354	23	5,776,306	113	5,775,456	252	5,775,517	CLASS 227	
41.65	5,775,271	68.18	5,775,355	112	5,776,307	187	5,775,457	257.2	5,775,518	18	5,775,566
41.82 R	5,775,272	102	5,775,356	117	5,776,308	214	5,775,458	274	5,775,519		
46 B	5,775,273	115.05	5,775,357	158	5,776,309			287	5,775,520	CLASS 228	
73 A	5,775,274	115.11	5,775,358	198	5,776,310			306	5,775,521	1.1	5,775,567
90.11	5,775,275			199	5,776,311			342	5,775,522	180.1	5,775,568
	5,775,276			252	5,776,312			443	5,775,523	254	5,775,569
90.17	5,775,277			358.2	5,776,313			605	5,775,524		
90.41	5,775,278					CLASS 164		663	5,775,525	CLASS 229	
90.5	5,775,279					22	5,775,459	691	5,775,526	4.5	5,775,570
179.8	5,775,280					93	5,775,460	708	5,775,527	108.1	5,775,571
	5,775,281					113	5,775,461	710	5,775,528	379	5,775,572
	5,775,282					187	5,775,462	748	5,775,529	120.14	5,775,573
	5,775,283					214	5,775,463	749	5,775,530	120.18	5,775,574
184.53	5,775,284							777	5,775,531	125	5,775,575
188.6	5,775,285					CLASS 165		806	5,775,532	225	5,775,576
196 A	5,775,286					8	5,775,405		5,776,354	403	5,775,577
197.3	5,775,287					11.1	5,775,406				
298	5,775,288					42	5,775,407				
305	5,775,289					48.1	5,775,408				
335	5,775,290					80.2	5,775,409				
339.15	5,775,291					101	5,775,410				
396	5,775,292					110	5,775,411				
	5,775,293					133	5,775,412				
417	5,775,294					134.1	5,775,413				
422	5,775,295					151	5,775,414				
438	5,775,296					158	5,775,415				
467	5,775,297					202	5,775,416				
468	5,775,298					275	5,775,417				
470	5,775,299										
497	5,775,300					CLASS 166		CLASS 211		CLASS 232	
502	5,775,301					77.3	5,775,417		5,775,517	17	5,775,578
520	5,775,302					81.1	5,775,418		5,775,518	43.1	5,775,579
549	5,775,303					85.4	5,775,419		5,775,519		
575	5,775,304					98	5,775,420		5,775,520	CLASS 235	
644	5,775,305					135	5,775,421		5,775,521	7 A	5,777,302
	5,775,306						5,775,422		5,775,522	375	5,777,303
681	5,775,307					178	5,775,423		5,775,523	379	5,777,304
687	5,775,308					264	5,775,424			380	5,777,305
706	5,775,309					276	5,775,425			454	5,777,306
723	5,775,310					308	5,775,426			462	5,777,307
730	5,775,311					344	5,775,427				5,777,308
						381	5,775,428				5,777,309
CLASS 124						387	5,775,429				5,777,310
7	5,775,312	286.5	5,775,395								5,777,311
6	5,775,313	358	5,775,397								5,777,312
	5,775,314										5,777,313
CLASS 126						CLASS 169		CLASS 212		CLASS 236	
5 R	5,775,315	122	5,776,263			30	5,775,430		5,777,286	44 E	5,775,580
1 R	5,775,316	237	5,776,264			37	5,775,431				
		241	5,776,265			46	5,775,432				
		277	5,776,266			74	5,775,433				
CLASS 128						CLASS 171		CLASS 213		CLASS 237	
122	5,775,317	122	5,776,267			126	5,775,434				
237	5,775,318	237	5,776,268								
241	5,775,319	241	5,776,269								
		277	5,776,270								
CLASS 130						CLASS 173		CLASS 214		CLASS 238	
139	5,775,398					1	5,775,439				
						109	5,775,440				
						200	5,775,441				
CLASS 132						CLASS 174		CLASS 215		CLASS 239	

104	5,777,574	337	5,777,673	173	5,777,769	268	5,775,799	CLASS 366	5,778,028
207.18	5,777,575	338	5,777,674	179	5,777,770	295	5,775,800	2	5,778,029
345	5,777,467	350	5,777,675	180	5,777,771	310	5,775,801	76.8	5,778,030
352	5,777,577	397	5,777,676	182	5,777,772	316	5,775,802	130	5,778,031
357	5,777,578	401	5,777,677	208	5,777,773				5,778,032
373	5,777,579	405	5,777,680	234	5,777,775	CLASS 363		CLASS 367	
457	5,777,580	416	5,777,681	244	5,777,776	24	5,777,858	1	5,777,947
		452	5,777,682	245	5,777,777	34	5,777,859	20	5,777,954
		458	5,777,683		5,777,778	37	5,777,860	131	5,777,948
700 MS	5,777,581	468	5,777,684	270	5,777,779	34	5,777,861	136	5,777,949
	5,777,582	500	5,777,685	273	5,777,780	56	5,777,862		CLASS 376
	5,777,583	537	5,777,686	291	5,777,781	63	5,777,863	150	5,778,033
	5,777,584	563	5,777,687	296	5,777,782	98	5,777,864	353	5,778,034
702	5,777,585	571	5,777,688	385	5,777,783	124	5,777,865	361	5,778,035
	5,777,586	625	5,777,689	388	5,777,784	126	5,777,866		CLASS 377
752	5,777,587	699	5,777,690	425	5,777,785	134	5,777,867	26	5,778,037
		718	5,777,691	462	5,777,787	146	5,777,868		CLASS 378
		725	5,777,692	487	5,777,788				CLASS 379
		731	5,777,693	494	5,777,789	CLASS 364		4	5,778,038
6	5,777,588	743	5,777,694	536	5,777,790	132	5,777,870	4	5,778,039
84	5,777,589	744	5,777,695		5,777,791	147	5,777,871	53	5,778,040
89	5,777,590	752	5,777,696	584	5,777,792	149	5,777,872	58	5,778,041
92	5,777,591	806	5,777,697		5,777,793	154	5,777,873	58	5,778,042
94	5,777,592	809	5,777,698	632	5,777,794	159	5,777,874	65	5,778,043
97	5,777,593	830	5,777,699	633	5,777,795	184	5,777,875	98.7	5,778,044
102	5,777,594			634	5,777,796	187	5,777,876	159	5,778,045
104	5,777,595	CLASS 349		660	5,777,797	188	5,777,877	209	5,778,046
133	5,777,597	-	5,777,700	676	5,777,798	275.4	5,777,878		5,778,047
	5,777,598	44	5,777,701	689	5,777,799	468.01	5,777,879	CLASS 370	
136	5,777,599	47	5,777,702	692	5,777,800	468.03	5,777,880	3	RE 35,839
141	5,777,600	58	5,777,703	694	5,777,801	469.03	5,777,881	21	5,778,064
152	5,777,601	73	5,777,704	700	5,777,802	469.04	5,777,882	24	5,778,065
157	5,777,602	78	5,777,705	719	5,777,803	470.14	5,777,883	25	5,778,066
174	5,777,603	100	5,777,706	727	5,777,804	477.03	5,777,884	25	5,778,067
173	5,777,604	110	5,777,707	803	5,777,805	478.02	5,777,885	30	5,778,068
	5,777,605	120	5,777,708	823	5,777,806	478.03	5,777,886	33	5,778,069
174	5,777,606	138	5,777,709	845	5,777,807	478.13	5,777,887	37	5,778,070
189	5,777,607	143	5,777,710	845	5,777,808	478.13	5,777,888	38	5,778,071
199	5,777,608	156	5,777,711	855	5,777,809	488	5,777,889	39	5,778,072
206	5,777,609		5,777,712	883	5,777,810	489	5,777,890	49	5,778,073
212	5,777,610	CLASS 351				496	5,777,891	51	5,778,074
302	5,777,612	43	5,777,713	CLASS 360		499	5,777,892	51	5,778,075
333	5,777,614	47	5,777,714	15	5,777,811	500	5,777,893	51	5,778,076
334	5,777,615	158	5,777,715	48	5,777,812	507	5,777,894	57	5,778,077
339	5,777,616	169	5,777,716	66	5,777,813	510	5,777,895	68.3	5,778,078
418	5,777,617	177	5,777,717	73.08	5,777,814	550	5,777,896	71.5	5,778,079
	5,777,618	211	5,777,718	75	5,777,815		5,777,897	92	5,778,080
419	5,777,619	212	5,777,719	77.08	5,777,816	551.01	5,777,898	102	5,778,081
426	5,777,620	237	5,777,720	77.14	5,777,817	554	5,777,899	109	5,778,082
428	5,777,621	245	5,777,721	92	5,777,818	557	5,777,900	110	5,778,083
	5,777,622		5,777,722	96.5	5,777,819	559	5,777,901	117	5,778,084
430	5,777,623	53	5,777,723	97.02	5,777,820	571.02	5,777,902	117	5,778,085
434	5,777,625		5,777,724	97.03	5,777,821	572	5,777,903	122.04	5,778,086
443	5,777,626	67	5,777,725	102	5,777,822	578	5,777,904	122.06	5,778,087
469	5,777,627		5,777,726	103	5,777,823	579	5,777,905	128.06	5,778,088
474	5,777,628		5,777,727		5,777,824	579	5,777,906	131.1	5,778,089
506	5,777,629	38	5,777,728	104	5,777,825	709.11	5,777,907	134.1	5,778,090
507	5,777,630	73.1	5,777,729	113	5,777,826	709.12	5,777,908	134.1	5,778,091
509	5,777,631	222	5,777,730	126	5,777,827	715.08	5,777,909	134.1	5,778,092
523	5,777,632	237	5,777,731	128	5,777,828	724.011	5,777,910	134.1	5,778,093
			5,777,732	132	5,777,829	724.1	5,777,911	134.1	5,778,094
			5,777,733		5,777,830	724.13	5,777,912	134.1	5,778,095
3	5,777,633	243	5,777,734	135	5,777,831	724.16	5,777,913	134.1	5,778,096
7	5,777,634	328	5,777,735		5,777,832	724.19	5,777,914	134.1	5,778,097
8	5,777,635	341	5,777,736		5,777,833	724.2	5,777,915	134.1	5,778,098
10	5,777,636	346	5,777,737	30	5,777,834	737	5,777,916	134.1	5,778,099
12	5,777,637	350	5,777,738	66	5,777,835	737	5,777,917	134.1	5,778,100
	5,777,638	354	5,777,739	93	5,777,836	757	5,777,918	134.1	5,778,101
15	5,777,639	357	5,777,740	94	5,777,837	767	5,777,919	134.1	5,778,102
	5,777,641		5,777,741	160	5,777,838	786.04	5,777,920	134.1	5,778,103
68	5,777,644	359	5,777,742	234	5,777,839		5,777,921	134.1	5,778,104
86	5,777,646		5,777,743	311	5,777,840		5,777,922	134.1	5,778,105
	5,777,647	370	5,777,744	519	5,777,841		5,777,923	134.1	5,778,106
87	5,777,648	372	5,777,745	603	5,777,842	104	5,777,924	134.1	5,778,107
94	5,777,649	373	5,777,746	641	5,777,843	145	5,777,925	134.1	5,778,108
103	5,777,650	380	5,777,747	684	5,777,844	154	5,777,926	134.1	5,778,109
120	5,777,651	401	5,777,748	685	5,777,845	185.05	5,777,927	134.1	5,778,110
123	5,777,652	438	5,777,749	690	5,777,846	185.11	5,777,928	134.1	5,778,111
171	5,777,653		5,777,750	704	5,777,847		5,777,929	134.1	5,778,112
	5,777,654	261.3	5,777,751	705	5,777,848		5,777,930	134.1	5,778,113
187	5,777,655	298	5,777,752	725	5,777,849	185.17	5,777,931	134.1	5,778,114
211	5,777,657		5,777,753	730	5,777,850	185.19	5,777,932	134.1	5,778,115
218	5,777,658	407	5,777,754	736	5,777,851	189.01	5,777,933	134.1	5,778,116
251	5,777,659	444	5,777,755	748	5,777,852	189.05	5,777,934	134.1	5,778,117
252	5,777,660	455	5,777,756	769	5,777,853		5,777,935	134.1	5,778,118
260	5,777,661	456	5,777,757	800	5,777,854	189.11	5,777,936	134.1	5,778,119
		457	5,777,758	816	5,777,855	200	5,777,937	134.1	5,778,120
		536	5,777,759		5,777,856	201	5,777,938	134.1	5,778,121
6	5,777,662	CLASS 348				203	5,777,939	134.1	5,778,122
15	5,777,663						5,777,940	134.1	5,778,123
16	5,777,664	CLASS 359				207	5,777,941	134.1	5,778,124
20	5,777,665	7	5,777,760	18	5,777,790	220	5,777,942	134.1	5,778,125
43	5,777,666	110	5,777,761	31	5,777,791	222	5,777,943	134.1	5,778,126
64	5,777,667	123	5,777,762	61	5,777,792	226	5,777,944	134.1	5,778,127
83	5,777,668	130	5,777,763	66	5,777,793	230.02	5,777,945	134.1	5,778,128
308	5,777,669	131	5,777,764	80	5,777,794	230.03	5,777,946	134.1	5,778,129
311	5,777,670	158	5,777,765	150	5,777,795	230.06	5,777,947	134.1	5,778,130
312	5,777,671		5,777,766	225	5,777,796		5,777,948	134.1	5,778,131
316	5,777,672	172	5,777,767	226	5,777,797		5,777,949	134.1	5,778,132

2	5,778,111	384	5,778,209	222	5,775,828	145	5,776,416	CLASS 426	5,776,623
3	5,778,112	394	5,778,210			171	5,776,417	1	5,776,615
12	5,778,113	500	5,778,211	CLASS 403		177	5,776,419	2	5,776,624
16	5,778,115		5,778,212	119	5,775,829	184	5,776,420	36	5,776,625
24	5,778,116	551	5,778,213	288	5,775,830	197	5,776,421	26	5,776,626
37	5,778,117	558	5,778,214	337	5,775,831	307	5,776,422	30	5,776,627
49	5,778,119		5,778,215					231	5,776,628
55	5,778,121	591	5,778,216	CLASS 404		111	5,776,426	233	5,776,629
609	5,778,122		5,778,217	6	5,775,832	239.2	5,776,423	233	5,776,630
611	5,778,123		5,778,218	9	5,775,833	593	5,776,424	233	

5,776,684	60	5,776,788	CLASS 442	18	5,776,894	65	5,776,997
5,776,685		5,776,789		12	5,776,895	111	5,776,998
5,776,686			CLASS 438	110	5,776,896		
5,776,687	6	5,776,790		135	5,776,897	CLASS 523	
5,776,688	15	5,776,791		267	5,776,898		
5,776,689	31	5,776,792		14	5,776,899	106	5,776,999
5,776,690	35	5,776,793	CLASS 445	15	5,776,900		5,777,000
5,776,691	46	5,776,794		16	5,776,901	205	5,777,001
5,776,692	66	5,776,795		18	5,776,902	213	5,777,002
5,776,693	106	5,776,796	CLASS 446	27	5,776,903	223	5,777,003
5,776,694	107	5,776,797		31	5,776,904	310	5,777,004
5,776,695	112	5,776,798		44	5,776,905		
5,776,696	118	5,776,799			5,776,906	CLASS 524	
5,776,697	122	5,776,800		40	5,776,907		5,777,005
5,776,699	123	5,776,801		46	5,776,908	53	5,777,008
5,776,700		5,776,802	CLASS 451	52	5,776,909	103	5,777,009
5,776,704	149	5,776,803		54	5,776,910	114	5,777,010
5,776,707	162	5,776,804		58	5,776,911	164	5,777,011
5,776,708	182	5,776,805		77	5,776,912	188	5,777,012
5,776,709	199	5,776,806		78	5,776,913	253	5,777,013
5,776,710	202	5,776,807		159	5,776,914	261	5,777,014
5,776,711	243	5,776,808		161	5,776,915	274	5,777,015
5,776,712	255	5,776,809		162	5,776,916	308	5,777,017
5,776,713	258	5,776,810		167	5,776,917	354	5,777,018
5,776,714	264	5,776,811		172	5,776,918	397	5,777,019
5,776,715	266	5,776,812		176	5,776,919	404	5,777,020
5,776,716	309	5,776,813		185	5,776,920	451	5,777,021
5,776,717	364	5,776,814		200	5,776,921	527	5,777,022
5,776,718	401	5,776,815		210	5,776,922	590	5,777,023
5,776,719	427	5,776,816	CLASS 452	215	5,776,923	745	5,777,025
5,776,720	479	5,776,817		221	5,776,924	837	5,777,026
5,776,721	482	5,776,818		232.8	5,776,925		
5,776,722	574	5,776,819	CLASS 454	235.2	5,776,926	CLASS 525	
5,776,723	585	5,776,820		237.5	5,776,927		5,777,027
5,776,724	586	5,776,821		245	5,776,928	58	5,777,028
5,776,725	592	5,776,822		248	5,776,929	86	5,777,029
5,776,726	614	5,776,823	CLASS 455	250	5,776,930	92 F	5,777,030
5,776,727	618	5,776,824		252	5,776,931	93	5,777,031
5,776,728	622	5,776,825		255	5,776,932	98	5,777,033
5,776,729	627	5,776,826		263	5,776,933	182	5,777,034
5,776,730	631	5,776,827		269	5,776,934	228	5,777,035
5,776,731	641	5,776,828		279	5,776,935	274	5,777,036
5,776,732	643	5,776,829		291	5,776,936	285	5,777,037
5,776,733	653	5,776,830		300	5,776,937	288	5,777,038
5,776,734	669	5,776,831		307	5,776,938	295	5,777,039
5,776,735	672	5,776,832		312	5,776,939	314	5,777,040
5,776,736	692	5,776,833		317	5,776,940	329.9	5,777,041
5,776,737	712	5,776,834		328	5,776,941	333.7	5,777,043
5,776,738	717	5,776,835		330	5,776,942	339	5,777,044
5,776,739	767	5,776,836		340	5,776,943	438	5,777,045
5,776,740		5,776,837		343	5,776,944	444	5,777,046
5,776,741	15	5,775,920	CLASS 439	345	5,776,945	478	5,777,047
5,776,742	21	5,775,921		351	5,776,946	509	5,777,048
5,776,743	23	5,775,922		351	5,776,947		
5,776,744	23	5,775,923		359	5,776,948	CLASS 526	
5,776,745	79	5,775,924		373	5,776,949		5,777,049
5,776,746	98	5,775,925		394	5,776,950	64	5,777,050
5,776,747	157	5,775,926		407	5,776,951	123.1	5,777,051
5,776,748	188	5,775,927		410	5,776,952	279	5,777,052
5,776,749	246	5,775,928		418	5,776,953	301	5,777,053
5,776,750	260	5,775,929		419	5,776,954	323.2	5,777,054
5,776,751	352	5,775,930		422	5,776,955	348.1	5,777,055
5,776,752	358	5,775,931		424	5,776,956	351	5,777,056
5,776,753	378	5,775,932		440	5,776,957		
5,776,754	378	5,775,933	CLASS 460	445	5,776,958	CLASS 527	
5,776,755	419	5,775,934		479	5,776,959		5,777,057
5,776,756	427	5,775,935		558	5,776,960	9	5,777,058
5,776,757	488	5,775,936		586	5,776,961	14	5,777,059
5,776,758	489	5,775,937		594	5,776,962	25	5,777,060
5,776,759	495	5,775,938		605	5,776,963	48	5,777,061
5,776,760	502	5,775,939		652	5,776,964	698	5,777,062
5,776,761	507	5,775,940		698	5,776,965	778	5,777,063
5,776,762	517	5,775,941		778	5,776,966		
5,776,763	528	5,775,942		778	5,776,967	CLASS 528	
5,776,764	590	5,775,943		778	5,776,968		5,777,064
5,776,765	607	5,775,944		778	5,776,969	14	5,777,065
5,776,766	608	5,775,945		778	5,776,970	25	5,777,066
5,776,767	610	5,775,946		778	5,776,971	48	5,777,067
5,776,768	630	5,775,947		778	5,776,972	72	5,777,068
5,776,769	637	5,775,948		778	5,776,973	74	5,777,069
5,776,770	640	5,775,949		778	5,776,974	196	5,777,070
5,776,771	668	5,775,950		778	5,776,975	272	5,777,071
5,776,772	701	5,775,951		778	5,776,976	310	5,777,072
5,776,773	717	5,775,952		778	5,776,977		
5,776,774	719	5,775,953		778	5,776,978	CLASS 529	
5,776,775	752	5,775,954		778	5,776,979		5,777,073
5,776,776	843	5,775,955	CLASS 436	715	5,776,980	306	5,777,074
5,776,777	852	5,775,956		715	5,776,981	328	5,777,075
5,776,778	884	5,775,957		715	5,776,982	330	5,777,076
5,776,779		5,775,958		715	5,776,983	333	5,777,077
5,776,780		5,775,959		715	5,776,984	350	5,777,078
5,776,781		5,775,960		715	5,776,985		5,777,079
5,776,782		5,775,961		715	5,776,986	CLASS 530	
5,776,783		5,775,962		715	5,776,987		5,777,080
5,776,784		5,775,963		715	5,776,988	378	5,777,081
5,776,785		5,775,964		715	5,776,989	382	5,777,082
				715	5,776,990	387.3	5,777,083
				715	5,776,991	388.22	5,777,084
				715	5,776,992	388.23	5,777,085
				715	5,776,993	500	5,777,086
				715	5,776,994		
				715	5,776,995	CLASS 531	
				715	5,776,996		5,777,087
				715	5,776,997	CLASS 532	
				715	5,776,998		5,777,088
				715	5,776,999	CLASS 533	
				715	5,777,000		5,777,089

CLASS 536			399	5,777.148	CLASS 606			5,776.194	5,778.378			
4.1	5,777.090	460	5,777.149	401	5,776.061	1	5,776.126	5,776.195	5,778.379			
20	5,777.091			407	5,776.062	2	5,776.127	5,776.196	5,778.380			
23.1	5,777.092	CLASS 560			408	5,776.063	28	5,776.197	104	5,778.381		
23.5	5,777.093	60	5,777.150	414	5,776.064	31	5,776.129	5,776.198	200	5,778.382		
	5,777.094	61	5,777.151	443	5,776.065	48	5,776.128	5,776.199	5,778.383			
23.7	5,777.095	82	5,777.152		5,776.066		5,776.136	20	5,776.200	5,778.384		
24.3	5,777.096	158	5,777.153		5,776.067	49	5,776.131	21	5,776.201	200.1	5,778.386	
24.31	5,777.097	172	5,777.154	483	5,776.070	56	5,776.132	21	5,776.202	202	5,778.387	
25.41	5,777.098	244	5,777.155	493	5,776.071	57	5,776.133	23	5,776.203	203	5,778.388	
25.42	5,777.099	245	5,777.156	515	5,776.069	61	5,776.134	23	5,776.204	204	5,778.389	
26.9	5,777.100	248	5,777.157	518	5,776.072	79	5,776.135	55	5,776.205	5,778.390		
56	5,777.101	CLASS 562			546	5,776.073	88	5,776.136	5,778.391			
124	5,777.102	442	5,777.158	549	5,776.074	107	5,776.138	CLASS 673			5,778.392	
CLASS 540			450	5,777.159	564	5,776.075	107	5,776.139	53.05	5,777.210	205	5,778.393
200	5,777.103	465	5,777.160	573	5,776.076	108	5,776.140	CLASS 701			5,778.394	
215	5,777.104	485	5,777.161	576	5,776.077		5,776.141	22	5,778.326	501	5,778.397	
456	5,777.105	576	5,777.161	585	5,776.078	130	5,776.142	23	5,778.327	513	5,778.398	
546	5,777.108	CLASS 564			593	5,776.081	142	5,776.143	29	5,778.328	514	5,778.400
CLASS 544			167	5,777.162	594	5,776.082	144	5,776.144	55	5,778.329	527	5,778.403
2	5,777.110	301	5,777.163	CLASS 601			148	5,776.145	62	5,778.330	530	5,778.402
9	5,777.111	399	5,777.168	23	5,776.083	159	5,776.151	66	5,778.331	531	5,778.404	
121	5,777.112	487	5,777.165	26	5,776.084	167	5,776.152	117	5,778.332	532	5,778.405	
126	RE. 35.840	491	5,777.166	99	5,776.085	169	5,776.153	212	5,778.333	CLASS 708		5,778.406
198	5,777.113	497	5,777.167			170	5,776.154	CLASS 704			5,778.407	
230	5,777.114	CLASS 568			16	5,776.086	172	5,776.155	219	5,778.334	1	5,778.406
242	5,777.115	17	5,777.169	19	5,776.087	186	5,776.158	222	5,778.335	2	5,778.407	
264	5,777.116	322	5,777.170	16	5,776.088	190	5,776.159	223	5,778.336	3	5,778.408	
267	5,777.117	324	5,777.171	27	5,776.089	191	5,776.160	224	5,778.337	4	5,778.410	
318	5,777.118	332	5,777.172	28	B1 269.748	194	5,776.161	244	5,778.338	5	5,778.412	
356	5,777.119	366	5,777.173	28	5,776.090	198	5,776.162	256	5,778.340		5,778.413	
CLASS 546			615	5,777.174	B1 298.013	411	5,776.125	256	5,778.341		5,778.414	
2	5,777.120	619	5,777.175	CLASS 604			5	5,776.164	275	5,778.342		5,778.416
133	5,777.121	631	5,777.176	4	5,776.091	5	5,776.165	2	5,778.343	100	5,778.417	
216	5,777.122	679	5,777.177	20	5,776.093	7	5,776.166	9	5,778.346	112	5,778.418	
225	5,777.123	728	5,777.180	43	5,776.094	9	5,776.167	408	5,778.347	113	5,778.419	
241	5,777.124	812	5,777.181	49	5,776.092	27	5,776.168	409	5,778.348	118	5,778.423	
244	5,777.126	862	5,777.182	22	5,776.096	36	5,776.169			122	5,778.425	
CLASS 548			905	5,777.183	43	5,776.097	46	5,776.170	CLASS 707			5,778.426
146	5,777.127	135	5,777.184	74	5,776.098	48	5,776.171	1	5,778.349	128	5,778.427	
252	5,777.128	164	5,777.185	102	5,776.099	56	5,776.172	9	5,778.350	115	5,778.428	
455	5,777.129	CLASS 570			104	5,776.100	67	5,776.173	408	5,778.347	118	5,778.423
543	5,777.131	135	5,777.184	96	5,776.098	89	5,776.174	409	5,778.348	122	5,778.425	
561	5,777.132	102	5,776.100	104	5,776.101	100	5,776.175			128	5,778.426	
CLASS 549			132	5,776.103	101	5,776.176	108	5,776.177	1	5,778.349	129	5,778.427
218	5,777.133	269	5,777.186	174	5,776.104	101	5,776.176	108	5,776.178	137	5,778.434	
276	5,777.134	449	5,777.187	180	5,776.106	127	5,776.178	137	5,776.179	141	5,778.436	
332	5,777.135	648	5,777.188	198	5,776.107	247	5,776.108	3	5,778.358	146	5,778.438	
417	5,777.136	709	5,777.189	251	5,776.109	256	5,776.109	4	5,778.359	153	5,778.439	
435	5,777.137	CLASS 585			264	5,776.110	1	5,776.180	5	5,778.360	154	5,778.440
436	5,777.138	202	5,777.190	280	5,776.111	280	5,776.111	5	5,778.361	159	5,778.442	
510	5,777.139	205	5,777.191	281	5,776.112	281	5,776.112	6	5,778.362	162	5,778.443	
CLASS 554			208	5,777.192	282	5,776.113	282	5,776.113	9	5,778.363	163	5,778.444
92	5,777.140	18	5,776.047	283	5,776.114	283	5,776.114	9	5,778.364	167	5,778.445	
175	5,777.141	21	5,776.048	317	5,776.115	317	5,776.115	10	5,778.365	169	5,778.447	
213	5,777.142	111	5,776.049	280	5,776.116	280	5,776.116	100	5,778.366	CLASS 800		5,779.193
CLASS 556			117	5,776.050	281	5,776.117	281	5,776.117	100	5,778.367	2	5,779.194
179	5,777.143	194	5,776.052	282	5,776.118	282	5,776.118	100	5,778.368	200	5,779.195	
407	5,777.144	195	5,776.053	283	5,776.119	283	5,776.119	100	5,778.369	200	5,779.196	
466	5,777.145	199	5,776.054	339	5,776.120	339	5,776.120	101	5,778.370	200	5,779.197	
472	5,777.146	210	5,776.055	385.1	5,776.121	385.1	5,776.121	101	5,778.371	205	5,779.198	
CLASS 558			301	5,776.056	385.2	5,776.122	385.2	5,776.122	101	5,778.372	250	5,779.199
122	5,777.147	338	5,776.057	403	5,776.123	403	5,776.123	103	5,778.373	250	5,779.200	
		340	5,776.058		5,776.124		5,776.124	103	5,778.374	250	5,779.201	
		340	5,776.059					103	5,778.375	250	5,779.202	

CLASSIFICATION OF PATENTS

D8—	644	395,802	D10—	4	395,825	130	395,848	D15—	7	395,899	D20—	11	395,921		
	665	395,803		520	395,826		110		395,849	229		395,895	49	395,917	
	679	395,804			395,827		118	395,850	239	395,896	51	395,919			
	692	395,805		522	395,828		125	395,851	109	395,873	51	395,919			
	694	395,806		573	395,829		128	395,852	114	395,874	65	395,920			
	7	395,807		4	395,830		130	395,853		395,875	7	395,921			
	14	395,808		46	395,834		131	395,854	114.1	395,877	249	395,898			
	31	395,809		52	395,831		147	395,855		28	395,900	23	395,922		
	40	395,810		57	395,832			395,856	114.7	395,878	148	395,901	D21—	28	395,923
	72	395,811		68	395,833			395,857	115	395,879	150	395,902		7	395,924
D9—	321	395,812	D11—	85	395,835	173	395,858	D16—	101	395,903	D22—	13	395,925		
	330	395,813		106	395,836				395,859	131		395,904	108	395,926	
	334	395,814		119	395,837		173	395,860	137	395,882		133	395,905	120	395,927
	356	395,815		126	395,838		187	395,861		395,883		135	395,906		395,928
		395,816		132	395,839		209	395,862	168	395,884	135	395,907	136	395,929	
	377	395,817		79	395,840		209	395,863	188	395,885	209	395,908	157	395,930	
	378	395,818		81	395,841		211	395,864	214	395,888	242	395,909	180	395,931	
	337	395,819			395,842		220	395,864	217	395,886	326	395,910	185	395,932	
	415	395,820			395,843			395,865	218	395,887		395,911	191	395,933	
	416	395,821		83	395,844		D14—	317	395,866		395,889	D17—	14	395,912	D23—
429	395,822	90	395,845	100	395,867			395,890	17	395,913					
430	395,823	131.1	395,846	106	395,868			395,891	43	395,914					
	395,824	92	395,847		395,869		395,892	55	395,915						
						107	395,870	224	395,892						
								227	395,893	56	395,916				

CLASSIFICATION OF PLANTS

P—	11	10,477	40.1	10,479	54.1	10,481	87.15	10,485	88.5	10,487
	22	10,478	45	10,480	69.1	10,482	87.12	10,484	88.8	10,488

STATUTORY INVENTION REGISTRATIONS

2—	49.1	H1,738	348—	207	H1,740	371—	21.3	H1,741	1	
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PATENTS

01 :	5,775,257	06 :	5,774,891	5,775,483	5,776,065	5,776,563	5,777,073
	5,776,060		5,774,893	5,775,496	5,776,083	5,776,594	5,777,079
	5,777,236		5,774,898	5,775,498	5,776,090	5,776,612	5,777,085
	5,777,428		5,774,901	5,775,543	5,776,096	5,776,679	5,777,092
	5,778,227		5,774,908	5,775,551	5,776,097	5,776,683	5,777,096
04 :	5,774,935		5,774,913	5,775,570	5,776,099	5,776,687	5,777,100
	5,775,127		5,774,916	5,775,577	5,776,106	5,776,689	5,777,153
	5,775,398		5,774,919	5,775,580	5,776,114	5,776,690	5,777,202
	5,775,472		5,774,922	5,775,591	5,776,116	5,776,698	5,777,210
	5,775,590		5,774,956	5,775,593	5,776,124	5,776,699	5,777,218
	5,776,624		5,774,966	5,775,634	5,776,134	5,776,711	5,777,245
	5,775,632		5,774,974	5,775,645	5,776,136	5,776,716	5,777,255
	5,775,660		5,774,989	5,775,664	5,776,138	5,776,717	5,777,269
	5,775,723		5,774,992	5,775,673	5,776,139	5,776,718	5,777,273
	5,775,751		5,775,006	5,775,684	5,776,141	5,776,719	5,777,276
	5,776,054		5,775,013	5,775,707	5,776,147	5,776,723	5,777,289
	5,776,182		5,775,015	5,775,731	5,776,154	5,776,732	5,777,292
	5,776,387		5,775,020	5,775,743	5,776,159	5,776,743	5,777,314
	5,776,429		5,775,033	5,775,770	5,776,167	5,776,753	5,777,323
	5,776,538		5,775,034	5,775,771	5,776,172	5,776,759	5,777,325
	5,776,798		5,775,038	5,775,782	5,776,191	5,776,762	5,777,336
	5,776,969		5,775,074	5,775,792	5,776,192	5,776,772	5,777,354
	5,777,265		5,775,084	5,775,799	5,776,193	5,776,776	5,777,360
	5,777,345		5,775,088	5,775,801	5,776,199	5,776,781	5,777,370
	5,777,361		5,775,142	5,775,808	5,776,205	5,776,785	5,777,374
	5,777,373		5,775,169	5,775,825	5,776,259	5,776,787	5,777,379
	5,777,419		5,775,170	5,775,914	5,776,296	5,776,795	5,777,383
	5,777,432		5,775,176	5,775,928	5,776,340	5,776,796	5,777,397
	5,777,498		5,775,183	5,775,931	5,776,353	5,776,800	5,777,400
	5,777,528		5,775,215	5,775,945	5,776,359	5,776,810	5,777,403
	5,777,534		5,775,221	5,775,951	5,776,361	5,776,811	5,777,421
	5,777,706		5,775,249	5,775,963	5,776,371	5,776,821	5,777,429
	5,777,903		5,775,258	5,775,965	5,776,377	5,776,831	5,777,433
	5,777,962		5,775,309	5,775,983	5,776,388	5,776,834	5,777,443
	5,778,070		5,775,313	5,775,987	5,776,400	5,776,844	5,777,449
	5,778,203		5,775,315	5,775,996	5,776,409	5,776,850	5,777,456
	5,778,207		5,775,320	5,776,007	5,776,448	5,776,859	5,777,462
	5,778,238		5,775,327	5,776,010	5,776,451	5,776,863	5,777,479
	5,778,313		5,775,329	5,776,011	5,776,456	5,776,877	5,777,484
	5,778,374		5,775,333	5,776,017	5,776,457	5,776,887	5,777,487
	5,778,391		5,775,334	5,776,018	5,776,479	5,776,905	5,777,488
	5,778,393		5,775,339	5,776,021	5,776,493	5,776,919	5,777,510
	5,778,416		5,775,342	5,776,038	5,776,498	5,776,925	5,777,512
05 :	5,775,023		5,775,346	5,776,039	5,776,504	5,776,927	5,777,514
	5,775,112		5,775,372	5,776,042	5,776,512	5,776,933	5,777,567
	5,775,924		5,775,379	5,776,044	5,776,532	5,776,962	5,777,579
	5,776,082		5,775,452	5,776,057	5,776,551	5,776,968	5,777,580
	5,777,080		5,775,456	5,776,058	5,776,553	5,776,990	5,777,586
	5,777,171		5,775,473	5,776,063	5,776,556	5,777,060	5,777,590

5,777,603	5,778,383	5,776,373	5,776,540	5,778,153	5,776,567
5,777,615	5,778,392	5,776,661	5,776,806	5,778,191	5,776,901
5,777,621	5,778,395	5,776,784	5,776,809	5,778,192	5,777,131
5,777,631	5,778,397	5,777,179	5,776,815	5,778,304	5,777,185
5,777,638	5,778,401	5,777,390	5,776,824	5,778,320	5,777,257
5,777,648	5,778,404	5,776,861	5,776,828	5,778,328	5,775,167
5,777,660	5,778,406	5,774,924	5,776,836	5,778,330	5,775,494
5,777,665	5,778,412	5,774,945	5,777,739	5,774,972	5,775,663
5,777,689	5,778,418	5,775,003	5,777,905	5,774,977	5,777,240
5,777,704	5,778,419	5,775,091	5,777,937	5,774,976	5,775,181
5,777,726	5,778,427	5,775,093	5,778,007	5,775,061	5,775,336
5,777,729	5,778,434	5,775,098	5,778,158	5,775,089	5,775,495
5,777,734	5,778,439	5,775,111	5,778,170	5,775,090	5,776,088
5,777,740	5,778,440	5,775,237	5,778,309	5,775,198	5,776,160
5,777,743	5,778,442	5,775,256	5,774,915	5,775,035	5,776,442
5,777,757	5,778,446	5,775,343	5,774,925	5,775,203	5,776,446
5,777,760	5,778,446	5,775,358	5,774,930	5,775,293	5,775,100
5,777,768	5,774,957	5,775,537	5,774,932	5,775,318	5,776,581
5,777,775	5,775,160	5,775,554	5,774,955	5,775,490	5,776,586
5,777,778	5,775,344	5,775,558	5,774,994	5,775,658	5,776,676
5,777,782	5,775,418	5,775,559	5,775,027	5,775,705	5,776,686
5,777,811	5,775,469	5,775,567	5,775,039	5,775,815	5,776,745
5,777,813	5,775,525	5,775,595	5,775,055	5,775,939	5,776,797
5,777,815	5,775,668	5,775,633	5,775,057	5,776,015	5,776,985
5,777,824	5,775,677	5,775,669	5,775,076	5,776,212	5,777,093
5,777,825	5,776,062	5,775,735	5,775,158	5,776,554	5,777,356
5,777,830	5,776,091	5,775,741	5,775,161	5,776,695	5,777,476
5,777,845	5,776,130	5,775,762	5,775,205	5,776,733	5,777,581
5,777,853	5,776,243	5,775,858	5,775,217	5,776,769	5,777,717
5,777,854	5,776,345	5,775,901	5,775,228	5,776,928	5,778,059
5,777,871	5,776,655	5,775,910	5,775,232	5,776,939	5,778,118
5,777,872	5,776,708	5,775,934	5,775,254	5,777,009	5,778,132
5,777,887	5,776,819	5,775,964	5,775,259	5,777,263	5,778,368
5,777,888	5,776,890	5,776,020	5,775,371	5,777,270	5,778,368
5,777,917	5,776,913	5,776,045	5,775,387	5,777,409	5,778,487
5,777,919	5,777,011	5,776,075	5,775,447	5,777,540	5,778,506
5,777,923	5,777,238	5,776,084	5,775,468	5,777,540	5,778,506
5,777,924	5,777,321	5,776,140	5,775,502	5,777,685	5,778,531
5,777,926	5,777,481	5,776,148	5,775,506	5,777,730	5,778,531
5,777,940	5,777,509	5,776,180	5,775,520	5,777,769	5,778,531
5,777,956	5,777,596	5,776,297	5,775,521	5,777,840	5,778,531
5,777,990	5,777,625	5,776,298	5,775,621	5,777,844	5,778,531
5,777,996	5,777,628	5,776,514	5,775,625	5,777,862	5,778,531
5,777,997	5,777,754	5,776,701	5,775,665	5,777,867	5,778,531
5,778,009	5,777,805	5,776,706	5,775,667	5,777,881	5,778,531
5,778,011	5,777,823	5,776,720	5,775,670	5,777,881	5,778,531
5,778,022	5,777,898	5,776,780	5,775,756	5,777,881	5,778,531
5,778,024	5,777,987	5,776,814	5,775,794	5,777,881	5,778,531
5,778,029	5,778,019	5,776,921	5,775,817	5,777,881	5,778,531
5,778,041	5,778,087	5,777,137	5,775,826	5,777,881	5,778,531
5,778,046	5,778,168	5,777,272	5,775,838	5,777,881	5,778,531
5,778,047	5,778,174	5,777,362	5,775,842	5,777,881	5,778,531
5,778,063	5,778,332	5,777,477	5,775,860	5,777,881	5,778,531
5,778,066	5,778,356	5,777,483	5,775,863	5,777,881	5,778,531
5,778,068	5,778,377	5,777,544	5,775,869	5,777,881	5,778,531
5,778,072	5,778,390	5,777,553	5,775,903	5,777,881	5,778,531
5,778,074	5,778,410	5,777,556	5,775,907	5,777,881	5,778,531
5,778,092	5,774,980	5,777,564	5,775,919	5,777,881	5,778,531
5,778,095	5,775,095	5,778,002	5,775,920	5,777,881	5,778,531
5,778,096	5,775,117	5,778,062	5,775,970	5,777,881	5,778,531
5,778,100	5,775,323	5,778,234	5,775,984	5,777,881	5,778,531
5,778,103	5,775,431	5,778,414	5,775,985	5,777,881	5,778,531
5,778,104	5,775,518	5,778,414	5,776,019	5,777,881	5,778,531
5,778,121	5,775,550	5,778,414	5,776,052	5,777,881	5,778,531
5,778,137	5,775,603	5,778,414	5,776,053	5,777,881	5,778,531
5,778,155	5,775,638	5,778,414	5,776,098	5,777,881	5,778,531
5,778,157	5,775,819	5,778,414	5,776,117	5,777,881	5,778,531
5,778,169	5,775,927	5,778,414	5,776,125	5,777,881	5,778,531
5,778,171	5,776,037	5,778,414	5,776,284	5,777,881	5,778,531
5,778,178	5,776,046	5,778,414	5,776,286	5,777,881	5,778,531
5,778,180	5,776,078	5,778,414	5,776,289	5,777,881	5,778,531
5,778,185	5,776,110	5,778,414	5,776,398	5,777,881	5,778,531
5,778,201	5,776,156	5,778,414	5,776,503	5,777,881	5,778,531
5,778,204	5,776,341	5,778,414	5,776,546	5,777,881	5,778,531
5,778,212	5,776,443	5,778,414	5,776,615	5,777,881	5,778,531
5,778,216	5,776,473	5,778,414	5,776,688	5,777,881	5,778,531
5,778,217	5,776,485	5,778,414	5,776,864	5,777,881	5,778,531
5,778,219	5,776,510	5,778,414	5,776,867	5,777,881	5,778,531
5,778,230	5,776,558	5,778,414	5,776,875	5,777,881	5,778,531
5,778,231	5,776,565	5,778,414	5,776,881	5,777,881	5,778,531
5,778,232	5,776,724	5,778,414	5,776,891	5,777,881	5,778,531
5,778,241	5,776,735	5,778,414	5,776,984	5,777,881	5,778,531
5,778,242	5,776,735	5,778,414	5,777,005	5,777,881	5,778,531
5,778,246	5,776,744	5,778,414	5,777,014	5,777,881	5,778,531
5,778,247	5,776,869	5,778,414	5,777,022	5,777,881	5,778,531
5,778,248	5,776,888	5,778,414	5,777,045	5,777,881	5,778,531
5,778,252	5,777,110	5,778,414	5,777,054	5,777,881	5,778,531
5,778,253	5,777,126	5,778,414	5,777,197	5,777,881	5,778,531
5,778,256	5,777,178	5,778,414	5,777,208	5,777,881	5,778,531
5,778,258	5,777,266	5,778,414	5,777,296	5,777,881	5,778,531
5,778,315	5,777,280	5,778,414	5,777,384	5,777,881	5,778,531
5,778,335	5,777,574	5,778,414	5,777,459	5,777,881	5,778,531
5,778,338	5,777,741	5,778,414	5,777,521	5,777,881	5,778,531
5,778,346	5,777,746	5,778,414	5,777,524	5,777,881	5,778,531
5,778,353	5,777,837	5,778,414	5,777,527	5,777,881	5,778,531
5,778,354	5,777,860	5,778,414	5,777,547	5,777,881	5,778,531
5,778,355	5,777,891	5,778,414	5,777,558	5,777,881	5,778,531
5,778,358	5,777,950	5,778,414	5,777,586	5,777,881	5,778,531
5,778,364	5,778,081	5,778,414	5,778,028	5,777,881	5,778,531
5,778,367	5,778,150	5,778,414	5,778,030	5,777,881	5,778,531
5,778,370	5,778,348	5,778,414	5,778,060	5,777,881	5,778,531
5,778,379	5,778,370	5,778,414	5,778,105	5,777,881	5,778,531
5,778,381	5,778,381	5,778,414	5,778,127	5,777,881	5,778,531

5,778,384	5,775,102	5,775,129	5,774,907	5,777,319	5,778,122
5,778,423	5,775,192	5,775,220	5,774,918	5,777,346	5,778,172
RE. 35,840	5,775,209	5,775,386	5,774,947	5,777,352	5,778,197
5,774,889	5,775,251	5,775,400	5,774,958	5,777,355	5,778,322
5,774,914	5,775,321	5,775,484	5,775,011	5,777,364	5,778,366
5,774,948	5,775,338	5,775,511	5,775,040	5,777,402	5,778,422
5,774,949	5,775,388	5,775,536	5,775,080	5,777,434	5,778,436
5,774,965	5,775,408	5,775,542	5,775,128	5,777,440	5,778,455
5,774,969	5,775,453	5,775,546	5,775,193	5,777,454	5,778,482
5,774,971	5,775,493	5,775,636	5,775,248	5,777,470	5,778,500
5,775,005	5,775,508	5,775,734	5,775,298	5,777,491	5,778,529
5,775,018	5,775,674	5,775,834	5,775,305	5,777,537	5,778,539
5,775,024	5,775,711	5,775,912	5,775,312	5,777,561	5,778,563
5,775,029	5,775,749	5,775,977	5,775,357	5,777,572	5,778,582
5,775,035	5,775,880	5,776,002	5,775,405	5,777,583	5,778,592
5,775,071	5,775,971	5,776,008	5,775,416	5,777,583	5,778,601
5,775,100	5,775,993	5,776,093	5,775,497	5,777,583	5,778,608
5,775,113	5,776,072	5,776,094	5,775,528	5,777,583	5,778,623
5,775,153	5,776,080	5,776,095	5,775,540	5,777,583	5,778,637
5,775,165	5,776,100	5,776,115	5,775,553	5,777,583	5,778,642
5,775,166	5,776,103	5,776,135	5,775,556	5,777,583	5,778,642
5,775,234	5,776,142	5,776,137	5,775,569	5,777,583	5,778,642
5,775,260	5,776,168	5,776,183	5,775,573	5,777,583	5,778,642
5,775,275	5,776,174	5,776,222	5,775,582	5,777,583	5,778,642
5,775,314	5,776,176	5,776,240	5,775,623	5,777,583	5,778,642
5,775,361	5,776,178	5,776,264	5,775,646	5,777,583	5,778,642
5,775,414	5,776,184	5,776,268	5,775,648	5,777,583	5,778,642
5,775,450	5,776,187	5,776,316	5,775,690	5,777,583	5,778,642
5,775,560	5,776,188	5,776,334	5,775,693	5,777,583	5,778,642
5,775,575	5,776,214	5,776,423	5,775,695	5,777,583	5,778,642
5,775,576	5,776,290	5,776,435	5,775,700	5,777,583	5,778,642
5,775,578	5,776,332	5,776,441	5,775,722	5,777,583	5,778,642
5,775,618	5,776,432	5,776,461	5,775,778	5,777,583	5,778,642
5,775,653	5,776,433	5,776,475	5,775,809	5,777,583	5,778,642
5,775,719	5,776,487	5,776,476	5,775,812	5,777,583	5,778,642
5,775,720	5,776,506	5,776,505	5,775,847	5,777,583	5,778,642
5,775,727	5,776,537	5,776,519	5,775,859	5,777,583	5,778,642
5,775,729	5,776,591	5,776,523	5,775,865	5,777,583	5,778,642
5,775,738	5,776,651	5,776,536	5,775,976	5,777,583	5,778,642
5,775,750	5,776,842	5,776,561	5,775,980	5,777,583	5,778,642
5,775,759	5,776,956	5,776,625	5,775,982	5,777,583	5,778,642
5,775,763	5,777,024	5,776,680	5,776,016	5,777,583	5,778,642
5,775,767	5,777,198	5,776,696	5,776,024	5,777,583	5,778,642
5,775,776	5,777,557	5,776,734	5,776,025	5,777,583	5,778,642
5,775,779	5,777,598	5,776,841	5,776,041	5,777,583	5,778,642
5,775,780	5,777,616	5,776,849	5,776,068	5,777,583	5,778,642
5,775,786	5,777,630	5,776,856	5,776,126	5,777,583	5,778,642
5,775,855	5,777,735	5,776,879	5,776,152	5,777,583	5,778,642
5,775,885	5,777,791	5,776,882	5,776,177	5,777,583	5,778,642
5,775,894	5,777,884	5,776,883	5,776,190	5,777,583	5,778,642
5,775,974	5,778,123	5,776,896	5,776,220	5,777,583	5,778,642
5,775,979	5,778,135	5,776,912	5,776,227	5,777,583	5,778,642
5,776,031	5,778,208	5,776,954	5,776,228	5,777,583	5,778,642
5,776,179	5,778,233	5,776,955	5,776,230	5,777,583	5,778,642
5,776,217	5,778,243	5,776,963	5,776,266	5,777,583	5,778,642
5,776,235	5,778,255	5,776,980	5,776,275	5,777,583	5,778,642
5,776,261	5,778,378	5,776,983	5,776,370	5,777,583	5,778,642
5,776,265	5,775,335	5,777,023	5,776,385	5,777,583	5,778,642
5,776,287	5,775,354	5,777,040	5,776,408	5,777,583	5,778,642
5,776,288	5,775,513	5,777,105	5,776,431	5,777,583	5,778,642
5,776,374	5,777,535	5,777,108	5,776,463	5,777,583	5,778,642
5,776,415	5,777,944	5,777,112	5,776,489	5,777,583	5,778,642
5,776,454	5,778,005	5,777,123	5,776,496	5,777,583	5,778,642
5,776,522	5,775,207	5,777,132	5,776,502	5,777,583	5,778,642
5,776,549	5,775,316	5,777,134	5,776,515	5,777,583	5,778,642
5,776,572	5,775,399	5,777,315	5,776,518	5,777,583	5,778,642
5,776,599	5,775,547	5,777,318	5,776,587	5,777,583	5,778,642
5,776,601	5,775,758	5,777,341	5,776,604	5,777,583	5,778,642
5,776,614	5,775,848	5,777,436	5,776,611	5,777,583	5,778,642
5,776,677	5,775,997	5,777,439	5,776,618	5,777,583	5,778,642
5,776,736	5,776,151	5,777,545	5,776,622	5,777,583	5,778,642
5,776,845	5,776,213	5,777,554	5,776,623	5,777,583	5,778,642
5,776,936	5,776,293	5,777,715	5,776,624	5,777,583	5,778,642
5,776,950	5,776,754	5,777,763	5,776,628	5,777,583	5,778,642
5,777,002	5,776,760	5,777,796	5,776,629	5,777,583	5,778,642
5,777,047	5,776,959	5,777,910	5,776,632	5,777,583	5,778,642
5,777,048	5,776,971	5,777,914	5,776,635	5,777,583	5,778,642
5,777,051	5,777,878	5,777,988	5,776,641	5,777,583	5,778,642
5,777,059	5,778,164	5,778,052	5,776,649	5,777,583	5,778,642
5,777,079	5,775,757	5,778,056	5,776,665	5,777,583	5,778,642
5,777,135	5,776,321	5,778,057	5,776,666	5,777,583	5,778,642
5,777,167	5,776,322	5,778,058	5,776,668	5,777,583	5,778,642
5,777,211	5,775,021	5,778,114	5,776,714	5,777,583	5,778,642
5,777,243	5,775,465	5,778,143	5,776,808	5,777,583	5,778,642
5,777,248	5,775,675	5,778,152	5,776,823	5,777,583	5,778,642
5,777,338	5,775,680	5,778,173	5,776,826	5,777,583	5,778,642
5,777,416	5,777,892	5,778,182	5,776,889	5,777,583	5,778,642
5,777,546	5,775,451	5,778,244	5,776,892	5,777,583	5,778,642
5,777,563	5,775,696	5,778,336	5,776,917	5,777,583	5,778,642
5,777,709	5,776,559	5,778,341	5,776,918	5,777,583	5,778,642
5,777,742	5,774,987	5,778,373	5,776,961	5,777,583	5,778,642
5,777,843	5,775,263	5,778,430	5,776,973	5,777,583	5,778,642
5,777,894	5,775,671	5,778,430	5,777,013	5,777,583	5,778,642
5,778,014	5,776,399	5,775,046	5,777,025	5,777,583	5,778,642
5,778,016	5,776,428	5,776,244	5,777,041	5,777,583	5,778,642
5,778,077	5,777,437	5,776,605	5,777,058	5,777,583	5,778,642
5,778,108	5,777,465	5,777,731	5,777,063	5,777,583	5,778,642
5,778,301	5,777,496	5,777,736	5,777,144	5,777,583	5,778,642
5,778,331	5,777,549	5,778,102	5,777,184	5,777,583	5,778,642
5,774,975	5,777,618	5,778,306	5,777,195	5,777,583	5,778,642
5,775,017	5,778,211	5,774,890	5,777,239	5,777,583	5,778,642
5,775,067	5,778,385	5,774,899	5,777,261	5,777,583	5,778,642
5,775,078	RE. 35,837	5,774,906	5,777,287	5,777,583	5,778,642

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GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

41 :	5,777,821 5,774,950 5,775,069 5,775,075 5,775,328 5,775,406 5,775,485 5,775,524 5,775,629 5,775,796 5,775,955 5,775,986 5,776,069 5,776,459 5,776,774 5,777,461 5,777,532 5,777,552 5,777,624 5,777,646 5,777,647 5,777,650 5,777,928 5,778,053 5,778,097 5,778,190 5,778,210 5,778,220 5,778,245 5,778,363 5,778,407 5,778,424 5,778,438 5,778,441	5,776,350 5,776,368 5,776,424 5,776,449 5,776,535 5,776,548 5,776,593 5,776,671 5,776,700 5,776,722 5,776,747 5,776,749 5,776,750 5,776,768 5,776,848 5,776,900 5,776,910 5,776,914 5,776,930 5,776,967 5,776,987 5,777,034 5,777,061 5,777,074 5,777,097 5,777,121 5,777,128 5,777,154 5,777,160 5,777,176 5,777,177 5,777,194 5,777,247 5,777,331 5,777,518 5,777,533 5,777,550 5,777,753 5,777,906 5,778,004 5,778,071 5,778,133 44 : 5,775,325 5,776,401 5,776,721 5,775,840 5,777,259 5,777,897 5,777,948 5,777,949 45 : 5,775,082 5,775,087 5,775,149 5,775,191 5,775,424 5,775,531 5,775,609 5,775,654 5,775,704 5,775,713 5,776,186 5,776,234 5,776,839 5,777,169 46 : 5,775,844 47 : 5,775,139 5,775,146 5,775,464 5,776,344 5,775,649	5,775,867 5,776,004 5,776,085 5,776,194 5,776,197 5,776,198 5,776,200 5,776,203 5,776,269 5,776,746 5,777,164 5,777,214 5,777,333 5,778,389 5,774,921 5,774,990 5,775,008 5,775,022 5,775,026 5,775,105 5,775,184 5,775,227 5,775,252 5,775,268 5,775,417 5,775,422 5,775,426 5,775,427 5,775,428 5,775,429 5,775,433 5,775,439 5,775,443 5,775,446 5,775,533 5,775,538 5,775,635 5,775,714 5,775,736 5,775,744 5,775,752 5,775,803 5,775,807 5,775,845 5,775,846 5,775,849 5,775,884 5,775,886 5,775,913 5,776,055 5,776,073 5,776,109 5,776,169 5,776,204 5,776,257 5,776,351 5,776,386 5,776,391 5,776,427 5,776,430 5,776,573 5,776,607 5,776,609 5,776,692 5,776,751 5,776,763	5,776,907 5,776,979 5,776,998 5,777,031 5,777,043 5,777,087 5,777,095 5,777,099 5,777,129 5,777,143 5,777,180 5,777,182 5,777,187 5,777,226 5,777,278 5,777,328 5,777,329 5,777,363 5,777,382 5,777,385 5,777,478 5,777,490 5,777,500 5,777,502 5,777,503 5,777,522 5,777,531 5,777,589 5,777,601 5,777,608 5,777,622 5,777,694 5,777,737 5,777,761 5,777,810 5,777,848 5,777,852 5,777,866 5,777,885 5,777,886 5,777,901 5,777,909 5,777,912 5,777,918 5,777,954 5,778,039 5,778,076 5,778,116 5,778,130 5,778,154 5,778,184 5,778,199 5,778,200 5,778,218 5,778,222 5,778,225 5,778,228 5,778,235 5,778,236 5,778,239 5,778,250 5,778,307 5,778,323 5,778,337 5,778,350 5,778,369 5,778,413	5,778,415 5,778,425 5,778,431 5,778,432 5,778,433 5,778,443 5,778,444 5,778,447 5,778,047 5,775,561 5,775,676 5,775,716 5,775,726 5,775,730 5,775,733 5,775,806 5,775,832 5,775,833 5,775,870 5,776,133 5,776,157 5,776,173 5,776,315 5,777,325 5,777,836 5,778,226 5,775,036 5,776,645 5,776,660 5,776,790 5,776,801 5,777,467 5,777,504 5,777,829 5,778,428 5,774,894 5,774,988 5,775,148 5,775,233 5,775,239 5,775,366 5,775,512 5,775,523 5,775,600 5,775,698 5,775,755 5,776,040 5,776,146 5,776,477 5,776,490 5,776,571 5,776,729 5,777,229 5,777,662 5,778,125 5,774,968 5,775,182 5,775,188 5,775,199 5,775,322 5,775,330 5,775,348 5,775,530 5,775,586 5,775,599 5,775,643 5,775,652 5,775,708	5,775,715 5,775,896 5,776,066 5,776,166 5,776,319 5,776,529 5,776,694 5,776,709 5,776,725 5,776,731 5,776,752 5,777,115 5,777,117 5,777,148 5,777,190 5,777,234 5,777,246 5,777,254 5,777,308 5,777,309 5,777,310 5,777,469 5,777,505 5,778,069 5,778,098 5,778,165 5,778,213 5,778,259 5,778,361 5,778,372 5,778,375 5,778,402 5,778,403 B1 034,572 5,775,012 5,775,507 5,776,225 5,776,258 5,776,349 5,777,119 RE. 35,841 5,775,044 5,775,077 5,775,290 5,775,363 5,775,454 5,775,516 5,775,555 5,775,659 5,776,087 5,776,122 5,776,123 5,776,309 5,776,569 5,776,619 5,776,633 5,776,682 5,776,908 5,776,915 5,777,004 5,777,026 5,777,201 5,777,267 5,777,290 5,777,332 5,777,377 5,777,863 5,777,879
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DESIGN PATENTS

05 :	395,837	395,894	395,822	27 :	395,796	395,851	42 :	395,736
06 :	395,746	395,922	395,885		395,934	395,899		395,790
	395,749	395,931	395,807	29 :	395,771	395,742		395,795
	395,752	08 : 395,881	18 : 395,864	34 :	395,778	395,798		395,850
	395,754	09 : 395,820	395,865		395,779	395,809		395,921
	395,759	395,840	395,895		395,827	395,811	45 :	395,810
	395,769	10 : 395,773	395,909		395,888	395,824	47 :	395,793
	395,791	395,780	395,755	36 :	395,907	395,825		395,794
	395,797	12 : 395,735	395,804		395,737	395,836	48 :	395,767
	395,812	395,763	395,832		395,758	395,787		395,777
	395,830	395,801	395,878		395,784	395,738		395,815
	395,831	395,816	395,879		395,792	395,739		395,854
	395,844	395,866	395,927		395,819	395,740		395,867
	395,846	395,882	395,928		395,829	395,741		395,923
	395,862	395,883	26 : 395,808		395,843	395,744	51 :	395,924
	395,876	13 : 395,747	395,861		395,884	395,745	53 :	395,848
	395,877	395,806	395,902		395,892	395,760	55 :	395,860
	395,889	17 : 395,768	395,917		395,910	395,782		395,818
	395,890	395,774	395,918	37 :	395,761	395,874		395,875
	395,891	395,776	395,919		395,762	395,896	56 :	395,900
	395,893	395,802	395,920		395,781	395,932		

PLANT PATENTS

06 :	10,479	10,484	10,487	34 :	10,481	
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STATUTORY INVENTION REGISTRATIONS

06 :	H1,741	12 :	H1,740	39 :	H1,738		
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William Daley, Secretary
PATENT AND TRADEMARK OFFICE
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OFFICIAL GAZETTE

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PATENTS

July 14, 1998



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1205 O.G. 4, on December 2, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was increased, effective January 1, 1998, and was announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997. The basic fee and the designation fee were further changed effective January 1, 1998 and were announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1997, and were announced in the *Official Gazette* at 1201 O.G. 63, on August 19, 1997.

The schedule of PCT fees (in U.S. dollars), effective January 1, 1998, is as follows:

International Application (PCT Chapter I) fees:

Transmittal fee.....	240.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed under 35 U.S.C. 111(a).....	700.00
— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a).....	450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	210.00
European Patent Office as ISA.....	1250.00
International fees	
Basic fee	455.00
Basic supplemental fee (for each page over 30).....	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated.....	105.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee.....	105.00
— Confirmation fee	52.50

International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:

Handling fee	162.00
Preliminary examination fee	

USPTO as International Preliminary Examining Authority (IPEA)

— USPTO was ISA in PCT Chapter I.....	490.00
— Additional examination fee, per additional invention (payable only upon invitation).....	140.00
— USPTO was not ISA in PCT Chapter I	750.00
— Additional examination fee, per additional invention (payable only upon invitation)	270.00

U.S. National Stage Fees

	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	49.00	98.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	360.00	720.00
USPTO was ISA but not IPEA.....	395.00	790.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	535.00	1070.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	465.00	930.00

Other National fees

— For each independent claim in excess of 3.....	41.00	82.00
— For each claim in excess of 20.....	11.00	22.00
— For each application containing a multiple dependent claim.....	135.00	270.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1).....	130.00	130.00

Nov. 10, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on July 11, 1995 for which maintenance fees due at 3 years and six

months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,430,896 through 5,432,950
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 9, 1991 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,029,341 through 5,031,236
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 7, 1987 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,677,694 through 4,679,252
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1997, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))\$525.00
By other than a small entity\$1,050.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))\$1,050.00
By other than a small entity\$2,100.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f))\$1,580.00
By other than a small entity\$3,160.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f))\$65.00
By other than a small entity\$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable\$700.00
(2) unintentional\$1,640.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED May 6, 1998 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,929	07/016,659	05/23/89
(4,587,158)	(06/769,371)	(05/06/86)
Re. 33,446	07/148,661	11/20/90
(4,586,602)	(06/692,896)	(05/06/86)
Re. 33,597	07/190,606	05/28/91
(4,587,670)	(06/434,516)	(05/06/86)
Re. 34,313	07/769,492	07/13/93
(4,587,240)	(06/651,772)	(05/06/86)
4,586,198	06/585,998	05/06/86
4,586,203	06/660,890	05/06/86
4,586,216	06/654,081	05/06/86
4,586,224	06/639,027	05/06/86
4,586,225	06/594,904	05/06/86
4,586,226	06/538,072	05/06/86
4,586,229	06/773,256	05/06/86
4,586,231	06/732,954	05/06/86
4,586,232	06/541,005	05/06/86
4,586,237	06/536,681	05/06/86
4,586,241	06/620,098	05/06/86
4,586,244	06/616,200	05/06/86
4,586,250	06/538,320	05/06/86
4,586,264	06/687,722	05/06/86
4,586,265	06/666,104	05/06/86
4,586,268	06/468,299	05/06/86
4,586,269	06/729,043	05/06/86
4,586,274	06/619,775	05/06/86
4,586,277	06/765,896	05/06/86
4,586,280	06/705,080	05/06/86
4,586,282	06/688,731	05/06/86
4,586,290	06/715,983	05/06/86
4,586,300	06/546,540	05/06/86
4,586,303	06/615,265	05/06/86
4,586,313	06/702,353	05/06/86
4,586,316	06/354,954	05/06/86
4,586,327	06/699,951	05/06/86
4,586,329	06/686,412	05/06/86
4,586,330	06/401,304	05/06/86
4,586,336	06/487,830	05/06/86
4,586,341	06/492,735	05/06/86
4,586,349	06/642,842	05/06/86
4,586,355	06/717,023	05/06/86
4,586,362	06/740,422	05/06/86
4,586,368	06/720,328	05/06/86
4,586,370	06/555,299	05/06/86
4,586,372	06/729,112	05/06/86
4,586,378	06/658,167	05/06/86
4,586,379	06/655,903	05/06/86
4,586,399	06/659,668	05/06/86
4,586,410	06/721,945	05/06/86
4,586,415	06/617,308	05/06/86
4,586,418	06/757,188	05/06/86
4,586,432	06/704,079	05/06/86
4,586,434	06/729,348	05/06/86
4,586,458	06/725,054	05/06/86
4,586,462	06/699,779	05/06/86
4,586,468	06/658,278	05/06/86
4,586,469	06/744,997	05/06/86
4,586,485	06/618,900	05/06/86
4,586,523	06/697,407	05/06/86
4,586,524	06/644,863	05/06/86
4,586,540	06/610,630	05/06/86

Patent Number	Serial Number	Issue Date	4,586,881	06/470,582	05/06/86
4,586,541	06/675,234	05/06/86	4,586,883	06/708,539	05/06/86
4,586,545	06/656,341	05/06/86	4,586,902	06/655,025	05/06/86
4,586,548	06/560,424	05/06/86	4,586,903	06/688,584	05/06/86
4,586,551	06/721,299	05/06/86	4,586,910	06/645,594	05/06/86
4,586,553	06/507,568	05/06/86	4,586,917	06/621,668	05/06/86
4,586,554	06/698,795	05/06/86	4,586,918	06/656,646	05/06/86
4,586,557	06/598,006	05/06/86	4,586,931	06/617,702	05/06/86
4,586,558	06/571,693	05/06/86	4,586,934	06/714,869	05/06/86
4,586,568	06/770,456	05/06/86	4,586,938	06/653,000	05/06/86
4,586,575	06/706,659	05/06/86	4,586,950	06/533,341	05/06/86
4,586,577	06/586,759	05/06/86	4,586,953	06/575,585	05/06/86
4,586,579	06/512,016	05/06/86	4,586,957	06/585,097	05/06/86
4,586,586	06/765,129	05/06/86	4,586,961	06/701,899	05/06/86
4,586,589	06/526,328	05/06/86	4,586,964	06/634,529	05/06/86
4,586,613	06/515,889	05/06/86	4,586,970	06/739,353	05/06/86
4,586,614	06/525,309	05/06/86	4,586,971	06/610,557	05/06/86
4,586,615	06/587,209	05/06/86	4,586,972	06/596,591	05/06/86
4,586,616	06/559,974	05/06/86	4,586,978	06/640,342	05/06/86
4,586,622	06/631,380	05/06/86	4,586,993	06/739,730	05/06/86
4,586,623	06/680,647	05/06/86	4,587,010	06/743,917	05/06/86
4,586,624	06/638,556	05/06/86	4,587,012	06/547,704	05/06/86
4,586,626	06/764,537	05/06/86	4,587,013	06/675,489	05/06/86
4,586,633	06/482,729	05/06/86	4,587,015	06/619,796	05/06/86
4,586,641	06/649,320	05/06/86	4,587,018	06/672,060	05/06/86
4,586,644	06/643,417	05/06/86	4,587,025	06/540,722	05/06/86
4,586,646	06/742,766	05/06/86	4,587,043	06/501,980	05/06/86
4,586,650	06/746,885	05/06/86	4,587,044	06/528,573	05/06/86
4,586,651	06/724,438	05/06/86	4,587,046	06/379,463	05/06/86
4,586,653	06/476,135	05/06/86	4,587,050	06/700,223	05/06/86
4,586,654	06/710,972	05/06/86	4,587,057	06/512,199	05/06/86
4,586,656	06/640,648	05/06/86	4,587,063	06/511,948	05/06/86
4,586,669	06/775,369	05/06/86	4,587,071	06/748,295	05/06/86
4,586,670	06/682,708	05/06/86	4,587,076	06/379,196	05/06/86
4,586,673	06/642,719	05/06/86	4,587,077	06/448,626	05/06/86
4,586,675	06/641,265	05/06/86	4,587,078	06/401,747	05/06/86
4,586,685	06/536,642	05/06/86	4,587,080	06/346,339	05/06/86
4,586,688	06/602,350	05/06/86	4,587,085	06/523,207	05/06/86
4,586,689	06/607,422	05/06/86	4,587,090	06/548,845	05/06/86
4,586,696	06/791,233	05/06/86	4,587,091	06/365,093	05/06/86
4,586,698	06/703,564	05/06/86	4,587,094	06/584,229	05/06/86
4,586,700	06/446,314	05/06/86	4,587,095	06/570,282	05/06/86
4,586,703	06/634,797	05/06/86	4,587,103	06/657,530	05/06/86
4,586,704	06/719,228	05/06/86	4,587,109	06/512,005	05/06/86
4,586,707	06/728,148	05/06/86	4,587,111	06/669,065	05/06/86
4,586,711	06/493,170	05/06/86	4,587,113	06/699,889	05/06/86
4,586,717	06/219,748	05/06/86	4,587,114	06/475,258	05/06/86
4,586,738	06/691,462	05/06/86	4,587,116	06/577,441	05/06/86
4,586,753	06/590,716	05/06/86	4,587,119	06/682,567	05/06/86
4,586,754	06/633,552	05/06/86	4,587,120	06/566,681	05/06/86
4,586,759	06/621,531	05/06/86	4,587,124	06/664,513	05/06/86
4,586,764	06/689,116	05/06/86	4,587,126	06/556,643	05/06/86
4,586,767	06/619,477	05/06/86	4,587,127	06/534,278	05/06/86
4,586,769	06/628,155	05/06/86	4,587,131	06/677,004	05/06/86
4,586,770	06/611,014	05/06/86	4,587,134	06/735,442	05/06/86
4,586,772	06/646,721	05/06/86	4,587,137	06/778,173	05/06/86
4,586,773	06/673,700	05/06/86	4,587,144	06/377,790	05/06/86
4,586,777	06/631,345	05/06/86	4,587,145	06/671,836	05/06/86
4,586,781	06/403,945	05/06/86	4,587,159	06/778,461	05/06/86
4,586,783	06/496,797	05/06/86	4,587,169	06/641,723	05/06/86
4,586,784	06/774,851	05/06/86	4,587,172	06/616,368	05/06/86
4,586,790	06/466,488	05/06/86	4,587,178	06/401,967	05/06/86
4,586,795	06/654,049	05/06/86	4,587,179	06/549,518	05/06/86
4,586,809	06/608,438	05/06/86	4,587,180	06/345,398	05/06/86
4,586,812	06/666,983	05/06/86	4,587,197	06/578,058	05/06/86
4,586,827	06/663,043	05/06/86	4,587,205	06/676,148	05/06/86
4,586,840	06/594,874	05/06/86	4,587,214	06/520,129	05/06/86
4,586,843	06/584,214	05/06/86	4,587,216	06/528,108	05/06/86
4,586,844	06/595,007	05/06/86	4,587,221	06/567,003	05/06/86
4,586,845	06/696,577	05/06/86	4,587,232	06/536,872	05/06/86
4,586,848	06/675,353	05/06/86	4,587,235	06/625,147	05/06/86
4,586,851	06/625,092	05/06/86	4,587,241	06/590,086	05/06/86
4,586,856	06/607,274	05/06/86	4,587,243	06/754,836	05/06/86
4,586,858	06/635,501	05/06/86	4,587,257	06/682,593	05/06/86
4,586,868	06/624,508	05/06/86	4,587,260	06/623,272	05/06/86
4,586,873	06/669,861	05/06/86	4,587,272	06/656,595	05/06/86
4,586,874	06/684,577	05/06/86	4,587,273	06/764,841	05/06/86
4,586,878	06/633,015	05/06/86	4,587,276	06/528,287	05/06/86
			4,587,279	06/646,396	05/06/86

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OFFICIAL GAZETTE

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Patent Number	Serial Number	Issue Date	4,920,589	06/724,405	05/01/90
4,587,280	06/472,357	05/06/86	4,920,594	07/337,293	05/01/90
4,587,281	06/706,613	05/06/86	4,920,596	07/318,183	05/01/90
4,587,284	06/744,615	05/06/86	4,920,597	07/269,200	05/01/90
4,587,287	06/685,835	05/06/86	4,920,599	07/273,279	05/01/90
4,587,288	06/729,834	05/06/86	4,920,600	07/084,990	05/01/90
4,587,290	06/533,816	05/06/86	4,920,602	07/339,234	05/01/90
4,587,295	06/688,248	05/06/86	4,920,606	07/294,617	05/01/90
4,587,298	06/683,662	05/06/86	4,920,607	07/053,852	05/01/90
4,587,299	06/566,659	05/06/86	4,920,616	07/288,567	05/01/90
4,587,304	06/778,269	05/06/86	4,920,618	07/277,156	05/01/90
4,587,309	06/724,611	05/06/86	4,920,622	07/256,841	05/01/90
4,587,317	06/696,630	05/06/86	4,920,627	07/281,298	05/01/90
4,587,318	06/694,647	05/06/86	4,920,628	07/160,620	05/01/90
4,587,319	06/682,351	05/06/86	4,920,631	07/365,892	05/01/90
4,587,326	06/700,097	05/06/86	4,920,638	07/251,899	05/01/90
4,587,327	06/652,532	05/06/86	4,920,644	07/281,870	05/01/90
4,587,330	06/704,237	05/06/86	4,920,648	07/330,687	05/01/90
4,587,339	06/673,119	05/06/86	4,920,649	07/310,579	05/01/90
4,587,340	06/620,152	05/06/86	4,920,650	07/311,723	05/01/90
4,587,351	06/601,753	05/06/86	4,920,659	07/315,727	05/01/90
4,587,352	06/746,314	05/06/86	4,920,664	07/253,968	05/01/90
4,587,354	06/591,380	05/06/86	4,920,668	07/264,618	05/01/90
4,587,358	06/769,095	05/06/86	4,920,670	07/189,649	05/01/90
4,587,364	06/612,210	05/06/86	4,920,678	07/288,613	05/01/90
4,587,382	06/403,171	05/06/86	4,920,689	07/347,225	05/01/90
4,587,383	06/604,470	05/06/86	4,920,695	07/303,717	05/01/90
4,587,399	06/683,499	05/06/86	4,920,697	07/227,911	05/01/90
4,587,404	06/576,633	05/06/86	4,920,699	07/423,659	05/01/90
4,587,405	06/602,811	05/06/86	4,920,701	07/155,117	05/01/90
4,587,411	06/568,091	05/06/86	4,920,714	07/304,193	05/01/90
4,587,413	06/773,417	05/06/86	4,920,716	07/280,681	05/01/90
4,587,422	06/568,839	05/06/86	4,920,718	07/204,377	05/01/90
4,587,439	06/454,213	05/06/86	4,920,720	07/346,246	05/01/90
4,587,442	06/557,025	05/06/86	4,920,721	07/217,288	05/01/90
4,587,457	06/350,153	05/06/86	4,920,727	07/305,738	05/01/90
4,587,462	06/639,916	05/06/86	4,920,728	07/289,711	05/01/90
4,587,464	06/626,357	05/06/86	4,920,730	07/318,214	05/01/90
4,587,471	06/513,015	05/06/86	4,920,731	07/238,004	05/01/90
4,587,472	06/715,495	05/06/86	4,920,741	07/190,201	05/01/90
4,587,474	06/626,712	05/06/86	4,920,754	07/329,955	05/01/90
4,587,477	06/611,803	05/06/86	4,920,757	07/306,360	05/01/90
4,587,478	06/589,244	05/06/86	4,920,760	07/395,262	05/01/90
4,587,488	06/519,832	05/06/86	4,920,761	07/128,660	05/01/90
4,587,495	06/496,257	05/06/86	4,920,765	06/877,653	05/01/90
4,587,498	06/587,089	05/06/86	4,920,766	07/295,558	05/01/90
4,587,513	06/624,156	05/06/86	4,920,768	07/401,689	05/01/90
4,587,518	06/439,679	05/06/86	4,920,772	07/368,847	05/01/90
4,587,525	06/577,751	05/06/86	4,920,777	07/349,917	05/01/90
4,587,527	06/762,808	05/06/86	4,920,778	07/137,754	05/01/90
4,587,530	06/531,782	05/06/86	4,920,779	07/133,292	05/01/90
4,587,537	06/494,312	05/06/86	4,920,782	07/385,552	05/01/90
4,587,538	06/667,888	05/06/86	4,920,786	07/275,411	05/01/90
4,587,548	06/459,436	05/06/86	4,920,789	07/348,379	05/01/90
4,587,553	06/550,559	05/06/86	4,920,790	07/409,377	05/01/90
4,587,567	06/585,079	05/06/86	4,920,792	07/377,383	05/01/90
4,587,570	06/531,243	05/06/86	4,920,793	07/164,153	05/01/90
4,587,571	06/742,382	05/06/86	4,920,798	07/228,601	05/01/90
4,587,573	06/612,959	05/06/86	4,920,799	07/272,629	05/01/90
4,587,581	06/689,406	05/06/86	4,920,801	07/247,894	05/01/90
4,587,583	06/438,352	05/06/86	4,920,802	07/222,138	05/01/90
4,587,586	06/481,233	05/06/86	4,920,803	07/229,788	05/01/90
4,587,590	06/580,475	05/06/86	4,920,806	07/235,544	05/01/90
4,587,596	06/597,982	05/06/86	4,920,809	07/311,340	05/01/90
4,587,604	06/698,924	05/06/86	4,920,811	07/260,990	05/01/90
4,587,620	06/373,437	05/06/86	4,920,821	07/320,332	05/01/90
4,587,621	06/500,758	05/06/86	4,920,822	06/820,147	05/01/90
4,587,629	06/567,301	05/06/86	4,920,825	07/381,970	05/01/90
4,587,640	06/550,209	05/06/86	4,920,827	07/164,416	05/01/90
4,587,641	06/577,927	05/06/86	4,920,828	07/317,181	05/01/90
4,587,642	06/447,039	05/06/86	4,920,833	07/307,286	05/01/90
4,587,647	06/470,108	05/06/86	4,920,834	07/282,617	05/01/90
4,587,648	06/521,074	05/06/86	4,920,852	07/323,167	05/01/90
4,587,652	06/622,939	05/06/86	4,920,855	07/334,807	05/01/90
4,587,654	06/554,730	05/06/86	4,920,858	07/224,627	05/01/90
4,920,575	07/298,828	05/01/90	4,920,866	07/292,096	05/01/90
4,920,579	07/176,722	05/01/90	4,920,876	07/333,197	05/01/90
4,920,586	07/283,467	05/01/90	4,920,878	07/166,673	05/01/90
				07/189,728	05/01/90

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Patent Number	Serial Number	Issue Date	4,921,219	07/403,997	05/01/90
4,920,879	07/303,571	05/01/90	4,921,240	07/297,221	05/01/90
4,920,886	07/250,715	05/01/90	4,921,243	07/255,098	05/01/90
4,920,890	07/228,759	05/01/90	4,921,245	07/274,705	05/01/90
4,920,892	07/268,309	05/01/90	4,921,252	07/330,821	05/01/90
4,920,900	07/326,341	05/01/90	4,921,253	07/321,627	05/01/90
4,920,902	07/198,455	05/01/90	4,921,254	07/293,735	05/01/90
4,920,903	07/277,002	05/01/90	4,921,255	07/300,048	05/01/90
4,920,910	07/291,668	05/01/90	4,921,256	07/256,852	05/01/90
4,920,911	07/258,635	05/01/90	4,921,258	07/229,445	05/01/90
4,920,912	07/166,555	05/01/90	4,921,259	07/312,478	05/01/90
4,920,919	07/402,364	05/01/90	4,921,262	07/240,825	05/01/90
4,920,920	07/235,164	05/01/90	4,921,263	07/065,282	05/01/90
4,920,921	07/223,910	05/01/90	4,921,265	07/296,127	05/01/90
4,920,922	07/305,366	05/01/90	4,921,266	07/306,768	05/01/90
4,920,926	07/265,596	05/01/90	4,921,277	07/261,841	05/01/90
4,920,928	07/121,066	05/01/90	4,921,283	07/355,404	05/01/90
4,920,929	07/273,260	05/01/90	4,921,286	07/329,609	05/01/90
4,920,931	07/369,381	05/01/90	4,921,287	07/410,278	05/01/90
4,920,937	07/307,480	05/01/90	4,921,293	06/680,605	05/01/90
4,920,943	07/349,638	05/01/90	4,921,299	07/305,777	05/01/90
4,920,945	07/288,014	05/01/90	4,921,302	07/371,006	05/01/90
4,920,946	07/139,752	05/01/90	4,921,304	06/848,964	05/01/90
4,920,959	07/138,381	05/01/90	4,921,306	07/260,122	05/01/90
4,920,964	07/200,429	05/01/90	4,921,307	07/268,088	05/01/90
4,920,981	07/097,964	05/01/90	4,921,312	07/344,572	05/01/90
4,920,982	07/211,574	05/01/90	4,921,314	07/274,051	05/01/90
4,921,001	07/354,891	05/01/90	4,921,322	07/329,869	05/01/90
4,921,004	07/394,113	05/01/90	4,921,324	07/204,482	05/01/90
4,921,012	07/407,212	05/01/90	4,921,326	07/328,005	05/01/90
4,921,015	07/383,003	05/01/90	4,921,328	07/357,763	05/01/90
4,921,019	07/347,434	05/01/90	4,921,329	07/221,531	05/01/90
4,921,020	07/115,627	05/01/90	4,921,335	07/239,498	05/01/90
4,921,027	07/308,204	05/01/90	4,921,340	07/218,878	05/01/90
4,921,028	07/229,258	05/01/90	4,921,344	06/743,824	05/01/90
4,921,035	07/162,316	05/01/90	4,921,359	07/365,570	05/01/90
4,921,048	07/247,760	05/01/90	4,921,360	07/278,950	05/01/90
4,921,055	07/110,719	05/01/90	4,921,364	07/240,431	05/01/90
4,921,057	07/345,300	05/01/90	4,921,367	07/422,272	05/01/90
4,921,059	07/341,707	05/01/90	4,921,371	07/315,146	05/01/90
4,921,067	07/134,074	05/01/90	4,921,381	07/243,464	05/01/90
4,921,069	07/329,687	05/01/90	4,921,383	07/353,071	05/01/90
4,921,071	07/366,316	05/01/90	4,921,387	07/245,720	05/01/90
4,921,074	07/274,419	05/01/90	4,921,389	07/259,188	05/01/90
4,921,088	07/090,928	05/01/90	4,921,397	07/305,012	05/01/90
4,921,089	07/262,949	05/01/90	4,921,398	07/172,320	05/01/90
4,921,095	07/307,474	05/01/90	4,921,402	07/345,458	05/01/90
4,921,099	07/276,753	05/01/90	4,921,403	07/296,123	05/01/90
4,921,100	07/409,841	05/01/90	4,921,405	07/269,505	05/01/90
4,921,101	07/405,158	05/01/90	4,921,407	07/354,859	05/01/90
4,921,104	07/309,139	05/01/90	4,921,409	07/209,698	05/01/90
4,921,106	07/309,433	05/01/90	4,921,416	07/389,330	05/01/90
4,921,111	07/282,254	05/01/90	4,921,419	07/310,458	05/01/90
4,921,120	07/335,297	05/01/90	4,921,420	07/214,752	05/01/90
4,921,121	07/309,254	05/01/90	4,921,445	07/337,805	05/01/90
4,921,122	07/436,110	05/01/90	4,921,446	07/318,918	05/01/90
4,921,128	07/261,291	05/01/90	4,921,447	07/353,290	05/01/90
4,921,130	07/279,996	05/01/90	4,921,450	07/324,135	05/01/90
4,921,132	07/221,711	05/01/90	4,921,459	07/181,519	05/01/90
4,921,133	07/399,395	05/01/90	4,921,460	07/371,624	05/01/90
4,921,137	07/215,290	05/01/90	4,921,461	07/335,228	05/01/90
4,921,139	06/663,134	05/01/90	4,921,467	07/200,598	05/01/90
4,921,140	07/242,818	05/01/90	4,921,469	07/271,869	05/01/90
4,921,150	07/236,948	05/01/90	4,921,485	07/250,164	05/01/90
4,921,154	07/173,872	05/01/90	4,921,486	07/369,758	05/01/90
4,921,159	07/225,621	05/01/90	4,921,487	07/247,271	05/01/90
4,921,162	07/342,342	05/01/90	4,921,488	07/144,375	05/01/90
4,921,164	07/350,892	05/01/90	4,921,491	07/332,594	05/01/90
4,921,165	07/366,904	05/01/90	4,921,495	06/842,956	05/01/90
4,921,167	07/271,035	05/01/90	4,921,499	07/253,730	05/01/90
4,921,169	07/249,565	05/01/90	4,921,502	07/226,128	05/01/90
4,921,173	07/355,137	05/01/90	4,921,505	07/283,470	05/01/90
4,921,174	07/402,130	05/01/90	4,921,506	07/361,589	05/01/90
4,921,175	07/402,220	05/01/90	4,921,508	07/372,655	05/01/90
4,921,179	07/371,373	05/01/90	4,921,509	07/236,945	05/01/90
4,921,199	07/268,427	05/01/90	4,921,515	07/260,430	05/01/90
4,921,204	07/315,905	05/01/90	4,921,518	07/288,990	05/01/90
4,921,212	07/404,292	05/01/90	4,921,524	07/181,410	05/01/90
		05/01/90	4,921,529	07/018,658	05/01/90

Patent Number	Serial Number	Issue Date	4,921,893	07/128,363	05/01/90
4,921,532	07/352,654	05/01/90	4,921,896	07/256,921	05/01/90
4,921,540	07/026,694	05/01/90	4,921,899	07/256,344	05/01/90
4,921,543	07/236,511	05/01/90	4,921,905	07/205,484	05/01/90
4,921,549	06/591,206	05/01/90	4,921,906	07/203,544	05/01/90
4,921,551	07/246,953	05/01/90	4,921,911	07/384,361	05/01/90
4,921,554	07/250,018	05/01/90	4,921,914	07/341,191	05/01/90
4,921,557	07/209,143	05/01/90	4,921,917	07/103,275	05/01/90
4,921,558	07/301,966	05/01/90	4,921,923	07/272,954	05/01/90
4,921,566	07/263,530	05/01/90	4,921,924	06/922,679	05/01/90
4,921,569	07/193,410	05/01/90	4,921,929	07/329,615	05/01/90
4,921,576	07/340,741	05/01/90	4,921,932	07/228,515	05/01/90
4,921,588	07/205,038	05/01/90	4,921,933	07/199,910	05/01/90
4,921,598	07/219,524	05/01/90	4,921,936	06/846,916	05/01/90
4,921,599	07/190,820	05/01/90	4,921,951	07/102,043	05/01/90
4,921,602	07/375,023	05/01/90	4,921,952	07/341,281	05/01/90
4,921,603	07/407,360	05/01/90	4,921,953	07/309,160	05/01/90
4,921,604	07/326,272	05/01/90	4,921,954	07/216,877	05/01/90
4,921,608	07/305,403	05/01/90	4,921,960	07/184,796	05/01/90
4,921,611	07/308,703	05/01/90	4,921,963	07/037,498	05/01/90
4,921,615	07/199,863	05/01/90	4,921,965	07/415,940	05/01/90
4,921,620	06/797,511	05/01/90	4,921,967	07/054,551	05/01/90
4,921,629	07/181,022	05/01/90	4,921,969	07/284,883	05/01/90
4,921,630	07/229,767	05/01/90	4,921,970	07/012,318	05/01/90
4,921,633	06/902,010	05/01/90	4,921,972	07/378,888	05/01/90
4,921,641	07/306,958	05/01/90	4,921,975	07/356,156	05/01/90
4,921,657	07/120,108	05/01/90	4,921,976	07/272,032	05/01/90
4,921,660	07/380,669	05/01/90	4,921,984	07/372,248	05/01/90
4,921,665	07/166,879	05/01/90	4,921,986	07/139,793	05/01/90
4,921,669	07/262,883	05/01/90	4,921,987	07/395,345	05/01/90
4,921,677	07/240,179	05/01/90	4,921,994	07/317,223	05/01/90
4,921,679	07/313,013	05/01/90	4,921,995	07/153,881	05/01/90
4,921,681	07/178,928	05/01/90	4,921,996	07/227,980	05/01/90
4,921,683	07/368,613	05/01/90	4,922,000	07/247,229	05/01/90
4,921,685	07/283,401	05/01/90	4,922,005	06/797,457	05/01/90
4,921,700	07/055,209	05/01/90	4,922,012	06/570,181	05/01/90
4,921,703	07/099,262	05/01/90	4,922,018	07/401,598	05/01/90
4,921,705	07/216,887	05/01/90	4,922,019	07/212,953	05/01/90
4,921,712	07/234,202	05/01/90	4,922,021	07/246,028	05/01/90
4,921,715	07/292,832	05/01/90	4,922,023	07/215,736	05/01/90
4,921,720	07/315,495	05/01/90	4,922,024	07/181,622	05/01/90
4,921,723	07/109,079	05/01/90	4,922,026	07/290,723	05/01/90
4,921,725	07/339,108	05/01/90	4,922,027	07/293,731	05/01/90
4,921,735	07/244,661	05/01/90	4,922,038	07/303,152	05/01/90
4,921,738	07/281,729	05/01/90	4,922,041	07/195,797	05/01/90
4,921,740	07/293,328	05/01/90	4,922,042	06/824,307	05/01/90
4,921,743	07/387,010	05/01/90	4,922,058	07/340,740	05/01/90
4,921,746	07/183,885	05/01/90	4,922,067	07/176,538	05/01/90
4,921,765	07/371,144	05/01/90	4,922,068	07/199,120	05/01/90
4,921,767	07/287,356	05/01/90	4,922,069	07/241,371	05/01/90
4,921,781	07/244,776	05/01/90	4,922,074	07/189,844	05/01/90
4,921,789	07/184,079	05/01/90	4,922,076	07/219,356	05/01/90
4,921,790	07/042,498	05/01/90	4,922,077	07/304,976	05/01/90
4,921,791	07/066,186	05/01/90	4,922,085	07/291,469	05/01/90
4,921,796	07/183,193	05/01/90	4,922,089	07/279,628	05/01/90
4,921,801	06/842,102	05/01/90	4,922,091	07/230,213	05/01/90
4,921,806	07/414,330	05/01/90	4,922,093	07/331,664	05/01/90
4,921,809	07/105,136	05/01/90	4,922,096	07/320,668	05/01/90
4,921,819	07/100,760	05/01/90	4,922,112	07/232,117	05/01/90
4,921,831	07/259,592	05/01/90	4,922,118	07/353,526	05/01/90
4,921,836	07/354,633	05/01/90	4,922,119	07/277,542	05/01/90
4,921,838	07/062,962	05/01/90	4,922,135	07/271,124	05/01/90
4,921,840	07/162,802	05/01/90	4,922,139	07/312,263	05/01/90
4,921,842	07/230,278	05/01/90	4,922,155	07/209,769	05/01/90
4,921,851	07/396,758	05/01/90	4,922,156	07/179,342	05/01/90
4,921,852	07/124,603	05/01/90	4,922,157	07/204,143	05/01/90
4,921,853	07/271,128	05/01/90	4,922,158	07/048,484	05/01/90
4,921,854	07/136,420	05/01/90	4,922,165	07/296,630	05/01/90
4,921,857	07/098,117	05/01/90	4,922,173	07/248,791	05/01/90
4,921,870	07/190,744	05/01/90	4,922,174	07/325,427	05/01/90
4,921,872	07/149,244	05/01/90	4,922,175	07/318,688	05/01/90
4,921,880	07/232,204	05/01/90	4,922,182	07/228,176	05/01/90
4,921,881	07/203,100	05/01/90	4,922,195	07/286,391	05/01/90
4,921,882	07/207,407	05/01/90	4,922,196	07/342,629	05/01/90
4,921,887	07/270,628	05/01/90	4,922,200	07/398,407	05/01/90
4,921,888	07/144,937	05/01/90	4,922,201	07/294,622	05/01/90
4,921,891	07/308,970	05/01/90	4,922,202	07/192,526	05/01/90
4,921,892	07/102,840	05/01/90	4,922,203	07/305,211	05/01/90
			4,922,214	07/216,723	05/01/90

Patent Number	Serial Number	Issue Date	4,922,433	07/137,457	05/01/90
4,922,219	07/380,807	05/01/90	4,922,434	07/207,691	05/01/90
4,922,228	07/231,198	05/01/90	4,922,436	07/199,048	05/01/90
4,922,229	07/350,492	05/01/90	4,922,444	07/132,012	05/01/90
4,922,230	07/236,503	05/01/90	4,922,448	07/253,335	05/01/90
4,922,232	07/261,173	05/01/90	4,922,455	07/094,465	05/01/90
4,922,234	07/275,371	05/01/90	4,922,458	07/249,302	05/01/90
4,922,237	07/298,852	05/01/90	4,922,462	07/270,445	05/01/90
4,922,238	07/143,309	05/01/90	4,922,464	07/334,682	05/01/90
4,922,239	07/149,478	05/01/90	4,922,468	07/360,478	05/01/90
4,922,243	07/186,382	05/01/90	4,922,475	07/162,327	05/01/90
4,922,244	06/899,223	05/01/90	4,922,478	07/178,703	05/01/90
4,922,253	07/292,983	05/01/90	4,922,481	07/099,004	05/01/90
4,922,258	07/119,576	05/01/90	4,922,488	07/269,520	05/01/90
4,922,260	07/298,523	05/01/90	4,922,494	07/191,206	05/01/90
4,922,264	07/341,846	05/01/90	4,922,495	07/390,131	05/01/90
4,922,266	07/218,669	05/01/90	4,922,501	07/103,074	05/01/90
4,922,271	07/244,508	05/01/90	4,922,503	07/264,134	05/01/90
4,922,275	07/412,212	05/01/90	4,922,504	07/290,284	05/01/90
4,922,281	07/347,031	05/01/90	4,922,505	07/219,669	05/01/90
4,922,304	07/167,037	05/01/90	4,922,509	07/212,386	05/01/90
4,922,310	06/914,540	05/01/90	4,922,513	07/410,983	05/01/90
4,922,327	07/137,882	05/01/90	4,922,520	07/304,704	05/01/90
4,922,339	07/176,258	05/01/90	4,922,521	07/320,728	05/01/90
4,922,341	07/249,371	05/01/90	4,922,524	07/196,614	05/01/90
4,922,361	07/194,601	05/01/90	4,922,546	07/251,922	05/01/90
4,922,372	07/336,471	05/01/90	4,922,548	07/358,796	05/01/90
4,922,388	07/382,285	05/01/90	5,308,328	07/838,417	05/03/94
4,922,389	07/334,618	05/01/90			
4,922,405	06/525,391	05/01/90			
4,922,412	07/313,369	05/01/90			
4,922,415	06/798,891	05/01/90			
4,922,422	07/183,204	05/01/90			
4,922,430	07/115,476	05/01/90			

Errata

In the list of patents which expired on October 15, 1997 due to failure to pay maintenance fees, in the OG of December 23, 1997, Patent Number 5,251,846 should not have appeared since the fee was timely paid.

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 05/15/98

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,554,005	06/644,975	08/28/84	11/19/85	05/15/98
4,556,195	06/648,075	09/07/84	12/03/85	05/20/98
4,700,406	06/828,944	02/12/86	10/20/87	05/19/98
4,796,515	07/002,740	01/12/87	01/10/89	05/20/98
4,809,752	07/044,838	04/30/87	03/07/89	05/20/98
4,844,212	07/192,988	05/12/88	07/04/89	05/15/98
5,060,417	07/426,976	10/25/89	10/29/91	05/21/98
5,091,601	07/584,960	09/19/90	02/25/92	05/15/98
5,122,917	07/531,832	06/01/90	06/16/92	05/18/98
5,124,018	07/283,782	12/13/88	06/23/92	05/18/98
5,124,420	07/723,279	06/28/91	06/23/92	05/20/98
5,131,862	07/665,542	03/01/91	07/21/92	05/18/98
5,143,107	07/621,036	11/30/90	09/01/92	05/19/98
5,151,030	07/729,485	07/12/91	09/29/92	05/15/98
5,177,148	07/572,323	08/23/90	01/05/93	05/20/98
5,183,851	07/752,977	09/03/91	02/02/93	05/15/98
5,190,484	07/929,531	08/14/92	03/02/93	05/20/98
5,203,529	07/628,935	12/14/90	04/20/93	05/19/98
5,225,576	07/711,775	06/07/91	07/06/93	05/15/98
5,240,961	07/907,847	07/02/92	08/31/93	05/21/98
5,247,787	07/823,722	01/22/92	09/28/93	05/15/98
5,248,286	07/891,178	05/29/92	09/28/93	05/15/98
5,251,849	07/456,533	12/26/89	10/12/93	05/20/98
5,261,060	07/668,778	03/13/91	11/09/93	05/21/98
5,276,596	07/902,940	06/23/92	01/04/94	05/21/98

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,889,988, Re. S.N. 09/034,175, Mar. 4, 1998, Cl. 250/306, FEEDBACK CONTROL FOR SCANNING TUNNEL MICROSCOPES, Virgil B. Elings, et. al., Owner of Record: Digital Instruments, Inc., Santa Barbara, Calif., Attorney or Agent: Patrick F.

LOWER POLYHYDRIC ALCOHOLS, Giuseppe Gubitosa, et. al., Owner of Record: *Montecatini Tecnologie S.R.L., Milano, Italy*, Attorney or Agent: N. Whitney Wilson, Ex. Gp.: 1755

5,463,616, Re. S.N. 08/961,401, Oct. 30, 1997, Cl. 370/24, METHOD AND APPARATUS FOR ESTABLISHING A FULL-DUPLEX, CONCURRENT, VOICE NON-VOICE CONNECTION BETWEEN TWO SITES, Robert J. Kruse, et. al., Owner of Record: *Multi-Tech Systems, Inc., Mounds View, Minn.*, Attorney or Agent: Daniel J. Kluth, Ex. Gp.: 2603

5,499,925, Re. S.N. 08/216,471, Mar. 19, 1998, Cl. 439/157, CONNECTOR DEVICE, Nai Hock Lwee, Owner of Record: *Berg Technology Inc., Reno, Nev.*, Attorney or Agent: Michael J. Swope, Ex. Gp.: 3202

Request for Reexamination Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,454,390, Reexam. No. 90/004,985, May 6, 1998, Cl. 200/006A, SWITCHING DEVICE FOR CONTROLLING SERVO DRIVE MECHANISMS OF VEHICLE SEAT, Guenter Gmeiner, et. al., Owner of Record: *Daimler-Benz Aktiengesellschaft, Stuttgart, Germany*, Attorney or Agent: Evenson McKeeown Edwards and Lenahan, Washington, D.C., Ex. Gp.: 2832, Requester: Owner

4,866,400, Reexam. No. 90/004,986, May 13, 1998, Cl. 330/305, AUTOMATIC POLE-ZERO ADJUSTMENT CIRCUIT FOR AN IONIZING RADIATION SPECTROSCOPY SYSTEM, Charles L. Britton, et. al., Owner of Record: *EG & G Instruments, Inc., Oak Ridge, Tenn.*, Attorney or Agent: Finnegan Henderson Farabow Garrett and Dunner, Washington, D.C., Ex. Gp.: 2817, Requester: Dennis G. Maloney, Fish and Richardson, Boston, Mass.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED May 25, 1998 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
118,162	71/102,902	08/21/1917
118,178	71/071,150	08/21/1917
348,902	71/381,596	08/17/1937
348,910	71/383,940	08/17/1937
348,934	71/387,154	08/17/1937
348,946	71/388,194	08/17/1937
348,959	71/388,777	08/17/1937
348,964	71/388,891	08/17/1937

348,979	71/389,719	08/17/1937
348,985	71/389,890	08/17/1937
349,002	71/390,147	08/17/1937
349,003	71/390,160	08/17/1937
349,022	71/390,449	08/17/1937
349,026	71/390,473	08/17/1937
349,071	71/390,887	08/17/1937
349,073	71/390,898	08/17/1937
349,082	71/391,059	08/17/1937
349,120	71/391,926	08/17/1937
641,260	71/678,793	02/12/1957
647,058	72/018,971	06/18/1957
650,290	71/691,411	08/20/1957
650,291	71/692,062	08/20/1957
650,297	71/689,954	08/20/1957
650,298	72/007,971	08/20/1957
650,302	72/018,840	08/20/1957
650,322	72/003,366	08/20/1957
650,328	72/010,436	08/20/1957
650,329	72/011,106	08/20/1957
650,332	72/018,871	08/20/1957
650,334	72/019,950	08/20/1957
650,336	72/020,962	08/20/1957
650,342	72/023,370	08/20/1957
650,343	72/023,374	08/20/1957
650,366	72/020,655	08/20/1957
650,374	72/021,333	08/20/1957
650,382	72/017,113	08/20/1957
650,387	72/019,687	08/20/1957
650,393	71/634,652	08/20/1957
650,394	72/003,573	08/20/1957
650,403	72/022,936	08/20/1957
650,405	72/023,011	08/20/1957
650,406	72/023,012	08/20/1957
650,407	72/023,016	08/20/1957
650,409	72/022,497	08/20/1957
650,412	72/014,381	08/20/1957
650,416	72/021,556	08/20/1957
650,422	72/023,451	08/20/1957
650,440	72/019,217	08/20/1957
650,449	72/008,322	08/20/1957
650,451	72/020,973	08/20/1957
650,464	72/016,906	08/20/1957
650,471	72/022,267	08/20/1957
650,473	72/022,375	08/20/1957
650,475	72/022,610	08/20/1957
650,476	72/022,638	08/20/1957
650,481	72/006,682	08/20/1957
650,503	72/018,590	08/20/1957
650,510	72/019,383	08/20/1957
650,514	72/005,416	08/20/1957
650,517	72/022,675	08/20/1957
650,522	72/006,889	08/20/1957
650,528	72/025,834	08/20/1957
650,542	72/018,850	08/20/1957
650,552	72/000,429	08/20/1957
650,553	72/001,792	08/20/1957
650,556	72/012,797	08/20/1957
650,560	72/017,411	08/20/1957
650,567	72/020,014	08/20/1957
650,580	72/019,590	08/20/1957
650,583	72/019,884	08/20/1957
650,585	72/020,065	08/20/1957
650,588	72/020,202	08/20/1957
650,589	71/698,992	08/20/1957
650,594	72/006,917	08/20/1957
650,595	71/693,559	08/20/1957
650,596	71/700,152	08/20/1957
650,597	72/001,600	08/20/1957
650,600	72/002,703	08/20/1957
650,605	72/006,583	08/20/1957
650,613	72/009,930	08/20/1957
650,615	72/010,428	08/20/1957
650,618	72/011,762	08/20/1957
650,619	72/011,937	08/20/1957
650,631	72/014,975	08/20/1957
650,636	72/016,057	08/20/1957
650,637	72/016,058	08/20/1957
650,638	72/016,365	08/20/1957

Reg. Number	Serial Number	Reg. Date	1,071,416	73/073,066	08/16/1977
650,644	72/018,893	08/20/1957	1,071,417	73/073,067	08/16/1977
650,649	72/019,504	08/20/1957	1,071,421	73/076,179	08/16/1977
650,657	72/020,041	08/20/1957	1,071,422	73/076,946	08/16/1977
650,658	72/020,062	08/20/1957	1,071,425	73/078,490	08/16/1977
650,662	72/017,270	08/20/1957	1,071,433	73/094,069	08/16/1977
650,668	72/002,864	08/20/1957	1,071,434	73/094,815	08/16/1977
650,672	72/006,436	08/20/1957	1,071,435	73/097,435	08/16/1977
650,673	72/006,920	08/20/1957	1,071,436	73/097,965	08/16/1977
650,676	72/011,026	08/20/1957	1,071,438	73/099,503	08/16/1977
650,678	72/018,845	08/20/1957	1,071,439	73/100,308	08/16/1977
650,679	72/019,016	08/20/1957	1,071,440	73/100,745	08/16/1977
650,683	71/687,171	08/20/1957	1,071,443	73/101,510	08/16/1977
650,685	72/015,509	08/20/1957	1,071,445	73/101,666	08/16/1977
650,689	72/018,250	08/20/1957	1,071,446	73/107,902	08/16/1977
1,065,487	73/077,528	05/10/1977	1,071,447	73/037,176	08/16/1977
1,068,677	73/098,881	06/28/1977	1,071,448	73/086,487	08/16/1977
1,070,947	73/101,763	08/09/1977	1,071,449	73/101,360	08/16/1977
1,071,213	73/066,023	08/16/1977	1,071,451	73/104,012	08/16/1977
1,071,221	73/099,146	08/16/1977	1,071,455	73/107,204	08/16/1977
1,071,224	73/107,189	08/16/1977	1,071,456	73/107,205	08/16/1977
1,071,225	73/107,208	08/16/1977	1,071,457	73/073,579	08/16/1977
1,071,227	73/109,257	08/16/1977	1,071,465	73/087,431	08/16/1977
1,071,230	73/110,314	08/16/1977	1,071,469	73/095,753	08/16/1977
1,071,243	73/085,820	08/16/1977	1,071,471	73/104,343	08/16/1977
1,071,245	73/092,102	08/16/1977	1,071,474	73/037,563	08/16/1977
1,071,251	73/108,927	08/16/1977	1,071,476	73/073,458	08/16/1977
1,071,252	73/109,020	08/16/1977	1,071,479	73/076,450	08/16/1977
1,071,253	73/109,031	08/16/1977	1,071,480	73/080,405	08/16/1977
1,071,257	73/099,061	08/16/1977	1,071,481	73/081,683	08/16/1977
1,071,264	73/084,543	08/16/1977	1,071,489	73/100,613	08/16/1977
1,071,272	73/110,156	08/16/1977	1,071,490	73/100,624	08/16/1977
1,071,274	73/112,035	08/16/1977	1,071,491	73/103,659	08/16/1977
1,071,277	73/112,621	08/16/1977	1,071,492	73/104,240	08/16/1977
1,071,281	73/113,151	08/16/1977	1,071,496	73/106,100	08/16/1977
1,071,283	73/055,771	08/16/1977	1,071,498	73/106,964	08/16/1977
1,071,285	73/086,055	08/16/1977	1,071,499	73/108,999	08/16/1977
1,071,287	73/103,896	08/16/1977	1,071,500	73/109,001	08/16/1977
1,071,292	73/051,988	08/16/1977	1,071,501	73/109,002	08/16/1977
1,071,293	73/059,209	08/16/1977	1,071,508	73/072,097	08/16/1977
1,071,296	73/078,622	08/16/1977	1,071,510	73/101,185	08/16/1977
1,071,298	73/078,919	08/16/1977	1,071,513	73/075,382	08/16/1977
1,071,300	73/080,165	08/16/1977	1,071,515	73/079,527	08/16/1977
1,071,301	73/080,166	08/16/1977	1,071,519	73/087,662	08/16/1977
1,071,303	73/084,644	08/16/1977	1,071,522	73/102,670	08/16/1977
1,071,305	73/088,749	08/16/1977	1,071,525	73/100,235	08/16/1977
1,071,315	73/046,850	08/16/1977	1,071,527	73/067,120	08/16/1977
1,071,316	73/084,171	08/16/1977	1,071,529	73/084,387	08/16/1977
1,071,318	73/101,799	08/16/1977	1,071,530	73/084,388	08/16/1977
1,071,328	73/064,553	08/16/1977	1,071,534	73/096,120	08/16/1977
1,071,330	73/070,578	08/16/1977	1,071,540	73/096,120	08/16/1977
1,071,333	73/077,543	08/16/1977	1,071,544	73/105,305	08/16/1977
1,071,337	73/082,330	08/16/1977	1,071,545	73/022,999	08/16/1977
1,071,339	73/082,964	08/16/1977	1,071,548	73/066,424	08/16/1977
1,071,342	73/086,108	08/16/1977	1,071,548	73/092,660	08/16/1977
1,071,343	73/087,213	08/16/1977	1,071,550	73/096,448	08/16/1977
1,071,345	73/089,194	08/16/1977	1,071,551	73/106,240	08/16/1977
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1,071,360	73/116,034	08/16/1977	1,071,562	73/107,690	08/16/1977
1,071,361	73/030,558	08/16/1977	1,071,568	73/107,243	08/16/1977
1,071,366	73/097,343	08/16/1977	1,071,569	73/060,986	08/16/1977
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1,071,387	73/085,048	08/16/1977	1,071,581	73/110,656	08/16/1977
1,071,388	73/087,555	08/16/1977	1,071,582	73/111,101	08/16/1977
1,071,392	73/092,652	08/16/1977	1,071,589		

Reg. Number	Serial Number	Reg. Date	Patents Available For License or Sale	
1,071,622	73/107,510	08/16/1977	D391,123	COMBINATION EATING UTENSIL
1,071,623	73/111,696	08/16/1977	Contact:	Clifford F. Rey 7400 Matherly Drive Wake Forest, N.C. 27587 (voice) : (919) 554-4200 (fax) : (919) 554-4243
1,071,624	73/044,500	08/16/1977		
1,071,627	73/103,742	08/16/1977	5,557,989	BAND SAW BLADE TENSIONING DEVICE
1,071,633	73/102,546	08/16/1977		
1,071,635	73/107,578	08/16/1977	Contact:	Kenneth Southall Troutman Sanders LLP 600 Peachtree St. NE Suite 5200 Atlanta, Ga. 30308-2216 (voice) : (404) 885-3290
1,071,636	73/108,121	08/16/1977		
1,071,639	73/054,234	08/16/1977	5,681,203	BUBBLE POPPING DEVICE
1,071,640	73/054,399	08/16/1977		
1,071,643	73/077,804	08/16/1977	Contact:	Melvin Arnold P.O. Box 696 Wheatley Heights, N.Y. 11798-0696 (voice) : (516) 643-9290
1,071,644	73/080,676	08/16/1977		
1,071,645	73/080,695	08/16/1977	5,711,094	POWER PIVOT GOLF SHOE
1,071,649	75/089,703	08/16/1977		
1,071,656	73/107,740	08/16/1977	Contact:	Jerry Grossman 6100 Westchester Park Drive Suite 1019 College Park, Md. 20740 (voice) : (301) 513-9379 (fax) : (301) 220-2207
1,071,660	73/086,391	08/16/1977		
1,071,662	72/408,405	08/16/1977	5,732,649	FLOATING DOCK SYSTEM
1,071,663	72/396,673	08/16/1977		
1,071,666	72/385,078	08/16/1977	Contact:	Paul P. Falcone 2808 11th St. No. St. Petersburg, Fla. 33704 (voice) : (305) 868-1183 (fax) : (305) 868-8501
1,071,667	72/427,177	08/16/1977		
1,071,669	73/111,051	08/16/1977	5,711,094	POWER PIVOT GOLF SHOE
1,071,671	73/101,280	08/16/1977		
1,071,675	73/088,171	08/16/1977	Contact:	Melvin Arnold P.O. Box 696 Wheatley Heights, N.Y. 11798-0696 (voice) : (516) 643-9290
1,071,678	73/100,208	08/16/1977		
1,071,680	73/065,427	08/16/1977	5,711,094	POWER PIVOT GOLF SHOE
1,083,956	73/121,440	01/31/1978		

Notice Regarding Technical Center Box Issue Fee Mailings

The Office will begin mailing address labels with the PTOL-85, "Notice of Allowance and Issue Fee Due" for patent applications allowed in all Technology Centers. These address labels should be used to ensure proper routing of post-allowance correspondence. This directive supersedes the "Special Boxes for Patent Mail" instruction. Any Notice of Allowance and Issue Fee Due received without the accompanying address labels should continue to be addressed to Box Issue Fee.

March 11, 1998

NICHOLAS P. GODICI
Deputy Assistant Commissioner
for Patents (Acting)

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Animal Crackers, Ltd., Highland Mills, N.Y., Reg. No. 1,160,134, for the mark "Animal Crackers and Design" and Reg. No. 1,156,469, for the mark "Animal Crackers", Canc. No. 26,222.

Creative Designs Imports, Inc., Los Angeles, Calif., Reg. No. 1,351,673, for the mark "PP and Design", Canc. No. 27,322.

American Kitchen Products Co., Inc., Jersey City, N.Y., Reg. No. 807,582, for the mark "BULLSHOT", Canc. No. 27,338.

KATRINA PETERSON
Supervisory Legal Assistant
Trademark Trial and
Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Disclaimers

D390,357—Lawrence I. Rosen, Mendham, N.J. CAR-
RYING CASE WITH TRANSPARENT COVER. Patent dated
February 10, 1998. Disclaimer filed March 17, 1998, by the
assignee, Rose Art Industries, Inc.

The term of this patent subsequent to October 7, 2011, has
been disclaimed.

5,532,609—Warren K. Harwood; Paul A. Tervo, both of
Vancouver, Wash.; Martin J. Koxxy, Hillsboro, Oreg. WAFER
PROBE STATION HAVING ENVIRONMENT CONTROL
ENCLOSURE. Patent dated July 2, 1996. Disclaimer filed
April 6, 1995, by the assignee, Cascade Microtech, Inc.

The term of this patent shall not extend beyond the expiration
date of Pat. No. 5,266,889.

5,665,085—Paul C. Nardella, North Easton, Mass. ELEC-
TROSURGICAL CUTTING TOOL. Patent dated September
9, 1997. Disclaimer filed April 30, 1998, by the assignee,
Medical Scientific, Inc.

Hereby enters this disclaimer to claims 1, 2, 3, 5 and 9, of
said patent.

5,700,687—Larry J. Finn, Gladewater, Texas. ODOR CON-
TROL SYSTEM. Patent dated December 23, 1997. Disclaimer
filed May 22, 1998, by the assignee, Bedminster Bioconversion
Corporation.

Hereby enters this disclaimer to claim 6 of said patent.

Disclaimers and Dedications

5,577,677—Hermann J. Frings, Alsdorf; Franz J. Hallmann,
Wurselen; Albert Keusch, Ubach-Palenberg, all of Germany.
AXIALLY-COMPRESSIBLE COIL CARRIER. Patent dated
November 26, 1996. Disclaimer and Dedication filed April 15,
1998, by the assignee, Technimark Inc.

Hereby disclaims and dedicates to the Public claims 1-21.

5,688,874—Douglas Claire Hoffman, Kingsport, Tenn.
PROCESS FOR PREPARING BLENDS OF POLY(ETH-
YLENE TEREPHTHALATE) AND POLY (ETHYLENE 2,6-
NAPHTHALENE DICARBOXYLATE). Patent dated
November 18, 1997. Disclaimer and Dedication filed May 11,
1998, by the assignee, Eastman Chemical Co.

Hereby disclaims and dedicates to the Public all claims of
said patent.

5,729,463—Gerhard Koenig, Birmingham; Robert Koehr,
Mt. Clemens; Felix Kybart, Birmingham, all of Michigan; Sig-
fried Walter, Leonberg, Germany; John Catterall, Troy; John
Krumbach, Plymouth, both of Michigan; Rolf Heyll, Ren-
ningen, Germany; Andrew Wolf, Parkland, Florida.
DESIGNING AND PRODUCING LIGHTWEIGHT AUTO-
MOBILE BODIES. Patent dated March 17, 1998. Disclaimer
and Dedication filed May 29, 1998, by the assignee, ULSAB
Trust.

Hereby disclaims and dedicates to the Public all claims of
said patent.

Certificates of Correction for July 14, 1998

B1-4,673,996	5,581,116	5,641,771	5,665,986
D. 379,340	5,583,088	5,641,774	5,666,558
D. 385,289	5,583,820	5,644,497	5,667,665
D. 387,237	5,584,407	5,645,033	5,667,970
D. 390,736	5,588,805	5,645,151	5,668,642
D. 393,618	5,589,452	5,646,124	5,668,830
D. 393,802	5,589,478	5,647,025	5,669,156
D. 394,245	5,590,021	5,649,006	5,670,047
4,837,009	5,590,102	5,649,034	5,670,088
4,886,657	5,593,085	5,649,250	5,670,144
4,938,335	5,593,737	5,650,882	5,673,156
4,975,285	5,599,479	5,651,469	5,674,128
4,997,042	5,599,729	5,652,649	5,675,183
5,080,860	5,600,300	5,652,923	5,676,530
5,099,103	5,605,903	5,653,871	5,677,094
5,156,820	5,606,085	5,653,937	5,677,569
5,291,167	5,608,536	5,654,287	5,679,381
5,310,424	5,611,084	5,654,752	5,679,805
5,319,084	5,612,760	5,655,763	5,680,225
5,428,149	5,613,066	5,656,401	5,680,241
5,453,489	5,616,552	5,656,449	5,680,428
5,453,594	5,619,967	5,656,498	5,680,623
5,455,631	5,621,648	5,656,875	5,681,199
5,478,852	5,621,720	5,658,373	5,684,200
5,479,553	5,622,151	5,658,884	5,685,373
5,486,384	5,622,632	5,659,842	5,685,727
5,496,590	5,622,765	5,659,844	5,685,765
5,505,984	5,623,624	5,659,852	5,686,281
5,508,001	5,624,893	5,660,437	5,686,407
5,509,430	5,625,790	5,661,033	5,686,730
5,533,582	5,627,052	5,661,113	5,687,218
5,536,732	5,629,113	5,661,147	5,688,370
5,545,289	5,629,541	5,661,256	5,688,463
5,558,411	5,631,125	5,661,296	5,688,652
5,565,695	5,631,354	5,661,411	5,688,673
5,570,689	5,633,049	5,662,581	5,688,906
5,571,227	5,635,005	5,663,067	5,689,403
5,575,109	5,637,508	5,664,562	5,689,777
5,577,004	5,638,081	5,665,373	5,690,359
5,577,181	5,638,760	5,665,442	5,690,755
5,578,589	5,639,749	5,665,780	5,691,248
5,580,462	5,640,887	5,665,798	5,691,958

Summary of Final Decisions Issued by the Trademark Trial and Appeal Board
May 25-29, 1998

Date Issued	Type of Case ⁽¹⁾	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
5-26	EX	74/673,178	Bridgewater Auto Body Shop, Inc.	2(c)(1)	Refusal Affirmed		"MANAGED CARE FOR COLLISION REPAIR" [motor vehicle body repair services]		No
5-26	EX	74/674,719	Mutoh Industries, Inc.	2(d)	Refusal Affirmed		"HI-PURE" [water purification and distillation units for household and office use]	"HI-PURE" [sodium free drinking water]	No
5-26	EX	74/673,773	Sun Mountain Sports, Inc.	2(d); whether identification of goods is sufficiently definite	Refusal Affirmed [on 2(d) ground only]		"ALTOS" [clothing, namely, shells, jackets, rainwear, cardigans, vests, sweaters, pullovers, shirts, slacks, shorts and upper body wear, consisting of, wind resistant suits, all particularly designed for use by golfers]	"ALTO" and "ALTO CANADA" [wearing apparel, namely, jackets, pants, shorts, rain coats, sweaters, vests, etc.]	No
5-27	EX (R)	74/692,688	Andre Romanelli, Inc.	2(d)	Request for Reconsideration Denied (Refusal Affirmed)		"MARIO RINALDI" [men's clothing, namely, suits, pants, jackets, coats, rainwear, shirts, ties and sweaters]	"RINALDI" [in stylized lettering] [women's shoes]	No

(1) EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (S)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case ⁽¹⁾	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
5-27	OPP	93,750	Uncle Ben's Inc. v. Stubenberg Int'l, Inc.	2(d)	Opposition Sustained	"UNCLE BEN'S" [rice, dehydrated vegetables, chicken or meat extracts, spices, seasonings, poultry dressing mix, peanut-pretzel snack, gravies, sauces]	"BEN'S BREAD" [bread mixes composed primarily of flour and other ingredients for bread baking]		Yes
5-29	OPP	95,968	Sabroso Co. v. Sabroso Foods Enterprises, Inc.	2(d)	Opposition Sustained	"SABROSO" [fruit puree concentrates] and "SABROSO COMPANY" trade name	"S SABROSO!" [canned peas, dry peas, frozen peas, canned black beans, canned soursop, coconut milk and prepared sausage, barbecue sauce, sour orange sauce, garlic and onion sauce]		No
5-29	OPP OPP	97,379 97,470	Success Holdings Co., LLC v. Napoleon Hill Foundation	2(d)	Oppositions Dismissed	"SUCCESS" [magazines pertaining to all aspects of personal, professional and financial achievement]; "SUCCESS!" [in stylized lettering] [general interest magazines]	"LAW OF SUCCESS" [education and entertainment services, namely, providing workshops and seminars relating to personal achievement and presenting awards relating to personal achievement; newsletters and printed teaching activity guides relating to personal achievement, calendars, diaries, memorandum books]		No

(1) EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (S)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box CPA	Requests for Continued Prosecution Applications (CPA's) under 37 CFR 1.53(d).
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
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Box Design	The filing of all design patent applications and any communications relating thereto.
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
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Box Reexam	Requests for Reexamination for <i>original</i> request papers <i>only</i> .
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Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications <i>prior</i> to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
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Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor <i>except</i> communications relating to <i>pending litigation and disciplinary proceedings</i> ; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
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Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
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Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

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Each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials.

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Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCIP) in Sunnyvale, California.

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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Connecticut	Hartford Public Library	Not Yet Operational
	New Haven Free Public Library	Not Yet Operational
Delaware	Newark: University of Delaware Library	(302) 831-2965
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	Tampa Campus Library, University of South Florida	(813) 974-2726
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	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
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Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
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	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 592-7000
	Stony Brook: Engineering Library, State University of New York	Not Yet Operational
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(330) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6971
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia: The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaguez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(864) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-1275
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2717
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	(806) 742-2282
	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Utah	Burlington: Bailey/Howe Library, University of Vermont	(802) 656-2542
Vermont	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Virginia	Seattle: Engineering Library, University of Washington	(206) 543-0740
Washington	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510 Ext. 113
West Virginia	Madison: Kurt F. Wendt Library, University of Wisconsin	(608) 262-6845
Wisconsin	Madison	(414) 286-3051
	Milwaukee Public Library	(307) 237-4935
Wyoming	Casper: Natrona County Public Library	

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
NICHOLAS P. GODICI, (Acting) Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director.....	308-0661	01/10/96
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director.....	308-1235	06/18/96
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director.....	308-0651	07/15/96
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director.....	308-2351	05/20/96
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director.....	308-0196	11/09/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director.....	308-1782	11/06/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director.....	308-0511	04/12/96
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director.....	305-3900	04/12/96
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director.....	305-3900	12/15/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director.....	308-0956	10/14/96
TELECOMMUNICATIONS, GROUP 2600—JIN F. NG, Director.....	305-3900	09/13/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director.....	305-3293	06/07/96
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director.....	308-1113	12/08/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director.....	308-1148	02/04/97
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director.....	308-0858	01/31/96
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director.....	308-0861	02/06/96
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director.....	308-2168	01/14/97

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:

- (1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
- (2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
- (3) All design patents are granted for a term of 14 years from the date of the grant. However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of June 1, 1998

Law Office	Oldest Date	
	New*	Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308-9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	01/09/98	03/16/98
Law Office 102—Thomas Shaw, Acting Managing Attorney, (703) 308-9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	10/14/97	02/11/98
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308-9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	09/16/97	05/01/98
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308-9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	08/21/97	03/05/98
Law Office 105—Thomas Howell, Managing Attorney, (703) 308-9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	10/14/97	02/12/98
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308-9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	10/31/97	04/14/98
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308-9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	01/09/98	03/10/98
Law Office 108—David Shallant, Managing Attorney, (703) 308-9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	08/27/97	01/21/98
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308-9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	08/21/97	04/14/98
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terror Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126 Affidavits Under Sections 8 & 15 (All Classes).....	04/20/98	—0—
Renewals (All Classes).....	04/20/98	—0—
Section 12(c) Publications (All Classes).....	03/16/98	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305-8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

JULY 14, 1998

Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,461,288 (3569th)

MID-HIND FOOT STABILIZER

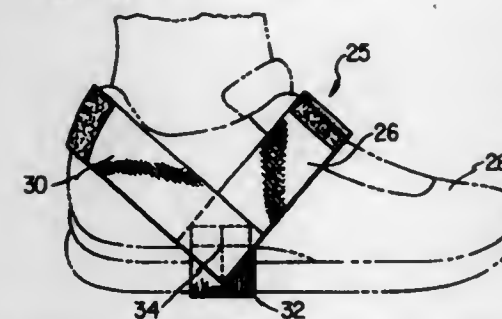
R. Stephen Curtis, Dallas, Tex., assignor to Nike, Inc., Beaverton, Oreg.

Reexamination Request No. 90/004,573, Mar. 5, 1997.

Reexamination Certificate for Patent 4,461,288, issued Jul. 24, 1984, Ser. No. 524,428, Aug. 18, 1983.

Int. Cl.⁶ A61F 5/04

U.S. Cl. 602—60



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-18 is confirmed.

1. An apparatus for stabilizing movement of the infratalar joints of the foot, comprising:

first means for applying a dispersive force about the region of the dorsum of the foot and directed along the line of motion of the infratalar joints, said first means slideable over the dorsum of the foot;

second means for applying a dispersive force about the region of the tendo-calcaneus proximate the attachment point thereof to the calcaneus bone and directed towards the region of the posterior talocalcaneal joint;

third means for applying a dispersive force about the sole of the foot in the region proximate the attachment point of the plantar fascia to the calcaneus bone and directed towards the infratalar joints, such that said first, second and third dispersive force means reduced movement of the infratalar joint during exercise; and

means for adjusting the relative force and position of said first, second and third dispersive force means such that said first and second dispersive force means can have differing forces for application to the infratalar joints.

B1 5,096,334 (3570th)

SHORING SHIELD

Michael J. Plank, Houston, Tex., assignor to Speed Shore Corporation, Houston, Tex.

Reexamination Request No. 90/003,056, May 12, 1993.

Reexamination Certificate for Patent 5,096,334, issued Mar. 17, 1992, Ser. No. 590,143, Sep. 28, 1990.

Int. Cl.⁶ E02D 17/04

U.S. Cl. 405—283

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

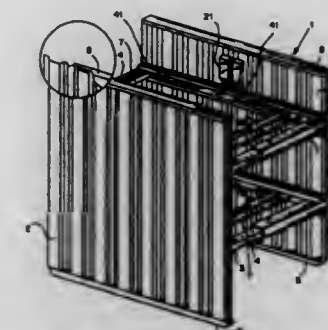
Claims 1-11 are cancelled.

New claims 12-14 are added and determined to be patentable.

12. A device for shoring the walls of an open excavation comprising:

(a) spaced shield means for insertion into the excavation for support of opposing side walls of the open excavation;

(b) support means mounted upon each of said shield means;



(c) telescoping cross members mounted to said support means of each of said shield means and extending across the space to form a box like structure expandable in one direction across the width of the excavation;

(d) means for extending and contracting said cross members across the width of the excavation;

(e) means for selectively applying, adjusting and releasing a precise pressure to said open excavation walls and means comprising combination manifold means and valve means providing for at least one attachment point for a hydraulic pressure source;

(f) means for simultaneous supply of hydraulic pressure equally to each of said hydraulic cylinders and selective pressure to isolated cylinders;

(g) protective armor means for said combination manifold means and valve means;

(h) hydraulic lines for connection of said combination manifold and valve means to each of said hydraulic cylinders; and

(i) means for protecting substantially the entire length of each of said hydraulic lines.

B1 5,346,699 (3571st)

METHOD FOR CONTROLLING PESTS BY A PESTICIDE FOAM

Barbara H. Tiernan, Cupertino, and Stanley M. Woogerd, San Rafael, both of Calif., assignors to Foam Innovations, Inc., Pleasanton, Calif.

Reexamination Request No. 90/004,299, Jul. 8, 1996.

Reexamination Certificate for Patent 5,346,699, issued Sep. 13, 1994, Ser. No. 63,361, May 17, 1993.

Continuation of Ser. No. 739,139, Jul. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 648,142, Apr. 11, 1991, abandoned, which is a continuation of Ser. No. 346,644, May 3, 1989, abandoned.

Int. Cl.⁶ A01N 25/16

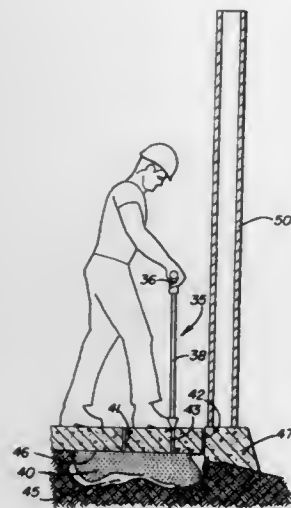
U.S. Cl. 424—405

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-19 is confirmed.

1. A method of controlling pests selected from the group consisting of termites, ants, spiders, mites, roaches, fleas, house nesting flies, silverfish, lice, earwigs, wasps, bees, sowbugs and crickets, comprising the steps of:

mixing a liquid foamable residual pesticide with a foaming agent, water and air, the pesticide being selected from the group consisting of the carbamates, the pyrethrins, the pyrethroids, the organophosphates, the chlorinated hydrocarbons and the borates, to produce a temporary non-solidifying pesticidal wet foam having an expansion ratio, defined as the ratio of the final foam volume to the sum of the volumes of the pesticide, the foaming agent and the water, of between 20 to 1 and 5 to 1 and a flowability of less than about 30 seconds; and



applying said foam, with repetition if necessary, at a locus whereby the foam contacts a surface which defines the locus, and thereafter deposits the pesticide on the surface and dissipates, so as to provide effective residual pesticidal activity on the surface.

B1 5,393,372 (3572nd)

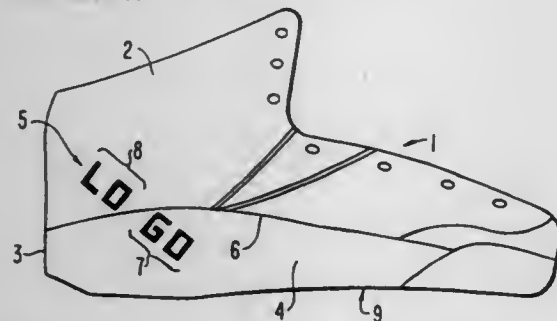
METHOD OF DISPLAYING INDICIA ON FOOTWEAR
Stephen D. Ammon, Newburyport, Mass., assignor to Fila U.S.A., Inc., Hunt Valley, Md.

Reexamination Request Nos. 90/004,034, Nov. 21, 1995 and 90/004,408, Oct. 7, 1996.

Reexamination Certificate for Patent 5,393,372, issued Feb. 28, 1995, Ser. No. 154,968, Nov. 19, 1993.

Int. Cl.⁶ B44C 1/22

U.S. Cl. 216—33



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–20 are cancelled.

1. A method for displaying indicia on footwear having a sole and upper portion, wherein the sole has a sidewall, the method comprising:

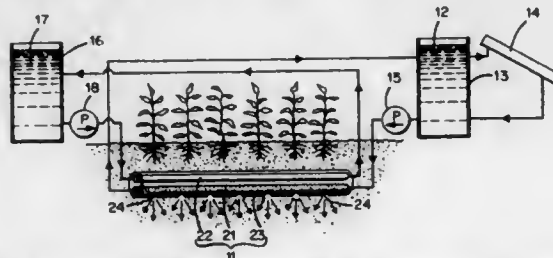
- applying a first segment of the indicia to the upper portion;
- applying a second segment of the indicia to the sidewall of the sole; and
- aligning the first and second segments to form the indicia during assembly of the upper portion to the sole.

B1 5,522,970 (3573rd)
DISTILLING TUBE APPARATUS
Yutaka Shimizu; Yoshiyuki Otsuka, both of Tokyo-to; Yoshihiko Hiraga; Atsushi Tanigawa, both of Osaka, and Masayuki Kobayashi, Okayama, all of Japan, assignors to Japan Gore-Tex, Inc., Japan

Reexamination Request No. 90/004,612, Apr. 24, 1997.
Reexamination Certificate for Patent 5,522,970, issued Jun. 4, 1996, Ser. No. 352,726, Dec. 2, 1994.

Claims priority, application Japan, Dec. 2, 1994, 5-306876
Int. Cl.⁶ B01D 3/04

U.S. Cl. 202—197



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–3 is confirmed.

New claim 4 is added and determined to be patentable.

1. Distilling tube apparatus for converting salt water into fresh water comprising:

- (a) source of heated salt water;
- (b) a first means for pumping said heated salt water, said first pumping means in fluid communication with said source of heated salt water;
- (c) a source of cooling water;
- (d) a second pumping means in fluid communication with said source of cooling water;
- (e) a first tube in fluid communication with said source of heated water and said first pumping means, said tube constructed of a porous material which is both water-vapor-permeable and liquid water impermeable, which tube allows water vapor to permeate through it when said heated salt water flows there-through, said vapor condensing outside of said first tube upon cooling of said vapor thereat;
- (f) a second tube, in fluid communication with said source of cooling water and said second pumping means, through which cooling water flows, said second tube oriented in generally parallel relationship and in close proximity to said first tube, said cooling water being maintained at a temperature lower than that of said heated salt water, thereby resulting in a lowering of the temperature of the surroundings of said second tube; and
- (g) a third housing tube which houses both said first tube and said second tube within its interior thereof, said housing tube having a plurality of spaced apart openings in a wall thereof to permit fresh water which has condensed externally to said first tube and within said housing tube to flow through said openings and outwardly of said distilling tube apparatus.

B1 5,554,121 (3574th)

INTRALUMINAL CATHETER WITH HIGH STRENGTH PROXIMAL SHAFT

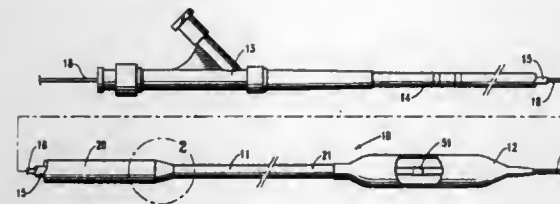
Robert D. Ainsworth, Scotts Valley; Tai C. Cheng, Mountain View, and Lawrence D. Wasicek, Sunnyvale, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Reexamination Request No. 90/004,602, Apr. 9, 1997.
Reexamination Certificate for Patent 5,554,121, issued Sep. 10, 1996, Ser. No. 280,210, Jul. 25, 1994.

Int. Cl.⁶ A61M 29/00

U.S. Cl. 604—96

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:



The patentability of claims 1–6 is confirmed.

New claims 7–17 are added and determined to be patentable.

1. A balloon dilatation catheter comprising:

- a) a proximal catheter shaft portion formed at least in part of an extruded engineering thermoplastic polymeric material with a tensile strength greater than 10,000 psi, an elongation greater than 50% and a tensile modulus greater than 300,000 psi, having proximal and distal ends and having a first inner lumen extending therein to the distal end;
- b) a distal catheter shaft portion being more flexible than the proximal catheter shaft portion, having proximal and distal ends and a second inner lumen extending from the proximal end of the distal shaft portion to a location proximal to the distal end of the distal catheter shaft portion and being in fluid communication with the first inner lumen extending within the proximal catheter shaft portion; and
- c) an expandable dilatation balloon on the distal catheter shaft portion having an interior in fluid communication with the second inner lumen extending within the distal shaft portion.

REISSUES

JULY 14, 1998

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in *italics* indicates additions made by reissue.

Re. 35,842

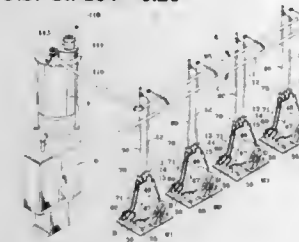
LUBRICATING SYSTEM

Charles W. Ehlert, Katy, Tex., assignor to Lubrication Systems Company of Texas, Inc., Houston, Tex.
Original No. 5,318,152, dated Jun. 7, 1994, Ser. No. 10,887, Jan. 29, 1993. Application for reissue May 6, 1996, Ser. No. 643,477

Int. Cl.⁶ F01M 1/00

U.S. Cl. 184—6.26

31 Claims



18. An improved lubricating system for continuous lubrication of a plurality of bearings of one or more bearing equipped items, said system comprising:

- oil mist generation means by which air and oil are combined to form a dry oil mist;
- a distribution assembly connected to said oil mist generation means and by which dry oil mist therefrom is remotely transmitted and distributed to one or more reclassifiers, said reclassifiers converting said dry oil mist to wet oil mist for distribution to said bearings;
- collection means connected to said bearing equipped items for collecting oil and excess oil mist from said bearings;
- a return assembly connected to said collection means and by which excess oil mist is returned for reuse; and
- characterized in that oil and oil mist in said distribution assembly, said collection means and said return assembly are completely enclosed and isolated from the surrounding environment.

Re. 35,843

LOW PRESSURE NON-BARRIER TYPE, VALVED DISPENSING CAN

George B. Diamond, and Ralph Helmrich, both of Glen Gardner, N.J., assignors to Dispensing Container Corporation, N.J.
Original No. 5,211,317, dated May 18, 1993, Ser. No. 900,414, Jun. 18, 1992. Application for reissue Sep. 5, 1996, Ser. No. 697,689

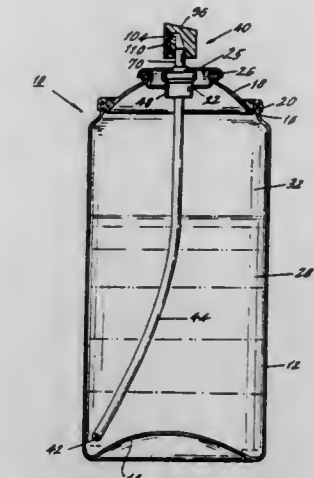
Int. Cl.⁶ B67D 5/42

U.S. Cl. 222—394

26 Claims

20. A low pressure, non-barrier type, aerosol spray valved dispensing can for containing and dispensing fluent materials in aerosol spray form by compressed and/or liquified gas the can comprising:

- a generally cylindrical can having a wall of such a material and with such a thickness that when the can is unpressurized, the can wall is easily distortable by normal finger pressure and is easily crushable by normal hand pressure, but when the can is pressurized, the can is rigid enough to not be easily distortable and crushable by normal finger and hand pressure;



the can being adapted for containing propellant and fluent material to be dispensed, the propellant and fluent material not be separated by a barrier in the can between them; an aerosol spray dispensing valve on the can with a valve orifice adapted to be opened to dispense a desired quantity and rate of flow of fluent material and propellant in an aerosol spray form and in a manner such that the can will retain enough propellant pressure to expel substantially all of the dispensable fluent material in the can.

Re. 35,844

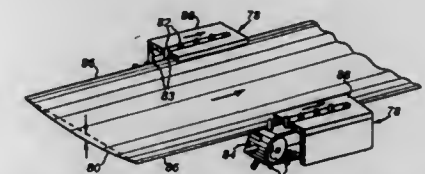
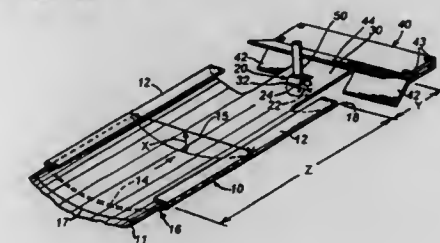
PAPER GUIDING METHOD AND APPARATUS

H. W. Crowley, Elliot, Me., assignor to Roll Systems, Inc., Burlington, Mass.
Original No. 5,213,246, dated May 25, 1993, Ser. No. 580,210, Sep. 10, 1990. Application for reissue May 24, 1995, Ser. No. 448,824

Int. Cl.⁶ B65H 23/26

U.S. Cl. 226—88

27 Claims



18. An apparatus for guiding a web in a defined path comprising:

- a tractor pin feed mechanism comprising a left tractor pin feed belt with pins projecting therefrom and a right tractor pin feed belt with pins projecting therefrom, the pins of the left tractor pin feed belt and the pins of the right tractor pin feed belt each having inner facing edges that are aligned along respective lines, the respective lines being substantially parallel to each other and being spaced apart at a first distance; and
- wherein the first distance is less than a second distance that is equal to a spacing between widthwise edges of a web when

the web is substantially flat, the inner facing edges of the pins of the left belt and the right belt being constructed and arranged to abut an edge of the web and form the web into a trough-shape to provide stiffness and controllability to the web as it passes through the tractor pin feed mechanism.

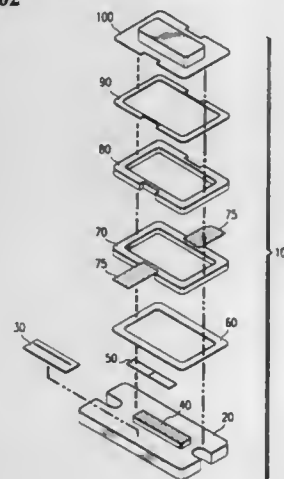
Re. 35,845

RF TRANSISTOR PACKAGE AND MOUNTING PAD
Gasper Butera, Blue Bell, Pa., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Original No. 5,109,268, dated Apr. 28, 1992, Ser. No. 458,585, Dec. 29, 1989. Application for reissue Apr. 28, 1994, Ser. No. 235,022

Int. Cl.⁶ H01L 39/02

U.S. Cl. 257—702

1 Claim



1. A semiconductor package having an input, output and a common terminal for connection therewith of respective terminals of a semiconductor which comprises:

- a support member;
 - a thermally conducting, electrically insulating pad deposited directly on said support member as a thin film without use of an intermediate material between said pad and said support member, said pad adapted to receive said semiconductor;
 - a semiconductor mounted on said pad; and
 - a protective lid,
- said pad comprising [a material selected from the group consisting of plasma deposited aluminum nitride, vacuum deposited diamond, plasma deposited alumina, and plasma deposited boron nitride].

Re. 35,846

SHEET SORTING APPARATUS

Jack Aaron, Tustin, Calif., assignor to Gradeo (Japan) Ltd., Tokyo, Japan
Original No. 5,351,947, dated Oct. 4, 1994, Ser. No. 985,553, Dec. 3, 1992. Continuation of Ser. No. 696,772, May 7, 1991, Pat. No. 5,169,144. Application for reissue Oct. 4, 1996, Ser. No. 725,812

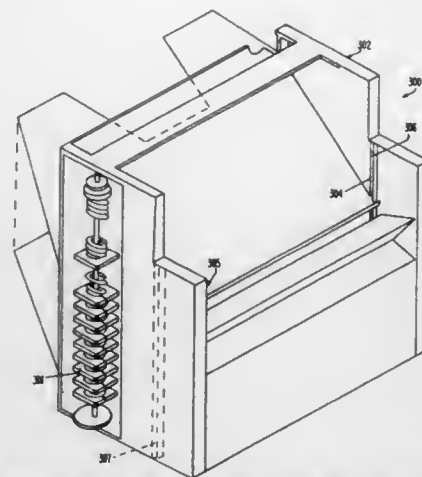
Int. Cl.⁶ B65H 31/24

U.S. Cl. 271—293

11 Claims

1. A sheet sorting apparatus of the shifting tray type for receiving paper sheets, comprising:

- a pair of helical coils, each coil of said pair of helical coils being predominantly [would] wound with a plurality of turns of a first pitch, and containing at least one turn of a second pitch, the second pitch being coarser than the first pitch, each coil having a longitudinal axis;
- means for rotational support, the support means holding the coils in positions wherein said longitudinal axes of the coils are approximately parallel to each other;



means for rotational drive, the drive means rotating each coil about said longitudinal axis, both coils rotating in the same sense and at the same speed of rotation;

a plurality of trays arranged in a stack, each said tray being separated from an adjacent said tray by a space, each tray having a leading edge for receiving the sheets, two side edges on either side of the leading edge, the side edges defining the sides of the stack, and a surface for supporting the sheets, one said coil being positioned adjacent to each of said sides of the stack;

one of said coils being positioned at about the center of each of said side edges; and

a plurality of tray lift blocks, each tray having a pair of the tray lift blocks [for] providing attachment [of] means connecting the tray to coils, each tray lift block having a means for tray engagement and a helical shaped guideway therethrough, the guideway providing clearance for sliding engagement of the tray lift block with the coil so that as the coil rotates the attachment means moves along the coil in accordance with the direction of rotation of the coil;

said apparatus including a pair of vertical guides, each of said leading edges of said trays including extensions for engaging said guides;

whereby the stack of trays move along the pair of coils as the coils rotate, the space between each pair of adjacent trays being approximately equal for adjacent trays moving on the coil turns of the first pitch, the space between each pair of adjacent trays growing to a larger spacing as each tray moves into the coil turns of the second pitch, the larger spacing facilitating the ingress of the sheet of paper, so that each tray in turn may receive a paper sheet.

Re. 35,847

SELF-TERMINATING DATA LINE DRIVER

Terry R. Lee, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Original No. 5,327,317, dated Jul. 5, 1994, Ser. No. 806,688, Dec. 13, 1991. Application for reissue Jul. 3, 1996, Ser. No. 675,728

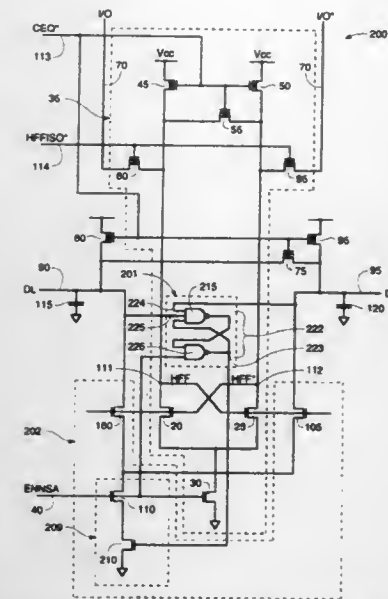
Int. Cl.⁶ H02H 3/14

U.S. Cl. 365—189.11

37 Claims

12. An electronic device for driving a differential potential between first and second data lines, the electronic device comprising:

- a gating device for selectively conducting a first potential in response to a control signal;
- a first switching device interposed between said first data line and said gating device for receiving said first potential and selectively conducting it to said first data line to pull said first data line toward said first potential;
- a second switching device interposed between said second data line and said gating device for receiving said first potential



and selectively conducting it to said second data line to pull said second data line toward said first potential; and
a differential signal sensing circuit coupled to said gating device for selectively providing said control signal thereto in response to a differential potential sensed by said sensing circuit between said first and second data lines in order to control the extent to which said first and second data lines are pulled toward said first potential.

Re. 35,848

X-RAY CT SCANNER

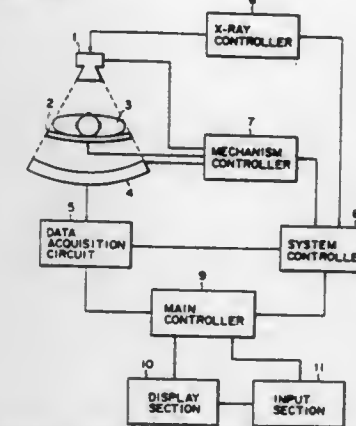
Shigeru Tanaka, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Original No. 5,103,469, dated Apr. 7, 1992, Ser. No. 662,995, Feb. 28, 1991. Continuation of Ser. No. 352,539, May 16, 1989, abandoned. Application for reissue Oct. 24, 1995, Ser. No. 547,153

Claims priority, application Japan, May 20, 1988, 63-124493

Int. Cl.⁶ A61B 6/00

U.S. Cl. 378—16

84 Claims



42. In an X-ray CT scanner having an X-ray emitting means and an X-ray detecting means, a method of operating the X-ray CT scanner to produce a slice image of a subject under examination, comprising the steps, performed by a processor, of:
emitting X-rays from the X-ray emitting means to the subject;

detecting X-rays emitted in the emitting step and passed through the subject;

constructing a scanogram, in response to the emitting step and to the detecting step, including the substeps of moving the X-ray emitting means with the X-ray detecting means along the subject and

photographing a scanogram of the subject;

specifying a slice of the entire photographed scanogram; determining, in response to the step of constructing a scanogram and the step of specifying a slice, an operation state of the emitting means including at least one of a current to be applied to the emitting means, a voltage to be applied to the emitting means, and a scan time, the operation state being determined for the slice specified by the slice specifying step based on image information of the scanogram at the slice;

scanning, in response to the determining step, the slice of the subject specified by the specifying step in the scanogram in accordance with the operation state determined in the determining step the scanning step including the substep of rotating the X-ray emitting means and the detecting means around the subject; and

reconstructing a slice image of the slice of the subject based on the output from the detecting step during scanning in the scanning step.

Re. 35,849

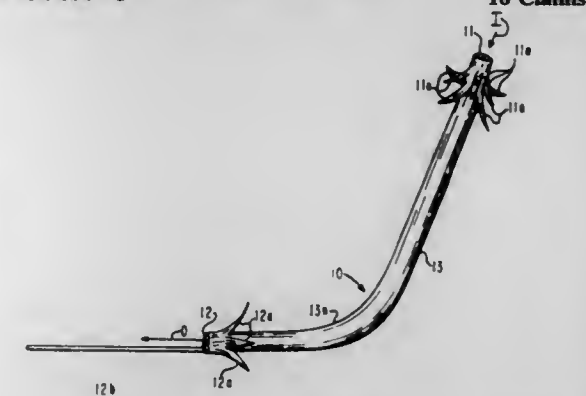
INDWELLING STENT

Nib Soehendra, Norderstedt, Germany, assignor to Wilson-Cook Medical, Inc., Winston-Salem, N.C.
Original No. 5,176,626, dated Jan. 5, 1993, Ser. No. 821,001, Jan. 15, 1992. Application for reissue Dec. 30, 1994, Ser. No. 367,801

Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—8

18 Claims



10. A stent for facilitating the drainage of fluids through an obstructed duct within the body, said stent comprising:

an inflow end portion, an outflow end portion, and a drainage tube therebetween, said inflow end portion defining inlet means for allowing fluid to enter into the inflow end of said drainage tube, said outflow end portion defining outlet means for allowing fluid to exit the outflow end of said drainage tube; and

means for anchoring said stent in an obstructed duct with the inflow end of said drainage tube positioned within the duct; wherein said anchoring means comprise a plurality of radially extending flaps formed by slicing small longitudinal sections in said drainage tube and orienting said sliced sections radially, and wherein said sliced sections are made shallowly such that holes are not made in said drainage tube.

PLANT PATENTS

GRANTED JULY 14, 1998

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,489

MINIATURE ROSE PLANT NAMED 'MEIBRENEC'
Alain A. Meilland, Antibes, France, assignor to CP (Delaware), Inc., Wilmington, Del.

Filed Jul. 31, 1997, Ser. No. 873,913

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—9

1 Claim

1. A new and distinct variety of miniature rose plant characterized by the following combination of characteristics:

- (a) forms in abundance attractive small double pink blossoms,
- (b) exhibits a hanging growth habit,
- (c) forms semi-glossy medium green foliage,
- (d) propagates well on its own roots, and
- (e) is particularly suited for growing as ornamentation in a hanging basket;

substantially as herein shown and described.

10,490

'P.F. 7' PEACH TREE

Paul Jan Friday, Coloma, Mich., assignor to Paul J. Friday, Coloma, Mich.

Filed Dec. 19, 1996, Ser. No. 770,124

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—43.1

1 Claim

1. A new and distinct variety of peach tree substantially as illustrated and described as a large size tree, vigorous in growth and a regular and productive bearer of large size, yellow flesh semi-cling fruit with good flavor and eating quality; and a fruit of substantially spherical shape having a firm flesh, and a red skin color covering over 80% of the fruit at maturity which occurs about 12 days before maturity of the 'Redhaven' peach variety; and, this tree has a remarkable ability to produce practically all fruit void of split pits or skin blemishes; extraordinary for an early peach. This tree has a particularly wide leaf.

10,491

OSTEOSPERMUM PLANT NAMED 'CAPE DAISY NAMAQUA'

Carl Aksel Kragh Sorensen, Åbyhøj, Denmark, assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Aug. 9, 1996, Ser. No. 695,340

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—68.1

1 Claim

1. A new and distinct cultivar of Osteospermum plant named 'Cape Daisy Namaqua', as illustrated and described.

10,492

AFRICAN VIOLET PLANT NAMED ILONA
Reinhold Holtkamp, Sr., Rees-Haffen, Germany, assignor to International Plant Breeding A.G., Bern, Switzerland

Filed Feb. 7, 1997, Ser. No. 797,615

Int. Cl.⁶ A01H 4/00

U.S. Cl. Plt.—69.1

1 Claim

1. A new and distinct cultivar of African violet plant named Ilona, as described and illustrated, and particularly characterized by its small, single violet-shaped, multi-colored light pink flowers with bright pink center radiating into the petals and purplish touches in the center; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the

leaves; medium green, oval to spear-shaped leaves; profuse flowering; vigorous and compact growth habit; flowering 9–10 weeks after potting, and its long lasting and non-dropping flowers.

10,493

AFRICAN VIOLET PLANT NAMED PICASSO

Reinhold Holtkamp, Sr., Rees-Haffen, Germany, assignor to International Plant Breeding A.G., Bern, Switzerland

Filed Feb. 7, 1997, Ser. No. 798,299

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—69.1

1 Claim

1. A new and distinct cultivar of African violet plant named Picasso, as described and illustrated, and particularly characterized by its single violet-shaped, multi-colored pink flowers with brighter pink center and purplish blue speckles on the petals; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, heart-shaped leaves; profuse flowering; vigorous and compact growth habit; flowering 9–10 weeks after potting, and by its long lasting and non-dropping flowers.

10,494

LILIUM NAMED 'MONTREUX, ALBA'

John Creedon, P.O. Box 608, Bantam, Conn. 06750

Filed Feb. 12, 1997, Ser. No. 798,084

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—87.4

1 Claim

1. A new distinctive Asiatic hybrid lily plant, as shown herein and described containing valuable characteristics of stem strength and bud retention, particularly for a white lily to be forced under greenhouse conditions of reduced light during winter months, without the aid of high intensity discharge (HID) lighting.

10,495

NEW GUINEA IMPATIENS PLANT NAMED 'DANIMIN'

Gaby Danziger, Nir Zvi, Israel, assignor to Danziger "Dan" Flower Farm, Post Beit Dagan, Israel

Filed Jul. 10, 1996, Ser. No. 677,851

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—87.6

1 Claim

1. A new and distinct cultivar of impatiens plant named 'Danimin', as illustrated and described.

10,496

DAHLIA PLANT NAMED 'GALLERY REMBRANDT'

Aad Verwer, Lisse, Netherlands, assignor to Gebr. Verwer, Lisse, Netherlands

Filed Mar. 12, 1997, Ser. No. 815,730

Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—87.8

1 Claim

1. A new and distinct cultivar of Dahlia plant named 'Gallery Rembrandt', as illustrated and described.

10,497

DAHLIA PLANT NAME 'GALLERY RENOIR'
Aad Verwer, Lisse, Netherlands, assignor to Gebr. Verwer,
Lisse, Netherlands

Filed Mar. 12, 1997, Ser. No. 815,862
Int. Cl.⁶ A01N 5/00

U.S. Cl. Pkt.—87.8

1 Claim

1. A new and distinct cultivar of Dahlia plant named 'Gallery
Renoir', as illustrated and described.

10,498

DAHLIA PLANT NAMED 'GALLERY LEONARD'
Aad Verwer, Lisse, Netherlands, assignor to Gebr. Verwer,
Lisse, Netherlands

Filed Mar. 12, 1997, Ser. No. 815,865
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.8

1 Claim

1. A new and distinct cultivar of Dahlia named 'Gallery
Leonardo', as illustrated and described.

10,499

DAHLIA PLANT NAMED 'GALLERY VERMEER'
Aad Verwer, Lisse, Netherlands, assignor to Gebr. Verwer,
Lisse, Netherlands

Filed Mar. 12, 1997, Ser. No. 815,866
Int. Cl.⁶ A01N 5/00

U.S. Cl. Pkt.—87.8

1 Claim

1. A new and distinct cultivar of Dahlia plant named 'Gallery
Vermeer', as illustrated and described.

10,500

DAHLIA PLANT NAMED 'GALLERY VINCENT'
Aad Verwer, Lisse, Netherlands, assignor to Gebr. Verwer,
Lisse, Netherlands

Filed Mar. 12, 1997, Ser. No. 815,867
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.8

1 Claim

1. A new and distinct cultivar of Dahlia plant named 'Gallery
Vincent', as illustrated and described.

10,501

DAHLIA PLANT NAMED 'GALLERY SALVADOR'
Aad Verwer, Lisse, Netherlands, assignor to Gebr. Verwer,
Lisse, Netherlands

Filed Mar. 12, 1997, Ser. No. 815,871
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.8

1 Claim

1. A new and distinct cultivar of Dahlia plant named 'Gallery
Salvador', as illustrated and described.

10,502

VARIETY OF GERANIUM PLANT NAMED 'ELYANE'
David Lemon, Lompoc, Calif., assignor to John Bodger & Sons
Company, So. El Monte, Calif.

Filed Oct. 1, 1996, Ser. No. 724,709
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.12

1 Claim

1. A new and distinct variety of Geranium plant, substantially as
shown and described.

10,503

BEGONIA PLANT NAMED 'PINTO'
Geert J. W. de Ridder, Aalsmeer, Netherlands, assignor to
Begonia Breeders Assoc. B.V., Aalsmeer, Netherlands

Filed Mar. 6, 1997, Ser. No. 811,737
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.18

1 Claim

1. A new and distinct cultivar of Begonia plant named 'Pinto', as
illustrated and described.

10,504

BEGONIA PLANT NAMED 'CAVILI'
Andre Smaal, Aalsmeer, Netherlands, assignor to Begonia
Breeders Assoc. B.V., Aalsmeer, Netherlands

Filed Mar. 6, 1997, Ser. No. 811,739
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.18

1 Claim

1. A new and distinct cultivar of Begonia plant named 'Cavili',
as illustrated and described.

10,505

BEGONIA PLANT NAMED 'MARY-ANN'
Jan Man, Amstelveen, Netherlands, assignor to Begonia Breed-
ers Assoc. B.V., Aalsmeer, Netherlands

Filed Mar. 6, 1997, Ser. No. 811,740
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.18

1 Claim

1. A new and distinct cultivar of Begonia plant named 'Mary-
Ann', as illustrated and described.

10,506

BEGONIA PLANT NAMED 'NETJA FRANJE'
Jan Man, Amstelveen, Netherlands, assignor to Begonia Breed-
ers Assoc. B.V., Aalsmeer, Netherlands

Filed Mar. 6, 1997, Ser. No. 811,741
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.18

1 Claim

1. A new and distinct cultivar of Begonia plant named 'Netja
Franje', as illustrated and described.

10,507

BEGONIA PLANT NAMED 'DELI'
Andre Smaal, Aalsmeer, Netherlands, assignor to Begonia
Breeders Assoc. B.V., Aalsmeer, Netherlands

Filed Mar. 6, 1997, Ser. No. 812,148
Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—87.18

1 Claim

1. A new and distinct cultivar of Begonia plant named 'Deli', as
illustrated and described.

PATENTS

GRANTED July 14, 1998

ERRATA

For CLASS	See PATENT NO.
D23—406	D396,001
135—078	5,778,605
248—221	5,778,804
229—125	5,779,129
244—012	5,779,169
254—134	5,779,229
384—107	5,779,275
401—079	5,779,381
434—094	5,779,479
204—267	5,779,876
425—131	5,780,063
436—518	5,780,319
526—086	5,780,570
564—413	5,780,686
570—134	5,780,691
257—788	5,780,933
347—029	5,780,216
326—220	5,781,007
356—375	5,781,269
336—192	5,781,287
702—007	5,781,436
385—124	5,781,684
385—134	5,781,685
385—135	5,781,686
419—066	5,781,846
711—118	5,781,916

PATENTS

GRANTED JULY 14, 1998

GENERAL AND MECHANICAL

5,778,448

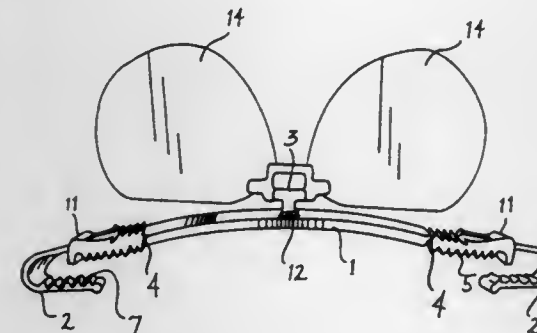
ASSEMBLY FOR ATTACHING SUNGLASSES TO A CAP
Thomas Henry Maher, 2864 Irving Ave. So., Minneapolis, Minn. 55408

Filed May 12, 1997, Ser. No. 854,557

Int. Cl.⁶ A42B 1/06

U.S. Cl. 2—10

1 Claim



1. An assembly for removably attaching sunglasses to the sides of the bill of a cap, said assembly comprising:

a bow having at either end thereof a hinge which has teeth which grasp onto said bill of said cap, said hinges allowing said bow to conform to various configurations of said bill, said hinges also having teeth on their opposite surfaces from said teeth which grip said cap bill;

a pair of clamps which mount onto said hinges, said clamps having teeth which grasp onto said bill and also having at least one tooth which interlocks into said teeth of said hinges which are on said opposite surfaces from said teeth which grip said cap bill in various positions, allowing said bow to be adjusted to fit various widths of cap bills;

a pressure clamp which clamps onto a sunglass lens, said clamp pivotally fitting into openings formed into said bow, allowing said lens to be flipped up underneath said bill when not in use and to be flipped down for use.

5,778,449

WRIST GUARD

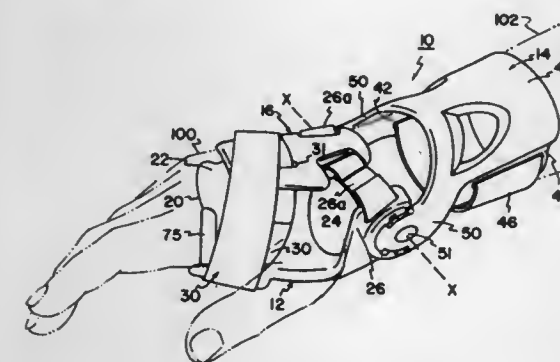
Richard Highlands Oetting; Thomas Lee Spaulding, both of St. Louis Park, and Sherry S. Popowski, Minneapolis, all of Mich., assignors to Rollerblade, Inc., Eden Prairie, Minn.

Filed Feb. 13, 1997, Ser. No. 800,887

Int. Cl.⁶ A41D 13/08

U.S. Cl. 2—16

16 Claims



1. A wrist guard for protecting a wrist of a user, said wrist guard comprising:

a first rigid brace and a second rigid brace;

said first rigid brace having an impact surface sized and positioned to oppose a palm of said user, said impact surface having a generally longitudinal concave shape opposing said palm;

said second rigid brace having a support surface sized and positioned to oppose an upper surface of a lower arm of said user;

said first brace including first and second support arms extending from said impact surface to opposite sides of said user's wrist;

said second brace including first and second support arms extending from said support surface to opposite sides of said user's wrist and opposing said first and second support arms of said first brace, respectively;

a hinge for pivotally joining said first and second support arms of said first brace to said first and second support arms of said second brace, respectively;

said hinge including means for restricting upward pivotal movement of said first brace relative to said second brace beyond a point of maximum upward bending.

5,778,450

BIB AND TRAY

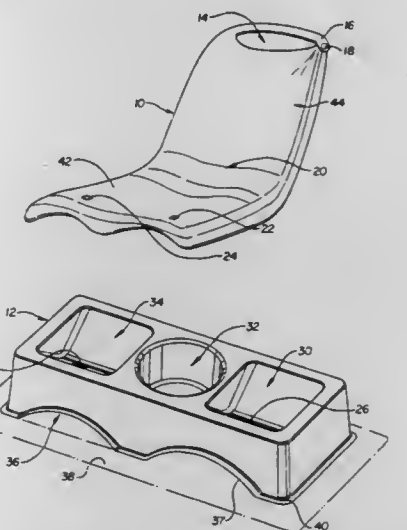
Christian A. Hagestad, 3522 W. 29th St., Minneapolis, Minn. 55416, and Choon M. Choi, 2820 Girard Ave. S., Minneapolis, Minn. 55408

Filed Dec. 5, 1996, Ser. No. 759,207

Int. Cl.⁶ A45F 5/00; 5/04

U.S. Cl. 2—49.3

5 Claims



1. A combination bib and tray system comprising a bib and a tray;

said bib comprising a substantially rectangular sheet of flexible material having a neck piece forming a neck aperture with a neck closure located off the center with respect to said neck aperture; said bib is divided into a chest portion and a leg portion;

said tray including a pair of leg recesses which are complementary leg cutouts to aid in positioning and stabilizing the tray on the legs in a seated position;

said tray also including a plurality of compartments for holding food wherein at least one compartment extends below the level of the top of the users legs in a seated position; and

said combination including at least one anchor for connecting the tray to the bib.

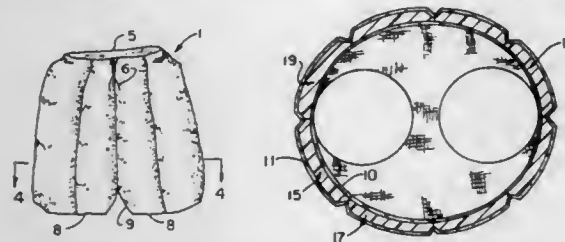
5,778,451
BUOYANT SWIM GARMENT AND METHOD OF MANUFACTURE

Richard L. Rhea, 1872 Woodhollow Dr., Apt. 209, St. Louis, Mo. 63043

Filed Feb. 3, 1997, Ser. No. 792,984
Int. Cl.⁶ A41D 7/00; B36C 9/08

U.S. Cl. 2—67

13 Claims



1. The process of making a buoyant swim garment having a circumferential reach and a heightwise dimension, said garment having inner and outer layers of fabric and, intermediate said inner and outer layers, a buoyant flexible sheet material, said sheet material having two broad side surfaces, a plurality of panels and a perimeter, said process comprising skiving in one of said side surfaces of said sheet material spaced V-shaped grooves extending in the heightwise dimension of said garment to define said panels, and skiving the periphery of said material to form a bevel with a pliant outer edge, positioning said skived material between said inner and outer layers with said bevel facing said outer layer, and stitching through an apex of said V-shaped grooves and said inner and outer layers.

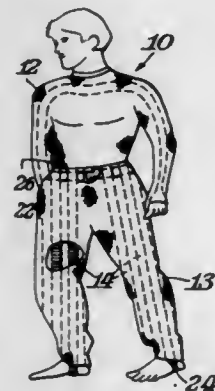
5,778,452
EXERCISE GARMENT

Timothy P. Dicker, 6906 Foothill Blvd., Tujunga, Calif. 91042-2780, and William T. Wilkinson, P.O. Box 73, Salem, N.J. 08079

Filed Apr. 25, 1997, Ser. No. 840,917
Int. Cl.⁶ A41B 1/12

U.S. Cl. 2—69

17 Claims



1. An exercise garment including an outer suit of clothing comprising at least a part of a sweatsuit having a body portion and a pair of limb portions, said sweatsuit having an inner surface, an inner suit of clothing having an outer surface, said inner suit of clothing being disposed inside of said outer suit of clothing, said inner surface of said sweatsuit and said outer surface of said inner suit being in at least partial contact with each other and being at least substantially free of connection to each other whereby said sweatsuit and said inner suit are free to move independently of each other with said sweatsuit concealing said inner suit, said inner suit of clothing being secured to said outer suit at at least one point said inner suit of clothing being made of a base fabric having elastic resistance elements requiring a greater force to stretch said resistance elements and resist said resistance elements from returning to their unstretched condition than is required for said base

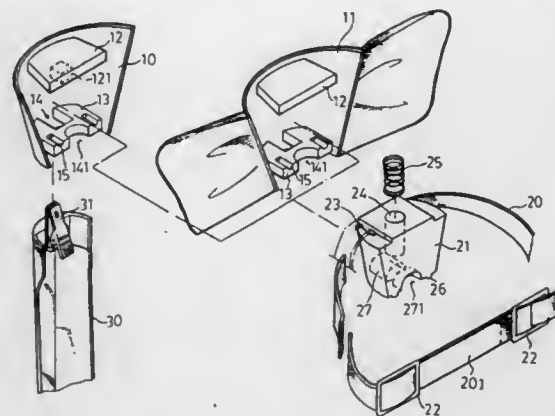
fabric, said inner suit of clothing closely fitting against a user whereby the user is required to stretch said elastic resistance elements during body movement of the user and to resist said elastic resistance elements from returning to their unstretched condition, and said sweatsuit being of longer length than the length of said inner suit of clothing over a given lineal distance whereby said sweatsuit is loose fitting on the user and said inner suit is tight fitting.

5,778,453
NECKTIE

Hui-Shen Chen, P.O. Box 82-144, Taipei, Taiwan
Filed Oct. 29, 1996, Ser. No. 739,214
Int. Cl.⁶ A41D 25/00; 25/02

U.S. Cl. 2—148

1 Claim



1. A necktie comprising:
a knot form constructed with a seat;
a binding device having a fixing block removably engaged with said seat of said knot, said seat of said knot including an upper positioning plate and a lower positioning plate, said upper positioning plate having a bottom formed with a protuberance, said lower positioning plate being formed with a first and a second openings which are separated by a partition wall, said lower positioning plate having top formed with a pair of grooves, said binding device further including a strap, said strap having an end connected with one side of said fixing block and another end connected with a resilient member installed on another side of said fixing block, said fixing block having a vertical through hole in which is fitted a helical spring having an upper end engaged with said protuberance of said upper plate, said fixing block further having a bottom formed with two legs adapted to engage with said grooves and having a first and second recesses which are separated by a partition wall; and
a front apron provided with a fastening means at an upper end thereof engageable with said knot.

5,778,454
VISOR CAP

Scott E. Oxman, Chandler, Ariz., assignor to Wind Wear Designs Partnership, Phoenix, Ariz.
Filed Aug. 26, 1996, Ser. No. 702,000
Int. Cl.⁶ A42B 1/06

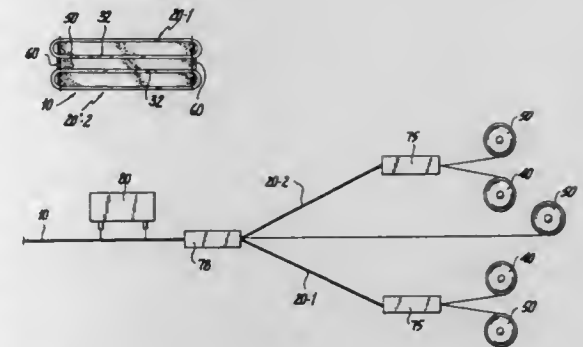
U.S. Cl. 2—195.1

11 Claims



1. A cap comprising:
a crown;

a visor extending from said crown, said visor comprising an upper surface and a lower surface, a forward edge and a rearward edge, said rearward edge attached to said crown, said upper and lower surfaces extending between said forward and rearward edges, at least a portion of said visor having a cross-sectional shape formed by said upper and lower surfaces in the shape of an inverted air foil such that air traveling across said lower surface of said visor portion travels faster than air traveling across said upper surface of said visor portion, said lower surface being curved relative to said upper surface such that the cross sectional thickness of said visor portion between said upper surface and said lower surface proximate said forward edge is substantially greater than the cross-sectional thickness of said visor portion between said upper surface and said lower surface proximate said rearward edge.



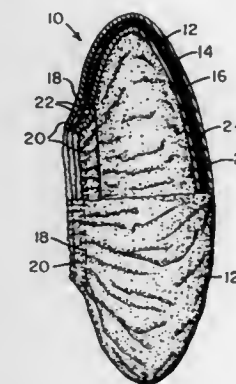
a row of stitches along the length of each edge and extending through said two opposing belt sections with the strip of reinforcing material therebetween joining said belt sections.

5,778,455
EAR COVER

Dephillia M. Joseph, 1319 Omar St., Houston, Tex. 77008
Filed Apr. 15, 1997, Ser. No. 842,672
Int. Cl.⁶ A42B 1/06

U.S. Cl. 2—209

12 Claims



1. A cover for the external ear of a human, comprising:
a first flexible sheet having an outer layer formed of an absorbent material and an inner layer coextensive therewith formed of an impermeable material;
a second flexible sheet secured to said first flexible sheet adjacent said inner layer; and
an elastic band secured between said first and second flexible sheets for gathering the respective peripheries thereof.

5,778,456

REVERSIBLE BELT AND METHOD OF MANUFACTURE
Richard Schimmel, Massapequa Park, N.Y., assignor to Blue Star Webbing Corp., Garden City Park, N.Y.

Filed Sep. 16, 1996, Ser. No. 714,227
Int. Cl.⁶ A41F 3/02

U.S. Cl. 2—338

12 Claims

1. A reversible belt comprising:
first and second belt sections stacked one above the other in opposing relationship, each belt section formed by an elongated flat strip of fabric having parts folded over and around the corresponding edges of an elongated flat filler material strip;
an elongated strip of reinforcing material between said two opposing belt sections; and

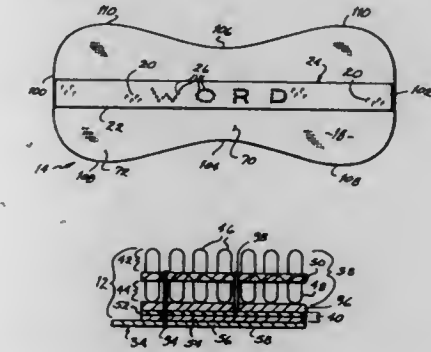
5,778,457
HYGIENIC PANTY AND QUICK-ATTACH PAD

David W. Conway, Loveland, Ohio, assignor to Intellitecs International Ltd., Cincinnati, Ohio

Continuation-in-part of Ser. No. 575,623, Dec. 20, 1995. This application Feb. 6, 1996, Ser. No. 597,132
Int. Cl.⁶ A41B 9/00; 9/12

U.S. Cl. 2—406

40 Claims



1. A quick-attach absorbent pad for use with an undergarment, the pad comprising:
an upper surface and a lower surface containing a fluid absorbent material therebetween and being sized to fit against a crotch panel of said undergarment with the lower surface of the pad adjacent said crotch panel, the pad further comprising a plurality of hook fasteners associated with the pad lower surface and adapted to releasably attach the pad to yarn loops of said crotch panel, the pad further comprising a hook fastener base attached to the pad lower surface and supporting the plurality of hook fasteners, wherein the base includes at least one aperture through which air may communicate with the pad lower surface.

5,778,458

BIODEGRADABLE AND FLUSHABLE BEDPAN LINER
Wilma Speelman, 1686 Flickinger Hill, Wooster, Ohio 44690
Continuation of Ser. No. 45,431, Oct. 19, 1995, abandoned.
This application Nov. 20, 1996, Ser. No. 752,789

Int. Cl.⁶ A61G 9/00

9 Claims

4. A method for using and cleaning a bed pan with a liner consisting essentially of:
a. placing a liner in a bed pan and said liner has a planar bottom and sides that extend around the outer circumference of the planar bottom and said sides are crimped nearly completely around the outer circumference of the planar bottom; and,



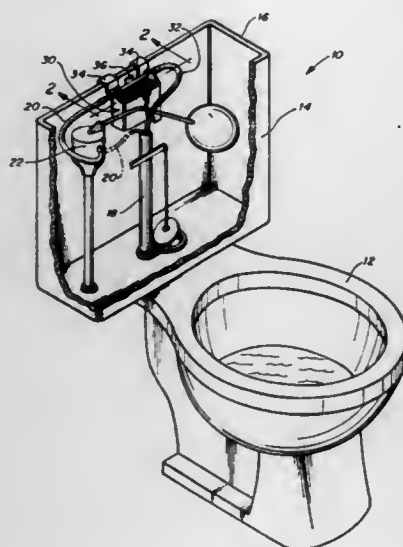
- b. placing the bed pan with liner in position under the patient; and,
- c. removing the bed pan with liner after the wastes have been dumped into the bed pan by the patient; and,
- d. taking the bed pan to the toilet; and,
- e. tilting the bed pan so that the liner and wastes will slide into the toilet bowl; and,
- f. flushing the toilet; and,
- g. washing the bed pan.

5,778,459

**METHOD AND APPARATUS FOR INJECTING
CHEMICALS INTO THE WATER OF A TOILET BOWL**
Phillip M. Guerin, 110 Ferry St., Lawrence, Mass. 01841
Filed Feb. 10, 1997, Ser. No. 796,437
Int. Cl.⁶ E03D 9/02

U.S. Cl. 4—225.1

16 Claims



1. A chemical injection apparatus for injecting chemicals into a toilet, the toilet having a tank, a bowl, an overflow pipe and a refill valve for providing refill water to the bowl through the overflow pipe, the apparatus comprising:

- a housing having an inlet adapted to couple to the refill valve to receive the refill water and an outlet that provides chemically treated water;

an inner chamber, disposed within the housing, that is adapted to contain a chemical tablet;

a first tube coupled between the inlet and the outlet of the housing, the first tube having a constantly open dispensing hole that dispenses at least a portion of the refill water from the first tube into the housing, the dispensing hole being constructed and arranged such that the water dispensed from the dispensing hole contacts the chemical tablet to dissolve a portion of the chemical tablet to create chemically treated water, the first tube having a venturi and having a suction hole near the venturi;

a sump area disposed within the housing such that at least a portion of the chemically treated water collects in the sump area; and

a second tube having a first end disposed in the sump area and having a second end coupled to the suction hole of the first tube;

wherein the venturi is arranged within the first tube such that the flow of the refill water through the first tube simultaneously provides refill water to the housing through the dispensing hole and causes chemically treated water to be drawn from the sump area through the second tube and mixed with the refill water in the first tube.

5,778,460

AUXILIARY TOILET SEAT

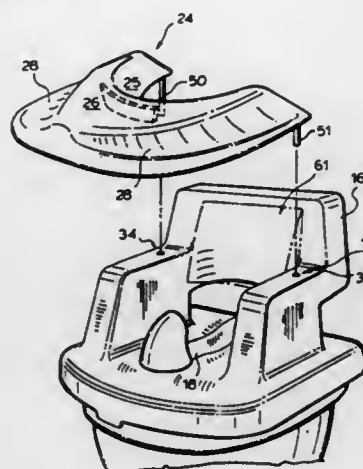
Michael Doell, Toronto, and Stephen Edward Ryan, Mississauga, both of Canada, assignors to Variety Ability Systems Inc., Toronto, Canada

Filed Jun. 20, 1996, Ser. No. 670,208

Int. Cl.⁶ A47K 13/00

U.S. Cl. 4—239

10 Claims



1. An auxiliary seat adapted for use with a toilet bowl having a base with a rear-facing elongate slotted opening, a pair of laterally extending upstanding arms; and an upstanding, back portion bridging between the upstanding arms, the back portion having a lower edge spaced apart from said base portion, the seat including a removable anterior trunk support tray mounted on the arms with an upwardly forwardly inclined inner trunk support surface and forward downwardly sloped arm rest surfaces, the trunk support surface and arm rest surfaces defining an upwardly extending central tray portion, a forward edge of the tray having a reduced thickness relative to the central tray portion.

5,778,461

BEDPAN WITH INTEGRAL URINAL

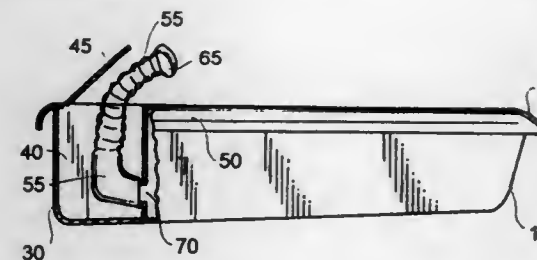
Vesta M. Attaway, 27267 Sleepy Hollow Ave., #105, Hayward, Calif. 94545

Filed Jul. 14, 1997, Ser. No. 891,919

Int. Cl.⁶ A61G 9/00

U.S. Cl. 4—454

3 Claims



1. A bedpan with incorporated urinal for male patients, said bedpan formed with front and rear ends connected by sidewalls topped by an outward curved seat, said bedpan comprising:

an enclosed cabinet in the front end of said bedpan, said cabinet having a top and a common wall with the interior of said bedpan, said common wall having an opening into said bedpan; and

a flexible tube within said cabinet, said tube having a first end extendible from said top and a second end attached to said common wall and to said opening.

5,778,462

DEVICE IN SEPARATION-TYPE TOILET SYSTEMS

Kenneth Björklund, Västra Frölunda, and Altti Berglund, Askim, both of Sweden, assignors to Pecunia Industries Ltd, Causeway Bay, Hong Kong

PCT No. PCT/SE95/00189, § 371 Date Dec. 2, 1996, § 102(e)

Date Dec. 2, 1996, PCT Pub. No. WO95/32658, PCT Pub.

Date Dec. 7, 1995

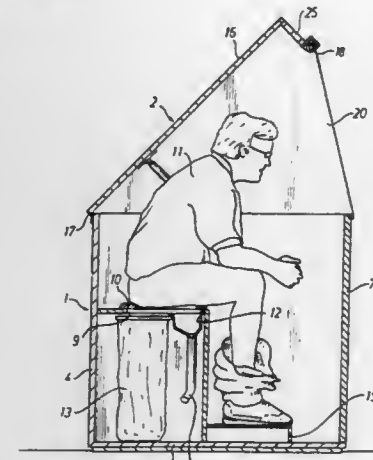
PCT Filed Feb. 23, 1995, Ser. No. 750,548

Claims priority, application Sweden, May 30, 1994, 9401857

Int. Cl.⁶ A47K 4/00

U.S. Cl. 4—463

16 Claims



1. A device in connection with a separation toilet system, comprising:

a container, the container including a headroom space; a reception means for collecting feces and urine, the reception means disposed within the container and including a urine receptacle and a feces receptacle, the reception means including an opening therein;

a toilet seat including an opening, the seat disposed on top of the reception means such that the toilet seat opening and the reception means opening are coextensive, the toilet seat open-

ing including a front part and a rear part, and the urine and feces receptacles are disposed under the toilet seat opening such that the urine receptacle debouches into the front part of the toilet seat opening and the feces receptacle debouches into the rear part of the toilet seat opening;

wherein the container is adapted to allow a user having the size of an average sized adult to assume a sitting position on top of the toilet seat with headroom between the user and the container, while denying the user a standing position within the container when the user is positioned adjacent said reception means and in a position to use said reception means.

5,778,463

MULTI-PIECE TUB/SHOWER UNIT AND METHOD OF INSTALLATION

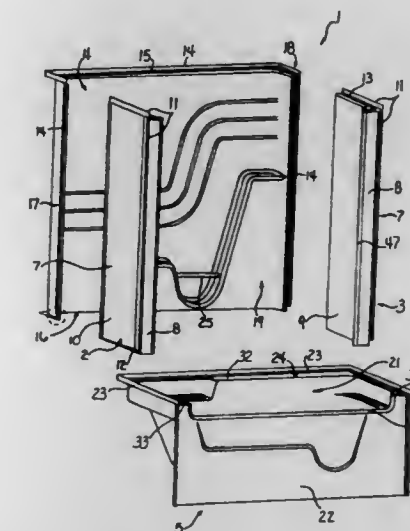
Lal D. Teckchandani, Poland, Ohio; Larry I. Fairchild, New Wilmington, and Becky J. Fennell, New Castle, both of Pa., assignors to Universal Rundle Corporation, New Castle, Pa.

Filed Oct. 1, 1996, Ser. No. 723,099

Int. Cl.⁶ A47K 3/02

U.S. Cl. 4—538

7 Claims



1. A multi-piece tub/shower unit comprised of:

(a) a first sidewall, having a sidewall nailing flange and a front flanged surface, wherein a shower door water retaining bead is an integral part of the front flanged surface and further comprising at least one point of assembly having a debossed aperture;

(b) a backwall, having a backwall nailing flange and at least one point of assembly having a debossed aperture; said backwall and said first sidewall being interconnected at said point of assembly with a christmas tree clip, having a first ribbed shank, a second ribbed shank and a shank head, inserted flushly within said debossed aperture of said point of assembly; and

(c) a bathtub unit having a tub nailing flange and a tub top ledge wherein said tub top ledge is comprised of an apron ledge having a shower door water retaining bead; said bathtub unit being further comprised of a first front corner wherein said first front corner flushly receives said front flange surface of said first sidewall; wherein further said backwall being mountably attached to said tub top ledge surface.

5,778,464

SHOWER AND/OR BATH APPARATUS

Bryn Lincoln Chapple, and Sabina Iris Klose, both of Auckland, New Zealand, assignors to New Line Shower Screens Limited, Auckland, New Zealand

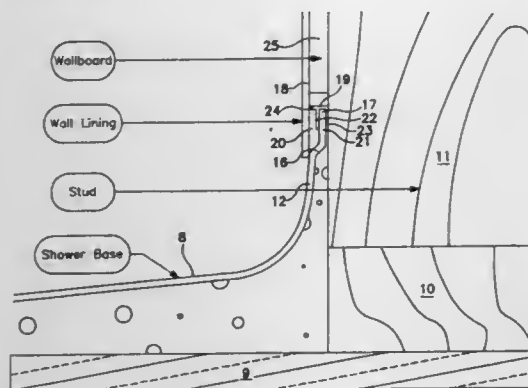
Filed Mar. 21, 1996, Ser. No. 619,310

Claims priority, application New Zealand, Mar. 21, 1995, 270768

Int. Cl.⁶ A47K 3/22

U.S. Cl. 4—596

5 Claims



1. An enclosure for use with one of a shower tray and bathroom tub supported by a floor and at least two walls comprising:
 - a base delimited by a perimeter thereof and having an upstanding flange about at least a portion of the perimeter of said base said upstanding flange having a top edge;
 - a planar wall lining for covering each respective wall, said lining extending downwardly beyond said upstanding flange such that it contacts said base;
 - a resiliently flexible spacer on said top edge of said upstanding flange, said spacer including a portion extending transversely towards said lining with respect to said upstanding flange in order to create an air space between an upper portion of said upstanding flange and said wall lining and to create a water-tight seal between the base and wall lining without the use of sealants.

5,778,465

BASSINET FOR ATTACHMENT TO A CHILD'S PLAYARD
Peter Jonathan Myers, Wheaton, Ill., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.

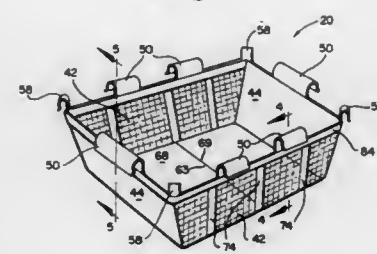
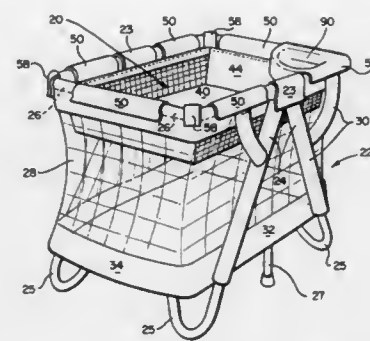
Filed Oct. 30, 1996, Ser. No. 741,376

Int. Cl.⁶ A47D 7/00

U.S. Cl. 5—99.1

24 Claims

16. A bassinet for attachment to a top rail of a playard, the bassinet comprising:
 - a bottom having a perimeter, a first rigid bottom panel having an edge and a second rigid bottom panel having an edge adjacent to the first panel edge to define a line along which the bassinet bottom is collapsible;
 - a flexible side wall having a bottom edge attached to at least a portion of the perimeter of the bassinet bottom, and a frameless and sleeveless top edge;
 - the bassinet bottom and side wall forming a pocket for receipt of an infant; and



a plurality of spaced, substantially rigid hooks attached to the top edge of the side wall, the hooks being adapted to removably receive the top rail of the playard.

5,778,466

BOX SPRING ASSEMBLY WITH CROSS SLATS OF DIFFERENT HEIGHTS

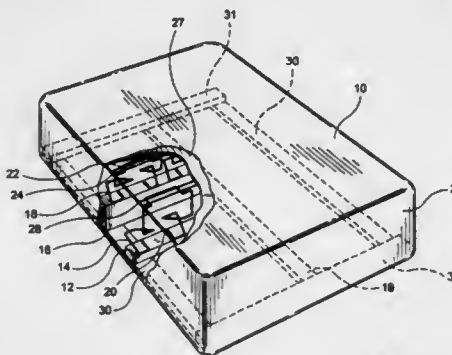
J. Wesner Price, Rte. 2, Box 18, Cameron, S.C. 29030

Filed May 15, 1997, Ser. No. 857,064

Int. Cl.⁶ A47C 23/00

U.S. Cl. 5—247

8 Claims



1. A box spring assembly having a predetermined vertical height, said box spring assembly comprising:
 - a rectangular bottom frame including a pair of parallel side rails, and a pair of parallel end rails respectively positioned at the opposite ends of said side rails;
 - a series of cross slats supported by said side rails positioned between and parallel to said end rails a predetermined distance apart, said cross slats including a plurality of first cross slats having a first height, and a plurality of second cross slats having a second height greater than said first height;
 - a plurality of first spring members mounted on each of said first cross slats, said first spring members having a third height generally complementary to said first height to provide said predetermined vertical height; and
 - a plurality of second spring members, mounted on each of said second cross slats, said second spring members having a

fourth height generally complementary to said second height to provide said predetermined vertical height.

5,778,467

PATIENT TREATMENT APPARATUS

Gerald R. Scott, Villa Park; James P. Moulton, Elgin, both of Ill.; V. Craig Seyl, Lenexa, Kans.; John L. Emrich, Algonquin, and Wayne L. Peterson, St. Charles, both of Ill., assignors to Standex International, Salem, N.H.

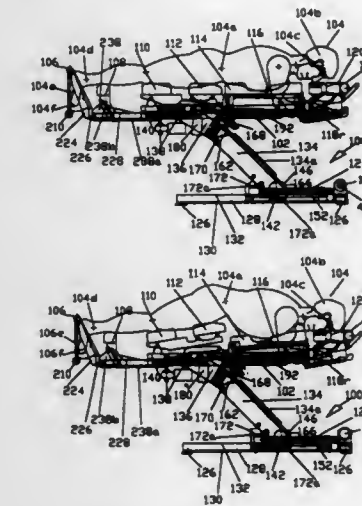
Division of Ser. No. 927,555, Sep. 13, 1995. This application

Jan. 16, 1997, Ser. No. 783,441

Int. Cl.⁶ A61G 13/00

U.S. Cl. 5—613

25 Claims



1. Treatment apparatus supporting a patient lying in a treatment position for manipulation, comprising:
 - base means;
 - table means supported from said base means for movement between one or more horizontal positions and tiltable toward and away from an upright position for facilitating the patient in mounting and dismounting before and after treatment;
 - foot piece means adjacent an end of said table means for supporting the patient when mounting and dismounting; and
 - cushion means mounted for movement along said table means selectively to said foot piece means for selectively adjustable positioning to accommodate patients of different size.

5,778,468

PILLOW-TOTE-ANGELIC COMPANION

Janis Edith Saarela, and Kristi Kay Saarela, both of 4210 E. 200 St., Prior Lake, Minn. 55372

Filed Sep. 16, 1996, Ser. No. 714,588

Int. Cl.⁶ A47G 9/12

U.S. Cl. 5—636

10 Claims

1. A child's combination pillow and plaything comprising:
 - a fabric piece shaped as a right triangle having a right angle corner and first and second acute angle corners and first and second adjacent edges extending from the right angle corner to the first and second acute angle corners, respectively, and a hypotenuse edge extending between the first and second acute angle corners and wherein the adjacent edges are of differing lengths,
 - the adjacent edges being peripherally aligned and stitched together the first and second acute angle corners having first been aligned such that due to the differing lengths of the adjacent edges, surface portions of the fabric piece form puckers,
 - and wherein the hypotenuse edge is folded to form opposing hypotenuse edge portions that are positioned in a separated



but parallel relationship and stitched together to form seamless swells and protrusions on the surface of the fabric piece to form a pillow cavity; and polyester batting being disposed within the pillow cavity.

5,778,469

THERAPEUTIC CERVICAL PILLOW

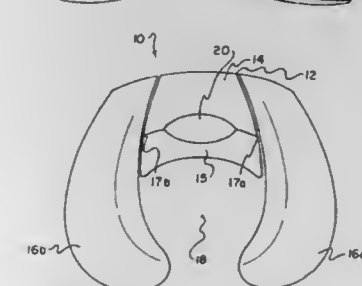
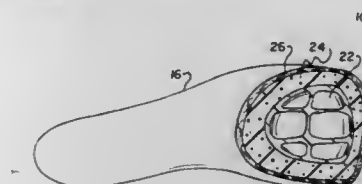
John Phillip Festa, 752 County Ave Apt C15, Secaucus, N.J. 07094

Filed May 13, 1997, Ser. No. 855,195

Int. Cl.⁶ A47G 9/00

U.S. Cl. 5—640

8 Claims



1. A therapeutic cervical pillow for maintaining proper alignment of the neck while being seated, comprising:
 - a concave pillow member having a back portion, and a pair laterally opposing arcuate side portions being extended from said back portion, said back portion having an arcuate surface; wherein said back portion and said arcuate side portions define a concavity for accepting the neck of a person for supporting the cervical spine,
 - a pivot pin connecting each of said arcuate side portions to said back portion in a manner permitting pivoting into a stationary position of each of said side portions relative to said back portion and the other of said side portions.

5,778,470

PARTITIONED THERAPEUTIC PILLOW WITH BEAD FILLING

Thomas T. Halder, 2357 Knob Hill Dr., Riverside, Calif. 92506

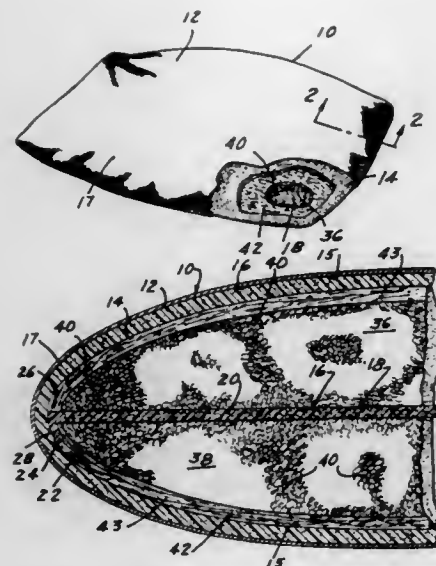
Filed Apr. 21, 1997, Ser. No. 843,815

Int. Cl.⁶ A47G 9/00

U.S. Cl. 5—645

16 Claims

1. A pillow structure comprising:
 - an outer casing;



an inner shell formed from a resilient material and enclosed in said outer casing;
a pair of juxtaposed compartments in which a multiplicity of polystyrene beads are disposed in;
a horizontal partition secured to the inner surface of said inner shell and defining the juxtaposed compartments to prevent movement of said beads between said compartments and an excess accumulation of beads in a given area of the pillow; and
said shell and said partition being formed from a polyurethane foam material.

5,778,471

EMERGENCY WATER STORAGE DEVICE

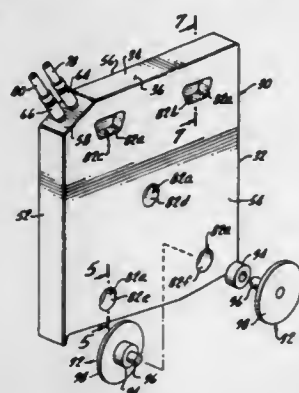
Timothy J. Collison, 2317 W. Chandler Ave., Santa Ana, Calif. 92704

Filed Nov. 14, 1996, Ser. No. 747,796

Int. Cl.⁶ D06F 39/08; F03B 11/00

U.S. Cl. 8—158

20 Claims



1. A device for storing an emergency supply of fresh water in association with an automatic washing machine while also providing an adjunct to the horizontal utility surface provided at the top of the automatic washing machine, said device comprising:

a tank member configured to have the form of a thin upright prismatic body defining a chamber therein for holding a supply of fresh water, said tank member including a generally horizontal top wall portion inwardly bounding said chamber and outwardly defining an upper surface oriented to substantially provide an adjunct continuation of the top surface of the washing machine when said tank member is located alongside of the washing machine, said tank member including inflow and outflow means for allowing fresh domestic water to flow from a supply thereof into said tank member chamber and from said tank member chamber to the washing machine;

said tank member defining also a bottom wall portion, a front wall portion, a rear wall portion, and a pair of opposite side wall portions all cooperatively bounding said chamber; each of said pair of side wall portions being of an area much greater than any other wall portion, and at least one reinforcement bridging said chamber and extending between said side wall portions, said reinforcement being stressed in tension by water pressure within said tank portion and supporting said opposite side wall portions against bulging.

5,778,472

CONTAINER LID CUTTER AND OPENER

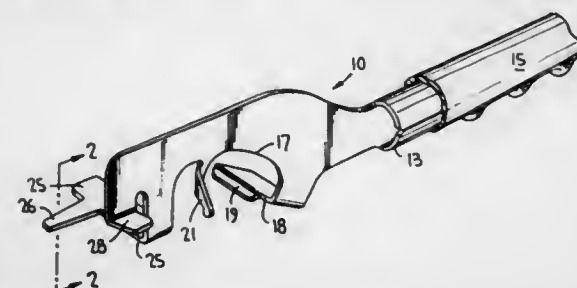
Frank J. Lang, 28W 101 Main St., Warrenville, Ill. 60555

Filed Jun. 25, 1997, Ser. No. 882,100

Int. Cl.⁶ B25F 1/00

U.S. Cl. 7—156

6 Claims



1. A cutting and opening tool comprising: operative elements comprising a handle portion and a head portion connected to the handle portion, wherein the head portion includes a main body defining a head plane having attached thereto a first flange having a first flange flap, an inward projecting recess, a cutting flange having a cutting edge, a second flange, and a third flange, wherein the first flange and the second flange are bent along an axis of each flange, respectively, about 90 degrees in a first direction out of said head plane, and wherein the third flange and the cutting flange are each bent out of said head plane in a second direction substantially opposite to the first direction, with said third flange being bent at least 90 degrees out of said head plane and said cutting flange being bent at least 75 degrees out of said head plane.

5,778,473

METHOD OF FORMING A BOOT

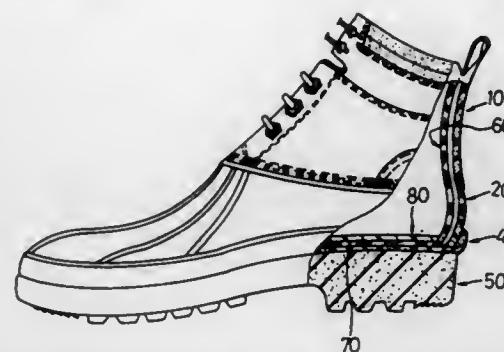
Eddie Chen, Taichung, Taiwan, assignor to C Two Corporation, Taichung, Taiwan

Filed Feb. 6, 1997, Ser. No. 795,676

Int. Cl.⁶ A43B 1/10

U.S. Cl. 12—142 T

6 Claims



1. A method of forming a shoe, such as a boot, comprising the steps of:

(a) forming a lower of unitary construction from a first waterproof polymeric material, said lower defining an enclosed toe

zone, and a heel zone and having a first upper end portion defining a first upper opening, and a first lower end portion defining a sole opening;

- (b) forming an upper from a relatively flexible material, said upper having a second lower end portion of a size such that said first upper end portion can be smoothly seamed to said second lower end portion;
- (c) joining said second lower end portion with said first upper end portion of said lower to form a seam juncture;
- (d) applying a waterproof layer onto said seam juncture through said sole opening; and
- (e) connecting a sole to said first lower end portion of said lower in a water-tight relationship to close said sole opening after step (d).

5,778,474

MECHANICALLY DRIVEN TOOTHBRUSH

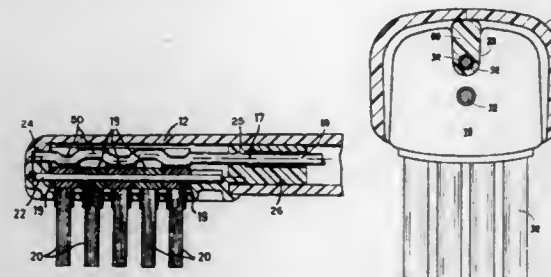
Kwok-Nam Shek, New Territories, Hong Kong, assignor to Addway Engineering Limited, Beiglan House, Hong Kong

Continuation-in-part of Ser. No. 551,431, Nov. 1, 1995, abandoned. This application Nov. 14, 1996, Ser. No. 749,112

Int. Cl.⁶ A16B 13/02; 7/06

U.S. Cl. 15—22.1

6 Claims



1. A power driven mechanical toothbrush comprising: an elongate shank; a toothbrush head member attached to said shank, said head supporting a plurality of tuft blocks, said blocks having bristle tufts therein, said tufts having upstanding remote ends; a cam shaft rotatably driven at speeds in the range of 5500 rpm to 7500 rpm within said shank, said shaft having a central longitudinal axis, said shaft formed by a wire extending directly from a motor to said head member, said shaft having a cam section that fits inside said head member; a bearing at each end of said cam section of said shaft to minimize deflection of said cam section from said central longitudinal axis; said tuft blocks pivotally supported by said head member about an axis parallel to and spaced apart from said central longitudinal axis, said tuft blocks having respective slots that fit loosely over said cam section such that when said cam shaft is rotated, said upstanding remote ends of said bristle tufts in said tuft blocks move from side to side with respect to said shanks; and a bearing insert engaged in one of said slots of one of said blocks, said insert supporting and restricting deflection of said cam section.

5,778,475

TONGUE DEBRIDEMENT AID

Peter G. Garcia, 1918 East Inglewood, Mesa, Ariz. 85203

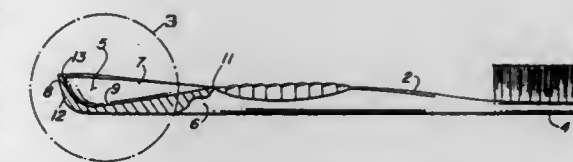
Filed Aug. 13, 1996, Ser. No. 696,124

Int. Cl.⁶ A46B 9/04

U.S. Cl. 15—111

20 Claims

1. A tongue debridement aid comprising:
A) an elongated handle; and
B) tongue debridement structure disposed at one end of said handle, said tongue debridement structure comprising:
1) a cupped region having an endwall and first and second sidewalls contiguous with said endwall; said endwall being



disposed at an obtuse angle with respect to said elongated handle; the exterior of the endwall being rounded toward said handle and

2) a working edge region disposed along at least the edge of said endwall, said working edge region being beveled inwardly toward said cupped region;

whereby, debris, including microorganisms, may be debrided from the dorsum of the tongue and collected in said cupped region by placing said working edge region on the back of the dorsum, applying moderate pressure and drawing said tongue debridement aid toward the tip of the tongue.

5,778,476

INTERDENTAL BRUSHES HAVING ROUGHENED, TAPERED AND ROUNDED BRISTLE ENDS AND METHOD OF MAKING THE SAME

Dominic Squillaci, Lake Villa; Scott Koepsel, Waukegan; John Shimkus, Bollingbrook, and Kiyoshi Mackawa, Mount Prospect, all of Ill., assignors to John O. Butler Company, Inc., Chicago, Ill.

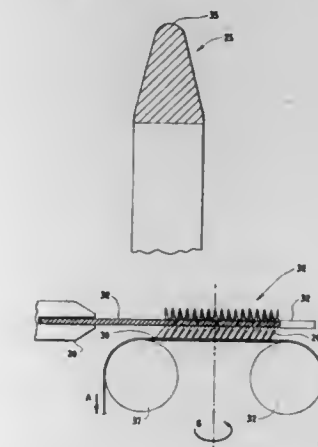
Division of Ser. No. 613,589, Mar. 12, 1996. This application

Jun. 20, 1996, Ser. No. 671,788

Int. Cl.⁶ A46B 9/04

U.S. Cl. 15—167.1

10 Claims



1. An interdental twisted wire brush having roughened, tapered and rounded bristle ends prepared by:

- a) rotating the interdental brush transversely to the axis of the brush;
- b) rotating the interdental brush along the longitudinal axis of the brush;
- c) grinding the bristle ends of the interdental brush against a flat, moving abrasive surface; and
- d) flexing the bristle ends against the abrasive surface.

5,778,477

TOOTHBRUSH

Raymond Conway, 710 Huntington Ave., Pine Beach, N.J. 08741

Filed Apr. 14, 1997, Ser. No. 839,487

Int. Cl.⁶ A46B 9/04

U.S. Cl. 15—167.1

1 Claim

1. A toothbrush comprising: an elongated handle;



- a first brush head integrally and rigidly fixed to said handle in angular relationship therewith, said first brush head having an inner and outer planar surface, said angular relationship being an obtuse angle formed between said elongate handle and said inner planar surface of said first brush head;
- a second brush head integrally and rigidly fixed to said first brush head in an angular relationship therewith, said second brush head having an inner and outer planar surface, said angular relationship being an obtuse angle formed between said outer planar surface of said second brush head and said outer planar surface of said first brush head;
- a plurality of bristles affixed to said inner planar surface of said first brush head and said inner planar surface of said second brush head, said plurality of bristles on said first brush head and said second brush head being in parallel relationship, said plurality of bristles on said first brush head being of uniform length, said plurality of bristles on said second brush head increasing in length from the connection between said first brush head and said second brush head to the tip of said second brush head, the tips of said bristles of said first brush head and said second brush head terminating in a plane parallel to said first brush head.

5,778,478

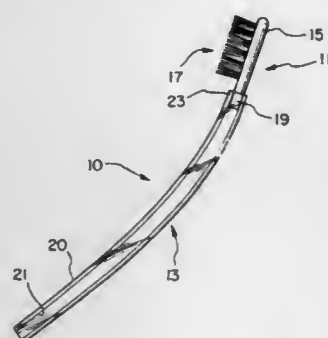
TOOTHBRUSH WITH FLEXIBLE HANDLE

Brian V. Coleman, 5460 Autumnwood Dr., Cochran, Ga. 30614

Filed Jun. 12, 1997, Ser. No. 873,887
Int. Cl.⁶ A46B 9/04

U.S. Cl. 15—167.1

5 Claims



1. An improved toothbrush for use in a prison, comprising:
- a) a brush head including a base, a neck portion attached to said base and extending from said base in a substantially common plane therewith, and a plurality of bristles extending from said base generally perpendicular to said plane;
- b) a handle comprising an elongated flexible transparent tube having a passageway therethrough, said passageway defined by an interior wall of said tube;
- c) said neck portion being received within an end of said passageway and engaging said interior wall to connect said brush head to said handle, a remainder of said passageway being visibly empty.

5,778,479

MODULAR, MULTIPLE PAINT BRUSH SYSTEM

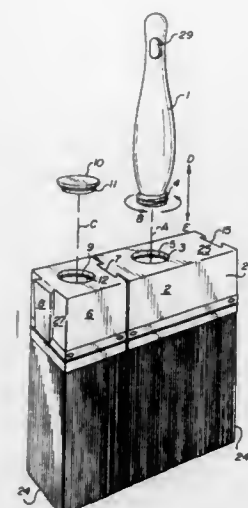
Lawrence A. Raia, 19 Denison Dr. East, Post Office of Saddle River, N.J. 07458

Filed Aug. 27, 1996, Ser. No. 703,658
Int. Cl.⁶ A46B 15/00

U.S. Cl. 15—202

10 Claims

1. A modular paint brush said paint brush comprising at least two brush units of varying brush widths, each of said brush units



comprising an upper mounting section and a lower, brush section, said upper mounting section comprising a top, a front, a back parallel to said front, and two parallel sides, a handle connectably mated to one of said tops, one of said parallel sides of each section having a female part of a dovetail connection mounted thereon, wherein said female dovetail connection is tapered, and the other of said parallel sides of each having a male part of a dovetail connection mounted thereon, wherein said male dovetail connection is tapered to insure a tight fit when connected to said female dovetail connection, wherein said brush units are connectably mated by insertion of said male dovetail part on one of said brush unit to said female dovetail part of another of said brush units thereby forming a modular brush made of said connected brush units.

5,778,480

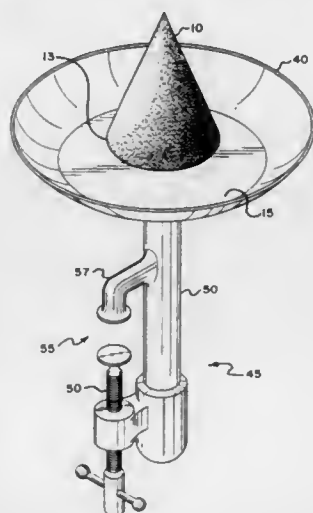
DENTAL HYGIENIST'S DEVICE

Susan R. Nittinger, 122 S. Concord Ter., Absecon, N.J. 08201

Filed Oct. 10, 1996, Ser. No. 731,207
Int. Cl.⁶ A47L 25/00; A61C 19/00

U.S. Cl. 15—210.1

12 Claims



1. A dental hygienist's device for removing debris from dental hygiene tools, comprising:
- a saucer member for collecting debris, said saucer member having a bottom wall;
- a conically shaped cleaning head for capturing debris when a dental hygienist's tool is wiped thereon, said cleaning head being mounted on said saucer member substantially centrally of said bottom wall, and extending upwardly therefrom, and

a clamp means beneath said saucer member for attaching said saucer member and said cleaning head to a surface located in a conventional dental operator.

5,778,481

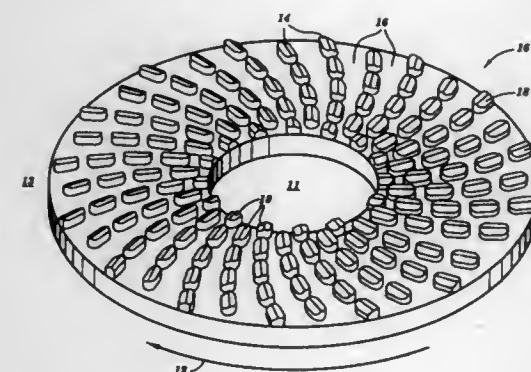
SILICON WAFER CLEANING AND POLISHING PADS

Michael R. Amsden, Londonderry, Vt.; Richard A. Bartley, Newburgh, N.Y.; Cuc Huynh, Jehrico, Vt.; Paul A. Manfredi, Waterbury, Vt., and Douglas P. Nadeau, Underhill, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 601,670, Feb. 15, 1996, abandoned. This application Jul. 26, 1996, Ser. No. 690,284
Int. Cl.⁶ B08B 11/00

U.S. Cl. 15—230.16

6 Claims



6. A rotatable pad with a surface having a plurality of raised regions for cleaning a highly finished surface, each of said raised regions having a cleaning surface that is angled with respect to said pad surface, and wherein said plurality of raised regions form a swirl pattern.

5,778,482

SPREADER FOR COLD-COAT ROOFING TAR

Charles Sbrigato, 45 Lancaster Ave., Brooklyn, N.Y. 11223

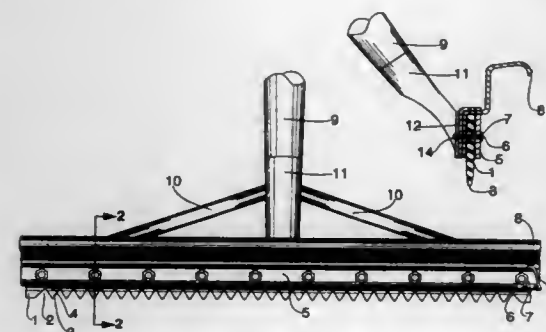
Continuation of Ser. No. 286,519, Aug. 5, 1994, abandoned.

This application Jul. 31, 1996, Ser. No. 690,725

Int. Cl.⁶ B05C 17/10; 17/00

U.S. Cl. 15—245.1

17 Claims



1. A spreader for spreading cold-coat roofing tar into generally uniform, substantially parallel adjacent ribbons over a section of a roof in a forward motion comprising:
- an elongated, stiff blade having a bottom edge having a plurality of evenly spaced serrations throughout, said blade having front and back sides,
- a support bar attached to said front side of said blade,
- a hood attached to said back side of said blade and having a portion curving above and in front of said blade,

an elongated blade bracket having two ends, said blade bracket being L-shaped in transverse cross section and overlying and attached to said hood such that said hood is sandwiched between the blade bracket and the back side of said blade, at least two braces attached to said blade bracket,

a handle bracket overlying and attached to said blade bracket and to each of the braces, and

a handle attached to said handle bracket.

5,778,483

WINDSHIELD WIPER BLADE ASSEMBLY WITH SPONGE AND TENSION MECHANISM

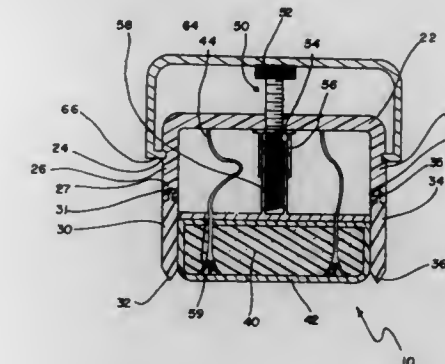
Steven K. Dawson, 901 Princeton Ave. #211, Palmerton, Pa. 18071

Filed Feb. 14, 1997, Ser. No. 799,376

Int. Cl.⁶ B60S 1/46; 1/38; 1/28

U.S. Cl. 15—250.04

8 Claims



1. A windshield wiper blade assembly with sponge and tension mechanism for wiping and cleaning a windshield of a vehicle having an oscillating wiper arm adapted for holding the windshield wiper blade assembly with sponge and tension mechanism against the windshield, said windshield wiper blade assembly with sponge and tension mechanism comprising:

a wiper blade support assembly having a support base portion, a first wiper blade support arm, and a second wiper blade support arm, said support base portion being adapted to be mounted on the oscillating wiper arm, said first wiper blade support arm and said second wiper blade support arm being spaced apart and being downwardly depending from said support base portion;

a first wiper blade being coupled to said first wiper blade support arm and being downwardly depending from said first wiper blade support arm;

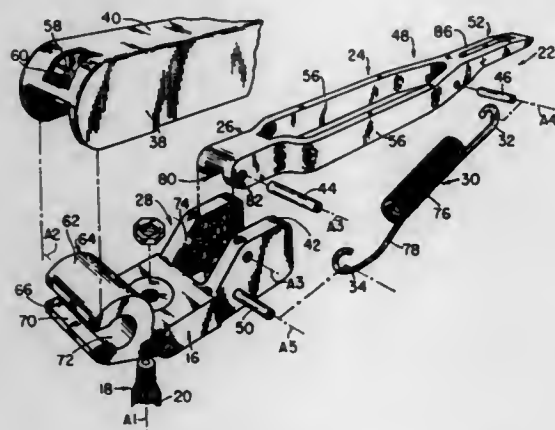
a second wiper blade being coupled to said second wiper blade support arm and being downwardly depending from said second wiper blade support arm, said first wiper blade being spaced apart from said second wiper blade;

a scrubbing sponge having a scrubbing surface and being interposed between said first wiper blade and said second wiper blade, said scrubbing sponge being in contact with said first wiper blade and said second wiper blade; and

a sponge tension mechanism being mounted on said wiper blade support assembly, said sponge tension mechanism being coupled to said scrubbing sponge, said sponge tension mechanism applying pressure to said scrubbing sponge whereby said scrubbing sponge is firmly positioned against said windshield to remove debris from said windshield.

5,778,484
**WINDSCREEN WIPER FOR A MOTOR VEHICLE
 HAVING IMPROVED ELASTIC RETURN MEANS**
 Bruno Lisiecki, Chatillon, and Alain Viaene, Creil, both of
 France, assignors to Valeo Systemes D'Essuyage, La Verri-
 ere, France

Filed Oct. 15, 1996, Ser. No. 730,234
 Claims priority, application France, Oct. 16, 1995, 95 12419
 Int. Cl.⁶ B60S 1/32:1/34
 U.S. Cl. 15—250.352 12 Claims

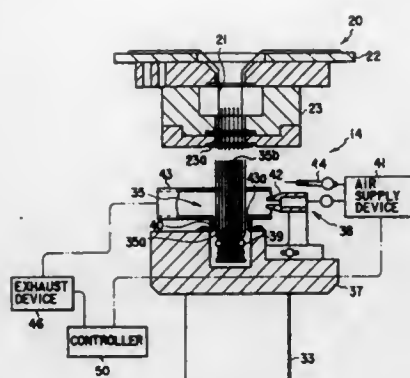


1. A windshield wiper arm assembly for a motor vehicle, said assembly comprising an elongated windshield-wiper arm articulated by a rear longitudinal end about a transverse axis, for movement between a wiping position and a disengaged position, on a head for driving the windshield wiper arm assembly in alternate sweeping motions, the rear longitudinal end of the arm has two longitudinal lateral wings joined by an upper transverse web so as to form a cavity which is open to face a window to be wiped, elastic return means are provided in the cavity of the arm, between the drive head and the arm, in order to bias the arm towards its wiping position, the elastic return means have a tension spring, which is attached, by a rear end, to the drive head and, by a front end, to a lever, said lever is mounted on a cylindrical transverse bar which connects two longitudinal sides of the drive head for movement, between an operating position and a raised position, on the drive head about a transverse axis, wherein the lever has a longitudinal nose which extends forwards from a front longitudinal end of the lever opposite to a rear pivoting end, wherein the arm has a crossmember which connects the two lateral wings of the arm, and wherein, when the arm is in the wiping position, the nose of the lever extends between the web of the arm and the crossmember on which it bears under the action of the spring.

5,778,485
**PROBE CARD CLEANING APPARATUS, PROBE
 APPARATUS WITH THE CLEANING APPARATUS, AND
 PROBE CARD CLEANING METHOD**
 Kunio Sano, Yamanashi-ken, and Satoru Yamashita, Kofu,
 both of Japan, assignors to Tokyo Electron Limited, Tokyo,
 Japan

Filed Dec. 5, 1995, Ser. No. 567,168
 Claims priority, application Japan, Jan. 19, 1995, 7-024688
 Int. Cl.⁶ B08B 3/10

U.S. Cl. 15—301 9 Claims
 1. A cleaning apparatus for cleaning at least one contact element of a probe card, said cleaning apparatus comprising:
 a brush unit having a plurality of conductive fiber filaments for contacting and cleaning the at least one contact element of the probe card; and
 a gas supplying mechanism with at least a gas outlet intermittently supplying a flow of gas onto and through the plurality of conductive fiber filaments of the brush unit to vibrate the conductive fiber filaments such that foreign objects adhered to

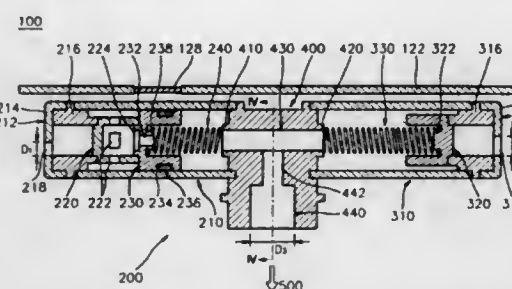


the at least one contact element of the probe card are cleaned away at least by the vibrating filaments.

5,778,486
**INDICATOR DEVICE FOR A VACUUM CLEANER DUST
 CONTAINER WHICH HAS AN ADDITIONAL PRESSURE
 CONTROLLER**

Suk-Gu Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
 Filed Oct. 28, 1996, Ser. No. 739,042
 Claims priority, application Rep. of Korea, Oct. 31, 1995, 95-38636

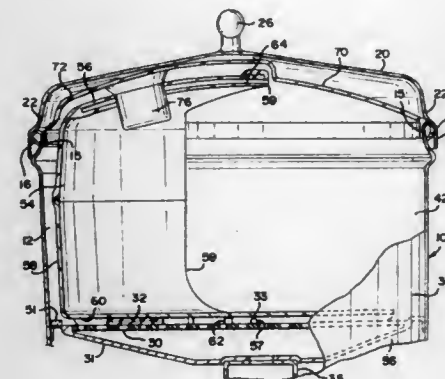
Int. Cl.⁶ A47L 5/00
 U.S. Cl. 15—339 22 Claims



1. An indicator device for visually in detail denoting an amount of filled dust in a dust container of a vacuum cleaner comprising:
 a transparent first cylinder including an indicating means for denoting the amount of the filled dust and a first adjusting cap assembly installed to one end thereof for adjusting an operating time of the indicating means by controlling a flowing area of a first air under an atmospheric pressure, and including a first supporting means for elastically supporting said indicating means, said indicating means being slidably positioned in said transparent first cylinder so as to primarily decrease a vacuum degree in a dust collecting compartment and continuously displays an amount of filled dust in the dust container;
 a second cylinder including a second cap assembly installed to one end thereof for controlling a flowing area of a second air under an atmospheric pressure, including a pressure control means for secondarily decreasing the vacuum degree in the dust collecting compartment, and including a second supporting means for elastically supporting said pressure control means; and
 a connecting tube allowing for fluid-communication of said first cylinder, and for pneumatically connecting said first cylinder and said second cylinder to the dust collecting compartment.

5,778,487
VACUUM CLEANING MACHINE
 Ernest R. Schuld, 109 Jana Rd., Macomb, Ill. 61455
 Filed Dec. 5, 1994, Ser. No. 349,437
 Int. Cl.⁶ A47L 5/36

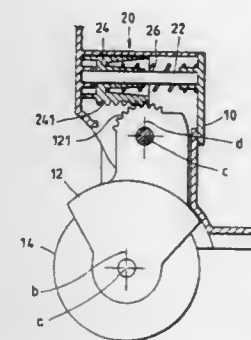
U.S. Cl. 15—352 24 Claims



1. A vacuum cleaner machine comprising: a housing having an open end, at least a first vacuum chamber and a second chamber, a bag holder removably positioned in said first vacuum chamber for removably retaining a bag having an inlet, a dome positioned over said open end of said housing and said bag holder, a nozzle fitting connected to and extending from said dome for communicating with said inlet in said bag, a vacuum hose having a hose cuff at one end thereof releasably insertable into said nozzle fitting, a suction unit mounted in said second chamber and having an inlet communicating with said vacuum chamber.

5,778,488
BAGGAGE CASTER
 Wang Mel-Li Tsai, No. 103, Ta Min 1 Rd., Tan Tsu Hsian,
 Taichung Hsien, Taiwan
 Filed Feb. 18, 1997, Ser. No. 802,797
 Int. Cl.⁶ B60B 33/06

U.S. Cl. 16—34 8 Claims

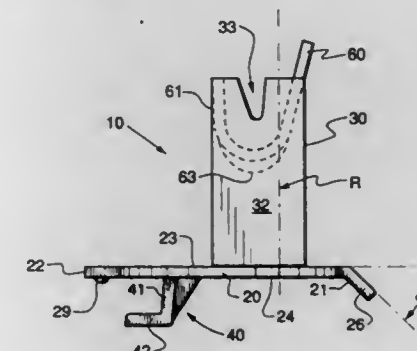


1. A baggage caster comprising:
 a wheel frame fastened pivotally with a baggage shell such that said wheel frame is capable of swiveling freely between a retraction position and an extraction position;
 a wheel fastened pivotally with said wheel frame such that a plummet of a pivot center of said wheel does not coincide with a plummet of a pivot center of said wheel frame at such time when said wheel frame is located at the retraction position, and that said wheel frame is caused to swivel to remain at the extraction position at such time when the baggage shell is exerted on by a load; and
 a retrieving mechanism fastened with the baggage shell such that said retrieving mechanism is contiguous to said wheel frame for providing said wheel frame with an elastic force capable of forcing said wheel frame back to the retraction

position from the extraction position at such time when the baggage shell is relieved of the load exerting thereon.

5,778,489
DETACHABLE HANDLE FOR A RECEPTACLE
 Henry W. Marshal, II, 1076 Kaolin Rd., Kenneth Square, Pa.
 19348

Filed Feb. 12, 1997, Ser. No. 798,856
 Int. Cl.⁶ A47B 95/02
 U.S. Cl. 16—114 R 10 Claims

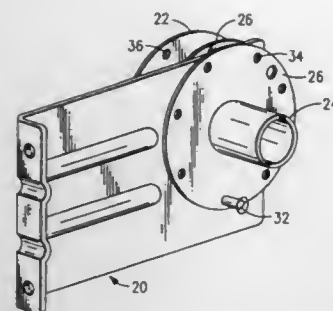


1. A detachable handle for a receptacle having an interior, an open top having an area, a lateral wall, a rim extending inwardly from the lateral wall, and a bail swingably mounted on diametrically opposed points on said wall, the handle comprising:
 a base plate having a front edge, a back side opposite said front edge, a top surface, and a bottom surface;
 a rim engaging tab extending from the bottom surface of the base plate adjacent the back side adapted to engage the rim between said tab and said bottom side; and
 a handle bar mounted on said base plate, the handle bar comprising a grip having a pressure applying front section, a back section and a bottom section, wherein:
 i) the front pressure applying section terminates at a top edge and extends at an angle between 0° and 90° measured clockwise from a reference plane perpendicular to the base;
 ii) the bottom section has an outer convex curved surface extending to a point which is more than one inch away from the top surface of the base; and
 iii) at least one bail engaging slot for receiving and maintaining the bail at an angle of between 20° and 60° from said reference plane when said base is mounted on said receptacle, the bail engaging slot having a bottom being at a distance measured from the base top surface which is less than a distance measured from the base top surface to the top edge of the front pressure applying section.

5,778,490
TENSION DEVICE FOR LIVE AXLE DOORS
 David B. Curtis, 962 Bay Springs Rd., Villa Rica, Ga. 30180
 Filed Jan. 24, 1996, Ser. No. 590,936
 Int. Cl.⁶ E05F 1/08:11/54

U.S. Cl. 16—198 25 Claims

1. A tensioning device for a roll up door having a live axle, the live axle connected to a set of drum wheels and supported at one end by a fixed bracket attached to a support structure, the tensioning device comprising:
 a) a tension bracket having an opening and at least one hole defined therein, the tension bracket fixedly attached to the support structure;
 b) an axle housing tube fitting through the opening in the tension bracket;
 c) a tension plate fixedly attached to the axle housing tube and positioned adjacent to the tension bracket, the tension plate having a plurality of holes defined therein;



- d) a tension pin sized to fit through the holes in the tension plate and through the hole in the tension bracket to prevent rotation of the tension plate relative to the tension bracket;
- e) a spring connecting plate fixedly attached to the axle housing tube so that the tension bracket is between the tension plate and the spring connecting plate; and
- f) a coil spring surrounding and extending along the axle having a first end and a second end, the first end connected to the axle and the second end connected to the spring connecting plate.

5,778,491

CONTINUOUS HINGE WITH A LONGITUDINALLY SUPPORTED PORTION AND A LONGITUDINALLY FREE END

Austin R. Baer, 24416 Hwy. 550, Ridgway, Colo. 81432

Filed Dec. 26, 1996, Ser. No. 774,701

Int. Cl.⁶ E05D 7/00

U.S. Cl. 16—354

34 Claims



1. A hinged combination comprising:
first and second hinge members of a predetermined hinge length which include a longitudinally-supported portion and a first longitudinally-free end portion that is located at an end of the hinge members, the hinge members being pivotably connected;
- a longitudinal support arrangement disposed in said supported portion including a group of supports configured and associated with the hinge members for preventing relative longitudinal movement between the hinge members in said supported portion; and
- a pivotable structural member having an edge that has an edge end, the edge being fixed to and supported from the first hinge member with the supported portion disposed generally centrally along the edge and the first free end portion extending substantially to the edge end;
- wherein the hinge members are both laterally supported relative to each other and capable of longitudinal slippage relative to each other in the first free end portion.

5,778,492 SCRAP FIBER REFEED SYSTEM AND METHOD

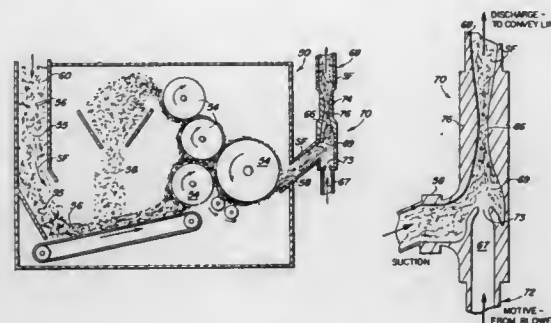
Leo Kurtis Thlessen, and James Sheldon Graham, both of Littleton, Colo., assignors to Johns Manville International, Inc., Denver, Colo.

Filed May 14, 1997, Ser. No. 856,407

Int. Cl.⁶ D01G 13/00

U.S. Cl. 19—107

24 Claims



1. A method of ref edding scrap fibers into a gaseous stream of virgin fibers and mixing the scrap fibers with the virgin fibers to form a fibrous mat, comprising:
- introducing scrap fibers including scrap fiber clumps and nodules into a fiber opening means; passing the scrap fibers through the fiber opening means to open up and substantially eliminate the scrap fiber clumps and nodules from the scrap fibers by releasing scrap fibers from the clumps and nodules;
- introducing the scrap fibers from the fiber opening means into a conveying airstream and conveying the scrap fibers from the fiber opening means to a virgin fiber containing gaseous stream by means of the conveying airstream which is passed through a venturi eductor means to reduce turbulence in the conveying airstream and impart a more laminar flow to the conveying airstream to reduce scrap fiber entanglement in the conveying airstream;
- introducing the scrap fibers into the gaseous stream of virgin fibers and mixing the scrap fibers with the virgin fibers; and
- collecting the mixture of virgin and scrap fibers to form a fibrous mat.

5,778,493 DEVICE AND METHOD FOR AUTOMATICALLY REPLACING THE FEED LAP PACKAGES AND FOR PREPARING AND JOINING THE RELATIVE EDGES IN A COMBING MACHINE

Giuseppe Moretti; Gian Mario Baitelli, and Giovanni Battista Pasini, all of Palazzolo sull'Oglio, Italy, assignors to F.LLI Marzoli & C. S.p.A., Bergamo, Italy

Filed Oct. 16, 1996, Ser. No. 731,610

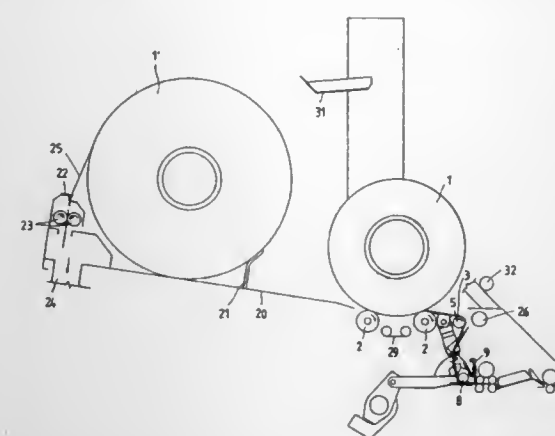
Claims priority, application Italy, Oct. 16, 1995, MI 95/A/002122

Int. Cl.⁶ D01G 19/08

U.S. Cl. 19—115 R

16 Claims

1. A method of automatically replacing a depleting lap with a new lap in a combing machine and joining lap edge portions thereof comprising the steps of clamping a trailing edge portion (3) of a depleting lap (1), changing rollers (2) from a normal drive direction unwinding the depleting lap (1) to another drive direction rewinding the depleting lap, operating the rollers (2) to rewind the trailing edge portion (3) of the depleting lap (1) so that it stretch-breaks in the vicinity of one of the rollers (2) and retaining an edge fringe of the depleting lap (1) upon a resting ledge (4) by suction, unloading the depleting lap (1), loading a new lap (1') having a leading edge portion (25) resting on the rollers (2) and straddling a bar (32), operating the rollers (2) to rewind the leading edge portion (25) of the new lap (1') to withdraw the leading edge (25) of the new lap (1') from the bar (32) and position the leading edge (25) of the new lap (1') on the ledge (4) in a superposing length (L) upon the trailing edge portion (3) of the depleting lap (1).



- pneumatically joining the superposed edge portions (25,3) at the resting ledge (4), changing the drive of the rollers (2) to their normal unwinding direction, driving the rollers (2) at low speed and subsequently returning to normal speed, providing a new reserve lap (1), and preparing a leading edge (25) of the new reserve lap (1') by stretch-breaking the new reserve lap leading edge (25) between a gripper (22) and a pair of rollers (23).

5,778,494

METHOD AND APPARATUS FOR IMPROVING THE AIR FLOW THROUGH AN AIR DUCT IN A DRY FIBER WEB FORMING SYSTEM

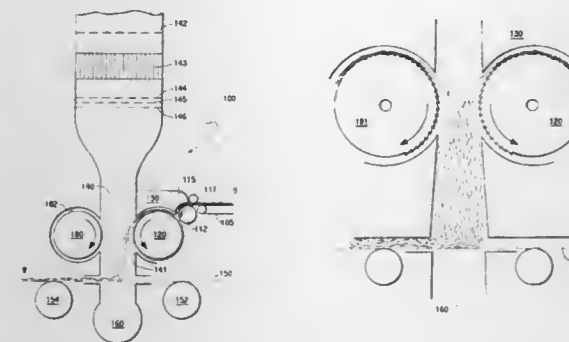
Kenneth Stephen Freund, Gallatin; Andrew James Giles, Joel-ton; Todd Arden McCoy, Hendersonville; Lyles Howard Sowell, Old Hickory; Phillip Osborne Staples, Nashville; Leonard Ray Tucker, Hendersonville, all of Tenn., and James Stephen Bailey, Arlington, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 3, 1996, Ser. No. 760,129

Int. Cl.⁶ D01G 25/00

U.S. Cl. 19—304

29 Claims



1. A process for forming a web of generally randomly oriented fibers comprising the steps of:
- dispersing fibers from a rotating disperser roll arranged generally adjacent to an air duct into an air stream within the air duct and wherein the rotating disperser roll creates a boundary layer of air which follows the periphery of the rotating disperser roll;
- directing the fibers and air stream to a consolidation screen to form a web of randomly oriented fibers on the consolidation screen; and
- rotating a roll positioned generally adjacent and generally across the air duct from the disperser roll to provide a balancing effect on the air stream in the air duct which at least partially offsets the unbalancing effects of the disperser roll.

5,778,495
BELT CLIP

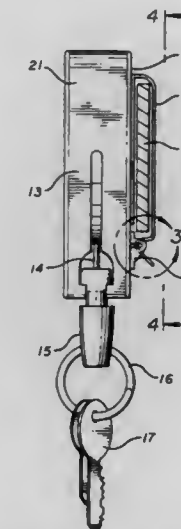
Edward C. Paugh, 80 Huntington St., No. 608, Huntington Beach, Calif. 92648

Filed Oct. 24, 1997, Ser. No. 957,249

Int. Cl.⁶ A44C 3/00; A45F 5/02

U.S. Cl. 24—3.12

4 Claims



1. An attachment for mounting an object on a belt or the like, including in combination:
- a spring clip having a U-shape with first and second arms joined at a bight;
- mounting means for mounting said first arm of said clip on a face of said object;
- pin support means attached to said object, said pin support means having aligned openings; and
- a pin for positioning in said aligned openings for maintaining the free end of said second arm in position between said pin and said face of said object.

5,778,496

STRAPPING DEVICE

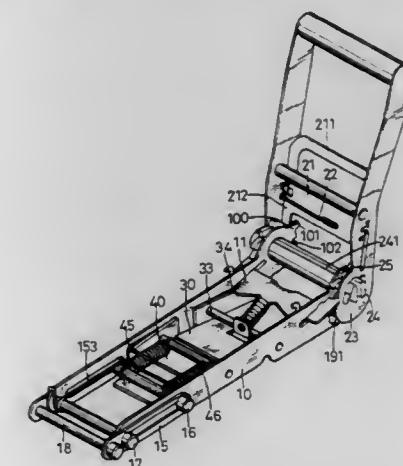
Han-Ching Huang, No. 12, Alley 111, Lane 437, Chen Hsing Road, Taichung, Taiwan

Filed Sep. 16, 1997, Ser. No. 931,311

Int. Cl.⁶ A44B 21/00; B25B 25/00

U.S. Cl. 24—68 CD

3 Claims



1. A strapping device comprising:
- a pair of plates each having a first end and a second end and a connecting plate connected between said two plates wherein said connecting plate has a stud extending upwardly there-

from, a first slot and a second slot respectively defined in each of said plates near said first end thereof, a periphery defining each of said second slots having a downward slope and a first pin received between said two second slots, each of said plates having a third slot and a first hole respectively defined therein and located near said second end of said corresponding plate, a concavity defined in a periphery defining each of said third slots and located opposite to said first hole, at least one of said plates having a stop extending from said first end thereof which has a recess defined therein, each of said two plates having a first aperture and a second aperture defined therethrough;

- a U-shaped handle having two arms respectively and pivotally connected to said first ends of said two plates by a shaft extending through said respective distal ends of said two arms and said respective first ends of said two plates, two ratchets respectively and securely mounted to said shaft and located between each pair of said plate and said arm, a cam means formed to a distal end of each one of said two arms;
- a control member slidably and biasedly disposed between said two arms and having two protrusions extending from a lower portion thereof so as to be respectively engaged with said ratchets;
- a pawl member biasedly and slidably received in said first slots with two ends thereof extending through said two first slots and respectively engaged with said two ratchets, a spring connected between said pawl member and said stud;
- a first board having an opening defined therethrough so as to receive said stud therein, and two first side plates so that said first board is movably disposed between said two plates by extending a second pin through said two second apertures and said two first side plates such that said first pin is located beneath a rear end of said first board, a first torsion member mounted to said second pin and pressing said rear end of said first board downwardly;
- a second board having two second side plates and movably disposed between said two plates by extending a third pin through said two first apertures and said two second side plates wherein a rear end of said second board is located beneath a front end of said first board, a front end of said second board having a groove defined transversely therein, a second torsion member mounted to said third pin and pressing said front end of said second board downwardly;
- two sliding plates respectively disposed to outside of said two plates and each of said sliding plates having a fourth slot and a second hole defined therethrough;
- a first rod extending through said fourth slots of said two sliding plates and said cavities and received in said groove of said second board;
- a second rod extending through said fourth slots of said two sliding plates and said first holes of said two plates, a third torsion member mounted to said second rod and pressing said first rod downwardly;
- a third rod fixedly connected between said two sliding plates and extending through said two second holes.

5,778,497

PLASTIC CLIP

Taizo Noda, Nishinomiya, Japan, assignor to J-Sen Ltd. No. 32, Kyoto, Japan

Filed Mar. 12, 1997, Ser. No. 820,346

Claims priority, application Japan, Mar. 25, 1996, 8-095973

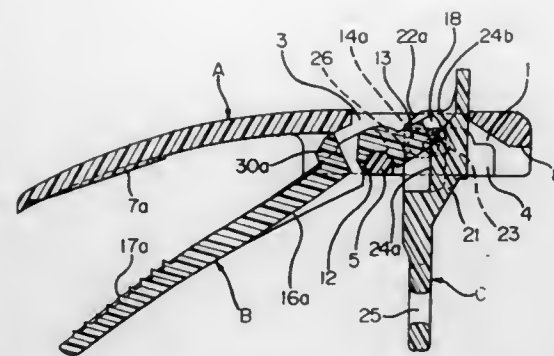
Int. Cl.⁶ A44B 21/00

U.S. Cl. 24—504

5 Claims

1. A plastic clip having an upper clipping member, a lower clipping member, and an operation stick member, the clip comprising:

- an upper clipping member having an upper substrate, on a rear portion of which a mouth is built in a square shape, a pair of side walls formed in both sides of the mouth, on the front and lower side of each wall a spindle plate in an arcuate shape being bridged between the side walls while a pair of recess



bearings which accept the operation member are formed on an inside surface of the walls at a distance from the spindle plate; a lower clipping member having a lower substrate, wherein its rear portion is formed narrower in size than its front portion so that this narrower rear portion is insertable between a front end of the mouth and the spindle plate, having a ditch-shaped bearing being formed to be freely movable over the spindle plate on the rear and lower portion of the upper substrate, having a projection formed in its rear end with a pair of protuberances established on both sides of the lower substrate, said projection extending towards the rear end of the mouth and being narrower than the rear portion of the lower substrate, and having an elastic tongue extending upward between legs a pair of a U-letter shaped opening for separating front portions of the upper and lower clipping members and

an operation stick member having an operation substrate, having on one end a box defined by a pair of outer side walls with a thickness adapted to be inserted between a rear end of the mouth and a rear end of the projection and also adapted to be insertable between inner surface of the upper clipping member side walls and outer surface of the lower clipping member projection from the lower side of the mouth, having a pair of actuation expansions which freely engage with the pair of recess bearings on the outer surface of a pair of outer side walls, having a pair of engaging dents which are fitted with the protuberances formed on a lower and inner surface of outer side walls, having a pressure plate which contacts on upper surface of the projection being established behind the center of the actuation expansions in the box, and having a slit shaped belt insertion drilled on another end of the operation substrate.

5,778,498

RELEASABLE FASTENER FOR FOOT APPAREL

David A. Laks, 930 Osborne, Vista, Calif. 92084

Filed Aug. 16, 1996, Ser. No. 699,127

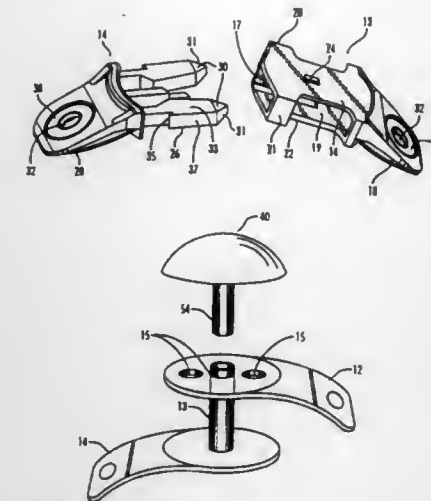
Int. Cl.⁶ A44B 11/00; A43C 11/00

U.S. Cl. 24—625

15 Claims

1. A latching mechanism for securing foot apparel to a user's foot, wherein the foot apparel includes upper flaps having a plurality of eyelets, comprising:

- a first connecting member, including a first arm;
- a second connecting member, including a second arm and capable of coupling to the first connecting member; wherein each of the first and second arms includes an aperture;
- a first securing mechanism for passing through the apertures in the first arm and an eyelet of the upper flaps and a second securing mechanism for passing through the apertures in the second arm and an eyelet of the upper flaps, for coupling the first arm and second arm to the foot apparel, wherein each securing mechanism each further comprises:
 - a threaded member having a head, and
 - a hollow threaded receptacle separable from the arm, the receptacle having a flange defining a generally flat surface which abuts relatively flush with the upper flap of the foot apparel



coupling the arm to the foot apparel, capable of receiving the threaded member within the hollow receptacle.

5,778,499

SHOELACE AND METHOD FOR EASY TYING

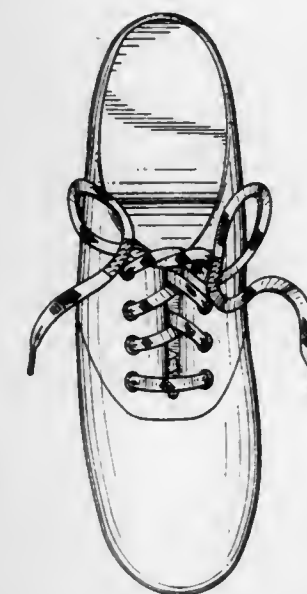
Dena Lehrman, 43 Netzach Yerushalayim, Efrat 90435, Israel

Filed Aug. 6, 1996, Ser. No. 692,677

Int. Cl.⁶ A43C 9/00

U.S. Cl. 24—712

5 Claims



1. A shoelace consisting of a flexible, nonmetallic binding having two end portions wherein a multiplicity of hook-shaped filaments are positioned on a first region of each end portion; and a second region of each end portion for adhering to the hook-shaped filaments the same end portion so as to form a loop at each end portion; wherein the first region is proximal to the extreme ends of the binding and the second region is distal to the extreme ends of the binding; wherein the binding is of a woven material in which the weave is sufficiently loose for adhering to the hook-shaped filaments, and in which a VELCRO loop and is not present on the binding.

5,778,500

KNOT SECURING DEVICE

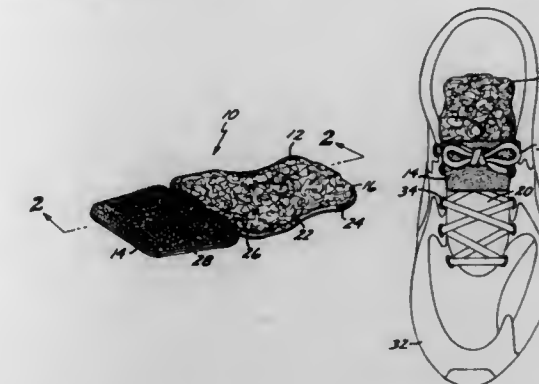
Moise Illingworth, 37826 Boxthorn St., Palmdale, Calif. 93550

Filed Mar. 20, 1997, Ser. No. 821,221

Int. Cl.⁶ A43B 11/00

U.S. Cl. 24—712.3

4 Claims



1. A device for securing a bow-type knot, comprising: a flexible patch of material having first and second surfaces and adaptable to be folded about a folding region; a region of hook elements entirely overlying said second surface of said patch of material on one side of said folding region; a region of loop elements entirely overlying said second surface of said patch material on a side of said folding region opposite said region of hook elements; and a pair of apertures extending through either said region of hook elements or said region of loop elements to allow two ends of a lace member forming the bow-type knot to pass there-through from said first surface to said second surface; wherein said flexible patch of material is folded about said folding region to bring said region of hook elements into contact with said region of loop elements to form a releasable lock that envelops the bow-type knot.

5,778,501

WATER-JET MACHINE FOR MAUFACTURING NON-WOVEN FABRIC

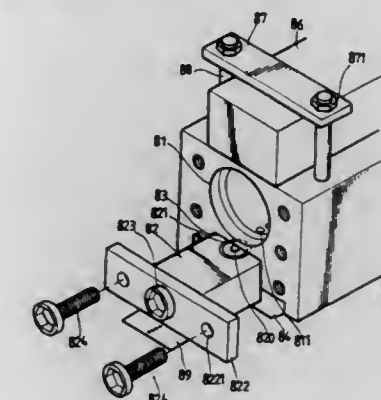
Fu Kuo You, Taoyuan, Taiwan, assignor to Yu-Hau Machinery Co., Ltd., Taoyuan Hsien, Taiwan

Filed May 29, 1997, Ser. No. 865,250

Int. Cl.⁶ D06B 5/02; D04H 1/46

U.S. Cl. 28—104

5 Claims



1. A water-jet machine comprising: a body having a plurality of piston means retractably received in a top thereof and a passage defined longitudinally therethrough, a groove defined longitudinally in an underside of said body wherein a plurality of first holes are defined through said underside of said body so that said passage communicates with said groove via said first holes, said top of said

body having two rows of second holes defined perpendicularly through said body and said two rows of second holes being arranged such that said piston means are located therebetween, at least two first threaded holes being defined in one of two ends of said body and located such that said groove is located between said two first threaded holes;

two supporting plates each having a plurality of third holes defined perpendicularly therethrough and a recess defined along one of two sides thereof, said two supporting plates disposed on said underside of said body by extending bolts through said third holes, said second holes and fixedly connected to at least one transverse bar which is mounted across over said top of said body, a gap being defined between said two adjacent sides having said respective recesses and said transverse bar being lifted by said piston means;

a bar having a plurality of fourth holes defined perpendicularly therethrough and an end plate fixedly connected to one of two ends thereof so that said bar is received in said groove by extending bolts through said end bar and engaged with said first threaded holes of said body, and

a board having a plurality of apertures defined therethrough and said board disposed to an underside of said bar wherein said first holes, said fourth holes and said apertures communicate with each other and are in alignment with said gap between said two supporting plates, a lower portion of said bar and said board being securely received between said two recesses of said two supporting plates when said transverse bar is lifted by said piston means.

5,778,502

DEVICE FOR CRIMPING SYNTHETIC THREAD BUNDLES OR BANDS

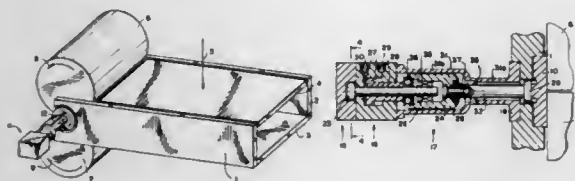
Carsten Voigtländer, Neumünster, and Uwe Münster, Wilster, both of Germany, assignors to NEUMAG-Neumünstersche Maschinen-und Anlagenbau GmbH, Neumünster, Germany
Filed Oct. 11, 1996, Ser. No. 728,934

Claims priority, application Germany, Oct. 12, 1995, 195 37 958.6

Int. Cl.⁶ D02G 1/12

U.S. Cl. 28—269

7 Claims



1. A device for crimping synthetic thread bundles or bands, comprising a stuffing chamber; a pair of rollers supplying a thread bundle or band into said stuffing chamber and forming a roller gap; pressing disks covering said roller gap at end surfaces of said rollers; a clamping element including an axially reciprocating piston which presses said pressing disks against the end surfaces of said rollers; a rotary drive having a drive unit for producing a reciprocating movement; and means for converting the reciprocating movement to a stepped rotation of said pressing disks, said clamping element being fixedly connected with said rotary drive to form a structural group, said structural group having a single rotatably supported and axially displaceable driven element which axially engages said pressing disk and is fixedly connected with it for joint rotation, said piston of said clamping element being clampable inside said structural group axially against said driven element, said rotary drive having a swivel motor with a swiveling shaft which is reciprocatingly swivelable in a limited angular region and a free-running element arranged as a coupling between said swivel shaft and said driven element aligned with said swivel shaft.

5,778,503

APPARATUS FOR DISPOSING OF SPENT NAS CELLS

Tomonori Tsuchimoto, Hashima-Gun; Katsuichi Iwata, Ichinomiya, and Yoshihiko Kurashima, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 483,160, Jun. 7, 1995, Pat. No. 5,587,252.

This application Aug. 2, 1996, Ser. No. 691,531

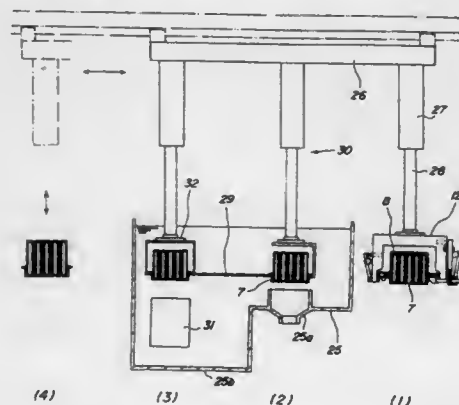
Claims priority, application Japan, Jul. 20, 1994, 6-167739; Jun. 1, 1995, 7-135265

The portion of the term of this patent subsequent to Mar. 7, 2014, has been disclaimed.

Int. Cl.⁶ B23P 21/00; H01M 6/50

U.S. Cl. 29—33 R

17 Claims



1. A spent NaS cell disposal apparatus comprising:

(1) a workpiece-setting vessel having a hole at a bottom portion of said workpiece vessel, said hole having a dimension sufficient to permit an inner tube of a spent NaS cell to be pulled out from said cell, said workpiece-setting vessel so configured to allow it (a) to hold and support a cut opening in said cell to permit sodium to flow out of said cell through said cut opening and (b) to permit an inner tube to be pulled out from said cell when said cut opening is opposed to said hole in said workpiece-setting vessel;

(2) a heating oil vessel into which said cell can be immersed, sodium inside said cell can pass through said opening, and said inner tube can be pulled out from said cell;

(3) a transporting elevation adapted to reciprocate along a reciprocating beam extending above said heating oil vessel and between above said heating oil vessel and outside said heating oil vessel, said elevator having means to hold said heating oil vessel at a lower end portion, to descend from the location above said heating oil vessel, and immerse said cell held by said workpiece-setting vessel into oil inside said heating oil vessel to allow sodium to flow out of said cell, and to remove said cell out of said heating oil vessel after said inner tube is taken out of said cell; and

(4) an extractor to extract said inner tube from said oil after sodium has flown out of said cell into said oil in said heating oil vessel when said cut opening is directed downwardly.

5,778,504

AUTOMATIC LATHE HAVING INDEPENDENTLY MOVABLE GANG TOOL POSTS

Satoru Ozawa, and Shozo Kasuya, both of Shizuoka, Japan, assignors to Star Micronics Co., Ltd., Shizuoka, Japan
Continuation of Ser. No. 201,390, Feb. 24, 1994, Pat. No. 5,564,171. This application Jul. 2, 1996, Ser. No. 676,091

Claims priority, application Japan, Feb. 27, 1993, 5-062822; Jul. 29, 1993, 5-208324

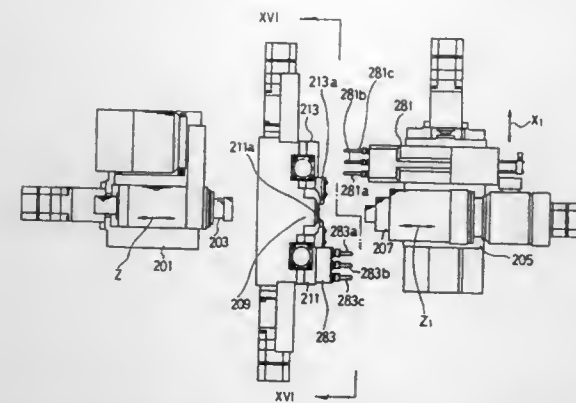
Int. Cl.⁶ B23B 7/00

U.S. Cl. 29—27 C

17 Claims

9. An automatic lathe comprising:

a pair of gang tool posts disposed on opposite sides with a headstock in between, said headstock having a main spindle and being moveable in an axial direction of said main spindle,



one of said pair of gang tool posts being moveable in an X-axis direction and a Y-axis direction both perpendicular to said axial direction of said main spindle and perpendicular to each other,

the other of said pair of gang tool posts being moveable in an X'-axis direction and a Y'-axis direction both perpendicular to said axial direction of said main spindle and perpendicular to each other,

wherein front work tools are mounted on a rear headstock opposite to said headstock, said rear headstock having a rear spindle and being moveable in a direction parallel to said axial direction of said main spindle and also in a direction perpendicular to said direction, and rear work tools are mounted on one of said pair of gang tool posts.

5,778,505

APPARATUS FOR FASTENING A SEMI-CYLINDRICAL WORKPIECE

William W. Mangus, North Tonawanda; Gary W. Riehle, Elma, and Larry J. Reilly, Kenmore, all of N.Y., assignors to Gemcor Engineering Corporation, Buffalo, N.Y.

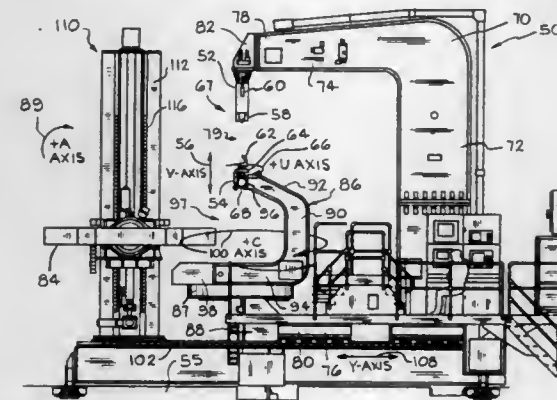
Continuation of Ser. No. 317,367, Oct. 4, 1994, abandoned.

This application Sep. 4, 1997, Ser. No. 923,231

Int. Cl.⁶ B23P 23/04; B21J 15/00

U.S. Cl. 29—34 B

20 Claims



1. Apparatus comprising first and second head means which are located along an axis for machining a curvilinear workpiece held therebetween, frame means including first and second C-frames for holding said first and second head means respectively, said first C-frame being disposed substantially in a plane and said workpiece having a longitudinal axis disposed substantially perpendicular to said plane, means for fixturing the workpiece and for moving the fixtured workpiece between said first and second head means for positioning of the workpiece at various positions thereof for machining, and means for rotating said second C-frame about said axis to provide clearance for the workpiece including the longitudinally extending edges thereof in the various positions thereof for machining.

5,778,506

METHOD FOR BALLISTICALLY ENHANCING A FORMED PANEL

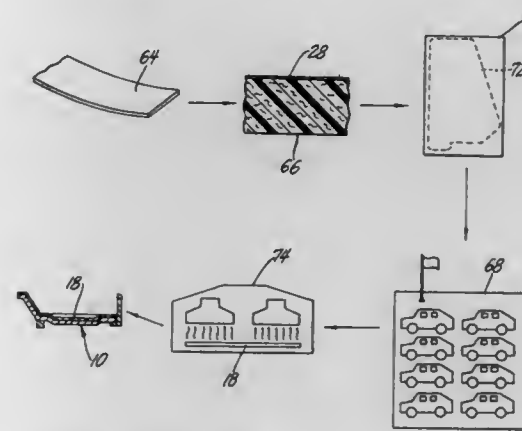
René G. Gonzalez, Southfield, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 29, 1996, Ser. No. 646,759

Int. Cl.⁶ B21K 21/16

U.S. Cl. 29—401.1

17 Claims



1. A method of reinforcing a nonplanar panel in a vehicle or other enclosed structure both against explosive blasts and flying debris, comprising:

providing a mat comprised of at least one plastically deformable matrix and fibrous material impregnated by the matrix; cutting the mat to the outline shape of the panel; placing the mat on the panel and conforming the mat to the topography of the panel, thereby creating a surface-to-surface interface between the mat and the panel; removably fixing the mat to the panel at points all over the interface; and after conforming the mat to the topography of the panel, hardening the matrix material.

5,778,507

MACHINE AND METHOD FOR MAKING DOME ARRAYS MOUNTED ON A BACKUP STRIP

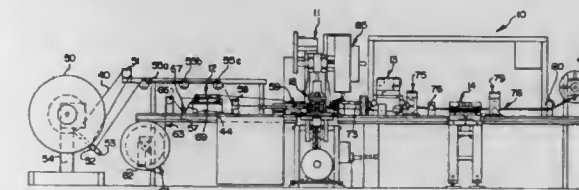
Dennis A. Grannan; Robert A. Baum, both of Ft. Collins, Colo., and Randall J. Brodka, Mt. Pleasant, Iowa, assignors to Lucas Automation & Control Engineering, Inc., Hampton, Va.

Filed Mar. 27, 1995, Ser. No. 411,430

Int. Cl.⁶ B26D 5/22; B65B 63/00

U.S. Cl. 29—412

8 Claims



1. A machine for continuously making a strip of dome arrays on a backup strip therefor wherein each array includes a plurality of domes mounted on a dome seal in a predetermined non-linear pattern and in oriented relation, said machine comprising: means for simultaneously stamping a plurality of domes in a predetermined non-linear pattern and in oriented relation from a metal strip including a set of dies for stamping a plurality of domes from the metal strip in a predetermined non-linear pattern and in oriented relation, said set of dies having a discharge end from which the domes are discharged in oriented relation following the stamping thereof.

means for incrementally feeding said metal strip to the input end of said stamping means;

means for incrementally feeding a dome seal strip having an adhesive coating on one side and a backup strip releasably laminated thereto toward the input end of the stamping means in synchronism with said metal strip feeding means;

means ahead of the input end of the stamping means for separating the dome seal strip from the backup strip;

means feeding the dome seal strip through the stamping means and along the discharge end of said set of dies with the side having the adhesive coating facing said discharge end of the dies so that the domes are deposited on the adhesive coating side of said dome seal strip in oriented relation;

means for routing the separated backup strip around the stamping means;

means at the output end of the stamping means for realigning the separated backup strip to the dome seal strip with domes to releasably laminate the backup strip to the dome seal strip;

and means synchronized with the metal strip feeding means and the dome seal strip feeding means for kiss-cutting the dome seal strip to define successively spaced apart dome arrays removably carried on the backup strip.

5,778,508

Patent Not Issued For This Number

5,778,509

METHOD FOR MANUFACTURING HYBRID INFLATOR HAVING TOROIDAL-LIKE STORED GAS HOUSING

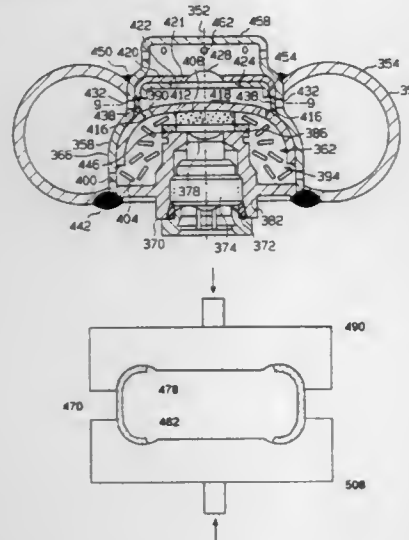
Brian K. Hamilton, Littleton, and Brent A. Parks, Englewood, both of Colo., assignors to OEA, Inc., Aurora, Colo.

Continuation-in-part of Ser. No. 389,297, Feb. 16, 1995, Pat. No. 5,553,889, which is a continuation-in-part of Ser. No. 328,657, Oct. 25, 1994, Pat. No. 5,616,883, which is a continuation-in-part of Ser. No. 210,668, Mar. 18, 1994, Pat. No. 5,602,361. This application May 2, 1995, Ser. No. 432,832

Int. Cl.⁶ B21D 39/03

U.S. Cl. 29—428

11 Claims



1. A method for manufacturing a hybrid inflator for an inflatable safety system, comprising the steps of:

forming an annular stored gas housing, tubing which has a generally torus-shaped outer wall, from a length of tubing wherein a radially inward annular part of said stored gas housing defines a central opening; said forming step including:

providing first and second dies, with each of said first and second dies having a groove;

locating said tubing between said first and second dies in axial alignment with said grooves of said first and second dies, said tubing comprising first and second tubing ends and a substantially cylindrical tubing sidewall disposed about a longitudinal axis;

advancing said first and second dies relatively toward each other and forcing portions of said tubing radially inwardly relative to said longitudinal axis; and

conforming an upper half of said tubing to said groove in said first die and conforming a lower half of said tubing to said groove in said second die;

supplying a central housing

positioning a propellant in at least part of said central housing;

disposing said central housing within said central opening of said stored gas housing;

securing said central housing to said stored gas housing; and

providing an inflating medium to at least said stored gas housing.

5,778,510

METHOD AND APPARATUS FOR ATTACHING OR DETACHING A FILMSTRIP TO A FILM CARTRIDGE

Hisashi Negoro, and Takuya Yamamoto, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

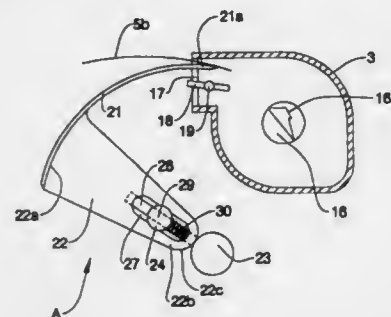
Filed Dec. 9, 1996, Ser. No. 762,105

Claims priority, application Japan, Dec. 8, 1995, 7-320693

Int. Cl.⁶ B23P 11/00; G03B 23/19; B65B 63/04

U.S. Cl. 29—434

9 Claims



1. A mechanism for attaching a filmstrip to a film cartridge having a take-up spool rotatably mounted therein, said cartridge having an access opening for allowing the filmstrip to be inserted or removed from within the cartridge, said mechanism comprising:

- means for positioning the film cartridge in a predetermined position;
- an attachment tool rotatably mounted to said mechanism for movement about a pivot point, said attachment tool having a generally arcuate guide member;
- means for moving said attachment tool from a non-engaged position to a first engaged position such that a portion of the attachment tool extends into said access opening;
- means for engaging the filmstrip to said attachment tool;
- means for moving said attachment tool to a second engaged position for engaging the filmstrip to said take-up spool; and
- means for moving said attachment tool in a radial direction relative to said pivot point while said attachment tool extends into said access opening.

5,778,511

SWING APPARATUS AND METHOD

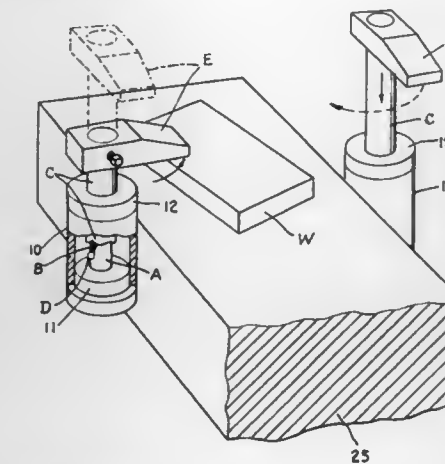
Rickey Lynn Keaton, West Union, S.C., assignor to Compact Air Products, Inc., Westminster, S.C.

Division of Ser. No. 109,581, Aug. 20, 1993, Pat. No. 5,437,440. This application Mar. 16, 1995, Ser. No. 405,140

Int. Cl.⁶ B23Q 3/08

U.S. Cl. 29—559

2 Claims



1. The method of operating a swing apparatus so as to reduce the length of the stroke of a swing member having a fluid operated cylinder with end cap and carrying a piston therein comprising the steps of:

- providing a piston in said cylinder;
- positioning an elongated cam member axially within the cylinder providing a mounting thereon on said end cap;
- providing a piston rod having an elongated cavity therein opening on one end receiving said elongated cam means therein;
- mounting said piston on said piston rod;
- extending a cam track longitudinally and circumferentially in respect to said cam member for a distance corresponding to substantially the entire length of the stroke of said piston;
- providing a cam follower adjacent a forward end of said piston and extending into said cavity and into engagement with said cam track for effecting turning of said piston rod in respect to said cylinder; and
- providing a mounting for an operator on said piston rod; whereby swinging of the piston rod occurs during longitudinal movement of the piston rod to reduce the stroke of the piston required to turn said operator by a given amount.

5,778,512

MANUFACTURING METHOD FOR A ROTOR OF AN ELECTRIC ROTARY MACHINE

Hideki Ichikawa, Inazawa; Masahiro Takada, Okazaki; Kouji Katahira, Chiryu, and Keniti Shibayama, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 18, 1995, Ser. No. 574,033

Claims priority, application Japan, Dec. 19, 1994, 6-315325; Dec. 19, 1994, 6-315336; Oct. 26, 1995, 7-279346

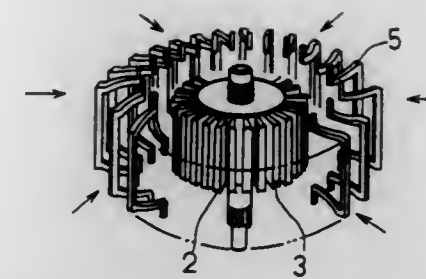
Int. Cl.⁶ H02K 15/06

U.S. Cl. 29—598

19 Claims

1. A method for manufacturing a rotor of an electric rotary machine comprising the steps of:

- providing an armature core having a plurality of slots on an outer surface thereof;
- providing a plurality of upper layer coil elements, each of said plurality of upper layer coil elements having an upper layer coil side and an upper layer coil end electrically connected at each end of the upper layer coil side such that each upper layer coil end extends at a right angle from the upper layer coil side and is inclined by a predetermined angle with respect to the upper layer coil side in a circumferential direction of the armature core;



providing a plurality of lower layer coil elements, each of said plurality of lower layer coil elements having a lower layer coil side and a lower layer coil end electrically connected at each end of the lower layer coil side such that each lower layer coil end extends at a right angle from the lower layer coil side and is inclined by a predetermined angle with respect to the lower layer coil side in a circumferential direction of the armature core;

arranging at least one of the plurality of upper layer coil elements and at least one of the plurality of lower layer coil elements radially outside each of the plurality of slots so that the coil elements are disposed circumferentially around the armature core at the plurality of slots; and

simultaneously moving all of the coil elements radially inwardly toward the armature core until each of the plurality of coil sides is inserted into a corresponding one of the plurality of slots.

5,778,513

BULK FABRICATED ELECTROMAGNETIC MICRO-RELAYS/MICRO-SWITCHES AND METHOD OF MAKING SAME

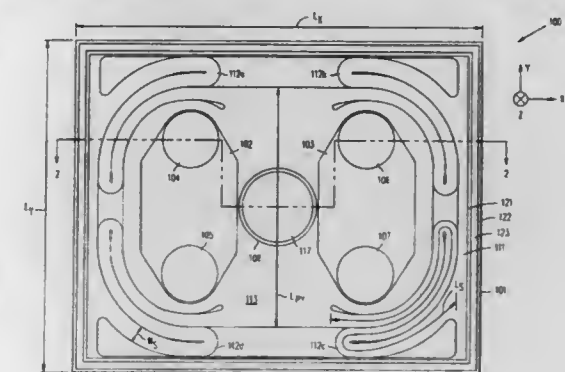
Denny K. Miu, 25873 Anzio Way, Valencia, Calif. 91135; Wellong Tang, Alhambra, and Viktoria A. Temesvary, Culver City, both of Calif., assignors to Denny K. Miu, Valencia, Calif.

Filed Feb. 9, 1996, Ser. No. 599,018

Int. Cl.⁶ H01F 4/14; H01H 15/00

U.S. Cl. 29—602.1

35 Claims



1. A micro-relay comprising:

a substrate having a magnetic pathway located therein;

one or more coils located on the substrate over the magnetic pathway, wherein a current applied to the one or more coils magnetizes the magnetic pathway;

a first electrically conductive contact pad coupled to the substrate, the first contact pad being electrically insulated from the substrate;

a flexible monocrystalline structure suspended over the substrate;

a second electrically conductive contact pad coupled to the monocrystalline structure and located above the first contact pad, the second contact pad being positioned such that when the monocrystalline structure flexes toward the substrate, the

second contact pad touches the first contact pad, thereby providing an electrical connection between the first and second contact pads; and
a pole piece coupled to the monocrystalline structure and positioned above the one or more coils, whereby a current applied to the one or more coils generates an electromagnetic force which flexes the monocrystalline structure toward the substrate, thereby causing the second contact pad to touch the first contact pad.

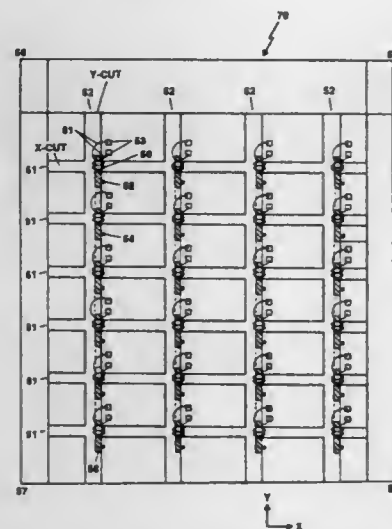
5,778,514

METHOD FOR FORMING A TRANSDUCING HEAD
Shyam Chandra Das, Cupertino, Calif., assignor to DAS Devices, Inc., Milpitas, Calif.

Continuation of Ser. No. 1,383, Jan. 6, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 384,247
Int. Cl.⁶ G11B 5/42

U.S. Cl. 29—603.14

19 Claims



1. A method for forming a transducing head on a substrate comprising the steps of:
forming a planar substrate containing a plurality of embedded cores or partial embedded cores, each of the cores being substantially U-shaped;
forming a core/coil assembly on the substrate by defining a plurality of metallic coils thereon, wherein each of the metallic coils are in magnetic association with respective ones of the embedded cores or partial embedded cores in the substrate; and
cutting the substrate having said core/coil assembly to define at least one slider to form the head and wherein said core forms a yoke with exposed yoke tips and provides a bottom pole of a multi-pole MIG head, and an area below said exposed yoke tips is recessed and at least one coil layer is deposited thereover, separated from said core by insulation, and then a second core is formed thereover for forming a top pole of said MIG head.

5,778,515

METHODS OF FABRICATING ELECTROCHEMICAL CELLS

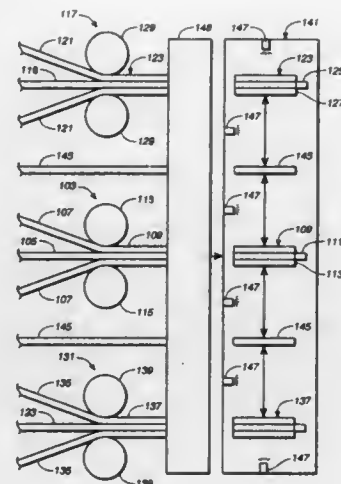
Krishna Menon, Henderson, Nev., assignor to Valence Technology, Inc., Henderson, Nev.

Filed Apr. 11, 1997, Ser. No. 838,634
Int. Cl.⁶ H01M 2/16; 10/40

U.S. Cl. 28—623.4

32 Claims

1. A method of preparing an electrode/separator assembly that comprises the steps of:



forming an electrode film that comprises a first polymer and an electrode active material;
forming a separator film that comprises a second polymer; and
attaching the electrode film to the separator film by a process comprising:

- (i) placing a pre-lamination solvent on either a first surface of the electrode film, first surface of the separator film, or on both surfaces, wherein the pre-lamination solvent is effective in solvating polymer on the surface of either film; and
- (ii) placing the first surface of the electrode film in contact with the first surface of the separator film to form an electrode/separators assembly.

5,778,516

RIVETING APPARATUS

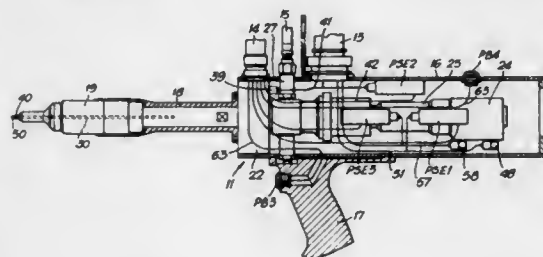
Aiden R. Dear, Hitchin; Keith Denham, and Anraj K. Seewraj, both of Welwyn Garden City, all of England, assignors to Avdel Textron Limited, Welwyn Garden City, England
Filed Mar. 20, 1996, Ser. No. 618,719

Claims priority, application United Kingdom, Mar. 24, 1995, 9505994

Int. Cl.⁶ B23Q 15/00; B23P 11/00

U.S. Cl. 29—707

15 Claims



1. A riveting apparatus comprising:
an elongated mandrel, having an enlarged head at one end and loaded with a plurality of tubular rivets forming a column of rivets on the mandrel;
a gripping mechanism located at or near the end remote from the head, and reciprocated relative to an abutment by relative reciprocation between the gripping mechanism and the abutment, the rivets in the column being fed forwardly along the mandrel so that the leading rivet nearest the mandrel head is positioned between the mandrel head and the abutment and can then be set by moving the mandrel rearwardly relative to the abutment so as to draw the head of the mandrel through the bore of the rivet while the rivet is supported by the abutment;
a pneumatically operated rivet-feeding mechanism feeding rivets forwardly along the mandrel, and

a valve mechanism shutting off the supply of air to the rivet feeding mechanism thereby to disable the rivet feeding mechanism, wherein the valve mechanism includes a mechanism detecting the presence or absence of a mandrel in the gripping mechanism and wherein the valve mechanism is responsive to the presence or absence of a mandrel in the gripping mechanism, the valve mechanism being closed in the absence of a mandrel and open only in the presence of a mandrel.

5,778,517

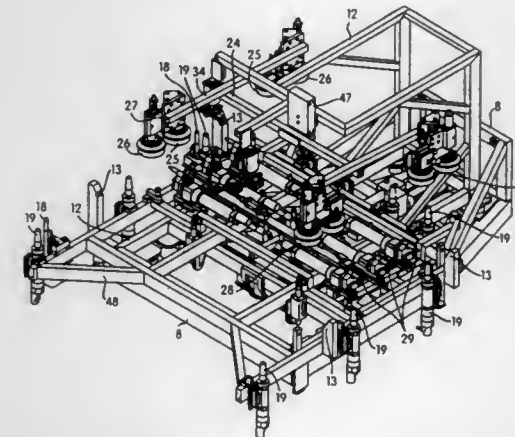
DEVICE AND METHOD FOR THE ASSEMBLY OF A SLIDING SUNROOF FRAME

Georg Amesbichler, Munich, and Hansjoerg Kauschke, Deisenhofen, both of Germany, assignors to Webasto Sunroofs, Inc., Rochester Hills, Mich.

Filed Jun. 7, 1996, Ser. No. 663,024
Claims priority, application Germany, Jun. 9, 1995, 4658159

Int. Cl.⁶ B23P 21/00
U.S. Cl. 29—709

10 Claims



1. A device for mounting a sunroof assembly including a sunroof frame having a slide and tilt mechanism, and a cover therefor in covering relation respect to a motor vehicle roof opening having an underside sunroof reinforcement frame, comprising:
a stand that is movable relative to a motor vehicle body;
a tool mounted on the stand, said tool having a lower portion and an upper portion spaced in relation to one another, said lower portion adapted to be introduced into the motor vehicle body and said upper portion adapted to be positioned above the roof opening;
a floating frame mounted for movement on the lower portion of the tool and constructed and arranged to be introduced into the motor vehicle body together with the lower portion of the tool;
actuators disposed between the tool and the floating frame and constructed and arranged to move the floating frame relative to the tool and in transverse and longitudinal directions relative to the vehicle body and hence the motor vehicle roof opening;
sensors constructed and arranged to monitor positioning of the floating frame within the vehicle body in relation to the motor vehicle roof opening;
a vertically movable lifting frame mounted for vertical movement on the floating frame, said lifting frame having positioning members constructed and arranged to center the sunroof frame and to mount the sunroof frame in proper vertical position with respect to the roof opening reinforcement frame from within the motor vehicle;
a first fastening mechanism mounted on the lifting frame and constructed and arranged to fasten the sunroof frame to the roof opening reinforcement frame from within the vehicle;
vertically movable suction devices mounted on said upper portion of the tool and constructed and arranged to engage and vertically lift the cover and mount the cover onto the slide-

and-tilt mechanism of the sunroof frame before the cover is fixed to said slide-and-tilt mechanism; and
a second fastening mechanism constructed and arranged to fasten said cover to said slide-and-tilt mechanism.

5,778,518

DEVICE FOR PRESSING SLOT SEALING PIECES FOR WINDING BARS INTO SLOTS OF AN IRON BODY OF AN ELECTRIC MACHINE

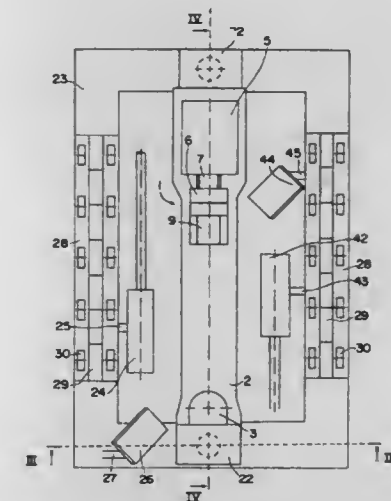
Albert Huber, Möriken; Armin Kech, Oberrohrdorf; Albert Kopp, Windisch, and Rainer Spielmann, Birrhard, all of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

Filed Apr. 16, 1996, Ser. No. 633,111
Claims priority, application Germany, Jun. 8, 1995, 195 20 868.4

Int. Cl.⁶ B23P 19/00

U.S. Cl. 29—736

4 Claims



1. A device for pressing slot sealing pieces for winding bars into slots of an iron body of an electric machine, the slot sealing pieces each including a first, upper prismatic body, the upper body having an underside with a lower surface that extends in an inclined fashion, and a second, lower prismatic body, the lower body having an upper surface, the upper surface facing the upper body, that extends in an inclined fashion parallel to an inclination of the lower surface of the upper body, the device comprising:
a wedging device including
a plunger for acting on an end face of a second prismatic body of a slot sealing piece,
a force-generating device, the force-generating device including a pressure cylinder with a fluid-operable piston, the piston having a linkage to which the plunger is connected, and
a collet on which the force-generating device is arranged, the collet being adapted to engage with a cam on a first prismatic body of a slot sealing piece;
a support frame, the support frame including one or more mounts, each of the one or more mounts including one or more rollers for permitting rolling movement of the support frame, and one or more permanent magnets for holding the support frame relative to an iron body of an electric machine, the electric machine having an iron body and a rotor body, the iron body and the rotor body defining an air gap, and slots into which the slot sealing piece is to be pressed;
a lifting device, the lifting device connecting the wedging device to the frame; and
a pulling device attached to the support frame for pulling the support frame and the wedging device connected to the support frame by the lifting device through the air gap.

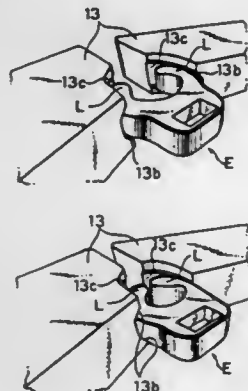
5,778,519
APPARATUS FOR FORMING "SLIDE FASTNER
ELEMENTS"

Yoshimichi Maeda; Toshio Aoki; Masafumi Mikkaichi, and
Kenichiro Iai, all of Toyama-ken, Japan, assignors to YKK
Corporation, Japan

Division of Ser. No. 518,309, Aug. 23, 1995, Pat. No.
5,671,510. This application Apr. 25, 1997, Ser. No. 840,936
Claims priority, application Japan, Aug. 24, 1994, 6-199320
Int. Cl.⁶ B41H 37/06

U.S. Cl. 29—769

1 Claim



1. An apparatus for forming a row of slide fastener elements, comprising:

- rolling means for rolling a wire into a generally Y shape in cross section while the wire is intermittently supplied at a predetermined pitch;
- a cutting die having on a wire supplying path a through hole for insertion of the rolled wire and movable reciprocatingly in a direction of cutting the wire;
- a protuberance-of-coupling-head forming die situated contiguously to a forward end of the reciprocating movement of said cutting die;
- a cutting punch fixed to a frame and situated in frictional contact with an upper surface of said cutting die;
- a protuberance-of-coupling-head forming punch situated above a protuberance forming station and vertically movable toward and away from said forming die; and
- a calking punch for calking attaching legs of the individual element blanks, which are provided with the respective protuberances, successively on a fastener tape being supplied intermittently at a predetermined pitch;
- said rolling means having rolling surfaces for providing the attaching legs with a generally C-shape profile;
- said calking punch having calking surfaces for providing cut edges of each individual attaching leg with smooth beveled surfaces.

5,778,520
METHOD OF MAKING AN ASSEMBLY PACKAGE IN AN
AIR TIGHT CAVITY AND A PRODUCT MADE BY THE
METHOD

Jong Tae Kim, #301 Spacevilla 741 Bangbae-Dong, Secho-Gu,
Seoul, Rep. of Korea, 137-069, and Chan Ik Park, 121-1
Sungbon-Ri Daeso-Myun, Eumsong-Koon, Choong-Book,
Rep. of Korea, 369-820

Filed Jul. 3, 1996, Ser. No. 675,110

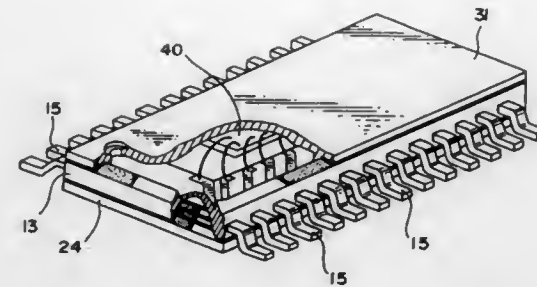
Int. Cl.⁶ H01L 23/31

U.S. Cl. 29—827

22 Claims

1. A method of making an assembly having an air tight cavity, said assembly comprising:

- a plurality of thin and flat planar conductive leads extending outwardly from said cavity for providing electrically conductive paths from a circuitry held within said cavity, each of said



conductive leads comprising an inner end and tip portion, an intermediate portion having a flat surface and an outer end portion; and

- a conductive base plate for supporting said circuitry, said conductive base plate having an outer periphery, the method comprising the steps of:

- injecting a liquified thermosetting epoxy into a die and solidifying by heat curing said epoxy to form a dielectric frame having a top surface, a bottom surface and an opening disposed therein for placing said circuitry, said frame being shaped such that said inner end and tip portions of said conductive leads are buried in said frame, the flat surfaces of said intermediate portions of said conductive leads are exposed in a common plane, the outer end portions of said conductive leads extend outside the epoxy and said circuitry is disposed within said opening;
- removing said die;
- bonding said bottom surface of said dielectric frame to said outer periphery of said conductive base plate;
- plating said exposed flat surfaces of said conductive leads and said conductive base plate with a conductive material;
- connecting said circuitry disposed within said opening to said conductive base plate and said exposed flat surfaces of said conductive leads; and
- enclosing the resulting connected circuitry to form an air tight cavity.

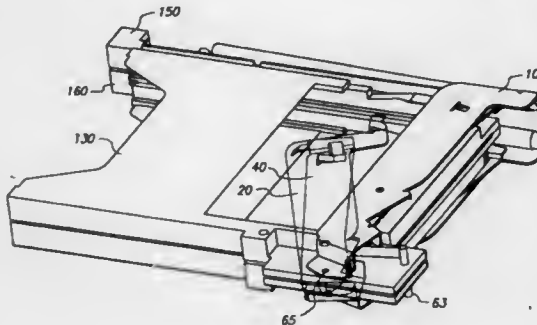
5,778,521
METHOD FOR EJECTING A PCMCIA CARD FROM A
HOUSING

David Law, Burlingame; Dennis Boyle, Palo Alto, and Matt Herron, Menlo Park, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 107,185, Aug. 13, 1993, Pat. No. 5,466,166. This application Apr. 13, 1995, Ser. No. 422,026
Int. Cl.⁶ H05K 3/00

U.S. Cl. 29—829

10 Claims



1. A method for ejecting an electronically active card from a housing, the housing having a front slot for inserting and guiding the electronically active card and a rear connector for coupling the electronically active card to a computing device, the method comprising the steps of:

moving a ejection member means from a first ready position by inserting the electronically active card into the housing, the ejection member means including a first member and a second member releasably coupled therewith;

latching the ejection member means into a second loaded position;

releasing the ejection member means upon a ejection signal from the computing device; and

applying force by the ejection member means to the electronically active card to free it from the connector.

5,778,522
METHOD OF MANUFACTURING A HIGH DENSITY
INTEGRATED CIRCUIT MODULE WITH COMPLEX
ELECTRICAL INTERCONNECT RAILS HAVING
ELECTRICAL INTERCONNECT STRAIN RELIEF

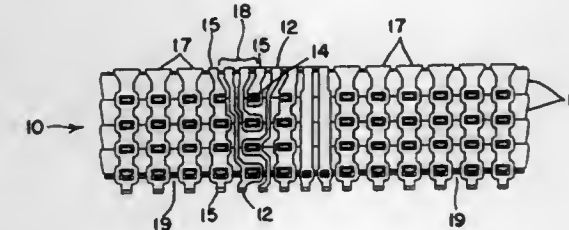
Carmen D. Burns, Austin, Tex., assignor to Staktek Corporation, Austin, Tex.

Filed May 20, 1996, Ser. No. 650,721

Int. Cl.⁶ H05K 3/36; H01R 9/00

U.S. Cl. 29—830

1 Claim



1. A method of manufacturing a high density integrated circuit module of the type which includes complex, non-linear interconnect rails, comprising the steps of:

- providing a plurality of level-one integrated circuit devices to form a module, wherein each said level-one device within said module includes an integrated circuit die, a rectangular casing surrounding said die, said casing having an upper major surface and a perimeter edge, and a plurality of electrical leads extending from said die through said perimeter edge of said casing;
- providing a plurality of rails, said rails formed of substantially planar material having a first and second major surface, and a perimeter edge, said major surfaces of said rails being oriented parallel to said edge of said device from which said leads extend, wherein at least one of said rails has an aperture formed therein to receive and partially surround one of said leads, and wherein the aperture extends from said perimeter edge of said rail; and
- connecting selected ones of said rails to selected ones of said leads of said level-one devices.

5,778,523
METHOD FOR CONTROLLING WARP OF ELECTRONIC
ASSEMBLIES BY USE OF PACKAGE STIFFENER

Mark F. Sylvester, Eau Claire, Wis., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Nov. 8, 1996, Ser. No. 745,970

Int. Cl.⁶ H05K 3/46

U.S. Cl. 29—831

6 Claims

1. A method of controlling warp of electronic assemblies comprising:

- mounting a first component to one side of a substrate, the first component having a different coefficient of thermal expansion (CTE) than the substrate and thereby tending to generate bending moments that distort the shape of the first component; and
- mounting a second component to an opposite side of the substrate and opposite the first component, the second component having a CTE that approximately matches that of the first

component, thereby tending to generate bending moments that offset the distorting bending moments.

5,778,524
SURFACE MOUNT MACHINE CONCEPT

Lennart Stridsberg, Enskeda, Sweden, assignor to Mydata Automation AB, Bromma, Sweden

PCT No. PCT/SE95/00015, § 371 Date Aug. 21, 1996, § 102(e)
Date Aug. 21, 1996, PCT Pub. No. WO95/19099, PCT Pub.
Date Jul. 13, 1995

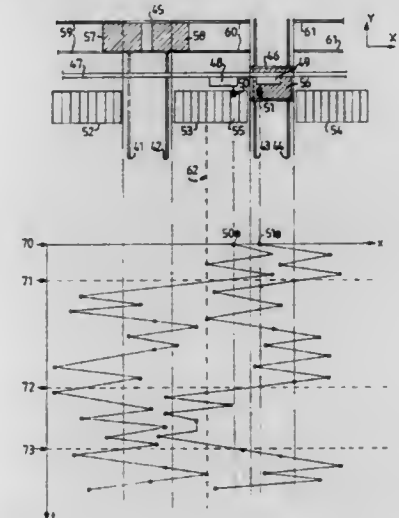
PCT Filed Jan. 10, 1995, Ser. No. 669,414

Claims priority, application Sweden, Jan. 10, 1994, 9400077

Int. Cl.⁶ H05K 3/30; 13/02; 13/04

U.S. Cl. 29—836

29 Claims



1. A method of placing components on boards, the method comprising:

- moving at least two boards independently of each other, each board being moved along one of two separate fixed board paths, the board paths being substantially parallel to each other, moving away a first board included in the at least two boards and interchanging the first board for a new board, and performing component placing steps as follows: moving the pick-up head to a pick-up position, picking up a component from a magazine with the pick-up head, moving the pick-up head to a position above a second board included in the at least two boards, the second one of the at least two boards being different from the first board, lowering the pick-up head to an accurately determined position at the surface of the second board, releasing the component from the pick-up head and placing it on the second board, raising the pick-up head, and repeating the above component placing steps on the second board and on the new board.

5,778,525
COMPONENT MOUNTING APPARATUS AND METHOD,
AND COMPONENT MOUNTING EQUIPMENT

Kanji Hata, Katano, and Noriaki Yoshida, Ikeda, both of
Japan, assignors to Matsushita Electric Industrial Co., Ltd.,
Kadoma, Japan

Filed Nov. 5, 1996, Ser. No. 740,992

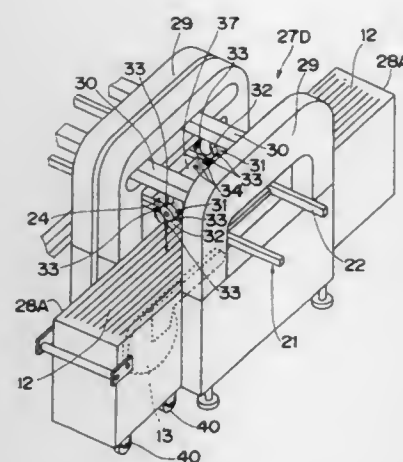
Claims priority, application Japan, Nov. 6, 1995, 7-286969

Int. Cl.⁶ H05K 3/30; 13/04

U.S. Cl. 29—836

10 Claims

1. A component mounting apparatus comprising:



- a pair of component supply tables on which components are accommodated and which are arranged on opposing sides of a board mounting position where a board is positioned;
- a first mounting head section for successively picking up the components at one of the component supply tables and thereafter successively mounting the picked-up components onto the board;
- a second mounting head section for successively picking up the components at the other of the component supply tables and thereafter successively mounting the picked-up components onto the board, wherein each of the first and second mounting head sections are independently moveable;
- a first driving device connected to said first mounting head section for moving said first mounting head section in a first direction;
- a second driving device connected to said first mounting head section for moving said first mounting head section in a second direction;
- a third driving device connected to said second mounting head section for moving said second mounting head section in the first direction; and
- a fourth driving device connected to said second mounting head section for moving said second mounting head section in the second direction, wherein the first direction and the second direction are perpendicular to each other.

5,778,526

PACKAGING ELECTRICAL COMPONENTS

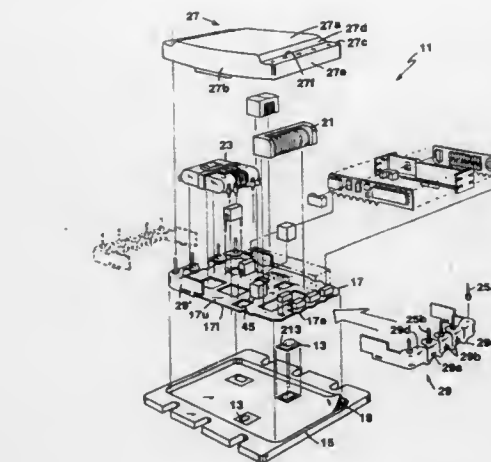
Patrizio Vinciarelli, Boston; Fred Finnemore, No. Reading; John S. Balog, Mendon, and Brant T. Johnson, Concord, all of Mass., assignors to VLT Corporation, San Antonio, Tex. Continuation of Ser. No. 587,951, Jan. 17, 1996, abandoned, which is a division of Ser. No. 143,173, Oct. 26, 1993, Pat. No. 5,526,234, which is a division of Ser. No. 914,347, Jul. 17, 1992, abandoned. This application May 5, 1997, Ser. No. 851,482

Int. Cl.⁶ H05K 3/34

U.S. Cl. 29—840

14 Claims

1. A method for mounting a power-dissipating component having contact pads comprising mounting the component on a thermally conductive baseplate,



placing a circuit board having an aperture over the component with at least part of the power-dissipating component lying in the aperture, and soldering the pads to the circuit board by heating the baseplate.

5,778,527

APPARATUS AND METHOD FOR FORMING "L"-SHAPED TERMINALS FROM STRUCTURES STAMPED IN A FLAT STRIP AND FOR INSERTING SUCH TERMINALS INTO AN ELECTRONIC PACKAGE

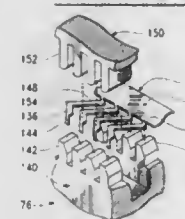
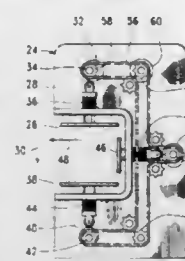
Michael Barenboim; Mark Edward Mino; John Lennon Sullivan, Jr., and Kenneth Wayne Watts, all of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 3, 1996, Ser. No. 707,100

Int. Cl.⁶ H01R 43/16; 43/20; H05K 3/30; 13/04

U.S. Cl. 29—845

24 Claims



1. A method for processing a plurality of "L"-shaped sections to form terminals extending from a side of an electronic package, wherein said method comprises the steps of:

- (a) feeding a flat strip in a feed direction into a first forming station, wherein said flat strip includes a first plurality of said "L"-shaped sections, wherein each "L"-shaped section within said first plurality thereof is attached at a first end by a connecting portion to a first web extending in a longitudinal direction parallel to said feed direction as a portion of said strip, wherein each said "L"-shaped section includes a first leg extending at a first oblique angle relative to said longitudinal direction from said first end to an intersection point and a second leg extending at a second oblique angle relative to said longitudinal direction from said intersection point to a second end of said "L"-shaped section, wherein said "L"-shaped

sections extend in a spaced-apart relationship, being arrayed in said longitudinal direction;

- (b) supporting each said "L"-shaped section within a second plurality thereof within said first forming station from a first side of said strip, near said first and second ends of said "L"-shaped section, with outer forming surfaces extending from a first die block, and pushing each said "L"-shaped section within said second plurality thereof, along said first and second legs thereof, from a second side, opposite said first side of said strip, with a central forming surface extending from a second die block, twisting said connecting portion attaching each said "L"-shaped section within said second plurality thereof to said first web so that said "L"-shaped section attached thereby extends in an individual plane essentially perpendicular to said first web; and

- (c) pushing each said "L"-shaped section within said second plurality thereof from said second side of said strip with a flexural forming surface, deflecting said connecting portion attaching each said "L"-shaped section within said second plurality thereof until said second leg extends within said individual plane in a direction essentially parallel to said first web.

5,778,528

WIRING CONSTRUCTION OF ELECTRICAL CONNECTION BOX

Yuuji Saka; Takahiro Onizuka; Yoshito Oka; Makoto Kobayashi, and Nori Inoue, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Division of Ser. No. 512,831, Aug. 9, 1995. This application

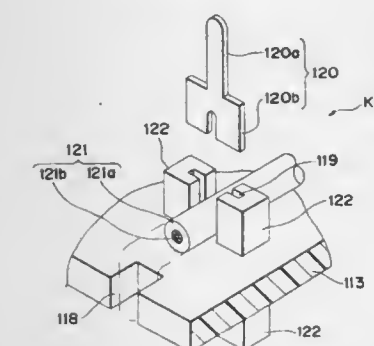
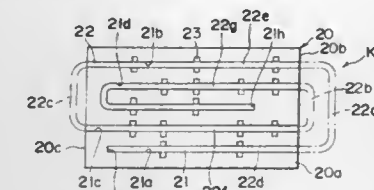
Oct. 3, 1996, Ser. No. 724,755

Claims priority, application Japan, Aug. 23, 1994, 6-198547; Aug. 23, 1994, 6-198548; Aug. 31, 1994, 6-207510; Sep. 1, 1994, 6-208838; Sep. 5, 1994, 6-211314; Sep. 14, 1994, 6-220604

Int. Cl.⁶ H01K 3/10

U.S. Cl. 29—850

1 Claim



1. A wiring method of an electrical connection box in which a plurality of wiring grooves for receiving a wire or a plurality of pairs of wiring projections for guiding the wire therebetween are provided on opposite faces of an insulating plate in accordance with predetermined wiring patterns and are formed with a plurality of terminal driving portions for receiving pressing contact terminals, respectively, the wiring method comprising the steps of:

- providing the insulating plate;
- laying the wire continuously along the wiring grooves or the wiring projections on one of the opposite faces of the insulating plate such that a portion of the wire extends outwardly from an outer peripheral edge of the insulating plate;
- turning down the portion of the wire to the other of the opposite faces of the insulating plate along the outer peripheral edge of the insulating plate;
- laying the portion of the wire along the wiring grooves or the wiring projections on the other of the opposite faces of the insulating plate; and
- driving the pressing contact terminals into the terminal driving portions, respectively so as to connect, through pressing contact, the pressing contact terminals to the wire laid on the opposite faces of the insulating plate.

5,778,529

METHOD OF MAKING A MULTICHIP MODULE SUBSTRATE

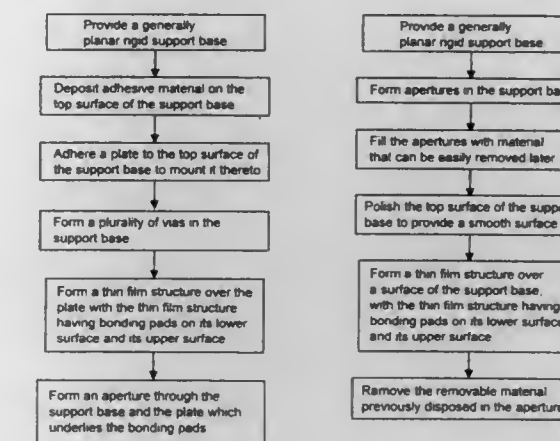
Solomon I. Beilin, San Carlos; William T. Chou, Cupertino; David Kudzuma, San Jose; Michael G. Lee, San Jose; Teruo Murase, San Jose; Michael G. Peters, Santa Clara; James J. Roman, Los Altos; Som S. Swamy, Danville, and Wen-Chou Vincent Wang, Cupertino, all of Calif., assignors to Fujitsu Limited, Japan

Division of Ser. No. 277,163, Jul. 19, 1994, Pat. No. 5,544,017, which is a continuation-in-part of Ser. No. 157,332, Nov. 22, 1993, Pat. No. 5,426,563, which is a continuation of Ser. No. 925,962, Aug. 5, 1992, abandoned. This application May 22, 1996, Ser. No. 651,479

Int. Cl.⁶ H01K 3/10; H05K 3/10

U.S. Cl. 29—852

24 Claims



1. A method of manufacturing a substrate for microelectronic components, comprising:

- providing a generally planar rigid support base,
- forming a thin film structure on a surface of said rigid support base, said thin film structure having an exposed upper surface and a lower surface overlying a surface of said rigid support base,
- forming an aperture in said support base by removing a portion of said support base while leaving the thin film structure intact, thereby exposing an area of said lower surface of said thin film structure, and
- forming vias between the surfaces of said rigid support base.

5,778,530

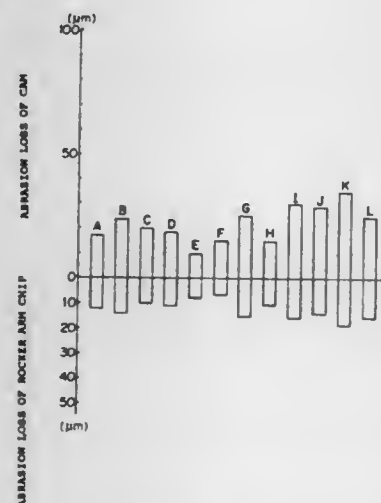
METHOD OF MANUFACTURING A CAMSHAFT

Yoshikatsu Nakamura; Osamu Kawamura; Teruo Takahashi, and Shinichi Yamamoto, all of Shimotsuga-gun, Japan, assignors to Nippon Piston Ring Company, Ltd., Japan
Division of Ser. No. 254,367, Jun. 6, 1994, Pat. No. 5,542,990.
This application Apr. 10, 1996, Ser. No. 630,247
Claims priority, application Japan, Jun. 8, 1993, 5-137876; Feb. 28, 1994, 6-54443

Int. Cl.⁶ B23P 15/60

U.S. Cl. 29—888.1

4 Claims



1. A method of manufacturing a camshaft in which a molten bath of cast iron is casted in a cast mold having a cavity surface, corresponding to the sliding surface of the cam lobe portion, formed by a chill, then a cast product is taken out of the cast mold, and the cast product is subjected to a finishing working to form a camshaft, wherein at least one kind of elements selected from the group consisting of Bi, Te, Se, As, Sb and Sn by an amount of 0.0005 to 0.5 weight % is added to the molten bath.

5,778,531

METHOD OF MANUFACTURING CYLINDER HEAD FOR ENGINE

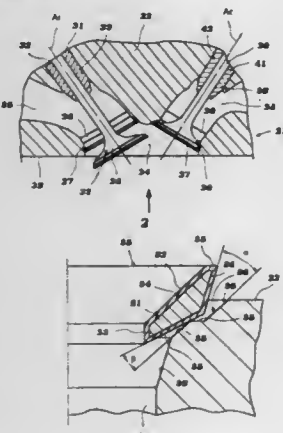
Junichi Inami, and Shuhei Adachi, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 13, 1996, Ser. No. 713,809

Int. Cl.⁶ B23P 15/00

U.S. Cl. 29—888.06

5 Claims



1. A method for forming and bonding a valve seat in a cylinder head, said cylinder head comprising a casting having a flow passage extending therethrough and terminating at a valve port in a combustion chamber surface thereof and an insert ring secured by

metallurgical bonding into said valve port, said method comprising the steps of forming a recess at said valve port comprised of a pair of angularly inclined portions joined by a generally planar section extending perpendicularly to the axis of said valve port, forming said insert ring with a pair of angularly inclined outer surfaces joined at an apex, positioning said insert ring into said recess so that the radially inner peripheral edge of said planar section of said casting recess is engaged by the radially inward most angularly inclined outer surface of said insert ring, and pressing and applying heat to said insert ring and said cylinder head for forming a metallurgical bond therebetween.

5,778,532

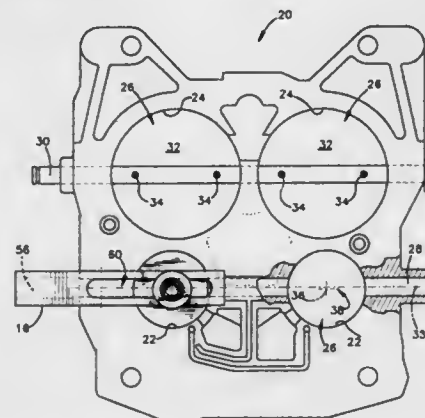
METHOD AND APPARATUS FOR RECONDITIONING CARBURETOR THROTTLE BODIES

Mark A. Leahy, 104 Bass Bay, Chippewa Lake, Ohio 44215
Filed Oct. 31, 1996, Ser. No. 741,564

Int. Cl.⁶ B23P 17/02

U.S. Cl. 29—888.011

14 Claims



1. A device for reconditioning a carburetor throttle body wherein a throttle shaft bore having a centerline extends transversely through at least one throttle bore, comprising:

- a first locator member adapted to be fitted within the throttle bore, the first locator member having a first through opening larger than the throttle shaft bore extending transversely there-through;
- a second locator member connected to the first locator member, the second locator member being disposed adjacent to the throttle body, the second locator member having a second through opening of the same size and shape as the first through opening; and
- the first and second locator members being connected to each other such that the first and second through openings are aligned with each other and the centerline of the throttle shaft bore.

5,778,533

METHOD OF PRODUCING A ONE-PART COOLING DUCT PISTON

Peter Kemnitz, Leutenbach, Germany, assignor to Mahle GmbH, Stuttgart, Germany

PCT No. PCT/DE95/01481, § 371 Date May 30, 1997, § 102(e)
Date May 30, 1997, PCT Pub. No. WO96/20340, PCT Pub.
Date Jul. 4, 1996

PCT Filed Oct. 21, 1995, Ser. No. 849,226

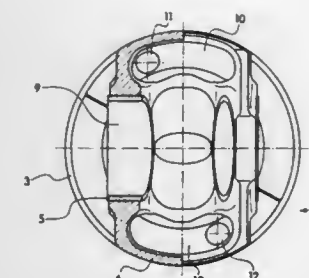
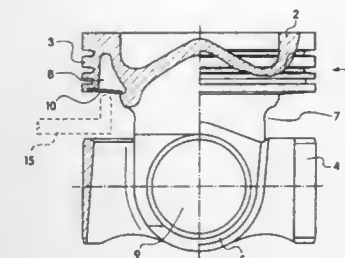
Claims priority, application Germany, Dec. 24, 1994, 44 46 726.5

Int. Cl.⁶ F02F 3/22

U.S. Cl. 29—888.049

6 Claims

1. Method of producing a one-piece piston for an engine from a piston blank, with a closed cooling duct annularly extending in a piston crown at a level of a piston ring band, and with an annular



recess between the piston ring band and a box-shaped piston shaft, wherein the piston shaft is connected with piston bosses suspended on the piston crown, characterized by the following steps:
forging the piston blank (1);
machining the annular recess (7);
machining a downwardly open cooling duct (8);
producing the boss bores (9) and finishing the outer contour of the piston (6);
closing the downwardly open cooling duct (8) with a cover ring (10).

5,778,534

METHOD OF MAKING EXHAUST VALVES FOR USE IN AUTOMOBILES

Sang-ho Kim, Seoul, Rep. of Korea, assignor to Kia Motors Corporation, Seoul, Rep. of Korea

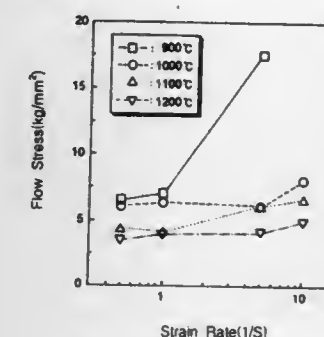
Filed Jul. 15, 1996, Ser. No. 683,636

Claims priority, application Rep. of Korea, Apr. 4, 1996, 96-10247

Int. Cl.⁶ B21K 1/22

U.S. Cl. 29—888.451

7 Claims



Effects of Forging Conditions on Flow Stress of Ti-6Al-4V alloy

1. A method of making an exhaust valve, comprising the steps of:
forging Ti-6Al-2Sn-4Zr-2Mo-0.1Si alloy at a temperature of 1000°–1200° C.;
annealing the forged alloy by cooling after maintaining it at a temperature of 1020°–1060° C. for 0.5–1.5 hours; and
comprising the further step of stress relieving the forged alloy, wherein the stress relieving step comprises the step of cooling

after maintaining the forged alloy at a temperature of 600°–700° C. for 1.5–2.5 hours.

5,778,535

MULTIWIDTH HAND RAZOR

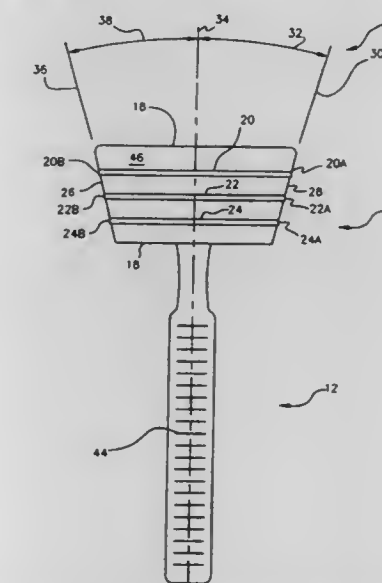
Jesus C. Ledesma, 5406 Greenview Rd., Cary, Ill. 60013

Filed Mar. 28, 1997, Ser. No. 825,392

Int. Cl.⁶ B26B 21/06

U.S. Cl. 30—50

4 Claims



1. A hand held razor for shaving both large and small surface areas of the face, comprising:
an elongated handle;
a head having a top surface and a bottom surface, a plurality of blades including a first blade having a first length and a second blade having a second length different from that of said first blade, and further including a third blade of a length different from those of said first blade and said second blade, and holding structure for holding said plurality of blades in a parallel, spaced apart relationship occupying a common plane, said holding structure arranged to hold said blades in order of progressively increasing blade length as distance increases from said elongated handle.

5,778,536

COMBINATION SLOTTING, SLITTING AND SCORING TOOL FOR MAKING CORRUGATED BOXES

Charles Howard Allen West, 7812 Valrie La., Riverview, Fla. 33569

Filed Aug. 26, 1996, Ser. No. 702,953

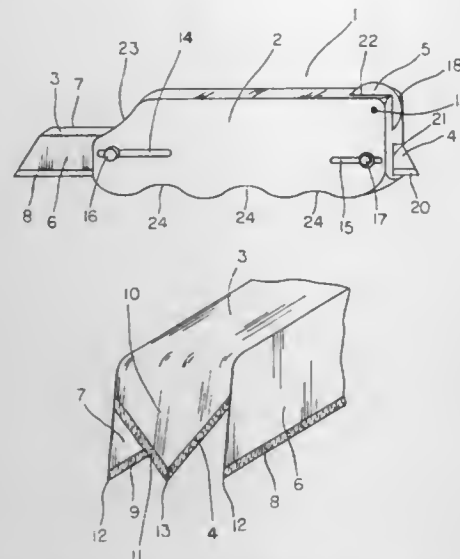
Int. Cl.⁶ B26B 1/08; 11/00

U.S. Cl. 30—123

9 Claims

1. A cutting device for creating geometrical shapes out of corrugated materials comprising:

- (a) a handle;
- (b) a slot cutting knife affixed to said handle, said slot cutting knife having a first cutting blade with a substantially straight keen edge, a second cutting blade with a substantially straight keen edge, the keen edge of said second cutting blade being substantially parallel to the keen edge of said first cutting blade, said first and second blades each having a front end, said slot cutting knife further including a third cutting blade extending between said first and second cutting blades in a transverse relation, said third cutting blade having two ends and being affixed at each end thereof to the front ends of said first and second cutting blades, respectively, and said third



- cutting blade having a keen edge that extends in a substantially V-shape between said two ends; and
- (c) a scoring wheel rotatably affixed to said handle.
6. A cutting device for creating geometrical shapes out of corrugated materials comprising:
- (a) a handle;
- (b) a slot cutting knife affixed to said handle, said slot cutting knife having a first cutting blade with a substantially straight keen edge, a second cutting blade with a substantially straight keen edge, the keen edge of said second cutting blade being substantially parallel to the keen edge of said first cutting blade, said first and second blades each having a front end, said slot cutting knife further including a third cutting blade extending between said first and second cutting blades in a transverse relation, said third cutting blade having two ends and being affixed at each end thereof to the front ends of said first and second cutting blades, respectively, and said third cutting blade having a keen edge that extends in a substantially V-shape between said two ends; and
- (c) a slit cutting knife affixed to said handle, wherein said handle has a cavity therein and said slit cutting knife is slidably mounted in said cavity such that said slit cutting knife can be retracted into said handle.

5,778,537

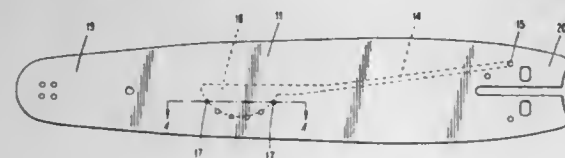
CHAIN SAW GUIDE BAR WITH LIQUID SPRAY DEVICE
Arvo Leinl, Edsbyn, Sweden, assignor to Sandvik AB, Sandviken, Sweden

PCT No. PCT/SE95/00692, § 371 Date Feb. 27, 1997, § 102(e) Date Feb. 27, 1997, PCT Pub. No. WO96/01725, PCT Pub. Date Jan. 25, 1996

PCT Filed Jun. 9, 1995, Ser. No. 765,946
Claims priority, application Sweden, Jul. 11, 1994, 9402426-2
Int. Cl.⁶ B23D 59/04

U.S. Cl. 30—123.4

9 Claims



1. A guide bar adapted for use in a vehicle-borne chain saw for spraying liquid onto a sawn surface, the guide bar having a longitudinal centerline extending between front and rear ends of the guide bar, the guide bar comprising two side plates and a center plate disposed therebetween, the center plate including a cut-out formed in at least one side thereof, the cut-out defining a passage

having inlet and outlet portions, the inlet portion disposed adjacent the rear end of the guide bar for receiving a liquid to be sprayed, at least one of the side plates including spray orifices communicating with the outlet portion of the passage for spraying liquid received therefrom, at least some of the orifices arranged such that a spray direction thereof has a component extending parallel to the centerline of the guide bar.

5,778,538

HAND POWER TOOL WITH ADJUSTABLE FOOT PLATE
René Gentinetta; Beat Kaech, and Robert Simm, all of Zuchwil, Switzerland, assignors to Scintilla AG, Solothurn, Switzerland

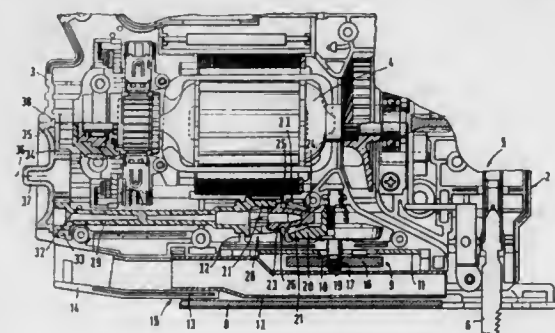
Continuation of Ser. No. 164,265, Dec. 9, 1993, abandoned.
This application Nov. 20, 1995, Ser. No. 561,134

Claims priority, application Germany, Dec. 24, 1992, 42 44 079.3

Int. Cl.⁶ B23D 51/02; B27B 19/02

U.S. Cl. 30—124

3 Claims



1. A hand power tool comprising, a motor housing; a foot plate adjustably arranged on said motor housing; a chip removing tool movably supported in said housing; a suction device for aspirating chips and dust and provided in a space between said motor housing and said foot plate; a clamping device adjustably mounting said foot plate on said housing; and a knob accessible outwardly of said housing said clamping device being connected to said knob by actuating members, said actuating members being connected to one another by an overrunning coupling for limiting a moment transmitted from the knob to said clamping device, one of said actuating members being a pinion, and said overrunning coupling including asymmetrical cams on said pinion, wherein each of said asymmetrical cams have two generally radially extending flanks extending at different flank angles, said overrunning coupling further including springy arresting members on another of said actuating members and cooperating with said asymmetrical cams of said pinion, said pinion being further provided with toothing, said clamping device having a disc wheel with which said toothing engages.

5,778,539

DEVICE FOR HAND TOOLS ATTACHED TO A POLE
Manfred Schneider, St. Wendel, and Gerhard Staudt, Schmelz, both of Germany, assignors to Wolf-Garten GmbH & Co. KG, Betzdorf, Germany

PCT No. PCT/EP95/02390, § 371 Date Dec. 23, 1996, § 102(e) Date Dec. 23, 1996, PCT Pub. No. WO95/35023, PCT Pub. Date Dec. 28, 1995

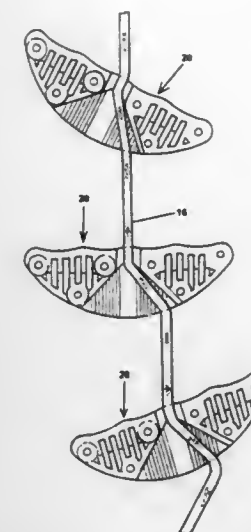
PCT Filed Jun. 20, 1995, Ser. No. 765,343
Claims priority, application Germany, Jun. 21, 1994, 44 21 659.9

Int. Cl.⁶ A01G 3/025

U.S. Cl. 30—231

9 Claims

1. A pull grip for a pull rope via which a tool fastened on one end of a pole can be operated, the pull grip having a passage



channel and a clamping device for the pull rope, the passage channel is developed as a centrally arranged passage hole and the clamping device is developed as an angular segment recess having a narrowed angular side which adjoins the passage hole, the recess being defined by opposite, spaced apart angular segment sides, each side having clamping ribs thereon, the opposite side clamping ribs converge laterally towards the passage hole, and the converging clamping ribs are so arranged laterally in the angular segment recess that the pull grip is clamped fast upon the pull grip and the ribs thereof having an oblique position with respect to the rope.

5,778,540

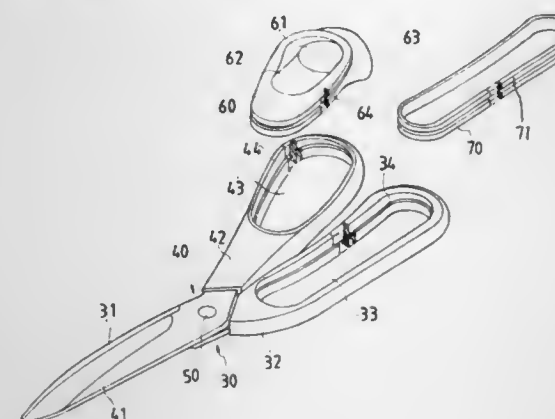
PROTECTIVE PAD FOR SCISSORS OR THE LIKE
Te Chien Huang, No. 6, Avenue 32, Lane 300, Sec. 2, Ching Hai Road, Taichung, Taiwan.

Filed Mar. 7, 1997, Ser. No. 813,229

Int. Cl.⁶ B26B 13/20

U.S. Cl. 30—232

1 Claim



1. A tool comprising:
a pair of levers including a middle portion pivotally coupled together at a pivot shaft and including a first end having a pair of blades and including a second having a pair of handles, said handles each including an opening having a peripheral surface, said handles each including two sides, and said handles each including a T-shaped peripheral rib formed in said peripheral surface,
a first ring engaged with said peripheral surface of a first of said handles, and
a second ring engaged with said peripheral surface of a second of said handles for engaging with thumb.

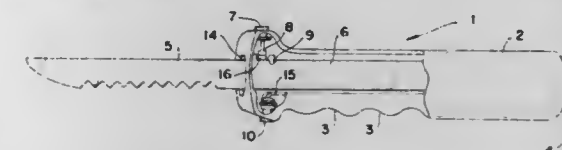
5,778,541

PRO PUMPKIN CARVER
Robert K. McClung, 438 Greenlow Rd., Baltimore, Md. 21228
Filed Mar. 28, 1997, Ser. No. 829,501

Int. Cl.⁶ B26B 7/00

U.S. Cl. 30—277.4

7 Claims



1. A power knife comprising:
a handle having a knife blade accepting opening at one end and means for connecting said handle to a source of electrical power at another end,
motor means associated with said handle for powering said power knife,
a knife blade mounted in said handle,
said knife blade having a cutting surface on one end and a shank on an opposite end,
said handle having locking means for securing said shank within said handle and for interrupting electrical power to said motor,
said locking means being movable from a first position, in which said locking means does not secure said shank in said handle and in which no electrical power is supplied to said motor, to a second position in which said locking means secures said shank in said handle and in which electrical power is supplied to said motor, and
wherein said locking means for securing said shank within said handle and for interrupting electrical power to said motor is a push button which operates a plunger attached thereto, said shank has a groove, and said plunger enters said groove when said knife blade is locked within said handle.

5,778,542

RELATIVE POSITION INDICATOR
Louis M. Spoto, Sleepy Hollow, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed May 31, 1996, Ser. No. 658,867

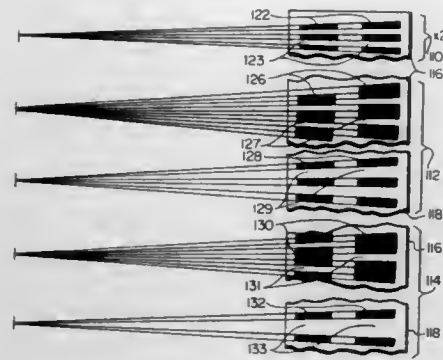
Int. Cl.⁶ G01B 11/02; H03M 1/22

U.S. Cl. 33—1 D

20 Claims

1. Apparatus for providing a visual indication of increments of position over a predetermined range of positions, said apparatus comprising:

a plurality of pattern generating units;
each one of said plurality of pattern generating units includes first and second surfaces;
each one of said first and second surfaces has a plurality of spaced-apart opaque areas and a plurality of light-transmissive areas interposed between said spaced-apart opaque areas; and
said second surface of each one of said plurality of pattern generating units is superimposed upon said first surface of each one of said plurality of pattern generating units for creating a set of unique and identifiable patterns, in response to relative movement between said first and second surfaces



and as defined between said opaque and light-transmissive areas of each one of said superimposed first and second surfaces of said plurality of pattern generating units, which is indicative of each one of said plurality of increments of position over said predetermined range.

5,778,543

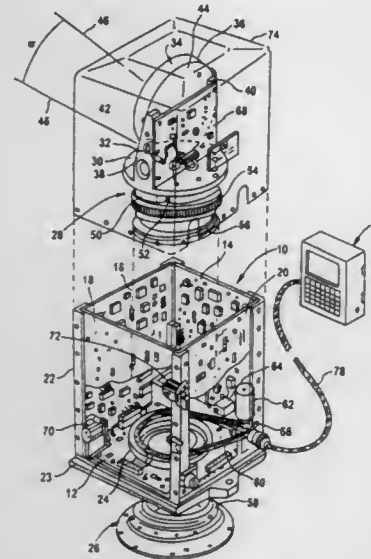
INERTIAL SENSOR UNIT

Alfred Schneider, Überlingen, and Gotz Geister, Frickingen, both of Germany, assignors to Bodenseewerk Geratetechnik GmbH, Überlingen/Bodensee, Germany
Continuation of Ser. No. 797,162, Feb. 10, 1997, abandoned.
This application May 8, 1997, Ser. No. 848,407
Claims priority, application Germany, Feb. 13, 1996, 296 02 453 U

Int. Cl.⁶ G01C 19/38

U.S. Cl. 33—324

13 Claims



1. An inertial sensor unit, comprising a housing; a positioning gimbal rotatably mounted in said housing about a substantially vertical axis; releasable, cooperating detent means at said housing and at said positioning gimbal for defining a number of fixed angular detent positions of said positioning gimbal about said axis relative to said housing; adjusting means for consecutively rotating said positioning gimbal about said axis into said detent positions; a fiber optical gyro comprising: a fiber coil of light-guiding fibers wound around an input axis, light source means and means for directing light from said light source means partially clockwise and partially counter-clockwise through said coil as first and second partial waves, respectively, interference means for causing interference of said first and second partial waves after propagating through said fiber coil, and detector means for detecting said interfering partial waves to generate a signal indicative of inertial angular rate of said coil about said input axis; said fiber optical

gyro being mounted in said positioning gimbal; a pair of inclination sensor means having sensitive axis, said inclination sensor means being attached to said inertial sensor unit such that said sensitive axes are mutually crossed to provide inclination signals, and signal processing means, to which said signals indicative of inertial angular rate generated by said fiber optical gyro in said number of detent positions and said inclination signals from said inclination sensor means are applied, for providing, therefrom, a measured value indicative of the angle between a reference direction and north.

5,778,544

COMBINED RIGHT-HAND/LEFT-HAND HORIZONTAL HEADLAMP INDICATOR DEVICE

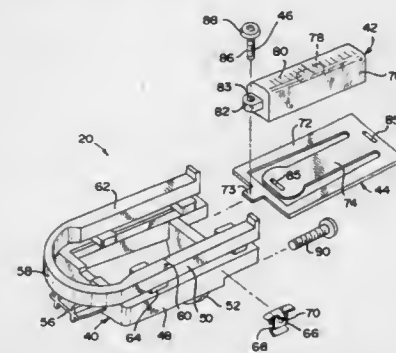
Douglas Pherigo, Loves Park, Ill., assignor to ELCO Textron Inc., Rockford, Ill.

Filed Mar. 7, 1997, Ser. No. 813,911

Int. Cl.⁶ G01C 9/32

U.S. Cl. 33—335

13 Claims



1. A non-handed indicator device for indicating a horizontal zero position of a movable reflector housed in a stationary housing of a headlamp arrangement for an automobile, wherein said headlamp arrangement is on the left or right side of the automobile, said stationary housing having an opening formed therethrough with a zero indicia provided on said stationary housing proximate to said opening, said non-handed indicator device comprising: a bracket for operative mounting on said reflector beneath said opening in said stationary housing, said bracket including a U-shaped track portion including a curved section and relatively linear leg sections; an arrow member mounted on said U-shaped track portion and slidable relative thereto around said U-shaped track portion for positioning on either one or other of said leg sections, such that said arrow member is movable to point along one or the other of said leg sections for alignment with said zero indicia for providing an indication of the horizontal zero position of the reflector.

5,778,545

MAGNETICALLY DAMPED AZIMUTH RESOLVER

Michael G. Smith, Richmond; James Howard Terhune, San Jose, both of Calif.; Roy C. May, Mooresville; George A. Romano, Charlotte, both of N.C., and Balasubramanian S. Kowdley, San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

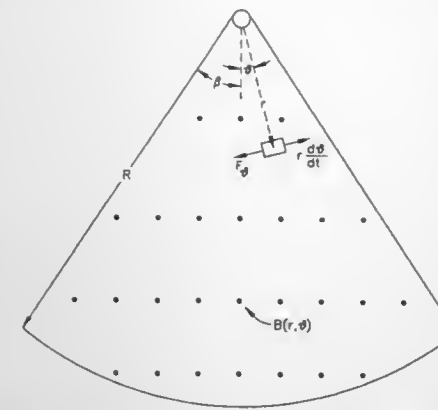
Filed May 6, 1996, Ser. No. 643,817

Int. Cl.⁶ G01C 9/12; G01B 7/30

U.S. Cl. 33—345

20 Claims

1. A magnetically damped angular resolver comprising: a resolver housing; a shaft having first and second end sections and an intermediate section between said first and second end sections said first end section being rotatably mounted to said resolver housing for rotation relative to said resolver housing about an axis, and said intermediate section and said second end section being located outside said resolver housing;



a conducting pendulum secured to said intermediate section of said shaft for rotation therewith, said pendulum being made of electrically conductive material;
a conducting disc secured to said second end section of said shaft for rotation therewith and oriented substantially perpendicular to said axis, said conducting disc being made of electrically conductive material;
a first magnet located outside said resolver housing;
a magnet support structure for supporting said first magnet in proximity to said conducting disc, wherein said magnet support structure is connected to and extends outside said resolver housing, and said first magnet induces eddy currents in said conducting disc during relative rotation of said shaft and said resolver housing such that said eddy currents produce a torque which opposes said relative rotation.

5,778,546

CONSTRUCTION ALIGNMENT APPARATUS AND METHOD

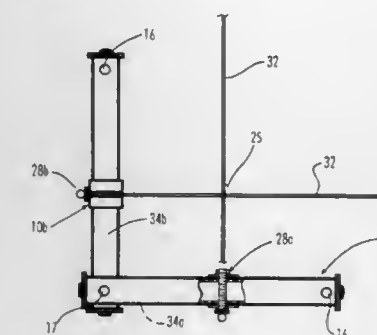
Richard L. Williamson, 942 SE. 5th St., Ocala, Fla. 34471

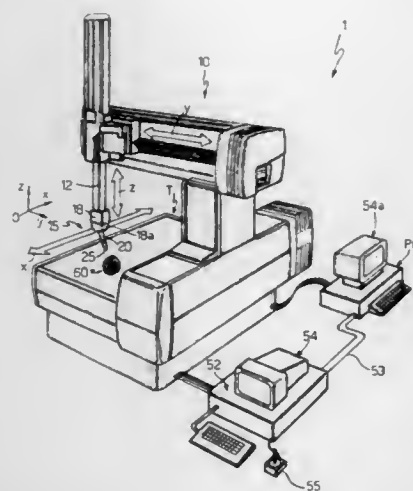
Filed May 3, 1996, Ser. No. 642,630

Int. Cl.⁶ E04G 21/18

U.S. Cl. 33—405

23 Claims





said measuring machine (10) presenting means for determining a first vector (CTPOS) defining the position of a reference point (CT) of said movable element (12) in relation to a first reference system of the measuring machine (10) itself and defined by a first cartesian reference frame (X,Y,Z) comprising perpendicular coordinate X,Y,Z axes;

a viewing sensor (25) of a measuring head (15) fitted to said movable element (12);

said measuring head (15) presenting positioning means (18) for orienting said viewing sensor (25) in said measuring space (T);

said viewing sensor (25) comprising at least a television camera (31) and a source (33) of a laser beam

said television camera (31) covering a three-dimensional space (38), in particular a space in the form of a solid angle and presenting an optical axis (41);

said laser beam (35) presenting an axis of symmetry (44) intersecting said three-dimensional space (38);

the intersection of said optical axis (41) and said axis of symmetry (44) defining the origin of a second Cartesian reference frame (X',Y',Z') forming part of a second reference system of said viewing sensor;

said second Cartesian reference frame comprising perpendicular coordinate X',Y',Z' axes, one axis (Z') of which is oriented along said optical axis (41);

said television camera (31) picking up a two-dimensional image defining an image plane, at the center (CI) of which is definable a point corresponding to the origin of said second reference system located with first and second coordinate axes (Y', X') perpendicular to each other and in the image plane;

said viewing sensor (25) supplying, for a point (P) in the measuring space, a measurement expressed by a measuring vector (m') relative to and oriented in relation to said second reference system (X',Y',Z');

said device (1) comprising calculating means for calculating a number of extrinsic parameters, including:

at least an OFFSET vector extending from the origin (O') of said second reference system (X',Y',Z') to said reference point (CT) of said movable element (12); said OFFSET vector being defined for at least a first arrangement of said positioning means;

at least a rotation matrix (ROT-MAT) defining the relationships between said first Cartesian reference frame (X,Y,Z) and said second Cartesian reference frame (X',Y',Z');

said device (1) comprising calculating means for calculating a second vector (V) expressing the distance between the origins of said first and said second reference system;

said second vector (V) being calculated on the basis of said first vector and said OFFSET vector;

said device (1) presenting vectorial calculating means for calculating a correct measurement (m) by relating said measurement vector (m') to said first reference system via said rotation matrix; and

said vectorial calculating means relating said correct measurement ($M=m+V$) to said first reference system by means of said second vector (V).

5,778,549

CORRECTING MEASUREMENT ERRORS

Lucio Flavio Campanile, Brunswick, Germany, assignor to Deutsche Forschungsanstalt für Luft- und Raumfahrt e.V., Bonn, Germany

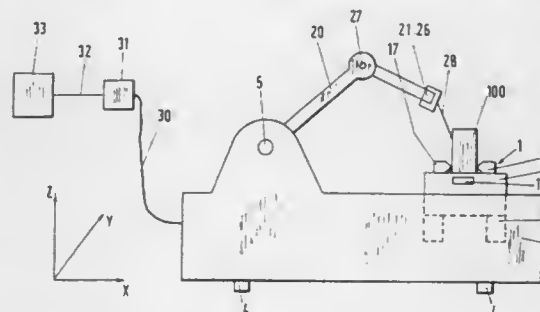
Filed Sep. 19, 1996, Ser. No. 715,697

Claims priority, application Japan, Sep. 19, 1995, 195 34 641.6

Int. Cl.⁶ G01B 5/008; 7/008

U.S. Cl. 33—503

15 Claims



1. A method of correcting measurement errors in measurement values in a measurement robot resulting from relative movement between an object to be measured and a measurement probe, comprising the steps of:

detecting accelerations at said probe,

detecting accelerations at or close to said object to be measured, and

calculating correction data reproducing said relative movement from said detected accelerations and correcting said measured values recorded by said measurement robot with said correction data.

5,778,550

SYSTEM FOR DETECTING LINEAR DIMENSIONS AND METHOD FOR TESTING THE SYSTEM OPERABILITY

Carlo Carli, and Andrea Ferrari, both of Ferrara, Italy, assignors to Marposs Societa' Per Azioni, Bentivoglio, Italy

PCT No. PCT/EP95/01261, § 371 Date Sep. 30, 1996, § 102(e) Date Sep. 30, 1996, PCT Pub. No. WO95/28615, PCT Pub. Date Oct. 26, 1995

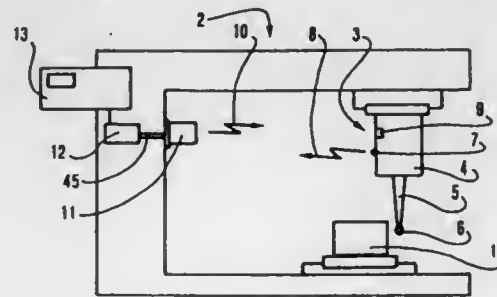
PCT Filed Apr. 6, 1995, Ser. No. 718,396

Claims priority, application Italy, Apr. 19, 1994, BO94A0167

Int. Cl.⁶ G01B 7/00

U.S. Cl. 33—503

10 Claims



1. System for checking the dimensions of mechanical workpieces (1), including a detecting apparatus and a processing and control unit (13), the detecting apparatus comprising:

a detecting head (3) for cooperating with the workpiece (1) to be checked, with transmission devices (7) for transmitting first electromagnetic coded signals (8);

a transceiver unit (11), separate from the head, with a receiving section (22,33,34) for receiving the first electromagnetic coded signals (8), and a transmitting section (25—28,35) for transmitting second electromagnetic signals (8',10), and an interface unit (12), connected to the transceiver unit (11) and to the processing and control unit (13), comprising reception means (39) and means for generating switch on signals (37), characterized in that said interface unit (12) also comprises means for generating test signals (38), the transmitting section (25—28,35) and the receiving section (22,33,34) of the transceiver unit (11) being adapted for transmitting associated electromagnetic test signals (8') and for receiving reflected electromagnetic test signals (8'), respectively, for testing the operability of the detecting apparatus.

5,778,551

COORDINATE MEASURING APPARATUS HAVING A DEVICE FOR PROFILE MEASUREMENTS AND METHOD FOR MAKING SAID PROFILE MEASUREMENTS

Henrik Herklotz; Thomas Arndt, both of Berlin; Rainer Ohnheiser, Lauterstein, and Karl Schepperle, Oberkochen, all of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany

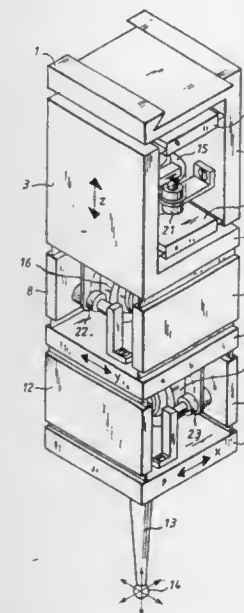
Filed Mar. 11, 1996, Ser. No. 613,846

Claims priority, application Germany, Mar. 11, 1995, 195 08 861.1

Int. Cl.⁶ G01B 7/28; 7/004

U.S. Cl. 33—554

15 Claims



1. A method for measuring roughness of a surface of a workpiece with a coordinate measuring apparatus including a probe head having a coordinate measuring probe for making coordinate measurements on a workpiece of the geometric dimensions thereof and having a mounting device for replaceably mounting said coordinate measuring probe on said probe head and said probe head having signal transducers mounted therein for supplying a first set of measurement signals (x', V', z') indicative of said geometric dimensions, the method comprising:

removing said coordinate measuring probe from said mounting device and mounting a passive probe thereon having a contact probe body completely devoid of signal transducers and defining a tip suitable for making roughness measurements; scanning said surface with said contact probe body with a slight force (F_x, F_y, F_z) applied via said probe head to said contact

probe body with said tip on said surface of said workpiece to obtain a second set of said measurement signals (x', y', z') outputted by said signal transducers in response to deflections of said passive probe because of said roughness; processing said second set of measurement signals (x', y', z') and storing the same as digital measured point sequences; and, determining roughness characteristic variables of said surface from said measured point sequences.

5,778,552

TOUCH SENSOR

Hermann LeGuin, Amtzell, Germany, assignor to Renishaw plc, Gloucestershire, United Kingdom

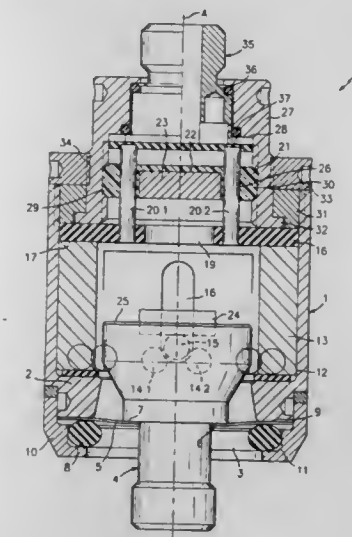
Filed May 8, 1996, Ser. No. 643,445

Claims priority, application Germany, May 8, 1995, 195 16 272.2

Int. Cl.⁶ G01B 5/00

U.S. Cl. 33—559

4 Claims



1. A touch sensor comprising:

a housing having an axis,

a movable member mounted in the housing

a feeler pin connected to the movable member,

a disc mounted for axial displacement within the housing,

a pressure element located between the movable member and the disc for providing an axial biasing force on the movable member against which the movable member is displaceable when the feeler pin is deflected,

means including an electrical circuit for providing a signal when the feeler pin is deflected,

wherein an external screw thread is carried by the disc and engages with an internal thread on a first part of the housing, the housing having a second part which is rotatable about the axis relative to the first part, and which is connected to at least one pin which extends axially within the housing and passes through the disc, whereby rotation of said rotatable part of the housing relative to the first part causes rotation of the disc to produce said axial displacement thereof to vary the axial biasing force.

5,778,553

DIMENSION TRANSFER TOOL

Homer D. Hollensbe, P.O. Box 1701, Bailey, Colo. 80421

Filed Jul. 3, 1996, Ser. No. 675,591

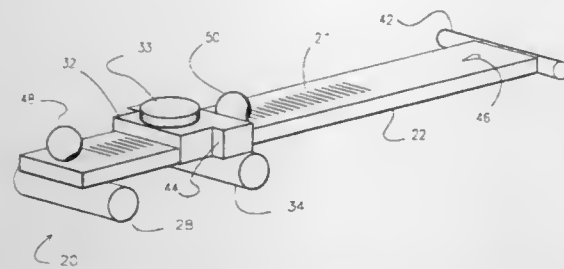
Int. Cl.⁶ G01B 5/14

U.S. Cl. 33—810

14 Claims

1. A feature dimension transfer tool comprising:

a longitudinal body having a longitudinal axis and a flat surface;



a first cylinder having a longitudinal axis, said first cylinder being attached directly to the flat surface of the longitudinal body in a tangential manner, the longitudinal axis of said first cylinder being substantially parallel to the flat surface of the longitudinal body and substantially perpendicular to the longitudinal axis of said longitudinal body;

a carriage slideably mounted on said longitudinal body;

a second cylinder having a longitudinal axis, said second cylinder being mounted on said carriage and directly over and in a tangential manner to the flat surface of the longitudinal body, the longitudinal axis of said first cylinder being substantially parallel to the flat surface of the longitudinal body and substantially perpendicular to the longitudinal axis of said longitudinal body.

5,778,554

WAFER SPIN DRYER AND METHOD OF DRYING A WAFER

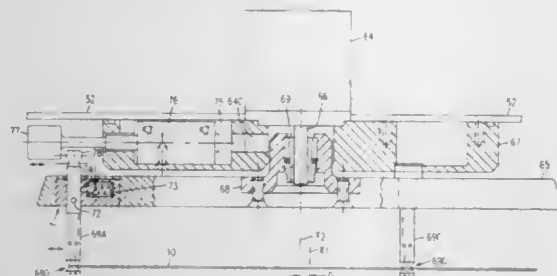
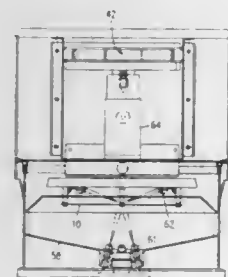
Oliver David Jones, Watsonville, Calif., assignor to Oliver Design, Inc., Scotts Valley, Calif.

Filed Jul. 15, 1996, Ser. No. 680,739

Int. Cl.⁶ F26B 17/24

U.S. Cl. 34—58

21 Claims



1. A spin dryer comprising:

a rotational member positioned in a drying chamber of said spin dryer, said rotational member being attached to a rotatable shaft;

a spin motor for rotating said shaft;

a plurality of gripping members extending downward from said rotational member, said gripping members being adapted so as to hold a flat substrate below said rotational member; and

at least one nozzle mounted in said spin dryer, said nozzle being positioned so as to direct a spray of liquid onto a top surface of a substrate held by said gripping members.

5,778,555 APPARATUS FOR DRYING AND SMOOTHING A FIBRE WEB

Jukka Lehtinen; Taisto Juntunen, and Paavo Rautakorpi, all of Tampere, Finland, assignors to Valmet Corporation, Helsinki, Finland

PCT No. PCT/FI95/00559, § 371 Date Jul. 15, 1997, § 102(e) Date Jul. 15, 1997, PCT Pub. No. WO96/11300, PCT Pub. Date Apr. 18, 1996

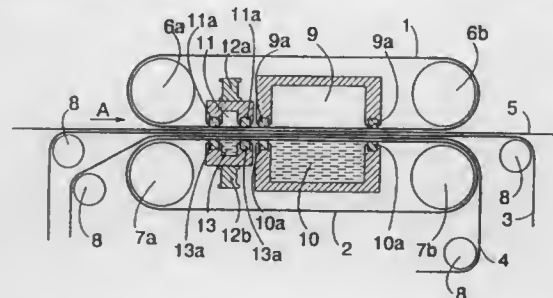
PCT Filed Oct. 10, 1995, Ser. No. 809,983

Claims priority, application Finland, Oct. 11, 1994, 944775

Int. Cl.⁶ F26B 13/26

U.S. Cl. 34—71

13 Claims



1. An apparatus for drying and smoothing a fibre web, the apparatus comprising two endless bands (1, 2) that are impermeable to air and have a good thermal conductivity; first turning rolls (6a, 6b), the first band (1) being arranged to turn around said first turning rolls (6a, 6b); and second turning rolls (7a, 7b), the second band (2) being arranged to turn around said second turning rolls (7a, 7b); the first (1) and second (2) bands being arranged to run part of the way in parallel such that they define a drying zone between them, the first band (1) being heated and the second band (2) being cooled, and a fibre web (5) and at least one felt or wire (3, 4) running between the bands (1, 2) such that the fibre web (5) is in contact with the first, heated band (1), and the felt or wire (3, 4) is between the fibre web (5) and the second, cooled band (2) and that the drying zone is formed by a steam chamber (9) and a water chamber (10), characterized in that the apparatus comprises at least one separate set of press means for pressing the fibre web (5).

5,778,556

DRYING EQUIPMENT

Yasuhiro Ohsugi, Hiroshima, Japan, assignor to NKG Co., Ltd., Hiroshima, Japan

Filed Dec. 23, 1996, Ser. No. 771,933

Claims priority, application Japan, Feb. 15, 1996, 8-028309

Int. Cl.⁶ F26B 25/00

U.S. Cl. 34—106

7 Claims

1. Drying equipment, comprising:

a body in a plate-like shape;

a plurality of hanger parts each of which is pivoted on a surface of the body at a bottom portion thereof so as to be rotated toward and away from the body in a range for positioning its tip portion higher than its bottom portion; and

a suspending part disposed at a higher end of the body.

5,778,557

TEMPERATURE AND ATMOSPHERE CONTROL SYSTEM FOR STORED PRODUCTS

Roland B. Leavens, Selah, Wash., assignor to Food Plant Engineering, Inc., Yakima, Wash.

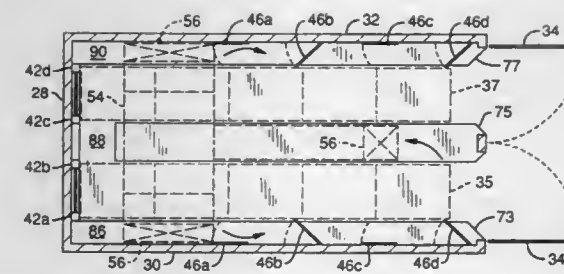
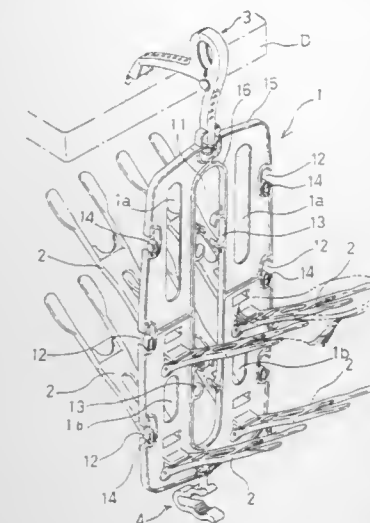
Filed Sep. 23, 1992, Ser. No. 950,268

Int. Cl.⁶ F26B 19/00; F25D 17/04

U.S. Cl. 34—222

39 Claims

1. Apparatus for controlling temperature or atmospheric effects on stored product, comprising:



a chamber having a volume defined by a floor, ceiling and sidewalls;

alignment structure within the chamber for spacing stored product apart from the sidewalls, the stored product having a height;

a flexible sealing member overlapping one side of the stored product to form a seal therewith, the sealing member and the stored product dividing the chamber volume into a first volume on one side of the product and a second volume on another side of the product;

one or more parallel, movable sealing baffles operatively connected to the chamber and extending along the height of the stored product for forming a seal between a sidewall and the product along the height of the product; and

a fluid control unit operably connected to the chamber for injecting fluid of a selected type or temperature into one of the first and second volumes and withdrawing the fluid from the other of the first and second volumes, the unit thereby creating a difference in pressure between the volumes which causes the fluid to flow through the product, the control unit and sealing member arranged within the chamber to prevent the fluid that is withdrawn from one volume from directly entering the other volume.

5,778,558

PELLET COOLING METHOD AND APPARATUS USING ALTERNATE HOT AND COOL AIR STREAMS

LaVon G. Wenger; Douglas S. Clark, and Nicholas B. Scott, all of Sabetha, Kans., assignors to Wenger Manufacturing, Inc., Sabetha, Kans.

Filed Jan. 23, 1997, Ser. No. 786,867

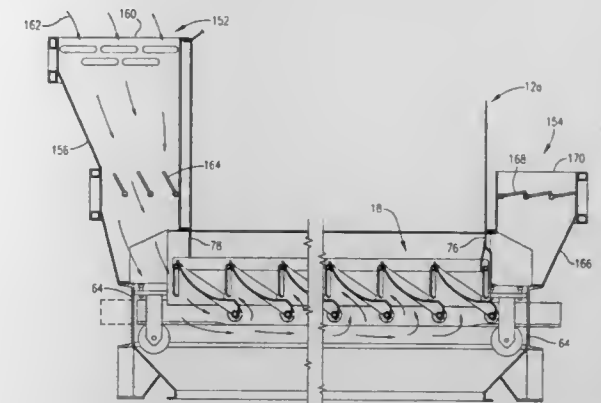
Int. Cl.⁶ F26B 3/00

U.S. Cl. 34—506

13 Claims

1. A method of conditioning preformed discrete pellets comprising the steps of:

(a) providing a pellet conditioning device including an upright bin adapted to hold a quantity of pellets to be conditioned, a



pellet inlet, a pellet outlet, and a selectively operable grate assembly within the bin and between said inlet and said outlet;

(b) introducing a quantity of pellets into said bin through said inlet, and causing the pellets to be supported within the bin on said grate assembly;

(c) directing relatively hot currents of air through said quantity of pellets, and then terminating the relatively hot current air flow;

(d) after substantial termination of said relatively hot current air flow, directing relatively cool currents of air through said quantity of pellets, the flow paths of said relatively hot and relatively cool currents of air through said quantity of pellets being generally cocurrent relative to each other; and

(e) continuing the alternate direction of said relatively hot and relatively cool air currents through said quantity of pellets for conditioning thereof.

5,778,559

DEVICE AND PROCESS FOR MOISTENING A RUNNING MATERIAL WEB

Stefan Winheim, Frankfurt, Germany, assignor to V.I.B. Apparatebau GmbH, Maintal, Germany

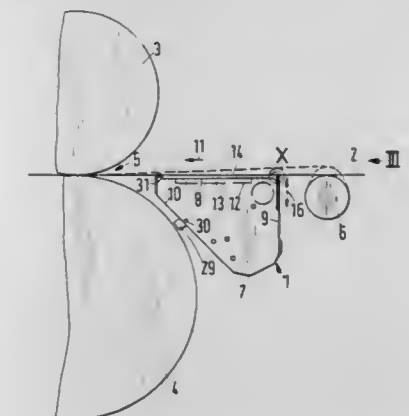
Filed Jan. 26, 1995, Ser. No. 378,633

Claims priority, application Germany, Oct. 19, 1994, 44 37 375.9

Int. Cl.⁶ F26B 9/00

U.S. Cl. 34—611

26 Claims



1. A device for moistening a running web of material comprising:

a housing having a front side, facing said approaching web of material, and a treatment side, said treatment side having a plurality of stream exit openings; and

a rail connected to said front side of said housing, said rail having a first edge projecting beyond said treatment side of said housing toward said web of material;

wherein said web of material is arced in a direction transverse to the direction of travel of the web and at least said first edge of

said rail is curved in the plane of said rail to correspond to the arc of said web of material.

5,778,560

STABILIZING SUPPORT, PARTICULARLY FOR CONTROLLING PRONATION IN SPORTS SHOES

Diego Danieli, Caerano San Marco, Italy, assignor to Diadora S.p.A., Caerano San Marco, Italy

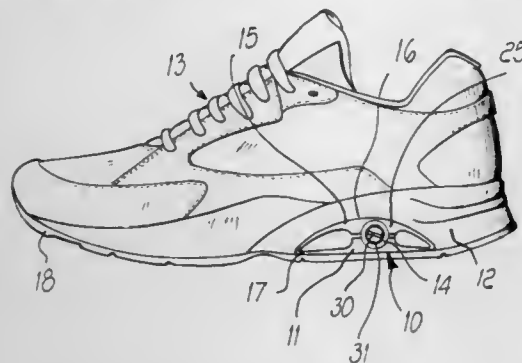
Filed Nov. 14, 1996, Ser. No. 748,923

Claims priority, application Italy, Nov. 15, 1995, PD95A0217

Int. Cl.⁶ A43B 13/18; 7/24; 21/32

U.S. Cl. 36—35 R

20 Claims



1. A stabilizing support for controlling pronation in a shoe having a sole, said support comprising:

a first flexing component for being lodged in the sole of the shoe; said first flexing component comprising at least one seat which extends from a lateral surface of the sole of the shoe inwardly of the sole when said first flexing component is lodged in the sole; and

at least one second detachable stiffening component, said second component being detachably accommodated in said at least one seat of said first flexing component for selectively varying a flexing condition of said first flexing component;

said at least one second detachable stiffening component comprising an inner T-shaped end part, and said at least one seat comprising a pair of inner ridges which protrude inwardly of said at least one seat and which mutually define an opening between said pair of inner ridges, said inner T-shaped end part and said pair of inner ridges and said opening all being shaped such that in an insertion and removal position of said at least one second detachable stiffening component said T-shaped end is movable through said opening in a direction along an axis of said at least one second detachable stiffening component, and further such that in a blocking position of said at least one second detachable stiffening component in which said at least one second detachable stiffening component is rotated about said axis with respect to said insertion and removal position, said pair of inner ridges engage with said T-shaped end for blocking said at least one second detachable stiffening component from being removed from said at least one seat.

5,778,561

COMFORT INSOLE

Seiji Shimoyama, Tokyo, Japan, assignor to Shimoyama Shoji Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1997, Ser. No. 815,751

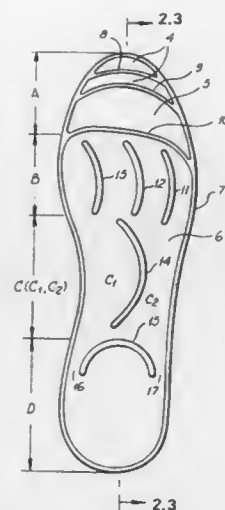
Claims priority, application Japan, Nov. 27, 1996, 8-012127 U

Int. Cl.⁶ A43B 13/38

U.S. Cl. 36—43

4 Claims

1. A comfort insole for use in a shoe, wherein said comfort insole is composed of two strong, airtight and water-repellant sheets each of which has a shape corre-



sponding to a shape of an inner sole of the shoe, said two sheets being stuck to each other at their outer peripheral portions so as to form bag portions therein,

wherein said comfort insole is sectioned into a frontmost portion, a tiptoe portion, a central portion, and a heel portion, wherein first fused lines are formed in said frontmost portion so as to form bag portions independently separated from each other,

wherein second fused lines are formed in said tiptoe portion, a third fused line is formed in said central portion, and a fourth fused line is formed in said heel portion, so that continuous bag portions are formed in a range including said second, third and fourth fused lines, and air is sealed in said continuous bag portions, and

wherein said second fused lines in said tiptoe portion are formed to direct respectively toward toes of a foot so as to support tiptoes of the foot uniformly in a width direction of the foot and so as to reduce air pressure acting on an instep of the foot.

5,778,562

INSERT FOR A SHOE

Lory Karl-Heinz, Augsburg, Germany, assignor to Lory Orthopädie Schuhtechnik Gesundheitsforum, Augsburg, Germany

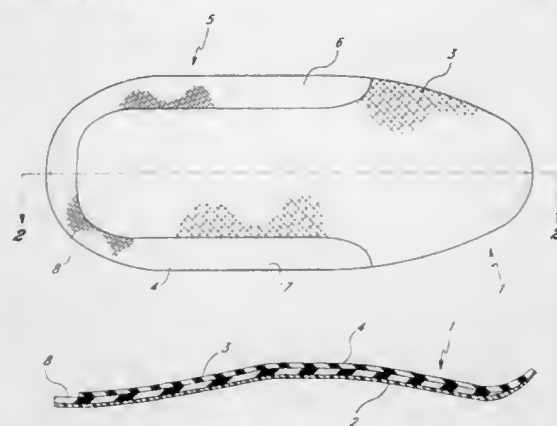
Filed Oct. 12, 1995, Ser. No. 542,470

Claims priority, application Germany, Oct. 18, 1994, 44 37 282.5

Int. Cl.⁶ A43B 13/38

U.S. Cl. 36—44

7 Claims



1. An orthopedic support for shoes, comprising a separate bottom-part and a top-part joined together, each of the bottom and top parts having a toe end and a heel end with the toe ends of the top and bottom parts having the same profile, the top-part having a cut-out section extending along a border of the top-part from the

heel end toward the toe end of the top part up to the region of the first to the fifth metatarsal-bone-head of a foot properly placed on the orthopedic support, and a border-part connected to at least the bottom-part with the border-part extending along opposing sides of a heel properly placed on the support, the border-part connected to at least a portion of the heel end of the bottom-part.

5,778,563

SHOE, IN PARTICULAR SPORT SHOE OR ORTHOPAEDIC STOCKING WITH ANKLE STABILIZATION

Georg Ahlbäumer, Via Arona 34 (Klinik Gut), CH-7500 St. Moritz, Switzerland

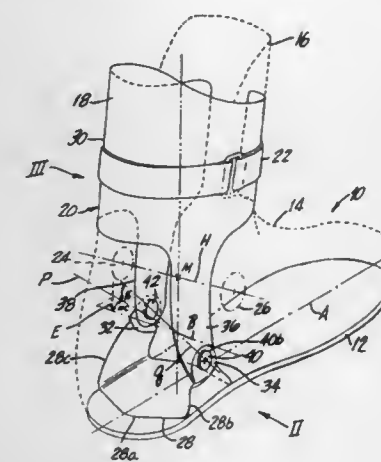
Filed Aug. 16, 1996, Ser. No. 698,839

Claims priority, application Germany, Feb. 16, 1994, 44 04 911.0

Int. Cl.⁶ A43B 7/14; 7/20; A61F 13/00

U.S. Cl. 36—88

83 Claims



1. A shoe, comprising:

a reinforcement (20) for at least partially enclosing a foot of a shoe wearer below ankle joints of the foot and for extending above an upper ankle joint of the foot, the reinforcement (20) having a stirrup element (28) for at least partially surrounding the foot below the ankle joints and a sleeve element (30) for at least partially surrounding a calf of the shoe wearer above the upper ankle joint; and

inner side (34) and outer side (32) articulations for connecting the sleeve element (30) with the stirrup element (28) on inner and outer sides of the foot, respectively, for transmitting of at least tractive forces between in the stirrup element (28) and the sleeve element (30),

wherein the outer side articulation (32) is offset relative to the inner side articulation (34) toward a front portion of the shoe in a longitudinal direction (A) of the shoe, and wherein a projection (P) of a straight line (G), which connects the inner and outer side articulations (34; 32), on a horizontal plane (E) forms with a transverse axis (B), which lies in the horizontal plane (E), an angle α of at least 10°.

5,778,564

CHANGEABLE SHOE COVER

Mark Kettner, 247 Drake Ave., Apt. N-21, New Rochelle, N.Y. 10805

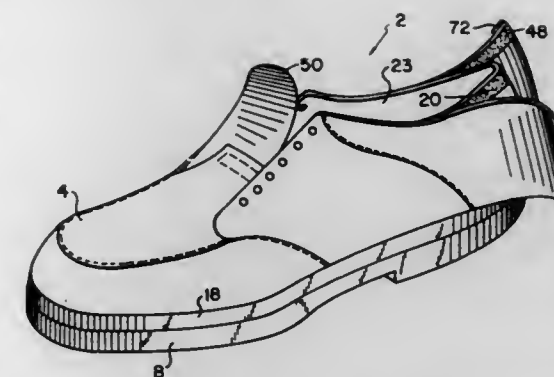
Continuation-in-part of Ser. No. 555,609, Nov. 9, 1995, abandoned. This application Mar. 13, 1997, Ser. No. 816,624

Int. Cl.⁶ A43B 3/24

U.S. Cl. 36—101

2 Claims

1. A shoe having a changeable cover for the upper portions thereof, said shoe comprising an upper portion secured to a sole



and having an opening at the upper regions thereof for insertion of a foot, the lower periphery of said upper portion secured to said sole of said shoe, upper and lower edges of said upper, each of said edges having a continuous strip of loop and hook nylon fastener secured to the lower margin of said upper of said shoe and to said upper margin of said upper shoe, said lower one adjacent to and abutting said sole, a cover for said shoe including a tongue and having a decorative outer surface and patterned to match the corresponding upper section of said shoe, lace eyelet portions corresponding with the outer portions of said shoe and continuous corresponding loop and hook nylon fasteners along the lower interior perimeter of said cover and the upper interior perimeter of said cover, said fasteners adapted to be matched to said corresponding fasteners on the shoe itself, whereby said cover may be removably attached to said shoe; and said fasteners being concealed from view when said cover is attached to said shoe.

5,778,565

VERSATILE ORTHOPAEDIC OR POST-OPERATIVE FOOTGEAR HAVING REMOVABLE TOE PIECE

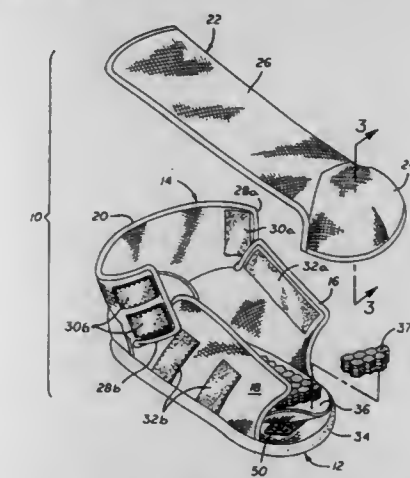
Mark D. Holt, Moorepark, Calif.; Tracy E. Grim, Broken Arrow, Okla., and Stacy L. Wyatt, Camarillo, Calif., assignors to Royce Medical Company, Camarillo, Calif.

Filed Nov. 28, 1995, Ser. No. 563,370

Int. Cl.⁶ A43B 23/26; 23/00

U.S. Cl. 36—110

6 Claims



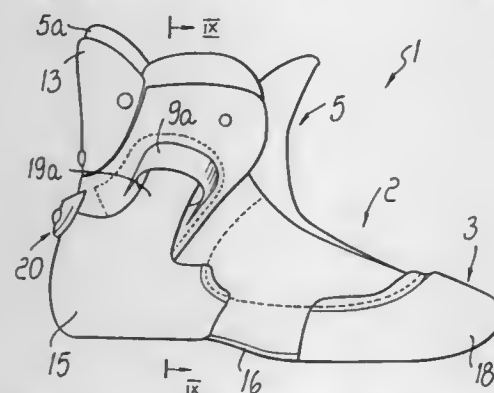
1. A versatile orthopaedic or postoperative shoe comprising: a sole having a front area, a middle area and a rear area, said sole comprising an inner sole having a plurality of removable pressure-relief zone elements arranged in a grid pattern; an upper secured to the sole, the upper including at least two flaps; a fastener arrangement on at least one of the flaps, the arrangement allowing the flaps to be fastened together; a removable toe piece having a front portion and a rear portion, the front portion of the toe piece being securable to the sole at the front area of the sole; and

a tongue extending from substantially the front portion of the toe piece to the rear portion thereof; wherein the upper is open over the toe area of the sole to expose the user's toes; and wherein the toe piece includes an arcuate upper section and a substantially planar lower section, the lower section being securable to the sole, whereby the user's toes are to extend between the upper and lower sections; whereby the toe piece may be secured to the sole at the front area to protect the toes of a user in an uncontrolled environment, and the toe piece and tongue may be removed from the sole to provide for comfort and allow for visual inspection of the user's toes.

5,778,566 SPORTS SHOE

Peter Philip Edauw, Camalo' Di Povegliano, and Mario Di Filippo, Casella D'Asolo, both of Italy, assignors to Stylus S.p.A., Castelfranco Veneto, Italy
PCT No. PCT/EP96/04052, § 371 Date May 23, 1997, § 102(e) Date May 23, 1997, PCT Pub. No. WO97/11618, PCT Pub. Date Apr. 3, 1997

PCT Filed Sep. 16, 1996, Ser. No. 849,017
Claims priority, application Italy, Sep. 26, 1995, TV95A0112
Int. Cl.⁶ A43B 23/07; 11/00
U.S. Cl. 36—117.1 9 Claims



1. Sports shoe, comprising a soft innerboot having a cuff that partially wraps around the user's leg, wherein a semirigid collar is associated with said cuff and is laterally provided with first guiding seats for tabs that protrude from a semirigid body associated with said innerboot at least in the heel region, said collar being connected to said body at the rear.

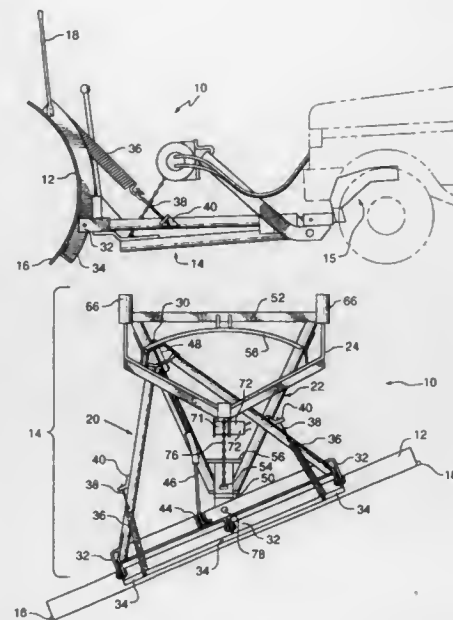
5,778,567

MOUNTING ASSEMBLY FOR LIGHT DUTY SNOW PLOW

Willem Jager, Breslaw; Roland Peter Barth, Waterloo, and Craig Shoemaker, Elora, all of Canada, assignors to Snowbear Corporation, Guelph, Canada

Filed May 1, 1996, Ser. No. 641,613
Claims priority, application Canada, Mar. 29, 1996, 2173025
Int. Cl.⁶ E01H 5/04

U.S. Cl. 37—235 16 Claims
1. A universal mounting assembly for a light duty snow plow, comprising:
a lower triangular frame having a wide end for attachment to a vehicle and narrow end for the attachment of an upper triangular frame, the wide end including means for locking the snow plow in one of a plurality of predetermined positions for plowing snow, and the narrow end including a pivot point upwardly offset from a plane of the lower frame;
the upper triangular frame having a wide end for attachment to the snow plow and a narrow end for selective connection with



the means for locking the snow plow into one of the plurality of predetermined positions for plowing snow, a center of the wide end being rotatably attachable to the pivot point of the lower triangular frame; and means for attaching the lower frame to a vehicle; whereby, the mounting assembly can be secured to a vehicle regardless of its ground clearance, and the plow can be used in any one of the plurality of predetermined positions; and, a bottom edge of a blade of the snow plow remains substantially flat against a surface to be plowed regardless of the predetermined position selected for the plow.

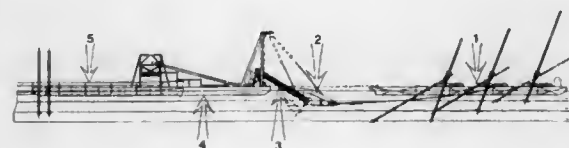
5,778,568

CARRY SCRAPER SHIPS

Kaneto Toyoshima, 66-1, Aza-Kitahara, Donari-cho, Itano-gun, Tokushima-ken, Japan

Filed Aug. 4, 1995, Ser. No. 511,610
Int. Cl.⁶ E02F 3/14

U.S. Cl. 37—345 17 Claims



1. A carry scraper ship comprising:
a device for scraping and lifting earth and sand accumulated on ground under water;
a tug lighter having means thereon for bearing against ground under water to thereby advance the tug lighter and tow the device for scraping and lifting;
said bearing means comprising an elongate element with a length and a drive mechanism for angularly reorienting the length of the elongate element relative to the tug lighter both with and without the bearing means bearing against ground;
a bucket conveyor for conveying earth and sand scraped and lifted from ground under water to an atmospheric environment above water;
a belt conveyor lighter for discharging earth and sand conveyed from under water to the atmospheric environment onto earth carriers; and
means for linking the tug lighter, the device for scraping and lifting, the bucket conveyor, and the belt conveyor lighter together in operative relationship.

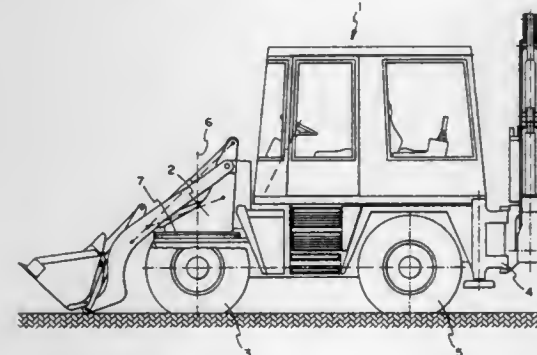
5,778,569

MULTI-PURPOSE CONSTRUCTION VEHICLE WITH AT LEAST TWO SUBFRAMES AND A SELF-ALIGNING BEARING BETWEEN THE SUBFRAMES

Hans Schaeff, Langenburg, Germany, assignor to Karl Schaeff GmbH & Co., Langenburg, Germany

Filed Mar. 28, 1996, Ser. No. 623,603
Claims priority, application Germany, Apr. 2, 1995, 195 12 061.2

Int. Cl.⁶ E02F 3/76 8 Claims
U.S. Cl. 37—410



1. A multi-purpose construction vehicle, comprising:
a) a chassis having a first side, a second side and a longitudinal center axis and including a front subframe and a rear subframe;
b) said front subframe being of substantial length and having an underside;
c) said rear subframe being of a relatively short length in comparison with said front subframe and having a front end;
d) a rear axle being connected to said front end of said rear subframe;
e) a front axle being connected to said front subframe;
f) a front loading device being connected to said front subframe, said front loading device being rotatable about a perpendicular axis;
g) a drive engine being mounted to said front subframe;
h) a driver's cabin being mounted to said front subframe;
i) an excavating unit being connected to said rear subframe;
j) a self-aligning bearing connecting said front and rear subframes and permitting a swivel motion of said front and rear subframes relative to each other about said longitudinal axis, said self-aligning bearing including a horizontal bearing axle and a horizontal bearing bushing and being disposed adjacent said rear axle;
k) said bearing bushing being secured to said front end of said rear subframe;
l) said bearing axle being secured to said underside of said front subframe and mounted inside said bearing bushing; and
m) a first cylinder connecting said front and rear subframes with each other and being disposed at a lateral distance from said longitudinal axis, said first cylinder being adapted to be locked while said vehicle is stationary and being adapted to provide damping of said swivel motion while said vehicle is traveling.

5,778,570

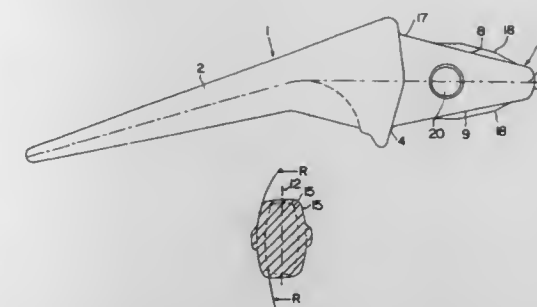
EXCAVATOR TOOTH

Peter Eichelberger, Unterageri, Switzerland, assignor to Baz Service AG, Switzerland

Filed Nov. 13, 1995, Ser. No. 558,276
Int. Cl.⁶ E02F 9/28

U.S. Cl. 37—450 10 Claims

1. An excavator tooth for attachment to an edge of an excavator bucket, which comprises:
a tooth holder having a wedge-shaped tooth nose with a nose edge and a nose root and sides thereof, said tooth nose extending beyond the edge of the bucket;



a tooth cap which can be placed on the tooth nose and fastened thereon, said tooth cap having a tooth cap body;
curved wedge surfaces on the sides of the tooth nose;
a wedge-shaped hollow space having wedge surfaces thereof and being recessed in the body of the tooth cap, said wedge-shaped hollow space having a base and a mouth, wherein the curved wedge surfaces of the tooth nose extend into the wedge-shaped hollow space, the wedge surfaces of the hollow space being adapted to the wedge surfaces of the tooth nose; wherein the curved wedge surfaces of the tooth nose and the wedge surfaces of the hollow space have the same circular profiles perpendicular to their longitudinal axes, the radius of curvature of which decreases continuously from the nose edge to the nose root of the tooth nose, and from the base to the mouth of the hollow space;
including a guide web on the wedge surfaces of the tooth nose spaced from the nose root and located in a central region of the wedge surfaces of the tooth nose, including a longitudinal groove in the wedge surfaces of the hollow space of the tooth cap to receive the guide web of the tooth nose, wherein said longitudinal groove terminates inside the mouth of the hollow space; and
wherein the tooth holder and tooth cap have lateral faces, and the wedge-shaped hollow space includes an opening at the base thereof, including a bore in the lateral faces for the insertion of a locking pin therein to fasten the tooth cap on the tooth holder, and wherein the bore in the tooth holder for receiving the locking pin has ends and a central part and has a larger diameter at both ends than in the central part, the transition from the larger to the smaller part being developed as a bevel wherein the bore is arranged at a distance from the nose root and at a distance from the opening at the base of the wedge-shaped hollow space.

5,778,571

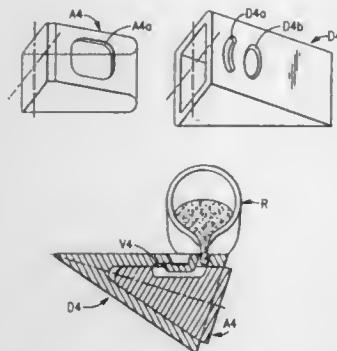
DEVICE AND PROCESS FOR BONDING WEARING PARTS ON AN EXCAVATOR

Charles Pasqualini, Feurs; Jean Marc Pasqualini, Mornant, and Sylvain Pasqualini, Lumbres, all of France, assignors to AFE Metal SA, France

Continuation of Ser. No. 219,451, Mar. 29, 1994, Pat. No. 5,579,594. This application Aug. 12, 1996, Ser. No. 695,627
Claims priority, application France, Mar. 29, 1993, 93 04013
Int. Cl.⁶ E02F 9/28

U.S. Cl. 37—455 17 Claims

1. For an excavator having wearing parts, including removable teeth and adapters on the ends of tools and receptacles used thereon, a bonding combination in which each said tooth includes a hollow internal shape and a contact surface, each said adapter having a tip having a shape allowing said tip to fit into a said tooth and a contact surface, said combination including an elastic filler material being placed in at least one area between a said tooth and a said adapter in order to provide at least one contact cushion to ensure distribution of stresses and strains, wherein the tooth and adapter are made with at least one pair of matching shapes to constitute areas for filling, accommodating, containing and removing said elastic filler material applied after prior assembly of the tooth on the adapter in order to provide, at least in the contact area.



absolute contact between the tooth and adapter, allowing the adapter to withstand stresses and strains over larger surface areas, the elastic filler material being capable of deformation and in that the matching shapes are located proximate and in connection with the areas for filling the elastic filler material and in that the elastic filler material is fluid as applied and is capable of solidification such that as it solidifies, the filler material bonds and secures the tooth and the adapter and in that the configuration of the areas intended for filling and containing the elastic filler material have the function of fixing at least one sufficiently capable mass of elastic filler material of a volume sufficiently capable of compressing and expanding during transmission of multidirectional mechanical stresses exerted on the tooth to the adapter during operation of the excavator such that the tooth can move relative to the adapter.

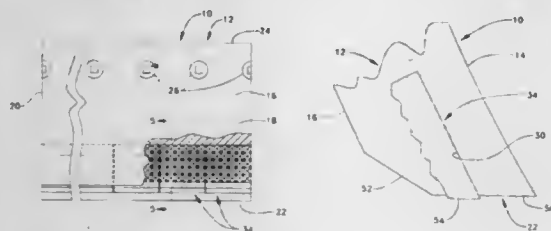
5,778,572
WEAR RESISTANT CUTTING EDGE AND METHOD FOR MAKING SAME

Paul J. Lukavich, Washington; Thomas D. Holtz, Peoria, and Charles L. McDaniel, Jr., Metamora, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 11, 1996, Ser. No. 763,651
Int. Cl.⁶ E02F 3/00

U.S. Cl. 37—460

10 Claims



1. A method of making a wear resistant cutting edge for a snowplow blade, comprising:
preparing an elongated steel cutting edge having a front face, a back face, a leading edge and opposite ends, and with a continuous, insert receiving slot in the leading edge extending from one of said opposite ends to the other end;
constructing a plurality of carbide inserts of a rectangular solid configuration with four sides and opposite planar faces and with a plurality of upstanding protuberances formed on one of the planar faces of said inserts;
placing said inserts in generally closely spaced, side by side relationship within said slot of said cutting edge and with the face of said protuberances facing one of said faces of said cutting edge;
heating said leading edge to a temperature of between about 1500 degrees to about 1800 degrees Fahrenheit; and
applying a press force against said front and rear faces of said cutting edge along said leading edge sufficient to cause plastic deformation of said cutting edge around said protuberances to create a mechanical interlock between said cutting edge and the protuberances of said inserts.

5,778,573
TWO-WAY SWIVEL BRACKET WITH IRONING BOARD ASSEMBLY

John R. Nottingham, Hunting Valley; John W. Spirk, Gates Mills; Richard O. McCarthy, Strongsville; Nicholas E. Stanca, Westlake, and Jeffery M. Kalman, Cleveland Heights, all of Ohio, assignors to Whitney Designs, Inc., St. Louis, Mo.

Filed Jan. 10, 1997, Ser. No. 782,884
Int. Cl.⁶ D06F 81/06; A47B 96/18

U.S. Cl. 38—103

25 Claims



1. A portable ironing board, comprising:
an L-shaped bracket;
an attachment arm slidably mounted at one end to said L-shaped bracket and depending therebelow and having a hook at the opposite distal end;
swivel assembly means attached to said ironing board and said L-shaped bracket for swiveling said ironing board in two directions.

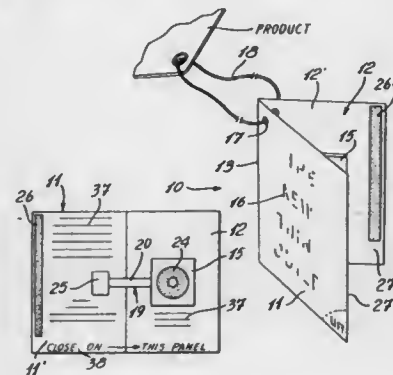
5,778,574
AUDIBLE PRODUCT MERCHANDISING TAG

Ronnie Reuben, 8355 Labarre, Montreal, Quebec, Canada, H4P 2S5

Filed May 15, 1996, Ser. No. 647,835
Int. Cl.⁶ G09F 1/00

U.S. Cl. 40—124.03

3 Claims



1. An audible product information tag for attachment to a remote product, said tag comprising a card having a pair of panels folded one over the other along a fold line, an electronic program circuit located in a housing secured to an inner face of one of said panels, switch actuation means connected at one end to an inner face of the other of said panels, said switch actuation means having switch contact operating means at an opposed end for enabling and disabling said electronic program circuit, said switch actuation means being a thin flexible strip-like member having a finger portion, said flexible member being glued at said one end to said

inner face of said other of said panels, said switch contact operating means being a connection between said finger portion of said flexible member and a normally open contact of a switch, means urging said contact to a normally open position, said finger portion being displaceable in a confined passage of said housing, said strip-like member having a weakened transverse section to act as a hinge, said transverse section being aligned with said fold line, audible speaker means for transmitting an audible message relating to characteristics of said remote product to which said tag is attached when said open contact of said switch is enabled by said switch actuation means upon displacement of said other of said panels a predetermined distance away from said one of said panels towards an open position, engageable detachment means to maintain said panels folded one over the other to a closed position with said switch contact disabled, said engageable detachment means being a detachable and re-engageable adhesive secured on an inner face of one of said panels adjacent a free end edge thereof to permit several opening and retention closures of said card, said other of said panels being a front panel of said card identifying a product, printed messages on said inner face of said front panel, said card having means to attach same to said remote product, said message or printed matter on said inner face of said front panel contains instructions to instruct a user person to reclose said card with said panels juxtaposed and secured by said adhesive after use, said means to attach including an attaching element secured through a hole formed in a corner of said card adjacent said fold line for attaching said card to said remote product.

5,778,575
GARMENT HANGER HOOK SIZE SYSTEM

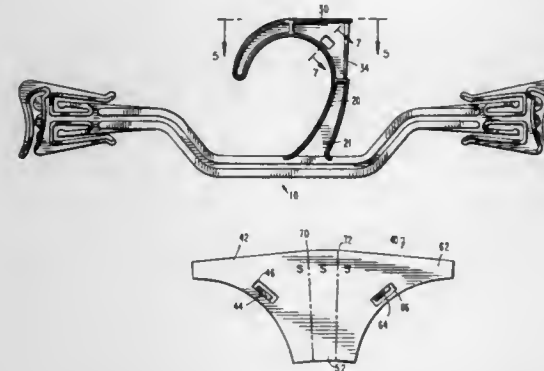
Clifford A. Deupree, Phoenix; Michael W. Dezelon, Paradise Valley, and Roy K. Fischer, Scottsdale, all of Ariz., assignors to Carlisle Plastics, Inc., North Bergen, N.J.

Filed Aug. 16, 1996, Ser. No. 689,972

Int. Cl.⁶ G09F 3/00

U.S. Cl. 40—322

9 Claims



1. A garment hanger sizing system comprising a garment hanger having a hook with a top said hook having a forward free end and a rear end, said rear end being formed with a size tab region adjacent the top of said hook, a size tab securable on said size tab region, said size tab having first and second panels joined by a living hinge, said size tab being securable on said size tab region by folding said first and second panels thereover, and a locking mechanism for locking said first panel to said second panel over said size tab region said size tab region including a top surface, a bottom surface and an inner rounded surface, all of which form a border around said size tab when positioned on said size tab region, said size tab region including a flattened panel, said flattened panel including an opening therethrough, said locking mechanism on said size tab extending through said opening when said size tab is secured on said size tab region, said flattened panel including an outer side wall having a raised edge, said size tab including projections on the inner surface thereof which capture said raised edge to hold said size tab on said size tab region.

5,778,576
NOVELTY LAMP

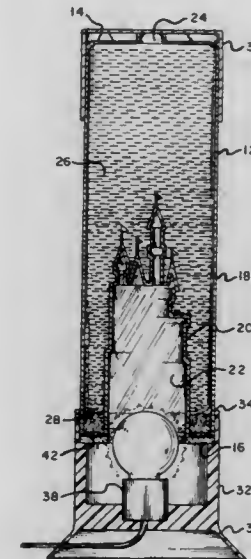
Ali Kaviani, Sicklerville, N.J., assignor to Spencer Gifts, Egg Harbor Township, N.J.

Filed Sep. 13, 1996, Ser. No. 713,916

Int. Cl.⁶ G09F 19/00

U.S. Cl. 40—409

8 Claims



1. A novelty lamp comprising:
a transparent container having a top surface, a bottom surface, an outer portion, and an inner portion having a shape, said container having a height defined by the top and bottom surfaces, said inner portion extending substantially upward from said bottom surface into an interior region that is equivalent to at least one quarter the height of said container;
a base member having an upper end and a lower end, said bottom surface of said container being mounted in said base member;
heating means positioned within said base member;
a first substance within said container, said first substance being a liquid at room temperature;
a second substance within said container, said second substance having a higher relative density than said first substance at room temperature and having a lower relative density than said first substance at a predetermined higher temperature, said substance being flowable about said first substance between said outer and inner portions of said container upon being heated to said predetermined higher temperature by said heating means.

5,778,577
CHANGEABLE NUMERIC SIGNS

James David Bailey, 546 Chilhowee School Rd., Seymour, Tenn. 37865

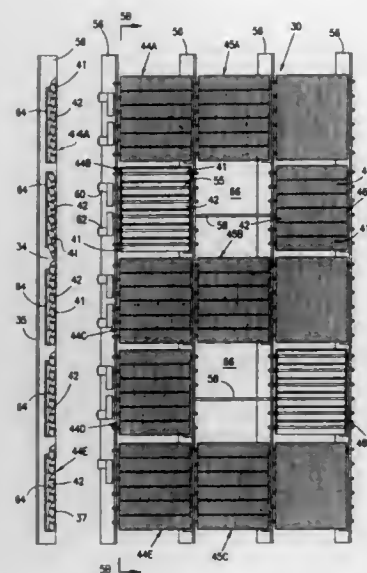
Filed Jun. 14, 1996, Ser. No. 663,788

Int. Cl.⁶ G09F 3/04

U.S. Cl. 40—450

23 Claims

1. A changeable display sign comprising:
a housing defining an interior,
a plurality of horizontally spaced columns each of which includes a plurality of vertically spaced changeable character display sections, each changeable character display section including a plurality of closely spaced and generally parallel flaps having first and second faces, each of said flaps being pivotally supported within said housing,
drive means connected to one of said flaps of each of said changeable character display sections for rotating said one of said flaps to selectively orient one of said first and second faces thereof in a direction for display.



means for pivotally connecting each of said flaps of a changeable character display section to one another so that each of said flaps of a changeable character display section is simultaneously rotated with said one of said flaps to selectively orient one of said first and second surfaces thereof in the direction for display and means for activating each of said drive means to control the orientation of each of said flaps of each of said changeable character display sections.

5,778,578

VIEW-CHANGING DISPLAY

Joseph E. Drapcho, 24 West Lake St., and Gregory M. Proulx,

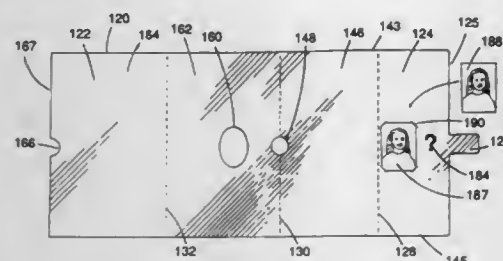
40 West Lake St., both of Waconia, Minn. 56387

Filed Mar. 28, 1996, Ser. No. 625,575

Int. Cl.⁶ G09F 11/00

U.S. Cl. 40—491

27 Claims



25. A view-changing display comprising:
a generally rectangular foldable resilient sheet having a first end from which a tab extends and a second end;
a first fold generally perpendicular to a direction the tab extends from the foldable sheet, a sliding panel between the first end and the first fold;
a biasing element between the first fold and a second fold spaced apart from and generally parallel to the first fold and
a front panel between the second fold and a third fold spaced apart from and generally parallel to the second fold,
a back flap between the third fold and the second end,
a tab passageway formed on the second fold, the tab passageway aligned in correspondence with the tab,
a viewing window formed in the front panel, and
slots on the sliding panel oriented and adapted for holdably receiving a feature so as to be viewable through the viewing window when bias of the biasing element is overcome by manually urging the tab outward through the tab passageway.

5,778,579

ILLUMINATED HOUSE NUMBER

Shu Wing Yuen, 85 Fieldwood Drive, Scarborough Ontario, Canada, M1V 3G3

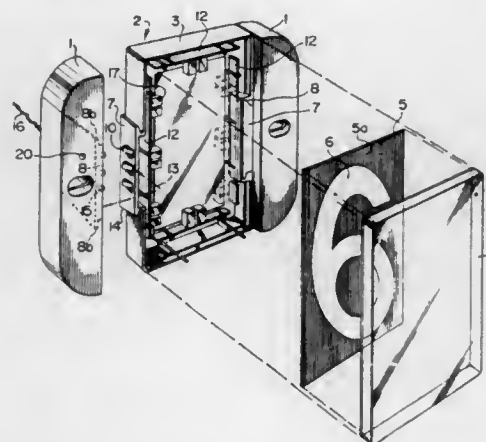
Filed Jun. 27, 1996, Ser. No. 670,501

Claims priority, application Canada, Jun. 27, 1995, 2,152,715

Int. Cl.⁶ G09F 13/04

U.S. Cl. 40—564

9 Claims



1. An interlocking display panel assembly comprises a pair of end elements for attachment to a supporting surface, at least one intermediate element having an indicia displaying surface locatable in an interlocking relationship between said end elements to form an integral planar assembly, illumination means in said at least one intermediate element for illuminating said indicia displaying surface, each said element slidably engaging an adjacent said element by means of a tongue-and-groove arrangement having a dovetail tongue interlocking with a complementary groove to lock adjacent said elements against relative lateral displacement, male and female portions of said tongue-and-groove arrangements on opposite sides of said intermediate element being arranged in a complementary manner so that as many intermediate elements can be fitted together in a row as desired, respective contact means provided on opposing surfaces of adjacent interlocking elements so as to come into abutting contact when said male and female portions are fitted together and thereby transfer electrical power between adjacent elements, and one of said end elements including means for providing power to the assembly, and wherein said tongue-and-groove arrangements are tapered along an axis along which they are slid together to permit insertion from only one direction and to inhibit further insertion when all the elements are properly aligned.

5,778,580

SHEET-LIKE IMAGE CARRIER

Christer Zarelius, Skeppargatan 29, 114 52 Stockholm, Sweden

PCT No. PCT/SE94/00905, § 371 Date Apr. 4, 1996, § 102(e)

Date Apr. 4, 1996, PCT Pub. No. WO95/10104, PCT Pub.

Date Apr. 13, 1995

PCT Filed Oct. 3, 1994, Ser. No. 619,504

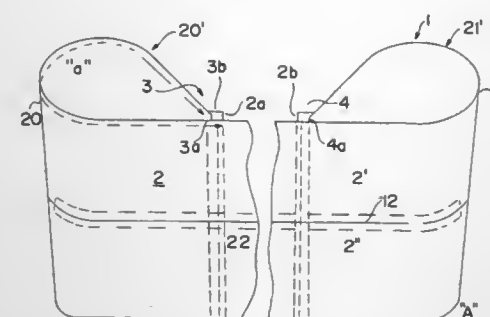
Claims priority, application Sweden, Oct. 5, 1993, 9303238

Int. Cl.⁶ G09F 15/00

U.S. Cl. 40—610

11 Claims

1. An image display unit, comprising:
a sheet-like image carrier, the carrier having a length and a width dimension and at least one edge, the carrier being bendable;
a first coupling device, the first coupling device including at least a first and a second part, the first part of the first coupling device being disposed proximate the at least one edge of the carrier and the second part of the first coupling device being attached to the carrier at a distance from the at least one edge, the first and second parts of the first coupling device and a first intermediate carrier section defining a first carrier section, the first and second parts of the first coupling device each



being width-oriented strips and having first and second coupling means, respectively, the first and second coupling means of the first carrier section being engageable with each other; and

the carrier having a second carrier section defined by a first part and a second part of a second coupling device mutually exclusive of the first coupling device, and a second intermediate carrier section, the first and second parts of the second coupling device each being width-oriented strips and having first and second coupling means, respectively, the first and second coupling means of the second carrier section being engageable with each other;

wherein, when the first carrier section and the second carrier section are bent against the restoring spring forces and the first and second coupling means of the first carrier section and the first and second coupling means of the second carrier section are connected, the generally tubular configurations are of sufficient size to support the first carrier section and the second carrier section in self-supporting conditions along the length dimension of the carrier.

5,778,581

INFLATABLE DISPLAY APPARATUS

Morris W. Bailey, 409 Havenwood La. North, Fort Worth, Tex.

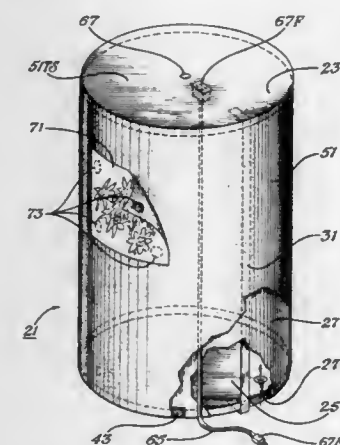
76112

Filed Jun. 17, 1996, Ser. No. 668,436

Int. Cl.⁶ G09F 15/00

U.S. Cl. 40—610

4 Claims



1. An inflatable display apparatus, comprising:

top and bottom members each having an upper end, a lower end, and an outer side with said outer sides defining the outer perimeters of said top and bottom members, respectively, an inflatable member formed of elastic material having upper and lower ends attached to said top and bottom members respectively such that said inflatable member forms a cavity between said top and bottom members,

a plurality of elongated flexible members each having an upper end coupled to said top member and a lower end coupled to said bottom member,

said upper and lower ends of said flexible members being coupled to said top and bottom members respectively at spaced apart positions around said inflatable member,

a flexible sleeve having upper and lower ends coupled to said top and bottom members respectively such that said sleeve surrounds said inflatable member and has an outer facing side between said top and bottom members,

said inflatable member having an inlet for receiving gas under pressure into said cavity to inflate said inflatable member to move said top and bottom members away from each other to allow said flexible sleeve to be moved to an extended position between said top and bottom members to form an outward facing wall,

said flexible sleeve having fastening means of a first type formed on its outer side to allow attachment of fastening means of a second type such that articles having attachment means of said second type may be removably attached to said outer side of said flexible sleeve,

said flexible members being characterized such that they limit stretching of said inflatable member between said top and bottom members when inflated, to prevent said flexible sleeve from being damaged when said inflatable member is inflated and said flexible sleeve is moved to said extended position, and

the gas injected into said cavity being releasable from said cavity to deflate said inflatable member to allow said top and bottom members to be moved toward each other to a compact storage position.

5,778,582

SIGN DEVICE

Klaus Peter Rath, Vejle, Denmark, assignor to A/S MOD-ULEX, Billund, Denmark

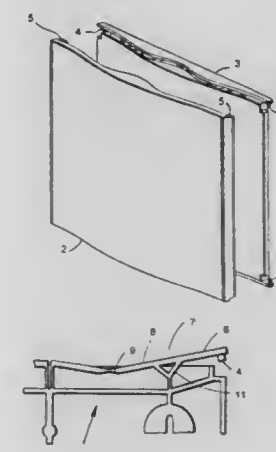
Filed Mar. 29, 1996, Ser. No. 626,714

Claims priority, application Denmark, Mar. 31, 1995, 0354/95

Int. Cl.⁶ G09F 11/2

U.S. Cl. 40—611

10 Claims



1. A sign device, comprising:
a rear plate;
a front plate;

at least one means for connecting said rear plate and said front plate, each of said at least one connecting means having a first connecting part on one of said rear plate and said front plate in engagement with a second connecting part on the other of said rear plate and said front plate, said first connecting part being provided on a movable member;

wherein the movable member is a rocker member, said rocker member having a center part, a first end and a second end, said first end and said second end extending from said center part in opposite directions said rocker member being attached to said one of said rear plate and said front plate at said center part, said first connecting part being located in a vicinity of said first end of said rocking member; and wherein said first connecting part is disengageable from said second connecting part by acting on said second end of said rocker member.

5,778,583

STRETCHABLE MARKING ARTICLE

Brian D. Larsen, Worthington, Minn., assignor to Bedford Industries, Inc., Worthington, Minn.

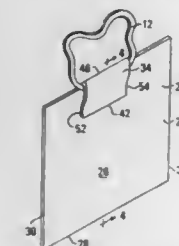
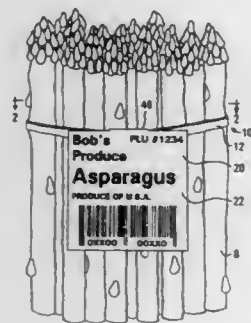
Filed Jul. 1, 1996, Ser. No. 672,958

Int. Cl.⁶ G09F 23/00

U.S. Cl. 40—637

15 Claims

U.S. Cl. 40—800



1. A stretchable merchandise marking article carrying a non-stretchable optically scannable code, said article consisting essentially of an endless elastomeric band having a circumferential longitudinal dimension for stretching about merchandise to band said merchandise, and a non-elastomeric tag consisting of a single continuous panel of flexible water resistant plastic sheet material discrete from said elastomeric band and having an information portion for displaying printed matter thereon and an attachment portion for bonding to said information portion, said information portion and said attachment portion being on opposites sides of a fold line and each said portion having a length extending perpendicularly from said fold line, said length of said information portion from said fold line being substantially greater than said length of said attachment portion from said fold line, said attachment portion being folded at said fold line over an elongate section of the longitudinal dimension of said elastomeric band and bonded to said information portion at a location spaced from said fold line so that said sheet material encircles said elongate section of said band and forms a channel having a length within which said encircled elongate section of said band is firmly but movably lodged, said length of said channel being no greater than half the circumferential longitudinal dimension of said elastomeric band and not greater than about 1 inch, said information portion of said sheet material having an area size substantially greater than the area size of said attachment portion such that a substantial majority

of both opposing surface areas of said information portion can be viewed for any printed matter thereon, said printed matter carried on said information portion including said optically scannable code, said information portion further having a width adjacent said channel greater than said length of said channel so as to cause part of said information portion to extend outward beyond said length of said channel, whereby bending forces exerted on said channel during stretching and flexing of said section of said elastomeric band within said channel in use applications are only minimally transmitted to said information portion and do not cause sufficient bending of said information portion to interfere with optical scanning of said optically scannable code on said information portion.

5,778,584

SUN CATCHER KIT

Thomas L. Pickle, Toledo, Ohio, assignor to Craft House Corporation, Toledo, Ohio

Filed Dec. 1, 1995, Ser. No. 566,120

Int. Cl.⁶ G09F 1/12

2 Claims



1. A sun catcher kit including a light transmitting panel having a first flat planar surface and an opposed second flat planar surface:
a) an opaque outline of a design formed on the first flat planar surface of said panel and extending from the first flat planar surface of said panel; and
b) a detailed etching-like design on the second flat planar surface of said panel in superposed registry with the design formed on the first flat planar surface of said panel.

5,778,585

SEMIAUTOMATIC WEAPON

Hans-Peter Sigg, Altenburg/Jestetten, Germany, assignor to Schweizerische Industriegesellschaft, Switzerland

PCT No. PCT/EP95/00411, § 371 Date Sep. 30, 1996, § 102(e)

Date Sep. 30, 1996, PCT Pub. No. WO95/23322, PCT Pub.

Date Aug. 31, 1995

PCT Filed Feb. 6, 1995, Ser. No. 702,476

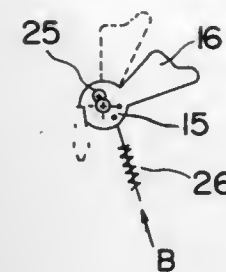
Claims priority, application Germany, Feb. 26, 1994, 44 06 401.2; Apr. 8, 1994, 44 12 128.8

Int. Cl.⁶ F41A 3/00

U.S. Cl. 42—69.03

13 Claims

1. A semiautomatic weapon with a grip, a breech block and a hammer which is arranged rotatably about a hammer axis, and means for varying the position of the hammer axis relative to the



grip so that the hammer axis is displaceable relative to the breech block.

5,778,586

FIREARM TRIGGER SAFETY DEVICE

Ronald G. Carlson, 301 SE. 54, Oklahoma City, Okla. 73129

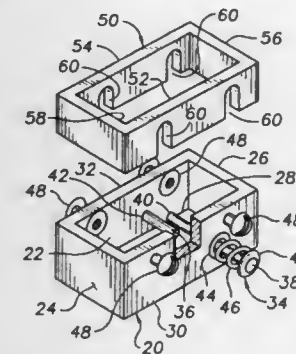
Continuation of Ser. No. 778,435, Jan. 2, 1997, abandoned.

This application Sep. 15, 1997, Ser. No. 931,079

Int. Cl.⁶ F41A 17/54

U.S. Cl. 42—70.07

8 Claims



1. A trigger safety device for a firearm having a trigger pivotal within a trigger guard on the firearm, comprising: end and first and second side walls integral with a body bight portion forming a socket for substantially covering the trigger guard;

J-shaped hook means including a stem slidably projecting through said first and second side walls under the trigger guard and beyond said first side wall and having a hook portion slidably projecting through said second side wall above the trigger guard; and,

expansion spring means having a predetermined axial compression rating interposed between said first side wall and the end portion of said stem opposite said first side wall for normally precluding separation of said J-shaped hook means from said trigger guard.

5,778,587

FIRING PIN FOR WEAPON

Rudolf Brandl, Dornhan/Weiden, and Thomas Romer, Schramberg, both of Germany, assignors to Heckler & Koch GmbH, Oberndorf am Neckar, Germany

Filed Feb. 10, 1997, Ser. No. 798,585

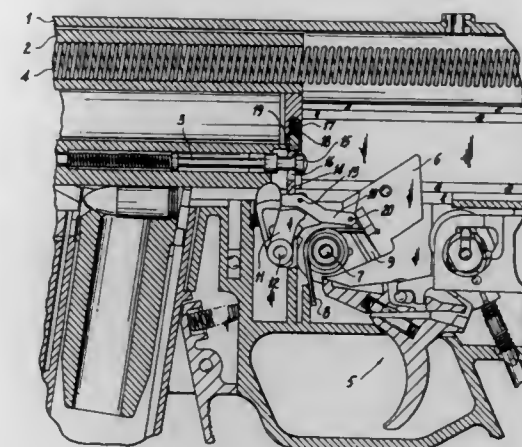
Int. Cl.⁶ F41A 17/00

U.S. Cl. 42—70.08

8 Claims

1. A firing pin and hammer assembly for a fire arm comprising:
(a) a firing pin capable of being moved from a rest position to a priming position, the firing pin having an end, the end is positioned in the travel path of a hammer;

(b) a firing pin spring for moving the firing pin into its rest position;



(c) a catch capable of being moved by a catch spring engaging the firing pin while the firing pin is in its rest position, and holding the same; and

(d) a release assembly cooperating with the hammer and releasing the catch from engagement with the firing pin when the hammer approaches the end of its travel path and wherein the release assembly is permanently coupled to the hammer.

5,778,588

FOLDING STOCK FOR A PISTOL

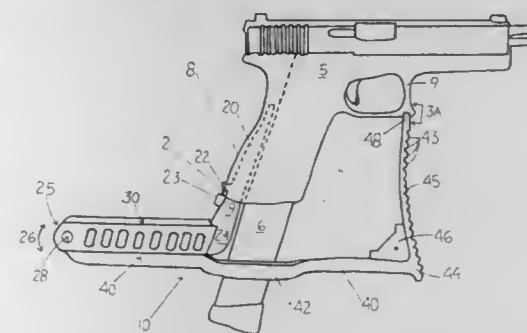
Charles Allen, III, 5329 Bayshore Blvd., Tampa, Fla. 33611; John R. Weaver, 3425 Yule Tree Dr., Edgewater, Fla. 32141, and Shawn E. Webb, 342 Sunflower Trail, Orlando, Fla. 32828

Filed Jan. 30, 1997, Ser. No. 791,229

Int. Cl.⁶ F41C 23/12; 23/04

U.S. Cl. 42—71.02

11 Claims



1. A folding stock for use with a pistol which employs a magazine comprising:

a pistol mating element, said pistol mating element attached to a first stock element,

said first stock element rotatably attached to a second stock element, said second stock element attached to a shoulder rest,

said second stock element further having a U-shaped portion thereon, said U-shaped portion forming an open area which would receive the magazine therethrough whereby said U-shaped portion permits the magazine to be placed into, be removed from, or remain within the pistol when said stock is folded, as well as permits said stock to be folded without coming in contact with the magazine.

5,778,589

ADJUSTABLE GUN SUPPORT

Rocky Lane Teague, St. Rte. 1, Box 5801, Three Rivers, Tex. 78071

Filed Apr. 24, 1997, Ser. No. 840,023

Int. Cl.⁶ F41A 31/00

U.S. Cl. 42—94

2 Claims



1. An adjustable gun support comprising:
 a collapsible arm cradle support which is adjustable between an extended position whereby said cradle arm assumes an elongate configuration, and a compact position wherein said arm cradle support assumes a compact, folded configuration, said arm cradle support having a cradle end and a frame end;
 an arm cradle adjustably attached to said cradle end of said arm cradle;
 a gun support frame adjustably attached to said frame end of said arm cradle support;
 a barrel cradle adjustably attached to said gun support frame;
 frame hanger means for reversibly suspending said gun support frame from a mounting surface;
 frame leveling means for adjusting the orientation of said gun support frame relative to said mounting surface.

5,778,590

FIREARM COVER

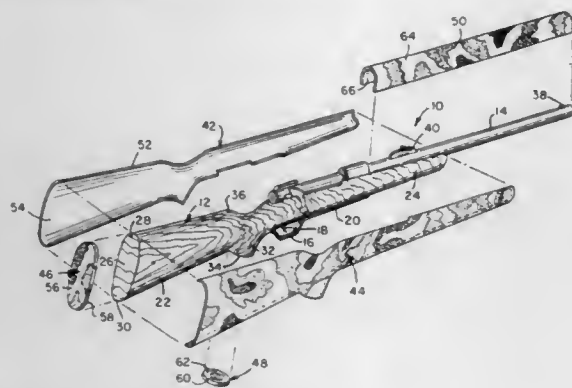
David Preston Browning, 270 Charter Oaks Dr., Canyon Lake, Tex. 78133, and Edward Wiley Martin, HC 3, Box 22, New Braunfels, Tex. 78132-2201

Filed Jan. 4, 1996, Ser. No. 584,206

Int. Cl.⁶ F41A 35/02; B32B 7/06

U.S. Cl. 42—96

11 Claims



1. A protective cover for a long-barreled firearm having a stock with opposed, first and second sides, comprising:
 a first flexible sheet of substantially uniform thickness having one surface bearing a camouflage pattern and an undersurface opposed therefrom, said first flexible sheet further having a shape corresponding to that of the first side of the stock and having a first pair of opposed longitudinal edges for positioning, respectively, adjacent the top and bottom of the stock; and

a backing of light-tack, adhesive material applied to the under-surface of said first flexible sheet.

5,778,591

METHOD AND APPARATUS FOR TEMPORARILY DEBILITATING TUNA AND OTHER FISH TO FACILITATE CAPTURE

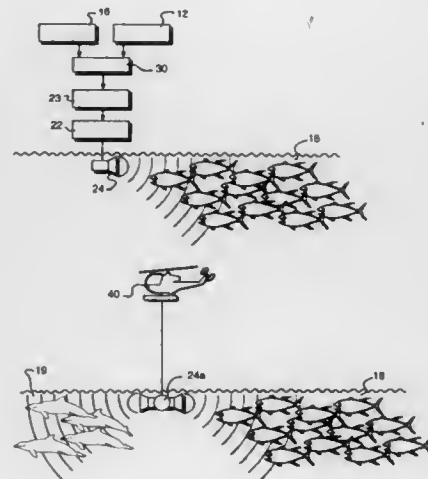
James L. Oschman; Nora H. Oschman, both of Dover, N.H., and Keith E. Sommer, Satellite Beach, Fla., assignors to Nature's Own Research Association, Dover, N.H.

Continuation of Ser. No. 306,875, Sep. 15, 1994. This application Jan. 7, 1997, Ser. No. 779,426

Int. Cl.⁶ H04B 1/02; A01K 79/02

U.S. Cl. 43—17.1

17 Claims



1. Fishing apparatus comprising sound producing means for producing and acoustically broadcasting synthesized signals under water;
 means for storing a group of signals predetermined by the steps of producing and acoustically broadcasting a group of synthesized signals under water to determine which of said group of signals has a frequency in a maximum range of stunning effect on a particular species and age of fish and minimal effects on marine mammals;
 means for selecting at least one signal from said group of signals having a maximum stunning effect for a selected species of target school fish;
 means for selectively activating said sound producing means with sufficient power that the broadcast underwater of the selected signal will temporarily stun a selected species of fish within range of said sound producing means.
 13. Fishing apparatus comprising sound producing means for producing and acoustically injecting synthesized signals under water;
 means for generating a group of signals predetermined by the steps of producing and acoustically injecting a group of synthesized signals underwater, to determine which of said group of signals have a frequency in a maximum range of stunning effect on a particular species and age of fish and minimal effects on marine mammals;
 means for selecting at least one signal from said group of signals having a maximum stunning effect for a selected species of target school fish;
 means for selectively activating said sound producing means with sufficient sound pressure that the injection underwater of the selected signal will temporarily stun a selected species of fish within range of said sound producing means.

5,778,592

FISHING ROD TENDER

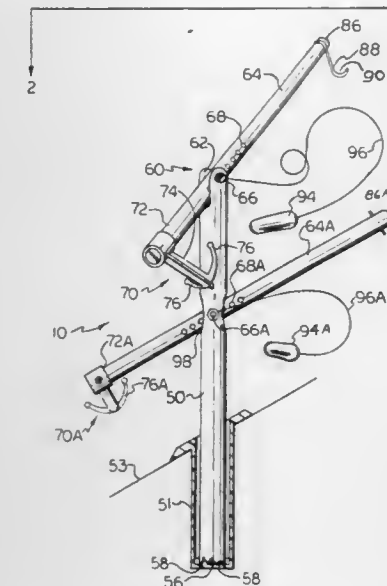
James A. Malmberg, S208 Delta College, University Center, Mich. 48710

Filed Mar. 5, 1996, Ser. No. 610,838

Int. Cl.⁶ A01K 87/00

U.S. Cl. 43—21.2

2 Claims



1. A fishing rod tender including:
 an upstanding standard for mounting on a vertically moveable foundation;
 a fishing rod mounting bar having one inner end for mounting a fishing rod handle end and a fishing reel mounted on said handle end and an opposite outer end for receiving an elongate fishing rod staff coupled to said handle end, said staff including an outer tip end through which fishing line, on said reel, freely passes;
 said opposite end cantileverly mounting said tip end outwardly of said foundation; and
 mount means, between said ends of said fishing rod mounting bar, for pivotally mounting said fishing rod mounting bar on said standard;
 said upstanding standard including a portion defining a generally horizontal passage receiving said fishing rod mounting bar, and means for selectively preventing pivotal movement of said fishing rod mounting bar relative to said upstanding standard comprising stop means detachably insertable in a wedging position between said fishing rod mounting bar and said portion of said standard defining said passage.

5,778,593

DIVING FISHING LURE

Richard D. Baron, Zephyrhills, Fla., assignor to Wanabe Outdoors, Tampa, Fla.

Continuation-in-part of Ser. No. 275,368, Jul. 15, 1994, Pat. No. 5,505,016, which is a continuation-in-part of Ser. No. 2,188, Jan. 8, 1993, Pat. No. 5,329,720, which is a

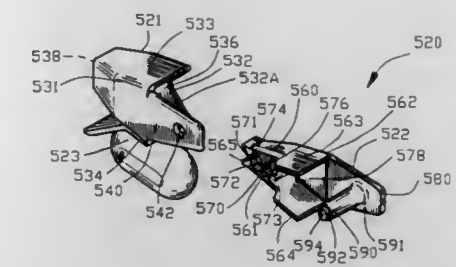
continuation-in-part of Ser. No. 890,811, Jun. 1, 1992, Pat. No. 5,177,895. This application Apr. 8, 1996, Ser. No. 630,715. The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.

Int. Cl.⁶ A01K 83/06

U.S. Cl. 43—41

16 Claims

1. A diving fishing lure for attaching a bait to a fishing line, comprising in combination:
 a lure head having a front aperture for enabling the fishing line to extend therethrough;



- said lure head having an insert cavity communicating with said front aperture;
 a lure insert comprising an insert portion;
 a first and a second panel extending from said lure head and said lure insert;
 locking pin means secured to one of said first and second panels for cooperating with a locking aperture means defined in the other of said first and second panels;
 said locking pin means extending through the bait for restraining the movement of the bait relative thereto;
 said lure insert being insertable within said insert cavity of said lure head with the fishing line extending through said front aperture of said lure head and with said locking aperture means cooperating with said locking pin means for interlocking said lure insert to said lure head;
 restraining means secured to said lure insert for restraining the movement of the fishing line relative thereto; and
 a sinker weight secured to said lure head to weight the diving fishing lure for causing the bait to sink.

5,778,594

TWO DOOR ANIMAL TRAP

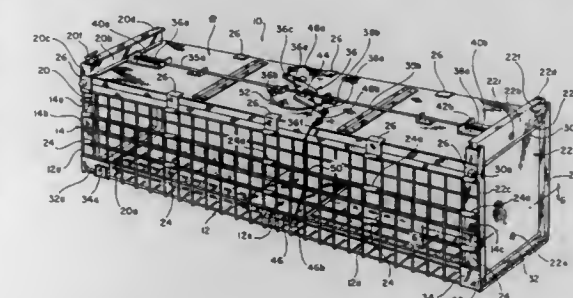
William E. Askins; Gary Roulston, both of Lititz, and Joseph F. Flore, Lebanon, all of Pa., assignors to Woodstream Corporation, Lititz, Pa.

Continuation-in-part of Ser. No. 600,160, Feb. 12, 1996. This application Jun. 4, 1996, Ser. No. 658,228

Int. Cl.⁶ A01M 23/02; A01K 31/08

U.S. Cl. 43—61

23 Claims



1. An animal trap comprising a cage including a base, a pair of opposite side walls, a pair of end frames and a roof, each side wall comprising an upper panel and a lower panel, the upper panel being hinged to one side of the roof, the lower panel being hinged to one side of the base, the upper and lower panels of each side wall having a hinge connection therebetween whereby the side walls can fold inwardly about the hinge connections concertina-wise to collapse the roof onto the base, the end frames being pivotally connected to opposite ends of the roof respectively for pivotal movement between folded positions in which the end frames are substantially flat against opposite end sections of the roof inside of the cage to permit inward folding of the side walls and unfolded positions in which lower edge surfaces of the end frames engage the base and the end frames form ridge braces holding the cage in an extended open-out condition and preventing inward folding of the side walls about the hinge connections.

at least one of the end frames including an animal access door, said animal access door being slidable in said at least one of the end frames between an elevated open position and a lower closed position, the trap including a trigger mechanism for releasably holding the door in the open position and a release device inside of the trap connectable to the trigger mechanism for moving the trigger mechanism to release the door and allow the door to slide under gravity to the closed position when the release device is activated by an animal on entering the trap.

the release device comprising a pivotal trip pan on the base of the cage inside of the trap, the trigger mechanism being located on top of the roof of the cage, and the trip pan being connectable to the trigger mechanism by a cable extending up one side of the cage.

5,778,595

Patent Not Issued For This Number

5,778,596

TERMITE BAIT APPARATUS AND METHOD

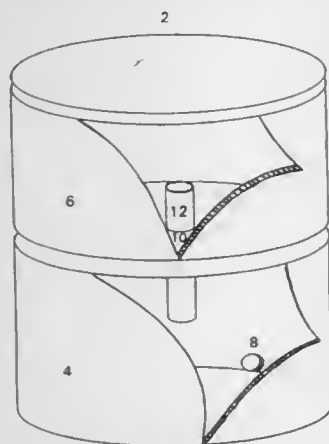
Gregg Henderson, and Jian Chen, both of Baton Rouge, La., assignors to Board of Supervisors of Louisiana State University, and Agricultural and Mechanical College

Filed Nov. 26, 1996, Ser. No. 755,810

Int. Cl.⁶ A01N 25/00; A01M 1/20

U.S. Cl. 43—132.1

27 Claims



13. An apparatus for delivering a toxicant to a termite colony, comprising:

- (a) a first compartment adapted to hold a first termite food source comprising a termite toxicant;
- (b) a second compartment adapted to hold termites, and a second termite food source lacking a termite toxicant, wherein said second compartment has an exit through which the termites can travel to the colony; and
- (c) a passage through which termites can move between said first and second compartments, wherein said passage is adapted to hold a plug comprising a substance that termites will eat, and wherein the plug will block passage of termites between said first and second compartments until the termites have eaten a sufficient amount of the plug to permit passage between said first and second compartments.

5,778,597
SUPPORT DEVICE FOR POTTED PLANTS AND THE LIKE

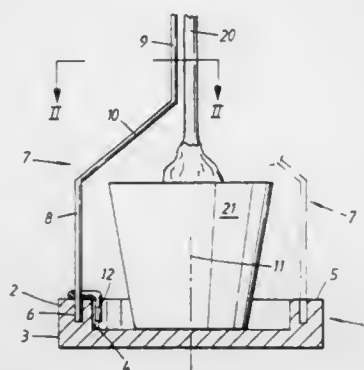
Sven Klestad, Hästköringen 24, 184 94 Åkersberga, Sweden
PCT No. PCT/SE96/00540, § 371 Date Sep. 5, 1997, § 102(e)
Date Sep. 5, 1997, PCT Pub. No. WO96/33603, PCT Pub.
Date Oct. 31, 1996

PCT Filed Apr. 24, 1996, Ser. No. 913,459

Claims priority, application Sweden, Apr. 27, 1996, 9501565
Int. Cl.⁶ A01G 17/14

U.S. Cl. 47—47

10 Claims



1. A supporting device for potted plants, comprising: a pot saucer having a longitudinal axis, the pot saucer having an edge portion having a top portion with a bore defined therein, the pot saucer having an inner wall;
- a support pin that is removably attached to the pot saucer, the support pin including a first member and a second member that is substantially parallel to the first member, the second member being radially displaced relative to the first member; and
- an attachment mechanism disposed at a bottom end of the first member to attach the support pin to the pot saucer so that the second member is adjacent to the longitudinal axis of the pot saucer, the attachment mechanism comprises a first, a second and a third protruding finger of which the second finger is in operative engagement with the bore defined in the edge portion of the pot saucer.

5,778,598

SHUTTER DOOR ASSEMBLY

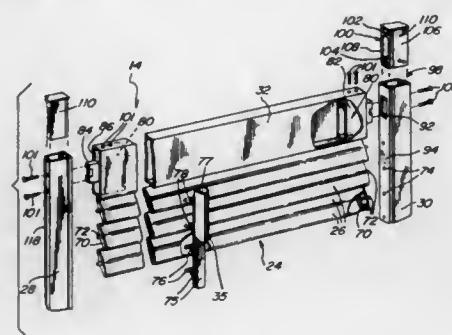
Harout Ohanesian, Northridge, Calif., assignor to U.S. Polymers, Inc., Commerce, Calif.

Continuation-in-part of Ser. No. 966,936, Oct. 27, 1992, Pat. No. 5,342,187. This application Jun. 9, 1994, Ser. No. 257,084

Int. Cl.⁶ E06B 7/08

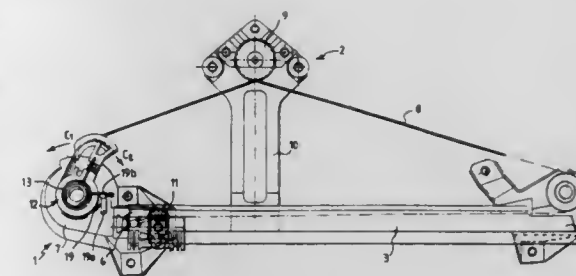
U.S. Cl. 49—74.1

14 Claims



1. A shutter assembly comprising: a frame;

- a louver door having a plurality of parallel extruded hollow plastic vanes, said louver door being pivotally mounted to said frame; and
- a tilting rod connecting said vanes of said louver door, said tilting rod having a plurality of I-bar members and a plurality of T-hooks for engaging with slots formed along sides of said hollow vanes, said plurality of T-hooks formed on said plurality of I-bar members and the I-bar members stackably held within a slot formed along a rear surface of said tilting rod.



5,778,599

GLASS HOLDER AND METHOD FOR ATTACHING A WINDOW GLASS USING SUCH A GLASS HOLDER

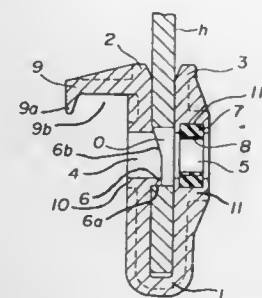
Kazuo Saito, Yokohama, Japan, assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Apr. 22, 1996, Ser. No. 635,821

Claims priority, application Japan, Apr. 20, 1995, 7-119306
Int. Cl.⁶ E05F 11/38

U.S. Cl. 49—375

20 Claims



1. A window glass holder for fixedly retaining a window glass element, having a through-bore defined therein, within said window glass holder, comprising: said window glass holder having a substantially U-shaped cross-sectional configuration and comprising a pair of axially spaced plate members disposed parallel to each other; and protrusion means fixedly disposed upon a first one of said pair of plate members and extending toward a second one of said pair of plate members for engagement within a through-bore defined within said window glass element to be fixedly retained within said window glass holder, said protrusion means comprising a shoulder portion for engaging the through-bore of the window glass element so as to fixedly retain the window glass element within said window glass holder, and a ramp portion for engaging an edge portion of the window glass element when the window glass element is inserted into said window glass holder such that said first and second plate members are expanded away from each other so as to enable the window glass element to be insertable into said space defined between said first and second plate members, whereby when said window glass element is inserted into said window glass holder such that an edge portion of the through-bore of the window glass element clears said protrusion means of said first one of said pair of plate members, said protrusion means will snap-engage into the through-bore of the window glass element so as to fixedly retain the window glass element within said window glass holder.

5,778,600

CABLE-TENSIONING DEVICE

Yi-Hwa Chu, Ouzouer-sur-Loire, France, assignor to Meritor Light Vehicle Systems-France, France

Filed Apr. 19, 1996, Ser. No. 635,349

Int. Cl.⁶ E05F 11/48

U.S. Cl. 49—352

9 Claims

1. A cable tensioning device for a window lifter mechanism, said cable tensioner associated with a rail having first and second ends,

wherein said first rail end has a first cable return and wherein said second rail end has a second cable return, and wherein a cable is alternately reciprocally returned by said first and second cable returns, wherein said first rail end includes:

- a rotary cam having an interior and an exterior, said cam further having grooves formed about its periphery;
- a cam-support element having a stop formed thereon and also having a non-return means shaped thereon, said stop and said non-return means are radially disposed from one another by an arc of fixed length; and
- a spring coaxial with said cam, said spring having a first axially offset radial tab bearing on said cam-support element stop, and a second axially offset radial tab extending inside said rotary cam, said second tab adapted to slide over said non-return means after the cam has rotated through a first travel, said non-return means shaped to prevent any return of said second tab back over said non-return means after said first and second tabs have become angularly separated by at least the length of said arc between said non-return means and said stop, said cable engaged in said grooves, wherein said cam is in equilibrium under the action of opposing forces exerted by said cable and said spring wherein said cam support element has a cam support upper surface and wherein said non-return means is a ramp inclined toward said cam support upper surface, wherein when said second tab is angularly separated from said first tab, said second tab slides rampingly upward along said inclined ramp.

5,778,601

PROTECTIVE DEVICE FOR A DOOR

I-Tsung Wu, No. 174, Chrang-An Street, Pan-Chiao City Taipei Hsien, Taiwan

Filed Sep. 10, 1996, Ser. No. 711,615

Int. Cl.⁶ E05B 11/00

U.S. Cl. 49—383

5 Claims



1. A protective device in combination with a door comprising:

a shield adapted to cover a gap between an edge of the door and a door frame, said shield having a vertical fixed edge in close proximity to the frame, and a vertical gliding edge in close proximity to a front side of the door, a width between said fixed edge and said gliding edge being larger than the maximum width of the gap;

a plurality of fixing elements attached to said frame, said fixed edge of said shield hinges on said fixing elements; and

a guiding system for guiding said gliding edge of said shield, such that said gliding edge glides on a front side of the door when the door is opened or closed;

a plurality of gliding elements mounted on said gliding edge of said shield;

a plurality of guiding elements, each of said guiding elements having a pair of rails, each of said pairs of rails guiding one of said gliding elements, such that said gliding edge of said shield is kept close to the front side of the door; such that by always covering the gap with said shield, injuries caused by fingers or limbs being pinched in said gap are prevented.

5,778,602

PICK RESISTANT WINDOW LOCK MANUAL CONTROL

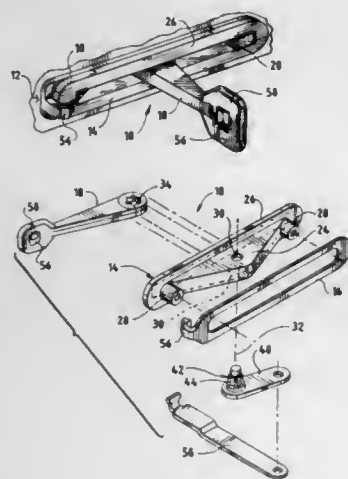
Douglas G. Johnson, Blooming Prairie; Timothy T. Frenzen, Owatonna, and Joseph P. Landherr, Rose Creek, all of Minn., assignors to Truth Hardware Corporation, Owatonna, Minn.

Filed Dec. 3, 1996, Ser. No. 781,939

Int. Cl.⁶ E05B 55/00

U.S. Cl. 49—449

24 Claims



1. A manual control used with a window lock structure having first and second locking members, the first locking member being associated with a window frame and the second locking member associated with a window sash, said manual control comprising:

a handle securable for pivoting relative to the window frame; means for operably connecting said handle to the first locking member whereby pivoting of said handle when connected to said first locking member operably moves the first locking member into and out of locking orientation relative to the second locking member;

a resilient retainer securable to the window frame, said retainer including means for releasably securing said handle in a locking position and being sufficiently resilient to bend in response to both a manual force applied to the handle to release the handle from the locking position and a manual force applied to the handle to move the handle to the locking position, said handle in said locking position when connected to the first locking member causing said first locking member to be in locking orientation relative to the second locking member.

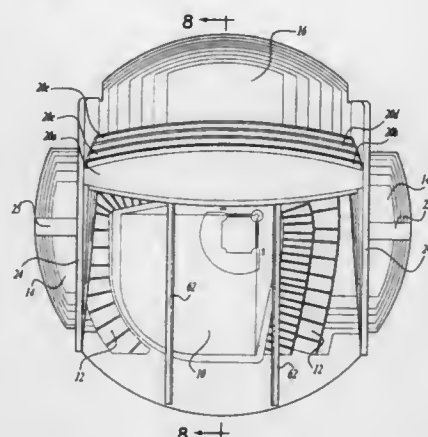
5,778,603
RETRACTABLE DOME
George S. Reppas, 1030 San Raymundo Rd., Hillsborough, Calif. 94010

Filed Oct. 29, 1996, Ser. No. 741,380

Int. Cl.⁶ E04H 3/10; E04B 7/16

U.S. Cl. 52—66

27 Claims



1. A retractable dome stadium, comprising:
an activity surface having a seating area disposed on one side of said activity surface;

a pair of parallel support members disposed on opposite sides of said activity surface;

a plurality of movable generally lune-shaped panels extending between said parallel support members, said panels move between an open position in which all of said panels are stacked one above the other in a superimposed relationship generally above said seating area on said one side of said activity surface and a closed position in which said panels are disposed in a generally side-by-side relationship including one of said panels extending generally to ground level, said seating area has a low and open view across said activity surface to an area outside of said dome stadium when said panels are in said open position.

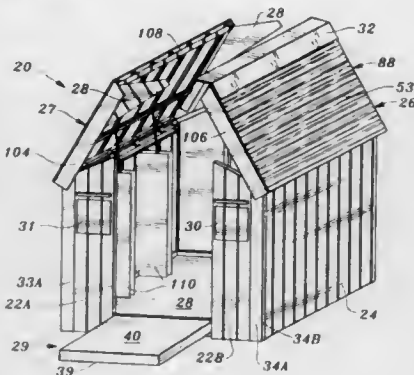
5,778,604
STORAGE BUILDING WITH RAM OPENABLE ROOF
Guy B. Snow, 1036 O St., Rio Linda, Calif. 95673

Filed Nov. 12, 1996, Ser. No. 747,972

Int. Cl.⁶ E04H 1/12; E04B 7/16; 1/344

U.S. Cl. 52—66

21 Claims



1. A portable storage shed having an operable roof, which shed comprises:

(A) a wall superstructure of spaced front and rear walls, and spaced side walls, said spaced side walls connected normal to said spaced front and rear walls, said front wall having a front access means therein, said superstructure's walls being covered with an enclosing material,

(B) a floor connected to said superstructure;
(C) said shed having at least one raiseable roof portion, said roof portion being hingedly connected to the said superstructure;
(D) at least one rain disposed within said shed connected to each roof portion,
(E) control means operatively connected to each said ram to operate each said ram to raise and lower each said roof portion.

5,778,605

GLIDE CAP FOR WALKER

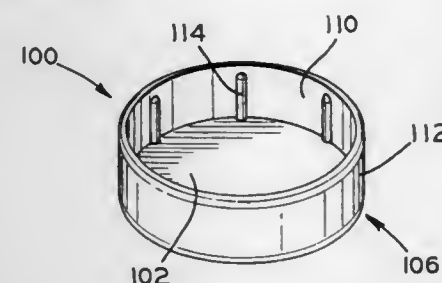
Nate Ellena, Woodland Hills, and Rolf Orchard, Manhattan Beach, both of Calif., assignors to Sunrise Medical HHG, Inc., Longmont, Colo.

Filed Oct. 10, 1996, Ser. No. 728,889

Int. Cl.⁶ A45B 9/04

U.S. Cl. 135—78

13 Claims



1. In combination with a walker having a pair of front legs and a pair of rear legs, the legs terminating at a lower end, with at least one of the legs having an elastomeric tip on the terminal end, at least one glide cap comprising a first surface removably secured to a bottom of the elastomeric tip and a second surface adapted to contact an underlying walker support surface, wherein said glide cap is formed from a material having a hardness greater than the hardness of the tip.

5,778,606

MODULAR BANK STATION

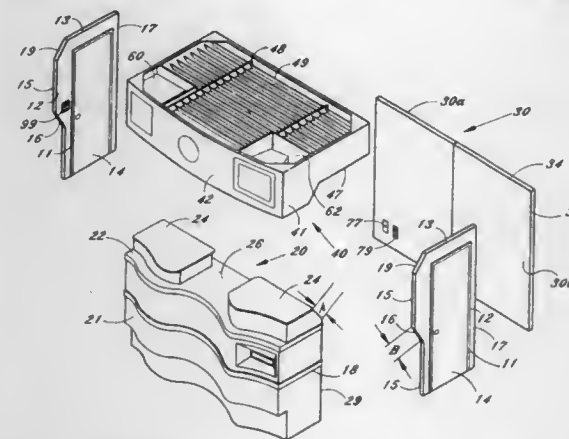
Louis O. Davis, Jr., 127 Thornton Dr., Palm Beach Gardens, Fla. 33418; Rita Groton, 6252 Floridian Cir., Lake Worth, Fla. 33463; Hunter T. Foy, 39 Southwest 10th Ave., Boca Raton, Fla. 33486, and Michael Thiem, 4303 Southeast Grant St., Stuart, Fla. 34997

Filed May 3, 1996, Ser. No. 642,458

Int. Cl.⁶ E04H 1/12

U.S. Cl. 52—36.2

53 Claims



1. A transportable bank facility having discrete, complementary sections for convenient assembly in existing building environments

to store banking related equipment and to provide banking related services to customers, via at least one teller, at a location remote from a parent bank and branch banks, said facility comprising:

ceiling means for enclosing a top end of said facility;
counter means, positioned below said ceiling means, for storing banking related equipment and transacting banking related services, wherein said counter means further comprises a drop box means for depositing banking related papers, said drop box means comprising a cutout in said counter means accessible from outside said facility, and a depository in communication with said cutout; and

enclosure means, positioned behind said counter means and below said ceiling means, for defining an interior office volume when engaged with said counter means and said ceiling means, said enclosure means supporting said ceiling means from an upper end, said counter means and said ceiling means defining a facility opening therebetween for enabling interaction between the customers and the teller.

5,778,607

PORTABLE SMOKER'S BOOTH

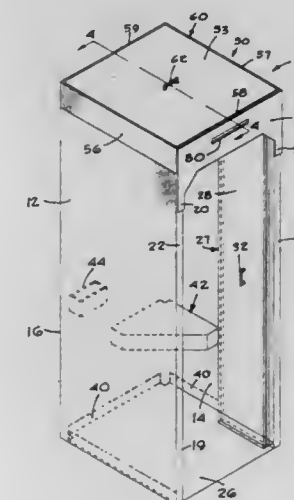
Benjamin J. Edwards, 3022 Lindenwood, Dearborn, Mich. 48120

Filed Jul. 11, 1996, Ser. No. 680,247

Int. Cl.⁶ E04H 1/00

U.S. Cl. 52—79.1

27 Claims



1. A free-standing smoker's booth for use within an enclosed area comprising:

a booth enclosure defined by sidewall means upstanding from base panel means, said sidewall means provided with a doorway closed by door means, said booth enclosure having a lower end closed by said base panel means and an upper end closed by cap means;

said booth enclosure divided by barrier panel means into a user compartment and a closed space, means in said closed space defining first and second plenum chambers, said first chamber enclosing a first air treating means, a first blower, a first intake air vent opening means, and a first return air vent opening means, said first blower intermediate said first intake air vent opening means and said first return air vent opening means, said second chamber enclosing a second air treating means, a second blower, a second intake air vent opening means, and a second return air vent opening means, said second blower intermediate said second intake air vent opening means and said second return air vent opening means, each of said opening means in communication with said compartment, said first blower means adapted for directing a flow of tobacco

smoke-laden air from said user compartment, through said first intake air vent opening means and said first air treating means, wherein the treated air flow is circulated by the first blower means through the first plenum chamber and said first return vent opening means back to the compartment, said second blower means adapted for directing a flow of tobacco smoke-laden air from said user compartment, through said second intake air vent opening means and said second air treating means, wherein the treated air flow is circulated by the second blower means through the second plenum chamber and said second return vent opening means back to said compartment, the first and second air treating means being of diverse types to perform differing beneficial treatments on the air, thereby obviating ambient air entering said booth or smoke-laden air being exhausted from said booth during operation of said booth air treating and blower means.

5,778,608

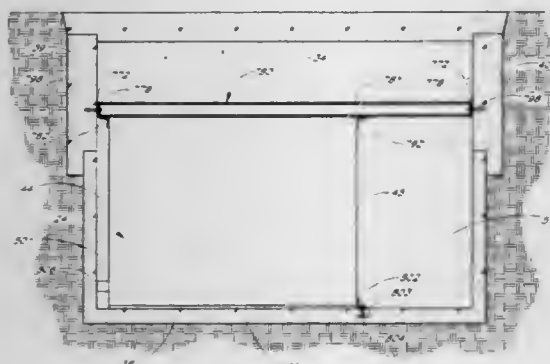
VAULTED UNDERGROUND STORAGE TANK

Thomas P. Elliott, Jr., Katy, Tex., assignor to Dalworth Concrete Products, Inc., Katy, Tex.

Continuation-in-part of Ser. No. 381,272, Jan. 31, 1995, Pat. No. 5,495,695. This application Mar. 4, 1996, Ser. No. 611,462
Int. Cl.⁶ E04C 3/10; E04D 29/14

U.S. Cl. 52—79.9

39 Claims



1. An underground storage system, comprising:

- a vault, comprising:
 - a bottom; and
 - a pair of opposing upstanding walls;
- a pre-fabricated storage vessel positioned within said vault; and
- a structural member positioned within said vault, above and across said storage vessel, said structural member comprising:
 - a beam;
 - a first depending restraint attached to said beam; and
 - a second depending restraint attached to said beam, such that said first depending restraint and said second depending restraint are spaced apart along said beam a distance not less than the width of said storage vessel to wedge said storage vessel between said first restraint and said second restraint, wherein said first restraint and said second restraint are fixed only to said beam and are not fixed to said storage vessel or to said vault, said first restraint restricting horizontal movement of said storage vessel relative to said vault in one direction and said second restraint restricting horizontal movement of said storage vessel in the opposite direction.

5,778,609

FLOOR COVERINGS HAVING TREAD STRIPS ON A BACKING LAYER

Ian Karl Pawson, Whitbourne, and Stephen James Pym, Shrewsbury, both of England, assignors to Nuway Manufacturing Company Limited, London, England

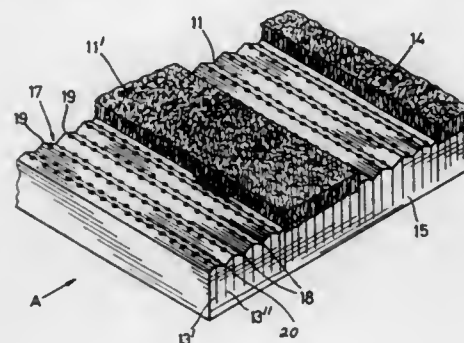
Filed Oct. 24, 1996, Ser. No. 740,056

Claims priority, application United Kingdom, Oct. 26, 1995, 9521940; Mar. 8, 1996, 9604899; Jul. 29, 1996, 9615971

Int. Cl.⁶ E04F 15/10

U.S. Cl. 52—181

19 Claims



1. A floor covering comprising
 - a backing layer of polymeric material defining a plane for said floor covering;
 - a plurality of tread strips on said backing layer, each said tread strip comprising a body of polymeric material having an embedded reinforcement of a plurality of layers of filamentary reinforcing material with each said layer arranged to lie substantially perpendicular to said plane;
 - the layers of filamentary reinforcing material lying spaced apart transversely relative to said plane;
 - at least some of said tread strips being fibrous tread strips which have a fibrous tread surface comprised by exposed ends of said embedded filamentary reinforcement material;
 - said tread strips being arranged to extend parallel with one another with successive tread strips lying side-by-side in contact with one another and with said respective fibrous tread surfaces substantially aligned;
 - said tread strips being retained in contact in said side-by-side relationship by said backing layer, the polymeric material of said backing layer resisting substantial extension in a direction perpendicular to a longitudinal direction of said strips.

5,778,610

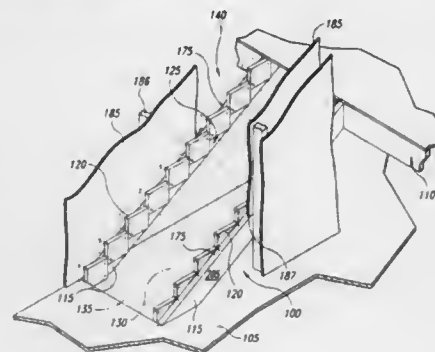
MODULAR STAIR JACK SYSTEM

Thomas L. Berg, 12527 38th Ave. SE, Everett, Wash. 98204
Filed Mar. 28, 1997, Ser. No. 829,438

Int. Cl.⁶ E04F 11/00

U.S. Cl. 52—182

14 Claims



1. A stairjack, comprising:

a stair support member having a top inclined edge surface with a length sufficient to extend between a first surface and a second surface an exterior side for facing toward a wall, and an interior side for facing toward another stair support member; and
a plurality of tread supports fixedly attached to only one of the exterior side or the interior side of the stair support member, each tread support having a riser surface projecting upwardly from the top inclined edge of the stair support member and a tread mounting surface extending from an upper point of the riser surface to the top inclined edge surface of the stair support member so that at least a portion of the tread mounting surface is above the top inclined edge surface of the stair support member to support a stair tread, wherein the tread mounting surfaces of the tread supports extend away from the side to which the tread supports are attached to leave open an area above the top inclined edge surface of the stair support member.

5,778,611

VENT EXTENSION FLASHING ASSEMBLY

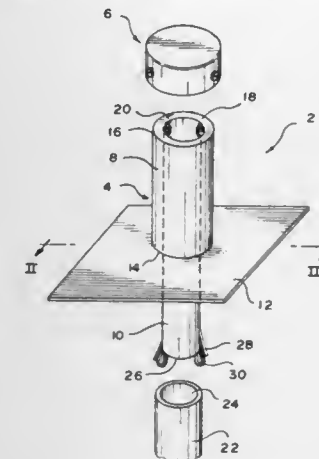
Daniel Michel, 1930 S. Club Dr., Wellington, Fla. 33414

Filed Dec. 20, 1996, Ser. No. 770,504

Int. Cl.⁶ E04H 12/28

U.S. Cl. 52—198

7 Claims



1. A vent extension flashing assembly for covering a vent pipe protruding through the roof of a building, comprising:
 - a inner vent cover having a longitudinal length with an upper end and a lower end, said inner vent cover having a cross-sectional shape sized to be smaller than that of the vent pipe to allow said inner vent cover to be positioned within the vent pipe;
 - an outer vent cover having a longitudinal length with an upper end and a lower end, said outer vent cover defining an inner chamber having a cross-sectional shape sized to be larger than that of the vent pipe to allow said outer vent cover to be positioned around the vent pipe;
 - a closure surface extending between the upper end of said inner vent cover and said upper end of said outer vent cover, wherein said inner vent cover extends within said outer vent cover so that said longitudinal lengths of said inner vent cover and said outer vent cover extend in a substantially parallel direction;
 - a roof flashing base plate adapted to extend from a bottom end of said outer vent cover in a direction substantially parallel to the roof;
 - an expandable portion formed on said lower end of said inner vent cover, said expandable portion capable of being expanded to engage an inner surface of the vent pipe and hold the inner vent cover in place within the vent pipe; and
 - an expansion unit mounted on said inner vent cover to expand said expandable portion into engagement with the inner surface of said vent pipe.

5,778,612

PARTITION PANEL CONTAINING DATA PROCESSING OR COMMUNICATIONS

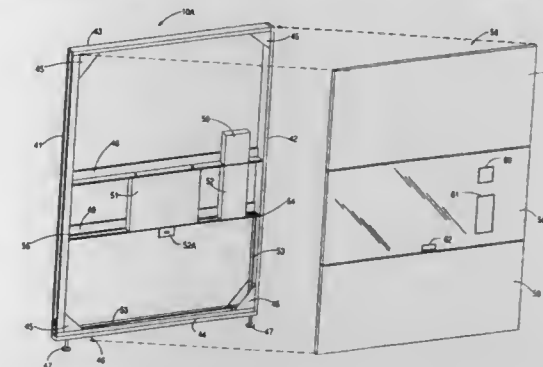
Terrance G. Kissinger, 2136 Pullman Ave., Belmont, Calif. 94002, and Steven M. Kissinger, 1277 Poplar Ave. #107, Sunnyvale, Calif. 94086

Continuation of Ser. No. 396,365, Feb. 27, 1995, abandoned, which is a continuation of Ser. No. 272,885, Jul. 7, 1994, abandoned, which is a continuation of Ser. No. 136,487, Oct. 13, 1993, abandoned, which is a continuation of Ser. No. 866,726, Apr. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 757,884, Sep. 11, 1991, Pat. No. 5,125,202, which is a continuation-in-part of Ser. No. 619,368, Nov. 28, 1990, abandoned. This application Nov. 8, 1995, Ser. No. 554,235

Int. Cl.⁶ E04B 2/00

U.S. Cl. 52—205

20 Claims



1. A partition panel, said partition panel having a thickness no greater than that of partition panels of the kind generally used in open plan offices, said partition panel comprising an internal cavity, an internal movable panel being positioned in said internal cavity and having mounted thereon within said internal cavity at least one piece of data processing or communications equipment, an aperture being located at a peripheral edge of said partition panel, said aperture providing an opening to said cavity such that said internal movable panel can be withdrawn from said partition panel through said aperture.

5,778,613

CANOPY STRUCTURES

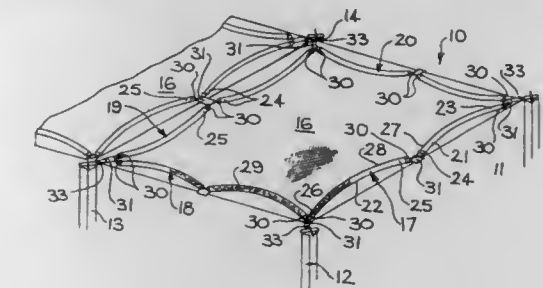
Darryl Alexander Thomson, Victoria, Australia, assignor to Thomson Tensile Pty Ltd., Malvern, Australia

Filed Dec. 9, 1994, Ser. No. 353,817

Claims priority, application Australia, Dec. 9, 1993, PM2871
Int. Cl.⁶ E04H 15/18; 15/54; 15/64

U.S. Cl. 52—222

19 Claims



1. A canopy panel for mounting on a plurality of support posts, including:
 - a sheet of flexible material having sides;
 - a plurality of substantially inextensible support straps fixed to the sheet, one of said straps extending substantially along each of the sides of the sheet, each of said straps having means at each of the ends thereof for mounting the panel to a

support post, and also means intermediate the strap ends for attaching at least one intermediate point on the support strap to an intermediate point on an adjacent support strap of an adjacent panel wherein each of the support straps defines a catenary configuration between one end thereof and the intermediate point, and a further catenary configuration between the intermediate point and the other end of the strap, and the ends of each of the catenary configurations are substantially adjacent the edge of the sheet and the remainder of the catenary configuration is positioned inwardly of the edge of the sheet.

5,778,614

Patent Not Issued For This Number

5,778,615

Patent Not Issued For This Number

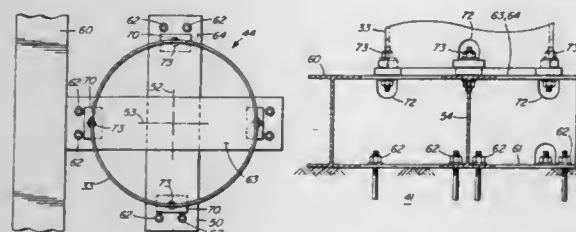
5,778,616

SCRUBBER MOUNTING APPARATUS

Brian C. Howes, Calgary, Canada, assignor to Beta Machinery Analysis Ltd., Calgary, Canada

Continuation of Ser. No. 253,361, Jun. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 4,792, Jan. 14, 1993, abandoned. This application Mar. 6, 1996, Ser. No. 611,288

Int. Cl.⁶ B23P 19/04; E02D 27/38; E04H 7/02
U.S. Cl. 52—247 2 Claims

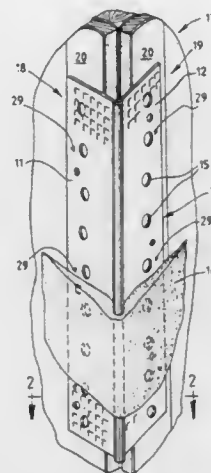


1. Mounting apparatus for mounting a pressure vessel having a skirt to a base, said pressure vessel having a longitudinal axis and an entry port having an entry port axis which is perpendicular to said longitudinal axis of said pressure vessel, said pressure vessel having piping entering said pressure vessel at said entry port, said mounting apparatus comprising four(4) anchor points to mount said skirt to said base comprising two I-beams, said anchor points being located on orthogonal axes of said I-beams crossing at a location substantially coaxial with said longitudinal axis of said pressure vessel, two of said anchor points being parallel to said entry port axis of said entry port and two of said anchor points being perpendicular to said entry port axis of said entry port, connectors to connect said skirt to said base at each of said anchor points and shims including spacers and spring removably mounted between said skirt and said base at at least one of said anchor points for adjustably mounting said skirt to said base, each of said I-beams having a longitudinal axis, said I-beams being joined with said longitudinal axes being orthogonal and crossing at a location substantially coaxial with said longitudinal axis of said pressure vessel, said anchor points being located between said skirt and said I-beams, each of said I-beams each having an upper flange, said anchor points being located between said skirt and said upper flange, said orthogonal longitudinal axes of said I-beams being coincident with said webs of said I-beams, said connectors being mounted between said skirt and said upper flanges of said I-beams over said webs of said I-beams and cutouts in said webs of said I-beams to accommodate said connectors.

5,778,617
PRESS-ON CORNER BEAD
Gerald R. Free, 302 Rte. 214, Phoenixia, N.Y. 12464
Filed Oct. 27, 1995, Ser. No. 549,034
Int. Cl.⁶ E04G 11/00

U.S. Cl. 52—255

23 Claims



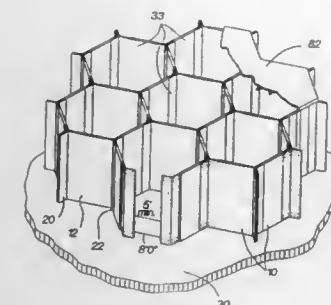
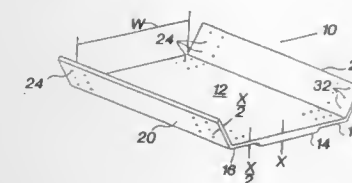
1. A drywall corner bead comprising:
first and second longitudinally-extending flanges which each include inner and outer edges;
a longitudinally-extending rounded nose which interconnects said inner edges of said first and second flanges, said first flange being disposed at an angle in a range of 70 to 80 degrees with respect to said second flange so that the first and second flanges form a substantially acute corner in an uninstalled condition of said corner bead;
a plurality of integral preformed barbs provided at intervals along each of said first and second flanges in a generally perpendicular direction, said barbs of said first flange being in transverse alignment with said barbs of said second flange;
each of said barbs being interconnected to said flanges by an integral bent portion and being positioned adjacent to a hole in said flange, each of said holes including a pointed tip opposite from said bent portion of said barb, said pointed tip being directed toward said inner edges of the flanges.

5,778,618
MODULAR WALL UNIT, SYSTEM AND METHOD FOR MAKING STORAGE CONTAINERS AND BARRIERS
Ned Hyman Abrams, 152 N. Third St., San Jose, Calif. 95113
Continuation of Ser. No. 541,259, Oct. 12, 1995, abandoned, which is a division of Ser. No. 136,412, Nov. 26, 1993. This application Jun. 26, 1997, Ser. No. 882,757
Int. Cl.⁶ E04B 1/00

U.S. Cl. 52—264

8 Claims

1. A containment system comprising:
a base including a horizontal upper surface;
a plurality of identically configured precast, unitary wall units interconnected in side-by-side relationship and disposed upon said base and combining with said upper surface to form at least one containment chamber having a polygonal plan-form, each said wall unit including a rectangular center panel and integrally formed and rectangularly configured side panels, said side panels extending from opposite side edges of said center panel and lying in planes which intersect a plane including at least a part of said center panel at predetermined angles, each said center panel including a central portion of a first thickness disposed between two side portions of a second thickness less than said first thickness, said side panels also having a thickness less than said first thickness, said side

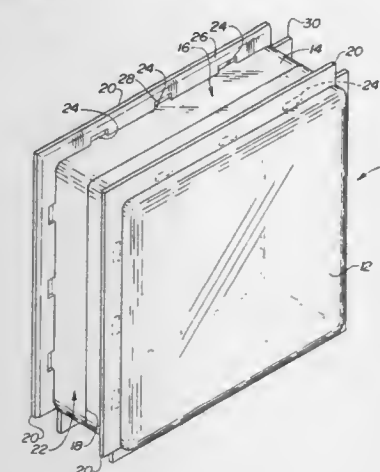


portions being matingly engaged to and fastened to a side panel of a like wall unit positioned adjacent thereto.

5,778,619

Patent Not Issued For This Number

5,778,620
CONSTRUCTION BLOCK
Myles Fisher, 2006 E. Mallory St., Pensacola, Fla. 32503
Filed Feb. 20, 1996, Ser. No. 603,460
Int. Cl.⁶ E04B 5/46; E04C 1/42
U.S. Cl. 52—306 9 Claims



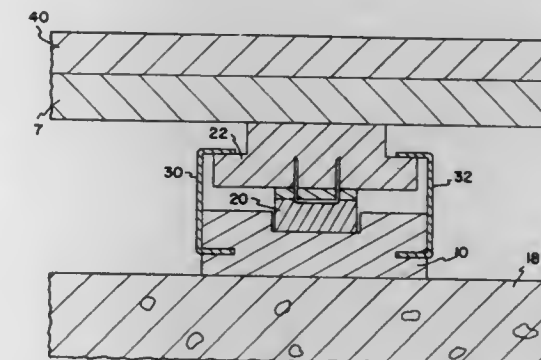
1. A construction block comprising:
a generally rectangular body having a pair of faces joined by a first side edge, a second side edge, a third side edge, and a fourth side edge;
outer spacing flanges extending about the first side edge and the second side edge adjacent and essentially parallel to the faces; at least one hook receptacle located along the outer spacing flanges and facing one of the pair of faces;
inner spacing flanges extending about the third side edge and the fourth side edge adjacent and essentially parallel to the faces and where each of the inner spacing flanges lie in a different plane relative to the outer spacing flanges; and
at least one hook, in corresponding number to the number of hook receptacles, located along the inner spacing flanges and facing one of the pair of faces each of the at least one hook adapted to be received within a corresponding hook receptacle

of the at least one hook receptacle, when the construction block is interconnected with another of the construction block.

5,778,621
SUBFLOORING ASSEMBLY FOR ATHLETIC PLAYING SURFACE AND METHOD OF FORMING THE SAME
Erin A. Randjelovic, Crystal Falls, Mich., assignor to Connor/AGA Sports Flooring Corporation, Amasa, Mich.
Filed Mar. 5, 1997, Ser. No. 811,700
Int. Cl.⁶ E04F 15/22

U.S. Cl. 52—403.1

23 Claims

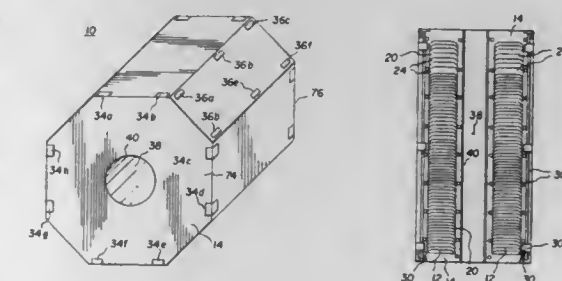


10. A flooring system to be placed over a substrate, comprising:
a plurality of subfloor members placed over the substrate and extending substantially in parallel to each other, each of said subfloor members comprising:
a base having a top surface, a bottom surface, and two side surfaces;
at least one pad positioned on the base;
an upper member having a top surface and a bottom surface, the top surface having at least one shoulder, and the bottom surface being positioned on the pad; and
a bracket having an upper tab and a lower tab, the lower tab adapted to fit within one of the side surfaces of the base, and the upper tab adapted to engage the upper member so as to limit vertical movement of the upper member; and
a plurality of flooring strips extending across the subfloor members and attached thereto.

5,778,622
EARTH STABILIZATION STRUCTURE AND METHOD FOR MAKING AND USING THEREOF
DeLoy T. Baker, P.O. Box 69 776 Jordan Creek Rd., Falling Rock, W. Va. 25079
Filed Jun. 6, 1997, Ser. No. 870,947
Int. Cl.⁶ E04C 1/41

U.S. Cl. 52—405.3

6 Claims



1. A reinforced earth stabilization structure comprising:
(a) an annular tire wall stack unit.

(b) a reinforced concrete matrix shell encompassing the tire wall stack unit, and at least metallic weld unit located along a top end of said structure wherein said structure is in the shape of an octagonal column.

5,778,623

THREADED ROOF FASTENER AND METHOD FOR USING THE SAME

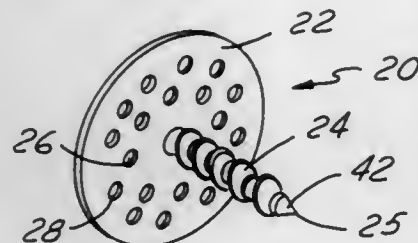
Kenneth S. Powell, Lilburn, Ga., assignor to K & R Industries, Inc., Lawrenceville, Ga.

Filed Feb. 3, 1997, Ser. No. 794,179

Int. Cl.⁶ E04B 5/00

U.S. Cl. 52—410

20 Claims



1. A method for retaining roofing materials to a roof, the method comprising:
placing a base ply over a roof substrate;
self-threading an integral roofing fastener having a planar head with openings therein and a threaded shank through the base ply and into the roof substrate;
continuing such self-threading until said planar head bears against the base ply; and
applying a layer of molten asphalt over the base ply and roofing fastener with asphalt passing through openings in the head and contacting the base ply therebeneath to envelope the head in the asphalt and bond the head to the base ply.

5,778,624

WALL PATCHING ELEMENT

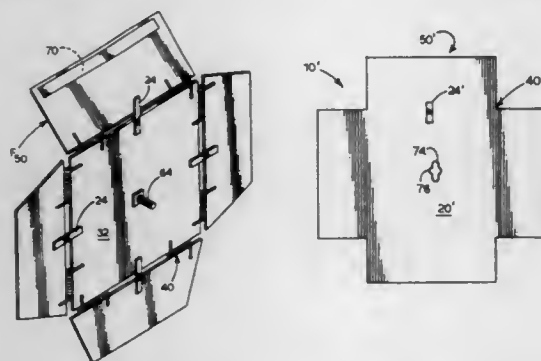
Thomas C. Russell, 3047 Wendmead Pl., Marietta, Ga. 30062

Filed Oct. 25, 1996, Ser. No. 736,654

Int. Cl.⁶ E04G 23/02

U.S. Cl. 52—514

15 Claims



1. An element used in patching holes in wallboard comprising:
A) a planar central section having peripheral edges;
B) a hinge fixed at one end thereof to said central section and having a second end and having a material memory;
C) a flap element fixed to the second end of the hinge to be movably attached to said central section by said hinge, said flap element moving between a first position at an angle to said central section and a second position, said hinge material memory biasing said flap element toward said second position when said flap element is in said first position; and

D) means on said central section for moving said central section toward a wall to be patched.

5,778,625

RECESSED LIGHTING FIXTURE AND METHOD OF INSTALLING

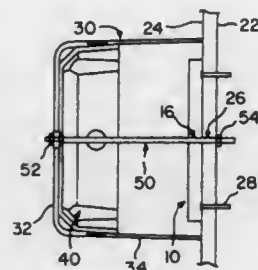
James B. Druffel, Solvang, and Larry L. Routh, Santa Barbara, both of Calif., assignors to Bega/US, Inc., Carpinteria, Calif.

Filed Oct. 11, 1996, Ser. No. 731,382

Int. Cl.⁶ H02G 3/08

U.S. Cl. 52—577

9 Claims



1. A preform for forming a concrete structure having a fixture embedded therein, said preform comprising:
a form board with an interior and an exterior surface;
a stiffening member secured to the interior surface of said form board;
a base housing secured to said form board and disposed over said stiffening member, said base housing having a generally cup-shaped or pan-shaped configuration with a closed end, one or more side walls, and an open end opposite said closed end and disposed over said stiffening member, said base housing having an interior region that is configured to receive therein components of said fixture; and
a securing member disposed within the interior region of said base housing and extending from the closed end of said base housing to said form board, said securing member pulling said base housing toward said form board to secure said base housing to said form board in releasable fashion.

5,778,626

CLOSED BEAM WITH EXPANDED METAL SECTIONS

Mikael Hellsten, Lychevägan 3, S-311 92 Fälnberg, Sweden

PCT No. PCT/SE96/01081, § 371 Date Apr. 23, 1997, § 102(e)

Date Apr. 23, 1997, PCT Pub. No. WO97/09496, PCT Pub.

Date Mar. 13, 1997

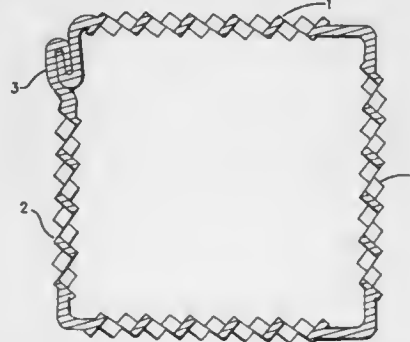
PCT Filed Sep. 2, 1996, Ser. No. 836,178

Claims priority, application Sweden, Sep. 7, 1995, 9503074

Int. Cl.⁶ E04C 3/09

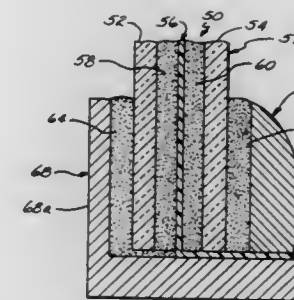
U.S. Cl. 52—731.2

11 Claims



1. A beam having a closed profile, comprising:

an elongate member having a first intermediate side section and a second intermediate side section that is integrally attached to the first intermediate side section by a first solid portion, the elongate member having a third intermediate side section that is integrally attached to the second intermediate side section by a second solid portion, the first, second and third intermediate side sections being made of a sheet metal strip including an expanded metal; and
the elongate member having a first side edge and a second side edge, the first side edge having an interlocking mechanism and the second side edge having an interlocking mechanism so that the first side edge is interlocked with the second side edge by the interlocking mechanisms to form a closed profile.



a resilient sealing material disposed between said frame structure and the outside face portions of each glass sheet; wherein the edge portion of said polymeric film layer is mechanically affixed between the components of said frame structure.

5,778,627

Patent Not Issued For This Number

5,778,628

ROOF NETTING CARRIER SLED

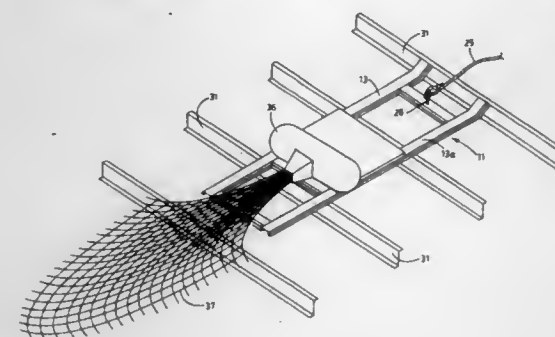
Timothy M. Pendley, Visalia, Calif., assignor to Golden Eagle Building Products, Inc., Madera, Calif.

Filed Jan. 31, 1997, Ser. No. 792,900

Int. Cl.⁶ E04D 15/06

U.S. Cl. 52—749.12

5 Claims



1. An apparatus for dispensing roof netting for installation over secondary roof members of a building comprising a sled having a pair of parallel rails separated by front and rear support members, a rope attached to said front support member, a platform mounted near a center of said sled, and an open-ended distribution cone having a closable upper door thereon for receiving or removing roof netting.

5,778,629

IMPACT RESISTANT WINDOW

Stephen E. Howes, 741 SE. Sixth Ter., Pompano, Fla. 33060

Continuation-in-part of Ser. No. 535,537, Sep. 28, 1995. This

application Dec. 11, 1996, Ser. No. 763,487

Int. Cl.⁶ E06B 7/00

U.S. Cl. 52—786.11

4 Claims

1. An impact resistant window comprising:
a composite sheet structure including first and second glass sheets having approximately equal peripheral dimensions and an intermediate polymeric film layer, said polymeric film layer being adhered on each side thereof to said first and second glass sheets by respective adhesive layers, said polymeric film layer including an edge portion extending substantially outwardly from all peripheries of said first and second glass sheets and said adhesive layers;
a frame structure having components encasing outside face portions of each glass sheet and peripheral edge portions of said composite sheet structure; and

5,778,630

CARTON FOLDING MECHANISM FOR WRAPAROUND CARTONS

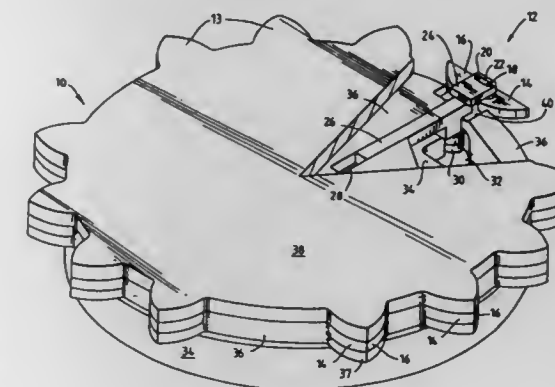
Pascal Portrait, Nuret-Le-Ferron, and Jean-Christophe Bonnain, Chateauroux, both of France, assignors to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 446,764, Jun. 2, 1995, Pat. No. 5,664,401. This application Mar. 20, 1997, Ser. No. 822,402. Claims priority, application United Kingdom, Sep. 24, 1993, 9319970

Int. Cl.⁶ B65B 21/24

U.S. Cl. 53—48.8

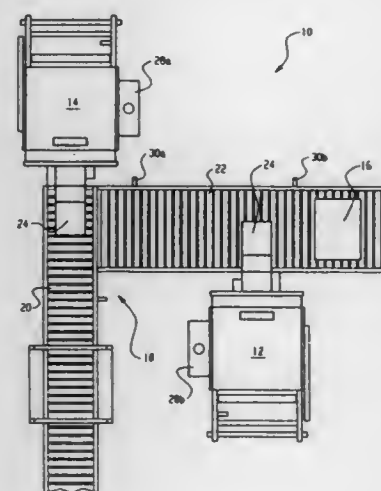
8 Claims



1. A device for use in a machine for packaging articles in a wraparound carrier which is formed from a blank having a pair of foldable flaps struck therefrom, said machine being arranged to advance said blank and articles associated therewith along a predetermined path, said device being positioned along said path to fold said flaps inwardly of said blank, said device comprising:
a rotational disc defining an axis of rotation;
a fixed cam plate disposed adjacent to said rotational disc and having an endless cam track disposed around said axis;
drive means for rotating said rotational disc about said axis in synchronization with movement of said blank and said articles;
a pair of blank-engaging fingers carried by said rotational disc for pivotal movement about respective first pins so as to engage said flaps; and
actuating means carried by said rotational disc to pivotally move said fingers away from each other and toward each other, said actuating means comprising a cam follower riding in said cam track so as to move radially inwardly and outwardly of said disc in response to rotation of said disc, and means for converting radial movement of said cam follower into pivotal movement of said fingers so that said fingers are simultaneously pivoted about said first pins in response to radial movement of said cam follower.

5,778,631
AUTOMATED CUSHIONING PRODUCING AND DISPENSING SYSTEM
 James A. Simmons, Painesville Township, Ohio, assignor to Ranpak Corp., Concord Township, Ohio
 Filed Feb. 7, 1997, Ser. No. 797,103
 Int. Cl.⁶ B31F 1/10; B65B 55/20; 57/00
 U.S. Cl. 53—55

7 Claims

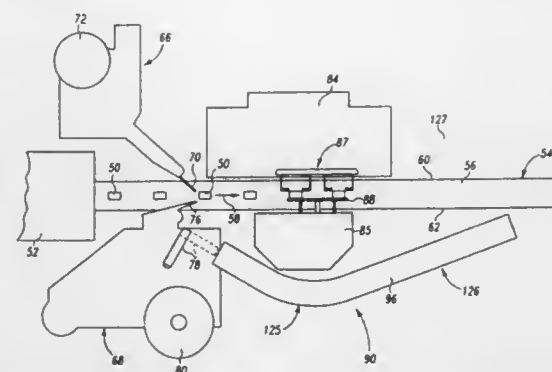


1. A redundant automated cushioning producing and dispensing system, comprising:
- a plurality of spaced cushioning conversion machines which convert stock paper into pads of a selected length, each cushioning conversion machine including a controller for controlling operation of the machine and communicating with another machine, a pad dispenser, and a sensor for determining when the amount of stock paper is less than a predetermined amount;
 - a conveyor extending between the plurality of cushioning conversion machines for conveying a container into which a pad is to be dispensed; and
 - at least one container sensor for providing information to at least one controller from which the controller can determine whether a pad has been dispensed into a container;
- whereby the controllers cooperate to selectively switch operation of the cushioning conversion machine from an active state to an inactive state in accordance with information received from the stock supply sensors.

5,778,632
HOPPER ASSEMBLY FOR LITERATURE FEEDER SYSTEM
 Harold B. Dinius, Mooresville; Jeffrey S. Fluharty, Indianapolis, and Donald R. Perryman, Brownsburg, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
 Filed Oct. 21, 1996, Ser. No. 734,160
 Int. Cl.⁶ B65B 35/02; 21/00; 35/18
 U.S. Cl. 53—157

19 Claims

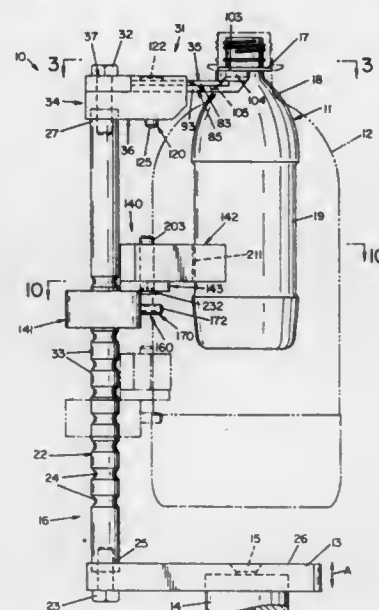
1. A packaging apparatus for products comprising:
- means for conveying products from a first position to a second position, said conveying means comprising a moving conveyor surface on which products are located, said conveyor surface comprising first and second opposite sides;
 - means for placing labels on products on said conveyor surface, said label placing means generally positioned on said first side of said conveyor surface and structured and arranged to be loaded with a supply of labels by an operator situated on said first side;
 - means for placing literature on products on said conveyor surface, said literature placing means generally positioned on said second side of said conveyor surface; and



a hopper assembly for feeding literature to said literature placing means, said hopper assembly comprising a chute structured and arranged to be manually loaded with a supply of literature by an operator situated on said first side, whereby a single operator can load both said label placing means and said hopper assembly for said literature placing means without leaving said first side of said conveyor surface.

5,778,633
QUICK CHANGE LEDGE SUPPORT ASSEMBLY FOR FILLING AND CAPPING MACHINES
 Kevin M. Sweeny, Columbia Station, Ohio, assignor to FCI, Inc., Cleveland, Ohio
 Continuation-in-part of Ser. No. 645,556, May 13, 1996, Pat. No. 5,689,932, and Ser. No. 681,364, Jul. 23, 1996, Pat. No. 5,732,528. This application Jul. 7, 1997, Ser. No. 888,782
 Int. Cl.⁶ B65B 7/28; 59/04
 U.S. Cl. 53—201

44 Claims



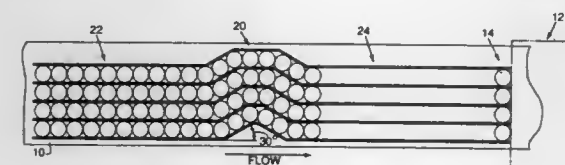
1. An improved container guide for a bottling machine for filling or capping containers having a generally circular cross-section, a neck portion and a body portion, said container guide retaining said containers in said machine during movement through said machine, said machine including a rotatable wheel for moving said containers through said machine; means on said wheel for supporting said containers including a pocket support portion for holding and supporting said container neck and a back support for supporting said container body portion and retaining said container within said pocket support portion during rotation, said back support including means for maintaining said body portion of said container in position during rotation of said wheel, the improvement

comprising means for adjusting the position of said back support to accommodate different size bottles.

5,778,634
PRODUCT INFEEED LINE PRESSURE CONTROLLING APPARATUS FOR PACKER
 J. Michael Weaver, Madison, Conn., and Johnny W. Stewart, Bristol, Tenn., assignors to Standard-Knapp, Inc., Portland, Conn.
 Filed Nov. 7, 1996, Ser. No. 745,927
 Int. Cl.⁶ P65B 35/00

U.S. Cl. 53—250

6 Claims

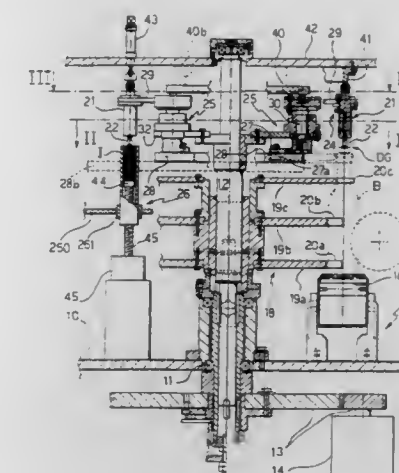


1. In a packaging line wherein compressible articles of cylindrical shape are to be packaged in a packer capable of accepting the articles at a predetermined rate, the improvement comprising:
- an infeed conveyor moving in a downstream direction at a speed at least slightly greater than the rate at which the packer can accommodate the articles, such relative speed differential creating article line pressure P_0 on said infeed conveyor,
 - lane guides that define a plurality of parallel lanes in which the articles are restricted to move in aligned columns downstream on said infeed conveyor and such that each column has an associated line pressure of at least approximately P_0 ,
 - said lane guides including first offset portions that define first lane segments oriented at an acute angle to the downstream direction, and second offset portions that define second lane segments downstream of and adjacent to said first portions, said acute angle being in the range of 20° to 40° and adapted to provide a back pressure ΔP on the articles upstream of said offset portions that reduces the line pressure downstream thereof to $P_0 - \Delta P$ so that the packer operates at a line pressure of less than P_0 .

5,778,635
MACHINE FOR APPLYING HEAT-SEALABLE PILFERPROOF DISKS TO BOTTLES OF WINE LIQUOR BEVERAGES IN GENERAL AND THE LIKE
 Agostino Galandrino, Canelli, Italy, assignor to Robino & Galandrino S.p.A., Canelli, Italy
 Filed May 16, 1997, Ser. No. 857,829
 Claims priority, application Italy, May 23, 1996, T096 A 000441; Nov. 21, 1996, T096 U 000236
 Int. Cl.⁶ B67B 1/10; B65B 7/28
 U.S. Cl. 53—306

17 Claims

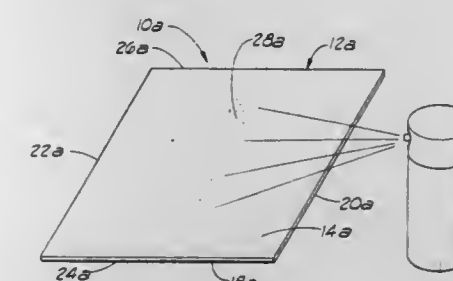
1. A machine for applying heat-sealable pilferproof disks to bottles of wine, liquors and beverages in general, comprising:
- a rotating shaft; rotating means associated with said rotating shaft for guiding the bottles while keeping them mutually spaced along a circular-arc path; a conveyor belt for feeding said bottles; a disk magazine for said disks, located to a side of said rotating means; a plurality of pneumatic heads also associated with said rotating shaft, said pneumatic heads following the bottles along said circular-arc path and moving from a position for picking up individual disks from a corresponding stack contained in said disk magazine to a position for depositing said disks on individual and corresponding bottles which are fed continuously by said conveyor belt; and a pair of fixed cams, said cams interacting with said pneumatic heads to keep each said head temporarily stationary above said stack of disks in order to pick up each one of said disks by suction and to make said heads follow each bottle along said



circular-arc corresponding path, in order to pneumatically deposit said disk on said bottle.

5,778,636
STICKY ELEMENT UPON WHICH INSECTS ADHERE AND MATERIALS AND METHODS
 Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc.
 Continuation of Ser. No. 282,858, Jul. 29, 1994, Pat. No. 5,517,802. This application Jan. 16, 1996, Ser. No. 586,457
 Int. Cl.⁶ B65B 25/02; 61/00
 U.S. Cl. 53—397

12 Claims



1. A method of disposing a flower pot cover on a flower pot in order to trap an insect on the flower pot, comprising the steps of:
- providing a pre-formed flower pot cover suitable for disposing on a flower pot, comprising
 - a flower pot cover constructed from a sheet of material, the flower pot cover having an inner surface and an outer surface
 - providing a sticky element comprising sufficient sticky qualities to cause an insect to become permanently attached to the sticky element when any portion of an insect comes into contact with the sticky element;
 - providing a flower pot having an outer surface;
 - disposing the sticky element on at least a portion of the outer surface of the flower pot such that the sticky element is exposed to capture an insect when an insect contacts the sticky element;
 - inserting the flower pot into the flower pot cover, the flower pot cover surrounding and covering at least a portion of the outer surface of the flower pot; and
 - positioning the flower pot cover such that at least a portion of the outer surface of the flower pot is uncovered by the flower pot cover, the sticky element remaining exposed in said position.

5,778,637

METHOD FOR FITTING A DEVICE FOR THE OPENING AND CLOSING OF A PACK

Michel Guillonnet, Villeurbanne, France, assignor to International Paper Emballages Liquides Sa-Idel SA, France

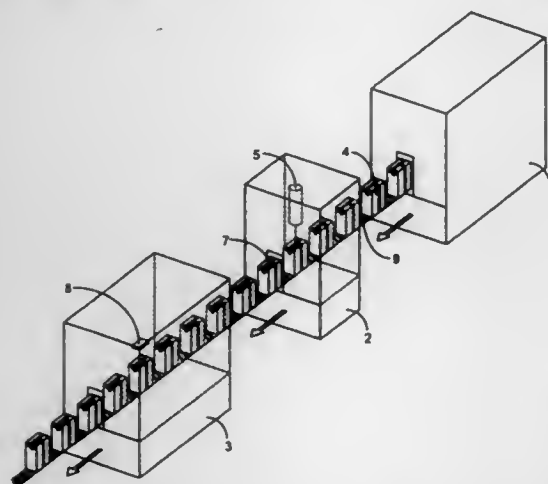
Filed Mar. 11, 1997, Ser. No. 816,031

Claims priority, application France, Mar. 20, 1996, 96 03702

Int. Cl.⁶ B65B 61/18

U.S. Cl. 53—412

7 Claims



1. A method for fitting an opening and closing device on a pack comprised of composite material comprising the steps of:

- filling closing the pack;
- precutting the composite material of the filled pack leaving an inner lining intact to create a precut zone on an upper face; and
- attaching an opening and closing device over the precut zone.

5,778,638

PROCESS FOR PRESERVING SOLDER PASTE

Hideaki Watanabe, and Takayuki Watanabe, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Feb. 12, 1997, Ser. No. 797,969

Claims priority, application Japan, Mar. 6, 1996, 8-049028

Int. Cl.⁶ B65B 31/02; 31/04

U.S. Cl. 53—432

14 Claims

1. A process for preserving solder paste which comprises:
- (a) housing solder paste together with (i) an oxygen absorbent not requiring moisture for absorbing oxygen, said oxygen absorbent comprising at least one member selected from the group consisting of linseed oil, soybean oil, tung oil, bran oil, sesame oil, cottonseed oil, rapeseed oil, tall oil, a fatty acid produced from any of said oils, polybutadiene having 100 to 1000 carbon atoms, polyisoprene having 100 to 1000 carbon atoms, poly(1,3-pentadiene) having 100 to 1000 carbon atoms, oleic acid, linoleic acid, linolenic acid, arachidonic acid, parinaric acid and ricinoleic acid; and (ii) a dehumidifying agent, in a vessel which is made to be substantially free from oxygen and moistures wherein relative humidity in said vessel is at most 1%, said vessel having gas barrier properties, and
 - (b) subsequently hermetically sealing said vessel.

5,778,639

PROCESS FOR FITTING THE BOTTOM OF A PACKAGE

Georges Sireix, 9bis, rue St-Marc, 68400 Riedisheim, France

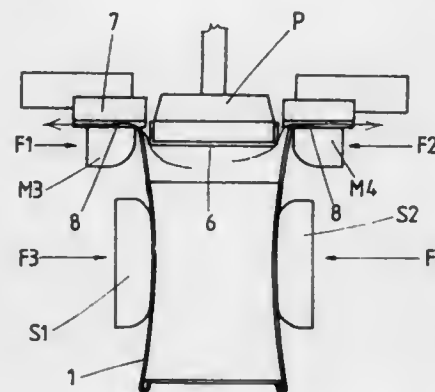
Filed May 8, 1997, Ser. No. 852,991

Claims priority, application France, May 9, 1996, 96 05802

Int. Cl.⁶ B65B 31/04; 7/28

U.S. Cl. 53—432

6 Claims



1. A process for fitting the bottom of a package comprising a tubular body of non-round cross section, closed by a cover at one end and having an open end at the other end and containing the product to be packaged, said bottom having the shape of a cup whose dimensions correspond to the cross section of the tubular body, the cup being fixed on after its insertion by means of a male tool into the body, by activating an adhesive and folding over the edge of the tubular body, the process consisting of the following steps:

- a) the open end of the tubular body is inserted between two fixed opposed jaws (M1, M2) which perfectly match two opposed parts (2, 3) of the open end of the tubular body (1) and the distance between the two jaws being less than the distance between said opposed parts to clamp said opposed parts and leaving other parts unclamped so that said unclamped parts (4, 5) in said jaws undergo non-permanent deformation by moving away from each other;
- b) the bottom is fitted by means of a punch (P), said bottom being held in its final position by said fixed jaws (M1, M2) and the punch (P);
- c) two opposed regions of the lateral surface of the tubular body are clamped by two clamping members (S1, S2) which lie below two movable jaws (M3, M4) intended to act on those portions of the free end of the tubular body which are not clamped by the fixed jaws in order to expel, at least partly, the air contained in the tubular body;
- d) the movable jaws (M3, M4) are clamped in order to bring the entire inner edge of the free end of the tubular body into contact with the cup;
- e) the adhesive film is activated and, thereafter, the closed package is released.

5,778,640

APPARATUS AND METHOD FOR PACKING STAND-UP POUCHES INTO CARTONS

Nicholaas Martin Prakken, Chester, and John James Hendry, Richmond, both of Va., assignors to Blueprint Automation, Inc., Richmond, Va.

Filed Nov. 7, 1996, Ser. No. 745,174

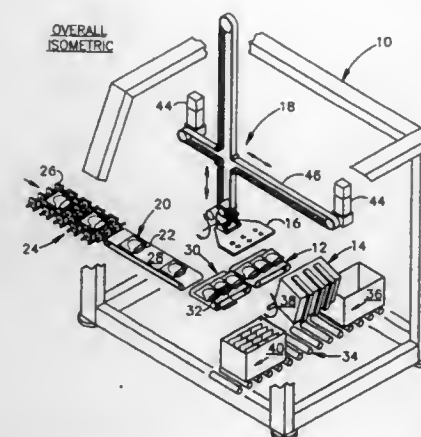
Int. Cl.⁶ B65B 5/10; 35/48; 39/12

U.S. Cl. 53—475

12 Claims

8. A method for placing flexible pouches in a carton comprising the following:

- A. providing a pick-up station for holding a row of flexible pouches;
- B. providing a carton having an open side;
- C. providing a thin pick-up head;



- D. providing a transfer mechanism for moving said thin pick-up head;
- E. providing a quantity of flexible pouches containing a product which pouches have relatively flat sides, a base end, an intermediate section and a top end with the difference in thickness between said base end and said intermediate section being a substantial amount of the thickness of said thin vacuum pick-up head;
- F. assembling a row of flexible pouches laying on their side on said pick-up station with said base ends of said pouches pointing in the same direction;
- G. Picking up said row of flexible pouches with said thin pick-up head by placing said head over said intermediate section but not said base end of said flexible pouches;
- H. Moving said row of picked up flexible pouches into said carton through said open side by said transfer mechanism;
- I. releasing said row of said flexible pouches from said pick-up head into said carton and moving said pick-up head to its starting position; and
- J. repeating F to I by stacking additional rows of pouches in said carton until said carton is full.

5,778,641

DEVICE FOR SEALING BAGS OR PACKAGES IN A HEAT-SEALABLE PLASTIC MATERIAL

Paolo Simionato, Padova, Italy, assignor to Simionato S.p.A., Padova, Italy

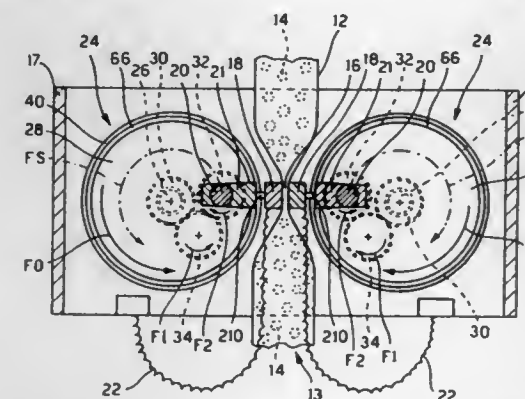
Filed Nov. 15, 1996, Ser. No. 749,648

Claims priority, application Italy, Dec. 6, 1995, MI95 A 002575

Int. Cl.⁶ B65B 9/06

U.S. Cl. 53—551

14 Claims



- 1. A device for welding bags or packages in a heat-sealable plastic material suitable for welding opposite edges of a tubular strip which is longitudinally fed and filled in sequence with an appropriate portion of product; said welding device comprising a support structure (17), at least two transverse welding parts (18,

18), arranged on opposite sides of said strip and held by respective support elements (20, 20), rotatably mobile along circular trajectories in opposite angular directions and means (24, 24) for driving the circular movement of said support elements (20, 20); wherein said means (24, 24) for driving the circular motion of said elements (20, 20) for supporting the welding part (18) comprise, for each of said welding parts, at least one rotation driving shaft (26); a train-holder (28) element connected integrally to said drive shaft (26) to rotate together with the latter; a fixed cogged sun wheel (30), coaxial to said drive shaft (26); a first cogged planet wheel (32) integral with said element (20) for supporting the welding part (18) and connected to said train-holder element (28) so as to be driven to rotate with the latter and rotate freely around its own axis; second intermediate cogged planet wheel (34) connected to said train-holder element (28) so as to be driven to rotate with the latter and rotate freely around its own axis, said intermediate planet wheel (34) meshing on said fixed cogged sun wheel (30) and with said first cogged planet wheel (30) of the shaft (24) holding the welding part (18) in such a way that, following rotation of said drive shaft (26), said intermediate planet wheel (34), rotating on said fixed sun wheel (30), makes said planet wheel (32) of the element (20) supporting the welding part (18) rotate so as to make the respective welding part (18) perform circular trajectories, always remaining turned in the same angular direction.

5,778,642

SYSTEM AND METHOD FOR USE OF LOOSE FILL PACKING MATERIALS

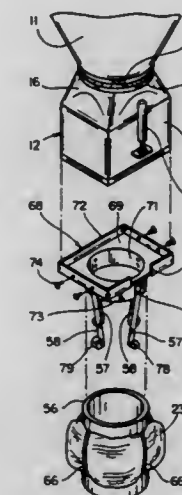
Gunter G. Fuss, San Mateo, and Vladimir Yampolsky, San Carlos, both of Calif., assignors to Free-Flow Packaging International, Inc., Redwood City, Calif.

Continuation-in-part of Ser. No. 673,296, Jun. 28, 1996. This application Dec. 12, 1996, Ser. No. 766,156

Int. Cl.⁶ B65B 9/10

U.S. Cl. 53—567

15 Claims



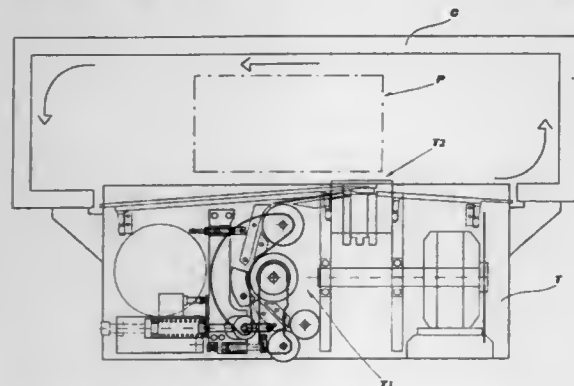
- 9. A system for packaging loose fill packing material in bags for use as cushions in shipping cartons, comprising:
 - a dispenser having an outlet through which loose fill packing material is discharged;
 - a plurality of fingers of flexible material spaced about the axis of the outlet and extending downwardly from the outlet;
 - the lower portions of the fingers being bent outwardly from the axis and upwardly toward the outlet to form hooks having outwardly curved side walls and upwardly facing openings; and
 - an elongated length of flexible plastic tubing gathered axially about a cylindrical core which is removably mounted on the fingers, with the fingers extending longitudinally within the core, the lower edge portion of the core extending into and resting upon the hooks, and the hooks projecting laterally from the core to retain the tubing on the core while permitting

successive sections of the tubing to be pulled therefrom and filled with material discharged through the outlet.

5,778,643
**DEVICE TO CONTROL THE FEEDING OF THE STRAP
 IN A STRAPPING MACHINE**
 Franco Tacchini, Nebbiano, Italy, assignor to Officina Meccanica Sestese S.p.A., Paruzzaro, Italy
 Filed Mar. 14, 1997, Ser. No. 816,419
 Int. Cl.⁶ B65B 13/04

U.S. Cl. 53—589

11 Claims



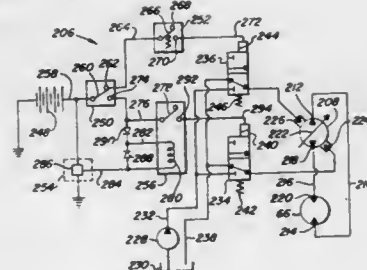
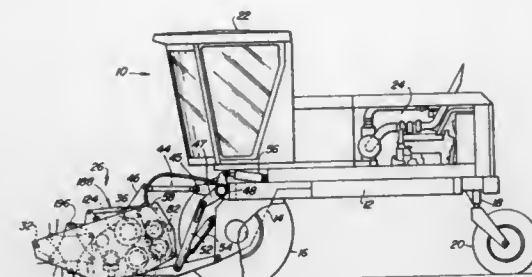
1. Device for controlling the feeding of a strap in a strapping machine, the device comprising:
 at least one fast driving wheel and one slow driving wheel; each wheel having a periphery for guiding the strap thereon; said fast driving wheel and said slow driving wheel being mounted on fixed axes and rotated by respective drive shafts which are always active;
 said slow driving wheel being mounted on the respective drive shaft through a freewheel mechanism;
 pressure means for pressing the strap against the periphery of at least one of said driving wheels so as to insure feeding thereof;
 said pressure means being moved by an oscillating member operating in response to tensioning of the strap;
 said pressure means comprising a first and a second pressure element mounted on said oscillating member;
 a strap transmission wheel mounted on said oscillating member and located at a distance from said pressure elements to form an angle of deviation of the strap path, whereby during a recovery step, the strap contacts the fast driving wheel, and tensioning of the strap causes, by action on the transmission wheel, the member to oscillate and transfer the contact pressure of the strap from the fast driving wheel onto the slow driving wheel, merely through an alternative action of said pressure elements.

5,778,644
**CROP HARVESTING PLATFORM HAVING A
 REVERSIBLE DRIVE FOR THE REEL, CUTTERBAR
 CENTER-FEED AUGERS AND CONDITIONER ROLLS**
 Melvin William Keller; David Henry Diebold, both of Ottumwa; Steven Lawrence Schmid, Agency; Stanley Paul Wellman, Ottumwa; Frederick Carl Krambeck, Ottumwa, and Thomas Daryl Bebernes, Ottumwa, all of Iowa, assignors to Deere & Company, Moline, Ill.
 Filed Aug. 9, 1996, Ser. No. 695,360
 Int. Cl.⁶ A01D 69/06

U.S. Cl. 56—11.2

14 Claims

1. In a crop harvesting platform including a plurality of driven crop treating elements including a crop engaging reel, a crop cutting sicklebar arrangement, at least one center-feed auger, and upper and lower conditioning rolls, a reversible drive arrangement,



comprising: a constant mesh gear train including an input gear and upper and lower conditioner roll drive gears; a reversible power device coupled to said input gear; an auger chain drive coupled for rotating in unison with one of said upper and lower conditioner roll drive gears for directly driving said at least one center-feed auger; a sicklebar knife drive including: a knife drive toothed-belt sprocket mounted for rotating in concert with said at least one center-feed auger, a knife drive belt idler, a knife drive housing including an output shaft coupled to said sicklebar knife, an input shaft having an input toothed-belt sprocket secured thereto, and a toothed belt entrained about said knife drive toothed-belt sprocket, said knife drive belt idler and said input toothed-belt sprocket; and a reel drive including: a first belt sheave mounted for rotation in unison with said one of said upper and lower center-feed augers, a jackshaft, a second belt sheave mounted on said jackshaft, a reel drive belt entrained about said first and second belt sheaves, a belt tensioning means including idler pulley means engaged with said reel drive belt for maintaining tension in said belt for both forward and reverse drive of said reel, a first reel drive chain sprocket mounted on said jackshaft, a reel shaft, a second reel drive chain sprocket mounted on said reel shaft, and a reel drive chain entrained about said first and second reel drive chain sprockets.

5,778,645
**TRANSMISSION FOR SELF-PROPELLED WALKING
 MOWERS**

Koji Irikura, Kobe, and Hirohiko Kawada, Amagasaki, both of Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Filed Sep. 3, 1996, Ser. No. 706,796

Claims priority, application Japan, Oct. 11, 1995, 7-317598

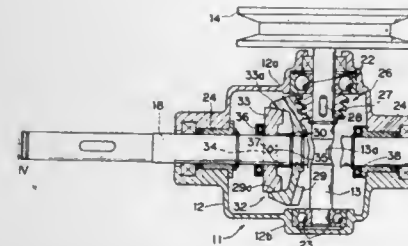
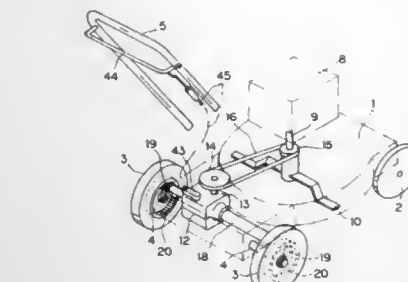
Int. Cl.⁶ A01D 34/68; 34/82

U.S. Cl. 56—11.8

5 Claims

1. In a self-propelled walking mower which comprises: a machine frame (1) which includes a blade compartment (6) and a transmission compartment (7), said blade compartment and said transmission compartment being disposed respectively at a front side and at a rear side as viewed in a longitudinal direction of the mower; an engine (8) mounted on said machine frame at a location above said blade compartment and having a vertical output shaft (9) which extends downwardly; a mowing blade (10) disposed within said blade compartment and adapted to be driven by said engine; left and right drive wheels (3) for driving the mower; and a transmission (11) for transmitting mower-driving power from said engine to said drive wheels, said transmission comprising:

a casing (12) disposed within said transmission compartment (7);

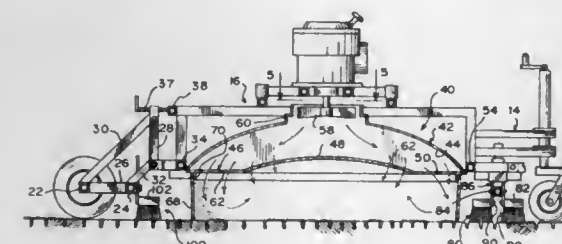


a horizontal wheel axle (18) journaled in said casing, said wheel axle extending leftwardly and rightwardly from said casing to drive said left and right drive wheels (3);
 a vertical input shaft (13) rotatably supported by a top wall (12a) of said casing and by a bottom wall (12b) of said casing and having an upper end which extends upwardly of said casing and carries an input pulley (14) co-rotatably mounted thereon, said input shaft intersecting said wheel axle at a location in front of and in close proximity to said wheel axles said input shaft being adapted to be driven to rotate by said output shaft (9) through an output pulley (15) co-rotatably mounted on said output shaft and through a belt (16) entrained over said output pulley and said input pulley;
 a hypoid gearing (26) including a hypoid pinion (27) fixedly mounted on said input shaft, and a larger hypoid gear (29) rotatable mounted on said wheel axle and meshing with said hypoid pinion; and
 a clutch (32) for selectively coupling said larger hypoid gear (29) to said wheel axle (18), said clutch including a movable clutch member (33) which is slidably but non-rotatably mounted on said wheel axle at a side opposite to said input shaft (13) with said larger hypoid gear therebetween.

5,778,646
GOLF GREEN GROOMING MACHINE
 James W. Pfisterer, Arnold, Md., assignor to Environmental Air Technology, LLC, Chester, Md.
 Filed Oct. 4, 1996, Ser. No. 725,472
 Int. Cl.⁶ A01D 75/00

U.S. Cl. 56—16.4

10 Claims



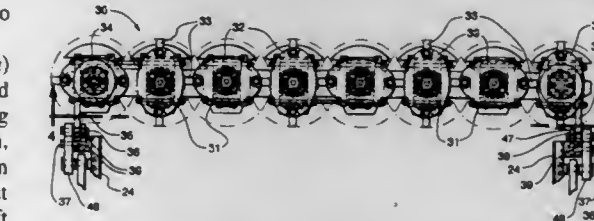
1. A ground grooming machine comprising a mobile support structure movable along a path of travel, an air flow generating assembly mounted on said support structure, said assembly including fan means for generating a downward flow of air, a chamber supported by said support structure for receiving, confining and directing said flow of air, said chamber having a bottom with downwardly directed discharge apertures therein for the downwardly directed discharge of the air flow therethrough, said support

structure supporting said chamber vertically above a ground surface, and flexible baffle means depending from and surrounding said chamber bottom for engagement with the ground surface, said baffle means extending around said openings in said chamber bottom and confining said air flow to the ground surface aligned below said chamber, a first brush assembly positioned forward of said air flow generating assembly along the path of travel, and a second brush assembly positioned rearward of said air flow generating assembly along the path of travel, and means for mounting said brush assemblies on said support structure for automatic vertical adjustment in response to the contours of an underlying ground surface over which the machine traverses.

5,778,647
DISC MOWER CONDITIONER
 Kenneth W. McLean, and Steven J. Campbell, both of New Holland, Pa., assignors to New Holland North America, Inc., New Holland, Pa.
 Filed Jun. 25, 1996, Ser. No. 670,060
 Int. Cl.⁶ A01D 34/03

U.S. Cl. 56—13.6

5 Claims



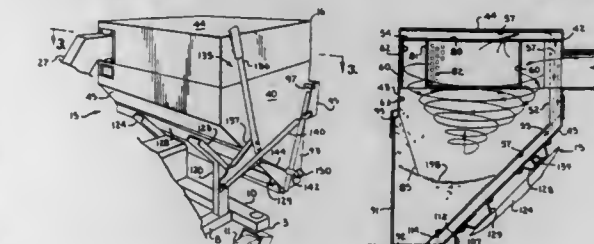
1. In a mower conditioner having a mobile frame; a crop harvesting header suspended from said frame for movement relative thereto; a cutterbar mounted to said header from a pair of laterally spaced support arms and extending forwardly from said header to sever standing crop material from the ground; and a conditioning mechanism positioned to receive severed crop material from said cutterbar to condition the severed crop material before discharging the severed crop material onto the ground, the improvement comprising:

each of said support arms being supported on said header by two longitudinally spaced members, each of said members carrying a spherical bushing to limit any vertical movement of said support arms relative to said header, yet permit a twisting of each respective said support arm relative to said header.

5,778,648
LAWN MOWER CLIPPING COLLECTION SYSTEM
 Donald H. Parkes, Lamoni, and Scott A. Schick, Corydon, both of Iowa, assignors to Shivers, Inc., Corydon, Iowa
 Filed Sep. 4, 1996, Ser. No. 707,772
 Int. Cl.⁶ A01D 34/70

U.S. Cl. 56—202

20 Claims



1. A mower clipping collection system for a riding mower comprising:

a collector housing for collecting clippings having a separation chamber of circular interior horizontal cross-section formed therein and positioned above and opening into a collection chamber of rectangular internal horizontal cross-

- section formed therein such that clippings in said separation chamber are directed to and collect in said collection chamber and having a generally planar rear wall;
- b) a clipping transfer conduit extending between the mower and the collector housing for transferring clippings blown from the mower to the collector housing; said clipping transfer conduit connected to said collector housing so as to generally tangentially convey clippings to said separation chamber such that clippings blown through said clipping transfer conduit are blown substantially tangentially into said separation chamber and circulate therein in a cyclonic manner; and
- c) a generally planar discharge door mounted in said collection chamber rear wall; said door being selectively moveable between a closed position to maintain clippings in said collection chamber and an open position to allow removal of clippings from said collection chamber.

5,778,649

POWER-DRIVEN HEDGE TRIMMER

Claes Losdahl; Stefan Stark, both of Huskvarna, and Richard Skogward, Jönköping, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

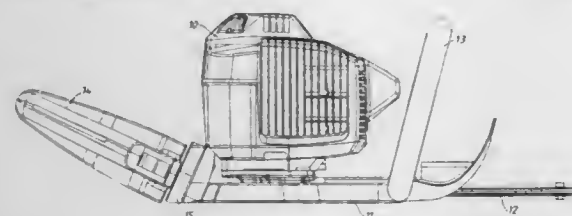
Filed Sep. 11, 1996, Ser. No. 712,164

Claims priority, application Sweden, Sep. 20, 1995, 9503262-9

Int. Cl.⁶ A01D 1/14; 34/08

U.S. Cl. 56—236

9 Claims



1. A power driven hedge trimmer comprising an engine housing (10), a base (11), a cutting tool (12), a front handle (13), and a rear handle (14), said engine housing being attached to said base, said front handle and said cutting tool being attached to a first end of said base and said rear handle being attached to a second end of said base, said rear handle being rotatable relative to the base to enable adjustment of said rear handle to different operating positions relative to said engine housing, wherein the rear handle is rotatable around an axis inclined at an angle relative to a longitudinal axis of the cutting tool (12) and has a latch device (19-24) for latching the rear handle in at least two predetermined operating positions relative to said engine housing.

5,778,650

DEVICE FOR STOPPING A SPINDLE OF A TEXTILE MACHINE DRIVEN BY A DRIVE BELT

Wilfried Broich, Mönchengladbach; Heinz Fink, Krefeld; Jürgen Kallmann, Kaarst, and Wolfgang Leupers, Mönchengladbach, all of Germany, assignors to Palitex Project-Company GmbH, Krefeld, Germany

Filed Dec. 24, 1996, Ser. No. 773,021

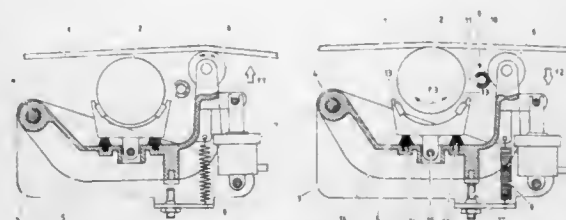
Claims priority, application Germany, Dec. 30, 1995, 195 49 163.7

Int. Cl.⁶ D01H 13/18

U.S. Cl. 57—88

8 Claims

1. A device for stopping a spindle of a textile machine driven by a drive belt, said device comprising:
- a roller for removing a drive belt from contact with a spindle whorl of the spindle, said roller movable from a rest position in which said roller is disengaged from the drive belt into an engaged position in which said roller engages the drive belt and moves the drive belt away from the spindle whorl;
- a brake device for braking the spindle whorl;



- a support member, positioned laterally adjacent to said roller, wherein said roller is moved against said support member when returned into said rest position and rests in said rest position on said support member so as to be vibration-dampened and is moved away from said support member when returned into said engaged position.

5,778,651

METHOD OF, AND DEVICE FOR, SPINNING-IN YARN ON AN OPEN-END SPINNING MACHINE

Zdeněk Špindler, Němcové, and Vojtěch Novotný, Dukelská, both of Czechoslovakia, assignors to Rieter Elitex a.s. Ústí nad Orlicí, Czechoslovakia

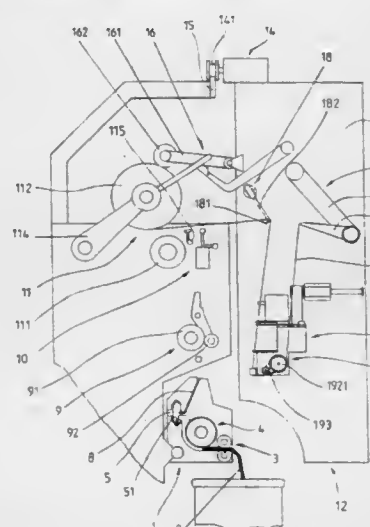
Filed Oct. 15, 1996, Ser. No. 730,198

Claims priority, application Czechoslovakia, Oct. 16, 1995, 2694-95

Int. Cl.⁶ D01H 13/26

U.S. Cl. 57—263

24 Claims



1. A method of spinning-in yarn on an open end spinning machine following rupture of the yarn being spun, comprising the steps of:

- detecting the end of the yarn on a bobbin on which the yarn is being wound;
- sucking the end of the yarn off the bobbin and into a detecting nozzle;
- unwinding yarn from the bobbin while moving the unwinding yarn generally toward a spinning unit including a spinning rotor which spins the yarn;
- forming an end of the yarn that is being withdrawn from the bobbin and introducing the yarn end into a spinning rotor of the spinning unit and subsequently sinking the yarn end onto a collecting groove of the spinning rotor for joining the yarn end to the fibers produced in the collecting groove from a fiber band;
- during the unwinding of the yarn from the bobbin, applying a force to the yarn between the bobbin and the detecting nozzle in the yarn unwinding direction by rotating a tension roller in the unwinding direction to impart tension to the yarn for achieving uniform yarn tension during the unwinding and during the transferring up to creation of the spinning-in yarn end; and

transferring the yarn now being spun to a yarn distributing device for distributing the yarn along the bobbin for achieving a constant quality and size of the spinning-in junction points.

5,778,652

CABLE WITH A SHEATH MADE OF STEEL, AND A METHOD AND APPARATUS FOR FORMING THE CABLE

Dieter Kunze, Neuried, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

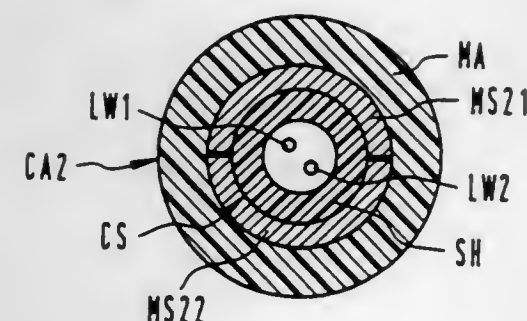
Filed Jun. 26, 1996, Ser. No. 672,040

Claims priority, application Germany, Jul. 12, 1995, 195 25 422.8

Int. Cl.⁶ D02G 3/06

U.S. Cl. 57—235

11 Claims



1. A cable comprising a cable core, a sheath made of steel formed into a tube surrounding the cable core, and an outer coating surrounding the sheath, the improvement comprising the sheath consisting of two shell parts formed from spring steel strips.

5,778,653

SUCTION ROLLER FOR AN OPEN-END SPINNING MACHINE

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 73337 Bad Überkingen, Germany, assignor to Fritz Stahlecker, Bad Überkingen, and Hans Stahlecker, Sussen, both of Germany

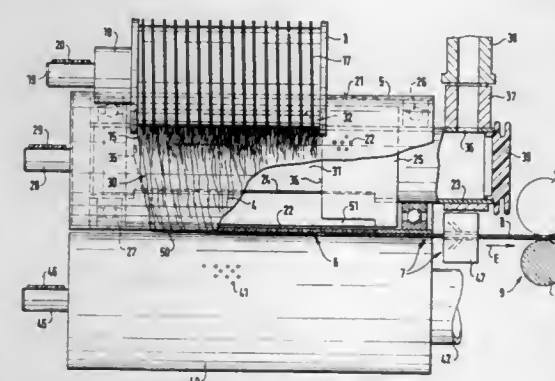
Filed Feb. 11, 1997, Ser. No. 802,350

Claims priority, application Germany, Mar. 7, 1996, 196 08 829.1

Int. Cl.⁶ D01H 4/00

U.S. Cl. 57—401

22 Claims



1. A suction roller for an open-end spinning machine for transporting a fiber veil along a transport path which extends between a fiber incoming position on the circumference of the suction roller to a yarn formation line extending transversely of the circumference of the suction roller and disposed downstream of and circumferentially spaced from the fiber incoming position with said fiber veil expanding transversely of the suction roller and consisting of fibers extending in the circumferential direction of the suction

roller, said suction roller comprising a suction insert with defining edges defining a suction area which determines the circumferential length and width of the fiber veil along the transport path during use of the suction roller to transport the fiber veil,

wherein one of the defining edges which is on a side of the fiber veil further away from a withdrawal device for withdrawing the yarn from the suction roller extends at least along a section of the transport path at an acute angle with respect to the circumferential direction of the suction roller.

5,778,654

ADAPTOR FOR AN OPEN-END SPINNING DEVICE

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 73337 Bad Überkingen, Germany, assignor to Fritz Stahlecker, Bad Überkingen, and Hans Stahlecker, Sussen, both of Germany

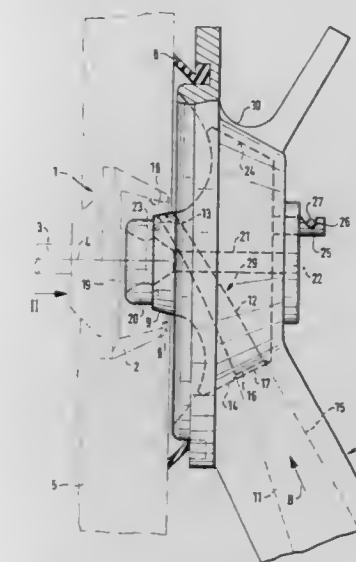
Filed Oct. 15, 1996, Ser. No. 730,269

Claims priority, application Germany, Nov. 30, 1995, 195 44 617.8

Int. Cl.⁶ D01H 4/00

U.S. Cl. 57—413

20 Claims



1. An adaptor for an open-end spinning arrangement adapted to the dimensions of a spinning rotor and arranged in use as an exchangeable extension at a cover of the spinning rotor and comprising a starting area of a yarn withdrawal channel as well as an end area of a fiber feed channel, said end area having an outlet opening having a fiber transport direction which deviates from a fiber transport direction of a connecting piece of the fiber feed channel located outside of the adaptor, wherein said end area of the fiber feed channel continues said connecting piece in a continuous curve along its entire length to thereby minimize braking forces on fibers supplied through the fiber feed channel.

5,778,655

CHAIN LINK AND A METHOD FOR THE MANUFACTURE THEREOF

Espen Lange, Oslo, Norway, assignor to Kvaerner ASA, Lysaker, Norway

Filed May 19, 1997, Ser. No. 858,515

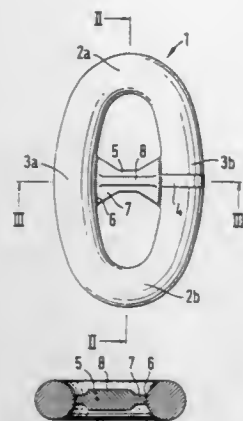
Claims priority, application Norway, Nov. 30, 1994, 952793

Int. Cl.⁶ B21L 3/00

U.S. Cl. 59—31

8 Claims

5. A method for manufacturing a chain link including two loops and two sides, wherein a distance between the loops constitutes a length of the chain link, and a distance between the sides consti-



tutes a width of the chain link, and wherein a post is welded in between the chain link's sides, the method comprising:

providing a post, wherein adjacent the chain link's sides the post has reduced thickness with respect to other parts of the post in a direction transverse to a plane of the chain link, in order to produce weld grooves for welding the post to the chain link's sides, and for allowing entire contact areas of the post to be through-weld to the chain link's sides; and through-welding the entire contact areas of the post to the chain link's sides.

5,778,656

CABLE RETENTION DEVICE

Anthony John Hart, Nottingham, United Kingdom, assignor to Mansign Mining Equipment Limited, United Kingdom

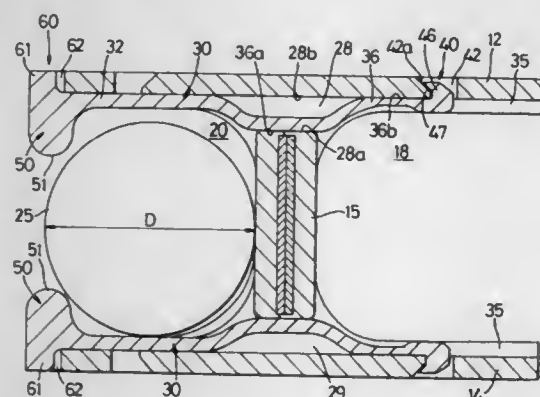
Filed Oct. 15, 1996, Ser. No. 732,787

Claims priority, application United Kingdom, Oct. 14, 1995, 9521075

Int. Cl.⁶ F16G 13/16

U.S. Cl. 59—78.1

13 Claims



1. A cable handling chain link assembly comprising:
a chain link; and

a releasably connectable cable retention device;

the link having an open sided cable compartment defined between an upper wall, a lower wall, and a partition extending between inside faces of the upper and lower walls, the compartment having a height to receive a cable of certain diameter;

the partition being located inboard from side edges of the upper and lower walls, the side edges defining the open side of the compartment wherein the partition includes at least one aperture adjacent to an inside face of one of said upper or lower walls;

the cable retention device being a unitary member of generally elongate form having a main body from which longitudinally extends a resilient tongue formation having detent means for co-operation with the chain link on one side of the partition to

restrain withdrawal of the retention device in a longitudinal direction of the retention device;

the resilient tongue formation co-operating with said inside face and a wall of said aperture opposed to said inside face to resiliently urge said detent means into contact with said link; the main body having a lateral projection with a height extending laterally away from said inside face toward the wall opposite said one wall, said lateral projection being located on the side of the partition opposite to said one side and acting to retain cables within said compartment; and

the main body and said one wall including co-operating latch formations which inter-engage on longitudinal insertion of the retention device to prevent separation of the main body in the lateral direction away from said inside face.

5,778,657

COMBINED CYCLE POWER PLANT

Fumio Ohtomo, Zama; Yuji Nakata, Yokohama; Yoshitaka Fukuyama, Yokohama; Asako Inomata, Yokohama; Sachio Shibuya, Tokyo; Akinori Koga; Junji Ishii, both of Yokohama; Shoko Ito, Sagami, and Hironobu Yamamoto, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

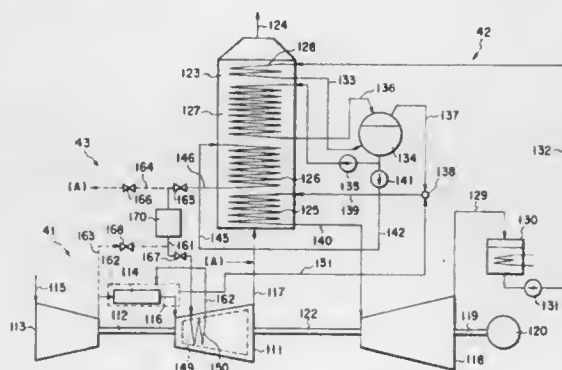
Filed Sep. 20, 1996, Ser. No. 716,868

Claims priority, application Japan, Sep. 22, 1995, 7-244750; Sep. 22, 1995, 7-244751

Int. Cl.⁶ F02C 6/18

U.S. Cl. 60—39.182

16 Claims



1. A combined cycle power plant comprising:

a gas turbine system having a gas turbine;

a waste heat collector boiler and high pressure drum for collecting the waste heat of the exhaust of the gas turbine;

a steam cycle system having a steam turbine to be driven by the steam generated by the waste heat collector boiler and condenser; and

a gas turbine cooling system for feeding at least part of at least one of the steam and water generated in said steam cycle system into said gas turbine system and returning them into said steam cycle system, wherein:

said gas turbine cooling system is provided with a cooling duct formed in two or more than two elements of said gas turbine system to be cooled and said at least one of steam and water is made to flow through said two or more than two elements, and at least one of the steam and water fed from said steam cycle system to said turbine cooling system is supplied from the waste heat collector boiler and the high pressure drum and one of the steam and water returned from the turbine cooling system to the steam cycle system is specifically returned to at least one of the waste heat collector boiler, the high pressure drum and the condenser of the steam cycle system.

5,778,658

RECOUP TURBOJET ENGINE

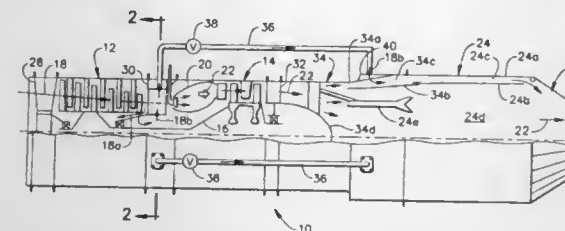
Chester J. Lamando, Jr., Nahant, and Wayne R. Oliver, Peabody, both of Mass., assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 24, 1996, Ser. No. 773,460

Int. Cl.⁶ F02K 3/10

U.S. Cl. 60—204

18 Claims



1. A turbojet engine comprising:

a compressor operatively joined to a turbine by a shaft;

a combustor disposed operatively between said compressor and turbine for combusting fuel with compressed air received from said compressor to generate exhaust gas for powering said turbine;

an afterburner including an annular casing and an annular combustion liner spaced radially inwardly therefrom to define a cooling duct therebetween;

a recoup duct disposed in flow communication with said compressor for receiving a portion of said compressed air therefrom as recoup air; and

a plenum disposed at an upstream end of said afterburner casing, and having an inlet disposed in flow communication with said recoup duct for receiving said recoup air, and a plurality of circumferentially spaced apart outlets disposed in flow communication with said cooling duct for discharging said recoup air therein.

5,778,659

VARIABLE AREA FAN EXHAUST NOZZLE HAVING MECHANICALLY SEPARATE SLEEVE AND THRUST REVERSER ACTIVATION SYSTEMS

Paul W. Duesler, Manchester; Constantino V. Loffredo, Newington, both of Conn.; Harold T. Prosser, Jr., Palm Beach Gardens, Fla., and Christopher W. Jones, Reston, Va., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 572,839, Dec. 14, 1995, abandoned, which is a continuation-in-part of Ser. No. 326,621, Oct. 20, 1994, abandoned. This application Mar. 21, 1997, Ser. No. 823,294

Int. Cl.⁶ F02C 3/02; F02K 1/09; 1/10

U.S. Cl. 60—226.1

7 Claims

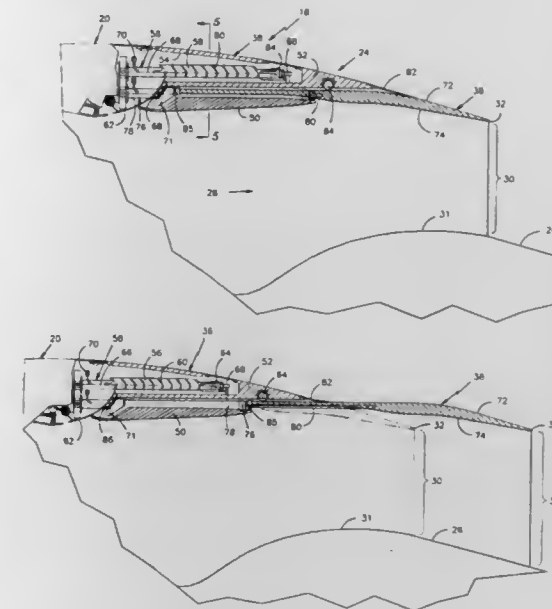
1. A variable area exhaust nozzle for a gas turbine engine having a longitudinally extending axis, comprising:

an aerodynamically streamlined outer nacelle having an upstream portion and a downstream portion, the downstream portion including:

a thrust reverser having a moveable body and a plurality of blocker doors radially spaced apart from the moveable body, the thrust reverser being positionable at an engaged position and a disengaged position, and

a fixed geometry translatable sleeve having a trailing edge aft of the moveable body, the sleeve being translatable between and deployable at a stowed position, a fully deployed position and a plurality of intermediate positions, the sleeve in its stowed position being nested radially intermediate the moveable body and the blocker doors so that the sleeve inhibits movement of the thrust reverser to its engaged position;

a fixed geometry, aftwardly convergent core cowl radially spaced from the outer nacelle and cooperating therewith to define a longitudinally extending annular exhaust duct the



exhaust duct having a throat defined by the core cowl and the trailing edge of the sleeve, the throat being the exclusive outlet for discharging a quantity of working medium gases from the duct for producing forward thrust, the duct having, for all positions of the sleeve, an aftwardly generally diminishing annular area including a throat area, the throat area being the minimum area of the duct;

a sleeve actuation system including a plurality of sleeve actuators for effecting translatable movement of the sleeve, the translatable movement being the exclusive means for varying the throat area and the quantity of forward thrust producing gases discharged from the duct, aftward movement of the sleeve causing an increase in the throat area and forward movement of the sleeve causing a decrease in the throat area; a thrust reverser actuation system including a plurality of thrust reverser actuators for positioning the thrust reverser at the disengaged position whereby working medium gases are discharged from the duct exclusively through the throat to produce forward thrust, and at the engaged position whereby at least a portion of the working medium gases are diverted to produce reverse thrust; and

the thrust reverser actuation system being mechanically independent of the sleeve actuation system so that translation of the sleeve does not actively contribute to engagement of the reverser.

5,778,660

THRUST REVERSER FOR A TURBOFAN JET ENGINE

Michel Christian Marie Jean, Harfleur, France, assignor to Societe Hispano Suiza, Colombes, Cedex, France

Continuation of Ser. No. 495,072, Jun. 27, 1995, abandoned.

This application Oct. 15, 1996, Ser. No. 729,943

Claims priority, application France, Jun. 30, 1994, 94 08056

Int. Cl.⁶ B64D 33/04

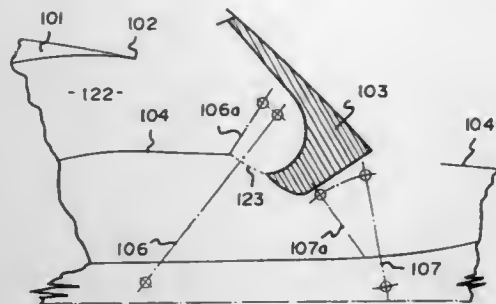
U.S. Cl. 60—226.2

6 Claims

1. A thrust reverser for a fan-type turbojet engine having a longitudinal axis, a fan housing defining an outer boundary of a cold flow exhaust duct and having a fixed rear end portion forming an aft end of the fan housing, a turbojet engine cowling forming an inner boundary of the cold flow exhaust duct and having an end portion extending axially away from the aft end of the fan housing and comprising:

a) at least one movable thrust reversing baffle having a forward edge and a rear edge;

b) a plurality of linkrods each pivotally connected to the at least one thrust reversing baffle and the end portion of the turbojet engine cowling forming a four bar linkage movably attaching the thrust reverser to the turbojet engine cowling.



the at least one thrust reversing baffle to the end portion of the turbojet engine cowling extending axially away from the aft end of the fan housing such that the at least one thrust reversing baffle is located to the rear of the aft end of the fan housing and is movable between a retracted, forward thrust position and an extended reverse thrust position wherein the forward edge extends outwardly away from the turbojet engine cowling further than the rear edge so as to redirect gases emanating from the cold flow exhaust duct so as to produce a reverse thrust wherein the plurality of linkrods comprises:

- a first pair of linkrods each having a first end pivotally attached directly to the turbojet engine cowling and a second end pivotally attached to the at least one thrust reversing baffle; and,
- a second pair of linkrods each having a first end pivotally attached directly to the turbojet engine cowling and a second end pivotally attached to the at least one thrust reversing baffle; and,
- c) an actuator connected to the turbojet engine cowling and the at least one thrust reversing baffle so as to move the at least one thrust reversing baffle between its extended and retracted positions.

5,778,661

Patent Not Issued For This Number

5,778,662

CONTROL APPARATUS AND METHOD FOR INTERNAL COMBUSTION ENGINE

Koichi Mori, Sagami-hara; Takayuki Toshiro, Fujisawa, and Kimiyoshi Nishizawa, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Jul. 11, 1996, Ser. No. 678,204

Claims priority, application Japan, Jul. 12, 1995, 7-176016

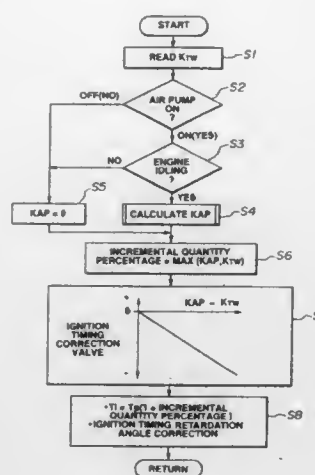
Int. Cl.⁶ F01N 3/20; 3/36

U.S. Cl. 60—274

15 Claims

1. A control apparatus for an internal combustion engine, comprising:

- secondary air supplying means, having an air pump, for operatively supplying a secondary air into a portion of an exhaust passage of the engine located upstream with respect to a three-way catalytic converter interposed in the exhaust passage;
- engine driving condition detecting means for detecting an engine driving condition, said engine driving condition detecting means including an engine idling sensor which is so constructed and arranged as to detect whether the engine enters an engine idling state, an airflow meter which is so constructed and arranged as to detect an intake air quantity supplied to the engine, and an air-fuel mixture ratio sensor which is so constructed and arranged in the portion of the exhaust passage located upstream with respect to the catalytic converter as to detect an air-fuel mixture ratio of the engine;
- a control unit which is so constructed and arranged as to determine whether the engine falls in the idling state and



determine whether the secondary air is supplied by said secondary air supplying means to the portion of the exhaust passage of the engine located upstream with respect to the catalytic converter, as to determine a basic fuel supply quantity on the basis of the detected engine driving condition and a supplied quantity of the secondary air, as to estimate an excess coefficient at an inlet portion of the catalytic converter on the basis of the detected air/fuel mixture ratio and the supplied quantity of the secondary air when determining that the engine falls in the idling state and that the secondary air is supplied into the portion of the exhaust passage located upstream with respect to the catalytic converter, as to determine an incremental correction quantity percentage of fuel supplied to the engine for the basic fuel supply quantity so that the excess coefficient gives a predetermined value, and as to determine a retardation correction quantity of an ignition timing for a basic ignition advance angle value according to the determined incremental correction percentage;

- fuel supplying means for supplying a final fuel supply quantity determined according to the basic fuel supply quantity and the incremental correction quantity percentage to the engine derived by said control unit; and
- an ignition device which is so constructed and arranged as to ignite the fuel supplied to the engine at the basic ignition timing advance angle value which is retarded by the retardation correction quantity determined by said control unit.

5,778,663

METHOD FOR CONTROLLING THE PURIFICATION OF EXHAUST GASES FROM AN INTERNAL COMBUSTION ENGINE

Jürgen Kostka, Lehre, Germany, assignor to Volkswagen AG, Wolfsburg, Germany

Filed Nov. 6, 1996, Ser. No. 744,926

Claims priority, application Germany, Nov. 11, 1995, 195 42 110.8

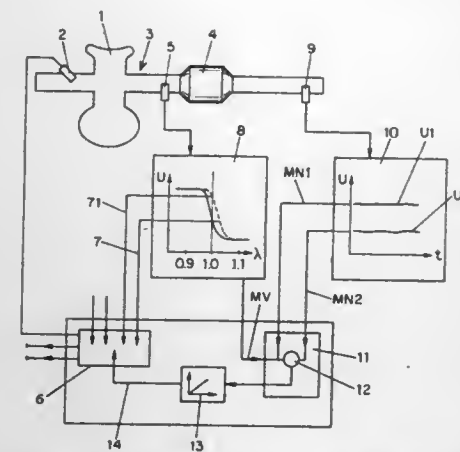
Int. Cl.⁶ F01N 3/20

U.S. Cl. 60—274

4 Claims

1. A method for controlling an exhaust gas purifier for an internal combustion engine which includes an exhaust line with at least one exhaust gas catalytic converter and at least a first oxygen sensor upstream of the catalytic converter producing output signals which are supplied to a control unit which controls injection times of a fuel metering device so that the exhaust gas catalytic converter is supplied with a stoichiometric fuel/air ratio comprising:

- storing in a memory a time average value of the output signals from the first oxygen sensor when a first fuel is used in the engine;
- detecting the oxygen content of the exhaust gases by a second oxygen sensor spaced downstream from the first oxygen sensor in the direction of flow of the exhaust gases and at least partly downstream of the exhaust gas catalytic converter;



storing in a memory a time average value of the output signal from the second oxygen sensor when the first fuel is used in the engine;

comparing in a comparator the time average values from the first and second oxygen sensors;

operating the internal combustion engine with a second fuel which differs from the first fuel in that the hydrogen content in the exhaust gas is higher than that in the exhaust gas when the first fuel is used;

storing in a memory an average value of the output signal from the second oxygen sensor when the second fuel is used in the engine;

comparing in the comparator the two average values from the first and second oxygen sensors when the second fuel is used in the engine; and

providing a correction signal to the control unit when the comparison reveals that a predetermined threshold value has been exceeded to produce fuel injection times which are increased until a stoichiometric fuel/air ratio is obtained.

5,778,664

APPARATUS FOR PHOTOCATALYTIC DESTRUCTION OF INTERNAL COMBUSTION ENGINE EMISSIONS DURING COLD START

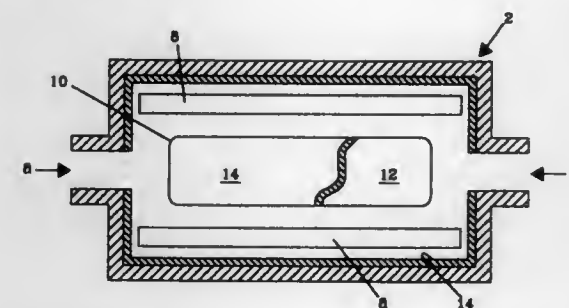
Jiri Janata; Gary L. McVay, both of Richland; Charles H. Peden, West Richland, and Gregory J. Exarhos, Richland, all of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Sep. 20, 1996, Ser. No. 717,036

Int. Cl.⁶ F01N 3/20; C07C 63/00; B01D 53/00; B01J 19/08

U.S. Cl. 60—274

11 Claims



11. A method for catalyzing oxidation/reduction reactions between gaseous hydrocarbons, carbon monoxide, nitrogen oxides and oxygen in the exhaust of an internal combustion engine comprising the steps of:

- placing a photocatalytic material comprising a substrate coated with a transition metal oxides selected from the group comprising TiO₂, SnO₂, ZnO or combinations thereof in the exhaust system of an internal combustion engine,
- exposing said photocatalytic material to a light source,

c) bringing said photocatalytic material exposed to said light source into contact with said exhaust of a said internal combustion engine, thereby catalyzing oxidation/reduction reactions between gaseous hydrocarbons, carbon monoxide, nitrogen oxides and oxygen present in said exhaust.

5,778,665

Patent Not Issued For This Number

5,778,666

METHOD AND APPARATUS FOR IMPROVING ENGINE FUEL ECONOMY

Michael John Cullen, Northville; David George Farmer, Plymouth; Gopichandra Surnilla, Westland, and Susan Nicole Cok, Pinckney, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Continuation-in-part of Ser. No. 638,082, Apr. 26, 1996, Pat.

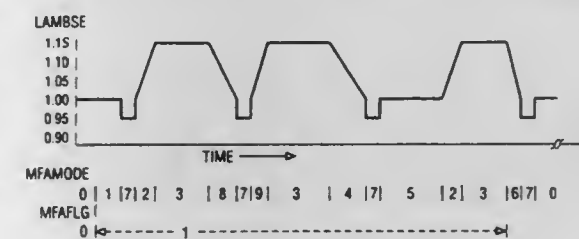
No. 5,704,339. This application Apr. 17, 1997, Ser. No.

843,948

Int. Cl.⁶ F01N 3/20; F02D 41/14

U.S. Cl. 60—274

18 Claims



1. A method of operating an internal combustion engine with a NO_x trap located in the engine exhaust path comprising a sequence of the following steps:

- operating the engine in an open loop lean fuel control mode wherein the fuel calculation includes an open loop correction factor;
- calculating the NO_x accumulated in said trap during said lean fuel control mode;
- when the accumulated NO_x exceeds a predetermined amount ramping the A/F of the mixture supplied to said engine from a lean A/F to stoichiometric and switching from stoichiometric to a rich A/F for a predetermined purge time and thereafter switching back to stoichiometric;
- ramping the A/F of the mixture supplied to said engine to said lean A/F from stoichiometric if the time since the last correction of said open loop correction factor is less than a predetermined update interval; and
- operating the engine in a closed loop fuel control mode at stoichiometric to update said open loop correction factor if the time since the last correction of said open loop correction factor exceeds said update interval.

5,778,667

METHOD AND A DEVICE FOR PURIFYING COMBUSTION EXHAUST GAS

Yukio Kinugasa, Susono; Takaaki Ito, Mishima, and Naoto Suzuki, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki, Kaisha, Aichi, Japan

Filed Jun. 16, 1997, Ser. No. 876,608

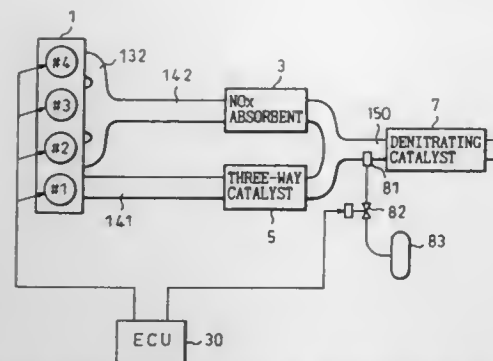
Claims priority, application Japan, Jun. 18, 1996, 8-157041

Int. Cl.⁶ F01N 3/20; 3/36

U.S. Cl. 60—274

5 Claims

1. A method for purifying combustion exhaust gas comprising:



- a step for contacting an exhaust gas having a lean air-fuel ratio with a NO_x absorbent to cause the NO_x absorbent to absorb NO_x in the exhaust gas, wherein said NO_x absorbent absorbs NO_x in an exhaust gas when an air-fuel ratio of an exhaust gas is lean and releases the absorbed NO_x when an air-fuel ratio of an exhaust gas becomes rich and wherein said NO_x absorbent releases the absorbed NO_x without reducing it during a short period after an air-fuel ratio of an exhaust gas is changed from a lean air-fuel ratio to a rich air-fuel ratio and releases the absorbed NO_x after reducing it to N_2 and H_2O after said short period has lapsed;
- a step for causing the air-fuel ratio of the exhaust gas contacting said NO_x absorbent to be a rich air-fuel ratio in order to make the NO_x absorbent release the absorbed NO_x ;
- a step for supplying NH_3 to the exhaust gas after it contacts said NO_x absorbent during said short period in which the NO_x absorbed in the NO_x absorbent is released without being reduced; and
- a step for contacting the exhaust gas after NH_3 is added with a NO_x purifying means which reduces NO_x in the exhaust gas by reacting the NO_x with NH_3 in the exhaust gas to, thereby, reduce the NO_x released from the NO_x absorbent in said short period by said NO_x purifying means.

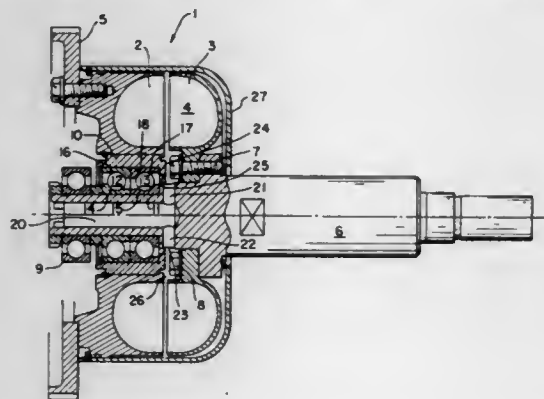
5,778,668
HYDRODYNAMIC CLUTCH ARRANGEMENT IN A DRIVE SYSTEM

Kurt Adloff, Crailsheim, and Gunter Schuttler, Wallhausen, both of Germany, assignors to Voith Turbo GmbH, Germany
Filed Jun. 24, 1996, Ser. No. 669,217

Claims priority, application Germany, Jun. 26, 1995, 195 22 753.0

Int. Cl.⁶ F16D 33/00
U.S. Cl. 60—339

6 Claims



1. A hydrodynamic clutch for a drive system, said hydrodynamic clutch comprising:
- a pump impeller and a turbine impeller together defining a toroidal working space, said toroidal working space having a center plane disposed between said pump impeller and said turbine impeller;

- a take-off shaft rotationally fixed to said turbine impeller;
- a first bearing disposed between said pump impeller and said take-off shaft whereby said pump impeller bears on said take-off shaft;
- an operating medium supply space in fluid communication with said toroidal working space and disposed radially interior of said toroidal working space, said operating medium supply space axially disposed between said first bearing and said turbine impeller;
- a central operating medium supply duct disposed in said take-off shaft and extending axially within said take-off shaft to a point proximate said center plane;
- a source of operating medium, said source in fluid communication with said central operating medium supply duct;
- at least one distributing duct disposed within said take-off shaft and providing fluid communication between said central operating supply duct and said operating medium supply space; and
- a disk providing support for an outer race of said first bearing and having an axial end bordering said operating medium supply space, said axial end defining a tapered opening between said operating medium supply space and said first bearing, said opening being largest nearest said first bearing whereby fluid from said operating medium supply space is diverted to said first bearing.

5,778,669
HYDRAULIC POSITIONING SYSTEM WITH INTERNAL COUNTERBALANCE

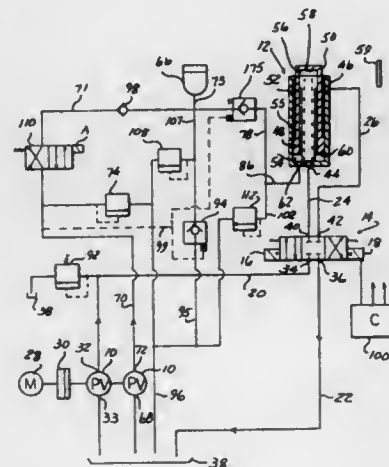
Philip A. Kubik, 1527 Lochridge Rd., Bloomfield Hills, Mich. 48302

Continuation-in-part of Ser. No. 360,639, Dec. 21, 1994. This application Feb. 10, 1995, Ser. No. 386,451

Int. Cl.⁶ F15B 11/02

U.S. Cl. 60—413

8 Claims



1. A hydraulic circuit for selectively positioning a single vertical rod piston operatively disposed in a hydraulic cylinder having three cylinder chambers, said piston having equal areas on its rod side and its head end side respectively exposed in first and second chambers of said cylinder, and a third area on its head end side exposed in the third chamber of said cylinder;
- said circuit comprising a main pump for pumping fluid through said circuit and connected only to said first and second chambers of the hydraulic cylinder via a proportional control valve, and a second pump connected only to said third chamber of the hydraulic cylinder via a two position valve;
- an accumulator communicating with and disposed downstream of the two position valve and selectively maintaining fluid in the third chamber;
- means for selectively directing fluid pressure from said main pump to and from said first and second chambers in an open

- loop fashion at a predetermined load, wherein said cylinder expands and contracts; and
- actuating means for connecting the accumulator to the third chamber and to maintain a substantially constant pressure in the third chamber at a predetermined value to exert a force for counterbalancing the load during the expansion and contraction of the cylinder.

5,778,670

Patent Not Issued For This Number

5,778,671
ELECTROHYDRAULIC SYSTEM AND APPARATUS WITH BIDIRECTIONAL ELECTRIC-MOTOR/HYDRAULIC-PUMP UNIT

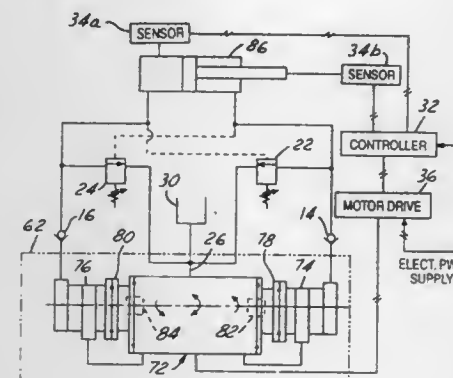
James V. Bloomquist, Holland, Ohio, and Albin J. Niemiec, Romeo, Mich., assignors to Vickers, Inc., Maumee, Ohio

Filed Sep. 13, 1996, Ser. No. 712,671

Int. Cl.⁶ F16D 31/02

U.S. Cl. 60—456

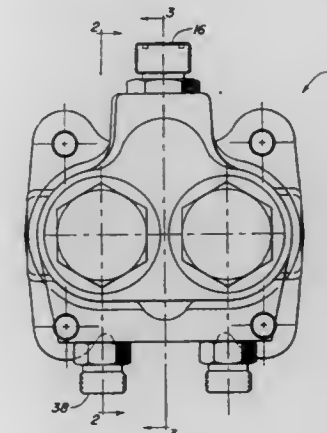
31 Claims



23. An electrohydraulic control system that comprises:
- bidirectional electric motor means responsive to application of electrical power for rotation in either of two directions,
- hydraulic pump means coupled to said electric motor means and having ports for supplying hydraulic fluid in either of two flow directions as a function of direction of rotation of said electric motor means,
- hydraulic actuator means coupled to said ports of said hydraulic pump means for receiving fluid in either of two flow directions and performing work as a function thereof, and
- electronic control means for applying electrical power to said electric motor means so as to obtain a desired work at said actuator means,
- said bidirectional electric motor means having a motor output shaft, and said hydraulic pump means comprising bidirectional hydraulic pump means coupled to said shaft,
- said bidirectional hydraulic pump means comprising a pair of unidirectional hydraulic pumps and a pair of directional couplers respectively connecting said pumps to said motor output shaft such that said pumps are alternately coupled to said shaft as a function of direction of rotation of said shaft, each of said unidirectional pumps having an inlet port and an outlet port, and said system further comprising valve means responsive to direction and/or pressure of hydraulic fluid flow for controlling fluid flow between said actuator means and said pump ports.

5,778,672
BRAKE VALVE
Douglas Michael Durant, Waterloo, Iowa, and Peter William Backes, Searcy, Ark., assignors to Deere & Company, Moline, Ill., and Vickers, Inc., Searcy, Ark.
Filed Oct. 17, 1996, Ser. No. 733,229
Int. Cl.⁶ B60T 13/00; F15B 7/00
U.S. Cl. 60—547.1

3 Claims



1. A two stage brake valve for communicating fluid pressure to a brake mechanism, the brake valve having an inlet for receiving pressurized brake fluid from a pump, a reservoir port, a stepped bore and a stepped piston movable therein, the stepped piston comprising a larger diameter prefill piston and a smaller diameter hollow high pressure piston, the stepped piston being movable away from a rest position to transfer fluid to the brake mechanism, the stepped bore and the stepped piston forming a high volume prefill chamber and a high pressure chamber, the high pressure piston having a metering groove communicated with the brake mechanism, the metering groove being communicated with the inlet when the high pressure piston has moved a certain distance to transfer fluid from the high pressure chamber to the brake mechanism, characterized by:

a bleed orifice formed in the high pressure piston, so that, during initial movement of the stepped piston from its rest position the bleed orifice communicates the high pressure chamber to the reservoir port while the metering groove is in communication with the inlet, the bleed orifice being closed upon movement of the high pressure piston a predetermined distance beyond said certain distance.

5,778,673
BRAKE CYLINDER MEANS FOR A MOTOR VEHICLE
Gregor Poertzgen, Koblenz, Germany, and Bob Uzzell, Redditch, Great Britain, assignors to Lucas Industries public limited company, United Kingdom
Filed Oct. 9, 1996, Ser. No. 728,086
Claims priority, application Germany, Oct. 11, 1995, 95 307 222.0

Int. Cl.⁶ B60T 11/224

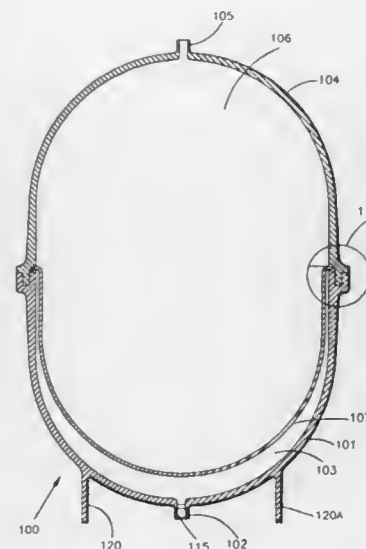
U.S. Cl. 60—577

1 Claim

1. Brake cylinder (1) for a motor vehicle, comprising a cylinder/piston means (2) adapted to be operated by a brake pedal means for generating pressure in a hydraulic brake system of the motor vehicle, characterized in that the cylinder/piston means (2) is provided in an outer cylinder means (3) in an axially movable manner;
- a spring (4) is provided to resiliently bias said cylinder/piston means (2) against said outer cylinder (3);
- in a normal actuation position said piston (2b) of said cylinder/piston means (2) being essentially non-movable with respect to the cylinder (2a) of said cylinder/piston means (2), such

formed in the lower side wall portion, a plurality of air inlets formed in the bottom, and an inner flange positioned above the air outlets;

- b) a cooling seat supported on the inner flange, the cooling seat including a lower side;
- c) a partitioning board disposed above the cooling seat, the partitioning board including a plurality of compartments for receiving water therein;
- d) a heat-radiating fan within a bottom portion of the housing;
- e) a heat-radiating plate positioned above the fan;
- f) a cooling chip having a cold inner face attached to the lower side of the cooling seat and a hot inner face attached to the heat-radiating plate;
- g) a power switch disposed on an outer side of the housing, the power switch being in electrical connection to the cooling chip and the fan for actuating same; and
- h) a water level switch disposed in the housing for detecting the water level in the housing and controlling the operation of the cooling chip.



5,778,678

METHOD AND APPARATUS FOR PRODUCING LIQUID MIXTURES OF OXYGEN AND NITROGEN

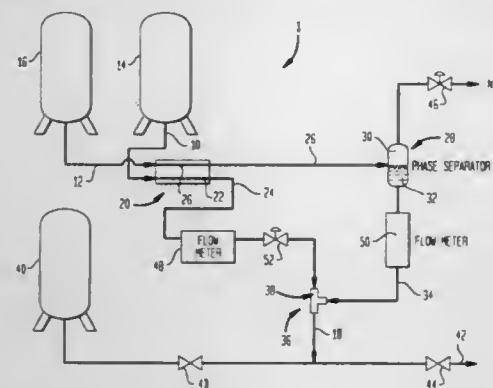
Ron C. Lee, Bloomsbury, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Filed Nov. 20, 1996, Ser. No. 752,313

Int. Cl.⁶ F17C 11/00

U.S. Cl. 62—46.1

7 Claims



1. A method of mixing liquid oxygen and liquid nitrogen to form a mixture, said method comprising: indirectly exchanging heat between streams of said liquid oxygen and liquid nitrogen to form a subcooled liquid oxygen stream and a partly vaporized liquid nitrogen stream, both at substantially a same temperature; the pressure of said liquid nitrogen being controlled so that said same temperature is also controlled; phase separating said partly vaporized liquid nitrogen stream to form liquid and vapor nitrogen phases; and combining a liquid phase stream composed of said liquid nitrogen phase with said subcooled liquid oxygen stream.

5,778,679

METHOD AND APPARATUS FOR INCREASING ACCEPTANCE AND ADJUSTING THE RATE OF PRESSURE VARIATIONS WITHIN A PRESPECIFIED RANGE IN PRECHARGED FLUID STORAGE SYSTEMS

George M. Celorier, Jr., Franklin, and Joseph Gerstmann, Framingham, both of Mass., assignors to Amtrol Inc.

Filed Oct. 28, 1996, Ser. No. 739,051

Int. Cl.⁶ F17C 5/02

U.S. Cl. 62—47.1

40 Claims

1. A method for increasing the working fluid storage capacity of a precharged fluid storage system, wherein said system includes a

fluid containment vessel, flexible means for separating the interior of said vessel into (a) a first portion for storing an expansion fluid used to precharge said vessel at ambient temperature to a predetermined back pressure exerted on said means for separating and into (b) a second portion for storing said working fluid, comprising the steps of:

- (a) precharging said vessel by introducing a volatile expansion fluid into the first portion of said vessel; and
- (b) introducing said working fluid into the second portion of said vessel to displace said means for separating and cause said volatile expansion fluid to at least in part condense to reduce the increase of the back pressure of said volatile expansion fluid on said means for separating in comparison with the back pressure that would be exerted on said means for separating using an ideal gas expansion fluid, to thereby permit additional working fluid to be introduced into said vessel.

5,778,680

APPARATUS FOR STORING A MULTI-COMPONENT CRYOGENIC MIXTURE WITHIN A CONTAINER

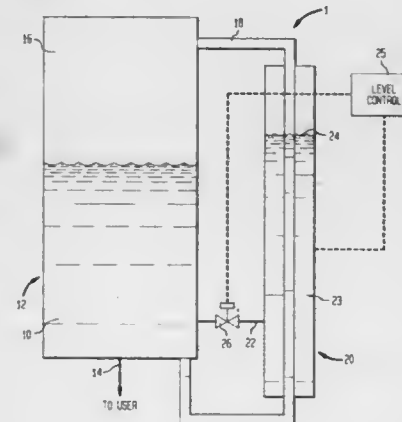
David G. Wardle, Bridgewater, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Filed May 23, 1997, Ser. No. 862,807

Int. Cl.⁶ F17C 3/10

U.S. Cl. 62—48.2

4 Claims



1. An apparatus for storing a multi-component cryogenic mixture as a liquid, said multi-component cryogenic mixture containing at least first and second components, the first component being more volatile than the second component, the second component having a bubble point temperature, at atmospheric pressure, lower

than that of said first component at an above atmospheric pressure, said apparatus comprising:

- a container for storing said cryogenic mixture, said cryogenic mixture vaporizing through heat leakage into said container such that a vapor phase of said mixture, enriched in said first component, is formed in a head space region of said container, at said above atmospheric pressure, and a liquid phase of said mixture, enriched in said second component, is formed below said head space region of said container;
- a conduit communicating between locations of said container above at and below said head space region of said container such that a vapor phase stream composed of the vapor phase of the mixture flows into said conduit; and
- a reservoir open to the atmosphere and in communication with said container such that a liquid phase stream, made up of said liquid phase, flows into said reservoir and develops an ever increasing second component concentration, said reservoir in a heat transfer relationship with said conduit to condense said vapor phase stream and said reservoir configured to develop a level of said liquid phase stream relative to said liquid phase such that condensate formed from condensation of said vapor phase stream develops a sufficient head to re-enter said liquid phase of said mixture within said container, thereby to stabilize first and second component concentration within said liquid phase of said mixture.

5,778,681

COOLING DEVICE FOR COOLING HEATABLE GAS CHROMATOGRAPHY ANALYTE SAMPLE INJECTOR

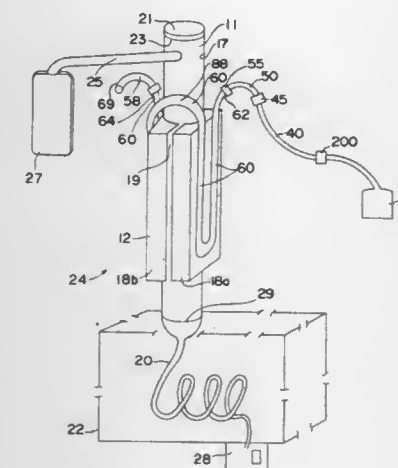
Kenneth Li, Piedmont, and John Robinson, Concord, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 15, 1997, Ser. No. 838,148

Int. Cl.⁶ F17C 9/02

U.S. Cl. 62—50.2

26 Claims



1. A cooling apparatus for cooling a gas chromatography analyte sample injector, comprising:

- a coolant delivery pathway for carrying coolant from a coolant supply to the gas chromatography injector, said delivery pathway having
- a supply tube, said supply tube being flexible to allow elastic deformation, and
- a cooling tube connected in fluid communication with said supply tube, said cooling tube having a thermal conductivity of at least about 200 watts/meter ° C., said cooling tube configured such that at least a portion of said cooling tube is engageable in physical contact with a portion of the injector to permit heat exchange between cooling fluid flowing within the cooling tube and the injector; and
- a coolant exhaust, in fluid connection with said cooling tube, for exhausting coolant away from the injector.

5,778,682

REACTIVE PVD WITH NEG PUMP

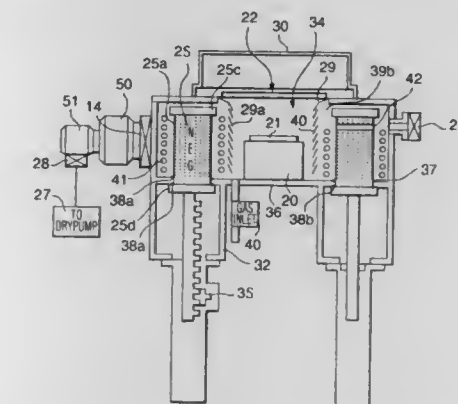
Luc Ouellet, Granby, Canada, assignor to Miel Corporation, Kanata, Canada

Filed Jun. 20, 1996, Ser. No. 666,257

Int. Cl.⁶ B01D 8/00

U.S. Cl. 62—55.5

8 Claims



1. An apparatus for carrying out reactive physical vapor deposition on a substrate to form a nitride layer, comprising a vacuum chamber; a substrate support in said vacuum chamber; a target over said substrate support made of a metal selected from the group consisting of a refractory metal and noble metal; a gas inlet for supplying nitrogen gas to said vacuum chamber; and a non-evaporable getter pump for serving as the primary pumping means in said vacuum chamber during the reactive physical vapor deposition of a nitride of said metal onto said substrate, said non-evaporable getter pump consisting of a material insensitive to nitrogen.

5,778,683

THERMAL STORAGE SYSTEM CONTROLLER AND METHOD

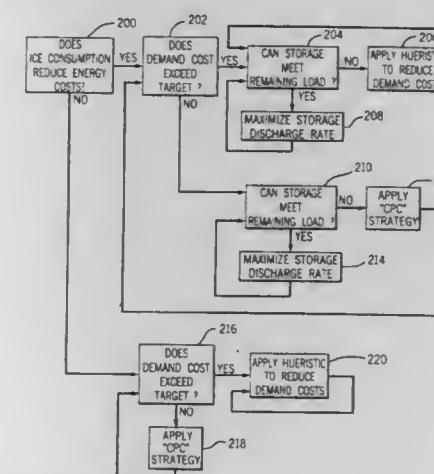
Kirk H. Drees, Cedarburg, Wis., and James E. Braun, West Lafayette, Ind., assignors to Johnson Controls Technology Co., Plymouth, Mich.

Filed Nov. 30, 1995, Ser. No. 565,441

Int. Cl.⁶ F25D 3/00

U.S. Cl. 62—59

19 Claims



a second data structure for storing a target demand cost that is determined by minimizing the demand costs independent of the energy costs for a sub-period of the billing period;

a memory having comparative rules that utilize a ratio of said on-peak energy rate to said off-peak energy rate and said target demand cost; and

a processor connected to said memory that uses said comparative rules in order to select a control strategy for the thermal storage system, whereby the energy costs are minimized subject to the demand costs and the utility costs for the billing period are reduced.

5,778,684

Patent Not Issued For This Number

5,778,685

CLATHRATE FORMING MEDIUM AND ITS USE IN THERMAL ENERGY STORAGE SYSTEMS AND PROCESSES FOR THERMAL ENERGY STORAGE AND TRANSFER

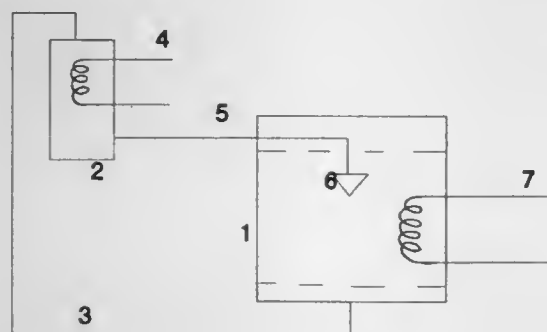
Rajiv R. Singh, Getzville; Raymond H. P. Thomas; D. P. Wilson, both of Amherst, and R. Robinson, Cheektowaga, all of N.Y., assignors to Allied Signal Inc, Morristown, N.J.

Continuation of Ser. No. 513,566, May 11, 1995, which is a continuation of Ser. No. 995,239, Dec. 22, 1992. This application May 5, 1997, Ser. No. 851,159

Int. Cl.⁶ F25D 3/00; C09K 5/00

U.S. Cl. 62—66

8 Claims



1. A thermal energy storage system comprising:

- (a) a clathrate formation chamber containing a clathrate forming cooling medium comprising water and a hydrofluorocarbon wherein the hydrofluorocarbon is $\text{CHF}_2\text{CHFCHF}_2$, $\text{CF}_2\text{HCF}_2\text{CH}_2\text{F}$, $\text{CF}_3\text{CHFCH}_2\text{F}$, $\text{CF}_3\text{CH}_2\text{CF}_2\text{H}$, $\text{CF}_3\text{CF}_2\text{CH}_3$, $\text{CF}_3\text{CHFCH}_2\text{H}$, $\text{CF}_3\text{CH}_2\text{CF}_3$, $\text{CF}_3\text{CF}_2\text{CF}_2\text{H}$, $\text{CH}_2\text{FCF}_2\text{CF}_3$, $\text{CHF}_2\text{CF}_2\text{CH}_3$, $\text{CF}_3\text{CF}_2\text{CF}_2\text{CH}_3$, $\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{H}$, or $\text{CF}_3\text{CFHCFHCF}_3$;
- (b) means for lowering the temperature in said clathrate formation chamber; and
- (c) means for circulating the cooling medium through a heat exchanger.

METHOD OF CONTROLLING AN OPERATION OF AN AUTOMATIC ICE MAKER IN A REFRIGERATOR

Byung-Joon Choi, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Rep. of Korea

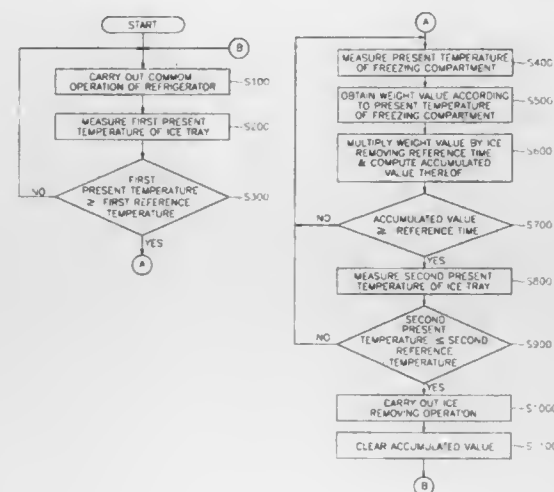
Filed May 30, 1997, Ser. No. 866,084

Claims priority, application Rep. of Korea, Sep. 25, 1996, 96-42576

Int. Cl.⁶ F25C 1/10

U.S. Cl. 62—71

13 Claims



9. A method of controlling an operation of an automatic ice maker in a refrigerator, said method comprising the steps of:

- carrying out a common operation of a refrigerator;
- measuring a first present temperature of an ice tray through an ice making sensor when an operating signal is generated with respect to said automatic ice maker while carrying out step (i);
- comparing the first present temperature measured in step (ii) with a first reference temperature;
- measuring a present temperature of a freezing compartment through a freezing sensor when step (iii) judges that the first present temperature is the same as or higher than said first reference temperature;
- obtaining a weight value differently established according to a range of the present temperature of said freezing compartment, measured in step (iv);
- computing a time by multiplying the weight value obtained in step (v) by an ice removing reference time and computing an accumulated value by accumulating the computed time;
- comparing the accumulated value computed in step (vi) with a reference time;
- measuring a second present temperature of said ice tray through said ice making sensor when step (vii) judges that the accumulated value is the same as or larger than the reference time;
- comparing the second present temperature measured in step (viii) with a second reference temperature;
- carrying out an ice removing operation when step (ix) judges that the second present temperature is the same as or lower than the second reference temperature; and
- clearing the accumulated value recorded in a memory in relation with an ice making operation.

5,778,687

TEMPERATURE CONTROL

Stephen N. Waldron, Lingfield, England, assignor to The BOC Group plc, Windlesham, England

Continuation of Ser. No. 691,899, Aug. 1, 1996, abandoned.

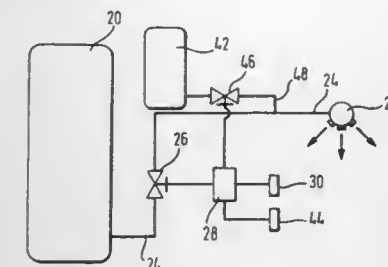
This application Jun. 26, 1997, Ser. No. 883,556

Claims priority, application United Kingdom, Aug. 1, 1995, 9515782

Int. Cl.⁶ F25B 9/00

U.S. Cl. 62—78

5 Claims



1. An apparatus for controlling the temperature while maintaining a breathable atmosphere in a building for human or animal occupancy comprising: a storage vessel including a quantity of liquefied breathable, life supporting gas such that, when fully vaporized, it consists of from about 19% to 23% by volume of oxygen and from about 77% to 81% by volume of nitrogen; dispensing means within an upper portion of said building for dispensing said gas and including vaporizing means for vaporizing the gas during dispensing such that the vaporized gas acts to chill the atmosphere within the building; temperature sensing and control means for sensing the temperature within said building and actuating said dispensing means at or above a predetermined temperature; an additional source of liquefied oxygen or oxygen-rich gas for increasing the oxygen level of said gas; and oxygen sensing means for sensing the oxygen concentration in said building and actuating the flow of said liquefied gas from said additional source when the oxygen concentration falls below a predetermined level.

5,778,688

TEMPERATURE CONTROLLING METHOD FOR SEPARATE COOLING REFRIGERATOR HAVING ROTARY BLADE

Hae-jin Park, Suwon; Hai-min Lee; Juong-ho Kim, both of Seoul; Soo-chul Shin, Kyungki-do; Jae-in Kim, Seoul, and Yun-seok Kang, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 23, 1997, Ser. No. 839,075

Claims priority, application Rep. of Korea, Apr. 30, 1996, 96-13970; Mar. 31, 1997, 97-11844

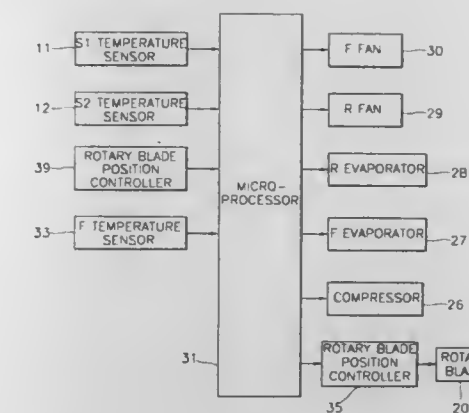
Int. Cl.⁶ F25D 17/08

U.S. Cl. 62—89

12 Claims

1. A temperature controlling method for a separate cooling refrigerator having a rotary blade in which a freezer compartment and a refrigeration compartment having the rotary blade at the rear thereof are separately cooled by installing an evaporator and a ventilation fan in each compartment, said method comprising the steps of:

- comparing each temperature measured by a temperature sensor for the freezer compartment and a temperature sensor for the refrigeration compartment to properly distribute cool air into the freezer compartment and the refrigeration compartment;
- inferring a temperature equilibrium angle of the rotary blade required for discharging cool air into the highest-temperature portion among a predetermined number of portions within the refrigeration compartment whose temperatures are inferred; and



(c) controlling a stationary angle of the rotary blade toward the inferred temperature equilibrium angle.

5,778,689

SYSTEM FOR MAINTAINING REFRIGERATION DOORS FREE OF FROST AND CONDENSATION

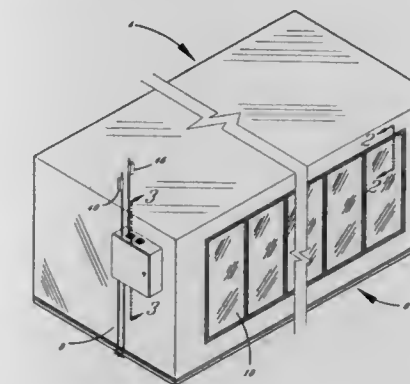
Bryan Beatenbough, 508 Bowers St., Royston, Ga. 30662

Filed May 19, 1997, Ser. No. 858,526

Int. Cl.⁶ H05B 3/84

U.S. Cl. 62—150

10 Claims



1. An energy conservation device for use with display type refrigeration and freezer equipment having glass display doors for preventing the formation of condensation and frost on said glass, said device comprising:

- a power source;
- heating elements arranged with portions of said doors, said heating elements acting to maintain said doors within a desired temperature range;
- a control connected with said heating elements and an electrical power source, said control including:
- monitors for monitoring room temperature and relative humidity, said monitors being operative to convert said monitored temperature and humidity into dew point degrees;
- a pulse activator connected with said heating elements for delivery of electrical pulses of preselected duration and a controlled active width to said heating elements for maintaining said doors within said desired temperature range;
- a processor inter-connecting said monitor and said pulse activator, said processor continuously accessing said dew point and continuously determining the active width of said electrical pulses necessary to maintain said doors within said desired temperature range, said processor continuously delivering said electrical pulses to said pulse activator for delivery to said heating elements; whereby
- a minimum of electrical energy is required for maintaining said glass doors free of condensation and frost.

5,778,690

METHOD FOR CONTINUOUSLY RUNNING A MULTI-TEMP REFRIGERATION CIRCUIT AT A HIGH COMPRESSOR SPEED

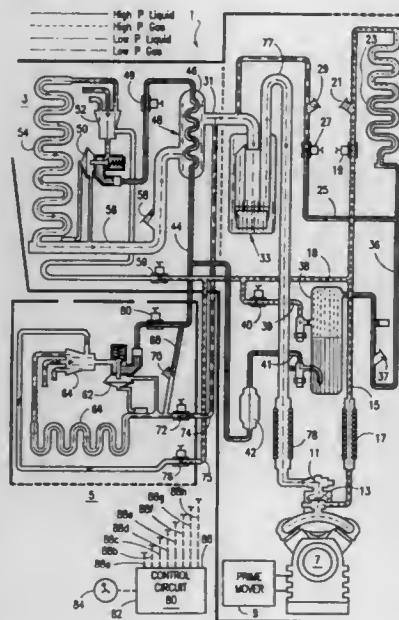
Jay Lowell Hanson, Bloomington; Steven Bruce Helgeson, Lakeville, and Stanley Oscar Holum, W. St. Paul, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed May 13, 1997, Ser. No. 855,273

Int. Cl.⁶ F25B 13/00

U.S. Cl. 62—160

18 Claims



1. A method for continuously operating a multi-temp refrigeration system at a high compressor speed, wherein said system includes a compressor for compressing a refrigerant at a high speed and a low speed, a condenser coil for receiving and liquefying hot gaseous refrigerant, at least first and second evaporator coils for heating and cooling at least two different conditioned spaces, respectively, a hot gas valve for admitting hot gaseous refrigerant to one of said first or second evaporator coils to heat one or the other of said conditioned spaces, and a condenser inlet valve for admitting a flow of hot gaseous refrigerant to said condenser coil, comprising the steps of

- opening said evaporator hot gas valve to admit hot gaseous refrigerant through one of said evaporator coils;
- closing said condenser inlet valve to direct a flow of hot gaseous refrigerant to said open evaporator hot gas valve, and
- periodically opening and reclosing said condenser inlet valve to maintain a refrigerant head pressure in said system below a level associated with a system shut-down condition while continuously operating said compressor at said high speed.

5,778,691

GAS INJECTION TYPE HEAT PUMP APPARATUS

Takahisa Suzuki, Kariya; Yuuji Takeo, Toyoake, and Yukikatsu Ozaki, Nishio, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Jul. 8, 1997, Ser. No. 889,216

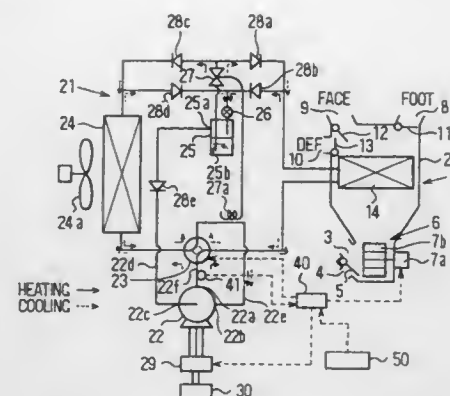
Claims priority, application Japan, Jul. 12, 1996, 8-183722

Int. Cl.⁶ F25B 13/00

U.S. Cl. 62—160

11 Claims

1. A gas injection type heat pump apparatus comprising:
a blower for blowing air;
a casing for forming an air passage through which air blown by said blower flows;
a compressor having a suction port for sucking refrigerant having a low pressure, a refrigeration cycle, a gas injection port for introducing gas refrigerant having an intermediate



pressure, and a discharge port for discharging the compressed refrigerant having a high pressure;
an inside heat exchanger disposed in said air passage, for performing heat exchange between the blown air and the refrigerant;
an outside heat exchanger disposed outside said air passage, for performing heat exchange between outside air and the refrigerant;
first decompressing means for decompressing the high-pressure side pressure to an intermediate pressure;
a gas-liquid separator for separating the refrigerant decompressed in said first decompressing means into gas refrigerant and liquid refrigerant;
introducing means for introducing the gas refrigerant separated in said gas-liquid separator into said gas injection port;
second decompressing means for decompressing the liquid refrigerant; and
physical amount detecting means for detecting a physical amount relative to the high-pressure side pressure of the refrigeration cycle,
air amount upper limit value determining means for determining an upper limit value based on the physical amount detected by said physical amount detecting means, wherein,
the refrigerant flows in the order of said compressor, said inside heat exchanger, said first decompressing means, said gas-liquid separator, said second decompressing means, and said outside heat exchanger in a heating operation, and
an amount of air passing through said inside heat exchanger in the heat operation is restricted to the upper limit value.

5,778,692

ALLOCATION OF COMPRESSORS TO COOLING CHAMBERS

Gerald A. Gura, Charlotte, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

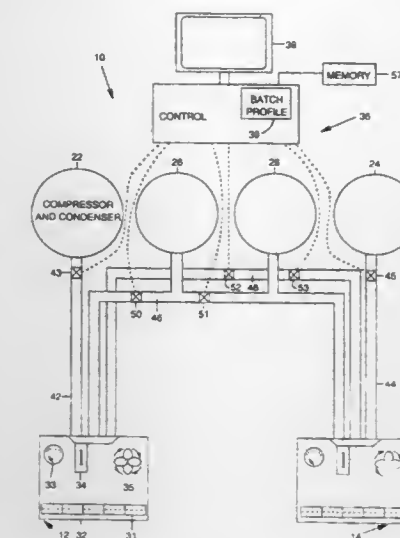
Filed Aug. 20, 1996, Ser. No. 699,905

Int. Cl.⁶ F25B 7/00; I/10

U.S. Cl. 62—175

3 Claims

1. A cooling system comprising:
at least two insulated chambers;
a first compressor permanently allocated to a first one of said chambers;
a second compressor permanently allocated to a second one of said chambers;
a third compressor selectively allocated to either said first chamber or said second chamber; and
means, including a data base storing information indicating a minimum number of compressors required to meet a cooling requirement, for selectively allocating said third compressor



to either said first chamber or said second chamber to meet a cooling requirement based on said information.

5,778,693

AUTOMOTIVE HYDRAULIC ENGINE COOLING SYSTEM WITH THERMOSTATIC CONTROL BY HYDRAULIC ACTUATION

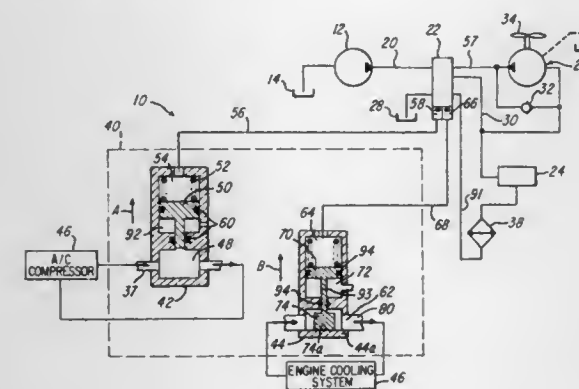
Michael J. Mientus, Dayton, Ohio, assignor to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Filed Dec. 20, 1996, Ser. No. 770,832

Int. Cl.⁶ F25D 17/00

U.S. Cl. 62—181

29 Claims



14. A method for thermostatically controlling cooling in a hydraulic cooling system associated with an engine of an automobile, said cooling system comprising a pump, a first hydraulic component and a second hydraulic component; said method comprising the steps of:

- hydraulically sensing a bypass condition;
 - said bypass condition corresponding to an increase in air conditioning refrigerant pressure or increase in engine temperature;
 - generating hydraulic signal in response to said by-pass condition; and
 - controlling an amount of hydraulic fluid delivered to said first hydraulic component and said second hydraulic component in response to said hydraulic signal;
- wherein said hydraulically sensing step further comprises the step of:
integrally forming a temperature sensitive material onto said coolant sensor, said temperature sensitive material expanding when said coolant temperature exceeds a predetermined coolant temperature.

5,778,694

COOLING AIR SUPPLY CONTROL APPARATUS OF REFRIGERATORSeong-Wook Jeong, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
PCT No. PCT/KR95/00031, § 371 Date Jan. 19, 1996, § 102(e)
Date Jan. 19, 1996, PCT Pub. No. WO95/27238, PCT Pub. Date Oct. 12, 1995

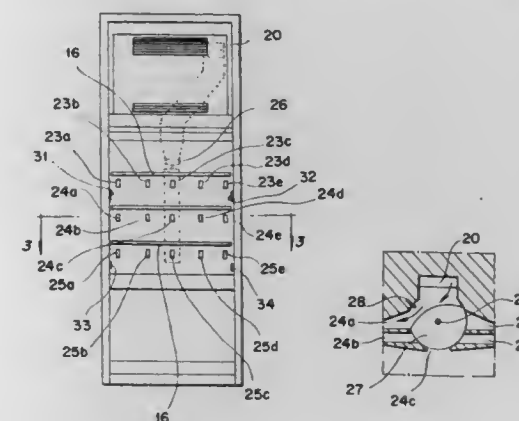
PCT Filed Apr. 3, 1995, Ser. No. 583,052

Claims priority, application Rep. of Korea, Apr. 4, 1994, 1994-7078

Int. Cl.⁶ F25D 17/04

U.S. Cl. 62—187

10 Claims



9. A refrigerator comprising:

- a body forming a refrigerating chamber having a rear wall, a duct disposed in the rear wall for receiving a cold air flow, and a plurality of vertically spaced groups of cold air inlet openings communicating with the duct for directing cold air into the refrigerating chamber in respective directions the cold air inlet openings of each of the groups being horizontally spaced apart for directing cold air into horizontally adjacent areas of the refrigerating chamber;
- a cold air generator for supplying cold air to the duct; and
- a motor-driven damper disposed in the duct with respective portions of the damper adjacent each of the groups of cold air inlet openings and positionable in different positions for directing cold air to selected ones of the cold air inlet openings within the groups.

5,778,695

LIQUID LEVEL SENSOR USING REFRIGERANT SUBCOOLING

H. Kenneth Ring, Houston, Minn., and Jon P. Hartfield, La Crosse, Wis., assignors to American Standard Inc., Piscataway, N.J.

Filed May 21, 1997, Ser. No. 859,900

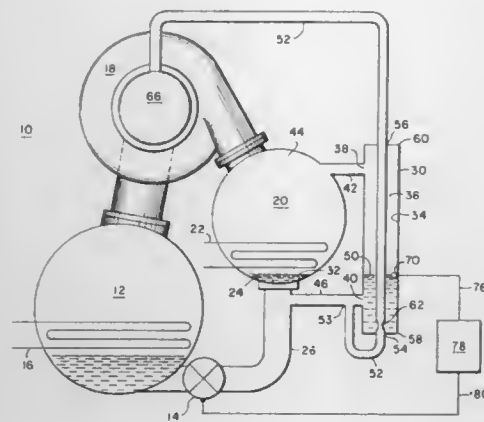
Int. Cl.⁶ F25B 41/04

U.S. Cl. 62—218

25 Claims

15. An air conditioning system comprising:

- a compressor;
- a first heat exchanger;
- an expansion valve;
- a second heat exchanger;
- conduit sequentially linking the compressor, the first heat exchanger, the expansion valve, and the second heat exchanger into a circuit;
- a liquid level sensor operably associated with the first heat exchanger, the sensor including a housing, a vapor port in the housing connected to a vaporous region of the first heat exchanger, a liquid port in the housing connected to a liquid region of the first heat exchanger, a chamber within the housing and open to the liquid and vapor ports so as to receive liquid and vaporous refrigerant from the first heat exchanger and establish a liquid level in the chamber representative of



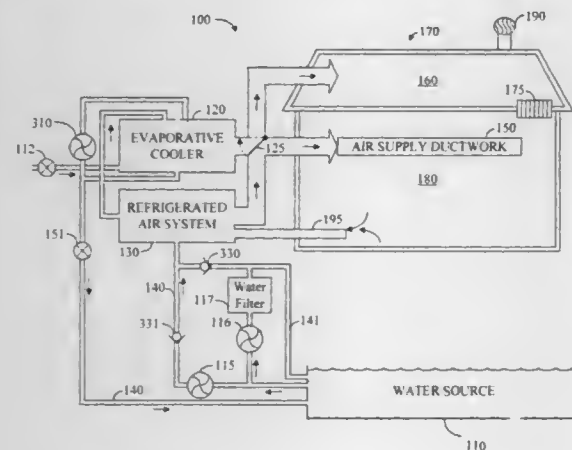
the refrigerant level in the first heat exchanger, cooling conduit for cooling the interior of the chamber, and at least one sensor located proximal a desired liquid level in the chamber and measuring a condition in the chamber; and a controller operably connected to the sensor and receiving a signal from the sensor representative of the measured condition, the controller being operable to control the expansion valve as a function of the condition signal.

5,778,696
METHOD AND APPARATUS FOR COOLING AIR AND WATER

Leo B. Conner, 2444 N. 39th Pl., Phoenix, Ariz. 85008
Filed Sep. 5, 1997, Ser. No. 924,727
Int. Cl.⁶ F25B 27/00

U.S. Cl. 62—238.6

14 Claims

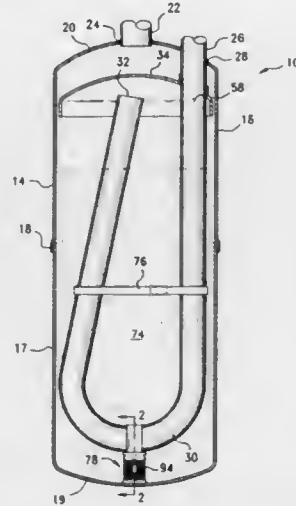


1. An apparatus for cooling the ambient air in a structure, the apparatus comprising:
a water source;
an air supply ductwork system;
a refrigerated air-conditioning system with a water-cooled condenser coupled to the water source and coupled to the air supply ductwork;
an evaporative cooler coupled to the water source and coupled to the air supply ductwork; and
wherein the water source provides water to the refrigerated air-conditioning system and the evaporative cooler and wherein the evaporative cooler discharges output air through the air supply ductwork to a first location in the structure and the refrigerated air-conditioning system discharges output air through the air supply ductwork to a second location in the structure and wherein unused water is returned to the water source.

5,778,697
ACCUMULATOR FOR REFRIGERATION SYSTEM
Gary Wantuck, Farmington Hills, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Mar. 15, 1996, Ser. No. 616,864
Int. Cl.⁶ F25B 43/02

U.S. Cl. 62—503

26 Claims



1. An accumulator located in a refrigeration system at the outlet side of an evaporator, said refrigeration system introducing moisture, particle and oil contaminants into refrigerant flowing through the system and said refrigerant having liquid and vapor components at an outlet side of the evaporator, said accumulator comprising:

- a refrigerant reservoir having a longitudinal axis oriented in a vertical plane, said reservoir having an enclosed interior with an axial lower region for the accumulation of liquid refrigerant and an axial upper region for the accumulation of vaporous refrigerant, an inlet port for directing liquid and vaporous refrigerant from the evaporator into the reservoir, and an outlet port for directing vapor refrigerant from the reservoir, desiccant disposed within said reservoir for removing the moisture from the refrigerant,
- a return conduit disposed within said reservoir for directing vapor refrigerant from the reservoir to said outlet port, said return conduit having an inlet end disposed toward the axial upper region of the reservoir and an outlet end fluidly connected to said outlet port, and
- an oil inlet tube and screen assembly connected to said return conduit for directing oil in the liquid refrigerant into the vapor refrigerant flow in the return conduit, said oil inlet tube having a first, outlet end connected to said return conduit, and a second, inlet end extending axially downward to a location proximate a lower end wall of the reservoir, said screen assembly surrounding said oil inlet tube and preventing particle contaminants from entering the inlet end of the oil inlet tube, said screen assembly supported against the return conduit.

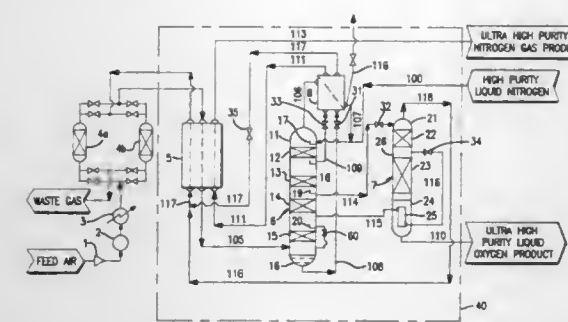
5,778,698
ULTRA HIGH PURITY NITROGEN AND OXYGEN GENERATOR UNIT

Takao Yamamoto, Hyogo-ken, Japan, assignor to Teisan Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 22, 1996, Ser. No. 755,006
Claims priority, application Japan, Mar. 27, 1996, 8-072448
Int. Cl.⁶ F25J 3/00

U.S. Cl. 62—652

7 Claims

1. An ultra high purity nitrogen and oxygen generator unit, which comprises:
a first rectification column (6) having, in order from above, a first upper space part (11), an upper rectifying part (12), an



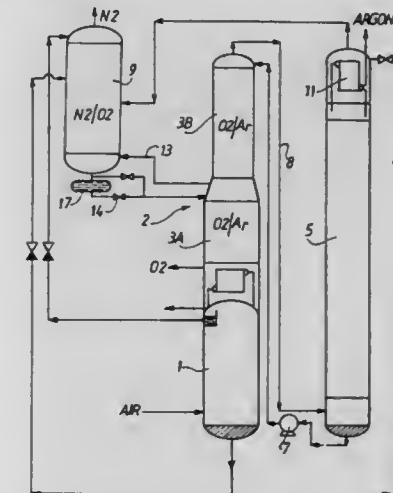
upper-stage middle rectifying part (13), a lower-stage middle rectifying part (14), a lower rectifying part (15) and a first lower space part (16);

- a second rectification column (7) having a second upper space part (21), an upper rectifying part (22), a lower rectifying part (23) and a second lower space part (24);
- a main heat exchanger (5) for cooling down air as a feed material through an indirect heat exchange with a refrigerant, and supplying the thus-cooled air to below said lower rectifying part (15);
- a high purity liquid nitrogen supply pipe (100) for supplying high purity liquid nitrogen for replenishment of cold (also as a reflux liquid) to above said upper rectifying part (12);
- a nitrogen condenser (8) for cooling down high purity nitrogen gas collected in the first upper space part (11), which is introduced therein, and supplying the thus-condensed high purity liquid nitrogen to above the upper rectifying part (12) as a reflux liquid and discharging the non-condensed gas out of the system;
- a first expansion valve (31) for reducing the pressure of oxygen-rich liquid air collected in the first lower space part (16), which is introduced therein, and supplying the thus-generated oxygen-rich waste gas to the nitrogen condenser (8) as a refrigerant;
- an oxygen-rich waste gas pipe (117) for supplying the oxygen-rich waste gas which has been used as a refrigerant in the nitrogen condenser (8) and then discharged therefrom to said main heat exchanger (5) as a refrigerant;
- an ultra high purity nitrogen delivery pipe (109) for recovering a portion of the reflux liquid from between the upper rectifying part (12) and the upper-stage middle rectifying part (13) as ultra high purity liquid nitrogen;
- a second expansion valve (32) for reducing the pressure of a portion of the reflux liquid which is introduced therein from between the upper-stage middle rectifying part (13) and the lower-stage middle rectifying part (14), and supplying the thus-generated gas-liquid mixture to above the upper rectifying part (22) of the second rectification column (7);
- a reboiler (25) placed in the second lower space part (24) for heating liquid collected in the second lower space part to evaporate a portion thereof;
- a pipe (115) for extracting air from between the lower-stage middle rectifying part (14) and the lower rectifying part (15), and supplying the thus-extracted air to the reboiler (25) as a heating source;
- a pipe (116) having a fourth expansion valve (34) for supplying air which has been used as the heating source in the reboiler (25) so as to be cooled down and liquefied as itself to above the lower rectifying part (23);
- a waste gas pipe (118) for discharging gas collected in the second upper space part (21) out of the system; and
- an ultra high purity liquid oxygen delivery pipe (110) for recovering liquid collected in the second lower space part (24) as ultra high purity liquid oxygen.

5,778,699
PROCESS AND INSTALLATION FOR THE PRODUCTION OF ARGON BY CRYOGENIC DISTILLATION
Bernard Darrebeau, Sartrouville, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procédés Georges Claude, Paris Cedex, France
Continuation of Ser. No. 715,878, Sep. 19, 1996, abandoned.
This application May 19, 1997, Ser. No. 858,462
Int. Cl.⁶ F25B 1/00

U.S. Cl. 62—653

17 Claims



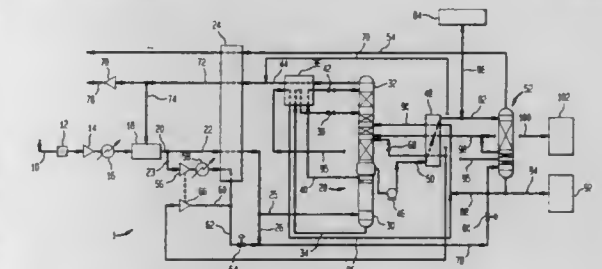
1. In a process for the production of argon by cryogenic distillation of air, comprising the steps of:
i) separating air into a fraction enriched in nitrogen and a fraction enriched in oxygen in a medium pressure column of a double column;
ii) sending at least one portion of the two fractions to an auxiliary column;
iii) withdrawing a stream rich in argon from the low pressure column and sending it to an argon purification column;
iv) producing pure argon at the head of the purification column; the improvement comprising the steps of:
v) sending a stream withdrawn from an intermediate level of the low pressure column to an auxiliary column;
vi) withdrawing said stream rich in argon from said low pressure column at a level above said intermediate level.

5,778,700
METHOD OF PRODUCING GASEOUS OXYGEN AT VARIABLE RATE
Rong-Jwyn Lee, Sugarland, Tex.; Joseph P. Naumovitz, Lebanon, and Craig Steven LaForce, Whitehouse Station, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Apr. 30, 1997, Ser. No. 846,748
Int. Cl.⁶ F25J 3/00

U.S. Cl. 62—656

6 Claims



1. A method of producing gaseous oxygen at a variable rate having cyclically repeating high and low demand phases, said method comprising the steps of:

- (a) rectifying air in a cryogenic rectification process including a double distillation column having lower and higher pressure distillation columns operatively associated with one another in a heat transfer relationship to produce a liquid oxygen column bottoms in said lower pressure column;
- (b) introducing a pressurized liquid oxygen stream into a mixing column to produce said gaseous oxygen as tower overhead and an oxygen enriched liquid column bottoms;
- (c) introducing a reflux stream into said lower pressure column as reflux;
- (d) removing liquid oxygen column bottoms from said lower pressure column;
- (e) during said low demand phase using part of the liquid oxygen column bottoms removed from said lower pressure column to form said pressurized liquid oxygen stream and storing a remaining part of said liquid oxygen column bottoms to create stored liquid oxygen column bottoms;
- (f) during said high demand phase, using all of the liquid oxygen column bottoms removed from said lower pressure column and said stored liquid oxygen column bottoms to form said pressurized liquid oxygen stream;
- (g) removing oxygen enriched liquid column bottoms from said mixing column;
- (h) during said high demand phase, using part of the oxygen enriched liquid column bottoms removed from said mixing column to form said reflux stream and storing a remaining part of said oxygen enriched liquid column bottoms to create stored oxygen enriched liquid column bottoms;
- (i) during said low demand phase, using all of the oxygen enriched liquid column bottoms removed from said mixing column and stored oxygen enriched liquid column bottoms to form said reflux stream;
- (j) steps (d) and (i) being conducted so that flow rates of said liquid oxygen column bottoms removed from said lower pressure column and said reflux stream remain substantially constant during both said low and high demand phases; and extracting a product stream composed of said tower overhead of said mixing column.

5,778,701

Patent Not Issued For This Number

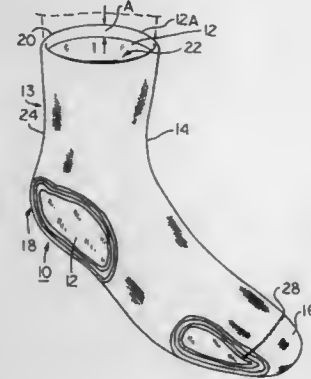
5,778,702

DOUBLE PLY SOCK AND METHOD OF MAKING SAME
 Jerry O. Wrightberry, 3110 Forestdale Dr., Burlington, N.C. 27215

Filed Sep. 6, 1996, Ser. No. 708,252
 Int. Cl.⁶ D04B 1/26; A41B 11/00

U.S. Cl. 66—178 R

31 Claims



1. A hygienic, moisture management sock comprising a unitary, continuous tube of knitted material having a first end and a second end, said tube folded about a fold line such that a first portion of

said tube extending between said fold line and said first end forms an outer ply and a second portion of said tube extending between said fold line and said second end forms an inner ply disposed within and substantially coextensive with said outer ply, said first end closed to form an outer toe portion, said second end closed to form an inner toe portion, said inner and outer plies each including a tubular foot portion, and wherein at least the entirety of said foot portion of said inner ply is undyed and said outer ply is at least partially dyed.

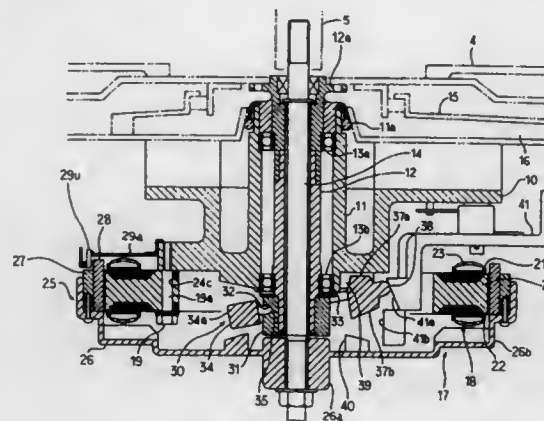
5,778,703

WASHING MACHINE WITH IMPROVED DRIVE STRUCTURE FOR ROTATABLE TUB AND AGITATOR
 Masahiro Imai, Tajimi; Hiroshi Nishimura, Seto; Masaru Koshimizu, Komaki; Koichi Hosomi, Seto; Kazunobu Nagai, Aichi-ken; Isamu Nitta, Kasugai, and Yutaka Inagaki, Fuji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-Ken, Japan

Filed Dec. 24, 1996, Ser. No. 773,681
 Int. Cl.⁶ D06F 37/40

U.S. Cl. 68—12.02

26 Claims



1. A washing machine comprising:
 a hollow tub shaft mounted on a first stationary portion of the machine for rotation;
 a rotatable tub rotatably mounted on an upper end of the tub shaft;
 an agitator shaft concentrically inserted in the tub shaft for rotation and having upper and lower ends projecting out of the tub shaft;
 an agitator mounted on the upper end of the agitator shaft to be located in the rotatable tub;
 a stator fixed to a second stationary portion of the machine to be concentric with the agitator shaft;
 a rotor mounted on the lower end of the agitator shaft to constitute an electric motor together with the stator; and
 a clutch including a holder provided on the tub shaft for rotation with the latter, a first engagement portion formed in a third stationary portion of the machine, a second engagement portion formed in the rotor, a lever provided on the holder to be selectively engaged with one of the first and second engagement portions, the lever operatively coupling the rotor to the agitator shaft when engaged with the first engagement portion, the lever operatively coupling the rotor to both of the agitator and tub shafts when engaged with the second engagement portion, and toggle type springs holding the lever in engagement with the first and second engagement portions respectively, the clutch being actuated so that the rotor of the motor is operatively coupled to the agitator shaft to thereby drive the agitator for execution of a wash step of a washing operation and so that the rotor of the motor is operatively coupled to both of the agitator and tub shafts to drive the agitator and the rotatable tub for execution of a dehydration step of the washing operation.

5,778,704

ARRANGEMENT FOR A CONTINUOUS DIFFUSER FOR WASHING PULP

Allan Jonsson, Kil, Sweden, assignor to Kvaerner Pulp AB, Karlstad, Sweden

PCT No. PCT/SE95/00700, § 371 Date Dec. 27, 1996, § 102(e)
 Date Dec. 27, 1996, PCT Pub. No. WO96/01339, PCT Pub. Date Jan. 18, 1996

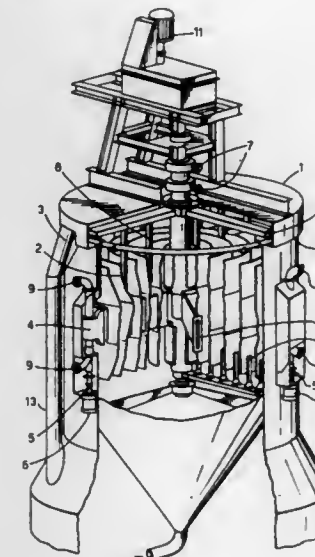
PCT Filed Jun. 12, 1995, Ser. No. 765,579

Claims priority, application Sweden, Jul. 4, 1994, 9402360

Int. Cl.⁶ D21D 5/02

U.S. Cl. 68—181 R

30 Claims



1. Arrangement for a continuous diffuser for washing pulp, comprising a number of hydraulic cylinders distributed in a ring, arranged so as to repeatedly raise and then lower a screen assembly which is included in the diffuser, characterized in that groups of two or more hydraulic cylinders which lie adjacent to each other in the ring are coupled in parallel with each other, but in series with the next group of adjacent hydraulic cylinders which are also coupled in parallel, so that each group of parallel-coupled hydraulic cylinders is coupled in series with the next group of parallel-coupled hydraulic cylinders.

5,778,705

MOTORIZED APPARATUS WITH AN APPARATUS FOR AUTOMATICALLY OPENING AND CLOSING THE DOOR

Young Su Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 12, 1996, Ser. No. 712,846

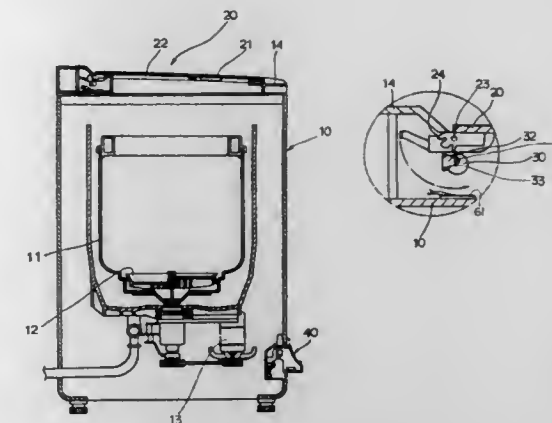
Claims priority, application Rep. of Korea, Nov. 9, 1995, 1995 32794 U

Int. Cl.⁶ D06F 37/28

U.S. Cl. 68—196

8 Claims

1. A washing machine comprising:
 a housing having a top opening, and a recess formed in a lower portion thereof;
 an upwardly open spin basket disposed in the housing;
 a door mounted on the housing for opening and closing the top opening;
 a motor-driven opening/closing mechanism operably for opening and closing the door; and



a signal generating mechanism including a foot pedal mounted on the housing in the recess for providing the opening/closing mechanism with an actuating signal.

5,778,706

MARINE PROPELLER ANTI-THEFT DEVICE

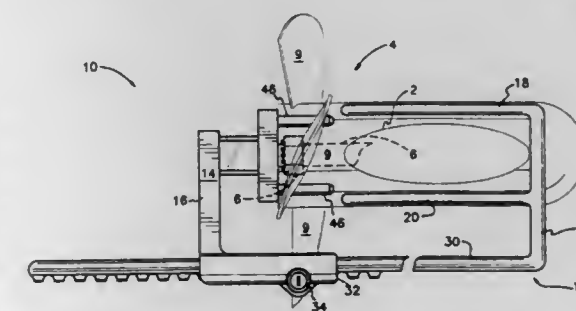
Troy Testa, 365 B Holly Ridge Dr., Lilburn, Ga. 30247

Filed Jun. 27, 1997, Ser. No. 884,127

Int. Cl.⁶ F16B 41/00

U.S. Cl. 70—14

9 Claims



1. An anti-theft device for discouraging theft of a propeller from an outboard engine assembly, said anti-theft device comprising:
 a clevis component having a left lateral member, a right lateral member, and an end member, for partially surrounding the front of a shaft housing of the outboard engine assembly, and a clevis center line disposed centrally between and parallel to said left lateral member and said right lateral member;
 a cap for obstructing access to a propeller nut, said cap having a face oriented towards said clevis component, and said clevis component arranged to open towards said cap;
 a connection member connecting said cap to said clevis component in spaced apart relationship therefrom, and for maintaining said face of said cap oriented towards said clevis component; and
 locking means for locking said cap in fixed spatial relation to said clevis component.

5,778,707

Patent Not Issued For This Number

5,778,708

DOOR LOCKING MECHANISM FOR SAFES

Gauis P. Crosby, Springville, and Terry R. Zierenberg, Mapleton, both of Utah, assignors to Liberty Safe & Security Products, Inc., Springville, Utah

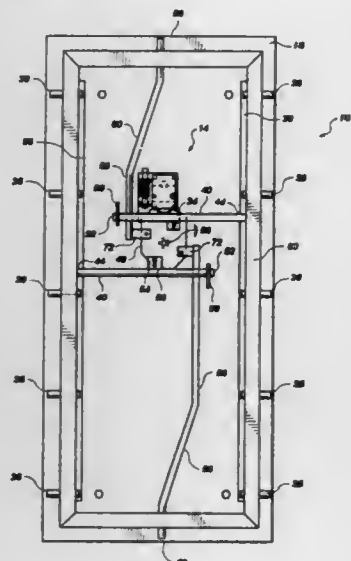
Continuation of Ser. No. 435,583, May 5, 1995, abandoned.

This application Feb. 20, 1997, Ser. No. 803,410

Int. Cl.⁶ E05B 63/14

U.S. Cl. 70—118

27 Claims



1. A door locking mechanism for safes having a door with a perimeter and a frame disposed on an interior of the door adjacent the perimeter, and a locking member attached to the door, moveable between locked and unlocked positions, the locking mechanism comprising:

a rotatable actuator plate disposable adjacent a locking member such that movement of the locking member between locked and unlock positions selectively prevents and permits rotation of the actuator plate;

a plurality of actuation means connected in rotatable attachment to the rotatable actuator plate, at least one of the actuation means extending generally horizontally from the actuator plate and at least one extending generally vertically from the actuator plate, and such that rotation of the actuator plate causes horizontal movement of the horizontally extending actuation means and generally vertical movement of the generally vertically extending actuation means;

at least one locking bar and an adjustable attachment means for attaching the locking bar to the at least one horizontal actuation means so as to enable adjustment of horizontal and vertical orientations of the locking bar relative to the horizontal actuation means, the adjustment means comprising at least one slot, and the locking bar having a plurality of locking bolts disposed thereon so as to be extendable through the frame of a door such that movement of the horizontal actuation means causes simultaneous movement of the locking bolts in a similar direction; and

wherein the rotatable actuator plate is disposed so as to simultaneously actuate each of the actuation means from a location adjacent the locking member.

5,778,709

VEHICLE STEERING WHEEL AND AIR BAG ANTITHEFT LOCKING APPARATUS

Henry Hsu, 112-15 Northern Blvd., Corona, N.Y. 11368

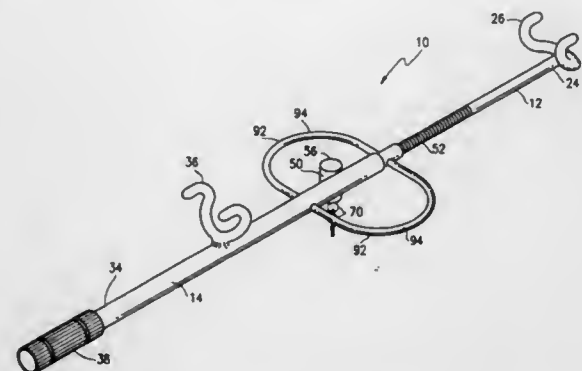
Continuation of Ser. No. 615,863, Mar. 14, 1996, abandoned.

This application Nov. 21, 1997, Ser. No. 976,369

Int. Cl.⁶ B60R 25/02

U.S. Cl. 70—209

5 Claims



1. A steering wheel antitheft locking apparatus for preventing theft of a vehicle having a steering wheel with a wheel rim and at least a first and a second wheel spoke, each wheel spoke having lateral spoke span adjacent said wheel rim and an air bag disposed atop said first and second wheel spoke, comprising:

a tubular outer wheel spanning member having a receiving end and a handle end;

a first pair of laterally spaced apart, outwardly facing hooks joined together by a first wheel rim overlay member and mounted to said outer wheel spanning member between said receiving end and said handle end, said first wheel rim overlay member spanning the lateral spoke span of said first wheel spoke and an adjacent wheel rim arcuate segment such that said first pair of hooks trap said first wheel spoke therebetween, each hook of said first pair of hooks having substantially co-planar hook legs which wrap at least 180 degrees around a corresponding wheel rim arcuate segment therebetween;

an elongate inner wheel spanning member having an entry end and an outwardly protruding end, said entry end being telescopically fitted into said outer wheel spanning member receiving end;

one of said handle end and said protruding end protrudes substantially radially from said steering wheel when said apparatus is engaged to prevent turning of said steering wheel sufficiently to drive said vehicle;

a second pair of laterally spaced apart, outwardly facing hooks joined together by a second wheel rim overlay member and mounted to said inner wheel spanning member, said second wheel rim overlay member spanning the lateral spoke span of said second wheel spoke and a respective adjacent wheel rim arcuate segment such that said second pair of hooks trap said second wheel spoke therebetween, each hook of said second pair of hooks having substantially co-planar hook legs which wrap at least 180 degrees around a corresponding wheel rim arcuate segment therebetween;

a key operated locking mechanism which releasably secures said inner and outer wheel spanning members together at any of a plurality of telescopic extensions; and

an air bag protecting structure including a shielding member integral with and extending laterally from said outer wheel spanning member and disposed within said wheel rim, substantially perpendicular to said first pair of laterally spaced apart, outwardly facing hooks, such that when said first pair of hooks trap said first wheel spoke therebetween, said shielding member is automatically positioned over said air bag and blocks removal of said air bag.

5,778,710

DEVICE FOR LOCKING GEAR SHIFT OF MOTOR VEHICLE

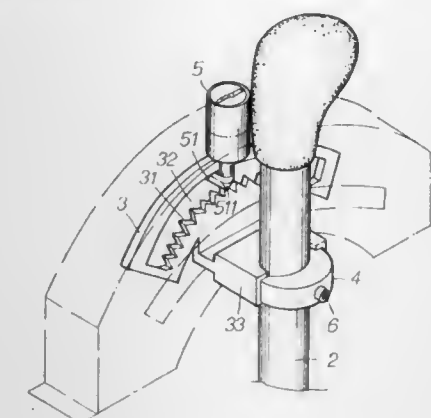
Hsi-Yen Hu, 14 Lane Pa Tei, Yung Ching Hsiang, Changhua, Taiwan, and Yuan-Chih Chiang, 386 Shan Chiao Road, Sec. 3, She Tou Hsiang, Changhua, Taiwan

Filed Jul. 2, 1997, Ser. No. 886,945

Int. Cl.⁶ B60R 25/06

U.S. Cl. 70—247

2 Claims



1. A device for locking a gear shift of a motor vehicle, said device comprising:

a lock seat having an upright portion and a horizontal portion, said upright portion consisting of an upper side, a lower side having a toothed portion, and an open space located between said upper side and said toothed portion of said lower side, said horizontal portion consisting of a fastening seat provided with an indentation having ratchet teeth;

a shackle corresponding in shape and size to said indentation of said fastening seat and having two arms provided with ratchet teeth engageable with said ratchet teeth of said fastening seat, said shackle further provided with a through hole engageable with a fastening bolt; and

a lock body provided with a stopping block having a tapered free end and secured to a gear shift mount of the motor vehicle such that said tapered free end of said stopping block is located in said open space of said upright portion of said lock seat, said lock body further provided with a lock core movably housed in said lock core such that said lock core can be rotated downwards by a key to enable said tapered free end of said stopping block of said lock body to be caught by said toothed portion of said lock seat, and that said lock core can be rotated upwards by the key to enable said tapered free end of said stopping block of said lock body to be released by said toothed portion of said lock seat.

5,778,711

HIGH SECURITY ELECTRONIC DIAL COMBINATION LOCK

Klaus W. Gartner, Palos Verdes Estates; Larry I. Cutter, Torrance, and Peter J. Phillips, Lake Arrowhead, all of Calif., assignors to Masco Corporation, Taylor, Mich.

Continuation of Ser. No. 237,258, May 2, 1994, Pat. No. 5,540,068, which is a continuation of Ser. No. 629,119, Dec. 17, 1990, Pat. No. 5,307,656. This application Jun. 26, 1996,

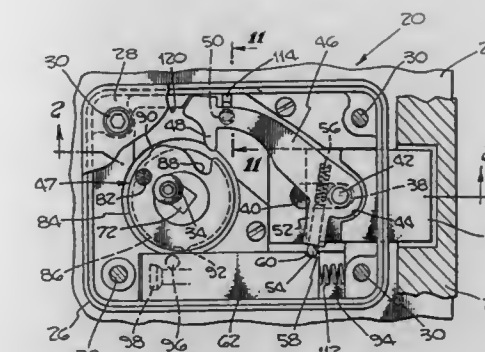
Ser. No. 669,748

Int. Cl.⁶ E05B 47/00

U.S. Cl. 70—277

16 Claims

1. A method of controlling a lock including a knob, a rotatable cam wheel operably connected to the knob and defining a surface, a locking mechanism movable between a locked position and an unlocked position, and a movable lever operably connected to the locking mechanism and having a protrusion adapted to engage the cam wheel, the method comprising the steps of:



holding the lever in a position where the protrusion cannot contact the surface of the cam wheel and in such a manner that the lever and the knob are operably disconnected and the lever will not move in response to rotation of the knob;

receiving an unlock signal;

forming a rigid connection between the lever and the knob with at least one substantially rigid member, while maintaining the lever in a position where the protrusion cannot contact the surface of the cam wheel, in response to a receipt of the unlock signal; and

transmitting a force applied to the knob to the lever through the rigid connection after the lever and the knob have been operably connected to drive the lever to a position where the protrusion can contact the surface of the cam wheel in such a manner that the lever will be pulled by the cam wheel during rotation of the cam wheel.

5,778,712

CYLINDER LOCK/KEY COMBINATION, A KEY AND A KEY BLANK THEREFOR

Lars Walldén, Eskilstuna, Sweden, assignor to ASSA AB, Eskilstuna, Sweden

PCT No. PCT/SE95/00886, § 371 Date Jan. 28, 1997, § 102(e)

Date Jan. 28, 1997, PCT Pub. No. WO96/03562, PCT Pub.

Date Feb. 8, 1996

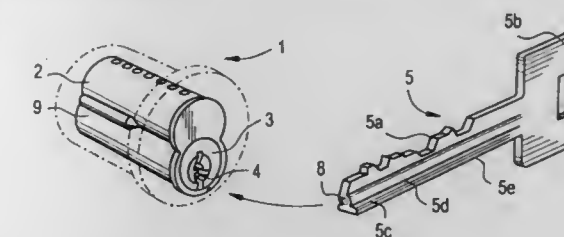
PCT Filed Jul. 26, 1995, Ser. No. 776,393

Claims priority, application Sweden, Jul. 28, 1994, 9402588

Int. Cl.⁶ E05B 15/08

U.S. Cl. 70—453

12 Claims



1. A cylinder lock/key combination in which the cylinder lock (1) includes a lock cylinder (2), a plug (3) rotatably mounted in the cylinder (2) and provided with a key slot (4) having a rear end wall, a plurality of tumbler pins (6), which are activated by a key-code (5a) when the key (5) is inserted in the key-slot (4), and which lock (1) is of the type where the blade part (5c) of the key (5) is not turnable relative to or within the slot (4), said combination comprising:

a rod-shaped element (7) which extends axially in a cantilever fashion in the key slot (4) and is secured at one end to the rear end wall of the key slot (4),

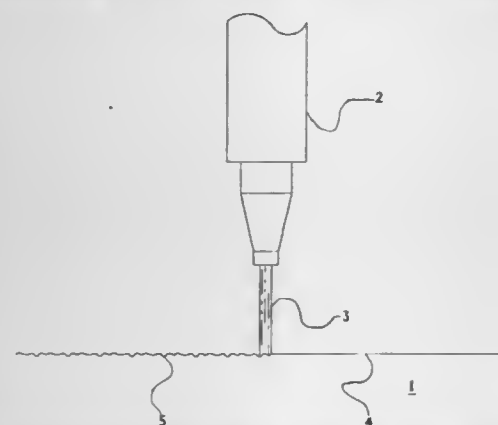
wherein the key (5) comprises a grip part (5b), a coded (5a) blade part (5c), and an axially extending part (5d) which includes an axially extending hole (8), in which hole the rod-shaped element (7) is received as the key is inserted into the lock, and

wherein the rod-shaped element (7) and the hole (8) in the key (5) are disposed eccentrically in relation to a center of the plug (3), so that as the key (5) is turned to activate rotation of the plug, the rod-shaped element (7) accompanies a rotational movement initiated by the key-activated rotation of the plug without forming a center for the rotational movement.

5,778,713
METHOD AND APPARATUS FOR ULTRA HIGH PRESSURE WATER JET PEENING
Tom Butler, Enumclaw; Dave Monserud, Seattle; Dave Bothell, Kent; Dave Steele, and John Hake, both of Seattle, all of Wash., assignors to Waterjet Technology, Inc., Kent, Wash.
Filed May 13, 1997, Ser. No. 855,288
Int. Cl.⁶ B24C 1/00; 3/00

U.S. Cl. 72—53

18 Claims

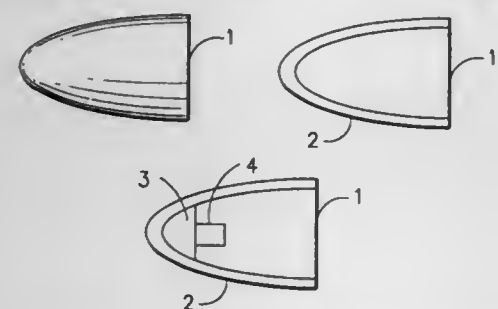


1. A method for peening a metal including the steps of producing a volume of ultra high pressure fluid; wherein the pressure of said volume of fluid is over 20,000 p.s.i. and; conveying said high pressure waterjet cutting nozzle; and ; releasing said ultra high pressure fluid to form an ultra high pressure waterjet, moving said ultra high pressure waterjet across the surface of metal sought to be peened in such a matter that said ultra high pressure waterjet contacts and compresses the surface of said metal until substantially all of the surface sought to be peened has been contacted by said jet and has been compressed, ceasing operation of said jet.

5,778,714
METHOD FOR MANUFACTURING SEAMLESS PIPE
Tatsuro Katsumura; Takashi Ariizumi; Motoharu Yamazaki, and Masahiko Yasukawa, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan
Filed May 13, 1996, Ser. No. 645,223
Claims priority, application Japan, May 19, 1995, 7-145673; Jun. 6, 1995, 7-162824; Jul. 4, 1995, 7-168634
Int. Cl.⁶ B21B 19/04; 17/10; 45/02

U.S. Cl. 72—97

22 Claims



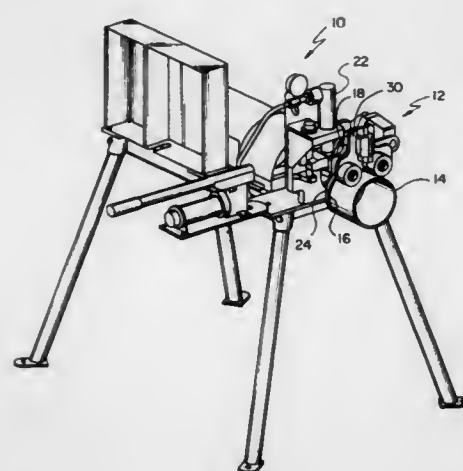
1. A method for manufacturing a seamless pipe, comprising the steps of:

- preparing a billet made of an alloy steel or an alloy having a main component selected from the group consisting of Cr, Ni and Mo;
- joining a steel plate at least to an end surface of the billet at which a piercing of the billet is to be commenced;
- preparing a piercing plug, the piercing plug comprising (i) a main body made of Mo, a Mo alloy or a heat resisting steel and (ii) a hard layer formed on the surface of the main body, wherein said hard layer is made of any one selected from the group consisting of stellite, a ceramic obtained by adding tungsten carbide to stellite, a ceramic obtained by adding a mixture composition of tungsten carbide and cobalt to stellite and a ceramic obtained by adding a compound of chromium and carbon to stellite;
- hot-piercing the billet at a hot-piercing temperature, to which the steel plate is joined, with the piercing plug by a Mannesmann piercing to produce a hollow shell, an oxide scale being formed from said steel plate, at the hot-piercing temperature, the oxide scale lubricating the piercing plug during the hot-piercing; and
- rolling the hollow shell to produce a seamless pipe.

5,778,715
COLD ROLLING POSITIONING ROLLER ASSEMBLY
Sandra M. Lippka, Warwick, R.I., and James O. Williams, Marlboro, Mass., assignors to Grinnell Corporation, Cranston, R.I.
Filed Nov. 5, 1996, Ser. No. 744,106
Int. Cl.⁶ B21D 17/04

U.S. Cl. 72—106

19 Claims

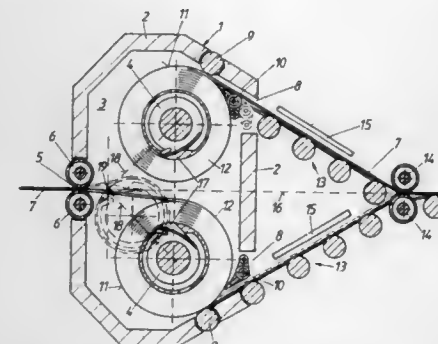


1. A positioning roller assembly for use when cold rolling a tube, the tube defining a longitudinal axis, comprising:
- first and second positioning rollers located at set relative positions offset axially from an inner groove roll and an outer groove roll during cold rolling, said first and second positioning rollers being disposed for initial contact with a tube surface to apply a load upon the tube surface generally directed along a direction of load applied by the outer groove roll, and
 - a mechanism for maintaining contact of said first and second positioning rollers relative to the tube surface during cold rolling.

5,778,716
COILER FURNACE FOR A HOT STRIP
Friedrich Moser, St. Florian, Austria, assignor to Voest-Alpine Industrieanlagenbau GmbH, Linz, Austria
PCT No. PCT/AT96/00070, § 371 Date Nov. 20, 1996, § 102(e)
Date Nov. 20, 1996, PCT Pub. No. WO96/32509, PCT Pub. Date Oct. 17, 1996
PCT Filed Apr. 11, 1996, Ser. No. 737,829
Claims priority, application Austria, Apr. 13, 1995, A 647/95
Int. Cl.⁶ B21B 27/06

U.S. Cl. 72—202

20 Claims



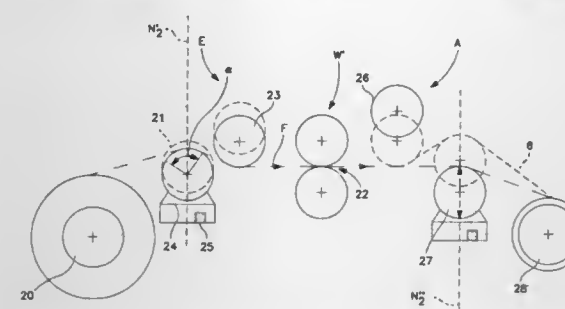
1. A coiler furnace for a hot strip, comprising a strip inlet opening, at least one coiler means formed by a coiler mandrel, a strip outlet opening different from the strip inlet opening and a heat-insulating furnace wall surrounding the coiler mandrel on all sides, wherein the coiler mandrel is movable by an adjustment device into a coiling start position at the strip inlet opening for the purpose of seizing the beginning of the hot strip, as well as into an uncoiling position in which a coil wound on the coiler mandrel is pressed against a pressing roller arranged, or to be arranged, stationarily at the coiler furnace, which pressing roller precedes the strip outlet opening in the uncoiling direction.

5,778,717
PROCESS AND DEVICE FOR ROLLING BANDS WITH UNEVEN THICKNESS AND/OR LENGTH DISTRIBUTION OVER THEIR WIDTH
Bernd Berger, Kaarst, and H. Dieter Volkenand, Hemer, both of Germany, assignors to Sundwiger Eisenhütte Maschinenfabrik GmbH & Co., Hemer, Germany
Filed Jun. 27, 1996, Ser. No. 673,796
Claims priority, application Germany, Jul. 7, 1995, 195 24 729.9

Int. Cl.⁶ B21B 39/08

U.S. Cl. 72—205

10 Claims



3. A device for compensating for lateral drift occurring on a band via a mill, said band having at least one of an uneven thickness and length distribution over the width of said band, comprising:
- at least one measuring device for detecting the distribution of tensile stresses over the width of said band, said at least one measuring device being located on at least one of an inlet and outlet side of said mill; and

at least one control roller, each located on said at least one of said inlet and said outlet side and corresponding to a respective one of said at least one measuring device, said at least one control roller being selectively swivelled based on the detected distribution of tensile stresses, wherein said at least one control roller is swivelled in at least one of a vertical and horizontal plane relative to said band to selectively compensate said detected distribution of tensile stresses until said stresses substantially equal a predetermined value to compensate for said lateral drift of each said band.

5,778,718
PROCESS FOR ROLLING TUBES
Horst Stinnertz, Willich, and Michael Baensch, Mönchengladbach, both of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany
Filed May 8, 1997, Ser. No. 853,077
Claims priority, application Germany, May 8, 1996, 196 20 161.6

Int. Cl.⁶ B21D 7/02

U.S. Cl. 72—214

3 Claims

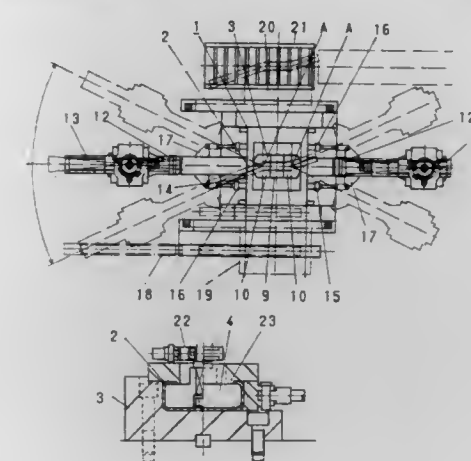
1. A process for rolling tubes in a grooved rolling mill having two rotary-driven rolls mounted opposite one another in a roll stand which are reciprocated on a tube-shaped rolling material arranged on a tapered rolling mandrel supported in an axial direction by a mandrel bar, wherein the rolls have, on their circumferential surface, narrowing work grooves substantially matching in shape to the tapered rolling mandrel, which roll down the rolling material on the rolling mandrel with each working pass of the rolls, whereby at the end of the working passes the rolls release the rolling material at the two dead centers of the roll stand path so as to advance and rotate the rolling material, the process comprising the step of:

driving asynchronously the tube-shaped rolling material and the rolling mandrel in the same rotational direction at different rotational speeds.

5,778,719
METHOD OF STRETCH-FORMING A CHANNEL MATERIAL
Masayoshi Takao, Akashi, Japan, assignor to Kawasaki Hydro-mechanics Corp., Hyogo, Japan
Filed Apr. 3, 1997, Ser. No. 833,072
Claims priority, application Japan, Apr. 12, 1996, 8-115713
Int. Cl.⁶ B21D 9/01

U.S. Cl. 72—296

14 Claims



1. A method of stretch-forming a channel material by feeding a channel material of predetermined length into a stretch forming apparatus and bending the material in predetermined form, the method comprising the steps of:

placing a mold in the apparatus in symmetry forward and rearward with respect to a length dimension of the apparatus so as to form a laterally symmetric bend in the channel material;

arranging a plurality of cores along the mold in such a manner that they can be inserted into and removed from the inside of a channel material to be fed into the apparatus, and supporting the arranged cores in such a manner that they can slide rightward and leftward with respect to the length dimension of the apparatus along the bend part of the material;

providing a spring device fitted in the mold area to centrally bias, for the next forming, the mold cores shifted rightward and leftward; and

bending the material in predetermined rightward and leftward directions so as to form said laterally symmetric bend, while stretching both end portions of the material by means of stretch cylinders.

5,778,720

PUNCH-OUT REMOVING TOOL

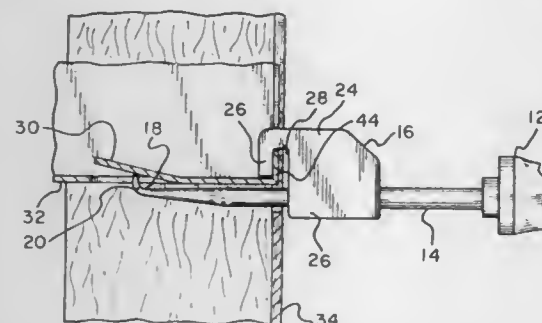
Bruce T. Olexa, Jr., 181 Briarwood Dr., Erma, N.J. 08204

Filed Feb. 24, 1997, Ser. No. 803,817

Int. Cl.⁶ B23P 19/04

U.S. Cl. 72—325

2 Claims



1. A tool for prying open punch-outs from an electrical box comprising:

a handle member;

an elongated shaft extending outwardly from said handle member, said elongated shaft terminating in a bent tip;

fulcrum means for engaging a portion of said box, said fulcrum means being slidably and rotatably mounted to said elongated shaft, said fulcrum means including a slide assembly having an opening extending therethrough, said elongated shaft extending through said opening in said slide assembly, said slide assembly further having a groove therein for engaging a tip of said box, and said slide assembly being adapted to move closer to or further from said bent tip;

said bent tip of said elongated shaft being adapted to act as a cam in order to pry open a punch-out from said box when said fulcrum means engages said box and said handle is rotated.

5,778,721

TOOLING MACHINE FOR RESHAPING WORKPIECES

Hans Klingel, Moglingen, and Werner Erlenmaier, Gerlingen, both of Germany, assignors to Trumpf GmbH & Co., Ditzingen, Germany

Filed Apr. 24, 1996, Ser. No. 636,978

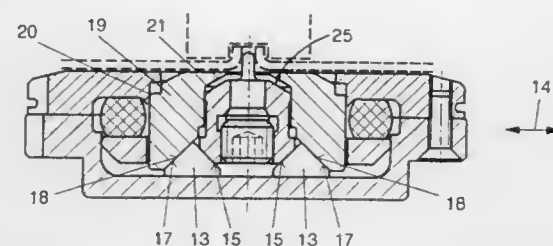
Claims priority, application Germany, Apr. 24, 1995, 295 06 877 U

Int. Cl.⁶ B21D 22/04; 28/24

U.S. Cl. 72—335

11 Claims

1. Tooling for use in a machine tool having a pressure element movable against a support surface for forming workpieces and disposed therebetween, said tooling comprising:



(a) a first tooling half adapted for mounting on the pressure element for movement therewith against a workpiece disposed between the pressure element and support surface and providing a first tool element;

(b) a second tooling half adapted for mounting in the support surface and providing a second tool element cooperating with said first tool element to shape a workpiece, said second tooling half comprising:

(i) a housing providing a cavity;

(ii) a thrust member slidably seated in said cavity and projecting outwardly of said housing, said thrust member being movable axially inwardly of said housing when acted upon by movement of said first tooling held thereagainst, said thrust member slidably seating said second tool element for axial movement therewith; and

(iii) moving means for slidably moving each second tool element axially oppositely of the movement of said thrust member and outwardly of said thrust member to cooperate with said first tool element, said thrust member having at least one inclined surface bearing upon a cooperating inclined surface of a wedge member slidably seated in said housing and movable against an inclined surface on said second tool member to move it axially within said thrust member and thereby provide said moving means.

5,778,722

METHOD OF PRODUCING SEAMLESS CANS

Norihito Saiki, Kawasaki; Katsuhiko Imazu, Yokohama; Akira Kobayashi, Chigasaki, and Tomomi Kobayashi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Continuation of Ser. No. 388,487, Feb. 14, 1995, abandoned.

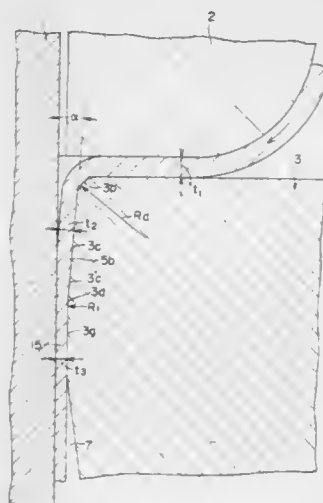
This application Jun. 9, 1997, Ser. No. 871,769

Claims priority, application Japan, Feb. 15, 1994, 6-039358

Int. Cl.⁶ B21D 51/26

U.S. Cl. 72—347

6 Claims



1. A method of producing a seamless can from a metal cup made of a metal sheet of which the inner and outer surfaces are coated with an organic film, which method comprises arranging coaxially

(1) an annular die which has a horizontal surface, an annular working surface continuous to the horizontal surface, a working corner portion of a small radius of curvature at a boundary portion between said surfaces, an ironing portion that protrudes most toward an inner side and is formed in said annular working surface, and an approach surface connecting the working corner portion to the ironing portion having an approach angle α of from 1 to 5 degrees, wherein the radius of curvature R_d of said working corner is selected so that the ratio thereof to thickness t_0 of the coated metal blank (R_d/t_0) is from 1.0 to 2.9, and a junction portion between said approach surface and said ironing portion is a sharp corner portion or is a curvature portion having a radius of curvature R_i which is smaller than $0.3 \times t_0$,

(2) an annular blank holder, and

(3) a punch having a front portion to form a main portion of side wall of the seamless can and a small diameter portion to form a thick portion to be subjected to necking of side wall of the seamless can, said annular die having a smaller inner diameter than an outer diameter of said annular blank holder; disposing said metal cup on said annular die; inserting said annular blank holder in the metal cup; advancing said punch from one annular blank holder into the annular die while pushing a bottom portion of the metal cup by the blank holder onto the horizontal surface of the annular die, so as to pass a wall portion of the metal cup that is to be worked through a space between the horizontal surface of the annular die and the blank holder and further through a space between the punch and the annular die; wherein a thickness of the side wall is reduced by bend-elongation at a working corner of the annular die so as to have a thickness (t_2), and then a main portion of the side wall is reduced by ironing between the front portion of the punch and the ironing portion of the annular die at an ironing ratio of from 10 to 40%, and a thick portion to be subjected to necking of the side wall is reduced by ironing between the small diameter portion of the punch and the ironing portion of the annular die at an ironing ratio of at least 5%, while the wall portion after bend-elongation contacts the approach surface, said ironing being defined by the following formula:

$$\text{Ironing ratio} = \frac{t_2 - t_3}{t_2} \times 100$$

where t_2 is a thickness of the wall portion bend-elongated by the working corner, and t_3 is a clearance between the ironing portion of the annular die and the punch.

5,778,723

METHOD AND APPARATUS FOR NECKING A METAL CONTAINER AND RESULTANT CONTAINER

Hans H. Diekhoff, Avonmore, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 260,285, Jun. 14, 1994, Pat. No. 5,557,963, which is a division of Ser. No. 922,913, Jul. 31, 1992, Pat. No. 5,355,710, which is a division of Ser. No. 343,943, Nov. 22, 1994, Pat. No. 5,718,352. This application Sep. 18, 1996, Ser. No. 713,998

Int. Cl.⁶ B21D 22/00; 22/21

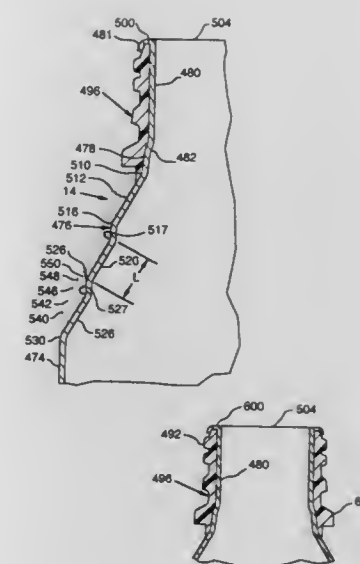
U.S. Cl. 72—356

22 Claims

1. A method of necking an end portion of a metal container comprising

progressively effecting in a plurality of steps a generally radially inward deformation of an axial portion of said container disposed between an open end of said container and a portion maintained at its initial diameter to establish a necked-in portion, adjacent said open end and a generally frustoconical transition portion between said necked-in portion and said portion retained at its original diameter,

subsequently reforming said transition portion to establish at least one outwardly concave portion underlying at least one outwardly convex portion and



establishing external threads on said necked-in portion to permit a threaded closure to be secured thereto creating generally straight portions in said transition portion between said concave portion and said convex portion, said generally straight portions measured with a length of about 0.375 to 0.625 inches.

5,778,724

METHOD AND DEVICE FOR MONITORING WEB BAGGINESS

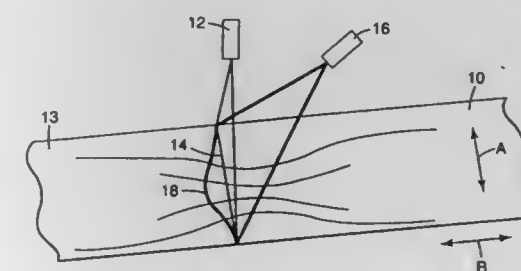
Todd E. Clapp, and John J. Costello, both of P.O. Box 33427, St. Paul, Minn. 55133-3427

Filed Sep. 7, 1995, Ser. No. 524,088

Int. Cl.⁶ G01L 5/04; G01N 21/84

U.S. Cl. 73—159

21 Claims



1. A method of monitoring bagginess of a web transverse to a longitudinal direction of the web, comprising the steps of:

projecting a first reference light at a first angle from a first light source onto a front face of the web transverse to the web; projecting a first measurement light at a second angle from a second light source onto the front face of the web non-perpendicular to the front face and transverse to the web, wherein the first angle is different from the second angle; and comparing a longitudinal distance on the front face of the web between a point along the first reference light and a corresponding point along the first measurement light to determine bagginess.

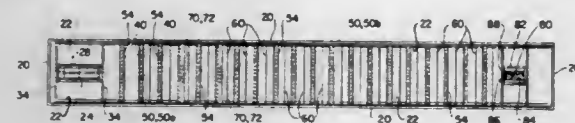
5,778,725
ASSEMBLY AND METHOD FOR TESTING AN
UNDERWATER GUN

Ivan N. Kirschner, Portsmouth, and Gary R. Berlam, Warwick, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 7, 1996, Ser. No. 759,821
Int. Cl.⁶ G01L 5/14

U.S. Cl. 73—167

14 Claims



1. A test assembly for testing an underwater gun in a body of liquid, said assembly for disposition in the body of liquid comprising:

- a mount for accepting and retaining the gun to be tested, with a barrel portion of the gun extending along an axis;
- a plurality of baffle plates, each having an aperture therethrough for alignment with the axis;
- a plurality of witness screens for alignment with the axis;
- a plurality of motion detection sensors for mounting in alignment with said apertures of said baffle plates, said motion detection sensors comprising electrical sensors in which passage of a bullet therethrough generates a signal in said sensors, which signal is detectable to enable determination of time of bullet passage past one of said sensors; and
- a bullet receptacle for alignment with the axis.

5,778,726
DEVICE FOR MONITORING A PREDETERMINED
LEVEL OF A LIQUID IN A CONTAINER

Roland Müller, Steinen; Winfried Maier, Maulburg, and Rolf Schwald, Schopfheim, all of Germany, assignors to Endress + Hauser GmbH + Co., Maulburg, Germany

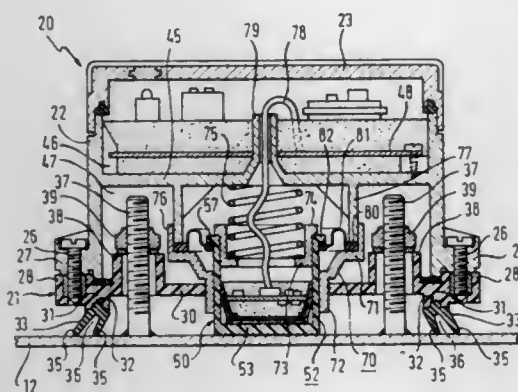
Filed Oct. 16, 1996, Ser. No. 733,098

Claims priority, application Germany, Oct. 17, 1995, 195 38 677.9

Int. Cl.⁶ G08B 21/00

U.S. Cl. 73—290 V

12 Claims



1. A device for monitoring a predetermined level of a liquid in a container by means of an ultrasonic sensor fitted on the outer surface of the container wall at a measurement point situated at the height of the level to be monitored and containing an ultrasonic transducer having a diaphragm in contact with the container wall, comprising an adapter which is configured so that it can be secured to containers of differing shape and/or differing materials in any way required, and a sensor block which contains the components of the ultrasonic sensor including the ultrasonic transducer and is

releasably connectable to the adapter while the adapter is secured to the container wall, the ultrasonic transducer being mounted axially displaceable in the sensor block so that it extends through an opening in the adapter towards the container wall when the sensor block is connected to the adapter the sensor block further comprising a spring biasing the ultrasonic transducer towards the container wall.

5,778,727
HEADED SPINDLE PIN FOR WOBBLE-TYPE SICKLE
DRIVE

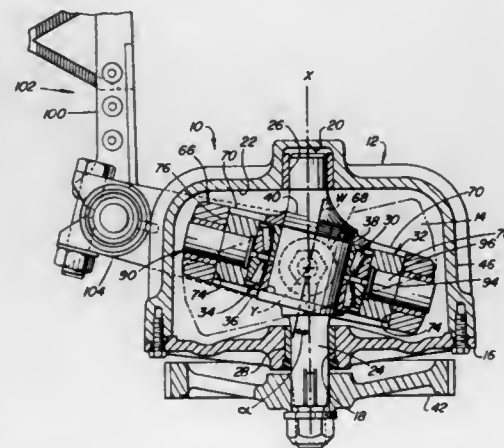
Craig Allen Richardson; James C. Walters; Jerry Lee Krafka, and Daniel J. Goodman, all of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Aug. 8, 1996, Ser. No. 693,628

Int. Cl.⁶ F16H 23/04

U.S. Cl. 74—60

2 Claims



1. In a wobble drive including a wobble drive shaft supported for rotating about a first axis and having a cylindrical wobble section formed about a second axis disposed at an angle to said first axis, a toroidal wobble shaft bearing housing mounted to said wobble section by a set of wobble bearings, and an output yoke including a yoke shaft, supported for rotation about a third axis extending perpendicular to said first axis, and joined to a pair of limbs having respective ends disposed against diametrically opposite locations of said wobble shaft bearing housing, each limb end being provided with a bearing bore extending radially relative to said third axis, a pair of pin bores being respectively provided in said bearing housing at said diametrically opposite locations in axial alignment with a respective bearing bore, a yoke bearing being received in each bearing bore, and a spindle pin being received in each yoke bearing and the adjacent pin bore, whereby rotation of said wobble drive shaft will cause oscillation of said wobble shaft bearing housing and, hence, of said yoke, an improved spindle pin connection between said pair of yoke limbs and said wobble shaft bearing housing, comprising: each spindle pin having an enlarged head at a radially inner end thereof preventing outward migration of said pins from said pin bore and yoke bearing; each of said pin bores including a counterbored section receiving the enlarged head of a respective one of the spindle pins; and said set of wobble bearings having outer races located in said bearing housing in respective positions wherein they cooperate to cover said counterbored sections of said pin bores, whereby said spindle pins are prevented from moving axially inwardly in said pin bores.

5,778,728
GEAR SHIFTING DEVICE FOR A CHANGE-SPEED
GEARBOX, PARTICULARLY FOR MOTOR VEHICLES
Hartmut Deidewig, Roesrath; Jean-Pierre Chazotte; Gustav Sabel, both of Cologne, and Mathias Doelling, Gladbach, all of Germany, assignors to Ford Global Technologies, Inc., Dearborn, Mich.

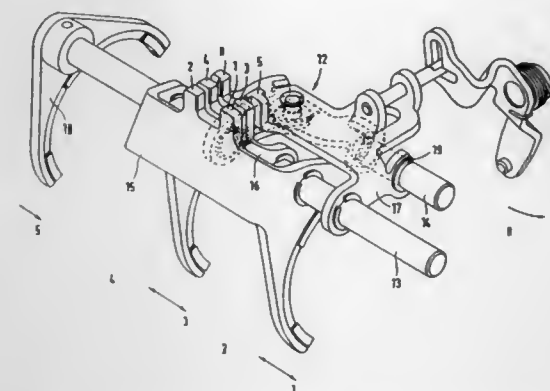
Filed Feb. 7, 1997, Ser. No. 797,258

Claims priority, application Germany, Feb. 17, 1996, 196 05 980.1

Int. Cl.⁶ F16H 5/04; 61/26

U.S. Cl. 74—473.25

11 Claims



5,778,731

RACK-AND-PINION GEAR

Theo Heep, Krefeld, Germany, assignor to TRW Inc.,
Lyndhurst, Ohio

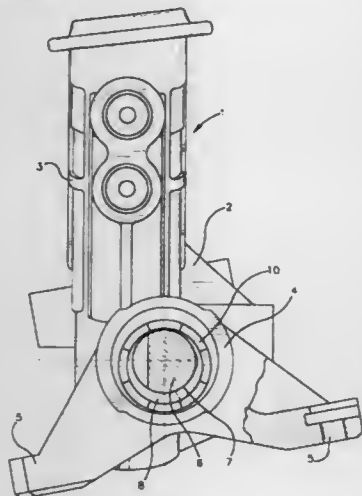
Filed Oct. 22, 1996, Ser. No. 734,584

Claims priority, application Germany, Oct. 26, 1995, 195 39
864.5

Int. Cl.⁶ B62D 3/12; F16H 1/04

U.S. Cl. 74—498

9 Claims



1. A rack and pinion steering mechanism comprising:
a rack centered on a rack axis and having rack teeth;
a pinion having teeth meshingly engaged with said rack teeth on said rack;
a housing enclosing said rack and said pinion, said housing having an axially extending passage, said passage having a first portion centered on said rack axis and a second portion centered on an eccentric axis offset from said rack axis, said second portion of said passage having a larger diameter than said first portion of said passage, said rack teeth on said rack and said teeth on said pinion being meshingly engaged in said first portion of said passage; and
a bearing element disposed in said passage in said housing and encircling said rack, said bearing element including a first sleeve section centered on said eccentric axis and a second sleeve section extending axially from said first sleeve section, said first sleeve section having a ring-shaped cross-section located in said second portion of said passage and said second sleeve section having a wedge-shaped cross-section extending circumferentially around a portion of said rack, said second sleeve section being disposed in said first portion of said passage.

5,778,732

SAFETY ARRANGEMENT FOR MOTOR VEHICLE LEG ROOM

Helmut Patzelt, Kernen; Eberhard Klemm, Esslingen; Norbert Wessels, Stuttgart, and Alfred Schnabel, Althengstett, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Jun. 24, 1996, Ser. No. 669,606

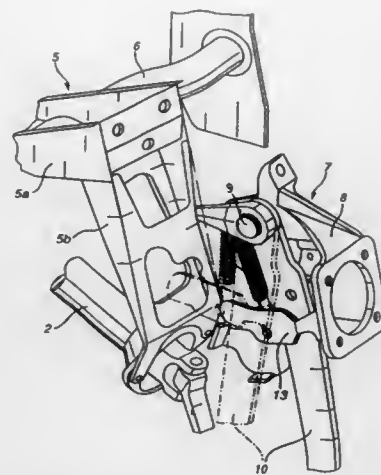
Claims priority, application Germany, Jun. 23, 1995, 195 22
398.5

Int. Cl.⁶ B62D 1/19

U.S. Cl. 74—512

8 Claims

1. A safety arrangement in a leg room region of a motor vehicle, comprising a safety steering column tube having a suspension which includes a strut configured to extend down into the leg room region and having a targeted bending zone to effect a crash-caused bending thereof and a raising of a lower end of the steering column tube, and a pedal assembly arranged laterally next to the strut on a front wall of the motor vehicle to bound a front region of the leg room, wherein at least a portion of a length of the pedal assembly



extends to a front portion of the strut and at least one laterally supporting deflecting device is arranged on at least one of the pedal assembly and on the strut such that, in the event of a crash-caused rearward displacement, the pedal assembly is caused to be guided past the strut by interaction of the at least one laterally supporting deflecting device with the targeted bending zone.

5,778,733

SPINNING NUT LINEAR MECHANICAL LOCK

Calvin R. Stringer, Saugus, Calif., assignor to P. L. Porter Co.,
Woodland Hills, Calif.

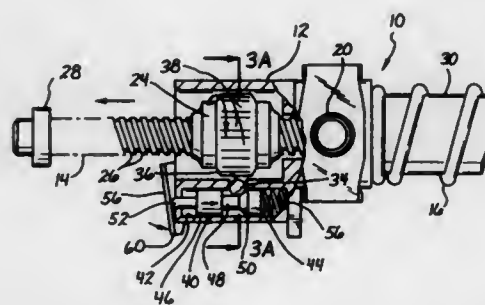
Continuation of Ser. No. 541,148, Oct. 11, 1995, abandoned.

This application May 2, 1997, Ser. No. 850,645

Int. Cl.⁶ B60N 2/08; F16H 29/20

U.S. Cl. 74—527

23 Claims



1. A mechanical lock having a lock housing, a rotatable nut axially captive in said housing, a threaded rod axially displaceable through said housing in threading engagement with said nut, a detent element movable into interlocking relationship with said nut for locking said nut against rotation in said housing, and detent control means normally in a locking position for containing said detent element in said interlocking relationship thereby to prevent axial translation of said rod through said nut, said control means being actuatable for displacing said control means to an unlocked position for admitting said detent element out of said interlocking relationship thereby to permit rotation of the nut and axial translation of the rod through said housing, characterized in that first cam means are provided on said nut operative for urging said detent element out of said interlocking relationship in response to torquing of the nut in either sense of rotation, and said detent element is displaced from said interlocking position only in said unlocked position of said control element.

5,778,734

FASTENING STRUCTURE

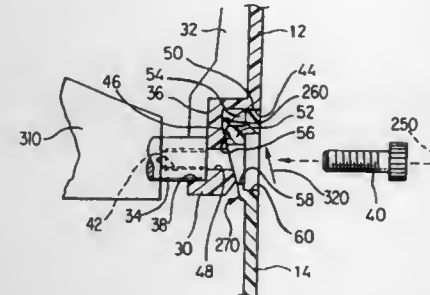
Terumune Uchida, Toyota, Japan, assignor to Toyota Jidosha
Kabushiki Kaisha, Toyota, Japan

Filed Mar. 4, 1996, Ser. No. 610,343

Claims priority, application Japan, Apr. 12, 1995, 7-112336
Int. Cl.⁶ B62D 1/04

U.S. Cl. 74—552

8 Claims



1. A fastening structure comprising:
a first member;
a second member distinct from said first member;
an externally threaded fastener for fastening said first and second members, said externally threaded fastener having a male screw thread around an axis of said externally threaded fastener;
a third member disposed proximate to one of said first member and said second member and having a female tapped hole, into which the male screw thread on said externally threaded fastener passing through said first member and said second member is screwed;
said first member further comprising:
a first face facing said second member,
a first through hole, through which said externally threaded fastener passes, said first through hole being arranged to position said externally threaded fastener passing therethrough,
a first slope formed on said first face of said first member, said first slope being inclined against said axis, and
a first contact part;
said second member further comprising:
a second face facing said first member,
a second through hole, through which said externally threaded fastener passes, said second through hole having play in a direction perpendicular to said axis to allow movement of said externally threaded fastener passing therethrough,
a second slope formed on said second face of said second member, said second slope being arranged to contact said first slope, and
a second contact part;
wherein the first and second contact parts of the first and second members are arranged so that contact between the first and second contact parts prevents movement of the first member relative to the second member along the first slope in a first direction.

5,778,735

INTERLAYER TOUGHENING OF FIBER COMPOSITE FLYWHEEL ROTORS

Scott E. Groves, Brentwood, and Steven J. Deteresa, Livermore, both of Calif., assignors to Regents of the University of California, Oakland, Calif.

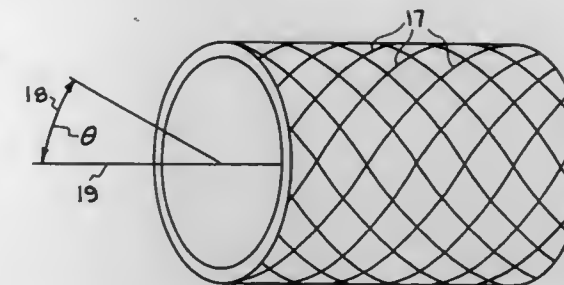
Filed May 17, 1996, Ser. No. 649,390

Int. Cl.⁶ G05G 1/00

U.S. Cl. 74—572

16 Claims

1. In a fiber composite rotor, the improvement comprising:
at least one toughening interlayer,



said interlayer being composed of fibers woven at an angle with respect to an axis of the rotor and bonded by a ductile matrix material.

5,778,736

SPIRAL WOVEN COMPOSITE FLYWHEEL RIM

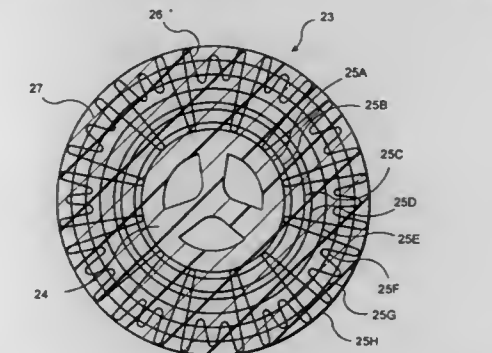
David Maass, New Haven, and Douglas M. Hoon, Guilford, both of Conn., assignors to DOW-United Technologies Composite Products, Inc., Wallingford, Conn.

Filed Jun. 12, 1996, Ser. No. 662,785

Int. Cl.⁶ F16F 15/305

U.S. Cl. 74—572

3 Claims



1. A fiber reinforced composite flywheel rim comprising a plurality of spiral woven disks in the form of a coil, formed from continuous spiral woven fibers, each spiral woven disk having a first of said woven fibers extending in a hoop direction and a second of said woven fibers extending in a radial direction, the first and second woven fibers being interwoven from an inner radius of the flywheel rim to an outer radius of the flywheel rim, a relatively high volume of said radial woven fibers, as compared to an amount of said radial woven fibers in an inner radius section, located in an intermediate area of the disk radius substantially bracketing a location of high radial stress.

5,778,737

BALANCE WEIGHT AND METHOD OF SECURING SAME TO A ROTATABLE TUBULAR

David E. Welsh, and Oliver Lee Sims, both of Toledo, Ohio, assignors to Dana Corporation, Toledo, Ohio

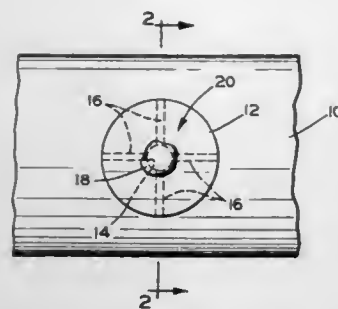
Continuation of Ser. No. 643,170, Jan. 22, 1991, abandoned, which is a continuation of Ser. No. 804,339, Dec. 5, 1985, abandoned, which is a continuation of Ser. No. 537,113, Sep. 29, 1983, abandoned. This application Jan. 24, 1994, Ser. No. 185,756

Int. Cl.⁶ F16F 15/22

U.S. Cl. 74—573 R

24 Claims

1. A balance weight secured to a curved outer surface of an unbalanced rotatable aluminum drive shaft for a vehicle for balancing the drive shaft comprising:
a body portion formed from a material having a higher density than that of aluminum, said body portion having an aperture



formed therethrough extending from one end surface of said body portion to an opposite end surface of said body portion, said opposite end surface of said body being curved to conform to the curved outer surface of the aluminum drive shaft and adapted to be maintained thereagainst, at least one groove being formed in said opposite surface connecting said aperture with an edge of said opposite surface; and adhesive material secured to the curved outer surface of the aluminum drive shaft and extending through said aperture from said opposite end surface of said body portion maintained against the curved outer surface of the aluminum drive shaft to said one end surface of said body portion, said adhesive material extending over a portion of said one end surface of said body portion to form a cap thereover so as to maintain said body portion against the curved outer surface of the aluminum drive shaft.

5,778,738

TWO-MASS TYPE OF FLYWHEEL DEVICE

Akira Takabayashi; Yoshihisa Sugimura; Toshihide Aoki; Tomohiko Tsuchiya, and Seiji Makita, all of Hamamatsu, Japan, assignors to Kabushiki Kaisha Yutaka Giken, Hamamatsu, Japan

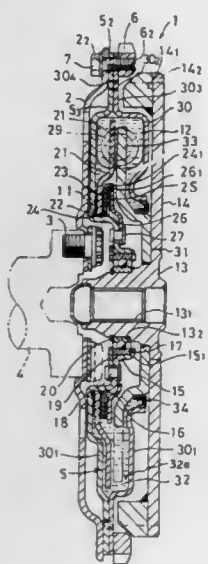
Filed Aug. 8, 1996, Ser. No. 694,320

Claims priority, application Japan, Aug. 31, 1995, 7-224228; Aug. 31, 1995, 7-224252; Aug. 31, 1995, 7-224274; Aug. 31, 1995, 7-224309; May 28, 1996, 7-133719

Int. Cl.⁶ F16D 3/14; 13/60; F16F 15/12

U.S. Cl. 74—574

9 Claims



1. A two-mass type of flywheel device comprising: a first flywheel having a first cylindrical portion at a radially inwards position; a second flywheel coaxial to said first flywheel; spring means for rotationally connecting said first flywheel to said second flywheel;

frictional connecting means having a friction plate between said first flywheel and said spring means; a driven plate affixed to said second flywheel between said spring means and said second flywheel; said friction plate being fitted at one end thereof onto said first cylindrical portion and frictionally engaged with said first flywheel, and being engaged at the other end thereof with said spring means; a spring holding plate disposed to define an oil chamber together with said first flywheel for containing therein said spring means, said frictional connecting means, and said driven plate; said first flywheel and said spring holding plate being pressed metallic plate members; and an inclined weld line joining a periphery of said spring holding plate to a side surface of said first flywheel hermetically sealing said oil chamber.

5,778,739

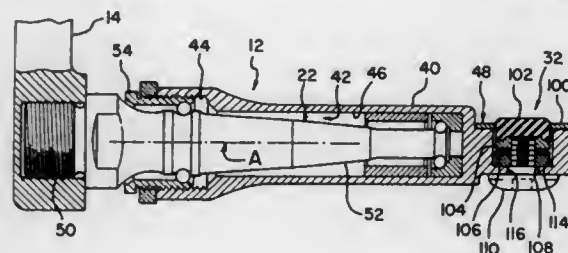
BICYCLE PEDAL WITH GAP ADJUSTING MECHANISM
Kimitaka Takahama, Osaka, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Aug. 26, 1996, Ser. No. 704,014

Int. Cl.⁶ B62M 3/08

U.S. Cl. 74—594.6

20 Claims



14. A bicycle pedal and cleat assembly, comprising: a cleat having attachment means for coupling said cleat to a shoe, a front coupling surface and a rear coupling surface; a pedal shaft having a first crank end and a second end with a center longitudinal axis of rotation extending therebetween; a pedal body rotatably coupled to said pedal shaft about center longitudinal axis, said pedal body having a front end, a rear end, an inner side with said pedal shaft extending outwardly therefrom an outer side spaced from said inner side, a top side and a bottom side; clamping means, coupled to said pedal body, for releasably coupling said cleat to said top side of said pedal body; and adjustment means, movably coupled to said pedal body, for limiting movement between said cleat and said pedal body said adjustment means being located adjacent said outer side of said pedal body opposite said first crank end and along said center longitudinal axis of said pedal shaft.

5,778,740

SEMI-AUTOMATIC BOTTLE CAP REMOVER

David Tye, Huntington Beach, Calif., assignor to Universal Aqua Technologies, Inc., Santa Fe Springs, Calif.

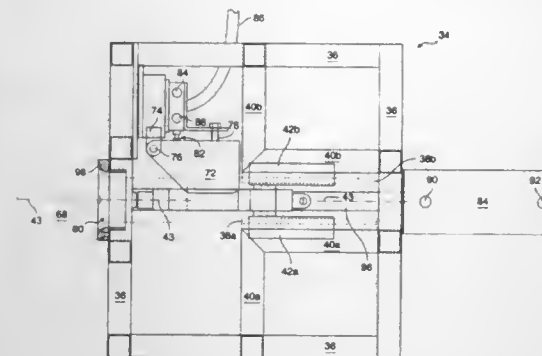
Filed Aug. 22, 1996, Ser. No. 704,004

Int. Cl.⁶ B67B 7/00

U.S. Cl. 81—3.2

5 Claims

1. A semiautomatic bottle cap remover for removing a bottle cap from a bottle, said bottle cap remover comprising: a housing having an orifice for insertion of a bottle; a pneumatic air ram adapted so as to control movement of a coupling along a direction parallel to an axis intersecting a plane in which said orifice is disposed; detection means including a lever connected to an air valve having a first port, a second port and a third port, wherein said



fast port is connected to a source of pressurized gas, said second port is connected to a first port of said pneumatic air ram, and said third port is connected to a second port of said pneumatic air ram, said detection means located adjacent said orifice for detecting when the bottle is inserted into said orifice;

said detection means coupled to said pneumatic air ram, said pneumatic air ram adapted to move to and remain at a first position away from said orifice while a bottle is inserted into said orifice and to return to a second position closer to said orifice than said first position at other times;

at least one track member mounted to said housing and oriented along a direction parallel to said axis;

a slider coupled to said pneumatic air ram and mounted to said at least one track member and slidable thereon along a direction parallel to said axis;

a pair of arms pivotally mounted to said slider at a pivot point, each of said pair of arms having a front portion forward of said pivot point and a rear portion rearward of said pivot point, said front portion oriented closer to said orifice than said rear portion;

first biasing means for biasing said rear portion toward said axis; a cam member mounted to said housing for biasing said front portion toward said axis;

a hook-shaped member attached to said front portion for engaging and removing a bottle cap; and

each of said pair of arms having a surface, said surface shaped so that in engaging with said cam member, as said pneumatic air ram moves from said second position toward said first position, said hook-shaped member closes toward the bottle cap and pulls it off of the bottle.

5,778,741

STATIONARY KEY MOUNTING IN FASTENER TOOL
Ronald W. Batten, Torrance, Calif., assignor to Fairchild Holding Corporation, Chantilly, Va.

Filed May 20, 1996, Ser. No. 650,381

Int. Cl.⁶ B25B 21/00

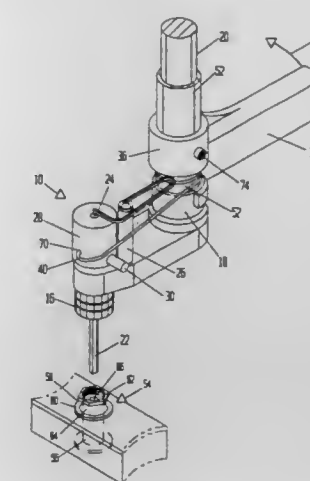
U.S. Cl. 81—56

20 Claims

1. A method for the assembly of a pin and nut fastener in a non-interference fit application wherein the pin exhibits frictional resistance during run-up of the nut and develops increased frictional resistance to rotation of the nut with increased torque loading applied to the fastener, the improvement comprising:

a. running the nut on the pin while applying a rotational restraining force to the pin sufficient to overcome the frictional resistance of the fastener to the run-up of the nut;

b. applying an escalating torque to said nut to tighten said assembly, while applying a resilient restraint to rotation of said



pin, thereby permitting a limited degree of rotation of said pin; and
c. applying a final tightening torque to the nut.

5,778,742

HYDRAULIC BACKUP TONG

Randolph L. Stuart, Odessa, Tex., assignor to Eckel Manufacturing Company, Inc., Odessa, Tex.

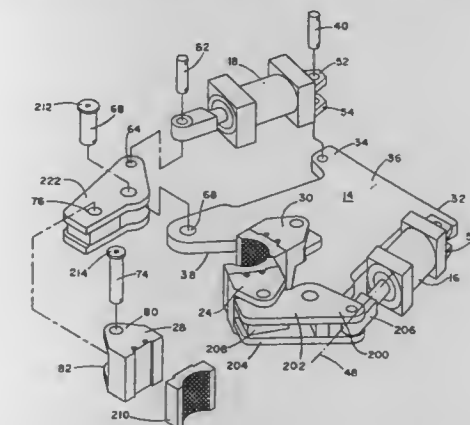
Continuation of Ser. No. 554,518, Nov. 7, 1995, abandoned.

This application Jul. 3, 1997, Ser. No. 887,526

Int. Cl.⁶ B25B 13/50

U.S. Cl. 81—57.34

20 Claims



1. A powered backup tong for securing a tubular member against axial rotation in response to rotation of another tubular member by a pipe-rotating device, the backup tong comprising:

a single planar support plate having an open throat for receiving the tubular member, an upper planar surface defining an upper plane and a lower planar surface defining a lower plane, and a plate centerline extending through the open throat;

first and second fluid powered cylinder assemblies each pivotally mounted at one end to the planar support plate and having an opposing end, the first and second cylinder assemblies each mounted on opposing sides of the plate centerline and positioned laterally outwardly from the support plate;

first and second pivot arms each pivotally mounted to the support plate on opposing sides of the plate centerline;

the opposing end of each of the first and second cylinder assemblies pivotally connected to a respective pivot arm; first and second heads each movable in response to movement of a respective pivot arm for gripping engagement with the tubular member; and

each of the first and second cylinder assemblies extends and retracts along a cylinder axis positioned between the upper plane and the lower plane.

5,778,743

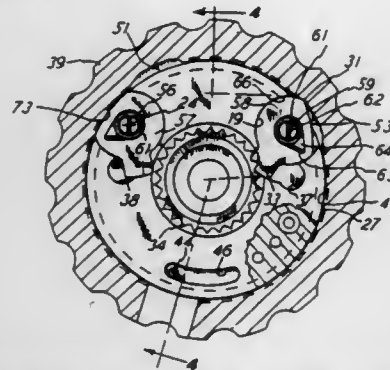
RATCHETING SCREWDRIVER

Clair L. Tiede, Mukwonago, Wis., assignor to Beere Precision Medical Instruments, Inc., Racine, Wis.

Continuation of Ser. No. 553,866, Nov. 6, 1995, Pat. No. 5,619,891. This application Feb. 10, 1997, Ser. No. 798,380
Int. Cl.⁶ B25B 13/46

U.S. Cl. 81—62

9 Claims



1. In a ratcheting tool comprising a handle, a bit rotatable on said handle and having a longitudinal axis, a gear rotatably supported on said handle and having teeth, two pawls with teeth and being movably supported on said handle and fully disposed on only one-half of a circle extending about said axis and being movable toward and away from said gear and respectively engaged and disengaged with said gear and with each respective one of said pawls extending into tooth-driving engagement with said gear teeth in a selected direction of handle rotation and being in ratcheting relationship with said gear in a direction of handle rotation which is opposite to said selected direction,

a resilient member operative on each of said pawls for urging said pawls into said tooth-driving engagement with said gear, and an arcuately shaped selector rotatably supported on said handle and having a rotation axis on said longitudinal axis for selective rotational movement in both directions about said axis, the improvement comprising

said selector being rotatable along a circular path scribed by rotation of said selector and including two surfaces spaced apart on said circular path of rotational movement and facing each other and being spaced apart along said path to have both said pawls disposed between said surfaces,

said pawls being rotationally confined by said housing and having portions thereof extendable across said circular path and with said pawls and said surfaces being arranged and located to achieve direct contact therebetween for alternately moving said pawls out of engagement with said gear,

the arrangement and location of said surfaces being such that each thereof contacts a respective one of said pawls for moving the contacted said one pawl to its disengaged position in response to arcuate movement of said selector in the same direction of rotation as that of the driving engagement of the other of said pawls which is the engaged one of said pawls.

5,778,744

METHOD AND DEVICE FOR POSITION-EXACT AND DIMENSION-EXACT CHAMFERING OF A PIPE END

Hans-Jörg Braun, Hagen-Berchum, and Gerhard Mohn, Bergneustadt, both of Germany, assignors to Maschinenfabrik Reika-Werk GmbH, Hagen, Germany

PCT No. PCT/EP94/04110, § 371 Date Jun. 11, 1996, § 102(c) Date Jun. 11, 1996, PCT Pub. No. WO95/15828, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 10, 1994, Ser. No. 666,402

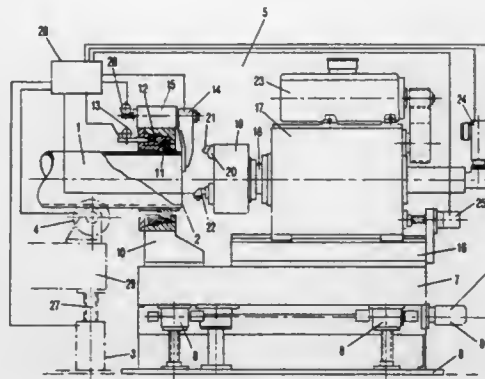
Claims priority, application Germany, Dec. 11, 1993, 43 42 325.6

Int. Cl.⁶ B23B 41/12

U.S. Cl. 82—1.11

11 Claims

1. A method for machining a chamfer at a pipe end, clamped in a radial clamping device, to exact positional and dimensional



tolerances as a function of a measured course of an inner and an outer diameter of the pipe, said method comprising the steps of:

- a) determining with a first sensing device an actual position of the pipe end clamped in the radial clamping device;
- b) quickly advancing, based on the determined actual position, in a controlled manner a machining tool to the pipe end;
- c) determining with a second sensing device at least one of the actual inner diameter of the pipe and the actual outer diameter of the pipe;
- d) adjusting the machining tool based on one of the actual inner diameter, the actual outer diameter, a nominal inner diameter and a nominal outer diameter;
- e) rough-machining the chamfer by the adjusted machining tool at a great advancing rate to a state in which a machining allowance for a subsequent finish-machining step is provided; and
- f) finish-machining the chamfer with minimal advancing rate to the exact positional and dimensional tolerances as a function of the course of one of the inner diameter and the outer diameter.

5,778,745

CHIP-BROKEN TURNING METHOD AND APPARATUS

Yoshinori Furusawa, Takarazuka; Yoshihiro Ikemoto, Hirakata; Koji Fujimoto, Toyono-gun; Koji Nakagawa, Minamikawachi-gun; Toshifumi Miyake, and Toshikazu Shogase, both of Ozu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

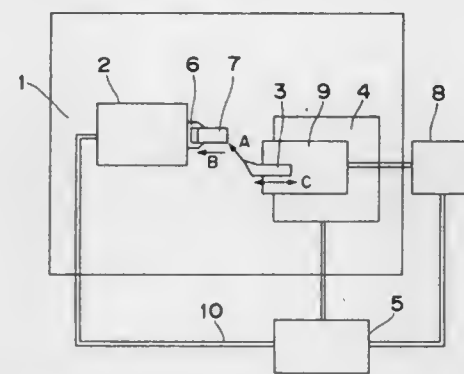
Filed Feb. 20, 1997, Ser. No. 803,367

Claims priority, application Japan, Feb. 21, 1996, 8-033351; Aug. 6, 1996, 8-206787

Int. Cl.⁶ B23B 3/00

U.S. Cl. 82—1.11

8 Claims



1. In a turning method for machining a workpiece with a cutting tool, a turning method with reciprocation of a cutting tool comprising:

transferring a table on which a cutting tool is mounted, in a direction along a surface to be machined, thereby machining a workpiece;

during the transferring and machining process, reciprocating the cutting tool in small steps in the direction along which the table is transferred; and

varying a chip width of a chip by inverting a feed mark at each one round of the workpiece while the cutting tool is reciprocated in the small steps at a frequency $m/2$ times (where m is any odd number) higher than a rotational speed N (rps) of the workpiece, so that the feed mark crosses itself and thus the cutting tool will pass a portion that has already been cut to break the chip at the portion.

5,778,746

TANDEM POINT CUTTING TOOL

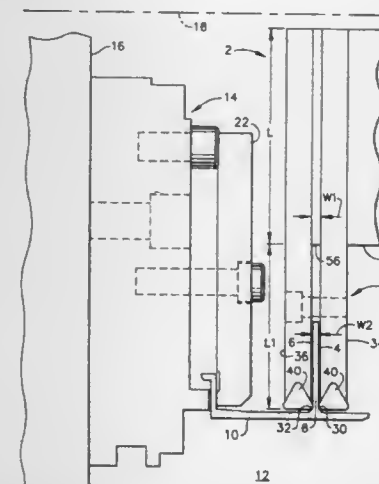
Jeffrey S. Keller, Cincinnati, and Alexander Reid, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jun. 20, 1996, Ser. No. 668,643

Int. Cl.⁶ B23B 27/00

U.S. Cl. 82—112

15 Claims



1. A tandem tool point apparatus for simultaneously machining surfaces on opposite sides of a thin wall, said apparatus comprising:

- spaced apart first and second tool points, said first and second tool points mounted in first and second tool holders respectively, said first and second tool holders mounted on a tool support, and a coupling means for coupling said first and second tool holders together to maintain said first and second tool points in tandem during a machining operation on the opposite sides of the wall, said coupling means comprising a longitudinally spaced apart pair of coupling bolts disposed through said first and second tool holders.

5,778,747

POWER SAW HAVING AN ERGONOMICALLY-DESIGNED HANDLE AND SAFETY SWITCH

Ruey-Zon Chen, Taichung, Taiwan, assignor to Rexon Industrial Corp., Ltd., Taichung, Taiwan

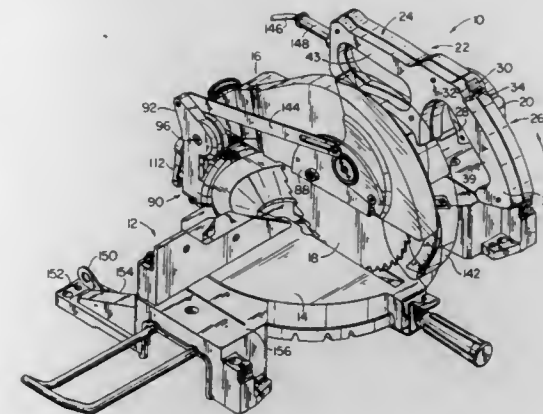
Filed Nov. 21, 1996, Ser. No. 754,629

Int. Cl.⁶ B27B 5/38

U.S. Cl. 83—471.3

16 Claims

1. A power saw comprising:
an approximately planar work surface for supporting a work-piece;
a frame pivotally mounted adjacent to the work surface;
a tool rotatably supported on the frame;
a motor drivingly connected to the tool for rotatably driving the tool, wherein the frame and tool are movable between an



upper, non-work position spaced away from the work surface, and a lower, work position located toward the work surface for engaging with the tool a workpiece supported on the work surface; and

a handle assembly mounted on the frame and including:
an arm extending along a first plane oriented approximately parallel to the work surface when the frame and tool are located in a work position;

a handle projecting downwardly from the arm and extending along a second plane oriented at an included angle of at least approximately 50° relative to the first plane;

a trigger electrically connected to the motor, and positioned on the underside of the handle for facilitating engagement of the trigger by at least one of the index through pinkie fingers of a user's hand in order to grip the handle and thereby depress the trigger to actuate the motor and tool; and

a safety switch coupled to the trigger for releasing the trigger to actuate the motor and tool, the safety switch being positioned on the upper side of the handle assembly at approximately a junction of the handle and arm for facilitating engagement of the safety switch with the thumb of the same hand engaging the trigger to release and in turn depress the trigger for actuating the motor and tool.

5,778,748

OFFSET CRANK ACTIVATED PAPER DIE CUTTERS

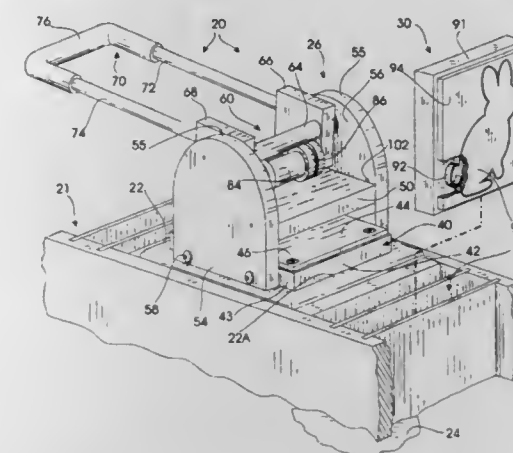
James H. Beijen, Mountain Home, Ark., assignor to School Systems Inc., Mountain Home, Ark.

Filed Apr. 22, 1996, Ser. No. 635,564

Int. Cl.⁶ B26D 5/10; 5/16

U.S. Cl. 83—529

11 Claims

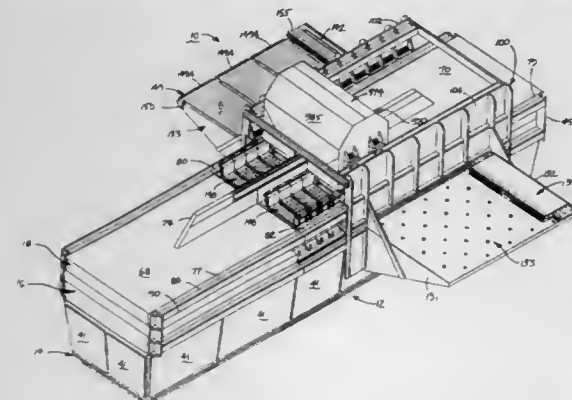


1. A die cutting machine comprising:
a horizontally disposed, stationary platen having a pair of spaced apart edges;

a pair of rigid, spaced apart, side plates fastened to said stationary platen edges and extending vertically upwardly therefrom;
 a horizontally oriented, moveable platen suspended between said side plates that is adapted to be moved towards said stationary platen;
 a compartment formed between said stationary and movable platens and said side plates;
 a removable cutting die temporarily disposed within said compartment for cutting planar material;
 resilient pad means disposed in said compartment for receiving said cutting die when said moveable platen is vertically displaced towards said stationary platen;
 exposed crankshaft assembly means for displacing said moveable platen toward said stationary platen without marring the surface of the moveable platen, and lever means extending outwardly from said crankshaft assembly means, wherein said crankshaft assembly means comprises:
 an elongated, pivot axle with spaced apart ends, said pivot axle extending between said side plates and enabling relative rotation of said crankshaft assembly means;
 a pivot block at each of said pivot axle ends that is adapted to be pivoted by said lever means;
 roller means for slidably contacting and displacing said moveable platen; and,
 a crankshaft extending between said pivot blocks parallel to and offset from said pivot axle, said crankshaft comprising spaced apart ends supporting said roller means adapted to travel in an arc for slidably contacting and displacing said moveable platen; and,
 said lever means adapted to be depressed by a user for activating said die cutting machine, depression of said lever means initially pivoting said crankshaft assembly means arcuately to force said moveable platen to compress said cutting die against said resilient pad means to begin cutting the planar material and wherein subsequent lever means depression forces said crankshaft assembly means to vertically displace said moveable platen to compress said cutting die against said pad to completely cut the planar material.

5,778,749
FLEXIBLE MANUFACTURING PRESS ASSEMBLY
 David C. Dunn, 410 E. Cleveland, Guthrie, Okla. 73044
 Filed Jun. 5, 1995, Ser. No. 461,140
 Int. Cl.⁶ B26D 7/02
 U.S. Cl. 83—549

8 Claims



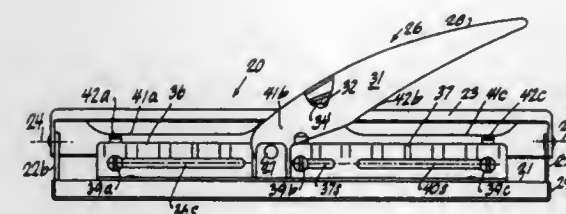
1. A press assembly for processing sheet material comprising a punch head which reciprocally imparts a punching force to a processing tool for processing operations on the sheet material, wherein the press assembly comprises:
 a central frame;
 sheet material positioning means supported by the central frame for positioning the sheet material to determined positions within an x-y axis plane of travel, wherein the punch head is supported by the sheet material positioning means, the sheet material positioning means comprising:

an x-axis frame assembly slidably supported by the central frame for movement along an x-axis direction of travel;
 x-axis frame assembly displacement means for displacing the x-axis frame assembly to determined positions along the x-axis direction of travel;
 a y-axis table transversely supported by the x-axis frame assembly;
 gripping means slidably supported on the y-axis table for gripping the sheet material and wherein the gripping means comprises:
 a clamp frame;
 a rocker arm pivotally supported by the clamp frame which clamps the sheet material in a clamped position and which unclamps the sheet material in an unclamped position;
 rocker arm biasing means supported by the clamp frame for biasing the rocker arm to the clamped position; and
 rocker arm moving means supported by the clamp frame for moving the rocker arm to the unclamped position, comprising:
 a cam having an extended position and a retracted position, wherein the cam operably engages the rocker arm in the extended position to pivot the rocker arm to the unclamped position, and wherein the cam operably disengages the rocker arm in the retracted position; and
 cam displacing means for displacing the cam between the extended position and the retracted position; and
 displacement means for displacing the gripping means to determined positions along the y-axis table;
 grouping support means for groupingly supporting a plurality of the processing tools, the grouping support means comprising:
 a punch magazine operably supported by the punch head;
 stripping means depending from the punch magazine for stripping the sheet material from the processing tool during the processing operations; and
 a die block matingly aligned with the punch magazine;
 punch head positioning means supported by the sheet material positioning means for operably positioning the punch head adjacent the grouping support means; and
 transmitting means supported by the punch head for selectively transmitting the punching force simultaneously to adjacent processing tools within the grouping support means, wherein each of the plurality of adjacent processing tools is also individually selectable, the transmitting means comprising:
 a selector frame operably supported by the punch head;
 a selector member rotatably supported by the selector frame and having a plurality of characteristic faces, each face having at least one contact surface;
 selector frame displacement means for displacing the selector frame to operably position the selector member adjacent a selected processing tool; and
 selector member rotating means for rotating the selector member to operably position a characteristic face adjacent the selected processing tool.

5,778,750
LEVER-OPERATED PUSH FLAP FOR MANUAL PUNCH
 James J. Drzewiecki, Arlington Heights, and Michael J. D'Amore, Lake Villa, both of Ill., assignors to ACCO Brands, Inc., Lincolnshire, Ill.
 Continuation of Ser. No. 270,186, Jul. 1, 1994, abandoned.
 This application Feb. 7, 1996, Ser. No. 598,057
 Int. Cl.⁶ B26F 1/02
 U.S. Cl. 83—628

4 Claims

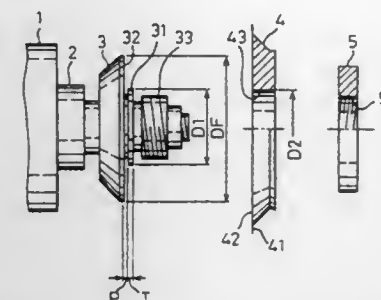
1. In a manual paper sheet punch having a base, an elongated flap pivotal about a flap axis, which flap has an upper cam surface, the improvement comprising:
 a) said flap having a first portion adjacent the flap axis and a second portion remote from the flap axis, which second portion includes said upper cam surface;
 b) a plurality of spaced apart pins for punching paper sheets, said pins being positioned below the flap for engagement with



said first portion of said flap at a pin engaging location defined by said first portion; and
 c) cam lever means mounted on a lever axis fixed on the punch, said axis lever extending perpendicular to said flap axis, said cam lever means including:
 i) a first surface spaced from said lever axis to which a punch operating force is applied to move said lever means, and
 ii) a second surface disposed between said lever axis and said first surface and positioned for cam engagement with said upper cam surface of the second portion of the flap,
 whereby movement of the lever means about its lever axis by said force applied to said lever means causes the flap to pivot about said flap axis to punch paper sheets.

5,778,751
MOUNTING STRUCTURE FOR CUTTING BLADE OF DICING APPARATUS
 Jiro Tsuchishima, and Kiyotaka Chiba, both of Mitaka, Japan, assignors to Tokyo Seimitsu Co., Ltd, Tokyo, Japan
 Continuation of Ser. No. 586,305, Jan. 17, 1996, abandoned, which is a continuation of Ser. No. 205,632, Mar. 4, 1994, abandoned. This application Dec. 31, 1996, Ser. No. 775,278
 Claims priority, application Japan, Mar. 8, 1993, 5-046729
 Int. Cl.⁶ B26D 1/14; 7/26
 U.S. Cl. 83—666

1 Claim

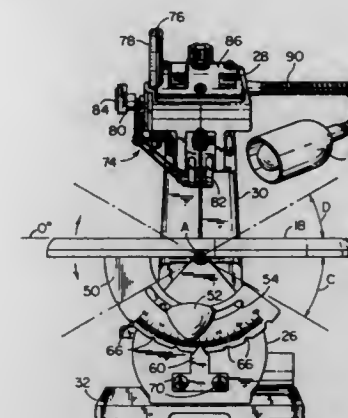


1. A mounting structure for a cutting blade in a dicing apparatus, said mounting structure comprising:
 a mount disposed at a fore end of a shaft of a spindle motor rotating at high speed, said mount including a first cylindrical engagement portion of which the center coincides with a rotational center, a flange perpendicular to a rotational axis, and a first screw portion;
 a cutting blade attached to said mount, said cutting blade including a second engagement portion engaging with said first engagement portion, and a blade surface coming into contact with said flange; and
 a screw member to attach said cutting blade to said mount, wherein said cutting blade is mounted onto said mount so that said first engagement portion is engaged with said second engagement portion, a second screw portion of the screw member is screwed into said first screw portion so that said screw member presses said cutting blade against said flange surface for fixation thereto, and wherein the flange and the blade are configured such that a flange diameter DF, a diameter of the first engagement portion D1, a thickness of the first engagement portion T, a gap between the flange and the first engagement portion P, and a diameter of the

second engagement portion D2 are selected such that an inclination angle θ , defined by a maximum inclination of the blade with respect to the shaft due to a tolerance of the first and second engagement portions and as limited by engagement of the first and second engagement portions, is minimized, wherein $\theta = \arcsin (D2 - D1) / T$, wherein an inclination angle $\alpha = \arctan 2(P+T) / (DF + D2)$, with the inclination angle α defining an angle of inclination of the blade with respect to the flange when a surface of the flange and a surface of the blade are engaged and fore ends of the engagement portions are contacted, wherein α is smaller than θ , and wherein the blade is therefore aligned with respect to the shaft by engagement of the surface of the flange and the surface of the blade, and wherein the engagement portions align rotational centers of the blade and shaft.

5,778,752
SCROLL SAW HAVING A TILTABLE TABLE AND POSITIVE STOPS FOR SELECT ANGULAR POSITIONS OF THE TABLE
 Ruey-Zon Chen, Taichung, Taiwan, assignor to Rexon Industrial Corp., Ltd., Taichung, Taiwan
 Filed Dec. 27, 1996, Ser. No. 774,205
 Int. Cl.⁶ B27B 11/10
 U.S. Cl. 83—783

18 Claims



1. A scroll saw, comprising:
 a frame;
 an axially-elongated saw blade drivably supported on the frame for cutting a workpiece;
 an approximately planar work surface pivotally mounted on the frame adjacent to the saw blade for supporting the workpiece, and tiltable relative to the saw blade;
 an angular adjustment member coupled between the work surface and the frame and defining a plurality of stop surfaces, each stop surface being angularly spaced relative to the other stop surfaces and defining a respective position of the work surface relative to the blade;
 a stop member mounted adjacent to the angular adjustment member and engageable with each stop surface for stopping the adjustment member and work surface in a desired respective position relative to the blade; and
 an adjustment handle coupled between the angular adjustment member and the frame, and engageable with the angular adjustment member for locking the adjustment member and work surface in any angular position to which they may be tilted relative to the saw blade.

5,778,753

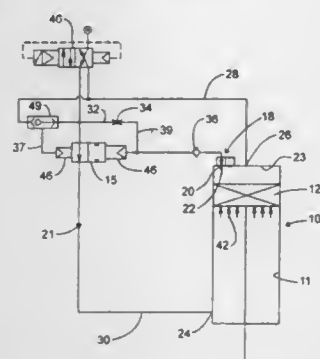
PNEUMATIC OR HYDRAULIC CYLINDERS

George Douglas Higgins, Roseville, Australia, assignor to Parker Hannifin Pty Limited, Castle Hill, Australia
Filed Nov. 22, 1996, Ser. No. 755,078

Claims priority, application Australia, Nov. 29, 1995, PN6877
Int. Cl.⁶ F15B 15/28

U.S. Cl. 91—1

24 Claims



1. A position signaling fluid cylinder assembly of a variety operable within a fluid power system under the control of an actuating fluid pressure for the reciprocating movement of an element thereof, said cylinder comprising:

a cylinder housing defining an interior extending axially from a first end to a second end, said housing having at least a first actuating fluid port opening into fluid communication with said interior, and at least one associated control fluid port opening into fluid communication with said interior and said actuating fluid port, said control fluid port being couplable in fluid communication with a control fluid pressure to admit said control fluid pressure into said interior, and said actuating fluid port being operable to vent said control fluid pressure from within said interior, and

a piston movable axially within said interior from a first position intermediate one of said ends of said interior and said actuating and control fluid ports to a predetermined second position, said piston being adapted when disposed in said second position to effect the closing of said fluid communication between said actuating fluid port and said control fluid port and an increase of said control fluid pressure deriving a fluid pressure signal responsive to the disposition of said piston in said second position.

5,778,754

VALVE ASSEMBLY

Manfred Kaub, Rhens, Germany, assignor to Lucas Industries public limited company, Great Britain

Filed Mar. 26, 1997, Ser. No. 824,503

Claims priority, application Germany, Nov. 7, 1994, 94 17 819 U

Int. Cl.⁶ F01B 25/02; F15B 9/10

U.S. Cl. 91—25

7 Claims

1. A valve assembly (10) for controlling a pneumatic brake booster, comprising

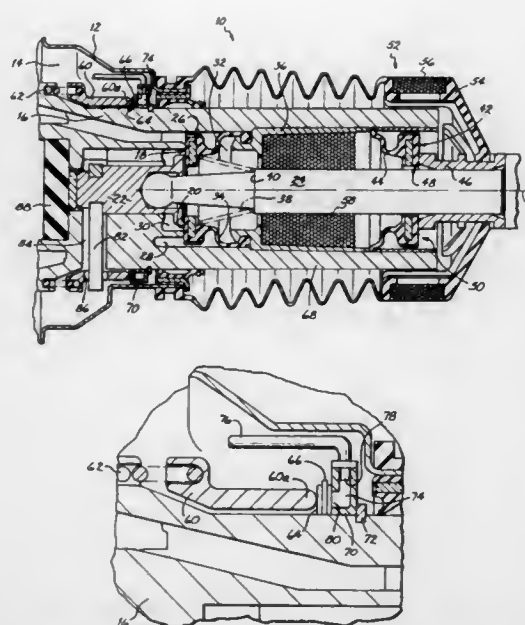
a valve housing (16) in which a first and a second valve seat (18, 20) are disposed;

a valve body (26) adapted to be applied to both valve seats (18, 20), which valve body

in one position of an operating member (24) is lifted off the first valve seat (18) only, whereby two chambers of the brake booster are connected with each other and both chambers are isolated from an air inlet (52), and

in another position of the operating member (24) is lifted off the second valve seat (20), whereby the two chambers are isolated from each other and one (14) of them is connected with the air inlet (52); and

an additional venting channel which opens into the chamber (14) of the brake booster adapted to be connected with the air inlet (52) and which is controlled by an additional valve



(60a, 64) formed by an annular third valve seat (64) which is disposed radially outside the valve housing (16) and by a control sleeve (60) surrounding the valve housing, which as an additional valve body is adapted to be axially displaced with respect to the valve housing (16) and is biased towards the third valve seat (64), with the operating member (24) being connected with the control sleeve (60) by means of a transmission member (82) in such a manner that the additional valve (60a, 64) can be opened by a movement of the operating member (24) which exceeds the movement required for lifting the valve body (26) off the second valve seat (20),

characterized in that the additional venting channel is formed by a ring (70) which surrounds the valve housing (16) at least partially, is arranged at an axial distance from the control sleeve (60) on the valve housing (16) and is provided with a hollow space (74) which comprises an inlet (78) connected with an air supply (76) and an outlet (80) which opens into the chamber (14) adapted to be connected with the air inlet (52).

5,778,755

CONTROL VALVE HAVING A SENSOR SWITCHABLE BETWEEN AN OPEN AND A CLOSED CONDITION

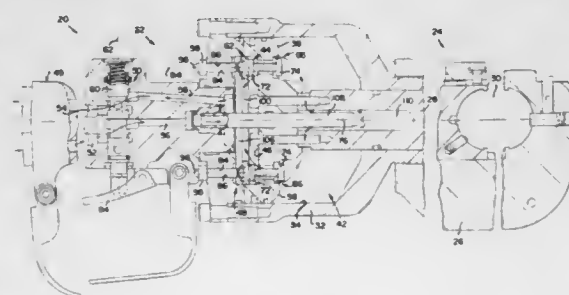
Thomas Gene Boese, Rockford, Ill., assignor to Greenlee Textron Inc., Rockford, Ill.

Filed Mar. 1, 1996, Ser. No. 609,724

Int. Cl.⁶ F15B 15/22

U.S. Cl. 91—399

13 Claims



1. A hydraulic control apparatus which is selectively configurable for use, independently, with a constant volume hydraulic power system and a constant pressure hydraulic power system, said hydraulic control apparatus comprising: a hollow housing defining a cavity therein; a reciprocal piston retained in said cavity of said

5,778,757

HYDRAULIC AXIAL PISTON MACHINE

Egon Kristensen, Nordborg, and Kurt Mamsen, Sønderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

PCT No. PCT/DK95/00280, § 371 Date Dec. 26, 1996, § 102(e) Date Dec. 26, 1996, PCT Pub. No. WO96/02759, PCT Pub. Date Feb. 1, 1996

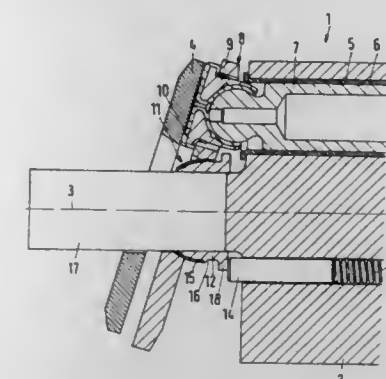
PCT Filed Jun. 30, 1995, Ser. No. 765,411

Claims priority, application Germany, Jul. 13, 1994, 44 24 608.0

Int. Cl.⁶ F01B 3/00

U.S. Cl. 92—12.2

8 Claims



1. A hydraulic axial piston machine having a cylinder drum having at least one cylinder in which a piston is arranged to move back and forth, the piston bearing by means of a slide shoe against a swash plate, the cylinder drum and the swash plate being rotatable relative to one another, and including a pressure plate which holds the slide shoe in contact with the swash plate, the pressure plate being joined in an articulated fashion to the cylinder drum by means of a ball-and-socket joint bearing against the pressure plate through a convexly spherical bearing surface, the convexly spherical bearing surface being formed from a friction-reducing plastics material.

5,778,756

HYDRAULIC POWER STEERING APPARATUS

Kyosuke Haga, Anjo; Mikio Suzuki, Hekinan, and Kenichi Fukumura, Aichi-ken, all of Japan, assignors to Toyota Koki Kabushiki Kaisha, Kariya, Japan

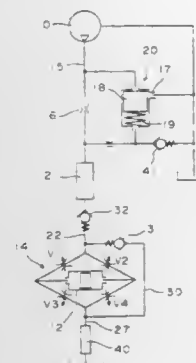
Filed Mar. 28, 1997, Ser. No. 828,366

Claims priority, application Japan, Mar. 28, 1996, 8-074449

Int. Cl.⁶ F15B 11/08; F16D 31/02

U.S. Cl. 91—441

5 Claims



1. A hydraulic power steering apparatus having a fluid pump, a power cylinder, a reservoir, and a control valve connected to said pump via a supply passage including a high pressure hose and connected to said reservoir via a drain passage, said control valve having variable throttles disposed in fluid passages that communicate respectively with said supply passage, two fluid chambers of said power cylinder and said drain passage, and being responsive to operation of a steering wheel so as to control operation fluid supplied from said pump to said power cylinder, wherein bypass means is further provided to allow operation fluid to flow from said drain passage on the downstream side of said control valve to said supply passage on the upstream side of said control valve.

5,778,758

LINEARLY GUIDED LONGITUDINAL DISPLACEMENT SYSTEM WITH A COVER TAPE

Waldemar Barth, Weil-Breitenstein; Uwe Schön, Echterdingen; Andreas Kec, Dettenhausen, and Martin Christmann, Reutlingen, all of Germany, assignors to NEFF Antriebstechnik Automation GmbH

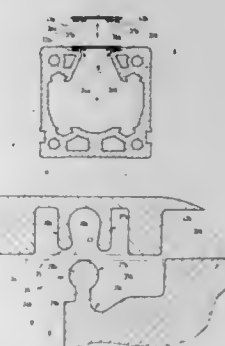
Filed Feb. 12, 1997, Ser. No. 799,621

Claims priority, application Germany, Feb. 14, 1996, 196 05 387.0

Int. Cl.⁶ F01B 29/00

U.S. Cl. 92—88

20 Claims



1. Linear guided longitudinal displacement system comprising a movable guided element (9, 11) movable along a predetermined path;

an essentially tubular guide body (6) formed with a longitudinally extending slit (8) therethrough, through which a projecting portion (9) of the movable element (9, 11) projects; a cover tape (14) to removably cover the slit (8); an elongated releasable locking arrangement (26, 35) formed of interlocking projection means (26) and recess means (35) located at the sides of the tape (14) and on said guide body (6), respectively, for releasably locking the tape (14) in position on said guide body (6); the projection means (26) having elongated ribs, each formed with a rounded head portion (28) and neck portion (29) narrower than the cross section of said head portion, which neck portion is coupled to the guide body (6), said ribs being located laterally adjacent the slit (8); the recess means (35) of the releasable locking arrangement including coupling recesses formed on said cover tape (14) shaped complementarily to said ribs (27) and dimensioned to receive the cross-sectional dimension of the head portion (28) of said projection means (26); said coupling recesses having coupling portions engaging over and beneath the head portion (28) of said projection means, which coupling recesses are formed by two projecting lips (36, 37), unitarily formed on the tape, spaced from each other and defining, therebetween, an elongated groove (38); and wherein said lips are resilient and dimensioned and constructed for resilient movement away from and towards each other, and form a part of the recess means (35) of said releasable locking arrangement, and provide for engagement over and beneath said rounded head portions (28) of said ribs (27).

5,778,759

SELF-ALIGNING PISTON ROD

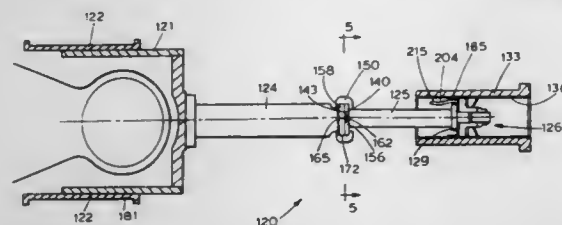
Jerry E. Johnson, Odessa, Tex., assignor to Phoenix Energy Products, Incorporated, Houston, Tex.

Filed Nov. 15, 1996, Ser. No. 751,084

Int. Cl.⁶ F16J 1/10

U.S. Cl. 92—129

19 Claims



1. A pump piston rod for connection to a crosshead extension and a piston in a pump, the piston rod comprising: a first end adapted to be fixed to the piston, a second end adapted to be clamped to the crosshead extension, and an elongate body having a longitudinal axis; and the second end of the piston rod defines a slot oblong in a cross-section transverse to the longitudinal axis of the piston rod body, the oblong slot for slidably receiving a male pilot of the crosshead extension.

5,778,760

END CAP FOR INTERMEDIATE USE IN CYLINDER ASSEMBLY AND METHOD

Lawrence F. Yuda, 105 Meadowcrest Dr., Seneca, S.C. 29678

Filed Apr. 16, 1997, Ser. No. 838,282

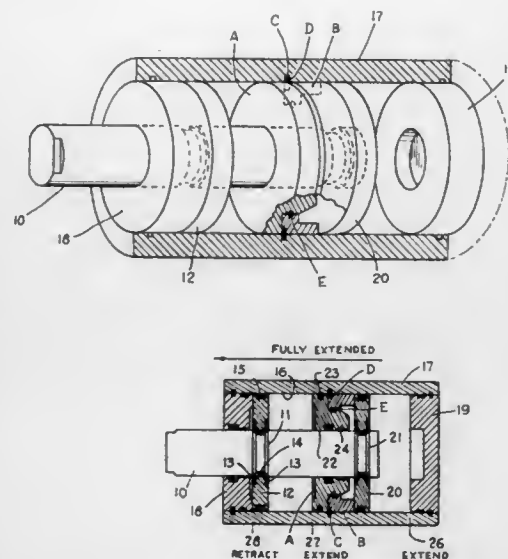
Int. Cl.⁶ F01B 7/00

U.S. Cl. 92—151

7 Claims

1. An end cap for forming separate chambers within a cylinder wall and for slidably receiving a piston rod carrying a piston in each chamber comprising:

a first circular segment having a substantially continuous peripheral surface adjacent the cylinder wall;



a second circular segment in concentric abutting relation to said first segment and having a substantially continuous peripheral surface opposite and adjacent said cylinder wall; a single groove in said cylinder wall between said first and second segments for receiving a retaining member; a retaining member carried in said groove between said first and second segments; and a fastening member connecting said first and second segments; whereby a single groove in the cylinder wall receives a retaining member restraining and positioning said end cap within said cylinder wall.

5. A method of mounting an end cap within a cylinder wall between spaced pistons comprising the steps of: providing a first circular segment having a substantially continuous peripheral surface for positioning within said cylinder wall; providing a second circular segment for positioning in concentric relation adjacent said first segment and having a substantially continuous peripheral surface adjacent said cylinder wall; machining a single groove in said cylinder wall; inserting a retaining member in said groove; positioning said first and second segments on respective sides of said retaining member; and a securing fastening member between said first and second segments; whereby a single groove in the cylinder wall receives a retaining member restraining and positioning said end cap within said cylinder wall.

5,778,761

FLAVOR-INJECTED BLENDING APPARATUS

Eric R. Miller, Deland, Fla., assignor to Archibald Bros. Fine Beverages, Inc., Deland, Fla.

Continuation of Ser. No. 695,238, Aug. 8, 1996, Pat. No. 5,653,157. This application Jul. 31, 1997, Ser. No. 904,075

Int. Cl.⁶ A23L 2/00; B67D 5/00; 5/56; B01F 7/00

U.S. Cl. 99—275

25 Claims

1. An apparatus for preparing a flavored food, the apparatus comprising:

a housing;

a nozzle carried by the housing and positioned for directing a food flavoring into a cup;

a valve operable with the nozzle for controlling a flow of the food flavoring therethrough;

a blender carried by the housing, the blender having a spindle positioned for operating within the cup for blending the food flavoring dispensed into the cup with a mix stored therein;

a reservoir for storing the food flavoring therein;

5,778,763

APPARATUS AND PROCESS FOR TREATING BOTTLED LIQUOR

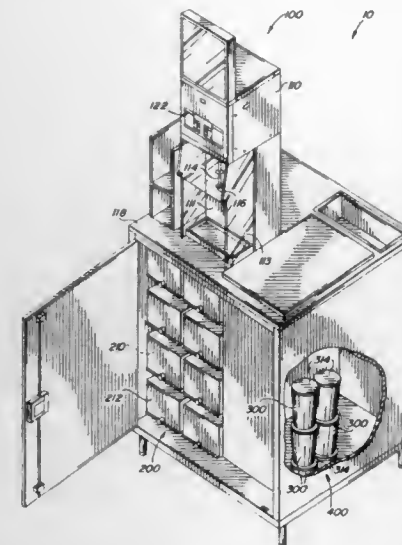
Clifton K. Ford, Sr., 2604 Antrim St., Pearland, Tex. 77581

Filed Nov. 18, 1996, Ser. No. 751,874

Int. Cl.⁶ C12H 1/00; B01F 3/04

U.S. Cl. 99—277.2

16 Claims



a conduit operational between the reservoir and the valve; and a pump in fluid communication with the reservoir through the conduit for pumping the food flavoring from the reservoir to the valve for dispensing the food flavoring through the nozzle.

5,778,762

LAUTER TUN

Kurt Stippler, Marzling, and Klaus-Karl Wasmuth, Ellingen, both of Germany, assignors to Anton Steinecker Maschinenfabrik GmbH, Freising-Attaching, Germany

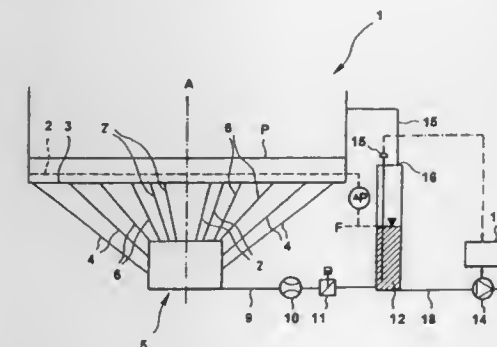
Filed Oct. 29, 1996, Ser. No. 739,677

Claims priority, application Germany, Oct. 30, 1995, 295 17 345.9

Int. Cl.⁶ C12C 7/16

U.S. Cl. 99—276

5 Claims



1. A lauter tun comprising a plurality of lauter pipes which are arranged with their openings in a bottom portion of said lauter tun in evenly distributed fashion over a bottom surface, which end in a collecting vessel that is located at a lower level than said bottom of said lauter tun, and said collecting vessel being connected to a buffer vessel, and the buffer vessel being connected via a compensating duct to an air chamber of said lauter tun, characterized in that all of said lauter pipes end in a joint chamber of said collecting vessel, and said chamber is connected via a single connecting duct to said buffer vessel.

5,778,764

DRIP COFFEE MAKER COMPRISING A DEVICE FOR MEASURING GROUND COFFEE

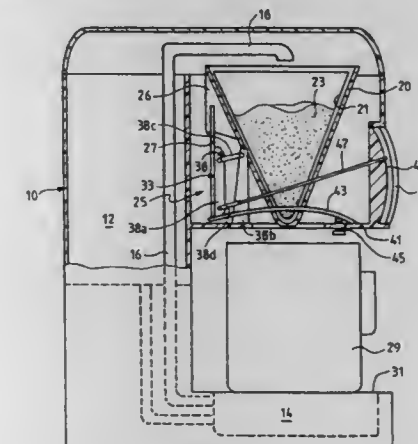
Henrik Nielsen, Cambes Ed Plaine, France, assignor to Moulinex S.A., Paris, France

Filed Jun. 5, 1997, Ser. No. 869,904

Int. Cl.⁶ A47J 31/00

U.S. Cl. 99—285

7 Claims



1. In a drip coffee maker comprising a housing (10), and in the housing (10) a filter holder (20) into which ground coffee (23) is to be poured, and a measuring device (25) for the ground coffee poured into the filter holder (20); the improvement in which the filter holder (20) is mounted movably in the housing, the measur-

ing device (25) comprises at least one deformable mechanical member (33) connected to the filter holder (20) and reacting by deformation to the quantity of ground coffee (23) poured into the filter holder, said deformable mechanical member (33) being adapted to drive by its deformation a member (35) for visual indication of the desired quantity of ground coffee, said deformable member (33) being in stable position when said desired quantity of ground coffee is obtained.

5,778,765

BEVERAGE BREWING APPARATUS

Manfred Klawuhn, Frankfurt am Main; Christof Miltenberger, Oberreifenberg; Roland Müller, Dreieich; Andreas Peter, Kronberg, and Gerhard Schäfer, Frankfurt am Main, all of Germany, assignors to Braun Aktiengesellschaft, Germany

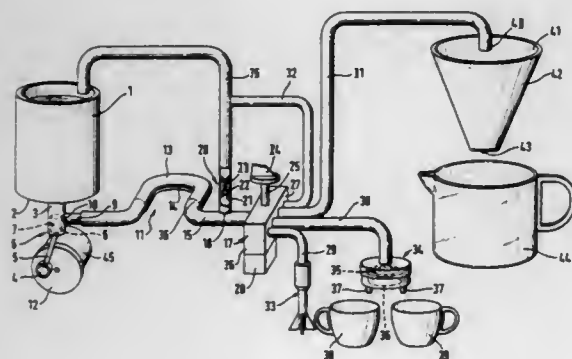
Filed Dec. 11, 1996, Ser. No. 763,416

Claims priority, application Germany, Dec. 30, 1995, 195 49 227.7

Int. Cl.⁶ A47J 31/34

U.S. Cl. 99—290

12 Claims



1. A beverage brewing apparatus comprising:

- a water reservoir;
- a pump for pressurizing water from the reservoir;
- an electric motor for powering the pump;
- a flow-through heater including a U-shaped pipe and an electric heating element for heating water delivered from the pump;
- a first pipe branch connected to an output side of the flow-through water heater and leading to atmosphere;
- a second pipe branch connected to the output side of the flow-through water heater;
- a brewing unit including a pressure chamber adapted to be filled with coffee grinds and to be fed with heated water from the heater, and from which, following an extraction operation, brewed coffee flows into a receptacle;
- a valve device located in said first pipe branch, which opens when a predetermined pressure is exceeded;
- a steam discharge device;
- an expansion pipe branch leading to atmosphere;
- a steam pipe branch leading to the steam discharge device;
- an espresso pipe branch leading to the brewing unit;
- a multi-way valve having an input side connected to said second pipe branch and having an output side connected to said steam pipe branch, said espresso pipe branch, and said expansion pipe branch, said multi-way valve, when in a first valve position, establishing a connection to the brewing unit, while blocking connections to atmosphere and to the steam discharge device, said valve, when in a zero position, blocking flows into the brewing unit and the steam discharge device, while connecting the second pipe branch to atmosphere through the expansion pipe, and said valve, when in the third valve position, blocking flows into the espresso and expansion pipe, while establishing a fluid flow to the steam discharge device.

5,778,766

AUTOMATIC BREADMAKER HAVING TOASTER OVEN FUNCTION

Donglei Wang, Vesta Industrial Building, Light Industrial North Road, Xiangzhou Industrial Area, Zhuhai City, Guangdong Province, China

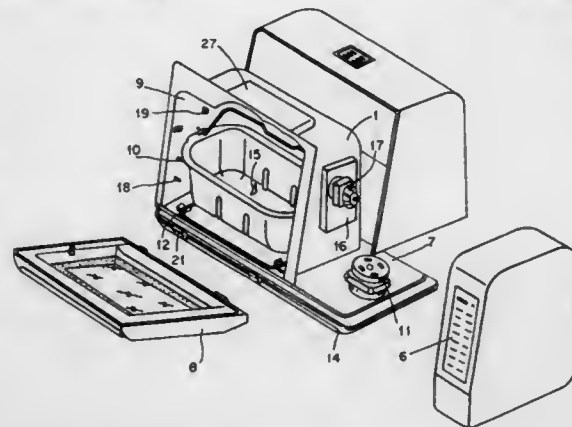
Filed Aug. 6, 1997, Ser. No. 908,139

Claims priority, application China, Sep. 9, 1996, 96 2 17747.4

Int. Cl.⁶ A21B 1/00; A21D 8/00; A47J 27/00; 37/01

U.S. Cl. 99—326

19 Claims



1. A breadmaker comprising:

- a housing having a base member, a top, a rear wall and two lateral side walls, the front edges of the lateral side walls being sloped downward and forward, and wherein the base member, the top, the rear wall and the lateral side walls define an oven cavity with a sloping front opening for facilitating the installation and removal of a bread pan;
- a front access door pivotally borne by the housing for selectively closing the front opening;
- a top heating element borne by the housing and disposed inside the oven cavity and adjacent to the top thereof;
- a bottom heating element borne by the housing and disposed inside the oven cavity and adjacent to the bottom thereof; and
- means for controlling the operation of the top and bottom heating elements.

5,778,767

DISPENSER APPARATUS

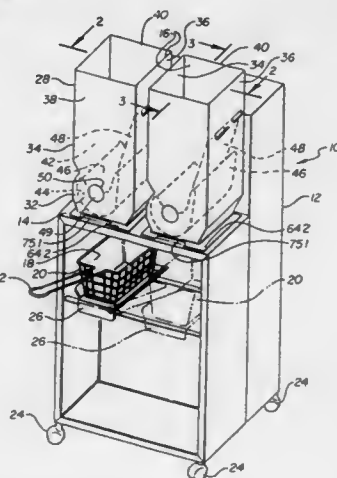
Brian R. Rudesill, Oakdale, Minn., assignor to Base Design, Inc., Hudson, Wis.

Filed Mar. 14, 1997, Ser. No. 818,768

Int. Cl.⁶ A47J 37/00; 37/12

U.S. Cl. 99—407

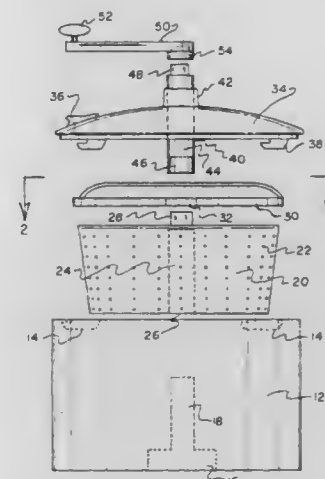
20 Claims



1. A dispenser comprising:

- a) a support structure;

- b) a hopper on the support structure having a top, a bottom, a storage area and an exit opening;
- c) a dispenser drum rotatably mounted in the hopper between the exit opening and the storage area, the drum having a catching lip, a sealing lip and an axis of rotation;
- d) a drive portion in the support structure connected to the dispenser drum for rotating the dispenser drum between a filling position and a dump position.



5,778,768

IN OR RELATING TO WOKS

John William McClean, Sydney, Australia, assignor to Breville Pty. Ltd., Botany, Australia

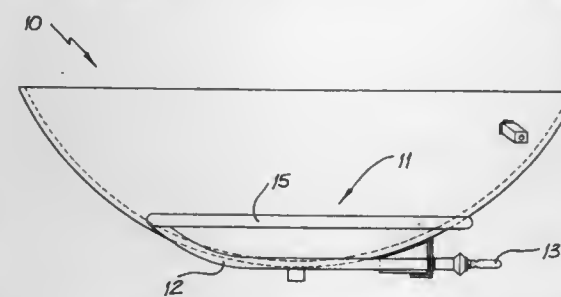
Filed Sep. 30, 1996, Ser. No. 724,529

Claims priority, application Australia, Sep. 28, 1995, PN5701

Int. Cl.⁶ A47J 36/34; 27/66

U.S. Cl. 99—422

9 Claims



- 1. A wok comprising a rounded body defining an outer surface, the rounded body part having a rounded central portion defining a curved bottom part, and curved portions surrounding the central portion, an electric heating element terminating in a pair of adjacent connectors, a first portion of the heating element defining a pair of opposed "C" shaped parts symmetrically disposed about a plane passing midway between the connectors and through a center of the outer surface and a second portion continuous with the first portion extending circumferentially on the outer surface in a part circular path extending over the curved portions surrounding the central portion and, each of the "C" shaped parts of the first portion bending in an opposite sense to a curve of the "C" shape to join with the second portion and the second portion also being symmetrically disposed about the plane, and the heating element being integral with and secured to the outer surface of the body part.

5,778,769

RICE RINSING SYSTEM

Albert A. Dodson, #8-2023 Winfield Drive, Abbotsford, British Columbia, Canada, V3G 1K5

Filed Sep. 30, 1997, Ser. No. 941,136

Int. Cl.⁶ A47J 43/04; B01D 33/00; B08B 3/04; F26B 17/24

U.S. Cl. 99—536

6 Claims

- 1. A rice rinsing system for cleaning naturally grown rice without having to get hands wet comprising, in combination:

- a cylindrical water bowl having an open upper end, a closed lower end and a cylindrical side wall therebetween, the water bowl having female receiving grooves extending downwardly within the side wall from the open upper end, the closed lower end having a base secured to a central portion thereof within an interior of the water bowl, a cylindrical shaft extending upwardly from the base;
- a cylindrical rice holder having an open upper end, a closed lower end and a cylindrical side wall therebetween, the closed lower end and the cylindrical side wall of the rice holder being perforated, a hollow cylindrical sleeve extending upwardly from the closed lower end of the rice holder, the cylindrical sleeve having an open lower end for receiving the cylindrical shaft of the water bowl therein when the rice holder is positioned within the water bowl, an upper end of

5,778,770

FOOD SEPARATING DEVICE

Paul Lindsay Holt, 20 Lowgon Rd., Bridlington, East Yorkshire, YO16 5LZ, Great Britain

PCT No. PCT/GB95/01512, § 371 Date Dec. 27, 1996, § 102(e)

Date Dec. 27, 1996, PCT Pub. No. WO96/00511, PCT Pub.

Date Jan. 11, 1996

PCT Filed Jun. 28, 1995, Ser. No. 750,804

Claims priority, application United Kingdom, Jun. 29, 1994, 9413027

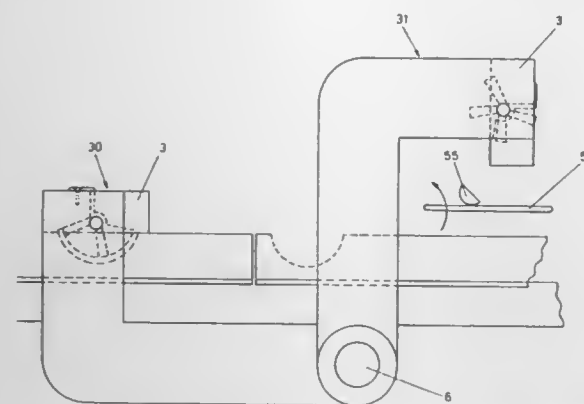
Int. Cl.⁶ A23N 4/13; 7/00

U.S. Cl. 99—541

8 Claims

- 1. A food processing machine for separating a body of a food item, the machine comprising:

- a plurality of cutting means arranged in an array, wherein each of the cutting means comprises a first arced blade having first and second ends, said arced blade being rotatable about an axis of rotation which connects the first and second ends;
- a plurality of receptacles for containing a plurality of said food items, the receptacles being arranged in an array; and
- means for moving the cutting means between a cutting position, in which the cutting means are operable to cut a body portion from each of the food items, and a release position, in which the food items are released from the cutting means;



a support means for supporting a cut food portion during transport between said cutting and release positions, wherein said support means comprises a second arced blade having first and second ends, said second arced blade being rotatable about an axis which connects said first and second ends of said second arced blade.

5,778,771

VEGETABLE TOPPER

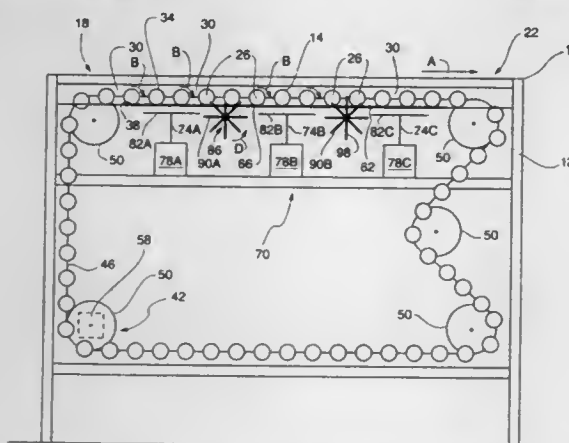
Thomas A. Heimbuch, R.R. #1, Box 70, Cogswell, N. Dak. 58017

Filed Sep. 9, 1996, Ser. No. 711,262

Int. Cl.⁶ A23N 7/00; 15/02; 15/04

U.S. Cl. 99—637

39 Claims



1. A device for removing ends of vegetables, comprising: a plurality of rotatable and spaced rollers defining a bed, wherein a flow of vegetables along said bed is in a non-parallel relation to a rotational axis of each of said rollers; and a cutter blade assembly disposed below said bed, wherein said blade assembly removes ends of vegetables extending between at least one pair of adjacent said rollers.

5,778,772

STRAP GUIDING FRAME FOR A LOOPING MACHINE

Horst Schwede, Bindlach, Germany, assignor to SMB Schwede Maschinenbau GmbH, Goldkronach, Germany

Filed Jun. 25, 1997, Ser. No. 882,270

Claims priority, application Germany, Jul. 19, 1996, 296 12 531 U

Int. Cl.⁶ B65B 13/06

U.S. Cl. 100—26

19 Claims

1. A strap guiding frame for a looping machine, comprising a frame base (6) and an encircling strap channel (7) for a looping strap (8) to be guided around a product stack (P), the strap channel

(7) being formed on the frame base (6) by a guide bar (10, 10'), which is located on the frame base (6) and defines the strap channel (7) externally, and by a movable cover (13), which defines the strap channel (7) internally toward the product stack (P) and which is composed of a plurality of overlapping lamellae (14, 14', 14'', 14''') lined up in the direction of circulation (U) of the looping strap (8), the lamellae (14, 14', 14'', 14''') being spring-mounted on the frame base (6) in such a way that when the looping strap (8) is tautened around the product stack (P), they can be lifted off the frame base (6) for the automatic opening of strap channel (7), wherein the lamellae (14, 14', 14'', 14''') are each spring-mounted by a rubber-elastic spring plate (18, 18', 18'', 18'''), which is supported on an associated support (19, 19', 19'', 19''') located on the frame base (6), and on which the lamella (14, 14', 14'', 14''') is suspended.

5,778,773

TIDY CAN KEEPER

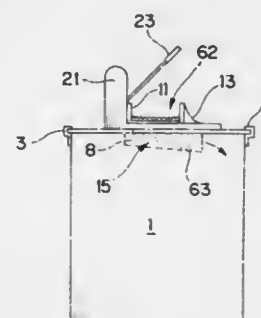
Carolyn M. Clark, 2104 S. Park, Oak Grove, Mo. 64075

Filed Apr. 3, 1997, Ser. No. 832,107

Int. Cl.⁶ B30B 9/32

U.S. Cl. 100—218

4 Claims



1. A can crusher adapted to be mounted on a container comprising: a vice having a stationary anvil element and a movable member between which the can to be crushed can be placed;

a normally closed trap door located below said vice and above the container for receiving crushed cans; and means for opening said trap door as a can is processed for crushing, said means including a manually operated pivotally connected handle, a pair of gear racks fixed to said vice's movable member and interconnecting gear members between the gear racks and the handle to permit linear movement of the racks by depressing the handle.

5,778,774

ARTICULATING EMBOSING DIE

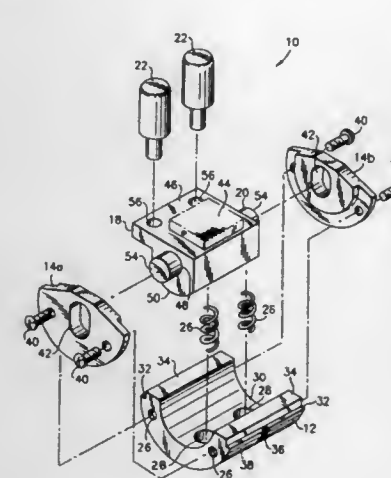
Raymond G. Lavoie, Manchester, N.H., assignor to Framatome Connectors USA Inc., Fairfield, Conn.

Filed Dec. 18, 1996, Ser. No. 768,431

Int. Cl.⁶ F31F 1/07; B41J 11/20

U.S. Cl. 101—28

21 Claims



21. An embossing die assembly comprising:

a frame having a base member with an inner surface;

an embossing pad member having a curved bottom surface, the embossing pad member being connected to the frame to both pivot relative to the frame and also vertically move relative to the frame; and

at least one spring biasing the embossing pad member in an upright direction away from the base member at a position where the curved bottom surface is spaced from the inner surface of the frame, wherein the bottom surface of the embossing pad member and the inner surface of the frame directly contact each other upon the spring being compressed.

5,778,775

PRINTING UNIT WITH SHORT INKING SYSTEM IN A ROTARY PRINTING MACHINE FOR DIRECT PRINTING USING A "WATERLESS" PLANOGRAPHIC PRINTING PLATE

Karl Robert Schäfer, Rimpf, Germany, assignor to Koenig & Bauer-Albert Aktiengesellschaft, Würzburg, Germany

PCT No. PCT/DE95/00887, § 371 Date Jan. 14, 1997, § 102(e)

Date Jan. 14, 1997, PCT Pub. No. WO96/02390, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 6, 1995, Ser. No. 765,177

Claims priority, application Germany, Jul. 14, 1994, 44 24 915.2

Int. Cl.⁶ B41F 7/00; 31/06

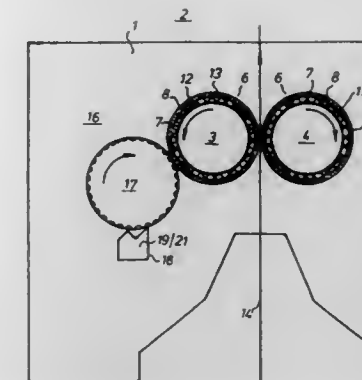
U.S. Cl. 101—141

5 Claims

1. A printing unit of a rotary printing press comprising: a first printing cylinder;

a first, soft waterless planographic printing plate secured to said first printing cylinder for directly printing a material to be printed, said first, soft waterless planographic printing plate having waterless ink accepting printing areas and waterless ink rejecting areas, said waterless ink rejecting areas being accepting of a waterless ink parting agent;

a short inking unit including at least one structured ink transfer roller and a doctor blade device, said short inking unit cooperating with said first waterless planographic printing plate, said structured ink transfer roller having a plurality of depressions separated by a plurality of lands, said depressions being waterless ink accepting, said lands being waterless ink parting



agent accepting, said doctor blade device supplying waterless printing ink to said structured ink transfer roller; a second printing cylinder; and a second, soft waterless planographic printing plate secured to said second cylinder and forming a counterpressure cylinder for said first waterless planographic printing plate whereby a web is printed by passage between, and contact with said first printing cylinder and said second printing cylinder.

5,778,776

STENCIL STAMP UNIT

Tetsuji Fuwa, Hashima; Teruo Imamaki, Kasugai, and Takashi Okumura, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

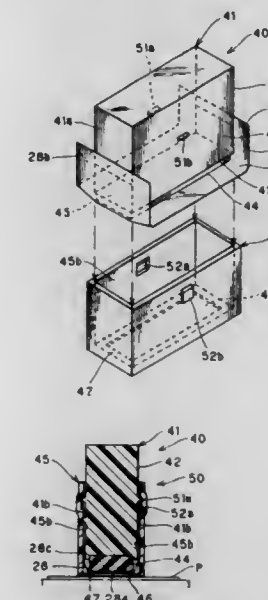
Filed Oct. 4, 1996, Ser. No. 726,857

Claims priority, application Japan, Oct. 5, 1995, 7-286640

Int. Cl.⁶ B41L 27/26

U.S. Cl. 101—125

19 Claims



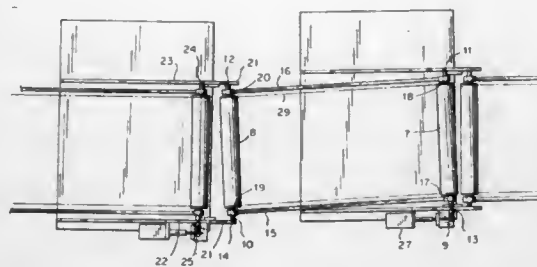
1. A stamp device for printing a stencil image by pressing the stamp device against a medium to be printed on, the stamp device comprising:

a stamp body including a base portion at a lower end thereof, wherein the stamp body is substantially rectangular in shape and has two parallel lengthwise side surfaces and two parallel widthwise side surfaces;

an ink impregnated body impregnated with ink and attached to the base portion of the stamp body;

a thermal stencil sheet disposed on the stamp body so as to cover the ink impregnated body;

a skirt member fitted around the lower end of the stamp body, the stamp body being freely movable with respect to the skirt member during printing;
 an adhesive layer provided to the lengthwise side surfaces of the stamp body and for adhering the stencil sheet to the lengthwise side surfaces of the stamp body;
 an engaging portion provided to one of the stamp body and the skirt member; and
 an engaged portion provided to the other of the stamp body and the skirt member and for engaging with the engaging portion.



comprising an entrance cylinder and an exit cylinder for the web; wherein the exit cylinder (7) of a first unit of said two printing units is pivotally connected in a horizontal plane to the entrance cylinder (8) of a second unit of said two printing units by a pair of rods forming a deformable parallelogram, wherein at least the exit cylinder of said first unit (7) and the entrance cylinder (8) of said second unit are respectively connected to displacement means for adjustment relative to said first unit and said second unit (27, 21, 22).

5,778,777

DAMPENING DEVICE FOR A PRINTING MACHINE
 Nobuyoshi Shibata, and Naoki Ikeda, both of Fuchu, Japan, assignors to Ryobi Ltd., Hiroshima-ken, Japan

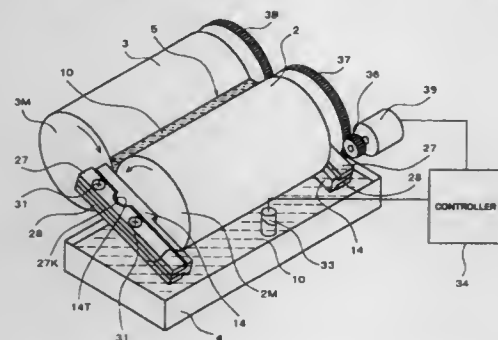
Filed May 8, 1997, Ser. No. 855,712

Claims priority, application Japan, Jun. 6, 1996, 6-144087

Int. Cl.⁶ B41F 7/26; 7/32

U.S. Cl. 101—148

6 Claims



1. A dampening device for a printing machine comprising:
 a first roller rotated by centering around a first roller shaft, and dampening solution being adhered on an outer surface of the first roller;
 a second roller positioned adjacent to the first roller and being rotated by a second roller shaft located substantially parallel to the first roller shaft, and the dampening solution adhered on the first roller being transferred to an outer surface of the second roller; and
 a contact member made of an elastic body having water retention, the contact member being provided so as to contact with both of a first roller lateral face and a second roller lateral face, the first roller lateral face being located substantially perpendicular to the first roller shaft of the first roller and the second roller lateral face being located substantially perpendicular to the second roller shaft of the second roller,
 wherein a part of the contact member is interposed between a first fixing member and a second fixing member so as to be fixed therebetween, and having concave grooves formed on the contact member along with one end of the first fixing member and the second fixing member by a compression force between the part of the contact member with the first fixing member and the second fixing member.

5,778,778

DEVICE FOR ALIGNING A WEB USED IN A PRINTING ROTARY MACHINE

Serge Chiloff, Loiret, France, assignor to Societe d'Etude de Machines pour les Arts Graphiques, Olivet, France

Filed Nov. 29, 1996, Ser. No. 757,686

Int. Cl.⁶ B41F 5/06; 13/02

U.S. Cl. 101—181

15 Claims

1. A device for aligning a web used in a printing rotary machine having at least two printing units, each of said two printing units

5,778,779

PRINTING UNIT AND REGISTER MECHANISM FOR MOUNTING A PRINTING SLEEVE

Jackson H. Jones, Rochester; Robert R. Murray, Madbury, and Roland Thomas Palmatier, Durham, all of N.H., assignors to Heidelberg Druckmaschinen AG, Germany, and Heidelberg Harris, Inc., Dover, N.H.

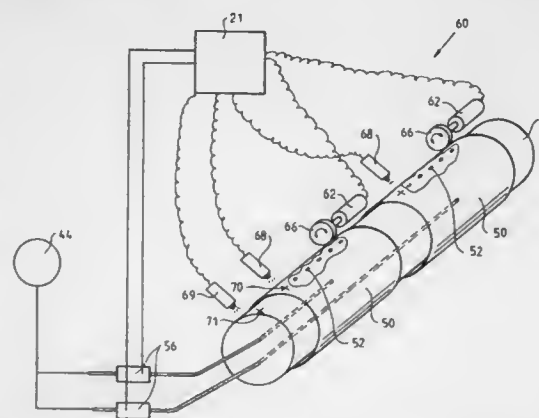
Continuation of Ser. No. 582,712, Jan. 4, 1996, abandoned.

This application Jun. 14, 1996, Ser. No. 665,134

Int. Cl.⁶ B41F 27/00

U.S. Cl. 101—216

4 Claims



1. An offset printing unit including an automatic register system, comprising:

a print cylinder having a sleeve-shaped print form mounted thereon, a first target located on an outer surface of the print form, a second target located on an outer surface of the print cylinder, a plurality of apertures located on the outer surface of the print cylinder;
 a sleeve expansion mechanism coupled to the print cylinder, the sleeve expansion mechanism transmitting compressed air through the plurality of apertures to radially expand the print form;
 a motor having a wheel mounted thereon, the wheel contacting the print form when the print form is in its expanded state;
 a first sensor mounted adjacent to the print cylinder for detecting the first target;
 a second sensor mounted adjacent to the print cylinder for detecting the second target;
 a control unit having a first input connected to the first sensor, a second input connected to the second sensor, and an output connected to the motor, the control unit controlling the cir-

cumferential position of the print form relative to the print cylinder as a function of the signals received from the first and second sensors.

5,778,780

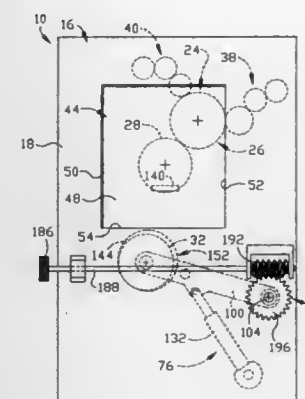
PRINTING PRESS WITH NIP ADJUSTMENT
 John Jarrett Miller, North Richland Hills, Tex., assignor to Stevens International, Fort Worth, Tex.

Filed Jun. 20, 1996, Ser. No. 667,066

Int. Cl.⁶ B41F 5/00

U.S. Cl. 101—216

10 Claims



1. A printing press for printing on sheet-like material, said printing press comprising:

a frame;
 a replaceable cassette removably mounted on said frame and including a printing cylinder;
 an impression cylinder having first and second axially opposite ends;

means for pivotally mounting said impression cylinder on said frame for pivotal movement between a retracted position in which said impression cylinder is offset to one side of said cassette and a printing position in which said impression cylinder extends into said cassette, said printing cylinder and said impression cylinder defining a nip through which the sheet-like material moves during printing on the sheet-like material when said impression cylinder is in the printing position, said nip having a gap with a first end adjacent to the first end of said impression cylinder and a second end adjacent to the second end of said impression cylinder; and
 manually actuatable means for simultaneously adjusting the size of the first and second ends of the gap at the nip between said printing cylinder and said impression cylinder, said manually actuatable means including a manually actuatable input member which remains stationary relative to said frame when said impression cylinder is pivoted between said retracted position and said printing position.

5,778,781

METHOD AND APPARATUS FOR PRINTING ON OPPOSITE SIDES OF A WEB

Henry J. Mueller, Wrentham, Mass., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed Apr. 4, 1997, Ser. No. 833,304

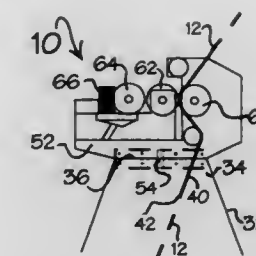
Int. Cl.⁶ B41F 5/12; 7/04

U.S. Cl. 101—220

20 Claims

1. A reversible printer for printing both sides of continuous web material comprising:

a support frame having a platform,
 a printer base positioned on said support frame platform,
 a rotatably driven impression cylinder supported by said printer base,



a rotatably driven plate cylinder supported by said printer base to receive web material fed between said impression cylinder and said plate cylinder for printing,
 said plate cylinder having an inked surface for transferring an inked image to one side of the web material, and
 said printer base being pivotally mounted on said support frame platform for movement to reverse the position of said impression cylinder and said plate cylinder to print one side of the web material in a first position of said printer base and the opposite side of the web material in a second position of said printer base pivoted from said first position.

5,778,782

DEVICE FOR PROCESSING WEBS OR SHEETS OF PAPER BETWEEN TWO JOINTLY OPERATING WORKING CYLINDERS OF A PROCESSING UNIT

Richard Behringer, Utzenfeld, and Juergen Rudiger, Zell, both of Germany, assignors to Grapha-Holding AG, Hergiswil, Switzerland

PCT No. PCT/CH96/00255, § 371 Date Feb. 27, 1997, § 102(e) Date Feb. 27, 1997, PCT Pub. No. WO97/03780, PCT Pub. Date Feb. 6, 1997

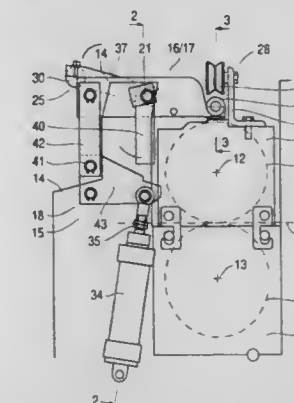
PCT Filed Jul. 11, 1996, Ser. No. 793,529

Claims priority, application Switzerland, Jul. 20, 1995, 02 135/95-9

Int. Cl.⁶ B41F 13/40; B26D 1/36; B26F 1/20

U.S. Cl. 101—226

15 Claims



1. A web-fed rotary press for processing a web material, comprising:

a machine column;
 a processing unit for one of perforating, punching and cutting the web material, the processing unit including for this purpose two counter-rotating, jointly operating working rollers having parallel rotational axes and between which the web material runs, the rollers having sides, and bearing housings supporting the working rollers at their sides and connecting the working rollers to the machine column; and
 a lifting mechanism, arranged on the machine column, for pre-stressing the working rollers in an operating position and for lifting off, installation and removal of the working rollers

at their sides, the lifting mechanism including a lifting frame coupled to the working rollers and further including, respectively on both sides of the working rollers, a lever including a receptacle which is coordinated with the lifting frame and that can be operated to pivot around an axis, and an activation device coupled to the lever for activating the lever to pivot around the axis.

5,778,783

SHEET-FED PRINTING PRESS

Christian Compera, Dossenheim; Martin Greive, Heidelberg; Bernd Herrmann, Malsch, and Anton Rodi, Leimen, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

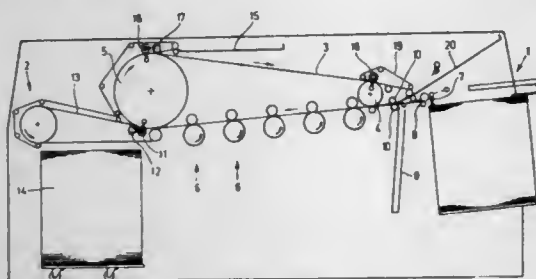
Filed Jul. 26, 1996, Ser. No. 686,817

Claims priority, application Germany, Jul. 26, 1995, 195 27 266.8

Int. Cl.⁶ B41F 13/24

U.S. Cl. 101—232

9 Claims



1. A sheet-fed printing press, comprising:
 - a plurality of digital printing units disposed along a sheet-transport path;
 - a transport apparatus disposed along the sheet-transport path, said transport apparatus transporting sheets through said printing units along the sheet-transport path and, after the sheets have been recto-printed in said printing units, returning the sheets in turned position along a return-transport path defined substantially in an opposite direction to the sheet-transport path for verso printing in the same said printing units; and
 - a feeder for feeding sheets to said printing units, said printing units being adapted to be operated at a faster rate than said feeder.

5,778,784

FLAT BED IMPRINTER

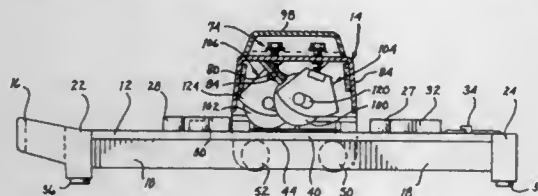
William P. Barbour, Rocky Mount, Va., assignor to Newbold Corporation, Rocky Mount, Va.

Filed Jan. 27, 1997, Ser. No. 789,535

Int. Cl.⁶ B41F 3/20

U.S. Cl. 101—269

21 Claims



1. In an imprinter apparatus for imprinting data from a source member onto a recording document, said apparatus comprising:
 - a base plate;
 - a print carriage having a cross member mounted for reciprocating movement in a linear direction with respect to the base plate;

a print roll supported by said carriage cross member and having an axis of rotation that is perpendicular to said linear direction, said print roll being effective to cause imprinting of said data when the carriage moves in one direction and to avoid printing of said data when the carriage moves in the opposite direction, said carriage including:

a hanger having an inverted U-shape with an upper member having a longitudinal dimension that is perpendicular to said linear direction and two downwardly extending arms at opposite ends of said upper member, said upper member being attached to the carriage by a structure that transmits a compressive printing force, resists separation by a tensile force encountered during normal operation of the imprinter and allows movement of the print roll in a pendulum like manner in a direction that is parallel to said linear direction;

said print roll being mounted at lower ends of said hanger arms for rotational movement about the print roll axis;

the pendulous movement of the hanger being restricted when the carriage moves in said one direction by engagement between one side of the hanger and the carriage cross member whereby the recording document is imprinted with said data due to a compression force applied by the print roll to a recording document properly positioned on said base plate; and

the pendulous movement of the hanger being less restricted when the carriage moves in said opposite direction whereby a larger pendulous movement of the hanger arms results in a displacement of the print roll away from the source member to reduce ghosting,

said apparatus further including sockets at said opposite ends of the hanger upper member to be positioned in substantial alignment with said downwardly extending arms; and

a pair of screws threadedly engaged with and extending downwardly through the carriage and having on a lower free end thereof a ball shaped portion fitted into respective ones of said upper member sockets whereby rotation of the screws controls the imprint pressure.

5,778,785

ZONAL INK FOUNTAIN BLADE FOR A ROTARY PRINTING PRESS

Joseph Gordon Blackwell, Brenouille, France, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany, and Heidelberg Harris, S.A., Montataire Cedex, France

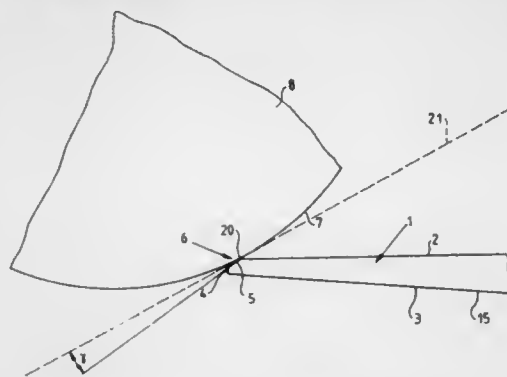
Filed Oct. 28, 1996, Ser. No. 740,151

Claims priority, application France, Oct. 26, 1995, 95 12641

Int. Cl.⁶ B41F 31/04; 31/06

U.S. Cl. 101—365

13 Claims



1. In a rotary printing press having an inking unit with an ink fountain and an ink fountain roller, an ink fountain blade to be disposed in the ink fountain for scraping printing ink from the ink fountain roller, comprising:
 - a base body having a free end region to be associated with the ink fountain roller;

said free end region having a plurality of slits formed therein for dividing said free end region zonally into a corresponding

number of individual blades and defining zones of contact of said individual blades with the ink fountain roller, said individual blades at said zones of contact being chamfers and a tangent to a surface of the ink fountain roller forming a constant angle of between 3° and 15° with each of said chamfers;

a hard-material coating disposed on said base body in said zones of contact; and

an intermediate layer having nickel, said intermediate layer being located between said base body and said hard-material coating, and said hard-material coating being applied to said intermediate layer.

5,778,786

PLATE CLAMPING DEVICE FOR REDUCING THE NON-PRINTING REGION

Jacques Metrope, Laigneville, France, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany, and Heidelberg Harris SA, Montataire Cedex, France

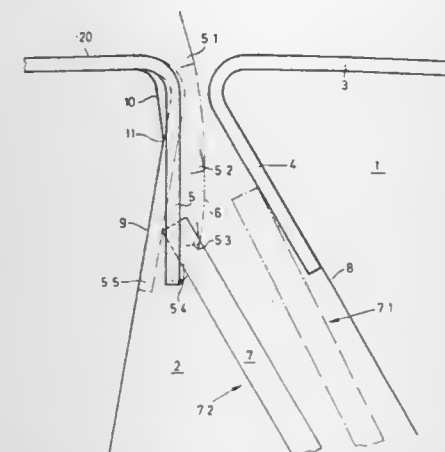
Filed Jul. 25, 1996, Ser. No. 686,357

Claims priority, application France, Jul. 25, 1995, 95 09001

Int. Cl.⁶ B41F 1/28

U.S. Cl. 101—415.1

8 Claims



1. A printing form cylinder device for receiving printing forms on the circumference of the printing form cylinder device, the printing forms having a leading edge and a trailing edge, the printing form cylinder device, comprising:
 - a printing cylinder body having a leading side wall, a trailing side wall and a gap formed therein, said leading side wall and said trailing side wall forming borders of said gap and said gap receiving a leading edge and a trailing edge of a printing form;

one of said leading side wall and said trailing side wall having a protrusion formed therein for assisting in pivoting and turning in the printing form;

a rotatable cross bar received in said gap;

a clamping element secured to said rotatable cross bar, apparatus mounting said clamping element to be movable so as to alternatively lock the leading edge of the printing form to said leading side wall and the trailing edge of the printing form to said trailing side wall; and

said clamping element engaging one of the edges of the printing form below said protrusion producing a tangentially acting force which moves the trailing edge toward the leading edge to reduce the space between them.

5,778,787

CYLINDER HAVING A TWO-LEGGED SLIT FOR A ROTARY PRINTING PRESS

Jürgen Alfred Stiel, Thüngen, Germany, assignor to Koenig & Bauer-Albert Aktiengesellschaft, Würzburg, Germany

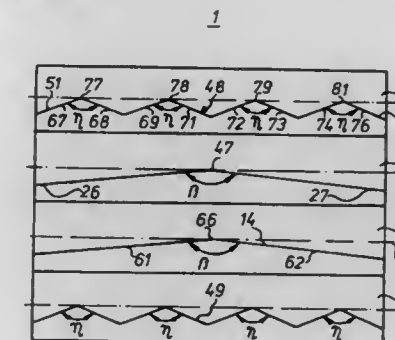
Filed Sep. 6, 1996, Ser. No. 711,952

Claims priority, application Germany, Sep. 8, 1995, 195 33 178.8

Int. Cl.⁶ B41F 1/28

U.S. Cl. 101—415.1

13 Claims



1. A cylinder for a rotary printing press comprising:
 - a cylinder peripheral surface; and
 - at least a first cylinder packing receiving two legged slit in said cylinder and having an outer portion on said cylinder peripheral surface, said two legged slit consisting of first and second legs, said first and second legs being disposed enclosing an apex of an opening angle of other than 180°, said apex of said opening angle lying on a line on said cylinder peripheral surface, said line being parallel to an axis of rotation of said cylinder.

5,778,788

SHEET OFFSET PRESS

Kjell Pettersson, Tranås, Sweden, assignor to IVT Graphics AB, Sweden

PCT No. PCT/SE94/01265, § 371 Date Aug. 28, 1996, § 102(e) Date Aug. 28, 1996, PCT Pub. No. WO95/18017, PCT Pub. Date Jul. 6, 1995

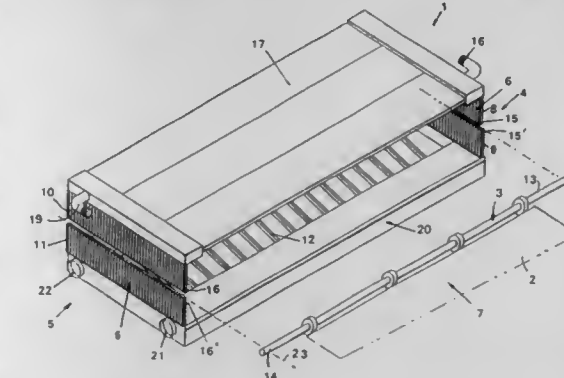
PCT Filed Dec. 29, 1994, Ser. No. 666,453

Claims priority, application Sweden, Dec. 30, 1993, 9304337

Int. Cl.⁶ B41F 35/00

U.S. Cl. 101—424.1

10 Claims



1. Apparatus for use in an offset press wherein the press includes an air-infra-red (IR) drying box with infrared drying lamps disposed therein and the box defines a pathway through which individual printed sheets may be passed in sequence for drying the pigments deposited on the sheets;

the apparatus comprising the box including separated upper and lower sections having lateral sides and with a respective gap between the sections at each lateral side,

gripping means for moving the sheets in a conveying direction between the sections and the gripping means being of such length and being so positioned as to extend from inside the box through the gap at each lateral side;

a respective supply of brush material supported by the sections at the gap at each lateral side of the box, the brush material at each lateral side of the sections extending from the respective section of the box by which it is supported toward the other section of the box in a direction perpendicular to the conveying direction of the sheets and of the gripping means for preventing heat radiation and hot air generated by the IR lamps in the box from passing the brush material and exiting the box through the gaps.

5,778,789
OFFSET LITHOGRAPHIC PRINTING PROCESS WITH A WATER BASED INK

Ramasamy Krishnan, Colonia; Marilyn C. Yamat, Bogota; Hugo Babij, Waldwick, all of N.J.; Roland T. Palmatier, Durham, and Robert R. Murray, Madbury, both of N.H., assignors to Sun Chemical, Ft. Lee, N.J., and Heidelberg Harris, Heidelberg, Germany

Filed Mar. 13, 1996, Ser. No. 614,559

Int. Cl.⁶ C09D 11/08; B41M 1/06

U.S. Cl. 101—450.1

13 Claims

1. An offset lithographic printing process comprising printing at a relative humidity of 75–90%, utilizing a water-based, single fluid, fountain solution free, offset printing ink having:

- (a) 10 to 70 wt. % of a macromolecular binder comprised of:
 - (i) up to 5 wt. % of macromolecular binders soluble in water regardless of the pH of the water;
 - (ii) 10–70 wt. % of macromolecular resin rosin salt binders soluble in water at a pH ranging from about 7.5 to about 10; and
 - (iii) up to 20 wt. % macromolecular aqueous emulsion binders;
- (b) 2–30 wt. % pigment and;
- (c) 0.5–10 wt. % of a re-wetting agent.

5,778,790
TRANSFER OF COMPUTER IMAGES TO LITHOGRAPHIC PLATES EMPLOYING PETROLEUM DISTILLATES AS THE TRANSFER AGENT

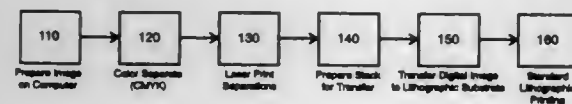
Richard Peterson, 60 W. Center St., Ventura, Calif. 93001

Filed Sep. 4, 1996, Ser. No. 707,510

Int. Cl.⁶ B41C 1/10; 1/06

U.S. Cl. 101—463.1

6 Claims



The Steps of the Transfer Method

1. A method for transferring a laser printed image on a sheet of paper to a lithographic substrate comprising the steps of: generating an image on a computer, printing said image on a sheet of paper by employing a laser printer, placing said sheet of paper atop said lithographic substrate, covering said sheet of paper with a porous paper sheet, said porous paper sheet having gasoline entrained therein, covering said porous paper sheet with a metal foil, covering said metal foil with a tympan, forming a stack, pressing said stack in a press, whereby

said gasoline permits said laser printed image to be transferred from said sheet of paper to said lithographic substrate under the urging of said pressing.

5,778,791
PRINTING INSTALLATION
Marc Albus, Heretsried, and Reinhard Messthaler, Mammendorf, both of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Germany

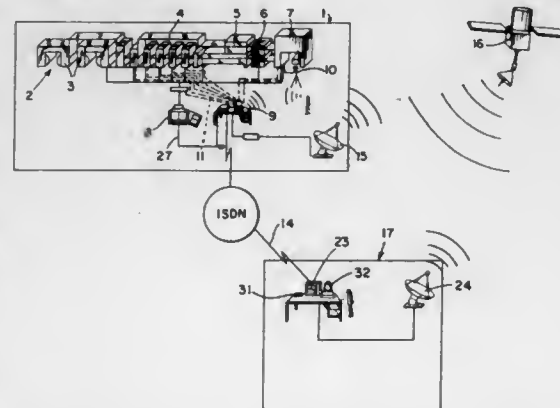
Filed Feb. 16, 1996, Ser. No. 602,905

Claims priority, application Germany, Feb. 20, 1995, 195 05 692.2

Int. Cl.⁶ B41F 33/00

U.S. Cl. 101—483

19 Claims



1. A printing installation, comprising:
a printing machine including a control panel and a plurality of constructional units;
a remote diagnostic and maintenance station including a monitor; data connection means for connecting together the printing machine and the remote diagnostic and maintenance station for data transmission; and
a video and audio communication system connected to individual ones of the constructional units of the printing machine, the video and audio communications system including a computer operatively connected to the data connection means and being operative to process video and audio data received from the printing machine for transmission by the data connection means, the monitor of the remote diagnostic and maintenance station being operative to display and reproduce the video and audio data, the remote diagnostic and maintenance station further being operative to send operating instructions to the printing machine via the data connection means, based upon the video and audio data.

5,778,792
METHOD FOR FORMING A PATTERN ON A SURFACE OF AN ALUMINUM EXTRUSION
Tsung-Tai Lu, No. 499, Chiu-Ju Erh Rd., Kaohsiung City, Taiwan

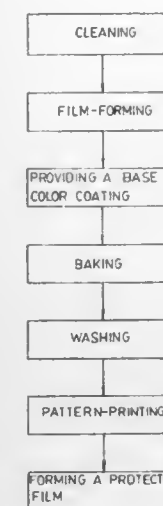
Filed May 2, 1997, Ser. No. 850,899

Int. Cl.⁶ B05D 7/00; 3/00; 5/00

U.S. Cl. 101—483

13 Claims

1. A method for forming a pattern on a surface of an aluminum extrusion, said method comprising the steps of: cleaning said surface of said aluminum extrusion by degreasing, caustic washing and pickling said aluminum extrusion; forming a film on said cleaned surface of said aluminum extrusion; providing a base color coating on said surface of said aluminum extrusion; baking said aluminum extrusion at a temperature of 150°–300° C. in order to crosslink and harden said base color coating;



washing said base color coating on said surface of said aluminum extrusion with an organic solvent in order to remove oil stains and dust;
printing said pattern onto said base color coating on said surface of said aluminum extrusion by means of a power-driven metal roller which has said pattern formed on an external face thereof and which has ink provided thereon, and a polyurethane roller which contacts rotatably said external face of said metal roller and said base color coating on said surface of said aluminum extrusion for transfer printing said pattern from said metal roller to said base color coating of said aluminum extrusion; and
forming a transparent protective film on said printed surface of said aluminum extrusion.

5,778,793
SHADED LOGOS FOR GOLF BALLS
Kathryn M. Mello, East Wareham, and Matthew M. Semiao, North Dartmouth, both of Mass., assignors to Acushnet Company, Fairhaven, Mass.
Continuation of Ser. No. 511,204, Aug. 4, 1995, abandoned.
This application Jul. 8, 1997, Ser. No. 874,925
Int. Cl.⁶ B41F 31/00; A63B 43/00
U.S. Cl. 101—494

18 Claims



1. A golf ball having a logo comprising:
a) a golf ball cover;
b) a logo formed on the cover comprising more than one region wherein each region comprises a plurality of randomized pixels wherein there are at least two regions in which the distance between the center points of the pixels making up the regions are not the same and wherein the combination of the regions form the logo.

5,778,794
MACHINE FOR LAYING A RAILROAD TRACK HAVING MULTIPLE-PART CARRIER FRAME CONNECTED BY A DISENGAGEABLE JOINT

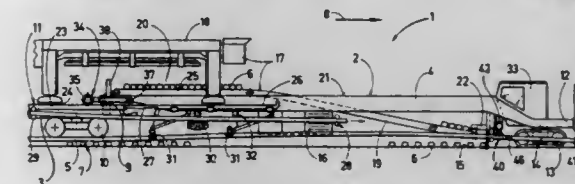
Josef Theurer, Vienna, and Manfred Brunner, Altenberg, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H., Vienna, Austria

Filed May 29, 1997, Ser. No. 865,233

Claims priority, application Austria, Jun. 4, 1996, 967/96
Int. Cl.⁶ E01B 29/00

U.S. Cl. 104—2

10 Claims



1. A machine for continuously laying a railroad track formed by rails fastened to ties; comprising:
a machine frame having a first carrier frame and a second carrier frame which in operative position are arranged successively in longitudinal direction of the machine frame and supported on undercarriages for mobility on the track in an operating direction;
a disengageable joint for detachably connecting the first and second carrier frames to one another, with the second carrier frame being positioned above the first carrier frame in an area of the joint and movable relative to the first carrier frame in longitudinal direction of the machine frame, said second carrier frame having a joint-distal free end;
an off-track undercarriage provided at the joint-distal free end of the second carrier frame;
a tie transport device for continuously transporting ties in longitudinal direction of the machine frame, said tie transport device including a mobile crane capable of traveling on a railway track formed on the first carrier frame;
an auxiliary undercarriage operatively connected to the second carrier frame in the area of the joint, said auxiliary undercarriage being movable on the railway track of the first carrier frame; and
a drive unit for adjusting the auxiliary undercarriage in a vertical direction.

5,778,795
RAILWAY TRUCK ASSEMBLY FOR TRUCK MAINTAINENCE
Peter Gunter Kusel, Pretoria, and Johannes Van Dyk, Esselen Park, both of South Africa, assignors to Gobarail (Pty) Limited, Pretoria, South Africa

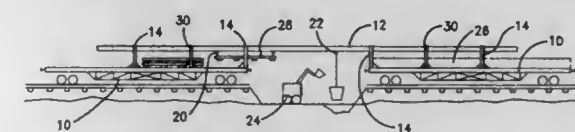
Filed Jul. 30, 1996, Ser. No. 689,063

Claims priority, application South Africa, Jul. 31, 1995, 95/6351; Dec. 27, 1995, 95/10949

Int. Cl.⁶ E01B 29/02

U.S. Cl. 104—3

1 Claim



1. A railway truck assembly comprising:
first truck and a second truck, each of said trucks having rail wheels;
a first plurality of vertically adjustable supports extending from said first truck, and a second plurality of vertically adjustable supports extending from said second truck;
first beam having a cantilevered first end extending from a first end of said first truck towards said second truck, and a second beam having a cantilevered second end extending from a

second end of said second truck towards said first truck, said first beam and said second beam being longitudinally adjustable relative to each other, and said first truck and second truck, respectively;

means for connecting said cantilevered first end to said cantilevered second end; said first plurality of vertically adjustable supports supporting said first beam, and said second plurality of vertically adjustable supports supporting said second beam; at least one support of said first plurality of vertically adjustable supports comprising first means for pivoting said first beam in a horizontal plane, and at least one support of said second plurality of vertically adjustable supports comprising second means for pivoting said second beam in said horizontal plane; and means for hoisting material from a working space located between said first end of said first truck and said second end of said second truck.

5,778,796

SWITCH SYSTEM FOR PERSONAL RAPID TRANSIT
In Ki Kim, 32-02 Hyosung Villa, #64 Chungdam-dong, Kangnam-gu, Seoul, Rep. of Korea, 135-100

Continuation of Ser. No. 602,722, Feb. 21, 1996, abandoned.

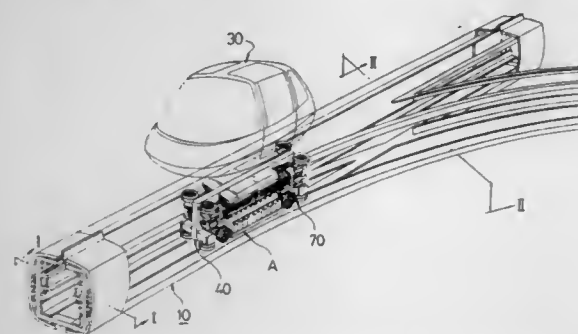
This application Aug. 28, 1997, Ser. No. 919,100

Claims priority, application Rep. of Korea, Jun. 21, 1994, 1994/14033

Int. Cl.⁶ E01B 26/00

U.S. Cl. 104—130.07

18 Claims



1. A transportation system for Personal Rapid Transit (PRT) comprising a vehicle operating over a network of interconnected guideways and a switch system, the switch system comprising:

a guideway switch section comprising a main path and first and second diverging paths which extend from said main path to merge and diverge therefrom, said guideway defining a predetermined vacancy, longitudinal guidance and support rails, lateral frames installed on said longitudinal guidance and support rails, a longitudinal slot centrally located on a top side of said guideway so that a support member connecting said chassis and the vehicle can pass through the slot, the longitudinal slot being continuous from said main path to both said diverging paths, and first and second opposed reaction rails mounted to opposed inside surfaces of said guideway switch section, said first reaction rail being functionally continuous from said main path to said first diverging path and said second reaction rail being functionally continuous from said main path to said second diverging path;

a chassis for supporting a vehicle on-board portion located above the chassis, the chassis equipped with guidance wheels inserted into the vacancy defined by the guideway on which the vehicle runs and having an upper portion for supporting the on-board portion of the vehicle; and

first and second opposed laterally directed electromagnets arranged at a respective predetermined location of said vehicle chassis, said electromagnets provided solely for directing said vehicle into a predetermined path, along said main path and one of said diverging paths, at said switch section by exerting a respective magnetic force directly on the

respective reaction rail functionally continuous from said main path to said one diverging path.

5,778,797

VIBRATION DAMPING ARRANGEMENT FOR CABLE CAR

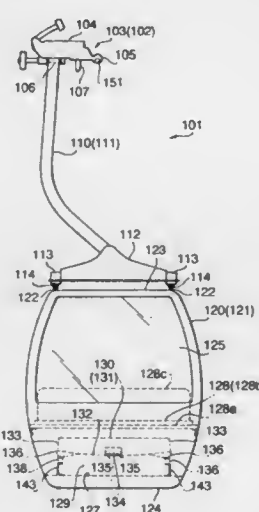
Masao Mutaguchi, Yotsukaido; Kiyosi Kawase; Koji Tanida, both of Yokohama; Hitoshi Nakagawa, Funabashi; Yoshinobu Hiranishi, Chiba, and Ichiro Tokumura, Funabashi, all of Japan, assignors to Nippon Cable Co., Ltd., Tokyo, Japan
Filed Jan. 16, 1996, Ser. No. 586,083

Claims priority, application Japan, Jan. 19, 1995, 7-023306; Jan. 31, 1995, 7-034193; Jan. 31, 1995, 7-034194; Jan. 31, 1995, 7-034195

Int. Cl.⁶ B61B 7/04

U.S. Cl. 105—149.1

67 Claims



17. A vibration damping arrangement for a cable car of a type having a hanger device suspended from a cable and a carriage suspended from the hanger device, the carriage having a seat therein comprising:

means for defining a downwardly arcuate oscillation track, the oscillation track having a longitudinal direction extending in a direction perpendicular to the cable, the oscillation track defining means being located under the seat inside the carriage; and

a vibration damping body movably located on the oscillation track such that it can naturally oscillate on the oscillation track in the longitudinal direction of the oscillation track upon vibrations of the carriage.

a cushioning member provided between the oscillation track defining means and the cable car.

5,778,798

LIFT AXLE SUSPENSION FOR LARGE VOLUME TRAILERS

Ervin K. VanDenberg, 7130 Lutz Ave., N.W., Massillon, Ohio 44646

Filed Feb. 24, 1995, Ser. No. 393,817

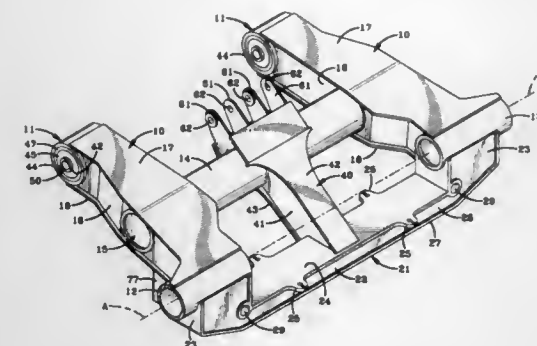
Int. Cl.⁶ B61C 11/00

U.S. Cl. 105—215.2

23 Claims

1. A suspension system for use with a vehicle having a frame and a given weight, the suspension system comprising:

a pair of spaced apart rigid control arms, each having an end and a pair of sidewalls;



5,778,800

FOLDING COLLAPSIBLE MANTEL

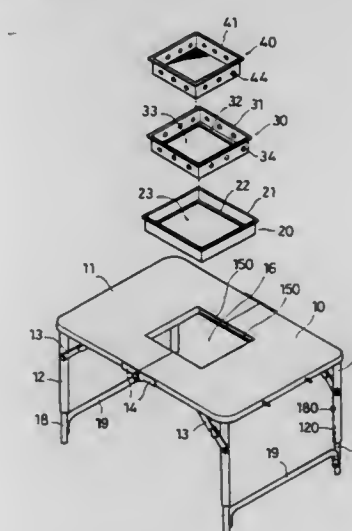
Chin-Chun Liang, No. 25-12, An-Ho Rd., Hsi-Tun Dist., Taichung, Taiwan

Filed Apr. 2, 1997, Ser. No. 832,005

Int. Cl.⁶ A47B 35/00

U.S. Cl. 108—50.11

4 Claims



5,778,799

COMPUTER WORK STATION

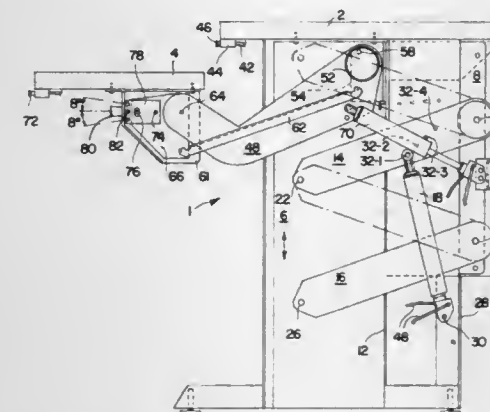
Clarence W. Eyre, Dry Prong, La., assignor to Baker Manufacturing Co., Pineville, La.

Continuation of Ser. No. 261,051, Jun. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 956,157, Oct. 5, 1992, Pat. No. 5,685,231. This application Feb. 23, 1996, Ser. No. 605,801

Int. Cl.⁶ A47F 5/12

U.S. Cl. 108—7

18 Claims



1. A computer console comprising:

a) a cabinet having sidewalls with vertical channels formed therein and a backwall;

b) a first platform supported by the cabinet for movement into multiple elevational positions;

c) the cabinet including a pair of vertical slides each slide secured to said first platform with each slide disposed in a different one of said channels;

d) a plurality of arms, including at least vertically spaced single upper and lower arms with each of the arms extending between a different sidewall of the cabinet and a different one of said slides;

e) said platform being adjustable into multiple elevational positions by rotation of each of the arms relative to the cabinet; and

f) an actuator having first and second end portions, one end portion attached to the cabinet near the back wall, the other end portion attached to an arm for movement therewith.

1. A folding collapsible mantel comprising:

a folding table plate formed of two table tops hinged together, each table top having a notch at one side, a reinforcing rib raised from a bottom side around a border of the notch and defining a bottom open chamber, and two mounting grooves formed in said reinforcing ribs and disposed at two opposite sides in said notches, the notches of said table tops forming a first opening at the center of said folding table plate;

two pairs of folding stand respectively pivoted to said table tops; two pairs of folding braces respectively connected between said table tops and said folding stands;

a base open mounting frame adapted to be mounted in the first opening of said table plate, said base open mounting frame comprising an outward top flange raised around a periphery of a top side thereof and mounted in the mounting grooves of said table tops, a second center opening, and an inward bottom flange raised from a bottom side thereof around said second opening;

a suspension open mounting frame mounted in the second center opening of said base open mounting frame, having a plurality of air vents spaced around an outside periphery of said base open mounting frame, a third center opening, an outward top flange supported on the inward bottom flange of said base open mounting frame, and an inward bottom flange raised from a bottom side thereof around said third center opening; and

a case mounted in the third center opening of said suspension open mounting frame and adapted for carrying a fuel for burning, having a plurality of air vents spaced around an outside periphery of said suspension open mounting frame, and an outward top flange supported on the inward bottom flange of said suspension open mounting frame.

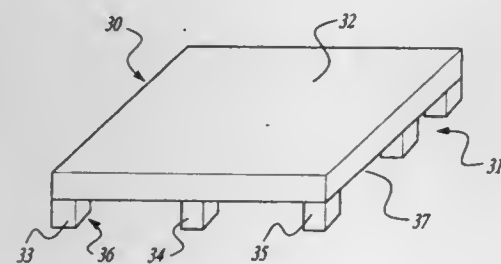
5,778,801
**FORKLIFT PALLET MADE OF PLASTICS MATERIAL,
 AND METHOD OF MANUFACTURE**
 Frederic Delacour, 25, Rue Etienne-Marcel, 37000 Tours,
 France

PCT No. PCT/FR94/00555, § 371 Date May 21, 1996, § 102(e)
 Date May 21, 1996, PCT Pub. No. WO94/26600, PCT Pub.
 Date Nov. 24, 1994

PCT Filed May 10, 1994, Ser. No. 557,161
 Claims priority, application France, May 10, 1993, 93 05564
 Int. Cl.⁶ B65D 19/00

U.S. Cl. 108—57.25

12 Claims



1. A pallet comprising:

a platform; and

a plurality of blocks for spacing said platform from a rest surface to allow a handling member to pass, said plurality of blocks being secured to a bottom face of said platform by a polyfusion method at a connection zone, said polyfusion method minimizing outwardly-opening interstices between said plurality of blocks and said platform, said plurality of blocks having at least one c-shaped plate; and said platform and said plurality of blocks being made of a solid plastics material to minimize outwardly-opening interstices caused by breakage from a blunt instrument.

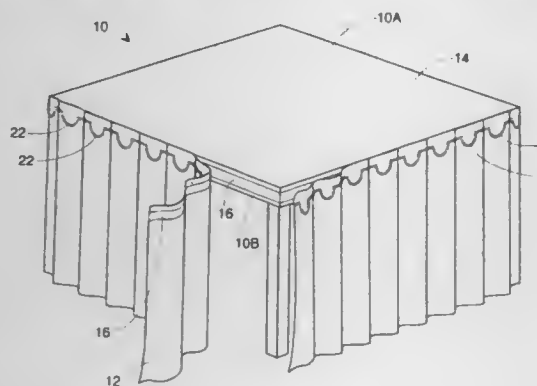
5,778,802
TABLE COVER SYSTEM
 Jana L. Hairston, and Ryland Hairston, both of 679 A Infantry
 Post Rd., San Antonio, Tex. 78234-5000

Filed Nov. 19, 1996, Ser. No. 752,657

Int. Cl.⁶ A47B 13/08

U.S. Cl. 108—90

8 Claims



1. A table cover system comprising:

a. a table cover having a top and a side when the table cover is spread upon a table;

b. an elongated panel having a first broad surface opposite a second broad surface;

c. fastening means for attaching the elongated panel to the table cover along the side such that the first broad surface faces the table cover; and

d. a plurality of elongated, slender cloth segments each having a first end opposite a second end, the first and second ends of

each segment connected to the second broad surface of the elongated panel and a center of each segment hanging limply free from and unattached to the panel, each segment forming a loop hanging limply against the second broad surface of the elongated panel, the segments distributed continuously along the elongated panel, the segments not being a part of the fastening means.

5,778,803
**ADJUSTABLE HEIGHT LOAD BEARING SUPPORT
 STRUCTURE**

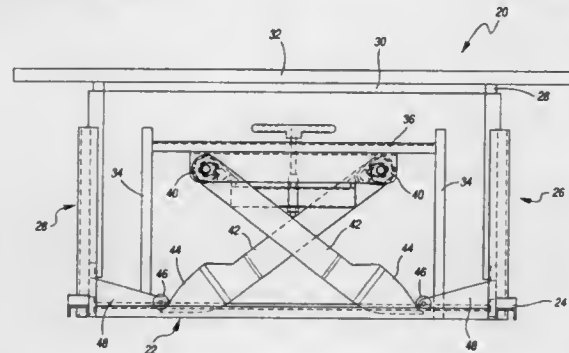
Jay R. Machael, Muscatine, Iowa, assignor to Hon Industries
 Inc., Muscatine, Iowa

Continuation-in-part of Ser. No. 634,592, Apr. 18, 1996. This
 application Oct. 11, 1996, Ser. No. 730,304

Int. Cl.⁶ A47B 9/00

U.S. Cl. 108—147

9 Claims



1. An adjustable height load bearing support structure comprising:

a base frame;

a generally planar support surface member;

support assembly means configured to support said support surface member for vertical movement relative to said base frame when said base frame is positioned on a horizontal surface;

at least one spring biased arm being pivotable about an axis disposed beneath said support surface member and having a free distal end; and

cam means cooperable between the distal end of said arm and said support assembly means for biasing said support assembly means throughout a range of vertical travel and continuously varying an effective moment arm of said arm to compensate for changing force of the spring biasing of said arm wherein force on said support assembly means is substantially equalized through its range of vertical travel;

said cam means including a cam member on said arm and said cam member having a curvilinear concave cam surface.

5,778,804
FASTENING APPARATUS
 Donald E. Read, 2851 N. Lake Dr., Milwaukee, Wis. 53211
 Filed Nov. 17, 1995, Ser. No. 559,937

Int. Cl.⁶ F16B 5/00

U.S. Cl. 248—221.12

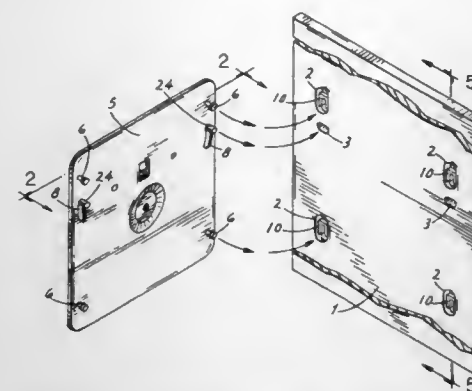
7 Claims

1. A fastening assembly which comprises

a first assembly member, said first assembly member including a generally flat bottom surface,

a second assembly member, said second assembly member including a generally flat top surface,

means for achieving generally coplanar alignment between the flat bottom surface of the first assembly member and the flat top surface of the second assembly member, said alignment means including a plurality of alignment posts extending outwardly from the second assembly member top surface and



a plurality of complimentary recesses defined within the first assembly member bottom surface, each recess being functionally adapted to receive an alignment post within it, means for moving the first assembly member and the second assembly member in relation to each other, said movement means including means for varying the position of the alignment posts of the second assembly member, and means for fastening the first assembly member to the second assembly member.

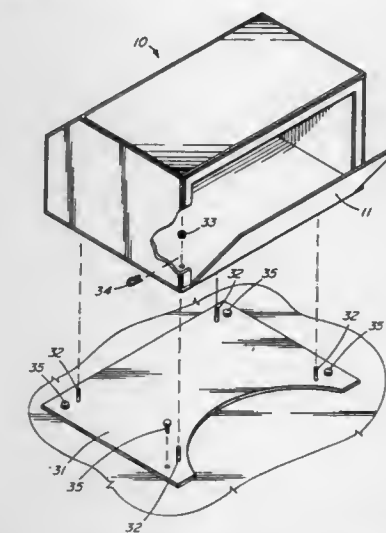
5,778,805
**VEHICLE SECURITY VAULT WITH ELECTRONIC
 LOCK**
 John Richard Green, 6331 Mesa Court, Burnaby, British
 Columbia, Canada, V5E 3W4

Filed Oct. 25, 1996, Ser. No. 738,436

Int. Cl.⁶ E05B 49/00

U.S. Cl. 109—51

8 Claims



1. A portable security vault comprising a case having an exterior, an interior within said case, a panel member movable relative to said case and allowing access to said interior through a first access opening, a programmable electronic circuit having a security code for allowing said panel member to be opened relative to said case, a locking member operable by said programmable electronic circuit to maintain said panel member in a closed position relative to said case and to allow said panel member to be opened relative to said case, a first key pad to enter a security code readable by said programmable electronic circuit, said first key pad being located outside of said case and being operably connected to said programmable electronic circuit, a lock enabler located wholly within said interior of said case when activated, said lock enabler being electrically connected to said locking member, and a second access opening in said case to allow access to said lock enabler from said exterior of said case.

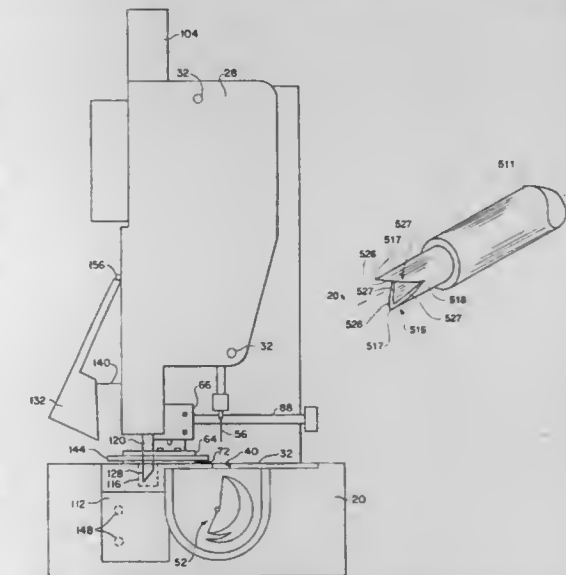
5,778,806
SEWING AND MATERIAL REMOVAL ASSEMBLY
 Paul Badillo, Littleton, Colo., assignor to Ralph's Industrial
 Sewing Machine Company, Denver, Colo.

Continuation-in-part of Ser. No. 286,640, Aug. 5, 1994, Pat.
 No. 5,575,226, which is a continuation-in-part of Ser. No.
 24,687, Mar. 1, 1993, Pat. No. 5,339,756, which is a continua-
 tion of Ser. No. 764,332, Sep. 23, 1991, Pat. No. 5,193,471,
 which is a continuation-in-part of Ser. No. 633,497, Dec. 26,
 1990, Pat. No. 5,158,026. This application Nov. 19, 1996, Ser.
 No. 746,973

Int. Cl.⁶ D05B 3/06

U.S. Cl. 112—68

26 Claims



21. A sewing and material removal assembly for use with a stitchable material, comprising:

a sewing unit comprising a sewing needle;

a material removal unit laterally displaced from and interconnected with said sewing unit, said first material removal unit comprising a punch and a stitchable material support surface comprising a punch hole defined by punch hole diameter and axially aligned with said punch, said punch comprising a punch body, having a punch body diameter substantially equal to said punch hole diameter, and a punch head, having a punch head diameter less than said punch hole diameter, said material removal unit further comprising means for first driving said punch head through stitchable material disposed on said stitchable material support surface and into said punch hole and then for driving at least a portion of said punch body through the stitchable material and into said punch hole.

5,778,807
**EYELET-END BUTTONHOLE SEWING MACHINE
 WHEREIN STITCHING DATA IS COMPENSATED
 ACCORDING TO A DESIGNED ONE OF
 COMPENSATION DATA SETS**

Yoshifumi Nishizawa, Tokyo; Jun Gamano, Okazaki; Hideo
 Ando, Konan, and Akihiro Funahashi, Handa, all of Japan,
 assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and
 Brother Kogyo Kabushiki Kaisha, Nagoya, both of Japan

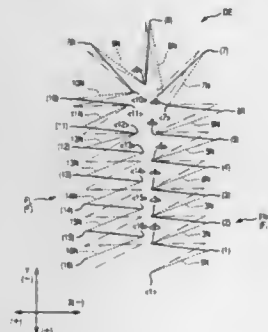
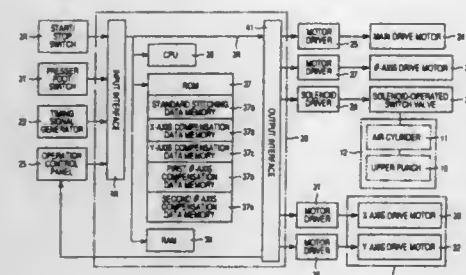
Filed Nov. 12, 1996, Ser. No. 747,383

Claims priority, application Japan, Nov. 15, 1995, 7-322245
 Int. Cl.⁶ D05B 3/08

U.S. Cl. 112—70

15 Claims

1. A buttonhole sewing machine for forming on a work fabric zigzag stitches defining an eyelet-end buttonhole including a foot portion and an eyelet end portion formed at one end of said foot portion, each of said zigzag stitches connecting an inner stitching position and an outer stitching position, said buttonhole sewing machine comprising:



stitch-forming instrumentalities including a sewing needle attached to a needle bar and, a looper device disposed in a looper base, said needle and said looper device cooperating to form said zigzag stitches;

a driving mechanism for operating said sewing needle and said looper device in synchronization with each other, to form said zigzag stitches successively;

a feeding table movable with said work fabric placed thereon, in a Y-axis direction parallel to a direction of extension of said foot portion from said eyelet end portion, and an X-axis direction perpendicular to said Y-axis direction;

a feeding mechanism for feeding said feeding table in said Y-axis and X-axis directions independently, when said sewing needle is placed above said work fabric;

a rotating mechanism for rotating said needle bar and said looper base about a θ axis intersecting said X- and Y-axis directions;

a control device for controlling said driving mechanism, said feeding mechanism and said rotating mechanism, according to stitching data representative of a feeding movement of said feeding table and a rotating movement of said needle bar and said looper base, for each of said zigzag stitches in said foot portion and said eyelet-end portion of said eyelet-end button-hole;

compensation data memory means storing a plurality of sets of compensation data for compensating said stitching data; compensation data designating means for designating one of said plurality of sets of compensation data; and compensating means for compensating said stitching data on the basis of the set of compensation data designated by said compensation data designating means.

5,778,808

EMBROIDERY SEWING DEVICE AND EXTERNAL MEMORY MEDIUM FOR USE THEREWITH

Takashi Hirata, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 31, 1996, Ser. No. 742,834

Claims priority, application Japan, Nov. 6, 1995, 7-311580

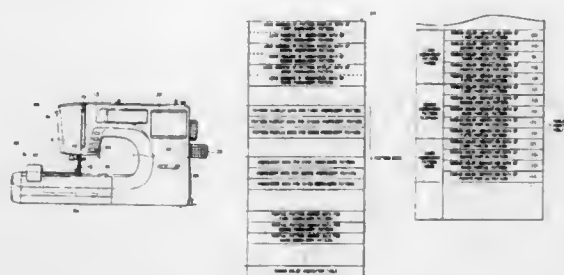
Int. Cl.⁶ D05B 21/00; D05C 5/04

U.S. Cl. 112—102.5

21 Claims

5. A sewing data processor capable of displaying embroidery patterns, comprising:

display means for displaying embroidery patterns; an external memory medium mounting portion; an external memory medium detachably mountable to the external memory medium mounting portion that stores sets of pattern data relating to a plurality of embroidery patterns,



each embroidery pattern including a plurality of partial patterns each to be sewn in a corresponding one of a plurality of thread colors and stores sets of thread color indication data, each set of thread color indication data indicating a corresponding thread color for sewing a corresponding one of the plurality of partial patterns of the plurality of embroidery patterns;

pattern display control means for displaying at least one of the plurality of embroidery patterns on the display means based on the pattern data;

character font memory means for storing a first plurality of sets of display font data for displaying a corresponding first plurality of characters required to indicate each of the thread colors in a first predetermined language using at least one character of the first predetermined language, each set of the first plurality of sets of display font data being stored under its lead address in the character font memory; and

lead address correspondence means for storing a plurality of sets of thread color indication data and lead addresses of the first plurality of sets of display font data, each set of thread color indication data indicating a corresponding one of the thread colors and being stored in correspondence with at least one lead address of display font data for displaying the corresponding one of the thread colors in at least a character of the first predetermined language.

5,778,809

DEVICE FOR AUTOMATICALLY CUTTING OFF THREAD FORMATIONS IN SEWING MACHINES

Helmut Schips, St. Gallen, Switzerland, assignor to SCHIPS AG Naebhauf, Tübingen, Switzerland

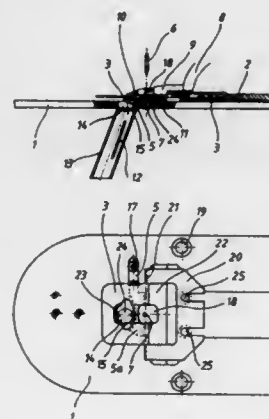
Filed Jul. 11, 1996, Ser. No. 678,195

Claims priority, application Germany, Jul. 14, 1995, 295 11 402.9

Int. Cl.⁶ D05B 65/00

U.S. Cl. 112—287

10 Claims



1. An apparatus for automatically cutting off thread formations in sewing machines having a longitudinal direction and a transverse direction and comprising:

a needle plate having a surface defining a support plane;

a transport plate disposed adjacent the needle plate, the transport plate being displaceable in a plane parallel to the support plane in both the longitudinal direction and the transverse direction;

a cutting device disposed adjacent the needle plate for cutting off a thread formation from the sewn item, the cutting device including a stationary lower blade connected to the needle plate and an upper blade connected to the transport plate, the upper blade defining a first recess therein; and

a hold-down device disposed adjacent the needle plate and defining a second recess therein and being configured for holding down a sewn item on the needle plate.

5,778,810

SEWING MACHINE

Koichi Akahane, Mikage Park Haitzu 1-102, 1-43-2, Mikage-cho, Chikusa-ku, Nagoya-shi, Aichi-ken; Takashi Kondo, 59-5, Terashita, Yokonemachi, Ohbu-shi, Aichi-ken; Motonari Nakano, 30-1, Aza-Kawasaki, Oku-cho, Ichinomiya-shi, Aichi-ken; Yoshihisa Nozaki, 205, Aza-Aoki, Oaza-Akasaka, Otowa-cho, Hoi-gun, Aichi-ken; Koichi Harada, 1-101, Fujishima, Komaki-shi, Aichi-ken; Tomoyuki Fujita, 18-55, Nagase-cho, Tajimi-shi, Gifu-ken, and Minoru Yamaguchi, 58-4, Kitadaido, Ogakie-cho, Kariya-shi, Aichi-ken, all of Japan

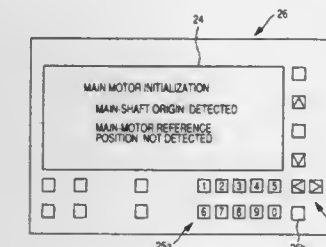
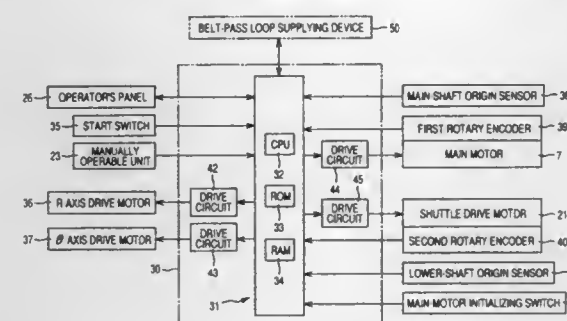
Filed Mar. 31, 1997, Ser. No. 829,339

Claims priority, application Japan, Apr. 8, 1996, 8-111983

Int. Cl.⁶ D05B 19/00; 69/12

U.S. Cl. 112—470.01

24 Claims



1. A sewing machine comprising:

a needle bar to which a sewing needle conveying a sewing thread is secured;

a main shaft to which said needle bar is connected;

a loop catcher which cooperates with the sewing needle to catch a loop of the sewing thread conveyed by the needle;

a catcher shaft to which said loop catcher is connected;

a drive motor which drives at least one of said needle bar and said loop catcher by rotating a corresponding one of said main shaft and said catcher shaft;

a first sensor which detects a first reference rotation position of at least one of said main shaft and said catcher shaft and generates a first detection signal indicating that said one shaft is taking said first reference rotation position;

a second sensor which detects a second reference rotation position of said drive motor and generates a second detection signal indicating that said drive motor is taking said second reference rotation position; and

an indicating device which indicates, based on said first detection signal, that said one of said main shaft and said catcher shaft is taking said first reference rotation position and indicates, based on said second detection signal, that said drive motor is taking said second reference rotation position.

5,778,811

SEWING MACHINE

Peter Gill, and Jason Prout, both of Leeds, England, assignors to AMF Reece, Inc., Richmond, Va.

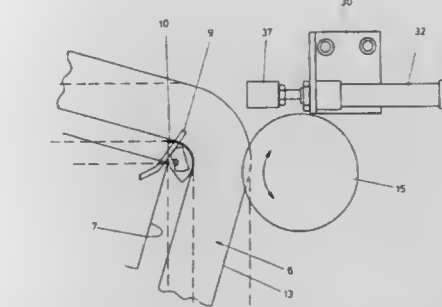
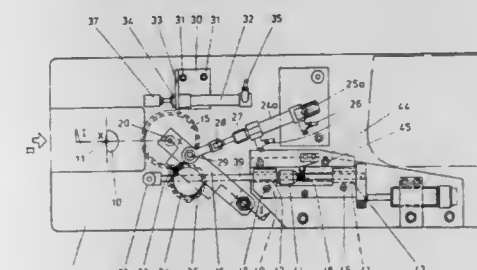
Filed Jul. 5, 1996, Ser. No. 672,227

Claims priority, application United Kingdom, Jul. 8, 1995, 9513978

Int. Cl.⁶ D05B 21/00

U.S. Cl. 112—470.09

7 Claims



1. A sewing machine including a template capable of holding together two or more layers of fabric that are to be stitched together and comprising:

a groove formed in the template and shaped, according to a required stitching profile;

a sewing machine base plate having a guide member projecting upwardly therefrom to engage with said groove;

a needle hole formed in the guide member;

a needle mounted on the sewing machine and operative to pass through said hole in the guide member to effect a stitching action;

relatively moveable sections forming part of said template and operative to form at least one pleat in an upper layer of fabric and thereby to impart fullness to that layer as the sections are moved together, with the end of the pleat extending across said groove;

diverting means for engaging said pleat and secured in a fixed position on a head of the sewing machine to lie above the guide member, said diverting means having a slot formed therein;

drive means for effecting movement of the template relative to the guide member to drive the template so that the groove is moveable along the guide member, said drive means comprising a drive wheel having a periphery for engaging a drive edge of the template;

means for rotating the drive wheel to cause the latter to move the template in a normal direction; and

means for reversing the direction of rotation of the drive wheel to cause the latter to move the template in a reversed direction.

5,778,812

SEWING APPARATUS FOR SEWING CIRCULAR RIB
Masahiko Nishikawa, Osaka, Japan, assignor to Pegasus Sewing Machine Mfg. Co., Ltd., Osaka, Japan

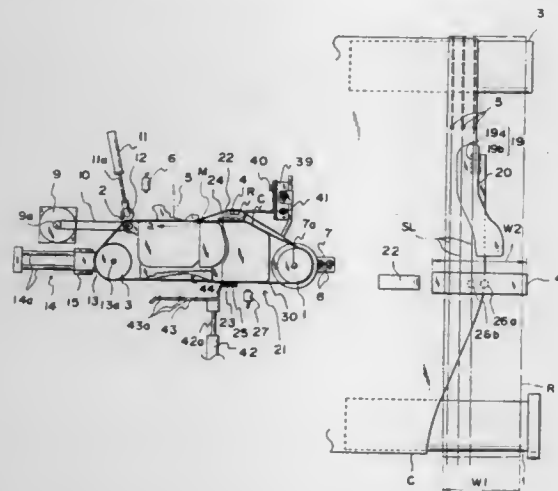
Filed May 13, 1997, Ser. No. 855,525

Claims priority, application Japan, May 15, 1996, 8-146593

Int. Cl.⁶ D05B 35/06

U.S. Cl. 112—470.33

4 Claims



1. A sewing apparatus of circular rib comprising:
plural rollers disposed in front and rear of a needle drop point of a sewing machine, capable of applying and setting the circular rib in a position for passing over the needle drop point in a state with a peripheral direction of the circular rib matched with a cloth feed direction of the sewing machine, and
a cloth correcting device for correcting a position of an end portion of a tubular cloth set on the plural rollers relatively to the circular rib,

wherein said cloth correcting device comprises
first cloth end position controlling means for gripping the end portion of the tubular cloth and correcting its position, so as to support the circular rib and tubular cloth in a state separated to the right and left at said front roller in front of the needle drop point,

second cloth end position controlling means for gripping the end portion of the tubular cloth and correcting its position, so that the end portion of the tubular cloth may overlap with the circular rib between the needle drop point and said front roller, and

a rib detaching guide disposed near the second cloth end position controlling means, the rib detaching guide being movable between an action position for supporting the circular rib above the tubular cloth on a sewing line, and a waiting position for allowing passing of a sewing start portion along with approach of the sewing start portion.

5,778,813

COMPOSITE STEEL STRUCTURAL PLASTIC SANDWICH PLATE SYSTEMS

Stephen J. Kennedy, Ottawa, Canada, assignor to Fern Investments Limited, Jersey, Channel Islands

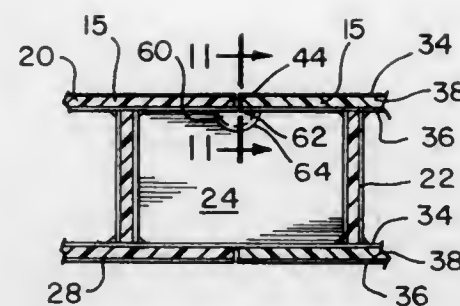
Filed Nov. 13, 1996, Ser. No. 746,539

Int. Cl.⁶ B63B 25/08

U.S. Cl. 114—74 A

27 Claims

1. A containment vessel comprising:
an outer wall;
an inner wall, located at a first predetermined distance from said outer wall, said inner wall comprising a structural laminate, said laminate comprising:
an outer metal layer having an inner and outer surface;
an inner metal layer having an inner and outer surface;



a spacer element between said inner surface of said outer metal layer and said outer surface of said inner metal layer, said spacer element arranged to maintain a second predetermined distance between said outer and inner metal layers, said spacer contacting said inner surface of said outer metal layer; and
an intermediate layer disposed between and bonded to both said inner and outer metal layers, said intermediate layer comprising a first plastic material; and
a plurality of structural members connecting said outer wall to said outer metal layer of said inner wall, each of said structural members having a stress relief clearance adjacent a portion of said outer surface of said inner wall outer metal layer, said clearance being opposite a point where said inner wall outer metal layer inner surface contacts said spacer, said clearance provided to prevent crack propagation from one of said structural members to said inner metal layer of said inner wall by way of said spacer.

5,778,814

SAILBOAT SAIL ARRANGEMENT AND GOOSENECK DEVICE THEREFOR

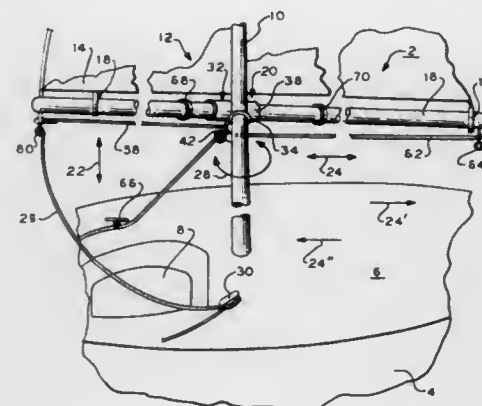
Sarah Louise Taylor, 230-29th St., Avalon, N.J. 08202

Filed Feb. 13, 1997, Ser. No. 799,127

Int. Cl.⁶ B63B 15/00

U.S. Cl. 114—97

20 Claims



1. A gooseneck device for coupling a sail boom to a mast in a sail boat comprising:
a ring member for receiving the mast therethrough, said ring member for traversing the mast in a vertical direction and for rotating about said mast;
a tubular member secured to the ring member for slidably receiving the boom, said boom for traversing along the tubular member in a direction transverse the vertical direction; and
means for securing the ring member to the tubular member.

5,778,815

SHIP HATCH COVER

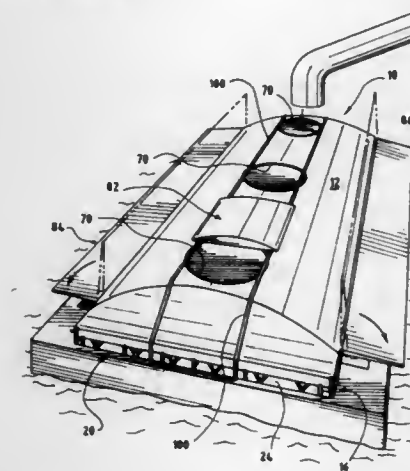
Glen E. Shields, North Vancouver, and Barry D. Jones, Saskatoon, both of Canada, assignors to Canpotex Shipping Services Limited, West Vancouver, Canada

Filed Feb. 21, 1997, Ser. No. 803,698

Int. Cl.⁶ B63B 19/12

U.S. Cl. 114—201 R

6 Claims



1. A portable hatch cover for a vessel, comprising:
a generally rectangular main frame section;
a lightweight waterproof cover extending over the frame;
at least one aperture in the cover to permit the passage of fluent cargo through the hatch opening;
at least one cover mountable above the port to permit selective opening and closing of the aperture;
connection means for lifting the portable hatch cover onto the open hatch of a ship to be loaded; and
at least one wing pivotally mounted on the frame for adjustment to insure complete closure of the hatch opening.

5,778,816

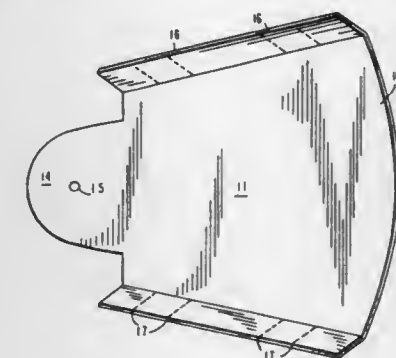
PORTABLE WIND SCOOP FOR BOAT PORT HOLES
Matthew Vincent Digulio, 79 Barrow St., New York, N.Y. 10014

Filed Jun. 2, 1997, Ser. No. 867,148

Int. Cl.⁶ B63J 2/00

U.S. Cl. 114—211

8 Claims



1. A readily insertable and removable windscoop adapted to be inserted into an elongated open porthole, comprising in combination, a compressible windscoop unit having a body portion, a narrowed tongue section at one end of said body portion and an expanded section at its other end, said windscoop have lateral flange portions at its sides extending downward from the plane of said body portion when not in use; said windscoop being adapted to be compressed prior to insertion into said elongated open porthole so that said expanded section provides an entry for airflow

and said lateral flange portions are adapted to fit into the side openings of an open porthole with the natural tension of the compressible windscoop holding the unit in place in said porthole.

5,778,817

OUTRIGGER SYSTEMS FOR MOTORBOATS

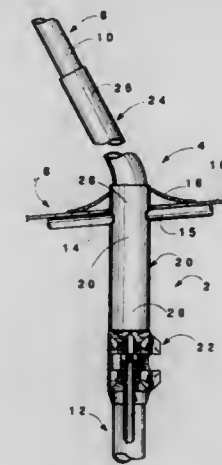
Scott A. Rupp, 4761 Anchor Ave., Port Salerno, Fla. 33492

Filed Nov. 26, 1996, Ser. No. 756,612

Int. Cl.⁶ B63B 17/00

U.S. Cl. 114—255

4 Claims



1. In an outrigger device installed on a T-top equipped motorboat having an outrigger pole supported by its inboard end above said T-top and which permits said outrigger pole to be rotated from a stowage position to a trolling position and vis versa by a person safely standing in said motorboat in the shelter of said T-top by manipulation of locking means,

the improvement in said locking means which comprises:
a tubular member defined by a longitudinal axis, an upper end portion and a lower end portion joined integrally to a center portion that extends through said T-top,

an arcuate tube aligned with said longitudinal axis and rotatably carried in said tubular member defined by a bottom portion with a bottom end positioned below said T-top and a top portion extending beyond said upper end portion and at an angle relative to said longitudinal axis of said tubular member, said arcuate tube having a hole of given perimeter through said bottom portion adjacent said bottom end,

a locking collar defined by a contoured outside surface, an inside cylindrical surface axially aligned with said longitudinal axis that rotatably receives said bottom portion of said arcuate tube, an upper end section, a lower end section and a central section, said locking collar being fixed by said upper end section to said lower end portion of said tubular member,

said contoured outside surface being defined in part by a lateral first lug including a first top portion, a first bottom portion and a first central portion, said first lug having a longitudinal groove therein extending axially aligned with said longitudinal axis from said first top portion to said first bottom portion said contoured outside surface being further defined by a lateral second lug including a second top portion, a second bottom portion and a second central portion, said second lug having a longitudinal groove therein extending axially aligned with said longitudinal axis from said second top portion to said second bottom portion, said second lug being positioned in said contoured outside surface approximately 90° relative to said first lug,

a horizontal slot extending radially through said locking collar from said contoured outside surface to said inside cylindrical surface and horizontally from and through said first central portion to and through said second central portion,

a cylindrical plug fitted into said bottom end of said arcuate tube and having a radial cavity therein with a cross-section

that mimics said perimeter of said hole in said arcuate tube, said cavity being aligned with said hole,
 a columnar member defined by a fore portion and an aft portion, said aft portion having a cross-section that mimics said cavity cross-section and said fore portion comprising a shackle, said aft portion extending through said hole plus said slot and being removably fixed by fasteners in said cavity of said cylindrical plug with said shackle extending beyond said slot, and
 a lever rod pivoted at one end to said shackle and sized to fit snugly into said longitudinal grooves of said first and second lugs.

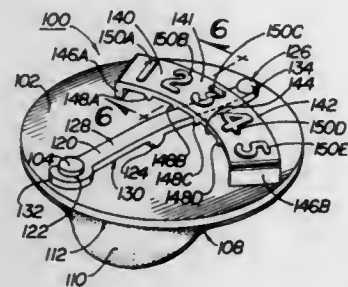
5,778,818 INDICATOR

Forrest A. Marshall, 615 Academy Ave., Dublin, Ga. 31021
 Continuation-in-part of Ser. No. 380,598, Jan. 30, 1995, Pat. No. 5,694,882. This application May 31, 1996, Ser. No. 656,081

Int. Cl.⁶ G09F 9/00

U.S. Cl. 116—313

12 Claims



1. An indicator comprising:
 - a. an upper surface;
 - b. an arm;
 - c. means for attaching the arm to the upper surface of the indicator so that the arm may move, in which the attaching means protrudes from the upper surface of the indicator and about which the arm pivots;
 - d. means, attached to the upper surface of the indicator and defining a space therebetween, for receiving the arm in which the receiving means has an upper surface and a lower surface, further comprising a plurality of nodes protruding from the lower surface of the receiving means and indicia located on the upper surface of the receiving means, each indicium located between an adjacent two of the nodes;
 - e. in which the arm is of a width to fit between an adjacent two of the nodes
 - f. in which the arm has an upper surface and a lower surface, the arm further comprising a knob protruding from the lower surface of the arm for biasing the arm against the lower surface of the receiving means; and
 - g. means, adapted to be inserted into the space, for restricting movement of the arm.

5,778,819

Patent Not Issued For This Number

5,778,820 APPARATUS AND METHOD FOR CONTROLLING FEED RECEIVED BY ANIMALS WHILE BEING AUTOMATICALLY MILKED

Cornelis van der Lely, 7 Brüschenrain, CH-6300 Zug, Switzerland, and Karel van den Berg, 5 Boterbloemstraat, 2971 BR Bleskensgraaf, Netherlands

PCT No. PCT/NL95/00278, § 371 Date Apr. 16, 1996, § 102(e) Date Apr. 16, 1996, PCT Pub. No. WO96/05723, PCT Pub. Date Feb. 29, 1996

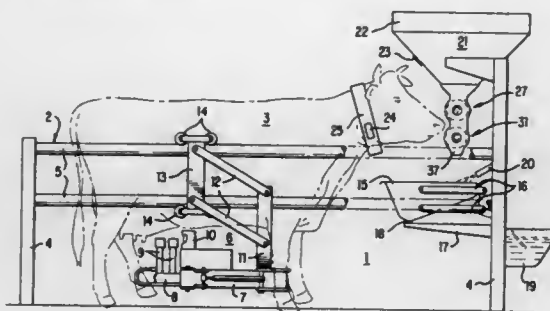
PCT Filed Aug. 21, 1995, Ser. No. 633,811

Claims priority, application Netherlands, Aug. 23, 1994, 9401358; Oct. 31, 1994, 9401801

Int. Cl.⁶ A01J 5/00

U.S. Cl. 119—14.18

36 Claims



15. An apparatus including a mechanism for milking animals, such as cows, equipped with a milking robot for automatically milking an animal which mechanism comprises a feeding trough and a measuring device for continually measuring the weight of fodder in said feeding trough.

5,778,821 RESTRICTED FLOW POULTRY FEEDER

Francis Hedley Horwood, and Francis Hedley Horwood, Jr., both of New South Wales, Australia, assignors to F&M Horwood Nominees Pty. Ltd., Auburn, Australia

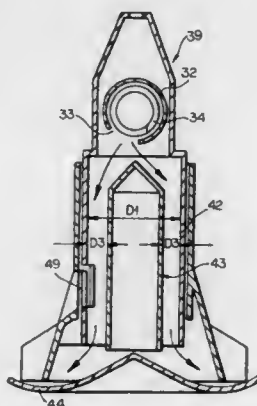
Filed Jan. 22, 1996, Ser. No. 589,377

Claims priority, application Australia, Jan. 23, 1995, PN0696; Nov. 17, 1995, PN6655

Int. Cl.⁶ A01K 39/012

U.S. Cl. 119—53

39 Claims



2. A flow variation device for controlling flow of poultry feed through a poultry feeder tube having an aperture formed therein, said flow variation device comprising:
 - a elongate body adapted to have, at least, a first diameter at one end and a second diameter at the other end thereof, wherein the second diameter is greater than the first diameter, wherein the first and second diameters of the elongate body and the inner surface of the poultry feeder tube define first and second

substantially annular cross-sectional areas wherein the second cross-sectional area is less than the first cross-sectional area; and
 engagement means for positioning the body within an inner surface of the poultry feeder tube, wherein the engagement means comprises a plurality of protrusions, each protrusion having a longitudinal axis substantially parallel to a longitudinal axis of the elongate body, each of the plurality of protrusions has a first notch incorporated therein for engaging said aperture, a tab incorporated in the protrusion adjacent to the first notch for engaging the aperture and for delimiting the vertical displacement of the elongate body within the feeder tube, and a second notch, where the first and second notches engaging opposite surfaces of the aperture to rigidly maintain the elongate body within the inner surface of the feeder tube.

5,778,822 METHOD AND APPARATUS FOR FILTERING ODORS GENERATED IN A PET LITTER CONTAINER

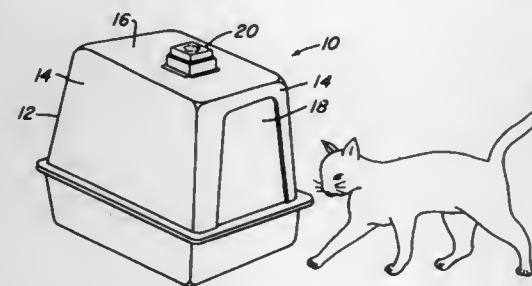
James Wesley Giffin, Southlake; Ronald William Allison, Fort Worth, and Joe Benton Carnahan, Flower Mound, all of Tex., assignors to Giftech Filter Products, Inc., Southlake, Tex.

Filed Dec. 29, 1995, Ser. No. 581,496

Int. Cl.⁶ A01K 29/00

U.S. Cl. 119—165

23 Claims



1. A pet litter container for use by a pet within a room comprising:
 - a pet litter container having a covering that defines an interior space, wherein the covering has a door opening for pet ingress and egress and is made of a material that is substantially impervious to fluids, the covering having a top containing a recessed area;
 - a plurality of ventilation openings in the recessed area of the covering;
 - a power filter assembly including a housing having a base, an air inlet, an air outlet, and an air path between the air inlet and air outlet which discharges into a room, the base having dimensions substantially coextensive with the recessed area and releasably retained in the recessed area with the base covering all the ventilation openings and with the air inlet in fluid communication with at least some of the ventilation openings;
 - a fan located in the housing in the air path for moving air at a predetermined rate from the interior space, through the air inlet and out the air outlet for exhausting air from the interior space into the room; and
 - a filter cartridge removably mounted in the housing in the air path for removing odors from air in the air path.

5,778,823 METHOD OF RAISING FISH BY USE OF ALGAL TURF

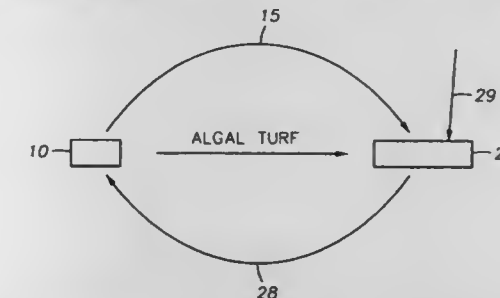
Walter H. Adey, Gloucester, Va., and Richard Purgason, Sugar Land, Tex., assignors to Aquatic BioEnhancement Systems, Sugar Land, Tex.

Filed Oct. 31, 1996, Ser. No. 741,126

Int. Cl.⁶ A01K 61/00

U.S. Cl. 119—215

37 Claims



1. A method of raising fish comprising:
 - (A) transferring algal turf, severed from the growing surface of an algal turf growth reservoir, to a fish rearing tank prior to the algal turf being overgrown by macroalgae;
 - (B) exposing young fish in the fish rearing tank to the severed algal turf for consumption of at least a portion of the severed algal turf by the fish;
 - (C) removing water enriched in oxygen from the algal turf growth reservoir and recycling it to the fish rearing tank;
 - (D) transferring at least a portion of the metabolic and respiratory waste products of the fish to the algal turf growth reservoir; and
 - (E) repeating steps (A), (B), (C) and (D) until obtaining mature fish in the fish rearing tank; and
 - (F) harvesting mature fish from the fish rearing tank.

5,778,824 MAGNETIC DEVICE AND METHOD FOR FEEDING AQUATIC ANIMALS

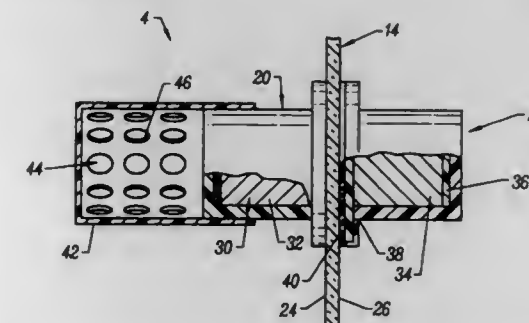
Gary Musgrave, and Frances L. Farmer, both of 267-27th St., San Francisco, Calif. 94131

Filed Jan. 31, 1996, Ser. No. 594,570

Int. Cl.⁶ A01K 61/00

U.S. Cl. 119—230

13 Claims



1. An aquatic animal feeding assembly for use with an aquarium comprising:
 - a first magnet having a first magnetic pole adapted for movable placement adjacent an outer surface of an outer wall of an aquarium;
 - a second magnet having a second magnetic pole opposing the first magnetic pole and being adapted for movable placement within an aquarium adjacent an inner surface of said outer wall of an aquarium opposite the first magnetic pole;
 - first and second casings housing the first and second magnets, respectively;
 - a food holder attached to the second casing for releasably holding food within an aquarium;

wherein the first and second magnets generate a magnetic force sufficient to hold each other in place against the outer aquarium wall;

wherein the first and second casings are movable with respect to the outer wall of the aquarium, the magnets being positioned within the casings such that movement of the first casing along an outer surface of the outer wall causes a corresponding movement of the second casing along an inner surface of the outer wall; and

further comprising a cover sheet attached to each of the casings adjacent the attraction surfaces of the magnets, the cover sheet comprising a relatively smooth material for minimizing friction between the outer wall of the aquarium and the cover sheet when the casings are moved relative to the outer wall.

5,778,825

FELINE EXERCISE AND PLAY TARGET OBJECT

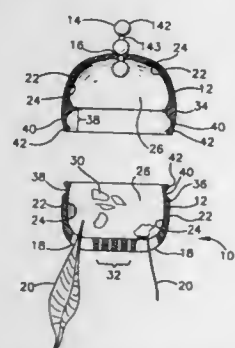
Mark H. Krietzmen, and Yu-Hsin Chen, both of 2347 W. 246th Pl., Lomita, Calif. 90717

Filed Jun. 17, 1996, Ser. No. 665,337

Int. Cl.⁶ A01K 15/02

U.S. Cl. 119—708

17 Claims



1. A feline exercise and play target object, comprising:

- a housing having an external wall and an internal wall said internal wall defining an enclosed cavity;
- support receiving means incorporated in said housing whereby said housing can be detachably supported and such that said housing can freely rotate while supported and whereby said support receiving means is a channel through said housing comprised from first and second hollow projections and forming a continuous passage therethrough and having a stop formed in said second hollow projection whereby a support is allowed to pass through said channel and said stop whereby said support contacts said stop and provides support for said housing;
- attraction attachment means incorporated in said housing such that a variety of mechanical attractions can be attached to said housing;
- a filling aperture incorporated into said housing through which natural attractant can be placed in said enclosed cavity; and
- a plurality of pores extending into said enclosed cavity from said external wall to said internal wall whereby through which natural attractant can escape from said housing.

5,778,826

BIRD AND ANIMAL BLINDFOLDING APPARATUS

William W. Dillon, P.O. Box 432; James Michael Dillon, P.O. Box 333, both of Walsh, Colo. 81090, and Russell Allen Dillon, P.O. Box 3328, Stinnett, Tex. 79083

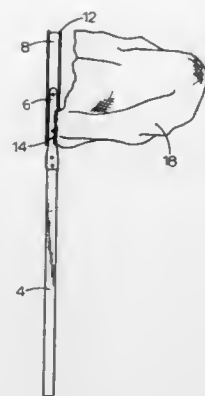
Filed Jan. 30, 1997, Ser. No. 790,421

Int. Cl.⁶ A01K 15/00

U.S. Cl. 119—717

1. Apparatus for blindfolding a bird, comprising, an elongated handle,

4 Claims



a deformable split ring attached to the handle, where said ring includes at least one peripheral flange, and a pliant hood, having an opening in one end thereof, detachably mounted around the circumference of the split ring, where the perimeter of the opening is elastic and is adapted to fit under the peripheral flange.

5,778,827

COW LIFT MECHANISM

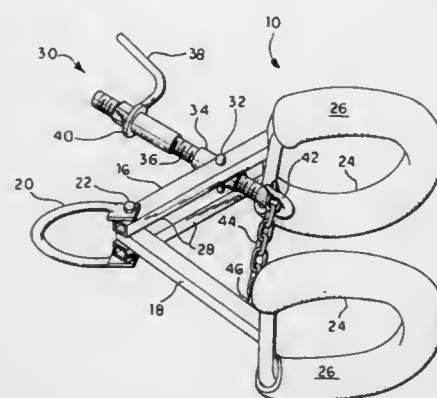
Mark O. Hansen, Maverick Veterinary Services, 29429 SR 2, Monroe, Wash. 98272

Filed Mar. 24, 1997, Ser. No. 822,492

Int. Cl.⁶ A61D 3/00

U.S. Cl. 119—728

10 Claims



1. A cow lift mechanism in the form of an adjustable yoke, said yoke comprising:

- a first arm with a first end;
- a second arm, said second arm having a first end;
- a stirrup-shaped ring, said first end of said first arm pivoting with said first end of said second arm on said stirrup-shaped ring;
- said first arm having two parallel elements and a pivotal crank having a hook, and positioned between the parallel elements;
- a first end of said second arm pivoting at the ring between the two parallel elements of the first arm and a second end having a length of angle adjusting chain connected thereto;
- each said first arm and said second arm attached to a padded circular arm at a predetermined angle, in that the padded arms are inclined toward each other; and
- a length of hoisting chain connected to said stirrup-shaped ring; whereby said padded circular arms upon being placed against the innominate bones of the lying cow, the angle adjusting chain being attached to the hook, the crank being rotated out to tighten the angle adjusting chain, and the hoisting chain being pulled upwards to lift the lying cow by the padded arms on the innominate bones.

5,778,828

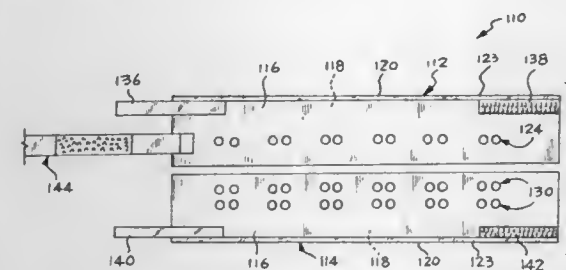
PROTECTIVE PET COLLAR

Roger Dell Klinkhart, San Dimas; Herman O. Klinkhart, Upland, and Kenneth W. Bowman, Diamond Bar, all of Calif., assignors to Ejay International Inc., Glendora, Calif. Filed Oct. 27, 1995, Ser. No. 549,327

Int. Cl.⁶ A01K 27/00

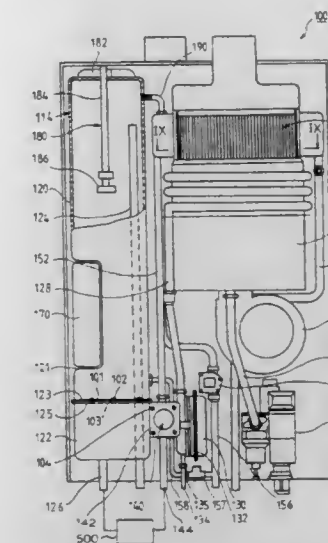
U.S. Cl. 119—815

27 Claims



1. A protective collar for an animal, comprising:

- two elongated sheets of hard, flexible material each having a back side, a front side, an elongated distal edge, an elongated proximal edge and two opposite ends;
- means for adjustably attaching said two sheets together in parallel such that said proximal edges are located adjacent to each other and forming the protective collar with an adjustable width to accommodate different sizes of an animal's neck, wherein said means for adjustably attaching comprises a plurality of first fasteners attached to said back side of one of said two sheets and a plurality of complementary second fasteners attached to said front side of the other one of said two sheets and facing the plurality of first fasteners respectively, where each one of said plurality of first fasteners is a male fastener with a hook type surface and each one of said plurality of complementary second fasteners is a female fastener with a loop type surface; and
- fastener means respectively positioned adjacent to said distal edges of said two sheets and located at said two opposite ends for adjustably fastening said two opposite ends of said two sheets to form a tubular shaped protective collar around the animal's neck;
- whereby when said tubular shaped protective collar is formed around the animal's neck, the collar thereby substantially prevents the animal from bending its neck to bite or lick an affected area on its body.



heat exchanger to a user, when an operational mode of said gas boiler is a heating mode;

second guide means for guiding the heated second water, said second guide means being communicated with said three-way valve and said heat exchanger, when the operational mode of said gas boiler is a hot water mode so as to supply the heated second water to the user, and for guiding the heated second water to a heating place when the operational mode of said gas boiler is the heating mode;

said three-way valve directing the heating second water to the user through the circulation pump and the second guide means when said gas boiler is in the hot water and for directing the heated second water to the heating place through the circulation pump and the second guide means when said gas boiler is in the heating mode;

third guide means for guiding the second water which returns from the heating place into said water tank;

fourth guide means for guiding the second water which has been guided into said water tank, into said circulation pump; and a printed circuit board box having a printed circuit board therein for controlling the operation of said gas boiler.

5,778,830

CLOSED FRAME SOOTBLOWER WITH TOP ACCESS

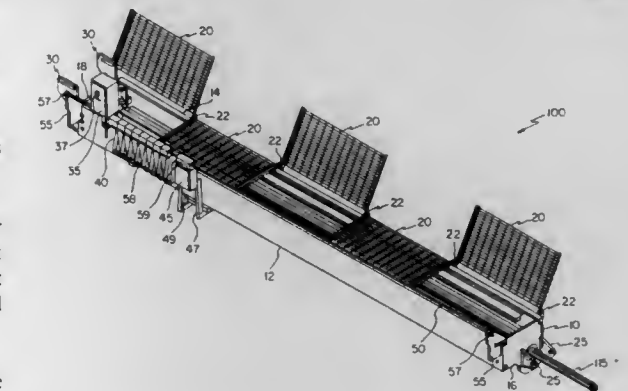
H. Davis Wall, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 2, 1997, Ser. No. 775,931

Int. Cl.⁶ F22B 37/18; A47L 5/38

U.S. Cl. 122—379

17 Claims



1. A frame for housing a retractable sootblower, having a movable carriage and lance tube for cleaning inside surfaces of a boiler, comprising:

- a front end wall disposed proximate said boiler;
- a rear end wall disposed distal to said boiler;

5,778,829

GAS BOILER

Tae-Sik Min, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 578,184

Claims priority, application Rep. of Korea, Mar. 31, 1995, 95-7372

Int. Cl.⁶ F22B 5/00

U.S. Cl. 122—17

20 Claims

1. A gas boiler comprising:

- a water tank;
- a heat exchanger including a gas burner for heating a first water and a second water, the first water being supplied from a first water supply source outside of said gas boiler to said heat exchanger, and the second water being supplied from said water tank;
- a three-way valve connected to said heat exchanger
- a circulation pump mounted to one side of said three-way valve in opposition to a mounting position of said water tank and in opposition to said three-way valve, said circulation pump providing the heated first and second water with pressure so as to flow;
- first guide means for guiding the first water to said heat exchanger and for supplying the first water heated within said

a pair of opposed side walls, each having one end connected to said front end wall and an opposed end connected to said rear end wall, thereby generally defining a rectangular box;
one or more top panels, each configured to extend between the opposed side walls with the panels in a closed position to thereby provide protection to the sootblower from above and to be moveable to an open position to provide substantially unobstructed access to the carriage from above the frame; and
one or more hinges, each of said hinges being connected to one of the side walls and to one of said top panels;
wherein each of said top panels is rotatable about said connected hinge between the open position and the closed position.

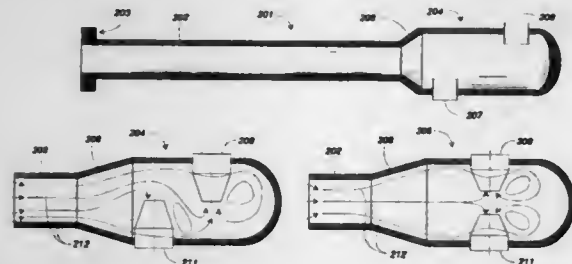
5,778,831

SOOTBLOWER LANCE WITH EXPANDED TIP
Mohomed I. Jameel, Lawrenceville, Ga., assignor to Berge-
mann USA, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 210,321, Mar. 18, 1994, Pat.
No. 5,505,163. This application Apr. 5, 1996, Ser. No. 628,284
Int. Cl.⁶ F22B 37/52; 37/48

U.S. Cl. 122—392

24 Claims



1. In a sootblower for cleaning fireside deposits from convective surfaces of a fuel-fired boiler wherein the sootblower includes an elongated hollow lance tube having a longitudinal axis through which a cleaning agent is supplied under pressure with Laval nozzles being mounted in the lance tube for generating supersonic jets of cleaning agent and directing the jets onto surfaces to be cleaned, said lance tube being selectively insertable into the boiler for supplying cleaning agent under pressure to the interior of the boiler, the improvement comprising an expanded tip portion on said lance tube with said expanded tip portion having an interior diameter greater than the interior diameter of the lance tube.

5,778,832

MODULAR RADIATOR FOR AN ENGINE-GENERATOR SET

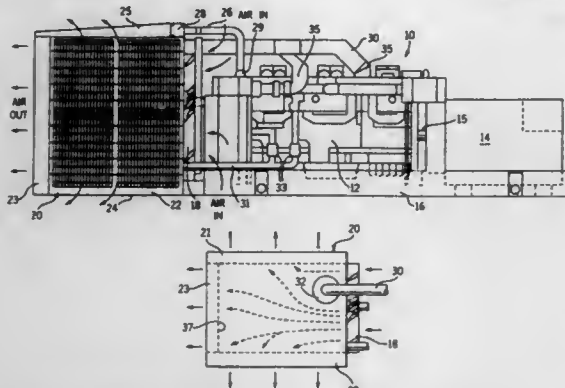
James L. King, Sheboygan, and Randy Scarf, New Holstein,
both of Wis., assignors to Kohler Co., Kohler, Wis.

Filed Apr. 14, 1997, Ser. No. 837,195

Int. Cl.⁶ F02B 63/04

U.S. Cl. 123—2

20 Claims



1. An apparatus for generating electricity comprising:

an internal combustion engine having a drive shaft, a coolant outlet, a coolant inlet, and a combustion exhaust outlet;
an electrical generator driven by a connection to the drive shaft of the internal combustion engine;
a radiator having the form of a hexahedral enclosure and having three cores each forming one side of the enclosure, the radiator further having a tank mounted above the three cores and connected so that coolant for the engine flows between the tank and the three cores, the tank being connected to one of the coolant outlet and the coolant inlet and the three tanks being connected to the other of the coolant outlet and the coolant inlet; and
a fan mounted adjacent to one side of the enclosure for forcing air through the three cores.

5,778,833

WATER VEHICLE HAVING A "V" SHAPED MULTI-CYLINDER CRANKCASE SCAVENGING ENGINE

Masabisa Kuranishi, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-ken, Japan

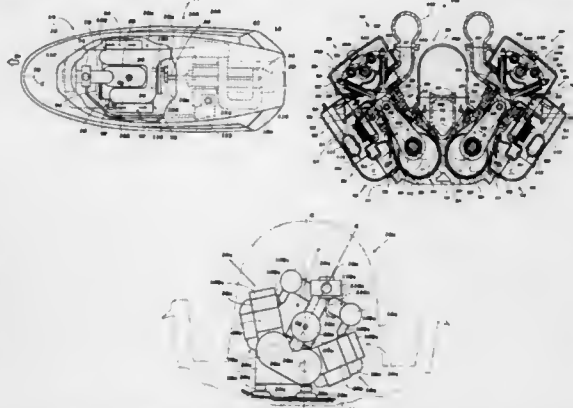
Filed Jun. 6, 1997, Ser. No. 870,785

Claims priority, application Japan, Jun. 6, 1996, 8-144635

Int. Cl.⁶ F02B 75/02

U.S. Cl. 123—52.4

18 Claims



1. A watercraft comprising a hull defining an engine compartment and including a water propulsion device, said water propulsion device powered by a four cycle, "V" type, internal combustion engine mounted in said engine compartment of said hull, said engine comprised of a pair of cylinder blocks disposed at a "V" angle to each other and forming a valley therebetween, each of said cylinder block having at least one cylinder bore, a crankcase at one end of said cylinder bores and forming a plurality of crankcase chambers each associated with a respective cylinder bore, a pair of cylinder heads closing the other end of said cylinder blocks, a plurality of pistons each reciprocating in a respective one of said cylinder bores and forming with said cylinder bores and said cylinder heads a plurality of combustion chambers, crankshaft means rotatably journaled in said crankcase, a plurality of connecting rods each coupled to a respective one of said pistons and said crankshaft means for transmitting motion therebetween, means for providing a seal so that said pistons, said cylinder bores, said connecting rods, said crankshaft means and said crankcase chambers act as a plurality of positive displacement pumps, intake means for admitting an air charge to said crankcase chambers in said valley, delivery means for discharging a compressed air charge from said crankcase chambers at the other side of said valley, a pair of compressor chambers located at said other sides of said valley for receiving the compressed charge therefrom the respective crankcase chamber, each of said cylinder heads having at least one intake port on said other side of said valley for serving the respective of said combustion chambers, means for supplying a compressed charge from said compressor chamber to said intake ports entirely located on said other side of said valley, at least one exhaust passage formed in each of said cylinder heads contiguous to said valley for discharging exhaust products from said combus-

tion chambers, and an exhaust manifold positioned at least in part in said valley for collecting the exhaust gasses from said exhaust passages, said crankshaft means extending outwardly from said engine and coupled in driving relation, said crankshaft means arranged in driving relation with said water propulsion device.

5,778,834

OPPOSED RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

Giuseppe Raoul Piccinini, Via Strada Nuova per Isorella, Goltolengo (Brescia), Italy

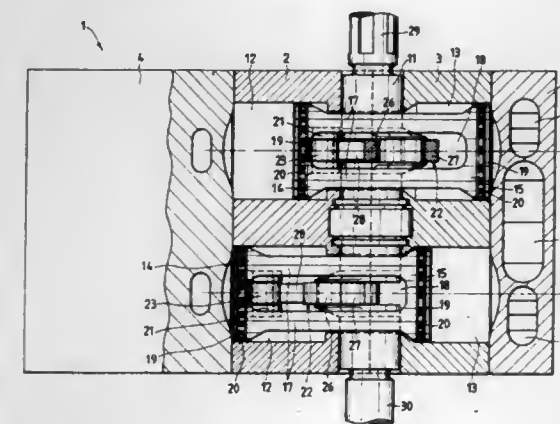
Filed Dec. 13, 1996, Ser. No. 766,678

Claims priority, application Italy, Dec. 13, 1995, M195A2608

Int. Cl.⁶ F02B 33/10

U.S. Cl. 123—55.2

3 Claims



1. An opposed reciprocating piston internal combustion engine, comprising:

at least one pair of mutually opposed pistons arranged to reciprocate as one single monolithic element respectively in a respective two mutually opposed cylinders;

a crankshaft arranged between the pistons of each said pair, said crankshaft extending through a gap in each said monolithic element, between mutually opposite uprights which are integrally formed with the pistons of each respective said pair; said crankshaft having a rotation axis;

each said monolithic element being hinged to said crankshaft by a respective single tie-rod, each said tie-rod being arranged within a respective said monolithic element, and having a head hinged to said crankshaft and a foot hinged to one said piston of each said pair, at a crown of the respective said piston;

said cylinders, pistons, crankshaft and each said tie-rod being housed in a housing which is divided into a plurality of pieces, including two shells which are divided along a plane which contains said rotation axis of said crankshaft; said housing providing support for said crankshaft near two opposite ends of said crankshaft and at at least one intermediate site between said two opposite ends; and

said engine being arranged to operate as one of an Otto-cycle engine and a diesel engine.

5,778,835

INTERNAL COMBUSTION ENGINE

Carl D. Vought, Huntsville, Ala., assignor to Amtec Corporation, Huntsville, Ala.

Filed Apr. 18, 1997, Ser. No. 839,375

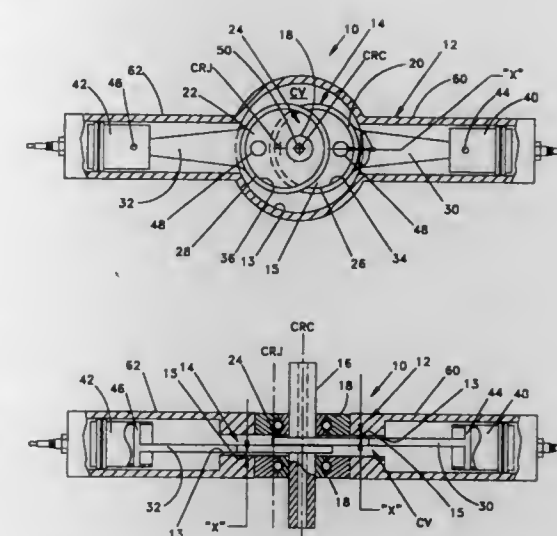
Int. Cl.⁶ F02B 75/22

U.S. Cl. 123—55.5

13 Claims

1. An internal combustion engine comprising:

a main shaft having a main shaft center of rotation and two spaced apart main bearings concentric with said main shaft



center of rotation and a straight passage formed around said center of rotation and passing through said main shaft;

a connecting rod journal attached in eccentric relation to said main shaft intermediate said main bearings and encircling said main shaft center of rotation, and having a rod journal center of rotation spaced radially apart from said main shaft center of rotation;

a connecting rod rotatably attached at one end thereof to said connecting rod journal and rotatably attached at the distal end thereof to a piston.

5,778,836

DRAIN SYSTEM FOR TWO CYCLE ENGINE

Masafumi Sougawa, Kyoji Hakamata, and Hisanori Genma,
all of Hamamatsu, Japan, assignors to Sanshin Kogyo
Kabushiki Kaisha, Shizuoka-Ken, Japan

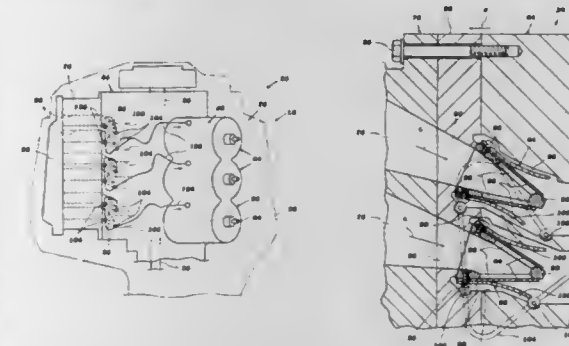
Filed Jan. 10, 1997, Ser. No. 781,878

Claims priority, application Japan, Jan. 10, 1996, 8-020365

Int. Cl.⁶ F02B 33/04

U.S. Cl. 123—65 P

8 Claims



1. A two-cycle internal combustion engine comprising a cylinder block having a cylinder head connected thereto and defining at least one combustion chamber, a piston movably positioned in said combustion chamber, said piston connected to a crankshaft which is rotatably journaled with respect to said cylinder block, said cylinder block defining a crankcase chamber corresponding to said combustion chamber, an induction passage having opposing sides and an inlet through which air is drawn and an outlet in communication with said crankcase chamber, fuel delivery means for introducing fuel into the air flowing through said induction passage, valve means positioned along said induction passage for controlling the flow of air and fuel therethrough, and a fuel drain system for draining fuel from said induction passage which is delivered to said air passing therethrough but which does not pass with said air to said combustion chamber, said drain system com-

prising at least one trough extending inwardly from each side of said passage and only partially across said induction passage and a fuel delivery line extending from said trough to said combustion chamber.

5,778,837

Patent Not Issued For This Number

5,778,838

FUEL SUPPLY DEVICE FOR CRANKCASE CHAMBER SUPERCHARGED ENGINE

Jun Taue, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

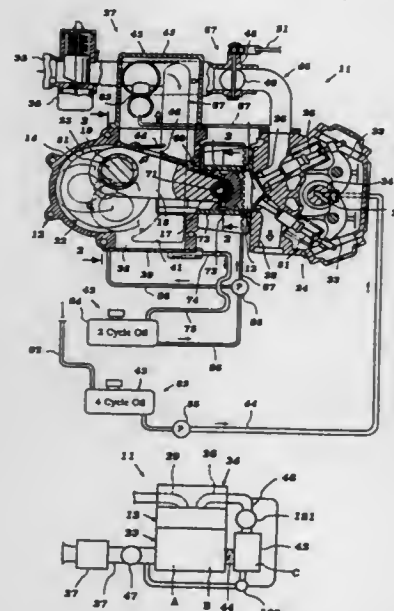
Division of Ser. No. 563,920, Nov. 29, 1995, Pat. No.

5,678,525. This application Apr. 2, 1997, Ser. No. 832,421

Int. Cl.⁶ F02B 33/04

U.S. Cl. 123—73 B

30 Claims



1. An internal combustion engine comprised of a cylinder block, cylinder head assembly defining a cylinder bore, a piston reciprocating in said cylinder bore and forming a combustion chamber at one end of said cylinder bore, a crankcase chamber formed at the other end of said cylinder bore and containing a rotatably journaled crankshaft, a connecting rod operatively connecting said piston to said crankshaft for driving said crankshaft upon reciprocation of said piston, said crankshaft, said connecting rod, said piston and said crankcase chamber being formed so that said crankcase chamber functions as a compressor as said piston reciprocates in said cylinder bore, said crankcase chamber forming a portion of an induction system for delivering atmospheric air under pressure to said combustion chamber, said induction system including, in addition to said combustion chamber, an atmospheric air inlet for supplying atmospheric air to said crankcase chamber and a pressure air conduit for communicating compressed air from said crankcase chamber to said combustion chamber, a manually operated throttle valve in said induction system for controlling the flow therethrough, and a selectively controllable bypass conduit extending between said atmospheric air inlet and said pressure air conduit for permitting flow therebetween without passing through said crankcase chamber.

5,778,839 FINGER LEVER FOR ACTUATING A GAS EXCHANGE VALVE

Walter Speil, Ingolstadt, Germany, assignor to Ina Wälzlager Schaeffler KG, Herzogenaurach, Germany

Continuation of Ser. No. 704,763, Sep. 26, 1996, abandoned.

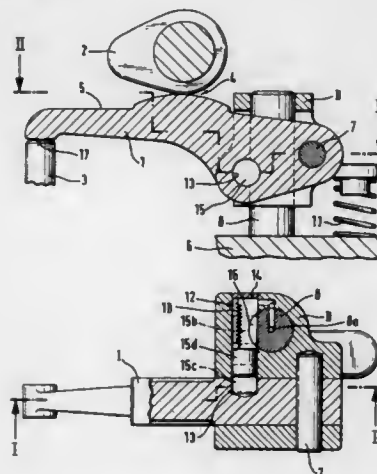
This application Aug. 14, 1997, Ser. No. 911,114

Claims priority, application Germany, Apr. 14, 1994, 9406211 U

Int. Cl.⁶ F01L 13/00; 1/18

U.S. Cl. 123—90.16

9 Claims



1. A finger lever assembly for a valve actuating mechanism of an internal combustion engine, comprising: a finger lever acted upon by a control cam having a single lift contour, said finger lever having one end acting on a gas exchange valve and another end; bearing means for swingably supporting the other end of the finger lever on a cylinder head, said bearing means including a longitudinal guide in general parallel relation to a longitudinal axis defined by the gas exchange valve, a bearing block slidably mounted on the longitudinal guide, and a bearing member for securing the finger lever to the bearing block; and a coupler for controlling actuation of the finger lever, said coupler being movable between a first position in which the bearing block is coupled with the longitudinal guide to effect during a lift phase of the control cam a maximum swinging action of the finger lever about the bearing member, a second position in which the bearing block is so linked to the finger lever as to conjointly execute an axial movement along the longitudinal guide during a complete cam lift, thereby effecting a smaller opening cross section of the gas exchange valve in the second position compared to the first position, and a third position in which the bearing block is disengaged from the longitudinal guide and the finger lever is disengaged from the bearing block so that the finger lever executes an idle swinging motion about the one end, with the gas exchange valve remaining in a closed state.

5,778,840

VARIABLE VALVE DRIVING MECHANISM

Shinichi Murata; Jun Isomoto; Masahiko Kubo, and Takaaki Hirano, all of Tokyo, Japan, assignors to Mitsubishi Jidosha Kogyo K.K., and Mitsubishi Jidosha Engineering K.K., both of Tokyo, Japan

PCT No. PCT/JP96/01390, § 371 Date Jan. 24, 1997, § 102(e) Date Jan. 24, 1997, PCT Pub. No. WO96/37689, PCT Pub. Date Nov. 28, 1996

PCT Filed May 24, 1996, Ser. No. 776,244

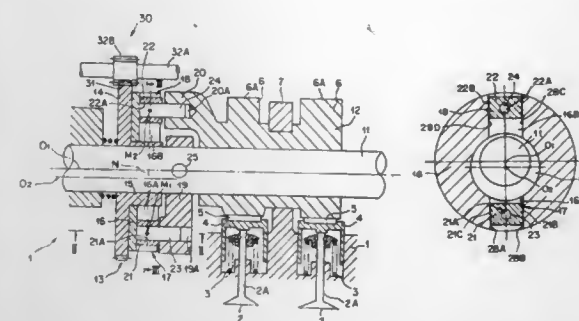
Claims priority, application Japan, May 25, 1995, 7-126747

Int. Cl.⁶ F01L 13/00

U.S. Cl. 123—90.17

6 Claims

1. A variable valve driving mechanism comprising: a camshaft rotationally driven by a crankshaft of an internal combustion engine;



an eccentric member having an annular eccentric portion, which is eccentric relative to said camshaft, and rotatably arranged on an outer periphery of said camshaft;
an intermediate rotating member defining therein a first groove portion and a second groove portion, which extend in radial directions, and rotatably supported on said eccentric portion;
a cam lobe having a cam portion for opening and closing a valve member, which regulates an inducted-air-charging period or an exhaust-gas-discharging period of a combustion chamber of said internal combustion engine, said cam lobe being arranged concentrically with said camshaft and rotatable relative to said camshaft;
a first pin member slidably fitted at one end thereof in said first groove portion and connected at an opposite end thereof to said camshaft so that rotation of said camshaft is transmitted to said intermediate rotating member;
a second pin member slidably fitted at one end thereof in said second groove portion and connected at an opposite end thereof to said cam lobe so that rotation of said intermediate rotating member is transmitted to said cam lobe; and
eccentric position adjusting means for rotating said eccentric member in accordance with a state of operation of said internal combustion engine so that an eccentric position of said eccentric portion is adjusted.

5,778,841

CAMSHAFT FOR INTERNAL COMBUSTION ENGINES

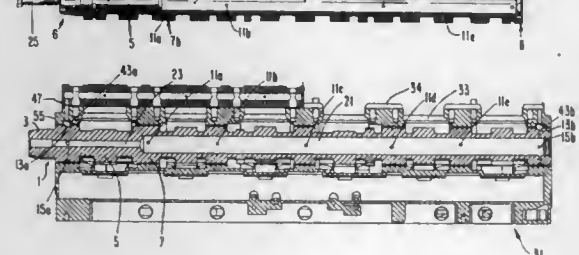
Steven W. Reedy, Nashville; Rand D. Klopfer, Indianapolis, both of Ind., and Randal L. Myers, Randolph, N.Y., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Feb. 26, 1997, Ser. No. 806,207

Int. Cl.⁶ F01L 1/04; F01M 9/10

U.S. Cl. 123—90.34

28 Claims



1. A high strength, lightweight camshaft for an internal combustion engine, comprising:
a camshaft body having an axially oriented hollow interior extending a predetermined length between a pair of spaced points, respectively, adjacent the ends of said camshaft body;
plural camshaft journal bearings spaced apart on said camshaft body, said camshaft journal bearings including a pair of end camshaft journal bearings positioned adjacent the ends of said camshaft body, respectively, and at least one inner camshaft journal bearing positioned intermediate said pair of end camshaft journal bearings, said each end camshaft journal bearing having a lubricant transfer means formed therein for receiving

lubricant from an external supply and for transferring lubricant into said hollow interior; and
at least one radial hole formed in said camshaft body for each said inner camshaft journal bearing for providing lubricant from said hollow interior to said inner camshaft journal bearing;
wherein said lubricant transfer means associated with said pair of end camshaft journals provides at least two paths for lubricant to flow into said hollow interior of said camshaft for providing an even distribution of lubrication to each said inner camshaft journal bearing during operation of the internal combustion engine.

5,778,842

ACTUATING LEVER FOR A VALVE DRIVE OF AN INTERNAL COMBUSTION ENGINE

Dieter Schmidt, and Jürgen Kretschmer, both of Nürnberg, Germany, assignors to INA Wälzlager Schaeffler KG, Herzogenaurach, Germany

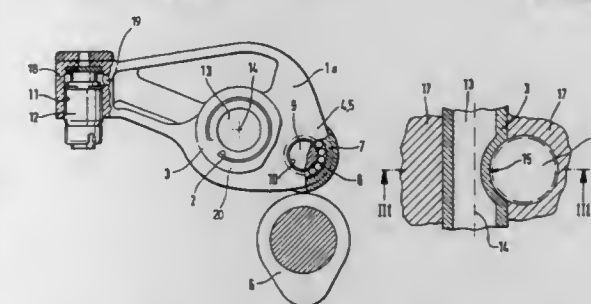
Filed Apr. 25, 1997, Ser. No. 846,150

Claims priority, application Germany, May 8, 1996, 1 96 18 416.9

Int. Cl.⁶ F01L 1/18

U.S. Cl. 123—90.39

6 Claims



1. A valve actuating lever for a valve drive of an internal combustion engine, comprising:
a main body formed therein with a bore;
a tubular shaft received in the bore of the main body and defining a pivot axis about which the main body pivots, said shaft having an outer surface area provided with tangential arcuate undercuts which are oriented transversely to the pivot axis and adapted for passage of screw fasteners for allowing securement of a cylinder head upon a motor block, said undercuts being formed through non-cutting shaping, with the shaft exhibiting a reduced wall thickness in an area of the undercuts; and
a cam mechanism interacting with the main body for controlling a gas exchange valve.

5,778,843

AUXILIARY HEAT SOURCE APPARATUS FOR VEHICLE AND HEATING APPARATUS EMPLOYING THE SAME

Yoshimitsu Inoue, Chiryu; Shinji Aoki, Kariya; Toshio Morikawa, Toyota; Hajime Ito, Kariya; Hikaru Sugi, Nagoya, and Takashi Ban, Kariya, all of Japan, assignors to Denso Corporation, and Kabushiki Kaisha Toyota Jidoshokki, both of Kariya, Japan

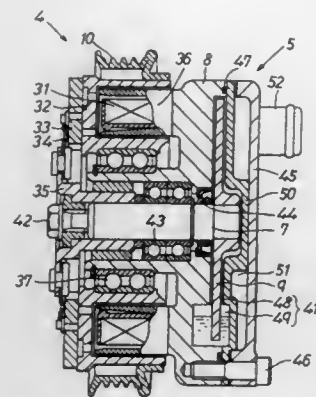
Filed Sep. 18, 1997, Ser. No. 933,295

Int. Cl.⁶ F02N 17/02; F27B 3/06

U.S. Cl. 123—142.5 R

18 Claims

11. A heating apparatus for heating a passenger compartment of a vehicle having a water-cooled internal combustion engine, said heating apparatus comprising:
a heating heat exchanger for heating said passenger compartment by heat-exchanging between cooling water having cooled said water-cooled engine and air to be blown into said passenger compartment;



a heat-generating unit using a shearing force, said heat-generating unit having a rotor which rotates when a rotational driving force of said engine is applied thereto, a heat-generating chamber for sealing therein viscous fluid which generates heat when a shearing force generated by a rotational driving force of said rotor is applied thereto, and a cooling water passage in which the cooling water circulates between said engine and said heating heat exchanger, said heat-generating unit heating the cooling water to be supplied to said heating heat exchanger by generated heat of the viscous fluid in said heat-generating chamber; and liquid level dropping means provided in said heat-generating chamber, for temporarily dropping a liquid level of the viscous fluid in said heat-generating chamber when a rotational speed of said rotor is less than a predetermined rotational speed.

5,778,844

PROCESS AND DEVICE FOR CONTROLLING A HEATING ELEMENT IN A MOTOR VEHICLE

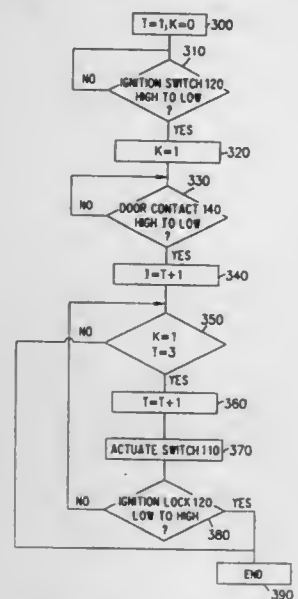
Thomas Küttner, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE96/00940, § 371 Date Jan. 28, 1997, § 102(e)
Date Jan. 28, 1997, PCT Pub. No. WO96/38665, PCT Pub. Date Dec. 5, 1996

PCT Filed May 22, 1996, Ser. No. 776,412

Claims priority, application Germany, May 30, 1995, 195 19 713.5

Int. Cl.⁶ F02N 17/02; F02P 19/02

U.S. Cl. 123—179.6



1. A method for controlling a heating element in a motor vehicle, comprising the steps of:

actuating at least one door contact of the motor vehicle; changing a state of an additional member of the motor vehicle, the additional member including an ignition lock member; and providing a current flow through the heating element to start a preheat cycle when the door contact is actuated and the state of the additional member is changed in a predetermined time sequence.

5,778,845

Patent Not Issued For This Number

5,778,846

FORGED OR CAST PISTON HEAD OF AN OSCILLATING SHAFT PISTON

Siegfried Mielke, Neckarsulm, Germany, assignor to Kolbenschmidt Aktiengesellschaft, Neckarsulm, Germany
PCT No. PCT/EP96/00145, § 371 Date Jul. 3, 1997, § 102(e)
Date Jul. 3, 1997, PCT Pub. No. WO96/22459, PCT Pub. Date Jul. 25, 1996

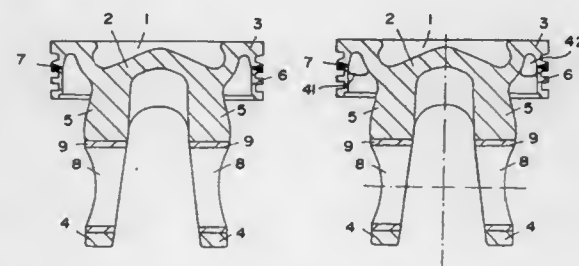
PCT Filed Jan. 16, 1996, Ser. No. 849,738

Claims priority, application Germany, Jan. 19, 1995, 195 01 416.2

Int. Cl.⁶ F16J 1/14

U.S. Cl. 123—193.6

6 Claims



1. A forged or cast piston head of an oscillating shaft piston for internal combustion engines, comprising: a piston bottom; a ring section which defines piston ring grooves, said piston bottom forming a radially outward transition into the ring section; a support bearing a boss, said support bearing and said boss being formed in one piece with the underside of said piston bottom and located at a distance from the inside of said ring section, wherein said support bearing and boss define a bolt eye bore, and wherein said ring section or lower part of said ring section is connected with said piston or an upper part of said ring section by means of one of a welding, soldering, frictional or interlocking connection.

5,778,847

FOUR CYCLE OUTBOARD MOTOR

Masanori Takahashi, and Atushi Isogawa, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 31, 1996, Ser. No. 690,057

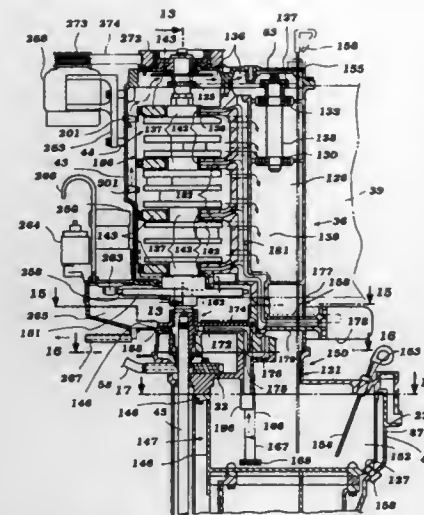
Claims priority, application Japan, Aug. 3, 1995, 7-198877; Aug. 3, 1995, 7-198879; Aug. 3, 1995, 7-198880; Aug. 3, 1995, 7-198884

Int. Cl.⁶ F02B 75/22; B63H 21/38

U.S. Cl. 123—195 P

56 Claims

1. An outboard motor comprised of a powerhead consisting of a four-cycle internal combustion engine and a surrounding protective cowling, said engine including a crankshaft journaled for rotation about a vertically extending axis, a driveshaft housing and lower unit depending from said powerhead and journaling a driveshaft for rotation about a vertically extending axis, a propulsion device



driven by said driveshaft for propelling an associated watercraft, means for coupling said crankshaft for rotation with said driveshaft for driving said driveshaft from said crankshaft, an oil reservoir for containing lubricant for said engine disposed beneath said engine, a flywheel fixed for rotation with said crankshaft at the lower end of said engine and above the coupling of said driveshaft to said crankshaft, and an oil pump driven by said crankshaft at a point below said flywheel for circulating lubricant between said oil reservoir and said engine.

5,778,848

FOUR-CYCLE OUTBOARD MOTOR LUBRICATING SYSTEM

Masanori Takahashi, and Atushi Isogawa, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

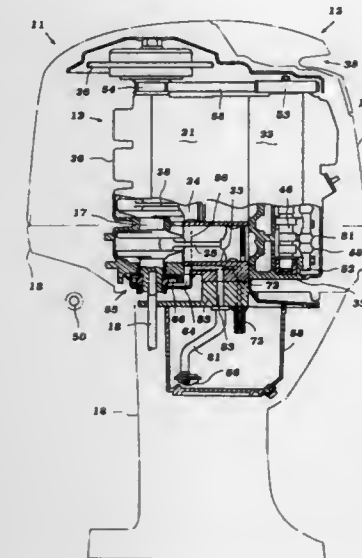
Filed Aug. 2, 1996, Ser. No. 692,873

Claims priority, application Japan, Aug. 7, 1995, 7-200981

Int. Cl.⁶ F01M 11/02

U.S. Cl. 123—196 W

11 Claims



1. An outboard motor comprised of a power head containing a four-cycle internal combustion engine, said engine including a cylinder block defining at least one horizontally extending cylinder bore, a crankcase member affixed to said cylinder block at one end of said cylinder bore and forming a crankcase chamber, a crank-

shaft rotatably journaled in said crankcase chamber, a protective cowling encircling said engine, said engine being supported in said power head so that said crankshaft rotates about a vertically disposed axis, a drive shaft housing and lower unit depending from said power head and journaling a drive shaft for rotation about a vertically extending axis, means for coupling said drive shaft to said engine crankshaft for driving said drive shaft, a propulsion device driven by said drive shaft for propelling an associated watercraft, an oil tank for containing lubricant for said engine contained at least in part in said drive shaft housing and lower unit, an oil pump driven off the lower end of said crankshaft for pumping oil, and conduit means for interconnecting said oil tank with said oil pump and said oil pump with said engine for lubricating said engine including at least one conduit portion formed integrally in a lower face of said cylinder block.

5,778,849

INSULATED PRECOMBUSTION CHAMBER

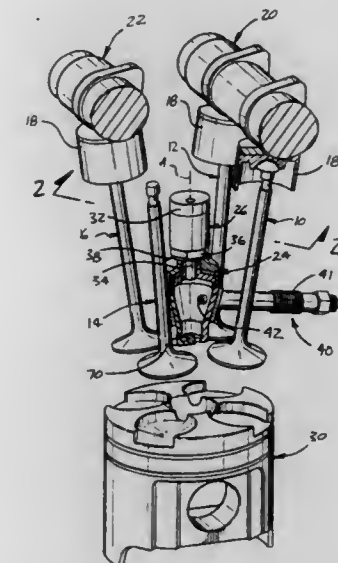
Jose F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed May 5, 1997, Ser. No. 851,301

Int. Cl.⁶ F02F 1/00

U.S. Cl. 123—254

20 Claims



1. In an internal combustion engine having a cylinder and a piston disposed in said cylinder for reciprocal movement relative thereto, a cylinder head over said cylinder and piston to form a main combustion chamber, a pre-combustion chamber located in said cylinder head above said main combustion chamber, said pre-combustion chamber including an upper housing member and a lower housing member and a retainer member all rigidly interconnected and being formed so as to provide an annular cavity between said retainer member and said upper housing member, said lower housing member having transfer passages formed therein connecting said pre-combustion chamber to said main combustion chamber, a pair of separate and independent insulation members, one of said pair of insulation members being located in said cavity and the other of said pair of insulation members being located between said lower housing member and said cylinder head for reducing the heat loss from said pre-combustion chamber.

5,778,850

METHOD AND DEVICE FOR CONTROLLING TRANSIENT-STATE INJECTION OF A SUPERCHARGED DIESEL ENGINE

Riccardo Buratti, Genova, and Alessandro Carlo, Turin, both of Italy, assignors to C.R.F. Società Consortile per Azioni, Orbassano, Italy

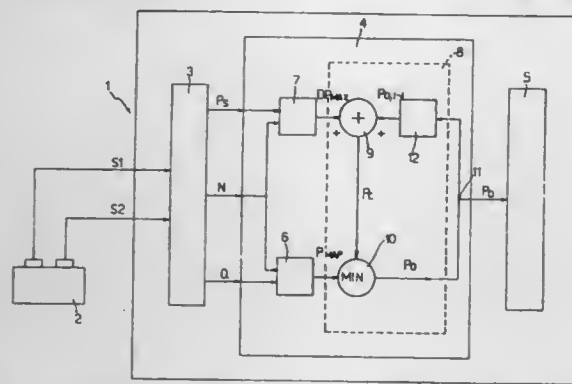
Filed Jun. 13, 1997, Ser. No. 876,025

Claims priority, application Italy, Jun. 14, 1996, T096A0513; Jun. 14, 1996, T096 A0514

Int. Cl.⁶ F02B 3/00

U.S. Cl. 123—299

26 Claims



1. A method of controlling injection during a transient operating state of a supercharged diesel engine (2), the method comprising the steps of:

- generating, at each engine cycle, a reference injection pressure value (P_{MAP}) as a function of at least a first operating parameter (N , Q) of said engine (2), said reference injection pressure value (P_{MAP}) defining an optimum injection pressure value for steady-state operation of the engine (2);
- generating, at each engine cycle, an incremental injection pressure value (DP_{MAX}) as a function of at least a second operating parameter (N , P_s) of said engine (2), said incremental injection pressure value (DP_{MAX}) defining the maximum permissible variation in injection pressure between one engine cycle and the next during said transient operating state of the engine (2); and
- generating a desired injection pressure value (P_d) at each engine cycle as a function of said reference injection pressure value (P_{MAP}) and said incremental injection pressure value (DP_{MAX}), and such that the variation in the injection pressure of said engine (2) during said transient operating state does not exceed said maximum permissible value; characterized in that said second operating parameter is the supercharge pressure (P_s) of said engine (2).

5,778,851

PISTON-TYPE INTERNAL COMBUSTION ENGINE HAVING AT LEAST TWO INTAKE VALVES PER CYLINDER

Torsten Schellhase, Baesweiler; Raymund Tensing, and Martin Pieper, both of Aachen, all of Germany, assignors to FEV Motorentechnik GmbH & Co. KG, Aachen, Germany

Filed May 3, 1996, Ser. No. 642,664

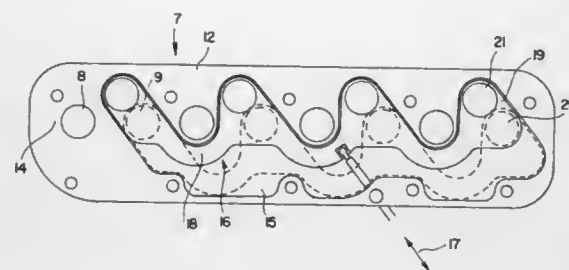
Claims priority, application Germany, May 3, 1995, 295 07 321.7

Int. Cl.⁶ F02D 9/08

U.S. Cl. 123—337

8 Claims

- 1. An internal combustion engine comprising
 - (a) an engine cylinder;
 - (b) a first intake port leading to said cylinder for introducing combustion gases thereinto;
 - (c) a first intake valve situated at said cylinder in said first intake port;
 - (d) a second intake port having a longitudinal axis and leading to said cylinder for introducing combustion gases thereinto;



- (e) a second intake valve situated at said cylinder in said second intake port;
- (f) throttle means situated in said second intake port for varying a flow passage cross section thereof; said throttle means including a flat sliding member movable in a direction of motion thereof perpendicularly to said axis for varying said flow passage cross section;
- (g) a slide valve housing having a passage opening aligned with said second intake port; said flat sliding member being guided in said slide valve housing across said passage opening for varying a free flow passage cross section thereof; and
- (h) a seal held in said slide valve housing; said seal having a sealing face being in a sliding engagement with a surface of said flat sliding member and bounding said passage opening.

5,778,852

FUNCTIONALLY MONITORED FUEL INJECTION SYSTEM

Martin Penteker, Tiefenbrunn, Germany, assignor to Mercedes-Benz AG, Germany

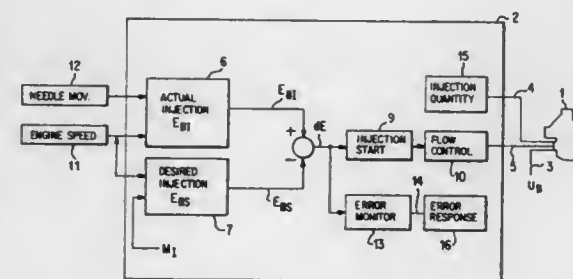
Filed Apr. 25, 1997, Ser. No. 845,793

Claims priority, application Germany, Apr. 26, 1996, 196 16 773.6

Int. Cl.⁶ F02D 31/00; F02M 37/04

U.S. Cl. 123—359

11 Claims



1. Internal combustion engine fuel injection system having an electrically actuatable injection pump with a pre-stroke actuator for setting the start of injection and a control unit for controlling start of injection, which control unit emits an actuation signal for the start of injection to the pre-stroke actuator via an output lead, said fuel injection system further comprising:

- a needle movement sensor for detecting an actual start of injection based on movement of a needle for controlling fuel flow in said fuel injection system;
- a comparing device for comparing said actual start of injection with a desired start of injection, to generate a start-of-injection control deviation value; and
- means in said control unit for protecting the pre-stroke actuator against a short circuit on said output lead, by monitoring said start-of-injection control deviation, detecting when said start-of-injection control deviation exceeds a predetermined warning threshold value for a time which is longer than a predetermined time interval, and generating an error detection signal in response thereto.

5,778,853

THROTTLE VALVE CONTROL DEVICE

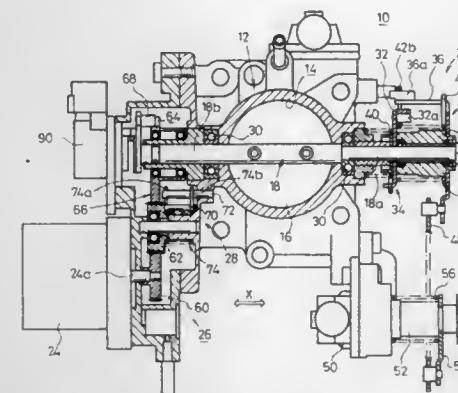
Katsumi Saito, Asaka, Japan, assignor to Hadsys, Inc., Miyagi-ken, Japan

Filed Mar. 12, 1997, Ser. No. 815,859

Int. Cl.⁶ F02D 7/00; 41/00

U.S. Cl. 123—396

24 Claims



1. A throttle valve control device comprising:

- a pedal side drive mechanism, provided at one end of a throttle shaft which opens and closes a throttle valve, said pedal side drive mechanism being rotatable relative to the throttle shaft in both opening and closing directions;
 - a motor side drive mechanism provided at another end of the throttle shaft, said motor side drive mechanism being rotatable relative to the throttle shaft in both of said opening and closing directions, wherein said motor side drive mechanism includes motor initial position reset means for generating an elastic force to reset the motor to an initial set position after the motor has been driven in one of the throttle valve opening and closing directions,
- wherein said pedal side drive mechanism and said motor side drive mechanism are able to be independently driven without interfering with each other in both of said opening and closing directions.

5,778,854

CYLINDER-DISCRIMINATING DEVICE FOR INTERNAL COMBUSTION ENGINES

Hideaki Arai, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

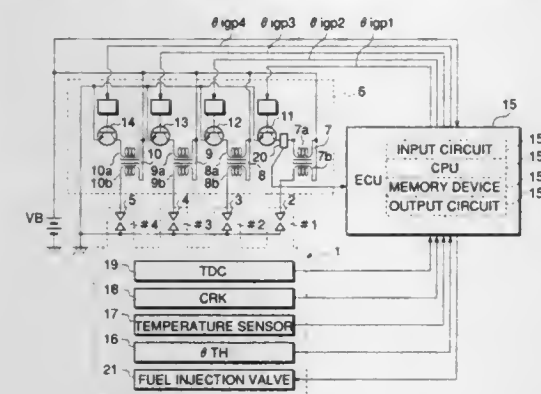
Filed Apr. 10, 1997, Ser. No. 831,601

Claims priority, application Japan, Apr. 12, 1996, 8-115444

Int. Cl.⁶ F02P 5/00

U.S. Cl. 123—414

24 Claims



1. A cylinder-discriminating device for an internal combustion engine having a plurality of cylinders, and ignition means for effecting ignition at said plurality of cylinders, said ignition means having ignition coils provided, respectively, for said plurality of

cylinders or for a plurality of cylinder groups of said plurality of cylinders, the device comprising:

- reference timing signal-generating means for generating a reference timing signal whenever said engine rotates through a predetermined rotational angle;
- ignition timing signal-generating means for generating an ignition timing signal for causing ignition at a particular cylinder of said plurality of cylinders or a particular cylinder group of said plurality of cylinder groups in synchronism with generation of said reference timing signal;
- voltage-detecting means for detecting a sparking voltage produced in said particular cylinder or said particular cylinder group when said ignition timing signal is generated; and
- cylinder-discriminating means for carrying out cylinder discrimination to discriminate between said plurality of cylinders or between said plurality of cylinder groups, based on said sparking voltage detected by said voltage-detecting means.

5,778,855

COMBUSTION STABILITY CONTROL FOR LEAN BURN ENGINES

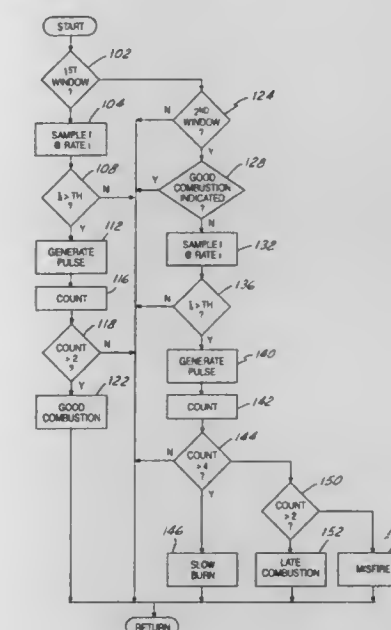
Michael Damian Czekala, Canton, and Thomas Evans Jones, Waterford, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Jul. 3, 1997, Ser. No. 887,855

Int. Cl.⁶ F02P 5/00

U.S. Cl. 123—416

15 Claims



providing a combustion condition indication based upon said ionic current samples occurring during said first window and said ionic current samples occurring during said second window.

5,778,856
CONTROL DEVICE AND CONTROL METHOD FOR LEAN-BURN ENGINE

Kojiro Okada; Kazuhide Togai, and Masaji Ishida, all of Tokyo, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP94/02270, § 371 Date Sep. 28, 1995, § 102(e) Date Sep. 28, 1995, PCT Pub. No. WO95/18298, PCT Pub. Date Jul. 6, 1995

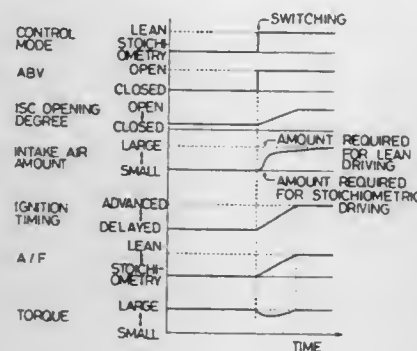
PCT Filed Dec. 27, 1994, Ser. No. 501,050

Claims priority, application Japan, Dec. 28, 1993, 5-338537; Dec. 28, 1993, 5-338538; Mar. 24, 1994, 6-053386

Int. Cl.⁶ F02D 41/04; 43/04

U.S. Cl. 123—417

18 Claims



1. A control device for a lean-burn engine, comprising: load state detecting means for detecting a load state of the engine;

fuel supply means for supplying fuel to the engine;

intake air amount adjusting means for adjusting an amount of intake air supplied to the engine; and

control means for controlling said intake air amount adjusting means according to the engine load state detected by said load state detecting means, so as to cause that change in the load state which permits a difference between output torques of the engine before and after switching to be reduced or canceled, when the switching is made from driving with a first air-fuel ratio which is set equal to a theoretical air-fuel ratio or on a fuel-rich side with respect thereto to driving with a second air-fuel ratio which is set on a fuel-lean side with respect to the theoretical air-fuel ratio, wherein

said intake air amount adjusting means includes an intake flow rate control valve provided in an intake passage for introducing the intake air into a combustion chamber of the engine,

said control means includes target air-fuel ratio setting means for setting a target air-fuel ratio according to a driving state of the engine, and fuel amount setting means for setting a fuel amount to realize the target air-fuel ratio thus set;

said fuel supply means supplies the fuel to the engine in accordance with the fuel amount set by said fuel amount setting means; and

said target air-fuel ratio setting means includes follow-up changing means for successive iterative changing the air-fuel ratio to follow a change in an actual intake air amount at a time of switching from the driving with the first air-fuel ratio to the driving with the second air-fuel ratio.

5,778,857
ENGINE CONTROL SYSTEM AND METHOD
Michihisa Nakamura, and Noritaka Matsuo, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

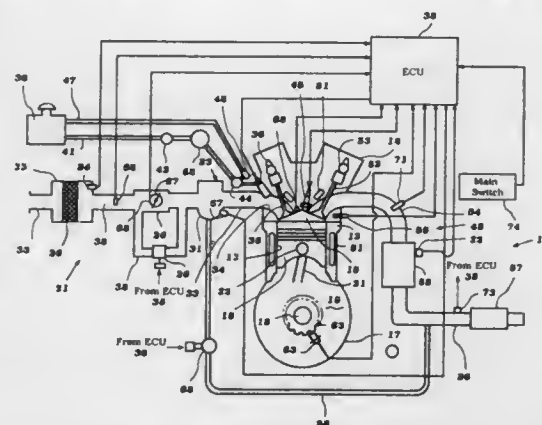
Continuation-in-part of Ser. No. 725,065, Oct. 2, 1996. This application Nov. 5, 1996, Ser. No. 744,057

Claims priority, application Japan, Oct. 2, 1995, 7-254847; Nov. 10, 1995, 7-292255; Nov. 10, 1995, 7-292258; Nov. 10, 1995, 7-292259; Nov. 10, 1995, 7-292644

Int. Cl.⁶ F02P 5/14

U.S. Cl. 123—425

90 Claims



1. A method for controlling an internal combustion engine having at least one chamber the volume of which varies cyclically during operation and in which combustion occurs during a portion of a complete cycle of operation, an induction system for delivering an air charge to said chamber, a fuel charging system for delivering a fuel charge to said chamber for combustion therein, an exhaust system for discharging combustion products from said chamber, said method comprising the steps of sensing the rate of combustion in said chamber at at least one specific volume of said chamber, comparing at least one of the measured rate of combustion and the specific volume with a target value from a map of such values, and adjusting at least one of said systems in a direction to establish the target value of at least the rate of combustion or the relative volume.

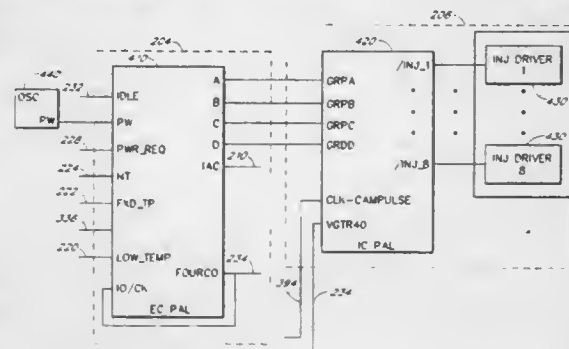
5,778,858
FUEL INJECTION SPLIT ENGINE
Arthur Garabedian, Fullerton, Calif., assignor to Dudley Frank, Santa Ana, Calif.

Filed Dec. 17, 1996, Ser. No. 768,440

Int. Cl.⁶ F02D 17/02; 41/36

U.S. Cl. 123—481

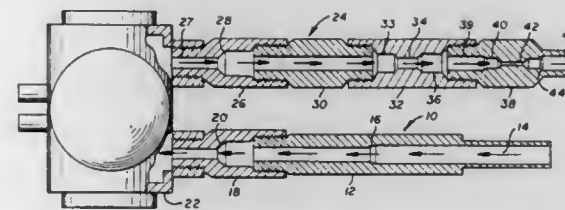
8 Claims



1. A method of selectively activating fuel injectors in an engine having multiple cylinders and an electronic circuit for sensing a state of an input, comprising:

operating said engine in a non-split engine mode in response to said electronic circuit sensing a first state of said input;

operating said engine in a half-power split engine mode in response to said electronic circuit sensing a second state of said input by sequentially activating a first half of said fuel injectors during a first time period, and activating a second half of said fuel injectors during a second time period; and operating said engine in a three-quarters power split engine mode in response to said electronic circuit sensing a third state of said input by sequentially activating a first subset of said fuel injectors during a third time period, activating all of said injectors during a fourth time period, and activating a second subset of said fuel injectors during a fifth time period.



to supply fuel to a vaporization chamber, means to pass partially vaporized fuel from the vaporization chamber to the engine, the vaporization chamber being placed in close proximity to the engine to partially vaporize the fuel solely due to the heat given off by the engine.

5,778,859
EVAPORATIVE FUEL PROCESSING APPARATUS OF INTERNAL COMBUSTION ENGINE
Naoya Takagi, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

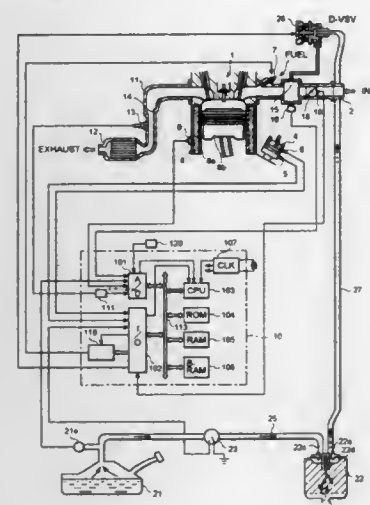
Filed May 14, 1997, Ser. No. 856,082

Claims priority, application Japan, May 15, 1996, 8-120386

Int. Cl.⁶ F02M 37/04; 41/14

U.S. Cl. 123—520

3 Claims



1. An evaporative fuel processing apparatus of internal combustion engine having an intake passage for air, comprising: a fuel tank; a canister; a first passage connecting said fuel tank and said canister; a second passage connecting said canister and said intake passage; a valve arranged in said second passage; and a control circuit for controlling said valve so as to make a purge rate be a target purge rate, the purge rate being a ratio of the quantity of gas passing through said valve to the quantity of intake air of said intake passage, the target purge rate being set based on an operating condition of the internal combustion engine, wherein the maximum of said target purge rate is determined by evaluating at least an amount of evaporative fuel introduced directly into said intake passage after said evaporative fuel has been generated in said fuel tank.

5,778,860
FUEL VAPORIZATION SYSTEM
Miguel A. Garcia, Marcial Ordóñez #774, Los Mochis, Sinaloa, Mexico, 81280

Filed Jan. 21, 1997, Ser. No. 786,464

Int. Cl.⁶ F02M 31/00

U.S. Cl. 123—557

13 Claims

1. A system for increasing the efficiency of a vehicle engine by supplying partially vaporized fuel to the engine comprising means

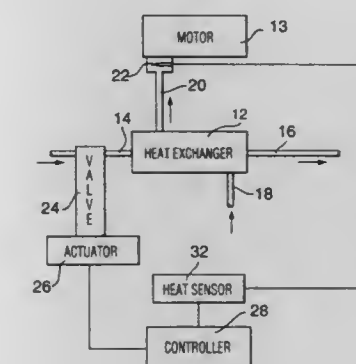
5,778,861
APPARATUS AND METHOD FOR CONTROLLING THE TEMPERATURE OF A FLUID
Victor J. Diduck, 315-510 Buckland Avenue, Kelowna, British Columbia, Canada, V1Y 8B4, assignor to Victor J. Diduck, Canada

Filed Feb. 10, 1997, Ser. No. 798,164

Int. Cl.⁶ F02G 5/00

U.S. Cl. 123—557

11 Claims



1. A system for controlling the temperature of a fluid or gas, comprising:

- a heat exchanger having a heat exchanging fluid inlet and outlet and temperature controlled fluid inlet and outlet;
- a valve having a valve closure member mounted in one of said heat exchanging fluid inlet and outlet, reversibly movable from an open position to a closed position so as to gradually reduce fluid flow therethrough;
- an actuator coupled to said valve operative to move said valve closure member in discrete amounts so as to change the temperature of the temperature controlled fluid by a predetermined amount in accordance with a user-selected high temperature limit TH and low temperature limit TL;
- a temperature measuring probe coupled to a temperature controlled fluid line connected to the temperature controlled fluid outlet from said heat exchanger so as to measure the temperature of temperature controlled fluid;
- a temperature sensor coupled to said probe to compare the temperature measured by said probe to a user-selected high temperature limit TH and to output a control signal when the measured temperature is greater than the user selected high temperature limit TH and less than the user-selected low temperature limit TL; and
- a processor coupled to said temperature sensor and to said actuator, operative to cause said actuator to move said valve in the direction of being closed when the temperature measured by said probe is more than TH and opens said valve when it is less than TL.

5,778,862
IGNITION CONTROLLER FOR INTERNAL COMBUSTION ENGINE

Wataru Fukui, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

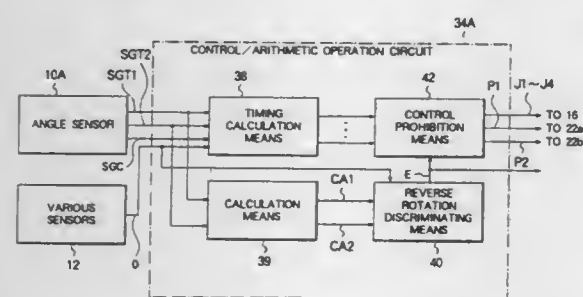
Filed Jul. 9, 1997, Ser. No. 890,393

Claims priority, application Japan, Feb. 3, 1997, 9-020418

Int. Cl.⁶ F02P 11/00

U.S. Cl. 123—631

5 Claims



1. An ignition controller for an internal combustion engine, comprising:
 - an angle sensor for detecting the rotational angle of the internal combustion engine;
 - various sensors for detecting the operating state of the internal combustion engine;
 - ignition coils for imposing a high voltage to the ignition plugs of the respective cylinders of the internal combustion engine; and
 - a control/arithmetic operation circuit for creating drive signals to at least said ignition coils based on the rotation angle and the operating state, wherein said angle sensor includes:
 - a plurality of sensor means for individually outputting a first pulse signal corresponding to the first reference crank angle of the respective cylinders and a second pulse signal corresponding to the second reference crank angle of the respective cylinders, and said control/arithmetic operation circuit includes:
 - timing calculation means for calculating the timings at which at least the ignition coils are controlled according to the operating state;
 - count means for counting the number of the pulses of one of the first and second pulse signals which are detected between two continuous pulses of the other of them;
 - reverse rotation discriminating means for discriminating the reverse rotation of the internal combustion engine based on at least one of the count values of the first and second pulse signals; and
 - control prohibition means for prohibiting the output of the drive signals in response to a reverse rotation discriminating signal.

5,778,863
IGNITION COIL FOR AN INTERNAL COMBUSTION ENGINE

Kazutoyo Oosuka, Gamagori; Masami Kojima, Chiryu, and Shozo Ikezima, Okazaki, all of Japan, assignors to Nipponenso Co., Ltd., Kariya, Japan

Filed Dec. 5, 1995, Ser. No. 567,707

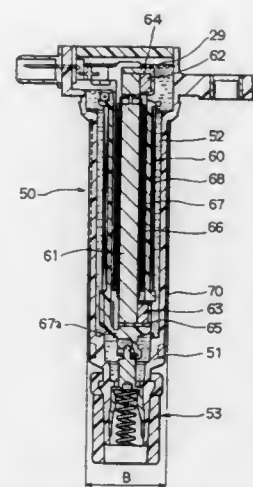
Claims priority, application Japan, Dec. 6, 1994, 6-302298; Sep. 18, 1995, 7-238573

Int. Cl.⁶ F02P 13/00; H01F 27/12

U.S. Cl. 123—634

20 Claims

1. An ignition coil for an internal combustion engine, said coil comprising:
 - a case;
 - a coil portion disposed within said case; and
 - insulating oil at least partially filling said case to immerse said coil portion;



wherein said insulating oil has a flash point of at least 180° C.; a total acid number of oxidation stability of not more than 0.6 mgKOH/g; a pour point of not more than -20° C.; said insulating oil being free of cloudiness before said temperature is reached; a dielectric strength of at least 70 kV; and a kinematic viscosity of not less than 20 cSt and not more than 180 cSt at 40° C.

5,778,864

Patent Not Issued For This Number

5,778,865
EVAPORATIVE FUEL CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Yosuke Tachibana, Kawauchi-gun; Toru Wada, Utsunomiya, and Satoru Kubo, Siyoa-gun, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

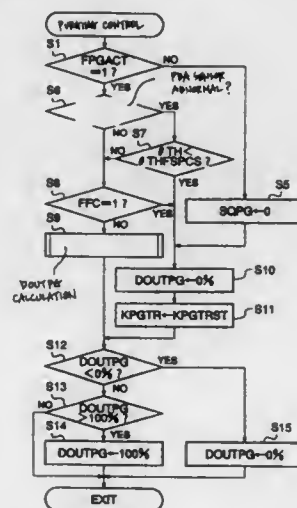
Filed May 27, 1997, Ser. No. 863,815

Claims priority, application Japan, May 31, 1996, 8-160942

Int. Cl.⁶ F02D 41/00

U.S. Cl. 123—675

7 Claims



1. In an evaporative fuel control system for an internal combustion engine having an intake system, a throttle valve arranged in said intake system, and a fuel tank, including a canister for adsorbing evaporative fuel generated in said fuel tank, a purging passage extending between said canister and said intake system, for purging evaporative fuel into said intake system at a location downstream of said throttle valve, a purge control valve for controlling a

5,778,867
EVAPORATIVE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE AND METHOD THEREFOR
Akinori Osanai, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

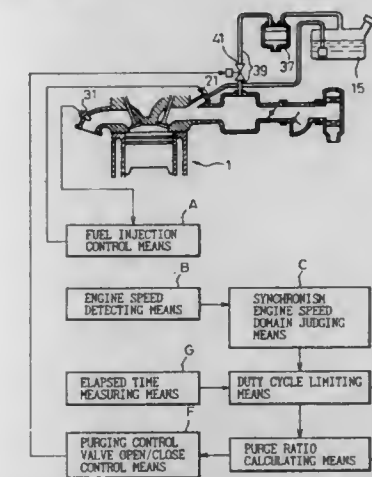
Filed Jan. 17, 1997, Ser. No. 785,456

Claims priority, application Japan, Jan. 19, 1996, 8-007603

Int. Cl.⁶ F02M 25/08

U.S. Cl. 123—698

6 Claims



1. An evaporative control system for an internal combustion engine comprising:
 - a canister for temporarily holding fuel vapor from a fuel tank;
 - a purge passage for communicating the canister with an intake passage of the engine;
 - a purging control valve, located in the purge passage, for controlling an amount gas purged into the intake passage;
 - an air-fuel ratio sensor, located in an exhaust passage of the engine, for detecting an air-fuel ratio of the engine;
 - fuel injection control means for controlling a fuel injection amount according to an output signal of the air-fuel ratio sensor so that the air-fuel ratio of the engine approaches a target air-fuel ratio;
 - engine speed detecting means for detecting the speed of the engine;
 - synchronism engine speed domain judging means for judging whether the detected speed of the engine falls within a synchronism domain in which a drive cycle of the purging control valve is substantially synchronous with the detected engine speed;
 - duty cycle limiting means that, when the speed of the engine falls within the synchronism domain, limits a duty cycle based on the speed of the engine to a value within a set range, wherein the duty cycle indicates a ratio of an open time of the purging control valve to the drive cycle thereof;
 - purge ratio calculating means that, when the speed of the engine falls within the synchronism domain, calculates a purge ratio relative to the duty cycle limited by the duty cycle limiting means; and
 - purging control valve open/close control means for opening and closing the purging control valve at the duty cycle to provide the purge ratio calculated by the purge ratio calculating means.

5,778,868
PNEUMATIC GUN
Charles G. Shepherd, Oakville, Canada, assignor to K.K.M. Inc., Mississauga, Canada

Filed Feb. 3, 1997, Ser. No. 794,707

Int. Cl.⁶ F41B 11/32

U.S. Cl. 124—76

17 Claims

9. A firing mechanism for use in semi-automatic guns of the type used to fire projectiles from a barrel using compressed gas stored in a high pressure canister, the firing mechanism having:

flow rate of said evaporative fuel to be purged into said intake system through said purging passage, air-fuel ratio correction coefficient-setting means for setting an air-fuel ratio correction coefficient applied in feedback control of an air-fuel ratio of an air-fuel mixture supplied to said intake system, based on concentration of a specific component in exhaust gases emitted from said engine, first calculating means for calculating a first learned value of said air-fuel ratio correction coefficient during execution of said air-fuel ratio feedback control, and control means for controlling said purge control valve such that said flow rate of said evaporative fuel to be purged into said intake system is changed according to said first learned value calculated by said first calculating means.

the improvement comprising:

- transient operating condition-determining means for determining whether said engine is in a transient operating condition;
- second calculating means for calculating a second learned value of said air-fuel ratio correction coefficient suitable for said transient operating condition of said engine; and
- learned value-setting means operable when said transient operating condition-determining means determines that said engine is in said transient operating condition, for setting said first learned value to said second learned value calculated by said second calculating means.

5,778,866
AIR-FUEL RATIO DETECTING SYSTEM OF INTERNAL COMBUSTION ENGINE

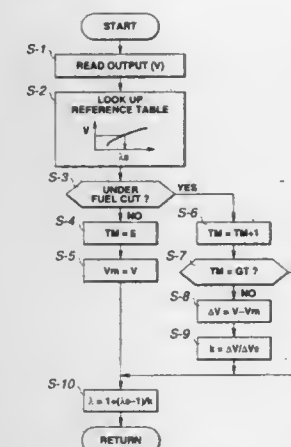
Akira Uchikawa, Omama, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Jan. 24, 1997, Ser. No. 788,302

Int. Cl.⁶ F02D 41/14; G01N 27/416

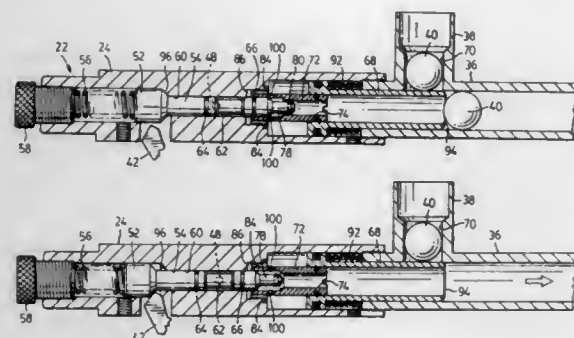
U.S. Cl. 123—682

5 Claims



1. An air-fuel ratio detecting system of an internal combustion engine comprising:
 - a wide range type air-fuel ratio sensor disposed in an exhaust pipe of the engine, said sensor issuing an output voltage that varies continuously in accordance with an exhaust gas air-fuel ratio possessed by an exhaust gas in the exhaust pipe;
 - means for translating the output voltage of the sensor to an air-fuel ratio of air-fuel mixture;
 - means for deciding a variation characteristic of the output voltage of the sensor relative to variation of the air-fuel ratio of air-fuel mixture;
 - means for forming a correction data of the translated air-fuel ratio with reference to said variation characteristic; and
 - means for correcting the translated air-fuel ratio with reference to said correction data,

wherein the means for deciding the variation characteristic of the output voltage of the sensor derives a variation of the output voltage of the sensor between the time on which a fuel-cut operation starts and the time on which a given time has passed from the fuel-cut operation starting time.



5,778,870

Patent Not Issued For This Number

5,778,871

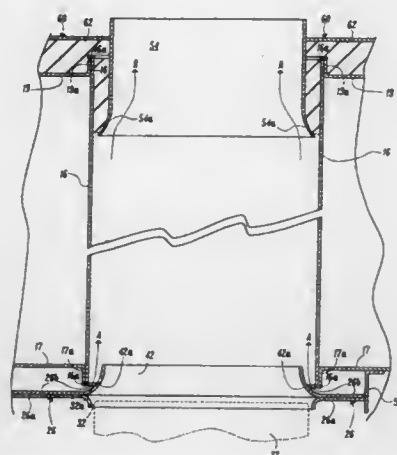
DEEP FAT FRYER WITH BURNER TUBE END WELD TEMPERATURE PROTECTION
Charles W. Herring, Cary, Ill., assignor to Keating of Chicago, Inc., Bellwood, Ill.

Filed Sep. 3, 1997, Ser. No. 922,407
Int. Cl.⁶ A47J 27/00; 37/12

U.S. Cl. 126—391

13 Claims

a main body;
an inlet valve in the main body and adapted to receive gas from the gas canister of a pressure above a selected threshold pressure;
an automatic outlet valve in the body and coupled pneumatically to the inlet valve; the outlet valve including a gas chamber for receiving gas from the inlet valve and having an outlet leading to the barrel;
a compound valve element movable longitudinally and coupled to both the inlet valve and the outlet valve and biased upon firing the gun to open the inlet valve and close the outlet in the gas chamber, the valve element being shaped to respond sequentially to threshold pressure in the gas chamber to first overcome the bias on the element to move the element to close the inlet valve and to then open the outlet in the outlet valve to release gas into the barrel.



1. In a deep fat fryer of the type including a fry pot, an open-ended burner tube secured to a wall of the fry pot by a welded junction and a burner for projecting a flame into the open end of the burner tube, the improvement comprising:
means for restricting the temperature rise of the welded junction of the burner tube during operation of the burner.

5,778,869

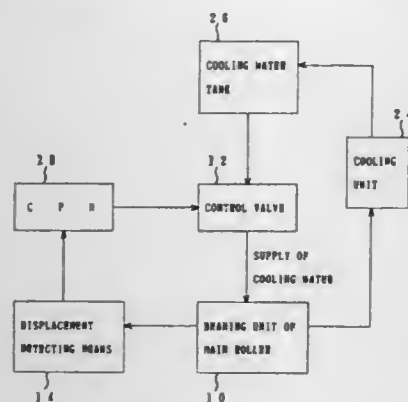
WIRE SAW SLICING APPARATUS AND SLICING METHOD USING THE SAME
Kobei Toyama, Shirakawa, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed May 30, 1996, Ser. No. 656,423

Claims priority, application Japan, Jun. 1, 1995, 7-134962
Int. Cl.⁶ B28D 1/08

U.S. Cl. 125—16.02

21 Claims



1. A method of slicing a workpiece of the type using a wire saw slicing apparatus including a plurality of main rollers rotatably supported at opposite ends thereof by pairs of bearing units and parallel spaced at predetermined intervals, and a wire wound spirally over and around the main rollers at a predetermined pitch so as to form a number of laterally spaced lines of wire stretched across a slicing zone defined between two adjacent ones of the main rollers, in which the workpiece is sliced into wafers as the workpiece is forced against the lines of wire running across the slicing zone while the main rollers are rotating, with a slurry continuously supplied to the lines of wire in the slicing zone, wherein the improvement comprises: controllably displacing the main rollers in the axial direction while the workpiece is being sliced.

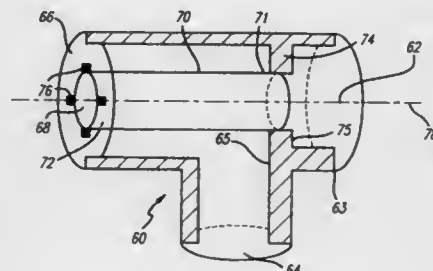
5,778,872

ARTIFICIAL VENTILATION SYSTEM AND METHODS OF CONTROLLING CARBON DIOXIDE REBREATHING
Atsuo F. Fukunaga, and Blanca M. Fukunaga, both of Rancho Palos Verdes, Calif., assignors to Medlis, Inc., Rancho Palos Verdes, Calif.

Filed Nov. 18, 1996, Ser. No. 751,316
Int. Cl.⁶ A61M 16/00

U.S. Cl. 128—202.27

6 Claims



1. A system for use in mammals to provide thereto and exhaust therefrom respiratory gases, comprising:

a first breathing conduit having a proximal end and a distal end for providing and exhausting respiratory gases from a mammal, said first breathing conduit being flexible, interface means comprising a proximal terminal operably connected to said proximal end of said first breathing conduit,

means for preventing biological contamination within said first breathing conduit from communication with said interface means, said means for preventing biological contamination being operably connected to or disposed within said proximal end of said first breathing conduit,

said proximal terminal comprising a rigid housing, said housing comprising an inspiratory gas input, an expiratory gas outlet, and a first respiratory port, said first respiratory port being in fluid communication through said means for preventing biological contamination with said first breathing conduit when said breathing conduit is in operable connection with said interface,

said proximal terminal further comprising a rigid outer tube, and a rigid inner tube, said outer tube and inner tube each having a first end and a second end, said inner tube being at least partially disposed within said outer tube,

said second end of said inner tube being disposed within said outer tube, said outer tube being connected at its second end to said first respiratory port, and

said first end of one of said tubes being connected to said inspiratory gas input, and said first end of one of said tubes being connected to said exhaust outlet, the outer diameter of said inner tube being smaller than the inner diameter of said outer tube,

wherein said first breathing conduit is detachable from said interface for disposal or sterilization.

5,778,873

METERING DEVICE FOR USE IN TRANSFERRING A DESIRED VOLUMETRIC DOSE OF A FLOWABLE SUBSTANCE FROM A STORAGE CONTAINER

Philip W. Braithwaite, Strensham, United Kingdom, assignor to Innovata Biomed Limited, St. Albans, United Kingdom
PCT No. PCT/GB93/00335, § 371 Date Oct. 12, 1994, § 102(e)
Date Oct. 12, 1994, PCT Pub. No. WO93/16748, PCT Pub. Date Sep. 2, 1993

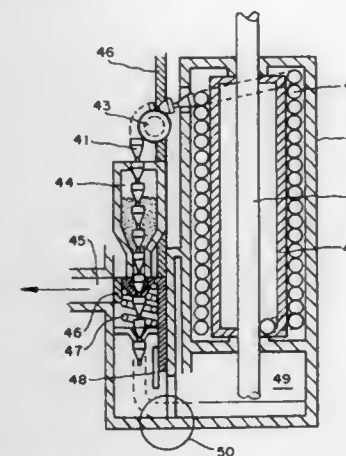
PCT Filed Feb. 18, 1993, Ser. No. 284,522

Claims priority, application United Kingdom, Feb. 21, 1992, 9203761

Int. Cl.⁶ A61M 15/00; 16/00; B05D 7/14; B65D 83/06

U.S. Cl. 128—203.15

37 Claims



1. Apparatus for dispensing a plurality of desired volumetric doses of a flowable substance, comprising:

a storage chamber for a flowable substance;
an outlet conduit communicating with said storage chamber and having an inner surface;
an inhalation passage;
a series of metering devices, each of said metering devices including a first end element and a second end element having a perimeter adapted for a sealing engagement with the inner surface of said outlet conduit, and an intermediate portion, located between the first end element and the second end

element, which is smaller in cross-section than the first end element and the second end element; and,

means for advancing said metering devices in series for moving one of said metering devices between a position within said storage chamber, at which one of said metering devices is surrounded by the flowable substance, and a position within said outlet conduit, at which the perimeter of each of the first end element and the second end element forms a continuous seal with the inner surface of the outlet conduit, and the intermediate portion, the first end element, the second end element and the inner surface of said outlet conduit define between them an intermediate dosing space containing an amount of the flowable substance which surrounds said one of said metering devices within said storage chamber and passes with said one of said metering devices into said outlet conduit, said metering devices are arranged in a continuous series, so that as the continuous series passes through said outlet conduit, the only flowable substance transferred with it is trapped between said end elements of successive metering devices, there being no spaces between said end element of one of said metering devices and a successive end element of the next said metering device in the continuous series, and wherein said means for advancing said metering devices is operable for moving, on each operation, said metering device which has last transferred a dose of the flowable substance to the inhalation passage forward through the apparatus and to replace that said metering device in the inhalation passage by said metering device next in the series, such that only one of said metering devices is presented to the inhalation passage at a time.

5,778,874

ANESTHESIA MACHINE OUTPUT MONITOR

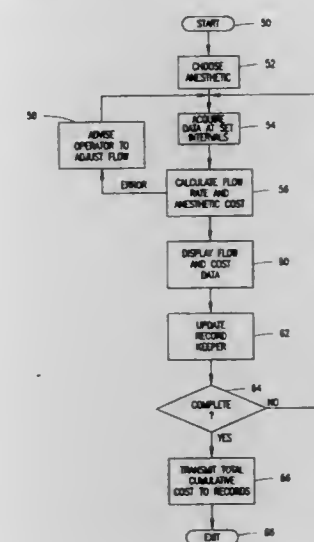
David P. Maguire, Sewell, N.J., and Marc Torjman, Philadelphia, Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Filed Oct. 2, 1996, Ser. No. 725,291

Int. Cl.⁶ A61M 16/00; A62B 7/00; 9/00; F16K 31/02

U.S. Cl. 128—204.22

16 Claims



1. A device for measuring anesthetic gas concentration delivered to a patient during a medical procedure requiring an anesthetic gas, comprising:

a supply which provides an anesthetic gas to a patient during a medical procedure;
a capnograph which determines flow rates and concentrations of respective gases input thereto;

a gas sampling device which provides a sample of gas output from said supply to said capnograph;
a processor which processes the flow rates and concentrations of gases in said sample provided to said capnograph by said gas sampling device to determine a cumulative cost of at least anesthetic gas used during said medical procedure; and
a display which displays at least said flow rates and gas concentrations of said sample to an operator of said device.

5,778,875

FIRST STAGE REGULATOR AND ROTATABLE IN-LINE VALVE

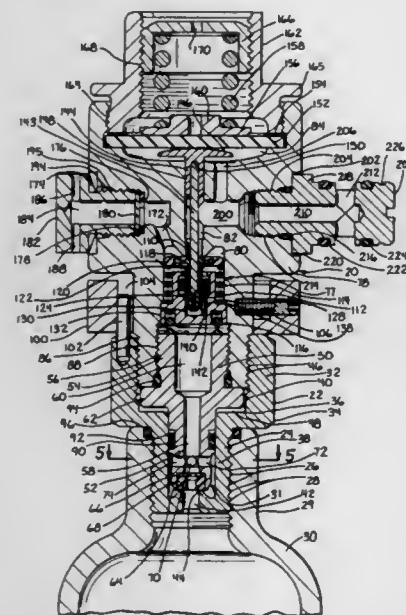
Michael V. Morgan, Laguna Beach, and Carl Winefordner, Costa Mesa, both of Calif., assignors to U.S. Divers Co., Inc., Santa Ana, Calif.

Filed May 6, 1996, Ser. No. 643,325

Int. Cl.⁶ A61M 16/00

U.S. Cl. 128—204.26

20 Claims



1. A regulator for a self-contained breathing apparatus comprising:

- a regulator body;
- means for connecting said regulator body to a source of high pressure gas;
- an in-line valve within said regulator body in communication with said source of high pressure gas;
- a burst disc disposed within said in-line valve which is adapted to block the passage of gas from said source of pressurized gas when said gas is pressurized below a given pressure and to give way when said gas is pressurized above a given pressure when said in-line valve is closed;
- a first stage regulator disposed within said regulator body for receipt of pressurized gas when said in-line valve is open; and

means for connecting a demand regulator to said regulator body for receipt of regulated breathing gas from said first stage regulator.

5,778,876
SELF-CONTAINED OXYGEN REBREATHING WITH SEMI-PERMEABLE MEMBRANE TO VENT EXCESS HELIUM

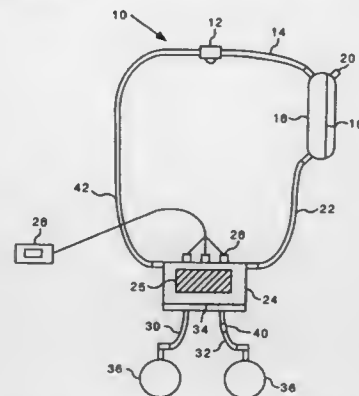
Steve Gorin, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1997, Ser. No. 803,207

Int. Cl.⁶ A62B 7/10; 19/00; 23/02; B63C 11/02

U.S. Cl. 128—205.12

12 Claims



9. A method for forming a self-contained underwater breathing loop apparatus for an oxygen rebreather for use by a diver via a mouthpiece, comprising the steps of:

- forming a breathing bag to act as a compliant volume;
- arranging a semipermeable membrane for dividing the breathing bag into a first chamber and a second chamber;
- connecting a first breathing hose between the mouthpiece and the first chamber of the breathing bag to conduct exhaust breath from the diver thereto;
- forming the semipermeable membrane for allowing helium in the diver's exhaust breath to pass therethrough while preventing oxygen in the exhaust breath from being transported from the first chamber into the second chamber; and
- placing a relief valve in the second chamber for allowing helium in the second chamber to be expelled into the water.

5,778,877

APPARATUS AND METHOD FOR CONNECTING A TRACHEOSTOMY TUBE TO A NECKPLATE

John Michael Stuart, Lake Forest, Calif., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

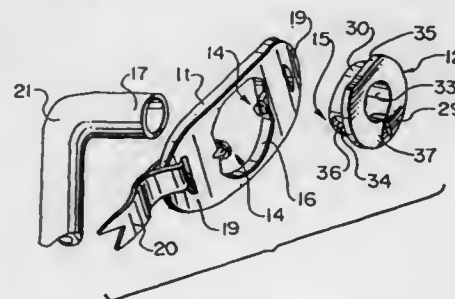
Continuation of Ser. No. 262,094, Jun. 20, 1994, Pat. No. 5,435,306, which is a division of Ser. No. 8,022, Jan. 25, 1993,

Pat. No. 5,361,754. This application Jun. 5, 1995, Ser. No. 463,385

Int. Cl.⁶ A61M 16/04

U.S. Cl. 128—207.17

5 Claims



1. A tracheostomy device comprising:
a neckplate having an access opening;
a trach head swivelly connected to said neckplate at said access opening;

a tube adapted for insertion into a patient's breathing passage, said tube connected to said trach head; and
connection means for swivelly connecting said trach head to said neckplate without deformation of the trach head or the neckplate and without thermal processing;

wherein said trach head includes a tube receiving portion having an inner tube receiving opening for receiving a portion of said tube, said receiving portion including an inner opening diametrically dimension and an outer diametrical dimension, and wherein said connection means includes a pair of bearing pins connected with said neckplate and extending inwardly toward one another from opposite sides of said opening and a pair of corresponding bearing sockets formed in said tube receiving portion to receive said pair of bearing pins.

5,778,878

LASER DOPPLER MICROSCOPY METHODS AND INSTRUMENTS

Keith Kellam, Braeside, Smallridge, Axminster, Devon. EX13 7JJ, England

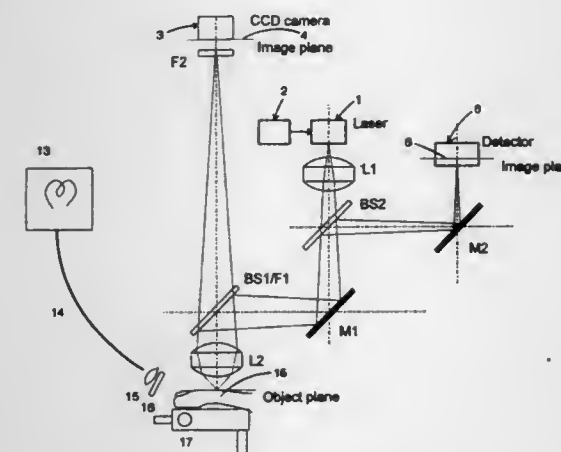
Filed May 26, 1995, Ser. No. 451,771

Claims priority, application United Kingdom, Jun. 4, 1994, 9411231

Int. Cl.⁶ A61B 6/00

U.S. Cl. 128—664

5 Claims



1. An instrument for use in the determination of blood cell velocity in a capillary in a tissue by a laser Doppler technique, said instrument comprising:

- means for generating a laser beam;
- means for directing the laser beam on to a surface of the tissue so as to impinge on a capillary within which blood cells are traveling with a component of velocity substantially perpendicular to the surface of the tissue;
- a camera having an image plane for observing impingement of the laser beam on the surface;
- means for measuring the velocity by detecting directly back-scattered laser radiation; and
- a lens system which collects the back-scattered laser beam and focuses the Doppler-shifted back-scattered radiation on to a photodetector via at least one beam splitter, said lens system also serving to effect focussing of radiation back-scattered by surrounding tissue and not subjected to Doppler-shifting.

5,778,879

ELECTRONIC BLOOD PRESSURE METER WITH POSTURE DETECTOR

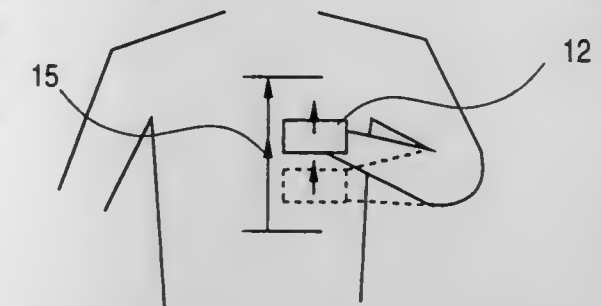
Hiroyuki Ota, Moriyama, and Kenji Taniguchi, Kyoto, both of Japan, assignors to Omron Corporation, Kyoto, Japan

Filed Feb. 23, 1996, Ser. No. 606,279

Claims priority, application Japan, Feb. 16, 1995, 7-28065 Int. Cl.⁶ A61B 5/02

U.S. Cl. 128—672

6 Claims



1. An electronic blood pressure meter, comprising:
a cuff device which, when fastened to a given part of a body, extracts data concerning pulsewave information found in said given body part;
a device which measures either a blood pressure or condition of blood vessels based on said extracted pulsewave information;
a posture detecting device which detects the posture of said given body part by detecting the height of said body part on which a blood pressure measurement is being performed; and
a judging device which judges whether said detected posture is appropriate.

5,778,880

HEART BEAT TRANSMITTER

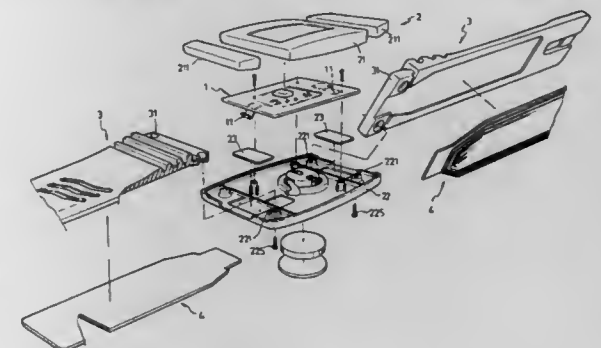
Tong-Pie Chen, Taipei, Taiwan, assignor to Zentan Technology Co., Ltd., Taipei, Taiwan

Filed Aug. 19, 1996, Ser. No. 699,455

Int. Cl.⁶ A61B 5/04; 5/024

U.S. Cl. 128—696

18 Claims

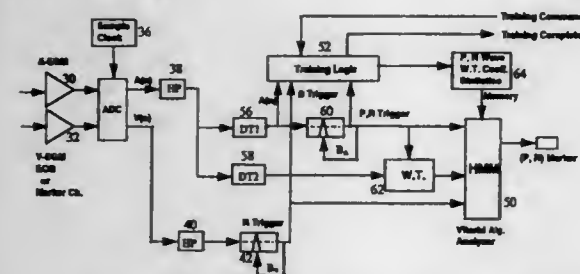


1. A heart beat transmitter to be worn by an user comprising:
a housing,
a pair of metal plates within said housing,
a pair of fastening straps secured to said housing, each of said fastening straps having an elongate conductive rubber plate in contact therewith,
each of said conductive rubber plates contacting one of said metal plates in said housing, said conductive rubber plates detecting the heart rate of the user,
a circuit board within said housing for decoding the signal received from said conductive rubber plates and transmitting a signal to a receiver, and
conductive members connecting said circuit board with each of said metal plates within said housing and establishing an electrical connection therebetween.

5,778,881
METHOD AND APPARATUS FOR DISCRIMINATING P AND R WAVES
Weimin Sun, Plymouth; Eric J. Panken, Minneapolis, and William J. Combs, Eden Prairie, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Dec. 4, 1996, Ser. No. 759,494
Int. Cl.⁶ A61N 5/0402

U.S. Cl. 128—696

18 Claims



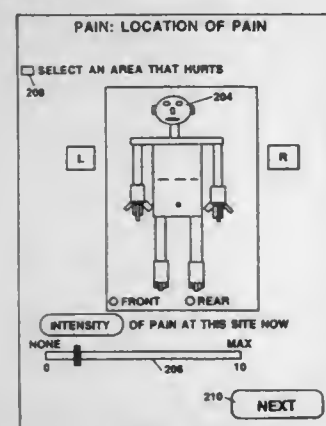
1. A method of identifying P-waves and R-waves in an electrocardiogram using Hidden Markov Modeling (HMM), wherein P-waves and R-waves may each be characterized as a state separated by state transitions in a hidden state sequence and wherein there are discrete probabilities that the states will transition from one to the other in a predetermined order, the method comprising the steps of:

- sensing the electrocardiogram from at least one electrode;
- continuously sampling the sensed electrocardiogram at a predetermined sampling rate and providing a sample value at each sample time;
- detecting an event of interest comprising one of the P-wave or R-wave in the electrocardiogram;
- framing a sample data set of sample values as a data frame in response to the detection of an event of interest;
- wavelet transforming the data frame of sample values to generate wavelet transformed coefficients;
- selecting a sub-set of wavelet coefficients from among the wavelet coefficients representing an observation vector correlated to each data frame;
- applying the HMM algorithm to each observation vector to generate the hidden state sequence; and
- from the hidden state sequence, determining whether the event of interest is a P-wave or an R-wave.

5,778,882
HEALTH MONITORING SYSTEM
Stephen A. Raymond, Charlestown; Geoffrey E. Gordon, Boston, and Daniel B. Singer, Weymouth, all of Mass., assignors to Brigham and Women's Hospital, Boston, Mass.
Filed Feb. 24, 1995, Ser. No. 394,157
Int. Cl.⁶ A61B 5/0402

U.S. Cl. 128—700

17 Claims



1. A personal health tracker comprising:

a portable, multiparametric physiological monitoring device which periodically and automatically measures and records from a subject a plurality of different physiological data pertinent to a plurality of different physiological systems, said different physiological data being collected as an ensemble of measurements taken over time, said ensemble of measurements not being directed to any particular medical condition of the subject but being indicative of a variety of trends in the subject's health such as to describe a general state of health of the subject;

a time base which tracks the time of recording of the physiological data;

a data storage unit in which the physiological data is stored with reference to the time base such as to provide a chronological health history of the subject which covers a period of time that includes time periods during which the subject is in substantially good health and those during which the subject is subject to adverse medical conditions; and

a data logger which collects subjective data from the subject regarding the subject's psychological condition, the data logger comprising an electronic data collection device that allows data input by the subject and provides data prompts to the subject to selectively elicit particular information, the data prompts including an interactive graphical display with a depiction of a human body, various regions of which include data input means which allow the subject to provide a data input by designating one of said regions as being associated with a particular symptom.

5,778,883

Patent Not Issued For This Number

5,778,884

Patent Not Issued For This Number

5,778,885
FORCE SENSATION EXHIBITING DEVICE DATA INPUT DEVICE AND DATA INPUT EQUIPMENT
Yoshiaki Doyama, Hirakata; Masataka Ozeki, Osaka; Keizo Matsui, Kobe, and Yoshiteru Ito, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Osaka, Japan

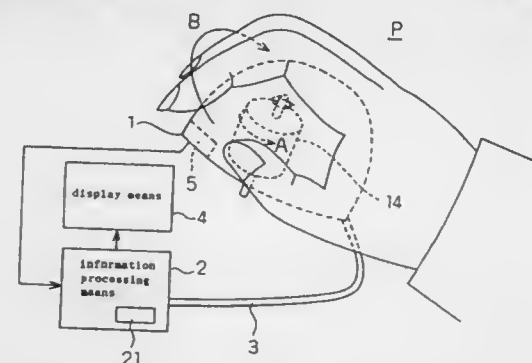
Division of Ser. No. 235,948, May 2, 1994, Pat. No. 5,555,894.
This application Jun. 18, 1996, Ser. No. 666,627

Claims priority, application Japan, May 11, 1993, 5-109529; Sep. 28, 1993, 5-241715; Dec. 28, 1993, 5-336976

Int. Cl.⁶ A61B 5/03

U.S. Cl. 128—782

4 Claims



1. A force sensation exhibiting device comprising a housing which can be grasped by a hand,

at least one rotatably or linearly movable motor contained in the housing,
an input section where repulsive force information are input, and control means for driving and controlling said motor according to the repulsive force information, wherein
a force sensation is given to said hand by a drive of said motor.

5,778,886
VAGINAL COMPOSITIONS COMBINING A SPERMICIDAL AGENT AND A PEROXYGEN COMPOUND
Alfred Shihata, 13565 Mira Montana Dr., Del Mar, Calif. 92014

Filed Feb. 27, 1996, Ser. No. 607,571
Int. Cl.⁶ A61F 6/06

U.S. Cl. 128—832

19 Claims

1. A vaginal composition suitable for preventing conception and transmission of sexually transmitted diseases comprising a spermicidal agent and a peroxygen compound, and having a pH wherein the pH is maintained at about 3 or lower.

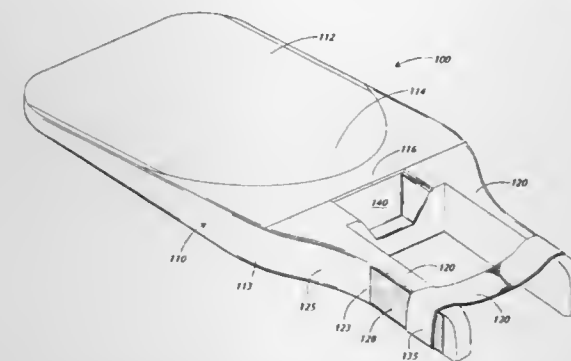
5,778,887
FACE DOWN BODY SUPPORT APPARATUS
Frederic M. Curtiss, 360 Coral Dr., SW, Fort Walton Beach, Fla. 32548

Continuation-in-part of Ser. No. 494,191, Jun. 23, 1995, abandoned. This application Feb. 20, 1996, Ser. No. 603,364

Int. Cl.⁶ A61G 15/00

U.S. Cl. 128—845

18 Claims



1. An apparatus for supporting a person face down, said apparatus comprising:

- a rigid member for supporting a person's body, said rigid member including first and second ends disposed opposite one another, a substantially planar bottom surface disposed between said first and second ends, wherein said bottom surface is adapted to engage a stable, horizontal surface, and a top surface having a contour near said second end which gradually increases in height with respect to said bottom surface as it approaches said second end forming a curved surface conforming substantially to that of a portion of a person's abdomen, chest and neck, wherein said top surface is adapted to engage and support a patient's abdomen, chest and neck;

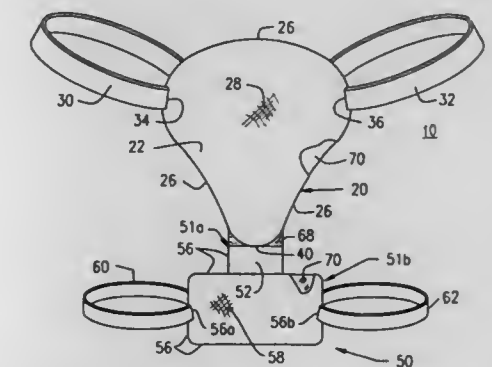
at least two rigid extensions extending outwardly from said second end of said rigid member in a substantially horizontal manner and substantially planar with respect to said planar bottom surface; and

a forehead support member coupled to said at least two rigid extensions for supporting a person's forehead from beneath, when the person is lying in a face down position.

5,778,888
X-RAY RADIATION PROTECTOR FOR REPRODUCTIVE SYSTEMS
Daniel M. Sheehy, 62 Raritan Rd., Linden, N.J. 07036
Filed Aug. 12, 1996, Ser. No. 695,933
Int. Cl.⁶ A61F 5/37

U.S. Cl. 128—846

24 Claims



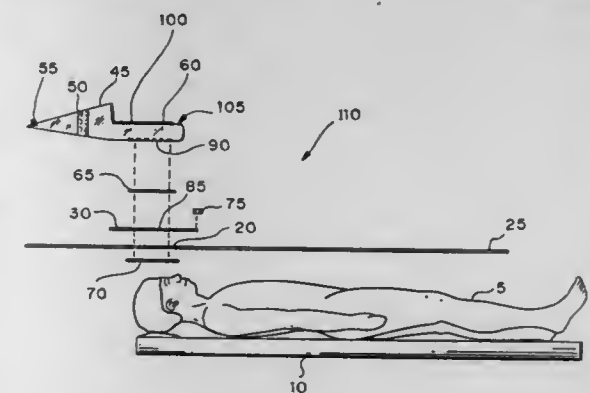
1. A male x-ray radiation protector for protection of the male reproductive system against x-ray radiation, having an upper section and a lower section, comprising:

- a) said upper section being a curved, pear-shaped penial shield for covering the glans penis;
- b) first strap means attached to said upper section for supporting said x-ray radiation protector on the wearer's torso;
- c) said lower section being a flexible, T-shaped testes shield for covering the male testes area, said testes shield having sides;
- d) second strap means attached to the sides of said testes shield for supporting said testes shield on the wearer's torso; and
- e) said testes shield being removably attached to said penial shield for use separately or together.

5,778,889
CRANIOTOMY DRAPE
Jerald T. Jascomb, Alpharetta, Ga., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.
Filed Aug. 30, 1996, Ser. No. 705,698
Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—849

13 Claims



1. A craniotomy drape comprising:

- (a) a main sheet; and
- (b) at least one translucent anesthesia screen attached to a lateral anterior edge of the main sheet.

5,778,890

SURGICAL DRAPE HAVING ADHESIVE MARGINS
Kristina Löfgren, Mölnlycke; Ewa Kölby Falck, Göteborg, and Bengt Netsner, Lindome, all of Sweden, assignors to Mölnlycke AB, Gothenburg, Sweden

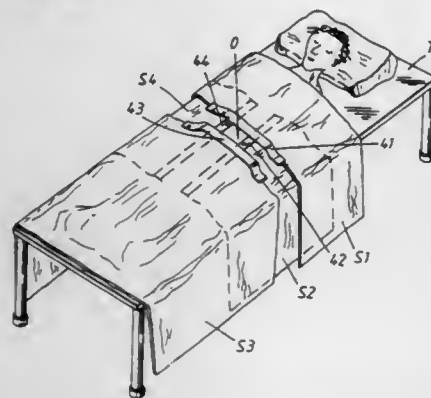
PCT No. PCT/SE96/00398, § 371 Date Sep. 24, 1997, § 102(e) Date Sep. 24, 1997, PCT Pub. No. WO96/29949, PCT Pub. Date Oct. 3, 1996

PCT Filed Mar. 27, 1996, Ser. No. 913,884

Claims priority, application Sweden, Mar. 30, 1995, 9501157 Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—849

10 Claims



1. A surgical drape (S1-S4) having an adhesive edge and including a liquid-impermeable layer (2) and a layer of absorbent material (1) fastened thereto, characterized in that at least one edge or border of the drape (S1-S4) includes a separate edge-piece (41-44) which is fastened to the composite layers constituting the drape itself with a part of the edge-piece extending outwardly beyond said edge of the drape itself and which includes an adhesive coating (5) on that side which lies proximal to the patient's body in use.

5,778,891

SURGICAL DRAPE

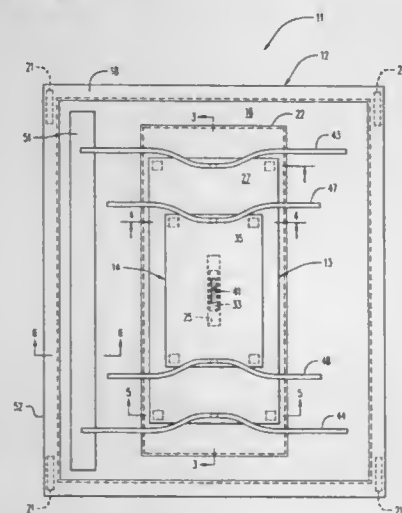
Dorothy R. McMahan, Titus, Ala., assignor to Missy D. Margolis, Framingham, Mass., and Patrick N. Trotter, Prattville, Ala.

Filed Aug. 25, 1997, Ser. No. 917,090

Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—849

20 Claims



1. A surgical drape comprising:
a flexible bottom sheet having a lower surface of given area for placement on a patient and an upper surface for facing away from the patient, said bottom sheet defining a bottom fenestration of given size for accommodating a surgical procedure;

a flexible top sheet detachably secured to said upper surface of said bottom sheet and covering said bottom fenestration, said top sheet having bottom and top surfaces of predetermined area less than said given area and defining a top fenestration of predetermined size smaller than said given size and aligned with bottom fenestration; and
securement means for securing said top sheet around a body appendage after detachment of said top sheet from said bottom sheet.

5,778,892

METHOD OF CONTROLLING THE SLEEP PATTERN OF A BABY

Derek John Goldsmith, Orchard House, Crockham Hill, Edenbridge, Kent TN8 6TE, United Kingdom

Filed Nov. 13, 1996, Ser. No. 748,590

Claims priority, application United Kingdom, Sep. 13, 1996, 9619143

Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—898

9 Claims

1. A method for controlling the sleep pattern of an infant not greater than one year old by causing such an infant to enter rapid eye movement sleep, such method comprising:

- determining the state of sleep of the infant when sleeping and, responsive to a determination of non-rapid eye movement sleep;
- waking the baby; and
- causing the infant to return to sleep; and
- repeating steps a-c until such an infant has entered rapid eye movement sleep state.

5,778,893

METHOD OF DIAGNOSING AND MONITORING A TREATMENT FOR ALZHEIMER'S DISEASE

Huntington Potter, Boston, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 409,103, Mar. 24, 1995, Pat. No. 5,535,760, which is a continuation of Ser. No. 109,746, Aug. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 678,683, Apr. 1, 1991, Pat. No. 5,297,562. This application May 19, 1995, Ser. No. 446,529

Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—898

24 Claims

1. A method of testing for Alzheimer's Disease in an individual, comprising the steps of:

- administering to an individual being tested for Alzheimer's Disease, referred to as a test individual, a drug selected from the group consisting of: adrenergic agonists and adrenergic antagonists, wherein the drug is administered in an amount sufficient to cause a physiological response in an individual;
- assessing in the test individual the physiological response to the drug; and
- comparing the extent of the physiological response determined in step b) in the test individual with the extent of the physiological response in an appropriate control,

wherein a greater response or lesser response in the test individual compared with the response in the control is indicative of Alzheimer's Disease in the test individual.

5,778,894

METHOD FOR REDUCING HUMAN BODY CELLULITE BY TREATMENT WITH PULSED ELECTROMAGNETIC ENERGY

Peter Ladislaus Dorogi, Norwalk, and John Patrick McCook, Guilford, both of Conn., assignors to Elizabeth Arden Co., New York, N.Y.

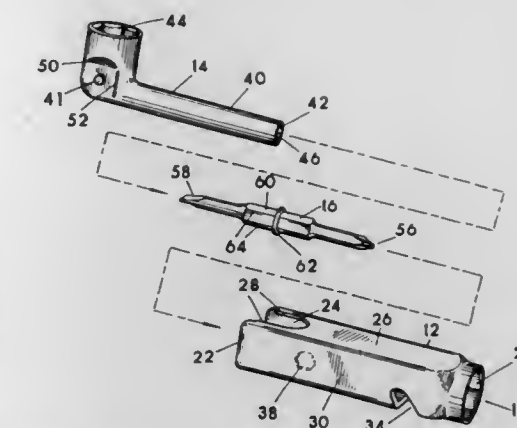
Filed Jan. 3, 1997, Ser. No. 778,497

Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—898

3 Claims

1. A method for improving the overall appearance of human cellulite on afflicted skin surface areas of the body, comprising deep heating the afflicted areas with electromagnetic waves applied by an applicator externally located over the afflicted areas, the electromagnetic waves being applied in a pulsed manner of pulse width between 20 and 400 micro seconds within a frequency range from 2.45 to 40.68 Mhz.



5,778,895

METHOD OF DISCRIMINATING BACTERIAL FROM ASEPTIC MENINGITIS

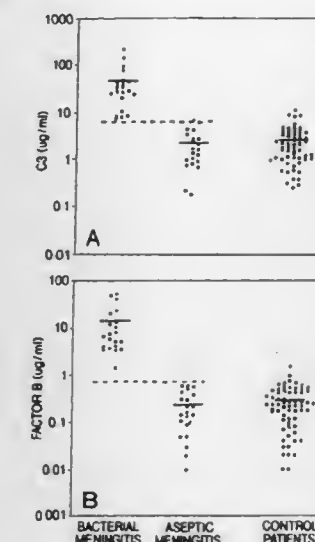
Scott R. Barnum, Sterrett, and Phillip Stahel, Birmingham, both of Ala., assignors to UAB Research Foundation, Birmingham, Ala.

Filed Jan. 29, 1997, Ser. No. 790,611

Int. Cl.⁶ A61B 19/00

U.S. Cl. 128—898

14 Claims



1. A method for the differential diagnosis of bacterial meningitis in an individual in need of such diagnosis, comprising the steps of: measuring the levels of complement C3 and complement factor B in a cerebrospinal fluid sample from said individual; and determining whether said individual has bacterial meningitis by comparing the levels of complement C3 and complement factor B in the sample from said individual to the levels of complement C3 and complement factor B from a sample from an individual not suspected of having bacterial meningitis.

5,778,896

SMOKING PIPE AND FASTENER MANIPULATING TOOL

Robert L. Seals, and Michael J. Okoniewski, both of Autumn La., Chico, Calif. 95926

Filed Aug. 29, 1997, Ser. No. 920,412

Int. Cl.⁶ A24F 1/26

U.S. Cl. 131—181

5 Claims

1. A combination smoking pipe and fastener manipulating tool comprising:

5,778,897

SMOKING CESSATION

Scott M. Nordlicht, 100 Lake Forest, St. Louis, Mo. 63117

Filed Feb. 6, 1996, Ser. No. 597,117

Int. Cl.⁶ A24F 47/00

U.S. Cl. 131—279

9 Claims

1. A smoking cessation method comprising:
providing a patient with a tamper-resistant, timed release cigarette dispenser;
programming the cigarette dispenser to initially release cigarettes from the dispenser one at a time at a first predetermined interval for a predetermined availability period to regularize the smoking habits of the patient;
after an initial period, reprogramming the cigarette dispenser to increase the interval at which cigarettes are dispensed to a second predetermined interval which is longer than the first predetermined interval;
continuing to increase the interval at which cigarettes are dispensed by programming the dispenser, until a critical interval is reached;
abruptly ceasing smoking once the critical interval is reached.

5,778,898

SELF-EXTINGUISHING CIGARETTE, CIGAR, AND THE LIKE

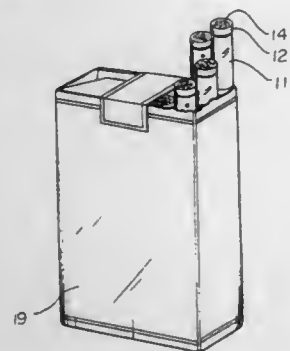
Tae Hong Bae; Sang Yun Bae, and Sang Il Bae, all of 6898 Old Annapolis Rd., Linthicum, Md. 21090

Filed Oct. 20, 1994, Ser. No. 325,157

Int. Cl.⁶ A24D 1/02

U.S. Cl. 131—349

6 Claims



1. A self-extinguishing cigarette which consists essentially of:
- a cigarette body;
 - a cigarette filter connected to said cigarette body;
 - a plastic annular sleeve coaxially disposed on said cigarette body for slidably and longitudinally moving along said cigarette body, said plastic annular sleeve formed of a polymer selected from the group consisting of vinyl chloride, vinyl acetate, vinylidene chloride, methyl acrylate, methyl methacrylate, acrylonitrile, styrene, vinyl ethers, and polyvinyl chloride; and
 - an annular stopper attached on one end of said cigarette filter for maintaining the annular sleeve on the cigarette body, whereby upon moving the sleeve to a lit end of the cigarette body, the sleeve wrinkles upon exposure to heat and effectively extinguishes the lit cigarette within approximately two seconds.

5,778,899

SMOKING ARTICLE

Yutaka Saito; Yuriko Anzai; Ryuichi Suzuki, and Hiroshi Ichinose, all of Yokohama, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

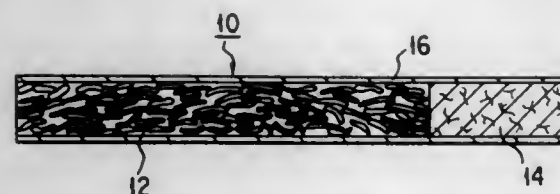
PCT No. PCT/JP95/00091, § 371 Date Sep. 26, 1995, § 102(e) Date Sep. 26, 1995, PCT Pub. No. WO95/20330, PCT Pub. Date Aug. 3, 1995

PCT Filed Jan. 26, 1995, Ser. No. 530,105

Claims priority, application Japan, Jan. 26, 1994, 6-007066 Int. Cl.⁶ A24B 15/12

U.S. Cl. 131—352

25 Claims



1. A smoking article having a burnable smoking element, said smoking element comprising:
- a flavor-generating material including a flavor component-holding material formed of a heat-irreversibly coagulating glucan which has been heat-irreversibly gelled and a flavoring component held in said holding material;
 - said smoking element having been obtained by thermally gelling a mixture of an ungelled heat-irreversibly coagulating glucan and the flavoring component added thereto, and being capable of releasing the flavoring component through burning;

wherein the flavoring component contains a hydrophobic flavoring component, and the flavor-generating material comprises an oily solvent for the hydrophobic flavoring component.

5,778,900

METHOD OF DECORATING FINGERNAILS

Jane M. Bate, 15083 Cleveland, Allen Park, Mich. 48101

Filed Dec. 24, 1997, Ser. No. 997,930

Int. Cl.⁶ A45D 29/00

U.S. Cl. 132—73

2 Claims



1. A new method of decorating fingernails for styling nails in a multitude of attractive designs for longer wear comprising, in combination:
- applying a coat of thick nail coverage to a fingernail;
 - cutting a piece of nail paper corresponding to the fingernail;
 - pressing the piece of nail paper onto the fingernail over the thick nail coverage;
 - working the piece of nail paper on the fingernail for a tight fit;
 - buffing all edges of the fingernail and the nail paper with a sponge file;
 - applying a first coat of epoxy over the piece of nail paper;
 - allowing first coat of epoxy to dry;
 - applying a second coat of epoxy over the piece of nail paper;
 - and
 - allowing second coat of epoxy to dry.

5,778,901

NAIL POLISH KIT FOR MIXING NAIL POLISH

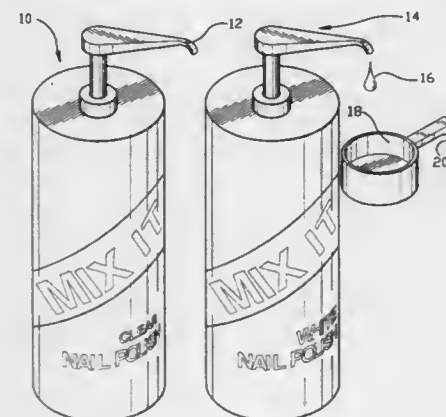
Sandra L. Abrahamian, 10 Lakeside Ave., Worcester, Mass. 01603

Filed May 9, 1997, Ser. No. 853,715

Int. Cl.⁶ A45D 29/18

U.S. Cl. 132—74.5

11 Claims



1. A nail polish kit, comprising:
- at least two nail polish containers, one of said at least two nail polish containers containing a clear nail polish and another of said at least two nail polish containers containing a white nail polish;
 - a plurality of pigment color containers, each of said pigment color containers containing a pigment color;
 - a plurality of mixing tools; and

at least one applicator brush;

whereby a desired color and hue of nail polish can be prepared by selecting one nail polish from said clear nail polish and said white nail polish, and mixing said one nail polish with at least one of said pigment colors using said mixing tools, and said desired color and hue of nail polish can be applied to a nail with said at least one applicator brush.

5,778,902

HAIR COLOR-STICK

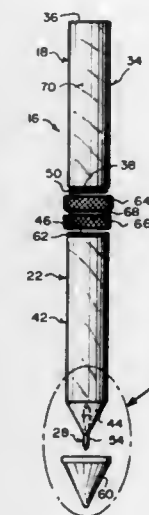
Christine Nagy, 417 East 72nd St. Apt. 2C, New York, N.Y. 10021

Filed Dec. 2, 1996, Ser. No. 759,062

Int. Cl.⁶ A45D 34/04

U.S. Cl. 132—200

7 Claims



1. A hair color stick comprising:
- a) a first cartridge for holding a first hair color solution comprising a first cylindrical barrel having a flat closed end and an open end with a first chamber therein containing said first hair color solution and having external threads about the open end thereof;
 - b) a second cartridge for holding a second hair color solution comprising a second cylindrical barrel having a conical closed end and an open end with a second chamber containing the second hair color solution and having external threads about the open end thereof;
 - c) a first knurled thumbscrew cap having internal threads engaged with the external threads on said first cylindrical barrel to maintain the first hair color solution within said first barrel;
 - d) a second knurled thumbscrew cap having internal threads engaged with the external threads on said second cylindrical barrel to maintain the second hair color solution within said second barrel;
 - e) means including a connector affixing said first knurled thumbscrew cap to said second thumbscrew cap forming said hair color stick with said first and second hair color solutions separated from each other;
 - f) the open end of said second barrel having internal threads engageable with the external threads on the open end of said first barrel so that upon removal of said connector and first and second thumbscrew caps said first barrel may be threadably connected to said second barrel so that the first hair color solution will mix with the second hair color solution;
 - g) means on said second cartridge comprising an absorbent applicator tip extending through said conical closed end of said second cylindrical barrel for applying a controlled amount of the mixed hair color solution onto a portion of the hair of a person, so that the hair can be touched up with the mixed hair color solution; and

h) a protective seal across said second chamber of said second cylindrical barrel above said absorbent applicator tip and a conical spring within said conical closed end to normally bias said absorbent applicator tip away from said protective seal so that when said absorbent applicator tip is manually pressed inwardly to overcome said conical spring said protective seal will break to release some of the mixed hair color solution into said absorbent applicator tip.

5,778,903

ACRYLIC CUTTER

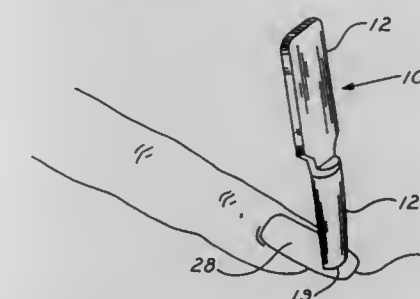
Thanh-Ha T. Tran, 32271 Mill Stream Rd., Trabuco Canyon, Calif. 92679, and Leigh Ann Peterson, 21976 Kingshill, Mission Viejo, Calif. 92692

Filed Jan. 15, 1997, Ser. No. 784,126

Int. Cl.⁶ A45D 29/00

U.S. Cl. 132—200

2 Claims



1. An acrylic cutter method for use in the application of an acrylic fingernail to achieve the look of a french manicure without using nail polish, comprising the steps of:
- applying a coat of acrylic to a tip of a fingernail;
 - holding the acrylic cutter by the proximal segment and positioning said cutter at the tip of the acrylic fingernail, thereby causing the edge of the distal segment to contact said tip; and
 - impressing a curved line on the tip of the acrylic nail to divide the nail into an inner portion and an outer portion by applying pressure to the acrylic cutter;
 - applying a second coat of acrylic to the entire acrylic nail, thereby creating a french manicure look.

5,778,904

HAIR TIE FASTENER

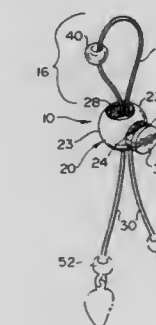
Susan C. Elsner, 9019 Georgia Ave. N., Brooklyn Park, Minn. 55445

Filed Jan. 27, 1997, Ser. No. 790,727

Int. Cl.⁶ A45D 8/16; 8/36

U.S. Cl. 132—275

10 Claims



1. A tie fastener, comprising:
- a) a predetermined length of cord, having a pair of terminal ends;

- b) a cord lock, having a first, unlocked position, such that said terminal ends are received by said cord lock, forming an elongated loop generally in the middle portion of said cord, and said cord lock having a second, locked position, whereby said cord is locked in position in said cord lock;
- c) said stop bead threaded onto said cord, said stop bead positioned such that when said cord is formed into a loop, said stop bead is positioned on said loop preventing said loop from being pulled through said cord lock when said cord lock is in said first, unlocked position; and
- d) means for decreasing the size of said loop.

5,778,905

VOLUME HAIRPIN

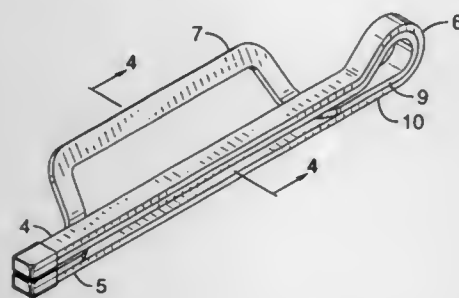
Helen Koshaba Adam, 2420 Meadow, Rue Modesto, Calif. 95355

Filed Oct. 30, 1996, Ser. No. 742,177

Int. Cl.⁶ A45D 8/06

U.S. Cl. 132—284

7 Claims



7. A means for giving hair in a hairpin an appearance of greater volume and thickness, comprising a hairpin with two legs connected by a loop wherein a support member protrudes at an acute angle from a leg of the hairpin such that the hairs grasped between the legs are elevated by the support member to a position further away from the scalp, the support member protruding from the leg worn closest to the scalp and the legs including ends that touch one another.

5,778,906

DENTAL FLOSS HOLDER

Kuang-Hsing Wei, and Kuang-Hung Wei, both of 18500 Bay Leaf Way, Germantown, Md. 20874

Continuation-in-part of Ser. No. 528,889, Sep. 15, 1995, Pat.

No. 5,570,710, Ser. No. 581,372, Dec. 29, 1995, Pat. No.

5,653,246, and Ser. No. 698,734, Aug. 16, 1996. This applica-

tion Sep. 13, 1996, Ser. No. 713,810

Int. Cl.⁶ A61C 15/00

U.S. Cl. 132—327

34 Claims



1. A dental floss holder for fastening a dental floss, said holder comprising:
- a first member having a surface thereon;

- a second member having a matching surface thereon, said matching surfaces being engageable with each other to fasten the floss therebetween; and
- locking means for locking said first and second members together so that the floss is fastened between said matching surfaces, whereby said holder having the floss fastened therein is manipulated by a hand in lieu of winding the floss around a finger for teeth cleaning.

5,778,907

CLEANING SYSTEM FOR ELONGATED OBJECTS

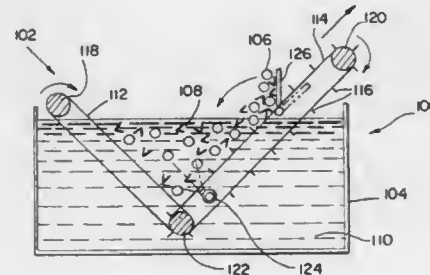
Gilbert F. Ransley, Jr., McFarland; Andrew Campos, Middleton, and Ronald R. Riebe, Madison, all of Wis., assignors to DEC International, Inc., Madison, Wis.

Filed Nov. 26, 1996, Ser. No. 757,054

Int. Cl.⁶ B08B 3/04

U.S. Cl. 134—25.4

21 Claims



1. An apparatus for cleaning elongated objects comprising:
- a tank having side and bottom walls for holding cleaning solution, wherein the tank also has a feed end and an exit end, both ends being adapted for the elongated objects;
- a first conveyor mounted inside the tank and downwardly inclined from the feed end toward the tank bottom, wherein the first conveyor has at least two spaced apart chains in which the spacing between the chains is adapted for supporting the elongated objects;
- a second conveyor mounted inside the tank and upwardly inclined from the bottom toward the exit end such that the planes of the first and second conveyors intersect near the tank bottom to form an angular section, wherein the second conveyor has at least two spaced apart chains in which the spacing between the chains is adapted for supporting the elongated objects and wherein the chains of the second conveyor have pusher flights;
- a jet manifold capable of producing a jet stream which is mounted in the tank such that the jet stream can be directed at the angular section formed by the planes of the first and second conveyors;
- a plate mounted between the chains of the second conveyor which can assume a first position below the plane of the second conveyor and a second position above the plane of the second conveyor; and
- a means for driving the conveyors.
20. A method of cleaning elongated objects comprising:
- feeding the elongated objects to the apparatus of claim 1;
- operating the conveyors with the plate in the second position for a predetermined time; and
- removing the elongated objects from the apparatus by placing the plate in its first position.

5,778,908

VEHICLE WHEEL WASHING DEVICE

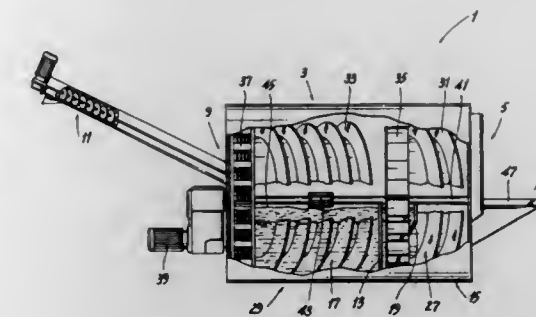
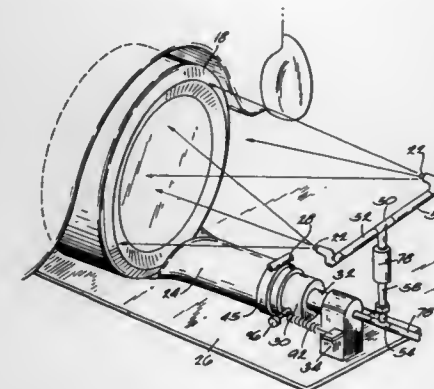
Richard J. Shelstad, 37352 S. Blackfoot Dr., Tucson, Ariz. 85737

Filed Jan. 8, 1997, Ser. No. 780,207

Int. Cl.⁶ B60S 3/04

U.S. Cl. 134—123

11 Claims



- second conveying mechanism, which transports material from the first region into the second region.

5,778,911

LIQUID SUPPLYING APPARATUS

Akira Yoshio, Shizuoka, Japan, assignor to Sony Disc Technology Inc., Japan

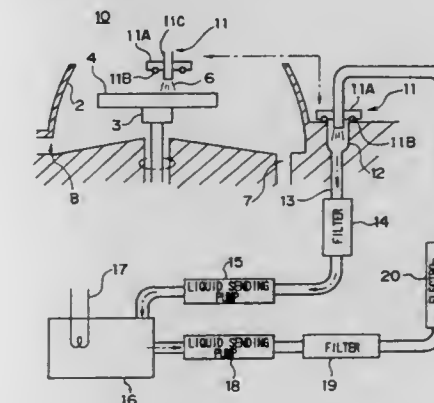
Filed Oct. 4, 1995, Ser. No. 539,265

Claims priority, application Japan, Oct. 13, 1994, 6-275954

Int. Cl.⁶ B08B 13/00

U.S. Cl. 134—104.2

14 Claims



1. A device for applying a cleansing fluid to the wheels of a vehicle travelling along a path through a washing zone comprising sprayer means located on at least one side of the washing zone for directing the cleansing fluid onto the vehicle wheels as it travels through the washing zone;
- an elongated, resilient tubular compression member having a hollow interior, said compression member located in the washing zone and extending transversely of the travel path of the vehicle wheels on one side of the vehicle; and
- a fluid flow system connecting the interior of said compression member in fluid communication with a source of the cleansing fluid and with said sprayer means such that, when said compression member is in a ready condition in its normal shape and at least partially filled with the cleansing fluid and a vehicle wheel rolls thereover, said compression member is squashed to a compressed condition and causes the cleansing fluid to be pumped therefrom and through said sprayer means and, as said compression member returns from a compressed condition to a ready condition after a vehicle wheel has rolled thereover, cleansing fluid is drawn from the source into said compression member.

5,778,909

Patent Not Issued For This Number

5,778,910

WASHING TROUGH FOR RESIDUAL CONCRETE

Horst Brenner, Steinbeisstrasse 2, Beilstein, Germany, 71717

Filed Oct. 21, 1996, Ser. No. 731,867

Claims priority, application Germany, Jan. 16, 1996, 196 01 262.7

Int. Cl.⁶ B08B 3/04

U.S. Cl. 134—65

15 Claims

1. An apparatus for reprocessing residual concrete comprising: a trough, a first conveying mechanism proximal to an adjoining bucket wheel and discharging equipment, characterized in that the trough is divided into two mutually separated regions, the first region taking up and buffering the residual concrete and the second region functioning as a washing-out trough, further including a

1. A liquid supplying apparatus for supplying a treatment liquid to treatment liquid ejecting means which eject treatment liquid to a work to be treated, comprising:
- a reservoir of said treatment liquid;
- means for supplying said treatment liquid from said reservoir to said ejecting means; and
- circulation means for returning said treatment liquid ejected by said ejecting means to said reservoir when said ejecting means is not ejecting said treatment liquid to said work to be treated;
- wherein said circulation means comprise a cup for receiving treatment liquid ejected from said ejecting means; and
- further wherein said ejecting means are movable between a first position at which said treatment liquid is ejected to said work and a second position at which said treatment liquid is ejected into said cup;
- said ejecting means comprising:
- a nozzle for ejecting said treatment liquid,
- a flange extending sideward of said nozzle, and
- means for creating a seal between said cup and said flange when said ejecting means is in said second position.

5,778,912

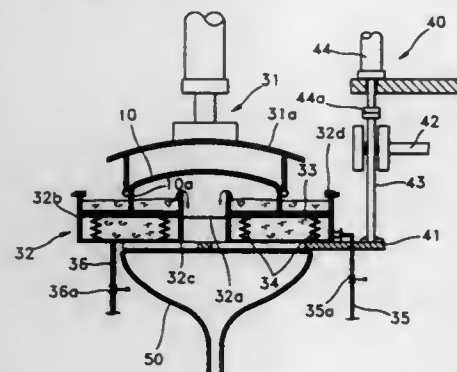
PANEL WASHING DEVICE FOR CATHODE RAY TUBE
Kil-won Lee, Suwon, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea
Filed Dec. 26, 1996, Ser. No. 773,973

Claims priority, application Rep. of Korea, Jul. 30, 1996, 1996-31532

Int. Cl.⁶ B08B 3/04

U.S. Cl. 134—104.2

10 Claims



1. A panel washing device for a cathode ray tube comprising: a carrier for transferring a panel;
- a tank installed underneath the panel transferred by said carrier to receive a skirt of said panel and containing solution for washing the skirt of said panel and including an outer wall and an inner wall which is lower than the outer wall and which forms a hollow portion in the middle of said tank;
- a meshed plate member installed inside said tank;
- an elastic member, installed between the upper bottom surface of said tank and the meshed plate member, for elastically biasing the meshed plate member in an upward direction;
- means for lifting said tank to said panel; and
- a hopper disposed beneath said tank for receiving overflow washing solution which is drained through said hollow portion.

5,778,913

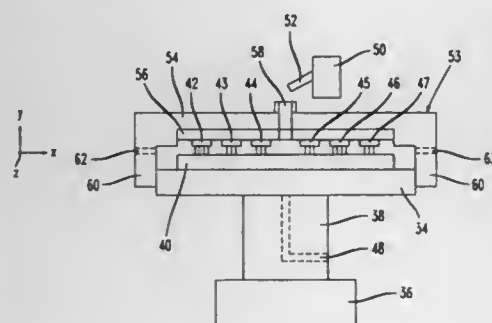
CLEANING SOLDER-BONDED FLIP-CHIP ASSEMBLIES
Yinon Degani, Highland Park; Thomas Dixon Dudderar, Chatham, and Dean Paul Kossives, Glen Gardner, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 20, 1997, Ser. No. 803,474

Int. Cl.⁶ B08B 3/02

U.S. Cl. 134—153

7 Claims



1. Apparatus for cleaning a flip-chip assembly that includes at least one chip that is face-down solder-bonded to a supporting substrate, said apparatus comprising
- a table adapted to hold the assembly substrate-side-down,
- means for rotating said table,
- a cover, having a centrally positioned aperture, adapted to resiliently engage the top of the assembly to be cleaned,

and means for introducing cleaning fluid via said aperture into the chip-to-substrate space of the assembly to be cleaned.

5,778,914

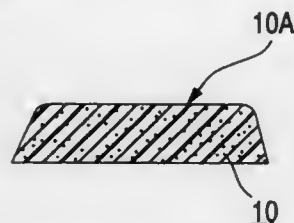
PORTABLE TELESCOPIC WEIGHTED WALKING POLE
Armando P. Trani, 1858 Williamsbridge Rd., Bronx, N.Y. 10461

Filed Mar. 28, 1996, Ser. No. 623,938

Int. Cl.⁶ A45B 3/00

U.S. Cl. 135—66

20 Claims



1. A portable telescopic weighted walking pole, comprising:
 - a) a pole portion being collapsible, telescopic, and tubular, and having a variety of lengths, so that said pole portion is length adjustable to accommodate users of different heights and can be collapsed to a small length for easy storage and transport; said pole portion including an upper element being tubular and elongated and having a proximal end, a distal end, an inner diameter, and a plurality of slots being elongated, longitudinally-oriented, spaced-apart, aligned, and having a length, and extending substantially from said proximal end of said upper element of said pole portion to substantially said distal end of said upper element of said pole portion; said pole portion further including an intermediate element being tubular and elongated and having an inner diameter and an outer diameter being substantially equal to said inner diameter of said upper element of said pole portion; said intermediate element of said pole portion further having a distal end and a proximal end being telescopically received by said distal end of said upper element of said pole portion; said intermediate element of said pole portion further having a plurality of slots being longitudinally-oriented, spaced-apart, and aligned, and having a length, and extending substantially from said proximal end of said intermediate element of said pole portion to substantially said distal end of said intermediate element of said pole portion; said plurality of slots in said intermediate element of said pole portion being alignable with said plurality of slots in said upper element of said pole portion so as to be cooperative therewith; said pole portion further including a lower element being tubular and elongated, and having a distal end, an outer diameter being substantially equal to said inner diameter of said intermediate element of said pole portion, and a proximal end being telescopically received by said distal end of said intermediate element of said pole portion;
 - b) maintaining means for maintaining said pole portion at a desired length; said intermediate element of said pole portion being extendable and removable from, retractable in, and maintained in relationship to, said upper element of said pole portion by said maintaining means; said lower element of said pole portion being extendable and removable from, retractable in, and maintained in relationship to, said intermediate element of said pole portion by said maintaining means; said maintaining means including a detent plate being elongated and thin and having a rounded proximal end with a lateral throughbore, a distal end, a first edge extending from said rounded proximal end of said detent plate of said maintaining means to said distal end of said detent plate of said pole portion maintaining means, and a straight second edge extending from said rounded proximal end of said detent plate of said maintaining means to said distal end of said detent plate of said pole portion;

plate of said maintaining means, opposite to said first edge of said detent plate of said maintaining means; said straight second edge of said detent plate of said maintaining means having a recess being substantially frustum-shaped with a depth and a narrowest and lowest point with a center from which a first projection being substantially pointed extends outwardly from to a length less than said depth of said recess in said straight second edge of said detent plate of said maintaining means; said recess in said straight second edge of said detent plate of said maintaining means being disposed intermediate said rounded proximal end of said detent plate of said maintaining means and said distal end of said detent plate of said maintaining means; said first projection in said recess in said straight second edge of said detent plate of said maintaining means together with said recess in said straight second edge of said detent plate of said maintaining means forming a first spring seat;

- c) a weighted handle being interchangeable and removably mounted to said pole portion, so that increased resistance is exerted on the arms of a user as the user walks and accomplishes dual-action exercising; and
- d) handle mounting means for removably mounting said weighted handle to said pole portion, so that said weighted handle can be interchanged with another said weighted handle when desired by the user and can be removed for easy storage and transport; said proximal end of said upper element of said pole portion being removably mounted to said weighted handle by said handle mounting means.

5,778,915

COLLAPSIBLE STRUCTURES

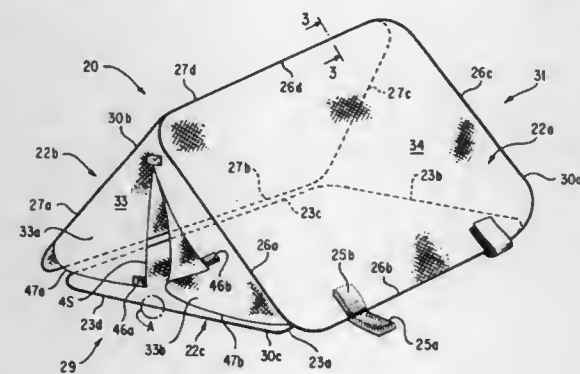
Yu Zheng, Covina, Calif., assignor to Patent Category Corporation, Monrovia, Calif.

Filed Dec. 26, 1996, Ser. No. 773,066

Int. Cl.⁶ E04H 15/40

U.S. Cl. 135—126

13 Claims



1. A collapsible structure having a deployed configuration and a collapsed configuration, comprising:
 - a base panel comprising separate first and second sides, a foldable frame member having a folded and an unfolded orientation, and a fabric material substantially covering the frame member to form the base panel when the frame member is in the unfolded orientation, with the fabric assuming the unfolded orientation of its associated frame member;
 - first and second wall panels, each wall panel comprising a bottom side, a foldable frame member having a folded and an unfolded orientation, and a fabric material substantially covering each frame member to form the panel for each frame member when the frame member is in the unfolded orientation, with the fabric assuming the unfolded orientation of its associated frame member;
 - wherein the bottom side of the first wall panel is connected to the first side of the base panel, and the bottom side of the second wall panel is connected to the second side of the base panel; and

5,778,916

Patent Not Issued For This Number

5,778,917

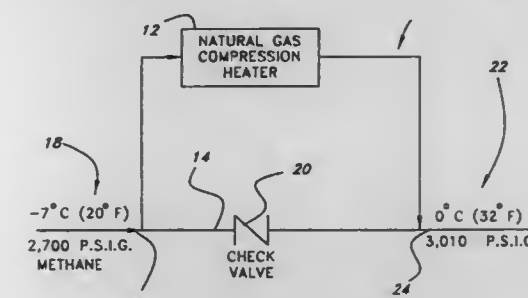
NATURAL GAS COMPRESSION HEATING PROCESS
Ward A. Whitmore, Anchorage, Ak., and Michael C. Metz, Clay Center, Kans., assignors to Yukon Pacific Corporation, Anchorage, Ak.

Filed Jun. 19, 1997, Ser. No. 879,088

Int. Cl.⁶ F17D 1/16

U.S. Cl. 137—13

13 Claims



1. A natural gas compression heating process for heating and simultaneously pressurizing a natural gas and devoid of a cooling step to treat the gas passing through a pipeline located in a continuous permafrost or discontinuous permafrost region comprising:
 - providing at least one natural gas compression heater positioned along a natural gas pipeline located in a permafrost or discontinuous permafrost region;
 - diverting a natural gas passing through said pipeline as an entry gas having a predetermined temperature and pressure below a desired standard;
 - controlling the heating and simultaneous pressurizing of the diverted entry gas with the at least one compression heater to a higher predetermined and desired temperature and corresponding pressure as an exit gas suitable for continued passage in the pipeline;
 - said compression heating step being devoid of any subsequent cooling step for cooling the compressed and heated gas; and
 - returning the pressurized and heated exit gas to the natural gas pipeline.

5,778,918

PILOT VALVE WITH IMPROVED CAGE

Mark W. McLelland, Angleton, Tex., assignor to Varco Shaffer, Inc., Houston, Tex.

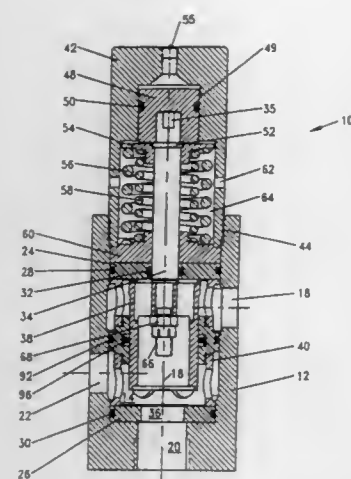
Filed Oct. 18, 1996, Ser. No. 733,414

Int. Cl.⁶ F16K 43/00; 31/124; F15B 13/042

U.S. Cl. 137—15

20 Claims

18. A method of servicing a two-position pilot-operated valve including a valve body having a central valve axis, a fluid inlet port, and a fluid outlet port, a piston axially movable with respect to the valve body in response to, pilot pressure, a spool axially movable within the valve body in response to axial movement of the piston, the spool being axially movable between an open position such that the inlet port is in fluid communication with the outlet port and a closed position such that the inlet port is blocked by the spool from fluid communication with the outlet port, a piston rod for structurally interconnecting the spool and the piston,



a cage within the valve body for receiving the spool and including at least one radial upper throughport therein, an upper seal plate spaced axially between the cage and the piston for sealing engagement with the spool when in the closed position, a lower seal plate spaced axially between the cage and the fluid outlet port for sealing engagement with the spool when in the open position, and a spring to bias the spool toward the closed position, the method comprising:

- replacing a worn cage with another cage including an axially intermediate cage body formed from a selected plastic material;
- providing an external seal on the plastic material intermediate body for sealing between the intermediate body of the cage and the valve body and an internal on the plastic material intermediate body for continuous dynamic sealing between the cage and the spool during axial movement of the spool between the open and closed positions;
- removably securing an upper cage body including the one or more radial upper throughports therein to the intermediate body;
- removably securing a lower cage body to the intermediate body; and
- positioning the another cage including the intermediate cage body, the upper cage body, and the lower cage body within the valve body such that an exterior surface on the intermediate body is in mating engagement with an interior surface on the valve body and an internal cylindrical surface of the intermediate body is in sliding engagement with an external cylindrical surface of the spool during axial movement of the spool between the open and closed positions.

5,778,919

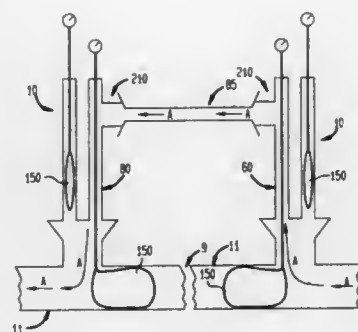
PIPELINE FLOW STOPPER WITH DUAL SHAFTS

Joseph Petrone, Ringwood, N.J., assignor to Custom Service Laboratories of N.J., Inc., North Bergen, N.J.
Continuation-in-part of Ser. No. 497,928, Jul. 5, 1995, which is a continuation-in-part of Ser. No. 380,210, Jan. 30, 1995, Pat. No. 5,503,188, and a continuation-in-part of Ser. No. 294,372, Aug. 23, 1994, Pat. No. 5,439,032, which is a continuation of Ser. No. 176,043, Dec. 30, 1993, abandoned. This application Feb. 4, 1997, Ser. No. 794,496
Int. Cl.⁶ F16L 55/128; F16K 43/00

U.S. Cl. 137—15

16 Claims

15. A method for re-routing gas flow through a first gas pipeline stopper apparatus around a break in a gas pipeline to allow for repairs to be made to the pipeline, comprising the steps of: attaching a first quick connect means to a valve attached to a pipeline;
- attaching a junction box to the first quick connect means;
- attaching first and second shafts to the junction box each of said shafts capable of receiving an air line with an air bag;



attaching a re-routing pipe to one of the shafts;
inserting an air line with an air bag through each of the shafts, and through the junction means, the first quick connect means and a valve and into a pipeline;
inflating at least one of the air bags positioned within the pipeline and attached to the respective air line;
retracting at least one of the air bags to a position within one of the shafts out of the flow of gas; and
connecting a second gas pipeline stopper apparatus, located on the other side of a break in a pipelines to the re-routing pipe for receiving re-routed gas flow from the first gas pipeline stopper apparatus.

5,778,920

Patent Not Issued For This Number

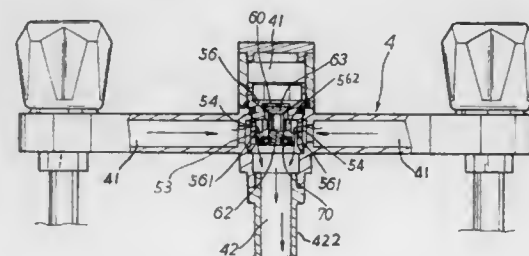
5,778,921

RELAY CONTROLLING VALVE STRUCTURE FOR TWIN-TAP FAUCET

Hsi-Chia Ko, Changhua Hsien, Taiwan, assignor to Chung Cheng Faucet Co., Ltd., Changhua Hsien, Taiwan
Filed May 22, 1996, Ser. No. 653,926
Int. Cl.⁶ F16K 11/044

U.S. Cl. 137—119.04

1 Claim



1. A relay controlling valve structure for twin-tap faucet, comprising a valve seat, a valve stem and a pushing block, wherein the valve seat is a hollow sleeve-like member made of plastic material and formed with outer thread on upper portion, a water-sealing ring being disposed around a middle portion of the valve seat, a hexagonal socket being formed at upper end of the valve seat for a wrench to fit therein and drive the valve seat, a stem hole being formed below the hexagonal socket, the upper portion of the stem hole having conic face and the lower portion of the stem hole being enlarged, several stopper ribs being disposed on the wall of the enlarged lower portion at intervals, a stem head being formed at the upper end of the valve stem, a reverse conic water-sealing washer being inserted at the adjoining portion between the stem body and the stem head, the stem body of the valve stem being passed through the hexagonal socket of the valve seat and fitted into the stem hole thereof, the reverse conic water-sealing washer

being fitted with the conic face of the stem hole of the valve seat, said controlling valve structure being characterized in that:

- an annular groove is formed between the water-sealing ring and the lower end of the valve seat, the annular groove of the valve seat and the partitioning wall of the water discharging passages defining a larger space with greater capacity for the water flow so as to more easily push the pushing block, two opposite water inlets being formed on the wall of the upper portion of the annular groove, each stopper rib having a shorter guiding rib extending toward the center for guiding the valve stem to linearly move up and down, the wall of the lower end of the enlarged lower portion being further enlarged into a conic shape, the lower end of the stem body being formed with an insertion groove, the pushing block being a conic body made of rubber material with a plane head and formed with a central fitting hole for fitting with the insertion groove of the stem body, the bottom of the pushing block being formed with an annular check groove.

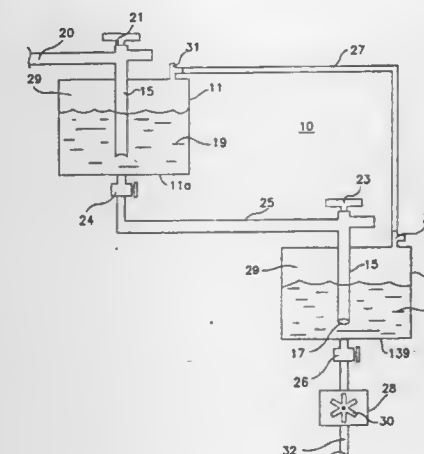
5,778,922

HYDRAULIC DEVICE AND SYSTEM

Carl Louis Schoultz, 350 Harwicke Rd., Springfield, Pa. 19064
Filed Aug. 22, 1996, Ser. No. 701,719
Int. Cl.⁶ F04F 1/00

U.S. Cl. 137—208

5 Claims



1. A hydraulic system useful for dispensing hydraulic fluids using a source of hydraulic fluid and a source of gas, comprising: an upper hollow container and a lower container for holding hydraulic fluid therein, each of said containers having gas valve means for introducing and discharging gas into said container and for gas transfer between said containers; said containers further including hydraulic fluid flow means extending into each said container from one end thereof to a point proximate the opposing inner surface of the other end thereof such that hydraulic fluid enters and exits said container proximate said other end;

- fluid transfer means for introducing hydraulic fluid from said hydraulic fluid source into said upper container for hydraulic fluid flow therein, said fluid transfer means further connecting said upper and lower containers for fluid flow there between;
- valve means operably connected with said gas valve means prevent discharge of air in said second container during transfer of hydraulic fluid from said first container to said second container to store a head of air pressure in said lower container; and
- means for discharging hydraulic fluid from said lower container under said pressure at a time after said head of pressure has been stored therein.

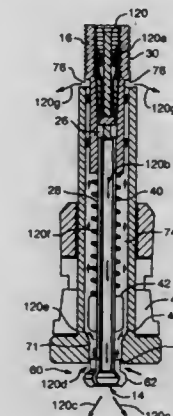
5,778,923

ANTI-SEEPAGE SELF-GAUGING INFLATION VALVE SYSTEM

Philip William Marston, 28-B Packet Landing, Pembroke, Mass. 02359
Filed Oct. 25, 1995, Ser. No. 547,970
Int. Cl.⁶ F16K 15/20

U.S. Cl. 137—226

22 Claims



1. An anti-seepage, self-gauging inflation valve system comprising:
 - a base for mounting in a device to be inflated;
 - an inlet port and an outlet port, said outlet port proximate said base;
 - a filler valve for introducing fluid under pressure from said inlet to said outlet port;
 - a vent structure;
 - an isolation chamber communicating with said vent structure;
 - an actuator device;
 - a gauging valve including spring means resiliently interconnecting said actuator device and said gauging valve for holding said gauging valve closed to seal said chamber from said vent structure and automatically opening when the pressure in said chamber exceeds a predetermined level; and
 - an anti-seepage isolation valve for isolating said chamber from said outlet port;
- said actuator device opening said isolation valve to enable access between said gauging valve and said outlet port to vent pressure in excess of said predetermined level while said actuator device holds open said isolation valve.

5,778,924

HYDRAULIC CONTROL VALVE BLOCK

Helmut Stangl, Horb, and Gerhard Beutler, Nagold, both of Germany, assignors to Brueninghaus Hydramatic GmbH, Elchingen, Germany
PCT No. PCT/EP94/02857, § 371 Date Apr. 26, 1996, § 102(e) Date Apr. 26, 1996, PCT Pub. No. WO95/06818, PCT Pub. Date Mar. 9, 1995

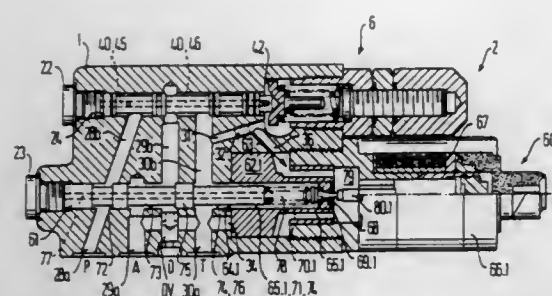
PCT Filed Aug. 29, 1994, Ser. No. 605,009
Claims priority, application Germany, Aug. 30, 1993, 43 29 164.3

Int. Cl.⁶ F15B 13/02

U.S. Cl. 137—269

7 Claims

1. Hydraulic control valve block having
 - a first hydraulic connection (P), for connection to a working line (102),
 - a tank connection (T), for connection to a tank (107),
 - a second hydraulic connection (A), for connection to a setting pressure line (103),
 - a control valve (2) having a first hydraulic pressure chamber (24) connected with the first hydraulic connection (P) and a second hydraulic pressure chamber (42) connected via a throttle point (32) with the tank connection (T), which—in accordance with the position of a displaceable valve piston (4)



arranged between the hydraulic pressure chambers (24, 42) - connects either the first hydraulic connection (P) or the tank connection (T) with the second hydraulic connection (A), a throttle (47) provided between the first (24) and second (42) hydraulic pressure chambers of the control valve (2) and a pressure limiting valve (60.1, 60.2) arranged between the second hydraulic pressure chamber (42) of the control valve (2) and the tank connection (T), having a control part (66.1, 66.2) actuating a closure element (69.1, 69.2), whereby upon active control of the control part (66.1, 66.2) the closure element (69.1, 69.2) is displaced in the direction of its open position and thus the pressure limiting valve (60.1, 60.2) connects the second hydraulic pressure chamber (42) of the control valve (2) with the tank (107) via the tank connection (T).

5,778,925

PRESSURE REGULATION VALVE

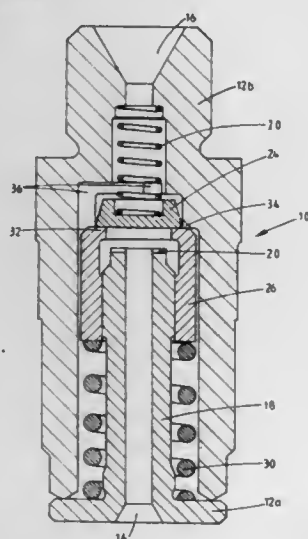
Michael Peter Cooke, Gillingham, United Kingdom, assignor to Lucas Industries Public Limited Company, England
Filed Aug. 21, 1995, Ser. No. 517,430

Claims priority, application United Kingdom, Aug. 19, 1994, 9416784

Int. Cl.⁶ F16K 17/18

U.S. Cl. 137—493.6

9 Claims



1. A fuel system pressure regulation valve for use in controlling the fuel pressure within a fuel supply line, the valve comprising a housing having first and second ports, a valve element moveable within the housing and biased into engagement with a moveable seating member to restrict the flow of fuel from the second port to the first port, the valve element being moveable away from the seating member upon the application of high pressure fuel to the first port to permit fuel to flow from the first port to the second port, and means for separating the valve element from the seating member in order to permit the flow of fuel from the second port to the first port upon the fuel pressure at the second port exceeding that at the first port by more than a predetermined pressure difference.

5,778,926
PRESSURE REGULATING VALVE AND FUEL SUPPLY SYSTEM USING THE SAME

Masaaki Tanaka, Tsu; Keiichi Yamashita, Kariya; Kouji Izutani, Nagoya; Kingo Okada, and Hideo Takahashi, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

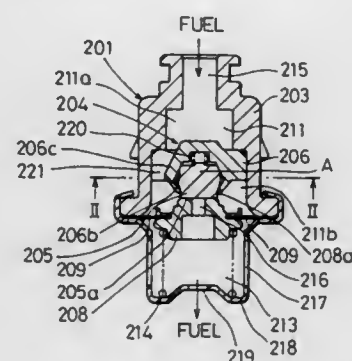
Filed Sep. 26, 1996, Ser. No. 721,338

Claims priority, application Japan, Feb. 3, 1995, 7-017308

Int. Cl.⁶ F16K 31/12

U.S. Cl. 137—508

7 Claims



1. A fuel supply system including a fuel pump disposed in a fuel tank for pumping fuel from the tank to a fuel injector, a fuel filter for removing foreign particles in said fuel before supplying said fuel to the injector, said fuel supply system including a fuel pressure regulating valve for regulating the fuel supplied to the injector, wherein

said fuel filter is disposed, at least partially, around said fuel pump, and said fuel pressure regulating valve discharges fuel flowing in said fuel filter into said fuel tank and regulates a pressure of said fuel supplied to said injector, and said fuel pressure regulating valve further comprising:

a cylindrical case having a fuel inlet chamber having a fuel inlet open to the fuel pumped by the fuel pump, and a fuel outlet chamber open to a fuel outlet to said tank;
a diaphragm separating the fuel inlet chamber from the fuel outlet chamber, and the diaphragm having an outer periphery fixed to an inner periphery of said case;
a stationary valve fixed to said case between said fuel inlet and said diaphragm;

a movable valve member fixed to a central portion of said diaphragm and facing the stationary valve, said movable valve member having a valve aperture closed by said stationary valve when said movable valve member is seated on said stationary valve, and open when the movable valve member is unseated from the stationary valve; and
a bias applied to said movable valve member to seat the valve aperture on the stationary valve;

wherein said stationary valve comprises a stationary valve member for closing said valve aperture on said movable valve member and a stationary valve guide for aligning said stationary valve member with said movable valve member; said stationary valve guide having a generally thick disk structure with a central convex portion, ribs extending radially from the convex portion to an inner periphery of said case where outer surfaces of the ribs engage the inner periphery of the case, and concave grooves on the disk between the ribs and around the central convex portion of the disk, where the grooves in the disk face the inner periphery of the case to form fuel paths from said fuel inlet to said diaphragm.

5,778,927

Patent Not Issued For This Number

adjacent said first end and a fluid discharge opening adjacent said second end, said valve barrel defining a fluid passageway between said fluid intake opening and said fluid discharge opening, an adapter body surrounding said valve barrel, a compression and torsion spring connected between said valve barrel and said adapter body, said adapter body defining a slot having a first leg extending generally parallel to said valve barrel, said adapter body defining a second leg connected to and generally perpendicular to said first leg, said first leg being continuous with said second leg, a pin positioned in said slot and connected to said valve barrel, said pin extending radially outwardly from said valve barrel, said pin having an outward end positioned in said slot and an inward end connected to said valve barrel, said pin being movable between an operating position in said first leg and a locked position in said second leg, said compression and torsion spring urging said valve barrel and said pin to said locked position in said second leg of said slot, said fluid intake opening being closed when said pin is in said locked position, said valve defining a vent passageway extending between said first end and said second end.

5,778,929

DIRECTIONAL CONTROL VALVE ASSEMBLY HAVING A PRESSURE COMPENSATION VALVE

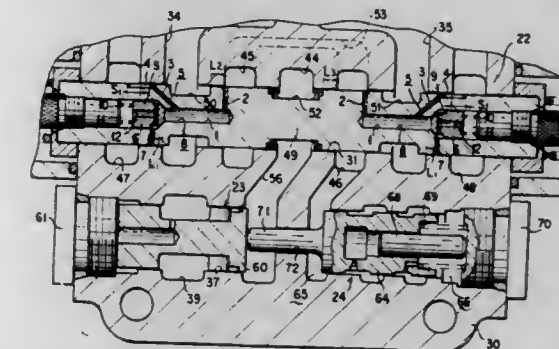
Naoki Ishizaki, and Mitsumasa Akashi, both of Tochigi-ken, Japan, assignors to Komatsu Ltd., Tokyo, Japan
PCT No. PCT/JP95/01274, § 371 Date Dec. 24, 1996, § 102(e) Date Dec. 24, 1996, PCT Pub. No. WO96/00351, PCT Pub. Date Jan. 4, 1996

PCT Filed Jun. 26, 1995, Ser. No. 750,994

Claims priority, application Japan, Jun. 27, 1994, 6-144540
Int. Cl.⁶ F15B 11/05

U.S. Cl. 137—596

8 Claims



1. A directional control valve assembly comprising:
a valve block defining a spool bore, a first load pressure detecting port, a second load pressure detecting port, a first actuator port, a second actuator port, a first tank port, and a second tank port;

a pump port formed in an inner peripheral surface of said spool bore, pump port being connected to a hydraulic pump;
a main spool slidably inserted in said spool bore;
a first pressure release passage formed in said main spool and located so as to establish fluid communication between said first load pressure detecting port and said first tank port when said main spool is in a neutral position, wherein said fluid communication between said first load pressure detecting port and said first tank port is blocked when main said spool is displaced from said neutral position to a first pressurized fluid supply position to prevent an increase in discharge pressure from said hydraulic pump;

a second pressure release passage formed in said main spool and located so as to establish fluid communication between second load pressure detecting port and said second tank port, wherein said fluid communication between said second load pressure detecting port and said second tank port is blocked when said main spool is displaced from said neutral position to a second pressurized fluid supply position to prevent an increase in discharge pressure from said hydraulic pump;

5,778,928

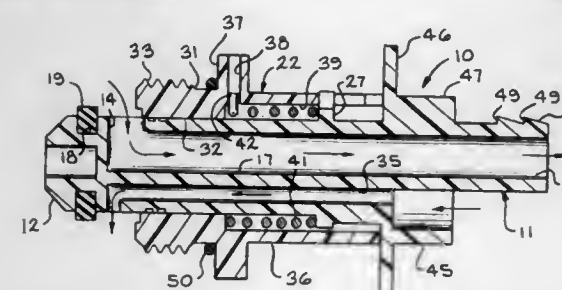
MARINE DRAIN VALVE

John D. Boland, and Gary M. Jenski, both of Jackson, Mich., assignors to Aeroquip Corporation, Maumee, Ohio
Filed Jul. 12, 1996, Ser. No. 678,974

Int. Cl.⁶ F16K 24/00

U.S. Cl. 137—588

7 Claims



1. A marine drain valve having a first and second end comprising a longitudinally extending valve barrel, a fluid intake opening

a first flow passage formed in said main spool and located so as to establish fluid communication between said first actuator port and first load pressure detecting port when said main spool is at an intermediate position between said neutral position and said first pressurized fluid supply position;

a first check valve disposed in said first flow passage to prevent reverse flow through said first flow passage;

a second flow passage formed in said main spool and located so as to establish fluid communication between said second actuator port and said second load pressure detecting port when said main spool is at an intermediate position between said neutral position and said second pressurized fluid supply position; and

a second check valve disposed in said second flow passage to prevent reverse flow through said second flow passage.

5,778,930

ADD-IN DEVICE FOR A HYDRAULIC CONTROL ARRANGEMENT

Welm Friedrichsen, Nordborg, and Thorkild Christensen, Sønderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

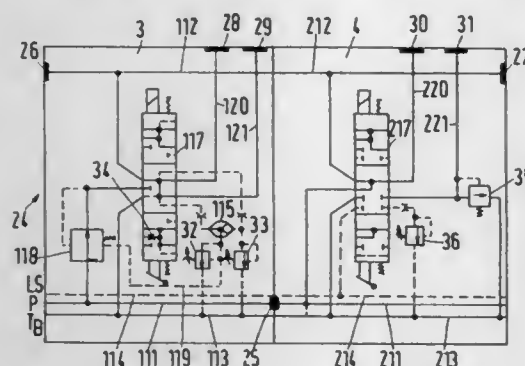
Filed Nov. 30, 1995, Ser. No. 565,229

Claims priority, application Germany, Dec. 7, 1994, 44 43 462.6

Int. Cl.⁶ F15B 13/08

U.S. Cl. 137—596.13

13 Claims



I. Add-in device for a hydraulic control arrangement which comprises a pump module connected to a pump and at least one control module supplying a load and containing a control slide valve, the control modules having pump channels, tank channels and load pressure channels fitting end to end with one another, the add-in device comprising a function unit arranged between successive ones of the modules, said function unit forming a connection between the pump channel of a preceding module and the pump channel of a following module and having at least one function slide valve for forming the connection, the function slide valve being arranged to be displaced into several positions, the function slide valve including means to initiate different functions in its positions by which fluid under pressure in the pump channel of the preceding module is arranged to be admitted to a subsequent control module in at least one of at least two different amounts and at least two different levels of pressure.

5,778,931

Patent Not Issued For This Number

5,778,932 ELECTROHYDRAULIC PROPORTIONAL PRESSURE REDUCING-RELIEVING VALVE

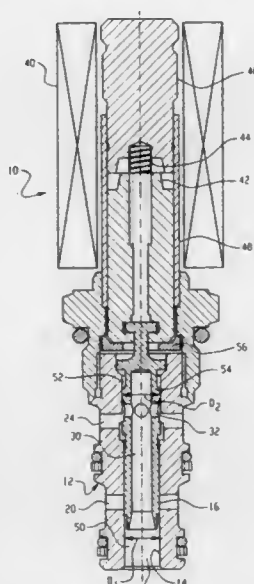
Dan Alexander, Schaumburg, Ill., assignor to Vickers, Incorporated, Maumee, Ohio

Filed Jun. 4, 1997, Ser. No. 868,647

Int. Cl.⁶ F15B 13/044

U.S. Cl. 137—625.65

3 Claims



I. A hydraulic valve, including a valve body, comprising:

- a pressure inlet port for receiving pressurized hydraulic fluid into the valve;
- a return port for establishing tank pressure in the valve;
- a regulated pressure port for receiving discharged hydraulic fluid having a predetermined pressure;
- a cavity formed in the valve body, in fluid communication with the inlet port, the return port and the regulated pressure port wherein said cavity comprises:
- a first chamber having a predetermined first diameter;
- a second chamber, having a predetermined second diameter greater than that of said first chamber;

wherein the valve further comprises:

- a solenoid-actuated spool, movably retained within said cavity, for selectively connecting the regulated pressure port to the inlet port and return port in response to an actuation force, wherein the spool comprises:
- a first section, retained within the first chamber, and having a corresponding predetermined first diameter and a first sectional area;
- a second section, retained within the second chamber, and having a corresponding predetermined second diameter and second sectional area are greater than that of the first section so as to produce a differential sectional area between the first and second sections;
- a fluid passage for establishing fluid communication between the first chamber and the second chamber, wherein the fluid passage includes a transverse opening for communicating with the return port, and wherein, upon actuation of the spool, the first and second chambers become pressurized by the inlet port, and the hydraulic fluid in the second chamber acts on the differential area between the first and second sections to produce a feedback force that opposes the actuation force acting on the spool, in order to create a desired spool modulation between the inlet port and the return port, so as to establish a desired regulated pressure at the regulated pressure port.

5,778,933

ORIFICE FITTING

Dreu E. Crane, Broken Arrow, Okla., assignor to Crane Manufacturing, Inc., Tulsa, Okla.

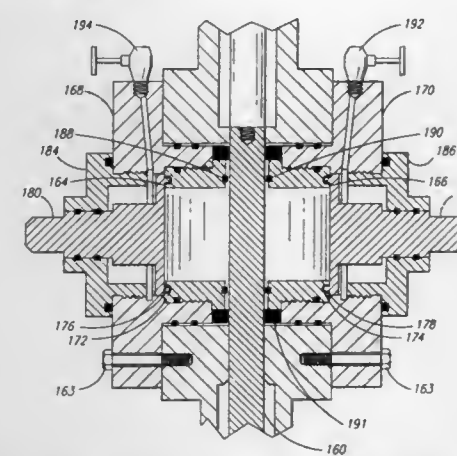
Continuation-in-part of Ser. No. 613,907, Mar. 11, 1996, Pat. No. 5,758,692, which is a continuation-in-part of Ser. No. 404,516, Mar. 15, 1995, Pat. No. 5,588,467. This application

Aug. 9, 1996, Ser. No. 694,860

Int. Cl.⁶ F15D 1/02

U.S. Cl. 138—44

12 Claims



I. A process to access a plate carrier having an orifice plate and carrier plate seals in an orifice fitting, which process comprises:

- moving said plate carrier from a pressurized orifice body lower chamber to an orifice body upper chamber;
- sealing a seal ring in said upper chamber against said plate carrier to create a fluid tight seal between said upper body chamber and said plate carrier by mating projections on a crank with recesses in said seal ring and rotating said crank;
- bleeding off pressure in said upper body chamber to atmospheric pressure;
- unscrewing an entry plug threadably connected to a retainer and removing said crank in said upper chamber to allow access to said orifice plate and to said carrier plate seals;
- replacing said crank and said entry plug;
- repressurizing said upper body chamber; and
- loosening said seal ring from said plate carrier by rotating said crank before returning said plate carrier to said lower body chamber.

5,778,934

DEBRIS CAP

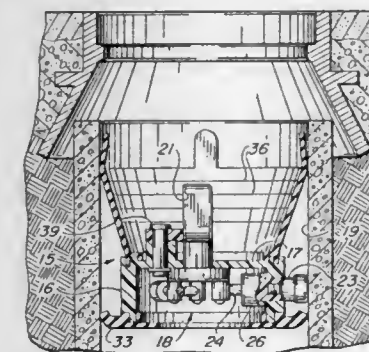
Lucky Campbell, Phoenix, Ariz., assignor to S.W. Services, Phoenix, Ariz.

Filed Oct. 29, 1996, Ser. No. 740,434

Int. Cl.⁶ F16L 55/11

U.S. Cl. 138—89

6 Claims



I. A debris cap for closing one end of a pipe, said cap comprising a hollow body member having a cylindrical outer surface

slightly less in diameter than the inner diameter of the pipe, a closure for the hollow member, a slide having inner and outer ends mounted for reciprocal radial movement in said member, the outer end of said slide being extendable beyond the outer surface of said member to engage the inner surface of the pipe, a drive member mounted on said closure for rotation with respect to the hollow member, means connecting said drive member to said slide whereby rotation of said drive member effects reciprocation of said slide, a handle for manipulating said drive member, and a resiliently deformable member affixed to the body member and extending outwardly therefrom to frictionally engage the inner surface of the pipe when the cap is first inserted into the pipe to temporarily retain the cap in position in the pipe until the handle can be turned to extend the slide to engage the inner surface of the pipe.

5,778,935

FLEXIBLE REPLACEMENT SECTION FOR IRRIGATION AND WATER PIPE

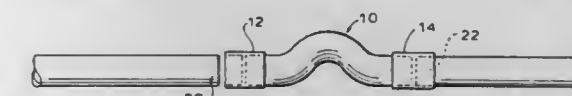
Ruben Koch, 5745 36th Pl., Vero Beach, Fla. 32966

Filed Mar. 18, 1996, Ser. No. 617,094

Int. Cl.⁶ F16L 55/18

U.S. Cl. 138—97

4 Claims



I. Apparatus for repairing an underground irrigation pipe, the apparatus comprising a replacement pipe section for connecting the ends of the irrigation pipe, said section comprising a substantially cylindrical wall with a substantially uniform diameter composed of flexible material and having first and second ends, a single part tubular coupling fixedly mounted to each of said ends, each of said couplings defining a recess adapted to receive and surround an end of the irrigation pipe.

5,778,936

FULL FLOW WINDING MACHINE

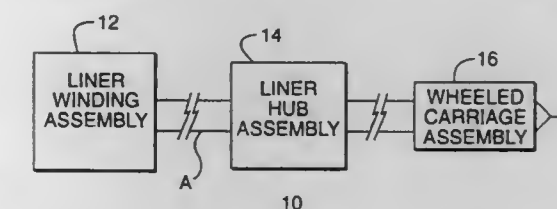
George McAlpine, Cary, N.C., assignor to Danby of North America, Cary, N.C.

Filed Jul. 30, 1996, Ser. No. 689,015

Int. Cl.⁶ F16L 55/16

U.S. Cl. 138—97

15 Claims

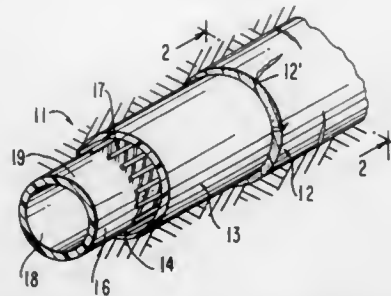


4. A system for generating a liner tube to be fed through an underground pipe while material is flowing through said pipe, comprising:

- a liner winding assembly including a feeding and driving device for feeding liner material into said underground pipe, means for forming said liner material into a liner tube, and a mounting device for fixedly mounting said feeding and driving device and said forming means in said underground pipe, said feeding and driving device including means for generating a driving force to rotatively move said liner tube into and through said underground pipe as said liner tube is being formed;
- a carriage assembly operatively connected to a front end of said liner tube being formed, said carriage assembly including means for movably supporting said carriage assembly as said liner tube moves into and through said underground pipe;

a towing device for generating a pulling force on said carriage assembly so as to release said liner tube from obstructions, said carriage assembly further including means for generating a torque on said liner tube based on said towing device pulling said carriage assembly; and

a liner hub assembly including means fixedly connected to said front end of said liner tube being formed, for operatively connecting said carriage assembly with said liner tube whereby said pulling force generated by said towing device is translated into said torque generated through said carriage assembly which is then operatively exerted on said liner tube so as to release said liner tube from obstructions.



placing into the existing conduit a uniform substantially crush-resistant spacer element and an impervious primary containment pipe which is adapted to be installed in the existing conduit and which after insertion is configured to conform to the interior configuration of the existing conduit to form a new primary containment pipe, configuring the containment pipe and spacer element to the interior configuration of the existing conduit, and fixing the containment pipe to maintain its configuration pressurized against the spacer element to form a substantially uniform space between the containment pipe and the existing conduit and provide a uniform space and communication along the length of the system.

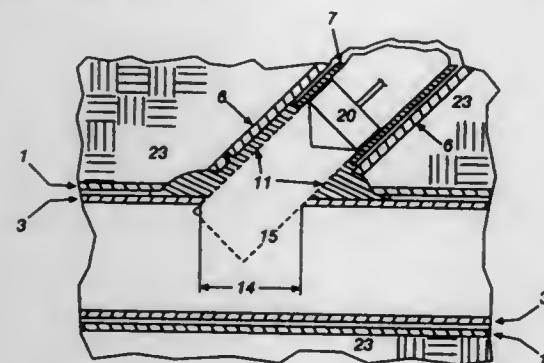
5,778,937
METHOD OF MAKING LEAKPROOF SITES OF ENTRY OF DOMESTIC CONNECTOR PIPES AND SIMILAR FEED PIPES INTO SEWERS

Franz Sündermann, Ruprechtshofen, Austria, assignor to Klug Kanal-, Leitungs-und Umweltsanierungs- G.m.b.H., Ruprechtshofen, Austria
PCT No. PCT/AT95/00040, § 371 Date Aug. 29, 1996, § 102(e) Date Aug. 29, 1996, PCT Pub. No. WO95/23940, PCT Pub. Date Sep. 8, 1995

PCT Filed Mar. 1, 1995, Ser. No. 700,474
Claims priority, application Austria, Mar. 1, 1994, 431/94
Int. Cl.⁶ F16L 55/16

U.S. Cl. 138—97

16 Claims



1. A method for producing a leak-proof site of entry for a feed pipe into a sewer, the method comprising the steps of:

- widening the site of entry by forming a recess in the vicinity of the site of entry;
- providing a barrier towards the interior of the sewer at the site of entry;
- providing a barrier within the feed pipe at a predetermined distance from the site of entry;
- introducing an expanding solidifying sealing mass between the barrier towards the interior of the sewer and the barrier within the feed pipe; and
- clearing a path of flow through the feed pipe into the sewer.

5,778,938
METHOD OF INSTALLATION OF DUAL CONTAINMENT PIPE REHABILITATION SYSTEM

Douglas K. Chick, Elstree, England, and F. Thomas Driver, Memphis, Tenn., assignors to Insituform (Netherlands) B.V., Netherlands

Division of Ser. No. 183,146, Jan. 18, 1994, Pat. No. 5,546,992.
This application Feb. 9, 1996, Ser. No. 598,907

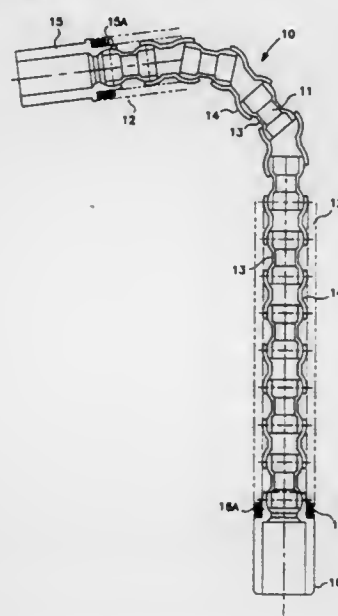
Int. Cl.⁶ F16L 55/16

U.S. Cl. 138—98

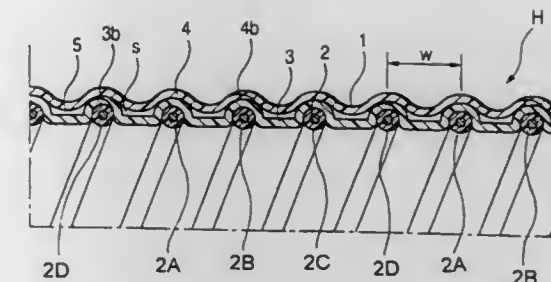
16 Claims

1. A method of installation of a dual containment pipe system into an existing conduits to provide communication along the length of the system, comprising

1. A flexible self-supporting plastic vacuum cleaner core comprising: a plurality of first and second members resiliently inter-engaged alternatively end to end along a length of the core to form universally rotatable fluid tight joints between adjacent members, the first members each including a uniform cross-sectioned central cylindrical tubular member having first and second ends, each of the first and second ends being integrally formed with a first connection member having a part spherical male outer surface, the central cylindrical tubular member having a smaller outer diameter than the outer diameter of the part spherical outer member, and



the second members each including a uniform cross-sectioned central cylindrical tubular member having a constant wall thickness and first and second ends, each of the first and second ends being integrally formed with a second connection member having a part spherical female inner surface, the central cylindrical tubular member having a smaller outer diameter than the outer diameter of the part spherical outer member, the first and second members being snap-fit together with the first connection members engaged inside respective second connection members to form the fluid tight joints.



reinforcing threads disposed between said inner and outer layers of said pipe wall.

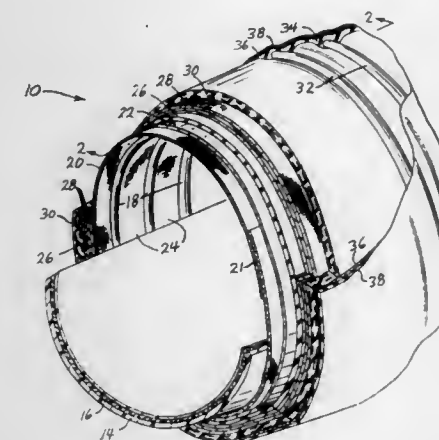
5,778,940
COMBINATION RUBBER/COMPOSITE HOSE
Peter N. Tucker, Greensboro, and George D. Ohm, Salisbury, both of N.C., assignors to HBD Industries, Inc., Bell Fontaine, Ohio

Filed Jun. 11, 1996, Ser. No. 661,654

Int. Cl.⁶ F16L 11/15

U.S. Cl. 138—127

9 Claims



1. A flexible, high strength fluid conveying hose comprising an inner composite hose section and an outer reinforced rubber section including a rubber layer surrounding said inner section, said inner section including an inner wire helix spirally wound along the length of the hose, a first fabric extending longitudinally along said wire helix and having a width sufficient to substantially encircle said wire helix, a strip of material spirally wound around said first fabric between said wire helix under tension and having a width sufficient to form said first fabric into a substantially flat surface between said helix and provide therewith a substantially smooth surfaced bore through which fluid passes in contact with said first fabric and said helix.

5,778,941
CLEANER HOSE
Tomio Inada, Osaka, Japan, assignor to Totaku Industries, Inc., Osaka, Japan

Filed Jul. 3, 1996, Ser. No. 675,075

Claims priority, application Japan, Jul. 6, 1995, 7-195918

Int. Cl.⁶ F16L 11/11

U.S. Cl. 138—134

14 Claims

4. A cleaner hose comprising: a synthetic resin pipe wall; four reinforcing hardened steel wires disposed spirally at predetermined intervals, in said synthetic resin pipe wall, wherein said pipe wall includes inner and outer layers comprising a lower tape and an upper tape, respectively, wherein said inner and outer layers are spirally wound and displaced by a half pitch from each other; and

5,778,942
VEHICLE INCLUDING FREEZE STRESS RESISTANT FLUID CONDUCTING APPARATUSES

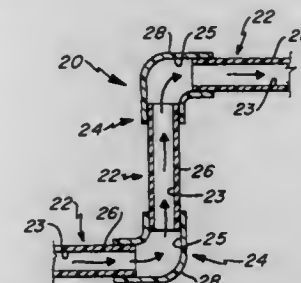
David E. Jewell, Golden, Colo., assignor to Stanley Aviation Corporation, Aurora, Colo.

Continuation-in-part of Ser. No. 673,568, Jul. 1, 1996. This application Mar. 31, 1997, Ser. No. 829,364

Int. Cl.⁶ F16L 9/127

U.S. Cl. 138—178

6 Claims



1. An improved aircraft having a fuselage and at least one engine mounted to said aircraft, the improvement comprising: a fluid conducting apparatus composed of a single homogeneous fluorinated polymer material attached to said aircraft, said apparatus having an outer surface, an inner surface, and a hollow interior defined by said inner surface, said material having a modulus of elasticity, yield strength, and yield stress wherein said modulus of elasticity is less than 20.5 times said yield strength when said modulus is measured at the yield stress whereby said fluid conducting apparatus can withstand multiple freeze cycles without failure.

5,778,943
CONTROLLABLE OUTPUT BRAKE, THREAD FEED DEVICE AS WELL AS PROJECTILE OR GRIPPER WEAVING MACHINE

Lars Helge Gottfrid Tholander, Ulricehamn, Sweden, assignor to IRO AB, Ulricehamn, Sweden

PCT No. PCT/EP95/00284, § 371 Date Jul. 25, 1996, § 102(e) Date Jul. 25, 1996, PCT Pub. No. WO95/20700, PCT Pub. Date Aug. 3, 1995

PCT Filed Jan. 26, 1995, Ser. No. 682,752

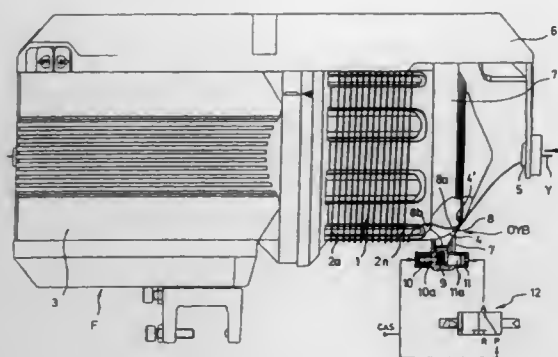
Claims priority, application Sweden, Jan. 26, 1994, 9400248; Jul. 15, 1994, 9400248

Int. Cl.⁶ D03D 51/00

U.S. Cl. 139—452

15 Claims

1. A controllable output brake in a thread feed device for projectile or gripper weaving machines, comprising a stationary storage drum which has thread supplied thereto and stored thereon in windings and from which said thread is drawn off discontinu-



ously and overhead into a shed, said storage drum having a rotationally symmetric brake surface, said output brake including an elastically deformable thread brake element, which said thread brake element is adapted to be pressed against said brake surface and is provided with an outer supporting ring, said supporting ring being closed in the circumferential direction and arranged in a holding member encompassing the storage drum in a contact-free manner, a drive control unit and a displacement drive which is arranged in the holding member and is adapted to be controlled by means of said drive control unit when the thread feed device and the weaving machine are in operation, said displacement drive acting on the supporting ring and being used for varying the force with which the thread brake element is pressed against the brake surface, comprising the improvement wherein the supporting ring of the thread brake element is adapted to be moved in said holding member in the axial direction of the storage drum with a predetermined amount of axial play relative to the brake surface in two opposite directions, said displacement drive comprising at least one push drive for each of said directions of movement of the supporting ring which said push drive is connected to the holding member and operates exclusively parallel to the axis of said storage drum, said push drive acting directly on the supporting ring and being adapted to be used for positioning said supporting ring on a holding-member contact area located opposite thereto in the respective direction of movement.

5,778,944

APPARATUS FOR APPLYING TIEING DEVICES TO CROSSING REINFORCEMENT RODS FOR CONNECTING THE SAME

Peter Hagens, Støvring, Denmark, assignor to Hagens Fiedre K/S, Støvring, Denmark

Division of Ser. No. 29,595, Mar. 11, 1993, Pat. No. 5,542,228.

This application Jun. 28, 1996, Ser. No. 671,843

Claims priority, application Denmark, Mar. 11, 1992, 0326/92; Sep. 14, 1992, 1128/92

Int. Cl.⁶ B21F 33/00

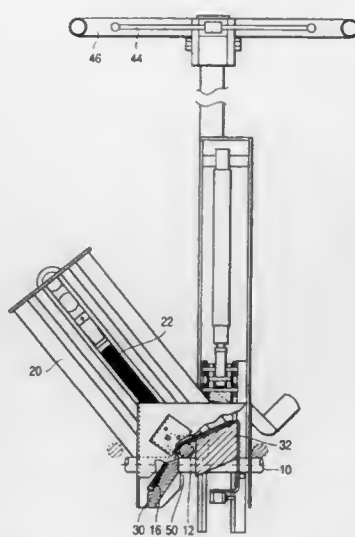
U.S. Cl. 140—53

7 Claims

1. An apparatus for mounting tying spring wire members over crossings of intercrossing reinforcing rods in a common rod plane to connect said reinforcing rods together, said tying spring wire members being shaped as a piece of wire having an intermediate portion and respective, opposed first and second hook shaped end portions bent laterally outwardly from said intermediate portion to respective opposite sides thereof, said apparatus comprising:

a magazine for holding a row of said tying spring wire members so as to expose a tying member thereof to a rod crossing having first and second rods crossing one another in a common rod plane, at which the apparatus is placed from one side of said common rod plane for cooperation with said first rod which is close to the apparatus and said second rod crossing the first rod at the opposite side thereof, said rods having proximate sides facing the apparatus and distal sides facing away therefrom;

a rod engaging base portion for engaging said intercrossing rods to define an apparatus position in which said exposed tying spring wire member assumes a position with said intermediate



portion thereof crossing over said first rod and with said opposed hook shaped ends located in the vicinity of said second rod;

positioning means for positioning said exposed tying spring wire member in a preparatory position in which a first of said hook shaped ends is located laterally outside the distal side of said second rod and the second hook shaped end is located at the proximate side of this rod when said apparatus is located in said apparatus position;

first plunger means for displacing said exposed tying spring wire member from said preparatory position into a position in which said first hook shaped end is located outside the distal side of the rod without lateral spacing therefrom and in which the second hook shaped end is located at the proximate side of the second rod laterally spaced therefrom; and

second plunger means for forcing the second hook shaped end from the proximate to the distal side of the second rod into a release position from which the second hook shaped end snaps into holding engagement with said distal side for connecting said intercrossing reinforcing rods together.

5,778,945

AUTOMATIC WIRE TWISTER

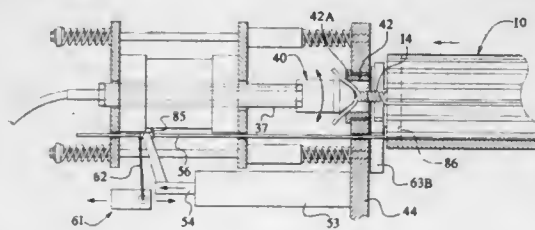
Richard J. Crowther, Dundas, Canada, assignor to Tempel Steel Company, Inc., Skokie, Ill.

Filed Mar. 14, 1997, Ser. No. 818,001

Int. Cl.⁶ B21F 15/04

U.S. Cl. 140—115

34 Claims



1. An automatic lamination stack wire twister system, comprising:

a stack of lamination parts to be bundled and a retaining wire for bundling the stack having two ends projecting from an end of the stack which are to be twisted;

a holder for holding and positioning the parts stack;

a rotatable collar adjacent the holder having an aperture through which the two ends of the wire project;

a rotating and reciprocating substantially conically-shaped head adjacent the rotatable collar such that the rotatable collar lies between the holder and the conically-shaped head for trapping the wire ends between an inner edge of the rotatable collar

facing the conically-shaped head and the conically-shaped head when the conically-shaped head is thrust into position against said inner edge of the collar, said inner edge lying at a side of the collar which is opposite a side of the collar facing the holder;

a unit for positioning the conically-shaped head against the inner edge of the collar; and

a rotating member for rotating the conically-shaped head to twist the two ends of the wire.

5,778,946

APPARATUS FOR PLACING TIES, FOR EXAMPLE, FOR TYING VINES

Roger Pellenc, Pertuis; Jose Montoya, Villelaure, and Philippe Gilbert, Pertuis, all of France, assignors to Pellenc (Societe Anonyme), Pertuis, France

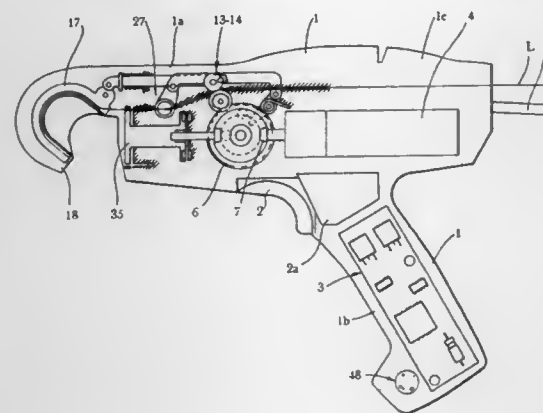
Filed Sep. 11, 1996, Ser. No. 712,422

Claims priority, application France, Sep. 12, 1995, 95/10929

Int. Cl.⁶ B21F 15/04

U.S. Cl. 140—119

38 Claims



1. An apparatus for placing ties comprising:

a feeding system for feeding an initial portion of a filiform band issuing from a supply source from an upstream position to a downstream position;

a rotatable twisting device disposed at a front part of the apparatus, said twisting device comprising a first opening and a second opening for engaging two parts of the initial portion of the band;

a cutting system disposed upstream from one of said first and second openings of the twisting device;

a hinged guide equipped with a guide groove disposed at a front end of the apparatus,

said hinged guide having an outlet, said outlet of said hinged guide being mounted for movement into an activated position opposite said second opening of said twisting device; and a driving system comprising a single electric motor capable of movement in two directions of rotation;

a transmission system comprising a first clutch device operatively connecting said driving system to said feeding system, said cutting system and said hinged guide and a second clutch device operatively connecting said driving system to said twisting device, the first and second clutch devices capable of being alternately active or inactive such that;

when said first clutch device is active, the first clutch device ensures communication of the movement of said single motor to said feeding system, to said hinged guide, and to said cutting system, while the second clutch device does not transmit any motor movement to said twisting device; for advancing the band by means of said feeding system, for allowing movement of said hinged guide into the activated position opposite the second opening of said twisting device, and for cutting the band by means of said cutting system to create a tie, while said twisting device is stopped; and

5,778,947

BENT LEAD REPAIR TOOL FOR ELECTRONIC COMPONENTS

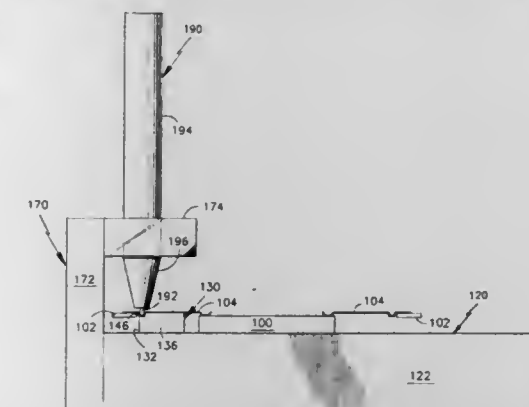
Mark F. Lewis, Colorado Springs, Colo., assignor to United Technologies Corporation, Windsor Locks, Conn.

Filed May 9, 1997, Ser. No. 854,263

Int. Cl.⁶ B21F 1/02

U.S. Cl. 140—147

9 Claims



1. An apparatus for repairing a bent lead of a component having a plurality of leads between a body and a tiebar of the component, comprising:

a repair stage means for positioning the bent lead for repair including an upper surface said repair stage comprising a plurality of combs projecting from said upper surface, wherein said plurality of combs define a recess there between for positioning the bent lead for repair;

a receiving means for receiving a portion of the bent lead; and a forcing means for forcing said portion of the bent lead into said receiving means, wherein as the bent lead is forced into said receiving means a remaining portion of the bent lead is pulled into said recess.

5,778,948

METHOD FOR INSERTING A FLUID IN A BEARING DEVICE

Masato Gomyo, and Kazuaki Oguchi, both of Nagano, Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Nagano-ken, Japan

Filed Jun. 28, 1995, Ser. No. 496,139

Claims priority, application Japan, Jun. 29, 1994, 6-170112

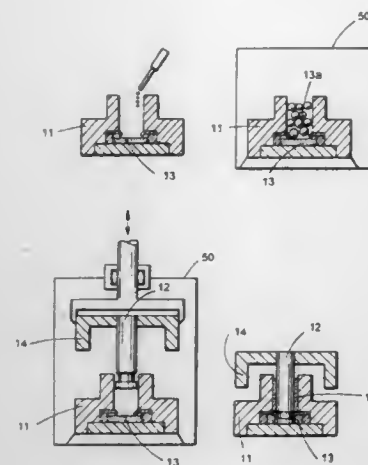
Int. Cl.⁶ B65B 31/00

U.S. Cl. 141—7

9 Claims

1. A method for inserting a bearing fluid in a bearing device where said bearing fluid is inserted in a bearing space formed between a fixed member and a rotating member such that said rotating member is rotatably supported by said bearing fluid, the method selected from a group of methods consisting of:

A. (A1) inserting and holding said bearing fluid in a storage space in one of said fixed member and said rotating member in said relatively high pressure environment; (A2) placing one of said fixed member and said rotating member with said bearing fluid from step (A1) in said relatively low pressure environment; (A3) assembling said fixed member with said rotating member in said relatively low pressure environment to disperse said bearing fluid in said bearing space formed



- between said fixed member and said rotating member; and (A4) placing said fixed member and said rotating member from step (A3) in said relatively high pressure environment; B. (B1) inserting said bearing fluid in said storage space in one of said fixed member and said rotating member in said relatively high pressure environment; (B2) holding said bearing fluid in said storage space of one of said fixed member and said rotating member from step (B1) with a magnetic body; (B3) placing one of said fixed member and said rotating member with said bearing fluid from step (B2) in said relatively low pressure environment; (B4) assembling said fixed member with said rotating member in said relatively low pressure environment to disperse said magnetic bearing fluid in said bearing space formed between said fixed member and said rotating member; and (B5) placing said fixed member and said rotating member from step (B4) in said relatively high pressure environment; C. (C1) inserting and holding said bearing fluid in said storage space in one of said fixed member and said rotating member in said relatively low pressure environment; (C2) assembling said fixed member with said rotating member in said relatively low pressure environment to disperse said bearing fluid in said bearing space formed between said fixed member and said rotating member; and (C3) placing said fixed member and said rotating member from step (C2) in said relatively high pressure environment; and D. (D1) inserting said bearing fluid in said storage space in one of said fixed member and said rotating member in said relatively low pressure environment; (D2) holding said bearing fluid in said storage space of one of said fixed member and said rotating member from step (D1) with said magnetic body; (D3) assembling said fixed member with said rotating member in said relatively low pressure environment to disperse said bearing fluid in said bearing space formed between said fixed member and said rotating member; and (D4) placing said fixed member and said rotating member from step (D3) in said relatively high pressure environment.

5,778,949

ADJUSTABLE ROUTER

Theodore K. Draves, 10221 Bridge Lk Rd., Clarkston, Mich. 48348

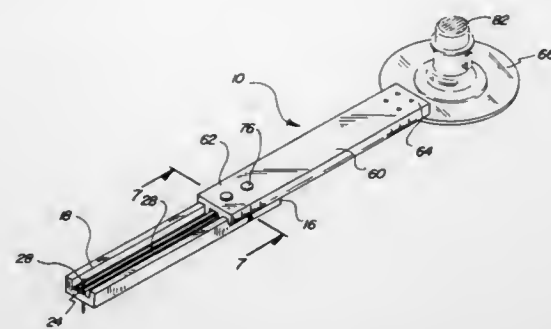
Filed Aug. 17, 1995, Ser. No. 516,380

Int. Cl.⁶ B27C 5/10

U.S. Cl. 144—48.6

1 Claim

1. An adjustable router for enabling an individual to cut perfect circles or arcs in pieces of wood comprising, in combination: an elongated lower track having a first end and a second end, the elongated lower track having an upper surface, a lower surface, and two side surfaces, the first end having an aperture formed therethrough, the aperture allowing the elongated lower track to be pivotally secured to a board by a nail, the



upper surface comprising a track portion, the track portion having a securement portion extending along a middle portion thereof, one of the two side surfaces having an indicating arrow thereon;

an elongated radius finder having a first end and a second end, the second end having pencil notch therein, the second end extending from the elongated radius finder in a triangular configuration, the elongated radius finder having an upper surface, a lower surface, and two side surfaces, the lower surface comprising a track portion adapted for removable slidable coupling with the track portion of the elongated lower track, the elongated radius finder having two locking knobs, the two locking knobs secured inwardly of the first end of the radius finder, the two locking knobs having a first portion and a second portion, the first portion extending outwardly of the upper surface of the radius finder, the second portion extending outwardly of the track portion of the lower surface of the radius finder for adjustable engagement with the securement portion of the elongated lower track, one of the two side surfaces having a ruler thereon aligning with the indicating arrow on the elongated lower track;

an elongated router track having a first end and a second end, the second end having a circular base secured thereto, the circular base having an aperture formed therethrough, the elongated router track having an upper surface, a lower surface, and two side surfaces, the lower surface comprising a track portion adapted for removable slidable coupling with the track portion of the elongated lower track, the elongated router track having two locking knobs, the two locking knobs secured inwardly of the first end of the radius finder, the two locking knobs having a first portion and a second portion, the first portion extending outwardly of the upper surface of the router track, the second portion extending outwardly of the track portion of the lower surface of the router track for adjustable engagement with the securement portion of the elongated lower track, one of the two side surfaces having a ruler thereon aligning with the indicating arrow on the elongated lower track;

a router secured to the circular base of the elongated router track.

5,778,950

PLANER ATTACHMENT

Ronald A. Wrightman, Box 25, 1 Kevin Crescent, Bracebridge, Ontario, Canada, P1L 1A7

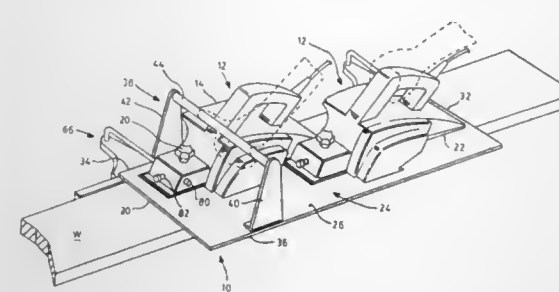
Filed Jan. 31, 1997, Ser. No. 792,654

Int. Cl.⁶ B23C 1/20; B27C 5/10

U.S. Cl. 144—48.6

7 Claims

1. A support to mount a plurality of portable machine tools in a ganged array for conjoint operation on a workpiece, said support comprising a generally planar mounting member having an upper surface to receive said tools and a lower surface engageable with a workpiece, a plurality of apertures in said mounting member, one associated with each of said tools to permit access of a tool bit



associated with a tool to said workpiece, and a retainer to secure releasably said tools to said member.

5,778,951

MOLDING CUTTING DEVICE

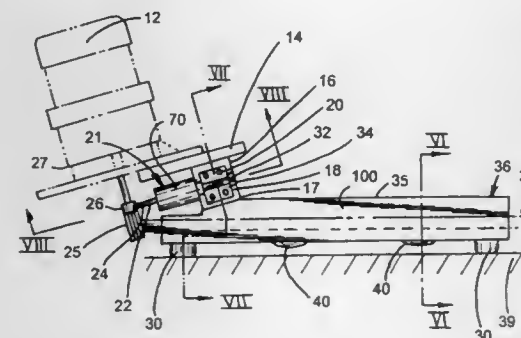
John A. Huitsing, 7388 Tory, Hudsonville, Mich. 49426

Filed Apr. 21, 1997, Ser. No. 840,979

Int. Cl.⁶ B27C 5/10; B27M 3/00

U.S. Cl. 144—144.1

25 Claims



1. A device for cutting trim moldings comprising: a base defining an adjustable width channel for receiving and holding molding; a lower bar mounted to said base and extending across said channel; an upper bar having one end pivotally coupled to said lower bar; a router plate mounted to said upper bar for supporting a router; and an adjustable template containing a series of pins movable to conform to the shape of an object pressed thereagainst, said template selectively clamped between said upper and lower bars to define a guide for a router.

5,778,952

ADJUSTABLE RUN-ON STRIP

Georg Aigner, Thannenmais, D-94419 Reisbach, Germany

Filed May 5, 1997, Ser. No. 851,251

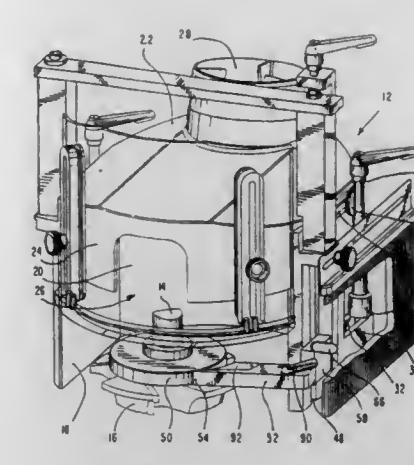
Claims priority, application Germany, May 4, 1996, 196 17 888.6; Feb. 14, 1997, 297 02 520.1

Int. Cl.⁶ B27C 5/04; F16B 2/04

U.S. Cl. 144—253.2

9 Claims

1. A device for ensuring a smooth movement of a workpiece during the operation of a milling machine, comprising a clamping body including a sliding block having a boring therein, a first coil spring disposed within said boring, a sliding bar having one end portion slidably disposed within said first coil spring in said



boring, and a run-on strip including a beak-like friction braking element adjustably engaged in the other end portion of said sliding bar.

5,778,953

METHOD AND APPARATUS FOR CARRYING AND SUPPORTING A PORTABLE BENCH TOP SAW

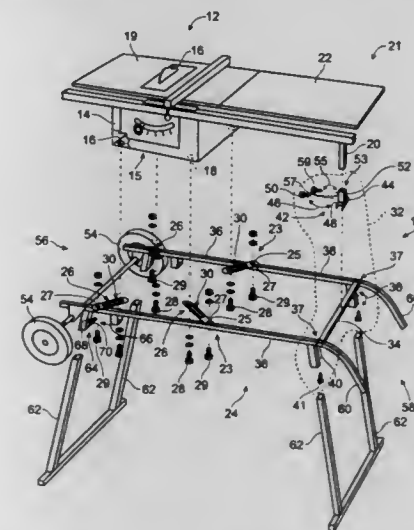
Lawrence D. Braddock, Portland, Oreg., assignor to Trojan Manufacturing, Inc., Portland, Oreg.

Filed Jul. 22, 1996, Ser. No. 687,106

Int. Cl.⁶ B25H 1/00

U.S. Cl. 144—286.1

10 Claims



1. An apparatus for carrying and supporting a portable bench top machining tool, the bench top machining tool having a pre-positioned plurality of first means for receiving respective fasteners at a base portion thereof, the apparatus comprising:

a relatively rigid carrying frame for supporting a bench top machining tool, said carrying frame including two substantially parallel rails; at least one wheel connected to a first end of said carrying frame for transporting the apparatus in a substantially up-right carrying position; and a plurality of adjustable connection members disposed on each of said rails; each connection member being pivotally connected to its respective rail and including second means for receiving the fasteners, said connection members being adapted to receive the base portion of the bench top machining tool and said second means of said connection members being separately positionally adjustable both longitudinally and laterally with respect to one another by pivoting said

connection members to permit said second means to align with the respective pre-positioned first means so as to accommodate the non-uniform shapes of different models of the bench top machining tool and thereby adjust the balance of the bench top machining tool with respect to said wheel so that the weight of the bench top machining tool is substantially evenly distributed over said wheel for ease of use.

5,778,954

WALLET/POCKET KNIFE HOLDER

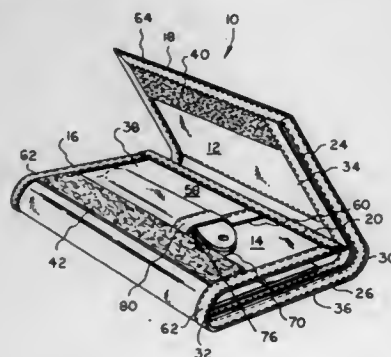
John Sullivan, Bradford, Pa., and Edward L. Jessup, Jr., Knoxville, Tenn., assignors to W. R. Case & Sons Cutlery Company, Bradford, Pa.

Filed Sep. 9, 1996, Ser. No. 795,594

Int. Cl.⁶ A45C 1/06

U.S. Cl. 150—143

15 Claims



1. In combination, a wallet including a plurality of sections, means for folding said wallet so that said sections overlaid each other, and pocket means on at least one of said sections, and a knife removably receivable in said pocket means, said pocket means being sized for frictionally receiving said knife.

5,778,955

PLEATED CURTAIN FIXING DEVICE

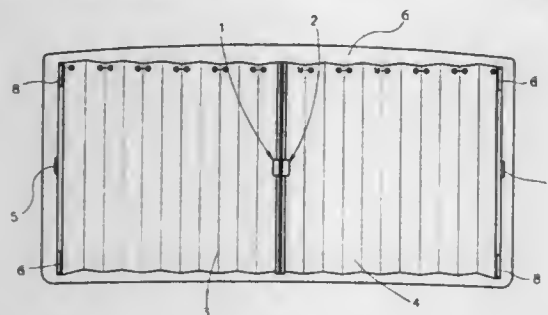
Ing-Wen Chen, No. 23, Lane 207, Kao-Feng Road, Hsin-Chu, Taiwan

Filed Jun. 18, 1997, Ser. No. 878,156

Int. Cl.⁶ E06B 9/06

U.S. Cl. 160—84.06

4 Claims



1. A fixing device for a pleated curtain, consisting of a left pleated curtain and a right pleated curtain, both of which have a fixed end and a moving end and two sides that define a front side and a back side, said pleated curtain having an unfolded state and a folded state, said fixing device comprising:

a left shackle, attached to said moving end of said left pleated curtain and roughly shaped like the letter L, having a main part and a front part, which further has a protrusion on said front side and upper and lower edges with two incisions opposite to each other, such that a T-shaped catch is formed, as seen from said front side;

a right shackle, attached to said moving end of said right pleated curtain and roughly shaped like the letter L, having a main part and a front part with a protrusion on said front side, further having an upper wing plate and a lower wing plate, which are opposite to each other and embrace a T-shaped opening, as seen from said front side, into which said T-shaped catch of said left shackle fits; and

two fixing plates, each of said fixing plates roughly shaped like the letter U, having a front leg and a rear leg, which enclose a gap, into which said front part of said left shackle or said right shackle fits, said front leg having on said back side an incision, into which said protrusion of said left shackle or said right shackle fits;

wherein said T-shaped catch of said left shackle is inserted in said T-shaped opening of said right shackle, when said curtain is in said unfolded state, and said front parts of said left and right shackles are respectively inserted in said gaps of said fixing plates, when said curtain is in said folded state.

5,778,956

VENETIAN BLINDS WITH LATERAL TILT

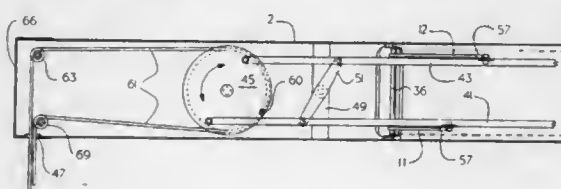
Ren Judkins, 46 Newgate Rd., Pittsburgh, Pa. 15202

Filed Feb. 18, 1997, Ser. No. 802,310

Int. Cl.⁶ E06B 9/26

U.S. Cl. 160—176.1 R

7 Claims



1. A venetian type blind comprising:

- a. a bottomrail;
- b. a headrail positioned above the bottomrail;
- c. a plurality of ladders each having a front rail, and a rear rail the ladders extending between the headrail and the bottomrail, and
- d. a tilt mechanism positioned within the headrail the tilt mechanism comprised of:
 - i. a plurality of bars each bar pivotably attached to the housing for movement about an axis that is generally parallel to the ladder rails of one ladder each bar having a front end and an opposite end;
 - ii. a front strap connected to the front end of all the bars wherein each of the front rails of the ladders are connected to one of the front strap and the front end of one bar;
 - iii. a rear strap connected to the rear end of all bars wherein each of the rear rails of the ladder are connected to one of the rear strap and rear end of one bar; and
 - iv. a tilt driver connected to one of the bars such that a force acting on the tilt driver will cause the bars to pivot in one direction and a second force acting on the tilt driver will cause the bars to pivot in an opposite direction such that when the blind is tilted from an open position to a closed position the straps will move together.

5,778,957

PROTECTIVE COVER FOR A MINIBLIND CORD

Christine L. Torgersen, 20401 Soledad Cyn Rd. #257, Canyon Country, Calif. 91351

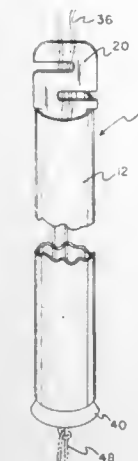
Filed Mar. 20, 1997, Ser. No. 821,049

Int. Cl.⁶ E06B 9/30

U.S. Cl. 160—178.1 R

4 Claims

1. A protective cover for a miniblind cord for preventing infants and pets from becoming entangled in the cord comprising, in combination:



an elongated hollow tube having an open upper end and an open lower end;

a planar S-shaped cord hook disposed within the open upper end of the elongated hollow tube, the S-shaped cord hook being defined by an upper member having a top edge, a bottom edge and opposing side edges, the upper member having a width greater than a diameter of the hollow tube, an upper slot extends inwardly of one of the opposing side edges disposed below the top edge, a lower slot extends inwardly of one of the opposing side edges disposed from the upper slot, the lower slot being disposed above the bottom edge, the bottom edge having an elongated planar member extending downwardly therefrom, the elongated planar member having a width less than the diameter of the hollow tube, the elongated planar member received within the open upper end of the hollow tube with the bottom edge abutting the open upper end of the hollow tube, the upper slot receiving a miniblind cord threadably therethrough with the cord extending downwardly through the lower slot and passed through the open upper end of the hollow tube and extending outwardly of the open lower end of the hollow tube; and

an end piece having a frustoconical configuration, the end piece having an upper end having a reduced diameter and a lower end having an enlarged diameter, the diameter of the hollow tube being greater than the upper end of the end piece and less than the lower end of the end piece, the end piece having a vertically oriented aperture directed therethrough, the aperture dimensioned for receiving the miniblind cord therethrough whereupon the cord is tied in a knot.

5,778,958

WINDOW SHUTTER AND METHOD THEREFOR

Richard A. Stebner, 757 West 37 St., Yuma, Ariz. 85365

Continuation of Ser. No. 546,907, Oct. 23, 1995, abandoned.

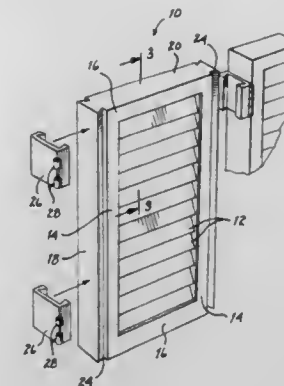
This application Mar. 13, 1997, Ser. No. 816,560

Int. Cl.⁶ E05D 15/00

U.S. Cl. 160—210

8 Claims

1. An insulating window panel comprising, in combination: a one-piece, substantially solid molded window panel comprising a plastic insulating material; said one-piece, substantially solid molded window panel comprising: an interior face comprising a plurality of simulated wooden slats in a closed position; a first border region circumscribing said interior face; an exterior face comprising a plurality of simulated wooden slats in a closed position; an area between an inner surface of said interior face and an outer surface of said exterior face is substantially filled with an insulating material; a second border region circumscribing said exterior face; and



5,778,959

PORTABLE DISPLAY SCREEN

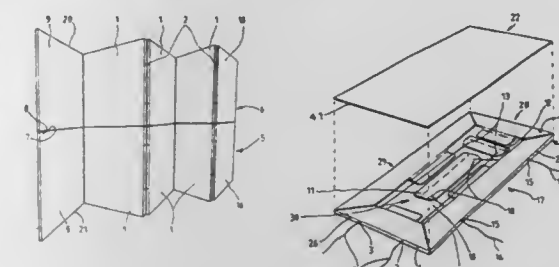
Keith Guetschow, 1837 Blackhawk Blvd., South Beloit, Ill. 61080

Filed Aug. 23, 1996, Ser. No. 701,860

Int. Cl.⁶ E06B 3/48

U.S. Cl. 160—231.2

17 Claims



1. A screen comprising at least two panels inter-connected in edge-to-edge array by elastic thread means, each panel comprising a cover element and a backing frame wherein the backing frame is formed from a cut and scored cardboard blank, the blank being adapted to fold to form a slim rectilinear prism having two major faces and three or more minor faces, said minor faces abutting each other in the screen assembly and each being provided with a number of corresponding apertures through which said elastic thread means extends, one of said major faces forming a support for the cover element, the other major face forming the back face of a panel, and wherein the backing frame is overlaid with the cover element to define a laminar panel, and anchorage means in the form of an anchorage flap adhered to an inner face of marginal panels of the screen to secure said thread means, said anchorage means being positioned so that the line of action of each thread means extends substantially unidirectionally from one anchorage means to another and the thread means extend without abrupt direction change intermediate the anchorage means.

1. A golf club head molding apparatus comprising:

an upper die having an upper die cavity of predetermined shape, a recess in said upper die cavity at the bottom, a screw hole and an air hole through said recess, said air hole being connected to a suction pump;

a first core member fitted into the recess of said upper die, having a screw hole at a bottom side thereof connected to the screw hole of said upper die by a screw, a through hole aligned with the air hole of said upper die, and a grooved face;

a titanium face plate for golf club head attached to said first core member, said titanium face plate having a flange along each side, a notch in the middle of the flange at each side, a bevel cut at each end of the flange at each side, a striped face forced into engagement with the grooved face of said first core member, and a back side opposing to said striped face;

a bottom die having a bottom die cavity, a screw hole through said bottom die cavity, and a molten alloy filling hole at the periphery in communication with said bottom die cavity; and
a second core member mounted in said bottom die cavity, having a projecting block raised from a top side thereof corresponding to the sweat spot of the golf club head to be made and facing said titanium face plate, and a screw hole at a bottom side thereof connected to the screw hole of said bottom die by a screw.

5,778,967

SIDE DAM FOR A CASTER HAVING IMPROVED CONTACT WITH SOLIDIFYING METAL

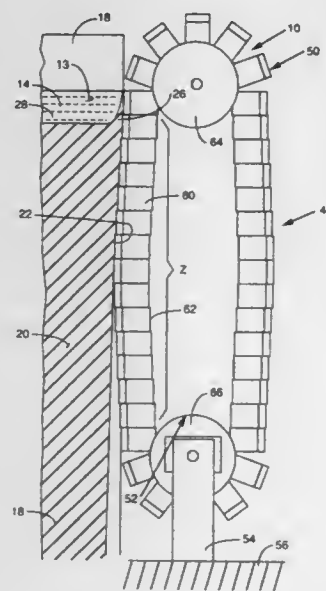
Wilhelm F. Lauener, Gerlafingen, Switzerland, assignor to Larex A.G., Solothurn, Switzerland

Filed Jan. 11, 1996, Ser. No. 567,181

Int. Cl.⁶ B22D 11/06

U.S. Cl. 164—481

19 Claims



9. A method of casting molten metal into a metal product comprising:

providing a caster defining a mold, said caster including at least one side dam having (i) a frame, (ii) orbiting chain mounted to said frame, (iii) a plurality of elements connected to said chain, and (iv) a block secured to each element;

introducing said molten metal into said mold;

effecting solidification of said molten metal into said metal product in said mold; and

urging said blocks in said side dam to bow toward an outer edge of said molten metal as it is solidifying in said mold.

5,778,968

METHOD FOR HEATING OR COOLING WAFERS

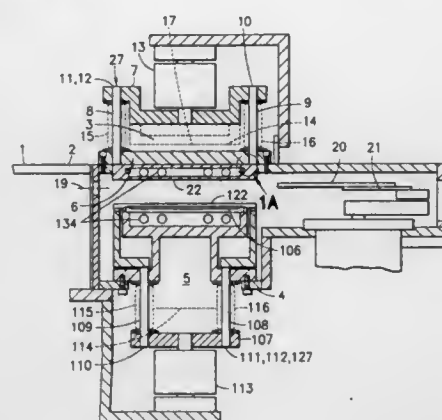
Ruth Ann Hendrickson, Lincoln, Mass.; Christopher Hofmeister, Hampstead, N.H., and Richard S. Muka, Topsfield, Mass., assignors to Brooks Automation Inc., Chelmsford, Mass.

Division of Ser. No. 169,432, Dec. 17, 1993, abandoned. This application May 28, 1996, Ser. No. 654,334

Int. Cl.⁶ F25B 29/00

U.S. Cl. 165—80.1

8 Claims



1. A method of stabilizing the temperature of semiconductor wafers to a selected target temperature comprising the steps of:

(a) maintaining at a selected target temperature the temperature of first and second high thermal inertia plates each having a flat surface for reception thereon of a semiconductor wafer;

(b) positioning the first thermal plate at an initial wafer receiving position;

(c) placing a first semiconductor wafer on the flat reception surface of the first thermal plate when the first thermal plate is positioned at the initial wafer receiving position;

(d) moving the first thermal plate with the first semiconductor wafer thereon from the initial wafer receiving position to a final thermal conditioning position whereat the first semiconductor wafer is located inside a sealable first chamber associated with thermal conditioning apparatus;

(e) introducing an inert pressurized gas into the first chamber for pressing the first semiconductor wafer uniformly across its surface against the flat reception surface of the first thermal plate for a period of time until the temperature of the first semiconductor wafer is substantially the same as that of the first thermal plate;

(f) upon the conclusion of step (d), positioning the second thermal plate at an initial wafer receiving position;

(g) placing a second semiconductor wafer on the flat reception surface of the second thermal plate when the second thermal plate is positioned at the initial wafer receiving position;

(h) moving the second thermal plate with the second semiconductor wafer thereon from the initial wafer receiving position to a final thermal conditioning position whereat the second semiconductor wafer is located inside a sealable second chamber associated with the thermal conditioning apparatus; and

(i) introducing an inert pressurized gas into the second chamber for pressing the second semiconductor wafer uniformly across its surface against the flat reception surface of the second thermal plate for a period of time until the temperature of the second semiconductor wafer is substantially the same as that of the second thermal plate.

5,778,969

APPARATUS FOR THERMAL TREATMENT OF THIN WAFERS

Hyun-Su Kyung; Won-Song Choi; Hueng-Jik Lee; Sek-Young Kim; Jung-Ho Shin, and Chang-Hwan Choi, all of Kyungki-Do, Rep. of Korea, assignors to Novellus Systems, Inc., San Jose, Calif.

PCT No. PCT/US95/05281, § 371 Date Jun. 3, 1996, § 102(e) Date Jun. 3, 1996, PCT Pub. No. WO95/30121, PCT Pub. Date Nov. 9, 1995

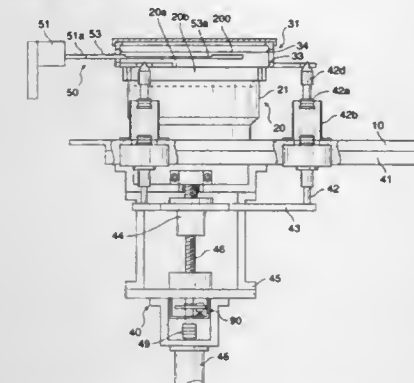
Continuation of Ser. No. 571,842, Jun. 3, 1996, abandoned.

This PCT application Apr. 28, 1995, Ser. No. 901,122
Claims priority, application Rep. of Korea, Apr. 28, 1994, 1994-109

Int. Cl.⁶ F28F 7/00

U.S. Cl. 165—80.1

16 Claims



1. An apparatus for thermal treatment of a thin film wafer having a peripheral edge, comprising:

a vacuum chamber;

a heater assembly for heating the wafer, said heater assembly having a heater block and being operatively positioned inside said vacuum chamber;

a clamp positioned in said vacuum chamber above said heater assembly, said clamp having a top and an open bottom for receiving said heater assembly through said bottom and having a specific weight for pressing against the wafer supported by said heater block;

an elevator mechanism for positioning said clamp relative to said heater assembly such that during thermal treatment of the wafer only said weight of said clamp presses against the wafer;

a vacuum generator for forming a vacuum inside said vacuum chamber, said vacuum generator having a first connection pipe in communication with the interior of said vacuum chamber and operatively connected in series to a first valve, a first vacuum pump and a second vacuum pump, a second connection pipe having an inlet in communication with the interior of said vacuum chamber and operatively connected to said first connection pipe, and a third vacuum pump operatively connected to said second connection pipe;

a gas supply network for providing gas to at least one surface of the wafer during thermal treatment to assist in maintaining the wafer at a uniform temperature during thermal treatment; and
an isolation mechanism for selectively opening and closing said inlet of said second connection pipe.

5,778,970

HEAT DISSIPATION APPARATUS

Juei-Chi Chang, Taipei, Taiwan, assignor to Mitac International Corp., Hsinchu, Taiwan

Filed Sep. 20, 1996, Ser. No. 718,260

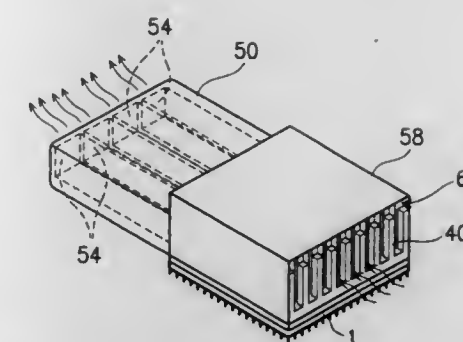
Claims priority, application Taiwan, Jul. 19, 1996, 85211095

Int. Cl.⁶ F28F 7/00

U.S. Cl. 165—80.3

14 Claims

1. A heat dissipation apparatus for dissipating heat from a heat source to a cooling ambient, comprising:



base having a contact surface attachable to said heat source; a plurality of fins on said base; and
means for transferring heat by convection from the heat source to the cooling ambient, the means including a heat transfer pipe, the heat transfer pipe having a first opening and a second opening, said first opening being laterally adjacent to said fins, and said second opening being in said cooling ambient whereby the heat transfer pipe transfers heat from the heat source to the cooling ambient by convection without using forced air.

5,778,971

HEAD FOR CONDUCTING HEAT-EXCHANGE FLUID TO ROTATING SYSTEM

Peter Szam, Gerstetten, Germany, assignor to Christian Maier GmbH & Co. Maschinenfabrik, Heidenheim, Germany

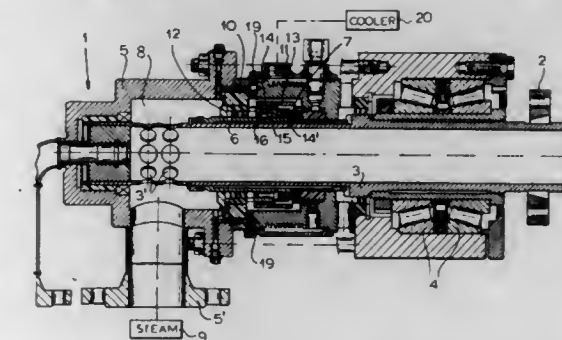
Filed May 9, 1997, Ser. No. 853,644

Claims priority, application Germany, Apr. 8, 1994, 196 18 661.7

Int. Cl.⁶ F28D 11/02

U.S. Cl. 165—90

14 Claims



1. In combination with a rotary steam-heated system and a source of steam under superatmospheric pressure, a coupling comprising:

a tubular shaft extending along and rotatable about an axis and having an outer end supporting the system and an inner end; a housing engaged around the inner end and forming therewith a chamber connected to the source and opening into the tubular shaft, whereby steam from the source can flow through the chamber into the shaft and therethrough to the system;

a bearing supporting the shaft in the housing;

a primary seal closing an outer side of the chamber and engaged between the housing and the shaft;

a secondary seal between the primary seal and the bearing and engaged between the housing and the shaft, the housing forming an annular compartment around the shaft between the primary and secondary seals and being formed with at least one passage communicating between the compartment and the chamber, whereby some of the steam in the chamber can flow via the passage from the chamber into the compartment; and

means for cooling the housing at the compartment and for condensing steam therein, whereby the condensed steam lubricates the primary and secondary seals.

5,778,972
**ROBUST METAL HYDRIDE HYDROGEN STORAGE
 SYSTEM WITH METAL HYDRIDE SUPPORT
 STRUCTURE**

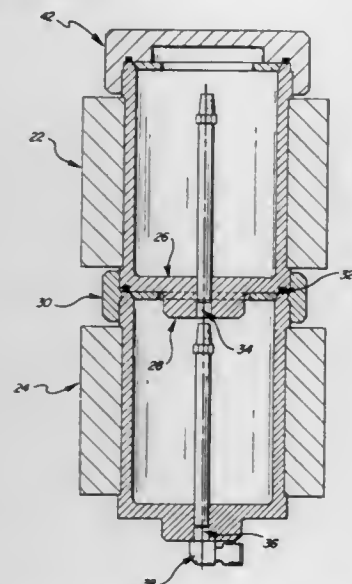
Krishna Sapru, Troy; Srinivasan Venkatesan, Southfield; Ned T. Stetson, Auburn Hills, all of Mich., and Krishnaswamy Rangaswamy, Clarendon Hills, Ill., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Mar. 28, 1996, Ser. No. 623,497

Int. Cl.⁶ F28D 15/00

U.S. Cl. 165—104.12

19 Claims



1. A hydrogen storage system for storing hydrogen in a metal hydride, said storage system comprising:
 - at least a first storage module attached to an identical second storage module, where each of said storage modules includes: a container for metal hydride having a closed end with a passage port; and an open end, opposite said closed end; metal hydride storage means positioned within said container; passage means, positioned within said container and gaseously connected to said passage port, for transporting gaseous hydrogen into and out of said container; and attachment means for connecting said closed end of each of said storage modules to said open end of a different storage module;
 - where said closed end of said first storage module is attached to said open end of said second storage module and said first storage module is in gaseous communication with said second storage module through said passage port;
 - and
 - a container cap covering said open end of said first storage module.

5,778,973
**COOLING APPARATUS HAVING A SPIRALLY WOUND
 CONDUCTIVE PIPE**

Jun-Chul Shin, Incneon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Feb. 12, 1997, Ser. No. 798,821

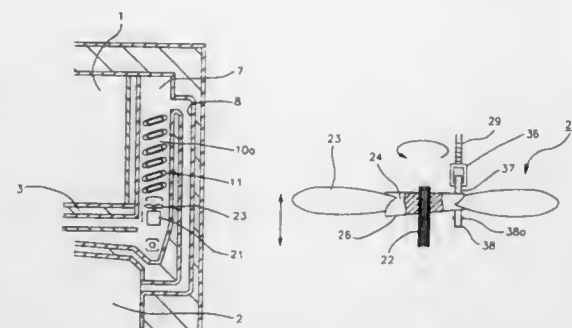
Claims priority, application Rep. of Korea, Jun. 4, 1996, 1996-19755

Int. Cl.⁶ F28F 13/12

U.S. Cl. 165—122

6 Claims

1. A cooling apparatus in a cooling system having a cool air duct disposed in a wall of a cooling compartment and being communicated with said cooling compartment, said cooling apparatus comprising:
 - an evaporator for generating cool air, said evaporator having a conductive pipe disposed in said cool air duct, said conductive



- pipe being wound spirally along a longitudinal direction of said cool air duct; and
- a means for blowing air toward said evaporator along an axial direction of said conductive pipe to provide said cooling compartment with the cool air, said blowing means having a blowing motor, a fan being rotated by said blowing motor, and a means for moving said fan to be reciprocated along the axial direction when said fan is rotated.

5,778,974

**LAMINATED TYPE HEAT EXCHANGER HAVING
 SMALL FLOW RESISTANCE**

Yoshiharu Kazikawa, Hekinan; Toshio Ohara; Eiichi Torigoe, both of Kariya, and Yasukazu Aikawa, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

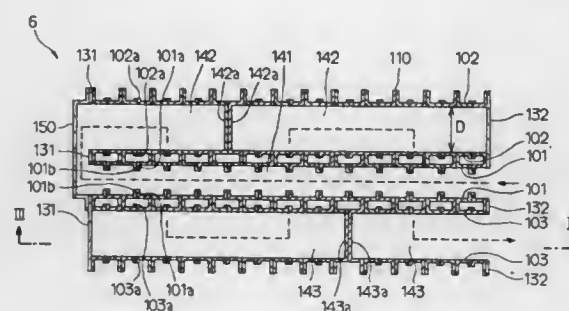
Filed Aug. 28, 1996, Ser. No. 697,617

Claims priority, application Japan, Aug. 29, 1995, 7-220902

Int. Cl.⁶ F28D 1/03

U.S. Cl. 165—153

10 Claims



1. A laminated heat exchanger comprising:
 - a plurality of tube elements, each tube element forming a tube in which refrigerant flows, said plurality of tube elements being secured together so as to form a first tank portion, a second tank portion, and a third tank portion, said refrigerant flowing through said second tank portion, through said tube, and through said third tank portion,
 - wherein said tube element includes a first flange folded inside said first tank portion, a second flange folded outside said second tank portion, and a third flange folded outside said third tank portion, said first, second and third flanges of said tube element being secured to a first, second and third flange of an adjacent tube element.

5,778,975

PLATE HEAT EXCHANGER

Mats Nilsson, Lund, Sweden, assignor to Alfa Laval AB, Lund, Sweden

PCT No. PCT/SE95/01073, § 371 Date Feb. 21, 1997, § 102(e) Date Feb. 21, 1997, PCT Pub. No. WO96/09513, PCT Pub. Date Mar. 28, 1996

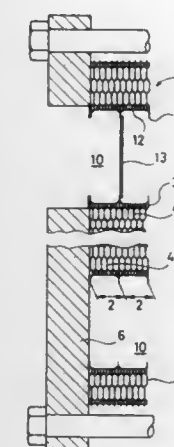
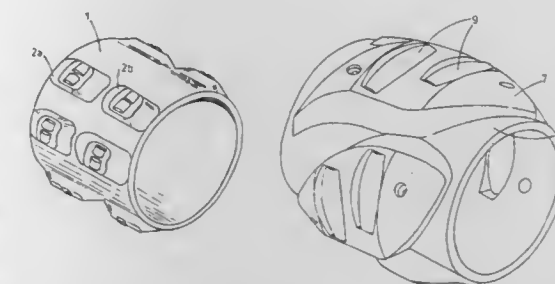
PCT Filed Sep. 21, 1995, Ser. No. 793,384

Claims priority, application Sweden, Sep. 22, 1994, 9403200

Int. Cl.⁶ F28F 3/08

U.S. Cl. 165—167

10 Claims



1. A plate heat exchanger (1) for heat transfer between two fluids, comprising at least two modules (2), each comprising two outer heat transfer plates (3) and between them several inner heat transfer plates (4), said inner and outer heat transfer plates being principally rectangular, permanently joined with each other and provided with openings (10) for the respective fluids in their corner portions to form flow passages through the plate heat exchanger (1), said outer heat transfer plates (3) having smaller openings than said inner heat transfer plates (4) for at least one of the fluids and said at least two modules (2) being permanently joined to each other around said smaller openings in their respective two outer heat transfer plates (3) facing each other, wherein at least one disc (13) is transfer plates (3) joined with each other to essentially close arranged in one of said at least two modules (2) and abuts against the outer heat transfer plate (3) thereof, which forms one of said two outer heat transfer plates facing each other, such that it essentially closes the relevant flow passage where the at least two modules (2) are joined to each other.

5,778,976

CASING INSTALLATION EQUIPMENT

Geoffrey Neil Murray, New Plymouth, New Zealand, assignor to Austoil Technology Limited, Auckland, New Zealand

PCT No. PCT/NZ95/00012, § 371 Date Aug. 14, 1996, § 102(e) Date Aug. 14, 1996, PCT Pub. No. WO95/21986, PCT Pub. Date Aug. 17, 1995

PCT Filed Feb. 14, 1995, Ser. No. 693,177

Claims priority, application New Zealand, Feb. 14, 1994, 250867

Int. Cl.⁶ E21B 17/10

U.S. Cl. 166—241.6

20 Claims

1. An improved casing installation component comprising:
 - a component body having a bore therethrough along a central axis thereof to enable rotation of the component about a drill string;
 - a plurality of support pedestals protruding from the outer surface of said body, positioned so that in use the casing is held substantially in the center of a well bore;
 - friction reducing means mounted in banks in axially and peripherally spaced relation on the outer surface of at least some of the support pedestals and adapted to reduce the resistance to

- axial movement of the component and subsequently the casing string through the well bore.
4. An improved casing installation component comprising:
 - a component body;
 - a plurality of support pedestals protruding from the outer surface of said body being substantially tear-drop shaped in the axial direction of the body and positioned so that in use the casing is held substantially in the center of a well bore;
 - friction reducing means mounted on the outer surface of at least some of the support pedestals and adapted to reduce the resistance to axial movement of the component and subsequently the casing string through the well bore.

5,778,977

**GRAVITY CONCENTRATED CARBON DIOXIDE FOR
 PROCESS**

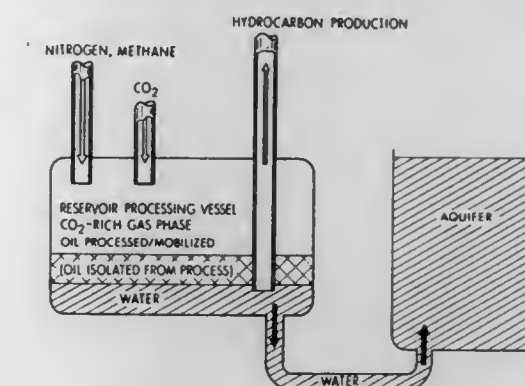
James L. Bowzer, Houston, Tex.; Douglas E. Kenyon, Littleton, Colo., and Eugene E. Wadleigh, Midland, Tex., assignors to Marathon Oil Company, Findlay, Ohio

Filed Jan. 3, 1997, Ser. No. 779,855

Int. Cl.⁶ E21B 43/16; 43/18

U.S. Cl. 166—252.1

10 Claims



1. A process for recovering hydrocarbon from a hydrocarbon-bearing formation having a natural fracture network with vertical communication, a gas-liquid hydrocarbon contact and a liquid hydrocarbon-water contact within the formation, and wherein the primary means for producing the hydrocarbon from the formation is gravity drainage and wherein the formation has at least one injection well in fluid communication with at least one production well, comprising:
 - a) injecting CO₂ into the formation via the injection well to establish a CO₂-rich displacing slug at about the gas-liquid hydrocarbon contact,
 - b) injecting via the injection well a chase gas having a density less than that of the CO₂, and permitting the chase gas to segregate from and above the CO₂ to obtain a gas-cap comprised of CO₂ gas at the bottom of the gas cap and the chase gas at the top of the gas cap,

- c) maintaining the chase gas at a sufficient pressure in the gas-cap to drive downwardly the CO₂-rich displacing slug, to displace the hydrocarbon toward the production well, and
d) recovering hydrocarbon from the production well.

5,778,978

EXTERIOR WIRELINE CABLE ADAPTER SUB

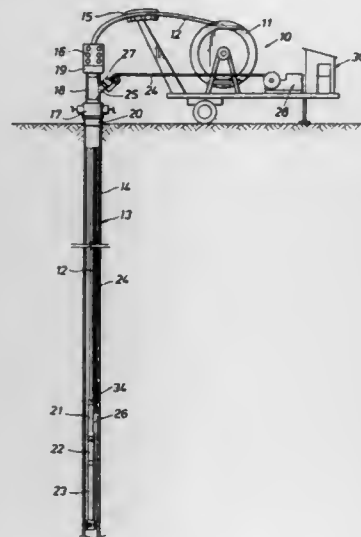
Joseph Michael Crow, Broussard, La., assignor to Pipe Recovery Services, L.L.P., New Iberia, La.

Filed Aug. 6, 1996, Ser. No. 692,528

Int. Cl.⁶ E21B 49/00

U.S. Cl. 166—254.2

19 Claims



16. A method of operating an electric wireline well tool that is run in a well on continuous or jointed tubing having a lower end within the well, comprising the steps of: connecting a tubular adapter means between the lower end of the tubing and the well tool, said adapter means having a wall and an opening through said wall; extending an end portion of an electric cable having armor wires and conductor means through said opening; establishing an electrical connection between said conductor means and said well tool to enable operation thereof in response to electrical signals; and lowering said well tool into a well with said cable extending outside of said tubing.

5,778,979

LATCH AND RELEASE PERFORATING GUN CONNECTOR AND METHOD

John D. Burleson, 2313 Booklake W., Denton, Tex. 76207, and Joseph A. Henke, 1920 Sunrise Trail, Lewisville, Tex. 75067

Filed Aug. 16, 1996, Ser. No. 698,603

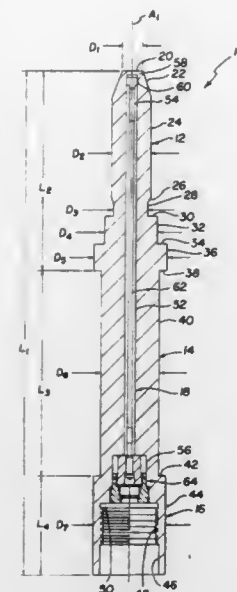
Int. Cl.⁶ E21B 43/00

U.S. Cl. 166—277

21 Claims

18. A method of connecting a first perforating gun section to a second perforating gun section, the method comprising the steps of:

- (a) connecting a stinger to the first perforating gun section;
(b) connecting a stinger receptacle to the second gun section;
(c) stabbing the stinger to mate with the stinger receptacle;



- (d) applying a set force to the stinger and stinger receptacle to release a loaded engaging member from a running position to a latched position to latch the stinger and the stinger receptacle together.

5,778,980

MULTICUT CASING WINDOW MILL AND METHOD FOR FORMING A CASING WINDOW

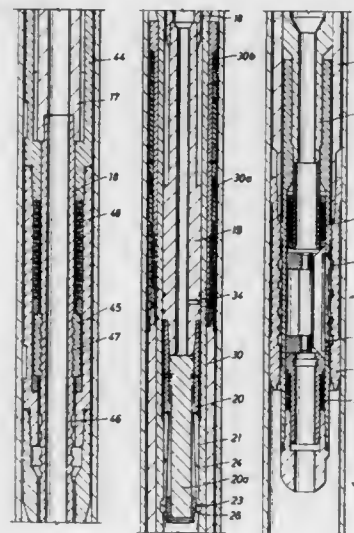
Laurier E. Comeau, Elis Vandenberg, and Ian Gillis, all of Alberta, Canada, assignors to Baroid Technology, Inc., Houston, Tex.

Filed May 29, 1996, Ser. No. 654,984

Int. Cl.⁶ F21B 7/08; 29/06

U.S. Cl. 166—298

35 Claims



12. A method for forming a subsurface window in a well casing comprising the steps of:
placing a cutting tool at a desired subsurface location within a well casing;
orienting the tool to a first cutting position;
cutting a first longitudinally extending opening through the wall of said casing at said first cutting position;
moving the tool to a second cutting position circumferentially spaced from said first cutting position;
cutting a second longitudinally extending opening through the wall of the casing at a second cutting position, said second opening being adjacent to said first opening to form a com-

- bined opening having a circumferential development greater than that of either of said first or second openings; and retrieving the cutting tool to the well surface.

5,778,981

DEVICE FOR SUSPENDING A SUB SEA OIL WELL RISER

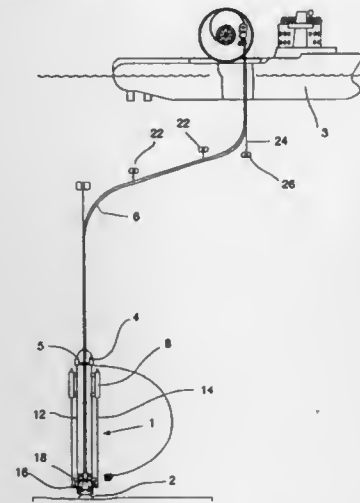
Philip Head, No. 6 Leith Mansions, Grantully Road, London W9 1LQ, Great Britain

Filed Jul. 29, 1996, Ser. No. 688,090

Int. Cl.⁶ E21B 7/132

U.S. Cl. 166—345

7 Claims



1. A device for accessing a sub-sea well comprising:
a surface vessel floating on the surface of the sea;
a well head of a sub-sea well on the sea bed; and
guide means for transporting equipment between the well head and the vessel, said guide means comprising:
a continuous coiled tubing extending between said well head and vessel and having an upper end which is attached to the vessel and a lower end, said tubing defining a transport path for the equipment,
riser means along the transport path for interconnecting the well head and tubing and adapted to apply a tensile stress to the lower end of the tubing upon connecting with the head, so that the lower end of the tubing extends along a substantially vertical stretch of said transport path, and
a plurality of spaced apart support buoys attached to the tubing between said upper and lower ends at such locations as to form a smooth continuous curved stretch of said tubing.

5,778,982

FIXED HEAD INFLATABLE PACKER WITH FULLY REINFORCED INFLATABLE ELEMENT AND METHOD OF FABRICATION

Emil Hauck, Littleton, and Henry A. Baski, Lakewood, both of Colo., assignors to Baski Water Instruments, Inc., Englewood, Colo.

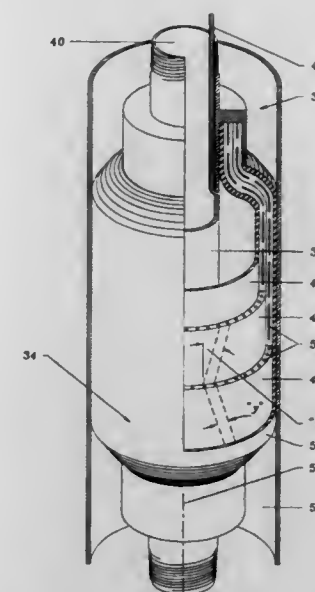
Continuation-in-part of Ser. No. 144,133, Oct. 27, 1993, abandoned. This application May 15, 1995, Ser. No. 441,649

Int. Cl.⁶ E21B 33/127

U.S. Cl. 166—387

35 Claims

1. An inflatable packer comprising:
a packer mandrel having a longitudinal axis;
a first attachment element and a second attachment element fixedly attached to the mandrel;
an inflatable element attached at a first end and at a second end to the packer mandrel by the first and second attachment



elements, the inflatable element comprising a plurality of reinforced layers, each reinforced layer comprising an elastomeric base material reinforced with a continuous reinforcing material embedded in the base material at a predetermined helical angle with respect to the longitudinal axis, the reinforcing material extending from the first end to the second end and configured to elongate during inflation of the inflatable element by a predetermined amount, with the angle selected, and the reinforcing material selected with a modulus of elasticity, to permit a desired expansion of the inflatable element and a substantially equal percentage of maximum elastic strain in the reinforcing material of each reinforced layer during inflation of the inflatable element.

5,778,983

Patent Not Issued For This Number

5,778,984

FLUID FIRE EXTINGUISHING AGENT SHELL FOR THROWING

Tomisaburo Suwa, Tokyo, Japan, assignor to Ebsu Science Laboratory Inc., Tokyo, Japan

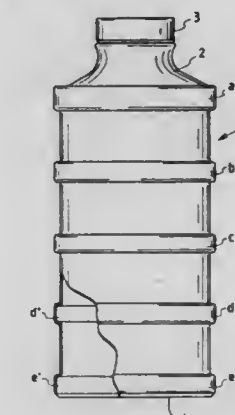
Filed Aug. 27, 1996, Ser. No. 703,464

Claims priority, application Japan, Mar. 22, 1996, 8-105996

Int. Cl.⁶ A62C 8/00; A62D 1/00; 1/06

U.S. Cl. 169—36

6 Claims

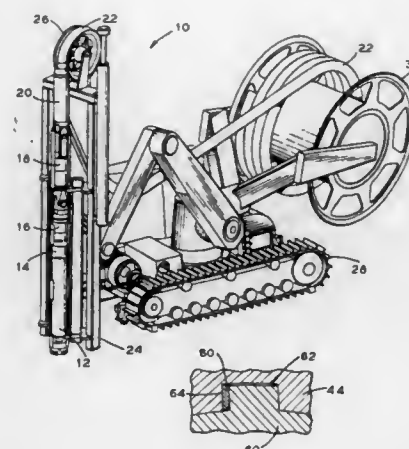


1. A fluid fire extinguishing agent shell for throwing into a fire, comprising

a fluid fire extinguishing agent sealed in a thin-walled resin container having such a size that one can throw such container, which is breakable by shock on impact, said fluid fire extinguishing agent consisting essentially of the following dry components dissolved in water in the amounts:

Dry Components	Amount by Weight Percent of Dry Components
Ammonium Chloride	at least about 47
Sodium Bicarbonate	About 4 to about 8
Potassium Carbonate	About 25 to about 35
Ammonium secondary Phosphate	About 8 to about 14
Sodium Tungstate	about 2 to about 6

wherein said dry components are completely dissolved in water in an amount such that said fluid fire extinguishing agent has a specific gravity of from about 1.25 to about 1.29.



adapter engaging the male spline member, and a central fluid flow passage longitudinally disposed throughout the core of the shock absorber.

5,778,985

Patent Not Issued For This Number

5,778,986

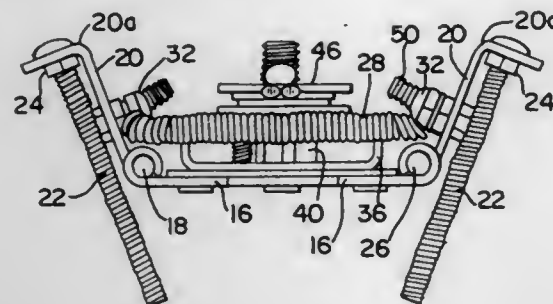
DEVICE TO REMOVE DIVOTS

Floyd A. Davis, 256 Moraine Rd., Highland Park, Ill. 60035
Filed Aug. 5, 1997, Ser. No. 906,462

Int. Cl.⁶ A63B 55/10

U.S. Cl. 172—378

6 Claims



1. A divot repair device comprising:

- a) a substantially horizontal base;
- b) at least two fingers hingedly attached to said base;
- c) means for resiliently holding said fingers in an operable downwardly extending position from said base; and
- d) means for overcoming said resilient means and for rotating said fingers into an inoperable flat position with respect to said base.

5,778,987

GUIDED DRILLING SYSTEM WITH SHOCK ABSORBER
Gregory R. Baiden, Lively; Donald D. Young, Sudbury; Lambertus H. Van Berkel, Millgrove; David L. Hoover, Hamilton, and Paul DeVlugt, Val Caron, all of Canada, assignors to Inco Limited, Toronto, Canada

Filed Apr. 29, 1996, Ser. No. 639,632

Int. Cl.⁶ B25D 17/24; E21B 17/00

U.S. Cl. 173—19

30 Claims

15. A shock absorber comprising a core therethrough, a coil spring, the coil spring circumscribing a tube, the tube having proximal and distal ends, the coil spring disposed within a male spline member, the male spline member in slidable engagement with a female spline member, the distal end of the tube communicating with a valve, the valve disposed within an adapter, the

5,778,988
DRILLING APPARATUS

Valto Ilomäki, Loilantie 8, FIN-33470 Ylöjärvi, Finland
PCT No. PCT/FI94/00486, § 371 Date Apr. 29, 1996, § 102(e)
Date Apr. 29, 1996, PCT Pub. No. WO95/12040, PCT Pub. Date May 4, 1995

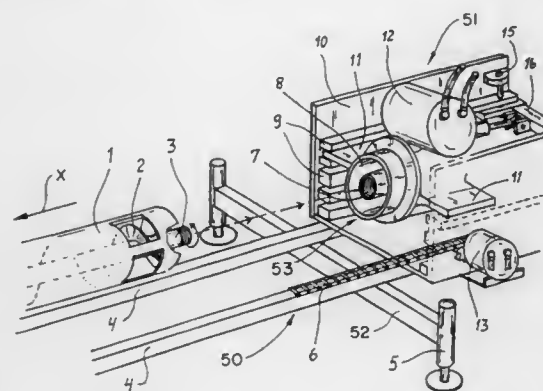
PCT Filed Oct. 27, 1994, Ser. No. 637,626

Claims priority, application Finland, Nov. 27, 1993, 934741

Int. Cl.⁶ E02F 5/18; E21B 7/20

U.S. Cl. 173—141

7 Claims



1. Drilling apparatus comprising:

- a support frame having guide tracks extending in a drilling direction;
- a drilling pipe advancing unit mounted for movement in a drilling direction on said guide tracks;
- a drilling pipe rotating and pushing unit mounted on said advancing unit for movement therewith and comprising a member for pushing a drilling pipe in said drilling direction, means for coupling a drilling pipe to said pushing member, and means for rotating a drilling pipe coupled to said pushing means;
- means for moving said advancing unit in said drilling direction; and
- means for mounting said pipe rotating and pushing unit on said advancing unit, said mounting means comprising means for adjusting the height of said pushing and advancing unit relative to said guide tracks, said mounting means comprising a plurality of elongate support members mounted on said advancing unit and extending in said drilling direction, said elongate support members allowing said rotating and pushing unit to glide thereon in said drilling direction.

5,778,989

SCREW DRIVING TOOL

Anton Neumaier, Fürstentfeldbruck, Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

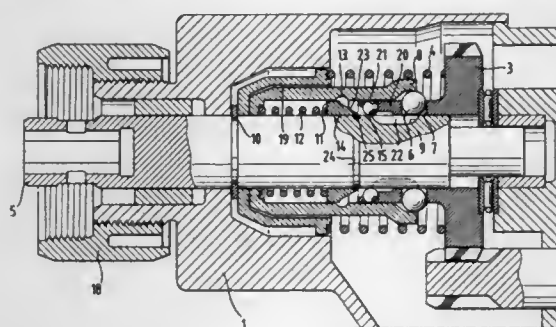
Filed Jul. 26, 1996, Ser. No. 687,873

Claims priority, application Germany, Jul. 26, 1995, 195 27 192.0

Int. Cl.⁶ B25B 23/157

U.S. Cl. 173—178

9 Claims



1. A manually operable tool comprising a housing (1) having a leading end, a trailing end, and an axially extending driving direction from the trailing end to the leading end, a motor (2) located in said housing, a drive pinion (3) fixed in the axial direction within said housing an axially extending spindle (5) mounting said drive pinion and being axially displaceable relative to the drive pinion (3) against a first spring (4) having a spring force, a clutch element (6) for engaging said spindle (5) to said drive pinion (3), said drive pinion having an axially extending collar (20) extending towards the leading end of said housing and encircling said spindle (5), said collar (20) having a first passageway (7) extending transversely of the axial direction and said clutch element (6) being mounted in said first passageway and being radially displaceable by an axially extending actuation member (8) at least partially encircling said collar (20), said clutch element (6) having a radially outer disengaged position and a radially inner engaged position coupling said drive pinion to said spindle, in the radially inner position, said clutch element (6) engages a stop surface (9) formed in said spindle (5), and stops (10, 11) cooperating with said spindle (5) for axially displacing said actuation member (8).

5,778,990

ARRANGEMENT IN A HYDRAULICALLY OPERATED ROCK DRILLING EQUIPMENT

Jaakko Niemi, Tampere, Finland, assignor to Tamrock Oy, Finland

PCT No. PCT/FI95/00183, § 371 Date Oct. 4, 1996, § 102(e)

Date Oct. 4, 1996, PCT Pub. No. WO95/28549, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 4, 1995, Ser. No. 718,511

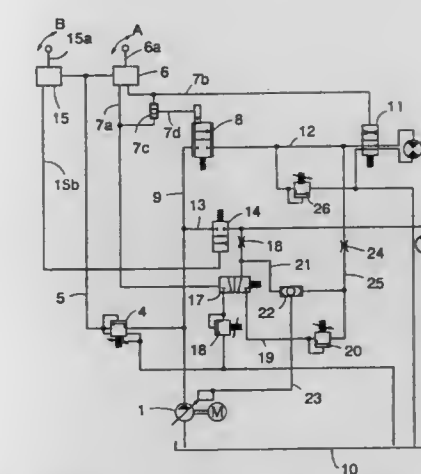
Claims priority, application Finland, Apr. 14, 1994, 941731

Int. Cl.⁶ E21B 44/00

U.S. Cl. 175—27

9 Claims

1. In hydraulically operated rock drilling equipment, an arrangement comprising a rock drill provided with a percussion device; a feed motor for feeding the rock drill in a drilling direction and in an opposite direction respectively; a hydraulic pump; a percussion pressure line and a feed pressure line, both connected to the pump for feeding hydraulic fluid to the percussion device and the feed motor respectively; a return line from the percussion device and the feed motor for returning hydraulic fluid to a tank for hydraulic fluid; a feed regulation valve and a feed regulator for regulating the flow of hydraulic fluid to the feed motor, the feed regulation valve being a signal-controlled proportional valve and the feed regulator being connected to control the feed regulation valve by means of at least one feed regulation line and wherein the arrangement further comprises a first pressure relief valve having a preset pressure value lower than the highest allowable operating pressure of the percussion device; a pressure difference valve in communication



with the feed pressure line; and a signal-controlled control valve connected between the percussion pressure line and the first pressure relief valve on one hand, and the pressure difference valve on the other hand, and being controlled by the feed regulation line controlling the forward operation of the feed motor in such a way that when a control signal of said feed regulation line has a value below a predetermined switching value, the first pressure relief valve is switched in communication with the percussion pressure line through the control valve and keeps the pressure of hydraulic fluid applied to the percussion device at said preset pressure value, and when the value of the control signal of the feed regulation line exceeds said switching value, the control valve changes its position and connects the pressure difference valve in communication with the percussion pressure line in place of the first pressure relief valve, the pressure difference preset for the pressure difference valve prevailing between the percussion pressure line and a feed motor line.

5,778,991

DIRECTIONAL BORING

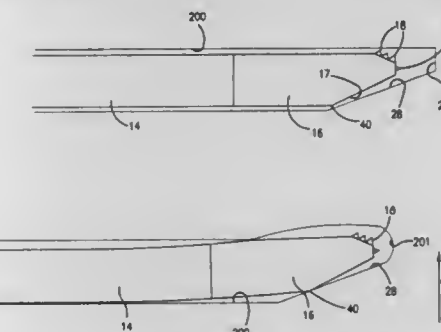
Randy R. Runquist, Lovilia; James R. Rankin, Montezuma, and Mark VanHouwelingen, Knoxville, all of Iowa, assignors to Vermeer Manufacturing Company, Pella, Iowa

Continuation-in-part of Ser. No. 618,541, Mar. 4, 1996, abandoned. This application Aug. 29, 1996, Ser. No. 705,007

Int. Cl.⁶ E21B 7/06

U.S. Cl. 175—61

29 Claims



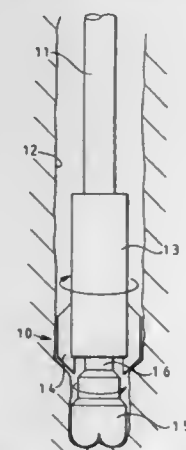
1. A method for controlling a drilling apparatus for drilling a bore hole through a medium, said apparatus having a drill string terminating at a drill head which rotates about an axis of rotation, said drill head including a cutting member selected to cut at a point offset from said axis, said apparatus including means for longitudinally advancing said drill head, said method comprising: advancing said drill head in a desired direction angled away from a straight path by: a. applying a longitudinal force to said drill head when said cutting member is in an arc of rotation through which said desired direction passes; and

b. relaxing said longitudinal force and longitudinally retracting said drill head when said cutting member is outside of said arc of rotation.

5,778,992
DRILLING ASSEMBLY FOR DRILLING HOLES IN SUBSURFACE FORMATIONS
John Michael Fuller, Nailsworth, England, assignor to Camco Drilling Group Limited of Hycalog, Stonehouse, England
Filed Oct. 16, 1996, Ser. No. 733,060
Claims priority, application United Kingdom, Oct. 26, 1995, 9521972

Int. Cl.⁶ E21B 7/06
U.S. Cl. 175—73

10 Claims



1. A drilling assembly for drilling holes in subsurface formations, comprising a drill bit, a drive unit including a housing and a rotor operatively coupled to the drill bit to rotate the drill bit relative to the housing, and a modulated bias unit coupled to rotate with the drive unit housing and apply a lateral bias thereto in synchronism with rotation of the housing.

5,778,993
LOCKING A SAMPLE TUBE IN A DOWNHOLE HAMMER
Frederick Graham Moir, Canning Vale, Australia, assignor to SDS Pacific PTE, Ltd., Singapore, Singapore
PCT No. PCT/AU95/00466, § 371 Date Jul. 31, 1996, § 102(e)
Date Jul. 31, 1996, PCT Pub. No. WO96/04459, PCT Pub. Date Feb. 15, 1996

PCT Filed Aug. 1, 1995, Ser. No. 687,595
Claims priority, application Australia, Aug. 1, 1994, PM7201
Int. Cl.⁶ E21B 4/14

U.S. Cl. 175—215

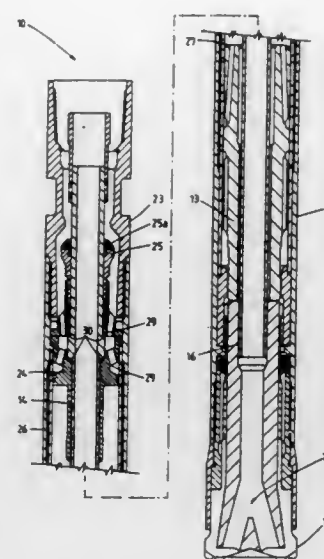
14 Claims

1. A sample tube for a reverse circulation downhole percussive hammer, wherein said percussive hammer comprises a hammer body having an upper and lower end, a percussive drill bit connected to said hammer body at said lower end, a piston reciprocates within said hammer body and strikes said drill bit at one end thereof and a sample tube extending from said drill bit, through said piston towards the upper end of said hammer body, said sample tube comprising:

an elongated substantially tubular member for engaging said drill bit to enable sample to be transferred from said drill bit to said sample tube, with said sample tube engaging a drill-string sample delivery tube,

at least one projection located substantially intermediate the opposite ends of said sample tube and having a non-circular cross-section normal to the longitudinal axis of said sample tube, and

a mounting collar within said hammer body with walls defining a recess within which said one projection locates, said walls



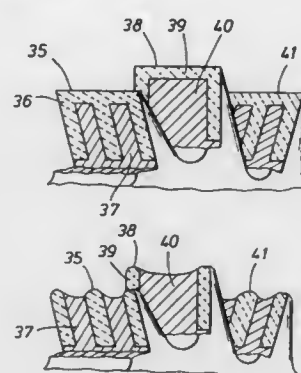
engaging said one projection with said mounting collar being fixed within said hammer body so that said sample tube is prevented from rotating with respect to said hammer body.

5,778,994
CLAW TOOTH ROTARY BIT
Edward C. Spatz, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 29, 1997, Ser. No. 902,095
Int. Cl.⁶ E21B 10/00

U.S. Cl. 175—374

21 Claims



1. A bit for boring earthen formations comprising:

a bit body;

teeth extending from said bit body;

said teeth including a main body section and a hard material section;

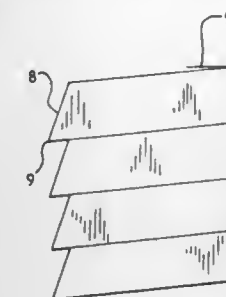
said hard material section being comprised of a material having a wear characteristic different than the wear characteristic of the material comprising said main body section; and

said hard material section combining in a first pattern with a first one of said teeth and combining in a second, different pattern with a second one of said teeth immediately adjacent to said first tooth whereby said first and second teeth comprise a tooth set of two teeth that wear dissimilarly while boring.

5,778,995
MILLING INSERT AND A MILLING TOOL
Bruce McGarian, Aberdeen, Scotland, assignor to The Red Baron (Oil Tools Rental) Ltd., Aberdeen, Scotland
Filed May 21, 1996, Ser. No. 651,794
Int. Cl.⁶ E21B 10/36

U.S. Cl. 175—420.1

10 Claims



1. A cutting insert for use on a mill, the cutting insert comprising:

a first element formed of a hard material, said first element defining a rear face by means of which said first element can be mounted in position, and said first element defining a front face having a cutting projection towards a lower edge thereof, said cutting projection having a leading single cutting edge, said front face defining a surface which extends rearwardly and upwardly from said cutting edge, said first element defining upper and lower faces with a thickness therebetween of between 0.187 and 0.22 centimeters, said front face being substantially planar; and

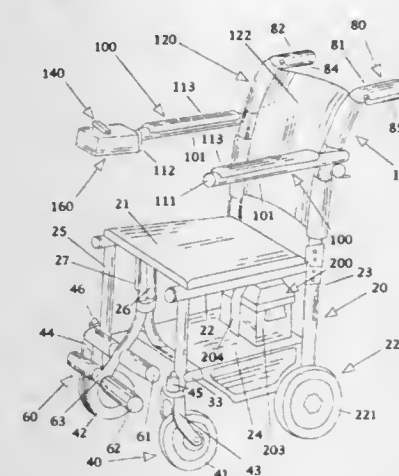
a second element in abutment with said first element, said second element defining a forwardly extending part of an undersurface of a cutting projection thereof, said first element having an upper edge of said front face located immediately adjacent said forwardly extending part.

5,778,996
COMBINATION POWER WHEELCHAIR AND WALKER
Ronald E. Prior, and Susan R. Harris, both of 4915 Industrial Way, Coeur d'Alene, Id. 83814

Filed Nov. 1, 1995, Ser. No. 551,704
Int. Cl.⁶ B60K 1/02

U.S. Cl. 180—65.1

18 Claims



1. A mobility aid, suitable for assisting a person in movement, either by carrying the person or supporting the person as the person walks behind the mobility aid, comprising:

(A) a frame comprising:

(a) seating means for supporting a seated person; and

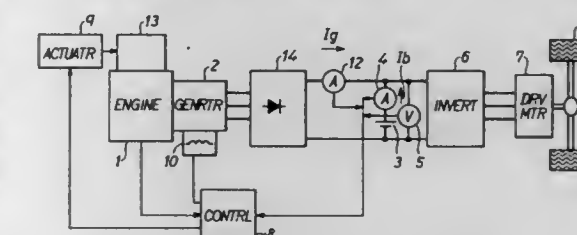
(b) walker handle means for providing partial support to a standing person;

(B) at least one pivoting wheel mounted on the frame;
(C) first and second independently rotatable drive wheels mounted to the frame;
(D) a first drive line assembly, mounted on the frame and mechanically connected to the first drive wheel;
(E) a second drive line assembly, mounted on the frame and mechanically connected to the second drive wheel;
(F) electrical power means for providing electrical power to the drive line assemblies;
(G) walker control means for enabling a standing user to control the operation of the first and second drive line assemblies; and
(H) hand control means for enabling a seated user to control the operation of the first and second drive line assemblies, comprising:
(a) a handle assembly, having a first end defining a round hole and a second end defining a slot hole.

5,778,997
METHOD AND DEVICE FOR CONTROLLING GENERATOR FOR HYBRID VEHICLE
Yousuke Setaka, Anjo, and Keiichi Banzai, Toyota, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jan. 17, 1996, Ser. No. 583,751
Claims priority, application Japan, Jan. 19, 1995, 7-006765
Int. Cl.⁶ B60K 1/00

U.S. Cl. 180—65.2

12 Claims



1. A method for controlling a generator for a series-hybrid car including an engine-driven generator, an assembled battery, and a wheel-drive motor energized by said generator and said battery, said method comprising the steps of:

detecting current wheel-drive-motor power;
memorizing said current wheel-drive-motor power once in a set time;

detecting battery charging state; and
controlling said generator to generate output power in accordance with said battery charging state, wherein said step of controlling said generator comprises a first step of controlling said generator to generate maximum output power if said charging state of said battery is lower than a first level; and

when said charging state becomes higher than said first level, a second step of controlling said generator to generate output power which is a sum of a fixed power and said current wheel-drive-motor power memorized during said step of memorizing.

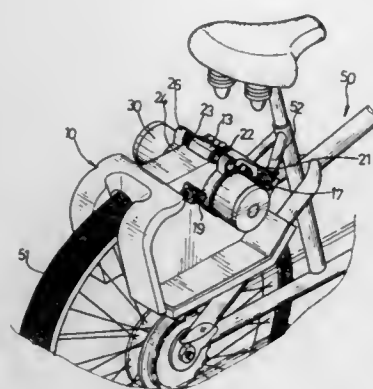
5,778,998
ELECTRICAL AUXILIARY DRIVE FOR A BICYCLE
Chin-yiao Shih, No. 1, Alley 1, Lane 164, Chinhua St., 18 Lin, Lung-an Li, Ta-an, Dist., Taipei, Taiwan
Filed Jan. 10, 1997, Ser. No. 781,212
Int. Cl.⁶ B62D 61/02

U.S. Cl. 180—221

6 Claims

1. The combination of an electrical auxiliary drive and a bicycle (50) which includes a pair of seat stays (52), and a rear wheel (51) rotatably mounted between said pair of seat stays (52), said electrical auxiliary drive comprising:

an inverted U-shaped bracket (10) including a top wall (11) disposed above said rear wheel (51) of said bicycle (50) and



two side walls (12) each fixedly mounted on a corresponding one of said pair of seat stays (52) of said bicycle (50) and each located adjacent to said rear wheel (51), each of said two side walls (12) of said bracket (10) having an arcuate slot (15) defined therein;

two motors (30) each mounted on a respective side wall (12) of said bracket (10) and each having a driving axle (31) rotatably mounted thereon and slidably extending through an associated said arcuate slot (15);

a driven axle (36) mounted between said top wall (11) of said bracket (10) and said rear wheel (51) and having two end portions (37) each fixedly mounted on said driving axle (31) of a respective motor (30) to rotate therewith; and

a driving wheel (35) fixedly mounted around said driven axle (36) and detachably engaging with said rear wheel (51) for rotating said rear wheel (51).

5,778,999

SCAFFOLD EXTENSION AND ENCLOSURE SYSTEM

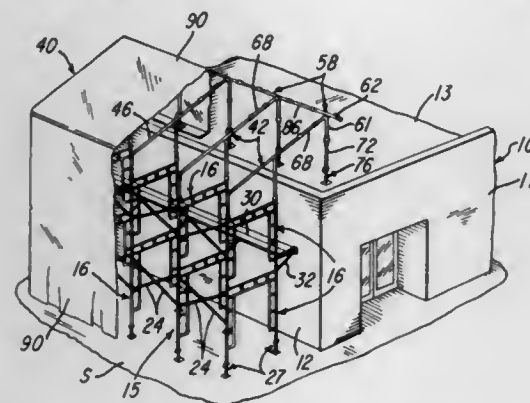
Dustin L. Nealeigh, 527 Markwith, Greenville, Ohio 45331

Filed Mar. 10, 1997, Ser. No. 813,407

Int. Cl.⁶ E04G 1/26

U.S. Cl. 182—82

7 Claims



1. A protective scaffold enclosure system adapted to be positioned adjacent a building, said system comprising a plurality of horizontally spaced scaffold units each having a pair of vertical legs, a set of tie members rigidly connecting said legs of adjacent said scaffold units, a corresponding plurality of horizontally spaced cover support frames each including a short leg member and a long leg member generally aligned with said vertical legs of the corresponding said scaffold units, each of said cover support frames also including an inclined cover support member rigidly connecting the corresponding said leg members, means for releasably connecting said leg members of each said cover support frame to the corresponding said legs of said scaffold units with said leg members projecting upwardly from said legs, a corresponding plurality of ridge connectors for said cover support frames, means releasably connecting each of said ridge connectors to the corresponding said inclined cover support member of the corresponding said cover

support frame, a corresponding plurality of generally vertical post members having upper portions releasably connected to the corresponding said ridge connectors and having bases adapted to be supported by a floor of the building, a plurality of generally horizontal cover support members extending laterally of said cover support frames and releasably connecting said ridge connectors for adjacent said cover support frames, a flexible cover extending over said cover support frames and said ridge connectors and said horizontal cover support members and projecting downwardly over said scaffold units, and said flexible cover having a generally vertical upper portion extending downwardly from said ridge connectors and said horizontal cover support members adjacent said post members.

5,779,000

EMERGENCY ESCAPE DEVICE

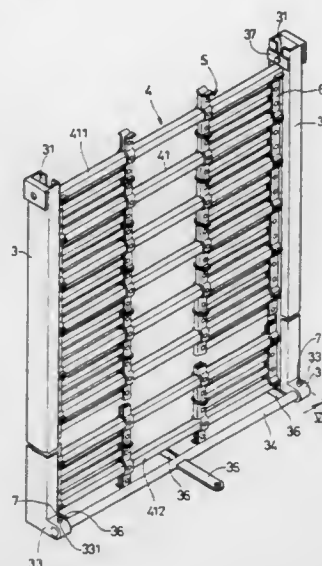
Rong-Dar Lin, P.O. Box 2103, Hsin Chu hsien, Taichung, Taiwan

Filed Jul. 10, 1995, Ser. No. 499,760

Int. Cl.⁶ E06C 9/00

U.S. Cl. 182—95

7 Claims



1. An emergency escape device for prevention of burglary and for escaping from a window on a building wall, said window having a top edge and a bottom edge, said emergency escape device comprising:

an upper connection structure for fixing on a wall near said window's top edge and a lower connecting structure for fixing on said wall near said window's bottom edge;

a pair of parallel sliding groove assemblies being fixed between said upper connecting structure and said lower connecting structure, each of said sliding groove assembly having

a longitudinal sliding groove extending from the sliding groove's top to its bottom vertically, said sliding groove having an inner longitudinal groove surface, and

a stopping part at the bottom end, wherein said sliding grooves face each other;

an escaping ladder assembly including a plurality of horizontal rods, the top horizontal rod having to two ends which connect two sliding plates, and

a plurality of side rod assemblies, each of said side rod assembly having two linking rods pivotally connected together,

wherein the length of each horizontal rod is slightly less than the distance between the inner groove surfaces of said pair of sliding grooves, and the length of each linking rod being approximately 1/4 of said horizontal rod's length;

5,779,002

ASTRONAUT'S WORK STATION DEVICE

Boris E. Paton; Valeri A. Kryukov; Sergei S. Gavrish; Alexander R. Bulatsev; Vladimir V. Demyanenko; Alexander A. Zagrebelni, all of Kiev, Ukraine; Alexandr V. Markov, Chelyuskinskii Town, Russian Federation; Boris I. Perepechenko, Kiev, Ukraine; Mikhail J. Moreinis, Kiev, Ukraine, and Igor G. Lubomudrov, Kiev, Ukraine, assignors to The E.O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Kiev, Ukraine

Filed Feb. 14, 1996, Ser. No. 599,972

Claims priority, application Ukraine, Feb. 14, 1995, 95020653

Int. Cl.⁶ B66F 11/04

U.S. Cl. 182—222

7 Claims

a plurality of fixed seat assemblies, each of said fixed seat assembly fixed on a pre-determined position near 1/4 of said horizontal rod's length, each of said fixed seat assembly having two parallel first plates portions,

an upper connecting plate for connecting said parallel plate portions,

a lower connecting plate for connecting said parallel plate portions,

a central opening between said upper connecting plate and said lower connecting plate for inserting one horizontal rod, and

two first pivoting holes for pivotally connecting two adjacent linking rods;

a plurality of movable seat assemblies, each of said movable seat assembly having

two parallel second plate portions,

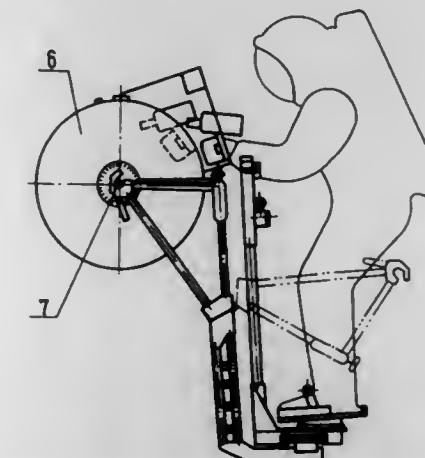
a central connecting plate for connecting said parallel plate portions,

a top recess for clasping a horizontal rod,

a bottom recess for clasping another horizontal rod, and

two second pivoting holes for pivotally connecting two adjacent linking rods;

wherein one end of each linking rod pivotally connects with one of said first pivoting holes of fixed seat assemblies and the other end of said linking rod pivotally connects with one of said second pivoting holes of movable seat assemblies so as to make the escape ladder assembly can be extended down and become a ladder-like structure under emergency conditions.



5,779,001

FOLDING LADDER, TREE STAND AND SECURING DEVICE THEREFOR

Helmut K. Skyba, Rte. 2, Box 330, Wild Rose, Wis. 54984

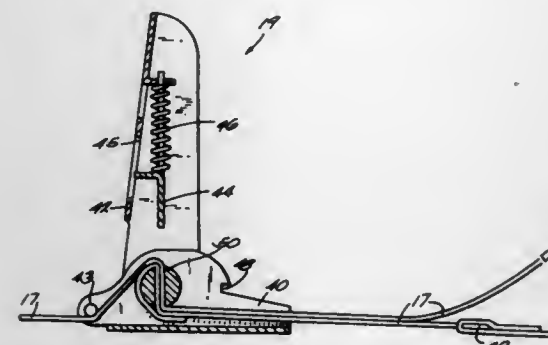
Division of Ser. No. 365,835, Dec. 29, 1994, Pat. No.

5,655,623. This application Aug. 12, 1997, Ser. No. 909,622

Int. Cl.⁶ B66F 3/00

U.S. Cl. 182—107

2 Claims



1. A belt and belt tightener mechanism combination for securing articles to structures comprising an elongated flat belt,

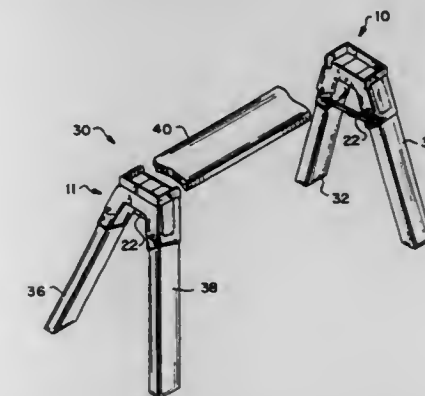
a belt tightening member comprised of a pair of pivotally connected components, a first one of said components forming a base; the second one of said components being pivotable from a first position raised from said base to a second position adjacent said base;

means for releasably locking said components in their adjacent positions;

said pivoting component having integrally connected therewith a slotted pin;

a first end of said strap being looped through the slot of said pin and anchored to itself;

an opposite end of said belt being extendable around a structure and inserted into said slot whereby said pivoting component is pivoted from the open position to the closed position each end of said strap is pulled toward said mechanism by rotation of said slotted pin.



1. A bracket comprising: a top plate having upward extending side walls on three sides, said top plate being hinged on portions of a fourth side to portions of a first side section and having an opening for accommodating a solid bar interconnecting said first side section to a second side section;

5,779,003

COLLAPSIBLE SAWHORSE

Walter F. Carty, 654 School St., Lowell, Mass. 01851

Filed Jan. 14, 1997, Ser. No. 782,417

Int. Cl.⁶ F04G 1/32

U.S. Cl. 182—225

14 Claims

leg sections, positioned to swing between the ends of said side sections toward and away from each other, for insertion of legs for support of said bracket;
downward extensions on the ends of two of said side walls of said top plate for resting against said leg sections when said leg sections are spread apart and prohibiting said top plate from rotating about said hinged connection; and
tab means extending inwardly from the top of each of said leg sections for insertion into tab slots beneath said side walls of said top plate.

5,779,004

LUBRICATING MECHANISM FOR PISTON TYPE COMPRESSOR

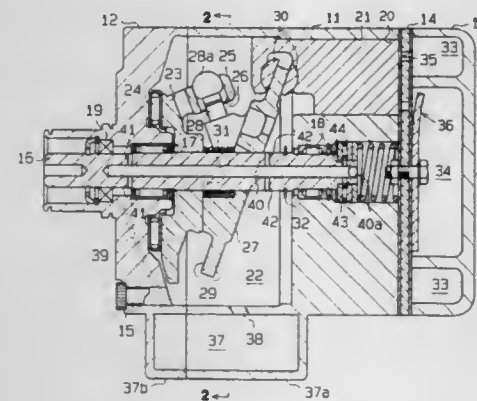
Tatsuyuki Hoshino, and Kenji Takenaka, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyota Jidoshokki Seisakusho, Kariya, Japan

Filed Apr. 17, 1996, Ser. No. 633,504

Claims priority, application Japan, Apr. 18, 1995, 7-092735
Int. Cl.⁶ F01M 1/00

U.S. Cl. 184—6.17

17 Claims



1. A compressor for a refrigeration system that circulates a refrigerant mixed with oil, the compressor comprising:
 - a casing;
 - a crank chamber within the casing, the crank chamber having a wall, wherein the crank chamber is supplied with the mixture of refrigerant and oil, the crank chamber having a bottom at which liquefied refrigerant and oil may settle due to gravity under certain conditions;
 - a drive shaft mounted in a rotatable manner to the casing for driving the compressor;
 - a cam plate connected to and driven by the drive shaft and located within the crank chamber, wherein rotation of the cam plate throws oil against the wall and causes oil to flow along the wall of the crank chamber in the general direction of rotation of the cam plate during operation of the compressor;
 - a cylinder bore formed within the casing;
 - a piston located within the bore, wherein the piston is coupled to the cam plate such that the cam plate causes the piston to reciprocate within the bore, which serves to compress the refrigerant and to discharge the refrigerant and oil mixture from the compressor;
 - an oil pan externally connected to and communicating with the crank chamber for collecting oil from the crank chamber, wherein the oil pan is located at a position elevated from the bottom of the crank chamber;
 - an oil recovering passage for joining the oil pan with the crank chamber such that some of the oil flowing along the wall of the crank chamber enters the recovering passage and thus enters the oil pan;
 - an oil guide passage for guiding oil from the oil pan toward a location near the drive shaft by the force of gravity on the oil.

5,779,005

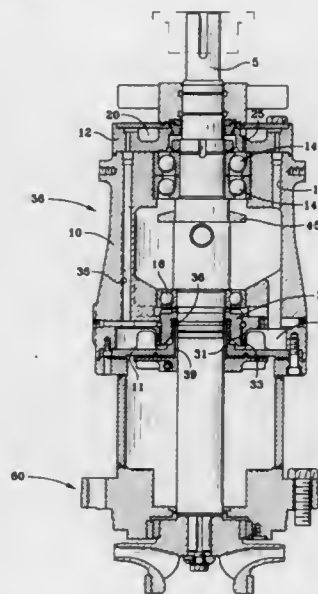
CONSTANT FLOW CASCADE LUBRICATION SYSTEM
William B. Jones, Jr., Whittier; Mark L. Hall, Garden Grove; Vahe Hayrapetian, and Khajak Jack Minassian, both of Glendale, all of Calif., assignors to Ingersoll-Dresser Pump Company, Liberty Corner, N.J.

Filed Feb. 27, 1997, Ser. No. 807,311

Int. Cl.⁶ F16N 13/20

U.S. Cl. 184—6.18

16 Claims



12. A system for lubricating bearings on a vertical rotatable shaft within a bearing housing, comprising:
 - a lower lubricant sump at a lower portion of said bearing housing;
 - an upper lubricant reservoir at an upper portion of said bearing housing;
 - a conduit providing fluid communication between said lower and upper lubricant sumps;
 - means for metering a gravity induced flow of lubricant from said upper lubricant reservoir into upper bearings;
 - means for pumping lubricant from said lower lubricant sump, through said conduit, to said upper lubricant reservoir at a rate exceeding a rate of said gravity induced flow into said upper bearings;
 - means in said upper lubricant reservoir for maintaining a constant head of lubricant above said metering means and for shunting excess lubricant back to said lower lubricant sump; and
 - means for feeding a portion of said excess lubricant to lower bearings before said excess lubricant is returned to said lower lubricant sump.

5,779,006

COMPOSITE FRICTION DISK HAVING REPLACEABLE WEAR FACES

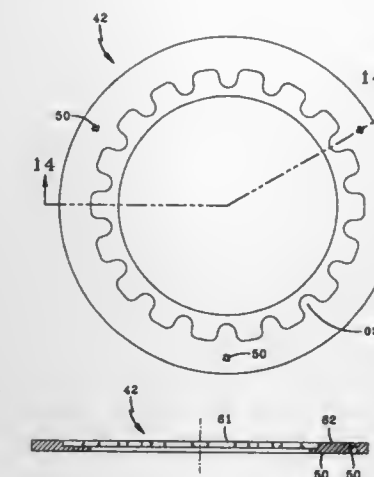
Robert William Hyde, Beavercreek; William Terry Holzworth, Springfield; Bradley John Baden, Troy, and Gary Charles Riebe, Tipp City, all of Ohio, assignors to The B. F. Goodrich Company, Richfield, Ohio

Continuation-in-part of Ser. No. 449,437, May 24, 1995, Pat. No. 5,558,186. This application Sep. 19, 1996, Ser. No. 716,121
Int. Cl.⁶ F16D 69/00

U.S. Cl. 188—250 D

30 Claims

1. A friction disk comprising an annular carrier of carbon or ceramic material including a plurality of recessed regions and a plurality of torque drive notches spaced around its circumferential direction, and an annular friction lining of carbon or ceramic material mounted on the carrier, the friction lining having a flat wear face and an obverse face including raised areas having walls



corresponding to and matingly engaging the walls of the recessed regions of the carrier to provide torque transfer capability between the lining and the carrier.

5,779,007

SHOCK ABSORBER WITH HYDRAULIC FLUID CONTROL ROD

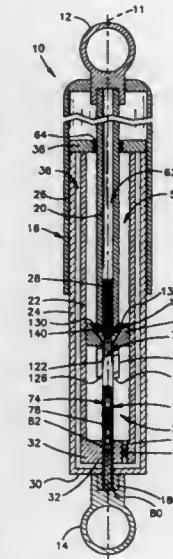
Derek K. Warinner, Lafayette, Ind., assignor to TRW Inc., Lyndhurst, Ohio

Filed Jul. 22, 1996, Ser. No. 681,173

Int. Cl.⁶ F16F 9/48

U.S. Cl. 188—289

5 Claims



1. Apparatus comprising:

- a tubular structure defining first and second variable volume hydraulic fluid chambers on opposite sides of a piston, said tubular structure further defining a hydraulic fluid reservoir; and
- a control rod which is movable longitudinally through said piston;
- said control rod and said piston together defining a first hydraulic fluid flow path extending from said first chamber to said second chamber;
- said control rod and said tubular structure together defining a second hydraulic fluid flow path extending from said first chamber to said reservoir, said second flow path being entirely separate from said first flow path;
- said control rod having surfaces that vary the sizes of said first and second flow paths upon movement of said control rod through said piston;

said surfaces of said control rod defining first and second tapered slots comprising portions of said first and second flow paths, respectively, said first and second tapered slots being spaced longitudinally from each other.

5,779,008

DRIVE UNIT WITH ENGINE AND RETARDER

Klaus Vogelsang; Jurgen Friedrich, both of Crailsheim; Hans Gebhardt, Langenzenn, and Heribert Moller, Sachsen, all of Germany, assignors to Voith Turbo GmbH & Co. KG, Germany

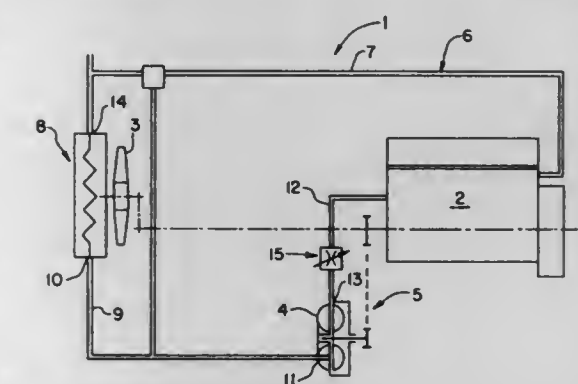
Filed Oct. 6, 1995, Ser. No. 540,205

Claims priority, application Germany, Oct. 12, 1994, P 44 36 344.3

Int. Cl.⁶ B60T 1/087; F01P 5/10

U.S. Cl. 188—296

25 Claims



1. A drive unit, comprising:

- an engine;
- a transmission;
- a hydrodynamic retarder having a housing enclosing a rotor impeller wheel and a stator impeller wheel, said rotor impeller wheel having a back side;
- an engine coolant circuit having coolant also serving as the working fluid for said retarder, said coolant circuit having a bypass line for conveying coolant, said bypass line arranged parallel to said retarder whereby the coolant may be selectively directed around said retarder; and
- a pump impeller wheel, said pump impeller wheel for circulating the coolant arranged coaxially with said rotor impeller wheel of said retarder, said pump impeller wheel being disposed in said coolant circuit in one of two positions, said two positions being a first position ahead of said bypass line in the coolant flow direction and a second position in said bypass line.

5,779,009

APPARATUS AND METHOD FOR CONTROLLING DAMPING FORCE CHARACTERISTIC OF SHOCK ABSORBER FOR CAB OVER TYPE TRUCK

Katsuya Iwasaki, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Jan. 23, 1997, Ser. No. 788,102

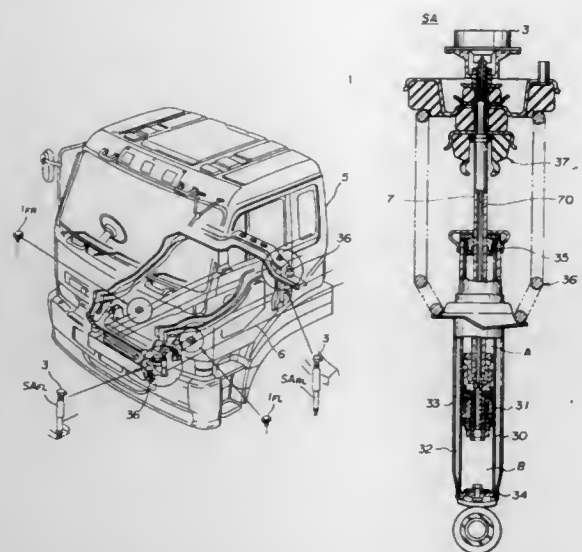
Claims priority, application Japan, Jan. 29, 1996, 8-13061

Int. Cl.⁶ F16F 9/46

U.S. Cl. 188—299

23 Claims

1. An apparatus for a cab over type truck, comprising:
 - a) at least one shock absorber interposed between a vehicle cab of the truck and a vehicle chassis of the truck and having a damping force characteristic varying member arranged to enable a variation in the damping force characteristic of the shock absorber in response to a control signal;
 - b) a vertical behavior sensor arranged on the vehicle chassis of the truck for detecting a vertical behavior on the chassis; and



longitudinal axis of the pendulum to impart to the isolator a designed horizontal stiffness.

5,779,011

Patent Not Issued For This Number

5,779,012

HYDROKINETIC TORQUE CONVERTER WITH LOCKUP CLUTCH

Volker Middelmann, Bühl; Marc Meisner, Baden-Baden, and Jürgen Freitag, Ottersweier, all of Germany, assignors to Luk Getriebe-Systeme GmbH, Bühl, Germany

Continuation of Ser. No. 386,725, Feb. 10, 1995, abandoned.

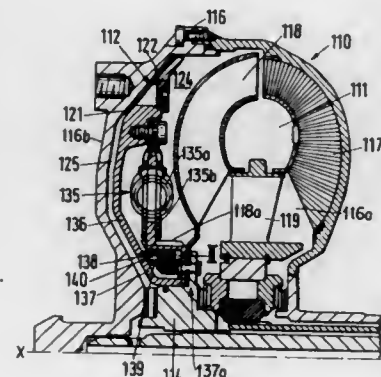
This application Aug. 5, 1997, Ser. No. 906,460

Claims priority, application Germany, Feb. 11, 1994, 44 04 454.2; Oct. 21, 1994, 44 37 747.9

Int. Cl.⁶ F16H 45/02; 61/14

U.S. Cl. 192—3.3

22 Claims



1. A torque transmitting apparatus comprising a hydrokinetic torque converter having a fluid-containing chamber and including a pump rotatable about a predetermined axis at a variable RPM by a rotary output element of a prime mover, and a turbine disposed in said chamber and including an output member rotatable about said axis; a lockup clutch engageable to transmit torque of variable magnitude from said output element to said output member and disengageable to interrupt the transmission of torque from said output element to said output member, said clutch including a piston rotatable at a plurality of speeds and movable in the direction of said axis and dividing said chamber into first and second compartments respectively containing bodies of a fluid at first and second pressures, the differential between said pressures determining the magnitude of torque being transmitted by said clutch; and at least one valve which is adjustable to establish at least one path for the flow of fluid between said compartments at a rate which varies as a function of variations of the RPM of the piston to thus influence the pressure differential and hence the magnitude of torque being transmitted by said clutch, said at least one valve being operative to permit the flow of fluid between said compartments in response to a reduction of said RPM of said piston to below a predetermined RPM and to at least reduce the rate of fluid flow between said compartments in response to a rise of the RPM of said piston above said predetermined RPM, said at least one valve comprising at least one valving element which is acted upon and is movable by centrifugal force in response to rotation of said piston to thereby reduce the rate of fluid flow between said compartments, said at least one valve further comprising means for yieldably urging said at least one valving element in a direction to increase the rate of fluid flow between said compartments.

5,779,010 SUSPENDED LOW-FREQUENCY HORIZONTAL PENDULUM ISOLATOR FOR VIBRATION ISOLATION SYSTEMS

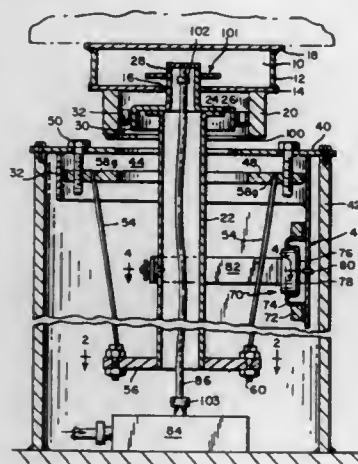
Peter G. Nelson, Newburyport, Mass., assignor to Technical Manufacturing Corporation, Peabody, Mass.

Filed Jul. 12, 1996, Ser. No. 682,855

Int. Cl.⁶ F16F 7/10

U.S. Cl. 188—378

15 Claims



1. A horizontal frequency vibration isolator which comprises: an air chamber which vertically supports a payload, the air chamber secured to the payload, said chamber having a depending wall; means to introduce air into the air chamber; and a pendulum having a longitudinal axis, the pendulum having an upper end flexibly secured to the chamber wall by a diaphragm, the pendulum having a lower end flexibly suspended by pendulum wires, which wires are attached to a leg which is grounded, the pendulum wires angled with reference to the

5,779,013 TORQUE TRANSFER APPARATUS USING MAGNETORHEOLOGICAL FLUIDS

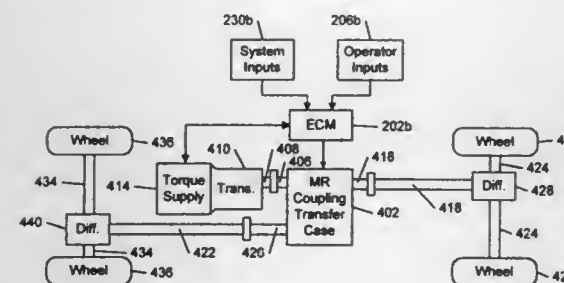
Eric A. Bansbach, Fayetteville, N.Y., assignor to New Venture Gear, Inc., Troy, Mich.

Filed Jul. 18, 1996, Ser. No. 683,834

Int. Cl.⁶ F16D 28/00

U.S. Cl. 192—21.5

6 Claims



1. A torque transfer control system comprising:
a torque supply source;
a transmission coupled to said torque supply;
first and second front axle driveshafts;
a front differential coupled between said first and second rear axle driveshafts;
a front propshaft;
first and second rear axle driveshafts;
a rear differential coupled between said first and second rear axle driveshafts;
a rear propshaft;
a fluidic coupling device which operates as a transfer case between said transmission and said front and rear differentials including
an input shaft coupled to said transmission,
a first output shaft coupled to said front propshaft,
a second output shaft coupled to said rear propshaft,
a first plate connected to said input shaft,
a second plate connected to at least one of said first and second output shafts and spaced from said first plate,
means for providing a magnetorheological fluid medium between said first and second plates, and
magnetic circuit means for applying a magnetic field to said magnetorheological fluid to variably control the rotation of said second plate in response to the rotation of said first plate;
first sensing means for detecting at least one of the rotational speed and the torque of said output shaft; and
control means, coupled to said first sensing means and said magnetic circuit means, for controlling the magnitude of said magnetic field.

5,779,014 ONE-WAY CLUTCH MOUNTING STRUCTURE

Yoshio Kinoshita, Shizuoka-ken; Toshio Awaji, and Takashi Miura, both of Fukuroi, all of Japan, assignors to NSK-Warner Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 356,439, Dec. 15, 1994, abandoned.

This application Nov. 12, 1996, Ser. No. 748,157

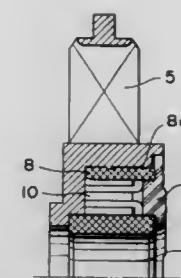
Claims priority, application Japan, Dec. 17, 1993, 5-317235

Int. Cl.⁶ F16D 41/00; 33/00

U.S. Cl. 192—41 R

8 Claims

8. In combination, a one-way clutch including an outer ring, an inner ring and a plurality of clutch members interposed between said outer and inner rings;
a housing having a pocket for receiving therein said outer ring of said one-way clutch;
spiral engaging means for securely holding said housing on said outer ring and being provided between said housing and said outer ring without a gap therebetween, said spiral engaging



means extending spirally with respect to a center axis of said outer ring and having a uniform width; and
wherein said spiral engaging means includes a spiral groove formed in an outer peripheral surface of said outer ring and wherein said housing includes a cast or molded connection filling in said spiral groove for integrating said housing to said outer ring.

5,779,015 ONE-WAY CLUTCH HAVING IMPROVED SPRING ACCOMMODATING CHAMBER

Mitsubishi Murata, Anjo, Japan, assignor to Denso Corporation, Kariya, Japan

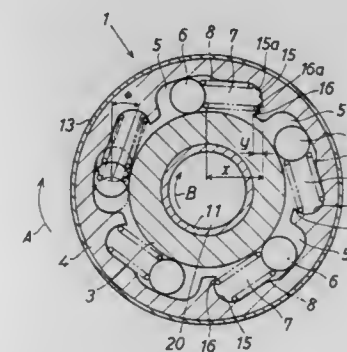
Filed Jan. 29, 1997, Ser. No. 791,785

Claims priority, application Japan, Feb. 7, 1996, 8-020984

Int. Cl.⁶ F16D 41/064

U.S. Cl. 192—42

9 Claims



1. A one-way clutch comprising:
an inner member disposed rotatably;
an outer member disposed around a periphery of the inner member to be relatively rotatably against the inner member and having a plurality of tapered cam chambers formed on an inner peripheral surface thereof and a plurality of spring-accommodating chambers communicating respectively with the cam chambers;
a plurality of rollers accommodated respectively in wedge-shaped spaces defined by the cam chambers and the inner member;
a plurality of compression coil springs accommodated respectively in the spring-accommodating chambers for urging the rollers toward a radially shorter-length side of the cam chambers;
each of the spring-accommodating chambers having a seat defined by a curved surface formed on the inner peripheral surface and inclined radially inwardly on a radially outer side with respect to an expansion/contraction direction of each compression coil spring to receive one end of each compression coil spring movably thereon; and
projections formed on the inner peripheral surface at a position radially inside the seat and projecting in the expansion/contraction direction of each compression coil spring.

5,779,016

DRIVE TRANSMISSION MECHANISM

Toyotoshi Kawasaki, Kawachinagano; Hiroyuki Ogura, Nishinomiya, and Masaaki Miyano, Sakai, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

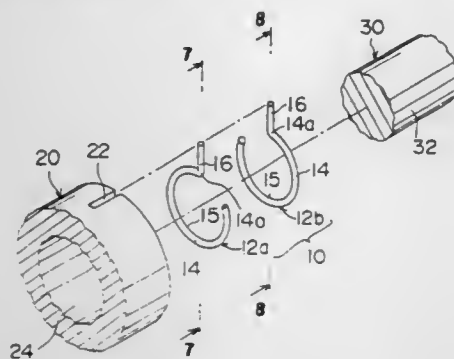
Filed Oct. 22, 1996, Ser. No. 735,136

Claims priority, application Japan, Oct. 23, 1995, 7-274089

Int. Cl.⁶ F16D 7/02

U.S. Cl. 192—48.92

8 Claims



1. A drive transmission mechanism, comprising:
- a first rotational member;
 - a first coiled spring which has a generally spiral winding part and a first engaging part which extends radially and outwardly from an end of the spiral winding part, wherein the spiral winding part of the first coiled spring is fictionally mounted on an outer surface of the first rotational member;
 - a second coiled spring which has a generally spiral winding part and a second engaging part which extends radially and outwardly from an end of the spiral winding part, wherein the spiral winding part of the second coiled spring is fictionally mounted on the outer surface of the first rotational member so that a winding direction of the spiral winding part of the second coiled spring is opposite to a winding direction of the spiral winding part of the first coiled spring; and
 - a second rotational member which is coaxial to the first rotational member, and which has an engaging groove that receives the first engaging part of the first coiled spring and the second engaging part of the second coiled spring with no space, between the first and second engaging parts thereof, and a surface forming the engaging groove, in a rotational direction of the first and second rotational members.

5,779,017

FRICTION CLUTCH FOR A MOTOR VEHICLE

Jürgen Kleifges, Schweinfurt; Bernhard Schierling, Kürnach, and Harald Jeppe, Schweinfurt, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Apr. 22, 1996, Ser. No. 636,191

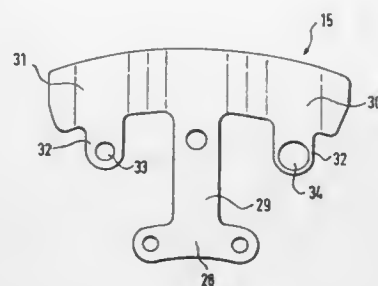
Claims priority, application Germany, Apr. 21, 1995, 195 14 817.7

Int. Cl.⁶ F16D 13/64

U.S. Cl. 192—52.6

19 Claims

1. A friction clutch for a motor vehicle, said friction clutch comprising:
- a flywheel, said flywheel having an axis of rotation defining an axial direction parallel to the axis of rotation;
 - a clutch housing;
 - a clutch disc;
 - a pressure plate for engaging and disengaging said clutch disc with said flywheel;
 - said clutch disc being disposed between said flywheel and said pressure plate;



- an arrangement to fasten said pressure plate to said clutch housing;
- an arrangement to engage said pressure plate and said flywheel with said clutch disc;
- said clutch disc comprising:
 - a hub;
 - a friction lining arrangement;
 - a carrier to connect said friction lining arrangement to one of said hub and a torsional damper disposed at said hub;
 - said friction lining arrangement comprising a first portion;
 - said first portion having a first friction surface;
 - said friction lining arrangement comprising a second portion disposed adjacent to said first portion;
 - said first portion being substantially in contact with said flywheel upon engagement of said clutch disc;
 - said friction lining arrangement comprising a third portion;
 - said third portion having a second friction surface;
 - said friction lining arrangement comprising a fourth portion adjacent to said third portion;
 - said third portion being substantially in contact with said pressure plate upon engagement of said clutch disc;
 - a first connecting arrangement to connect said friction lining arrangement to said carrier;
 - said first portion, having said first friction surface disposed thereon, being without metal fastening elements therein;
 - said third portion, having said second friction surface disposed thereon, being without metal fastening elements therein;
- said friction lining arrangement comprising a first friction lining ring;
- said first friction surface being disposed on said first friction lining ring;
- said friction lining arrangement comprising a second friction lining ring;
- said second friction surface being disposed on said second friction lining ring;
- said carrier comprising a plurality of lining springs;
- each of said plurality of lining springs comprising a second connecting arrangement to connect said friction lining arrangement to said hub;
- each of said plurality of lining springs being disposed substantially between said first friction lining ring and said second friction lining ring;
- said first friction lining ring comprising a plurality of fastening openings, each of said fastening openings of said first friction lining ring being disposed circumferentially around said first friction lining ring;
- said second friction lining ring comprising a plurality of fastening openings, each of said fastening openings of said second friction lining ring being disposed circumferentially around said second friction lining ring;
- each of said plurality of lining springs further comprising at least one tab;
- said at least one tab extending in a substantially circumferential direction;
- said at least one tab comprising a tongue;

- said at least one tab and said tongue being disposed between said first friction lining ring and said second friction lining ring;
- said tongue extending radially inwardly from said at least one tab;
- said tongue comprising at least one rivet hole;
- said first connecting arrangement comprising a plurality of rivets;
- said at least one rivet hole being circumferentially aligned with a corresponding one of said fastening openings of one of: said first friction lining ring and said second friction lining ring; and
- one of said rivets being disposed in said corresponding one of said fastening openings of said one of: said first friction lining ring and said second friction lining ring to connect said one of: said first friction lining ring and said second friction lining ring to said tongue.

5,779,018

FRICTION CLUTCH WITH CARBON PRESSURE PLATE

Klaus Hofmann, Leutershausen; Klaus Betten, Rüttershausen; Nicole Unrath, Schweinfurt, and Horst Friedrich, Happertshausen, all of Germany, assignors to Mannesmann Sachs AG, Schweinfurt, Germany

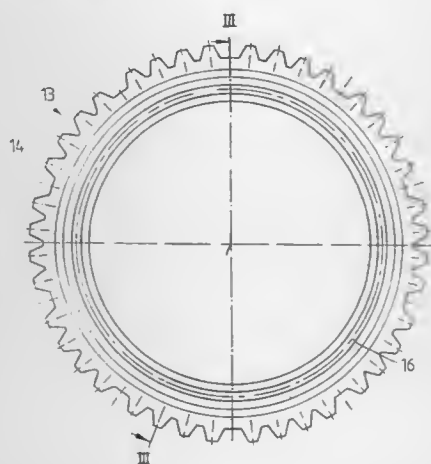
Filed Dec. 9, 1996, Ser. No. 762,409

Claims priority, application Germany, Dec. 9, 1995, 195 45 972.5

Int. Cl.⁶ F16D 13/60

U.S. Cl. 192—70.14

7 Claims



1. A friction clutch, comprising a clutch housing mountable on a counterpressure plate; a hub with internal teeth arranged in the clutch housing so as to be mountable on a transmission shaft, which defines a rotational axis, in turn-proof fashion; a friction element arranged on the hub in turn-proof fashion; a pressure plate arranged in the clutch housing in turn-proof but axially movable fashion; and diaphragm spring means for subjecting the pressure plate to a force so that the pressure plate, with interconnection of the friction element, is pressable against the counterpressure plate carrying the clutch housing, the pressure plate being made of carbon material and having a friction surface for direct contact with a friction surface of the friction element, the pressure plate further having a seating bulge arranged to engage with the diaphragm spring means, the seating bulge being arranged on a side of the pressure plate opposite to the friction surface so as to be concentric to the rotational axis, the seating bulge being reinforced, at least in an area making contact with the diaphragm spring means, by a wear resistant material.

5,779,019

HYDRAULICALLY OPERATED CLUTCH ASSEMBLY FOR A MOTOR VEHICLE HAVING A CYLINDER WITH A PLUG-IN CONNECTION

Wolfgang Grosspietsch; Herbert Voit, and Manfred Wehner, all of Schweinfurt, Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

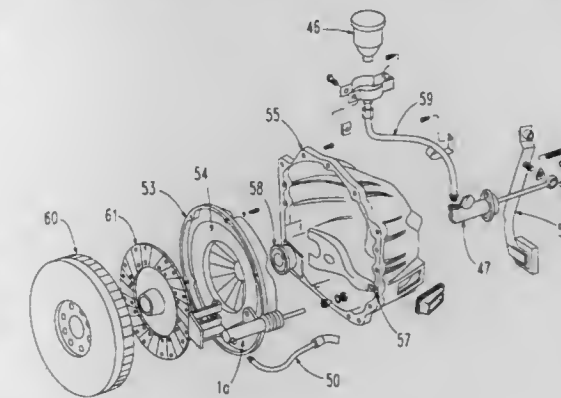
Continuation of Ser. No. 389,012, Feb. 15, 1995. This application Mar. 21, 1997, Ser. No. 821,169

Claims priority, application Germany, Feb. 16, 1994, 44 04 731.2

Int. Cl.⁶ F16L 37/14; F15B 15/14; 7/08; 9/12

U.S. Cl. 192—85 C

13 Claims



1. A hydraulically operated clutch assembly for a motor vehicle, said clutch assembly comprising:
- a flywheel defining an axis of rotation and an axial direction parallel to the axis of rotation;
 - a clutch disc;
 - a pressure plate for applying an axially directed force to said clutch disc, with respect to said axis of rotation of said flywheel, to engage said clutch disc with said flywheel;
 - said clutch disc being disposed between said flywheel and said pressure plate;
 - said clutch disc comprising at least one friction lining for contacting said pressure plate and said flywheel during engagement of said clutch disc with said flywheel;
 - an arrangement to hydraulically actuate said clutch disc;
 - said arrangement to hydraulically actuate said clutch disc comprising:
 - a cylinder, said cylinder having a first end and a second end and defining a chamber therein, at least a portion of said chamber comprising hydraulic fluid therein;
 - a piston rod extending through said first end of said cylinder and into said chamber;
 - a first arrangement to operatively connect said pressure plate to one of: said cylinder and said piston rod;
 - an arrangement to provide hydraulic fluid into and out of said chamber, said arrangement to provide hydraulic fluid comprising a male fastening device, said male fastening device having a longitudinal axis;
 - a pedal for applying pressure to the hydraulic fluid within said chamber to operate said pressure plate to apply said axially directed force, at least a portion of said pedal being disposed in a passenger compartment of a motor vehicle;
 - a second arrangement to operatively connect said pedal to the other one of: said cylinder and said piston rod; and
 - said cylinder comprising:
 - a piston disposed on said piston rod within said chamber, said piston dividing said chamber into at least two chamber portions, said piston being movable within said chamber;
 - at least one of said at least two chamber portions being configured to contain said hydraulic fluid therein;
 - an arrangement to connect said arrangement to provide hydraulic fluid to said at least one of said at least two chamber portions containing hydraulic fluid therein; and

said arrangement to connect comprising a female fastening device configured for receiving said male fastening device;

said male fastening device comprising a tubular portion having first and second parts, said first part for being inserted into said female fastening device, said second part being disposed immediately adjacent said first part;

said first part of said tubular portion comprising an outward, radial deformation of said tubular portion, said outward, radial deformation having a diameter greater than a diameter of said second part;

said arrangement to connect comprising a clip for being disposed about said second part of said tubular portion for axially fixing, with respect to said longitudinal axis of said male fastening device, said first part of said tubular portion within said female fastening device, said clip for being disposed adjacent said outward, radial deformation of said first part of said tubular portion;

said chamber of said cylinder having a longitudinal axis;

said female fastening device of said arrangement to connect having a longitudinal axis, said longitudinal axis of said female fastening device being disposed at an acute angle with respect to said longitudinal axis of said chamber, said acute angle being a substantial acute angle;

said cylinder comprising a housing disposed about and defining said chamber;

said female fastening device being integral, unitary and homogeneous with said housing;

said female fastening device of said arrangement to connect comprising a radial recess, a portion of said clip being disposed in said radial recess to axially fix said clip with respect to said female fastening device;

said radial recess comprising an arrangement to selectively permit removal of said clip from said radial recess and subsequent reinstallation of said clip into said radial recess;

said clip further comprises:

a base portion, said base portion being disposed substantially outside of said radial recess;

said base portion being configured for installing and removing said clip from said radial recess;

a first leg and a second leg disposed both opposite to and spaced apart from one another, and extending from said base portion;

said first and second legs for being disposed about said male fastening device and for tangentially enclosing at least a portion of said male fastening device therebetween; and said first leg and said second leg for being disposed substantially perpendicular to said longitudinal axis of said male fastening device; and

said outward, radial deformation of said first part comprising a substantially conical portion disposed radially about said longitudinal axis of said male fastening device.

5,779,020

BEARING ARRANGEMENT FOR ROTATABLY MOUNTING A SHAFT TO THE DRUM OF A CENTRIFUGAL CLUTCH

Thomas J. Hargarten, Glendale, Wis., assignor to Racing Technology Corporation, Milwaukee, Wis.

Filed Jul. 26, 1996, Ser. No. 686,744

Int. Cl.⁶ F16D 43/04; F16C 19/24; 43/04

U.S. Cl. 192—105 R

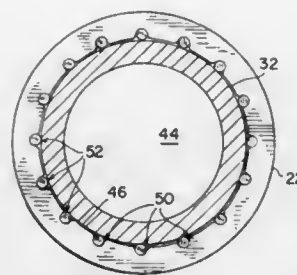
17 Claims

8. An assembly for rotatably mounting a shaft to a member, comprising:

a passage formed in the member into which the shaft is received, the passage being defined by an internal wall;

a plurality of grooves formed in the internal wall; and

a plurality of separate pin members, wherein each pin member is disposed within one of the grooves separately from and without connection to the adjacent pin members, wherein the pin members extend inwardly of the internal wall into the passage so as to engage the shaft to maintain the shaft out of engage-



ment with the internal wall and to provide relative rotation between the shaft and the member.

9. A method of rotatably mounting a shaft to a member, comprising the steps of:

forming a passage in the member, the passage being defined by an internal wall and having a diameter greater than the diameter of the shaft;

forming a series of grooves in the internal wall;

placing a pin member in each groove separate from placement of pin members in the remaining grooves, wherein the grooves and the pin members are arranged such that a portion of each pin member projects past the passage internal walls; and

inserting the shaft into the passage, wherein the pin members contact the shaft to maintain the shaft out of engagement with the internal wall.

5,779,021

Patent Not Issued For This Number

5,779,022

Patent Not Issued For This Number

5,779,023

SORTING CONVEYOR APPARATUS

Masatoshi Hidai, Utsunomiya, and Tsutomu Miura, Tochigi-ken, both of Japan, assignors to Rheon Automatic Machinery Co., Ltd., Japan

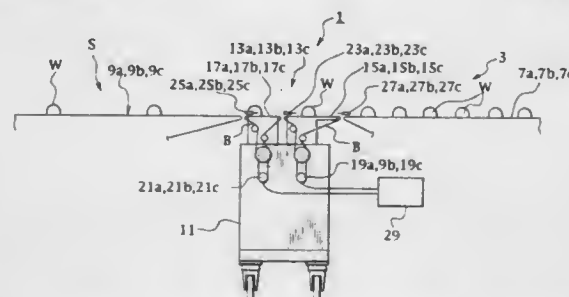
Filed Apr. 11, 1997, Ser. No. 840,192

Claims priority, application Japan, Apr. 17, 1996, 8-095508

Int. Cl.⁶ B65G 47/30

U.S. Cl. 198—418.1

8 Claims



1. A sorting conveyor apparatus for continuously sorting objects to be conveyed into groups and conveying the objects comprising: a first conveyor disposed upstream of a transverse direction for conveying the objects, said first conveyor having a plurality of first conveying areas for conveying a lot of objects under a condition of rows in said transverse direction, in a longitudinal direction which is crossed to said transverse direction;

a second conveyor disposed downstream of said transverse direction, said second conveyor having a plurality of second

conveying areas for conveying a lot of objects under a condition of rows in said transverse direction, in said longitudinal direction;

a sorting conveyors set disposed between said first conveyor and said second conveyor, said sorting conveyors set having a plurality of upstream sorting conveyors disposed in said longitudinal direction and a plurality of downstream sorting conveyors disposed in said longitudinal direction, said plurality of upstream sorting conveyors corresponding to said plurality of first conveying areas of said first conveyor in the longitudinal direction and said plurality of downstream sorting conveyors corresponding to said plurality of second conveying areas of said second conveyor in the longitudinal direction; and

a control device for individually controlling said plurality of upstream sorting conveyors and said plurality of downstream sorting conveyors, wherein said control device controls in such a manner as to stop driving of each of said upstream sorting conveyors disposed adjacent in the transverse direction when each of the objects is positioned in outlet sides of said upstream sorting conveyors disposed adjacent in the transverse direction under a condition that the objects are positioned on said plurality of respective downstream sorting conveyors and to restart driving of each of said adjacent upstream sorting conveyors again when each of the objects is carried out from outlet sides of said downstream sorting conveyors, and said control device also controls in such a manner as to stop driving of each of said downstream sorting conveyors when each of the objects is positioned in the outlet sides of said plurality of downstream sorting conveyor and to synchronously restart driving of all the downstream sorting conveyors under a predetermined carry out condition.

5,779,024

CLEANING DEVICE FOR ENDLESS CONVEYOR

Christopher R. Harper, Field View, Wade House Lane, Drax Hales, Drax, Selby, Great Britain

PCT No. PCT/GB94/02810, § 371 Date Jun. 19, 1996, § 102(e)

Date Jun. 19, 1996, PCT Pub. No. WO95/17341, PCT Pub. Date Jun. 29, 1995

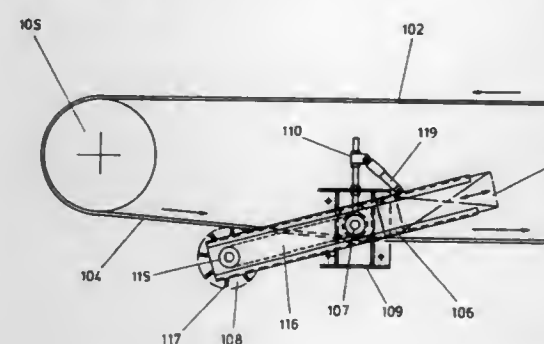
PCT Filed Dec. 22, 1994, Ser. No. 656,365

Claims priority, application United Kingdom, Dec. 22, 1993, 9326155; Jun. 22, 1994, 9412482; Aug. 15, 1994, 9416431

Int. Cl.⁶ B65G 45/18

U.S. Cl. 198—496

11 Claims



1. A cleaning device for an endless conveyor of the type comprising an endless belt having an upper conveyor run and a lower return run which are guided over rollers at each end of the conveyor, said cleaning device being arranged to exert a cleaning action on the underside of the return run of the conveyor belt and to be driven directly by the linear motion of the conveyor belt, and in which the cleaning device comprises:

a cradle adapted to be mounted pivotally adjacent to the path of travel of the return run of the endless belt, said cradle having a pivot axis;

a drive roller rotatably mounted on said cradle and engageable frictionally with the upper surface of the return run to be

rotated by the linear motion of the belt, said drive roller having an axis which coincides substantially with the pivot axis of the cradle;

a generally cylindrical cleaner also rotatably mounted on said cradle and having cleaning elements extending outwardly of the axis of rotation of the cleaner and to be engageable with the lower surface of the return run;

drive means interconnecting said roller and said cylindrical cleaner, and operative to rotate the cleaner in a direction such that the tips of the cleaning elements move in an opposite direction to the linear movement of the return run as the elements carry out a cleaning operation; and

biasing means arranged to apply a biasing moment to the cradle about its pivot axis to urge the cylindrical cleaner upwardly and thereby press the tips of the cleaning elements into engagement with the lower surface of the return run.

5,779,025

THREE-DIMENSIONAL GRIPPER RAIL DRIVE APPARATUS

Andreas Dangelmayr, Ottenbach, and Karl Thudium, Wachsenbeuren, both of Germany, assignors to Schuler Pressen GmbH & Co., Germany

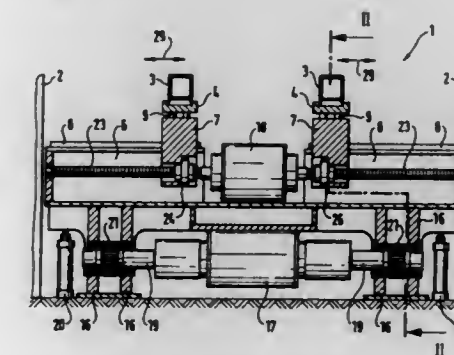
Filed Aug. 14, 1995, Ser. No. 514,985

Claims priority, application Germany, Aug. 13, 1994, 44 28 772.0

Int. Cl.⁶ B65G 25/00

U.S. Cl. 198—621.1

2 Claims



1. An apparatus for three-dimensional drive of multiple-pedestal press gripper rails which extend horizontally, are spaced parallel to one another and are arranged to move forward and backward in a transfer direction, up and down in a raising and lowering direction, and toward and away from one another in a clamping and releasing direction, wherein guides for moving the gripper rails in the transfer direction are supported in cross slide supports movable in the raising and lowering direction; the cross slide supports are supported movably in the clamping and releasing direction in a bracket; a servomotor having a reversible rotation direction is secured in the bracket, a shaft of the servomotor extends on both ends thereof to the outside and has a counterclockwise thread on one end and a clockwise thread on another end, and the servomotor is operatively associated with clasp nuts for direct drive of the cross slide supports.

5,779,026

APPARATUS FOR SORTING ARTICLES

Michael A. Hosch, Oconomowoc, and John G. Schwan, III, Milwaukee, both of Wis., assignors to Dorner Mfg. Corp., Hartland, Wis.

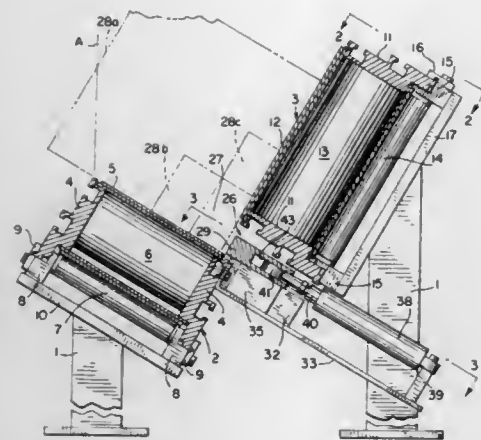
Filed Nov. 29, 1995, Ser. No. 564,620

Int. Cl.⁶ B65G 15/10

U.S. Cl. 198—817

9 Claims

1. A sorting apparatus for sorting articles on a conveyor system, comprising a first conveyor having a first conveyor member, said



first conveyor being tilted laterally so that said first conveyor member is disposed at an acute angle to the horizontal, said first conveyor member having an upper side edge and a lower side edge, a second conveyor disposed parallel to said first conveyor and having a second conveyor member disposed at an angle of about 90° to said first conveyor member, said second conveyor member having an upper side edge and a lower side edge, the lower side edge of said second conveyor member being spaced above said first conveyor member to define a space therebetween, said first conveyor member and said second conveyor member defining a generally L-shaped channel to receive articles to be conveyed, drive means for driving said first and second conveyors, and pusher means disposed to move in said space to engage and push an article laterally from said first conveyor member.

5,779,027

SIDEFLEXING CONVEYOR INCLUDING LUBRICATION INSERTS

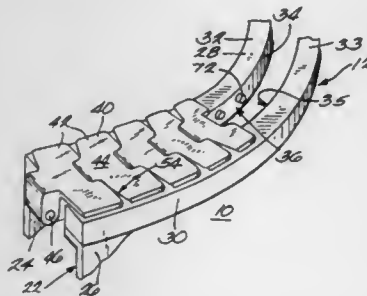
Peter J. Ensich, Wauwatosa, and Louis F. Counter, Greendale, Wis., assignors to Rexnord Corporation, Milwaukee, Wis.

Filed Feb. 14, 1996, Ser. No. 599,996

Int. Cl.⁶ B65G 15/62

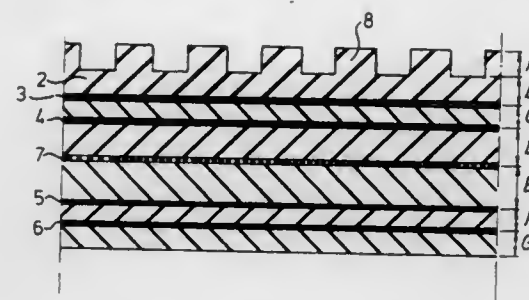
U.S. Cl. 198—841

40 Claims



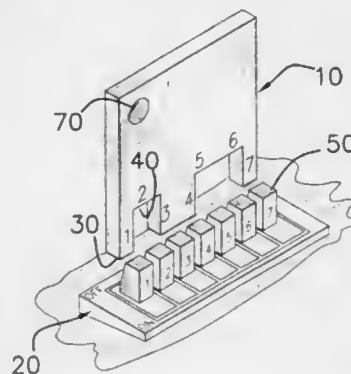
1. A conveyor comprising: a guide track including a wear strip including a guide surface; a conveyor chain supported for movement relative to said guide track and including a plurality of interconnected links each including a surface which rides adjacent said guide surface when said conveyor chain is moved; and a plurality of lubrication inserts mounted in spaced relation to one another and in one of said wear strip and said plurality of said links and including a porous material having an outer portion proximate one of said guide surface and said surface of said interconnected links and a fluid lubricant impregnating said porous material such that when said conveyor chain is moved said fluid lubricant is released from said porous material and forms a lubricating film between said guide surface and said lubrication inserts.

5,779,028
BELT HAVING TRANSVERSE RIGIDITY
Hans De Vries, Drachten, Netherlands, assignor to Dunlop-Enerka B.V., Drachten, Netherlands
PCT No. PCT/NL95/00087, § 371 Date Aug. 30, 1996, § 102(e) Date Aug. 30, 1996, PCT Pub. No. WO95/24351, PCT Pub. Date Sep. 14, 1995
PCT Filed Mar. 7, 1995, Ser. No. 700,495
Claims priority, application Netherlands, Mar. 7, 1994, 9400350
Int. Cl.⁶ B65G 15/34
U.S. Cl. 198—847 7 Claims



1. Belt (1) comprising a rubber support (2) having layers (3-6) embedded in said support and composed of high modulus cables, one of said layers being disposed close to the top and one of said layers being disposed close to the bottom of the belt to extend essentially perpendicular with respect to the longitudinal axis of the belt over the substantially complete belt width to provide transverse rigidity and, between said layers, a single layer (7) extending essentially parallel with respect to the longitudinal axis of the belt to provide longitudinal strength of the belt, characterized in that at least the layer located close to the top of the belt, comprises at least two spaced apart sub-layers (3,4) the distance between said sub-layer being smaller than the distance from any of said sub-layers to the layer providing longitudinal strength.

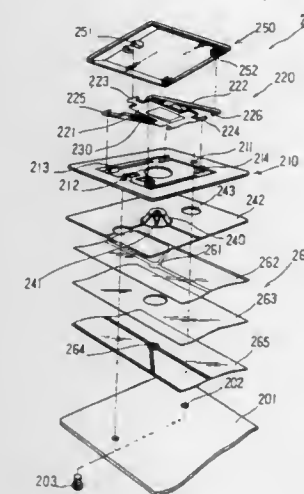
5,779,029
DEVICE FOR SETTING ACTUATORS OF A DIP SWITCH IN DESIRED POSITIONS
Jack Gershfeld, 273 Brookshire Pl., Brea, Calif. 92821
Filed Aug. 18, 1997, Ser. No. 912,504
Int. Cl.⁶ H01H 3/20
U.S. Cl. 200—330 5 Claims



1. A device for setting a plurality of actuators extending from a DIP switch in a desired position wherein the actuators are disposed adjacent to each other comprising:
a plate having a plurality of edges thereon;
at least one notch sized to enable at least one of the actuators to pass therethrough and at least one protrusion sized to contact and thereby set at least one of the actuators wherein said at least one notch and said at least one protrusion are positioned

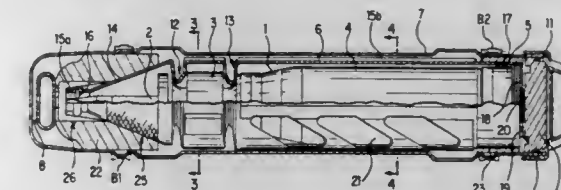
along one of said edges whereby when said plate is passed over the plurality of actuators, at least one actuator to be set is contacted and moved by said at least one protrusion to another position and at least one of the actuators not to be set is passed through said at least one notch and thereby remaining in an initial position.

5,779,030
KEY BOARD
Masahomi Ikegami, and Hobeom Park, both of Suwon-si, Rep. of Korea, assignors to Samsung Electro-Mechanics Co., Ltd., Kyongki-do, Rep. of Korea
Filed Nov. 27, 1996, Ser. No. 757,792
Int. Cl.⁶ H01H 13/70
U.S. Cl. 200—344 5 Claims



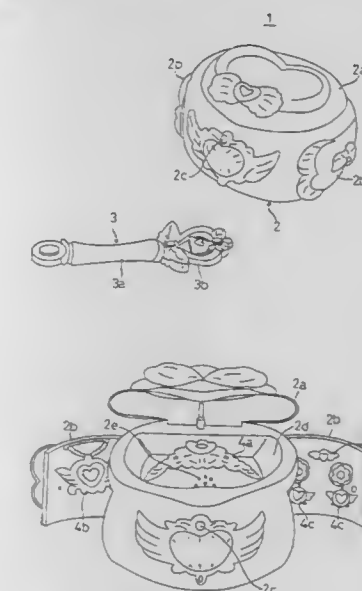
4. A key board comprising:
a key top (250) having first guide pieces (251) and second guide pieces (252) installed thereon;
a key frame (210) installed in opposing facing relation to said key top (250) with said guide pieces formed therebetween;
an actuation rubber sheet (242) having an actuation rubber (240) arranged integrally thereon to transmit upward and downward actuating movement of said key top (250) to a switching part (260);
a movable contact (261) and a fixed contact (264) respectively disposed on opposite sides of said switching part (260) and being contactable with each other through the switching part (260) by movement of said actuation rubber (240);
a link plate (220) disposed between said key top (250) and said key frame (210), and having a connecting plate (230) integrally connecting a first link part (221) to a second link part (222) thereof, wherein said connecting plate (230) and said first and second link parts (221, 222) are integrally formed as a one-piece unit;
said first link part 221 includes first and second supporting parts (223) and (224) respectively formed on opposite ends thereof, and a protuberance (231) formed on an outer rear side thereof and integrally connected to said connecting plate (230);
said second link part 222 includes first and second supporting pieces (225) and (226) respectively protecting inward from opposite ends thereof, and protuberances (232) formed on insides thereof for connecting said second link part (222) to said connecting plate (230); and
said connecting plate (230) integrally connected between said first and second link parts (221) and (222) of said link plate (220) has a thickness thinner than those of said first and second link parts (221) and (222), for making said first and second link parts (221) and (222) perform elastic actuations.

5,779,031
LARGE CALIBRE MUNITION CONTAINER
Gérard Moraine, Chaville; Gilles Capitani, La Castera; André Ferrandez, Eysines, and Yves Hazard, Cerny, all of France, assignors to Tiag Industries, Villacoublay, France
PCT No. PCT/FR96/00147, § 371 Date Aug. 9, 1996, § 102(e) Date Aug. 9, 1996, PCT Pub. No. WO96/24023, PCT Pub. Date Aug. 8, 1996
PCT Filed Jan. 29, 1996, Ser. No. 676,123
Claims priority, application France, Jan. 30, 1995, 95/01031
Int. Cl.⁶ F42B 37/00
U.S. Cl. 206—3 16 Claims



1. A container for a large calibre munition, said container comprising:
an outer envelope closed by a cap;
an inner envelope for enclosing and holding the entire munition and fully enclosed by the outer envelope, the inner envelope having means for preventing translation of the munition with respect to the outer envelope, a tapered outer part on one end and a cylindrical part having a radial wall serving as a bottom on the other end;
a head wedge positioned in the outer envelope and fitted with a recess demarcating a tapered inner profile which matches the tapered outer part of the inner envelope;
a side wedge positioned between the inner and outer envelopes; and
a bottom wedge applied against the radial bottom wall of the inner envelope and compressed by the cap.

5,779,032
ACCESSORY BOX WITH REMOTE CONTROL OPENING DEVICE
Taichi Iimura, and Hiroyasu Inagawa, both of Tokyo, Japan, assignors to Tomy Company, Ltd., Tokyo, Japan
Filed May 29, 1996, Ser. No. 654,580
Int. Cl.⁶ A47F 7/02
U.S. Cl. 206—6.1 6 Claims



1. A device, comprising:

a container with a compartment for holding one or more accessories, at least one lid mounted for movement relative to the container between an open position wherein the accessory may be removed from the compartment and a closed position, a motor, a mechanism operatively connected the motor to the lid to move same between the open and closed positions and a receiver for energizing the motor to operate the lid in response to receiving a predetermined signal, and a manually operable remote controller for emitting the signal to operate the accessory containing device, wherein said at least one lid comprises a first lid positioned generally at the top of the accessory contained device and in addition thereto second and third lids mounted generally at the sides of the device, and wherein the mechanism operatively connecting the motor and said at least one lid operatively connects said second and third lids.

5,779,033

JEWELRY CARRYING CASE

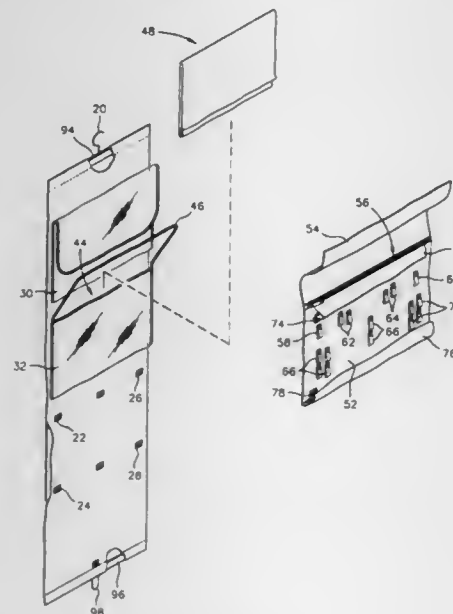
DeAnna Roegner, 774 Mays Blvd., #10-405, Incline Village, Nev. 89451

Filed Mar. 21, 1997, Ser. No. 821,420

Int. Cl.⁶ A45C 11/04

U.S. Cl. 206—6.1

20 Claims



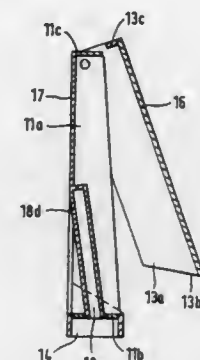
1. A jewelry carrying case, comprising:
 - a primary shell of pliable material, said shell formed of a rectangular panel having an inner face and an outer face and foldable along selected lines transverse of the back panel forming a primary receptacle;
 - a pocket assembly for detachably securing to said inner face of said panel inside said primary receptacle, said pocket comprising a back pocket panel and a front pocket panel secured together along at least a bottom and side edges forming a pocket; and
 - jewelry mounting means in said pocket for detachably mounting a plurality of selected items of jewelry.

5,779,034
DEVICE FOR STORING INFORMATION MATERIAL
 Johannes Dallmer, Arnberg, Germany, assignor to Dallmer GmbH & Co., Arnberg, Germany
 Filed Oct. 15, 1996, Ser. No. 730,202
 Claims priority, application Germany, Oct. 18, 1995, 295 16 486.7

Int. Cl.⁶ B65D 85/57

U.S. Cl. 206—232

9 Claims



1. A device for storing information material, comprising:
 - a larger container for receiving printed papers, said larger container having a bottom; and
 - a smaller container for holding standard size CDs fixedly joined to said larger container, said smaller container being disposed within said larger container and accessible from the outside, and having a bottom arranged slanted with respect to the bottom of said larger container; wherein said larger container and said smaller container are independently accessible.

5,779,035

REUSABLE PLASTIC CONTAINERS AS PACKAGING MATERIAL FOR DISPOSABLE PLASTIC GARBAGE BAGS CONTAINED THEREIN AND METHOD OF PACKAGING WITH REUSABLE PLASTIC CONTAINERS AS PACKAGING MATERIAL

John C. Marrelli, 2761 Dow Ave., Tustin, Calif. 92680, and Gary L. Rutledge, Parker, Tex., assignors to John C. Marrelli, Tustin, Calif.

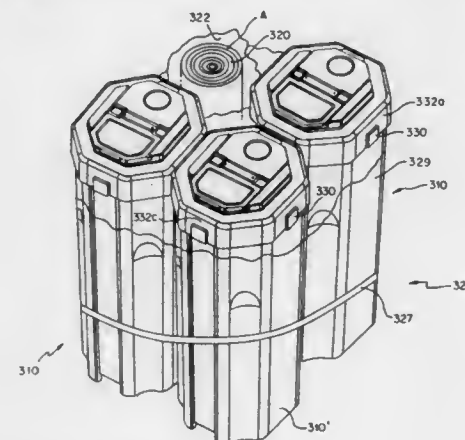
PCT No. PCT/US95/10205, § 371 Date Apr. 9, 1996, § 102(e) Date Apr. 9, 1996, PCT Pub. No. WO96/06013, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 11, 1995, Ser. No. 571,919

Int. Cl.⁶ B65D 43/16; 69/00; 85/69

U.S. Cl. 206—233

8 Claims



1. In combination; comprising:
 - (a) a reusable plastic container; and

- (b) a product including a plurality of plastic garbage bags disposed within said reusable container, wherein said reusable plastic container includes a container label associated with the container and having indicia representative of a description of the product, said container thereby functions as packaging and shipping material for said plastic garbage bags, said container, label and said bags thereby being saleable as a unit at a point of purchase; wherein said reusable plastic container includes a container body; a main lid detachably secured to close an open end of the container body, said main lid being formed with at least one pour opening; and an auxiliary closure secured to the main lid to selectively cover said pour opening.

5,779,036

FOOTWEAR HOLDING APPARATUS

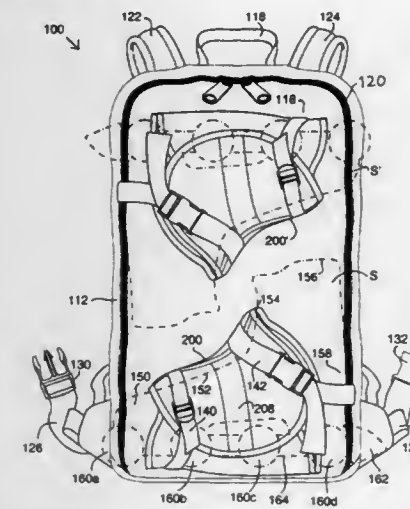
Robert S. Westbrook, 1510 E. Third St., Benicia, Calif. 94510; Christine M. Cassidy, San Anselmo, and James Dudley, Sacramento, both of Calif., assignors to Robert S. Westbrook, San Francisco, Calif.

Filed Mar. 1, 1996, Ser. No. 609,522

Int. Cl.⁶ A45C 3/12; 13/30

U.S. Cl. 206—292

14 Claims



5. A footwear holding apparatus for securing an item of footwear to the outside of an item of luggage, the item of footwear having an opening for a foot to be inserted, a toe section, a body section located forward of the opening between the toe section and the opening, and a heel section located rearward of the opening, the footwear holding apparatus comprising:
 - a center portion having a first end and a second end, said center portion secured to the outside of an item of luggage, such that when said item of footwear is secured in said footwear holding apparatus, said item of footwear is snugly attached to said item of luggage and is visible from the outside;
 - a first flap secured to the center portion first end and arranged to partially encircle the body section of the footwear when the footwear is placed upon the center portion;
 - a second flap secured to the center portion second end and arranged to partially encircle the body section of the footwear when the footwear is placed upon the center portion, wherein the first and second flaps form a continuous large flap with the center portion, the large flap arranged to completely encircle the footwear when the first flap is attached to second flap and to cover a substantial portion of the body section of the footwear;
 - a flap attaching means for attaching the first flap to the second flap to produce an encirclement, such that the first and second flaps secure the footwear within the encirclement substantially at the body section of the footwear, said first and second flaps producing an encirclement that narrows in a direction toward said toe section of said footwear;

- a first rear strap secured to one of the center portion and the first flap and arranged to partially encircle the body section of the footwear when the footwear is placed upon the center portion;
- a second rear strap secured to the center portion and arranged to partially encircle the heel section of the footwear when the footwear is placed upon the center portion; and
- a rear strap attaching means for attaching the first rear strap to the second rear strap such that the first and second rear straps secure the footwear to the center portion and prevent the footwear from sliding in a direction toward the heel section of the footwear.

5,779,037

CONTAINER FOR STORING A NUMBER OF COMPACT DISKS

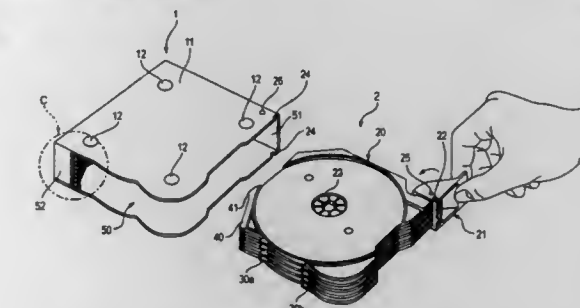
Amos D'Agaro, and Andrea Venturini, both of Udine, Italy, assignors to Exponent Italia S.r.l., Udine, Italy
 Filed Nov. 8, 1996, Ser. No. 745,287

Claims priority, application Italy, Nov. 24, 1995, PN950043 U

Int. Cl.⁶ B65D 85/57

U.S. Cl. 206—308.1

12 Claims



1. A CD container, comprising:
 - a housing defining an interior space and having a peripheral aperture opening into said interior space;
 - a plurality of CD support members pivotally mounted on said housing so as to be separately pivotal through an arc of 90 degrees through said aperture between a first position inside said housing and a second position outside of said housing; and
 - elastic holding members on said housing for retaining said plurality of CD support members in said housing; wherein each of said CD support members comprises a disk carrier plate having a central coupler washer; and wherein said plurality of disk carrier plates are pivoted on a pivot shaft that is mounted on a handle, said handle comprises spacer members thereon spacing said plurality of CD support members from each other, and said housing comprises a hole therein removably receiving an end of said pivot shaft therein.

5,779,038

STORAGE CONTAINER FOR INFORMATION-BEARING DISC DEVICES

Arthur G. F. Herr, New York, N.Y.; Robert W. Johnson, Naperville, Ill., and Toby S. Welles, Redding, Conn., assignors to Reynard CVC, Inc., Englewood Cliffs, N.J.

Division of Ser. No. 192,926, Feb. 7, 1994, Pat. No. 5,445,265.

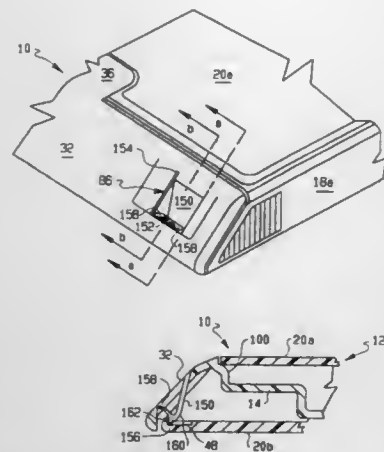
This application May 19, 1995, Ser. No. 445,252

Int. Cl.⁶ B65D 85/57

U.S. Cl. 206—308.2

10 Claims

1. A storage container for information-bearing disc devices comprising:
 - a) a drawer member comprising a top segment having a lid portion upon an upper surface thereof, a bottom segment configured and adapted for receiving an information-bearing disc device and a flexible hinge formed integral with said top and bottom segments and connecting said top segment to said



- bottom segment, said hinge adapted to permit rotation of said top segment relative to said bottom segment;
- b) an outer shell adapted for storing said drawer member, said shell comprising a front face defining a cut-out portion along an upper surface thereof, a rear face oppositely disposed and parallel to said front face, two opposed side walls and a bottom member, wherein said front and rear faces are joined to said side walls along side edges of said front and rear faces and to said bottom member along bottom edges of said front and rear faces, wherein said shell forms a generally rectangular structure closed at a lower end and open at a top end thereof, said shell configured and adapted to permit insertion and reciprocal back and forth motion of said drawer member into and out of respectively, the top end of said shell, wherein the top end is closed by said lid portion when the drawer member is fully inserted therein; and
- c) a tamper seal comprising a shaft having a first end and a second end, said shaft connected to said drawer member via a hinge at said first end and via a breakable filament at said second end, and a groove in said outer shell rear face wherein, when said storage container is opened for the first time, said shaft coacts with said groove to rotate said shaft about said hinge and break said filament.

5,779,039

PROTECTIVE DEVICE

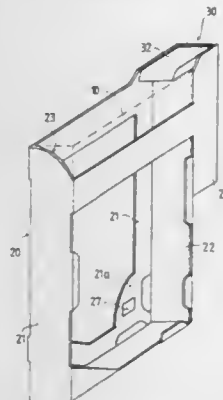
Sándor Z. Ambrus, 4 Highview Crescent, Suite 3, Toronto, Ontario, Canada, M6H 2Y2

Filed Feb. 21, 1997, Ser. No. 802,957

Int. Cl.⁶ B65D 85/57; 85/575

U.S. Cl. 206—308.2

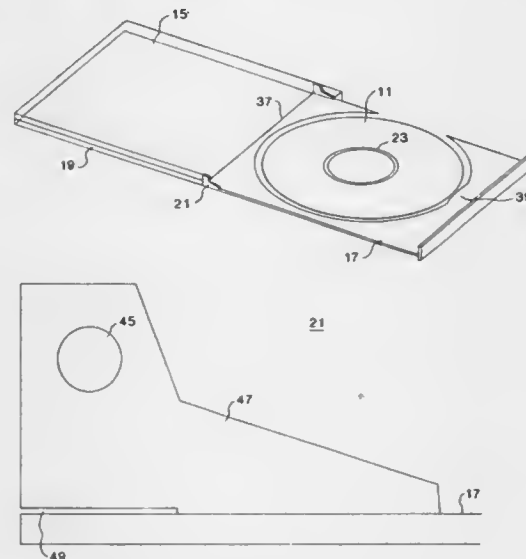
12 Claims



1. Protective means to prevent goods from being misappropriated, suitable to accommodate storage units especially of prismatic shape, said means having an internal space adapted to the shape of the storage unit and a casing that includes covering plates surrounding the internal space casing provided with a free opening to introduce the storage unit into the internal space; furthermore, the

U.S. Cl. 206—310

20 Claims



1. An apparatus for holding a disk, comprising:
a shell defined by a roof, a shell floor, a left wall and a right wall extending between the roof and the shell floor, and an opening therebetween, a pair of first grooves, each wall having one of the first grooves inside the shell running substantially the length of the respective wall; and

casing is provided with a protective hollow surrounded by a box located in the vicinity of the free opening; the said protective hollow is provided with a locking mechanism, being the said locking mechanism provided with a carrier element movable within the protective hollow as well as a clamping device associated with the carrier element covering the free opening of the casing at least partly and being able to be fixed in this position; the carrier element is provided with one or more grasping profiles located within the protective hollow; the grasping profiles are in connection to linking elements each located within the box, while the casing is provided with release openings enabling the locking mechanism to be unlocked, characterized in that primary guide device (31d) with its axis (31e) forming an angle of about 60° to 120°, with the axis (31c) of displacement of the carrier element (31) arranged on the carrier element (31) at its outer end (31b) opposite to the grasping profiles (31a); the clamping device (31) is provided with a nose-piece (32a) protruding towards the free opening (23) of the casing (20) as well as a secondary guide device (32b) of shape and size adapted to the primary guide device (31d) of the carrier element (31) and cooperating therewith, that allows the clamping device (32) to slide along the primary guide device (31d) of the carrier element (31); in the closed state of the locking device (30), the clamping device (32) is inserted into the protective hollow (25) of the box (24) and at least part of the rear wall or side wall (32d) of the clamping device (32) is in fixed connection with the box (24) to prevent any displacement; while in the open position of the locking device (30), the clamping device (32) is pulled out of the protective hollow (25) of the box (24) to allow any displacement.

5,779,040

APPARATUS FOR HOLDING AN ARTICLE

Shanas Attar, 1028 7th St., #202, Santa Monica, Calif. 90403; Donal Gibson, 2700 Neilson Way, #1536, Santa Monica, Calif. 90405, and Sean Lawlor, 950 Second St., #107, Santa Monica, Calif. 90403, assignors to Shanas Attar; Donal Gibson; Sean Lawlor, all of Santa Monica, and Icon F/X, Inc., Burbank, all of Calif.

Filed Oct. 24, 1996, Ser. No. 736,132

Int. Cl.⁶ B65D 85/57

a tray having a first end and a second end for holding the disk, the tray having a pair of hooks at the first end, each hook having a support member on the tray, and a pin attached to the support member, the pin sized to slidably engage a respective one of said first grooves allowing the tray to be moved between a closed position and an open position, the tray resting against the shell floor while substantially extending beyond the opening in the open position and substantially lying within the shell in the closed position.

5,779,041

GAME BOX PROTECTOR

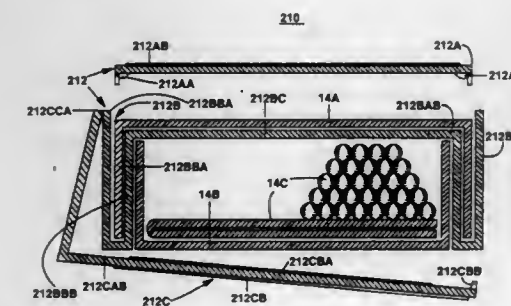
Dianna Nielsen, 514 A Hoala, Kibei, Hi. 96753

Filed Mar. 17, 1997, Ser. No. 823,892

Int. Cl.⁶ B65D 81/36

U.S. Cl. 206—315.1

5 Claims



1. A game box protector (210) comprising:
A) a housing (212) which comprises:
i) a housing middle (212B) and a housing top (212A) which comprises at least one housing top insert (212AA) extending in a downwardly direction which functions to lock the housing top to the housing middle,
ii) the housing middle which comprises a housing middle front (212BAA) securely fastened to a housing middle back (212BBA) at an outer left side edge by a housing middle left side (212BLA), the housing middle front (212BAA) is securely fastened to the housing middle back (212BBA) at an outer right side edge by a housing middle right side (212BRA), a housing middle plate (212BC) is securely fastened an outer perimeter to an inner side edge of the housing middle back (212BBA) and the housing middle left side (212BLA) and the housing middle back (212BBA) and the housing middle right side (212BRA), a game box top (14A) is insertable between the outer edges and inner of the housing middle back (212BBA) and the housing middle left side (212BLA) and the housing middle back (212BBA) and the housing middle right side (212BRA) resting upon the housing middle plate (212BC), the housing top (212A) is removably insertable into the housing middle (212B),
iii) a housing bottom (212C) is hingeably attached to an upper edge of the housing middle back (212BBA) by a housing bottom top hinge (212CAA), the housing bottom (212C) comprises a housing bottom top panel (212CA) attached at a perpendicular angle to a housing bottom bottom panel (212CB), the housing bottom bottom panel (212CB) further comprises at least one housing bottom bottom panel insert (212CBB) extending upwardly which functions to lock the housing bottom bottom panel (212CB) to the housing middle (212B), a game box bottom (14B) is insertable from a bottom direction into the game box top (14A) contained within the housing middle (212B).

5,779,042
GOLF BAG

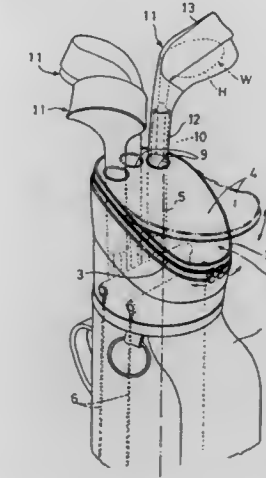
Nariie Kaneko, Osaka, Japan, assignor to Two and One Co., Ltd., Osaka, Japan

Filed Jun. 24, 1997, Ser. No. 881,203

Int. Cl.⁶ A63B 55/00

U.S. Cl. 206—315.4

2 Claims



1. A golf bag comprising a cylindrical body having a top opening, a flap detachably mounted on said cylindrical body at said top opening for closing said opening, said flap being formed with holes therethrough, tubular cases for woods inserted in said respective holes, said tubular cases being shaped such that shafts of the woods are insertable therethrough, said tubular cases each having an end portion extending outwardly through said flap, and bag members mounted on said end portions of said tubular cases, each of said bag members having a reclosable opening through which a wood is insertable.

5,779,043

GOLF CLUBS MOUNTING STRUCTURE

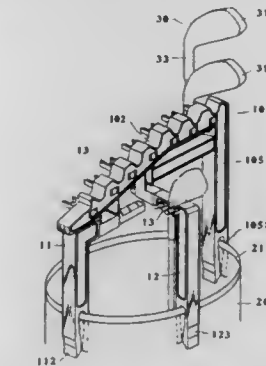
Sen-Jung Hsu, No. 27, Nong 26, Lane 2, Kuang-Fu St., Yeong-Ho City, Taipei Hsien, Taiwan; Te-Fu Hsu, and Chi-Ern Hsu, both of Yeong-Ho, Japan, assignors to Sen-Jung Hsu, Yeong-Ho, Taiwan, a part interest

Filed Jan. 6, 1997, Ser. No. 778,790

Int. Cl.⁶ A63B 55/00; 57/00

U.S. Cl. 206—315.6

4 Claims



1. An improved, golf clubs mounting structure, comprising a mounting frame, a movable vertical arm, a movable auxiliary vertical arm and a plurality of jaw elements:
said mounting frame having an upper portion which inclines to one side to form a slanting portion, a plurality of rectangular slots in a side wall thereof for engaging said jaw elements, and a plurality of substantially V-shaped mounting seats disposed on an upper side thereof for matching said

rectangular through slots; a downwardly extending portion extending from approximately a middle section of the bottom side of said slanting portion, said downwardly extending portion having one side extending horizontally to form an auxiliary arm support provided with a rectangular through hole, a reinforcing support being mounted between a side wall of said downwardly extending portion and a vertical arm to strength the structure of said auxiliary arm support; a recessed seat being disposed near the end of said slanting portion of said mounting frame, said recessed seat being provided with an adjusting seat having a quadrilateral connecting hole, said vertical arm extending integrally from the other end of said mounting frame and having a vertically oriented clamp portion provided, at a bottom end thereof;

said movable vertical arm having an upper end extending horizontally to one side to form a quadrilateral adjusting column which may fit into said quadrilateral connecting hole of said adjusting seat of said mounting frame, said movable vertical arm further having a clamp portion extending vertically from a bottom end thereof and matching said clamp portion of said vertical arm of said mounting frame;

said movable auxiliary vertical arm having an upper end extending horizontally to one side to form a support arm with a quadrilateral column at a front end thereof for fitting into the quadrilateral through hole of said auxiliary arm support of said mounting frame, said support arm having a side wall provided with two rectangular slots spaced suitably apart from each other for engaging two of said jaw elements; said movable auxiliary vertical arm further having a clamp portion extending vertically from a bottom end thereof and matching said clamp portion of said vertical arm of said mounting frame; and

said jaw elements each having a front end forming a substantially circular opening and a rear end provided with two hooks which are spaced apart suitably from each other, said jaw elements being fitted into the respective rectangular slots of said mounting frame and said support arm by pressing said hooks, thereby;

said rectangular slots engaging said jaw elements each hold the neck of a golf club and said mounting seats located above said rectangular slots each hold the head of the golf club so that a complete set of golf clubs may be positioned effectively and arranged neatly on said mounting frame; said adjusting seat has said adjusting column of said movable vertical arm inserted therethrough such that the distance between said clamp portion of said movable vertical arm and said vertical arm of said mounting frame can be adjusted; and said auxiliary arm support is movably coupled to said movable auxiliary vertical arm to enhance the stability of said mounting frame.

5,779,044

GYM BAG FOR HOLDING A BASKETBALL

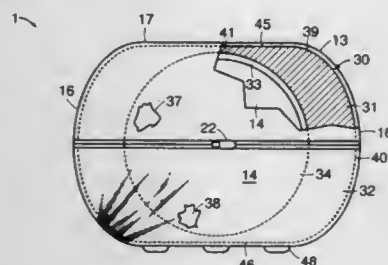
James D. Myers, Jr., 94 Cherry St., Malden, Mass. 02148

Filed Jan. 16, 1996, Ser. No. 585,907

Int. Cl.⁶ B65D 85/00; 85/30

U.S. Cl. 206—315.9

18 Claims



1. A gym bag carrier for holding a basketball, a uniform, athletic shoes and accessories, comprising:

- a flexible cover having an exterior surface and defining an interior forming a compartment, said cover having a front, rear, two sides, a top and a bottom;
- a rigid inner core element contained within said cover compartment, said inner core element having a generally spherical shape formed with two halves, a first half and a second half, each half having an exterior and an interior with a semispherical cavity formed therein and both said semispherical cavities together forming a ball cavity adapted to hold a basketball; and
- a horizontal zipper arrangement formed centrally across said cover, said zipper being arranged as part of the cover to provide two halves.

5,779,045

CEILING FAN PACKAGE

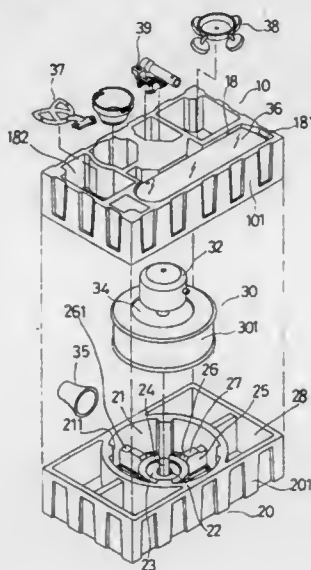
Jack Yu, No. 109-1, Avenue 6, Lane 164, Tzong Sa Road, Da Du Hsiang, Taichung Hsien, Taiwan

Filed Apr. 18, 1997, Ser. No. 844,509

Int. Cl.⁶ B65D 85/00

U.S. Cl. 206—320

6 Claims



1. A package for receiving a ceiling fan having a housing and a motor disposed in the housing and a control box coupled to the motor, the housing including an upper surface and a lower surface and a peripheral surface and a shaft extended from the upper surface, said package comprising:

- a lower casing including a bore for receiving the shaft, and including a first opening for engaging with the housing, and including at least three bars for engaging with the upper surface of the housing, and including at least three first ribs radially extended inward of said first opening for engaging with the outer peripheral surface of the housing, and
- an upper casing including a second opening for engaging with the housing, and including a space for engaging with the control box, and including at least three lumps for engaging with the lower surface of the housing and for stably retaining the housing in said package.

5,779,046

DECORATIVE TOOTHBRUSH GUARD

Andrew E. Plakos, Irvine, Calif., assignor to Strotman International, Inc., Irvine, Calif.

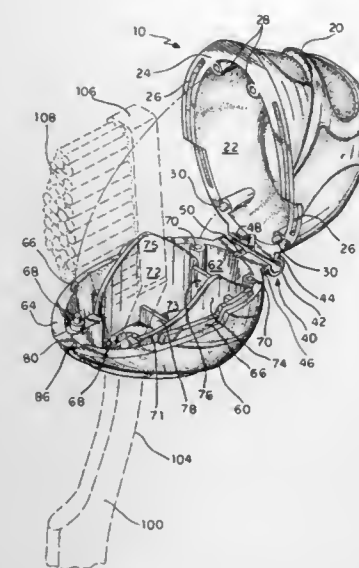
Filed Apr. 1, 1997, Ser. No. 831,144

Int. Cl.⁶ B65D 85/00

U.S. Cl. 206—362.3

16 Claims

1. A toothbrush guard comprising:



an upper cover portion having an inner cavity therein with an edge therearound;

a lower cover portion having an inner cavity therein with an edge therearound, said lower cover portion having a slot;

a seat portion integrally connected within said inner cavity to said lower cover portion for receiving a toothbrush head therein, said slot extending from said edge of said lower cover portion to said seat portion, said seat portion including a pair of opposed side walls and a rear wall connecting said side walls, each of said side walls having a base end attached to said lower cover portion and a terminal end, and said side walls being tapered in relation to each other from wide at said terminal end to narrow at said base end;

a living hinge pivotally connecting said upper cover portion to said lower cover portion; and

means for holding said edge of said upper cover portion flush with said edge of said lower cover portion.

5,779,047

WATER TIGHT STEEL TOOL BOX

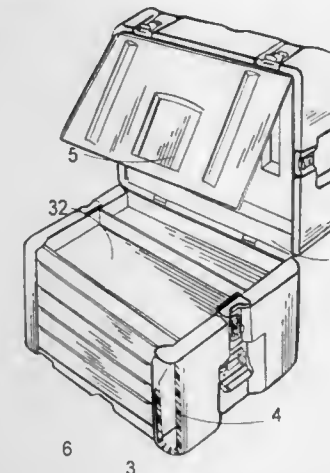
Scott A. Darrah, 7616 Wilderness Rd., Raleigh, N.C. 27613

Filed Mar. 25, 1997, Ser. No. 823,712

Int. Cl.⁶ B65D 85/00

U.S. Cl. 206—373

2 Claims



1. A water tight steel box consisting of:

- a polyethylene base member having a bottom and sidewalls, said sidewalls being of a hollow double wall construction and plastic lid members with at least one of said lid members having a top and sidewalls, said sidewalls of said at least one

of said lid members being of a hollow double wall construction and having inside and outside portions, said lid and base members having mating raised tongue and recessed groove portions at open ends of said lid and base sidewalls;

a gasket fitted in said groove portions;

a cold rolled steel inner liner with welded drawer channels molded into said sidewalls of said base member; and said drawer channels configured to accept cold rolled steel drawers; and

a locking means for holding said lid members against said base member, whereby said liner and base member eliminates need for double steel walls to support steel drawers, and whereby the tongue and groove configurations of said base and lid members encapsulate and protect inner steel components by sealing same when in closed and locked position, and whereby said liner allows for installation of steel welded parts without drilling of holes in order to attach fasteners to support steel drawers.

5,779,048

BIN LOADER PACKAGE AND METHOD

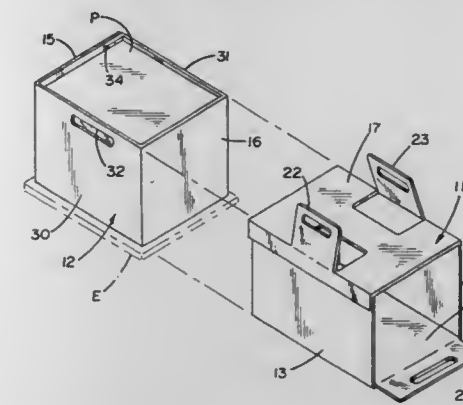
George D. Dunn, Conway, Ark., assignor to Union Camp Corporation, Lawrenceville, N.J.

Continuation-in-part of Ser. No. 597,949, Feb. 7, 1996. This application Oct. 17, 1996, Ser. No. 733,279

Int. Cl.⁶ B65D 85/62

U.S. Cl. 206—449

16 Claims



1. A bin loader package for shipping, storing and dispensing cut paper directly into the paper supply bin of a photocopier, printer or other equipment having means for storing a supply of paper used in the operation of the equipment, comprising:

means defining a box enclosure having opposite side walls, opposite end walls, a top wall and a bottom wall for enclosing a stack of paper sheets to be placed in a photocopier or other machine that uses the paper;

said means including first and second open-ended tubular members telescopically interengaged with one another to define said opposite side and end walls and said top and bottom walls, said first tubular member being oriented with its open ends aligned along a longitudinal axis and defining at least said bottom wall and said top wall, and said second tubular member oriented with its open ends aligned along a vertical axis and defining said side and end walls, said members normally being telescopically engaged with one another such that the walls of one close the open ends of the other to form said box enclosure for enclosing and protecting a stack of paper sheets during shipping, storage and handling of the package;

said first tubular member being slidable horizontally away from the second tubular member to expose the second tubular member and uncover the open top and bottom ends thereof, and said second tubular member being liftable vertically upwardly away from the stack of paper to release the paper through the open bottom end of the second tubular member and deposit it onto the elevator platform of the machine, said

first tubular member having first handle means thereon to facilitate grasping and lifting of the package formed by the first and second tubular members and a stack of paper held therein, and second handle means to facilitate movement of the first tubular member horizontally away from the second tubular member; and

said interengaged tubular members being receivable in the paper supply bin of a photocopier of other machine and separable from one another while in place in the paper supply bin to open the box enclosure to enable the first and second tubular members to be removed from the paper supply bin and to release the stack of paper from the package, whereby the package may be lifted and deposited onto the elevator platform of the paper supply bin of a photocopier or other machine, said tubular members separated from one another, in situ, and the tubular members removed from the paper supply bin to deposit the stack of paper directly from the box enclosure onto the elevator platform of the paper supply bin in position for use by the machine.

8. A bin loader package for shipping, storing and dispensing cut paper directly into the paper supply bin of a photocopier, printer or other equipment having means for storing a supply of paper used in the operation of the equipment, comprising:

means defining a box enclosure having opposite side walls, opposite end walls, a top wall and a bottom wall for enclosing a stack of paper sheets to be placed in a photocopier or other machine that uses the paper;

said means including first and second open-ended tubular members telescopically interengaged with one another to define said opposite side and end walls and said top and bottom walls, said first tubular member being oriented with its open ends aligned along a longitudinal axis and defining at least said bottom wall and said top wall, and said second tubular member oriented with its open ends aligned along a vertical axis and defining said side and end walls, said tubular members normally being telescopically engaged with one another such that the walls of one close the open ends of the other to form said box enclosure for enclosing and protecting a stack of paper sheets during shipping, storage and handling of the package;

said first tubular member being slidable horizontally away from the second tubular member to expose the second tubular member and uncover the open top and bottom ends thereof, and said second tubular member being liftable vertically upwardly away from the stack of paper to release the paper through the open bottom end of the second tubular member and deposit it onto the elevator platform of the machine; and

said interengaged tubular members being receivable in the paper supply bin of a photocopier of other machine and separable from one another while in place in the paper supply bin to open the box enclosure to enable the first and second tubular members to be removed from the paper supply bin and to release the stack of paper from the package, whereby the package may be lifted and deposited onto the elevator platform of the paper supply bin of a photocopier or other machine, said tubular members separated from one another, in situ, and the tubular members removed from the paper supply bin to deposit the stack of paper directly from the box enclosure onto the elevator platform of the paper supply bin in position for use by the machine.

9. A bin loader package for shipping, storing and dispensing cut paper directly into the paper supply bin of a photocopier, printer or other equipment having means for storing a supply of paper used in the operation of the equipment, comprising:

means defining a box enclosure having opposite side walls, opposite end walls, a top wall and a bottom wall for enclosing a stack of paper sheets to be placed in a photocopier or other machine that uses the paper;

said means including first and second members interengaged with one another to define said opposite side and end walls and said top and bottom walls, said first member defining at least said bottom wall and said second member defining at least one of said side and end walls, said members normally being engaged with one another to form said box enclosure

for enclosing and protecting a stack of paper sheets during shipping, storage and handling of the package; and

said first member having first handle means thereon to facilitate grasping and lifting of the package formed by the first and second members and a stack of paper held therein, and second handle means to facilitate movement of the first member horizontally away from the second member, whereby said interengaged members are receivable in the paper supply bin of a photocopier of other machine and separable from one another while in place in the paper supply bin to open the box enclosure to enable at least one of the first and second members to be removed from the paper supply bin and to release the stack of paper from the package, whereby the package may be lifted and deposited onto the elevator platform of the paper supply bin of a photocopier or other machine, said members separated from one another, in situ, and at least one of the members removed from the paper supply bin to deposit the stack of paper directly from the box enclosure onto the elevator platform of the paper supply bin in position for use by the machine.

5,779,049

BIN LOADER PACKAGE AND METHOD

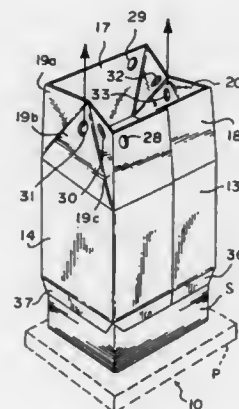
Robert W. Werby, Franklin, Va.; Peter F. Szeles, Strongsville, Ohio, and A. Cameron Leslie, Chesapeake, Va., assignors to Union Camp Corporation, Lawrenceville, N.J.

Filed Feb. 7, 1996, Ser. No. 597,949

Int. Cl.⁶ B65D 85/62

U.S. Cl. 206—451

32 Claims



1. A bin loader package for shipping, storing and dispensing cut paper directly into the paper supply bin of a photocopier, printer or other equipment having means for storing a supply of paper used in operation of the equipment, comprising:

means defining a box having opposite side walls, opposite end walls, a top wall and a bottom;

said bottom having wall means movable between an open position and a closed position, said wall means, when in closed position, supporting at least a marginal edge portion of sheets of paper placed in the box;

said wall means being openable under the weight of paper in the box when the box is lifted to open the bottom of the box and enable the paper to drop through the open bottom for deposit onto a supporting surface in the paper supply bin, thereby enabling the paper to be quickly and easily deposited directly from the box into the bin; and

said top wall has lifting means to facilitate grasping of the top wall to lift the box for discharge of paper through the bottom.

17. A blank for forming a package containing a quantity of sheets of paper, in which the package has a bottom that is openable under the weight of paper in the package so that the paper can be discharged through the bottom of the package as it is lifted, said blank comprising:

a plurality of wall panels joined together at spaced apart, parallel, transverse fold lines for forming side and end walls when the blank is folded to its operative position to form the package;

a plurality of flap panels integrally joined to the wall panels via a longitudinal fold line extending along one edge of the wall panels, said flap panels being joined to one another at adjacent edges via said transverse fold lines, and forming opposed top end wall flaps and opposed top side wall flaps when the blank is folded to its operative position to form the package; and

at least one of said flap panels having lifting means formed thereon to facilitate grasping of the flap and lifting of the package when the panels are folded to their operative position to form the package.

18. A bin loader package containing a quantity of sheets of paper for shipping, storing and dispensing the paper directly into the paper supply bin of a photocopier, printer or other equipment having means for storing a supply of paper used in operation of the equipment, comprising:

means defining a box having opposite side walls, opposite end walls, a top and a bottom;

said bottom having wall means movable between an open position and a closed position, said wall means comprising narrow foldable flaps integrally joined via fold lines to a bottom edge of each of the side and end walls, defining a narrow ledge around the open bottom of the box when the flaps are in their closed position, whereby only a narrow marginal edge portion of a stack of paper in the box is engaged and supported by the flaps when they are closed, said flaps being easily openable under the weight of paper in the box when the box is lifted, to open the bottom of the box and enable the paper to drop only a very short distance through the open bottom for deposit directly from the box onto a supporting surface in the paper supply bin.

26. A bin loader package for shipping, storing and dispensing cut paper directly into the paper supply bin of a photocopier, printer or other equipment having means for storing a supply of paper used in operation of the equipment, comprising:

means defining a box having opposite side walls, opposite end walls, a top wall and a bottom wall;

said top wall has lifting means to facilitate grasping of the top wall to lift the box for discharge of paper through the bottom of the box;

said bottom wall including flap means movable between an open position and a closed position, said flap means, when in closed position, supporting at least a marginal edge portion of sheets of paper placed in the box, and being openable under the weight of paper in the box when the box is lifted to open the bottom of the box and enable the paper to drop through the open bottom for deposit onto a supporting surface in the paper supply bin, thereby enabling the paper to be quickly and easily deposited directly from the box into the bin; and

a moisture vapor barrier material incorporated in the walls of the box to maintain a predetermined moisture content of paper stored in the box.

31. A bin loader package containing a quantity of sheets of paper for shipping, storing and dispensing the paper directly into the paper supply bin of a photocopier, printer or other equipment having means for storing a supply of paper used in operation of the equipment, comprising:

means defining a box having opposite side walls, opposite end walls, a top and bottom;

said bottom comprising foldable flaps integrally joined via fold lines to a bottom edge of each of the side and end walls and movable between an open position and a closed position and when in closed position supporting at least a marginal edge portion of sheets of paper placed in the box, said flaps being openable under the weight of paper in the box when the box is lifted to open the bottom of the box and enable the paper to drop through the open bottom for deposit onto a supporting surface in the paper supply bin, thereby enabling the paper to be quickly and easily deposited directly from the box into the bin;

said flaps including a pair of rectangular bottom wall side flaps joined at a fold line to a bottom edge of respective opposite

side walls of the box and having free edges extending into contiguous relationship with one another when folded into closed position across the bottom of the box, and a pair of bottom wall end flaps joined at a fold line to the bottom edges of respective opposite end walls of the box, said bottom end flaps each divided by a pair of diagonal fold lines into a central triangularly shaped panel having a base edge coincident with the fold line joining the bottom end flap to a respective box end wall, and a pair of outer triangular panels joined along fold lines to respective adjacent end edges of said rectangular bottom wall side flaps, said central triangular panels first being folded inwardly over the bottom of the box, with the outer triangular panels lying against the central triangular panel and the opposite bottom wall side flaps lying over the triangular panels of the inwardly folded bottom wall end flaps, whereby the weight of paper held within the box rests primarily on the first-folded center triangular panels of the bottom wall end flaps to move these panels downwardly and outwardly relative to the bottom of the box, causing the opposite outer triangular panels and the side flaps to also untold as the box is lifted to discharge the paper onto a platform of the photocopier or the like.

5,779,050

LIDDED PACKAGE HAVING A TAB TO FACILITATE PEELING

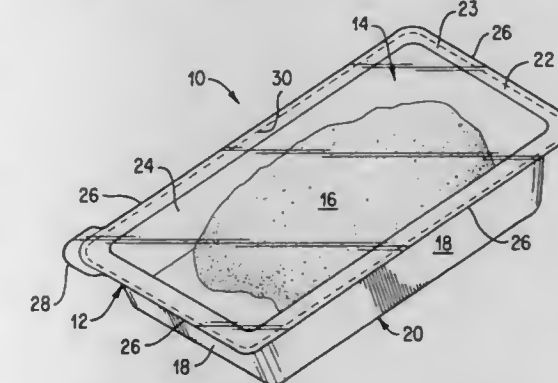
Patrick N. Kocher, and Robin D. Owens, both of Greer, S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Mar. 11, 1997, Ser. No. 814,671

Int. Cl.⁶ B65D 85/50

U.S. Cl. 206—497

10 Claims



1. A package, comprising:

a. a support member for supporting a product thereon; and
b. a lid bonded to said support member with a heat-seal between said support member and said lid, said heat-seal extending substantially continuously about the product to enclose the product between said support member and said lid, said lid being at least partially heat-shrinkable and having a first peripheral portion and a second peripheral portion, said first peripheral portion being heat-contracted toward said heat-seal to a greater degree relative to said second peripheral portion, whereby said second peripheral portion provides a tab which can be manually grasped for peeling said lid.

5,779,051

TWO-PLANE STACKING CONTAINER FOR LIQUIDS

Raymond Boutin, 865, rue Mackenzie, Boucherville, Québec, Canada, J4B 5W9

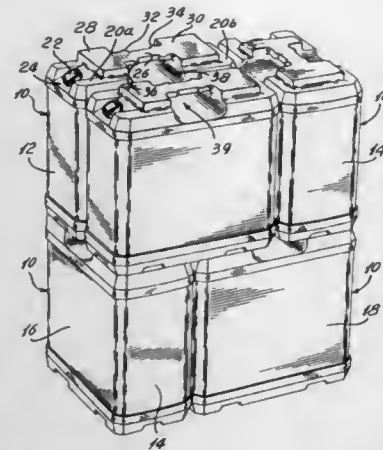
Filed Sep. 9, 1996, Ser. No. 708,823

Int. Cl.⁶ B65D 1/24

U.S. Cl. 206—504

6 Claims

1. A container for liquids configured for two-plane stacking with similarly constructed containers comprising a body having a rect-



anguloid configuration including a front wall, a rear wall, a pair of opposite side walls, a bottom wall and a top wall; said top wall including a top surface having a recessed liquid pouring spout area and a raised handle area; said handle area including a handle bar and a rectangular planar face contiguous with each opposite end of the handle bar; said bottom wall having an underface included within a downwardly extending peripheral border defined by a series of spaced legs and displaying pockets between said legs; said legs being adapted to rest on the top surface of one or two containers when disposed therebeneath in stacked relation; said handle bar being adapted to extend through pockets of two containers when stacked either in planes 90° to one another or when stacked in a common plane but vertically offset to one another; said raised handle area being received within said border under the underface of a superposed container vertically stacked thereunder; said rectangular planar faces and said handle bar of one container cooperating with the legs and pockets of another container to secure said containers in stacked condition.

5,779,052

APPARATUS AND METHOD FOR DELIVERING AIR-DROP SUPPLIES

Geoffrey Reason Woodford, Oaklands Farm, Haveringland, Norwich, United Kingdom; Larry James Aitken, Rylee Estates, Upper Compensation, Umblai, Natal, South Africa; Neville Martin Desselss, Transvaal, South Africa; Brent Aubrey Manson, Transvaal, South Africa; Casparus Johannes Stoop, Transvaal, South Africa; Herman J. Kleynhans, Transvaal, South Africa, and Etienne Eugene Coetzee, Transvaal, South Africa, assignors to Larry James Aitken, South Africa, and Geoffrey Reason Woodford, United Kingdom

PCT No. PCT/GB94/01056, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO94/26623, PCT Pub. Date Nov. 24, 1994

PCT Filed May 17, 1994, Ser. No. 583,070

Claims priority, application United Kingdom, May 17, 1993, 9310068.3; Apr. 5, 1994, 9406726.1

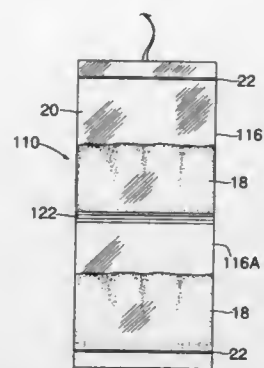
Int. Cl.⁶ B65D 25/08; 81/02

U.S. Cl. 206—521

21 Claims

1. A sachet for use in an air-drop carton and containing food, medical supplies or other aid-related contents, the sachet comprising:

opposing flexible walls sealed together to form a plurality of separate compartments for containing the contents, the flexible walls comprising plastic sheet material having a thickness between 50 and 500 microns, at least one of the compartments being filled between 15% and 85% of its volume with the contents, the sachet and the contents having a weight of between 30 g and 700 g, and the sachet having a length to a



width ratio of 4:3 or greater, such that the sachet will tend to feather-fall earthwards when released from an aircraft in flight.

5,779,053

SKIN PREPARATION TRAY FOR USE IN SURGICAL PROCEDURES

Lawrence Partika, Bridgewater; Vivekanand Arya, Fairview, and Christopher Johnson, Ringwood, all of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

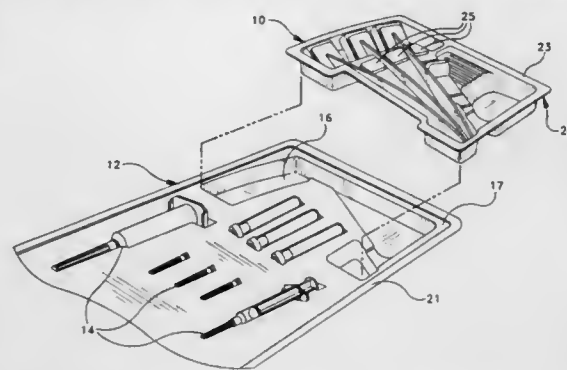
Continuation of Ser. No. 499,340, Jul. 7, 1995, abandoned.

This application May 5, 1997, Ser. No. 841,878

Int. Cl.⁶ B65D 85/62

U.S. Cl. 206—570

17 Claims



1. A kit useful for preparing a patient for catheterization comprising:

an implement tray having a plurality of recesses therein for holding a plurality of implements for preparing a patient for catheterization, wherein one of said recesses is shaped to receive a removable preparation tray;

a removable preparation tray holdable in a user's hand for use in the preparation of the patient involving a solution and one or more swab implements absorptive of a quantity of said solution,

at least one swab to receive, to deliver and to apply the solution to the patient's skin;

said removable preparation tray comprising a relatively planar sheet having a top surface, a bottom surface and opposed sides, said removable tray being sized and ambidextrously configured to be held between the fingers and thumb of either of a user's hands, and wherein said removable tray includes at least one swab embossment forming a recess for receiving said one or more swab implements and a basin embossment having a depth for receiving a quantity of the solution, and wherein said at least one of said swab embossments and said basin embossment define co-planar bottom surfaces spaced at said opposed sides of said removable tray sufficient to enable said removable preparation tray to be stood stable on a work surface; and

said basin embossment further including a pressing surface to allow the user to control the quantity of solution absorbed by

said one or more swab implements by the user's compression of said one or more swab implements against said pressing surface, said pressing surface being fluidly communicable with said basin embossment to collect a surplus of the solution in said basin embossment; and

said pressing surface being located intermediate said opposed sides of said removable tray so that when said removable tray is held between the thumb and fingers of the hand the user, said pressing surface is supported by the palm of the user's hand.

5,779,054

Patent Not Issued For This Number

5,779,055

PROTECTIVE PACKAGE FOR DELICATE ITEMS

Curtis R. Lacy, III, Buford, Ga., assignor to Stephen Gould Paper Co., Inc., Whippany, N.Y.

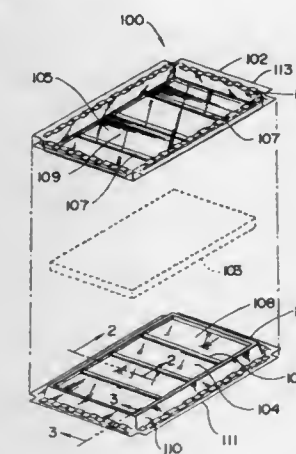
Continuation of Ser. No. 422,070, Apr. 13, 1995, abandoned.

This application Mar. 5, 1997, Ser. No. 811,857

Int. Cl.⁶ B65D 85/30

U.S. Cl. 206—701

23 Claims



1. A package for delicate items, the package comprising:

(a) a base comprising a base component cavity and a base perimeter portion, the base perimeter portion surrounding and connected to the base component cavity, the base perimeter portion comprising;

a first base flange comprising a first base side edge, and a second base flange adjacent to the first base flange, the second base flange comprising a second base side edge, the first base side edge and the second base side edge being adjacent and separated by an inside corner and wherein at least a portion of the first base side edge and a portion of the second base side edge are unconnected with each other, the first base flange and the second base flange constructed of a plastic material of predetermined thickness whereby the first base flange flexes in a vertical and a lateral direction independent of the second base flange, and

(b) a cover engageable with the base.

5,779,056

ELECTROSTATIC DISCHARGE (ESD) PROTECTION SYSTEM FOR SHIELDING A PRINTED CIRCUIT ASSEMBLY DURING MANUFACTURE

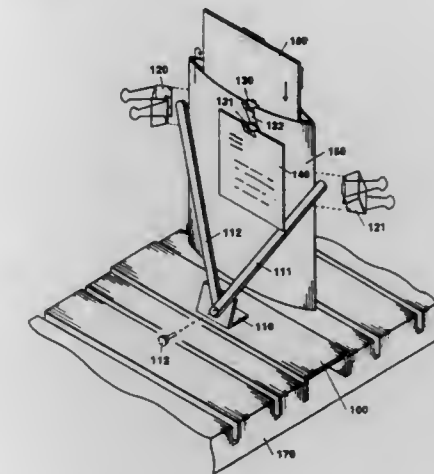
Robert J. Russell, South Boston, and Robert W. Romeri, Quincy, both of Mass., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Aug. 14, 1996, Ser. No. 702,394

Int. Cl.⁶ B65D 85/38

U.S. Cl. 206—709

25 Claims



1. An electrostatic discharge (ESD) protection system for shielding printed circuit assemblies (PCAs) during their manufacture, the ESD protection system comprising:

(a) an ESD packaging bag sized to house a PCA and having a pair of sides, a sealed bottom and an open end;

(b) a frame support structure including a number of vertical angled support members and a horizontal base member having a pair of ends, the support structure being constructed to have at least one of the number of vertical angled support members positioned mounted to the horizontal base member at a predetermined distance from one of the ends of the horizontal base member, the one vertical angled support member being configured for attaching to the sides of the bag when vertically positioned so as to provide a predetermined confinement area for the PCA inserted into the bag; and,

(c) a weighted attachment element attachably mounted to a predetermined point along the open end of the bag, the weighted attachment element being constructed for holding the open end of the bag in an open position for facilitating insertion and removal of the PCA when placed in a first position and for maintaining the open end of the bag in a closed position when placed in a second position by folding over the open end of the bag to maintain ESD protection.

17. An electrostatic discharge (ESD) protection system for shielding printed circuit assemblies (PCAs) during their manufacture, the ESD protection system comprising:

(a) an ESD packaging bag sized to house a PCA and having a pair of sides, a sealed bottom and an open end;

(b) a frame support structure including a T shaped vertically positioned member, and a horizontal base member having a pair of ends, the T shaped member being positioned at a central point along the horizontal base member, the T shaped member being attachable to the sides of the ESD bag; and,

(c) a weighted attachment element attachably mounted to a predetermined point along the open end of the bag, the weighted attachment element being constructed for holding the open end of the bag in an open position for facilitating insertion and removal of the PCA when placed in a first position and for retaining the open end of the bag in a closed position when placed in a second position by folding over open end of the bag to maintain ESD protection.

20. An electrostatic discharge (ESD) protective system for shielding a printed circuit assembly (PCA) during manufacture, the ESD system comprising:

- (a) an ESD packaging bag sized to house a PCA and having a pair of sides, a sealed bottom and an open end;
 (b) a horizontal base member;
 (c) a support structure including a number of vertical angled members mounted to the horizontal base member and configured for enabling attachment of predetermined portions of the members to the sides of the bag when vertically positioned and for providing a predetermined confinement area for securely supporting the PCA when inserted into the ESD bag, and

- (d) a weighted attachment element attachably mounted to a predetermined point along the open end of the bag, the weighted attachment element being constructed for holding the open end of the bag in an open position for facilitating insertion and removal of the PCA when placed in a first position and for retaining the open end of the bag in a closed position when the weighted attachment element is placed in a second position by folding over open end of the bag to provide ESD protection.

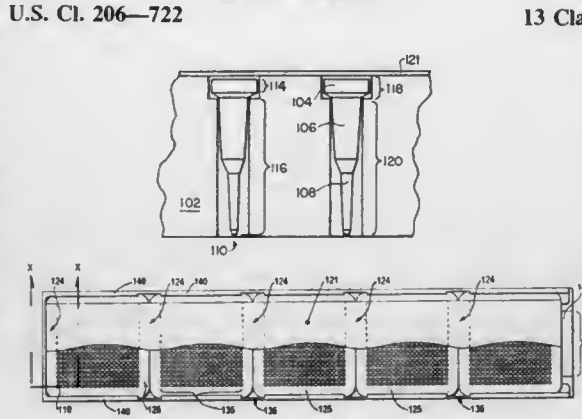
23. An electrostatic discharge (ESD) protective system for shielding a printed circuit assembly (PCA) during manufacture, the ESD system comprising:

- (a) an ESD packaging bag sized to house a PCA and having a pair of sides, a sealed bottom and an open end;
 (b) a horizontal base member;
 (c) a support structure attached to the horizontal base member, the support structure including a number of members configured for enabling attachment of predetermined ones of the members to the sides of the bag when vertically positioned and for providing a predetermined confinement area for securely supporting the PCA when inserted into the ESD bag, and
 (d) a weighted attachment element attachably mounted to a predetermined point along the open end of the bag, the weighted attachment element being constructed for holding the open end of the bag in an open position for facilitating insertion and removal of the PCA when placed in a first position and for retaining the open end of the bag in a closed position when placed in a second position by folding over open end of the bag to maintain ESD protection, the weighted attachment element having a pair of ends, each end having an attachment element, one end of the pair being attachable to the predetermined point along the open end of the bag and the other end being attachable to documents associated with PCA inserted into the ESD bag.

24. An electrostatic discharge (ESD) protection system for shielding printed circuit assemblies (PCAs) during their manufacture, the ESD protection system comprising:

- (a) an ESD packaging bag sized to house a PCA and having a pair of sides, a sealed bottom and an open end;
 (b) a frame support structure including a pair of vertical angled support members, each support member having a pair of ends and a horizontal base member having a substantially flat top surface, the support structure being constructed to have each of the pair of vertical angled support members mounted generally perpendicular to the top surface of the horizontal base member, the pair of vertical angled support members being configured relative to each other for attaching to the sides of the bag when vertically positioned so as to provide a predetermined confinement area for the PCA inserted into the bag; and
 (c) a weighted attachment element attachably mounted to a predetermined point along the open end of the bag, the weighted attachment element being constructed for holding the open end of the bag in an open position for facilitating insertion and removal of the PCA when placed in a first position and for retaining the open end of the bag in a closed position when placed in a second position by folding over the open end of the bag to maintain ESD protection.

5,779,057
RIGID REMOVABLE CARRIER TRAYS
 Michael LePage, Tiverton; Keith Morrison, Jamestown; Ronald Schmitt, Coventry, and Paul Chauvin, Cumberland, all of R.I., assignors to Augat Inc, Mansfield, Mass.
 Filed Nov. 4, 1996, Ser. No. 740,718
 Int. Cl.⁶ B65D 85/46
 U.S. Cl. 206—722 13 Claims



1. A carrying device for transportation and storage of groups of pin sockets, each having an overall length dimension and an upper section and lower section of predetermined length and diameter, where the upper section diameter is greater than the lower section diameter, comprising:

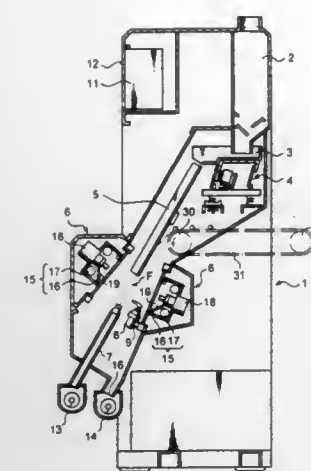
- a frame section with first and second members interconnected by at least one support beam; and
 a rigid body with upper and lower surfaces, said body disposed in said frame and having at least one array of holes disposed through said upper surface, said holes including upper and lower sections, said hole lower section having a diameter that is less than the pin socket upper section diameter, said hole upper section having a length dimension which is approximately equal to the length dimension of the upper section of the pin socket;

whereby groups of pin sockets may be transported and stored by placing individual pin sockets in said holes, the upper section of each pin socket being approximately flush with the upper surface of the rigid body during transport.

5,779,058
COLOR SORTING APPARATUS FOR GRAINS
 Satoru Satake, Tokyo; Takafumi Ito, and Norimasa Ikeda, both of Hiroshima, all of Japan, assignors to Satake Corporation, Tokyo, Japan
 Filed Dec. 28, 1995, Ser. No. 580,528
 Claims priority, application Japan, Dec. 28, 1994, 6-339845; Jan. 12, 1995, 7-021161
 Int. Cl.⁶ B07C 5/342; G01J 3/50
 U.S. Cl. 209—581 3 Claims

1. A grain color sorting apparatus comprising:

- grain guide means for guiding grain along a predetermined grain path;
 grain feeding means for feeding grain to said grain guide means;
 optical detection means having illumination means for illuminating the grain at a predetermined detection field while the grain flows down along the grain path, an optical detection section for receiving light from said illuminated grain, and a background disposed at a location opposite to said optical detection section with said grain path interposed therebetween, said illumination means including at least one kind of light source having spectral energy distribution in both a visible light region and a near infrared region, at least one set of said optical detection means formed by said optical detection section and said background being provided, and said optical detection section being integrally formed by a first light receiving sensor with high sensitivity to the visible light region and a second light receiving sensor with high sensitiv-

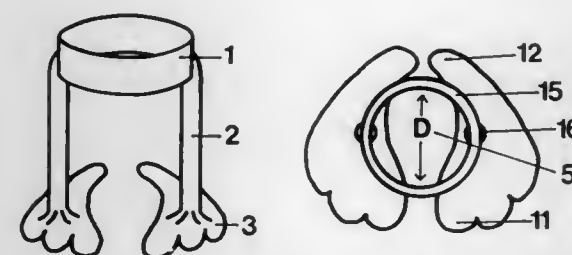


ity to the near infrared region, said first light receiving sensor being directed to a first viewing point within said predetermined detection field and said second light receiving sensor being directed to a second viewing point which is different from said first viewing point within said predetermined detection field;

a control circuit for outputting a rejection signal by comparing an output signal of said optical detection means with a threshold value,

said control circuit comprising a speed detection circuit for detecting a flowing speed of the grain based on a time difference between the detection of a given grain by said first light receiving sensor and the detection of the same grain by said second light receiving sensor, and a drive delay time change circuit for changing a drive delay time of said ejector means when there has occurred a change in the flowing speed of the grain detected by said speed detection circuit; and
 ejector means disposed below said optical detection means and arranged for rejecting rejective grain or foreign materials according to the rejection signal from said control circuit.

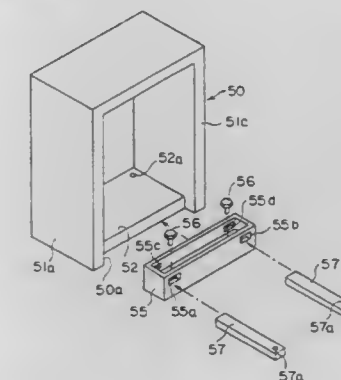
5,779,059
ORNAMENTAL EGG DISPLAY STAND
 Andrew J. Kotch, 330 Howell Rd., Shavertown, Pa. 18708-9603, assignor to Andrew J. Kotch, Shavertown, Pa.
 Filed Apr. 29, 1996, Ser. No. 639,747
 Int. Cl.⁶ A47F 7/00
 U.S. Cl. 211—14 1 Claim



1. A manufactured free standing unit for the purpose of holding and displaying an egg in an elevated position, comprising:

- (a) a hollow cylindrical member having sufficient diameter to prevent an egg from passing through,
 (b) a pair of elongated support members of equal length to elevate said hollow cylindrical member, attached to said hollow cylindrical member at opposite sides of its diameter and both extending in a similar downward direction,
 (c) a pair of broad flat base members joined to said elongated support members to stabilize and maintain an upright position of said elongated support members and cylindrical member.

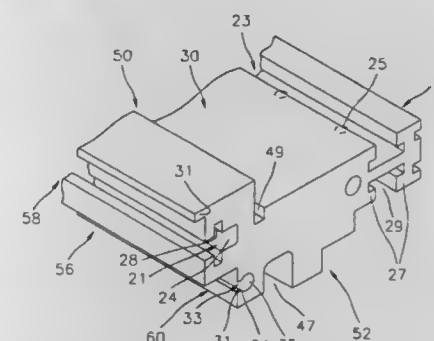
5,779,060
STRUCTURE OF RACK
 Takashi Imamoto; Hirotohi Takada; Toshiaki Miyamaru, and Akihiro Hamaguchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
 Filed Oct. 19, 1994, Ser. No. 325,827
 Claims priority, application Japan, Mar. 18, 1994, 6-049502
 Int. Cl.⁶ A47F 5/00
 U.S. Cl. 211—26 10 Claims



1. In combination:

- a) at least two racks adapted to be placed back-to-back with each other on a floor
 b) a structure including
 a fixing base block located in a border between the racks and adapted to be fixed on the floor, said fixing base block having a hole; and
 a connecting bar having a first end portion inserted into the hole of the fixing base block and a second end portion adapted to be fixed on the floor, said connecting bar crossing a bottom of one of said racks so that a bottom surface of the one of the racks is adapted to be pressed against the floor by the connecting bar.

5,779,061
SHELF FRAME FOR USE IN A RACK FOR STORING A COMMUNICATION SYSTEM
 Gab-Sang Lee, Incheon, Rep. of Korea, assignor to Daewoo Telecom Ltd., Rep. of Korea
 Filed Nov. 6, 1996, Ser. No. 744,491
 Claims priority, application Rep. of Korea, Nov. 7, 1995, 1995 32527
 Int. Cl.⁶ A47F 7/00
 U.S. Cl. 211—26 15 Claims



1. A shelf frame for use in a rack for storing a communication system, the shelf frame comprising:

- a top side, a bottom side, a rear side and a front side, said front side comprising a protruding portion proximate said top side and a recessed portion proximate said bottom side, said recessed portion being rearward of said protruding portion in a side view of the shelf frame;

a first locking portion extending along said protruding portion;
a second locking portion extending along said recessed portion and running parallel to the first locking portion;
an ejector supporting portion formed in said bottom side and running parallel to the second locking portion; and
a clamping portion located and extending along said rear side.

5,779,062

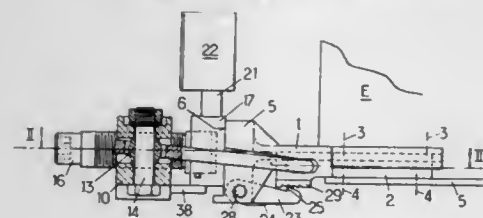
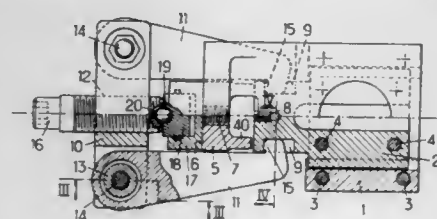
DEVICE FOR POSITIONING, LOCKING AND EXTRACTING MOBILE EQUIPMENT WITH RESPECT TO A FIXED SUPPORT

Roger Félix Canonero, Aix-En-Provence, France, assignor to Eurocopter France, Marignane Cedex, France
Filed Dec. 10, 1996, Ser. No. 763,149

Claims priority, application France, Dec. 12, 1995, 95 14705
Int. Cl.⁶ A47F 7/00

U.S. Cl. 211—26

8 Claims



1. A device for positioning and extracting mobile equipment with respect to a fixed support comprising two slideway elements, one of said two slideway elements being secured to the mobile equipment and the other of said two slideway elements being secured to the fixed support, for guiding the mobile equipment slideably along the fixed support until complementary connectors, secured to said mobile equipment and to said fixed support, have been coupled together; removable insertion tooling comprising catching means for temporarily catching hold of a load-spreading body on said other of said two slideway elements; and a press screw adapted to be screwed into said load-spreading body to exert, via an end, a thrust on said one of said two slideway elements; locking means comprising a locking screw adapted to be screwed into a tapped hole in said other of said two slideway elements after said locking screw has passed said one of said two slideway elements, said locking screw comprising a head for resting against a bearing face of said one of said two slideway elements.

5,779,063

DEMOUNTABLE BRACKETS

Joseph P. Moran, III, Tulsa, Okla., assignor to Jomoco Products Company, Tulsa, Okla.

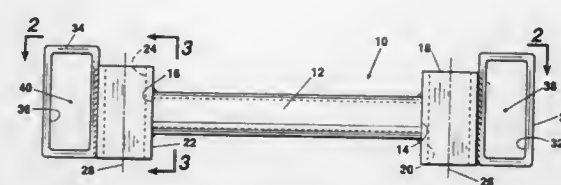
Continuation of Ser. No. 279,909, Jul. 25, 1994, Pat. No. 5,651,467. This application Apr. 18, 1997, Ser. No. 843,568
Int. Cl.⁶ A47F 7/00

U.S. Cl. 211—49.1

9 Claims

1. A demountable bracket for use in erection of a structure, wherein the structure is assembled employing load supporting timbers, the timbers being of generally uniform cross-sectional shape, said bracket comprising:

a horizontal elongated non-load bearing connecting member having opposed first and second ends;



a first short-length inner channel member secured to said connecting member first end and having a channel axis;
a second short-length inner channel member secured to said connecting member second end and having a channel axis;
a third short-length outer channel member secured to said first channel member on a side thereof opposite said connecting member and having a channel axis; and
a fourth short-length outer channel member secured to said second channel member on a side thereof opposite said connecting member and having a channel axis, the channel axis of one of said first and third channels and one of said second and fourth channels being in a first common plane and the channel axis of the other of said first and third channels and the other of said second and fourth channels being in a second common plane, each common plane being substantially perpendicular to the other, wherein said timbers are slidably receivable in said channel members to form said structure, said connecting member being isolated from the weight of objects supported by said structure.

5,779,064

FASTENING ARRANGEMENT FOR RACKING SYSTEM

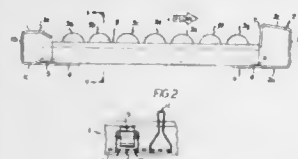
Vic Dolling, Lincoln, England, assignor to Dexion Group PLC, Hemel Hempstead, Great Britain
Filed Jan. 27, 1997, Ser. No. 789,119

Claims priority, application United Kingdom, Jan. 30, 1996, 9601857

Int. Cl.⁶ A47F 5/00

U.S. Cl. 211—59.2

10 Claims



1. A fastening arrangement for securing an elongate member of a racking system to a support member, wherein said elongate member is disposed substantially perpendicularly to the support member, comprising:

a rack support member having a substantially planar flange for supporting the elongate member, and having a plurality of tongues spaced along said support member, said tongues being pressed out of the plane of said flange, and
an elongate member releasably held on said flange of said support member by a selected one or more of said tongues, with said elongate member lying between said flange and at least one of said tongues.

5,779,065

RACK AND SHELVING SYSTEM

David R. Thalensfeld, Bear Creek, Pa., and Thomas O. Nagel, Blairstown, N.J., assignors to Trion Industries, Inc., Wilkes-Barre, Pa.

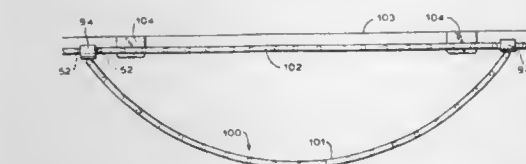
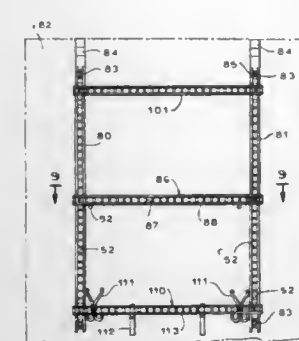
Division of Ser. No. 378,187, Jan. 25, 1995, Pat. No. 5,719,366.
This application May 31, 1996, Ser. No. 657,797

Int. Cl.⁶ A47F 5/00

U.S. Cl. 211—87.01

11 Claims

1. A rack structure comprising first and second rack strips



(a) each rack strip comprising a pair of elongated, spaced-apart side elements formed of steel wire rod material and extending in parallel relation and with respective longitudinal axes defining a plane,
(b) said rack strips including a multiplicity of cross bar elements, formed of steel wire rod material similar to said side elements,
(c) said cross bar elements being spaced apart uniformly in the direction of said longitudinal axes, being disposed at right angles to and in the plane of said longitudinal axes, and said cross bar elements being spaced apart a distance equal to the spacing between said side elements,
(d) said cross bar elements being fused at each end with inner side surface portions of said side elements,
(e) each of said rack strips having an end cross bar element adjacent to one end extremity thereof,
(f) one joining clamp engaging the end cross bar element of each of said rack strips,
(g) said joining clamp comprising a body member having a central portion and a pair of cross bar engaging recesses on opposite sides of said central portion for receiving the end cross bar elements of each of said rack strips,
(h) a clamping cap for said joining clamp for securing said end cross bars within said recesses,
(i) first and second rack strips of the type comprising a pair of elongated, spaced-apart side elements disposed in parallel relation and defining a plane, and a plurality of cross bars welded to said side elements and lying in the plane defined thereby,
(j) a plurality of mounting clamps, at least two such clamps for each of said rack strips,
(k) said rack strips being mounted in spaced-apart parallel relation on a support structure,
(l) at least a third rack strip extending between said first and second rack strips at right angles thereto, and
(m) two back plates fixed adjacent opposed ends of said third rack strip and each back plate being adapted for snap-on attachment of said third rack strip to one of said first and second rack strips.

5,779,066

STORAGE RACK WITH RETAINER LOOPS MAINTAINING UNIFORM PRESSURE AGAINST THE ARTICLES BEING HELD

Herbert M. Drower, Wilmette, Ill., and Dean S. Paris, Takoma Park, Md., assignors to Transilwrap Company, Inc., Chicago, Ill.

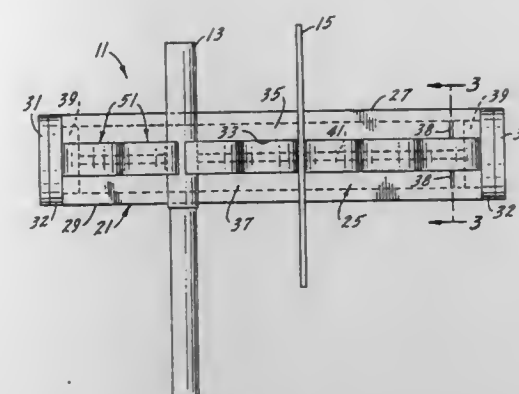
Filed Sep. 24, 1996, Ser. No. 719,154

Int. Cl.⁶ A47F 5/00

U.S. Cl. 211—89.01

6 Claims

1. An elongated rack for supporting or aligning small articles or elongated things, said rack including:



an elongated housing having a rear wall adapted to be positioned against a supporting surface, a front wall including upper and lower portions separated by a narrow, elongated opening extending substantially the entire length of said housing, a rib extending forwardly of said rear wall in alignment with said narrow, elongated opening, and

a multiplicity of retainer loops mounted side by side on said elongated housing, each retainer loop formed of a strip of a tough, resilient, abrasion-resistant resin and having a bight portion and two legs with a tail formed at the end of each leg and a notch formed in each tail,
said retainer loops mounted in said elongated housing with said legs extending through said narrow, elongated opening in said front wall of said elongated housing with said bight portions of said loops positioned outwardly of said front wall, said tails of said loops engaging said upper and lower portions of said front wall and said notches of said retainer loops receiving said rib.

5,779,067

VERTICAL REFRIGERATOR SIDE RACK AND METHOD

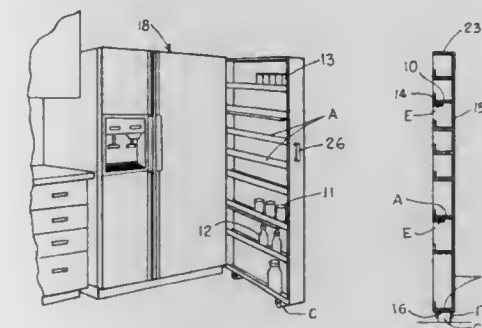
Everette A. Reaney, 200 Childress Circle, Greenville, S.C. 29611-2611

Filed Sep. 10, 1996, Ser. No. 711,991

Int. Cl.⁶ A47F 5/00

U.S. Cl. 211—90.04

9 Claims



1. A vertical rack for mounting outside and on a side wall of a refrigerator comprising:

a plurality of aligned vertically spaced horizontal shelves each having a depth suitable for carrying a single row of canned goods longitudinally disposed from front to rear across said side wall;
a frame supporting said shelves and having a base support member aligned with the shelves, a top opposite the base and a side member remote from the side wall;
spaced wheels carried by said base support member for carrying the vertical rack on the floor for movement from a retracted position to an extended position exposing the shelves and their contents extending outwardly beyond the refrigerator while being supported thereby;
a mounting plate extending across said side wall for securing the rack to the wall; and

an extensible slide on said mounting plate on said side wall carrying said rack for said movement from retracted to extended position;
whereby space adjacent a side of a refrigerator is conserved while positioning articles including canned goods for ready access.

5,779,068

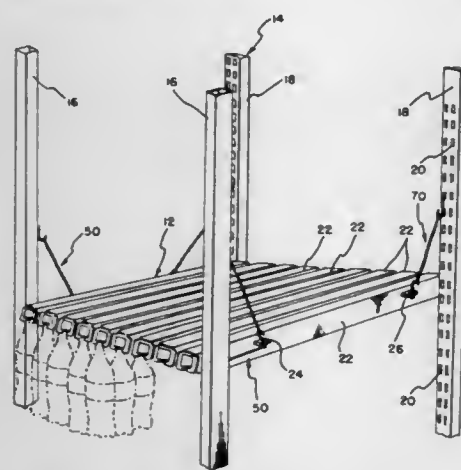
SUPPORT ASSEMBLY FOR DISPLAY SHELF

James Douglas Whiten, Kennesaw; J. Marshall Suttles, Elberton; Dennis E. Parham, Kennesaw, and Reeder T. Burch, Jasper, all of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Jul. 19, 1996, Ser. No. 684,357
Int. Cl.⁶ A47F 5/08

U.S. Cl. 211—117

16 Claims



1. A support assembly for a display shelf, comprising:
an upright for supporting said shelf in an elevated position, said upright having a plurality of engaging means disposed therealong at vertical spacings whereby said shelf may be supported at a selected elevation;
an upper hook engaged with one of said engaging means of said upright;
an elongate member connected to said upper hook and extending downward from said upper hook;
a lower hook connected to said elongate member at a position lower than said upper hook to engage said shelf; and
positioning means interposed between said upright and said lower hook to retain said lower hook at a predetermined position with respect to said upright.

5,779,069

REINFORCED SHELVES

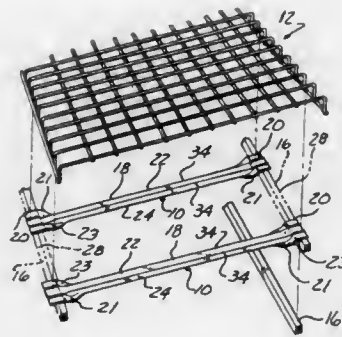
Geoffrey B. Scully, Tecumseh, Mich., assignor to Adrian Fabricators, Inc., Adrian, Mich.

Filed Jul. 9, 1996, Ser. No. 680,537
Int. Cl.⁶ A47B 43/00

U.S. Cl. 211—153

3 Claims

1. A reinforced shelf comprising:
a shelf member;
at least one horizontal support bar having opposite end portions and a center portion;
said center portion of said at least one horizontal support bar having a top planar surface and a pair of side walls, and said top planar surface connected to said shelf member wherein said shelf member extends beyond the periphery of said top planar surface;
said pair of side walls extending downwardly from said top planar surface to form a longitudinal channel wherein said channel faces away from said shelf member;



said end portions having a substantially flat bearing surface lying in substantially the same plane as said top planar surface;
at least one contour line extending contiguously from the top planar surface through said end portions to strengthen said bearing surface; and
said bearing surface supportable by a traverse beam, wherein said at least one contour line further comprises a semi-cylindrical raised contour formed in and extending along said bearing surface.

5,779,070

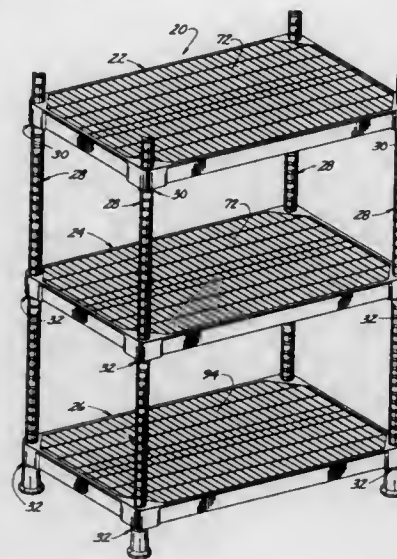
ADJUSTABLE SHELVING APPARATUS

Thomas Dickinson, and Bradley D. Gale, both of St. Louis, Mo., assignors to Contico International, Inc., St. Louis, Mo.

Filed Nov. 10, 1995, Ser. No. 556,267
Int. Cl.⁶ A47B 43/00

U.S. Cl. 211—187

47 Claims



1. An adjustable shelving apparatus comprising:
at least one shelf having a support surface for supporting articles placed thereon;
at least one upright post sized for extending through an opening in the shelf, the post having a plurality of lock elements on the surface thereof;
at least one collar configured for at least partially encompassing the post, the collar having an inner surface, an outer surface, and at least one lock element on the inner surface of the collar engageable with the lock elements of the post;
said lock elements of the post and said lock element of the collar being shaped and configured for preventing axial movement of the collar relative to the post when said lock element of the collar engages at least one of said lock elements of the post; the collar being resiliently deformable between a gripping position and a release position, the lock element of the collar

engaging at least one of the lock elements of the post when the collar at least partially encompasses the post and is in its gripping position to lock against axial displacement of the collar relative to the post, the lock element of the collar being radially spaced from the lock elements of the post when the collar is in its release position to permit axial displacement of the collar relative to the post, the resiliency of the collar biasing the collar in its gripping position independent of any external forces pressing against the collar to releasably maintain engagement of said lock element of the collar with said at least one of the lock elements of the post;

the lock element of the collar and the lock elements of the post being shaped and configured for locking against axial movement of the collar relative to the post regardless of the circumferential position of the collar relative to the post;
the opening through the shelf comprising a collar-receiving socket for receiving the collar;
the collar-receiving socket being configured to receive the collar in a manner so that the collar supports the shelf on the post.

5,779,071

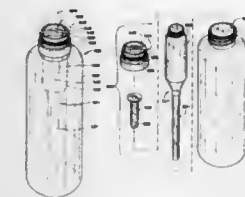
NURSING BOTTLE WITH AN AIR VENTING STRUCTURE

Craig E. Brown, Mt. Zion, Ill.; Robert J. Brown; Bernard J. Kemper, both of Bonne Terre, Mo., and David E. Hays, Desloge, Mo., assignors to New Vent Designs, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 511,590, Aug. 4, 1995, Pat. No. 5,570,796. This application Jan. 19, 1996, Ser. No. 589,117
Int. Cl.⁶ A61J 9/04

U.S. Cl. 215—11.5

9 Claims



1. A nursing bottle adapted to be filled with liquid, wherein the bottle prevents a vacuum from being formed within the bottle when inverted, the nursing bottle comprising:

a container having an open top and being adapted to contain a quantity of liquid;
a vent unit adapted to fit within the container comprising a reservoir tube having an upper and lower portion, the reservoir tube having a proximal first end adapted to fit adjacent the top of the container and an open second end projecting sufficiently downwardly in the container so that when the bottle is inverted the open second end is above the level of the liquid in the container; and
an airway in the vent unit extending between the outside of the container and a point in the reservoir tube above the level of the liquid trapped in the reservoir tube when the nursing bottle is inverted.

5,779,072

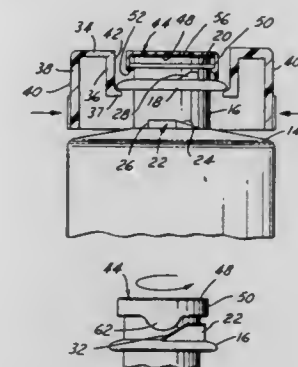
SQUEEZE AND TURN FLIP TOP CHILD RESISTANT PACKAGE

John D. Krebs, Toledo, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Filed Feb. 19, 1997, Ser. No. 802,703
Int. Cl.⁶ B65D 50/04

U.S. Cl. 215—219

9 Claims



1. A child resistant package comprising
a hollow container including a body and a finish having an opening,
a plastic closure comprising a base wall, an outer flexible peripheral skirt and an inner peripheral skirt,
interengaging retaining means on said finish of said container and said inner skirt of said closure restricting relative movement between said container and closure to rotary movement, said plastic closure comprising opposed flexible portions on said outer skirt,
said plastic closure having opposed lugs on the inner surface of said outer skirt,
said container having opposed lugs on said finish engaging said lugs on said closure precluding rotation of said closure unless said flexible portions of said skirt are squeezed,
said plastic closure having a top portion of said base wall hinged to said base wall and normally lying in the same plane as said base wall,
said container having a securing bead on said finish,
said top portion having means engaging said securing bead,
an inclined ramp on said container, and
a cam follower on said top portion of said closure such that when said outer skirt of said closure is squeezed and rotated, said cam follower engages said inclined ramp and said top portion is released from said securing bead.

5,779,073

CAP FOR A CORKED GLASS BOTTLE

Didier Milhomme, Sevrier, France, assignor to Societe Alsacienne d'Aluminium, Saint Julien en Genevois, France

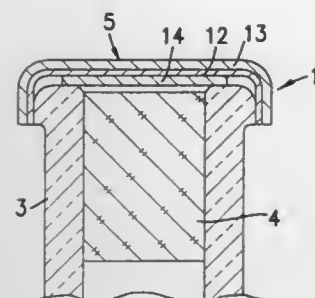
Filed Oct. 11, 1996, Ser. No. 729,398

Claims priority, application France, Oct. 12, 1995, 95 11974
Int. Cl.⁶ B65D 39/00

U.S. Cl. 215—232

6 Claims

1. A bottle cap and bottle combination comprising (i) a glass bottle provided with a neck having an upper surface and an annular side surface in close proximity to said upper surface and (ii) a bottle cap including
a thin member having a circular planar portion and a depending peripheral skirt portion, said planar portion having a lower surface,
means including said planar portion for contacting the upper surface with a material having substantially no adhesive properties, and



said skirt portion having an inner surface which is directly adhered to the side surface by a heat-activated adhesive in contact therewith.

5,779,074

COMBINATION STOPPER-SHIELD CLOSURE

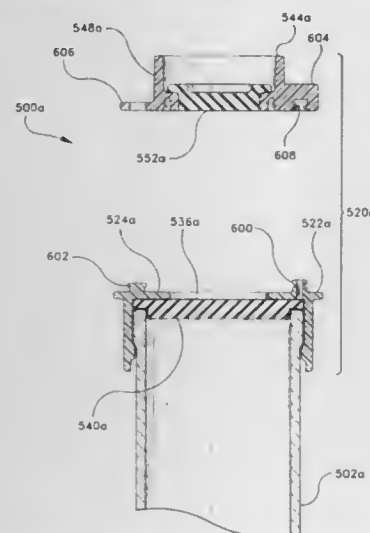
James A. Burns, Elizabeth, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 314,105, Sep. 28, 1994, Pat. No. 5,632,396, which is a continuation-in-part of Ser. No. 280,621, Jul. 26, 1994, abandoned. This application Oct. 9, 1996, Ser. No. 723,466

Int. Cl.⁶ B65D 39/04

U.S. Cl. 215—247

1 Claim



1. A closure for sealing an open end of a body fluid collection tube comprising:
- a shield having a top, an opening therethrough and a cavity for receiving the tube;
 - a sealing element for sealing the tube, said element having a top surface and a lower flange, said top surface being received in said opening;
 - a gas barrier member bonded to said lower flange of said sealing element to form a primary seal with an inside wall of the tube and a secondary seal at the open end of the tube;
 - a plug housing having a passage therethrough, said housing having an outside wall;
 - a resilient plug having a bottom mounted in said passage;
 - a pivot post and a lock post projecting upwardly from said top of said shield; and
 - a projection extending outwardly from said outside wall of said housing and a clasp opposite said projection extending outwardly from said outside wall of said housing, said projection having an opening for receiving said pivot post, said clasp for engaging said lock post, said plug housing being rotatable about said pivot post between a first position and a second position, said first position at which said bottom surface of

said plug contacts said top surface of said sealing element and said clasp engages said lock post, said second position exposing said top surface of said sealing element and at which said clasp is not engaging said lock post.

5,779,075

SCREW CAP AND A TAMPER-PROOFING RING, PACKAGING PROVIDED WITH SUCH A CAP, A METHOD OF MANUFACTURING SUCH A CAP, AND A METHOD OF MANUFACTURING SUCH PACKAGING

Pierre Salmon, Chatillon-D'Azergues, and Jean-Patrice Racine, Saint Andre-De-Crocy, both of France, assignors to Novemal, Paris, France

PCT No. PCT/FR94/00965, § 371 Date Mar. 27, 1996, § 102(e) Date Mar. 27, 1996, PCT Pub. No. WO95/06598, PCT Pub. Date Mar. 9, 1995

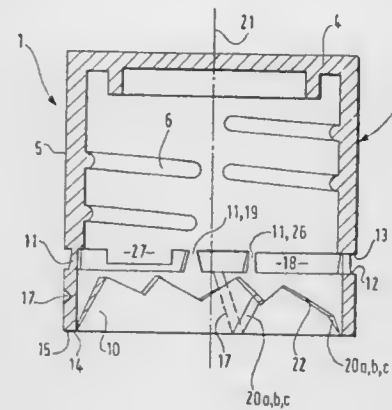
PCT Filed Jul. 29, 1994, Ser. No. 605,018

Claims priority, application France, Sep. 3, 1993, 93/10542; Nov. 5, 1993, 93/13180

Int. Cl.⁶ B65D 41/34

U.S. Cl. 215—252

34 Claims



1. A screw cap made of a plastics material, the cap comprising:
- a closing portion (3) having:
 - a transverse end wall (4); and
 - a skirt (5) adjoining the wall (4) and provided with an inside thread (6); and
 - a tamper-proofing ring (8) formed integrally with the closing portion (3), and having:
 - an outer portion (9) forming a closed loop, disposed in alignment with the skirt (5), and connected thereto via link means (11) spaced apart circumferentially between a free edge (12) of the outer portion (9) and a free edge (13) of the skirt (5), a lower edge (15) of the outer portion directly adjoining;
 - a thin edge (14) of an inner portion (10) that can be pivoted about the thin edge relative to the outer portion (9), the inner portion (10) being designed to project back inside the ring (8) towards the transverse end wall (4) such that the inner portion is positioned to interfere with a projection (16) on a container (2) on which the cap (1) is meant to be screwed;
 - at least one breakable zone (17) on the outer portion (9) of said tamper-proofing ring (8) enabling it to be opened on unscrewing the cap (1) terminating at a first end on an empty space (18) between the outer portion (9) and the skirt (5), which empty space (18) is delimited downstream, with respect to the unscrewing direction of the cap (1), by at least one non-breakable fastening (19) which does not break on unscrewing the cap (1), and which is part of said link means (11), and terminating at a second end on one of a breakable zone (20a), a cut (20b), and a gap spanning

30°-90° of a circumference of the inner portion, (20c) disposed on the inner portion (10) so that, on unscrewing the cap (1), the tamper-proofing ring (8) remains attached to the closing portion (3);

wherein the at least one breakable zone (17) in the outer portion (9) curves away from the empty space (18) between the outer portion (9) and the skirt (5) so that it substantially extends the empty space (18).

5,779,076

PLASTIC CAP

Yuji Kano, Hiratsuka, Japan, assignor to Japan Crown Cork Co., Ltd., Japan

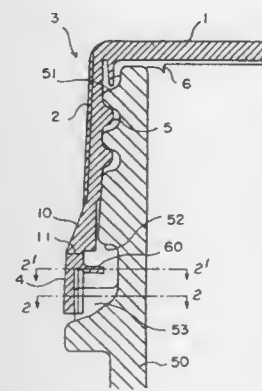
Filed Mar. 28, 1996, Ser. No. 623,088

Claims priority, application Japan, Mar. 29, 1995, 4-071300

Int. Cl.⁶ B65D 41/34

U.S. Cl. 215—252

5 Claims



1. A plastic cap comprising:
- a cap structure; and
 - a circumferential band having,
 - a lower portion,
 - an inner surface, and
 - at least one flexible fin which has an upper surface;
- wherein the cap structure has a top panel which has,
- a circumferential edge portion, and
 - a skirt having a lower portion and an inner surface, and suspending downwardly from the circumferential edge portion of the top panel;
- the circumferential band having a circumferential breakable line which has a plurality of bridges, said circumferential band connected to the lower end of the skirt via the circumferential breakable line;
- the inner surface of the skirt is threaded so as to be brought into a threaded engagement with an outer neck surface of a container which is also threaded;
- the inner surface of the lower portion of the circumferential band having a protrusion formed thereon and adapted to come into engagement with an engaging protrusion that is formed at a lower portion of the outer neck surface of the container; and
- the at least one flexible fin extending inwardly from the inner surface of the circumferential band in a direction which is a diametrical direction of the top panel and spaced axially above the protrusion on the inner surface of the circumferential band so that the upper surface of the flexible fin can come into contact with the outer neck surface of the container.

5,779,077

CONTAINER TANK

Robin Ernest Fossey, Redhills, Ireland, assignor to Container Design Limited, County Monaghan, Ireland

PCT No. PCT/IE94/00030, § 371 Date Feb. 12, 1996, § 102(e) Date Feb. 12, 1996, PCT Pub. No. WO94/27893, PCT Pub. Date Dec. 8, 1994

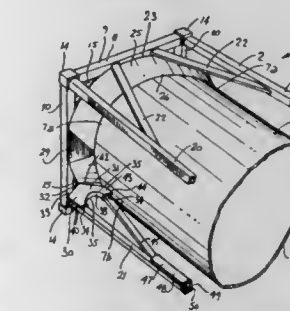
PCT Filed May 23, 1994, Ser. No. 553,311

Claims priority, application Ireland, May 21, 1993, S930385

Int. Cl.⁶ B65D 88/00

U.S. Cl. 220—1.5

19 Claims



1. A container tank (1) comprising an elongated tank (3) defining a longitudinally extending central axis (6), and defining four quadrants (7) in transverse cross section, namely, a pair of upper quadrants (7a) and a pair of lower quadrants (7b), the tank (3) being disposed between a pair of spaced apart end frames (9), having opposite lower corners, extending transversely of the central axis (6) at respective opposite ends of the tank (3), the end frames (9) being joined by a pair of spaced apart parallel lower longitudinal members (21) extending from positions adjacent respective opposite lower corners (14) of the end frames (9), and a mounting means (25) at each end of the tank (3) for mounting the tank (3) to the adjacent end frame (9), each mounting means (25) comprising at least one bearer plate (25) extending from the tank (3) adjacent the lower quadrants (7b) thereof to the adjacent end frame (9), and each bearer plate (25) being secured directly to the tank (3) and directly to the adjacent end frame (9), characterised in that four reinforcing plate members (30) are located adjacent the four respective lower corners (14) of the end frames, each reinforcing plate member (30) extending between and being secured to the adjacent lower longitudinal member (21) and the bearer plate (25).

5,779,078

INTERMODAL CONTAINER TANK CONSTRUCTION

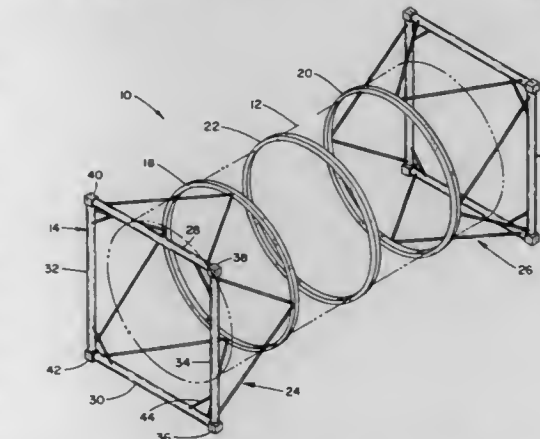
Neil Reddy, 2301 S. Millbend Dr. (Apt. 1102), The Woodlands, Tex. 77380

Filed Nov. 21, 1996, Ser. No. 749,347

Int. Cl.⁶ B65D 88/08

U.S. Cl. 220—1.5

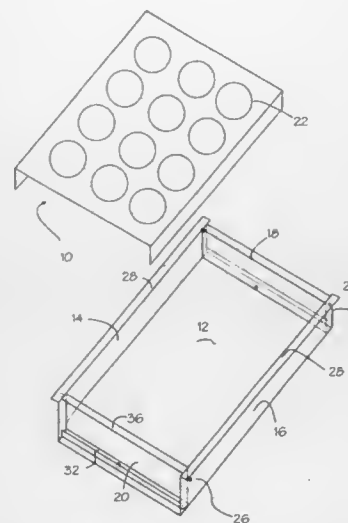
30 Claims



1. In an intermodal container tank including a substantially cylindrically shaped tank vessel, a circumferential ring stiffener

circumferentially surrounding said tank vessel at a front end of said tank vessel, a circumferential ring stiffener circumferentially surrounding said tank vessel at a rear end of said tank vessel, a front structural end frame supporting the front end of said tank vessel, and a rear structural end frame supporting the rear end of said tank vessel, each of said end frames including top and bottom horizontal rails, left and right corner posts, and four corner fittings, the improvement comprising:

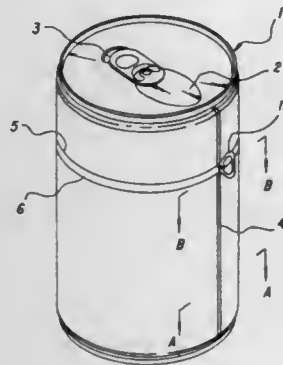
a connecting system connecting said front structural end frame to the front end of said tank vessel and a connecting system connecting said rear structural end frame to the rear end of said tank vessel, wherein each said connecting system comprises a left and right side vertical truss connecting the left and right corner posts of the respective end frame to the left and right lateral sides of the respective circumferential ring stiffener, and a top and bottom horizontal truss connecting the top and bottom horizontal rails of the respective end frame to the top and bottom of the respective circumferential ring stiffener.



5,779,079
MULTI-PURPOSE BEVERAGE CANISTER
Sang Chol Lee, 167-67, Seungsan-2 Dong, Mapo-Ku, Seoul, Rep. of Korea

Filed Oct. 21, 1996, Ser. No. 734,646
Int. Cl.⁶ B65D 17/34
U.S. Cl. 220—4.07

9 Claims



1. A multi-purpose canister comprising:
an upper tab provided at an upper surface of the canister;
a seal member which is attached at the upper surface of the canister and is opened by drawing the upper tab upwards;
a welding portion at which both ends of an aluminum plate are welded with each other so as to make a cylindrical shape;
a take-off strip being attached to an outer wall of the canister, the take-off strip having a protrusion at its end and, the take-off strip having at least one groove therein; and
a lower tab fixed to the protrusion of the take-off strip.

5,779,080
MULTI-PURPOSE BAKING PAN WITH HINGED END SECTIONS AND COVER
Kenneth J. Corse, P.O. Box 954, New Milford, Pa. 18834
Filed May 5, 1997, Ser. No. 841,876
Int. Cl.⁶ B65D 6/24

U.S. Cl. 220—4.28

4 Claims

1. A baking utensil selectively adaptable to contain batter for producing baked goods of a plurality of sizes and shapes, said utensil comprising:

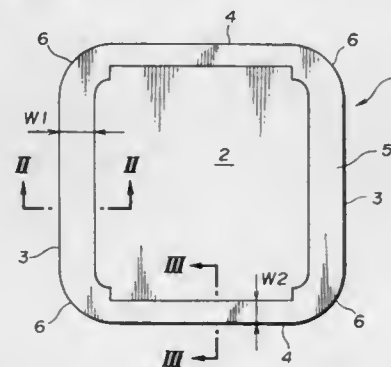
a) a pan portion including a substantially rectangular bottom wall with two side walls extending integrally in the same direction from said bottom wall along opposite edges thereof, for equal distances to provide substantially parallel top edges of said side walls;

b) a detent catch disposed on said rectangular bottom wall;
c) a pair of openings through each of said side walls disposed at opposite ends thereof to provide pairs of openings directly opposite one another along said side walls adjacent said top edges thereof; and
d) an end member having substantially parallel top and bottom edges, and a hinge for mounting in one of said opposite pairs of openings, said end member including a channel-like strengthening flange along said top and bottom edges to add strength and rigidity to said utensil, said channel-like flange having a bottom surface and a side edge, said bottom surface having an aperture therethrough for engaging said detent catch.

5,779,081
CERAMIC PACKAGE LID HAVING METALLIZED LAYER WITH VARYING WIDTHS
Kazuo Kimura; Haruhiko Murata, and Yukihiro Aoyama, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan
Continuation of Ser. No. 283,897, Aug. 3, 1994, abandoned.
This application Oct. 10, 1996, Ser. No. 731,379
Claims priority, application Japan, Aug. 3, 1993, 5-212385
Int. Cl.⁶ B65D 53/00

U.S. Cl. 220—200

7 Claims



1. A ceramic lid for a semiconductor package, comprising:
a ceramic substrate having a peripheral region defining a hermetic sealing area;
a metallized layer formed on said peripheral region of said ceramic substrate; and
a solder layer for hermetic sealing of the package, formed on said metallized layer;
wherein said metallized layer has at least one portion which differs in width from a remaining portion thereof such that

said solder layer has one portion that differs in thickness from a remaining portion thereof at a location corresponding to said one portion of said metallized layer by the effect of a surface tension of said solder layer in a molten state, and the thickness of said solder layer varies smoothly at a transition from said one portion of said solder layer to said remaining portion of said solder layer.

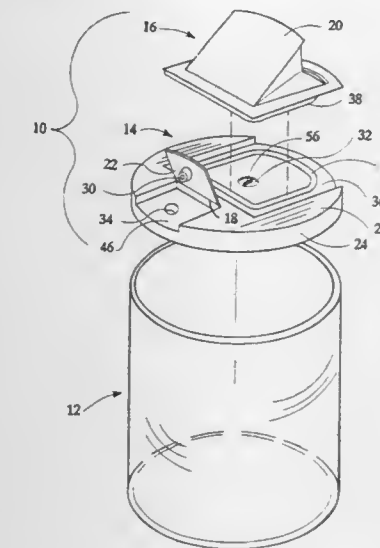
5,779,082
EASILY-CLEANED REUSABLE LID INCLUDING AN EVACUATING PUMP

Eric J. Miramon, Los Osos, Calif., assignor to Invental Laboratory, Inc., Atascadero, Calif.

Continuation-in-part of Ser. No. 419,193, Apr. 10, 1995, Pat. No. 5,546,997, which is a continuation-in-part of Ser. No. 49,005, Apr. 19, 1993, Pat. No. 5,406,992. This application Aug. 16, 1996, Ser. No. 699,159
Int. Cl.⁶ B65D 31/04

U.S. Cl. 220—212

9 Claims



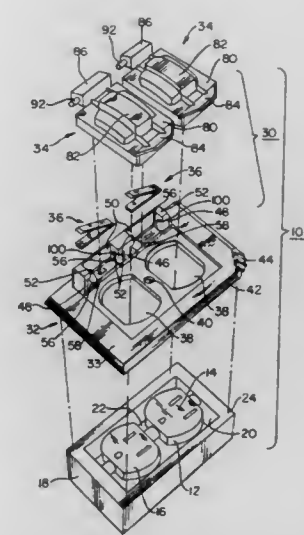
1. A sanitary lid body for an evacuated container comprising:
a one piece article composed of a soft resilient material and including an integrally molded vacuum release valve through which air can be admitted into the container and integrally molded portions defining a check valve through which air can be withdrawn from the container.

5,779,083
ELECTRICAL RECEPTACLE COVER ASSEMBLY INCLUDING DUAL ACTING SPRING
Mark Bordwell, Memphis, Tenn., assignor to Thomas & Betts Corporation, Memphis, Tenn.
Continuation of Ser. No. 201,538, Feb. 25, 1994, abandoned.
This application Mar. 29, 1996, Ser. No. 624,060
Int. Cl.⁶ H02G 3/14

U.S. Cl. 220—242

21 Claims

1. An electrical receptacle cover assembly comprising:
a faceplate mountable over an electrical receptacle and having an opening therethrough for exposing an outlet of the receptacle for use;
a cover hingedly attached to said faceplate for closing said opening;
an elongate substantially V-shaped spring positioned on said faceplate;
said faceplate including a means for supporting said elongate spring, said elongate spring being engagable with said cover, said elongate spring further including;



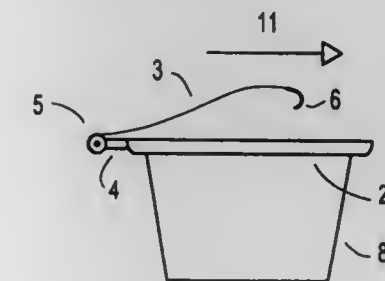
a deformable leaf spring element having a convex shape in an unstressed state and movably supported within said spring support means; and
a deformable cantilevered spring element extending from and over said leaf spring element.

5,779,084
LAUNDRY RECEPTACLE WITH FLEXIBLE COVER
Peter G. Lehman, Evanston, Ill., assignor to SP Watersports, Inc., Evanston, Ill.

Filed Feb. 6, 1997, Ser. No. 795,634
Int. Cl.⁶ B65D 43/20

U.S. Cl. 220—346

14 Claims



1. A laundry receptacle with a flexible cover and a pair of handles, comprising:

a structurally rigid receptacle portion with an open upper end and a flexible covering assembly, said structurally rigid receptacle portion having a circumferential flange integrally secured to its open upper end, said flexible covering assembly including
a flexible covering material,
a cylindrical rod around which the flexible covering material is wrapped when not in use,
a pair of hinges that are cooperatively attached to opposite ends of the cylindrical rod, which hinges are in turn fixedly secured to the circumferential flange of the receptacle portion, so as to allow the cylindrical rod to rotate;
first attachment means, which secure the flexible cover to the cylindrical rod, and
second attachment means, which secure the flexible cover to the circumferential flange when the flexible covering material is unwrapped from said cylindrical rod and extended over the open upper end of the rigid receptacle portion.

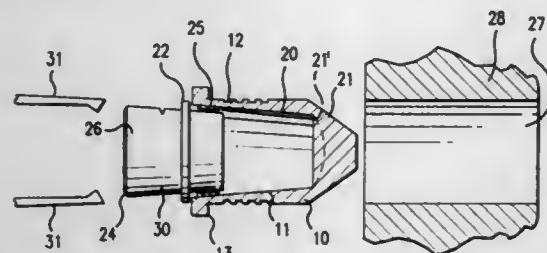
5,779,085

EXPANDABLE PIN PLUG FOR AUTOMATED USE
Kenneth Havlinek, Trumbull, Conn.; Michele Tesciuba, Houston, and Thomas D. MacDougall, Sugar Land, both of Tex., assignors to Gas Research Institute, Chicago, Ill.

Filed Mar. 11, 1997, Ser. No. 815,059
Int. Cl.⁶ B65D 53/00

U.S. Cl. 220—234

19 Claims



1. An expandable plug, adapted to be mounted in a plug mounting bore in a material for sealing said material at high pressure comprising:

- a) a plug body having an axially spaced inner end wall, a coaxial bore extending between an outer end of the plug body and the inner end wall, the coaxial bore having a tapered bore section with a larger diameter end at its outer end, said tapered bore section forming a socket;
- b) a plurality of axially spaced annular grooves and lands along an external portion of the plug body;
- c) a tapered plug pin adapted to be driven into the socket to expand the plug body into locking engagement with a wall of a plug mounting bore, the tapered plug pin having a surface tapered approximately the same as the tapered bore of the socket and a diameter larger than the diameter of the socket to substantially uniformly expand said peripheral lands of the plug body into engagement with the wall of the plug mounting bore; and
- d) a shear flange surrounding the plug pin and positioned so that it is flush with the plug outer end with a small amount of pre-installation of the pin to allow for sequential installation of the expandable plug pin.

5,779,086

SEALING SYSTEM AND METHOD FOR A TWIST-OFF CAN END ASSEMBLY

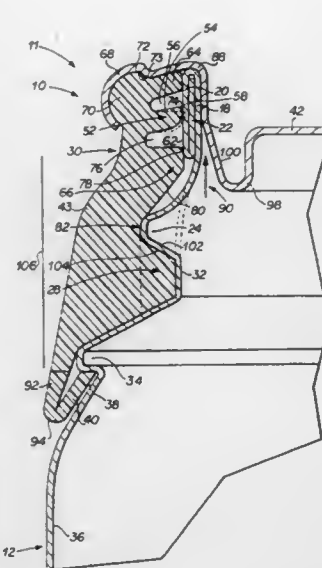
Marshall J. Barrash, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Jul. 24, 1995, Ser. No. 505,881
Int. Cl.⁶ B65D 51/22

U.S. Cl. 220—240

46 Claims

1. A twist-off can end assembly, comprising:
- a cylindrical can body having an open end and a closed end with a flange extending around the can body at the open end thereof; and
 - a lid assembly for closing the open end of the can body, the lid assembly including:
 - a lid, the lid being adjacent to the flange when the open end of the can body is closed by the lid assembly, and
 - a collar attached to the lid, the collar having means for sealing the lid assembly to the can body, the means for sealing comprising a deformable sealing lip engageable with the can body to thereby form a hermetic seal when the lid assembly is placed on the can body, an annular chamber being defined between the collar and the can body, the annular chamber being adjacent the sealing lip, pressure within the annular chamber increasing due to increases in pressure of contents within the can body, the sealing lip being deformable in response to increases in pressure



within the annular chamber, and the hermetic seal between the lid assembly and the can body increasing in response to increasing deformation of the lip.

5,779,087

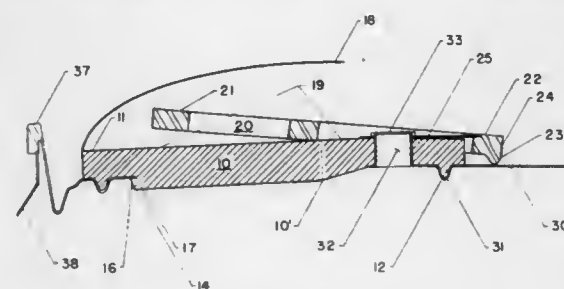
CLOSING TAB

Andrew J. Sharpe, 2 New Castle St., Concord, N.H. 03301-2209, and Darryl J. Baker, 3 Greenwich St., Concord, N.H. 03301

Filed Jun. 6, 1996, Ser. No. 659,266
Int. Cl.⁶ B65D 41/32

U.S. Cl. 220—269

10 Claims



1. An improved can closure comprising:

- a) a can end wall joined to a can body and further comprising an arcuate scoreline which defines an opening panel, an attachment means for rotationally joining a metal opening tab and a closing tab to said can end wall, and an opening having predetermined size and shape resulting from the rupture of said opening panel along said arcuate scoreline;
- b) said metal opening tab being substantially parallel to said can end wall and further comprising a downward enlargement of a side wall on a lever end of said metal opening tab;
- c) said closing tab being manufactured from a rigid elastically deformable material and further comprising a central body of predetermined size and shape to include a hole for rotationally joining said closing tab to said can end wall and corresponding in size and shape to said opening in said can end wall, and positioned between said can end wall, and said metal opening tab;
- d) said closing tab further comprising a circumferential flange projecting outwardly from said central body of said closing tab, said circumferential flange being integral with said closing tab and of sufficient size and shape to prevent said closing tab from completely passing through said opening;

- e) said circumferential flange including an annular sealing ring projecting downwardly from said circumferential flange; and
- f) said can end wall further comprising an annular sealing channel provided in said can end wall.

5,779,088

SEAL FOR UPWARD OPENING HOLLOW CONTAINERS
Wolfgang Hornig, Industriestrasse 10, D-69245 Bammmental, Germany

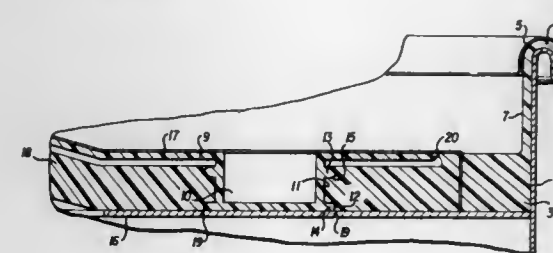
Filed Jun. 25, 1996, Ser. No. 670,808

Claims priority, application Germany, Jun. 30, 1995, 295 10 691 U

Int. Cl.⁶ B65D 17/34

U.S. Cl. 220—269

4 Claims



1. A seal for an upward opening hollow container, including a can or paper cup for holding food or beverage, having a substantially circular upper rim, the seal comprising a substantially circular inside cover having a diameter that closely matches the diameter of the upper rim of the container, the inside cover having an opening through which food or beverage may be dispensed from the container and being relatively planar except for a raised area along a portion of the circumference of the rim of said substantially circular inside cover which is angled upwardly from the plane of the inside cover within and toward the upper rim of the container to provide a lip for drinking from the container when the seal is opened; an outside cover on at least a portion of the inside cover and having a projection shaped to mate tightly with the opening in the inside cover, the outside cover being connected to the inside cover by an articulated hinge to allow the outside cover to be rotated through a sufficient angle so that the projection may be moved out of and into the opening when the container is to be opened and re-sealed, respectively; a vapor diffusion barrier comprising a thin foil of material firmly fastened to the underside of the inside cover and across the opening therein, and to the underside of the projection on the outside cover lying substantially flush with the underside of the inside cover when the container is originally sealed by said seal, so that the barrier material will rupture preferentially along the outline of the projection when the projection is pulled out of the opening; the lower end of the wall of the opening in the inside cover having a circumferential groove therein, and the lower end of the wall of the projection having a circumferential bead thereon that matches with and is accepted within the groove in the wall of the inside cover, so that the outside and inside covers may be resealed at the opening by pressing the projection into the opening until the bead enters the groove to retain the projection in place, and a second circumferential groove in the upper end of the wall of the opening in the inside cover, parallel to the first groove and a second circumferential bead on the upper end of the wall of the projection that matches with and is accepted by the second groove so that the outside and inside covers may be held together by a press fit of the projection into the opening until both beads enter and engage their respective grooves.

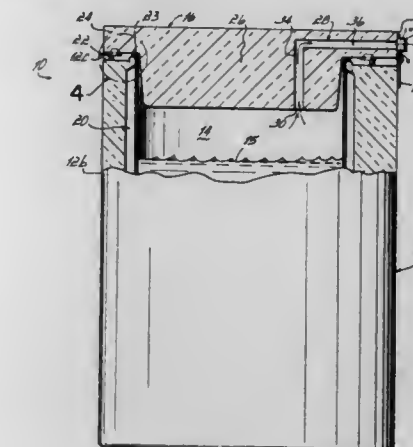
5,779,089

CRYOGENIC STORAGE APPARATUS WITH LID VENT
William West, Marietta, Ohio, assignor to Forma Scientific, Inc., Marietta, Ohio

Filed Jul. 26, 1996, Ser. No. 686,657
Int. Cl.⁶ B65D 51/16

U.S. Cl. 220—367.1

11 Claims



1. A cryogenic storage apparatus comprising:
- a housing;
 - a cryogenic storage chamber contained within said housing and having an open end;
 - a lid connected to said housing and operable to selectively expose the open end of said cryogenic storage chamber;
 - a seal at least substantially surrounding the open end of said storage chamber and engageable with said lid; and
 - a vent path formed within said lid and leading from said cryogenic storage chamber to ambient when said lid is in a closed position, said vent path including a flap valve mounted at a rear portion of said lid for controlling gas flow through said vent path.

5,779,090

Patent Not Issued For This Number

5,779,091

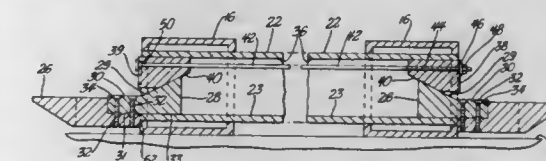
SIXCON ADAPTOR

James D. Thomas, Macomb County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 13, 1996, Ser. No. 759,824
Int. Cl.⁶ B65D 25/00

U.S. Cl. 220—561

18 Claims



1. A structure to adapt a cargo container for one kind of transport vehicle to another kind of transport vehicle, wherein the container has a frame and a tube passing through the frame, the structure comprising:
- first blocks at ends of the tube contacting an inner peripheral surface of the tube;
 - adapter members fixed to the first blocks, the adapter members abutting the container;

second blocks at the ends of the tube and at least partly in the tube;
wherein the second blocks oppose the first blocks;
means for forcing the second blocks toward one another and jamming the second blocks against the first blocks.

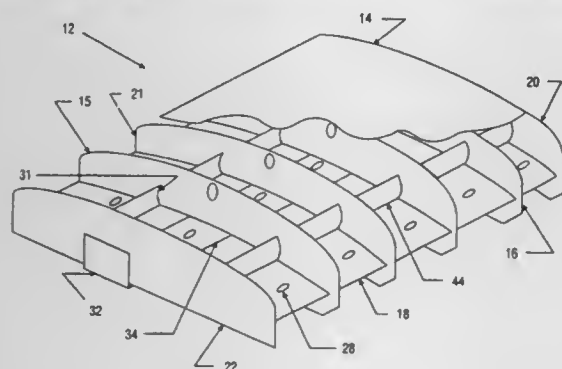
5,779,092

BAFFLE SYSTEM FOR TANK

Ronald L. Hehn, Hawley, Minn., and John Cain, Goodyear, Ariz., assignors to Mega Corporation, Albuquerque, N. Mex.
Filed Jan. 22, 1997, Ser. No. 787,519
Int. Cl.⁶ B60P 3/00; F17B 1/14

U.S. Cl. 220—563

19 Claims



1. A tank for containing and decreasing excessive surging and wave motion of liquids, comprising:

- (a) a shell having an interior and exterior surface;
- (b) a longitudinal tunnel, positioned within the shell and supported by the shell's interior surface, the tunnel comprising a top portion, and at least two side portions, the top portion having at least one access port and one of said side portions having at least one orifice, the tunnel further including at least one transversely oriented internal tunnel baffle rigidly secured to the interior of the tunnel, the tunnel baffle provided with at least one orifice;
- (c) at least one external vertical baffle having at least one orifice, the vertical baffle oriented transversely to the axis of the tank and rigidly secured to the exterior of the tunnel;
- (d) at least one horizontal baffle having at least one orifice and one access port, the horizontal baffle positioned coplanar with the top portion of the tunnel and rigidly secured to the exterior of the tunnel, the vertical baffle, and the shell; and
- (e) at least one longitudinal baffle rigidly secured to the at least one horizontal baffle and the at least one vertical baffle, the longitudinal baffle extending along the longitudinal axis of the tank.

5,779,093

PAINT CAN GUARD

Trent A. Poole, 59 Country Corners Rd.; Alan G. Bonneau, 88 Rambling Rd., both of South Amherst, Mass. 01002, and James R. Labrie, 66 Gunn Rd., Southampton, Mass. 01073
Filed Sep. 20, 1996, Ser. No. 717,547
Int. Cl.⁶ B65D 5/00

U.S. Cl. 220—698

19 Claims



1. A paint can guard for mounting on a sealing rim of a paint can, comprising:

an annular rim guard for covering the sealing rim of said paint can;
an annular brush wiper having an inner surface and an outer surface; and
a plurality of struts supporting said wiper in spaced relation to said rim guard, thereby defining a substantially annular passage between the outer surface of said wiper and said rim guard, said annular passage having substantially parallel, frustoconical walls that slope inwardly and downwardly and having a width selected to cause wicking of said paint into said paint can, wherein paint from a brush wiped on said wiper may flow on the inner surface of said wiper into said paint can and may flow through said passage between the outer surface of said wiper and said rim guard into said paint can.

5,779,094

ARTICLE RECEPTION SYSTEM FOR STORAGE AND DISPENSING APPARATUS

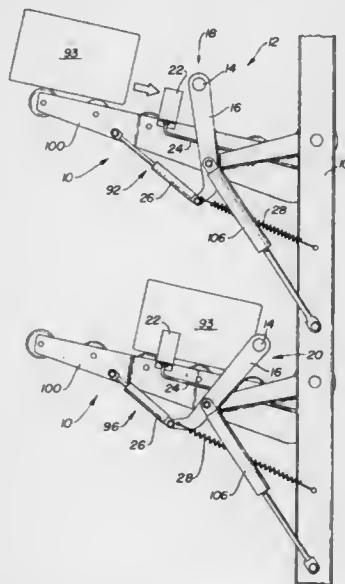
Frederick J. Stingel, Jr., 2860 Pinckard Pike, Versailles, Ky. 40383

Filed Jan. 22, 1996, Ser. No. 589,700

Int. Cl.⁶ G07F 11/00

U.S. Cl. 221—75

14 Claims



1. A storage and conveying apparatus, comprising:

- a rack;
- respective sets of shelves pivotably supported on said rack and facing one another in a staggered orientation enabling articles to be conveyed downwardly from an upper shelf to a lower shelf, back and forth between said shelves of said respective sets as said shelves are pivoted upwardly and downwardly in a coordinated manner;
- a pivotably mounted cross bar extending transversely across each shelf and movable between an article receiving position and an article arrested position;
- means operating independently of said cross bar for independently pivoting said shelves in said coordinated manner;
- a respective damper for arresting motion of each said cross bar when engaged by a conveyed article and moved from said article receiving position to said article arrested position; and
- respective biasing means for urging each said cross bar from said article arrested position to said article receiving position.

5,779,095

PORTABLE GUMBALL DISPENSER

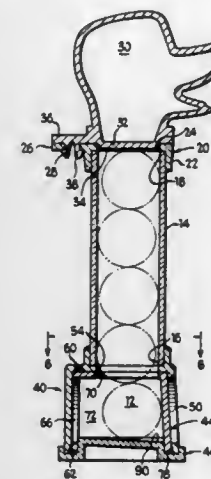
Sidney Diamond, Barrington Hills, Ill., assignor to Imaginings 3, Inc., Niles, Ill., and Imaginings 3 Int'l Ltd., Jersey, Channel Islands

Filed Jan. 31, 1997, Ser. No. 792,519

Int. Cl.⁶ B65G 57/00

U.S. Cl. 221—263

20 Claims



1. A portable gumball dispenser comprising in combination: a reservoir for storing a number of gumballs, the reservoir having a top and bottom; and an opening in the bottom of the reservoir permitting the passage of a single gumball; an opening in the top of the reservoir permitting the filling of the reservoir with one or more gumballs; a cap for selectively closing the opening in the top of the reservoir; a pedestal on top of which the reservoir is mounted and which forms a dispensing chamber for dispensing one gumball at a time; the pedestal including a base and a nested assembly of relatively rotatable tubular members; the nested assembly including an outer tubular member and an inner tubular member; the outer and inner tubular members each having a bottom that is generally open; the base being secured to the nested assembly to close the generally open bottoms of the outer and inner tubular members; each of the outer and inner tubular members having a respective top wall and a respective cylindrical side wall; each of the outer and inner tubular members having an axis; the axes of the outer and inner tubular members being generally concentric in the nested assembly; an aperture permitting the passage of a single gumball in the side wall of the outer tubular member; an aperture permitting the passage of a single gumball in the top wall of the outer tubular member; the aperture in the top wall of the outer tubular member being offset from the axis of the outer tubular member toward the aperture in the side wall of the outer tubular member; an aperture permitting the passage of a single gumball in the side wall of the inner tubular member; an aperture permitting the passage of a single gumball in the top wall of the inner tubular member; and the aperture in the top wall of the inner tubular member being offset from the axis of the inner tubular member away from the aperture in the side wall of the inner tubular member.

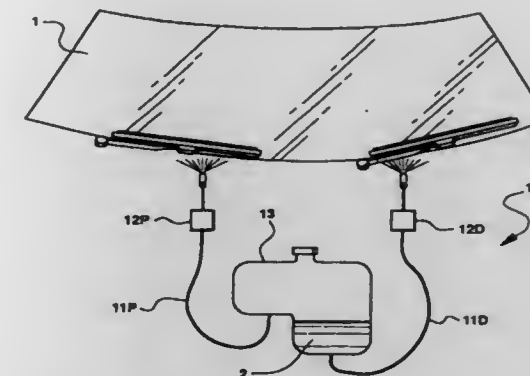
5,779,096

EMERGENCY WINDSHIELD WASHER FLUID RESERVE SYSTEM

David E. Cockfield, 325 Shotwell Ct., White Lake, Mich. 48386
Filed Mar. 10, 1997, Ser. No. 814,438
Int. Cl.⁶ B67D 5/38

U.S. Cl. 222—23

10 Claims



3. A windshield wiper washer fluid system for use in cleaning debris from a windshield of an automobile, said windshield being generally divided into an operator side and a passenger side, said system comprising:

- an operator washer fluid reservoir having a first predefined volume, said washer fluid reservoir located on said vehicle for holding said washer fluid;
- a passenger washer fluid reservoir having a second predefined volume, wherein said first predefined volume of said operator washer fluid reservoir is larger than said second predefined volume of said passenger washer fluid reservoir;
- an operator side hose having a first end connected to said operator washer fluid reservoir;
- a passenger side hose having a first end connected to said passenger washer fluid reservoir;
- first means for moving washer fluid from said operator washer fluid reservoir through said operator side hose, said first moving means in communication with said operator side hose;
- second means for moving washer fluid from said passenger washer fluid reservoir through said passenger side hose, said second moving means in communication with said passenger side hose; and
- wherein said operator side hose has a second end located such that said washer fluid moving from said operator washer fluid reservoir locates on said operator side of said windshield and said passenger side hose has a second end located such that said washer fluid moving from said passenger washer fluid reservoir locates on said passenger side of said windshield.

5,779,097

VAPOR RECOVERY SYSTEM WITH INTEGRATED MONITORING UNIT

Scott M. Olson, Grand Rapids; Gregory P. Wood; Andrew Chernoby, Jr., both of Kentwood, and Roger D. Swieringa, Wyoming, all of Mich., assignors to Delaware Capital Formation, Inc., Wilmington, Del.

Filed May 14, 1996, Ser. No. 651,338

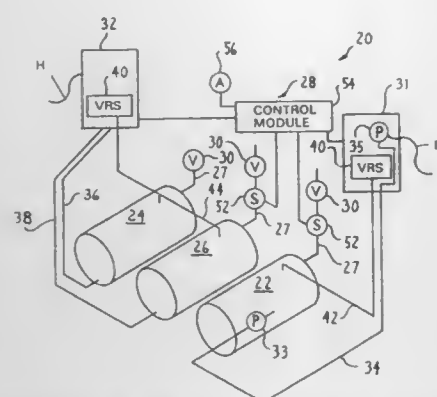
Int. Cl.⁶ B67D 5/16

U.S. Cl. 222—39

26 Claims

1. A vapor recovery system for capturing vapor, said system including:

- a vapor recovery unit having a conduit which is in fluid communication with a vapor pick-up port, a pump connected to said conduit for drawing vapor through the conduit, and a return line connected to said pump for receiving the vapor drawn through said pump;



- a sealed return tank connected to said return line of said vapor recovery unit for receiving the vapor drawn by said pump of said vapor recovery unit; and
- a monitoring unit, said monitoring unit including:
- a pressure sensor disposed in said return tank for monitoring pressure in said return tank and configured to generate a sensor signal representative of the pressure;
 - a control module connected to said pressure sensor for receiving said sensor signal, said control module being configured to compare said sensor signal to a reference signal, and, if said sensor signal maintains a selected signal state relative to said reference signal for a delay period, to selectively assert an alarm signal; and
 - an alarm connected to said control module for receiving said alarm signal, said alarm being configured to generate a detectable alarm when said alarm signal is asserted.

5,779,098

PRESSURE CONTROL SYSTEM FOR FREE-FLOATING PISTON

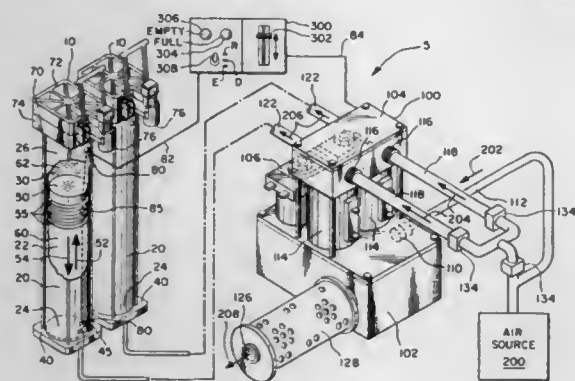
Hershel Edward Fancher, New Albany, Ind., assignor to Grand Soft Equipment Company, Louisville, Ky.

Filed Aug. 22, 1996, Ser. No. 701,631

Int. Cl.⁶ B67D 5/22

U.S. Cl. 222—41

42 Claims



14. A system for pneumatically dispensing a product, said system comprising:

- a receptacle having a passageway therein for holding said product, said receptacle having a first end and a second end;
- a free-floating piston within said passageway in said receptacle between said first end and said second end, said receptacle, piston, and first end defining a chamber within said receptacle;
- a pressurized air supply in fluid communication with said chamber;
- a first valve between said pressurized air supply and said chamber;
- a venturi attached to said first valve; and
- a second valve between said pressurized air supply and said venturi;

said pressurized air from said pressurized air supply flowing through said first valve and entering said chamber, moving said piston away from said first end and toward said second end, forcing said product out of said receptacle, when said first valve allows communication between said pressurized air supply and said chamber and not between said venturi and said chamber, and said second valve is closed;

said venturi generating a vacuum in said chamber, moving said piston toward said first end and away from said second end, when said first valve allows communication between said chamber and said venturi and not between said pressurized air supply and said chamber, and said second valve allows said pressurized air to flow through said venturi.

5,779,099

NOZZLE WITH TURBULENCE CONTROL MEMBER FOR WATER GUN LAMINAR FLOW EJECTION

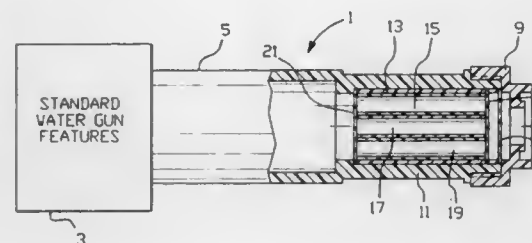
Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Station, N.J. 08889

Filed Jun. 28, 1996, Ser. No. 672,933

Int. Cl.⁶ B05B 1/14

U.S. Cl. 222—79

12 Claims



1. A toy water gun which comprises:
- a hand held portable toy water gun having a barrel defined by an elongated portion having a central axis and a water ejection nozzle connected to an end of said barrel, said nozzle having an ejection orifice of a predetermined diameter, said barrel including:
 - a separate insertable elongated turbulence control member located in said barrel of said portable toy water gun in proximity to said nozzle for enhanced laminar flow ejection of a liquid through said nozzle such that said turbulence control member is capable of emitting a high velocity stream of liquid therefrom, said turbulence control member having a plurality of separate linear, tubular stream guidance walls, said linear, tubular stream guidance walls extending substantially parallel to the central axis of said elongated portion of said barrel, wherein at least one of said tubular guidance walls is centrally located within said turbulence control member; and
 - at least one screen contiguous to an end of said turbulence control member.

5,779,100

VACUUM ACTUATED REPLENISHING WATER GUN

Lonnie G. Johnson, Smyrna, Ga., assignor to Johnson Research & Development Corp., Inc., Atlanta, Ga.

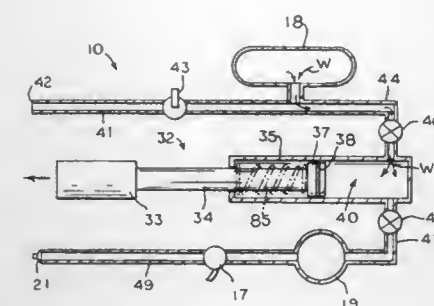
Filed Aug. 7, 1996, Ser. No. 693,407

Int. Cl.⁶ A63H 33/00

U.S. Cl. 222—79

16 Claims

1. A water gun comprising:
- first conduit means having one end open to ambience;
 - a reservoir coupled to said first conduit means adapted to store a supply of liquid;
 - a manual control valve coupled to said first conduit means between said reservoir and said open end, said control valve being manually operable between a closed position preventing the flow of fluid through said first conduit means with said



reservoir maintained under a static vacuum pressure state and an open position allowing the flow of liquid through said first conduit means;

second conduit means coupled to said reservoir for conveying the liquid from said reservoir; and

pump means in fluid communication with said reservoir and said second conduit means for extracting liquid from said reservoir and depositing the liquid into said second conduit means;

whereby with the control valve in its closed position the actuation of the pump means causes liquid to be drawn from the reservoir creating a static vacuum therein, thereafter the open end of the first conduit means may be submerged into a supplemental supply of liquid and the control valve actuated to its open position to allow the vacuum within the reservoir to draw at least a portion of the supplemental supply of liquid through the first conduit means and into the reservoir.

5,779,101

PORTABLE CARRIER FOR AEROSOL CONTAINERS AND METHOD THEREFOR

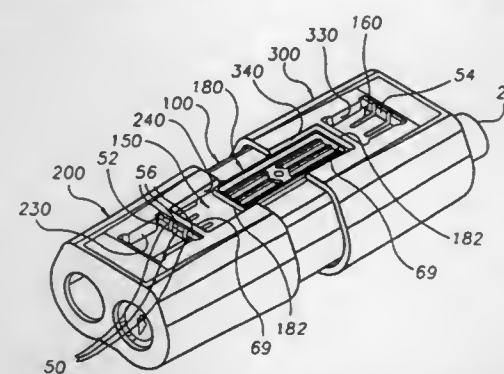
Vilma G. Holmgren, West Dundee; Joseph A. Hahn, Graylake; Douglas G. Begley, Palatine, and Thomas E. Perdue, Jr., Crystal Lake, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Nov. 12, 1996, Ser. No. 746,332

Int. Cl.⁶ B67D 5/64

U.S. Cl. 222—130

10 Claims



1. A portable carrier for housing a plurality of at least two containers of the type having a valve actuator cap disposed on an end portion of the container, the carrier comprising:
- an housing member having a first end portion with a first opening defining a first container cavity for receiving a first container, the housing member having a second end portion with a second opening defining a second container cavity for receiving a second container;
 - a first cover member having an open end portion and a closed end portion having at least one aperture, the first cover member slidably coupled to the first end portion of the housing member, and the first cover member movable between a closed position and an opened position relative to the housing member;
 - a second cover member having an open end portion and a closed end portion having at least one aperture, the second cover member slidably coupled to the second end portion of the

housing member, and the second cover member movable between a closed position and an opened position relative to the housing member.

whereby a first valve actuator cap of a first container received in the first container cavity of the housing member protrudes through the at least one aperture of the first cover member when the first cover member is in the opened position, and the first valve actuator cap of the first container received in the first container cavity of the housing member is covered by the first cover member when the first cover member is in the closed position,

whereby a second valve actuator cap of a second container received in the second container cavity of the housing member protrudes through the at least one aperture of the second cover member when the second cover member is in the opened position, and the second valve actuator cap of the second container received in the second container cavity of the housing member is covered by the second cover member when the second cover member is in the closed position.

5,779,102

DUAL COMPARTMENT BEVERAGE DISPENSER

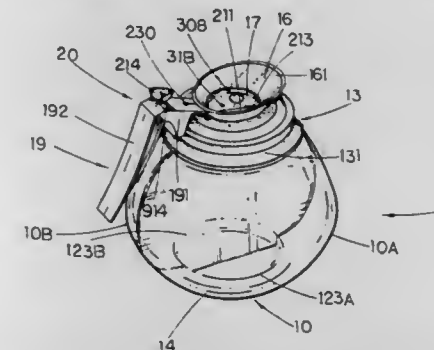
Dennis Smith, 505 S. Beverly Dr., Suite 106, Beverly Hills, Calif. 90212

Filed Feb. 12, 1997, Ser. No. 799,583

Int. Cl.⁶ A47G 19/12

U.S. Cl. 222—144.5

18 Claims



1. A dual compartment beverage dispenser, comprising:
- a first single chamber container having a first internal chamber and a second single chamber container having a second internal chamber, wherein said first and second single chamber containers are combined to form a beverage container assembly which has a top securing neck having a first and a second access opening for said first and second internal chambers respectively;
 - a top closure cap assembly, which is secured to said top securing neck of said beverage container assembly in air tight manner to seal off said first and second single chamber containers, comprising a U-shaped bottom cover with an inner threaded portion for screwing with an outer threaded portion of said top securing neck so as to secure said top closure cap assembly with said beverage container assembly, a conical top spout having a periphery lip wall upwardly and inclinedly extended from said bottom cover, and a horizontal cover wall integrally formed between said bottom cover and said top spout for covering said first and second access openings of said first and second internal chambers of said first and second single chamber containers respectively, so as to provide an air tight concealing between said first single chamber container, said second single chamber container and said top closure cap assembly, in which said cover wall has a first and a second spout opening and a first and a second air hole, wherein said first spout opening and said first air hole are respectively formed in a front and a rear position of a first half of said cover wall above said first access opening of said first single chamber container, and that said second spout opening and said second air hole are respectively formed in a front and a

rear position of a second half of said cover wall above said second access opening of said second single chamber container, said top closure cap assembly further comprising a L-shaped handle which is composed of a handle support bar integrally extended upwardly and inclinedly from an edge of said bottom cover and a grip handle integrally extended downwardly and perpendicularly from said handle support bar; and

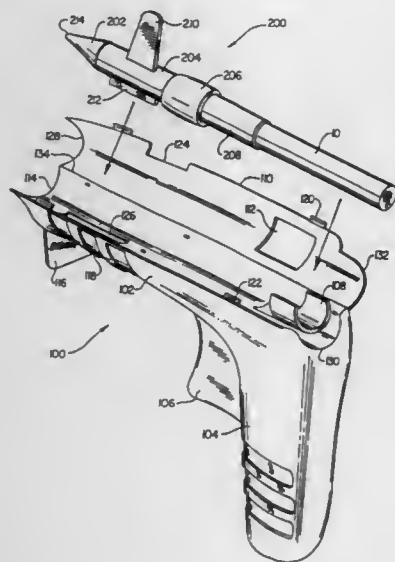
a shut off device which comprises a switching arm having a horizontal front cap arm portion and an inclined rear operating arm portion extended rearwardly from said front cap arm portion, said top spout providing an operation slot which has a width larger than a width of said switching arm and is formed on said lip wall at an intersection position of said lip wall and said handle support bar, said cap arm portion being extended through said operation slot to locate on said cover wall while said operating arm portion is extended along said handle support bar, in which said switching arm is incorporated with said top closure cap assembly by pivotally connecting said operating arm portion with said handle support bar of said handle by means of an axle pin, so that said cap arm portion is able to be actuated to move between a first position and a second position on said cover wall by switching said operating arm portion to left and right respectively, an enlarged shutting head being provided at a front end of said cap arm portion, wherein said cap arm portion and said shutting head which has a size slightly larger than said spout openings is adapted to be positioned between said first position, for overlapping and shutting off said first spout opening and said first air hole, and said second position, for overlapping and shutting off second spout opening and said second air hole, when said operating arm portion is driven to left and right alternatively.

5,779,103

GLUE GUN SYSTEM WITH REMOVABLE CARTRIDGES
Leonard Massena, 9423 Tarleton, Dallas, Tex. 75218
Continuation of Ser. No. 377,842, Jan. 25, 1995, Pat. No. 5,664,701. This application Dec. 3, 1996, Ser. No. 757,140
Int. Cl.⁶ B67D 5/62

U.S. Cl. 222—146.5

12 Claims



1. A glue gun system for dispensing glue from sticks, comprising:
a glue gun having a glue gun body adapted for readily accepting and readily removing therefrom a removable cartridge;
member for releasably securing said removable cartridge to said barrel body, such that said removable cartridge is readily releasable therefrom;

said removable cartridge suitable for accepting a glue stick, and having a cartridge heat zone;
a heater mounted to said removable cartridge and operable for heating at least a portion of the glue stick which is disposed within said cartridge heat zone of said removable cartridge;
an interface for providing electrical power from said glue gun body to said heater of said removable cartridge when said removable cartridge is releasably secured to said glue gun body, and said interface being automatically interrupted when said removable cartridge is removed from being releasably secured to said glue gun body; and
said glue gun having a glue-stick advancement mechanism at a first end for moving the glue stick through said cartridge heat zone and dispensing melt flow glue from an opening of said central passage at a second end of said glue gun.

5,779,104

DEVICE FOR GENERATING AND DISPENSING FOAM
Hermann Reldel, Karlstein, Germany, assignor to Eureka Development Ltd., Germany
PCT No. PCT/DE95/00547, § 371 Date Nov. 1, 1996, § 102(e)
Date Nov. 1, 1996, PCT Pub. No. WO95/29759, PCT Pub. Date Nov. 9, 1995

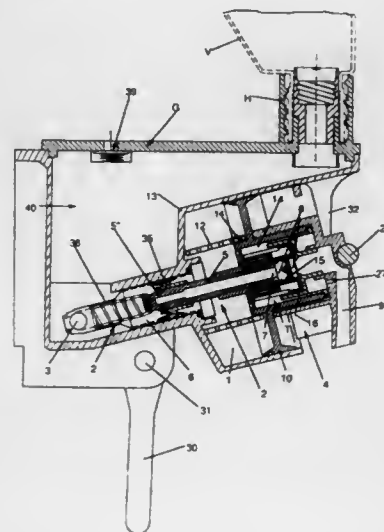
PCT Filed Apr. 24, 1995, Ser. No. 732,434

Claims priority, application Germany, May 2, 1994, 9407178 U

Int. Cl.⁶ B67D 5/58

U.S. Cl. 222—190

5 Claims



1. An apparatus for the generation and metered discharge of foam comprising:

a housing having a cylindrical air chamber of variable volume;
a device arranged coaxially on the housing for conveying foamable liquid out of a tank simultaneously with the conveyance of air, wherein the device comprises a plunger piston retractable on a suction side of the device and defines a chamber receiving a non-return valve having an actuating element for the compression of air, wherein the air chamber and the chamber receiving the non-return valve are each connected to a foaming chamber; and
a foam-outlet duct connected to the foaming chamber, the device further comprising:
a piston arranged in the air chamber, the piston having a central insert fixedly connected to the piston, a unit formed from the central insert and the piston being supported against a bottom of the air chamber by a spring;
an air duct arranged centrally in the central insert, the air duct being connected to the air chamber;
an open end of the plunger piston projecting into the central insert towards the foaming chamber and fixedly connected to

the central insert, the plunger piston having a conveying duct and being displaceable in the device for the conveyance of liquid; and
a foam return-suction valve arranged in the air duct upstream of the foaming chamber, the foam return-suction valve connecting the air duct to the foam-outlet duct.

5,779,105

AIR OPERATED GREASE GUN

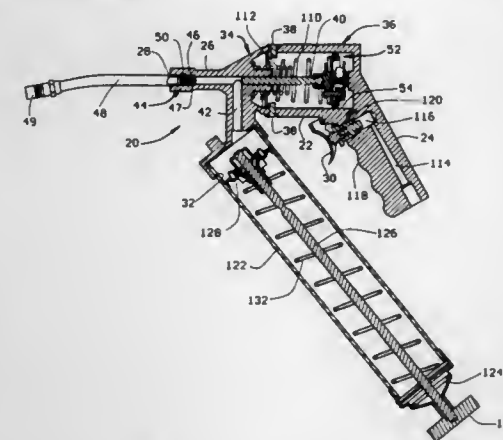
C. Brandon Brown, and Steven W. Post, both of Jonesboro, Ark., assignors to McNeil (Ohio) Corporation, St. Paul, Minn.

Filed Aug. 11, 1997, Ser. No. 909,281

Int. Cl.⁶ G01F 11/00

U.S. Cl. 222—262

6 Claims



1. In an automatic air operated grease gun of the type in which a grease plunger is operated by the reciprocation of a piston in a cylinder caused by air pressure repeatedly advancing the piston against a return spring until a release is triggered to open a plurality of apertures on the piston, releasing the air pressure and allowing the piston to retreat under the force of the spring, the improvement comprising separate closures for each of the apertures operated by the release to open the apertures.

5,779,106

ATOMIZED LIQUID DISPENSER

Giovanni Albini; Tommaso Ruscitti, both of Milan, and Franco Carlappi, Pianello Val Tidone, all of Italy, assignors to TER S.R.L., Milan, Italy

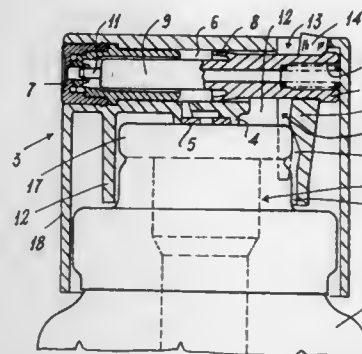
Filed Jul. 8, 1996, Ser. No. 676,812

Claims priority, application Italy, Jul. 17, 1995, MI95A1544

Int. Cl.⁶ B67D 5/42

U.S. Cl. 222—321.3

4 Claims



1. A dispenser for dispensing liquids in atomized form, said liquids being received by said dispenser from a pump which feeds

the liquid under pressure to a hollow stem in the pump, said hollow stem having a cavity, said dispenser comprising:
a cylindrical wall defining a seat for receiving a free end of said hollow stem;
a chamber communicating with said cavity, said chamber having a nozzle at one end for discharging said liquid in atomized form into the atmosphere;
a piston which is housed in and translationally movable within said chamber, said piston having a seal lip which seals said chamber at an end opposite said nozzle, said piston having an appendix projecting toward said nozzle;
a spring acting on said piston to push said appendix toward said nozzle;
a skirt extending in the same direction as said cylindrical wall, said skirt having cuts formed therein to form an elongated flexible tang;
said piston extending into and engaging said elongated flexible tang at the end of said piston opposite said nozzle; and
deflection means for flexing said tang outwardly so as to move said piston away from said nozzle when the dispenser is operated.

5,779,107

PRESSURIZABLE CONTAINER ASSEMBLY AND PISTON MEMBER THEREFOR

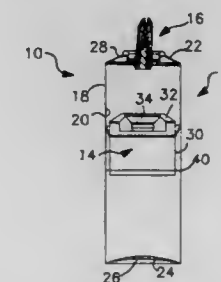
Floyd R. French, Manchester, Mo., assignor to Clayton Corporation, Fenton, Mo.

Filed Jan. 24, 1997, Ser. No. 791,104

Int. Cl.⁶ B65D 88/60

U.S. Cl. 222—327

7 Claims



5. A piston member for a pressurizable container assembly, which comprises:

a cylindrically-shaped body portion;
an end wall portion enclosing a top of said body portion; and
a frusto-conically shaped intermediate wall member extending upwardly and outwardly from said body portion and defining a ring-shaped wiping edge, said intermediate wall member being formed with radially-disposed segments of smaller thickness.

5,779,108

PRESSURE VENTING TRIGGER SPRAYER

Jacques J. Barriac, Claremont, and Douglas B. Dobbs, Yorba Linda, both of Calif., assignors to Calmar Inc., City of Industry, Calif.

Filed Jun. 15, 1995, Ser. No. 490,887

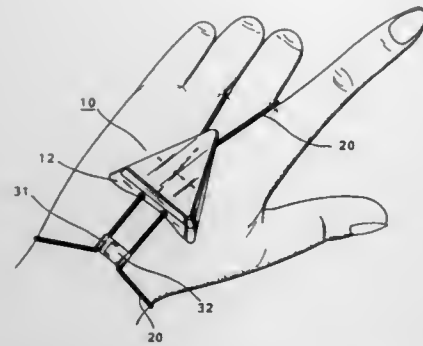
Int. Cl.⁶ B67D 5/40

U.S. Cl. 222—340

11 Claims

1. A trigger actuated pump dispenser, comprising, a housing means mounted on a container of gas/vapor producing liquid product capable of generating a superatmospheric pressure in the container, said housing means having pump cylinder means open at its outer end to atmosphere and having at its inner end region a pump chamber for a manually reciprocable piston, said housing having container air vent means including a vent chamber and a vent port establishing communication between said vent chamber





and ranging from a front end of said support plate to a back end thereof, said support plate having a concave lower surface to adapt to the curvature of said hand, said elastic cord being endless and passing glidingly through said two holes to form a front loop and a back loop extending from said casing, and said hold and said hook of said buckle being attached to the two sides of said back loop of said elastic cord.

5,779,114

SAFETY HOLSTER

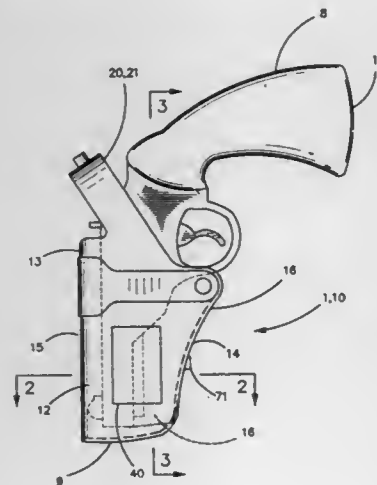
William Rex Owens, 40182 LaRoche Rd., Prairieville, La. 70769

Filed Jul. 19, 1996, Ser. No. 684,377

Int. Cl.⁶ F41C 33/04

U.S. Cl. 224—193

26 Claims



1. A safety device for a firearm comprising a receptacle adapted to receive a firearm, said receptacle having a status as to whether a firearm is engaged or disengaged in said receptacle, said receptacle having a first signal means for generating a first status signal reflecting said status of said receptacle, said safety device further having a tracking device, said tracking device responsive to said first status signal and adapted to record the status of said receptacle, said tracking device being attached to said receptacle.

5,779,115
CARRYING DEVICE FOR MOBILE STATION
Tapio Parkas, Salo; Jukka Solla, Oulu, and Aki Leppänen, Salo, all of Finland, assignors to Nokia Mobile Phones, Ltd., Salo, Finland

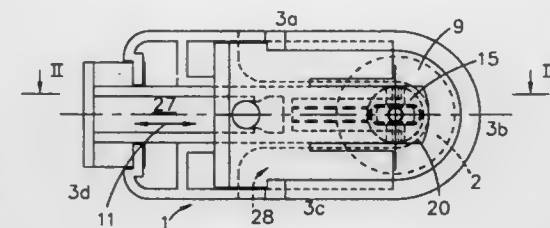
Filed Jun. 10, 1996, Ser. No. 658,444

Claims priority, application Finland, Jun. 30, 1995, 953247

Int. Cl.⁶ A45F 5/02

U.S. Cl. 224—272

9 Claims



1. A carrying device for use with a mobile station whereby the mobile station can be detachably attached to a target, the mobile station being of the type having a support stud (2) with a circular flange (9), the circular flange (9) having a cavity (33) in the middle thereof, the carrying device comprising:

- an attachment element (5) for attaching the carrying device to the target;
- gripping elements comprising guide grooves (8) disposed in a plane for slidably receiving the circular flange (9) therein;
- a tongue (7) adapted to be received in the cavity (33) of the circular flange (9) and being movable in a direction transverse to the plane containing the guide grooves (8);
- a spring (13) having a given spring force (F) for biasing the tongue (7) into a locking position (L) wherein the tongue (7) extends across the plane containing the guide grooves (8) and into the cavity (33) of the circular flange (9) to secure the mobile station to the carrying device while permitting rotational movement of the mobile station relative to the carrying device; and
- a movable slide (27) having a transfer element (12) for forcing the tongue (7) against the bias of the spring force (F) out of the locking position (L) and into a release position (R) wherein the tongue is displaced from the cavity (33) of the circular flange (9) so that the circular flange (9) may slide along guide grooves (8) for removal of the mobile station from the carrying device.

5,779,116

APPARATUS FOR SECURING A LOAD TO A MOTOR VEHICLE

Christoph Rösch, and Mark Seer, both of München, Germany, assignors to HS Products AG, Systemtechnik und Produktmanagement, Krailling, Germany

Filed May 14, 1996, Ser. No. 647,512

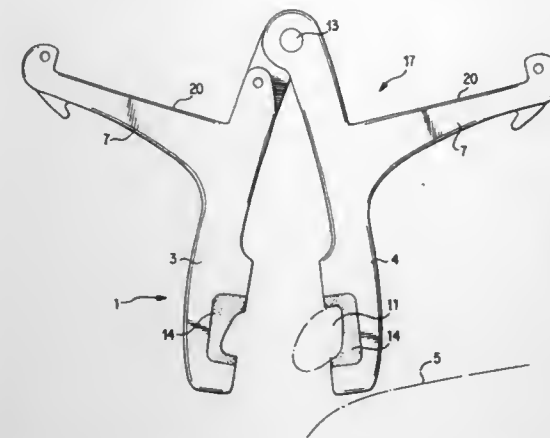
Claims priority, application Germany, May 23, 1995, 195 18 949.3

Int. Cl.⁶ B60R 9/048

U.S. Cl. 224—324

28 Claims

1. Apparatus for securing a load to a motor vehicle comprising: at least first and second load holders adapted to be fixed to a vehicle body, load securing means provided on each of the holders for securing a load extending in a longitudinal direction of the vehicle, clamping means included in each of the load holders for securing a respective load holder to an intermediate carrier which, in use, is connected to the vehicle body, and first and second clamping jaws included in the clamping means for embracing a part of the intermediate carrier, the clamping jaws having a clamping opening which is matched to a profile of the intermediate carrier and which, in a clamping position, substantially embraces said profile and with a longitudinal



extent, in its axial direction, which is substantially parallel to the longitudinal direction of the vehicle, wherein the load securing means are fixed to respective clamping jaws in such a way that a force produced by the weight of a load on the load securing means holds the clamping jaws in the clamping position.

5,779,117

TOOL BOX ADAPTER

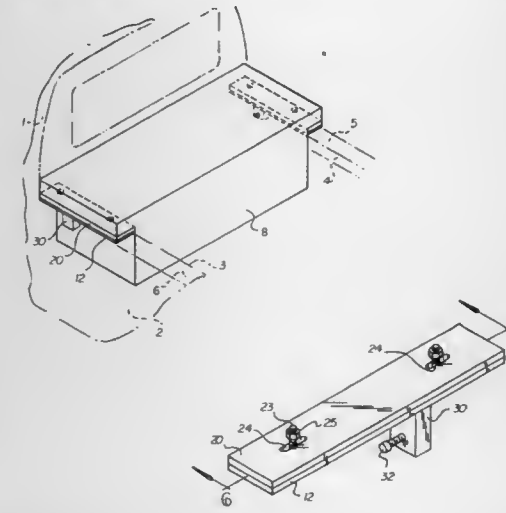
Gene R. Rogers, and Joe R. Puckett, both of Rte. 1 Box 194AA, Davis, Okla. 73030

Filed Oct. 4, 1996, Ser. No. 726,001

Int. Cl.⁶ B60R 9/00

U.S. Cl. 224—403

1 Claim



1. A tool box attachment adapter for securing a tool box to a cargo box of a pickup truck, the tool box structured to have attachment apertures, the pickup truck having parallel laterally spaced side walls, the pickup truck further having side wall ledges on a top surface of the side walls, each of the side wall ledges having a vertical mounting channel, each mounting channel having a mounting channel hole leading from the mounting channel through to an interior of the cargo box, the adapter comprising: a plate member having an upper surface and a lower surface; a number of threaded attachment studs, each stud protruding through a respective slot in the plate member such that each stud extends upwardly from the upper surface of the plate member, the studs further having a head portion positioned flush with the lower surface of the plate member; each stud having a stud nut removably engageable to the threaded stud; each stud slidable within the respective plate member slot such that the studs can align with the tool box apertures;

a side wall bracing member disposed perpendicularly from the lower surface of the plate member, the side wall bracing member adapted for insertion into the vertical mounting channel in the side wall of the pickup, the bracing member further structured to have a mounting screw disposed from the bracing member, the mounting screw positionable through the mounting channel hole;

a mounting screw nut engageable to the mounting screw; and a rubber pad covering the lower surface of the plate member such that the plate member does not directly contact the pickup truck.

5,779,118

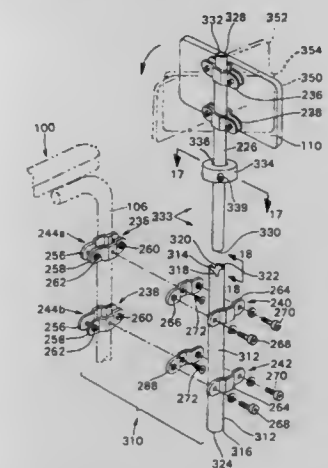
ATTACHABLE CONTAINER PARTICULARLY SUITED FOR AMBULATORY AIDS

Karl J. Douglass, 3730 Dogwood La., Doylestown, Pa. 18901
Continuation-in-part of Ser. No. 439,805, May 12, 1995, Pat. No. 5,516,021, which is a division of Ser. No. 125,630, Sep. 23, 1993, Pat. No. 5,480,079. This application Nov. 8, 1995, Ser. No. 555,052

Int. Cl.⁶ B60R 11/00

U.S. Cl. 224—407

13 Claims



1. An adapter for releasably mounting a container to an ambulatory appliance having a frame member comprising: a support tube for being connected to the ambulatory appliance, the support tube having an internal diameter, an external diameter, a first end, a second end, and an axis; a telescoping tube having first and second ends and an external diameter which is smaller than the internal diameter of the support tube, the telescoping tube being rotatably and slidably disposed in the support tube for rotation about and movement along the axis; releasable interlocking structure disposed on and extending between the support tube and telescoping tube such that the telescoping tube is movable between a first fixed rotary position with respect to the support tube and a second fixed rotary position with respect to the support tube, the interlocking structure including notches located on the first end of the support tube and complementary pins located on the telescoping tube; and a connecting device for being secured to the container attached to the first end of the telescoping tube.

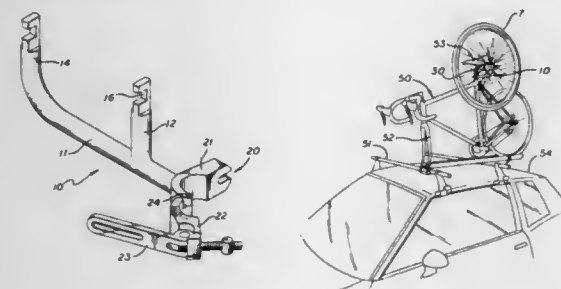
5,779,119

REMOVABLE WHEEL HOLDER FOR BICYCLE

Mark Talbot, 358 S. 24th St., Mesa, Ariz. 85204, and Allen Aflague, 5445 E. Crescent, Mesa, Ariz. 85206
 Filed Nov. 21, 1995, Ser. No. 560,791
 Int. Cl.⁶ B62J 11/00

U.S. Cl. 224-427

5 Claims



1. A bicycle wheel attachment device for holding a wheel with a radius to a seat post of a bicycle comprising:

- a) a support arm;
- b) a first finger attached substantially perpendicularly to the support arm, and a second finger attached to the support arm in spaced relation and substantially parallel to the first finger, the support arm, the first finger and the second finger being of a length less than the radius of the wheel and sized to be receivable through spokes of the wheel and free ends of the first finger and the second finger being shaped to accommodate a wheel axle of the wheel of the bicycle; and
- c) a clamp attached to one end of the support arm for attaching the device to the seat post of the bicycle, the clamp including two clamping members hingedly attached at one end such that the clamp can be opened and installed around the seat post and latch means attached to another end of the clamping members to secure the clamping members around the seat post without requiring a seat of the bicycle to be removed.

5,779,120

FIREARM SUPPORT

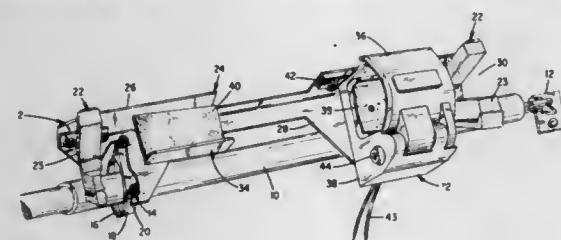
Ted Morford, Bozeman, Mont., assignor to Big Sky Racks, Inc., Bozeman, Mont.

Filed Feb. 20, 1996, Ser. No. 603,720

Int. Cl.⁶ B60R 7/14

U.S. Cl. 224-571

17 Claims



1. A support for a firearm comprising:

- a) a bracket having coextensive top and back plates extending orthogonal to one another;
- b) first and second cradle means mounted to depend beneath said top plate and forward of said back plate and each having a recess for supporting a portion of the firearm within the recess;
- c) a lock plate mounted to depend beneath said top plate and forward of said back plate;
- d) lock means mounted to said lock plate for encircling and containing the barrel of the firearm; and
- e) a trigger shroud mounted beneath said top plate and forward of said back plate and having a web which projects parallel to said top plate and defines a storage space for containing the trigger of the firearm between said top plate and said web,

whereby the firearm is supportable beneath said top plate and forward of said back plate with restricted access to the trigger.

5,779,121

POCKET CLOSURE AND COMPRESSION STRAP FOR A PACK

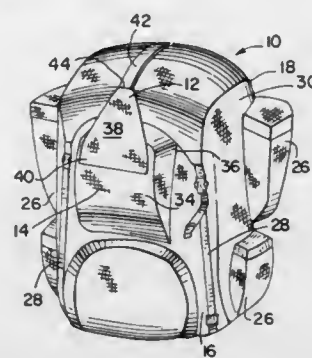
Linda Lee Capwell, Brackney, Pa., assignor to Johnson Worldwide Associates, Inc., Racine, Wis.

Filed Apr. 16, 1996, Ser. No. 633,089

Int. Cl.⁶ A45F 3/04

U.S. Cl. 224-655

17 Claims



1. A compression strap arrangement for a pack of the type including front and back panels enclosing an internal storage volume, the arrangement comprising:

- a) a pocket panel adapted to be affixed to the front panel of the pack, the pocket panel forming and at least partially enclosing a storage pocket, the storage pocket having an opening for inserting articles into and removing articles from the pocket;
- b) a pocket closure panel secured to the pocket panel for selectively closing the pocket; and
- c) a compression strap coupled to the pocket closure panel and adapted to extend to a portion of the pack across the internal storage volume, the compression strap being adjustably tensionable to maintain the pocket closure panel over the pocket opening and adapted to compress the internal storage volume of the pack.

5,779,122

ASTHMA MEDICATION POUCH

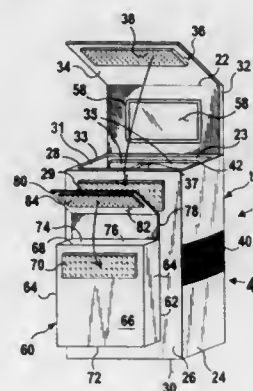
Vincent Martinelli, 255-29 75 Ave., Glen Oaks, N.Y. 11004

Filed May 5, 1997, Ser. No. 851,210

Int. Cl.⁶ A45F 5/00

U.S. Cl. 224-683

22 Claims



1. An asthma medication pouch adaptable to be replaceably attachable to one of a belt, clothing, and an ankle of an asthma patient, and carrying asthma medications for the asthma patient, comprising:

5,779,124

NEGATIVE FILM TRANSFER APPARATUS AND METHOD FOR CORRECTING STANDARD TRANSFER DISTANCE BASED ON PULSE COUNT BETWEEN SUCCESSIVE IDENTIFICATION DATA

Toshiro Akira, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama-ken, Japan

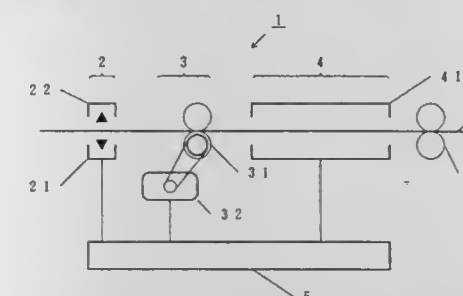
Continuation of Ser. No. 547,542, Oct. 24, 1995, abandoned.

This application Mar. 21, 1997, Ser. No. 822,459

Claims priority, application Japan, Oct. 27, 1994, 2-264144
 Int. Cl.⁶ B65H 23/18; G06F 17/00

U.S. Cl. 226-2

4 Claims



1. A method of transferring a negative film to a processing station, wherein said negative film has a lengthwise track along which are recorded at intervals of a given length identification data containing negative film processing information indicative of processing conditions to be conducted at said processing station, said method comprising:

- conveying said negative film by a transfer mechanism in response to a transfer control signal;
- establishing a value of said transfer control signal representative of a standard time necessary to convey said negative film a transfer distance between first and second said identification data;
- detecting said identification data and producing a pulse signal corresponding to said negative film processing information of said identification data;
- determining an actual time taken to convey said negative film said transfer distance between said first and second identification data in response to said pulse signal;
- comparing said actual time with said standard time to determine a transfer time error therebetween; and
- correcting the value of said transfer control signal to compensate for said transfer time error, such that said transfer mechanism conveys said negative film by said transfer distance.

5,779,125

SYSTEM FOR PROCESSING A WEB OF PLASTIC MATERIAL

Rainer Melzer, and Roland Melzer, both of Schwelm, Germany, assignors to Melzer Maschinenbau GmbH, Schwelm, Germany

Filed Nov. 15, 1996, Ser. No. 751,301

Claims priority, application Germany, Nov. 18, 1995, 195 43 140.5

Int. Cl.⁶ G03B 1/28; 1/34

U.S. Cl. 226-55

9 Claims



1. A system for affixing a plastic web upon a longitudinally extending beam, the plastic web comprising successive articles

5,779,123

WEB/RIBBON PATH VERIFIER FOR DETECTING AND IDENTIFYING ERRORS IN A WEB/RIBBON PATH

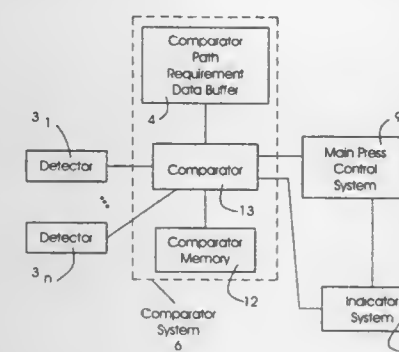
John Sheridan Richards, Barrington, N.H., assignor to Heidelberg Harris, Inc., Dover, N.H., and Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Nov. 20, 1996, Ser. No. 754,771

Int. Cl.⁶ B65H 26/00; B23Q 15/00; G03B 1/56

U.S. Cl. 226-1

16 Claims



14. A method for verifying a web/ribbon path for detecting errors in a path of a web/ribbon threaded through a device including a plurality of rollers, the method comprising the steps of:

- detecting a current web/ribbon path;
- comparing the detected current web/ribbon path to a desired web/ribbon path to detect errors in the current web/ribbon path, wherein the comparing system identifies at which of the rollers of the device errors in the current web/ribbon path have been detected; and

determining whether any of the detected errors are catastrophic errors which require rethreading the web/ribbon through the device.

separated by transverse straps of a punch grid, said transverse straps being provided with longitudinally spaced-apart positioning holes thereon, the longitudinally extending beam being provided with longitudinally spaced-apart positioning pins thereon, wherein the longitudinally spaced-apart positioning holes are dimensioned to mate with the longitudinally spaced-apart positioning pins, comprising:

means for simultaneously adjusting a separation distance between the spaced-apart positioning pins on the beam by bending the beam about an axis extending transversely there-through.

5,779,126

SYSTEM FOR SUPPORTING TORQUE

Gil-Hwan Chun, Haminkeln, Germany, assignor to A. Friedr. Flender AG, Bocholt, Germany

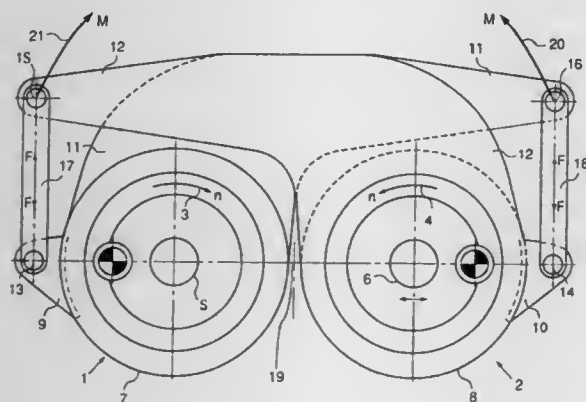
Filed Oct. 31, 1996, Ser. No. 741,517

Claims priority, application Germany, Nov. 21, 1995, 195 43 364.5

Int. Cl.⁶ B65H 20/00

U.S. Cl. 226—187

4 Claims



4. A system for supporting torque in two oppositely-rotated rollers, comprising: a first roller mounted stationarily; a second roller displaceable toward and away from said first roller along a bed; said first and second rollers having axes; a journal in each roller at same ends of said first roller and said second roller; transmission means mounted over each journal; torque supports fastened to said transmission means; tie rods connected to said torque supports at two points of articulation on each tie rod; said two points of articulation on each tie rod being both on one side of a midplane extending through said axes of said rollers; one point of articulation associated with each tie rod being adjacent said midplane; said first and second rollers being horizontal and having a space between them, said rollers having directions of rotation for moving downward material entering said space between said rollers, said points of articulation being above said midplane.

5,779,127

FASTENING MACHINES

Stuart Edmund Blacket, Closeburn, and Wojciech Gostylla, Camira, both of Australia, assignors to Henrob Ltd., Clwyd, United Kingdom

PCT No. PCT/AU95/00219, § 371 Date Oct. 11, 1996, § 102(e) Date Oct. 11, 1996, PCT Pub. No. WO95/28242, PCT Pub. Date Oct. 26, 1995

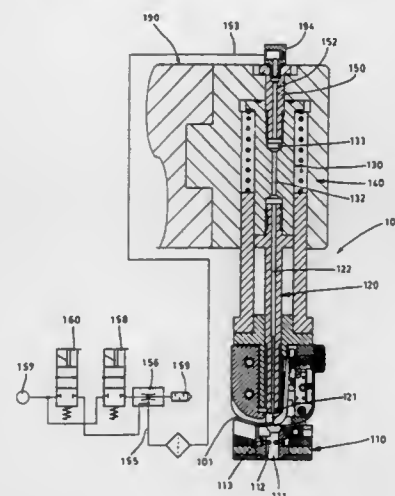
PCT Filed Apr. 18, 1995, Ser. No. 722,020

Claims priority, application Australia, Apr. 18, 1994, PM5070

Int. Cl.⁶ B21J 15/30; B25B 23/08

U.S. Cl. 227—107

17 Claims



1. A fastener actuator for a fastening machine, wherein the actuator advances a fastener toward a workpiece for securing the fastener to the workpiece, comprising:

means defining a fastener delivery passage downwardly through which the fastener passes,

a fastener supply passage for sequentially delivering fasteners to the fastener delivery passage, and wherein

the fastener actuator is vertically movable through the fastener delivery passage, the actuator including a nose at its leading end for engaging a fastener and advancing the same toward the workpiece, the actuator being provided with an internal passage one end of which is open to the nose of the actuator and another end of which is connected to a vacuum source through a control, whereby connecting the internal passage to the vacuum source effects vacuum retention of the fastener on the nose of the actuator to maintain orientation of the fastener as the actuator advances toward the workpiece.

5,779,128

NAIL DRIVING APPARATUS

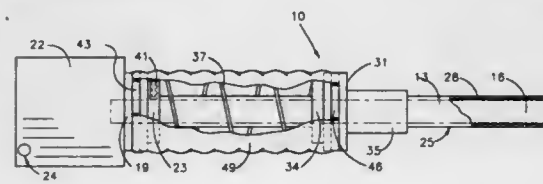
Mirosław A. Szczurba, 1011 Boren Ave. #213, Seattle, Wash. 98104

Filed May 31, 1996, Ser. No. 656,054

Int. Cl.⁶ B25C 1/02

U.S. Cl. 227—113

22 Claims



1. A nail driving apparatus comprising:
a tube having a bore along its entire length;

a rod having a front end and a back end, said rod being slightly longer than said tube and slidably mounted in said bore for reciprocating movement therein whereby said front end engages the head of a nail placed within said bore;
a mass rigidly attached to said back end, said mass having a first neck being substantially cylindrical and adjacent said back end;
a collar rigidly mounted to the external surface of said tube, said collar having a second neck being substantially cylindrical and positioned nearest said back end; and
a spring permanently engaging said first neck and said second neck whereby said mass is normally urged toward said tube.

5,779,129

CONTAINER HAVING A BOX BLANK WITH REMOVABLY ATTACHED LID BLANK

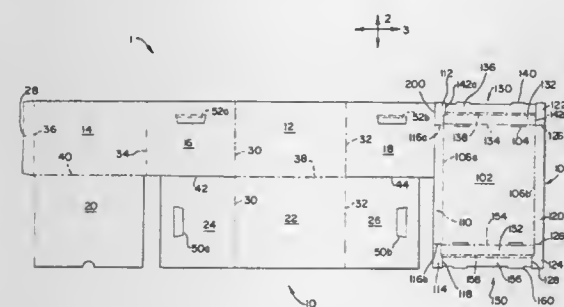
John E. Herbst, Bolingbrook, and Joseph J. Benes, Arlington Hts., both of Ill., assignors to Fellowes Manufacturing Company, Itasca, Ill.

Filed Jan. 24, 1997, Ser. No. 794,193

Int. Cl.⁶ B65D 5/42

U.S. Cl. 229—125.19

5 Claims



1. A blank of foldable material adapted to be separated into two portions that may be folded to form a box and a removable cover for the box, the blank comprising

a. a box blank having a longitudinal direction and a lateral direction and comprising:

- a front wall;
 - a first outer side wall connected to the front wall by a longitudinal score line;
 - a second outer side wall connected to the front wall by a longitudinal score line;
 - a back wall connected to the first side wall by a longitudinal score line;
 - an inner bottom wall connected to the back wall by a lateral score line;
 - an outer bottom wall connected to the front wall by a lateral score line;
 - a first inner side wall connected to the outer bottom wall by a longitudinal score line; and,
 - a second inner side wall connected to the outer bottom wall by a longitudinal score line, wherein at least some of the walls define a box blank longitudinal dimension; and
- b. a lid blank having a portion removably secured to a portion of the box blank, wherein the lid blank does not extend beyond the box blank longitudinal dimension.

5,779,130

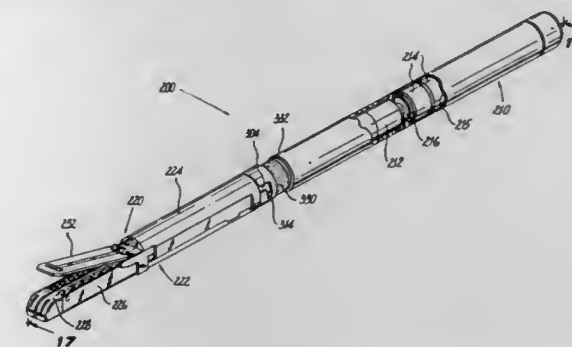
SELF-CONTAINED POWERED SURGICAL APPARATUS
Daniel E. Alesi, Sherman; Robert J. Geiste, Milford; Dominick L. Mastri, Bridgeport, all of Conn.; Wayne P. Young, Brewster, N.Y., and Kenneth E. Toso, Wilton, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 287,455, Aug. 5, 1994, abandoned. This application Oct. 7, 1994, Ser. No. 319,907

Int. Cl.⁶ A61B 17/068

U.S. Cl. 227—176.1

20 Claims



1. A self-contained powered surgical apparatus for applying surgical fasteners to body tissue comprising:

- an elongate body defining a longitudinal axis;
- a cartridge assembly detachably supported in a distal end portion of the elongate body, and including:
 - a frame having a proximal end portion configured to engage the distal end portion of the elongate body;
 - a housing supported within the frame and containing a plurality of surgical fasteners;
 - an anvil pivotably associated with the frame and mounted for movement with respect to the housing between an open position and a closed position;
 - an actuation assembly configured to translate in a longitudinal direction relative to the housing and the anvil to progressively move the anvil from the open position to the closed position and to sequentially eject the surgical fasteners from the housing to be formed against the anvil; and
 - an axial drive screw rotatably mounted within the frame and threadably associated with the actuation assembly for effectuating the longitudinal translation thereof;
- a motor assembly disposed within the elongate body and including an axial drive shaft;
- a coupling disposed within the elongate body for detachably connecting the axial drive shaft of the motor assembly and the axial drive screw of the cartridge assembly; and
- a power source disposed within the elongate body for energizing the motor assembly.

5,779,131

ENDOSCOPIC SURGICAL STAPLER WITH COMPACT PROFILE

Tim Knodel; Bryan D. Knodel, both of Cincinnati; Anil Nalagatla, West Carrollton, and Dale R. Schulze, Lebanon, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Division of Ser. No. 545,297, Oct. 19, 1995, Pat. No. 5,697,542.

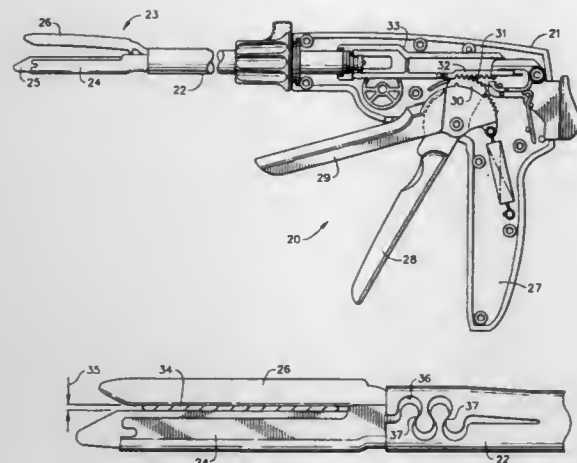
This application Apr. 24, 1997, Ser. No. 842,253

Int. Cl.⁶ A61B 17/068

U.S. Cl. 227—176.1

1 Claim

1. An endoscopic surgical stapler capable of clamping bodily tissue prior to firing staples to fasten said tissue, said stapler comprising:
an end effector including an anvil and an elongated channel containing a staple cartridge therein, said anvil facing said channel and movable toward and away therefrom;
and a reciprocating closure sleeve from which said end effector extends, said sleeve movable from rearward to forward positions;



wherein said anvil is moveable to first, second and third fixed positions relative to said channel, said first fixed position being a closed position wherein said closure sleeve is in said forward position and said anvil is in intimate contact with said staple cartridge thereby eliminating any clearance therebetween, said second fixed position being an open position wherein said closure sleeve is in said rearward position and said anvil is spaced from said cartridge for inserting said bodily tissue therebetween, said third fixed position being a clamped position wherein said closure sleeve is in said forward position and said anvil is adjacent said cartridge so as to provide a tissue-clamping gap therebetween for clamping said bodily tissue, and said closure sleeve has an unstressed sleeve diameter, wherein when said sleeve is in said forward position and said bodily tissue has been inserted between said anvil and said cartridge thereby positioning said anvil in said third fixed position, said sleeve expands so as to exceed said unstressed sleeve diameter for accommodating said tissue-clamping gap.

5,779,132
ENDOSCOPIC SURGICAL STAPLER WITH COMPACT PROFILE

Tim Knodel; Bryan D. Knodel, both of Cincinnati; Anil Nalagatla, West Carrollton, and Dale R. Schulze, Lebanon, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Division of Ser. No. 545,297, Oct. 19, 1995, Pat. No. 5,697,542.
This application Apr. 24, 1997, Ser. No. 842,255
Int. Cl.⁶ A61B 17/068

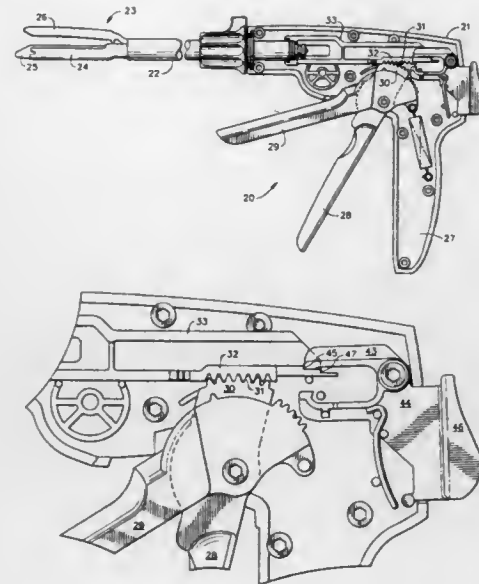
U.S. Cl. 227—176.1

2 Claims

1. An endoscopic surgical stapler capable of clamping bodily tissue prior to firing staples to fasten said tissue, said stapler comprising:

an end effector including an anvil fixed to a slot post and an elongated channel containing a staple cartridge therein, said channel having an elongated diagonal slot for receiving said slot post, and said anvil facing said channel and movable toward and away therefrom;

wherein said anvil is moveable to first, second and third fixed positions relative to said channel, said first fixed position being a closed position wherein said anvil is in intimate contact with said staple cartridge thereby eliminating any clearance therebetween, said second fixed position being an open position wherein said anvil is spaced from said cartridge for inserting said bodily tissue therebetween, said third fixed position being a clamped position wherein said anvil is adjacent said cartridge so as to provide a tissue-clamping gap therebetween for clamping said bodily tissue, and said slot



post of said anvil rides in said diagonal slot of said channel so as to move said anvil from said second to third fixed positions.

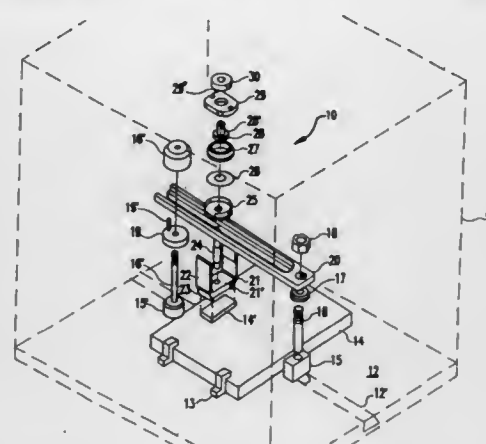
5,779,133
IN-SITU DEVICE REMOVAL FOR MULTI-CHIP MODULES

Raymond Alan Jackson, Poughkeepsie; Kathleen Ann Lidestri, Hopewell Junction; David Clyde Linnell, Poughkeepsie, and Raj Navinchandra Master, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 342,563, Nov. 21, 1994, Pat. No. 5,553,766. This application May 1, 1996, Ser. No. 641,661
Int. Cl.⁶ B23K 3/00

U.S. Cl. 228—13

19 Claims



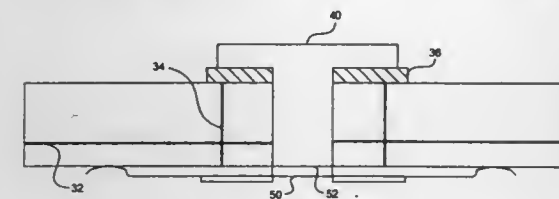
1. Apparatus for removing a semiconductor chip from a substrate including in combination a chip lifting assembly, and means for supporting said chip lifting assembly above a substrate to which at least one chip is attached by means of solder, wherein said chip lifting assembly comprises means for gripping a chip and means for applying a lifting force to said means for gripping a chip only at a temperature equal to or exceeding a softening temperature of said solder, wherein said means for applying a lifting force includes a disk shaped element which deforms with temperature.

5,779,134
METHOD FOR SURFACE MOUNTING A HEATSINK TO A PRINTED CIRCUIT BOARD

Jeff R. Watson; Michael N. Goetsch, both of Phoenix, Ariz.; Jim V. Noval, and Raiyo F. Aspandiar, both of Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.
Division of Ser. No. 535,974, Sep. 29, 1995, Pat. No. 5,617,294.
This application Oct. 31, 1996, Ser. No. 741,833
Int. Cl.⁶ H05K 3/34

U.S. Cl. 228—179.1

13 Claims



1. A method for surface mounting a heat sink having a step that is located between a top and bottom surface into an opening of a printed circuit board, said opening having a plurality of vias filled with a thermally conductive metal, said vias being disposed around the periphery of said opening and extending from said bottom surface to said top surface, said method comprising the steps of:

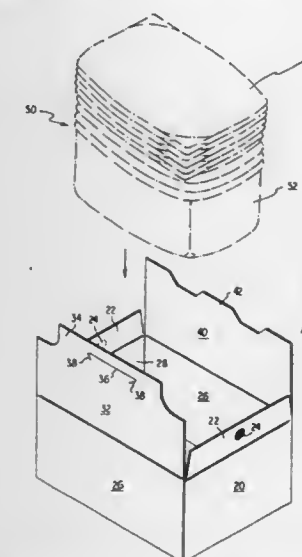
- forming a metal coating about the periphery of said opening in said printed circuit board such that said metal coating covers said vias;
- depositing solder paste over said metal coating;
- placing said heat sink into said opening using a surface-mount machine such that said bottom surface of said heat sink is deposited within said opening and said step makes contact with said solder paste; and
- heating said solder paste such that said solder paste is wetted onto said printed circuit board and said step of said heat sink.

5,779,135
NESTED CONTAINER PACKAGE
Paul D. Richardson, Greenhills, Ohio, assignor to International Paper Company, Purchase, N.Y.

Filed Nov. 6, 1996, Ser. No. 744,636
Int. Cl.⁶ B65D 83/00

U.S. Cl. 229—155

3 Claims



1. A package including a plurality of nested and stacked containers and a paperboard carton, said carton fashioned from a unitary blank of paperboard, said carton including two opposite main roof panels, two opposite tuck panels, side wall panels, and a bottom panel, said roof and tuck panels carried by respective ones of said side panels, said two main roof panels each having respective free

edges which overlap to thereby close said carton, one of said two main roof panels being the uppermost of said two main roof panels and the other being the lowermost of said two main roof panels, an opening in said bottom panel, each of said containers of said nested stack having a flange, said nested stack of containers extending partially through said bottom panel opening, said flanges of said nested stack located above said bottom panel, said stack having a lowermost container whose said flange rests on said bottom panel, said two main roof panel free edges having respective latch elements to thereby enable latching together said roof panels in substantial coplanar relationship to each other, said tuck panels each located beneath said two main roof panels, said tuck panels each having an adhesive spot on a respective upper surface thereof, said adhesive spots each being in contact with a respective lower surface portion of said uppermost main roof panel, whereby initial opening of said main roof and tuck panels is effected by pulling upwardly on said uppermost main roof panel to overcome the force of said adhesive spots, and whereby subsequent refolding of said roof panels is effected by securing said latch elements together.

5,779,136
CARDBOARD CONTAINER

Diego Blazquez Garcia, Olvido 23-3012q., E-28026 Madrid, Spain

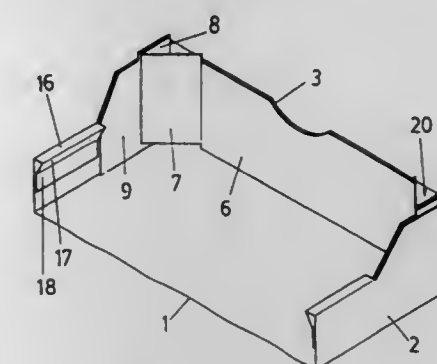
PCT No. PCT/ES96/00162, § 371 Date Apr. 18, 1997, § 102(e) Date Apr. 18, 1997, PCT Pub. No. WO97/08060, PCT Pub. Date Mar. 6, 1997

PCT Filed Aug. 22, 1996, Ser. No. 817,550

Claims priority, application Spain, Aug. 22, 1995, 9502221 U
Int. Cl.⁶ B65D 5/50

U.S. Cl. 229—199

9 Claims



1. A cardboard container for the transport and storage of products which comprises:

a base sheet with two side walls, two front walls with lateral laps, extending therefrom and separated by folding lines, two reinforcement front walls independent from the base sheet and attached to said front walls, each reinforcement front wall being composed of a central sheet laterally divided by three folding lines which define an inner sector, an outer sector, and a lap extending from said outer sector, said lap consists on an inner zone and an outer zone, said inner zone presents its upper edge staggered up to a level below corresponding to said outer zone, said inner sector being positioned in an oblique arrangement and said outer sector being adhered to said inner zone of said lap, forming a prismatic reinforcement portion with a hollow inside.

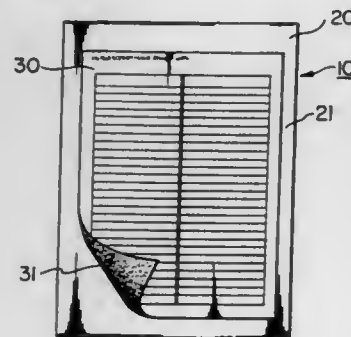
5,779,137

ROUTING ENVELOPE

Carol A. Coffey, Calgary, Canada, assignor to Calgary District Hospital Group Foundation Ltd., Calgary, Canada
Continuation of Ser. No. 457,478, Jun. 1, 1995, abandoned, which is a continuation of Ser. No. 366,030, Dec. 29, 1994, abandoned, which is a continuation of Ser. No. 120,633, Sep. 13, 1993, abandoned, which is a continuation of Ser. No. 927,952, Aug. 11, 1992, abandoned. This application Dec. 5, 1996, Ser. No. 761,061
Int. Cl.⁶ B65D 27/06

U.S. Cl. 229—301

6 Claims



1. An environmentally friendly reusable routing envelope for interoffice use, said envelope being made from non-metallic recyclable material and intended to be transmitted to a plurality of recipients greater than two, said envelope comprising an access opening to allow an item to be inserted into and removed from said envelope, a closure member movable between a first position wherein said access opening is open and a second position wherein said access opening is closed, said envelope having a backside surface and a front outside surface, reusable securing means to maintain said closure member in said closed position on said backside surface, a routing label removably attached to said front outside surface by a pressure sensitive adhesive, said routing label being mounted remotely from said access opening to allow said closure member to be opened or closed without removal of said routing label, said routing label being made of a recyclable material, said pressure sensitive adhesive being applied along the periphery of said routing label for adhering said label to said front outside surface of said envelope, said label having an exposed outer surface preprinted with ink and including multi-designated areas, said multi-designated areas being greater than two, for receiving written routing instructions for said plurality of recipients greater than two for said envelope.

5,779,138

Patent Not Issued For This Number

5,779,139

AUTOMATIC WATER COMBINATION FAUCET

Yuseki Ueno, Tokyo, Japan, assignor to NTC Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1996, Ser. No. 770,001

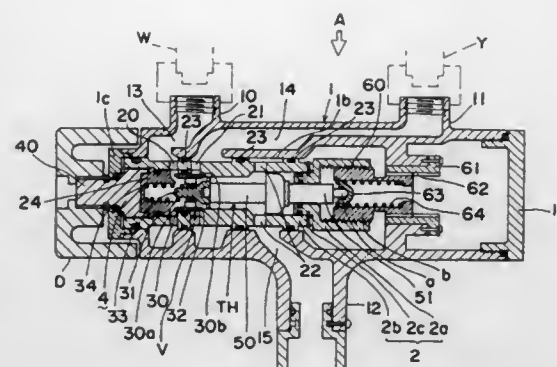
Claims priority, application Japan, Dec. 20, 1995, 7-349333

Int. Cl.⁶ G05D 23/13

U.S. Cl. 236—12.2

3 Claims

1. An automatic water combination faucet, comprising:
a body having a hot water inlet pipe, a water inlet pipe and a combination water outlet pipe respectively provided on the outer surface;
a mixing valve mechanism incorporated in said body to control the rate of inflow of hot water and water respectively supplied from said hot water inlet pipe and said water inlet pipe; and



a thermostat incorporated in said body to automatically control said mixing valve mechanism so as to hold a desired setting temperature of combination water discharged from said combination water outlet pipe;
wherein said mixing valve mechanism and said thermostat respectively incorporated in said body are housed in a cartridge of an axial cylinder shape;
said cartridge is inserted into said body so as to be freely rotated about a rotary axis in the longitudinal axial direction;
an adjustment screw is provided on one end side in said body, adjacent to a projected or retracted operating rod of the thermostat in said cartridge so as to be freely displaced in the axial direction of said body to support said operating rod;
said adjustment screw and one end of said cartridge are respectively connected to said body through a screw and a spline such that said adjustment screw is displaced in the axial direction of said body through the rotation of said cartridge; and
said cartridge is connected to a temperature control dial provided on the other end of said body so as to be rotated by the operation of rotating said temperature control dial.

5,779,140

Patent Not Issued For This Number

5,779,141

HEATING APPARATUS

Yoshihiko Okumura; Koichi Ito, both of Kariya; Yoshimitsu Inoue, Chiryu, and Hikaru Sugi, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 19, 1996, Ser. No. 684,076

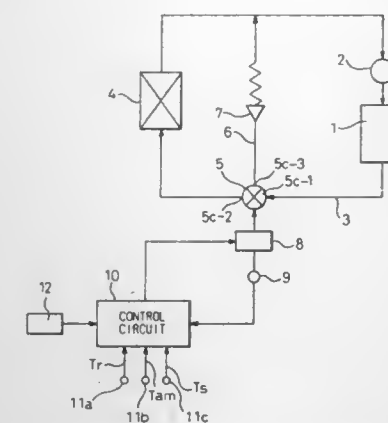
Claims priority, application Japan, Jul. 21, 1995, 7-185312

Int. Cl.⁶ F28F 27/00; G05D 23/00

U.S. Cl. 236—36

8 Claims

1. A heating system for heating an air flow to a chamber, comprising:
a source of a hot water;
a passageway for a re-circulation of the hot water from the source;
a heat exchanger arranged on said passageway for obtaining a heat exchange between the hot water and an air flow for heating the air flow;
a flow control valve arranged on the passageway for controlling an amount of the of water directed to the heat exchanger;
a flow amount detecting means for detecting an actual amount of the hot water from the hot water source to the heat exchanger;
a target flow amount calculating means for calculating a target flow amount of the hot water from the hot water source to the heat exchanger;
first determining means for determining if the actual hot water amount detected by the detecting means is in a first range;



second determining means for determining if a value of the target hot water amount calculated by the calculating means is different from the detected actual hot water amount and is in a second range;

a first control means for controlling said flow control valve in such a manner that an amount of the hot water from the hot water source to the heat exchanger is, initially, controlled to the calculated target value plus a predetermined overshoot amount, and, then, controlled to the calculated target value, when it is determined by the first determining means that the actual hot water amount detected by the detecting means is in a first range and it is determined by the second determining means that a value of the target hot water amount calculated by the calculating means is different from the detected actual hot water amount and is in a second range;

a second control means for controlling said flow control valve in such a manner that an amount of the hot water from the hot water source to the heat exchanger is controlled to the calculated target value when it is determined by the first determining means that the actual hot water amount detected by the detecting means is out of the first range or it is determined by the second determining means that a value of the target hot water amount calculated by the calculating means is the same as the detected actual hot water amount or is out of the second range.

5,779,142

METHOD FOR ACHIEVING A SPECIFIC TEMPERATURE BEHAVIOR OF ADJUSTING ELEMENTS OPERATING IN DEPENDENCE ON TEMPERATURE AND AN ADJUSTING ELEMENT OPERATING IN DEPENDENCE ON TEMPERATURE

Viggo Rudebeck, Augustenborg, and Jørgen Trelle Pedersen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

PCT No. PCT/DK95/00060, § 371 Date Jul. 29, 1996, § 102(e)

Date Jul. 29, 1996, PCT Pub. No. WO95/22091, PCT Pub.

Date Aug. 17, 1995

PCT Filed Feb. 9, 1995, Ser. No. 687,504

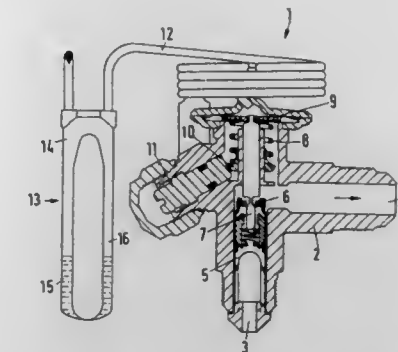
Claims priority, application Germany, Feb. 11, 1994, 44 04 328.7

Int. Cl.⁶ G05D 23/12

U.S. Cl. 236—99 R

17 Claims

6. An adjusting element, operating in dependence on temperature, of valves or thermostatic apparatus in which an actuating element is in pressure connection with a pressure chamber, the pressure chamber containing a zeotropic mixture of at least two component substances, which mixture has a boiling point line and a condensing point line which do not coincide, between said lines is an indeterminate state where part of the mixture is gaseous and



part of the mixture is fluid, where an area for operation is limited by the boiling point line and the condensing point line, which area for operation is changed by variation of the ratio of components in order to obtain the desired temperature behavior.

5,779,143

ELECTRONIC BOILER CONTROL

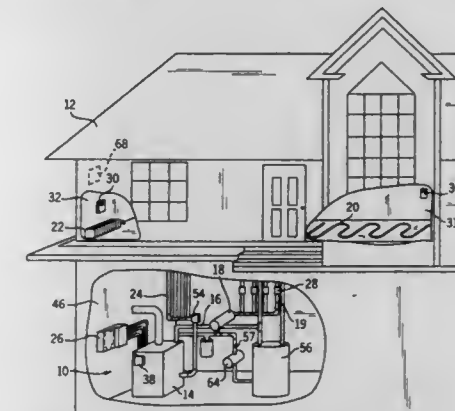
Roger P. Michaud, Orrs Island, Me., and Larry Milesky, Needham, Mass., assignors to Erie Manufacturing Company, Milwaukee, Wis.

Filed Feb. 13, 1997, Ser. No. 800,193

Int. Cl.⁶ F24D 3/00

U.S. Cl. 237—8 R

24 Claims



1. A hydronic heating system including a main boiler and a circulating pump, the hydronic heating system heating a plurality of heating zones, the system comprising:

a plurality of zone thermostats, each thermostat in communication with one of the heating zones, the zone thermostats each generating a demand signal upon sensing that the temperature in the heating zone is below a desired value;
a plurality of zone valves, each zone valve being positioned between the main boiler and one of the heating zones, the operation of each zone valve controlling the flow of heated water from the main boiler to the heating zone;
a hydronic control unit in communication with the plurality of zone thermostats and zone valves, the hydronic control unit operating the zone valves to control the flow of heated water from the main boiler into each heating zone, the hydronic control unit further being in communication with the main boiler to maintain the boiler water temperature at a desired boiler temperature;
a priority device in communication with the hydronic control unit, the hydronic control unit diverting the flow of heated water from the boiler to only the priority device upon receiving a demand signal from the priority device, the hydronic control unit monitoring the priority device and restoring the flow of heated water to the zone valves after a predetermined delay during which heated water is diverted only to the priority device;

an outdoor temperature sensor in communication with the hydronic control unit;
 a low water sensor in communication with the hydronic control unit the low water sensor disabling the hydronic control unit upon sensing a reduced amount of water in the hydronic heating system; and
 a mode selection switch, the mode selection switch selecting from a standard operating mode and a boiler reset operating mode, wherein when the standard operating mode is selected, the hydronic control unit maintains the boiler water temperature between an upper and a lower temperature limit, and wherein when the boiler reset operating mode is selected the hydronic control unit modifies the desired boiler temperature based on the outside air temperature.

5,779,144

Patent Not Issued For This Number

5,779,145

DEVICE FOR SECURING RAILROAD TRACKS FOR TRAIN SETS

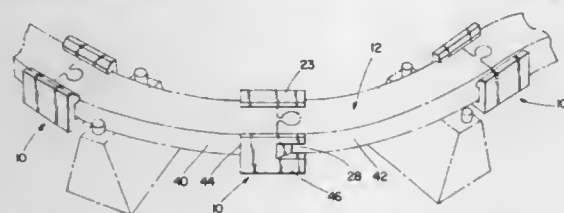
David A. Zelle, and Jill J. T. Zelle, both of 4709 Belfield Dr., Dublin, Ohio 43017

Filed Nov. 6, 1996, Ser. No. 744,650

Int. Cl.⁶ A63H 19/30

U.S. Cl. 238—10 E

8 Claims



1. A track connector for securing a first track with a second track, comprising:
 a base portion;
 a first arm upstanding along a first side of said base portion, said first arm portion extending a distance away from said base sufficient to contact a top portion of said first track;
 a second distinct arm upstanding along a second side of said base portion, said second arm extending away from said base a distance sufficient to contact a top portion of said second track; and
 wherein said first and second arm engage and secure said first track with said second track.

5,779,146

DECORATIVE FLUID DISCHARGING FIXTURES WITH SELECTIVELY INTERCHANGEABLE INSERT

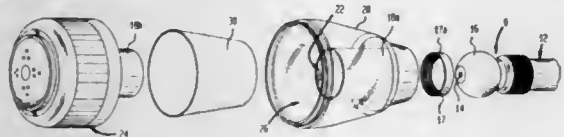
Paul F. Cutler, R.D. #3, Box 920, Rte. 517, Hackettstown, N.J. 07840

Filed Dec. 6, 1995, Ser. No. 568,170

Int. Cl.⁶ B67D 5/08

U.S. Cl. 239—71

24 Claims



11. A decorative fluid discharging fixture comprising a housing element having a generally translucent portion and a pair of spaced

apart open ends, one of said open ends connectable to a fluid source, said housing element having a hollow cylindrical first member attached within said housing element to said one open end to receive fluid from said source, an end cap having a fluid discharge first end and a second end detachably connectable to the other open end of said housing element, said end cap having a hollow cylindrical second member attached thereto for receiving fluid from said first member, said first and second members connectable to each other to form a fluid passageway from said fluid source to said discharge end of said end cap, and a generally fluid-tight annular receiving chamber formed within said translucent portion of said housing when said end cap is attached to said other end of said housing element, and at least one decorative insert element removably disposable within said receiving chamber through said other open end of said housing element thereby being visible from the exterior of said fixture through said translucent portion of said housing element.

5,779,147

DOSING NOZZLE ASSEMBLY AND PROCESS FOR DOSING LIQUID

Meinrad Rosse, La-Tour-De-Peilz, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

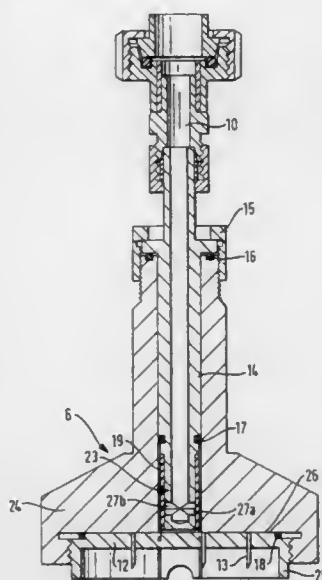
Filed Sep. 17, 1996, Ser. No. 715,301

Claims priority, application European Pat. Off., Oct. 24, 1995, 95202881

Int. Cl.⁶ B05B 1/08; 1/30; B65D 88/54

U.S. Cl. 239—99

14 Claims



1. Nozzle assembly for dosing liquid comprising
 a dosing chamber comprising an inlet, a piston housing wherein a piston plunger is disposed the displacement of which enlarges or decreases the volume of the dosing chamber corresponding to the volume of a dose, and an outlet communicating with a distribution channel
 a first one-way valve to open the inlet when the dosing chamber is being filled and to close the inlet when a dose is being emptied out from the dosing chamber into the distribution channel,
 a second one-way valve to close the outlet when the dosing chamber is being filled and to open the outlet when a dose is being emptied from the dosing chamber into the distribution channel,
 a pressure release valve to open a distribution channel outlet when pressurised to a desired pressure, said pressure release valve comprising an elastic cover tightly fitted around the distribution channel outlet only allowing passage of liquid upon reaching of the desired pressure in the distribution

channel to distribution means comprising one or more needles through which the liquid is dosed.

5,779,148

POP-UP SPRINKLER WITH PRESSURE REGULATOR

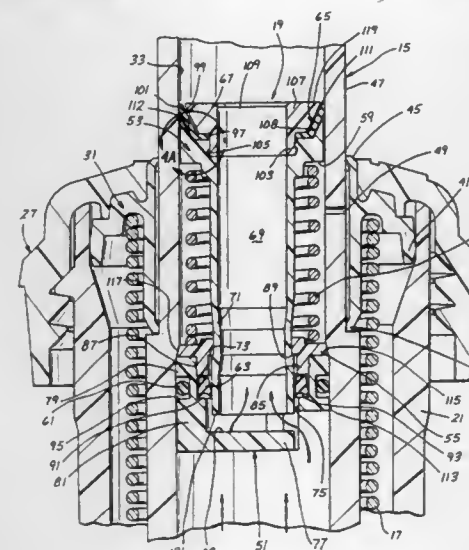
Myrl Saarem, Carson City, Nev., and Alan W. Dawn, Murrieta, Calif., assignors to The Toro Company, Riverside, Calif.

Filed Aug. 21, 1996, Ser. No. 701,152

Int. Cl.⁶ B05B 1/28; 15/10

U.S. Cl. 239—104

26 Claims



1. In a pop-up sprinkler which includes a housing, a riser in the housing movable between an extended position in which the riser extends from the housing and a retracted position in which the riser is retracted from the extended position, first and second axially spaced seals carried by said housing and cooperable with the riser, said second seal allowing the passage of air, a pressure regulator within said riser and an aperture in the riser adjacent the pressure regulator for providing a vent for the pressure regulator, the improvement comprising:

said aperture being located on said riser so as to be between the first and second seals in said extended position whereby the first and second seals reduce the likelihood of clogging of the aperture.

5,779,149

PIEZOELECTRIC CONTROLLED COMMON RAIL INJECTOR WITH HYDRAULIC AMPLIFICATION OF PIEZOELECTRIC STROKE

Edward James Hayes, Jr., Virginia Beach, Va., assignor to Siemens Automotive Corporation, Auburn Hills, Mich.

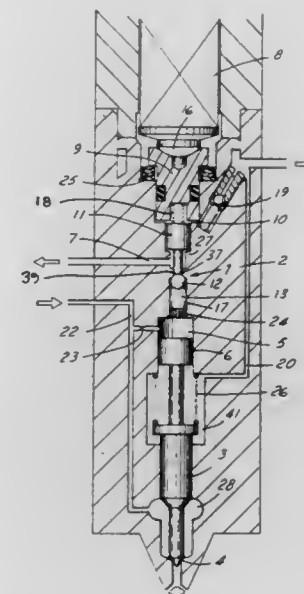
Filed Jul. 2, 1996, Ser. No. 674,556

Int. Cl.⁶ F02M 51/00; B05B 9/00

U.S. Cl. 239—124

19 Claims

1. A fuel injector for internal combustion engines comprising:
 a control valve housed in a body of the injector;
 an electrical actuator device for operating said control valve;
 an injector valve, housed in an end of said body, fitted with a nozzle needle that opens under the pressure of fuel fed by a feeding line, said needle retracting from its seat when the counter pressure contained in a control chamber, and acting on a power piston that is mechanically connected to the coaxial nozzle needle, is reduced in consequence of the control valve actuation hydraulically connected drain duct to said control chamber, wherein:
 said electrical actuator device operates a first fluid-tight piston that faces onto a first chamber which is filled with fuel at a low pressure; and



a second fluid-tight piston also faces the aforementioned first chamber, said second piston having an effective surface area smaller than that of said first piston;
 said second piston operates a sealing component of said control valve, which is housed on the inside of a second chamber hydraulically connected to said control chamber, across a drain hole of said control valve;
 wherein the pressure of the fuel contained in said first chamber causes the constant contact of said second piston with said sealing component of said control valve.

5,779,150

AIRCRAFT ENGINE EJECTOR NOZZLE

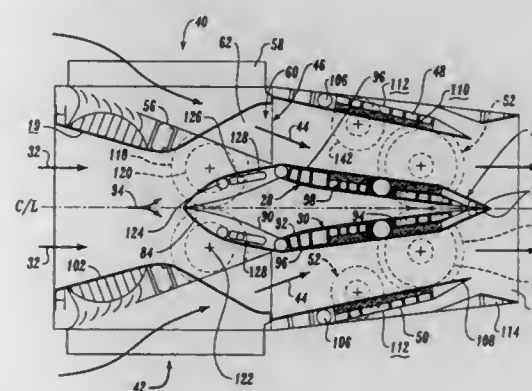
Gary L. Lidstone, Federal Way; David L. Sandquist, Renton; Larry T. Clark, Enumclaw; and Imre A. Szupkay, Othello, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 1, 1996, Ser. No. 723,589

Int. Cl.⁶ B64D 33/04

U.S. Cl. 239—265.13

23 Claims



1. An aircraft engine ejector nozzle for optimizing engine performance and suppressing engine noise by altering an exhaust airflow, the nozzle comprising:
 (a) upper and lower cowlings extending between an upright sidewalls, at least one of the upper and lower cowlings including an ejector for directing ambient air into the exhaust airflow; and
 (b) a reconfigurable plug assembly extending between the upright nozzle sidewalls, the upper and lower cowlings located above and below the plug assembly respectively, the

plug assembly comprising separable upper and lower diverters each having an inner surface, an outer surface, a forward end, and an aft end, the upper and lower diverters being positioned in a generally opposed longitudinal relation, the reconfigurable plug assembly having at least two distinct configurations, the first configuration comprising positioning the diverter forward ends together and the diverter aft ends together in order to form a bifurcated exhaust path defined between the cowlings and the diverter outer surfaces and the second configuration comprising positioning the diverter forward ends apart and the diverter aft ends apart to form an exhaust path defined by the upper and lower diverter inner surfaces;

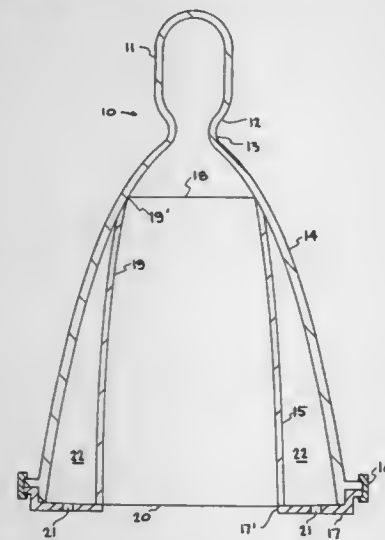
(c) an actuation assembly for moving the plug assembly between the at least two distinct configurations.

5,779,151 STEPPED NOZZLE

George P. Sutton, Danville, Calif., assignor to Regents of the University of California, Oakland, Calif.
Filed May 28, 1996, Ser. No. 654,478
Int. Cl.⁶ B63H 11/10

U.S. Cl. 239—265.15

16 Claims



1. A stepped nozzle including:
a nozzle body including a converging section, a throat section, and a diverging section,
at least one hollow member removably located in said diverging section of said nozzle body, and
means for retaining/releasing said hollow member,
said means for retaining/releasing said hollow member including a support member having a plurality of vent holes therein,
said support member being secured to an aft end of said hollow member and releasably secured to an aft end section of said diverging section of said nozzle body.

5,779,152 COORDINATED VECTORING EXHAUST NOZZLE WITH SCISSORS LINKAGE

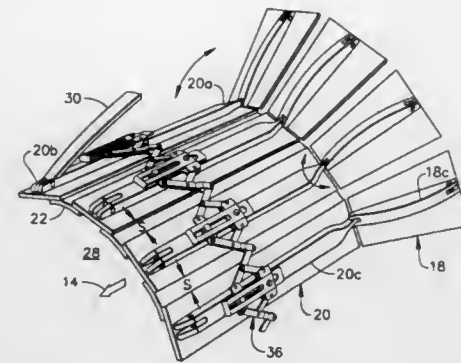
Bernard J. Renggli, and Robert J. Ellerhorst, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 16, 1997, Ser. No. 783,854
Int. Cl.⁶ B64C 15/02; F02K 1/12

U.S. Cl. 239—265.33

10 Claims

1. A gas turbine engine exhaust nozzle comprising: a plurality of circumferentially spaced apart flaps; and a plurality of scissor linkages, each including:



a frame pivotally joined to a respective one of said flaps;
a carriage slidably mounted to said frame;
a pair of circumferentially oppositely extending side links each pivotally joined at a first end to said carriage, and pivotally joined at an opposite second end to a corresponding side link of a circumferentially adjacent scissor linkage to form an interconnected ring of said side links allowing circumferential spreading and folding thereof; and
a pair of circumferentially oppositely extending equalizer links, each pivotally joined at a first end to said frame, and pivotally joined at an opposite second end to a corresponding one of said side links to coordinate angular position of said side links pivotable on said carriage, and in turn maintaining circumferential spacing between adjacent ones of said flaps.

5,779,153 NOZZLE FOR PAINT SPRAY GUNS

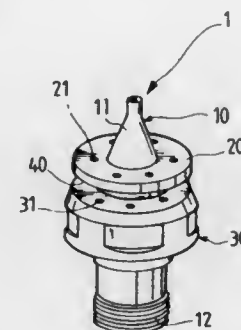
Jackie Wu, Taipei Hsien, Taiwan, assignor to Chia Chun Enterprises Co., Ltd., Taipei Hsien, Japan

Filed Nov. 15, 1996, Ser. No. 749,667

Int. Cl.⁶ B05B 1/28; 7/06

U.S. Cl. 239—296

1 Claim



1. A nozzle for paint spray guns, comprising:
a tubular nozzle body having a front end terminating in a conical nozzle tip and a rear end terminating in an outer thread for mounting;
a first collar tightly mounted around said tubular nozzle body near said conical nozzle tip and having a plurality of axial through holes in parallel to said tubular nozzle body; and,
a second collar tightly mounted around said tubular nozzle body between said first collar and the outer thread of said tubular nozzle body and having a plurality of axial through holes in parallel to said tubular nozzle body, said second collar defining with said first collar an annular space around said tubular nozzle body, the axial through holes of said first collar being not in longitudinal alignment with the axial air inlets of said second collar.

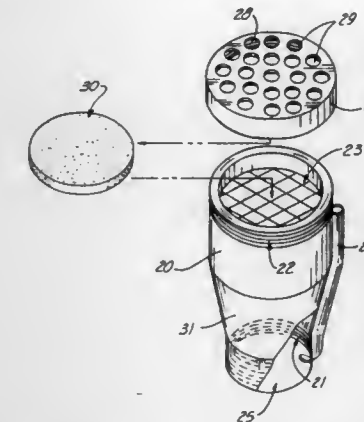
5,779,154

GARDEN SPRINKLER ADAPTER DEVICE
Blake T. Martin, 2800 Keego Rd., Brewton, Ala. 36426
Filed Oct. 23, 1996, Ser. No. 736,003

Int. Cl.⁶ B05B 7/24

U.S. Cl. 239—315

4 Claims



1. A garden sprinkler adapter device for use in combination with fertilizer disk and a conventional receptacle having an externally threaded mouth wherein the adapter device consisting of:

an elongated hollow housing unit having a lower portion operably engageable with the mouth of the conventional receptacle and an upper portion dimensioned to receive said fertilizer disk;

screen means associated with said housing unit for suspending the fertilizer disk above the conventional receptacle;

an aperture cap element operatively associated with the upper portion of the housing unit for captively engaging said fertilizer disk; and

a vent tube extending between said upper and lower portions of the housing unit wherein the vent tube is disposed substantially on the exterior of the housing unit and one end of the vent tube extends into the housing unit proximate the lower portion of the housing unit and is further provided with a hinged flap closure.

5,779,155

DECOUPLED LIQUID DELIVERY SYSTEM

Steven M. Schennum, West Chester, and Vernon S. Ping, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 26, 1996, Ser. No. 756,151

Int. Cl.⁶ B05B 9/043; 1/30

U.S. Cl. 239—333

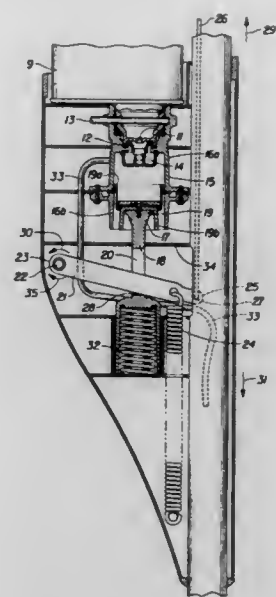
14 Claims

1. A decoupled liquid delivery system positioned within a housing for dispensing a liquid from a liquid filled canister, comprising:
a cylinder having an inlet for receiving the liquid and an outlet for dispensing the liquid;

a piston moveably engaging said cylinder for exerting pressure on the liquid when said piston is actuated;

a compression spring connected to said piston and the housing; and

a recoil spring connected to said piston and the housing to prevent said piston from moving prior to actuation, wherein said piston is actuated by disengaging said recoil spring from said piston, thereby allowing said compression spring to exert



5,779,156 SPRAY DISPENSER AND SYSTEM FOR SPRAYING VISCIOUS LIQUIDS

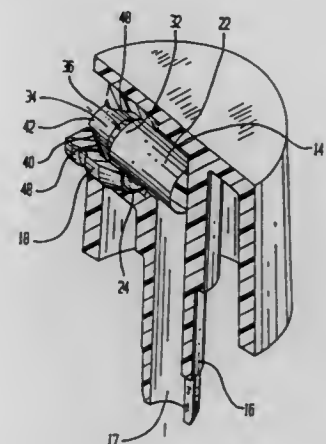
David C. Crampton, Fountain Valley, Calif., assignor to Par-Way Group, St. Clair, Mo.

Filed Nov. 13, 1995, Ser. No. 556,650

Int. Cl.⁶ B05B 7/32

U.S. Cl. 239—337

21 Claims



1. A spray dispenser for dispensing and atomizing liquid comprising:

a. a reservoir for storing a viscous liquid;

b. means to deliver viscous liquid under pressure from said reservoir to a delivery passageway;

c. a nozzle having two outlets which provide intersecting streams of viscous liquid during dispensing; said nozzle including:

i. a post having an inlet end and an outlet end in fluid communication with the viscous liquid in said delivery passageway; said post mounted in said delivery passageway to form a fluid flowpath between said post and said delivery passageway;

ii. a first groove and a second groove located on said post;

iii. said first and second grooves having a preselected length and extending to said outlet end of said post;

- iv. a groove containment cap mounted in said delivery passageway, said cap located at a preselected point along said first and second groove to provide top confinement to said grooves at a preselected point intermediate to the outlet end of said post so that said grooves have top confinement for at least a portion of their length; said groove containment cap terminating prior to termination of said grooves at the outlet end of said post whereby said grooves extend along said post from said groove containment cap to the post outlet end without top confinement;
- v. said grooves having a preselected greater depth at the outlet end of said post than at the inlet end of said post so that fluid flowing along said first groove intersects with fluid flowing along said second groove at a preselected impingement angle after said fluid is discharged from the dispenser;
- vi. said grooves providing a flow path for viscous liquids during dispensing;
- vii. means to direct fluid flowing along said flow path through said outlets during dispensing;
- viii. said groove containment cap having a central outlet for snug receipt and engagement of said post;
- ix. said central outlet having side walls;
- x. said side walls engaging said post and providing said top confinement of said grooves prior to dispensing said viscous liquid.

5,779,157

AIR BRUSH WITH REMOVABLE PAINT REGULATING NEEDLE

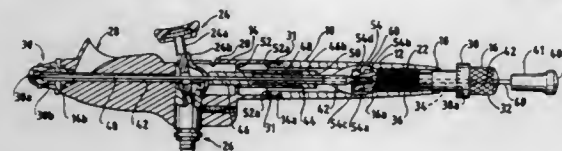
Herman Robisch, Schiller Park, and Kenneth W. Schlottfeldt, Addison, both of Ill., assignors to Badger Air Brush Co., Franklin Park, Ill.

Filed Jun. 4, 1996, Ser. No. 658,055

Int. Cl.⁶ B05B 7/30

U.S. Cl. 239—346

22 Claims



15. An air brush which comprises:

- a handle;
- a front body;
- an adjusting screw;
- a trigger assembly;
- a paint regulating needle;
- a needle chuck;
- said handle, front body, and adjusting screw defining a tubular cavity, and a longitudinal axis;
- said handle having a proximal end and a distal end;
- said proximal end of said handle defining an opening about said longitudinal axis;
- said handle defining a portal between said proximal end and said distal end of said handle;
- said front body having a proximal end and a distal end;
- said adjusting screw being threaded into said handle through said opening defined in the proximal end of said handle;
- said adjusting screw being rotatable so as to extend distally or proximally, as desired, within or out from said handle;
- said needle chuck being releasably attachable to said paint regulating needle such that said needle chuck rides said paint regulating needle and is located proximate to the distal end of said adjusting screw at said portal;
- said paint regulating needle being reactive to said trigger assembly such that the proximal and distal movement of said trigger assembly, along said longitudinal axis, causes the proximal and distal, respectively, movements of said paint regulating needle;
- said paint regulating needle having a proximal end portion and a distal end, said proximal end portion having a stop;

said paint regulating needle being releasably held within said tubular cavity such that said stop of said paint regulating needle extends proximally from said adjusting screw and said distal end of said paint regulating needle is located within said front body;

a spring to bias said paint regulating needle towards said distal end of said front body whereby said adjusting screw may be rotated to extend further proximally from said handle and push against said stop on said paint regulating needle and against said spring to pull said distal end of said paint regulating needle proximally from said distal end of said front body and fix a desired minimum paint flow position;

said adjusting screw being rotatable to enter further into said handle and remain proximate to said needle chuck such that when said trigger assembly is moved said paint regulating needle may be pulled back only until said needle chuck and adjusting screw abut, fixing a desired maximum paint flow position, and;

said paint regulating needle being removable from said proximal end of said airbrush when said needle is released.

5,779,158

NOZZLE FOR USE WITH FIRE-FIGHTING FOAMS

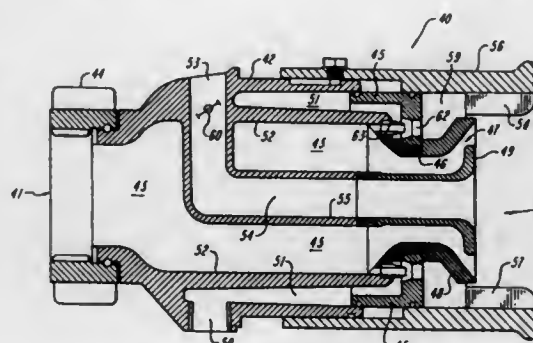
Kenneth C. Baker, Pottstown, Pa., assignor to National Foam, Inc., Lionville, Pa.

Filed Apr. 16, 1996, Ser. No. 633,241

Int. Cl.⁶ B05B 7/06

U.S. Cl. 239—419.5

6 Claims



1. A nozzle assembly for combining a liquid foam concentrate with a liquid to produce a fire extinguishing foam solution, said nozzle assembly comprising:

- a tubular body having axially aligned inlet and outlet openings;
- wall means for internally subdividing said body into an axial passageway surrounded by an annular chamber, opposite ends of said passageway being in communication with said inlet and outlet openings to accommodate a flow of said liquid through said body;
- a sleeve surrounding said outlet opening and extending axially from said body;
- means for introducing a supply of said foam concentrate into said annular chamber;
- a plurality of openings in said wall means spaced around said passageway;
- jet nozzles for diverting a portion of the liquid flowing through said passageway into said openings to mix with and educt foam concentrate from said annular chamber for delivery into the interior of said sleeve; and
- guide means for directing an annular exiting flow of said liquid from said outlet opening outwardly towards the interior of the surrounding sleeve to additionally mix said liquid with the educted foam concentrate and to thereby produce a dilute mixture of foam solution within said sleeve.

5,779,159

ADDITIVE FLUID PERIPHERAL CHANNELING FIRE FIGHTING NOZZLE

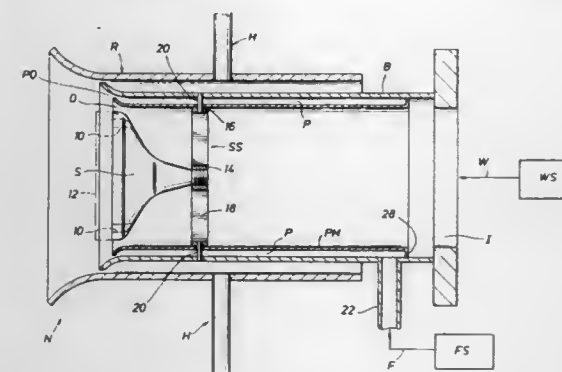
Leslie P. Williams, deceased, late of Vidor, and by Dwight Williams, 1530 Texla Rd., Vidor, both of Tex. 77662

Filed Aug. 9, 1995, Ser. No. 512,965

Int. Cl.⁶ B05B 7/06

U.S. Cl. 239—424.5

28 Claims



1. A fire fighting nozzle, comprising:

- a barrel, having an inlet and a discharge, the barrel defining a passageway for a primary firefighting liquid;
- a deflecting surface affixed within said barrel, proximate the discharge, positioned to outwardly deflect the primary liquid in the liquid passageway;

means for defining an additive fluid passageway along wall portions of said barrel, the means for defining an additive passageway terminating in an outlet proximate said barrel discharge; and wherein said deflecting surface and said outlet being positioned, in combination, such that liquid is deflected outwardly across said outlet.

5,779,160

LOW-FLOW STATOR AND METHOD

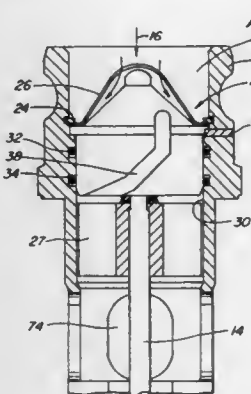
David L. Rucker, Shell Beach, Calif., assignor to Cloud Company, Inc., San Luis Obispo, Calif.

Filed Aug. 13, 1996, Ser. No. 696,449

Int. Cl.⁶ B05B 1/34

U.S. Cl. 239—466

30 Claims



1. A low-flow stator for use upstream of a rotor of a tank cleaning machine comprising:

- a body having a front surface, a rear surface and a circumferential sidewall coupling the front and rear surfaces, said body defining an axis passing through the front and rear surfaces;
- said front surface having a periphery, at least a portion of said front surface extending from said periphery axially away from the sidewall and radially inwardly;

said body comprising a plurality of passageways fluidly coupling the front and rear surfaces, each said passageway extending from an entrance to an exit;

each said passageway defining a generally helical flow path from said entrance to said exit so that a fluid passing along said flow path leaves said exit of said passageway at an exit angle relative to a line passing through said exit and oriented parallel to said axis; and

each said exit being completely circumferentially offset from its corresponding entrance.

5,779,161

APPARATUS FOR DISPENSING POWDERED AND GRANULATED MATERIALS

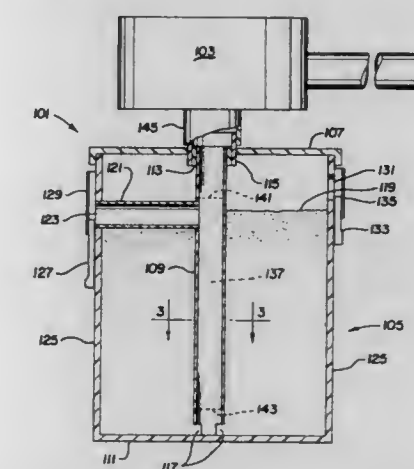
Tom Rudy Dvorak, Stringtown, Okla., assignor to Tom Dvorak

Filed Nov. 28, 1995, Ser. No. 563,320

Int. Cl.⁶ A01C 3/06

U.S. Cl. 239—654

3 Claims



1. An apparatus for dispersing powdered and granulated materials comprising:

- (a) a container including a wall, a bottom, and a top defining an interior thereof, and suitable for containing a powdered and granulated material;
- (b) an outlet tube disposed in the interior of the container, the outlet tube including first and second ends; the first outlet tube end being disposed adjacent to the container bottom; the second outlet tube end being connected to an outlet orifice for the container;
- (c) at least one air inlet tube in fluid communication with the second end of the outlet tube and a first air inlet orifice for the container
- (d) a second air inlet orifice for the container; and
- (e) a blower coupled to the outlet orifice for the container such that when the blower blows air across the outlet orifice, air enters the container through the second air inlet and filters through and entrains the material before entering the outlet tube where it is mixed with air drawn through the first air inlet orifice.

5,779,162

SPRAYING DEVICE

Timothy James Noakes, Pantymwyn; Michael Leslie Green, Nannerch; Maurice Joseph Prendergast, Runcorn, and Andrew Jefferies, Pantymwyn, all of United Kingdom, assignors to Imperial Chemical Industries PLC, London, United Kingdom

PCT No. PCT/GB94/02407, § 371 Date May 14, 1996, § 102(e) Date May 14, 1996, PCT Pub. No. WO95/13879, PCT Pub. Date May 26, 1995

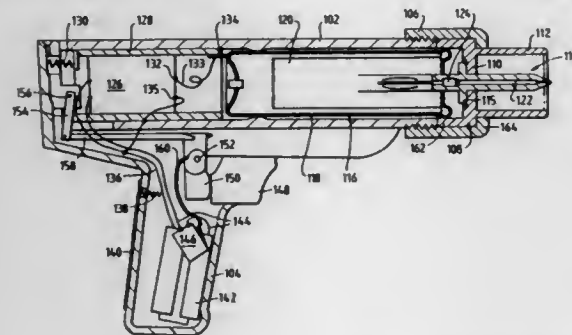
PCT Filed Nov. 2, 1994, Ser. No. 646,247

Claims priority, application United Kingdom, Nov. 16, 1993, 9323647; Dec. 6, 1993, 932497

Int. Cl.⁶ B05B 5/00

U.S. Cl. 239—690.1

21 Claims



1. An electrostatic spraying device capable of spraying liquids having resistivities of the order of 5×10^6 ohm-cm and viscosities of the order of 1 Poise at a spraying rate up to at least 4 cc/min, said device comprising nozzle means having an outlet, means for positively feeding liquid to be sprayed to said nozzle means, a high voltage generator, means coupled to the high voltage generator for applying a potential to the liquid emerging at the outlet of the nozzle means, an electrode located adjacent the nozzle means to modify the field intensity in the vicinity of the outlet of the nozzle means, the electrode comprising a semi-insulating material, and means for electrically connecting the electrode to said high voltage generator to develop on the electrode a potential of the same polarity as the liquid emerging from the nozzle outlet and of a magnitude which is substantially the same magnitude as that applied to the liquid such that the potential gradient is reduced in the immediate vicinity of the outlet of the nozzle means.

5,779,163

CENTER PIVOT IRRIGATION SYSTEM DROP STABILIZER

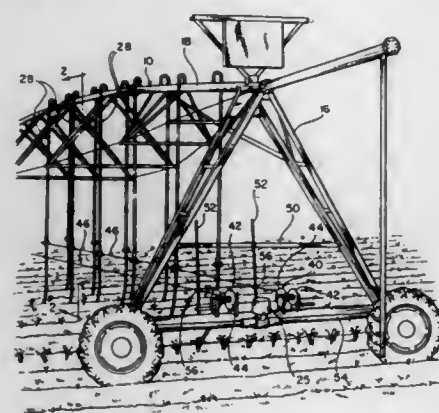
Uil L. Gunter, HCR 2 Box 27, Olton, Tex. 79064

Filed Oct. 23, 1995, Ser. No. 546,951

Int. Cl.⁶ B05B 7/18

U.S. Cl. 239—734

15 Claims



1. A self propelled irrigation device including an elongated delivery pipe supported at a plurality of points spaced along its

length from ground supported mobile support towers, said pipe including a plurality of water outlet tubes opening outwardly of and depending downwardly from said pipe at points spaced therealong and including lower end portions terminating downwardly at least closely adjacent ground level, a low height, tensioned member extending between adjacent mobile support towers, and attaching structure removably anchoring said outlet tubes relative to said tension member against deflection by wind.

5,779,164

MUNICIPAL SOLID WASTE PROCESSING FACILITY AND COMMERCIAL ETHANOL PRODUCTION PROCESS

Rodger Chieffalo, Birmingham, Ala., and George R. Lightsey, Starkville, Miss., assignors to Controlled Environmental Systems Corporation, Birmingham, Ala.

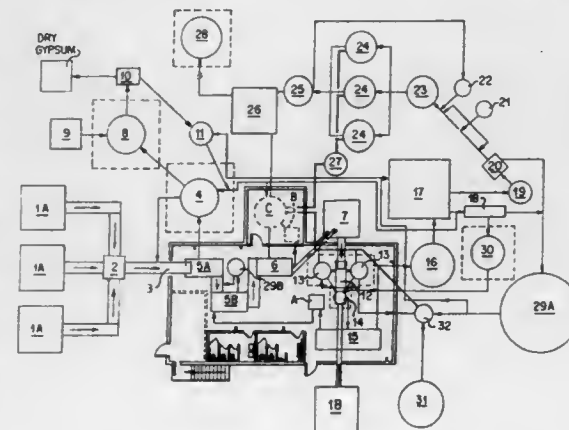
Continuation of Ser. No. 422,585, Apr. 14, 1995, Pat. No. 5,571,703, and a continuation-in-part of Ser. No. 351,017, Dec. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 291,045, Aug. 12, 1994, Pat. No. 5,407,817, which is a continuation of Ser. No. 172,202, Dec. 23, 1993, abandoned.

This application Sep. 23, 1996, Ser. No. 717,909

Int. Cl.⁶ B02C 19/12

U.S. Cl. 241—17

4 Claims



1. A method for producing ethanol from the cellulosic component of municipal solid waste comprising the following steps:

- shredding the cellulosic component of municipal solid waste;
- treating the shredded cellulosic component obtained in step (a) with about 1:1 concentrated sulfuric acid to solid component, by weight, at about 30° to 80° C. to give a partially hydrolyzed mixture;
- diluting the partially hydrolyzed mixture obtained in step (b) with water at a temperature of about 80° to 100° C. to give a solution containing about 4 to 6 parts water to about 1 parts partially hydrolyzed material, by weight;
- agitating the diluted mixture obtained in step (c) at about 80° to 100° C. to give a digested material;
- removing the solids from the digested mixture to give a filtrate;
- separating the soluble component obtained in step (e) into an acid containing solution and a sugar containing solution;
- concentrating the sugar containing solution to about 12–14% sugar;
- adjusting the pH of the concentrated sugar containing solution obtained in step (g) to about 6;
- fermenting with yeast the solution obtained in step (h) to give a beer;
- removing the yeast from the beer obtained in step (i);
- distilling the ethanol from the beer obtained in step (j);
- drying the insoluble component obtained in step (e); and
- burning the dry insoluble component obtained in step (l) as a fuel to provide heat for the distillation of ethanol in step (k) from the filtered beer obtained in step (j).

5,779,165

GARBAGE DECOMPOSING APPARATUS WITH WATER REMOVAL AND FORCED-AIR HEATING SYSTEMS

Jin Surk Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

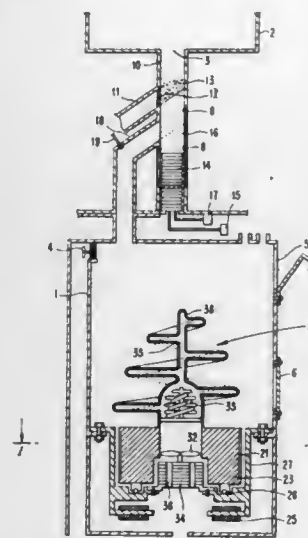
Filed Sep. 26, 1996, Ser. No. 722,844

Claims priority, application Rep. of Korea, Oct. 5, 1995, 1995-34089; Apr. 9, 1996, 1996-10667

Int. Cl.⁶ B02C 23/26

U.S. Cl. 241—33

10 Claims



1. A garbage decomposing apparatus comprising:
a vessel having a stirrer for stirring garbage therein;
a heater for heating garbage in the vessel;
an inlet channel extending downwardly and communicating with the vessel;
a water drainage channel communicating with the inlet channel for conducting away water separated from the garbage;
a garbage supporting mechanism movable in the inlet channel between a first position locating the garbage adjacent the water drainage channel to allow water in the garbage to flow into the water drainage channel, and a second position allowing the garbage to flow into the vessel; and
a moving mechanism for moving the garbage supporting mechanism between the first and second positions.

5,779,166

ADJUSTABLE CRUSHER

Markku Ruokonen, Lempäälä, and Raimo Koski, Nokia, both of Finland, assignors to Nordberg-Lokomo Oy, Tampere, Finland

PCT No. PCT/FI95/00041, § 371 Date Jul. 24, 1996, § 102(e) Date Jul. 24, 1996, PCT Pub. No. WO95/20435, PCT Pub. Date Aug. 3, 1995

PCT Filed Jan. 27, 1995, Ser. No. 682,595

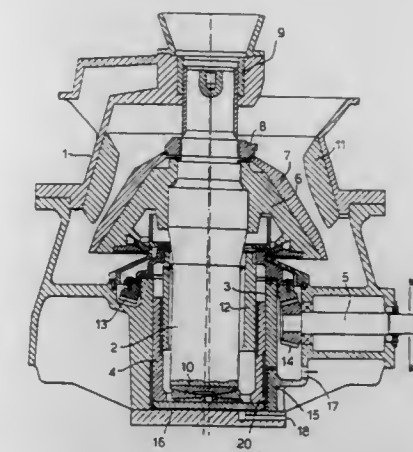
Claims priority, application Finland, Jan. 28, 1996, 940438

Int. Cl.⁶ B02C 2/06

U.S. Cl. 241—213

18 Claims

1. An adjustable cone crusher, comprising:
a body;
an eccentric shaft positioned in the body and rotatable about a vertical axis, the eccentric shaft having a vertically oriented oblique hole;
a main shaft journaled in the hole of the eccentric shaft, the main shaft having a bottom end and a top end;
a hydraulic cylinder-plunger-combination, the hydraulic cylinder being adapted to receive a pressure medium to vertically extend the hydraulic cylinder-plunger-combination, the bottom end of the main shaft being supported on the hydraulic cylinder-plunger-combination so that extension of the hydraulic cylinder-plunger-combination causes upward movement of



the main shaft, the hydraulic cylinder-plunger-combination including a bypass channel which is opened and closed depending upon the position of the plunger, said bypass channel being covered by the plunger so as to be closed when the plunger is located below a predetermined raised position and being open when the plunger is at the predetermined raised position to permit pressure medium in the cylinder to escape.

5,779,167

FORAGE HARVESTER KNIFE AND MOUNTING APPARATUS

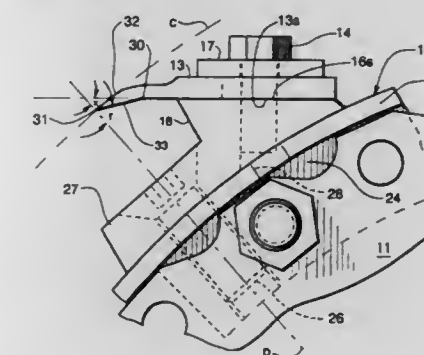
Robert A. Wagstaff, Lancaster, Pa., assignor to New Holland North America, Inc., New Holland, Pa.

Filed Jan. 16, 1997, Ser. No. 782,693

Int. Cl.⁶ B02C 18/18

U.S. Cl. 241—242

6 Claims



1. In a rotatable forage harvester cutterhead comprising a shaft,
a drum assembly having an outer cylindrical surface, means for coaxially securing said drum assembly to said shaft, and
a plurality of knives, each of which has a cutting edge length less than half the axial length of said drum assembly, the improvement comprising
a plurality of knife support assemblies each of which comprises a solid mounting block detachably secured to said outer cylindrical surface of said drum assembly, said mounting block having a flat mounting surface extending at an acute angle to a radial plane extending from said shaft, fastener means for securing a knife to said flat mounting surface of said mounting block with the cutting edge extending in the direction of rotation of said cutterhead and generating a cylinder as the cutterhead rotates, said cylinder having a diameter larger than the diameter of the outer cylindrical surface of said drum assembly, said knife having a top surface and a bottom surface whereby the rake

angle formed by said bottom surface of said knife and said radial plane is greater than said acute angle;
 said bottom surface of said knife includes an inner flat portion adjacent and coplanar with said mounting surface of said mounting block, and an outer portion terminating in said cutting edge;
 said top surface of said knife includes a beveled surface adjacent said cutting edge, and
 said outer portion of said bottom surface of said knife is arcuately shaped from said cutting edge to a line parallel to said cutting edge, said line being contiguous with said inner portion of said bottom surface of said knife.

5,779,168

REFINER AND TOOLING FOR REFINING SUSPENDED FIBROUS MATERIAL

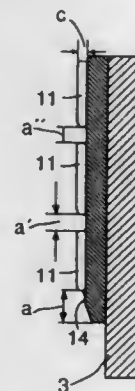
Frank Meltzer, Daisendorf, Germany, assignor to Voith Sulzer Stoffaufbereitung GmbH, Ravensburg, Germany
 Filed Feb. 29, 1996, Ser. No. 610,117

Claims priority, application Germany, Mar. 8, 1995, 195 08 202.8

Int. Cl.⁶ B02C 7/12

U.S. Cl. 241—261.1

14 Claims



1. A refiner for refining suspended fibrous material, said refiner including a housing having an inlet port and an outlet port for the suspended fibrous material; at least two refiner tooling supports; and refiner tooling carried by said at least two refiner tooling supports, said refiner tooling defining a working surface carried by one of said at least two refiner tooling supports and a complementary working surface carried by another of said at least two refiner tooling supports, said working surface and said complementary working surface being positioned relative to each other so as to form a refiner gap therebetween for receiving the suspended fibrous material, at least one of said working surface and said complementary surface including a plurality of slat-shaped elevations defining channel type grooves therebetween, wherein the suspended fibrous material can be at least partly carried by said channel type grooves and a mechanical working of the suspended fibrous material can take place by the relative movement between said working surface and said complementary working surface, the improvement comprising:

said plurality of slat shaped elevations having a maximum radial expanse of approximately 60 millimeters and including at least three slat-shaped elevations arranged successively in the direction of said channel type grooves (12), said at least three slat-shaped elevations having a void (a', a'', a''') of approximately 8 and 30 millimeters therebetween in a direction transverse to the direction of relative movement between said working surface and said complementary working surface, said slat-shaped elevations of at least one of said working surface and said complementary working surface being disposed a distance of a void (a) of approximately between 8 and 10 mm from a radially inward edge of a corresponding said refiner tooling support.

5,779,169

AIRCRAFT ENGINE INLET HOT GAS AND FOREIGN OBJECT INGESTION REDUCTION AND PITCH CONTROL SYSTEM

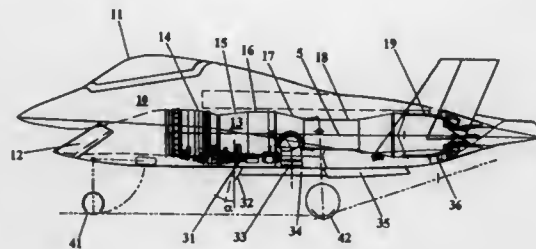
Mark L. Sloan, Newcastle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 15, 1995, Ser. No. 573,047

Int. Cl.⁶ B64C 15/14; 29/00; B64D 33/02

U.S. Cl. 244—12.3

16 Claims



1. An aircraft engine inlet exhaust gas and foreign body ingestion reduction and aircraft pitch control system for use in a vertical and short takeoff and landing aircraft utilizing a high pressure ratio bypass jet engine defining a longitudinal axis, and including an air inlet for ducting air to the engine, said engine having first and second stage compressors, a bypass duct communicating with the area between said first stage compressor and said second stage compressor and conducting compressed bypass air therefrom to a point aft of the engine, a plenum attached aft of said engine for receiving said bypass air and exhaust gases, a tailpipe attached aft of said plenum, a selectively closable cruise nozzle attached to the aft end of said tailpipe and two controllable lift nozzles positioned in said plenum for selectively diverting mixed engine exhaust gas and bypass air downwardly in a lift column, said aircraft engine inlet exhaust gas and foreign body ingestion reduction and pitch control system comprising:

- a bypass duct offtake attached to said bypass duct and mounted forward of said two lift nozzles, for diverting a portion of compressed air flow from said bypass duct;
- a jet screen nozzle connected to said bypass duct offtake to receive bypass air from said bypass duct offtake and discharge said bypass air as a jet screen;
- a pitch nozzle attached to said tailpipe and oriented to selectively discharge exhaust gases to provide the aircraft a negative pitching moment in response to control commands; and
- a control system connected to control area pitch nozzle, and said jet screen nozzle for differentially opening and closing said pitch nozzle and said jet screen nozzle to generate positive and negative aircraft pitching moments in response to operator commands while maintaining the total discharge flow area of the high pressure ratio bypass jet engine substantially constant.

5,779,170

METHOD AND APPARATUS FOR REPLACING FULL PACKAGES WITH EMPTY TUBES ON A TAKEUP MACHINE FOR A CONTINUOUSLY ADVANCING YARN

Peter Siepmann, Schwelm; Hermann Westrich, Wuppertal; Jurgen Gsell, Wuppertal, and Wolfgang Fink, Wuppertal, all of Germany, assignors to Barmag AG, Remscheid, Germany
 PCT No. PCT/DE96/00285, § 371 Date Feb. 11, 1997, § 102(e) Date Feb. 11, 1997, PCT Pub. No. WO96/26150, PCT Pub. Date Aug. 29, 1996

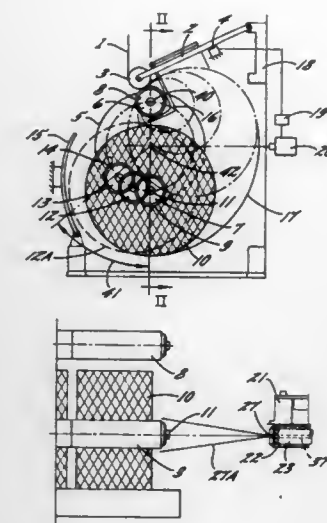
PCT Filed Feb. 23, 1996, Ser. No. 727,534

Claims priority, application Germany, Feb. 24, 1995, 195 06 468.2; Jul. 22, 1995, 195 26 904.7; Jul. 29, 1995, 195 27 920.4
 Int. Cl.⁶ B65H 54/02

U.S. Cl. 242—35.5 A

21 Claims

1. A method for continuously winding an advancing yarn onto bobbin tubes, and comprising the steps of



providing a revolver which is rotatable about a central axis and which rotatably mounts two spindles which are rotatable about respective axes which are parallel to said central axis and with the two spindles being equally spaced about the periphery of the revolver,

rotating the revolver so as to alternately move the spindles between an angular winding range and an angular doffing range and including

- (a) winding the advancing yarn onto a rotating bobbin tube which is positioned coaxially upon one of the spindles positioned in the winding range, while rotating the revolver about said central axis so that the one spindle moves through the winding range during which a full yarn package is formed on the bobbin tube,
- (b) donning an empty bobbin tube coaxially upon the other of said two spindles while the other spindle is within the doffing range, then
- (c) rotating the revolver so that the one spindle and the full package move to said doffing range and the other spindle and the donned empty bobbin tube move to said winding range,
- (d) transferring the advancing yarn from the full package to the donned empty bobbin tube which is positioned at the winding range, and
- (e) doffing the full package from said one spindle while the one spindle is in said doffing range, and including positioning a package receiving mandrel in general axial alignment with the one spindle, monitoring the position of the one spindle to detect any change of position thereof resulting from the continued rotation of the revolver, moving the package receiving mandrel so as to follow any detected movement of the one spindle and maintain the axial alignment of the one spindle and the package receiving mandrel, and axially displacing the full package from the one spindle onto the package receiving mandrel, and
- (f) cyclically repeating steps (a) through (e).

5,779,171

OVERRIDING CLUTCH WITH REVERSE ROTATION PREVENTION SWITCH

Arthur J. Milano, Jr., Burlington; Jeffrey E. Seitz, Warren, and Zoltan Sostarecz, Winsted, all of Conn., assignors to Seitz Corporation, Torrington, Conn.

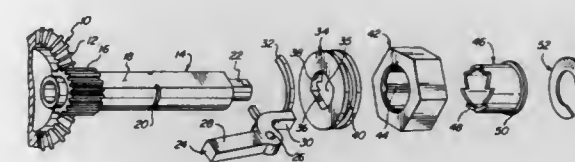
Continuation-in-part of Ser. No. 332,935, Oct. 31, 1994, abandoned. This application May 6, 1996, Ser. No. 643,787

Int. Cl.⁶ A01K 89/02

U.S. Cl. 242—299

10 Claims

1. An anti-reversing mechanism for a reel having a reel housing, a rotatable handle supported thereon and a drive gear of generally



annular cross section within the reel housing and rotated by actuating the handle in either direction, said anti-reversing mechanism comprising:

- (a) an overriding clutch of generally annular cross section adapted to fit within the drive gear of an associated reel;
- (b) a sleeve of generally annular cross section rotatably mounted within said overriding clutch;
- (c) means restricting axial movement of said sleeve to retain said sleeve within said clutch;
- (d) a drive shaft rotatable in said sleeve and adapted to be rotatably mounted in the housing of the associated reel for rotation thereof in either direction;
- (e) a locking member of generally annular cross section axially mounted upon the periphery of and movable axially of said drive shaft, said locking member including means limiting rotation of said locking member relative to said drive shaft, said locking member and said sleeve having interengaging means whereby rotation of said locking member and thereby of said shaft in one direction is constrained by the limitation of rotation of said sleeve within said overriding clutch; and
- (f) means for moving said locking member axially along said drive shaft between a first position of disengagement with said sleeve and a second position of engagement with said sleeve, said drive shaft and locking member being rotatable in both directions relative to said clutch when said locking member is disengaged from said sleeve, said clutch allowing one-way rotation of said sleeve and thereby said drive shaft under normal torque loads when said locking member is engaged.

5,779,172

DRIVE FOR HANDLING MULTIPLE SIZE INFORMATION STORAGE MEDIA CARTRIDGES AND CARTRIDGES THEREFOR

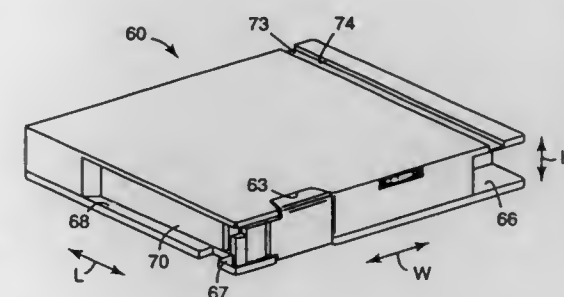
James S. Anderson, Chanhassen; Sten R. Gerfast, Mendota Heights; Warren W. Opheim, Prior Lake; Robert W. Tapani, Oakdale, and Hung T. Tran, Woodbury, all of Minn., assignors to Imation Corp., Oakdale, Minn.

Continuation of Ser. No. 243,504, May 16, 1994, Pat. No. 5,558,291. This application Sep. 23, 1996, Ser. No. 716,749

Int. Cl.⁶ G11B 23/087

U.S. Cl. 242—336

9 Claims



1. A data storage cartridge having a baseplate with a top surface and a bottom surface and at least one reference point defined on each of the top and bottom surfaces to allow accurate positioning of the cartridge in the drive.

5,779,173

APPARATUS FOR OPERATING THE SHUTTER OF A CASSETTE

Norbert C. Vollmann, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 401,759, Mar. 9, 1995, abandoned.

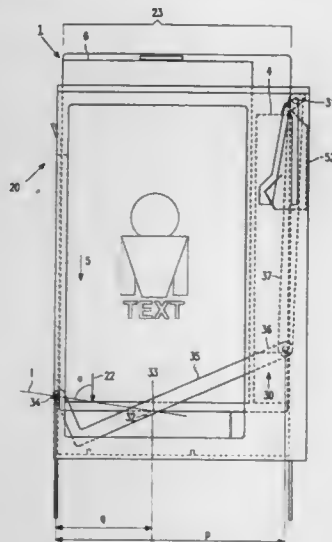
This application Nov. 19, 1996, Ser. No. 751,376

Claims priority, application European Pat. Off., Jun. 23, 1994, 94201805

Int. Cl.⁶ G11B 23/04; 5/008; 15/00

U.S. Cl. 242—338.4

28 Claims



1. An apparatus for cooperation with a cassette, the cassette having an information carrier, a housing and a shutter, the shutter being movable relative to the housing in an opening direction from a closed position in which the information carrier is shielded to an open position in which the information carrier is accessible, the apparatus comprising:

- a holder into which the cassette is removably insertable in an insertion direction, the insertion direction corresponding substantially to the opening direction of the shutter;
- an actuator capable of engaging the shutter of the cassette;
- an actuating mechanism, coupled to the actuator, for driving movement of the actuator;
- control means, coupled to the actuator, for causing the actuator to engage the shutter and for directing movement of the actuator, as driven by the actuating mechanism, so that said movement relative to said housing and said cassette is substantially in the insertion direction, thereby moving the shutter in the opening direction toward the open position.

5,779,174

MOUNTING ARRANGEMENT FOR LOOP DISTRIBUTOR IN A REFORMING CHAMBER

Raymond R. Starvaski, and Frederick Ferrazza, both of Worcester, Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Apr. 2, 1996, Ser. No. 630,414

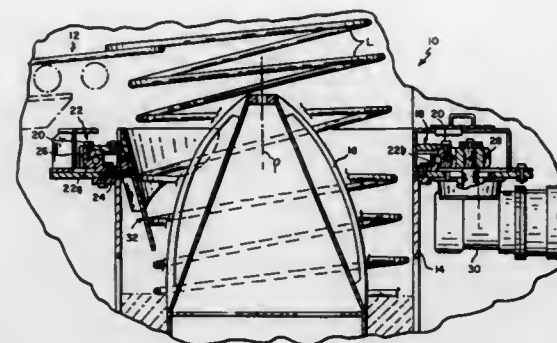
Int. Cl.⁶ B21C 47/24; B65H 57/14; B21F 00/00

U.S. Cl. 242—363

6 Claims

1. In an apparatus for receiving a series of loops descending along a vertical path from the delivery end of a conveyor and for accumulating the thus received loops into an annular coil, a device for horizontally distributing the loops as they descend into the apparatus, said device comprising:

- a) a ring surrounding said vertical path, said ring having a cylindrical vertical wall and a radially outwardly extending horizontal ledge;
- b) a curved guide member extending around a segment of said ring and having leading and trailing ends, said guide member



- protruding downward and angularly inwardly from said ring into said vertical path, with the extent of said inward protrusion being greater at said trailing end than at said leading end;
- c) mounting means for connecting said guide member to said ring, said mounting means being engageable bidirectionally with said ring and being adapted to accommodate vertical movement of said guide member onto and off of said ring without attendant radial displacement of said guide member with respect to said ring, mounting means including adjustment means protruding radially outwardly from said guide member into engagement with said vertical wall for adjusting the angular position of said guide member relative to said ring; and
- d) means for rotatably driving said ring.

5,779,175

CORDING REEL DEVICE

Reiji Shirahase, 2-2-8-701, Shinmachi, Toride-Shi, Ibaraki, Japan

PCT No. PCT/JP96/01797, § 371 Date Jun. 18, 1997, § 102(e) Date Jun. 18, 1997, PCT Pub. No. WO97/19093, PCT Pub. Date May 29, 1997

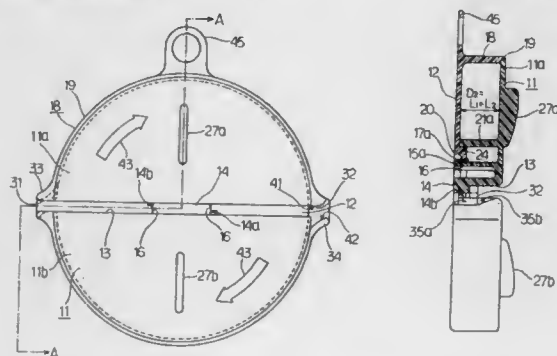
PCT Filed Jun. 28, 1996, Ser. No. 849,841

Claims priority, application Japan, Oct. 25, 1995, 7-277967

Int. Cl.⁶ B65H 75/38

U.S. Cl. 242—388.1

22 Claims



1. A cording reel device comprising:
- a first constraint plate divided by a cording insertion slot into two substantially equal halves which are integrally connected together by a connecting portion of U-shaped cross section,
 - a pair of reel shaft segments attached integrally to the interior surface of said first constraint plate on opposite sides of said connecting portion,
 - a second constraint plate coupled in opposed facing relation with the first constraint plate for relative rotation about said connecting portion, and
 - an annular frame member interposed between and generally along outer peripheries of said first and second constraint plates and affixed integrally to one of said constraint plates, said annular frame member being formed with first and second inlet/outlets on opposite sides of said connecting portion for introducing and withdrawing a cording therethrough into

and out of said device, said first inlet/outlet being formed as spanning said first and second constraint plates, and said second inlet/outlet being formed as extending from the other of said constraint plates to which said annular frame member is not affixed to approximately the midpoint of the spacing between said first and second constraint plates.

5,779,176

WEBBING TAKE-UP DEVICE

Seiji Hori, Yasuho Kitazawa, Sumikazu Sasaki, Keiichi Kato; Naohiro Tsukiyama, and Kenji Matsui, all of Aichi-ken, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Japan

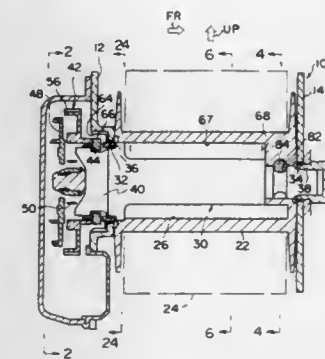
Filed Apr. 19, 1996, Ser. No. 634,823

Claims priority, application Japan, Oct. 16, 1995, 7-267509; Mar. 19, 1996, 8-062910

Int. Cl.⁶ B65H 75/48; B60R 22/28; 22/34

U.S. Cl. 242—379.1

20 Claims



1. A webbing take-up device comprising:

- a rotatably mounted spool having a cylinder with a cavity portion and which can freely draw and take up a webbing;
- a shaft, rotatably arranged within the cavity portion of the cylinder of said spool, which can be freely rotated with reference to said spool, and
- a plate-like energy absorbing member completely contained within the cavity portion of the cylinder of said spool and having an inner end connected to said shaft and an outer end engaged with said spool, said plate-like member being wound around said shaft and keeping an original shape in an ordinary state to rotate said spool and said shaft together with each other, and, when said shaft is prevented from being rotated in a webbing drawing direction, said plate-like member being deformed by torsional forces generated by relative rotation between said spool and said shaft as a result of a webbing drawing force acting on said spool and being wound around said shaft.

5,779,177

BELT RETRACTOR FOR A SAFETY BELT HAVING PLASTICALLY DEFORMABLE RATCHET TEETH
Thomas Kielwein, Eschach, Germany, assignor to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany
PCT No. PCT/EP96/02870, § 371 Date Feb. 13, 1997, § 102(e) Date Feb. 13, 1997, PCT Pub. No. WO97/02163, PCT Pub. Date Jan. 23, 1997

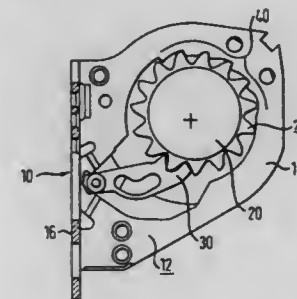
PCT Filed Jul. 1, 1996, Ser. No. 776,962

Claims priority, application Germany, Jul. 3, 1995, 195 24 162.2

Int. Cl.⁶ B60R 22/28

U.S. Cl. 242—382.6

8 Claims



1. A belt retractor for a safety belt, comprising a housing (12) which possesses two parallel limbs (14), in each of which an opening (18) is formed, a belt drum (20), which is so mounted rotatably in the housing (12) that sets (22) of ratchet teeth provided at the drum's axial ends are arranged within the openings (18) with an all-round clearance from the same, and a load bearing pawl (30), which for a selective locking of the belt drum (20) is able to be engaged with the ratchet teeth (22) thereof and which is so dimensioned as to be able to withstand at least the major part of the loads for locking the belt drum, the belt drum (20) being adapted to be shifted in a radial direction in relation to its axis (C) by a load applied to it in the locked condition until the ratchet teeth (22) thereof are supported in the openings (18) of the limbs (14), characterized in that a set (40) of teeth is formed at the edge of each opening (18), which corresponds to said sets of ratchet teeth (22) but possesses at least one support portion which is adapted to be plastically deformed by the ratchet teeth (22) when the belt drum (20) is shifted under a high load in the radial direction.

5,779,178

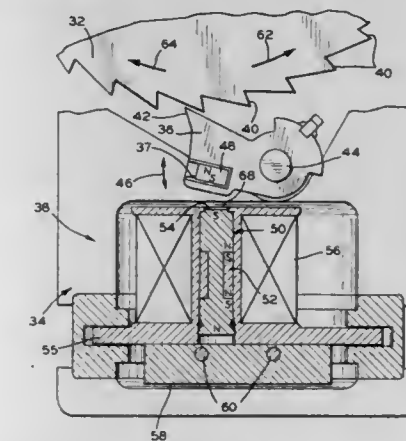
SEAT BELT RETRACTOR ASSEMBLY HAVING MAGNETICALLY ACTUATED LOCKING MECHANISM
Bryan R. McCarty, Laurinburg, N.C., assignor to Rostra Precision Controls, Inc., Laurinburg, N.C.

Filed Nov. 7, 1996, Ser. No. 746,311

Int. Cl.⁶ B60R 21/00

U.S. Cl. 242—384

1 Claim



1. A retractor assembly for use in a seat belt system comprising:

a spindle rotatable in a first direction to extend a seat belt therefrom and in a second direction to retract the seat belt; a ratchet member connected for rotation with said spindle; a pawl which is movable between an engaged position, wherein said pawl engages said ratchet member to prevent rotation in said first direction, and an engaged position, wherein said pawl does not engage said ratchet member, a first permanent magnet carried on said pawl for movement therewith and defining a first magnet pole face; and a magnetic actuator for moving said pawl between said engaged and disengaged positions, said magnetic actuator including a second hollow permanent magnet disposed about a core of a magnetically permeable material that defines a second magnet pole face, said first and second magnet pole faces having the same magnetic polarization such that said first magnet is repelled from said second magnet to normally urge said pawl toward said engaged position, said magnetic actuator further including means selectively actuable to urge said first magnet and said pawl toward said disengaged position.

5,779,179

MANUAL STRETCH FILM APPLICATOR AND METHOD THEREFOR

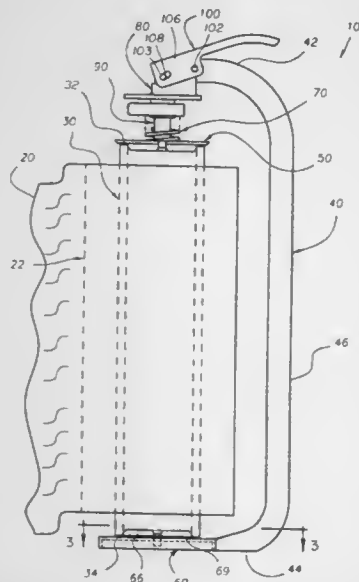
Hugh J. Zentmyer, Green Oaks, and Gale W. Huson, Glenview, Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Mar. 21, 1997, Ser. No. 821,847

Int. Cl.⁶ B65H 23/06; B44C 7/00

U.S. Cl. 242—423.2

10 Claims



1. A stretch film applicator for manually wrapping stretch film supplied from a stretch film roll having a core with a first end and a second end, the stretch film applicator comprising:
 - a substantially U-shaped handle member;
 - a first core cap coupled to a first end portion of the handle member, and a second core cap coupled to a second end portion of the handle member, the first core cap being disposed over the first end of the core of the stretch film roll and the second core cap being disposed over the second end of the core of the stretch film roll; and
 - a spring member disposed between the first core cap and the first end portion of the handle member, wherein the spring member biases the first core cap toward the second core cap so as to rotatably retain the stretch film roll between the first core cap and the second core cap and to induce frictional drag upon the core of the stretch film roll as stretch film is supplied from the stretch film roll.

5,779,180

WINDER FOR USE WITH BAG-MAKING MACHINE

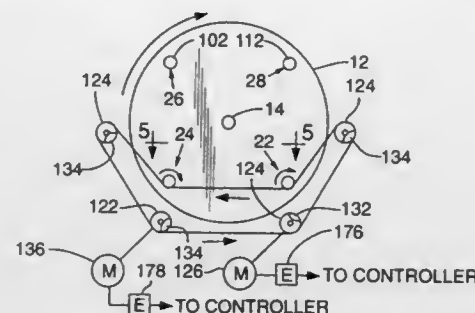
Eric De Smedt, Opwijk, and Wim Verbeiren, Lede, both of Belgium, assignors to FMC Corporation, Chicago, Ill.

Filed Oct. 18, 1996, Ser. No. 730,857

Int. Cl.⁶ B65H 19/30

U.S. Cl. 242—528

9 Claims



1. A winder for winding continuous webs or interleaved web segments into rolls, the winder comprising
 - (a) a winding turret indexable about a winding turret axis through an endless series of indexed positions,
 - (b) a first winding spindle mounted operatively on the winding turret and arranged to be rotatably driven about a first winding spindle axis parallel to the winding turret axis, the first winding spindle having a pulley-mounting portion and a web-winding portion adapted to receive a continuous web or interleaved web segments for winding into a roll,
 - (c) a pulley adapted to interengage a timing belt and mounted on the pulley-mounting portion of the first winding spindle so as to be conjointly rotatable with the first winding spindle,
 - (d) a pulley adapted to interengage a timing belt and mounted on the pulley-mounting portion of the first winding spindle so as to be independently rotatable,
 - (e) a second winding spindle mounted operatively on the winding turret and arranged to be rotatably driven about a second winding spindle axis parallel to the winding turret axis, the second winding spindle having a pulley-mounting portion and a web-winding portion adapted to receive a continuous web or interleaved web segments for winding into a roll,
 - (f) a pulley adapted to interengage a timing belt and mounted on the pulley-mounting portion of the second winding spindle so as to be conjointly rotatable with the second winding spindle,
 - (g) a pulley adapted to interengage a timing belt and mounted on the pulley-mounting portion of the second winding spindle so as to be independently rotatable,
 - (h) a first timing belt interengaging the conjointly rotatable pulley mounted on the pulley-mounting portion of the first winding spindle and interengaging the independently rotatable pulley mounted on the pulley-mounting portion of the second winding spindle, and
 - (i) a second timing belt interengaging the independently rotatable pulley mounted on the pulley-mounting portion of the first winding spindle and interengaging the conjointly rotatable pulley mounted on the pulley-mounting portion of the second winding spindle,
 - (j) a first motor and a first driving pulley, said first driving pulley rotatable engaged to said first timing belt, said first motor connected to said first driving pulley to rotate said first driving pulley to circulate said first timing belt;
 - (k) second motor and a second driving pulley, said second driving pulley rotatable engaged to said second timing belt, said second motor connected to said second driving pulley to rotate said second driving pulley to circulate said second timing belt.

5,779,181

TAPE WINDING APPARATUS AND TAPE WINDING METHOD

Shun Nakae, Tokyo, and Hideo Kajiyama, Kuki, both of Japan, assignors to Lintec Corporation, Tokyo, Japan

Continuation of Ser. No. 301,273, Sep. 6, 1994, abandoned.

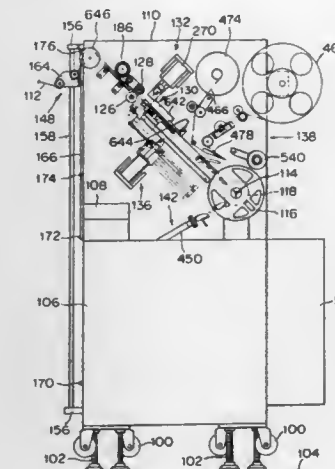
This application Jan. 28, 1997, Ser. No. 789,983

Claims priority, application Japan, Sep. 7, 1993, 5-222430; Dec. 28, 1993, 5-338294

Int. Cl.⁶ B65H 19/28

U.S. Cl. 242—532.6

8 Claims



8. A method for winding a tape onto a reel, comprising the steps of:
 - feeding an end of a tape through a first tape guide; releasably gripping said end of the tape with a second tape guide in a first position proximate said first tape guide, the second tape guide being slidable and the first position being sufficiently close to the first tape guide so that the second tape guide receives the end of tape fed by the first tape guide; moving said second tape guide during said releasable gripping step from the first position to a second position proximate a take-up reel, said second position being sufficiently close to a hub core of the take-up reel so that the second tape guide delivers said end of the tape to the hub core of the take-up reel to allow for attachment of the end of the tape to the hub core of the reel; and
 - moving said second tape guide from the second position to a third stop position between said first and second positions, said third stop position being located between the first and second positions so that the second tape guide guides movement of a portion of said tape extending from the first tape guide to the take-up reel while said tape is being wound onto said take-up reel.

5,779,182

METHOD AND DEVICE FOR WINDING A MATERIAL WEB

Vesa Raudaskoski, Järvenpää, Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Nov. 12, 1996, Ser. No. 747,462

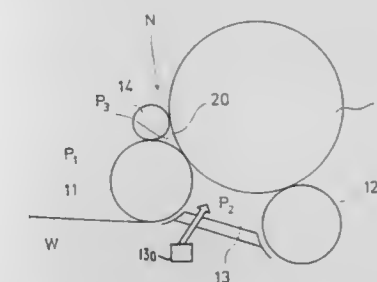
Claims priority, application Finland, Nov. 24, 1995, 955666

Int. Cl.⁶ B65H 18/14

U.S. Cl. 242—541.4

20 Claims

10. An arrangement for winding a material web onto a roll being formed about a spool, comprising
 - a first cylinder arranged to define a first winding nip with the roll being formed through which the web is passed,
 - a second cylinder arranged at a distance from said first cylinder and to define a second winding nip with the roll being formed through which the web passes after traveling from said first winding nip around the roll being formed,



said first and second cylinders and the roll being formed being arranged relative to one another to define an air relief area situated at least partially below the roll being formed, the web being passed through said air relief area into said first winding nip such that said air relief area is situated before said first winding nip in a running direction of the web and a wedge-shaped area is situated immediately after said first winding nip exterior of said air relief area, the web being transferred in said first winding nip from said first cylinder onto the roll being formed while the roll being formed is rotated to cause the web to wind onto the roll being formed, and first pressure means for raising the pressure in said wedge-shaped area after said first winding nip to reduce the transfer of air from said air relief area through said first winding nip into said wedge-shaped area after said first winding nip along with the web to be wound onto the roll being formed.

5,779,183

METHOD AND DEVICE FOR FINISHING THE SURFACE LAYERS OF THE MACHINE REEL THAT IS FORMED DURING REELING OF THE WEB

Esa Aalto, Hyvinkää; Markku Kyytsönen, Numminen; Aaron Mannio, and Silvo Mikkonen, both of Järvenpää, all of Finland, assignors to Valmet Corporation, Helsinki, Finland PCT No. PCT/FI95/00334, § 371 Date May 28, 1996, § 102(e) Date May 28, 1996, PCT Pub. No. WO95/34495, PCT Pub. Date Dec. 21, 1995

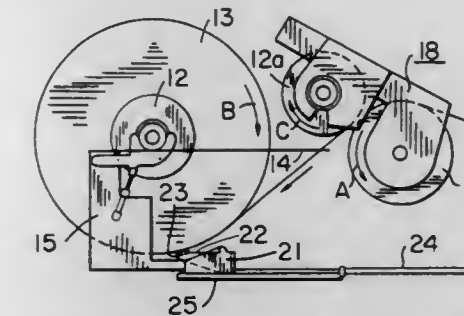
PCT Filed Jun. 9, 1995, Ser. No. 600,964

Claims priority, application Finland, Jun. 10, 1994, 942743

Int. Cl.⁶ B65H 18/26; 18/14

U.S. Cl. 242—547

15 Claims



1. A method for finishing the surface layers of a machine reel formed during reeling of a web in a reeling station in which the reel forms a nip with a reeling drum, comprising the steps of:
 - providing a pressing member with a brush,
 - while the reel is in nip-defining relationship with the reeling drum in the reeling station displacing the pressing member toward the reel until the brush contacts a face of the reel and presses the web against the face of the reel, and
 - maintaining the brush of the pressing member in pressing contact with the face of the reel while the reel is out of nip-defining relationship with the reeling drum during winding of the finishing surface layers onto the reel to thereby prevent air from entering between the web and the reel as the finishing surface layers are wound onto the reel.

5,779,184

DEVICE AND METHOD FOR STABILIZING A PAPER WEB AT A TIME BEFORE THE WEB IS CUT

Bernd Kaufmann, Heidenheim, and Herbert Illenberger, Nattheim, both of Germany, assignors to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Continuation of Ser. No. 614,740, Mar. 13, 1996, abandoned.

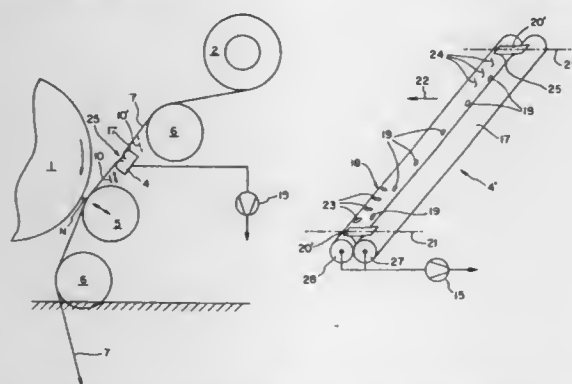
This application Sep. 29, 1997, Ser. No. 939,987

Claims priority, application Germany, Mar. 17, 1995, 295 04 553.1

Int. Cl.⁶ B65H 19/20; 21/00; 69/06; 69/02

U.S. Cl. 242—554.2

23 Claims



1. A device for stabilizing a paper web in a paper machine, said device comprising:

a continuous unwinding and flying splicing station, the splicing station including a primary paper roll, a secondary paper roll and a cut-off device, said secondary paper roll is adapted to have the paper web unwinding therefrom, said splicing station defining a splicing location, said cut-off device positioned between said secondary paper roll and said splicing location; and

a suction trough disposed between said secondary paper roll and said splicing location, said suction trough extending across a width of the paper web, said suction trough including a pair of cylindrical pipes disposed side-by-side and non-rotatably connected to each other, said cylindrical pipes defining a suction zone adjacent the paper web, the paper web is adapted to travel past said suction trough to said splicing location, said suction zone extending substantially across said width of the paper web and being configured to effect a substantially uniform vacuum in a suction zone area, wherein the paper web runs evenly over said suction zone area.

5,779,185

FILM SPLICING DEVICE

Shigeru Masuda, and Masayuki Kojima, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Sep. 11, 1996, Ser. No. 712,544

Claims priority, application Japan, Sep. 18, 1995, 7-238580; Oct. 13, 1995, 7-265507

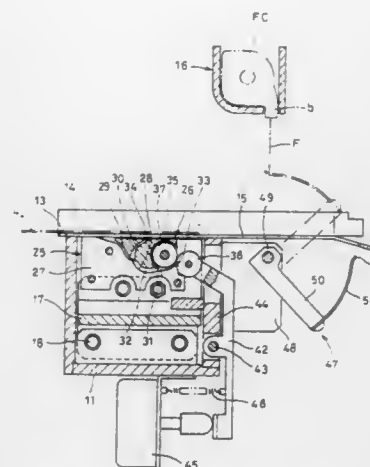
Int. Cl.⁶ B65H 19/18

U.S. Cl. 242—556

9 Claims

1. A film splicing device for splicing a film to a leader formed with a first hole, a second hole and protrusions, said film splicing device being adapted to guide an end of the film through the second hole formed in the leader and then through the first hole formed in the leader adjacent the second hole while resiliently deforming the protrusions formed on the leader and extending across the first hole, and then to pull back the film with the protrusions being resiliently deformed to cause the protrusions to engage in holes formed in the film, said film splicing device comprising:

a table having a substantially flat top surface for supporting the leader, said table having in said top surface a film inserting elongated opening;



a film cartridge support portion located over said opening for supporting a film cartridge in which is wound a film;

a fixed guide positioned directly under said opening and a movable guide provided under said table, said movable guide being movable above said fixed guide in the direction of a width of said table to and away from a position right over said fixed guide, said movable guide and said fixed guide being so positioned that a film turning passage is defined therebetween when said movable guide is right over said fixed guide, said film turning passage having a film inlet and a film outlet both open to said top surface of said table;

a feed roller movable in said direction of said width of said table together with said movable guide so as to be located near said inlet of said film turning passage when said film turning passage is formed;

a press roller pressed against said feed roller with a film sandwiched therebetween; and

a film pulling means for pulling the film out of the film cartridge supported on said support portion and guiding the film through the second hole formed in the leader placed on said table into said inlet of said film turning passage.

5,779,186

MULTI-PART REEL FOR ELECTRICAL TERMINALS AND THE LIKE

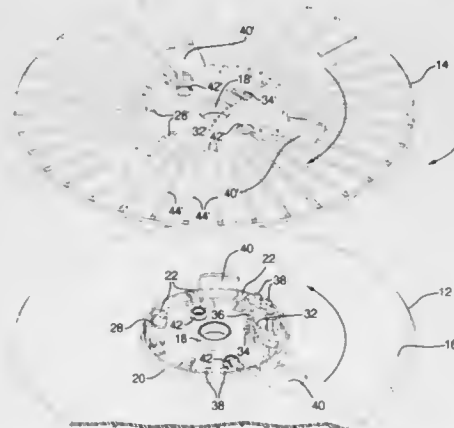
John Henry Bakker, Cortland; Edward Joseph Miller, Youngstown, and Scott Duncan Welsh, Aurora, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 3, 1997, Ser. No. 832,221

Int. Cl.⁶ B65H 75/14

U.S. Cl. 242—609.1

10 Claims



1. A multi-part reel of molded plastic construction comprising a first part and a second part,

the first part having a first flange and a first inner hub portion and a first outer hub portion that are integrally connected to the first flange so as to project in an axial direction, the first part having a plurality of first circumferentially spaced hooks that extend outwardly of the first outer hub portion in the axial direction,

the first part having a first tangential lock arm that is located between the first inner hub portion and the first outer hub portion in a radial direction and that extends outwardly of the first outer hub in the axial direction,

the second part having a second flange and a second inner hub portion and a second outer hub portion that are integrally connected to the second flange so as to project in an axial direction,

the first inner hub portion engaging the second inner hub portion to provide an axle hole for the reel,

the first outer hub portion engaging the second outer hub portion to provide an annular support for winding material onto the reel,

the second part having a second plurality of circumferentially spaced hooks that engage the first plurality of circumferentially spaced hooks to fasten the first part and the second part together in the axial direction and to limit rotation of the first part with respect to the second parts in one direction, and the second part having a second tangential lock arm that is located between the second inner hub portion and the second outer hub portion in a radial direction and that engages the first tangential lock arm to prevent relative rotation of the first part with respect to the second part in an opposite direction.

5,779,187

SEEKER HEAD FOR TARGET-TRACKING MISSILES OR PROJECTILES

Bernd Dulat, Überlingen, and Wolfgang Eger, Aach-Linz, both of Germany, assignors to Bodenseewerk Geratetechnik GmbH, Überlingen/Bodensee, Germany

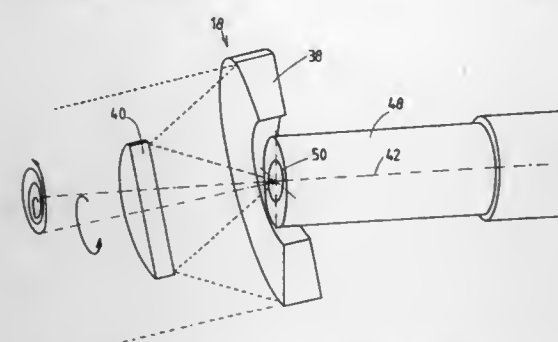
Filed Feb. 10, 1997, Ser. No. 798,537

Claims priority, application Germany, Mar. 23, 1996, 196 11 595.7

Int. Cl.⁶ F41G 7/00; G02B 26/08

U.S. Cl. 244—3.16

4 Claims



1. A seeker head for a target tracking missile or projectile, comprising:

an imaging optical system with an optical axis;

a rotor defining a geometrical axis, said imaging optical system being mounted on said rotor;

mounting means for mounting said rotor for universal swivelling movement in said missile or projectile, said rotor rotating about said geometrical axis such that said rotor is stabilized in inertial space and is de-coupled from the angular movements of the missile;

detector means in the form of a circular array of detector elements for providing detector signals; said imaging optical system being arranged to image an object scene on said detector means;

attitude pick-off means for detecting the angular orientation of said rotor and for providing signals indicative of said orientation;

5,779,188

FLIGHT DEVICE

Alexander Frick, Dr. Josef Hoop-Strasse 633, F1-9492 Eschen, Liechtenstein

Continuation of Ser. No. 433,495, Jun. 28, 1995, abandoned.

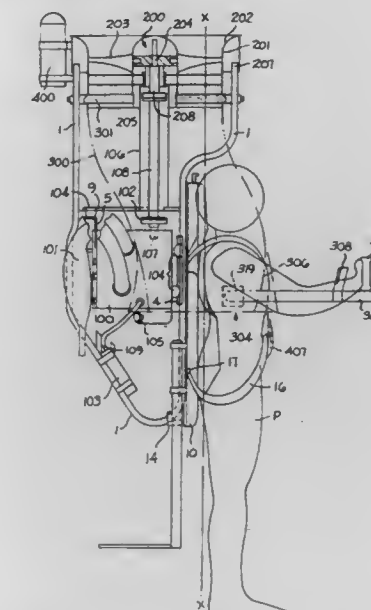
This application Apr. 21, 1997, Ser. No. 844,568

Claims priority, application Switzerland, Sep. 21, 1993, 2842/ 93

Int. Cl.⁶ B64C 29/00

U.S. Cl. 244—4 A

8 Claims



1. A flight vehicle with structure for joining and firmly strapping the vehicle to a human or inanimate load, whereby the load itself is capable of performing piloting functions, and with the aid of the flight vehicle is to be lifted off the ground autonomously and maintained at a height above the ground either stationary or in forward flight, the flight vehicle comprising in combination:

a supporting frame with means for attaching the flight vehicle to the load in such a manner as to establish an essentially frictional connection between the flight vehicle and the load, a fuel consuming power drive arrangement (100), which is coupled directly with a single shrouded propeller (200) inducing a gas stream flow path for lifting and guiding the vehicle via a rotating drive shaft (108) wherein the drive shaft and the propeller (200) both rotate at the same speed without intermediate gearing, at least one fuel tank (10) for providing fuel used to propel the driving arrangement (100), at least two jet pipes (300), which open into outlet nozzles (304, 305) fitted on the air outlet ends located laterally beside the load and through each of which a gas stream is discharged, controllable guiding means for adjusting the jet pipes and the nozzles with respect to said supporting frame to change the direction in which the gas stream flows and to discharge such gas streams through the jet pipes (300) by variably diverting a portion of the gas flow stream in a generally horizontal direction resulting in a lift force which enables both the lifting and guiding of the vehicle for flight motion, including hover flight of the load, said shrouded propeller (200) being fitted with an air intake funnel (200), which admits the air with a minimum of losses, said driving shaft (108) being coupled to drive the shrouded propeller (200) further being essentially disposed in a vertical position when the flight vehicle is in the normal flight position, said outlet nozzles (304, 305) being essentially disposed in a plane determined by a vertical neutral axis (X), and means for discharging said gas stream flow through the jet pipes (300) in their entirety at subsonic velocity.

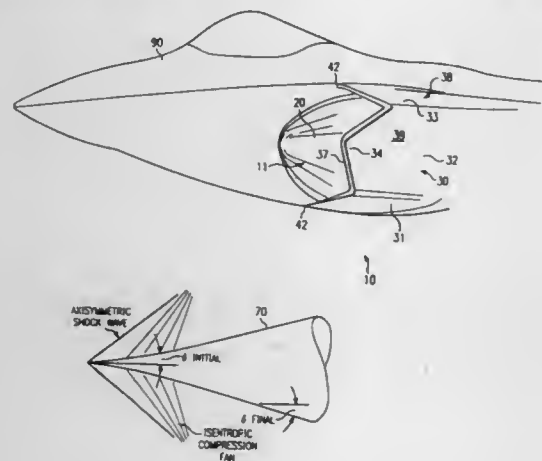
5,779,189
SYSTEM AND METHOD FOR DIVERTING BOUNDARY LAYER AIR

Jeffrey William Hamstra, and Thomas Gerard Sylvester, both of Fort Worth, Tex., assignors to Lockheed Martin Corporation, Fort Worth, Tex.

Filed Mar. 19, 1996, Ser. No. 619,831
Int. Cl.⁶ B64D 33/02

U.S. Cl. 244—53 B

46 Claims



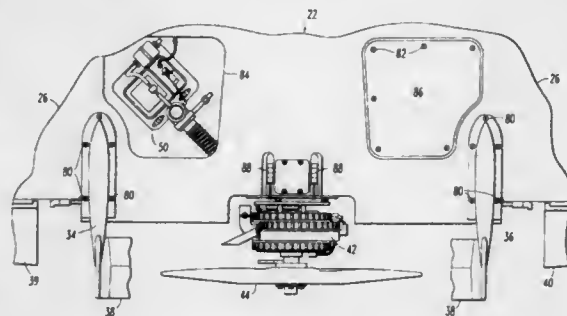
1. A system for diverting boundary layer air from an inlet for an aircraft engine comprising: a bump having a surface raised outwardly from the body of the aircraft to begin diverting the boundary layer air from the inlet prior to the boundary layer air entering the inlet, the bump beginning prior to an opening of the inlet and extending toward the rear of the inlet to form at least a portion of an inner surface of the inlet; and a cowl coupled to the body of the aircraft to define the opening of the inlet comprising;

an aft-closing portion closed against the body of the aircraft at the aft-most points of the opening of the inlet; and a forward-swept portion, coupled to the aft-closing portion, that extends toward the front of the aircraft; the cowl working in conjunction with the bump to further divert the boundary layer air and prevent substantially all of the boundary layer air from entering said inlet during operation.

5,779,190
PORTABLE UNMANNED AERIAL VEHICLE
James E. Rambo; Jerry H. Bowling, both of Huntsville, and Robert S. Kincade, Madison, all of Ala., assignors to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Nov. 22, 1995, Ser. No. 561,929
Int. Cl.⁶ B64C 1/16; 1/26

U.S. Cl. 244—54

7 Claims



1. An unmanned aerial vehicle, comprising: a pusher engine; a payload; a first mounting plate; one of said engine and said payload being affixed to said first mounting plate; said first mounting plate having a plurality of non-symmetrically disposed notched attachment plates; a delta wing airframe having a fuselage and detachable, symmetrical, interchangeable wings; a second mounting plate affixed to said fuselage; quick release draw latches for attaching said wings to said fuselage, said engine to said fuselage and said payload to said fuselage; said second mounting plate including said quick release draw latches for attaching said one of said engine and said payload to said fuselage, wherein each of said draw latches for attaching said one of said engine and said payload to said fuselage includes a pin engageable with a respective one of said non-symmetrically disposed notched attachment plates of said first mounting plate.

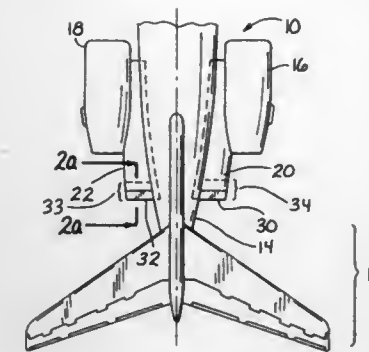
5,779,191
PYLON FLAP FOR INCREASING NEGATIVE PITCHING MOMENTS

Mark G. Brislawn, 1668 N. Nordic Dr., Orange, Calif. 90808
Filed Nov. 12, 1996, Ser. No. 751,929
Int. Cl.⁶ B64C 5/02

U.S. Cl. 244—75 R

19 Claims

1. A flight control system for use in aircraft with fuselage mounted engines, comprising: an aircraft fuselage having both a left aircraft fuselage side and a right aircraft fuselage side; a jet engine disposed on one side of the left and right sides of said aircraft fuselage; a jet engine pylon having a forward pylon portion and an aft pylon portion, said pylon being joined on one side thereof to said jet engine and a second side to said one side of the aircraft fuselage, to thereby join the jet engine to the fuselage;



a pylon flap disposed at the aft pylon portion of the jet engine pylon, the pylon flap being movable between a retracted pylon flap angular orientation and an extended pylon flap angular orientation; user-input receiving means for receiving a full nose-down user input, the full nose-down user input being input by the user to command a pitch angle of the T-tailed aircraft to be decreased as quickly as possible; and pylon-flap controlling means for controlling the pylon flap to move from the retracted pylon-flap angular orientation to the extended pylon-flap angular orientation, upon reception of the full nose-down user input by the user-input receiving means.

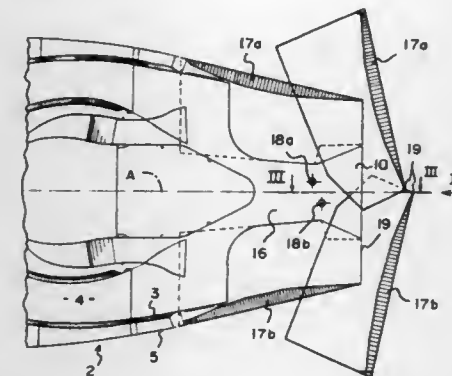
5,779,192
THRUST REVERSER WITH IMPROVED FORWARD THRUST EFFICIENCY

Emile Fabrice Henri Metezeau, Le Havre, and Marcel Jean-Fabrice Portal, Ste Adresse, both of France, assignors to Societe Hispano-Suiza, Saint Cloud Cedex, France
Filed Nov. 30, 1995, Ser. No. 566,433

Claims priority, application France, Nov. 30, 1994, 94 14341
Int. Cl.⁶ F02K 1/68; 1/60

U.S. Cl. 244—110 B

1 Claim



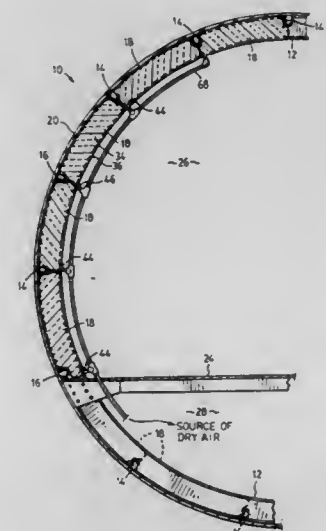
1. A thrust reverser for a turbojet engine having a central axis and an exhaust nozzle, the thrust reverser comprising first and second deflectors pivotally attached to the turbojet engine such that the first deflector pivots about a single non-translating first pivot axis and the second deflector pivots about a single non-translating second pivot axis, the first and second pivot axes extending generally transverse to the central axis, the first and second deflectors pivoting between forward thrust positions, wherein the first and second deflectors form a downstream end of the exhaust nozzle and reverse thrust positions wherein the first and second deflectors deflect gases emanating from the turbojet engine, each deflector having a trailing edge such that the trailing edges of the first and second deflectors lie in a common plane extending substantially transverse to the central axis when the deflectors are in their forward thrust positions, wherein the first and second pivot axes are longitudinally displaced from each other along the central axis.

5,779,193
CONTAINMENT SYSTEMS FOR INSULATION, AND INSULATION ELEMENTS EMPLOYING SUCH SYSTEMS
Frank P. Sloan, 1601-19 Lascelles Blvd., Toronto, Ontario, Canada, M4V 2B7
Continuation-in-part of Ser. No. 261,273, Jun. 15, 1994, Pat. No. 5,577,688. This application Jun. 13, 1996, Ser. No. 662,967

Int. Cl.⁶ B64C 1/40

U.S. Cl. 244—117 R

4 Claims



1. A system for the containment of thermal insulation elements used for the insulation of the interior of an enclosed space constituted by at least one external wall, a plurality of said elements being applied for that purpose on the inside surface of the external wall or walls of the space:

wherein each insulation element comprises a body of thermally insulating material enclosed in a bag of substantially moisture impervious material, the system also including a source of relatively dry air at a pressure slightly higher than the ambient air pressure in the enclosed space, and connectors connecting the source of the dry air to the interior of the thermal insulation elements.

5,779,194
JOINT FOR A CANTILEVER ARM ON A SATELLITE
Bernhard Doll; Wolfram Beckert, both of Immenstaad, and Reinhard Wolters, Salem, all of Germany, assignors to Dornier GmbH, Germany
Filed Jun. 3, 1996, Ser. No. 655,684

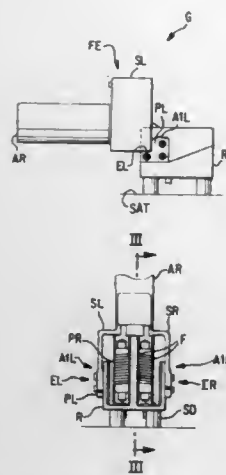
Claims priority, application Germany, Jun. 27, 1995, 195 23 236.4

Int. Cl.⁶ B64G 1/22

U.S. Cl. 244—158 R

7 Claims

1. A joint for folding and unfolding a cantilever arm on a spacecraft, comprising: a guide element which is rigidly attached to an end of the cantilever arm; stop plates rigidly attached to the spacecraft; at least one spring element which is connected with the cantilever arm and with the spacecraft and is pretensioned to hold said guide element in contact with said stop plates, said stop plates having first and second unfolded stops located symmetrically relative to a motion plane of the cantilever arm; a third unfolded stop, whereby during unfolding of the cantilever arm, the guide element alternately contacts the first and second unfolded stops on the one hand and the third unfolded stop on the other, and in an unfolded state of said cantilever arm, the guide element abuts all three unfolded stops; and

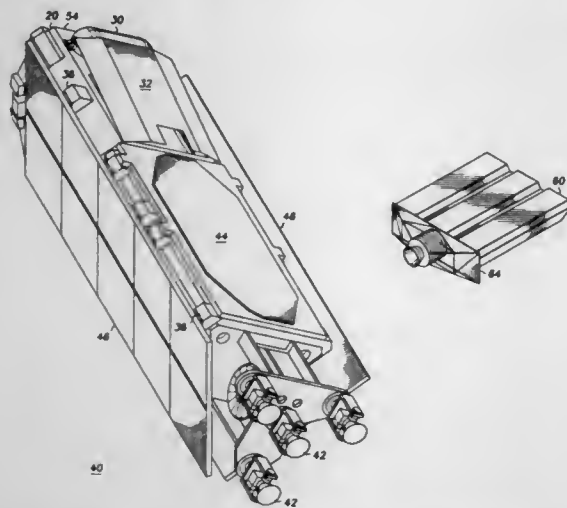


said stop plates also have first and second folded stops which abut said guide element when said cantilever arm is in a folded state.

5,779,195
SATELLITE ASSEMBLY HAVING MODULAR COMMON BUS COMPONENTS
Sibnath Basuthakur; David R. Laidig, both of Phoenix, and David H. Cubbage, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 3, 1996, Ser. No. 642,713
Int. Cl.⁶ B64G 1/64

U.S. Cl. 244—161

4 Claims

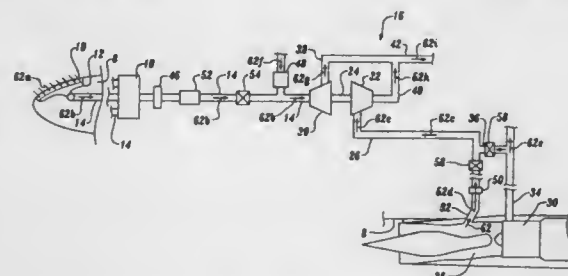


1. A satellite assembly with modular bus components for delivery to and placement in an orbit, said satellite assembly comprising:
a plurality of bus modules, each bus module comprised of a structural frame having substantially identical shape and defining interior spaces having approximately equal volumes, each bus module having substantially identical bus subsystems, said substantially identical bus subsystems comprising a thermal subsystem, a telemetry, tracking and control subsystem, a power subsystem, an attitude, orientation and control subsystem, and a propulsion subsystem;
a single apogee booster coupled to said plurality of bus modules for taking the satellite assembly to a final orbit, said apogee booster configured to detach from said plurality of bus modules after ascent of said satellite assembly to said final orbit;
a separation system for separating the plurality of bus modules into individual satellite subassemblies after detachment of the apogee booster from said plurality of bus modules, each

individual satellite subassembly being a separate satellite and comprised of one or more of said bus modules, and wherein at least one individual satellite assembly is comprised of at least two of said bus modules.

5,779,196
RAM AIR DRIVE LAMINAR FLOW CONTROL SYSTEM
Thomas Timar, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Dec. 8, 1995, Ser. No. 569,907
Int. Cl.⁶ B64C 21/06
U.S. Cl. 244—209

16 Claims



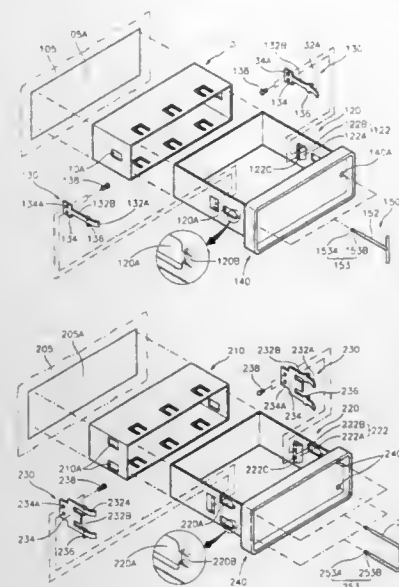
1. In a boundary layer flow control suction system for an aircraft including a supersonic engine inlet having a region of subsonic airflow, a source of engine bleed air, and a boundary layer suction compressor unit having a turbine driving a compressor, the compressor being connected to a suction surface of the aircraft for suctioning external air from an aircraft surface;
the improvement comprising a turbine input line connected to both the region of subsonic airflow and the source of engine bleed air during flight at less than a predetermined minimum aircraft speed M_{min} and minimum aircraft altitude A_{min} , and connected only to the region of subsonic airflow during flight at at least the M_{min} and A_{min} ;
whereby the turbine is powered from air flowing through the turbine input line during boundary layer flow control.

5,779,197
APPARATUS FOR DETACHABLY MOUNTING AUDIO EQUIPMENT
Ji-Seop Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Rep. of Korea
Filed May 28, 1997, Ser. No. 864,110
Claims priority, application Rep. of Korea, May 28, 1996, 1996-13366
Int. Cl.⁶ G12B 9/00

U.S. Cl. 248—27.1

19 Claims

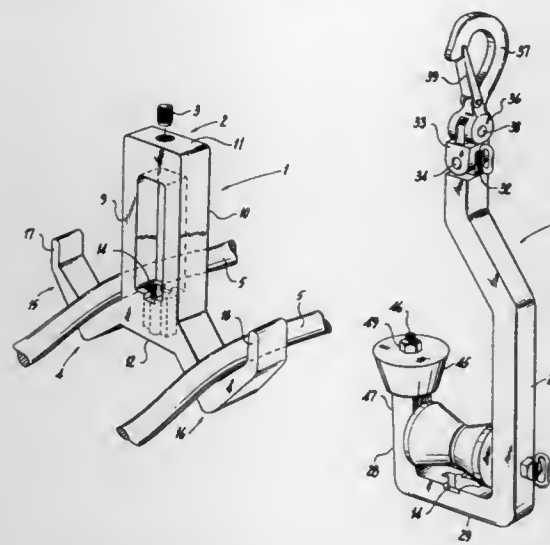
1. An apparatus for detachably mounting audio equipment, which comprises:
a mounting frame in which at least one mounting aperture is formed on each side thereof;
a main chassis having side walls and being inserted into and detachably mounted to the mounting frame, in which an opening corresponding to the engagement aperture of the mounting frame is formed on each side thereof;
engagement members fixed to an interior surface of the side walls of the main chassis, each engagement member being engaged with the corresponding engagement aperture of the mounting frame when the main chassis is mounted to the mounting frame and being disengaged from the corresponding engagement aperture of the mounting frame when the main chassis is drawn from the mounting frame;
a front frame fixed to the main chassis on the front side of the main chassis, in which an insertion hole corresponding to the engagement aperture of the mounting frame is formed on each side thereof; and



disengagement members for disengaging the engagement members from the engagement apertures of the mounting frame by making contact with the engagement members when the disengagement members are inserted into the insertion holes of the front frame, the main chassis being provided with latching members engaged with the disengagement members so that the main chassis is pulled together with the disengagement when the disengagement members are pulled forward.

5,779,198
HANGER BRACKET
William Rutherford, Islington, and Kieron Denz, Belmont North, both of Australia, assignors to Fioris Pty Limited, Gateshead, Australia
PCT No. PCT/AU94/00069, § 371 Date Dec. 29, 1994, § 102(e) Date Dec. 29, 1994, PCT Pub. No. WO94/19580, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 15, 1994, Ser. No. 367,179
Claims priority, application Australia, Feb. 22, 1993, PL7434
Int. Cl.⁶ E21F 17/02
U.S. Cl. 248—58

12 Claims



1. A support bracket for a cable or hose to be attached to a support said bracket comprising a post having a first end and a second end, the first end having means whereby the bracket can be

secured to the support, the second end having at least one arm to support the cable or hose, said post having a flex area and said arm being formed of flexible material, the flex area in said post co-operating with said arm to permit said arm to move from a cable or hose support position to a cable or hose release position when said cable or hose is subject to a load in excess of a predetermined level and return said arm to a cable or hose support position when said load has been removed.

5,779,199
Patent Not Issued For This Number

5,779,200
Patent Not Issued For This Number

5,779,201
Patent Not Issued For This Number

5,779,202
PIVOTING MAILBOX POST
Roland L. Black, and Sara J. Black, both of 7645 Scarff Rd. S., New Carlisle, Ohio 45344
Filed Feb. 21, 1997, Ser. No. 804,003
Int. Cl.⁶ B65D 91/00
U.S. Cl. 248—122.1

6 Claims



1. A pivoting mailbox post comprising:
a substantially vertically disposed lower post section including anchoring means for anchoring said lower post section into a ground and further including a centrally disposed vertical longitudinal bore extending partially into said lower post section;
a substantially horizontally disposed mailbox support arm having a mailbox support portion and a pivoting portion, said pivoting portion including a support arm vertical bore;
a substantially vertically disposed upper post section including a centrally disposed vertical longitudinal bore extending completely through said upper post section; and
a shaft disposed within said lower post section vertical longitudinal bore, said mailbox support arm vertical bore, and said upper post section vertical longitudinal bore, where said mailbox support arm is disposed between and is in frictional contact with both said upper post section and said lower post section and where said mailbox support arm is rotatable about said shaft and where said shaft further extends through and

above said upper post section to define a threaded adjustment portion on said shaft; whereby said lower post section is fixed into the ground, and where said lower post section vertical longitudinal bore, said mailbox support arm vertical bore, and said upper post section vertical longitudinal bore are aligned, said shaft is placed within said aligned bores such that said mailbox support arm is rotatable around said shaft, and where a nut adapted to fit on said threaded adjustment portion of said shaft may be tightened to set a desired amount of friction between said upper post section, said rotatable mailbox support arm, and said lower post section.

5,779,203

ADJUSTABLE WAFFER CASSETTE STAND

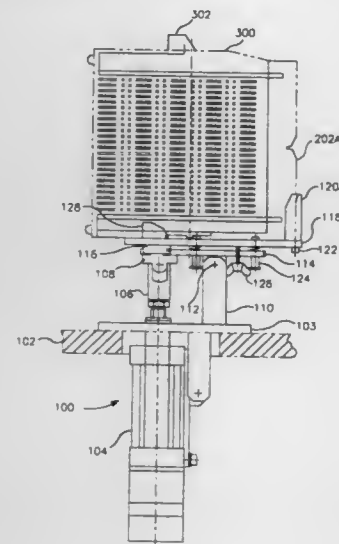
Erich Edlinger, 11025 S. 51st St., Apt. 2059, Phoenix, Ariz. 85044

Filed Jun. 28, 1996, Ser. No. 671,155

Int. Cl.⁶ F16M 11/04

U.S. Cl. 248—178.1

29 Claims



1. A cassette stand for holding a cassette of the type configured to hold a plurality of wafers, said cassette being of the type including a bottom flange having a leading edge and respective first and second rearwardly projecting vertically extending wings, said cassette stand comprising:

a platform upon which said cassette may be placed;
an adjustment guide on said platform positioned to abut said leading edge of said flange of said cassette;
respective first and second alignment posts extending upwardly from said platform and configured to receive said first and said second wings of said cassette, respectively; and
wherein said adjustment guide is movable about said platform and securable at a desired position on said platform, and further wherein said first and said second alignment posts are moveable about said platform and fixable at desired positions on said platform.

5,779,204

WORKSTATION FOR DOOR

Lee H. Greenberg, 14 Lucky Dr., Greenbrae, Calif. 94904, and Manuel L. Karell, 3573-22 St., San Francisco, Calif. 94114

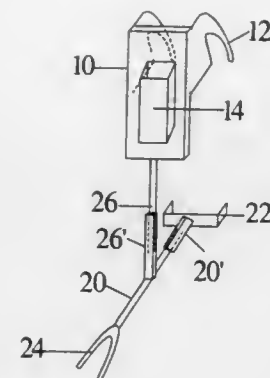
Filed Dec. 18, 1995, Ser. No. 574,205

Int. Cl.⁶ A47B 96/06

U.S. Cl. 248—205.1

4 Claims

1. An apparatus placed between a door and an item for suspending the item onto the door's edge comprising:



a body having a front portion, a back portion, a top portion and a bottom portion;
a connector means attached to said back portion for connecting said body to doorknob shafts;
a receiving means attached to said front portion for receiving, supporting and suspending an item onto said body;
a distancing means for providing a distance between said item and said door's edge; and
a coupling means for coupling said distancing means to said bottom portion.

5,779,205

EXTENSIBLE WINDSHIELD PORTABLE PHONE HOLDER

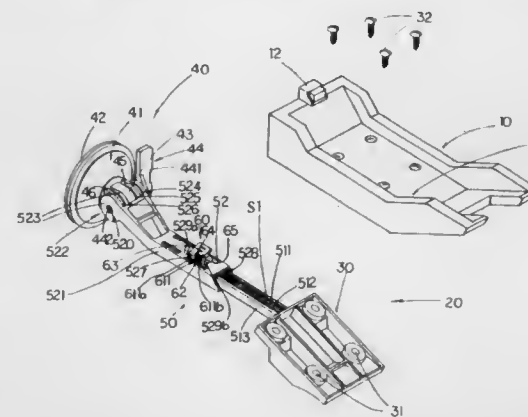
Allen Ching, 380 Thor Pl., Brea, Calif. 92821

Filed Dec. 23, 1996, Ser. No. 772,424

Int. Cl.⁶ A45D 42/14

U.S. Cl. 248—205.8

28 Claims



1. An extensible windshield portable phone holder, comprising a phone mounting device which has a portable phone receiving cavity for receiving a portable phone, and a holding means installed thereon for holding said portable phone in position; and

an extensible holder arrangement which comprises
a supporter for securing said phone mounting device thereon;
a sucking device for firmly attaching to a predetermined position of a windshield; and
an extending device which comprises
an elongated rack, which is connected to said phone mounting device, having two side walls, on an upper side of said elongated rack, a plurality of parallel and equally spaced transverse locking grooves being provided between said two side walls;
a supporting arm connecting to said sucking device and comprising an axial guiding tubular rail which has a mounting opening provided thereon and an axial receiving through cavity having a width and a thickness slightly larger than a

width and a thickness of said elongated rack for slidably receiving said elongated rack therein; and
a locking switch for interlocking said elongated rack with said supporting arm, comprising a turning axle pivotally and coaxially mounted on said supporting arm and positioned above said mounting opening, in which said turning axle is positioned perpendicular with said transverse locking grooves, said turning axle comprising a lock plug and a turner, wherein said lock plug which has a height and a width smaller than a depth and a width of said locking grooves respectively is perpendicularly protruded from said turning axle, and that said turner is extended from said turning axle outwardly for turning said locking plug to rotate downwardly and wedge into one of said transverse locking grooves of said elongated rack to interlock said elongated rack with said supporting arm, however when said turner is turned to rotate said locking plug upwardly away from said corresponding locking groove of said elongated rack, said elongated rack is able to be slid in and out along said supporting arm to adjust a distance between said sucking device and said phone mounting device.

5,779,207

MEDICAL DEVICE CLAMP

Hal Danby, Winthrop Hall, Chilton Sudbury, Suffolk, CO10 OPZ, England

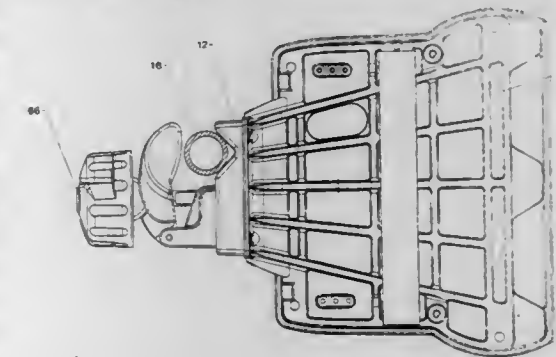
Filed Jun. 17, 1996, Ser. No. 664,629

Claims priority, application United Kingdom, Apr. 17, 1996, 9607981

Int. Cl.⁶ A47B 96/06

U.S. Cl. 248—230.4

20 Claims



1. A clamp for removably affixing a device to a gripped element, said clamp comprising groove means, for partially encompassing said gripped element, clamp body means for releasably compressively urging said gripped element into contact with said groove means, and actuation means for releasably actuating said clamp body means wherein said actuation means includes torque means for preferentially allowing the application of more torque when said clamp body means is being released from said gripped element.

5,779,206

HANGER ASSEMBLY

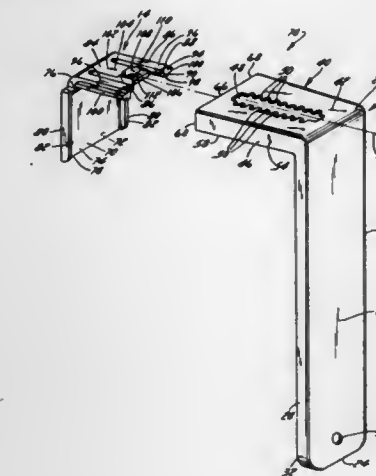
David C. Harris, Baraboo, Wis., and William T. DeBruyn, Rockford, Ill., assignors to Sterling Plastics Co., Madison, Wis.

Filed Nov. 13, 1995, Ser. No. 556,625

Int. Cl.⁶ A47B 96/06

U.S. Cl. 248—214

19 Claims



1. A hanger assembly for attachment to a partition or a screen, comprising:

a support bracket including a channel portion and an elongate member extending generally transversely from the channel portion, the channel portion having a channel and at least one detent; and
an attachment bracket adjustably engaged with the channel, the attachment bracket including a resilient finger having a catch, the catch being releasably engaged within at least one detent by depression of the resilient finger.

5,779,208

MOVABLE STEP PLATFORM FOR LADDERS

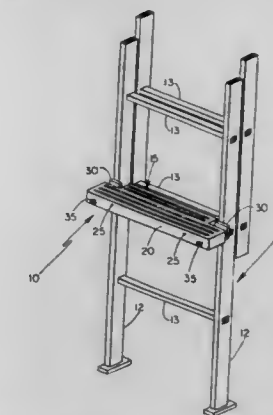
Raymond V. McGraw, 1427 Bussard Ct., Arden Hills, Minn. 55112

Filed Nov. 25, 1996, Ser. No. 756,262

Int. Cl.⁶ E04G 3/08

U.S. Cl. 248—238

4 Claims



1. An adjustably positionable support platform for use in combination with a ladder having a pair of generally vertically extending rails flanking a plurality of horizontal rungs and comprising:

(a) deck means having a load bearing assembly to accommodate a person standing thereon with said load bearing assembly comprising a plate with an upper foot supporting surface for accommodating a person along with a lower rung engaging surface for supporting contact with the top surface of one of said rungs, said plate further having angularly downwardly extended flanges coupled thereto adjacent the forward and rear edges thereof;
(b) a first pair of pin receiving support brackets and a second pair of pin receiving support brackets secured to said plate

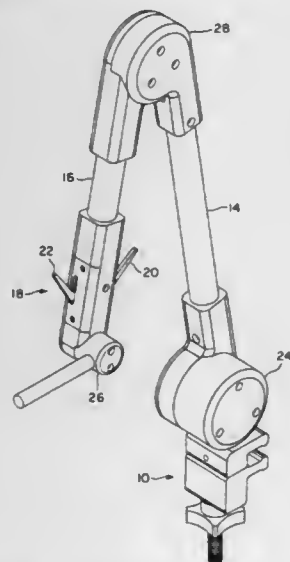
- along said lower rung engaging surface medially of said front and rear edges and having a first plurality of pin receiving bores and a second plurality of pin receiving bores, each bore adapted for slidable engagement with a pin member;
- (c) said first plurality of bores adapted to receive a first pair of generally horizontally extending rung engaging pins in spaced apart vertical parallel relationship from the lower rung engaging surface of said plate for capturing one of said rungs between said rung engaging pins and said lower rung engaging surface;
- (d) a second pair of adjustably positionable generally horizontally extending pins, with each pin extending through one of said second pair of brackets and with each of said second pins carrying a ladder rail engaging plate forwardly thereof for engagement with the front edge surface of one of said ladder rails and for capturing one of said vertical ladder rails between said forward flange and said ladder rail engaging plate; and
- (e) said first pair of pins are resiliently biased forwardly toward said front downwardly extending flange.

5,779,209 POSITIONING UNIT

Michael J. Rello, Harleysville, Pa., assignor to Robert G. Johnston, Medford Lakes, N.J., a part interest
Filed Jun. 2, 1997, Ser. No. 867,130
Int. Cl.⁶ E04G 3/00

U.S. Cl. 248—278.1

9 Claims



1. A positioning unit comprising:
mounting means for mounting said positioning unit to a stationary surface;
a first arm;
a second arm;
control means for controlling, upon actuation by a single human hand:
(a) locking of said first arm and said second arm against movement of said first arm and said second arm, and
(b) selective releasing of said first arm and said second arm to permit movement of said first arm and said second arm;
a first joint for coupling said first arm to said mounting means for:
(a) rotational movement of said first arm relative to said mounting means about a first vertical axis, and
(b) pivotal movement of said first arm relative to said mounting means about a first horizontal axis,
and having first locking and releasing means for:
(a) preventing:
(1) rotational movement of said first arm relative to said mounting means about said first vertical axis, and

- (2) pivotal movement of said first arm relative to said mounting means about said first horizontal axis, and
(b) selectively permitting:
(1) rotational movement of said first arm relative to said mounting means about said first vertical axis, and
(2) pivotal movement of said first arm relative to said mounting means about said first horizontal axis;
a second joint for coupling a payload to said second arm for:
(a) pivotal movement of the payload relative to said second arm about a second horizontal axis, and
(b) rotational movement of the payload relative to said second arm about an axis perpendicular to said second horizontal axis,
and having second locking and releasing means for:
(a) preventing:
(1) pivotal movement of the payload relative to said second arm about said second horizontal axis, and
(2) rotational movement of the payload relative to said second arm about said axis perpendicular to said second horizontal axis, and
(b) selectively permitting:
(1) pivotal movement of the payload relative to said second arm about said second horizontal axis, and
(2) rotational movement of the payload relative to said second arm about said axis perpendicular to said second horizontal axis;
a third joint at which said first arm and said second arm are coupled together for relative pivotal movement between said first arm and said second arm about a third horizontal axis and having third locking and releasing means for:
(a) preventing relative pivotal movement between said first arm and said second arm about said third horizontal axis, and
(b) selectively permitting relative pivotal movement between said first arm and said second arm about said third horizontal axis; and
connecting means for connecting said control means to:
(a) said first locking and releasing means to:
(1) release said first locking and releasing means upon actuation of said control means, and
(2) lock said first locking and releasing means upon deactuation of said control means, and
(b) said second locking and releasing means to:
(1) release said second locking and releasing means upon actuation of said control means, and
(2) lock said second locking and releasing means upon deactuation of said control means, and
(c) said third locking and releasing means to:
(1) release said third locking and releasing means upon actuation of said control means, and
(2) lock said third locking and releasing means upon deactuation of said control means.

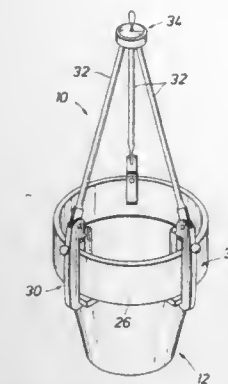
5,779,210 DECORATIVE CLAY POT HANGERS

Barney Canson, 2406 Golden Pond, Kingwood, Tex. 77345, and Jack Canson, 505 Elmwood St., Marshall, Tex. 75670
Filed Feb. 9, 1996, Ser. No. 599,080
Int. Cl.⁶ A47H 1/10

U.S. Cl. 248—318

13 Claims

1. A clay pot hanger comprising:
(a) two or more replicated pot rim clamps comprising two pivotally connected clamp arms, and a threaded clamping means for fixing the relative position of said clamping arms;
(b) upwardly extending suspension members from said clamps;
(c) an overhead and centralized support for said members; and
(d) a rim engaging hook surface on each of said clamps to engage the rim of the pot at least two locations in a circle around said pot.



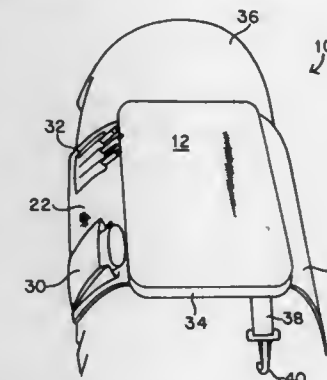
- (e) wherein a single pot rim clamp is pivotally connected to a single upwardly extending suspension member thereby forming a support member.

5,779,211 PERSONAL MOUSE PAD

Peter D. Bird, 1637 N. Trelliss Pl., Eagle, Id. 83616
Filed Dec. 12, 1996, Ser. No. 771,826
Int. Cl.⁶ A47B 91/00

U.S. Cl. 248—346.01

17 Claims



1. A portable leg-mounted mouse pad for use with a computer mouse and for attachment to a leg of a computer user, comprising:
a pad surface with a top surface, which is mounted to a rigid board;
a means of attaching said pad surface to a rigid board;
a rigid board to which said pad surface is attached;
a means of attachment of said rigid board and said pad surface to said leg of a computer user which will hold said portable leg mounted mouse pad in place if said computer user is in a standing, sitting, reclining, feet up, or walking or changing between any position; and
a pocket built into said portable leg mounted mouse pad for storage of the said mouse.

5,779,212 ANGLE COMPENSATOR FOR A MONITOR STAND

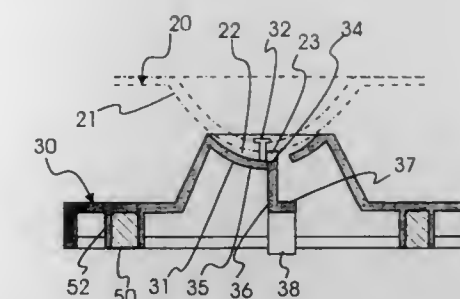
Soon-Ki Baek, Suwon-si, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Jun. 20, 1996, Ser. No. 668,644
Claims priority, application Rep. of Korea, Jun. 20, 1995, 13963/1995

Int. Cl.⁶ A47G 29/00

U.S. Cl. 248—371

16 Claims

1. A view angle compensator for a monitor display apparatus, said view angle compensator comprising:
a monitor rotator integrally assembled with an underside of said monitor display apparatus, said monitor rotator having a fixed



- protuberance protrudently extended from a first side of said rotator restricting manual rotation of said monitor display apparatus in left and right angular directions of said monitor display apparatus; and
a stand support comprising a supporting portion, an elastic tab, a support tab, an engagement tab and a combination of left and right rotational angle compensation ribs respectively extending from both sides of the upper portion of said supporting portion for controlling a rotation of said fixed protuberance provided on said monitor rotator to turn left or right directions within the range of a predetermined angle;
said elastic tab provided and formed on the bottom surface of said supporting portion for allowing said right rotational angle compensating rib to flexibly move upwards and downwards; said support tab allowing assembly and disassembly of said rotating portion and said supporting portion by moving said elastic tab upwardly and downwardly;
said engagement tab extended horizontally from an end portion of said support tab, for pulling and pushing down said support tab; and
a rotation preventing protrusion protrudently extending downwardly from a bottom side of said engagement tab to reinforce said elastic tab and limiting said left and right rotational angles by obstructing passage of said fixed protuberance while engaging any underlying surface supporting said stand.

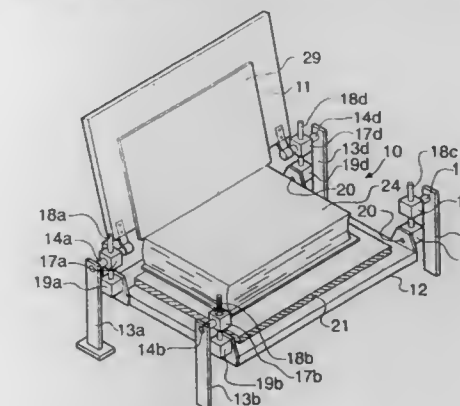
5,779,213 BOOK SUPPORT

Robert Alan MacGregor Buchanan, 13 Arlington Cottages, Sutton Lane, London W4 4HB, United Kingdom
Filed Feb. 18, 1997, Ser. No. 802,796
Claims priority, application United Kingdom, Feb. 19, 1996, 9603449

Int. Cl.⁶ A47G 1/24

U.S. Cl. 248—455

20 Claims



1. A book support comprising:
a first, generally rectangular, book-supporting platform pivotable on a first pivot around a first axis (A) so as to be held at a predetermined angle relative to a plane (A-C) in which the first axis (A) is located; and

a second, generally rectangular, book-supporting platform suspended below the plane (A-C) at (i) at least one position on a first line (B), which first line is approximately coincident with, and parallel to, the end of the second platform which is proximal the first axis, and (ii) at least one position on a second line (D), which second line is approximately coincident with, and parallel to, the end of the second platform which is distal the first axis, the second platform being movable on second pivots so that the first line (B) is rotatable around the first axis (A) and the second line (D) is rotatable around a second axis (C), which second axis (C) is located in the plane (A-C).

5,779,214

Patent Not Issued For This Number

5,779,215

CHRISTMAS TREE STAND

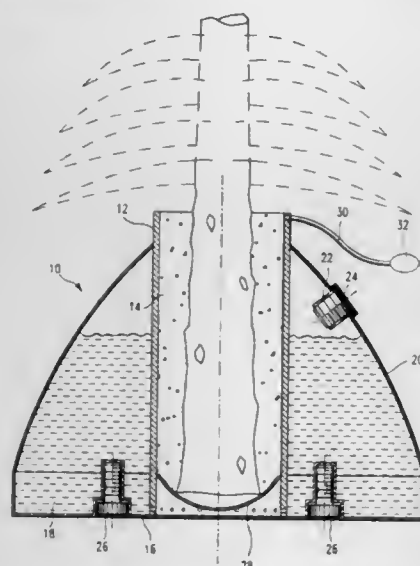
Douglas D. DeMasi, 675 Beekman Rd., Hopewell Junction, N.Y. 12533

Filed Feb. 12, 1996, Ser. No. 599,805

Int. Cl.⁶ A47G 7/02

U.S. Cl. 248—523

10 Claims



1. A Christmas tree stand comprising:
a framework adapted to be support on a floor;
a rigid tube centrally secured to said framework and extended vertically upwards for providing stable support to a tree in an upright fashion; and
an inflatable bladder mounted on an inside wall of said tube for centering a tree trunk on said stand.

5,779,216

POWER TOOL TORQUE AND WEIGHT BALANCING APPARATUS

Gregory J. Grace, Richfield, and David A. Lemaster, Northfield Center, both of Ohio, assignors to Ohio Tool Systems, Inc., Richfield, Ohio

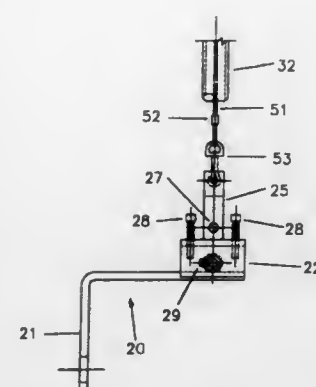
Filed Nov. 16, 1995, Ser. No. 558,674

Int. Cl.⁶ F16M 11/00

U.S. Cl. 248—651

7 Claims

1. A power tool torque and weight balancing apparatus, comprising:



a mounting frame having a first end, a second end and a pivoting member for allowing said second end to pivot relative to said first end;

a balancer frame having a first end and a second end and a lower mounting surface, said first end of said balancer frame being connected to said second end of said mounting frame;

a mechanism for holding a power tool including means for receiving a swivel connector;

said mechanism for holding a power tool comprising:

a tool support bracket having a top and side surface, rotational means attached to said top surface of said tool support bracket; and

an attachment block connected to said rotational means on said top surface of said tool support bracket;

said rotational means comprising a sleeve attached to said top surface of said tool support bracket,

a pivot support bracket having a hole therethrough, a pin having a first and second end,

said first end of said pin having a flat head,

said second end of said pin adapted to receive a snap ring,

a snap ring engageable with said pin,

said pin being positioned within said sleeve, said pin connecting said pivot support bracket to said tool support bracket;

a balancer mechanism interposed within said first end and said second end of said balancer frame, said balancer mechanism having a cable with an end and a swivel connector attached to said end of said cable, said swivel connector attachable to said mechanism for holding a power tool;

telescoping tube members consisting of an inside tube and an outside tube, said inside tube being slidably disposed within said outside tube, said inside tube and said outside tube each having a fixed end and a free end, said fixed end of said outside tube being attached to said second end of said mounting frame, said fixed end of said inside tube being attached to said mechanism for holding a power tool.

5,779,217

DIAPHRAGM ACTUATED AIR CYCLE VALVE

Clive D. Lucas, Richmond Heights; Jeffrey C. Armour, Garfield Heights, and Ahmed I. Sabet, North Royalton, all of Ohio, assignors to North American Manufacturing Company, Cleveland, Ohio

Filed Mar. 11, 1996, Ser. No. 614,962

Int. Cl.⁶ F16K 31/12

U.S. Cl. 251—30.01

10 Claims

1. A valve for adjusting the flow of a fluid, said valve comprising:

a valve body in line with a flow passage for admitting a flow of fluid;

a valve member retained within the valve body, said valve member being varied between a high flow position and a low flow position for respectively admitting and obstructing the flow of fluid;

an actuation assembly including a diaphragm member, in mechanical connection with the valve member, wherein said

5,779,219

SOLENOID VALVE

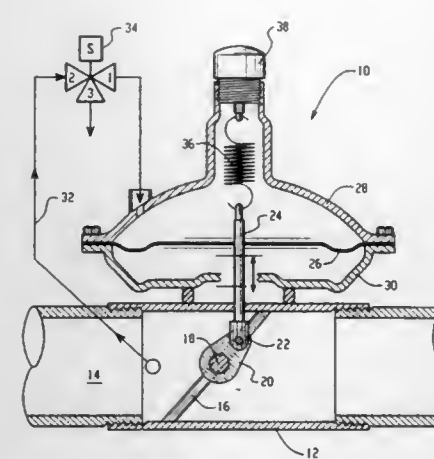
Hiroshi Miida; Yoshihito Ohyu; Motoaki Hayashi, all of Niigata-ken; Hisanori Okamoto, and Masashige Uematsu, both of Saitama-ken, all of Japan, assignors to Kabushiki Kaisha Riken, and Honda Giken Kogyo Kabushiki Kaisha, both of Japan

Filed Jun. 12, 1996, Ser. No. 662,002

Int. Cl.⁶ F16K 31/06; 39/02

U.S. Cl. 251—129.07

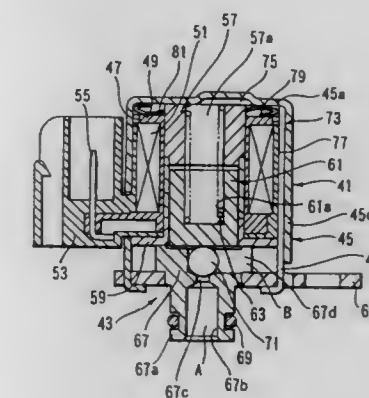
4 Claims



diaphragm member is displaced in order to vary the position of the valve member;

an impulse line in fluid communication with the flow of fluid for providing a pressurized impulse fluid to the actuation assembly, wherein the diaphragm member distends in response to the pressure of the impulse fluid in order to displace the valve member;

a control for selectively admitting the impulse fluid to the actuation assembly, thereby governing displacement of the diaphragm in order to vary the position of the valve member.



1. A solenoid valve which has a center pole and a plunger disposed in series in the axial direction of a housing to be placed in a control fluid, has a through hole formed in the axial direction of said center pole, moves said plunger in said axial direction by an electromagnetic coil disposed outside of said center pole and said plunger to open or close a port, wherein:

one end of said center pole on the side opposite from said plunger is covered with the end face of said housing, and a communication passage is formed in said housing to communicate the through hole of said center pole with an opening formed on said housing on the side of said plunger.

5,779,218

VALVE WITH PIEZOELECTRIC LAMINA AND A METHOD OF PRODUCING A VALVE

Bernd Kowanz, Öhringen, Germany, assignor to Burkert Werke GmbH & Co., Germany

PCT No. PCT/EP96/03920, § 371 Date May 7, 1997, § 102(e)

Date May 7, 1997, PCT Pub. No. WO97/09555, PCT Pub.

Date Mar. 13, 1997

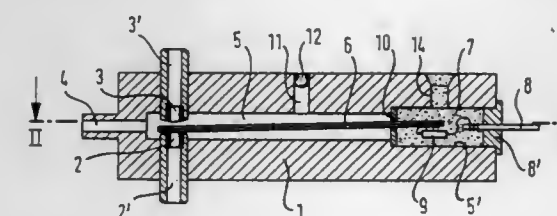
PCT Filed Sep. 6, 1996, Ser. No. 817,828

Claims priority, application Germany, Sep. 8, 1995, 295 14 495.5

Int. Cl.⁶ F16K 31/02

U.S. Cl. 251—129.06

6 Claims



1. A valve having a housing with a valve chamber formed therein, said valve chamber having first and second opposite ends, at least one valve seat formed at the first end of said valve chamber, an elongate piezoelectric lamina having a first end cooperating with said valve seat and a second end embedded in a sealing compound poured into said second end of said valve chamber, and a base carrying a plurality of contact pins, said contact pins having inner ends embedded in said sealing compound and outer ends projecting from said base.

5,779,220

LINEAR SOLENOID ACTUATOR FOR AN EXHAUST GAS RECIRCULATION VALVE

Thomas Wolfgang Nehl, Shelby Township, Mich.; Noreen Louise Mastro, Rochester, N.Y.; Raul Armando Bircann, Penfield, N.Y., and Dwight Orman Palmer, Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.

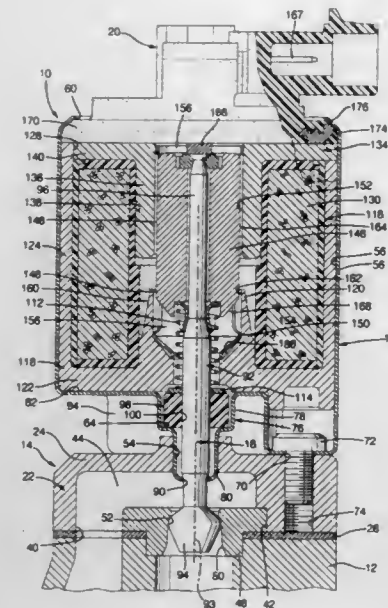
Continuation-in-part of Ser. No. 303,958, Sep. 9, 1994, abandoned. This application Feb. 6, 1996, Ser. No. 599,538

Int. Cl.⁶ F16K 31/06

U.S. Cl. 251—129.15

2 Claims

1. A valve assembly for metering exhaust gas to an internal combustion engine comprising an electromagnetic solenoid actuator having a magnetic circuit including primary and secondary pole pieces defining an axial chamber and an armature, associated with a valve member, and moveable in said chamber, said primary pole piece having a center pole member including a cylindrical inner wall, open at a first end, for receiving said moveable armature, said armature and said cylindrical inner wall defining a fixed, radially extending, primary air gap for flux passage thereacross, and an outer wall extending in an outward taper from said first, open end of said center pole member to a second end of said center pole member, said outwardly tapering wall operable to increase the mass of the pole piece through which said magnetic circuit operates as said armature moves from said first, open end of said center pole member towards said second end, said inner cylindrical wall further including an axially inwardly tapered, conical portion adjacent said second end of said center pole member, operable with an



associated conical end portion of said moveable armature to define a secondary air gap for flux passage thereacross as said armature approaches said second end of said pole piece, and operable to increase axial force on said armature.

5,779,221

ELECTROHYDRAULIC PRESSURE ADJUSTING DEVICE FOR A SLIP-CONTROLLED VEHICLE BRAKE SYSTEM

Helmuth Staib, Schwieberdingen; Gunther Glock, Steinheim; Michael Friedow, Tamm; Jurgen Lander, Stuttgart, and Ulrich Pechtold, Tamm, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/00412, § 371 Date Oct. 15, 1996, § 102(e) Date Oct. 15, 1996, PCT Pub. No. WO95/28304, PCT Pub. Date Oct. 26, 1995

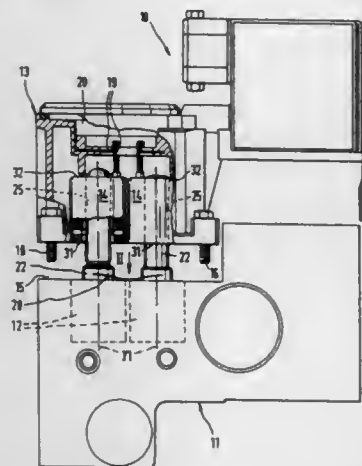
PCT Filed Mar. 27, 1995, Ser. No. 727,383

Claims priority, application Germany, Apr. 13, 1994, 44 12 665.4

Int. Cl.⁶ F16K 31/02

U.S. Cl. 251—129.15

4 Claims



1. An electrohydraulic pressure adjusting device (10), for a slip-controlled vehicle brake system, having at least one electro-magnetically actuatable valve (12), which is united with a valve block (11) and has both a valve dome (22), protruding from the valve block, and a coil (14) that is aligned with and mounted on the valve dome, a cap (13) covers the coil (14) and the valve dome (22) and is fastened to the valve block (11), and a spring element

(28) that axially retains the mounted coil (14) is disposed between the coil (14) and the valve block (11), the coil of the valve (12) before the cap is secured in place is suspended elastically resiliently from the cap (13), the spring element is a sheet-metal spring (28), subsequent to securing the cap (13) to the valve block 11, the spring (28) engages the valve block (11) on one side and on the other side engages the coil (14) and that the coil (14) is axially braced on the cap (13) remote from the valve block.

5,779,222

TAPERED PLUG VALVE

Keith Jeffrey Hollingworth, and Peter Richard Jones, both of Telford, United Kingdom, assignors to BTR plc, London, United Kingdom

PCT No. PCT/GB95/01881, § 371 Date Nov. 27, 1996, § 102(e)

Date Nov. 27, 1996, PCT Pub. No. WO96/05459, PCT Pub.

Date Feb. 22, 1996

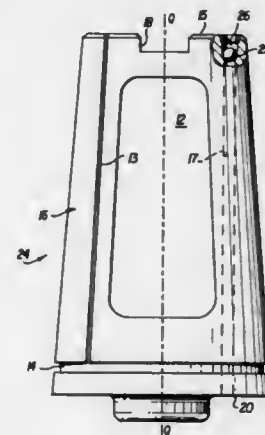
PCT Filed Aug. 9, 1995, Ser. No. 750,036

Claims priority, application United Kingdom, Aug. 12, 1994, 9416307; Oct. 27, 1994, 9421689; Nov. 17, 1994, 9423235

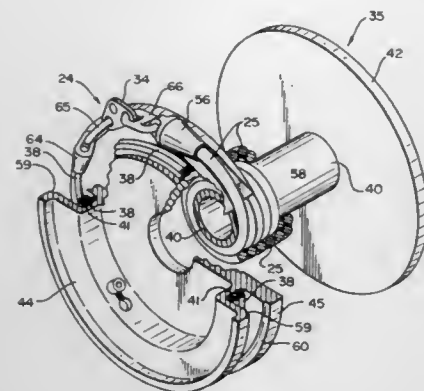
Int. Cl.⁶ F16K 39/06

U.S. Cl. 251—283

5 Claims



1. A tapered plug valve comprising
a body having a passageway therethrough for flow of medium, two chambers and a tapered bore intercepting said passageway;
a tapered plug



- a) a pair of spaced apart pedestals adapted to be fixedly mounted on the drilling platform;
- b) a drive shaft journaled for rotation in said pair of support pedestals;
- c) first and second coaxial side-by-side storage drums non-rotatably mounted on said drive shaft;
- i) said first storage drum comprising a wire mooring rope storage drum having a drum barrel with a diameter D_1 and an uninterrupted axial length L_1 ;
- ii) said second storage drum comprising a wire rope lanyard storage drum having a drum barrel with a diameter D_2 , where D_2 is substantially greater than D_1 , and an uninterrupted axial length L_2 , where L_2 is substantially less than L_1 ;
- iii) a common central circular flange integral with and intermediate said first and second side-by-side storage drums, said common central circular flange having a diameter D_3 substantially greater than D_2 and an axial thickness T_1 ;
- iv) a first circular end flange integral with said first storage drum and disposed on the end of said first storage drum remote from said common central circular flange, said first end flange having a thickness T_2 and a diameter substantially equal to D_3 ;
- v) a second circular end flange integral with said second storage drum and disposed on the end of said second storage drum remote from said common central circular flange, said second circular end flange having a thickness T_3 and a diameter substantially equal to D_3 ;
- d) said common central circular flange having a first sidewall facing said first storage drum and a second sidewall facing said second storage drum;
- e) a wire support groove formed in said common central circular flange extending from said second sidewall adjacent the outer peripheral edge of said central circular flange toward said first storage drum and generally tangential with respect thereto, said wire support groove exiting said first sidewall adjacent said first storage drum; and
- f) means for rotatably driving said drive shaft in a selected one of first and second directions for reeling wire rope onto said first and second coaxial side-by-side drums when said shaft is rotated in said first direction and for unreeling wire rope from said first and second coaxial side-by-side drums when said shaft is rotated in said second direction.

5,779,227

CROWD CONTROL BARRIER

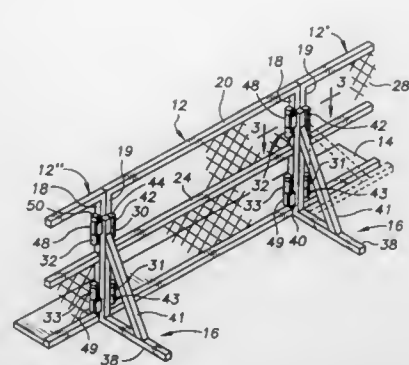
R. Wayne Elkins, 5016 S. Georgia Place, Oklahoma City, Okla. 73129; Lance K. Childers, 1509 Padova, Las Vegas, Nev. 89117, and Randal S. Harcastle, 5016 S. Georgia Place, Oklahoma City, Okla. 73129

Filed Feb. 25, 1997, Ser. No. 806,273

Int. Cl.⁶ E04H 17/16

U.S. Cl. 256—31

1. The crowd control barrier, comprising:



- a plurality of elongated rectangular substantially congruent modular fence panels having end posts disposed in panel end abutting relation with respective adjacent fence panels; each panel of said plurality of panels comprising:
- an open frame having upright parallel tubular posts forming frame end members and having longitudinal upper and lower tubular rails respectively connected at respective ends with the ends of said posts;
- a coextensive section of fence fabric having marginal edge portions secured to perimeter portions of said frame;
- a base platform having a longitudinal edge longitudinally hinged to the lower rail of each said fence panel on the fence fabric side thereof;
- a first plurality of sleeves secured in vertically spaced axially aligned relation to one said post on its surface opposite said fence fabric;
- a second plurality of sleeves secured in vertically spaced axially aligned relation to the other said post within said frame on the surface of the other said post confronting said one post;
- knee brace means including a standard adjacent the surfaces of said abutted fence panel end posts opposite the fence fabric;
- said knee brace means comprising:
- a base member orthogonally connected with the depending end of said standard and protecting opposite the base platform on the respective said fence panel;
- a knee brace extending between said base member and said standard;
- other sleeves secured to said standard adjacent and in cooperative vertically spaced axial alignment with said first and said second plurality of sleeves; and
- pins axially extending through said adjacent axially aligned sleeves of said standard and said posts.

5,779,228

ANTI-SLIP HAND RAIL

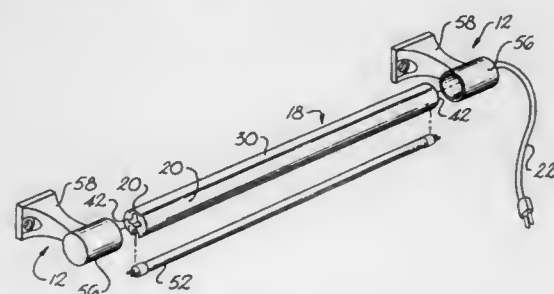
Randall C. Hansen, 6 Old Mill Ct., Columbia, S.C. 29206

Filed Aug. 3, 1996, Ser. No. 704,884

Int. Cl.⁶ E04F 11/18

U.S. Cl. 256—65

22 Claims



1 Claim

1. A vehicle hand rail assembly, said hand rail assembly comprising:

an elongated bar, a first section of said bar defining a gripping area and a second section of said bar defining a longitudinal cavity configured to longitudinally slidably receive and radially retain at least one light element longitudinally disposed along said bar so that the light element is easily removable from said elongated bar; and

at least one mounting member securing said bar in position with respect to a surface of the vehicle.

5,779,230

METHOD OF MAKING A COMPOSITE BUTTON OF AN ELECTRICAL DEVICE

Junichi Nakao, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

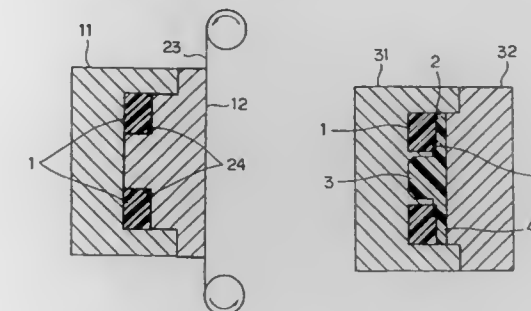
Filed Jun. 6, 1996, Ser. No. 659,187

Claims priority, application Japan, Jun. 6, 1995, 7-162900

Int. Cl.⁶ B29C 45/16

U.S. Cl. 264—130

5 Claims



5,779,229

CABLE TRAY ASSEMBLY INCLUDING A PULLING MECHANISM

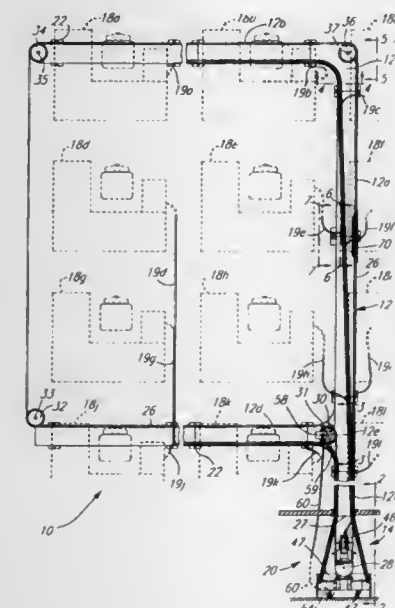
Gilles Lirette, 2528, Avenue de la Falaise, Sillery, Québec, Canada, G1T 1W3

Filed Dec. 6, 1996, Ser. No. 761,490

Int. Cl.⁶ H02G 1/08

U.S. Cl. 254—134.3 FT

16 Claims



1. A cable tray assembly for supporting at least one cable, comprising:

- a tray member for supporting said at least one cable; said tray member defining a predetermined path; and
- a cable pulling mechanism including:
- a pulling rope defining a closed circuit and including a securing element for securing said at least one cable to said pulling rope; and
- pulling rope mounting means for mounting said pulling rope longitudinally movable with at least a portion of said pulling rope extending along said predetermined path;
- wherein, in operation, said at least one cable is secured to said pulling rope through said securing element and is pulled along said predetermined path by longitudinally moving said rope in order to displace said securing element along said predetermined path from a first location to a second location while said at least one cable is supported by said tray member.

5,779,231

VIBRATION-ISOLATING MOUNT DEVICE

Koji Okazaki, Yasuji Nozawa, Masaki Ueyama, Masakazu Kinoshita, and Hidetaka Ozawa, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 861,467, May 21, 1997, abandoned, which is a continuation of Ser. No. 622,922, Mar. 27, 1996, abandoned, which is a continuation of Ser. No. 232,905, Apr. 27, 1994, abandoned. This application Oct. 24, 1997, Ser. No. 960,086

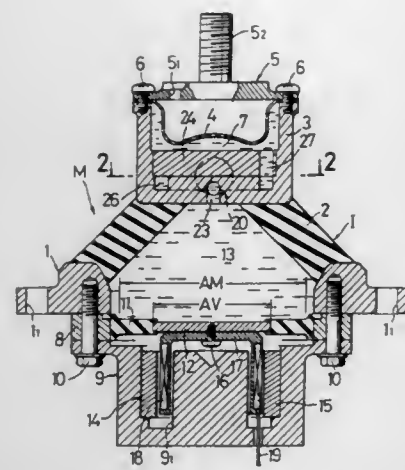
Claims priority, application Japan, Apr. 28, 1993, 5-102448; Apr. 11, 1994, 6-072272

Int. Cl.⁶ F16F 5/00; F16M 5/00

U.S. Cl. 267—140.14

11 Claims

1. A vibration-isolating mount device for isolating an engine from a vehicle frame, comprising:
- a first mounting member fixable to the engine;
- a second mounting member fixable to the vehicle frame;
- an intermediate member interconnecting the first and second mounting members;
- said intermediate member having an outer shell formed, at least in part, of an elastomer, and having a primary fluid chamber with a fluid sealedly charged therein and a subsidiary fluid chamber;
- a movable plate connected to actuator means and forming a portion of said primary fluid chamber;
- damping characteristic varying means for varying the damping characteristic of said intermediate member, including a first fluid passage, and a second fluid passage, extending between



said primary fluid chamber and said subsidiary fluid chamber, said first fluid passage being shorter than said second fluid passage;

the first fluid passage of the damping characteristic varying means having a liquid column resonance characteristic providing a substantial difference in phase between an input and a displacement in a shake vibration frequency region, to damp vibration;

the second fluid passage being longer than the first fluid passage and having a liquid column resonance characteristic providing a substantial difference in phase between an input and a displacement in a frequency region lower than said shake vibration frequency region thereby keeping the spring constant of the mount device at a substantially high, stabilized level;

means for selecting said first fluid passage and closing off said second fluid passage, during normal travel of the vehicle, and for selecting said second fluid passage and closing off said first fluid passage, during low speed travelling of the vehicle or when the engine is idling

means for moving the movable plate independently of selection of the first or second fluid passages and operated by said actuator means to control a variation in fluid pressure within said primary fluid chamber, for controlling expansion and compression of said vibration-isolating mount device to damp vibration transmitted from the engine toward the vehicle frame.

5,779,232

METHOD AND DEVICE FOR THE PRODUCTION OF A LONGITUDINAL FOLD

Rudolf Phillip Öchsner, Beindersheim, Germany, assignor to Koenig Bauer-Albert Aktiengesellschaft, Würzburg, Germany

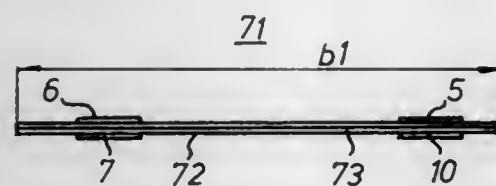
Filed Jun. 24, 1996, Ser. No. 663,259

Claims priority, application Germany, Dec. 24, 1993, 43 44 603.5

Int. Cl.⁶ B42C 1/00; B31F 1/00

U.S. Cl. 270—45

34 Claims



1. A method for producing a fold in a signature including the steps of:

clamping a signature on the left and right of an intended fold line between upper and lower conveyor belts;
feeding said clamped signature along a signature transport path in a signature transport direction;
placing a signature pre-folding device in said signature transport path;
passing said clamped signatures through said pre-folding device; forming a prefold in said clamped signatures during passage through said pre-folding device;
locating a signature longitudinal folding device along said signature transport path after said pre-folding device;
providing first and second spaced rotary folding rollers in said longitudinal folding device, said spaced folding rollers defining an inlet wedge area and having a folding roller gap;
positioning said spaced rotating folding rollers with rotational axes parallel with said folding roller gap;
providing a pushing device acting perpendicularly with respect to said transport direction of said signatures for moving said signatures into said inlet wedge area and for pressing said signatures into said folding roller gap;
supplying said signatures to said longitudinal folding device already prefolded by said pre-folding device;
moving said pre-folded signatures into said folding roller gap by using said pushing device; and
transporting said pre-folded signatures through said folding roller gap by rotation of said folding rollers to create a final fold in said pre-folded signatures.

5,779,233

DEVICE AND METHOD FOR COMBINING AND PROCESSING SEVERAL PAPER WEBS

Joseph Schweiger, Vaduz, Liechtenstein, assignor to Branstal Printing Participation Establishment, Vaduz, Liechtenstein
PCT No. PCT/EP95/01402, § 371 Date Oct. 15, 1996, § 102(e)
Date Oct. 15, 1996, PCT Pub. No. WO95/28345, PCT Pub. Date Oct. 26, 1995

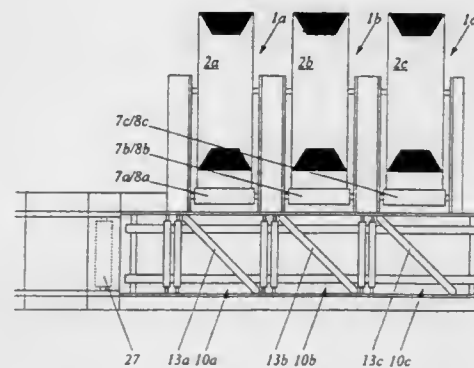
PCT Filed Apr. 13, 1995, Ser. No. 727,402

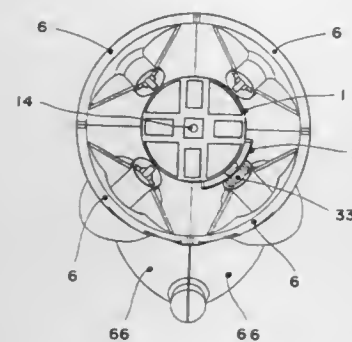
Claims priority, application Switzerland, Apr. 13, 1994, 1099/94

Int. Cl.⁶ B65H 39/00

U.S. Cl. 270—52.07

12 Claims





parts (3) and said fixed support part (4) being selectively guided and retained on the nucleus by the guidance organs, said support parts being equipped with pin means (33, 43) externally directed relative to the nucleus for receiving the eight external members (6), each external member being generally equivalent to an octant of a defined predetermined object, and a retractable bumper element (5) mountable on the nucleus diametrically opposed to the position of the fixed support part.

5,779,239

CHIP-A-TAK BOARD AND DICE GAME

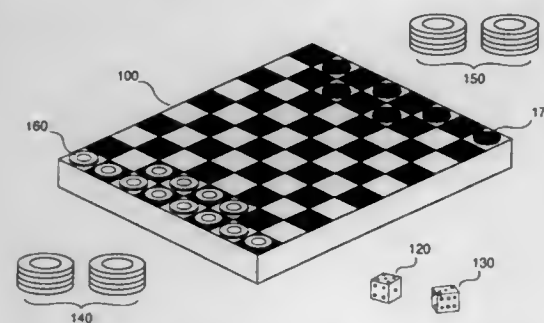
Fenwick E. Lind, 6 Horne Rd., P.O. Box 848, Windham, N.H. 03087

Filed Mar. 6, 1997, Ser. No. 812,779

Int. Cl.⁶ A63F 3/00

U.S. Cl. 273—260

15 Claims



1. In a board game comprising a board having aligned vertical and horizontal rows including diagonal rows of playing spaces of alternating colors, a plurality of playing pieces of two different colors, each color provided for a corresponding player, and a means for generating at least one random number, a method of play comprising the steps of:

each corresponding player taking an alternate turn, each turn comprising the steps of:
generating a random number with the means for generating at least one random number,

moving at least one of the plurality of playing pieces of a color corresponding to the corresponding player a number of spaces equal to or less than the random number, wherein the total spaces moved by all of the at least one of the plurality of playing pieces during a turn is equal to the random number.

5,779,240

WATER FORTRESS

Andrew W. Santella, 81 Mercer St., Hamilton, N.J. 08690

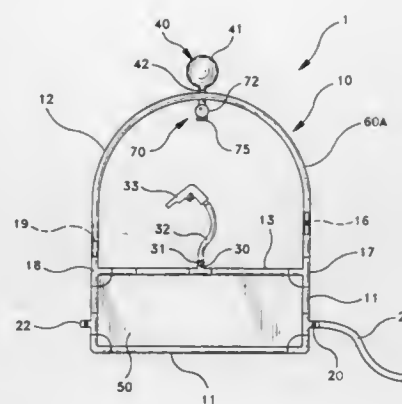
Filed Jun. 20, 1997, Ser. No. 879,585

Int. Cl.⁶ A63F 9/02

U.S. Cl. 273—349

20 Claims

1. A water fortress apparatus, comprising:



- a frame defining a space capable of retaining a player therein, the frame comprising hollow members which are capable of internal water flow;
- a water connection in water communication with the hollow members, permitting pressurized water flow in and through the hollow members;
- a target mounted to the frame comprising means for releasing pressurized water from the frame when the target is activated;
- a water gun supply port capable of dispensing water from the hollow members; and
- a water gun detachably connected to the water gun supply port.

5,779,241

APPARATUS AND METHOD FOR MEASUREMENT OF POSITION AND VELOCITY

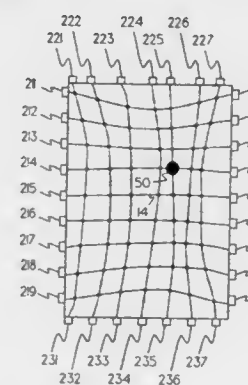
Joseph F. D'Costa, 700 10th Ave. SE., #8, Minneapolis, Minn. 55414; Arthur G. Erdman, 1957 3rd St. SW., New Brighton, Minn. 55112, and Timothy A. Rodgers, 75 W. Golden Lake Rd., Circle Pines, Minn. 55014

Filed Jun. 2, 1995, Ser. No. 460,117

Int. Cl.⁶ A63B 57/00

U.S. Cl. 273—371

63 Claims



1. An apparatus for determining position and velocity of an object at impact, comprising:

- a frame having a plurality of sensor mounts and an outer edge;
- a plurality of sensor modules wherein one of the plurality of sensor mounts attaches a corresponding sensor module to the outer edge of the frame;
- a means for capturing an object wherein the means for capturing an object is located within the frame and attached to the plurality of sensor modules by a plurality of cords;
- a plurality of stops wherein one of the plurality of stops is attached to a corresponding one of the plurality of cords, wherein the plurality of stops provide a resting position for the apparatus at a predetermined point; and

- a controller attached to receive electronic signals from the plurality of sensor modules, wherein the controller determines at least one kinematic parameter.

5,779,242

METHOD FOR PLAYERS TO PLAY A TOURNAMENT OF GAMES WHERE GAME SCORES ARE OBTAINED

Michael A. Kaufmann, Henderson, Nev., assignor to Boyd Gaming Corporation, Las Vegas, Nev.

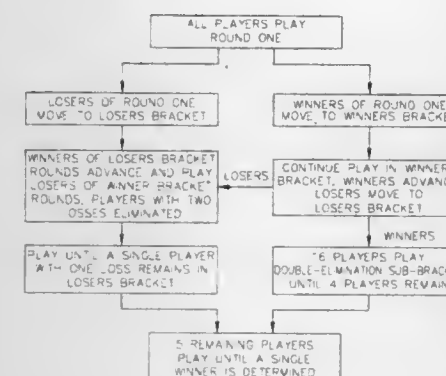
Continuation of Ser. No. 374,839, Jan. 19, 1995, abandoned.

This application Feb. 7, 1997, Ser. No. 796,594

Int. Cl.⁶ A63B 67/00

U.S. Cl. 273—459

30 Claims



1. A method for multiple players to play a tournament of games where scores are obtained comprising:

- ascertaining the number of players for the tournament;
- determining from the number of players the number of rounds to be played in a winners bracket and a losers bracket;
- the players playing an initial game;
- using approximately the median score of the players of the initial game to declare approximately half of the players winners and half losers of the initial round, said declared winners advancing to the winners bracket and the declared losers falling to play in the losers bracket;

in the winners bracket, the advancing field of players playing the game in each round to each obtain a score, using the players' individual scores to determine a dividing score to divide the field of each round into winners having individual scores at or above said dividing score and the remainder losers, the winners advancing to fill the next round in the winners bracket and the losers falling to the losers bracket;

in the losers bracket, the advancing field of players and those declared losers from each round in the winners bracket merging and playing the game at a predetermined round in the losers bracket to each obtain a score, using the players' scores to determine a score to divide the field of each round in the losers bracket into winners and losers, the declared winners advancing to the next round in the losers bracket to play with players falling from the winners bracket and merged into said next round, if any, and eliminating the losers of the round in the losers bracket from the tournament;

playing corresponding rounds in the winners and losers brackets to advance at least one player from the winners bracket having not once been declared a loser and one player from the losers bracket having only once been declared a loser and eliminating the remainder of players, said advancing players playing to determine the tournament champion.

5,779,243

PISTON RING SET FOR RECIPROCATING ENGINES

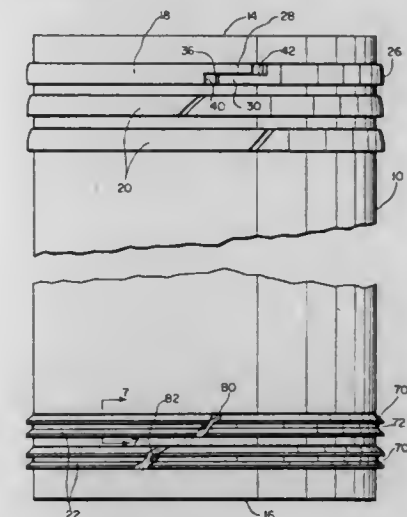
Paul C. Hanlon, Shepherdsville, Ky., assignor to Delaware Capital Formation, Inc., Wilmington, Del.

Filed Nov. 21, 1996, Ser. No. 753,220

Int. Cl.⁶ F16J 9/14; 9/20; 9/28

U.S. Cl. 277—216

15 Claims



1. A set of rings for a piston of an internal combustion engine, a series of rings comprising

a split top ring including an annularly shaped resilient first member sized for confinement in and around a first radially outwardly opening annular groove formed in and around a surface portion of an internal combustion engine piston relatively near an upper end thereof, said first member projecting radially out of said first piston groove for slidably bearing against a surrounding engine cylinder wall, said first member forming a lap joint between a first end portion and a second end portion thereof, said first end portion having an inverted L-shaped structure defining a circumferentially extending notch in and along a lower outer surface portion thereof, said second end portion having an axial dimension sized for close fitting within and along said notch between an overlapping surface of said first end portion and a lower surface portion of said first piston groove and having a radial dimension which is less than the radial dimension of said notch for defining a fluid passageway between opposing axially extending surfaces of said first end portion and said second end portion, said passageway extending between and communicating with a downwardly opening slot between said end portions which is located at a first end of said lap joint and an upwardly opening slot which is located at a second end of said lap joint; at least one split intermediate ring including a second annularly shaped resilient member sized for confinement in and around a second radially outwardly opening annularly shaped groove formed in and around a surface portion of said piston which is axially spaced below said first groove, said second member also being sized to project radially out of said second piston groove for slidably bearing against said cylinder wall, said second member defining an arc shaped outer surface for slidably bearing against said cylinder wall, wherein a first radial dimension of said second member, as measured in and along a plane containing a lower surface of said second member, is greater than a second radial dimension of said second member as measured in and along a plane containing an upper surface of said second member; and at least one split scraper ring including a third resilient annularly shaped member sized for confinement in and around a third radially outwardly opening annularly shaped groove formed in and around a surface portion of said piston which is spaced below said second groove and which is sized to project radially out of said third groove for slidably bearing against said cylinder wall, said third member including at least one radially outwardly projecting skirt defining an upper surface.

an axially extending outer surface and a lower surface, said upper, outer and lower surfaces containing a continuous friction reducing outer coating having a thickness of from about 0.0005 inches to about 0.002 inches.

5,779,244

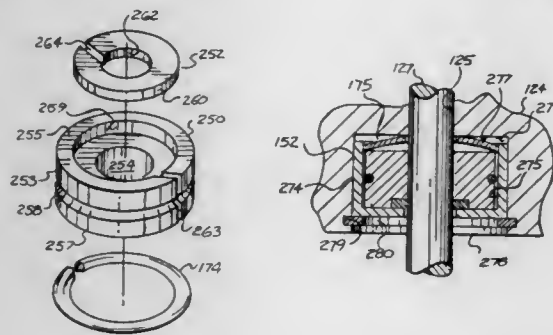
SEAL APPARATUS

Maurice J. Moriarty, 70 Clark Rd., Rye, N.H. 03870, and Joseph E. Whitesell, 9 E. Calavar, Moon Valley, Ariz. 85022 Division of Ser. No. 111,371, Aug. 23, 1993, Pat. No. 5,618,048, which is a continuation-in-part of Ser. No. 774,054, Oct. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 538,886, Jun. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 267,542, Nov. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 172,657, Mar. 24, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 475,490

Int. Cl.⁶ F16J 15/56

U.S. Cl. 277—311

6 Claims



1. A method for sealing a shaft to a body having a bore in which said shaft is moveably disposed, said method comprising: providing a seal assembly for sealingly receiving said shaft therethrough, the seal assembly including: a first annular member having first and second opposed radial surfaces, an outer surface for residing adjacent the body, and a contact surface for engagement with the shaft; a second annular member having first and second opposed radial surfaces, the first radial surface for residing in juxtaposition with the first annular member, and a contact surface for engagement with the shaft; a first end gap severing the first annular member along a slanted line which is angularly disposed to intercept a radial line of the first annular member and parallel to a plane defined by the first radial surface of the first annular member, the first end gap separating a first end and a second end of the first annular member which is continuous therebetween; and a second end gap severing the second annular member, the second end gap separating a first end and a second end of the second annular member which is continuous therebetween; forming a recess into said body in axial alignment with said bore; placing said seal assembly into said recess; and retaining said seal assembly in said recess.

5,779,245

ROLLER SKATE LOCK

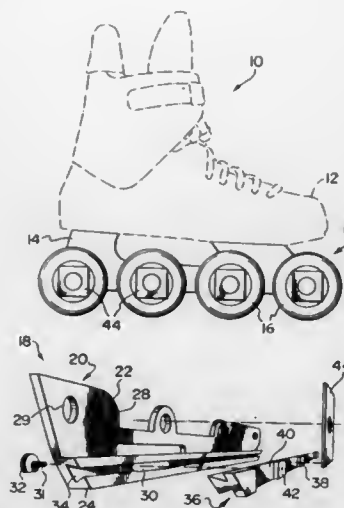
Lyndon Smith, 32 Lankin Blvd., Orillia, Ontario, Canada, L3V 6T2; Charles Johnson, 101 Front Street South, Orillia, Ontario, Canada, L3V 4S5, and Sean Finucan, 142 Mississauga Street, Apt. 3, Orillia, Ontario, Canada, L3V 3B2 Filed Jun. 13, 1996, Ser. No. 662,973

Int. Cl.⁶ A63C 17/14

U.S. Cl. 280—11.2

6 Claims

1. A locking roller skate, comprising:



a roller skate having a plurality of wheels and a chassis for supporting each wheel of said wheels, each wheel of said wheels including a hub projection having at least three sides; a selectively engageable and releasable locking system for locking said wheels against rotation, said locking system including a slidably mounted abutment member having a plurality of abutments and recesses in alternation, said recesses configured to receive hub projections when said abutment member is moved from a storage position out of contact with said hub projections to a use position where said recesses each receive a respective projection for locking said wheels in a fixed position; mounting means for slidably mounting said abutment member on said chassis; and frictional securing means connected to said abutment member and said mounting means for securing said abutment member against movement relative to said mounting means when said abutment member is in a storage position.

5,779,246

SKATE

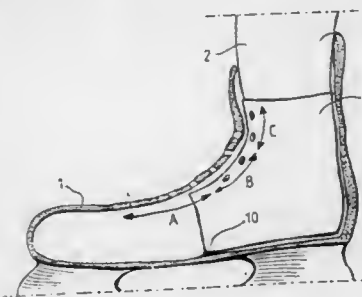
Kent Bengtsson, Örebro, Sweden, assignor to Örebro Skenan Aktiebolag, Örebro, Sweden PCT No. PCT/SE94/01102, § 371 Date Jun. 3, 1996, § 102(e) Date Jun. 3, 1996, PCT Pub. No. WO95/15095, PCT Pub. Date Jun. 8, 1995

PCT Filed Nov. 18, 1994, Ser. No. 646,334

Claims priority, application Sweden, Dec. 3, 1993, 9304037 Int. Cl.⁶ A63C 3/02

U.S. Cl. 280—11.12

6 Claims



1. An ice skate, comprising an outer shoe (1), a skate blade attached to sole of the outer shoe, and an inner shoe (9) disposed within the outer shoe and which embraces at least the rear part of a user's foot, including heel and ankle, wherein the inner shoe is so fitted in the outer shoe as to be pivotal about an axis (10) which extends transversely across the inner sole of the outer shoe and forwardly of the ankle joint; and a part of the sole of the inner shoe located rearwardly of the pivot axis is free in relation to the inner

sole of the outer shoe such that the rear part of the inner shoe is able to accompany and guide the foot with limited upward movement of the heel part of the foot, and wherein the inner shoe is secured to the inner sole of the outer shoe along a transverse line which coincides with the pivot axle.

5,779,247

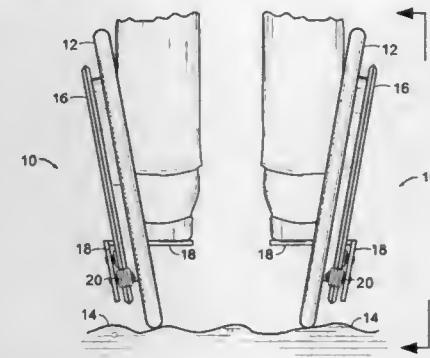
WHEELED ALL TERRAIN RECREATIONAL DEVICE

Anthony Gray Anselmo, 177 Main St., Harwich, Mass. 02645 Filed May 3, 1996, Ser. No. 642,695

Int. Cl.⁶ A63C 17/08

U.S. Cl. 280—11.24

17 Claims



1. A recreational device for use by a person to traverse a terrain surface comprising: (a) a wheel member; (b) a track member engaged with said wheel member and comprising a first bearing surface and a second bearing surface, said track member is spaced outward, apart from and positioned substantially adjacent to said wheel member, said track member is parallel to said wheel member; (c) a foot plate member adapted to carry and support the person; and (d) first and second bearing members extending from said foot plate member, said first bearing member being engaged with said first bearing surface of said track member and said second bearing member being engaged with said second bearing surface of said track member, whereby said track member rotates about said foot plate member when said wheel member is rolled upon the terrain surface.

5,779,248

WHEELED CHILD CARRIER

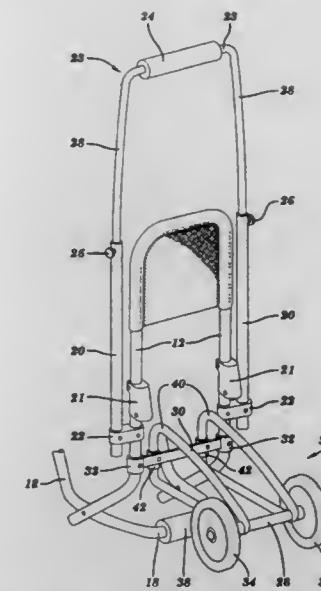
Nancy Gold, Schenectady; Carl Legere, Charlton; Christine Gauss, Scotia, and Charles Howarth, Schenectady, all of N.Y., assignors to Tough Traveler, Ltd., Schenectady, N.Y. Filed Aug. 11, 1995, Ser. No. 514,116

Int. Cl.⁶ B62B 9/12

U.S. Cl. 280—30

14 Claims

1. A child carrier convertible for use between a non-wheeled back-supported child carrier and a wheeled child carrier, comprising: a frame assembly including front and rear tubular frame portions pivotally connected at lower ends thereof; a child seat supported between the frame portions; a shoulder harness for attaching the front frame portion to a person's back; a removable handlebar assembly having: a handlebar with at least one vertical leg and a push bar adapted to be gripped by a user, and at least one mounting device for releasably connecting said at least one vertical leg of said handlebar to said rear frame portion;



5,779,249

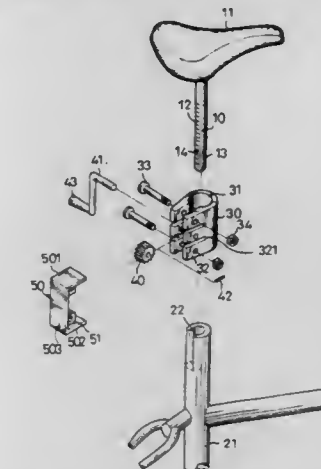
SEAT HEIGHT ADJUSTING MEANS OF A BICYCLE Gin-ding Lin, No. 27, Hsiping Lane, Tsengtso Village, Hsiushui Hsiang, Changhua Hsien, Taiwan

Filed Sep. 3, 1996, Ser. No. 707,174

Int. Cl.⁶ B62K 19/36

U.S. Cl. 280—287

5 Claims



1. A seat height adjusting means comprising: a seat post having one end thereof connected to a seat and a rack section defined in an outer periphery of said seat post; a tube having a first end and a second end which has a slot defined longitudinally therein; a clamp member having a C-shaped configuration and a passage defined longitudinally therein, said clamp member having two end sides and each one of said two end sides having an extending plate extending therefrom; a pinion received between said two extending plates and a crank extending through said two extending plates and being fixedly connected to a center of said pinion, and

said tube is securely clamped in said passage and said seat post is slidably received in said tube by an engagement between said pinion and said rack section of said seat post via said slot.

5,779,250

PREPARING A BOAT FOR USE

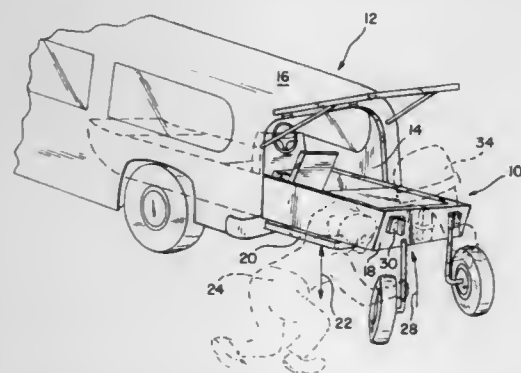
John J. Becht, P.O. Box 441, Southold, N.Y. 11971

Filed Nov. 19, 1996, Ser. No. 751,973

Int. Cl.⁶ B60P 3/10; B62B 11/00; B60R 27/00

U.S. Cl. 280—414.2

1 Claim

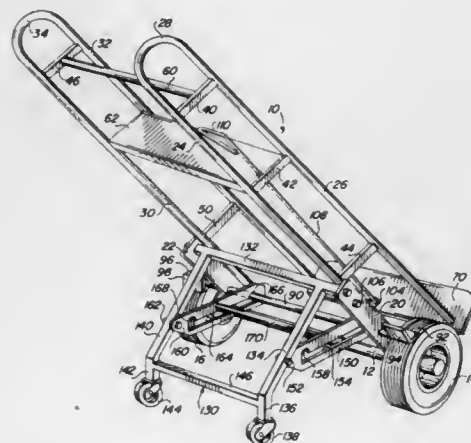


1. Improvements in a method of preparing a boat for boating service, said boat being of a type having a rear transom and characterized by a nominal weight contributing to the transport of said boat from a site of storage to a site of use adjacent a body of water into which said boat provides said boating service, said method comprising the steps of attaching to said transom in spaced-apart relation a pair of cylindrical connecting members bounding a circular rod-receiving opening and each having opposite pin-receiving openings in horizontal alignment with each other, constructing for transport with said boat pair of wheel means each comprised of a rod of a selected vertical size when used in a vertical orientation having a horizontally oriented axle attached to the bottom end of said rod and having journaled for rotation on said axle a wheel, said axle being projected through a hub of said wheel and pinned using an inboard pin means to hold said wheel in place, and having a pin-receiving through bore adjacent an upper end of said rod, transporting in a condition supported from below said boat on a vehicle from said site of storage to said site of use, moving said boat transom in an overhanging relation to said vehicle to establish beneath said transom-attached cylindrical connecting members a working clearance exceeding that of said vertical size of said rod of said wheel means, moving said rods in said working clearance so as to cause an interengagement of said rod upper ends within said cylindrical connecting members and an alignment of said pin-receiving respective connecting members openings and upper end rod through bore, attaching said wheel means to said overhanging boat transom using outboard pin means seated in said pin-receiving respective connecting members openings and upper end rod through bore, transporting manually said boat of said attached wheel means into said adjacent body of water to a level exceeding said vertical size of said rod wheel means, and detaching said wheel means from said body by withdrawing said pin mean and urging said rods in descending movement clear of said cylindrical connecting members, whereby there is minimal effort required of the user in providing working clearance in the attaching and detaching of said wheel means incident to the placement of said boat in boat service-rendering condition.

5,779,251
BRAKE AND RETRACTABLE REAR STABILIZER
APPARATUS FOR A HAND DOLLY
James W. Meier, 2538 W. Townley, Phoenix, Ariz. 85021
Continuation of Ser. No. 179,259, Jan. 10, 1994, abandoned.
This application Jun. 18, 1996, Ser. No. 666,607
Int. Cl.⁶ B62B 1/08

U.S. Cl. 280—47.2

8 Claims



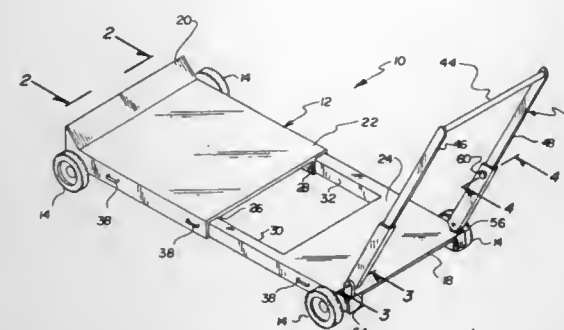
1. Dolly apparatus comprising in combination:
a platform for supporting an article to be moved;
a first pair of wheels secured to the platform means for moving the platform and the article;
handle means secured to the platform and to the pair of wheels for grasping by a user to move the dolly apparatus; and
means for stabilizing the platform, including a frame secured to and pivotal on the handle means adjacent to the platform between an up, storage, position and a down, use, position, including
a cross beam pivotally secured to the handle means adjacent to the platform,
a pair of legs secured to the cross beam,
a pair of links pivotally secured to the pair of legs and each link of the pair of links includes a first means for securing the frame in the up, storage, position, including a first detent on each link, and a second means for securing the frame in a down, use, position, and
a rotatable shaft secured to the frame and extending into the first detent on each link to secure the frame in the up position; and
brake means for contacting the first pair of wheels in response to rotation of the shaft, including plate means secured to the shaft for contacting the first pair of wheels in response to rotation of the shaft.

5,779,252
COOLER CADDY
Albert Bolton, Jr., 2650 E. 73rd St., Chicago, Ill. 60649
Filed Feb. 5, 1996, Ser. No. 599,532
Int. Cl.⁶ B62B 3/02

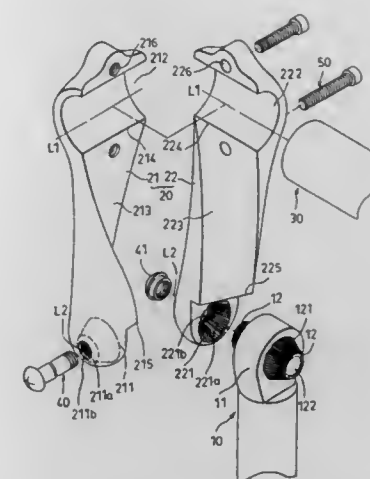
U.S. Cl. 280—47.371

1 Claim

1. A new and improved cooler caddy comprising:
a cooler;
a support platform, said support platform being selectively lengthwise adjustable so as to be able to accept said cooler of a specific length;
handle means pivotally attached to said support platform by way of a rivet, the handle means including a pair of telescoping arms each with a rotatable threaded lock screw which extends through each of the arms so as to effect a lengthwise locking function via friction;
first lock means for locking said support platform at a precise chosen length;
and

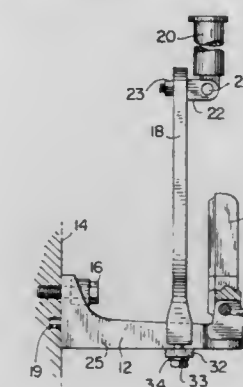


second lock means for locking said support platform at said precise chosen length when said cooler is positioned thereon, said second lock means also fixedly securing said cooler to said support platform;
wherein said support platform comprising a first platform having a second platform telescopically positioned therein, said second platform being slidable in and out of said first platform to adjust said precise chosen length of said support platform with the first platform having aligned and oppositely disposed rectangularly-shaped channels along the sides thereof and the second platform having rectangularly-shaped arms telescopically received with the channels;
wherein said first lock means comprises at least one threaded member which can be rotated into a position which prevents relative movement between said first platform and said second platform, said first lock means being useable to lock said support platform at a chosen length when said cooler is not positioned thereon;
wherein said second lock means includes at least one strap designed to overlie said cooler when said cooler is positioned on said support platform, said at least one strap being operable to hold said cooler in a tight abutting relationship to said first platform and said second platform, thereby to prevent relative movement between said first platform and said second platform, said at least one strap being tied to said support platform by way of a plurality of metallic tiedown-receiving hooks;
wherein said first lock means and said second lock means can be used concurrently to prevent relative movement between said first platform and said second platform;
wherein said support platform includes an upwardly directed, angulated brace which serves to prevent said cooler from sliding off of said support platform, said brace being sloped rearwardly of said handle means, thereby to also function as a guiding surface for placing said cooler on and removing said cooler from said support platform;
wherein said caddy includes a storage compartment for said second lock means with said storage compartment being formed in said brace of said support platform, the storage component being equipped with a hinged door.



one of said pivot end portion of each of said holding arms and said positioning member being formed with a pivot projection that is received in said pivot hole to mount pivotally said pivot end portion of each of said holding arms on said positioning member, said gripping end portion of each of said holding arms being formed with a grip section with an axis that is parallel to an axis of said pivot hole, said grip sections of said holding arms being adapted to grip fittingly the handlebar therebetween, said abutment faces of said holding arms being complementary and being formed as twisted faces that abut against each other;
a first fastener extending through said pivot end portion of each of said holding arms and said positioning member to mount said holding member onto said positioning member; and
a second fastener extending through said holding arms on one side of said grip section to secure said holding member on the handlebar.

5,779,254
MOTORCYCLE FOOTREST
Raymond H. James, Menomonee Falls, and Gene W. Squire, Pewaukee, both of Wis., assignors to Squire & James, Ltd., Menomonee Falls, Wis.
Filed Apr. 5, 1996, Ser. No. 626,137
Int. Cl.⁶ B60R 3/00; B62H 1/08; G05G 1/18; B62J 25/00
U.S. Cl. 280—291 9 Claims



5,779,253
MOUNTING DEVICE FOR MOUNTING ADJUSTABLY A
HANDLEBAR ON A HEAD TUBE OF A BICYCLE
Kun-Ho Lee, Taichung Hsien, Taiwan, assignor to Giant Manufacturing Co., Ltd., Taiwan
Filed Aug. 23, 1996, Ser. No. 709,194
Int. Cl.⁶ B62K 21/18; 21/24

U.S. Cl. 280—279

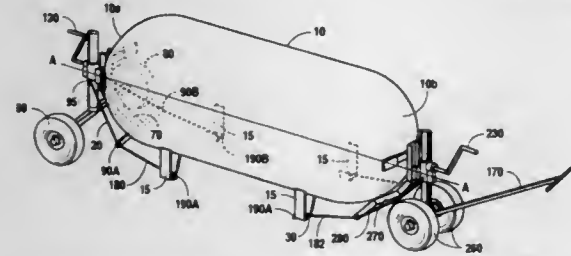
5 Claims

1. A mounting device for mounting a handlebar on a head tube of a bicycle, said mounting device comprising:
a positioning member adapted to be mounted on the head tube;
a holding member including complementary first and second holding arms, each of which has a pivot end portion, a gripping end portion and an abutment face which extends between said pivot and gripping end portions, one of said pivot end portion of each of said holding arms and said positioning member being formed with a pivot hole, the other

1. In a passenger footrest assembly for a motorcycle which comprises a frame, a footrest support member extending laterally from said frame and a first footrest supported by and at a distal end portion of said support member: the improvement comprising an elongated arm arranged to support an alternate footrest extending laterally from a distal end portion of said elongated arm, said elongated arm arranged to be supported by and extending upwardly and forwardly from said footrest support member and to be positioned thereon and relative to said frame and said first footrest; and wherein said footrest support member includes, for at

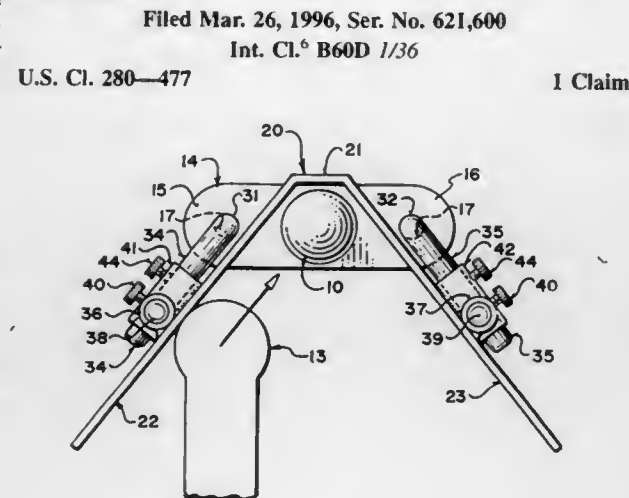
least a portion of its length, a torque resisting cross-sectional geometric configuration having a top linear surface and oppositely disposed linear surfaces depending downwardly from said top linear surface, the lower supporting end of said elongated arm defining a mating, open-ended, torque-resisting cross-sectional surface configuration arranged for supporting engagement with said footrest supporting member, said open-ended surface defining substantially identical matching top and downwardly depending linear surfaces, and means for securing said elongated arm to said footrest support member.

5,779,255
VESSEL TRANSPORT CARRIER AND METHOD FOR TRANSPORTING SUCH VESSEL
Daniel C. Garcia, Jr., P.O. Box 399, Cotulla, Tex. 78014
Filed May 29, 1996, Ser. No. 654,525
Int. Cl.⁶ B60P 3/022
U.S. Cl. 280—404



1. A transport carrier for a vessel having a first longitudinal axis, a first end and a second end comprising:
 - a first support carriage having
 - a first frame member;
 - a first axle pivotally attached to said first frame member, and
 - first and second rotatable wheels affixed to said first axle;
 - a first arcuate support yoke, said first arcuate yoke further comprising:
 - a first downwardly depending arcuate lift arm extensible beneath said first end of said vessel;
 - a first arcuate holding arm extending transversely across an upper end portion of said first lift arm;
 - a first cross member extending transversely across a lower end portion of said first lift arm, said first cross member extensible beneath said first end of said vessel;
 - a first means for elevating said first arcuate support yoke along the length of said first frame member, said first elevating means attached to said first support arcuate yoke and said first frame member; and
 - a first means for removably attaching said first arcuate support yoke to said vessel;
 - a second support carriage having
 - a second frame member;
 - a second axle attached to said second frame member, and third and fourth rotatable wheels affixed to said second axle;
 - a second arcuate support yoke, said second arcuate yoke further comprising:
 - a second downwardly depending arcuate lift arm extensible beneath said second end of said vessel;
 - a second arcuate holding arm extending transversely across an upper end portion of said second lift arm;
 - a second cross member extending transversely across a lower end portion of said second lift arm, said second cross member extensible beneath said second end of said vessel;
 - a second means for elevating said second arcuate support yoke along the length of said second frame member, said second elevating means attached to said second arcuate support yoke and said second frame member;
 - a second means for removably attaching said second arcuate support yoke to said vessel; and
 - said first and second support carriages cooperating to transport said vessel when said vessel is disposed between and removably attached to said first and second arcuate support yokes.

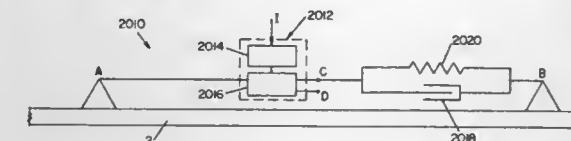
5,779,256
HITCH GUIDE FOR GUIDING A HITCH COUPLING OF A TRAILER INTO ALIGNMENT WITH A HITCH BALL
Theodore W. Vass, Box 91, Lestock Saskatchewan, Canada, S0A 2G0
Filed Mar. 26, 1996, Ser. No. 621,600
Int. Cl.⁶ B60D 1/36
U.S. Cl. 280—477



1. A hitch assembly for mounting on a towing vehicle for engagement with a hitch coupling of a trailer, the assembly comprising:
 - a hitch ball;
 - a horizontal mounting plate for the hitch ball having a pair of side plate wings extending outwardly to respective sides of the ball, each side plate wing having a vertical hole therethrough which is circular in plan at a position on the wing such that the ball and the holes are substantially aligned across the mounting plate;
 - and a hitch guide for guiding the hitch coupling into alignment with the hitch ball, the hitch guide comprising:
 - a generally V-shaped guide member having a vertical base plate and two vertical side plates;
 - and mounting means for mounting the guide member on the trailer hitch so that the base plate and two side plates lie generally in a horizontal orientation with the base plate in front of the ball and the two side plates extending rearwardly and outwardly to respective sides of the ball so as to engage the hitch coupling and guide the hitch coupling toward the base plate as the towing vehicle is moved toward the hitch coupling;
 - the mounting means comprising:
 - a pair of cylindrical vertical pins each arranged to be readily releasable and reengageable in a respective one of the circular holes;
 - a pair of horizontal support arms each attached to and extending rearwardly and outwardly from an upper end of a respective one of the pins;
 - a pair of horizontal first sleeves, each mounted on a respective one of the arms for sliding movement therealong;
 - a pair of vertical posts which are circular in cross-section each carried on a respective one of the first sleeves;
 - and a pair of vertical second sleeves each attached to a respective one of the side plates and each defining a cylindrical bore receiving a respective one of the posts for sliding movement therealong.

1 Claim

5,779,257
AUTOMATIC DAMPING/STIFFENING SYSTEM
Duane J. Bonvallet, Ann Arbor, Mich.; Jeffrey R. Bonvallet, Black Forest, and John C. Bonvallet, Boulder, both of Colo., assignors to Marker Deutschland GmbH, Eschenlohe, Germany
Continuation-in-part of Ser. No. 568,156, Dec. 6, 1995, Pat. No. 5,681,054. This application Apr. 26, 1996, Ser. No. 639,190
Int. Cl.⁶ A63C 5/07
U.S. Cl. 280—602



1. A system for damping vibrations in a ski, the ski vibrating as the skier travels on an irregular surface, said system comprising:
 - a first member extending generally longitudinally on a ski, said first member having a fixed portion fixed longitudinally to the ski and a free portion movable relative to the ski as the ski vibrates;
 - a second member spaced longitudinally from said first member on the ski, said second member having a fixed portion fixed to the ski and at least one movable portion;
 - damping means operatively connected to the free portion of said first member and the least one movable portion of said second member, and having an active condition for damping longitudinal motion between the fixed portion of said first member and the fixed portion of said second member, and an inactive condition for permitting free longitudinal motion therebetween; and
 - switch means for switching said damping means to the active condition in response to a threshold force exceeding a predetermined value exerted by a skier's boot in response to shifting of the skier's body during skiing maneuvers, and for switching said damping means to the inactive condition when the threshold force is below the predetermined value.

11 Claims

U.S. Cl. 280—618

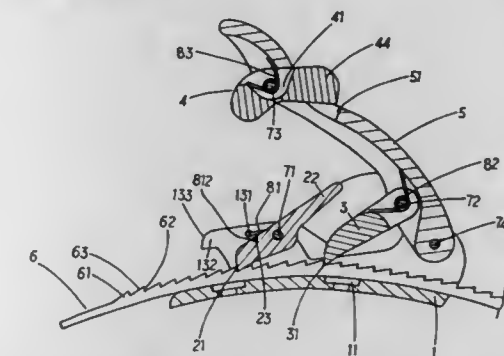
22 Claims



1. A damping device for arrangement between a surface of a ski and parts of a coupling device for a ski boot having heel and ball areas, which comprises

- (a) at least one bearing element consisting of a first material, the bearing element defining a hollow receiving chamber and having
 - (1) an elongated supporting surface facing the surface of the ski for support of the bearing element on the ski surface,
 - (2) an opposite surface facing away from the surface of the ski,
 - (3) a region capable of taking up high pressure loads without deformation and wherein bores for receiving fastening elements are located, and
 - (4) another region corresponding to the heel and ball areas of the ski boot, and
- (b) at least one damping element inserted in the receiving chamber of the bearing element, the damping element having
 - (1) a lower hardness and a higher elasticity than the first material, and
 - (2) at least one contact surface located in the other region and facing the surface of the ski, the contact surface in an unstressed state protruding beyond the supporting surface of the bearing element in the direction of the surface of the ski, and
 - (3) the bores extending perpendicularly to the contact surface.

5,779,259
TOE-STRAP OF A SKI BOOT BINDING
Jack Lin, 3 Edwards Pl., Ellenville, N.Y. 12428
Filed Jun. 14, 1996, Ser. No. 663,974
Int. Cl.⁶ A43C 11/14
U.S. Cl. 280—623



1 Claim

pivot hole near one end, a second transverse pivot hole near an opposite end, and a third transverse pivot hole spaced between said first transverse pivot hole and said second transverse pivot hole;

a second pivot mounted in the third transverse hole of said handle;

a third pivot mounted in the second transverse pivot hole of said handle;

a fourth pivot mounted in the first transverse pivot hole of said handle and connected between the first upright lugs of said base frame;

a front push plate turned about said second pivot and retained between said handle and said base frame, said front push plate comprising a transverse push face at one end adapted for engaging the transverse teeth of said first strap, two upright side walls turned about said second pivot and bilaterally disposed outside two opposite sides of said handle, two backward lugs perpendicularly extending from said transverse push face and equally spaced between said upright side walls and turned about said second pivot;

a second torsional spring mounted around said second pivot between the backward lugs of said front push plate, having one end stopped against said front push plate and an opposite end stopped against said handle to impart a downward pressure to the push face of said front push plate;

a retainer plate turned about said third pivot below said handle, said retainer plate comprising a top recessed hole, a smoothly curved face at one end, a press knob at an opposite end projecting into the top opening of said handle and adapted for pressing by hand to turn said retainer plate about said third pivot, and two pawls at two opposite sides of said smoothly curved face and adapted for engaging the noses of said base frame respectively; and

a third torsional spring mounted within the top recessed hole of said retainer plate, having one end stopped against said retainer plate and an opposite end stopped against said handle to impart a downward pressure to the smoothly curved face of said retainer plate, causing the pawls of said retainer plate to be forced into engagement with the noses of said base frame.

5,779,260

METHOD AND APPARATUS FOR ADJUSTING STRUT-TYPE SUSPENSION SYSTEMS

Bruce John Reilly, and Bruce Sean Reilly, both of 1-5 Campbell Street, Narellan, NSW 2567, Australia

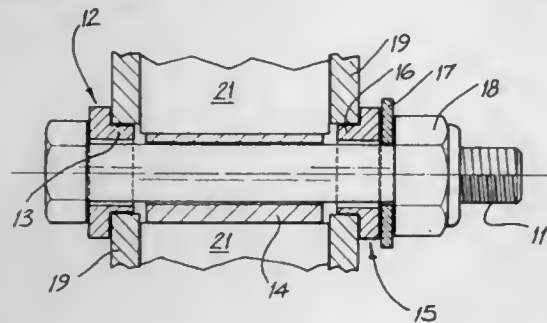
Filed May 23, 1996, Ser. No. 652,831

Claims priority, application Australia, May 23, 1995, PN3137

Int. Cl.⁶ B62D 17/00

U.S. Cl. 280—661

19 Claims



1. A camber adjusting device for a strut suspension system; said device comprising a bolt having a head, shank and threaded end remote from the head, a centrally disposed eccentric sleeve rotatably mountable on the shank of the bolt; the head end of the bolt having an eccentric portion projecting axially from the head toward the centrally disposed sleeve and the threaded end of the bolt, a corresponding further eccentric portion adapted to be slidably mounted over the threaded end of the bolt so as to project

toward the eccentric projecting portion at the head end of the bolt, further wherein the amount of eccentricity of each eccentric portion relative to the axis of the bolt is the same and the outside diameters of the eccentric portions and of the eccentric sleeve are the same and which outside diameter corresponds to the diameter of a bore in a steering knuckle assembly of a vehicle suspension system adapted to receive the device, wherein in use the knuckle assembly is adapted to be mounted to a suspension support strut via the bolt through said bore and aligned bores in a pair of support brackets of said strut when said support brackets sandwich the bore of the knuckle assembly therebetween, and wherein the length of the eccentric sleeve is no greater than the length of the bore in the steering knuckle assembly and the axial projection of each eccentric portion is no greater than the length of each respective bore in the pair of support brackets.

5,779,261

VEHICLE AIR BAG RETAINING ARRANGEMENT

Kiyoshi Honda, Saitama-ken, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

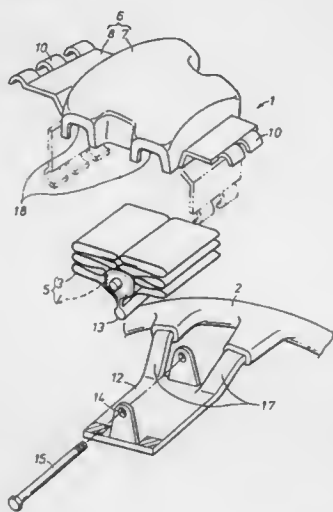
Filed Nov. 12, 1996, Ser. No. 745,481

Claims priority, application Japan, Nov. 20, 1995, 7-326357

Int. Cl.⁶ B60R 21/20

U.S. Cl. 280—728.2

8 Claims



1. A retaining arrangement for a vehicle air bag system comprising:

a cover for mounting on a fixed part of a vehicle body, said fixed part located on one of a steering wheel, a dashboard panel or other fixed panel to be shielded from impact upon impact of the vehicle;

an inflator received inside said cover for producing gas upon activation; and

an air bag received inside said cover for inflation by said gas produced from said inflator;

wherein a pair of retainer sections are attached to opposite edges of said cover by hinge means so that free ends of said retainer sections are jointly attached to said fixed part of said vehicle body and

said free ends of said retainer sections are provided with tabs which can mutually interdigitate.

5,779,262

CAR INTERIOR FINISH MEMBER WITH AIR BAG COVER

Chiharu Totani, Gifu; Shigehiro Ueno; Tetsuya Fujii, both of Aichi, and Kenichi Furuta, Gifu, all of Japan, assignors to Toyota Gosei Co., Ltd., Aichi-ken, Japan

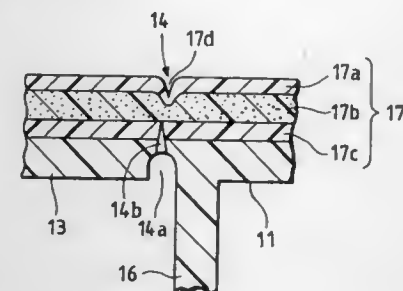
Filed Dec. 11, 1996, Ser. No. 764,022

Claims priority, application Japan, Dec. 12, 1995, 7-323281

Int. Cl.⁶ B60R 21/20

U.S. Cl. 280—728.3

12 Claims



1. A car interior finish member comprising:

an interior member body portion;

a cover portion for an air bag integrally molded with said interior member body portion in a shape retaining thermoplastic resin so as to have an approximately even front surface, wherein said cover portion includes:

a door which opens to form an air bag port when said air bag is operated,

a hinge portion, and

a breakable seam formed about a peripheral portion of said door;

a design sheet integrally molded onto a front surface of said cover portion thereby forming a front surface of said interior member body portion;

wherein said design sheet has at least an outer skin layer and an interior barrier layer, said barrier layer comprising a material thermally fusible with said thermoplastic resin, and a breakable portion being defined by a notch extending through said barrier layer,

wherein a foaming layer is interposed between said outer skin layer and said barrier layer in said design sheet, and

wherein said thermoplastic resin forming said body portion is fiber-reinforced polypropylene, and said barrier layer material is selected from the group consisting of olefinic and styrenic thermoplastic elastomers.

5,779,263

INTEGRATED SIDE IMPACT AIR BAG SYSTEM WITHIN A SEAT STRUCTURE

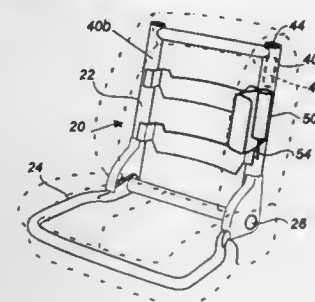
Wendell C. Lane, Jr., Romeo; Michael J. Lachat, Shelby; Michael A. Hague, Troy, and Patrick J. Fonk, Sterling Heights, all of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Jan. 21, 1997, Ser. No. 787,497

Int. Cl.⁶ B60R 21/22

U.S. Cl. 280—730.2

8 Claims



1. An assembly comprising:

a seat (20) having a hollow tubular frame part (40a) with an open end (180) having a gas flow port (182); and

an air bag module (36) comprising an inflator (50), the inflator including at least one exit port (56); wherein the inflator (50) is fitted within the hollow frame part (40a) with the exit port (56) in fluid communication with the flow port (182),

an L-shaped bracket, having an axial portion (202) fitted against the frame part and a lateral part sealing the open end (180) and

an air bag (90) disposed in fluid communication with the flow port (182) and wrapped about the axial portion of the bracket.

5,779,264

CRASH DETECTOR ARRANGEMENT

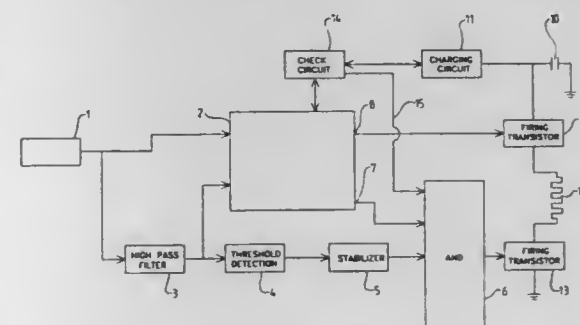
Bernard de Mersseman, Varenne Saint Hillaire, and Philippe Aubertin, Jouy le Montier, both of France, assignors to Sagem-Autoliv, Paris, France

Filed Feb. 10, 1997, Ser. No. 798,167

Int. Cl.⁶ B60R 21/32

U.S. Cl. 280—735

20 Claims



1. A crash detector arrangement adapted to activate a safety device, the arrangement comprising a power supply connected to a series connection of a first switch, an actuator for activating the safety device and a second switch, the arrangement further comprising a crash sensor providing a signal, processing means adapted to process the said signal in accordance with a first predetermined algorithm to provide a first output signal to render the first switch conductive, and processing means adapted to process a further signal from the crash sensor in accordance with a second algorithm to provide a second output signal to render the second switch conductive, the two algorithms being different, the further signal being derived by passing the output of the crash sensor through a high-pass filter, each algorithm being adapted to distinguish a signal from the crash sensor due to a crash having predetermined characteristics from a signal from the crash sensor due to other causes, so that the first output signal and the second output signal are each provided in response to a crash having said predetermined characteristics, said processing means being adapted to process the further signal and comprising means to determine the number of times the output of the high-pass filter passes predetermined threshold levels in a predetermined period of time and, in response to the number of passages exceeding a predetermined number, to provide said second output signal to render the second switch conductive.

5,779,265

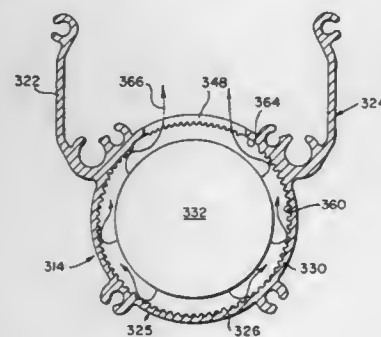
REACTION CANISTER WITH INFLATOR OUTPUT TREATMENT FINS

Larry D. Rose, 1433 E. 2500 North, Layton, Utah 84040; Donald R. Lauritzen, 948 W. 3rd North, Hyrum, Utah 84319, and Bradley D. Harris, 761 Southampton, Farmington, Utah 84025

Filed Oct. 16, 1996, Ser. No. 732,010
Int. Cl.⁶ B60R 21/26

U.S. Cl. 280—736

19 Claims



1. In an inflatable restraint system including a reaction canister structure body having a portion wherein at least a section of an associated inflator is housed in spaced relation to avoid contact therebetween, the improvement comprising:

the inflator housing portion of the reaction canister body including a plurality of inflator output treatment fins extending towards, without contacting, the associated inflator.

5,779,266

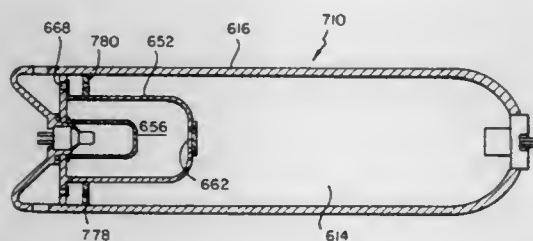
FLUID FUELED INFLATOR WITH FLOW REVERSAL

Walter A. Moore, Ogden; Karl K. Rink, Liberty, and Glenn S. Beus, Ogden, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Oct. 10, 1995, Ser. No. 541,357
Int. Cl.⁶ B60R 21/26

U.S. Cl. 280—737

29 Claims



1. An apparatus for inflating an inflatable device, said apparatus comprising:

a housing containing at least one fuel in the form of a fluid and at least one oxidant, said housing including a first chamber wherein the at least one fuel and the at least one oxidant are burned to produce combustion products including hot combustion gas, said first chamber adapted to open when a predetermined increase in pressure within said first chamber is realized, whereby at least a portion of the hot combustion gas is expelled from said first chamber in a first direction, initiator means for initiating the burning of the at least one fuel and at least one oxidant in said first chamber, said housing also including a second chamber containing a supply of pressurized stored gas, said second chamber having at least one outlet opening with sealing means normally closing said at least one outlet opening and being in fluid communication with said first chamber upon the opening of said first chamber with the hot combustion gas expelled from said first chamber mixing with the pressurized stored gas to

produce inflation gas free of solid particulate material, said sealing means normally closing said at least one outlet opening adapted to open when a predetermined increase in pressure within said second chamber is realized after the hot combustion gas expelled from said first chamber mixes with the pressurized stored gas to produce the inflation gas, whereby at least a portion of the inflation gas is expelled from said second chamber in a second direction, and wherein the inflation gas is expelled from said second chamber in a counterflow manner in relation to the hot combustion gas expelled from said first chamber.

5,779,267

AIRBAG INFLATOR COMPONENTS PROTECTED FROM HIGH-TEMPERATURE, REACTIVE GENERATED GASES

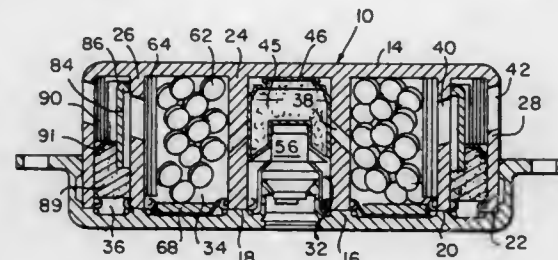
Michael P. Jordan, 8140 S. Cedar Cir., South Weber, Utah 84405; Alan J. Ward, 2942 N. 1150 East, North Ogden, Utah 84414; Christopher Hock, 6846 Buena Vista, Uintah, Utah 84405, and Linda M. Rink, 3711 E. 4350 North, Liberty, Utah 84310

Continuation of Ser. No. 411,002, Mar. 27, 1995, abandoned.
This application Oct. 15, 1996, Ser. No. 716,931

Int. Cl.⁶ B60R 21/26

U.S. Cl. 280—740

26 Claims



6. In a gas generator for a vehicle airbag system, comprising: a housing enclosing a combustion chamber, said housing having an outer wall containing at least one port from which generated gas can be discharged,

said combustion chamber containing a high reaction temperature gas generating material capable of producing sufficient generated gas to inflate an airbag, said gas generating material containing at least one material selected from the group consisting of triazole compounds, tetrazole compounds, salts of 5-nitrobarbituric acid, salts of 5-nitroorotic acid, salts of dicyanamide, nitrate salts of amines and nitrate salts of substituted amines,

said housing also enclosing a structure located at a position in said housing where at least a portion of said structure will be impinged upon by the gas generated in the combustion chamber as said gas is directed to said at least one port;

the improvement comprising providing a protective coating of a material selected from the group consisting of metals and ceramics on said portion of said structure, said protective coating having a thickness sufficient to protect said structure from chemical and ablative deterioration caused by the impingement of said generated gas on said structure.

5,779,268

STAMPED DRIVER INFLATOR BASE

Bradley W. Smith, Ogden; Kirk H. Rasmussen, West Point, and Brian T. Snyder, Hooper, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Jun. 6, 1995, Ser. No. 468,225
Int. Cl.⁶ B60R 21/28

U.S. Cl. 280—741

2 Claims

1. A housing construction for a gas generating inflator comprising:

5,779,270

SHOULDER ANCHOR STRUCTURE

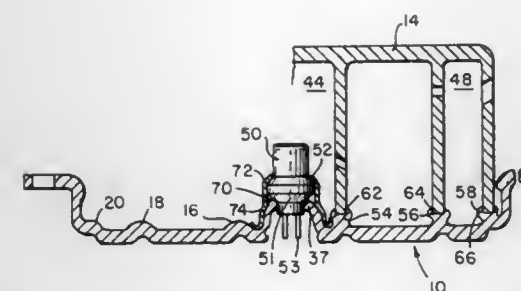
Hideki Tanaka, Aichi-ken, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi-ken, Japan

Filed Aug. 7, 1996, Ser. No. 689,243

Claims priority, application Japan, Sep. 13, 1995, 7-235808
Int. Cl.⁶ B60R 22/00

U.S. Cl. 280—808

26 Claims



a diffuser comprising a first shell having a plurality of concentric chambers, each chamber having a wall;
a base comprising a second shell stamped from a sheet of aluminum, the stamped base including a central axis, a plurality of stamped concentric rings extending upwardly from a bottom of the base, said concentric rings being spaced from said central axis, an interface attachment flange for mounting the inflator, and a squib pocket extending about the central axis of said base for holding a squib of the inflator;
means for attaching the concentric rings of the base with a respective wall of each of the chambers; and
means for securing the squib within the squib pocket of the base, the means for securing having opposed ends, one end engaging the squib and another end engaging an outer surface of a side wall of the squib pocket.

5,779,269

PROPELLANT MODULE ASSEMBLY

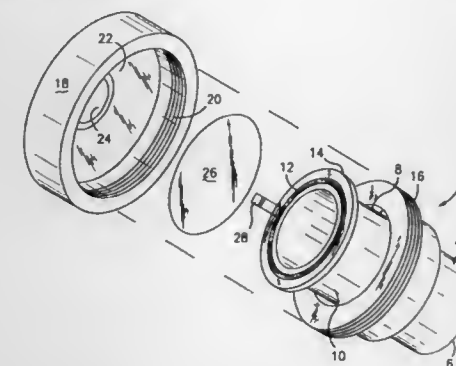
Sanders H. Moore, and Brian D. Sharpe, both of Cleveland, Tenn., assignors to Olin Corporation, Charleston, Tenn.

Filed Dec. 6, 1996, Ser. No. 761,296

Int. Cl.⁶ B60R 21/26

U.S. Cl. 280—741

21 Claims



1. A vehicle air bag inflation assembly comprising:

- a canister having a cup-shaped member and a closure cap, said closure cap being sealed onto said cup-shaped member, and said closure cap including a central opening forming an inflation gas outlet port in the canister;
- a rupturable membrane sandwiched between said cup-shaped member and said closure cap;
- a seal ring sandwiched between said cup-shaped member and said membrane, said seal ring and said membrane being operable to seal an interior portion of said canister from ambient surroundings; and
- a liquid propellant formulation disposed in the interior portion of said canister, said liquid propellant formulation being operable when ignited, to produce an inflation gas which is non-toxic and incapable of inflicting chemical burns on vehicle passengers.

5,779,271

ENERGY ABSORPTION DEVICE FOR IMPACTS IMPARTED TO A SUPPORT BAR OF A VEHICLE

Duane A. Dorow, and Sukhbir S. Bilkhu, both of Rochester Hills, Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Jun. 17, 1996, Ser. No. 664,944

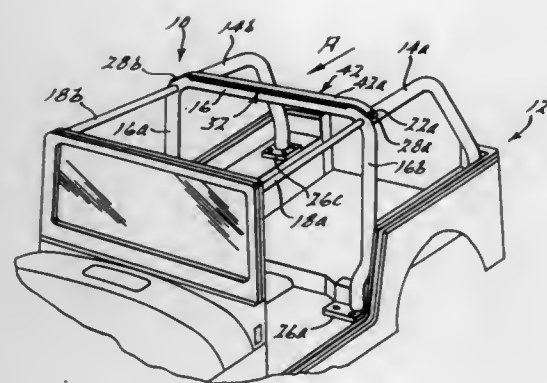
Int. Cl.⁶ B60R 21/13

U.S. Cl. 280—751

11 Claims

1. An energy absorption device for cushioning impacts imparted against a support bar of a vehicle by an occupant, the energy absorption device comprising:

a plurality of elongated impact shells provided in a nested arrangement adjacent to said support bar;



a plurality of ribs extending from at least one of said plurality of impact shells, said plurality of ribs having a first edge attached to said impact shell from which they extend and a free second edge; and
an attachment element adapted to couple said plurality of elongated impact shells and said support bar.

5,779,272

ROLL-OVER PROTECTION SYSTEM

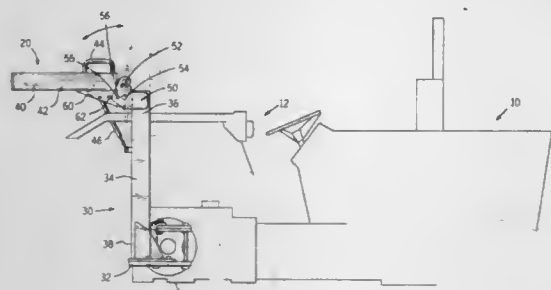
Bruno J. Panek, Palos Heights, and Sudhakar Kolli, Plainfield, both of Ill., assignors to Case Corporation, Wis.

Filed Nov. 7, 1996, Ser. No. 745,615

Int. Cl.⁶ B60R 21/13

U.S. Cl. 280—756

21 Claims



1. A roll-over protection system for a construction or agricultural vehicle including a chassis, the roll-over protection system comprising:

- a support structure including a pair of vertical posts, each vertical post having an upper end and a lower end, the lower end of each vertical post being mountable to the chassis;
- a cross member pivotally coupled to the upper ends of the vertical posts between a folded position and an upright position;
- a substantially stationary handle attached to the cross member; and
- a lift assist assembly coupled to the cross member and to the support structure, the lift assist assembly applying a force between the cross member and the support structure to urge the cross member toward the upright position.

5,779,273

HEIGHT ADJUSTER FOR VEHICLE SAFETY BELT

Reinhard Schmidt, Lennestadt, Germany, assignor to R. Schmidt GmbH, Lennestadt, Germany

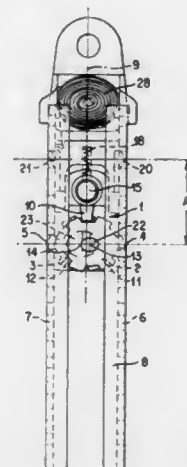
Filed Aug. 12, 1996, Ser. No. 695,798

Claims priority, application Germany, Aug. 21, 1995, 195 30 663.5

Int. Cl.⁶ B60R 22/20

U.S. Cl. 280—801.2

26 Claims



1. A height adjuster for a vehicle safety belt comprising: an adjusting element, a guide rail on which the adjusting element runs and including opposing denticulations, a mounting element for a terminal mount or reversing mount of the safety belt anchored to the adjusting element, a catch element that snaps in and locks the adjusting element at certain height positions, two gears rotatable on the adjusting element and braced at two support points in two opposing denticulations of the guide rail essentially symmetrical to a longitudinal middle plane running in the longitudinal direction of the guide rail, the catch element engaging adjustably in the longitudinal middle plane with the denticulations of the two gears to block rotation of the gears and lock the adjusting element and release blocking of the rotation for adjusting height of the belt.

5,779,274

BINGO GAME BOOKLET

John E. Gallagher, Jr.; Michael A. Singh, both of Lakewood, and Gregory T. Pollock, Cleveland, all of Ohio, assignors to Arrow International, Inc.

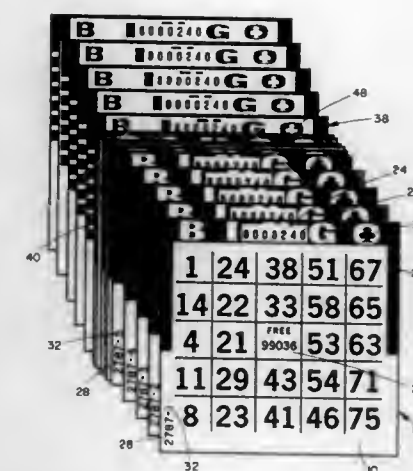
Continuation of Ser. No. 659,303, Jun. 6, 1996, which is a continuation-in-part of Ser. No. 367,975, Dec. 30, 1994, abandoned. This application Jan. 24, 1997, Ser. No. 788,587

Int. Cl.⁶ G09B 19/00

U.S. Cl. 283—49

27 Claims

1. A bingo game booklet comprising: a cover sheet; a first sheet including at least one bingo face; a first serial number located on each bingo face of said first sheet, wherein said first serial number is identical on each bingo face of said first sheet; a second sheet located below said first sheet, said second sheet including at least one bingo face; a second serial number located on each bingo face of said second sheet, wherein said second serial number is identical on each bingo face of said second sheet and said second serial number is identical to said first serial number; a connecting element for connecting an edge of said cover sheet to an edge of said first sheet and an edge of said second sheet to form the booklet;



an audit coding located on said cover sheet, wherein said audit coding identifies the booklet, wherein said audit coding is also located on each of said first and second sheets of the booklet and wherein said audit coding is identical on said first and second sheets and on said cover sheet; and
a page identifier printed on each of said first and second sheets wherein consecutive identifiers are employed for said first and second sheets of the booklet.

5,779,275

Patent Not Issued For This Number

5,779,276

LINED PIPE CONNECTOR CONTAINING END RINGS

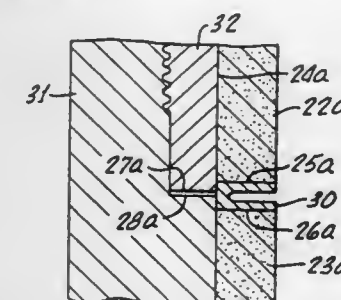
William C. Allen, Pasadena, Calif., assignor to Union Oil Company of California, El Segundo, Calif.

Continuation-in-part of Ser. No. 68,770, Jun. 1, 1993, Pat. No. 5,405,171, which is a continuation-in-part of Ser. No. 713,551, Jun. 7, 1991, Pat. No. 5,236,231, which is a continuation of Ser. No. 427,758, Oct. 26, 1989, Pat. No. 5,069,485. This application Mar. 24, 1995, Ser. No. 410,621

Int. Cl.⁶ F16L 9/14

U.S. Cl. 285—55

12 Claims



1. A connector apparatus for containing a fluid, the apparatus comprising:

- a duct having an interior passageway;
- a rigid end ring element attached proximate to at least one end of a brittle liner substantially covering said interior passageway, said end ring element having a first sealing surface;
- a duct mating element having a second sealing surface which is substantially oppositely located from said first sealing surface when said duct is joined to said duct mating element;
- means for joining said duct and said duct mating element while compressing a seal located between said sealing surfaces and while rotating said duct relative to said duct mating element; and

5,779,277

LOCKING ASEXUAL COUPLING

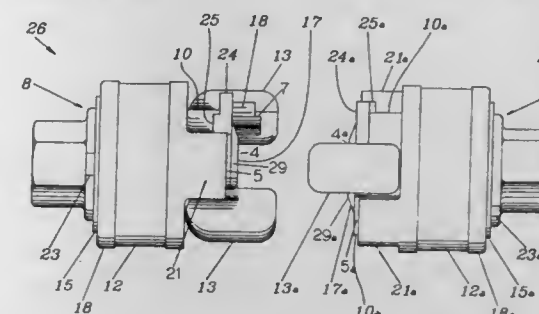
David G. Street, Pottstown, Pa., assignor to Campbell Fittings, Inc., Boyertown, Pa.

Filed Sep. 3, 1996, Ser. No. 706,996

Int. Cl.⁶ F16L 33/00

U.S. Cl. 285—79

21 Claims



1. A locking hose coupling comprising a pair of mating couplings for joining hose segments, each of said mating couplings including a coupling body with an axial bore, an end opening, radial claws and interspaced diametrically opposed flange segments adjacent said end opening, each said claw having a side opening pocket positioned to receive a flange segment on the other coupling of said pair, the improvement comprising:

- a coupling locking means comprising a coaxial sleeve on said coupling body for axial movement thereon, said locking means further comprising a locking projection extending axially from said sleeve in the direction of said end opening;
- means for axially biasing said locking means to a locking position blocking relative rotation of the flange of one coupling and the claw of the other coupling, said biasing means urging said locking projection into said locking position intermediate one of said claws and said flange segments, said projection being movable axially away from said locking position by movement of said sleeve against the action of said biasing means;
- said pair of mating couplings being movable axially to positions in which the side opening pockets in each coupling are positioned to receive the flange segments of the other and the end openings are in interfacing relationship, said mating couplings being thereafter movable rotationally to positions in which the flange segments interfit within the pockets, said locking means being free to move under action of said biasing means into said locking position when the flange segments are interfitted within the pockets to block relative rotation of the flange segments and the claws in a direction effecting removal of the flange segments from the pockets.

5,779,278

POP OFF INSERTION INDICATOR FOR METAL QUICK CONNECTORS

Thomas Eugene Grooters, Rochester Hills, and George Szabo, Ortonville, both of Mich., assignors to ITT Automotive, Inc., Auburn Hills, Mich., and ITT Manufacturing Enterprises, Inc., Wilmington, Del.

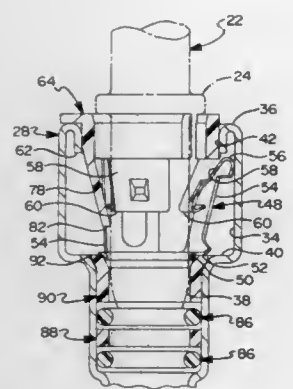
Filed Dec. 27, 1995, Ser. No. 579,185

Int. Cl.⁶ F16L 35/00

U.S. Cl. 285—93

14 Claims

1. An indicator for providing visual confirmation of a completed coupling of a male component of a connector assembly with a



female component of the connector assembly, wherein the male component includes a mating end with an external flange and the female component includes an axial bore defined therein adapted to receive the male component's mating end, the connector assembly further including a retainer means disposed within the bore of the female component for retaining the male component within the bore once the flange thereof is advanced to a first predetermined depth within the bore, said indicator comprising:

- an annular base having a central passage for passing the male component through said base and wherein said indicator is adapted to be releasably retained within the bore through radial engagement of said base with the bore; and
- at least one leg projecting axially from said base, for directly engaging the flange of the male component at a second depth greater than the first depth.

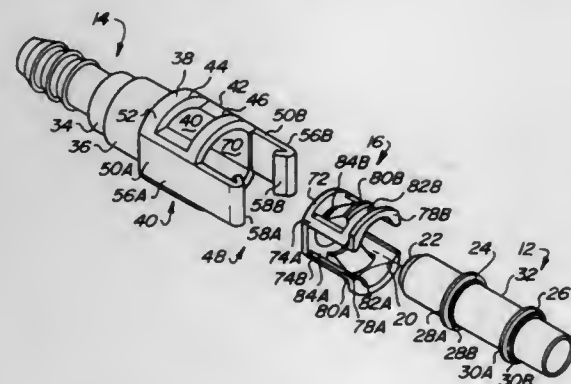
5,779,279 CONNECTION VERIFICATION AND SECONDARY LATCH DEVICE

Donald D. Bartholomew, Mt. Clemens, Mich., assignor to Proprietary Technology, Inc., Bloomfield Hills, Mich.
PCT No. PCT/US94/05886, § 371 Date Nov. 19, 1996, § 102(e)
Date Nov. 19, 1996, PCT Pub. No. WO95/32382, PCT Pub.
Date Nov. 30, 1995

PCT Filed May 24, 1994, Ser. No. 737,870
Int. Cl.⁶ F16L 37/084

U.S. Cl. 285—93

21 Claims



1. A connector assembly, comprising:
 - a tubular conduit including a first end having first and second annular projections disposed a predetermined distance from said first end;
 - a retainer element including primary latching means releasably engageable with the first annular projection;
 - means for sealing the connector assembly; and
 - a housing for receiving the first end of the tubular conduit, said housing including secondary latching means extending from the housing for maintaining a fluid conveying connection between the tubular conduit and the housing, the secondary

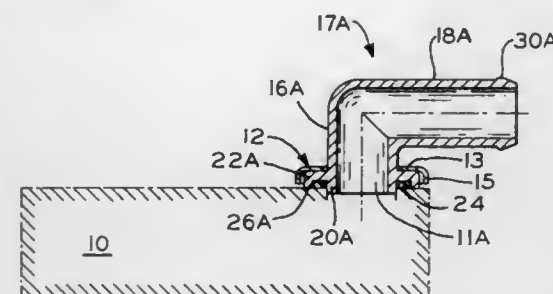
latching means including a pair of axially formed arms having means for locking formed on the ends thereof, whereby upon fully inserting the tubular conduit within the housing, the primary latching means engage the first annular projection of the tubular conduit and the locking means of the secondary latching means engage the second annular projection of the tubular conduit.

5,779,280 FLUID CONNECTOR

Erik Hedman, Linköping, Sweden, assignor to Mark IV Automotive Aktiebolag, Solvesborg, Sweden
Filed Feb. 28, 1997, Ser. No. 810,614
Int. Cl.⁶ F16L 39/00

U.S. Cl. 285—124.4

6 Claims



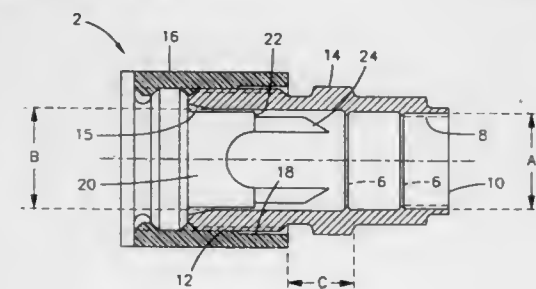
1. A fluid connector for connecting a conduit to a fluid carrying aperture of an apparatus, said connector comprising:
 - a fluid conduit, said fluid conduit comprising first and second interconnected sections, said sections oriented at an angle with respect to each other which is less than 180°, whereby fluid flowing through said conduit changes direction;
 - said first section including a base, said base adapted to be engaged in fluid carrying communication with said aperture of said apparatus, said base having a seal chamber;
 - a seal disposed in said seal chamber;
 - a yoke for securing said base into sealing engagement with said apparatus; and
 - a single only fastener for securing said yoke to said apparatus, whereby said conduit is rotatable adjustable with respect to said apparatus upon loosening said fastener.

5,779,281 FORMING A CONNECTION TO AN OBJECT

Michael I. Kagan, Foster City, and Richard H. Kosarchuk, Fremont, both of Calif., assignors to Advanced Metal Components, Inc., Menlo Park, Calif.
Continuation of Ser. No. 423,506, Apr. 17, 1995, abandoned.
This application Sep. 11, 1997, Ser. No. 927,296
Int. Cl.⁶ F16L 55/00

U.S. Cl. 285—148.19

37 Claims



1. A method of forming a connection to an elongate object, which comprises:

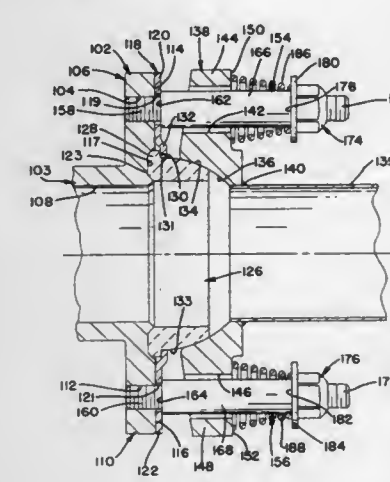
- (a) providing an object having an internal surface, an external surface and an end, and a device which comprises a sleeve formed from a shape memory alloy, the sleeve being transversely heat-shrinkable towards a recovered configuration, and having an internal surface, a first end with formations on the internal surface for forming a seal with the external surface of the object, and a second end which has a predetermined configuration when the sleeve is fully recovered in the absence of a restraint at the second end, in which it is capable of forming a connection to a second object;
- (b) positioning the object so that it is located within the first end of the sleeve; and
- (c) increasing the temperature of the sleeve to a temperature above the A_t temperature of the shape memory alloy, to cause the sleeve to shrink transversely so that the end of the object located within the first end of the sleeve restricts the shrinkage of the sleeve at that end so that the formations on the internal surface of the sleeve engage the external surface of the object and form a seal between the sleeve and the object, the second end of the sleeve after completion of the shrinkage having the said predetermined configuration.

5,779,282 EXHAUST BALL SEAL

Robert James Ezze, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 11, 1996, Ser. No. 585,060
Int. Cl.⁶ F16L 27/06

U.S. Cl. 285—261

5 Claims



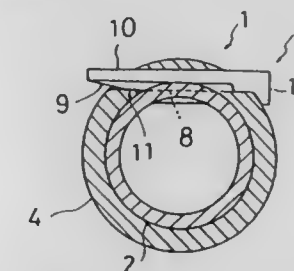
1. An exhaust connection comprising:
 - a first flange on an exhaust manifold having first and second first flange ears on either side of an exhaust port;
 - an annular seal having a substantially flat seat on a first axial end, a peripheral shoulder extending radially outwardly from the first axial end and a convex ball seat on a second axial end;
 - a retainer plate having first and second diametrically opposed retainer plate ears located radially exterior of a central opening fitting over the seal and a lip extending radially inwardly and engaging the peripheral shoulder;
 - a second flange, mounted to a pipe, having first and second second flange ears on either side of the pipe and a concave ball seat surface engaging the convex ball seat surface of the seal; and
 - first and second retainers passing through the second flange ears and threadably engaging the first flange ears wherein each of the first and second retainers has a retaining shoulder proximate to the first flange wherein the retaining shoulders sandwich the retainer plate ears to the first flange, positively retaining the retainer plate to the first flange and ensuring that the seal is seated in the first flange.

5,779,283 PIPE JOINT UNIT

Yoshitsugu Kimura; Motonori Onoshi; Yasuharu Sakaguchi, and Keitaro Watanabe, all of Osaka, Japan, assignors to Takenaka Corporation, Osaka, Japan
Filed Apr. 10, 1996, Ser. No. 630,611
Int. Cl.⁶ F16L 37/12

U.S. Cl. 285—305

23 Claims



1. A pipe joint unit for joining a pair of inserted pipes comprising:
 - a body of said pipe joint unit having through holes each of which faces a portion of an inserted pipe in a direction along a tangent line; and
 - separate key members to be driven into said through holes, wherein each of said key members has a body portion that supports a securing rib member that extends from the body portion and includes, adjacent one end of the body portion, a tapered portion which is brought into contact with the surface of the pipe as the driving operation proceeds, the body portion is wider than the securing rib member and includes adjacent the other end of the body portion a contact surface that is larger than said through holes and is aligned with the securing rib member, the contact surface is susceptible to receiving a driving force, whereby the securing rib member is secured to the pipe when the contact surface is driven to a position adjacent the pipe and cannot be driven further through the hole.

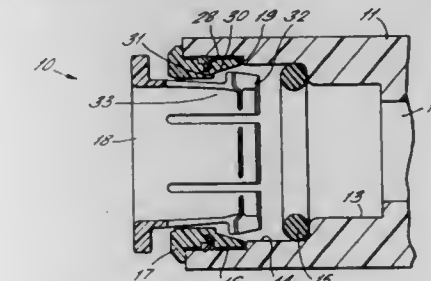
5,779,284 TUBE COUPLING BODIES HAVING RESILIENT FINGERS SPACED FROM THE GROOVE WALL

John Derek Guest, 'Iona', Cannon Hill Way, Bray, Maidenhead, Berkshire SL6 2EX, United Kingdom
Filed Jun. 24, 1996, Ser. No. 669,086
Claims priority, application United Kingdom, Jun. 26, 1995, 9512974

Int. Cl.⁶ F16L 37/12

U.S. Cl. 285—322

9 Claims



1. A tube coupling body having a throughway open at one end to receive a tube and an insert sleeve to fit in the throughway adjacent the open end with one end of the sleeve located within the throughway and the other end at the open end of the throughway, the insert sleeve having a tapered internal cam surface reducing towards said other end of the sleeve with which fingers of a tube gripping collet are engageable to receive and lock a tube inserted into the throughway in the coupling body, the external surface, of

the sleeve having an annular groove which has one side nearest said one end of said sleeve, and a metal grab ring embodied in the sleeve, said grab ring having multiple resilient fingers around an outer periphery of said grab ring projecting radially beyond the outer surface of the sleeve and adjacent said one side of said groove so that on insertion of the sleeve into the throughway, the resilient fingers are flexed and spaced away from said one side of said groove and are thereby angled towards the other end of the sleeve by engagement with a surface of the throughway, the flexing of the fingers being accommodated by the annular groove and the resilience of the fingers causing the fingers to grip said surface of the throughway to prevent the insert sleeve from being withdrawn from the throughway.

5,779,285

PIPE COUPLING ASSEMBLY

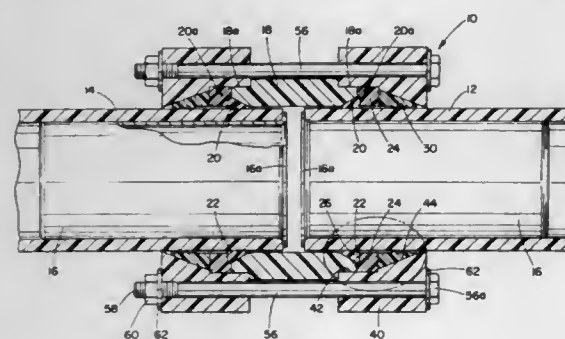
Dave Robison, Madison, Ohio, assignor to Perfection Corporation, Madison, Ohio

Filed Feb. 27, 1996, Ser. No. 607,828

Int. Cl.⁶ F16L 17/00

U.S. Cl. 285—337

18 Claims



1. A coupling assembly for joining two spaced pipe ends comprising:

- an elongate sleeve adapted to receive two opposing pipe ends to be connected, said sleeve having frusto-conical ends opening outwardly;
- a pair of annular elastomeric gaskets having frusto-conical end portions adapted to fit into the frusto-conical ends of the sleeve in sliding engagement around the pipe ends to be connected;
- a separate retaining ring member located axially outward of each end of the sleeve and to encircle the pipe ends to be connected, each retaining ring member having a frusto-conical inner wall facing the sleeve to define a gripping ring chamber;
- a separate radially compressible gripping ring member positioned in each gripping ring chamber;
- separate engagement ring members located at each end of the sleeve at a location between the elastomeric gasket and the gripping ring at that respective end;
- tightening means for selectively moving the retaining ring members axially toward one another to compress the gaskets into their respective frustoconical chambers of the sleeve and to radially compress the respective gripping ring members; and,
- cooperating stop surfaces located on the retaining ring members and engageable with stop surfaces on the associated sleeve and engagement ring for providing a fixed stop to limit movement of the retaining ring members toward one another to provide positive limit to the compression applied to the gaskets and the gripping ring members.

5,779,286

PIPE JOINING CONSTRUCTION

Mitsuo Kaishio, Koga, Japan, assignor to ITT Automotive, Inc., Auburn Hills, Mich., and Sanoh Industrial Co., Ltd., Japan

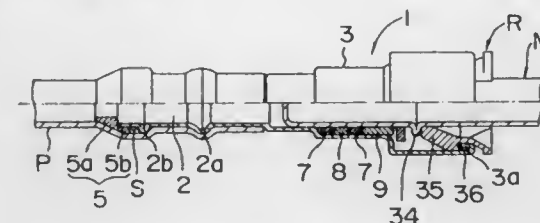
PCT No. PCT/US95/10964, § 371 Date Feb. 26, 1997, § 102(e) Date Feb. 26, 1997, PCT Pub. No. WO96/07045, PCT Pub. Date Mar. 7, 1996

PCT Filed Aug. 30, 1995, Ser. No. 793,813

Claims priority, application Japan, Aug. 31, 1994, 6-206160 Int. Cl.⁶ F16L 17/00

U.S. Cl. 285—379

18 Claims



1. A pipe joining construction for joining pipes by fitting a polymeric pipe onto the outer periphery of a metallic male end form having a tip end comprising:

- a seal member mounted on the outer periphery of the male end form; and
- a separate collar formed of a synthetic resin and mounted on the outer periphery of a tip end of the male end form, the collar having tapered portion with tapering outer periphery, the collar acting as a holding member for the seal member.

5,779,287

LOCK HAVING AN OPTICAL BOLTING MEANS

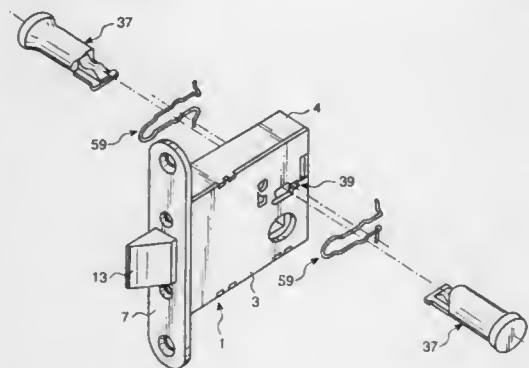
Torsten Johansson, Köpmangatan 9, S-633 56 Eskilstuna, Sweden

Filed Feb. 21, 1997, Ser. No. 803,922

Int. Cl.⁶ E05C 1/12

U.S. Cl. 292—169.14

6 Claims



1. A bolting means for a lock comprising:

- a lock case having opposed walls;
 - a latch bolt slidable between a locking position and an unlocking position;
 - a holding bolt and aperture means in said lock case for receiving said holding bolt, said holding bolt being positionable in said aperture means in a first, relatively retracted position allowing sliding of said latch bolt from said locking position to said unlocking position, and in a second, relatively inserted position preventing sliding of said holding bolt from said locking position to said unlocking position; and
 - yieldable means for yieldably retaining said holding bolt in said first position and said second position;
- wherein said aperture means includes one aperture in each of said opposed walls, and wherein releasable means is provided for releasably mounting said yieldable means adjacent a

selected one of said aperture for retaining engagement with said holding bolt introduced through said selected one of said aperture.

5,779,288

LOW PROFILE LATCH MECHANISM

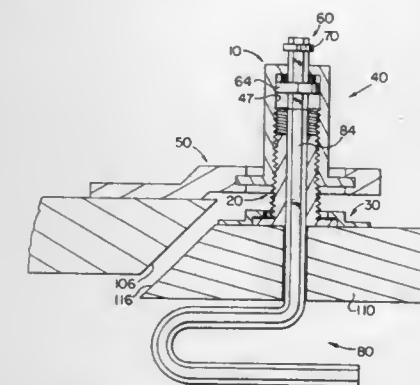
Armand F. Amelio, New Milford, Conn., assignor to United Technologies Corporation, Stratford, Conn.

Filed Sep. 8, 1993, Ser. No. 118,066

Int. Cl.⁶ F05C 5/04

U.S. Cl. 292—251

14 Claims



1. A low profile latch mechanism for an access panel defined by edges of a frame, the access panel being mounted in pivotable engagement with an adjacent segment of the frame, the frame having an inner surface and the access panel having mating edges complementary in configuration to the edges of the frame, an inner surface, an outer surface, and a minimal access aperture formed therethrough adjacent one mating edge thereof, comprising:

- an externally threaded insert member having a polygonal-shaped internal channel extending therethrough;
- an insert mounting bracket including a base plate secured in combination with the inner surface of the access panel and a cylindrical housing, said insert member being inserted in combination with the mounting bracket so that said insert member is restrained by said cylindrical housing and is rotatable with respect thereto and the internal surface of the access panel and said polygonal-shaped internal channel is aligned with the minimal access aperture of the access panel;
- a captured floating nut having an internal cylindrical configuration, a first portion of said internal cylindrical configuration having threads and a second portion thereof having a smooth surface;
- means for mounting said captured floating nut in nonrotatable combination with the inner surface of the frame;
- a safety lock member having a polygonal-shaped body member disposed within said captured floating nut and operative for axial displacement with respect to said smooth surface of said second internal portion thereof, said polygonal shape of said body member being complementary to said polygonal shape of said internal channel; and
- a removable key member having a polygonal-shaped shank sized for insertion through the minimal access aperture of the access panel, said polygonal shape of said shank being complementary to said polygonal shape of said internal channel;

said low profile latch mechanism being engaged and locked to close the access panel by inserting said polygonal-shaped shank of said removable key member through the minimal access aperture to engage said polygonal-shaped internal channel, rotating said removable key member to thread said insert member into said captured floating nut while concomitantly axially displacing said safety lock member away from said insert member, and removing said removable key member upon full engagement of said insert member within said captured floating nut wherein said safety key member is

axially displaced into mechanical engagement with said polygonal-shaped internal channel of said insert member to lock said low profile latch mechanism; said low profile latch mechanism being unlocked and disengaged by inserting said polygonal-shaped shank of said removable key member through the minimal access aperture to mechanically disengage said safety key member from said polygonal-shaped internal channel of said insert member to unlock said low profile latch mechanism, counter-rotating said removable key member to threadingly disengage said insert member from said capture floating nut which causes the one mating edge of the access panel to be pushed outwardly from the frame, and removing said removable key member upon full disengagement of said insert member from said captured floating nut wherein the access panel may be manually opened.

5,779,289

WATER FILLED BALLASTED TRACTOR BUMPER ASSEMBLY

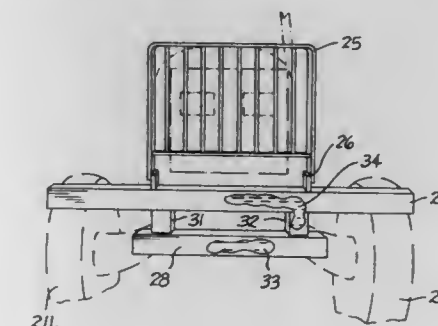
William Haston Alexander, Jr., P.O. Box 267, Sheffield, Ala. 35660

Filed May 29, 1996, Ser. No. 654,540

Int. Cl.⁶ B60R 19/52

U.S. Cl. 293—106

10 Claims



9. A heavy duty ballast bumper assembly attached to a tractor front end for ballast to keep front tractor wheels in traction on the ground comprising a structure made of welded steel plate shaped to constitute two horizontally disposed vertically spaced bumper rods disposed substantially below a center of gravity for the attached tractor, said bumper assembly being of a weight substantially contributing to counteract tractor torque tending to raise the front tractor wheels by ballasting a set of front steering wheels into firm contact with the ground.

5,779,290

PET HYGIENE MANAGEMENT APPARATUS AND METHOD

James A. Wilke, S76 W12620 McShane Dr., Muskego, Wis. 53150

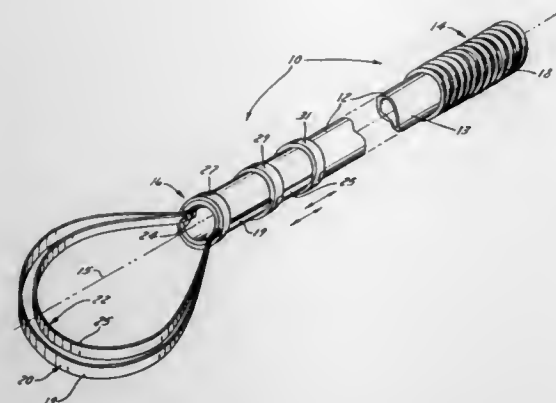
Continuation-in-part of Ser. No. 625,703, Apr. 3, 1996, Pat. No. 5,620,221. This application Jan. 30, 1997, Ser. No. 791,254

Int. Cl.⁶ A01K 29/00; E01H 1/12

U.S. Cl. 294—1.5

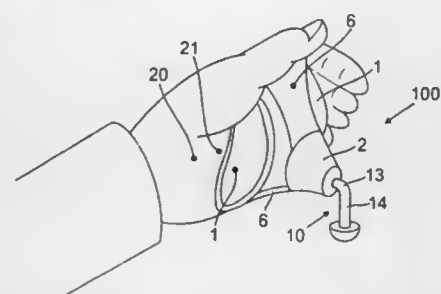
11 Claims

1. An apparatus for collecting pet excrement comprising: a tube having a longitudinal axis, with said tube having a distal end and a proximal end, a first band having two ends with one end attached to the distal end of the tube, a second band having two ends with one end attached to the distal end of the tube, an outer loop slider coaxial with the longitudinal axis of the tube and slidably mounted on the tube near the distal end and attached to the other end of the first band,



5,779,292
MANIPULATION AID FOR ATTACHMENT TO HUMAN BODY PARTS
Leonard Ralph Kasday, Moorestown, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Continuation of Ser. No. 366,655, Dec. 30, 1994, abandoned.
This application Jan. 2, 1997, Ser. No. 778,437
Int. Cl.⁶ A61F 2/78; B25J 1/00
U.S. Cl. 294—25

35 Claims



1. A manipulation aid comprising:
a cone having a base and an apex;
an actuator mounted at the apex of the cone; and
means for attaching the cone to a palm of a user, wherein the cone provides a platform for the actuator, displacing the actuator from the palm of the hand.

5,779,291
AQUARIUM TOOL
Robert Forest, 5505 N. Scarsdale Cir., Reno, Nev. 89502
Continuation-in-part of Ser. No. 559,939, Nov. 17, 1995, Pat. No. 5,601,322. This application Nov. 4, 1996, Ser. No. 742,671
Int. Cl.⁶ B25J 1/02
U.S. Cl. 294—3

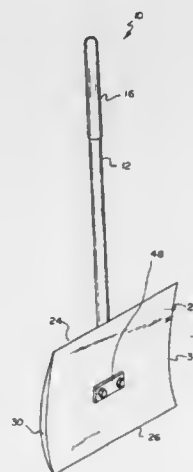
5 Claims



1. An aquarium tool kit for use in structuring, maintaining and restructuring aquariums of any size and shape, comprising an elongate sectional handle including a plurality of elongate handle members, each handle member having quick coupling elements at each end thereof for quick coupling and uncoupling to the coupling element on an adjacent handle member, at least one of said handle members having a bendable portion intermediate the ends thereof said one handle member being bendable from elongate straight configuration to angular configuration to permit angular adjustment of said handle from straight position,
an aquarium implement for performing a specific function, and having a quick coupling element secured thereto for quick coupling to a handle member, said implement being selected from the group comprising an L-shaped scoop simulating a hand, a hook and a needle type scraper,
said handle members and said implement being shaped and dimensioned for use in an aquarium.

5,779,293
QUICK CHANGE REVERSIBLE SHOVEL
Brian J. Hainer, 260 Tyler St., East Haven, Conn. 06512
Filed Mar. 14, 1996, Ser. No. 616,155
Int. Cl.⁶ E01H 5/02
U.S. Cl. 294—54.5

3 Claims

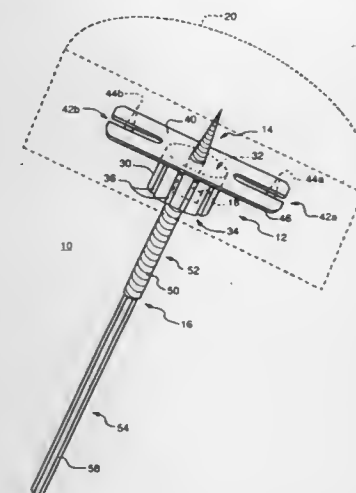


1. A quick change reversible shovel comprising, in combination:
a handle of a cylindrical cross-section and of an extended length having a lower attachment end and having an upper gripping end, the handle having a central axis which is linear over the majority of its length and a small bent portion at the first or attachment end, an angle being at between about 5 and 15 degrees from the axis of a major portion of the handle;
a grip formed over the handle at the gripping end for being held by a user;
a blade in a generally rectangular configuration but with a symmetric curve, the blade being thicker along a horizontal center line and coming to a tapered edge at the opposite upper and lower ends, the blade having curved side edges parallel with each other coupling the upper and lower ends of the blade, a pair of apertures formed in a central extent of the blade along the horizontal center line; and

attachment means including a ring-like member positionable around the lower end of the handle with an opening constituting between about 15 and 30 percent of the periphery of the ring-like member, the ring-like member then having a pair of outwardly extending flanges in a common plane parallel with a rear face of the blade each with an aperture overlying an aperture of the blade, the attachment means further including a small plate with a pair of apertures overlying the apertures of the blade with associated bolts positionable through the apertures of the plate, blade and flanges with associated nuts for securement purposes.

5,779,294
MOUNTING SYSTEM AND METHOD
Steven A. Magri, 29 Sullivan Rd., Hudson, N.H. 03051
Filed Aug. 29, 1996, Ser. No. 697,741
Int. Cl.⁶ B44C 5/02; G09B 23/36
U.S. Cl. 294—61

36 Claims



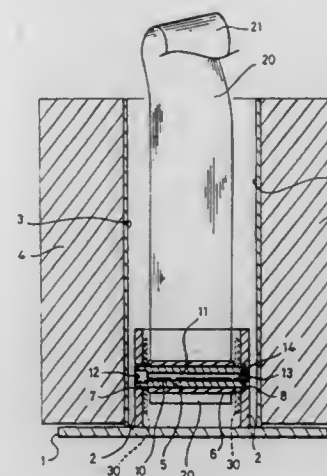
1. A mounting device, for handling an object and mounting the object to a mounting surface, said mounting device comprising:
a mounting base portion, for mounting to the mounting surface, said mounting base portion having at least a first end and a second end;
at least one object engaging member extending from said first end of said mounting base portion, for engaging with the object; and
an elongated member, extending from said second end of said mounting base portion, for allowing the object to be handled, and wherein said mounting base portion extends generally outwardly from said elongated member in at least one direction in a manner that allows said elongated member to extend through the mounting surface such that said mounting base portion generally engages with the mounting surface to mount the object proximate the mounting surface.

5,779,295
LIFTING PLATE FOR SLINGS
Paul Auston, Kent, England, assignor to Checkmate UK Limited, United Kingdom
Filed Dec. 10, 1996, Ser. No. 764,714
Claims priority, application United Kingdom, Aug. 6, 1996, 9612012.06

Int. Cl.⁶ B65H 49/00; B66C 1/16
U.S. Cl. 294—67.1

10 Claims

1. A base plate assembly for use in the lifting of articles having an axial bore therethrough extending from a base of the article to an upper end of the article, which bore has a proximal end at the



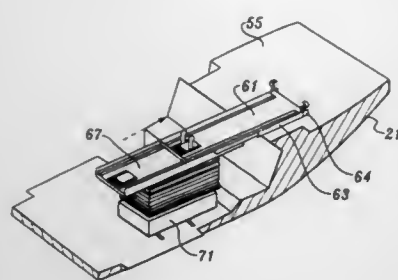
base of the article and a distal end at the upper end of the article, the base plate assembly comprises:

- a base plate for receiving and supporting the article, with the axial bore of the article extending substantially normally from the base plate; and
- an annular wall member upstanding from the base plate and extending axially from a proximal end at the base plate to an open distal end, the annular wall member axially engaging the axial bore of the article, with the article locating upon the base plate, the annular wall member having a radially inward face which encompasses an internal space within the annular wall member and having diametrically opposed recesses or apertures in the radially inward face of the upstanding annular wall adjacent the open end of the annular wall member; and
- a load-bearing cross member comprising a metal bar which extends substantially diametrically across the internal space within the annular wall member adjacent the open end of the wall member, the cross member having end portions which are located in said diametrically opposed recesses or apertures in the annular wall member; and
- securing means operatively associated with at least one of said end portions of said cross member, which securing means acts to positively secure said end portions in position in said recesses or apertures in the annular wall member, said securing means being disengageable whereby the cross member can be demounted from the annular wall member; and
- a length of load-bearing sling material having a loop formed at each end thereof, one end of which length of sling material being passed up said bore in the article and extending beyond the upper end of the article so as to provide a first loop by which the base plate and an article located on the base plate can be lifted, the second loop at the other end of said length of sling material being located around said cross member whereby said length of sling material is attached to said base plate.

5,779,296
PATIENT TRANSPORT SYSTEM
Barry J. Hewko, Sidney, Canada, assignor to Vancouver Island Helicopters, Ltd., British Columbia, Canada
Continuation-in-part of Ser. No. 479,083, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 72,569, Jun. 4, 1993, Pat. No. 5,490,703. This application Nov. 5, 1996, Ser. No. 743,860
Int. Cl.⁶ A61G 3/00; B64C 1/22
U.S. Cl. 296—19

14 Claims

1. An apparatus for positioning and securing a patient support relative to an interior of a vehicle having a floor, said apparatus comprising:
a first tray for removably receiving the patient support wherein the patient support can be secured to said first tray for transportation of a patient; and



a first base on the floor of the vehicle, said first tray being removably, telescopically connected to said first base such that said first tray can be telescopically, longitudinally extended relative to said first base, said first tray being pivotally attached to said first base for pivotal movement of said first tray about an axis generally perpendicular to the floor, said first base including means for moving the first tray towards, and away from, the floor.

5,779,297

SLIT-COVERING PROFILE WITH INTEGRATED REPAIR SOLUTION

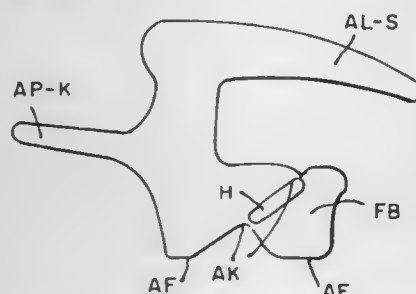
Hasso Flauss, St. Wendel-Winterbach, Germany, assignor to Saar-Gummewerke GmbH, Wadern-Büschfeld, Germany
Filed Jun. 26, 1996, Ser. No. 672,061

Claims priority, application Germany, Jun. 28, 1995, 195 22 980.0

Int. Cl.⁶ B60R 13/06

U.S. Cl. 296—93

8 Claims



1. A slit-covering profile for covering defined slits between a windshield and a vehicle body comprising a profile having a body, a cover lip along one side of the body, a foot zone along another side of the body, a clamping area on the foot zone having a length parallel to the cover lip, and a hollow space between the clamping area and the foot zone.

5,779,298

SUN VISOR, KIT AND METHOD FOR REUPHOLSTERY

John L. Smelser, and Debbie J. Smelser, both of 5904 Fox Hollow Ln., Bradenton, Fla. 34202

Filed Aug. 23, 1996, Ser. No. 697,374

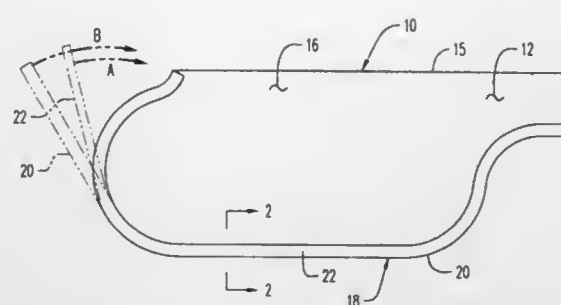
Int. Cl.⁶ B60J 3/00

U.S. Cl. 296—97.1

3 Claims

1. A kit for connecting, decorating, and finishing common edge margins of fabric used to reupholster a sun visor of a vehicle, comprising:

- an elongated length of flexible rope, substantially as long as a length of the edge margins and having a thickness somewhat smaller than a thickness of the sun visor, said rope having an outer coating of adhesive for attaching said rope between the fabric edge margins which extend beyond an edge of a rigid or semi-rigid panel of the visor covered by the fabric;
- an elongated hollow flexible trim member having a length similar to that of said rope and slit or parted along substan-



tially its entire length, said trim member adapted to biasingly engage over and conceal said rope and fabric edge margins attached to said rope.

5,779,299

APPARATUS FOR ACHIEVING AUTOMOTIVE VEHICLE ROOF ISOLATION

George F. Purcell, Southgate; Adam A. Erickson, Novi; Robert A. Patterson, Garden City, all of Mich., and B. Michael Flaherty, Fort Wayne, Ind., assignors to ASC Incorporated, Southgate, Mich.

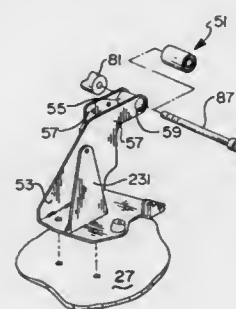
Continuation of Ser. No. 480,272, Jun. 7, 1995, abandoned.

This application Feb. 5, 1997, Ser. No. 794,875

Int. Cl.⁶ B60J 7/12

U.S. Cl. 296—121

20 Claims



1. An apparatus for use in an automotive vehicle comprising: a convertible roof assembly movable between an extended position and a retracted position; an automotive vehicle body having a fixed windshield header; a weatherstrip being disposed between and directly contacting against said roof assembly and said header; elastomeric material disposed between a portion of said roof assembly and said automotive vehicle body; a pivot isolator including said elastomeric material; a rear section of said roof assembly pivotally coupled to said pivot isolator; said elastomeric material being positioned in a vibrational path otherwise present between said rear section of said roof assembly and said automotive vehicle body for reducing vibrational transmission; a bracket directly attaching to a quarter panel section of said automotive vehicle body, said pivot isolator being stationarily affixed to said bracket, said bracket further including a brace mounted between a pair of substantially parallel walls, said pivot isolator being located within a passageway of said brace; and a fastener extending through said pivot isolator securing said roof assembly to said bracket; whereby said elastomeric material reduces vibrations from passing between said body and said roof assembly.

5,779,300

MODULAR PACKER BODY

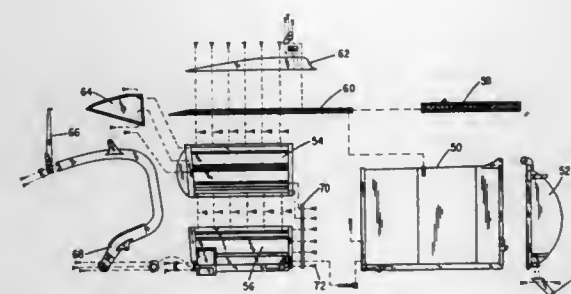
Garwin B. McNeilus, Dodge Center, and Wilbur R. Harris, Rochester, both of Minn., assignors to McNeilus Truck and Manufacturing, Inc., Dodge Center, Minn.

Filed Jan. 28, 1997, Ser. No. 788,428

Int. Cl.⁶ B60P 1/00

U.S. Cl. 296—183

9 Claims



1. In refuse and recyclable collection vehicle, a dedicated truck body selected from the group comprising top loading refuse vehicle bodies, said truck body comprising a plurality of discrete, independently removable and replaceable modular subassemblies for separate replacement in response to non-uniform wear and damage requirements.

5,779,301

SUN ROOF DEVICE

Koichi Ito, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

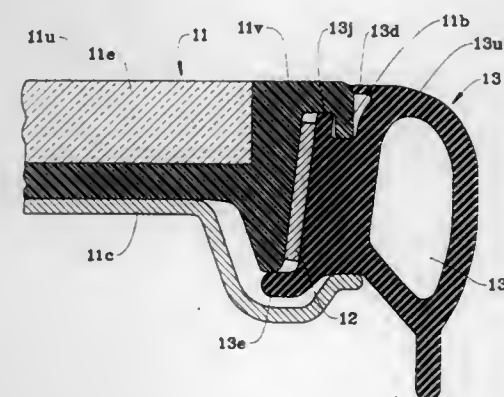
Filed Apr. 27, 1995, Ser. No. 429,635

Claims priority, application Japan, Apr. 27, 1994, 6-090158; Nov. 30, 1994, 6-297473

Int. Cl.⁶ B60J 7/043

U.S. Cl. 269—216

17 Claims



1. A sun-roof device comprising: a lid panel for being fitted within an opening of a vehicle roof, the lid panel including a glass member, an inner panel connected to the glass member and a fixing portion formed integrally with the outer periphery of the glass member, said glass member having an upper surface, said fixing portion having an upper surface and a lower surface, the upper surface of the glass member being substantially coplanar with the upper surface of the fixing portion; a weather strip for establishing a fluid-tight seal between the lid panel and the vehicle roof, the inner panel urging a portion of the weather strip towards the lower surface of the fixing portion; and adhesive means for connecting the weather strip to the inner panel, said weather strip including an upper surface that is substantially coplanar with the upper surface of the fixing portion.

5,779,302

DRINKING VESSEL HOLDER FOR VEHICLES

Bernd Geier, Grafenau; Gerald Jank, Tübingen; Hermann Gross, Magstadt; Jürgen Löffler, Niefern, and Ernst Franz, Filderstadt, all of Germany, assignors to Mercedes-Benz AG, Germany

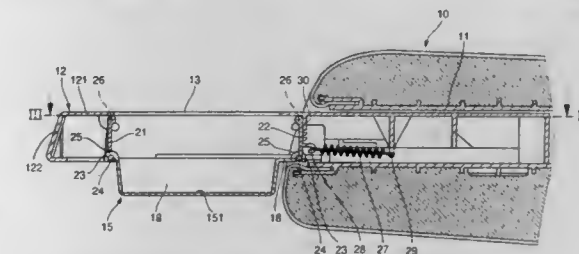
Filed Jan. 30, 1997, Ser. No. 792,836

Claims priority, application Germany, Apr. 26, 1996, 19616774.4-21

Int. Cl.⁶ A47C 7/62

U.S. Cl. 297—188.17

20 Claims



1. A beverage vessel holder for a vehicle comprising: a housing which is integratable in a vehicle part; a hollow beverage vessel receiving device which is axially movably guided in the housing, can be pulled out of and pushed into the housing, and has on a top side thereof at least one insertion opening for inserting a beverage vessel; a beverage vessel support which is pivotably coupled on the receiving device, has a placing surface for supporting a beverage vessel below the insertion opening, and, including the placing surface, can be swivelled into the hollow receiving device; wherein the beverage vessel support has a plate with at least one cup-shaped insertion indentation constructed therein, which indentation, in a pulled out position of said beverage vessel receiving device, is aligned coaxially to the insertion opening, a cup bottom of the insertion indentation forming the placing surface for the beverage vessel; and on forward and rearward sides relative to a sliding direction of the beverage vessel receiving device, the plate is pivotably coupled to a bottom edge of a respective transverse web which is swivelably held on an upper edge thereof in the receiving device.

5,779,303

SUPPORT BRACKET SYSTEM FOR SECURING MOTORCYCLE BACKRESTS

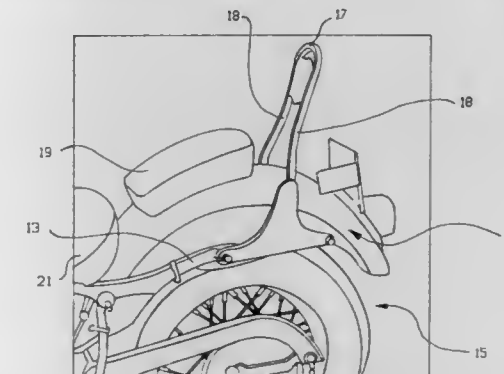
Gregory G. Kuelbs, and Michael J. Green, both of Fort Worth, Tex., assignors to Chrome Specialties, Inc., Fort Worth, Tex.

Filed Feb. 3, 1997, Ser. No. 792,403

Int. Cl.⁶ B62J 1/28

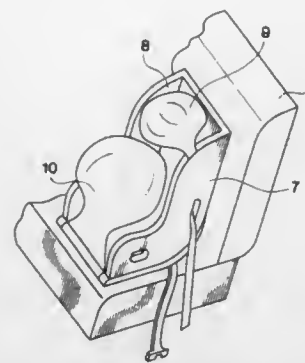
U.S. Cl. 297—215.11

17 Claims



1. A support bracket system for use in securing a motorcycle backrest, having a backrest member and first and second substantially parallel fastening arms, to a fender rail of a motorcycle, comprising:

- (1) left and right support members each including:
- a substantially planar plate member having:
 - an inward facing side;
 - an outward facing side;
 - an upper backrest receiving portion;
 - a forward mounting portion; and
 - a rearward mounting portion;
 - a retainer member located at said upper backrest receiving portion of said substantially planar plate member, and adapted for securing one of said first and second substantially parallel fastening arms of said motorcycle backrest;
 - a forward coupling member located at said forward mounting portion of said substantially planar plate member, said forward coupling member including:
 - a bolt feed slot;
 - a locking cavity communicating with said bolt feed slot;
 - said bolt feed slot and said locking cavity being dimensioned to allow passage and retention of a motorcycle fender bolt;
 - a rearward coupling member located at said rearward mounting portion of said substantially planar plate member, said rearward coupling member including:
 - a bolt feed slot;
 - a locking cavity communicating with said bolt feed slot;
- (2) at least one forward bolt member adapted to extend through at least one of said locking cavities of said forward coupling members to secure at least one of said forward coupling members of said substantially planar plate members in a fixed position relative to said motorcycle;
- (3) at least one rear bolt member for securing at least one of said rearward coupling members of said substantially planar plate members in a fixed position relative to said motorcycle, said at least one rear bolt member including:
- an elongated shaft;
 - at least one externally threaded portion of said elongated shaft;
 - at least one shoulder portion on said elongated shaft, said at least one shoulder portion mating with the substantially planar plate member;
 - at least one internally threaded nut for threaded connection to said at least one rear bolt member, said at least one internally threaded nut including:
 - a locking shoulder portion which mates with the substantially planar plate member and retains it against said at least one shoulder portion on said elongated shaft;
 - a stem portion having an outer diameter smaller than an inner diameter of the locking cavity;
 - wherein the internally threaded nut can be secured onto said at least one rear bolt member so that the stem portion of said at least one internally threaded nut is located within the locking cavity.



said air bag means extending completely from one of said wings to the other of said wings when deployed, a second air bag means contained in said seat portion, said second air bag means deploying upward toward said back in the event that said automobile is involved in a collision, means for deploying said air bags means in the event that said automobile is involved in a collision.

5,779,305

WORK STATIONS

Rory Hocking, Bulls Run Road, RD 1, Plimmerton, New Zealand

PCT No. PCT/NZ95/00043, § 371 Date Nov. 25, 1996, § 102(e) Date Nov. 25, 1996, PCT Pub. No. WO95/32647, PCT Pub. Date Dec. 7, 1995

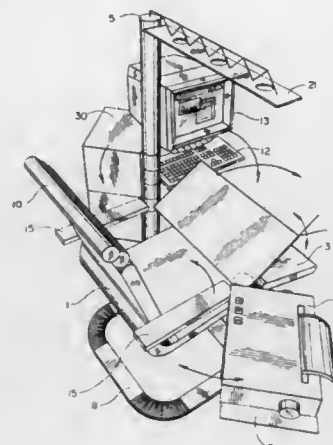
PCT Filed May 26, 1995, Ser. No. 750,315

Claims priority, application New Zealand, May 27, 1994, 260620

Int. Cl.⁶ A47C 7/62

U.S. Cl. 297—217.4

5 Claims



1. A work station comprising a chair base, at least two stanchions projecting upwardly from the chair base, a plurality of sleeves engaged on each of the said stanchions, a support member attached to at least one of said sleeves to extend from said sleeve in a direction substantially normal to the longitudinal axis of the stanchion, said support member being adapted to support an item of equipment and wherein the work station also includes a chair supported on said stanchions by chair sleeves attached to said chair, which sleeves are engaged over at least two of said stanchions with the height of the chair above the chair base being determined by locating sleeves on the stanchions between the chair base and the chair sleeve.

5,779,304

CHILD SAFETY WITH SELF-CONTAINED AIR BAG

Ronny L. Cunningham, Rt. 1, Box 182A, Parkton, N.C. 28371

Filed May 2, 1997, Ser. No. 850,397

Int. Cl.⁶ B60N 2/42

U.S. Cl. 297—216.11

2 Claims

1. A child safety seat for an automobile comprising: a seat having a back, a seat portion and a pair of wings disposed on opposite sides of said back, one of said wings contains an air bag means which will deploy in the event that said automobile is involved in a collision,

5,779,306

MODULAR CHAIR CONSTRUCTION

Åke Ohlsson, Floravägen 21 D, S-137, 38 Västerhaninge, Sweden

PCT No. PCT/SE95/00470, § 371 Date Nov. 21, 1996, § 102(e) Date Nov. 21, 1996, PCT Pub. No. WO95/28865, PCT Pub. Date Nov. 2, 1995

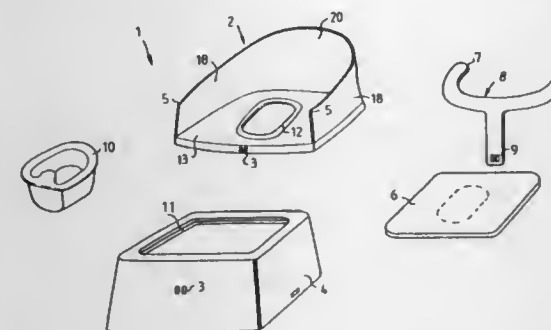
PCT Filed Apr. 27, 1995, Ser. No. 732,227

Claims priority, application Sweden, Apr. 27, 1994, 9401447; Sep. 9, 1994, 9403017

Int. Cl.⁶ A47C 1/08

U.S. Cl. 297—256.16

6 Claims



1. Child's chair construction comprising a chair module with a backrest, a side rest and a seat equipped with a void for a seat hole into which a potty can be inserted, a base module which can be joined together with the chair module, and a removable seat hole cover which can be fastened over the seat, whereby the chair module is equipped with chair fastening means for joining together said chair module with the base module and whereby the base module is equipped with a receiver for the chair fastening means, wherein the chair fastening means comprises two opposing bosses arranged at the front part of the underside of the chair module and a locking device comprising two sliding lock parts arranged at the rear part of the underside of the chair module between the seat hole void and the backrest, said base module is shaped like a box with an essentially open first side and an opposing second side, including a void, the seat hole cover comprising cover fastening means for fastening the seat hole cover on either said chair module or said base module to make a footstool which can be used together with the chair module arranged on a conventional toilet.

5,779,307

Patent Not Issued For This Number

5,779,308

LOCKING APPARATUS OF A FOLDING SEAT FOR VEHICLES

Yeong-Wook Kim, Woolsan, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Dec. 6, 1996, Ser. No. 761,315

Claims priority, application Rep. of Korea, Dec. 8, 1995, 1995 47698

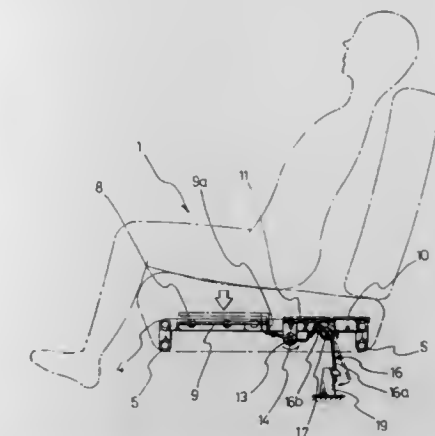
Int. Cl.⁶ A47C 1/02

U.S. Cl. 297—336

5 Claims

1. A locking apparatus for a folding seat of a vehicle, the apparatus comprising:

- a support frame for a rear seat cushioning unit, said rear seat cushioning unit being rotatably mounted to the vehicle by a front hinge, and said support frame having mounted brackets at lateral ends;
- a load detecting plate disposed for vertical movement relative to the support frame, the load detecting plate being resiliently supported by a plurality of return springs, each of the return



springs having one tip connected to the load detecting plate and another tip connected to one of the mounted brackets; a manipulating plate disposed in contact with the load detecting plate and rotatable from an original position in response to a descending motion of the load detecting plate, said manipulating plate having a return spring to return the manipulating plate to its original position; a lock disposed in contact with the manipulating plate and rotatable from an original position in response to the rotary movement of the manipulating plate, said lock having a return spring to return the lock to its original position; and a hook mounted to a floor panel of the vehicle and releasably coupled to the lock for securing the rear seat cushioning unit to the floor panel.

5,779,309

SWIVEL PLATE DEVICE

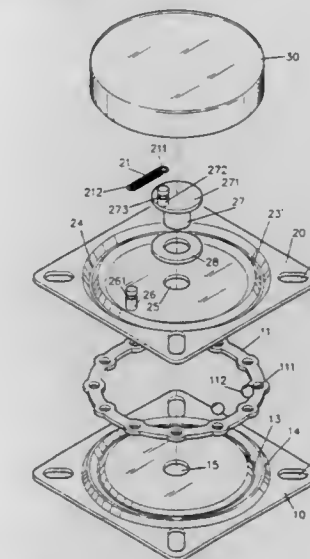
Cheng-Ho Lu, 56 Min Sheng Street, Fengyuan, Taichung Hsien, Taiwan, 420

Filed Sep. 2, 1997, Ser. No. 921,717

Int. Cl.⁶ A47C 1/02; A47B 91/00

U.S. Cl. 297—344.26

1 Claim



1. A swivel plate device comprises:

- a base plate, a rotating plate disposed on the base plate, a chain-shaped ring disposed between the base plate and the rotating plate, and a cover covering the rotating plate, the base plate having a center hole, an annular groove, an annular protuberance, and a plurality of positioning holes, the chain-shaped ring having a plurality of round holes, a plurality of steel balls inserted in the round holes,

the rotating plate having a central through hole, a plurality of oblong holes, an annular recess formed on an upper face of the rotating plate, an annular protrusion formed on the upper face of the rotating plate, an annular channel formed on a lower face of the rotating plate, and a post disposed on the rotating plate,

a periphery groove formed on the post,
a rivet passing through an annular bearing, the central through hole, and the center hole,
a pillar disposed on a head of the rivet,
a periphery recess formed on the pillar,
a spring having a first end hook hooking the periphery recess and a second end hook hooking the periphery groove,
a rim of the cover inserted in the annular recess, and
the chain-shaped ring inserted in the annular groove and the annular channel.

5,779,310

SUPINE RECLINER AND MECHANISM

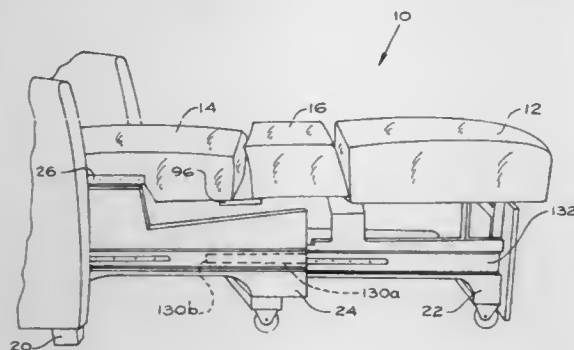
Wesley D. Suskey; Todd S. Zeier, both of Sheboygan, and Randall L. Dorner, Howards Grove, all of Wis., assignors to Nemschoff Chairs, Inc., Sheboygan, Wis.

Filed Apr. 10, 1995, Ser. No. 446,916

Int. Cl.⁶ B60N 2/02

U.S. Cl. 297—354.13

33 Claims



31. A mechanism for use with chairs having seat and back rests extendable to a sleeping position and retractable to a sitting position, said mechanism comprising:

a substantially stationary frame having an interior cross dimension;
a frame movable from said stationary frame and having a structural height dimension and an exterior cross dimension less than said stationary frame interior cross dimension; and
a connector between said stationary and movable frames, said connector having a plurality of non-coplanar extensible members, one said extensible member slidably engaging said stationary frame and another said extensible member slidably engaging said movable frame and having a structural height dimension less than said height dimension of said movable frame, said extensible members including two pairs of interengaging linear members, wherein one interengaging linear member of each said pair slidably engages said stationary frame, and one interengaging linear member of each said pair slidably engages said movable frame, and wherein each linear member of each said pair has a track member for slidable engagement with one of said stationary and movable frames.

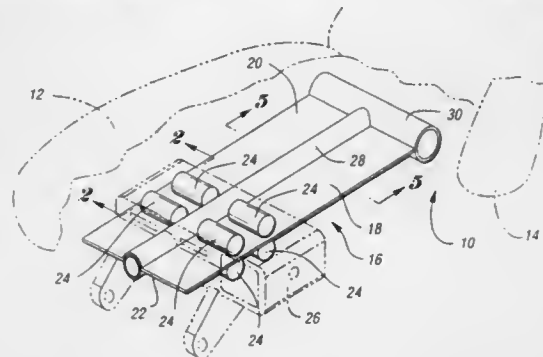
5,779,311
RECLINING SEAT FOR MOTOR VEHICLE
Andrew J. Massara, Vargön, Sweden, assignor to Lear Corporation, Southfield, Mich.

Filed Apr. 10, 1997, Ser. No. 837,222

Int. Cl.⁶ B60N 2/02

U.S. Cl. 297—361.1

9 Claims



1. A vehicle seat comprising:
a lower seat portion;
a seat back portion supported adjacent the lower seat portion in a range of angular orientations for reclining the seat back portion relative to the lower seat portion;
a strap having first and second sides extending between the lower seat portion and the seat back portion;
an actuator having at least two rollers engaging the first and second sides of the strap, said rollers being selectively shiftable between a locked position in which the rollers are spring biased to grip the strap and a recline adjustment position in which the rollers release the strap, said strap being movable in a linear direction between a reclined position and an upright position, said rollers having an axis of rotation aligned perpendicular to the linear direction in which said strap moves.

5,779,312

BACK-REST ANGLE ADJUSTING APPARATUS

Tomoyuki Nagai, Kamiyamada-machi; Eizi Sunohara, Nagano, and Toshihiko Hidaka, Aichi, all of Japan, assignors to Kayaba Kogyo Kabushiki Kaisha, Tokyo; Kabushiki Kaisha Yanagisawa Seiki-Seisakusho, Nagano, and Koito Industries Ltd., Kanagawa, all of Japan

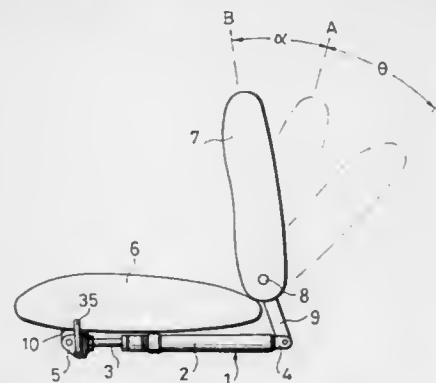
Filed Dec. 26, 1996, Ser. No. 773,970

Claims priority, application Japan, Aug. 6, 1996, 8-197991

Int. Cl.⁶ B60N 2/02

U.S. Cl. 297—362.13

9 Claims



1. A back-rest angle adjusting apparatus for a seat, the device comprising:
a seat;
a backrest of said seat;
a cylinder;
a piston slidably received in said cylinder;

a piston rod having one end coupled to said piston and another end disposed retractably outside said cylinder, said piston defining a rod side chamber and a head side chamber within said cylinder and having a passage for causing both said rod side chamber and a head side chamber to communicate with each other and an opening and closing valve for opening and dosing said passage, said piston rod being always urged in an expanding direction by gas pressure of a gas chamber defined in the cylinder, an outer end of said piston and a proximal end of said cylinder being mounted between said seat and said backrest of said seat, and an angle of said back-rest is adjusted by an opening and closing operation of said closing valve, said cylinder having an enlarged diameter portion formed in an inner cylinder wall portion opposed to said piston in a vicinity of a most expanded position of said piston, and a bypass passage for causing said rod side chamber and said head side chamber to communicate with each other formed between an inner wall of said enlarged diameter portion and an outer periphery of said piston when said enlarged diameter portion is opposed to said piston.

5,779,313

ARTICULATION FOR A VEHICLE SEAT

René Rohee, La Chapelle-Biche, France, assignor to Bertrand Faure Equipements SA, Boulogne, France

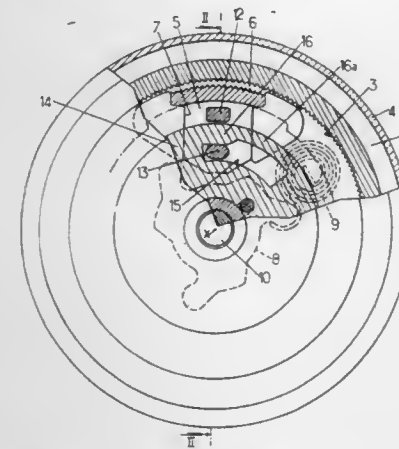
Filed Oct. 24, 1996, Ser. No. 740,055

Claims priority, application France, Oct. 27, 1995, 95 12723

Int. Cl.⁶ B60N 2/02

U.S. Cl. 297—367

5 Claims



1. An articulation for a vehicle seat, allowing the inclination of the backrest of the seat to be adjusted with respect to its seat part about a horizontal axis of pivoting, including:

a first cheek and a second cheek which are intended to be secured respectively to the seat part of the seat and to the backrest of the seat and which are mounted so that they can pivot one with respect to the other about the axis of pivoting the second cheek being secured to toothings which extends over at least one circular arc centered on the axis of pivoting and which toothings points radially inward,
at least one follower inside the box and provided with external toothings capable of interacting with the toothings of the second cheek, this follower being guided as it slides in a radial direction by a guide secured to the first cheek, between a locked position in which the follower interacts with the toothings of the second cheek, thereby blocking the articulation, and an unlocked position in which it is disengaged from the toothings of the second cheek,

a cam inside the box and mounted so that it can, rotate about the axis of pivoting in order to control the radial sliding of the follower, this cam being urged by elastic means toward an angular position of rest for which it pushes the follower back into its locked position,

and a control member accessible to the person sitting in the seat in order to shift the cam from its position of rest into a

working position in which it allows the follower to slide into its disengaged position,

the articulation further including, a peg projecting axially from each follower and, a stepped circular ramp connected to the cheek of the backrest and capable of interacting with the pegs so as positively to hold the followers in their disengaged positions for predetermined ranges of angular positions of the backrest,

said articulation comprising, a second peg projecting axially from each follower and, a thin plate secured to the cam and cut with openings each capable of interacting with one of said second pegs so as positively to control its shifting toward the axis of pivoting and hold it in a disengaged position for those positions of the cam which correspond to the articulation being unlocked, said plate comprising, between the two pegs of each follower, a bowed bridging piece with a portion which is thin enough to make the radial excursions of the followers possible.

5,779,314

COLLAPSIBLE MULTI-PURPOSE CHAIR

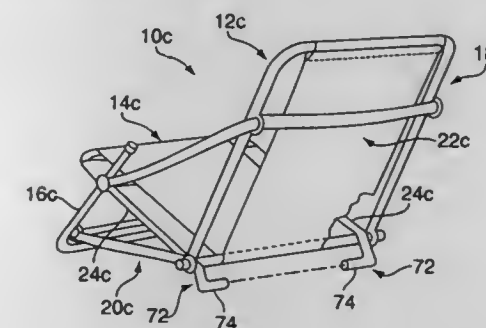
Daniel Grace, 11 Goodrich Ave., Cromwell, Conn. 06416

Filed Jul. 14, 1995, Ser. No. 502,714

Int. Cl.⁶ B60N 2/02

U.S. Cl. 297—380

41 Claims



1. A portable collapsible chair having operative and collapsed positions and comprising a back, a bottom connected to said back for pivotal movement relative to said back, said bottom in said operative position being generally horizontally disposed, said back in said operative position extending generally upwardly from a rear portion of said bottom, said bottom in said collapsed position extending generally upwardly adjacent said back, and carrying means including an elongated flexible carrying strap having opposite ends connected to said bottom forward of said back and connected to said back at spaced apart points of operable connection, said carrying strap defining a carrying portion exposed between said points of operable connection, said carrying strap being freely movable relative to said back at said points of operable connection between back retaining and carrying positions for supporting said back in said operative position relative to said bottom when said carrying strap is in its back retaining position relative to said chair and for moving said chair from its operative position to its collapsed position in response to lifting force applied to said carrying portion to move said carrying strap from said back retaining position to said carrying position, said carrying strap further comprising means for maintaining said chair in said collapsed position while said carrying strap is in said carrying position, whereby said carrying strap may be employed as a shoulder strap for carrying said portable chair in its collapsed condition.

5,779,315
SUPPORT AID FOR USE DURING A BAPTISMAL CEREMONY

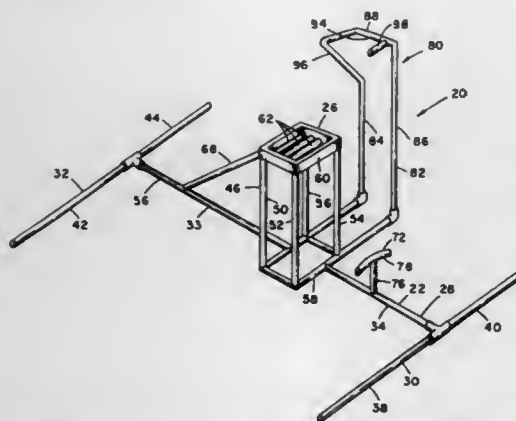
Cormey Shultz, 802 Old Lake City Hwy., Lake City, Tenn. 37769

Filed Dec. 19, 1996, Ser. No. 770,054

Int. Cl.⁶ A47C 5/12

U.S. Cl. 297—423.1

7 Claims



1. A support aid for use during a baptismal process to be performed upon an individual within a pool of water wherein the individual leans rearwardly from an upright orientation to a totally-immersed position within the pool of water during the baptismal process, the support aid comprising:

a base positionable in a pool of water and in a stationary condition with respect to the bottom of the pool;

means attached to the base providing a backless seat upon which an individual is seated for the baptismal process, wherein the seat is disposed relative to the base so that when the base is positioned within the pool of water for use of the support aid, a portion of the individual's torso is disposed beneath the surface of the water in the pool;

feet-engaging means attached to the base including a rigid member beneath which the feet of the individual are positionable so that when the individual is seated upon the seat and his feet are positioned beneath the rigid member of the feet-engaging means, the individual is able to stabilize himself during the baptismal process by urging his feet upwardly against the rigid member of the feet-engaging means; and

grip means attached to the base and including a hand grip disposed to one side of the seat so that when the individual is seated upon the seat, the hand grip is capable of being grasped and held by the individual during the baptismal process; and wherein each of the base, seat and grip means are of constructed of pipe members joined together to form the support aid;

the base includes an elongated lower portion having forward and rearward ends for engaging the bottom of the pool within which the support aid is positionable and a pedestal portion upon which the seat is supported for elevating the seat above the lower portion of the base so that when an individual is seated upon the seat, his feet depend generally downwardly therefrom; and

the rigid member of the feet-engaging means is disposed generally between the seat and the forward end of the lower portion of the base and at an elevation between that of the seat and the lower portion so that when an individual is seated upon the seat with his feet depending downwardly therefrom, the feet can be moved as the individual pivots his legs at the knees between a raised position at which his feet engage the underside of the rigid member for urging thereagainst during the baptismal process and a lowered position which facilitates the movement of the individual to a standing position; and

wherein the member of the feet-engaging means is in the form of a cross-bar member which extends transversely of the support aid and has two opposite ends and a mid-portion, and the cross-bar is shaped so that the ends of the cross-member are lower than the mid-portion thereof.

5,779,316
DEVICE FOR EXTENDING AND RETRACTING A FOOTREST OF A CHAIR

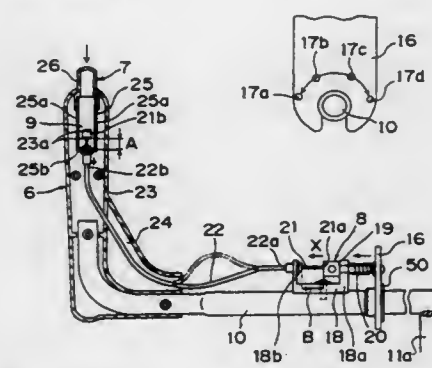
Akihito Sugawa; Masamichi Miyaguchi; Makoto Fukutani, and Fumihito Nishio, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 15, 1996, Ser. No. 647,777

Claims priority, application Japan, May 19, 1995, 7-121808 Int. Cl.⁶ A47C 7/50

U.S. Cl. 297—423.26

14 Claims



1. A chair comprising:

a seat;

a footrest which is pivotally mounted on a front end portion of the seat;

pivotal means for pivoting the footrest between a projecting position at which the footrest is substantially horizontally projected forwardly of the seat and a retractive position at which the footrest is retracted below the seat substantially vertically;

an operating lever for actuating the pivotal means; and

a locking portion for effecting or cancelling locking of the footrest at a pivotal angle between the projecting position and the retractive position, which is provided at the operating lever, said locking portion including a depressible locking button, which can lock in one of a depressed state and a non-depressed state, thereby causing either the locking or unlocking of the footrest at said pivotal angle.

5,779,317
CHAIR WITH INTERCHANGEABLE CHAIR COMPONENTS

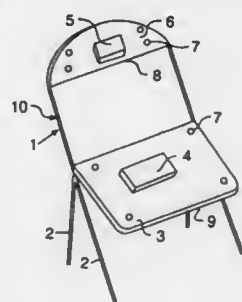
Bill G. Neal, Chuckey, Tenn., assignor to MECO Corporation, Greeneville, Tenn.

Filed Aug. 16, 1996, Ser. No. 699,017

Int. Cl.⁶ A47C 7/00

U.S. Cl. 297—440.2

25 Claims



4. A chair comprising:

(a) attachable chair components having at least one cutout and a plurality of fastening apertures, the fastening apertures comprising a first end, a second end, and arcuate section between the first end and the second end, the first end comprising a substantially circular shaped portion and the second end comprising a substantially circular shaped portion, wherein the

first end of the arcuate shaped fastening apertures is at least as large as the heads of the fasteners and the second end is smaller than the diameter of the heads of the fasteners, the fasteners cooperating with the plurality of fastening apertures and the plurality of holes to attach the chair components to the seating surfaces;

(b) seating surfaces having a plurality of holes and at least one raised locator area and wherein the at least one raised locator area fits into the at least one cutout;

(c) fasteners, the fasteners having heads, wherein the heads each have a diameter.

5,779,318
COMBINATION HEARTH SEAT AND CHILD PROTECTOR

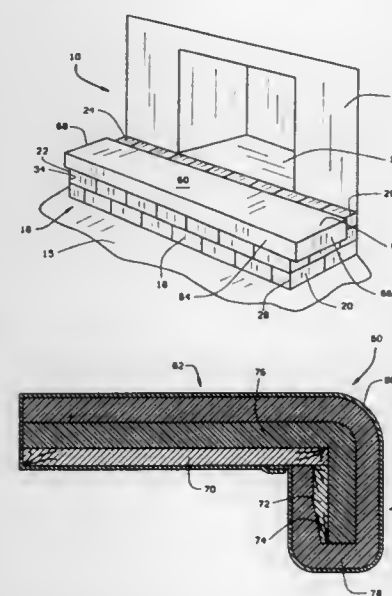
Edward Martin O'Reilly, 46 Klamburg Dr., Ellisville, Mo. 63021

Continuation-in-part of Ser. No. 508,481, Jul. 28, 1995, abandoned. This application Sep. 26, 1996, Ser. No. 721,498

Int. Cl.⁶ A47B 95/04; A47C 7/18

U.S. Cl. 297—452.55

11 Claims



1. A combination hearth seat and child protector comprising:

a rigid frame defined by a top piece, a front piece, a left side piece, and a right side piece, said front piece attached to a front edge of said top piece and extending a distance downward, said left side piece attached to a left edge of said top piece and extending a distance downward, said right side piece attached to a right edge of said top piece and extending a distance downward, said top piece adapted to rest on a top surface of the hearth, said left side piece adapted to cover a portion of the left side of the hearth, said right side piece adapted to cover a portion of the right side of the hearth, and said front piece adapted to cover a portion of the front of the hearth;

a first foam layer disposed on an upper surface of said top piece, and upper surface of said front piece, an upper surface of said right side piece, and an upper surface of said left side piece;

a second foam layer disposed on said first foam layer and on a lower surface of said left side piece and on a lower surface of said right side piece;

a layer of fabric disposed on said second foam layer and a lower surface of said front piece and a lower surface of said top piece; and

wherein said top piece is adapted to cover a substantial portion of the top surface of the hearth, said substantial portion equal to or greater than 3/4 of the top surface of the hearth from a

front edge thereof towards a rear edge thereof, and an entire length of the top surface of the hearth from a right side to a left side thereof.

5,779,319
CHILD SEAT RETRACTOR

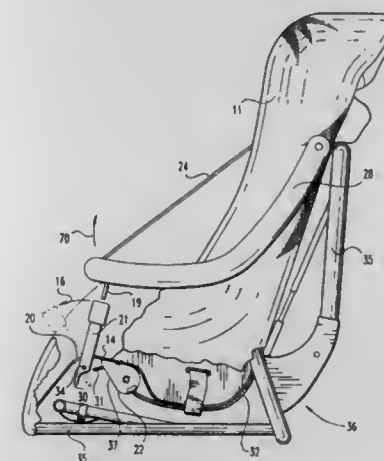
David D. Merrick, Cicero, Ind., assignor to Indiana Mills and Manufacturing, Inc., Westfield, Ind.

Filed Feb. 3, 1997, Ser. No. 794,681

Int. Cl.⁶ A47D 15/00; A62B 35/00

U.S. Cl. 297—484

15 Claims



1. A child seat retractor, comprising:

a child seat having a harness and interengaged combination of a tongue and a seat belt buckle, said harness having a portion; a frame attached to said child seat;

a spool to wrapingly receive said portion of said harness and further having an axle and end walls at least one of which is configured as a ratchet wheel, said spool rotatably mounted to said frame;

a first spring mounted to said frame and normally urging said spool to rotate to a retracted position, whereat said portion of said harness is wrapped thereon;

a locking bar mounted to said frame to be movable between a removed position whereat said locking bar is located apart from said ratchet wheel, and a locking position, whereat said locking bar lockingly engages said ratchet wheel limiting movement of said spool; and

a crotch stalk pivotally mounted to said child seat, said crotch stalk pivotal with respect to said child seat between an adjustment position and a restraining position, said crotch stalk when in said adjustment position controlling said locking bar in said removed position and when in said restraining position controlling said locking bar in said locking position.

5,779,320
PROTECTIVE CHILD RESTRAINT DEVICE FOR USE ON AN AUTOMOTIVE VEHICLE SEAT

Daniel S. Corrales, 1541 W. 132nd St., Gardena, Calif. 90249

Filed Apr. 29, 1997, Ser. No. 841,046

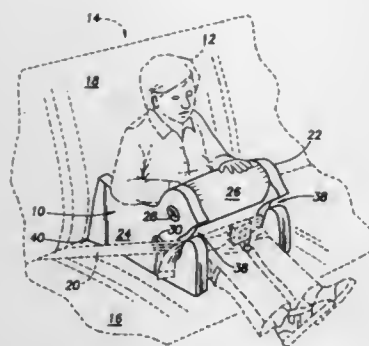
Int. Cl.⁶ A47C 31/00; 7/00

U.S. Cl. 297—487

16 Claims

1. A protective device for use in restraining a child sitting on a bottom portion of an automotive vehicle seat having a seat belt secured thereto and a backrest portion extending upwardly from and generally transverse to said bottom portion, said device comprising:

first and second side panel members disposed in a mutually spaced, parallel and opposing relationship, said first and second side panel members being positionable atop and trans-



verse to said bottom portion of said automotive vehicle seat on opposite sides of a child sitting thereon, said first and second side panel members having top front corner portions and front side edge portions;

a third member extending between and interconnecting said top front corner portions and positioned to extend over the legs of a child seated between said first and second side panel members; and

a pair of generally L-shaped seat belt-receiving slots formed in said front side edge portions, each of said seat belt-receiving slots having a front portion extending rearwardly through one of said front side edge portions and having an inner end, and a rear portion extending downwardly from the inner end of the front slot portion and having a vertical length, said seat belt-receiving slots being configured to permit the seat belt to be moved rearwardly through their front portions and then be moved downwardly into their rear portions to be restrained therein.

5,779,321

SWING TAIL ASSEMBLY FOR MINER

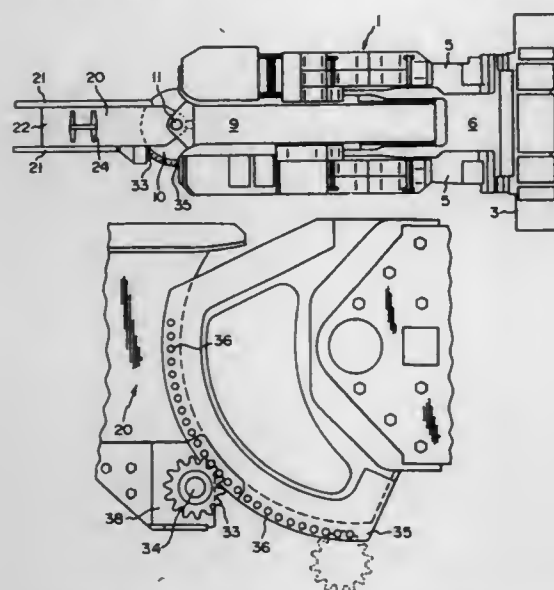
George E. Coleman, Bristol, Tenn., and Michael R. Walker, Bristol, Va., assignors to Arch Technology Corporation, St. Louis, Mo.

Filed Nov. 12, 1996, Ser. No. 747,446

Int. Cl.⁶ E21C 31/10; 35/20

U.S. Cl. 299—64

19 Claims



1. A swing tail assembly for rotating a swing tail conveyor relative to a miner having a central conveyor with an outby end having a fan section, said swing tail assembly including:

a motor mounting assembly for mounting on a swing tail conveyor;

a drive arrangement mounted on said motor mounting assembly, said drive arrangement including a hydraulic motor, a differential planetary speed reducer and a sprocket operatively connected to said differential planetary speed reducer;

a fixed pin/rack arrangement adapted to be mounted on a fan section of a miner conveyor;

whereby said sprocket cooperates with said fixed pin/rack arrangement to rotate a swing tail conveyor relative to a fan section of a miner conveyor.

5,779,322

Patent Not Issued For This Number

5,779,323

SPOKED WHEEL WITH AERODYNAMIC AND RIGIDITY IMPARTING SPOKES

Mike Burrows, Norwich, England, assignor to Giant Manufacturing Co., Ltd., Taipei, Taiwan

Filed Apr. 25, 1997, Ser. No. 845,692

Int. Cl.⁶ B60B 1/02

U.S. Cl. 301—58

4 Claims



1. A spoked wheel comprising:

a wheel rim formed with a plurality of equally displaced first through-holes therethrough;

a wheel hub including an axle tube and two side bosses attached respectively to two end portions of said axle tube, each of said side bosses being formed with a radial hub flange, said hub flange having inner and outer sides and being formed with a plurality of equiangularly displaced spoke apertures, each of said spoke apertures being formed with opposite diverging end sections that are respectively confined by first and second annular inclined faces;

a plurality of spokes formed integrally from fiber reinforced plastic, each of said spokes including

an intermediate portion having uppermost and lowermost sections, and an oval cross-section which has a first major axis parallel to a plane of the spoked wheel and a first minor axis normal to the plane of the spoked wheel, the oval cross-section being symmetrical along the first major and minor axes and having a first width measured in a direction of the first major axis and a first thickness measured in a direction of the first minor axis;

a nub having a circular cross-section and an outermost end portion with a diameter larger than that of said spoke apertures, said nub further having a gradually converging connecting end portion formed with a first abutment face

for contacting tightly said first inclined face of a corresponding one of said spoke apertures so as to secure said nub on said inner side of said hub flange on one of said side bosses;

a bend extending from said connecting end portion of said nub and through the corresponding one of said spoke apertures, said bend interconnecting said nub and said lowermost section of said intermediate portion and having inner and outer sides, said bend changing gradually from the circular cross-section to the oval cross-section and having a second abutment face on said inner side thereof for contacting tightly said second inclined face of the corresponding one of said spoke apertures so as to secure said bend on said outer side of said hub flange on said one of said side bosses;

a transitional portion extending from said uppermost section of said intermediate portion, and changing gradually from the oval cross-section to an elliptical cross-section which has a second major axis parallel to the plane of the spoked wheel and a second minor axis normal to the plane of the spoked wheel, the elliptical cross-section being symmetrical along the second major and minor axes and having a second width measured in a direction of the second major axis and equal to the first width, and a second thickness measured in a direction of the second minor axis and greater than the first width; and

a foot portion extending from said transitional portion and having the elliptical cross-section and a metal fastener axially embedded therein;

a plurality of washers, each of which is disposed between said wheel rim and a respective one of said spokes, each of said washers being formed with a second through-hole that is registered with a corresponding one of said first through-holes in said wheel rim, and with said metal fastener on the respective one of said spokes, each of said washers having the elliptical cross-section, a bottom face that is in contact with a distal end face of said foot portion of the respective one of said spokes, and a top face that is contoured to correspond with and contact a bottom side of said wheel rim; and

a plurality of spoke fasteners, each having a head portion which is larger than said first through-holes in said wheel rim, and a shank portion which extends through a respective one of said first through-holes in said wheel rim and through said second through-hole of a respective one of said washers, each of said spoke fasteners engaging said metal fastener on said foot portion of a respective one of said spokes so that said spokes can be placed under tension when connecting said wheel rim to said wheel hub to impart rigidity to the spoked wheel.

5,779,324

TOWED VEHICLE BRAKE SYSTEM

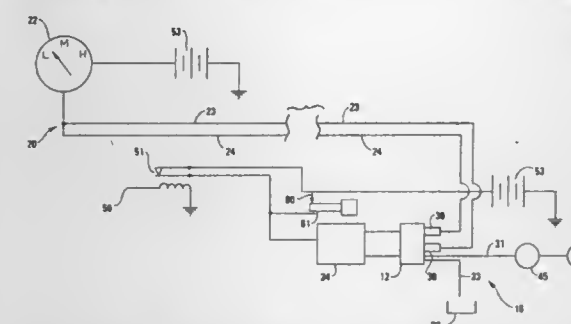
Frederick W. Cords, Le Sueur; David E. Frye, North Mankato, and Jeffrey S. Swanson, White Bear Lake, all of Minn., assignors to Commercial Intertech Corp., Youngstown, Ohio

Filed Dec. 28, 1995, Ser. No. 579,215

Int. Cl.⁶ B60T 13/00

U.S. Cl. 303—7

18 Claims



1. A hydraulic control system configured for use in connection with a towed vehicle hydraulic brake system including a hydraulic

brake and a tank of hydraulic fluid for actuating the brake and adapted to be connected to a towing vehicle having a brake and an electrical system for providing a brake signal upon actuation of the towing vehicle brake, the hydraulic control system comprising:

a pump configured for electrical interconnection to the towing vehicle electrical system and for hydraulic interconnection between the tank of hydraulic fluid and brake of the towed vehicle hydraulic system, for providing pressurized hydraulic fluid to the brake in response to the towing vehicle brake signal;

input means for receiving an operator-selected input representative of a desired one of a plurality of constant-level towed vehicle braking forces; and

fluid pressure control means coupled to the pump and input means, for controlling the pressure of the hydraulic fluid provided to the brake as a function of the operator-selected input, and causing the application of the desired constant-level towed vehicle braking force represented by the operator-selected input.

5,779,325

FLUID CONTROL CIRCUIT AND BRAKE SYSTEM

Stuart Gavin Diesel, Brighton, United Kingdom, assignor to Twiflex Limited, Twickenham, United Kingdom

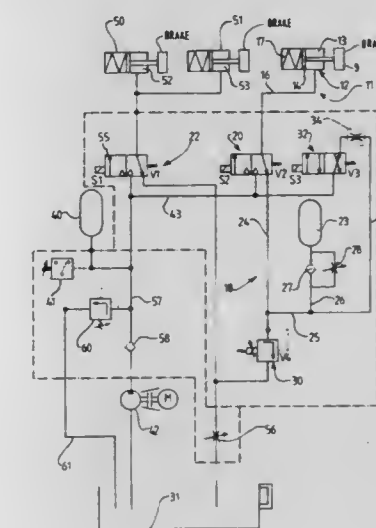
Filed Jul. 18, 1996, Ser. No. 685,593

Claims priority, application United Kingdom, Jul. 22, 1995, 9515062

Int. Cl.⁶ B60T 15/46

U.S. Cl. 303—72

12 Claims



1. A fluid control circuit for operation of a brake comprising a first circuit part including an actuator having a chamber and an operating part, the operating part being mechanically connected to the brake and movable to release or apply the brake when fluid under an operating pressure is fed to the chamber, means to expel fluid from the chamber when the operating pressure is released, thus to apply or release the brake, a second circuit part, a control valve operable in a first condition to permit fluid to pass under the operating pressure to the chamber of the actuator in the first circuit part and when in a second condition to permit fluid to pass from the first circuit part into the second circuit part, the second circuit part further comprising a buffer means to which fluid pressure is communicated from the first circuit part when the control valve is moved to its second condition, and a proportional fluid valve to control the flow of fluid passing to a tank from the second circuit part in dependence upon the pressure of fluid in the second circuit part.

5,779,326

ACTUATING UNIT FOR A LOCKING-PROTECTED MOTOR VEHICLE BRAKE SYSTEM

Hans-Jörg Feigel, Rosbach; Ulrich Neumann, Rosdorf, and Lothar Schiel, Hofheim, all of Germany, assignors to ITT Automotive Europe GmbH, Germany

PCT No. PCT/EP93/03246, § 371 Date Sep. 14, 1995, § 102(e)

Date Sep. 14, 1995, PCT Pub. No. WO94/16927, PCT Pub. Date Aug. 4, 1994

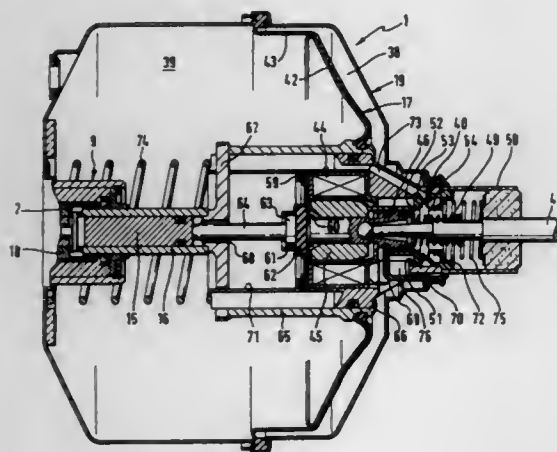
PCT Filed Nov. 20, 1993, Ser. No. 492,015

Claims priority, application Germany, Jan. 20, 1993, 43 01 336.8

Int. Cl.⁶ B60T 8/44

U.S. Cl. 303—114.3

19 Claims



1. An actuating unit for a locking-protected motor vehicle brake system comprising:

a control housing;

a pneumatic brake booster having:

(a) a housing,

(b) a vacuum chamber,

(c) a working chamber, and

(d) a wall movable separately from the said control housing against the direction of actuation in the brake pressure control mode by a pneumatic pressure equalization initiated within the said booster housing;

a control valve;

an input member:

(a) extending through said control housing,

(b) actuating said control valve, and

(c) controlling a pneumatic pressure difference acting on said movable wall of the said brake booster; and

a main brake cylinder downstream of said pneumatic brake booster and having:

(a) first pressure space,

(b) a second pressure space,

(c) a modulator space which:

(1) in the normal braking mode is part of said first pressure space, and

(2) in the brake pressure control mode is connected to wheel brakes separately from said first pressure space,

(d) a first piston defining said first pressure space and having:

(1) an inner part connected to said input member, and

(2) an outer part modulator piston connected to said movable wall of said brake booster and defining said modulator space, and

(e) a second piston defining said second pressure space.

5,779,327

PRESSURE SUPPLY SYSTEM HAVING A MALFUNCTION DETECTION DEVICE

Hiroshi Nakashima, Nishio; Toshiaki Hamada, Okazaki; Tadashi Terazawa, Toyota, and Yuichiro Sakakibara, Hekinan, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

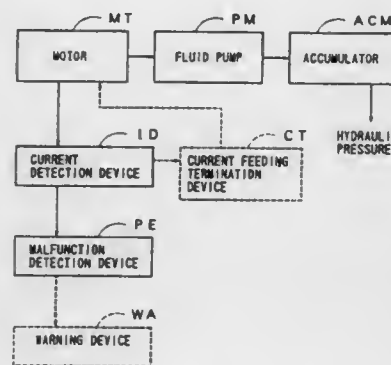
Filed Aug. 27, 1996, Ser. No. 697,597

Claims priority, application Japan, Aug. 31, 1995, 7-223455

Int. Cl.⁶ B60T 13/14

U.S. Cl. 303—122.12

7 Claims



1. A pressure supply system having a fluid pump, an electric motor for driving said fluid pump to supply a hydraulic pressure in proportion to a current fed to said motor, and an accumulator for accumulating the hydraulic pressure supplied from said fluid pump, comprising:

current detection means for detecting the current fed to said motor; and

malfunction detection means for calculating an increasing rate of the current fed to said motor on the basis of the output of said current detection means, and detecting a malfunction of said pressure supply system on the basis of the increasing rate of the current fed to said motor, said malfunction detection means determining that the malfunction occurs when an increasing rate of the current fed to said motor is less than a predetermined rate.

5,779,328

METHOD FOR MONITORING A BRAKE SYSTEM

Rolf-Hermann Mergenthaler, Leonberg; Jost Brachert, Ditzingen; Ruediger Poggenburg; Bernard Witsch, both of Vaihingen; Norbert Polzin, Zaberfeld, all of Germany; Robert Kornhaas, Commerce, Mich.; Ulrich Gottwick, Stuttgart, and Thomas Braun, Steinheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 30, 1996, Ser. No. 774,625

Claims priority, application Germany, Dec. 30, 1995, 195 49 172.6; Sep. 19, 1996, 196 38 196.7

Int. Cl.⁶ B60T 17/22; 8/88

U.S. Cl. 303—122.12

13 Claims

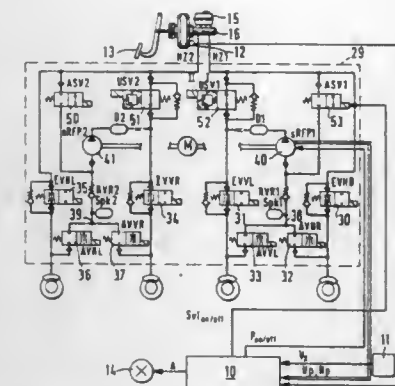
1. Method for monitoring a brake system comprising a hydraulic circuit with a hydraulic pump and at least one solenoid valve having at least two operating states, wherein changing the operating state changes the flow resistance of the hydraulic circuit, said method comprising

determining whether at least one specified operating condition is present,

determining run-down behavior of the hydraulic pump in a first operating state of the solenoid valve when said at least one specified operating condition is present,

determining run-down behavior of the pump in a second operating state of the solenoid valve,

comparing said run-down behaviors in said first and second operating states,



determining whether a malfunction is present based on said comparison, and
actuating a display device when it is determined that a malfunction is present.

5,779,329

EMERGENCY BRAKE SYSTEM SENSING PEDAL SPEED AND PRESSURE

Sadao Takeshima, Higashimatsuyama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

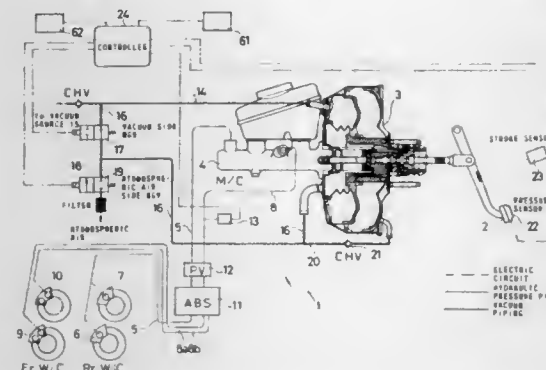
Filed May 24, 1996, Ser. No. 652,937

Claims priority, application Japan, Jun. 8, 1995, 7-141802

Int. Cl.⁶ B60T 13/58

U.S. Cl. 303—155

14 Claims



1. A brake system comprising:

a brake controlling member;

a vacuum booster comprising a constant pressure chamber inside of which is always vacuumed by a vacuum source, a variable pressure chamber inside of which is vacuumed when a brake is in non-operation and into which atmospheric air is introduced when the brake is in operation, a diaphragm which separates said constant pressure chamber and said variable pressure chamber and is actuated by the atmospheric air introduced in said variable pressure chamber, an inner chamber inside of which is normally vacuumed and into which the atmospheric air is introduced alternatively if necessary, a control valve which is controlled by said brake controlling member so that said variable pressure chamber is allowed to communicate with the inner chamber when the brake is in non-operation, and said variable pressure chamber is allowed to communicate with the atmospheric air and not allowed to communicate with the inner chamber when the brake is in operation, and an output shaft which is actuated by said diaphragm;

a master cylinder which is actuated by said output shaft of said vacuum booster to develop brake fluid pressure;

brake cylinders into which the brake fluid pressure of said master cylinder is introduced to produce a braking force;
a first path which is communicated with said inner chamber;
a pressure switching valve which normally allows said first path to communicate with said vacuum source and allows said first path to communicate with the atmospheric air if necessary;
a second path for introducing the atmospheric air passing through said first path to said variable pressure chamber;
a check valve which is disposed in said second path to allow air from said first path to said variable pressure chamber and not allow air from said variable pressure chamber to said first path;

a displacement sensor for detecting displacement of said brake controlling member;

a force sensor for detecting an operating force exerted on said brake controlling member; and

an electronic controller for operating said pressure switching valve when an operating speed computed based on said displacement detected by said displacement sensor is greater than a predetermined speed threshold and said operating force detected by said force sensor is greater than a predetermined force threshold, wherein

said electronic controller operates said pressure switching valve to allow said first path to communicate with the atmospheric air when emergency braking is required so as to increase said braking force.

5,779,330

Patent Not Issued For This Number

5,779,331

FILE MANAGEMENT SYSTEM

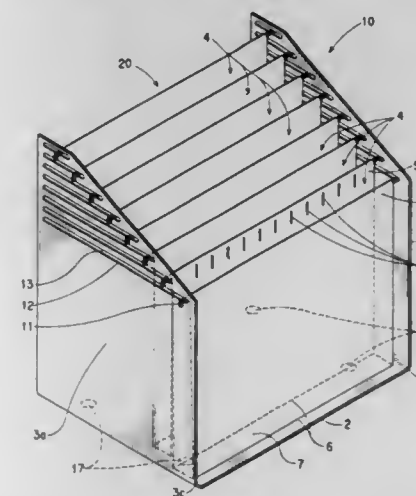
Keith Thomas Fox, 2407 Lennox St., Easton, Pa. 18042, and Robert Edward Ball, 45 Strawbridge Ave., Westmont, N.J. 08108

Filed Aug. 14, 1996, Ser. No. 696,725

Int. Cl.⁶ A47B 63/00

U.S. Cl. 312—184

10 Claims



1. A vertical filing assembly comprising a filing support having more than two mounting means vertically spaced from each other, each mounting means being tracks spaced apart from and substantially parallel to each other, and two or more file compartments, each file compartment having a front panel having a top edge and a bottom edge and a back panel having a top edge and a bottom

edge adjoining the bottom edge of the front panel, wherein the compartments are contained in the filing support and wherein the back panel and the front panel of each compartment has a suspension means, at least one of the suspension means for each compartment being slidably engaged with the mounting means in a manner that

- a. the top edge of the front panel of each compartment is positioned lower than the top edge of the back panel of that compartment and is positioned at least as high the top edge of the back panel of the compartment immediately in front of it in the filing assembly, and
- b. each compartment can be opened by sliding the front panel or the back panel on the mounting means from which it is suspended or by sliding both front and back panels on the mounting means from which they are suspended.

5,779,332

Patent Not Issued For This Number

5,779,333

FASTENING ARRANGEMENT FOR GUIDE RAILS OF PULL-OUT GUIDES

Horst Lautenschläger, Reinheim, Germany, assignor to MEPLA-Werke Lautenschläger GmbH & Co., KG, Germany

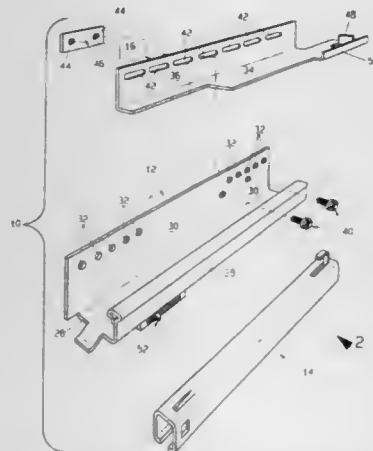
Filed Oct. 28, 1996, Ser. No. 738,717

Claims priority, application Germany, Aug. 6, 1996, 296 13 357 U

Int. Cl.⁶ A47B 88/00

U.S. Cl. 312—334.15

11 Claims



1. An arrangement for fastening guide rails of pull-out guides for drawers within the carcass of a cabinet which has a narrowed opening front region relative to the internal width between the side walls of the carcass, comprising;

a guide rail having a length that is less than the depth of the carcass measured in the longitudinal direction of the guide rail,

said guide rail having a first vertical profile leg engaging into an associated running rail from below the running rail, wherein the running rail is fastenable to a drawer and is configured as a hollow profile with an opening in its under-side and has roll-on tracks formed in an interior of said hollow profile with roll-bodies disposed therein and capable of rolling in one of the running rail roll-on tracks and a rolling track formed on a portion of the first vertical profile leg engaged in the interior of the hollow profile, for longitudinal displacement of the running rail,

a profile cross member extending substantially horizontally at an angle of about 90° from a lower profile edge of the first vertical profile leg to a lower edge of a second vertical profile leg, which extends substantially vertically at an angle of about 90° from the profile cross member,

an extended distance profile, connected in a mutually overlapping position with the guide rail within the carcass, having a length greater than the difference between the length of the guide rail and the depth of the carcass so that the distance profile at the end of the guide rail bridges the distance between the end of the guide rail and a rear wall of the carcass,

wherein the distance profile at least in a region in which it is overlapped by the guide rail in the connected position, has the shape of an angle section having a first profile leg which, in the overlapping region, lies against the profile cross member, the distance profile further having a second profile leg which, also in the overlapping region, lies against the second vertical profile leg of the guide rail,

said first profile leg of the distance profile comprising an end region for installation into a holding fitting, said end region comprising a third profile leg joined to the first profile leg on an edge opposite the second profile leg of the distance profile to stiffen said end of the first profile leg

a holding fitting installable at the rear wall of the carcass for receiving said end of the first profile leg of the distance profile,

wherein the end of the distance profile is installed in the holding fitting, and

means for connecting the guide rail to the distance profile in the mutually overlapping region.

5,779,334

ENHANCED VIDEO PROJECTION SYSTEM

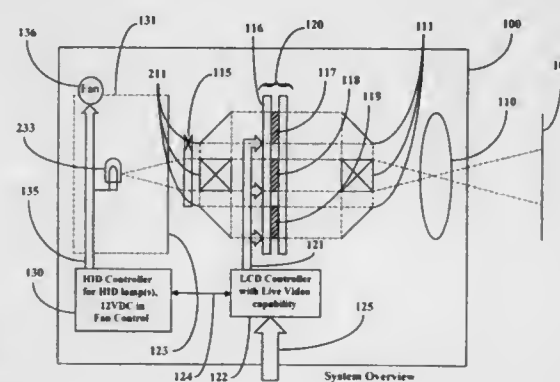
Dan Kikinis, Saratoga, Calif., assignor to Lextron Systems, Inc., Saratoga, Calif.

Continuation-in-part of Ser. No. 686,809, Jul. 26, 1996. This application Jan. 8, 1997, Ser. No. 780,351

Int. Cl.⁶ G03B 21/28

U.S. Cl. 353—31

14 Claims



11. A video projector system comprising: a source projecting a beam of white light; a splitter adapted to split the beam of white light into separate parallel beams of light of different colors; a light-shutter matrix system comprising a number of equivalent switching matrices equal to the number of beams of light of different colors and placed one each in each beam path; a video controller adapted for controlling the light-shutter matrix system; and

an optical combination system adapted for combining the separate beams after the light-shutter matrix system into a single composite beam for projection on a surface to provide a video display.

5,779,335

Patent Not Issued For This Number

5,779,336

LIQUID CRYSTAL DISPLAY WITH PROJECTING FUNCTION

Michael Zhao, 9682 Telstar Ave., El Monte, Calif. 91731

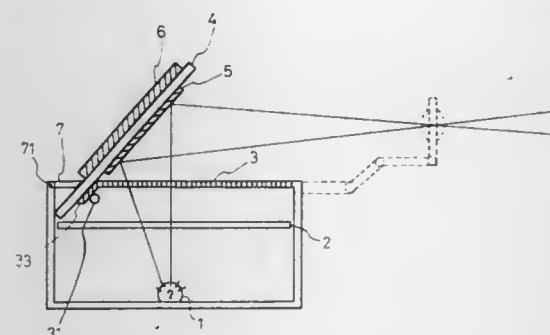
Filed Feb. 11, 1997, Ser. No. 798,554

Claims priority, application Switzerland, Dec. 26, 1996, 96 2 49524.7

Int. Cl.⁶ G03B 21/14

U.S. Cl. 353—119

5 Claims



1. A liquid crystal display with projecting function in the form of a box body with enclosed sides except at the top, said liquid crystal display comprising:

a projection light source provided at the bottom side of said box body for providing light necessary for projection purposes; a condensing lens disposed in said box body above said projection light source;

a liquid crystal display plate connected to a computer mainframe, said liquid crystal display plate being connected to a display light source at one side and a top side of said box body at the other side;

a relay plate;

a reflective lens fixedly connected to a lower side of said relay plate;

a back light plate fixedly connected to an upper side of said relay plate;

said relay plate, said reflective lens and said back light plate being closable and accommodated in between said liquid crystal display plate and said condensing lens; said relay plate, said reflective lens and said back light plate being obliquely disposed at the upper side of said liquid crystal display plate, whereby light from said projection light source may pass through said condensing lens, said liquid crystal display plate and said reflective lens for projection purposes.

5,779,337

PLANE LIGHT SOURCE UNIT AND LIGHT GUIDE USED THEREIN

Shinichiro Saito, Hachioji; Norio Nakamura, Tokyo; Yasuo Shono, Tokyo; Yoshinori Higuchi, Tokyo, and Atsunori Ohya, Tokyo, all of Japan, assignors to Konica Corporation, Tokyo, and Toshiba Corporation, Kanagawa-ken, both of Japan

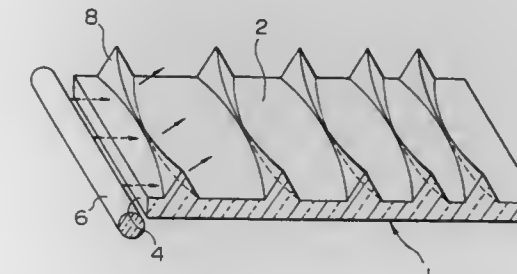
Filed Jul. 31, 1996, Ser. No. 691,807

Claims priority, application Japan, May 30, 1996, 8-136278; May 13, 1996, 8-117800; Jul. 23, 1996, 8-193646

Int. Cl.⁶ F21V 7/04

U.S. Cl. 362—31

48 Claims



1. A plane light source unit comprising:

a tubular light source; and

a light guide having a light emitting surface and a reflecting surface in addition to a light incident face placed near said tubular light source to receive light emitted from said tubular light source,

wherein said light guide has a plurality of projections arrayed on the light emitting surface to extend parallel to each other along a longitudinal direction of said tubular light source so as to cause the light incident from the light incident face to emerge from the light emitting surface, and a height of each of said projections increases from a central portion to two end portions in the longitudinal direction of said tubular light source.

5,779,338

SURFACE LIGHT SOURCE DEVICE

Tsuyoshi Ishikawa, Nerima-ku; Kayoko Watai, Hasuda, and Kazuaki Yokoyama, Ageo, all of Japan, assignors to Enplas Corporation, Kawaguchi, Japan

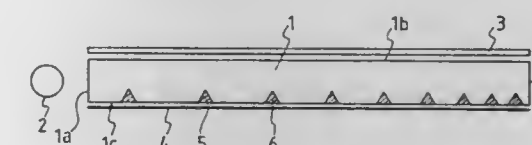
Division of Ser. No. 290,087, Aug. 12, 1994, Pat. No.

5,755,549. This application Sep. 6, 1996, Ser. No. 709,118

Int. Cl.⁶ F21V 8/00

U.S. Cl. 362—31

14 Claims



1. A surface light source device comprising a light conducting member made of transparent material, a linear light source disposed adjacent to one of edge surfaces of said light conducting member, and a diffusion plate disposed on a light emitting surface side of said light conducting member, said light conducting member comprising a multiplicity of concave portions formed on an opposite side surface of said light emitting surface of said light conducting member and a light diffusing material applied on all over the opposite side surface of the light conducting member.

5,779,339

SURFACE LIGHT SOURCE APPARATUS

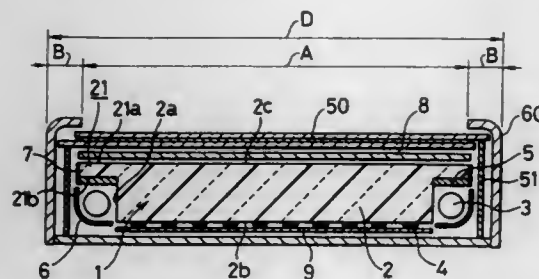
Satoru Konishi; Kazushige Ohta; Koji Kawada, and Takashi Obata, all of Hadano, Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1997, Ser. No. 784,409

Claims priority, application Japan, Jan. 17, 1996, 8-023036
Int. Cl.⁶ F21V 7/04; G01D 11/28

U.S. Cl. 362—31

2 Claims



1. A surface light source apparatus comprising an optical guide plate formed substantially rectangular from a transparent member and having a reflection treated rear surface and at least one light source arranged on one of end surfaces on the thickness sides of said optical guide plate, wherein

an overhang portion overhanging the light source is provided integrally on part of the end surface where the light source of the optical guide plate is arranged in such a manner that it is flush with the front surface of the optical guide plate; and an incident light control unit formed from a resin for diffusing and attenuating light is provided integrally on at least an overhang portion side out of the light source facing surfaces of the overhang portion and the end surface of the optical guide plate.

5,779,340

VEHICLE LAMP AND METHOD OF MANUFACTURING THE SAME

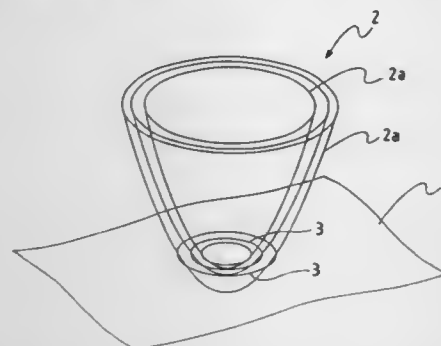
Masahiro Maeda, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 549,531

Claims priority, application Japan, Oct. 28, 1994, 6-287167
Int. Cl.⁶ F21V 7/06; B60Q 1/04

U.S. Cl. 362—61

21 Claims



1. A vehicle lamp comprising a light source and a reflection mirror having a principal optical axis, said reflection mirror comprising:

a reflection surface defined by a fundamental surface and having at least a first and a second plurality of reflection steps, said fundamental surface being defined as a free curved surface so as to be conformed to a configuration of a car body; wherein said reflection steps in each said first and second plurality of reflecting steps are formed:

(a) from a plurality of paraboloids of revolution, each paraboloid defining a paraboloid surface, said plurality of paraboloids having a common axis of rotational symmetry that passes through a central part on said fundamental surface and each paraboloid intersecting with said fundamental surface to define a closed curve thereon which is adjacent to at least one other such closed curve formed by another intersection of another paraboloid with said fundamental surface, and

(b) by allotting a part of said paraboloid surface for each of said respective paraboloids of revolution between adjacent ones of closed curves formed as lines of intersection of said fundamental surface and said paraboloids of revolution having different focal distances; and

wherein each of said first and second plurality of reflection steps is arranged around a respective central part in multiple loops.

5,779,341

REDUCED PACKAGE DEPTH LOW-PROFILE LAMP WITH SMOOTHLY SHAPED LENSES

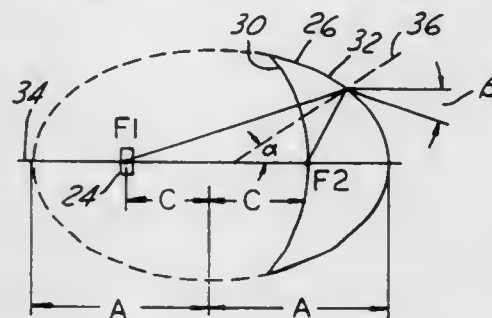
Jeyachandrabose Chinniah, Ann Arbor; Mahendra S. Dassanayake, Farmington Hills, and Balvantrai G. Patel, Rochester Hills, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Mar. 1, 1996, Ser. No. 607,545

Int. Cl.⁶ B60Q 1/00

U.S. Cl. 362—61

19 Claims



1. A lighting system for an automotive vehicle having an optical axis, a longitudinal axis, a horizontal plane and parallel to the longitudinal axis of said vehicle, said lighting system comprising:

a light source emitting light; and

a solid lens having a first surface and a second surface, wherein said first surface has a hyperbolic cross section through said optical axis having a substantially constant A/C ratio, wherein A is half a length of a major axis and C is a distance between a focal line and an axis of symmetry, and said second surface having a planar surface, wherein said planar surface is substantially perpendicular to said horizontal and vertical planes.

5,779,342

DEVICE FOR ADJUSTING THE LEVEL OF A VEHICLE HEADLIGHT

Reinhold Kluge, Hallbergmoos, Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany

Filed Apr. 10, 1996, Ser. No. 632,369

Claims priority, application Germany, Apr. 10, 1995, 195 13 554.7

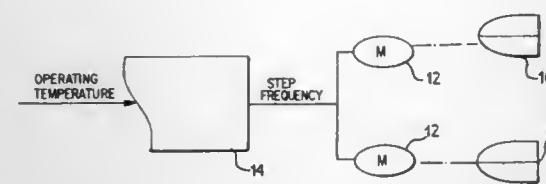
Int. Cl.⁶ B60Q 1/06

U.S. Cl. 362—66

5 Claims

1. A device for adjusting a tilt level of a motor vehicle headlight, comprising:

a stepping motor coupled to the headlight for adjusting a tilt level of the headlight, said stepping motor serving as a drive motor controlled in accordance with a set-tilt value; and



wherein a stepping frequency of the stepping motor, depending on an operating temperature of the headlight, is smaller for low temperatures than for higher temperatures.

5,779,343

HEADLIGHT ADJUSTER

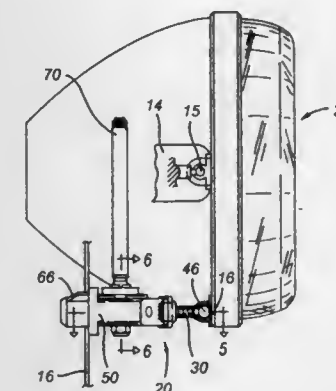
Ronald S. Denley, Woodstock, Ill., assignor to Elco Industries, Rockford, Ill.

Filed Jun. 25, 1996, Ser. No. 670,408

Int. Cl.⁶ B60Q 1/04

U.S. Cl. 362—66

20 Claims



1. A headlight adjuster for adjusting the aim of a headlight, the headlight adjuster comprising, in combination:

a housing;

a link mounted in the housing traveling along a link axis in an advance-and-retract direction, the link having two rolled helical threaded sections, a first helical threaded section having a relatively coarse drive helix and a second helical threaded section having a relatively fine pitch-control thread;

a drive shaft rotatably mounted in the housing and having a drive gear which mates with the coarse drive helix of the link for rotating the link;

a nut in the housing, the nut having an internal thread which mates with the pitch-control thread of the link, the nut being restrained from rotation in the housing so that rotation of the link moves the link along the link axis at a rate controlled by the pitch-control thread;

the housing having a linear bearing surface parallel to the link axis; and

the link carrying a traveling bearing, the traveling bearing interfitting with the linear bearing surface of the housing for guiding the link along the link axis.

5,779,344

LIGHT EMITTING ROLLER FOR ROLLER SKATES

Shen-Ko Tseng, No. 28, Lane 41, Chyau-Dong St., Shih-Chih Jenn Taipei Hsien, Taiwan

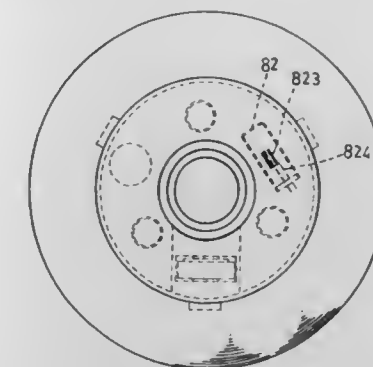
Filed Mar. 13, 1996, Ser. No. 614,699

Int. Cl.⁶ B60Q 1/26

U.S. Cl. 362—78

12 Claims

1. A light emitting roller for roller skates, comprising:



a roller body having a center axle hole to receive a wheel axle, an annular groove around said center axle hole at an outer side, a battery chamber and two opposite through holes at said annular groove;

an annular circuit board mounted within said annular groove on said roller, said annular circuit board comprising a plurality of light emitting elements controlled to emit light through the through holes on said roller body, an automatic switch, an opening, two metal contact plates at two opposite sides of said opening, and a battery cell connected between said metal contact plates and mounted within said battery chamber on said roller to provide electric power supply to said light emitting elements through said automatic switch; and

an annular cap mounted within said annular groove on said roller to hold down said annular circuit board; and

wherein said automatic switch comprises an electric conductive filament connected to one end of said battery cell, and a metal coil spring connected to an opposite end of said battery cell and suspending around said electric conductive filament.

5,779,345

LIGHTED HOOD ORNAMENT

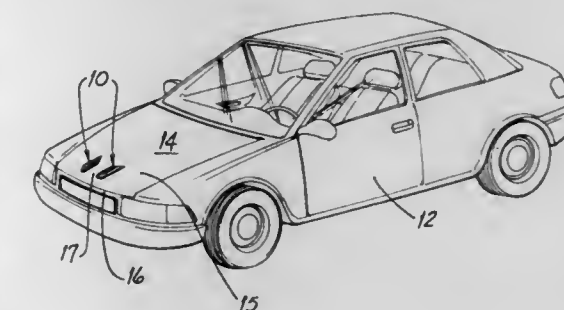
Elroy Adams, P.O. Box 5069, West Memphis, Ark. 72303

Filed Dec. 23, 1996, Ser. No. 779,989

Int. Cl.⁶ B60Q 1/02

U.S. Cl. 362—80

12 Claims



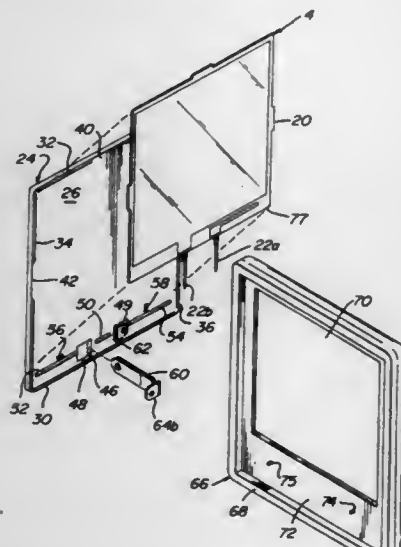
1. In a self-propelled vehicle of a type having a hood, which hood has an outer surface, an automotive lighting device affixed to the hood, the device having a base with a longitudinal axis generally parallel to the outer surface of the hood, said base having a base top surface having an opening in a direction perpendicular to the longitudinal axis of the base, at least one lamp situated on the base top surface connected to a power source and a lens connected to the base which lens encloses the base top surface and the lamp thereon, wherein the device, when charged, provides steady illumination upwardly from the outer surface of the hood, thereby providing increased illumination above and in front of the vehicle.

5,779,346
ELECTROLUMINESCENT DEVICE WITH A SECURE CONTACT

David M. Burke, Grand Blanc, Mich., assignor to Dynamic Brilliance Corporation, Goodrich, Mich.
Division of Ser. No. 413,784, Mar. 30, 1995, abandoned. This application Jun. 5, 1996, Ser. No. 658,606
Int. Cl.⁶ F21V 9/16

U.S. Cl. 362-84

17 Claims



1. An electroluminescent device having a panel for displaying a design comprising:

- a) a substrate coated with a first conductive layer which extends outwardly to the peripheral edges of said substrate;
- b) a phosphor layer imprinted onto the surface of said conductive layer, said phosphor layer comprising a plurality of discrete multicolored characters;
- c) a dielectric layer deposited onto said phosphor layer;
- d) a second conductive layer deposited onto said dielectric layer;
- e) a first elongated pin electrically connected to said first conductive layer; and
- f) a second elongated pin electrically connected to said second conductive layer.

5,779,347
APPARATUS AND METHOD FOR CONTROLLING LIGHTING OF FLUORESCENT LAMP FOR REFRIGERATOR

Jin Oh Seok, Kyungki-Do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Mar. 6, 1997, Ser. No. 812,164

Claims priority, application Rep. of Korea, May 23, 1996, 1996-17836

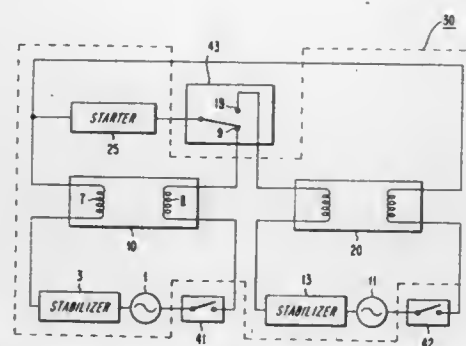
Int. Cl.⁶ F21V 33/00

U.S. Cl. 362-94

4 Claims

1. A fluorescent lamp light-up control apparatus for use in a refrigerator having a plurality of fluorescent lamps which are installed in a plurality of cooling compartments to illuminate a corresponding cooling compartment, the fluorescent lamp light-up control apparatus comprising:

- a preheating starter which is commonly connected to said plurality of fluorescent lamps;
- a switching means for selectively connecting said preheating starter to one of said plurality of fluorescent lamps; and

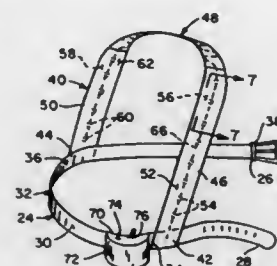


a light-up controller for controlling said switching means so that said preheating starter is connected to the fluorescent lamp in an opened cooling compartment when a door of one of said plurality of cooling compartments is opened.

5,779,348
ILLUMINATED SAFETY SHOULDER STRAP
Joseph C. Interlicchio, 283 Curtin Ave., West Islip, N.Y. 11795
Filed Feb. 18, 1997, Ser. No. 800,955
Int. Cl.⁶ F21L 15/06

U.S. Cl. 362-108

15 Claims



1. An illuminated safety shoulder strap that is wearable by a user having an arm, a waist with a right side, a chest, a left shoulder, and a back, said strap comprising:

- a) an elongated and slender waist belt replaceably encircling the waist of the user when said illuminated safety shoulder strap is donned; said elongated and slender waist belt having a buckle end, a free end, an outer surface, and a right portion with a shape and extending along the right side of the waist of the user when said illuminated safety shoulder strap is donned; said right portion of said elongated and slender waist belt having a front and a back;
- b) said shoulder strap being elongated and slender and having a front end and a back end; said front end of said elongated and slender shoulder strap being attached to said outer surface of said elongated and slender waist belt, at said front of said right portion of said elongated and slender waist belt, and extending diagonally upwardly therefrom, along the chest of the user, over the left shoulder of the user, and diagonally downwardly along the back of the user to said back of said right portion of said elongated and slender waist belt where it is attached to said outer surface thereof;
- c) a plurality of light bulbs extending longitudinally along, and outwardly from, said elongated and slender shoulder strap; and
- d) a generally semi-cylindrically-shaped power supply housing attached to said outer surface of said elongated and slender waist belt, at said front of said right portion of said elongated and slender waist belt; said generally semi-cylindrically-shaped power supply housing having a concave-shaped waist surface conforming to said shape of said right portion of said elongated and slender waist belt when said illuminated safety shoulder strap is donned so as to provide greater comfort for the user; said generally semi-cylindrically-shaped power supply

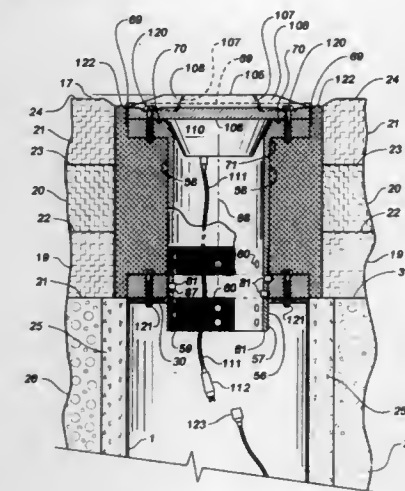
ply housing further having a convex-shaped outer surface providing a smooth surface so as to prevent injury to the arm of the user and to any person coming in contact therewith.

5,779,349
ADJUSTABLE AIRPORT RUNWAY APPARATUS AND METHOD

Gary L. Reinert, Sr., 4319 Middle Rd., Allison Park, Pa. 15101
Continuation-in-part of Ser. No. 2,014, Jan. 8, 1993, Pat. No. 5,541,362, Ser. No. 58,356, May 10, 1993, Pat. No. 5,594,201, and Ser. No. 464,736, Jun. 29, 1995, Pat. No. 5,431,510. This application Jul. 26, 1996, Ser. No. 687,809
Int. Cl.⁶ E01F 9/00

U.S. Cl. 362-153.1

20 Claims



1. An airport inset light adjustable alignment container set apparatus, comprising:

- (a) a light fixture support container base for placement as a partially embedded support for a light fixture in an airport runway, taxiway, or other aircraft ground traffic area;
- (b) a light support extension canister having outside screw threading means over at least 6 inches (15 cm) from its bottom end for rotatable attachment to an inside thread on said container base fixture support and having at least six intercalated vertical rows of threaded holes for receiving Allen set screws rotation locking means for securing said light support extension canister against further rotation;
- (c) mounting means on said extension canister for holding an airport inset light.

5,779,350
HAND TOOL CASE WITH DETACHABLY CONNECTED WORKING LIGHT

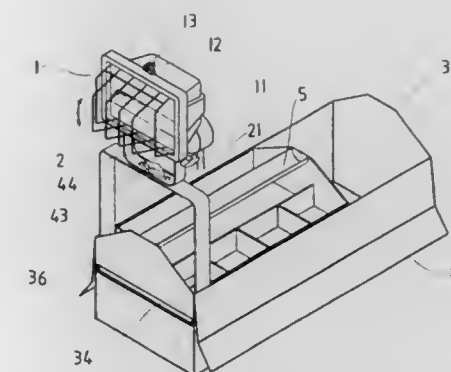
Cheng-Chen Chang, Sanchung, Taiwan, assignor to Caster Lighting Inc., Taipei Hsien, Taiwan
Filed Jul. 22, 1997, Ser. No. 898,687
Int. Cl.⁶ F21V 33/00

U.S. Cl. 362-154

4 Claims

1. A hand tool case with a detachably connected working light, comprising:

- a working light for providing light needed in a work site and having top connecting blocks formed at a peripheral frame of the working light for a fixing screw to thread therethrough;



a mounting bracket being angular adjustably connected at free ends to said working light at proper positions by means of adjusting screws, such that said working light may be firmly secured to said mounting bracket at a desired angle relative to said mounting bracket, and at least one connecting hole being formed on a lower flat portion of said mounting bracket;

a hand tool case having a transversely extended internal partition which vertically divides an interior of said hand tool case into a first and a second space, an end wall of said hand tool case adjacent to said second space being formed of an inward projected portion at a height corresponding to a top of said partition, and clearances being left between two vertical end edges of said partition and two side walls of said hand tool case;

a movable frame being pivotally connected at free ends to inner corners of said hand tool case adjacent to said end wall having said inward projected portion, such that said movable frame can be turned between a horizontal position in said hand tool case and an upright position protruding beyond said hand tool case, said movable frame being provided at a flat top portion with a fixing hole for a check screw to thread through and into one of said connecting holes on said mounting bracket to thereby connect said mounting bracket to said movable frame; and

a shallow container for accommodating hand tools, parts, accessories, and/or other frequently used hardware, said shallow container being disposed in said hand tool case above said second space with a lower end of said container supported on said inward projected portion of said end wall adjacent to said second space and the other lower end on said top of said internal partition, two recesses being formed on said shallow container at two lower corners thereof adjacent to said movable frame for said movable frame in said upright position to extend therethrough and be firmly locked thereto, and a downward projected rib transversely extending across a bottom surface of said shallow container within said second space to just abut against said top of said partition;

whereby said working light can be fixed to and above said hand tool case for use when said mounting bracket being angular adjustably connected to said working light is secured to said movable frame having been turned to said upright position; and whereby when said working light is not in use, it can be received in said first space in said hand tool case by removing said shallow container out of the hand tool case, and then loosening and turning said movable frame to said horizontal position in said hand tool case via clearances between said internal partition and said side walls of

said case, so that said working light along with said mounting bracket are just located in said first space in the hand tool case for save storage therein.

5,779,351

MATRIX DISPLAY WITH MULTIPLE PIXEL LENS AND MULTIPLE PARTIAL PARABOLIC REFLECTOR SURFACES

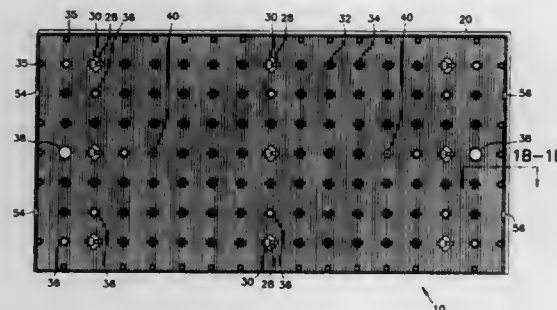
Troy A. Erickson, and Vernon P. Voelzke, both of Brookings, S. Dak., assignors to Daktronics, Inc., Brookings, S. Dak.

Filed May 2, 1995, Ser. No. 433,895

Int. Cl.⁶ F21V 7/06

U.S. Cl. 362—241

21 Claims



1. A lamp matrix display, comprising:
 - a vertical planar array of light sources arranged in rows and columns;
 - a plurality of reflectors, each reflector positioned about a corresponding light source and having a reflective surface for directing light emitted from the light source in a forward direction, the reflective surface of at least one of the plurality of reflectors is formed in a cavity having a central axis and includes:
 - a first parabolic reflective surface having a first focal point offset from the central axis; and
 - a second parabolic reflective surface adjacent the first parabolic reflective surface having a second focal point offset from the first focal point of the first parabolic surface and offset from the central axis; and
 - at least one lens mounted in front of at least one of the plurality of reflectors.

5,779,352

DECORATION LAMP DEVICE

Mei-Lu Lin, 56, Min Sheng Street, Fengyuan Taichung Hsien, Taiwan

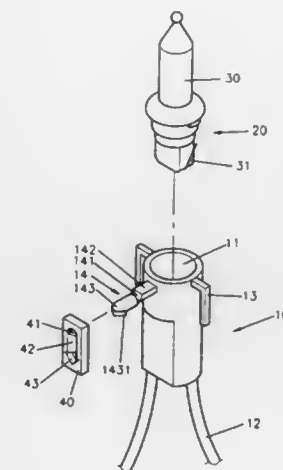
Filed Oct. 18, 1997, Ser. No. 953,875

Int. Cl.⁶ F21P 1/02

U.S. Cl. 362—249

6 Claims

1. A decoration lamp device comprises:
 - a bulb,
 - a lamp holder receiving the bulb,
 - a socket receiving the lamp holder,
 - a first L-shaped rod disposed on the socket,
 - a second L-shaped rod disposed on the socket,
 - a post disposed on the socket,
 - a retainer plate having a slot receiving the post,
 - the post bent to be inserted in the slot.



5,779,353

WEATHER-PROTECTED LIGHTING APPARATUS AND METHOD

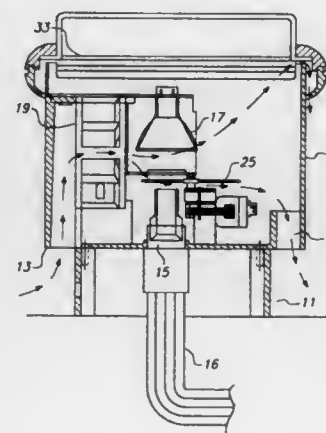
Nilesh P. Kacheria, Bombay, India, assignor to Fiberstars, Inc., Fremont, Calif.

Filed Apr. 16, 1996, Ser. No. 633,157

Int. Cl.⁶ F21V 9/00

U.S. Cl. 362—293

6 Claims



1. Lighting apparatus comprising:
 - a housing including a lower surface and intersecting side walls elevating from the lower surface to upper edges and surrounding an inner region of the housing;
 - a first aperture near the lower surface of the housing adjacent one side wall;
 - a second aperture near the lower surface and adjacent the one side wall that forms a common wall between the apertures along a path of air flow therebetween;
 - a light source disposed within the housing above the lower surface intermediate the apertures and oriented to direct a portion of light flux therefrom toward a focal location near the lower surface;
 - a fan disposed within the housing intermediate the light source and the first aperture for establishing a pressure differential within the housing to promote flow of air into the housing through the first or second aperture, past the light source, and out of the second or first aperture, respectively;
 - a mounting attached to the housing for supporting a plurality of optical fibers with ends thereof disposed near the focal location of the light source;

- a light transmissive globe disposed above the upper edges of the side walls to emit therethrough another portion of light flux from the light source that is not focused toward the focal location; and
- a baffle interposed between the light source and the globe and including at least one optical aperture therein for passing unfocused light flux from within the housing to the globe.

5,779,354

MODULAR SUPPORT STRUCTURE FOR ELECTRICAL AND ELECTRONIC DEVICES AND FOR LIGHTING APPARATUSES

Paolo Targetti, 29, Via Barbacane, 50100 Florence, Italy

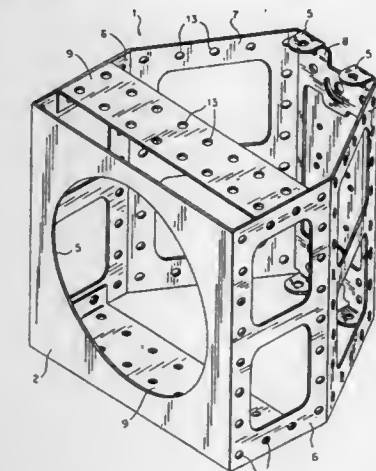
Filed Dec. 3, 1996, Ser. No. 753,934

Claims priority, application Italy, Dec. 20, 1995, FI95A0256

Int. Cl.⁶ F21V 21/00

U.S. Cl. 362—362

20 Claims



4. For lighting apparatuses and other electric and electronic devices and their associated instrumentation, a modular support element comprising:
 - a main face (2) and at least four connection faces (6, 7, 8), each connection face configured to be attachable to a connection face an adjacent modular element;
 - wherein the connection faces extend consecutively from one side of the main face to the opposite side of the main face in an angled relationship between one face and the adjacent ones.

5,779,355

MIXING APPARATUS VENTURI COUPLED MULTIPLE SHEAR MIXING APPARATUS FOR REPAIRING A LIQUID-SOLID SLURRY

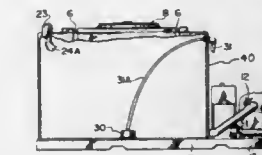
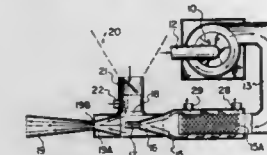
Douglas G. Pullman, Watford, Canada, assignor to Roger H. Woods Limited, Watford, Canada

Filed Feb. 27, 1997, Ser. No. 805,668

Int. Cl.⁶ B01F 5/04; 15/02

U.S. Cl. 366—137

14 Claims



2. A multiple shear mixing apparatus for treating a slurry-type solid/liquid mixture, comprising:
 - a storage tank for the mixture;

- a pump connected to the tank and suitable for pumping said mixture from the storage tank,
- a shear filter connected to receive the mixture from the pump;
- a jet nozzle downstream of the shear filter;
- a venturi tube located to receive mixture from the jet nozzle;
- a vacuum chamber surrounding the jet nozzle and an inlet end of the venturi tube and having at least one port for the introduction of starting or make-up materials to the chamber;
- an off-loading outlet for the mixture between said shear filter and said jet nozzle;
- a jet mixer within the storage tank;
- the above components being interconnected and adapted to pump said mixture from the tank, through the filter, then through the jet nozzle and chamber, hence into the venturi tube and from the venturi tube into the storage tank, while allowing some of the mixture to be removed from the apparatus through said off-loading outlet.

5,779,356

APPARATUS AND METHOD FOR MIXING FIRST AND SECOND COMPONENTS OF A BONE CEMENT IN A VACUUM

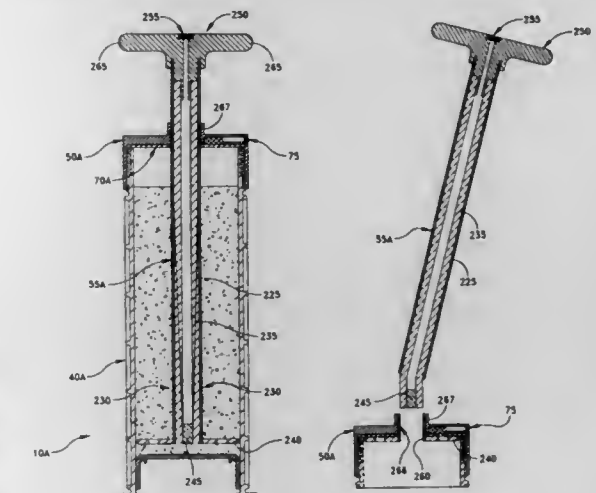
Kwan-Ho Chan, 4803 1st Pl., Lubbock, Tex. 79416

Filed Feb. 21, 1996, Ser. No. 604,194

Int. Cl.⁶ B01F 13/06

U.S. Cl. 366—139

4 Claims



1. Apparatus for mixing bone cement in a vacuum, said apparatus comprising:
 - a container for mixing first and second components of a bone cement in a vacuum, said container comprising:
 - a sealed body defining an interior space for retaining a selected quantity of said first bone cement component; and
 - an exhaust port formed in said sealed body and communicating with said interior space, said exhaust port being adapted for interconnection with a vacuum source for pulling a vacuum inside said interior space of said sealed body;
 - an agitator comprising:
 - a mixing paddle disposed in said interior space of said sealed body; and
 - an actuating handle disposed outside said sealed body, said mixing paddle being connected to said actuating handle by a hollow shaft extending through said sealed body;
 - said hollow shaft comprising a thin-walled exterior tube and a resilient interior tube, said thin-walled exterior tube being connected to said mixing paddle, and being provided with a breakaway notch adjacent to said mixing paddle, and said resilient interior tube being provided with a porous plug disposed in a central passageway of said resilient interior tube adjacent to said mixing paddle, said porous plug being connected to said resilient interior tube and being adapted to permit gas and the bone cement second component to pass through said porous plug but to prevent said bone cement first component from passing through said porous plug; and

an injection port formed in said actuating handle and communicating with the interior of said resilient interior tube, said injection port being adapted for interconnection with a holder containing a selected quantity of said bone cement second component, whereby said bone cement second component can be introduced into said interior space of said sealed body for mixing with said bone cement first component.

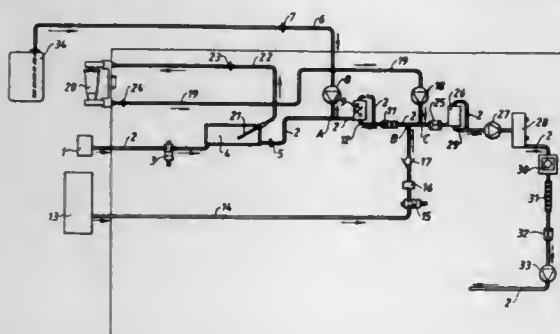
5,779,357

METHOD AND APPARATUS FOR THE PREPARATION OF A MEDICAL SOLUTION

Lennart Jönsson, Furulund, and Sven Jönsson, Staffanstorps, both of Sweden, assignors to Gambro AB, Sweden
Division of Ser. No. 132,765, Oct. 6, 1993, abandoned, which is a continuation of Ser. No. 776,561, Oct. 15, 1991, abandoned. This application May 31, 1995, Ser. No. 455,319
Claims priority, application Sweden, Oct. 15, 1990, 9003278
Int. Cl.⁶ B01F 15/04

U.S. Cl. 366—151.1

12 Claims



1. Apparatus for continuously preparing a medical dialysis solution from water and a plurality of concentrates contemporaneous with its use wherein one of said concentrates includes a carbonate, another one of said concentrates includes calcium, and one of said concentrates is carbon dioxide gas, the apparatus comprising water supply means for supplying a liquid comprising water to said apparatus, a closed main conduit means for transporting said supply of water through said apparatus to be directly supplied therefrom for said use, first concentrate supply means for supplying a first one of said concentrates to a first predetermined point on said main conduit means, second concentrate supply means for supplying a second one of said concentrates comprising said carbon dioxide gas to a second predetermined point on said main conduit downstream of said first predetermined point, and third concentrate supply means for supplying a third one of said concentrates to a third predetermined point on said main conduit means downstream of said second predetermined point whereby a medical solution including said first, second and third concentrates is continuously provided for said contemporaneous use.

5,779,358

BLENDER HAVING A DISCONNECTABLE BASE PORTION

Dale Bevington, London, England, assignor to Dualit Limited, London, England

Filed Mar. 11, 1997, Ser. No. 814,334

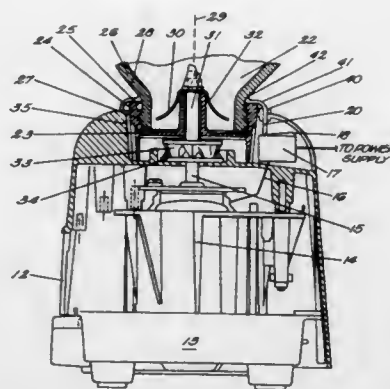
Claims priority, application United Kingdom, Mar. 12, 1996, 9605236

Int. Cl.⁶ B01F 13/04; B02C 23/04

U.S. Cl. 366—206

6 Claims

1. A blender, comprising a base support having a motor, a container formed in two connectable and disconnectable portions, a first of the portions being a base portion mounting a number of blades rotatable about an axis and being connectable to the base support so that the blades are driven by the motor, and the other portion being an upper tubular portion, a switch biased to a



position in which it is arranged to automatically disable the motor unless the base portion and upper tubular portion are fully engaged with each other and the base support but movable to a deactivated position in which it allows the motor to operate, and a substantially annular collar arranged for engagement by the upper tubular portion for moving the switch to the deactivated position when the base portion and upper tubular portion are fully engaged with each other and with the base support in any relative angular orientation about the axis.

5,779,359

MIXER HAVING EXPOSED CLEAN-IN-PLACE BEARING ASSEMBLIES

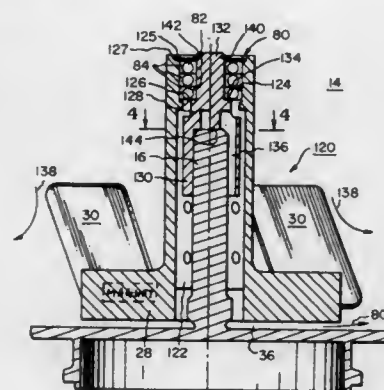
Jeffrey S. Gambrill, Hilton; Thomas C. Durney, Piffard, and Dominic Borraccia, Spencerport, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 767,127, Dec. 5, 1996. This application May 5, 1997, Ser. No. 851,130

Int. Cl.⁶ B01F 13/08

U.S. Cl. 366—273

7 Claims



1. A mixer system for agitation of materials within a vessel, comprising:

- a fixed mixer shaft disposed on a wall within said vessel;
- a stationary adapter collar disposed coaxially on a free end of said fixed mixer shaft;
- a mixer impeller having an axial bore and being disposed for rotation coaxially on said adapter collar; and
- at least one bearing assembly exposed to said materials and having races and rollable elements disposed within said axial bore between said adapter collar and said mixer impeller, said races being formed of a nickel-beryllium alloy and said rollable elements containing silicon nitride hybrid ceramic.

5,779,360

AGITATION APPARATUS INCLUDING VESSEL HAVING MIXING BLADES AND MOVEABLE AGITATOR

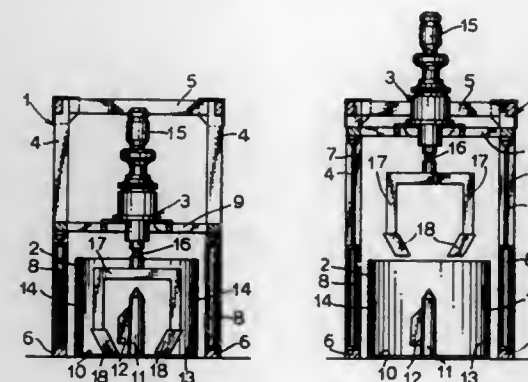
Masaru Tanaka, Higashi-Katsushika-gun, Japan, assignor to Katsu Manufacturing Co., Ltd., Chiba-ken, Japan

Filed Sep. 16, 1996, Ser. No. 716,644

Claims priority, application Japan, Dec. 20, 1995, 7-354555
Int. Cl.⁶ B01F 7/18

U.S. Cl. 366—286

6 Claims



1. An agitation apparatus for agitating pellets of synthetic resin, said apparatus comprising:
 - a supporting frame;
 - a cylindrical vessel removably housed in said supporting frame and to receive pellets to be agitated;
 - an agitator mounted on said supporting frame for movement upwardly and downwardly relative thereto, said agitator having agitating means to be entered into and withdrawn from said vessel upon downward and upward movement, respectively, of said agitator;
 - an upright guiding pillar positioned in a center of a bottom of said vessel;
 - a stationary blade extending from said pillar in a direction toward an inner peripheral surface of said vessel; and
 - a plurality of mixing blades extending from said inner peripheral surface in a direction toward said pillar, said mixing blades being spaced from each other.

5,779,361

STATIC MIXER

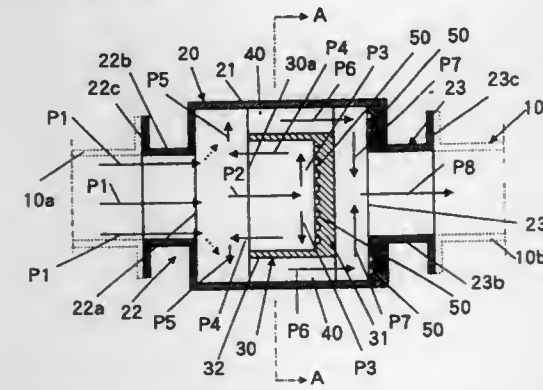
Hikoroku Sugiura, Funabashi, Japan, assignor to Shinyou Technologies, Inc., Chiba-ken, Japan

Filed May 12, 1997, Ser. No. 854,580

Claims priority, application Japan, May 14, 1996, 8-143514
Int. Cl.⁶ B01F 13/00

U.S. Cl. 366—340

5 Claims



1. A static mixer comprising:
 - a mixing body concentrically disposed in the midst of a fluid flow passage,

said mixing body having a larger diameter than a diameter of said fluid flow passage,
said mixing body having a cylindrical portion, a hollow inlet port fixed to a first end of said cylindrical portion, and a hollow outlet port fixed to a second end of said cylindrical portion,
an impingement cylinder disposed within said mixing body and having a diameter larger than a diameter of said hollow inlet port and smaller than an inner diameter of an inner diameter of said cylindrical portion of the mixing body,
said impingement cylinder having an opening in a confronting spaced relation with said hollow inlet port,
a fixing wing plate means extending radially outwardly from an outer circumferential surface of said impingement cylinder and having an extended end connected to an inner circumferential surface of said cylindrical portion of the mixing body for concentrically holding said impingement cylinder, and
a plurality of recesses formed at at least one of an inner side portion of bottom of said impingement cylinder, an inner surface portion of said hollow inlet port, an inner circumferential portion of a cylindrical portion of said impingement cylinder, and an inner circumferential surface portion of said cylindrical portion of said mixing body.

5,779,362

APPARATUS AND METHOD OF DETERMINING A CHARACTERISTIC RELATED TO THE THERMAL POWER OF A SAMPLE

John Adrian Lightfoot, Hill House, Hunter Rise, Beckermat, Cumbria CA21 2YP, United Kingdom

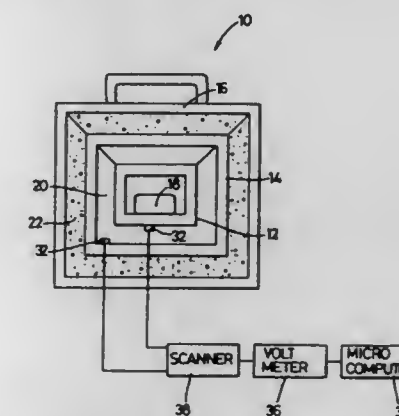
Filed Jul. 13, 1995, Ser. No. 501,941

Claims priority, application United Kingdom, Jul. 15, 1994, 9414364

Int. Cl.⁶ G01F 17/00

U.S. Cl. 374—33

22 Claims



1. A calorimeter comprising:
 - a sample chamber adapted to enclose a sample;
 - a reference surface surrounding and insulated from the sample chamber;
 - means for measuring the temperature of the sample chamber and the reference surface;
 - means for determining a characteristic functionally related to the thermal power of a sample enclosed within the sample chamber from the time variation of the temperature measurements obtained, the determining means including means for calculating the approximate theoretical temperature of the sample chamber from:
 - i) the measured values of the reference surface temperature,
 - ii) the estimated values of the said characteristic of the sample,
 - iii) the thermal resistance from the sample to the sample chamber, and
 - iv) the thermal capacity of the sample; and

means for optimizing the fit between the approximate theoretical calculations and the corresponding measured values of the temperature of the sample chamber.

5,779,363

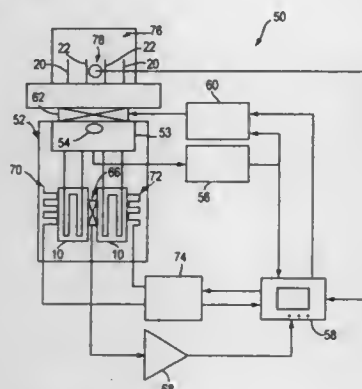
CAPILLARY CALORIMETRIC CELL AND METHOD OF MANUFACTURING SAME

Ernesto Freire; Vincent V. Kavina; George P. Privalov, and Peter L. Privalov, all of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Sep. 27, 1995, Ser. No. 534,987
Int. Cl.⁶ G01K 17/00; 17/06

U.S. Cl. 374—33

19 Claims



1. A calorimeter comprising:

- a pair of capillary calorimetric cells, each including
 - i) a solid metallic block having a plurality of channel portions formed therein, each channel portion having a first end and a second end opening to a first end face and a second end face, respectively, of said block;
 - ii) a first cap member and a second cap member disposed at said first end face and said second end face of said block respectively, adjacent first ends of selected ones of said channel portions being connected to one another and adjacent second ends of selected ones of said channel portions being connected to one another to thus form a single, continuous channel; and
 - iii) an inlet and an outlet constructed and arranged to establish communication at opposite ends of said single continuous channel;
- a temperature sensor disposed in contact with said pair of capillary calorimetric cells for determining a temperature difference between said cells;
- a pair of heaters, each disposed in contact with a respective one of said capillary calorimetric cells; and
- a control system operatively connected with said temperature sensor and said pair of heaters, said control system constructed and arranged to detect and regulate a temperature of said pair of capillary calorimetric cells.

5,779,364

TEMPERATURE SENSITIVE DEVICE FOR MEDICINE CONTAINERS

Joseph F. Cannelongo, 1462 Kedron La., Port Charlotte, Fla. 33983, and Christy D. Cugini, Jr., 4754 Instermorle La., Sarasota, Fla. 33983

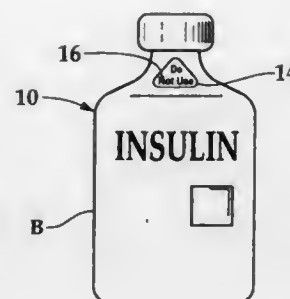
Continuation-in-part of Ser. No. 429,792, Apr. 27, 1995, abandoned. This application Jul. 29, 1996, Ser. No. 688,150

Int. Cl.⁶ G01K 11/06

U.S. Cl. 374—160

3 Claims

- 3. In combination, a medicine container for a temperature-sensitive medication which loses intended medical efficacy when subjected to a temperature at or above a predetermined temperature and a medicine safety device attached to said medicine container comprising:



said medicine safety device including:

- a support member attached to an exterior surface of said medicine container, an outwardly facing surface of said support member having a viewable warning indicia thereon;
- a temperature responsive member connected to said outwardly facing surface and substantially covering said warning indicia from view, said temperature responsive member being a pastille formed of opaque wax which melts at a temperature substantially at or above the predetermined temperature whereby said warning indicia becomes viewable on the support member only after the pastille has melted;
- said medicine container having a narrow cap, an enlarged main body portion and a narrow neck smaller in width than that of said main body portion;
- said support member being attached to said narrow neck between said cap end and said main body portion whereby handling of said container will not cause said temperature responsive member to inadvertently melt.

5,779,365

TEMPERATURE SENSOR FOR MEDICAL APPLICATION

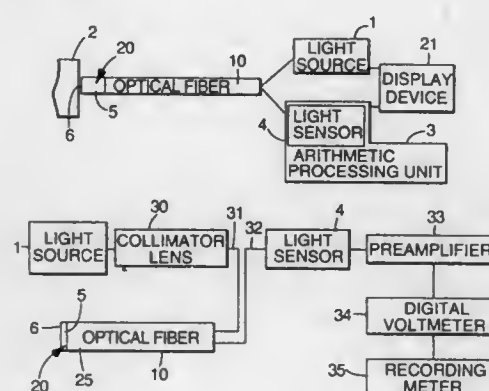
Shunsuke Takaki, Sagamihara, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
PCT No. PCT/US93/10719, § 371 Date May 24, 1995, § 102(e)
Date May 24, 1995, PCT Pub. No. WO94/12859, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 8, 1993, Ser. No. 436,435

Claims priority, application Japan, Nov. 25, 1992, 4-314852
Int. Cl.⁶ G01K 11/00; A61B 5/00

U.S. Cl. 374—161

12 Claims



1. A temperature sensor, comprising:

- a source of light which irradiates light;
- an optical fiber positioned at one end to receive light from said source of light;
- a transducer positioned near the other end of the optical fiber for reflecting the light delivered by the optical fiber, said transducer being made up of at least two polymers that have refractive indices with different temperature dependencies and form a microphase separation structure, wherein said polymers are cured products made from a cationically polymeriz-

able compound having epoxy groups and a radically polymerizable compound having radically unsaturated groups; a light sensor for receiving the reflected light; and an arithmetic processing unit which calculates a temperature based upon the reflected light received by said light sensor.

5,779,366

WIRE MANAGEMENT BAG

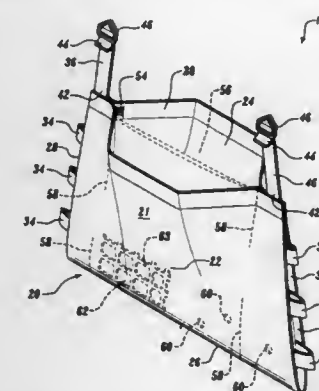
Clifton K. McKenzie, III; Kathy L. McKenzie, and Michael B. Barringer, all of Bainbridge Island, Wash., assignors to Watson Furniture Systems, Bainbridge Island, Wash.

Filed Nov. 8, 1995, Ser. No. 555,101

Int. Cl.⁶ B65D 33/14

U.S. Cl. 383—22

22 Claims



- 1. A wire management bag for attaching to a piece of furniture or to a piece of electronic equipment, the bag for organizing electrical wires that accompany electronic equipment, the bag comprising:

- (a) a body into which the wires may be placed via an open top in the body, the body including a closure mechanism for retaining the wires in the bag; and
 - (b) a furniture attachment system adapted for interconnection between the body and at least one of the piece of furniture and the piece of electronic equipment;
- wherein the closure mechanism includes a portfolio-type hinge mechanism having rigid strips joined together in a spring biased relation; and
- wherein the body includes a front panel having opposite side ends, a back panel having opposite side ends positioned adjacent to the opposite side ends of the front panel, the panels being connected to each other with at least one of the panel side ends being left open to form a wire exit opening, and at least one strap attached to and extending between the open panel side ends.

5,779,367

SPLINE BEARING WITH DETECTION DEVICE

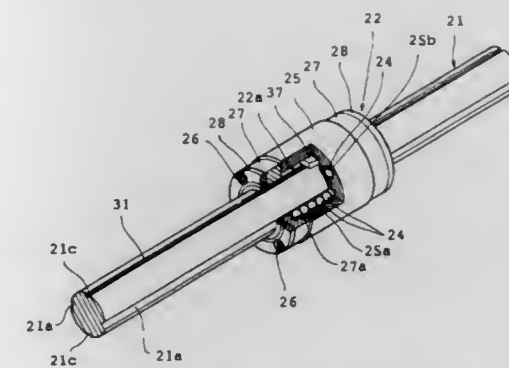
Kouji Obara, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan
Filed Jul. 10, 1997, Ser. No. 891,346
Claims priority, application Japan, Aug. 15, 1996, 8-233591

Int. Cl.⁶ F16C 29/06; G01B 7/00

U.S. Cl. 384—8

7 Claims

- 1. A spline bearing comprising: a spline shaft in which tracks are formed along the lengthwise direction; an outer cylinder having a rolling element circulating path that includes load bearing tracks corresponding to the tracks, and is able to freely move relative to the spline shaft; and, a plurality of rolling elements that are arranged and contained within the rolling element circulating path and bear the load while rolling over the tracks; wherein, a plurality of grooves are formed in parallel with the tracks in the spline shaft, a linear scale having a detected portion that is magnetized by N and S magnetic poles in a prescribed pattern is arranged in each of



5,779,368

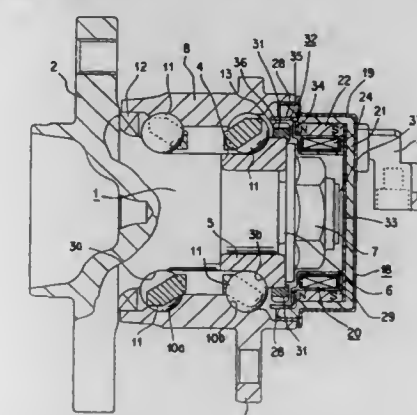
ROLLING BEARING UNIT FITTED WITH A ROTATIONAL SPEED DETECTION UNIT

Kouichi Morita; Hideo Ouchi, and Junshi Sakamoto, all of Fujisawa, Japan, assignors to NSK Ltd., Tokyo, Japan
Continuation of Ser. No. 513,030, Aug. 9, 1995, Pat. No. 5,622,436. This application Oct. 2, 1996, Ser. No. 725,053
Claims priority, application Japan, Aug. 11, 1994, 6-189276; Dec. 8, 1994, 6-305053; Jan. 30, 1995, 7-012969; Feb. 17, 1995, 7-029560; May 31, 1995, 7-133601

Int. Cl.⁶ F16C 19/08

U.S. Cl. 384—448

17 Claims



- 1. A rolling bearing unit fitted with a rotational speed detection unit comprising:

- a stationary outer ring having an inner peripheral face formed with a double row outer ring raceway thereon and an inner end opening;
- a rotatable inner ring assembly having an outer peripheral face provided opposite to the inner peripheral face of the stationary outer ring and formed with a double row inner ring raceway thereon;
- a plurality of rolling bodies provided so as to be freely rotatable between the outer ring raceway and the inner ring raceway;
- an annular tone wheel made from a magnetic material, fixed to an end portion of the inner ring assembly, and having a surface portion formed with a rotating cutout section for detection with a plurality of cutouts evenly spaced with a pitch in a circumferential direction;
- a cover fixed to the inner end opening of the outer ring to form an annular space with reference to part of the inner ring assembly and comprising a synthetic resin, and
- an annular sensor partly positioned in the annular space and comprising an annular coil, at least one stator and a permanent magnet and embedded in the synthetic resin retained in the cover so as to be faced to the rotating cutout section of the

tone wheel, wherein the coil of the sensor is circumferentially located radially inward of the rotating cutout section of the tone wheel.

5,779,369

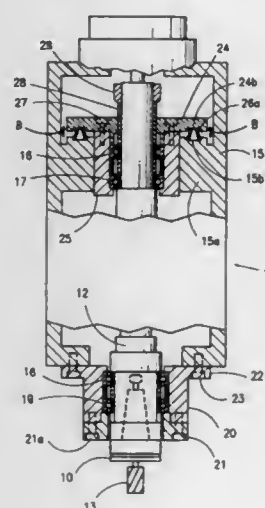
PRELOAD CONTROL APPARATUS FOR BEARINGS
Koichiro Kitamura, Takaoka, Japan, assignor to Kitamura Machinery Co., Ltd., Japan

Filed Feb. 22, 1996, Ser. No. 605,596

Int. Cl.⁶ F16C 23/00

U.S. Cl. 384—517

8 Claims



1. A machine tool comprising:

- a bed, a table for supporting a workpiece and mounted on said bed for movement relative thereto, a column extending vertically from said bed, a spindle head movably supported by said column for vertical movement, a spindle mounted within said spindle head and extending vertically toward said table, and a tool holder detachably supported by said spindle for holding a tool, wherein said spindle head comprises:
- a frame defining an interior space within said spindle head;
- a plurality of bearings for rotatably supporting said spindle within said spindle head for rotation relative to said frame, an inner flange extending horizontally from said frame into the interior space and defining a central opening;
- pressing means for pressing said spindle vertically downward relative to said frame so as to exert a preload on said bearings;
- an intermediate member mounted within said frame for vertical sliding movement relative thereto, at least one of said bearings being interposed between said intermediate member and said spindle;
- a plurality of coned disc springs surrounding said spindle, each of said coned disc springs being formed from a spring plate into a topless cone-shape and having an upper end supporting said intermediate member and a lower end supported by said inner flange, said coned disc springs including a first set of springs made of a shape memory alloy and, in cooperation with said pressing means, regulating the preload exerted on the bearings in multiple stages responsive to changes in temperature.

5,779,370

APPARATUS FOR PRINTING LABELS AND A SELF-RELEASING PRINT ROLLER THEREFOR

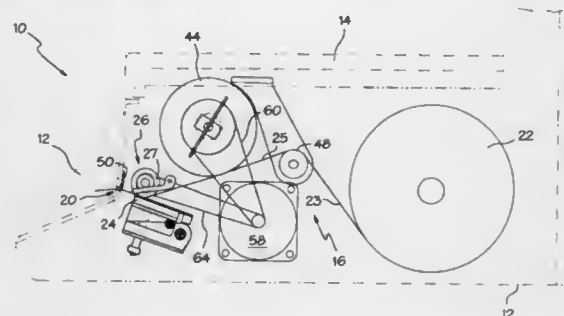
Karl Siegfried Schroeder, Clayton; Nigel G. Mills, Kettering, and William Howard McMahon, Ludlow Falls, all of Ohio, assignors to Premark FEG L.L.C., Wilmington, Del.

Filed Jul. 17, 1996, Ser. No. 682,317

Int. Cl.⁶ B41J 2/325; B65H 29/54

U.S. Cl. 400—120.01

22 Claims



1. Apparatus for printing linerless labels having a tacky side and a non-tacky printable side, comprising:
 - a print head for printing indicia on said printable side of said labels;
 - a print roller disposed in close proximity to said print head such that said print head is able to print indicia on the labels when the labels are supported by said print roller, said print roller having at least one annular recess in the surface thereof;
 - and at least one elongated stripper element fixedly retained in and extending from said recess such that upon rotation of said roller, said label is transported to said stripper element and said stripper element lifts said label from said surface of said roller and said label is removed from said print roller.

5,779,371

THERMAL PRINTING APPARATUS

Yuji Aoyama, Sagamiyama, and Masao Yamada, Zama, both of Japan, assignors to Anritsu Corporation, Tokyo, Japan

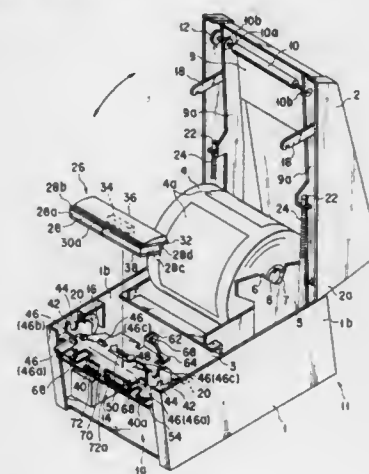
Filed Sep. 13, 1996, Ser. No. 713,732

Claims priority, application Japan, Sep. 29, 1995, 7-253339

Int. Cl.⁶ B41J 2/32

U.S. Cl. 400—120.16

15 Claims



1. A thermal head printing apparatus comprising:

- a main shell;
- a frame arranged to be movable in first and second directions for opening and closing the main shell;
- a thermal head including a strip-like heating element for printing on a printing medium, a circuit board having a circuit for driving the heating element, a head-side connector connected

5,779,372

HOT STAMP IMPRINTING SYSTEM WITH LOCKING CAM REEL HUBS

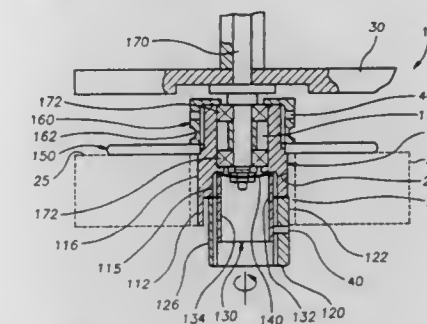
Arne R. Jorgensen, Woodridge, Ill., assignor to Illinois Tool Works, Inc., Glenview, Ill.

Filed Oct. 7, 1996, Ser. No. 725,930

Int. Cl.⁶ B41J 31/00

U.S. Cl. 400—191

10 Claims



1. An imprinting system for transferring ink from an inked ribbon onto a substrate, the inked ribbon supplied from a ribbon roll having a tubular core with an inner surface, the system comprising:

- a reel hub rotatable about an axis, the reel hub having a first surface engageable with the inner surface of the ribbon roll; and
 - an eccentric hub having a second surface engageable with the inner surface of the tubular core, the eccentric hub rotatable relative to the reel hub to provide a variable diameter between the first surface of the reel hub and the second surface of the eccentric hub,
- wherein the diameter between the first surface of the reel hub and the second surface of the eccentric hub is reduceable by rotating the eccentric hub relative to the reel hub to permit disposal of the ribbon roll tubular core about the first surface of the reel hub and the second surface of the eccentric hub, and
- wherein the diameter between the first surface of the reel hub and the second surface of the eccentric hub is increaseable by rotating the eccentric hub relative to the reel hub to engageably retain the inner surface of the tubular core by the first surface of the reel hub and the second surface of the eccentric hub.

5,779,373

RIBBON CARTRIDGE DEVICE FOR ELECTRONIC EQUIPMENT

Eiji Tukahara; Hideki Oikawa; Kenichi Nakajima; Hiroshi Kuriyama, all of Suwa; Kenji Watanabe, Tokyo; Takanobu Kameda, Tokyo; Chieko Aida, Tokyo, and Tomoyuki Shimamura, Tokyo, all of Japan, assignors to Seiko Epson Corporation, and King Jim Co., Ltd., both of Tokyo, Japan

Filed Sep. 10, 1996, Ser. No. 711,799

Claims priority, application Japan, Sep. 12, 1995, 7-234466;

Dec. 28, 1995, 7-341994

Int. Cl.⁶ B41J 33/52

U.S. Cl. 400—208

19 Claims

19. A ribbon cartridge device for electronic equipment, including a ribbon cartridge removably mounted in said electronic equipment, wherein said ribbon cartridge comprises:

- a cartridge body, said cartridge body having:
 - an ink ribbon,
 - a supply reel for rolling out said ink ribbon therefrom,
 - a take-up reel for taking up said ink ribbon; and
 - a single slide plate, said single slide plate having a pair of reel-engaging portions for respectively engaging with or disengaging from said supply reel and said take-up reel,
- said single slide plate being mounted in said cartridge body such that said single slide plate is slidable between a

to the circuit board, and a rectangular base supporting the heating element and the circuit board, wherein:

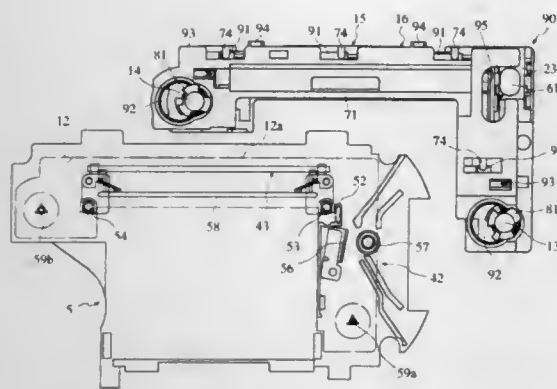
- (a) the rectangular base is formed of a metallic material having radiation characteristics, and has an upper surface which supports the heating element and the circuit board, a bottom surface which releases heat generated by the heating element when the thermal head is attached, and front, rear, right and left side surfaces which are provided as reference surfaces for use in correctly positioning the thermal head when the thermal head is attached to the thermal printing apparatus,
- (b) the circuit board includes a portion which is projected backwards from a rear region of the upper surface of the rectangular base,
- (c) the heating element is formed on the upper surface of the rectangular base along a longitudinal direction of the rectangular base so as to have a predetermined relationship with the rectangular base, and
- (d) the head-side connector is provided on a bottom of the projected backwards portion of the circuit board such that the head-side connector is movable for connection and disconnection in a direction perpendicular to the bottom surface of the rectangular base;

a platen pivotally mounted to the frame for nipping the printing medium between the platen and the heating element of the thermal head when the frame is moved so as to close the main shell;

first positioning means provided on the frame coaxially with respect to the platen; and

a thermal head mount, formed of a metallic material having radiation characteristics, for detachably supporting the thermal head so that the heating element faces upwards, and for causing the platen and the heating element to be correctly positioned when the frame is moved so as to close the main shell, wherein the thermal head mount is provided in the main shell such that the thermal head mount is movable forwards and backwards relative to the main shell, and wherein the thermal head mount includes:

- (a) a mount surface which is provided such that the bottom surface of the rectangular base is brought into contact with the mount surface when the thermal head is attached, and which allows heat generated from the heating element to be transmitted to the mount surface when the thermal head is attached;
 - (b) at least four projections which are projected upwards from the mount surface, and which allow the front, rear, right and left side surfaces of the rectangular base to be respectively brought into contact with the at least four projections when the thermal head is attached, whereby the thermal head is correctly positioned by the at least four projections and the mount surface;
 - (c) second positioning means which is engaged with the first positioning means to thereby position the platen and the thermal head when the frame is closed to cover the main shell; and
 - (d) a circuit-side connector, provided opposite to the head-side connector and in a rear region of the mount surface, for being connected to and disconnected from the head-side conductor in a direction perpendicular to the mount surface, and for holding the thermal head attached to the thermal head mount in cooperation with the head-side connector when the thermal head is moved in the direction perpendicular to the mount surface to be attached to the thermal head mount;
- wherein when the head-side connector is moved to be disconnected from the circuit-side connector in the direction perpendicular to the mount surface, the thermal head is detached from the thermal head mount.



reel-restraining position in which said pair of reel-engaging portions are in engagement with said supply reel and said take-up reel to restrain both said supply reel and said take-up reel from rotation at the same time, and a reel-releasing position in which said pair of reel-engaging portions are disengaged from said supply reel and said take-up reel to cancel restraining of said supply reel and said take-up reel from rotation at the same time.

5,779,374

Patent Not Issued For This Number

5,779,375

Patent Not Issued For This Number

5,779,376

PRINTER CARRIAGE DRIVE WITH MOVABLY MOUNTED MOTOR

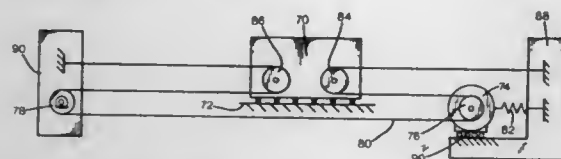
Preston D. Seu, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 31, 1996, Ser. No. 741,885

Int. Cl.⁶ B41J 19/00

U.S. Cl. 400—335

2 Claims



1. A printer comprising:
 - a chassis having a first side and a second side and a print zone between said first and second sides;
 - a carriage mounted to said chassis to traverse back and forth across said print zone, said carriage having a first idler pulley and a second idler pulley;
 - a carriage motor mounted at said first side of said chassis and having a motor pulley;
 - a chassis idler pulley mounted at said second side of said chassis; and
 - a belt attached to said first side of said chassis, over to and wrapped around said first carriage idler pulley, back to and wrapped 180° around said motor pulley, across said print zone and wrapped around said chassis idler pulley, over to and wrapped around said second carriage idler pulley, then back to and attached to said second side of said chassis;
- wherein said motor is movably mounted to said chassis and further comprising a tensioning device attached to said motor

and configured to resiliently urge said motor away from said second side of said chassis.

5,779,377

PRINTING APPARATUS

Eiji Kumai, Akira Takagi, and Satoshi Fujioka, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

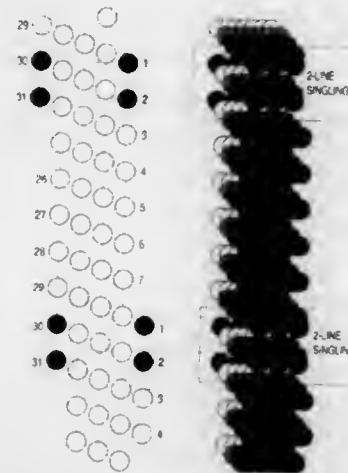
Filed Dec. 20, 1996, Ser. No. 770,811

Claims priority, application Japan, Dec. 20, 1995, 7-332212

Int. Cl.⁶ B41J 19/96

U.S. Cl. 400—555

6 Claims



1. A printing apparatus comprising:
 - a print head comprising an array having N dot forming elements arrayed at fixed pitches, said array having a lower end and an upper end;
 - horizontal scan drive means for moving the print head above and along a print medium in a horizontal scan direction;
 - vertical scan drive means for moving the print medium in a vertical scan direction perpendicular to the horizontal scan direction, wherein a vertical scan distance that the print medium is vertically moved, when the vertical scan drive means is driven one time is selected such that the position of at least one dot forming element from the lower end of the array is coincident with a previous position of at least another dot forming element from the upper end of the array, the coincident position defining a shared horizontal scan line; and
 - head drive means for performing a printing operation by intermittently driving said at least one dot forming element and said another dot forming element to print in an intermittent manner with respect to said shared horizontal scan line;
- wherein a microweave pitch M by the vertical scan drive means and an element-to-element interval K are mutually prime, and $M+t=N$ holds, where
 - $M=(\text{vertical scan drive pitch by the vertical scan drive means})/(\text{print resolution})$,
 - $K=(\text{print resolution})/(\text{nozzle pitch})$, and
 - $t=\text{number of lines intermittently printed by the head drive means}$.

5,779,378

CONTINUOUS FORM PRINTER

Shinji Kikuchi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1997, Ser. No. 832,182

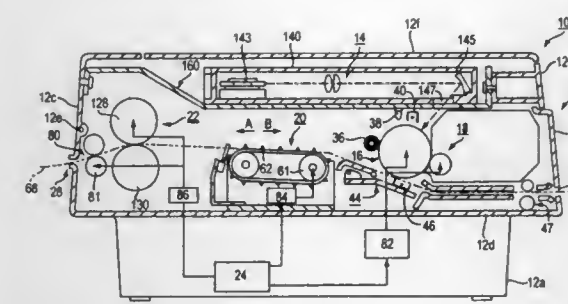
Claims priority, application Japan, Apr. 9, 1996, 8-111953

Int. Cl.⁶ B41J 11/26

U.S. Cl. 400—616.2

20 Claims

1. A printer which prints on a continuous form paper, comprising:



5,779,380

STRIP FOR JOINING COMPONENTS

Friedrich Knapp, Amstetten, Austria, assignor to Friedrich Knapp Gesellschaft M.B.H., Amstetten, Austria

PCT No. PCT/AT95/00115, § 371 Date Dec. 17, 1996, § 102(e) Date Dec. 17, 1996, PCT Pub. No. WO95/35050, PCT Pub. Date Dec. 28, 1995

PCT Filed Jun. 9, 1995, Ser. No. 750,667

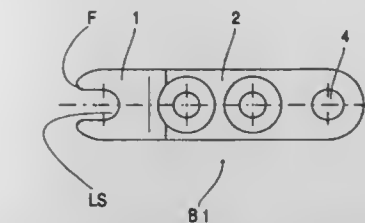
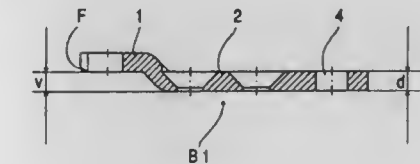
Claims priority, application Germany, Jun. 17, 1994, 44 21 398.0

Int. Cl.⁶ B25G 3/00

U.S. Cl. 403—331

15 Claims

a tractor unit for feeding said paper;
 feed pulse generating means for generating a feed pulse responsive to a predetermined interval of feeding of said paper;
 a paper top sensor which detects the leading edge of said paper and generates a paper top signal;
 a non-volatile memory;
 comparing means for comparing a time interval from said paper top signal to said feed pulse with a threshold value; and
 a controller which controls said tractor unit and a printing operation onto said continuous form paper in accordance with said feed pulse, said controller being arranged to change the timing of starting said printing operation according to a result of said comparing means;
 wherein said threshold value is adjustable and can be stored in said non-volatile memory.



5,779,379

RECEIPT FORM HANDLING SYSTEM FOR AUTOMATED BANKING MACHINE

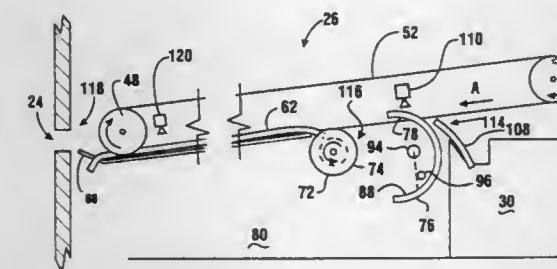
Thomas S. Mason, Jeffrey A. Brannan, and Timothy R. Hoover, all of Canton, Ohio, assignors to InterBold, North Canton, Ohio

Filed Mar. 28, 1997, Ser. No. 827,567

Int. Cl.⁶ B41J 11/70

U.S. Cl. 400—621

19 Claims



1. An automated banking machine apparatus comprising:
 - a paper path, wherein paper moves in a first direction along the paper path;
 - a printer, wherein the printer is operative to print indicia on paper extending in the paper path;
 - a drive, wherein the drive engages paper in the paper path and is operative to selectively move the paper to a delivery area disposed in the first direction along the paper path from the printer;
 - a cutter selectively operative to cut the paper in the paper path, wherein the cutter is disposed in the paper path in an opposed direction along the paper path from said drive;
 - a sensor, wherein the sensor senses the paper at a location in the paper path, wherein the location is in the opposed direction along the paper path from the cutter; and
 - a controller in operative connection with the cutter and the sensor, wherein the controller is operative to cause the cutter to cease operation responsive to the sensor ceasing to sense paper at the location.

5,779,381

LOCKABLE CRAYON HOLDER

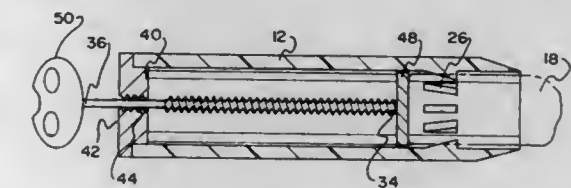
Vance J. Muelver, W. 270 N. 3894 Parkside Rd., Pewaukee, Wis. 53072

Filed May 20, 1997, Ser. No. 859,433

Int. Cl.⁶ B43K 21/08

U.S. Cl. 401—79

1 Claim



1. A lockable crayon holder for securing a crayon in a tube to prevent breaking of the crayon and to prevent a child from eating the crayon comprising, in combination:
 - a cylindrical body having a tapered open forward end and an open rearward end, the cylindrical body dimensioned for

receiving a crayon therein with a tip of the crayon extending outwardly of the open forward end, the open rearward end having a pair of diametrically opposed slots extending inwardly thereof, each of the slots being defined by an outer portion parallel with the cylindrical body and an inner portion orthogonally disposed with respect to the outer portion, the cylindrical body having a plurality of circumferentially disposed engaging members extending angularly from an interior thereof inwardly of the tapered open forward end for engaging the crayon and abating manual forward movement of the crayon with respect to the cylindrical body by a child; and a plunger assembly comprised of an elongated threaded rod, the rod having an interior end and an exterior end, the plunger assembly including a stop plate, the stop plate comprising an inner disk and an outer disk, a threaded aperture extending centrally through the inner disk and the outer disk, the threaded aperture adjustably receiving the rod therethrough, the inner disk positionable within the open rearward end of cylindrical body, the outer disk having a diameter greater than an interior diameter of the cylindrical body whereby when the inner disk is positioned within the open rearward end, the outer disk is in an abutting relationship with the open rearward end, the inner disk having a pair of diametrically opposed pins extending radially therefrom, the pins received within the diametrically opposed slots of the cylindrical body, the interior end of the rod having a circular push plate secured thereto, the push plate having a diameter less than an interior diameter of the cylindrical body, the exterior end of the rod having a handle secured thereto.

5,779,382

Patent Not Issued For This Number

5,779,383

BRAKED MECHANICAL JOINT ASSEMBLY

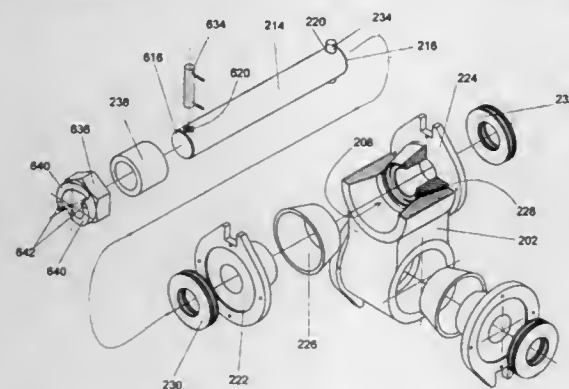
Dennis L. McCallum, 38940 Jasper-Lowell Rd., Fall Creek, Oreg. 97438

Continuation-in-part of Ser. No. 625,748, Mar. 28, 1996, Pat. No. 5,713,688. This application Aug. 12, 1997, Ser. No. 909,552

Int. Cl.⁶ F16D 3/16

U.S. Cl. 403—57

12 Claims



1. A braked joint assembly for rotatably joining a first joined member and a second joined member, said braked joint assembly comprising:

a joint body for substantially rigidly connecting to said first joined member and comprising four substantially orthogonal faces and a bore defining a rotation axis, the bore comprising first and second coaxial right circular substantially frusto-conical sections each comprising a base, the bases of each of the frusto-conical sections coinciding with opposing faces of said joint body;

a rotation assembly for substantially nonrotatably engaging said second joined member and allowing relative rotation of said joint body and said second joined member about the rotation axis, comprising

a shaft positioned coaxially within the bore in said joint body and comprising a first end and a second end,

a first friction cone comprising an outer right circular substantially frusto-conical surface corresponding to the first frusto-conical section of the bore and an inner coaxial right circular substantially frusto-conical surface and positioned coaxially around the shaft against the first frusto-conical section of the bore,

a second friction cone comprising an outer right circular substantially frusto-conical surface corresponding to the second frusto-conical section of the bore and an inner coaxial right circular substantially frusto-conical surface and positioned coaxially around the shaft against the second frusto-conical section of the bore,

a first brake cone comprising a right circular substantially frusto-conical section corresponding to the inner surface of the first friction cone, a base, an axial bore for receiving the shaft, and means for substantially nonrotatably engaging said second joined member, and positioned coaxially around the shaft against the inner surface of the first friction cone, and

a second brake cone comprising a right circular substantially frusto-conical section corresponding to the inner surface of the second friction cone, a base, an axial bore for receiving the shaft, and means for substantially nonrotatably engaging said second joined member, and positioned coaxially around the shaft against the inner surface of the second friction cone; and

means for compressing the first and second friction cones and said joint body between the first and second brake cones, thereby generating a frictional torque opposing relative rotation of said joint body with respect to the first and second brake cones and said second joined member engaged therewith about the rotation axis,

wherein:

a load force between said second joined member and said joint body is substantially borne by the first and second frusto-conical sections of the bore, the frusto-conical sections of the first and second brake cones of said rotation assembly, and the first and second friction cones of said rotation assembly;

the compressing means of said rotation assembly comprises means, positioned at the first end of the shaft, for retaining the first brake cone on the shaft, and

means, positioned at the second end of the shaft, for pushing the second brake cone against the second friction cone;

the first end of the shaft of said rotation assembly is provided with a transverse hole, and the retaining means of said rotation assembly comprises a locking pin positioned there-through;

the second end of the shaft of said rotation assembly is provided with a transverse hole, and the pushing means of said rotation assembly comprises a cam engaging pin positioned there-through, a cam positioned on the shaft between the cam engaging pin and the second brake cone, and a spacer positioned between the cam and the second brake cone; and rotation of the cam about the shaft and engagement of the cam engaging pin by the cam serve to push the second brake cone against the second friction cone.

5,779,384

WINDOW FRAME WELDING METHOD AND PRODUCT THEREOF

Carl James Olsen, Hudson, Wis., assignor to Andersen Corporation, Bayport, Minn.

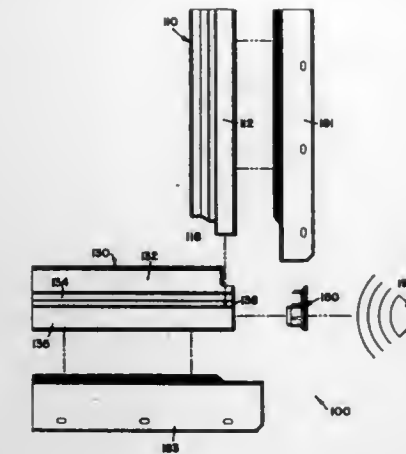
Filed May 17, 1996, Ser. No. 649,577

Int. Cl.⁶ F16B 5/08

U.S. Cl. 403—231

4 Claims

1. A corner joint for a window or door, comprising:



a first frame member extruded from a composite material including wood fibers and plastic, the first frame member having a cut end and sidewalls disposed about a hollow interior;

a plastic end cap sized and configured to insert between the sidewalls and seal off the cut end of the first frame member, the plastic end cap being sonically welded to the cut end, the end cap includes first energy directors disposed on a first surface which extends parallel to and overlies the cut end, and second energy directors disposed on a second surface which extends parallel to and nests within the sidewalls; and

a second frame member connected to at least one of the end cap and the first frame member.

5,779,385

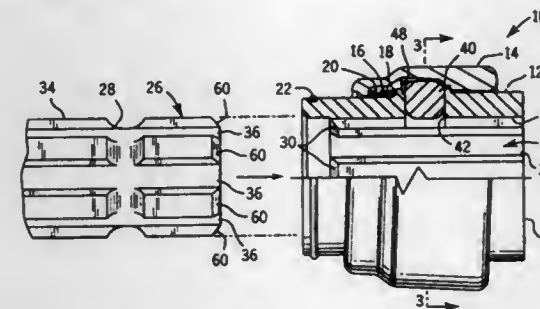
AUTOMATIC UNCOCKING SHAFT SENSING COUPLER
Mark A. Fechter, West Bend, Wis., assignor to Weasler Engineering, Inc., West Bend, Wis.

Continuation-in-part of Ser. No. 582,243, Jan. 3, 1996, Pat. No. 5,632,568. This application Jan. 16, 1997, Ser. No. 784,878

Int. Cl.⁶ F16B 7/00

U.S. Cl. 403—328

15 Claims



1. In a coupling for axially locking a hub to a shaft of the type having a locking member received in a radially extending slot in the hub for radial sliding movement therein into or out of a recess formed in the shaft and a collar slidable on said hub between a locked position in which said collar prevents radial outward movement of said locking member in said slot and a released position in which said collar permits radial outward movement of said locking member in said slot, said collar being biased into said locking position and having a radially inwardly extending shoulder on an inner surface thereof, said hub having a radially outwardly extending ledge on an outer surface thereof so that said collar may be cocked at an angle with respect to a longitudinal axis of said hub to engage said shoulder with said ledge to hold said collar in said released position, the improvement wherein said coupling further comprises means separate from said locking member for uncocking said collar so as to reduce said angle and disengage said shoulder from said ledge in response to insertion of said shaft into said hub.

5,779,386

APPARATUS AND METHOD FOR COUPLING SUPPORT MEMBERS

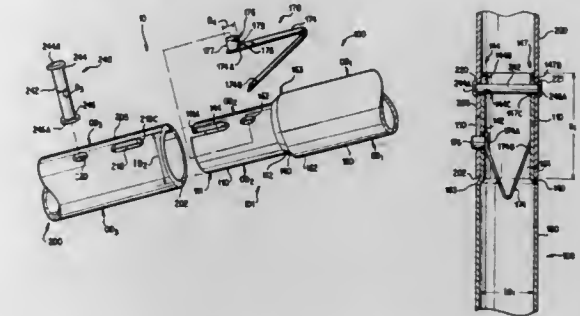
Anthony E. Eichhorn, East Amherst, N.Y., assignor to Fisher-Price, Inc., Aurora, N.Y.

Filed Aug. 15, 1996, Ser. No. 698,370

Int. Cl.⁶ B25G 3/18

U.S. Cl. 403—329

11 Claims



1. A joint for connecting two support members comprising:

a first swaged tubular support member having a first portion having a first outside diameter, a third, end portion having a second outside diameter smaller than said first outside diameter, a wall, a longitudinal axis, an end, and a slot formed in said wall and extending axially from said end, and a second portion extending between said first and third portions, and tapering inwardly in diameter from said first portion to said third portion;

a second tubular support member having an inner bore bounded by a wall with an inside diameter larger than said second outside diameter, a first aperture in said wall of said second support member, and an elongate rotation restraint member disposed in said bore and extending radially inwardly from said wall, said first support member being slidably receivable within said bore of said second support member; and

a connecting member coupled to said first support member and selectively extendable radially outwardly from said wall of said first support member to an extended position and being engageable with said aperture when in said extended position and when said first support member is disposed in said second support member with said rotation restraint member disposed in said slot, engagement of said connecting member with said aperture preventing axial withdrawal of said first support member from said second member, and engagement of said rotation restraining member and said slot preventing rotation of said first support member with respect to said second support member.

5,779,387

DEVICE FOR SUPPORTING OR CLAMPING AT LEAST ONE ARTICLE, SPECIFICALLY AN ELONGATE MEMBER

Paul Schönauer, Fahrweidstrasse 42, CH-8951 Fahrweid, Switzerland

Filed Nov. 1, 1996, Ser. No. 742,988

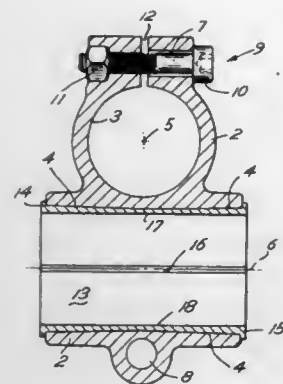
Claims priority, application Germany, Nov. 10, 1995, 295 17 872 U

Int. Cl.⁶ F16L 3/10

U.S. Cl. 403—400

8 Claims

1. A device for supporting or clamping at least one article, specifically for supporting an elongate member in a moveable manner or in a clamped state such as to allow an adjusting of the position of said elongate member relative to said supporting and clamping device, which device includes a base body in the form of a casting; comprising at least one first through hole adapted for receipt of a pipe, which at least one first through hole features a double taper tapering in opposite directions, comprising further at least one cladding in the form of a sleeve made of an elastomeric



material, which sleeve includes a second through hole adapted to receive such elongate member, wherein the apex of the double tapering is proximate the middle of the first through hole, with the tapers widening toward the ends of the first through hole.

5,779,388

PRINTED CIRCUIT BOARD RETAINER

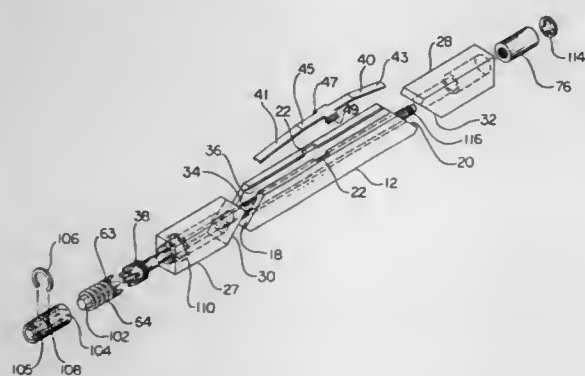
Albert K. Yamamoto, Huntington Beach, Calif., assignor to Fairchild Holding Corp., Chantilly, Va.

Filed Oct. 4, 1996, Ser. No. 725,806

Int. Cl.⁶ B25G 3/00

U.S. Cl. 403—405.1

2 Claims



1. A locking wedge apparatus for locking a printed circuit board within an elongated slot in a rack comprising:

- a center wedge having sloped surfaces at its opposite ends;
- first and second end wedges located at said opposite ends of the center wedge and having surfaces that engage the sloped surfaces of the center wedge;
- a threaded shaft interconnecting the first and second end wedges, one end of said threaded shaft having a plurality of ratchet teeth formed thereon, rotation of the shaft in a first direction drawing the two end wedges toward each other such that the end wedges and interconnecting shaft are deflected transversely by the sloped surfaces of the center wedge to lock printed circuit board within said elongated slot, rotation of said shaft in a second direction to unlock said printed circuit board within said elongated slot;
- a hex shaped member having a plurality of ratchet teeth formed on one end thereof, the ratchet teeth on said hex shaped member adapted to engage cooperating said ratchet teeth formed on said threaded shaft when said shaft is rotated in either said first or second directions;
- a sleeve having an internal hex shaped recess, said hex shaped member extending in said recess; and

a retaining ring, a portion of said retaining ring being positioned in a groove formed on an external surface of said sleeve and another portion of said ring extending into a groove formed in an inside diameter of said first end wedge whereby said sleeve is captivated within said first end wedge.

5,779,389

DEFORMABLE IMPACT TEST BARRIER

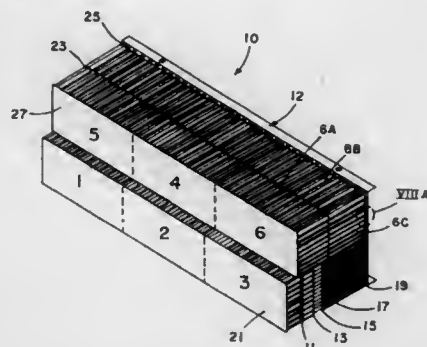
Michael C. Niemerski, Jenison, Mich., assignor to Plascore, Inc., Zeeland, Mich.

Continuation-in-part of Ser. No. 536,058, Sep. 29, 1995, Pat. No. 5,620,276. This application Mar. 19, 1997, Ser. No. 820,104

Int. Cl.⁶ E01F 13/00

U.S. Cl. 404—6

10 Claims



1. An impactor for a movable, deformable barrier simulating an automobile, comprising:

- an upright, solid backing support having a support face;
- a plurality of energy absorbing impact segments protruding from said support face;
- each said segment having an outer impact face and each comprising a plurality of layers of honeycomb having different crush strength characterized by increasing crush strength of successive layers from said outer impact face to said support; said layers being separated by and secured to perforate plates therebetween allowing air flow from a crushing layer to the succeeding layers when said layers are successively crushed; and
- at least one of said layers having a face area characterized by recess portions reducing said face area.

5,779,390

DEVICE FOR LEVELLING A LAYER OF SAND

Jukka Tapani Tuusinen, Tervatie 3, Fin-35990 Kolho, Finland
PCT No. PCT/FI95/00235, § 371 Date Sep. 13, 1996, § 102(e)
Date Sep. 13, 1996, PCT Pub. No. WO95/30051, PCT Pub. Date Nov. 9, 1995

PCT Filed May 2, 1995, Ser. No. 704,596

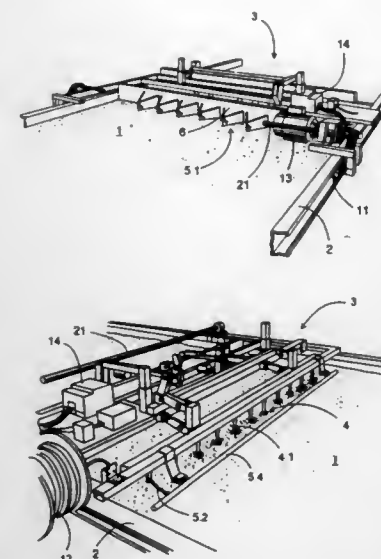
Claims priority, application Finland, Apr. 29, 1994, 941985

Int. Cl.⁶ E01C 19/12; 23/06

U.S. Cl. 404—101

7 Claims

1. A device for levelling a sand layer at the landing place of various jumping events, the device including rails on either side of the sand layer and a trolley travelling back and forwards on the rails, the trolley including a rake member for loosening the sand layer, a sand-moving member for filling pits, and a levelling member for levelling the loosened sand layer, as well as devices for moving said rake, sand moving and levelling members in a vertical direction, characterized in that the sand-moving member



comprises several laterally spaced V-ploughs pointed in the opposite direction to the levelling direction and a transverse bar together with support devices, moving after the rake member.

5,779,391

REVTMENT BLOCK

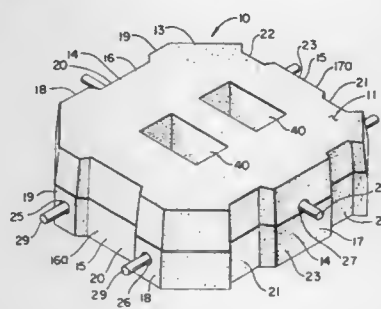
David W. Knight, Humble, Tex., assignor to Keystone Retaining Wall Systems, Inc., Bloomington, Minn.

Filed Nov. 19, 1996, Ser. No. 752,694

Int. Cl.⁶ E02B 3/12

U.S. Cl. 405—20

36 Claims



1. A block for use in a revetment system which includes a plurality of blocks arranged to form a mat, the block comprising:

- a top surface;
- a bottom surface; and
- first and second opposed and substantially parallel side surfaces extending between the top and bottom surfaces, and third and fourth opposed and substantially parallel side surfaces extending between the top and bottom surfaces and the first and second side surfaces, the first and third side surfaces each having first and second projections and the second and fourth side surfaces each having first and second recesses, the projections and recesses being sized and configured such that the projections on the first and third side surfaces mate with the recesses on the second and fourth side surfaces, respectively, of an adjacent block in the mat.

5,779,392

SYSTEMS FOR CONTAINING AND COLLECTING OIL SPILLS

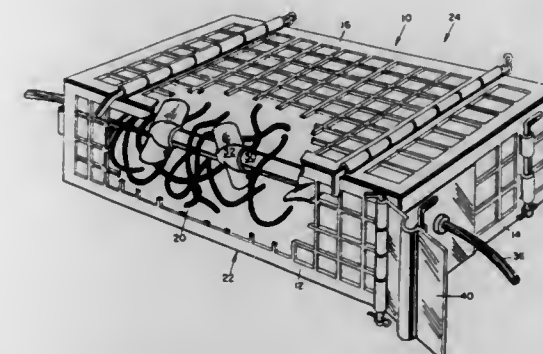
Joseph B. Mendes, P.O. Box 474, Agawam, Mass. 01001

Filed Sep. 27, 1996, Ser. No. 719,520

Int. Cl.⁶ E02B 15/04

U.S. Cl. 405—63

1 Claim



1. Oil skimming apparatus for minimizing the effects of a spreading of a spillage or leakage of liquid hydrocarbons on a body of water comprising:

- a plurality of traps suited for end-to-end disposition upon a body of water,
- each trap being box-like in configuration and having top and bottom and side and end open mesh type panels,
- a charge of strands of a polyolefin in each trap with interstices throughout the charge for increasing the adsorbing oil ensnaring characteristics of the charge,
- an elongated horizontally-disposed tube freely mounted interiorly of each trap and extendable between the opposite end panels of each respective trap,
- a plurality of spaced helically-arranged fins mounted on each tube exterior for defining in concert with a respective tube an agitation mechanism,
- a continuous towing cable freely extendable through each tube for connecting and holding together the traps of the series and for allowing the towing of the trap series by the cable ends or to permit anchoring of the series by the staking of the cable at both of its termini,
- the cable serving to support each tube in a free-wheeling rotative manner responsive to the motion of the water flowing through each trap with such rotation effecting agitation of the strands of the charge, and
- a flexible liquid impervious membrane between the spillage confronting side panels for closing off the spaces between adjacent traps.

5,779,393

DRAINAGE CHANNEL GRATES FOR ATHLETIC PLAYING SURFACES AND ASSOCIATED METHODS

Charles E. Gunter, Statesville, N.C., assignor to ABT, Inc., Troutman, N.C.

Division of Ser. No. 568,301, Dec. 6, 1995, Pat. No. 5,647,689.

This application May 16, 1997, Ser. No. 857,359

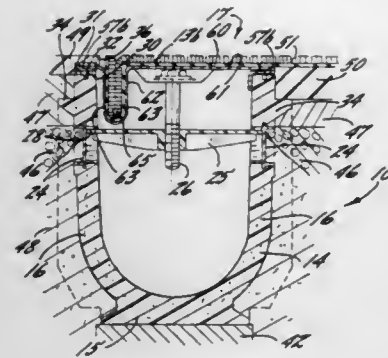
Int. Cl.⁶ E02B 13/00; 11/00

U.S. Cl. 405—121

12 Claims

1. An elongate grate capable of securing an edge portion of an artificial turf surface to a drainage channel which defines an open top for receiving runoff from the artificial turf surface, said grate comprising:

- an elongate central portion having an upper surface extending between opposed exterior edges and over the open top of the drainage channel; and
- an elongate slot integrally defined in said central portion by a pair of sidewalls extending downwardly into the drainage channel from the upper surface, wherein said slot has a width at least as great as a predetermined crush height of the



artificial turf surface such that said slot can receive and frictionally engage the edge portion of the artificial turf surface.

5,779,394

QUAY SIDE DEVICE FOR ENGAGING A CHAIN FOR A MARINE FENDER

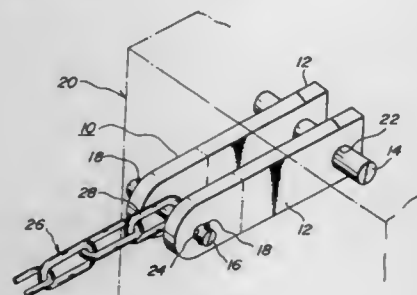
Takuma Tokura, Kawasaki, and Hitoshi Akiyama, Fujisawa, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 28, 1996, Ser. No. 654,344

Int. Cl.⁶ E02B 3/22

U.S. Cl. 405—212

2 Claims



1. A quay side device for engaging a chain for a marine fender attached to a fitting face of a quaywall or another berthing installation, comprising: a pair of rigid plates separated and in parallel to each other and mostly embedded in the quaywall, a round hole formed in a protruding portion of each rigid plate from the fitting face of the quaywall, a support rod detachably inserted into the round holes between the protruding portions of the rigid plates, and a fixing member arranged in end portions of the rigid plates embedded in the quaywall, wherein said fixing member comprises a round hold formed in the embedded end portion of each rigid plate, a fixing rod inserted into the holes between the embedded end portions, a fixing plate provided at its one end portion with a round hole passing the fixing rod and slantly extending downward with respect to a longitudinal direction of the rigid plate.

5,779,395

Patent Not Issued For This Number

5,779,396

PROCESSES FOR CONDITIONING SOIL WITH ANIONIC WATER-SOLUBLE POLYMERS

Joseph J. Mallon, Danbury; Raymond S. Farinato, Norwalk, both of Conn.; Louis Rosati, South Salem, and John J. Freeman, Jr., Valhalla, both of N.Y., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Oct. 3, 1996, Ser. No. 726,158

Int. Cl.⁶ C09K 17/40; E02D 3/00

U.S. Cl. 405—264

8 Claims

1. A process of conditioning soil which comprises adding to the soil a soil-conditioning amount of an aqueous composition comprised of an effective amount of at least one cationic organic salt, an effective amount of at least one kosmotropic salt, and at least one precipitated anionic water-soluble polymer.

5,779,397

METHOD OF IMPROVING SOIL BODY AGAINST VIBRATION AND LIQUEFACTION

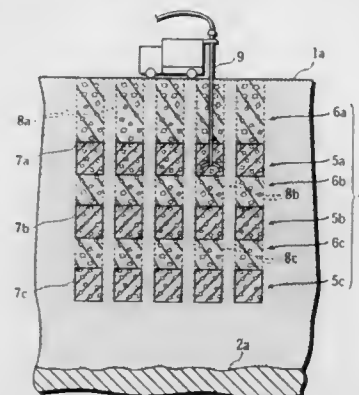
Hirokazu Takemiya, 15-23, Tsushima-honmachi; Tasuichirou Naruse, 136-1, Souzume, and Mitsunori Hashimoto, 2-20, Tsushima-shino 2-chome, all of Okayama-shi, Okayama, Japan

Filed May 24, 1996, Ser. No. 652,950

Int. Cl.⁶ E02D 3/02

U.S. Cl. 405—271

6 Claims



1. A method of improving a soil body comprising the steps of: forming a higher strength stage within the soil body, the higher strength stage including a plurality of higher hardness portions formed by a consolidation process at horizontally different positions in the same higher strength stage; and forming a lower strength stage above the higher strength stage, the lower strength stage including a plurality of lower hardness portions also formed by a consolidation process in corresponding relation to the higher hardness portions.

5,779,398

BATTERY-POWERED COOLING SYSTEM FOR TRAILOR PNEUMATIC UNLOADING PROCESS

Melton R. Battle, Charenton, La.; James E. Bedeker, and Robert C. Heiss, both of Ottawa, Ill., assignors to Bulk Transportation Services, Inc., Charenton, La.

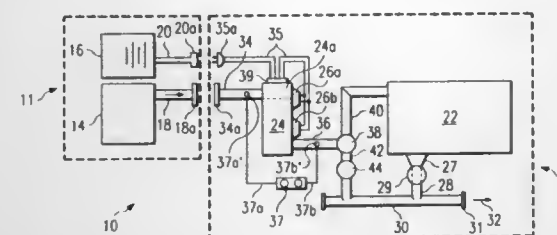
Continuation of Ser. No. 534,286, Sep. 27, 1995, Pat. No. 5,580,193. This application Jul. 22, 1996, Ser. No. 681,457

Int. Cl.⁶ B65G 53/34

U.S. Cl. 406—41

21 Claims

1. A system for unloading bulk material from a storage device having an outlet for the bulk material, the system comprising: a material conveying conduit connected to the outlet for receiving the material and conveying the material externally of the device; means for pressurizing ambient air into pressurized air; radiator means;



a battery for supplying electrical power; fan means connectable to and electrically driven by the battery for introducing a cooling fluid comprising air to the radiator means; means for introducing the pressurized air to the radiator means in a heat exchange relation with the cooling fluid to cool the pressurized air into cooled pressurized air; and means for passing the cooled pressurized air to the conduit to entrain the material as the material passes through the conduit.

5,779,399

ROTARY CUTTING APPARATUS

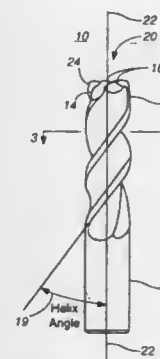
Lawrence Francis Kuberski, St. Charles, Mo., assignor to McDonnell Douglas, St. Louis, Mo.

Filed Mar. 5, 1996, Ser. No. 611,177

Int. Cl.⁶ B23C 5/10

U.S. Cl. 407—54

17 Claims



7. A rotary cutting apparatus, comprising: a cylindrical shank; a first flute formed on the cylindrical shank, having a first characteristic frequency and a cutting edge extending radially from an exterior perimeter through and beyond a longitudinal axis; and a second flute formed on the cylindrical shank, the second flute having a second characteristic frequency not equal to the first characteristic frequency.

14. A rotary cutting apparatus, comprising: a cylindrical shank; a first flute formed on the cylindrical shank, having a first axial geometry and a cutting edge extending radially from an exterior perimeter through and beyond a longitudinal axis; and a second flute formed on the cylindrical shank, the second flute having a second axial geometry not equal to the first axial geometry.

5,779,400

SMALL-SHANK TOOL FOR AUTOMATIC LATHES

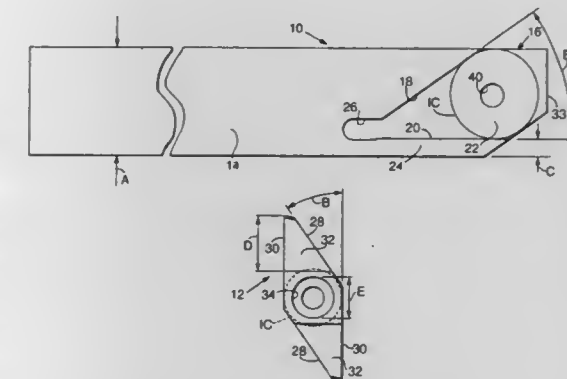
William R. Fountaine, 12 Rampart Ct., Holyoke, Mass. 01040

Filed Apr. 10, 1996, Ser. No. 632,347

Int. Cl.⁶ B23B 27/16; 29/20

U.S. Cl. 407—103

19 Claims



1. A small-shank tool for an automatic lathe, comprising: a tool shank defining a rectangular cross-sectional shape and having a maximum width of less than approximately 9 mm, and including a tool recess defined at one end of the shank by two tool-supporting surfaces oriented at an acute angle relative to each other for receiving and supporting a tool insert, wherein one of the tool-supporting surfaces is oriented approximately parallel to an adjacent side of the shank forming an elongated body portion between the tool recess and the respective side of the shank and having a thickness of at least approximately 1.0 mm; an approximately rhomboidal-shaped tool insert defined by an inscribed circle having a diameter less than approximately 90% of the shank width, and defining a fastener aperture extending through the approximate center of the inscribed circle having a diameter less than approximately 70% of the diameter of the inscribed circle, the rhomboidal-shaped tool insert being received within the tool recess with two sides of the insert each engaging a respective tool-supporting surface of the shank and a substantial portion of the other two sides of the insert extending beyond the end of the shank and forming a cutting tip for cutting a workpiece; and a threaded fastener extending through the fastener aperture and threadably attached to the tool shank for fixedly attaching the tool insert to the tool shank, the threaded fastener defining a head having a maximum diameter less than approximately 70% of the diameter of the inscribed circle.

5,779,401

CUTTING INSERT

Erwin Stallwitz, Lichtenau; José Agustín Paya; Klaus Mader, both of Mülheim, and Dirk Retzkowski, Gelsenkirchen, all of Germany, assignors to Widia GmbH, Essen, Germany

PCT No. PCT/DE94/00896, § 371 Date Apr. 2, 1996, § 102(e)

Date Apr. 2, 1996, PCT Pub. No. WO95/07783, PCT Pub. Date Mar. 23, 1995

PCT Filed Jul. 29, 1994, Ser. No. 615,301

Claims priority, application Germany, Sep. 13, 1993, 43 30

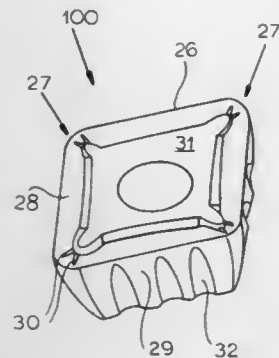
816.3; Oct. 22, 1993, 43 36 055.6

Int. Cl.⁶ B23B 27/10

U.S. Cl. 407—114

25 Claims

23. A cutting insert for chip-removing machining, the cutting insert being formed with: a cutting surface;



- a land surface adjacent the cutting surface, joining same at a cutting edge, and having a contact zone extending to the cutting edge and engaging a workpiece during machining thereof; and
- a plurality of concavely or convexly curved land elements formed on the surface, extending into the cutting zone, and spaced from the cutting edge.

5,779,402

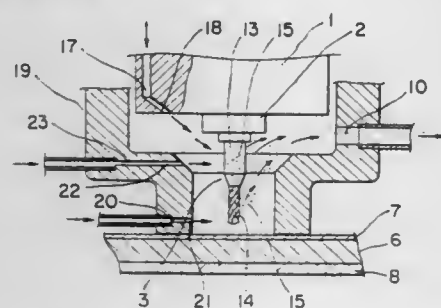
CHIP ADHESION PREVENTING DEVICE FOR PREVENTING ADHESION OF CHIPS TO DRILL SHANK
Eiichi Kameda, Tsukuba, Japan, assignor to Nippon Mektron, Ltd., Tokyo-to, Japan

Filed Mar. 12, 1997, Ser. No. 815,587

Claims priority, application Japan, Mar. 28, 1996, 8-073853
Int. Cl.⁶ B23B 47/34

U.S. Cl. 408—56

5 Claims



1. A chip adhesion preventing device for preventing the adhesion of chips to a drill having a drill shank and a drill body used on a boring machine having a spindle for boring a workpiece by rotating the drill, said chip adhesion preventing device comprising:

- a cup-shaped work holding member to be placed on a workpiece, having a central hole through which the drill is brought into engagement with the workpiece;
- a discharge opening formed in a portion of the work holding member;
- a first cooling substance supply means formed at a position opposite the discharge opening with respect to the drill body to blow a cooling substance therethrough against the drill body;
- a second cooling substance supply means formed at a position opposite the discharge opening with respect to the drill shank to blow the cooling substance therethrough against the drill shank; and
- a third cooling substance supply means formed in the spindle, the third cooling substance supply means having a passage with an axis parallel to an axis of the spindle, and a nozzle connected to an outlet end of the passage and formed so that an axis of the nozzle is inclined toward the drill shank such that the nozzle blows only against the drill shank.

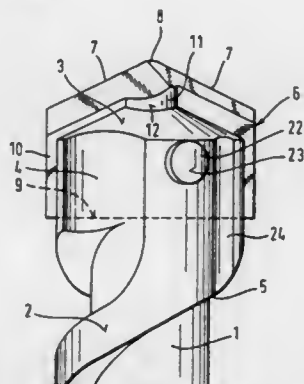
5,779,403
PERCUSSIVE BLOW ASSISTED ROTARY DRILL
Werner Kleine, Achim; Axel Neukirchen, Drensteinfurt, and Werner Bongers, Iffeldorf, all of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Dec. 9, 1996, Ser. No. 762,181

Claims priority, application Germany, Dec. 7, 1995, 195 45 647.5

Int. Cl.⁶ B23B 51/00

U.S. Cl. 408—230

16 Claims



1. A percussive blow assisted rotary drill comprising an axially extending shank (1) having a leading end face (3) and at least one main drilled material removal groove (4, 5) extending helically from said leading end face in an axially extending outside surface (2) of said shank (1), a unitary cutting plate (6, 16) fitted in said leading end face of said shank and having at least one cutting edge (7, 21), said cutting plate having a base portion (10) fixed in a continuous groove (9) in said leading end face of said shank and extending across a diameter of said shank, said base portion having opposite ends and side surfaces extending between said opposite ends, said base portion (10) is reinforced intermediate the opposite ends thereof by an outward projection (12) in at least one said side surface thereof, said continuous groove (9) having opposite side surfaces extending across the diameter of said shank and at least one of said side surfaces in said groove having a recess (13) shaped to correspond to and to receive said projection on said cutting plate, so that the base portion (10) of said cutting plate is secured in a positively locked manner in said shank.

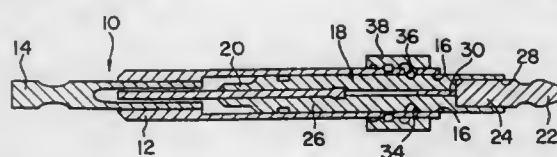
5,779,404

REVERSIBLE DRILL/DRIVER TOOL
Matthew B. Jore, P.O. Box 735, Ronan, Mont. 59864
Continuation-in-part of Ser. No. 236,992, May 2, 1994, Pat. No. 5,470,180. This application May 11, 1995, Ser. No. 439,355

Int. Cl.⁶ B23B 31/10

U.S. Cl. 408—239 R

15 Claims



1. A reversible drill/driver tool for use with a powered drill having a chuck comprising:
- a two-ended reversible tool assembly having an elongate holder body means for holding at one end thereof a removable bit for drilling a pilot hole and countersink, and for holding at the other end thereof a removable screwdriver bit for driving a screw;
 - an elongate hollow socket open at one end and having a drive shank attached at the other end to be received by the chuck of the powered drill, a set screw wrench attached to the drive shank;

the hollow socket, sized to accept the two-ended reversible tool assembly within the interior thereof with one end of the reversible tool assembly exposed;

a polygonal shaped driving means operatively connecting the tool assembly with the socket for rotating the two-ended reversible tool assembly with the socket; and

a releasable retaining means for releasably retaining the two-ended reversible tool assembly within the hollow socket.

5,779,405

THERMAL DISPLACEMENT CORRECTING APPARATUS FOR MACHINE TOOL

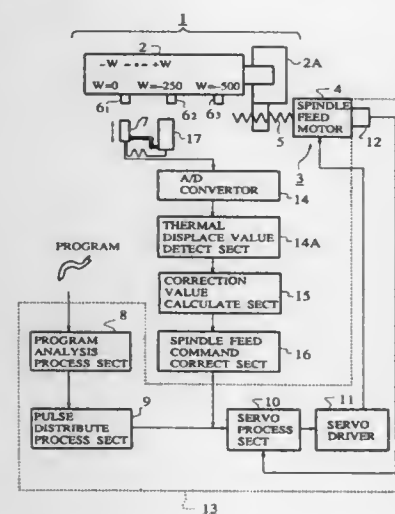
Katsuyoshi Aiso; Takeshi Goto; Kenichi Suzuki, and Tadashi Sasaki, all of Shizuoka-ken, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 413,870

Claims priority, application Japan, Mar. 30, 1994, 6-061334
Int. Cl.⁶ B23C 9/00

U.S. Cl. 409—132

13 Claims



7. A method of correcting thermal displacement of a machine tool provided with a mechanism for feeding a main spindle via a spindle feed mechanism by applying a spindle feed command to a spindle feed motor, which comprises the steps of:

- stopping the main spindle at a predetermined first spindle feed position for initialization;
- feeding the main spindle to a second spindle feed position;
- detecting the main spindle position magnetically with a predetermined sensitivity to obtain a second spindle feed position signal;
- storing the detected second spindle feed position signal;
- feeding the main spindle to a third spindle feed position;
- detecting the main spindle position magnetically with the predetermined sensitivity to obtain a third spindle feed position signal;
- storing the detected third spindle feed position signal;
- calculating a correction function on the basis of the detected and stored second and third spindle feed position signals and previously determined reference values at the second and third spindle feed positions;
- calculating thermal displacement correction values at the second and third spindle feed position in accordance with the calculated correction function; and
- correcting the spindle feed command applied to the spindle feed motor at the second and third spindle feed positions on the basis of the calculated thermal displacement correction values, respectively.

5,779,406
FORMING A NONUNIFORM GROOVE IN AN ANNULAR BORE WALL

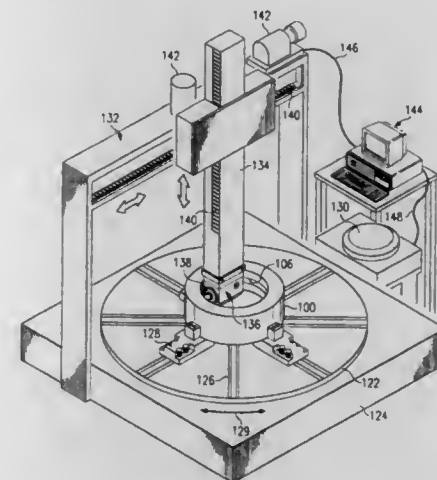
John Joseph Astor, Bradford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 17, 1996, Ser. No. 682,438

Int. Cl.⁶ B23C 3/00

U.S. Cl. 409—132

24 Claims



1. A method of forming a circumferentially extending nonuniform groove in an annular wall of a bore in a casing, said bore having a longitudinal axis, said nonuniform groove having, with respect to said longitudinal axis, an annular radial outer side wall, an annular axial upper side wall, and an annular axial lower side wall, said method comprising the steps of:

- contacting said annular wall with a first milling tool having a longitudinal axis;
- rotating said first milling tool about the longitudinal axis of said first milling tool;
- asserting said first milling tool radially into said bore wall to form a first portion of said annular nonuniform groove, said first portion defining a starting point as the radially furthest point on the radial outer surface of said first portion and defining a first intermediate point as the radially closest point of the radial outer surface of said first portion;
- contacting a second milling tool having a longitudinal axis to said bore wall at a point immediately adjacent said first intermediate point;
- rotating said second milling tool about said longitudinal axis of said second milling tool;
- asserting said second milling tool into said bore wall to form a second portion of said annular nonuniform groove, said second portion being defined along said annular radial outer side wall from said first intermediate point to a second intermediate point, said second intermediate point being defined as the radially closest point on said annular radial outer side wall of said second portion;
- contacting a third milling tool having a longitudinal axis to said bore wall at a point immediately adjacent said second intermediate point;
- rotating said third milling tool about said longitudinal axis of said third milling tool; and,
- asserting said third milling tool into said bore wall to form a third portion of said annular nonuniform groove, said third portion extending along said annular radial outer side wall of said annular nonuniform groove from said second intermediate point to an ending point.

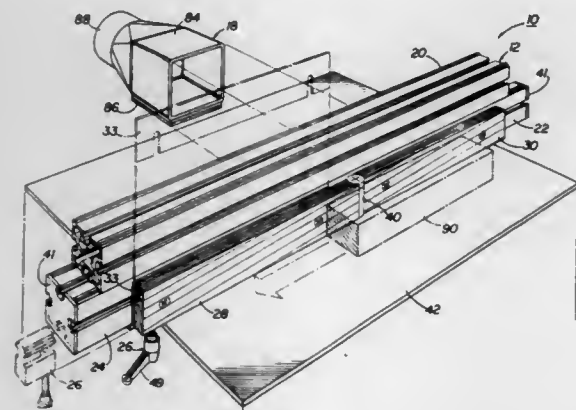
5,779,407

ROUTER TABLE FENCE SYSTEM

Edwin C. Tucker; Michael S. McGuire, both of Ottawa;
Leonard G. Lee, Almonte, and John S. Lynn, Ottawa, all of
Canada, assignors to Lee Valley Tools Ltd., Ottawa, Canada
Filed Jan. 30, 1997, Ser. No. 791,818
Int. Cl.⁶ B27B 31/00; B23C 1/12

U.S. Cl. 409—218

26 Claims



1. A router table fence for use with a router table top, comprising:

- (a) a top spar having a first length and a front face,
- (b) two bottom spars having front faces, and
- (c) connectors for attaching the bottom spars to the top spar so that:
 - (i) the front faces of each of the top spar and the two bottom spars are in substantially the same plane and
 - (ii) opposed ends of the two bottom spars may be positioned either:
 - (x) abutting, or
 - (y) separated by a selected distance.

5,779,408

FLUID CONTROL QUILL STOP

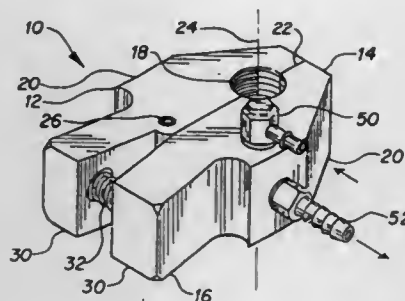
Joseph J. Amodeo, 31 Janis Way, Unit D, Scotts Valley, Calif.
95066

Filed Feb. 6, 1997, Ser. No. 796,240

Int. Cl.⁶ B23C 1/12

U.S. Cl. 409—218

19 Claims



1. A fluid control quill stop for selective placement on a stop rod of a machine, the quill stop selectively restricting displacement of a quill of the machine by contacting a dog stop upon set maximum displacement of the quill, said quill stop comprising:

- securing means for releasably attaching to a stop rod of a machine at a selected position, and
- control valve means for actuating fluid flow upon contact with a dog stop of the machine.

5,779,409

TORQUE LIMITING RETENTION SUBASSEMBLY FOR FLOATING INSERT THREADED FASTENER ASSEMBLIES

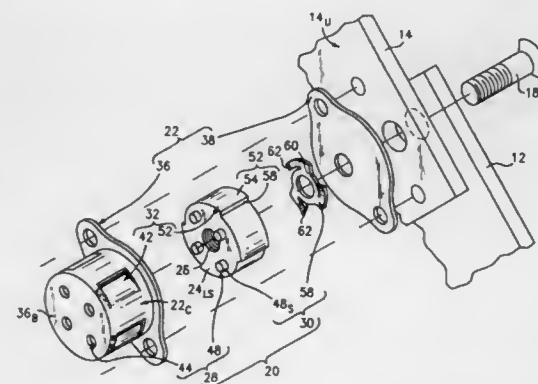
James J. Manzolli, Ansonia, Conn., assignor to Sikorsky Aircraft Corporation, Stratford, Conn.

Filed Mar. 27, 1997, Ser. No. 825,043

Int. Cl.⁶ F16B 31/00; 39/00

U.S. Cl. 411—7

11 Claims



1. A retention subassembly (20) for Floating Insert threaded fastener assemblies (10), the retention subassembly (20) operative to accept a threaded fastener (18) for coupling components, comprising:

- a cage assembly (22) defining an internal chamber (22c);
- a floating threaded insert (24) disposed within said internal chamber (22c) and having a threaded bore (26) for accepting the threaded fastener (18);
- first torque reacting means (28) for reacting torque when the threaded fastener (18) is caused to engage said threaded bore (26);
- disengagement means (30) for disengaging said first torque reacting means 28 in response to a threshold magnitude of torque;
- said disengagement means (30) including:
 - a spring bias element (58, 58a, 58b, or 58c) disposed between an upper end cap (38) of said cage assembly (22) and said floating threaded insert (24); and an engagement surface (48_s) formed in combination with said floating threaded insert (24) and having an axial engagement length L;
 - said spring bias element (58, 58a, 58b, or 58c) having a predetermined spring rate stiffness and a predefined deflection length (s) which, in combination, produce a spring bias force, said spring bias force being a function of said threshold magnitude of torque, and
 - said axial engagement length L of said engagement surface (48_s) being substantially equal to said predefined deflection length (s) of said spring bias element (58, 58a, 58b, or 58c); and
 - second torque reacting means (32) for reacting torque when the threaded fastener (18) is caused to disengage said threaded bore (26).

5,779,410

FASTENING DEVICE FOR MOUNTING HARDWARE ESPECIALLY CABINET HARDWARE ON CABINETS

Horst Lautenschläger, and Gerhard Wilhelm Lautenschläger, both of Reinheim, Germany, assignors to MEPLA-Werke Lautenschläger GmbH & Co. KG, Germany

Filed Feb. 5, 1996, Ser. No. 596,994

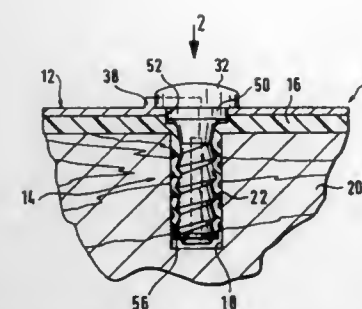
Claims priority, application Germany, Feb. 17, 1995, 195 05 311.7

Int. Cl.⁶ F16B 13/04

U.S. Cl. 411—33

6 Claims

1. A fastening device for mounting hardware, especially cabinet hardware, on a surface, comprising:



an expander having an elongated shaft, an expansion plug, which is introducible into a bore, said plug having an expansion sleeve for receiving the elongated shaft of said expander, said expander having an integrally fixed head on an end protruding from the expansion sleeve for rotating the expander radially relative to the expansion sleeve, wherein, the elongated shaft of the expander comprises a number of expansion sections provided successively lengthwise and tapering conically in a direction toward the end protruding from the expansion sleeve,

the expansion sleeve comprises a central opening for receiving the elongated shaft of the expander and is of a shape complementary to the shaft of the expander, means are provided for axially varying the position of the complementary,

conically tapering expansion sections of the shaft relative to complementarily conical central opening sections in the expansion sleeve upon a radial rotation of the expander relative to the expansion sleeve, and

a disk provided at a free end of the expansion sleeve and projecting radially beyond an end face of the sleeve wherein the expansion sleeve further comprises means for enabling the expansion sleeve to be preinstallable nonrotatably on the hardware device to be mounted.

5,779,411

PRE-ASSEMBLY NUT MADE OF PLASTIC

Jean-Christophe Vasseur, Elmeldingen, Germany, and Alain Villerot, Giromagny, France, assignors to ITW De France, Beauchamp, France

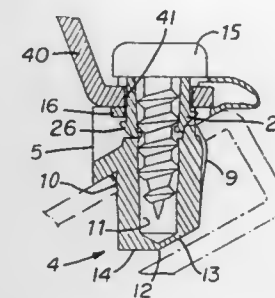
Filed Dec. 31, 1996, Ser. No. 775,554

Claims priority, application France, Feb. 26, 1996, 96 02337

Int. Cl.⁶ F16B 13/06; 37/04; 19/06

U.S. Cl. 411—55

25 Claims



1. A fastener assembly for mounting a component upon a support member, comprising:

- a body member having a head portion, and a body portion for insertion within an aperture defined within a support member upon which a component is to be mounted; and
- a clip member, for supporting a component which is to be mounted upon a support member, adapted to be mounted upon said body member, said clip member comprising a head portion and a longitudinal axis;

retaining means provided upon said clip member and disposed upon one side of said head portion of said clip member so as

to be axially spaced from said head portion of said clip member and thereby be able to cooperate with said head portion of said clip member in retaining a component upon said clip member;

first engagement means provided upon said clip member and disposed upon said one side of said head portion of said clip member so as to be axially spaced from said head portion of said clip member; and

second engagement means provided upon said head portion of said body member for engaging said first engagement means of said clip member so as to mount a component, which is retained upon said clip member, upon a support member when said body portion of said body member is disposed within an aperture defined within the support member and said clip member, having the component, which is to be mounted upon the support member, retained thereon, is engaged with said body member as a result of the engagement of said first engagement means of said clip member with said second engagement means of said body member.

5,779,412

PROFILE FRAME AND CONNECTOR

Shigekazu Nagai, and Koji Sugano, both of Yawara-mura, Japan, assignors to SMC Corporation, Tokyo, Japan

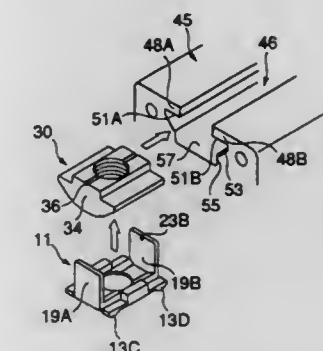
Filed Apr. 30, 1997, Ser. No. 848,307

Claims priority, application Japan, May 2, 1996, 8-134190

Int. Cl.⁶ F16B 27/00; 37/00

U.S. Cl. 411—85

5 Claims



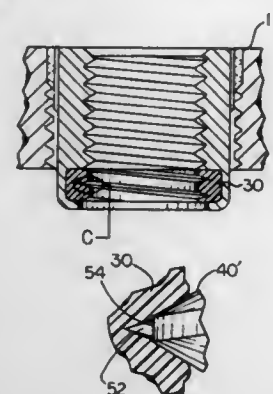
1. In an interconnecting device of the type wherein a nut is inserted into a dovetail groove in a profile frame to connect another profile frame or a mechanical component to said profile frame by using said nut,

the improvement which comprises a nut holder having clamping portions formed at both longitudinal ends, respectively, of a bottom member of said nut holder, said clamping portions extending in one direction at approximately right angles to said bottom member, said clamping portions having coupling projections or recesses respectively formed on inner sides thereof, said nut holder further having elastically deformable portions projecting in the other direction from both longitudinally extending sides, respectively, of said bottom member such that said elastically deformable portions are capable of bending deflection, and wherein said nut has abutments respectively formed at both longitudinal ends thereof, said abutments being provided with coupling recesses or projections, respectively, so that when said nut is coupled to said nut holder, said coupling projections are engaged with said coupling recesses to maintain said nut and said nut holder in a coupled state, and when said nut coupled to said nut holder is inserted into said dovetail groove, said nut is maintained at a predetermined position by frictional force due to resilient force from said elastically deformable portions.

5,779,413
FASTENER SYSTEM HAVING IMPROVED LOCKING ELEMENT
 Frank J. Cosenza, Santa Barbara, Calif., assignor to Fairchild Holding Corp., Chantilly, Va.
 Filed Feb. 23, 1996, Ser. No. 606,361
 Int. Cl.⁶ F16B 37/12

U.S. Cl. 411—302

18 Claims

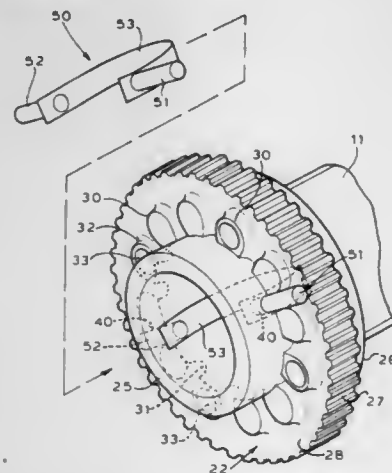


1. A fastener system comprising:
 a parent material having a hole formed therein;
 a threaded insert positioned in said hole;
 a separate locking element positioned in said threaded insert, said locking element having a thread configuration with a major thread diameter preformed thereon, the angle of said thread configuration determining the prevailing torque of the fastener system; and
 a threaded first bolt having a major thread diameter for installation within said threaded insert, the tip of said major thread diameter of said first bolt not engaging the major diameter of said thread configuration preformed on said locking element after said first bolt is installed in said insert and locking element.

5,779,414
SCREW THREADED FASTENERS
 David Paul Adkins, Chapelfields, and Mark Ford, Bulkington, both of Great Britain, assignors to Jaguar Cars Limited, Coventry, Great Britain
 Filed Jan. 11, 1996, Ser. No. 584,231
 Claims priority, application United Kingdom, Jan. 12, 1995, 9500623

Int. Cl.⁶ B60T 8/32
 U.S. Cl. 411—317

5 Claims



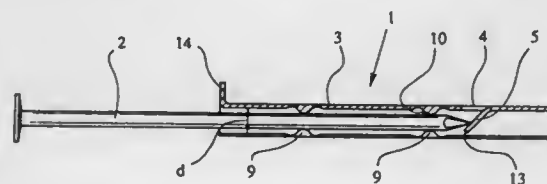
1. A wheel hub assembly for a motor vehicle comprising:
 a spindle having an external screw thread, an axial bore and a radial hole therein;

a ring having an internal thread corresponding to said external screw thread and opposite outer faces, one of said faces having a plurality of axial projections extending therefrom forming an aperture between said projections in registration with the radial bore of said spindle; and
 a pin assembly having a radially projecting pin and a spring, said spring urging said pin radially outwardly through said radial hole into said aperture to hold said ring against rotation relative to said spindle.

5,779,415
SLEEVE FOR GUIDING, DEFLECTING AND HOLDING A NAIL AND PROCESS FOR PRODUCING THIS SLEEVE
 Jochen Hoene, Südring 11, 51702 Bergneustadt, Germany
 Filed Nov. 27, 1996, Ser. No. 757,400
 Claims priority, application Germany, Nov. 28, 1995, 195 44 184.2; Jan. 13, 1996, 196 01 091.8
 Int. Cl.⁶ F16B 15/00

U.S. Cl. 411—358

18 Claims

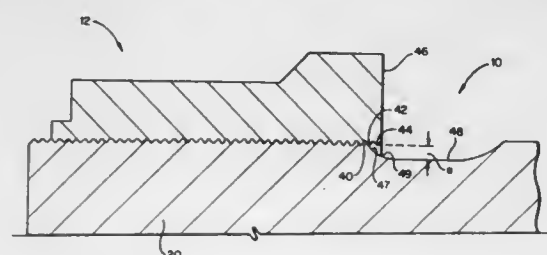


1. A nail and a sleeve for guiding, deflecting and holding the nail comprising a sleeve body, a deflection opening in the sleeve body and a guide which extends from within the sleeve body to the deflection opening; wherein the sleeve body is formed of a rolled section of a flat material; wherein at least one circumferential constriction is provided on an inner surface of the sleeve body, and wherein the constriction has an inner diameter which is less than an outer diameter of the nail for exerting a slight clamping pressure thereon.

5,779,416
BOLT/STUD AND NUT FOR ENHANCED HIGH-CYCLE FATIGUE CAPABILITY
 Kevin W. Sternitzky, Easley, S.C., assignor to General Electric Co., Schenectady, N.Y.
 Filed Oct. 30, 1996, Ser. No. 738,644
 Int. Cl.⁶ F16B 35/04

U.S. Cl. 411—411

12 Claims



1. Apparatus for enhanced high cycle fatigue capability, comprising:
 first and second structures rotatable about an axis and having openings in registration one with the other in an axial direction of the structures;
 an elongated shaft passing through the registering openings and having threads at least adjacent one end of said shaft, said shaft having an unthreaded portion adjacent said threads and located on a side of said threads remote from said one end of said shaft; and

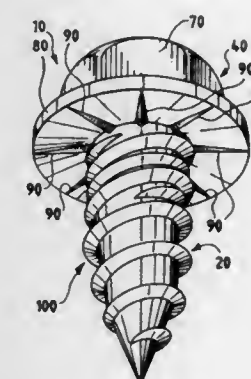
a nut having threads for threaded engagement with the threads of said shaft and a surface for bearing engagement against one of said structures, said nut having at least one thread closer to said surface than remaining threads on said nut and overlying said unthreaded portion of said shaft, said one thread of said nut being out of contact with the threads of said shaft whereby said shaft is resistant to high-cycle fatigue caused by rotation of said structures; said unthreaded portion of said shaft being undercut to a diameter reduced relative to a diameter of the shaft passing through the registering openings and including a compound fillet of different radii for transitioning between said undercut and a first thread on the shaft adjacent said undercut and engaging a first of said remaining threads of said nut.

5,779,417
FASTENER HAVING PRIMARY AND SECONDARY THREADS
 Gerald D. Barth, South Elgin, and Frank W. Bechtel, Hanover Park, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed May 12, 1997, Ser. No. 855,799
 Int. Cl.⁶ F16B 23/00; 35/04

U.S. Cl. 411—412

12 Claims

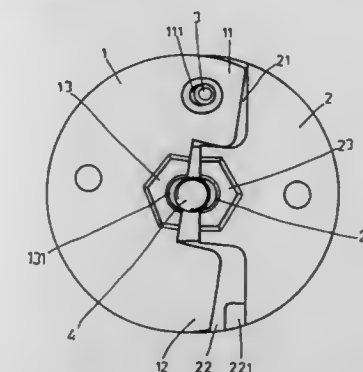


1. A fastener having a head and a shank unitary with the head, the shank defining an axis and having a generally cylindrical portion, the generally cylindrical portion having a proximal end adjoining the head and a distal end, the shank having a primary thread formation and a secondary thread formation, the primary thread formation defining axially spaced threads along the generally cylindrical portion of the shank and having a generally uniform radial dimension along the generally cylindrical portion of the shank, the secondary thread formation defining axially spaced threads between at least some of the threads defined by the primary thread formation, the secondary thread formation originating at a region spaced axially from the distal end of the generally cylindrical portion of the shank and terminating at a region adjoining the head, with a radial dimension tapering outwardly and increasing over a major portion of the axial length of the secondary thread formation, from the region where the secondary thread formation originates, toward the head.

5,779,418
QUICK-SETTING NUT
 Lin Ying-Che, No. 57, Chin-Hua St., Erh-Chia Tsun, Liu-Chia Hsiang, Tainan Hsien, Taiwan
 Filed Feb. 10, 1997, Ser. No. 796,440
 Int. Cl.⁶ F16B 37/08

U.S. Cl. 411—433

2 Claims



1. A quick-setting nut consisting of two half connecting blocks and a rivet, the improvements comprising:
 said two half connecting blocks having upper and lower surfaces and being coupled together by said rivet, each of said two half blocks having a central portion with a threaded semi-cylindrical recess formed therein, each of said threaded semi-cylindrical recesses extending between said upper and lower surfaces and being disposed in aligned relationship to form a threaded hole when said central portions of said two half connecting blocks are disposed contiguously, each of said two half connecting blocks having a pin joint portion radially spaced from said centrally located semi-cylindrical recess and diametrically disposed lock joint portion, said pin joint portions being disposed in overlapping relationship and said lock joint portions being disposed in overlapping relationship, said pin joint portion of one of said two half connecting blocks having an aperture formed therethrough for receiving said rivet and said pin joint portion of said other half connecting block having a slotted opening formed therethrough disposed in aligned relationship with said aperture for passage of said rivet therethrough, whereby said two half connecting blocks are both pivotally and slidably coupled together, said locking joint portion of one of said two half connecting blocks having a locking recess formed therein and said locking joint portion of said other half connecting block having a locking projection formed therein and disposed in corresponding relationship with said locking recess for releasable locking engagement therewith, wherein said two half connecting blocks are pivotally displaced to slide a bolt therebetween and subsequently lockingly engaged to contiguously dispose said central portions for threadably engaging the bolt within said threaded hole.

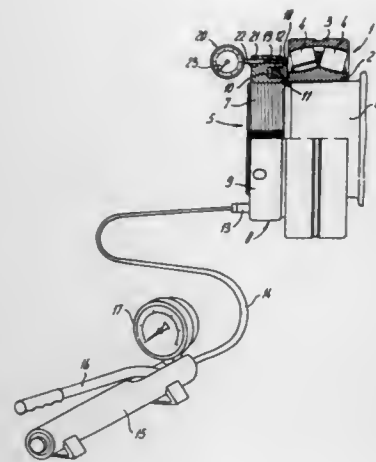
5,779,419
HYDRAULIC NUT FOR MOUNTING CONICAL OBJECTS
 Magnus Kellström; Kenneth Pettersson, both of Partille, Sweden, and Magnus Rydin, Amsterdam, Netherlands, assignors to SKF Maintenance Products B.V., Mijdrecht, Netherlands
 Filed Dec. 26, 1995, Ser. No. 578,233
 Claims priority, application Netherlands, Dec. 23, 1994, 9402211

U.S. Cl. 411—434

Int. Cl.⁶ F16B 37/08

5 Claims

1. In a hydraulic nut for use and mounting a hollow object having a conically shaped opening on a conical shaft, said nut comprising:



a nut body having an annular, coaxial cavity;
a ring like piston which is displaceable within said cavity;
wherein the improvement comprises measuring means for measuring the axial displacement of the ring like piston with respect to the nut body.

5,779,420

STRIP FOR SUPPORTING NAILS

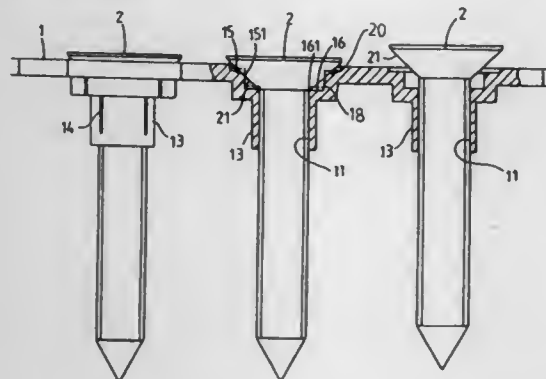
Sbhi Chang Huang, No. 134, Yiau San Street, San Min Chu, Kaoshiung, Taiwan

Filed Nov. 25, 1996, Ser. No. 757,963

Int. Cl.⁶ F16B 15/08

U.S. Cl. 411—442

1 Claim



1. A strip body of an elongate tape shape having an outer surface and at least one longitudinal side provided with a plurality of transporting notches spaced equidistantly;

a plurality of holes formed in the body and terminating in the outer surface and spaced apart equidistantly along the outer surface for engaging with fasteners;

each of said holes defined by an inner first cylindrical wall normal to the outer surface, the first cylindrical wall being joined in turn, forming a first corner, to a first shoulder parallel to the outer surface; the first shoulder being joined in turn to an intermediate wall normal to the outer surface; the intermediate wall being joined in turn, forming a second corner, to a second shoulder parallel to the outer surface; the second shoulder being joined in turn to a third wall normal to the outer surface and terminating at the outer surface, the shoulders for engaging resiliently with the fasteners and for decreasing contact area between the strip and the fasteners; the strip including a plurality of slits, in planes normal to the outer surface, through said first and second shoulders and inner first, second and third walls for further increasing resilience of the shoulders; and

the strip body including a plurality of openings communicating with said slits for further increasing the resilience of the shoulders.

5,779,421

INSULATION FASTENING DEVICE

Harald Beck, Schaan, Liechtenstein, and Remo Kluser, Hinterforst, Switzerland, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

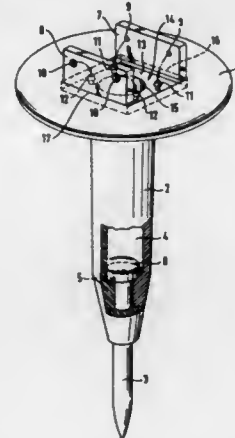
Filed May 13, 1997, Ser. No. 855,348

Claims priority, application Germany, May 14, 1996, 196 19 318.4

Int. Cl.⁶ F16B 15/02; 43/00

U.S. Cl. 411—480

6 Claims



1. A device for fastening an insulation element to a constructional component comprising a large-surface head (1); a hollow shank (2) projecting from the head (1) and having an inner space, which is freely accessible from an opening (15) provided in the head (1), for receiving a fastening member (3) drivable into the constructional element; and a lid (7, 8) supported on the head (1) and pivotable about an articulation axis (16, 17) located outside of the opening (15), for closing the opening, the lid engaging, in a closed position thereof, a projection extending from a head surface extending parallel to a cross-sectional surface of the hollow shank (2).

5,779,422

DEVICE FOR JOINING TWO ELEMENTS

Maurice Petignat, Rue du Bois-Noir 27, La Chaux-de-Fonds, Switzerland, assignor to Maurice Petignat, Switzerland, and Etablissements Sarran S.A., France

PCT No. PCT/IB95/00299, § 371 Date Nov. 4, 1996, § 102(e)

Date Nov. 4, 1996, PCT Pub. No. WO95/30837, PCT Pub. Date Nov. 16, 1995

PCT Filed Apr. 26, 1995, Ser. No. 737,149

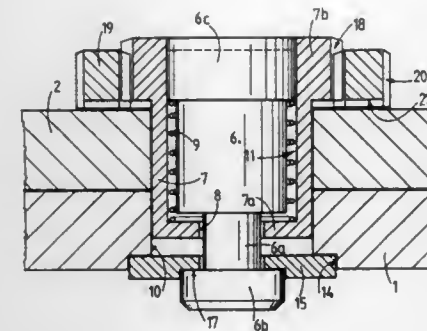
Claims priority, application Switzerland, May 4, 1994, 1405/94

Int. Cl.⁶ F16B 21/00

U.S. Cl. 411—551

3 Claims

1. Whole formed by two elements assembled together by a device effecting assembly of said elements, said device comprising, a stud including at least one radial lug, said stud secured to one of said elements by said one radial lug, said one element including a passage having a recess on the outer face thereof for receipt of said lug, said lug being maintained within said passage by a return resilient device which bears at one end thereof on said stud and at the other end on said one element, a sleeve positioned within said passage, said sleeve having a bottom with an opening therein for receipt therein of said lug, said return resilient device being positioned within said sleeve and bearing at one end thereof



on said stud and at the other end on said bottom, said sleeve being engaged between said elements and being slidable longitudinally within said passage, said sleeve having a threaded portion, a tightening ring screwed on said threaded portion, said tightening ring bearing on the other of said elements, whereby the force of the return resilient device and the pressure exerted by one of the elements on the other element is variable according to the axial position of said sleeve as the tightening ring is screwed upon said sleeve.

5,779,423

SOFT COVER BOOK AND METHOD OF MAKING SAME

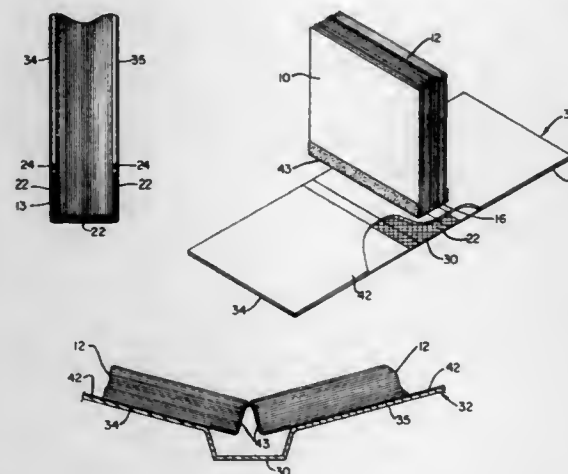
John F. Bermingham, 6490 S. Hermitage Pl. E., Englewood, Colo. 80111

Continuation-in-part of Ser. No. 424,113, Apr. 19, 1995, abandoned. This application Aug. 15, 1996, Ser. No. 689,934

Int. Cl.⁶ B42C 11/00

U.S. Cl. 412—4

29 Claims



1. In a book wherein a book block is comprised of collated pages including an adhesive applied to one edge and outer surface portions of first and last pages of said block adjacent to one edge whereby the one edge constitutes a backbone of said book, the improvement comprising:

a non-adherent coating disposed over said adhesive at least along said backbone;
a cover including front and rear leaves superimposed on said front and last pages of said book block and a spinal portion between said front and rear leaves in overlying relation to said backbone, and means hinging said front and rear leaves to said spinal portion adjacent to said backbone; and
adhering means between said front and rear leaves and said outer surface portions adjacent to said backbone for adhering said cover to said block whereby said backbone is movable independently of said spinal portion when said book block is opened.

5,779,424

PROCESS FOR PRODUCING A TWO-CHAMBER PRESSURE PACKAGE

Gerd Stoffel, In Den Dorfackern 21, D-78465 Konstanz, Germany

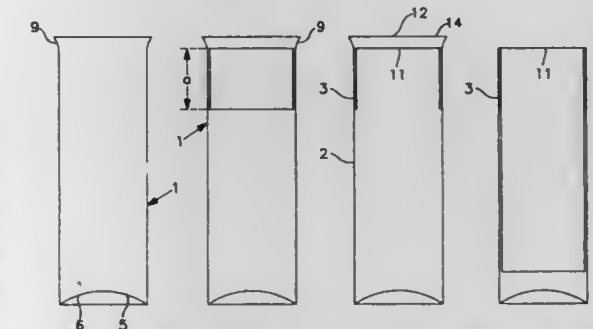
Filed Apr. 7, 1995, Ser. No. 418,207

Claims priority, application Germany, Apr. 18, 1994, 44 13 331.6

Int. Cl.⁶ B21D 51/26

U.S. Cl. 413—1

2 Claims



1. A process for producing a two-chamber pressure package having an outer casing defining an opening edge and an inner casing connected to the outer casing by means of an adhesive layer forming a bonding zone between the outer casing and the inner casing wherein the bonding zone has an upper edge which is spaced a distance b from the opening edge whereby the outer casing defines a ring extending from the upper edge of the bonding zone to the opening edge, the improvement comprising: removing the ring at the upper edge of the bonding zone thereby forming a new opening edge formed by the outer casing, adhesive layer and inner casing; and forming a bond with the new opening edge.

5,779,425

PROCEDURE AND FACILITY FOR HANDLING AND TRANSPORT OF WAFERS IN ULTRA-CLEAN ROOMS

Hartmut Grützediek, An der Klosterheck 16, and Joachim Scheerer, Am Fort Weisenau 38, both of D-55130 Mainz, Germany

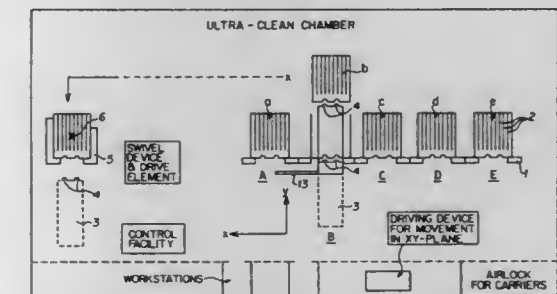
Continuation of Ser. No. 641,274, Apr. 30, 1996, which is a continuation of Ser. No. 215,185, Mar. 21, 1994, abandoned.

This application Dec. 3, 1996, Ser. No. 758,355
Claims priority, application Germany, Mar. 22, 1993, 43 09 092.3

Int. Cl.⁶ B65G 49/07

U.S. Cl. 414—416

35 Claims



5. Apparatus to handle, under ultra-clean conditions, plate-form discs for processing by workstations located within a room, comprising:

a chamber maintained under ultra-clean conditions;
a plurality of support stations mounted in said chamber in sequential alignment extending along a horizontal, or X, direction for supporting a plurality of carriers, respectively, each of which stores therein a plurality of the plate-form discs, said carriers being brought to rest on said support

stations by motion along a vertical, or Y, direction, said X and Y directions defining a working plane within said chamber; a carrier transporting means for moving said carriers in only said working plane within said chamber; an opening in said chamber within said working plane through which at least one of the workstations is accessible to said plate-form discs delivered thereto; and disc transporting means for transporting individual ones of the plate-form discs in only said working plane between said carriers and said accessible workstation.

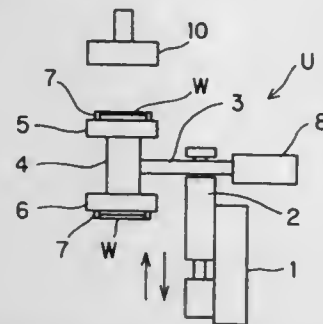
5,779,426

LOADING AND UNLOADING UNIT FOR POLISHING APPARATUS

Seiji Ishikawa, Yokohama, and Takao Mitsukura, Atsugi, both of Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed Jul. 8, 1996, Ser. No. 677,732
Claims priority, application Japan, Jul. 7, 1995, 7-196092
Int. Cl.⁶ B24B 47/02

U.S. Cl. 414—225

26 Claims



1. A polishing apparatuses for polishing objects, said apparatuses including a turntable, a top ring for holding an object and pressing the object against said turntable to polish the object, and a loading and unloading unit for loading an unpolished object to said top ring and for unloading a polished object from said top ring, said top ring being movable relative to said turntable and said loading and unloading unit to a transfer position, said loading and unloading unit comprising:

- a support member having opposite first and second ends, said support member being movable about a horizontal axis such that said opposite first and second ends are angularly movable in a vertical plane;
- a supply holder mounted on said first end of said support member for holding an unpolished object and for supplying the unpolished object to said top ring when said top ring is at said transfer position;
- a reception holder mounted on said second end of said support member for receiving a polished object from said top ring when said top ring is at said transfer position and for holding the polished object; and
- means for moving said support member about said horizontal axis and thereby for angularly moving said supply holder and said reception holder with said first and second ends, respectively, in said vertical plane to selectively and alternately position either said supply holder or said reception holder at said transfer position.

5,779,427

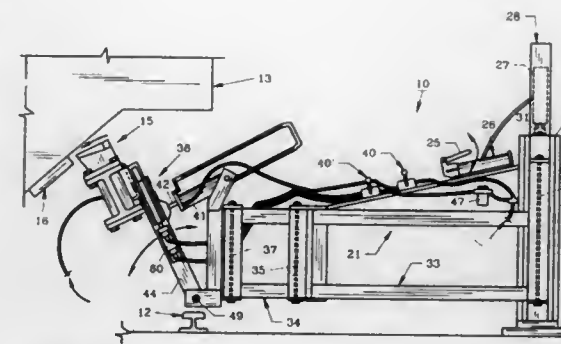
RAILWAY CAR VIBRATOR HANDLING DEVICE

George R. Heffinger, 238 Longhook Rd., Eden, N.C. 27288
Filed Sep. 13, 1996, Ser. No. 713,917
Int. Cl.⁶ B65G 67/24

U.S. Cl. 414—375

6 Claims

1. A vibrator handling device for positioning a vibrator on a railway car in combination with a railway car and a vibrator, said vibrator comprising a handle, said handling device comprising:



a stanchion, an arm, said arm comprising a first section and a second section, said first section hingedly joined to said second section; said arm pivotally joined to said stanchion at a first elevation and extending horizontally therefrom; means to vertically control said arm, said vertical control means affixed to said arm; an elongated member, said elongated member pivotally attached to said arm; a wedge shaped vibrator locking plate, said vibrator locking plate movably positionable along said elongated member, said vibrator locking plate engaging said vibrator handle; a vibrator carrier, said vibrator carrier pivotally attached to said arm to transfer said vibrator to said railway car at a position having an elevation equal to or greater than that of said first elevation; and a fluid operated cylinder, said fluid operated cylinder joined to said vibrator carrier.

5,779,428

CARRIER CART

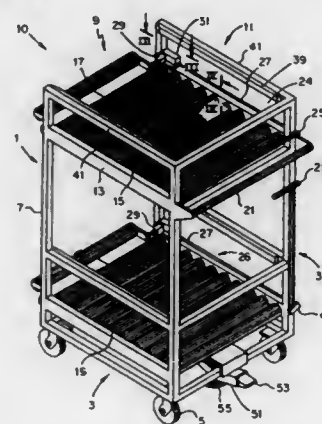
Paul C. Dyson, Raleigh, and Danny B. Merritt, Durham, both of N.C., assignors to Mitsubishi Semiconductor America, Inc., Durham, N.C.

Filed Jan. 15, 1997, Ser. No. 783,800

Int. Cl.⁶ B62B 3/00

U.S. Cl. 414—536

20 Claims



1. A cart for transporting a workpiece comprising:
- a) a frame having a wheeled base;
 - b) at least one carrier assembly supported by said frame, the carrier assembly including a bed of rollers for receiving, supporting and discharging the workpiece;
 - c) a locking mechanism supported by said frame having a locking tab and a stop positioned in a travel path of said workpiece above said bed of rollers, said locking tab moveable about a first axis out of said travel path for receiving said workpiece onto said bed of rollers and biased for movement about said first axis into said travel path for locking said workpiece between the stop and the locking tab, and said

locking tab moveable about a second axis, different than said first axis, out of said travel path for discharging said workpiece from said bed of rollers.

5,779,429

MECHANISM ALLOWING QUICK IMPLEMENT ATTACHMENT TO TRACTORS

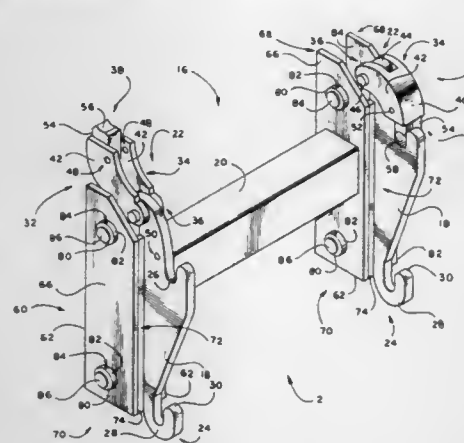
James E. Poole, Newbury, Ohio, assignor to Kendall Manufacturing, Inc., Lawrenceville, Ga.

Filed Sep. 10, 1996, Ser. No. 711,251

Int. Cl.⁶ B66C 23/00

U.S. Cl. 414—723

6 Claims



1. A mechanism for quick implement attachment to vehicles, comprising:

- a pair of laterally spaced apart upper transverse pins mountable to the implement;
- a pair of laterally spaced apart lower transverse pins mountable to the implement beneath the upper pins;
- a pair of laterally spaced apart receiving sides, each receiving side having an upwardly open top U-shaped member adapted to receive an upper transverse pin and an upwardly open bottom U-shaped member adapted to receive a lower transverse pin;
- a dog disposed on each receiving side for extending over the top U-shaped member to secure the upper transverse pin within the top U-shaped member and hence securing the lower transverse pin within the bottom U-shaped member, the dog having an elongated body, a first dog end and a second dog end, the first dog end being pivotally mounted to the receiving side proximate the top U-shaped member, the second dog end being removably mounted to the receiving side and having a pin engaging member, the pin engaging member having a pin engaging surface adapted to engage the upper transverse pin, and the body having a back and spaced apart and opposing dog sides depending from the back;
- each dog side having a dog pivot pin bore proximate the first dog end, each dog pivot pin bore being concentrically aligned along a lateral axis disposed between the pivot pin bores, the receiving side having a side pivot pin bore disposed to be concentrically aligned between the dog pivot pin bores;
- a pivot pin disposed through the dog pivot pin and side pivot pin bores to pivotally mount the first dog end to the receiving side; and
- coupling means for coupling the mechanism to the vehicle.

5,779,430

MATERIAL HANDLING SYSTEM

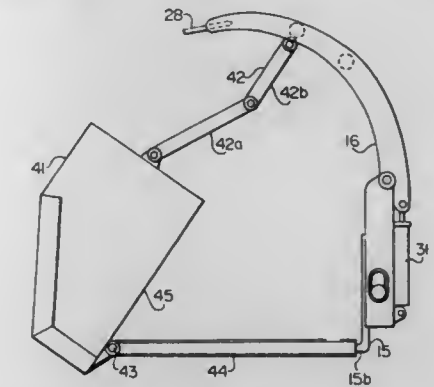
E. Gary Ball, Millers Tavern, Va., assignor to Rockland, Inc., Bedford, Pa.

Filed Jan. 22, 1997, Ser. No. 786,245

Int. Cl.⁶ E02F 9/00

U.S. Cl. 414—724

33 Claims



1. A material handling apparatus comprising: support means mountable on operating arms of a vehicle; material holding means supported on and pivotally connected to said support means, having a material discharge opening and being angularly displaceable about the axis of the pivotal connection thereof with said support means between a rest position on said support means and a dump position allowing material disposed therein to be gravity discharged through said material discharge opening; clamping means operatively connected to said support means and displaceable between a first position when said material holding means is supported on said support means in said rest position for maintaining said material holding means between said clamping means and said support means, and a second position displaced from said material holding means; means direct interconnecting said material holding means and said clamping means operable for angularly displacing said material holding means between said rest and dump positions upon said clamping means being displaced between said first and second positions; and means for displacing said clamping means between said first and second positions.

5,779,431

TRANSPORTING APPARATUS AND METHOD

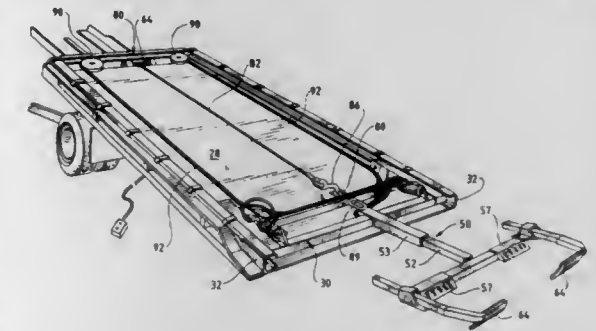
Stephen D. Alm, Germantown; Andrew J. Alm, and John M. Cullum, both of Memphis, all of Tenn., assignors to Vulcan International, Inc., Olive Branch, Miss.

Continuation of Ser. No. 306,188, Sep. 13, 1994, Pat. No. 5,529,454. This application Jun. 17, 1996, Ser. No. 664,540

Int. Cl.⁶ B60P 3/72

U.S. Cl. 414—786

1 Claim



1. A method for loading a vehicle having at least one pair of wheels using a car carrier towing system, comprising the steps of:

positioning a towing vehicle proximate the vehicle to be loaded, the towing vehicle including an inclined platform; engaging the vehicle to be loaded using a wheel lift device associated with and positioned rearward of the platform, the wheel lift device including rearwardly extending vehicle engaging means and being operable to lift one pair of the at least one pair of wheels of the vehicle to be loaded while the wheel lift device is rearwardly displaced from the platform; moving the wheel lift device along the platform in a forward direction toward the towing vehicle; selectively rotating the vehicle engaging means during movement of the wheel lift device along the platform so that the vehicle to be loaded is moved to desired raised or lowered positions; and rotating the platform to a vehicle transporting position, in which the platform and the loaded vehicle are generally horizontal.

5,779,432

COMPACT PRODUCT STACKER

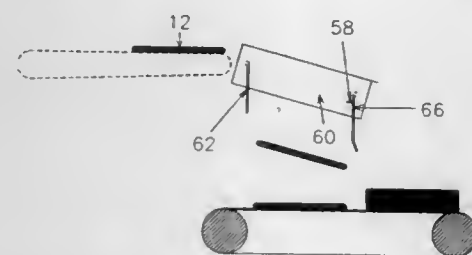
Daniel S. Pena, Corpus Christi, Tex., assignor to Sam Hausman Meat Packer, Inc., Corpus Christi, Tex.

Filed Jun. 18, 1997, Ser. No. 878,494

Int. Cl.⁶ B07C 5/00

U.S. Cl. 414—794.4

36 Claims



1. A product stacker for receiving a series of flat shaped product and placing such product in a stack, comprising:

- (a) a product support paddle combination having a first product support paddle and a second product support paddle, the first product support paddle having a pivot end and a top surface, and the second product support paddle having a pivot end and a top surface;
- (b) a first pivot rod to which the first product support paddle pivot end is attached;
- (c) a second pivot rod to which the second product support paddle pivot end is attached;
- (d) a frame supporting the first and second pivot rods, such that the first pivot rod transverses the path of the product, and the second pivot rod is approximately parallel to the first pivot rod, the frame further positioning the first pivot rod such that product moves onto the first product support paddle top surface and then the second product support paddle top surface as the product is discharged from the source;
- (e) product motion detection means for detecting product motion on the product support paddle combination; and
- (f) paddle movement means such that the first and second product support paddles are caused to rotate to a down position after product motion is detected on the product support paddle combination, the paddle movement means then causing the first and second product support paddles to rotate to their original position.

5,779,433
ROTARY SUCTION AND BLOWING MACHINE
Giuseppe Bocchi, Parma, Italy, assignor to ESAM S.P.A., Parma, Italy

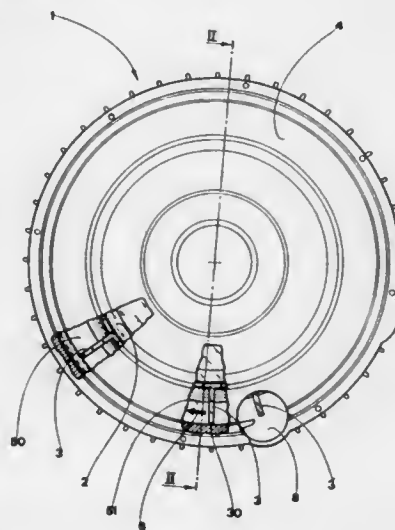
Filed Jan. 2, 1997, Ser. No. 778,364

Claims priority, application European Pat. Off., Feb. 21, 1996, 96830077

Int. Cl.⁶ F04D 29/42

U.S. Cl. 415—55.1

2 Claims



1. A rotary suction and blowing machine comprising:
- an impeller including substantially rectangular blades set parallel to a rotation axis of the impeller;
 - a body, in which the impeller is rotatably mounted for rotation about the axis thereof, having an annular conduit therein and a delivery mouth and an intake mouth each communicating with the annular conduit;
 - the annular conduit including a first tract and a second tract; the second tract defining, parallel to the rotation axis, a rectangular outline;
 - the first tract further comprising two communicating semichannels and defining, parallel to the rotation axis, an outer portion of an intersecting-circle outline including two generally circular portions forming therebetween a projecting portion terminating in a first point;
 - the impeller, exclusive of the blades, defining parallel to the rotation axis a complementary inner portion of the intersecting-circle outline including a second projecting portion terminating in a second point;
 - the first point and the second point being separated by a gap.

5,779,434

PUMP MOUNTED THRUST BEARING

Robert De Long, Alberta, Canada, assignor to Baker Hughes Incorporated, Houston, Tex.

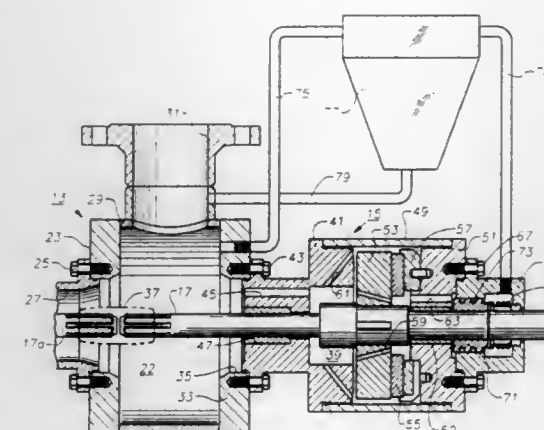
Filed Feb. 6, 1997, Ser. No. 796,154

Int. Cl.⁶ F04D 1/06; 13/06; 29/66

U.S. Cl. 415—104

20 Claims

16. A pump assembly, comprising in combination:
- a centrifugal pump which has an intake on a rearward end and a discharge on a forward end;
 - an intake chamber having a forward end, a rearward end, and a side wall, the side wall having an inlet adapted to be connected to a source of fluid;
 - means for securing the forward end of the intake chamber to the rearward end of the pump;
 - a thrust chamber extending rearward from the rearward end of the intake chamber, having an annular stationary thrust bearing therein;
 - a motor located rearward of the thrust chamber;



- a shaft extending through the thrust chamber and to the motor, the shaft being coupled to the pump for driving the pump;
- a thrust runner rigidly mounted to the shaft in rotary engagement with the thrust bearing for absorbing thrust applied to the shaft;
- a communication port in the rearward wall of the intake chamber leading to the thrust chamber; and
- a circulation tube having an upstream end in communication with a portion of the fluid being supplied from the source and a downstream end connected to the thrust chamber; and
- positive pressure means for causing flow of the fluid through the circulation tube, thrust chamber and out the communication port into the intake chamber.

5,779,435

LOW-PRESSURE STEAM TURBINE

Heinrich Lageder, Baden, and Urs Ritter, Stüsslingen, both of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

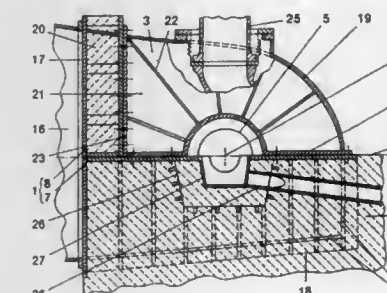
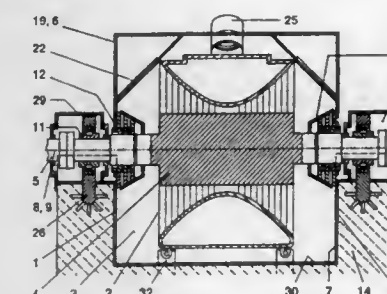
Filed May 10, 1996, Ser. No. 644,461

Claims priority, application Germany, Jun. 30, 1995, 195 23 923.7

Int. Cl.⁶ F01D 25/26; 25/28; F01K 9/02

U.S. Cl. 415—108

6 Claims



1. A low-pressure steam turbine comprising:
- an inner casing,
 - a turbine rotor mounted in the inner casing,
 - an outer casing with an exhaust-steam space enclosing the inner casing, the outer casing having a top and bottom part,

a concrete foundation with a recess for accommodating the bottom part of the outer casing, the bottom part being designed as steel formwork of the concrete foundation, bearing points located on opposite sides of the recess and having supporting bearings for the turbine rotor,

a condenser connected to the outer casing and arranged at a side of the outer casing, wherein:

- a dividing plane between the top and bottom part of the outer casing lies on an axis of the turbine rotor and the concrete foundation extends vertically to the dividing plane,
- the bottom part of the outer casing and the bearing points of the turbine rotor are secured in the concrete foundation,
- the outer casing having a lateral opening at least on one side perpendicular to and horizontal to the axis of the turbine rotor and connected to the condenser at said at least one lateral opening in the outer casing,
- the top part of the outer casing includes an assembly hood and, for said at least one opening, a frame part is connected to the condenser and the bottom part by one of a cohesive bonding and a friction gripping fastening manner, and wherein,
- the assembly hood is connected to the bottom part of the outer casing and to said frame part in one of a friction gripping fastening and an interlocking fastening manner and said frame part is arranged between said condenser and the assembly hood.

5,779,436

TURBINE BLADE CLEARANCE CONTROL SYSTEM

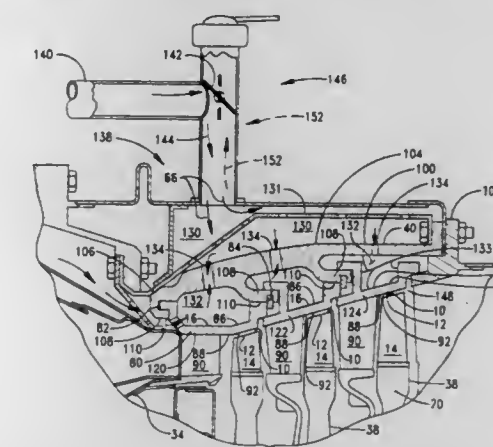
Boris Glezer, Del Mar, and Hamid Bagheri, San Diego, both of Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Aug. 7, 1996, Ser. No. 693,774

Int. Cl.⁶ F04D 29/38

U.S. Cl. 415—115

11 Claims



1. A system for controlling a radial clearance between a tip of a turbine blade and a stationary shroud comprising:
- a support case being positioned within a housing and forming a main cavity therebetween, said support case supporting said stationary shroud and defining a support case cavity therebetween defining a heat transfer extremity, said support case having a passage defined therein communication from said main cavity to said support case cavity, said passage having a preestablished cross-sectional area;
 - said stationary shroud defining an inner surface defining a portion of said heat transfer extremity of said support case cavity and being in communication with said support case cavity; and
 - an outer surface forming an extremity of said radial clearance;
 - a flow of hot fluid being communicated to said main cavity and being directed through said passage and being in heat transfer relationship to said heat transfer extremity of said support case cavity; and

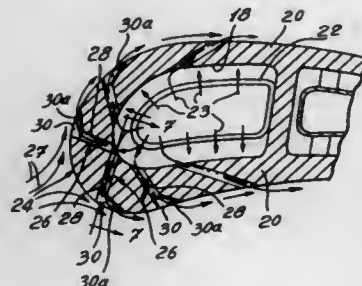
a means for controlling the thermal transfer rate of said fluid to said one of said main cavity and said support case cavity, said means including a flow control apparatus controlling the flow of hot fluid.

5,779,437

COOLING PASSAGES FOR AIRFOIL LEADING EDGE
William Abdel-Messeh, Beloeil; Ian Tibbott, St. Burno, both of Canada, and Subhash Arora, Phoenix, Ariz., assignors to Pratt & Whitney Canada Inc., Longueuil, Canada
Filed Oct. 31, 1996, Ser. No. 742,258
Int. Cl.⁶ F04D 29/38

U.S. Cl. 415—115

7 Claims



1. A cooling system for a wall at the leading edge portion of a hollow airfoil located in a hot gas flow path, including passages defined in the wall on either side of a radial leading edge axis passing through a stagnation point on the wall, relative to the flow path, each passage having a straight cylindrical bore portion with a conical portion forming the outlet thereof, each passage extending through the wall at an angle having a radial component and a downstream component relative to the leading edge axis such that the conical outlet forms a diffuser area recessed in the surface of the wall of the airfoil in the downstream portion of the outlet of the passage.

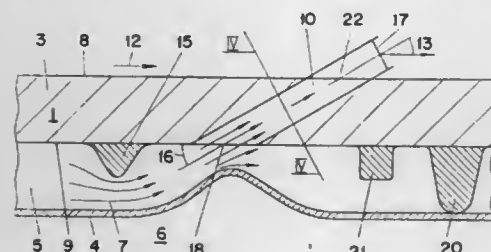
5,779,438

ARRANGEMENT FOR AND METHOD OF COOLING A WALL SURROUNDED ON ONE SIDE BY HOT GAS
Günter Wilfert, Küssaberg-Ettikon, Germany, assignor to ABB Research Ltd., Zurich, Switzerland
Filed Feb. 4, 1997, Ser. No. 794,056
Claims priority, application Germany, Mar. 30, 1996, 196 12 840.4

U.S. Cl. 415—115

Int. Cl.⁶ F04D 29/38

10 Claims



1. An arrangement for cooling a wall surrounded on one side by hot gas, in particular the hollow-profile body of a gas-turbine blade, comprising a wall having an outer surface and an inner surface, a cooling insert arranged substantially parallel to the wall and forming together with the wall a cooling hollow space, and a row or a plurality of rows, arranged one behind the other in a direction of flow of a cooling fluid, of recesses which extend between the two surfaces of the wall, the recesses each having a predetermined entry and discharge angle and a diameter, wherein

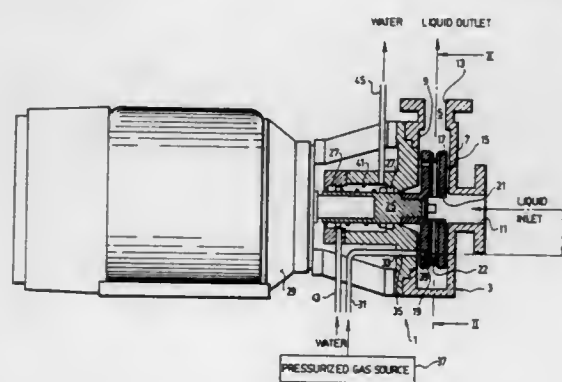
upstream of each row of recesses, a radial rib is arranged on the inner surface of the wall, and the cooling insert is shaped in the region of the recesses to extend in the direction of the wall and in the process is formed at least approximately parallel to the entry angle of the recesses.

5,779,439

CENTRIFUGAL LIQUID PUMP WITH INTERNAL GAS INJECTION
Reneau Dufour, Breakeyville, Canada, assignor to Les Traitements des Eaux Poseidon Inc., Outremont, Canada
Filed Apr. 11, 1997, Ser. No. 837,326
Int. Cl.⁶ F04D 29/38

U.S. Cl. 415—115

18 Claims



1. A centrifugal pump for use to pump a liquid and to inject and dissolve, at least in part, a gas into the liquid while said liquid is being pumped, said pump comprising:

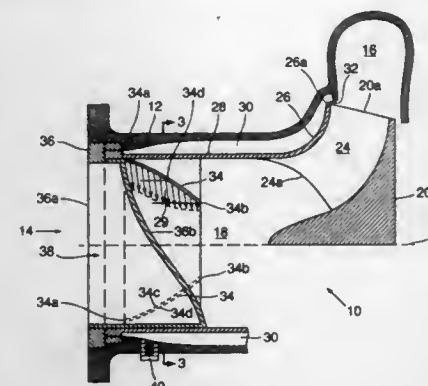
- a casing defining an inner, substantially cylindrical chamber, said chamber having first and second opposite walls coaxial with each other;
- a liquid inlet of given diameter in open communication with the chamber, said inlet being coaxial with said chamber and opening into the first opposite wall thereof;
- a liquid outlet in open communication with the chamber, said outlet extending tangentially out of said chamber;
- a rotary impeller rotatably mounted within the chamber, said impeller comprising a first and second spaced apart discs of a given radius coaxial with the first and second opposite walls of said chamber; said first and second discs being rigidly interconnected at such a distance away from each other as to extend close to the first and second opposite walls of the chamber, respectively, the first disc that extends close to the first opposite wall into which the liquid inlet opens having a central opening of the same diameter as the liquid inlet to allow the liquid injected through said inlet to enter within the chamber in between said discs, the second disc having a plurality of spaced apart openings located at a constant radius, said constant radius being inferior to the radius of said first and second discs;
- a power shaft coaxial with and rigidly connected to the impeller so as to rotate the impeller in a given direction within the chamber, said power shaft passing through the second opposite wall of the casing and extending out of the chamber in a direction opposite to the liquid inlet; and
- a gas feed pipe in open communication with said chamber, said gas feed pipe having a first end rigidly connected to a hole made in the casing, said hole being located in the second opposite wall of the chamber at a radial distance substantially equal to said constant radius, said gas feed pipe having a second end connected to a pressurized gas injector.

5,779,440

FLOW ENERGIZING SYSTEM FOR TURBOMACHINERY
John G. Stricker, Berlin, and John G. Purnell, Catonsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 6, 1997, Ser. No. 779,876
Int. Cl.⁶ F04D 17/14

U.S. Cl. 415—143

18 Claims



1. A nonintrusive flow energizing system for providing circumferentially-varying energization of a flow into an impeller of a turbomachine, the turbomachine including a housing having an upstream inlet and a downstream outlet, the impeller mounted for rotation within the housing and having a plurality of impeller vanes projecting therefrom for accelerating the flow from the inlet toward the outlet, said flow energizing system comprising:

- means for forming a plurality of rotating jet-sheet blades upstream of the impeller; and
 - means for circumferentially varying blade geometries of said plurality of rotating jet-sheet blades;
- wherein said means for forming a plurality of rotating jet-sheet blades comprises:
- an impeller shroud coaxial with the impeller and mounted for rotation therewith, said impeller shroud having an upstream-projecting axial extension, said shroud defining a flow chamber within said shroud and between said shroud and the impeller, said axial extension having an annular cross-section with a central aperture for allowing flow to pass from the inlet to said flow chamber; and
 - a plurality of generally axially-extending slots distributed circumferentially around a periphery of said axial extension and passing therethrough, said plurality of slots shaped and configured to create a corresponding number of jet-sheet blades in said flow chamber upon flow passing through said slots.

5,779,441

Patent Not Issued For This Number

5,779,442

REMOVABLE INNER TURBINE SHELL WITH BUCKET TIP CLEARANCE CONTROL

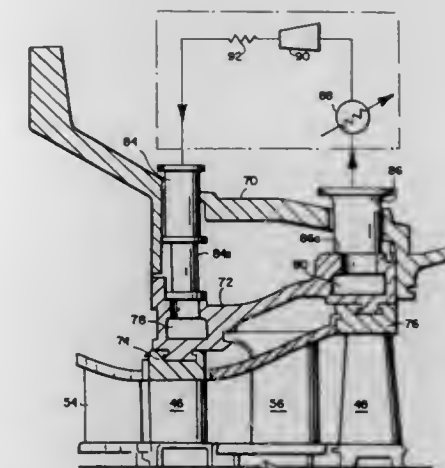
Brendan F. Sexton, Clifton Park; Hans M. Knuijt, Niskayuna; Sacheverel Q. Eldrid, Saratoga Springs; Albert Myers, Amsterdam; Kyle E. Coneybeer, Schenectady; David Martin Johnson, Ballston Lake, and Iain R. Kellock, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 414,698, Mar. 31, 1995, Pat. No. 5,685,693. This application Aug. 2, 1995, Ser. No. 510,402
Int. Cl.⁶ F01D 11/24

U.S. Cl. 415—173.2

12 Claims

1. A turbine comprising:
a rotor carrying buckets forming part of a turbine stage;



an inner shell carrying nozzles and a shroud for surrounding tips of said buckets;
an outer shell about said inner shell; and
connections between said inner and outer shells for supporting said inner shell against radial and circumferential movement and enabling thermal expansion and contraction of said inner shell relative to said outer shell in radial directions, said inner shell having a passage for containing a thermal medium to control the thermal expansion and contraction of said inner shell about said bucket tips and relative to said outer shell, thereby actively controlling clearance between said shroud and said bucket tips during turbine operation.

5,779,443

TURBINE BLADE

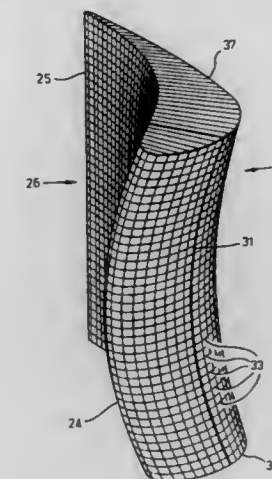
Brian Robert Haller, Warwickshire; David Moreton Hall, Northants, and Vickers Jeremy Andrews, Warwickshire, all of United Kingdom, assignors to GEC Alsthom Limited, Warwickshire, United Kingdom

Continuation of Ser. No. 515,369, Aug. 15, 1995, abandoned.
This application Aug. 22, 1997, Ser. No. 918,709
Claims priority, application United Kingdom, Aug. 30, 1994, 9417406

Int. Cl.⁶ F04D 29/54

U.S. Cl. 415—191

8 Claims



1. A turbine blade for use as one of a ring of similar turbine blades arranged in an annular path of a turbine working fluid, the blade being of at least approximately constant aerofoil cross-section from a root at a radially inner end of the blade to a tip at a radially outer end of the blade, the blade being of substantially parabolic curvature between the root and the tip so that a pressure face of the blade is convex in a radial direction between the root and the tip, the blade having a trailing edge which is substantially

straight from the root to the tip, the blade comprising a plurality of aerofoil sections stacked between the root and the tip and lying in respective planes, the convex curvature of the blade pressure face in the radial direction being achieved by rotational displacement of the aerofoil sections in said respective planes about the substantially straight trailing edge.

5,779,444

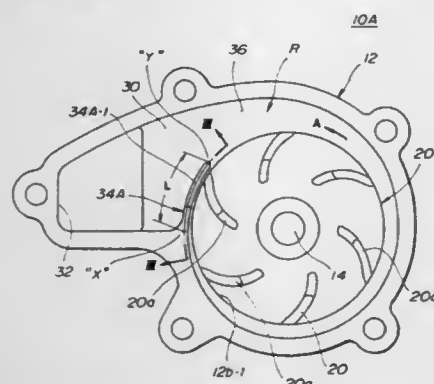
CENTRIFUGAL PUMP

Junichiro Onigata, and Kazuyoshi Kushihiro, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan
Filed May 22, 1996, Ser. No. 651,542

Claims priority, application Japan, May 23, 1995, 7-123921
Int. Cl.⁶ F04D 29/44

U.S. Cl. 415—206

12 Claims



1. A centrifugal fluid pump comprising:
 - a hollow pump body having a pump chamber at least partially defined therein;
 - an impeller rotatably installed in said pump chamber, the impeller having a plurality of vanes formed on a front side and a rear side facing a bottom wall of said pump chamber;
 - a fluid discharge passage and a fluid discharge port being positioned in said hollow pump body downstream of said pump chamber; and
 - a fluid guide ridge being positioned between said pump chamber and said fluid discharge passage to smooth fluid flow from said pump chamber toward said fluid discharge port, said fluid guide ridge rising and extending upstream from said bottom wall across said pump body,
- wherein said water guide ridge has an upstream end portion profile changing such that the ridge's height increases downstream.

5,779,445

NONCONTAMINATIVE CENTRIFUGAL PUMP

Hiroshi Yokota; Tetsuya Tanimoto, and Masahiro Kawamoto, all of Hiroshima, Japan, assignors to Kabushiki Kaisha Yokota Seisakusho, Hiroshima-ken, Japan

PCT No. PCT/JP94/01503, § 371 Date May 17, 1996, § 102(e)
Date May 17, 1996, PCT Pub. No. WO95/08063, PCT Pub. Date Mar. 23, 1995

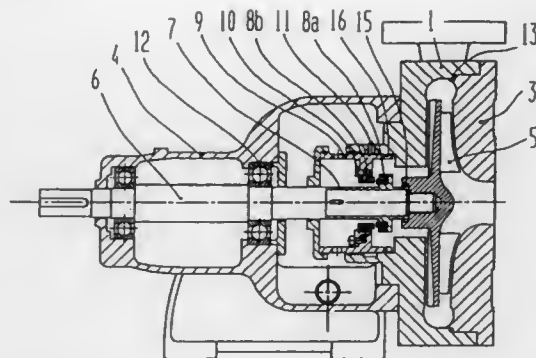
PCT Filed Sep. 12, 1994, Ser. No. 615,210

Claims priority, application Japan, Sep. 13, 1993, 5-226950
Int. Cl.⁶ F04D 29/10

U.S. Cl. 415—230

16 Claims

1. A non contaminative centrifugal pump for pumping a high purity liquid, comprising:
 - a casing;
 - a rotatable main shaft extending through said casing;
 - a shaft seal assembly between said casing and said main shaft, said shaft seal assembly including a rotating ring mounted on said main shaft and a fixed ring mounted on said casing, said rotating ring and said fixed ring being disposed to be separated from one another, axially of said main shaft, to define therebetween a gap which is maintained both during operation and stoppage of the pump to allow liquid to leak through the gap and outside the pump even during the operation of the pump;



2. A source of second speed signals indicating a desired rotational speed of said hub;
3. means for taking a derivative of said first speed signals to determine actual acceleration of the hub and generating an acceleration signal indicative of that actual acceleration;
4. means for creating a blade pitch position error signal from said first and second speed signals and said acceleration signal; and
5. means for applying pitch control signals to said motor which are a function of said blade pitch position error signal.

5,779,446

AIR DRIVEN TURBINE INCLUDING A BLADE PITCH CONTROL SYSTEM

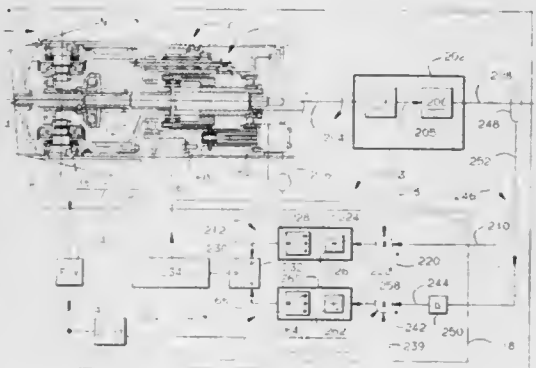
Jon B. Althof, Loves Park; Shan-Chin Tsai, Rockford, and Teddy L. Jones, Cherry Valley, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 7, 1995, Ser. No. 553,180

Int. Cl.⁶ F01D 7/02

U.S. Cl. 416—36

19 Claims



8. A blade pitch control system for a bladed device having a hub that is rotatable about an axis of rotation of said hub and a movable blade extending from said hub along a blade pitch axis passing transversely through the hub, said blade being attached to said hub for rotation of the blade about said blade pitch axis through a range of blade pitches of said blade with respect to said axis of rotation of said hub, said blade pitch control system comprising:
 - a) pitch change actuator means operably connected between said hub and said blade for changing said blade pitch of said blade with respect to said hub, said pitch change actuator means including:
 - (1) a motor;
 - (2) non-back-drivable drive means having an input connected to said motor to be driven thereby and an output connected to said blade for changing the pitch of said blade when said drive means is driven by said motor;

- b) first control means for controlling the pitch of said blades when said bladed device is not rotating about said axis of rotation; and
- c) second control means for controlling the blade pitch of said blades when said bladed device is rotating about said axis of rotation, wherein said second control means includes:
 - (1) means for sensing a rotational speed of said hub about said axis of rotation and providing first speed signals indicative of that rotational speed;
 - (2) a source of second speed signals indicating a desired rotational speed of said hub;
 - (3) means for taking a derivative of said first speed signals to determine actual acceleration of the hub and generating an acceleration signal indicative of that actual acceleration;
 - (4) means for creating a blade pitch position error signal from said first and second speed signals and said acceleration signal; and
 - (5) means for applying pitch control signals to said motor which are a function of said blade pitch position error signal.

5,779,447

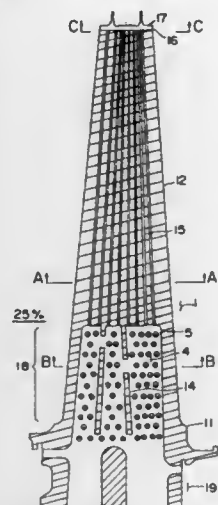
TURBINE ROTOR

Yasuoki Tomita, and Lars Thomsen, both of Takasago, Japan, assignors to Mitsubishi Heavy Industries, Ltd., Tokyo, Japan
Filed Feb. 19, 1997, Ser. No. 800,985

Int. Cl.⁶ F04D 29/58

U.S. Cl. 416—97 R

6 Claims



1. A turbine rotor blade comprising:
 - a root portion for affixing said rotor blade to a turbine rotor, wherein said root portion defines a first cooling fluid passageway extending substantially radially through said root portion, and said first cooling passageway has an inlet for receiving a flow of cooling fluid;
 - a hub unit extending from said root portion, wherein said hub unit defines a plurality of radially extending second cooling fluid passageways which extend through said hub unit, said second cooling fluid passageways are approximately parallel to each other, said second cooling fluid passageways extend from said first cooling fluid passageway so as to be in fluid communication therewith, and said first cooling fluid passageway and said second cooling fluid passageways together define a cavity; and

5,779,448

Patent Not Issued For This Number

5,779,449

SEPARABLE, MULTIPARTITE IMPELLER ASSEMBLY FOR CENTRIFUGAL PUMPS

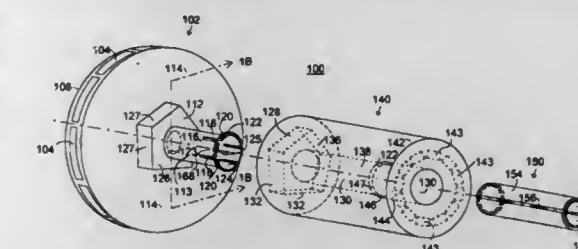
Manfred P. Klein, Highland Park, Ill., assignor to Ansimag Inc., Elk Grove Village, Ill.

Filed Apr. 15, 1996, Ser. No. 632,303

Int. Cl.⁶ F04D 29/20; F04B 17/00

U.S. Cl. 416—244 R

43 Claims



1. An impeller assembly for a centrifugal pump, the impeller assembly comprising:
 - an impeller portion having a rear shroud, impeller blades, a tube, and torque receiving means for receiving and transferring torque to the impeller portion; said torque receiving means being associated with the rear shroud, the tube extending axially from the rear shroud, the tube having a tube exterior, said torque receiving means located radially outward from the tube exterior;
 - a magnetic coupler having a substantially hollow core, a magnetic coupling region, and torque transmitting means for transmitting torque from the magnetic coupler to the impeller portion; said torque receiving means interlocking with and engaging said torque transmitting means;
 - a snap-fit connector for connecting the impeller portion to the magnetic coupler, the snap-fit connector being associated with the tube and the hollow core;
 - locking means for locking the snap-fit connector in a connected state, the locking means located within a tube interior of the tube, said locking means being distinct from the tube, said locking means oriented adjacent to the snap-fit connector, said locking means opposing possible radial movement associated with the snap-fit connector, the possible radial movement tending to disengage the snap-fit connector from the connected state.

5,779,450

REFRIGERATING APPARATUS HAVING A FLUID COMPRESSOR

Takayoshi Fujiwara, Tokyo; Yoshinori Sone, Yokohama; Takashi Honjo, Kawasaki; Takuya Hirayama, Fujisawa; Syunro Kawaguchi, Yokosuka, and Teruhisa Tsunekawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

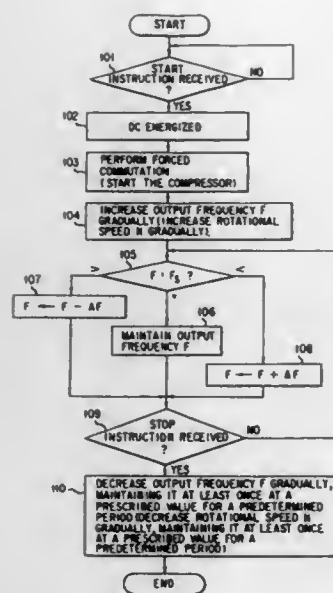
Filed Dec. 8, 1995, Ser. No. 569,688

Claims priority, application Japan, Dec. 8, 1994, 6-304958
Int. Cl.⁶ F04B 49/06

U.S. Cl. 417—45

13 Claims

2. A refrigerating apparatus comprising:



a fluid compressor having a sealed case filled with lubricant a compression section provided in said sealed case, and an electric motor section provided in said sealed case, said compression section and said electric motor section having axes extending substantially horizontally; and

a control circuit for gradually increasing a rotational speed of said electric motor section after said fluid compressor is started maintaining said rotational speed of said electric motor section at a prescribed value for a predetermined period, and then continuing to gradually increase said rotational speed after said predetermined period.

5,779,451

POWER EFFICIENT MULTI-STAGE TWIN SCREW PUMP

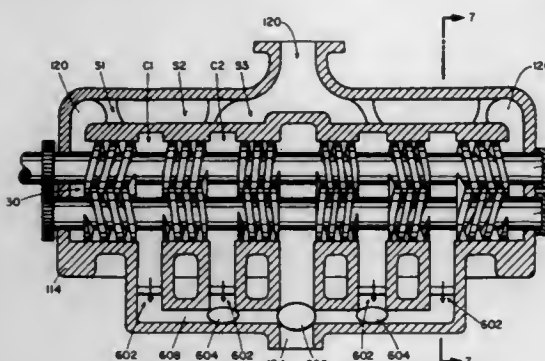
Gregory John Hatton, 3207 Rambling Creek Dr., Kingwood, Tex. 77345

Division of Ser. No. 463,205, Jun. 5, 1995, abandoned. This application Jun. 28, 1996, Ser. No. 671,696

Int. Cl.⁶ F04C 2/16; F04B 23/12

U.S. Cl. 417—205

5 Claims



1. A pump, comprising:

a housing, said housing having an internal rotor enclosure, said enclosure having an inlet and an outlet;

a plurality of rotors operably contained in said enclosure, each rotor having a shaft and a plurality of outwardly extending threads affixed thereon, said rotors being shaped to provide a non-uniform volumetric delivery rate along the length of each rotor, said rotors further having a plurality of threaded pumping stages separated by unthreaded non-pumping chambers, each non-pumping chamber having an increased rotor enclosure diameter; and

means for rotating said rotors, whereby a fluid stream entering from said inlet is subjected to a pumping action to transport said fluid stream to exit said enclosure through said outlet.

5,779,452

POSITIVE DISPLACEMENT PUMP OR MOTOR UTILIZING A RECIPROCAL SLIDING MEMBER TO OPERATE THE SUCTION AND DISCHARGE PORTS

Alan Keith McComble, 12 Darlington Place, Bath BA2 6B3, United Kingdom

PCT No. PCT/GB94/02390, § 371 Date Jul. 15, 1996, § 102(e) Date Jul. 15, 1996, PCT Pub. No. WO95/12758, PCT Pub. Date May 11, 1995

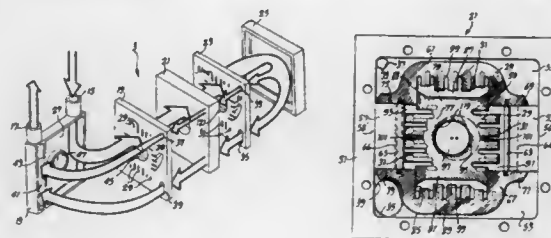
PCT Filed Oct. 31, 1994, Ser. No. 637,697

Claims priority, application United Kingdom, Oct. 30, 1993, 9322451

Int. Cl.⁶ F04B 1/04

U.S. Cl. 417—273

20 Claims



1. A pump in which a driving member (77) having substantially flat faces is sandwiched between first and second fixed walls (19, 23) and arranged for orbital motion, said driving member (77) co-operating with one or more sliding members (59) disposed in an operating space between said walls (19, 23), so as to impart oscillating motion to the one or more sliding members (59), the shape of the driving member (77) and sliding member (59) being such that at least one displacement chamber (87, 89, 91, 93) is formed between the driving member and the one or more sliding members, and between the walls (19, 23), so as to expand and contract in synchronism with the motion of the driving member (77), wherein valve means (29, 31, 101, 99) include at least one port (29, 31) for suction formed in said first wall (19), which will be covered and uncovered by part of one of the driving and sliding members (77, 59) synchronously with said motion, so as to cause fluid to be pumped through the chamber (87, 89, 91, 93) characterised in that the fluid is pumped substantially in the direction from one of said walls (19, 23) to the other (19, 23).

5,779,453

VACUUM PUMP MOTOR ARRANGEMENT HAVING REDUCED HEAT GENERATION

Masami Nagayama; Katsuaki Usui; Kozo Mataka; Yoshinori Ojima; Genichi Sato, and Yasushi Hisabe, all of Kanagawa-ken, Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation of Ser. No. 618,117, Mar. 19, 1996, abandoned.

This application Jan. 3, 1997, Ser. No. 778,499

Claims priority, application Japan, Mar. 20, 1995, 7-087542

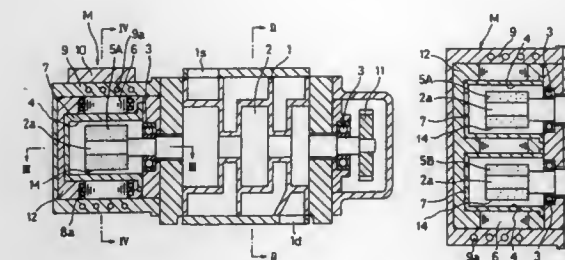
Int. Cl.⁶ F04B 35/04; F04B 35/08

U.S. Cl. 417—410.4

6 Claims

1. A vacuum pump comprising:

a pump casing having a suction side where a suction port is located and a discharge side where a discharge port is located;



a pump assembly housed in said pump casing and comprising a pair of pump rotors rotatable in synchronism with each other and having respective shafts; and

a motor mounted on said pump casing at said suction side of said pump casing, said motor comprising a pair of motor rotors having respective sets of permanent magnets which are mounted respectively on said shafts, a pair of cans surrounding outer circumferential and end surfaces of said motor rotors in sealing relation to said pump assembly, and a motor stator disposed around said cans and housed in a motor frame.

5,779,454

COMBINED PRESSURE SURGE FUEL PUMP AND NOZZLE ASSEMBLY

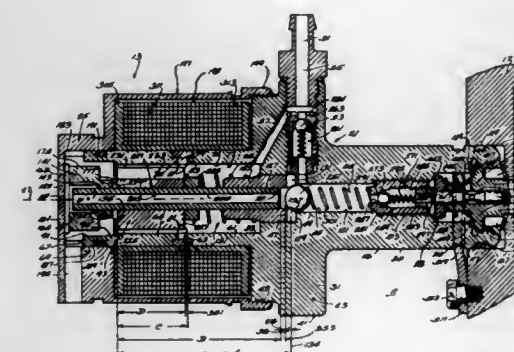
Gregory J. Binversie, Grayslake, Ill.; Wolfgang Heimberg, Ebersberg, Germany; Theodore J. Holterman, Brookfield, Wis.; Christopher R. Irgens, Elm Grove, Wis.; Francis A. McGinnity, Hartland, Wis.; Philip D. McDowell, Sullivan, Wis.; Richard T. Tunkielez, Kenosha, Wis.; Lee A. Woodward, Racine, Wis., and Wolfram Hellmich, München, Germany, assignors to FICHT GmbH & Co. KG, Germany

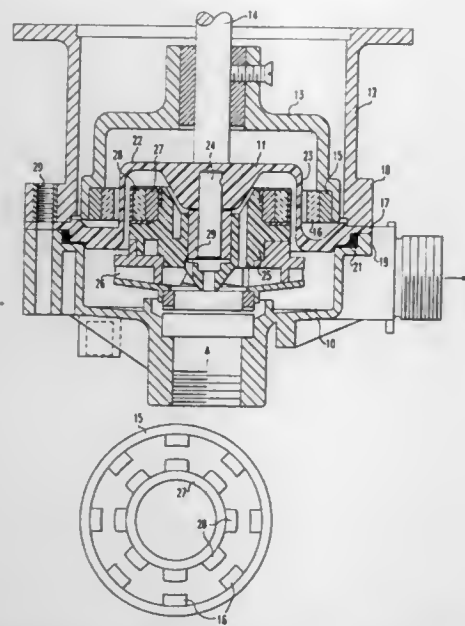
Filed Jul. 25, 1995, Ser. No. 506,534

Int. Cl.⁶ F04B 7/04; F04B 7/08

U.S. Cl. 417—417

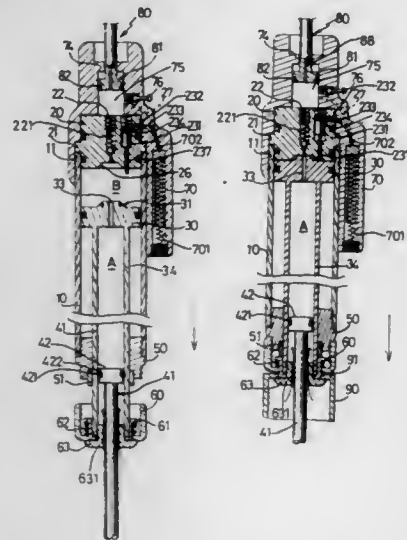
74 Claims





same radius as the inner radius RI of the first ferromagnetic ring and the inner cylindrical surface having a radius substantially the same as the outer radius RO of the second ferromagnetic ring.

5,779,457
HAND PUMP FOR PUMPING AIR OF LOWER PRESSURE AND HIGH PRESSURE
Louis Chuang, 7F-8, No. 20, Ta Lon Road, Taichung, Taiwan, and Scott Wu, No. 2, Lane 296, Ming Shent Road, Wu Feng Hsiang Taichung Hsien, Taiwan
Continuation-in-part of Ser. No. 624,076, Mar. 29, 1996, abandoned. This application Apr. 29, 1997, Ser. No. 841,190
Int. Cl.⁶ F04B 19/02
U.S. Cl. 417-467

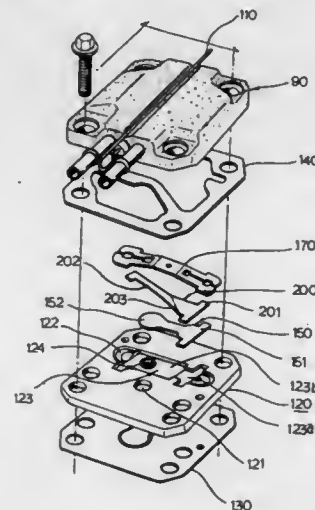


1. A hand pump comprising:
a cylindrical body for receiving air therein, the cylindrical body including an upper portion and a lower portion,
an upper cap engaged in the upper portion of said cylindrical body and including a bore defined therein,
a cover secured on top of said cylindrical body for securing said upper cap in place, said cover including a room defined therein and communicating with said bore of said upper cap,
an outlet means having an outlet in fluid communication with the room of the cover,

a relatively large piston slidably engaged in said cylindrical body and including an aperture defined therein, said large piston including a barrel extended downward therefrom,
a relatively small piston slidably engaged in said barrel for pumping air in said barrel into said cylindrical body via said aperture of said relatively large piston and for pumping the air into said room of said cover via said bore of said upper cap, and
a fastening means for releasably fastening said barrel to said cylindrical body and for engaging said large piston with said upper cap,
said relatively small piston being moved in a reciprocating action in said barrel so as to pump pressurized air below a pre-determined value to said outlet of said outlet means via said cylindrical body and said room when said fastening means is disengaged from said cylindrical body, and said relatively small piston being moved in the reciprocating action in said barrel so as to pump pressurized air higher than the pre-determined value to said outlet of said outlet means via said cylindrical body and said room when said fastening means secures said barrel to said cylindrical body and engages said relatively large piston to said upper cap.

5,779,458
VALVE APPARATUS OF ENCLOSED RECIPROCATING COMPRESSOR
Myung-Jung Hong, and Ju-Hwan Kim, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Sep. 12, 1996, Ser. No. 710,186
Int. Cl.⁶ F04B 21/02
U.S. Cl. 417-569

3 Claims



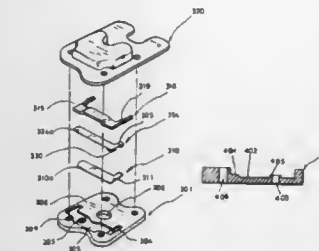
1. A valve apparatus adapted for use in a reciprocating compressor which pressurizes gas, the valve apparatus comprising:
a valve plate having a gas discharge opening for discharging pressurized gas, and a discharge valve; the discharge valve including a fixing portion and a movement portion normally assuming a closed position covering the discharge opening; the movement portion being flexible rearwardly relative to the fixing portion to an open position uncovering the discharge opening in response to a force of pressurized gas; and
a stopper disposed behind the discharge valve for limiting an opening angle of the movement portion in its open position; the stopper including a first portion disposed behind the fixing portion of the discharge valve, and a second portion disposed behind the movement portion of the discharge valve and being bent relative to the first portion to define a corner engaging the discharge valve; the corner extending obliquely relative to a longitudinal axis of the discharge valve as the stopper and discharge valve are viewed in a direction parallel to the discharge opening, wherein the second portion is slanted at an

inclination relative to a plane of the fixing portion of the discharge valve as viewed in a direction parallel to the longitudinal axis of the discharge valve.

5,779,459
DISCHARGE VALVE ARRANGEMENT FOR A HERMETIC TYPE COMPRESSOR
Jae Sang Park, Busan, and Jae Mun Hwang, Masan, both of Rep. of Korea, assignors to LG Electronics, Inc., Rep. of Korea
Division of Ser. No. 631,528, Apr. 12, 1996, Pat. No. 5,676,533.
This application Aug. 19, 1996, Ser. No. 699,420
Claims priority, application Rep. of Korea, Apr. 20, 1995, 9354/1995; Jun. 12, 1995, 13141/1995; Jun. 12, 1995, 15360/1995

Int. Cl.⁶ F04B 39/10
U.S. Cl. 417-571

1 Claim

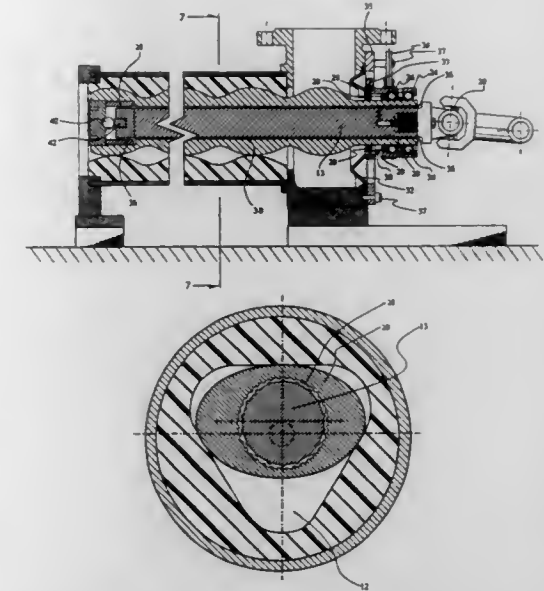


1. A hermetic type compressor comprising:
a cylinder head containing an exhaust port through which compressed refrigerant is discharged from an inside of a cylinder and having a valve seat surface, and a valve fixing surface to which an exhaust valve and a valve spring are fixed, wherein said valve fixing surface and said valve seat surface are flush with one another, and wherein said cylinder head further includes a suction port positioned in-line with said exhaust port and adjacent to said valve fixing surface.

5,779,460
PROGRESSIVE CAVITY PUMP WITH TAMPER-PROOF SAFETY
Horst Fritz Marz, Otterburn, Calif., assignor to ICI Canada Inc., Canada
Filed Jun. 7, 1996, Ser. No. 659,901
Int. Cl.⁶ F04C 2/107; 5/00; 13/00
U.S. Cl. 418-48

11 Claims

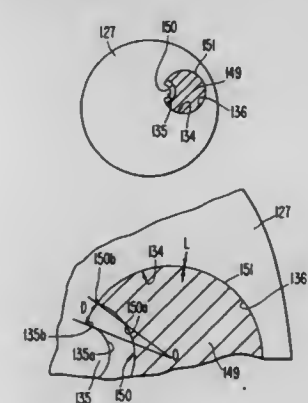
1. A rotor assembly for a pump, said rotor assembly comprising:
a) a rotor member including a cavity;
b) a rotor shaft extending at least partially in said cavity;
c) a connecting member in said cavity in contact with said rotor member and said rotor shaft and thereby establishing a driving relationship between said rotor shaft and said rotor member so that rotational movement imparted to said rotor shaft is transmitted to said rotor member by the intermediary of said connecting member and therefor wherein said rotor member is in a condition of mesh with said connecting member; and wherein



d) said connecting member is capable of thermally-induced structural failure prior to shear-induced failure to terminate said driving relationship when a predetermined pump temperature is reached.

5,779,461
SCROLL TYPE FLUID DISPLACEMENT APPARATUS HAVING A CONTROL SYSTEM OF LINE CONTACTS BETWEEN SPIRAL ELEMENTS
Jiro Iizuka, Takasaki, and Kiyoshi Miyazawa, Annaka, both of Japan, assignors to Sanden Company, Gunma, Japan
Division of Ser. No. 530,890, Sep. 20, 1995, abandoned. This application Sep. 24, 1996, Ser. No. 719,418
Claims priority, application Japan, Sep. 20, 1994, 6-253054
Int. Cl.⁶ F01C 1/04
U.S. Cl. 418-55.5

5 Claims



1. A fluid displacement apparatus comprising:
a housing having a fluid inlet port, a fluid outlet port and a sleeve;
a fixed scroll fixedly disposed within said housing and having a first end plate;
a first wrap extending from said first end plate;
an orbiting scroll movably disposed within said housing and having a second end plate;
a second wrap extending from a surface of said second end plate, said first and second wraps interfiting at an angular offset to make a plurality of line contacts and thereby define at least one sealed off fluid pocket;
a boss extending from a surface of said second end plate opposite the surface from which the second wrap extends;

a drive shaft rotatably supported by said sleeve of said housing, said drive shaft having a disk at its inner end,
 a bushing having a generally cylindrical circumferential surface rotatably supported in said boss by a bearing, said bushing having a hole spaced eccentrically from a center of said bushing, said center of said bushing spaced from a center of said drive shaft a distance equal to a radius of orbiting motion of said orbiting scroll;
 a balance weight extending radially from said connection portion about a portion of said circumferential surface;
 a crank pin extending from said disk toward said bushing at a location spaced from an axis of rotation of said drive shaft, said crank pin inserted into said eccentric hole in said bushing; and,
 regulating means disposed between said crank pin and said eccentric hole for regulating an angle by which said bushing swings around a radial center of said crank pin, said regulating means comprising:
 at least one arc shaped projection extending from an inner wall of said eccentric hole; and,
 at least one arc shaped groove formed on a peripheral surface of said crank pin.

5,779,462

Patent Not Issued For This Number

5,779,463

ROTARY PISTON PUMP HAVING A SLIDE VALVE DRIVEN BY A ROTOR

Helmut Rossel, Neuss; Martin Krucinski, Krefeld; Rainer Strauss, Monchengladbach; Ulrich Flesch, Essen, and Dieter Jelinek, Dusseldorf, all of Germany, assignors to Pierburg AG, Neuss, Germany

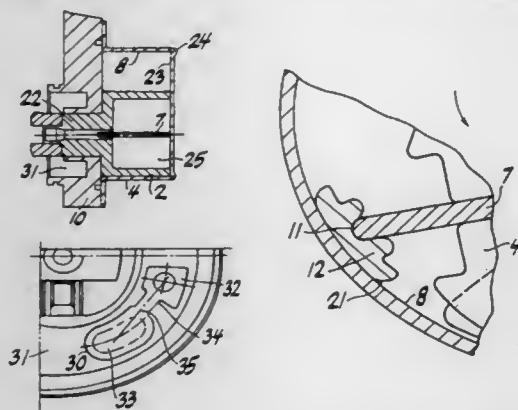
Filed Jul. 14, 1995, Ser. No. 502,820

Claims priority, application Germany, Jul. 16, 1994, 44 25 293.5

Int. Cl.⁶ F04C 18/344; 27/00; 29/02

U.S. Cl. 418—94

6 Claims



1. In a rotary piston pump having a cylinder shell containing a rotor having a slot passing through a center of rotation of the rotor and in which a slide valve is driven as the rotor rotates, the shell having a wall with a surface of non-circular cross section whose secants pass through the center of rotation of the rotor and are substantially equal to a length of the slide valve between points of contact of the ends thereof with the wall surface, the improvement comprising:

a pivot bearing at each end of the slide valve,
 a sliding block pivotably connected to the pivot bearing at each end of the slide valve, each sliding block being in contact with the wall surface of the shell, a distance between the pivot bearings at the ends of the slide valve plus two times the

thickness of one said sliding block between the pivot bearing thereof and the cylinder wall, when axes of symmetry of the rotor and the slide valve are superimposed, being a theoretical length defining the crosssectional shape of said wall and equal to the length of the secants defining the wall surface,
 said sliding blocks each having an outer surface which contacts the wall surface, said outer surface having a curvature between the curvature of the outer surface of the rotor and the maximum curvature of the wall surface,
 a flange body against which the cylinder shell is mounted, said cylinder shell comprising a one-piece deep drawn press part having an integral flange collar secured to said flange body, said cylindrical shell, flange body and rotor defining a pump chamber, said shell having a bead between said wall surface and an end face of the shell.

5,779,464

CALCIUM CARBONATE SORBENT AND METHODS OF MAKING AND USING SAME

Liang-Shih Fan; Abhijit Ghosh-Dastidar, and Subas Mahuli, all of Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Jan. 10, 1996, Ser. No. 584,089

Int. Cl.⁶ B01J 8/00; 20/00; C02F 1/42

U.S. Cl. 423—244.08

25 Claims

1. A sorbent comprising:
 a calcium carbonate powder comprising powder particles having an average surface area above about 30 m²/gram; said powder particles having pores of an average pore volume, and the ratio of said average surface area to said average pore volume is in the range of at least about 200 m²/cubic centimeter.
 9. A process for making a calcium carbonate sorbent, said process comprising the steps of:
 (a) preparing a liquid suspension of calcium (II) ion; and
 (b) subjecting said liquid suspension to a flow of carbon dioxide gas for sufficient time and at sufficient temperature so as to form calcium carbonate, wherein the concentration of said liquid suspension of calcium (II) ion in the suspension of step (a) is at least about 4_{wt}; and wherein the flow rate of said flow of carbon dioxide gas is at least about 0.48 liters/minute.
 13. A process of removing sulfur dioxide from a gaseous flow, said process comprising:
 exposing said gaseous flow to a sorbent, said sorbent comprising calcium carbonate powder comprising powder particles having an average surface area above about 40 m²/gram; said powder particles having pores of an average pore volume, and the ratio of said average surface area to said average pore volume is in the range of from about 200 to about 350 m²/cubic centimeter, for sufficient time and at sufficient temperature so as to bind said sulfur dioxide to said sorbent.
 20. A process of removing at least one heavy metal from a sample, said process comprising:
 exposing said sample to a sorbent, said sorbent comprising calcium carbonate powder comprising powder particles having an average surface area above about 40 m²/gram; said powder particles having pores of an average pore volume, and the ratio of said average surface area to said average pore volume is in the range of from about 200 to about 350 m²/cubic centimeter, for sufficient time and at sufficient temperature so as to bind said at least one heavy metal to said sorbent.

13. A process of removing sulfur dioxide from a gaseous flow, said process comprising:
 exposing said gaseous flow to a sorbent, said sorbent comprising calcium carbonate powder comprising powder particles having an average surface area above about 40 m²/gram; said powder particles having pores of an average pore volume, and the ratio of said average surface area to said average pore volume is in the range of from about 200 to about 350 m²/cubic centimeter, for sufficient time and at sufficient temperature so as to bind said sulfur dioxide to said sorbent.

20. A process of removing at least one heavy metal from a sample, said process comprising:
 exposing said sample to a sorbent, said sorbent comprising calcium carbonate powder comprising powder particles having an average surface area above about 40 m²/gram; said powder particles having pores of an average pore volume, and the ratio of said average surface area to said average pore volume is in the range of from about 200 to about 350 m²/cubic centimeter, for sufficient time and at sufficient temperature so as to bind said at least one heavy metal to said sorbent.

exposing said sample to a sorbent, said sorbent comprising calcium carbonate powder comprising powder particles having an average surface area above about 40 m²/gram; said powder particles having pores of an average pore volume, and the ratio of said average surface area to said average pore volume is in the range of from about 200 to about 350 m²/cubic centimeter, for sufficient time and at sufficient temperature so as to bind said at least one heavy metal to said sorbent.

5,779,465

SPARK IGNITED BURNER

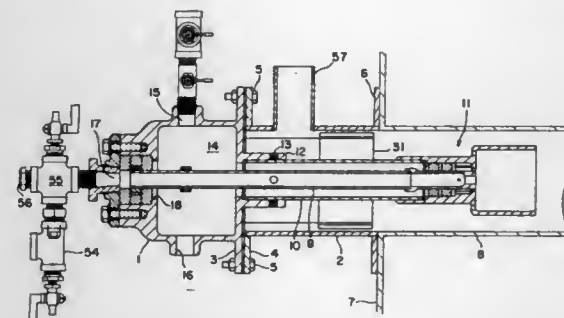
Beresford N. Clarke, 3723 W. Hamilton Rd., Fort Wayne, Ind. 46804, and John B. Clarke, 5304 Century Ct., Fort Wayne, Ind. 46807

Filed Sep. 6, 1996, Ser. No. 709,387

Int. Cl.⁶ F24C 3/00

U.S. Cl. 431—8

39 Claims



1. A method of firing a spark ignited burner having concentric, coaxial gas inlet and air inlet tubes, which method comprises:
 providing a burner tip assembly at adjacent ends of the gas inlet and air inlet tubes, the burner tip assembly having an annular ignition spark discharge gap at an end thereof;
 applying a sufficient electrical potential across the annular ignition spark discharge gap to generate an ignition spark across the annular ignition spark discharge gap;
 discharging a fuel-air mixture through the annular ignition spark discharge gap so as to cause the fuel-air mixture to become ignited;
 discharging a fuel gas through an orifice attached to the gas inlet tube, the orifice having a discharge opening which is radially aligned with the annular ignition spark discharge gap; and
 igniting the discharged fuel gas with the ignited fuel-air mixture.

5,779,466

GAS FLOW CONTROLLER

Chuchi Okamura, Osaka, Japan, assignor to Daishin Industrial Co., Ltd., Osaka, Japan

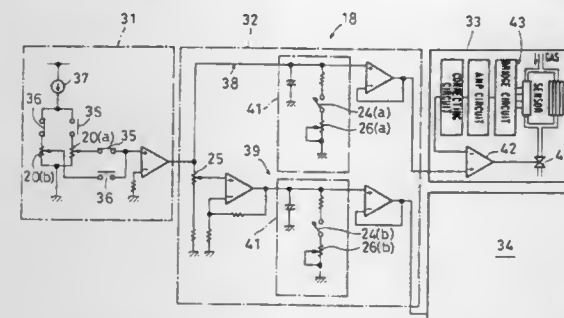
Filed Sep. 6, 1995, Ser. No. 524,444

Claims priority, application Japan, Mar. 8, 1995, 7-048687

Int. Cl.⁶ F23N 5/24

U.S. Cl. 431—89

23 Claims



7. A burner heating device for use in producing a gas mixture by mixing a flammable gas and a combustion-assisting gas in a gas mixing chamber, feeding the gas mixture into a burner, and igniting the gas mixture fed into the burner to heat an article in the burner, said burner heating device comprising:
 an electronic flow rate setting means for electronically setting a desired flow rate of the gas mixture;
 an electronic gas mixture ratio setting means for electronically setting a mixture ratio of the flammable gas and the combustion-assisting gas fed into the gas mixing chamber;

an electronic flow rate setting means for electronically setting a desired flow rate of the gas mixture;
 an electronic gas mixture ratio setting means for electronically setting a mixture ratio of the flammable gas and the combustion-assisting gas fed into the gas mixing chamber;

a flammable gas flow rate control means for controlling the flow rate of the flammable gas as it is fed into the gas mixing chamber;
 a combustion-assisting gas flow rate control means for controlling the flow rate of the combustion-assisting gas as it is fed into the gas mixing chamber; and
 an electronic control means for electronically controlling said flammable gas flow rate control means so that the flammable gas will be fed into the gas mixing chamber at the desired flow rate set by said flow rate setting means even if a gas pressure at which the flammable gas is supplied to said flammable gas flow rate control means changes, and for electronically controlling said combustion-assisting gas flow rate control means so that the combustion-assisting gas will be fed into the gas mixing chamber at the flow rate determined based on the flow rate set by said flow rate setting means and the gas mixture ratio set by said gas mixture ratio setting means even if a gas pressure at which the combustion-assisting gas is supplied to said combustion-assisting gas flow rate control means changes.

5,779,467

METHOD AND APPARATUS FOR PREHEATING PARTICULATE MATERIAL

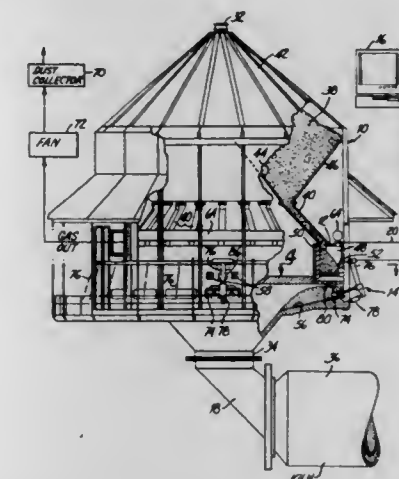
Kenneth LeRoy Gardner, Riverside, Pa., assignor to Svedala Industries, Inc., Waukesha, Wis.

Filed Feb. 4, 1997, Ser. No. 795,690

Int. Cl.⁶ F27B 15/18; 9/40; 7/02; F27D 1/08

U.S. Cl. 432—17

21 Claims



5,779,468

DEVICE FOR SUPPLYING GAS TO ROTARY KILNS
Heinrich Helker, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

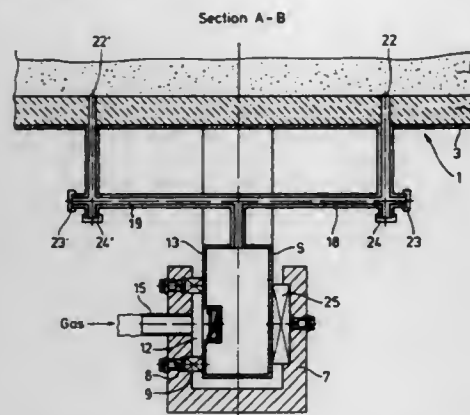
Filed Apr. 4, 1996, Ser. No. 628,176

Claims priority, application Germany, Apr. 11, 1995, 195 13 203.3

Int. Cl.⁶ F27B 7/06; 7/10

U.S. Cl. 432—103

3 Claims



1. A device for supplying gas to a rotary kiln comprising gas supply nozzles (22) which penetrate the shell of the rotary kiln and are supplied via essentially stationary gas supply lines (18, 19), which is characterized in that a gas supply pipe (5) having two preferably parallel lateral surfaces (13, 13') is provided which concentrically surrounds the shell of the kiln and is divided by means of interior intermediate walls (27) into segments (17), preferably at least 6 segments (17), which are individually connected to at least one gas supply line (18/19) leading to the nozzles (22) of the kiln, in that the gas supply pipe (5) engages into a stationary bracket (7) having an external gas supply means (15), in that the bracket forms a gas supply chamber (12) with one of the lateral surfaces (13) of the pipe (5), which chamber is sealed off from its surroundings by an endless sliding sealing element (9), at least two openings containing inlet valves (16) being present per segment in at least one lateral surface (13), in that at least one inlet opening (20 or 20') is always enclosed by the gas supply chamber (12) and in that a counter-support (25) in the form of a sliding surface rests against the other side of the pipe (5).

5,779,469

Patent Not Issued For This Number

5,779,470

TONGUE THRUST ORAL HABIT RETRAINER
Leon Kussick, Livingston, N.J., assignor to Kussick Orthodontic Systems, LLC, Livingston, N.J.

Filed Jun. 7, 1996, Ser. No. 660,371

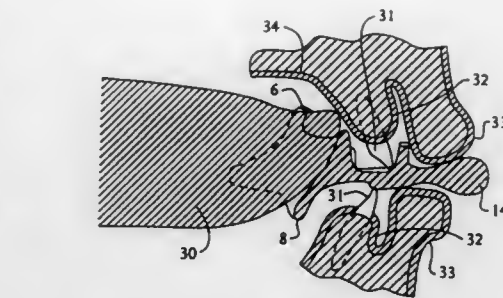
Int. Cl.⁶ A61C 3/00; A61F 5/56

U.S. Cl. 433—6

22 Claims

19. A pre-formed dental implement for forming therefrom a tongue thrust habit oral corrective device, the implement designed to be fitted to the upper posterior teeth and to form the corrective device, which is utilized to train the user to swallow without thrusting the tongue against the front teeth, the implement comprising:

a teeth-fitting segment comprising (1) a first occlusal trough adapted to fit under at least one, on one side of the user's mouth, of the posterior teeth, and (2) a second occlusal trough adapted to fit under at least one, on the other side of the user's



mouth, of the posterior teeth, wherein each occlusal trough has a hole adapted for anchoring a polymerizable material; a downward projection extending from the teeth-fitting segment and adapted to create a ramp for directing the tip of the user's tongue towards the soft tissue of the front anterior bend of the user's palate; and a palatal bridge having a loop shape looping above the teeth-fitting segment and connecting the first and second occlusal troughs, wherein the palatal bridge is adapted, in conjunction with the teeth-fitting segment and the downward projection, to create an opening allowing the user's tongue to contact the soft tissue of the front anterior bend of the user's palate.

5,779,471

DELIVERY OF SUBSTANCE TO THE MOUTH

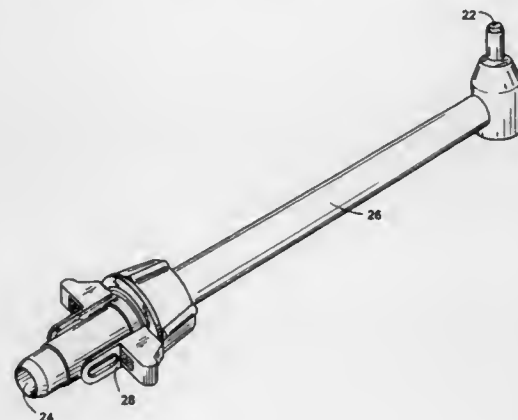
Mingchih M. Tseng, Hingham; Jean L. Spencer, Boston, both of Mass., and Thomas Craig Masterman, Foster City, Calif., assignors to Gillette Canada Inc., Kirkland, Canada

Continuation-in-part of Ser. No. 400,611, Mar. 8, 1995, abandoned. This application Jan. 31, 1996, Ser. No. 594,694

Int. Cl.⁶ A61C 17/02

U.S. Cl. 433—80

59 Claims



1. An oral irrigator for delivering a substance to the mouth when water flows through the irrigator, said irrigator comprising: a tip portion for dispensing water into the mouth; a flow path that delivers water through said irrigator, including said tip portion, to said mouth; and a composite comprising a blend of a polymer and a substance that is released from the composite when the composite is contacted with water, positioned in said irrigator so that water flowing through said irrigator contacts said composite.

5,779,472

TESTING OF USEFUL DENTAL VACUUM

Robert A. Meyer, Spearfish, S. Dak., assignor to RAMVAC Corporation, Spearfish, S. Dak.

Filed Feb. 21, 1995, Ser. No. 390,977

Int. Cl.⁶ A61C 17/06; 17/14

U.S. Cl. 433—91

19 Claims



1. A method of testing the useful vacuum of a dental vacuum system, during full flow, the system having at least one high volume evacuator valve or at least one hose, using an adaptor tube and a vacuum indicating weight, comprising the steps of:

- placing the adaptor tube into contact with a high volume evacuator valve or a hose of the dental vacuum system so that air is drawn by the dental vacuum system through the adaptor tube into the high volume evacuator valve or hose when the dental vacuum system is operating;
- with the dental vacuum system operating, bringing the vacuum indicating weight into position with the adaptor tube so that gravity acts to move the vacuum indicating weight away from the adaptor tube, while positioning the adaptor tube so that it is substantially vertical and the high volume evacuator valve or hose is substantially above the adaptor tube; and
- after step (b), releasing the vacuum indicating weight, the weight moving away from the adaptor tube indicating that the dental vacuum system has insufficient useful vacuum conditions, and the weight staying in position with the adaptor tube indicating that the dental vacuum system has sufficient useful vacuum conditions.

5,779,473

DENTAL SCALER AND VIBRATORY TRANSDUCER THEREFOR

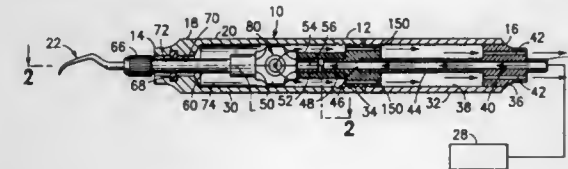
Anthony T. Sertich, 137 MacIntyre La., Allendale, N.J. 07401

Filed Dec. 13, 1996, Ser. No. 766,674

Int. Cl.⁶ A61C 1/07; 3/08; B01F 11/00

U.S. Cl. 433—120

26 Claims



1. A dental scaler having a scaling tool to be vibrated at a high frequency and low amplitude by a fluid under pressure, the dental scaler comprising:

- an outer tubular housing extending along a longitudinal axis between opposite ends;
- a vibratory transducer within the outer tubular housing; coupling means for coupling the scaling tool to the vibratory transducer;

resilient support means for supporting the vibratory transducer within the outer tubular housing;

the vibratory transducer comprising:

an inner housing having a chamber including a peripheral wall extending between opposite first and second chamber ends;

an essentially spherical rotor within the chamber, the rotor having a diameter and a polar axis extending along the diameter between opposite poles;

at least two fluid inlets located adjacent the first chamber end and juxtaposed with one of the opposite poles of the rotor for admitting the fluid under pressure into the chamber and directing the fluid toward the rotor adjacent the one of the opposite poles; and

at least one fluid outlet aligned essentially with the polar axis of the rotor for exhausting from the chamber the fluid admitted into the chamber;

the relative dimensions of the peripheral wall of the chamber and the diameter of the rotor providing a relatively small clearance between the rotor and the peripheral wall of the chamber for enabling relatively high speed rotation of the rotor within the chamber, in response to the passage of the fluid under pressure through the inlets into the chamber and through the outlet out of the chamber, and the concomitant transmission of relatively high frequency, low amplitude vibrational energy from the rotating rotor to the inner housing and to the scaling tool.

5,779,474

SUDDEN STOP MECHANISM AND AIR-GAP SEAL FOR DENTAL HANDPIECE

Donald I. Gonser, Lancaster, Pa., assignor to Den-Tal-Ez, Inc., Conshohocken, Pa.

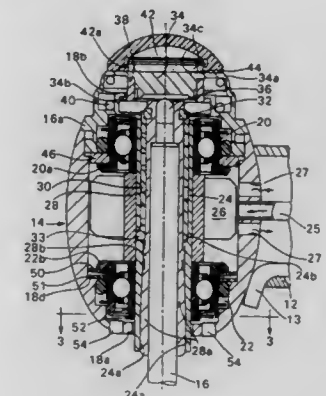
Continuation of Ser. No. 257,209, Jun. 9, 1994, abandoned.

This application Dec. 20, 1996, Ser. No. 770,485

Int. Cl.⁶ A61C 1/05; 1/14

U.S. Cl. 433—129

55 Claims



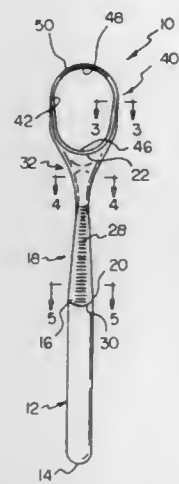
1. In a dental handpiece having an autochuck with a collet rotatable in a housing for releasably mounting a tool, and a push button with a finger engageable surface, the push button being mounted for axial movement to actuate the collet, the improvement comprising:

means rotatable with the collet in closely spaced relation within said housing and operable in response to a predetermined axial movement of the push button to engage a stationary surface of the housing and completely arrest rotation of the collet without causing an undesirable level of heat to be sensed at the finger engageable surface.

5,779,475
TONGUE SCRAPER

Deepty U. Patel, 2906 Whittington Pl., Tampa, Fla. 33618
Filed Feb. 11, 1997, Ser. No. 798,942
Int. Cl.⁶ A61C 3/00

U.S. Cl. 433—141



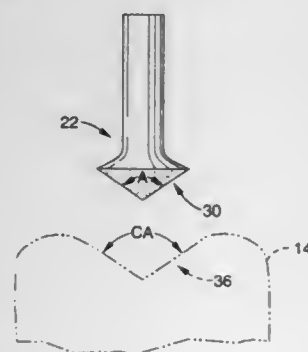
16. A tongue scraper comprising:
a handle extent with a first free end and a second end;
an intermediate gripping extent with a first end coupled with the second end of the handle extent; and
a scraping extent including a first end integrally coupled with the second end of the intermediate gripping extent and a second end, the second end of the scraping extent having scraping means for scraping a tongue of a user;
said scraping means including teeth defined by a plurality of cut outs, the cut outs forming a plurality of wells and a plurality of teeth members, the teeth members each including a rear surface and a front bevelled surface;
wherein the scraping extent forms a closed loop configuration.

5,779,476
RAPID ADAPTING PRECISION TRANSFORMER FOR OCCLUSAL RESINS

Patrick Roetzer, 1085 W. K St., Benicia, Calif. 94510, and Ron Verner, 9236 Whitehorn Cir., Scottsdale, Ariz. 85262
Filed Apr. 30, 1997, Ser. No. 846,793
Int. Cl.⁶ A61C 3/06

U.S. Cl. 433—166

21 Claims



1. A rapid adapting precision transformer apparatus for occlusal resins, comprising:
(a) a shaft; and
(b) a cutting head extending from said shaft;
(c) said cutting head including a conical cutting surface having a cuspal angle between approximately 90 degrees and approximately 100 degrees.

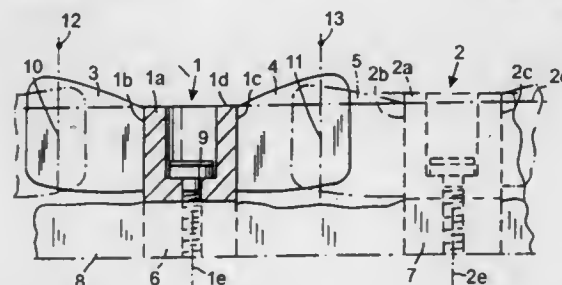
5,779,477
METHOD AND APPLIANCE USING ONE OR MORE WIRE-FEEDING TRACKS FOR PRODUCTION OF ARTIFICIAL SUPPORTING MEMBERS FOR THE HUMAN BODY

Anders Boss, Molndal, Sweden, assignor to Nobel Biocare AB, Gothenburg, Sweden
PCT No. PCT/SE95/00809, § 371 Date Apr. 23, 1996, § 102(e)
Date Apr. 23, 1996, PCT Pub. No. WO96/01080, PCT Pub. Date Jan. 18, 1996

PCT Filed Jun. 30, 1995, Ser. No. 602,775
Claims priority, application Sweden, Jul. 4, 1994, 9402352
Int. Cl.⁶ A61C 13/225

U.S. Cl. 433—172

10 Claims



1. A method for producing artificial supporting members in the human body, wherein, in a first manufacturing stage, at least two supporting part members are matched together by machining contact surfaces on said supporting member parts via which said supporting part members are joined and positional information regarding the relative positions of said contact surfaces and supporting part members is identified, and in a second manufacturing stage, said supporting part members are joined together using said positional information and said supporting part members are applied on a bearing member in relation to a plane, said plane extends at right angles with respect to a selected direction of said supporting part members when they are matched together, said method comprising the steps of:

moving at least one of a wire feeding track and said bearing member such that the position of said wire feeding track is altered with respect to said plane;
crossing connection portions of said supporting part members with said wire feeding track during said moving;
machining said supporting part member with said wire feeding track to create a contact surface at said connection portion, said contact surfaces being able to cooperate with another contact surface on another supporting part member; and
obtaining said positional information based on the positional relationship of said wire feeding track and said bearing member in said plane during said first manufacturing stage.

5,779,478

Patent Not Issued For This Number

5,779,479
METHOD OF DETERMINING THE OUTCOME OF COLORING A PERSON'S HAIR

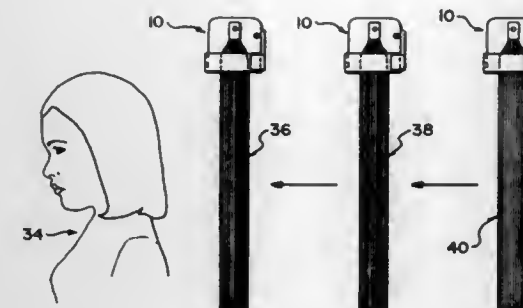
Andrea S. Hawiuk, 102-35 Bennet St., Red Deer, Canada, T4R 1V3

Division of Ser. No. 360,634, Dec. 21, 1994, Pat. No. 5,609,484. This application Mar. 10, 1997, Ser. No. 812,911
Int. Cl.⁶ G09B 9/10

U.S. Cl. 434—94

5 Claims

1. A method of determining the outcome of colouring a person's hair comprising:
(a) blending together a first group of coloured filaments to match the basic hair colour of the person;



between 0.1 and 1.5 mm and where the truncated cone tapers at an angle of 1° to 15° in the upward direction.

5,779,481
TISSUE-ENHANCING ABUTMENT AND ADJUSTABLE COPING DEVICE FOR DENTAL IMPLANTS

Ian Aires, 4130 La Jolla Village Dr. #204, La Jolla, Calif. 92037

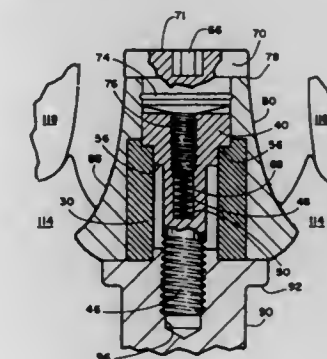
Filed Jun. 10, 1997, Ser. No. 871,935

Int. Cl.⁶ A61C 8/00

U.S. Cl. 433—173

10 Claims

(b) blending together a second group of coloured filaments corresponding to the degree of colour tint to be added to the basic hair colour of the person; and
(c) blending together the first group of basic hair colour matching filaments (a) with the second group of colour tint filaments (b) to achieve a blended colour combination for visualization by the person.

5,779,480
PROSTHETIC ABUTMENT FOR DENTAL IMPLANTS

Werner Groll, Alzenau; Thomas Lange, Langenselbold; Pascale Grote, Hanau, and Willi Meiers, Alzenau, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main 1, Germany

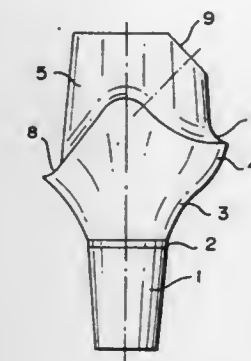
Filed May 20, 1997, Ser. No. 859,425

Claims priority, application Germany, May 21, 1996, 196 20 394.5

Int. Cl.⁶ A61C 8/00

U.S. Cl. 433—173

2 Claims

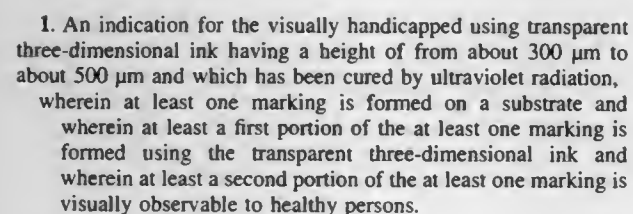


1. A prosthetic abutment made from metal for a two-phase dental implant, said abutment having a lower end for securing with the aid of a central screw to an enossal part of a dental implant anchored in a jawbone of a patient in need thereof and said abutment having an upper occlusal end for attachment to a prosthetic device, said abutment comprising a lower most part of the abutment for mating engagement with an enossal part of a dental implant in the form of a first truncated cone, said first truncated cone being followed by and attached to a section of the abutment configured as a hyperboloid of revolution opening out in an upward direction and passing in a further section into a stump configured as a paraboloid of revolution having on an occlusal side the shape of a second truncated cones, said second truncated cone having a larger cross-section than said first truncated cone and being of a semi-elliptical base plane in cross section on a labial side of said abutment and a paraboloid base plane on a lingual side of said abutment, whereby the transition between the truncated cone and the stump configured as a paraboloid of revolution is situated in the region where the abutment passes through the gingiva and takes the form of a shoulder having a uniform width

1. A tissue-enhancing abutment and adjustable coping device for dental implants comprising:

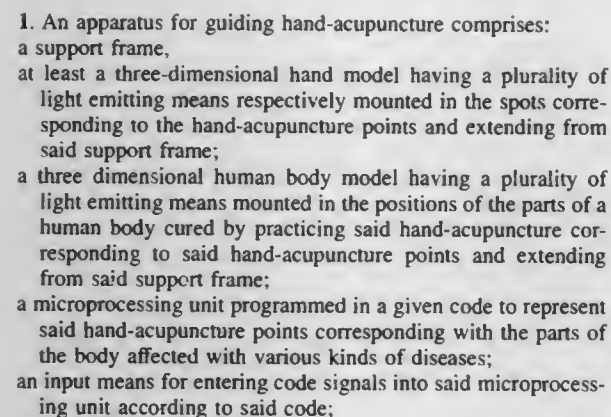
a. an abutment assembly having
(1) an abutment member with an abutment member top and an abutment member bottom;
(2) an abutment anchoring means for anchoring said abutment assembly into an implant, said abutment anchoring means further having a threaded abutment bore therein terminating at an abutment ledge;
(3) an abutment assembly coupling means for coupling said abutment member to said abutment anchoring means;
b. a coping assembly having
(1) a rotatable coping adjuster, said coping adjuster having a coping adjuster top, a coping adjuster bottom, a threaded section extending from the coping adjuster bottom toward the coping adjuster top and in mating cooperation with said threaded abutment bore, a coping tension means on said coping adjuster, said tension means exerting tension on said coping assembly in an opposing direction from said abutment assembly; and
(2) a coping member having a coping member top, a coping member bottom, an outer surface, and a coping assembly coupling means adjacent to said coping member top for coupling said coping adjuster onto said coping member, said outer surface further comprising an upper section and a lower section, said lower section having a substantially roughened texture thereon; whereby when said abutment assembly is anchored to said implant by said anchoring means, and said coping assembly is affixed to said abutment assembly by mating of the coping adjuster with the threaded abutment bore, said tension means establishes a coronal tension on said coping assembly which, by said coping adjuster may be further adjusted coronally to accommodate a coronal movement of tissue bonding to said lower section of said coping member to further facilitate tissue growth and coronal buildup.

7 Claims



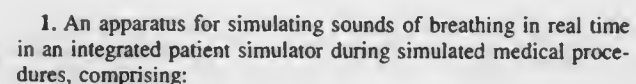
U.S. Cl. 434-262

9 Claims



U.S. Cl. 434—266

4 Claims



- a. a manikin;
- b. means associated with the manikin for continuously determining the volume of at least one lung bellows associated with the manikin;
- c. means for calculating a first derivative of the bellows volume over time to determine the phase of the respiratory cycle and for calculating a second derivative of the bellows volume over time to determine a transition in phase of the respiratory cycle; and
- d. sound output means for outputting, based upon the first and second derivatives of the bellows volume over time, an audible sound of breathing corresponding to an appropriate physiological sound.

Int. Cl.⁶ G09B 7/06

U.S. Cl. 434--321

3 Claims

1. A method for controlling the reciting time of a language learning device, said language learning device comprising a recording medium containing a recorded voice signal, a timer for outputting time information, a motor for transporting said recording medium in the desired direction, and a microcomputer for

a connecting means for connecting the output signals of said microprocessing unit with said light emitting means; and wherein, if code signals are entered into said microprocessing unit according to said code, the corresponding light emitting means of said body model and hand model are turned on to emit light under the control of said microprocessing unit.

controlling the entire operation of said language learning device,
said method comprising the steps of:

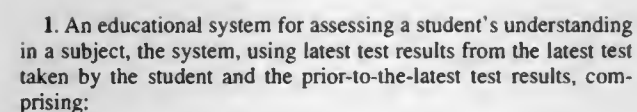
- (a) reproducing the voice signal for an interval of time controlled by said microcomputer; and
said microcomputer automatically stopping said motor to suspend the reproduction operation until an input of a voice signal recited by a user is completed and automatically driving said motor if the input of the recited voice signal is completed, to resume the reproduction operation;
wherein said step (b) includes the steps of said microcomputer:
(b-1) stopping said motor to if the recorded voice signal is not reproduction for a predetermined time period, thereby suspending the reproduction operation;
(b-2) checking whether the recited voice signal has been inputted and maintaining said motor at its stopped state if it is determined that the recited voice signal has been inputted; and
(b-3) driving said motor if it is determined at said step (b-2) that no recited voice signal has been inputted, to resume the reproduction operation.

METHODS AND APPARATUS TO ASSESS AND ENHANCE A STUDENT'S UNDERSTANDING IN A SUBJECT

Chi Fai Ho, 4816 Cabello Ct., Union City, Calif. 94587, and
Peter P. Tong, 1807 Limetree La., Mountain View, Calif.
94040

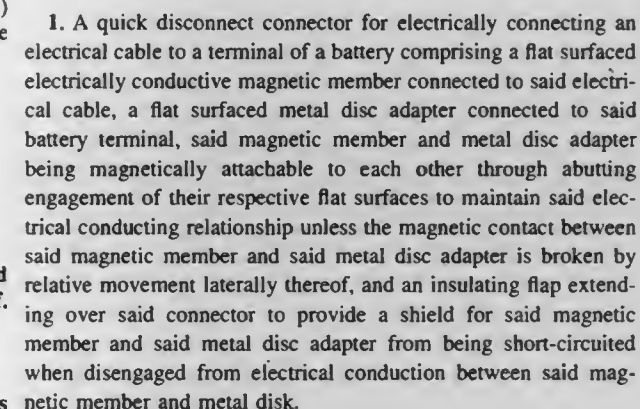
U.S. Cl. 434—353

55 Claims

Int. Cl.⁶ H01R 11/30

U.S. Cl. 439—39

3 Claims



SOCKET FOR MOUNTING AN ELECTRICAL COMPONENT TO A BOARD

Dean Kaye Cluff, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

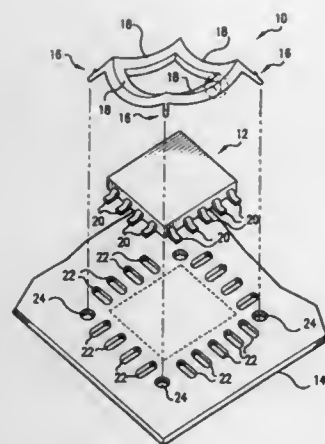
Filed Dec. 20, 1996, Ser. No. 772,223

Int. Cl.⁶ H01R 9/09

U.S. Cl. 439-73

19 Claims

1. A socket for mounting an electrical component having a plurality of electrical leads to a board, comprising:
a continuous body forming four corners, said body contacting with the electrical component and applying a force to the electrical component such that the plurality of electrical leads directly contact a plurality of pads formed on the boards; and
a plurality of legs, each leg coupled to one of said four corners, said legs attachable to and detachable from the board; and



wherein said body is initially arched in an outward direction and subsequently is flattened upon the legs being attached to the board.

5,779,489

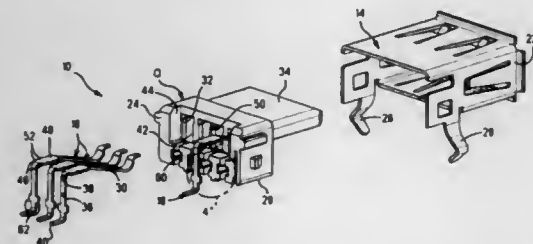
BOARD MOUNTABLE ELECTRICAL CONNECTOR
Wayne Samuel Davis, Harrisburg; Michael Eugene Shirk, Grantville, and Robert Neil Whiteman, Jr., Middletown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 705,932, Aug. 30, 1996, Pat. No. 5,725,386, which is a continuation-in-part of Ser. No. 653,144, May 24, 1996, abandoned. This application Oct. 25, 1996, Ser. No. 738,159

Int. Cl.⁶ H01R 9/09

U.S. Cl. 439—79

4 Claims



1. An electrical connector of the type suitable for mounting to a surface of a circuit board, comprising:

a housing of insulative material having a board-mounting face, a mating face and an assembly face opposed to said mating face; and

at least one contact member having a contact section exposed along said mating face, and a second section extending along said assembly face to a board-connecting section for connection to a circuit of a circuit board at said board-mounting face, said assembly face including a slot therealong parallel to said second section with said second section disposed therealong, at least one flange-receiving recess defined into a side wall of said slot, and said second section including a flange associated with each said at least one recess and extending laterally from an edge of said second contact section, said flange being received into said flange-receiving recess in a snug fit allowing essentially no movement of said second section along said assembly face perpendicular to said board-mounting face; and a surface of said at least one recess parallel to said board-mounting face including a sharp rib extending into said recess, and said associated flange of said second contact section is assuredly urged against an opposed recess surface referenced to bottom standoff surfaces of the housing while deforming said rib during assembly.

whereby said board-connecting section of said contact is assuredly held in position with respect to said board-mounting face.

5,779,490

Patent Not Issued For This Number

5,779,491

MULTIPOLAR ELECTRICAL CONNECTOR

Hiroyuki Nagano, Yamatotakada, and Hideo Nagata, Otsu, both of Japan, assignors to Hosiden Corporation, Osaka, and Nintendo Co., Ltd., Kyoto, both of Japan

PCT No. PCT/JP95/01688, § 371 Date Feb. 27, 1996, § 102(e) Date Feb. 27, 1996, PCT Pub. No. WO96/07218, PCT Pub. Date Mar. 7, 1996

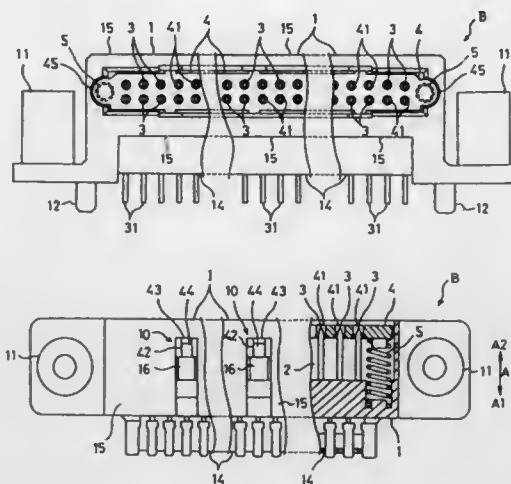
PCT Filed Aug. 24, 1995, Ser. No. 600,921

Claims priority, application Japan, Aug. 31, 1994, 6-207325

Int. Cl.⁶ H01R 13/453

U.S. Cl. 439—141

8 Claims



1. A multipolar electrical connector, comprising:

a body having an insertion space for a counter electrical connector, said insertion space defining an opening portion;

a plurality of contacts which protrude into said insertion space, said plurality of contacts being arranged at predetermined spaces relative to each other;

a cover member which covers the opening portion of said insertion space, said cover member being displaceable in said insertion space in an insertion direction and an extraction direction relative to said counter electrical connector;

a plurality of hole portions formed in said cover member in an arranged manner and into which a respective one of said plurality of contacts are loosely inserted;

a spring member disposed between said body and said cover member for constantly urging said cover member in said extraction direction; and

an engaging mechanism disposed between said body and said cover member, said engaging mechanism restricting the position of said cover member urged by said spring member thereby blocking said cover member from protruding from said insertion space, and, when the position of said cover member is restricted, permitting the tip ends of said plurality of contacts to assume intermediate positions in an axial direction of said hole portions, said hole portions respectively corresponding to said contacts, said engaging mechanism including a plurality of elongated claws which protrude outwardly from an edge of said cover member and are disposed on both sides of the center of said cover member, wherein: said engaging claws define engaging faces which oppose said opening edges, said body includes peripheral walls, openings are formed in said peripheral walls defining said insertion space, said openings respectively housing said engaging claws in such a manner that said engaging claws are displaceable in said insertion and extraction direction, and said opening edges defining a downstream end in an extraction direction of said openings for fitting said cover body inside said insertion space, each of said engaging faces for engaging a respective

one of said opening edges, said opening edges and said engaging faces being positioned opposite to said plural openings of said cover member, said engaging mechanism further including a guide face for guiding said cover member including said guide face so as to be positioned in said extraction direction relative to said counter electrical connector, thereby fitting said cover body inside said insertion space, said plural claws elastically protruding outwardly from both edges of said cover member and which are housed inside said plural openings by elasticity, in fitting said cover member.

5,779,492

CONNECTOR EMPLOYING LIQUID CONDUCTOR FOR ELECTRICAL CONTACT

Takeshi Okuyama; Kouji Watanabe; Tatsuo Chiyonobu; Kaoru Hashimoto, and Kyoichiro Kawano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 261,926, Jun. 17, 1994, Pat. No.

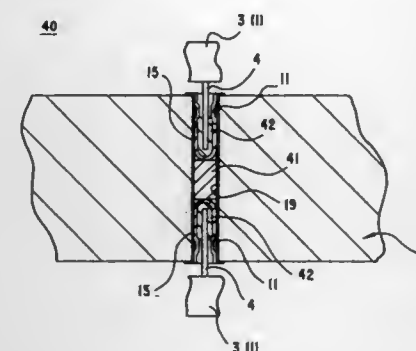
5,626,484. This application Jan. 24, 1997, Ser. No. 788,699

Claims priority, application Japan, Sep. 20, 1993, 5-233864

Int. Cl.⁶ H01R 3/08

U.S. Cl. 439—179

10 Claims



1. A connector comprising:

a first contact member comprising a liquid conductor which comes into contact with a second contact member so as to establish an electric connection between the two contact members; and

a container for containing said first contact member therein;

and wherein:
said second contact member is pin-shaped;
said container is tube-shaped and has a containing portion, which is filled with said liquid conductor, and has an opening through which said second contact member is inserted; and

an area contraction member provided at said opening for contracting the cross sectional area of said container, wherein said container comprises a through hole of a substrate, and wherein a sectional area of said through hole is constant throughout said through hole.

5,779,493

WATERPROOFING CONNECTOR

Yoshinori Tomita, and Naomi Suzuki, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 5, 1996, Ser. No. 744,193

Claims priority, application Japan, Nov. 7, 1995, 7-288559

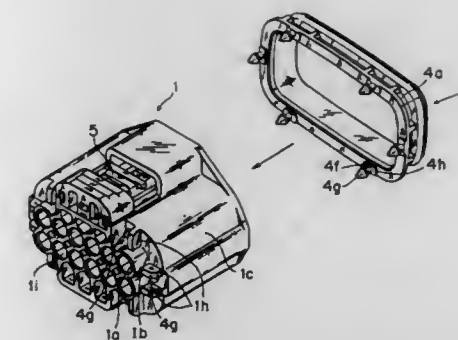
Int. Cl.⁶ H01R 13/52

U.S. Cl. 439—271

2 Claims

1. A waterproofing connector comprising:

a connector housing having first wall means extending from one end of said housing and defining chambers for reception of terminal fittings installed in said connector, second wall means having peripheral dimensions greater than those of said first wall means and extending to an opposite end of said



housing, and a rising rear wall extending substantially perpendicularly between said first wall means and said second wall means, said second wall means and said rising rear wall cooperating to define an interior space for reception of a packing and a mating connector housing;

a plurality of through-holes formed in said rising rear wall;

a packing inserted into said interior space in abutment with said rising rear wall, said packing having locking projections extending through said through-holes and having head portions disposed on the ends of said locking projections for locking engagement with said rising rear wall; and

a protecting wall structure on said connector housing adjacent said locking projection head portion of said packing, said protecting wall structure including walls disposed on opposite sides of said head portions, said walls being substantially parallel to a longitudinal axis of said connector and extending from, and being integrally formed within, said first wall means and said rising rear wall, respectively.

5,779,494

CONNECTOR WITH REINFORCED LATCH

Yoshikazu Ito, and Satoshi Sueoka, both of Yamato, Japan, assignors to Molex Incorporated, Lisle, Ill.

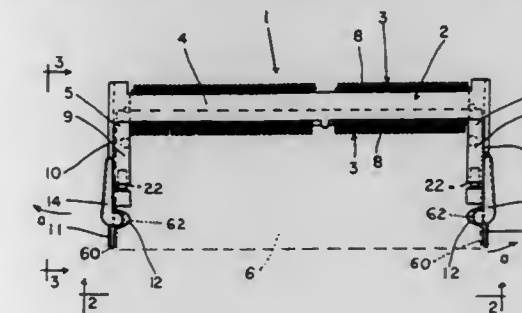
Filed Feb. 21, 1997, Ser. No. 804,265

Claims priority, application Japan, Mar. 21, 1996, 8-002989

Int. Cl.⁶ H01R 13/62

U.S. Cl. 439—326

14 Claims



1. An electrical connector for providing a connection between a primary circuit board and a secondary circuit card, the connector comprising:

an insulative connector housing having two longitudinal side-walls and a card-receiving slot interspersed therebetween, the card-receiving slot being adapted to receive an edge of the secondary circuit card therein;

a plurality of conductive terminals disposed within said card-receiving slot for electrically communicating with a plurality of conductive contacts disposed near the circuit card edge when said circuit card is positioned in said card-receiving slot, each of said terminals having a solder tail portion extending outwardly from said connector housing;

a pair of insulative resilient latching arms integrally formed with said connector housing, each being disposed generally adjacent an opposite end of said card-receiving slot, the latching arms being further positioned to engage with respective

opposing side edges of said circuit card and said latching arms further being deflectable outwardly from said connector housing in opposing directions aligned with said card-receiving slot upon insertion of said circuit card into said card-receiving slot; and,

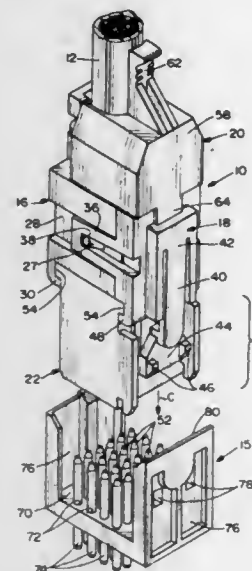
a pair of discrete metal reinforcing channels mounted on said housing, each being disposed adjacent one of said latching arms and extending lengthwise along said latching arms so as to partially enclose said latching arms, said reinforcing channels each having a plurality of reinforcement surfaces that restrict deflection of said latching arms, said reinforcing channel including a web portion and distinct upper and lower flange portions interconnected by said web portion, said web and upper and lower flange portions defining said reinforcement surfaces said upper and lower flange portions serving to restrict deflection of said latching arms in respective upward and downward directions and said reinforcing channel web portion serving to restrict deflection of each said latching arm in a direction parallel to said opposing directions.

5,779,495
ELECTRICAL CONNECTOR WITH IMPROVED LATCHING SYSTEM
Patrick Dechelette, Le Plessis Robinson, and Jerome Tamsson, Paris, both of France, assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 10, 1996, Ser. No. 676,616
Claims priority, application European Pat. Off., Aug. 26, 1995, 95113426

Int. Cl.⁶ H01R 13/627
U.S. Cl. 439—353

11 Claims



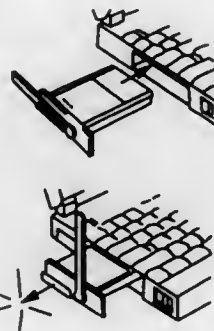
1. An electrical connector, comprising:
a housing adapted for mating with a complementary electrical device along a mating axis;
a latch on the housing for latching the connector to the complementary electrical device, the latch being movable relative to the housing generally transversely of said axis;
said latch including a latch arm pivotally mounted on the housing for pivotal movement of a latching portion of the arm generally transversely of said axis;
said latch arm being integral with the housing at a fulcrum which pivotally mounts the arm to the housing;
an actuator mounted on the housing for movement relative thereto generally parallel to said axis; and
complementary interengaging coupling means between the actuator and the latch for converting axial movement of the actuator to transverse movement of the latch.

5,779,496
SLIDING CONNECTOR BLOCK SYSTEM FOR ELECTRONIC DEVICES
Nancy J. Bolinger, Chapel Hill, N.C.; Gary Bethurum, Laguna Niguel, Calif.; David Campbell Brower, Wake Forest, N.C.; Kenneth Wayne Maynor, and Charles Lee Smith, both of Durham, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 11, 1996, Ser. No. 728,725
Int. Cl.⁶ H01R 13/629

U.S. Cl. 439—377

21 Claims



1. A sliding connector block apparatus for inserting an electronic device into a compartment of an electrical equipment enclosure, electrically interconnecting the electronic device via a flexible cable having cable connectors disposed at each end to an electrical component installed in the enclosure, and moving said electronic device to adjust its performance, said compartment having a pair of side walls, a rear wall, a top cover, a bottom cover and an opening for inserting said electronic device, comprising:

a metal tray for housing said electronic device, said metal tray having a front surface, a base surface and a pair of side surfaces with curved flanges at the upper end of said side surfaces and extending substantially along the length of the upper edge of the side surfaces;
a pair of curved guide rails disposed laterally along the upper edge of the side walls forming the interior portion of said compartment for inserting said curved flanges of said metal tray enabling said metal tray to be inserted into and removed from said enclosure, said guide rails having a flat flange portion for mounting said guide rails within said enclosure;
a sliding connector block disposed adjacent to the back wall of the compartment and having slots for inserting and for securing the cable connector disposed at one end of the flexible cable to enable blind electrical interconnection with a connector on the electronic device, said sliding connector block further including a top surface with a pair of vertical flanges disposed at each end to enable the sliding connector block to travel within said pair of guide rails to adjust the performance of said electronic device while maintaining electrical interconnection.

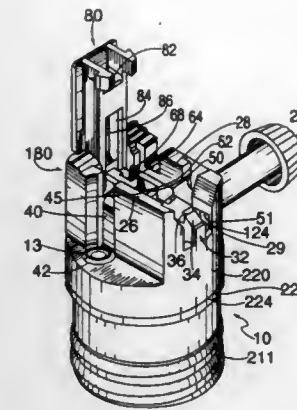
5,779,497
QUICK WIRE ELECTRICAL SOCKET
Scot J. Hale, Williston Park; James N. Pearse, Dix Hills; Dennis A. Odds, Eatons Neck, and Anthony C. Tufano, North Massapequa, all of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Oct. 28, 1996, Ser. No. 738,740
Int. Cl.⁶ H01R 4/24

U.S. Cl. 439—419

16 Claims

1. A lamp socket assembly comprising:
a) a substantially cylindrical screwshell having a substantially closed end, an open end and a wall in which is formed a screw thread between said ends, said screwshell making an electrical connection with the threaded metal base of an electrical lamp placed in said screwshell through said open end and made to threadably engage said screw thread of said screwshell wall;



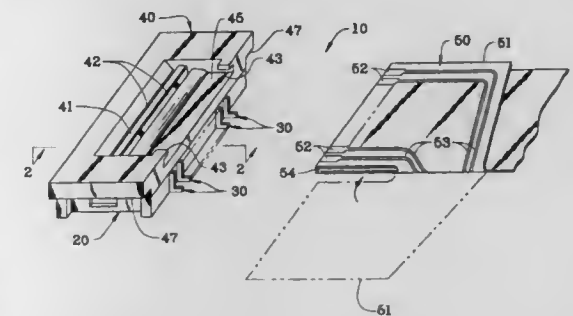
b) a disk of insulating material having a first surface and a second surface;
c) a body member fabricated of insulating material having a first end surface and a second end surface parallel with one another and spaced apart along the longitudinal axis of said assembly; said disk positioned between said screwshell and said body member with said first surface of said disk adjacent said substantially closed end of said screwshell and said second surface of said disk adjacent said second end surface of said body member;
d) a substantially U-shaped recess in said first end surface extending across said first end surface perpendicular to said longitudinal axis and into said body member towards said second end surface; said recess having a width less than said first end surface diameter to provide a shoulder on said first surface to each side of said recess, said recess having a floor and two vertical walls parallel with said longitudinal axis;
e) a first conductive member having a first end and a second end;
f) first fastening means holding in assembly said screwshell, said disk, said body member and said second end of said first conductive member;
g) said first conductive member having a first insulation displacing contact at said first end extending into said recess for displacing the insulation and making contact with the first central metallic conductor of an insulated electrical cord having two side-by-side linked insulated electrical conductors;
h) a second conductive member having a third end and a fourth end;
i) a displaceable tongue having a fifth end and a sixth end, said fifth end of said displaceable tongue passing through the non-closed portion of said substantially closed end of said screwshell and an aperture in said disk to engage said fourth end of said second conductive member, said sixth end of said displaceable tongue positioned in said screwshell to engage the contact button at the base of an electrical lamp threadably engaging said screw thread of said screwshell wall;
j) said second conductive member having a second insulation displacing contact at said third end extending into said recess for displacing the insulation and making contact with the second central metallic conductor of an insulated electrical cord having two side-by-side linked insulated electrical conductors;
k) actuator means having a first end and a second end, said actuator means pivotally mounted adjacent said second end to said vertical walls of said recess to permit said actuator means to move said first end of said actuator means towards and away from said floor of said recess;
l) said actuator means having a central passageway extending from adjacent said first end of said actuator means towards said second end of said actuator means to receive an electrical cord therein when said actuator means first end is pivoted away from said floor of said recess and to cause the engagement of the each of said two side-by-side linked insulated electrical conductors with its associated first and second insulation displacing contacts and the electrical connection of

each of said first and second central metallic conductors with its associated first and second insulation displacing contacts;
m) lock means on said actuator means adjacent said first end to engage associated apertures in said vertical walls of said recess to retain said first end of said actuator means adjacent said floor of said recess;
n) said actuator means has a top member, a bottom member and two side members joined so as to form a hollow rectangular structure open adjacent said first end of said actuating means and closed adjacent said second end of said actuating means, the inner surfaces of said top member, said bottom member and said two side members defining said central passageway;
o) a first cut-out in said bottom member adjacent said first end of said actuator means;
p) an upstanding member extending upwardly from said recess floor towards said first end surface and parallel with said recess vertical walls at a point remote from the pivotal mounting of said actuating means to said vertical walls of said recess; and
q) said upstanding member extending through said first cut-out to engage an electrical cord in said passageway to provide strain relief for the electrical cord.

5,779,498
FLAT CABLE CONNECTOR
Kazushige Asakawa, Yokohama, Japan, assignor to The Whitaker Corporation, Wilmington, Del.
Continuation of Ser. No. 537,602, Nov. 27, 1995, abandoned.
This application Apr. 29, 1997, Ser. No. 841,294
Claims priority, application Japan, Oct. 31, 1994, 6-266608
Int. Cl.⁶ H01R 9/07

U.S. Cl. 439—495

9 Claims



1. A flat cable connector for electrical interconnections of high density parallel conductors on one surface of a flexible cable and a circuit board, comprising:
the flexible cable having a wider termination end formed with conductive pads which are connected to respective ones of the parallel conductors, and a slot at a substantially center portion of the termination end to provide a pair of termination end portions to be folded over along the slot;
a housing having a plurality of terminals in two rows secured therein, the terminals having termination sections to be soldered to the circuit board and resilient contact members; and
a slider having a pair of parallel slots and a tongue located between the parallel slots, the slider having an outer surface and a recess in the outer surface extending perpendicular to the parallel slots;
wherein the termination end portions of the flexible cable are inserted into the parallel slots in the slider for being inserted between the resilient contact members of the two rows of terminals while locating the tongue of the slider between the folded termination end portions of the flexible cable, and the flexible cable can be bent adjacent to the termination end portions so that the flexible cable is received in the recess and extends perpendicular to the parallel slots.

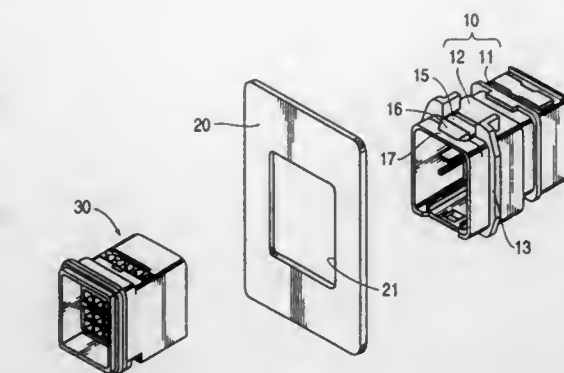
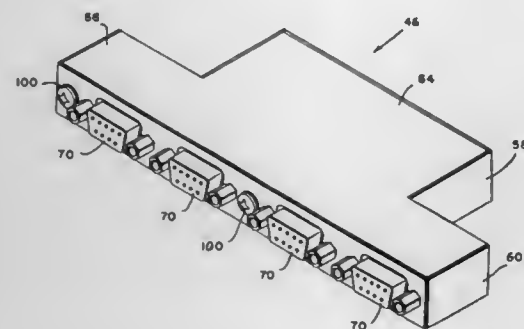
5,779,499
COMPUTER INTERFACE MULTIPLE INPUT
CONNECTING DEVICE

Paul R. Sette, Branford, and Richard A. Sloan, Jr., Southbury,
both of Conn., assignors to Pitney Bowes Inc., Stamford,
Conn.

Filed Nov. 4, 1996, Ser. No. 743,264
Int. Cl.⁶ H01R 13/60

U.S. Cl. 439—540.1

5 Claims



free end extending in the second direction so as to be accessible in front of the panel and freely depressible at all times, a guard extending in the second direction around the free end of the locking arm to prevent inadvertent contact of the locking arm and release of the connector from the panel, and a projection opposite said locking arm having a locking face for engaging the panel.

1. A computer interface multiple connecting device for connecting a plurality of peripheral devices to a computer having a plurality of standard elongate expansion slots provided in a rear wall of the chassis of the computer, said device comprising:

- (a) a plurality of opposed front and rear, top and bottom and end walls defining a hollow housing, said housing having approximately the same thickness as one of said standard expansion slots;
- (b) means on said rear wall of said housing for connecting said housing to the rear wall portion of the computer chassis adjacent one of said standard expansion slots; wherein said walls define a first rectangular housing portion which has a length approximately the same as the length of the expansion slot on the computer, and a second rectangular housing portion which has a length substantially longer than the length of the expansion slot on the computer, said plurality of input connector sockets being mounted in said second rectangular housing portion;
- (c) means on said front wall of said housing for connecting a plurality of input connector sockets to said housing, whereby a corresponding plurality of input connector plugs attached to computer peripheral devices can be attached to said input connector sockets on said housing within the space occupied by a single standard expansion slot of the computer; and wherein said means for connecting said housing to the rear wall portion of the computer chassis further comprises:
 - (i) bracket means adapted to be mounted on the inside surface of said rear wall portion of the computer chassis adjacent said expansion slot; and
 - (ii) means for removably connecting said rear wall of said first rectangular portion of said housing to said bracket means.

5,779,500
SNAP-FIT CONNECTOR

Koichiro Tokiwa, and Hitoshi Okumura, both of Mie, Japan,
assignors to Sumitomo Wiring Systems, Ltd.

Filed Apr. 24, 1996, Ser. No. 639,090

Claims priority, application Japan, Apr. 24, 1995, 7-124440
Int. Cl.⁶ H01R 13/74

U.S. Cl. 439—557

11 Claims

1. A snap-fit electrical connector for retention in an aperture of a panel, the connector having an opening in which a complementary connector is inserted in a first direction, a resilient locking arm having a free end and a locking face, said locking face facing in the first direction for engaging an edge of said aperture to secure the connector to the panel when the connector is inserted into the aperture in a second direction opposite to the first direction, said

5,779,501
CONNECTOR

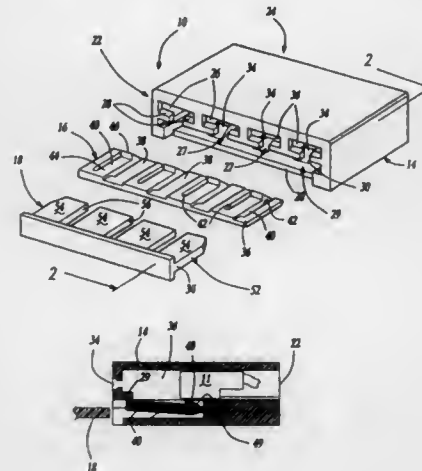
Zenon Hotra, Troy, and Brian M. Hood, Clinton Township,
both of Mich., assignors to UT Automotive Dearborn, Inc.,
Dearborn, Mich.

Filed Oct. 11, 1996, Ser. No. 730,533

Int. Cl.⁶ H01R 13/40

U.S. Cl. 439—595

20 Claims



- 1. A connector for holding at least one terminal, comprising:
 - a housing including at least one channel for receiving the terminal and a slot adjacent to said channel;
 - a holding member that is separate from and received within said housing, said holding member having a portion that extends at least partially into said channel, said portion being moveable out of said channel in response to movement of the terminal within said channel; and
 - an indicator member that is received into a predetermined position relative to said housing to visually indicate a secure connection between said housing and the terminal.

5,779,502
SOCKET INTEGRATING HIGH FREQUENCY
CAPACITOR ASSEMBLY

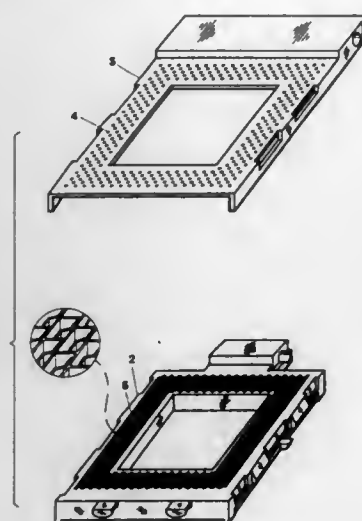
Reza E. Daftari, Irvine, and Bao G. Le, Orange, both of Calif.,
assignors to AST Research, Irvine, Calif.

Filed Jun. 6, 1995, Ser. No. 485,188

Int. Cl.⁶ H01R 13/66

U.S. Cl. 439—620

14 Claims



1. An integrated circuit socket having a plurality of connecting pins adapted for receiving an integrated circuit having a plurality of integrated circuit connecting pins comprising:

- a. a base having a plurality of connecting pins adapted for receiving the connecting pins of the integrated circuit at least one of which is a voltage pin and at least one of which is a ground pin, and
- b. a capacitor electrically coupled between said voltage pin and said ground pin mounted at the top of said socket in juxtaposition with the tops of said integrated circuit connecting pins immediately adjacent the point of entry of said integrated circuit pins into said integrated circuit.

5,779,503
HIGH FREQUENCY CONNECTOR WITH NOISE
CANCELLING CHARACTERISTICS

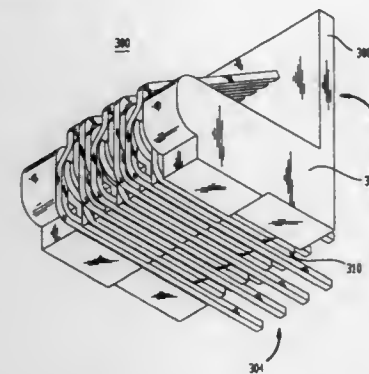
Edmond Tremblay, Saint-Blaise; Brenda Lord, Pointe-Claire;
Yves Deflandre, Pierrefonds, and Luc Milette, Montreal, all
of Canada, assignors to Nordx/CDT, Inc., Canada

Filed Dec. 18, 1996, Ser. No. 769,711

Int. Cl.⁶ H01R 23/02

U.S. Cl. 439—676

15 Claims



1. An electrical connector for electrically and mechanically mating with a mating plug, the connector comprising:

- a dielectric block having an upper surface, a substantially parallel lower surface and a curved forefront section adjacent to said upper and lower surfaces; and
 - a terminal array consisting of a plurality of conductors, including,
 - a planar spring contact region configured to electrically connect with a corresponding contact region in the mating plug,
 - a non-contacting cross-over region immediately adjacent to said contact region at said curved forefront section of said dielectric block, whereat specific pairs of said plurality of conductors have paths that cross, and
 - a reverse interference region located at said lower surface of said dielectric block whereat said plurality of conductors are substantially parallel,
- wherein said dielectric block comprises a plurality of channels each configured to receive one of said plurality of conductors, said channels crossing at said curved forefront section of said dielectric block to create said non-contacting cross-over region of said terminal array.

5,779,504

MODULAR TERMINAL BLOCK ASSEMBLY

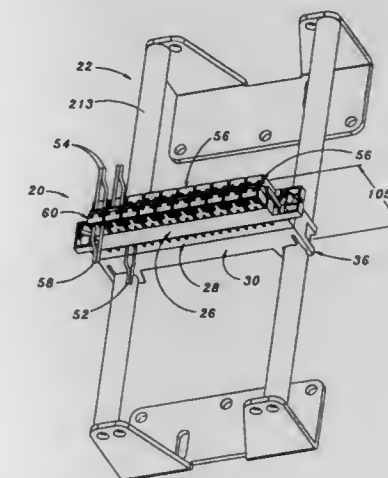
Robert M. Dominiak, Chicago; Kenneth C. Littlejohn, Northlake; Richard T. Kaczmarek, Park Ridge; Janet A. Bradshaw, Darien, all of Ill.; Wayne G. Haines, Toccoa, Ga., and Michael J. Bascom, Clinton Township, Mich., assignors to Reltec Corporation, Mayfield Heights, Ohio

Filed Sep. 29, 1995, Ser. No. 536,062

Int. Cl.⁶ H01R 9/22

U.S. Cl. 439—709

26 Claims



- 1. A modular terminal block assembly comprising:
 - a base module for dressing and retaining distribution lines;
 - a connector module having distribution clips retained therein for engagement with said distribution lines retained in said base module, and service clips retained therein for connection of service lines thereto, said service clips and distribution clips being conductively coupled;
 - a protection module including protection clips retained therein coupled to said distribution clips retained in said connector module, protector devices conductively coupled to said protection clips for providing protection of said distribution and service line; and
 - mounting structures for attaching said modular connector terminal block assembly to a conductive frame structure, at least a portion of said mounting structures being conductive and conductively coupled to said protector devices for conductively connecting said protector devices to said frame structure.

5,779,505

ELECTRICAL CONNECTOR TERMINAL AND METHOD OF MAKING ELECTRICAL CONNECTOR WITH SAME
Masanori Yagi, Ebina; Masahiro Shiga, Yamato, and Toru Maruyama, Kawasaki, all of Japan, assignors to Molex Incorporated, Lisle, Ill.

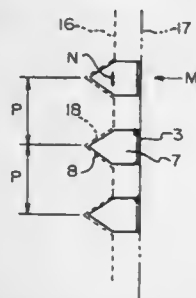
Filed Jun. 12, 1995, Ser. No. 489,470

Claims priority, application Japan, Jul. 19, 1994, 6-188973

Int. Cl.⁶ H01R 13/405

U.S. Cl. 439—736

17 Claims



1. An electrical connector comprising:
an insulative housing having a pair of spaced apart, generally parallel sidewalls;
a plurality of terminals mounted in said housing generally along the length of said housing sidewalls, said terminals being generally parallel and spaced apart a predetermined distance; and
each terminal including a first end for interconnection to an electrical component, a second opposite end positioned within said housing, and a terminal body portion between said first and second ends, each said second end having a tapered portion adapted for engagement with a correspondingly shaped recess in a mold component to maintain said terminal second ends in a predetermined array, said predetermined distance apart in order to maintain said terminal body portions in a generally parallel array and spaced apart said predetermined distance prior to overmolding said housing about said terminals whereby said tapered portions assist in aligning said terminals at said predetermined distance.

5,779,506

CONNECTOR WITH DOUBLE RETAINING MECHANISM
Toshiaki Okabe; Kimihiro Abe; Toshihiko Yamamoto, and Yuji Hatagishi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

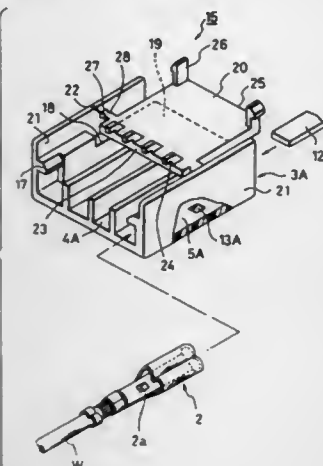
Filed Nov. 22, 1996, Ser. No. 755,339

Claims priority, application Japan, Nov. 22, 1995, 7-304533

Int. Cl.⁶ H01R 13/514

U.S. Cl. 439—752

17 Claims



1. A connector, comprising:
a housing having at least two side walls;

a terminal accommodating chamber, for accommodating a terminal, formed in said housing; and
a cover member, for retaining said terminal in said terminal accommodating chamber, said cover member being integrally connected to said housing by coupling portions formed on at least two side portions of said cover member, wherein when said cover member is twisted to a closed position, said coupling portions are severed.

5,779,507

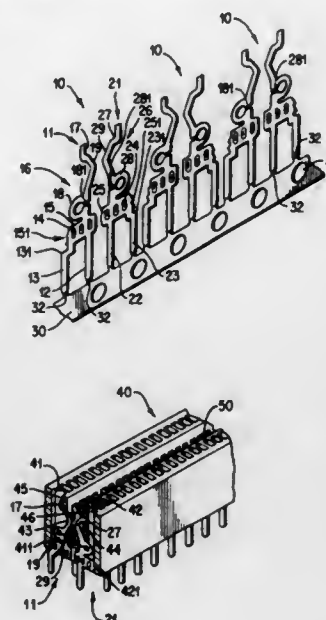
TERMINAL DEVICE FOR INTERFACE SOCKETS
Te-Hsin Yeh, No. 45, Tong Yuan Road, Chungli City, Taoyuan County, Taiwan

Continuation-in-part of Ser. No. 440,588, May 15, 1995, abandoned. This application Aug. 1, 1996, Ser. No. 695,198

Int. Cl.⁶ H01R 23/70

U.S. Cl. 439—862

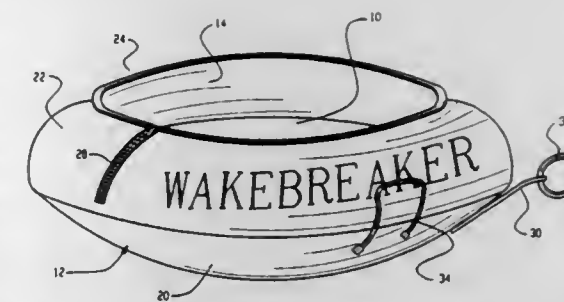
9 Claims



1. A terminal device for use in an interface socket defining rows of right and left orifices, opening to a bottom surface of said interface socket, and a groove interposed therebetween with the right and left orifices each having elongated slots in an inner wall thereof communicating with said groove, said terminal device comprising:

terminal sets connected to a conductive sheet, the terminal sets and the conductive sheet being integrally punched from an elongated sheet of metal;
said conductive sheet being provided with a plurality of positioning holes facilitating automatic assembly;
each of said terminal sets including corresponding left and right terminals adjacent one another with inner edges facing each other and defining a reception channel therebetween for receipt of a mating connector, said right and left terminals being symmetrical with respect to each other in shape and having a common substantially planar configuration;
said left terminal and said right terminal each having:
a mounting plate portion having an outer insert post and an inner insert post extending from a lower edge thereof, the inner insert post being joined to said mounting plate proximate an inner edge of said mounting plate portion and the outer insert post being joined to said mounting plate proximate an outer edge thereof;
each of said outer insert post and said inner insert post having a distal end connected to said conductive sheet via a frangible interface; and
said mounting plate portion having a contact member extending from an upper edge of the mounting plate portion;

each of said contact members having a biasing ring connected to said upper edge of said mounting plate portion at a first position on said biasing ring;
each of said contact members further having a contact portion extending from a second position on said biasing ring;
said biasing ring having a slit disposed in a shorter arc of two arcs of said biasing ring defined between said first and second positions and extending from an inner circumference of said biasing ring to an outer circumference of said biasing ring to permit elastic deflection of said biasing ring for biasing said contact portion into said reception channel; and
said contact portion extending inwardly at a middle section thereof into said reception channel between said right and left terminals such that said contact portions of the respective left and right terminals extend through corresponding ones of said elongated slots into said groove of said interface socket when said right and left terminals are inserted into corresponding ones of said right and left orifices in said interface socket.



an aperture in said disk for admitting water when the device is stationary to lower its profile in the water and for exiting water when the device is being towed to drain water from the upper side of said disk; and
a pull for interconnecting the said disk and inflated tube with a tow rope.

5,779,508

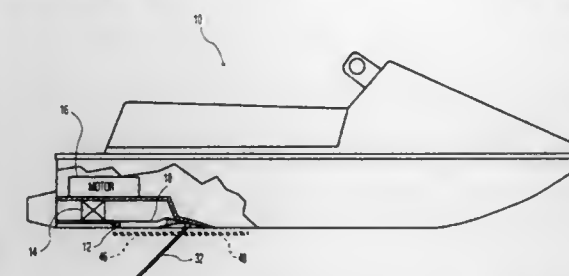
ANTICLOGGING WATER JET CRAFT
Martin C. Pettesch, 3 Cayuga Rd., and Donald Eckloff, 8 Chippewa Way, both of Cranford, N.J. 07016

Filed Mar. 21, 1997, Ser. No. 822,315

Int. Cl.⁶ B63H 11/01

U.S. Cl. 440—46

16 Claims



1. A water jet craft comprising a hull having a water intake opening in the bottom portion of said hull and a water outlet substantially at the rear of said hull, a grate extending across the inlet opening, pump means for drawing water from near said intake and forcing water through said outlet to provide forward propulsion for the craft and to draw floating or growing grass or weeds near said inlet opening into said intake opening and within and beyond said grate, said craft characterized by:

at least one anticlogging device comprising at least one elongated, flexible member having a first end coupled to said hull substantially at the forward portion of said inlet and extending downward from said first end and below said grate for contacting and forcing downward from the bottom portion of said hull floating or growing weeds or grass thereby preventing the weeds or grass from being sucked into the intake and the grate and causing the weeds or grass to pass under and rearward of the water drawing action at said intake as the craft moves forward over the weeds or grass.

5,779,509

INNER TUBE WATER SKIMMING AMUSEMENT
David A. Barman, 936 Moriah Rd., Norwalk, Ohio 44857

Filed Feb. 10, 1997, Ser. No. 797,116

Int. Cl.⁶ B63B 1/00

U.S. Cl. 441—65

8 Claims

1. A water amusement device comprising:
a rigid disk having a peripheral edge;
an annular inflated tube extending along an upper side of said disk adjacent the round peripheral edge;
a means for anchoring the inflated tube and disk firmly together;

5,779,510

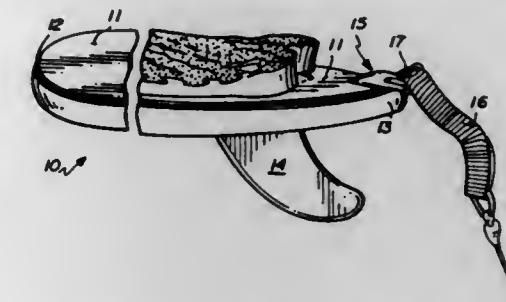
SURFBOARD LEASH ATTACHMENT
David Skedelski, Alea, HI., assignor to Surfco, Hawaii, Alea, HI.

Filed Mar. 4, 1997, Ser. No. 810,853

Int. Cl.⁶ B63B 1/00

U.S. Cl. 441—75

19 Claims



1. A leash attachment for sport boards, comprising:
an integral plastic body having a substantially flat bottom face, and a contoured top, said contoured top defining an eye large enough to receive a leash; and
a double face very high bond permanent pressure sensitive adhesive tape having first and second faces, said first face with very high bond pressure sensitive adhesive engaging said flat bottom face to substantially permanently attach said tape to said integral body and said second face adhesive substantially permanently attached to a surface of a sport board.

5,779,511

OVERBOARD RECOVERY DEVICE AND RESCUE IDENTIFYING SIGNAL

Robert M. Davidson, Jr., 58 S. Gate La., Southport, Conn. 06490

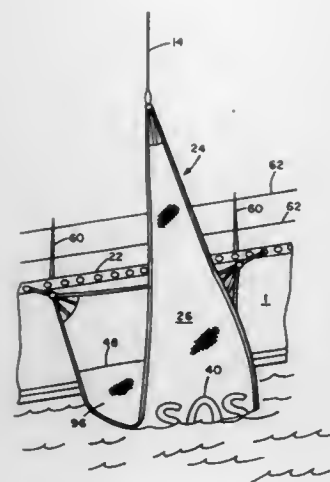
Filed Aug. 12, 1996, Ser. No. 695,884

Int. Cl.⁶ B63C 9/00

U.S. Cl. 441—80

12 Claims

1. A man overboard rescue device comprising:
a sheet-like lifting harness having an effective shape as defined by a top, a first foot and a second foot;
each of said first foot and said second foot including means for securing each foot to a stationary part of a vessel, and said top of said lifting harness including means for connecting the lifting harness to a halyard for moving the lifting harness top relative to said first foot and said second foot;
said lifting harness in an area associated with the top thereof being formed at least in part from a mesh-like material which



is capable of passing substantially freely through water, and wherein said lifting harness is formed from a two-piece construction with a first section associated with the top thereof and a second section associated with said first foot and said second foot, with the first section including said mesh-like water permeable material and said second section being formed from a generally water impermeable material.

5,779,512 FLOTATION DEVICE

Roger J. Rupert, 26 W. Second St., Fulton, N.Y. 13069

Filed Jan. 30, 1997, Ser. No. 790,797

Int. Cl.⁶ B63C 9/08

U.S. Cl. 441—123

8 Claims

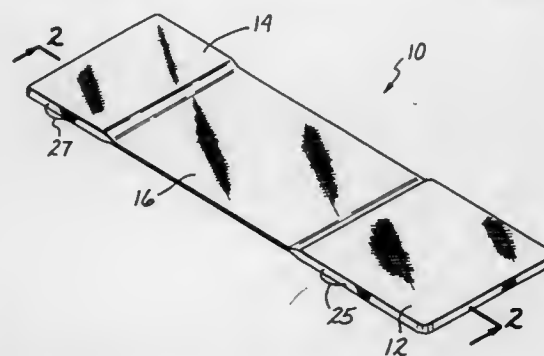


1. A flotation device comprising:
 - a buoyant outer tube having a first overall diameter and a first cross sectional diameter, a top edge and an opposing bottom edge; and
 - an inflatable buoyant inner tube having a second overall diameter smaller than said first overall diameter and a second cross sectional diameter smaller than said first cross sectional diameter, said inner tube tangentially and concentrically joined to said outer tube, said inner and outer tubes defining an open interior for receiving a user.

5,779,513
FLOTATION APPARATUS
Judith Ann Burton, and Mary Bowes McKenzie, both of 20806 Juniper, Yorba Linda, Calif. 92686
Continuation of Ser. No. 153,224, Nov. 15, 1993, abandoned.
This application Nov. 18, 1994, Ser. No. 341,837
Int. Cl.⁶ B63C 9/08

U.S. Cl. 441—129

14 Claims

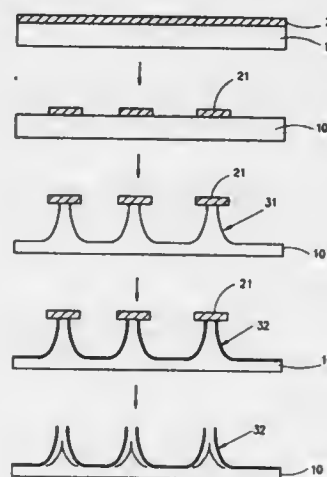


2. A flotation apparatus, comprising:
 - a first float section sized and adapted to underlie the head and shoulders of a user;
 - a second float section sized and adapted to underlie a femoral portion of the legs of the user and being shorter than the first float section; and
 - a connecting section formed of a flexible material and being less buoyant than the first and second float sections, said connecting section extending between and joining said first and second float sections, said connecting section being longer than either of said float sections, said connecting section being sized and adapted to extend from a mid back region of the user to a femoral region of the user and to terminate at such femoral region, and the flotation apparatus terminating at a distal end of the second float section.

5,779,514
TECHNIQUE TO FABRICATE CHIMNEY-SHAPED
EMITTERS FOR FIELD-EMISSION DEVICES
Huang-Chung Cheng, Hsin-Chu, and Chih-Chong Wang, Chang Hua, both of Taiwan, assignors to National Science Council, Taipei, Taiwan
Filed Feb. 13, 1996, Ser. No. 601,153
Int. Cl.⁶ H01J 9/02

U.S. Cl. 445—24

12 Claims



1. A method for making chimney-shaped metal field emission elements which comprises:
 - (a) growing a layer of silicon dioxide on a silicon substrate;

- (b) forming a silicon dioxide mask using photolithographic etching on the silicon substrate;
- (c) forming a narrow neck silicon cone by means of isotropic or anisotropic wet or dry etching, the silicon dioxide mask on said cone remaining connected to said cone;
- (d) sputtering a low work-function material on said unmasked areas by isotropic physical vapor deposition;
- (e) etching the silicon dioxide with a solution which is able to etch silicon dioxide and silicon to form the chimney-shaped field emission element forming a diode.

wherein the linkage means is further devised so that, on activation of the motor (66), at least one other of the sockets (26) rotates through reciprocal movement.

5,779,516
CUSTOMIZED SHEET MATERIAL FIGURE WITH
PORTRAIT-STYLE FACIAL LIKENESS
Elizabeth Troxler Thorne, Raleigh, N.C., assignor to Portrait Pals, Inc., Raleigh, N.C.
Continuation of Ser. No. 245,653, May 18, 1994, abandoned.
This application Oct. 2, 1995, Ser. No. 538,078
Int. Cl.⁶ A63H 3/08

U.S. Cl. 446—98

19 Claims



1. A method of producing a customized doll formed from a sheet material and having the facial likeness of a person recognizable to a child playing with the doll, said method comprising the steps of:
 - providing a painted portrait bearing the facial likeness of a person, said portrait being of a size at least sufficient to substantially cover a 4 inch by 5 inch sheet;
 - providing a sheet material bearing the likeness of a body portion;
 - replicating said portrait on a sheet material in a reduced size to form a head portion of a size that is proportionate in scale to said body portion; and
 - combining said head portion and said body portion to form a customized doll having the facial likeness of said person and being between 6 and 12 inches in height.

5,779,517 CONSTRUCTION KIT

David John Clarke, 30 Kingsbrook Rd., Bedford MK42 0BH, England

Filed Jan. 23, 1997, Ser. No. 788,712

Claims priority, application United Kingdom, Jan. 26, 1996, 9601573

Int. Cl.⁶ A63H 33/08; 33/06

U.S. Cl. 446—108

8 Claims

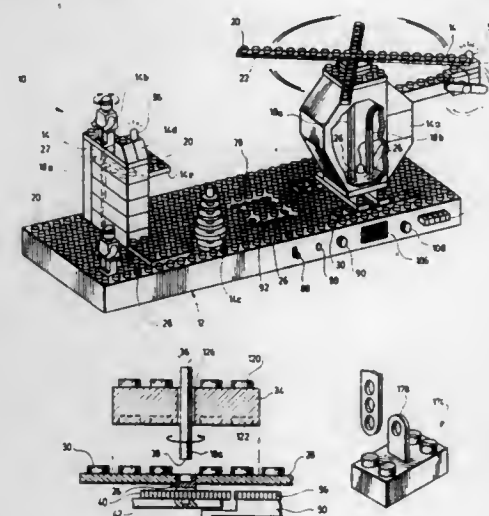
1. A construction kit for a toy or model building, said construction kit comprising:

a base panel having a top surface, a front edge, a rear edge, opposite side edges each extending from said front edge to said rear edge, and a frame extending around said edges of said base panel and having a top face which is raised relative to said top surface of said base panel, and an inner edge adjoining said top surface of said base panel, said top face of

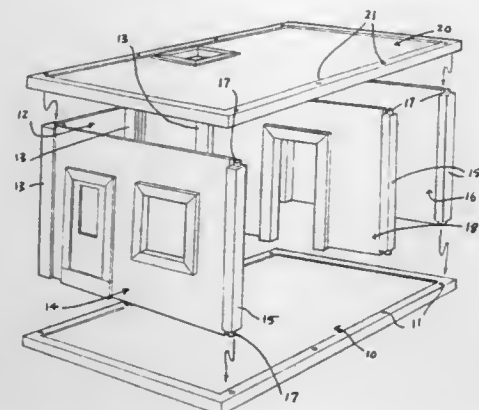
5,779,515
CONSTRUCTION TOY SUPPORT BASE
Henry Hung Lai Chung, Downsview, Canada, assignor to Ritvik Holdings, Inc., Quebec, Canada
Continuation of Ser. No. 494,029, Jun. 26, 1995, abandoned.
This application Sep. 23, 1996, Ser. No. 717,913
Int. Cl.⁶ A63H 33/08

U.S. Cl. 446—90

22 Claims



1. A construction toy (10) comprising:
 - a plurality of releasably connectable toy modules (14);
 - drive shafts (18a, 18b) for actuating at least one of the toy modules into movement, said drive shafts including a first end portion (38) having a substantially polygonal cross-sectional shape, and a second end portion (36) for engaging at least one of the toy modules (14), and
 - a supporting base (12) for supporting the toy modules thereon, said base (12) including an upper mounting surface (28) including coupling means (30) to releasably couple a plurality of said modules (14) to said base, wherein the base (12) also includes:
 - a plurality of openings (32) formed through the upper mounting surface (28) and each sized to permit insertion therein of the first end portion (38) of one of said drive shafts (18a, 18b);
 - a plurality of rotatable sockets (26), each of said sockets (26) being axially aligned with a corresponding one of said openings and having a size and shape complementary to those of the first end portions of the drive shaft to permit their insertion, and
 - drive means (40, 50, 66) for activating the sockets (26) in rotational movement whereby the rotation of said sockets activates any of said drive shafts (18a, 18b) inserted therein into rotational movement to rotate said toy modules engaged by said second end portion, said drive means including a motor (66), and linkage means (40, 50) for mechanically coupling said motor to said sockets (26), wherein said motor (66) and linkage (40, 50) means are housed within the supporting base (12) as a unitary unit and at least one of the sockets (26) rotates through 360° movement and



the frame being formed with a plurality of holes adjacent said front edge of said base panel;
a rear wall having a bottom edge dimensioned and arranged for resting on said top surface of said base panel with said rear wall abutting said inner edge of said frame adjacent said rear edge of said base panel between said side edges, said rear wall having opposite side edges and being formed with grooves adjacent said opposite side edges; and,
two side walls having respective bottom edges dimensioned and arranged for resting on said top surface of said base panel and with respective said side walls abutting said inner edge of said frame adjacent said opposite side edges of said base panel, each said side wall having a rear edge dimensioned and arranged for engagement in a respective said groove of said rear wall, a front edge, and a stud projecting from said bottom edge of said side wall dimensioned and arranged for engagement in a hole of said plurality of holes in said top face of said frame.

5,779,518

SUPERFINISHING METHOD AND APPARATUS

H. Guenter Schmitz, Wermelskirchen, Germany, assignor to Nagel Maschinen-und Werkzeugfabrik GmbH, Nuertingen, Germany

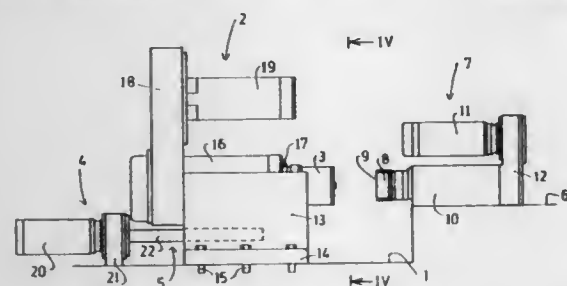
Filed Mar. 15, 1996, Ser. No. 616,710

Claims priority, application Germany, Mar. 17, 1995, 195 09 764.5

Int. Cl.⁶ B24C 1/00

U.S. Cl. 451—28

10 Claims



1. Apparatus for the superfinishing of workpieces having a work mount in which can be fixed a workpiece to be worked, the work mount having a frame fixable to a machine bed and with respect to which is displaceably guided an infeedable casing containing a work support;

a tool mount, in which can be fixed a superfinishing tool which is mounted in non-displaceable manner in an action direction of the tool;

a drive for the tool; and,

an infeed device, which is so constructed that the infeed device can move the workpiece towards the tool in an infeed movement until the workpiece is at least in contact with said tool and has a drive.

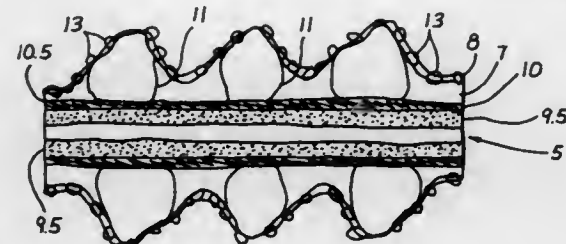
5,779,519
SCENTED FINGERNAIL FILES AND BUFFERS
G. Brian Oliver, Newport Coast, Calif., assignor to SunFiles, LLC, Del Mar, Calif.

Filed Nov. 18, 1996, Ser. No. 746,796

Int. Cl.⁶ B24B 7/19

U.S. Cl. 451—28

20 Claims



1. A scented fingernail file and buffer for contacting and filing a target surface, the scented fingernail file and buffer comprising:
a base structure;
a substrate layer disposed on the base structure;
an abrasive material disposed within the substrate layer, the abrasive material comprising emery, silicon carbide, aluminum oxide, diamond and/or quartz, or other abrasive grains; and
fragrance-filled capsules disposed within the substrate layer, each of the fragrance-filled capsules having properties for being ruptured by the target surface, when the scented fingernail file and buffer is frictionally placed into contact with the target surface.

5,779,520

METHOD AND APPARATUS OF POLISHING WAFER

Hideaki Hayakawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

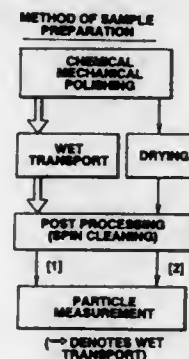
Continuation of Ser. No. 701,561, Aug. 22, 1996, abandoned, which is a continuation of Ser. No. 337,482, Nov. 8, 1994, abandoned. This application Jul. 22, 1997, Ser. No. 898,386

Claims priority, application Japan, Nov. 9, 1993, 5-279384

Int. Cl.⁶ B24B 13/02

U.S. Cl. 451—41

8 Claims



1. A method for polishing and post-processing a substrate comprising the steps of:
chemically and mechanically polishing the substrate at a chemical mechanical polishing process station;
transporting the substrate from the chemical mechanical process station to a first post-processing apparatus station under a wet atmosphere;
post-processing the polished substrate at the first post-processing apparatus station by physically scrubbing the substrate, transporting the substrate from the first post-processing apparatus station to a second post-processing apparatus station under a wet atmosphere;

post-processing the polished substrate at the second post-processing station by spin-cleaning the substrate in a chemical solution;
wherein the substrate is maintained in a wet state since directly after polishing until the end of second post-processing of the substrate and,
wherein an inner atmosphere of the chemical mechanical polishing process station is at a lower pressure than inner atmospheres of the first and second post-processing apparatus stations.

5,779,521

METHOD AND APPARATUS FOR CHEMICAL/MECHANICAL POLISHING

Masakazu Muroyama, Kanagawa, and Masayoshi Sasaki, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

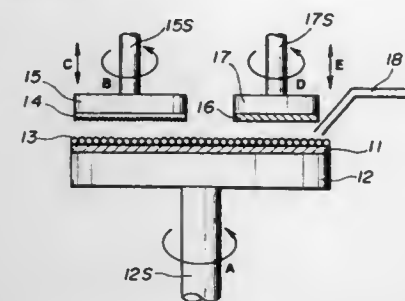
Filed Feb. 27, 1996, Ser. No. 607,558

Claims priority, application Japan, Mar. 3, 1995, 7-044065

Int. Cl.⁶ B24B 1/00

U.S. Cl. 451—56

6 Claims



1. A polishing method for polishing a substrate by bringing a surface of said substrate to be polished into rotating contact with a polishing cloth extended taut on a rotary table as a polishing agent is supplied to said polishing cloth, comprising:

rotating the rotary table;

rotating the substrate;

rotating a first grinding head carrying first abrasive particles on a surface thereof;

carrying out said polishing under a first condition in which the surface roughness of said polishing cloth is maintained at a constant larger value by simultaneously engaging the first abrasive particles disposed on the rotating first grinding head with the polishing cloth disposed on the rotating rotary table and grinding the polishing cloth with the first abrasive particles under predetermined thrusting pressure and rotational velocity of the first grinding head;

subsequently carrying out the remaining portion of the polishing in continuation to said polishing under said first condition under a second condition in which the surface roughness is maintained at a smaller constant value by varying the thrusting pressure and rotational velocity of the first grinding head.

5,779,522

DIRECTIONAL SPRAY PAD SCRUBBER

Michael A. Walker, and Karl M. Robinson, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

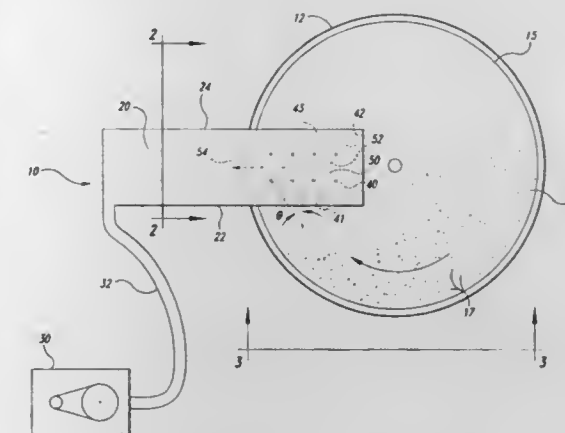
Continuation of Ser. No. 574,678, Dec. 19, 1995, Pat. No. 5,616,069. This application Mar. 26, 1997, Ser. No. 824,664

Int. Cl.⁶ B24B 53/00

U.S. Cl. 451—56

32 Claims

1. A chemical-mechanical planarization apparatus, comprising:
a platen;
a polishing pad positioned on the platen, the polishing pad having a planarizing surface;



a wafer carrier positioned over the polishing pad, wherein at least one of the wafer carrier and the platen is moveable with respect to the other to impart relative motion therebetween and planarize a wafer; and

a pad scrubber located proximate to the planarizing surface of the polishing pad, the pad scrubber having a fluid manifold, a first nozzle attached to the manifold for directing a first fluid stream generally outwardly toward a peripheral edge of the polishing pad, and a second nozzle attached to the manifold and canted for directing a second fluid stream outwardly toward the peripheral edge of the polishing pad and toward the first fluid stream.

5,779,523

APPARATUS FOR AND METHOD FOR ACCELERATING FLUIDIZED PARTICULATE MATTER

Terry Bernard Mesher, Victoria, Canada, assignor to Job Industries, Ltd., Vancouver, Canada

PCT No. PCT/CA95/00115, § 371 Date Aug. 29, 1996, § 102(e)

Date Aug. 29, 1996, PCT Pub. No. WO95/23673, PCT Pub. Date Sep. 8, 1995

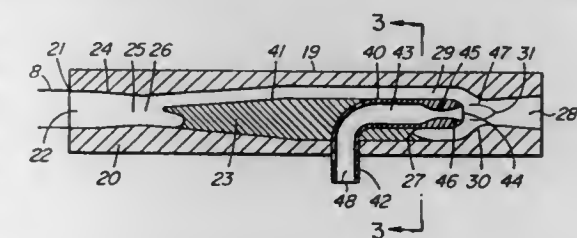
Continuation-in-part of Ser. No. 203,584, Mar. 1, 1994, abandoned. This PCT application Feb. 28, 1994, Ser. No. 696,848

The portion of the term of this patent subsequent to Apr. 14, 2015, has been disclaimed.

Int. Cl.⁶ B24C 5/04

U.S. Cl. 451—93

19 Claims



1. A fluid jet accelerator/pressurizer apparatus for accelerating and pressurizing a fluidized stream of particulate matter, comprising:

a nozzle housing defining a main conduit;

said main conduit forming a passage for the flow of the fluidized stream through said nozzle housing;

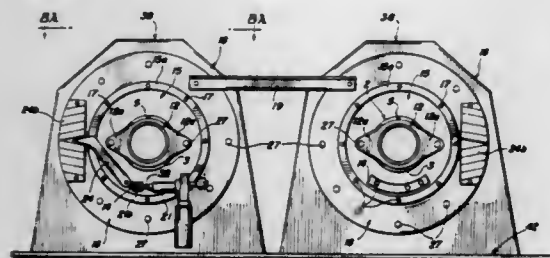
said main conduit having a constriction formed by a convergent-divergent region of said main conduit for effecting acceleration of the fluidized stream;

an inner blast nozzle provided in said main conduit upstream of and directed in a downstream direction towards said constriction; and

a means for discharging a blast medium from said inner blast nozzle at a speed sufficient to form within the fluidized stream

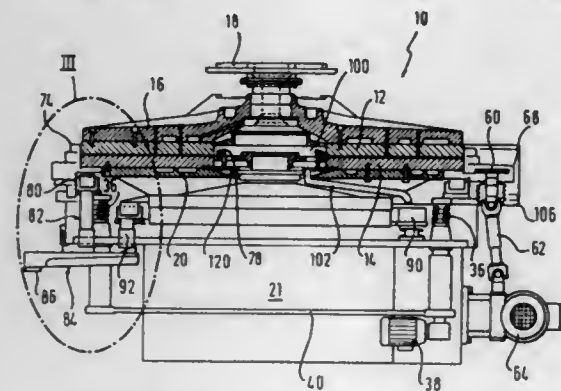
a flow front which is impenetrable by the fluidized stream and which co-operates with said constriction to accelerate the fluidized stream.

5,779,524
ADJUSTABLE CAGE ASSEMBLY FOR MOBILE SURFACE ABRADING APPARATUS
Jon M. Swain, 3145 Holloway Rd., Ruston, La. 71270
Filed Oct. 21, 1996, Ser. No. 734,539
Int. Cl.⁶ B24C 7/00
U.S. Cl. 541—102



1. An adjustable cage assembly for varying the contact area of abrasive discharged on a surface to be treated by a rotating wheel mounted in the wheel housing of a mobile surface abrading apparatus, said adjustable cage assembly comprising a cage plate adjustable mounted on the wheel housing; a cage fixedly secured to said cage plate, said cage extending axially into said wheel; a cage window provided in said cage; a remotely-operated actuator mounted on the wheel housing, said actuator connected to said cage plate for selectively adjusting said cage with respect to said wheel; an impeller extending into said cage and mounted on said wheel for rotation with said wheel; and at least one impeller slot provided in said impeller for sequentially rotatably aligning with said cage window responsive to rotation of said impeller inside said cage, whereby the abrasive is discharged through said at least one impeller slot and said cage window onto the wheel and the abrasive strikes selected locations on the surface, responsive to operation of said actuator.

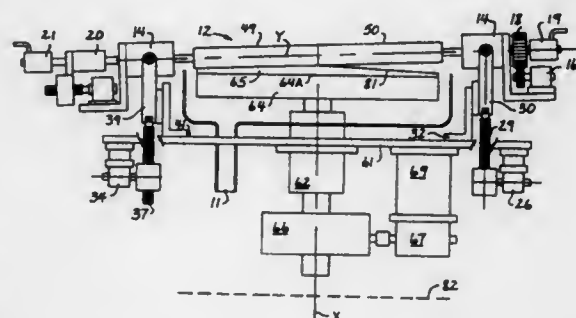
5,779,525
POLISHING MACHINE
Hans-Peter Boller, Fockbek, Germany, assignor to Peter Wolters Werkzeugmaschinen GmbH, Rendsburg, Germany
Filed Dec. 10, 1996, Ser. No. 763,198
Claims priority, application Germany, Dec. 15, 1995, 195 47 085.0
Int. Cl.⁶ B24B 49/00
U.S. Cl. 451—262



1. A polishing machine comprising a frame, an upper and a lower working wheel each having working surfaces opposing each other, said working wheels leaving an inner and an outer circum-

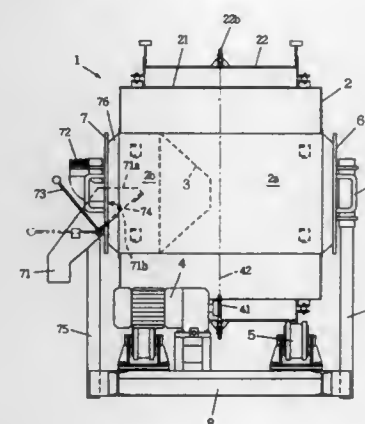
ference, at least one of said working wheels being rotatably supported by said frame and driven by driving means, with a plurality of runner wheels being located between said working surfaces of said upper and said lower working wheel, said runner wheels having apertures for the accommodation of work pieces and a toothing at the circumference thereof, an outer and an inner circular row of equally spaced pins said outer row of pins being located around said outer circumference of said working wheels and said inner row of pins being located inside of said inner circumference of said working wheels, said pins being retained by a respective pin ring, said toothing of said runner wheels engaging said outer and said inner row of pins for the forward and rotating movement of said runner wheels if at least one of said row of pins is rotated, second driving means to rotate at least one row of pins, a source of the supply of working and/or rinsing fluid between said working surfaces, interception means on the outer and inner side of said working wheels, with the outer of said interception means being formed by a first ring attached to and encircling said outer pin ring, whereas said inner interception means is formed by a second ring which is located radially inwardly of said inner row of pins, passages being formed between said outer pin ring and the circumference of said lower working wheel, and said inner ring and the inner circumference of said lower working wheel, respectively, and being adapted to pass said working or rinsing fluid deflected by said rings downwardly into annular collection channels which are located between said lower working wheel, and a gate adapted to selectively connect said channels to a recycling tank or another discharge, respectively.

5,779,526
PAD CONDITIONER
Gerald L. Gill, 1812 Peaceful Mesa, Prescott, Ariz. 85301
Filed Feb. 27, 1996, Ser. No. 622,265
Int. Cl.⁶ B24B 53/00
U.S. Cl. 451—324



1. In combination with a polishing pad apparatus including a table having an upper surface, polishing pad means mounted on said upper surface of said table, said polishing pad means having an upper polishing surface, frame means to rotatably support said table in a selected orientation with respect to said frame means to rotate about a rotational axis substantially normal to said upper surface of said table, and means for rotating said table about said axis, the improvement comprising conditioning means to cut said pad means, said conditioning means comprising (a) an elongate tool for cutting said upper polishing surface, said tool having a longitudinal axis and first and second ends; and, (b) mounting means for attaching said tool to said frame means such that the elevation of at least one end of said tool can be adjusted to cant said longitudinal axis and said tool with respect to said rotational axis at a plurality of angles other than ninety degrees to cut said upper polishing surface.

5,779,527
STONE BEVELLING MACHINE
Tooru Maebashi, Fukuchiyama, Japan, assignor to Maebashi Industries Co., Ltd., Kyoto, Japan
PCT No. PCT/JP95/00551, § 371 Date Sep. 30, 1996, § 102(e) Date Sep. 30, 1996, PCT Pub. No. WO95/26863, PCT Pub. Date Oct. 12, 1995
PCT Filed Mar. 22, 1996, Ser. No. 718,432
Claims priority, application Japan, Apr. 1, 1994, 6/005116 U; Jul. 22, 1994, 6/192009
Int. Cl.⁶ B24B 31/00; 31/02
U.S. Cl. 451—328

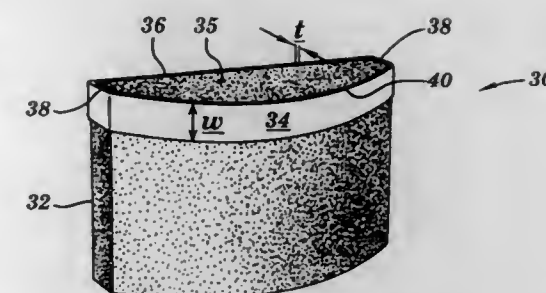


1. A machine for beveling stone comprising a cylinder rotatable about an axis and having an interior space, a charge port at one axial end and a discharge port at an opposite axial end; drive means for rotating said cylinder; a partition located between said ports and dividing the interior space of the cylinder into a charge port side zone that communicates with said charge port and a discharge port side zone that communicates with said discharge port; a size-regulator gate in said partition that selectively allows stones of a specified size or smaller to pass through the partition from the charge port side zone to the discharge port side zone; and a plurality of feeder vanes fixed to at least an inner wall surface of the cylinder in the charge port side zone that protrude inwardly toward the axis of the cylinder for feeding stones in the charge port side zone of the cylinder from the charge port toward said partition; wherein said partition has a convex surface facing the charge port side zone and has a plurality of scratch vanes extending in a radial pattern and protruding therefrom toward the charge port for returning larger stones received at the partition back to the feeder vanes.

5,779,528
ELASTOMERIC MOUNT FOR GRINDING WHEEL, AND GRINDER

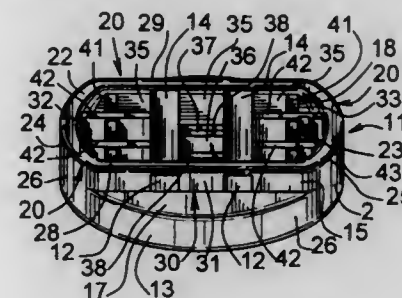
John J. Tartaglione, Hopkinton, Mass., assignor to Norton Company, Worcester, Mass.
Filed Jul. 12, 1996, Ser. No. 678,865
Int. Cl.⁶ B23P 11/02; B24B 23/02
U.S. Cl. 451—358

1. A rotary surface grinder comprising a chuck, a segmented grinding wheel and a mount adapted to secure a segment of the segmented grinding wheel in the chuck, the mount comprising: an elastomeric band having a predetermined original circumference and being elastically deformable over a predetermined range of circumferences from said predetermined original circumference to a fully tensioned circumference; the elastomeric band being deformable around a circumference of the segment to engage the circumference of the segment,



wherein the elastomeric band is engageable by a clamp to secure the segment to the chuck.

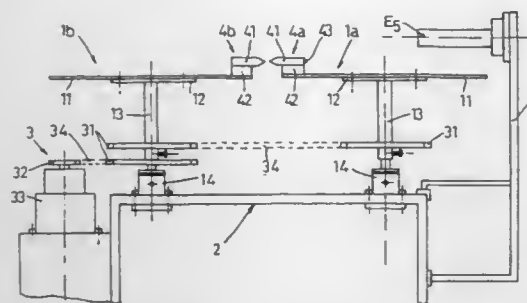
5,779,529
THERMOPLASTIC OPTICAL LAP WITH REINFORCED WEBBING
Jerry L. Bizer, Louisville, Ky., assignor to Bizer Industries, Clarksville, Ind.
Filed Nov. 25, 1996, Ser. No. 753,417
Int. Cl.⁶ B24B 5/16
U.S. Cl. 451—550



1. An optical lap of unitary construction comprising a thermoplastic polymer resin of uniform density, porosity, and texture throughout formed having a solid main body with a generally domed-shaped upper head portion of substantially monolithic form providing an upper curved surface and a lower flat surface having an attachment means defining an integral base portion extending downward opposite the lower flat surface offset from said main body, said integral base portion, comprising: webbing having a continuous peripheral rail extending therearound; said continuous peripheral rail including a pair of parallel side rails connecting a pair of opposing curved end rails; and at least one reinforcement member comprising harder material than said dome body and said integral base, said at least one reinforcement member being integrally formed and embedded within said webbing, said at least one reinforcement member being positioned normal to and inbetween said pair of parallel side rails.

5,779,530
MACHINE FOR INDUSTRIALLY CLEANING CEPHALOPODS AND SIMILAR MOLLUSKS
Inaki Agote, Guipuzcoa, Spain, assignor to Elixu, S.L., Spain
Filed Mar. 3, 1997, Ser. No. 810,299
Int. Cl.⁶ A22C 29/04
U.S. Cl. 452—12

1. A machine for industrially cleaning cephalopods and similar mollusks comprised of: a pair of working platforms, each of the working platforms being positioned on one same working plane and equipped with means for synchronized shifting between the two thereof;



- b) a plurality of loaders, each of said loaders being positioned opposite one another in pairs during the synchronized, cyclic shifting of said working platforms, each loader further being capable of holding one cephalopod for cleaning;
- c) means for turning the cephalopod inside out and simultaneously turning it right side out while it is being transferred from a loader on the first working platform to a loader on the second working platform;
- d) means in connection with the first and second working platforms for cleaning the pertinent tubular mantle and internal organs of the cephalopod whilst they are positioned outside thereof.

5,779,531

MACHINE FOR REMOVING A SURFACE LAYER FROM FISH FILLETS

Horst Braeger, Lübeck, and Michael Jürs, Stockelsdorf, both of Germany, assignors to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG, Lubeck, Germany

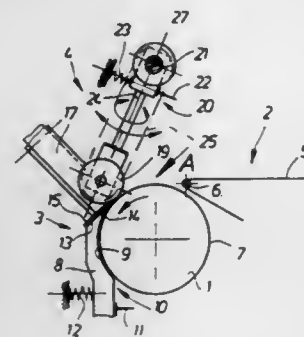
Filed Mar. 3, 1997, Ser. No. 813,952

Claims priority, application European Pat. Off., Mar. 4, 1996, 96103327

Int. Cl.⁶ A22C 5/16

U.S. Cl. 452—127

10 Claims



1. An apparatus for removing a surface layer from fish fillets comprising a conveying surface for advancing the fillets, driven knife means having a cutting edge guided spaced from said conveying surface and pressing means acting in the area of said cutting edge to press the fillets against said conveying surface, wherein

said conveying surface is at least partially formed by a part of the outer surface of an entrainer roller and defines a point of transfer at which the fillets are first engaged by said surface, said knife means comprises an endless knife, guided in a knife guide which is disposed in a pressing element having a pressing surface directed towards, and spaced by a gap from, said surface of said entrainer roller, and

said pressing means comprise a plurality of rotating pressing rollers, which are at least in part driven to rotate and which are adapted to be displaceable with at least two degrees of freedom with respect to said entrainer roller surface.

METHOD OF MAKING CHICKEN RIBS PRODUCT FROM WHOLE CHICKEN

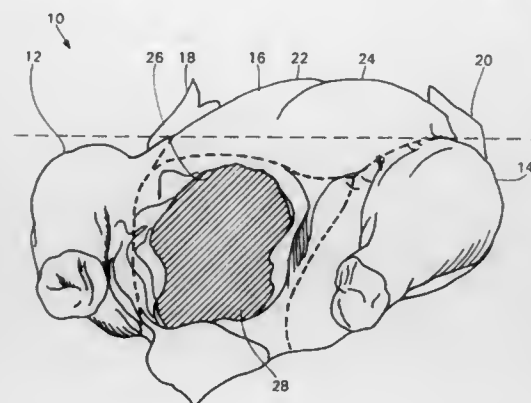
Eugene D. Gagliardi, Jr., Atglen, Pa., assignor to Visionary Design, Inc., Atglen, Pa.

Filed Aug. 4, 1997, Ser. No. 905,418

Int. Cl.⁶ A22C 21/00

U.S. Cl. 452—149

16 Claims



1. A method of cutting a whole chicken carcass into a chicken tender and ribs product, the method comprising the steps of:

- (a) removing the wings and hind quarters from the whole chicken carcass, thereby forming a wingless breast half of the chicken carcass;
- (b) removing left and right breast lobes from the rib cage of the breast half;
- (c) cutting along left and right outer wall surfaces of the keel bone to release the tenders from the keel bone;
- (d) removing the backbone;
- (e) releasing a front end of the keel bone from the surrounding cartilage;
- (f) separating left and right sides of the rib cage from each other to which it is attached, the keel bone remaining attached to either the left or right side during the separation; and
- (g) separating the keel bone from either the left or right side of the rib cage, thereby creating two chicken ribs products, each having ribs, rib meat and a tender thereon.

5,779,533

DEVICE FOR PROCESSING A SLAUGHTERED ANIMAL OR A PART THEREOF

Thomas Gerardus Maria Jacobs, Doetinchem; Sander Antonie Van Ochten, Lichtenvoorde, and Leonardus Jozephus Antonius Tiggeleoven, Groenlo, all of Netherlands, assignors to Stork R.M.S. B.V., Lichtenvoorde, Netherlands

Filed May 15, 1996, Ser. No. 648,211

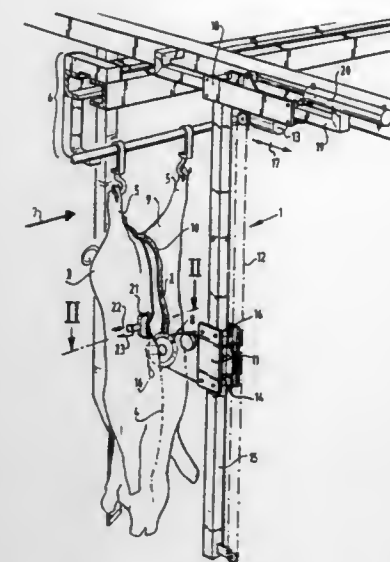
Int. Cl.⁶ A22B 5/20

U.S. Cl. 452—160

12 Claims

1. A device for subjecting a slaughtered animal to a process such that said process takes place in a zone where an organ is situated in the tissue, for example the fatty tissue of a wall of the animal, which device comprises:

processing means for performing said process; and



- displacing means for displacing the organ out of an active zone of the processing means at least during performing of the process at the position of the organ.

5,779,534

MULTIPLE STAGE AIRFLOW DIFFUSER APPARATUS FOR PAINT BOOTH

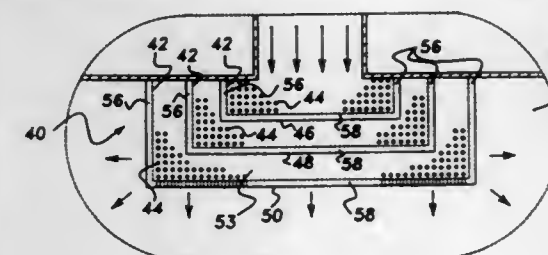
Richard J. Kunec, Canton, Mich., assignor to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Jan. 21, 1997, Ser. No. 792,914

Int. Cl.⁶ B05B 15/12

U.S. Cl. 454—52

11 Claims



1. An airflow diffuser apparatus comprising:
a plenum having an air inlet;
an air supply connected to said plenum and supplying air to said plenum through said air inlet in said plenum; and
a diffuser receiving air from said air supply through said air inlet, said diffuser including a plurality of diffuser stages arranged in a spaced, nested relationship.

5,779,535

HEATING AND/OR AIR-CONDITIONING SYSTEM FOR A MOTOR VEHICLE

Ian Bendell, Mönsheim, and Stefan Winkelmann, Bietigheim-Bissingen, both of Germany, assignors to Behr GmbH & Co., Stuttgart, Germany

Filed Feb. 9, 1996, Ser. No. 598,989

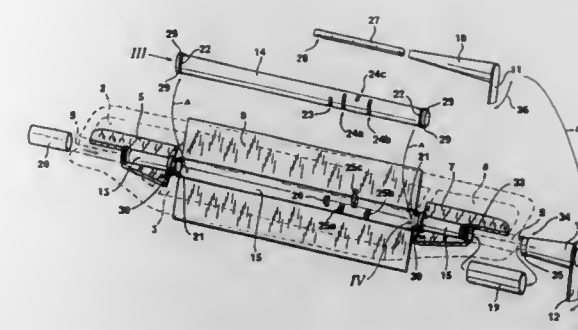
Claims priority, application Germany, Feb. 17, 1995, 195 05 336.2

Int. Cl.⁶ B60H 1/26

U.S. Cl. 454—121

9 Claims

6. An air flow control system for an air-conditioning system of a passenger motor vehicle, comprising:
a housing defining at least two air ducts,



- an air flap disposed in each of said air ducts, said air flaps being pivotable about a common axis between respective open and closed positions, and independently operable flap adjusting devices operably connected to said air flaps, wherein said housing defines a central air duct and a pair of auxiliary air ducts disposed at respective opposite sides of the central air duct, wherein said air flaps include a central air flap in said central air duct and respective auxiliary air flaps in said auxiliary air ducts, and wherein said flap adjusting devices includes a first flap adjusting device operably connected to said central air flap and a second flap adjusting device operably connected to both of said auxiliary air flaps.

5,779,536

TRUCK CAB VENTILATION SYSTEM AND METHOD

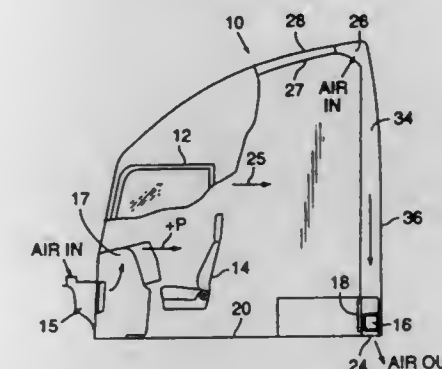
Joseph H. McCorkel, and Terry J. Urban, both of Vancouver, Wash., assignors to Freightliner Corporation, Portland, Oreg.

Filed Apr. 12, 1996, Ser. No. 631,171

Int. Cl.⁶ B60H 1/26

U.S. Cl. 454—137

11 Claims



1. A truck cab exhaust ventilation system, comprising:
an exhaust vent;
vent mounting means for mounting the exhaust vent within a truck cab for exhausting air from the interior to the exterior of the truck cab;
an air flow channel adapted to be connected to said vent at the outlet end of said channel; and
an elongated air collection inlet completely within the truck cab extending transversely of the truck cab including an upper portion of the channel adjacent the ceiling of said cab to remove stale air from the cab through said channel and said vent.

5,779,537
DEPOSIT CUPBOARD FOR SOLVENTS, COMBUSTIBLE LIQUIDS AND THE LIKE

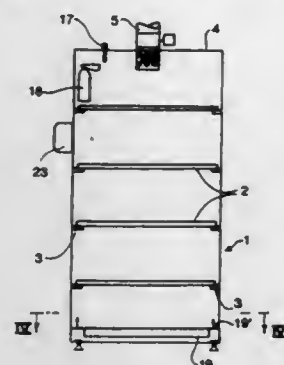
Jan Fritz Alden, Dusaviks, 147, N-4007 Stavanger, Norway
PCT No. PCT/NO94/00136, § 371 Date Jul. 5, 1996, § 102(e)
Date Jul. 5, 1996, PCT Pub. No. WO95/05763, PCT Pub.
Date Mar. 2, 1995

PCT Filed Aug. 24, 1994, Ser. No. 602,856

Claims priority, application Norway, Aug. 25, 1993, 933039
Int. Cl.⁶ B24F 11/00

U.S. Cl. 454—239

10 Claims



1. A storage apparatus for solvents and combustible materials comprising:

- a cabinet having an interior storage area accessible through a closable door;
- a fire extinguishing apparatus supported within an interior of said storage area, said fire extinguishing apparatus having an automatic activation means;
- a plurality of shelves carried within said cabinet interior, said shelves defining a plurality of perforations, each said shelf positioned at a distance from at least one of an adjacent interior side wall of said cabinet;
- a top plate of said cabinet having a hinged connection along a side of said top plate, said top plate adapted to opening upon the occurrence of a high pressure condition;
- a restraint in communication with said top plate and said cabinet, said restraint limiting a size of said top plate opening wherein when said top plate is held in a fixed open position by said restraint, said top plate provides a protective shield for personnel in proximity to said cabinet.

5,779,538
METHOD AND DEVICE FOR ADJUSTING THE VENTILATION OF PREMISES

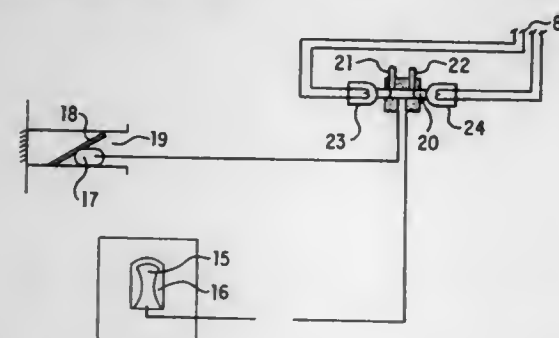
Pierre P. C. J. J. Jardinier, Gournay sur Marne, France,
assignor to Consells Etudes et Recherches en Gestion de l'Air, Bussy Saint Georges, France

Filed Dec. 8, 1995, Ser. No. 569,939

Claims priority, application France, Dec. 15, 1994, 94 15107
Int. Cl.⁶ F24F 11/04

U.S. Cl. 454—256

13 Claims



1. A method of adjusting ventilation of premises, comprising counting a number of movements of occupants of the premises for

a given time, deducing from the number of movements a datum related to activity of the occupants and to a number of the occupants, and based upon the datum, directly varying an air flow cross section and consequently a flow rate of a ventilation device of the premises, in a same direction as the activity.

5,779,539
STATIC VENTING SYSTEM

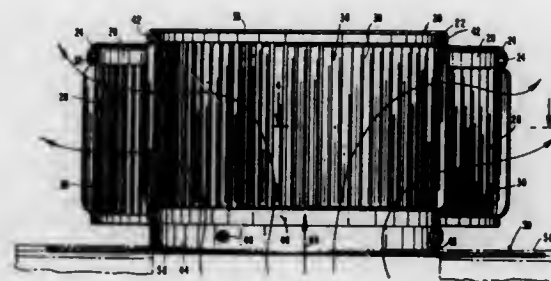
Stanley Kolt, 4 Country Rd., Mamaroneck, N.Y. 10543

Filed Nov. 22, 1996, Ser. No. 755,409

Int. Cl.⁶ F24F 7/00

U.S. Cl. 454—368

15 Claims



1. A static venting system comprising:

- A. a first larger geometrically-shaped member having,
 - a) a plurality of outwardly extending vertical louvers, and
 - b) a top margin and a bottom margin;
- B. a second smaller geometrically-shaped member disposed within said larger member having,
 - a) a plurality of outwardly extending vertical louvers, and
 - b) a top margin and a bottom margin;
- C. a cap member provided with,
 - a) a first portion for affixing said cap member to the top margin of said first geometrically-shaped member and a second portion for affixing said cap member to the top margin of said second geometrically-shaped member;
- D. a base member, said base member having,
 - a) a centrally disposed aperture,
 - b) a portion for affixing said bottom margin of one of said first or said second geometrically-shaped members thereto, and
 - c) means for affixing said base member over a vent aperture provided in an external surface; and
- E. means for connecting said base member to said cap member.

5,779,540
FLUID FLOW CONTROL DAMPER

Lance P. Nailor, The Woodlands, Tex., assignor to Nailor Industries of Texas, Inc., Houston, Tex.

Filed Feb. 7, 1997, Ser. No. 797,597

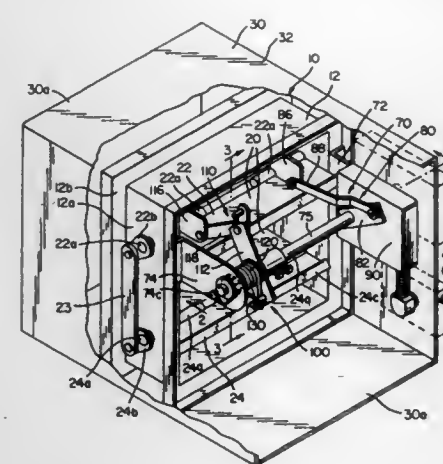
Int. Cl.⁶ A62C 2/12

U.S. Cl. 454—369

25 Claims

1. A damper adapted to be positioned in a building conduit to control the flow of fluid through the conduit, said damper comprising:

- a frame adapted to be positioned within the conduit;
- barrier structure coupled to said frame and movable between open and closed positions, said barrier structure permitting fluid to flow through the conduit when positioned in said open position and substantially blocking fluid flow through the conduit when positioned in said closed position;
- an actuator coupled to said barrier structure for effecting movement of said barrier structure; and
- a control circuit connected to said actuator for controlling operation of said actuator, said control circuit including a thermal responsive switch located outside of the conduit, said switch



preventing operation of said actuator when the temperature of fluid at a location outside of the conduit exceeds a first predetermined value.

5,779,541
COMBINE YIELD MONITOR

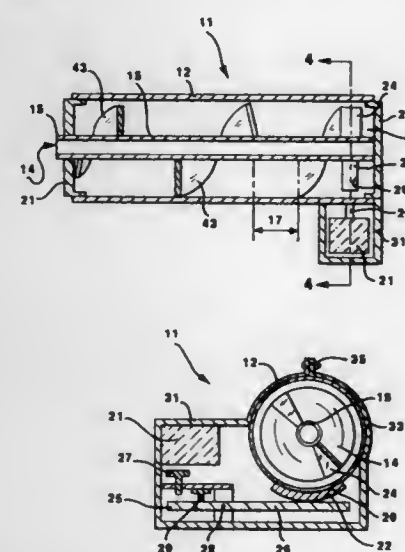
Jim C. Helfrich, 747 Millegan Rd., Great Falls, Mont. 59504

Filed Oct. 3, 1996, Ser. No. 720,880

Int. Cl.⁶ A01F 12/46; 12/50

U.S. Cl. 460—6

4 Claims



1. A combine yield monitor replacing a portion of a conventional cross-auger moving grain along a predetermined path within a cross-auger housing, the combine yield monitor comprising:

- a monitor housing having an input end and an output end and connected to the cross-auger housing and extending along the predetermined path;
- the monitor housing having an opening through a bottom wall of the monitor housing adjacent the output end;
- an auger having a screw blade and connected to the cross-auger to replace a portion of the cross-auger along the predetermined path and rotatably positioned within the monitor housing;
- the auger having a portion of the screw blade removed intermediate the ends to form an accumulation volume;
- the auger further having a portion of the screw blade positioned over the opening to move grain away from over the opening;
- a weight pad covering the opening;
- a load cell; and

an arm, resting upon a fulcrum, with one end of the arm resting against the weight pad, and the other end of the arm resting against the load cell to transfer a proportionate weight from the weight pad to the load cell.

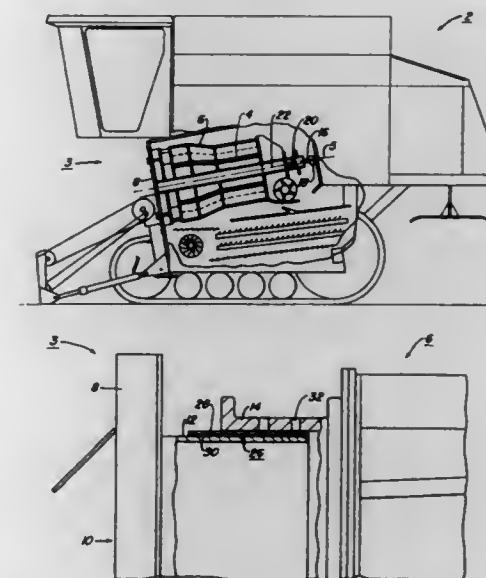
5,779,542
NYLATRON SUPPORT BEARING FOR CAGE
Mark Ray Underwood, Burr Oak, and Sushil V. Dwyer, Arkansas City, both of Kans., assignors to Deere & Company, Moline, Ill.

Filed Nov. 22, 1996, Ser. No. 753,294

Int. Cl.⁶ A01F 12/58

U.S. Cl. 460—69

11 Claims



8. In a grain combine having a threshing rotor which rotates within a rotor housing to thresh grain from crop, the rotor housing rotating relative to the threshing rotor, and a front plate having an opening for receiving crop into an annular space between the threshing rotor and the rotor housing, comprising in combination:

- a cylindrical stationary ring rigidly mounted to a rearward side of the front plate around the opening;
- a cylindrical bearing pad fixedly mounted to an outer surface of the stationary ring; and
- a rotating ring rigidly mounted to a front edge of the rotor housing, the rotating ring having an inner surface which slidably engages the bearing pad on the stationary ring to support the front end of the rotor housing.

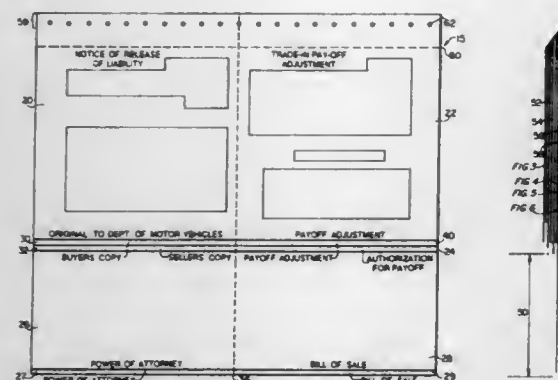
5,779,543
MULTI-LAYER BUSINESS FORM
Jeffrey M. Sisilli, North Hollywood, Calif., assignor to The Reynolds and Reynolds Company, Dayton, Ohio
Filed Sep. 29, 1995, Ser. No. 536,637
Int. Cl.⁶ B41L 1/20

U.S. Cl. 462—28

17 Claims

1. A multi-layer form comprising:

- a plurality of layered form blanks having upper and lower edges, said upper edges of said form blanks being substantially aligned, said plurality of form blanks including a top form blank and a plurality of subjacent forms blanks layered below said top form blank, with each successively lower subjacent form blank having length greater than said form blank immediately above it to define a lower portion extending below said lower edge of said form blank immediately above it, for the display of information;



a plurality of sheets of copy-producing medium interleaved with said plurality of form blanks, said sheets of copy-producing medium having upper and lower edges, said upper edges of said sheets of copy-producing medium being substantially aligned with said upper edges of said form blanks; said form blanks and said sheets of copy-producing medium being secured at said upper edges to form a unitary structure for entry of information to effect simultaneous completion of parts of said form blanks, said unitary structure having a top surface defined by one side of said top form blank, each of said form blanks being provided with a horizontal line of separation extending across the entire width thereof, all said horizontal lines of separation being in registration with each other, and each of said form blanks and said sheets of copy-producing medium being provided with a vertical line of separation perpendicular to said horizontal lines of separation, all of said vertical lines of separation being in registration with each other and extending along the entire lengths of said form blanks and said sheets of copy-producing medium including said upper edges of said form blanks and said sheets of copy-producing medium said vertical lines of separation permitting separation of said form blanks and said sheets of copy-producing medium into left and right sets of documents each having an upper edge, and in which all documents in a set are secured at said upper edge of said set, and said horizontal lines of separation permitting separation of said form blanks from each other.

5,779,544

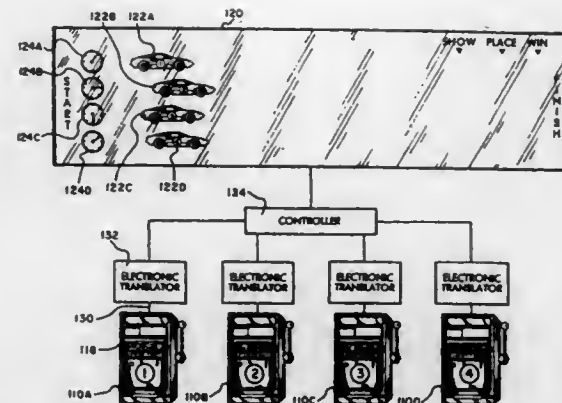
COMBINED SLOT MACHINE AND RACING GAME
Mac R. Seelig; Jerald Seelig, both of Absecon; Michael Hiltbrand, Pedricktown, and Douglas Cramer, Somers Point, all of N.J., assignors to Atlantic City Coin & Slot Service Company, Inc., Pleasantville, N.J.
Continuation-in-part of Ser. No. 488,270, Jun. 7, 1995, Pat. No. 5,664,998. This application Aug. 25, 1997, Ser. No. 875,980

Int. Cl.⁶ A63F 9/14; G07F 17/34

U.S. Cl. 463—6

10 Claims

1. A gaming system comprising:
a slot machine including means for accepting one or more coins to be bet in said machine, said machine including a plurality of rotating wheels with indicia thereon and at least one window for exhibiting the indicia on said wheels after they have stopped rotating;
said slot machine including means for making a monetary payment to a player when said means for exhibiting displays a predetermined combination of said indicia on said wheels;
a racing display including a movable racing element thereon and means for moving said racing element, the appearance of said racing element being similar in appearance to at least some of said indicia;
said slot machine further including a means for generating an output signal when said exhibiting means displays a second predetermined combination of indicia;



means connecting said output signal to said moving means whereby said output signal functions to move the racing element through a predetermined distance, and means for rewarding the player if the racing element reaches a predetermined position.

5,779,545

CENTRAL RANDOM NUMBER GENERATION FOR GAMING SYSTEM

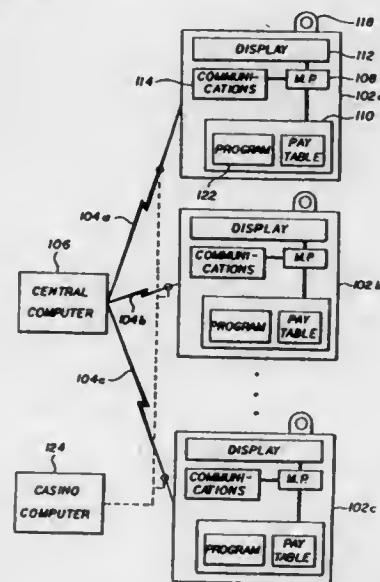
David A. Berg; Robert A. Luciano, Jr., and Ali Saffari, all of Reno, Nev., assignors to International Game Technology, Reno, Nev.

Filed Sep. 10, 1996, Ser. No. 711,847

Int. Cl.⁶ A63F 9/24

U.S. Cl. 463—22

21 Claims



1. A method for using a gaming system comprising:
providing a central computer;
coupling said central computer to at least one gaming terminal having a terminal processor configured for playing a game;
transmitting a series of game outcome seeds from said central computer substantially simultaneously to each gaming terminal;
initiating play at a first of said plurality of gaming terminals by calculating a first random number in a range selected for said game of said first gaming terminal, in response to a user action occurring at a first time, wherein said first random number is based on a game outcome seed received at said first gaming terminal from said central computer at said first time;
initiating play at a second of said plurality of gaming terminals by calculating a second random number in a range selected

for said game at said gaming terminal, in response to a user action occurring at a second time, wherein said second random number is based on a game outcome seed received at said second gaming terminal from said central computer at said second time; and

wherein said terminal processors are configured such that when said first and second terminals are configured for playing an identical game when play is initiated on both at predetermined times and when said first and second game outcome seeds are identical, said first and second random numbers calculated by the terminal processors of said first and second gaming terminals will be identical.

5,779,546

AUTOMATED GAMING SYSTEM AND METHOD OF AUTOMATED GAMING

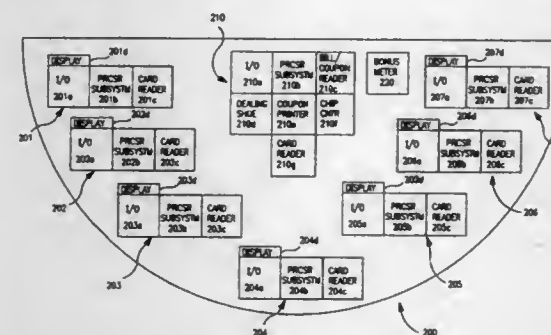
Garry D. Meissner, Egg Harbor Township, and Peter Fayter, Collingslakes, both of N.J., assignors to FM Gaming Electronics L.P., Egg Harbor Township, N.J.

Filed Jan. 27, 1997, Ser. No. 790,058

Int. Cl.⁶ A63F 1/18; A47B 25/00

U.S. Cl. 463—25

29 Claims



entity which moves in said predetermined area in response to a control signal entered by an operator while a game is in progress;
display data generating means for reading the absolute coordinates from said memory means in response to a replay request from the operator and processing said absolute coordinates into display data depending on processing information supplied from an input unit; and
display control means for replaying the moving entity on a display screen based on said display data.

5,779,549

DATABASE DRIVEN ONLINE DISTRIBUTED TOURNAMENT SYSTEM

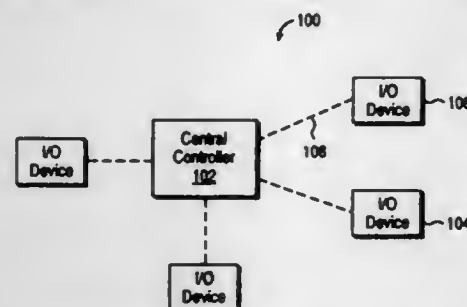
Jay S. Walker, Ridgefield, and James A. Jorasch, Stamford, both of Conn., assignors to Walker Asset Management Limited Partnership, Samford, Conn.

Filed Apr. 22, 1996, Ser. No. 635,576

Int. Cl.⁶ A63F 9/22

U.S. Cl. 463—42

12 Claims



1. A distributed electronic tournament system in which a plurality of remotely located players participate in a tournament through input/output devices connected to a central controller which manages the tournament, the system comprising:

- (a) means for uniquely identifying one of the players communicating with the central controller via one of the associated input/output devices;
- (b) means for allowing the player to participate in the tournament via the associated input/output device upon payment of an entry fee; and
- (c) means for storing in database player information that is generated as the player participates in a game of the tournament, such information being available for use in a subsequent tournament, which is administered by said controller wherein a pre-determined number of positions for players are reserved for a selected group of players until the tournament is a preset time away, at which time the reserved positions will be made available to all players.

5,779,550

TORSION DAMPING DEVICE, NOTABLY FOR MOTOR VEHICLES

Pascal Annic, Dinard; Michel Ginaldi, Paris, and Gustave Chasseguet, Taverny, all of France, assignors to Valeo, Paris Cedex, France

PCT No. PCT/FR95/00239, § 371 Date Jan. 22, 1996, § 102(e) Date Jan. 22, 1996, PCT Pub. No. WO95/23929, PCT Pub. Date Sep. 8, 1995

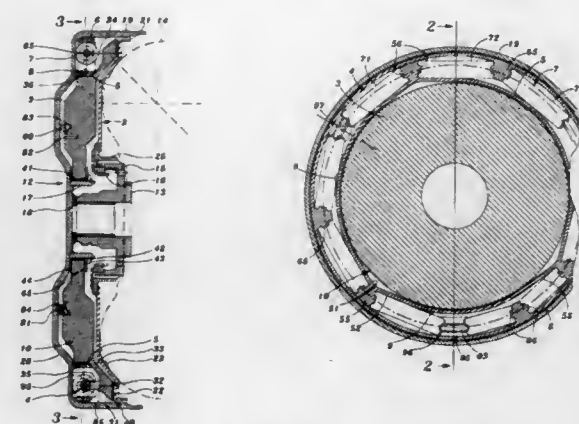
PCT Filed Mar. 1, 1995, Ser. No. 545,737

Claims priority, application France, Mar. 4, 1994, 94 02542 Int. Cl.⁶ F16D 3/66

U.S. Cl. 464—66

10 Claims

1. A torsion damping device comprising: a first and second coaxial part (12, 3) mounted so as to move angularly with respect to each other counter to elastic means (7) with circumferential action, said elastic means including elastic members (71, 72, 73)



acting between radial lugs (55, 65) which are offset circumferentially and belonging to two phasing washers (5, 6), said phasing washers being mounted so as to rotate with respect to the first and second coaxial parts (12, 3), wherein said two phasing washers (5, 6) are mounted in the same plane, in reverse orientations and concentrically, one of the washers (6), referred to as the outer washer, surrounding the other washer (5), referred to as the inner washer, in that the lugs (55) of the inner washer (5) are directed radially in a direction opposite to an axis of the first and second coaxial parts (12, 3), while the lugs (65) of the outer washer are directed radially towards the axis of the first and second coaxial parts (12, 3) and in that the inner washer (5) is rotatably mounted on said first coaxial part (3) of the torsion damping device, while the outer washer (6) is rotatably mounted with respect to one of said first and second coaxial parts (3, 12) of the torsion damping device.

5,779,551

ROTATIONAL FIXED CONNECTION

Eugen Stall, Neunkirchen; Winfried Busch, Köln, and Wolfgang Beigang, Ruppichteroth, all of Germany, assignors to GKN Automotive AG, Lohmar, Germany

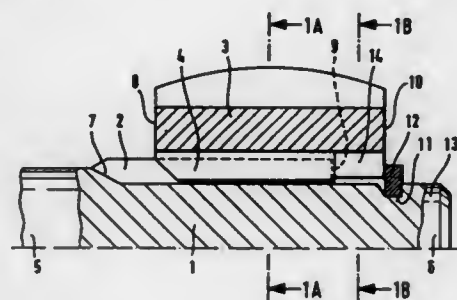
Filed Apr. 10, 1996, Ser. No. 630,164

Claims priority, application Germany, Apr. 12, 1995, 195 13 905.4

Int. Cl.⁶ F16D 3/205; 3/226

U.S. Cl. 464—111

9 Claims



1. A rotationally fixed connection comprising:
a shaft including an axial end and said shaft having outer shaft teeth;
a hub including a through-bore and said hub having hub teeth extending within said through-bore, said shaft outer shaft teeth run out into the shaft shank toward the shaft shank at a distance from an end of the hub teeth;
said outer shaft teeth end inside the hub, a stepped end is formed at an end said outer shaft teeth inside the hub;
said shaft having a tooth-free end portion in a region following the end of the outer shaft teeth, said tooth-free end portion including means for retaining said hub axially securely resting against a hub end face nearest the axial end of the shaft; and

the hub teeth, at the axial end of the hub are deformed to provide a portion which axially securely rests against the stepped end, said deformed portion prevented from engaging with the outer shaft teeth, said deformed portion of said hub teeth extends adjacent the stepped end of said outer shaft teeth inside the hub towards the axial end of the shaft.

5,779,552

ILLUSORY LIQUID APPARATUS

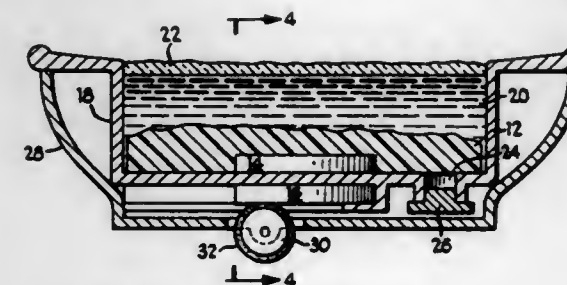
Lisa Gelford; Sandra A. Levin, both of Chicago; Randall Jon Klimpert, Wilmette, and Horst Dieter Herbstler, Bolingbrook, all of Ill., assignors to Meyer/Glass Design, Ltd., Chicago, Ill.

Filed Sep. 13, 1996, Ser. No. 712,398

Int. Cl.⁶ A63G 31/00

U.S. Cl. 472—67

8 Claims



1. An illusory liquid apparatus comprising:

- A) a vessel;
- B) a liquid, contained in the vessel;
- C) an illusory item, suspended in the liquid;
- D) a first magnetic attractor attached to the illusory item;
- E) means for altering the proximities of the first magnetic attractor and the second magnetic attractor.

5,779,553

WATERSLIDE WITH UPHILL RUNS AND PROGRESSIVE GRAVITY FEED

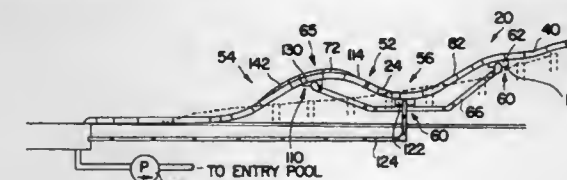
Frederick Langford, 212 Crest Rd., P.O. Box 245, Cape May Court House, N.J. 08210

Filed Sep. 18, 1996, Ser. No. 718,124

Int. Cl.⁶ A63G 21/18

U.S. Cl. 472—117

15 Claims



1. A waterslide comprising:

- a sluice defining a generally downhill course having a high elevation entry point, the sluice being arranged to carry riders along the course and water for at least one of reducing friction between the riders and the sluice, and carrying the riders along the course;
- means for emitting water into the sluice adjacent to the entry point, such that said water flows toward a point of lower elevation along the course;
- a drain disposed in the sluice at a water extraction point at an elevation below the entry point; and,
- a water emitter in the sluice at a still lower elevation than the water extraction point, coupled by at least one conduit to the drain, whereby water is collected from the course from the

point of relatively lower elevation and inserted again at the still lower elevation via the water emitter.

5,779,554

THREE-DIMENSIONAL BOWLING ALLEY MASKING UNIT

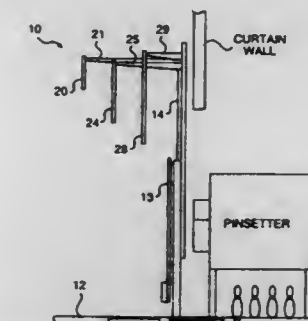
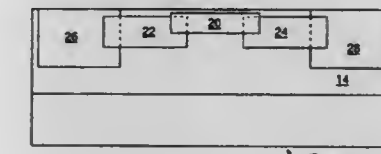
Winston T. Sanders; John R. Madsen, and Sean Anderson, all of Richmond, Va., assignors to AMF Bowling, Inc., Mechanicsville, Va.

Filed Mar. 28, 1997, Ser. No. 828,335

Int. Cl.⁶ A63D 5/04

U.S. Cl. 473—54

8 Claims



1. A bowling alley masking unit for hiding a bowling pin setting apparatus from the view of a bowler and for providing a three dimensional effect, said masking unit comprising a pin curtain adapted to extend laterally across at least one longitudinally extending bowling lane in front of pin setting apparatus and between a pin setting apparatus and a bowler, a plurality of panels each of which has a top, bottom and two side portions and means for supporting said panels across and above a bowling lane in front of said pin curtain, said means for supporting said panels comprising a plurality of cantilevers with one cantilever for each panel extending forwardly from said curtain a first array of at least two of said panels laterally spaced from each other and generally aligned across the lane in a generally vertical position, at least one of said panels other than those in said array spaced forwardly of said array and overlapping a side portion of at least two of said panels in said array.

5,779,555

SWING TYPE ATHLETIC EQUIPMENT AND PRACTICE APPARATUS THEREFOR

Kazuo Nomura; Kouji Fukuhisa, and Yozo Ohara, all of Toyama-ken, Japan, assignors to Hokuriku Electric Industry Co., Ltd., Toyama, Japan

Filed Dec. 5, 1996, Ser. No. 759,473

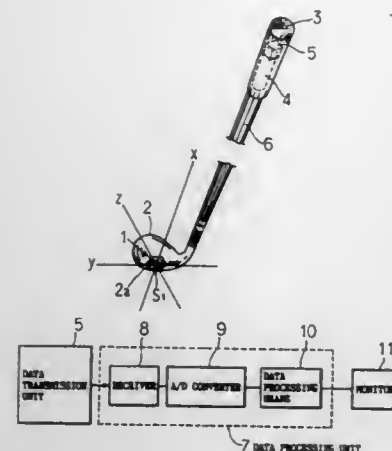
Claims priority, application Japan, Dec. 7, 1995, 7-319078; Nov. 20, 1996, 8-309138

Int. Cl.⁶ A63B 69/36

U.S. Cl. 473—223

3 Claims

1. A practice apparatus for a golf club including a grip and a head mounted through a shaft on said grip, comprising:
a triaxial acceleration sensor mounted on said head;
a ball discharge direction detection means for detecting a direction of discharge of a golf ball hit;
a data processing unit, for processing acceleration data in three detection-axis directions outputted from said triaxial accelera-



tion sensor and for processing data outputted from said ball discharge direction detection means, to determine the direction of discharge of the golf ball, rotation thereof and the flying distance thereof resulting in display data representing the locus of the golf ball;

a data transmission unit for transmitting the data outputted from said triaxial acceleration sensor and the data outputted from said ball discharge direction detecting means to said data processing unit; and

a display means for displaying the locus of the golf ball in response to the display data received from said data processing unit.

5,779,556

GOLF CLUB POINT OF IMPACT AND RELATIVE CLUB VELOCITY INDICATOR

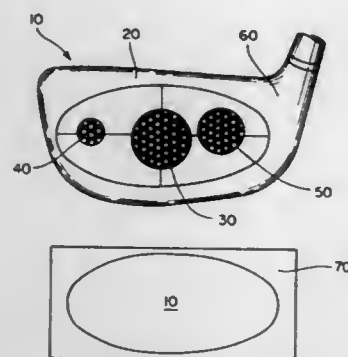
Eduardo Cervantes, 64 Winding Run Ln., Streamwood, Ill. 60107, and Steven R. Puschmann, 2171 W. Sunnyside, Chicago, Ill. 60625

Filed Jul. 16, 1996, Ser. No. 680,991

Int. Cl.⁶ A63B 69/36

U.S. Cl. 473—237

1 Claim



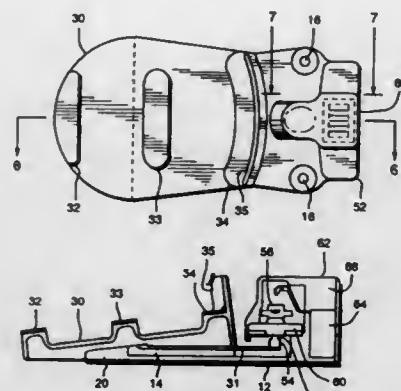
1. A golf club point of impact and relative club velocity indicator for recording the relative velocity and the location at which the head of a golf club impacts a golf ball, said apparatus comprising:

- a heat sensitive chemical top coating means for providing a permanent black image if heat is applied thereto, said means including a layer of direct thermal face stock,
- a fibrous paper having first and second sides, the first side being secured with said layer of direct thermal face stock, and
- an adhesive backing secured to the second side of said fibrous paper, the adhesive backing being adapted for removable attachment to a golf club.

5,779,557
GOLFER'S FOOT BALANCE TRAINING AID
Lawrence M. Scannell, 92 Lowell Rd., Westford, Mass. 01886; Glenn L. Spacht, 3 Broad Path, Lloyd Neck, N.Y. 11743; Robert L. Benoit, 49 Chatham Dr., Oakdale, N.Y. 11769; William Fahey, 21 Sharon Ct., Kings Park, N.Y. 11754, and Bernard I. Rachowitz, 28 Lloyd La., Lloyd Neck, N.Y. 11743
Filed Mar. 10, 1997, Ser. No. 814,103
Int. Cl.⁶ A63B 69/36

U.S. Cl. 473—269

14 Claims



1. A training aid for indicating an unbalanced stance, comprising means for sensing weight at the outer edge of a shoe of the user, means for calibrating said means for sensing weight to a null value for a balanced stance, and means for indicating a condition of greater weight than said null value.

5,779,558

GOLF PUTTER

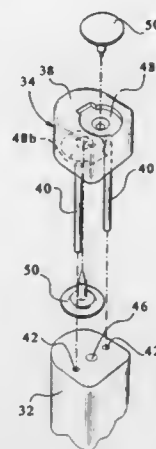
Richard Britton, 2963 Quedada St., Newport Beach, Calif. 92660

Filed Feb. 7, 1996, Ser. No. 597,856

Int. Cl.⁶ A63B 53/14

U.S. Cl. 473—286

2 Claims



1. A golf putter grip comprising:
a flexible grip member having a hollow adapted to receive a putter shaft, the grip member being shaped to substantially close the hollow at a top end; and
a divot mark repair tool having a tool handle from which at least two generally parallel tines extend;
wherein the tines are receivable in bores in the grip member, the bores being aligned generally parallel to the hollow and being positioned radially outward of the hollow, so that the divot mark repair tool is integrally securable to the grip member.

5,779,559
GOLF CLUB WITH IMPROVED GRIP
George F. Eberle, P.O. Box 1588, Boca Grande, Fla. 33921
Filed Jan. 24, 1997, Ser. No. 788,021
Int. Cl.⁶ A63B 53/14

U.S. Cl. 473—294

11 Claims



1. An extended length putter comprising: a shaft having a longitudinal axis; a head attached to one end of the shaft and having a sole that is presented downwardly and a generally flat face that rises generally vertically from the sole to serve as the surface along which the head contacts a golf ball; and a grip located around the shaft in the region of its other end, the grip having two flats which extend along its opposite sides and lie substantially perpendicular to the plane in which the face of the head lies, the grip being at least 14 inches long and the distance between the top of the grip and the sole of the head being at least 40 inches, whereby the grip along its flats may be held between the fingers and thumb of a hand to establish a pivot about which the putter swings during a putting stroke.

5,779,560

GOLF CLUB HEADS

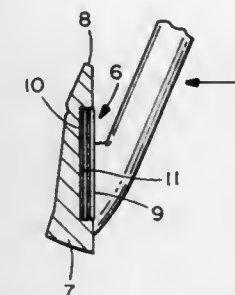
Michael Eugene Buck, Hudson, N.H.; Stephen Anthony Kraus, West Groton, and Thomas William Shabood, Dunstable, both of Mass., assignors to Textron Systems Corporation, Wilmington, Mass.

Filed Apr. 13, 1995, Ser. No. 420,966

Int. Cl.⁶ A63B 53/04

U.S. Cl. 473—342

12 Claims



1. A golf club head having a main body member and an insert secured to said main body member for engagement with the golf ball, wherein the insert comprises:

- a metal layer forming the surface for engagement with the golf ball; and
- a layer of a fiber reinforced metal which is laminated to said metal layer.

5,779,561

GOLF BALL AND METHOD OF MAKING SAME

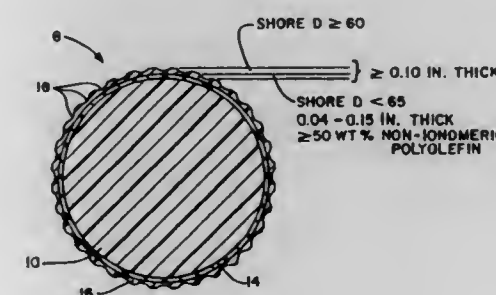
Michael J. Sullivan, 58 Marlborough St., Chicopee, Mass. 01020; R. Dennis Nesbitt, 70 Deer Path La., Westfield, Mass. 01085, and Mark L. Binette, 241 Elizabeth Dr., Ludlow, Mass. 01056

Continuation-in-part of Ser. No. 495,062, Jun. 26, 1995. This application Dec. 10, 1996, Ser. No. 762,947

Int. Cl.⁶ A63B 37/06; 37/12

U.S. Cl. 473—373

35 Claims



1. A golf ball, comprising
a core,
an inner cover layer comprising
a first resin composition containing at least 50 parts by weight of a non-ionomeric polyolefin material, and
at least one part by weight of a filler, the parts by weight of non-ionomeric polyolefin material and filler being based upon 100 parts by weight of the first resin composition, and
an outer cover layer comprising a second resin composition which is different from the first resin composition,
the golf ball having an overall cover thickness of at least 0.10 inches.

5,779,562

MULTI-CORE, MULTI-COVER GOLF BALL

Terrence Melvin, 24 Fox Hollow Rd., Somers, Conn. 06071; Michael J. Sullivan, 58 Marlborough St., Chicopee, Mass. 01020, and R. Dennis Nesbitt, 70 Deer Path La., Westfield, Mass. 01085

Continuation-in-part of Ser. No. 631,613, Apr. 10, 1996, which is a continuation-in-part of Ser. No. 591,046, Jan. 25, 1996, which is a continuation-in-part of Ser. No. 542,793, Oct. 13, 1995, which is a continuation-in-part of Ser. No. 070,510, Jun. 1, 1993. This application Apr. 29, 1997, Ser. No. 840,392

Int. Cl.⁶ A63B 37/12; 37/06

U.S. Cl. 473—373

18 Claims

1. A solid golf ball comprising a solid core and a cover enclosing said core; the core comprising a center core layer and an outer core layer enclosing said center core layer, the center core layer having a specific gravity that differs from the specific gravity of the outer core layer by more than 0.1; the cover comprising an inner cover

5 Claims

the dimples occupy at least 60% of the ball surface, and V_0 which is the ratio of the volume of the dimple space below a plane circumscribed by the dimple edge to the volume of a cylinder whose bottom is the plane and whose height is the maximum depth of the dimple from the bottom is in the range of 0.4 to 0.65.

6 Claims

1. A solid golf ball comprising: a solid core and a cover wherein said cover has a Shore D hardness in the range of 40 to 53 said solid core has a hardness corresponding to a distortion of 3.0 to 5 mm under a load of 100 kg, and the ball has a weight in the range of 41 to 44.5 grams.

8 Claims

1. A fairway type metal wood golf club head, comprising:
a club head body having a heel, toe, top surface, bottom surface,
rear surface, side and rear walls and ball striking face;
said club head characterized by an upright trapezoidal geometry
wherein said bottom surface has a greater area than said top
surface, and said side and rear walls are angled upwardly and
inwardly from an outer periphery of said bottom surface to an
outer periphery of said top surface;
said club head body being further characterized by a low profile
ball striking face wherein the ratio of the dimension of the
heel to toe distance on said ball striking face and the dimen-
sion of the top surface to bottom surface distance on the ball
striking face is at least 3 to 1.

37 Claims

key entry means for retrieving and selectively displaying the information screens from the memory on the display, and for retrieving, selecting, and recording the associated data with each information screen, wherein the key entry means includes first key means comprising one entry key for selectively displaying information screens, second screen-dependent field select key means for selecting a particular data input field of predefined data on a displayed screen, the second screen-dependent field select key means comprising two bi-directional tab keys for scrolling in opposite directions through the data input fields on a displayed information screen, and third screen-dependent value select key means for displaying and selectively recording or altering selected data in a selected data input field, the third screen-dependent value select key means comprising two bi-directional scroll keys for scrolling in opposite directions through the predefined data associated with the data input field on the displayed information screen.

19 Claims

1. A method of instruction for improving actual play of golf, which method comprises the following steps:

providing a web material golf swing touch trainer, which embraces a portably-sized, substantially flat web material having a top horizontal surface, and a bottom horizontal surface generally in vertical registry with and essentially parallel to said top surface, a peripheral boundary having a transverse dimension about one-half foot to about three feet; having a substantially thin side profile less than about $\frac{1}{8}$ of an inch such that a golf ball can roll across the peripheral boundary from, and to, a surface on which the trainer can be

and move the ball toward the trainer so as to have the ball enter the target hole or stop, as by friction from the ball in contact with said top surface, at least within the peripheral boundary of the trainer.

3 Claims

1. A batting training system comprising:
an "I" frame; and
at least one baseball coupled to said "I" frame wherein said at least one baseball is suspended in mid-air;
said "I" frame comprising:
two horizontal frame members; and
a vertical frame member wherein one distal end thereof couples to the center of one of the two horizontal frame members and the other distal end thereof couples to the center of the other of the two horizontal frame members;
said vertical frame member having formed therein a window.

5,779,569

DIRECTIONAL BALL RETURN CHUTE

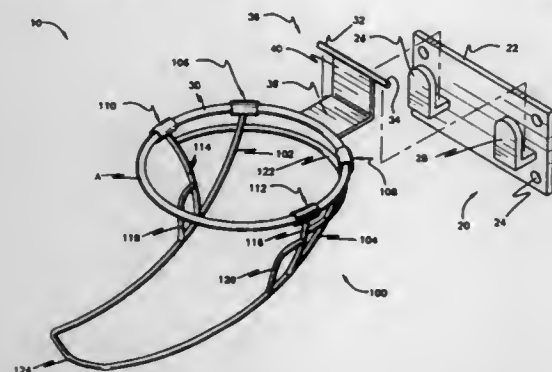
Linn Edward Townsend, P.O. Box 676, Nevada City, Calif. 95959, and Daniel Lathe Townsend, 1722 Buchanan St., Marysville, Calif. 95901

Filed Mar. 12, 1997, Ser. No. 820,433

Int. Cl.⁶ A63B 69/00

U.S. Cl. 473—433

6 Claims



1. A directional ball return chute for returning a ball thrown at a basketball hoop comprising:

a chute for returning the ball, said chute including two side rail members disposed to guide the falling ball in a lateral direction

connection means for attaching said chute to the basketball hoop, said connection means including at least two encirclement members, said encirclement members being disposed in a common plane, said encirclement members being arranged to open outwardly and away from one another, said encirclement members being C-shaped in cross section, and where said encirclement members are disposed to engage the basketball hoop; whereby

said chute is attached to the basketball hoop by the engagement of said encirclement members, said chute is prevented from dislodgement from the impact of a basketball impacting the hoop, and the basketball is directed in a chosen direction by said chute.

5,779,570

STUFFED ANIMAL WITH REMOVABLE BASKET FOR A BALL GAME

Hillard Bear, Beverly Hills, Calif., assignor to KKH Corp., Culver City, Calif.

Filed Feb. 4, 1997, Ser. No. 795,465

Int. Cl.⁶ A63B 63/08

U.S. Cl. 473—481



1. A game figure comprising a body, said body having a skin, said skin being stuffed with a yieldable material and said body being configured with a torso having a lower seating end and an upper end provided with a

pair of shoulders from each of which shoulders forwardly projects an appendage; and a receptacle disposed and securable between the projecting appendages, said receptacle being configured to receive a ball when tossed into the receptacle; and said receptacle comprising a basket having an open bottom whereby the ball may pass down, through, and out of the receptacle.

5,779,571

BALL-GAME RACKET, IN PARTICULAR A TENNIS RACKET

Karl Heinz Roggenkamp, Euskirchen, Germany, assignor to Franz Volkl GmbH & Co., and Ski und Tennis Sportartikel-fabrik KG, both of Germany

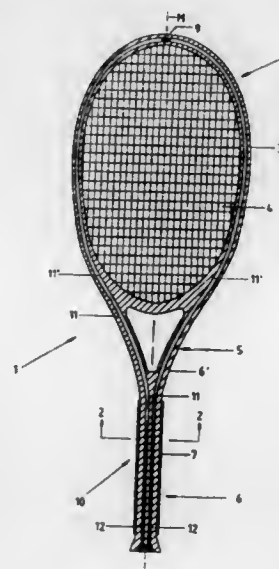
Filed Mar. 19, 1997, Ser. No. 820,492

Claims priority, application Germany, Apr. 3, 1996, 196 13 347.5; Apr. 10, 1996, 196 14 247.4

Int. Cl.⁶ A63B 49/02

U.S. Cl. 473—519

15 Claims



1. A ball-game racket having a racket head (2) consisting of a tension frame (3) for the netting (4), having a shaft (6) extending away from the racket head (2), and having at least one spring-mass system (10) which is provided on one side of a midplane (M) enclosing the longitudinal axis of the shaft (6) and arranged perpendicular to the plane of the netting (4) and, in a movement channel (11') extending from the handle (7) into the racket head (2), at least one mass weight (13), movable in the longitudinal direction of the channel, which is movable against the action of a spring element (12) serving as a restoring spring between a starting position in the handle (7) and an end position in the racket head (2), where the mass weight (13) consists of a plurality of mass elements (14) joined together like a string of pearls by way of a connecting element (15), characterized in that the movement channel (11') is formed by the channel of an outer hose (11) which is arranged in a channel-like cavity of the shaft (6) and of the racket head (2) or the tension frame (3), and in that the mass elements (14) of each mass weight (13) are surrounded by an inner fabric hose (16) which latter slides with the mass elements (14) in the outer hose (11).

5,779,572

SPORTS RACKET

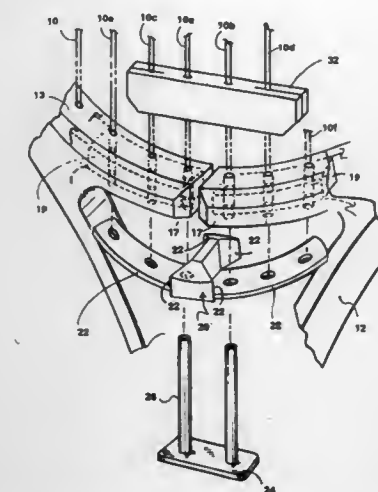
Charles Dicerbo, Concord, Canada, assignor to Boz Sports International Ltd., Toronto, Canada

Filed Apr. 22, 1997, Ser. No. 837,785

Int. Cl.⁶ A63B 49/02

U.S. Cl. 473—521

3 Claims



1. In a split bridge sports racket having a hollow frame with a rim and a handle, the rim being formed with string tunnels through which the string extends to form an impact surface, the handle having a Y configuration, the arms of which merge with the rim to define a bridge section of the rim that extends between the ends of the arms of the Y configuration, the bridge having a discontinuity, the free ends of the bridge at the discontinuity articulating with a bridge insert to reduce player arm stress in use, the improvement of a bridge having a length to accommodate at least four central longitudinal string tunnels of the racket; each of said central longitudinal string tunnels extending in the same direction as its respective longitudinal string through the said bridge; and wherein a support plug is mounted within the hollow of each of the free ends of the bridge to limit the movement of the free ends during play and prevent cracking of the frame from use.

5,779,573

GAME RACKET

Chin-San You, No. 6, Lane 477, Sec. 2, Feng-Shyn Rd., Feng Yuan City, Taichung Hsien, Taiwan

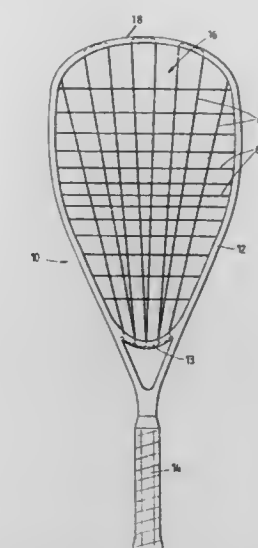
Filed May 16, 1997, Ser. No. 857,303

Int. Cl.⁶ A63B 49/02; 51/08

U.S. Cl. 473—543

5 Claims

1. A game racket comprising: a head frame having a plurality of first string holes, a crown portion, and a throat portion opposite in location to said crown portion, said head frame further having a ball-striking face formed by a plurality of first string sections and second string sections formed by string; and a handle of a predetermined length and extending posteriorly from said throat portion of said head frame; wherein said throat portion of said head frame is provided with a plurality of second string holes such that said second string holes are greater in diameter than said first string holes, and that a distance between two adjoining second string holes of said throat portion are smaller than a distance between two adjoining first string holes of said crown portion of said head frame; wherein said string is fastened with said first string holes to form said first string sections; wherein said string is fastened with said second string holes of said throat portion and said first string holes of said crown portion to form said second string sections such that said second string sections are arranged radially from said second



string holes, and that each of said second string sections are respectively fastened in pairs in said second string holes.

5,779,574

ELECTRONIC GAME FOOTBAG

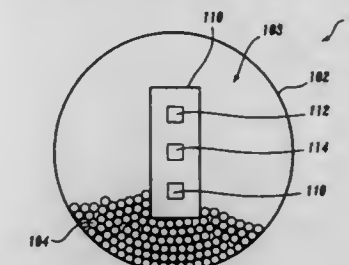
Michael J. Allman, and Mitchell Jeffrey Rood, both of Seattle, Wash., assignors to Emjay Enterprise Corporation, Seattle, Wash.

Filed Jan. 24, 1996, Ser. No. 592,877

Int. Cl.⁶ A63B 39/00; 43/04

U.S. Cl. 473—570

24 Claims



1. A game footbag comprising: a light transmissible pliable skin enclosing a space; a light transmissible filler disposed within said space, said skin retaining said filler in an approximately fluid manner; and an electronic light source circuit disposed within said space, said electronic light source circuit comprising a light source, an energy source, and an inertial switch, said energy source being coupled to said light source and said inertial switch, wherein activation of said inertial switch causes said light source to emit light of a predetermined intensity.

5,779,575

LUMINOUS GAMES SPHERICAL BODY

Frank Hsieh, 9th-1 Floor, Kuang Fu South Road, Taipei, Taiwan

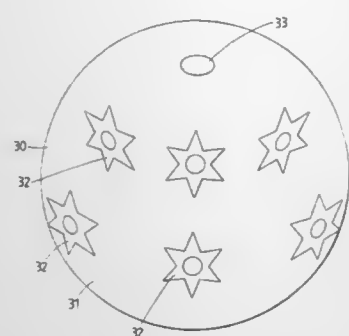
Filed Jun. 18, 1996, Ser. No. 665,555

Int. Cl.⁶ A63F 43/06

U.S. Cl. 473—570

10 Claims

1. A luminous spherical body comprising: a spherical inner body having a power source compartment for housing a power source switching main body and a circuit mechanism having a plurality of loops arranged in a radiate



manner such that each of said loops is provided with at least one luminous lamp; and
an outer layer of a rubber or plastic material engaged over said spherical body, said outer layer provided with a plurality of transparent or translucent panels, said plurality of transparent or translucent panels respectively corresponding in location to each said luminous lamp of said spherical inner body, said outer layer further provided with an opening corresponding in location to said power source switching main body.

5,779,576

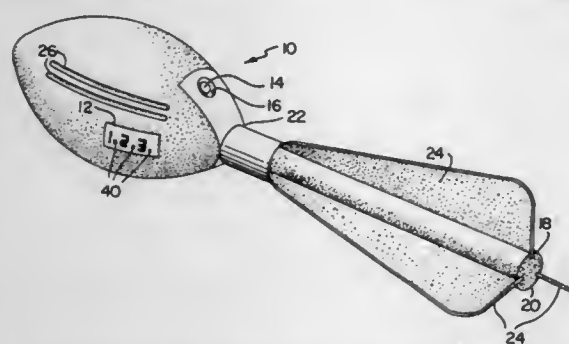
THROW-MEASURING FOOTBALL

Jay Smith, III; Kevin Hudson, and Bill Hudson, all of Los Angeles, Calif., assignors to Smith Engineering, Los Angeles, Calif.

Filed Aug. 20, 1996, Ser. No. 700,002
Int. Cl.⁶ A63B 43/00

U.S. Cl. 473—570

21 Claims

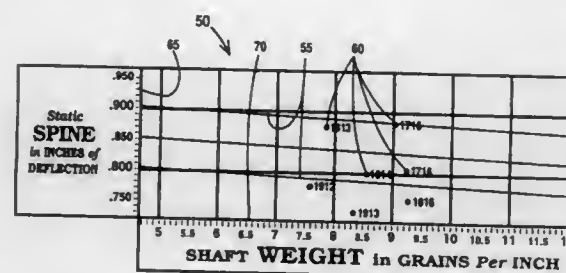


1. An amusement projectile of the type adapted to be propelled by a user through the air to land on the ground at a distance from said user, said projectile comprising a body, means for computing flight characteristics, and digital display means mounted on said body for displaying flight characteristics of said amusement projectile, said means for computing flight characteristics comprising:
accelerometer means disposed within said body for measuring an acceleration of said amusement projectile upon being propelled by said user and generating an acceleration signal representative of said measured acceleration;
signal conversion means for receiving said acceleration signal and converting said acceleration signal to a digital acceleration signal;
timer means for determining a time from a separation of said amusement projectile with said user to an impact with the ground, and generating a time signal representative of this determined time;
memory means for storing flight characteristic data;
microprocessor means for receiving said digital acceleration signal and said time signal, and for retrieving said flight characteristic data stored in said memory means, and for computing flight characteristics therefrom; and
battery means for providing power to said microprocessor means.

5,779,577
ARROW SHAFT SELECTION SYSTEM
Victor O. Erickson, 1295 Ada Ave., Idaho Falls, Id. 83402
Filed Oct. 4, 1996, Ser. No. 725,757
Int. Cl.⁶ F42B 6/04

U.S. Cl. 473—578

11 Claims



1. A system for selecting an arrow shaft, the system comprising:
(a) means for determining an optimum spine based on a type of bow, a point weight, a peak bow weight, and an arrow shaft length; and
(b) graphic means for providing a pictorial representation of a relationship between static spine, dynamic spine, and weight per inch of the arrow shaft.

5,779,578

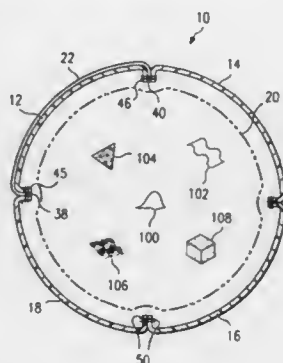
PRESENTATION FOOTBALL CONSTRUCTION

Christopher John Calandro, 4524 Sarasota Dr., The Colony, Tex. 75056

Filed Oct. 28, 1996, Ser. No. 738,471
Int. Cl.⁶ A63B 41/08

U.S. Cl. 473—599

15 Claims



1. A presentation football comprising:
a vinyl panel having artwork printed thereon by a resin printer with the artwork printed on the vinyl panel when the vinyl panel is in a flat shape;
a plurality of football panels;
adhesive bonding the vinyl panel to one of said football panels; and
the football panels being secured together to form a football with the vinyl panel having a shape configured to the shape of the football.

5,779,579

PULLEY ASSEMBLY FOR DRIVEN SHAFT

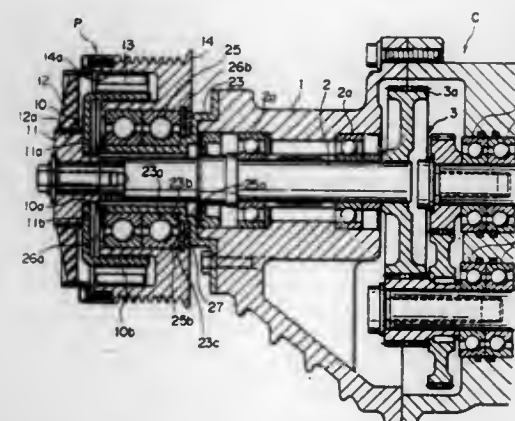
Yoshiyuki Miyagi, Ichikawa; Moena Hori, Yokhama, and Shigeru Takabe, Sagamihara, all of Japan, assignors to Ishikawajima-Harima Heavy Industries, Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1996, Ser. No. 658,685
Claims priority, application Japan, Nov. 29, 1995, 7-311358

Int. Cl.⁶ F16H 9/00

U.S. Cl. 474—72

8 Claims



1. A pulley assembly for a driven shaft of a driven unit, said pulley assembly comprising:

a pulley to which a turning force is transferred from a driving unit, said pulley being formed with an annular concave portion opened to one side of said pulley;
a sleeve fixedly mounted to a casing of said driven unit, through which said driven shaft passes with a clearance between an outer periphery of said driven shaft and an inner periphery of said sleeve;
a bearing means for bearing said pulley rotatably about an axis of said driven shaft, said bearing means being disposed between said pulley and said sleeve; and
a torque transferring means for transferring said turning force transferred to said pulley to said driven shaft, said torque transferring means being interposed between said pulley and said driven shaft and being engaged with said pulley by means of a plurality of teeth-like engaging members formed on said torque transferring means and on said pulley respectively, said teeth-like engaging members being arranged in said annular concave portion of said pulley.

5,779,580

FRONT BICYCLE DERAILEUR

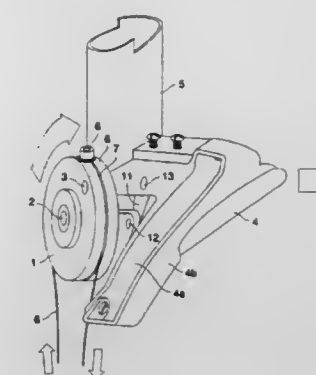
Douglas M. White, 9830 Sir Francis Drake Blvd., Olema, Calif. 94950, and Erik Gamera, 130 Greenwood Ave., San Rafael, Calif. 94901

Filed Sep. 3, 1996, Ser. No. 708,275
Int. Cl.⁶ F16H 59/00

U.S. Cl. 474—80

7 Claims

1. In a front derailleur for a bicycle comprising a fixing member securely attached to a seat tube of a bicycle frame through a tightening band, a chain guide, a pair of linkage members for supporting the chain guide movable in reciprocation with respect to the fixing member, said linkage members being pivoted at one of their ends to the fixing member through a first pair of linkage pivot pins and at their other ends to the chain guide through a second pair of pivot pins, the improvement comprising providing a spool rotatably connecting said fixing member to said chain guide, said spool receiving looped cable emanating from a shifter located remotely from the front derailleur whereby actuation of said shifter results in rotation of said spool causing pivoting of said linkage members through said linkage pivot pins and movement of said



chain guide in reciprocation with respect to the fixing member without spring biasing said linkage member.

5,779,581

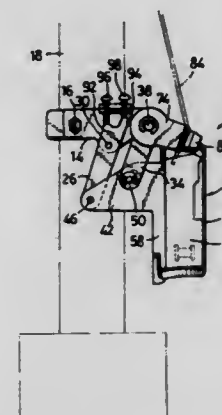
TOP PULL FRONT DERAILEUR

Kazubiro Fujii, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Jun. 19, 1996, Ser. No. 666,001
Int. Cl.⁶ F16H 61/00

U.S. Cl. 474—82

10 Claims



1. A bicycle front derailleur comprising:
a base member (14) for attachment to a bicycle frame (18);
a chain guide (54) for guiding a chain (22) laterally inwardly and outwardly of the bicycle frame (18);
an inner link member (26) having a first end pivotably coupled to the base member (14) and a second end coupled to the chain guide (54);
an outer link member (34) having a first end pivotably coupled to the base member (14) and a second end coupled to the chain guide (54);
biasing means (90) for biasing the chain guide (54) laterally inwardly; and
an actuating arm (74) directly connected to the outer link member (34) for integral movement with the outer link member (34) and extending laterally outwardly from the outer link member (34) so that pulling the actuating arm (74) upwardly causes the chain guide (54) to move laterally outwardly.

5,779,582

CHAIN GUIDE WITH TAPERED SIDE RAILS

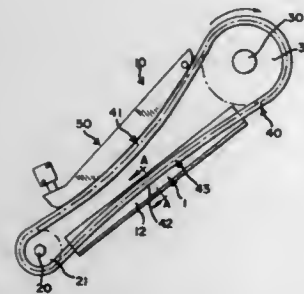
Philip J. Mott, 1 Kimberly Cir.; Mark E. Patton, 7 W. Lake Rd., both of Dryden, N.Y. 13053, and Timothy J. Ledvina, 30 Torok Rd., Groton, N.Y. 13073

Filed Mar. 6, 1996, Ser. No. 611,951

Int. Cl.⁶ F16H 7/18; 7/00

U.S. Cl. 474—140

9 Claims



1. A power transmission chain and guide system for a high speed, automotive application, said chain and guide system comprising:

- a plurality of sprockets including at least one driving sprocket connected to a power input and at least one driven sprocket connected to a power output;
- a chain assembled of interleaved links, said chain wrapped around said plurality of sprockets, said chain including at least one tight strand portion having some of said links being pulled by said driving sprocket and at least one slack strand portion;
- a chain guide located along said tight strand portion of said chain, said guide having a substantially horizontal portion and raised side rails to create a groove for passage of said chain in a longitudinal direction from a guide inlet at one end through a center portion to a guide outlet at another end, said guide inlet being of a first width, said center portion being of a second width and said guide outlet being of a third width, each of said first, second and third widths being defined as the distance across the groove between said side rails in the lateral direction of the movement of the chain through said groove, said side rails being arranged for said second width to be of narrower width than said first width and said third width in the lateral direction of the movement of the chain at said center portion between said guide inlet and said guide outlet, said guide inlet and guide outlet have gradually narrowing portions from the ends of the rail inward towards the center portion, said guide inlet and guide outlet each comprise approximately one-third of the length of the chain guide in the longitudinal direction and where the center portion of the guide comprises approximately one-third of the length of the chain guide in the longitudinal direction.

5,779,583

CHAIN COVER

Masato Nakatani; Kenichiro Ikeda, and Nanako Uno, all of Ishikawa, Japan, assignors to Daido Kogyo Co., Ltd., Kaga, Japan

Filed Aug. 1, 1996, Ser. No. 690,992

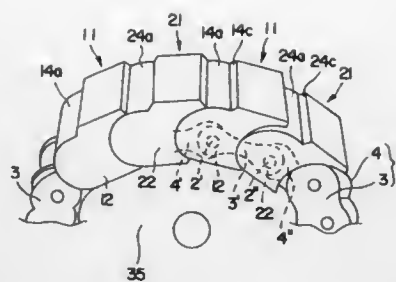
Claims priority, application Japan, Feb. 27, 1995, 7-38667

Int. Cl.⁶ B62J 13/00; F16D 1/00

U.S. Cl. 474—145

13 Claims

1. A chain cover for a chain which is formed with a plurality of outer link plates connected alternately to a plurality of inner link



plates with pins inserted through said outer and inner link plates, said chain cover comprising:

- a first cover block including a pair of opposing side walls and a bridge connecting said sidewalls,
- each of said side walls of said first cover block having a convex front edge portion, a concave rear edge portion, and an inwardly projecting portion configured so as to conform to the shape of one of the outer link plates of the chain; and
- a second cover block including a pair of side walls and a bridge connecting said sidewalls,
- each of said side walls of said second cover block having a convex front edge portion, a concave rear edge portion, and an inwardly projecting portion which is configured to conform to the shape of one of the outer link plates of the chain,
- wherein said concave rear edge portion of said second cover block is configured to rotatably receive said convex front edge portion of said first cover block, and
- said first cover block and said second cover block are adapted to be inserted into spaces formed between the outer link plates of the chain so that said chain cover can flex along with a flexing action of the chain.

5,779,584

TRANSMISSION BELT AND METHOD OF MANUFACTURING THE SAME

Tadahiko Noguchi, Kobe, Japan, assignor to Bando Chemical Industries, Ltd., Kobe, Japan

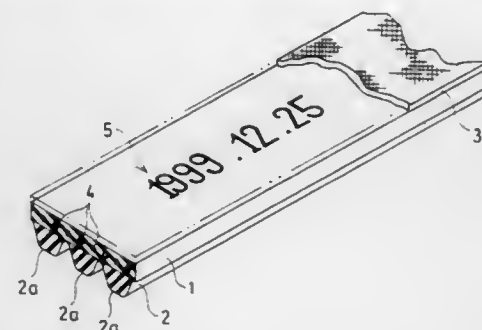
Filed May 28, 1997, Ser. No. 864,483

Claims priority, application Japan, Jun. 19, 1996, 8-158491

Int. Cl.⁶ F16G 1/04; 5/00

U.S. Cl. 474—264

6 Claims



1. A transmission belt applicable to back-face drive and having a mark indicating a manufacture record on a back side of a belt body, wherein said belt body includes a peelable layer on the back side, and said mark is disposed on an inner side of said peelable layer.

5,779,585

HYDRAULIC CONTROL APPARATUS FOR AUTOMATIC TRANSMISSION

Kazumasa Tsukamoto, Toyota; Masahiro Hayabuchi; Masaaki Nishida, both of Anjo; Yoshihisa Yamamoto, and Akitomo Suzuki, both of Nishio, all of Japan, assignors to Aisin Aw Co., Ltd., Japan

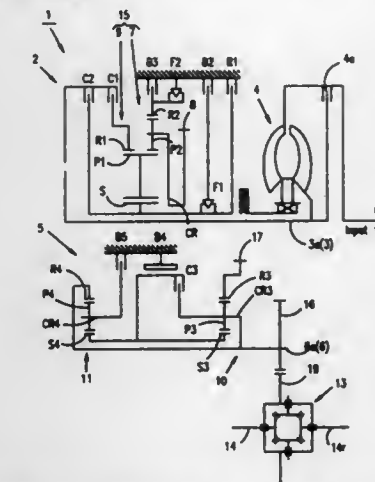
Filed Dec. 12, 1996, Ser. No. 763,946

Claims priority, application Japan, Dec. 12, 1995, 7-323273

Int. Cl.⁶ F16H 5/66

U.S. Cl. 475—128

18 Claims



1. A hydraulic control apparatus for an automatic transmission, comprising:

- a first shift mechanism and a second shift mechanism each of which has a plurality of friction engagement elements; and
- a hydraulic control circuit for achieving a plurality of speeds by selectively supplying fluid pressure to and discharging fluid pressure from hydraulic servo units which operate said plurality of friction engagement elements, the hydraulic control circuit comprising:
- a first hydraulic servo for controlling a first friction engagement element in the first shift mechanism;
- a first shift valve for switching between supply and discharge of fluid pressure to/from said first hydraulic servo, responsive to various speed signals;
- a second hydraulic servo for controlling a second friction engagement element in the second shift mechanism;
- a second shift valve for switching between supply and discharge of fluid pressure to/from the second hydraulic servo, in accordance with said speed signals;
- a fluid pressure source for generating a line pressure;
- a pressure regulating valve for regulating the line pressure from the fluid pressure source to provide a regulated pressure; and
- a fluid pressure changeover valve for selectively supplying the line pressure or the regulated pressure to the first shift valve and to the second shift valve.

5,779,586

DRIVING DEVICE

Wolfgang Gebhard, and Eduard Hellig, both of Friedrichshafen, Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

PCT No. PCT/EP95/00835, § 371 Date Sep. 11, 1996, § 102(e) Date Sep. 11, 1996, PCT Pub. No. WO95/25021, PCT Pub. Date Sep. 21, 1995

PCT Filed Mar. 7, 1995, Ser. No. 704,503

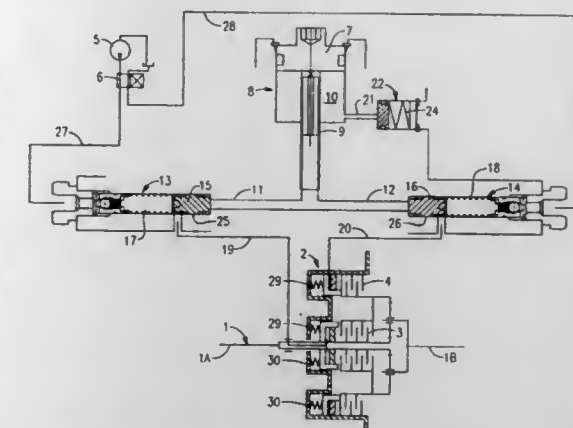
Claims priority, application Germany, Mar. 12, 1994, 44 08 472.20

Int. Cl.⁶ B60K 23/02

U.S. Cl. 475—140

11 Claims

1. A two-speed transmission, having two friction clutches (3, 4) with friction elements which are engaged by spring tension and



disengaged by oil pressure, said two friction clutches (3, 4) having clutch lines (19, 20 and 27, 28) which lead to pressure chambers which are switched via gearshift valves (13, 14), and said two friction clutches, in an engaged state, acting as a parking brake; wherein said gearshift valves have gearshift pistons (15, 16) which are connected by accumulator lines (11, 12) with an auxiliary uncoupling device which has an adjustable accumulator piston (7), and, upon the actuation of said adjustable accumulator piston (7), said gearshift pistons are moved so that said clutch lines (19, 20) are connected with said accumulator lines (11, 12) such that an oil volume accumulated within said auxiliary uncoupling device is supplied from said accumulator pistons (7) to said two friction clutches (3, 4) to uncouple said two friction clutches (3, 4); and said auxiliary uncoupling device is provided with a sealed oil volume which is maintained pressureless during normal operation of the vehicle.

5,779,587

JAM TOLERANT ROTARY ACTUATOR WITH SHEAR PINS AND DISENGAGEMENT COUPLING

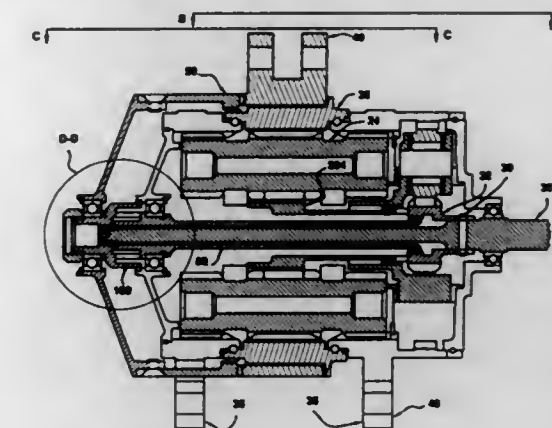
William Reilly, Verona, N.J., assignor to Curtiss Wright Flight Systems, Inc., Fairfield, N.J.

Filed Aug. 30, 1996, Ser. No. 705,955

Int. Cl.⁶ F16H 3/74; 3/44; F16D 9/00

U.S. Cl. 475—263

24 Claims



1. A jam-tolerant geared rotary actuator having a normal operating mode and a jam-tolerant operating mode, said rotary actuator comprising:

- a. an input shaft having an outer diameter, a proximal end which is connected to an input source, and a distal end;
- b. a rotary gear means including:
- a sun gear means having a shear portion;
- a planet gear means;
- a fixed ring gear means;

- a movable ring gear means;
 an output ring means;
 c. an output spline means for releasably connecting said movable ring gear means to said output ring means;
 d. a decoupling means including:
 a hollow timing shaft having an inner diameter greater than the outer diameter of said input shaft, wherein said input shaft is disposed within said timing shaft;
 a shear means connecting said input shaft to the shear portion of said sun gear means for sensing excessive torque in said actuator, wherein said shear means is capable of initiating the jam-tolerant mode;
 e. a sun gear spline means for connecting said sun gear means to said hollow timing shaft;
 f. an axial displacement means for engaging said output spline means with said movable ring gear means and said output ring means in the normal mode, and for disengaging said output spline means from said movable ring gear means and said output ring means in the jam-tolerant mode; and
 g. an input engagement means for releasably connecting said axial displacement means to the distal end of said input shaft in the normal operating mode, and for disengaging said axial displacement means from the distal end of said input shaft in the jam-tolerant mode;
 wherein said input shaft and said hollow timing shaft rotate together in the normal operating mode; and
 wherein said input shaft and said hollow timing shaft shear said shear means in the jam-tolerant mode.

5,779,588

DRIVE FOR LIFTING EQUIPMENT

Egon Mann, Friedrichshafen, and Erwin Meisinger, Hauzenberg, both of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

PCT No. PCT/EP95/03879, § 371 Date Jul. 10, 1996, § 102(e) Date Jul. 10, 1996, PCT Pub. No. WO96/11161, PCT Pub. Date Apr. 18, 1996

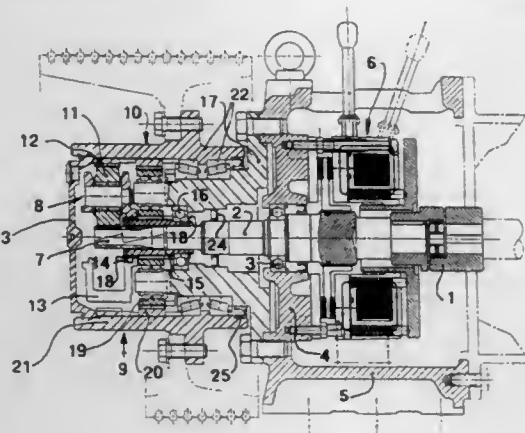
PCT Filed Sep. 30, 1995, Ser. No. 656,180

Claims priority, application Germany, Oct. 7, 1994, 44 35 849.0

Int. Cl.⁶ F16H 1/46

U.S. Cl. 475—331

9 Claims



1. An elevator drive device, comprising:
 a rotary hub (21) mounted on a fixed hub carrier; and
 a motor in driving communication with a dual stage planetary transmission, which in turn drives said rotary hub, said dual stage planetary transmission (9) having a first (8) and a second (10) helically cut planetary gear set, wherein said first planetary gear set (8) has a helically cut driven sun gear (7) floatingly mounted in said hub carrier by a bearing which absorbs axial and radial forces and rotationally fixed to a free end of an input shaft (2) attached to a bearing (3) of a fixed flange (4), and a planetary gear carrier (13) which is rotation-

ally fixed with a sun gear (15) of said second helically cut planetary gear set (10) whose planetary gears (11, 19) intermesh with ring gears (12, 20) wherein the meshing ratio between said first and second planetary gear sets (8, 10) is not an integer.

5,779,589

PLANETARY GEARING

Bodo Fütterer, Luzerne, Switzerland, assignor to Maxon-Motor GmbH, Germany

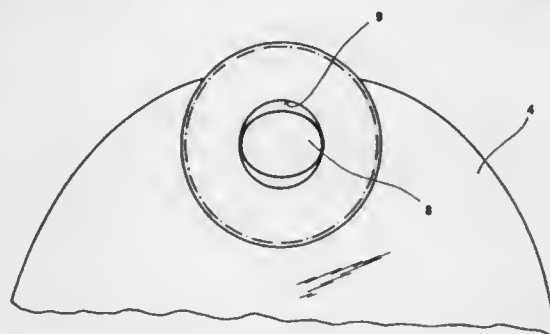
Filed Dec. 10, 1996, Ser. No. 762,727

Claims priority, application Germany, Dec. 13, 1995, 195 46 586.5

Int. Cl.⁶ F16H 1/28

U.S. Cl. 475—346

10 Claims



1. In a planetary gearing comprising a planet carrier (4) which is adapted to be rotated about an axis of rotation (10), a sun gear (1), at least one planetary gear (3), a ring gear (2), at least one axle end (8) projecting beyond one end face of said planet carrier (4), and said planetary gear (3) being rotatably supported on said axle end (8) by means of its axle-reception opening (9), said planetary gear (3) being constructed such that it is at least radially displaceable with regard to said axis of rotation (10) of said planet carrier (4), and wherein the cross-sectional shape of said axle end (8) and said planet carrier (4) deviates from the cross-sectional shape of said axle-reception opening (9) of said planetary gear in such a way that said planetary gear (3) is supported in a radially displaceable manner relative to said axle end (8), the improvement comprising that said planetary gear (3) is supported such that it is adapted to be displaced radially as well as tangentially relative to said axis of rotation (10) of said planet carrier (4), the amount of said tangential displaceability being smaller than the amount of said radial displaceability.

5,779,590

Patent Not Issued For This Number

5,779,591

TOROIDAL CONTINUOUS VARIABLE TRANSMISSION
 Elji Inoue, Sagami, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

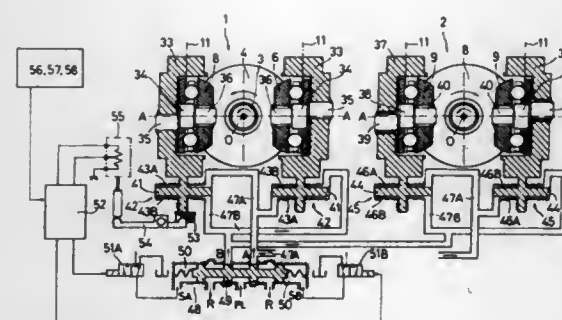
Filed Dec. 20, 1996, Ser. No. 770,255

Claims priority, application Japan, Dec. 22, 1995, 7-349460
 Int. Cl.⁶ F16H 15/38

U.S. Cl. 476—42

6 Claims

1. A toroidal continuous variable transmission comprising:
 a first input disk and a second input disk, both rotatable together with a main shaft and axially movable;
 an input shaft for transferring power to the first input disk through a loading cam;



- a first output disk disposed opposite the first input disk and rotatable relative to the main shaft;
 a pair of first power rollers for continuously changing the speed of rotation of the first input disk according to changes in a tilt angle with respect to the first input disk and the first output disk and transferring the speed-changed rotation to the first output disk;
 a first support shaft for rotatably supporting at one end thereof one of the first power rollers;
 a first trunnion mounted to the other end of the first support shaft and having a tilt axis, the first trunnion being adapted to be displaced in a direction parallel to its tilt axis from a neutral position and to tilt about its tilt axis;
 a second output disk disposed opposite the second input disk and rotatable relative to the main shaft;
 a pair of second power rollers for continuously changing the speed of rotation of the second input disk according to changes in a tilt angle with respect to the second input disk and the second output disk and transferring the speed-changed rotation to the second output disk;
 a second support shaft for rotatably supporting at one end thereof one of the second power rollers;
 a second trunnion mounted to the other end of the second support shaft and having a tilt axis, the second trunnion being adapted to be displaced in a direction parallel to its tilt axis from a neutral position and to tilt about its tilt axis; and
 an output shaft connected with the first output disk and the second output disk, the first and second output disks being disposed adjacent to each other;
 wherein the first output disk and the second output disk are supported on a casing between the output disks through radial bearings, axes of both ends of the first support shaft and of the second support shaft are offset from each other, one of the first and second support shafts is secured nonpivotable to its respective trunnion, and the other support shaft is mounted pivotable to its respective trunnion.

5,779,592

FOUR POSITION SWITCH FOR SHIFT ASSIST SYSTEM

Charles E. Allen, Jr., Rochester Hills; Frank A. Palmeri, Troy, both of Mich.; Jon M. Huber, Laurinburg, and Steven E. Radue, Southern Pines, both of N.C., assignors to Meritor Heavy Vehicle Systems, LLC, Troy, Mich.

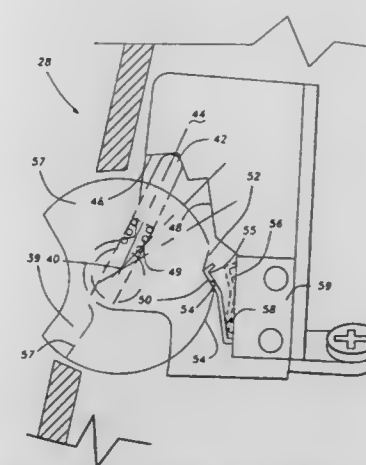
Filed Jul. 27, 1995, Ser. No. 508,153

Int. Cl.⁶ B60K 41/24

U.S. Cl. 477—83

10 Claims

1. A vehicle drive control system comprising:
 an engine having an output shaft, and an electronic control unit for controlling the output speed of said engine output shaft;
 a multi-speed transmission connected to be driven by said engine output shaft for outputting the engine output speed through several speed ratios;



5,779,593

ON-VEHICLE CONTROL APPARATUS

Mitsuru Takada, Aichi-ken, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 28, 1997, Ser. No. 807,690

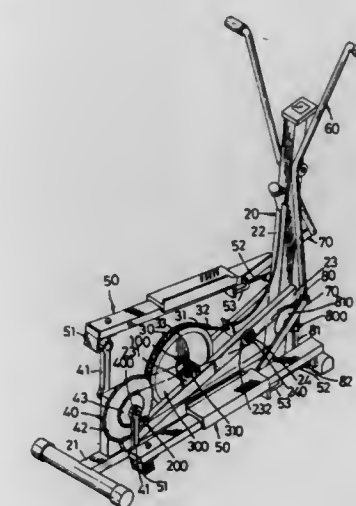
Claims priority, application Japan, Mar. 6, 1996, 8-049350
 Int. Cl.⁶ F02D 9/02

U.S. Cl. 477—107

11 Claims

1. An apparatus of controlling vehicle speed, said vehicle having an engine with a throttle valve being arranged to vary the opening thereof to control the amount of intake air supplied to the engine so as to change the vehicle speed, the vehicle having an accelerator for controlling the opening of the throttle valve, wherein the throttle valve is urged toward a closed position by an urging member, and wherein the throttle valve is opened by the accelerator manipulated to a predetermined effective position, the apparatus comprising:

means for electrically adjusting the opening of the throttle valve against the force of the urging member in accordance with the position of the accelerator;
 means for mechanically coupling the accelerator to the throttle valve against the force of the urging member to control the opening of the throttle valve;
 means for detecting an occurrence of a malfunction in the adjusting means;



1. A pedal-type exerciser, comprising:
 - a base having a front end portion provided with an upright prop, and a rear end portion; a first drive assembly including: a first horizontal axle mounted rotatably on said rear end portion of said base; first and second drive wheels mounted securely and coaxially on said first horizontal axle; and a pair of first crank arms mounted securely on opposite ends of said first horizontal axle;
 - a second drive assembly including: a second horizontal axle mounted rotatably on said front end portion of said base; a third drive wheel mounted securely on said second horizontal axle; a first transmission chain trained on said second drive wheel and said third drive wheel so that rotation of said second drive wheel is transmitted to said third drive wheel; and a pair of second crank arms mounted securely on opposite ends of said second horizontal axle;
 - a resistance device mounted on said base and coupled to said first drive wheel for providing resistance to rotation of said first horizontal axle;
 - a pair of elongate pedal members, each of which has a front portion with a distal end of a corresponding one of said second crank arms mounted pivotally and slidably therealong, and a rear portion mounted pivotally on a distal end of a corresponding one of said first crank arms;
 - a pair of elongate lever arms, each of which has a lower portion, and an intermediate portion mounted pivotally on a respective one of opposite sides of said upright prop; and
 - a pair of elongate linking rods, each of which has an upper end mounted pivotally on said lower portion of a respective one of said lever arms, and a lower end mounted pivotally on said front portion of a respective one of said pedal members.

5,779,599

STATIONARY EXERCISER

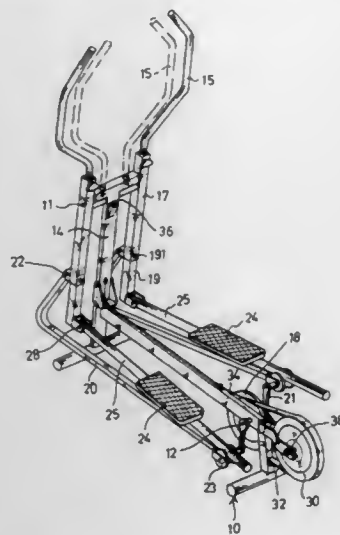
Paul Chen, 5F., No. 31, Gan Tzou 2nd Street, Shi Tun Chu, Taichung, Taiwan

Filed Aug. 19, 1997, Ser. No. 914,814

Int. Cl.⁶ A63B 69/16;22/04

U.S. Cl. 482—57

6 Claims



1. An exerciser comprising:
a base including a rear axle and a front axle,
a pair of levers pivotally coupled to said front axle for allowing said levers to be swung about said front axle,
a pair of cranks rotatably secured to said rear axle
a pair of links including a front portion pivotally secured to said levers and including a rear portion pivotally coupled to said cranks,
a pair of foot supports supported beside said links,
means for moving said foot supports relative to said links, and
means for applying a resistance force against said foot supports.

5,779,600

ROWING SIMULATOR

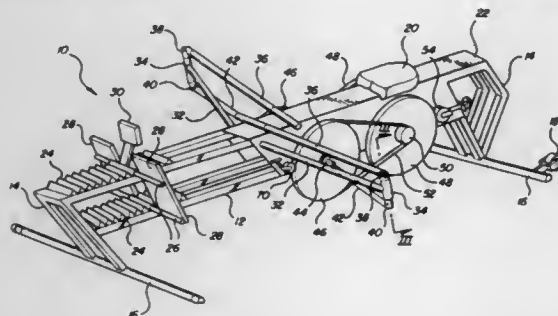
Leslie Pape, 43470 Algonquin Dr., Novi, Mich. 48375

Filed Dec. 19, 1995, Ser. No. 574,998

Int. Cl.⁶ A63B 69/06

U.S. Cl. 482—72

40 Claims



1. A rowing simulator comprising a frame, a seat slidably mounted on the frame, a pair of foot rests adjustably mounted on the frame, a flywheel rotatably mounted on the frame, a driven wheel secured to the flywheel, a drive wheel rotatably mounted on the frame, connector means interconnecting the drive wheel to the driven wheel, universal means operatively connected to said drive wheel, a rotatable pivot linked to said universal means, and an oar connected to rotate said pivot, whereby said pivot rotates said universal means which, in turn, rotates said drive wheel to, thereby, rotate said driven wheel and said flywheel, wherein said universal means includes a first universal coupling adapted to be rotated by

said pivot, a drive shaft rotated by said first universal coupling, a second universal coupling rotated by said drive shaft to drive said drive wheel.

5,779,601

COMPACT MULTI-STATION EXERCISE MACHINE

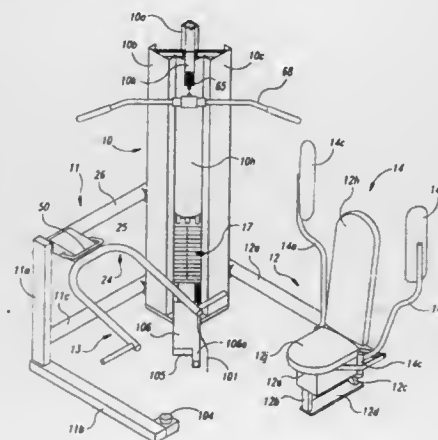
A. Buell Ish, III, Renton, Wash., assignor to Vectra Fitness, Incorporated, Redmond, Wash.

Filed Feb. 2, 1996, Ser. No. 597,522

Int. Cl.⁶ A63B 21/00

U.S. Cl. 482—100

16 Claims



1. A multi-station exercise machine for operating in a corner area comprising:

- a frame assembly having a rear upright corner frame and frame extensions extending as first and second wings from said corner frame in respective first and second vertical wing planes which are in generally perpendicular relationship to one another at the rear of the corner area, said frame assembly having a ground engaging outrigger projecting by an outer end into said corner area;
- high pull and low pull exercise stations facing said area and located at the top and bottom, respectively of said corner frame so as to be arranged to be used by an exerciser occupying said area;
- a butterfly exercise station mounted at the outer end of said first wing to occupy a position entirely within said corner area, said butterfly exercise station including a seat extending into said area in generally parallel relation to said second wing plane and including two butterfly arms arranged to swing over said area about vertical swing axes within said area;
- a press exercise station at the outer end of said second wing and including a press arm arranged to swing within a swing range entirely over said area about a horizontal swing axis which is perpendicular to said first wing plane;
- a bench in said area partly seated on said outrigger and adjustable in position horizontally at one end relative to said outrigger;
- a weight load at said corner frame;
- and a pulley and cable system mounted on said frame assembly and continuously operatively connecting said exercise stations with said load whereby said load is moved responsive to performance of the respective exercises at said exercise stations.

5,779,602

SYSTEM FOR RAISING WEIGHTS WHEN ACTIVATED BY A USER IN RESPONSE TO A DANGEROUS SITUATION

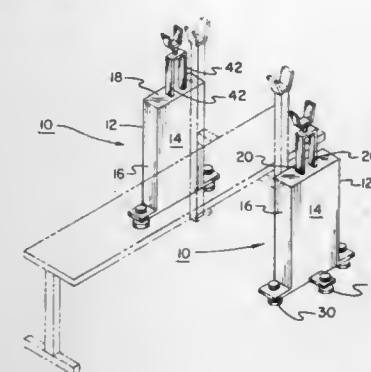
Anibal Rodriguez, 11 Edwards St., Apt. #1, Springfield, Mass. 01105

Filed Sep. 11, 1996, Ser. No. 712,461

Int. Cl.⁶ A63B 21/078

U.S. Cl. 482—104

5 Claims



1. A new and improved system for raising weights when activated by a user in response to a dangerous situation comprising, in combination:

- a housing in a generally rectangular configuration having parallel interior and exterior walls and parallel rectangular end walls, the walls coupled at their vertical edges to form a box-like configuration with a planar roof secured to the upper edges of the walls, the roof having two parallel slots therethrough, the housing also having a base plate with an upper surface and a lower surface, the upper surface receiving the lower edges of the walls with adjustable legs extending from the two sides and front of the base plate in a downward direction for leveling purposes, an intermediate support plate located within the housing, the intermediate support plate having a central aperture therethrough and a pair of recesses formed on opposite ends thereof, wherein the intermediate support member is adapted to be moved within an upper portion of the housing;
- a bracket formed in the shape of an inverted U with parallel legs extending through the slots and with a horizontal upper surface and an essentially U-shaped receiver for supporting the horizontal bar of free weights;
- an intermediate base positioned in a horizontal orientation interior of the housing and with a central aperture therethrough and a vertically oriented jack screw extending through the aperture of the intermediate base, the jack screw threadedly engaging the central aperture of the intermediate base;
- reciprocable pins in a horizontal orientation movable internally into the recesses with a cable secured thereto and extended from the device for effecting the withdrawal of the pins;
- a large coil spring between the intermediate base and the intermediate support plate to urge the intermediate support plate upwardly upon the pulling of the cables and the release of the intermediate support plate to raise a weight;
- a small coil spring above the intermediate support plate and beneath the roof of the housing to dampen the force of the large spring; and
- a pedal adapted to be positioned in a plurality of positions to receive the free end of the cable to effect the withdrawal of the cable and pin from the recesses of the intermediate support plate, the raising of the bracket and support upon the depression of the pedal, and the pulling of the cable and the withdrawal of the pin from the intermediate support plate.

5,779,603

HANDS-FREE HANDWEIGHTS

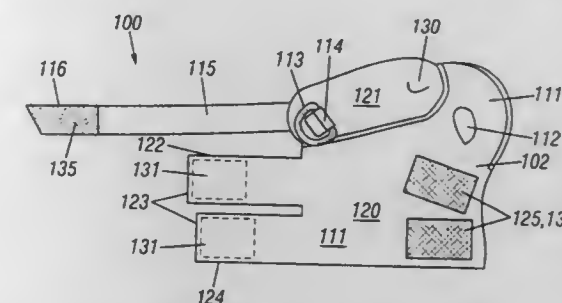
Neil Nusbaum, Culver City, Calif., assignor to Hollywood Engineering, Inc., Compton, Calif.

Filed Feb. 10, 1997, Ser. No. 795,235

Int. Cl.⁶ A63B 21/065

U.S. Cl. 482—105

19 Claims



1. An exercise device for attaching weights to a user, comprising:

- a flexible supporting portion having a first surface that is adapted to a shape of at least a part of a hand thereby fitting said supporting portion to at least a part of said user's hand and wrist and a second surface opposing said first surface;
- a hand portion formed in said supporting portion to fit on the back of said user's hand;
- a first anchoring element formed in said hand portion, operable to anchor said supporting portion to a first member of said user's thumb and fingers, leaving said user's thumb and fingers free;
- a palm attachment formed in said hand portion, operable for fastening said hand portion to said user's hand in a way that said user's fingers are free to move about;
- a wrist portion formed in said supporting portion and connected to said hand portion;
- a wrist attachment formed in said wrist portion, operable to fasten said wrist portion to said user's wrist; and
- a first weight compartment, disposed on said second surface of said supporting portion, operable to hold a first weight therein.

5,779,604

ADJUSTABLE DUMBBELL

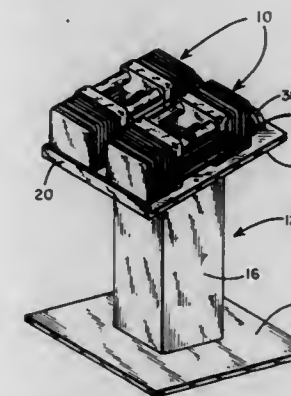
Carl K. Towley, III, and Gregory S. Olson, both of Owatonna, Minn., assignors to Intellbell Ventures, Monterey, Calif.

Continuation-in-part of Ser. No. 186,937, Feb. 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 13,785, Feb. 5, 1993, abandoned. This application Mar. 4, 1996, Ser. No. 610,512

Int. Cl.⁶ A63B 21/075

U.S. Cl. 482—108

23 Claims



1. An adjustable dumbbell, comprising:

a handle, said handle including a grip secured between a pair of longitudinally spaced apart ends;
at least one weight, said weight(s) including a pair of end plates and means for interconnecting the end plates together in longitudinally spaced apart relationship for receiving said handle with said grip located between upper and lower edges of said end plates and each said end plate being located longitudinally outwardly of one end of said handle; and means for selectively interconnecting said handle and said weight.

5,779,605

BODY-BUILDING MACHINE

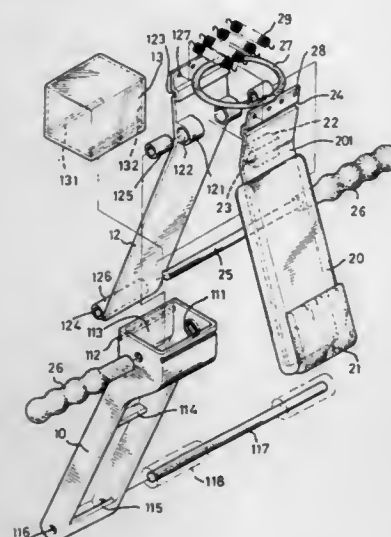
Ming-Tsang Tu, 7Fl., No. 96, Jen-ai 1st St., Kaohsiung, Taiwan

Filed Sep. 3, 1997, Ser. No. 922,427

Int. Cl.⁶ A63B 21/02

U.S. Cl. 482—122

9 Claims

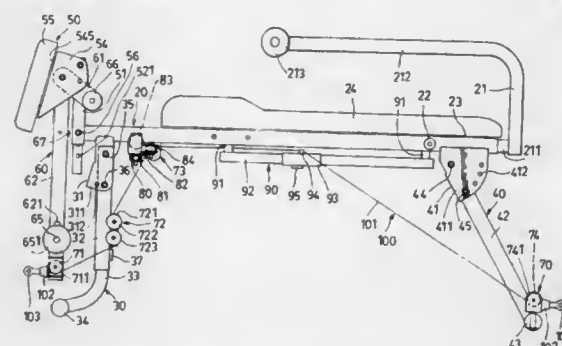


1. A body-building machine comprising:
 - a locating frame having a head portion integrally formed at a top thereof, said head portion defining an open chamber therein and a pair of opposed holes at two side walls thereof;
 - a locating plate inserted into the open chamber of the head portion and received in the locating frame, said locating plate including a body with an inclined end portion extending therefrom and a pair of tubular lugs formed at an intersection between the inclined end portion and the body, passages in the tubular lugs aligning with the pair of opposed holes;
 - a cladding plate including a plank with an angled end portion extending therefrom and a tube formed at an intersection between the angled end portion and the plank, said tube aligning with the tubular lugs of the locating plate, the angled end portion of the cladding plate being received in the open chamber of the head portion of the locating frame;
 - a shaft inserted through the opposed holes of the locating frame, the pair of tubular lugs of the locating plate and the tube of the plank to engage the inclined end portion of the locating plate with the angled end portion of the plank and to form a short tension arm above shaft and a long tension arm below the shaft for the locating plate and the plank; and
 - an elastic return means disposed between the inclined end portion of the locating plate and the angled end portion of the plank in the short tension arm portion.

5,779,606
MULTI-FUNCTION EXERCISER
Chin-Jung Chen, Taichung, Taiwan, assignor to Fit-Right Enterprise Co., Ltd., Taichung, Taiwan
Filed Aug. 14, 1996, Ser. No. 696,552
Int. Cl.⁶ A63B 21/04

U.S. Cl. 482—130

4 Claims



1. An exerciser comprising:
 - a front support rod having telescoping inner and outer tubes, said outer tube having an upper end and a first coupling member which interconnects said upper end of said outer tube and said front end of said main frame, said inner tube having a curved lower portion with a lower end, said lower end of said inner tube having a front bottom rod connected transversely thereto;
 - a rear support rod having upper and lower ends, a second coupling member interconnecting said upper end of said rear support rod, and a rear bottom rod connected transversely to said lower end of said rear support rod;
 - a spine-exercising device having telescoping inner and outer tubes, said outer tube of said spine-exercising device having an upper end and a lower end which is fixed to said front end of said main frame, said inner tube having an upper end, a U-shaped bracket connected to said upper end of said inner tube of said spine-exercising device, and an abutting plate fixed to said U-shaped bracket;
 - a leg-exercising device having a pair of elongated connecting plates which are fixed parallelly to said upper end of said outer tube of said spine-exercising device, and a swing rod having upper and lower ends, each of said connecting plates having upper and lower ends, said upper ends of said connecting plates being connected pivotally to said upper end of said swing rod, said lower ends of said connecting plates having a handle connected thereto;
 - a first pulley assembly having a pair of front pulleys, two pairs of first middle pulleys, a pair of second middle pulleys and a pair of rear pulleys, said front pulleys being mounted rotatably to said lower end of said swing rod, said first middle pulleys being mounted rotatably to said outer tube of said front support rod, said second middle pulleys being mounted rotatably to said lower side face of said main frame behind said front support rod, said rear pulleys being mounted rotatably to said lower end of said rear support rod;
 - a second pulley assembly having a mounting rod with two ends which is connected transversely to said main frame between said front support rod and said second middle pulleys, each end of said mounting rod having a generally T-shaped member which has a tail portion and a head portion transversely connected to said tail portion, each tail portion being connected pivotally to a respective one of said ends of said mounting rod and having a pair of opposed wing members extending upwardly therefrom, said wing members of each of said T-shaped members having a bobbin mounted rotatably therebetween, each of said head portions having a pair of guiding rollers mounted rotatably to an upper face thereof;
 - a tension-adjusting device mounted to said main frame between said second middle pulleys and said rear support rod and

having a guiding rod which is fixed under said lower side face of said main frame, a slide tube which is sleeved slidably on said guiding rod, a fastening device for positioning releasably said slide tube to said guiding tube, and a retaining rod which is fixed to said slide tube;

two pairs of elastic cords including a pair of first cords and a pair of second cords, each of said first cords passing around a respective one of said front pulleys, a respective one pair of said first middle pulleys, a respective one of said second middle pulleys, said retaining rod, and a respective one of said rear pulleys, each of said first cords having two ends, each end of a respective one of said first cords having a first retaining block and a first hooking ring connected thereto, said first retaining blocks abutting against said front pulleys and said rear pulleys in order to keep said first cords under tension, each of said second cords passing around said bobbin and one of said guiding rollers of a respective one of said ends of said mounting rod, each of said second cords having first and second ends, said first ends of said second cords having second hooking rings which are connected to said retaining rods of said tension-adjusting device, said second end of each of said second cords having a second retaining block and a third hooking ring connected thereto, said second retaining blocks abutting said bobbins of said second pulley assembly in order to keep said second cords under tension.

- (c) handlebar means pivotally attached to and on one side of said first frame by pivotal attachment to said side arms of said first frame proximate said second ends thereof
- (d) wherein said first exercise configuration comprises said side arms of said second frame positioned on said support rods of said first frame so as to be supported at least partially thereby, and whereby a user performs abdominal exercise by positioning himself on an exercise surface in a supine position at least partially between said side arms of said first frame and with at least the head of the user being supported on said support means of said second frame and pushing said handlebar means in a direction away from said support means to force said exercise machine to pivot on said second end of said second frame on the exercise surface and support at least the head of the user during abdominal exercise; and
- (e) wherein said second exercise configuration comprises said second frame positioned such that said side arms of said second frame extend in a direction generally opposite and away from said side arms of said first frame, and whereby a user can perform strength exercise by placing at least part of his weight on said support means of said second frame and grasping and moving said handlebar means to move and pivot said first frame about said first end of said first frame against the user's weight during strength exercise.

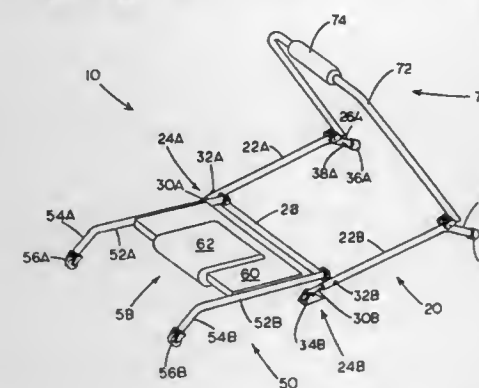
5,779,608

Patent Not Issued For This Number

5,779,607
ABDOMINAL EXERCISE MACHINE ADAPTED FOR STRENGTH EXERCISES
Robert W. Harris, 209 W. Woodridge Dr., Durham, N.C. 27707
Filed Jan. 21, 1997, Ser. No. 781,356
Int. Cl.⁶ A63B 23/02

U.S. Cl. 482—140

18 Claims



15. An exercise machine operable at least for abdominal exercise in a first exercise configuration and strength exercise in a second exercise configuration, said exercise machine comprising:

- (a) a first frame including a pair of laterally spaced and parallel side arms having first and second ends and adapted for receiving a user in a supine position therebetween in said first exercise configuration, said side arms including support rods proximate said second ends thereof, and said first frame further including a transverse arm attached to and extending between said side arms proximate said first ends thereof;
- (b) a second frame including laterally spaced and parallel side arms and support means attached to and extending between said side arms of said second frame for at least partially supporting a user's weight thereon when said exercise machine is operable for abdominal exercise in said first exercise configuration and when said exercise machine is operable for strength exercise in said second exercise configuration, said side arms of said second frame being pivotally attached to said transverse arm of said first frame proximate said first end thereof such that said second frame is pivotally movable relative to said first frame and can be positioned on and supported at least partially by said support rods of said first frame;

5,779,609
INTEGRATED STUD WELDING ROBOTIC TOOL CHANGING SYSTEM

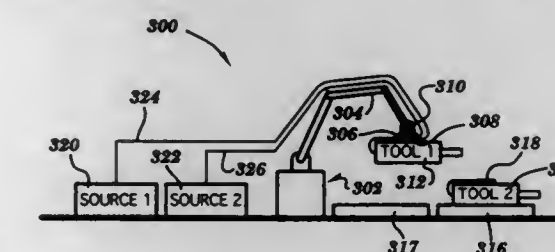
W. Paul Cullen, Scotia; Pamela B. Billings, Ballston Spa, and Douglas N. Gallup, Schoharie, all of N.Y., assignors to Applied Robotics, Inc., Glenville, N.Y.

Filed Jan. 16, 1996, Ser. No. 587,367

Int. Cl.⁶ B23Q 3/155; B23K 9/20

U.S. Cl. 483—69

3 Claims



1. In a robotic tool changing system which facilitates the automatic exchange of tools on an end of a robot arm, the combination comprising:
 - a robot adapter assembly for attachment to the end of the robot arm;
 - a tooling adapter assembly for attachment to a fastener attaching tool;
 - means for coupling said tooling adapter assembly to said robot adapter assembly;
 - a first passage defining member associated with said robot adapter assembly, said first passage defining member having an entry port at a first end thereof and an exit port at a second end thereof;
 - a second passage defining member associated with said tooling adapter assembly, said second passage defining member having an entry port at a first end thereof and an exit port at a second end thereof;
 - a first feed tube for transporting fasteners from a source of fasteners to said entry port of the first passage defining member;

a second feed tube for transporting fasteners from the exit port of said second passage defining member to the fastener attaching tool; and wherein the coupling of the tooling adapter assembly to the robot adapter assembly causes said first and second passage defining members to engage and define a passageway extending from said entry port of said first passage defining member to said exit port of said second passage defining member to allow a fastener to be transported from said source of fasteners through said first feed tube, said passageway and said second feed tube to the fastener attaching tool.

5,779,610

ROLL PAINT APPLICATION AND STRUCTURAL ELEMENT FOR THE LATTER

Georg Wehrauch, Wald-Michelbach, Germany, assignor to Sterkel GmbH Pinsel- und Farbröllerwerk, Wolpertswende, Germany

Continuation of Ser. No. 392,126, Feb. 22, 1995, abandoned.

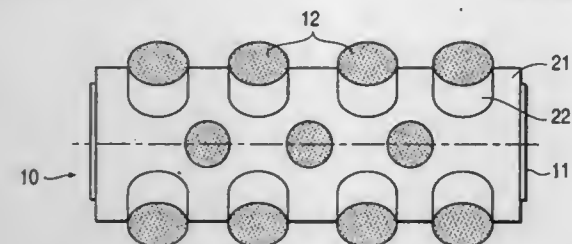
This application Apr. 7, 1997, Ser. No. 835,194

Claims priority, application Germany, Feb. 22, 1994, 94 02 910 U

Int. Cl.⁶ B21B 27/02

U.S. Cl. 492—13

20 Claims



1. A roll for paint application, for use with a paint roller provided with a handle and on which the roll can be mounted in rotary manner, comprising:

a circular cylindrical carrying body having a paint application layer on an outer surface of the circular cylindrical carrying body with the paint application layer being one of a non woven, a fleece or a foam layer and at least one structural element in the form of a tubular sleeve member disposed over the paint application layer and with openings extending through the tubular sleeve member and portions of the paint application layer projecting through and radially outward from the openings.

5,779,611

Patent Not Issued For This Number

5,779,612

COMBINATION CHECK AND ENVELOPE

J. Garrett Whitney, 2225 Mistletoe Ave., Fort Worth, Tex. 76110

Continuation of Ser. No. 317,316, Oct. 4, 1994, abandoned.

This application Nov. 19, 1996, Ser. No. 752,632

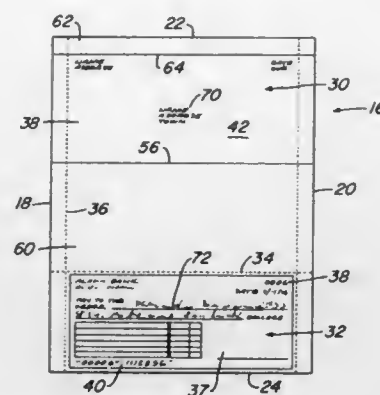
Int. Cl.⁶ B31B 1/88

U.S. Cl. 493—331

8 Claims

1. A method of writing and preparing to send a bank draft using an electronic printer such as those used in conjunction with a personal computer, the method comprising the steps of:

(a) providing a preglued, perforated paper sheet which is completely opaque and is sized to be received within the electronic printer, the paper sheet having a front surface and a back surface and having a perimeter defined by opposite side



edges and upper and lower end edges, the paper sheet having an upper fold line parallel and adjacent to the upper end edge to define a flap, an intermediate fold line parallel to and spaced below the upper fold line to define an address panel between the intermediate and upper fold lines, a perforated line below and parallel to the intermediate fold line to define a central panel between the perforated line and the intermediate line and a bank draft panel below the perforated line, the paper sheet further being preglued with longitudinal adhesive stripe on the side edges of the back surfaces of the address panel and the central panel and with a transverse adhesive strip along the back surface of the flap; then

(b) feeding the preglued, perforated paper sheet into the electronic printer;

(c) printing recipient indicia on the front surface of the address panel and the amount of the bank draft and recipient indicia on the front surface of the bank draft panel using the electronic printer; then

(d) discharging the paper sheet from the electronic printer; then

(e) folding the address panel along the intermediate fold line and the bank draft panel along the perforated line to define an envelope configuration with the bank draft panel sandwiched between the address panel and central panel;

(f) bonding the adhesive strips on the back surface of the central panel and the address panel to seal the side edges of the address and central panels to retain the envelope configuration;

(g) folding the flap over the back surface of the central panel; and

(h) bonding the adhesive strip on the back surface of the flap to the front surface of the central panel, sealing the bank draft panel within the envelope configuration.

5,779,613

Patent Not Issued For This Number

5,779,614

METHOD AND APPARATUS FOR FOLDING TOY BALLOONS

Richard John Kurtz, Arvada, Colo., assignor to M & D Balloons, Inc., Manteno, Ill.

Filed Sep. 5, 1995, Ser. No. 523,235

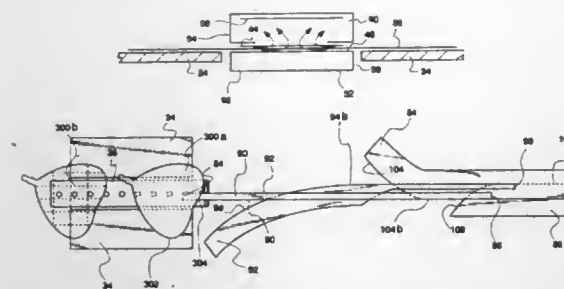
Int. Cl.⁶ B31B 1/26

U.S. Cl. 493—436

21 Claims

1. An apparatus for folding a flexible, inflatable vessel comprised of a toy balloon having at least two balloon films joined together at respective peripheral edges to form a first portion and remaining portions, said first portion having an upper surface, the apparatus comprising:

a conveyor means having an inlet end and an outlet end, for lifting and pulling the upper surface of the first portion of the inflatable vessel and for hangingly suspending the remaining



portions of the inflatable vessel while lifting, pulling and hangingly suspending the inflatable vessel along a path of travel;

a serial succession of generally horizontal folding plates at least partly disposed below the conveyor means and having laterally offset inlet edges disposed at an angle to the path of travel and spaced apart along the path of travel; and such that the conveyor means lifts and pulls the inflatable vessel over and past the inlet edges of the folding plates so as to slide the remaining, hangingly suspended portions in overlying relationship with the inlet edges of the folding plates, folding successive parts of the remaining, hangingly suspended portions in overlying relationship with one another and with the first portion.

5,779,615

Patent Not Issued For This Number

5,779,616

FORMER FOR A PRINTING MACHINE

Otto Hintermeier, Augsburg; Reinhold Litzel, Königsbrunn, and Hans Schwöpfung, Augsburg, all of Germany, assignors to Man Roland Druckmaschinen AG, Offenbach AM Main, Germany

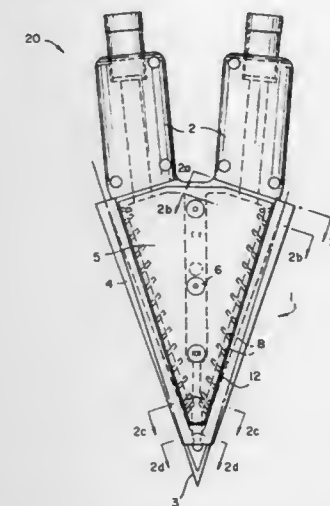
Filed Oct. 5, 1995, Ser. No. 538,966

Claims priority, application Germany, Oct. 5, 1994, 44 35 528.9

Int. Cl.⁶ B65H 45/22

U.S. Cl. 493—439

10 Claims



1. A former for longitudinally folding a web, comprising:

a nose plate including a base plate having a recessed upper face and a bordering edge region that borders the recessed upper face and has a top surface from which the upper face is recessed and an internally directed sidewall, the nose plate further including a cover plate having an upper face, a lower face and a peripheral sidewall, the cover plate being arranged

so that the lower face rests on the recessed upper face of the base plate and so that the peripheral sidewall is opposite the sidewall of the base plate, whereby a running surface for the web is formed by the upper face of the cover plate and the top surface of the bordering region of the base plate, the base plate and the cover plate being configured to define a plurality of air ducts disposed between said base plate sidewall and said cover plate sidewall to provide a passage between said running surface and the web.

5,779,617

TOOL HEAD POSITIONING DEVICE

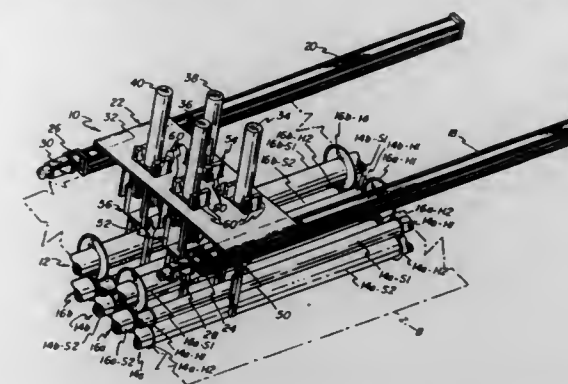
Barry E. Larkin, Timonium, and Meyer L. Ruthenberg, Owings Mills, both of Md., assignors to United Container Machinery, Inc., Glen Arm, Md.

Filed Jul. 8, 1996, Ser. No. 678,555

Int. Cl.⁶ B31B 1/14

U.S. Cl. 493—475

20 Claims



1. A tool positioning device in a machine for working paper-board blanks conveyed in a horizontal direction through the machine, the machine including pairs of parallel rotary shafts wherein each pair of shafts includes a first, upper shaft and a second, lower shaft located below said upper shaft, and a plurality of tool heads mounted on each of said first and second shafts, said tool heads on said first shafts cooperating with said tool heads on said second shafts to work a paperboard blank conveyed along a path between said first and second shafts, said tool positioning device comprising:

a plurality of coupling members located on one side of said path, said coupling members including vertically extending portions for engaging said tool heads to reposition said tool heads axially along said shafts; means for guiding said coupling member in movement in a direction substantially perpendicular to said path; and wherein each said coupling member is movable linearly in a vertical direction into engagement with said tool heads on both said first and said second shafts of one of said pairs of shafts.

5,779,618

CENTRIFUGAL SEPARATING FILTER

Yasuyuki Onodera, and Kenji Mihara, both of Oyama, Japan, assignors to Komatsu Ltd., Tokyo, Japan

PCT No. PCT/JP95/02615, § 371 Date Jun. 20, 1997, § 102(e) Date Jun. 20, 1997, PCT Pub. No. WO96/19644, PCT Pub. Date Jun. 27, 1996

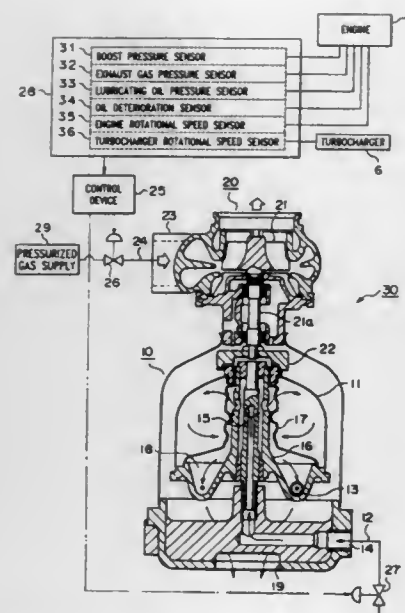
PCT Filed Dec. 20, 1995, Ser. No. 860,070

Claims priority, application Japan, Dec. 22, 1994, 6-336385 Int. Cl.⁶ B04B 9/06; F01M 11/03

U.S. Cl. 494—5

22 Claims

1. A centrifugal separating filter which includes an inner rotating member, and which separates foreign materials in a fluid by rotating the rotating member, said filter comprising:



- a turbine driving device (20) for rotating said rotating member (11);
- a pressurized gas supply for driving said turbine driving device; and
- a control device (25) for outputting an open/close command signal, to a valve (26) which is provided at a turbine inlet of said turbine driving device (25), based on an output signal from at least one condition sensor (28) and an output signal from an oil deterioration sensor (28) for detecting fouling of lubricating oil in the internal combustion engine (1), wherein said at least one condition sensor is at least one of (a) a pressure sensor for detecting a boost pressure of an internal combustion engine (1), (b) a pressure sensor for detecting an exhaust gas pressure of the internal combustion engine, (c) a pressure sensor for detecting a lubricating oil pressure of the internal combustion engine, (d) a speed sensor for detecting a rotational speed of the internal combustion engine, and (e) a speed sensor for detecting a rotational speed of a turbocharger (6).

5,779,619

CENTRIFUGAL SEPARATOR

Leonard Borgström, Tyresö; Patrik Brehmer, Täby; Claes-Göran Carlsson; Peter Franzén, both of Tullinge; Claes Inge, Saltsjö-Duvnäs; Torgny Lagerstedt, and Hans Moberg, both of Stockholm, all of Sweden, assignors to Alfa Laval AB, Lund, Sweden

PCT No. PCT/SE95/00437, § 371 Date Dec. 4, 1996, § 102(e) Date Dec. 4, 1996, PCT Pub. No. WO95/29013, PCT Pub. Date Nov. 2, 1995

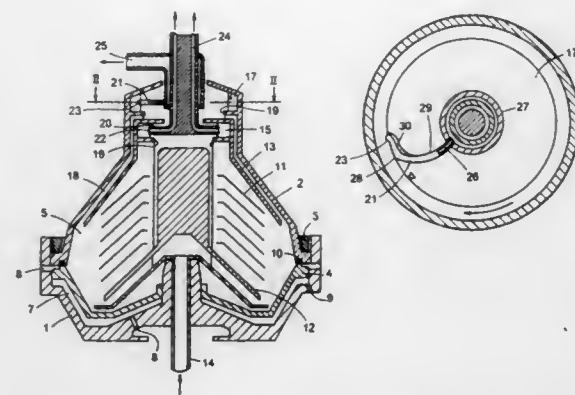
PCT Filed Apr. 20, 1995, Ser. No. 727,614

Claims priority, application Sweden, Apr. 21, 1994, 9401354 Int. Cl.⁶ B04B 11/02

U.S. Cl. 494—56

18 Claims

1. A centrifugal separator comprising a rotor, which rotor is rotatable in a predetermined rotational direction around a rotational axis and forms an inlet for liquid which is to be centrifugally treated, and an outlet chamber (17) for a liquid separated in the rotor, the outlet chamber (17) surrounding the rotational axis and being so designed that liquid present in the outlet chamber (17) during operation forms a liquid body, which has a radially inwardly directed free liquid surface at a preselected radial level in the rotor, rotating around the rotational axis, and
- a stationary discharge device (21) arranged in the outlet chamber (17), which discharge device extends from the rotating liquid body radially inwardly to a central outlet (25) and inside of said discharge device forms a flow channel (26) with an inlet



opening (23,32), which radially is located in the area where the free liquid surface is located during operation, and which during operation is at least partly located in the liquid body and via the flow channel (26) is connected to the central outlet (25), and which discharge device (21) has a front contour (28) projected in a plane perpendicular to the rotational axis and directed towards the rotational direction of the rotor and a rear contour (29) projected in said plane and directed in the rotational direction of the rotor, wherein the front and rear contours (28, 29) viewed radially outwardly each have a directional component in the rotational direction of the rotor along essentially their whole extensions, the front contour (28) being so curved in said plane at the free liquid surface such that the front contour nearby and radially outside the free liquid surface essentially is directed in the rotational direction of the rotor.

5,779,620

Patent Not Issued For This Number

5,779,621

PENILE RING GAUGE

John L. Chaney, 156 Broad St. Box 790, Lake Geneva, Wis. 53147

Filed Oct. 29, 1996, Ser. No. 739,414

Int. Cl.⁶ A61F 5/00

U.S. Cl. 600—38

9 Claims



1. A combination of a set of elastic penile rings and a gauge for selecting a ring from the set wherein each ring has an opening

whose diameter when unstretched is a predetermined percent smaller than the diameter of the penis to which a ring selected from said set is to be applied.

said rings in said set including a ring having the largest diameter opening and a ring having the smallest diameter opening and there is at least one ring in the set having an opening whose diameter is between said largest and smallest opening diameters.

the rings having successive code indicia, respectively, for identification,

said gauge comprising a strip of flexible material having distal and proximal ends and having a cursor slot at a distance from said distal end for the distal end to be passed through said cursor slot to form a loop for the strip to be grasped and pulled to tighten the loop on the penis,

at least a part of said distance between said distal end and said cursor slot having graduations defining spaces which are identified in succession with code indicia corresponding to the code indicia that identify the rings to provide for a male who seeks a ring having an opening diameter that is said predetermined percent smaller than his penis diameter matching the code indicia indicated in a space between or on said graduations by coincidence of said cursor slot and said space or graduation, respectively, to thereby identify the ring diameter that is to be chosen without having to know the actual diameter of the penis or the diameter of the opening of the ring that is indicated to be chosen.

5,779,622

Patent Not Issued For This Number

5,779,623

POSITIONER FOR MEDICAL INSTRUMENTS

Leonard J. Bonnell, Huntingdon Valley, Pa., assignor to Leonard Medical, Inc., Huntingdon Valley, Pa.

Continuation-in-part of Ser. No. 134,206, Oct. 8, 1993, Pat.

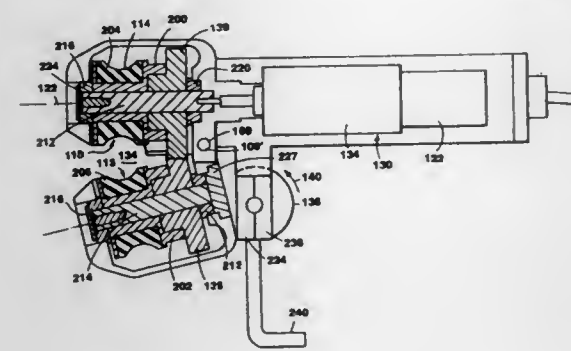
No. 5,540,649, This application Nov. 29, 1995, Ser. No.

564,772

Int. Cl.⁶ A61B 1/01; B65H 51/18

U.S. Cl. 600—114

20 Claims



1. A remote-control device for selectively positioning a medical instrument within a predetermined region of space, said medical instrument having an axially elongated shaft defining an axis, said device comprising:

a clamp having a first section and a second section, the first and second sections being pivotally mounted to enable the clamp to be placed in an open position wherein the shaft of the

medical instrument can laterally pass between the first and second sections of said clamp, and in a closed position wherein the shaft of the medical instrument is laterally held between the first and second sections of said clamp, each section having:

a drive wheel rotatably coupled to said section and having a surface exposed for frictional engagement with the shaft of the medical instrument, said drive wheel being rotatable about an axis that is perpendicular to the axis defined by the medical instrument so that when the surface of said drive wheel engages with the shaft of the medical instrument rotation of the drive wheel moves the medical instrument in a direction along the axis defined by the medical instrument, the surface of said wheel being formed from a material having an elastomeric characteristics for grasping the shaft; and

wherein each drive wheel has a coupling gear mounted to rotate with the drive wheel, with the clamp in the closed position, the coupling gear of the first section engaging the coupling gear of the second section, and a motor housed in the first section of the clamp for directly driving the drive wheel of the first section.

5,779,624

SIGMOID SPLINT DEVICE FOR ENDOSCOPY

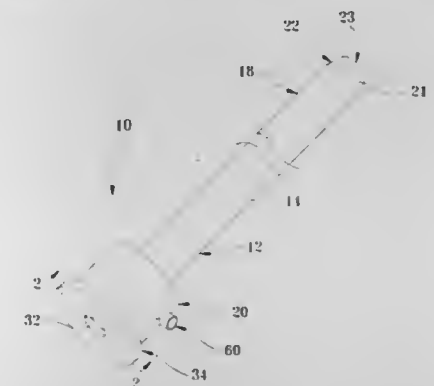
Stanley F. Chang, Fresno, Calif., assignor to Boston Scientific Corporation, Natick, Mass.

Filed Dec. 5, 1996, Ser. No. 760,704

Int. Cl.⁶ A61B 1/04

U.S. Cl. 600—114

26 Claims



1. A splint device for use in medical endoscopy to guide an endoscope having an outer diameter, comprising:

an elongated tubular member having an outer surface, an inner surface, a distal end and a proximal end, said distal end having a first outside diameter and said proximal end having a second outside diameter, said second outside diameter being greater than said first outside diameter;

first sealing means located at said distal end for sealing the annular space between said inner surface of said distal end and the endoscope when the endoscope is inside said tubular member, said first sealing means having an opening and an internal surface, said opening having a diameter slightly smaller than or substantially equal to the outer diameter of the endoscope; and

second sealing means located at said proximal end for sealing the annular space between said inner surface of said proximal end and the endoscope when the endoscope is inside said tubular member.

5,779,625

ENDOSCOPE SYSTEM INCLUDING ENDOSCOPE AND PROTECTION COVER

Akira Suzuki, Kitatsuru-Gun; Hisao Yabe, Tokyo; Yoshihiro Iida, Tokyo; Hideo Ito, Tokyo; Yoshio Tashiro, Tokyo; Minoru Yamazaki, Tokyo; Osamu Tamada, Tokyo; Hiroshi Ishii, Tokyo; Jin Kira, Tokyo, and Takeshi Yokoi, Tokyo, all of Japan, assigns to Olympus Optical Co., Ltd., Tokyo, Japan

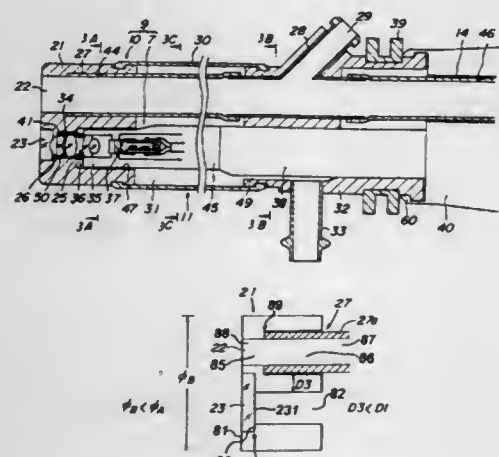
Division of Ser. No. 361,678, Dec. 22, 1994, Pat. No. 5,674,182, which is a continuation-in-part of Ser. No. 38,092, Mar. 30, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,905

Claims priority, application Japan, Feb. 26, 1993, 5-007455 U; Feb. 26, 1993, 5-007456 U; Mar. 1, 1993, 5-007890 U; Dec. 22, 1993, 5-325311; Dec. 27, 1993, 5-331839; Dec. 28, 1993, 5-337227

Int. Cl.⁶ A61B 1/04

U.S. Cl. 600—121

3 Claims



1. An endoscope system, comprising:
- (a) an endoscope including an insertion section having a proximal end and a distal end; and
 - (b) a protective cover for covering said endoscope, said cover comprising:
 - (i) a proximal end and a distal end,
 - (ii) a distal end member disposed at said distal end of the cover,
 - (iii) a first channel for receiving therein said endoscope,
 - (iv) an optical window member connected to an end surface of the distal end member, said optical window member having an inner surface which is situated at a first position between said distal end of said cover and said first channel, and
 - (v) a second channel having a first end near the distal end of said cover and a second end near said proximal end of the cover, said second channel being connected to said distal end member and said first end of said second channel being situated at a second position which is closer to said proximal end of said cover than is said first position;

wherein said cover has a first cross-section at said first position and a second cross-section at said second position, said first and second cross-sections are different from one another, and said second channel at said second position and said optical window member partly overlap with each other in their axial projections.

5,779,626

ENDOSCOPE

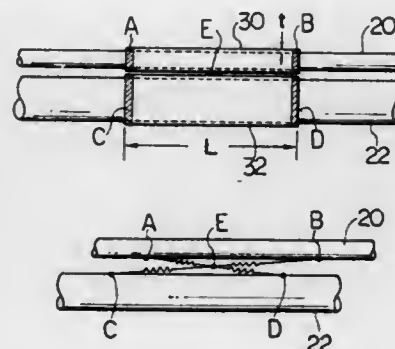
Mituo Kondo, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Sep. 23, 1996, Ser. No. 723,876

Claims priority, application Japan, Sep. 29, 1995, 7-252265 Int. Cl.⁶ A61B 1/04

U.S. Cl. 600—130

7 Claims



1. An endoscope wherein:
- a forceps tube and other contents are loosely inserted into an insertion part of said endoscope and are connected with each other via an elastic member in said insertion part;
 - said forceps tube has a first connecting position and a second connecting position which is at a predetermined distance from said first connecting position in a longitudinal direction of said endoscope in order to secure longitudinal expansion of said elastic member;
 - said other contents have a third connecting position opposite to said first connecting position and a fourth connecting position opposite to said second connecting position; and
 - said elastic member connects said first connecting position to said fourth connecting position, and connects said second connecting position to said third connecting position, said elastic member changing form in the longitudinal direction with dislocation of said forceps tube and other contents as a result of bending of said insertion part, said elastic member restoring said forceps tube and other contents to their original positions by restitutive tensile forces thereof upon elimination of the cause of said bending.

5,779,627

Patent Not Issued For This Number

5,779,628

Patent Not Issued For This Number

5,779,629

DUAL AXIS RETRACTOR

Robert D. Hohlen, 3735 W. 82nd St., Hastings, Nebr. 68901

Filed Oct. 2, 1997, Ser. No. 942,763

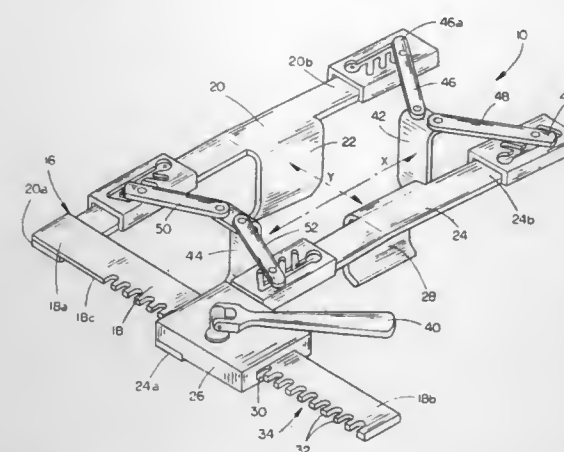
Int. Cl.⁶ A61B 17/00

U.S. Cl. 600—233

17 Claims

17. Apparatus for simultaneously moving two pairs of blades along two independent axes, comprising:

a generally L-shaped frame including an elongated longitudinal arm having first and second ends and an elongated base leg rigidly secured to the arm first end and extending transversely therefrom;



- a second elongated arm having first and second ends with means on the first end for operably connecting the arm to the base leg for selective movement towards and away from the first arm along a transverse axis;
- a first pair of blades, one blade mounted on the first arm and the second blade mounted on the second arm for movement with the arms along transverse axes;
- a second pair of blades oriented generally orthogonally relative to the first pair of blades, each of said second pair of blades operably connected between the first and second arms by a linkage, for movement towards and away from each other along longitudinal axes in response to movement of the arms towards and away from one another; and
- drive means connected between the second arm and base leg for selectively moving the arms towards and away from one another.

5,779,630

MEDICAL SENSOR WITH MODULATED ENCODING SCHEME

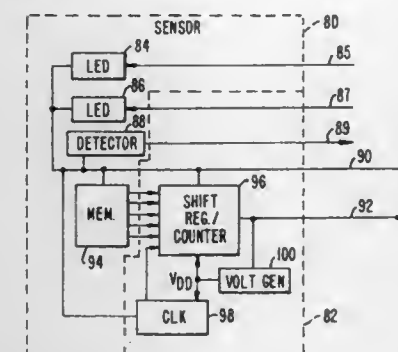
Michael E. Fein, Mountain View; David C. Jenkins, Loomis; Michael J. Bernstein, San Ramon; K. L. Venkatachalam, Palo Alto; Adnan I. Merchant, Fremont, and Charles H. Bowden, San Ramon, all of Calif., assigns to Nellcor Puritan Bennett Incorporated, Pleasanton, Calif.

Division of Ser. No. 168,449, Dec. 17, 1993, Pat. No. 5,695,059. This application May 26, 1995, Ser. No. 451,630

Int. Cl.⁶ A61B 5/00

U.S. Cl. 600—323

15 Claims



1. A pulse oximeter sensor comprising:
- a first emitter which emits light of a first known wavelength;
 - a photosensor for sensing the light emitted by the first emitter;
 - a transmitter for coupling said sensor to a remote oximeter;
 - an encoder for encoding a value indicative of said first known wavelength as a coded value;
 - a modulator, coupled to said transmitter, for providing said coded value as a modulated signal to said transmitter, wherein

said transmitter is adapted to transmit said modulated signal to said remote oximeter for use in an oxygen saturation measurement.

5,779,631

SPECTROPHOTOMETER FOR MEASURING THE METABOLIC CONDITION OF A SUBJECT

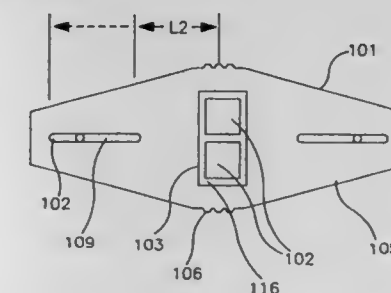
Britton Chance, Marathon, Fla., assignor to Non-Invasive Technology, Inc., Philadelphia, Pa.

Continuation of Ser. No. 150,084, Nov. 15, 1993, which is a continuation of Ser. No. 701,127, May 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 266,019, Nov. 2, 1988, Pat. No. 5,167,230. This application Jun. 7, 1995, Ser. No. 485,346

Int. Cl.⁶ A61B 5/00

U.S. Cl. 600—328

14 Claims



1. A spectrophotometer for measuring a condition of a biological tissue of a subject, comprising:
- a body-conformable support constructed to be mounted on the skin of the subject;
 - a light source optically connected to an input port located in said support;
 - a light detector optically connected to a detection port included in said support in a laterally spaced-apart arrangement from said input port establishing photon lateral-scatter paths through the tissue of interest;
 - an adjustable mechanism constructed to vary the spacing between said input port and said detection port by moving one of said ports relative to said support, the spacing between said ports being several centimeters and being adapted to extend along a surface of the examined tissue, said spacing determining the depth of penetration of the introduced light migrating over lateral scatter-paths in said tissue;
 - an opaque barrier included in said body-conformable support and exposed for contact with the skin, said barrier influencing the lateral scatter paths by preventing substantially detection of light migrating laterally in subcutaneous layers; and
 - a processor, including circuitry receiving a wavelength specific detection signal from said detector, constructed and arranged to determine a condition of the examined tissue.

5,779,632

BIOMEDICAL ELECTRODE COMPRISING POLYMERIZED MICROEMULSION PRESSURE SENSITIVE ADHESIVE COMPOSITIONS

Timothy M. Dietz, St. Paul; Ying-Yuh Lu, Woodbury; Rosa Uy, St. Paul, and Chung I. Young, Roseville, all of Minn., assigns to Minnesota Mining And Manufacturing Company, St. Paul, Minn.

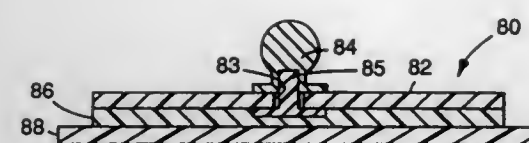
Division of Ser. No. 507,006, Jul. 25, 1995, Pat. No. 5,670,557, which is a continuation-in-part of Ser. No. 188,269, Jan. 28, 1994, abandoned. This application Sep. 23, 1997, Ser. No. 933,742

Int. Cl.⁶ A61B 5/04; 5/0416

U.S. Cl. 600—391

6 Claims

1. A biomedical electrode, comprising:



a field of adhesive conductive medium for contacting mammalian skin and a means for electrical communication for interfacing with the adhesive conductive medium and electrical diagnostic, therapeutic, or electrosurgical instrumentation, the adhesive conductive medium adhered to the means for electrical communication and comprising a polymerized micro-emulsion pressure sensitive adhesive composition having a continuous phase of a hydrophobic pressure sensitive adhesive polymer and a continuous phase of a hydrophilic polymer.

5,779,633

TONOMETER AIR PULSE GENERATOR

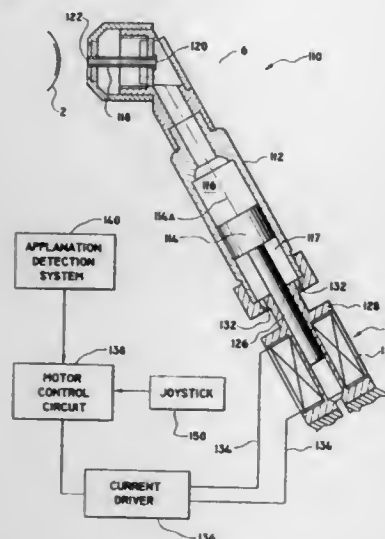
David A. Luce, Clarence Center, N.Y., assignor to Leica Inc., Depew, N.Y.

Filed Jun. 10, 1996, Ser. No. 659,704

Int. Cl.⁶ A61B 3/16

U.S. Cl. 600—398

19 Claims



1. A non-contact tonometer for making a measurement of intraocular pressure of an eye, said non-contact tonometer having an outlet for directing an increasing velocity air pulse toward said eye and detecting means for generating a signal indicating appplanation of the eye caused by said air pulse, which comprises:

compression means communicating with said outlet for generating said air pulse;

a motor drivably connected to said compression means;

energizing means connected to said motor for providing force to move said compression means in a first direction along an axis and produce said air pulse; and

reversing means connected to said energizing means for providing force to stop generation of said air pulse directly in response to said signal generated during said measurement.

5,779,634 MEDICAL INFORMATION PROCESSING SYSTEM FOR SUPPORTING DIAGNOSIS

Takehiro Ema, and Eitaro Nishihara, both of Otawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 880,522, May 8, 1992, abandoned.

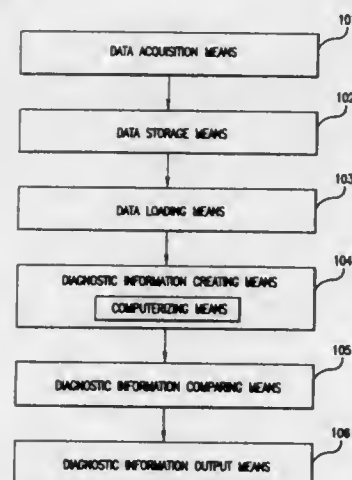
This application Sep. 30, 1994, Ser. No. 315,496

Claims priority, application Japan, May 10, 1991, 3-105851; May 10, 1991, 3-105852; Sep. 3, 1991, 3-222999

Int. Cl.⁶ A61B 5/05

U.S. Cl. 600—407

55 Claims



1. A medical information processing system for supporting diagnostic interpretation, which has a workstation having a storage unit for storing data, the system comprising:

data storage means having a memory means for storing examination data of an object to be examined including interpretation data to be interpreted and interpretation reference data to be referenced during interpretation of the interpretation data, said data storage means being apart from the workstation;

data loading means comprising:

specifying means for specifying a priority order in loading of the interpretation reference data in conjunction with the given interpretation data; and

instructing means for instructing a workstation control means and a memory control means to load the interpretation data and the interpretation reference data from the memory means of the data storage means into the storage unit of the workstation, the interpretation reference data being loaded according to the priority order specified by the specifying means;

diagnostic information creating means for creating diagnostic information relative to the examination data loaded in the storage unit of the workstation;

diagnostic information comparing means for comparing a plurality of the diagnostic information with each other; and
diagnostic information output means for outputting at least one of the created diagnostic information and information concerning results compared by the diagnostic information comparing means.

5,779,635

MICROWAVE DETECTION APPARATUS FOR LOCATING CANCEROUS TUMORS PARTICULARLY BREAST TUMORS

Kenneth L. Carr, Harvard, Mass., assignor to Microwave Medical Systems, Inc., Acton, Mass.

Division of Ser. No. 627,117, Apr. 3, 1996, Pat. No. 5,662,110.

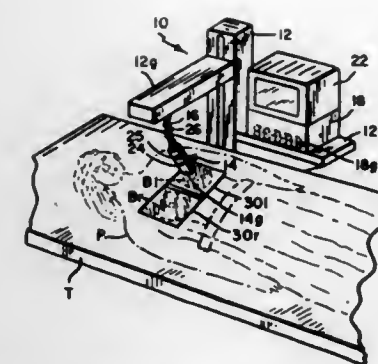
This application Dec. 24, 1996, Ser. No. 777,962

Int. Cl.⁶ A61B 5/00

U.S. Cl. 600—407

4 Claims

1. A method of detecting breast tumors in an individual having two breasts, said method comprising the steps of positioning an



array of microwave antennas against a selected area of one of said breasts so as to receive electromagnetic emissions from a plurality of substantially contiguous subcutaneous locations in said one breast;

simultaneously detecting said emissions to produce a corresponding first plurality of electrical signals indicative of the temperatures of said locations;

digitizing and storing said first plurality of signals;

immediately positioning said antenna array against the corresponding area of the other of said breasts so as to receive similar emissions from corresponding subcutaneous locations in the other breast;

simultaneously detecting said emissions to produce a corresponding second plurality of electrical signals indicative of the temperatures at said locations in said other breast;

digitizing and storing the second plurality of signals;

comparing said first and second pluralities of signals to determine if the detected temperatures from corresponding locations in the breasts differ by more than a selected amount, and locating a thermally insulating interface pad between the antenna array and each breast before positioning the antenna array against each breast.

5,779,636

METHOD OF ECHO VOLUME IMAGING AND MRI SYSTEM USING THE SAME

Hitoshi Kanazawa, Nasu-Gun, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

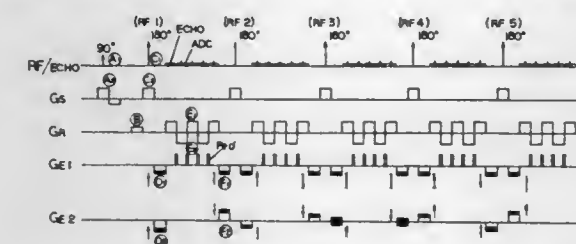
Filed Apr. 28, 1995, Ser. No. 430,361

Claims priority, application Japan, Dec. 21, 1994, 6-318777

Int. Cl.⁶ A61B 5/055

U.S. Cl. 600—410

29 Claims



1. A method of acquiring echo data in magnetic resonance imaging, said echo data being reconstructed into a more than two dimensional MR image and said magnetic resonance imaging being carried out based on a pulse sequence applied to an object to which a coordinate system having mutually-orthogonal first, second and third directions is set, said method comprising the steps of: applying to the object a magnetic RF excitation pulse and a magnetic slice-selective pulse set in the first direction; after applying the magnetic RF excitation pulse and the magnetic slice-selective pulse, applying a magnetic RF refocusing pulse to the object;

after applying the magnetic RF refocusing pulse, applying to the object:

in the first direction, one of two phase-encoding magnetic gradient pulses being incorporated in the pulse sequence and providing a first encoding value changed according to every application of the magnetic RF excitation pulse,

in the second direction, a plurality of readout magnetic gradient pulses whose polarities are alternately inverted at every application, thereby a plurality of echoes are generated consecutively from the object in response to inversion of the polarities of the readout magnetic gradient pulses, and

in the third direction, the remaining one of the two phase-encoding magnetic gradient pulses being incorporated in the pulse sequence and providing a second encoding value changed according to every application of the magnetic RF excitation pulse and to every inversion of the polarities of the readout-magnetic gradient pulses; and

repeating plural times the applying of the magnetic RF refocusing pulse, the applying of the two phase-encoding magnetic gradient pulses, and the applying of the plurality of readout magnetic gradient pulses, said first encoding value being changed at every application of the magnetic RF excitation pulse and the magnetic RF refocusing pulse.

5,779,637

MAGNETIC RESONANCE IMAGING SYSTEM INCLUDING AN IMAGE ACQUISITION APPARATUS ROTATOR

Alex Palkovich, Oxford, and John Bird, Oxon, both of England, assignors to Elscint, Ltd., Haifa, Israel

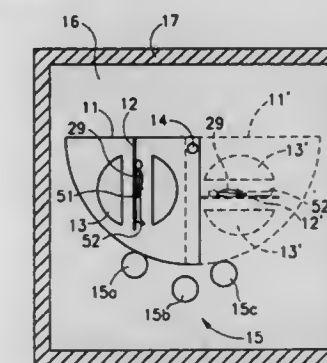
Filed May 3, 1996, Ser. No. 642,435

Claims priority, application United Kingdom, May 11, 1995, 9509911

Int. Cl.⁶ A61B 5/055

U.S. Cl. 600—415

7 Claims



1. A method for imaging using a magnetic resonance imaging (MRI) system, said MRI imaging system including a magnet; said method including:

rotating said magnet and a patient's support that supports a patient, while acquiring MRI images to provide images of a variety of organs in different postures;

creating a homogeneous magnetic field in a predetermined volume that includes said patient's support;

generating gradient fields in the predetermined volume;

generating radio frequency pulses for applying said pulses to a patient supported on said patient's support;

wherein rotating said magnet and said patient's support includes rotating said magnet and said patient's support within a ferromagnetic room and relative to the room,

arranging said magnet to have a first half and second half each of said first half and said second half extending along the length of said patient and said magnet being oriented with

said first half above and said second half being below said patient when said patient's support is rotated to support the patient in a supine position and with said first half being positioned along a backside and said second half being positioned along a front side of said patient when said patient's support is rotated to support the patient in an erect position.

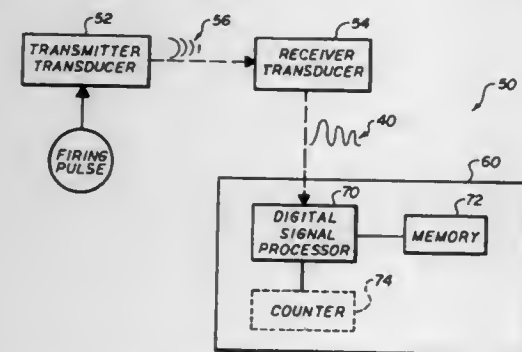
5,779,638
ULTRASOUND-BASED 3-D TRACKING SYSTEM USING A DIGITAL SIGNAL PROCESSOR
Ivan Vesely, Cleveland Heights, Ohio, and Wayne L. Smith, London, Canada, assignors to Sonometrics Corporation, London, Canada

Continuation-in-part of Ser. No. 411,959, Mar. 28, 1995, Pat. No. 5,515,853. This application Apr. 17, 1997, Ser. No. 842,807

Int. Cl.⁶ A61B 8/00

U.S. Cl. 600—437

18 Claims



1. A system for determining a propagation time delay of a transmit waveform initiated by an associated transmitter means and received by an associated receiver means, wherein said receiver means generates an output in the form of an output waveform in response to receipt of the transmit waveform, the system comprising:

- template storage means for storing template waveform data representative of a characteristic output waveform;
- sampling means for sampling the output of the receiver means at a predetermined sampling rate and converting the output waveform to digital output waveform data;
- comparison means for comparing the digital output waveform data to the template waveform data to determine the digital output waveform data corresponding to the beginning of the output waveform; and
- computation means for computing the propagation time delay in accordance with the digital output waveform data corresponding to the beginning of the output waveform.

5,779,639
ULTRASOUND PROBE WITH OFFSET ANGLE TIP
Hubert K. Yeung, Lynnfield, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

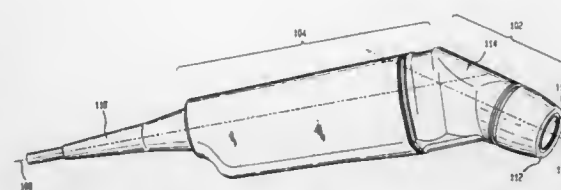
Filed Nov. 21, 1996, Ser. No. 754,489

Int. Cl.⁶ A61B 8/00

U.S. Cl. 600—446

19 Claims

1. An external ultrasonic imaging probe comprising:
- a handle region having first distal and proximal ends and a first longitudinal axis;
 - a tip region having second proximal and distal ends, said second proximal end coupled to said first distal end, and a second longitudinal axis intersecting said first longitudinal axis at an acute angle, wherein said tip region includes a patient-



contacting surface located at said second distal end with a substantially planar imaging window that is substantially orthogonal with said second longitudinal axis, and an ultrasound transducer adjacent to and substantially parallel with said imaging window to provide a field of view extending from said imaging window; and

a drive mechanism configured to rotate said ultrasound transducer about said second longitudinal axis.

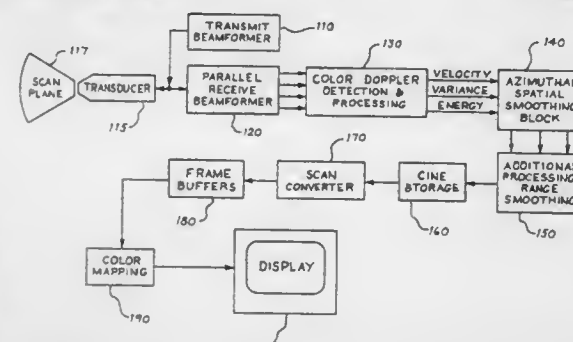
5,779,640
ULTRASOUND MULTI-BEAM DISTORTION CORRECTION SYSTEM AND METHOD
Gregory L. Holley, Mountain View, and Ismayil M. Guracar, Redwood City, both of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Filed Apr. 26, 1996, Ser. No. 638,384

Int. Cl.⁶ A61B 8/00

U.S. Cl. 600—447

17 Claims



1. An ultrasound multi-beam distortion correction system for an ultrasound imaging system comprising a transmit beamformer for generating a sequence of transmit beams, a receive beamformer operative to acquire multiple receive beams from each respective transmit beam, wherein each receive beam is associated with a respective azimuthal coordinate, and a display system responsive to the receive beams, said correction system comprising:

- a spatial filter responsive to input signals derived from the receive beams to generate a corrected signal output as a function of a plurality of the receive beams and a plurality of filter weights; and
- means for selecting the filter weights applied by the spatial filter to the input signals to cause the filter weights to vary in accordance with the azimuthal coordinates of the selected plurality of receive beams to reduce artifacts associated with multiple receive beam groupings.

5,779,641
METHOD AND APPARATUS FOR THREE-DIMENSIONAL ULTRASOUND IMAGING BY PROJECTING FILTERED PIXEL DATA
William Thomas Hatfield, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

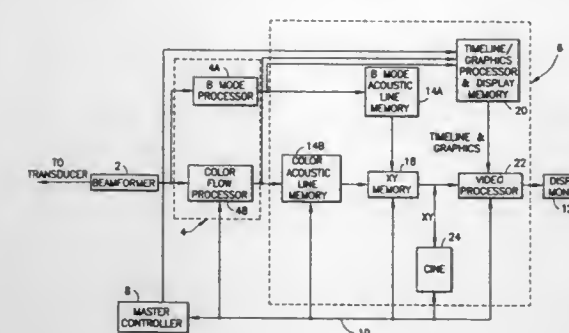
Filed May 7, 1997, Ser. No. 852,773

Int. Cl.⁶ A61B 8/00

U.S. Cl. 600—443

18 Claims

1. A system for three-dimensional imaging of ultrasound scatterers in an object volume, comprising:



an ultrasound transducer array for transmitting ultrasound beams and detecting ultrasound echoes reflected from said object volume at a multiplicity of focal positions in a scan plane; means coupled to said ultrasound transducer array for acquiring imaging data derived from ultrasound echoes reflected from each one of a multiplicity of scan planes through said object volume;

means for converting the acquired imaging data for each scan plane into a respective image frame of pixel data;

memory means for storing pixel data for each of a multiplicity of image frames corresponding to said multiplicity of scan planes;

means for retrieving a volume of pixel data from said memory means corresponding to a volume of interest in the object volume;

means for three-dimensional filtering said volume of pixel data by applying a set of filter coefficients to pixel data of n image frames during each filtering operation, where $n \geq 2$, to form a three-dimensionally filtered pixel data volume;

means for projecting said three-dimensionally filtered pixel data volume onto a first image plane, thereby forming a first projected data set representing a first projected image;

a display monitor; and

means for displaying said first projected image on said display monitor.

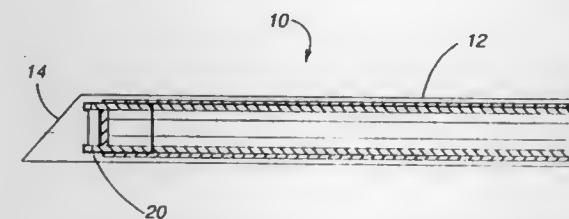
5,779,642
INTERROGATION DEVICE AND METHOD
Christopher Nightengale, 6303 E. Jamison Cir. South, Englewood, Colo. 80112

Continuation-in-part of Ser. No. 585,924, Jan. 16, 1996. This application Feb. 18, 1997, Ser. No. 801,562

Int. Cl.⁶ A61B 8/12

U.S. Cl. 600—461

9 Claims



1. A method of locating a nerve in a body, said nerve associated with a vessel having flowing blood cells, said method comprising the steps of:

- (a) penetrating the body with a guide needle having an electrode contained therein;
- (b) guiding said needle into the body in response to a detector signal triggered by an ultrasound means within said electrode; and
- (c) guiding said needle to a position proximate the nerve in response to a predetermined muscle response from a stimulating signal emitted by said electrode.

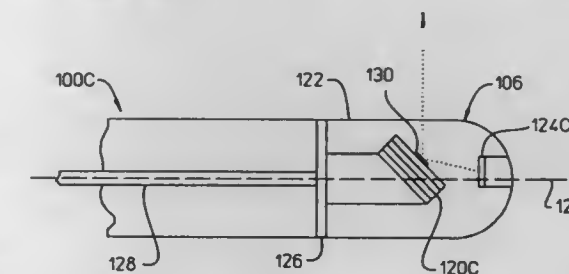
5,779,643
IMAGING GUIDEWIRE WITH BACK AND FORTH SWEEPING ULTRASONIC SOURCE
Paul Lum, Los Altos, and Edward Verdonk, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 26, 1996, Ser. No. 757,040

Int. Cl.⁶ A61B 8/12

U.S. Cl. 600—462

23 Claims



1. Imaging guidewire for imaging tissues from inside a patient's body cavity having a wall, the imaging guidewire having a distal end suitable for inserting inside the body cavity and a proximal end opposite the distal end, comprising:

- (a) elongated main body portion; and
- (b) end portion connected distally to the elongated main body portion, comprising:
 - (i) housing having a portion that is substantially transparent to ultrasound, the housing being proximate to the distal end of the imaging guidewire;
 - (ii) an ultrasonic beam transmitting means in the housing for transmitting an ultrasonic beam, the means having a transducer for emitting the ultrasonic beam and a pivotable member which directs the ultrasonic beam to a selected direction, the pivotable member being supported by support arms operatively connected in the housing, said support arms by torsion or flexion allowing the pivotable member's back and forth pivotal motion for scanning the ultrasonic beam at the wall of the body cavity for imaging; and
 - (iii) driver in said housing for driving the pivotal motion of the pivotable member, the driver being located proximate to the transducer such that all driving motions occur proximate to the distal end of the imaging guidewire.

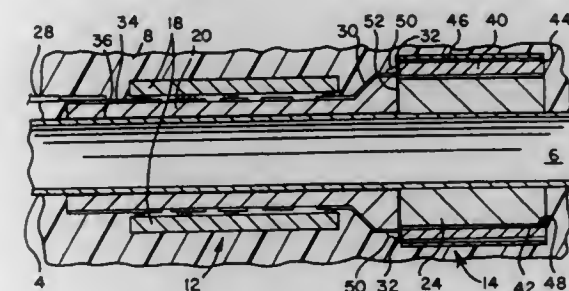
5,779,644
ULTRASOUND CATHETER PROBE
Michael J. Eberle, Fair Oaks; Gary P. Rizzuti, Shingle Springs, and Horst F. Kiepen, Georgetown, all of Calif., assignors to Endosonics Corporation, Rancho Cordova, Calif.

Continuation of Ser. No. 516,538, Aug. 18, 1995, Pat. No. 5,603,327, which is a continuation of Ser. No. 234,848, Apr. 28, 1994, Pat. No. 5,453,575, which is a continuation-in-part of Ser. No. 12,251, Feb. 1, 1993, Pat. No. 5,368,037. This application Sep. 11, 1996, Ser. No. 712,166

Int. Cl.⁶ A61B 8/00

U.S. Cl. 600—463

25 Claims



1. A method of making an ultrasound transducer probe assembly for insertion into a cavity and emitting ultrasonic waves to facili-

tate construction of a usable image in accordance with detected reflected ultrasonic acoustic waves, said method comprising the steps:

- manufacturing a planar sheet comprising a set of transducer elements and a substrate;
- re-shaping the planar sheet into a substantially non-planar shape; and
- communicatively coupling the set of transducer elements to integrated circuits on the ultrasound transducer probe.

5,779,645

SYSTEM AND METHOD FOR WAVEFORM MORPHOLOGY COMPARISON

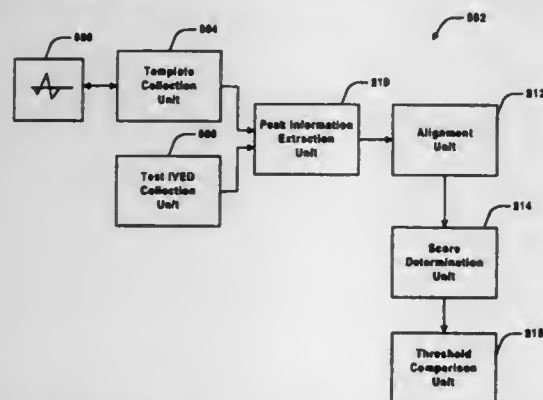
Timothy Scott Olson, San Jose; April Catherine Pixley, Los Altos, and Michael O. Williams, Mt. Shasta, all of Calif., assignors to Pacesetter, Inc., Sunnyvale, Calif.

Filed Dec. 17, 1996, Ser. No. 767,660

Int. Cl.⁶ A61B 5/464

U.S. Cl. 600—518

21 Claims



1. A method for comparing a test electrogram to a template electrogram, comprising the steps of:
 - (a) collecting a template electrogram;
 - (b) collecting a test electrogram;
 - (c) locating a group of three consecutive peaks having a largest cumulative peak amplitude in said template electrogram and extracting template peak information from that portion of said template electrogram;
 - (d) locating a group of three consecutive peaks having a largest cumulative peak amplitude in said test electrogram and extracting test peak information from that portion of said test electrogram;
 - (e) comparing polarities and positions of said test peak information with polarities and positions of said template peak information to align said test electrogram with said template electrogram; and
 - (f) comparing said test peak information with said template peak information to generate a score indicative of similarity between said template electrogram and said test electrogram to thereby provide an indication of whether said test and template electrograms originate from a same region of a patient's heart.

5,779,646

DEFLECTABLE BIOPSY CATHETER

Josef V. Koblisch, Framingham; Thomas T. Coen, Westboro, both of Mass., and George J. Klein, London, Canada, assignors to E.P. Technologies Inc., San Jose, Calif.

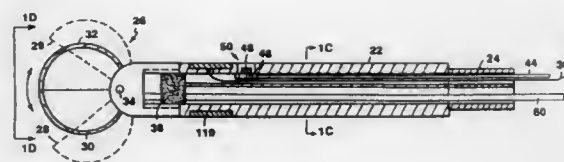
Continuation of Ser. No. 395,968, Feb. 28, 1995, Pat. No. 5,715,832. This application Aug. 27, 1997, Ser. No. 918,913

Int. Cl.⁶ A61B 5/00

U.S. Cl. 600—567

41 Claims

1. A deflectable biopsy catheter for obtaining a tissue sample from a body cavity of a patient, the catheter comprising:



an elongate catheter shaft having a body portion defining a proximal end and a distal end, a flexible tip portion associated with the distal end of the body portion, and a lumen extending from the body portion to the tip portion, the catheter shaft being sized and constructed to be advanced into a body cavity of a patient;

- a deflection wire extending through the lumen and attached to the flexible tip portion of the catheter shaft; and
- a pair of biopsy jaws coupled to the flexible tip portion of the catheter shaft and having first and second opposed free cutting surfaces exposable for contact with a selected area of tissue within the patient's body cavity and movable with respect to each other to cut a tissue sample from the selected area of tissue.

5,779,647

AUTOMATED BIOPSY INSTRUMENTS

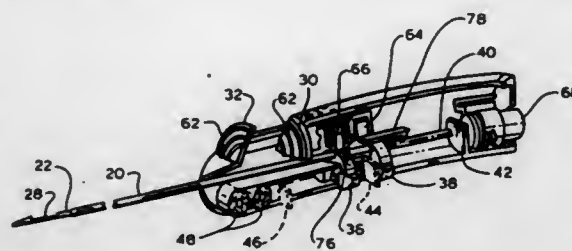
Sorany Chau, 1800 Wedgewood Dr. #106, Gurnee, Ill. 60031; Jan Como-Rodriguez, 814 Liberty Bell Ct., Libertyville, Ill. 60048, and Thomas Kupec, 3874 Grandview Ave., Gurnee, Ill. 60031

Filed Jun. 7, 1995, Ser. No. 474,756

Int. Cl.⁶ A61B 10/00

U.S. Cl. 600—564

36 Claims



1. A biopsy device comprising:
 - a housing;
 - a cannula slidably extending from the housing through an opening;
 - a stylet slidably positioned within the cannula;
 - a stylet actuator associated with the stylet, wherein the stylet is retracted within the housing when the cannula actuator is actuated;
 - a cannula actuator associated with the cannula, wherein the cannula is retracted within the housing when the cannula actuator is actuated, the cannula and stylet actuators positioned laterally relative to each other along a longitudinal direction of the biopsy device; and,
 - forced generator engagable with the stylet and the cannula, wherein the stylet and the cannula are driven outward from the housing by forces released from the force generator.

5,779,648

MULTI-MOTION CUTTER MULTIPLE BIOPSY SAMPLING DEVICE

Michael S. Banik, Cincinnati, Ohio, and Donald E. Robinson, Hopkinton, Mass., assignors to Boston Scientific Corporation, Natick, Mass.

Continuation of Ser. No. 557,916, Nov. 14, 1995, abandoned,

which is a continuation of Ser. No. 380,202, Jan. 30, 1995,

Pat. No. 5,471,992, which is a continuation of Ser. No.

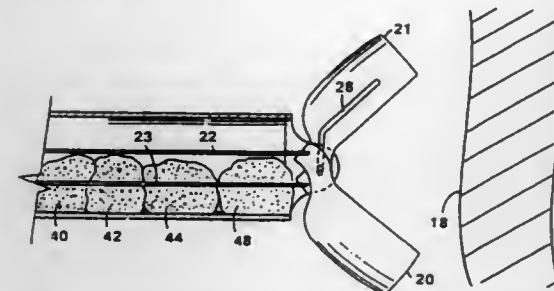
193,298, Feb. 8, 1994, abandoned. This application Mar. 12,

1997, Ser. No. 820,411

Int. Cl.⁶ A61B 5/00

U.S. Cl. 600—567

25 Claims



1. An instrument for obtaining multiple tissue samples from sites within a body while the instrument remains within the body, the instrument comprising:
 - an elongated flexible portion having a distal end;
 - a device body defining a storage space proximate the distal end for storing multiple samples; and
 - a distal end sampling assembly having a first cutting member capable of a rotational motion for detaching a tissue sample from the body and of an axial motion for disposing said sample into said storage space.

5,779,649

SURGICAL SUCTION WAND WITH FILTER

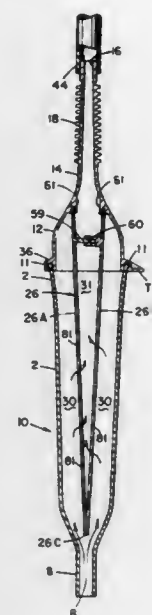
H. Nicholas Herbert, San Juan Capistrano, Calif., assignor to Pabban Development, Inc., Irvine, Calif.

Filed Dec. 17, 1996, Ser. No. 768,751

Int. Cl.⁶ A61B 5/00

U.S. Cl. 600—571

20 Claims



1. A surgical suction apparatus comprising a tubular body having an inner wall surface,

- a hollow tip at one end of said body which communicates into the interior of said body,
- a releasable cap closing the other end of said body,
- a tubular connector which communicates through said cap into the interior of said body,
- a filter member located within said body to define a chamber between said filter member and said inner wall surface of said body,
- said filter member includes a plurality of plate members,
- said filter member including a plurality of apertures therein interconnecting the interior of said filter member with said chamber, and
- location means integrally formed on said cap to receive and locate one end of said filter member adjacent said cap.

5,779,650

FLUID SAMPLE COLLECTION AND INTRODUCTION DEVICE AND METHOD

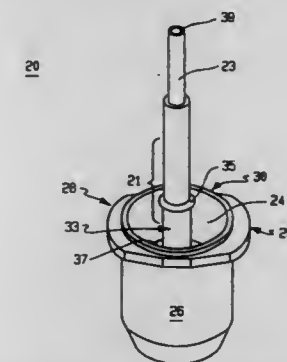
Imants R. Lauks, Rockcliff Park, Canada, and Joseph W. Rogers, Doylestown, Pa., assignors to I-STAT Corporation, Princeton, N.J.

Division of Ser. No. 144,966, Oct. 28, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,871

Int. Cl.⁶ A61B 5/00

U.S. Cl. 600—576

15 Claims



1. A fluid sample collection device comprising:
 - a reservoir chamber housing circumjacent about a central axis having walls and an open end capable of receiving a fluid sample;
 - a capillary tube having a first end and a second end; and
 - means for supporting the capillary tube through the open end of the reservoir chamber housing such that an opening substantially encircles the outside of the capillary tube and the first end of the capillary tube is in the reservoir chamber housing.

5,779,651

MEDICAL APPARATUS FOR THE DIAGNOSIS OF CARTILAGE DEGENERATION VIA SPATIAL MAPPING OF COMPRESSION-INDUCED ELECTRICAL POTENTIALS

Michael D. Buschmann, Montreal; Robert Guardo, Mt-St-Hilaire; Martin Garon; Pierre Le Guyader, both of Montreal, and Pierre Savard, Ste-Thérèse, all of Canada, assignors to Bio Syntech, Laval, Canada

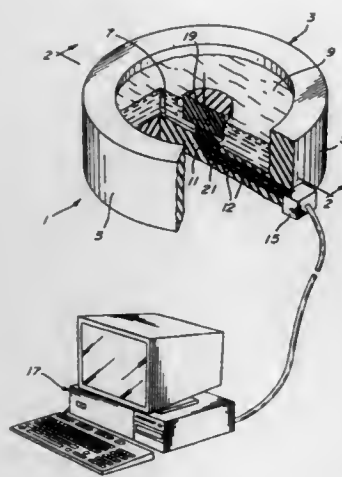
Filed Feb. 7, 1997, Ser. No. 796,299

Int. Cl.⁶ A61B 5/103

U.S. Cl. 600—587

19 Claims

1. A medical apparatus for early detection of degradation in cartilage, said apparatus comprising:
 - a) at least two spaced apart point electrodes fixed to a solid surface and exposed for contact with a cartilage to be analyzed, each said electrodes measuring streaming potentials in such cartilage;
 - b) means for compressing said electrodes and cartilage together;



- c) signal processing means for processing signals received from the electrodes; and
d) means for analytical interpretation of data received from said signal processing means, and
wherein said medical apparatus allows for spatially and temporally resolving the streaming potentials measured between said electrodes.

5,779,652

ACUPRESSURE AND MASSAGING METHOD

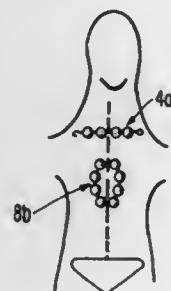
Bonnie Mencher-Allazzo, 6 Fiddlers Green Spur, Huntington, N.Y. 11743

Filed Dec. 12, 1996, Ser. No. 767,601

Int. Cl.⁶ A61H 11/00; 15/00

U.S. Cl. 601—132

1 Claim



1. A method for detection and treatment of muscular irregularities of the back of the human body utilizing a configurative and flexible acupressure and massaging device, comprised of a row of balls slidably, spatially and adjustably mounted on a flexible, elongate and inelastic string for freedom of limited motion in all directions, and wherein the balls are compressive, hollow and resilient, comprising the steps of:

- (a) selecting a design of pressure points on the back of the human body that conforms to and embraces the areas requiring treatment;
(b) spreading the device over a supporting surface and adjusting the balls thereof spatially along the string and in a shape following the selected design so as to embrace areas requiring treatment;
(c) applying the back of the body against the device as spread out for engagement with the balls; and
(d) oscillating the body supported by the balls to control corresponding movement of the balls in all directions and in unison.

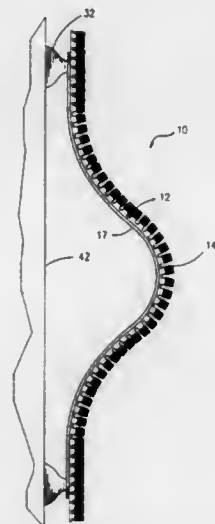
5,779,653
BACK SCRUBBING AND MASSAGING APPARATUS
Michael R. Thompson, 16460 Highway 3 #906, Webster, Tex. 77598

Filed Sep. 9, 1996, Ser. No. 709,714

Int. Cl.⁶ A47K 7/02

U.S. Cl. 601—136

12 Claims



1. A back scrubbing and massaging apparatus comprising:
a backing surface;
a plurality of molded multi-fingered clusters extending outwardly from one side of said backing surface;
a first support bar affixed to an opposite side of said backing surface from said plurality of multi-fingered clusters, said first support bar being of a rigid formable material such that said first support bar retains a shape into which said first support bar is bent, said first support bar extending across at least a portion of said opposite side of said backing surface;
at least one suction cup connected to said first support bar and extending in a direction outwardly from said opposite side, said first support bar including a hinge member formed adjacent to said first suction cup;
a second support bar affixed to an opposite side of said backing surface from said plurality of multi-fingered clusters, said second support bar being of a rigid formable material such that said second support bar retains a shape into which said second support bar is bent, said second support bar extending across at least a portion of said opposite side of said backing surface at a location different than said first support bar; and
at least one suction cup connected to said second support bar and extending outwardly from said opposite side, said second support bar having a hinge member formed adjacent to said at least one suction cup of said second support bar.

5,779,654

CLEAN BREATH WAND

Rita S. Foley, and Patrick F. Foley, both of 1214 Eric La., Lake Zurich, Ill. 60047

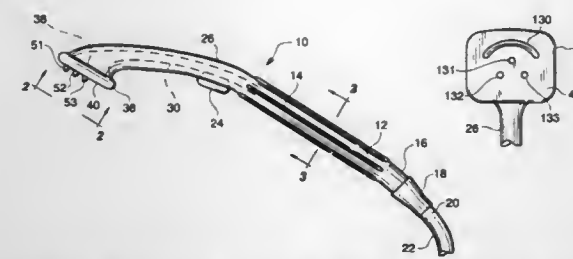
Filed Mar. 26, 1997, Ser. No. 824,502

Int. Cl.⁶ A61M 7/00

U.S. Cl. 601—137

18 Claims

1. A clean breath wand comprising an elongate hollow body having a distal end, a proximal end and a proximal handle portion, coupling means for coupling said proximal handle portion to a source of liquid which is pressurized, a head end fixed to said distal end of said hollow body, and said head end having an upper distal end, a lower proximal end and an outer end face, at least one irrigating opening fluidly coupled to the hollow interior of said handle portion, extending through said front end adjacent said proximal end and opening onto said outer end face, at least one tongue scraping rib or blade thereon on said outer end face,



extending transversely of said outer end face with at least the ends of said at least one rib being curved or inclined toward said elongate hollow body (FIG. 8) and being located above said at least one opening and adjacent said distal end so that said rib prevents pressurized liquid from being directed posteriorly toward a users throat and liquid flow valve means for controlling the delivery of pressurized liquid to said at least one opening.

5,779,655

FLEXIBLE AND REMOVABLE LEG CAST/BRACE HANDLE

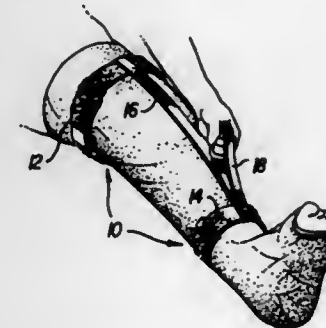
Jeffrey H. Holden, 1040 Arbor Rd., No. A, Winston-Salem, N.C. 27104

Filed Nov. 4, 1996, Ser. No. 743,032

Int. Cl.⁶ A61F 5/00; 5/04

U.S. Cl. 602—5

17 Claims



5. A device for manipulating an immobilized leg of a user, comprising:
first strap means located at a first end of the device for encircling a first portion of the leg;
second strap means located at a second end of the device for encircling a second portion of the leg;
third strap means extending between and joining said first strap means and said second strap means;
a first loop handle having a first end connected to said third strap means and to said second strap means and a second end connected to an intermediate portion of said third strap means; and
a second loop handle having one end connected to said intermediate portion of said third strap means and an opposite end connected to said third strap means and said first strap means.

5,779,656

LOAD REMOVING AND WALKING CAST FOR LOWER LEG AND METHOD OF MAKING THE SAME

Takeshi Goto, Kurume, Japan, assignor to Castec Corporation, Kurume, Japan

Continuation of Ser. No. 567,171, Dec. 5, 1995, Pat. No. 5,649,898. This application Mar. 18, 1997, Ser. No. 820,000

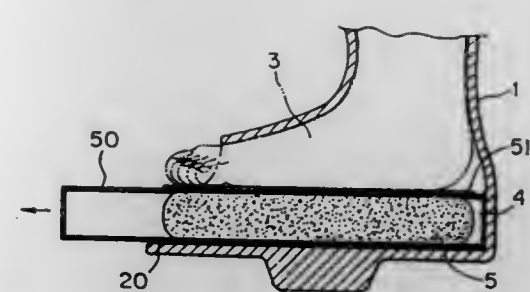
Claims priority, application Japan, Sep. 26, 1995, 7-270684

Int. Cl.⁶ A61F 5/00

U.S. Cl. 602—6

17 Claims

1. A method for forming a load removing and walking cast about a lower leg of a patient comprising the steps of positioning a



substantially L-shaped member having a substantially planar base and an upstanding heel-contacting plate member adjacent a lower leg of a patient such that the upstanding plate member is in contact with the patient's heel of the foot and the substantially planar base is spaced away from the sole of a patient's foot to define a spatial void therebetween, applying a casting plaster about the lower leg and foot of a patient to form a cast having an interior bottom base portion cast adjacent said substantially planar base and including a leg surrounding portion that surrounds, supports, and suspends the lower leg of a patient at the knee and its adjacent parts so as to maintain a spatial void between the sole of a patient's foot and the interior bottom base portion, and allowing the casting plaster to solidify.

7. A load removing and walking lower leg cast adapted to surround and support the lower leg of a patient comprising a plaster cast leg surrounding portion and a plaster cast bottom portion, a substantially L-shaped member having a substantially planar base and an upstanding plate member, said planar base lying upon said plaster cast bottom portion and an upper portion of said upstanding plate member in contact with the patient's heel portion of the foot to maintain a spatial void between said plaster cast bottom portion and the sole of a patient's foot during the imposition of reactive loading forces upon the cast during walking so as to reduce the loading forces acting upon a patient's lower leg.

5,779,657

NONSTRETCHABLE WOUND COVER AND PROTECTOR

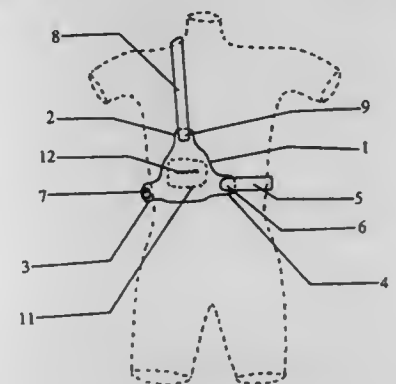
Yousef Daneshvar, 21459 Woodfarm, Northville, Mich. 48167

Filed Jul. 21, 1995, Ser. No. 505,538

Int. Cl.⁶ A61F 5/00

U.S. Cl. 602—60

23 Claims



1. A device for protecting a wound site on the exterior of a body comprising:
a) a non-stretchable cover adapted to cover an underlying wound site on the exterior of a body;
b) a support system for supporting said cover so that said cover is held against the exterior of a body in covering relation to an underlying wound site;
c) said support system comprising a first strap means and a second strap means both of which strap said cover to the exterior of a body;

- d) wherein said first strap means and said cover together form a girdling portion that girdles a portion of a body to exert a girdling force holding said cover against the exterior of a body in covering relation to an underlying wound site;
- e) wherein said second strap means forms a non-girdling portion that does not girdle a portion of a body and that acts on said girdling portion in a direction that is transverse to said girdling portion; and
- f) wherein said girdling portion comprises means for setting a desired effective length of said first strap means and includes means for allowing said girdling portion to be wrapped around and unwrapped from a portion of a body.

5,779,658

PROTECTIVE GARMENT FOR THE HIP

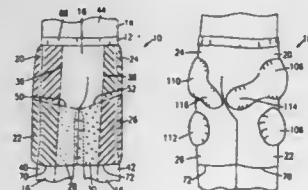
Ricardo E. Saca, 1527 Parker Canyon Rd., Walnut, Calif. 91789

Continuation of Ser. No. 413,412, Mar. 30, 1995, Pat. No. 5,658,246. This application May 13, 1997, Ser. No. 856,078

Int. Cl.⁶ A61F 5/00

U.S. Cl. 602—61

12 Claims



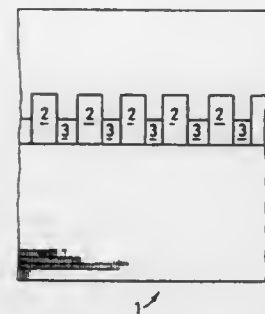
1. A protective garment for a person's hip joint and hip comprising: a pair of shorts extending from a waist opening superiorly to two leg openings inferiorly; the garment having a front section anteriorly, an upper right lateral section rightward laterally adjacent to the front section, a lower right lateral section inferiorly adjacent to the upper right lateral section, an upper left lateral section leftward laterally adjacent to the front section, a lower left lateral section inferiorly adjacent to the upper left lateral section, a lower right medial section medially adjacent the lower right lateral section and inferiorly adjacent the front section, a lower left medial section medially adjacent the lower left lateral section and inferiorly adjacent the front section, an upper back section posteriorly adjacent and between the upper right lateral and upper left lateral sections and a lower back section inferiorly adjacent the upper back section and posteriorly adjacent and between the upper right lateral and upper left lateral sections; the garment further having protective padding suitable for absorbing or dispersing energy transmitted to the hip during a fall, the padding being in combination with the upper right lateral section and the lower right lateral section, wherein the padding in combination with the upper right lateral section is separated from the padding in combination with the lower right lateral section by a gap; the gap comprising substantially unpadded flexible material, the gap allowing substantially unhindered flexion and abduction of the hip joint; wherein the padding in combination with the lower right lateral section extends posteriorly beyond a line approximately bisecting the right lateral side of the garment anteriorly and posteriorly; and wherein the front section, upper back section, lower right medial section and lower left medial section are substantially devoid of protective padding.

5,779,659
ELASTIC BANDAGE WITH TENSION INDICATOR
Kenneth Alfred Allen, Hucknall, England, assignor to Conva-Tec Limited, England
Continuation of Ser. No. 446,724, May 30, 1995, abandoned.
This application Mar. 18, 1997, Ser. No. 791,538
Claims priority, application United Kingdom, Dec. 1, 1992, 9225146

Int. Cl.⁶ A61F 5/00

U.S. Cl. 602—75

21 Claims



20. An elastic bandage bearing a geometrical pattern, comprising: components which adopt a recognizable configuration when the bandage is extended to a predetermined degree, said components being rectangles having short sides which lie parallel to the longitudinal axis of the bandage and longer sides which lie transverse to the bandage, the short sides of the rectangles being co-linear and together forming a centrally disposed application guide line located halfway between the bandage longitudinal edges.

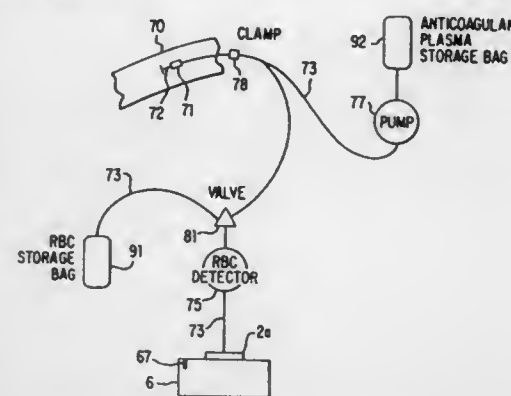
5,779,660

BLOOD COLLECTION AND SEPARATION PROCESS
Gordon F. Kingsley; Thomas D. Headley, both of Wellesley, and Lise N. Halpern, Wayland, all of Mass., assignors to Transfusion Technologies Corporation, Natick, Mass.
Division of Ser. No. 482,617, Jun. 7, 1995, Pat. No. 5,560,147.
This application Jun. 13, 1996, Ser. No. 662,615

Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—6

12 Claims



1. A method of collecting and processing blood from a donor, the method comprising the steps of: drawing a volume of whole blood from a donor through venous-access means; adding anticoagulant from a first container to the whole blood directing the whole blood from the venous-access means to a separation means; using the separation means to separate the whole blood into plasma and red blood cells; and directing the plasma from the separation means to the first container.

5,779,661
METHOD OF TREATING DYSFUNCTIONAL BLADDER SYNDROMES BY ELECTROMOTIVE DRUG ADMINISTRATION

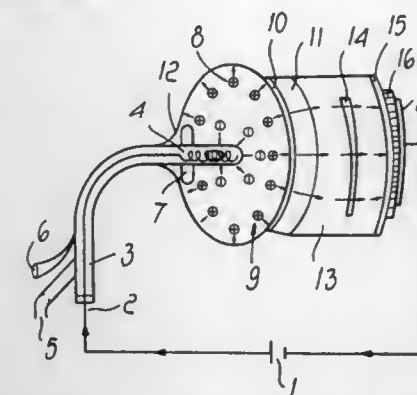
Robert L. Stephen, Salt Lake City, Utah; Manfred Stöhrer, Murnau, Germany; Umberto Fontanella, Milan, Italy; Donald P. Griffith, Houston, Tex.; Franco Lugnani, Trieste, Italy; Cino Rossi, Rome, Italy, and Silvio Eruzzi, Mantova, Italy, assignors to Physion, S.r.l., Italy

Filed Dec. 11, 1995, Ser. No. 570,507

Int. Cl.⁶ A61N 1/30

U.S. Cl. 604—21

15 Claims



1. A method of treating dysfunctional bladder syndromes by Electromotive Drug Administration of intravesically instilled drug into a bladder wall, said method comprising the steps of:

- inserting a catheter via a urethra into a bladder and draining said bladder of urinary contents;
- administering into said bladder via said catheter an electrically conductive aqueous solution comprising at least a local anaesthetic agent and an antimuscarinic agent to achieve both analgesia and relaxation of the detrusor muscle;
- inserting into said catheter a tubular anodic electrode connected to an external controllable power source, so that the internal tip of said electrode resides within that section of said catheter which is within the bladder cavity;
- placing in contact with an adapted skin location a cathodic electrode also connected to said external power source;
- supplying an electrical current from said power source to said electrodes;
- instituting a progressive active hydraulic dilatation of said bladder by infusing, portionwise, through said catheter, a solution to substantially achieve its maximum intravesical volume.

5,779,662

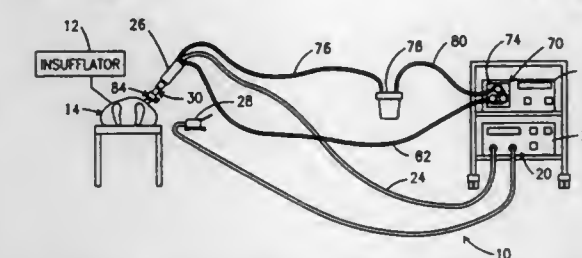
LAPAROSCOPIC TISSUE RESECTION SYSTEM
Phillip J. Berman, St. Petersburg, Fla., assignor to Llnvatec Corporation, Largo, Fla.

Filed May 20, 1996, Ser. No. 650,362

Int. Cl.⁶ A61M 1/00

U.S. Cl. 604—22

6 Claims



1. A tissue resection system for use in an endoscopic surgical procedure conducted in a closed body cavity having gas therein, said gas maintained at a predetermined pressure, said system comprising:

a cutting means for resecting tissue in said body cavity;
an aspiration means for aspirating resected tissue and gas from said cavity;
separating means for separating resected tissue from gas to produce reusable gas;
recirculating means for returning said reusable gas to said cavity.

5,779,663

Patent Not Issued For This Number

5,779,664

Patent Not Issued For This Number

5,779,665

TRANSDERMAL INTRODUCER ASSEMBLY

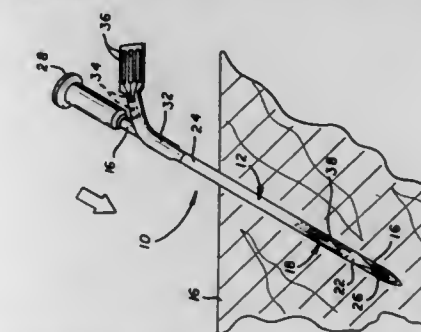
John J. Mastrototaro, Los Angeles; Richard Lemos, Littlerock; Nannette M. Van Antwerp, Valencia, and Edgardo C. Halili, Reseda, all of Calif., assignors to Minimed Inc., Sylmar, Calif.

Filed May 8, 1997, Ser. No. 848,476

Int. Cl.⁶ A61M 31/00

U.S. Cl. 604—51

21 Claims



1. A transdermal introducer assembly, comprising: a tube segment defining a hollow lumen extending between a distal end for placement into the subcutaneous tissue of a patient, and a proximal end for placement outside the patient, said tube segment including means for permitting passage of fluid into said lumen at least at the distal end thereof; an elongated flexible introducer thread connected to the distal end of said tube segment; and a hollow introducer needle having an open distal end sized for slide-fit reception of said introducer thread, said thread permitting said tube segment to be folded back to extend along said introducer needle in close fitting side-by-side relation, whereby manipulation of the introducer needle to pierce the patient's skin carries said tube segment to a transcutaneous position, said introducer needle being slidably withdrawable from said introducer thread to leave said introducer thread and said tube segment transcutaneously positioned on the patient.

5,779,666

METHOD AND APPARATUS FOR UNINTERRUPTED DELIVERY OF RADIOGRAPHIC DYE

Paul S. Teirstein, 402 Coast Blvd. South, La Jolla, Calif. 92037

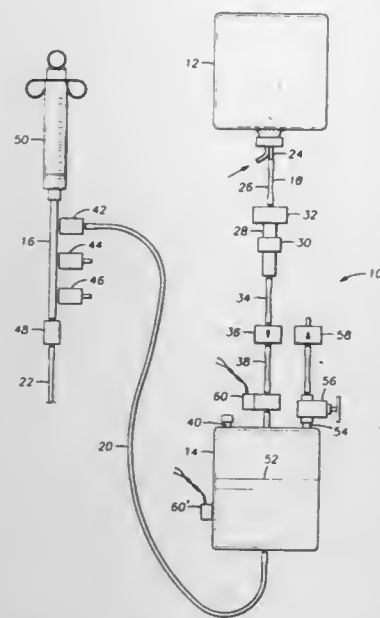
Continuation of Ser. No. 336,252, Nov. 7, 1994, Pat. No. 5,533,978. This application Jun. 11, 1996, Ser. No. 661,374

Int. Cl.⁶ A61M 13/00

U.S. Cl. 604—52

6 Claims

3. A fluid delivery system, comprising: a fluid reservoir, said fluid reservoir having an outlet;



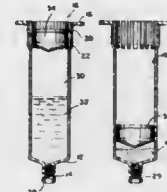
5,779,668

SYRINGE BARREL FOR LYOPHILIZATION,
RECONSTITUTION AND ADMINISTRATIONRichard W. Grabenkort, Barrington, Ill., assignor to Abbott
Laboratories, Abbott Park, Ill.Continuation-in-part of Ser. No. 412,623, Mar. 29, 1995,
abandoned. This application Mar. 21, 1996, Ser. No. 620,061Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—89

29 Claims

- a deformable fluid holding chamber, said holding chamber having an inlet and an outlet;
- a fluid shut off valve in said holding chamber for shutting off said outlet of said holding chamber when said holding chamber becomes empty;
- a tubular conduit connecting said outlet of said reservoir in fluid flow communication with said inlet of said holding chamber;
- a first one way valve connected in said tubular conduit, said first one way valve permitting flow only from said reservoir to said holding chamber;
- an air vent in fluid flow communication with said holding chamber; and
- a second one way valve connected in fluid flow communication with said air vent, said second one way valve permitting flow only from said holding chamber to the atmosphere.



5,779,667

Patent Not Issued For This Number

1. A syringe system comprising:
 - a primary syringe barrel having a delivery end defining a delivery passage and an opposite end having an edge and a venting portion with an inner surface and a larger transverse cross section;
 - a removable closure sealing the delivery passage of the primary syringe barrel to define a chamber for containing a medical solution;
 - a plurality of longitudinal channels on the inner surface of the venting portion of the open end of said primary syringe barrel;
 - a plurality of rib portions in the venting portion between said channels, said opposite end of said primary syringe barrel has a smooth portion along the inner surface between said edge and said rib portions; and
 - a reciprocable stopper for slidably sealing said primary barrel wherein the reciprocable stopper has a first position abutting the channels of the inner surface of the venting portion to allow the medical solution to be lyophilized, and is then axially movable in the direction of the delivery passage to a second position to sealingly enclose the lyophilized drug within the sealed delivery end of the primary syringe barrel.

5,779,669

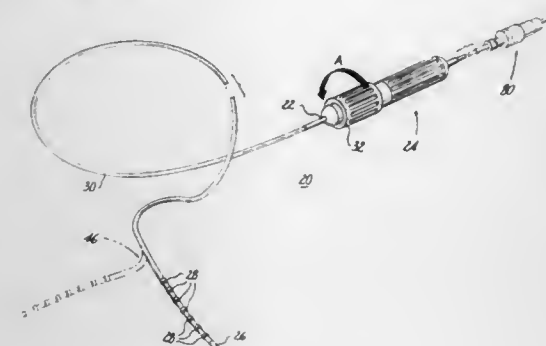
STEERABLE CATHETER WITH FIXED CURVE
Michel Haissaguerre, Talence, France, and Gary S. Falwell,
Manchester, N.H., assignors to C. R. Bard, Inc., Murray Hill,
N.J.

Filed Oct. 28, 1996, Ser. No. 739,145

Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—95

18 Claims



1. A steerable catheter, comprising:
 - a preshaped distal section,
 - a flexible intermediate section having a distal end connected to said distal section,
 - a complexly curved proximal section having a distal end connected to said flexible intermediate section, said proximal section being shaped to seat the catheter relative to an anatomical feature within a patient, and
 - means for steering the distal section of the seated catheter into contact with tissue within the patient by flexing said flexible intermediate section.

5,779,670

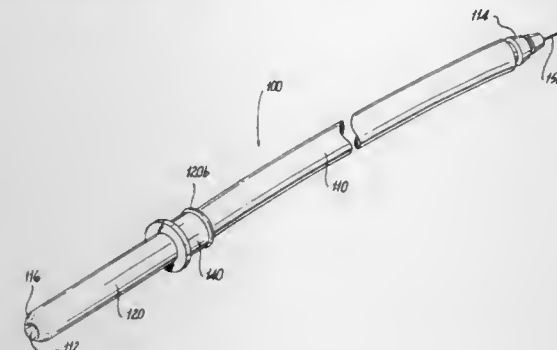
CATHETER HAVING LUBRICATED SHEATHING
Robert E. Bidwell, 27 Montrose Pl., Melville, N.Y. 11747, and
Arnold Melman, 23 Agnes Cir., Ardsley, N.Y. 10502

Filed May 31, 1995, Ser. No. 455,126

Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—172

20 Claims



1. A catheter assembly which comprises:
 - (a) an elongate catheter body having a proximal and a distal end, said catheter body having an interior lumen extending therethrough defined by an interior surface and having an exterior surface;
 - (b) an elongate tubular sheath operatively associated with said catheter body and having opposed first and second ends, the first end of said sheath sealingly attached adjacent the interior surface of said catheter body and the second end of said sheath sealingly attached adjacent the exterior surface of said catheter body; and
 - (c) a layer of lubricant sealingly disposed between said sheath and said catheter body along the interior and exterior surfaces thereof to reduce frictional resistance between said sheath and

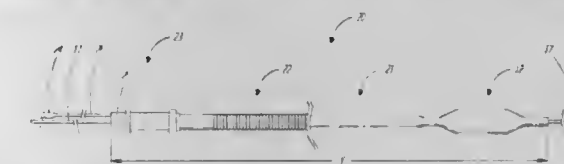
said catheter body, the tubular sheath being positioned at least partially about the catheter body such that the layer of lubricant is disposed between the interior surface of the tubular sheath and the exterior surface of the catheter body to permit relative movement therebetween.

5,779,671

LONGITUDINALLY COLLAPSIBLE AND
EXCHANGEABLE CATHETERThomas V. Ressemann, St. Cloud, and David J. Blaeser, Cham-
plin, both of Minn., assignors to SCIMED Life Systems, Inc.,
Maple Grove, Minn.Continuation of Ser. No. 516,040, Aug. 17, 1995, abandoned,
which is a division of Ser. No. 220,752, Mar. 30, 1994, Pat.
No. 5,466,222. This application Jan. 23, 1997, Ser. No. 787,782Int. Cl.⁶ A61M 29/00

U.S. Cl. 604—96

6 Claims



2. A method of removing a balloon catheter over a guide wire, comprising the steps of:
 - (a) inserting a guide wire into a patient such that the guide wire extends from a point outside the patient to a point inside the patient;
 - (b) compressing a balloon catheter longitudinally such that the entire length of the balloon catheter is shorter than the length of the guide wire outside the patient;
 - (c) positioning the balloon catheter over the guide wire such that the entire length of the balloon catheter is on the guide wire;
 - (d) extending the balloon catheter such that the balloon catheter extends to the point inside the patient;
 - (e) providing therapy to the patient using the balloon catheter;
 - (f) compressing the balloon catheter longitudinally such that the entire length of the balloon catheter is shorter than the length of the guide wire outside the body; and
 - (g) removing the balloon catheter from the guide wire.

5,779,672

DUAL VALVE DETACHABLE OCCLUSION BALLOON
AND OVER-THE-WIRE DELIVERY APPARATUS AND
METHOD FOR USE THEREWITHRay H. Dormandy, Jr., Pleasanton, Calif., assignor to Interv-
entional Therapeutics Corporation, Fremont, Calif.

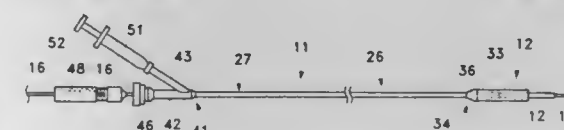
Continuation of Ser. No. 421,767, Apr. 14, 1995, abandoned.

This application Mar. 5, 1997, Ser. No. 812,375

Int. Cl.⁶ A61M 29/00

U.S. Cl. 604—96

10 Claims



1. A dual valve detachable occlusion balloon for use in an artificial vessel embolization for use with a delivery catheter adapted to receive a fluid for inflating the balloon, the delivery catheter having proximal and distal extremities and a flow lumen

extending from the proximal extremity to the distal extremity and having a balloon inflation orifice in the distal extremity in communication with the flow lumen, the balloon comprising a cylindrical body of an elastomeric material having first and second open ends and a bore extending between the first and second open ends, a first duck-bill valve mounted in the first open end of the cylindrical body, a second duck-bill valve mounted in the second open end of the cylindrical body, said first and second duck-bill valves facing in opposite directions into the bore, said first and second duck-bill valves each comprising an elastomeric cylindrical base member having an axial bore extending therethrough, a pair of leaflets bonded to the cylindrical base in a curvilinear manner and forming a mitre seal extending diametrically of the cylindrical base, said first and second duck-bill valves being in a normally sealed position to prevent the escape of a fluid under pressure in the bore of the cylindrical body, said first and second duck-bill valves being formed to permit movement to positions to permit said delivery catheter to be inserted through said first and second duck-bill valves and form a substantially fluid-tight seal therewith and so that the balloon inflation orifice is disposed in the bore between the first and second duck-bill valves whereby fluid introduced into the bore through the delivery catheter to inflate the balloon cannot escape, said first and second duck-bill valves being formed to move to a closed sealing position upon removal of the delivery catheter from the balloon.

5,779,673

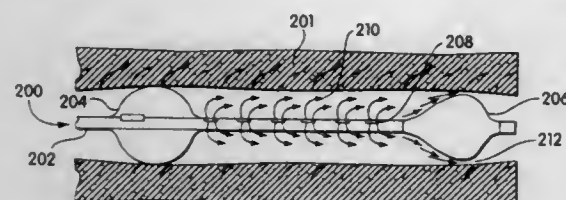
DEVICES AND METHODS FOR APPLICATION OF INTRALUMINAL PHOTOPOLYMERIZED GELS

Laurence A. Roth, Windham, N.H.; Stephen J. Herman, Andover, Mass.; Farhad Khosravi, San Mateo, Calif.; David Melanson, Hudson; Michael Dumont, Stratham, both of N.H.; Patrick K. Campbell, Georgetown, and John C. Spradigliozzi, Dedham, both of Mass., assignors to Focal, Inc., Lexington, Mass.

Continuation-in-part of Ser. No. 256,448, Jun. 24, 1994, Pat. No. 5,665,063. This application Jun. 26, 1995, Ser. No. 494,333

Int. Cl.⁶ A61M 25/00
U.S. Cl. 604—101

72 Claims



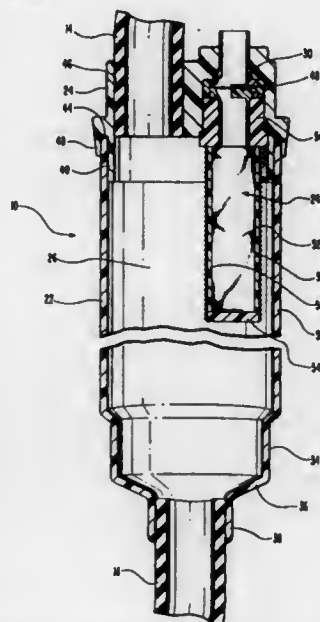
1. A device for delivery of a therapeutic agent to a body cavity or lumen, comprising:
 - one or more elongated shafts, each with a proximal end, and a distal portion adapted for insertion into a body lumen or cavity;
 - at least one occlusion element mounted on one or more of the shafts;
 - at least one injection lumen in at least one shaft, suitable for injection of an agent into a treatment space defined at least at one end by the occlusion element, wherein said injection lumen communicates with at least one injection port located on the shaft; and
 - a flushing sleeve mounted about the injection port, and arranged on the shaft so as to create at least one axially-directed flushing port.

5,779,674 FLUID GAS REMOVAL DRIP CHAMBER Steven Ford, Woods Cross, Utah, assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed May 6, 1996, Ser. No. 642,955
Int. Cl.⁶ A61M 5/14

U.S. Cl. 604—126

22 Claims



1. A fluid gas removal chamber for parenteral administration of fluids, comprising:
 - a housing having an enclosed top end, and an outlet with an opening therethrough for discharge of fluid, said housing defining an interior chamber for receiving and collecting fluid;
 - means for delivering fluid to said chamber;
 - barrier means, disposed adjacent the top end and extending into said chamber, for establishing a vertically dimensioned hydrophobic barrier that will pass air from said chamber, without passing fluid; and
 - vent means, in fluid communication with said barrier means, for venting air passed through the hydrophobic barrier of said barrier means.

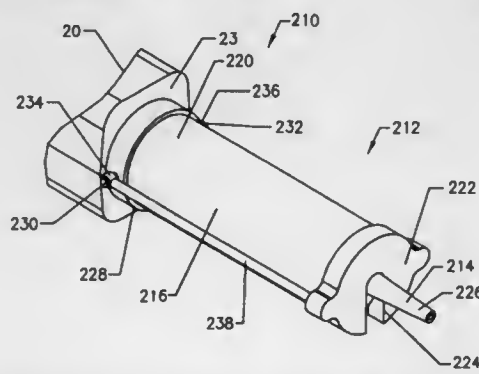
5,779,675 FRONT LOAD PRESSURE JACKET SYSTEM WITH SYRINGE HOLDER

David M. Reilly, Glenshaw; Arthur E. Uber, III, Pittsburgh; Alan D. Hirschman, Glenshaw, and Eugene A. Gelblum, Mt. Lebanon, all of Pa., assignors to Medrad, Inc., Indianola, Pa.

Filed Aug. 25, 1995, Ser. No. 519,201
Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—131

5 Claims



1. Fluid injection apparatus for injecting fluid from a syringe including a rear end and an opening formed therein a front end

having a syringe neck, and a plunger disposed in the syringe the fluid injection apparatus comprising:

- an injector head having a housing and a front opening in said housing for connection to said rear end of said syringe, drive means extendible through said front opening and through said opening in said rear end of the syringe for imparting motive force to said syringe plunger; and
- a pressure jacket for holding the syringe to the injector head, the pressure jacket including:
 - a jacket cylinder having an open front end for receiving the syringe, and a rear end coupled to the injector head;
 - a first tie rod having a front end, and a rear end pivotally attached to said injector head;
 - a second tie rod having a front end, and a rear end pivotally attached to said injector head;
 - a front retaining plate joined to said front ends of said first and second tie rods, said retaining plate and said tie rods pivotable between a closed position for holding the syringe within said jacket cylinder and an open position to allow the insertion and removal of the syringe from said jacket cylinder.

5,779,676

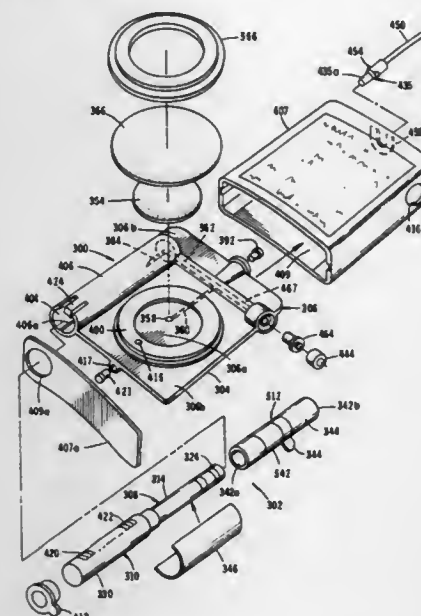
FLUID DELIVERY DEVICE WITH BOLUS INJECTION SITE

Marshall S. Kriesel, St. Paul; Farhad Kazemzadeh, Bloomington; Matthew B. Kriesel, St. Paul, all of Minn.; William W. Feng, Lafayette, Calif.; Steve C. Barber, Shorewood, Minn., and William J. Kluck, Hudson, Wis., assignors to Science Incorporated, Bloomington, Minn.

Continuation-in-part of Ser. No. 541,184, Oct. 11, 1995. This application Feb. 23, 1996, Ser. No. 606,090
Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—132

25 Claims



1. A fluid delivery apparatus comprising:
 - (a) a fluid delivery assembly having an outlet for delivering fluid from the apparatus, said fluid delivery assembly including:
 - (i) a base having a fluid passageway in communication with said outlet;
 - (ii) a stored energy means comprising at least one distendable membrane cooperating with said base to define a fluid reservoir in communication with said fluid passageway of said base; and
 - (iii) a cover assembly connected to said base, one of said cover assembly and said base having a receiving chamber interconnected with said fluid passageway; and

(b) a fill assembly interconnected with said fluid delivery assembly for filling said reservoir, said fill assembly comprising:

- (i) a container assembly including:
 - a. a container having a fluid chamber; and
 - b. means movable within said fluid chamber of said container for urging fluid from said fluid chamber; and
- (ii) an adapter assembly receivable within said receiving chamber for interconnecting said container with said fluid delivery assembly, said adapter assembly comprising a hollow housing for telescopically receiving a part of said container of said container assembly and including a second end;
- (c) delivery means in communication with said fluid reservoir for delivering fluid from said reservoir outwardly of the device; and
- (d) bolus injection means in communication with said delivery means for providing a bolus volume of fluid to said delivery means.

5,779,677

AUTOMATIC DRUG INJECTOR

Pierre Frezza, Charly, France, assignor to Laboratoire Aguetant, Lyons, France

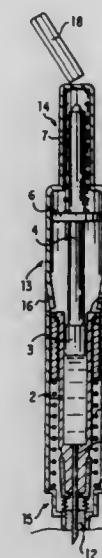
PCT No. PCT/FR95/00047, § 371 Date Aug. 1, 1996, § 102(e) Date Aug. 1, 1996, PCT Pub. No. WO95/19194, PCT Pub. Date Jul. 20, 1995

PCT Filed Jan. 16, 1995, Ser. No. 669,444

Claims priority, application France, Jan. 17, 1994, 94 00608
Int. Cl.⁶ A61M 5/20

U.S. Cl. 604—134

9 Claims



1. An automatic liquid drug injector comprising:
 - a tubular body;
 - a reservoir having at least one chamber adapted for containing the drug, the reservoir positioned within the tubular body, the reservoir comprising:
 - a tubular wall;
 - a plunger sealing one end of the tubular wall and displaceable within the tubular wall towards the other end;
 - a hollow needle positioned at the other end of the tubular wall; and
 - a plunger rod connected to the plunger and extending out of the tubular wall;
 - a ring slidably mounted on the tubular wall and adapted to entrain the reservoir in the direction of the needle;
 - a first spring abutting at a first end against an inner surface of the tubular body and at a second end against the plunger rod, wherein the first spring biases the plunger rod in the direction of the needle;

a second spring abutting at a first end against an inner surface of the tubular body and at a second end against the ring, wherein the second spring biases the ring away from the needle in a direction opposing the first spring, the second spring exerting a force greater than the first spring; and
at least one movable abutment adapted to prevent the ring from translating in a direction away from the needle in the tubular body, wherein the plunger rod is adapted to move the at least one movable abutment to permit the ring to translate in a direction away from the needle in the tubular body.

5,779,678

FLUID ADMINISTRATION APPARATUS

Roland H. C. Carter, Hythe, England, assignor to Smiths Industries plc, London, England

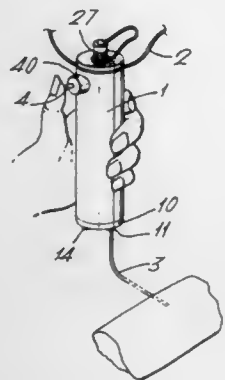
Filed Nov. 22, 1996, Ser. No. 754,971

Claims priority, application United Kingdom, Dec. 2, 1995, 9524880

Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—140

17 Claims



1. Fluid administration apparatus comprising:
a container;

a first chamber in said container, said first chamber being adapted for containing a medication liquid and having an outlet adapted to be connected to a region of a patient;
a second chamber, said second chamber being air-filled and having an inlet;
a movable piston separating said first and second chambers from one another;
a manually-actuable air pump, said pump having an internal volume and an air inlet into said internal volume, said air inlet including an air flow restrictor arranged to limit flow of air from outside the apparatus into said internal volume; and
a connection between said internal volume of said air pump and said inlet of said second chamber, such that said air pump can be repeatedly manually actuated to supply air to said second chamber and thereby progressively displace said piston further on each actuation so as to drive liquid out of said outlet of said first chamber.

5,779,679

WINGED IV SET WITH RETRACTABLE NEEDLE

Thomas J. Shaw, 1510 Hillcrest, Little Elm, Tex. 75068

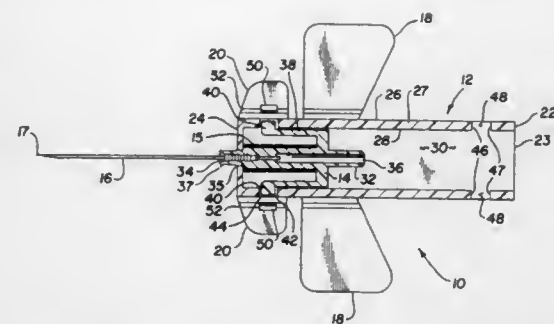
Filed Apr. 18, 1997, Ser. No. 845,762

Int. Cl.⁶ A61M 5/178

U.S. Cl. 604—158

17 Claims

1. A medical device for temporarily establishing venous fluid communication between a patient and a source of fluid comprising:
an elongated hollow body having a longitudinally extended wall defining a cavity therein, the body having a front end portion, a back end portion, and a middle portion extending between the end portions;



a sliding needle holder configured to fit within the cavity and slide backwards from a forward locked position, the needle holder having a centrally positioned tubular connection having a front portion capable of holding a needle and a rear portion capable of receiving an end of a tubular fluid connection;

the middle portion of the elongated body having at least one laterally extending opening near the front end portion of the body which is adapted to receive a lug;

the sliding needle holder having at least one springing arm terminating in a lug which in an unlocked position allows the needle holder to slide within the cavity, the sliding needle holder being positionable in the forward locked position wherever the lug on the springing arm engages the lug receiving opening near the front end portion of the elongated body to hold the sliding needle holder in position for insertion of a needle extending from the front end portion of the body; and,

a bendably attached lateral extension of the body having a tab oriented to engage and release the lug from the laterally extending opening near the front end portion of the elongated body to permit the needle holder to be driven rearwardly by a spring thereby retracting the needle within the elongated body.

5,779,680

RETRACTABLE SAFETY NEEDLE INSTRUMENT WITH MOVABLE SAFETY MEMBER

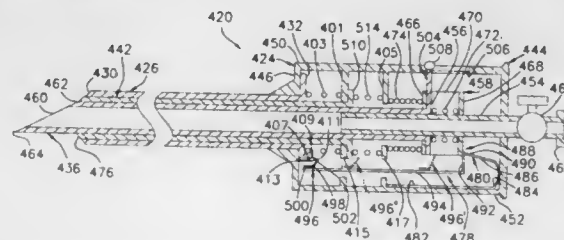
InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 247,205, May 20, 1994, Pat. No. 5,634,934, and Ser. No. 254,007, Jun. 3, 1994, Pat. No. 5,478,317, which is a division of Ser. No. 800,507, Nov. 27, 1991, abandoned, and a continuation of Ser. No. 800,507, Ser. No. 79,586, Jun. 22, 1993, Pat. No. 5,423,770, and Ser. No. 260,439, Jun. 15, 1994, Pat. No. 5,423,760, which is a division of Ser. No. 868,578, Apr. 15, 1992, Pat. No. 5,336,176, and Ser. No. 237,734, May 4, 1994, which is a continuation of Ser. No. 868,578, Apr. 15, 1992, Pat. No. 5,336,176. This application Jan. 13, 1995, Ser. No. 371,687

Int. Cl.⁶ A61M 5/178

U.S. Cl. 604—164

34 Claims



1. A safety needle instrument for establishing a portal in the wall of an anatomical cavity comprising
a housing;

an elongate cannula having a proximal end mounted by said housing and a distal end for introduction in the anatomical cavity;

a needle disposed within said cannula and having a distal end for penetrating the anatomical cavity wall, said needle being movable relative to said cannula between an extended position where said distal end of said needle protrudes distally from said distal end of said cannula and a retracted position proximally spaced from said extended position;

a safety shield disposed between said cannula and said needle, said safety shield being movable relative to said cannula between an extended safety shield rest position protecting said needle distal end when said needle is retracted and a safety shield retracted position exposing said needle distal end when said needle is extended;

safety shield bias means for biasing said safety shield distally toward said safety shield rest position;

retracting means for moving said needle from said needle extended position to said needle retracted position;

means for manually moving said needle from said needle retracted position to said needle extended position;

locking means for locking said needle in said needle extended position while permitting a predetermined amount of proximal movement of said needle during penetration of the anatomical cavity wall;

needle bias means for biasing said needle distally in said locked needle extended position to permit said needle to move proximally during penetration of the anatomical cavity wall and distally upon introduction into the anatomical cavity; and

releasing means responsive to penetration of said safety needle instrument into the anatomical cavity for triggering release of said locking means to permit said retracting means to move said needle to said needle retracted position.

5,779,681

VASCULAR ACCESS SHEATH FOR INTERVENTIONAL DEVICES

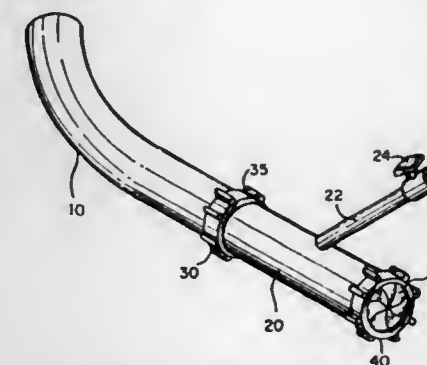
Joseph Bonn, Strafford, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Division of Ser. No. 808,003, Dec. 16, 1991, Pat. No. 5,382,230. This application Dec. 28, 1994, Ser. No. 364,966

Int. Cl.⁶ A61M 5/178

U.S. Cl. 604—167

11 Claims



1. A method of inserting an interventional device into a patient using a sheath comprising the steps of
providing a sheath comprising a flexible tubular portion that is connected to a rigid tubular portion by a second adjustable valve, wherein the rigid tubular portion further comprises a first adjustable valve disposed at a proximal end of the rigid tubular portion and wherein the adjustable valves each further comprise an adjustable orifice that can be either opened, closed or partially opened;

adjusting the first and the second adjustable valves to close their respective orifices and thereby preventing fluid flow through the rigid tubular portion;

inserting the flexible tubular portion into the patient;

adjusting the first adjustable valve to open the orifice of the first adjustable valve;

inserting the interventional device through the orifice of the first adjustable valve;

adjusting the first adjustable valve to close the orifice of the first adjustable valve around the interventional device and thereby creating a hemostatic seal between the first adjustable valve and the interventional device;

adjusting the second adjustable valve to open the orifice of the second adjustable valve; and

inserting the interventional device through the orifice of the second adjustable valve and into the flexible tubular portion and into the patient.

5,779,682

NEEDLE GUARD TO PREVENT ACCIDENTAL NEEDLE STICKING

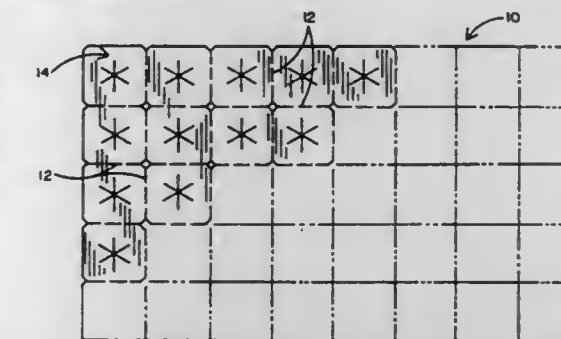
Steven C. Chang, 1000 Dove St., No. 250, Newport Beach, Calif. 92660

Filed Aug. 4, 1997, Ser. No. 905,637

Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—187

9 Claims



1. A safety device for protecting and preventing users from sticking injuries in connection with the usage of needles, for use with needles having a needle cap with a mouth opening at one end and a closed end at the other end of the needle cap and having a sharp needle tip, comprising:

a sheet of flexible material having a firm surface further having a plurality of perforations laid out to form rows and columns of polygon shaped plates having round corners,

said polygon shaped plates having round corners,

said perforations are adapted to allow easy tearing off of the square plates using fingers,

said polygon shaped plates each having a center portion, the center portion includes a plurality of slits extending outwardly and radially from the center of the polygon shaped plates for allowing the needle cap to penetrate through the slits and for gripping on to the needle cap,

the needle cap having a lip at one end opposite the closed end, the polygon shaped plate is positioned abutting the lip of the needle cap whereby the polygon shaped plate shields the user's hands and fingers from accidental sticking injuries.

5,779,683

INJECTOR MODULE FOR A SYRINGE AND PRE-FILLED SYRINGE PROVIDED THEREWITH

Gabriel Meyer, Dully, Switzerland, assignor to Medicorp Holding S.A., Luxembourg, Luxembourg

PCT No. PCT/IB95/00080, § 371 Date Nov. 29, 1995, § 102(e) Date Nov. 29, 1995, PCT Pub. No. WO95/21647, PCT Pub. Date Aug. 17, 1995

PCT Filed Feb. 7, 1995, Ser. No. 532,704

Claims priority, application Switzerland, Feb. 14, 1994, 429/94

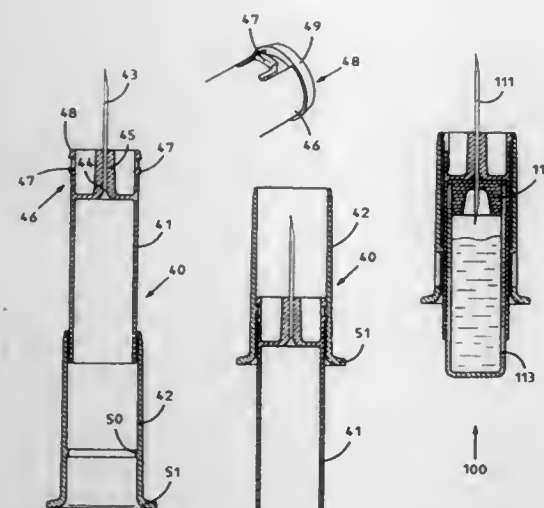
Int. Cl.⁶ A61M 5/32

18 Claims

U.S. Cl. 604—118

1. An injector module having a syringe subassembly, said module comprising:

a cylindrical barrel having a distal and proximate extremity;



a needle extending from said proximate extremity and attached to said barrel by a needle-holder tip;
a sleeve being movable between a retracted position, exposing said needle, and an advanced position, covering said needle, wherein said sleeve comprises a single rigid piece telescopically interlocked with and axially slidable on said barrel;
an annular skirt, attached to said proximate extremity, surrounding said needle-holder tip (45);
at least two diametrically opposed flexible tabs on said skirt that cooperate with an interior annular rib (50) on said rigid piece to form an anti-return device when said sleeve is in the advanced position; and
at least one stop means also cooperating with said annular rib (50) on said sleeve thereby to define a path of said sleeve when said sleeve is in the advanced position, said stop means comprising an annular protruding rib extending across two diametrically opposed circular portions respectively located between said flexible tabs.

5,779,684

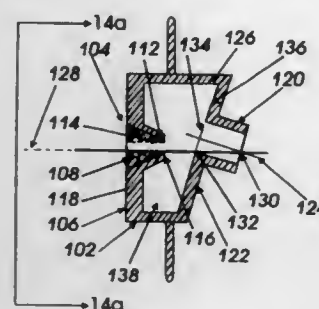
SAFETY ASSEMBLY CAP FOR NEEDLES

Frank A. Tamaro, 22 Pancake Hollow Dr., Wayne, N.J. 07470
Division of Ser. No. 554,037, Nov. 6, 1995, Pat. No. 5,630,803.
This application May 19, 1997, Ser. No. 858,587

Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—263

17 Claims



1. A safety needle cap assembly for use in combination with a hub portion for holding a needle, said assembly comprising:
(a) a safety needle cap;
(b) an elastic sheath means;
said elastic sheath means including a first end, said first end connected to said safety needle cap;
said sheath means including a second end for connecting to the hub portion;
said safety needle cap having at least a front face portion, and side wall means connected to said front face portion and extending back from said front face portion a minimum distance to a rear end;

said front face portion of said safety needle cap having at least a first opening, larger in diameter than the diameter of the needle; and,

(c) a needle capturing material disposed about said first opening and within said volume defined by said front face portion and the rear end of said side wall,

said safety needle cap being constructed so as to prevent the passage therethrough of the needle other than through said first opening, so that when the needle is attached to the hub portion, and when the needle is positioned within said elastic sheath means with said second end of the said sheath means being connected to the hub portion in a pre-ready condition, and when said cap is moved by an operator so that a first axis of said first opening in said front face portion of said cap is in axial alignment with the axis of the needle, the needle within said cap can now be induced by said operator to pass through said opening in said front face portion of said cap to a ready position, the motion of said cap sliding back over the needle causing said elastic sheath means to be compressed so that when the needle is withdrawn during a procedure involving injecting the needle into a patient, and said compressed elastic sheath means is released, said cap is automatically urged forward by the releasing elastic sheath means over the tip of the needle and beyond to a released condition,

said needle capturing material adapted to retain the tip of said needle when said needle is positioned in said volume in the released condition.

5,779,685

RETROGRADE CARDIOPLEGIA CATHETER AND METHOD OF USE

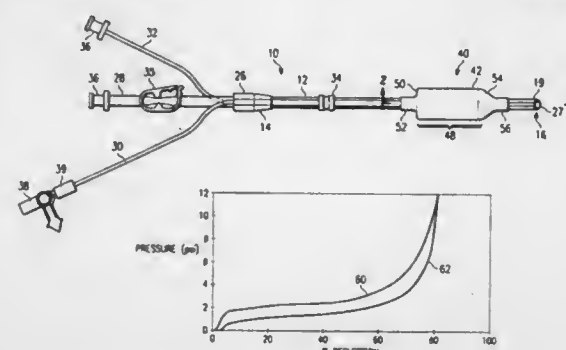
Thomas C. Thompson, McKinney, Tex.; Andrew S. Wechsler, Richmond, Va., and Tamara L. Clark, McKinney, Tex., assignors to Quest Medical, Inc., Allen, Tex.

Filed Nov. 13, 1995, Ser. No. 555,767

Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—264

26 Claims



1. A retrograde cardioplegia catheter comprising:

(a) a flexible, elongated cannula having a proximal end and a distal end and a first lumen spanning therebetween;

(b) a sealing member, fixedly coupled to and encompassing the cannula adjacent to the distal end, having a compressible resilient member that allows the sealing member to assume a reduced cross-section when in a compressed state and maintains the sealing member in an expanded position when in a less compressed state; and

(c) a second lumen, integrally formed with the cannula, originating at the proximal end of the cannula and terminating within the sealing member.

5,779,686

DISPOSABLE MEDICAL INSTRUMENT

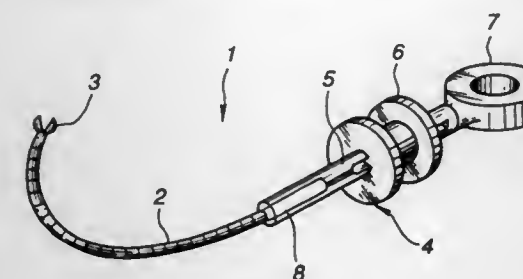
Yukio Sato, Kodaira; Yutaka Yanuma, Hachioji; Kazuhiko Ohzeki, Hino; Ryuta Sekine, Choufu, and Yasuo Miyano, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 530,422, Sep. 18, 1995, abandoned, which is a continuation of Ser. No. 179,944, Jan. 11, 1994, abandoned. This application Sep. 3, 1996, Ser. No. 718,016
Claims priority, application Japan, Apr. 19, 1993, 5-091516; Oct. 22, 1993, 5-265207

Int. Cl.⁶ A61B 10/00

U.S. Cl. 604—265

12 Claims



1. A disposable medical instrument comprising:

a treatment section comprising non-degradable material at a front end of the instrument capable of performing a treatment of body cavities;

a flexible sheath comprising non-degradable material extending from said treatment section at the front end to an operator side of the instrument; and

an operating section provided at the operator side of said sheath, said operating section not directly contacting mucosa of body cavities, at least a part of the operating section being composed of a degradable material containing hydrophilic polymer,

wherein said part of said operating section is arranged at a position which would contact with water when washed to thereby degrade said part of the operating section.

5,779,687

METHOD OF REMOVING UNDESIRABLE FLUID FROM RESPIRATION PASSAGES BY SUCTION CATHETER ASSEMBLIES

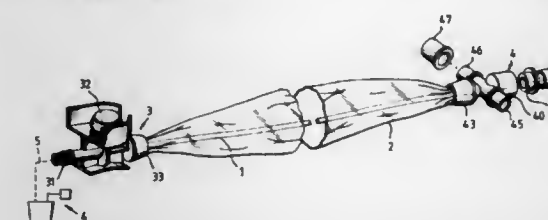
Craig J. Bell, Winchester, and William Hollister, E. Sullivan, both of N.H., assignors to Smiths Industries Public Limited Company, London, England

Continuation of Ser. No. 301,438, Sep. 8, 1994, abandoned, which is a continuation of Ser. No. 949,978, Sep. 24, 1992, abandoned. This application Feb. 16, 1996, Ser. No. 601,347

Int. Cl.⁶ A61M 5/32

U.S. Cl. 604—265

8 Claims



1. A method of removing undesirable fluid from the respiration passages of a patient by a suction catheter assembly including an aspirating catheter having a proximal end and a distal end, said distal end being suitable for insertion into a patient; a vacuum connecting member located in the vicinity of the proximal end of the aspirating catheter; a patient connecting member mounted to surround the aspirating catheter in the vicinity of the distal end of the aspirating catheter; a flexible protective sleeve extending along

the aspirating catheter where it extends between the patient connecting member and the vacuum connecting member, the patient connecting member having a sliding seal with the external surface of the aspirating catheter, said method comprising the steps of:

(a) providing an antimicrobial substance of a solid material on at least one component of said suction catheter assembly that reduces transfer of bacteria from the external surface of the aspirating catheter to the patient, wherein the antimicrobial substance includes a silver compound with a binder selected from the group comprising aluminosilicate and hydroxyapatite;

(b) advancing the aspirating catheter through the patient connecting member into the trachea of the patient to effect suctioning of the respiration passages;

(c) withdrawing the aspirating catheter into the protective sleeve through the patient connecting member after suctioning such that the catheter is wiped by the sliding seal;

(d) maintaining the aspirating catheter within the protective sleeve except for the periods when the suctioning is being effected, with said antimicrobial substance at least substantially reducing accumulation of bacteria on said catheter when in the protective sleeve;

(e) repeating steps (b), (c), and (d) each time the suctioning of the respiration passages is indicated,

wherein said antimicrobial substance of said solid material remains effective to reduce transfer of bacteria from the external surface of the aspirating catheter to the patient despite repeated movement of said aspirating catheter through said sliding seal, and

whereby said substantially reduced accumulation of bacteria allows repeated, periodical insertion of said aspirating catheter into the patient's trachea.

5,779,688

LOW PROFILE BALLOON-ON-A-WIRE CATHETER WITH SHAPEABLE AND/OR DEFLECTABLE TIP AND METHOD

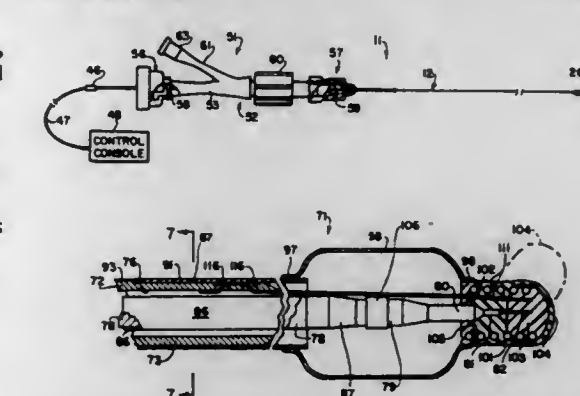
Mir A. Imran, Palo Alto; Cecily M. Hillsman; Deepak R. Gandhi, both of San Jose, and Dennis L. Brooks, Santa Clara, all of Calif., assignors to Intella Interventional Systems, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 331,217, Oct. 28, 1994, Pat. No. 5,520,645. This application Jul. 20, 1995, Ser. No. 504,927

Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—283

3 Claims



1. A low profile balloon-on-a-wire catheter comprising a flexible elongate tubular member having proximal and distal extremities and having an outer cylindrical surface and a lumen disposed inwardly from the outer cylindrical surface extending from the proximal extremity to the distal extremity, an inflatable balloon carried by the distal extremity of the flexible elongate tubular member, means carried by the flexible elongate tubular member for establishing communication between the lumen and the interior of the inflatable balloon and inflation means removably secured to the proximal extremity of the outer cylindrical surface of the flexible

elongate tubular member for supplying an inflation fluid to the lumen for inflating and deflating the balloon, said removable inflation means including means forming a first high-pressure seal with the proximal extremity of the flexible elongate tubular member, said removable inflation means when removed providing a proximal extremity of the outer cylindrical surface of the flexible elongate tubular member which is free of obstructions so that a balloon catheter can be advanced over the proximal extremity of the flexible elongate tubular member, said flexible elongate tubular member having at least one side opening therein in communication with the lumen, said removable inflation means including means forming a second high pressure seal with the proximal extremity of the flexible elongate tubular member, said first and second high pressure seals being disposed on opposite sides of the at least one side opening so that the inflation fluid from the removable inflation means passes through said side opening.

5,779,689

DIAPERS WITH ELASTICIZED CROTCH AND END REGIONS AND A PROCESS AND APPARATUS FOR THE CONTINUOUS MANUFACTURE THEREOF

Roland Pfeifer, Bondues, France, and Joakim Berntsson, Onsala, Sweden, assignors to Peaudouce, Linselles, France

Continuation of Ser. No. 39,479, Jun. 4, 1993, abandoned.

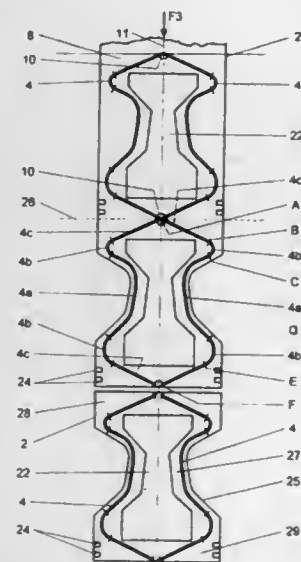
This application Nov. 28, 1995, Ser. No. 563,737

Claims priority, application France, Oct. 26, 1990, 90 13268

Int. Cl.⁶ A61F 13/15; B32B 31/00

U.S. Cl. 604—385.2

18 Claims



I. A disposable diaper comprising:

- a liquid impervious outer sheet having lengthwise and transverse edges, said outer sheet having an inner face and an outer face;
- a liquid-permeable inner sheet having lengthwise and transverse edges, said inner sheet having an inner face and an outer face;
- a median indentation cutout in each of said lengthwise edges of said outer and inner sheets defining a narrower crotch region between two wider end regions;
- an absorbent pad having lengthwise and transverse edges and having an overall dimension smaller than said inner and outer sheets disposed between said inner and outer sheets so that its lengthwise and transverse edges are set back in relation to the corresponding lengthwise and transverse edges of said inner and outer sheets, said inner and outer sheets being joined together by adhesive bonding along their edges around said pad;

fastening means for closing said two end regions around a user's waist; and

elastic members secured under tension by adhesive bonding to the inner face of said outer sheet adjacent to both lengthwise edges of said absorbent pad and extending substantially over a whole length of said outer sheet, said elastic members having a higher tension in the crotch region than in the end regions, the elastic members having end portions positioned in the two end regions and transversely oriented to converge in the direction of a lengthwise center axis of said outer sheet, so that said elastic members form an elastic barrier which practically surrounds the pad and provides the outer sheet with a lengthwise elasticity in the crotch region and a transverse elasticity in the end regions,

wherein said converging end portions are spaced from each other near each transverse edge of said outer sheet by a maximum distance which is less than 20% of a width of said transverse edge of said outer sheet and are inclined by at least 45° relative to the lengthwise center axis of said outer sheet.

5,779,690

DIAPER WITH OPENING IN TOP SHEET

Anders Gustafsson, Bildal; Anna Svernlöv, Kullavik; Urban Widlund, Mölnlycke, all of Sweden, and Benedicte Durant, Armentières, France, assignors to Mölnlycke AB, Göteborg, Sweden

PCT No. PCT/SE94/01179, § 371 Date Jul. 29, 1996, § 102(e)

Date Jul. 29, 1996, PCT Pub. No. WO95/16419, PCT Pub.

Date Jun. 22, 1995

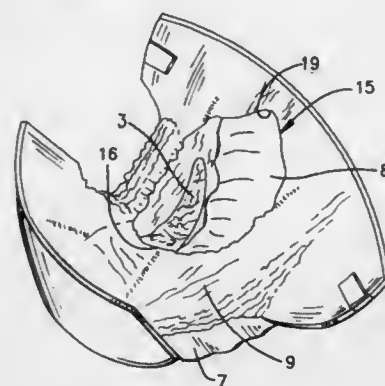
PCT Filed Dec. 8, 1994, Ser. No. 640,796

Claims priority, application Sweden, Dec. 13, 1993, 9304132

Int. Cl.⁶ A61F 13/15

U.S. Cl. 604—385.2

12 Claims



I. A diaper extending in a longitudinal direction and comprising:

- a front part, a back part, and an intermediate crotch part, an absorbent body joined to a fluid-impermeable bottom sheet, and a fluid-permeable top sheet which lies proximal to a wearer's body in use, said top sheet including an opening situated in the back and crotch parts of the diaper and elastic devices, said top sheet being unattached to the absorbent body at least within the region of the opening, and wherein two elastic devices in the top sheet extend divergently in relation to one another, from a front edge of the opening in the crotch part towards the back part and on respective sides of the opening in the top sheet.

5,779,691

FASTENING TAPE FOR A SANITARY ARTICLE PARTICULARLY DISPOSABLE DIAPER

Achim Schmitt, Munster-Sarmsheim, Germany, assignor to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US95/11166, § 371 Date Mar. 27, 1997, § 102(e)

Date Mar. 27, 1997, PCT Pub. No. WO96/10382, PCT Pub.

Date Apr. 11, 1996

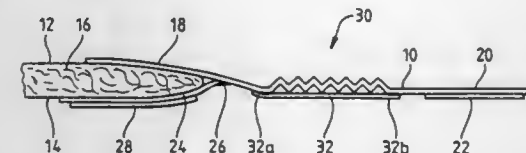
PCT Filed Sep. 1, 1995, Ser. No. 809,684

Claims priority, application European Pat. Off., Sep. 30, 1994, 94115429

Int. Cl.⁶ A61F 13/56; B32B 31/18; C09J 7/04

U.S. Cl. 604—386

11 Claims



1. Fastening device for a sanitary article for fastening the article onto a wearer's body, the fastening device comprising a fastening tape having two end portions and being attached to the sanitary article at one of its end portions (18) and being provided with a fastening means (22) on one surface of the other end portion (20); and a stretchable elastic portion (30) being provided between the end portions, characterized in that a tape section (32) of a stretchable elastic material is secured to a length of the fastening tape (10) at least at both ends (32a, 32b) of the tape section; the length of the fastening tape that is located between the two ends of the elastic tape section exceeds the length of the elastic tape section, thereby forming said stretchable elastic portion of the fastening tape.

5,779,692

ABSORBENT ARTICLES HAVING PANTY COVERING COMPONENTS THAT NATURALLY WRAP THE SIDES OF PANTIES

Bruce William Lavash, West Chester; Thomas Ward Osborn, III; Robb Eric Olsen, both of Cincinnati, all of Ohio; Katherine Louise Mayer, Newport, Ky.; Letha Margie Hines, Cincinnati, Ohio, and Noriko Kawai, Ashiya, Japan, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 96,121, Jul. 22, 1993, which is a

continuation-in-part of Ser. No. 707,233, May 21, 1991, Pat.

No. 5,346,486, Ser. No. 832,246, Feb. 7, 1992, Pat. No.

5,344,416, Ser. No. 915,133, Jul. 23, 1992, Ser. No. 42,840,

Apr. 5, 1993, Pat. No. 5,354,400, and Ser. No. 73,256, Jun. 4,

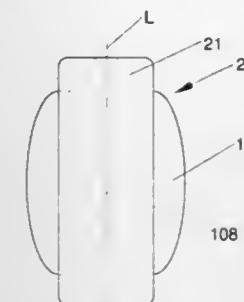
1993, Pat. No. 5,389,094. This application Jun. 7, 1995, Ser.

No. 483,367

Int. Cl.⁶ A61F 13/15

U.S. Cl. 604—387

28 Claims



1. An absorbent article having a longitudinal dimension extending in a longitudinal direction and a transverse dimension extending in a transverse direction, a longitudinal centerline, and a transverse centerline, said absorbent article comprising:

a main body portion comprising an absorbent core, said main body portion having a body-facing side, a garment-facing side, and a pair of longitudinal side edges;

an undergarment covering component, said undergarment covering component being joined to the garment-facing side of said main body portion inboard of the longitudinal side edges of said main body portion at affixation points and being otherwise unattached to said main body portion laterally outboard of at least some of said affixation points, said undergarment covering component comprising a pair of side wrapping elements that extend laterally outward beyond the longitudinal side edges of said main body portion a distance of less than one-half the width of said main body portion to distal edges, wherein at least a portion of said undergarment covering component is extensible greater than or equal to about 5% and less than about 50% under forces of between about 50 grams and about 1,500 grams generally in the longitudinal direction between said affixation points and said distal edges of said side wrapping elements.

5,779,693

FLEXIBLE PLASTIC CONTAINER FOR THE CONTAINMENT AND DELIVERY OF DIAGNOSTIC CONTRAST MEDIA AND PARENTERAL DRUG FORMULATIONS

Irene K. Ropiak, Somerset, and John J. Niesodspal, Jr., Burlington, both of N.J., assignors to Bracco Diagnostics, Inc., Princeton, N.J.

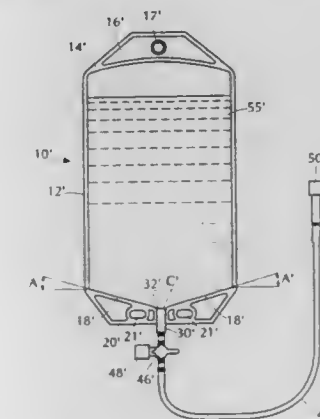
Continuation-in-part of Ser. No. 692,813, Jul. 30, 1996, Pat.

No. 5,738,671. This application Oct. 29, 1996, Ser. No. 739,440

Int. Cl.⁶ A61B 5/00

U.S. Cl. 604—408

13 Claims



I. A unitary, flexible container made of a polymeric material for the containment and delivery of medical fluids comprising:

- a) first and second polymeric sheets having a square, round, oval, hexagonal, octagonal or rectangular configuration superimposed and sealed together at their periphery defining an interior reservoir, said container having a top portion and a bottom portion;
- said bottom portion terminates in a first angle and a second angle of from about 5° to about 45° each from the center thereof and relative to a horizontal plane crossing the center of said bottom portion;
- portions of said interior reservoir being mechanically or chemically embossed with ribs having a V-shaped configuration to maintain the polymeric sheets forming said interior reservoir spaced apart from each other thereby allowing relative movements of said polymeric sheets and preventing sticking therebetween;
- b) an access member integral with said container located at the center of said bottom portion allowing filling of the container with a medical fluid and access thereto for delivery to a patient, said access member comprising:
- an access port located below the bottom portion of said container where said first angle and said second angle meet;

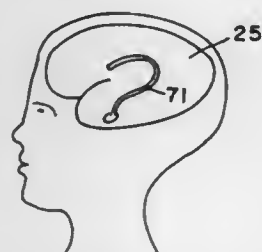
a flexible tubing having first end and second end, said first end is integral with said access port and said second end is removably covered with a cap, said flexible tubing equipped with a one-way luer slip stopcock assembly with a vent for controlling the delivery of the medical fluid from the container.

5,779,694

MAGNETIC STEREOTACTIC SYSTEM FOR TREATMENT DELIVERY

Matthew A. Howard; Mark Mayberg; M. Sean Grady, all of Seattle, Wash.; Rogers C. Ritter, and George T. Gillies, both of Charlottesville, Va., assignors to The University of Virginia Alumni Patents Foundation, Charlottesville, Va. Continuation of Ser. No. 904,032, Jun. 25, 1992, abandoned, which is a division of Ser. No. 463,340, Jan. 10, 1990, Pat. No. 5,125,888. This application Jul. 19, 1993, Ser. No. 96,214 Int. Cl.⁶ A61M 37/00; 1/00; A61K 9/22 U.S. Cl. 604—891.1

13 Claims



1. A drug delivering apparatus comprising:
 - a) a magnetic means for inserting in a body part;
 - b) a carrier means for carrying a treatment to a specific location in the body part; and
 - c) a connection means for releasably connecting the carrier means to the magnetic means and for disengaging the carrier means from the magnetic means.

5,779,695

Patent Not Issued For This Number

5,779,696

METHOD AND APPARATUS FOR PERFORMING CORNEAL RESHAPING TO CORRECT OCULAR REFRACTIVE ERRORS

Michael J. Berry, Carmel; David R. Hennings, New Castle, and Arthur V. Vassiliadis, Los Altos, all of Calif., assignors to Sunrise Technologies International, Inc., Fremont, Calif. Division of Ser. No. 160,405, Dec. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 702,960, May 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 556,886, Jul. 23, 1990, abandoned, and Ser. No. 596,060, Oct. 11, 1990, abandoned. This application Apr. 26, 1995, Ser. No. 429,744

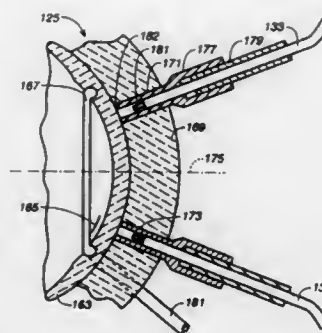
Int. Cl.⁶ A61N 5/06

U.S. Cl. 606—16

9 Claims

1. A system for internally heating human tissue by exposing an outside surface of a given shape to one of at least first and second predetermined and distinct patterns of infra-red radiation, comprising:

at least first and second radiation couplers that each have on one side thereof a first surface with a shape that is complementary to said given outside surface shape and a second surface on an opposite side thereof, each of said at least first and second



couplers having a plurality of apertures spaced apart across said second surface and extending into said second surface to closed ends within the coupler a distance from said first surface, at least regions of each of said at least first and second couplers between said closed ends of the plurality of apertures and said first surface being substantially transparent to said infra-red radiation, said first coupler having said aperture ends thereof arranged across said first surface in said first predetermined pattern, and said second coupler having said aperture ends thereof arranged across said first surface in said second predetermined pattern,

- a source of said infra-red radiation, and
- a plurality of optical fibers having first and second ends, said first ends being coupled to receive infra-red radiation from said source and said second ends having individual sleeves attached thereto which are shaped to mate with at least one aperture of each of said at least first and second couplers and allow insertion of the sleeves into said at least one aperture in a manner to self-align the individual optical fiber second ends to which the sleeves are attached with the closed end of said at least one aperture, thereby to allow said at least one of said second optical fiber ends to be removably inserted into at least one of the apertures of each of said first or second couplers, said optical fiber sleeves securely fitting in said apertures without allowing adjustment of the position of the optical fiber second ends in a direction across said first surface.

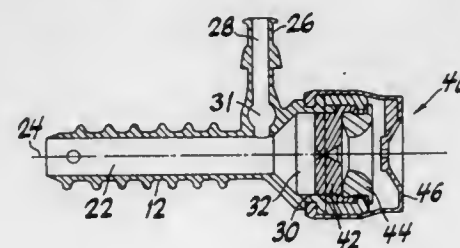
5,779,697

ARTHROSCOPIC CANNULA WITH FLUID SEALS
Michael P. Glowa, and Phillip J. Berman, both of St. Petersburg, Fla., assignors to Linvatec Corporation, Largo, Fla. Filed May 28, 1997, Ser. No. 864,182

Int. Cl.⁶ A61B 17/34

U.S. Cl. 606—185

20 Claims



1. A sealing cannula for enabling passage of elongated instruments therethrough comprising:

a tubular housing having an axis, an inner surface and outer surface, a distal end, a proximal end and an axially aligned tubular body extending distally from said distal end;
a first proximal elastomeric seal comprising:
a first tubular wall having a proximal end and a distal end;
a first transverse end wall at the proximal end of said first tubular wall, said first transverse end wall comprising an expandable circular aperture; and

floating means for enabling lateral and inclined motion of said circular aperture relative to said axis when an elongated instrument is inserted therethrough;

means for securing said first tubular wall to said housing, aligning said circular aperture along said axis and spacing said circular aperture a first predetermined longitudinal distance from said proximal end of said housing;

a second distal elastomeric seal comprising:

a second tubular wall having a proximal end and a distal end;

a second transverse end wall at the distal end of said second tubular wall, said second transverse end wall having proximal and distal sides and a transversely oriented linear slit therethrough;

means for securing said second tubular wall within said housing, aligning said slit along said axis and spacing said slit a second predetermined longitudinal distance from said circular aperture; and

a generally rectangular primary reinforcing member formed about said slit, and extending distally a predetermined distance from said second transverse end wall on the distally facing side of said end wall.

5,779,698

ANGIOPLASTY CATHETER SYSTEM AND METHOD FOR MAKING SAME

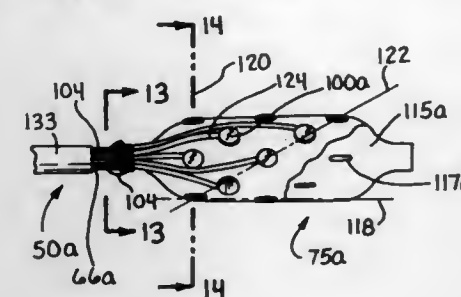
Ralph V. Clayman, Clayton, Mo.; Said S. Hilal, Laguna Niguel, and Michael L. Jones, Capistrano Beach, both of Calif., assignors to Applied Medical Resources Corporation, Laguna Hills, Calif.

Continuation-in-part of Ser. No. 70,495, Jun. 2, 1993, abandoned, which is a continuation of Ser. No. 647,472, Jan. 29, 1991, abandoned, which is a continuation-in-part of Ser. No. 522,148, May 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 298,477, Jan. 18, 1989, abandoned. This application May 11, 1994, Ser. No. 241,007

Int. Cl.⁶ A61B 17/36

U.S. Cl. 606—39

13 Claims



1. An electrosurgical catheter system adapted to increase the patency of a body conduit, comprising:

an electrosurgical generator providing electrical energy at intensities and radio frequencies sufficient to generate electrical arcs and to ablate a material defining the body conduit;

an electrosurgical catheter including an elongate shaft extending along a central longitudinal axis between a proximal end and a distal end;

portions of the shaft defining an inflation lumen extending between the proximal end and the distal end of the shaft;

a balloon disposed at the distal end of the shaft in fluid flow communication with the inflation lumen, the balloon having an interior surface facing toward the axis of the shaft, and having an exterior surface facing away from the axis of the shaft;

a printed circuit disposed on the exterior surface of the balloon and including a plurality of discrete areas of electrically conductive material, the discrete areas of electrically conductive material being of a size and shape to receive the electrical energy from the electrosurgical generator and to deliver the

electrical energy to the material defining the body conduit with a current density sufficient to define an electrical arc and to ablate the material defining the body conduit;

a layer of insulation covering each of the plurality of discrete areas of conductive material, the layer of insulation having a plurality of slits, each slit being disposed over a respective one of the discrete areas and reducing an exposure of the respective discrete area and for maintaining a gap between the plurality of discrete areas and the material defining the body conduit, to thereby increase a current density at the respective slit;

means extending from the proximal end of the shaft for conducting the electrical energy from the electrosurgical generator to the distal end of the shaft

means for electrically coupling the conducting means at the distal end of the shaft to each of the discrete areas of conductive material on the balloon; whereby

the catheter can be inserted into the body conduit and the discrete areas can be energized in cause arcing between each of the energized discrete areas and the material defining the body conduit to electrosurgically alter the material defining the body conduit thereby increasing the patency of the body conduit.

5,779,699

SLIP RESISTANT FIELD FOCUSING ABLATION CATHETER ELECTRODE

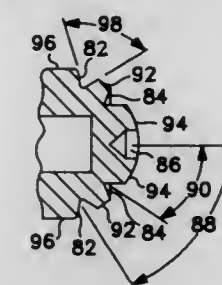
David Lipson, Shoreview, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 29, 1996, Ser. No. 626,750

Int. Cl.⁶ A61N 1/00

U.S. Cl. 606—41

8 Claims



1. A method of ablation comprising: advancing a catheter carrying a distal tip electrode having a distal facing surface provided with at least one depression formed therein having edges with a small radius of curvature to prevent slippage of the distal facing surface, to a desired location within the body and from a proximal end of the catheter and manipulating the distal facing surface of the tip electrode into contact with body tissue at the desired location; and

ablating tissue at the desired location by application of electrical energy to the tip electrode while the distal facing surface is located in contact with tissue at the desired location.

5,779,700

ROLLER ELECTRODES FOR ELECTROCAUTERY PROBES FOR USE WITH A RESECTOSCOPE

Kevin F. Hahnen, Cooper City, and Michael J. Turcat, Miami, both of Fla., assignors to Symbiosis Corporation, Cooper City, Fla.

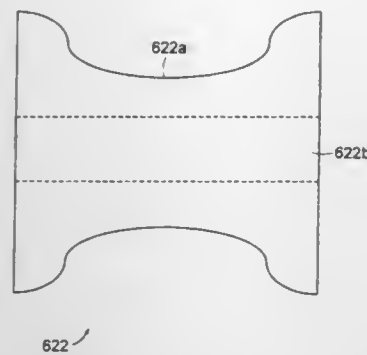
Filed Apr. 20, 1995, Ser. No. 425,363

Int. Cl.⁶ A61B 17/39

U.S. Cl. 606—46

10 Claims

1. A roller electrode for use in an electrocautery probe having a longitudinal axis and two arms between which said electrode is mounted for rotation, said electrode comprising:



a conductive member having an axial bore, first and second ends, and an outer surface, said axial bore being perpendicular to the longitudinal axis of the electrocautery probe, said conductive member rotating about said axial bore, and said conductive member having a substantially circular cross section having a first diameter at said first and second ends and a second diameter at a center portion thereof, said first diameter being larger than said second diameter and said outer surface being substantially concave.

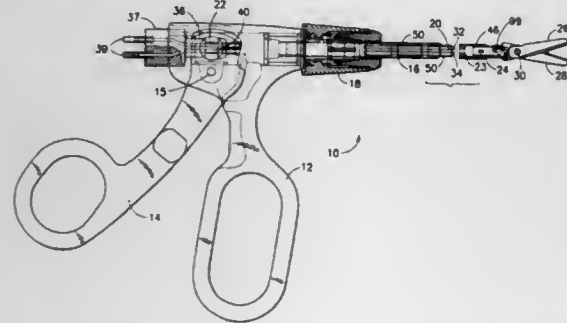
5,779,701

BIPOLAR ENDOSCOPIC SURGICAL SCISSOR BLADES AND INSTRUMENT INCORPORATING THE SAME
Michael Sean McBrayer, Miami, and Juergen Andrew Kortebach, Miami Springs, both of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Filed Apr. 27, 1995, Ser. No. 429,596
Int. Cl.⁶ A61B 17/39

U.S. Cl. 606—46

43 Claims



1. A bipolar electrosurgical instrument for cutting and coagulating tissue comprising:

- first and second blade members each comprising a laminated assembly of an outer electrically conductive layer and an inner face layer comprising an element selected from the group consisting of titanium dioxide and chromium dioxide, said inner face layer forming a shearing surface of said blade member;
- means for pivotally joining said first and second blade members together with their respective shearing surfaces facing one another;
- means coupled to at least one of said first and second blade members for imparting a scissors-like movement relative to the other of said first and second blade members; and
- means for applying a voltage between the outer electrically conductive layers of said first and second blade members.

5,779,702
HIGH SPEED PULSE LAVAGE SURGICAL HAND TOOL ATTACHMENT

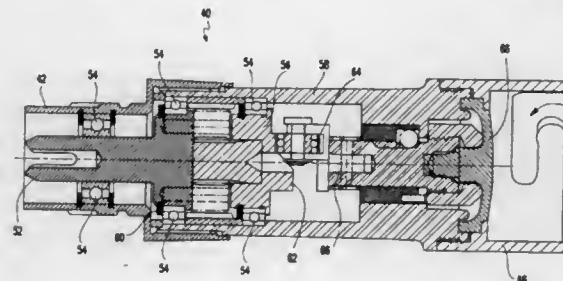
Mike Fard, Charlottesville, Va., assignor to Microaire Surgical Instruments, Inc., Charlottesville, Va.

Filed Apr. 9, 1997, Ser. No. 838,534

Int. Cl.⁶ A61B 17/56

U.S. Cl. 606—53

6 Claims



1. A pulsed lavage attachment for a powered modular surgical hand piece, comprising:

- a housing;
- a connector located at a first end of said housing, said connector being configured to fit within a coupler of a powered modular surgical hand piece;
- an internal driver positioned within said connector for mating with an output driver of a powered modular surgical hand piece, said internal driver being axially rotatable;
- a coupler located at a second end of said housing, said coupler being configured to receive a connector of a pulsed lavage fluid delivery set;
- an actuator positioned within said coupler, said actuator being axially moveable within said coupler to interact with a connector of a pulsed lavage fluid delivery set; and
- a drive mechanism which is connected to said internal driver in said connector and said actuator in said coupler which translates rotational drive power of said internal driver into axial movements of said actuator.

5,779,703

DEVICE AND METHOD FOR POSITIONING AND HOLDING BONE FRAGMENTS IN PLACE

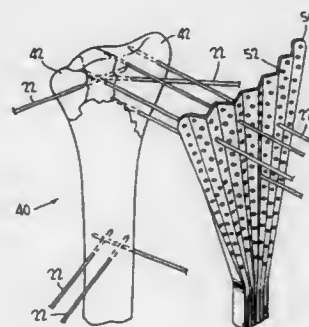
Louis Armand Benoist, 1700 Skeels Ave., Eau Claire, Wis. 54701

Division of Ser. No. 403,628, Mar. 14, 1995, Pat. No. 5,591,169, which is a continuation-in-part of Ser. No. 260,412, Jun. 14, 1994, abandoned. This application Nov. 14, 1996, Ser. No. 749,006

Int. Cl.⁶ A61B 17/56

U.S. Cl. 606—54

6 Claims



1. Method of repairing a bone fracture comprising the steps of:
a) arranging the bone pieces of the fractured bone and inserting a plurality of wires into said bone pieces;

- providing a template having a plurality of randomly distributed holes therein, said template having a first and second end, said first end being wider than said second end and having a greater number of holes therein relative to said second end;
- arranging the wires of step a in the holes of said template whereby a greater number of wires are in the first end thereof than in said second end;
- positioning the template adjacent to the bone fracture;
- anchoring the ends of said wires to said template; and
- fixing said ends of said wires to said template.

5,779,704

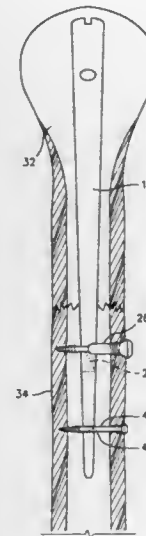
BI-DIRECTIONAL UNIVERSAL DYNAMIC COMPRESSION DEVICE

Andrew C. Kim, 30213 Del Rey Rd., Temecula, Calif. 92591
Continuation-in-part of Ser. No. 618,366, Mar. 19, 1996. This application Jul. 3, 1996, Ser. No. 674,784

Int. Cl.⁶ A61B 17/72

U.S. Cl. 606—64

16 Claims



10. A compression interlocking system for stabilizing long bone fractures, comprising:

- elongated intramedullary rod means having a proximal end, a distal end and a longitudinal axis, said rod means adapted for extending within a bore generally parallel to a longitudinal axis of a long bone from a proximal end of the bone to beyond a fracture of the bone;
- proximal fixing means for fixing said proximal end to a first portion of a bone having a fracture;
- a transverse bore in the rod means for positioning in a second portion of the bone at a position beyond the fracture from said proximal end, said transverse bore having a predetermined diameter and a configuration enabling a lag screw to move longitudinally of the rod when viewing in elevation view of the rod means;
- cam means on said rod adjacent said bore for engaging and camming a lag screw along from either side of said axis of said rod means so that said lag screw may be moved along said axis relative to said rod; and
- a stepped diameter lag screw for extending across said second portion and through said transverse bore, said lag screw having a stepped diameter with a forward end having a diameter less than said predetermined diameter and a rear end greater than said predetermined diameter, and a shoulder between said diameters for engaging said cam means on said rod.

5,779,705

INTRAMEDULLARY NAIL

Michael Gordon Matthews, Orchard Farm, Little Kingshill, Great Missenden Buckinghamshire HP16 OEB, Great Britain
PCT No. PCT/GB95/01355, § 371 Date Dec. 18, 1996, § 102(e) Date Dec. 18, 1996, PCT Pub. No. WO95/34248, PCT Pub. Date Dec. 12, 1995

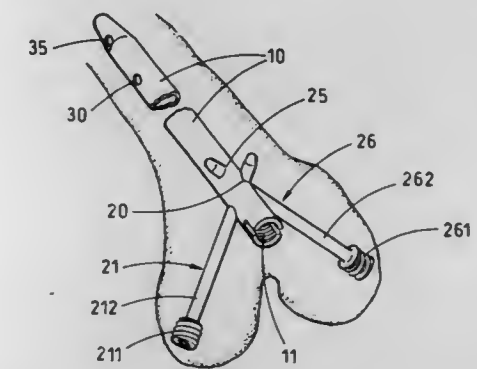
PCT Filed Jun. 9, 1995, Ser. No. 750,165

Claims priority, application United Kingdom, Jun. 10, 1994, 9411693

Int. Cl.⁶ A61B 17/56

U.S. Cl. 606—67

10 Claims



1. A surgical intramedullary nail and locking bolt assembly for stabilizing fractures of the condyles and supracondylar region of the femur and humerus, said assembly comprising:

- a nail in the form of a rod or tube having a longitudinal axis and adapted for insertion into an intramedullary canal through a distal end of a femur or humerus, said nail having first and second distal locking holes; and
 - first and second distal locking bolts for insertion into the first and second distal locking holes;
- the first and second distal locking holes being staggered and angled with respect to said longitudinal axis such that the distal locking bolts when inserted into said holes extend in a divergent manner from said nail and permit each condyle to be gripped by a respective one of the first and second locking bolts so as to stabilize the condyles with respect to the nail.

5,779,706

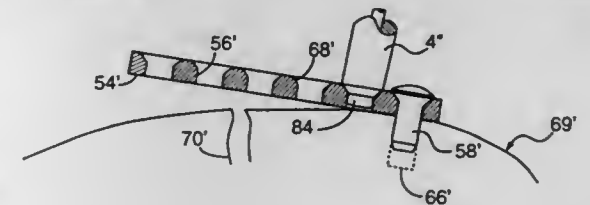
SURGICAL SYSTEM

Alexander Tschakaloff, Pinneberg, Germany, assignor to Medicon eG, Tuttlingen, Germany
Continuation-in-part of Ser. No. 105,794, Aug. 12, 1993, Pat. No. 5,607,427, which is a division of Ser. No. 898,453, Jun. 15, 1992, Pat. No. 5,290,281. This application Jun. 26, 1996, Ser. No. 672,055

Int. Cl.⁶ A61B 17/58

U.S. Cl. 606—69

15 Claims



1. A heating apparatus for heating a thermoplastic, body absorbable, bodily tissue fixation plate having a plurality of through-bores for receiving fasteners for attaching said plate to bodily tissue and at least one truncated, substantially concave spherical formation associated with at least one of said through-bores, said heating apparatus comprising:
a heating wand; and

a heating tip attached to said heating wand, said heating tip consisting essentially of a truncated, substantially convex spherically shaped member adapted to substantially matingly cooperate with said at least one formation, said heating apparatus being operable to function such that heat generated by said heating apparatus radiates substantially exclusively from said truncated, substantially convex heating tip, whereby heat from said heating tip is localized to heat said plate when said heating tip is mated with said at least one plate formation and to minimize heat-related damage to biological tissue when said heating tip is separated from said plate,

wherein said heating wand comprises a first electrical conductor operating as a first electrode, a second electrical conductor operating as a second electrode, insulating material isolating said first and second conductors and formed into said truncated, substantially convex spherical shape at said heating tip, electrically conductive material covering said heating tip and electrically connecting said first and second conductors, and thermally insulative means protruding from said heating tip for positioning said heating tip with respect to said plate.

5,779,707

LINK PIECE FOR BONY ELEMENTS

Maurice Bertholet, La Rochette, Les Cotes, F-38360 Sassenage, and Philippe Morilleau, 20, Bd Jean Pain, F-38000 Grenoble, both of France

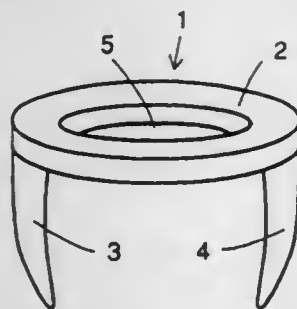
Continuation of Ser. No. 151,028, Nov. 12, 1993, abandoned.

This application Oct. 3, 1995, Ser. No. 538,345

Int. Cl.⁶ A61B 17/68

U.S. Cl. 606—75

10 Claims



1. A link piece for bony elements comprising:
 - a planar central portion made from a shape memory effect material and including a central hole formed therethrough; and
 - at least two anchoring portions connected to said central portion and extending substantially perpendicular to the plane in which said central portion lies wherein a distance between said at least two anchoring portions is variable along a straight line in correspondence with a variation in a shape of said central portion, said variation in distance being substantially free from angular displacement of said at least two anchoring portions relative to said central portion.

5,779,708

INTRAOSSEOUS DRUG DELIVERY DEVICE AND METHOD

Gin Wu, Corte Madera, Calif., assignor to Cyberdent, Inc., Novato, Calif.

Filed Aug. 15, 1996, Ser. No. 698,016

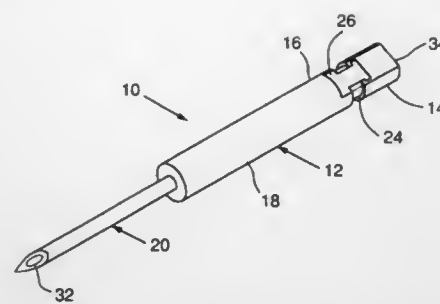
Int. Cl.⁶ A61B 17/00

U.S. Cl. 606—80

17 Claims

1. A rotatable drilling device for use in injecting medication, said rotatable drilling device comprising:

a rotatable hollow drill bit adapted for mounting in a spindle of a drill, wherein the rotatable hollow drill bit includes a hub



and a needle extending outwardly from an end of the hub, wherein the needle has a sharpened tip, wherein the rotatable hollow drill bit has a bore extending through the hub and needle, and wherein an end of the hub opposite the needle has an opening through which medication can be introduced into the bore, wherein the hub further includes an adapter means for coupling the hub to the spindle for rotation therewith; and a stylet removably inserted in the bore of the rotatable hollow drill bit, wherein the stylet extends through the bore of the rotatable hollow drill bit to the tip of the needle.

5,779,709

ULNAR CUT GUIDE ALIGNMENT SYSTEM

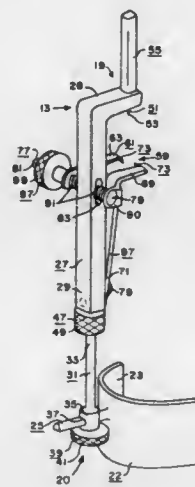
Brian R. Harris, Jr., Memphis, Tenn.; Charles Sorbie, Kingston, and Gerald A. B. Saunders, Sydenham, both of Canada, assignors to Wright Medical Technology, Inc., Arlington, Tenn.

Filed Feb. 12, 1997, Ser. No. 798,917

Int. Cl.⁶ A61B 17/56

U.S. Cl. 606—87

3 Claims



1. An ulnar cut guide alignment system for use in the osteotomy of an ulna having a proximal end, a distal end, a long axis extending between the proximal and distal ends, and an articular notch having an articular axis; the ulnar cut guide alignment system comprising:

(a) an ulnar alignment guide having a first end for attachment relative to the proximal end of the ulna, a second end for attachment relative to the distal end of the ulna, and a long axis for placement parallel to the long axis of the ulna;

(b) an ulnar cut guide holder including a body having an aperture extending therethrough along a longitudinal axis;

(c) ulnar cut guide locator for connecting the ulnar cut guide holder to the ulnar alignment guide with the longitudinal axis through the aperture of the body of the ulnar cut guide holder placed substantially coextensive with the articular axis of the trochlear notch of the ulna when the first end of the ulnar alignment guide is attached relative to the distal end of the

ulna and when the second end of the ulnar alignment guide is attached to the proximal end of the ulna;

(d) ulnar rotation guide for positioning in the trochlear notch of the ulna; and

(e) an ulnar rotation guide shaft for attaching the ulnar rotation guide to the ulnar cut guide holder along the longitudinal axis of the aperture in the ulnar cut guide holder.

5,779,710

JOINT REPLACEMENT METHOD AND APPARATUS

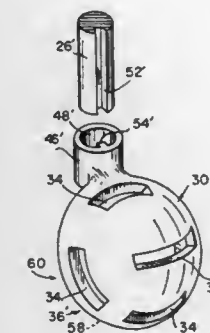
Frederick A. Matsen, III, 1853 E. Hamlin, Seattle, Wash. 98112

Filed Jun. 21, 1996, Ser. No. 668,578

Int. Cl.⁶ A61B 17/56

U.S. Cl. 606—102

1 Claim



1. A shaft for insertion into the proximal end of the intramedullary canal of the proximal humerus, the shaft having a non-circular cross section transverse to its longitudinal extent along at least a part of its longitudinal extent, and a plurality of gauges for determining the size of an articular surface of the proximal humeral head to be replaced, each gauge having an engaging portion for engaging the articular surface and a portion for receiving the non-circular cross section shaft.

5,779,711

CORNEAL FLAP/CAP ELEVATOR

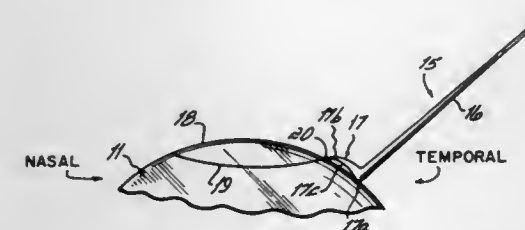
Michiel S. Kritzinger, 26 Wexford Avenue, Westcliff, Johannesburg, South Africa, and Stephen A. Updegraff, Rapid City, S. Dak., assignors to Michiel S. Kritzinger, Johannesburg, South Africa, and Stephen D. Updegraff, St. Petersburg, Fla.

Filed Nov. 22, 1995, Ser. No. 562,257

Int. Cl.⁶ A61F 9/00

U.S. Cl. 606—107

15 Claims



1. An elevating instrument for use in atraumatically lifting a corneal cap or flap during corneal lamellar surgery comprising a handle, and an elevator head at one end of said handle, said head having a concave leading edge with an inclined top face extending vertically upward away from said edge and a concave bottom surface for atraumatically engaging the corneal surface, said head adapts for insertion into a corneal cap or flap incision with said concave leading edge and inclined top face exposing a corneal edge for lifting the cap or flap.

5,779,712

Patent Not Issued For This Number

5,779,713

INSTRUMENT FOR REMOVING NEUROLOGIC TUMORS

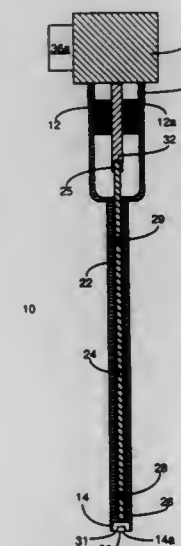
Leon Turjanski, Republica de la India 3129 (1425), Buenos Aires, Argentina, and Carl E. Fabian, 577 NE. 96th St., Miami Shores, Fla. 33138

Continuation of Ser. No. 254,861, Jun. 6, 1994, abandoned, which is a continuation-in-part of Ser. No. 72,717, Jun. 7, 1993, abandoned. This application Aug. 23, 1996, Ser. No. 697,425

Int. Cl.⁶ A61F 11/00

U.S. Cl. 606—108

7 Claims



1. A surgical instrument for removing diseased tissue in the presence of non-diseased tissue, comprising:

(a) a tubular housing having open proximal and distal ends;

(b) a rotating shaft having proximal and distal ends, said rotating shaft being disposed within said tubular housing;

(c) a rotational power means;

(d) a shaft connecting means for attaching said rotating shaft to said rotational power means; and

(e) a battering means having a battering edge disposed at said distal end of said rotating shaft and contained within said housing so that said battering edge is approximately flush with the distal end of said tubular housing, said distal end being operative to push normal living cellular tissue away from said battering means, to permit tissue walls to be simultaneously cleaned by said battering edges, and said battering means being operative, upon rotation at a velocity ranging from about 10,000 to 30,000 rpm, to liquefy diseased tissue while simultaneously preserving the structure and function of non-diseased tissue.

5,779,714

Patent Not Issued For This Number

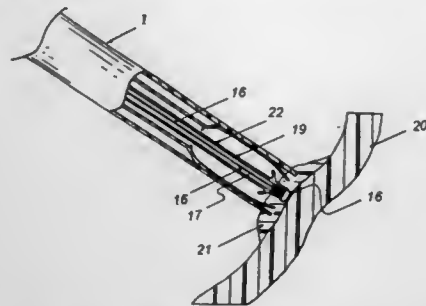
5,779,715
LEAD EXTRACTION SYSTEM AND METHODS THEREOF

Hosheng Tu, Tustin, Calif., assignor to Irvine Biomedical, Inc., Irvine, Calif.

Filed Jul. 28, 1997, Ser. No. 901,500
Int. Cl.⁶ A61B 17/50

U.S. Cl. 606—108

20 Claims



1. A lead extraction system comprising: a catheter sheath having a distal tip section, a distal end, and at least one lumen extending therebetween; a handle attached to the proximal end of the catheter sheath; a locking stylet located within the lumen of said catheter sheath; and an electrode deployment means including a retractable tip section, comprising a set of deployable jaw electrodes each having a sharp end.

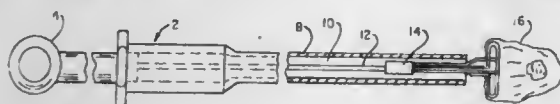
5,779,716
DEVICE FOR REMOVING SOLID OBJECTS FROM BODY CANALS, CAVITIES AND ORGANS

Gerald G. Cano, Penn Hills, and Robert W. Doebler, Sewickley, both of Pa., assignors to Metamorphic Surgical Devices, Inc., Pittsburgh, Pa.

Filed Oct. 6, 1995, Ser. No. 539,875
Int. Cl.⁶ A61B 17/22

U.S. Cl. 606—114

23 Claims



1. A surgical instrument for removing foreign objects from body canals, cavities or organs, used in minimally invasive procedures performed under either direct, endoscopic, fluoroscopic or other visualization comprising:

- a) a handle, said handle including a means for extending and retracting a wire linkage attached to said handle, said wire linkage having a first proximal end attached to said means for extending and retracting said wire linkage, said wire linkage having a second distal end;
- b) an elongated tubular sheath attached to said handle, said sheath having a hollow lumen extending longitudinally there-through, said wire linkage contained within said lumen, said wire linkage being adapted to slide within said lumen of said sheath;
- c) a wire frame attached to said wire linkage at said second distal end of said wire linkage, said wire frame being extendible beyond said sheath and retractable into said sheath by said means for extending and retracting said wire linkage which correspondingly extends and retracts said wire frame within said sheath, said wire frame being formed of a shape-memory-effect alloy wire, said alloy in a super elastic state and previously trained to form at an end of the wire frame opposite said wire linkage at least a partial loop, said at least partial loop forming when said wire frame is extended beyond said sheath, said at least partial loop being continuous between the ends of each of said at least two control arms

opposite the wire linkage said wire frame having at least two control arms diverging from the longitudinal axis of said sheath between said wire linkage and said at least partial loop when said wire frame is extended beyond said sheath, said at least two control arms positioned parallel to and adjacent the longitudinal axis of the sheath when said wire frame is retracted into said sheath; and

- d) a sack having a mouth, said mouth of said sack being attached to said wire frame wherein said mouth of said sack is opened and closed when said at least two control arms are extended from and retracted into said sheath.

5,779,717

Patent Not Issued For This Number

5,779,718
METHOD OF ANASTOMOSING A VESSEL USING A SURGICAL CLIP APPLIER

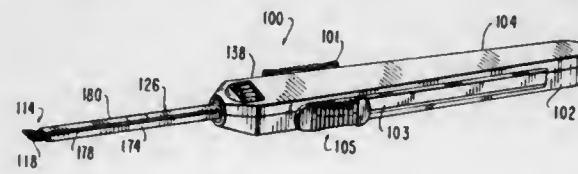
David T. Green, Westport; Henry Bolanos, East Norwalk, both of Conn.; Kenneth E. Toso, Portchester, N.Y.; Daniel E. Alesi, Sherman, Conn.; Robert Geiste, Milford, Conn., and Frank C. Maffei, Shelton, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 476,756, Jun. 7, 1995, abandoned, which is a division of Ser. No. 134,017, Oct. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 959,201, Oct. 9, 1992, abandoned. This application Sep. 13, 1996, Ser. No. 714,790

Int. Cl.⁶ A61B 17/04

U.S. Cl. 606—143

8 Claims



1. A method for performing anastomosis procedures in vascular surgery comprising the steps of:

- (a) incising body tissue to access first and second vessel portions;
- (b) everting respective sections of the first and second vessel portions;
- (c) positioning the everted sections in adjacent relation with respect to each other;
- (d) providing a clip applying instrument including a pair of jaws, a series of clips, each clip having a pair of inwardly directed legs terminating in a non-penetrating tip, and a handle assembly operably associated with the jaws to close the jaws upon actuation of the handle assembly;
- (e) positioning the jaws of the instrument over a first portion of the everted sections of the vessel portions such that the legs of a clip positioned in the jaws are located over the first section of the everted sections;
- (f) actuating the handle assembly to close the jaws and crimp the clip positioned therebetween such that the ends of the legs are approximated about the everted sections of the vessel portions to non-invasively join the vessel portions;
- (g) releasing the handle assembly to open the jaws and release the crimped clip;
- (h) positioning the jaws of the instrument over an unclipped portion of the everted sections of the first and second vessel portions; and
- (i) repeating steps (f) to (h) to apply a plurality of clips to the everted sections of the first and second vessel portions.

5,779,719
DEVICE AND METHOD FOR THE PERCUTANEOUS SUTURING OF A VASCULAR PUNCTURE SITE

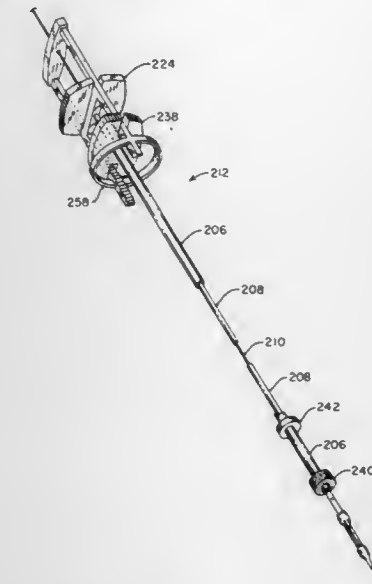
Enrique J. Klein, Los Altos; T. Daniel Gross, Los Gatos; Tomoaki Hinohara, Portola Valley, and James W. Vetter, Redwood City, all of Calif., assignors to Perclose, Inc., Menlo Park, Calif.

Division of Ser. No. 989,611, Dec. 10, 1992, Pat. No. 5,417,699, and a continuation-in-part of Ser. No. 989,611, Dec. 10, 1992. This application Jun. 14, 1994, Ser. No. 259,410

Int. Cl.⁶ A61B 17/04

U.S. Cl. 606—144

173 Claims



1. A suturing device comprising: a shaft having a proximal end and a distal end; a pair of needles removably carried near the distal end of the shaft; a length of suture secured to and extending between the needles; a sleeve received over the shaft; and a radially expandable structure disposed on the sleeve for presenting a receiving area to the needles as the shaft is drawn proximally relative to the sleeve, wherein the structure may be selectively expanded to capture the needles in the receiving area after they have passed through tissue.

5,779,720
ONE-PIECE SURGICAL CLIP

Alice Walder-Utz, Zurich, and Werner Fritz Dubach, Maur, both of Switzerland, assignors to Createch AG, Dietlikon, Switzerland

PCT No. PCT/CH95/00023, § 371 Date Sep. 9, 1996, § 102(e) Date Sep. 9, 1996, PCT Pub. No. WO95/21575, PCT Pub. Date Aug. 17, 1995

PCT Filed Feb. 2, 1995, Ser. No. 687,577

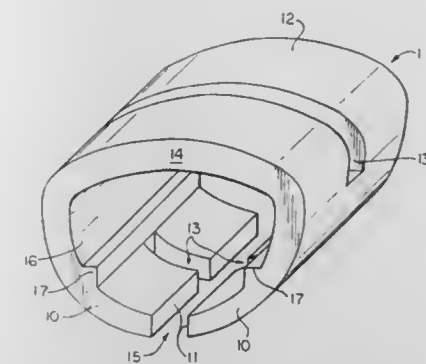
Claims priority, application Switzerland, Feb. 11, 1994, 415/94

Int. Cl.⁶ A61B 17/08

U.S. Cl. 606—151

8 Claims

1. A one-piece, spring-mounted, curved surgical clip and a storage element as a retaining device, comprising: first and second pressure edges which face one another, and which are formed by two jaws connected to one another via a web and means for stackably holding on a storage element that goes through them, characterized by the fact that the holding means have at least one cut or one recess, which crosses the web and the pressure edges of the jaws perpendicular to the direction in which the pressure edges run and by the fact that the jaws have retaining ribs running parallel to and some distance away from the pressure edges, said clip



being stackably held on a storage element disposed there-through, said storage element having a sword-like form with lateral cuts forming positioning notches, wherein the distance between adjacent positioning notches corresponds to the height of the surgical clip, said retaining ribs being in contact with said positioning notches upon stacking.

5,779,721
SYSTEM AND METHOD OF USE FOR REVASCULARIZING STENOTIC BYPASS GRAFTS AND OTHER BLOOD VESSELS

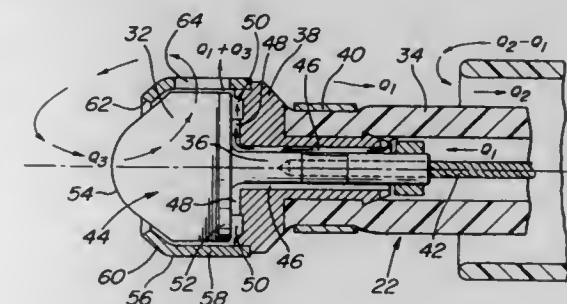
John E. Nash, Downingtown, Pa., assignor to Kensey Nash Corporation, Exton, Pa.

Filed Jul. 26, 1996, Ser. No. 690,438

Int. Cl.⁶ A61B 17/22

U.S. Cl. 606—159

53 Claims



1. An intravascular system for opening a lumen in an occluded blood vessel portion of a living being's vascular system, the occluded blood vessel portion being occluded by an occlusive material, said system comprising an instrument and debris extraction means, said instrument having an exterior surface and a working head and being arranged to be located within the being's vascular system, whereupon a passageway is established outside said exterior surface of said instrument and within the being's vascular system, said working head being arranged to operate on the occlusive material in the interior of the occluded blood vessel portion to open a lumen therein for the flow of blood therethrough, whereupon some debris may be produced from the occlusive material by the operation of said working head, said debris extraction means introducing an infusate liquid at a first flow rate adjacent said working head and withdrawing said liquid at a second and higher flow rate through said passageway to create a differential flow adjacent said working head, whereupon debris produced by the operation of said working head is withdrawn through said passageway by said differential flow for collection remote from the occluded vessel portion and is prevented from flowing into any upstream blood vessel or downstream blood vessel.

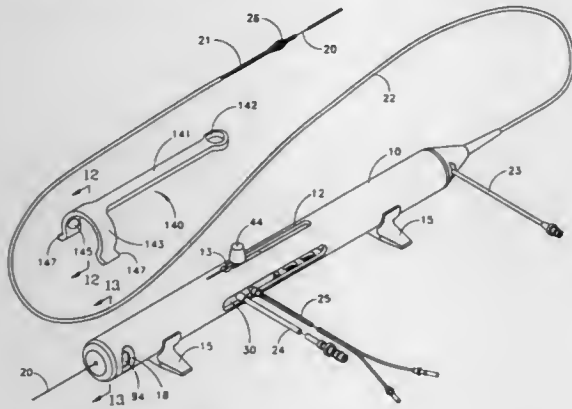
5,779,722
ATHERECTOMY DEVICE HANDLE WITH GUIDE WIRE CLAMP OVERRIDE DEVICE

Leonid Shturman, Minnetonka, Minn., and Georgiy Morov, Moscow, Russian Federation, assignors to Shturman Cardiology Systems, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 785,991, Jan. 21, 1997. This application Jan. 31, 1997, Ser. No. 792,101
Int. Cl.⁶ A61B 17/22

U.S. Cl. 606—159

22 Claims



1. An atherectomy device comprising:
 - a handle housing;
 - a rotatable prime mover movable longitudinally with respect to the handle housing;
 - a rotatable drive shaft having a proximal end connected to the prime mover for rotation and longitudinal movement therewith, and a distal end portion having a tissue removal implement usable to remove tissue from a bodily passageway;
 - a guide wire disposed within the drive shaft and having a proximal portion extending proximally from the proximal end of the drive shaft;
 - a guide wire clamp disposed within the handle housing for releasably clamping the proximal portion of the guide wire, the guide wire clamp being selectively movable from a guide wire-clamped position to a guide wire-released position;
 - the handle housing being shaped and sized with respect to the guide wire clamp to permit manual movement of the guide wire clamp from its guide wire-clamped position to its guide wire-released position; and
 - an override clamp removably securable to the handle housing to move the guide wire clamp to the guide wire-released position and to hold the guide wire clamp in such position.

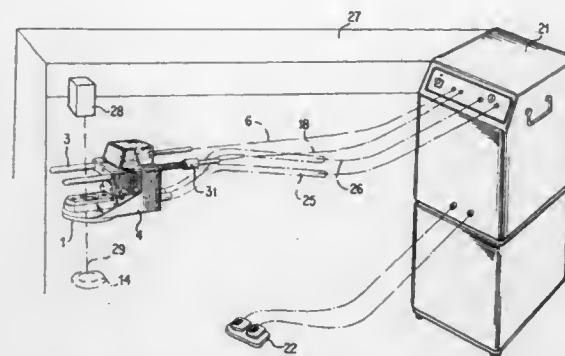
5,779,723
DEVICE FOR CORNEAL SURGERY
Herbert Schwind, Kleinostheim, Germany, assignor to Herbert Schwind GmbH & Co. KG, Kleinostheim, Germany
Filed Oct. 29, 1996, Ser. No. 738,582
Claims priority, application Germany, Oct. 30, 1995, 195 40 439.4

U.S. Cl. 606—166

Int. Cl.⁶ A61F 9/00

23 Claims

1. A device for corneal surgery comprising:
 - a base ring which is to be applied to an eye to be treated and fixed by negative pressure which can be generated in an annular chamber in an area of the cornea,
 - an oscillating knife which can be moved over the eye by a support mounted to and guided on the base ring, said oscillating knife being operatively connected to said support
 - a first drive connected to said support for providing movement of the support,
 - a second drive interconnected with said knife for providing oscillatory movement of the knife, the first and the second drives being independently controllable, and



a movement stop for stopping forward movement of the support during cutting a lamellar corneal part which is separated from the cornea is connected to the cornea which has remained on the eye by a hinge site formed by corneal tissue so that a separated lamellar corneal piece can be folded laterally away, exposing the eye tissue located below it, and so that during a return stroke of the support, the second drive for providing the oscillatory movement of the knife is stopped by the movement stop.

5,779,724
RETRACTABLE SURGICAL KNIFE
Richard S. Werner, 2920 West 38th St., Minneapolis, Minn. 55410

Continuation-in-part of Ser. No. 489,890, Jun. 13, 1995, Pat. No. 5,562,282, which is a continuation-in-part of Ser. No. 161,662, Dec. 3, 1993, Pat. No. 5,423,843, which is a continuation-in-part of Ser. No. 986,139, Dec. 4, 1992, Pat. No. 5,292,329. This application May 24, 1996, Ser. No. 653,311

U.S. Cl. 606—167

Int. Cl.⁶ A61B 17/32

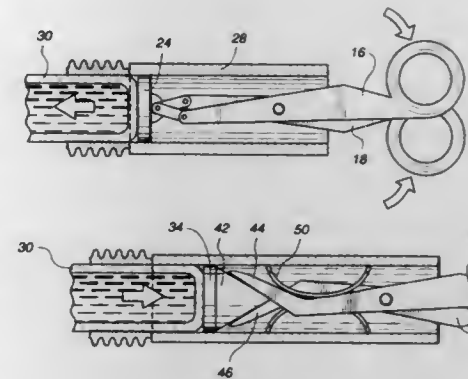
4 Claims



1. A retractable tool holder, comprising:
 - a tool support member holding a tool at a front end, including at least one longitudinally extended slot;
 - a sheath member telescopically at least partially receiving the tool support member, the sheath member having a back end and a front end;
 - a first spring being telescopically disposed inside the tool support member proximate a back end of the tool support member;
 - a latch mechanism, disposed proximate the back end of the sheath member, the latch mechanism reciprocating in the slot of the tool support member, the movement of the back end of the tool support member toward the latch mechanism extending the tool out of the sheath member and compressing the

first spring between the back end of the tool support member and the latch mechanism, the movement of the back end of the tool support member away from the latch mechanism retracting the tool into the sheath member and expanding the first spring between the back end of the tool support member and the latch mechanism;

wherein the latch mechanism includes a member having an open slot, the tool support member reciprocates along a longitudinal axis of the tool holder through the open slot; and a key member having a prong, disposed proximate the back end of the sheath member, a post being disposed on the prong, a second spring being disposed between the member and the prong and being disposed around the post, so that the key member is prevented from falling out of the back end of the sheath member.



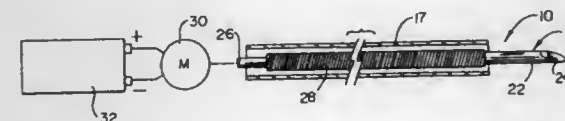
5,779,725
TRANSMYOCARDIAL REVASCULARIZATION CATHETER AND METHOD
Louis Ellis, St. Anthony, and Gary L. Hendrickson, Big Lake, both of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed Mar. 6, 1997, Ser. No. 812,425

Int. Cl.⁶ A61B 17/32

U.S. Cl. 606—167

5 Claims



1. A method of performing transmyocardial revascularization, comprising the steps of:
 - providing a transmyocardial revascularization catheter including an elongate drive shaft having a proximal end, a distal end and a longitudinal axis; a cutting tip disposed at the distal end of the shaft, the tip having a distally disposed cutting edge and longitudinally extending lumen therethrough; and a motor coupled to the drive shaft for rotation of the cutting tip;
 - advancing the cutting edge of the tip into engagement with the heart wall;
 - rotating the tip; and
 - advancing the tip into the myocardium of the heart.

5,779,726

Patent Not Issued For This Number

5,779,727
HYDRAULICALLY OPERATED SURGICAL SCISSORS
Wilmo C. Orejola, 144 Mountain Ave., Pompton Plains, N.J. 07444-1020

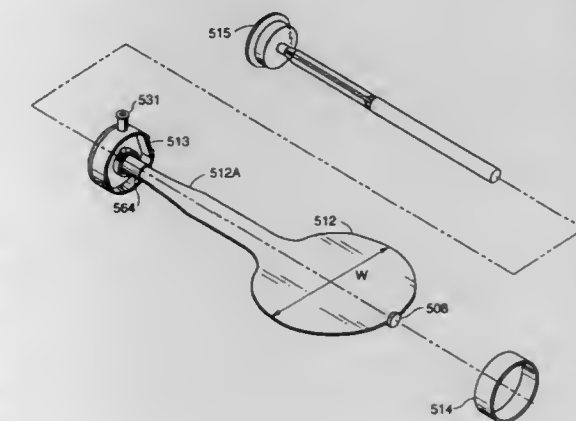
Filed Feb. 18, 1997, Ser. No. 802,780

Int. Cl.⁶ A61B 17/32

U.S. Cl. 606—174

6 Claims

1. A hydraulically operated surgical scissors comprising:
 - a tubular flexible arm containing over its length a sealed pliable tube filled with fluid, said flexible arm having a first and a second end;
 - a manipulator attached to the first end of said flexible arm, said manipulator including a tubular member aligned with said flexible arm and containing a slideable piston having first and second surfaces, said first surface in communication with said sealed pliable tube for exerting a force against said tube, said manipulator including a pair of normally open, elongated scissor handles with thumb and index finger rings protruding



1. A device for dissection of tissue layers, including:
 - a trocar having a distal end; and

from an open end of said tubular member, said handles being pivoted together near the center of their lengths, each handle of said pair being pivotally coupled to a corresponding short link which is pivotally coupled to said second surface of said piston whereby closure of said finger rings forces said piston against said pliable tube; and an operator removably attached to the second end of said flexible arm, said operator including a scissors having a pair of blades having first and second ends, said blades being closed by the movement of an operator piston in contact with said sealed pliable tube.

5,779,728
METHOD AND INFLATABLE CHAMBER APPARATUS FOR SEPARATING LAYERS OF TISSUE
John P. Lunsford, San Carlos; Charles Gresl, San Francisco; Jeffrey A. Smith, Sunnyvale; Daniel T. Wallace, and Albert K. Chin, both of Palo Alto, all of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.
Continuation-in-part of Ser. No. 542,666, Oct. 13, 1995, which is a continuation-in-part of Ser. No. 405,284, Mar. 16, 1995, Pat. No. 5,632,761, which is a continuation-in-part of Ser. No. 365,096, Dec. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 319,552, Oct. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 282,287, Jul. 19, 1994, Pat. No. 5,704,372, which is a continuation-in-part of Ser. No. 911,714, Jul. 10, 1992, which is a continuation-in-part of Ser. No. 794,590, Nov. 19, 1991, Pat. No. 5,309,896, which is a continuation-in-part of Ser. No. 706,781, May 29, 1991, abandoned. This application Jan. 5, 1996, Ser. No. 583,563

Int. Cl.⁶ A61B 17/00

U.S. Cl. 606—190

14 Claims

a dissection balloon assembly attached to the distal end of the trocar, the dissection balloon including a distal end and a viewing window provided at the distal end, wherein the distal end of the dissection balloon defines an opening, the viewing window has a grooved side wall, and the grooved side wall is glued to the dissection balloon so that the viewing window is attached to the dissection balloon over the opening.

5,779,729 COATED STENT

Aldo Severini, Milan, Italy, assignor to Istituto Nazionale Per Lo Studio E La Cura Dei Tumori, Milan, Italy

Continuation of Ser. No. 253,740, Jun. 3, 1994, abandoned.

This application Feb. 8, 1996, Ser. No. 597,379

Claims priority, application Italy, Jun. 4, 1993, M193A0176

Int. Cl.⁶ A61F 2/06

U.S. Cl. 606—191

18 Claims

1. In a prosthetic polymer coated stent selected from the group consisting of a Gianturco stent, a Gianturco-Roubin stent and a Gianturco-Rosch stent for implantation within an animal duct comprising an elongated metal mesh stent structure having a lumen, an inner lumen surface and an outer surface and a polymer coating extending completely over the elongated metal mesh stent structure, the improvement comprising:

the polymer coating being a thermoplastic polycarbonate urethane polymer coating and said coating having:

a smooth inner lumen surface to provide improved fluid hydrodynamics within the lumen; and

an outer surface configured to the outer surface of the elongated metal mesh stent structure to promote interaction of the coated stent with and non-migration thereof within the animal duct.

5,779,730

BALLOON CATHETER AND INFLATION METHOD

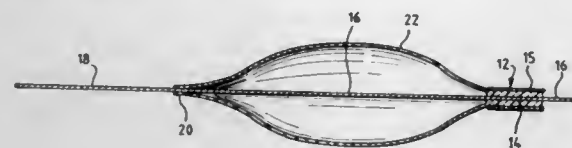
Jay F. Miller, Miramar, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Division of Ser. No. 556,206, Nov. 9, 1995, Pat. No. 5,681,343, which is a division of Ser. No. 294,659, Aug. 23, 1994, Pat. No. 5,490,838, which is a continuation of Ser. No. 78,511, Jun. 16, 1993, abandoned. This application May 5, 1997, Ser. No. 841,889

Int. Cl.⁶ A61M 29/00

U.S. Cl. 606—192

6 Claims



1. A balloon catheter defining a tubular shaft having a diameter, an inflation lumen, an outer wall having a wall thickness, and a single-layer, tubular balloon communicating with said inflation lumen, said balloon comprising a tube, integral with said shaft and having a cylindrical outer surface of a diameter essentially no greater than the diameter of said tubular shaft, said balloon having a tubular wall thickness which is substantially the same as the wall thickness of said outer wall of the tubular shaft, said balloon being made of a plastic formulation capable of work-hardening upon elastic expansion.

5,779,731 BALLOON CATHETER HAVING DUAL MARKERS AND METHOD

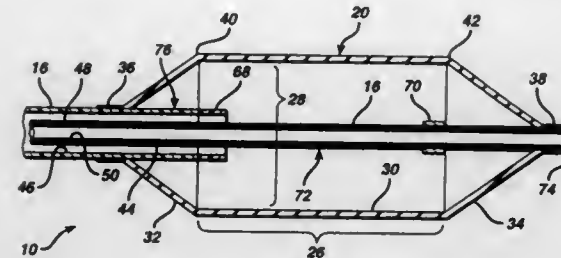
Ernest E. Leavitt, Coral Springs, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Dec. 20, 1996, Ser. No. 770,875

Int. Cl.⁶ A61M 29/00

U.S. Cl. 606—194

31 Claims



1. An intravascular balloon catheter for treating a portion of the body of a patient, comprising:

a flexible catheter shaft, at least a distal portion of the catheter shaft having an inner shaft member coaxially surrounded by an outer shaft member, an inflation lumen being defined by an annular space between said inner and outer shaft members;

a flexible balloon disposed near a distal end of the catheter shaft, the balloon having a working portion with a constant cross-sectional area, a proximal end of the balloon being sealed to the outer shaft member, and a distal end of the balloon being sealed to the inner shaft member, whereby the inflation lumen is in fluid communication with the interior of the balloon; and first and second radiopaque markers disposed within the interior of the balloon, the first marker being affixed to the inner shaft member, and the second marker being affixed to the outer shaft member, said first and second markers being positioned at a distal and proximal end of the balloon working portion, respectively, whereby the first and second markers indicate under fluoroscopy the position of the balloon working portion within the body of the patient.

5,779,732

METHOD AND APPARATUS FOR IMPLANTING A FILM WITH AN EXANDABLE STENT

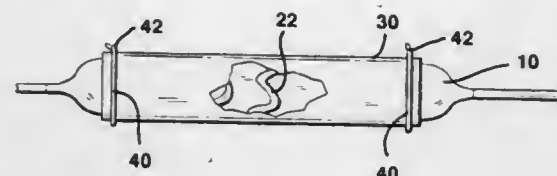
Rodney R. Amundson, Lindstrom, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 31, 1997, Ser. No. 829,576

Int. Cl.⁶ A61M 29/00

U.S. Cl. 606—198

19 Claims



1. A method for manufacturing a film-wrapped stent, the method comprising steps of:

providing a collapsed, radially expandable stent; providing a film that is separate from the stent, the film being provided in sheet form and having first and second ends; wrapping the film around at least a portion of the stent; and releasably securing the film around the stent with at least one suture extending about the exterior of the film.

5,779,733

LUMBAR SPINE COMPRESSION DEVICE

Jan A. G. Willen, Mölnlycke; Arne Gaultz, Bildal; Barbro Danielsson, Lindome, and Thomas Nicklasson, Onsala, all of Sweden, assignors to Bobuslandstinget, Sweden

PCT No. PCT/SE95/00581, § 371 Date Jan. 24, 1996, § 102(e)

Date Jan. 24, 1996, PCT Pub. No. WO95/31936, PCT Pub. Date Nov. 30, 1995

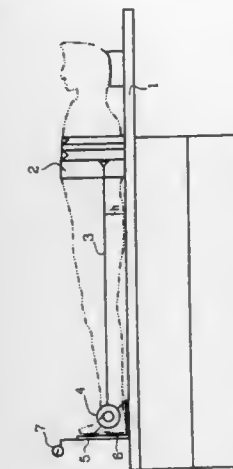
PCT Filed May 24, 1995, Ser. No. 591,640

Claims priority, application Sweden, Jan. 24, 1994, 9401793

Int. Cl.⁶ A61F 5/00

U.S. Cl. 606—237

10 Claims



1. A device for use in medical complementary examination for imaging a patient's spine while in a supine position, comprising a flexible garment-like structure which contacts and substantially surrounds a portion of the patient's body, a foot plate having a transmission mechanism connected thereto for exerting a compression pressure on the spine and at least one pressure sensor connected said foot plate, and wherein at least a portion of said foot plate being secured to a substantially stationary surface, and at least one pulling cord mechanism connecting said garment-like structure to said transmission.

5,779,734

COVERING FOR AN IMPLANTABLE PROSTHETIC DEVICE

Walter J. Ledergerber, 29502 Anna Maria, Laguna Niguel, Calif. 92677

Continuation of Ser. No. 198,651, Feb. 18, 1994, Pat. No. 5,653,755, which is a continuation of Ser. No. 837,284, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 137,871, Dec. 22, 1987, Pat. No. 5,282,856. This application

Mar. 20, 1997, Ser. No. 821,225

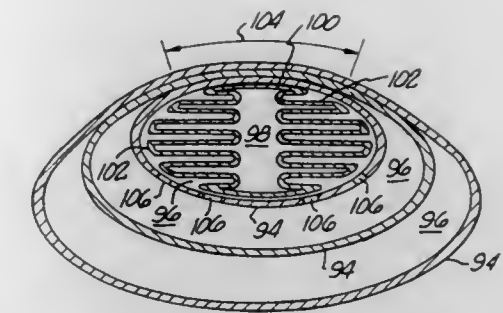
Int. Cl.⁶ A61F 2/12; 2/02

U.S. Cl. 623—8

1 Claim

1. A covering for an implantable prosthetic device for use in the human body comprising:

at least one pressure sensitive structure, said at least one pressure sensitive structure enclosing a volume for containing a fluid, a gas or a combination of both; and a



means for communication between the volume of said pressure sensitive structure and the human body, and an atraumatic covering for at least that portion of the pressure sensitive structure adapted to interface with the human body.

5,779,735

KNEE UNIT FOR ABOVE-KNEE PROSTHETIC LEG

Joseph L. Molino, 2 Aura Dr., Valley Cottage, N.Y. 10989

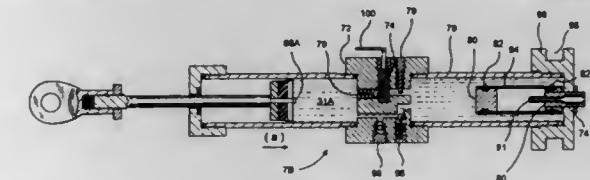
Continuation of Ser. No. 316,854, Oct. 3, 1994, abandoned.

This application May 17, 1996, Ser. No. 650,898

Int. Cl.⁶ A61F 2/64

U.S. Cl. 623—44

16 Claims



1. A prosthetic leg comprising: an upper prosthetic limb member; a lower prosthetic limb member; an operating cylinder, a piston movably disposed within said operating cylinder, said piston separating said operating cylinder into first and second operating chambers; said upper prosthetic limb member being connected to said piston; a flexible bladder having at least an exterior portion, said bladder situated within a bladder cylinder, said operating cylinder being separated from said bladder cylinder by a solid intermediate region, said second operating chamber being adjacent to said solid intermediate region; a valve arrangement situated within said solid intermediate region, said valve arrangement providing communication and controlling a flow of fluid through said solid intermediate region between said bladder cylinder and said second operating chamber of said operating cylinder; and said piston being responsive to operation of said prosthetic leg and discharging said fluid in a pressurized form from said second operating chamber via said valve arrangement to said bladder cylinder, while in said bladder cylinder said pressurized fluid acting upon said exterior portion compresses said bladder to store the energy required to drive a prosthetic leg and to provide bias and flexion resistance for the prosthetic leg.

CHEMICAL

5,779,736

PROCESS FOR MAKING FIBRILLATED CELLULOSE
ACETATE STAPLE FIBERS

Tim J. Frederick; Melvin G. Mitchell; Lee R. Partin; Alan K. Wilson, and Richard D. Neal, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jan. 19, 1995, Ser. No. 375,140

Int. Cl.⁶ D06M 11/00

U.S. Cl. 8—130

19 Claims

1. A process comprising: contacting cellulose acetate fiber with a strong base solution having a pH of greater than about 11 at conditions sufficient to remove from at least about 5% to about 10% of bulk acetyl groups from said cellulose acetate fiber.

5,779,737

FIBRE TREATMENT

Christopher David Potter, and Peter Dobson, both of Derby, United Kingdom, assignors to Courtaulds Fibres Holdings Limited, United Kingdom

PCT No. PCT/GB95/00838, § 371 Date Sep. 9, 1996, § 102(e) Date Sep. 9, 1996, PCT Pub. No. WO95/28516, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 12, 1995, Ser. No. 702,717

Claims priority, application United Kingdom, Apr. 15, 1994, 9407496

Int. Cl.⁶ D06M 13/41; 13/355

U.S. Cl. 8—194

11 Claims

1. A method for reducing the fibrillation tendency of lyocell fibre, comprising in a continuous process the steps of (1) applying to the fibre in never-dried state an aqueous solution comprising dissolved therein an inorganic alkali and a chemical reagent bearing a plurality of acrylamido groups, the average number of acrylamido groups per molecule of the chemical reagent in the solution being greater than 2.1, and (2) heating the fibre to which the chemical reagent has been applied to produce reaction between the fibre and the chemical reagent.

5,779,738

Patent Not Issued For This Number

5,779,739

DYE MIXTURE OF FIBER-REACTIVE AZO DYES AND
THEIR USE FOR DYEING HYDROXY-AND/OR
CARBOXAMIDO-CONTAINING FIBER MATERIAL

Andreas Von Der Eltz, Frankfurt am Main; Werner Hubert Russ, Flörsheim, and Bengt-Thomas Gröbel, Niederems, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Mar. 28, 1996, Ser. No. 627,937

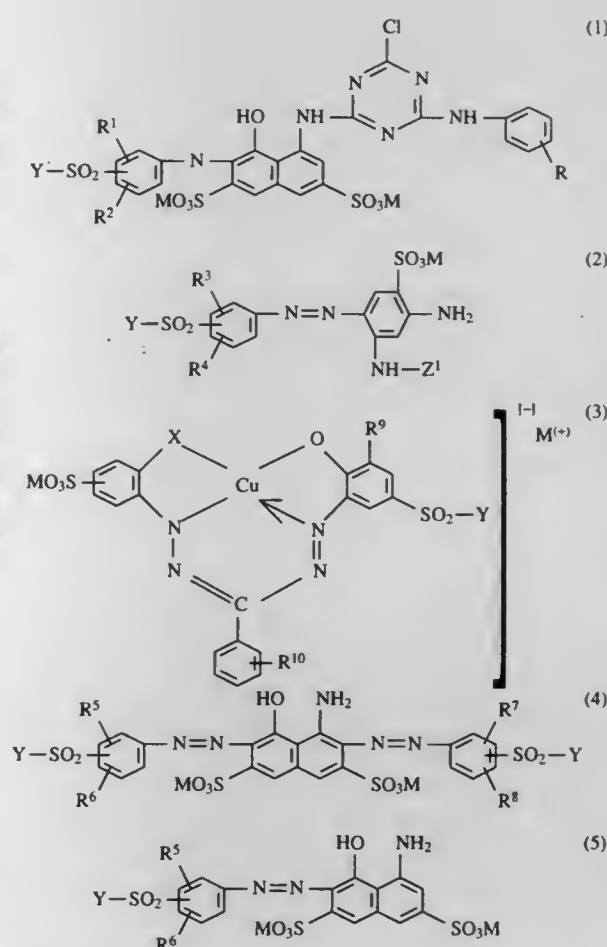
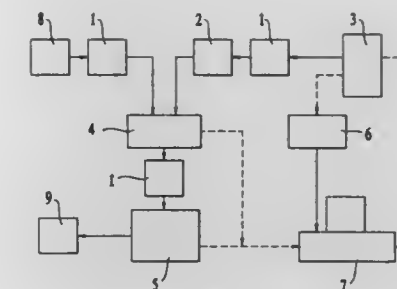
Claims priority, application Germany, Mar. 30, 1995, 195 11 688.7

Int. Cl.⁶ D06P 1/384; C09B 67/22

U.S. Cl. 8—549

18 Claims

1. A dye mixture containing one or more monoazo dyes of the formula (1), one or more monoazo dyes of the formula (2) and one or two copper-formazan dyes of the formula (3) and optionally, one or two dyes of the formula (5); or one or more monoazo dyes of the formula (1), one or more monoazo dyes of the formula (2), and one or more disazo dyes of the formula (4) and optionally, one or two dyes of the formula (5); or one or more monoazo dyes of the formula (1), one or more monoazo dyes of the formula (2), one or two copper-formazan dyes of the formula (3) and one or more disazo dyes of the formula (4), and optionally one or two dyes of the formula (5).



in which

M is hydrogen or an alkali metal;

R¹ is hydrogen, methyl, ethyl, methoxy or ethoxy,R² is hydrogen, methyl, ethyl, methoxy or ethoxy,R³ is hydrogen, methyl, ethyl, methoxy or ethoxy,R⁴ is hydrogen, methyl, ethyl, methoxy or ethoxy,R⁵ is hydrogen, methyl, ethyl, methoxy or ethoxy,R⁶ is hydrogen, methyl, ethyl, methoxy or ethoxy,R⁷ is hydrogen, methyl, ethyl, methoxy or ethoxy,R⁸ is hydrogen, methyl, ethyl, methoxy or ethoxy,R⁹ is hydrogen or sulfo,R¹⁰ is hydrogen, alkyl of 1 to 4 carbon atoms,

sulfo, carboxy, alkanoyl of 2 to 5 carbon atoms or a group of the

formula —SO₂—Y where Y has one of the meanings given

below,

X is carbonyloxy of the formula —CO—O— or oxy of the

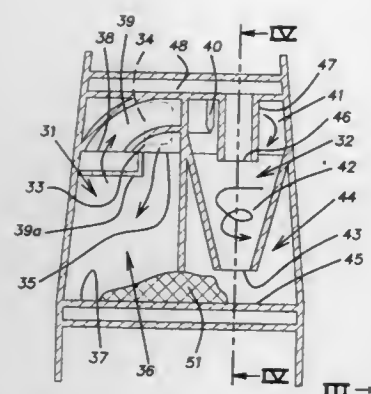
formula —O— or is the group —SO₃⁽⁻⁾, each Y, indepen-

dently of the others, is vinyl, β-chloroethyl, β-thiosulfatoethyl

or β-sulfatoethyl,

R is hydrogen, methyl, sulfo, carboxy or a group of the formula

—SO₂—Y where Y has one of the meanings given above,



said adaptor comprising a cyclone separator (32) having an inlet side connected to the inlet tube (18).

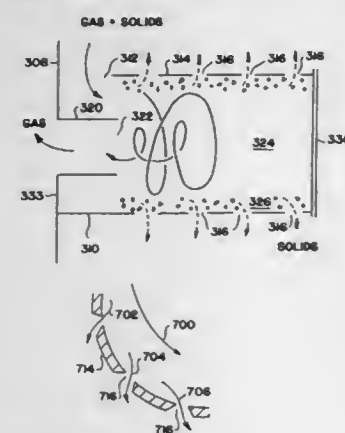
5,779,746

UNDERFLOW CYCLONE WITH PERFORATED BARREL
John S. Buchanan, and Christopher G. Smalley, both of Hamilton, N.J., assignors to Mobil Oil Corporation, Fairfax, Va. Division of Ser. No. 234,794, Apr. 28, 1994, Pat. No. 5,514,271. This application Apr. 30, 1996, Ser. No. 640,390

Int. Cl.⁶ B01D 45/12

U.S. Cl. 55—452

14 Claims



1. A cyclone separator comprising:
 - a cylindrical cyclone body having a length, a cylindrical axis and a wall having an inner surface and an outer surface;
 - a tangential vapor inlet connective with an inlet end of said cyclone body for a stream of vapor and entrained solids;
 - a cylindrical vapor outlet tube within said inlet end of said cyclone body for withdrawal of gas with a reduced entrained solids content, said outlet tube having a cylindrical axis aligned with said cylindrical axis of said cyclone body;
 - a plurality of radially and longitudinally distributed solids outlets for removing most of said entrained solids and a minor amount of gas, comprising at least two sets of slanted openings distributed around the cyclone body.

5,779,747

FLEXIBLE FOLDED FILTER INSERT

Ulrich Schlör, Darmstadt, and Dieter Hintenlang, Absteinach, both of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Aug. 2, 1996, Ser. No. 691,717

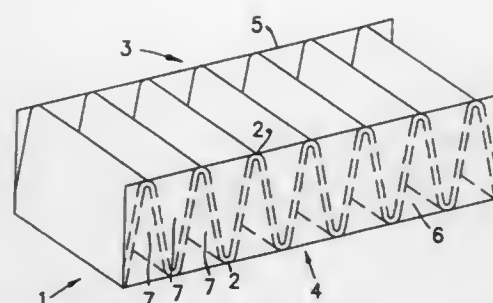
Claims priority, application Germany, Aug. 4, 1995, 195 28 670.7

Int. Cl.⁶ B01D 27/06

U.S. Cl. 55—497

16 Claims

1. A device for filtering air, comprising:



a flexible folded filter insert that maintains the shape in operation, the insert having a fold pattern and two ends; and
a plurality of flexible strips which are compressible in the longitudinal direction, said flexible strips being located so as to close off the ends of the flexible folded filter insert, said flexible strips further being compressible, viewed crosswise relative to the fold pattern, to at least three-fourths of the thickness in the unstressed state.

5,779,748

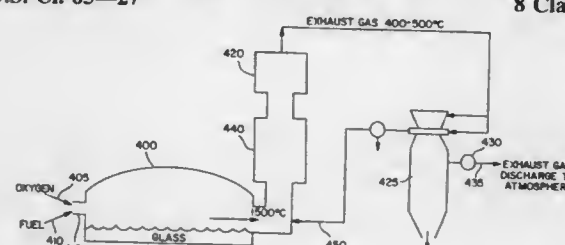
METHOD WHICH REMOVES ODOR AND POLLUTANTS WHEN PREPARING CULLET FOR USE IN AN ELECTROSTATIC BED FILTER

Jeffrey C. Alexander, Kent, United Kingdom, assignor to Edmeston AB, Västra Frölunda, Sweden
Division of Ser. No. 570,984, Dec. 12, 1995. This application Sep. 25, 1996, Ser. No. 719,515

Int. Cl.⁶ C03B 3/02

U.S. Cl. 65—27

8 Claims



1. A method for reducing particulate pollution emissions from glass making furnace exhaust gases, comprising:

- (a) providing a first confinement for a first moving bed of raw cullet having impurities adhered to its surface, including moisture and fine glass dust material said first confinement being free of a means for imposing an electrical charge and said moving bed being outside said furnace;
- (b) passing a first flow of hot glass furnace exhaust gases through said first moving bed, said exhaust gases containing particulate pollution and condensable acid-generating materials, the velocity of the exhaust gases through the first bed being such that the exhaust gases are cooled to a temperature above their acid dew point, wherein at least a portion of odor causing impurities is pyrolyzed to form volatile products, which are entrained in the exhaust gases passing through said first moving bed and wherein the first moving bed is heated by said exhaust gases;
- (c) removing said exhaust gases entraining said volatile products of pyrolysis therein and incinerating said volatile products;
- (d) providing a second flow of exhaust gases outside said furnace not having been passed through said first confinement, said second flow of exhaust gases comprising particles which are electrostatically ionized;
- (e) providing said second confinement outside said furnace for a second moving bed formed with the cleaned, preheated cullet exiting from the first moving bed, said second confinement being contiguous with said first confinement means;
- (f) polarizing said second bed of cullet; and
- (g) passing said second flow of exhaust gases through said electrically polarized second moving bed and depositing at least a portion of the electrostatically ionized particles in said

exhaust gases onto said second bed, thereby removing at least a portion of said particles from said second flow of exhaust gases.

5,779,749

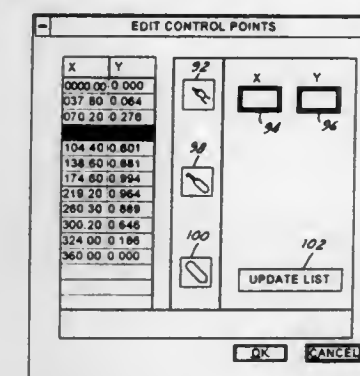
GENERATION OF NEEDLE MOTION PROFILE IN AN INDIVIDUAL SECTION GLASSWARE FORMING SYSTEM

Gregory W. Nafziger, Archbold, Ohio, assignor to Owens-Brockway Glass Container Inc., Toledo, Ohio
Filed Apr. 21, 1997, Ser. No. 844,739

Int. Cl.⁶ G05B 19/19

U.S. Cl. 65—29.11

13 Claims



1. In an individual section glassware forming system that includes a plurality of operating mechanisms for performing cyclic motions, electronic control means for controlling cyclic motion of at least one of said mechanisms that comprises:

- means for storing a plurality of motion profiles for said one mechanism, with each of said profiles comprising a set of position data versus time data,
- means for selectively displaying one of said profiles as a graph of position versus time,
- means for identifying on said display a plurality of control points at spaced positions along said graph,
- means for permitting an operator to select one of said control points, and to change at least one of the position data and time data associated with the control point so selected,
- means for automatically recomputing said position data versus time data for said profile as a function of data changes at said one control point, and
- means for displaying the recomputed position data versus time data as a recomputed graph of position versus time, including said plurality of control points at spaced positions along said recomputed graph.

5,779,750

Patent Not Issued For This Number

5,779,751

PHOTOLITHOGRAPHIC METHOD OF FABRICATING FRESNEL LENSES

Kaiser H. Wong, Torrance, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 14, 1997, Ser. No. 815,040

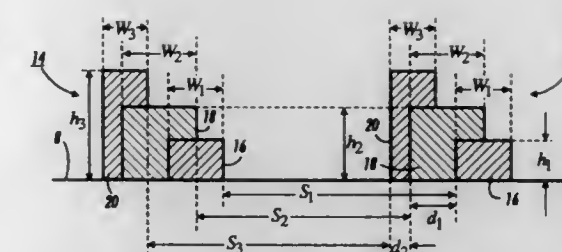
Int. Cl.⁶ G03B 17/32; G02B 3/08

U.S. Cl. 65—60.3

12 Claims

1. A method for making a fresnel lens comprising:

- A) providing a substrate,
- B) forming a first annular step having an inner wall, an outer wall, and an upper surface on said substrate, and



- C) forming a second annular step having an inner wall and an outer wall at least partially on the upper surface of said first annular step such that the outer wall of said second annular step is offset from the outer wall of said first annular step in an outward radial direction.

5,779,752

THERMOBARIC QUENCHING

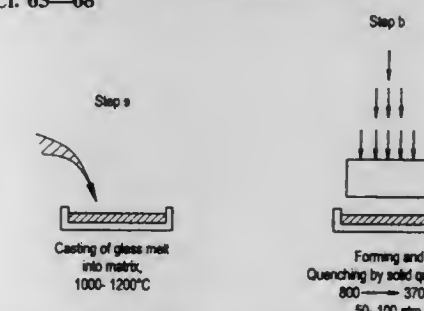
Leonid M. Landa, and Ksenia A. Landa, both of 218 S. Fifth St., Jeannette, Pa. 15644

Filed Feb. 21, 1995, Ser. No. 393,132

Int. Cl.⁶ C03B 9/14

U.S. Cl. 65—68

8 Claims



1. A method for forming and strengthening glass comprising the steps of:

- placing molten glass in a mold;
- applying to the molten glass in the mold a solid, pressure applying means to thereby place the glass under a pressure greater than ambient pressure;
- cooling and solidifying the molten glass while applying the pressure; and
- removing the pressure from the solidified glass.

5,779,753

METHOD OF AND APPARATUS FOR TREATING A SOLID WORKPIECE, ESPECIALLY A GLASS TUBE

Helmut Vetter, Ravensburg; Gisbert Staupendahl, and Jens Bliedtner, both of Jena, all of Germany, assignors to Arzneimittel GmbH Apotheker Vetter & Co. Ravensburg, Ravensburg, Germany

Filed Feb. 6, 1997, Ser. No. 796,786

Claims priority, application Germany, Mar. 9, 1996, 19609199.3

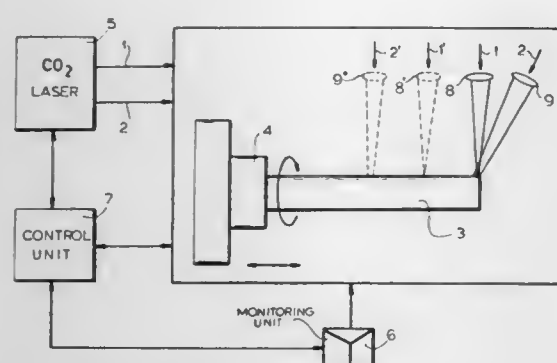
Int. Cl.⁶ C03B 23/04; 33/06

U.S. Cl. 65—105

12 Claims

1. A method of shaping a tubular glass workpiece, comprising the steps of:

- (a) training on a tubular glass workpiece a first, sharply focussed beam of electromagnetic radiation in the visible range of the spectrum or a part of the spectrum adjacent the visible range and with an energy density sufficient to effect material removal from said workpiece in a cutting, drilling or recessing operation;
- (b) training on said workpiece a second focussed beam of said radiation with an energy density less than that required to effect material removal from said workpiece but sufficient to reshape, melt or heat-treat said workpiece;



- (c) generating said electromagnetic radiation at a source;
- (d) splitting said electromagnetic radiation from said source to form said first and second beams and controllably deflecting said first and second beams so that said first and second beams are selectively parallel to or inclined to one another and so that said beams are trained selectively on the same location or on different locations on said workpiece; and
- (e) monitoring the interaction of said first and second beams with said workpiece at each location at which a respective one of said first and second beams impinges on said workpiece, and controlling at least one parameter selected from operating parameters of said first and second beams, positions of said workpiece, and clamping of said workpiece in a workpiece holder in response to the monitoring of the interaction of said first and second beams with said workpiece.
6. An apparatus for shaping a tubular glass workpiece, comprising:
- a holder for positioning a tubular glass workpiece;
 - means for training on said workpiece a first, sharply focussed beam of electromagnetic radiation in the visible range of the spectrum or a part of the spectrum adjacent the visible range and with an energy density sufficient to effect material removal from said workpiece in a cutting, drilling or recessing operation;
 - means for training on said workpiece a second focussed beam of said radiation with an energy density less than that required to effect material removal from said workpiece but sufficient to reshape, melt or heat-treat said workpiece;
 - a laser for generating said electromagnetic radiation; and
 - means for splitting said electromagnetic radiation from said laser to form said first and second beams and controllably deflecting said first and second beams so that said first and second beams are selectively parallel to or inclined to one another and so that said first and second beams are trained selectively on the same location or on different locations on said workpiece, said means for splitting comprising:
 - a first interference modulator for transforming a ray from said laser into a transmitted beam and a reflected beam;
 - a pair of reflectors intercepting said transmitted beam and reflecting said transmitted beam back through said first interference modulator as a further beam at an acute angle to said reflected beam;
 - a telescopic objective along said reflected beam;
 - a second interference modulator along a path of said reflected beam downstream from said telescopic objective for re-reflecting the reflected beam passing through said telescopic objective to form said second beam;
 - a further reflector intercepting said further beam and reflecting said further beam through said second interference modulator as a transmitted beam forming said first beam; and
 - means for tilting said second interference modulator to vary an angle of inclination between said first and second beams.

5,779,754 PROCESS AND HORSESHOE FLAME FURNACE FOR THE MELTING OF GLASS

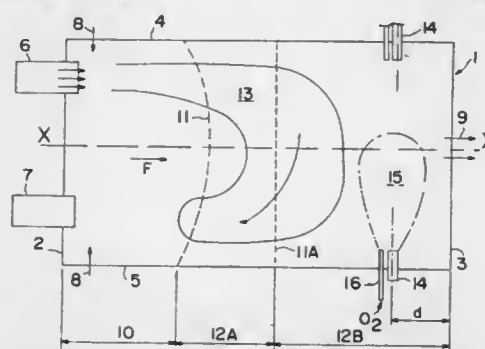
Pierre Bodelin, Vanves, and Patrick Recourt, Marcoussis, both of France, assignors to L'Air Liquide Societe Anonyme Pour L'Etude et L'Exploitation des Procédes Georges Claude, Paris, and Verrerie, Cristallerie d'Arques, J.G. Durand & Cie, Arques, both of France

Filed Jul. 8, 1996, Ser. No. 677,664

Claims priority, application France, Jul. 6, 1995, 9508171
Int. Cl.⁶ C03B 5/235

U.S. Cl. 65—134.4

20 Claims



1. A process for melting glass in a horseshoe-flame furnace including a rear, a forward and a lateral wall and a longitudinal axis comprising the steps of:
- introducing a charge into a region of the rear wall of the furnace;
 - running said charge, in succession in a longitudinal direction, through a melting zone to completely melt said charge and form a glass bath, through a homogenization zone and then through a refining zone;
 - evacuating the melted and refined glass into a region of the forward wall of the furnace;
 - sending an air-fuel flame from a first region in said rear wall which is staggered with respect to said longitudinal axis of the furnace,
 - evacuating smoke from a second region of the rear wall essentially symmetrically to the first region with respect to said axis;
 - periodically alternating operation of said first and second regions; and
 - sending at least one oxy-fuel flame contained above said refining zone from a point on the lateral wall adjacent to said second region which is situated opposite said refining zone.

5,779,755 DEVICE FOR TEMPERING A GLASS SHEET BY CONTACT

Hans-Werner Kuster, Aachen, and Carsten Bremer, Baesweiler, both of Germany, assignors to Saint Gobain Vitrage, Courbevoie, France

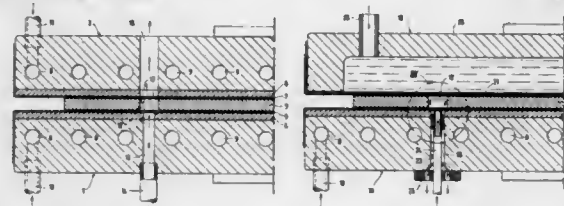
Filed Feb. 10, 1995, Ser. No. 386,666

Claims priority, application Germany, Feb. 10, 1994, 44 04 165.9

Int. Cl.⁶ C03B 27/004

U.S. Cl. 65—348

11 Claims



1. Device for tempering by contact a glass sheet having at least one hole, comprising:
- two cooled clamping plates for holding said glass sheet having said at least one hole therebetween; and

- a cooling gas inflow opening in one of said two clamping plates at a location corresponding to said at least one hole, when the glass sheet is held between said plates, for applying a cooling gas to a wall of said at least one hole; and
 - a cooling gas outflow opening in the other of said two clamping plates at a location corresponding to said at least one hole when the glass sheet is held between said plates, and substantially coaxial with said cooling gas inflow opening, for discharging the cooling gas therefrom.
5. Device for tempering by contact a glass sheet having at least one hole, comprising:
- two cooled clamping plates for holding said glass sheet having said at least one hole therebetween; and
 - a cooling gas inflow opening in one of said two clamping plates at a location corresponding to said at least one hole, when the glass sheet is held between said plates, for applying a cooling gas to a wall of said at least one hole; and
 - a cooling gas outflow opening in said one of said two clamping plates at a location adjacent said cooling gas inflow opening and corresponding to said at least one hole when the glass sheet is held between said plates, and substantially coaxial with said cooling gas inflow opening, for discharging the cooling gas therefrom.

5,779,756 METHOD OF CENTRIFUGING A HALIDE GLASS AND FORMING AN OPTICAL FIBER PREFORM

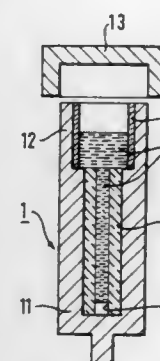
Frédéric Chiquet, Massy; Marylise Le Crom, Elancourt, and Jean-Jacques Girard, St Germain Les Arpajon, all of France, assignors to Alcatel Alsthom Compagnie Generale D'Electricite, Paris Cedex, France

Filed Jun. 19, 1997, Ser. No. 878,626

Claims priority, application France, Jun. 20, 1996, 96 07686
Int. Cl.⁶ C03B 37/027

U.S. Cl. 65—388

8 Claims



1. A method of fabricating a fluoride glass optical fiber preform having a core comprising fluoride glass surrounded by an optical cladding comprising fluoride glass, said method including the steps of:
- introducing said cladding glass in a molten state into a bottom part of a mold having a cylindrical inside cross-section,
 - introducing said core glass in a molten state into a top part of said mold above said cladding glass, and
 - inwardly solidifying said core glass and said cladding glass from an interface between said glasses and said mold, wherein the kinetics of the solidification of said core glass are that complete solidification of said cladding glass occurs before complete solidification of said core glass.
- said method further including the steps of:
- centrifuging the glasses simultaneously with said solidification, wherein because of the reduction in the volume of said glasses during said solidification, a central portion empty of glass and of substantially cylindrical cross-section is formed around an axis of said mold by said completely solidified cladding glass which thereby forms the cladding of said preform, and wherein said core glass is not completely solidified at the end of said centrifuging.

5,779,757 PROCESS FOR REMOVING HYDROGEN AND CARBON IMPURITIES FROM GLASSES BY ADDING A TELLURIUM HALIDE

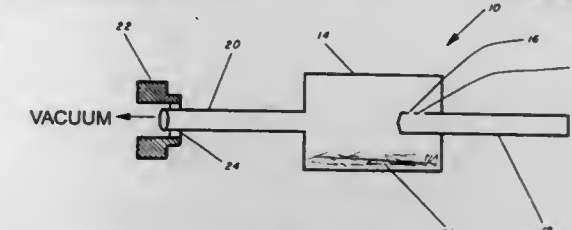
Jasbinder S. Sanghera, Greenbelt; Vinh Q. Nguyen, Lanham, both of Md., and Ishwar D. Aggarwal, Fairfax Station, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 26, 1996, Ser. No. 670,910

Int. Cl.⁶ C03B 5/00

U.S. Cl. 65—389

16 Claims



1. A method comprising the steps of:
- adding tellurium halide to a batch composition, thereby forming a halide-containing batch composition, said batch composition contains hydrogen impurities;
 - heating said halide-containing batch composition to melt said batch composition thus forming a glass melt, and to react said tellurium halide with said hydrogen impurities to form HCl;
 - distilling said glass melt to form a distillate essentially free of particulate matter; and
 - outgassing said distillate.

5,779,758 METHOD AND APPARATUS FOR FORMING CONTINUOUS GLASS FIBERS

Douglas B. Mann, Westerville; Leonard J. Adzima, Pickerington, and Martin C. Flautt, Granville, all of Ohio, assignors to Owens-Corning Fiberglass Technology, Inc., Summit, Ill.

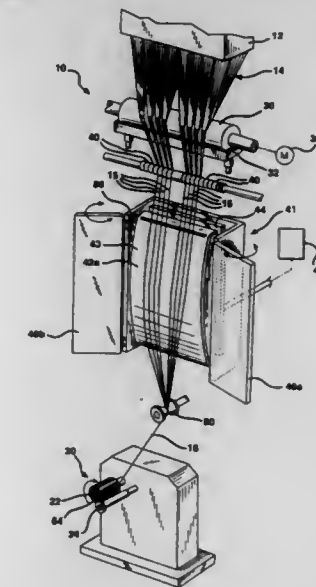
Continuation of Ser. No. 291,801, Aug. 17, 1994, abandoned.

This application May 17, 1996, Ser. No. 651,197

Int. Cl.⁶ C03B 37/10; 40/02; 25/02

U.S. Cl. 65—443

21 Claims



1. A method for applying size to glass fibers comprising the steps of:

applying a size to said fibers to form sized fibers; and contacting said sized fibers with a heated member maintained at a temperature of between about 1000° F. and 1500° F. to effect drying of said size on said fibers, said member being stationary while contacting said sized fibers.

5,779,759

Patent Not Issued For This Number

5,779,760

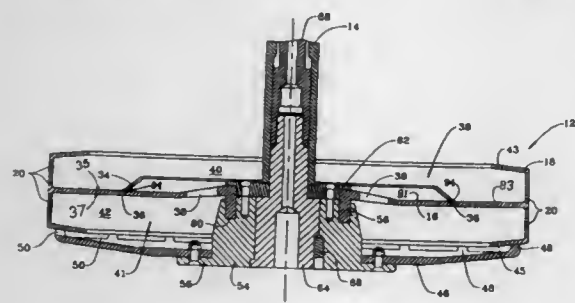
FIBER MANUFACTURING SPINNER

William A. Watton, Pickerington, and James G. Snyder, Newark, both of Ohio, assignors to Owens Corning Fiberglass Technology, Inc., Summit, Ill.

Filed Sep. 30, 1996, Ser. No. 722,399

Int. Cl.⁶ C03B 37/04

U.S. Cl. 65—497



1. A spinner capable of being fixed at one end of a rotatable shaft in a fiberizer, said spinner comprising:

a radial wall having an upper surface, a dam separating said upper surface into an inner portion and an outer portion, a lower surface, at least one first flow hole connecting said upper surface to said lower surface, and at least one second flow hole connecting said inner portion and said outer portion of said upper surface; and

an outer peripheral wall connected to said radial wall and having a plurality of orifices therethrough.

5,779,761

METHOD OF MAKING METALS AND OTHER ELEMENTS

Donn Reynolds Armstrong, Lisle; Stanley S. Borys, Naperville, and Richard Paul Anderson, Clarendon Hills, all of Ill., assignors to Krofft-Brakston International, Inc., Clarendon Hills, Ill.

Continuation of Ser. No. 283,358, Aug. 1, 1994, abandoned.

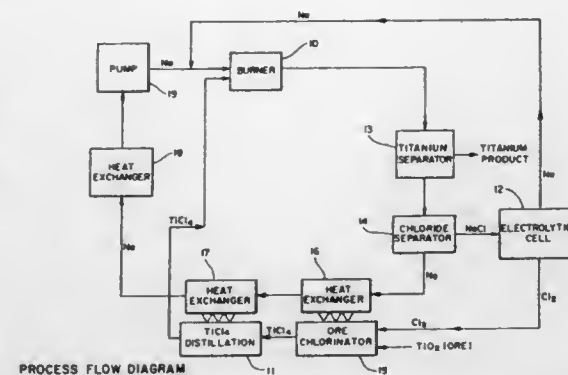
This application Aug. 2, 1996, Ser. No. 691,423

Int. Cl.⁶ C22B 21/04; 30/02; 34/10; 34/20

U.S. Cl. 75—370

41 Claims

1. A method of producing an elemental material or an alloy thereof from a halide vapor of the elemental material or mixtures thereof comprising submerging the halide vapor or mixtures



thereof in flowing liquid alkali metal or liquid alkaline earth metal or mixtures thereof to convert the halide vapor to elemental material or an alloy.

5,779,762

METHOD FOR IMPROVING THE HEAP BIOOXIDATION RATE OF REFRACTORY SULFIDE ORE PARTICLES THAT ARE BIOOXIDIZED USING RECYCLED BIOLEACHATE SOLUTION

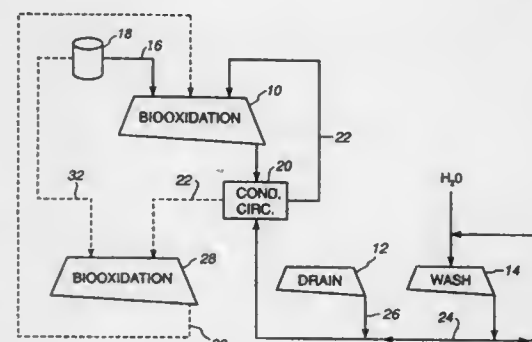
William J. Kohr, San Mateo; Chris Johansson, San Bruno; John Shield, San Mateo, and Vandy Shrader, Belmont, all of Calif., assignors to Geobiotics, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 329,002, Oct. 25, 1994, abandoned. This application Oct. 25, 1995, Ser. No. 547,894

Int. Cl.⁶ C22B 3/18

U.S. Cl. 75—712

40 Claims



1. A method for improving the biooxidation rate of a heap comprised of refractory sulfide ore particles that is at least partially biooxidized using a bioleachate off solution that includes a plurality of inhibitory materials dissolved therein, including ferric ion wherein the concentration of each individual inhibitory material in the bioleachate off solution is below its individual inhibitory concentration, yet the combined concentration of at least two of the inhibitory materials is sufficient to inhibit the biooxidation rate of the refractory sulfide ore particles in the ore, the process comprising:

- collecting the bioleachate off solution;
- dividing the bioleachate off solution into a first portion and a second portion;
- treating the first portion of the bioleachate off solution to remove at least some of the inhibitory materials dissolved therein;
- combining the first and second portions of the bioleachate off solution to thereby form a conditioned bioleachate off solution;
- recycling the conditioned bioleachate off solution to the heap; and
- biooxidizing the refractory sulfide ore particles in the heap with the conditioned bioleachate off solution.

5,779,763

PROCESS FOR RECOVERING SEMICONDUCTOR INDUSTRY CLEANING COMPOUNDS

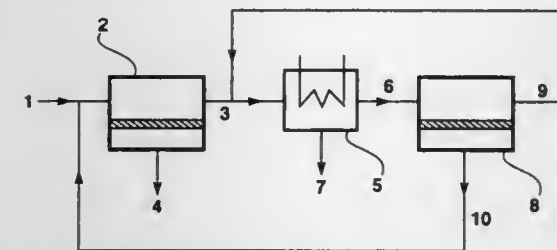
Ingo Pinnau, Palo Alto; Johannes G. Wijmans, Menlo Park; Zhenjie He, Daly City; Shannon Goakey, San Jose, and Richard W. Baker, Palo Alto, all of Calif., assignors to Membrane Technology and Research, Inc., Menlo Park, Calif.

Filed Mar. 7, 1997, Ser. No. 813,520

Int. Cl.⁶ B01D 53/22

U.S. Cl. 95—39

71 Claims



1. A process for separating a perfluoro compound from a second gas in a gas mixture, said process comprising the steps of:

- providing a first membrane having a first feed side and a first permeate side, and being selective for said second gas over said perfluoro compound;
- passing said gas mixture across said first feed side;
- withdrawing from said first feed side a first residue stream depleted in said second gas and enriched in said perfluoro compound compared with said gas mixture;
- withdrawing from said first permeate side a first permeate stream enriched in said second gas and depleted in said perfluoro compound compared with said gas mixture;
- providing a second membrane having a second feed side and a second permeate side, and being selective for said second gas over said perfluoro compound;
- passing said first residue stream across said second feed side;
- withdrawing from said second feed side a second residue stream depleted in said second gas and enriched in said perfluoro compound compared with said first residue stream;
- withdrawing from said second permeate side a second permeate stream enriched in said second gas and depleted in said perfluoro compound compared with said first residue stream;
- passing said second residue stream to a condensation step carried out at a temperature no lower than about -30° C. to liquefy at least a portion of said second residue stream, thereby forming a liquefied perfluoro compound product;
- recirculating said second permeate stream to said first feed side.

5,779,764

METHOD FOR OBTAINING DEVOLATILIZED BITUMINOUS COAL FROM THE EFFLUENT STREAMS OF COAL FIRED BOILERS

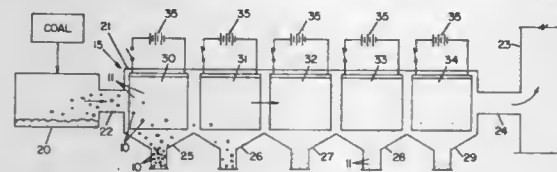
James E. Gillen, Tallmadge, and Richard E. Mills, Akron, both of Ohio, assignors to Carbon Plus, L.L.C., Akron, Ohio

Filed Jan. 6, 1997, Ser. No. 779,931

Int. Cl.⁶ B03C 3/04

U.S. Cl. 95—79

13 Claims



1. A method for obtaining devolatilized coal, utilizing a multi-zone electrostatic precipitator, from the air-borne effluent streams of coal fired boilers comprising the steps of: directing an effluent stream, generated by the combustion of coal and carrying a plurality of particles comprising carbon and

ash, to an electrostatic precipitator, wherein said plurality of particles comprise first and second pluralities of particles said first plurality of particles having a greater carbon to ash weight ratio than said second plurality of particles; de-energizing a first zone of said electrostatic precipitator and collecting a plurality of particles that exit said precipitator from said first zone, said plurality of particles collected at said first zone being substantially comprised of said first plurality of particles.

5,779,765

PROCESS AND DEVICE FOR THE INJECTION OF LARGE VOLUMES OF LIQUID SAMPLES IN A GAS CHROMATOGRAPH

Konrad Grob, Fehraltorf, Switzerland, and Fausto Munari, Milan, Italy, assignors to Thermoquest Italia S.P.A., Milan, Italy

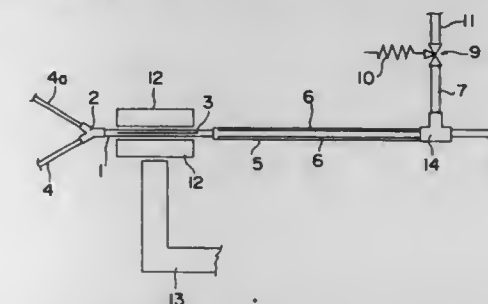
Filed Jul. 12, 1996, Ser. No. 679,255

Claims priority, application Italy, Jul. 14, 1995, MI95A1507

Int. Cl.⁶ B01D 15/08

U.S. Cl. 95—83

15 Claims



1. A process for the introduction of a liquid sample with large volume into a gas chromatograph, comprising the evaporation of the sample, the elimination of at least part of the vapors of the solvent present in the sample and the dispatch to a GC column of the vapors of compounds for analysis, characterized by comprising the following phases: evaporating the sample in a non-selective way in a vaporization chamber, stabilizing the evaporation front inside of said chamber; feeding the vapors generated in said chamber to a means of retention of the compounds to be analyzed located upstream of said GC column and maintained at a lower temperature to that of said vaporization chamber in order to separate said compounds from the solvent vapors; increasing the retention of the compounds of interest with said means of retention with a portion of the solvent vapors therein, unloading at least part of the solvent vapors leaving said means of retention; and sending the compounds to be analyzed by said GC column.

5,779,766

GAS SEPARATION WITH LITHIUM-CONTAINING ZSM-2 METALLOSILICATES

Scott Jeffrey Weigel, Goleta, Calif.; James Edward MacDougall, New Tripoli; Charles Gardner Coe, Macungie, both of Pa.; Yan Liang Xiong, Xiamen, China; Johan Adriaan Martens, Huldenberg, Belgium; Pierre A. Jacobs, Gooik, Belgium, and Paul Anthony Webley, Macungie, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 241,929, May 12, 1994, abandoned. This application Apr. 23, 1996, Ser. No. 635,158

Int. Cl.⁶ B01D 53/02

U.S. Cl. 95—96

12 Claims

1. A process of adsorptively separating nitrogen gas from a less strongly adsorbed oxygen gas in a gas mixture containing nitrogen gas and a less strongly adsorbed oxygen gas, comprising: contacting said gas mixture at an elevated pressure with a zone of adsorbent at a temperature in the range of approximately -100° C. to 100° C. containing crystalline metallosilicate composition hav-

ing a ZSM-2 structure with a Si/X ratio of less than 2.0, and a cation exchange of more than 80% with a cation selected from the group consisting of lithium, calcium, magnesium, zinc, nickel, manganese and mixtures thereof, wherein X is selected from the group consisting of aluminum, boron and gallium, selectively adsorbing said nitrogen gas preferentially to said less strongly adsorbed oxygen gas on said adsorbent, removing an unadsorbed gas containing said less strongly adsorbed oxygen gas and depleted in said nitrogen gas from said zone and separately desorbing and removing said nitrogen gas from said adsorbent.

5,779,767

USE OF ZEOLITES AND ALUMINA IN ADSORPTION PROCESSES

Timothy Christopher Golden, Allentown, Pa.; Mohammed Ali Kalbassi, Walton-on-Thames, England; Fred William Taylor, Allentown, Pa., and Rodney John Allam, Gullford, England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 7, 1997, Ser. No. 814,749
Int. Cl.⁶ B01D 53/047

U.S. Cl. 95—96

30 Claims

1. A process for the adsorption of at least carbon dioxide and water from a feed gas, comprising contacting the feed gas with a composite adsorbent comprising a mixture of a zeolite and an alumina.

5,779,768

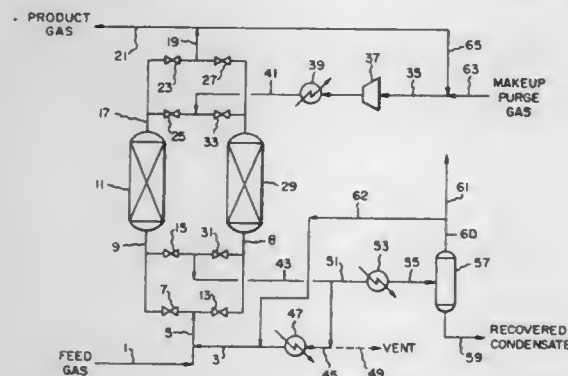
RECOVERY OF VOLATILE ORGANIC COMPOUNDS FROM GAS STREAMS

Madhu Anand, Allentown; Shivaji Sircar, Wescosville, and Augustine Ivanhoe Dalton, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 19, 1996, Ser. No. 619,846
Int. Cl.⁶ B01D 53/047

U.S. Cl. 95—99

19 Claims



1. A method for the recovery of one or more condensable components present at low concentration from a feed gas mixture containing the condensable components and one or more noncondensable components, said method comprising:

- passing the feed gas mixture at an adsorption temperature through a first adsorbent bed which selectively adsorbs the condensable component and withdrawing therefrom a noncondensable component product substantially free of the condensable component;
- terminating the flow of the feed gas mixture to the first adsorbent bed and passing the feed gas mixture through a second adsorbent bed which selectively adsorbs the condensable component and withdrawing therefrom a high purity noncondensable component product;
- desorbing the condensable component adsorbed in step (a) by passing a flow of purge gas through the first adsorbent bed at a temperature above the adsorption temperature of step (a), and

withdrawing therefrom a purge gas effluent enriched in the desorbed condensable component, wherein during sequential time periods

- at least a portion of the purge gas effluent is cooled and combined with the feed gas mixture passing to the second adsorbent bed in step (b), and then
- concurrently a first portion of the purge gas effluent is cooled to yield a cooled purge gas effluent; a second portion of the purge gas effluent is cooled to a temperature sufficient to condense substantially all of the condensable component present therein and the resulting condensate is separated from the resulting cooled noncondensable gas; and the cooled purge gas effluent is combined with the feed gas mixture to yield a total feed mixture which is passed to the second bed in step (b);
- discontinuing the flow of purge gas through the first adsorbent bed;
- cooling the first adsorbent bed; and
- repeating steps (a) through (e).

5,779,769

INTEGRATED MULTI-FUNCTION LAMP FOR PROVIDING LIGHT AND PURIFICATION OF INDOOR AIR

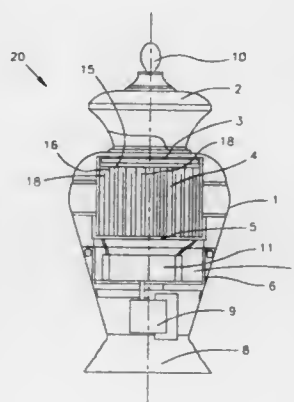
Pengming Jiang, 139 Fengtailukou, Beijing, China, 100071

Filed Oct. 24, 1995, Ser. No. 546,170

Int. Cl.⁶ B03C 3/155

U.S. Cl. 96—55

8 Claims



1. A vertical unit-body multiple-function lamp-cleaner air purification apparatus comprising:

- a vertical elongated supporting and containing means for supporting a lighting means thereon for providing light therefrom;
- said supporting and containing means further including an air inlet for drawing in an air flow and an air outlet for blowing out said air flow therefrom;
- a vertical elongated air purification system disposed in said vertical elongated supporting and containing means for filtering and cleaning said air flow drawn in from said air inlet whereby said air flow blown out from said air outlet being filtered and purified; and
- said vertical elongated air purification system further includes a vertical elongated electrostatic purifying means comprising a plurality of elongated channels surrounded by channel walls biased with a contaminant collecting voltage for purifying a plurality of particles from said air flow whereby a vertical single-body lamp-cleaner air purification apparatus with effective air purification operation can be provided without occupying extra horizontal surface areas.

5,779,770

MAGNETIC FIELD TYPE OXYGEN ENRICHED AIR PRODUCING APPARATUS

Shoichiro Nitta, Aichi-ken; Takashi Izuo, Toyota; Kazuhisa Mikame, Nagoya; Shinzo Kobuki, Toyota; Yozo Ito, Okazaki, and Kazuhiro Asayama, Nishin, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

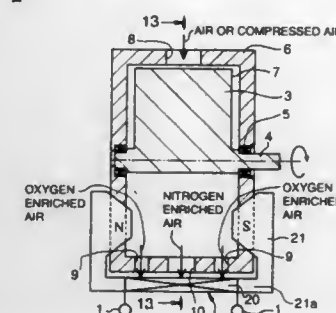
Filed Nov. 12, 1996, Ser. No. 746,490

Claims priority, application Japan, Nov. 13, 1995, 7-294597; Oct. 4, 1996, 8-263926

Int. Cl.⁶ B03C 1/02

U.S. Cl. 96—2

12 Claims



1. A magnetic field oxygen enriched air producing apparatus comprising:

- a casing;
- a rotor disposed in and rotatably supported by said casing, said rotor and said casing defining a space there between, said space having an axis and extending in an axial direction;
- a magnetic field generating device for generating a magnetic field in said space, said magnetic field including a magnetic flux extending axially within said space and magnetic poles produced at opposite ends of said space;
- an air inlet formed in said casing;
- an oxygen enriched air outlet formed in said casing at a position close to at least one of said magnetic poles; and
- a nitrogen enriched air outlet formed in said casing at a position axially spaced from said oxygen enriched air outlet.

5,779,771

ROTATING FLOW DISTRIBUTOR ASSEMBLY FOR USE IN CONTINUOUSLY DISTRIBUTING DECONTAMINATION AND REGENERATION FLUID FLOW

Russell C. Wooten; Paul E. Vargas, and Andrew N. Andrascik, all of Vero Beach, Fla., assignors to Calgon Carbon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 554,860, Nov. 7, 1995, Pat. No. 5,681,376. This application Sep. 16, 1996, Ser. No. 714,678

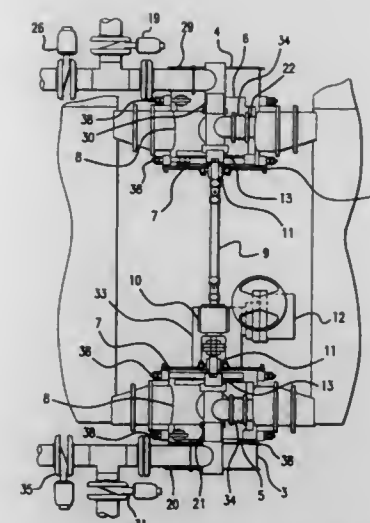
Int. Cl.⁶ B01D 53/04

U.S. Cl. 96—124

9 Claims

1. A rotating flow distributor assembly for use in continuously distributing fluid flow, comprising:

- a connected pair of housings forming a first end of said assembly and a second end of said assembly opposite said first end having:
 - an inlet port,
 - an exhaust port spaced apart from said inlet port,
 - a first flow distribution chamber located at said first end of said assembly and a second flow distribution chamber located at said second end of said assembly, each of said flow distribution chambers having a hollow interior, and
 - a plurality of openings within each of said flow distribution chambers distributed circumferentially around said housing;
- a first flow diverter located within said interior of said first flow distribution chamber, and a second flow diverter located inside said interior of said second flow distribution chamber, each said flow diverter rotating about a center axis of said assembly;



C. a rotatable drive shaft, extending through said assembly, connecting said flow diverters; and

D. a means for rotating said drive shaft; wherein each said flow diverter comprises:

- a casing having a hollow interior and a single closed end that sequentially abuts each opening of said flow distribution chamber as said flow diverter rotates;
- a pipe located inside said interior having:
 - a rotatable first end which connects said pipe to either said inlet port or said exhaust port of said housing
 - a second end which is connected to said closed end of said casing; and
- a seal covering said pipe second end which forms a seal against the opening of said flow distribution chamber in contact with said closed end of said casing.

5,779,772

AIR DRYING CARTRIDGE FOR VEHICLES' COMPRESSED-AIR BRAKE SYSTEM

Hans Unger, Unterschleissheim; Wolfgang Hatz, Munich, and Herbert Tschewik, Haimhausen, all of Germany, assignors to Knorr Bremse Systeme für Nutzfahrzeuge GmbH, Munich, Germany

PCT No. PCT/DE94/00531, § 371 Date May 16, 1996, § 102(e) Date May 16, 1996, PCT Pub. No. WO95/14598, PCT Pub. Date Jun. 1, 1995

PCT Filed May 6, 1994, Ser. No. 646,295

Claims priority, application Germany, Mar. 22, 1994, 44 09 871.5

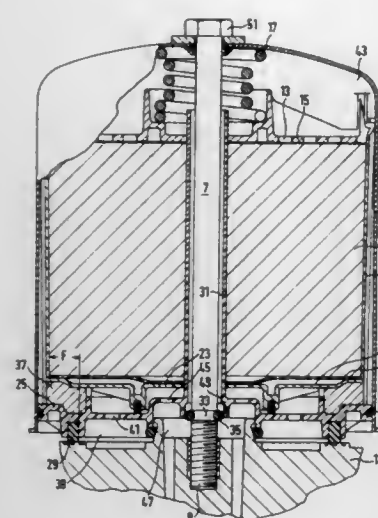
Int. Cl.⁶ B01D 53/26

U.S. Cl. 96—137

10 Claims

1. Drying cartridge for air drying installations including a drying cartridge sealably mounted to a dryer casing, the drying cartridge comprising:

- an outside pot, an inside pot in said outside pot and a drying agent in the inside pot;
- a central screw extending through the drying cartridge and including a threaded end for threadably fastening the drying cartridge to the dryer casing;
- a face cover displaceably mounted on the central screw adjacent a bottom side of the inside pot for sealing with the dryer casing when the drying cartridge is mounted to the dryer casing;
- a central tube on the face cover and including an extension extending from a bottom side of the face cover;
- the central screw extends through the center tube and includes an annular groove in the area of the passage of the central screw through the plane of the face cover;
- a fastening arrangement including an O-ring in the annular groove of the central screw and displaceably held by the extension of the central tube for retaining the face cover on



the central screw so as to maintain the inside pot and drying agent in said outside pot;
when the drying cartridge is dismounted from the dryer casing, displacement of the face cover permits a detaching of the O-ring of the fastening arrangement followed by a removal of the inside pot and drying agent from the interior of the drying cartridge.

5,779,773

RECEPTACLE HAVING A GRILLE THEREIN FOR SUPPORTING AN ACTIVE MATERIAL

Francois Cam, Drancy, and Serge Phelut, Champigny Sur Marne, both of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et Exploitation des Procédés Georges Claude, Paris Cedex, France

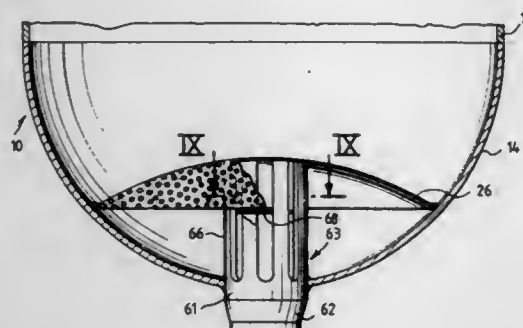
Filed Feb. 15, 1996, Ser. No. 602,070

Claims priority, application France, Feb. 15, 1995, 95 01731

Int. Cl.⁶ B01D 53/04

U.S. Cl. 96—152

17 Claims



1. Receptacle for the treatment of fluid comprising a sleeve having a bottom portion and an internal wall and enclosing at least one active material supported on a grille having an array of perforations coextensive with its surface, said grille bearing about its periphery on the internal wall and centrally of the bottom portion via at least one vertically extending support forming a deflector having at least one passageway at its top for the circulation of fluid.

5,779,774

RUST INHIBITING PHOSPHATE ESTER FORMULATIONS

Kazimiera J. L. Paciorek, 1425 Seacrest Dr., Corona Del Mar, Calif. 92625, and Steven R. Masuda, 29322 Crown Ridge, Laguna Niguel, Calif. 92656

Filed Mar. 17, 1997, Ser. No. 819,541

Int. Cl.⁶ C23F 11/10; C10M 129/68; 137/04

U.S. Cl. 106—14.41

6 Claims

1. A rust inhibitor for hydrocarbon based fluids consisting essentially of a mixture of compounds comprising:

- (RC₆H₄O)₂P(O)OH wherein R is selected from groups having a general formula C_nH_{2n+1} wherein n is an integer from 1 to 20 inclusive, and
- (RC₆H₄O)₃P(O) wherein R is selected from groups having a general formula C_nH_{2n+1} wherein n is an integer from 1 to 20 inclusive.

5,779,775

STOCK SOLUTION COMPOSITION FOR USE IN PRODUCTION OF HARD POLYURETHANE FOAM

Shin Kuwabara; Kazuhisa Nagata; Yasuo Imashiro, and Eiji Sasaki, all of Tokyo, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

PCT No. PCT/JP96/02519, § 371 Date Apr. 8, 1997, § 102(e)

Date Apr. 8, 1997, PCT Pub. No. WO97/09362, PCT Pub.

Date Mar. 13, 1997

PCT Filed Sep. 5, 1996, Ser. No. 817,119

Claims priority, application Japan, Sep. 7, 1995, 7-257095

Int. Cl.⁶ C09K 21/00; C08J 9/00

U.S. Cl. 106—18.11

5 Claims

1. A stock solution composition for use in production of hard polyurethane foam, which comprises, as the essential components:

- 10–90% of a polyol,
- 0.1–40% of a foaming agent,
- 0.1–10% of a flame retardant filler,
- a flame retarder and
- 0.1–20% of a solvent-swollen clay mineral.

5,779,776

ROOTING INHIBITORS

Lutz Heuer, Dormagen, and Heinz-Joachim Rother, Krefeld, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP95/05096, § 371 Date Jul. 1, 1997, § 102(e)

Date Jul. 1, 1997, PCT Pub. No. WO96/20597, PCT Pub.

Date Jul. 11, 1996

PCT Filed Dec. 22, 1995, Ser. No. 860,608

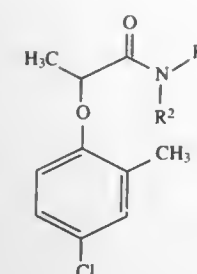
Claims priority, application Germany, Jan. 4, 1995, 195 00 123.0

Int. Cl.⁶ A01N 37/18

U.S. Cl. 106—18.32

3 Claims

1. A method of protecting a building, a building material or a building insulation against the penetration of roots into and through said building, building material or building insulation, said method comprising treating said building, building material or building insulation with an amount of a compound which is effective to inhibit said root penetration, said compound having the formula (IIa):



wherein

R¹ and R² are identical or different and are selected from the group consisting of hydrogen and straight-chain, branched or cyclic alkyl having 1 to 30 carbon atoms.

5,779,777

EMULSION INK FOR STENCIL PRINTING

Sadanao Okuda, and Teruaki Obkawa, both of Inashiki-gun, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Mar. 25, 1997, Ser. No. 823,486

Claims priority, application Japan, Mar. 26, 1996, 8-097527

Int. Cl.⁶ C09D 11/02

U.S. Cl. 106—31.26

5 Claims

1. A water-in-oil (W/O) emulsion ink for stencil printing, said emulsion ink having an oil phase and a water phase and a pearlescent pigment contained in said oil phase and/or said water phase in an amount of 1 to 20% by weight of the total weight of said emulsion ink, said pearlescent pigment having both an average particle size of 1 to 30 μm, and a hiding power of 1,000 cm²/g or lower.

5,779,778

INK COMPOSITION CONTAINING A MIXTURE OF BENZODIFURANONE DYES

Peter Gregory, and Alan Thomas Leaver, both of Manchester, United Kingdom, assignors to Zeneca Limited, London, England

Filed Apr. 2, 1997, Ser. No. 831,935

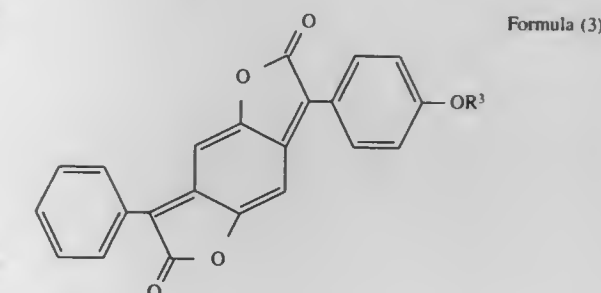
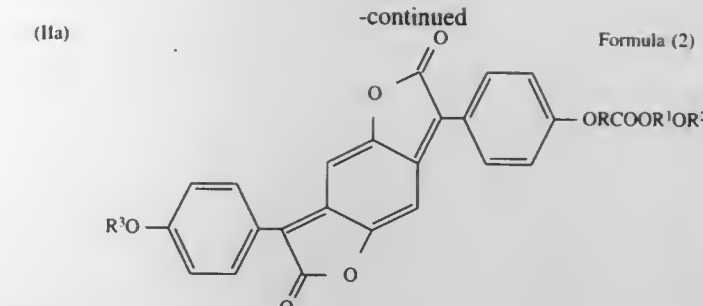
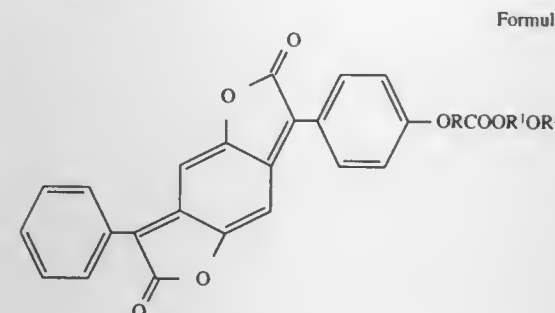
Claims priority, application United Kingdom, Apr. 25, 1996, 9608491

Int. Cl.⁶ C09D 11/02

U.S. Cl. 106—31.27

11 Claims

1. An ink composition comprising:
(i) a medium comprising a low melting point solid or a mixture of water and one or more water-soluble organic solvent(s) in a weight ratio of water:water-soluble organic solvent of from 98:2 to 50:50; and
(ii) from 0.5 to 20% based on the total weight of the ink composition of a mixture of dyes comprising on a weight basis from 5 to 70% of a dye of Formula (1), from 5 to 70% of a dye of Formula (2) and from 0 to 40% of a dye of Formula (3):



wherein:

R and R¹ each independently represent an alkylene group; and R² and R³ each independently represent an alkyl group.

5,779,779

UV-BLOCKING HOT MELT INKS

Augusta Jolly, Canoga Park, Calif., assignor to Dataproducts Corporation, Simi Valley, Calif.

Filed Sep. 27, 1996, Ser. No. 724,166

Int. Cl.⁶ C09D 11/00

U.S. Cl. 106—31.29

18 Claims

1. An UV-blocking hot melt ink composition for printing on a substrate comprising:

- about 30 to 95 wt. % of a wax;
- up to about 30 wt. % of a plasticizer;
- about 1 to 20 wt. % of an UV blocker; and
- up to an amount of a dye sufficient to provide visibility of the ink when applied on the substrate.

5,779,780

INK AND TONER COMPOSITIONS CONTAINING A MIXTURE OF BIS-AZO DYES

Peter Gregory, Bolton, and John Anthony Taylor, Manchester, both of United Kingdom, assignors to Zeneca Limited, London, England

Filed Apr. 2, 1997, Ser. No. 825,920

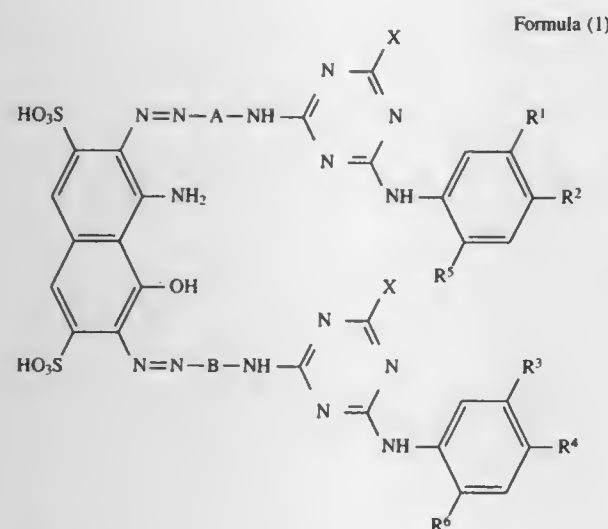
Claims priority, application United Kingdom, Apr. 25, 1996, 9608487

Int. Cl.⁶ C09D 11/02

U.S. Cl. 106—31.48

12 Claims

1. An ink composition comprising a medium comprising at least one of a low melting point solid, an organic solvent and a mixture of water and one or more water-soluble organic solvent(s); and a mixture of a first, second, third and fourth dye, each of which is of Formula (1) or a salt thereof:



wherein:

- X is a labile or non labile atom or group;
A and B are each independently an optionally substituted phenylene group;
one of R¹ and R² is H and the other is sulpho;
one of R³ and R⁴ is H and the other is sulpho;
R⁵ and R⁶ are each independently C₁₋₄-alkyl; and
the first, second, third and fourth dye are different from each other.

5,779,781
INK AND TONER COMPOSITIONS CONTAINING SUBSTITUTED PHENYL AZO THIOPHENE DYE
Peter Gregory, and Alan Thomas Leaver, both of Manchester, United Kingdom, assignors to Zeneca Limited, London, England

Filed Apr. 2, 1997, Ser. No. 831,934

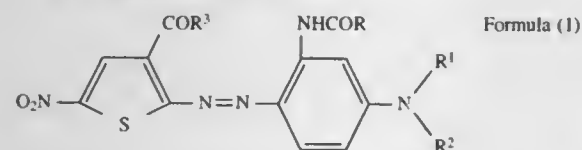
Claims priority, application United Kingdom, Apr. 25, 1996, 9608489

Int. Cl.⁶ C09D 11/02

U.S. Cl. 106—31.51

13 Claims

1. An ink composition comprising:
(i) a medium comprising component (a), (b) or (c):
(a) a low melting point solid;
(b) an organic solvent selected from ketones, alkanols, esters, ethers, amides, and a mixture of an aliphatic hydrocarbon and a polar solvent;
(c) a mixture of water and one or more water-soluble organic solvents(s), wherein the weight ratio of water to water-soluble organic solvent is from 99:1 to 50:50; and
(ii) an azothiophene of Formula (1):



wherein:

- R, R¹, R² and R³ each independently is optionally substituted alkyl or alkenyl.

5,779,782
MECHANICALLY BONDED FIBER MULCH AND PROCESS FOR PRODUCING SAME
Kevin Scott Spittle, 7934 Ravenwood La., Stanley, N.C. 28164
Filed Jun. 7, 1996, Ser. No. 663,033
Int. Cl.⁶ C09K 17/00

U.S. Cl. 106—164.3

10 Claims

1. An open, yet mechanically-bonded, water-absorbent fiber matrix mulch which can be mixed with water and spray applied to soil to form an open, mechanically bonded mulch on the surface of the soil to which it is applied, comprising:
about 65% to 95% wood fibers having a length of about 1/8 to 3/4 inch;
about 5% to 15% synthetic fibers; and
about 5% to 15% polymer-based water absorbent;
wherein said wood fibers and said synthetic fibers are intimately mixed and interlocked with one another to form an open, yet mechanically-bonded fiber matrix mulch, and said water absorbent is dispersed throughout said fiber matrix mulch to increase the mulch water absorption capacity.

5,779,783
COMPOSITION FOR PRINTING INKS
Hideki Senba; Hiroki Inoue, both of Osaka; Yoshiaki Hayashi, Hyogo; Makoto Akita, and Keisuke Ito, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

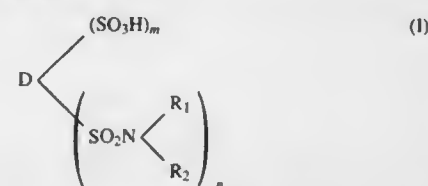
Continuation of Ser. No. 814,059, Mar. 10, 1997, abandoned, which is a continuation of Ser. No. 305,482, Sep. 13, 1994, abandoned. This application Sep. 23, 1997, Ser. No. 935,825
Claims priority, application Japan, Sep. 14, 1993, 5-228886

Int. Cl.⁶ C09B 67/50

U.S. Cl. 106—410

5 Claims

1. A composition for an ingredient of printing ink, which comprises an organic pigment and a pigment derivative represented by the formula (I) in the acid form:



- wherein D represents a residue of a dioxazine pigment, R₁ represents a hydrogen atom or an unsaturated aliphatic, saturated aliphatic or aromatic hydrocarbon group having 1 to 20 carbon atoms, R₂ represents an unsaturated aliphatic, saturated aliphatic or aromatic hydrocarbon group having 1 to 20 carbon atoms, m represents a number of from 0 to 3 and n represents a number of from 1 to 4, provided that m+n is from 1 to 5.

5,779,784
PIGMENTARY MATERIAL
Desmond G. Eadon, Emmer Green, United Kingdom, and Pamela Wood, Milltimber, Scotland, assignors to Cookson Matthey Ceramics & Materials Limited, London, United Kingdom

Continuation of Ser. No. 320,688, Oct. 11, 1994, abandoned. This application Sep. 23, 1996, Ser. No. 717,911

Claims priority, application United Kingdom, Oct. 29, 1993, 9322358; Apr. 30, 1994, 9408732

Int. Cl.⁶ C08K 3/00

U.S. Cl. 106—450

25 Claims

1. A pink or purple pigmentary material consisting essentially of silver in a lattice of crystalline zirconia, which material contains at least 0.4% by weight of the silver, wherein the material in the absence of gold is pink or purple.

5,779,785
STABILIZED, HIGH SOLIDS, LOW VISCOSITY SMECTITE SLURRIES, AND METHOD OF PREPARATION

James Payton, Marietta; Nicholas Canaris, Atlanta, and Jorge Miranda, Marietta, all of Ga., assignors to Vinings Industries, Inc., Atlanta, Ga.

PCT No. PCT/US94/10770, § 371 Date Mar. 29, 1996, § 102(e) Date Mar. 29, 1996, PCT Pub. No. WO95/09135, PCT Pub. Date Apr. 6, 1995

Continuation-in-part of Ser. No. 129,416, Sep. 30, 1993, Pat. No. 5,407,480. This PCT application Sep. 23, 1994, Ser. No. 619,675

Int. Cl.⁶ C04B 33/02; C09C 1/42; 3/08

U.S. Cl. 106—487

33 Claims

1. An aqueous smectite clay slurry, comprising an aqueous solution or emulsion of at least 0.2% by weight of said slurry of a salt of a primary, secondary, tertiary or quaternary amine having a molecular weight within the range of about 31 to about 500 daltons, in which is dispersed from about 10 to 47% by weight of said slurry, of a smectite clay; said amine salt being effective to prevent said smectite clay from swelling appreciably, and to prevent gelling of the slurry, whereby the slurry can be shipped and stored without creating a gelling problem; and any effect of said salt to prevent said swelling of the smectite clay and to prevent said gelling of said slurry being reversible upon subsequent dilution with water.

5,779,786
READY MIXED SETTING-TYPE JOINT COMPOUND, AND METHOD OF MAKING SAME

Jashbhaj M. Patel, Amherst, N.Y., assignor to National Gypsum Company, Charlotte, N.C.

Continuation of Ser. No. 638,190, Apr. 26, 1996, Pat. No. 5,653,797. This application Mar. 4, 1997, Ser. No. 810,434

Int. Cl.⁶ C04B 11/00

U.S. Cl. 106—781

21 Claims

1. A settable, ready-mixed joint compound composition suitable for use in concealing joints between edges of adjacent wallboard panels, said joint compound composition comprising:
(a) calcium sulfate hemihydrate;
(b) sufficient water to form a slurry with said calcium sulfate hemihydrate; and
(c) a set-retarding agent comprising a polymer composition including acrylic acid and acrylamide monomer units, said set-retarding agent having a molecular weight in a range of between about 1700 and about 6700.

5,779,787
WELL CEMENT COMPOSITIONS CONTAINING RUBBER PARTICLES AND METHODS OF CEMENTING SUBTERRANEAN ZONES

Lance E. Brothers, Ninnakah; David D. Onan, Duncan, and Rickey L. Morgan, Comanche, all of Okla., assignors to Halliburton Energy Services, Inc., Duncan, Okla.

Filed Aug. 15, 1997, Ser. No. 912,136

Int. Cl.⁶ C04B 18/22; 24/24; 16/04

U.S. Cl. 106—802

10 Claims

1. A method of cementing a subterranean zone comprising the steps of:
forming a pumpable well cement composition comprised of a hydraulic cementitious material, rubber consisting essentially of vulcanized rubber particles, and sufficient water to form the pumpable composition;
pumping the cement composition into the subterranean zone; and
allowing the cement composition to set into a hard impermeable mass therein.

5,779,788
CEMENT COMPOSITION
Neal Steven Berke, Chelmsford, Mass.; Michael Paul Dallaire, Dover, N.H., and Awdhoot Vasant Kerkar, Columbia, Md., assignors to W.R. Grace & Co.-Conn., New York, N.Y.
Continuation of Ser. No. 398,718, Mar. 6, 1995, abandoned. This application Aug. 14, 1996, Ser. No. 778,070
Int. Cl.⁶ C04B 24/02; 24/16

U.S. Cl. 106—809

11 Claims

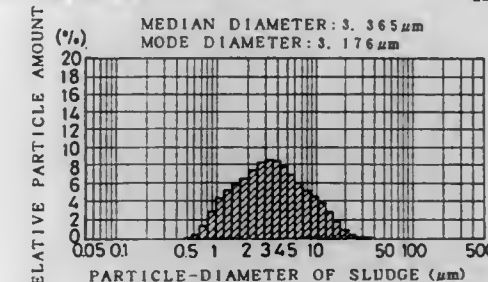
1. A cement admixture comprising a mixture of (a) at least one alkyl ether oxyalkylene adduct represented by the formula RO(A-O)_nH wherein A is a C₂-C₄ alkylene radical, O is oxygen, R is a C₁-C₃ alkyl or C₅-C₆ cycloalkyl group, and n is an integer of from 1 to 5; and (b) a sulfonated organocyclic material in a weight ratio of (a) to (b) in the range of 0.7 to about 7.

5,779,789
SOIL CONDITIONER
Hayato Kato, Kariya, Japan, assignor to Aisin Takaoka Co., Ltd., Toyota, Japan

Filed Dec. 5, 1996, Ser. No. 760,765
Claims priority, application Japan, Dec. 18, 1995, 7-329220
Int. Cl.⁶ C04B 38/00

U.S. Cl. 106—900

12 Claims



1. A soil conditioner having a pellet-shape and comprising at least 50% silica by weight, and at least 20% alumina by weight; and having a porosity of at least 40% by volume, wherein said soil conditioner comprises pores having 0.1 to 20 micro meters in pore-diameter.

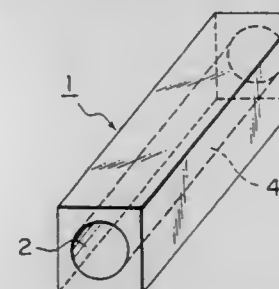
5,779,790
METHOD OF MANUFACTURING A SILICON MONOCRYSTAL

Toshinari Murai, and Naoki Nagai, both of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Filed Mar. 10, 1997, Ser. No. 814,107

Claims priority, application Japan, Mar. 15, 1996, 8-087187
Int. Cl.⁶ C30B 15/20

U.S. Cl. 117—13

12 Claims



1. A method of manufacturing a silicon monocrystal using the Czochralski method, said method comprising the steps of:
a) bringing a seed crystal into contact with a silicon melt;
b) forming a neck portion; and
c) growing a silicon monocrystal below the neck portion, wherein said seed crystal has a hollow portion which has an

opening in a contact surface of the seed crystal which is brought into contact with the silicon melt.

5,779,791

PROCESS FOR CONTROLLING THERMAL HISTORY OF CZOCHRALSKI-GROWN SILICON

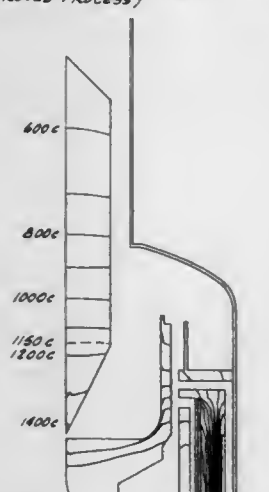
Harold W. Korb, Town & Country; Sadasivam Chandrasekhar, Chesterfield, both of Mo.; Robert J. Falster, Milan, Italy; Joseph C. Holzer, Manchester, Mo.; Kyong-Min Kim, St. Charles, Mo.; Steven L. Kimbel, St. Charles, Mo.; and Larry E. Drafal, St. Charles, Mo., assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.

Filed Aug. 8, 1996, Ser. No. 694,157
Int. Cl.⁶ C30B 15/20

U.S. Cl. 117—15

51 Claims

CRYSTAL TEMPERATURE PROFILE AFTER
DETACHMENT FROM THE MELT
(IMPROVED PROCESS)



1. A process for controlling the thermal history of a single crystal silicon ingot during a crystal growth process in which the silicon ingot is rotated and pulled from a silicon melt contained within a rotating crucible in accordance with the Czochralski technique, the ingot having, in succession, a cone, a main body having a first half and a second half, and an end-cone, the process comprising:

pulling the second half of the main body of the ingot from the silicon melt at a rate R_B , wherein R_B is the average growth rate for the second half of the main body of the crystal as a function of time;

pulling the end-cone of the ingot from the silicon melt at a rate R_E , wherein R_E is the average growth rate for the end-cone of the ingot as a function of time; and

controlling R_B and R_E such that the ratio of R_E to R_B is between about 0.50 and about 1.50.

5,779,792

SINGLE CRYSTAL PULLING APPARATUS

Takashi Atami; Hisashi Furuya, both of Tokyo, and Michio Kida, Omiya, all of Japan, assignors to Mitsubishi Materials Silicon Corporation, and Mitsubishi Materials Corporation, both of Tokyo, Japan

Filed Jan. 10, 1997, Ser. No. 781,843

Claims priority, application Japan, Jan. 12, 1996, 8-004409

Int. Cl.⁶ C30B 35/00

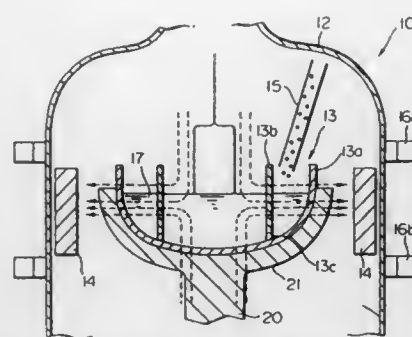
U.S. Cl. 117—214

6 Claims

1. A single crystal pulling apparatus comprising:

a gas tight container covering a melting region for single crystal material;

a double crucible for storing a semiconductor melt, disposed inside of said gas tight container, having a cylindrical inner



crucible defined by a cylindrical partition body mounted inside of an outer crucible, and a communication passage for communicating the outer region and the inner region of the double crucible;

a heater provided inside said gas tight container and outside said double crucible, for heating said double crucible to yield a semiconductor melt; and

means for applying the cusp magnetic field provided outside of said gas tight container for applying a cusp magnetic field; the apparatus characterized in that

a substantially horizontal portion of the cusp magnetic field applied by said means is positioned below the surface level of the semiconductor melt, and substantially vertical portion of the cusp magnetic field is located at the position of said communication passage.

5,779,793

DEVICE FOR FEEDING OUT FIBRES AT PRODUCTION OF THERMOSETTABLE FIBRE REINFORCED PRODUCTS

Kjell Sand, Västra Frölunda, Sweden, assignor to Aplicator System AB, Sweden

PCT No. PCT/SE93/00616, § 371 Date Jan. 4, 1996, § 102(e)

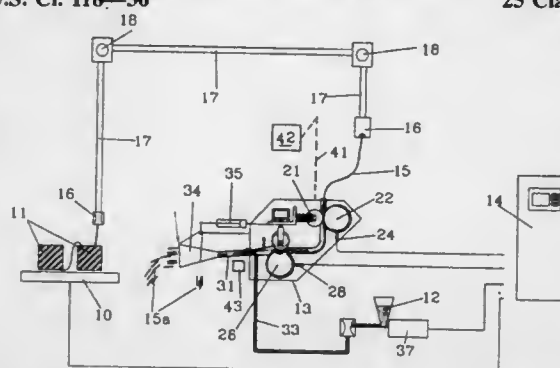
Date Jan. 4, 1996, PCT Pub. No. WO95/01939, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 6, 1993, Ser. No. 571,874

Int. Cl.⁶ B05C 11/00; D02G 3/00

U.S. Cl. 118—36

25 Claims



10. A device for feeding reinforcement fibres for production of thermosettable plastic products, said device comprising:

at least one magazine for containing a fibre thread;

fibre feedout head, guiding means for guiding the fibre thread from a magazine to the fibre feedout head, the feedout head being provided with feeding means for feeding the fibre thread from the magazine through the guiding means, and cutting means positioned and arranged after the feeding means in the path of the fibre thread and adapted to cut the fibre thread, wherein the feeding means of the feedout head includes driven feed rollers which form at least one nip for the fibre thread, and fibre ejecting means, wherein the cutting means are driven individually from the feed rollers and are located between the feed rollers and the fibre ejecting means, the cutting means including a driven knife roller with out-

wardly projecting knife blades and a backing roller which is operable either to a position of engagement with or to a position of non-engagement with the knife roller; measuring means for continuous weighing of an amount of fibre thread fed from the magazine; and control means associated with the measuring means for controlling the feed rollers to feed a selected amount of fibre thread from the magazine.

5,779,794

UNIVERSAL FIXTURE FOR HOLDING PRINTED CIRCUIT BOARDS DURING PROCESSING

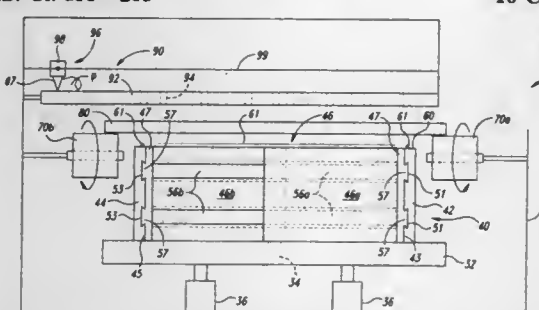
Curtis C. Thompson, Meridian, Id., assignor to Micron Technology, Inc., Nampa, Id.

Filed Dec. 6, 1996, Ser. No. 761,701

Int. Cl.⁶ B05C 13/00

U.S. Cl. 118—213

10 Claims



1. An apparatus for stenciling paste on printed circuit boards, comprising:

a stencil assembly having a stencil plate with a plurality of holes arranged in a desired pattern and a moveable wiper to press a paste into the holes;

a moveable platform positioned under the stencil plate and having a work surface facing a bottom surface of the stencil plate, the moveable platform being moveable into a raised position to present a top side of a printed circuit board to the bottom surface of the stencil plate and into a lowered position to remove the top side of the printed circuit board from the bottom surface of the stencil plate;

a first support member attached to the platform, the first support member having an elongated first sidewall and at least one endwall attached to the sidewall, the endwall extending transversely to the sidewall; and

a second support member attached to the endwall, the second support member being spaced apart from the first sidewall by a distance along a dimension of a printed circuit board, and at least one of the first sidewall and the second support member being moveable with respect to the other to adjust the distance between the first sidewall and the second support member along the dimension.

5,779,795

LOW SURFACE ENERGY FLUID METERING AND COATING DEVICE

Richard Andrew Bucher; Robert L. Sassa, both of Newark, and Tit-Keung Lau, Wilmington, all of Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Aug. 4, 1995, Ser. No. 511,502

Int. Cl.⁶ B05C 1/00

U.S. Cl. 118—264

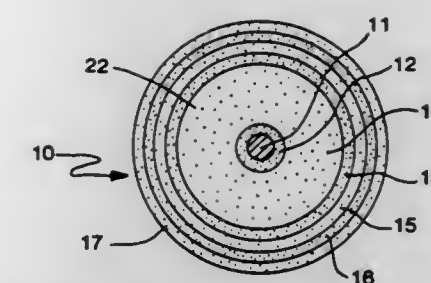
12 Claims

1. A liquid metering and coating device comprising:

a porous tubular support comprising a thermosetting polymer comprising open-celled pores;

a porous permeation control material adhered to an outer surface of the porous tubular support;

a reinforcing material contiguous with said permeation control material and located in an outer portion of the pores of said



porous tubular support, the reinforcing material comprising a mixture of silicone oil and silicone rubber;

an oil-supply material contiguous with the reinforcing material and substantially filling the pores radially closer to the inner portion of said porous tubular support, the oil-supply material comprising a mixture of silicone oil and silicone rubber; and a low surface energy material which allows the flow of release agents therethrough and inhibits collection of contamination on the device adhesively disposed about an outer surface of the porous permeation control material.

5,779,796

RESIST PROCESSING METHOD AND APPARATUS

Takayuki Tomoeda, Kumamoto-ken; Masaaki Murakami, Kumamoto, and Kenichi Nishioka, Kumamoto-ken, all of Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Kyushu Limited, Tosu, both of Japan

Division of Ser. No. 400,935, Mar. 9, 1995, Pat. No. 5,626,913.

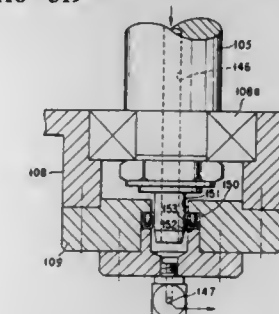
This application Dec. 17, 1996, Ser. No. 768,884

Claims priority, application Japan, Mar. 9, 1994, 6-064345; Mar. 30, 1994, 6-084064

Int. Cl.⁶ B05B 13/02

U.S. Cl. 118—319

5 Claims



1. A resist processing apparatus, comprising: holding means for rotatably holding an object to be processed;

process solution supply means, arranged spaced apart from the object to be processed, for supplying a process solution onto a surface of said object to be processed; and

cleaning solution supply means, arranged spaced apart from the object to be processed, for supplying a cleaning solution onto said surface of said object to be processed,

wherein said holding means is arranged in a vessel, and has a vacuum suction type spin chuck with a rotating shaft which can be elevated and rotated, and a seal mechanism is provided in a space between said rotating shaft and said vessel, said seal mechanism being mainly constituted by a flexible seal member for closing the space between said rotating shaft and said vessel, and a spring member for pressing said seal member against said rotating shaft and said vessel

and wherein said process solution supply means has a bubble drawing port formed in an upper portion of a process solution container, and a bubble discharge pipe in which a suction amount adjustment mechanism is interposed is connected to the bubble drawing port.

5,779,797

WAFER BOAT FOR VERTICAL DIFFUSION AND VAPOR GROWTH FURNACE
Tomohisa Kitano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

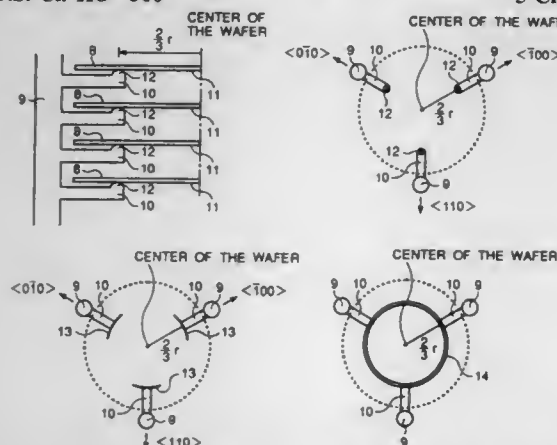
Filed Nov. 13, 1996, Ser. No. 747,086

Claims priority, application Japan, Nov. 15, 1995, 7-297004

Int. Cl.⁶ C23C 16/00

U.S. Cl. 118—500

5 Claims



1. A wafer boat for use with vertical furnaces and having a structure for supporting a plurality of wafers one above another at an interval, said structure comprising:

- a plurality of support posts being disposed upright and essentially perpendicular to principal surfaces of said wafers at positions around said wafers, and
- a plurality of supporting bars each extending laterally from each of said support posts and supporting a back surface of each of said wafers at positions thereof spaced apart from a center of the wafer by a distance corresponding to two-thirds of the radius of the wafer.

5,779,798

DEVICE FOR DISTRIBUTING LIQUID BY GRAVITY
Jean-Claude Bosvot, Sassenay, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 26, 1995, Ser. No. 506,746

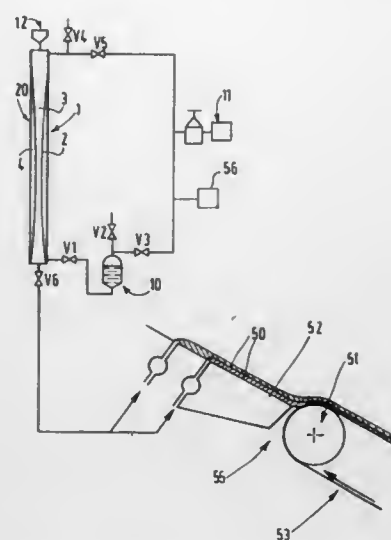
Claims priority, application France, Aug. 1, 1994, 94 09733

Int. Cl.⁶ F16K 17/14; B65D 83/00

U.S. Cl. 118—506

12 Claims

1. A device for distributing liquid by gravity comprising:
- a) a rigid cylindrical outer pipe having two opened ends, one of said two opened ends being an entrance end connectable to an external source of liquid and the other of said two opened ends an exit end for delivering the liquid provided by the external source of liquid;
 - b) a source of pressurized fluid;
 - c) a deformable casing located inside said rigid cylindrical outer pipe and being arranged so as to define, with the pipe, a first internal zone delimited by the interior of said casing and a second external zone isolated from said first internal zone delimited by said outer pipe and the exterior of said casing, one of said zones being open at said two opened ends of the rigid cylindrical outer pipe so as to receive through the entrance end the liquid to be distributed from said external source of liquid, and to convey and distribute said liquid through the exit end, by gravity the other of said zones being



connected to the source of pressurized fluid to be able, under the effect of the pressure of the fluid, to cause the relative cross sections and volumes of said first and second zones to be modified, in order to control the flow rate of the liquid conveyed through said one of said zones.

5,779,799

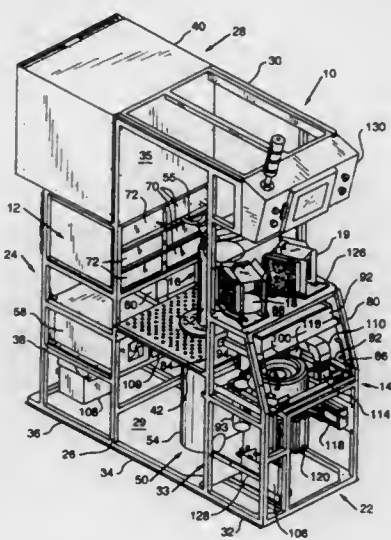
SUBSTRATE COATING APPARATUS
Shawn D. Davis, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 21, 1996, Ser. No. 667,738

Int. Cl.⁶ B05C 5/00

U.S. Cl. 118—663

18 Claims



1. An apparatus for coating a substrate surface with process liquid comprising:

- a plurality of self-controlled modules comprising at least one thermal conditioning module and a substrate coating assembly; and
- a substrate handling device positioned to access said coating assembly and said at least one thermal conditioning module; and
- a host controller connected to said plurality of self-controlled modules, wherein each of said plurality of self-controlled modules is removable without disabling said other self-controlled modules or said host controller.

5,779,800

Patent Not Issued For This Number

5,779,801

Patent Not Issued For This Number

5,779,802

THIN FILM DEPOSITION CHAMBER WITH ECR-PLASMA SOURCE

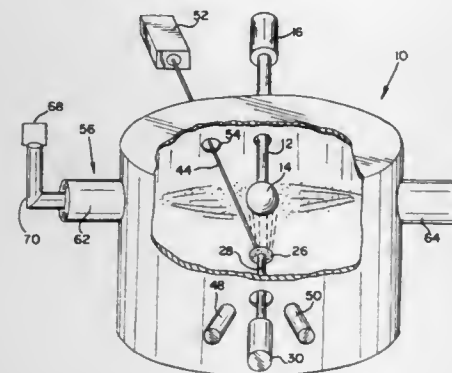
Gustaaf Regina Borghs, Kessel-Lo, and Kristin Johanna Leona Deneffe, Meerbeek, both of Belgium, assignors to IMEC v.z.w., Leuven, Belgium

Continuation-in-part of Ser. No. 912,223, Jul. 10, 1992, abandoned, which is a continuation of Ser. No. 634,153, Dec. 10, 1990, abandoned. This application Aug. 31, 1995, Ser. No. 521,788

Int. Cl.⁶ H05H 1/00; C23C 16/00; 14/00

U.S. Cl. 118—723 MP

8 Claims



1. A process chamber comprising:

- a sealed chamber having walls,
- means for generating a vacuum in the chamber;
- a substrate holder disposed within the chamber and including means for holding a substrate;
- means for introducing a gas into the chamber;
- means for generating by electron-cyclotron resonance a gas plasma and for magnetically confining the plasma to a region surrounding the substrate holder and isolated from the walls of the chamber, wherein said means includes two solenoids mounted on diametrically opposite sides of the chamber for generating a magnetic field within the chamber and further includes means for supplying microwave energy to the chamber; and
- means for supplying particles of a substance to be deposited on the substrate wherein said means for supplying particles includes a target holder disposed within the chamber, a target of said substance mounted on the target holder within the chamber, and a laser that illuminates the target to thereby ablate particles of the substance from the target.

5,779,803

PLASMA PROCESSING APPARATUS

Yoichi Kuroko, Yamanashi-ken; Shigeki Tozawa, Nirasaki, and Shozo Hosoda, Yamanashi-ken, all of Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Yamanashi Limited, Nirasaki, both of Japan

Division of Ser. No. 363,270, Dec. 23, 1994, Pat. No.

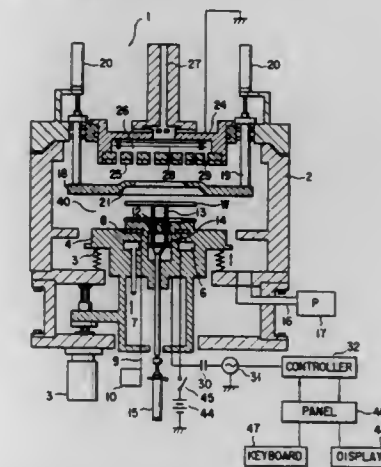
5,578,164. This application Aug. 13, 1996, Ser. No. 696,224

Claims priority, application Japan, Dec. 24, 1993, 5-347386; Dec. 28, 1993, 5-352895

Int. Cl.⁶ C23C 16/00

U.S. Cl. 118—723 R

13 Claims



1. An apparatus for subjecting a substrate to a plasma process, the substrate having a portion on which a patterned mask film is formed and a marginal portion which is not covered with the mask film, said apparatus comprising:

- a process chamber;
- a supply for supplying a process gas to the process chamber;
- an exhaust means for exhausting and setting the process chamber to a vacuum;
- a work table arranged in the process chamber, and having a supporting surface for mounting the substrate, and an electrostatic chuck for attracting and holding the substrate on the supporting surface;
- a plasma generator for making the process gas into a plasma at a position facing the supporting surface and in the process chamber, the plasma having a plasma sheath opposite to the supporting surface; and
- a hood arranged between the substrate mounted on the supporting surface and the plasma sheath, the hood covering but being out of contact with a marginal portion of the substrate so as to prevent the marginal portion from being subjected to the plasma process.

5,779,804

GAS FEEDING DEVICE FOR CONTROLLED VAPORIZATION OF AN ORGANANOMETALLIC COMPOUND USED IN DEPOSITION FILM FORMATION
Nobuo Mikoshiba; Kazuo Tsubouchi, and Kazuya Masu, all of Sandai, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 232,431, Apr. 21, 1994, Pat. No. 5,476,547, which is a continuation of Ser. No. 41,340, Apr. 1, 1993, abandoned, which is a continuation of Ser. No. 869,121, Apr. 15, 1992, abandoned, which is a continuation of Ser. No. 586,877, Sep. 24, 1990, abandoned. This application May 11, 1995, Ser. No. 439,516

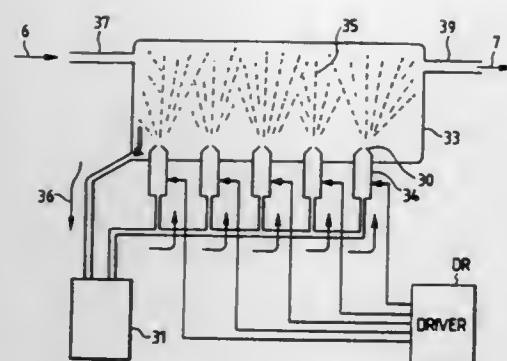
Claims priority, application Japan, Sep. 26, 1989, 1-250025; Sep. 26, 1989, 1-250026; Sep. 26, 1989, 1-250027

Int. Cl.⁶ C23C 16/00

U.S. Cl. 118—726

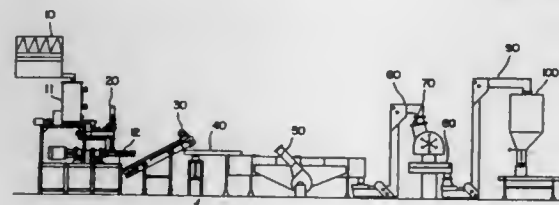
21 Claims

1. A gas-feeding device for feeding a starting gas for formation of a deposited film by the chemical vapor deposition method,



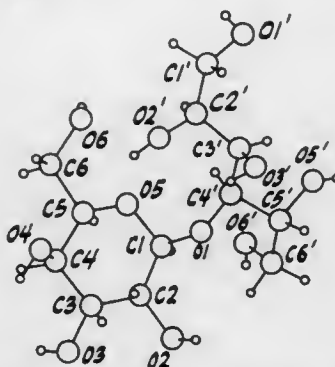
comprising a first container having an inlet for introducing a carrier gas into the first container, a space for discharging a starting gas containing an organometallic compound and an outlet for feeding the starting gas from the space to the outside of the first container, the outlet being provided in a position opposite to the inlet; a plurality of ejection means each having an opening for ejecting the organometallic compound in a mist state with the carrier gas into the space, the plurality of ejection means being provided at a lower part of the first container; a second container for storing the organometallic compound to be fed to the ejection means; and a passage to enable the first and the second containers to communicate with each other.

5,779,805
PROCESS FOR RECRYSTALLIZING SUGAR AND PRODUCT THEREOF
James R. Morano, Somerset, N.J., assignor to Crompton & Knowles Corporation, Stamford, Conn.
Continuation of Ser. No. 258,110, Jun. 10, 1994, Pat. No. 5,549,757. This application Aug. 26, 1996, Ser. No. 703,091
Int. Cl.⁶ B01J 3/00; C08B 30/00; C13F 1/04; C13D 1/12
U.S. Cl. 127-42 26 Claims



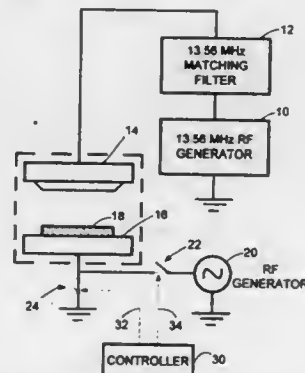
1. A recrystallized sugar product prepared by a process comprising:
blending a powdered sugar with up to about 15 percent of an adjuvant to provide a sugar blend, said sugar blend has up to about 3 percent moisture;
feeding said sugar blend under a positive pressure to an extruding means; and
mixing with a high shear extruding means said sugar blend at a temperature between about 220° F. and about 300° F. with a residence time in said extruding means of between about 0.5 and about 12 seconds and with a discharge pressure between 20 and 1,200 psi;
whereby said adjuvant is uniformly distributed throughout said sugar blend.

5,779,806
CRYSTALLINE ANHYDROUS LACTITOL AND A PROCESS FOR THE PREPARATION THEREOF AS WELL AS USE THEREOF
Heikki Olavi Heikkilä, Espoo; Juha Veikko Nurm, Pinjainen, and Tammy Pepper, Surrey, all of Finland, assignors to Xyrofin Oy, Helsinki, Finland
Continuation of Ser. No. 122,423, Jan. 6, 1994, Pat. No. 5,494,525. This application Sep. 8, 1995, Ser. No. 525,358
Claims priority, application Finland, Mar. 22, 1991, 911411
Int. Cl.⁶ C13F 3/00; 1/00; A23G 3/00; C08B 31/00
U.S. Cl. 127-61 6 Claims



1. A crystalline anhydrous lactitol belonging to the monoclinic crystal system and having unit cell constants $a=7.614 \text{ \AA}$, $b=10.757 \text{ \AA}$, $c=9.370 \text{ \AA}$ and $\beta=108.2^\circ$ and a melting point of 149° C. to 152° C. , a water content below 0.5% and a lactitol content of more than 99%.

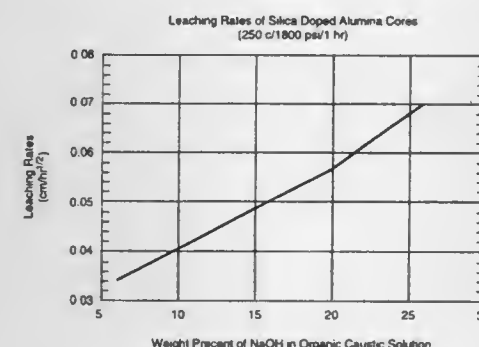
5,779,807
METHOD AND APPARATUS FOR REMOVING PARTICULATES FROM SEMICONDUCTOR SUBSTRATES IN PLASMA PROCESSING CHAMBERS
Charles Dornfest, Fremont; Anand Gupta, San Jose, and Gerald Girard, Milpitas, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Filed Oct. 29, 1996, Ser. No. 740,407
Int. Cl.⁶ B08B 3/12; B44C 1/22
U.S. Cl. 134-1.2 5 Claims



1. A method for removing particulates from a semiconductor wafer surface in a plasma processing chamber, comprising the steps of:
applying high-frequency plasma power across a two electrodes, one of which is normally grounded and supports a semiconductor wafer to be processed, whereby the plasma power initiates and maintains a plasma between the electrodes;
at selected times, electrically isolating the wafer-supporting electrode and simultaneously applying to it a bias voltage selected to launch particulates from the surface of the wafer by electrostatic action; and
maintaining the plasma during the selected times for launching the particulates, whereby, launched particulates are suspended in the plasma until they can be later removed.

5,779,808
Patent Not Issued For This Number

5,779,809
METHOD OF DISSOLVING OR LEACHING CERAMIC CORES IN AIRFOILS
D. Sangeeta, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 26, 1995, Ser. No. 578,799
Int. Cl.⁶ B08B 3/10 12 Claims



1. A method to leach or dissolve porous ceramic oxide cores used in precision casting of hollow turbine airfoils comprising the step of:
soaking the oxide cores of the airfoils in an organic caustic solution, consisting essentially of an organic solvent, a base, and water, where the organic caustic solution is about 1-98 weight percent organic solvent, about 1-65 weight percent base, and about 1-35 weight percent water, in an autoclave at a temperature and pressure sufficient to lower a surface tension of the organic caustic solution for a period of time to completely remove all of the oxide cores from the airfoils.

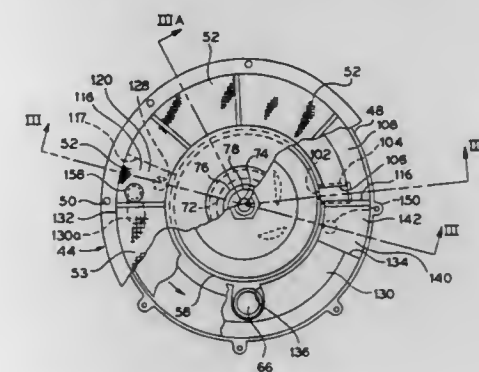
5,779,810
METHOD TO REMOVE HALOGENATED HYDROCARBONS FROM PARTICULATE MATTER
Jimmy Lynn Webb, Ballston Lake; Herman Otto Krabbenhoft, Scotia, and David Gilles Gascoyne, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Continuation-in-part of Ser. No. 300,900, Sep. 6, 1994, abandoned. This application Jul. 1, 1996, Ser. No. 673,484
Int. Cl.⁶ B08B 3/00 1 Claim

1. A process for the removal of halogenated organic compounds adsorbed on particulate material, comprising: contacting the material with a vapor phase consisting essentially of water and a monocarboxylic acid selected from the group consisting essentially of acetic acid, propionic acid, butyric acid, valeric acid, hexanoic acid, octanoic acid, oleic acid, fatty acid mixtures derived from natural sources selected from the group consisting of triglycerides, at a temperature between about 300°-400° C. for about 10-30 minutes to substantially remove the halogenated organic compounds from the particulate material so that ten parts per million or less of the halogenated organic compounds remain in the particulate material.

5,779,811
METHOD FOR PEELING OFF DIRT FROM WALL SURFACE BY USING PEELABLE POLYMER MEMBRANE
Minori Machii; Nobuyoshi Nanba; Boon Keng Lim; Noboru Sakata; Nobuo Sakurai, and Yasubiko Furusawa, all of Chohu, Japan, assignors to Kajima Corporation, Tokyo, Japan
Filed Jul. 26, 1996, Ser. No. 686,908
Claims priority, application Japan, May 6, 1994, 6-094299; Mar. 24, 1995, 7-066569
Int. Cl.⁶ B08B 7/00 13 Claims

1. A method of cleaning a wall surface by removing dirt therefrom, comprising the steps of applying a pasty polymer solution on the wall surface in the form of a liquid film, said solution being made by dissolving a membrane-forming polymer and a plasticizer in water, said plasticizer being capable of providing flexibility and elongation of the membrane formed by the polymer solution causing the dirt substance on the wall surface to adhere to the liquid film, evaporating water of the liquid film so as to dry the liquid film to form the flexible membrane which is peelable intact from the wall surface, and removing the dirt substance from the wall surface by the peeling off of the flexible membrane intact from the wall surface together with the dirt substance adhering thereto, wherein 5-10 mm long fibers are dispersed in the pasty polymer solution.

5,779,812
MULTI-MESH MECHANICAL FILTER SCREEN SYSTEM FOR DISHWASHERS
Edward L. Thies, Tipp City, Ohio, and Roger J. Bertsch, Stevensville, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Aug. 8, 1996, Ser. No. 694,221
Int. Cl.⁶ B08B 3/02 15 Claims



7. A dishwasher soil separator, comprising:
a rotating wash impeller;
a circular surrounding wall;
an outlet water conduit receiving water flow from said rotating impeller;
a soil laden water flow channel receiving soil laden water flow from adjacent said surrounding wall;
an annular soil screening channel having an annular plate with a soil laden water inlet region having an end wall and having two screen elements on a top side thereof of different mesh sizes, for passing water therethrough while retaining soil below said elements, said screening channel surrounding said surrounding wall, said soil laden water flow channel flow connected to said inlet region of said screening channel;
a soil accumulator sump arranged below said annular plate and flow connected to said screening channel at two locations around said annular screening channel; and
a means for draining soil from said accumulator sump.

5,779,813

METHOD AND APPARATUS FOR DECONTAMINATION OF POLY CHLORINATED BIPHENYL CONTAMINATED SOIL

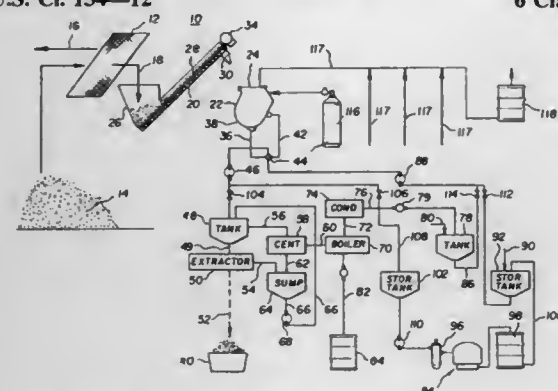
Erie L. Plunkett, Lockwood Folly, N.C., assignor to Dan W. Gore, Fayetteville, N.C.

Filed Dec. 6, 1996, Ser. No. 758,737

Int. Cl.⁶ B08B 7/04

U.S. Cl. 134—12

6 Claims



1. A method for extraction of an organic contaminant from contaminated soil, said method comprising:

- preparing a solvent composition comprising admixing an aliphatic short chain alcohol having from 1 to 6 carbon atoms with an aliphatic long chain alcohol having from 10 to 24 carbon atoms, said short chain alcohol being present in said composition at a level of from 80 to 99 percent by volume based on the total volume of the composition, and said long chain alcohol being present at a level of from 1 to 20 percent by volume based on the total volume of the composition;
- admixing said solvent composition with said contaminated soil to extract at least a portion of organic contaminant from said contaminated soil thereby producing an admixture of soil and contaminated solvent;
- separating said soil from said contaminated solvent;
- washing said soil with water to remove residual solvent from said soil thereby providing decontaminated soil;
- separating by distillation said contaminated solvent into (i) a light fraction comprising said short chain alcohol and (ii) a heavy fraction comprising said long chain alcohol and said organic pollutant, thereby providing the short chain alcohol in a condition for reuse.

5,779,814

METHOD FOR CONTROLLING AND REMOVING SOLID DEPOSITS FROM A SURFACE OF A COMPONENT OF A STEAM GENERATING SYSTEM

Billy Dean Fellers, Sr., Rte. 1, Box 244H, Glen Rose, Tex. 76043, and David M. Shenberger, P.O. Box 429, Midway, Pa. 15060

Continuation of Ser. No. 214,927, Mar. 17, 1994, abandoned.

This application Dec. 12, 1995, Ser. No. 570,799

Int. Cl.⁶ B08B 3/00; 3/10; 9/00; F23J 1/00

U.S. Cl. 134—20

15 Claims

1. A method for controlling and removing solid deposits from a surface of at least one component of a steam generating system laden with said solid deposits wherein said solid deposits are porous and are formed from an impurity introduced into said steam generating system and wherein said steam generating system produces megawatts of energy said method comprises:

- adding to an aqueous phase of said steam generating system an effective amount of at least one volatile amine having a pKa value greater than about 10.61 at 25° C. and selected from the group consisting of an alkyl amine, a cyclo alkyl amine, and derivatives thereof to form an aqueous phase having said volatile amine, said effective amount being the amount of said volatile amine necessary for controlling and removing said solid deposits from said surface of at least one component of

said steam generating system, said removing solid deposits does not require dissolution of said solid deposits; converting said aqueous phase having said volatile amine to a steam phase having said volatile amine, wherein said steam phase is selected from the group consisting of wet steam, saturated steam and superheated steam;

exposing said steam phase having said volatile amine to said surface of said component laden with said solid deposits, wherein each of said solid deposits has at least one functional site selected from the group consisting of (1) an acidic site to which an inorganic cation is sorbed, (2) a basic site to which an inorganic anion is sorbed, and (3) combinations thereof, for effecting selective sorption of said volatile amine by said solid deposits and displacing said inorganic cation, anion or combinations thereof; and

providing thermal cycling having a temperature ranging, for at least one cycle, from greater than or equal to about 0° C. to less than or equal to about 550° C. for effecting at least one cycle of sorption and one cycle of desorption of said volatile amine wherein the rate of said desorption of said volatile amine exceeds the rate of diffusion of said volatile amine from said porous solid deposit for controlling and removing said porous solid deposits from said surface of said component.

5,779,815

PROCESS FOR REMOVAL OF LUMEN FILLERS AND OTHER SOLUBLE RESIDUES FROM HOLLOW FILAMENTS

Hans-Günter Breidohr; Manfred Martin, both of Wuppertal; Bernhard Krautwurst, Erlangen, and Martin König, Düsseldorf, all of Germany, assignors to Akzo Nobel NV, Arnhem, Netherlands

PCT No. PCT/EP95/02118, § 371 Date Feb. 26, 1996, § 102(e) Date Feb. 26, 1996, PCT Pub. No. WO96/01144, PCT Pub. Date Jan. 18, 1996

PCT Filed Jun. 3, 1995, Ser. No. 602,820

Claims priority, application Germany, Jul. 4, 1994, 44 23 167.9

Int. Cl.⁶ B08B 9/00

U.S. Cl. 134—22.1

12 Claims

1. Process for removal of at least one of a lumen filler and other soluble residues from hollow filaments of finite length which are combined into bundles, comprising first roughly removing the lumen filler by means of centrifuging, the bundles are cleaned by feeding a solvent and centrifuging, and the solvent is then evaporated by means of a gas, wherein the cleaning with solvent is carried out by end spraying of the hollow filament bundles in at least two steps, whereby the first step is carried out in a pass through mode and spraying in further steps is carried out in a recirculation process.

5,779,816

NOZZLE AND SYSTEM FOR USE IN WAFER CLEANING PROCEDURES

Tieu T. Trinh, 601 Kathleen La., Leander, Tex. 78641

Filed Jan. 30, 1997, Ser. No. 794,223

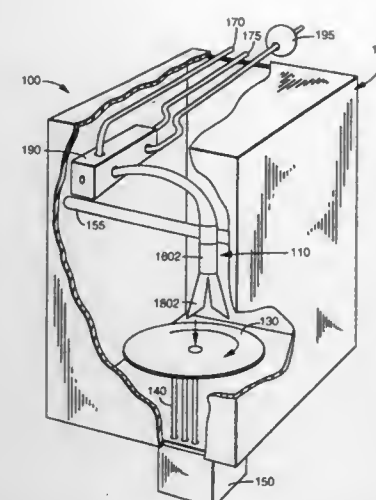
Int. Cl.⁶ B08B 3/02

U.S. Cl. 134—23

36 Claims

1. An apparatus for wet processing a wafer, the apparatus comprising:

- a processing chamber, wherein the wafer is processed in the processing chamber;
- a means for supporting and rotating the wafer about an upright axis within the processing chamber; and
- a nozzle through which a flow of fluid is directed onto the wafer, the nozzle comprising:
 - a nozzle housing in communication with a fluid supply;
 - at least two tubes forming angled extensions from the nozzle housing, each tube having an inner end and an outer end,



wherein each tube directs a fluid flow from the inner end through the outer end to a predetermined location on the wafer while the wafer is rotated within the processing chamber; and wherein the nozzle is positioned downwardly over the wafer; and

wherein a first tube directs a first fluid flow to a center area of the wafer and a second tube directs a second fluid flow to an area of the wafer at least substantially one-third the diameter of the wafer and wherein the rotation of the wafer causes the fluid to overflow toward the outer edge of the wafer.

5,779,817

CIRCUIT ARRANGEMENT OF SOLAR CELLS

Reinhard Wecker, Eichenau, Germany, assignor to Webasto-Schade GmbH, Stockdorf, Germany

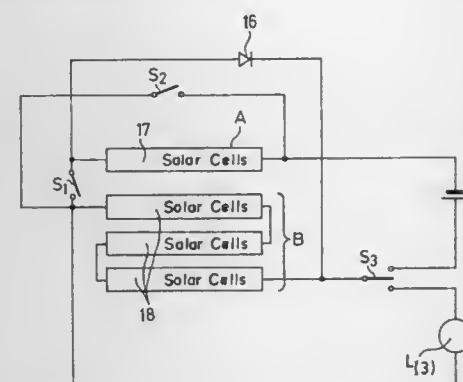
Filed May 31, 1996, Ser. No. 655,814

Claims priority, application Germany, Jun. 30, 1995, 195 23 904.0; Jul. 28, 1995, 195 27 740.6

Int. Cl.⁶ H01L 31/042

U.S. Cl. 136—293

18 Claims



1. A circuit arrangement comprising:

- first string of solar cells which are connected together in series; and
 - at least one second string of solar cells which are connected together in series, the first and second strings being connected in parallel to an ohmic or inductive load as a means for supplying electric power generated by the solar cells thereto for operation thereof;
- wherein the first string forms a means for generating a first no-load voltage and the second string forms a means for generating a second no-load voltage [that is significantly] different from said first no-load voltage for adapting the electric power generated by the solar cells to changing current/voltage characteristics of the load, and

wherein one of the first and second no-load voltages is at least approximately 60 percent greater than the other of said no load voltages.

5,779,818

PROCESS FOR THE PRODUCTION OF CORROSION-PROTECTED METALLIC MATERIALS AND MATERIALS OBTAINABLE THEREWITH

Bernhard Wessling, Bargteheide, Germany, assignor to Zipperling Kessler & Co., Ahrensburg, Germany

Division of Ser. No. 392,861, Feb. 27, 1995, Pat. No.

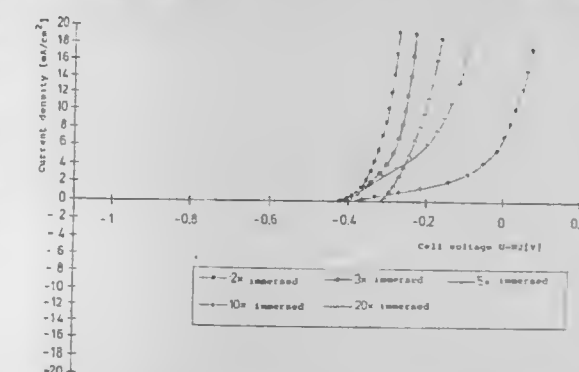
5,721,056. This application Mar. 6, 1996, Ser. No. 611,679

Claims priority, application Germany, Jun. 25, 1993, P 43 21 615.3; Jul. 7, 1993, P 43 23 333.3; Jul. 20, 1993, P 43 24 345.2; Jul. 20, 1993, P 43 24 346.0; Sep. 16, 1993, P 43 32 020.1; Oct. 6, 1993, P 43 34 628.6

Int. Cl.⁶ C23C 8/00

U.S. Cl. 148—240

16 Claims



1. Process for the production of corrosion-protected metallic materials, comprising:

- applying to a metallic material in a non-electrochemical manner a layer of an intrinsically conductive polymer capable of absorbing water, which has a redox potential with respect to a normal hydrogen electrode of -300 to +1800 mV, and
- contacting the metallic material coated according to step (a) with a passivating medium comprising oxygen-containing water for a period of at least 30 seconds, and after steps (a) and (b),
- repassivation by bringing the metallic material, for a period of at least 1.5 minutes, to a potential which is 50 to 500 mV more negative with respect to a normal hydrogen electrode than the equilibrium potential of the metallic material coated with the conductive polymer, working at zero current or with less than 2 mA/cm²,
- removing the layer of the conductive polymer, and
- providing the metallic material with a corrosion-protection covering.

5,779,819

GRAIN ORIENTED ELECTRICAL STEEL HAVING HIGH VOLUME RESISTIVITY

Glenn Stuart Huppi, Monroe, Ohio, assignor to Armco Inc., Middletown, Ohio

Division of Ser. No. 442,459, May 16, 1995, Pat. No.

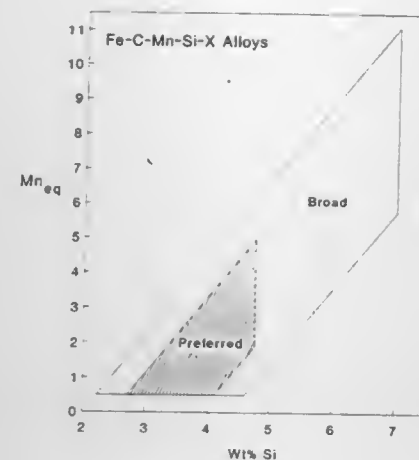
5,643,370. This application Feb. 20, 1997, Ser. No. 803,486

Int. Cl.⁶ H01F 1/147

U.S. Cl. 148—308

8 Claims

1. A grain oriented electrical steel melt, consisting essentially of, in weight %, 2.25–7% Si, 0.01–0.08% C, 0.015–0.05% Al, up to 0.01% S, 0.001–0.011% N, Mn, of at least 0.5% and balance being essentially iron and normally occurring residual elements to provide a volume resistivity in a cold reduced grain oriented electrical steel of at least 50 micro-ohm-cm, said steel melt bal-



anced such that $2.0 \leq \{(\%Si) - 0.45(\%Mn_{eq})\} \leq 4.4$ wherein $\%Mn_{eq}$ is defined as $(\%Mn) + 1.5(\%Ni) + 0.5(\%Cu) + 0.1(\%Cr)$.

5,779,820

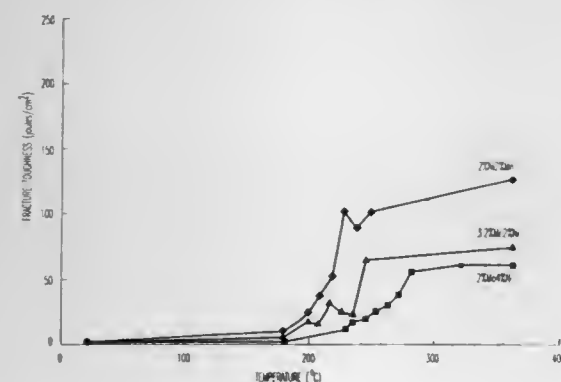
PROCESS FOR PRODUCING A FERRITIC STAINLESS STEEL HAVING AN IMPROVED CORROSION RESISTANCE, ESPECIALLY RESISTANCE TO INTERGRANULAR AND PITTING CORROSION

Jean-Michel Hauser, and Pascale Haudrechy, both of Ugine, France, assignors to Usinor Sacilor, Puteaux, France
Filed Mar. 17, 1997, Ser. No. 819,371

Int. Cl.⁶ C21D 9/00; 8/02; C22C 38/44

U.S. Cl. 148—325

12 Claims



1. A process for producing a ferritic stainless steel, wherein steel having a composition comprising, by weight based on total weight: 18% <chromium>27% 1% <molybdenum>3% 1% <nickel>3% manganese<1% silicon<1% carbon<0.030% nitrogen<0.03 0% 0.075% <titanium>0.20% 0.20% <niobium>0.50% sulfur<0.01% phosphorus<0.1%

iron and impurities resulting from smelting materials necessary for production of said steel, is subjected, in a first phase, to cooling from a temperature above 950° C. at a rate of between 400° C. and 600° C./hour down to a temperature of 950°–850° C. and then, in a second phase, to rapid cooling at a rate of between 1200° C. and 140° C./h to a temperature of from 550° C.–650° C.

5,779,821 ROTOR FOR STEAM TURBINE AND MANUFACTURING METHOD THEREOF

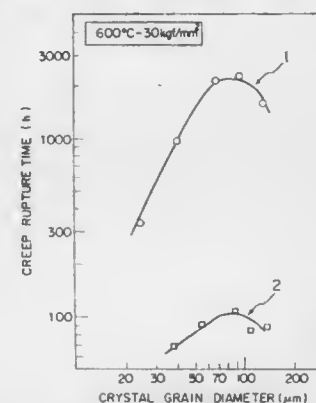
Ryuichi Ishii, Kanagawa-ken; Yoichi Tsuda, Tokyo, and Masayuki Yamada, Kanagawa-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan
Filed Jul. 19, 1994, Ser. No. 276,920

Claims priority, application Japan, Jul. 23, 1993, 5-182647

Int. Cl.⁶ C21D 8/10; C22C 38/46; 38/44

U.S. Cl. 148—326

12 Claims



1. A rotor for a steam turbine made of a heat resistant steel having a composition consisting of 0.05 to 0.30% by weight of C, 8.0 to 13.0% by weight of Cr, more than 0 to 1.0% by weight of Si, more than 0 to 1.0% by weight of Mn, more than 0 to 2.0% by weight of Ni, 0.10 to 0.50% by weight of V, 0.50 to 5.0% by weight of W, 0.025 to 0.10% by weight of N, more than 0 to 1.5% by weight of Mo, at least one element selected from the group consisting of 0.03 to 0.25% by weight of Nb and 0.03 to 0.50% by weight of Ta, more than 0 to 3% by weight of Re, 0 to 5.0% by weight of Co, 0 to 0.05% by weight of B and the balance Fe and inevitable impurities, and having a martensite structure.

5,779,822

PRECIPITATION HARDENING TYPE SINGLE CRYSTAL AUSTENITIC STEEL

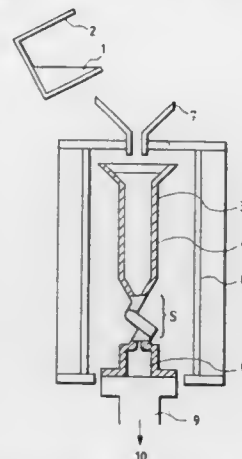
Yasuhisa Aono, Hitachi; Akira Yoshinari; Yasuo Kondo, both of Hitachinaka; Junya Kaneda, Hitachi; Hideyo Kodama; Takahiko Kato, both of Hitachinaka; Shigeo Hattori, Tokai-mura, and Masahiko Arai, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 30, 1996, Ser. No. 593,491

Claims priority, application Japan, Feb. 3, 1995, 7-016665

Int. Cl.⁶ C22C 38/40

U.S. Cl. 148—404

9 Claims



1. Precipitation hardening type austenitic stainless steel having a stress corrosion cracking resistance which contains: C: 0.03–0.20 & by weight,

Si: max. 1% by weight,
Mn: max. 2.0% by weight,
Ni: 9–21% by weight,
Cr: 14–20% by weight, and
unavoidable impurities: max. 0.5% by weight;

wherein

said steel comprises an austenitic-ferritic phase including ferritic phases which are at most 10% by volume, or all austenitic phase, as a parent phase;

said austenitic phase is a single crystal; and
carbides have been substantially formed in an ageing heat treatment and are precipitated in the parent phase.

5,779,823

CARBON OR BORON MODIFIED TITANIUM SILICIDE

Andrew J. Thom, Slater, and Mufit Akinc, Ames, both of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

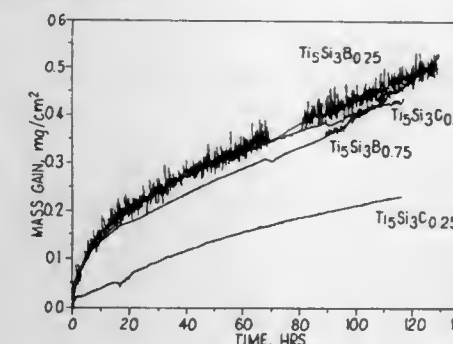
Division of Ser. No. 273,955, Jul. 12, 1994, Pat. No. 5,580,518.

This application Aug. 15, 1996, Ser. No. 698,507

Int. Cl.⁶ C22C 27/04

U.S. Cl. 148—423

6 Claims



1. A structural member comprising Ti_5Si_3 compound that includes carbon in an amount of at least about 0.3 weight % effective to improve oxidation resistance of said compound.

5,779,824

ALUMINUM ALLOY SUPPORT FOR PLANOGRAPHIC PRINTING PLATE AND METHOD FOR PRODUCING THE SAME

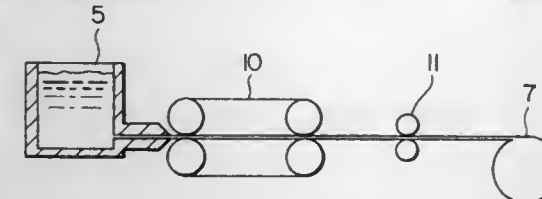
Hirokazu Sawada; Hirokazu Sakaki; Tsutomu Kakei; Akio Uesugi, and Masaya Matsuki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jul. 20, 1995, Ser. No. 504,676

Claims priority, application Japan, Aug. 5, 1994, 6-184900; Sep. 21, 1994, 6-226735; Oct. 7, 1994, 6-244427

Int. Cl.⁶ C22C 21/00

U.S. Cl. 148—437

4 Claims



1. An aluminum alloy support for a planographic printing plate, which is an aluminum alloy plate comprising 0<Fe≤0.20 wt %, 0≤Si≤0.13 wt %, Al≥99.7 wt % and the balance of inevitable impurity elements, wherein the number of intermetallic compounds present in the arbitrary thickness direction within 10 μm from the plate surface is from 100 to 3,000 per mm² and the intermetallic compound has an average particle size of from 0.5 to 8 μm, with the intermetallic compounds having a particle size of 10 μm or more being in a proportion by number of 2% or less.

5,779,825

PROCESS FOR MANUFACTURING ELECTRODE MATERIAL

Jung-Gi Moon, Gu, Rep. of Korea, assignor to Korea Institute of Machinery & Materials, Taejeon, Rep. of Korea

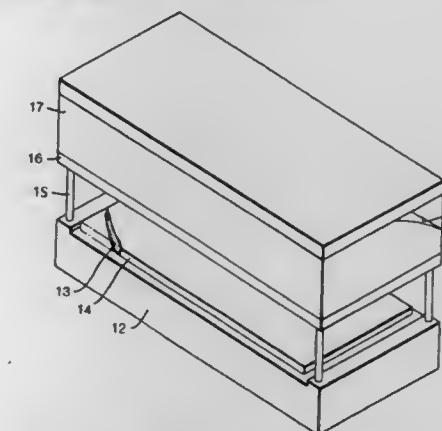
Filed Jan. 30, 1996, Ser. No. 593,988

Claims priority, application Rep. of Korea, Feb. 6, 1995, 95-2088

Int. Cl.⁶ B22F 9/22

U.S. Cl. 148—513

7 Claims



1. A method of manufacturing electrode material of Cu—Al₂O₃ comprising the steps of:

- (1) annealing Cu—Al alloy powder in a vacuum state;
- (2) generating pure Cu—Al alloy metal powder free from oxide by reducing the annealed Cu—Al alloy powder in a hydrogen atmosphere at 400° C.–500° C.;
- (3) oxidizing the surface of grains of the powder by heating the reduced Cu—Al metal alloy powder in the air or in an oxygen atmosphere at 400° C.–500° C.;
- (4) getting the Al in the Cu—Al alloy metal powder oxidized internally by heating the surface-oxidized Cu—Al alloy metal powder in an inert gas atmosphere at 900° C.–1000° C. to oxidize the powder grains internally and
- (5) reducing the internally oxidized Cu—Al₂O₃ metal alloy powder in a hydrogen atmosphere.

5,779,826

METHOD FOR FORMING HEAT TREATING ATMOSPHERES

Harbhajan S. Nayar, Murray Hill; John J. Dwyer, Jr., Edison, and Edward Chang, Gillette, all of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

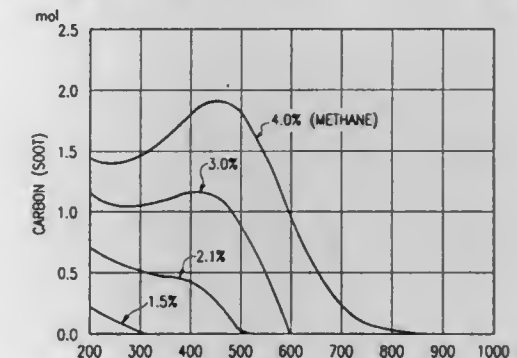
Continuation of Ser. No. 635,089, Apr. 19, 1996, abandoned.

This application Sep. 29, 1997, Ser. No. 939,860

Int. Cl.⁶ C21D 1/76; 1/74

U.S. Cl. 148—633

20 Claims



1. A method of heat treating a metal comprising:

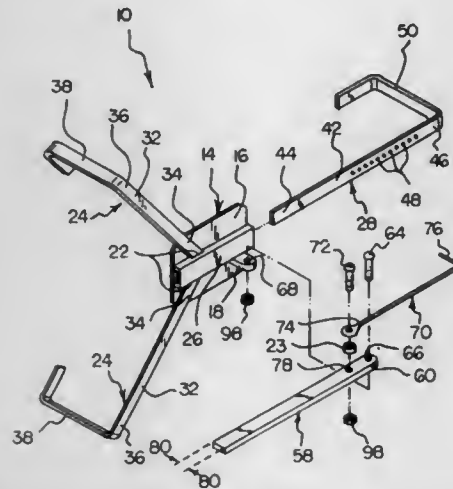
- a) preheating a gas consisting of a nitrogen rich gas to a preheating temperature;

- b) adding to the preheated nitrogen rich gas an oxygen-reactive gas to form a reaction mixture at a reaction temperature at which substantial sooting does not occur;
- c) reacting the reaction mixture at said reaction temperature to form a heat treating atmosphere in the absence of a catalyst;
- d) transferring the heat treating atmosphere to a furnace; and
- e) heat treating the metal in said furnace in the presence of said heat treating atmosphere.

5,779,827
TIRE TRACTION APPARATUS
Steven Olexson, 3670 N. Delaware Dr., Easton, Pa. 18040
Filed Jun. 29, 1995, Ser. No. 496,580
Int. Cl.⁶ B60C 27/20

U.S. Cl. 152-217

2 Claims



1. A tire traction apparatus for installation on a wheel-mounted vehicle tire, comprising:

- a base assembly including a base plate;
- a pair of first tire-gripper assemblies fixedly secured to said base assembly and oriented with respect to each other on said base assembly at a predetermined and fixed orientation angle, each of said first tire-gripper assemblies including an extension portion which has a proximal end and a distal end, said proximal end being connected to said base assembly, with said extension portion extending radially from said base assembly, each of said first tire-gripper assemblies including a first tread-gripper portion connected to said distal end of said extension portion;
- a second tire-gripper assembly including an adjustable extension portion having a proximal end and a distal end, said adjustable extension portion including a plurality of apertures arrayed between said proximal end and said distal end, said second tire-gripper assembly including a second tread-gripper portion connected to said distal end of said adjustable extension portion;
- a channel fixedly secured to said base plate, said proximal end of said adjustable extension portion being slidably received within said channel, said channel supporting said second tire-gripper assembly at the predetermined and fixed orientation angle relative to said first tire-gripper assemblies;
- a tensioning assembly mounted to said base assembly for engaging any one of said apertures and pulling said second tread-gripper portion of said second tire-gripper assembly toward said base plate, whereby said pair of first tread-gripper portions of said first tire-gripper assemblies and said second tread-gripper portion of said second tire-gripper assembly exert a clamping pressure on a tread surface of the tire;
- hinge assemblies located between said first tread-gripper portions and said extension portions of said first tire-gripper assemblies and between said second tread-gripper portion and said adjustable extension portion of said second tire-gripper assembly;

wherein the first tread-gripper portions and the second tread-gripper portion each include a lateral arm portion projecting therefrom, the lateral arm portions each projecting from a plane containing the respective tread-gripper portion, the hinge assemblies being located between the lateral arm portions and the extension portions of the first tire-gripper assemblies and between the lateral arm portion and the adjustable extension portion of the second tire-gripper assembly, respectively, such that said lateral arm portions can be pivoted to reside within a plane containing the extension portions of the tire-gripper assemblies;

wherein said hinge assemblies allow each of said tire-gripper assemblies to pivot about an axis residing within a plane containing the respective extension portions of the tire-gripper assemblies;

wherein the tread-gripper portions each comprise a straight and flat portion which is positioned to extend completely across the tread surface of the vehicle tire such that an outer exterior surface of the straight and flat member faces away from the tread surface of the vehicle tire; and,

a plurality of chain segments, each chain segment being connected to an individual one of the tread-gripper portions so as to extend longitudinally along an entire length of the straight and flat portion and along the outer exterior surface thereof.

5,779,828
HEAVY DUTY PNEUMATIC RADIAL TIRES WITH PARTICULAR BELT RUBBER CONFIGURATION
Yoichi Okamoto, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

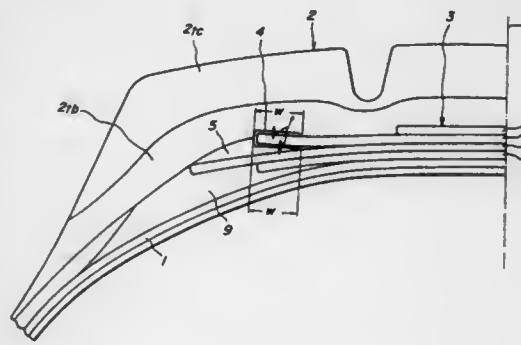
Filed Jan. 22, 1997, Ser. No. 788,916

Claims priority, application Japan, Jan. 22, 1996, 8-008067; Jan. 8, 1997, 9-001246

Int. Cl.⁶ B60C 9/18; 9/20

U.S. Cl. 152-532

7 Claims



1. A heavy duty pneumatic radial tire comprising a radial carcass toroidally extending between a pair of bead cores embedded in a pair of bead portions and a belt superimposed about an outer periphery of the carcass to reinforce a tread portion and comprised of at least three rubberized cord layers, cords of two adjacent layers among these layers being crossed with each other at an acute cord angle with respect to an equatorial plane of the tire to form cross cord layers, in which an outer cord layer of the cross cord layers in a radial direction of the tire has a width narrower than that of an inner cord layer, and such a narrow-width cord layer is provided at its end portion with an end cover rubber covering the end portion and having a 100% modulus larger than that of a coating rubber for the narrow-width cord layer, and a space cushion rubber having a 100% modulus smaller than that of a coating rubber for each of the cross cord layers is disposed between the end portions of the cross cord layers so as to separate these end portions from each other exceeding the thickness of the end cover rubber.

5,779,829
PNEUMATIC TIRE HAVING A SINGLE CARCASS PLY REINFORCED WITH METALLIC CORDS, A HIGH ENDING PLY, TURNUP AND LOCKED BEAD CONSTRUCTION

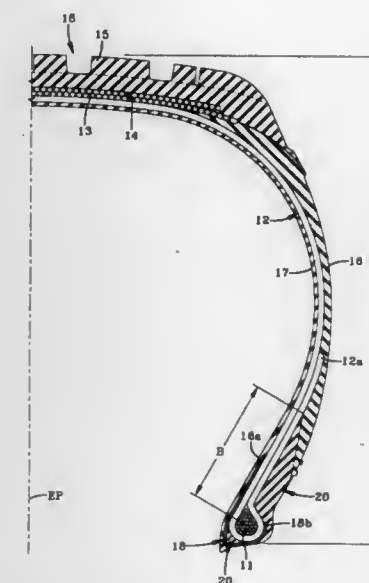
Amit Prakash, Hudson; Donald Woodrow Gilliam, Uniontown, and Gary Edwin Tubb, Copley, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 24, 1995, Ser. No. 518,777

Int. Cl.⁶ B60C 9/02; 9/04; 15/00; 15/04

U.S. Cl. 152-540

13 Claims



1. A pneumatic tire comprising:

- (a) a pair of axially spaced apart annular bead cores, each bead core comprising a plurality of wraps of a single metallic filament, each bead core having a radial cross-sectional shape;
- (b) a single carcass ply reinforced with parallel metallic filament cords of a 1+5 construction, each filament having a tensile strength of at least $(-2000 \times D + 4400 \text{ Mpa}) \times 95\%$, where D is the filament diameter in millimeters, said single carcass ply being folded about each said bead core, said carcass ply having a main portion that extends between the bead cores and turnup portions that are folded around the bead cores, a radially outer edge of each said turnup portion being in contact with said main portion and extending to an end point 0.5 inches (12.7 mm) to 4.0 inches (101.6 mm) radially outward of the bead core, as measured along the main portion of the carcass ply of the tire; and
- (c) a toe guard associated with each bead core and having first and second ends wherein each end thereof is disposed directly adjacent to said carcass ply, said first end being located on the axially inner side of the main portion of the carcass ply at a location about 0.4 inches (10 mm) inches to 3.5 inches (89 mm) radially outward of the bead core as measured along the main portion of the carcass ply and said second end being located at a point ranging from substantially the axially outermost point of the bead core to a location about 3.5 inches (89 mm) radially outward of the bead core as measured along the turnup portion of the carcass ply, and wherein the first end and second end of the toe guard is a shorter radial distance from said bead core than the end point of the turnup portion of the carcass ply.

5,779,830
FLEXIBLE TAPE APPLICATOR AND METHOD OF OPERATION

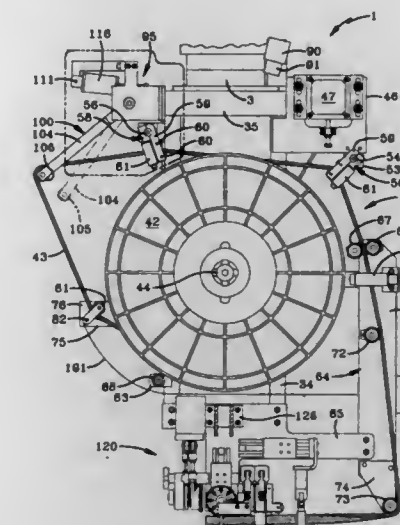
Timothy A. Wakefield, Williamsburg; David L. Clark, Hamilton, and A. B. Lockstead, Cincinnati, all of Ohio, assignors to Truseal Technologies, Inc., Beachwood, Ohio

Filed Oct. 24, 1995, Ser. No. 547,308

Int. Cl.⁶ B32B 31/00; B65H 26/00

U.S. Cl. 156-64

37 Claims



31. A method of applying a flexible tape to a sheet comprising the steps of:

- moving an applicator head having a flexible tape path along a predetermined path while simultaneously applying flexible tape to the sheet at predetermined speeds;
- measuring the tension on the flexible tape along the flexible tape path and creating a tension signal;
- forwarding the tension signal to a control unit;
- providing a flexible tape drive means for driving the flexible tape to the applicator head while applying the flexible tape to the sheet; and
- controlling the speed of the flexible tape drive means with the control unit in response to said tension signal for maintaining a proportional relationship between the speed of operation of the flexible tape drive means and the predetermined speeds whereby the tension on the flexible tape remains substantially constant throughout the path of travel of the applicator head.

5,779,831
METHOD AND APPARATUS FOR MAKING AN UNDERGARMENT HAVING OVERLAPPING OR BUTT-TYPE SIDE SEAMS

Christoph Johann Schmitz, Euskirchen-Stotzheim, Germany, assignor to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US95/16152, § 371 Date Jun. 20, 1997, § 102(e) Date Jun. 20, 1997, PCT Pub. No. WO96/20076, PCT Pub. Date Jul. 4, 1996

PCT Filed Dec. 8, 1995, Ser. No. 849,938

Claims priority, application European Pat. Off., Dec. 24, 1994, 94120638

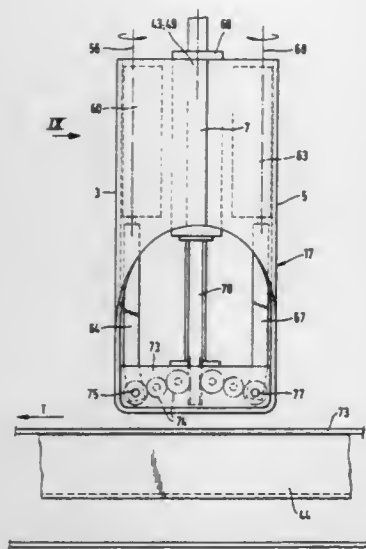
Int. Cl.⁶ A41B 9/12; A61F 13/15; B32B 31/04; 31/20

U.S. Cl. 156-73.1

27 Claims

1. Method of making an undergarment (1) having side seams (7, 9, 16, 18) from a substantially two-dimensional web (58), the web having two longitudinal sides (28, 30) and a first transverse edge (24, 31) extending transversely to the longitudinal sides, the method comprising the steps of:

transporting the web (58) in a substantially flattened position on a transport means (73, 105, 107, 112) along a transport trajectory,



cutting the web (58) along a second transverse edge (26, 33) to form a two-dimensional pre-form (17), the pre-form (17) comprising the first and the second transverse edge (24, 31; 26, 33) and two longitudinal edges (27, 29), each longitudinal edge having two waist sections (39, 39'; 41, 41') and a crotch section (40, 40') located intermediate the waist sections, a sealing area (43, 45; 47, 49) being located adjacent and inboard of each waist section, and wherein the longitudinal edges of the pre-form (17) are formed by the transverse edges (24, 31; 26, 33) of the web (58), the transverse edges of the pre-form (17) corresponding to sections of the longitudinal sides (28, 30) of the web (58).

gripping the pre-form adjacent each waist section with gripping means (60, 61, 62, 63) in four gripping areas (51, 53, 55, 57), each gripping area being located near a respective sealing area.

jointly rotating at least the gripping means which hold the gripping areas in the region of one of the transverse edges around at least one hinging axis (75, 77) extending substantially parallel to the transverse edges (24, 31; 26, 33) of the pre-form (17) to place the transverse edge (24, 31) generally parallel and opposite to the second transverse edge (26, 33), superimposing the sealing areas (43, 49; 45, 47) in a contacting relationship.

joining the superimposed sealing areas in a sealing means (78, 79), thus forming the undergarment, and releasing the undergarment from the gripping means.

14. An apparatus for making an undergarment (1) having side seams (7, 9, 16, 18) from a substantially two-dimensional web (58), the web having two longitudinal sides (28, 30) and a first transverse edge (24, 31) extending transversely to the longitudinal sides, the web being transported along a transport trajectory and cut along a second transverse edge (26, 33) to form a two-dimensional pre-form (17), the pre-form comprising the first and second transverse edge (24, 31; 26, 33) and two longitudinal edges (27, 29), each longitudinal edge having two waist sections (39, 39'; 41, 41') and a crotch section (40, 40') located intermediate the waist sections, a sealing area (43, 45; 47, 49) being located adjacent and inboard of each waist section, the apparatus comprising at least one folding-and-sealing unit (59), each folding-and-sealing unit (59) having a frame (72) and comprising:

- at least a first and second carrier arm (64, 65, 66, 67), each carrier arm being connected to the frame (72) and mounted on a hinging axis (75, 77) extending generally transversely to the carrier arms and substantially parallel to the transverse edges (24, 31; 26, 33) of the pre-form (17),
- gripping means (60, 61, 62, 63) attached to each carrier arm for gripping the pre-form (17) in four gripping areas (51, 53, 55, 57), each gripping area being located near a respective sealing area,
- carrier arm-actuating means (70, 74, 84, 86, 88) for rotating at least the carrier arm with the gripping means holding the

gripping areas in the region of one of the transverse edges around its hinging axis to a sealing position, said carrier arm-actuating means having a lower member (84), and

d) sealing means (78, 79) for contacting the pre-form in the sealing areas when the carrier arms and gripping means are in the sealing position.

5,779,832 METHOD AND APPARATUS FOR MAKING A PEELEABLE FILM

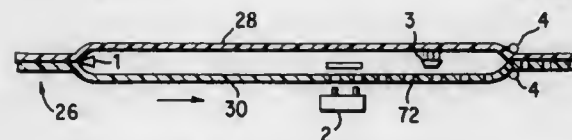
Patrick N. Kocher, Greer, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Nov. 25, 1996, Ser. No. 756,205

Int. Cl.⁶ B32B 31/18; 31/22

U.S. Cl. 156—73.1

8 Claims



1. A method of making a peelable film comprising:
 - a) providing a multilayer thermoplastic film;
 - b) delaminating the film along a first interface into a first gas impermeable portion having a permeability of less than 1000 cc of gas per square meter of film per 24 hour period at 1 atmosphere and at a temperature of 73° F., and a second gas permeable portion having a permeability of at least 1000 cc of gas per square meter of film per 24 hour period at 1 atmosphere and at a temperature of 73° F.
 - c) perforating the second portion to increase its gas permeability; and
 - d) relaminating the perforated second portion to the first portion along the first interface.

5,779,833 METHOD FOR CONSTRUCTING THREE DIMENSIONAL BODIES FROM LAMINATIONS

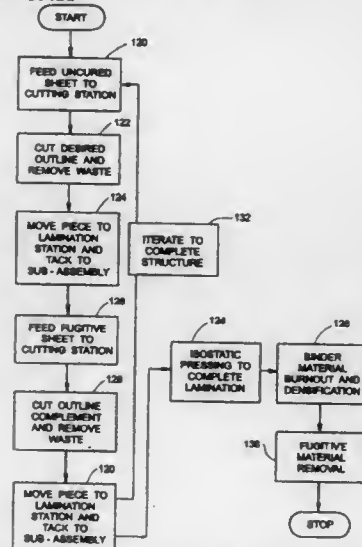
James D. Cawley, Shaker Heights; Arthur H. Heuer, Cleveland, and Wyatt S. Newman, Cleveland Heights, all of Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Continuation-in-part of Ser. No. 511,604, Aug. 4, 1995, abandoned. This application Apr. 12, 1996, Ser. No. 631,378

Int. Cl.⁶ B32B 31/06; 31/26

U.S. Cl. 156—89.11

16 Claims



1. A method of manufacturing an integral three-dimensional object from laminations, comprising the steps of:

fabricating a plurality of first sheets of a first material composition;

fabricating a plurality of second sheets of a second material composition;

cutting each of said first sheets to form a contoured layer representing a cross-section of the three-dimensional object and to form a waste material;

cutting each of said second sheets to form a contoured layer representing a void in a cross-section of the three-dimensional object and to form a waste material;

discarding the waste material of said first and second sheets;

stacking said contoured layers of said first and second sheets in a desired sequence to form a stack of contoured layers;

laminating said stack of contoured layers; and,

subsequently securing said contoured layers of said stack to each other to form an integral three dimensional object.

5,779,834 PROCESS OF MAKING A SHOE WITH A SPRAY-MOLDED SOLE AND SHOE MANUFACTURED THEREFROM

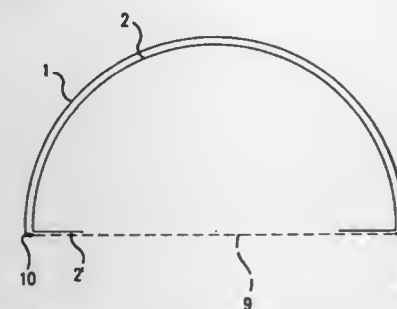
Liviu Mihai Pavelescu, Dortmund, and Manfred Haderlein, Haan, both of Germany, assignors to Akzo Nobel NV, Arnhem, Netherlands

Filed Sep. 5, 1996, Ser. No. 708,606

Int. Cl.⁶ A43B 9/16; 13/28

U.S. Cl. 156—93

19 Claims



1. A process of making a shoe wherein said process comprises the steps of:
 - bonding a flat structure to an upper layer of the shoe, the flat structure having a melting temperature T_2 and providing stability to a shape of the upper layer, to form a bonded structure;
 - positioning the bonded structure into a mold so that an underside of the bonded structure faces the mold;
 - spraying a liquid sole material into the mold, the sole material being at a temperature T_1 which is greater than temperature T_2 , the sole material contacting and melting the flat structure;
 - allowing the sole material to cool and solidify; and
 - removing the shoe from the mold, wherein the shoe does not have an insole.

5,779,835 METHOD AND APPARATUS FOR APPLYING LABELS TO ARTICLES USING BOTTOM FEED CHAIN CONVEYOR

Robert Michael Rello, Slatington; Michael Yager, Shaver, and Ramon Antonio Martinez, Wilkes-Barre, all of Pa., assignors to CMS Gilbreth Packaging Systems, Inc.

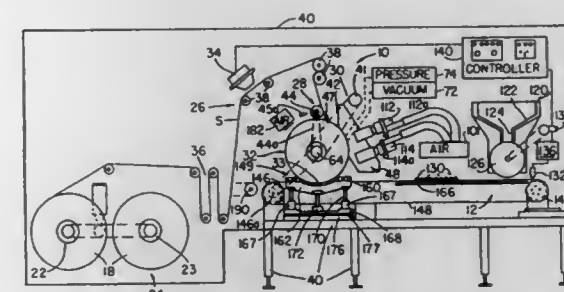
Continuation-in-part of Ser. No. 427,289, Apr. 21, 1995, which is a continuation-in-part of Ser. No. 342,780, Nov. 21, 1994, abandoned. This application Nov. 2, 1995, Ser. No. 551,986

Int. Cl.⁶ B65C 9/00

U.S. Cl. 156—187

23 Claims

1. A method for applying a label onto a substantially cylindrical article comprising the steps of



feeding a thin layer, heat activated adhesive backed label onto the surface of a label drum so that the adhesive back faces outward from the drum,

rotating the drum to move the label retained thereto into an article wrapping position at a lower portion of the drum, heating the adhesive as the drum rotates so that the adhesive obtains a sufficient temperature to melt,

conveying a cylindrical article into an article wrapping position at the lower portion of the label drum and into rotative engagement with a label retained on the label drum by feeding the articles onto a vacuum wheel, and rotating the vacuum wheel to deposit the articles on a substantially horizontal chain conveyor formed of two chain loops each formed from a plurality of interconnected chain links, and including substantially parallel support rods extending between the chain loops and supported by the chain links, wherein said support rods are spaced a distance sufficient to allow an article to rest thereon,

timing the vacuum wheel rotation to drop an article on two respective support rods when the two respective support rods are opposite a drop off point defined by the vacuum wheel, and

transferring the label onto the cylindrical article by wrap around labeling.

5,779,836 METHOD FOR MAKING A PRINTED WIRING BOARD

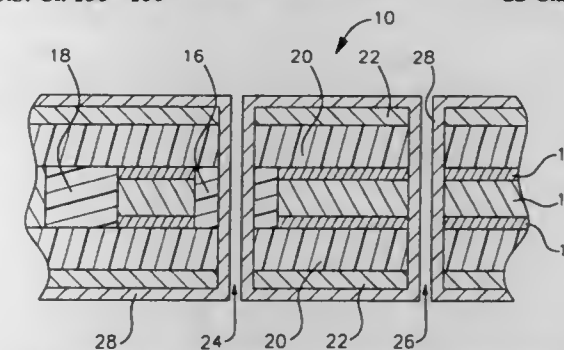
Jon P. Kerrick, 15001 Highland La., Minnetonka, Minn. 55345

Continuation-in-part of Ser. No. 678,655, Jul. 11, 1996. This application Oct. 31, 1996, Ser. No. 741,825

Int. Cl.⁶ H05K 3/10

U.S. Cl. 156—150

22 Claims



1. A method for manufacturing a printed wiring board comprising the steps of:
 - (a) providing a core of electrically conductive material having a plurality of apertures through the core, said core having an upper and lower surface;
 - (b) substantially filling said apertures with a dielectric material;
 - (c) laminating a layer of dielectric material onto the upper and lower surfaces of the core;
 - (d) laminating a first layer of electrically conductive material onto both layers of dielectric material to produce a board assembly;
 - (e) making a first hole through dielectric material in at least one aperture which extends through the board assembly, the interior of said hole having side walls;

- (f) making a second hole through the board assembly which extends through the core, said hole having side walls; and
(g) coating the upper and lower surfaces of the board assembly and the side walls of said first and second holes with a second layer of electrically conductive material, the electrically conductive material on the side walls of the first hole being electrically insulated from the core.

5,779,837

METHOD OF MANUFACTURING A DROPLET DEPOSITION APPARATUS

Robert Alan Harvey, Cambridge, Great Britain, assignor to Xaar Limited, Cambridge, Great Britain
PCT No. PCT/GB94/01747, § 371 Date Mar. 26, 1996, § 102(e) Date Mar. 26, 1996, PCT Pub. No. WO95/04658, PCT Pub. Date Feb. 16, 1995

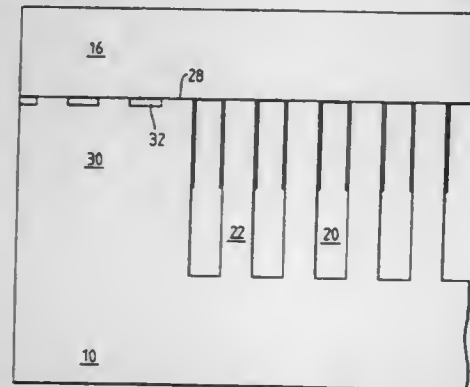
PCT Filed Aug. 10, 1994, Ser. No. 596,151

Claims priority, application United Kingdom, Aug. 10, 1993, 9316605

Int. Cl.⁶ B41J 2/16; 2/135

U.S. Cl. 156—153

24 Claims



1. A method of making multi-channel pulsed droplet deposition apparatus comprising the steps in any order of bonding together a stack of layers comprising at least one layer of piezo-electric material and a cover layer; forming a multiplicity of parallel grooves in said stack which extend at least partly through said layer of piezo-electric material to afford walls of said material between successive droplet liquid channels, said channels being closed by said cover layer; and locating electrodes in relation to said walls so that an electric field can be applied to effect shear mode displacement of said walls transversely to said channels; characterised in that the bonding together of two of said layers comprises the steps of preparing respective mating surfaces of said layers to reduce the surface roughness to the order of 2 µm or less; applying an excess of adhesive and with the mating surfaces in register applying pressure and allowing adhesive to flow in the bonding plane until surface extremities of the respective mating surfaces come into substantially direct contact to produce a bond layer of mean thickness 2 µm or less.

5,779,838

METHOD FOR MAKING A FIBER-REINFORCED STRUCTURE INVOLVING A POLYMER-IMPREGNATED FIBER STRAND

John F. Fellers, 616 Galveston Rd., Knoxville, Tenn. 37923, and Albert E. Pope, 4704 Gwinfield Dr., Knoxville, Tenn. 37920
Filed Apr. 10, 1996, Ser. No. 630,167

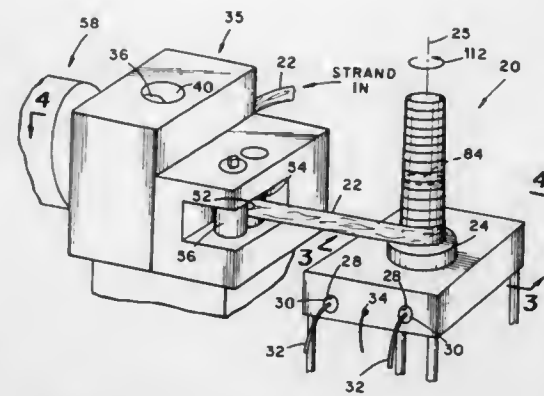
Int. Cl.⁶ B65H 81/00

U.S. Cl. 156—195

15 Claims

1. A method for forming a structure of polymer-impregnated fiber comprising the steps of:

providing a rotatable mandrel having a peripheral surface about which the desired structure is to be formed and a length which terminates at a free end and wherein the mandrel surface



includes a preselected section along the mandrel length which is spaced from the free end;
rotating the mandrel about a rotational axis;
providing a continuous fiber strand which has been impregnated with a heated polymer melt;
feeding the continuous strand of polymer-impregnated fiber to the preselected section of the surface of the rotating mandrel while the polymer of the polymer-impregnated strand is in a melted condition so that the mandrel pulls the strand toward and winds the strand about the mandrel surface in an arrangement of windings;
advancing the arrangement of windings along the length of the mandrel toward and off of the free end as the polymer-impregnated fiber strand is fed to the preselected section of the mandrel surface;
permitting the polymer of the polymer-impregnated strand to cool as the arrangement of windings is advanced toward and off of the free end so that upon advancement of the windings of the arrangement off of the free end, the polymer contained within the strands of the windings is at least partially-hardened;
wherein the step of feeding is followed by a step of exerting a tension upon the polymer-impregnated strand as the polymer-impregnated strand is wound about the mandrel surface; and wherein the surface of the mandrel converges toward the axis of mandrel rotation as a path is traced along the length of the mandrel from the preselected section of the mandrel surface toward the free end thereof, and the tension exerted upon the polymer-impregnated strand cooperates with the converging surface of the mandrel to effect the advancement of the arrangement of windings along the length of the mandrel toward and off of the free end of the mandrel as the polymer-impregnated fiber strand is fed to the preselected section of the mandrel surface.

5,779,839

METHOD OF MANUFACTURING AN ENCLOSED TRANSCIVER

Mark E. Tuttle; John R. Tuttle, both of Boise, and Rickie C. Lake, Eagle, all of Id., assignors to Micron Communications, Inc., Boise, Id.

Continuation-in-part of Ser. No. 168,909, Dec. 17, 1993, Pat. No. 5,497,140, Ser. No. 489,185, Jun. 9, 1995, and a continuation of Ser. No. 8,529, Jan. 25, 1993, Pat. No. 5,326,652, and Ser. No. 602,686, Feb. 16, 1996, abandoned, which is a continuation of Ser. No. 137,677, Oct. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 899,777, Jun. 17, 1992, abandoned, said Ser. No. 168,909 is a continuation of Ser. No. 928,899, Aug. 12, 1992, abandoned, said Ser. No. 489,185 is a continuation of Ser. No. 123,030, Sep. 14, 1993, Pat. No. 5,448,110. This application Sep. 26, 1997, Ser. No. 947,681

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—213

10 Claims

1. A method of manufacturing a radio frequency identification (RFID) transceiver, comprising the steps of:

5,779,841

CONTAINER HAVING EAR AND A METHOD FOR MANUFACTURING THE SAME

Nobuo Yamanaka, Tokyo, Japan, assignor to Yoshino Kogyo Co., Ltd., Tokyo, Japan

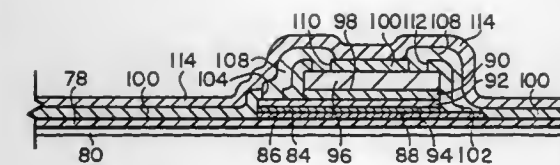
Continuation of Ser. No. 211,681, Jun. 10, 1994, Pat. No. 5,579,950. This application Jun. 5, 1995, Ser. No. 461,942

Claims priority, application Japan, Aug. 19, 1992, 4-63926

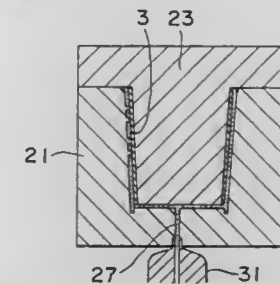
Int. Cl.⁶ B29C 45/16; 69/00; B32B 31/00

U.S. Cl. 156—245

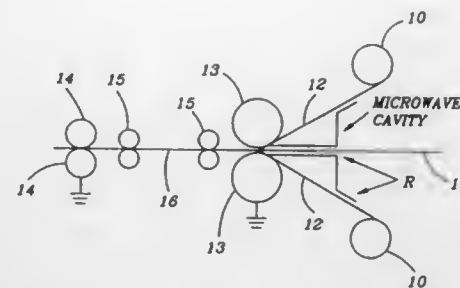
8 Claims



providing two covers, each cover being composed of a sheet of polymer film;
depositing on each of the two covers a barrier material which is a barrier to water vapor;
mounting an RFID transceiver circuit and a battery between the two covers; and
sealing the two covers together along a peripheral contour which completely encircles the transceiver and battery;
whereby the barrier material protects the battery and transceiver from contamination.



- a) bringing into contact with the area of the electrode that is to be coated, a web which contains the erosion resistant material and which carries an adhesive, on one surface, selected from the group consisting of a thermally decomposable adhesive, a thermally volatilizable adhesive, and an adhesive which is both thermally decomposable and thermally volatilizable, so that the web adheres to the electrode using the adhesive;
- b) heating the electrode and the adhered web to a temperature high enough to cause the adhesive to decompose, volatilize, or decompose and volatilize so that the adhesive is substantially eliminated from the web, and to fuse the erosion resistant material so that the erosion resistant material bonds to the electrode.



circuit plates for propagating said electromagnetic radiation through said laminated core portion.

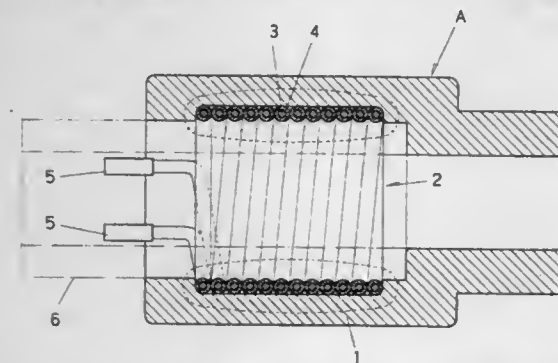
5,779,843

METHOD OF FUSION WELDING RESIN ARTICLES DIFFICULT TO MELT

Masaru Kumagai, Yao, and Yoshiaki Hukuhara, Hirakata, both of Japan, assignors to Toua Kokyu Tugitevarubu Seizo Co. Ltd, and EF Tekuno Limited Company, both of Japan
Filed Sep. 6, 1996, Ser. No. 711,954
Int. Cl.⁶ F16L 47/02; 47/06

U.S. Cl. 156—274.2

9 Claims



1. A method of fusion welding resin articles difficult to melt due to a fusion retarder present in the articles in the form of a fusion retarding element or structure, the articles having surface portions in contact with each other so as to be bonded one to another, the method comprising the steps of:

- applying a fusion accelerator to the surface portions, with the accelerator being capable of destroying the fusion retarder when heated;
- then heating the resin articles so that the fusion accelerator destroys the fusion retarder, whereby the surface portions melt to effect the fusion welding; and
- finally allowing the resin articles to cool down.

5,779,844

CONTINUOUS LAMINATION OF ELECTRONIC STRUCTURES

David Andrew Lewis, Carmel; Alfred Viehbeck, Fishkill, and Stanley Joseph Whitehair, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 482,209, Jun. 8, 1995, Pat. No. 5,705,022.
This application Oct. 16, 1996, Ser. No. 732,648
Int. Cl.⁶ B32B 31/20

U.S. Cl. 156—275.5

16 Claims

1. A continuous process for producing metal clad laminated core structures with the application of pressure and heating, comprising the steps of:

- fabricating a web structure, having a laminated core portion disposed between metal layers, by moving said web structure through a pressure and heating region; and
- applying electromagnetic radiation to heat said laminated core portion in said pressure and heating region, and wherein said electromagnetic radiation is applied using said metal layers as

5,779,845

THICK VENEERING PROCESS AND PRODUCT

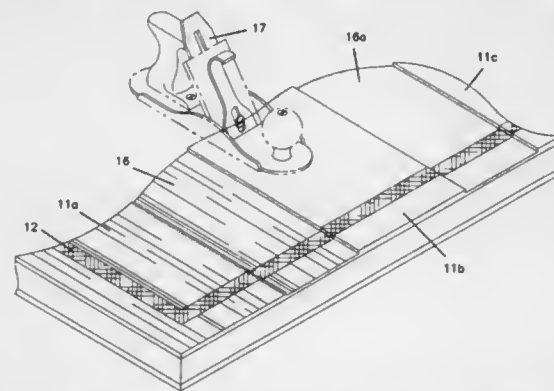
John M. Kiryanoff, Jenison, Mich., and Michael A. Hinshaw, Mocksville, N.C., assignors to Baker, Knapp & Tubbs, Inc., Grand Rapids, Mich.

Filed Oct. 16, 1996, Ser. No. 731,616

Int. Cl.⁶ B30B 31/00

U.S. Cl. 156—299

9 Claims



1. A method of making a decorative panel having the appearance of antique, solid, planked, hand-planed wood, using a hand plane comprising the steps of:

- (a) Adhesively applying relatively thick sheets of veneer to opposing sides of a core layer of wood material to create a panel;
- (b) Cutting a plurality of spaced grooves, each having a bottom surface of sufficient width to accommodate a hand plane, in an outwardly directed face of one of said veneer sheets to create alternating faces and bottom surfaces, to impart the look of planks of solid wood; and
- (c) Hand planing the faces and bottom surfaces of said one veneer sheet in a direction generally parallel to said grooves, to achieve a wavy, antique looking texture.

5,779,846

MACHINE FOR EMBEDDING COPPER NUTS IN A WORKPIECE

Kan-Tsang Fan, No. 38, Alley 41, Lane 116, Chun-Ying St., Shulin Town, Taipei County, Taiwan

Filed Mar. 25, 1997, Ser. No. 823,125

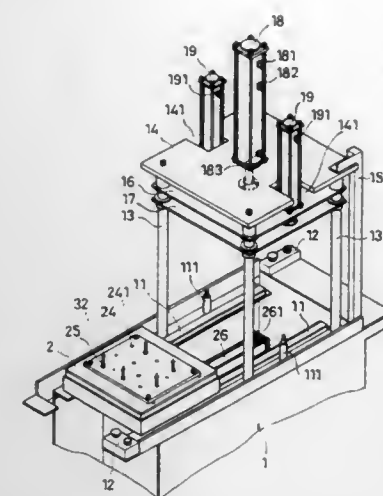
Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—366

1 Claim

1. A machine for embedding copper nuts in pasted holes of a workpiece, comprising:

- a machine base, said machine base comprising two longitudinal sliding rails bilaterally disposed at a top side thereof, four upright guide rods raised from its top side at one end of said longitudinal sliding rails, and a top plate fixedly mounted on said upright guide rods;



a slotted workpiece carrier moved up and down along said upright guide rods of said machine base below said top plate and adapted for holding the workpiece to be processed;

a holding down plate moved up and down along said upright guide rods of said machine base between said top plate and said slotted workpiece carrier and adapted for holding down the workpiece on said slotted workpiece carrier;

stop means mounted on said machine base and adapted to limit the down stroke of said slotted workpiece carrier;

a mold carrier moved along the longitudinal sliding rails between two opposite ends thereof;

a mold mounted on said mold carrier and having a plurality of heating elements controlled to heat copper nuts carried thereon, permitting heated copper nuts to be inserted through said slotted workpiece carrier and embedded into respective pasted mounting holes in the workpiece retained in between said workpiece carrier and said holding down plate when said mold carrier is moved along said longitudinal sliding rails of said machine base to one end below said slotted workpiece carrier and said workpiece carrier with said holding down plate are lowered;

a first air cylinder mounted in said machine base and controlled to reciprocate said mold carrier along said longitudinal sliding rails of said machine base;

a second air cylinder mounted on said top plate of said machine base and controlled to reciprocate said slotted workpiece carrier and said holding down plate along said upright guide rods of said machine base;

two third air cylinders respectively mounted on said holding down plate and controlled to reciprocate said slotted workpiece carrier along said upright guide rods of said machine base relative to said holding down plate; and

two control panels diagonally mounted on two opposite ends of said machine base and adapted for controlling the operation of the apparatus, and adapted for controlling the operation of said first air cylinder, said second air cylinder and said third air cylinders through solenoid switch means installed thereon.

5,779,847

PROCESS FOR HIGH PERFORMANCE, PERMEABLE FIBROUS STRUCTURE

H. Gunter Groeger, Charlotte, N.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Apr. 22, 1996, Ser. No. 636,102

Int. Cl.⁶ B32B 31/20

U.S. Cl. 156—308.2

14 Claims

1. A process for making a high performance, permeable, pleat-able fibrous structure comprising a particle-loaded web structure having a specific loading of at least 0.25 g/cm³ of functional particles, said process comprising

(a) dry forming an open, generally uniform, fibrous web structure comprising crimped staple composite fibers comprising a heat-softenable, structural component and a lower melting component;

(b) thereafter generally equidistantly spacing in three dimensions and entrapping in interstices of said open, generally uniform, fibrous web structure, a sufficient loading of functional particles of suitable physical characteristics;

(c) thereafter heat-treating said fibrous web structure prior to any application of pressure thereto, at a first elevated temperature whereby said lower melting component of said composite fibers provides for fiber-fiber bonding at fiber cross-over points and for adhesion of said functional particles to said fibrous web structure so as to form a stabilized microstructure;

(d) thereafter by an additional heat treatment step carried out without application of pressure to said fibrous web structure, heating the microstructure-stabilized fibrous web structure to a thermoforming temperature, said thermoforming temperature being elevated but less than said first elevated temperature, and

(e) thereafter effecting macrostructural change by reducing in thickness said microstructure-stabilized web structure heated to said thermoforming temperature, and yet maintaining microstructural relative geometry whereby said web structure is increased in structural integrity and stiffened, and is of decreased volume so as to comprise said specific loading, and yet has an air permeability greater than 100 l/cm²/hr at 200 Pa.

5,779,848

CORROSION-RESISTANT ALUMINUM NITRIDE COATING FOR A SEMICONDUCTOR CHAMBER WINDOW

Michio Aruga, Inba-gun, Japan, assignor to Applied Materials, Inc., Santa Clara, Calif.

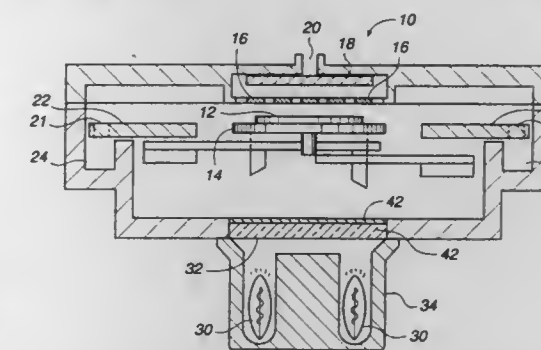
Filed Jan. 10, 1997, Ser. No. 781,473

Claims priority, application Japan, Jan. 10, 1996, 8-002260

Int. Cl.⁶ H01L 21/00

U.S. Cl. 156—345

18 Claims



1. An improved apparatus for the processing of integrated circuit structures on semiconductor wafers wherein the improvement comprises a protective coating of AlN formed on the inner surface of a quartz window mounted in a wall of said apparatus.

5,779,849

PLASMA REACTORS AND METHOD OF CLEANING A PLASMA REACTOR

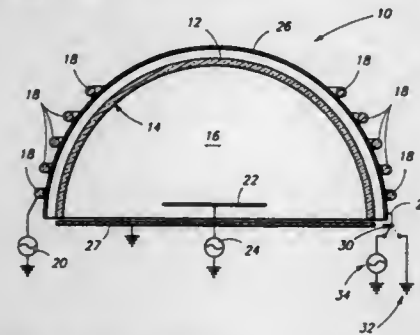
Guy Blalock, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 450,392, May 25, 1995, Pat. No. 5,647,913, which is a division of Ser. No. 253,115, Jun. 2, 1994, Pat. No. 5,514,246. This application Jan. 30, 1997, Ser. No. 791,412

Int. Cl.⁶ H05H 1/00

U.S. Cl. 156—345

16 Claims



1. A plasma reactor comprising:
 - an electrically insulative shell forming a reactor cavity, the reactor cavity having internal walls;
 - an inductive coil positioned externally of the cavity configured to inductively generate and transmit electromagnetic radiation into the reactor cavity to ionize gas therein into a plasma state, and
 - a dual function capacitive plate positioned externally of the cavity, and switchable between a first operation mode wherein the plate capacitively generates and transmits electromagnetic radiation into the reactor cavity to ionize gas therein into a plasma state, and draws plasma ions in the direction of the capacitive plate to impact and clean material adhering to the reactor cavity internal walls, and a second mode wherein the capacitive plate shields the reactor cavity from capacitive electrostatic charge during semiconductor wafer processing, the capacitive coupling plate being switchable between a grounded condition and a conductively powered condition.

5,779,850

APPARATUS FOR JOINING TOGETHER THE OPPOSITE ENDS OF A BELT-SHAPED MEMBER

Yoshinori Miyamoto; Hidemasa Sato; Jiro Agawa, all of Nagasaki; Keizo Yamashita, and Toshinari Matsumoto, both of Hiratsuka, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

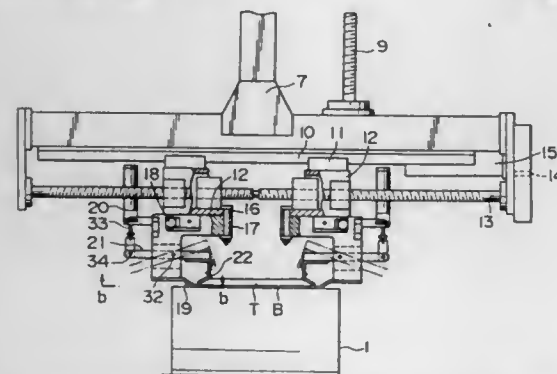
Continuation-in-part of Ser. No. 432,941, May 1, 1995, abandoned. This application Sep. 25, 1996, Ser. No. 719,366

Claims priority, application Japan, May 11, 1994, 6-97588

Int. Cl.⁶ B29D 30/30

U.S. Cl. 156—405.1

4 Claims



1. In an apparatus for joining together the two opposite ends of an elongated, belt-forming member during a belt-forming operation,

each end of said belt-forming member comprising a center portion interposed between two side portions, the belt-forming operation including

the belt-forming member being wound on the peripheral cylindrical surface of a drum which is rotatable about an axis, and the center portions of the opposite ends of the belt-forming member being abutted against each other with a pair of opposite, substantially V-shaped side gaps being formed between the side portions of the opposite ends of the belt-forming member, the V-shaped side gaps each having a respective vertex adjacent to the abutting center portions of the two ends of the belt-forming member;

the improvement comprising:

a pair of movable rests positioned with respect to the drum and adapted so as to be movable along both a radial direction and an axial direction with respect to the drum, arms connected to said movable rests, said arms being positioned with respect to the drum and adapted so as to be swingable about respective arm axes radially extending with respect to the axis of the drum, the movable rests being positionable such that the arm axes pass through respective points located substantially between the side portions of the opposite ends of the belt-forming member, holding devices connected to said arms for holding the side portions of at least one end of said belt-forming member, and

actuators connected to said arms which drive said arms arcuately about said respective arm axes to draw toward each other the side portions of the opposite ends of the belt-forming member.

5,779,851

WEB SPLICING APPARATUS

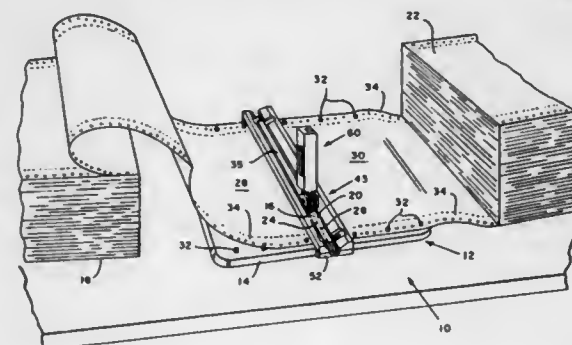
Michael R. Izkovits, Danbury; Anthony M. Macelis, Watertown, and Thomas E. Tyrrell, Brookfield, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 10, 1996, Ser. No. 728,587

Int. Cl.⁶ A65H 21/00

U.S. Cl. 156—505

11 Claims



1. Apparatus for aligning the leading and trailing edges of two adjacent webs preparatory to splicing the edges together with adhesive tape, and for perforating the tape subsequent to being applied to adjacent abutting web edges along the seam formed by the web edges, said apparatus comprising:

- a. a sheet supporting device comprising a flat body member on which the trailing edge portion of a preceding web and the leading edge portion of a succeeding web are placed,
- b. means on said body member for positioning said trailing and leading edge portions so that the adjacent edges of said trailing and leading edge portions are disposed in abutting relationship, so that a strip of adhesive backed tape can be placed on said trailing and leading edge portions over said abutting edges to secure said edges together,
- c. elongate guide means adapted to be positioned on said body member in overlying relationship with said edges of said trailing and leading edge portions and said tape to secure said trailing and leading edge portions to said body member, and

- d. tape perforating means adapted to be moved along said guide means from one end thereof to the other for perforating said tape along said abutting edges of said trailing and leading edge portions to form a partially perforated weakened line across the tape, whereby said trailing and leading edge portions of said preceding and subsequent webs can be subsequently separated by severing the remaining portions of the tape along the perforated line.

5,779,852

HANDHELD APPLICATOR

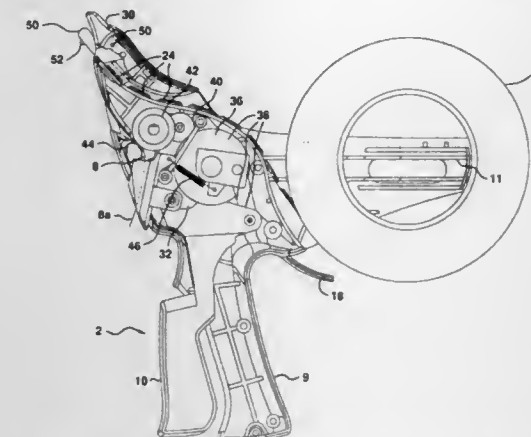
David A. Hauey, Boca Raton; Sergio M. Perez, Boynton Beach; Jeffrey J. Ronan, Deerfield Beach; Jon D. Buzzard, Margate; Howard M. Schenkel, Boca Raton, and Edward P. Ellers, Lake Worth, all of Fla., assignors to Sensormatic Electronics Corporation, Boca Raton, Fla.

Filed Jun. 11, 1996, Ser. No. 661,719

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—577

34 Claims



1. An applicator for use in applying EAS labels adhered to a release liner, the release liner with said labels being in the form of a roll, comprising:

- a body having a trigger and a roll holder for supporting said rolled release liner;
- a friction drive means responsive to said trigger for controlling and advancing the release liner through said applicator;
- an indexing means for stripping labels from said release liner when advanced by said friction drive means and positioning said released labels in an applicator means, said indexing means being operable for label formats of varying pitch;
- an applicator means for applying the labels positioned by said indexing means; and
- said friction drive means including a tensioning means having a drive slip means which allows the friction drive means to slip when a label is positioned by said indexing means in said applicator means.

5,779,853

HOLE-FILLING TOOL

Amos E. Cline, Box 143, Cross Rd., Costigan, Me. 04423

Filed Oct. 13, 1995, Ser. No. 543,209

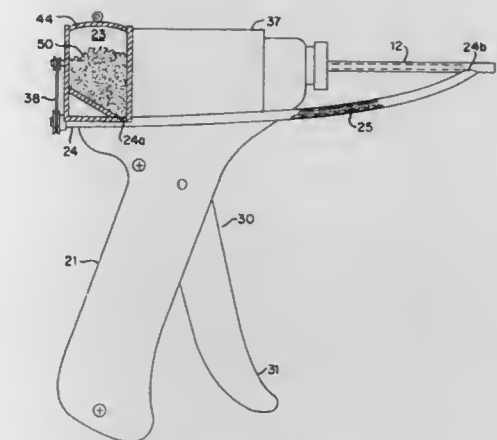
Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—578

14 Claims

1. A hole-filling tool for filling a hole of specified diameter with a filler material, said hole-filling tool comprising:

- a) an elongate tube having a proximal end and a distal end of substantially equal inside dimensions, said elongate tube including an end-section located at said distal end and of like dimension as said distal end, said end-section for holding a charge of said filler material, said end-section having an opening being shaped substantially similar to a perimeter of



said hole to be filled in so as to enable visual alignment of said elongate tube over said hole;

b) filler-moving means for moving said filler material out of said end-section, through said elongate tube, and into said hole; and

c) a plunger having a proximal end coupled to said filler-moving means, said plunger having a distal end sized to fit within said elongate tube such that said plunger may move within said elongate tube from said proximal end to said distal end of said elongate tube and such that said plunger and said elongate tube are in axial alignment with each other, wherein axial movement of said plunger within said elongate tube causes said distal end of said plunger to displace said filler material and thereby eject said filler material from said end-section of said elongate tube.

5,779,854

ADHESIVE APPLICATION DEVICE

Hermann Sandmeier, Bielefeld, Germany, assignor to Windmüller & Hölscher, Lengerich/Westf., Germany

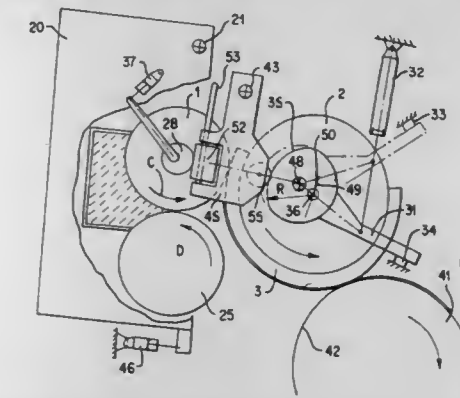
Filed Feb. 4, 1997, Ser. No. 795,322

Claims priority, application Germany, Feb. 9, 1996, 196 04 761.7

Int. Cl.⁶ B05C 1/00

U.S. Cl. 156—578

12 Claims



1. An adhesive application device comprising:
 - an adhesive chamber for accepting adhesive,
 - an adhesive roll which dips partially into the adhesive,
 - a block roll for spreading glue onto a workpiece, and
 - a clamping device for guiding the workpiece past the block roll so that, in absence of a workpiece, a turning axis of the block roll is swung away from the clamping device on an eccentric axis which does not coincide with a rotational axis of the adhesive roll,
- wherein one of the turning axis of the block roll and the rotational axis of the adhesive roll is guided so as to be movable in such a way that a distance of the block roll from the adhesive roll remains constant.

5,779,855

APPARATUS FOR CURING AN OPTICAL DISC
Mikuni Amo, and Masami Inouchi, both of Tokushima-ken, Japan, assignors to Kitano Engineering Co., Ltd., Tokushima-ken, Japan

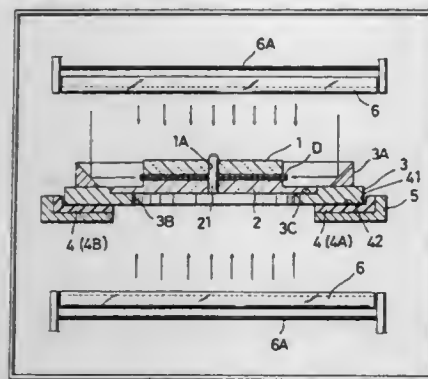
Filed Aug. 30, 1996, Ser. No. 708,079

Claims priority, application Japan, Aug. 30, 1995, 7-243951

Int. Cl.⁶ B32B 31/28

U.S. Cl. 156—379.6

10 Claims



1. An apparatus for curing an optical disc, comprising: first and second resin substrates, said first resin substrate being overlaid on said second resin substrate by way of an adhesive; two ultraviolet transmittance plates for clamping said first and second overlaid substrates therebetween; a base table for supporting said two ultraviolet transmittance plates; conveying means for moving said base table; and ultraviolet irradiators for irradiating said first and second overlaid substrates on said base table with ultraviolet radiation from both sides thereof to cure the adhesive and thereby produce an optical disc.

5,779,856

COOKING CELLULOSE MATERIAL USING HIGH ALKALI CONCENTRATIONS AND/OR HIGH PH NEAR THE END OF THE COOK

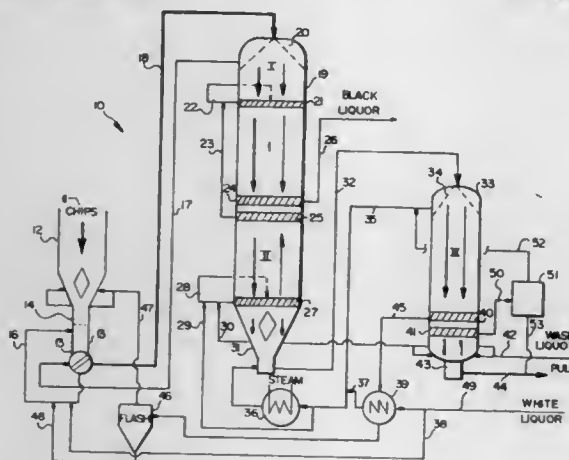
Auvo K. Kettunen, Neuvoton, Finland, assignor to Ahlstrom Machinery Inc., Glens Falls, N.Y.

Continuation-in-part of Ser. No. 558,138, Nov. 13, 1995, Pat. No. 5,635,026. This application Oct. 24, 1996, Ser. No. 736,112

Int. Cl.⁶ D21C 11/04

U.S. Cl. 162—34

21 Claims



1. A method of producing chemical cellulose pulp from comminuted cellulose fibrous material using a continuous digester having an inlet, comprising the steps of:

(a) continuously feeding comminuted cellulose fibrous material in a liquid slurry to the inlet to the continuous digester; and

(b) cooking the material in the digester for more than thirty minutes at a temperature between about 140°–190° C., before the cook is terminated; and wherein step (b) is practiced so that during at least the last minute before the cook is terminated the effective alkali concentration, expressed as NaOH or equivalent, in the digester is between 20–50g/l.

5,779,857

METHOD FOR THE PREPARATION OF DEFIBERED CELLULOSE PRODUCTS

Leif Norlander, Falun, Sweden, assignor to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden

PCT No. PCT/SE94/00613, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO95/00703, PCT Pub. Date Jan. 5, 1995

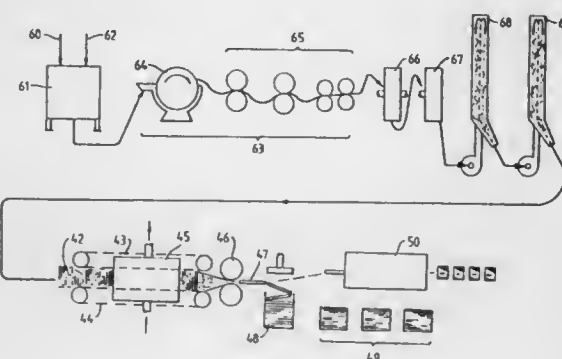
PCT Filed Jun. 21, 1994, Ser. No. 553,539

Claims priority, application Sweden, Jun. 23, 1993, 9302166

Int. Cl.⁶ D21H 11/20; 17/06; A61L 15/16

U.S. Cl. 162—157.6

16 Claims



1. Method for preparing a crosslinked cellulose product having good compressibility under the influence of heat and pressure in combination with good absorption properties, said method comprising the steps of:

impregnating cellulose fibers with a crosslinking agent and at least one polyfunctional alcohol; drying the impregnated cellulose fibers; defibrating said cellulose fibers to obtain defibrated cellulose fibers; and crosslinking said defibrated cellulose fibers in the dry state at a temperature of at least 110° C.

5,779,858

DEPOSITION CONTROL IN PULP AND PAPERMAKING SYSTEMS USING A COMPOSITION COMPRISING OF POLYVINYL ALCOHOL AND GELATIN

Duy T. Nguyen, Jacksonville, Fla., assignor to BetzDearborn Inc., Trevose, Pa.

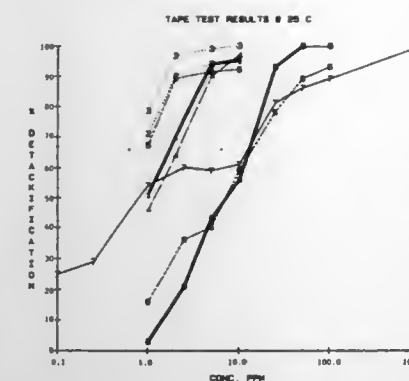
Continuation-in-part of Ser. No. 421,349, Apr. 12, 1995, Pat. No. 5,536,363. This application May 22, 1996, Ser. No. 651,077

Int. Cl.⁶ D21H 21/02; 17/06; 17/22

U.S. Cl. 162—168.1

9 Claims

1. A method for inhibiting the deposition of organic contaminants from pulp in pulp and papermaking systems comprising adding to said pulp from 0.5 parts to about 150 parts per million parts pulp of a composition comprising a polyvinyl alcohol having 50 to 100% hydrolysis and a molecular weight from about 15,000 to about 125,000 and a high molecular weight gelatin having a molecular weight of about 100,000 to about 250,000, wherein the



weight ratio of said polyvinyl alcohol to said high molecular weight gelatin ranges from 8:1 weight/weight percent to about 20:1 weight/weight percent.

5,779,859

METHOD OF IMPROVING FILLER RETENTION IN PAPERMAKING

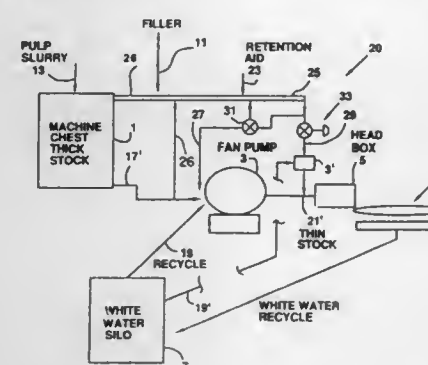
Richard Douglas Carter, and Britt Cicerchi, both of Macon, Ga., assignors to J.M. Huber Corporation, Edison, N.J.

Filed Dec. 13, 1996, Ser. No. 766,260

Int. Cl.⁶ B21F 11/00; B21H 17/37; 17/74

U.S. Cl. 162—183

10 Claims



1. In a method of papermaking wherein a filler is added to a pulp slurry, a retention aid is added to the filler-containing pulp slurry and the pulp slurry with the filler and retention aid are fed to a paper machine, the improvement comprising:

a) separating the pulp slurry into at least a first and a second stream;
b) adding the filler and retention aid to the first stream; and
c) adding the first stream containing the filler and retention aid back to the second stream;
d) whereby said retention aid is subjected to lesser amounts of anionic trash in the pulp slurry due to said separating step.

5,779,860

HIGH-DENSITY ABSORBENT STRUCTURE

David Henry Hollenberg, Kaukauna; James Ellis Horton, Jr., Appleton, and Andrew Michael Lake, Combined Locks, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Dec. 17, 1996, Ser. No. 773,797

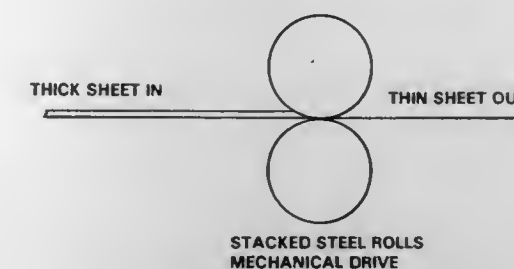
Int. Cl.⁶ D21F 11/00

U.S. Cl. 162—206

11 Claims

1. A method of making an absorbent structure comprising:
(a) Forming a structure having a density of about 0.2 grams per cubic centimeter or less, said structure comprising wet-resilient fibers and having a wet-dry geometric mean tensile ratio of about 0.1 or greater; and

HEATED CALENDAR ROLL PRESS



(ACTUAL PROCESS USED FOR MAKING THIN UCTAD SHEETS)

- (b) Compressing the structure to increase its density to about 0.3 grams per cubic centimeter or greater, wherein upon being saturated with water, the density decreases about 20 percent or greater.

5,779,861

METHOD FOR TREATING PROCESS CONDENSATE

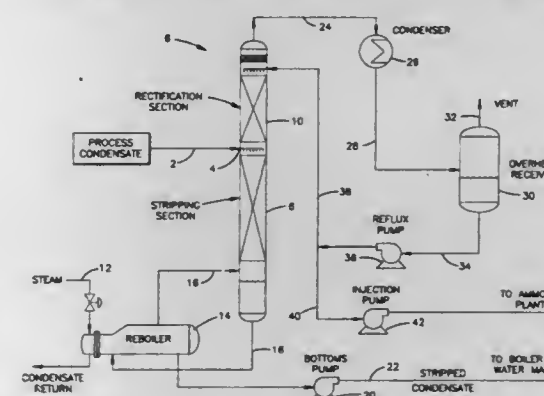
Allan Holiday, Overland Park, Kans., and Ralph A. Scott, Pineville, La., assignors to Farmland Industries, Inc., N. Kansas City, Mo.

Continuation-in-part of Ser. No. 539,830, Oct. 6, 1995, Pat. No. 5,643,420, which is a continuation-in-part of Ser. No. 323,855, Oct. 17, 1994, Pat. No. 5,498,317, which is a division of Ser. No. 116,863, Sep. 3, 1993, Pat. No. 5,385,646. This application Mar. 18, 1996, Ser. No. 617,324

Int. Cl.⁶ B01D 3/38

U.S. Cl. 203—11

23 Claims



1. A method for treating an ammonia production plant process effluent stream of dilute ammonia contaminants and an ammonia production plant low pressure purge gas stream of dilute ammonia contaminants, said method comprising the following steps:

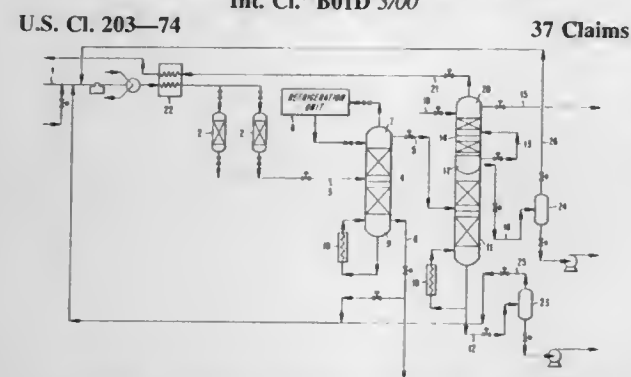
stripping at least a portion of ammonia contaminants from a process effluent obtained from an ammonia production plant, wherein said stripping is conducted in a stripping section to obtain an ammonia contaminant-rich vapor stream and an aqueous bottom stream of reduced ammonia contaminant content;
rectifying said ammonia contaminant-rich vapor stream in a rectification section to obtain a concentrated overhead stream;
condensing said concentrated overhead stream to obtain ammonia contaminant-rich overhead condensate and non-condensed gases comprising trace amounts of the ammonia contaminants;
scrubbing said non-condensed gases and a purge gas stream of dilute ammonia contaminants with water so as to recover a portion of said trace amounts of the ammonia contaminants from the non-condensed gases and said dilute ammonia contaminants from the purge gas stream into said ammonia contaminant-rich overhead condensate;

recycling said overhead condensate to said rectifying step to form a closed loop so as to build up the concentration of ammonia contaminants in said overhead condensate; separating and withdrawing from said closed loop a fraction of said overhead condensate; and reusing said fraction of the overhead condensate in the ammonia production plant.

5,779,862
SEPARATION OF 2-METHYL-1-BUTANOL AND 3-METHYL-1-BUTANOL FROM 1-PENTANOL BY AZEOTROPIC DISTILLATION
Lloyd Berg, 1314 S. 3rd Ave., Bozeman, Mont. 59715
Filed Mar. 17, 1997, Ser. No. 819,645
Int. Cl.⁶ B01D 3/36; C07C 29/82

U.S. Cl. 203—57
1 Claim
1. A method for recovering 2-methyl-1-butanol and 3-methyl-1-butanol from a mixture of 2-methyl-1-butanol, 3-methyl-1-butanol and 1-pentanol which consists essentially of distilling a mixture consisting of 2-methyl-1-butanol, 3-methyl-1-BUTANOL and 1-pentanol in the presence of an azeotrope forming agent, recovering the 2-methyl-1-butanol, 3-methyl-1-butanol and the azeotrope forming agent as overhead product and obtaining the 1-pentanol as bottoms product, wherein said azeotrope forming agent consists of one material selected from the group consisting of acetal, dioxolane, methyl acetate, isopropyl acetate, propyl acetate, butyl formate, ethyl formate, di-tert butyl carbonate, acetone, 2-butanone, 2-pentanone, 4-methyl-2-pentanone, 3-methyl-2-butanone, isopropyl ether, acetol, 1-methoxy-2-propanol, butyraldehyde, triethyl amine, acetonitrile, nitromethane, 2-nitropropane, nitroethane, tetrahydrofuran, 2-methoxyethanol, salicylaldehyde, benzene, toluene, cyclopentane, hexane, cyclohexane, cyclohexene, p-xylene, o-xylene, methyl cyclohexane, heptane, 2,2,4-trimethylpentane and diethyl amine.

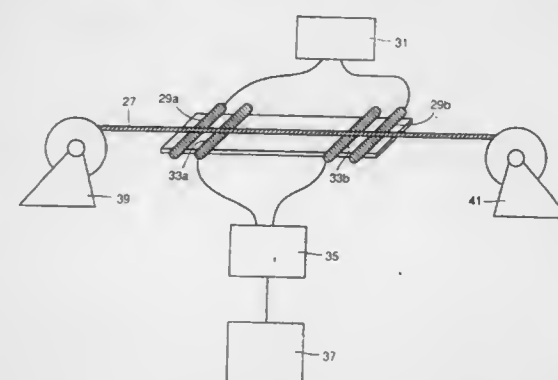
5,779,863
PERFLUOROCOMPOUND SEPARATION AND PURIFICATION METHOD AND SYSTEM
Bao Ha, San Ramon, and Timothy Arcuri, San Francisco, both of Calif., assignors to Air Liquide America Corporation, and Air Liquide Process and Construction, both of Houston, Tex.
Filed Jan. 16, 1997, Ser. No. 783,446
Int. Cl.⁶ B01D 3/00



U.S. Cl. 203—74
37 Claims
1. A method for purifying perfluorocompounds, comprising the steps of:
(a) introducing a perfluorocompound-containing gas stream into a first distillation column;
(b) removing a light product from the first column, and removing a heavy product from the first column;
(c) introducing the first column light product into a second distillation column;
(d) removing a light product from the second column, and removing a heavy product from the second column;
(e) introducing the second column light product into a third distillation column; and

(f) removing a light product from the third column, and removing a heavy product from the third column;
thereby obtaining a purified perfluorocompound.

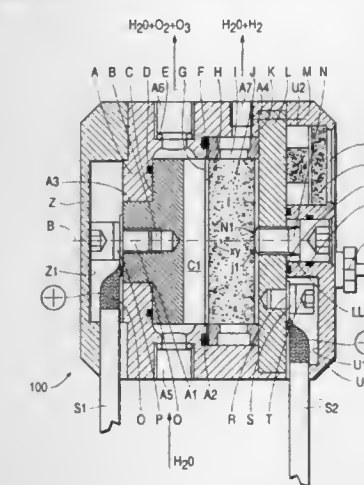
5,779,864
APPARATUS FOR ADJUSTING SECTIONAL AREA RATIO OF METAL-COVERED ELECTRIC WIRE
Akira Mikumo; Kenichi Takahashi, and Masanobu Koganeya, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan
Division of Ser. No. 599,454, Jan. 22, 1996, Pat. No. 5,602,488, which is a division of Ser. No. 189,404, Jan. 31, 1994, Pat. No. 5,507,924. This application Jan. 28, 1997, Ser. No. 746,518
Claims priority, application Japan, Feb. 1, 1993, 5-14734; Mar. 29, 1993, 5-69734; Jan. 19, 1994, 6-4147
Int. Cl.⁶ C25D 17/00; C25F 7/00
U.S. Cl. 204—207
1 Claim



1. An apparatus for uniformizing a sectional area ratio between a first material part and a second material part of a metal-covered electric wire having a core part including said first material and a metal covering layer formed of said second material covering said core part along its longitudinal direction, said apparatus comprising:
means for previously storing electric resistance values of said first and second materials respectively;
a pair of first electrodes for feeding a current to a prescribed length region of said metal-covered electric wire;
a pair of second electrodes being placed inside said pair of first electrodes for measuring a voltage being developed in said prescribed length region of said metal-covered electric wire;
means for calculating electric resistance of said metal-covered electric wire in said prescribed length region on the basis of as-applied said current value and as-measured said voltage value;
means for calculating a sectional area ratio between said first material part and said second material part in said prescribed length region on the basis of previously stored said electric resistance values of said first and second materials and actually measured/calculated said electric resistance of said metal-covered electric wire;
an electrolytic bath adapted to contain electrolytic cell;
means for anodizing said electric wire;
a metal member being arranged in said electrolytic bath for serving as a cathode;
means for causing potential difference between said electric wire and said metal member for dissolving a surface layer part of said electric wire by electropolishing;
means for continuously moving said electric wire along its longitudinal direction for continuously passing the same through said electrolytic bath in continuation to said measurement of said sectional area ratio; and

means for controlling the amount of dissolution of said surface layer part of said electric wire in response to the result of said measurement of said sectional area ratio.

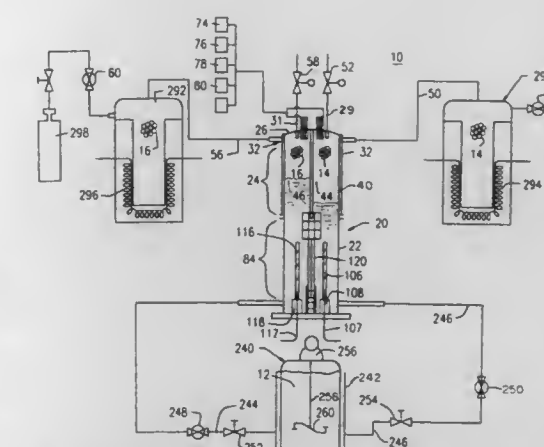
5,779,865
ELECTROLYSIS CELL FOR GENERATING OZONE AND/OR OXYGEN
Dirk Schulze, Langenbachstr. 2, 53113 Bonn, and Wolfgang Beyer, Bergstr. 35, 53359 Rheinbach, both of Germany
Filed Mar. 18, 1996, Ser. No. 617,055
Claims priority, application Germany, Mar. 17, 1995, 295 04 323 U
Int. Cl.⁶ C25B 9/00; 1/00
U.S. Cl. 204—252
12 Claims



1. Electrolysis cell for generating ozone and/or oxygen from superpure water comprising a solid electrolyte membrane located in a multipartite housing, said housing comprising a cathode space having a cathode and an anode space having an anode, said membrane being in direct contact with said cathode and anode made as porous structures, with said membrane separating the cathode space from the anode space, and a pressure device acting on at least one of said cathode and anode for producing a pressure which acts on said membrane, wherein the pressure device contains a pressure screw having a convex head, so arranged that said convex head is placed directly and centrally on a surface of said cathode or anode, and contacts an indentation in the form of said concave spherical segment which is formed by said convex head in a cathode surface or anode surface by action of the pressure device.

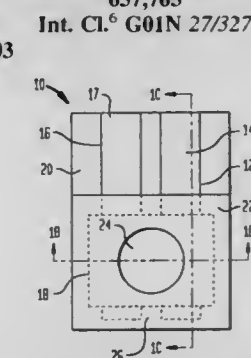
5,779,866
ELECTROLYZER
Gregorio Tarancon, High Springs, Fla., assignor to Florida Scientific Laboratories Inc., High Springs, Fla.
Filed Nov. 26, 1996, Ser. No. 757,619
Int. Cl.⁶ C25B 9/00; 15/08
U.S. Cl. 204—262
29 Claims

1. An electrolyzer, comprising:
a) a lower electrolyte chamber for receiving liquid electrolyte flux and having disposed therein anode and cathode electrodes for producing anodic and cathodic gases;
b) a first barrier disposed in said lower electrolyte chamber between said anode and cathode electrodes having a plurality of passageways for allowing the passage of electrons but for preventing the recombination of anodic and cathodic gases;
c) an upper liquid/gas chamber having an anodic gas compartment and a cathodic gas compartment for receiving therein the anodic and cathodic gases produced in said lower electrolyte chamber;
d) a second barrier disposed between said anodic and cathodic gas compartments having no passageways in order to prevent



the recombination of anodic and cathodic gases, said second barrier being connected to said first barrier; and
e) means for transferring the anodic and cathodic gases produced in said anodic and cathodic gas compartments to holding tanks for storing said gases.
19. An electrolyzer in accordance with claim 1, further including a heat exchanger and a transfer mixing tank for heating said electrolyte flux in the range of 140° to 180° F. to maintain a uniform electrolyte composition having a uniform electroconductivity adjacent to said anode and cathode electrodes.

5,779,867
DRY CHEMISTRY GLUCOSE SENSOR
Paul Shieh; Shek-Hong Lau, both of Fremont, and Esfir Goldberg, San Francisco, all of Calif., assignors to Biomedix, Inc., Fremont, Calif.
Continuation-in-part of Ser. No. 319,618, Oct. 7, 1994, Pat. No. 5,522,977. This application May 31, 1996, Ser. No. 657,763
Int. Cl.⁶ G01N 27/327
U.S. Cl. 204—403
13 Claims



1. A self contained sensor for the potentiometric assay of glucose comprising:
a sensing electrode strip, the sensing electrode strip comprising:
an electrically insulating base strip and an electrically conductive layer in contact with the base strip and a redox membrane which coats the electrically conductive layer, the redox membrane comprising:
a polymer matrix, the polymer matrix containing:
a plasticizer, and
a complex of 7,7,8,8-tetracyanoquinodimethane and tetrathiafulvalene characterized by a burgundy red coloration, and a reference electrode strip, the reference electrode strip comprising:
an electrically insulating base strip coated with an electrically conductive formulation containing silver and silver chloride, with the reference electrode and the sensing electrode having a gap between them, and a water absorbent carrier strip, the water absorbent carrier strip impregnated with a mixture comprising:
glucose oxidase, peroxidase.

an oxidizable dye,
at least one surfactant and
at least one thickening agent, with the carrier strip bridg-
ing the gap between the sensing electrode strip and the
reference electrode strip and in simultaneous contact
with the redox membrane of the sensing electrode and
the coating of electrically conductive formulation con-
taining silver and silver chloride of the reference elec-
trode.

5,779,868

ELECTROPIPETTOR AND COMPENSATION MEANS FOR ELECTROPHORETIC BIAS

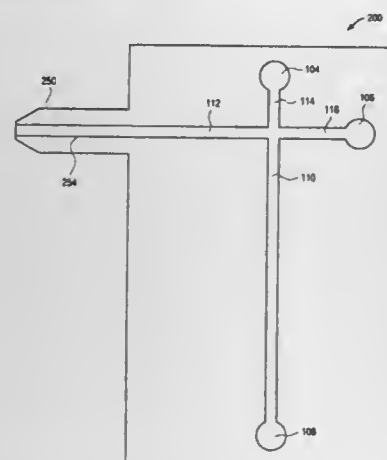
J. Wallace Parce, Palo Alto, and Michael R. Knapp, Aptos,
both of Calif., assignors to Caliper Technologies Corpora-
tion, Palo Alto, Calif.

Filed Jun. 28, 1996, Ser. No. 671,986

Int. Cl.⁶ G01N 27/26; 27/447

U.S. Cl. 204—604

12 Claims



1. A combination comprising:
a microfluidic system comprising at least two intersecting chan-
nels disposed within a substrate;
an electropipettor for introducing materials into at least one of
said at least two intersecting channels in said microfluidic
system, said electropipettor comprising:
a body having a capillary channel therein, said capillary
channel having a first end for contacting at least one source
of said materials and a second end fluidly connected to at
least one of said two intersecting channels in said micro-
fluidic system; and
a voltage source for applying a voltage between said one
source of said materials and a first electrode in said micro-
fluidic system when said capillary channel end contacts said
one source of said materials such that material from said
one source is electrokinetically introduced into said elec-
tropipettor toward said microfluidic system.

5,779,869

LOW FOG ELECTROPHORESIS DEVICE

Joel Norman Helfer, and Douglas L. Vizard, both of Cheshire,
Conn., assignors to Eastman Kodak Company, Rochester,
N.Y.

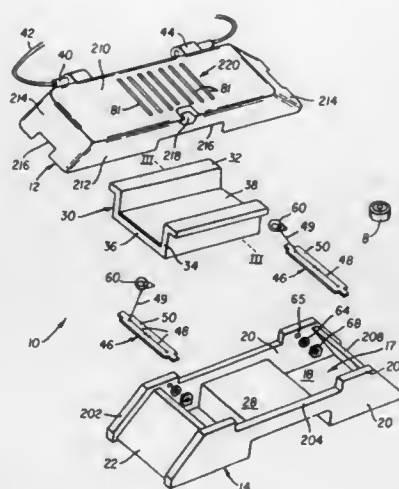
Continuation of Ser. No. 340,506, Nov. 16, 1994, abandoned,
which is a continuation of Ser. No. 250,181, May 27, 1994,
abandoned. This application Nov. 22, 1996, Ser. No. 754,463

Int. Cl.⁶ C25B 9/00

U.S. Cl. 204—606

9 Claims

1. An electrophoresis device comprising:



a housing comprising an inlet portion having an inlet, and an
outlet portion having an outlet, said outlet portion being
located above said inlet portion; a buffer solution compart-
ment within said housing having a fill level for buffer solu-
tion; and a plurality of electrodes located in said buffer
solution compartment; wherein openings of the inlet and
outlet into the electrophoresis device are located above said
fill level for the buffer solution.

5,779,870

METHOD OF MANUFACTURING LAMINATES AND PRINTED CIRCUIT BOARDS

D. Eric Seip, Mission Viejo, Calif., assignor to Polyclad Lami-
nates, Inc., West Franklin, N.H.

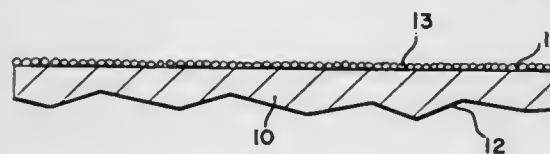
Continuation of Ser. No. 176,750, Jan. 3, 1994, abandoned,
which is a continuation-in-part of Ser. No. 27,620, Mar. 5,
1993, abandoned. This application Apr. 13, 1995, Ser. No.

422,510

Int. Cl.⁶ C25D 1/04

U.S. Cl. 205—77

15 Claims



1. A method of forming a printed circuit board comprising the
steps of:

- (a) depositing a quantity of an electrically conductive material
onto a smooth forming surface to form a foil having a first
smooth surface which forms against the forming surface, and
a second, surface which forms away from the forming sur-
face,
- (b) electroplating an adhesion promoting layer on said first
surface which causes the formation of nodular or dendritic
particles on said first foil side of the foil,
- (c) bonding said first, smooth surface to a first electrically
insulative substrate, and

- (d) bonding said substrate and said second surface to a second
electrically insulative substrate, without applying said adhe-
sion promoting layer to the second surface and without apply-
ing a second treatment in which said second foil side would
be chemically oxidized to form metal oxide dendrites.

5,779,871

PROCESS OF MANUFACTURING ALUMINUM SURFACES FOR TECHNICAL LIGHTING PURPOSES

Volkmar Gillich, Neuhausen, Switzerland, assignor to Alusu-
isse Technology & Management Ltd., Switzerland

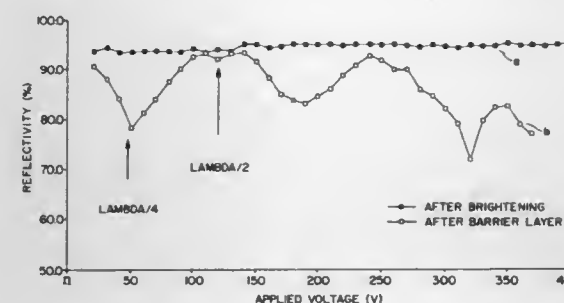
Division of Ser. No. 547,799, Oct. 25, 1995. This application
May 19, 1997, Ser. No. 859,807

Claims priority, application Switzerland, Nov. 24, 1994,
03543/94

Int. Cl.⁶ C25D 11/04; 7/08

U.S. Cl. 205—116

6 Claims



1. Process for manufacturing a reflector having a reflecting
surface of aluminum and a protective, transparent, pore-free barrier
layer of aluminum oxide produced by anodizing having a dielectric
constant ϵ of 6 to 10.5 at 20° C., where the barrier layer is of
thickness d that satisfies at least one of the following conditions:

a) for constructive interference:

$$d \cdot n = k \cdot \lambda / 2 \pm 20 \text{ nm},$$

b) for achieving a color-toned reflector surface:

$$[k \cdot \lambda / 2 + 20 \text{ nm}] < d \cdot n < [(k+1) \cdot \lambda / 2 - 20 \text{ nm}],$$

and

- c) for using as starting material to produce reflectors with low
index/high index multi-layer coatings that increase reflectiv-
ity:

$$d \cdot n = 1 \cdot \lambda / 4 \pm 20 \text{ nm},$$

where n is the refractive index of the barrier layer, λ is the average
wavelength of the light striking the surface of the reflector, k is a
natural number and l is a natural number that is uneven, the
thickness of the barrier layer lies between 60 and 490 nm and does
not vary by more than $\pm 5\%$ over the whole of the aluminum
surface, wherein the aluminum surface is oxidized electrolytically
in an electrolyte that does not redissolve the aluminum oxide layer
and the desired thickness d of the resulting oxide layer, measured
in nm is arrived at by choosing and setting a constant electrolyte
voltage U in volts, selected according to the following criteria:

$$d/1.4 \leq U \leq d/1.2.$$

5,779,872

COMPOSITE MATERIAL HAVING ANTI-WEAR PROPERTY AND PROCESS FOR PRODUCING THE SAME

Satoru Kito, Aichi-ken; Masahito Ito; Fuminori Matuda, both
of Toyota; Eiki Takeshima, Ichikawa; Yasuji Tanaka,
Ichikawa; Takahiro Fujii, Ichikawa, and Kenjiro Izutani,
Ichikawa, all of Japan, assignors to Toyota Jidosha
Kabushiki Kaisha, and Nisshin Steel, both of Japan
Division of Ser. No. 258,635, Jun. 10, 1994, Pat. No.
5,641,454, which is a continuation-in-part of Ser. No. 31,093,
Mar. 11, 1993, abandoned. This application Nov. 8, 1996, Ser.
No. 745,207

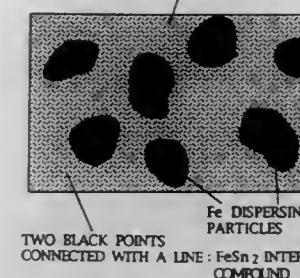
Claims priority, application Japan, Mar. 13, 1992, 4-55366;
Aug. 24, 1992, 4-246053; Aug. 24, 1992, 4-246054; Sep. 3, 1992,
4-235729; Oct. 29, 1993, 5-272423; Oct. 29, 1993, 5-272429;
Nov. 12, 1993, 5-283647

Int. Cl.⁶ C02F 1/46

U.S. Cl. 205—149

8 Claims

WHITE AREA: LOW MELTING POINT
Sn ALLOY COMPRISING
Bi, Sn AND Sb



1. A process for producing metallic alloy particles adapted for
dispersion in a matrix of a composite material having an anti-wear
property, comprising the steps of:

electroplating a plating layer including either Sn or Ni on outer
peripheral surfaces of at least one group of particles selected
from the group consisting of Fe—C alloy particles and
Fe—W—C alloy particles with an electric current density of
from 0.5 to 5.0 A/dm² so as to electroplate Sn in an amount of
from 1 to 15% by weight or Ni in an amount of from 1 to 10%
by weight with respect to said particles;
immersing said particles having said plating layer formed
thereon into a ZnCl₂·NH₄Cl flux so as to deposit a layer of the
flux on outer peripheral surfaces of said particles having said
plating layer formed thereon, the flux layer having a thickness
of from 0.18 to 0.78 micrometers; and
vacuum-drying said particles having said flux deposited thereon.

5,779,873

ELECTROPLATING OF NICKEL ON NICKEL FERRITE DEVICES

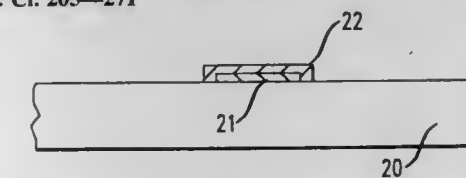
Henry Hon Law, Berkeley Heights; Lynn Frances Schneem-
eyer, Westfield, and Te-Sung Wu, New Providence, all of
N.J., assignors to Lucent Technologies Inc., Murray Hill,
N.J.

Continuation-in-part of Ser. No. 581,079, Dec. 29, 1995, aban-
doned. This application Dec. 18, 1996, Ser. No. 769,189

Int. Cl.⁶ C25D 3/12; 5/10; C25C 28/02

U.S. Cl. 205—271

8 Claims

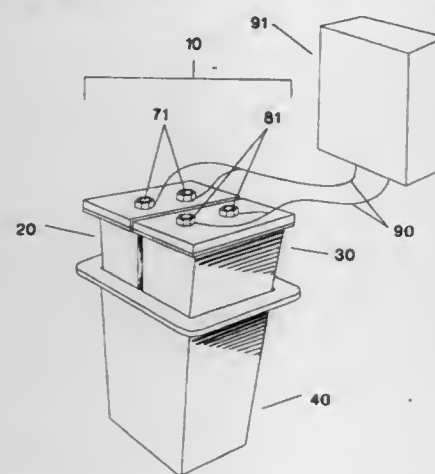


1. A method of electroplating nickel on a nickel ferrite device
comprising the steps of:
providing a substrate of nickel-containing ferrite;
adhering a metal conductor to said substrate;

disposing said substrate and said conductor in a nickel plating bath comprising nickel salt and an acidic buffer substantially free of boric acid for buffering said bath to a pH of about 3 or less; and
applying an electric current through said conductor to isotropically electroplate a desired thickness of nickel on said conductor.

5,779,874
CHLOR ALKALI CELLS METHOD AND CELL COMPRESSION SYSTEM
Chris A. Lemke, 369 W. Gettysburg Ave., Clovis, Calif. 93612
Filed Feb. 20, 1996, Ser. No. 603,987
Int. Cl.⁶ C25B 9/00
U.S. Cl. 205—334

8 Claims

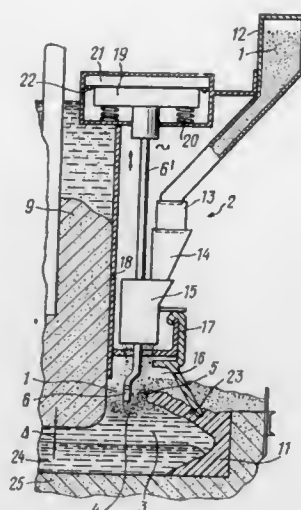


8. A method of containing components of an electrolysis cell containing, an anode compartment, a cathode compartment, and a membrane positioned between said anode compartment and said cathode compartment, said method comprising the steps of:
positioning said anode compartment and said cathode compartment in connective communication with a union pipe fitting;
applying a rotational exterior force to said union pipe fitting which results in a uniform compressive force at the junction of said anode compartment and said cathode compartment at said membrane where said uniform compressive force acting on a seal at the junction of said anode compartment and said cathode compartment at said membrane hydraulically isolates said electrolysis cell from the exterior environment; and
maintaining said uniform compressive force at the junction of said anode compartment and said cathode compartment at said membrane when said rotational exterior force is removed.

5,779,875
METHOD FOR FEEDING LOOSE MATERIAL INTO AN ELECTROLYZER FOR PRODUCTION OF ALUMINUM
Jury Alexeevich Budaev; Viktor Konstantinovich Kazantsev; Jury Petrovich Shelkovnikov, all of Irkutsk; Igor Samsonovich Grinberg, Irkutskaya obl.; Sergey Kokhanovsky, Irkutskaya obl.; Vladimir Illich Skorniyakov, Irkutskaya obl.; Petr Ivanovich Elagin, Irkutskaya obl., and Leonid Viktorovich Ragozin, Irkutskaya obl., all of Russian Federation, assignors to Jury Alexeevich Budaev, Russian Federation
Filed Dec. 12, 1996, Ser. No. 766,414
Claims priority, application Russian Federation, Dec. 13, 1995, 95121030; Aug. 30, 1996, 96116728
Int. Cl.⁶ C25C 3/14
U.S. Cl. 205—392

1. A method for feeding loose material, primarily alumina, into an electrolyzer for the production of aluminum, the method comprising the following steps:

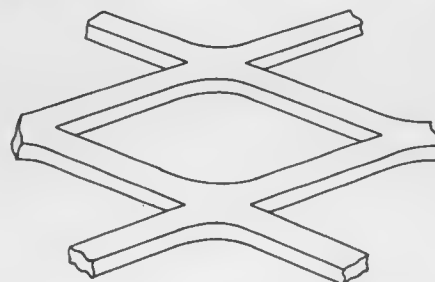
5 Claims



forming at least one input zone for inputting of said material in a bell-shaped space of the electrolyzer on the surface of an electrolyte,
providing a working tool for pushing said material into a melt of the electrolyte in said at least one input zone,
imparting to the working tool mechanical oscillations and translatory motions back and forth from the electrolyte, the length of time of the motions being within the range of about 10.0 to about 120.0 sec,
transporting said material to said at least one input zone for inputting of said material,
forming a layer in said at least one input zone for inputting of said material, after accumulating a sufficient amount of said material in said layer, the material enters into contact with said working tool, as a result of which a vibrational field is created in said layer which hinders the formation of a crust on the electrolyte, and said material is pushed through said at least one input zone into the melt of the electrolyte.

5,779,876
ELECTROLYZER FOR THE PRODUCTION OF SODIUM HYPOCHLORITE AND CHLORATE
Carlo Traini, and Tomaso Leone, both of Milan, Italy, assignors to DeNora S.p.A., Italy
Continuation of Ser. No. 386,686, Feb. 10, 1995, abandoned.
This application Mar. 18, 1997, Ser. No. 820,225
Claims priority, application Israel, May 3, 1994, 000853
Int. Cl.⁶ C25B 9/00; 11/03; 11/04
U.S. Cl. 204—267

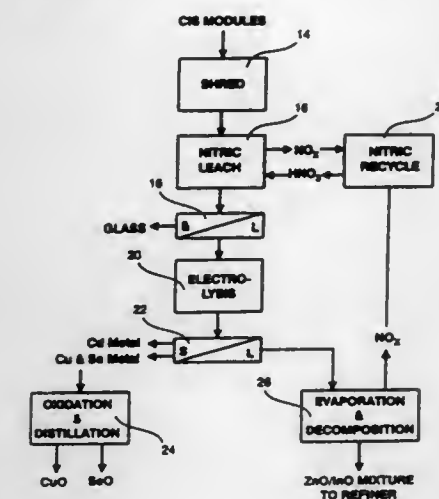
10 Claims



1. A high-efficiency electrolyzer for the production of sodium hypochlorite or sodium chlorate comprising elementary units consisting of interleaved anodes and cathodes, each anode and each cathode formed by a metal plate, characterized in that, said anodes are provided with foraminous sheets, made of perforated sheets or flattened expanded metal sheets applied to said metal plates by a multiplicity of connection points, said foraminous sheets having an electrocatalytic coating for chloride evolution applied thereto.

5,779,877
RECYCLING OF CIS PHOTOVOLTAIC WASTE
William F. Drinkard, Jr.; Mark O. Long, and Robert E. Gozner, all of Charlotte, N.C., assignors to Drinkard Metalox, Inc., Charlotte, N.C.
Filed May 12, 1997, Ser. No. 854,851
Int. Cl.⁶ C25C 1/00; 1/24; 1/12; C21B 15/00
U.S. Cl. 205—560

23 Claims

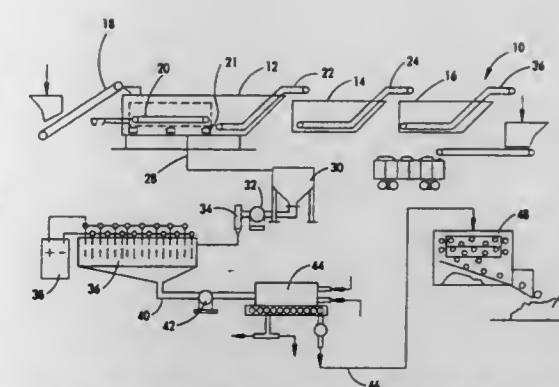


1. A method for recycling metals from scrap cadmium-indium-diselenide (CIS) photovoltaic cells including copper and manufacturing waste, comprising the steps of:
forming a solid substrate and a leachate by leaching the scrap photovoltaic cells and manufacturing waste with a solution comprising nitric acid and water;
electrolyzing the leachate to selectively deposit a mixture comprising copper and selenium onto a first cathode; and
re-electrolyzing the leachate to deposit cadmium metal onto a second cathode while leaving a depleted leachate comprising zinc and indium.
16. A method for removal and recovery of metals from photovoltaic cells and manufacturing waste, the cells having layers of metal, glass and plastic, the method comprising the steps of:
delaminating the cells;
leaching the cells and waste with a solution comprising nitric acid and water to form a leachate;
separating a substrate comprising glass and plastic from the leachate;
electrolyzing the leachate to deposit a mixture of copper and selenide onto a first cathode; and
re-electrolyzing the leachate to deposit cadmium onto a second cathode.

5,779,878
PROCESS FOR DEZINCING GALVANIZED STEEL
William A. Morgan, Hamilton, Canada; Frederick J. Dudek, Arlington Hts., and Edward J. Daniels, Oak Lawn, both of Ill., assignors to Metal Recovery Industries (US) Inc., East Chicago, Ind.
Filed Jul. 17, 1996, Ser. No. 680,344
Int. Cl.⁶ C25F 3/06; 5/00
U.S. Cl. 205—657

17 Claims

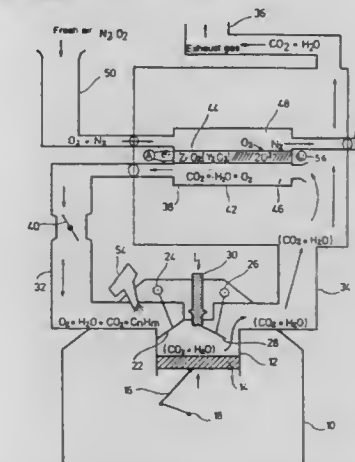
1. A process of removing zinc from galvanized steel comprising immersing the galvanized steel in an aqueous electrolyte containing sodium or potassium hydroxide,
galvanically corroding the zinc from the surface of the galvanized steel in a reaction in which there is an anode and a cathode, wherein the zinc serves as the anode and the material serving as the cathode is principally a material having a standard electrode potential which is intermediate of the standard electrode potentials of zinc and cadmium in the electrochemical series, and



treating the galvanized steel to accelerate the corrosion rate of the zinc from the galvanized steel, said treatment comprising (i) increasing the number density of corrosion sites in the galvanized steel by mechanically abrading or deforming the galvanized steel, (ii) heating the galvanized steel to form an alloy of zinc on the surface of the galvanized steel, (iii) mixing the galvanized steel with a material having a standard electrode potential which is intermediate of the standard electrode potentials of zinc and cadmium in the electrochemical series with the proportion of said material being at least 5% by weight of the mixture, or (iv) causing the galvanized steel to move relative to itself and to the electrolyte while immersed in the electrolyte.

5,779,879
APPARATUS AND METHOD FOR REDUCING HARMFUL SUBSTANCES IN COMBUSTION GASES
Klaus Dieterich, Stuttgart, and Wolfgang Blankenhorn, Ostfildern, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE95/00128, § 371 Date Jul. 24, 1996, § 102(e) Date Jul. 24, 1996, PCT Pub. No. WO95/21684, PCT Pub. Date Aug. 17, 1995
PCT Filed Feb. 2, 1995, Ser. No. 682,593
Claims priority, application Germany, Feb. 15, 1994, 44 04 681.2
Int. Cl.⁶ B01D 53/32
U.S. Cl. 205—763

17 Claims



1. Apparatus for reducing harmful nitrogen oxides, in combustion exhaust gases in a combustion process performed with an oxygen-nitrogen-air supply mixture (atmosphere), comprising: a supply chamber that conducts the oxygen-nitrogen-air supply mixture and has an inlet and an outlet; at least one exhaust gas chamber which is in communication with an exhaust gas conduit that is connected between a combustion chamber and a further outlet, and which is connected to the supply chamber via an intermediate wall, with the intermediate wall being selectively permeable to the oxygen (O₂) of the oxygen-nitrogen-air supply

mixture; and a further conduit connecting the exhaust gas chamber with the combustion chamber to supply oxygen enriched exhaust gas formed in the exhaust gas chamber to the combustion chamber.

5,779,880

CARBONACEOUS POWDER TO BE DISPERSED IN ELECTORRHEOLOGICAL FLUID AND ELECTORRHEOLOGICAL FLUID USING THE SAME
Takayuki Maruyama; Takao Ogino; Yuichi Ishino; Tasuku Saito, all of Tokyo; Takashi Haraoka; Kaori Takagi, both of Chiba, and Hitomi Hatano, Chiba, all of Japan, assignors to Bridgestone Corporation, and Kawasaki Steel Corporation, both of Tokyo, Japan

Division of Ser. No. 347,061, Nov. 23, 1994, abandoned. This application Jun. 24, 1996, Ser. No. 667,932

Claims priority, application Japan, Dec. 1, 1993, 5-325797
Int. Cl.⁶ C10C 1/20

U.S. Cl. 208—44

6 Claims

1. A process for producing a carbonaceous powder to be dispersed in an electrorheological fluid, said powder having an oxygen content above 10% by weight but not more than 20% by weight and having an average particle diameter of 0.01–100 μm, said process comprising the steps of:

heat-polymerizing a condensed polycyclic compound containing a main component of naphthalene by using HF/BF₃ as a catalyst to obtain a 100% meso-phase pitch having a softening point within a range of 150°–400° C.;

heat-treating and making the pitch infusible in an oxidizing atmosphere of a temperature not more than the lesser of a fusing temperature of the pitch or 400° C. and not less than 50° C. to allow the pitch to have an oxygen content of 12–25% by weight; and then

heat-treating and carbonizing the pitch in an inert gas atmosphere at a temperature not less than 300° C. and not more than 700° C.

5,779,881

PHOSPHONATE/THIOPHOSPHONATE COKING INHIBITORS

Youdong Tong, Houston, and Michael K. Poindexter, Sugar Land, both of Tex., assignors to Nalco/Exxon Energy Chemicals, L.P., Sugar Land, Tex.

Continuation-in-part of Ser. No. 343,059, Nov. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 190,954, Feb. 3, 1994, abandoned. This application Jan. 6, 1997, Ser. No. 778,995

Int. Cl.⁶ C10G 9/12

U.S. Cl. 208—48 AA

14 Claims

1. A method for inhibiting the formation of coke on heat transfer surfaces in contact with petroleum feedstocks, which feedstocks are at a temperature of from about 400° to about 1100° C. comprising:

contacting said heat transfer surfaces with an effective amount to inhibit coke formation of a phosphonate of the formula (R¹Y)₂P(X)R², wherein X and Y are chalcogens selected from the group consisting of oxygen and sulfur, R¹ is selected from the group consisting of alkyls, alkylaryls, aryls, arylalkyls and heteroatom-containing substituents having 4 to 20 carbon atoms with the proviso that the heteroatom of said heteroatom-containing substituent is not directly bonded to the phosphorous atom and R² is selected from the group consisting of alkyl, arylalkyl, alkylaryl, aryl and heteroatom-containing substituents having 6 to 30 carbon atoms with the proviso that the heteroatom of said heteroatom-containing substituent is not directly bonded to the phosphorous atom.

5,779,882

MODIFIED MCM-56, ITS PREPARATION AND USE

Arthur W. Chester, Cherry Hill, N.J.; Anthony S. Fung, Wilmington, Del.; Charles T. Kresge, West Chester, Pa., and Wieslaw J. Roth, Sewell, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 22, 1996, Ser. No. 684,673

Int. Cl.⁶ C10G 11/05; C07C 2/58; 2/66; B01J 29/06

U.S. Cl. 208—120

20 Claims

1. A layered composition of matter, MCM-56, which has an X-ray diffraction including the lines listed in Table II below:

TABLE II

Interplanar d-Spacing (Å)	Relative Intensity
12.4 ± 0.2	vs
9.9 ± 0.3	m-s
6.9 ± 0.1	w
6.2 ± 0.1	s
3.55 ± 0.07	m-s
3.42 ± 0.07	vs

and which has been selectively modified so that the ratio of the number of active acid sites at its external surface to the number of internal active acid sites is greater than that of the unmodified material.

19. A hydrocarbon conversion process comprising contacting a reaction stream comprising a hydrocarbon to be converted, under conversion conditions, with a layered composition of matter, MCM-56, which has an X-ray diffraction including the lines listed in Table II below:

TABLE II

Interplanar d-Spacing (Å)	Relative Intensity
12.4 ± 0.2	vs
9.9 ± 0.3	m-s
6.9 ± 0.1	w
6.2 ± 0.1	s
3.55 ± 0.07	m-s
3.42 ± 0.07	vs

and which has been selectively modified so that the ratio of the number of active acid sites at its external surface to the number of internal active acid sites is greater than that of the unmodified material.

5,779,883

HYDRODESULFURIZATION PROCESS UTILIZING A DISTILLATION COLUMN REALTOR

Dennis Hearn, and Hugh M. Putman, both of Houston, Tex., assignors to Catalytic Distillation Technologies, Pasadena, Tex.

Continuation of Ser. No. 800,100, Jul. 10, 1995, abandoned. This application Mar. 17, 1997, Ser. No. 819,491

Int. Cl.⁶ C10G 45/02

U.S. Cl. 208—213

17 Claims

1. A process for the hydrodesulfurization of petroleum streams comprising:

(A) feeding (1) a petroleum stream containing organic sulfur compounds and (2) hydrogen to a distillation column reactor; (B) concurrently in said distillation column reactor

(1) distilling said petroleum stream whereby there are vaporous petroleum products rising upward through said distillation column reactor, an internal reflux of liquid flowing downward in said distillation column reactor and condensing petroleum products within said distillation column reactor, and

(2) contacting said petroleum stream and said hydrogen in the presence of a hydrodesulfurization catalytic distillation

structure at total pressure less than about 300 psig, hydrogen partial pressure in the range of 0.1 to less than 70 psi and a temperature in the range of 400° to 800° F. whereby a portion of the organic sulfur compounds contained within said petroleum stream react with hydrogen to form H₂S;

(C) withdrawing an overheads from said distillation column reactor containing said H₂S;

(D) separating the H₂S from said overheads by condensing a higher boiling fraction of said overheads;

(E) returning a portion of said condensed higher boiling fraction of said overheads to said distillation column reactor as external reflux; and

(F) withdrawing a bottoms product having a lower sulfur content than said petroleum stream.

5,779,884

AUTOMATIC WATER CHANGING SYSTEM AND APPARATUS FOR AQUARIUMS

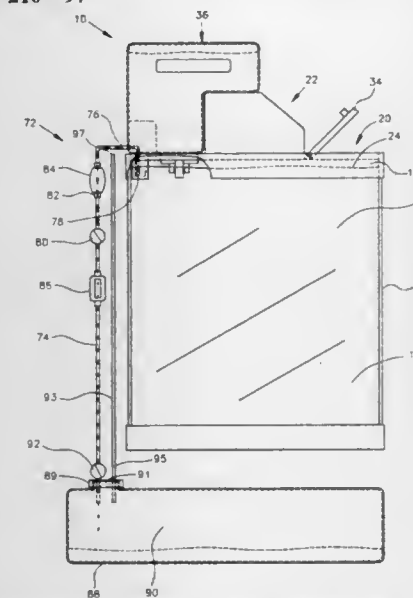
Joseph D. Raymo, 13487 W. Blanchard Rd., Gurnee, Ill. 60031

Filed Apr. 17, 1996, Ser. No. 633,426

Int. Cl.⁶ A01K 63/04; 63/06

U.S. Cl. 210—97

25 Claims



1. An apparatus for automatic water changing and water leveling adapted for use with an aquarium containing a body of aquarium water the apparatus comprising:

(a) a hood structure sized and configured for mounting on the aquarium across an open top of the aquarium in approximate horizontal adjacency with an upper surface level of the aquarium water;

(b) a water reservoir structure including a housing defining a chamber therewithin for containing fresh water, the water reservoir structure being removably supported by the hood structure for positioning the water reservoir structure above the upper surface level of the water, and discharge means mounted to a bottom portion of the water reservoir structure and adapted for downwardly extending into the water of the aquarium for discharging fresh water from the water reservoir structure into the aquarium as the upper surface level of the aquarium water falls below a predetermined level and causing air to be communicated through said discharge means and into the chamber of the water reservoir structure allowing fresh water to be discharged; and

(c) siphoning means for withdrawing water from the aquarium by siphoning action allowing the upper surface level of aquarium water to fall below the predetermined level and thereby controlling the discharging of fresh water from the discharge means.

9. The apparatus of claim 1, wherein the siphoning means includes a skimmer dam structure connected to the hood structure,

5,779,885

ROTATING BIOLOGICAL FILTER SYSTEM

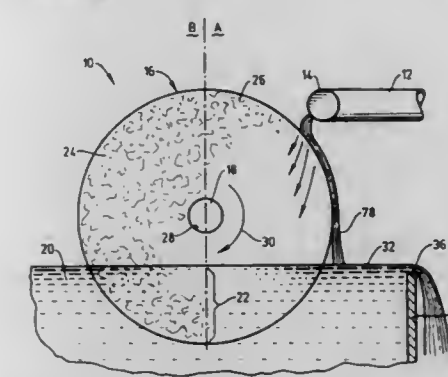
Roy S. Hickok, Moorpark, and Roger W. McGrath, Simi Valley, both of Calif., assignors to Aquaria, Inc., Moorpark, Calif.

Continuation-in-part of Ser. No. 4,677, Jan. 14, 1993, Pat. No. 5,419,831, which is a continuation of Ser. No. 708,478, May 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 535,905, Jun. 11, 1990, abandoned, and a continuation-in-part of Ser. No. 125,445, Sep. 22, 1993, abandoned. This application Dec. 30, 1994, Ser. No. 367,843

Int. Cl.⁶ C02F 3/08

U.S. Cl. 210—150

24 Claims



1. A biological filter for treating water in an aquatic system, comprising:

a porous water absorbing body of material adapted for rotation; and

means for supplying water to the body to be absorbed by a portion of the body so as to cause the body to rotate, said water absorbing body being constructed and positioned relative to said means for supplying water in a manner to be rotated substantially only by the weight of water absorbed in said body.

5,779,886

MEDIA FOR FILTRATION

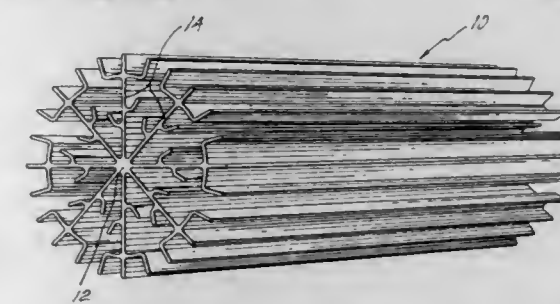
Real Couture, 2426 Du Buran, Varennes, Quebec, Canada, J3X 1L2

Filed Oct. 23, 1996, Ser. No. 735,888

Int. Cl.⁶ B01F 3/04

U.S. Cl. 210—150

8 Claims



1. A media element comprising an elongated member, said elongated member having a center core, a plurality of ribs extending radially outwardly from said center core, a plurality of fins

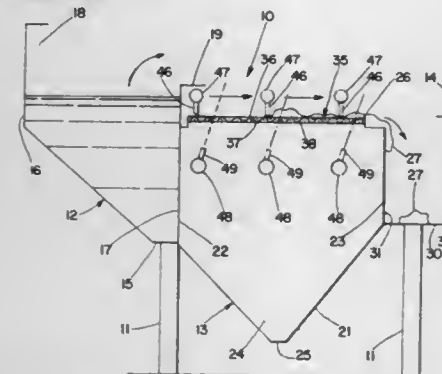
extending outwardly from each rib, and a plurality of outwardly extending vanes situated at a distal end of each of said ribs, said vanes of each rib being spaced from adjacent ribs to thereby provide longitudinally extending circumferential openings.

5,779,887
GRAVITY SCREEN WITH BURDEN REMOVAL AND PORE-CLEANING MEANS

John J. Rector, Visalia, and Thomas Lisy, Clovis, both of Calif., assignors to Claude Laval Corporation, Fresno, Calif.
Filed Jan. 7, 1997, Ser. No. 778,055
Int. Cl.⁶ B01D 29/075; E02B 5/08

U.S. Cl. 210—159

3 Claims



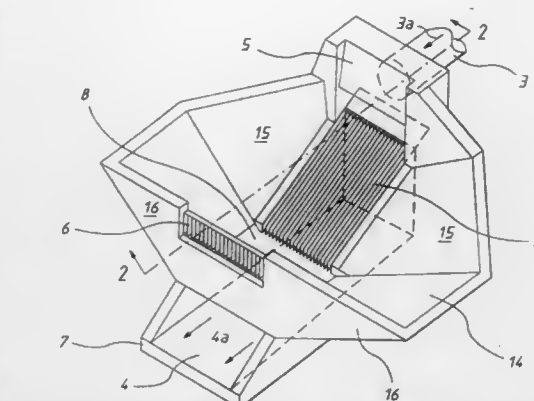
1. A burden removal system for removing solid burden from a stream of water, said system comprising:
 - a screen having an upper surface, a lower surface, and a plurality of pores extending between said surfaces, at least said upper surface being substantially horizontal, to receive said stream with its burden, to pass water through said pores, and to retain burden on said upper surface;
 - a drive bar extending above and across said screen;
 - a wiper blade having a linear edge mounted to said drive bar;
 - a spray bar extending below and across said screen;
 - a plurality of jet sprays on said spray bar, said spray bar adapted to provide water under pressure to said jet sprays, said jet sprays discharging against said lower surface of said screen;
 - mounting means mounting said bars for simultaneous movement parallel to said screen;
 - power means drivingly connected to said mounting means bi-directionally to drive said bars;
 - said wiper blade being mounted such that its linear edge moves in contact with the screen in a first direction of movement and is out of contact with the screen in a second opposite direction of movement so as to shove burden off of the screen in said first direction, and to pass over burden in its second direction, repetitive cycling of said power means causing periodic removal of burden from said screen, while the jets direct water upwardly into the pores to clear them of burden and lift some of the burden above the upper surface to assist the wiper blade in its removal of said burden.

5,779,888
FILTERING APPARATUS
Peter Joseph Bennett, Katoomba, Australia, assignor to Baramy Engineering Pty. Ltd., Katoomba, Australia
Filed Sep. 4, 1996, Ser. No. 707,796
Claims priority, application Australia, Sep. 4, 1995, PN5201
Int. Cl.⁶ B01D 29/44

U.S. Cl. 210—162

16 Claims

1. A filtering apparatus for filtering solid litter from a flow of water, said apparatus comprising:
 - an inclined filter grate having an upper end and a lower end, said grate including a plurality of generally parallel transversely spaced beams extending from said upper end to said lower end;



- an inlet to receive the flow of water and direct the flow to said grate;
- an outlet to receive filtered water that has passed through said grate;
- catchment means at said lower end to collect litter; and wherein said inlet is configured to direct water leaving the inlet to flow in a direction substantially parallel to said beams, and said catchment means includes a collection surface located at said lower end positioned to collect litter, and access means enabling a cleaning vehicle or manual entry to the catchment means to remove litter from said collection surface.

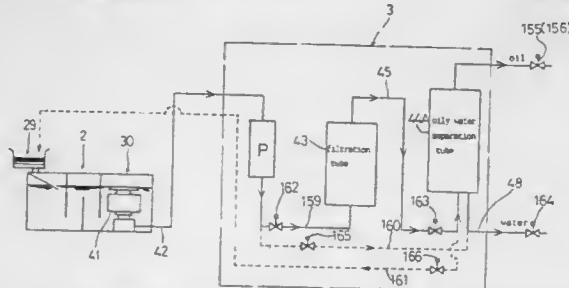
5,779,889
WASHING APPARATUS AND OILY WATER SEPARATION DEVICE AND FILTRATION DEVICE BEST SUITED TO WASHING APPARATUS

Eiichi Sugiura, 149, Matsumoto-cho, Hekinani-shi, Aichi-ken, Japan
PCT No. PCT/JP95/00634, § 371 Date Nov. 28, 1995, § 102(e)
Date Nov. 28, 1995, PCT Pub. No. WO95/26797, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 31, 1995, Ser. No. 563,645
Claims priority, application Japan, Mar. 31, 1994, 6-63172;
Oct. 13, 1994, 6-247949; Dec. 8, 1994, 6-304945
Int. Cl.⁶ C02F 1/40

U.S. Cl. 210—195.1

7 Claims



1. An oily water separation device comprising a body having an inlet of oily water to be separated, and an oil outlet and a water outlet disposed on an upper side and a lower side of said body for discharging the oils and the water after separation, respectively, a hollow coalescer having therein an oily water passage connected to said inlet of the oily water to be separated, and a separated oil and water passage disposed between said coalescer and a wall part of said body and in communication with said oil outlet and said water outlet, so that the oily water which enters at said inlet into said oily water passage of said coalescer is separated into oil components and water components through a wall of said coalescer, wherein a back-washing device is provided for introducing washing liquid into said separated oil and water passage, and passing the liquid through said coalescer in a direction opposite to the direction for separation of the oily water, and thereafter discharging the washing

liquid to the outside of said body via said oily water passage, said back-washing device including a back-washing water supply pipe connected to said water outlet of said body, and a back-washing water discharge pipe connected to said inlet of the oily water, said back-washing water supply pipe being connected to an outlet side of a separate oily water separation tank and said back-washing water discharging pipe being connected to an inlet side of said oily water separation tank, so that the washing liquid used for back-washing is separated into oil components and water component at said oily water separation tank and is circulated for again back-washing said coalescer during a back-washing operation, wherein said oily water separation tank is upstream from said coalescer for pre-separation of the oily water before separation at said coalescer during an oily water separation operation.

5,779,890
MULTI-EDUCTOR SYSTEM

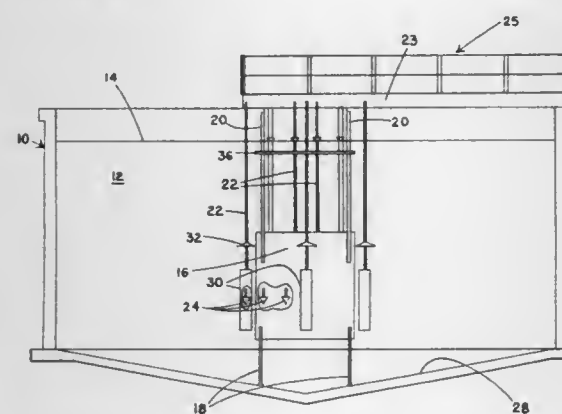
Elena Bailey, Austin, Tex., assignor to Enviroquip, Inc., Austin, Tex.

Filed Nov. 13, 1996, Ser. No. 746,752

Int. Cl.⁶ C02F 3/20

U.S. Cl. 210—197

19 Claims



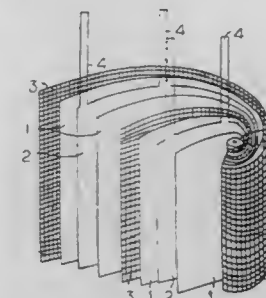
1. In an aerobic or anaerobic system comprising a basin containing a liquid, and a central or main draft tube submerged in the liquid and positioned within the basin, the draft tube circumscribing at least one gas diffuser attached to a gas line and from which gas bubbles issue when gas is delivered under pressure through the drop pipe, a majority of the gas bubbles and associated currents created by the gas bubbles circulating up through the draft tube, then horizontally toward the perimeter of the basin, down toward the floor of the basin and ultimately drawn back into the bottom of the draft tube, the improvement comprising:

a plurality of peripheral draft tubes shorter than the central draft tube and mounted peripherally around the central draft tube, each peripheral draft tube circumscribing at least one gas diffuser positioned within the draft tube, the gas diffusers in the peripheral draft tubes releasing gas bubbles which rise up through each peripheral draft tube and circulate the liquid and gas bubbles primarily inwardly of the currents created by the gas bubbles from the central draft tube and which are eventually drawn back into the bottom of the peripheral draft tubes, whereby the peripheral draft tubes improve the distribution of and mixing of the gas into the liquid.

5,779,891
NON-FOULING FLOW THROUGH CAPACITOR SYSTEM
Marc D. Andelman, One Parkton Ave., Worcester, Mass. 01601
Division of Ser. No. 541,880, Oct. 10, 1995, Pat. No. 5,620,597, which is a division of Ser. No. 439,310, May 11, 1995, Pat. No. 5,547,581, which is a division of Ser. No. 194,609, Feb. 10, 1994, Pat. No. 5,415,768, which is a continuation-in-part of Ser. No. 27,699, Mar. 8, 1993, Pat. No. 5,360,540, which is a division of Ser. No. 819,828, Jan. 13, 1992, Pat. No. 5,200,068, which is a continuation-in-part of Ser. No. 792,902, Nov. 15, 1991, Pat. No. 5,192,432, which is a continuation of Ser. No. 512,970, Apr. 23, 1990, abandoned. This application Apr. 15, 1997, Ser. No. 834,259
Int. Cl.⁶ B01D 15/08

U.S. Cl. 210—198.2

35 Claims



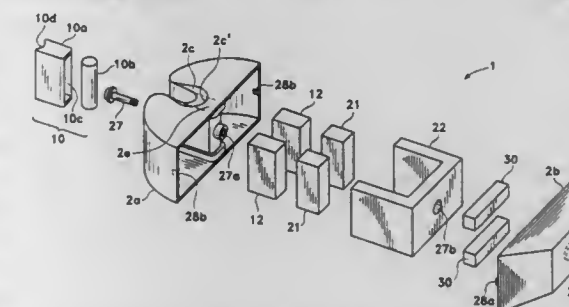
1. A flow-through capacitor-cartridge system for use in the electrical treatment of fluids which tend to foul the capacitor of the system, which system comprises:

- a) one or more foul-resistant, flow-through capacitors, each capacitor having at least one anode and cathode pair for use in the electrical purification, concentration, separation, recovery, or electrochemical breakdown of solutes or fluids, which capacitor comprises one or more monolithic, spaced apart pairs of cathode-anode electrodes incorporating a high surface area material and having a non-conductive spacer between the anode and cathode electrodes characterized by an open flow path between the electrodes to permit the unobstructed flow of the fluid across the electrode surface and of sufficient width to prevent the fouling of the capacitor, and wherein the open flow path has at least one dimension open to an exterior of the capacitor; and
- b) cartridge means to seal the capacitor therein, the cartridge means having a fluid flow feed inlet and a fluid flow product outlet.

5,779,892
MAGNETIC SEPARATOR WITH MAGNETIC COMPENSATED RELEASE MECHANISM FOR SEPARATING BIOLOGICAL MATERIAL
Stefan Miltenyi, Gladbach; Gerard Buchholz, Berlin, and Robert Herz, Overath, all of Germany, assignors to Miltenyi Biotec GmbH, Gladbach, Germany
Filed Nov. 15, 1996, Ser. No. 749,573
Int. Cl.⁶ B01P 35/06

U.S. Cl. 210—222

23 Claims



1. A magnetic separator for separating biological material which is either magnetic or bound to a magnetic material, comprising:

a magnet having North and South poles defining a predetermined gap therebetween, said predetermined gap dimensioned to receive a chamber therein; and
a release compensator separate of the chamber and being movable into said predetermined gap to reduce a force necessary for removal of the chamber from said predetermined gap, wherein said release compensator remains in said predetermined gap even when the chamber is completely removed from the magnetic separator so as to no longer contact said release compensator.

5,779,893

Patent Not Issued For This Number

5,779,894

ASEPTIC BAG FOR SEPARATING OFF LIQUID

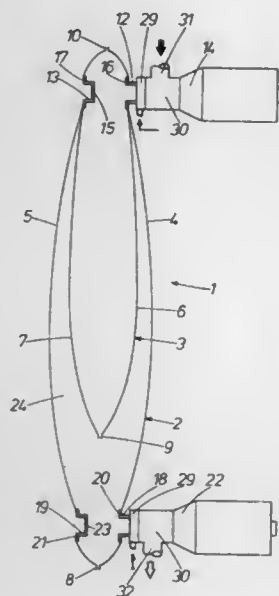
Karl Martensson, deceased, late of Lund, Sweden, by Ulla Thulin, executor, assignor to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Dec. 4, 1996, Ser. No. 760,309

Claims priority, application Denmark, Dec. 6, 1995, 1382/95
Int. Cl.⁶ B65D 30/26; 33/01; 81/26; 81/30

U.S. Cl. 210—232

6 Claims



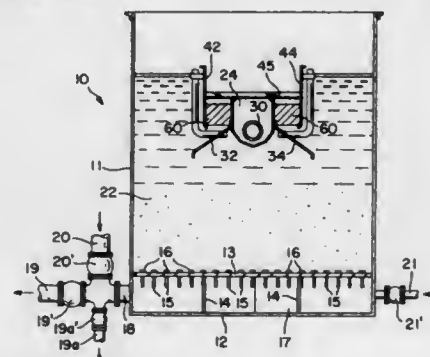
1. An aseptic bag for separating off liquid comprising an outer bag and an inner bag, an inlet device and means for closing said inlet device, and an outlet device and means for closing said outlet device, wherein the inner bag is perforated, the inlet device is disposed in a first part of the outer bag and in a first part of the inner bag, said closure means of said inlet device is disposed in a second part of the outer bag and in a second part of the inner bag, the outlet device is disposed in the first part of the outer bag, and said means for closing the outlet device is disposed in the second part of the outer bag.

5,779,895
GRANULAR MEDIA FILTER INCLUDING MEDIA
SETTLER ASSEMBLY
Charles D. Biskner, Ames, Iowa, and James C. Young, Boalsburg, Pa., assignors to General Filter Company, Waukesha, Wis.

Continuation of Ser. No. 601,685, Feb. 15, 1996, abandoned.
This application Jan. 22, 1997, Ser. No. 787,230
Int. Cl.⁶ B01D 24/46

U.S. Cl. 210—274

19 Claims



1. A granular media filter comprising:
a tank having an upper portion and a bottom for containing liquid and a bed of filter media for filtering liquid flowing downwardly through the bed of filter media,
a liquid discharge in the bottom of the tank, a means for washing the bed of filter media, said means for washing including means for selectively supplying fluid into the tank below the bed of filter media and for causing upward flow of fluid through the bed of filter media to clean the media,
a backwash trough in the tank positioned above the filter media bed for draining off backwash liquid when fluid is supplied upwardly through the bed of filter media to wash the media, the backwash trough having a length and including a lower portion and upwardly extending sides, at least one of the sides having an upper edge defining a weir,
a baffle assembly for controlling upward fluid flow around the backwash trough and for deflecting upwardly flowing fluid and entrained media grains away from the backwash trough, the baffle assembly including at least one baffle portion spaced from the backwash trough, and
a settler assembly located between the baffle portion and the backwash trough, the settler assembly including means defining a plurality of rows of flow passages for controlling upward fluid flow adjacent the backwash trough and preventing turbulent flow of backwash liquid flowing upwardly between the backwash trough and said baffle portion, the plurality of rows of flow passages being between the backwash trough and the baffle portion, the rows of flow passages extending along the length of the backwash trough and the rows of flow passages each being divided into a plurality of discrete and separate flow passages, the flow passages being separated with respect to one another and spaced substantially along the length of said backwash trough.

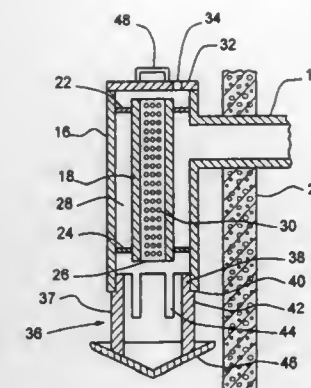
5,779,896
GAS BAFFLE FOR A WASTE WATER TREATMENT
PLANT EFFLUENT
Harry L. Nurse, Jr., 10409 Watterson Trail, Louisville, Ky. 40299

Filed Aug. 13, 1996, Ser. No. 696,064
Int. Cl.⁶ B01D 21/24

U.S. Cl. 210—299

9 Claims

1. A waste water treatment plant outlet comprising:
An effluent outlet assembly having a vertical housing with an open bottom inlet and an outlet; and
a gas baffle disposed within said open bottom inlet, said gas baffle comprising a conically-shaped deflector cone and an elongated tubular member having a bottom end affixed to an



inner surface of said cone, said tubular member having an outer diameter less than an inner diameter of said cone, said tubular member having at least one flow-through opening through a vertical wall of said tubular member and an opening in an opposed end of said tubular member, said opposed end received within said open bottom inlet to said effluent outlet assembly.

5,779,897
HOLLOW FIBER MEMBRANE DEVICE WITH INERT
FILAMENTS RANDOMLY DISTRIBUTED IN THE
INTER-FIBER VOIDS

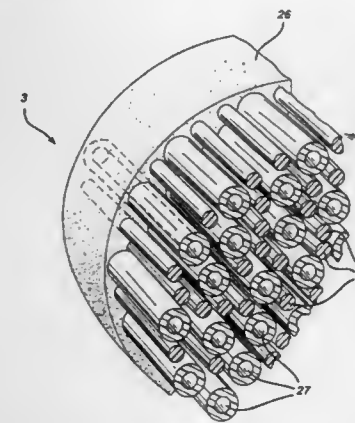
Dilip Gurudath Kalthod, St. Louis, and Donald Joseph Stookey, Creve Coeur, both of Mo., assignors to Permea, Inc., St. Louis, Mo.

Filed Nov. 8, 1996, Ser. No. 748,481

Int. Cl.⁶ B01D 61/28; 63/02

U.S. Cl. 210—321.8

11 Claims



1. A fluid separation module comprising:
(a) a bundle of hollow fiber membranes which are of substantially uniform inner and outer diameters, the bundle having randomly dispersed therein filaments having an outer diameter equal to or less than that given by the following expression: $\alpha - \{(1.2533/\rho^{0.5}) - 1\}$ wherein α represents the outer diameter of the hollow fiber and ρ represents the packing density of the hollow fibers expressed as a fraction, the packing density of the hollow fibers being greater than 30% the hollow fibers having an outer diameter from about 100 to about 3000 microns and the filaments having an outer diameter of at least about 60 microns, the filaments being present in number from about 0.5 to about 5 times the number of hollow fibers;
(b) substantially all of the filaments occupying the void volume between adjacent fibers; and
(c) at least one tubesheet wherein the hollow fibers and filaments are embedded therein and at least the hollow fibers penetrate the tubesheet.

5,779,898
CONTROL DEVICE FOR FILTERS IN AT LEAST TWO
PARTIAL FLUID STREAMS

Heinrich Schwanekamp, Vreden; Ludger Wilken-Trenkamp, Havixbeck; Manfred Hangmann, Greven, and Wilfried Leuders, Gronau, all of Germany, assignors to Wilman Polymer Filtration GmbH, Wetztingen, Germany

Continuation of Ser. No. 404,629, Mar. 14, 1995, abandoned.

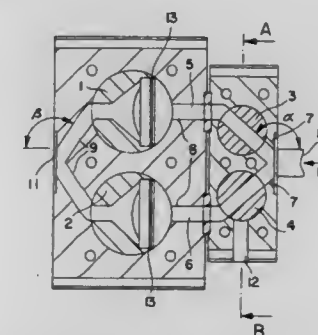
This application Feb. 12, 1997, Ser. No. 800,212

Claims priority, application Germany, Mar. 15, 1994, 44 08 803.5; Mar. 15, 1994, 44 08 600.8

Int. Cl.⁶ B01D 35/12

U.S. Cl. 210—324

29 Claims



1. A control device for filtering at least two partial fluid streams, comprising:
a common fluid supply duct for supplying said fluid streams;
a common fluid removal duct for removing the filtered fluid streams;
at least two partial fluid ducts, positioned between the common fluid supply and removal ducts, each of said at least two partial fluid ducts including:
a corresponding filtering device in each partial fluid duct for filtering a respective partial fluid stream in the corresponding partial fluid duct,
a single corresponding valve device for each of said partial fluid ducts for controlling the flow of the respective partial fluid stream in each of said partial fluid ducts via a corresponding blocking element, wherein the number of valve devices is equal to the number of said partial fluid ducts, each said blocking element being located in the flow of the respective partial fluid stream of the corresponding partial fluid duct and having a first open position for directing said respective partial fluid stream to flow through the corresponding filtering device, a second blocking position for blocking said respective partial fluid stream from said corresponding filtering device and for redirecting said respective partial fluid stream to one of the at least one other partial fluid ducts for filtering in its corresponding filtering device, while the filtering device in said corresponding partial duct is washed of accumulated particles by a reversed flow of said partial fluid stream through said filtering device, and a third position for directing said respective partial fluid stream outside said control device, and
a corresponding stop valve positioned in proximity to each said corresponding filtering device, having a first open position and a second blocking position, each said stop valve being in said first open position, when the corresponding blocking element is in its second blocking position, for releasing said particles washed from the corresponding filtering device from said device, and each said stop valve being in said second blocking position when said corresponding blocking element is in its first open position.
15. The control device according to claim 1, wherein each said stop valve is positioned downstream from each said filter device, such that each said filter device is washed by said partial fluid stream when each said stop valve is in its first open position.
16. The control device according to claim 15, wherein each said filter device is rotatable.

5,779,899

FILTER FOR HIGHLY VISCOUS FLUID

Kazumitsu Shiomi, Setagaya-ku; Hideo Nakamura, Ichikawa; Akira Kondou, Chiba, and Michihiro Kawasaki, Ichikawa, all of Japan, assignors to Fuji Filter Manufacturing Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/01302, § 371 Date Aug. 5, 1996, § 102(e) Date Aug. 5, 1996, PCT Pub. No. WO96/00606, PCT Pub. Date Jan. 11, 1996

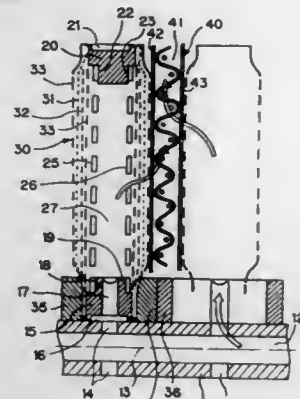
PCT Filed Jun. 30, 1995, Ser. No. 600,934

Claims priority, application Japan, Jun. 30, 1994, 6-149261

Int. Cl.⁶ B01D 29/39

U.S. Cl. 210—346

6 Claims



1. A filter for highly viscous fluid comprising:
 - a housing which encloses a cavity;
 - a first rigid perforated member for partitioning a first chamber in the cavity;
 - a second rigid perforated member for partitioning a second chamber in the cavity;
 - a first filter disposed adjacent to the first perforated member and between the first and the second chambers;
 - a second filter disposed adjacent to the second perforated member and between the first and second chambers;
 - a supporting layer inserted between the first filter and the second filter;
 - an introduction inlet provided in the housing for communicating with the first chamber and the second chamber; and
 - an exhaust outlet provided in the housing for communicating with the cavity at a section of the supporting layer;
- wherein said first perforated member comprises a pair of first disk-shaped perforated plates;
- said second perforated member comprises a pair of second disk-shaped perforated plates spaced adjacent to said pair of first disk-shaped perforated plates;
- each of said first and second filters comprises annular nonwoven fabric with different fiber diameters of metallic fine fibers stacked and two annular protective wire mesh layers for holding the nonwoven fabric of metallic fine fibers therebetween; and
- the annular nonwoven fabric and annular protective wire mesh layers are mutually sintered in one piece.

5,779,900

IN-SITU CLEANABLE FILTER WITH FILTERED CLEANSER

Christopher E. Holm, Madison; Brian W. Schwandt, Fort Atkinson; Brian K. Wagner; Barry M. Verdegan, both of Stoughton, and Stephen L. Fallon, Madison, all of Wis., assignors to Nelson Industries, Inc., Stoughton, Wis.

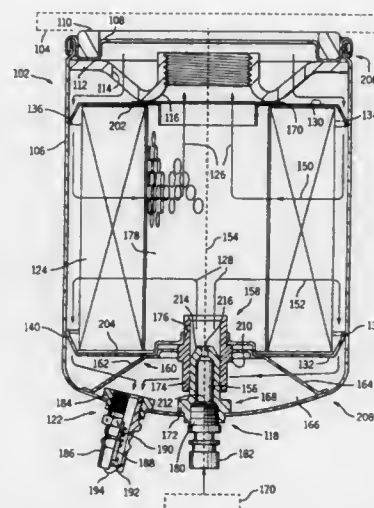
Filed Nov. 22, 1996, Ser. No. 755,497

Int. Cl.⁶ B01D 29/66

U.S. Cl. 210—411

56 Claims

1. A filter for filtering fluid from a machine, comprising:
 - a filter housing having a first inlet receiving a first fluid from said machine, a first outlet returning said first fluid to said machine, a second inlet selectively receiving a second fluid



- from a source of cleaning fluid, and a second outlet exhausting said second fluid;
- a first filter element in said filter housing;
- said filter housing having a first flow path therethrough from said first inlet then through said first filter element in one direction then to said first outlet;
- said filter housing having a second flow path therethrough from said second inlet then through said first filter element in the opposite direction then to said second outlet, said first and second flow paths having common but opposite direction portions through said first filter element; and
- a second filter element disposed within said filter housing and in said second flow path.

5,779,901

SELF-DECLOGGING FILTRATION DEVICE

Pierre Mosca, Coulevie, France, assignor to Cellier Groupe S.A., Aix les Bains, France

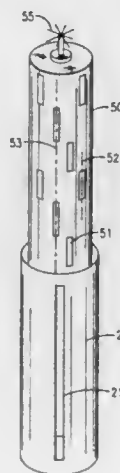
Filed Jan. 13, 1997, Ser. No. 782,367

Claims priority, application France, Jan. 15, 1996, 96 00558

Int. Cl.⁶ B01D 29/68; 29/35

U.S. Cl. 210—411

8 Claims



1. Apparatus for the filtration of a suspension that includes:
 - a cylindrical chamber having an inlet port and an outlet port for routing a suspension through said chamber,
 - a cylindrical filter cartridge mounted inside said chamber having a first face and a second face that are ordered in the direction of suspension flow through said chamber, said faces having a predetermined porosity.

5,779,903

FILTER ASSEMBLIES AND END CAPS FOR FILTER ASSEMBLIES

Karl S. Smith, Portsmouth; Roger A. Buttery, Petersfield, and Richard G. Gutman, Chichester, all of United Kingdom, assignors to Pall Corporation, East Hills, N.Y.

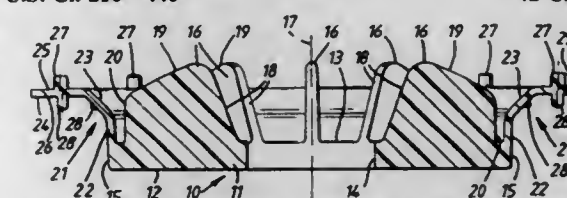
Filed Nov. 4, 1996, Ser. No. 743,252

Claims priority, application United Kingdom, Nov. 2, 1995, 9522454

Int. Cl.⁶ B01D 27/08

U.S. Cl. 210—440

42 Claims



1. An end cap comprising an annular body having inner and outer radially extending faces extending between a central aperture and an outer peripheral edge, a plurality of angularly spaced fins on the outer face, each fin including a radially outer edge terminating radially inwardly of the outer peripheral edge of the body, an annular flange extending from the outer peripheral edge and being radially spaced from the radially outer edges of the fins, the flange having a portion extending from the body in a direction generally parallel to the aperture axis followed by a portion extending generally radially relative to the aperture axis for carrying a seal for sealing engagement with a housing.

5,779,902

IN-LINE VENT FILTER FOR AUTOMATICALLY DRAINING A BIOLOGICAL LIQUID FILTRATION DEVICE

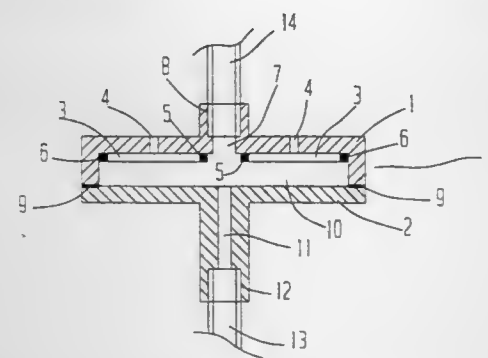
Peter Zuk, Jr., Harvard, Mass., assignor to HemaSure, Inc., Marlborough, Mass.

Continuation of Ser. No. 661,804, Jun. 11, 1996, abandoned, which is a continuation of Ser. No. 449,362, May 24, 1995, abandoned, which is a division of Ser. No. 209,523, Mar. 10, 1994, Pat. No. 5,472,605. This application Jul. 25, 1997, Ser. No. 903,271

Int. Cl.⁶ B01D 35/01; 46/00

U.S. Cl. 210—436

11 Claims



10. An in-line vent filter comprising:
 - a body having an inlet and outlet therein, said body configured without a filtration media therein to allow blood product to flow unfiltered from said inlet to said outlet;
 - at least one vent opening within said body;
 - at least one hydrophobic filter located within said body and located over one of said at least one vent opening, said at least one hydrophobic filter being sealed to said body to prevent the blood product within said body from leaking between the body and the hydrophobic filter; and
 - flow restriction means within said body for preventing air from entering said body through said at least one vent opening during flow of the blood product through said body until the blood product flow stops thereby causing air to automatically enter said at least one vent opening to drain blood product downstream.

5,779,904

SYNTHESIS OF INORGANIC MEMBRANES ON SUPPORTS

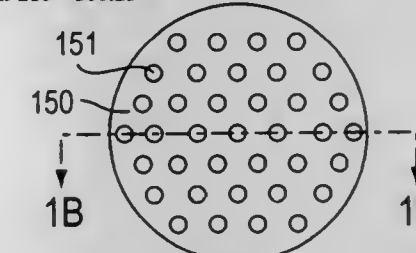
Warren Ruderman, Demarest, N.J.; James R. Fehlner, Salem Township, Wayne County, Pa., and Zhenyu Zhang, New York, N.Y., assignors to Inrad, Northvale, N.J.

Continuation-in-part of Ser. No. 864,814, Mar. 31, 1992, Pat. No. 5,474,681. This application Jun. 7, 1995, Ser. No. 477,035

Int. Cl.⁶ B01D 39/00

U.S. Cl. 210—500.25

37 Claims



1. A membrane array, comprising:
 - a support defining a plurality of holes defined by interior walls that are substantially symmetrical about the central axis of the holes and crystalline zeo-type material grown completely across the holes and bonded to the walls defining the holes.

5,779,905

PROCESS FOR THE DEPYROGENATION OF INJECTABLE PHARMACEUTICAL SOLUTIONS

Ervino Morandi, and Angelo Gallotti, both of Milan, Italy, assignors to Dibra S.p.A., Milan, Italy

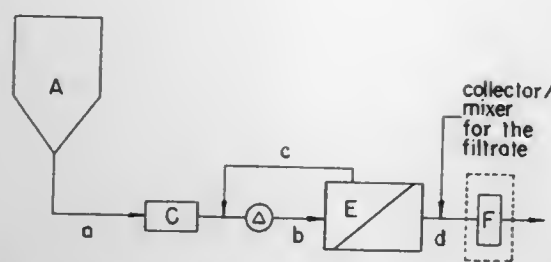
Filed May 30, 1995, Ser. No. 453,342

Int. Cl.⁶ B01D 61/00

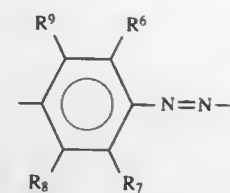
U.S. Cl. 210—651

5 Claims

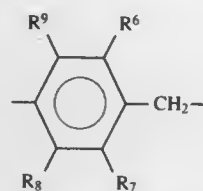
1. A process for the depyrogenation of an injectable pharmaceutical solution of a contrast agent comprising the following steps:
 - a) prefiltering said solution by means of a microfiltering unit to obtain a second solution;



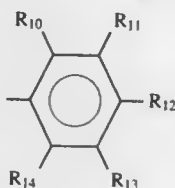
b) passing said second solution from step a) to an ultrafiltration unit, said ultrafiltration unit consisting of at least one filtration module, said module being equipped with tangential-ultrafiltration membranes having an average cut-off of 10,000 dalton, said module being capable of operating simultaneously or individually, wherein said tangential-ultrafiltration membranes are cellulose-based and have a porosity such as to deny passage to bacterial endotoxins whereby a permeate and a retentate are obtained, the retentate from said unit is directly recycled to said second solution which emerges from step a), while the permeate, complying with the limits set by the pharmacopoeia for the pyrogen content, is collected in a collector, where it is homogenized under agitation before being packaged.



wherein R_6 - R_9 are the same or different and are $-H$ or $-(CH_2)_aCH_3$ wherein a is 0-20; or $-[(CH_2)_b-NH]_c-(CH_2)_d-$ wherein b is 1-5, and c and d are the same or different and are 1-14 20; or



wherein R_6 - R_9 are as defined above; and R_3 is



wherein up to three of R_{10} - R_{13} are $-OH$ and other of R_{10} - R_{13} and R_{14} are $-H$.

5,779,906

METHOD OF REMOVING HEAVY METAL IONS FROM A LIQUID WITH CHEMICALLY ACTIVE CERAMIC COMPOSITIONS WITH A PYROGALLOL MOIETY

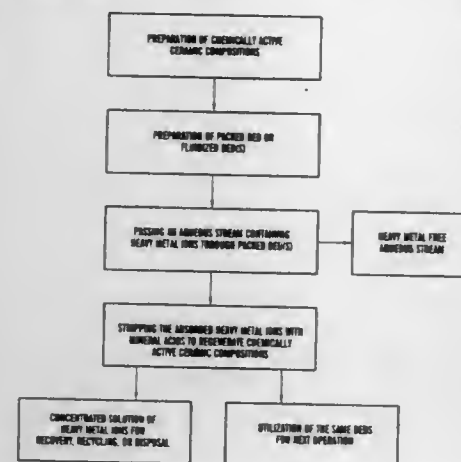
Lawrence L. Tavlarides, Fayetteville, and Nandu Deorkar, Syracuse, both of N.Y., assignors to Syracuse University, Syracuse, N.Y.

Division of Ser. No. 312,875, Sep. 27, 1994, Pat. No. 5,624,881. This application Jan. 27, 1997, Ser. No. 791,477

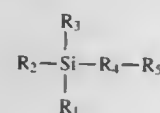
Int. Cl.⁶ B01D 15/00

U.S. Cl. 210-661

24 Claims



I. A method of removing heavy metal ions from a liquid stream comprising the step of contacting the stream with a composite material under conditions effective to complex said heavy metal ions on said composite material, said composite material having the formula:



wherein at least one of R_1 , R_2 and R_3 are SUPPORT $-O-$ and other of R_1 , R_2 and R_3 are the same or different and are unsubstituted or halosubstituted hydrocarbon chains having 1-5 carbon atoms and R_4 is:

MAGNETIC MICROPLATE SEPARATOR

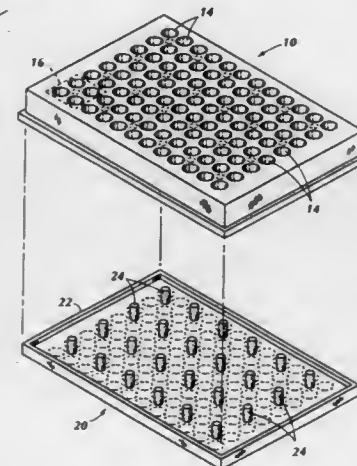
Hao Yu, Baltimore, Md., assignor to Systems Research Laboratories, Inc., Dayton, Ohio

Filed Dec. 6, 1996, Ser. No. 761,593

Int. Cl.⁶ B01D 35/06

U.S. Cl. 210-695

12 Claims

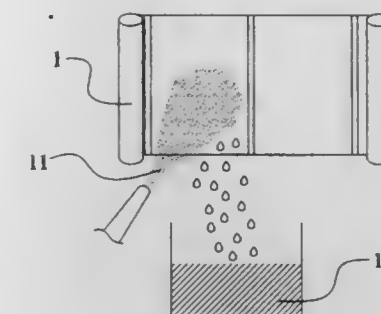


I. A magnetic microplate assembly using a microplate, the microplate including multiple wells for containing liquid under analysis formed in an array of multiple rows and columns, the wells of the microplate being integrally formed with and depending from an upper surface, the wells being generally cylindrical with spaces formed therebetween on the underneath side of the upper surface, said assembly comprising a generally flat support plate, and a plurality of magnets supported on said support plate and being spaced apart to extend upwardly into the spaces formed

between the wells of the microplate when said support plate and the microplate are brought together.

II. A method of separating suspended magnetic particles in a microplate wherein the microplate includes multiple wells for containing liquid under analysis formed in an array of multiple rows and columns, the wells of the microplate being integrally formed with and depending from a relatively flat upper surface, the wells being generally cylindrical with spaces formed therebetween on the underneath side of the upper surface, the method comprising the steps of

supporting a plurality of individual magnets on a plate with each magnet being capable of being inserted into the space between adjacent wells of the microplate, and inserting the magnet containing plate into the underneath side of the microplate.



resulting concentrate, pouring the resulting concentrate into a second solvent in which dye is soluble but binder resin is substantially insoluble, thereby precipitating binder resin, and separating and drying precipitates.

5,779,908

METHOD AND APPARATUS FOR WASTE WATER TREATMENT

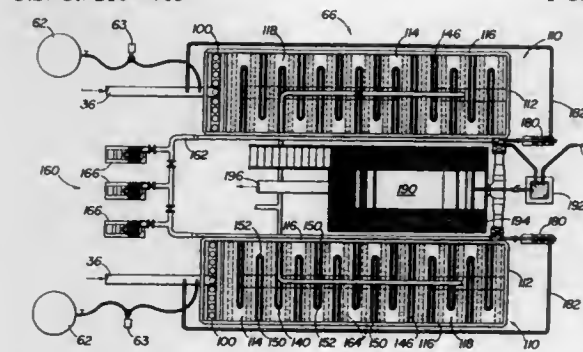
Richard Wayne Anderson, and Lee Edward Ellenburg, both of Gainesville, Ga., assignors to Sorin, Inc., Gainesville, Ga.

Division of Ser. No. 504,221, Jul. 19, 1995, abandoned. This application Feb. 25, 1997, Ser. No. 806,073

Int. Cl.⁶ C02F 1/24; 1/48; 1/20; 1/72

U.S. Cl. 210-703

1 Claim



I. A method of removing contaminants from waste water, comprising the steps of:

- adding an oxidizing agent into the waste water;
- passing the waste water and the oxidizing agent through a magnetic field;
- injecting into the waste water air bubbles that absorb at least one gas from the waste water and then float to the surface of the waste water and are expelled therefrom; and
- removing foam from the waste water.

5,779,909

METHOD FOR RECOVERING BINDER RESIN FROM INK RIBBON, METHOD FOR RECOVERING DYE FROM INK RIBBON, APPARATUS FOR RECOVERING INK ACCORDING TO SAID METHOD, AND METHOD FOR PRODUCING RECYCLED INK

Hidemi Tomita; Huy Sam, both of Tokyo; Haruo Watanabe, and Misao Kusunoki, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 8, 1996, Ser. No. 727,039

Claims priority, application Japan, Oct. 13, 1995, 7-292027

Int. Cl.⁶ B01D 11/02

U.S. Cl. 210-712

16 Claims

I. A method for recovering binder resin from an ink layer of an ink ribbon, said method comprising the following steps: collecting an ink ribbon having an ink layer comprising dye and binder resin, mixing the ink ribbon in a solvent in which the dye and the binder resin are soluble resulting in a dissolving of the dye and the binder in a resulting solution and a suspension of insoluble matter including ribbon in the resulting solution, freeing the resulting solution of the insoluble matter, concentrating the resulting solution to create a

5,779,910

ENHANCED FLOCCULATION OF MINERAL SLURRY WITH POLYMER BLENDS

William T. Donlin, Norwalk, Conn., assignor to Cytec Technology Corp., Wilmington, Del.

Filed Apr. 8, 1996, Ser. No. 629,244

Int. Cl.⁶ B01D 21/01

U.S. Cl. 210-726

12 Claims

1. A method of separating solids from a mineral slurry, which comprises:

- adding a blend of a low molecular weight, cationic polymer flocculent and a high molecular weight, cationic polymer flocculent to a mineral slurry to form a substrate;
- adding to said substrate a high molecular weight, anionic polymer flocculent to form a settled solids phase and an aqueous phases and
- separating said solids and aqueous phases.

5,779,911

AQUEOUS FLUID PURIFICATION MONITORING AND CONTROL SYSTEM AND PROCESS

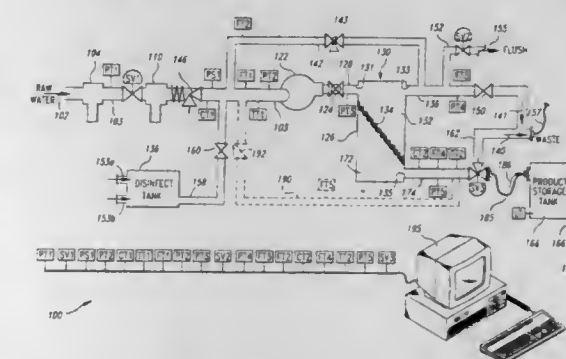
Irving M. Haug, 910 Island Dr., No. 112, Rancho Mirage, Calif. 92270, and David F. Hilbiber, 357 Tennessee Rd., Winlock, Wash. 98072

Filed Apr. 10, 1996, Ser. No. 630,609

Int. Cl.⁶ B01D 17/12; 37/00

U.S. Cl. 210-739

23 Claims



13. A method of treating a liquid and monitoring the treatment, comprising:

- providing a liquid treatment station;
- delivering liquid to be treated to the liquid treatment station;
- treating the liquid at the liquid treatment station to control at least one condition of said liquid;
- removing treated liquid from the liquid treatment station;

providing at least one transducer in the liquid being delivered to the liquid treatment station;
 providing at least one transducer in the treated liquid;
 using said transducers to measure values of the at least one condition of the liquid, before and after treatment and produce electrical signals indicative of the at least one condition;
 producing electrical control signals from the electrical signals produced by the transducers for each condition;
 utilizing a computer and the electrical control signals to determine an operating norm for each condition in the system and further to determine in real time if any of the following conditions exist:

- a) the value in real time exceeds the operating norm;
 - b) the value in real time does not exceed the operating norm but is within a predetermined percentage of the operating norm; and
 - c) the value in real time does not exceed the operating norm and is not within said predetermined percentage of the operating norm but has changed the predetermined percentage over a predetermined amount of time; and
- using said computer to collect and store information respecting determinations (a), (b) and (c).

5,779,912

PHOTOCATALYTIC OXIDATION OF ORGANICS USING A POROUS TITANIUM DIOXIDE MEMBRANE AND AN EFFICIENT OXIDANT

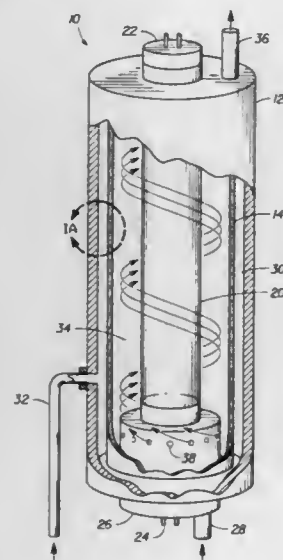
Anuncia Gonzalez-Martin, College Station; Oliver J. Murphy, Bryan, and Dalibor Hodko, College Station, all of Tex., assignors to Lynntech, Inc., College Station, Tex.

Filed Jan. 31, 1997, Ser. No. 791,599

Int. Cl.⁶ C02F 1/32

U.S. Cl. 210—748

44 Claims



1. A process for oxidizing organic contaminants, comprising the steps of:

- a) providing a fluid containing the organic contaminants over a photocatalyst disposed on a first surface of a porous substrate having pores therethrough to a second surface;
- b) providing an oxidant to the second surface and through the pores of the porous substrate into contact with the photocatalyst on the first surface; and exposing the photocatalyst to ultraviolet light.

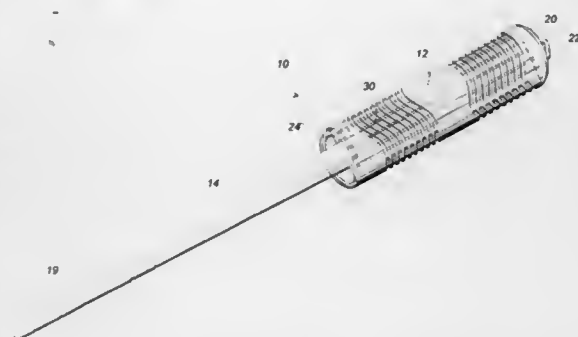
5,779,913
WATER PURIFIER FOR A SPA
 Raymond P. Denkewicz, Jr., Warwick; John D. Rafter, Providence, and Mark A. Bollinger, Warwick, all of R.I., assignors to Fountainhead Technologies, Inc., Providence, R.I.

Filed Aug. 1, 1996, Ser. No. 686,844

Int. Cl.⁶ E04N 4/16; C02F 1/50

U.S. Cl. 210—752

8 Claims



1. A method of purifying water in a spa, comprising the steps of: providing a water purifier having a housing containing a purification material that kills bacteria in water and having openings that permit water to enter and exit said housing within a flow of water in said spa;

- a) circulating water from said spa over said water purifier;
- b) exposing said purification material contained in said housing to said circulated water; and
- c) using a support attached to said housing, retaining and supporting said housing in the flow of said circulated water either (i) within the core of a filter contained in the spa or (ii) by attaching the housing to the underside of a skimmer basket contained in the spa.

5,779,914

METHODS FOR SANITIZING WATER

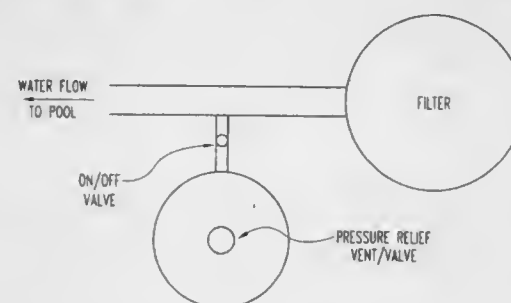
Geoffrey A. Brown, Lithonia, and Ron Starkey, Lawrenceville, both of Ga., assignors to Bio-Lab, Inc., Decatur, Ga.

Filed Jul. 3, 1996, Ser. No. 675,042

Int. Cl.⁶ C02F 1/50

U.S. Cl. 210—754

8 Claims



1. A method of treating water, comprising:

- (a) maintaining in the water between about 0.1 ppm and about 100 ppm polyhexamethylenebiguanide; and additionally
- (b) maintaining in the water between about 0.1 ppm and about 200 ppm of a peroxyacid.

5,779,915

METHOD OF REMOVING CHLORINE AND HALOGEN-OXYGEN COMPOUNDS FROM WATER BY CATALYTIC REDUCTION

Arne Becker, Hanover; Michael Sell, Peine; Gerhard Neuenfeldt, Estorf; Veronika Koch, Gehrden, and Hubert Schindler, Uetze, all of Germany, assignors to Solvay Umweltchemie GmbH, Hanover, Germany

PCT No. PCT/EP95/03481, § 371 Date Mar. 7, 1997, § 102(e) Date Mar. 7, 1997, PCT Pub. No. WO90/07617, PCT Pub. Date Mar. 14, 1996

PCT Filed Sep. 5, 1995, Ser. No. 809,047

Claims priority, application Germany, Sep. 8, 1994, 44 31 790.5; Sep. 8, 1994, 44 31 975.4

Int. Cl.⁶ C02F 1/70

U.S. Cl. 210—757

21 Claims

1. A method of treating water containing at least one halogen-oxygen compound selected from the group consisting of chlorate and bromate compounds, said method comprising contacting the water with a supported precious metal catalyst in the presence of hydrogen and catalytically reducing said at least one compound, wherein said supported precious metal catalyst comprises at least one metal selected from the 8th subgroup of the Periodic Table of Elements.

5,779,916

Patent Not Issued For This Number

5,779,917

PROCESS FOR SEPARATING FLUIDS HAVING DIFFERENT DENSITIES

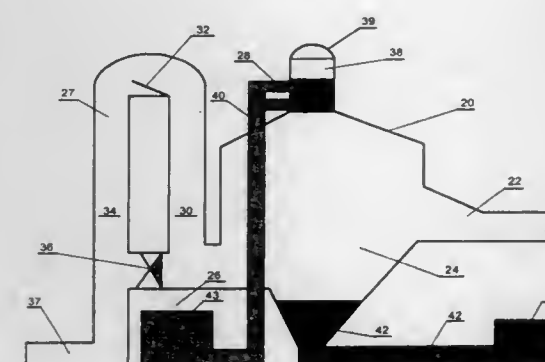
Daniel L. Brister, Corpus Christi, Tex., assignor to Fluid Technologies, Inc., Corpus Christi, Tex.

Filed Aug. 9, 1996, Ser. No. 695,265

Int. Cl.⁶ B01D 21/24

U.S. Cl. 210—800

4 Claims



1. A process for separating fluids of different densities, comprising the steps of:

- a) passing a turbulent flow mixed fluid stream which comprises fluids of different densities into means for producing laminar flow;
- b) passing said laminar flow fluid stream into a separation chamber to allow said fluid stream to separate into individual fluid layers according to fluid density; and
- c) subjecting said fluid layers to a positive internal pressure sufficient to cause said fluid layers to rise in said chamber and force at least said lowest density fluid from said chamber.

179-283 O.G.-98-17:QL3

5,779,918

METHOD FOR MANUFACTURING A PHOTO-SENSOR
 Keijiro Inoue, Kariya; Inao Toyoda, and Yasutoshi Suzuki, both of Okazaki, all of Japan, assignors to Denso Corporation, Kariya, Japan

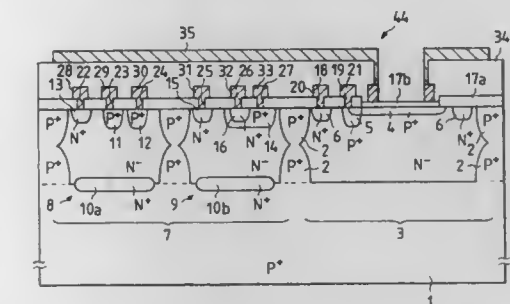
Filed Feb. 14, 1997, Ser. No. 800,325

Claims priority, application Japan, Feb. 14, 1996, 8-026985; Jul. 11, 1996, 8-182499; Dec. 4, 1996, 8-324428

Int. Cl.⁶ H01L 21/00; B44C 1/22

U.S. Cl. 216—2

18 Claims



1. A method for manufacturing a photo-sensor in which light received in a light receiving element is converted into a photoelectric current in a photoelectric transfer device and the photoelectric current is processed in a signal processing circuit, comprising the steps of:

- a) forming the photoelectric transfer device having the light receiving element in a semiconductor substrate;
- b) forming the signal processing circuit in the semiconductor substrate;
- c) forming a first insulating film on the light receiving element of the photoelectric transfer device;
- d) forming a first metallic film, which is made of a metallic material different from a material of the first insulating film, on the semiconductor substrate to cover the signal processing circuit and the first insulating film with the first metallic film;
- e) patterning the first metallic film to make a wire connected with the signal processing circuit and a protective film arranged on the first insulating film;
- f) forming a second insulating film on the semiconductor substrate to cover the signal processing circuit, the wire and the protective film made of the patterned first metallic film with the second insulating film;
- g) removing a portion of the second insulating film placed on the protective film;
- h) forming a second metallic film on the semiconductor substrate to cover the second insulating film and the protective film with the second metallic film;
- i) etching a portion of the second metallic film placed on the protective film to remove the portion of the second metallic film; and
- j) etching the protective film arranged on the first insulating film to remove the protective film.

5,779,919

PORCELAIN ENAMEL SIGN AND METHOD OF MANUFACTURE

Milton DiPietro, North Brunswick, N.J., and Donall B. Healy, New York, N.Y., assignors to New York Sign Systems, Inc., New York, N.Y.

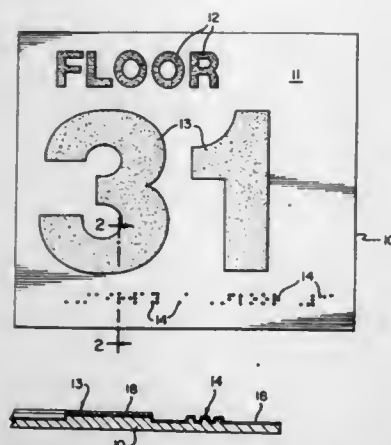
Filed Jan. 11, 1996, Ser. No. 584,007

Int. Cl.⁶ B44C 1/22

U.S. Cl. 216—4

8 Claims

1. A method of manufacturing a vandal-resistant sign having raised indicia extending from a background area, comprising the steps of:
 reverse-etching selected indicia on a surface of said steel plate to form said raised indicia and background area; and



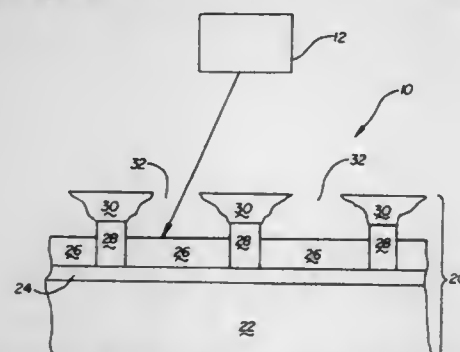
baking a porcelain enamel coating onto the raised indicia and background area of the metal plate.

5,779,920

LUMINESCENT SCREEN WITH MASK LAYER
Surjit S. Chadha, Meridian, and Dean A. Wilkinson, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Nov. 12, 1996, Ser. No. 747,216
Int. Cl.⁶ B44C 1/22

U.S. Cl. 216—12

24 Claims



1. A luminescent screen including a generally transparent substrate having a generally transparent electrode on the substrate, the screen comprising:

- phosphor material on the electrode, the phosphor material being located in distinct areas on the electrode, wherein the distinct areas define pixels in the screen;
- matrix material on the electrode, the matrix material being located between the pixels; and
- a mask layer having a first surface attached to the matrix material and a second surface opposite the first surface, the mask layer including voids formed through the first and second surfaces thereof, the voids generally corresponding to the pixels, wherein the area of each void is larger proximate the first surface than the area of the void proximate the second surface.

5,779,921

METHOD FOR SELECTIVELY PLATING AN ORGANIC SUBSTRATE
Randy E. Haslow, Donald G. Hutchins, and Michael R. Leaf, all of Eau Claire, Wis., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Nov. 8, 1996, Ser. No. 745,980

Int. Cl.⁶ B44C 1/22

U.S. Cl. 216—13

36 Claims

1. A method for making a substrate having differential front to back terminal metal thickness comprising the steps of:



- providing an organic based substrate having a conductive metal layer on a front and back side thereof;
- protecting the back side of the substrate, metallizing the front side wherein said metallizing is conducted by electroplating while electrically bussing the front side with the back side; and
- unprotecting the back side and protecting the front side and metallizing the back side by at least one of electroless plating or immersion plating.

5,779,922

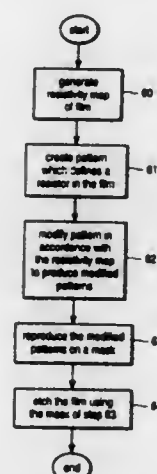
RESISTOR VALUE CONTROL TECHNIQUE
Paul R. Boon, Menlo Park, and John D. Husher, Los Altos Hills, both of Calif., assignors to Micrel, Incorporated, San Jose, Calif.

Filed Nov. 7, 1996, Ser. No. 745,925

Int. Cl.⁶ B44C 1/22

U.S. Cl. 216—16

7 Claims



1. A method for forming at least one resistive element in a first film formed on a wafer, said method comprising:
- generating data indicative of the resistivity of a second film as a function of position on said wafer;
 - creating a pattern defining a test resistive element;
 - modifying a width of said pattern to produce one or more modified patterns, said width being modified in accordance with said data so as to define said at least one resistive element;
 - reproducing said one or more modified patterns on a mask; and
 - etching said first film using said mask containing said one or more modified patterns to form said at least one resistive element.

5,779,923

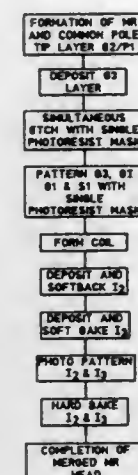
SIMPLIFIED METHOD OF MAKING MERGED MR HEAD

Mohamad Towfik Krounbi, and James Hsi-Tang Lee, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 205,006, Mar. 2, 1994, Pat. No. 5,435,053.
This application Jun. 7, 1995, Ser. No. 474,645

Int. Cl.⁶ G11B 5/127

U.S. Cl. 46—22

4 Claims



1. A method of making a thin film magnetic head wherein the head includes a coil and a gap layer G located between bottom and top pole pieces P1 and P2, the method comprising:
- forming the coil directly on top of the gap layer G so that the gap layer G can serve as a first insulation layer I for the coil;
 - forming a second insulation layer I2 on top of the coil;
 - soft baking the second insulation layer I2;
 - forming a third insulation layer I3 on top of the second insulation layer I2;
 - soft baking the third insulation layer I3;
 - photo patterning the third and second insulation layers I2 and I3 after soft baking; and
 - hard baking the first and second insulation layers I2 and I3.

5,779,924

ORDERED INTERFACE TEXTURING FOR A LIGHT EMITTING DEVICE

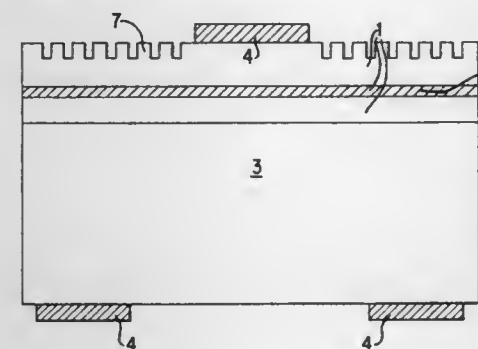
Michael R. Krames, Mountain View, and Fred A. Kish, Jr., San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 22, 1996, Ser. No. 620,518

Int. Cl.⁶ B44C 1/22

U.S. Cl. 216—24

22 Claims



1. A light emitting device comprising:
a device that includes,
a substrate,

a p-n junction region having multiple layers, wherein subsets of the multiple layers have opposing polarity such that a p-n junction is formed, one of the layers being adjacent the substrate,
a transparent window layer, positioned adjacent the p-n junction region, and
electrical contacts, connecting to the p-n junction region, being operative to forward bias the p-n junction; and
a primary interface, positioned in the device, that is textured with repeated features in at least one selected direction, having an associated periodicity in each of the selected directions to increase light extraction and, within a period, having a cross-sectional profile having at least one peak and at least one valley.

5,779,925

PLASMA PROCESSING WITH LESS DAMAGE
Koichi Hashimoto, Takeshi Kamata, Ynkobu Hikosaka, and Akihiro Hasegawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

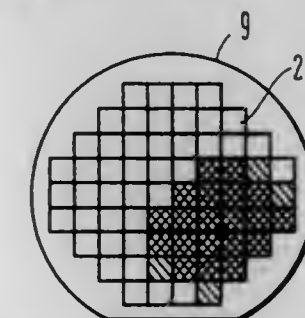
Filed Oct. 13, 1995, Ser. No. 542,622

Claims priority, application Japan, Oct. 14, 1994, 6-249836; Jul. 19, 1995, 7-183065

Int. Cl.⁶ H01L 21/02

U.S. Cl. 216—67

20 Claims



1. A method of manufacturing a semiconductor device including a transistor having an insulated gate with use of plasma wherein at least one selected from the group consisting of rf frequency, power, magnetic field, pressure, and gas species is selected so that an electron energy distribution in a plasma has an electron temperature Te expressed in electron volts which is smaller than B, where B is a breakdown voltage of the insulated gate expressed in volts, thereby allowing electrons to enter a conductive pattern appearing between insulating patterns having an aspect ratio higher than 1.

5,779,926

PLASMA PROCESS FOR ETCHING MULTICOMPONENT ALLOYS

Diana Xiaobing Ma, Saratoga, Calif.; Daisuke Tajima, Chiba-ken, Japan; Allen Zhao, Mountain View, Calif.; Peter K. Loewenhardt, Santa Clara, Calif., and Timothy R. Webb, San Francisco, Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 597,445, Feb. 2, 1996, which is a continuation-in-part of Ser. No. 389,889, Feb. 15, 1995, which is a continuation-in-part of Ser. No. 307,870, Sep. 16, 1994. This application Feb. 5, 1996, Ser. No. 596,960

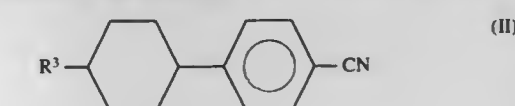
Int. Cl.⁶ B44C 1/22; C23F 1/00; H01L 21/00

U.S. Cl. 216—67

35 Claims

1. A method of etching a multicomponent alloy on a substrate, substantially without forming etchant residue on the substrate, the method comprising the steps of:

- placing the substrate in a process chamber comprising a plasma generator and plasma electrodes;
- introducing into the process chamber, process gas comprising a volumetric flow ratio V, of (i) a chlorine-containing gas



wherein R^3 is an alkyl group having 1 to 10 carbon atoms or an alkenyl group having 2 to 10 carbon atoms,
10 to 30% by weight of at least one compound as a third component selected from the group consisting of compounds represented by the formula (III)

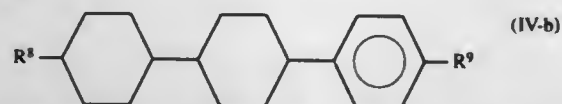


wherein R^4 is an alkyl group or an alkoxy group having 1 to 10 carbon atoms, and R^5 is an alkenyl group or an alkenyloxy group having 2 to 10 carbon atoms, and

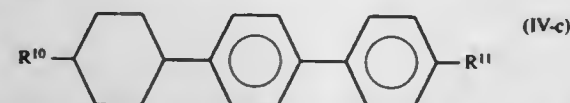
10 to 45% by weight of at least one compound as a fourth component selected from the group consisting of compounds represented by the formulae (IV-a), (IV-b), (IV-c) and (IV-d)



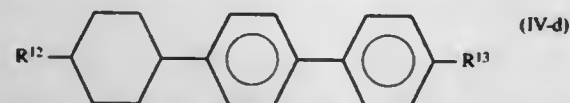
wherein R^6 is an alkenyl group having 2 to 10 carbon atoms, and R^7 is an alkyl group or an alkoxy group having 1 to 10 carbon atoms,



wherein R^8 is an alkyl group having 1 to 10 carbon atoms, and R^9 is an alkenyl group or an alkenyloxy group having 2 to 10 carbon atoms,



wherein R^{10} is an alkenyl group having 2 to 10 carbon atoms, and R^{11} is an alkyl group or an alkoxy group having 1 to 10 carbon atoms,



wherein R^{12} is an alkyl group having 1 to 10 carbon atoms, and R^{13} is an alkoxyalkyl group having 2 to 10 carbon atoms.

5,779,934

FLUORINE-CONTAINING OPTICALLY ACTIVE COMPOUND, PROCESS FOR PREPARING THE SAME AND LIQUID CRYSTAL MIXTURE AND LIQUID CRYSTAL ELEMENT COMPRISING THE SAME

Takayuki Higashi, Irvington, N.Y.; Yukari Fujimoto, Takatsuki, Japan; Tsutomu Matsumoto, Kyoto, Japan; Masayoshi Minal, Moriyama, Japan; Chizu Sekine, Tsukuba, Japan; Kyoko Endo, Ibaraki, Japan, and Koichi Fujisawa, Tsukuba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 14, 1995, Ser. No. 388,424

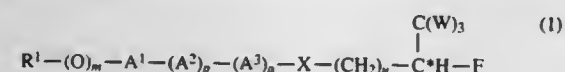
Claims priority, application Japan, Feb. 14, 1994, 6-017413

Int. Cl.⁶ C09K 19/34; C07D 239/00

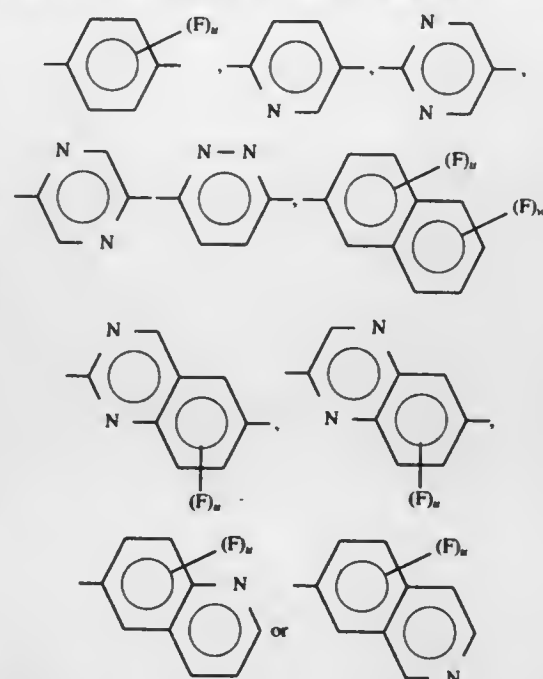
U.S. Cl. 252—299.61

15 Claims

1. A fluorine-containing optically active compound represented by the formula (I):

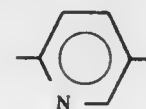


wherein R^1 is a saturated or unsaturated C_3 - C_{20} alkyl group or a saturated or unsaturated C_3 - C_{20} alkoxyalkyl group; A^1 , A^2 and A^3 independently represent one of the following groups:



provided that, when A^1 is a condensed ring group, a sum of p and q is 0 or 1 and A^2 and A^3 are both monocyclic groups, or when A^1 is a monocyclic group, a sum of p and q is 1 or 2 with the proviso that when the sum of p and q is 2, A^2 and A^3 are both monocyclic groups; X is $-\text{CH}_2\text{CH}_2-$, $-\text{CH}=\text{CH}-$ or $-\text{C}\equiv\text{C}-$; W is a fluorine atom or a hydrogen atom; n is an integer of 1 to 10; m, p and q are each 0 or 1; u and w are each an integer of 0 to 3; and * indicates an asymmetric carbon atom; and with the further proviso that A^3 is not

when X is $-\text{CH}_2\text{CH}_2-$, A^1 is a monocyclic group, and q is 1, or that A^2 is not



when X is $-\text{CH}_2\text{CH}_2-$, A^1 is a monocyclic group, and q is 0.

5,779,935

FERROELECTRIC LIQUID CRYSTAL MIXTURE

Ayako Takeichi, Tokorozawa, Japan, and Gerhard Illian, Erftstadt, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 315,091, Sep. 29, 1991, Pat. No. 5,695,683.

This application Mar. 24, 1997, Ser. No. 822,801

Claims priority, application Japan, Sep. 30, 1993, 5-245485

Int. Cl.⁶ C09K 19/34; 19/32

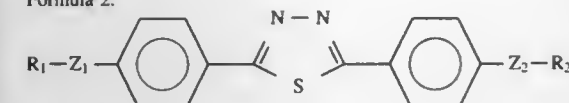
U.S. Cl. 252—299.61

7 Claims

1. A ferroelectric liquid crystal mixture comprising at least one of the compounds of each of the formulae 2 and 3, and having a

Sc/Sa phase transition temperature of 60° C. or more and a cone angle of 47 degrees or less at a temperature between 15° C. and 35° C.:

Formula 2:



wherein at least one optional $=\text{C}-\text{H}$ group of the aromatic ring may be substituted with $=\text{N}-$;

R_1 and R_2 each independently represents

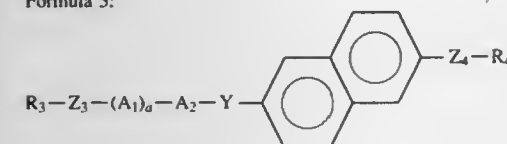
- a hydrogen atom;
- a straight chain or branched chain alkyl group having from 2 to 16 carbon atoms, in which one or two non-adjacent $-\text{CH}_2-$ groups may be substituted with $-\text{O}-$, $-\text{CO}-$, $-\text{O}-\text{CO}-$, $-\text{Si}(\text{CH}_3)_2-$; and a terminal methyl group may be substituted with a cyclopropyl group; or

(c):



wherein n is an integer of from 1 to 10; and Z_1 and Z_2 each represents a single bond, $-\text{O}-$, $-\text{CO}-$, $-\text{O}-\text{CO}-$, $-\text{O}-\text{CH}_2-$ or $-\text{CH}_2-\text{O}-$; provided that, when R_1 is (c), Z_1 is $-\text{CO}-\text{O}-$ or $-\text{CH}_2-\text{O}-$, and that, when R_2 is (c), Z_2 is $-\text{O}-\text{CO}-$ or $-\text{OCH}_2-$; and

Formula 3:



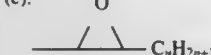
wherein A_1 and A_2 , which may be the same or different, each represents 1,4-phenylene in which one or two hydrogen atoms may be substituted with F or pyridine-2,5-diyl or pyrimidine-2,5-diyl in which one or two hydrogen atoms may be substituted with F;

a is 0 or 1; and

R_3 and R_4 each independently represents

- a hydrogen atom;
- a straight chain or branched chain alkyl group having from 2 to 16 carbon atoms, in which one or two non-adjacent $-\text{CH}_2-$ groups may be substituted with $-\text{O}-$, $-\text{CO}-$, $-\text{O}-\text{CO}-$, $-\text{Si}(\text{CH}_3)_2-$; and a terminal methyl group may be substituted with a cyclopropyl group; or

(c):



wherein n is an integer of from 1 to 10;

Y is a single bond, $-\text{O}-\text{CO}-$, $-\text{CO}-\text{O}-$, $-\text{O}-\text{CH}_2-$ or $-\text{CH}_2-\text{O}-$; and

Z_3 and Z_4 each represents a single bond, $-\text{O}-$, $-\text{CO}-$, $-\text{O}-\text{CO}-$, $-\text{CH}_2-\text{O}-$ or $-\text{O}-\text{CH}_2-$; provided that, when R_3 is (c), Z_3 is $-\text{CO}-\text{O}-$ or $-\text{CH}_2-\text{O}-$, and that, when R_4 is (c), Z_4 is $-\text{O}-\text{CO}-$ or $-\text{O}-\text{CH}_2-$.

5,779,936

LIQUID CRYSTALLINE COMPOUND AND LIQUID CRYSTAL COMPOSITION CONTAINING THE SAME

Kazutoshi Miyazawa; Shuichi Matsui; Atsuko Fujita; Tomoyuki Kondo; Yasuyuki Goto; Etsuo Nakagawa, and Shinichi Sawada, all of Chiba, Japan, assignors to Chisso Corporation, Osaka, Japan

PCT No. PCT/JP94/01914, § 371 Date Jul. 24, 1996, § 102(e)

Date Jul. 24, 1996, PCT Pub. No. WO95/20021, PCT Pub.

Date Jul. 27, 1995

PCT Filed Nov. 11, 1994, Ser. No. 682,678

Claims priority, application Japan, Jan. 25, 1994, 6-6629;

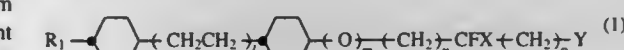
Jun. 10, 1994, 6-129304

Int. Cl.⁶ C09K 19/30; C07C 22/08

U.S. Cl. 252—299.63

16 Claims

1. A liquid crystalline compound expressed by the general formula (1)



wherein R_1 is an alkyl group having 1 to 12 carbon atoms and one CH_2 group in the alkyl group may be replaced by oxygen atom or $-\text{CH}=\text{CH}-$; X represents hydrogen atom or fluorine atom; Y represents hydrogen atom or alkoxy group having 1 to 5 carbon atoms; l and m independently represent 0 or 1, respectively; and n and p independently represent an integer of 0 to 10, respectively, and when p is 0, n is 2 or more, and when Y is an alkoxy group, X is fluorine atom and p is 0, provided that in no case X is fluorine atom, p is 0, and Y is hydrogen atom when m is 0.

5,779,937

ORGANIC ELECTROLUMINESCENT DEVICE

Takeshi Sano, Hirakata; Yuji Hamada, Ikoma-gun, and Kenichi Shibata, Hashimoto, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, Japan

Filed Apr. 29, 1996, Ser. No. 638,734

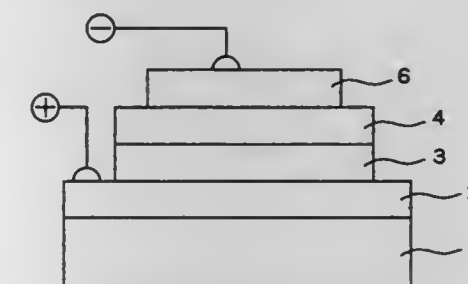
Claims priority, application Japan, May 16, 1995, 7-142713;

Aug. 4, 1995, 7-219743

Int. Cl.⁶ B32B 9/00

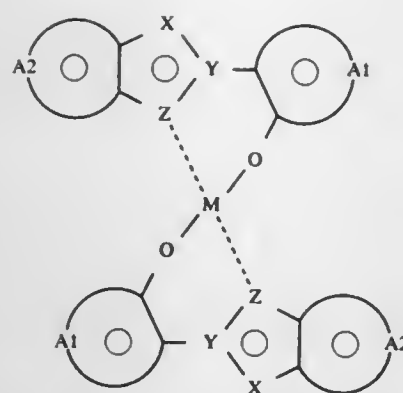
U.S. Cl. 252—301.16

3 Claims



1. An organic electroluminescent device in which at least a carrier transporting layer and a luminescent layer using an organic material are laminated between a hole injection electrode and an electron injection electrode, wherein

a chelate compound, indicated by the following chemical formula, having as a ligand a heterocyclic compound is contained in said carrier transporting layer:



wherein, in the foregoing chemical formula, X and Z are any elements selected from C, S, Se, Te, N and P, Y is any one element selected from C and P, (A1) is an aromatic radical or a heterocyclic radical in which a hydroxyl group is bound to said Y in an ortho position, (A2) is a radical which is bound to carbon to which said X is bound and carbon to which said Z is bound to constitute an aromatic compound or a heterocyclic compound, and a central metal ion M in said chelate compound is a metal ion in Group II of a periodic table.

5,779,938

COMPOSITIONS AND METHODS FOR INHIBITING CORROSION

Ali Naraghi, Missouri City, and Philippe Prince, Pearland, both of Tex., assignors to Champion Technologies, Inc., Fresno, Tex.

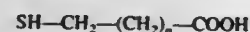
Filed Aug. 24, 1995, Ser. No. 518,985

Int. Cl.⁶ C09K 3/00; 7/00; C23F 11/00

U.S. Cl. 252—391

35 Claims

1. A composition for inhibiting corrosion comprising: the reaction product of at least one tertiary amine and at least one mercapto carboxylic acid of the formula:



wherein n is an integer from 0 to 2.

5,779,939

CORROSION PREVENTING COMPOSITION COMPRISING LACTOBIONIC ACID AMIDES

Klaus-Guenter Gerling, Laatzen; Heige Rau, Burgdorf; Kornelia Wendler, Sehnde; Petra Schwarz, Hannover, and Karlheinz Uhlig, Krefeld, all of Germany, assignors to Solvay Deutschland GmbH, Hannover, Germany

Filed Feb. 13, 1996, Ser. No. 600,613

Claims priority, application Germany, Feb. 13, 1995, 195 04 639.0

Int. Cl.⁶ C23F 11/00; 14/00; C09K 3/00

U.S. Cl. 252—392

6 Claims

1. A corrosion inhibiting composition comprising 0.1 to 20% by weight lactobionic acid N-alkylamides, said composition further comprising at least one further corrosion inhibiting agent selected from the group consisting of petroleum sulfonates and mineral oils and having a pH below pH 9.0.

5,779,940

Patent Not Issued For This Number

5,779,941

1,2-N-ACYL-N-METHYLENE-ETHYLENEDIAMINE, AND ELECTROCONDUCTIVE PASTE COMPRISING IT

Hiroaki Umeda; Tsunehiko Terada, and Hisatoshi Murakami, all of Osaka, Japan, assignors to Tatsuta Electric Wire and Cable Co., Ltd., Osaka, Japan

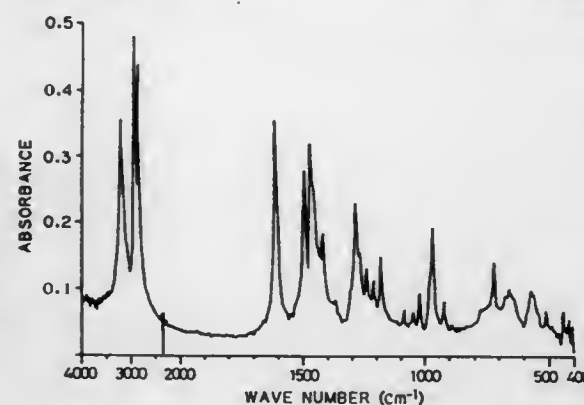
Filed Apr. 22, 1997, Ser. No. 844,817

Claims priority, application Japan, Apr. 26, 1996, 8-106957; Apr. 26, 1996, 8-106958; Oct. 29, 1996, 8-286292

Int. Cl.⁶ H01B 1/22; C07C 233/00

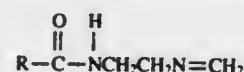
U.S. Cl. 252—512

6 Claims



1. 1,2-N-acyl-N-methylene-ethylenediamines of a general formula (I):

(I)



wherein R represents a hydrogen atom or a hydrocarbon group.

5,779,942

LONG-CHAIN DIALKYLMAGNESIUM, ITS PREPARATION PROCESS AND APPLICATIONS

Jean-François Pelletier, La Garde; Karel Bujadoux, Dunkerque; Xavier Olonde, Neuville En Ferrain; Emmanuel Addison, Arques; André Mortreux, Hem, and Thomas Chenal, Villeneuve D'Ascq, all of France, assignors to Enichem S.p.A., Milan, Italy, and Université Des Sciences Et Technologies De Lille, Villeneuve D'Ascq, France

Filed Apr. 5, 1996, Ser. No. 628,373

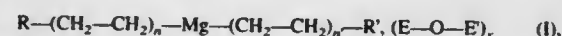
Claims priority, application France, Apr. 7, 1995, 95 04203

Int. Cl.⁶ C07F 3/02

U.S. Cl. 260—665 R

19 Claims

1. A long-chain dialkylmagnesium composition represented by formula (I):



wherein:

R and R' each independently represent a C₁-C₂₀ hydrocarbon residue, branched or unbranched, substituted or unsubstituted, of the alkyl, cycloalkyl, or aralkyl type;
n and m, identical or substantially identical, each represent an average number of —CH₂—CH₂— linkages such that an average number of carbon atoms in each of the two chains borne by Mg is greater than 20;
E and E', identical or different, each represent an alkyl radical, linear or cyclical, branched or unbranched; and
0 ≤ x ≤ 2, wherein x represents an average value of the number of moles of E—O—E' ether complexed to the dialkylmagnesium.

5,779,943

MOLDED POLYMERIC OBJECT WITH WETTABLE SURFACE MADE FROM LATENT-HYDROPHILIC MONOMERS

John B. Enns; Allan W. Kimble; Susan B. Orr, and Douglas G. Vanderlaan, all of Jacksonville, Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Filed Mar. 19, 1996, Ser. No. 620,685

Int. Cl.⁶ B29D 11/00

U.S. Cl. 264—1.7

28 Claims

1. A process for preparing the molded article of manufacture comprising a body of a bulk polymer coated with a latent-hydrophilic polymerizable material;

- coating an inner surface of a mold with a latent-hydrophilic, normally hydrophobic polymerizable material;
- filling the coated mold of step (a) with a monomeric material which is polymerizable to an oxygen-permeable polymeric material;
- curing the mold contents of step (b) to produce a coated molded object; and
- treating said coated molded object of step (c) with a solution having a pH from 5 to 9 to convert the coating to a hydrophilic form.

5,779,944

WATER DISPERSIBLE PERFLUOROETHER POLYMER ENCAPSULATES

Stephen L. Kopelow, Plainsboro, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Filed Oct. 10, 1997, Ser. No. 948,914

Int. Cl.⁶ A61K 7/00; 9/50

U.S. Cl. 264—4.7

23 Claims

1. A stable composition comprising an aqueous suspension of water insoluble perfluoroether polymer microdroplets encapsulated by a water soluble vinyl lactam polymer.

5,779,945

PROCESS FOR PRODUCING GRANULES

Pieter J. B. Nijsten, Meerssen, and Peter J. M. Starmans, Nuth, both of Netherlands, assignors to DSM N.V., Heerlen, Netherlands

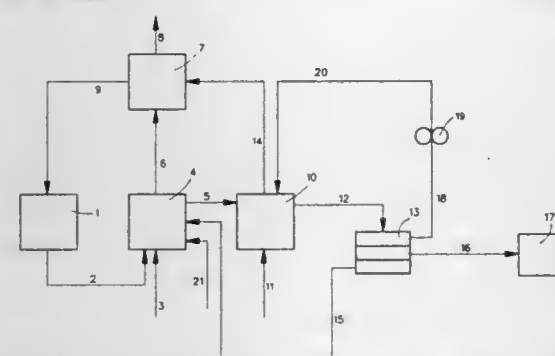
Filed Apr. 15, 1997, Ser. No. 838,131

Claims priority, application Netherlands, Apr. 15, 1996, 1002862

Int. Cl.⁶ B29B 9/08

U.S. Cl. 264—7

13 Claims



1. A process for the production of granules from a liquid composition, said process comprising the steps of: applying the liquid composition onto solid particles recirculating in a granulation zone of a granulator, thereby depositing and solidifying said liquid composition around said solid particles to increase the size of the particles and thereby form grown solid particles; discharging a stream of said grown solid particles from the granulation zone to a cooler;

cooling said stream of said grown solid particles in said cooler to produce a cooled stream of said grown solid particles; dividing, in a size-sorting apparatus, said cooled stream of said grown solid particles into individual streams based on the size of said grown solid particles to thereby produce streams of undersized, oversized, and desired-sized grown solid particles; recycling said stream of said undersized grown solid particles to said granulation zone; transferring said stream of said oversized grown solid particles to a size-reducing apparatus; crushing said stream of said oversized grown solid particles in said size-reducing apparatus, thereby reducing the particle size of said oversized grown solid particles and thereby producing a stream of crushed solid particles; recycling said stream of said crushed solid particles to said cooler; and withdrawing said stream of desired-sized grown solid particles.

5,779,946

METHOD FOR SPIN PROCESSING MATERIAL HAVING TEMPERATURE FEEDBACK CONTROL

Beuford A. Bogue, Broad Run, and John A. Hrubec, Annandale, both of Va., assignors to Fuisz Technologies Ltd., Chantilly, Va.

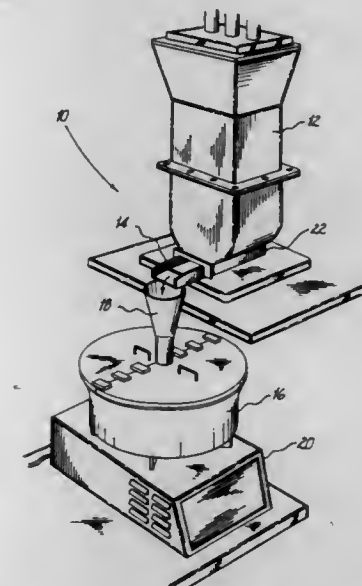
Division of Ser. No. 677,251, Jul. 9, 1996, which is a continuation of Ser. No. 425,337, Apr. 18, 1995, abandoned, which is a continuation of Ser. No. 49,773, Apr. 19, 1993, abandoned.

This application Oct. 10, 1996, Ser. No. 729,274

Int. Cl.⁶ B29C 67/00

U.S. Cl. 264—8

9 Claims



1. A temperature controlled thermo flow melt-spinning process, comprising the steps of: introducing processing material to a chamber within a spinner head containing a heater element; supplying power to said heater element in order to process said material; detecting a temperature at a locus on said heater element where an internal flow condition for the processing material is created; and transmitting a signal to said power source dependent on the detected temperature such that the internal flow condition may be controlled.

5. A method of thermo flow melt spin processing of a solid material capable of intraparticle flow comprising the steps of: providing a spinner head having a perimetrical processing wall, said processing wall being formed of an electrically powered resistance heater having at least one opening through which said material is processed;

inserting said material into said spinner head;
heating said processing wall to a processing temperature sufficient to effect said intraparticle flow of said material;
rotating said spinner head to urge said material through said processing wall; and
controlling said temperature of said processing wall at a location thereon where said material undergoes said intraparticle flow.

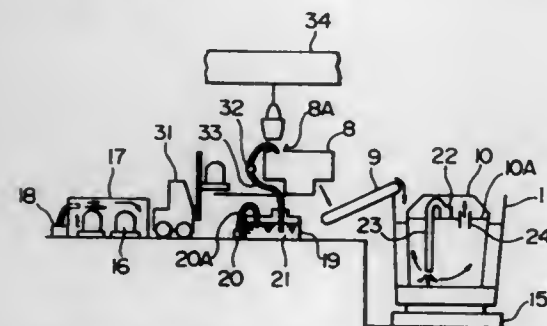
5,779,947
METHOD OF CASTING CASTABLE REFRACTORIES OF VESSEL FOR MOLTEN METAL

Keisuke Adachi, Kurashiki; Michihito Kuwayama, Chiba; Momoki Kamo; Masakazu Yoshida, both of Kurashiki; Tsutomu Yoshida, and Norio Miki, both of Akou, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, and Kawasaki Refractories Co., Ltd., Akou, both of Japan
Filed Nov. 19, 1996, Ser. No. 752,283

Int. Cl.⁶ F27D 1/16

U.S. Cl. 264—30

12 Claims



1. A method of casting castable refractories to line a vessel for molten metal, comprising:
forming castable refractories by kneading monolithic refractories with an aqueous solution of a binder containing alumina cement; and
casting said castable refractories while maintaining the refractories within a set temperature range of from about 20° C. to 40° C.;
wherein said step of casting consists of lining or relining the vessel for molten metal.

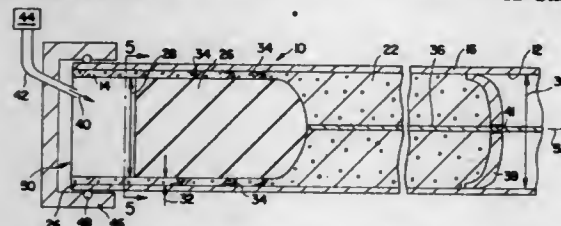
5,779,948
METHOD OF LINING A PIPELINE USING A CONSTANT EXTRUSION PRESSURE

Alfred G. Perkins, deceased late of McCormick S.C. by Patricia R. Perkins, 196 Savannah Dr., McCormick, S.C. 29835
Filed Mar. 11, 1996, Ser. No. 613,851

Int. Cl.⁶ B32B 35/00; E04B 1/16; F16L 55/18

U.S. Cl. 264—35

12 Claims



1. A method of lining a pipeline section with a mortar comprising the steps of: (a) inserting a quantity of the mortar into the pipeline section; (b) inserting a mandrel into the pipeline section behind the mortar; (c) applying a pushing force to the mandrel and the mortar to overcome resistance to movement thereof; (d) applying a pull to the mandrel; and (e) regulating tension of the pull to maintain a constant tension pull on the mandrel to effect movement of the mandrel at a constant rate relative to a portion of the mortar

between the mandrel and a wall of the pipeline section to thereby effect extrusion of the mortar onto an inner wall of the pipeline section to form a lining of mortar on the pipeline section.

5,779,949
CONVERSION OF LEAD-CONTAMINATED SOIL INTO CERAMIC PRODUCTS

Glenn M. Mason, Floyds Knobs, Ind., and Edward M. Bryan, Boca Raton, Fla., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Aug. 14, 1996, Ser. No. 689,837

Int. Cl.⁶ C04B 33/02

U.S. Cl. 264—40.1

3 Claims

1. A process for preparing construction brick or tile from lead-contaminated soil, which consists essentially of the following steps:

- analyzing the soil for clay, sand and limestone content;
- based on the analyzing step, adjusting and mixing said soil with brick or tile fabricating ingredients to form a premix for producing semi-vitrified to vitrified brick or tile suitable for use in construction;
- forming said premix into suitable shapes; and
- firing said shaped premix at a temperature and for a time sufficient to convert metallic lead, lead alloys or lead compounds present into covalently-bound lead compounds and to produce a semi-vitrified to vitrified brick or tile suitable for use in construction.

5,779,950
METHOD OF MAKING A SYNTHETIC FIBER CONTAINING INFRARED ENERGY POWDER

Dong Soon Kang, Keumjung-Ku, Jang-Jun 1 Dong 222-44 Pusan, Rep. of Korea

Filed Dec. 2, 1996, Ser. No. 759,876

Int. Cl.⁶ D01F 1/10

U.S. Cl. 264—40.4

18 Claims

1. A method of making a synthetic fiber containing the infrared energy powder, which comprises the steps of:

- mixing a predetermined quantity of a synthetic material with a predetermined quantity of the infrared energy powder to form a mixture of the synthetic material and the infrared energy powder;
- adding a predetermined quantity of silicone oil into the mixture of the synthetic material and the infrared energy powder to form a blend of ready to draw substance; and
- drawing one or more strands of synthetic fiber containing the infrared energy powder from the blend of ready to draw substance.

5,779,951
METHOD OF FORMING A VEHICLE WHEEL HAVING INJECTION MOLDED ANNULAR FILLER RING IN WHEEL CAVITY

Martin D. Osborne, Ann Arbor, Mich., assignor to Hayes Lemmerz International, Inc., Romulus, Mich.

Filed Jan. 7, 1997, Ser. No. 779,587

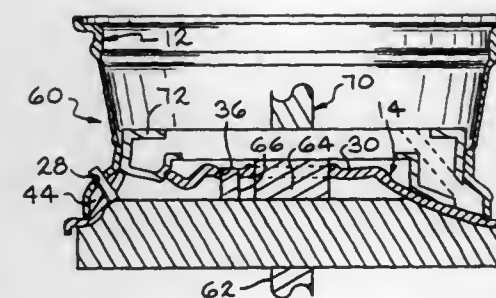
Int. Cl.⁶ B29C 44/06; 44/12; 45/16

U.S. Cl. 264—46.5

9 Claims

1. A method for producing a vehicle wheel comprising the steps of:

- providing a rim and a disc;
- securing the rim and the disc together to produce a wheel construction which defines a circumferential cavity;
- moving a mold into engagement with an inner surface of the wheel adjacent the circumferential cavity; wherein the mold includes an outer portion formed of a pliable material and having a profile which generally corresponds to the profile of



adjacent surfaces of the wheel, the pliable outer portion of the mold operative to take up any variations in the wheel profile so as to form a seal at wheel engagement surfaces and thereby isolate the circumferential cavity;
(d) injecting a filler material through a passageway formed in the mold into the circumferential cavity; and
(e) curing the filler material in the circumferential cavity to form an injection molded generally annular filler ring.

5,779,952
METHOD OF FABRICATING A MOLDED PART OF THERMOPLASTIC RESIN

Koichi Matsumoto, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Continuation of Ser. No. 296,649, Aug. 26, 1994, abandoned.

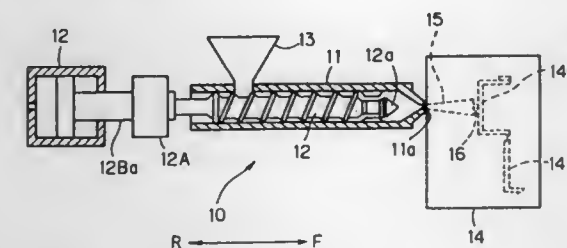
This application Oct. 29, 1996, Ser. No. 741,387

Claims priority, application Japan, Sep. 10, 1993, 5-249906

Int. Cl.⁶ B29C 44/02

U.S. Cl. 264—51

1 Claim



1. A method of fabricating a molded part in which plasticized thermoplastic resin is injected into a cavity within a mold from an injection gate of an injection molding machine to form said molded part, said method comprising

introducing of a mixture of said resin and a foaming agent into a chamber, said foaming agent adapted to generate foam under foaming conditions which are above a minimum temperature and below a maximum pressure,
feeding said mixture from said chamber into a first cavity in said mold for forming a first thick-walled portion, feeding said mixture from said first cavity into a hinge cavity for forming a hinge portion, and feeding said mixture from said hinge cavity into a second cavity, thereby filling said mold, said hinge cavity having a thickness less than that of said first cavity and of said second cavity,
said foaming agent being outside said foaming conditions while within said chamber, said first cavity, and said hinge cavity, said agent being within said foaming conditions when in said second cavity, whereby foaming takes place in said second cavity,
said mixture being above said maximum pressure and below said minimum temperature in said chamber, below said maximum pressure and below said minimum temperature in said first cavity and upon entry into said hinge cavity, whereby feeding said mixture through said hinge cavity into said second cavity increases a temperature of said mixture above said minimum temperature so that foaming takes place in said second cavity.

5,779,953
METHOD AND A DEVICE FOR MAKING CONCRETE PRODUCTS

Olli Harala, Petsamontie; Risto Sutinen, Toijala, and Lassi Järvinen, Koulukatu, all of Finland, assignors to Partek Concrete Engineering Oy, Toijala, Finland

PCT No. PCT/Fin/00228, § 371 Date Oct. 29, 1996, § 102(e)

Date Oct. 29, 1996, PCT Pub. No. WO95/29799, PCT Pub.

Date Nov. 9, 1995

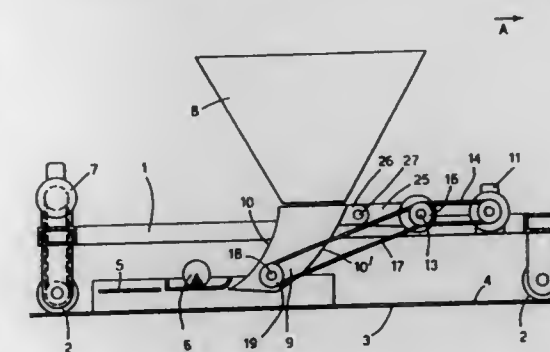
PCT Filed Apr. 26, 1995, Ser. No. 732,470

Claims priority, application Finland, Apr. 29, 1994, 941992

Int. Cl.⁶ B28B 1/08; 13/02

U.S. Cl. 264—70

24 Claims



1. A method of casting concrete products with a slide casting apparatus, comprising the steps of:

moving the slide casting apparatus, the slide casting apparatus including a feeding hopper having a discharge opening and a mold disposed below the feeding hopper, in a path of travel along a base;
feeding concrete mix into the mold through the feeding hopper, the feeding hopper tapering downward as far as the discharge opening;
moving the feeding hopper along a path of motion deviating from the path of travel of the apparatus;
compacting the mix at a bottom end of the feeding hopper; and
controlling the path of motion of the feeding hopper such that a vertical component of a path of motion of a bottom part of the feeding hopper exceeds a vertical component of a path of motion of a top part of the feeding hopper the vertical component of the path of motion of the top part of the feeding hopper being >0 or =0.

5,779,954
PROCESS FOR MANUFACTURING A HOLLOW BODY

Anne Tinant, Brussels, and Roger Houba, Gembloux, both of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Mar. 13, 1996, Ser. No. 614,999

Claims priority, application Belgium, Mar. 14, 1995, 09500225

Int. Cl.⁶ C08J 7/00

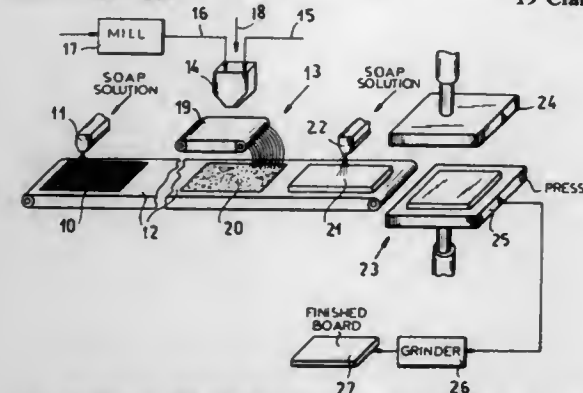
U.S. Cl. 264—83

5 Claims

1. A process for manufacturing a plastic hollow body associated with a fuel supply circuit, comprising:
treating a surface of at least a portion of the hollow body consisting essentially of a plastic including polyalkyleneimine with at least one sulphonation step; and
treating said surface with at least one neutralization step carried out by contacting said surface with at least one polyamine compound.

5,779,955
METHOD OF MAKING SHAPED BODIES ESPECIALLY
BOARDS
Dieter Siempelkamp, Krefeld, Germany, assignor to G. Siem-
pelkamp GmbH & Co., Krefeld, Germany
Filed Feb. 24, 1997, Ser. No. 805,410
Int. Cl.⁶ B27N 3/04

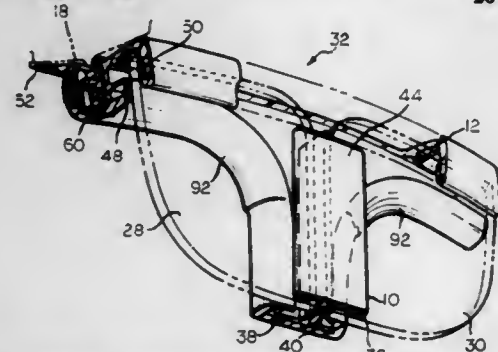
U.S. Cl. 264—109 19 Claims



1. A method of making shaped bodies comprising the steps of:
 - (a) mixing a comminuted vegetable material with a water-curable isocyanate binder and an amount of water in excess of that required to cure said binder to form a setttable mixture;
 - (b) coating a support for said mixture with a layer of a liquid parting agent;
 - (c) depositing said setttable mixture on said layer of said liquid parting agent on said support;
 - (d) applying to an upper side of the setttable mixture on said support another layer of said liquid parting agent;
 - (e) thereafter pressing said setttable mixture on said support at an elevated temperature and pressure to shape a body from said setttable mixture while causing curing of said binder to form a shaped body.

5,779,956
METHOD FOR MOLDING A GLASS RUN CHANNEL
CORNER ASSEMBLY
Chris J. Hollingshead, Wabash, and Eric E. Gardner, Hartford
City, both of Ind., assignors to GenCorp Inc., Fairlawn, Ohio
Division of Ser. No. 329,605, Oct. 26, 1994, Pat. No. 5,566,510.
This application Aug. 16, 1996, Ser. No. 699,887
Int. Cl.⁶ B29C 45/14; 65/70

U.S. Cl. 264—138 20 Claims



1. A method of forming a glass run channel corner assembly to join an extruded rigid division post glass run channel and an extruded flexible header glass run channel, the division post glass run channel including an H-shaped cross sectional member having an outboard sealing lip and an opposing inboard sealing lip joined together a selected distance by a cross-piece which functions as a divider to define opposing glass run channels, the header glass run channel including an inboard sealing lip, outboard sealing lip, inside reveal sealing lip, and a bulb, wherein an inwardly facing edge of the outboard sealing lip, an outwardly facing edge of the inboard sealing lip and the bulb cooperatively form a C-shaped

channel and the inside reveal sealing lip and the inboard sealing lip cooperatively form a C-shaped channel to receive a metal flange of an upper door frame, the method comprising the steps of:

- a) inserting the division post glass run channel and the header glass run channel within a mold assembly in a predetermined arrangement;
- b) supporting the outboard sealing lip of the header glass run channel a selected distance from the outboard sealing lip of the division post glass run channel within the mold assembly; and
- c) injecting an elastomeric material within the mold assembly to form a glass run channel corner assembly having a curved inboard sealing lip which bonds with and joins the inboard sealing lip of the header glass run channel and the inboard sealing lip of the division post glass run channel and forms an inboard presentation surface of the division post glass run channel and the inside reveal sealing lip of the header glass run channel such that the outboard sealing lip of the division post glass run channel is independent of the outboard sealing lip of the header glass run channel.

5,779,957
ARTICLE, IN PARTICULAR A BUILDING COVERING
PLATE, AND PROCESS FOR MANUFACTURING SAID
ARTICLE

Claude Caampomier, Saint-Avertin, and Pascal Soukatchoff,
Saint-Christophe, both of France, assignors to Matériaux De
Construction International, Courbevoie, France
PCT No. PCT/FR94/01415, § 371 Date Jul. 29, 1996, § 102(c)
Date Jul. 29, 1996, PCT Pub. No. WO95/16644, PCT Pub.
Date Jun. 22, 1995

PCT Filed Dec. 5, 1994, Ser. No. 663,231
Claims priority, application France, Dec. 16, 1993, 93 15184
Int. Cl.⁶ B29C 47/00

U.S. Cl. 264—151 13 Claims

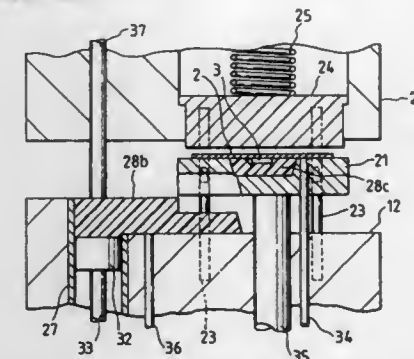


1. Process for manufacturing a shaped article in the form of a plate having a specific gravity of no more than 1.85 and isotropic mechanical properties, comprising a hydrated matrix containing cement and sand and reinforced by fibers, the process comprising:
 - a) mixing to obtain a substantially homogeneous paste, a hydrated matrix containing 100 parts by weight of cement and about 80 to 120 parts by weight of sand having a grain size of less than 1 mm, water with a water/cement ratio by weight between 0.30 and 0.40, and alkali-resistant glass fibers having a length/diameter ratio between 100 and 200, present in a proportion of about 3 to 4% by weight relative to the hydrated matrix;
 - b) extruding and plasticizing the paste in a screw extruder to form a strip; and
 - c) after or before the cutting of said strip rolling the strip in the form of a plate and reorienting the glass fibers contained therein.

5,779,958
METHOD FOR PACKAGING ELECTRONIC DEVICE
Syujiron Nishihara, Fukuoka, and Teruaki Nishinaka,
Kasuga, both of Japan, assignors to Matsushita Electric
Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 360,052, Dec. 20, 1994, abandoned.
This application Jan. 14, 1997, Ser. No. 782,250
Claims priority, application Japan, Dec. 22, 1993, 5-324628
Int. Cl.⁶ B29C 33/42; 33/44; 45/02

U.S. Cl. 264—161

3 Claims

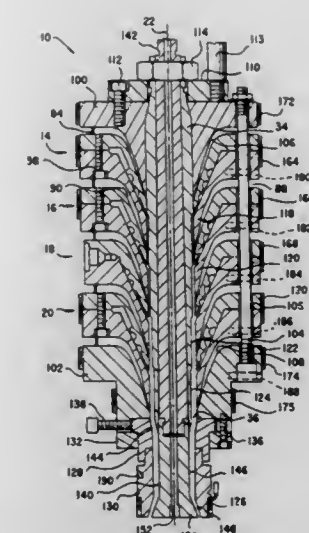


1. A process for packaging a chip mounted on a circuit substrate with a resin material which avoids the formation of resin burrs on the chip comprising the steps of:
 - retaining the circuit substrate on a major surface of a one-piece cavity block so that the chip is disposed in a recessed portion formed in the major surface, and surrounded by a continuous wall of said cavity, the cavity block having formed in a surface opposite the major surface a tapered groove communicating with the bottom of the recessed portion said groove having tapered side walls which widen towards the bottom of said recessed portion;
 - pressing the circuit substrate against the major surface of the cavity block;
 - injecting a melted resin material into the recessed portion formed in the cavity block through the groove to package the chip said resin being contained within said continuous wall inhibiting the formation of burrs on said chip package wherein said resin material hardens forming said chip package and said tapered groove facilitating removal of hardened resin;
 - removing the hardened resin out of the groove for separation from said chip package; and
 - removing said chip package out of the recessed portion.

5,779,959
PROCESS FOR FORMING PLASTIC ARTICLES
Erich O. Teutsch, Pittsfield, Mass., and Dennis J. Coyle, Clifton
Park, N.Y., assignors to General Electric Company, Pitts-
field, Mass.
Continuation of Ser. No. 368,672, Jan. 4, 1995, abandoned,
which is a continuation of Ser. No. 797,021, Nov. 25, 1991,
Pat. No. 5,393,216, which is a continuation-in-part of Ser. No.
585,452, Sep. 20, 1990, Pat. No. 5,069,612. This application
Jul. 8, 1996, Ser. No. 676,997
Int. Cl.⁶ B29C 47/06; 49/22

U.S. Cl. 264—171.26 14 Claims

1. A process for forming articles from a polymeric resin, comprising: disposing and securing a plurality of extrusion modules along a longitudinal axis; each of said modules having outer periphery and coaxially aligned annular resin outlets extending along the longitudinal axis and having an upper member having a lower surface and a lower member having an upper surface, said, respective lower and upper surfaces facing to define an annular frustoconical resin passage between said surfaces wherein at least one of said facing surfaces has a frustoconical shape, each of said modules having a resin inlet on the periphery of said module communicating with a respective resin passage for introducing the resin to the respective resin passage, each of said modules having



a respective annular resin outlet communicating with the respective resin passage for extruding the resin from the resin passage in annular form, each of said respective resin passages include a pair of inlet extensions communicating with said resin inlet for distributing resin to opposing spaced apart locations, a pair of spiral channel means extending from respective inlet extensions for defining a spiral flow path for resin introduced through the resin inlet to flow from respective inlet channels to the annular resin outlet, wherein each spiral flow path extends in the same direction and substantially symmetrically circumscribes the longitudinal axis of the module, each of said spiral channel means being formed on at least one of said upper or lower surface having a frustoconical shape and having a cross-sectional area gradually decreasing long the length thereof from an origin thereof to an endpoint with the depth of respective spiral channels changing linearly along a direction from a respective inlet extension toward a respective annular outlet wherein each spiral channel has a substantially constant pitch along said frustoconical surface, said respective lower surface of said upper member and said respective upper surface of said lower member diverging toward said annular outlet for increasing the thickness of said resin passage along the length of the spiral channel from said origin thereof to said end point thereof whereby resin is gradually dispersed from said respective spiral channels into the increasing width of the frustoconical passage to distribute resin thereto and evenly distributed about said annular outlet so that all resin that is introduced to a respective module through a respective resin inlet flows through the resin passage to said resin outlet is subjected to substantially the same process conditions within the module; introducing the resin into said respective resin inlets under conditions that allow the resin to flow through the channel means to the respective annular resin outlets whereby the resin arrives at each annular outlet with properties which are substantially uniform around the entire annular resin outlet; extruding the resin through the respective annular resin outlets to form an annular shaped article.

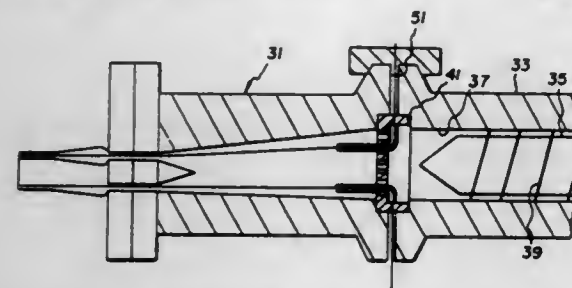
5,779,960
ALGAL PLASTICS
Laurence Berlowitz-Tarrant, Harvard, Mass.; Toshimasa
Tukumo, Tokyo, Japan, and Satya Shivkumar, Worcester,
Mass., assignors to International Technology Management
Associates, Inc., Harvard, Mass.
Continuation-in-part of Ser. No. 11,408, Jan. 29, 1993, Pat.
No. 5,352,709. This application Oct. 3, 1994, Ser. No. 317,936
Int. Cl.⁶ C08L 5/00

U.S. Cl. 264—176.1 23 Claims

1. A method of forming a solid packing material comprising subjecting a filamentous green algal pulp to a plastic forming process which results in a solid algal fiber matrix having a substantial degree of dimensional stability, wherein said pulp is prepared by pulping a filamentous green algal mass using a pulping process

which is selected to substantially retain the fibrous structure of the algae, while minimizing damage to the inherent fiber structure of the filamentous green algae.

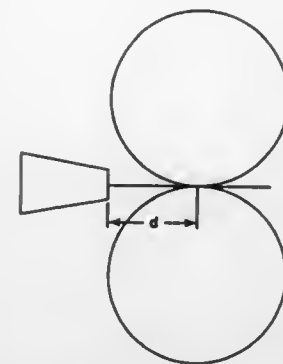
5,779,961
METHOD OF MAKING A FIBER REINFORCED THERMOPLASTIC EXTRUSION
Erich Otto Teutsch, Richmond, Mass., assignor to General Electric Company, Pittsfield, Mass.
Filed Jul. 26, 1996, Ser. No. 690,444
Int. Cl.⁶ B28B 3/20
U.S. Cl. 264—176.1



1. A process for continuously extruding a fiber reinforced thermoplastic lineal profile structure having a predetermined cross sectional profile having at least one of a corner portion or end portion, said structure extending in the longitudinal direction, said process comprising feeding a thermoplastic material into an extruder having an inlet for receiving melted thermoplastic material and an outlet having a shape corresponding to said desired cross sectional profile, said outlet being positioned downstream of said inlet whereby a stream of melted thermoplastic resin under pressure flows from said inlet to said outlet, introducing a plurality of fiber bundles into said stream at predetermined spaced apart positions with at least one fiber bundle being positioned at said corner or end portion for providing fiber reinforcement to said lineal profile at spaced apart locations whereby said bundles of fiber reinforcement extend in the longitudinal direction at a predetermined location in said profile, said extruder includes means mounted transverse to the flow of said stream for positioning said fiber bundles at said spaced apart positions, said process being carried out with the volume percent of fiber to the total volume percent of material is less than about 15 percent volume fiber, said percent being calculated by comparing the total area of the cross section with the cross sectional area of the fibers, said thermoplastic material has a higher coefficient of thermal expansion than the coefficient of thermal expansion of the fiber material so that the thermoplastic material shrinks around the fiber material causing compressive stresses which grip the fiber material and hold it in place, said means mounted transverse to the flow comprises a plate means including a plurality of openings and a plurality of guide tubes positioned in respective openings, said fiber bundles being fed through said guide tubes during extruding.

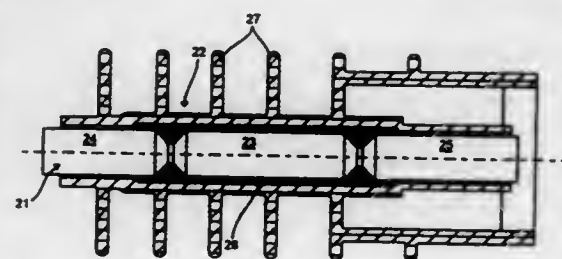
5,779,962
EXTRUDING THIN MULTIPHASE POLYMER FILMS
Warren Steve Andraschko, North Hudson, Wis., and Bruce B. Wilson, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 1, 1996, Ser. No. 626,709
Int. Cl.⁶ B29C 47/32
U.S. Cl. 264—210.1

1. A method of extruding a thin multiphase polymer film comprising:
a) providing a flat film extrusion die having die lips spaced apart by a die lip spacing;
b) providing at least two rolls near the die lips, the rolls forming a nip to transport extrudate away from the die;



c) providing a draw distance between the die lips and the nip of about 11.5 centimeters or less;
d) extruding a multiphase polymer through the die and directly into the nip to provide a film consisting essentially of a multiphase polymer with a substantially uniform caliper of about 250 micrometers or less, wherein the die lip spacing is less than the film caliper.

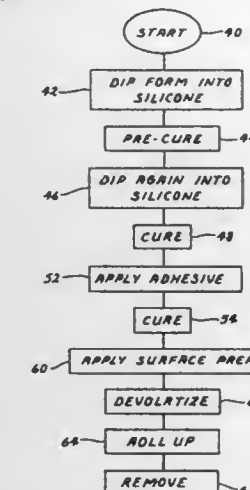
5,779,963
MANUFACTURING PROCESS OF AN INSULATOR
Pierre Chappaz, Venon; Yvan Fedorenko, Poizat; Jacques Quentin, Gleres; François Trichon, Meylan, and Bernard Yvars, Tullins, all of France, assignors to Schneider Electric SA, Billancourt, France
Filed Sep. 18, 1996, Ser. No. 715,459
Claims priority, application France, Oct. 4, 1995, 95 11888
Int. Cl.⁶ B29C 45/14; 45/16
U.S. Cl. 264—254



1. A manufacturing process of an insulator having a central core and an insulating body fitted tightly around said central core, said process comprising:

A. forming the central core by attaching a first conductor to one end of a rod shaped insert and attaching a second conductor to another end of the insert;
B. overmoulding of at least a part of the central core with an elastomeric material adhering to the core to form a flexible coating layer, said overmoulding being carried out by casting in a first mould to form said layer coating the insert and presenting a thickness between 0.75 and 1.5 mm; and
C. overmoulding said central core previously coated in said flexible coating layer with an insulating resin material injected under pressure into a second mould to form the insulating body and to compress the flexible coating layer, which flexible coating layer subsequently fills in shrinkage cavities created by retraction of the injected insulating resin material as it changes from a fluid state to a solid state, to compensate for said retraction, the insulating material having a retraction on moulding of more than 1%.

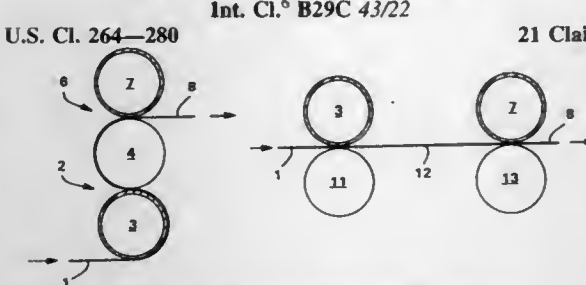
5,779,964
METHOD OF MAKING A MALE CATHETER
Daniel P. Welch, Zimmerman; Thomas D. Ryan, Minnetonka, and Erik M. Knutson, Minneapolis, all of Minn., assignors to Mentor Corporation, Santa Barbara, Calif.
Continuation of Ser. No. 754,054, Sep. 3, 1991, abandoned.
This application Sep. 17, 1993, Ser. No. 122,399
Int. Cl.⁶ B29C 41/08; 41/14
U.S. Cl. 264—255



1. A method of manufacturing an external male catheter, said external male catheter having an exterior surface, an interior surface, a distal end, and a proximal end, said method comprising the steps of:

dipping a form mandrel into silicone rubber to produce a substrate defining the interior surface and the exterior surface of the external male catheter;
precuring said substrate;
applying an adhesive layer to a predetermined region of the exterior surface of the substrate;
curing at least the adhesive layer or the substrate;
applying a surface preparation material overlying the adhesive layer, said surface preparation material having an affinity for the silicon rubber which is greater than that of the adhesive layer; and
rolling the substrate upon itself from the proximal end toward the distal end to a rolled configuration such that a portion of the interior surface lies in close confronting relation to a distinct region of the interior surface, the surface preparation material contacting the distinct region of the interior surface of the substrate with the adhesive layer being transferred directly to the interior surface from the exterior surface.

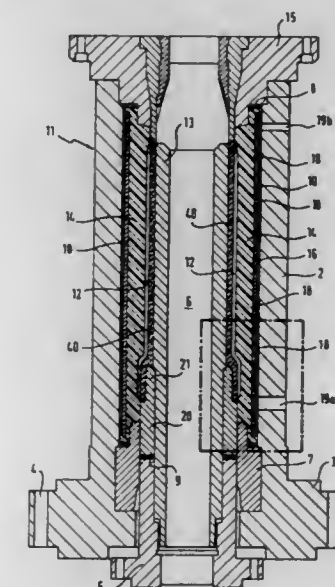
5,779,965
DOUBLE NIP EMBOSSED
Paul Douglas Beuther, Neenah; Tammy Lynn Baum, Fremont, both of Wis.; Anthony Mark Gambaro, Conway, Ark.; David Robert Gruber, Neenah, and Jeffrey Dean Lindsay, Appleton, both of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.
Filed Sep. 3, 1996, Ser. No. 708,239
Int. Cl.⁶ B29C 43/22
U.S. Cl. 264—280



1. A method of embossing a cellulosic web comprising:

(a) embossing the web in a first embossing nip formed between a rotating rigid embossing roll having a pattern of protruding embossing elements and a first rotating resilient backing roll to produce an embossed web having a pattern of embossments corresponding to the embossing elements pattern; and
(b) thereafter embossing the web in a second embossing nip formed between a second rotating resilient backing roll and a second rigid embossing roll that is either the rotating rigid embossing roll or another rotating rigid embossing roll having a pattern of protruding embossing elements which is in registration with the pattern of embossments in the embossed web such that the embossing elements of the second rigid embossing roll fall within the embossments of the embossed web, wherein the Shore A hardness of the second resilient backing roll is greater than the Shore A hardness of the first resilient backing roll, thereby setting the pattern of embossments in the web and forming a twice-embossed web having improved pattern definition.

5,779,966
METHOD FOR MANUFACTURING CERAMIC BELL AND SPIGOT PIPE MOLDINGS
Klaus Strobel, Pfaffenleithen 17, D-95100 Selb, Germany
Filed Dec. 20, 1996, Ser. No. 770,873
Claims priority, application Germany, Dec. 20, 1995, 195 47 775.8
Int. Cl.⁶ B28B 7/32
U.S. Cl. 264—314



1. A method of manufacturing a bell and spigot pipe molding from a ceramic molding compound by isostatic pressing, which comprises:
defining a molding cavity within a hollow-cylindrical pressure pot between an axially removable inner core and an elastomeric diaphragm disposed concentrically about the inner core;
defining a pressure chamber radially outside the elastomeric diaphragm;
placing a molding ring on the inner core for defining a bell region of the bell and spigot pipe with the molding ring;
forming the molding ring with two concentric and axially spaced apart end faces defining a bell region of a molding and providing at least one of the two end faces with a cover of elastic plastic material;
defining an annular gap between the end region of the molding ring and the inner core and at least one vent port communicating with the molding cavity;
inserting ceramic molding compound and isostatically pressing the ceramic molding compound in the molding cavity by subjecting the pressure chamber to hydraulic pressure, and

selectively opening and closing the at least one vent port with the hydraulic pressure.

5,779,967

METHOD AND APPARATUS FOR PRODUCTION OF THREE-DIMENSIONAL OBJECTS BY STEREO LITHOGRAPHY

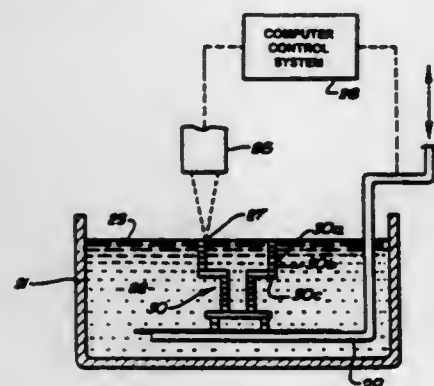
Charles W. Hull, Arcadia, Calif., assignor to 3D Systems, Inc., Valencia, Calif.

Continuation of Ser. No. 299,878, Sep. 1, 1994, abandoned, which is a division of Ser. No. 967,303, Oct. 20, 1992, Pat. No. 5,344,298, which is a continuation of Ser. No. 749,125, Aug. 23, 1991, Pat. No. 5,174,943, which is a continuation of Ser. No. 637,999, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 493,498, Mar. 14, 1990, abandoned, which is a division of Ser. No. 340,894, Apr. 19, 1989, Pat. No. 4,929,402, which is a continuation of Ser. No. 161,346, Feb. 19, 1988, abandoned, which is a continuation of Ser. No. 792,979, Dec. 9, 1985, abandoned, which is a division of Ser. No. 638,905, Aug. 8, 1984, Pat. No. 4,575,330. This application Jun. 6, 1995, Ser. No. 468,288

Int. Cl.⁶ B29C 35/08; 41/02

U.S. Cl. 264—401

8 Claims



2. A method of producing a three-dimensional object from a medium capable of solidification when subjected to synergistic stimulation, said method comprising the steps of:

- providing data representing the three-dimensional object;
- providing said medium;
- forming a layer of medium in preparation for forming a lamina of said object, said layer of medium having a surface;
- selectively exposing said surface of said layer of medium to a beam of synergistic stimulation in accordance with said data to form said lamina integral with any previously formed lamina;
- repeating steps (c) and (d) a plurality of times to form said three-dimensional object from a plurality of solidified and adhered laminae; and
- wherein said step of exposing comprises scanning at least a portion of one layer according to a plurality of successively scanned parallel lines wherein the scanning direction of each successively scanned parallel line is antiparallel to the scanning direction of the immediately preceding scanned line in the succession.

5,779,968 SPORTS BALL BLADDER AND METHOD OF MANUFACTURE

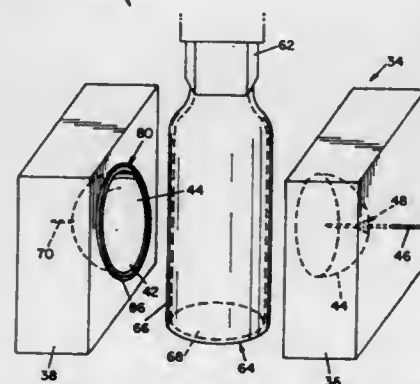
John Robert Richwine, Medina; Ostin H.C. Tan, Copley, both of Ohio; Purushottam Das Agrawal; Tiong Boon Seet, both of Singapore, Singapore, and Kevin Mark Gase, Bay Village, Ohio, assignors to Advanced Elastomer Systems, L.P., Akron, Ohio

Filed Aug. 22, 1996, Ser. No. 697,302

Int. Cl.⁶ B29C 49/20

U.S. Cl. 264—515

19 Claims



1. A method of making a ball bladder in a mold, wherein said mold has a cavity bounded by a cavity wall defining a shape of said bladder, and wherein said mold comprises at least two separable mold pieces, said mold pieces being separable along a parting line, comprising the steps of:

- supporting a valve element in said mold cavity, said valve element being supported at a position disposed away from said parting line;
- positioning a generally hollow parison comprised of heated plastic material within said cavity, said parison bounding an interior area;
- closing said mold pieces when said parison extends in said cavity;
- applying a differential fluid pressure between said interior area of said parison and an area of said cavity surrounding said parison, wherein said parison expands and impinges against said cavity wall and said valve element, whereby said parison assumes said bladder shape;
- cooling said expanded parison wherein said parison solidifies having said bladder shape and fuses together with said valve element; and
- opening said mold pieces, whereby said bladder and the fused valve element are removed together from said mold.

5,779,969

METHOD FOR FABRICATING MULTIWOOUND MICROCOILS EMBEDDED IN A CERAMIC SUBSTRATE

Dillip K. Chatterjee, Rochester; Edward P. Furlani, Lancaster, and Syamal K. Ghosh, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 20, 1997, Ser. No. 879,546

Int. Cl.⁶ C04B 33/34

U.S. Cl. 264—619

4 Claims

1. A method for fabricating a multiwound microcoil embedded in a ceramic substrate comprising the steps of:

- forming a sacrificial multiwound microcoil, having a melting temperature greater than the sintering temperature of the ceramic material to be used as the ceramic substrate by:
 - wrapping a first sacrificial coil winding in a helical fashion on the midsection of a sintered ceramic bar thereby forming a one winding sacrificial coil structure;
 - wrapping a first layer of tape cast ceramic material around the midsection of said one winding sacrificial coil structure thereby forming a first coated one winding sacrificial coil structure;

5,779,971

SOLDER JET PRINTHEAD

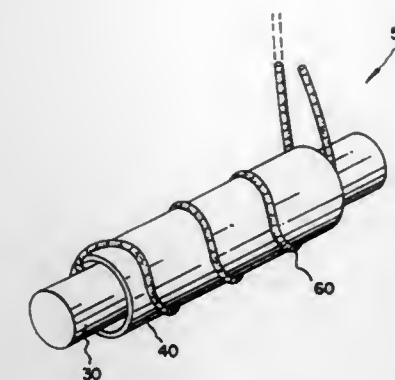
Alfred I. Tsung Pan, Sunnyvale; Ross R. Allen, Belmont, and Eric G. Hanson, Burlingame, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 7, 1996, Ser. No. 660,649

Int. Cl.⁶ B05D 1/02

U.S. Cl. 266—237

21 Claims



(iii) wrapping a second sacrificial coil winding in a helical fashion on the midsection of said first coated one winding sacrificial coil structure thereby forming a two winding sacrificial coil structure;

- repeating steps (a) (ii) and (a)(iii) until the desired number of sacrificial coil windings are formed, thus producing a sacrificial multiwound microcoil having tape cast ceramic material layers therein;
- forming green ceramic material into the shape of the ceramic substrate incorporating said formed sacrificial multiwound microcoil;
- sintering the green ceramic material and the tape cast ceramic material to form a unitary sintered ceramic substrate;
- removing the sacrificial multiwound microcoil from the sintered ceramic substrate;
- flowing molten electrically conductive material into the space relinquished by the removed sacrificial multiwound microcoil; and
- cooling the molten electrically conductive material to fabricate the multiwound microcoil embedded in a ceramic substrate.

5,779,970

CONVECTION COOKING OVEN WITH A COOLED INTERIOR

Francois Charmier, Voreppe, and Philippe Brema, Voiron, both of France, assignors to Aluminium Pechiney, Courbevoie, France

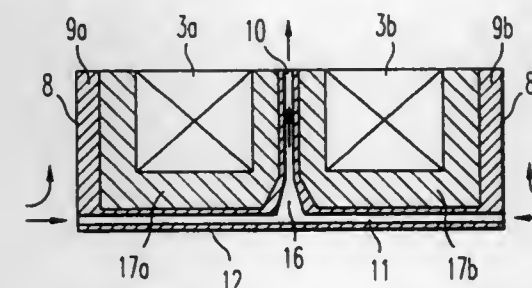
Filed Jan. 26, 1996, Ser. No. 592,631

Claims priority, application France, Jan. 27, 1995, 95 01186

Int. Cl.⁶ C10B 9/00

U.S. Cl. 266—44

11 Claims



1. A baking ring furnace comprising two parallel rows of cooking chambers (3a) and (3b) placed with their own thermal insulation layer (17a) and (17b) jointly or separately in a basin (8), said basin having a bottom equipped with cooling ducts and having exterior walls (9a) and (9b) which are cooled by ventilation, wherein the two parallel rows of cooking chambers are separated by an interior partition which is attached to the bottom of the basin and which is in communication with said cooling ducts for cooling of the basin.

5,779,972

HEAT RESISTING ALLOYS, EXHAUST VALVES AND KNIT MESHES FOR CATALYZER FOR EXHAUST GAS

Toshiharu Noda, Tajimi; Michio Okabe, Chita; Katsuaki Sato, and Tsutomu Saka, both of Wako, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Apr. 9, 1997, Ser. No. 832,675

Claims priority, application Japan, Apr. 12, 1996, 8-091270

Int. Cl.⁶ C22C 38/48

U.S. Cl. 420—54

18 Claims

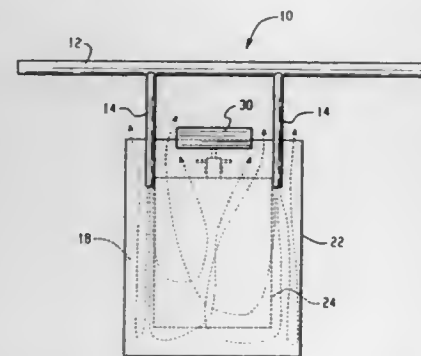
1. A heat resisting alloy of Fe—Cr—Ni consisting by weight percentage of 0.01 to 0.10% of C, not more than 2% of Si, not more than 2% of Mn, 14 to 18% of Cr, 0.5 to 1.5% in total of Nb and Ta, 2.0 to 3.0% of Ti, 0.8 to 1.5% of Al, 30 to 34.9% of Ni, 0.001 to 0.01% of B, 0.001 to 0.01% in total of Ca and Mg, not more than 0.5% of Cu, not more than 0.02% of P, not more than 0.01% of S, not more than 0.01% of O, not more than 0.01% of N, and the balance being Fe and inevitable impurities, wherein the total atomic percentage of Al, Ti, Nb and Ta is in a range of 5.0 to 7.0%, an atomic percentage ratio of Ti/Al is in a range of 1.0 to 1.5, and M-value calculated using the following equation does not exceed 0.95;

$$M = (0.717 \text{ Ni(atomic percentage)} + 0.858 \text{ Fe(atomic percentage)} + 1.142 \text{ Cr(atomic percentage)} + 1.90 \text{ Al(atomic percentage)} + 2.271 \text{ Ti(atomic percentage)} + 2.117 \text{ Nb(atomic percentage)} + 2.224 \text{ Ta(atomic percentage)} + 1.001 \text{ Mn(atomic percentage)} + 1.90 \text{ Si(atomic percentage)}) / 100.$$

5,779,973

VAPOR PHASE INTERSTITIAL MICROBIAL DECONTAMINATION OF OVERWRAPPED IV BAGS
Steven Jay Edwards, Madison, Ohio, and Paul Archie Steen, Apex, N.C., assignors to Steris Corporation, Mentor, Ohio
Filed Apr. 1, 1997, Ser. No. 831,294
Int. Cl.⁶ A61L 2/00; 9/00

U.S. Cl. 422—28

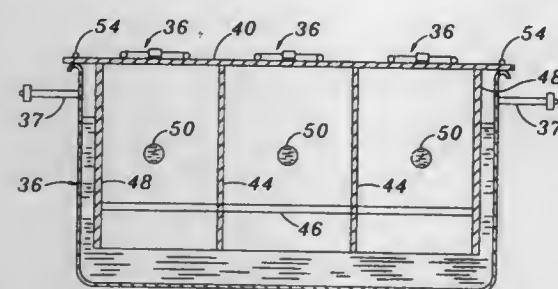


1. A method for interstitial sterilization, comprising: vaporizing an aqueous solution of a strong oxidant to form a sterilant vapor; delivering the sterilant vapor through at least one conduit which terminates in an interstitial space between a sealed bag and an overwrap; flowing sterilant vapor into the interstitial space displacing air and other gases therefrom; maintaining the sterilant vapor in contact with an outer surface of the sealed bag and at least an inner surface of the overwrap which define the interstitial space until sterilization is achieved.

5,779,974

FROZEN PLASMA THAWING SYSTEM
Roman Kuzyk, 110 Sewell Ave., Trenton, N.J. 08610
Filed Oct. 30, 1995, Ser. No. 550,291
Int. Cl.⁶ A61M 1/14

U.S. Cl. 422—44



1. A system for thawing a frozen plasma unit pouch comprising: a fluid bath adapted to hold a quantity of fluid; mounting means for supporting said pouch in a substantially submerged position with respect to said quantity of fluid when containing said frozen plasma unit pouch; means for varying a flow of the fluid in said fluid bath to create a kneading effect on the exterior of the frozen plasma unit to thereby reduce the thawing time of said frozen plasma unit, wherein said means for varying the flow of the fluid comprises a wall positioned in said fluid adjacent said pouch and an oscillating means for generating a differential in water depth on opposite sides of said wall, said wall comprising at least one aperture through which said fluid passes as a result of said differential to create said kneading effect.

5,779,975

Patent Not Issued For This Number

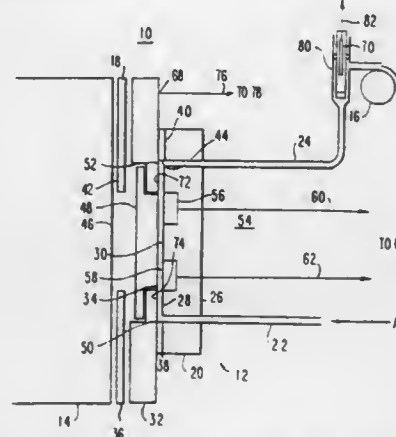
5,779,976

APPARATUS FOR IMPROVED LUMINESCENCE ASSAYS
Jonathan K. Leland, Laurel, Md.; Haresh P. Shah, Pleasant Hill, Calif.; John Henry Kenten, Gaithersburg, Md.; Jack E. Goodman, Arlington, Va.; George E. Lowke, Laytonsville, Md.; Yuzaburo Namba, Tsukuba, Japan; Gary F. Blackburn, Gaithersburg, and Richard J. Massey, Rockville, both of Md., assignors to IGEN International, Inc., Gaithersburg, Md.

Division of Ser. No. 346,832, Nov. 30, 1994, which is a continuation of Ser. No. 158,193, Nov. 24, 1993, abandoned, which is a continuation of Ser. No. 652,427, Feb. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 539,389, Jun. 18, 1990, abandoned, which is a continuation of Ser. No. 266,882, Nov. 3, 1988, abandoned. This application Jun. 5, 1995, Ser. No. 461,395
Int. Cl.⁶ G01N 21/66

U.S. Cl. 422—52

10 Claims



1. An apparatus for performing a binding assay for an analyte of interest present in a sample based upon measurement of electrochemiluminescence at an electrode surface comprising:

- (a) a cell defining a sample containing volume intersecting with inlet and outlet means
- (b) an electrode having a substantially horizontally positioned surface exposed to and positioned below a portion of the sample containing volume;
- (c) means for impressing electrochemical energy upon said electrode sufficient to generate luminescence;
- (d) means for magnetically collecting particles along said surface; and
- (e) means for measuring the luminescence generated at said electrode.

5,779,977

NUCLEIC ACID AMPLIFICATION REACTION APPARATUS AND METHOD

Lawrence A. Hafl, Wilton; Enrico Picozza, Newtown, both of Conn.; Will Bloch, San Mateo, Calif., and Timothy M. Woudenberg, Bethel, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 299,033, Aug. 31, 1994, Pat. No. 5,720,923, which is a continuation of Ser. No. 98,711, Jul. 28, 1993, abandoned. This application Mar. 26, 1997, Ser. No. 827,353
Int. Cl.⁶ G01N 15/06

U.S. Cl. 422—68.1

4 Claims

1. An apparatus for performing a nucleic acid amplification reaction in a reaction mixture, comprising:

5,779,979

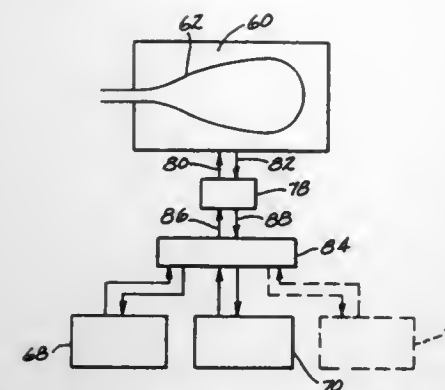
METHOD AND TEST KIT FOR DETERMINING HYDROXY AROMATIC COMPOUNDS

Kris A. Berglund, Okemos; Joel I. Dulebohn, and Beatrice A. Torgerson, both of Lansing, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation of Ser. No. 415,425, Apr. 3, 1995, abandoned, which is a division of Ser. No. 301,652, Sep. 6, 1994, Pat. No. 5,462,878. This application Aug. 12, 1996, Ser. No. 695,536
Int. Cl.⁶ G01N 21/27

U.S. Cl. 422—82.09

7 Claims



- a capillary tube for containing the reaction mixture;
- a chamber surrounding the capillary tube including at least one input port for receiving fluid of different temperatures and at least one output port through which the fluid can be removed from the chamber;
- a first thermostatted bath coupled to the chamber through the input and output ports, the bath containing a temperature-stabilized body of fluid at a temperature suitable for causing nucleic acid denaturation to occur in the reaction mixture;
- a second thermostatted bath coupled to the input and output ports of the chamber containing a temperature-stabilized body of fluid at a temperature suitable for causing nucleic acid annealing and extension to occur in the reaction mixture; and
- pumping means for alternately moving fluid from the first and second baths into and out of the chamber so as to alternately subject the reaction mixture to the denaturation and annealing temperatures.

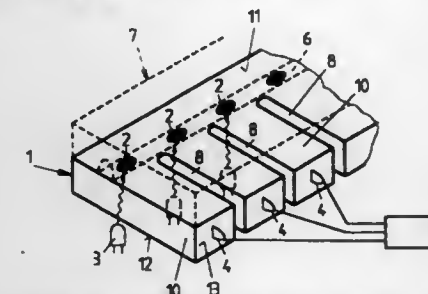
5,779,978

MEASURING ASSEMBLY FOR LUMINESCENCE ANALYSIS

Paul Hartmann, Weiz; Werner Ziegler, Graz; Hellfried Karpf, Graz, and Johann Harer, Graz, all of Austria, assignors to AVL Medical Instruments AG, Schaffhausen, Switzerland
Filed Feb. 7, 1997, Ser. No. 797,249
Claims priority, application Austria, Feb. 29, 1996, 383/96
Int. Cl.⁶ G01N 21/64

U.S. Cl. 422—82.05

15 Claims



1. A measuring assembly comprising at least one radiation source, at least one detector and a supporting element being transparent to excitation and measurement radiation and having first, second and third boundary faces, said supporting element being provided with several luminescence-optical sensor elements on said first boundary face, and picks up excitation radiation from said radiation source via said second boundary face, and supplies measurement radiation of said sensor elements to said detector of an evaluation unit via said third boundary face, the direction of said excitation radiation being essentially normal to the direction of detection, and the refractive index n_1 of said supporting element being greater than the refractive index of the environment, wherein said several sensor elements are connected by a common sample channel, and wherein means are provided for optical or temporal separation of light paths of said measurement radiation emitted by said individual sensor elements.

5,779,980

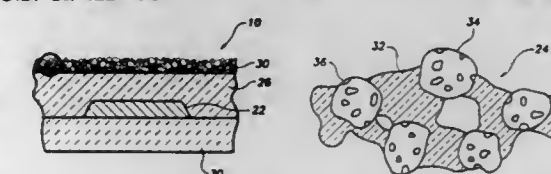
GAS SENSOR HAVING A COMPOUNDED CATALYTIC STRUCTURE

Thomas N. Hatfield, Mishawaka, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Jan. 16, 1997, Ser. No. 783,858
Int. Cl.⁶ G01N 27/16

U.S. Cl. 422—95

29 Claims



1. A gas sensor for sensing the concentration of a gas, comprising:
 - a) a base;
 - b) a resistor element, located on the base, having an electrical resistance that changes based on a change in temperature of the resistor element;

- c) a compound catalyst support structure, including a mixture of ceramic particles and melted glass that binds the ceramic particles together and adheres the support structure to the base and resistor element; and
- d) a catalyst, located on both the melted glass and ceramic particles of the catalyst support structure, for promoting an exothermic reaction of the gas, thereby increasing the temperature of the resistor element.

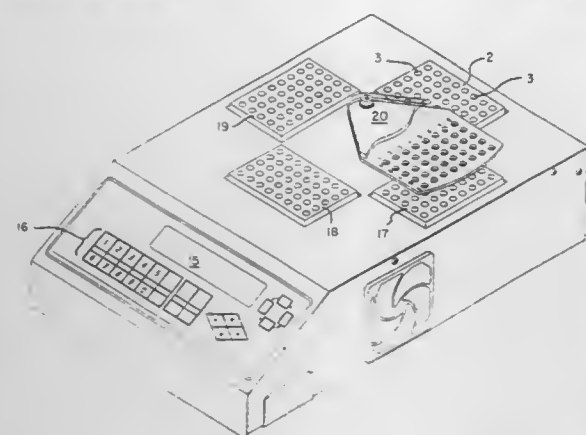
5,779,981

THERMAL CYCLER INCLUDING A TEMPERATURE GRADIENT BLOCK

John Lewis Danssaert; Robert James Shopes, both of San Diego, and Daniel Davis Shoemaker, Stanford, all of Calif., assignors to Stratagene, La Jolla, Calif.
Continuation of Ser. No. 139,540, Oct. 20, 1993, Pat. No. 5,525,300. This application Apr. 19, 1996, Ser. No. 634,826
Int. Cl.⁶ B01L 7/00

U.S. Cl. 422—99

22 Claims



1. A method for simultaneously reacting a plurality of reaction mixtures in an apparatus including a temperature gradient block and further including first and second uniform temperature blocks, said method comprising the steps of:

- placing reaction mixtures in a plurality of reaction wells in said gradient block, said gradient block having first and second opposing end portions, said plurality of reaction mixture wells being formed in said block between said opposing end portions;
- generating a temperature gradient across said gradient block and between said opposing end portions; and
- placing the reaction mixtures in a plurality of reaction wells in said first uniform temperature block; and
- placing the reaction mixtures in a plurality of reaction wells in said second uniform temperature block; and
- generating uniform temperatures in said uniform temperature blocks.

5,779,982

AUTOMATIC SAMPLE PREPARING APPARATUS

Kensaku Aota, Kanzaki-gun; Jun Toyoda, Kobe; Yoshihiko Miki, Kakogawa, and Masakazu Kondo, Kobe, all of Japan, assignors to TOA Medical Electronics Co., Ltd., Hyogo, Japan

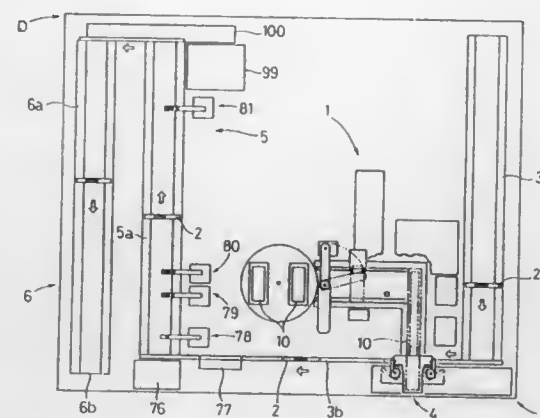
Filed Mar. 29, 1996, Ser. No. 625,007

Claims priority, application Japan, Mar. 31, 1995, 7-075523
Int. Cl.⁶ B01L 3/00

U.S. Cl. 422—100

11 Claims

1. An automatic sample preparing apparatus comprising:
- a smearing part for smearing a sample on a slide glass;
- a carrying part for removably setting and carrying at least one cassette;



- said at least one cassette including a holding part for holding a slide glass and a liquid therein;
- a loading part for loading slide glasses into the at least one cassette one by one;
- a dyeing part including a pipette for insertion into the at least one cassette, for supplying a dyeing liquid to the at least one cassette and dyeing the slide glass with a sample smeared thereon and means for automatically smearing the sample and subsequently while the slide glass is in the at least one cassette, automatically dyeing the sample.

5,779,983

TEST TUBE FOR DETERMINING THE ERYTHROCYTE SEDIMENTATION RATE AND A SURFACTANT FOR USE THEREIN

Christopher Dufresne, Jarrie; Georges Bonneval, Le Cheylas; Jean Emin, Saint Etienne de Crossey, all of France, and Robert S. Golabek, Jr., Towaco, N.J., assignors to Becton, Dickinson & Company, Franklin Lakes, N.J.

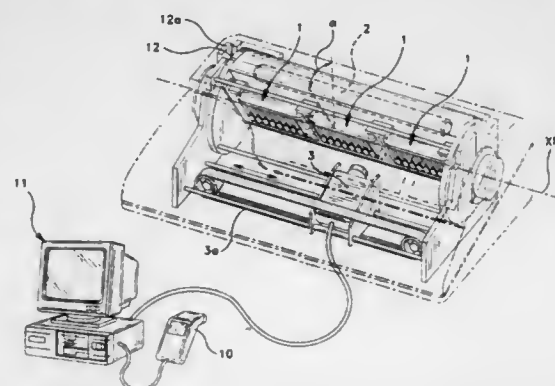
Filed Jun. 19, 1996, Ser. No. 666,112

Claims priority, application European Pat. Off., Jul. 21, 1995, 95111546

Int. Cl.⁶ B01L 3/00

U.S. Cl. 422—102

8 Claims



1. An irradiation stable test tube for determining the erythrocyte sedimentation rate of a blood sample comprising:

- an open top end;
- a closed bottom end;
- a cylindrical sidewall having an inner surface and an outer surface extending between said open top end and said closed bottom end having a length of about 80 mm to about 110 mm, an outside diameter of about 7 mm to about 9 mm and an inside diameter of about 5 mm to about 7 mm;
- a stopper in said open top end;
- a label located near said closed bottom end on said outer surface of said sidewall comprising an upper portion and a lower portion;

- a window from about 30 mm to about 40 mm located between said open top end and said upper portion of said label for measuring the location of the cell/plasma interface of said blood sample;
- a surfactant;
- an anticoagulation agent wherein said anticoagulation agent is a mixture of tri-sodium citrate and citric acid; and wherein said anticoagulation agent is an aqueous solution to achieve a molarity of 0.015M–0.135M.

5,779,984

PIPETTE TIP RACK AND REFILL PACK CONTAINING LARGE MAXIMIZED VOLUME FREELY NESTABLE PIPETTE TIPS

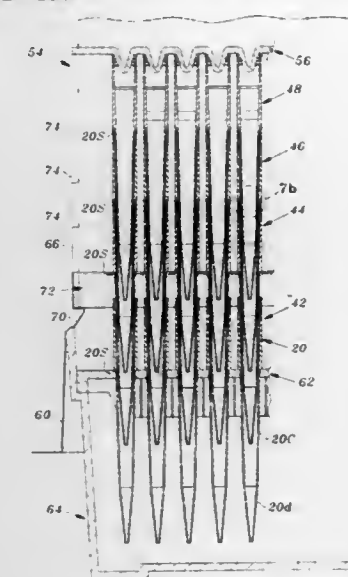
Christopher Kelly, Larkspur; David J. Lemieux, Middleton; Haakon T. Magnussen, Jr., Orinda; James S. Petrek, Danville, and Kenneth Rainin, Piedmont, all of Calif., assignors to Rainin Instrumental Co., Inc., Emeryville, Calif.

Filed Dec. 4, 1996, Ser. No. 759,409

Int. Cl.⁶ B01L 3/02; B65D 85/00

U.S. Cl. 422—104

43 Claims



1. In a pipette tip rack including a base and vertically extending side members, the combination of a horizontally extending pipette tip support tray over the base of the tip rack and a plurality of large maximized internal volume freely nestable pipette tips having an internal volume of 500 microliters or more, the support tray including a plurality of through holes arranged in an array, each hole having a center which is spaced a distance "s" from centers of immediately adjacent through holes, "s" being approximately 9 millimeters, each pipette tip having a substantially cylindrical proximal portion and an elongated generally conical distal portion coaxial with and joined to its proximal portion adjacent a downwardly facing outwardly extending shoulder and including at a distal tip end a relatively small orifice for receiving and dispensing fluid into and from the pipette tip upon operation of a pipette to which the pipette tip is mounted, the proximal portion of each pipette tip having an outer diameter equal to or approximately equal to but less than "s" and a conical inner surface for receiving and releasably attaching to a pipette tip mounting shaft of the pipette, the distal portion of each pipette tip being vertically oriented in a different one of the through holes in the support tray with its shoulder on a top of the support tray for support thereby to form a first array of pipette tips supported by the pipette tip rack, and the distal portion of each pipette tip further including substantially parallel inner and outer surfaces tapering inward in a downward direction relative to a vertical longitudinal axis of the pipette tip to maximize the inner volume of the central portion and for spacing from an outer surface of a similar pipette tip of a second array of pipette tips when nesting in the first array of pipette tips.

5,779,985

REACTION PLENUM

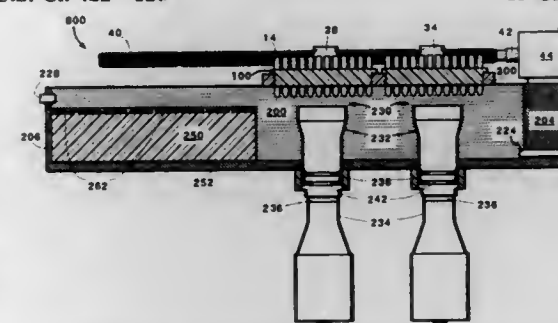
Irving Sucholeiki, Watertown, Mass., assignor to Solid Phase Sciences Corporation, Watertown, Mass.

Filed Dec. 7, 1996, Ser. No. 762,887

Int. Cl.⁶ B06B 1/00

U.S. Cl. 422—128

13 Claims



1. An apparatus for performing a chemical synthesis reaction on a paramagnetic bead, said apparatus comprising:
- a means for sonication mounted in a water bath at a first end of said water bath;
- a means for magnetic separation mounted in said water bath at a second end of said water bath;
- a motor located proximate said water bath;
- a glass reaction vessel for containing the paramagnetic bead;
- a reaction plate located in said water bath and having a well sized to receive said glass reaction vessel such that at least a portion of said glass reaction vessel is located below a water level of said water bath;
- a rod connected to said motor; and
- a means for rotatably mounting said reaction plate to said rod whereby activation of said motor results in rotation of said rod thereby moving said reaction plate between said means for sonication and said means for magnetic separation.

5,779,986

REACTOR DEVICE FOR FREE-FLOWING AND HIGHER-VISCOSITY MEDIA

Eike Schulz van Endert; Klaus Schröder, and Hans-Peter Hoffmann, all of Berlin, Germany, assignors to Karl Fischer Industrieanlagen GmbH, Berlin, Germany

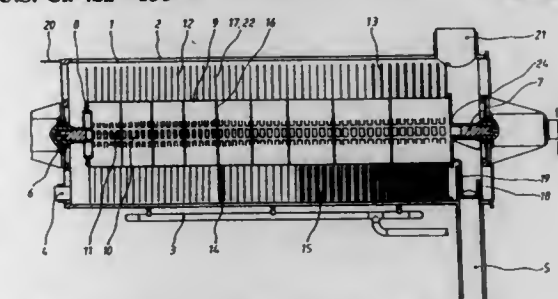
Filed Dec. 12, 1995, Ser. No. 571,137

Claims priority, application Germany, Dec. 30, 1994, 44 47 422.9; Sep. 12, 1995, 295 15 322.9

Int. Cl.⁶ B01F 15/00; 7/02

U.S. Cl. 422—136

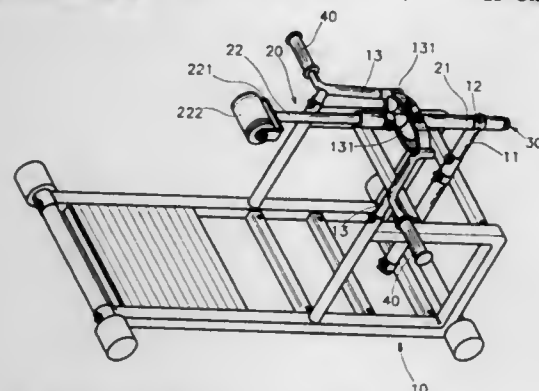
29 Claims



1. Reactor device for free-flowing media, comprising:
- a) a cylindrical housing disposed horizontally, a medium inlet opening and a medium outlet opening at opposing ends of the housing; and
- b) a rotor being rotatably mounted in the housing, the rotor having:
- 1) hollow cylinder extending through the housing, the hollow cylinder having openings on its circumference; and
 - 2) plurality of annular members, the annular members being attached to the hollow cylinder and extending from an outer surface of the hollow cylinder, the annular members mixing

and/or transporting the medium rotational movement of the rotor, the openings providing a medium and gas flow path through the hollow cylinder as the medium is mixed and/or transported.

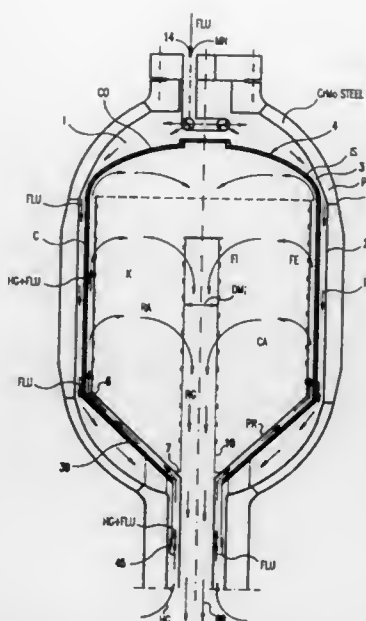
5,779,987
ABDOMEN TRAINING DEVICE
Kou-Ming Huang, No. 181, Lane 412, Chenshing Road,, Tai-chung, Taiwan
Filed May 13, 1997, Ser. No. 855,167
Int. Cl.⁶ A63B 21/02
U.S. Cl. 482—140 13 Claims



1. An abdomen training devices comprising:
a base frame, carrying a positioning frame with an upper end, a support being mounted on said upper end; and
an abdomen training element with a front end, a rear end and a longitudinal axis, mounted on said support and further comprising
an accommodating part with a front end and a rear end,
a spring with a front end and a rear end, inserted into said accommodating part close to said front end thereof,
a gliding bar with a front end and a rear end, inserted into said accommodating part, said front end of said gliding bar leaning against said rear end of said spring, said rear end of said gliding bar extending beyond said rear end of said accommodating part, said gliding bar gliding inside said accommodating part along said longitudinal axis, and
a rest plate, attached to said rear end of said gliding bar, having a rear surface, which is pressed against by the abdomen of a user;
wherein during an exercise said user, contracting her or his abdominal muscles, pushes said rest plate and said gliding bar towards said front end of said abdomen training element against an elastic force caused by said spring and subsequently, releasing her or his abdominal muscles, allows said rest plate to return.

5,779,988
HETEROGENEOUS SYNTHESIS METHOD AND APPARATUS INCLUDING WALL TEMPERATURE PROTECTION
Umberto Zardi, Via Lucino 57, CH-6932 Breganzona, Switzerland, and Giorgio Pagani, Milan, Italy, assignors to Ammonia Casale, S.A., and Umberto Zardi, both of Switzerland
Continuation-in-part of Ser. No. 16,747, Feb. 11, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 432,466
Claims priority, application Switzerland, Feb. 12, 1992, 00409/92
Int. Cl.⁶ C01C 1/00
U.S. Cl. 422—148 13 Claims

1. A method of retrofitting a Braun-type converter for heterogeneous synthesis, said Braun-type converter comprising a pressure-resisting outer shell, a feed duct for introducing synthesis gas into said shell, a gas transfer pipe for withdrawing a gaseous reaction

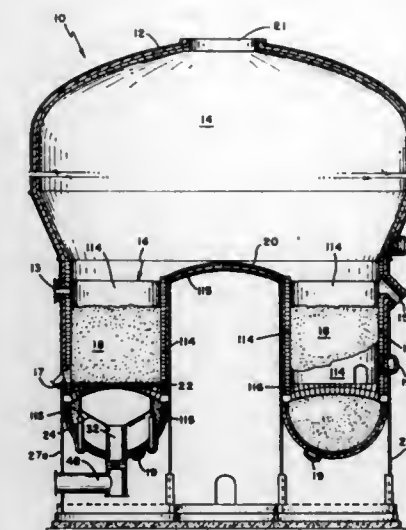


mixture axially positioned in the feed duct, a cartridge inside the shell for holding a catalyst bed, the catalyst bed being open on top and traversed downwardly by the synthesis gas, said method comprising the steps of:

- inserting a first substantially perforated cylindrical wall having a first diameter inside said cartridge, said first perforated wall having a diameter slightly smaller than that of the cartridge;
- connecting a bottom portion of the first cylindrical wall with said gas transfer pipe by means of a cone-shaped wall;
- inserting a second substantially perforated cylindrical wall, having a second diameter smaller than the first diameter, said second perforated wall having substantially the same diameter of said gas transfer pipe;
- providing said cartridge with:
 - a top cover;
 - a substantially cylindrical bottom portion, said bottom portion extending downwardly into said feed duct between an internal cylindrical wall thereof and said axially proportioned gas transfer pipe;
 - a lower portion, substantially parallel to said cone-shaped wall, having a diameter decreasing starting from the diameter of the cartridge towards the diameter of said substantially cylindrical bottom portion; and
- providing an inlet through the shell for feeding a cooling fluid between the cartridge and the shell down to said substantially cylindrical bottom portion.

5,779,989
FLUIDIZED BED REACTOR WITH GAS DISTRIBUTOR AND BAFFLE
George Tomasichio, Milan, Italy, and Alfredo E. Basas, Bethel, Conn., assignors to Dorr-Oliver Incorporated, Milford, Conn.
Filed Nov. 2, 1995, Ser. No. 552,243
Int. Cl.⁶ F27B 15/10
U.S. Cl. 422—145 13 Claims

1. An improved fluidized bed reactor having a reactor shell and a reaction chamber within the shell, the reaction chamber having chamber walls and a bottom portion, the improvement comprising: at least one baffle disposed within the reaction chamber, the baffle comprising a pair of outer refractory walls, an inner refractory wall between and contiguous with the outer refractory walls, and a metallic reinforcement member embedded



5,779,992

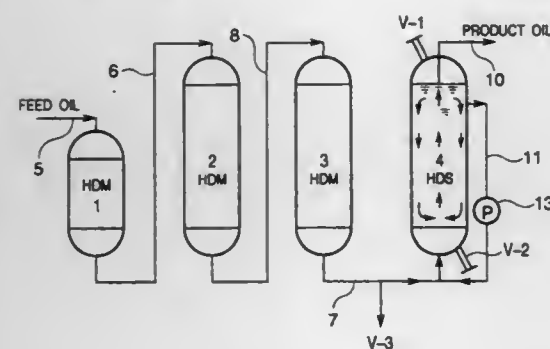
PROCESS FOR HYDROTREATING HEAVY OIL AND HYDROTREATING APPARATUS

Hidehiro Higashi, Kitakyushu, Japan, assignor to Catalysts & Chemicals Industries Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 335,886, Nov. 15, 1994, Pat. No. 5,591,325. This application Aug. 15, 1996, Ser. No. 698,473

Claims priority, application Japan, Aug. 18, 1993, 5-225177
Int. Cl.⁶ B01J 8/04

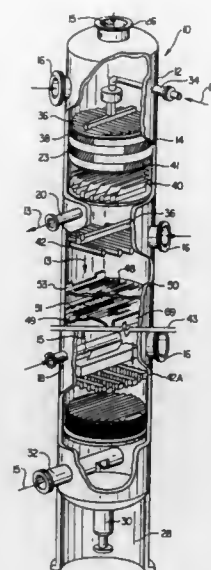
U.S. Cl. 422—190

6 Claims



1. A hydrotreating apparatus for hydrotreating a heavy oil, wherein the apparatus comprises:

- (a') at least one fixed-bed reactor packed with a hydrotreating catalyst for hydrotreating a heavy oil to remove impurities having high reactivities with hydrogen, and
- (b') at least one suspended-bed reactor packed with a hydrotreating catalyst for further hydrotreating the heavy oil hydrotreated in the fixed-bed reactor to remove impurities contained in the heavy oil and having low reactivities with hydrogen, wherein the suspended-bed reactor includes means for side feeding a feed oil containing vanadium and nickel in a total amount of not more than 10 ppm to the suspended-bed reactor in addition to the hydrotreated heavy oil in the fixed-bed reactor.



umn assembly and chemical reaction of said constituents promoted by said catalyst media;

- a first solid tray secured in said process column assembly in a position beneath any catalyst support grid that is secured above a tray through which vapor flows upwardly; and means for removing said vapor from said process column assembly and preventing said vapor from being exposed to said liquid-only reaction region and to said catalyst media therein, said means for removing comprising a first vapor stream draw off disposed beneath any said first solid tray that is secured in said process column and positioned to remove all vapor therefrom and prevent its passage into said liquid-only reaction region of said process column assembly.

5,779,994

TUBULAR REACTOR

Kurt-Manfred Küpper, Bergisch Gladbach; Ulrich Perner, Köln; Axel Bergmann-Franke, Dormagen, and Horst Groos, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

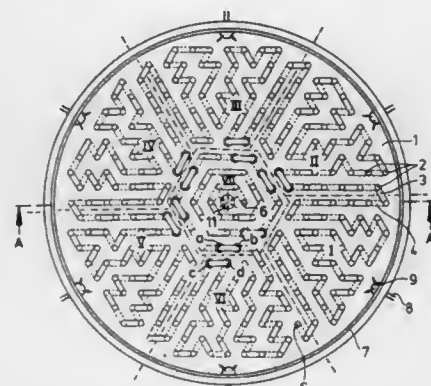
Filed Oct. 7, 1996, Ser. No. 726,037

Claims priority, application Germany, Oct. 16, 1995, 195 39 622.7

Int. Cl.⁶ F28D 21/00; B01J 8/04

U.S. Cl. 422—197

15 Claims



- 1. A tubular reactor comprising a plurality of reaction tubes held in parallel between two tube plates, wherein said plurality of reaction tubes are connected outside of said tube plates by 180° tube bends to form a tubular coil; at least one said tube bend is connected to a tube end of said reaction tube by a releasable flange connection.

5,779,993

LIQUID-PHASE CATALYST-ASSEMBLY FOR CHEMICAL PROCESS TOWER

Joseph C. Gentry, Houston, Tex., assignor to Glitsch, Inc., Dallas, Tex.

Continuation of Ser. No. 557,718, Nov. 13, 1995, abandoned, which is a division of Ser. No. 206,748, Mar. 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 132,059, Oct. 5, 1993, Pat. No. 5,389,343. This application May 16, 1997, Ser. No. 857,985

Int. Cl.⁶ B01J 8/04; 8/08

U.S. Cl. 422—191

11 Claims

1. In a process column assembly utilizing catalyst media therein, wherein liquid flows continuously downwardly through at least a first downcomer onto a first tray and across the active area thereof through which vapor flows upwardly for interaction and mass transfer with the liquid before passing, therefrom by at least a second downcomer, the improvement comprises:

- a catalyst media adapted for securement in said process column assembly;
- at least one catalyst support grid secured to said process column assembly and extending thereacross for the support of said catalyst media within said process column assembly;
- said at least one catalyst support grid and said catalyst media are positioned in a liquid-only reaction region in said process column assembly where only said liquid flows continuously downwardly and said catalyst media is continuously flooded by said liquid which flows continuously downwardly for facilitating the interaction between constituents of the liquid flowing continuously downwardly through said process col-

5,779,995

SLUDGE PHASE REACTOR AND PROCESS FOR PERFORMING SLUDGE PHASE REACTIONS

Harro Witt, Kuden; Uwe Jens Zarnack, Brunsbüttel, and Heiko Beckhaus, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
PCT No. PCT/EP95/03786, § 371 Date Apr. 2, 1997, § 102(e) Date Apr. 2, 1997, PCT Pub. No. WO96/11052, PCT Pub. Date Apr. 18, 1996

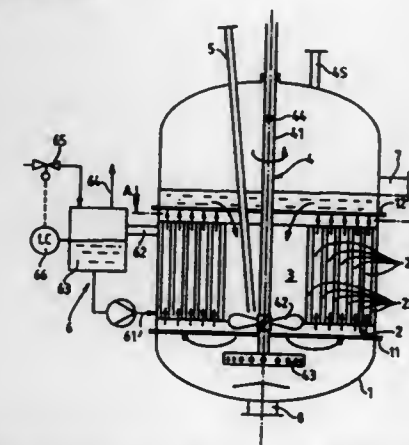
PCT Filed Sep. 25, 1995, Ser. No. 809,840

Claims priority, application Germany, Oct. 7, 1994, 44 35 839.3

Int. Cl.⁶ B01J 8/22; 19/00

U.S. Cl. 422—215

4 Claims



1. A sludge phase reactor for exothermic sludge phase reactions comprising:

- (a) a reaction container;
- (b) a heat exchanger disposed within said reaction container, said heat exchanger in the form of an annular chamber through which heat-exchanging medium and reaction mass flow;
- (c) wherein said annular chamber comprises a plurality of open-ended vertical passage ducts having a circular cross-section for said reaction mass, and wherein said heat-exchanging medium flows through said annular chamber between said passage ducts for said reaction mass;
- (d) a central free flow chamber inside the annular chamber for the return flow of the reaction mass;
- (e) a central agitator which circulates the reaction mass between the central free flow chamber and the annular chamber;
- (f) wherein said agitator is additionally in the form of a gassing agitator; and
- (g) wherein said agitator conveys said reaction mass downwards in said central flow chamber and produces an upward flow in said vertical passage ducts.

5,779,996

MICROBIAL REMEDIATION REACTOR AND PROCESS

Keith Stormo, Moscow, Id., assignor to Innovative BioSystems, Inc., Moscow, Id.

Continuation-in-part of Ser. No. 426,566, Apr. 21, 1995, Pat. No. 5,616,304. This application Sep. 3, 1996, Ser. No. 708,118

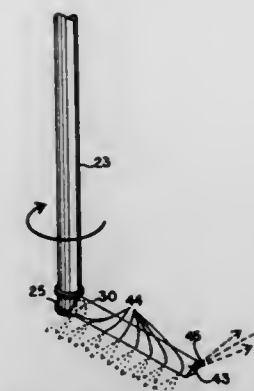
Int. Cl.⁶ B01F 13/02; 7/20; C12M 1/06

U.S. Cl. 422—227

22 Claims

1. A process for remediating a liquid waste stream or a contaminated sludge or soil which comprises:

- (a) maintaining a slurry, suspension or settled bed of solid particles in a reactor, said solid particles colonized by micro-organisms;
- (b) providing at least one generally horizontal blade within said reactor, said stirrer blade being adapted to rotate within said reactor and having a certain direction of rotation, a leading side and a trailing side, there being openings at or near the leading side through which fluid may pass; and



(c) passing fluid containing contaminants which are nutrients for the micro-organisms through said openings at or near the leading side of the blade.

5,779,997

METHOD FOR PREVENTING THE FORMATION OF JAROSITE AND AMMONIUM AND ALKALI BASED DOUBLE SALTS IN SOLVENT EXTRACTION CIRCUITS CONNECTED TO ACIDIC LEACHING PROCESSES

Bror Göran Nyman, Ulvila, and Stig-Erik Hulttholm, Pori, both of Finland, assignors to Outokumpu Harjavalta Metals Oy, Harjavalta, Finland

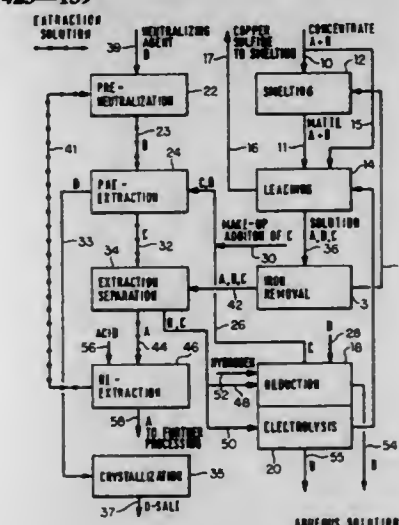
Continuation-in-part of Ser. No. 76,243, Jan. 11, 1993, abandoned. This application May 12, 1995, Ser. No. 440,077

Claims priority, application Finland, Jun. 8, 1992, 922842

Int. Cl.⁶ B01D 11/00; C22B 23/00

U.S. Cl. 423—139

4 Claims



1. A method for preventing the formation of jarosite, or ammonium or alkali metal double salts during leaching and solvent extraction of nickel and cobalt, comprising:

- 1) neutralizing an organic extraction solution of a di-(2,4,4-trimethylpentyl)phosphinic acid with at least one of an ammonium, sodium or a potassium base;
- 2) conducting the neutralized organic extraction solution to a pre-extraction step, where the organic extraction solution is contacted with an aqueous solution containing magnesium exchange ions, wherein said magnesium exchange ions replace the ammonium or alkali ions in the organic extraction solution, said aqueous solution now containing said ammonium or alkali ions;
- 3) the aqueous solution containing said ammonium or alkali ions is crystallized to recover ammonium or alkali salt;
- 4) the organic extraction solution, which is now free of ammonium or alkali ions but contains magnesium ions, is then contacted with an aqueous solution containing nickel and

cobalt to selectively extract cobalt into the organic extraction solution, leaving nickel in the aqueous solution;
5) recovering cobalt from the organic extraction solution; and
6) recovering nickel from the aqueous solution.

5,779,998

METHOD AND APPARATUS FOR CONCENTRATION AND RECOVERY OF HALOCARBONS FROM EFFLUENT GAS STREAMS

Glenn M. Tom, New Milford, Conn., assignor to ATMI EcoSys Corporation, Danbury, Conn.

Continuation of Ser. No. 395,162, Feb. 27, 1995, Pat. No. 5,662,682, which is a continuation of Ser. No. 224,292, Apr. 6, 1994, abandoned. This application Dec. 5, 1996, Ser. No. 759,578

Int. Cl.⁶ B01D 47/00

U.S. Cl. 423—210

9 Claims

1. A process for recovery of halocarbon from a gas mixture comprising:

(i) halocarbon selected from the group consisting of perfluorocarbons, fluorinated hydrocarbons, chlorofluorocarbons, sulfur hexafluoride, and mixtures thereof; and

(ii) at least one other gas component selected from the group consisting of HF, WOF₃, CO, CO₂, F₂O₂, F₂, Si₂F₆, F₂O, SiF₄, AsH₃, BCl₃, SiH₄, Ta(OC₂H₅)₅, Cl₂, HCl, N₂ and O₂, wherein the halocarbon is present in a concentration not exceeding 5% by weight, based on the total weight of the gas mixture, said process comprising the steps of:

a. contacting the gas mixture with a scavenger composition to remove said at least one other gas component from the gas mixture, thereby yielding a first effluent gas mixture containing said halocarbon and substantially free of said at least one other gas component, wherein said scavenger composition is selected from the group consisting of:

(1) a caustic liquid medium; and

(II) a solid scavenger material selected from the group consisting of:

(a) goethite;

(b) copper oxide;

(c) copper oxide/zinc oxide mixtures;

(d) copper sulfate;

(e) lithium hydroxide;

(f) a synthetic metallic scavenger comprising a three-dimensional complex of a plurality of (i) metal coordination atoms each of which has coordinated thereto at least two (ii) oxomeric moieties selected from the group consisting of carbonate, sulfite, carboxylate, and silicate, wherein the oxomeric moieties bridge between and link the metal coordination atoms, and each of the metal coordination atoms is bridged to another of the metal coordination atoms through the oxomeric moieties, with the three-dimensional complex comprising at least two different oxomeric moieties of said group; and
(g) mixtures thereof;

b. contacting the first effluent gas mixture with an adsorbent which is adsorbingly selective for the halocarbon component of the first effluent gas mixture to adsorb said halocarbon component on the adsorbent and yield a second effluent gas, wherein said contacting with the adsorbent is carried out in at least two adsorbent beds via pressure swing adsorption processing of the first effluent gas mixture; and
c. recovering the adsorbed halocarbon by desorbing same from the adsorbent.

5,779,999

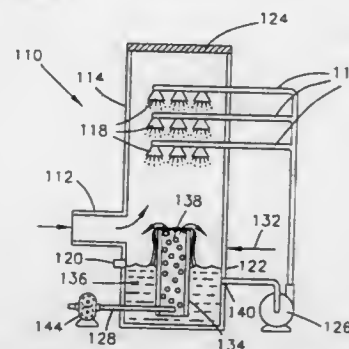
METHOD FOR SCRUBBING FLUE GASES

Dennis J. Laslo, Lebanon, Pa., assignor to Marsulex Environmental Technologies, LLC, Lebanon, Pa.

Division of Ser. No. 580,693, Dec. 29, 1995, Pat. No. 5,665,317. This application Feb. 27, 1997, Ser. No. 807,010 Int. Cl.⁶ B01D 53/40; 53/78

U.S. Cl. 423—210

7 Claims



1. A flue gas scrubbing method comprising the steps of: introducing flue gases comprising acidic gases into a passage; introducing an alkali-containing fluid into the passage such that the alkali-containing fluid removes the acidic gases from the flue gases;

accumulating the alkali-containing fluid in a tank located below said passage, said tank being in open communication with the passage;

injecting an oxygen-containing gas into the tank so as to cause the alkali-containing fluid to flow up through a first region structurally delineated within the tank and down into a second region structurally delineated within the tank, and so as to simultaneously expand, agitate and oxidize the alkali-containing fluid within the first region prior to flowing into the second region;

after returning to the second region, recirculating a first portion of the alkali-containing fluid to the first region; and drawing a second portion of the alkali-containing fluid from the second region of the tank and returning the second portion of the alkali-containing fluid to the passage.

5,780,000

USE OF Z-SORB PROCESS AS CATALYTIC INCINERATOR FOR TAIL GAS FROM SULFUR PLANTS

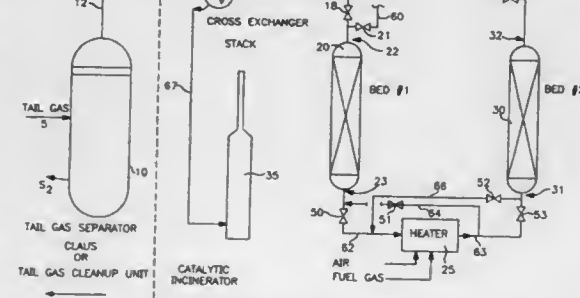
James F. Strickland, Stafford, Tex., assignor to Gas Research Institute, Chicago, Ill.

Filed Sep. 9, 1996, Ser. No. 711,456

Int. Cl.⁶ B01D 53/52

U.S. Cl. 423—220

12 Claims



1. A method for removing hydrogen sulfide out of a Claus tail gas, the method comprising the steps of:

preliminarily heating a gas containing hydrogen sulfide, wherein the gas is released from an initial gas discharge source; passing the preliminarily heated gas through a first reaction vessel containing therein an amount of a chemical agent effective to react with the hydrogen sulfide in the gas, so that

at least a portion of the hydrogen sulfide has been removed from the gas, by absorption into the chemical agent; transporting all of the gas from the first reaction vessel, after at least a portion of the hydrogen sulfide has been removed, to a heating unit;

introducing an oxidizing agent to the heating unit;

secondarily heating all of the gas and the oxidizing agent in the heating unit; and

passing all of the secondarily heated gas from the heating unit to and through a second reaction vessel which contains therein an amount of a chemical agent, which already has been used to absorb hydrogen sulfide from a gas, the chemical agent releasing sulfur dioxide upon exposure to the secondarily heated gas, the chemical agent in the second reaction vessel becoming regenerated and again capable of absorbing hydrogen sulfide.

5,780,001

SULFUR ABSORBENTS

Gyanesh P. Khare, Bartlesville, and Ralph E. Bonnell, Dewey, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

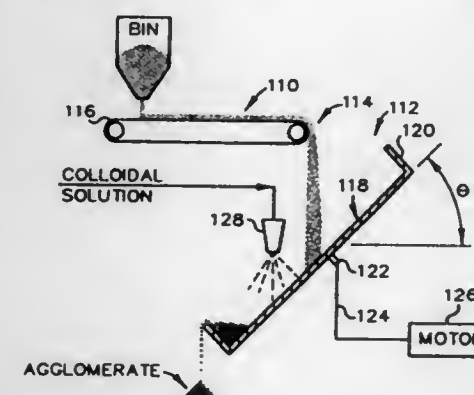
Continuation of Ser. No. 826,567, Jan. 27, 1992, abandoned.

This application Aug. 9, 1996, Ser. No. 694,975

Int. Cl.⁶ B01D 53/14

U.S. Cl. 423—230

14 Claims



1. A process for absorbing hydrogen sulfide from a fluid stream, said process comprising:

(a) mixing zinc oxide and silica to provide a dry homogeneous mixture;

(b) providing said dry homogeneous mixture within a pan of a tumbling agglomerator;

(c) spraying a colloidal oxide solution, wherein said colloidal oxide solution comprises particles of an oxide compound dispersed in a liquid medium said oxide compound comprises colloidal-size particles having a median particle size in a range from about 50 angstroms to about 10,000 angstroms upon said dry homogeneous mixture while rotating said pan to thereby form pellets;

(d) drying said pellets to provide dried pellets having a crush strength of at least about 5 lb; and

(e) contacting said dried pellets with a fluid stream containing hydrogen sulfide under conditions suitable for absorbing hydrogen sulfide.

5,780,002

EXHAUST GAS CLEANER AND METHOD FOR CLEANING EXHAUST GAS

Tatsuo Miyadera, Tsukuba; Kiyohide Yoshida, Kumagaya; Mika Saito, Kumagaya; Naoko Irite, Kumagaya; Akira Abe, Kumagaya, and Masataka Furuyama, Kumagaya, all of Japan, assignors to Jiro Hiraishi, Director-General of Agency of Industrial Science and Technology, and Kabushiki Kaisha Riken, both of Tokyo, Japan

Continuation of Ser. No. 458,586, Jun. 2, 1995, abandoned.

This application Jul. 9, 1997, Ser. No. 890,641

Claims priority, application Japan, Nov. 4, 1994, 6-295822; Nov. 10, 1994, 6-301478; Nov. 24, 1994, 6-314034; Nov. 28, 1994, 6-317633

Int. Cl.⁶ B01D 53/56; 53/94

U.S. Cl. 423—239.1

14 Claims

1. A method for removing nitrogen oxides by reduction from an exhaust gas containing nitrogen oxides, sulfur dioxide, and oxygen in an amount larger than the stoichiometric amount of said oxygen required for completely oxidizing unburned components in said exhaust gas, which comprises:

disposing an exhaust gas cleaner having an inlet side and an outlet side in a flow path of said exhaust gas;

introducing into said exhaust gas at least one reducing agent selected from the group consisting of hydrocarbons and oxygen containing organic compounds on an upstream side of said exhaust gas cleaner; and

introducing the resulting exhaust gas containing said reducing agent to the inlet side of said exhaust gas cleaner wherein said exhaust gas containing said reducing agent is brought into contact with said exhaust gas cleaner at 150°–600° C., thereby causing a reaction of said nitrogen oxides with said reducing agent to remove said nitrogen oxides by reduction;

said exhaust gas cleaner consisting essentially of:

an Ag catalyst consisting essentially of a first porous inorganic oxide supporting 0.2–15 weight % of at least one Ag component selected from the group consisting of Ag and compounds of Ag;

a base metal catalyst consisting essentially of a second porous inorganic oxide supporting 0.2–30 weight % of at least one Cu component selected from the group consisting of oxides and sulfates of Cu, and optionally 30 weight % or less of at least one component selected from the group consisting of oxides and sulfates of V and oxides and sulfides of W and Mo; and

a noble metal catalyst consisting essentially of a third porous inorganic oxide supporting 0.01–5 weight % of at least one component selected from the group consisting of Pt, Pd, Ru, Rh, Ir and Au, the weight percentages being expressed by metal basis and being based on the amount of each porous inorganic oxide, and said Ag catalyst, base metal catalyst and noble metal catalyst being disposed in this order from inlet side to outlet side of said exhaust gas cleaner.

5,780,003

CRYSTALLINE MANGANESE PHOSPHATE COMPOSITIONS

Gregory J. Lewis, Mt. Prospect, Ill., assignor to UOP LLC, Des Plaines, Ill.

Filed Aug. 23, 1996, Ser. No. 707,986

Int. Cl.⁶ B01J 27/18; 27/185; C01B 25/37

U.S. Cl. 423—305

10 Claims

1. A crystalline manganese phosphate composition having an extended network and an empirical composition on an anhydrous basis expressed by an empirical formula of:

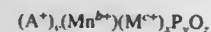


where A is a templating agent selected from the group consisting of alkali metals, alkaline earth metals, hydronium ion, ammonium ion, organoammonium ions, silver, copper (II), zinc(II), nickel (II), mercury (II), cadmium (II), and mixtures

thereof, "a" represents a weighted average valence of A and varies from 1.0 to 2.0, "v" is the mole ratio of A to Mn and varies from about 0.1 to about 10, "b" is the average valence of Mn and has a value of greater than 3 to about 4, M is a metal selected from the group consisting of Al, Fe³⁺, Ga, Sn⁴⁺, Ti, Sb⁵⁺, Ag, Zn, Cu, Ni, Cd, and mixtures thereof, "x" is the mole ratio of M to Mn and varies from 0 to about 3.0, "c" is the weighted average valence of M and varies from about 1.0 to about 5.0, "y" is the mole ratio of P to Mn and varies from about 0.10 to about 5.0 and "z" is the mole ratio of O to Mn and has a value determined by the equation

$$z = \frac{1}{2}(a + v + b + x + c + 5 \cdot y).$$

6. A process for preparing a crystalline manganese phosphate composition having an extended network and an empirical composition on an anhydrous basis expressed by an empirical formula of:



where A is a templating agent selected from the group consisting of alkali metals, alkaline earth metals, hydronium ion, ammonium ion, organoammonium ions, silver, copper (II), zinc(II), nickel (II), mercury (II), cadmium (II), and mixtures thereof, "a" represents a weighted average valence of A and varies from 1.0 to 2.0, "v" is the mole ratio of A to Mn and varies from about 0.1 to about 10, "b" is the average valence of Mn and has a value of greater than 3 to about 4, M is a metal selected from the group consisting of Al, Fe³⁺, Ga, Sn⁴⁺, Ti, Sb⁵⁺, Ag, Zn, Cu, Ni, Cd, and mixtures thereof, "x" is the mole ratio of M to Mn and varies from 0 to about 3.0, "c" is the weighted average valence of M and varies from about 1.0 to about 5.0, "y" is the mole ratio of P to Mn and varies from about 0.10 to about 5.0 and "z" is the mole ratio of O to Mn and has a value determined by the equation

$$z = \frac{1}{2}(a + v + b + x + c + 5 \cdot y).$$

the process comprising reacting a mixture containing reactive sources of manganese, phosphorus, A, and optionally at least one M metal, a reductant and a mineralizer, at a pH of about 2.0 to about 9.0 and a temperature and time sufficient to form the composition, the mixture having a composition expressed by:



where B is a mineralizer, R is a reductant, "d" ranges from about 2.5 to about 20, "e" ranges from 0 to about 3.0, "f" ranges from about 1.0 to about 15, "g" ranges from 0 to about 2, "h" ranges from 0 to about 4, "t" ranges from about 25 to about 1000 and "m" ranges from about 3.0 to about 7.0.

5,780,004

PROCESS FOR THE PREPARATION OF MIXED SILICA-ZIRCONIA SOLS AND MIXED OXIDES OBTAINED IN SPHERICAL FORM

Luigi Balducci, Mortara; Raffaele Ungarelli, Trecate, and Fabio Garbassi, Novara, all of Italy, assignors to Enichem S.p.A., Milano, Italy

Filed Jun. 26, 1996, Ser. No. 672,038

Claims priority, application Italy, Aug. 4, 1995, MI95A1732 Int. Cl.⁶ C01B 33/141; 33/148; C01G 25/02; R01J 21/08

U.S. Cl. 423—326

10 Claims

1. A process for preparation of a mixed silica-zirconia sol comprising mixing a silicon alkoxide with a solution of an inorganic salt of zirconium in at least one polyol, wherein said polyol is selected from the group consisting of ethylene glycol, propylene glycol and glycerin, to form an intermediate, and then subjecting said intermediate to acid hydrolysis in a water medium.

5,780,005 METHOD FOR MANUFACTURING SPHERICAL SILICA FROM OLIVINE

Svein Olerud, Strindveien 75, N-7015 Trondheim, Norway
PCT No. PCT/NO94/00145, § 371 Date Mar. 4, 1996, § 102(e)
Date Mar. 4, 1996, PCT Pub. No. WO95/07235, PCT Pub. Date Mar. 16, 1995

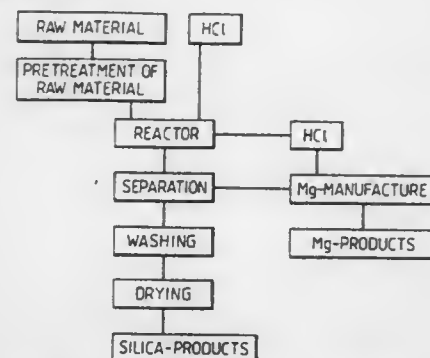
PCT Filed Sep. 1, 1994, Ser. No. 602,772

Claims priority, application Norway, Sep. 6, 1993, 933168

Int. Cl.⁶ C01B 33/12

U.S. Cl. 423—335

7 Claims



1. A method of manufacturing silica in the form of spherical particles having a reduced content of iron and impurities, the method comprising:

- pretreating substantially pure mineral olivine to obtain olivine particles having a particle diameter ranging between 0.05 and 5 mm;
- washing the particles to remove dust from the surfaces of the particles;
- removing from the washed particles heavy minerals, and at least a portion of the foliar and stem-like minerals;
- leaching the particles with a mineral acid in a reactor under controlled temperature for a period of time to obtain extracted silica having a desired specific surface and pore volume, said mineral acid being selected from the group consisting of hydrochloric acid, sulfuric acid, and nitric acid;
- separating extracted silica from the mineral acid;
- washing the silica to remove residual acid therefrom;
- drying the washed silica and optionally grinding;
- the dried silica particles to form spherical particles of silica having a diameter ranging between 30–70 nanometers.

5,780,006

PEPTIDE DERIVED RADIONUCLIDE CHELATORS

Alfred Pollak, and Anne Goodbody, both of Toronto, Canada, assignors to Resolution Pharmaceuticals Inc., Mississauga, Canada

Division of Ser. No. 279,155, Jul. 22, 1994, Pat. No. 5,662,885.

This application Aug. 28, 1996, Ser. No. 703,988

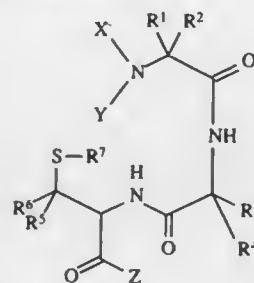
The portion of the term of this patent subsequent to Jul. 22, 2014, has been disclaimed.

Int. Cl.⁶ A61K 51/00; A61M 36/14

U.S. Cl. 424—1.69

22 Claims

1. A compound of the general formula:



wherein

X is a linear or branched, saturated or unsaturated C₁₋₄alkyl chain that is optionally interrupted by one or two heteroatoms selected from N, O and S; and is optionally substituted by at least one group selected from halogen, hydroxyl, amino, carboxyl, C₁₋₄alkyl, aryl and C(O)Z;

Y is H or a substituent defined by X; or

X or and Y together form a 5- to 8-membered saturated or unsaturated heterocyclic ring optionally substituted by at least one group selected from halogen, hydroxyl, amino, carboxyl, oxo, C₁₋₄alkyl, aryl and C(O)Z;

R¹ through R⁴ are selected independently from H; carboxyl; C₁₋₄alkyl; C₁₋₄alkyl substituted with a group selected from hydroxyl, amino, sulfhydryl, halogen, carboxyl, C₁₋₄alkoxycarbonyl and aminocarbonyl; an alpha carbon side chain of a D- or L-amino acid other than proline; and C(O)Z;

R⁵ and R⁶ are selected independently from H; carboxyl; amino; C₁₋₄alkyl; C₁₋₄alkyl substituted by hydroxyl, carboxyl or amino; and C(O)Z;

R⁷ is selected from H and a sulfur protecting group; and Z is selected from hydroxyl and a targeting molecule.

5,780,007

TECHNETIUM-99M LABELED PEPTIDES FOR IMAGING

Richard T. Dean, Bedford; Scott Buttram, Derry; William McBride, Manchester; John Lister-James, Bedford, and Edgar R. Clivello, Londonderry, all of N.H., assignors to Diatide, Inc., Londonderry, N.H.

Division of Ser. No. 871,282, Apr. 30, 1992. This application Jun. 6, 1995, Ser. No. 470,152

Int. Cl.⁶ A61K 51/00; A61M 36/14

U.S. Cl. 424—1.69

12 Claims

1. A composition comprising a specific binding peptide and a radiolabel-binding moiety covalently linked thereto, wherein the moiety forms a complex with technetium-99m, and wherein the complex is electrically neutral, thereby avoiding interference of the complex with specific binding of the peptide to a target in vivo.

5,780,008

POLYHYDRIC PHENOL COMPOUNDS

John Janine Rene Mertens, Vilvoorde, Belgium, assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation of Ser. No. 491,841, Jun. 20, 1995. This application Apr. 15, 1997, Ser. No. 842,698

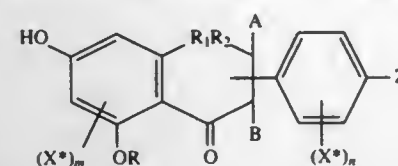
Int. Cl.⁶ A61K 51/00; A61M 36/14

U.S. Cl. 424—1.73

9 Claims

1. A method of detecting and locating tissues, having a disturbed glucose metabolism or an increased tyrosine kinase activity, in the body of a warm-blooded living being, which comprises (i) administering to said being a composition comprising, in an effective amount for external imaging, a pharmaceutical composition, comprising

- a pharmaceutically acceptable carrier material; and
- a polyhydric phenol compound of the general formula



wherein

R is a hydrogen atom or a saccharide moiety;

A and B are hydrogen atoms or form together a C—C bond;

R₁ is a hydroxy group and R₂ is a hydrogen atom, or

R₁ and R₂ form together an oxygene atom;

Z is a hydroxy group, an amino group, a carboxy group or a

N-(carboxymethyl) carbamoyl group;

X* is ¹²³I, ¹³¹I, ⁷⁵Br or ⁷⁷Br; and

m and n are 0 or 1, with the proviso, that m is 1 if n is 0, and that m is 0 if n is 1;

and thereupon (ii) subjecting said being to external imaging to determine the targeted sites in the body of said being in relationship to the background activity.

5,780,009

DIRECT GENE TRANSFER INTO THE RUMINANT MAMMARY GLAND

Constantinos Karatzas; Anthoula Lazaris-Karatzas, both of Beaconsfield, and Jeffrey Donald Turner, Hudson, all of Canada, assignors to Nexia Biotechnologies, Inc., Quebec, Canada

Filed Jan. 20, 1995, Ser. No. 377,016

Int. Cl.⁶ A61K 49/00; C12N 15/00; 5/00; C12P 21/06

U.S. Cl. 424—9.1

41 Claims

1. A method for producing, in a ruminant mammal, milk containing a heterologous protein, said method comprising:

- providing a genetic construct including DNA encoding said heterologous protein and a signal peptide;
- mixing said construct with a liquid carrier to form a liquid complex;
- infusing said liquid complex into a ductal tree of said mammal at an age of said mammal earlier than sexual maturity and after development of a functional streak canal leading to said ductal tree;
- raising said mammal so that the mammal lactates and the heterologous protein encoded by said construct is expressed and secreted into the milk produced by said ductal tree and mammary alveolar cells; and
- obtaining milk from said mammal.

5,780,010

METHOD OF MRI USING AVIDIN-BIOTIN CONJUGATED EMULSIONS AS A SITE SPECIFIC BINDING SYSTEM

Gregory M. Lanza, and Samuel A. Wickline, both of St. Louis, Mo., assignors to Barnes-Jewish Hospital, St. Louis, Mo. Continuation-in-part of Ser. No. 488,743, Jun. 8, 1995, Pat. No. 5,690,907. This application May 23, 1996, Ser. No. 647,277

Int. Cl.⁶ A61B 5/055

U.S. Cl. 424—9.32

14 Claims

1. A method for magnetic resonance imaging in vivo through ligand-based binding of an emulsion to a surface to be imaged comprising administering to said surface:

- a site-specific ligand conjugated with a biotin activating agent;
- an avidin activating agent; and
- an emulsion conjugated with a biotin activating agent, said emulsion having a paramagnetic element incorporated therein; whereby said ligand is conjugated to said emulsion through an avidin-biotin interaction and the resulting conjugate is bound to said surface to permit magnetic resonance imaging thereof.

5,780,011

PROCESS OF MAKING RADIOLOGICAL CONTRAST FOR GASTROINTESTINAL EXPLORATION COMPRISING BARIUM SULFATE AND SUCRALFATE

Ramon Gallo Molina, Madrid, Spain, assignor to Industrial Farmaceutica Cantabria S.A., and Gallo De Llanos S.L., both of Madrid, Spain

Filed Aug. 1, 1996, Ser. No. 691,078

Claims priority, application Spain, Aug. 2, 1995, 9501574

Int. Cl.⁶ A61K 49/04

U.S. Cl. 424—9.41

9 Claims

1. A process for making a radio-opaque formulation comprising mixing a radiological contrast agent with a gastroenteric injury selective adherence agent in an acid medium.

5,780,012

METHOD FOR REDUCING LUNG AFFLICTIONS BY INHALATION OF CYTOKINE SOLUTIONS

Edith Huland, and Hartwig Huland, both of Barkenkoppel 8, D22391 Hamburg, Germany

Continuation-in-part of Ser. No. 717,824, Jun. 19, 1991, Pat. No. 5,399,341. This application May 13, 1994, Ser. No. 242,542

Claims priority, application European Pat. Off., Jun. 21, 1990, 9011717

The portion of the term of this patent subsequent to Mar. 21, 2012, has been disclaimed.

Int. Cl.⁶ A61K 9/12

U.S. Cl. 424—45

30 Claims

1. A method for administering to a patient having at least one affliction selected from the group consisting of an infection, immunodeficiency syndrome, inflammatory disease, autoimmune disease, foreign body transplant, and tumor disease requiring immuno-regulation, which affliction is present in the lungs, which method consists essentially of administering to the lungs a non-systemic application of an amount of a nebulized aerosol composition effective to reduce the affliction, which aerosol composition consists essentially of a solution of

- I. at least one cytokine; and
- II. a sufficient amount of at least one pharmaceutically acceptable aqueous carrier solution therefor to form a homogeneous solution, said carrier solution selected from the group consisting of sterilized water, a pharmaceutically acceptable salt solution, a buffer solution and a sugar solution, wherein the aerosol composition is uniformly administered to the patient for a plurality of months.

5,780,013

GLIADIN-CONTAINING HAIRSPRAY

Sukh Bassi, Atchison, Kans.; Larry Murphy, Richardson, Tex.; Clodualdo C. Maningat, Platte City, and Li Nie, Kansas City, both of Mo., assignors to Midwest Grain Products, Atchison, Kans.

Filed Oct. 25, 1996, Ser. No. 738,094

Int. Cl.⁶ A61K 7/11

U.S. Cl. 424—45

10 Claims

1. An aqueous, low VOC hairspray formulation comprising from about 0.05–10% by weight gliadin dispersed in an aqueous, alcohol-containing solvent system, the formulation having a pH of from about 3.0–5.5 adjusted by the addition of an acid to said formulation, said gliadin having a molecular weight of from about 30,000–40,000, said formulation comprising from about 20–75% by weight water and from about 20–92% by weight of a lower alcohol, said formulation having a VOC content of up to about 85%.

5,780,014

METHOD AND APPARATUS FOR PULMONARY ADMINISTRATION OF DRY POWDER ALPHA 1-ANTITRYPSIN

Mohammed Eljamal, San Jose, and John S. Patton, San Carlos, both of Calif., assignors to Inhale Therapeutic Systems, San Carlos, Calif.

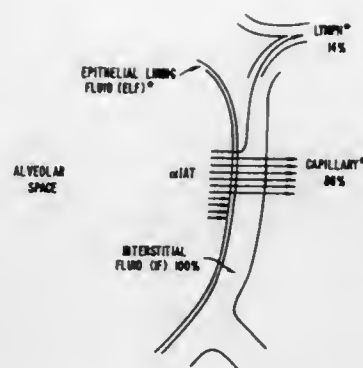
Continuation-in-part of Ser. No. 423,515, Apr. 14, 1995, abandoned. This application Mar. 13, 1996, Ser. No. 617,512

Int. Cl.⁶ A61K 9/12

U.S. Cl. 424—46

18 Claims

1. A method of administering α 1-antitrypsin to a patient, comprising: providing said α 1-antitrypsin as a dry powder, having a mean particle size in the range from 1 μ m to 5 μ m and an α 1-antitrypsin concentration of greater than or equal to 30% by weight; aerosolizing said dry powder composition; and



administering said aerosolized dry powder composition pulmonarily to said patient.

5,780,015

DENTIFRICE FOR THE TREATMENT OF DENTINAL HYPERSENSITIVITY HAVING LIMITED ASTRINGENCY

Steven W. Fisher, Middlesex; Edward A. Tavss, Kendall Park; Marilou T. Joziak, South River, and Robert J. Gambogi, Belle Mead, all of N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Filed May 14, 1997, Ser. No. 856,265

Int. Cl.⁶ A61K 7/16; 7/18

U.S. Cl. 424—52

10 Claims

1. A two component desensitizing dentifrice composition wherein the components are separated from one another but are nonetheless dispensable from a single packaging means, the composition being comprised of a first dentifrice component containing a desensitizing potassium salt and a second dentifrice component containing a stannous salt desensitizing agent and free of potassium salt, the first dentifrice component being free of stannous salt wherein at least one component has incorporated therein the reaction product of the oxyethylation of hydrogenated castor oil so that the components when dispensed and combined for use, contain at least about 6% by weight of the composition whereby less astringency is experienced by the user of the composition.

5,780,016

Patent Not Issued For This Number

5,780,017

Patent Not Issued For This Number

5,780,018

COSMETIC FORMULATIONS

Rosemary Collins, and Sandra Cox, both of Nottinghamshire, United Kingdom, assignors to The Boots Company PLC, Notts, United Kingdom

Division of Ser. No. 150,191, Dec. 8, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 475,347

Claims priority, application United Kingdom, Jun. 21, 1991, 9113481; Jun. 21, 1991, 9113482

Int. Cl.⁶ A61K 7/027

U.S. Cl. 424—64

10 Claims

1. A process for the manufacture of a lipstick comprising the steps of

5,780,020

METHODS AND COMPOSITIONS FOR REDUCING BODY ODOR

Liezl Gonzales Peterson, Loveland, Ohio, and Patricia Allison LaFleur, Shrewsbury, Pa., assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Oct. 28, 1996, Ser. No. 736,838

Int. Cl.⁶ A61K 7/32; 7/36

U.S. Cl. 424—65

16 Claims

1. An odor absorbing composition comprising:
a. from about 0.1% to about 25%, by weight of the composition, of uncomplexed cyclodextrin; and
b. a powder carrier;
and wherein said composition is safe for use on human skin.

5,780,021

METHOD FOR TREATING TYPE 1 DIABETES USING α -INTERFERON AND/OR β -INTERFERON

Douglas O. Sobel, Washington, D.C., assignor to Georgetown University, Washington, D.C.

Filed Mar. 5, 1993, Ser. No. 26,758

Int. Cl.⁶ A61K 38/19; C07K 14/555

U.S. Cl. 424—85.4

24 Claims

1. A method of treating Type 1 diabetes in a mammal, which method comprises administering to a mammal having Type 1 diabetes mellitus an effective amount of at least one naturally-occurring Type 1 interferon, a synthetic Type 1 interferon analog or a hybrid Type 1 interferon, wherein said Type 1 interferon analog or hybrid binds to the same receptor as a naturally occurring Type 1 interferon.

5,780,022

Patent Not Issued For This Number

5,780,019

DEODORIZING COMBINATION OF AGENTS BASED ON α - ω ALKANEDICARBOXYLIC ACIDS AND FATTY ACID PARTIAL GLYCERIDES

Manfred Klier, Aumühle; Bernd Traupe; Florian Wolf, both of Hamburg, and Manfred Roedel, Wedel, all of Germany, assignors to Beiersdorf AG, Hamburg, Germany

PCT No. PCT/DE94/01303, § 371 Date May 16, 1996, § 102(c) Date May 16, 1996, PCT Pub. No. WO95/14458, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 5, 1994, Ser. No. 640,881

Claims priority, application Germany, Nov. 20, 1993, 43 39 605.4

Int. Cl.⁶ A61K 7/53; 7/00; 31/19

U.S. Cl. 424—65

10 Claims

1. A deodorant composition comprising a deodorizing effective amount of a combination of:
a) an α - ω -alkanedicarboxylic acid; and
b) a fatty acid partial glyceride of an unbranched fatty acid.

5,780,023

INHIBITING PLANT PATHOGENS WITH AN ANTAGONISTIC MICROORGANISM(S)

Randy J. McLaughlin, Martinsburg, W. Va.; Charles L. Wilson, Frederick, Md., and Edo Chalutz, Rishon le 'Zion, Israel, assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 297,008, Aug. 29, 1994, Pat. No. 5,670,368, which is a continuation-in-part of Ser. No. 387,669, Jul. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 177,236, Apr. 4, 1983, abandoned. This application Nov. 27, 1996, Ser. No. 757,169

Int. Cl.⁶ A01N 63/00; C12N 1/16

U.S. Cl. 424—93.51

32 Claims

1. A biocontrol composition comprising a mixture of at least one microorganism which is an antagonist against plant pathogens but is not antibiotic and a carrier for said at least one microorganism, wherein said at least one microorganism is a yeast selected from the group consisting of *Pichia guilliermondii* and *Hanseniaspora*

uvarum and wherein said at least one microorganism is present in an amount effective for inhibiting plant pathogen development.

5,780,024

**SUPEROXIDE DISMUTASE/TETANUS TOXIN
FRAGMENT C HYBRID PROTEIN**

Robert H. Brown, Needham, Mass.; Paul S. Fishman, Baltimore, Md.; Jonathan W. Francis, Mansfield, and Betsy A. Hosler, Melrose, both of Mass., assignors to The General Hospital Corp., Boston, Mass., and University of Maryland at Baltimore, Baltimore, Md.

Filed Jun. 21, 1996, Ser. No. 668,381

Int. Cl.⁶ A61K 38/44; C12N 15/00; 9/02

U.S. Cl. 424—94.4

7 Claims

1. A hybrid protein comprising:
 - (a) an enzymatically active Cu/Zn superoxide dismutase (SOD-1) moiety that retains enzymatic activity following uptake of the hybrid protein into a neuron; and
 - (b) a tetanus toxin fragment C (TTC) moiety capable of selectively delivering the hybrid protein into neurons.

5,780,025

**COMPOSITIONS AND METHODS FOR THE SYNTHESIS
AND ASSAY OF ENKEPHALINASE**

Bernard Malfroy-Camine, San Bruno, and Peter R. Schofield, San Francisco, both of Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

Continuation of Ser. No. 540,439, Jun. 19, 1990, abandoned, which is a continuation of Ser. No. 2,478, Jan. 12, 1987, Pat. No. 4,960,700, which is a continuation-in-part of Ser. No. 946,566, Dec. 24, 1986, abandoned. This application Oct. 12, 1993, Ser. No. 134,481

Int. Cl.⁶ A61K 38/48; C12N 9/48

U.S. Cl. 424—94.67

20 Claims

1. Water soluble mammalian neutral endopeptidase which is free of detergent, wherein said neutral endopeptidase is encoded by a DNA selected from the group consisting of:
 - a) a rat DNA sequence encoding neutral endopeptidase,
 - b) a human DNA sequence encoding neutral endopeptidase, and
 - c) a DNA sequence which hybridizes to a) or b) and which encodes a mammalian neutral endopeptidase.

5,780,026

**IMMUNOMODULATING AND ANTIINFLAMMATORY
AGENT**

Haruo Yoshii, and Yuriko Fukata, both of Katoh-gun, Japan, assignors to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

Filed Aug. 8, 1994, Ser. No. 287,249

Claims priority, application Japan, Aug. 9, 1993, 5-218043

Int. Cl.⁶ A61K 35/14; 35/16

U.S. Cl. 424—130.1

11 Claims

1. A method of treating an autoimmune disease except for autoimmune allergic skin diseases comprising administering a pharmaceutically effective amount of histamine-added gamma-globulin.

5,780,027

**METHODS OF TREATMENT OF DOWN SYNDROME BY
INTERFERON ANTAGONISTS**

Leonard E. Maroun, Springfield, Ill., assignor to Meigen Biotechnology Corporation, Springfield, Ill.

Filed Jul. 14, 1995, Ser. No. 502,519

Int. Cl.⁶ A61K 39/395; 38/21

U.S. Cl. 424—130.1

16 Claims

1. A method of ameliorating the pathological effects of a trisomy of chromosome 21 which comprises administering an amount of an interferon antagonist to a mammal having a trisomy of chromosome 21 that renders the cells of the mammal hypersensitive to interferon, said amount being effective to ameliorate the pathological effects of the trisomy, wherein the pathological effects are the result of increased responsiveness to interferon.

5,780,028

**METHOD OF OBTAINING IMMUNOGLOBULINS FROM
COLOSTRUM AND THEIR USE IN PHARMACEUTICAL
COMPOSITION**

Conor John Grabam, Victoria, Australia, assignor to Anadis Ltd., Australia

PCT No. PCT/AU94/00562, § 371 Date Mar. 18, 1996, § 102(e)

Date Mar. 18, 1996, PCT Pub. No. WO95/08562, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 20, 1994, Ser. No. 617,750

Claims priority, application Australia, Sep. 20, 1993, PM 1313

Int. Cl.⁶ A61K 39/395; 39/42; B01J 13/00; B05D 3/00

U.S. Cl. 424—130.1

13 Claims

1. A pharmaceutical composition consisting of nontoxic components wherein said nontoxic components comprise a core element comprising an antibody which binds to an antigen wherein the core element is a compressed tablet wherein compression forces used to prepare the tablet range from about 0.1 tonnes/cm² to about 42.1 tonnes/cm².

5,780,029

**ANTIDIOTYPIC MONOCLONAL ANTIBODIES FOR
TREATMENT OF MELANOMA**

Soldano Ferrone, Scarsdale, N.Y., assignor to New York Medical College, Valhalla, N.Y.

Division of Ser. No. 41,885, Apr. 2, 1993, Pat. No. 5,493,009, which is a continuation of Ser. No. 595,064, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 435,885, Nov. 14, 1989, abandoned. This application Oct. 27, 1995, Ser. No. 549,423

Int. Cl.⁶ A61K 39/395; C07K 16/00; C12N 5/00

U.S. Cl. 424—131.1

6 Claims

1. A pharmaceutical composition for the treatment of melanoma comprising a murine antiidiotypic monoclonal antibody designated Mab MK2-23 which is produced by the hybridoma cell line deposited with the American Type Culture Collection (ATCC) under accession No. HB 10288 or a conjugate or fragment thereof retaining the specificity of antibody MK2-23 and a pharmaceutically acceptable carrier.

5. A method of treating a warm-blooded animal including man in need of treatment of melanoma which comprises administering to said animal a therapeutically effective amount of a murine antiidiotypic monoclonal antibody designated Mab MK2-23 which is produced by the hybridoma cell line deposited with the American Type Culture Collection (ATCC) under accession No. HB 10288 or a conjugate or fragment thereof retaining the specificity of antibody MK2-23.

5,780,030

PASSIVE VACCINE AGAINST LYME DISEASE

Markus M. Simon; Ulrich E. Schaible; Klaus Eichmann, all of Freiburg; Michael Kramer, and Wallich Reinhard, both of Heidelberg, all of Germany, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, and Deutsches Krebsforschungszentrum Stiftung des Öffentlichen Rechts, Heidelberg, both of Germany

Division of Ser. No. 68,063, May 27, 1993, Pat. No. 5,434,077, which is a division of Ser. No. 937,054, Aug. 26, 1992, abandoned, which is a division of Ser. No. 585,310, Sep. 19, 1990, Pat. No. 5,178,859. This application Mar. 20, 1995, Ser. No. 406,623

Claims priority, application Germany, Sep. 19, 1989, 39 31 236.4; May 17, 1990, 40 15 911.6

Int. Cl.⁶ A61K 39/395; C07K 15/28

U.S. Cl. 424—150.1

6 Claims

1. A vaccine against Lyme disease comprising a monoclonal antibody selected from the group consisting of LA-2 secreted by hybridoma cell line ECACC 89091302, LA-25.1 secreted by hybridoma cell line ECACC 90050405, LA-26.1 secreted by hybridoma cell line ECACC 90050406, and LA-27.1 secreted by hybridoma cell line ECACC 90050407 which binds to at least one antigen selected from the group consisting of OspA and OspB of *Borrelia burgdorferi*, strain ZS7, wherein said antibody is characterized by conferring passive immunity against Lyme disease in a subject to which it is administered.

5,780,031

Patent Not Issued For This Number

5,780,032

**METHOD OF USING MONOCLONAL ANTIBODIES TO
CYTOKERATIN FRAGMENTS**

Åke Silén, Vällingby, and Bo Wiklund, Upplands Väsby, both of Sweden, assignors to AB IDL Immunodevelop Lab, Sollentuna, Sweden

Division of Ser. No. 30,100, Mar. 23, 1993. This application Jun. 19, 1996, Ser. No. 666,835

Claims priority, application Sweden, Sep. 24, 1990, 9003025

Int. Cl.⁶ A61K 39/395; C07K 16/30; 1/00; C12N 5/00

U.S. Cl. 424—178.1

2 Claims

1. A method of treating epithelial cancer comprising administering to a patient in need thereof an effective amount of an antibody selected from the group consisting of an antibody which specifically binds to a fragment of cytokeratin 8, an antibody which specifically binds to a fragment of cytokeratin 18 and an antibody which specifically binds to a fragment of cytokeratin 19, coupled to a cytotoxin or radioactive isotope, wherein said antibody is produced by

- purifying cytokeratins from epithelial carcinoma cells by preparative SDS-PAGE;
- eluting bands corresponding to cytokeratins 8, 18, and 19;
- digesting said cytokeratins 8, 18, and 19 to produce a mixture of fragments ranging in size from 10 to 50 Kd, with the proviso that said mixture includes fragments other than fragments ranging in size from about 38 to 48 kD;
- immunizing a mouse with a solution comprising said mixture of cytokeratin fragments;
- recovering lymphocytes from the spleen of said mouse;
- fusing said lymphocytes with myeloma cells to produce hybridomas;
- cloning and growing said hybridomas;
- stabilizing and establishing single clones of said hybridomas; and
- recovering a monoclonal antibody which binds to said cytokeratin fragments from said single clones of said hybridomas.

179-283 O.G.-98-18:QL3

5,780,033

**USE OF AUTOANTIBODIES FOR TUMOR THERAPY
AND PROPHYLAXIS**

Vladimir P. Torchilin, 12 Shipway Pl., Charlestown, Mass. 02129, and Leonid Z. Iakubov, 51 Parker Terrace, Newton, Mass. 02159

Continuation of Ser. No. 265,411, Jun. 24, 1994, abandoned.

This application Nov. 22, 1995, Ser. No. 563,901

Int. Cl.⁶ A61K 39/395; G01N 33/574; C12N 5/20; C07K 16/30

U.S. Cl. 424—183.1

23 Claims

1. A method of inhibiting the growth of a tumor cell in a mammal, said method comprising administering to the mammal an antinuclear autoantibody obtained from a non-immunized, healthy mammal or from a hybridoma prepared with cells from a non-immunized, healthy mammal, wherein said autoantibody binds specifically to (i) a surface of a living tumor cell and (ii) a protein released from a dead tumor cell or an antigen in the nucleus of said tumor cell, and (iii) does not specifically bind to the surface of normal cells of the mammal to which it is administered.

5,780,034

**DIAGNOSIS AND TREATMENT OF INSULIN
DEPENDENT DIABETES MELLITUS USING HEAT
SHOCK PROTEIN DETERMINANTS**

Irun R. Cohen; Dana Elias, and Doron Markovits, all of Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Continuation of Ser. No. 937,449, Aug. 31, 1992, abandoned, which is a continuation of Ser. No. 493,127, Mar. 14, 1990, abandoned, which is a continuation-in-part of Ser. No.

371,249, Jun. 26, 1989, Pat. No. 5,114,844, which is a continuation-in-part of Ser. No. 322,864, Mar. 14, 1989, abandoned. This application Feb. 3, 1995, Ser. No. 384,454

Int. Cl.⁶ A61K 38/00; 39/04

U.S. Cl. 424—185.1

18 Claims

1. A substantially pure polypeptide which is capable of down-regulating the autoimmune response causing destruction of insulin-producing beta cells when administered to a patient undergoing autoimmune destruction of the insulin-producing beta cells, comprising the 24 amino acid sequence Val-Leu-Gly-Gly-Gly-Cys-Ala-Leu-Leu-Arg-Cys-Ile-Pro-Ala-Leu-Asp-Ser-Leu-Thr-Pro-Ala-Asn-Glu-Asp, but which is not an entire heat shock protein.

5,780,035

LHRH HORMONES

Christopher A. Morrison, Route de Belfeux 288 Chin, 1711 Corminboeuf, FR, Switzerland; Barry Robson, 26 Jessop Drive, Marple, Stockport, Cheshire, and Robert V. Fishleigh, 14 Clifton Road, Chorlton, Manchester, both of United Kingdom

Continuation of Ser. No. 177,730, Apr. 5, 1988. This application Jul. 2, 1992, Ser. No. 908,659

Claims priority, application United Kingdom, Jun. 5, 1987, 8713240; Oct. 1, 1987, 8723072

Int. Cl.⁶ A61K 39/00; 38/09; C07K 7/23

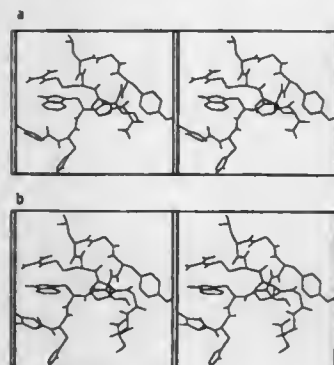
U.S. Cl. 424—185.1

14 Claims

1. An analogue of luteinising hormone-releasing hormone (LHRH) having the amino acid sequence:

pGlg-His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-Gly-Z

Stereoscopic diagrams of the predicted lowest energy solution conformers of (a) mammalian LRR, and (b) the LRR-Gly-Cys-Asn analogue.



wherein
Z is selected from the group consisting of Cys and Tyr.

5,780,036

PEPTIDES FOR INDUCING CYTOTOXIC T LYMPHOCYTE RESPONSES TO HEPATITIS B VIRUS
Francis V. Chisari, Del Mar, Calif., assignor to The Scripps Research Institute, La Jolla, Calif.

Division of Ser. No. 100,870, Aug. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 935,898, Aug. 26, 1992, which is a continuation-in-part of Ser. No. 749,540, Aug. 26, 1991, abandoned. This application Apr. 4, 1995, Ser. No. 416,950

Int. Cl.⁶ A61K 39/29; 39/12; 39/385; C07K 7/06
U.S. Cl. 424—189.1 7 Claims
1. A peptide containing at least one cytotoxic T lymphocyte (CTL) epitope, the peptide comprising no more than thirteen and at least eight amino acids wherein the peptide includes at least seven contiguous amino acids from a corresponding portion of HBpol having the sequence:
(HBpol 455-463) (SEQ ID NO:2)
Gly-Leu-Ser-Arg-Tyr-Val-Ala-Arg-Leu.

5,780,037

MISTLETOE EXTRACT AND METHOD
Tasneem A. Khwaja, Newport Beach, Calif., assignor to PharmaPrint, Inc., and The University of Southern California, both of San Diego, Calif.

Continuation of Ser. No. 579,832, Dec. 28, 1995, abandoned, which is a division of Ser. No. 421,993, Apr. 14, 1995, abandoned. This application Feb. 5, 1997, Ser. No. 796,487
Int. Cl.⁶ A61K 35/78

U.S. Cl. 424—195.1 16 Claims
1. A method for making a pharmaceutical grade mistletoe extract, said method comprising the steps of:
extracting mistletoe with an aqueous solution to form an aqueous extract;
measuring the total concentration of protein in said extract;
measuring the concentration of one or more Ca⁺⁺ dependent sugar-binding proteins in said extract, said sugar-binding protein being selected from the group of proteins in said extract which binds to lactose, galactose, melibiose, N-acetyl-D-galactosamine and fucose; and
determining the relative concentration of said one or more Ca⁺⁺ dependent sugar-binding proteins with respect to said total concentration of protein and identifying said aqueous extract as being of pharmaceutical grade only if the relative concentration of said one or more Ca⁺⁺ dependent sugar-binding proteins is between about 0.1 and 2.8 percent of total protein.

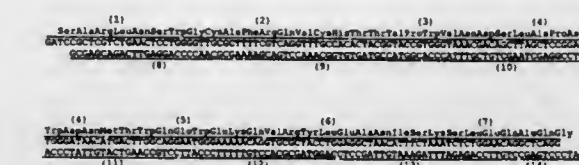
5,780,038

HIV-2 ENVELOPE POLYPEPTIDES

Wilhelm Bannwarth, Rheinfelden-Beuggen, Germany; Patrick Caspers, Oberwil, Switzerland; Stuart Le Grice, Basel, Switzerland, and Jan Mous, Giebenach, Switzerland, assignors to Roche Diagnostic Systems, Inc., Branchburg, N.J.

Division of Ser. No. 213,416, Mar. 15, 1994, which is a continuation of Ser. No. 895,977, Jun. 9, 1992, abandoned, which is a continuation of Ser. No. 268,322, Nov. 7, 1988, abandoned. This application May 3, 1995, Ser. No. 433,036
Claims priority, application Switzerland, Nov. 16, 1987, 4454/87

Int. Cl.⁶ A61K 39/21; C07H 21/04; C12N 15/00
U.S. Cl. 424—208.1 4 Claims



I. A process for detecting antibodies against HIV-2 viruses in human serum, which process comprises:

(a) labeling a polypeptide having the amino acid sequence

SerAlaArgLeuAsnSerTrpGlyCysAlaPheArgGlnValCysHisThrThr

ValProTrpValAsnAspSerLeuAlaProAspTrpAspAsnMetThrTrpGln

GluTrpGluLysGlnValArgTyrLeuGluAlaAsnIleSerLysSerLeuGlu

GlnAlaGlnGly;

(b) reacting the labeled polypeptide with a human serum sample suspected of containing antibodies against HIV-2 viruses and allowing labeled polypeptide-antibody complexes to form in the reaction mixtures; and

(c) detecting the labeled polypeptide-antibody complexes in the serum sample.

5,780,039

ORALLY-INGESTIBLE NUTRITION COMPOSITIONS HAVING IMPROVED PALATABILITY

Norman A. Greenberg, New Hope; Candis Kvamme, Brooklyn Park, and Mary K. Schmidt, Arden Hills, all of Minn., assignors to Novartis Nutrition AG, Basel, Switzerland

Filed Apr. 23, 1992, Ser. No. 872,870

Int. Cl.⁶ A61K 9/00

U.S. Cl. 424—400 12 Claims

I. An orally- ingestible nutrition composition having an improved taste and palatability comprising a carbohydrate source providing from 40 to 70%, a nitrogen source providing from 15 to 30% and a fatty acid source providing from 15 to 30% of the total energy supply of said composition, wherein said composition comprises a low pH form of an amino acid having an aqueous pH of less than 6 at a concentration of about 0.1 to about 20% by solid weight, said low pH form being selected from the group consisting of phosphates, citrates, acetates, tartrates, fumarates, adipates, lactates, hydrates and mixtures thereof, wherein said amino acid is selected from the group consisting of arginine, valine and ornithine and wherein said composition is a dry powder.

5,780,040

HELICOBACTER PYLORI NICKEL BINDING PROTEIN
Andrew G. Plaut, Lexington; Joanne V. Gilbert-Rothstein, Arlington, and Andrew Wright, Lincoln, all of Mass., assignors to Tufts University School of Medicine Hospital, Inc., Boston, Mass., and New England Medical Center Hospital, Inc., Boston, Mass.

Filed Jun. 8, 1994, Ser. No. 255,457

Int. Cl.⁶ A61K 39/106; 39/02; C07K 14/205; G01N 35/53
U.S. Cl. 424—234.1 3 Claims

I. A substantially pure protein characterized in that
(a) it is found in Helicobacter bacteria,
(b) it comprises the amino acid sequence of SEQ ID NO.: 1,
(c) it has a monomeric molecular weight of about 14 kDa as determined by polyacrylamide gel electrophoresis, and
(d) it is a nickel-binding protein.

5,780,041

39-KILODALTON ANTIGEN SPECIFIC TO BORRELIA BURGDORFERI

Warren J. Simpson, and T. G. Schwan, both of Hamilton, Mont., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 20,245, Feb. 19, 1993, Pat. No. 5,470,712, which is a continuation of Ser. No. 664,731, Mar. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 487,716, Mar. 5, 1990, abandoned. This application Mar. 1, 1995, Ser. No. 396,957

Int. Cl.⁶ C07K 14/20; A61K 39/02; C12P 21/06
U.S. Cl. 424—263.1 7 Claims

I. An isolated and purified *Borrelia burgdorferi* protein comprising SEQ ID NO:4 which is immunoreactive with mammalian Lyme borreliosis serum.

5,780,042

SYNERGISTIC LIGHT PROTECTION COMBINATIONS AND COSMETIC AND DERMATOLOGICAL FORMULATIONS COMPRISING SUCH COMBINATIONS

Heinrich Gers-Barlag, Kummerfeld; Anja Müller, Hamburg; Gerhard Sauermann, Wiemersdorf, and Beate Uhlmann, Hamburg, all of Germany, assignors to Beiersdorf AG, Hamburg, Germany

PCT No. PCT/DE94/00078, § 371 Date Feb. 8, 1996, § 102(e) Date Feb. 8, 1996, PCT Pub. No. WO94/18942, PCT Pub. Date Sep. 1, 1994

PCT Filed Jan. 29, 1994, Ser. No. 495,497

Claims priority, application Germany, Feb. 25, 1993, 43 05 788.8

Int. Cl.⁶ A61K 7/40

U.S. Cl. 424—401 8 Claims

I. Cosmetic or dermatological formulations for the protection of the skin against oxidation processes, comprising the combination of at least one substance selected from the group consisting of 2,4-O-furfurylidene-sorbitol and alkyl ethers thereof and more than 0.2% by weight based on the total weight of the formulations, of one or more substances chosen from the group consisting of cosmetically or pharmaceutically acceptable antioxidants, with the proviso that the antioxidants do not include citric acid or citrates.

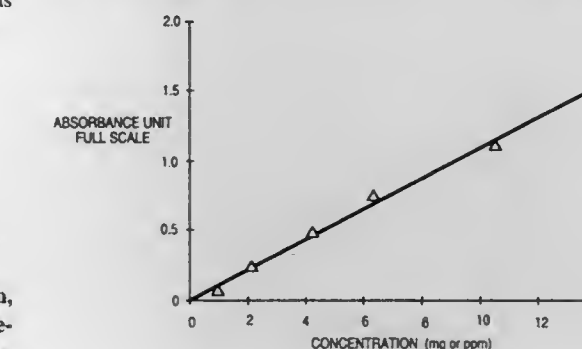
5,780,043

INFECTION RESISTANT THERMOPLASTIC POLYURETHANE

Greg Dane, Rue Clement Delpierre 44, 1310 La Hulpe; Jean Kersten, Chaussee De Tournai 259, 7931 Willers St Amand, and Yves Delmotte, Rue De La Fontaine, 36, 7333 Tertre, all of Belgium

Continuation of Ser. No. 175,939, Dec. 30, 1993, abandoned, which is a continuation of Ser. No. 842,012, Feb. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 795,695, Sep. 9, 1991, Pat. No. 5,181,276, which is a continuation of Ser. No. 484,137, Feb. 22, 1990, abandoned. This application Oct. 18, 1995, Ser. No. 544,915
Int. Cl.⁶ A01N 25/34

U.S. Cl. 424—404 4 Claims



I. An infection resistant thermoplastic polyurethane device selected from the group consisting of: gloves, condoms, surgical clothes, finger stalls, aprons, bibs, caps and surgical operative fields formed by the process consisting essentially of:

a) mixing a non-ionic surfactant with a thermoplastic polyurethane polymer and a plasticizer having a molecular weight greater than 300, to form a mixture, the non-ionic surfactant having the formula:



wherein R₁ is a saturated or unsaturated hydrocarbon radical; a, is for I=n, an integer greater or equal to 2; R₂ is an organic radical selected from the group consisting of C—H and C—O and n is an integer selected so that the Hydrophilic Lipophilic Balance of the surfactant is between 12 and 20;

b) combining the mixture with a sufficient amount of an organic solvent selected from the group consisting of tetrahydrofuran and 1,4 dioxane to form a one-phase solution; and
c) forming the thermoplastic polyurethane device.

5,780,044

LIQUID DELIVERY COMPOSITIONS

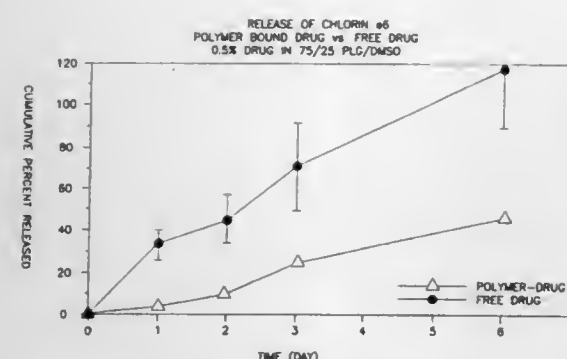
Gerald L. Yewey; Nancy L. Krinick; Richard L. Dunn, all of Fort Collins, Colo.; Michael L. Radomsky, Mountain View; Gerbrand Brouwer, Menlo Park, both of Calif., and Arthur J. Tipton, Birmingham, Ala., assignors to Atrix Laboratories, Inc., Fort Collins, Colo.

Continuation of Ser. No. 225,140, Apr. 8, 1994, abandoned. This application Dec. 5, 1996, Ser. No. 761,015

Int. Cl.⁶ A61F 2/00; A61K 9/127; 9/52
U.S. Cl. 424—426 15 Claims

I. A delivery composition suitable for in situ formation of a solid implant for controlled release of an active agent, the composition comprising:

(a) a biocompatible organic solvent which has a solubility range of miscible to dispersible in aqueous medium;
(b) a biocompatible, biodegradable, thermoplastic polymer dissolved in the organic solvent, the thermoplastic polymer being insoluble in aqueous medium; and
(c) an active agent incorporated into a particulate controlled release component, the particulate controlled release compo-



nent being suspended in the organic solvent wherein upon contacting an aqueous medium, the organic solvent dissipates or disperses into the aqueous medium and the thermoplastic polymer precipitates or coagulates to form the solid implant in which the particulate controlled release component is embedded.

5,780,045

TRANSMUCOSAL DRUG DELIVERY DEVICE

Roy L. McQuian, Lake Elmo, and Joan K. Barkhaus, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 885,282, May 18, 1992, abandoned.

This application Nov. 8, 1996, Ser. No. 746,353

Int. Cl.⁶ A61F 13/02

U.S. Cl. 424-434

16 Claims

1. A method of delivering a drug to a mucosal surface of a mammal or to the vicinity of a mucosal surface of a mammal to provide a therapeutic effect on or in the vicinity of the mucosal surface, which method comprises the steps of:

- a) adhering to the mucosal surface a transmucosal drug delivery device in the form of a sheet material having a surface comprising:
 - 1) a particulate polymeric resin comprising carboxylic acid containing monomer units and having an average particle size of less than or equal to about 100 mm;
 - 2) from about 10 parts to about 200 parts by weight of a polytetrafluoroethylene support matrix based on 100 parts by weight of the resin; and
 - 3) an amount of a drug effective to provide a desired therapeutic result;

which composition contains less than about 10% water by weight based on the weight of the polymeric resin, and adheres to a mucosal surface to release the drug to the mucosal surface;

- b) allowing the device to remain adhered so as to release the drug to the mucosal surface or to the vicinity of the mucosal surface.

5,780,046

ORAL FORMULATIONS OF S(+)-IBUPROFEN

Leslie G. Humber, Brunswick, N.J., and Gerald L. Reuter, Plattsburgh, N.Y., assignors to American Home Products Corporation, Madison, N.J.

Filed Jun. 10, 1996, Ser. No. 661,207

Int. Cl.⁶ A61K 9/10; 9/14; 9/20; 9/46

U.S. Cl. 424-440

11 Claims

1. An oral pharmaceutical composition comprising an organoleptically acceptable combination of S(+)-2-(p-isobutylphenyl)-propionic acid substantially free of R(-)-2-(p-isobutylphenyl)-propionic acid and an organoleptically and pharmaceutically acceptable acidic component, the acidic component being of sufficient amount to maintain the pH of the formulation between 2 and 6.

5,780,047

PATCH

Tetsuro Kamiya; Kouichi Niinaka; Keiko Morioka; Hidenori Yorozu; Michitaka Sawada, and Masaki Iwasaki, all of Tochigi, Japan, assignors to Kao Corporation, Tokyo, Japan
Filed Jun. 27, 1996, Ser. No. 671,543

Claims priority, application Japan, Jun. 27, 1995, 7-160593; Feb. 9, 1996, 8-024014

Int. Cl.⁶ A61F 13/00; A61K 9/70

U.S. Cl. 424-443

13 Claims

1. A patch comprising a water-soluble adhesive sheet (a) and a water-soluble protective material (b) laminated thereon selected from the group consisting of a non-ionic water-soluble polymer, a gelatin and an emulsion polymer,

wherein said non-ionic water-soluble polymer is polydimethyl acrylamide, polyvinyl pyrrolidone, polyethylene glycol monomethacrylate, poly-2-ethyl-2-oxazoline, polyvinyl alcohol or pullulan,

said gelatin has a weight average molecular weight of 20,000 to 100,000, and

wherein said emulsion polymer is an acralate resin emulsion.

5,780,048

FIRST AID BANDAGE DRESSING SYSTEM AND METHOD OF APPLICATION THEREOF

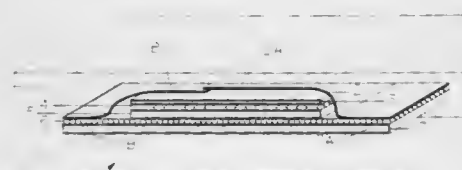
Chung Chih Lee, P.O. Box 196, Bellaine, Tex. 77402-0196

Filed Mar. 20, 1997, Ser. No. 822,272

Int. Cl.⁶ A61F 13/00

U.S. Cl. 424-443

31 Claims



1. A bandage dressing system, which is stored in an air-tight or vacuum package, consists of a number of layers including an uppermost layer and a bottommost layer and comprises:

- (a) a wound binding layer that comprises one or more cyanoacrylates;
- (b) a flexible layer that is positioned under the wound binding layer;
- (c) a peelable cover that is positioned over the wound binding layer;
- (d) an adhesive bandage that is the bottommost layer;
- (e) a peelable covering that is the uppermost layer; and
- (f) a peelable attachment that is positioned over the adhesive bandage and that attaches one section of the adhesive bandage to the flexible layer and that attaches another section of the adhesive bandage to the peelable covering;

such that upon removal of the peelable covering and the peelable cover, the wound binding layer is positioned over the wound and the section of the adhesive bandage that was attached to the peelable covering is secured to the sides of the wound.

5,780,049

ENHANCED SKIN PENETRATION SYSTEM FOR IMPROVED TOPICAL DELIVERY OF DRUGS

George Endel Deckner, Trumbull, and Brian Scott Lombardo, Ansonia, both of Conn., assignors to Richardson-Vicks Inc., Shelton, Conn.

Division of Ser. No. 390,902, Feb. 16, 1995, abandoned, which is a continuation of Ser. No. 228,167, Apr. 15, 1994, abandoned, which is a continuation of Ser. No. 111,032, Aug. 24, 1993, abandoned, which is a continuation of Ser. No. 957,752, Oct. 2, 1992, abandoned, which is a continuation of Ser. No. 778,424, Oct. 16, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 464,991

Int. Cl.⁶ A61K 9/107; 31/78; 47/44

U.S. Cl. 424-449

13 Claims

1. A topical pharmaceutical composition having enhanced penetration through the skin, comprising:

- (a) an aqueous carrier comprising from about 53% to about 91.5% water;
- (b) a safe and effective amount of an antimicrobial pharmaceutical active selected from the group consisting of β -lactam drugs, quinolone drugs, ciprofloxacin, norfloxacin, tetracycline, erythromycin, amikacin, triclosan, doxycycline, capreomycin, chlorhexidine, chlortetracycline, oxytetracycline, clindamycin, ethambutol, metronidazole, pentamidine, gentamicin, kanamycin, lineomycin, methacycline, methenamine, minocycline, neomycin, netilmicin, paromomycin, streptomycin, tobramycin, miconazole, amantadine, triclosan, octopirox, parachlorometa xylenol, nystatin, tolmetate, clotrimazole, pharmaceutically-acceptable salts thereof, and mixtures thereof; and
- (c) from about 0.05% to about 5% of a non-ionic polyacrylamide having a molecular weight of from about 1,000,000 to about 30,000,000, the polyacrylamide being predispersed in a water-immiscible oil containing a surfactant having an HLB of from about 7 to about 10,

wherein the composition is in gel emulsion form and has a pH below about 5.

5,780,050

DRUG DELIVERY COMPOSITIONS FOR IMPROVED STABILITY OF STEROIDS

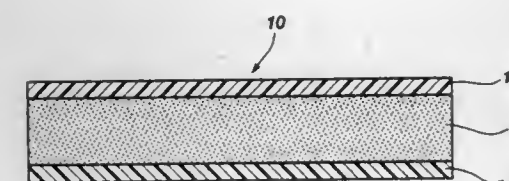
Uday Jain; Srinivasan Venkateshwaran, and Charles D. Ebert, all of Salt Lake City, Utah, assignors to Theratech, Inc., Salt Lake City, Utah

Filed Jul. 20, 1995, Ser. No. 504,430

Int. Cl.⁶ A61F 13/00

U.S. Cl. 424-449

30 Claims



1. A stabilized patch device for transdermal delivery of a steroid drug containing a 3-keto-4-en functional group, wherein said steroid drug is stable upon storage of said device, comprising an effective amount of said steroid drug and a biocompatible polymeric adhesive with which said steroid drug is intimately admixed, wherein said polymeric adhesive is a block copolymer of N-vinyl pyrrolidone and 2-ethyl-hexyl acrylate.

5,780,051

METHODS AND ARTICLES OF MANUFACTURE FOR NICOTINE CESSATION AND MONITORING NICOTINE USE

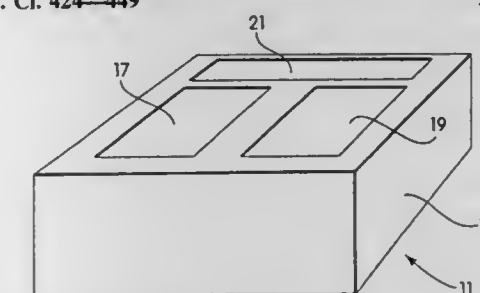
Amruta R. Eswara, Beverly; Neal Muni, N. Reading; F. Howard Schneider, Yarmouth, and Peter J. Mione, Abington, all of Mass., assignors to DynaGen, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 487,853, Jun. 7, 1995, abandoned, and Ser. No. 881,740, May 7, 1992, which is a division of Ser. No. 135,847, Oct. 13, 1993, Pat. No. 5,403,595, which is a division of Ser. No. 415,859, Apr. 3, 1995, Pat. No. 5,536,503, which is a division of Ser. No. 145,203, Oct. 28, 1993, Pat. No. 5,414,005, which is a division of Ser. No. 862,051, Apr. 2, 1992, abandoned, which is a division of Ser. No. 137,687, Oct. 15, 1993, abandoned, which is a division of Ser. No. 279,619, Jul. 25, 1994. This application Jan. 22, 1997, Ser. No. 779,281

Int. Cl.⁶ A61K 9/70; 9/48; 9/50; A61F 2/02

U.S. Cl. 424-449

28 Claims



1. A method of treating nicotine withdrawal symptoms, comprising: administering to a subject an effective amount of a nicotine substitute prior to or during a period in which the subject is experiencing nicotine withdrawal symptoms, to alleviate the subject's desire for nicotine; and monitoring said subject for the presence of nicotine and nicotine metabolite in a biological sample of the subject with a nicotine detection system.

5,780,052

COMPOSITIONS AND METHODS USEFUL FOR INHIBITING CELL DEATH AND FOR DELIVERING AN AGENT INTO A CELL

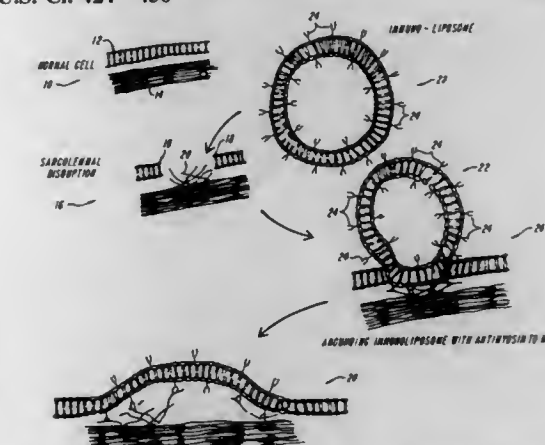
Ban An Khaw, Milton; Vladimir P. Torchilio, Charlestown; Jagat Narula, and Imran Vural, both of Brookline, all of Mass., assignors to Northeastern University, Boston, Mass.

Filed Apr. 24, 1995, Ser. No. 427,676

Int. Cl.⁶ A61K 9/127

U.S. Cl. 424-450

3 Claims



1. A method of inhibiting cell death in cardiac tissue, said method comprising

providing cardiac tissue comprising injured cardiomyocytes having intracellular myosin exposed to the exterior of said cardiomyocytes;
contacting said injured cardiomyocytes with a specific affinity reagent-liposome conjugate, said specific affinity reagent comprising an antibody specific for said intracellular myosin, for a time sufficient to allow said conjugate to adhere to said intracellular myosin; and
determining the viability of said cardiomyocytes.

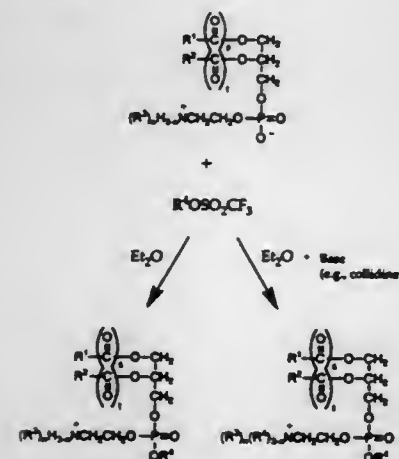
5,780,053

CATIONIC PHOSPHOLIPIDS FOR TRANSFECTION
Gary W. Ashley, Alameda, Calif.; Robert C. MacDonald, Evanston, and Miho Shida, Barrington, both of Ill., assignors to Northwestern University, Evanston, Ill.

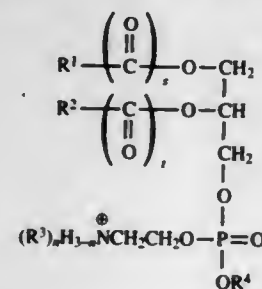
Division of Ser. No. 220,376, Mar. 29, 1994, Pat. No. 5,651,981. This application Jun. 6, 1995, Ser. No. 466,417
Int. Cl.⁶ A61K 9/127

U.S. Cl. 424—450

6 Claims



1. A liposome-drug aggregate comprising one or more nucleic acids and one or more liposomes, each liposome comprising one or more cationic phospholipids having the structure:



wherein

R₁ is H or C₁ to about C₂₄ straight or branched alkyl, alkenyl, or alkynyl chains optionally substituted with a carbocyclic, aromatic, or heterocyclic moiety,

R₂ is H or C₁₀ to about C₂₄ straight or branched alkyl, alkenyl, or alkynyl chains optionally substituted with a carbocyclic, aromatic, or heterocyclic moiety,

R₃ is hydrogen or methyl,

R₄ is C₂ to about C₂₄ straight or branched alkyl, alkenyl, or alkynyl chain optionally substituted with a carbocyclic, aromatic or heterocyclic moiety, or R₄ is a C₁ to about C₆ straight or branched chain ester, aldehyde, ketone, ether, haloalkyl, azidoalkyl, or tetraalkylammonium,

n is 0, 1, 2, or 3,

s is 0 or 1, and

t is 0 or 1,

provided that R¹ and R² are not both H and that when R¹ is H, s is 0, and that when R² is H, t is 0, and further provided that R⁴ is not an alkenyl or alkynyl substituted with a phenyl.

5,780,054

METHODS FOR INCREASING THE CIRCULATION HALF-LIFE OF PROTEIN-BASED THERAPEUTICS

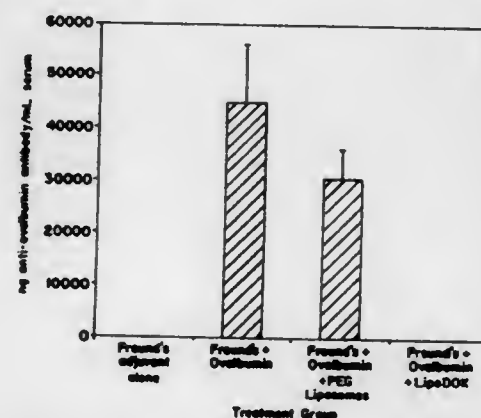
Paul G. Tard, Richmond; Erik Swartz, Vancouver; Marcel B. Bally, Bowen Island, and Pieter R. Cullis, Vancouver, all of Canada, assignors to University of British Columbia, Canada

Filed Jan. 17, 1996, Ser. No. 588,014

Int. Cl.⁶ A61K 9/127

U.S. Cl. 424—450

14 Claims



1. A method of increasing the circulation half-life of a protein-based therapeutic in a host, said method comprising:

- administering to said host an amount of a first formulation comprising liposomes and an antineoplastic agent; and
- administering to said host a second formulation comprising said protein-based therapeutic, wherein said amount of said first formulation is sufficient to suppress an IgG response to said protein-based therapeutic of said second formulation, thereby suppressing said IgG response and increasing the circulation half-life of said protein-based therapeutic, wherein said protein-based therapeutic is selected from the group consisting of protein-coated liposomes peptide-containing liposomes, therapeutic agents which are proteins or polypeptides, antibody-toxin conjugates, transferrin DNA bound to polylysine, and prodrugs having a protein-targeting group.

5,780,055

CUSHIONING BEADS AND TABLET COMPRISING THE SAME CAPABLE OF FORMING A SUSPENSION

Yacoub S. Habib; Ralph Shangraw, both of Baltimore, and Larry L. Augsburg, Ellicott City, all of Md., assignors to University of Maryland, Baltimore, Md.

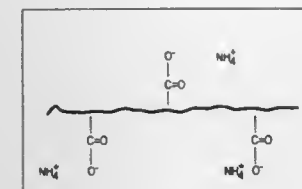
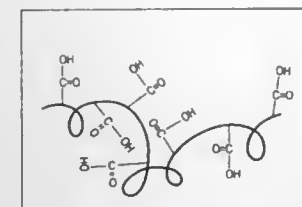
Filed Sep. 6, 1996, Ser. No. 709,415

Int. Cl.⁶ A61K 9/20

U.S. Cl. 424—464

53 Claims

1. A cushioning bead comprising microcrystalline cellulose, wherein said cushioning bead is prepared by extrusion-



spheronization, followed by freeze-drying, wherein said cushioning bead has a diameter of about 0.2–2.0 mm.

5,780,056

MICROCAPSULES OF THE MULTI-CORE STRUCTURE CONTAINING NATURAL CAROTENOID

Taku Akamatsu; Ryoji Yasue; Kentaro Kiyama, and Noboru Hara, all of Tokyo, Japan, assignors to Lion Corporation, Tokyo, Japan

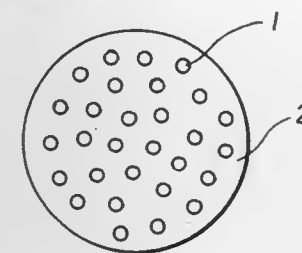
Filed Sep. 17, 1996, Ser. No. 714,266

Claims priority, application Japan, May 10, 1996, 8-141034

Int. Cl.⁶ A61K 9/20

U.S. Cl. 424—464

24 Claims



1. A microcapsule of multi-core structure comprising a plurality of particles which are made of a core material comprising natural carotenoid and an edible oil, and a wall which is made of a coating material based on gelatin, wherein said particles have a mean particle size of 0.01 to 5 μm, said gelatin has a jelly strength of at least 100 blooms, and said microcapsule has a water content of up to 10% by weight based on the weight of said microcapsule.

5,780,057

PHARMACEUTICAL TABLET CHARACTERIZED BY A SHOWING HIGH VOLUME INCREASE WHEN COMING INTO CONTACT WITH BIOLOGICAL FLUIDS

Ubaldo Conte, Busto Arsizio, and Lauretta Maggi, Pavia, both of Italy, assignors to Jagotec AG, Switzerland

Filed Feb. 14, 1997, Ser. No. 799,313

Claims priority, application Italy, Feb. 19, 1996, MI96A0311

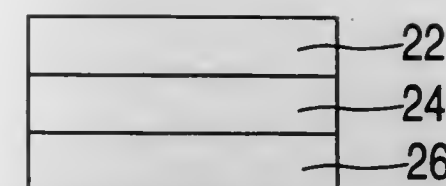
Int. Cl.⁶ A61K 9/28

U.S. Cl. 424—468

17 Claims

1. A pharmaceutical tablet wherein the active ingredients are released at a controlled rate selectively in the first portion of the gastrointestinal tract, said tablet having a multi-layer structure and comprising:

- a first layer, which considerably and rapidly swells in the presence of biological aqueous fluids, said swelling resulting



in an increase by at least 50% of the total volume of the tablet when coming into contact with the gastric juice, said layer being formed by a compressed granular mixture of biocompatible hydrophilic polymers and at least one highly swellable (superdisintegrating) polymer selected from the group consisting of cross-linked polyvinylpyrrolidone, hydroxypropylcellulose and hydroxypropyl methylcellulose having molecular weight up to 150,000, cross-linked sodium carboxymethylcellulose, carboxymethyl starch, sodium carboxymethyl starch, potassium methacrylate-divinylbenzene copolymer, polyvinyl alcohols, amylose, cross-linked amylose, starch derivatives, microcrystalline cellulose and cellulose derivatives, alpha-, beta- and gamma-cyclodextrin and dextrin derivatives in general, said substances amounting to 1% to 90% of the layer weight.

b) a second layer, adjacent to the first and containing the active ingredient, made out of biodegradable and biocompatible polymeric materials and other adjuvants whereby the formulation can be formed by compression and the active ingredient may be released within a time interval that may be predetermined by preliminary tests in vitro;

c) an optional third layer, formed by compression and applied to the second layer, comprising erodible and/or gellable and/or swellable hydrophilic polymers and, being initially impermeable to the active ingredient, acting as a barrier modulating the release of the active ingredient contained in the adjacent 2nd layer, said third layer optionally being identical with the first layer in composition and functional characteristics.

5,780,058

ORAL DELIVERY OF DISCRETE UNITS

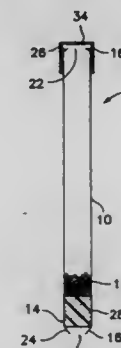
Patrick S.-L. Wong, Palo Alto; Howard B. Rosen, Los Gatos; Nathan Roth, San Francisco, and Phyllis I. Gardner, Stanford, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Jul. 19, 1996, Ser. No. 684,602

Int. Cl.⁶ A61K 9/24

U.S. Cl. 424—473

15 Claims



1. An oral active agent delivery system for delivering to a patient discrete units of active agent formulation in admixture with a fluid, said system comprising:

a tubular active agent formulation chamber, said chamber having a first end and a second end and containing an active agent formulation in the form of discrete units, said first end being adapted for fluid communication with a fluid and said second end being adapted for oral application of suction by the patient; and

a fluid passing active agent formulation retainer in said active agent formulation chamber for preventing release of the dis-

crete units from the first end of the chamber while permitting fluid entry into the chamber, said retainer being transportable toward said second end of said chamber with the fluid entering said first end of said chamber upon application of suction at said second end.

5,780,059

Patent Not Issued For This Number

5,780,060

MICROCAPSULES WITH A WALL OF CROSSLINKED PLANT POLYPHENOLS AND COMPOSITIONS CONTAINING THEM

Marie-Christine Levy, Reims, and Marie-Christine Andry, Dizy, both of France, assignors to Centre National de la Recherche Scientifique, Paris, France

PCT No. PCT/FR95/00116, § 371 Date Sep. 27, 1995, § 102(c) Date Sep. 27, 1995, PCT Pub. No. WO95/21018, PCT Pub. Date Aug. 10, 1995

PCT Filed Feb. 1, 1995, Ser. No. 525,619

Claims priority, application France, Feb. 2, 1994, 94 01146 Int. Cl.⁶ A61K 9/50;35/78

U.S. Cl. 424—489

35 Claims

1. Microcapsules comprising a wall formed of at least one plant polyphenol interfacially crosslinked with a diacid halide crosslinking agent.

5,780,061

Patent Not Issued For This Number

5,780,062

SMALL PARTICLE FORMATION

Sylvan Frank, Columbus, Ohio; Jan-Erik Löfroth, Mölndal, Sweden, and Levon Bostanian, Metairie, La., assignors to The Ohio State University Research Foundation, Columbus, Ohio

PCT No. PCT/SE95/01302, § 371 Date Nov. 27, 1996, § 102(c) Date Nov. 27, 1996, PCT Pub. No. WO96/14833, PCT Pub. Date May 23, 1996

PCT Filed Nov. 3, 1995, Ser. No. 553,460

Claims priority, application Sweden, Nov. 9, 1994, 9403846 Int. Cl.⁶ A61K 9/16

U.S. Cl. 424—501

7 Claims

1. A process for preparing small particles comprising an organic compound, the solubility of which is greater in a water-miscible first solvent than in a second solvent which is aqueous, which process comprises the following steps:

- (i) dissolving said organic compound in the water-miscible first solvent,
- (ii) preparing a solution of polymer and an amphiphile in the aqueous second solvent and in which second solvent the organic compound is substantially insoluble whereby a polymer/amphiphile complex is formed, and
- (iii) mixing the solutions from steps (i) and (ii) so as to cause precipitation of an aggregate comprising the organic compound and the polymer/amphiphile complex.

5,780,063

APPARATUS FOR PRODUCING A HARD METAL OR CERAMIC ROD HAVING HELICAL BORES

Arno Friedrichs, Hamburg, Germany, assignor to Konrad Friedrichs KG, Kulmbach, and Gottlieb Gühring KG, Ebnat, both of Germany

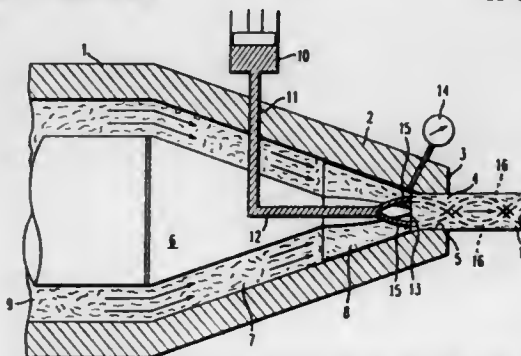
Division of Ser. No. 340,449, Nov. 14, 1994, Pat. No. 5,601,857, which is a continuation of Ser. No. 725,596, Jul. 3, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 469,367

Claims priority, application Germany, Jul. 5, 1990, 40 21 383.8; Jun. 19, 1991, 41 20 165.5

Int. Cl.⁶ B29C 47/06;47/30

U.S. Cl. 425—131.1

11 Claims



1. An extruder for extrusion manufacturing one of a hard metal and a ceramic rod with at least a helical inner bore and having a smooth outer surface substantially free of elevations and depressions, comprising:

- a die;
- means for twisting a plasticized mass of said one of said hard metal and said ceramic;
- means for forcing said plasticized mass through said die such that a helical-shaped twisted mass is produced during extrusion wherein said mass is shaped in the form of a billet having a cross-section;
- spinner means defining said twisting means located in said die, said spinner means being rotated by an axial flow of said mass through said spinner means;
- an outlet located at an end of the die and downstream of the spinner means; and
- means for introducing a filament-shaped plasticized material into said mass, wherein said material follows a twisted movement of said twisted mass so as to form a helical inner bore therein;
- said die having an interior coaxial mandrel mounting said spinner means wherein said filament-shaped material is introduced from the downstream end of said spinner means into said die at eccentrically arranged locations wherein said introducing means comprises a reservoir of plasticized material, said reservoir having one of a piston and a screw and said plasticized material comprises one of a readily evaporating material and a soluble material that are removable from said plasticized mass prior to sintering of said plasticized mass.

5,780,064

GERMICIDAL COMPOSITIONS FOR THE TREATMENT OF ANIMAL INFECTIOUS DISEASES OF THE HOOF

George J. Meisters, Mount Prospect, and Charles D. Gradle, Berwyn, both of Ill., assignors to Babson Bros. Co., Naperville, Ill.

Filed Sep. 12, 1997, Ser. No. 938,013

Int. Cl.⁶ A61K 31/14;33/34;33/40

U.S. Cl. 424—616

29 Claims

1. An aqueous germicidal composition for the treatment or prevention of infectious diseases of the hoof in animals, comprising a copper salt, a quaternary ammonium compound, and a peroxide.

5,780,065

Patent Not Issued For This Number

5,780,066

EXTRUSION DIE WITH CIRCUMFERENTIAL DISTRIBUTION GROOVE

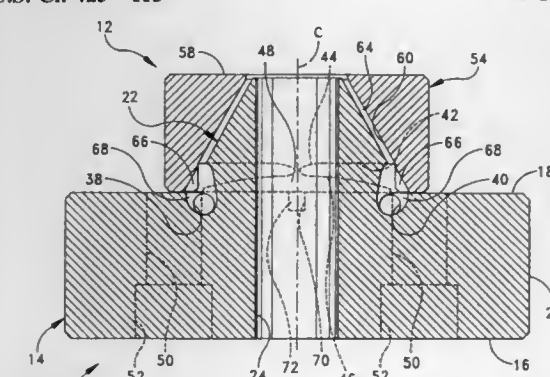
A. Roger Guillemette, 37 Fairview Ave., West Warwick, R.I. 02893

Filed Dec. 4, 1995, Ser. No. 566,995

Int. Cl.⁶ B29C 47/12

U.S. Cl. 425—113

4 Claims



1. An extrusion die for extruding molten materials comprising: a cylindrical body having an outer surface and opposite first and second end walls, a flow inlet formed in said body to receive molten material, and first and second symmetrical flow channels which diverge and extend into said body directly from said flow inlet, said flow channels communicating with a pair of openings formed in the second end wall, and a tapered end portion integrally formed in a concentric fashion with the cylindrical body, said end portion having an outer surface and a circumferential groove formed therein adjacent the juncture of the end portion and the cylindrical body to receive molten material from said pair of openings; and
- a mating head including a body portion having a frustoconically-shaped bore formed therein with an inner surface tapered to mate with the end portion, the mating head being secured to the cylindrical body in a position adjacent the end portion wherein the end portion is received within the bore and an annular channel is formed between the end portion and the inner surface of the mating head, the arrangement being such that molten material deposited with said flow inlet and through the symmetrical flow channels enters the groove formed in said end portion and flows within said annular channel between the outer surface of the end portion and the inner surface of the mating head in a balanced and even flow.

5,780,067

ADJUSTABLE COEXTRUSION FEEDBLOCK

F. John Herrington, Jr., Bloomfield, N.Y., assignor to Extrusion Dies, Inc., Chippewa Falls, Wis.

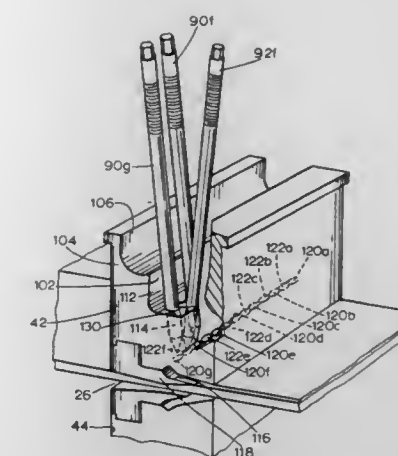
Filed Sep. 10, 1996, Ser. No. 711,554

Int. Cl.⁶ B29C 47/06

U.S. Cl. 425—131.1

28 Claims

1. A feedblock, comprising: a main passage having a length extending from a first inlet toward an outlet and a width transverse to the length; a plurality of intercommunicating auxiliary passages converging with the main passage on one side of the main passage at a series of openings arranged across the width of the main passage, the auxiliary passages intercommunicating over at least a portion of their lengths from the openings to upstream of the openings; and



flow adjustment apparatus disposed in the auxiliary passages for controlling flow of a material therethrough; wherein each auxiliary passage is defined by associated passage walls substantially fully surrounding an associated auxiliary flow of material therethrough.

5,780,068

INJECTION MOLD ASSEMBLY

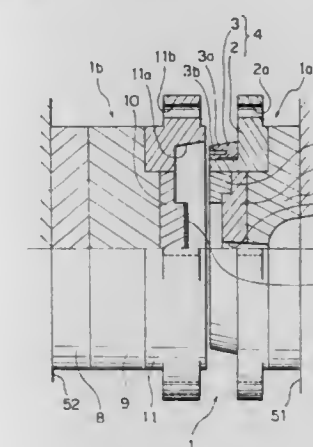
Masahito Shinohara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 15, 1996, Ser. No. 683,605

Claims priority, application Japan, Jul. 20, 1995, 7-183791 Int. Cl.⁶ B29C 45/36

U.S. Cl. 425—168

5 Claims



1. An injection mold assembly for an injection molding machine, said injection mold assembly comprising a first and a second split molds to be clamped with each other to define cavity therebetween in a closed position of said mold assembly, said first split mold including a first base unit and a first tapered unit supported by said first base unit in front thereof, said first tapered unit having a tapered outer peripheral surface, said second split mold including a second base unit and a second tapered unit supported by said second base unit in front thereof, said second tapered unit having a tapered inner peripheral surface having an inclination equivalent to an inclination of said tapered outer peripheral surface to allow said first tapered unit to be telescoped into said second tapered unit for alignment, said first base unit and said second tapered unit defining said cavity, at least one of said first and second tapered units being detachably mounted on a corresponding one of said first and second base units so that said injection mold assembly can operate without said detachable mounted unit in place, whereby said first and second units do not bind as they telescope into alignment.

5,780,069

BLOW MOLDING APPARATUS HAVING RADIANT HEATING MEANS FOR PREFORMS

Saburo Suzuki, Nagano-ken, Japan, assignor to Frontier, Inc., Nagano-ken, Japan

PCT No. PCT/JP95/00739, § 371 Date Feb. 9, 1996, § 102(e) Date Feb. 9, 1996, PCT Pub. No. WO95/28270, PCT Pub. Date Oct. 26, 1995

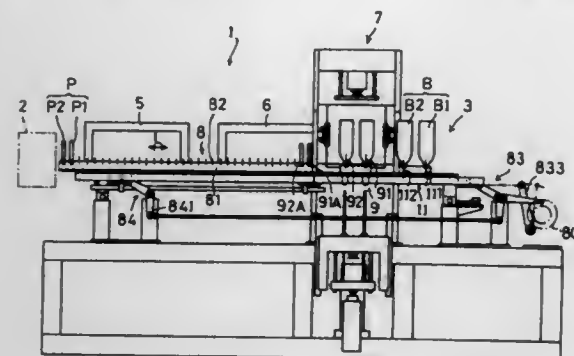
PCT Filed Apr. 14, 1995, Ser. No. 564,037

Claims priority, application Japan, Apr. 18, 1994, 6-104777; Jun. 24, 1994, 6-165899; Dec. 22, 1994, 6-320070

Int. Cl.⁶ B29C 49/64

U.S. Cl. 425—174.4

10 Claims



1. A blow molding apparatus comprising preform heating means for radiant heating of cylindrical preforms having an opening at a tip end and a closed bottom at another end, stretch-molding means for biaxial stretch-molding of heated preforms into hollow moldings of a prescribed shape, and preform carrying means for intermittently carrying preforms through the heating means to the stretch-molding means at a prescribe feed pitch, characterized in that the carrying means includes a linear member extending in a preform carrying direction, multiple preform carrying members supported by the linear member as disposed at regular intervals in the preform carrying direction and capable of being inserted into the openings of the preforms, a carrying mechanism adapted to move the linear member to a retracted position one feed pitch backward by lowering it from its initial position to a lowered position where the carrying members are free of the preforms, moving it from the lowered position backward in a direction opposite to the carrying direction and then raising it, and then to move it forward from the retracted position to the initial position, and a grasping/releasing mechanism adapted to grasp the preforms while the carrying members supported by the linear member are moving from the initial position to the retracted position and to release and give the preforms over to the carrying member upon its arrival at the retracted position.

5,780,070

APPARATUS FOR SOLIDIFYING AND SHAPING OPTICALLY CURED FLUID BY CARRYING OUT SCANNING SIMULTANEOUSLY WITH RECOATING

Kenji Yamazawa, Toshiki Niino, Takeo Nakagawa, all of Wako, and Seiji Hayano, Inagi, all of Japan, assignors to Institute of Physical and Chemical Research (RIKEN), Saitama, and Shimat Co., Ltd., Tokyo, both of Japan

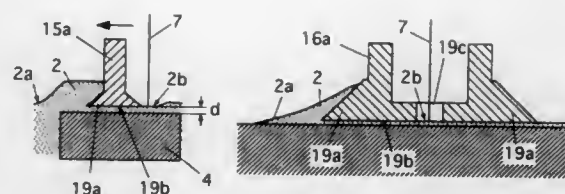
Filed Feb. 13, 1997, Ser. No. 799,807

Claims priority, application Japan, Feb. 14, 1996, 8-026368 Int. Cl.⁶ B29C 35/08; 41/02

U.S. Cl. 425—174.4

20 Claims

1. An apparatus for solidifying and shaping optically curable fluid resin, comprising:
(a) an optical scanning device for scanning a level of optically curable fluid resin with a light beam,



(b) a sinking device for sinking a layer of resin cured by scanning below a level of the optically curable fluid resin, and
(c) a recoat device for recoating the resin cured by scanning with optically curable fluid resin, having a recoater blade constructed to move horizontally above the resin cured by scanning by a predetermined gap and smooth the optically curable fluid resin, wherein said scanning device is constructed to scan synchronously with the recoating blade to thereby scan the optically curable fluid resin smoothed by the recoater blade.

5,780,071

SYSTEM FOR CALIBRATOR CHANGEOVER

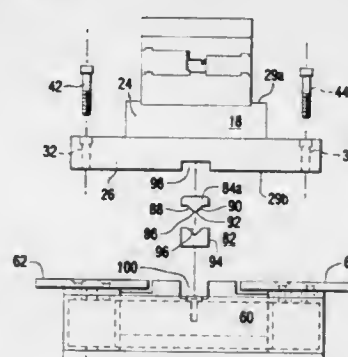
Pat A. Racloppi, Sarver; Rocco D. Nocera, Harmony, and Thomas C. Richards, Cranberry Township, all of Pa., assignors to Veka, Inc., Fombell, Pa.

Filed Apr. 2, 1996, Ser. No. 626,482

Int. Cl.⁶ B29C 47/90

U.S. Cl. 425—186

10 Claims



1. Apparatus for installing a plurality of calibrators on a support table of a thermoplastic extrusion system, each of said calibrators having an internal passageway with surfaces that define a given profile, said calibrators being located in a linear array such that selected points on each profile define an axis, said apparatus comprising:

a base having a selected surface that is connected to each of the calibrators;
a guide that includes first and second sections that cooperate in mating relationship, the first section of said guide being connected to said base on a surface that is oppositely disposed from the selected surface connected to said calibrators, the second section of said guide being connected to the support table, said first and second sections of said guide cooperating in sliding engagement in a direction substantially parallel to the axis defined by the calibrators; and
means for clamping said base to said support table.

5,780,072

MANUFACTURING APPARATUS FOR MANUFACTURING TM DUAL MODE DIELECTRIC RESONATOR APPARATUS

Toru Kurisu, Kyoto; Hidekazu Wada, Ibaraki, and Shin Abe, Mukou, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

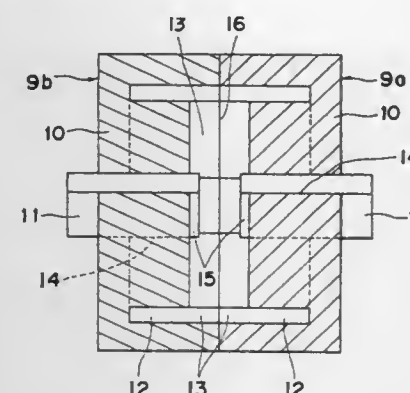
Division of Ser. No. 637,431, Apr. 25, 1996, Pat. No. 5,659,275, which is a continuation of Ser. No. 359,920, Dec. 20, 1994, abandoned. This application Jun. 13, 1997, Ser. No. 876,153

Claims priority, application Japan, Dec. 24, 1993, P05-347592

Int. Cl.⁶ B29C 43/36

U.S. Cl. 425—195

2 Claims



1. A manufacturing apparatus for manufacturing a dielectric resonator apparatus;
wherein said dielectric resonator apparatus comprises:
a cross-shaped TM dual mode dielectric resonator provided in a electrically conductive case, said TM dual mode dielectric resonator comprising first and second dielectric resonators integrally formed so as to be perpendicular to each other; and
at least one coupling groove for coupling an operation mode of said first dielectric resonator with an operation mode of said second dielectric resonator, formed on at least one of a front surface and a back surface of a crossing portion of said first and second dielectric resonators, in a diagonal direction of said crossing portion so as to cut electric lines of force of either one of an odd mode and an even mode,
wherein said manufacturing apparatus comprises:
a pair of main molds each having a cavity for forming said TM dual mode dielectric resonator and a penetrating hole formed in the center of said cavity so as to penetrate said main mold; and
a pair of sub-molds formed so as to insert said penetrating hole, said sub-molds being slid in said penetrating hole in a direction towards front and back surfaces of said case so that the height of projection of said sub-mold into said cavity can be changed.

5,780,073

APPARATUS OF SHAPING A CATHETER TIP

Jui-Hsiang Chen; Shu-Fang Jiang; Ken-Yuan Chang, all of Hsinchu; Ruey-Wen Hwang, Tao Yuan, and Huei-Ming Ding, Chupei, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 4, 1997, Ser. No. 832,627

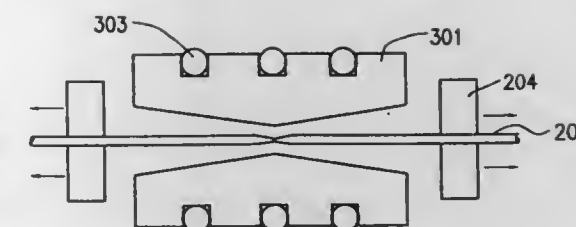
Claims priority, application Taiwan, Feb. 11, 1997, 86101495

Int. Cl.⁶ B29C 55/22

U.S. Cl. 425—289

13 Claims

1. An apparatus for shaping a catheter tip, comprising:
a twin taper-shaped heating device to heat a hollow tube;
a tube drawing device to extend the hollow tube;



a cooling device to cool the hollow tube; and
a cutting device to cut the hollow tube.

5,780,074

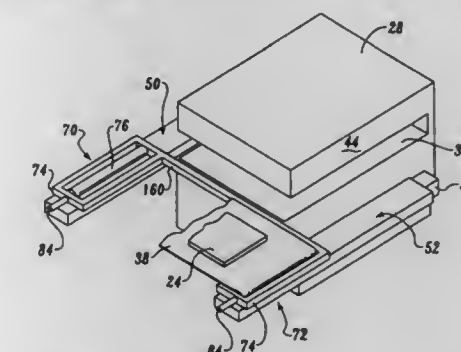
APPARATUS FOR SHAPING HONEYCOMB CORE
Bradley J. Blonigen, Wichita, and William T. Ross, Cheney, both of Kans., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 16, 1995, Ser. No. 545,190

Int. Cl.⁶ B29C 51/08; 53/04

U.S. Cl. 425—394

16 Claims



1. A shaping apparatus for shaping a preheated settable material, the apparatus comprising:

(a) a die;
(b) first and second tensioning assemblies, each including at least one roller and at least one torque supply system for rotating the at least one roller;
(c) at least one flexible support having one end rotatably connected to the roller of the first tensioning assembly and a substantially opposite end rotatably connected to the roller of the second tensioning assembly, the settable material being supported by the flexible support; and
(d) a regulation system operably engaged with the torque supply systems of both the first and second tensioning assemblies, the regulation system for equalizing tension between the ends of the flexible support and for keeping the opposed torque supply systems operating in unison;
(e) whereby the settable material is shaped by the relative pressing between the die, and the flexible support, the settable material being disposed therebetween during pressing.

5,780,075

MANDREL FOR FILAMENT WINDING - APPLICATION TO THE MANUFACTURE OF CURVED PROFILES

Michel Huvey, Bougival, France, assignor to Institut Francais du Pétrole, France

Continuation of Ser. No. 358,947, Dec. 19, 1994, abandoned.

This application Jul. 5, 1996, Ser. No. 675,873

Claims priority, application France, Dec. 20, 1993, 9315409

Int. Cl.⁶ B29C 33/48

U.S. Cl. 425—403

18 Claims

1. A cylindrical mandrel assembly having an axis of rotation, for manufacturing, by filament winding, parts made from resin reinforced with glass reinforcing fibers, wherein said mandrel assembly comprises a steel support directly covered by a composite

material layer including threads arranged substantially circumferentially with respect to the axis of rotation of said mandrel assembly, said composite layer having a thickness according to the formula

$$e_c = e_s (E_s/E_c) ((\alpha_s - \alpha_c)/(\alpha_s - \alpha_s)),$$

wherein e_c is the thickness of the composite;
wherein e_s is the thickness of steel;
wherein E_s is the modulus of steel;
wherein E_c is the modulus of the composite;
wherein α_s is the expansion coefficient of glass;
wherein α_c is the expansion coefficient of the composite; and,
wherein α_s is the expansion coefficient of steel,
an open mold in surrounding contact with said mandrel assembly, said resin reinforced with said glass reinforcing fiber being disposed in said open mold, said mandrel assembly having an overall circumferential thermal expansion coefficient substantially equal to the thermal expansion coefficient of said reinforcing fibers.

5,780,076

COMPRESSION APPARATUS

Heinz Bauer, Rungstrasse 17, D-81475 München, and Achim Roland Bernhardt, Birkenstrasse 21, D-63512 Hainburg, both of Germany

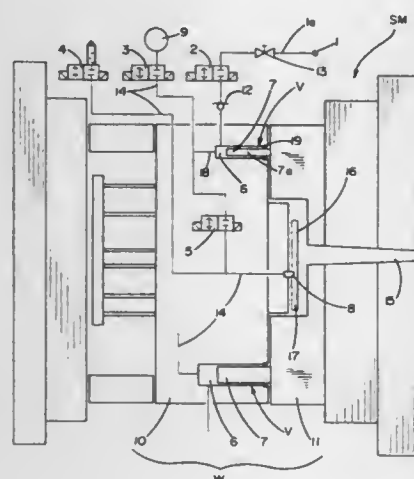
Filed May 30, 1996, Ser. No. 655,164

Claims priority, application Germany, May 31, 1995, 195 19 968.5

Int. Cl.⁶ B29C 45/17

U.S. Cl. 425—533

18 Claims



1. Apparatus for compressing a gaseous medium comprising a pair of mold parts mounted for relative movement with respect to each other to open and close said mold parts, drive means for producing said relative movement and at least one gas compressing unit having a working element which is movable in a working chamber, said gas compressing unit being physically associated with at least one of said mold parts in a manner producing relative movement of the working element and working chamber in direct relation to the relative movement of the mold parts in a mold closing direction to define means for compressing a gaseous medium in the working chamber with the working element during closure of said mold parts, wherein said working chamber is connected to an inlet by which the gaseous medium is delivered to the working chamber and to a supply means for receiving the gaseous medium after it has been compressed in said working chamber, and wherein the supply means comprises an outlet line connected to a gaseous medium consumer.

5,780,077
ADJUSTABLE MOLD GATE FOR A HOT PROBE MEMBER

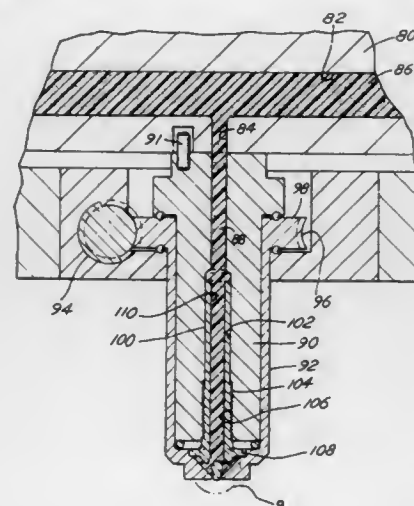
John W. von Holdt, 6864 Lexington La., Niles, Ill. 60648, assignor to John W. Von Holdt, Niles, Ill.

Filed Sep. 5, 1995, Ser. No. 523,381

Int. Cl.⁶ B29C 45/23

U.S. Cl. 425—564

19 Claims



1. A mold where molten plastic is conducted to flow through a gate to a mold cavity for the injection molding of plastic parts, said mold having an adjustable gate for controlling said flow of said molten plastic to said mold cavity, said gate comprising, in combination, a radially outer gate member having a round, central opening at a lower end thereof through which said molten plastic flows to said mold cavity, a hot probe extending vertically within said radially outer mold gate member with a lowermost end of said hot probe located adjacent said central opening, said hot probe having a cylindrical section with a diameter approximately equal to a diameter of said round, central opening, said hot probe being adjustable vertically between a raised fully-open position, and a lowered fully-closed position where a lower cylindrical end of said cylindrical section of said hot probe is located in said central opening to close said gate, said hot probe being adjustable to intermediate vertical positions between said fully-open and fully-closed positions to partially-open positions where said lowermost end of said hot probe cooperates with a portion of said radially outer mold gate member, which portion surrounds said central opening, to define a ring-shaped passage through which said molten plastic can flow to said mold cavity, said ring-shaped passage having an open area which varies depending on said vertical position of said hot probe, and apparatus for adjusting said vertical position of said hot probe to vary said open area of said ring-shaped passage.

5,780,078

MATERIAL INJECTION SYSTEM OF A PLASTIC MATERIAL INJECTION MOLDING MACHINE

Fa-Shen Chen, Taichung, Taiwan, assignor to King Steel Machinery Co., Ltd., Taichung, Taiwan

Filed Oct. 16, 1996, Ser. No. 730,793

Int. Cl.⁶ B29C 45/07

U.S. Cl. 425—574

4 Claims

1. A material injection system for an injection molding machine comprising:

(a) a base having distal first and second end portions and an intermediate portion extending therebetween along an axial direction, said base having formed on said intermediate section a pushing frame projecting therefrom, said base having formed at said first end portion a shifting seat, said shifting seat being displaceable with respect to said base in a direction substantially normal to said axial direction;

5,780,079

APPARATUS FOR MOLDING A CONNECTOR

Ho-kyung Lee, Incheon, Rep. of Korea, assignor to Daewoo Telecom Ltd., Rep. of Korea

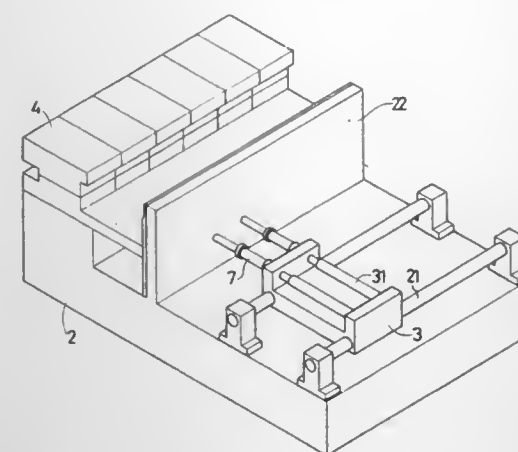
Filed Jul. 29, 1996, Ser. No. 688,123

Claims priority, application Rep. of Korea, Aug. 1, 1995, 95-23729

Int. Cl.⁶ B29C 33/30; 33/32

U.S. Cl. 425—577

10 Claims



(b) at least one mold coupled to said second end portion of said base, said mold having an outer surface, said mold including a top mold block and a bottom mold block defining therebetween a mold cavity, said mold having formed therein a pouring passage and a ventilating passage extending from said mold cavity, said pouring and ventilating passages respectively defining at said mold outer surface a pouring gate and a ventilating opening, said top mold block having formed therein a through hole intersecting said pouring passage;

(c) means for substantially evacuating said mold cavity, said means including a sucking pipe connected to said ventilating opening of said mold;

(d) a material injection seat displaceably coupled to said shifting seat of said base for forward or backward displacement with respect thereto along said axial direction, said material injection seat having a front end portion extending substantially to said second end portion of said base;

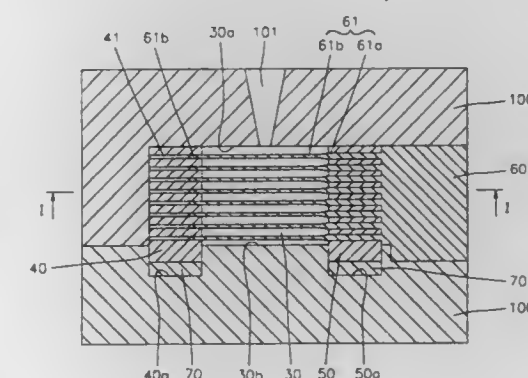
(e) a seat body disposed on said top mold block, said seat body having a notched portion, said notched portion having formed therethrough a shaft hole substantially aligned axially with said top mold block through hole, said seat body including a lever section received in said shaft hole to be axially displaceable therein and a material stopping pin substantially coaxially coupled to said lever section to extend into said top mold block through hole, said material stopping pin being adapted to reversibly block said pouring passage responsive to displacement of said lever section;

(f) driving means coupled to said seat body for displacing, said lever section;

(g) a material injection assembly coupled to said front end of said material injection seats said material injection assembly including a material injection nozzle disposed adjacent said pouring gate of said mold and a material stopping member coaxially disposed within said material injection nozzle, said material stopping member having a sloped front face adapted to engage said material injection nozzle in a sealed manner, said material injection assembly including means for reversibly displacing said material stopping member into and out of said sealed engagement with said material injection nozzle;

(h) advancing cylinder means coupled to said front end of said material injection seat for actuating said forward displacement of said material injection seat, said advancing cylinder means including a piston stem adapted to apply a thrust force against said pushing frame of said bases whereby said material injection nozzle is displaced into engagement with said mold pouring gate; and,

(i) retracting cylinder means coupled to said shifting seat for actuating said backward displacement of said material injection seat, said retracting cylinder means including a piston stem adapted to apply a thrust force against said material injection seat, whereby said material injection nozzle is displaced to disengage from said mold pouring gate.



1. An apparatus for molding a connector, which comprises: a stationary body;
a moving body provided with a first and a second site;
a first and a second block detachably fixed to the first and the second sites, respectively, the first block having at least one hole and the second block having at least one through-hole corresponding to the hole of the first block; and
a core block having at least one core corresponding to the hole of the first block and the through-hole of the second block, wherein, when the molding apparatus is closed, the stationary body, the moving body, and the first and the second blocks cooperate to define a cavity, and a leading end of the core fits through the through-hole of the second block and into the hole of the first block, and wherein the first and the second blocks and the core block are removable for being replaced with another first block, second block and core block having a different number of holes, through-holes and cores respectively.

5,780,080

CABBAGES TREATED TO CONTROL POST-HARVEST DISEASES

Carlo Leifert, Aberden; Harold A. S. Epton, Cheadle, and David C. Sigee, Sale, all of Great Britain, assignors to The Ministry of Agriculture, Fisheries and Food in Her Britannic Majesty's Government of the U.K. of Gt. Britain & N. Ireland

Division of Ser. No. 307,686, Nov. 1, 1994. This application Mar. 27, 1995, Ser. No. 411,286

Claims priority, application United Kingdom, Mar. 26, 1992, 9206645

Int. Cl.⁶ A23B 7/10

U.S. Cl. 426—49

8 Claims

1. A cabbage having applied thereto an isolated bacteria having the identifying characteristics of an isolate selected from the group consisting of *Bacillus pumilus* NCIMB 40489, *Pseudomonas fluorescens* NCIMB 40490, *Bacillus subtilis* NCIMB 40491, *Serratia liquefaciens* NCIMB 40492, *Serratia plymuthica* NCIMB 40493, *Pseudomonas fluorescens* NCIMB 40495, and *Pseudomonas fluorescens* NCIMB 40497 including the characteristic of being capable of inhibiting growth of fungi of species *Alternaria brassicicola* on homogenized cabbage tissue:agar:water mixtures.

5,780,081

FORTIFICATION OF FOOD WITH CALCIUM AND PROCESS OF MAKING

Mark Randolph Jacobson; Sekhar Reddy; Dharam Vadehra, all of New Milford, and Elaine Regina Wedral, Sherman, all of Conn., assignors to Nestec S.A., Vevey, Switzerland

Filed Oct. 28, 1996, Ser. No. 739,070

Int. Cl.⁶ A23L 1/304

U.S. Cl. 426—74

12 Claims

1. A fortified foodstuff comprising a fortifying amount of a complex of calcium and a hydrolysed pectin having a DP of from about 1 to 25 together with an acid.

5,780,082

PROCESS FOR MAKING A FOOD PRODUCT OF THE PIZZA TYPE, IN THE SHAPE OF A POCKET

Isabelle Rebeaud, Pully, Switzerland, assignor to Alda Services S.A., Lausanne, Switzerland

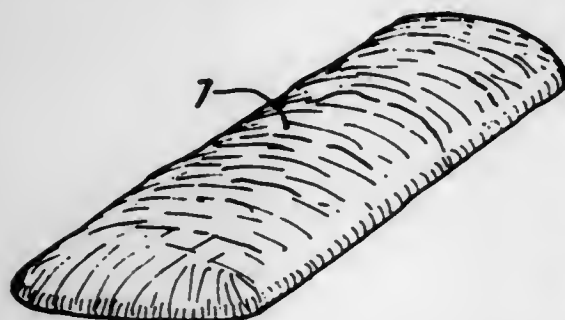
Filed Sep. 3, 1996, Ser. No. 707,332

Claims priority, application France, Sep. 7, 1995, 95 10482

Int. Cl.⁶ A21D 13/00

U.S. Cl. 426—94

9 Claims



1. A method of manufacturing a pizza pocket, comprising the steps of:

- preparing a first pizza crust dimensioned and configured to define a bottom portion of a pizza pocket;
- arranging pizza toppings on a top surface of said first pizza crust;
- placing said first pizza crust and associated pizza toppings on a hearth in an oven;
- cooking said first pizza crust and associated pizza toppings in said oven for approximately 60 seconds such that said first pizza crust and associated pizza toppings are cooked to a condition close to completion;
- removing said first pizza crust and associated pizza toppings from said oven;
- covering said first pizza crust and associated pizza toppings with a second uncooked pizza crust, thinner than said first pizza crust, to define a top portion of said pizza pocket;
- joining edges of said first pizza crust and said second pizza crust to form a pizza pocket enclosing said pizza toppings;
- placing said pizza pocket in said oven; and
- cooking said pizza pocket in said oven for a time sufficient to cook said pizza pocket to completion.

5,780,083

CARBONATED BEVERAGE CONTAINER

Timothy Wright, Solihull; Mark Erich Sillince, Bedfordshire, both of United Kingdom, and Erwin Anton Rosens, Alphen, Netherlands, assignors to Whitbread PLC, London, United Kingdom, and Heineken Technical Services B.V., Amsterdam, Netherlands

PCT No. PCT/GB94/01756, § 371 Date Jan. 30, 1996, § 102(e)

Date Jan. 30, 1996, PCT Pub. No. WO95/05326, PCT Pub.

Date Feb. 23, 1995

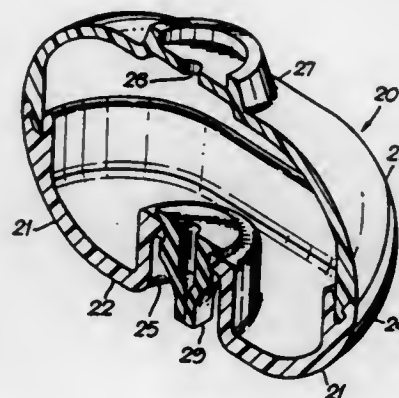
PCT Filed Aug. 11, 1994, Ser. No. 591,671

Claims priority, application United Kingdom, Aug. 12, 1993, 9316732; Sep. 14, 1993, 9318957; Jan. 21, 1994, 9401168; Jul. 7, 1994, 9413741

Int. Cl.⁶ B65B 31/00; 17/00; 25/00

U.S. Cl. 426—112

18 Claims



1. A carbonated beverage container (10, 35, 40) holding a beverage (11), the container (10, 35, 40) including a hollow insert (1, 20) having two opening means (6, 7, 28, 29, 31, 32, 33, 34), one of said two opening means (6, 28, 31, 32) arranged to allow gas to enter the insert (1, 20) from a headspace above the beverage (11), wherein the headspace is inside the container, and the other of said two opening means (7, 29, 33, 34) arranged to jet gas into the beverage (11) from the insert (1, 20) upon opening the container (10, 35, 40), wherein one of the two opening means (7, 29, 31, 32) is a one-way valve, and the other of said two opening means (6, 28, 33, 34) is an orifice.

5,780,084

PROCESS FOR PREPARING LAYERED AND PUFFED PASTRY PRODUCTS

Alessandro Degli Angeli, Parma; Valter Conci, Trento; Luciano Eccher, Trento, and Luca Colato, Trento, all of Italy, assignors to M.G. Bralanti S.p.A., Milan, Italy

Filed May 30, 1996, Ser. No. 656,865

Claims priority, application Italy, Jun. 8, 1995, MI95A1209

Int. Cl.⁶ A21D 8/00; 13/00; H05B 6/00

U.S. Cl. 426—242

30 Claims

1. A layered and puffed pastry, produced by a process comprising: producing a dough by mixing a raw material with water, wherein the raw material does not contain a wheat flour; shaping the dough into a plurality of layers to obtain a layered dough; baking the layered dough in a thermal cycle oven; and drying the baked layered dough with microwaves, radio waves or infrared rays to obtain the layered and puffed pastry.

5,780,085

CHEMICAL TREATMENT AND PACKAGING PROCESS TO IMPROVE THE APPEARANCE AND SHELF LIFE OF FRESH PORK

David C. Ruzek, Austin, Minn., assignor to Hormel Foods Corporation, Austin, Minn.

Filed Oct. 4, 1996, Ser. No. 725,858

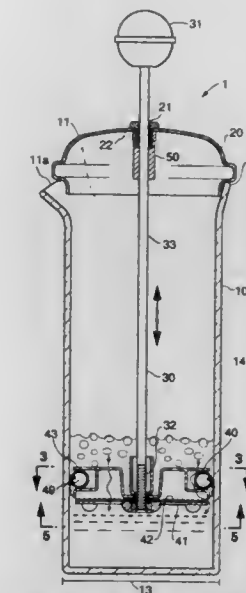
Int. Cl.⁶ A23B 4/20; 4/24; A23L 1/314

U.S. Cl. 426—281

19 Claims

1. A process for packaging fresh pork to obtain improved appearance and extended shelf life, which process comprises:

- treating fresh pork with an aqueous solution, comprising a major proportion of water and an alkali metal lactate agent, a phosphate sequestrant and an alkali metal diacetate microbial growth inhibitor, said aqueous solution used in an amount sufficient to increase the weight of the pork up to about 125 wt-% of the original weight, to produce a treated pork comprising about 1 to 5 wt % of alkali metal lactate, about 0.1 to 0.5 wt % of a phosphate sequestrant and about 0.01 to 0.2 wt % of a diacetate microbial growth inhibitor, the percentages based on the pork; and
- packaging the treated pork, in a closed film package, to form a display unit.



introducing a rod terminating in a plunger into the liquid in said container so that the plunger contacts the liquid, the plunger comprising:

- a plunger body having a circumference;
 - a screen; and
 - a spring positioned about the circumference of the plunger body such that the spring is biased to hold the screen in place in contact with, though not sealably connected to, the container; and
- pumping the plunger by moving the rod in a vertical motion such that the plunger passes through the liquid in the container for a time sufficient to aerate the liquid until it takes on a frothy or foamy consistency.

5,780,086

COLOR AND SHELF STABLE BEVERAGE COMPOSITIONS CONTAINING TEA EXTRACT

Sanford Theodore Kirksey; Athula Ekanayake; Edmund Paul Pultinas, Jr., all of Cincinnati; Judith Ann Jones, Cleves, and Richard Fiske Stradling, Jr., Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 287,334, Aug. 8, 1994, abandoned.

This application Jan. 3, 1996, Ser. No. 582,593

The portion of the term of this patent subsequent to Aug. 8, 2014, has been disclaimed.

Int. Cl.⁶ A23F 3/16; 3/18; 3/30

U.S. Cl. 010396—330.3

29 Claims

- A color stable beverage composition comprising:
 - from about 0.4% to about 1.5% green tea extract having a tea solids content of from about 12% to about 60% and a Hunter L color value of from about 58 to about 63.5;
 - from about 10 ppm to about 45 ppm colorant;
 - a total level of erythorbic and ascorbic acid of from about 300 ppm to about 1500 ppm;
 - from about 0.1% to about 1.0% citric acid;
 - an effective amount of sweetener; and
 - water;

wherein said green tea extract is obtained by extracting unfermented tea solids or tea material with an aqueous solution containing erythorbic acid, ascorbic acid or mixtures thereof and citric acid and wherein said green tea extract comprises from about 3% to about 10% erythorbic acid, ascorbic acid, or mixtures thereof; from about 1% to about 6% citric acid, from about 2% to about 6% flavanols; theanine; from about 0.85% to about 3.2% caffeine; and water; wherein the theanine to caffeine ratio is from about 1:17 to about 1:200; and wherein the extract has a ratio of theanine to oxidized flavanols of from about 1:20 to about 1:150.

5,780,087

APPARATUS AND METHOD FOR FROTHING LIQUIDS

Frank A. Brady, 3166 Blackhawk Meadows Dr., Danville, Calif. 94506

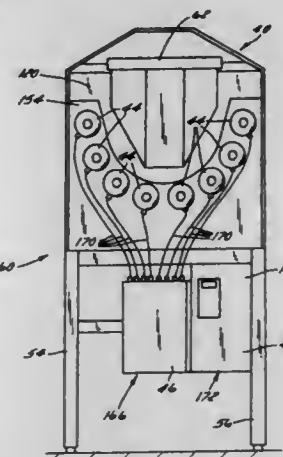
Filed Sep. 23, 1996, Ser. No. 717,764

Int. Cl.⁶ A23C 23/00

U.S. Cl. 426—474

7 Claims

1. A method for aerating a liquid comprising the steps of: providing a container characterized by a height and a diameter, the height being at least two times the diameter; placing the liquid into the container;



65. A method of peeling and cleaning fruits and vegetables comprising the steps of:

- providing a stationary frame having a pair of end plates, a plurality of elongate and generally cylindrical abrasive rollers journaled for rotation at each end to an end plate, a gear reducer having an output shaft coupled to each abrasive roller, an electric motor having an output shaft coupled to each gear

reducer, and an electric power supply for providing electric power to operate each motor;
 (b) applying electrical power to each motor;
 (c) reducing the output speed of the motor output shaft; and
 (d) rotating each abrasive roller.

interleaved within the spiral form so that upon subsequent boiling the spiral uncoils without substantially sticking together and the pasta is immersed in sauce or sauce diluted with the water used for boiling.

5,780,089

FLAVOR COMPOSITION

Eldon Chen-Hsiung Lee, New Milford, Conn., assignor to Nestec S.A., Vevey, Switzerland

Filed May 3, 1996, Ser. No. 643,217

Int. Cl.⁶ A23L 1/22

U.S. Cl. 426—533

11 Claims

1. A complex of a pyrolyzed fat/oil flavor and a completely gelatinised amylose.

5,780,090

FLAVORED PRODUCTS AND A PROCESS FOR THEIR PREPARATION

Eric Frerot, Ville le Grand, and Sina Dorothea Escher, Confignon, both of France, assignors to Firmenich SA, Geneva, Switzerland

PCT No. PCT/IB96/00723, § 371 Date Mar. 12, 1997, § 102(e) Date Mar. 12, 1997, PCT Pub. No. WO97/04667, PCT Pub. Date Feb. 13, 1997

PCT Filed Jul. 18, 1996, Ser. No. 793,890

Claims priority, application Switzerland, Jul. 26, 1995, 2189/95

Int. Cl.⁶ A23L 1/22; 2/56; A23J 1/00

U.S. Cl. 426—534

16 Claims

1. A method to improve the organoleptic properties of a flavored composition or a flavored product, which method comprises adding to said composition or product:

- one or more tripeptides containing a hydrophobic amino acid residue and at least one acidic amino acid residue, or
- one or more amino acid derivatives having an N-lactoyl-X structure, where X represents an amino acid residue.

5,780,091

MULTI LAYER SPIRAL-SHAPED, DRIED PASTA/SAUCE FOOD COMPOSITION AND A METHOD FOR MAKING THE SPIRAL PASTA/SAUCE COMBINATION

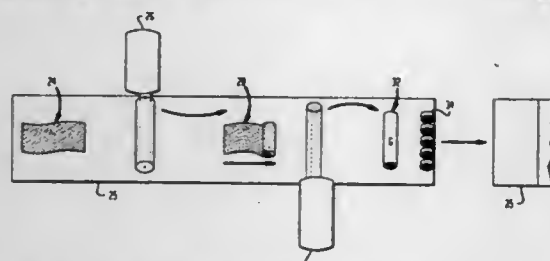
James Vincent Cassetta, Pearl River, N.Y.; Michael Budd, Lincoln Park, and Mauro Dominick Mordini, Parsippany, both of N.J., assignors to Thomas J. Lipton Co., Division of Conopco, Inc., Englewood Cliffs, N.J.

Filed Nov. 13, 1995, Ser. No. 556,356

Int. Cl.⁶ A23L 1/16

U.S. Cl. 126—557

5 Claims



1. A dried partially cooked instant pasta/sauce composition in the form of a closely wound, compacted spiral, said pasta composition consisting essentially of flour, an anti-sticking agent, water, and a dusting agent sprinkled on the surface of said pasta selected from the group consisting of oat bran, corn bran, soy fiber and oat fiber, said pasta composition further having said sauce consisting essentially of food ingredients, water and water binding agent

5,780,092
FOAMING COFFEE CREAMER AND INSTANT HOT CAPPUCCINO

Francis Agbo, Warwick, N.Y.; Kozaburo Mori, Suzuka, Japan; Tetsuya Goto, Suzuka, Japan; Kenneth W. Cale, Yorktown Heights, N.Y.; Twyla L. Stubblefield, South Nyack, N.Y., and Anna C. Dal Monte, Port Chester, N.Y., assignors to Kraft Foods, Inc., Northfield, Ill.

Continuation of Ser. No. 305,925, Sep. 16, 1994, abandoned. This application Feb. 14, 1997, Ser. No. 800,823

Int. Cl.⁶ A23C 1/04; A23G 1/00

U.S. Cl. 426—569

26 Claims

1. A particulate dry mix foaming creamer composition comprising a gasified foaming beverage creamer capable of producing a cappuccino-type foam and a foam generating component comprising a food grade acidulant and an alkali metal carbonate or bicarbonate.

5,780,093

LOW-FAT SAUTE

Kristine Bateman, 243 W. Main, Rigby, Id. 83442

Continuation-in-part of Ser. No. 516,624, Aug. 18, 1995, Pat. No. 5,650,189, which is a continuation-in-part of Ser. No. 487,085, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 223,290, Apr. 5, 1994, abandoned, which is a continuation-in-part of Ser. No. 76,318, Jun. 11, 1993, abandoned. This application Jun. 5, 1997, Ser. No. 870,117

Int. Cl.⁶ A23L 1/0522

U.S. Cl. 426—578

21 Claims

1. A low-fat saute comprising:

- maltodextrin in the range of about 15 percent to about 35 percent by weight;
- at least one pregelatinized water soluble starch in the range of about 1 percent to about 15 percent by weight;
- water in the range of about 50 percent to about 80 percent by weight; and
- fat in the range of about 1 percent to about 15 percent by weight, such that the mixture is substituted in a one-to-one ratio for normal fat sautes, and such that a substantially similar food product is rendered in sauteing, in terms of texture, as if normal fat saute were used.

5,780,094

SPORTS DRINK

Roderick Frederick Gerardus Joseph King, Otley, United Kingdom, assignor to Marathade, Ltd., Leeds, England

PCT No. PCT/GB95/00331, § 371 Date Nov. 1, 1996, § 102(e) Date Nov. 1, 1996, PCT Pub. No. WO95/22260, PCT Pub. Date Aug. 24, 1995

PCT Filed Feb. 16, 1995, Ser. No. 693,146

Claims priority, application United Kingdom, Feb. 16, 1994, 9402950

Int. Cl.⁶ A23L 2/60; 2/68

U.S. Cl. 426—590

7 Claims

1. A sports drink comprising an aqueous solution including a saccharide selected from the group consisting of galactose, a galactose containing disaccharide or oligosaccharide and mixtures thereof, 25 to 45 mmol.l⁻¹ of sodium, and optionally including not more than 2.5% w/v of glucose, wherein the total concentration of saccharide is 0.5 to 5.0% w/v and wherein the combined monosaccharide osmolality is 150 to 280 mosm.kg⁻¹.

5,780,095

METHOD OF PREPARING A DIETARY, CHOLESTEROL-REDUCED WHOLE EGG OR EGG YOLK PRODUCT, AND ITS PROCESSING INTO FOOD STUFFS

Martin Jackeschky, Moltkestrasse 86, Kiel, Germany, 24105
 Continuation-in-part of Ser. No. 256,665, Jul. 19, 1994, abandoned. This application May 20, 1996, Ser. No. 664,934

Claims priority, application WIPO, Jan. 24, 1992, PCT/EP92/00159

Int. Cl.⁶ A23L 1/32

U.S. Cl. 426—614

14 Claims

1. A method for the preparation of a dietetic, cholesterol-reduced whole egg or egg yolk product, wherein cholesterol and lipids are removed from the yolk, said method comprising the steps of:

- dehydrating the whole egg or yolk substance by spray drying;
- forming a grain size of about 150µ to about 300µ;
- suspending the spray dried egg substance in a liquid food oil or a mixture of liquid food oils while maintaining the grain size;
- dispersing the cholesterol and lipid fraction from the spray dried egg substance in the liquid food oil while maintaining the grain size; and
- removing the cholesterol and lipid fraction enhanced liquid food oil.

5,780,096

PROCESS FOR PREPARATION OF POWDERY CHLORELLA EXTRACT

Yoshio Tanaka, 22 Banchi, Yamaguchi-cho, Gifu-shi, Gifu-ken, Japan

Filed Sep. 11, 1996, Ser. No. 712,469

Claims priority, application Japan, Dec. 25, 1995, 7-350030

Int. Cl.⁶ A23L 1/28

U.S. Cl. 426—655

4 Claims

1. A process for preparing a powdery chlorella extract as a cyclodextrin clathrate comprising:

- adding 1–10 kg of a cyclodextrin solution to 100 kg of an extract obtained by concentrating a hot water extract of a powdery chlorella alga by a factor of from two to five, thus concentrating the hot water extract to one half to one fifth of its original volume;
- kneading the thus obtained mixture at 60°–90° C. for 10–24 hours under reduced pressure to produce a cyclodextrin clathrate; and
- drying and powdering the cyclodextrin clathrate.

5,780,097

PROCESS FOR PREPARATION OF POWDERY EXTRACT OF SHIITAKE MUSHROOM

Yoshio Tanaka, 22 Banchi, Yamaguchi-cho, Gifu-shi, Gifu-ken, Japan

Filed Sep. 11, 1996, Ser. No. 712,443

Claims priority, application Japan, Dec. 25, 1995, 7-350029

Int. Cl.⁶ A23L 1/28

U.S. Cl. 426—655

4 Claims

1. A process for preparation of a powdery extract of a shiitake mushroom comprising:

- suspending 10–50 parts by weight of a shiitake mushroom powder in 500–1000 parts by weight of water to form a suspension;
- subjecting the suspension to heat extraction at 80°–90° C. for 30–60 minutes to obtain a hot water extract;
- concentrating the hot water extract by a factor of two to five;
- adding 1–10 parts by weight of a cyclodextrin solution to 100 parts by weight of the two- to five-fold concentrated extract to produce a mixture;
- kneading the mixture under reduced pressure at 60°–90° C. for 10–24 hours to produce a cyclodextrin clathrate; and
- drying and pulverizing the clathrate.

5,780,098

STERILIZATION INDICATORS AND METHODS

Donald R. Battles, Arden Hills, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

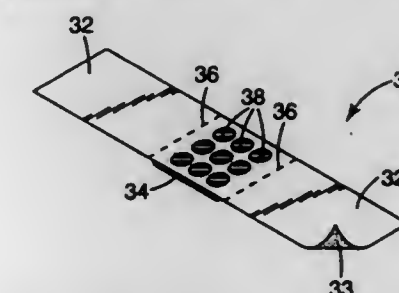
Division of Ser. No. 477,543, Jun. 7, 1995, Pat. No. 5,622,764.

This application Dec. 20, 1996, Ser. No. 771,779

Int. Cl.⁶ B05D 5/10; 5/06; 3/00

U.S. Cl. 427—2.1

21 Claims



1. A method of making a sterilization indicator, comprising: providing at least one backing strip having ends and opposing sides; providing a sterilization indicator strip comprising an indicator ink in combination with a binder printed onto a backing; coating a moisture resistant, water-dispersible, pressure sensitive adhesive on one of the opposing sides of the at least one backing strip; and affixing the sterilization indicator strip to an end of the at least one backing strip, wherein the sterilization indicator strip is easily removable from the at least one backing strip prior to laundering and wherein the indicator ink is capable of undergoing a color change when exposed to sterilization conditions.

5,780,099

FLOSS YARN BULKING ASSEMBLY AND METHOD

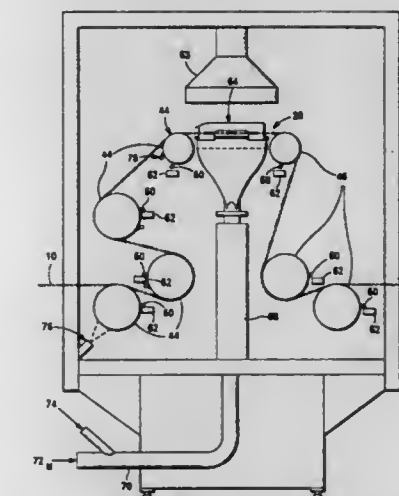
Sean G. Gilligan, Kilcullen; Dermot T. Freeman, Killiney, both of Ireland; Larry J. Oliphant, Swisher; Jeffrey S. Meesmann, Iowa City, both of Iowa; Patrick J. Hanley, S. San Francisco, Calif., and Gerald S. Szczec, Iowa City, Iowa, assignors to Gillette Canada, Inc., Kirkland, Canada

Division of Ser. No. 249,515, May 26, 1994, Pat. No. 5,558,901. This application Jul. 9, 1996, Ser. No. 677,156

Int. Cl.⁶ B05D 3/00

U.S. Cl. 427—175

4 Claims



1. A process for restoring the bulk of stretched nylon yarn comprising feeding the yarn into a humidifier zone containing a steam and gas mixture, the yarn being fed into the humidifier zone at a speed greater than that at which the yarn is removed therefrom to maintain a substantially constant yarn tension as the yarn

expands radially in the humidifier zone, wherein the yarn is guided on rollers as it passes through the humidifier assembly, and the process includes applying a water/alcohol solution to the rollers.

5,780,100
METHOD AND APPARATUS FOR PREPARING SAMPLE CARTRIDGES FOR PARTICLE ACCELERATION DEVICE

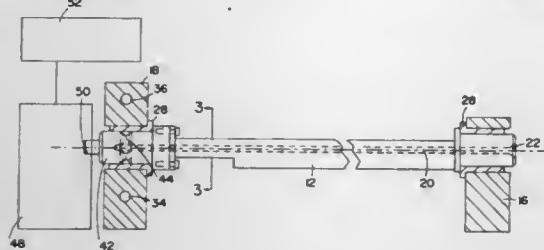
Dennis E. McCabe, Middleton, and Richard J. Heinzen, North Freedom, both of Wis., assignors to PowderJect Vaccines, Inc., Madison, Wis.

Filed May 18, 1995, Ser. No. 444,173

Int. Cl.⁶ B05D 7/22; 3/12; 3/04; C12N 15/00

U.S. Cl. 427—183

4 Claims



1. A method for depositing particles within a length of tubing, said method comprising the steps of:
preparing a suspension of particles in an evaporable liquid medium;
introducing the suspension into a length of tubing having a concave inner surfaces, a first ends, and a second end;
placing the tubing into a generally horizontal orientation, thereby allowing particles from the suspension to settle onto a portion of the inner surface of the tubing;
removing most of the evaporable liquid from the tubing after the particles have been allowed to settle;
rotating the tubing about a generally horizontal axis of rotation for a time sufficient to distribute the settled particles over the inner surface of the tubing; and
drying the distributed particles.

5,780,101
METHOD FOR PRODUCING ENCAPSULATED NANOPARTICLES AND CARBON NANOTUBES USING CATALYTIC DISPROPORTIONATION OF CARBON MONOXIDE

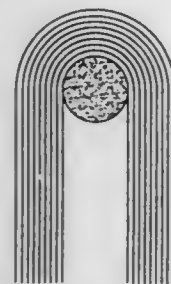
Peter E. Nolan, Andrew H. Cutler, and David G. Lynch, all of Tucson, Ariz., assignors to Arizona Board of Regents on behalf of the University of Arizona, Tucson, Ariz.

Filed Feb. 17, 1995, Ser. No. 389,900

Int. Cl.⁶ C23C 16/26; D01F 9/12; C01B 31/02

U.S. Cl. 427—216

16 Claims



1. A method for the production of carbon encapsulated metal particles and carbon nanotubes comprising:

- 1) drying a catalyst of a transition metal, or a compound or alloy thereof, in an inert gas at a temperature and for a period of time sufficient to form a dried catalyst;
- 2) reducing said dried catalyst with hydrogen to form a reduced catalyst;
- 3) contacting said reduced catalyst with an inert gas under conditions effective to reduce the level of residual hydrogen therein to less than about 5×10^{-4} mol of H_2 equivalent per gram of catalyst, and then
- 4) contacting the catalyst from step (3) with a gas mixture containing carbon monoxide, and an amount of available molecular hydrogen which is insufficient to cause formation of graphite plane edges through capping, at a temperature in the range of from 300° – 1000° C., to thereby form carbon nanotubes and metal particles of said catalyst which are carbon encapsulated.

5,780,102
PROCESS FOR PRODUCING ALUMINA WITH HIGH SPECIFIC SURFACE AREA

Fujio Mizukami; Kazuyuki Maeda; Shuichi Niwa, all of Ibaragi-ken, and Junichi Mine, Kanagawa-ken, all of Japan, assignors to Agency of Industrial Science & Technology, and Nissan Motor Company, Limited, both of Japan

Continuation of Ser. No. 403,517, Sep. 6, 1989, abandoned.

This application Nov. 20, 1991, Ser. No. 794,701

Claims priority, application Japan, Sep. 6, 1988, 63-221448

Int. Cl.⁶ B05D 3/02; C01F 1/02; B01J 31/60

U.S. Cl. 427—226

9 Claims

1. A process of producing alumina, comprising the steps of:
dissolving aluminum alkoxide in hexylene glycol to form a solution;
heating said solution at a temperature falling in a range from 101° C. to 200° C. to produce a sol;
hydrolyzing said sol to obtain a gel by adding water in an amount of less than or equal to 20 mol versus 1 mol of aluminum oxide;
drying said gel; and
baking said dried gel at a temperature higher than or equal to 750° C.

5,780,103
METHOD FOR FORMING OF A SILICON OXIDE LAYER ON A TOPOGRAPHY

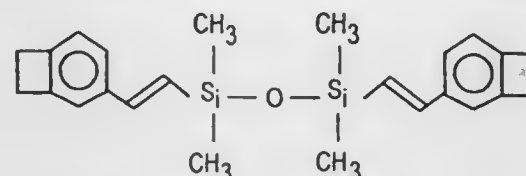
Dirk Toebben, Fishkill, N.Y.; Doerthe Groteloh, Regensburg, Germany; Oswald Spindler, Vaterstetten, Germany, and Michael Rogalli, Rottenburg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 20, 1996, Ser. No. 771,153

Int. Cl.⁶ B05D 3/02

U.S. Cl. 427—226

22 Claims



1. A method of forming a SiO_2 layer on a surface comprising the following steps:
applying to the surface a solution comprising organodisiloxane and a solvent, the organodisiloxane having the general formula $R_1(R_2)_2Si-O-Si(R_2)_2R_1$ wherein R_2 is selected from the group consisting of hydrogen and an alkyl radical and wherein R_1 is a vinylcyclobutabenzene radical,
polymerizing the organodisiloxane to form a polymer, and
decomposing the polymer to form a SiO_2 containing layer.

5,780,104
METHOD FOR PREVENTING THE INNER WALL SURFACES OF THE POLYMERIZATION APPARATUS FROM BEING FOULED WITH SCALE DURING THE POLYMERIZATION OF VINYL CHLORIDE

Akihiko Takahashi, Osaka-fu; Sunao Maeda; Yuzo Ono, both of Aichi-ken; Masaaki Ozawa, and Ichisaburo Nakamura, both of Osaka-fu, all of Japan, assignors to Mitsui Chemicals, Inc., Tokyo, Japan

Filed Dec. 18, 1996, Ser. No. 768,970

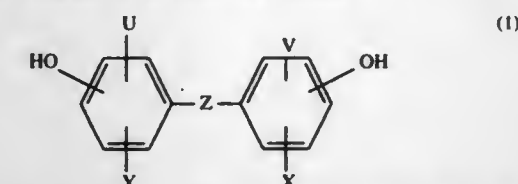
Claims priority, application Japan, Dec. 28, 1995, 7-342147

Int. Cl.⁶ B05D 7/22

U.S. Cl. 427—230

6 Claims

1. A method for preventing scale formation on the inner walls of a polymerization apparatus during homopolymerization of vinyl chloride monomer or copolymerization of vinyl chloride monomer and a monomer copolymerizable therewith in the polymerization apparatus comprising: applying a coating fluid to said inner walls to form a coating layer thereon, the coating fluid containing the reaction product being prepared by the oxidative polymerization of a phenolic monomer of the following formula



where U, V, X and Y are each a hydrogen atom, an alkyl group, and alkoxy group, an aryl group or a phenylalkyl group, Z is $-CO-$, $-(R^1)C(R^2)-$, $-O-$, $-OR^3-$, $-R^4O-$, $-R^5-$ or $-C(R^6)-$, and R^1 and R^2 are each a hydrogen atom or a linear or branched alkyl group of 1 to 5 carbon atoms, R^3 and R^4 are each a linear or branched alkylene group of 1 to 5 carbon atoms, R^5 is a linear or branched alkylene group of 1 to 8 carbon atoms, and R^6 is a saturated aliphatic ring group of 3 to 6 carbon atoms; and conducting homopolymerization of vinyl chloride monomer or copolymerization of vinyl chloride monomer and a monomer copolymerizable therewith.

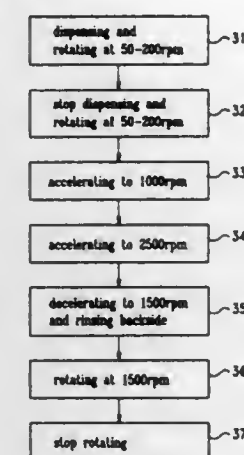
5,780,105
METHOD FOR UNIFORMLY COATING A SEMICONDUCTOR WAFER WITH PHOTORESIST
Li-Ming Wang, Ping Tung, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan

Filed Jul. 31, 1997, Ser. No. 904,082

Int. Cl.⁶ B05D 3/12

U.S. Cl. 427—240

22 Claims



1. A method for uniformly coating a semiconductor wafer with a photoresist material, comprising the steps of:

rotating the semiconductor wafer about a central axis at a first rotational speed while concurrently dispensing the photoresist material onto a top surface of the semiconductor wafer;
ceasing dispensing said photoresist material and maintaining said semiconductor wafer at the first rotational speed;
accelerating said semiconductor wafer from the first rotational speed to a second rotational speed;
accelerating said semiconductor wafer from the second rotational speed to a third rotational speed in determining the thickness of the photoresist material on said semiconductor wafer;
decelerating said semiconductor wafer from the third rotational speed to a fourth rotational speed while concurrently rinsing a back surface of said semiconductor wafer;
maintaining said semiconductor wafer at the fourth rotational speed; and
stopping said semiconductor wafer before removing said semiconductor wafer.

5,780,106
METHOD FOR LOW TEMPERATURE ALUMINUM COATING OF AN ARTICLE

Jeffrey A. Conner, Hamilton, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 29, 1995, Ser. No. 537,205

Int. Cl.⁶ C23C 16/12; 16/18

U.S. Cl. 427—250

6 Claims

1. In a method for coating an article surface including a first portion having a protective first coating thereon and a second portion requiring a second coating thereon, a method for applying the second coating of the second portion comprising the steps of:
providing an aluminizing precursor vapor which can decompose to an aluminizing vapor of substantially pure Al by heating at a first temperature in the range of about 350° – 600° F., the first temperature being one at which the precursor vapor decomposes, one below a temperature that can diffuse a coating of substantially pure Al into the surface, and one less than a selected temperature greater than the first temperature and exposure at which can result in degradation of mechanical properties of the first coating and a bond of the first coating with the article surface;

placing the article surface in a coating chamber;
heating at least the second portion to the first temperature;
exposing at least the second portion to the precursor vapor for a coating time sufficient to deposit a layer of substantially pure Al to a preselected thickness on the second portion;
removing the article surface from the coating chamber; and then, heating at least the second portion, including the layer of Al deposited thereon, at a second, elevated Al diffusion temperature, sufficient to diffuse Al into the second portion to provide a protective coating, the second temperature being greater than the first temperature and less than the selected temperature exposure at which can result in degradation of mechanical properties of the article and the first coating, to diffuse the Al into the second portion at the second temperature.

5,780,107

WOOL PRE-TREATMENT METHOD

Christopher Michael Carr, Winsford, and Kevin James Dodd, Crawcrook, both of United Kingdom, assignors to The University of Manchester Institute of Science and Technology, Manchester, United Kingdom

PCT No. PCT/GB95/01862, § 371 Date Jun. 16, 1997, § 102(e) Date Jun. 16, 1997, PCT Pub. No. WO96/05355, PCT Pub. Date Feb. 22, 1996

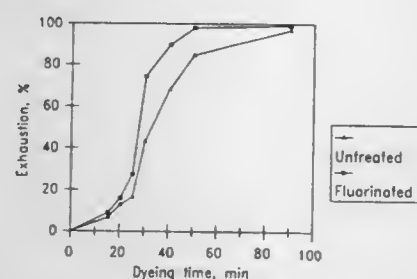
PCT Filed Aug. 7, 1995, Ser. No. 750,931

Claims priority, application United Kingdom, Aug. 9, 1994, 9416032

Int. Cl.⁶ B05D 1/00

U.S. Cl. 427—255.1

8 Claims



Dye exhaustion profile of Sandolan Milling Blue N-BL on wool fabric

1. A method for treating a fabric comprising fibres of keratin to impart shrink-resistance to the fabric comprising passing the fabric continuously through a chamber containing an atmosphere of 10% or less fluorine gas by volume at a rate such that the residence time of the fabric within the chamber is 60 seconds or less.

5,780,108

CLEANING TAPE WITH IMPROVED EDGE ADHESIVE
John Skoufis, Denville; Cary Africk, Montclair, both of N.J.; John M. Questel, Cayahoga Falls, and Wayne Mazorow, Akron, both of Ohio, assignors to The Texwipe Co., LLC., Upper Saddle River, N.J.

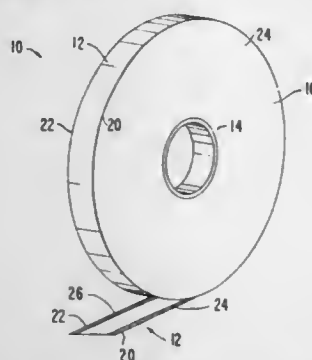
Division of Ser. No. 369,373, Jan. 6, 1995, Pat. No. 5,571,601.

This application May 31, 1996, Ser. No. 655,917

Int. Cl.⁶ B05D 1/28

U.S. Cl. 427—284

19 Claims



1. A method of forming an edge-stabilized cleaning tape roll, comprising the steps of:

- providing a roll of cleaning tape wound so that opposite edges of said cleaning tape form opposed substantially flat sides of said roll;
- applying a cross-linkable adhesive formulation to said flat sides of said roll to form an adhesive layer; and
- allowing said applied adhesive formulation to dry, cure and crosslink to form said edge-stabilized cleaning tape roll, wherein said adhesive formulation comprises at least one defoaming surfactant in an amount sufficient to promote mixing of the adhesive formulation.

5,780,109

DIE EDGE CLEANING SYSTEM

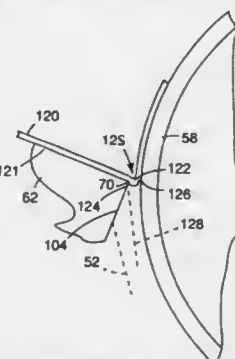
Robert A. Yapel, Oakdale; Thomas M. Milbourn, Mahtomedi; Aparna V. Bhawe, Woodbury; Lawrence B. Wallace, Newport; Daniel V. Norton, Saint Paul, and Hans E. Iverson, Ham Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 21, 1997, Ser. No. 784,629

Int. Cl.⁶ B05D 3/00

U.S. Cl. 427—294

12 Claims



1. A method for applying a coating fluid to a moving web comprising the steps of:

- extruding the coating fluid through at least one feed slot of a coating die, the coating die having a front face demarked from the at least one feed slot by a die edge;
- positioning a moving web and the coating die such that a coating bead is formed in a gap between the moving web and the die edge to initiate coating of the coating fluid onto the moving web;
- spraying a cleaning fluid at a first flow rate on at least a portion of the front face of the coating die for an initial period;
- terminating the first flow rate such that a coating bead with a generally linear static wetting line is formed on the front face during coating of the coating fluid onto the moving web; and
- optionally spraying cleaning fluid at a second flow rate.

5,780,110

METHOD FOR MANUFACTURING THERMAL BARRIER COATED ARTICLES

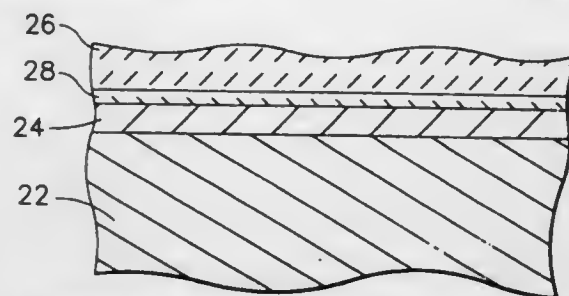
Jon C. Schaeffer, Milford, Ohio; William B. Connor, Clifton Park, N.Y., and Robert D. Field, Los Alamos, N. Mex., assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 577,169, Dec. 22, 1995, abandoned. This application Mar. 18, 1997, Ser. No. 819,344

Int. Cl.⁶ B05D 3/00; C23C 14/00

U.S. Cl. 427—327

4 Claims



1. A method for manufacturing an article suitable for use in a gas turbine engine, the method comprising:

- (a) providing a superalloy substrate,
- (b) applying a metallic bond coating on the substrate,
- (c) surface doping a surface of the bond coating with at least one element that oxidizes at a faster rate than Al, the at least one element being selected from the group consisting of Fe, Cr and Y and
- (d) applying an insulative ceramic coating onto the bond coating.

5,780,111

METHOD OF CLEANING AND CONDITIONING SURFACES

John H. Thrower, 1231 Belrose La., Charlotte, N.C. 28209

Filed Sep. 9, 1997, Ser. No. 926,115

Int. Cl.⁶ B05D 3/12; 1/38; B08B 1/00

U.S. Cl. 427—355

13 Claims

1. A coating, cleaning, and conditioning process for marble comprising the steps of: applying a first mixture consisting essentially of zinc sulfate, an abrasive, a thickener and a wetting agent to the surface to be treated; removing the mixture with buffing means and water; forming a second mixture consisting essentially of fluorosilicates of the group consisting of the alkaline earth metals and zinc, a monocarboxylic aliphatic organic acid and a wetting agent; applying a 20% solution by volume of the second mixture to the surface to be treated by buffing means utilizing abrasive means; removing this solution by vacuuming; applying the full strength second mixture to the surface to be treated; partially removing the second mixture with buffing means to form an insoluble film of calcium fluorosilicate that restores the depth of gloss of the marble; applying a third mixture consisting essentially of the second mixture, fumed silica and an organic filler to the surface to be treated; and partially removing this third mixture with buffing means to increase the slip-resistance of the surface.

5,780,112

POWER-FREE LATEX ARTICLES AND METHODS OF MAKING THE SAME

Bradley L. Pugh, Midland, and Russell D. Culp, Dothan, both of Ala., assignors to LRC Products, Ltd., Broxbourne, United Kingdom

Filed May 15, 1996, Ser. No. 645,639

Int. Cl.⁶ B05D 3/02

U.S. Cl. 427—393.3

36 Claims

- 1. A method of making a latex article, comprising:
 - a.) contacting a latex article having a surface with a reaction mixture comprising effective amounts of
 - i) water,
 - ii) an aqueous emulsion comprising a high-density, substantially linear hydrocarbon polymer, and
 - iii) an acid-activated oxidizing agent or initiator;
 - b.) in a first admixing step, admixing an effective amount of an acid to the reaction mixture to activate the oxidizing agent or initiator, thereby forming an activated reaction mixture;
 - c.) after a first selected period of time sufficient to adhere the polymer to the surface of the article, in a second admixing step, admixing a stoichiometrically effective amount of a stopping agent to the activated reaction mixture sufficient to substantially reduce or halt the oxidation, thereby forming a stopped reaction mixture; and
 - d.) after a second selected period of time sufficient to reduce substantially or halt oxidation, neutralizing the article by contacting the article with a neutralization mixture comprising water and a base.

5,780,113

METHOD FOR FORMATION OF COATING FILM

Yutaka Masuda, Fujisawa; Akimasa Nakahata; Yoshiyuki Yukawa, both of Hiratsuka, and Motoshi Yabuta, Hadano, all of Japan, assignors to Kansai Paint Co., Ltd., Japan

Filed Apr. 4, 1997, Ser. No. 833,118

Claims priority, application Japan, Apr. 5, 1996, 8-108686

Int. Cl.⁶ B05D 5/06; 7/14

U.S. Cl. 427—405

11 Claims

1. A method for forming a multi-layer coating film by applying a clear coating (B) on a film of a leafing aluminum flake-containing metallic coating (A), which method comprises forming a film of the metallic coating (A), curing the film, applying thereon a composition (C) containing a polymer formed from an unsatur-

ated monomer having a phosphoric acid group represented by $-\text{O}-\text{PO}(\text{OH})(\text{R}_1)$ (wherein R_1 is a hydroxyl group, a phenyl group or a C_{1-20} alkyl group) and a hydroxyl group-containing unsaturated monomer, and then applying the clear coating (B) on a film of the composition (C).

5,780,114

PRODUCTION OF A SILICEOUS REFRACTORY MASS
Jean-Pierre Meynckens, Villers-Perwin, and Bernard Somershausen, Nivelles, both of Belgium, assignors to Glaverbel, Brussels, Belgium

PCT No. PCT/BE95/00108, § 371 Date May 27, 1997, § 102(e) Date May 27, 1997, PCT Pub. No. WO96/16917, PCT Pub. Date Jun. 6, 1996

PCT Filed Nov. 23, 1995, Ser. No. 849,305

Claims priority, application United Kingdom, Nov. 28, 1994, 9423984; Dec. 22, 1994, 9425927

Int. Cl.⁶ C04B 35/02; 35/60

U.S. Cl. 427—422

21 Claims

1. A process for producing a crystalline siliceous refractory mass comprising:

- a. providing particulate constituents to be projected comprised of
 - (1) solid refractory particles comprising silica in the form of vitreous silica, and
 - (2) solid combustible particles comprising silicon particles;
- b. projecting the particulate constituents with gaseous oxygen against a surface under ceramic welding conditions effective to cause a reaction between the solid combustible particles and the gaseous oxygen to occur against the surface, thereby releasing the heat of reaction against the surface so that a coherent refractory mass comprising cristobalite is formed, wherein the surface against which the solid refractory particles are projected is at a temperature of at least 1000° C.

5,780,115

METHODS FOR FABRICATING ELECTRODE STRUCTURES INCLUDING OXYGEN AND NITROGEN PLASMA TREATMENTS

In-sung Park, Seoul, and Byoung-taek Lee, Kyungki-do, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

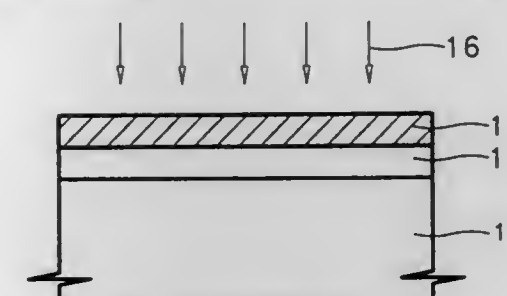
Filed Feb. 25, 1997, Ser. No. 806,145

Claims priority, application Rep. of Korea, Feb. 29, 1996, 1996-5311

Int. Cl.⁶ H05H 1/00; B05D 3/06

U.S. Cl. 427—539

45 Claims



1. A method for fabricating an integrated circuit capacitor, said method comprising the steps of:

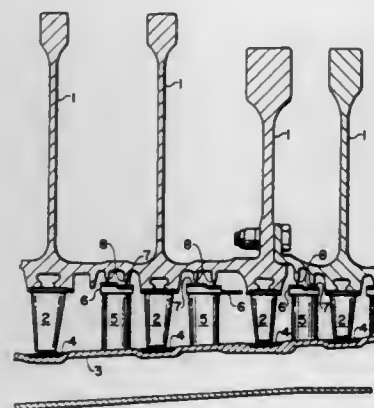
- forming a first electrode on a microelectronic substrate;
- plasma treating said first electrode with a plasma of a gas including nitrogen and oxygen;
- forming a dielectric film on said plasma treated first electrode opposite said microelectronic substrate; and
- forming a second electrode on said dielectric film opposite said plasma treated first electrode.

5,780,116

METHOD FOR PRODUCING AN ABRADABLE SEAL
Gerard A. Sileo, Jupiter; John W. Appleby, Palm Beach Gardens; Stephen T. Narsavage, Jupiter; Francis X. Alent, Port St. Lucie, and Charles G. Davis, Jupiter, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.
Continuation of Ser. No. 569,412, Dec. 6, 1995, abandoned, which is a division of Ser. No. 145,896, Oct. 29, 1993, Pat. No. 5,536,022, which is a continuation-in-part of Ser. No. 572,271, Aug. 24, 1990, abandoned. This application May 27, 1997, Ser. No. 863,414
Int. Cl.⁶ C23C 4/06; 4/10

U.S. Cl. 427—456

13 Claims



1. A method for producing a substantially gas impermeable abradable seal having a surface roughness of less than about 600 microinches and minimal interconnected pores, said method comprising:

- Providing a metallic substrate;
- Plasma spraying onto said substrate a low porosity bond coat layer consisting essentially of a nickel based superalloy having a density greater than 90 percent theoretical, and having an oxidation resistance greater than that of nichrome at 1200° F., wherein said bond coat layer does not contain boron nitride; and
- Forming a substantially gas impermeable abradable seal having a surface roughness of less than about 600 microinches and minimal interconnected pores by plasma spraying over said bond coat layer an abradable layer comprising 50 to 65 volume percent oxidation resistant nickel based superalloy, 20 to 45 volume percent hexagonal boron nitride, and from about 5 to about 15 volume percent porosity.

5,780,117

DUAL-CURE LATEX COMPOSITIONS
Andrew Joseph Swartz, Charlotte, N.C., and Kurt Arthur Wood, Abington, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 25, 1997, Ser. No. 806,893

Int. Cl.⁶ C08F 2/46; C08J 3/28; C08K 3/20

U.S. Cl. 427—493

10 Claims

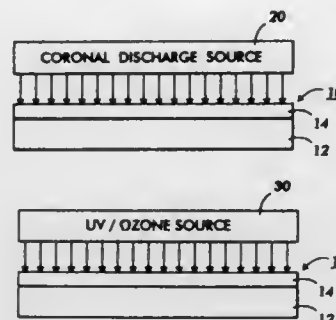
1. A radiation-cured latex composition having a secondary curing mechanism, comprising:
- an anionically stabilized, water-borne dispersion of one or more radiation-curable resins; and
 - a low molecular weight compound having at least two reactive functional groups, wherein one reactive functional group comprises an epoxy and the other reactive functional group comprises either an epoxy or a functionality, which is cured via self-condensation after film formation.

5,780,118

METHOD FOR INCREASING HYDROPHILICITY OF TRANSPARENTS USED AS RECORDING MEDIA IN A THERMAL INK JET PRINTER
Mark D. Tracy, Rochester, and Dale R. Ims, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jul. 1, 1996, Ser. No. 673,533
Int. Cl.⁶ C08F 2/48

U.S. Cl. 427—508

6 Claims



1. A method for increasing the hydrophilicity of an ink recording media which comprises a transparent substrate upon which is formed a transparent coating comprising a plasticizer and a member selected from the group consisting of cellulose ester, alkyl cellulose, cyanoalkyl cellulose, carboxyalkyl cellulose, carboxy-alkyl hydroxyalkyl cellulose, hydroxyalkyl cellulose, hydroxyalkyl methyl cellulose, acrylamide, a poly(alkylene oxide), and mixtures thereof comprising the steps of:

exposing a surface of the coating to a coronal discharge and maintaining the discharge for a time sufficient to create oxygen functionality changes at the surface of the coating.

5,780,119

TREATMENTS TO REDUCE FRICTION AND WEAR ON METAL ALLOY COMPONENTS

Geoffrey Dearnaley, and James Lankford, Jr., both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Mar. 20, 1996, Ser. No. 618,568

Int. Cl.⁶ B05D 3/06; C23C 16/26

U.S. Cl. 427—528

14 Claims

1. A method for coating an outer surface of a metal alloy substrate with diamond-like carbon comprising:
- exposing said metal alloy substrate to a vacuum of at least about 10⁻⁵ torr;
 - heating said substrate to a first temperature of about 300° C. (149° F.) or, if said metal alloy is temperature sensitive, to a highest temperature acceptable for said metal alloy;
 - depositing an intermediate material selected from the group consisting of silicon and germanium onto said substrate in an amount sufficient to form an intermetallic bonding layer at said outer surface of said substrate cohesively bonded to an outer interlayer of said intermediate material;
 - substantially simultaneously bombarding said intermediate material with a first energetic beam of ions at a first energy, a first ion arrival ratio, and for a first amount of time sufficient to form said intermetallic bonding layer cohesively bonded to said interlayer;
 - condensing a diamond-like carbon precursor onto said interlayer at a second temperature and for a second amount of time sufficient to form a film of precursor molecules on said interlayer;
 - substantially simultaneously bombarding said diamond-like carbon precursor with a second energetic beam of ions at a second energy, a second ion arrival ratio, and for a third amount of time sufficient to form a carbide bonding layer cohesively bonded to a coating of diamond-like carbon.

5,780,120

METHOD FOR PREPARING LASER FACES
Christian Belouet, Sceaux; Dominique Boccon-Gibod, Paris, and Sylvaine Kerboeuf, Fresnes, all of France, assignors to Alcatel Alsthom Compagnie Generale D'Electricite, Paris Cedex, France

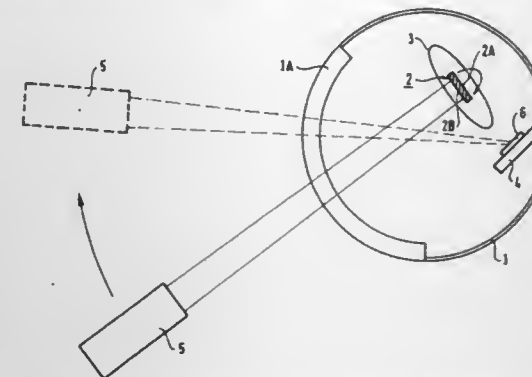
Filed Dec. 18, 1996, Ser. No. 769,137

Claims priority, application France, Dec. 22, 1995, 95 15397

Int. Cl.⁶ B05D 3/00

U.S. Cl. 427—554

12 Claims



1. A method of preparing faces of a laser, the method comprising the following operations:

- forming faces of a laser;
- placing said faces in an enclosure at a pressure of about 10⁻⁷ mbar to about 10⁻⁸ mbar, and cleaning said faces by irradiation with a pulsed laser; and
- using said pulsed laser to ablate a target so as to subject said faces to a passivation operation whereby silicon Si or gallium nitride GaN is deposited thereon by the pulsed laser deposition method until a thickness is obtained in the range of 2 Å to 20 Å.

5,780,121

METHOD FOR PREPARING A FLUORO-CONTAINING POLYIMIDE FILM

Kazuhiko Endo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 487,243, Jun. 13, 1995, Pat. No.

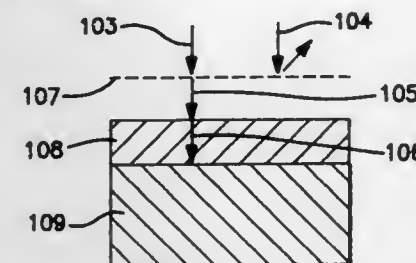
5,702,773. This application Jun. 12, 1997, Ser. No. 873,592

Claims priority, application Japan, Jun. 13, 1994, 6-129983; Aug. 30, 1994, 6-204085

Int. Cl.⁶ H05H 1/24

U.S. Cl. 427—569

13 Claims



1. A method for forming a polyimide film containing fluorine on a base layer comprising the steps of:
- forming a polyimide film free of fluorine on a base layer;
 - generating fluorine radicals in a fluorine based gas;
 - removing charge particles from said gas to leave said fluorine radicals in said gas; and
 - exposing said polyimide film to an irradiation of said fluorine radicals so that said irradiated fluorine radicals penetrate into said polyimide, thereby avoiding reaction of the removed charge particles with a surface of said polyimide film.

5,780,122

PRETREATMENT METHOD FOR COATING ON MOLDED METAL ARTICLE

Seiichi Shirahata, Toyonaha, Japan; Mitsuo Shinozumi, Canton, Mich.; Satoshi Miyamoto, Toyonaha, and Tamotsu Sobata, Ibaraki, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

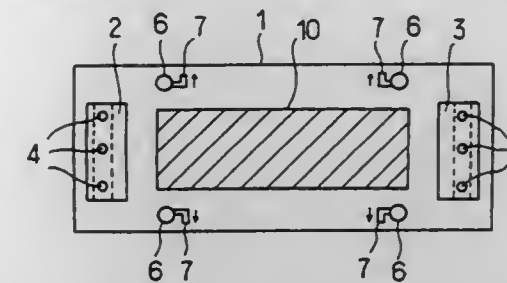
Filed Dec. 6, 1996, Ser. No. 760,459

Claims priority, application Japan, Dec. 12, 1995, 7-322826; Oct. 25, 1996, 8-283699

Int. Cl.⁶ B06B 1/20

U.S. Cl. 427—601

13 Claims



1. A pretreatment method for coating on a molded metal article having a substantially horizontal surface comprising the steps of:
- carrying and dipping said molded metal article in a solution stored in a treatment bath; and
 - agitating said solution around said horizontal surface of said molded metal article in an inlet part of said treatment bath for introducing said molded metal article into said treatment bath, by vibration of a plurality of vibrating plates of vibration agitation means provided in said inlet part, so that mean acceleration α expressed in the following equation is at least 8 cm/sec²:

$$\alpha = \sqrt{X^2 + Y^2 + Z^2}$$

where X, Y and Z, which are in units of cm/sec², represent average acceleration values of flow rate changes within 60 seconds, measured simultaneously in three axial directions of X, Y and Z which are perpendicular to each other at a measuring position.

5,780,123

TUBULAR LINER AND A METHOD FOR CONNECTING ENDS OF LINER TUBES

Takao Kamiyama, Hiratsuka, and Yasuhiro Yokoshima, Ibaraki-ken, both of Japan, assignors to Yokoshima & Company, Ibaraki-ken, and Sbonan Gosei-Jushi Seisakusho K.K., Kanagawa-ken, both of Japan

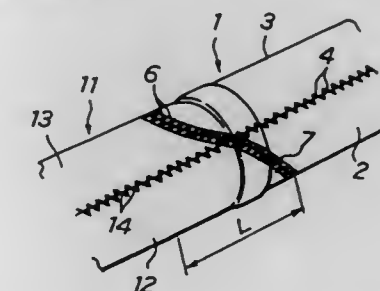
Filed Feb. 15, 1996, Ser. No. 601,752

Claims priority, application Japan, Mar. 23, 1995, 7-063973

Int. Cl.⁶ F16L 55/16; 9/20

U.S. Cl. 428—35.2

3 Claims



1. A tubular liner comprising an inner layer of a resin-absorbable sheet and an outer layer of hermetic plastic film, for use in lining the inner wall of a pipe, which tubular liner comprises at least two

liner tubes connected in series, wherein any of two neighboring liner tubes are connected to each other end to end with stitches binding abutted ends of the respective liner tubes closely together, which stitches form a spiral seam.

5,780,124
ULTRAVIOLET ENHANCED OIL PAINTING AND METHOD THEREFOR

Jacqueline Ripstein, 2800 Williams Island Blvd. #804, Miami, Fla. 33160

Continuation of Ser. No. 715,133, Sep. 17, 1996, abandoned.

This application Ser. No. 935,624

Int. Cl.⁶ B44F 1/10; B32B 3/00

U.S. Cl. 428—29

1 Claim

1. A hand layering of oil based paints on a backing media for creating a painting, consisting essentially of two adjacent, hand applied touching layers consisting essentially of oil based paints wherein a first, upper layer includes only a transparent, ultraviolet, luminescent pigment that is not luminescent under only incandescent light, mixed with said oil based paint prior to layering, and wherein a second lower layer does not include said transparent, ultraviolet, luminescent pigment, and wherein said first upper layer is disposed by hand directly on and contacts a portion of said second lower layer, which second layer is disposed on the backing media for producing a luminescent effect of said first upper layer when subject to ultraviolet light, said first upper layer defining a first visible design and said second lower layer defining a second, different visible design, wherein the painting exhibits only said second different visible design when subjected to incandescent light and wherein the painting exhibits only said first visible design when subjected to ultraviolet light.

5,780,125
BUMPER MADE OF SYNTHETIC RESIN FOR AUTOMOBILE, AND PROCESS FOR PRODUCING THE SAME

Atsushi Takeuchi; Osamu Aoki; Kenji Hamabe; Tatsuya Itakura; Hitoshi Ohgane, and Minoru Makuta, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

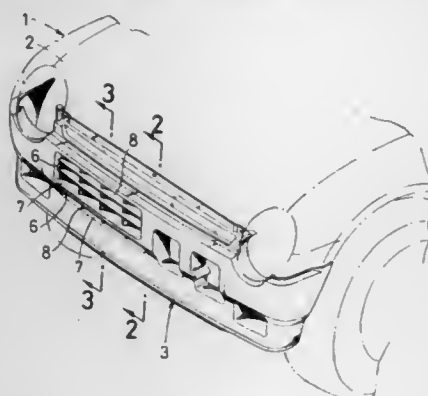
Filed Aug. 21, 1995, Ser. No. 517,319

Claims priority, application Japan, Aug. 22, 1994, 6-197048

Int. Cl.⁶ B32B 3/26

U.S. Cl. 428—31

17 Claims



1. A bumper of synthetic resin for use in an automobile, comprising a core, and an outer layer covering the core, wherein a material for forming said core includes a main component and a polyethylene added to said main component, said main component being produced by pulverizing a recovered bumper which has been formed using a polyolefin-based resin composition modified by an olefinic elastomer and which has a thermosetting synthetic resin coating film on a surface of the recovered bumper, and wherein a material for forming said outer layer includes a polyolefin-based

resin composition modified by an olefinic elastomer, and a polyethylene in a content A_2 which is smaller than a content A_1 of the polyethylene included in said core forming material ($A_2 < A_1$).

5,780,126
FILTER MATERIAL

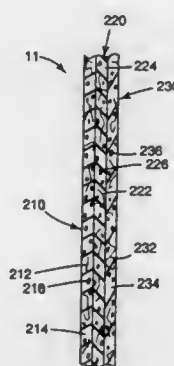
Robert G. Smith, Vadnais Heights; Joseph H. Eaton, Roseville; Edward M. Fischer, White Bear Lake; Larry R. Visser, Oakdale, all of Minn.; Venecia M. Grobelny, San Jose, and Kevin D. McVicker, Livermore, both of Calif., assignors to Minnesota Mining & Manufacturing, St. Paul, Minn., and Hexcel Corporation, Stamford, Conn.

Filed Jul. 17, 1996, Ser. No. 682,335

Int. Cl.⁶ B32B 18/00

U.S. Cl. 428—34.5

26 Claims



1. A filter material comprising:

(a) a self supporting fluid permeable wall comprising:

- (i) first woven, braided, knitted, or filament wound ceramic oxide fibers;
- (ii) first ceramic oxide particles; and
- (iii) a first silicate ceramic oxide bonding phase, said first ceramic oxide particles being interspersed about said first ceramic oxide fibers, and said first ceramic oxide bonding phase bonding said first particles and said first fibers together; and

(b) a fluid permeable filter layer on said wall, said filter layer being less permeable than said fluid permeable wall, and comprising:

- (i) non-woven second ceramic oxide fibers; and
- (ii) a second silicate ceramic oxide bonding phase bonding to said second fibers, said filter layer being arranged such that said filter material is permeable.

5,780,127
WAFER CARRIER

Kirk J. Mikkelsen, Chanhassen, Minn., assignor to Flourware, Inc., Chaska, Minn.

Continuation of Ser. No. 275,502, Jul. 15, 1994, abandoned.

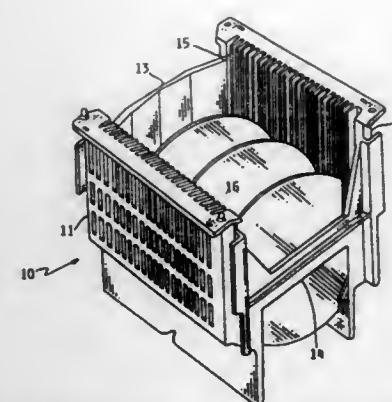
This application Jan. 11, 1996, Ser. No. 584,093

Int. Cl.⁶ B65D 85/30

U.S. Cl. 428—35.7

15 Claims

1. A dimensionally stable and low particle generating wafer carrier comprising injection molded polybutyl terephthalate and carbon fiber filler, further comprising a pair of side walls, a pair of end walls joining the sidewalls, a plurality of slots formed in the



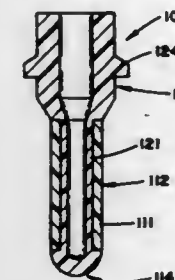
5,780,128
POLYETHYLENE PREFORM AND CONTAINER
Said K. Farha, Chappaqua, N.Y., assignor to PepsiCo Inc., Purchase, N.Y.

Filed Apr. 15, 1996, Ser. No. 633,951

Int. Cl.⁶ B65D 71/00

U.S. Cl. 428—35.7

12 Claims



1. A preform comprising an open neck portion integrally adjacent a laminate body portion integrally adjacent a closed bottom portion; said laminate body portion including an outer ply formed of a polymeric composition comprising a post consumer PET having an intrinsic viscosity of between about 0.67 and about 0.75 and a first virgin PET, which is a copolymer of ethylene terephthalate and ethylene isophthalate, having an intrinsic viscosity of between about 0.77 and about 0.83 and an inner ply of a second virgin PET, which is a copolymer of ethylene terephthalate and ethylene isophthalate, having an intrinsic viscosity of between about 0.77 and about 0.83; said open neck and said closed bottom portions formed of said second virgin PET.

5,780,129
MULTI-LAYER BLOW-MOLDED ARTICLE
Akira Ohta, Ichihara, Japan, assignor to Nippon Steel Chemical Co., Ltd., and Nippon Steel Corporation, both of Tokyo, Japan

PCT No. PCT/JP95/00015, § 371 Date Jun. 28, 1996, § 102(e) Date Jun. 28, 1996, PCT Pub. No. WO95/18712, PCT Pub. Date Jul. 13, 1995

PCT Filed Jan. 11, 1995, Ser. No. 669,346

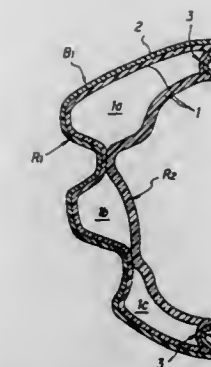
Claims priority, application Japan, Jan. 11, 1994, 6-001379

Int. Cl.⁶ B60R 19/02; B32B 7/02; 7/04

U.S. Cl. 428—35.7

11 Claims

1. A multi-layer blow-molded article wherein the layers are formed of diverse types of thermoplastic resins each having a different molding shrinkage factor and wherein, in a multi-layer marginal-wall region of the blow-molded article formed of a plurality of layers progressing from outer to inner layers, a more outer



layer is formed of a resin having a higher molding shrinkage factor than that of a more inner layer at a convexly crooked portion where the multi-layer marginal-wall region is projected generally convexly from inside to outside, and a more outer layer is formed of a resin having a lower molding shrinkage factor than that of a more inner layer at a concavely crooked portion wherein the multi-layer marginal-wall region is dented generally concavely from outside to inside, the layers of the entire molded article being fittingly secured to each other, without adhesive by means of a clamping force resulting from the difference in molding shrinkage factors of the resins forming the layers defined in a circumferential direction in said multi-layer marginal-wall region.

5,780,130
CONTAINER AND METHOD OF MAKING CONTAINER FROM POLYETHYLENE NAPHTHALATE AND COPOLYMERS THEREOF

Jeffrey E. Hansen, Acworth, Ga.; Kunio Osakada, Kawasaki, Japan, and Michael J. Myers, Lawrenceville, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

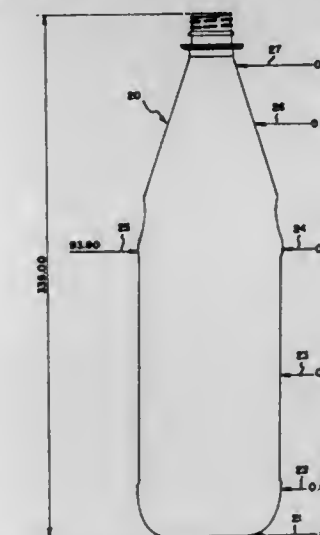
Continuation of Ser. No. 329,859, Oct. 27, 1994, abandoned.

This application Dec. 31, 1996, Ser. No. 775,309

Int. Cl.⁶ B65D 90/02; 1/02

U.S. Cl. 428—35.7

18 Claims



1. A pourable, hot wash, refillable container comprising a base, a cylindrical body having an average side wall thickness of at least 0.635 mm, a shoulder portion, and a neck portion, said pourable, hot wash, refillable container comprising polyethylene naphthalate homopolymer, said container being capable of undergoing multiple trips through a washing, filling, shipping and consumer use cycle, and said base of said container being oriented and having sufficient impact resistance so that said container will not break when dropped one meter onto a concrete surface when filled with water at both 4.4° C. and 22.2° C., said base of said container being

oriented by the process of blow-molding a preform wherein the preform stretch ratio is in the range of 5 to 9.

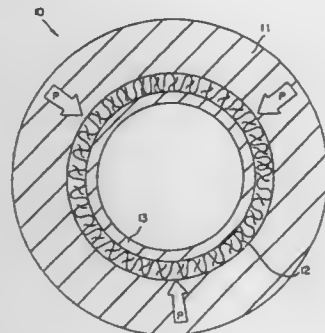
5,780,131
COVERED ROLL AND A METHOD FOR MAKING THE SAME

Jan Anders Paasonen, Kerava, and Seppo Antti Yliselä, Järvenpää, both of Finland, assignors to Stowe Woodward Company, Middletown, Va.

Continuation of Ser. No. 418,421, Apr. 6, 1995, Pat. No. 5,601,920. This application Feb. 11, 1997, Ser. No. 798,619
Int. Cl.⁶ B32B 9/00

U.S. Cl. 428—35.9

10 Claims



1. A covered roll comprising:

- a roll core base;
- a filling member having at least one surface which defines a filling region, said filling member circumferentially surrounding said roll core base;
- a cover circumferentially surrounding said filling member; wherein said filling region comprises a material cured at a temperature lower than a temperature for which the cover is cured.

5,780,132
COMPOSITE RUBBER ARTICLE AND METHOD OF MAKING

Shinji Saitoh; Masato Yoshikawa, both of Kodaira; Setsuo Akiyama, Sagami, and Shingo Kato, Tokyo, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Continuation of Ser. No. 360,000, Dec. 20, 1994, abandoned.

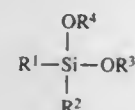
This application Oct. 25, 1996, Ser. No. 736,783

Claims priority, application Japan, Dec. 20, 1993, 5-344833
Int. Cl.⁶ B29D 22/00

U.S. Cl. 428—36.8

8 Claims

- 1. A rubber tube comprising, in order starting from the outside:**
- (a) a rubber composition layer comprising a rubber component comprising a copolymer of 98 to 80% by weight of isobutylene and 2 to 20% by weight of a brominated para-methylstyrene with the degree of bromination of the copolymer being 10 to 80%;
 - (b) a layer comprising an alkoxysilane compound of the formula:



wherein each of R¹ and R² is a saturated or unsaturated monovalent hydrocarbon group or alkoxy group, and each of R³ and R⁴ is a saturated or unsaturated monovalent hydrocarbon group, and

(c) a resinous material layer.

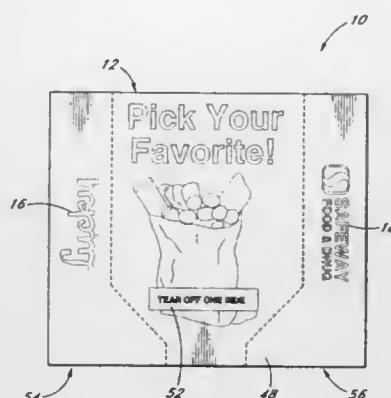
5,780,133
VARIABLE VALUE RETAIL COUPON SYSTEM
John A. Engstrom, 250 N. Golden Circle Dr., Santa Ana, Calif. 92705

Filed Oct. 11, 1996, Ser. No. 729,500

Int. Cl.⁶ B65D 65/28

U.S. Cl. 428—40.1

26 Claims



1. A variable value coupon system comprising:

- a coupon sheet of flexible material having a face and a back and having edges, at least one coupon panel on said face of said coupon sheet, indicia on said face of said at least one coupon panel, said indicia representing at least one coupon;
- first and second spaced separation lines on said coupon sheet for separating said coupon sheet at said separation lines, both said first and second separation lines passing through said coupon indicia, said coupon indicia being arranged to have an offer beyond each separation line so that when torn at said first separation line said coupon has a first character and when torn at said second separation line said coupon has a second character;
- a cover extending across said coupon indicia, said cover having first and second spaced separation lines, said cover lying with said first cover separation line overlying said first coupon sheet separation line and said second cover separation line overlying said second coupon sheet separation line so as to enclose said indicia representing said at least one coupon so that said indicia is not visible until said cover and said coupon sheet are separated on one of said first and second separation lines to permit removal of said coupon sheet and cover sheet beyond said separation line to permit uncovering of the remaining face of said coupon sheet to display said indicia.

5,780,134

Patent Not Issued For This Number

5,780,135
MAGNETIC DISC APPARATUS
Akira Kikitsu, and Katsutaro Ichihara, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 11, 1996, Ser. No. 712,434

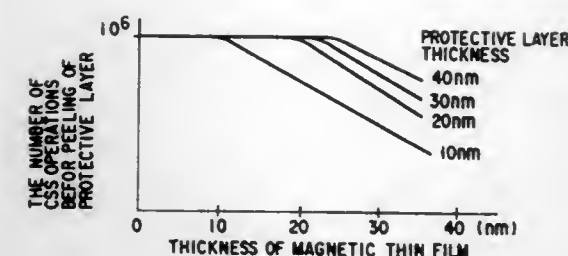
Claims priority, application Japan, Sep. 13, 1995, 7-234842
Int. Cl.⁶ G11B 5/66

U.S. Cl. 428—65.3

24 Claims

1. A magnetic disc apparatus, comprising:

- a magnetic recording medium including a non-magnetic substrate, a recording layer of a magnetic thin film formed on the non-magnetic substrate, and a non-magnetic protective layer formed on a recording layer, wherein said non-magnetic protective layer is thicker than the total recording layer; and



means for recording/reproducing information in/out of said magnetic recording medium.

5,780,136

Patent Not Issued For This Number

5,780,137

Patent Not Issued For This Number

5,780,138

Patent Not Issued For This Number

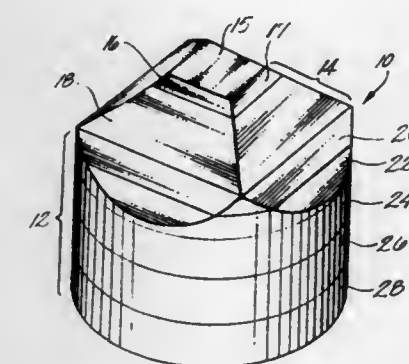
5,780,139
MULTI-LAYER ANVIL FOR ULTRA HIGH PRESSURE PRESSES
Lan Carter, Payson; Madapusi K. Keshavan; Ghanshyam Rai, both of Sandy, all of Utah; Jimmy W. Eason, and Vonnice D. Hood, both of Rogers, Ark., assignors to Rogers Tool Works, Inc., Rogers, Ark.

Filed Sep. 18, 1996, Ser. No. 715,437

Int. Cl.⁶ B21D 37/04

U.S. Cl. 428—217

19 Claims



1. An anvil comprising a plurality of cemented tungsten carbide layers diffusion bonded together for applying pressure in an ultra high pressure press capable of operating in the pressure ranges where diamonds, polycrystalline diamond composites and cubic boron nitride are stable.

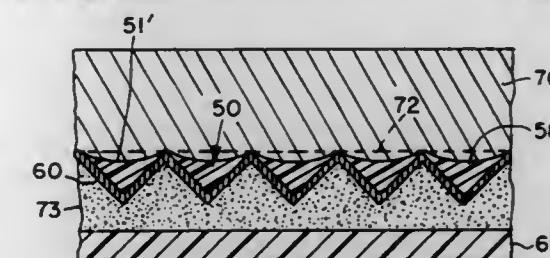
5,780,140
RETROREFLECTIVE MICROPRISMATIC MATERIAL WITH TOP FACE CURVATURE AND METHOD OF MAKING SAME
Robert B. Nilsen, Wheatogque, Conn., assignor to Reflexite Corporation, Avon, Conn.

Filed Sep. 23, 1996, Ser. No. 717,597

Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—172

18 Claims



1. A method of forming an array of microprism retroreflective material comprising the steps of:

- a) forming an array of heat shrinkable transparent prisms in a mold, the prisms having a planar base face and side faces extending therefrom to an apex;
 - b) bonding the array to a plastic film with the base faces abutting the film;
 - c) curing the array to shrink the prisms and causing the base face to curve inwardly and portions of the film to move into a space left as the base face curves inwardly;
 - d) removing the film, leaving an array of micro prisms with curved base faces; and
 - e) forming a reflective interface on the said side faces.
- 11. An embossing tool formed in accordance with the method of claim 1.**

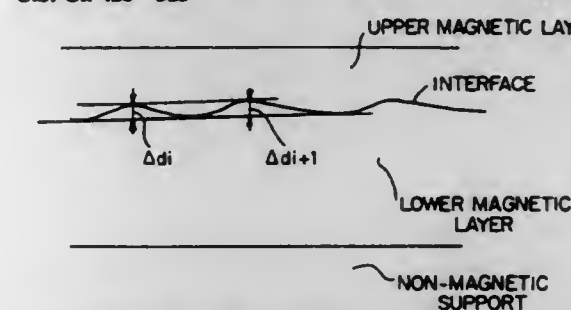
5,780,141
MAGNETIC RECORDING MEDIUM
Kiyomi Ejiri; Hiroo Inaba; Shinji Saito, and Satoru Hayakawa, all of Odawara, Japan, assignors to Fujii Photo Film Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 873,201, Apr. 24, 1992, Pat. No. 5,616,397, which is a continuation-in-part of Ser. No. 822,975, Jan. 21, 1992, Pat. No. 5,258,223. This application Dec. 4, 1996, Ser. No. 760,626

Claims priority, application Japan, Apr. 25, 1991, 3-121873; Apr. 25, 1991, 3-121875; Jul. 15, 1991, 3-198309; Jan. 8, 1992, 4-18416; Jan. 10, 1992, 4-21782

Int. Cl.⁶ G11B 5/66

U.S. Cl. 428—323

16 Claims



1. A magnetic recording medium comprising a support having provided thereon in sequence at least a lower layer over the lower layer, the upper magnetic layer comprising a binder and a non-magnetic powder dispersed therein and an upper magnetic layer comprising a binder and an acicular ferromagnetic powder dispersed therein which is coated while the lower layer is in a wet state, wherein said upper layer has an average dry thickness (d) of not more than 1 μm, and said non-magnetic powder is an inorganic powder having a mohs hardness of not less than 3 and an average

particle size of not more than $\frac{1}{4}$ the major axis length of said acicular ferromagnetic powder in the upper magnetic layer.

5,780,142

PATTERN-FORMING SHEET AND LABEL COMPRISING SAME

Katsuya Kume; Itsuroh Takenoshita; Katsuyuki Okazaki; Mitsuo Kuramoto, and Kihachi Suzuki, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Apr. 26, 1996, Ser. No. 639,907

Claims priority, application Japan, Apr. 27, 1995, 7-128951; Jun. 29, 1995, 7-186375

Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—195



1. A pattern-forming sheet for use as a label to be heat bonded to a product, said sheet comprising a bonded laminate of

- (1) a base layer obtained by shaping a glass powder into a sheet with a decomposable acrylic polymer, said decomposable acrylic polymer having a decomposition temperature lower than the melting temperature of said glass powder; and
- (2) an ink-receptive layer formed of a silicone resin containing an inorganic powder.

5,780,143
CIRCUIT BOARD

Toshitsugu Shimamoto, and Toshihiro Katayama, both of Tokuyama, Japan, assignors to Tokuyama Corporation, Yamaguchi-Ken, Japan

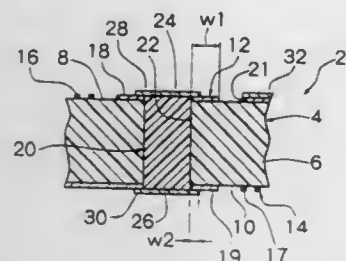
Filed Feb. 26, 1996, Ser. No. 605,474

Claims priority, application Japan, Mar. 1, 1995, 7-042153

Int. Cl.⁶ B32B 9/00

U.S. Cl. 428—209

20 Claims



1. A circuit board comprising:

- a board body including at least one insulating substrate, said board body having a through-hole formed therethrough, circuit patterns formed on both surfaces of said board body, connection means disposed in said through-hole for electrically connecting together said circuit patterns formed on said surfaces of said board body, said connection means is constituted by an electrically conducting substance filling said through-hole formed in said board body, at least one end surface of said electrically conducting substance being substantially flush with one of said circuit patterns, wherein said electrically conducting substance is a paste obtained by mixing an electrically conducting powder and an epoxy resin, said electrically conducting substance is cured after having been filled in said through-hole, and

an electrically conducting pattern provided in contact with said connection means, said electrically conducting pattern has a

substantially uniform thickness formed to substantially cover said connection means and a connection edge portion of one of said circuit patterns, said electrically conducting pattern being composed of a cured paste obtained by mixing an electrically conducting powder and a phenol resin, said cured paste is electrically conducting and is highly moistureproof; and

wherein the connection edge portion is connected to said one end surface of said connection means.

5,780,144

PLANAR DRAINAGE AND IMPACT PROTECTION MATERIAL

Anthony S. Bradley, Valparaiso, Fla., assignor to Bradley Industrial Textiles, Inc., Valparaiso, Fla.

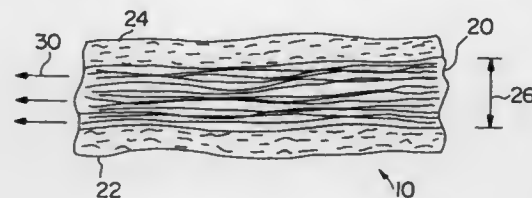
Continuation of Ser. No. 334,407, Nov. 4, 1994, abandoned.

This application Aug. 20, 1996, Ser. No. 700,057

Int. Cl.⁶ E02B 11/00

U.S. Cl. 428—217

26 Claims



1. A composite material comprising:

- a first layer of a soft nonwoven fabric material having a thickness and a planar weight sufficient to facilitate flow of a fluid along a plane of said first layer;
 - a second layer of a stiffened fabric material attached to a first planar side of said first layer, said stiffened fabric material being rigid relative to said first layer;
 - a third layer of said stiffened fabric material, rigid relative to said first layer, attached to a second planar side of said first layer opposite said first planar side; and,
- said layers being arranged such that said composite material has a structure defined by outer layers of said stiffened fabric material with said soft nonwoven fabric material sandwiched therebetween such that said composite material exhibits a degree of rigidity greater than said soft nonwoven fabric material and wherein fluid passing into said soft nonwoven fabric material can flow in said plane.

5,780,145

FILLER-CONTAINING RESIN COMPOSITION SUITABLE FOR INJECTION MOLDING AND TRANSFER MOLDING

Yasuhiro Hirano; Masatsugu Akiba, both of Tsukuba; Yutaka Shiomi, and Noriaki Saito, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 487,628, Jun. 7, 1995, Pat. No. 5,719,225.

This application Jun. 30, 1997, Ser. No. 885,196

Claims priority, application Japan, Jun. 13, 1994, 6-130621; Jun. 17, 1994, 6-136049; Aug. 8, 1994, 6-185998

Int. Cl.⁶ B23B 5/16; 27/38; 27/26

U.S. Cl. 428—323

25 Claims

1. A semi-conductor package obtained by sealing a semi-conductor with a molding composition, and curing the molding composition in the presence of a curing accelerator to form the semi-conductor package, wherein the uncured molding composition contains:

- (A) a resin and a filler therein, said filler comprising a globular powder of which the mean particle diameter is not smaller than 0.1 μ m and not greater than 1.5 μ m (x component), a globular powder of which the mean particle diameter is not smaller than 2 μ m and not greater than 10 μ m (y component)

5,780,147

LAMINATE HAVING IMPROVED DIMENSIONAL STABILITY AND HEAT RESISTANCE

Mikio Sugahara, Kawanishi; Mitsutoshi Yoshinobu, Amagasaki, and Yoshiyuki Tanaka, Itami, all of Japan, assignors to Daiso Co., Ltd., Osaka, Japan

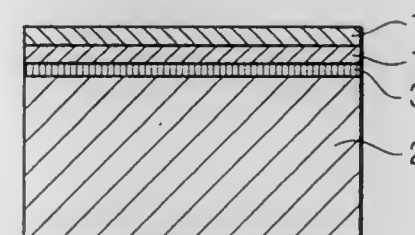
Filed Mar. 13, 1996, Ser. No. 614,548

Claims priority, application Japan, Mar. 14, 1995, 7-054544; Aug. 30, 1995, 7-221906

Int. Cl.⁶ B32B 15/04; 15/06; 15/08

U.S. Cl. 428—332

6 Claims



1. A laminate comprising (A) a thermosetting resin-impregnated prepreg layer constituting a surface layer, (B) a rubber or thermoplastic resin layer having a good flexibility and (C) a hot melt resin adhesive layer, said hot melt resin adhesive layer being interposed between said thermosetting resin-impregnated prepreg layer and said rubber or thermoplastic resin layer;

wherein said layer (A) is a prepreg impregnated with a thermosetting resin selected from a diallyl phthalate resin or an unsaturated polyester; the rubber or resin of the layer (B) is a rubber or a thermoplastic resin selected from chlorinated polyethylene or polyvinyl chloride; and said hot melt resin adhesive layer (C) comprises a hot melt resin having a melting point of 60° to 165° C. and a solubility parameter (SP value) of 7.4 to 10.9, selected from an ethylene-vinyl acetate copolymer, an ethylene-acrylic acid copolymer, carboxylated polyethylene, polyurethane, polybutylene terephthalate and a modified ethylene-vinyl acetate copolymer, and wherein said hot melt resin adhesive layer (C) is formed by applying or laminating said hot melt resin on both surfaces of a reinforcing core material comprising a metal foil, a punching metal foil or a plain weave net made of ribbon metal yarns, said reinforcing core material having a thickness of 10 to 200 μ m, said metal being selected from the group consisting of aluminum, iron, copper, zinc and lead.

5,780,148

HYDROPHILIC THIN FILM AND METHOD OF MANUFACTURING THE SAME

Tadashi Ohtake, Neyagawa; Norihisa Mino, Settsu, and Kazufumi Ogawa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 625,091, Apr. 1, 1996, abandoned, which is a continuation of Ser. No. 375,275, Jan. 19, 1995, abandoned, which is a continuation of Ser. No. 151,301, Nov. 12, 1993, abandoned. This application Oct. 6, 1997, Ser. No. 944,800

Claims priority, application Japan, Nov. 12, 1992, 4-302124

Int. Cl.⁶ B32B 7/04

8 Claims

1. A composite-layer film comprising a chemically adsorbed film and an exposed surface layer, said chemically adsorbed film being a monomolecular film or a multi-layer monomolecular film that is chemically bonded to a substrate,

said exposed surface layer comprising molecules having hydrophilic groups present on an outer surface of said exposed surface layer.

and a globular powder of which the mean particle diameter is not smaller than 20 μ m and not greater than 70 μ m (z component), wherein proportions of the x, y and z components based on the total volume of x, y and z components are not smaller than 10% by volume and not greater than 24% by volume, not smaller than 0.1% by volume and not greater than 30% by volume and not smaller than 57% by volume and not greater than 76% by volume, respectively; or

(B) a resin and a filler therein, said filler comprising a globular powder of which mean particle diameter is not smaller than 0.1 μ m and not greater than 1.5 μ m (x component), a globular powder of which the mean particle diameter is not smaller than 2 μ m and not greater than 10 μ m (y component), a globular powder of which mean particle diameter is not smaller than 20 μ m and not greater than 70 μ m (z component), and a crushed powder (m component), wherein proportions of the x, y and z components based on the total volume of x, y and z components are not smaller than 10% by volume and not greater than 24% by volume, not smaller than 0.1% by volume and not greater than 30% by volume and not smaller than 57% by volume and not greater than 76% by volume, respectively, and a proportion of the m component is not smaller than 1% by weight and not greater than 30% by weight based on the total weight of x, y, z and m components.

5,780,146

ABRADABLE COMPOSITION, A METHOD OF MANUFACTURING AN ABRADABLE COMPOSITION AND A GAS TURBINE ENGINE HAVING AN ABRADABLE SEAL

Stephen Mason, Warwickshire; Michael J. L. Percival, Derbyshire; Gary B. Merrill, and Paul A. Doleman, both of Derby, all of England, assignors to Rolls-Royce plc, London, England

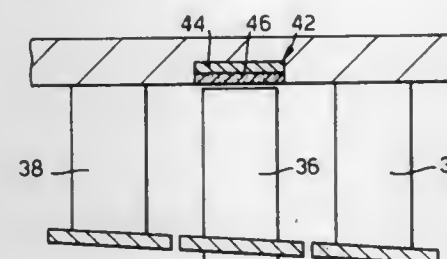
Filed May 22, 1996, Ser. No. 651,486

Claims priority, application United Kingdom, Jun. 29, 1995, 9513252

Int. Cl.⁶ C04B 35/447; 35/78; F01D 11/00; B32B 5/16

U.S. Cl. 428—328

11 Claims

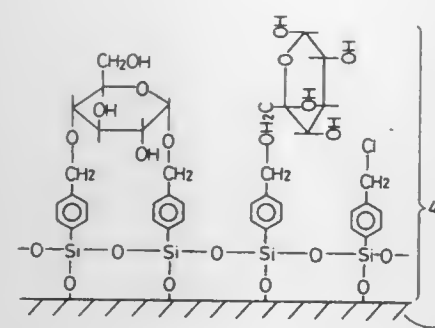


1. An abradable composition comprising:

- hollow aluminosilicate spheres having a diameter in the range of 400 to 1800 microns, and
 - an aluminium phosphate matrix,
- the hollow aluminosilicate spheres being arranged in the aluminium phosphate matrix, the weight proportion of hollow aluminosilicate spheres being 30% to 50%.

5. A gas turbine engine having a component, the component comprising a ceramic matrix composite material, the ceramic matrix composite material comprising reinforcing fibers in a ceramic matrix material,

an abradable seal being arranged on the component, the abradable seal being bonded to the component, the abradable seal comprising hollow aluminosilicate spheres having a diameter in the range 400 to 1800 microns and an aluminum phosphate matrix, the hollow aluminosilicate spheres being arranged in the aluminum phosphate matrix, the weight proportion of hollow aluminosilicate spheres being 30% to 50%.



said molecules being hydrophilic polymers selected from the group consisting of polysaccharides, polyethers, polyalcohols, polyethylene oxides, poly-N-vinylactams, polymethacrylamides, polymethacrylic acids, polymethacrylic acid esters, and polyvinyl amines, wherein said exposed surface film is fixed to said chemically adsorbed film by way of said non-polar groups and has a water contact angle of 5° or less.

5. A method of manufacturing a composite-layer film comprising the steps of:

chemically bonding an adsorbed film to a substrate surface, said chemically adsorbed film being a monomolecular film or a multi-layer monomolecular film; and
fixing at least one polymer molecule comprising hydrophilic groups selected from the group consisting of polysaccharides, polyethers, polyalcohols, polyethylene oxides, poly-N-vinylactams, polymethacrylamides, polymethacrylic acids, polymethacrylic acid esters, and polyvinyl amines, to said chemically adsorbed film to produce an exposed surface film having a water contact angle of 5° or less.

5,780,149

GLASS ARTICLE HAVING A SOLAR CONTROL COATING

Richard J. McCurdy, and David A. Strickler, both of Toledo, Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio
Filed Sep. 13, 1996, Ser. No. 713,785

Int. Cl.⁶ B32B 15/00

U.S. Cl. 428—336

27 Claims

1. A coated glass article comprising:

- a glass substrate, having a surface;
- an iridescence-suppressing interlayer deposited on and adhering to the surface of the glass substrate;
- a first transparent coating deposited on and adhering to the iridescence-suppressing interlayer; and
- a second transparent coating deposited on and adhering to said first transparent coating, said first transparent coating and said second transparent coating having a difference in refractive indices in the near infrared region greater than a difference in refractive indices in the visible region, wherein the coatings, including the interlayer, are such as to provide, when applied to a clear nominal 3 mm glass substrate, a glass article having a visible light transmittance (Illuminant C) of at least 10 percentage points higher than a solar heat transmittance integrated with an air mass 1.5.

5,780,150

PAPER-FIM LAMINATE SEALING TAPE

Gilbert Bloch, 3349 S. Malo Ct., Palm Beach Gardens, Fla. 33410; Gerald Bloch, 21 E. 87th St., New York, N.Y. 10028, and Arnold B. Finestone, 2400 Presidential Way, West Palm Beach, Fla. 33401

Continuation of Ser. No. 232,648, Apr. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 169,007, Dec. 20, 1993, abandoned. This application Jan. 9, 1997, Ser. No. 781,501

Int. Cl.⁶ B32B 7/12; C09J 7/04

U.S. Cl. 428—350

25 Claims



1. A sealing tape for use on cartons and other articles fabricated of recyclable material, the tape comprising:

- a base ply formed of high-strength oriented synthetic plastic film having corona-discharge treated opposing surfaces which render these surfaces wettable;
- a face ply formed of paper adhesively cold laminated by a water-based adhesive to one surface of the base ply whereby the orientation of the film and its strength are maintained; and
- a layer of water re-moistenable adhesive coating the other wettable surface of the base film ply and bonded thereto, said film ply being water impermeable whereby the tape, when the adhesive layer is moistened with water, can be applied in a moistened condition during a relatively long "open-time" period during which the adhesive remains in a moistened state in a condition to be applied to an article to be sealed.

5,780,151

RADIATION CROSSLINKABLE BRANCHED POLYESTER COMPOSITIONS WHICH ARE WATER-DISPERSIBLE AND PROCESSES

Richard Anthony Miller, and Scott Ellery George, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Dec. 8, 1995, Ser. No. 569,638

Int. Cl.⁶ C09J 7/02

U.S. Cl. 428—355 R

25 Claims

1. A water-dispersible adhesive composition comprising a branched water-dispersible radiation crosslinkable polyester composition, the polyester composition being water dispersible before and after crosslinking and made of the moieties of reaction products;

- at least one difunctional dicarboxylic acid which is not a sulfonamide;
- about 2 to 30 mole percent, based on the total of all acid, hydroxyl and amino equivalence, of residues of at least one difunctional sulfonamide containing at least one sulfonate group bonded to an aromatic ring wherein the functional groups are hydroxyl or carboxyl;
- at least one diol or a mixture of diol and diamine comprising:
 - about 0.1 to 85 mole percent, based on the total mole percent of diol and diamine moieties, of a diol and diamine having the formula $H-(OCH_2CH_2)_n-OH$ and $HRN((CH_2CH_2O)_n)NHR$ wherein n is 1 to about 20 and R is hydrogen or C_1-C_8 alkyl provided that the mole percent of such moieties is inversely proportional to the value of n ;
 - about 0.1 to about 15 mole percent, based on the total mole percent of diol moieties, of moieties of a poly(ethylene glycol) having the formula $H-(OCH_2CH_2)_n-OH$ wherein n is 2 to about 500, provided that the mole percent of such moieties is inversely proportional to the value of n ; and

(C) 0 to about 99 mole percent of the diol component being selected from the group consisting of a glycol containing two $-C(R')_2-OH$ groups wherein R' in the reactant is a hydrogen atom, an alkyl of 1 to 5 carbon atoms, or an alkyl group of 6 to 10 carbon atoms;

(IV) 0 to about 40 mole percent of a di functional monomer reactant selected from the group consisting of hydroxycarboxylic acids having one $-C(R-)_2-OH$ group, aminocarboxylic acids having one $-NRH$ group, and mixtures of said difunctional reactants wherein R in the reactant is hydrogen or an alkyl group of 1 to 6 carbon atoms;

(V) about 0.1 to 40 mole percent of a multifunctional reactant containing at least three functional groups selected from hydroxyl, carboxyl, amino and mixtures thereof; and

(VI) about 0.11 to 20 mole percent of an unsaturated mono- or dicarboxylic acid;

wherein the moieties of (I), (II), (III), (IV) and (V) are aliphatic, cycloaliphatic or aromatic, wherein the polymer contains substantially equal molar proportions of acid equivalents (100 mole percent) and diol or diol and diamine equivalents (100 mole percent), wherein all stated mole percents are based on the total of all acid, hydroxyl, and amino group containing reactants being equal to 200 mole percent, and wherein the polymer contains a portion of the acid-group containing reactants (100 mole percent acid) to hydroxyl and amino-group containing reactants (100 mole percent), wherein at least 20 weight percent of the groups linking the moieties of the monomeric units are ester linkages, wherein the inherent viscosity is at least 0.1 dL/g measured in a 60/40 parts by weight solution of phenol/tetrachloroethane at 25 ° C. and at a concentration of about 0.25 g of polymer in 100 ml of the solvent, wherein the glass transition temperature T_g is no greater than 20° C., and wherein the ring and ball softening point (RBSP) is at least 70° C.

5,780,152

HIGH TEMPERATURE RESISTANT BLENDED YARN
Takaharu Ichiryu, Otsu, and Elji Shinya, Kaizuka, both of Japan, assignors to Toyo Boseki Kabushiki Kaisha, and Soshin Lining Co., Ltd., both of Osaka-fu, Japan

Filed Feb. 19, 1997, Ser. No. 802,554

Claims priority, application Japan, Feb. 19, 1996, 8-030966

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—357

12 Claims

1. A high temperature resistant blended yarn exhibiting an ignition loss of 70% or less when heated in air at 850° C. for 30 minutes.

5,780,153

MELTBLOWN IONOMER MICROFIBERS AND NON-WOVEN WEBS MADE THEREFROM FOR GAS FILTERS
Richard Tien-Hua Chou, Wilmington; Patrick Stephen Ireland, Hockessin; Charles John Molnar, Wilmington, all of Del.; Hyun Sung Lim, Chesterfield, Va., and Hyunkook Shin, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 712,743, Sep. 12, 1996. This application

Jul. 25, 1997, Ser. No. 900,592

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—359

3 Claims

1. Microfibers, made from a polymer blend, consisting essentially of

- at least 10 weight percent of a copolymer of ethylene, 5 to 25 weight percent of (meth)acrylic acid, and optionally up to 40 weight percent of an alkyl (meth)acrylate whose alkyl groups have from 1 to 8 carbon atoms, having from 5 to 70 percent of the acid groups neutralized with metal ions, the copolymer having a melt index of from 5 to 1000 g/10 minutes
- the remainder being a polyolefin selected from the group consisting of polypropylene and polyethylene.

5,780,154

BORON NITRIDE FIBER AND PROCESS FOR PRODUCTION THEREOF

Yoshio Okano, and Hiroya Yamashita, both of Tsukuba, Japan, assignors to Tokuyama Corporation, Yamaguchi, Japan

PCT No. PCT/JP95/00500, § 371 Date Nov. 22, 1995, § 102(e) Date Nov. 22, 1995, PCT Pub. No. WO95/25834, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 20, 1995, Ser. No. 556,985

Claims priority, application Japan, Mar. 22, 1994, 6-050779 Int. Cl.⁶ B32B 9/00

U.S. Cl. 428—366

40 Claims



1. A boron nitride fiber comprising boron nitride having a multi-layered structure consisting of planes (C planes) each formed by linkage of 6-membered rings in the plane, in which boron and nitrogen are positioned alternately and bonded to each other, which fiber has a tensile strength of at least 1,400 MPa.

5,780,155

MELT-ADHESIVE COMPOSITE FIBERS, PROCESS FOR PRODUCING THE SAME, AND FUSED FABRIC OR SURFACE MATERIAL OBTAINED THEREFROM

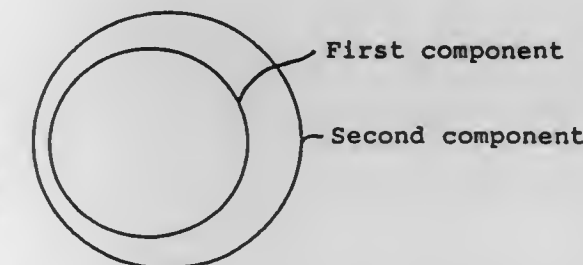
Sei Ishizawa, Moriyama; Masayasu Suzuki, Shiga-ken, and Hirokazu Terada, Moriyama, all of Japan, assignors to Chisso Corporation, Osaka-fu, Japan

Continuation-in-part of Ser. No. 501,309, Jul. 12, 1995, abandoned. This application Feb. 10, 1997, Ser. No. 798,370

Claims priority, application Japan, Aug. 11, 1994, 6-210629 Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—370

3 Claims



1. A melt-adhesive composite fiber for a surface material for medical or sanitary supplies comprising a first component comprising a crystalline polypropylene and a second component consisting essentially of a polyethylene, the components being arranged in a side-by-side or sheath-core relationship wherein the second component is continuously present on at least a part of the fiber surface in the lengthwise direction of the fiber, said composite fiber having helical crimps of 4 to 16/inch, a filamentary denier of 1.0 to 2.0, and an apparent cut length of 20 to 40 mm corresponding to a cut length of 28 to 80 mm, said composite fiber being subjected to a card processing.

5,780,156
BIOCOMPONENT FIBERS HAVING DISTINCT CRYSTALLINE AND AMORPHOUS POLYMER DOMAINS AND METHOD MAKING SAME
 Matthew B. Hoyt; Diane R. Kent, both of Arden, and James R. Bristow, Asheville, all of N.C., assignors to BASF Corporation, Mt. Olive, N.J.

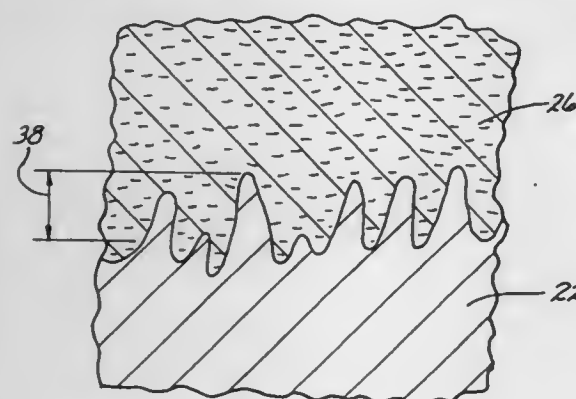
Filed Oct. 3, 1996, Ser. No. 725,417
 Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—373 10 Claims
 1. A bicomponent fiber comprising distinct cross-sectional domains, wherein one domain comprises a fiber-forming polyamide and one domain comprises a non-fiber-forming amorphous polymer and wherein the non-fiber-forming amorphous polymer is substantially surrounded by the fiber-forming polyamide.

5,780,157
COMPOSITE STRUCTURE
 Robert H. Tuffias, Los Angeles; Brian E. Williams, Simi Valley, and Richard B. Kaplan, Beverly Hills, all of Calif., assignors to Ultramet, Pacoima, Calif.

Filed Jun. 6, 1994, Ser. No. 254,515
 Int. Cl.⁶ B32B 9/00

U.S. Cl. 428—408 9 Claims



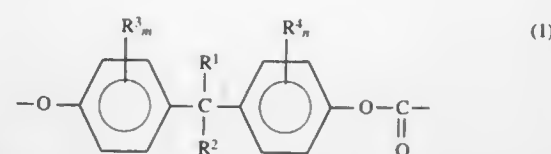
1. A high temperature corrosion resistant composite structure comprising:
 a refractory metallic layer having two sides, one of said sides having a roughened surface, said roughened surface comprising from approximately 500,000 to 15,000,000 free standing metallic grains per square centimeter; and
 a refractory structural composite shell comprising a matrix and filamentary inclusions tightly bonded to said roughened surface.

5,780,158
BIAXIALLY ORIENTED FILM TO BE LAMINATED ON A METAL

Takeo Asai; Takafumi Kudo; Koji Kubo; Yukihiko Minamihira, and Kinji Hasegawa, all of Sagami, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jul. 19, 1996, Ser. No. 684,935
 Int. Cl.⁶ B32B 15/08; 27/36; C08J 5/18

U.S. Cl. 428—412 20 Claims
 1. A biaxially oriented film to be laminated on a metal, which is a laminate film comprising:
 (A) a first layer of a polyester comprising ethylene terephthalate as a main recurring unit; and
 (B) a second layer formed from a composition of polyesters and a polycarbonate which consists essentially of a recurring unit represented by the following formula (1):



wherein
 R^1 and R^2 are independent from each other and selected from the group consisting of a hydrogen atom, an alkyl group having 1 to 5 carbon atoms and a cycloalkyl group having 5 to 6 ring carbon atoms, or R^1 and R^2 may be bonded together to form a cycloalkylene group having 5 to 6 ring carbon atoms with the carbon atom to which they are bonded,
 R^3 and R^4 are independent from each other and selected from the group consisting of an alkyl group having 1 to 5 carbon atoms, a phenyl group and a halogen atom, and m and n are independent from each other and are 0, 1 or 2,
 the polycarbonate and the polyesters being each contained in amounts of 20 to 50% by weight and 50 to 80% by weight, respectively, based on the total thereof; the polyesters consisting essentially of a first polyester comprising ethylene terephthalate as a main recurring unit and having a terminal carboxyl group concentration of more than 5 eq./10⁶ g and a second polyester comprising butylene terephthalate as a main recurring unit and having a terminal carboxyl group concentration of less than 20 eq./10⁶ g; and the first and second polyesters being each contained in an amount of 10 to 90% by weight based on the total thereof; and
 (C) the plane orientation coefficients of said first layer and said second layer are both in the range of 0.05 to 0.10.

5,780,159
PLASTIC OPTICAL COMPONENTS
 Monika Bauer; Hartmut Krüger, both of Berlin; Andreas Bräuer, Rabis, and Peter Dannberg, Jena, all of Germany, assignors to Fraunhofer-Gesellschaft zur Förderung der Angewandten Forschung e.V., Munich, Germany
 PCT No. PCT/DE95/01353, § 371 Date Jul. 30, 1996, § 102(e) Date Jul. 30, 1996, PCT Pub. No. WO96/11415, PCT Pub. Date Apr. 18, 1996

PCT Filed Sep. 28, 1995, Ser. No. 656,176
 Claims priority, application Germany, Oct. 8, 1994, 44 35 992.6

Int. Cl.⁶ G02B 1/04; C08L 79/04; C08G 73/06
 U.S. Cl. 428—422.8 17 Claims
 1. An optical element comprising plastic, wherein said plastic is a polycyanurate resin.

5,780,160
ELECTROCHROMIC DEVICES WITH IMPROVED PROCESSABILITY AND METHODS OF PREPARING THE SAME

Pierre-Marc Allemand; Barbara A. Bigelow; F. Randall Grimes, and Anoop Agrawal, all of Tucson, Ariz., assignors to Donnelly Corporation, Holland, Mich.

Filed Oct. 26, 1994, Ser. No. 330,090
 Int. Cl.⁶ B32B 17/00

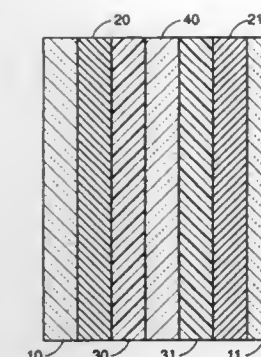
U.S. Cl. 428—426 25 Claims
 1. An electrochromic device comprising two opposed conducting electrodes, at least one of which is transparent, an electrochemically active layer disposed on an opposing face of one of said electrodes and an electrolyte disposed between said electrochemically active layer and an other opposing face of said electrodes, wherein said electrolyte contains an electrochromically-inert additive selected from the group consisting of reducing agents

5,780,162
ALUMINUM NITRIDE SUBSTRATE AND METHOD OF PRODUCING THE SAME

Seiji Toyoda; Yoshirou Kuromitsu; Kunio Sugamura, and Akira Nakabayashi, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jun. 13, 1995, Ser. No. 489,677
 Claims priority, application Japan, Jun. 13, 1994, 6-130296; Oct. 7, 1994, 6-243660

Int. Cl.⁶ B32B 15/00 18 Claims
 U.S. Cl. 428—428



and oxidizing agents in an effective amount to reduce or oxidize an electrochemically active material in said electrochemically active layer, wherein the reducing agents are selected from the group consisting of oxalic acid, ascorbic acid, mercaptans, hydrazines, amines, organo lithium and mixtures thereof and the oxidizing agents are selected from the group consisting of persulfates, peroxides, nitrosonium salts and mixtures thereof.

5,780,161
NON-ABSORBING ANTI-REFLECTIVE COATED (ARC) RETICLE USING THIN DIELECTRIC FILMS AND METHOD OF FORMING THE RETICLE

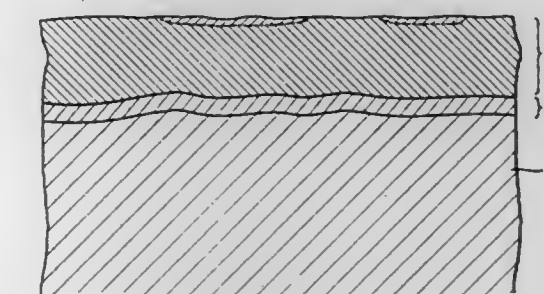
Sung-Mu Hsu, Lotung, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Nov. 6, 1996, Ser. No. 746,059
 Int. Cl.⁶ B32B 17/06; C03C 17/34

U.S. Cl. 428—426 16 Claims



1. A method for forming a reticle comprising:
 providing a transparent substrate, the transparent substrate having a first surface and a second surface, the first surface and the second surface being on opposite sides of the transparent substrate;
 forming upon the first surface of the transparent substrate a patterned metal layer;
 forming upon the second surface of the transparent substrate a two layer dielectric stack, the two layer dielectric stack having a first dielectric layer closer to the transparent substrate and a second dielectric layer formed directly upon the first dielectric layer, the first dielectric layer having an index of refraction greater than the index of refraction of either the transparent substrate or the second dielectric layer, the second dielectric layer having a thickness of about one-quarter a wavelength of light whose reflection is desired to be attenuated from the second surface.
 9. A reticle comprising
 a transparent substrate, the transparent substrate having a first surface and a second surface, the first surface and the second surface being on opposite sides of the transparent substrate;
 a patterned metal layer formed upon the first surface of the transparent substrate;
 a two-layer dielectric stack formed upon the second surface of the transparent substrate, the two-layer dielectric stack having a first dielectric layer closer to the transparent substrate and a second dielectric layer formed directly upon the first dielectric layer, the first dielectric layer having an index of refraction greater than the index of refraction of either the transparent substrate or the second dielectric layer, the second dielectric layer having a thickness of about one-quarter a wavelength of light whose reflection is desired to be attenuated from the second surface.



1. An aluminum nitride substrate comprising:
 (a) a sinter comprising aluminum nitride;
 (b) a glass-mixed Al₂O₃ layer comprising Al₂O₃ and glass, on said sinter; and
 (c) optionally an intervening layer comprising Al₂O₃, between said sinter and said glass-mixed Al₂O₃ layers, wherein the glass-mixed Al₂O₃ layer (b) comprises 0.01–15% by volume of glass, and glass in the glass-mixed Al₂O₃ layer is present in pores of the Al₂O₃ in the glass-mixed Al₂O₃ layer.

5,780,163
MULTILAYER COATING FOR MICROELECTRONIC DEVICES

Robert Charles Camilletti; Loren Andrew Haluska, and Keith Winton Michael, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 5, 1996, Ser. No. 660,344
 Int. Cl.⁶ B32B 9/04; 9/06

U.S. Cl. 428—446 34 Claims
 24. An article of manufacture comprising:
 an electronic device;
 a silica-containing ceramic coating on the surface of the electronic device;
 a silicon carbide ceramic coating on the surface of the silica-containing ceramic coating;
 a first porous silica-containing ceramic coating on the surface of the silicon carbide ceramic coating, wherein a substance comprising an opaque material or a filler is within the pores of the porous silica-containing ceramic coating;
 a metal layer or metal pattern on the surface of the opaque porous silica-containing ceramic coating; and
 a second porous silica-containing ceramic coating on the surface of the metal, wherein a substance comprising an opaque material or filler is within the pores of the second porous silica-containing ceramic coating.

5,780,164
COMPUTER DISK SUBSTRATE, THE PROCESS FOR
MAKING SAME, AND THE MATERIAL MADE
THEREFROM

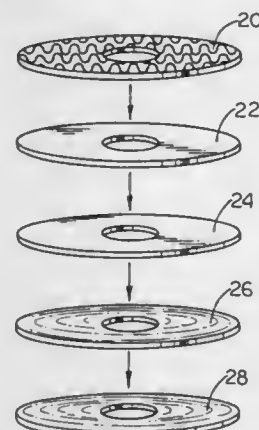
Aleksander J. Pyzik; Uday V. Deshmukh; Chan Han; Kevin J. Nilsen; Donald J. Perettie, and Arthur R. Prunier, Jr., all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 354,185, Dec. 12, 1994, abandoned. This application Jun. 29, 1995, Ser. No. 496,798

Int. Cl.⁶ B22F 3/26

U.S. Cl. 428—539.5

22 Claims



1. A hard drive disk substrate having a magnetic media deposited thereon comprising a multi-phase ceramic-metal composite material having at least two phases, at least one phase being a crystalline ceramic and at least one phase being free metal wherein the theoretical density of the hard drive disk substrate is greater than 98 percent.

5,780,165
BEARING STEEL BEARING MEMBER HAVING
EXCELLENT THERMAL RESISTANCE AND
TOUGHNESS

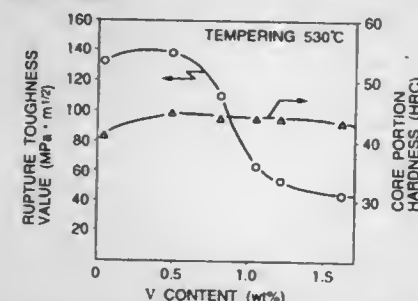
Shiho Fukumoto, Yasugi, and Hideki Nakamura, Yonago, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan
Filed Nov. 30, 1995, Ser. No. 565,044

Claims priority, application Japan, Apr. 27, 1995, 7-103839

Int. Cl.⁶ C22C 38/44; 38/46; F16C 33/30

U.S. Cl. 428—472.1

7 Claims



4. A bearing member composed of martensitic Fe-based bearing steel, comprising a carburized layer formed in part or the whole surface of said bearing member, and a core portion except said carburized layer, said core portion contains, by weight, not more than 0.1 to 0.3% carbon, not more than 1% silicon, not more than 1% manganese, 1 to 5% nickel, 3.5 to 7.0% chromium, at least one of tungsten and molybdenum and tungsten equivalent defined by $([W]+2[Mo])$ of which at least one is 3 to 12%, and not less than 0.5% but less than 1.0% vanadium, a ratio of Cv/Ceq being not more than 0.3 where Cv represents a carbon equivalent of vanadium defined by $0.2[V]$, and where Ceq represents a carbon equivalent of carbide-forming elements defined by $(0.063[Cr]+0.06[Mo]+0.033[W]+0.2[V])$, said bearing member being excellent in heat resistance and toughness.

5,780,166
ARRANGEMENT IN CONNECTION WITH A WEAR
RESISTANT COATING IN PARTICLE FEEDER AND
METHOD FOR PRODUCING THE SAME

Ivar Lund, Ottestad, Norway, assignor to AMECO International AS, Ottestad, Norway

PCT No. PCT/NO94/00195, § 371 Date Jun. 3, 1996, § 102(e)
Date Jun. 3, 1996, PCT Pub. No. WO95/15813, PCT Pub.
Date Jun. 15, 1995

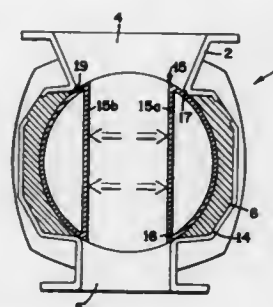
PCT Filed Dec. 6, 1994, Ser. No. 652,497

Claims priority, application Norway, Dec. 7, 1993, 934452

Int. Cl.⁶ B05B 15/04; B22D 19/14; B05D 7/22

U.S. Cl. 428—472.1

12 Claims



1. A wear-resistant coating arrangement in a rotating gate feeder comprising a housing with an inner wall and end caps secured to the housing at opposite ends thereof so as to define a housing interior, and a rotor mounted for rotation within the interior of the housing; and a wear-resistant coating cast directly onto the inner wall of the housing radially outside of the rotor.

5,780,167
MAGNETIC RECORDING MEDIUM HAVING A BINDER
COMPRISING A STAR BLOCK POLYMER WITH
DISPERSING GROUPS

William E. Bottomley, Essex, England, and Colin F. Norman, Austin, Tex., assignors to Imation Corp., Oakdale, Minn.

Filed Nov. 5, 1996, Ser. No. 741,753

Claims priority, application United Kingdom, Dec. 4, 1995, 9524760

Int. Cl.⁶ G11B 5/702

U.S. Cl. 428—521

12 Claims

1. A magnetic recording medium comprising a magnetizable coating provided on a substrate wherein the magnetizable coating comprises a magnetic pigment dispersed in a polymeric binder, said polymeric binder comprises a star block copolymer having a two phase morphology and comprising pendant dispersing groups, wherein said star block copolymer has the general formula:



in which;

X represents a polyfunctional coupling moiety;

each (A-B) represents a polymeric arm radiating from the polyfunctional coupling moiety X,

m has a number average value of at least 3

A represents a hard glassy polymeric segment having a $T_g \geq 75^\circ \text{C}$., and

B represents a soft rubbery polymeric segment having a $T_g \leq 25^\circ \text{C}$., which hard glassy polymeric segment is incompatible with the soft, rubbery polymeric segment and;

each arm (A-B) comprises one or more hard glassy segments and one or more soft, rubbery polymeric segments with the proviso that the hard, glassy polymeric segments comprise at least 50% of the total weight of the star block copolymer and the free ends of the arms (A-B) comprise a hard glassy polymeric segment, said dispersing group (s) being pendant to said hard polymeric segment, and wherein there are an average of from two to ten dispersing groups per polymeric arm.

5,780,168
POLYPROPYLENE COMPOSITION FOR LAMINATED
AND ORIENTED FILM AND LAMINATED AND
ORIENTED FILM THEREOF

Makoto Satoh; Ritsuo Setoh; Katsunari Inagaki, and Jun Obara, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 27, 1995, Ser. No. 429,900

Claims priority, application Japan, Apr. 28, 1994, 6-092317

Int. Cl.⁶ B32B 27/32; C08L 23/14

U.S. Cl. 428—516

2 Claims

1. A laminated and oriented film comprising a substrate and a surface layer of a propylene- α -olefin random copolymer composition comprising:

(A) from 75 to 95% by weight of a crystalline propylene random copolymer obtained by gas-phase polymerization of propylene and an α -olefin having from 4 to 10 carbon atoms, wherein the crystalline random copolymer contains components soluble in xylene at 20°C . in an amount less than 15% by weight, propylene in an amount from 73 to 97% by weight based upon the total weight of the copolymer, and α -olefin in an amount from 3 to 27% by weight, and wherein said crystalline propylene random copolymer does not contain ethylene, and

(B) from 5 to 25% by weight of a propylene random copolymer of propylene and an α -olefin having from 4 to 10 carbon atoms, wherein the propylene random copolymer contains propylene in an amount from 40 to 50% by weight and α -olefin in an amount from 50 to 60% by weight, has a molecular weight distribution (M_w/M_n) of less than 4.0, an intrinsic viscosity measured in tetralin at 135°C . of 1 to 2 dl/g, and a melt flow rate measured by the method of condition-14 according to JIS K7210, of 4 to 8 g/10 mins., and is obtained by the copolymerization of propylene and α -olefin using a solid catalyst component comprising Ti, Mg, a halogen and an electron donor in the presence of solvent, and

wherein the propylene- α -olefin random copolymer composition has a melt flow rate measured by the method of condition-14 according to JIS K7210 of 1 to 50 g/10 mins. and contains components soluble in xylene at 20°C . in an amount less than 30% by weight.

5,780,169

GOLF BALL

Hidekazu Hiraoka; Kuniyasu Horiuchi, both of Kobe; Yoshikazu Yabuki, Akashi; Yoshimasa Koizumi, and Kiyoto Maruoka, both of Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan
Continuation of Ser. No. 158,792, Dec. 1, 1993, abandoned.

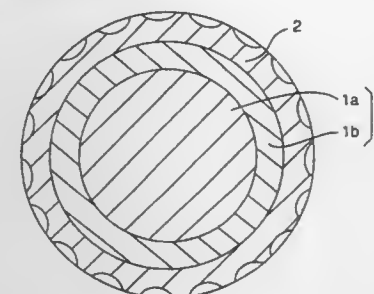
This application May 17, 1996, Ser. No. 650,033

Claims priority, application Japan, Dec. 1, 1992, 4-349862

Int. Cl.⁶ A63B 37/10

U.S. Cl. 428—517

10 Claims



1. A golf ball comprising a core 1 composed of a center 1a and an outer shell 1b, and a cover 2 covering said core wherein said center has a specific gravity of 0.2 to 0.79 and a diameter of 10 to 38 mm, said core has a weight of 32.0 to 39.0 g and has a diameter of 37 to 40 mm, and said cover has a thickness of 1.0 to 2.7 mm.

5,780,170
SYNCHRONIZING RING HAVING A SINTERED FRICTION
COATING

Detlev Gonia, Solingen; Marion Eckhardt, Possendorf/Boernchen, and Lothar Schneider, Coswig, all of Germany, assignors to Sintermetallwerk Krebsöge GmbH, Radevormwald, Germany

PCT No. PCT/EP95/00054, § 371 Date Jul. 10, 1996, § 102(e)
Date Jul. 10, 1996, PCT Pub. No. WO95/18877, PCT Pub.
Date Jul. 13, 1995

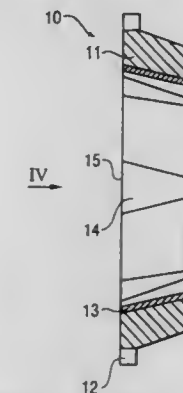
PCT Filed Jan. 7, 1995, Ser. No. 676,112

Claims priority, application Germany, Jan. 10, 1994, 44 00 431.1

Int. Cl.⁶ B22F 7/02

U.S. Cl. 428—565

20 Claims



1. A synchronizing ring, comprising:
a bearing ring comprised of sintered steel; and
a friction coating provided on the bearing ring and comprised of a friction material which is sintered and which comprises a matrix which is iron-based, from 0.5 to 10 percent by weight molybdenum in relation to the weight of the matrix, and from 20 to 50 percent by volume of graphite as a solid lubricant.

5,780,171

GAS TURBINE ENGINE COMPONENT

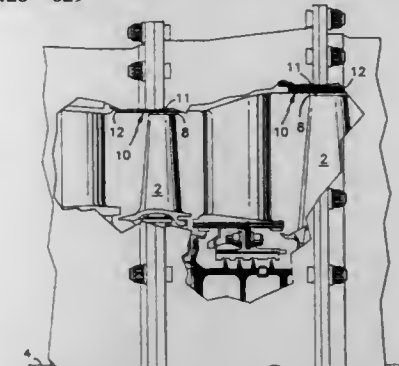
David M. Nissley, Marlborough; Harold D. Harter, Manchester, both of Conn.; Daniel R. Godin, East Waterboro, Me., and George E. Foster, Dudley, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 685,284, Jul. 23, 1996, Pat. No. 5,705,231, which is a division of Ser. No. 534,146, Sep. 26, 1995. This application Aug. 15, 1997, Ser. No. 911,789

Int. Cl.⁶ C25D 11/02

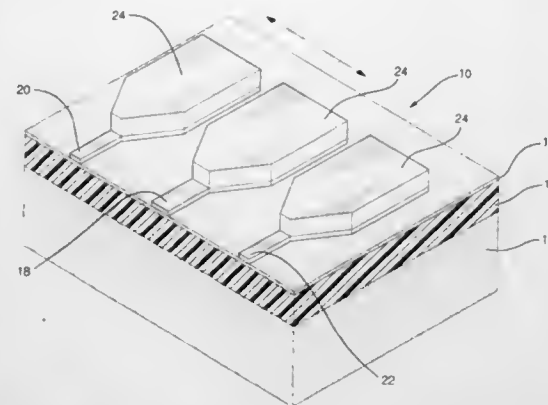
U.S. Cl. 428—629

2 Claims



1. A gas turbine engine component coated with a coating including a base coat foundation layer, a graded interlayer, and an abradable top layer, said coating made by the method comprising:
applying the base coat foundation layer on a MCrAlY bond-coated metallic substrate using a spray gun, said base coat foundation layer comprising a layer of material selected from the group consisting of zirconia stabilized with ceria, zirconia stabilized with magnesia, zirconia stabilized with calcia, zir-

conia stabilized with yttria, and mixtures thereof, wherein the distance between the gun and surface to be coated is varied during production of the base coat foundation layer to a thickness between about 5 mils and about 15 mils; applying the graded interlayer on the base coat foundation layer using a spray gun, said graded interlayer comprising a compositional blend of the base coat foundation layer and the abrasible top layer; wherein the distance between the gun and surface to be coated is held constant during production of the graded layer to a thickness between about 3 mils and about 10 mils; and applying the abrasible top layer on the graded interlayer using a spray gun, said abrasible top layer comprising zirconia, wherein the distance between the gun and surface to be coated is held constant during production of the abrasible top layer, wherein each layer comprises vertical segmentation, as well as powder particles which are spherical and hollow, prior to deposition, for increased abrasibility.



being coextensive in area with the overlying metal strip so as to provide a chemical stabilization barrier between said polyimide layer and said metal.

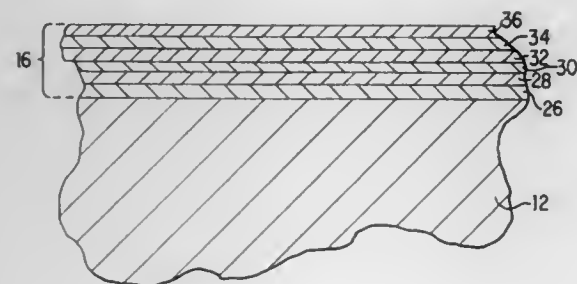
5,780,172

TIN COATED ELECTRICAL CONNECTOR

Julius C. Fister, Hamden; Szuchain Chen, Orange, both of Conn., and Abid A. Khan, Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 573,686, Dec. 18, 1995, abandoned. This application Jun. 3, 1996, Ser. No. 657,211 Int. Cl.⁶ B32B 15/01; 15/20; H01R 9/00; 13/02 U.S. Cl. 428—647

15 Claims



1. A composite material, comprising: a copper or a copper base alloy substrate; a coating layer consisting of tin or a tin base alloy overlying a portion of said substrate; and an electroplated barrier layer interposed between said substrate and said coating layer directly contacting said coating layer, said barrier layer being predominantly copper and containing from 25% to 40%, by weight, of nickel and having a thickness of from 0.2 micron to 2.5 microns.

5,780,173

DURABLE PLATINUM/POLYIMIDE SENSING STRUCTURES

Charles Robert Harrington; Marie Irene Harrington; Michel Farid Sultan, all of Troy, and John Richard Troxell, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 523,987, Sep. 6, 1995, Pat. No. 5,631,417. This application Sep. 4, 1996, Ser. No. 706,756 Int. Cl.⁶ B32B 15/00; 15/01; 3/00; B21C 37/00 U.S. Cl. 428—661

13 Claims

1. A thin film structure comprising a supported, thermally insulative polyimide layer, a layer of a metal oxide selected from the group consisting of aluminum oxide, chromium oxide and tantalum oxide and deposited on said polyimide layer and at least one metal strip on said metal oxide layer, said metal strip being composed of a metal selected from the group consisting of chromium, iron, nickel, palladium and platinum, the metal oxide layer

5,780,174

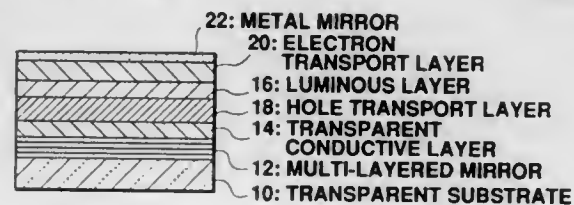
MICRO-OPTICAL RESONATOR TYPE ORGANIC ELECTROLUMINESCENT DEVICE

Shizuo Tokito, Nagoya; Koji Noda, Aichi-ken, and Yasunori Taga, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Oct. 25, 1996, Ser. No. 736,726 Claims priority, application Japan, Oct. 27, 1995, 7-280162 Int. Cl.⁶ H05B 33/12

U.S. Cl. 428—690

12 Claims



1. A micro-optical resonator organic electroluminescent device comprising: a multi-layered mirror having two alternately laminated layers with different refractive indexes; a transparent conductive layer as an anode formed on said multi-layered mirror; an organic compound layer of a single layer or a plurality of layers formed on said transparent conductive layer; and a metal mirror, as a cathode, capable of reflecting light, said multi-layered mirror and said metal mirror forming a micro-optical resonator for enhancing light output from said organic compound layer, wherein an optical length L of the micro-optical resonator is such that radiation from the micro-optical resonator has a single mode spectrum free of low mode components, said optical length L of said micro-optical resonator is given by the equation set forth below which takes into account the penetration depth of light into the inside of said multi-layered mirror,

$$L = \frac{\lambda}{2} \left(\frac{n_{eff}}{\Delta n} \right) + \sum n_i d_i \cos \theta$$

where λ is the wavelength of a resonating light, n_{eff} is the effective refractive index of the multi-layered mirror, Δn is in the difference of the refractive indexes of the two layers in the multi-layered mirror, n_i and d_i are the refractive index and the total thickness of the organic compound and the transparent conductive layer, and θ is the angle of the light incident on an interface between organic compound layers or between an organic compound layer and a transparent conductive layer, with respect to the normal to the interface, wherein the optical length L is 1.5 times a required emission wavelength.

5,780,175

ARTICLES COMPRISING MAGNETICALLY SOFT THIN FILMS AND METHODS FOR MAKING SUCH ARTICLES

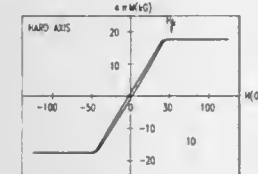
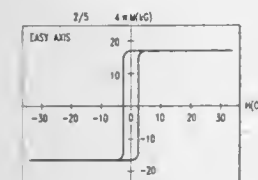
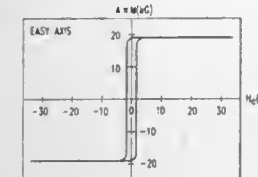
Li-Han Chen; Sungho Jin, both of Millington; Wei Zhu, Middlesex, and Robert Bruce van Dover, Maplewood, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 2, 1996, Ser. No. 595,543

Int. Cl.⁶ H01F 10/14; 10/10

U.S. Cl. 428—692

8 Claims



1. An article, comprising: a non-magnetic substrate; and a magnetically soft film supported by said substrate, said magnetically soft film including an alloy of iron-chromium-tantalum-nitrogen (Fe—Cr—Ta—N) and having an anisotropy field, H_k , within the range from approximately 10 to approximately 100 oersteds (Oe), wherein said alloy contains, by atomic percentage, Cr in the range from approximately 0.5% to 20%, Ta in the range from approximately 0.1% to 10%, N in the range from approximately 1% to 30%, the balance consisting essentially of Fe, with elements other than Fe, Cr, Ta and N being at most approximately 2% wherein a total, by weight percentage of Fe, Cr, Ta and N equals approximately 100%, wherein said article has been heat treated at a temperature of no more than approximately 150° C.

5,780,176

MAGNETORESISTANCE EFFECT ELEMENT

Hitoshi Iwasaki; Yuichi Ohsawa; Reiko Kondoh, all of Yokohama; Susumu Hashimoto, Ebina; Atsuhito Sawabe, Yokosuka; Yuzo Kamiguchi; Masashi Sahashi, both of Yokohama, and Hiromi Fuke, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 144,258, Nov. 1, 1993, Pat. No. 5,549,978. This application Jun. 28, 1996, Ser. No. 672,912

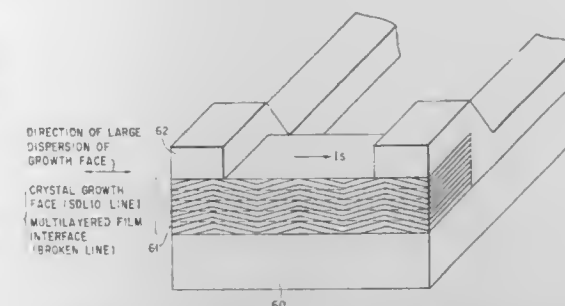
Claims priority, application Japan, Oct. 30, 1992, 4-315648; Mar. 12, 1993, 5-078919; Mar. 15, 1993, 5-053605; Mar. 15, 1993, 5-053612; Sep. 14, 1995, 7-237335

Int. Cl.⁶ G11B 5/66

U.S. Cl. 428—692

23 Claims

1. An exchange coupling film comprising: a ferromagnetic film comprising at least one element selected from the group consisting of Fe, Co and Ni; and an antiferromagnetic film; wherein an intermediate film comprising a ferromagnetic material containing at least one element selected from the group



consisting of Fe, Co and Ni, and at least one element selected from the group consisting of B, Al, Ca, Sc, Cu, Sr, Rh, Pd, Ag, La, Ce, Pr, Yb, Ir, Pt, Au, Pb, Li, Ti, Rb, V, Zr, K, Cr, Nb, Mo, Ba, Nd, Eu, Ta, W, C, Zr, Cd, Mg, Y, Tc, Ru, Gd, Tb, Dy, Ho, Er, Tm, Lu, Hf, Re, Os, Tl, Na, In and Ga, is provided at an interface between said ferromagnetic film and said antiferromagnetic film.

5,780,177

MAGNETIC THIN FILM AND THIN FILM MAGNETIC ELEMENT USING THE SAME

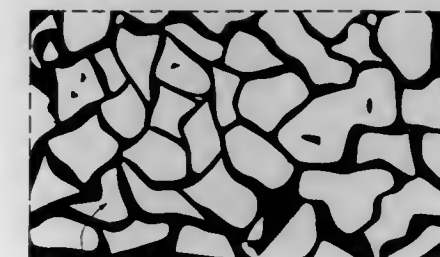
Hiroshi Tomita, Tokyo, and Tetsuhiko Mizoguchi, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 26, 1996, Ser. No. 721,722

Claims priority, application Japan, Sep. 28, 1995, 7-251334 Int. Cl.⁶ G11B 5/66

U.S. Cl. 428—692

8 Claims



1. A magnetic thin film comprising: a material with a composition according to the following chemical formula, $\{(Fe_{1-x}Co_x)_{1-y}(B_{1-x}Zr_x)_{1-y}\}_{1-a}RE_a$, wherein X represents at least one element selected from among the Group IVB elements in the IUPAC version of the Periodic Table, RE represents rare earth elements including Sm, and $0 < x < 1$, $0 < z < 1$, $0.05 < y < 0.36$, and $0 < a < 0.1$; wherein at least a part of said magnetic thin film is amorphous; and wherein said magnetic thin film is characterized by in-plane uniaxial magnetic anisotropy.

5,780,178

SCANDIA, YTTRIA-STABILIZED ZIRCONIA FOR ULTRA-HIGH TEMPERATURE THERMAL BARRIER COATINGS

Robert L. Jones, Fairfax, Va., assignor to The United States as represented by the Secretary of the Navy, Washington, D.C.

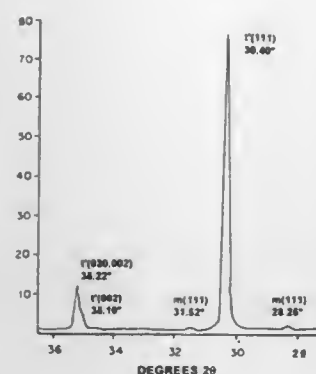
Filed Oct. 31, 1996, Ser. No. 741,006

Int. Cl.⁶ F01D 11/08

U.S. Cl. 428—697

9 Claims

1. A composite structure comprising a self-supporting substrate and



a thermal barrier coating on said substrate, said thermal barrier coating including zirconia stabilized with scandia and yttria, wherein the combined amount of scandia and yttria in the thermal barrier coating is about 4-10 mole-percent of the thermal barrier coating and wherein the amount of yttria is about 1-70 mole-percent of the combined amount of scandia and yttria.

5,780,179

FUEL CELL SYSTEM FOR USE ON MOBILE BODIES
Takafumi Okamoto, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

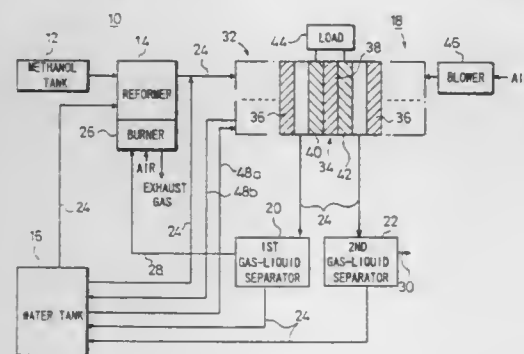
Filed Jun. 25, 1996, Ser. No. 668,300

Claims priority, application Japan, Jun. 26, 1995, 7-159613

Int. Cl.⁶ H01M 8/06

U.S. Cl. 429-20

19 Claims



1. A fuel cell system for use on a mobile body, comprising:
a fuel cell stack comprising a plurality of fuel cells each having an ion exchange membrane, and an anode and a cathode which sandwich said ion exchange membrane therebetween;
a water reservoir for storing water to humidify a fuel gas to be supplied to said fuel cell stack;
gas-liquid separating means for separating substances discharged from said fuel cell stack into gases and water and supplying the separated water to said water reservoir; and
a reformer for reforming a hydrocarbon with steam to generate a hydrogen gas as said fuel gas, wherein water is supplied to the reformer from said reservoir for producing said steam, said fuel cell stack having a fuel gas utilization ratio sufficient to cause an amount of the separated water discharged from said fuel cell stack to at least equal an amount of the water being supplied to said fuel cell stack and said reformer.

5,780,180
SEALED ALKALINE STORAGE BATTERY
Miho Okamoto, Sakai; Shinji Hamada, Hirakata, and Mune-hisa Ikoma, Shiki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

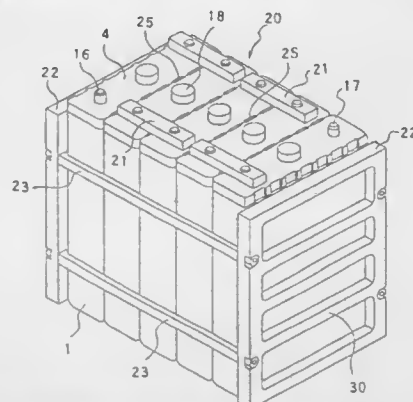
Filed Oct. 23, 1996, Ser. No. 735,577

Claims priority, application Japan, Oct. 24, 1995, 7-275332

Int. Cl.⁶ H01M 2/04

U.S. Cl. 429-175

11 Claims



1. A sealed alkaline storage battery comprising:
an electrode group comprising positive electrodes and negative electrodes which are piled alternately and separators sandwiched therebetween;
a battery case containing said electrode group therein; and
a lid for sealing an opening portion of said battery case, wherein said battery case or said lid is made of a polymer alloy containing polyphenylene ether and an olefin resin as main components, said olefin resin occupying 20-60 wt % of the whole polymer alloy.

5,780,181

NONAQUEOUS SECONDARY BATTERY
Yoshio Idota; Masayuki Mishima; Yukio Miyaki; Tadahiko Kubota, and Tsutomu Miyasaka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 326,365, Oct. 20, 1994, Pat. No. 5,618,640.

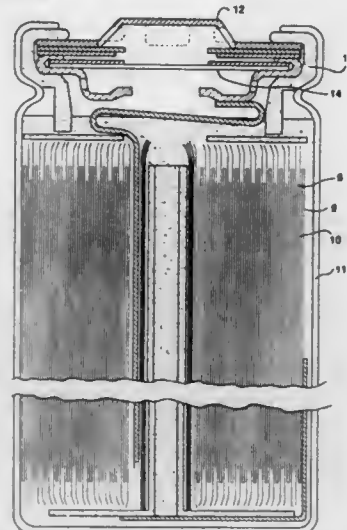
This application Nov. 26, 1996, Ser. No. 756,628

Claims priority, application Japan, Oct. 22, 1993, HEI. 5-264995; Jan. 27, 1994, HEI. 6-7760; Feb. 24, 1994, HEI. 6-26745; Feb. 28, 1994, HEI. 6-30206; Mar. 11, 1994, HEI. 6-66422

Int. Cl.⁶ H01M 6/14; 4/48

U.S. Cl. 429-194

8 Claims



1. A nonaqueous secondary battery comprising a positive electrode active material, a negative electrode active material, and a

nonaqueous electrolyte containing a lithium salt, wherein said negative electrode active material mainly comprises an amorphous oxide containing at least two atoms selected from the group consisting of B, Al, Ga, In, Tl, Si, Ge, Sn, Pb, P, As, Sb, and Bi and at least one of O, S, Se and Te, and wherein the negative electrode active material has an X-ray diffraction pattern using CuK α rays that shows a broad scattering band with peaks between 20° and 40° in terms of 2 θ .

5,780,182

PROPYLENE CARBONATE BASED ELECTROLYTE FOR LITHIUM ION ELECTROCHEMICAL CELL

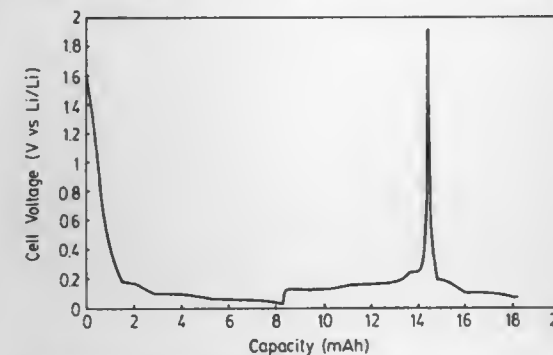
Jeremy Barker, and Feng Gao, both of Henderson, Nev., assignors to Valence Technology, Inc., Henderson, Nev.

Filed Nov. 4, 1996, Ser. No. 742,398

Int. Cl.⁶ H01M 10/40

U.S. Cl. 429-197

32 Claims



1. An electrochemical cell comprising:
an anode comprising a carbon anode active material comprising graphite, coke, or mixtures thereof, and a binder;
a cathode; and
an electrolyte, that is interposed between the anode and cathode, that comprises a salt and a solvent mixture comprising about a 20:80 to 80:20 weight ratio of propylene carbonate and 4,5-dichloroethylene carbonate.

5,780,183

AGENT FOR MAINTAINING AND RECOVERING THE FUNCTION OF LEAD STORAGE BATTERY AND ELECTROLYTE FOR LEAD STORAGE BATTERY USING THE SAME

Katsuchi Komoda, Toyonaka, Japan, assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, and K-TEC Co., Ltd., Osaka, both of Japan

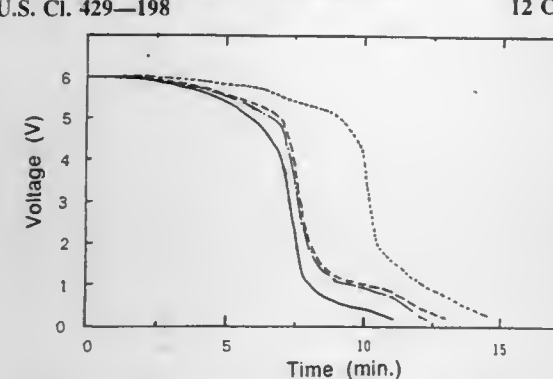
Continuation of Ser. No. 378,477, Jan. 26, 1995, Pat. No. 5,738,956. This application Nov. 6, 1996, Ser. No. 744,285

Claims priority, application Japan, Jan. 28, 1994, 6-8090

Int. Cl.⁶ H01M 10/08

U.S. Cl. 429-198

12 Claims



1. A method for maintaining and recovering the function of a lead storage battery, comprising the steps of combining a metal

5,780,184

NEGATIVE ELECTRODE FOR AN ALKALINE CELL
Isabelle Coco, Talence Cedex; Jean-Michel Cocciantelli, Bordeaux, and Jean-Jacques Villenave, Talence Cedex, all of France, assignors to SAFT, Romainville, France

Continuation-in-part of Ser. No. 429,221, Apr. 25, 1995, abandoned. This application Jun. 26, 1996, Ser. No. 668,315

Claims priority, application France, Apr. 24, 1995, 95 04871

Int. Cl.⁶ H01M 4/62; 4/58

U.S. Cl. 429-217

7 Claims

1. A negative electrode for a Ni-MH alkaline cell, comprising a current collector supporting a paste containing a hydrogen-combinable alloy and a binder, wherein said binder is a polymer containing hydrophilic and hydrophobic groups, wherein said polymer is an acrylic homopolymer containing non-ionic aliphatic groups exclusively, an acrylic copolymer containing non-ionic aliphatic groups exclusively, or an acrylic terpolymer containing non-ionic aliphatic groups exclusively.

5,780,185

CATHODE MATERIALS FOR LITHIUM BATTERIES

AND METHODS FOR PRODUCING THE SAME
Naohiko Oki; Minoru Noguchi; Atsushi Demachi; Kenji Sato; Eisuke Komazawa, and Kazuhiro Araki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

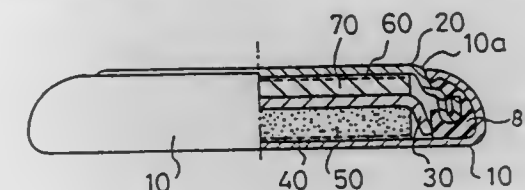
Continuation-in-part of Ser. No. 253,924, Jun. 3, 1994, abandoned. This application Oct. 6, 1995, Ser. No. 540,127

Claims priority, application Japan, Jun. 7, 1993, 5-159982; May 11, 1994, 6-120782; Oct. 7, 1994, 6-268107

Int. Cl.⁶ H01M 4/48; 4/52

U.S. Cl. 429-218

20 Claims



1. A battery cathode of a lithium battery comprising:
a conductive agent, a binding agent, and a solid solution comprising V₂O₅, CoO₂, P₂O₅, MO, wherein M represents an alkaline earth metal element, and at least one lithium compound selected from the group consisting of lithium-oxygen compounds, lithium halides and lithium oxygen acid salts, wherein the amount of Li ions of the Li compound is 2 mols or less per mol of V₂O₅.

5,780,186

HIGH PERFORMANCE ZINC ANODE FOR BATTERY APPLICATIONS

John E. Casey, Jr., League City, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

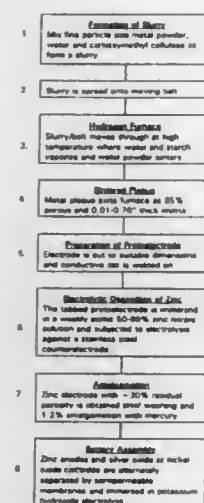
Filed May 9, 1996, Ser. No. 649,858

Int. Cl.⁶ H01M 4/42; 4/66

U.S. Cl. 429-229

18 Claims

1. An electrode comprising an essentially electrochemically inert substrate chosen from the group consisting of nickel, copper and



5,780,187
REPAIR OF REFLECTIVE PHOTOMASK USED IN SEMICONDUCTOR PROCESS
 Christophe Pierrat, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
 Filed Feb. 26, 1997, Ser. No. 806,191
 Int. Cl.⁶ G03F 9/00
 U.S. Cl. 430—5

14 Claims

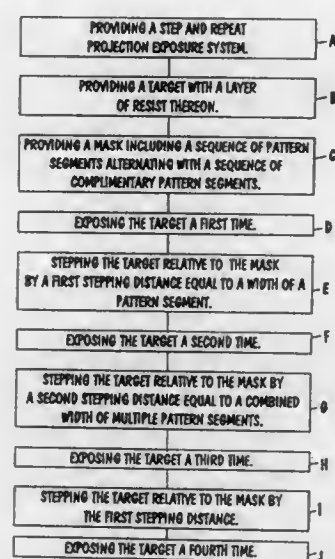
1. A method for repairing a reflective photomask used in a lithographic semiconductor fabrication process, the photomask having a first area comprising a first material, wherein a first defect occurs in the first area, the first defect characterized as an indentation in the first area where material is missing, the method comprising the steps of:

depositing into the indentation characterizing the first defect a second material having substantially the same reflectivity and phase response under operating conditions of the lithographic semiconductor fabrication process as the first material; and planarizing the first area to provide a common surface profile between the second material and first material in the first area.

5,780,188
LITHOGRAPHIC SYSTEM AND METHOD FOR EXPOSING A TARGET UTILIZING UNEQUAL STEPPING DISTANCES
 J. Brett Rolson, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Aug. 22, 1997, Ser. No. 916,833
 Int. Cl.⁶ G03F 9/00; G03B 27/42
 U.S. Cl. 430—30

20 Claims



1. A method for exposing a layer of resist on a target comprising: providing a mask comprising an alternating array of first pattern segments and second pattern segments; exposing the resist by projecting exposure energy through the mask onto the target; stepping the target by a first distance equal to a width of a pattern segment; exposing the resist by projecting exposure energy through the mask onto the target; stepping the target by a second distance equal to a combined width of multiple pattern segments; and exposing the resist by projecting exposure energy through the mask onto the target.

5,780,189
APPARATUS AND METHOD FOR CONTROLLING THE CHEMICAL ACTIVITY OF PROCESSING SOLUTION IN A PHOTOGRAPHIC PROCESSING APPARATUS
 Christopher Barrie Rider, Mitcham, England, assignor to Eastman Kodak Company, Rochester, N.Y.
 Continuation of Ser. No. 515,768, Aug. 15, 1995, abandoned, which is a continuation of Ser. No. 190,062, Jan. 28, 1994, abandoned. This application Jul. 10, 1997, Ser. No. 891,241
 Claims priority, application United Kingdom, Aug. 1, 1991, 9116625

Int. Cl.⁶ G03C 5/02; G03D 3/00

U.S. Cl. 430—30

14 Claims

1. A method of controlling the chemical activity of processing solutions used in a photographic processing apparatus, the apparatus comprising a film processing stage in which an exposed photographic film is processed and a subsequent second stage including measuring means for measuring the optical transmittance of an image on the film, the method including the step of measuring the transmittance of the image, and using the measured transmittance information for converting the image into a desired format in said subsequent second stage, characterized by the step of controlling the removal of by-products formed in the film processing stage and its attached subsystems in response to the transmittance information to maintain concentration of said by-products at a predetermined level.

5,780,190
MAGNETIC IMAGE CHARACTER RECOGNITION PROCESSES WITH ENCAPSULATED TONERS
 Nancy A. Listigovers, Oakville; Richard P. N. Veregin; Fernando P. Yulo, both of Mississauga, and Kayong Koch, Scarborough, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1989, Ser. No. 445,221
 The portion of the term of this patent subsequent to Feb. 28, 2011, has been disclaimed.
 Int. Cl.⁶ G03G 19/00

U.S. Cl. 430—39

39 Claims

1. A process which comprises generating character images in a magnetic image character recognition device, developing the images with an encapsulated magnetic ink comprised of a core comprised of a polymer and magnetite and wherein the core is encapsulated within a polymeric shell; transferring the images to a substrate; fusing the images thereto; and subsequently processing the substrate with magnetic ink characters thereon in a reader/sorter device.

5,780,191
MULTICOLOR IMAGE FORMING METHOD
 Osamu Ide, Minami-Ashigara, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
 Filed Jan. 9, 1997, Ser. No. 780,896
 Claims priority, application Japan, Jan. 18, 1996, 8-006863
 Int. Cl.⁶ G03G 13/01

U.S. Cl. 430—45

16 Claims

1. A method of forming fixed layers of a multi-color image having an image portion and a non-image portion and in which a plurality of color toner layers are fixed onto a transfer member to form the image portion, the method comprising the steps of: forming a transparent toner layer on the entire surface of a photosensitive member; forming a plurality of color toner layers on the transparent toner layer; transferring the plurality of color toner layers and the transfer toner layer onto the transfer member; and fixing the plurality of color toner layers and the transparent toner layer simultaneously to form the multi-color image, wherein a mean surface roughness (Ra) of the fixed layers is 0.0<Ra<1.5 μm and a maximum surface roughness (RMax) of the fixed layers is 0.0<RMax<10 μm, and wherein a relation between the mean surface roughness (Ra) obtained when said image is fixed in a case in which said color toner layers and said transparent toner layer are provided and a mean surface roughness (Ra') obtained when said image is fixed in a case in which said color toner layers are provided and said transparent toner layer is excluded satisfies 0.0<Ra<0.7Ra'.

5,780,192
ELECTROPHOTOGRAPHIC ELEMENTS EXHIBITING REDUCED NUMBERS OF BLACK SPOTS IN DISCHARGE AREA DEVELOPMENT SYSTEMS
 Marie B. O'Regan, Rochester; Anne F. Lalmore, Hilton; Jeffrey R. Murray, Palmyra; Louis J. Sorriero, Rochester; Albert V. Buettner, Rochester, and David S. Weiss, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 13, 1997, Ser. No. 800,247
 Int. Cl.⁶ G03G 5/05

U.S. Cl. 430—58

11 Claims

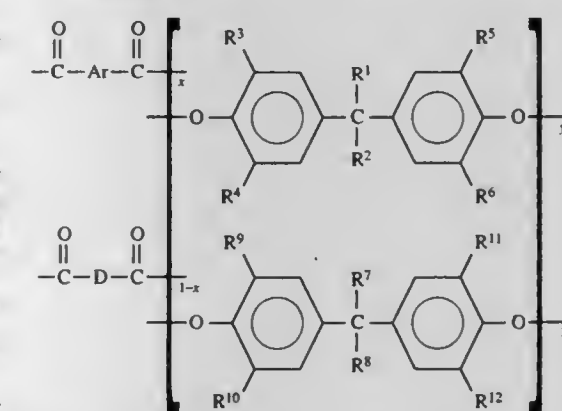
1. A multiactive photoconductive element comprising, in the following order,
 (A) a conductive layer,
 (B) an aggregate charge generation layer in direct physical contact with the conductive layer; wherein the charge generation layer contains (i) a binder and, (ii) based on the total solid

content of the charge generation layer, 4 to 10 weight percent of an adhesive polymer selected from the group consisting of:
 (a) polyesters prepared from units derived from at least one aromatic dicarboxylic acid component and at least one diol component, at least one of said acid or diol components being a branched monomer selected from the group consisting of an isophthalic acid component or a branched-chain alkylene diol having the formula:



in which R is a branched-chain alkylene group, and

(b) polyester copolymers prepared from units derived from at least one aromatic dicarboxylic acid component and at least one of said acid or said diol components being a mixture of at least two different acids or two different diols, respectively, a copolyester is obtained, and at least one of said acid or one of said diol components being selected from the group consisting of a branched monomer as defined above or a cycloaliphatic diol; and
 (c) a charge transport layer comprising a binder according to formula II:



wherein

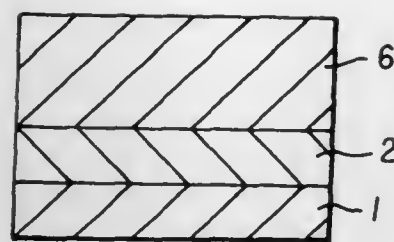
Ar represents 1,4-phenylene, 1,3-phenylene, 5-*t*-butyl-1,3-phenylene and 1,1,3-trimethyl-3-phenylindanylidene.
 D represents alkylene, linear or branched, or cycloalkyl, having from 4 to about 12 carbons;
 R¹, R², R⁷, and R⁸ represent H, alkylene having 1 to 4 carbon atoms, cyclohexylidene, norbornylidene, phenylindanylidene, perfluoroalkyl having 1 to 4 carbon atoms, α,α-dihydrofluoroalkyl having 1 to 4 carbon atoms, and α,α,ω-hydrofluoroalkyl having 1 to 4 carbon atoms; and
 R³, R⁴, R⁵, R⁶, R⁹, R¹⁰, R¹¹, and R¹² represent, H, and alkyl having from 1 to about 6 carbons; x is from 0 to 0.8; and y is from 0 to 1.

5,780,193
ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR WITH CONDUCTIVE BORON POLYMER
 Shinjiro Suzuki, and Sumitaka Nogami, both of Nagano, Japan, assignors to Fuji Electric Co., Ltd., Japan
 Filed Aug. 12, 1997, Ser. No. 909,519
 Claims priority, application Japan, Aug. 13, 1996, 8-213355
 Int. Cl.⁶ G03G 5/14

U.S. Cl. 430—62

3 Claims

1. An electrophotographic photoconductor comprising:
 a conductive substrate;
 an intermediate layer formed on said conductive substrate; and
 a photosensitive layer formed on said intermediate layer,



wherein said intermediate layer comprises a conductive boron polymer.

5,780,194

ELECTROPHOTOSENSITIVE MATERIAL

Masato Katsukawa; Akiyoshi Urano; Ayako Sugase; Mitsuo Ihara; Ichiro Yamazato, and Yuka Nakamura, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Apr. 9, 1996, Ser. No. 629,634

Claims priority, application Japan, Apr. 18, 1995, 7-092776; Apr. 18, 1995, 7-092777

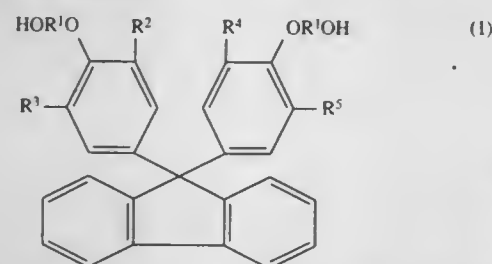
Int. Cl.⁶ G03G 5/09; 5/05

U.S. Cl. 430—83

3 Claims

I. An electrophotosensitive material comprising a conductive substrate and a photosensitive layer provided on the conductive substrate, the photosensitive layer comprising:

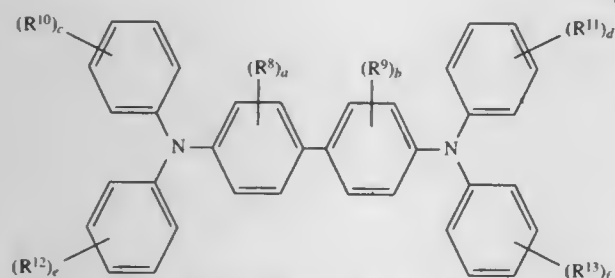
(I) a binding resin comprising a polyester resin which is a linear polymer obtained by using a dihydroxy compound represented by the formula 1:



wherein R¹ is an alkylene group having 2 to 4 carbon atoms, and R², R³, R⁴ and R⁵ are the same or different and indicate a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an aryl group or an aralkyl group;

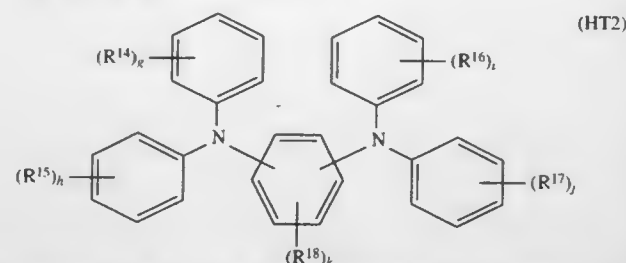
(II) an electric charge generating material; and

(III) at least one of a hole transferring material selected from the group consisting of compounds (HT1) to (HT13) represented by the formulas:

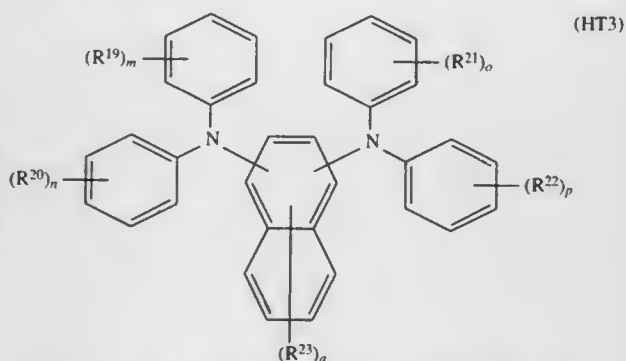


wherein R⁸, R⁹, R¹⁰, R¹¹, R¹² and R¹³ are the same or different and indicate a halogen atom, an alkyl group, an alkoxy group or an aryl group, the alkyl group and the alkoxy group can be substituted by halogen, amino, hydroxyl, optionally esterified carboxyl, cyano or alkoxy having 1 to 6 carbon atoms, the aryl group can be substituted by halogen, amino, hydroxyl, optionally esterified carboxyl, cyano, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms or alkenyl having 2 to 6 carbon atoms which may have an aryl group; and g, h, i, j and k are the same or different and indicate an integer of 0 to 5,

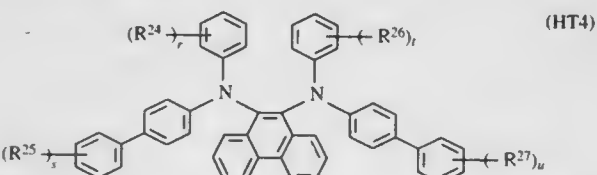
carbon atoms or alkenyl having 2 to 6 carbon atoms which can have an aryl group; and a, b, c, d, e and f are the same or different and indicate an integer of 0 to 5,



wherein R¹⁴, R¹⁵, R¹⁶, R¹⁷ and R¹⁸ are the same or different and indicate a halogen atom, an alkyl group, an alkoxy group or an aryl group, the alkyl group and the alkoxy group can be substituted by halogen, amino, hydroxyl, optionally esterified carboxyl, cyano or alkoxy having 1 to 6 carbon atoms, the aryl group can be substituted by halogen, amino, hydroxyl, optionally esterified carboxyl, cyano, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms or alkenyl having 2 to 6 carbon atoms which may have an aryl group; and g, h, i, j and k are the same or different and indicate an integer of 0 to 5,

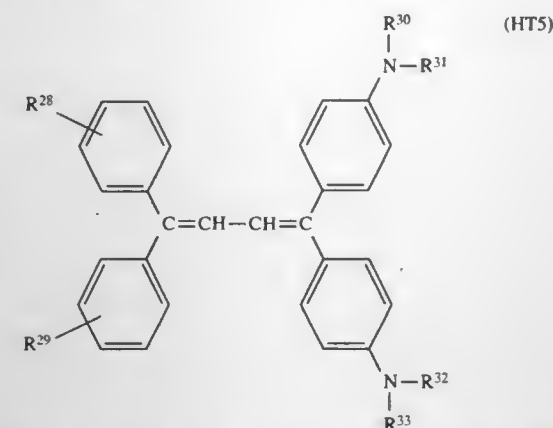


wherein R¹⁹, R²⁰, R²¹, and R²² are the same or different and indicate a halogen atom, an alkyl group, an alkoxy group or an aryl group, the alkyl group and the alkoxy group can be substituted by halogen, amino, hydroxyl, optionally esterified carboxyl, cyano or alkoxy having 1 to 6 carbon atoms, the aryl group can be substituted by halogen, amino, hydroxyl, optionally esterified carboxyl, cyano, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms or alkenyl having 2 to 6 carbon atoms which may have an aryl group; R²³ are the same or different and indicate a halogen atom, a cyano group, a nitro group, an alkyl group, an alkoxy group or an aryl group, the alkyl group and the alkoxy group can be substituted by halogen, amino, hydroxyl, optionally esterified carboxyl, cyano, or alkoxy having 1 to 6 carbon atoms and the aryl group can be substituted by halogen, amino, a hydroxyl, optionally esterified carboxyl, cyano, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms or alkenyl having 2 to 6 carbon atoms which may have an aryl group; m, n, o and p are the same or different and indicate an integer of 0 to 5; and q is an integer of 0 to 6,

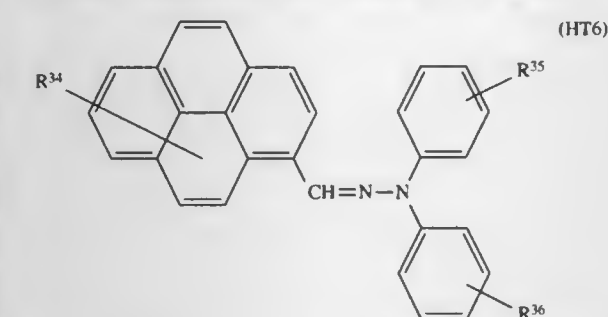


wherein R²⁴, R²⁵, R²⁶, and R²⁷ are the same or different and indicate a halogen atom, an alkyl group, an alkoxy group or an aryl group, the alkyl group and the alkoxy group can be substituted by halogen, amino, hydroxyl, optionally esterified carboxyl, cyano, or alkoxy having 1 to 6 carbon atoms, and the aryl group can be substituted by halogen, amino, hydroxyl, optionally esterified carboxyl, cyano, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms or alkenyl having 2 to 6 carbon atoms which may have an aryl group; and r, s, t and u are the same or different and indicate an integer of 0 to 5,

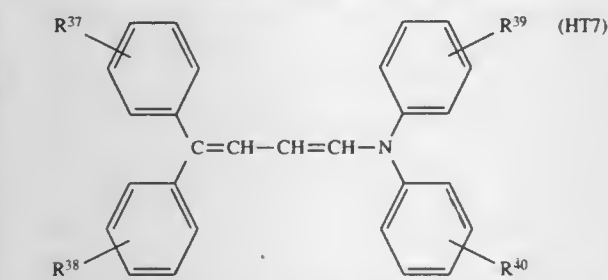
have an aryl group; and r, s, t and u are the same or different and indicate an integer of 0 to 5,



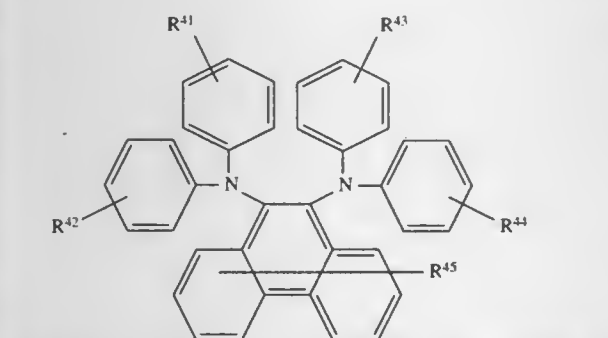
wherein R²⁸ and R²⁹ are the same or different and indicate a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group; and R³⁰, R³¹, R³² and R³³ are the same or different and indicate a hydrogen atom, an alkyl group or an aryl group,



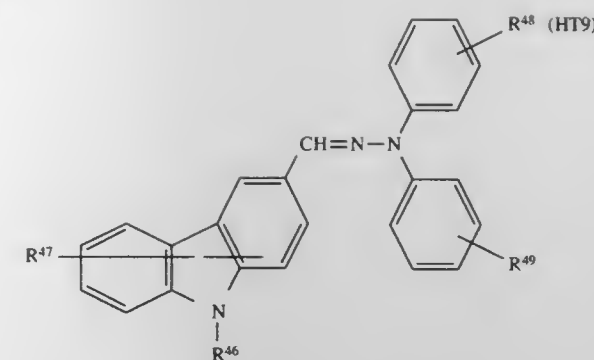
wherein R³⁴, R³⁵ and R³⁶ are the same or different and indicate a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group,



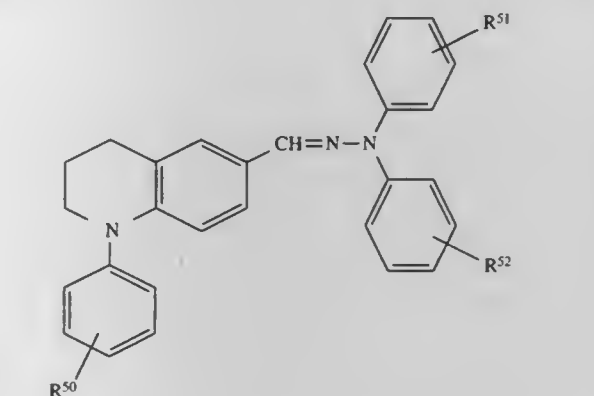
wherein R³⁷, R³⁸, R³⁹ and R⁴⁰ are the same or different and indicate a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group,



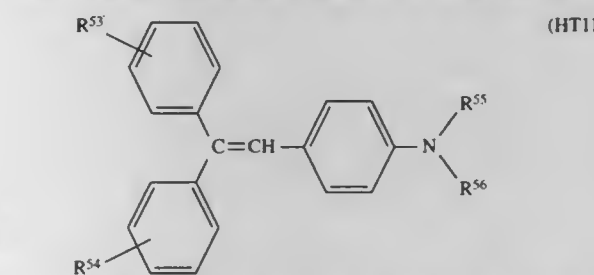
wherein R⁴¹, R⁴², R⁴³, R⁴⁴ and R⁴⁵ are the same or different and indicate a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group,



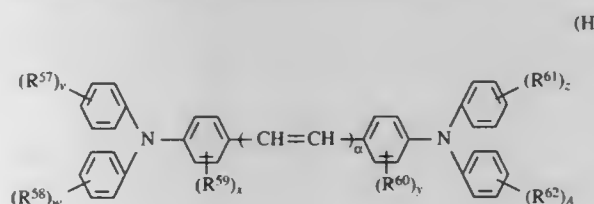
wherein R⁴⁶ is a hydrogen atom or an alkyl group; and R⁴⁷, R⁴⁸ and R⁴⁹ are the same or different and indicate a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group,



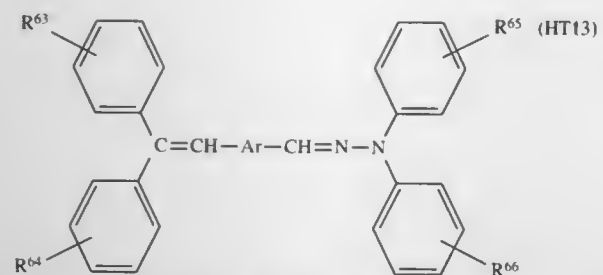
wherein R⁵⁰, R⁵¹ and R⁵² are the same or different and indicate a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group,



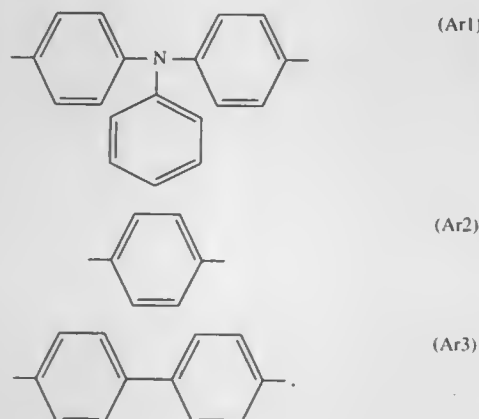
wherein R⁵³ and R⁵⁴ are the same or different and indicate a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group; and R⁵⁵ and R⁵⁶ are the same or different and indicate a hydrogen atom, an alkyl group or an aryl group,



wherein R⁵⁷, R⁵⁸, R⁵⁹, R⁶⁰, R⁶¹ and R⁶² are the same or different and indicate an alkyl group or an alkoxy group, or an aryl group; α is an integer of 1 to 10; and v, w, x, y, z and A are the same or different and indicate 0 to 2, and



wherein R^{63} , R^{64} , R^{65} , and R^{66} are the same or different and indicate a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group; Ar is a group (Ar1), (Ar2) or (Ar3) represented by the formulas:



5,780,195

TONER RESIN COMPOSITIONS

Hildeberto Nava, Cary, N.C., assignor to Reichold Chemicals, Inc., Durham, N.C.

Filed Jun. 17, 1996, Ser. No. 664,853

Int. Cl.⁶ C03G 9/00; 63/00; C08G 63/00; C08F 20/00; C08K 5/49
U.S. Cl. 430—110 35 Claims

1. A toner resin composition comprising:
above about 50 to 99 percent by weight of a polyester resin formed from a reaction of a polybasic acid or anhydride and at least one polyhydric alcohol, wherein said at least one polyhydric alcohol includes a bisphenol; and
a polyfunctional epoxy resin crosslinked to said polyester resin, said polyfunctional epoxy resin being the reaction product of a polyfunctional halohydrin and a component selected from the group consisting of a phenol, a polyhydric phenol, a novolac resin, and mixtures thereof;
wherein said polyfunctional epoxy resin and said polyester resin have become crosslinked in the presence of a catalyst.

5,780,196

TONER AND LIQUID DEVELOPER, LIQUID DEVELOPER, AND METHOD OF PRODUCING SAME

Toshimitsu Fujiwara, Kobe; Shuji Iino, Muko; Masaharu Kanazawa, Suita; Seishi Ojima, and Hidetoshi Miyamoto, both of Takatsuki, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Dec. 23, 1996, Ser. No. 780,017

Claims priority, application Japan, Dec. 27, 1995, 7-341480
Int. Cl.⁶ G03G 9/087

U.S. Cl. 430—137 15 Claims

1. A method for producing a liquid developer comprising steps of:
adding a colored resin to a nonpolar dispersion medium;
elevating the temperature of said nonpolar dispersion medium above the melting point of said resin;

producing a resin emulsion by mixing said heated nonpolar dispersion medium including said resin therein;
cooling said resin emulsion so as to obtain colored resin microparticles; and
preparing a liquid developer by using the obtained colored resin microparticles.

5,780,197

ELECTROPHOTOGRAPHIC TONER AND PROCESS FOR THE PRODUCTION THEREOF

Hideyuki Kubota, Shizuoka-ken, Japan, assignor to Tomoe-gawa Paper Co., Ltd., Shizuoka-ku, Japan

Division of Ser. No. 647,744, May 15, 1996, Pat. No. 5,702,859. This application Sep. 17, 1997, Ser. No. 931,947

Claims priority, application Japan, May 16, 1995, 7-141165; Nov. 22, 1995, 7-350509; Mar. 26, 1996, 8-70537; Apr. 18, 1996, 8-120985

Int. Cl.⁶ G03G 9/097

U.S. Cl. 430—137

7 Claims

1. A process for the production of an electrophotographic toner containing a binder resin and a colorant as main components, which comprises solution-polymerizing, suspension-polymerizing or emulsion-polymerizing a vinyl-containing monomer in which a Fischer-Tropsch wax formed from natural gas and/or a Fischer-Tropsch wax formed from coal are/is dissolved in advance, to prepare the binder resin.

5,780,198

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Takahiro Goto; Kazunobu Katoh, and Minoru Sakai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 950,761, Sep. 24, 1992, abandoned, which is a continuation of Ser. No. 584,029, Sep. 18, 1990, abandoned. This application Feb. 15, 1995, Ser. No. 389,728

Claims priority, application Japan, Sep. 18, 1989, 1-240966; Nov. 8, 1989, 1-290564; Nov. 9, 1989, 1-291783

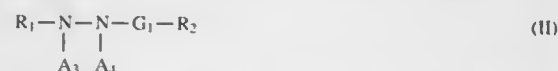
Int. Cl.⁶ G03C 1/06

U.S. Cl. 430—264

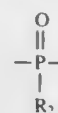
2 Claims

1. A silver halide photographic material comprising on a film support a plurality of light-sensitive silver halide emulsion layers, wherein

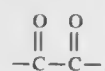
(A) at least one of said light-sensitive silver halide emulsion layers contains a hydrazine nucleating agent represented by formula (II):



wherein R_1 represents an aliphatic group or an aromatic group; R_2 represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an amino group, a hydrazino group, a carbamoyl group, or an oxycarbonyl group; G_1 represents a carbonyl group, a sulfonyl group, a sulfoxy group,



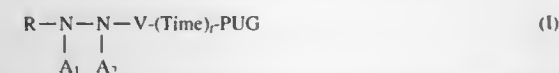
(wherein R_2 is as defined above).



a thiocarbonyl group, or an iminomethylene group; and A_3 and A_4 each represents a hydrogen atom, a substituted or unsubstituted alkylsulfonyl group, a substituted or unsubstituted arylsulfonyl

group, or a substituted or unsubstituted acyl group, provided that at least one of A_3 and A_4 is a hydrogen atom, and

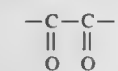
(B) a light-sensitive silver halide emulsion layer other than said layer containing said hydrazine nucleating agent contains, (i) a redox compound capable of releasing a development inhibitor when said redox compound is oxidized, wherein said redox compound is represented by formula (I):



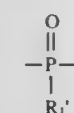
wherein A_1 and A_2 each represents a hydrogen atom, a sulfinic acid residue,



wherein R_0 represents an alkyl group, an alkenyl group, an aryl group, an alkoxy group, or an aryloxy group and l represents 1 or 2, or an unsubstituted acyl group, provided that at least one of A_1 and A_2 is a hydrogen atom; Time represents a divalent linking group containing a hetero atom and is linked to V through said hetero atom; t represents 0 or 1; PUG represents a residue of a development inhibitor; and V represents a carbonyl group,



a sulfonyl group, a sulfoxy group, an iminomethylene group, a thiocarbonyl group, or



wherein R_1 represents an alkoxy group or an aryloxy group; R represents an aliphatic group, an aromatic group, or a heterocyclic group; and (ii) a quinone trapping agent in an amount of 1×10^{-5} to 5×10^{-2} mol per mol of silver halide.

5,780,199

POLYAMIC ACID AND POLYIMIDE FROM FLUORINATED REACTANT

Marie Angelopoulos, Briarcliff Manor, N.Y.; Jeffrey Donald Gelorme, Plainville, Conn.; Jeffrey William Labadie, Sunnyvale, Calif.; David Andrew Lewis, Carmel, N.Y.; Sally Ann Swanson, San Jose, Calif., and Nancy Carolyn Labianca, Yalesville, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 58,303, May 10, 1993, Pat. No. 5,464,927, which is a continuation of Ser. No. 782,923, Oct. 25, 1991, abandoned. This application May 16, 1995, Ser. No. 442,062

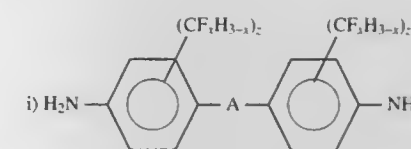
Int. Cl.⁶ G03C 1/73; 1/725

U.S. Cl. 430—270

26 Claims

1. A radiation sensitive composition containing:

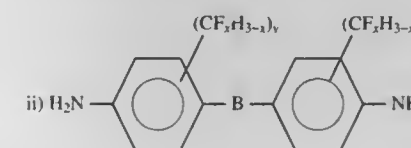
- a copolyamic acid from
- tetracarboxylic acid dianhydride,
- organic diamine having the formula: $H_2N R^1 NH_2$; wherein R^1 is a polycyclic aromatic organic diradical selected from the group consisting of aromatic, heterocyclic, and directly attached rings; and
- a co-reactant selected from the group consisting of:
 - fluorinated diamine having a formula selected from the group consisting of:



wherein
A is

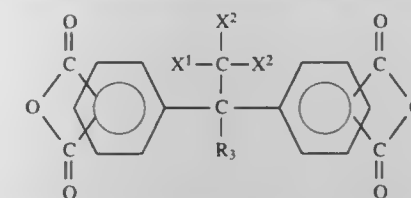


R^2 is selected from the group consisting of alkyl containing 1–6 carbon atoms aryl containing 6 carbon atoms and CF_3H_{3-1} ; x is a whole number integer from 1–3; z is a whole number integer from 0–4; and



wherein
B is a direct bond or $C(CH_3)_2$; and

y is a whole number integer from 1–4; (2) fluorinated tetracarboxylic acid dianhydride having the formula:



wherein X^1 is fluorine and each X^2 individually is selected from the group consisting of hydrogen, fluorine and chlorine; R^3 is selected from the group consisting of alkyl containing 1–6 carbon atoms, aryl containing 6 carbon atoms and $C(X^2)_3$; and (3) mixtures of (1) and (2); and when said co-reactant includes said fluorinated diamine, the molar ratio of said organic diamine to said fluorinated diamine is about 9.5:0.5 to about 1:1; and when said co-reactant includes said fluorinated tetracarboxylic acid dianhydride, the molar ratio of said tetracarboxylic acid dianhydride to said fluorinated tetracarboxylic acid dianhydride is about 9.5:0.5 to about 1:1

B. photosensitive initiator; and
C. sensitizer.

5,780,200

PRINTING PLATE MATERIALS AND METHOD OF PRODUCING THE SAME

Tohru Kitaguchi, Himeji; Kazuo Notsu, Amagasaki; Kazushi Takahashi, Himeji; Masayoshi Furukawa, Himeji; Shigeki Kambara, Himeji; Osamu Majima, and Soichi Kuwahara, both of Tokyo, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP95/00764, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO95/28288, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 19, 1995, Ser. No. 564,184

Claims priority, application Japan, Apr. 19, 1994, 6-080033; Aug. 1, 1994, 6-180337

Int. Cl.⁶ G03C 1/73

U.S. Cl. 430—270.1

20 Claims

1. A printing plate material which comprises a photosensitive layer containing a nitrocellulose, a photoabsorber and a polyurethane elastomer having an elongation percentage of not less than 400% and a glass transition temperature of not higher than $-10^\circ C$, and a support on which said photosensitive layer is formed.

19. A method of producing a printing plate material which comprises coating a coating composition comprising a nitrocellulose, a photoabsorber and a polyurethane elastomer having an elongation percentage of not less than 400% and a glass transition temperature of not higher than -10°C . on a support to provide a photosensitive layer which can be sculptured with laser light.

5,780,201

ULTRA THIN PHOTOLITHOGRAPHICALLY IMAGEABLE ORGANIC BLACK MATRIX COATING MATERIAL

Ram W. Sabnis; Jonathan W. Mayo; Edith G. Hays; Terry L. Brewer, all of Rolla; Michael D. Stroder, Springfield, all of Mo.; Akira Yanagimoto, Musashino, Japan; Yasuhisa Sone, Funabashi, Japan; Yoshitane Watanabe, Tokyo, Japan, and Kiyomi Ema, Chiba, Japan, assignors to Brewer Science, Inc., Rolla, Mo., and Nissan Chemical Industries, Ltd., Chiyoda-ku, Japan

Filed Sep. 27, 1996, Ser. No. 721,841
Int. Cl.⁶ G03F 7/004

U.S. Cl. 430—270.1

10 Claims

1. A photolithographically imageable black matrix coating material having optical density ≥ 2.0 and surface resistivity greater than 10^5 ohm/square when coated at thicknesses ≤ 1.0 micron, consisting essentially of

- a polyimide precursor vehicle and a solvent system therefore;
- a soluble light-absorbing dye or mixtures of dyes, said dye or mixtures of dyes being substantially completely soluble in the vehicle and solvent system, and being effective to absorb substantially all light across a broad spectrum of from ultra violet to infrared; and
- a mixed metal oxide non-carbon black pigment or mixture of pigments, and a dispersant therefor in Newtonian dispersion, said pigment or mixtures of pigments being substantially black in color.

5,780,202

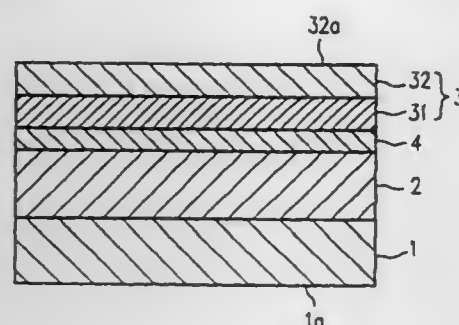
ANTISTATIC PHOTOSENSITIVE MULTILAYERED STRUCTURE AND METHOD FOR PRODUCING THE SAME

Shigenori Nagahara; Toshiaki Fujimura, and Shinichi Tanaka, all of Ohtsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Apr. 6, 1995, Ser. No. 417,549
Claims priority, application Japan, Apr. 8, 1994, 6-070727
Int. Cl.⁶ G03C 1/492

U.S. Cl. 430—271.1

10 Claims



1. An antistatic photosensitive multilayered structure comprising a substrate, a photosensitive layer, an antistatic layer and an antistatic cover film in this order, the antistatic cover film having a base layer in contact with the antistatic layer and an antistatic surface layer on a side opposite to the photosensitive layer, and the antistatic surface layer being made of a composition containing a polyolefin resin and a cationic surfactant.

5,780,203 PROCESS FOR FORMING COLORED PARTIAL PICTURE ELEMENT AND LIGHT-SHIELDING LIGHT- SENSITIVE RESIN COMPOSITION USED THEREFOR

Morimasa Sato; Masayuki Iwasaki, and Takekatsu Sugiyama, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

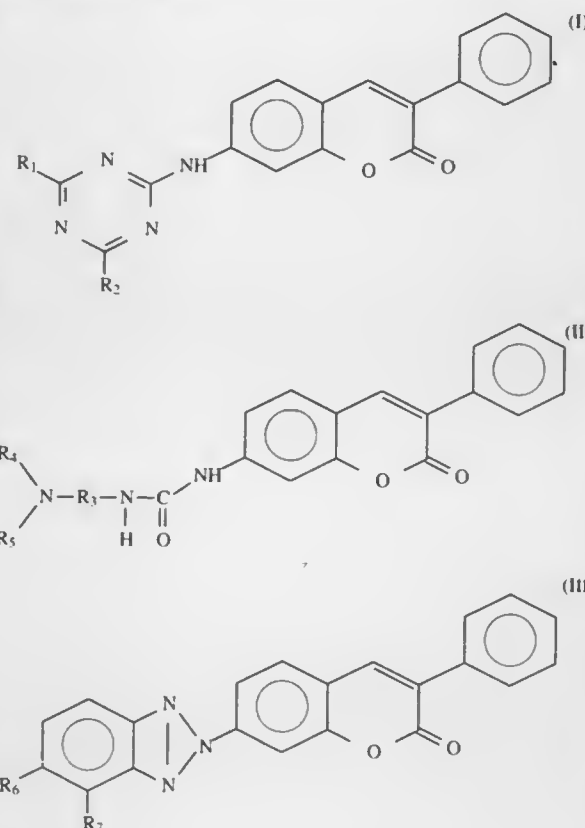
Division of Ser. No. 241,571, May 12, 1994, Pat. No. 5,489,621. This application Nov. 9, 1995, Ser. No. 556,090
Claims priority, application Japan, May 12, 1993, 5-110487; May 12, 1993, 5-110488; May 13, 1993, 5-111543; Dec. 14, 1993, 5-313558

Int. Cl.⁶ G03F 7/26; 7/30

U.S. Cl. 430—294

12 Claims

1. A process for forming a colored partial picture element, comprising a step of forming a colored light-sensitive resin composition layer on a transparent substrate by transferring the colored light-sensitive resin composition from a temporary support so as to cover at least a part of multicolor patterns formed by picture elements each having one of the three primary colors of light which are provided on the transparent substrate, a step of irradiating the colored light-sensitive resin composition layer with an active ray through the transparent substrate to cure it, and a step of developing the above colored light sensitive resin composition layer to form a colored partial picture element at a part where at least a part of the above multi-color patterns is not present, wherein the picture element of at least one color of the picture elements having the three primary colors of light contains at least one compound selected from the compounds represented by the following formulas (I) to (III):



wherein

R₁ represents a hydrogen atom, an amino group, a dialkylamino group, a monoalkylamino group, an N-substituted aminoalkyl group, a halogen atom, an alkoxy group, an amino group substituted with at least one hydroxyalkyl group, or a group represented by the following formula (IV):



R₂ represents a hydrogen atom, a halogen atom, an amino group, an alkyl group, an aralkyl group, an aryl group, an aralkyloxy group, an alkoxy group, an aryloxy group, a dialkylamino group, a monoalkylamino group, an N-substituted aminoalkyl group, an amino group substituted with at least one hydroxyalkyl group, or a group represented by the above formula (IV); provided that R₁ and R₂ are the same or different;
R₃ represents an alkyl group having 1 to 7 carbon atoms;
R₄ and R₅, which are the same or different, each represents a hydrogen atom or an alkyl group having 1 to 7 carbon atoms;
R₆ and R₇, which are the same or different, each represents a hydrogen atom, an alkyl group or a substituted alkylene group having 1 to 7 carbon atoms, or an alkoxy group having 1 to 4 carbon atoms;
R₈ represents an alkylene group; and
R₉ represents a hydrogen atom, an alkyl group, an aralkyl group, an aryl group, an alkoxyalkyl group, an aralkyloxyalkyl group, an aryloxyalkyl group, or a group represented by HO—R₈.

5,780,204

BACKSIDE WAFER POLISHING FOR IMPROVED PHOTOLITHOGRAPHY

Tho Le La, San Jose; Subramanian Venkatkrishnan; Mark T. Ramsbey, both of Sunnyvale; Jack F. Thomas, Palo Alto, and Kathleen Early, Santa Clara, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 3, 1997, Ser. No. 790,886
Int. Cl.⁶ G03C 5/00; G03F 7/00

U.S. Cl. 430—312

22 Claims

1. A method of manufacturing a semiconductor device, which method comprises sequentially:
depositing at least one dielectric layer on a frontside of a wafer, which wafer has a backside opposite the frontside;
polishing the backside of the wafer; and
performing a photolithographic technique on the dielectric layer.

5,780,205

METHOD FOR MANUFACTURING A MOLD FOR A DISC-SHAPED REGISTRATION CARRIER

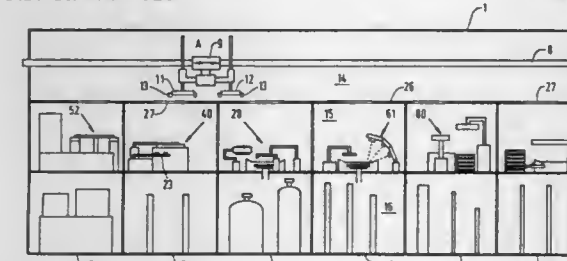
Lodewijk J. M. Beckers, Overpelt, Belgium; Christopher Jayne, Eindhoven, Netherlands; Joseph P. De Nijs, Geldrop, Netherlands, and Marcellus A. C. M. Geerts, Eindhoven, Netherlands, assignors to OD & ME B.V., Eindhoven, Netherlands

Continuation of Ser. No. 330,088, Oct. 26, 1994, abandoned, which is a division of Ser. No. 138,224, Oct. 20, 1993, Pat. No. 5,403,397. This application Apr. 10, 1997, Ser. No. 838,805
Claims priority, application Netherlands, Oct. 21, 1992, 9201825

Int. Cl.⁶ G03F 7/00; G11B 7/26

U.S. Cl. 430—320

5 Claims



1. A method for manufacturing a mold for a disc-shaped registration carrier, wherein a substrate, on which said mold is to be

formed is automatically moved in a horizontal plane and vertically thereto within a housing which is closed during normal operation, including the sequential steps of mounting the substrate into a station for applying a photosensitive layer to said substrate and applying a photosensitive layer, moving the treated substrate into a station for exposing the photosensitive layer in accordance with the registration data to be stored and exposing the photosensitive layer, moving the substrate into a station for developing the photosensitive layer and developing the photosensitive layer, and then applying a metal coating and metallizing the side of the substrate carrying the developed photosensitive layer.

5,780,206

FINE PATTERN FORMING PROCESS USING A RESIST COMPOSITION SENSITIVE TO DEEP ULTRAVIOLET LIGHT

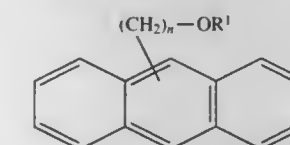
Fumiyoshi Urano; Takanori Yasuda, both of Kawagoe; Akiko Katsuyama, Moriguchi, and Kazuhiro Yamashita, Amagasaki, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, and Matsushita Electric Industrial Co., Ltd., Kadoma, both of Japan

Division of Ser. No. 702,805, Aug. 26, 1996, Pat. No. 5,695,910, which is a continuation of Ser. No. 407,946, Mar. 22, 1995. This application Jul. 23, 1997, Ser. No. 898,086
Claims priority, application Japan, Mar. 28, 1994, 6-080957
Int. Cl.⁶ G03F 7/30; 1/52

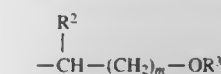
U.S. Cl. 430—325

2 Claims

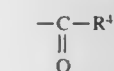
1. A fine pattern forming process comprising the steps of:
(i) coating a resist composition on a semiconductor substrate and heating the obtained coating film;
(ii) exposing the coating film to deep ultraviolet light or KrF excimer laser light through a mask; and
(iii) developing the film with an alkali developing solution, wherein the resist composition comprises
(a) one of the following substances (i)–(iii):
(i) a resin which becomes alkali-soluble on elimination of protective groups by the action of an acid;
(ii) a combination of an alkali-soluble resin and a compound which becomes alkali-soluble on elimination of protective groups by the action of an acid;
(iii) a combination of an alkali-soluble resin and a compound which is crosslinked with the resin by the action of an acid to make the resin hardly soluble in an alkaline solution;
(b) a photosensitive compound which generates an acid on exposure to light;
(c) an anthracene derivative represented by the following formula:



wherein R¹ is an alkyl group having 1–6 carbon atoms, a group represented by the formula:



wherein R² is a hydrogen atom or an alkyl group having 1–4 carbon atoms, R³ is an alkyl group having 1–6 carbon atoms and m is zero or an integer of 1 to 3; or a group represented by the formula:



wherein R⁴ is an alkyl group having 1–6 carbon atoms, a phenyl group or a substituted phenyl group, and n is an integer of 1–5; and

(d) a solvent.

R^{10} is alkyl or aryl. R^{11} is OH, alkyl or aryl and R^{12} is hydrogen, alkyl or aryl:
with the additional condition that at least one of the radicals R^1 to R^7 must contain a SOL group and that



cannot represent an ethylmethylsulfonamide radical.

5,780,213

PHOTOGRAPHIC PRINTING PAPER SUPPORT

Kazuo Ozaki; Tadahiro Kegasawa, both of Shizuoka-ken, and Ryuichi Katsumoto, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 508,089, Jul. 27, 1995, abandoned, which is a continuation of Ser. No. 362,165, Dec. 22, 1994, abandoned. This application Sep. 5, 1997, Ser. No. 924,842

Claims priority, application Japan, Dec. 22, 1993, 5-346065 Int. Cl.⁶ G03C 1/775

U.S. Cl. 430—538

10 Claims

1. A photographic printing paper support having waterproof resin layers on both sides of a substrate, said waterproof resin layer on the side where emulsions are to be coated comprising at least an upper layer containing from 5 to 25% by weight of titanium oxide and from 0 to 0.56% by weight of a bluing agent and a lower layer containing substantially no titanium oxide but containing from 0.05 to 0.60% by weight of a bluing agent, and wherein the upper layer contains less bluing agent than the lower layer.

5,780,214

COLOR PHOTOGRAPHIC SILVER HALIDE MATERIAL WITH TiO₂ AND U.V. ABSORBER

Jörg Hagermann, Köln, and Arno Schmuck, Leichlingen, both of Germany, assignors to Agfa-Gevaert AG, Germany

Filed May 9, 1997, Ser. No. 853,514

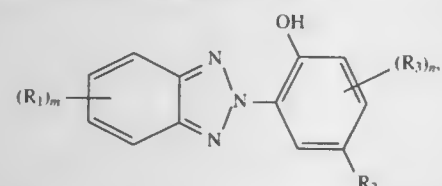
Claims priority, application Germany, May 17, 1996, 196 19 946.8

Int. Cl.⁶ G03C 1/815

U.S. Cl. 430—512

9 Claims

1. A color photographic silver halide material which comprises at least one photosensitive silver halide emulsion layer and optionally a non-photosensitive layer, which is arranged close to the light source than the photosensitive silver halide emulsion layer, wherein at least one of said photosensitive layers or non-photosensitive layers contains a TiO₂ pigment having a primary particle diameter of 1 to 100 nm and at least one of said photosensitive layers or non-photosensitive layers contains at least one compound of the formulae (I) or (II)

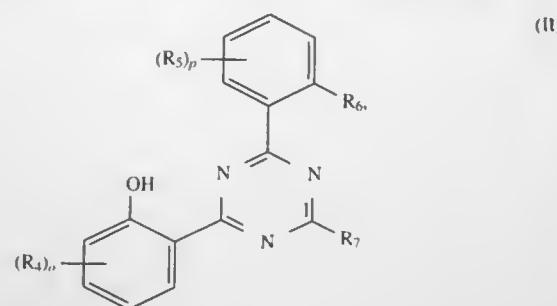


in which R₁ and R₃ independently of one another are halogen, alkyl, alkoxy, aryloxy, alkylthio, arylthio, acyloxy, acylamino or acyl;

R₂ means alkyl or acyl and

m and n independently of one another are 0, 1 or 2

and two or more residues R₁ and R₃ are identical or different,

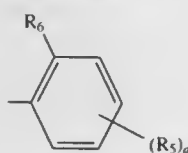


in which

R₄ and R₅ independently of one another are H, halogen, hydroxy, mercapto, alkyl, aryl, alkoxy, aryloxy, acyloxy, alkylthio, arylthio, —NR₈—R₉, alkoxycarbonyl, carbamoyl or sulphamoyl;

R₆ means H, hydroxy, halogen or alkyl;

R₇ means alkyl, alkoxy, alkylthio, aryloxy, arylthio or a residue of the formula



R₈ means H, alkyl or aryl;

R₉ means H, alkyl, aryl, acyl, alkoxycarbonyl, carbamoyl, sulphamoyl or sulphonyl;

o, p and q are identical or different and are 1, 2, 3 or 4, and in which two or more residues R₄, R₅ and R₆ are identical or different.

5,780,215

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Mineko Ito, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Jul. 23, 1996, Ser. No. 681,515

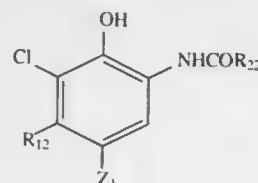
Claims priority, application Japan, Jul. 26, 1995, 7-190483; Jul. 26, 1995, 7-190484; Jul. 26, 1995, 7-190485

Int. Cl.⁶ G03C 1/46

U.S. Cl. 430—531

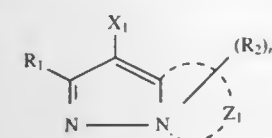
7 Claims

1. A silver halide color photographic material comprising a paper support, and provided thereon, a light sensitive silver halide emulsion layer and a non-light sensitive layer, said support comprising a paper base and a resin layer coated on each side of the paper base, the resin layer on the silver halide emulsion layer side comprising two or more resin layers containing white pigment and having a different white pigment content, at least one of the resin layers being composed of a polyolefin or polyester resin, and at least another one layer being composed of a resin selected from the group consisting of a polyester resin, a polyether resin, a polyurethane resin, a polycarbonate resin, a polystyrene resin, a cellulose derivative and an electron beam hardened resin, wherein the silver halide emulsion layer comprises a silver halide emulsion having a silver chloride content of 95 to 99.9 mol % and contains at least one cyan coupler selected from a compound represented by the following Formula [C-1] or, Formula [I], [II], [III] or [IV]:

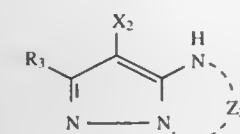


Formula [C-1]

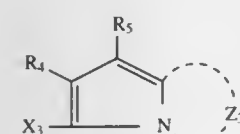
wherein R₂₁ represents an alkyl group having 2 to 6 carbon atoms; R₂₂ represents a ballast group; and Z₁ represents a hydrogen atom or an atom or group capable of being released on reaction with an oxidation product of a color developing agent,



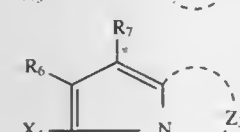
Formula [I]



Formula [II]



Formula [III]



Formula [IV]

wherein R₁ represents a hydrogen atom or a substituent; R₂ is a substituent; m is the number of substituent R₂, provided when m is zero, R₁ represents an electron attractive group having a Hammett's substituent constant σ_p of not less than 0.20, while when m is 1, 2 or more, at least one of R₁ and R₂ represents an electron attractive group having a Hammett's substituent constant σ_p of not less than 0.20; Z₁ represents a group of non-metallic atoms necessary to form a nitrogen-containing 5-membered heterocyclic ring; R₃ represents a hydrogen atom or a substituent; Z₂ represents a group of non-metallic atoms necessary to form a nitrogen-containing 6-membered heterocyclic ring together with —NH—, which may have a substituent; R₄ and R₅ each represent an electron attractive group having a Hammett's substituent constant σ_p of not less than 0.20, provided the sum of σ_p values of R₄ and R₅ is not less than 0.65; Z₃ represents a group of non-metallic atoms necessary to form a nitrogen-containing 5-membered heterocyclic ring, which may have a substituent; R₆ and R₇ each represent a hydrogen atom or a substituent; Z₄ represents a group of non-metallic atoms necessary to form a nitrogen-containing 6-membered heterocyclic ring, which may have a substituent; and X₁, X₂, X₃ and X₄ each represent a hydrogen atom or a group capable of being released upon coupling reaction with an oxidation product of a color developing agent.

5,780,216

SILVER HALIDE PHOTOGRAPHIC EMULSION

Mikio Ihama, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 17, 1996, Ser. No. 649,101

Claims priority, application Japan, May 19, 1995, 7-121497

Int. Cl.⁶ G03C 1/005

U.S. Cl. 430—567

16 Claims

1. A silver halide photographic emulsion comprising silver iodobromide tabular grains having (111) faces as parallel major faces and having an aspect ratio of not less than 2 in an amount of not less than 50% of the total projected area of the emulsion, wherein each tabular grain has a core and multi-layered shell structure around the core, wherein said shell structure comprises a first shell on the core, a second shell on the first shell, a third shell on the second shell, and a fourth shell on the third shell.

said core having a silver amount of 20 to 50 mol % of the total silver amount in the grain, and an average silver iodide content of 0 to 5 mol % based on the total amount of silver in said core.

said first shell having a silver amount of 5 to 30 mol % of the total silver amount in the grain, and an average silver iodide content of 15 to 40 mol % based on the total amount of silver in said first shell,

said second shell having a silver amount of 10 to 30 mol % of the total silver amount in the grain, and an average silver iodide content of 0 to 5 mol % based on the total amount of silver in said second shell,

said third shell having a silver amount of 1 to 10 mol % of the total silver amount in the grain, and an average silver iodide content of 20 to 100 mol % based on the total amount of silver in said third shell, and

said fourth shell having a silver amount of 10 to 40 mol % of the total silver amount of in the grain, and an average silver iodide content of 0 to 5 mol % based on the total amount of silver in said fourth shell.

5,780,217

SILVER HALIDE PHOTOGRAPHIC EMULSION HAVING REDUCED PRESSURE FOGGING

Gérard Amédé Friour, and Christiane Marie Feumi-Jantou, both of Chalon-sur-Saone, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 12, 1996, Ser. No. 662,409

Claims priority, application France, Jun. 19, 1995, 95 07526

Int. Cl.⁶ G03C 1/015; 1/005; 1/04

U.S. Cl. 430—567

17 Claims

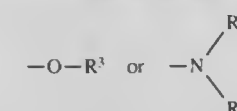
1. Radiation-sensitive silver halide photographic emulsion which comprises, dispersed in a binder consisting of a hydrophilic colloid and a latex, grains comprised of silver bromide where at least 50% of the total number of grains are tabular grains, the emulsion being characterized in that

- (1) the ratio by weight between the hydrophilic colloid and the silver contained in the emulsion is between 1.3 and 3,
- (2) the ratio by weight between the latex and the hydrophilic colloid is between 1/25 and 1/2, and
- (3) the pAg of the emulsion before coating is between 9.0 and 9.9,

the latex being a vinyl polymer obtained from monomers of the formula:



in which R¹ is a hydrogen atom, or an alkyl group with straight or branched chains of 1 to 10 carbon atoms, R² is selected from:



in which R³ is selected from an alkyl group with a linear or branched chain having 1 to 10 carbon atoms, a cycloalkyl or aryl group having at least 5 atoms, where these groups may be substituted or not by alkoxy, aryloxy, alkylcarbonyl, arylcarbonyl, alkoxycarbonyl or aryloxy carbonyl groups or sulfo, carboxyl, phosphono, sulphato or sulphino groups.

5,780,218

REDUCTION SENSITIZATION METHOD OF SILVER HALIDE PHOTOGRAPHIC EMULSION AND SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING THE REDUCTION SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Hiroyuki Mifune, Tetsuro Kojima, and Yasuhiro Mitamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 4, 1996, Ser. No. 627,548

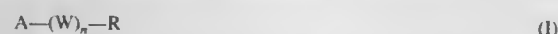
Claims priority, application Japan, Apr. 4, 1995, 7-078685
Int. Cl.⁶ G03C 1/08

U.S. Cl. 430—599

8 Claims

1. A method of reduction sensitization of a silver halide photographic emulsion, comprising using a reduction sensitizer comprising a compound having a group which is capable of being adsorbed onto a silver halide and a reducing group or a precursor of said compound

wherein said compound is represented by formula (I):



wherein A represents an atomic group containing a mercapto group, a thione group or a group which forms imino silver; W represents a divalent linking group; n represents 0 or 1; and R represents a formyl group, an amino group or an acetylene group.

5,780,219

NUCLEIC ACID AMPLIFICATION OLIGONUCLEOTIDES AND PROBES TO HUMAN HEPATITIS B VIRUS

Sherrol H. McDonough, San Diego, and Timothy J. Fultz, Martinez, both of Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Continuation of Ser. No. 879,684, May 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 550,837, Jul. 10, 1990, Pat. No. 5,480,784, which is a continuation-in-part of Ser. No. 379,501, Jul. 11, 1989, abandoned. This application Jan. 12, 1995, Ser. No. 371,583

Int. Cl.⁶ C12Q 1/68; C07H 21/04

U.S. Cl. 435—5

57 Claims

1. An oligonucleotide from 15 to 100 nucleotides in length comprising a sequence selected from the group consisting of:

- (X) GAGGACAAACGGGCAACATACCTTG (SEQ ID NO: 5);
- (X) TCCTGGAATTAGAGGACAAACGGGC (SEQ ID NO: 6);
- (X) TCCTGGAATTAGAGGATAAACGGGC (SEQ ID NO: 7);
- (X) CGTCCTTTGTTTACGTCCTCCGTC (SEQ ID NO: 8);
- (X) CACCAAAATGCCCTATCTTATCAACACTTCCGG (SEQ ID NO: 10);
- (X) CCCGAGATTGAGATCTTCTGCGAC (SEQ ID NO: 11);
- (X) CGAGATTGAGATCTTCTGCGACGCG (SEQ ID NO: 12);

where X is nothing or comprises an oligonucleotide sequence recognized by an RNA polymerase or which enhances initiation or elongation by an RNA polymerase.

5,780,220

METHODS AND COMPOSITIONS FOR INHIBITING HIV REPLICATION

David B. Weiner, Merion, Pa.; Yosef Refaeli, Boston, Mass., and David N. Levy, Birmingham, Ala., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 246,177, May 19, 1994, Pat. No. 5,639,598. This application Feb. 3, 1995, Ser. No. 382,873

Int. Cl.⁶ C12Q 1/70; G01N 33/53; A61K 31/56; A01N 43/04
U.S. Cl. 435—5

3 Claims

1. A method for treating a human individual exposed to or infected with HIV comprising the steps of identifying said individual, and administering to said individual a therapeutically effective amount of mifepristone to inhibit or prevent replication of said

HIV by inhibiting cytosolic-nuclear translocation of a complex comprising HIV Vpr protein and Rip-1 protein in an HIV infected cell of said individual.

5,780,221

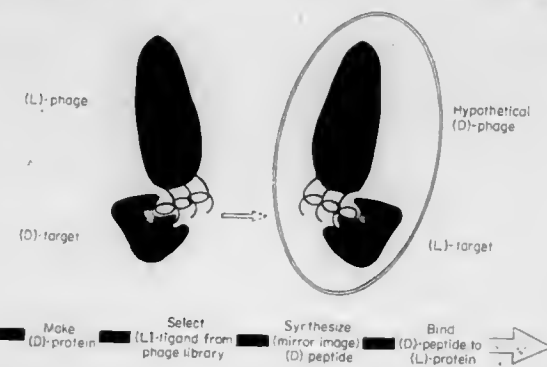
IDENTIFICATION OF ENANTIOMERIC LIGANDS

Antonius Nicolass Maria Schumacher, Somerville, and Peter S. Kim, Lexington, both of Mass., assignors to Whitehead Institute for Biomedical Research, Cambridge, Mass.

Continuation-in-part of Ser. No. 482,309, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 433,572, May 3, 1995. This application Mar. 28, 1996, Ser. No. 627,497
Int. Cl.⁶ C12Q 1/70; 1/68; G01N 33/53

U.S. Cl. 435—5

14 Claims



1. A method of producing a macromolecule of non-natural handedness that binds to a target macromolecule of natural handedness, comprising the steps of:

- a) providing an enantiomer of the target macromolecule;
- b) providing a library of macromolecules of natural handedness;
- c) contacting the library of b) with the enantiomer of a), under conditions appropriate for binding of a macromolecule of natural handedness in the library with the enantiomer of a), whereby the enantiomer of a) binds a macromolecule of natural handedness present in the library;
- d) producing the enantiomer of the macromolecule of natural handedness which is bound to the enantiomer of a), wherein the enantiomer of d) is a macromolecule of non-natural handedness which binds to the target macromolecule of natural handedness.

5,780,222

METHOD OF PCR TESTING OF POOLED BLOOD SAMPLES

Lorraine B. Peddada; Charles M. Heldebrant, both of Arcadia, and Andrew J. Conrad, Los Angeles, all of Calif., assignors to Alpha Therapeutic Corporation, Los Angeles, Calif.

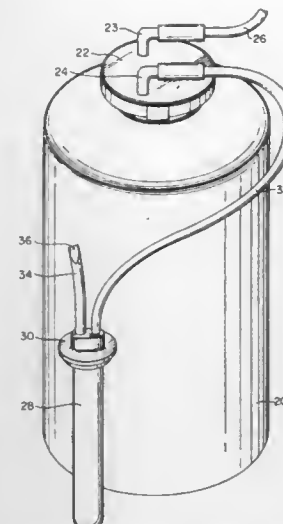
Continuation-in-part of Ser. No. 683,784, Jul. 16, 1996, which is a division of Ser. No. 419,620, Apr. 10, 1995, Pat. No. 5,591,573. This application Jan. 6, 1997, Ser. No. 778,610

Int. Cl.⁶ C12Q 1/70; 1/68; C12P 19/34; C07H 21/00
U.S. Cl. 435—5

10 Claims

1. A method for testing a multiplicity of plasma donations to uniquely identify donations having a positive viral indication, in a single PCR testing cycle, the method comprising the steps of:

- providing a plurality of plasma donations, wherein a portion of each donation is contained in a tubing segment divided along its length by spaced-apart seals, the tubing segment portions between the seals defining sequential containers, wherein each container contains a plasma sample of said donation;
- defining an n-dimensional grid, wherein n is 2 or 3 and, wherein the grid elements are each defined by the intersecting coordinates of the n-dimensions of the grid;
- mapping a sample from particular ones of the plurality of plasma donations to a corresponding one of each element of the grid.



each sample being defined by a matrix notation $X_{n \times 3}$, wherein the subscript of the matrix notation defines the dimensional indices of the grid;

taking n aliquots from each plasma sample of each of the plurality of plasma donations, the number of aliquots taken from each sample defined by the number of dimensional indices comprising the grid;

forming subpools from the aliquots of each sample, wherein each subpool comprises an aliquot of all samples in which one dimensional index is fixed;

testing all of the subpools, in a single PCR testing cycle, for a viral indication; and

evaluating the dimensional indicia of each subpool which tested positive in the single PCR testing cycle, in accordance with a reduction by the method of minors, thereby unambiguously identifying a unique element defined by the dimensional indicia of each positive subpool, thus unambiguously identifying a uniquely positive sample.

5,780,223

MOLECULAR DIAGNOSIS OF AUTOSOMAL DOMINANT CHARCOT-MARIETOOH DISEASE

James R. Lupski; Liu Pentao; Benjamin B. Roa; Nacer E. Abbas, and Pragna I. Patel, all of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Continuation-in-part of Ser. No. 879,623, May 6, 1992, abandoned, which is a continuation of Ser. No. 711,615, Jun. 6, 1991, Pat. No. 5,306,616. This application Sep. 30, 1993, Ser. No. 129,902

Int. Cl.⁶ C12Q 1/68; C07H 21/02

U.S. Cl. 435—6

7 Claims

1. An isolated DNA molecule consisting of a CMT1A-REP sequence.

5,780,224

TARGET AND BACKGROUND CAPTURE METHODS AND APPARATUS FOR AFFINITY ASSAYS

Mark L. Collins, Holden, Mass., assignor to AMOCO Corporation, Chicago, Ill.

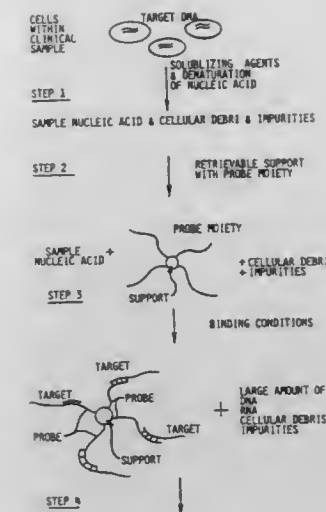
Continuation of Ser. No. 6,804, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 859,619, Mar. 23, 1992, abandoned, which is a continuation of Ser. No. 550,147, Jul. 9, 1990, abandoned, which is a continuation of Ser. No. 922,155, Oct. 23, 1986, abandoned. This application Apr. 29, 1994, Ser. No. 236,877

Int. Cl.⁶ C12Q 1/68

U.S. Cl. 435—6

20 Claims

1. A method for assaying a sample for target nucleic acid comprising the steps of:



(a) contacting the sample with reagent comprising a first nucleic acid probe and a second nucleic acid probe which bind to the target to form a probe-target complex and wherein said second nucleic acid probe comprises a label;

(b) contacting the sample with a support which binds to the first nucleic acid probe of the probe-target complex;

(c) substantially separating the support and bound probe-target complex from the sample;

(d) contacting the support and bound probe-target complex with a second medium;

(e) releasing the probe-target complex into the second medium;

(f) substantially separating the support from the second medium; and

(g) monitoring the probe-target complex for the presence of the second nucleic acid probe indicating the presence of target.

5,780,225

METHOD FOR GENERATING LIBRARIES OF ANTIBODY GENES COMPRISING AMPLIFICATION OF DIVERSE ANTIBODY DNAS AND METHODS FOR USING THESE LIBRARIES FOR THE PRODUCTION OF DIVERSE ANTIGEN COMBINING MOLECULES

Michael H. Wigler, Lloyd Harbor, N.Y., and Joseph A. Sorge, Rancho Santa Fe, Calif., assignors to Stratagene, La Jolla, Calif.

Continuation of Ser. No. 919,370, Jul. 23, 1992, which is a continuation of Ser. No. 464,530, Jan. 11, 1990. This application Sep. 29, 1994, Ser. No. 315,269

Int. Cl.⁶ C12Q 1/68; C12P 21/00

U.S. Cl. 435—6

36 Claims

1. An in vitro process for synthesizing DNA vectors capable of encoding a family of antigen-combining proteins, comprising the steps of:

a) obtaining DNA containing genes encoding a diverse set of antigen-combining proteins;

b) combining the DNA containing genes encoding antigen-combining proteins with sequence specific primers which are oligonucleotides having sequence similarity with conserved regions of the genes;

c) performing sequence specific gene amplification; and

d) inserting the amplified genes into a framework antibody vector.

5,780,226

Patent Not Issued For This Number

5,780,227

OLIGONUCLEOTIDE PROBE CONJUGATED TO A PURIFIED HYDROPHILIC ALKALINE PHOSPHATASE AND USES THEREOF

Patrick J. Sheridan, 2008 Horne St., San Leandro, Calif. 94578; Julio C. Gagne, Studio #7, 5865 Doyle St., Emeryville, Calif. 94608, and Mary L. Anderson, 1392 Danville Blvd #202, Alamo, Calif. 94507

Filed Jun. 7, 1995, Ser. No. 472,756
Int. Cl.⁶ C12Q 1/68; C07H 21/04; 21/02

U.S. Cl. 435—6

23 Claims

1. A label probe comprising a purified hydrophilic alkaline phosphatase conjugated to an oligonucleotide probe.

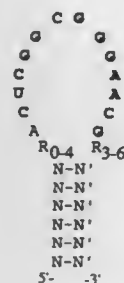
5,780,228

HIGH AFFINITY NUCLEIC ACID LIGANDS TO LECTINS

David H. Parma; Brian Hicke; Philippe Bridonneau, and Larry Gold, all of Boulder, Colo., assignors to NeXstar Pharmaceuticals, Inc., Boulder, Colo.
Continuation-in-part of Ser. No. 714,131, Jun. 10, 1991, Pat. No. 5,475,096, which is a continuation-in-part of Ser. No. 536,428, Jun. 11, 1990, abandoned, and a continuation-in-part of Ser. No. 964,624, Oct. 21, 1992, Pat. No. 5,496,938. This application Jun. 7, 1995, Ser. No. 479,724

Int. Cl.⁶ C12Q 1/68; G01N 33/53; C07H 19/00; 21/02
U.S. Cl. 435—6

10 Claims



1. A method for identifying nucleic acid ligands and nucleic acid ligand sequences to a lectin comprising:

- contacting a candidate mixture of nucleic acids with a lectin, wherein nucleic acids having an increased affinity to said lectin relative to the candidate mixture may be partitioned from the remainder of the candidate mixture;
- partitioning the increased affinity nucleic acids from the remainder of the candidate mixture; and
- amplifying the increased affinity nucleic acids to yield a mixture of nucleic acids enriched for nucleic acid sequences with relatively higher affinity and specificity for binding to said lectin, whereby nucleic acid ligands to said lectin may be identified.

5,780,229

POLYNUCLEOTIDES FOR DETERMINING THE PEN POLYMORPHISM OF HUMAN PLATELET MEMBRANE GLYCOPROTEIN IIIA

Peter J. Newman, Bayside, Wis., assignor to The Blood Center Research Foundation, Inc., Milwaukee, Wis.

Division of Ser. No. 721,321, Jul. 1, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 482,174

Int. Cl.⁶ C12Q 1/68

U.S. Cl. 435—6

12 Claims

1. An oligonucleotide that distinguishes between the Pen^a and the Pen^b alleles of the GPIIIa gene, wherein said oligonucleotide hybridizes to a portion of said GPIIIa gene that includes nucleotide 526 of the cDNA that corresponds to said GPIIIa gene when said nucleotide 526 is adenylate, but does not hybridize with said portion of said GPIIIa gene when said nucleotide 526 is guanylate.

5,780,230

COMPOSITIONS AND METHODS FOR HUMAN SPERM ACTIVATION AND QUANTITATIVE ASSESSMENT OF HUMAN SPERM GENOME REPLICATION

Honghua Li, Cherry Hill, and Yong-Sheng Xu, Haddonfield, both of N.J., assignors to Coriell Institute for Medical Research, Camden, N.J.

Filed Oct. 6, 1995, Ser. No. 540,327
Int. Cl.⁶ C12Q 1/68; C12N 1/06

U.S. Cl. 435—6

21 Claims

1. A composition comprising a purified cytoplasmic extract from eggs of *Xenopus laevis* which supports activation of human sperm and complete replication of a human sperm genome, said composition being prepared by a method comprising the steps of:

- providing a sexually mature female *Xenopus laevis* toad;
- priming said toad for egg production by administering to said toad a gonadotropin hormone in an amount effective to stimulate said egg production; said priming comprising:
 - a first priming step wherein a first aliquot of pregnant mare gonadotropin is administered two days prior to egg collection; and
 - a second priming step wherein at least one additional aliquot of human chorionic gonadotropin is administered between about 12 and about 24 hours prior to egg collection;
- collecting the eggs;
- de-jellying the collected eggs;
- removing from the de-jellied eggs substantially all eggs which appear damaged or of non-uniform character as compared with normal, intact eggs from *Xenopus laevis*;
- activating the eggs to shift from mitotic phase to S phase in their cell cycle;
- rinsing the activated eggs with a compatible rinsing solution;
- packing the eggs by removing substantially all excess rinsing solution from the rinsed eggs;
- preparing an initial cytoplasmic fraction from the packed eggs by
 - subjecting the eggs to centrifugation under conditions resulting in crushing of the eggs and separation of the initial cytoplasmic fraction from other egg components; and
 - collecting only the initial cytoplasmic fraction; and
- preparing the purified cytoplasmic extract from the initial cytoplasmic fraction by
 - subjecting the initial cytoplasmic fraction to centrifugation under conditions resulting in separation of the purified cytoplasmic extract from vesicular components remaining in the initial cytoplasmic fraction;
 - collecting only said purified cytoplasmic extract; and
- optionally freezing and thawing said cytoplasmic extract, said extract retaining biological activity following said freezing and thawing.

5,780,231

DNA EXTENSION AND ANALYSIS WITH ROLLING PRIMERS

Sydney Brenner, Cambridge, England, assignor to Lynx Therapeutics, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 560,313, Nov. 17, 1995. This application Mar. 5, 1996, Ser. No. 611,155

Int. Cl.⁶ C12Q 1/68; C12P 19/34; C12N 15/00

U.S. Cl. 435—6

4 Claims

1. A method for determining the nucleotide sequence of a polynucleotide, the method comprising the steps of:

- providing a set of primers, each primer of the set having a terminal nucleotide, a template positioning segment, and an extension region comprising one or more complexity-reducing nucleotides;
- forming a template comprising a primer binding site and the polynucleotide, the primer binding site being complementary to at least one primer of the set;

5,780,233

ARTIFICIAL MISMATCH HYBRIDIZATION

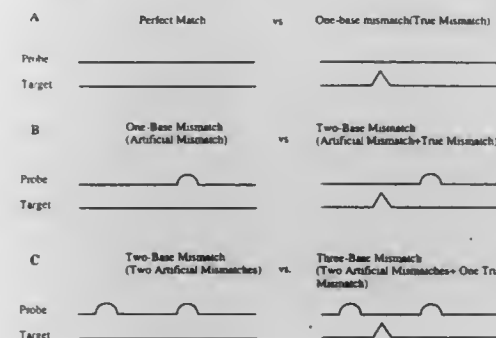
Zhen Guo, and Lloyd M. Smith, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jun. 6, 1996, Ser. No. 659,605
Int. Cl.⁶ C12Q 1/68; C07H 21/04

U.S. Cl. 435—6

5 Claims

- forming an amplicon from the template by amplifying a double stranded DNA selectively formed by extending a primer from the set whose extension region forms a perfectly matched duplex with the primer binding site of the template;
- identifying the terminal nucleotide of the extension region of the primer by the identity of the amplicon;
- mutating the primer binding site of the template so that the primer binding site is shifted one nucleotide in the direction of extension; and
- repeating steps (c) through (e) until the nucleotide sequence of the polynucleotide is determined.



1. A process for hybridizing an oligonucleotide to a first nucleic acid target, the method comprising the steps of:

- providing an oligonucleotide having a nucleic acid sequence complementary in part to the first target, but comprising at least one artificial mismatch relative to the first target and having a nucleic acid sequence complementary in part to a second target, but comprising at least one artificial mismatch and a true mismatch relative to the second target; and
- combining the oligonucleotide and the first target under selected hybridization conditions to form a first duplex, wherein the first duplex has a melting temperature 1 to 25 C.^o higher than that of a second duplex that would form under the same hybridization conditions between the oligonucleotide and a second nucleic acid target, where the oligonucleotide also comprises a true mismatch relative to the second target and where the true mismatch and the artificial mismatch are separated from one another by three or four nucleotide positions and where the artificial mismatch has base stacking properties of a natural nucleoside.

5,780,232

DNA SEQUENCING, MAPPING, AND DIAGNOSTIC PROCESSES USING HYBRIDIZATION AND STABLE ISOTOPE LABELS OF DNA

Heinrich F. Arlinghaus, and K. Bruce Jacobson, both of Oak Ridge, Tenn., assignors to Atom Sciences, Inc., Oak Ridge, Tenn.

Filed May 28, 1996, Ser. No. 654,181

Int. Cl.⁶ C12Q 1/68

U.S. Cl. 435—6

67 Claims



1. A DNA sequencing, mapping, and diagnostic process using known individual isotopes, including stable isotopes and long-lived radioactive isotopes, associated with individual oligodeoxynucleotides (ODNs) or peptide nucleic acids (PNAs), said process comprising the steps of:

- labeling nucleotide segments or PNAs with said known isotopes of an element that does not normally occur in DNAs or ODNs;
- causing said labeled, complementary, free nucleotide segments or PNAs to hybridize to fixed nucleotide segments or PNAs, said fixed nucleotide segments or PNAs being immobilized in distinct positions on a hybridization surface in an array such that said nucleotide segments or PNAs with known sequences define sequences of nucleotide segments or PNAs that become hybridized;
- rinsing non-hybridized labeled nucleotide segments or PNAs from said hybridization array; and
- using mass spectrometric methods to analyze the presence and position on said array of said hybridized, labeled complementary nucleotide segments or PNAs and identifying said isotopes.

5,780,234

NUCLEIC ACID MEDIATED ELECTRON TRANSFER

Thomas J. Meade, Altadena; Jon Faiz Kayyem, Pasadena, and Scott E. Fraser, Newport Beach, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 166,036, Dec. 10, 1993, Pat. No. 5,591,578. This application Sep. 6, 1996, Ser. No. 709,263

Int. Cl.⁶ C12Q 1/68; 1/70; C07H 21/04; 21/02

U.S. Cl. 435—6

21 Claims

1. A composition comprising a first single stranded nucleic acid containing one or multiple electron transfer moieties and a second single stranded nucleic acid containing one or multiple electron transfer moieties, wherein said electron transfer moieties are transition metal complexes covalently linked to a ribose of the ribose-phosphate backbone of said first and second single stranded nucleic acids, and wherein electron transfer occurs between said electron transfer moieties when said first single stranded nucleic acid hybridizes to a first domain of a target sequence, said second single stranded nucleic acid hybridizes to a second domain of said target sequence, and an intervening nucleic acid hybridizes to an intervening target domain of said target sequence.

5,780,235

HUMAN VOLTAGE-DEPENDENT ANION CHANNEL
Olga Baadman, Mountain View, and Jennifer L. Hillman, San Jose, both of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Oct. 4, 1996, Ser. No. 726,227
Int. Cl.⁶ G01N 33/574; C07H 21/04

U.S. Cl. 435—6

9 Claims

3. An isolated polynucleotide sequence consisting of the nucleic acid sequence of SEQ ID NO:2.

5,780,236

METHOD FOR IDENTIFYING MUTANTS AND MOLECULES

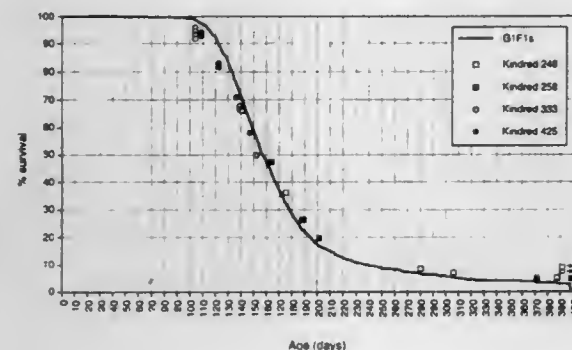
William F. Dove, and Alexandra Shedlovsky, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 18, 1996, Ser. No. 751,292
Int. Cl.⁶ C12P 19/34; C12Q 1/68

U.S. Cl. 435—6

9 Claims

The ICMM Method



1. A method for identifying a segregating mutation at a murine genetic locus that modifies an index phenotype in an index inbred mouse strain, the segregating mutation causing an outlying phenotype relative to the index phenotype, the method comprising the steps of:

outcrossing a set of mice of a founder isogenic inbred mouse strain with a mouse of the index inbred mouse strain to obtain Gen1F₁ progeny, the founder isogenic inbred strain being heterozygous only for random point mutations relative to a wild-type mouse of the founder inbred strain, the index inbred mouse strain carrying a dominant allele at a locus known to confer the index phenotype, wherein at least some of the Gen1F₁ progeny carry both the dominant allele and at least one random mutation;

crossing a founder mouse of the founder isogenic inbred strain to a mouse of the founder strain that lacks the mutations to obtain inbred Gen2 offspring, wherein the founder mouse has at least one outcrossed F₁ progeny that displays the outlying phenotype relative to the index phenotype;

outcrossing Gen2 offspring to the index mouse strain to obtain Gen2F₁ backcross progeny, half of which, on average, carry the dominant allele that confers the index phenotype; and verifying that a subset of the Gen2F₁ progeny shows the outlying phenotype.

5,780,237

SEPSIS, ADULT RESPIRATORY DISTRESS SYNDROME, AND SYSTEMIC INFLAMMATORY RESPONSE SYNDROME DIAGNOSTIC

Stuart L. Bursten, Snoqualmie, and David A. Federighi, Kirkland, both of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Filed Oct. 12, 1994, Ser. No. 321,483

Int. Cl.⁶ G01N 33/53

U.S. Cl. 435—7.1

6 Claims

1. A diagnostic assay for adult respiratory distress syndrome (ARDS), sepsis, multiple organ dysfunction (MOD) and systemic inflammatory response syndrome (SIRS), comprising (a) measuring an amount of unsaturated free fatty acid (FFA) selected from the group consisting of linoleate, oleate, and arachidonate and an amount of saturated free fatty acid (FFA) selected from the group consisting of myristate, palmitate, and stearate in a body fluid, and (b) determining an increased ratio value comprising the amount of selected unsaturated FFA divided by the amount of the selected saturated FFA as compared to a normal value, is diagnostic ARDS, MOD and SIRS.

5,780,238

VPR RECEPTOR PROTEIN

David B. Weiner, Merion, Pa.; David Nathan Levy, and Yosef Refaelli, both of Boston, Mass., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

PCT No. PCT/US94/14532, § 371 Date Oct. 24, 1996, § 102(e) Date Oct. 24, 1996, PCT Pub. No. WO95/16705, PCT Pub. Date Jun. 22, 1995

Continuation-in-part of Ser. No. 167,519, Dec. 15, 1993, abandoned. This PCT application Dec. 15, 1994, Ser. No. 652,572
Int. Cl.⁶ G01N 33/566; C07K 14/705; 14/47

U.S. Cl. 435—7.1

5 Claims

1. Essentially pure viral protein R receptor protein characterized by a molecular weight of about 41 kD as determined using 12% SDS-PAGE, an ability to bind to viral protein R and solubility in Triton, or a fragment of said viral protein R receptor protein which binds to viral protein R.

5,780,239

METHOD FOR THE DETERMINATION OF CAST IN URINE

Jesse M. Carter, 9105 S. Rome Ave., Tampa, Fla. 33606, and Jack V. Smith, 8505 42nd Ave. N., St. Petersburg, Fla. 33709
Continuation-in-part of Ser. No. 347,124, Nov. 23, 1994, abandoned. This application Jul. 2, 1996, Ser. No. 675,386

Int. Cl.⁶ G01N 33/53

U.S. Cl. 435—7.1

1 Claim

1. An immunoassay for determining the presence or amount of casts in a urine sample, said method comprising contacting said urine sample with an antibody which specifically binds to Tamm-Horsfall protein to form an immunocomplex; and, measuring said immunocomplex to determine the presence or amount of said Tamm-Horsfall protein in said urine sample, wherein the presence or amount of said Tamm-Horsfall protein indicates the presence or amount of said casts in said urine sample.

5,780,240

ASSAYS FOR CARTILAGE SYNTHESIS IN OSTEOARTHRITIS BASED ON DETECTION OF TYPE IIA PROCOLLAGEN/PROPEPTIDE

Linda J. Sandell, Seattle, Wash., assignor to University of Washington, Seattle, Wash.

Continuation of Ser. No. 198,962, Feb. 18, 1994, Pat. No. 5,541,066. This application Jul. 17, 1996, Ser. No. 682,412
Int. Cl.⁶ G01N 33/53; 33/567

U.S. Cl. 435—7.1

11 Claims

1. A method for determining cartilage synthesis associated with osteoarthritis in a non-embryonic human subject comprising detecting the presence of collagen type IIA propeptide or collagen type IIA in a tissue or fluid sample from said human subject wherein detected collagen type IIA propeptide or collagen type IIA procollagen indicates cartilage synthesis associated with osteoarthritis.

5,780,241

COMPLEX CHEMICAL LIBRARIES

Phillip Dan Cook, Vista, Calif., assignor to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Filed Nov. 5, 1996, Ser. No. 744,020
Int. Cl.⁶ G01N 33/53

U.S. Cl. 435—7.1

4 Claims

1. A method for preparing a chemical library comprising: reacting a mixture of at least four chemical reactive compounds with a scaffold moiety to provide a mixture of reaction products; and transforming the scaffold moiety portion of said reaction products to alter at least one of its chemical or electrochemical properties, wherein said transformation comprises ring opening of a macrocycle that comprises at least one nitrogen-oxygen bond.

5,780,242

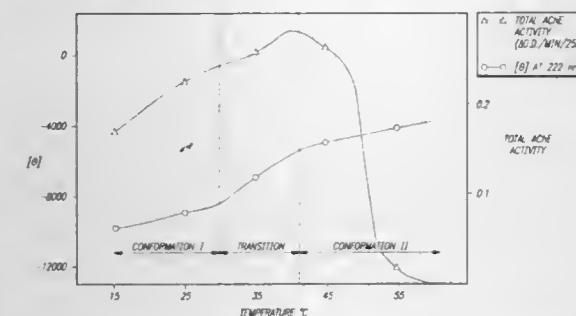
BIOASSAY FOR THE SCREENING OF ION CHANNEL ACTIVE MOLECULES

Alfred A. Nickel, 1844 San Miguel, Walnut Creek, Calif. 94596
PCT No. PCT/US93/05792, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO94/00748, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 18, 1993, Ser. No. 356,388
Int. Cl.⁶ G01N 21/19; 33/566; A61K 41/00; 47/48

U.S. Cl. 435—7.2

10 Claims



1. A method for determining abnormality in the structural conformation of a sodium channel thermal protein comprising the steps of:

- forming a mixture of a test sodium channel thermal protein and a molecule capable of blocking or preventing the normal function of the sodium channel thermal protein in an excitable cell;
- subjecting the mixture to circular dichroism at a wave length of 222 nm wave length measuring the transition of molar ellipticity while varying the temperature of said mixture between 25°–50° C., and

(c) comparing said transition with the transition of molar ellipticity of a control normal sodium channel protein to ascertain the difference in structural conformation of the test sodium channel protein.

5,780,243

METHODS FOR THE QUANTITATIVE ANALYSIS OF ORGANIC COMPOUNDS

James D. Thacker, Manassas, Va., assignor to Thaco Research, Ltd., Chantilly, Va.

Filed Jun. 28, 1996, Ser. No. 671,754
Int. Cl.⁶ G01N 33/531

U.S. Cl. 435—7.9

38 Claims

1. A process for the chemical modification of an organic compound to form an immunogen comprising:
a) adding the organic compound containing either amine, hydroxyl or sulfhydryl functional groups to a homobifunctional carboxylic cross-linking agent in the presence of a hydroxylamide catalyst to form an adduct with a free carboxyl moiety;
b) activating the free carboxyl moiety of the adduct with a carbodiimide and eliminating a urea group to form an activated ester; and
c) conjugating the active ester to an immunogenic carrier containing a primary amine to form the immunogen.

5,780,244

CHANGES IN LAMININ SUBUNIT COMPOSITION ARE DIAGNOSTIC OF FUKUYAMA CONGENITAL MUSCULAR DYSTROPHY

Eva Engvall, Rancho Santa Fe, Calif., and Kiichi Arahata, Tokyo, Japan, assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Continuation-in-part of Ser. No. 127,589, Sep. 27, 1993, abandoned. This application Feb. 14, 1994, Ser. No. 196,828
Int. Cl.⁶ G01N 33/53

U.S. Cl. 435—7.21

7 Claims



1. A method to aid in the identification of an individual predisposed to an autosomal recessive muscular dystrophy, comprising the steps of:

- obtaining a tissue sample from an individual suspected of being predisposed to the autosomal recessive muscular dystrophy, said tissue sample obtained from a tissue known to express laminin M in a subject not predisposed to said autosomal recessive muscular dystrophy;
- contacting said tissue sample with at least one antibody, said antibody which specifically binds to at least one component of basal lamina, said component selected from the group consisting of a laminin and a laminin subunit, said laminin subunit being A, M, B1, B2 or S, under conditions sufficient to effect specific binding of said antibody; and

- c. detecting a level and/or localization of said specific binding, which, when compared to a normal level and/or localization of specific binding, indicates that said individual is predisposed to said autosomal recessive muscular dystrophy.
3. The method of claim 1, wherein said at least one component is laminin M.

5,780,245

POLYPEPTIDES HAVING A SEROTONIN RECEPTOR ACTIVITY, NUCLEIC ACIDS CODING FOR THESE POLYPEPTIDES AND USES

Luc Maroteaux, Strasbourg, France, assignor to Institut National de la Sante et de la Recherche Medicale, Paris, France

PCT No. PCT/FR93/01012, § 371 Date Apr. 14, 1995, § 102(e) Date Apr. 14, 1995, PCT Pub. No. WO94/09130, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 13, 1993, Ser. No. 416,788

Claims priority, application France, Oct. 14, 1992, 92 12280 Int. Cl.⁶ C12N 15/00

U.S. Cl. 435—7.21

11 Claims

1. An isolated polypeptide comprising a sequence selected from the group consisting of:
- SEQ ID No. 2
 - SEQ ID No. 2₍₁₋₁₇₇₎-SEQ ID No. 3, and
 - fragments of (a) or (b), wherein said polypeptide has serotonin binding activity.

5,780,246

ACCUMULATION OF HEAT SHOCK PROTEINS FOR EVALUATING BIOLOGICAL DAMAGE DUE TO CHRONIC EXPOSURE OF AN ORGANISM TO SUBLETHAL LEVELS OF STRESSORS

Brenda M. Sanders; Kenneth D. Jenkins, both of Long Beach, Calif.; Jack L. Nichols, West Vancouver, and Bryan E. Imber, Victoria, both of Canada, assignors to StressGen Biotechnology Corporation, Victoria, Canada, and CA. State University, Long Beach Foundation, Long Beach, Calif.

Continuation of Ser. No. 764,015, Sep. 23, 1991, Pat. No. 5,464,750, which is a continuation-in-part of Ser. No. 404,401, Sep. 12, 1989, Pat. No. 5,232,833, which is a continuation-in-part of Ser. No. 244,757, Sep. 14, 1988, abandoned. This application Apr. 20, 1995, Ser. No. 425,377

Int. Cl.⁶ G01N 33/567

U.S. Cl. 435—7.21

13 Claims

1. A method of detecting chronic exposure of an organism to sublethal levels of one or more stressors in its habitat, comprising: conducting first and second assays at different times, each assay comprising:
- sampling by removing at least one organism from said habitat under sampling conditions that do not induce a heat shock protein response in said organism;
 - obtaining a physiological sample of said organism;
 - measuring the concentration in said sample of at least one heat shock protein selected from the group consisting of hsp 20-30, hsp 60, hsp 70, hsp 90, and ubiquitin; and
 - comparing the heat shock protein concentrations measured in the first and second assays and considering said organism to have been chronically exposed to one or more stressors if said concentrations are at least about 2 times above a baseline heat shock protein concentration corresponding to a non-stressed organism and the measured concentrations do not vary more than about 50% one from the other.

5,780,247

PROCESS FOR SEPARATING AND MEASURING TRACE COMPONENTS

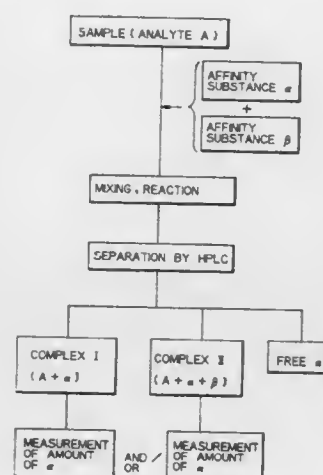
Shinji Satomura, Osaka; Kenji Nakamura, Toyonaka, and Shuji Matuura, Kawanishi, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 133,782, Oct. 8, 1993, abandoned, which is a continuation of Ser. No. 640,768, Jan. 4, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 488,009 Claims priority, application Japan, Jan. 9, 1990, 2-002170; Jan. 26, 1990, 2-016694

Int. Cl.⁶ G01N 33/574

U.S. Cl. 435—7.23

9 Claims



1. A process for separating and simultaneously measuring the total of and specific components of analytes having similar physiological activities or similar structures contained in a bodily fluid which comprises:

mixing in a buffer solution a sample of a bodily fluid containing two or more analytes, which have (a) similar physiological activities or (b) similar structures and different physiological activities with a first affinity substance which binds to all of the analytes and has itself a detectable property or has been labeled with a detectable substance, and a second affinity substance which binds to at least one of the analytes but does not bind to at least one of the other analytes,

reacting the analytes with the first and second affinity substances in said buffer solution,

separating a first complex consisting of the analytes bound to the first affinity substance, a second complex of the analytes bound to the first and second affinity substances, and residual unbound first affinity substance from one another by high pressure liquid chromatography,

separately preparing linear calibration curves showing the values of the detectable property of the first affinity substance corresponding to the concentrations of the analytes in the first and second complexes from a series of incrementally differing samples having known concentrations of the analytes, and determining the amount in the effluent from the high-pressure liquid chromatography of the first affinity substance in the first complex and/or the amount of the first affinity substance in the second complex, by comparison with the linear calibration curve, thereby simultaneously measuring (1) the total amount of said two or more analytes, (2) the amount of the specific analyte or analytes bound to the second affinity substances and (3) the amount of the analyte or analytes other than the specific analyte or analytes.

5,780,248

FOIL SEALED CASSETTE FOR AGGLUTINATION REACTIONS AND LINER THEREFOR

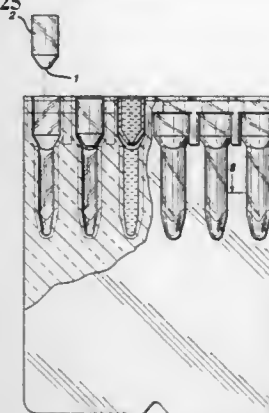
Walter Milchanoski, Milford; Milan Jorik, Bridgewater; Kathleen J. Reis, Milford; Diane E. Bechtold, Green Brook, all of N.J.; Linda Davis, Doylestown, Pa.; Thomas M. Setcavage, Milford, N.J., and Donald M. Davies, Unionville, Va., assignors to Ortho Diagnostic Systems, Inc., Raritan, N.J.

Continuation-in-part of Ser. No. 93,106, Jul. 16, 1993, Pat. No. 5,491,067, which is a continuation of Ser. No. 92,157, Jul. 15, 1993, abandoned. This application Feb. 2, 1996, Ser. No. 595,719

Int. Cl.⁶ G01N 33/50;33/558

U.S. Cl. 435—7.25

10 Claims



1. A liner for preventing cross-contamination of reagent or solution from one column of an agglutination assay cassette to another column of said cassette, wherein said liner comprises a body and at least one conical member depending therefrom, wherein said conical member has an aperture at a narrowed apex thereof, and wherein said conical member has sealing means located at a position spaced from said narrowed apex.

5,780,249

COMPETITIVE ASSAYS USING CHEMILUMINESCENT ELECTRON-RICH ARYL-SUBSTITUTED 1,2-DIOXETANES

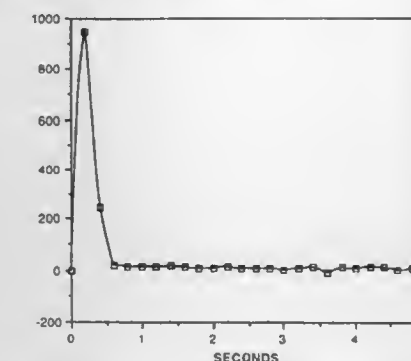
Nai-Yi Wang, Mundelein, and Roger C. Hu, Libertyville, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill. Division of Ser. No. 968,911, Oct. 30, 1992, Pat. No. 5,603,868.

This application May 9, 1995, Ser. No. 437,343

Int. Cl.⁶ G01N 33/53;33/543

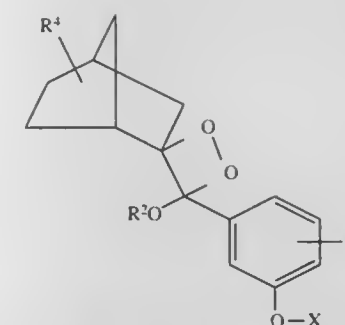
U.S. Cl. 435—7.93

32 Claims



1. A competitive assay for determining the presence and/or amount of analyte in a test sample, comprising:

(a) contacting the test sample suspected of containing the analyte and a control sample free of the analyte with a solid phase to which an analyte-specific binding member has been attached and an indicator reagent capable of generating a measurable signal comprising (i) said analyte or analyte derivative of said analyte and (ii) a chemiluminescent compound of formula (III):



wherein R² is independently selected from the group consisting of C₁-C₁₀-alkyl, halo-C₁-C₁₀-alkyl, C₁-C₁₀-arylalkyl, carboxy-C₁-C₁₀-alkyl, hydroxy-C₁-C₁₀-alkyl, aldehyde-C₁-C₁₀-alkyl, amino-C₁-C₁₀-alkyl and thiol-C₁-C₁₀-alkyl; R⁴ is independently selected from the group consisting of hydrogen, C₁-C₁₀-alkoxy, halo-C₁-C₁₀-alkyl and halogen;

R⁵ is one to four groups independently selected from the group consisting of hydrogen, C₁-C₁₀-alkyl, C₁-C₁₀-alkoxy, C₁-C₁₀-alkylthio, halo-C₁-C₁₀-alkyl, C₁-C₁₀-alkylamino, C₁-C₁₀-dialkylamino and aryl-C₁-C₁₀-alkyl; and

OX is a chemically labile group wherein the removal of X by an activating agent results in the formation of an aryl oxide intermediate; and

(b) determining the reduction in binding of the indicator reagent by measuring the difference between the signals generated by the test sample and the control sample and correlating said reduction to the presence and/or amount of analyte in the sample.

5,780,250

IMMUNOASSAY STANDARDS FOR POLYAROMATIC HYDROCARBON DETECTION

Fernando M. Rubio, Doylestown, Pa.; Timothy S. Lawruk, New Castle, Del., and Charles E. Lachman, Levittown, Pa., assignors to Strategic Diagnostics, Inc., Newark, Del.

Filed Feb. 23, 1996, Ser. No. 606,284

Int. Cl.⁶ G01N 33/533

U.S. Cl. 435—7.93

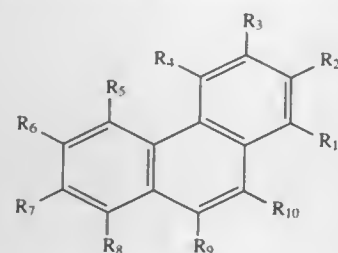
11 Claims

1. An immunoassay for an analyte, said immunoassay a process that comprises the steps of:

- 1) reacting a sample with an antibody preparation, said sample comprising an unknown amount of analyte, said antibody reactive against said analyte,
- 2) reacting a known amount of standard with an antibody preparation of the same specificity as that used in step (1), it being required that the standard is a compound that is immunoreactive with the antibody preparation,
- 3) quantitating the amount of the antibody preparation that reacted with the sample in step (1),
- 4) quantitating the amount of the antibody preparation that reacted with the known amount of standard in step (2), and
- 5) utilizing the amount quantitated in steps (3) and (4) and the known amount in step (2) to calculate the amount or an upper or lower limit to the amount of analyte present in the sample used in step (1).

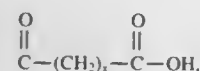
wherein the analyte is selected from the group phenanthrene, fluoranthene, benzo[a]pyrene, pyrene, chrysene, anthracene, indeno[1,2,3-cd]pyrene, 1,2-benzoanthracene, fluorene, and benzo(h)fluoranthene.

wherein either the standard is a compound with the structure

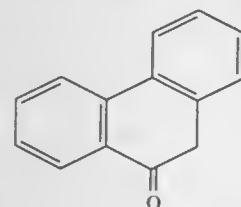


wherein R_1 , R_2 , R_3 , R_4 , R_5 , R_6 , R_7 , R_8 , R_9 , and R_{10} are substituents,

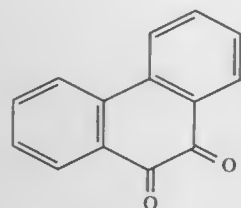
wherein one or two of said substituents is not H and the other substituents are H, and a substituent that is not H is either OH, COH, CH_2OH , $\text{CH}_2(\text{CH}_2)_x\text{OH}$, CO_2H , NH_2 , CN, SO_3H , NO_2 , or



or the standard is a compound with a structure



or



wherein x is an integer between 1 and 12.

5,780,251

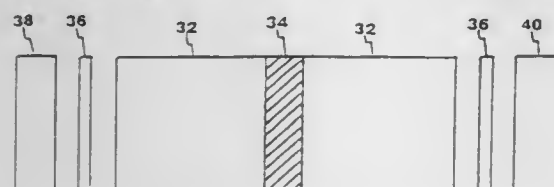
ULTRASENSITIVE SINGLE-STEP, SOLID-STATE COMPETITIVE IMMUNOASSAY SENSOR WITH INTERFERENCE MODIFIER AND/OR GEL LAYER
Stanley M. Klainer; Stephen L. Coulter, and Geoffrey F. Hewitt, all of Henderson, Nev., assignors to FCI FiberChem, Inc., Las Vegas, Nev.

Continuation-in-part of Ser. No. 671,378, Jun. 27, 1996. This application Dec. 30, 1996, Ser. No. 774,389

Int. Cl.⁶ G01N 33/53; 33/552

U.S. Cl. 435—7,93

32 Claims



1. A solid state competitive immunoassay sensor for detecting the presence of a particular analyte, comprising:
a solid substrate which transmits light;
an antibody to which the analyte binds immobilized on the solid substrate;

an affinity controlled tagged form of the analyte displaceably bound to the antibody and having a lower binding energy to the antibody than untagged analyte, wherein untagged analyte will displace tagged analyte and bind to the antibody when the antibody with tagged analyte contacts a sample containing untagged analyte, the antibody with bound tagged analyte having an optical property which is changed by displacement of tagged analyte by untagged analyte, the antibody with bound tagged analyte forming a solid state system, the affinity controlled tagged form of the analyte having a binding energy to the antibody to provide a desired level of sensitivity to the untagged analyte, the affinity controlled tagged form of the analyte including an interference modifier which removes displaced tagged analyte from the field of view of the sensor.

5,780,252

Patent Not Issued For This Number

5,780,253

SCREENING METHOD FOR DETECTION OF HERBICIDES

Venkiteswaran Subramanian, Danville, and Anne G. Toschi, Burlingame, both of Calif., assignors to Sandoz Ltd., Basel, Switzerland

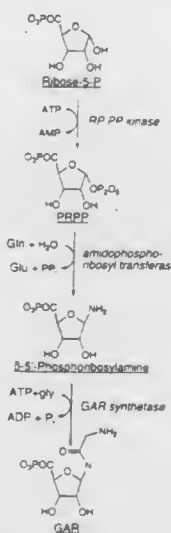
Continuation of Ser. No. 434,826, May 4, 1995, abandoned.

This application Nov. 21, 1996, Ser. No. 752,990

Int. Cl.⁶ C12Q 1/48; 1/32; 1/37; 1/00

U.S. Cl. 435—15

18 Claims



1. A method for identifying a probe compound that inhibits plant AMP biosynthesis, said method comprising a two-step procedure, a) the first step includes the determination of a lethal concentration which comprises:

- 1) maintaining plant material capable of expressing the enzyme adenylosuccinate synthetase and adenylosuccinate lyase under test conditions suitable for the growth of the plant material;
- 2) contacting a probe compound at a concentration range of about 0.01 ppm to about 500 ppm with the plant material of 1);
- 3) allowing the probe compound and plant material to incubate; and
- 4) measuring the inhibition of growth of the plant material and determining the lethal concentration of the probe compound;

b) the second step includes the determination of reversal conditions which comprises:

- 5) maintaining the plant material as stated in step 1)

6) contacting the plant material with the probe compound and one or more antidotes compounds wherein the concentration of the probe compound is at the lethal concentration and the concentration of the antidote compound is in the range of 0.001 to about 5.0 mM;

7) allowing the plant material to grow in the presence of the probe compound and antidote compound;

8) measuring the growth of the plant material and selecting the probe compound that inhibits growth of the plant material under step a) but does not inhibit growth of the plant material under reversal conditions of step b) and wherein the plant material is seed material.

5,780,254

METHOD FOR DETECTION OF HERBICIDES

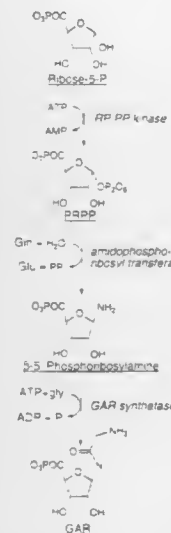
Daniel L. Siehl, Menlo Park; Venkiteswaran Subramanian, Danville, and Anne G. Toschi, Burlingame, all of Calif., assignors to Sandoz Ltd, Basel, Switzerland

Continuation of Ser. No. 508,999, Jul. 28, 1995, abandoned, which is a continuation-in-part of Ser. No. 435,948, May 4, 1995, abandoned. This application Dec. 18, 1996, Ser. No. 767,363

Int. Cl.⁶ C12Q 1/48; 1/34; 1/32; 1/00

U.S. Cl. 435—15

23 Claims



1. A method for identifying a probe compound that inhibits plant AMP biosynthesis, said method comprising:

- a) exposing plant material capable of expressing the enzyme adenylosuccinate synthetase and adenylosuccinate lyase to a concentration range of a probe compound;
- b) determining a lethal concentration range of said probe compound;
- c) exposing plant material capable of expressing said enzymes to the lethal concentration range of said probe compound and concurrently exposing said material to a concentration range of one or more antidote compounds; and
- d) selecting the probe compound that inhibits growth of the plant material at a lethal concentration range of said probe compound but does not inhibit growth of the plant material when exposed to the antidote compound.

5,780,255

PROTEIN C PATHWAY SCREENING TEST

Luigi Preda, Verano Brianza, Italy, assignor to Instrumentation Laboratory, S.p.A., Italy

Filed Jun. 9, 1995, Ser. No. 488,510

Int. Cl.⁶ C12Q 1/37; 1/56; C12N 9/48; 9/74

U.S. Cl. 435—23

6 Claims

1. A non-quantitative screening method for determining the presence of a defect in the protein C pathway, including a deficiency of protein C or protein S or APC resistance, said method comprising:

- a. adding to a plasma sample obtained from said subject (i) a first reagent comprising bovine thromboplastin in an amount sufficient to induce or activate coagulation in the plasma, (ii) a second reagent which activates endogenous protein C in the plasma, and (iii) a third reagent comprising a combination of calcium salts, phospholipids and tissue thromboplastin;
- b. adding to a second plasma sample from the same said subject (i) said first reagent which activates or induces coagulation, (ii) a buffer or other material which does not activate protein C, and (iii) a third reagent comprising a combination of calcium salts, phospholipids and tissue thromboplastin;
- c. measuring the time, rate, or both, necessary for conversion of endogenous fibrinogen to fibrin in the sample of step (a);
- d. measuring the time, rate, or both necessary for conversion of endogenous fibrinogen to fibrin in the plasma sample of step (b);
- e. calculating the difference or ratio between the times, rates or both, obtained in steps (c) or (d);
- f. performing steps (a), (b), (c) and (d) on a sample of normal control plasma; and
- g. determining the difference or ratio in the times, rates, or both, obtained in steps (e) and (f) wherein said difference is indicative of the thrombotic risk in said subject.

5,780,256

METHOD AND COMPOSITION FOR QUANTITATIVE DETERMINATION OF AMMONIA, α -AMINO ACID, OR α -KETO ACID

Shigeru Ueda, Tagata-gun; Mamoru Takahashi, Suntou-gun; Hideo Misaki, and Shigeru Ikuta, both of Tagata-gun, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP91/01785, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO92/15705, PCT Pub. Date Sep. 17, 1992

PCT Filed Dec. 27, 1991, Ser. No. 108,736

Claims priority, application Japan, Mar. 1, 1991, 3-036385

Int. Cl.⁶ C12Q 1/32

U.S. Cl. 435—26

18 Claims

1. A method for the quantitative determination of a chemical substance selected from the group consisting of ammonia, an α -amino acid and an α -keto acid corresponding to said α -amino acid, which comprises:

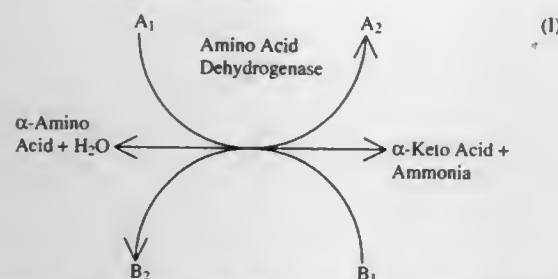
reacting a biological sample containing a target chemical substance selected from the group consisting of ammonia, an α -amino acid and an α -keto acid corresponding to said α -amino acid, with a reagent comprising:

- (1) an amino acid dehydrogenase which catalyzes the reversible reaction of an α -amino acid with water, said reaction producing ammonia and an α -keto acid corresponding to said α -amino acid, in the presence of (i) a first coenzyme selected from the group consisting of a thio-NADP compound and a thio-NAD compound and (ii) a second coenzyme selected from the group consisting of an NADP compound and an NAD compound,

wherein said thio-NADP compound is selected from the group consisting of thionicotinamide adenine dinucleotide phosphate and thionicotinamide hypoxanthine dinucleotide phosphate, and said thio-NAD compound is selected from the group consisting of thionicotinamide adenine dinucleotide and thionicotinamide hypoxanthine dinucleotide, and wherein said

NADP compound is selected from the group consisting of nicotinamide adenine dinucleotide phosphate, acetylpyridine adenine dinucleotide phosphate, acetylpyridine hypoxanthine dinucleotide phosphate, and said NAD compound is selected from the group consisting of nicotinamide adenine dinucleotide, acetylpyridine adenine dinucleotide, acetylpyridine hypoxanthine dinucleotide and nicotinamide hypoxanthine dinucleotide:

- (2) A_1 ; and
(3) B_1 ; said components (1), (2) and (3) participating in the following cycling reaction (I):



wherein A_1 is a thio-NADP compound, a thio-NAD compound, an NADP compound or an NAD compound; A_2 is a reduced product of A_1 ; B_1 is a reduced NADP compound or a reduced NAD compound when A_1 is a thio-NADP compound or a thio-NAD compound, or a reduced thio-NADP compound or a reduced thio-NAD compound when A_1 is an NADP compound or an NAD compound; and B_2 is an oxidized product of B_1 ,

with the proviso that when said target chemical substance is ammonia, said reagent further comprises an α -keto acid corresponding to the amino acid dehydrogenase as a nontarget chemical substance, and that when said target chemical substance is an α -keto acid, said reagent further comprises ammonia as a non-target chemical substance;

thereby effecting the cycling reaction (I);

measuring a change in absorbance at a wavelength specific for A_2 or B_1 , which is caused for a predetermined period of time during said reaction (I); and

correlating the measured change in absorbance of the target chemical substance with a calibration curve, which has been prepared from standard samples containing the target chemical substance in different concentrations, to quantify the amount of the target chemical substance.

5,780,257

METHOD AND REAGENT FOR DETECTING PEROXIDASE OR HYDROGEN PEROXIDE

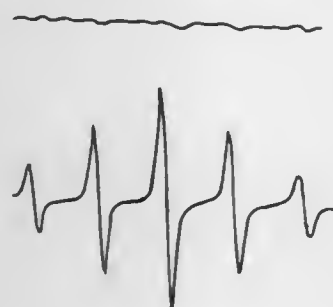
Masaaki Aoyama, Yamagata, Japan, and Masanobu Shiga, Rockville, Md., assignors to Yamagata Technopolis Foundation, and JEOL Ltd., both of Japan

Filed Jul. 18, 1996, Ser. No. 683,148

Int. Cl.⁶ C12Q 1/28;1/26; G01N 33/53;24/00

U.S. Cl. 435—28

8 Claims



1. A method for detecting peroxidase or hydrogen peroxide, said method comprising the steps of:

preparing peroxidase and hydrogen peroxide such that one of them is overabundant to the other;

producing phenoxy radicals from a p-substituted phenol compound by the action of the peroxidase in the presence of the hydrogen peroxide;

transferring electrons from said phenoxy radicals to a hydroxy amine compound and producing stable radical species of said hydroxy amine compound; and

measuring electron spin resonances of said stable radical species.

5,780,258

DRUG SCREENS FOR REGULATORS OF THE EXPRESSION OF THE OBESE GENE

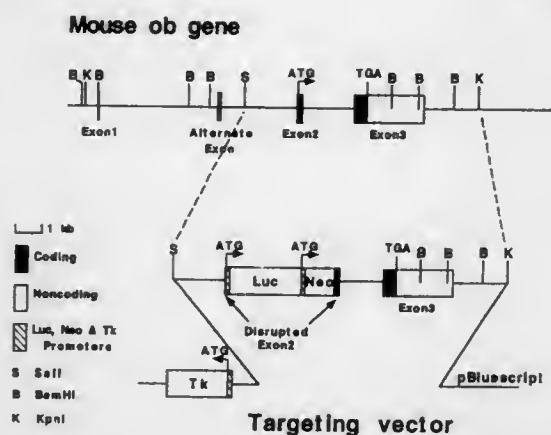
Fabienne Charles de la Brousse, San Francisco, and Jin-long Chen, Millbrae, both of Calif., assignors to Tularik, Inc., South San Francisco, Calif.

Filed Sep. 4, 1996, Ser. No. 707,408

Int. Cl.⁶ C12Q 1/02;1/66; C12N 5/10;5/00

U.S. Cl. 435—29

6 Claims



1. An isolated genetic knock-in mammalian adipocyte, wherein said adipocyte is, or is a progeny of, a genetic knock-in cell made by homologous recombination of a native ob allele with a transgene comprising a sequence encoding a reporter flanked by flanking sequences which effect the homologous recombination of said transgene with said native ob allele, wherein the expression of said reporter is under the control of native gene expression regulatory sequences of said native ob allele.

5. A cell-based method for screening for modulators of ob gene expression, said method comprising steps:

- determining a first reporter expression level in a first isolated mammalian adipocyte according to claim 1;
- contacting a second isolated mammalian adipocyte according to claim 1 with a candidate agent under conditions whereby but for the presence of said agent, said reporter is expressed at said first reporter expression level;
- determining a second reporter expression level in said second isolated mammalian adipocyte;
- comparing said first expression level with said second expression level, wherein a difference between said first and second expression levels indicates that said candidate agent modulates ob gene expression.

5,780,259

MEDIUM AND METHOD FOR DETECTING A TARGET MICROBE

Stephen C. Edberg, 356 Woodland La., Orange, Conn. 06477

Continuation of Ser. No. 323,064, Oct. 14, 1994, Pat. No. 5,429,933, which is a continuation of Ser. No. 149,706, Nov. 9, 1993, abandoned, which is a continuation of Ser. No. 824,893, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 752,996, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 349,653, May 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 880,305, Jun. 30, 1986, Pat. No. 4,925,789. This application Jun. 5, 1995, Ser. No. 465,010

Int. Cl.⁶ C12Q 1/04;1/10

U.S. Cl. 435—34

20 Claims

1. A target microbe-specific medium for detecting the presence or absence of a target microbe in an environmental or biological sample, said medium comprising:

- an effective amount of vitamin, amino acid, element and salt ingredients operable to allow viability and log phase reproduction of said target microbe in the presence of a nutrient-indicator and to aid the target microbe through lag phase and into log phase of growth in the sample and;
- an effective amount of a nutrient-indicator which is provided in an amount sufficient to support log phase growth of said target microbe of a sample until a detectable characteristic signal is produced in the medium/sample mixture during said log phase growth; said nutrient-indicator being incapable of supporting continued logarithmic growth of any viable non-target microbes in the medium/sample mixture to produce a detectable characteristic signal; and said nutrient-indicator being operable to alter a detectable characteristic of the medium/sample mixture metabolized by the target microbe so as to confirm the presence or absence of the target microbe in the sample; wherein said medium lacks a gelling agent so that when said medium is mixed with a liquefied sample a liquid is formed, and wherein said ingredients in (a), and said nutrient-indicator are chosen such that growth of non-target microbes does not interfere with growth of said target microbe.

5,780,260

IMMOBILIZATION OF PENICILLIN G AMIDASE, GLUTARYL-7-ACA ACYLASE OR D-AMINOACID OXIDASE ON AN AMINOFUNCTIONAL ORGANOSILOXANE POLYMER CARRIER

Frank Wedekind, Penzberg; Adelheid Daser, Schlehdorf, and Wilhelm Tischer, Peissenberg, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

PCT No. PCT/EP94/04132, § 371 Date May 30, 1996, § 102(e) Date May 30, 1996, PCT Pub. No. WO95/16773, PCT Pub. Date Jun. 22, 1995

PCT Filed Dec. 13, 1996, Ser. No. 648,015

Claims priority, application Germany, Dec. 15, 1993, 43 42 770.7

Int. Cl.⁶ C12P 37/00;35/00; C12N 11/18;11/14

U.S. Cl. 435—43

23 Claims

1. An emmobilized enzyme comprising an enzyme selected from the group consisting of penicillin-G amidase, glutaryl-7-ACA acylase and D-amino acid oxidase immobilized by covalent binding to an aminofunctional organosiloxane polymer carrier material having an average diameter of 0.01 to 3 mm wherein the enzyme has a specific volume activity of at least 100 U/g carrier material.

5,780,261

METHOD AND SYSTEM FOR ENHANCED PRODUCTION OF COMMERCIALY IMPORTANT EXOPROTEINS IN GRAM-POSITIVE BACTERIA

Vesa Kontinen, and Matti Sarvas, both of Helsinki, Finland, assignors to The Finnish National Public Health Institute (KTL), Helsinki, Finland

PCT No. PCT/FI94/00072, § 371 Date Jul. 8, 1996, § 102(e) Date Jul. 8, 1996, PCT Pub. No. WO94/19471, PCT Pub. Date Sep. 1, 1994

Continuation-in-part of Ser. No. 24,154, Feb. 26, 1993, abandoned. This PCT application Feb. 25, 1994, Ser. No. 507,391

Int. Cl.⁶ C12P 21/00; C12N 1/21;15/00;15/32

U.S. Cl. 435—69.1

16 Claims

1. An expression system for enhancing secretion of exoproteins in gram-positive bacteria engineered to express greater than wild-type amounts of PrsA protein from Bacillus, wherein said gram-positive bacteria express greater than wild-type amounts of at least one exoprotein of interest.

5,780,262

MAX-INTERACTING PROTEINS AND RELATED MOLECULES AND METHODS

Roger Brent, Cambridge, and Antonis S. Zervos, Boston, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 11,398, Jan. 29, 1993, Pat. No. 5,512,473. This application Jun. 5, 1995, Ser. No. 464,051

Int. Cl.⁶ C12N 5/10;15/54;15/63; C12P 21/02

U.S. Cl. 435—69.1

7 Claims

1. Purified DNA comprising a sequence encoding a human Max-Interacting 2 (Mxi2) polypeptide.

5,780,263

HUMAN CCN-LIKE GROWTH FACTOR

Gregg A. Hastings, Germantown, and Mark D. Adams, North Potomac, both of Md., assignors to Human Genome Sciences, Inc., Rockville, Md.

Filed Jun. 6, 1995, Ser. No. 468,847

Int. Cl.⁶ C12N 15/12

U.S. Cl. 435—69.1

20 Claims

1. An isolated polynucleotide comprising a polynucleotide having at least a 95% identity to a member selected from the group consisting of:

- a polynucleotide encoding a polypeptide comprising amino acids 1 to 183 of SEQ ID NO:2; and
- the complement of (a).

5,780,264

IRON TRANSPORT PROTEIN

Marianne Wessling-Resnick, Boxborough, Mass., and Jesus Gutierrez, Greenfield, Ind., assignors to The President and Fellows of Harvard College, Cambridge, Mass.

Filed Feb. 25, 1997, Ser. No. 806,581

Int. Cl.⁶ C12P 21/00;19/34; C12N 15/63; C07H 21/04

U.S. Cl. 435—69.1

9 Claims

1. An isolated nucleotide sequence encoding the stimulator of Fe (iron) transport (SFT) protein.

1 GAATGGGCT GTGGACCTTA CTGTCAATA GTATATCTC TGTATTGAA
51 AAATAGATGT ATATATTCTA GGTGATAAT TAAAAATGAA AGAATTTAAT
101 CATGGGAAG TATTAATAT ATATTGCTTA TCTTCTCAA GGAAGAGAG
151 TCTCTCGTA CCATCCAAA CTGACCTAAT TCTCAAGCTG CTTCACTCTG
201 CTTGTACTGT AGGTTCATT GCAATTTGTA GATATGCTC CTTGAGGATT
251 GGCTTTGTA AATTCTGTT AGAAGCTGGT TCTGCAATT TGTATTTTTC
301 TGTATTGGA TACATTTTCA TATGTGCAG AGAATCCAT GAGTTAAAAA
351 ATTATTTTTC CTTGTTTAT TCTGCTGCA ACCTAAGTCA CATTGACCCA
401 GTAATTGATA TATGTGTGAT TATGCAATT AAGTAAAGA AGGTAGATAA
451 TATAGTTTTA TTAGACAGAT GCTTCTGAA ATATTATTTT GTATGTTTTT
501 ACTATATCTT TTTTGTGAT CTACAGATC AACAGACATG CAAGAGAATG
551 GACTCAGAAA TATGCAATGT AAAATCAAA AACATTTTCA TATATAACCA
601 GAGTACTGTA AAATCTAGGT TTTTCTCAA CATTAGCAGT AAATTAGCA
651 CTGTTTACCT GTTTCATTGT ACCATGAAC CATTGATT TTACATTTT
701 AAATGTGCTC CAAGCAAGAC AAAACAATC TCAAAAAATA CCGTTAAGAC
751 TGTGATGAGA GCATTATCA TTTTGTATGC ATTGAGAAAG ACATTATTA

5,780,265

KUNITZ TYPE PLASMA KALLIKREIN INHIBITORS

Mark S. Dennis, San Carlos, and Robert A. Lazarus, Millbrae, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Jun. 5, 1995, Ser. No. 463,155

Int. Cl.⁶ C12P 21/06; C12N 15/63; C07K 14/81; C07H 21/04
U.S. Cl. 435—69.2 11 Claims

1 A polypeptide which inhibits plasma kallikrein comprising a non-native Kunitz-type serine protease inhibitor domain said Kunitz-type serine protease inhibitor domain having a primary binding loop: Xaa₃-Xaa₄-Xaa₅-Xaa₆-Xaa₇-Xaa₈-Xaa₉-Xaa₁₀-Xaa₁₁-Xaa₁₂-Xaa₁₃-Xaa₁₄-Xaa₁₅-Xaa₁₆-Xaa₁₇-Xaa₁₈-Xaa₁₉-Xaa₂₀-Xaa₂₁-Xaa₂₂-Xaa₂₃-Xaa₂₄-Xaa₂₅-Xaa₂₆-Xaa₂₇-Xaa₂₈-Xaa₂₉-Xaa₃₀-Xaa₃₁-Xaa₃₂-Xaa₃₃-Xaa₃₄-Xaa₃₅-Xaa₃₆-Xaa₃₇-Xaa₃₈-Xaa₃₉-Xaa₄₀-Xaa₄₁-Xaa₄₂-Xaa₄₃-Xaa₄₄-Xaa₄₅-Xaa₄₆-Xaa₄₇-Xaa₄₈-Xaa₄₉-Xaa₅₀-Xaa₅₁-Xaa₅₂-Xaa₅₃-Xaa₅₄-Xaa₅₅-Xaa₅₆-Xaa₅₇-Xaa₅₈-Xaa₅₉-Xaa₆₀-Xaa₆₁-Xaa₆₂-Xaa₆₃-Xaa₆₄-Xaa₆₅-Xaa₆₆-Xaa₆₇-Xaa₆₈-Xaa₆₉-Xaa₇₀-Xaa₇₁-Xaa₇₂-Xaa₇₃-Xaa₇₄-Xaa₇₅-Xaa₇₆-Xaa₇₇-Xaa₇₈-Xaa₇₉-Xaa₈₀-Xaa₈₁-Xaa₈₂-Xaa₈₃-Xaa₈₄-Xaa₈₅-Xaa₈₆-Xaa₈₇-Xaa₈₈-Xaa₈₉-Xaa₉₀-Xaa₉₁-Xaa₉₂-Xaa₉₃-Xaa₉₄-Xaa₉₅-Xaa₉₆-Xaa₉₇-Xaa₉₈-Xaa₉₉-Xaa₁₀₀-Xaa₁₀₁-Xaa₁₀₂-Xaa₁₀₃-Xaa₁₀₄-Xaa₁₀₅-Xaa₁₀₆-Xaa₁₀₇-Xaa₁₀₈-Xaa₁₀₉-Xaa₁₁₀-Xaa₁₁₁-Xaa₁₁₂-Xaa₁₁₃-Xaa₁₁₄-Xaa₁₁₅-Xaa₁₁₆-Xaa₁₁₇-Xaa₁₁₈-Xaa₁₁₉-Xaa₁₂₀-Xaa₁₂₁-Xaa₁₂₂-Xaa₁₂₃-Xaa₁₂₄-Xaa₁₂₅-Xaa₁₂₆-Xaa₁₂₇-Xaa₁₂₈-Xaa₁₂₉-Xaa₁₃₀-Xaa₁₃₁-Xaa₁₃₂-Xaa₁₃₃-Xaa₁₃₄-Xaa₁₃₅-Xaa₁₃₆-Xaa₁₃₇-Xaa₁₃₈-Xaa₁₃₉-Xaa₁₄₀-Xaa₁₄₁-Xaa₁₄₂-Xaa₁₄₃-Xaa₁₄₄-Xaa₁₄₅-Xaa₁₄₆-Xaa₁₄₇-Xaa₁₄₈-Xaa₁₄₉-Xaa₁₅₀-Xaa₁₅₁-Xaa₁₅₂-Xaa₁₅₃-Xaa₁₅₄-Xaa₁₅₅-Xaa₁₅₆-Xaa₁₅₇-Xaa₁₅₈-Xaa₁₅₉-Xaa₁₆₀-Xaa₁₆₁-Xaa₁₆₂-Xaa₁₆₃-Xaa₁₆₄-Xaa₁₆₅-Xaa₁₆₆-Xaa₁₆₇-Xaa₁₆₈-Xaa₁₆₉-Xaa₁₇₀-Xaa₁₇₁-Xaa₁₇₂-Xaa₁₇₃-Xaa₁₇₄-Xaa₁₇₅-Xaa₁₇₆-Xaa₁₇₇-Xaa₁₇₈-Xaa₁₇₉-Xaa₁₈₀-Xaa₁₈₁-Xaa₁₈₂-Xaa₁₈₃-Xaa₁₈₄-Xaa₁₈₅-Xaa₁₈₆-Xaa₁₈₇-Xaa₁₈₈-Xaa₁₈₉-Xaa₁₉₀-Xaa₁₉₁-Xaa₁₉₂-Xaa₁₉₃-Xaa₁₉₄-Xaa₁₉₅-Xaa₁₉₆-Xaa₁₉₇-Xaa₁₉₈-Xaa₁₉₉-Xaa₂₀₀-Xaa₂₀₁-Xaa₂₀₂-Xaa₂₀₃-Xaa₂₀₄-Xaa₂₀₅-Xaa₂₀₆-Xaa₂₀₇-Xaa₂₀₈-Xaa₂₀₉-Xaa₂₁₀-Xaa₂₁₁-Xaa₂₁₂-Xaa₂₁₃-Xaa₂₁₄-Xaa₂₁₅-Xaa₂₁₆-Xaa₂₁₇-Xaa₂₁₈-Xaa₂₁₉-Xaa₂₂₀-Xaa₂₂₁-Xaa₂₂₂-Xaa₂₂₃-Xaa₂₂₄-Xaa₂₂₅-Xaa₂₂₆-Xaa₂₂₇-Xaa₂₂₈-Xaa₂₂₉-Xaa₂₃₀-Xaa₂₃₁-Xaa₂₃₂-Xaa₂₃₃-Xaa₂₃₄-Xaa₂₃₅-Xaa₂₃₆-Xaa₂₃₇-Xaa₂₃₈-Xaa₂₃₉-Xaa₂₄₀-Xaa₂₄₁-Xaa₂₄₂-Xaa₂₄₃-Xaa₂₄₄-Xaa₂₄₅-Xaa₂₄₆-Xaa₂₄₇-Xaa₂₄₈-Xaa₂₄₉-Xaa₂₅₀-Xaa₂₅₁-Xaa₂₅₂-Xaa₂₅₃-Xaa₂₅₄-Xaa₂₅₅-Xaa₂₅₆-Xaa₂₅₇-Xaa₂₅₈-Xaa₂₅₉-Xaa₂₆₀-Xaa₂₆₁-Xaa₂₆₂-Xaa₂₆₃-Xaa₂₆₄-Xaa₂₆₅-Xaa₂₆₆-Xaa₂₆₇-Xaa₂₆₈-Xaa₂₆₉-Xaa₂₇₀-Xaa₂₇₁-Xaa₂₇₂-Xaa₂₇₃-Xaa₂₇₄-Xaa₂₇₅-Xaa₂₇₆-Xaa₂₇₇-Xaa₂₇₈-Xaa₂₇₉-Xaa₂₈₀-Xaa₂₈₁-Xaa₂₈₂-Xaa₂₈₃-Xaa₂₈₄-Xaa₂₈₅-Xaa₂₈₆-Xaa₂₈₇-Xaa₂₈₈-Xaa₂₈₉-Xaa₂₉₀-Xaa₂₉₁-Xaa₂₉₂-Xaa₂₉₃-Xaa₂₉₄-Xaa₂₉₅-Xaa₂₉₆-Xaa₂₉₇-Xaa₂₉₈-Xaa₂₉₉-Xaa₃₀₀-Xaa₃₀₁-Xaa₃₀₂-Xaa₃₀₃-Xaa₃₀₄-Xaa₃₀₅-Xaa₃₀₆-Xaa₃₀₇-Xaa₃₀₈-Xaa₃₀₉-Xaa₃₁₀-Xaa₃₁₁-Xaa₃₁₂-Xaa₃₁₃-Xaa₃₁₄-Xaa₃₁₅-Xaa₃₁₆-Xaa₃₁₇-Xaa₃₁₈-Xaa₃₁₉-Xaa₃₂₀-Xaa₃₂₁-Xaa₃₂₂-Xaa₃₂₃-Xaa₃₂₄-Xaa₃₂₅-Xaa₃₂₆-Xaa₃₂₇-Xaa₃₂₈-Xaa₃₂₉-Xaa₃₃₀-Xaa₃₃₁-Xaa₃₃₂-Xaa₃₃₃-Xaa₃₃₄-Xaa₃₃₅-Xaa₃₃₆-Xaa₃₃₇-Xaa₃₃₈-Xaa₃₃₉-Xaa₃₄₀-Xaa₃₄₁-Xaa₃₄₂-Xaa₃₄₃-Xaa₃₄₄-Xaa₃₄₅-Xaa₃₄₆-Xaa₃₄₇-Xaa₃₄₈-Xaa₃₄₉-Xaa₃₅₀-Xaa₃₅₁-Xaa₃₅₂-Xaa₃₅₃-Xaa₃₅₄-Xaa₃₅₅-Xaa₃₅₆-Xaa₃₅₇-Xaa₃₅₈-Xaa₃₅₉-Xaa₃₆₀-Xaa₃₆₁-Xaa₃₆₂-Xaa₃₆₃-Xaa₃₆₄-Xaa₃₆₅-Xaa₃₆₆-Xaa₃₆₇-Xaa₃₆₈-Xaa₃₆₉-Xaa₃₇₀-Xaa₃₇₁-Xaa₃₇₂-Xaa₃₇₃-Xaa₃₇₄-Xaa₃₇₅-Xaa₃₇₆-Xaa₃₇₇-Xaa₃₇₈-Xaa₃₇₉-Xaa₃₈₀-Xaa₃₈₁-Xaa₃₈₂-Xaa₃₈₃-Xaa₃₈₄-Xaa₃₈₅-Xaa₃₈₆-Xaa₃₈₇-Xaa₃₈₈-Xaa₃₈₉-Xaa₃₉₀-Xaa₃₉₁-Xaa₃₉₂-Xaa₃₉₃-Xaa₃₉₄-Xaa₃₉₅-Xaa₃₉₆-Xaa₃₉₇-Xaa₃₉₈-Xaa₃₉₉-Xaa₄₀₀-Xaa₄₀₁-Xaa₄₀₂-Xaa₄₀₃-Xaa₄₀₄-Xaa₄₀₅-Xaa₄₀₆-Xaa₄₀₇-Xaa₄₀₈-Xaa₄₀₉-Xaa₄₁₀-Xaa₄₁₁-Xaa₄₁₂-Xaa₄₁₃-Xaa₄₁₄-Xaa₄₁₅-Xaa₄₁₆-Xaa₄₁₇-Xaa₄₁₈-Xaa₄₁₉-Xaa₄₂₀-Xaa₄₂₁-Xaa₄₂₂-Xaa₄₂₃-Xaa₄₂₄-Xaa₄₂₅-Xaa₄₂₆-Xaa₄₂₇-Xaa₄₂₈-Xaa₄₂₉-Xaa₄₃₀-Xaa₄₃₁-Xaa₄₃₂-Xaa₄₃₃-Xaa₄₃₄-Xaa₄₃₅-Xaa₄₃₆-Xaa₄₃₇-Xaa₄₃₈-Xaa₄₃₉-Xaa₄₄₀-Xaa₄₄₁-Xaa₄₄₂-Xaa₄₄₃-Xaa₄₄₄-Xaa₄₄₅-Xaa₄₄₆-Xaa₄₄₇-Xaa₄₄₈-Xaa₄₄₉-Xaa₄₅₀-Xaa₄₅₁-Xaa₄₅₂-Xaa₄₅₃-Xaa₄₅₄-Xaa₄₅₅-Xaa₄₅₆-Xaa₄₅₇-Xaa₄₅₈-Xaa₄₅₉-Xaa₄₆₀-Xaa₄₆₁-Xaa₄₆₂-Xaa₄₆₃-Xaa₄₆₄-Xaa₄₆₅-Xaa₄₆₆-Xaa₄₆₇-Xaa₄₆₈-Xaa₄₆₉-Xaa₄₇₀-Xaa₄₇₁-Xaa₄₇₂-Xaa₄₇₃-Xaa₄₇₄-Xaa₄₇₅-Xaa₄₇₆-Xaa₄₇₇-Xaa₄₇₈-Xaa₄₇₉-Xaa₄₈₀-Xaa₄₈₁-Xaa₄₈₂-Xaa₄₈₃-Xaa₄₈₄-Xaa₄₈₅-Xaa₄₈₆-Xaa₄₈₇-Xaa₄₈₈-Xaa₄₈₉-Xaa₄₉₀-Xaa₄₉₁-Xaa₄₉₂-Xaa₄₉₃-Xaa₄₉₄-Xaa₄₉₅-Xaa₄₉₆-Xaa₄₉₇-Xaa₄₉₈-Xaa₄₉₉-Xaa₅₀₀-Xaa₅₀₁-Xaa₅₀₂-Xaa₅₀₃-Xaa₅₀₄-Xaa₅₀₅-Xaa₅₀₆-Xaa₅₀₇-Xaa₅₀₈-Xaa₅₀₉-Xaa₅₁₀-Xaa₅₁₁-Xaa₅₁₂-Xaa₅₁₃-Xaa₅₁₄-Xaa₅₁₅-Xaa₅₁₆-Xaa₅₁₇-Xaa₅₁₈-Xaa₅₁₉-Xaa₅₂₀-Xaa₅₂₁-Xaa₅₂₂-Xaa₅₂₃-Xaa₅₂₄-Xaa₅₂₅-Xaa₅₂₆-Xaa₅₂₇-Xaa₅₂₈-Xaa₅₂₉-Xaa₅₃₀-Xaa₅₃₁-Xaa₅₃₂-Xaa₅₃₃-Xaa₅₃₄-Xaa₅₃₅-Xaa₅₃₆-Xaa₅₃₇-Xaa₅₃₈-Xaa₅₃₉-Xaa₅₄₀-Xaa₅₄₁-Xaa₅₄₂-Xaa₅₄₃-Xaa₅₄₄-Xaa₅₄₅-Xaa₅₄₆-Xaa₅₄₇-Xaa₅₄₈-Xaa₅₄₉-Xaa₅₅₀-Xaa₅₅₁-Xaa₅₅₂-Xaa₅₅₃-Xaa₅₅₄-Xaa₅₅₅-Xaa₅₅₆-Xaa₅₅₇-Xaa₅₅₈-Xaa₅₅₉-Xaa₅₆₀-Xaa₅₆₁-Xaa₅₆₂-Xaa₅₆₃-Xaa₅₆₄-Xaa₅₆₅-Xaa₅₆₆-Xaa₅₆₇-Xaa₅₆₈-Xaa₅₆₉-Xaa₅₇₀-Xaa₅₇₁-Xaa₅₇₂-Xaa₅₇₃-Xaa₅₇₄-Xaa₅₇₅-Xaa₅₇₆-Xaa₅₇₇-Xaa₅₇₈-Xaa₅₇₉-Xaa₅₈₀-Xaa₅₈₁-Xaa₅₈₂-Xaa₅₈₃-Xaa₅₈₄-Xaa₅₈₅-Xaa₅₈₆-Xaa₅₈₇-Xaa₅₈₈-Xaa₅₈₉-Xaa₅₉₀-Xaa₅₉₁-Xaa₅₉₂-Xaa₅₉₃-Xaa₅₉₄-Xaa₅₉₅-Xaa₅₉₆-Xaa₅₉₇-Xaa₅₉₈-Xaa₅₉₉-Xaa₆₀₀-Xaa₆₀₁-Xaa₆₀₂-Xaa₆₀₃-Xaa₆₀₄-Xaa₆₀₅-Xaa₆₀₆-Xaa₆₀₇-Xaa₆₀₈-Xaa₆₀₉-Xaa₆₁₀-Xaa₆₁₁-Xaa₆₁₂-Xaa₆₁₃-Xaa₆₁₄-Xaa₆₁₅-Xaa₆₁₆-Xaa₆₁₇-Xaa₆₁₈-Xaa₆₁₉-Xaa₆₂₀-Xaa₆₂₁-Xaa₆₂₂-Xaa₆₂₃-Xaa₆₂₄-Xaa₆₂₅-Xaa₆₂₆-Xaa₆₂₇-Xaa₆₂₈-Xaa₆₂₉-Xaa₆₃₀-Xaa₆₃₁-Xaa₆₃₂-Xaa₆₃₃-Xaa₆₃₄-Xaa₆₃₅-Xaa₆₃₆-Xaa₆₃₇-Xaa₆₃₈-Xaa₆₃₉-Xaa₆₄₀-Xaa₆₄₁-Xaa₆₄₂-Xaa₆₄₃-Xaa₆₄₄-Xaa₆₄₅-Xaa₆₄₆-Xaa₆₄₇-Xaa₆₄₈-Xaa₆₄₉-Xaa₆₅₀-Xaa₆₅₁-Xaa₆₅₂-Xaa₆₅₃-Xaa₆₅₄-Xaa₆₅₅-Xaa₆₅₆-Xaa₆₅₇-Xaa₆₅₈-Xaa₆₅₉-Xaa₆₆₀-Xaa₆₆₁-Xaa₆₆₂-Xaa₆₆₃-Xaa₆₆₄-Xaa₆₆₅-Xaa₆₆₆-Xaa₆₆₇-Xaa₆₆₈-Xaa₆₆₉-Xaa₆₇₀-Xaa₆₇₁-Xaa₆₇₂-Xaa₆₇₃-Xaa₆₇₄-Xaa₆₇₅-Xaa₆₇₆-Xaa₆₇₇-Xaa₆₇₈-Xaa₆₇₉-Xaa₆₈₀-Xaa₆₈₁-Xaa₆₈₂-Xaa₆₈₃-Xaa₆₈₄-Xaa₆₈₅-Xaa₆₈₆-Xaa₆₈₇-Xaa₆₈₈-Xaa₆₈₉-Xaa₆₉₀-Xaa₆₉₁-Xaa₆₉₂-Xaa₆₉₃-Xaa₆₉₄-Xaa₆₉₅-Xaa₆₉₆-Xaa₆₉₇-Xaa₆₉₈-Xaa₆₉₉-Xaa₇₀₀-Xaa₇₀₁-Xaa₇₀₂-Xaa₇₀₃-Xaa₇₀₄-Xaa₇₀₅-Xaa₇₀₆-Xaa₇₀₇-Xaa₇₀₈-Xaa₇₀₉-Xaa₇₁₀-Xaa₇₁₁-Xaa₇₁₂-Xaa₇₁₃-Xaa₇₁₄-Xaa₇₁₅-Xaa₇₁₆-Xaa₇₁₇-Xaa₇₁₈-Xaa₇₁₉-Xaa₇₂₀-Xaa₇₂₁-Xaa₇₂₂-Xaa₇₂₃-Xaa₇₂₄-Xaa₇₂₅-Xaa₇₂₆-Xaa₇₂₇-Xaa₇₂₈-Xaa₇₂₉-Xaa₇₃₀-Xaa₇₃₁-Xaa₇₃₂-Xaa₇₃₃-Xaa₇₃₄-Xaa₇₃₅-Xaa₇₃₆-Xaa₇₃₇-Xaa₇₃₈-Xaa₇₃₉-Xaa₇₄₀-Xaa₇₄₁-Xaa₇₄₂-Xaa₇₄₃-Xaa₇₄₄-Xaa₇₄₅-Xaa₇₄₆-Xaa₇₄₇-Xaa₇₄₈-Xaa₇₄₉-Xaa₇₅₀-Xaa₇₅₁-Xaa₇₅₂-Xaa₇₅₃-Xaa₇₅₄-Xaa₇₅₅-Xaa₇₅₆-Xaa₇₅₇-Xaa₇₅₈-Xaa₇₅₉-Xaa₇₆₀-Xaa₇₆₁-Xaa₇₆₂-Xaa₇₆₃-Xaa₇₆₄-Xaa₇₆₅-Xaa₇₆₆-Xaa₇₆₇-Xaa₇₆₈-Xaa₇₆₉-Xaa₇₇₀-Xaa₇₇₁-Xaa₇₇₂-Xaa₇₇₃-Xaa₇₇₄-Xaa₇₇₅-Xaa₇₇₆-Xaa₇₇₇-Xaa₇₇₈-Xaa₇₇₉-Xaa₇₈₀-Xaa₇₈₁-Xaa₇₈₂-Xaa₇₈₃-Xaa₇₈₄-Xaa₇₈₅-Xaa₇₈₆-Xaa₇₈₇-Xaa₇₈₈-Xaa₇₈₉-Xaa₇₉₀-Xaa₇₉₁-Xaa₇₉₂-Xaa₇₉₃-Xaa₇₉₄-Xaa₇₉₅-Xaa₇₉₆-Xaa₇₉₇-Xaa₇₉₈-Xaa₇₉₉-Xaa₈₀₀-Xaa₈₀₁-Xaa₈₀₂-Xaa₈₀₃-Xaa₈₀₄-Xaa₈₀₅-Xaa₈₀₆-Xaa₈₀₇-Xaa₈₀₈-Xaa₈₀₉-Xaa₈₁₀-Xaa₈₁₁-Xaa₈₁₂-Xaa₈₁₃-Xaa₈₁₄-Xaa₈₁₅-Xaa₈₁₆-Xaa₈₁₇-Xaa₈₁₈-Xaa₈₁₉-Xaa₈₂₀-Xaa₈₂₁-Xaa₈₂₂-Xaa₈₂₃-Xaa₈₂₄-Xaa₈₂₅-Xaa₈₂₆-Xaa₈₂₇-Xaa₈₂₈-Xaa₈₂₉-Xaa₈₃₀-Xaa₈₃₁-Xaa₈₃₂-Xaa₈₃₃-Xaa₈₃₄-Xaa₈₃₅-Xaa₈₃₆-Xaa₈₃₇-Xaa₈₃₈-Xaa₈₃₉-Xaa₈₄₀-Xaa₈₄₁-Xaa₈₄₂-Xaa₈₄₃-Xaa₈₄₄-Xaa₈₄₅-Xaa₈₄₆-Xaa₈₄₇-Xaa₈₄₈-Xaa₈₄₉-Xaa₈₅₀-Xaa₈₅₁-Xaa₈₅₂-Xaa₈₅₃-Xaa₈₅₄-Xaa₈₅₅-Xaa₈₅₆-Xaa₈₅₇-Xaa₈₅₈-Xaa₈₅₉-Xaa₈₆₀-Xaa₈₆₁-Xaa₈₆₂-Xaa₈₆₃-Xaa₈₆₄-Xaa₈₆₅-Xaa₈₆₆-Xaa₈₆₇-Xaa₈₆₈-Xaa₈₆₉-Xaa₈₇₀-Xaa₈₇₁-Xaa₈₇₂-Xaa₈₇₃-Xaa₈₇₄-Xaa₈₇₅-Xaa₈₇₆-Xaa₈₇₇-Xaa₈₇₈-Xaa₈₇₉-Xaa₈₈₀-Xaa₈₈₁-Xaa₈₈₂-Xaa₈₈₃-Xaa₈₈₄-Xaa₈₈₅-Xaa₈₈₆-Xaa₈₈₇-Xaa₈₈₈-Xaa₈₈₉-Xaa₈₉₀-Xaa₈₉₁-Xaa₈₉₂-Xaa₈₉₃-Xaa₈₉₄-Xaa₈₉₅-Xaa₈₉₆-Xaa₈₉₇-Xaa₈₉₈-Xaa₈₉₉-Xaa₉₀₀-Xaa₉₀₁-Xaa₉₀₂-Xaa₉₀₃-Xaa₉₀₄-Xaa₉₀₅-Xaa₉₀₆-Xaa₉₀₇-Xaa₉₀₈-Xaa₉₀₉-Xaa₉₁₀-Xaa₉₁₁-Xaa₉₁₂-Xaa₉₁₃-Xaa₉₁₄-Xaa₉₁₅-Xaa₉₁₆-Xaa₉₁₇-Xaa₉₁₈-Xaa₉₁₉-Xaa₉₂₀-Xaa₉₂₁-Xaa₉₂₂-Xaa₉₂₃-Xaa₉₂₄-Xaa₉₂₅-Xaa₉₂₆-Xaa₉₂₇-Xaa₉₂₈-Xaa₉₂₉-Xaa₉₃₀-Xaa₉₃₁-Xaa₉₃₂-Xaa₉₃₃-Xaa₉₃₄-Xaa₉₃₅-Xaa₉₃₆-Xaa₉₃₇-Xaa₉₃₈-Xaa₉₃₉-Xaa₉₄₀-Xaa₉₄₁-Xaa₉₄₂-Xaa₉₄₃-Xaa₉₄₄-Xaa₉₄₅-Xaa₉₄₆-Xaa₉₄₇-Xaa₉₄₈-Xaa₉₄₉-Xaa₉₅₀-Xaa₉₅₁-Xaa₉₅₂-Xaa₉₅₃-Xaa₉₅₄-Xaa₉₅₅-Xaa₉₅₆-Xaa₉₅₇-Xaa₉₅₈-Xaa₉₅₉-Xaa₉₆₀-Xaa₉₆₁-Xaa₉₆₂-Xaa₉₆₃-Xaa₉₆₄-Xaa₉₆₅-Xaa₉₆₆-Xaa₉₆₇-Xaa₉₆₈-Xaa₉₆₉-Xaa₉₇₀-Xaa₉₇₁-Xaa₉₇₂-Xaa₉₇₃-Xaa₉₇₄-Xaa₉₇₅-Xaa₉₇₆-Xaa₉₇₇-Xaa₉₇₈-Xaa₉₇₉-Xaa₉₈₀-Xaa₉₈₁-Xaa₉₈₂-Xaa₉₈₃-Xaa₉₈₄-Xaa₉₈₅-Xaa₉₈₆-Xaa₉₈₇-Xaa₉₈₈-Xaa₉₈₉-Xaa₉₉₀-Xaa₉₉₁-Xaa₉₉₂-Xaa₉₉₃-Xaa₉₉₄-Xaa₉₉₅-Xaa₉₉₆-Xaa₉₉₇-Xaa₉₉₈-Xaa₉₉₉-Xaa₁₀₀₀-Xaa₁₀₀₁-Xaa₁₀₀₂-Xaa₁₀₀₃-Xaa₁₀₀₄-Xaa₁₀₀₅-Xaa₁₀₀₆-Xaa₁₀₀₇-Xaa₁₀₀₈-Xaa₁₀₀₉-Xaa₁₀₁₀-Xaa₁₀₁₁-Xaa₁₀₁₂-Xaa₁₀₁₃-Xaa₁₀₁₄-Xaa₁₀₁₅-Xaa₁₀₁₆-Xaa₁₀₁₇-Xaa₁₀₁₈-Xaa₁₀₁₉-Xaa

wherein an approximately 600 base pair amplification product indicates the presence of at least one of *P. infestans*, *P. cactorum* or *P. mirabilis* in the test sample.

5,780,272 INTRON-MEDIATED RECOMBINANT TECHNIQUES AND REAGENTS

Kevin A. Jarrell, Boston, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.
Continuation-in-part of Ser. No. 119,512, Sep. 10, 1993, Pat. No. 5,498,531. This application Jun. 7, 1995, Ser. No. 488,015
Int. Cl.⁶ C12N 15/11; 15/13; C12P 19/34

U.S. Cl. 435—91.31 45 Claims
1. A purified preparation of a reverse-splicing intron, which reverse-splicing intron comprises:

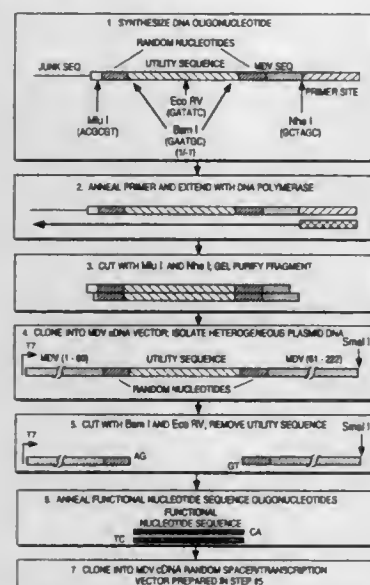
- a first segment comprising a 5' portion of a group II intron, which 5' portion includes an exon binding site not naturally present in said group II intron; and
- a second segment comprising a 3' portion of a group II intron, which 3' portion includes a domain V motif, a branch site acceptor forming a phosphodiester bond with a 5' end of said first segment, and a nucleophilic group at a 3' end of said second segment for transesterifying a phosphodiester bond of a ribonucleic acid,

wherein said first and second segments together form an autocatalytic y-branched intron which catalyzes integration of at least the first segment of the reverse-splicing intron into a substrate ribonucleic acid by a reverse-splicing reaction.

5,780,273 INSERTION ELEMENTS AND AMPLIFIABLE NUCLEIC ACIDS

J. Lawrence Burg, Framingham, Mass., assignor to Amoco Corporation, Chicago, Ill.
Continuation of Ser. No. 357,779, Dec. 16, 1994, abandoned, which is a continuation of Ser. No. 45,587, Apr. 9, 1993, abandoned. This application Jan. 24, 1996, Ser. No. 590,804
Int. Cl.⁶ C12Q 1/68; C12P 19/34; C07H 21/04

U.S. Cl. 435—91.31 21 Claims



1. An amplifiable nucleic acid comprising a replicable nucleic acid substrate, a functional nucleotide sequence and at least one spacer element comprising a sequence of random nucleotide flanking the functional nucleotide sequence and wherein the functional nucleotide sequence and at least one flanking spacer elements are internal to the replicable nucleic acid substrate, and the functional

nucleotide sequence binds to a nucleotide sequence of a target polynucleotide under hybridization conditions.

11. A library of amplifiable nucleic acids wherein each amplifiable nucleic acid of the library comprises a replicable nucleic acid substrate, a functional nucleotide sequence and at least one spacer element comprising a sequence of random nucleotides flanking the functional nucleotide sequence and wherein the functional nucleotide sequence and at least one flanking spacer elements are internal to the replicable nucleic acid substrate, and the functional nucleotide sequence binds to a nucleotide sequence of a target polynucleotide under hybridization conditions.

16. A method for making a library of the amplifiable nucleic acids of claim 11 comprising the steps of: (a) synthesizing a plurality of DNA oligonucleotides comprising a first polylinker, a first randomly generated spacer element, a functional nucleotide sequence, a second randomly generated spacer element, and a second polylinker; (b) incorporating said DNA oligonucleotides into replicable nucleic acid substrates to form amplifiable nucleic acids; and (c) incorporating the resulting amplifiable nucleic acids into vector hosts.

5,780,274 PROCESS FOR THE ISOLATION OF CLAVULANIC ACID AND OF PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF FROM THE FERMENTATION BROTH OF STREPTOMYCES SP. P 6621 FERM P 2804

Egidij Capuder, Dob, Slovenia, assignor to Lek Pharmaceutical and Chemical Company D.D., Ljubljana, Slovenia
PCT No. PCT/SI95/00002, § 371 Date Apr. 10, 1996, § 102(e) Date Apr. 10, 1996, PCT Pub. No. WO95/23870, PCT Pub. Date Sep. 8, 1995

PCT Filed Feb. 23, 1995, Ser. No. 632,402
Claims priority, application Slovenia, Mar. 2, 1994, P-9400107

Int. Cl.⁶ C12P 17/14; 17/16; 17/18
U.S. Cl. 435—119 15 Claims

1. A process for the isolation of potassium clavulanate from an aqueous fermentation broth of a clavulanic acid-producing microorganism, the broth containing the mycelium, other suspended solid particles, and suspended proteins, the process comprising the steps of:

- (a) continuous microfiltration of the broth through filter elements having a pore size of 0.05 μm, thereby removing substantially all of the mycelium and other suspended solid particles and a major part of the suspended proteins from the broth, and producing a microfiltration filtrate;
- (b) optionally ultrafiltering the microfiltration filtrate to produce an ultrafiltration filtrate;
- (c) concentrating the microfiltration filtrate from step (a) or the ultrafiltration filtrate from step (b), thereby producing a retentate;
- (d) extracting the retentate with a water-immiscible organic solvent, thereby producing an organic phase containing the clavulanic acid;
- (e) drying the organic phase;
- (f) concentrating the organic phase;
- (g) reacting the clavulanic acid in the organic phase with N,N'-diisopropylethylenediamine, thereby producing N,N'-diisopropylethylenediammonium diclavulanate;
- (h) reacting the N,N'-diisopropylethylenediammonium diclavulanate with potassium 2-ethylhexanoate, thereby producing potassium clavulanate; and
- (i) isolating the potassium clavulanate.

5,780,275 COUPLED PROCESS OF SACCHARIDE FERMENTATION AND MICROBIAL ESTERIFICATION Shinobu Oda, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Hyogo-Ken, Japan

Filed Sep. 6, 1996, Ser. No. 708,965
Claims priority, application Japan, Sep. 7, 1995, 7-254532; Sep. 7, 1995, 7-254534
Int. Cl.⁶ C12P 7/62; 7/40; 7/02; C12N 11/00

U.S. Cl. 435—135 14 Claims

1. A coupled microbial fermentation and esterification process for producing an esterified fermentation product from a saccharide which comprises:

- attaching a microorganism having (a) organic acid fermentation activity, alcohol fermentation activity or acetylcoenzyme A fermentation activity and (b) an esterase production ability or an alcohol acetyltransferase production ability to a hydrophilic immobilizing carrier,
- contacting the microorganism on the carrier with a hydrophobic organic solvent containing at least one compound selected from the group consisting of water-insoluble or slightly water-soluble alcohols, organic acids and aldehydes while in the presence of an aqueous medium containing a saccharide,
- growing the microorganism at a contact interface between the hydrophobic organic solvent and the aqueous medium to fermentatively produce from the saccharide through the fermentation activity of the microorganism a fermentation product of water soluble organic acid, alcohol or acetylcoenzyme A, and
- subjecting, at the time of said production, the fermentation product of water soluble organic acid, alcohol or acetylcoenzyme A to a microbial esterification reaction using the esterase or alcohol acetyltransferase produced by the microorganism with (a) the water-insoluble or slightly water-soluble alcohol or organic acid contained in the hydrophobic organic solvent, (b) a water-insoluble or slightly water-soluble organic acid product produced by microbial oxidation of the water-insoluble or slightly water-soluble alcohol contained in the hydrophobic organic solvent, or (c) a water-insoluble or slightly water-soluble alcohol or organic acid product produced by microbial reduction or oxidation of the water-insoluble or slightly water-soluble aldehyde contained in the hydrophobic organic solvent, to form the esterified fermentation product from the saccharide.

5,780,276 RECOVERY OF CARBOXYLIC ACID FROM ORGANIC SOLUTION THAT CONTAINS AN AMINE AND AN EXTRACTION ENHANCER

Avraham Matityahu Baniel, Jerusalem, Israel, assignor to Innova S.A., Luxembourg, Luxembourg
PCT No. PCT/EP95/01889, § 371 Date Nov. 25, 1996, § 102(e) Date Nov. 25, 1996, PCT Pub. No. WO95/32177, PCT Pub. Date Nov. 30, 1995

PCT Filed May 16, 1995, Ser. No. 737,792
Claims priority, application Israel, May 23, 1994, 109724
Int. Cl.⁶ C12P 7/40; C07C 51/48; B01D 11/04

U.S. Cl. 435—136 20 Claims

1. In a process of recovering a carboxylic acid from a water-immiscible organic extractant solution thereof which consists essentially of said carboxylic acid, an amine and an extraction enhancer, by extraction of the carboxylic acid into an aqueous phase to yield an aqueous carboxylic acid output solution, the improvement wherein

the extraction enhancer is a low molecular, at least partly water miscible organic compound selected from the group consisting of C₂-C₅ alkanols, acetates of C₁-C₃ alkanols and acetone, and said extraction enhancer is recovered and recycled.

5,780,277

Patent Not Issued For This Number

5,780,278 ICEA GENE AND RELATED METHODS

Geraldine G. Miller, Franklin; Richard M. Peek, Jr., Nashville; Stuart A. Thompson, Whites Creek, and Martin J. Blaser, Nashville, all of Tenn., assignors to Vanderbilt University, Nashville, Tenn.

Filed May 20, 1996, Ser. No. 650,528
Int. Cl.⁶ C12N 15/00

U.S. Cl. 435—172.2 17 Claims

1. An isolated nucleic acid molecule that encodes an IceA 1 or 2 (induced by contact with epithelium), protein of *Helicobacter pylori*.

5,780,279 METHOD OF SELECTION OF PROTEOLYTIC CLEAVAGE SITES BY DIRECTED EVOLUTION AND PHAGEMID DISPLAY

David J. Matthews, San Francisco; James A. Wells, Burlingame, and Mark J. Zoller, San Francisco, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 161,692, Dec. 3, 1993, which is a continuation of Ser. No. 864,452, Apr. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 743,614, Aug. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 715,300, Jun. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 683,400, Apr. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 621,667, Dec. 3, 1990, abandoned. This application Apr. 5, 1995, Ser. No. 418,928
Int. Cl.⁶ C12N 15/10; 15/12; C07K 14/435

U.S. Cl. 435—172.3 25 Claims

1. A method for selecting novel polypeptides comprising:
 - (a) constructing a replicable expression vector comprising a transcription regulatory element operably linked to a gene fusion, wherein the gene fusion comprises:
 - (i) a first gene encoding a polypeptide;
 - (ii) a second gene encoding a substrate peptide; and
 - (iii) a third gene encoding at least a portion of a phage coat protein,

wherein the 3' end of the first gene is linked to the 5' end of the second gene, and the 3' end of the second gene is linked to the 5' end of the third gene;

- (b) mutating the vector at one or more selected positions within the second gene thereby forming a family of related plasmids encoding substrate peptides;
- (c) transforming suitable host cells with the plasmids;
- (d) infecting the transformed host cells with a helper phage having a gene encoding the phage coat protein;
- (e) culturing the transformed infected host cells under conditions suitable for forming recombinant phagemid particles containing at least a portion of the plasmid and capable of transforming the host, the conditions adjusted so that no more than a minor amount of phagemid particles display more than one copy of the fusion protein on the surface of the particle;
- (f) exposing the phagemid particles to at least one protease to provide a family of protease treated phagemid particles;
- (g) contacting the family of protease treated phagemid particles with an affinity molecule, wherein the affinity molecule has affinity for the polypeptide encoded by the first gene; and
- (h) separating the phagemid particles that bind to the affinity molecule from those that do not.

5,780,280

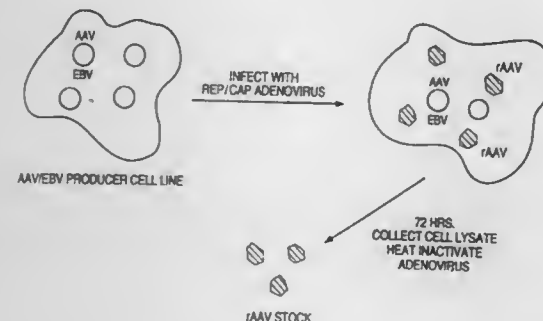
RECOMBINANT ADENO-ASSOCIATED VIRUS VECTORS
Jane S. Lebkowski, Portola Valley; Maureen A. McNally, and Thomas B. Okarma, both of Palo Alto, all of Calif., assignors to Rhône-Poulenc Rorer Pharmaceuticals, Inc., Collegeville, Pa.

Division of Ser. No. 236,642, May 2, 1994, abandoned, which is a division of Ser. No. 993,776, Dec. 21, 1992, Pat. No. 5,354,678, which is a continuation-in-part of Ser. No. 605,775, Oct. 30, 1990, Pat. No. 5,173,414. This application Jun. 2, 1995, Ser. No. 459,352

Int. Cl.⁶ C12N 15/09;15/86;15/64

U.S. Cl. 435—172.3

12 Claims



1. A method for producing a recombinant adeno-associated virus comprising the steps of:

- introducing into a mammalian cell an AAV/EBV plasmid vector, said AAV/EBV plasmid vector comprising an Epstein Barr nuclear antigen gene, an Epstein Barr virus latent origin of replication and an adeno-associated virus transducing vector comprising exogenous genetic material and lacking functional adeno-associated virus rep and cap genes; thereby producing a recombinant adeno-associated virus producer cell;
- growing said producer cell in a cell growth medium;
- introducing into said producer cell an adenovirus vector comprising an adeno-associated virus cap gene and an adeno-associated virus rep gene, thereby producing a recombinant adeno-associated virus; and
- isolating said recombinant adeno-associated virus.

5,780,281

METHOD OF PREPARING A LOW-DENSITY POROUS FUSED-FIBER MATRIX

Robert Deane Yasukawa, San Jose, and Loretta Jane Cordrey, Livermore, both of Calif., assignors to Lockheed Martin Corporation, Bethesda, Md.

Division of Ser. No. 234,304, Apr. 28, 1994, Pat. No. 5,629,186. This application Jan. 29, 1997, Ser. No. 790,686

Int. Cl.⁶ C12N 11/14;5/00; G01N 33/551

U.S. Cl. 435—176

11 Claims

1. A method of producing a rigid fused-fiber matrix formed of fused fibers of silica, alumina, or silica and alumina, and having (a) a rigid, three-dimensionally continuous network of open, intercommunicating voids formed randomly in all directions, (b) a density of between about 3.5 and 5.5 pounds/cubic foot, and (c) a free volume of between about 90–98 volume percent, said method comprising:

forming a slurry composed of (i) silica, alumina or silica and alumina fibers having selected fiber thicknesses in the size range between about 0.5 and 20 μ m and fiber lengths between about 1 and 10 mm, at a fiber:liquid weight ratio of between about 1:25 to 1:70, (ii) a thickening agent effective to give the slurry a viscosity between about 1,000 and 25,000 centipoise, (iii) boron nitride particles, in an amount between about 2–12 percent by weight of the total fiber weight, and (iv) where the slurry contains silica fibers, a dispersing agent effective to enhance the dispersion of silica fibers in the slurry.

allowing the slurry to settle in a mold under conditions effective to produce a fiber block having a selected fiber density between about 3.3 and 5.3 pounds/ft³, drying the settled block to form a substantially dehydrated fiber block, and heating the dehydrated block to a temperature of at least about 2200° F. for a period sufficient to cause the fibers to form a fused-fiber matrix.

5,780,282

Patent Not Issued For This Number

5,780,283

ENZYME STABILIZATION BY OXYGEN-CONTAINING BLOCK COPOLYMERS

James C. Lee, Memphis, Tenn., assignor to Buckman Laboratories International, Inc., Memphis, Tenn.

Continuation of Ser. No. 160,865, Dec. 3, 1993, abandoned.

This application Sep. 15, 1995, Ser. No. 528,610

Int. Cl.⁶ C12N 9/96; C11D 7/42;3/386

U.S. Cl. 435—188

29 Claims

1. A method for stabilizing an enzyme composition containing greater than about 20 weight percent of water against loss of activity evaluated at 50° C. comprising combining said enzyme with stabilizing amounts of a surfactant where the surfactant comprises:

- a block polymer surfactant formed from a starting material having the formula:
 $I-[A_m-B_n]_x$, wherein I represents an alcohol, A represents a hydrophobe comprising an alkylene oxide unit in which at least one hydrogen has been replaced by an alkyl group or an aryl group, m is the degree of polymerization which is greater than about 6, B is an aqueous solubilizing group comprising at least one oxyethylene group, n is the degree of polymerization which is greater than about 6, and x is the functionality of I and is from 1 to 4; or
- a surfactant having the formula:
 $RO(CH_2CH_2O)_nH$, wherein R is a hydrophobic group, and n is greater than about 5.

5,780,284

CERAMIDE GLUCOSYLTRANSFERASE

Yoshio Hirabayashi, and Shin-ichi Ichikawa, both of Saitama, Japan, assignors to The Institute of Physical and Chemical Research, Japan

Filed Jun. 14, 1996, Ser. No. 663,713

Claims priority, application Japan, Jun. 15, 1995, 7-148472

Int. Cl.⁶ C12N 9/10

U.S. Cl. 435—193

12 Claims

1. An isolated ceramide glucosyltransferase having the amino acid sequence of SEQ ID No. 2.

5,780,285

SUBTILISIN VARIANTS CAPABLE OF CLEAVING SUBSTRATES CONTAINING DIBASIC RESIDUES

Marcus D. Ballinger, and James A. Wells, both of Bulingame, Calif., assignors to Genentech, Inc., South San Francisco, Calif.

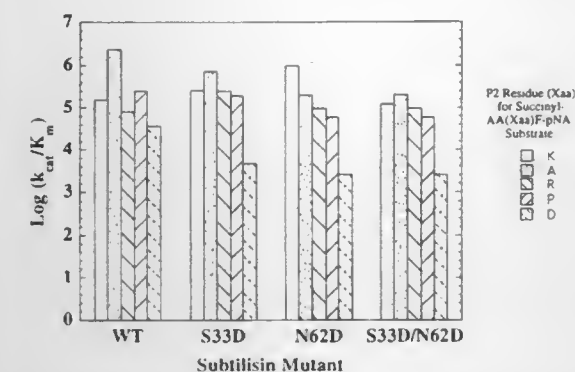
Filed Mar. 3, 1995, Ser. No. 398,028

Int. Cl.⁶ C12N 9/54;9/56;15/57;15/75

U.S. Cl. 435—222

1 Claim

1. An isolated subtilisin having substrate specificity for peptide substrates having basic amino acids at the P₂ and P₁ positions of the substrate, said subtilisin-type serine protease having a nega-



tively charged amino acid at an amino acid residue equivalent to Asn 62 and Gly 166 of the subtilisin having the amino acid sequence of SEQ ID NO: 74 naturally produced by *Bacillus amyloliquefaciens*.

5,780,286

ARGINASE II

Patrick J. Dillon, Gaithersburg, Md., and Joseph G. Vockley, Downingtown, Pa., assignors to SmithKline Beecham Corporation, Phila., Pa., and Human Genome Sciences Inc., Rockville, Md.

Filed Aug. 20, 1996, Ser. No. 700,186

Int. Cl.⁶ C12N 9/78

U.S. Cl. 435—227

16 Claims

1. An isolated polynucleotide comprising a polynucleotide which encodes a polypeptide which has the Arginase II activity of the protein which has amino acid sequence shown in SEQ ID NO:2.

5,780,287

PHOTOACTIVATED ANTIVIRAL AND ANTITUMOR COMPOSITIONS

George A. Kraus; Susan L. Carpenter, and Jacob W. Petrich, all of Story, Iowa, assignors to Iowa State University Research Foundation, Ames, Iowa

Continuation-in-part of Ser. No. 995,877, Dec. 23, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 474,000

Int. Cl.⁶ C12N 7/04;7/06; C07H 21/04

U.S. Cl. 435—236

15 Claims

- An antiviral composition comprising:
 - a photosensitizing chemical, virucidally activated by absorbing light or energy within a specific wavelength range, selected from the group consisting of hematoporphyrin analogs, polycyclic quinones, phthalocyanines and porphyrins; and
 - an energy donating chemical that, when activated, transfers energy or emits light within the range of that absorbed by said photosensitizing chemical.

5,780,288

PROCESS TO DESTROY BIOLOGICAL ACTIVITY IN PROTEIN-CONTAINING FEED

Gary L. Rohwer, 29575 Bar Diamond La., Parma, Id. 83660 Continuation-in-part of Ser. No. 299,822, Aug. 31, 1994, Pat. No. 5,514,388. This application May 7, 1996, Ser. No. 643,840

Int. Cl.⁶ C12N 7/06

U.S. Cl. 435—238

4 Claims

1. A method for destroying infectious activity of infectious vectors in a proteinaceous mixture, wherein the infectious vectors are selected from the group consisting of prions, viruses and bacteria, the method comprising the steps of:

- treating the proteinaceous mixture by adding an alkali to cause the pH of the mixture to be raised to a basic pH range where proteins in the proteinaceous mixture will be solubilized to form a gel; maintaining the proteinaceous mixture at a temperature above the melting point of a lipid material, in a range between about 50° to 55° C.; and optionally adding sufficient lipid material, to the alkali-treated proteinaceous mixture to provide a dispersion with a ratio of lipid to proteinaceous mixture in a range from about 5 to 80, respectively;
- determining an optimum pH of solubilization wherein that optimum is expressed as an alkali hydrogen ion difference on a hydrogen ion difference curve;
- measuring rate of change of hydrogen ion difference per unit of acid equivalent;
- ceasing addition of alkali when the slope of the titration curve is essentially zero;
- adding an acid to the lipid material/proteinaceous mixture dispersion to cause the pH of the dispersion to be lowered to an acidic endpoint where the proteins in the dispersion will encapsulate the lipid material; the acidic endpoint being defined by
 - determining a pH of encapsulation by titration wherein that pH of encapsulation is expressed as an acidic hydrogen ion difference on a hydrogen ion difference curve;
 - measuring rate of change of hydrogen ion difference per unit of acid equivalent;
 - ceasing addition of acid when the slope of the titration curve is essentially zero.

5,780,289

COCCIDIOSIS POULTRY VACCINE DNA ENCODING AN ELMERIA 20K ANTIGEN

Arnoldus Nicolaas Vermeulen, HH Cuijk; Paul van den Boogaart, SC Oss, and Jacobus Johannus Kok, DH Nijmegen, all of Netherlands, assignors to Azko Nobel N.V., Arnhem, Netherlands

Division of Ser. No. 310,357, Sep. 21, 1994, which is a continuation of Ser. No. 102,865, Aug. 6, 1993, abandoned, which is a continuation of Ser. No. 904,075, Jun. 18, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 468,855

Claims priority, application European Pat. Off., Jun. 18, 1991, 91.201.523.7.

Int. Cl.⁶ C12N 5/10;1/21;15/30;15/63

U.S. Cl. 435—240.1

16 Claims

1. A DNA molecule comprising a nucleic acid sequence coding for an Eimeria polypeptide having the amino acid sequence of SEQ ID NO:8, or a fragment of said polypeptide that specifically binds with antibody raised to said polypeptide, wherein the DNA molecule is free from other genetic material of Eimeria.

9. A host cell transfected with a nucleic acid sequence according to claim 1.

5,780,290

NON-POLLUTING COMPOSITIONS TO DEGRADE HYDROCARBONS AND MICROORGANISMS FOR USE THEREOF

Eugene Rosenberg, and Eliora Z. Ron, both of Tel-Aviv, Israel, assignors to Ramot, University of Authority for Applied Research and Industrial Development, Israel

Continuation of Ser. No. 994,493, Dec. 21, 1992, abandoned.

This application Jun. 5, 1995, Ser. No. 461,754

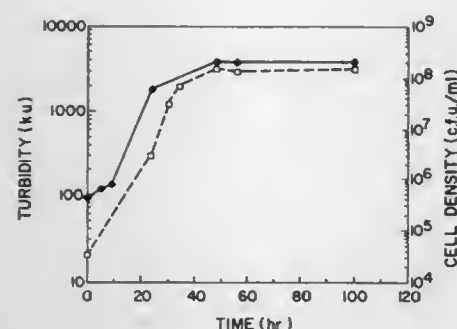
Claims priority, application Israel, Dec. 24, 1991, 100485; Nov. 23, 1992, 103842

Int. Cl.⁶ C12N 1/00;1/38

U.S. Cl. 435—243

3 Claims

1. A composition prepared for the application to a soil or water composition having the capability of bioremediation of the hydrocarbons content of liquid and heavy tar hydrocarbon-polluted soil or water compositions, consisting essentially of



- (a) at least one bacterium preselected to be functionally capable of metabolizing said hydrocarbons, and
(b) triazone, in a form which permits the microorganism to maintain growth and replication during metabolism of said hydrocarbons.

5,780,291

WNT-X GROWTH FACTOR POLYPEPTIDE, DNA ENCODING SAME, AND WNT-X ANTIBODY

Gideon A. Rodan, Bryn Mawr; Su Jane Rutledge, East Greenville, and Azriel Schmidt, Bryn Mawr, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

PCT No. PCT/US94/14708, § 371 Date May 22, 1996, § 102(e) Date May 22, 1996, PCT Pub. No. WO95/17416, PCT Pub. Date Jun. 29, 1995

Continuation of Ser. No. 172,365, Dec. 22, 1993, abandoned.

This PCT application Dec. 19, 1994, Ser. No. 647,928

Int. Cl.⁶ C07K 14/475; C12N 1/21.5/10; 15/12

U.S. Cl. 435—252.3

6 Claims

1. An isolated and purified Wnt-x protein wherein said protein is characterized by the amino acid sequence:

MLRPGGAEEAAQLPRRASAPVPVSPAAPDGSRASA
RLGLACLLLLLLTLPARVDTSWYIGALGARVICDN
IPGLVSRQRLCQRYPDIMRSVGEAREWIREQHQF
RHHRWNTTLDRDHTVGRVMLRSSRDGAFVYAISS
AGVVHAIACRACQSGELSVSCDPYTRGRHHDQRGDF
DWGGCSNIIHYGVRFKAFVDAKEKRLKDARALMN
LHNNRCCGRVSTHVCARRFLKLECKCHGVSGCTL
RTCWRLSDFRRTGDYLRRTDGAQVQMATQDGAN
FTAARQGYRRATRTDLVLTAPDYCVLDKAAGSLG
TAGRVCSKTSKGTGCEIMCCGRGYDTRVTRVTOC
ECKFHWCCAVRCKECRNTVDVHTCKAPKKAEWLDQ
T [SEQ.ID.NO.: 8]

5,780,292

PRODUCTION OF PHYTATE DEGRADING ENZYMES IN TRICHODERMA

Helena K. M. Nevalainen, Espoo; Marja T. Paloheimo, Helsinki; Aria S. K. Miettinen-Oinonen, Masala; Tuula K. Torkkeli, Helsinki, all of Finland; Michael Cantrell, Seattle, Wash.; Christopher S. Piddington, Seattle, Wash.; John A. Rambosek, Seattle, Wash.; Marja K. Turunen, Helsinki, and Richard B. Fagerström, Espoo, both of Finland, assignors to Alko Group Ltd., Helsinki, Finland

Continuation-in-part of Ser. No. 496,155, Mar. 19, 1990, Pat. No. 5,273,887, which is a continuation of Ser. No. 44,077, Apr. 29, 1987, abandoned. This application Jul. 31, 1992, Ser. No. 923,724

Int. Cl.⁶ C12N 1/14; 1/15; 9/16; A23K 1/00

U.S. Cl. 435—256.8

13 Claims

1. Culture medium obtained after the culture of transformed *Trichoderma* host cells, said culture medium comprising an *Aspergillus* phytate degrading enzyme that has a *Trichoderma* glycosylation pattern, said culture medium being produced by a process comprising:

(a) culturing a transformed *Trichoderma* host cell, wherein said host cell has been transformed with a gene encoding said phytate degrading enzyme, said phytate degrading enzyme being selected from the group consisting of:

- (i) phytase, wherein said gene comprises DNA encoding amino acids 20–467 of SEQ ID NO:8; and
(ii) pH 2.5 acid phosphatase, wherein said gene comprises DNA encoding amino acids 20–479 of SEQ ID NO:2; and
(b) expressing said gene encoding said phytate degrading enzyme in said *Trichoderma* host cell.

5,780,293

SYSTEM AND METHOD FOR CAPTURING AND DESTROYING HAP/VOC SUBSTANCES USING MICROBIAL DEGRADATION

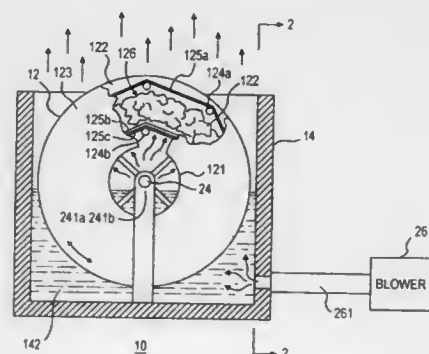
Edward D. Seagle, Andrews, N.C., assignor to Agri Microbe Sales, Inc., Chester, Va.

Filed May 20, 1997, Ser. No. 859,487

Int. Cl.⁶ C12M 3/00; A61L 9/01

U.S. Cl. 435—266

8 Claims



5. A method for recovering and recycling HAPs/VOCs from an air stream using bioremediation, said method comprising the steps of:

- providing a perforated drum containing a capture material therein;
providing a microbe-inoculated water bath so as to position said drum partially submerged in said water bath;
inputting HAPs/VOCs in an air stream into said perforated drum, whereby the HAPs/VOCs are absorbed into the capture material; and
rotating said perforated drum in the water bath so as to leach the HAPs/VOCs into the microbe-inoculated water bath and thereby bioremediate the HAPs/VOCs therewith.

5,780,294

CULTURE VESSEL ASSEMBLY

Timothy A. Stevens, Warwick, N.Y.; Tadeusz A. Tyndorf, Manalapan, and Susan L. Barker, Tenafly, both of N.J., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Mar. 19, 1997, Ser. No. 820,920

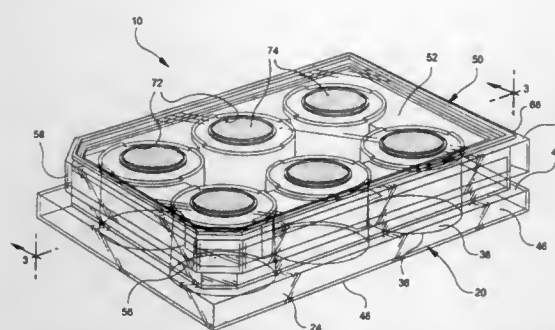
Int. Cl.⁶ C12M 3/00

U.S. Cl. 435—297.5

17 Claims

1. An assembly comprising:

- a test plate comprising a plurality of wells having openings therein for receiving tissue culture media or cell culture inserts and upstanding sidewall forming an outside border of said plate;
a lid removably positioned on said plate comprising a substantially planar cover extending over said wells, comprising an upper surface and a lower surface, a skirt surrounding said cover defining a plurality of corners on said cover and extend-



ing downwardly in spaced relation with respect to said side-wall of said plate, to form sidewalls having an inner and outer surface; and
a plurality of orifices in said planar cover each comprising a gas permeable membrane and positioned whereby said orifices are in alignment with said wells of said test plate.

5,780,295

APPARATUS FOR CRYOPREPARATION, DRY STABILIZATION AND REHYDRATION OF BIOLOGICAL SUSPENSIONS

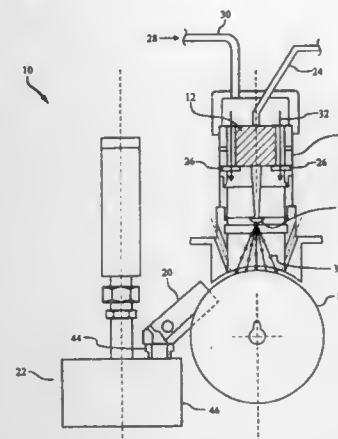
Stephen A. Livesey, Victoria, Australia; Anthony A. del Campo, Houston, Tex.; Abhijit Nag, Houston, Tex.; Ken B. Nichols, Houston, Tex.; Carmen Piuino, The Woodlands, Tex., and David P. Ross, Houston, Tex., assignors to Life Cell Corporation, The Woodlands, Tex.

Continuation of Ser. No. 291,340, Aug. 17, 1994, abandoned, which is a division of Ser. No. 18,357, Feb. 16, 1993, Pat. No. 5,364,756, which is a continuation of Ser. No. 709,504, Jun. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 581,584, Sep. 12, 1990, abandoned. This application Nov. 14, 1996, Ser. No. 752,740

Int. Cl.⁶ C12M 1/02

U.S. Cl. 435—307.1

12 Claims



1. An apparatus for rapid cryofixation of suspensions of microscopic biological materials comprising:

- (a) a nebulizer for creating microdroplets of a suspension of a microscopic biological material in a laminar flow of gas, said gas propelling said microdroplets away from the nebulizer, said microdroplets having diameters of about 25 μm to about 250 μm;
(b) an internally cooled cryogenic surface for cooling the microdroplets at an approximate cooling rate of 50,000° to 100,000° C./sec. said internally cooled cryogenic surface being functionally located in said laminar flow of gas so that said microdroplets contact and are cooled by said internally cooled cryogenic surface;
(c) an internally cooled collector for removing the cooled microdroplets from the cryogenic surface; and

(d) a removable sample holder for receiving the cooled microdroplets.

5,780,296

COMPOSITIONS AND METHODS TO PROMOTE HOMOLOGOUS RECOMBINATION IN EUKARYOTIC CELLS AND ORGANISMS

William K. Holloman, Yorktown Heights, N.Y., and Eric B. Kmiec, Malvern, Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Filed Jan. 17, 1995, Ser. No. 373,134

Int. Cl.⁶ C12N 15/63

U.S. Cl. 435—320.1

26 Claims

1. A polydeoxynucleic acid expression vector for expressing a recombinase in a higher eukaryotic cell comprising:

a. a coding portion encoding a protein that:

- (1) is an ATPase;
(2) catalyzes the formation of complementary or identical strand pairings of polydeoxynucleic acids; and
(3) promotes homologous recombination in a eukaryote;
(4) wherein the normalized alignment score of the protein, compared to SEQ ID NO: 2, is at least about 150;
(5) wherein said coding portion hybridizes to the 2.8 Kb Bam HI REC2 insert of pCM346 when the coding portion is membrane immobilized and the final wash conditions are 40 mM Na₂PO₄, 1 mM EDTA, 1% SDS at 50° C.;
(6) wherein said coding portion is a naturally occurring REC2 gene or a naturally occurring REC2 gene modified to remove a p34^{CDC2} kinase consensus phosphorylation site; and

b. a promoter operably linked to the coding portion, said promoter being active in a higher eukaryotic cell.

5,780,297

Patent Not Issued For This Number

5,780,298

DNA ENCODING THE SN-RNP-A ANTIGEN AND FRAGMENTS THEREOF

Walter Jacobus Van Venrooij; Peter Theodorus Gerardus Sillescu, and Winand Johannes Antonius Habets, all of Nijmegen, Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 561,685, Nov. 22, 1995, abandoned, which is a division of Ser. No. 319,503, Oct. 6, 1994, Pat. No. 5,616,685, which is a continuation of Ser. No. 908,507, Jun. 30, 1992, abandoned, which is a continuation of Ser. No. 823,051, Jan. 16, 1992, abandoned, which is a continuation of Ser. No. 569,266, Aug. 17, 1990, abandoned, which is a continuation of Ser. No. 260,713, Oct. 21, 1988, abandoned. This application Oct. 23, 1997, Ser. No. 959,096

Claims priority, application Netherlands, Oct. 21, 1987, 87.02510

Int. Cl.⁶ C12N 15/63; 15/12

U.S. Cl. 435—325

5 Claims

1. A DNA molecule consisting of the nucleic acid sequence of FIG. 5.

5,780,299

METHOD OF ALTERING BLOOD SUGAR LEVELS USING NON-TRANSFORMED HUMAN PANCREATIC CELLS THAT HAVE BEEN EXPANDED IN CULTURE
Hayden G. Coon, Gaithersburg, Md.; Francesco Saverio Ambesi-Impombato, Tricesimo, and Francesco Curcio, Pagnacco, both of Italy, assignors to Human Cell Cultures Inc., East Sebago, Me.

Division of Ser. No. 83,772, Jun. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 44,010, Apr. 8, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,027
Int. Cl.⁶ C12N 5/00

U.S. Cl. 435—366

14 Claims

1. A method of altering blood sugar levels of a mammal comprising administering expanded human pancreatic cells to the mammal, which expanded cells have been expanded in a cell culture and comprise enriched, non-transformed, serially passaged human pancreatic endocrine cells, wherein said cell culture is substantially free of fibroblast, macrophage, and capillary endothelial cells, and wherein said cell culture is prepared by a method comprising the steps of:

- selecting said pancreatic endocrine cells from a human tissue that comprises said cells;
- concentrating said selected cells;
- resuspending said concentrated cells in a culture medium, wherein said medium comprises a basal medium supplemented with (i) hypothalamus extract and (ii) pituitary extract;
- culturing said resuspended cells; and
- passaging said cultured cells periodically to expand said culture.

5,780,300

MANIPULATION OF NON-TERMINALLY DIFFERENTIATED CELLS USING THE NOTCH PATHWAY

Spyridon Artavanis-Tsakonas, Hamden; Mark Edward Fortini, and Kenji Matsuno, both of New Haven, all of Conn., assignors to Yale University, New Haven, Conn.
Filed Sep. 29, 1995, Ser. No. 537,210
Int. Cl.⁶ C12N 5/08; 5/02; 5/06

U.S. Cl. 435—377

40 Claims

1. A method for expansion of a human precursor cell comprising contacting the cell in vitro with an amount of an agonist of Notch function effective to inhibit differentiation of the cell, and exposing the cell in vitro to cell growth conditions such that the cell proliferates.

5,780,301

SERUM-FREE MEDIUM FOR CULTIVATION OF POSTNATAL CENTRAL NEURONS

Hiroshi Saito; Hiroshi Katsuki, and Fumio Kawahara, all of Tokyo, Japan, assignors to Kyorin Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1995, Ser. No. 387,321

Claims priority, application Japan, Feb. 18, 1994, 6-44955
Int. Cl.⁶ C12N 5/00; 5/02

U.S. Cl. 435—404

7 Claims

1. A serum-free medium for culturing postnatal central neurons comprising 0.1–0.2% bovine serum albumin, 0.5–1.0 ng/mL platelet-derived growth factor, 0.1–10 U/mL IL-1 β and 0.05–0.5 μ g/mL vitronectin.

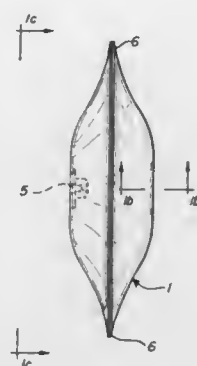
5,780,302

METHOD OF PACKAGING OXYGEN REFERENCE SOLUTION USING FLEXIBLE PACKAGE WITH INSIDE VALVE

Dennis R. Conlon, South Attleboro; Kevin J. Sullivan, Medfield, and Robert B. Green, Hopkinton, all of Mass., assignors to Chiron Diagnostics Corporation, E. Walpole, Mass.
Filed Oct. 29, 1996, Ser. No. 740,410
Int. Cl.⁶ G01N 31/00

U.S. Cl. 436—8

13 Claims



1. A method of maintaining the stability of an oxygen reference solution comprising the step of:

packaging an oxygen reference solution in a package comprising:

- multiple laminated layers, said laminated layers comprising: an inner layer of a heat-sealable polymer film; a middle layer of aluminum; and an outer layer selected from the group consisting of polyester nylon and a lacquer coating; and
- an access device disposed completely within said package in contact with said oxygen reference solution wherein said access device does not breach said multiple laminated layers and wherein said access device allows access to the oxygen reference solution in the package while maintaining the integrity of the solution during storage and preventing exposure of the solution to the outside environment when the access device is punctured by a probe.

5,780,303

METHOD AND COMPOSITION FOR TREATING THROMBOSIS

Michael D. Pierschbacher; Soan Cheng; William S. Craig, and Juerg F. Tschopp, all of San Diego, Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Continuation of Ser. No. 246,852, May 19, 1994, which is a continuation of Ser. No. 79,441, Jun. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 50,736, Apr. 14, 1993, abandoned, which is a continuation of Ser. No. 681,119, Apr. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 506,444, Apr. 6, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 459,566
Int. Cl.⁶ C07K 7/64

U.S. Cl. 436—10

4 Claims

1. A method of identifying a peptide useful for inhibiting platelet aggregation activity without substantially prolonging bleeding time, comprising the steps of:

- determining the IC₅₀ value of the peptide in a platelet aggregation assay conducted in heparin;
- determining the IC₅₀ value of the peptide in a platelet aggregation assay conducted in citrate;
- determining the ratio of IC₅₀ (heparin):IC₅₀ (citrate); and
- identifying those peptides having a ratio of at least about 3.

5,780,304

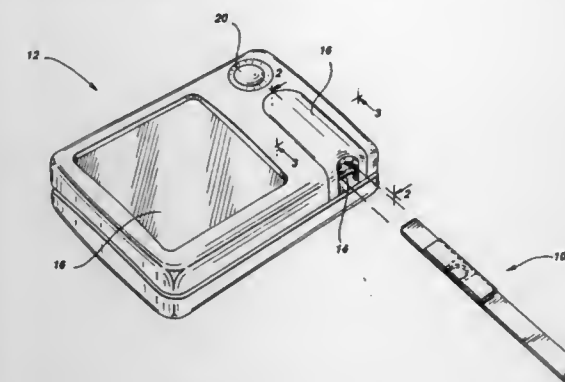
METHOD AND APPARATUS FOR ANALYTE DETECTION HAVING ON-STRIP STANDARD

David Parkes Matzinger, Menlo Park, and George Michael Daffern, Sunnyvale, both of Calif., assignors to Lifescan, Inc., Milpitas, Calif.

Continuation of Ser. No. 302,160, Sep. 8, 1994, abandoned. This application Mar. 11, 1996, Ser. No. 613,404
Int. Cl.⁶ G01N 21/75

U.S. Cl. 436—169

3 Claims



2. A method for determining the presence or quantity of an analyte in a liquid applied to a test strip and inserted into an optical reading apparatus, said method comprising:

- applying liquid to said test strip wherein said test strip comprises a portion having a surface defining a reaction zone which varies in reflectance as a function of the quantity of analyte present in said applied liquid and further comprises a standard zone of substantially constant reflectance;
- inserting said strip into said apparatus with said standard zone leading said reaction zone as said strip is inserted;
- taking a plurality of readings of the reflectance of said standard zone as said strip is inserted;
- reading the reflectance of said reaction zone after said strip is inserted;
- employing the highest of the standard zone reflectance readings and the reaction zone reflectance reading to determining the presence or quantity of the analyte in the liquid as a function of these reflectance readings.

5,780,305

METHOD FOR USING FORENSIC SAMPLER

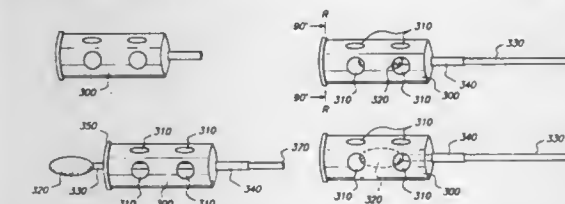
William J. Chisum, 9312 Quesnel Dr., Elk Grove, Calif. 95758-1044

Filed Oct. 15, 1996, Ser. No. 734,781

Int. Cl.⁶ G01N 1/00

U.S. Cl. 436—174

10 Claims



1. A method for collecting evidence samples using a sample collection means having a shaft and a sampling head mounted on a proximal end of said shaft and a perforated shield slidably mounted on a distal end of said shaft, comprising the steps of:

- exposing said sampling head to a sample, thereby providing a collected sample; and
- drawing said sampling head containing said collected sample into said perforated shield by pulling said distal end of said shaft away from said perforated shield, thereby providing an evidence sample.

5,780,306

METHOD AND SYSTEM FOR MIXING LIQUIDS

Hans Schels, Munich; Karl-Heinz Mann, Weilheim; Horst Menzler, Bernried; Leonhard Geissler, Tutzing, and Georg Kuffer, Furh, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

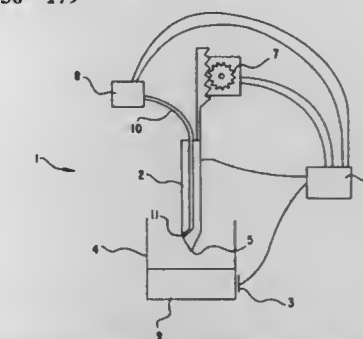
Continuation of Ser. No. 310,021, Sep. 21, 1994, abandoned. This application Nov. 7, 1996, Ser. No. 744,506

Claims priority, application Germany, Sep. 21, 1993, 43 31 997.1

Int. Cl.⁶ G01N 1/10

U.S. Cl. 436—179

9 Claims



7. An apparatus for mixing a liquid with at least one other liquid or solid material, said apparatus comprising:

- a vessel for containing the liquid therein, said vessel having an access opening therein;
- a mixing element having an outer surface with at least one opening therein, said at least one opening enabling gas to travel therethrough;
- an optical detection means coupled to the mixing element for detecting a distance between a liquid surface and the mixing element and for detecting a liquid level in the vessel, wherein said optical detection means is disposed outside of said vessel;
- a moving means coupled to the mixing element for moving the mixing element in at least one direction to a predetermined distance;
- a gas supply means for supplying the gas to the mixing element, thereby providing a gas jet from the at least one opening in the mixing element, wherein the gas jet blows the gas onto the liquid surface when the mixing element is at the predetermined distance to cause the liquid to move, thereby mixing the liquid; and
- an evaluation and control means coupled to said optical detection means and said moving means for controlling the moving means to move the mixing element and to control the gas jet based upon signals generated by the optical detection means.

5,780,307

IMMUNOSUPPRESSIVE DRUG BINDING PROTEINS AND USE

Steven J. Soldin, 6335 31st St., NW., Washington, D.C. 20015
Continuation of Ser. No. 200,404, Feb. 23, 1994, abandoned, which is a continuation of Ser. No. 200,404, which is a continuation-in-part of Ser. No. 782,761, Oct. 22, 1991, abandoned, and Ser. No. 841,792, Feb. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 521,074, May 9, 1990, abandoned, said Ser. No. 782,761 is a continuation-in-part of Ser. No. 487,115, Mar. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 279,176, Dec. 2, 1988, abandoned. This application Jul. 26, 1996, Ser. No. 686,759
Int. Cl.⁶ G01N 33/567

U.S. Cl. 436—503

18 Claims

1. An isolated purified cytosolic immunosuppressive drug binding protein ("immunophilin") of 34–37 kDa, said immunophilin being isolated by a process comprising the steps of:

- centrifuging a homogenized, disrupted normal or transformed mammalian lymphoid tissue so as to produce a water-soluble cytosolic fraction containing said immunophilin; and

b. fractionating said cytosolic fraction so as to produce said purified immunophilin, said isolated purified immunophilin exhibiting the properties of: specific binding to cyclosporine, FK506 or rapamycin; a molecular mass of 34–37 kDa by chromatography, SDS-PAGE or amino acid analyses; a pI of about 6.5–7.0 by isoelectric focusing; and homogeneity by SDS-PAGE.

5,780,308

CALIBRATION REAGENTS FOR SEMIQUANTITATIVE BINDING ASSAYS AND DEVICES

ShanFun Ching, Libertyville, and Julian Gordon, Lake Bluff, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 395,139, Feb. 27, 1995, abandoned, which is a division of Ser. No. 81,063, Jun. 22, 1993, abandoned, which is a continuation of Ser. No. 823,486, Jan. 22, 1992, abandoned. This application May 12, 1997, Ser. No. 854,785

Int. Cl.⁶ G01N 33/558

U.S. Cl. 436—514

9 Claims

1. A multizone test device for semiquantitatively determining the presence of at least a predetermined minimum concentration of an analyte in a test sample, said device comprising:

- a strip of porous material, said strip comprising a reagent zone and a capture site, said reagent zone being upstream from said capture site;
 - a soluble conjugate comprising a labeled analyte-specific binding member which binds the analyte to form a labeled analyte complex, said soluble conjugate contained in said reagent zone;
 - a capture reagent comprising an unlabeled specific binding member attached to said porous material, wherein said capture reagent binds the labeled analyte complex to form an immobilized labeled analyte complex; and
 - a soluble calibration reagent comprising a n unlabeled specific binding member which blocks the binding of the analyte to said capture reagent, thereby controlling the proportion of the analyte that binds to said capture reagent such that the analyte in the test sample must exceed a minimum concentration before said immobilized labeled complex is formed, said calibration reagent contained in said reagent zone;
- said capture reagent being immobilized at said capture site wherein said immobilized labeled complex is separated from the test sample, and wherein the presence of label associated with said immobilized labeled complex is detected to determine the presence of at least a predetermined minimum concentration of an analyte in the test sample.

5,780,309

Patent Not Issued For This Number

5,780,310

METHOD OF FABRICATING A MEMORY CELL ARRAY AREA AND A PERIPHERAL CIRCUIT AREA

Kuniaki Koyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

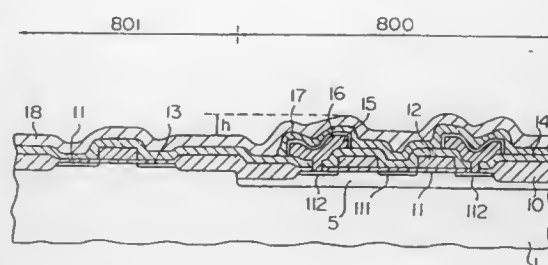
Division of Ser. No. 288,355, Aug. 10, 1994, Pat. No. 5,451,269, which is a division of Ser. No. 993,382, Dec. 18, 1992, Pat. No. 5,348,904. This application Jun. 7, 1995, Ser. No. 476,233

Claims priority, application Japan, Dec. 20, 1991, 3-356070 Int. Cl.⁶ H01L 21/8239

U.S. Cl. 437—52

1 Claim

1. A method of forming a semiconductor substrate having an array area and a peripheral area for a semiconductor integrated



circuit device including a first multi-layer structure having a first thickness formed in said array area and a second multi-layer structure having a second thickness formed in said peripheral area, said method comprising the steps of:

- forming an insulation film on said semiconductor substrate;
- selectively forming a photo-resist film on said insulation film in said peripheral area;
- selectively etching said insulation film by use of said photo-resist film as a mask in order to leave said insulation film in said peripheral area;
- carrying out a selective ion-implantation by use of said photo-resist film as a mask to form in said array area an impurity doped region of a conductivity type opposite to a conductivity type of said semiconductor substrate;
- etching from the surface of the structure resulting from said ion-implantation to remove said photo-resist film in said peripheral region and also to remove said insulation film and a surface part of said impurity doped region in said array region to leave the insulation film in said peripheral region; and
- removal of the remaining insulation film from said peripheral region.

5,780,311

BONDED WAFER PROCESSING

James D. Beasom, and Craig J. McLachlan, both of Melbourne Beach, Fla., assignors to Harris Corporation, Palm Bay, Fla.

Continuation of Ser. No. 466,214, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 335,600, Nov. 8, 1994, abandoned, which is a continuation of Ser. No. 900,202, Jun. 17, 1992, abandoned. This application Jan. 15, 1997, Ser. No. 783,792

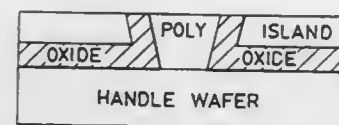
Int. Cl.⁶ H01L 21/76

U.S. Cl. 437—62

6 Claims



AFTER RIE
BOTTOM OXIDE
ETCH



AFTER POLY TRENCH
FILL AND
PLANARIZATION

1. A method of bonded wafer processing, comprising the steps of:

- (a) providing a bonded wafer, said bonded wafer comprising a handle wafer bonded to a device wafer by a bonding layer;
- (b) etching at least one trench in said bonded wafer;
- (c) each said trench extending through said device wafer and said bonding layer to said handle wafer; and then
- (d) filling at least a portion of each said trench with a material different from said bonding layer to prevent said bonding layer from reconnecting and to deter warpage.

5,780,312

Patent Not Issued For This Number

5,780,313

METHOD OF FABRICATING SEMICONDUCTOR DEVICE

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

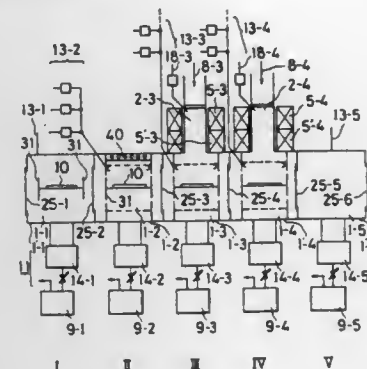
Division of Ser. No. 895,229, Jun. 10, 1992, which is a continuation of Ser. No. 593,257, Oct. 1, 1990, abandoned, which is a division of Ser. No. 118,892, Nov. 10, 1987, abandoned, which is a continuation-in-part of Ser. No. 929,449, Nov. 12, 1986, abandoned, which is a continuation-in-part of Ser. No. 701,738, Feb. 14, 1985, Pat. No. 4,636,401. This application Mar. 31, 1994, Ser. No. 220,491

Claims priority, application Japan, Nov. 18, 1985, 60-259194; Nov. 25, 1985, 60-253229

Int. Cl.⁶ H01L 21/02

U.S. Cl. 437—235

24 Claims



1. A method of fabricating a electronic device including at least a first layer and a second layer comprising the steps of:

- preparing a multi-chamber CVD apparatus having at least a first chamber and a second chamber, wherein said first and second chambers are isolated from each other by at least one gate valve;
- a first CVD forming step for forming one of the first layer or the second layer in the first chamber on a substrate where said first CVD forming step includes inputting a first reactive gas to the first chamber where the first reactive gas forms said one of the first and second layers; and
- a second CVD forming step for forming in the second chamber the other one of said first layer and said second layer to thereby form the first and second layers of the device where said second CVD forming step includes inputting a second reactive gas to the second chamber where the second reactive gas forms said other one of the first and second layers; wherein the flow of reactive gas in at least one of said first and second reaction chambers is substantially perpendicular to the substrate.

5,780,314

METHOD OF FORMING A HIGH PERFORMANCE LOW THERMAL LOSS BI-TEMPERATURE SUPERCONDUCTIVE DEVICE

Hugo Wai-Kung Chan, Rancho Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.

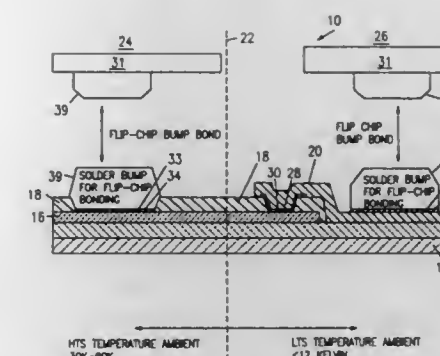
Division of Ser. No. 606,177, Feb. 23, 1996. This application Jul. 14, 1997, Ser. No. 892,467

Int. Cl.⁶ H01L 39/24

U.S. Cl. 438—2

4 Claims

1. A method of forming a superconductive electrical device operable simultaneously at a relatively higher temperature and at a



relatively lower temperature, the two temperatures differing by at least 20K, the method comprising the steps of:

- (a) selecting a non-superconducting substrate having first and second regions;
- (b) depositing a first superconductive layer on the first region of the substrate and on a portion of the second region, the first layer being superconductive at the relatively higher temperature;
- (c) depositing a dielectric layer on the first superconductive layer; and
- (d) depositing a second superconductive layer on a second region of the substrate and on a portion of the dielectric layer, the second layer being superconductive at the relatively lower temperature and not at the relatively higher temperature.

5,780,315

DRY ETCH ENDPOINT METHOD

Ying-Chen Chao, and Ting-Hwang Lin, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd, Hsin-Chu, Taiwan

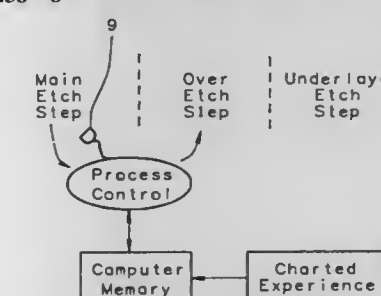
Continuation of Ser. No. 526,086, Sep. 11, 1995, abandoned.

This application Mar. 13, 1997, Ser. No. 816,478

Int. Cl.⁶ H01L 21/302

U.S. Cl. 438—8

3 Claims



1. A method of fabrication of an interconnection layer in an integrated circuit comprising:

- loading wafer cassette, containing substrates having a mask pattern formed over an aluminum-copper-silicon layer, to a plasma etcher apparatus;
- etching of said aluminum-copper-silicon layer by vertical etching, using BCl₃ and Cl₂ at an ambient pressure between about 100 to 250 mTorr whereby said etching apparatus also produces residues;
- detecting the endpoint of said vertical etching;
- timing said vertical etching process from the beginning to said detected endpoint;
- storing said detected endpoint in a computer wherein is also stored charted experience of desired overetch time versus detected endpoint;
- comparing said detected endpoint to said stored charted experience comprising a table of, at least two overetch times versus detected endpoints, where said table resides in the computer memory;
- selecting an overetch time, based upon said detected endpoint and said charted experience to reduce said residues;

5,780,322
METHOD FOR GROWING A II-VI COMPOUND
SEMICONDUCTOR LAYER CONTAINING CADMIUM
AND METHOD FOR FABRICATING A
SEMICONDUCTOR LASER

Koshi Tamamura, Tokyo; Hironori Tsukamoto, and Masao Ikeda, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

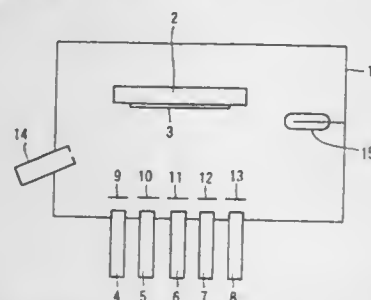
Filed Sep. 27, 1996, Ser. No. 722,615

Claims priority, application Japan, Sep. 29, 1995, 7-276859

Int. Cl.⁶ H01L 21/20

U.S. Cl. 438—45

12 Claims



1. A method for growing II-VI mixed crystal compound semiconductor layer containing cadmium on a surface by using a molecular beam epitaxy method for higher cadmium incorporating efficiency, comprising:

setting a ratio of an actual intensity of the molecular beams of a group VI element irradiated on the surface to an actual intensity of molecular beams of a group II element irradiated on the surface to be in a range from 0.7 to 1.3 during the growth such that the cadmium containing II-VI compound semiconductor layer is a mixed crystal layer having (2×1) structure and c(2×2) structure.

5,780,323
FABRICATION METHOD FOR METAL-TO-METAL
ANTIFUSES INCORPORATING A TUNGSTEN VIA PLUG
 Abdul R. Forouhi, San Jose; Frank W. Hawley, Campbell; John L. McCollum, Saratoga, and Yeouchung Yen, San Jose, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 417,152, Apr. 3, 1995, which is a division of Ser. No. 284,054, Aug. 1, 1994, Pat. No. 5,614,756, which is a continuation-in-part of Ser. No. 790,366, Nov. 12, 1991, Pat. No. 5,404,029, Ser. No. 947,275, Sep. 18, 1992, Pat. No. 5,275,676, Ser. No. 172,132, Dec. 21, 1993, Pat. No. 5,381,035, Ser. No. 197,102, Feb. 15, 1994, abandoned, Ser. No. 50,744, Apr. 20, 1993, Ser. No. 231,634, Apr. 22, 1994, Pat. No. 5,552,627, and Ser. No. 4,912, Jan. 19, 1993, Pat. No. 5,411,917, which is a continuation-in-part of Ser. No. 604,779, Oct. 26, 1990, Pat. No. 5,181,096, which is a continuation-in-part of Ser. No. 508,306, Apr. 12, 1990, Pat. No. 5,070,384, said Ser. No. 947,275 is a division of Ser. No. 743,261, Aug. 9, 1991, Pat. No. 5,272,101, which is a continuation-in-part of Ser. No. 604,779, said Ser. No. 172,132 is a continuation-in-part of Ser. No. 950,264, Sep. 23, 1992, said Ser. No. 197,102 is a continuation of Ser. No. 950,264, said Ser. No. 50,744 is a continuation of Ser. No. 749,866, Aug. 26, 1991, said Ser. No. 231,634 is a continuation-in-part of Ser. No. 4,912. This application Nov. 12, 1996, Ser. No. 758,281

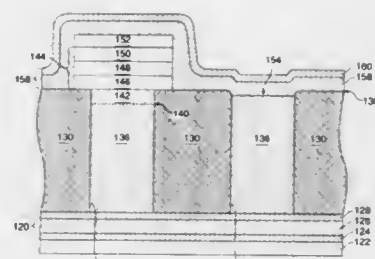
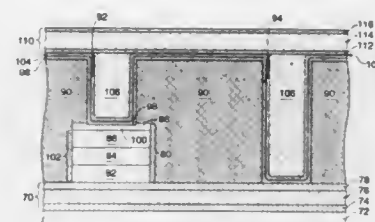
Int. Cl.⁶ H01L 21/82

U.S. Cl. 438—131

16 Claims

1. A method of fabricating an antifuse disposed on an integrated circuit comprising the steps of:

- disposing a first metallization layer on an insulating portion of the integrated circuit;
- disposing an antifuse material layer over said first metallization layer;
- disposing an etch-stop layer over said antifuse material layer;
- patterning and etching said antifuse material layer;



- disposing a dielectric layer over said etch-stop layer;
- etching a via entirely through said dielectric layer to expose said etch-stop layer;
- disposing a plug of a conductive material within said via;
- disposing a second metallization layer over said dielectric layer and said plug and in electrical contact with said plug.

5,780,324
METHOD OF MANUFACTURING A VERTICAL
SEMICONDUCTOR DEVICE

Norihito Tokura; Shigeki Takahashi, both of Okazaki; Tsuyoshi Yamamoto; Mitsuhiro Kataoka, both of Kariya, and Kunihiko Hara, Nukata-gun, all of Japan, assignors to Denso Corporation, Kariya, Japan

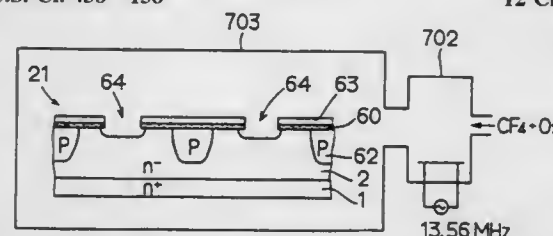
Continuation-in-part of Ser. No. 413,410, Mar. 30, 1995, Pat. No. 5,470,770. This application Feb. 22, 1996, Ser. No. 605,637

Claims priority, application Japan, Mar. 30, 1994, 6-60693; Mar. 31, 1994, 6-62448; Mar. 31, 1994, 6-63220; Sep. 9, 1994, 6-215769; Dec. 27, 1994, 6-324694; Feb. 22, 1995, 7-033666; Oct. 30, 1995, 7-281557

Int. Cl.⁶ H01L 21/332

U.S. Cl. 438—138

12 Claims



1. A manufacturing method of a vertical semiconductor device, comprising the steps of:
 - providing a first conductivity type semiconductor layer disposed on a semiconductor substrate;
 - forming a mask having an opening part within a specified region on a main surface of said first conductivity type semiconductor layer;
 - generating plasma within a plasma generation chamber containing an etching gas to form a chemically active etching gas, said plasma generation chamber being physically separated from a reaction chamber in which said semiconductor substrate and said semiconductor layer are disposed;
 - introducing said chemically active etching gas into said reaction chamber by transporting said chemically active gas from said plasma generation chamber to said reaction chamber via a passageway between said plasma generation chamber and said reaction chamber, said chemically active gas forming a

first groove in said semiconductor layer by chemical dry etching said semiconductor layer through said opening part of said mask;

forming a local oxide film to a specified thickness from said main surface within said semiconductor layer within said specified region by locally oxidizing a region including said first groove so as to define a concave configuration in said locally oxidized region of said semiconductor layer due to erosion of said semiconductor layer in said locally oxidized region by said local oxide film, said concave configuration having a bottom surface and a sidewall surface not treater than 4 nm in a surface roughness;

introducing second conductivity type impurities from said main surface to form a second conductivity type body region within said semiconductor layer wherein a boundary of said second conductivity type body region is defined by said sidewall surface of said concave configuration;

introducing first conductivity type impurities into said second conductivity type body region from said main surface to form a first conductivity type source region within said second conductivity type body region, whereby a channel region is defined by said second conductivity type body region at said sidewall surface of said concave configuration between said semiconductor layer and said source region;

removing said local oxide film to expose said concave configuration;

forming a gate electrode along said sidewall surface of said concave configuration and at least over said channel region with a gate insulating layer interposed there between;

forming a source electrode electrically connected to at least said source region; and

forming a drain electrode electrically connecting to said semiconductor substrate.

5,780,325
METHODS OF MAKING ISOLATIONS INCLUDING
DOPED EDGE LAYER, FOR SEMICONDUCTOR-ON-
INSULATOR SUBSTRATES

Joon-hee Lee, Seoul, Rep. of Korea, assignor to Isoclear, Inc., Chicago, Ill.

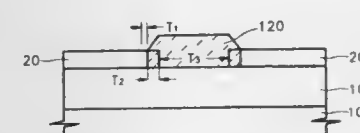
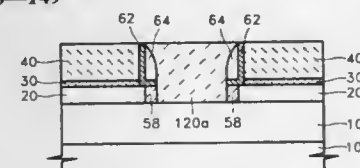
Filed Dec. 11, 1996, Ser. No. 763,673

Claims priority, application Rep. of Korea, Dec. 14, 1995, 95-49689

Int. Cl.⁶ H01L 21/00

U.S. Cl. 438—149

14 Claims



1. A method of fabricating an isolation region for a semiconductor layer of a semiconductor-on-insulator substrate, comprising the steps of:

- forming an implantation mask on the semiconductor layer, the implantation mask having mask sidewalls;
- forming an implantation masking film on the sidewalls of the implantation mask, to thereby define an opening between the implantation masking film on the sidewalls of the implantation mask;
- implanting ions into the semiconductor layer, through the opening, to thereby form a doped region in the semiconductor layer;

forming sidewall spacers on the implantation masking film, opposite the patterned implantation mask;

etching a part of the doped region between the sidewall spacers to thereby define a trench in the semiconductor layer between the sidewall spacers, and a doped edge layer in the semiconductor layer which extends from the trench to the implantation masking film; and

forming insulating material in the trench.

5,780,326
FULLY PLANARIZED THIN FILM TRANSISTOR (TFT)
AND PROCESS TO FABRICATE SAME

Charles H. Dennison, Boise, and Monte Manning, Kuna, both of Id., assignors to Micron Technology, Inc., Boise, Id.

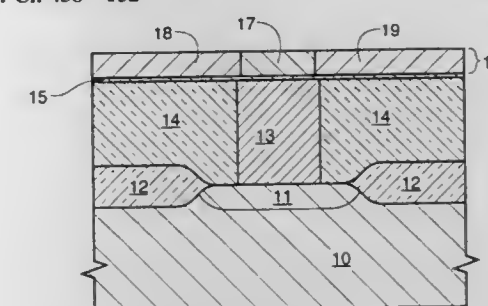
Division of Ser. No. 621,766, Mar. 22, 1996, Pat. No.

5,616,934, which is a continuation of Ser. No. 304,910, Sep. 12, 1994, abandoned, which is a division of Ser. No. 61,402, May 12, 1993, abandoned. This application Sep. 11, 1996, Ser. No. 711,923

Int. Cl.⁶ H01L 21/00; 21/20

U.S. Cl. 438—152

21 Claims



1. A process for forming a transistor assembly on a substrate, comprising the steps of:

- providing a substrate having a conductive region formed therein, said substrate having a blanketing insulating layer formed thereon;
- patterning and etching said insulating layer using a single patterning and etching step to define an opening extending from a top surface of said insulating layer to said conductive region in said substrate, said opening defined in part by a sidewall in said insulating layer;
- forming a conductive silicon material plug within said opening, said plug electrically contacting said conductive region in said substrate and having an upper surface;
- forming a dielectric layer overlying said plug upper surface;
- forming a semiconductor layer over said dielectric layer and doping said semiconductor layer to form source and drain regions proximate said plug upper surface and said dielectric layer thereon.

5,780,327
VERTICAL DOUBLE-GATE FIELD EFFECT
TRANSISTOR

Jack Oon Chu, Astoria; Louis Lu-Chen Hsu, Fishkill; Jack Allan Mandelman, Stormville; Yuan-Chen Sun, Katonah, and Yuan Taur, Bedford, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

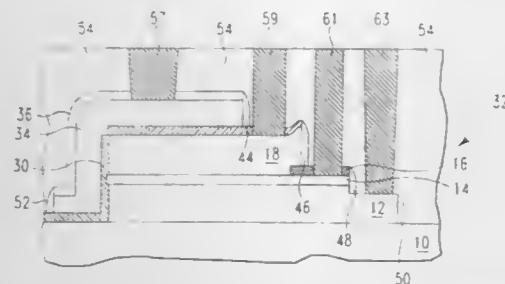
Division of Ser. No. 610,949, Mar. 5, 1996, Pat. No. 5,689,127. This application Apr. 16, 1997, Ser. No. 840,741

Int. Cl.⁶ H01L 21/336

U.S. Cl. 438—156

10 Claims

1. A method of forming a vertical double-gate field effect transistor, the method comprising the steps:
 - obtaining a semiconductor substrate;
 - forming on the semiconductor substrate a source layer, the source layer having a first peripheral edge;



forming on the source layer a channel layer, the channel layer having a second peripheral edge;
forming over a portion of the channel layer at a first end of the channel layer an etch-stop layer;
forming over the channel layer and the etch-stop layer a drain layer, the drain layer having a third peripheral edge;
forming over the drain layer a first dielectric layer;
forming along a portion of the first, second and third peripheral edges a gate dielectric and a conformal conductive gate, thus forming an insulated transistor stack having a first end including the etch stop and a second end including the gate dielectric and conformal conductive gate;
forming over the conformal conductive gate a conformal dielectric layer;
removing a portion of the drain layer at the second end of the insulated transistor stack to expose the etch stop layer, and removing portions of the source and channel layers unprotected by the etch stop layer, thereby forming a contact plateau in each of the source, channel and drain layers;
forming sidewall spacers along the sides of the contact plateaus; and
forming vertical electrically conductive contacts connected to each of the source, channel and drain contact plateaus and to the conductive gate.

5,780,328

PROCESS FOR PRODUCING SEMICONDUCTOR INTEGRATED CIRCUIT

Kazushi Fukuda, Kodaira; Yasuko Yoshida, Sayama; Yutaka Hoshino, Higashimurayama; Naotaka Hashimoto, Koganei; Kyoichiro Asayama, Higashiyama; Yuuki Koide, Akishima; Keiichi Yoshizumi, Kokubunji; Eri Okamoto, Kodaira; Satoru Haga, Akishima, and Shuji Ikeda, Koganei, all of Japan, assignors to Hitachi, Ltd., and Hitachi ULSI Engineering Co., Ltd., both of Tokyo, Japan
Continuation of Ser. No. 675,149, Jul. 3, 1996, abandoned.

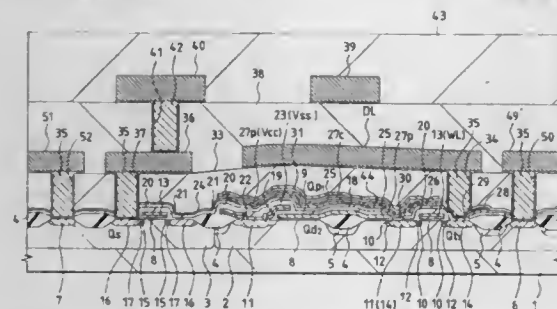
This application Apr. 7, 1997, Ser. No. 835,197

Claims priority, application Japan, Jul. 11, 1995, 7-175240

Int. Cl.⁶ H01L 21/8238; 21/336

U.S. Cl. 438—201

20 Claims



1. A process for producing a semiconductor integrated circuit, comprising the steps of:

- providing a semiconductor substrate having a first semiconductor region of a first conductivity type and a second semiconductor region of a second conductivity type, the semiconductor substrate having a first gate electrode of a first MISFET on a first MISFET forming area of the first semiconductor region, with a first gate insulating film of the first

MISFET between the first gate electrode and the first MISFET forming area, and a second gate electrode of a second MISFET on a second MISFET forming area of the second semiconductor region, with a second gate insulating film of the second MISFET between the second gate electrode and the second MISFET forming area;

- forming third semiconductor regions of the second conductivity type in the first semiconductor region on both sides of the first gate electrode by introducing an impurity into the first MISFET forming area with a first mask film covering a feeding-portion forming area of the second semiconductor region and the second MISFET forming area as a mask;
- forming fourth semiconductor regions of the first conductivity type in the first semiconductor region and beneath the third semiconductor regions by introducing an impurity into the first MISFET forming area with the first mask film as a mask, an impurity concentration of the fourth semiconductor regions being higher than that of the first semiconductor region; and
- forming fifth semiconductor regions of the second conductivity type in the feeding-portion forming area of the second semiconductor region by introducing an impurity into the first MISFET forming area and the feeding-portion forming area of the second semiconductor region with a second mask film covering the second MISFET forming area and having an opening over the feeding-portion forming area of the second semiconductor region as a mask, wherein the third semiconductor region is formed, in the first semiconductor region, between one of the fifth semiconductor regions and a channel forming area of the first MISFET, wherein an impurity concentration of the fifth semiconductor regions is higher than that of the third semiconductor regions, wherein an impurity concentration of the sixth semiconductor region is higher than that of the second semiconductor region, and wherein a first fixed potential is supplied through the sixth semiconductor region to the second semiconductor region.

5,780,329

PROCESS FOR FABRICATING A MODERATE-DEPTH DIFFUSED EMITTER BIPOLAR TRANSISTOR IN A BICMOS DEVICE WITHOUT USING AN ADDITIONAL MASK

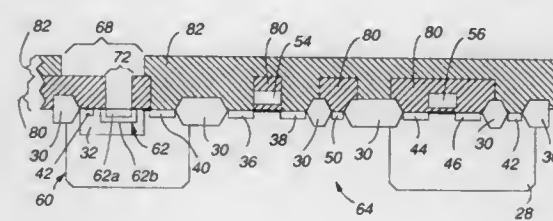
Todd A. Randazzo, and John J. Seliskar, both of Colorado Springs, Colo., assignors to Symbios, Inc., Fort Collins, Colo.

Filed Apr. 3, 1997, Ser. No. 832,245

Int. Cl.⁶ H01L 21/8238

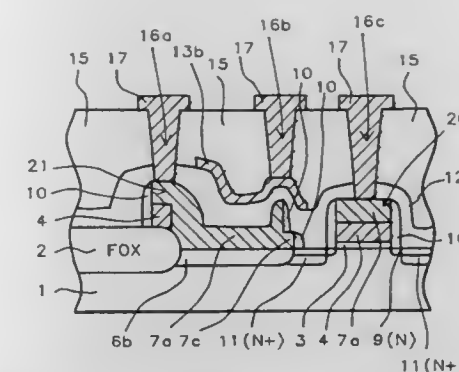
U.S. Cl. 438—202

15 Claims



1. A process of forming a BICMOS device with an integrated bipolar transistor and a MOSFET, by steps including patterning a semiconductor structure with a source/drain mask and thereafter forming a source and drain region of the MOSFET, and patterning the structure with a base region mask and thereafter forming an emitter region of the bipolar transistor, said process including improved steps to form the emitter region of the bipolar transistor to a greater depth in the structure than a depth to which the source and the drain regions of the MOSFET are formed in the structure, said improvements comprising the steps of:

exposing a first coating of photoresist applied on the structure with one of the base region and source/drain region masks and then developing the first coating;
exposing a second coating of photoresist applied on top of the first coating with the other one of the base region and source/drain region masks and then developing the second coating;
creating individual openings in each of two developed coatings of photoresist after exposing the two coatings with the masks; defining an access opening to the emitter region in the structure at a co-location of the individual openings in the two coatings;
forming a base region of the bipolar;
forming the emitter region through the access opening to its greater depth in the structure.



5,780,330

SELECTIVE DIFFUSION PROCESS FOR FORMING BOTH N-TYPE AND P-TYPE GATES WITH A SINGLE MASKING STEP

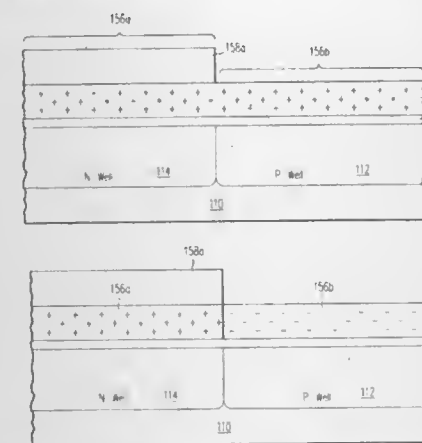
Jeong Yeol Choi, Fremont, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Jun. 28, 1996, Ser. No. 671,984

Int. Cl.⁶ H01L 21/8238

U.S. Cl. 438—232

29 Claims



1. A method of forming a semiconductor device comprising the steps of:

- doping a polysilicon layer to a first conductivity type with a first dopant, said polysilicon layer being doped to the saturation point of said first dopant in polysilicon;
- forming a patterned first layer over a first region of said polysilicon layer and leaving a second region of said polysilicon layer exposed; and
- counter-doping said second region of said polysilicon layer to a second conductivity type opposite said first conductivity type with a second dopant.

5,780,331

METHOD OF MAKING BURIED CONTACT STRUCTURE FOR A MOSFET DEVICE IN AN SRAM CELL

Jhon-Jhy Liaw, Taipei, and Jin-Yuan Lee, Hsin-Chu, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Jan. 15, 1997, Ser. No. 783,980

Int. Cl.⁶ H01L 21/8244

U.S. Cl. 438—238

19 Claims

1. A method for fabricating a MOSFET device on a semiconductor substrate, for an SRAM cell, using a buried contact structure, used to connect a MOSFET drain region to a MOSFET gate region, comprising the steps of:

- forming a field oxide region in said semiconductor substrate;
- growing a gate insulator layer on a region of said semiconductor substrate, not covered by said field oxide region;

depositing a first polysilicon layer on said gate insulator layer and on said field oxide region;

opening a buried contact hole, in said first polysilicon layer, creating a split polysilicon shape, and also opening said buried contact hole in said gate insulator layer, exposing a first portion of said semiconductor substrate;

ion implanting a first conductivity imparting dopant, into said first portion of said semiconductor substrate, to create a buried contact region;

depositing a metal silicide layer on top surface of said split polysilicon shape, and on top surface of said buried contact region, exposed in said buried contact hole, with a thick metal silicide layer forming on the sides of said split polysilicon shape, in said buried contact hole;

forming a first photoresist shape on the top surface of said metal silicide layer, where said metal silicide layer directly overlies said split polysilicon shape, with said first photoresist shape defining a polycide gate structure;

forming a second photoresist shape, to define said buried contact structure, with a first section of said second photoresist shape on top surface of said metal silicide layer, and on top surface of said thick metal silicide layer, in a region where said metal silicide, and said thick metal silicide layer, directly overlie a portion of said buried contact region, while also forming a second section of said second photoresist shape, on said metal silicide layer, where said metal silicide layer directly overlies said split polysilicon shape, on said field oxide region;

a first anisotropic etching procedure, removing said metal silicide layer, and a top portion of said split polysilicon shape, in an area not covered by said first photoresist shape, for a region to be used for said polycide gate structure, while removing only a top portion of said thick metal silicide layer, in areas not covered by said first section of said second photoresist shape, leaving a thin metal silicide tab, on a portion of underlying buried contact region, and with said first anisotropic RIE procedure also removing said metal silicide layer, and a top portion of said split polysilicon shape, in region overlying said FOX region, not covered by said second section of said second photoresist shape;

a second anisotropic etching procedure, removing bottom portion of said split polysilicon shape, in an area not covered by said first photoresist shape, to create said polycide gate structure, on underlying gate insulator layer, while removing bottom portion of said split polysilicon shape, on said FOX region, in an area not covered by said second section of said second photoresist shape, creating said buried contact structure, with thin metal silicide tab protecting underlying region of buried contact region from said second anisotropic RIE procedure, in an area not covered by said first section of said second photoresist shape;

removal of said first photoresist shape, and of said second photoresist shape;

ion implanting a second conductivity imparting dopant into regions of said semiconductor substrate not covered by said polycide gate structure, not covered by said buried contact structure, and not covered by said field oxide regions, to create a lightly doped source and drain region;

forming insulator sidewall spacers on the sides of said polycide gate structure, and the sides of said buried contact structure;

ion implanting a third conductivity imparting dopant into regions of said semiconductor substrate, not covered by said polycide gate structure, not covered by said buried contact structure, not covered by said insulator spacers, and not covered by said field oxide region, to create heavily doped source and drain regions, with one heavily doped source and drain region located between said polycide gate structure and said buried contact structure;

depositing an interlevel silicon oxide layer;

depositing a second polysilicon layer on said interlevel silicon oxide layer;

patterning of said second polysilicon layer to form a polysilicon load resistor;

depositing a thick composite insulator layer on said polysilicon load resistor, and on top surface of said interlevel silicon oxide layer, not covered by said polysilicon load resistor;

opening contact holes in said thick composite insulator layer, to expose top surface of said polysilicon load resistor, and opening contact holes in said thick composite insulator layer, and in said interlevel silicon oxide layer, to expose top surface of said polycide gate structure and top surface of said buried contact structure; and

forming metal contact structures to said polycide gate structure, to said buried contact structure, and to said polysilicon load resistor.

5,780,332

METHOD OF MANUFACTURING A SEMICONDUCTOR MEMORY DEVICE WITH A TRENCH CAPACITOR

Tohru Ozaki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

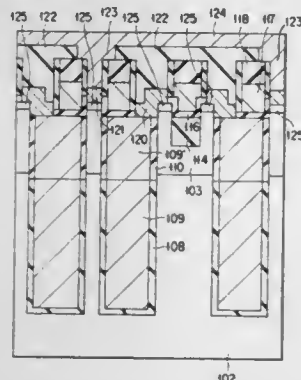
Filed Mar. 5, 1997, Ser. No. 812,973

Claims priority, application Japan, Mar. 11, 1996, 8-053218

Int. Cl.⁶ H01L 21/8242

U.S. Cl. 438—238

10 Claims



1. A method for manufacturing a semiconductor memory device comprising the steps of:

forming a plurality of openings in a laminated insulating layer formed of at least two layers laminated on a semiconductor substrate;

forming a plurality of trenches in said semiconductor substrate by using said laminated insulating layer having said plurality of openings as a mask;

filling a plurality of storage electrodes into said plurality of trenches to a level which is at least higher than an under surface of an uppermost layer of said laminated insulating layer with capacitor insulating films disposed therebetween, respectively;

removing said uppermost layer of said laminated insulating layer;

forming first mask members on side walls of said plurality of storage electrodes which project as a result of removal of said uppermost layer, respectively;

selectively etching remaining portions of said laminated insulating layer with said first mask members used as masks to expose parts of said semiconductor substrate;

etching said exposed parts of said semiconductor substrate to form a plurality of grooves; and

filling first insulating films at least in said plurality of grooves to form an element isolation region.

5,780,333

METHOD OF FABRICATING AN ANALOG SEMICONDUCTOR DEVICE HAVING A SALICIDE LAYER

Jae-Kap Kim, Ich'on, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Ich'on, Rep. of Korea

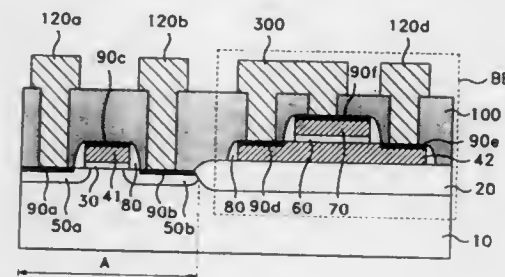
Filed Jun. 26, 1997, Ser. No. 882,745

Claims priority, application Rep. of Korea, Jun. 29, 1996, 1996-26313

Int. Cl.⁶ H01L 21/8234

U.S. Cl. 438—238

2 Claims



1. A method of fabricating an analog semiconductor device wherein an isolation layer is formed on a semiconductor substrate to define an active region, a resistor is formed on a predetermined portion of the isolation layer, a capacitor insulating layer and dummy upper capacitor electrode are formed on a predetermined portion of the resistor, and a salicide layer is selectively formed on the dummy upper capacitor electrode and exposed portions of the resistor, the method comprising the steps of:

forming an intermediate insulating layer on the substrate;

etching the intermediate insulating layer, to form first and second contact holes exposing predetermined portions of the salicide layer formed on the resistor, and a third contact hole exposing a predetermined portion of the salicide layer formed on the dummy upper capacitor electrode;

forming a conductivity layer on the intermediate insulating layer, to fill the first, second and third contact holes; and

patterning the conductivity layer, to form a first interconnection layer electrically connecting the resistor to the dummy capacitor electrode through the first and second contact holes, and second interconnection layer coming into contact with the salicide layer formed on the resistor through the second contact hole.

5,780,334

METHOD OF FABRICATING CAPACITOR OF SEMICONDUCTOR MEMORY DEVICE

Jun-Hee Lim, and Mun-Mo Jeong, both of Seoul, Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Oct. 11, 1996, Ser. No. 730,705

Claims priority, application Rep. of Korea, Oct. 13, 1995, 1995 35293

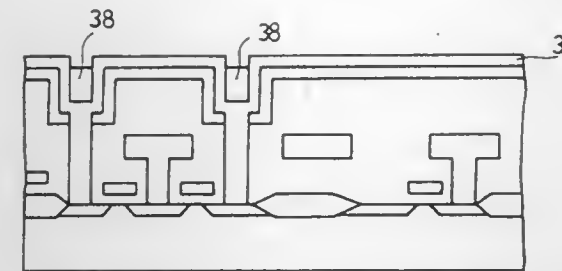
Int. Cl.⁶ H01L 21/8292

U.S. Cl. 438—239

17 Claims

1. A method of fabricating a capacitor of a semiconductor memory device, the method comprising the steps of:

(a) forming an interlevel insulating layer on a semiconductor substrate on which the capacitor will be formed, selectively etching a portion of the interlevel insulating layer placed on a capacitor forming portion to form a capacitor node hole, and forming a first temporary layer on the interlevel insulating



layer, including a portion of the interlevel insulating layer in which the capacitor node hole is formed;

(b) forming a contact hole beneath the capacitor node hole in a capacitor contact portion;

(c) forming a conductive layer on the first temporary layer to bury the contact hole and the capacitor node hole, and then forming a second temporary layer on the conductive layer;

(d) etching back the second temporary layer through anisotropic etching process to expose the conductive layer, and to simultaneously form a temporary pillar layer inside the capacitor node hole, both sides of the temporary pillar layer being [substantially] surrounded by the conductive layer;

(e) removing a portion of the conductive layer placed on a portion other than the capacitor forming portion, to form a first capacitor electrode and to expose at least a portion of the first temporary layer; and

(f) removing remaining portions of the first and second temporary layers to expose an upper portion of the first capacitor electrode, forming a dielectric layer on a surface of the first capacitor electrode, and forming a second capacitor electrode on a surface of the dielectric layer.

5,780,335

METHOD OF FORMING A BURIED-SIDEWALL-STRAP TWO TRANSISTOR ONE CAPACITOR TRENCH CELL

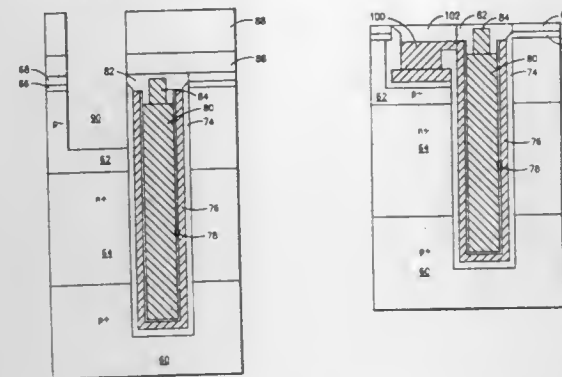
Walter Harvey Henkels, Putnam Valley, and Wei Hwang, Armonk, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 296,714, Aug. 26, 1994, Pat. No. 5,571,743. This application Apr. 26, 1996, Ser. No. 638,531

Int. Cl.⁶ H01L 21/8242

U.S. Cl. 438—243

17 Claims



12. A method of forming a two-transistor, one-capacitor dynamic random access memory cell comprising:

forming a first trench in a semiconductor substrate of a first conductivity type;

forming a first insulating layer on each sidewall of said trench;

depositing a layer of conductive material of a second conductivity type on said first insulating layer to form an outer electrode of said capacitor;

forming a second insulating layer on said outer electrode;

filling a portion of said trench which is above said second insulating layer with conductive material of said second conductivity type to form an inner electrode of said capacitor;

forming a gate region of a first field effect transistor on said substrate, and a gate region of a second field effect transistor on said substrate, said gate regions being part of a conductor forming a single word line connection between the gate region of said first transistor and the gate region of said second transistor;

forming source and drain regions of said first field effect transistor on said substrate;

forming source and drain regions of said second field effect transistor on said substrate;

forming a first contact for electrically connecting the source or drain region of said first field effect transistor to said outer electrode;

forming a second contact for electrically connecting the source or drain region of said second field effect transistor to said inner electrode; and

forming a complementary pair of first and second conductive bit lines, said first bit line contacting that source or drain region of said first transistor not contacted by said outer electrode of said capacitor, and said second bit line contacting that source or drain region of said second transistor not contacted by said inner electrode of said capacitor.

5,780,336

METHODS OF FORMING INTEGRATED CIRCUIT MEMORY DEVICES HAVING IMPROVED STORAGE ELECTRODE CONTACT REGIONS THEREIN

Jin-young Son, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

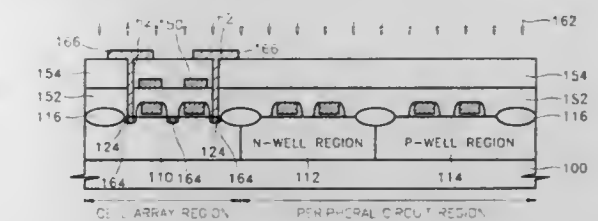
Filed Dec. 30, 1996, Ser. No. 773,195

Claims priority, application Rep. of Korea, Aug. 21, 1996, 1996 34756

Int. Cl.⁶ H01L 21/8242

U.S. Cl. 438—251

10 Claims



1. A method of forming an integrated circuit memory device, comprising the steps of:

forming a field oxide isolation region at a face of semiconductor substrate;

forming an insulated electrode of a memory cell on the face, adjacent the field oxide isolation region;

implanting dopants of first conductivity type into the face using the insulated electrode as an implant mask to define a storage electrode contact region of first conductivity type between the insulated electrode and the field oxide isolation region; then

forming sidewall spacers on first and second opposing edges of the insulated electrode;

implanting dopants of first conductivity type into the storage electrode contact region at a dose level in a range between about $1 \times 10^{12} \text{ cm}^{-2}$ and $3 \times 10^{13} \text{ cm}^{-2}$ and at an energy in a range between about 10 KeV and 300 KeV, using the insulated electrode and sidewall spacers as an implant mask; and

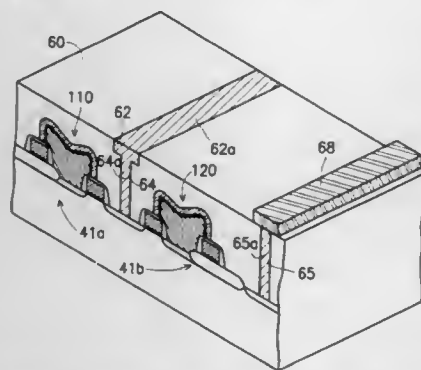
forming an electrode of a storage capacitor coupled to the storage electrode contact region, on the substrate.

5,780,337

METHOD OF FABRICATING A BIT LINE OF A DYNAMIC RANDOM ACCESS MEMORYHsiu-Wen Huang, Kaoshiung, Taiwan, assignor to United Microelectronics Corporation, Taiwan
Filed Nov. 19, 1996, Ser. No. 752,427Claims priority, application Taiwan, Sep. 23, 1996, 85111514
Int. Cl.⁶ H01L 21/8242

U.S. Cl. 438—253

8 Claims



1. A method of forming a bit line of a dynamic random access memory, comprising:

- providing a substrate having a memory cell region;
- forming a first memory cell and a second memory cell in the memory cell region, wherein the first memory cell and the second memory cell have a common source/drain region;
- forming a periphery circuit region on the substrate;
- forming an insulating layer over the substrate;
- forming a trench, having a bottom surface, in the insulating layer above the common source/drain region;
- removing a portion of the insulating layer at the bottom surface of the trench to form a first contact window, wherein the first contact window exposes the common source/drain region;
- forming a second contact window in the periphery circuit region simultaneously with forming the first contact window in the memory cell region; and
- filling the trench and the first contact window with a conductor, wherein the conductor in the trench serves as a bit line, and the conductor in the contact window serves as a plug.

5,780,338

METHOD FOR MANUFACTURING CROWN-SHAPED CAPACITORS FOR DYNAMIC RANDOM ACCESS MEMORY INTEGRATED CIRCUITS

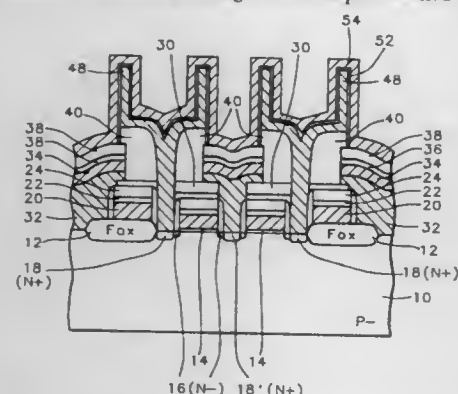
Erik S. Jeng, and Tzu-Shih Yen, both of Taipei, Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Apr. 11, 1997, Ser. No. 827,820
Int. Cl.⁶ H01L 21/8242

U.S. Cl. 438—253

32 Claims

1. A method for manufacturing crown-shaped stacked capacitors



for an array of dynamic random access memory (DRAM) cells on a semiconductor substrate comprising the steps of:

providing a semiconductor substrate having device areas surrounded and electrically isolated from each other by field oxide areas;

providing field effect transistors (FETs) in said device areas, each of said transistors having a gate electrode formed from a patterned first polysilicon layer, and having first and second source/drain contact areas in said device areas, and electrically insulated by depositing a conformal first insulating layer thereon;

forming a planarized second insulating layer on said first insulating layer;

photoresist masking and anisotropically etching contact openings to said first source/drain contact areas of each said FET, thereby forming bit line contact openings for bit lines;

depositing a conformal second polysilicon layer on said substrate having a refractory metal silicide layer thereon;

depositing a third insulating layer on said silicide layer;

patterning said third insulating layer and said second polysilicon layer using photoresist masking and anisotropic plasma etching leaving portions of said second polysilicon layer over and in said first source/drain contact areas thereby forming bit lines for said DRAM cells;

depositing a fourth insulating layer over said bit lines and planarizing said fourth insulating layer;

depositing a hard masking layer on said planar fourth insulating layer;

forming a patterned photoresist layer on said hard masking layer having openings over said second source/drain contact areas; anisotropic etching through said hard masking layer and partially recessing into said fourth insulating layer in said photoresist openings;

removing said photoresist masking layer;

depositing a conformal fifth insulating layer and blanket anisotropically etching back to form sidewall spacers in said recessed areas and exposing said fourth insulating layer between said sidewall spacers in said openings;

anisotropically and selectively etching said fourth and second insulating layers in said openings to said second source/drain contact areas thereby forming contact openings that exceed the resolution limit of said patterned photoresist layer while providing wider openings that reduce the aspect ratio in said fourth insulating layer;

depositing a conformal third polysilicon layer in said second source/drain contact openings and elsewhere on said substrate;

depositing a second masking layer and blanket etching back leaving portions in said second source/drain contact openings while exposing said third polysilicon layer elsewhere on said substrate;

etching back said third polysilicon layer and said hard masking layer to said fourth insulating layer;

selectively remove by etching said second masking layer and said fourth insulating layer thereby forming bottom electrodes for said crown-shaped stacked capacitors;

forming an interelectrode dielectric layer on said bottom electrodes;

depositing and patterning a fourth polysilicon layer thereby forming top electrodes and completing said crown-shaped stacked capacitors.

5,780,339

METHOD FOR FABRICATING A SEMICONDUCTOR MEMORY CELL IN A DRAM

Bin Liu, Taipei; Wen-Jya Liang, Hsinchu, and Yeh-Sen Lin, Tao Yuan, all of Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan

Filed May 2, 1997, Ser. No. 850,908

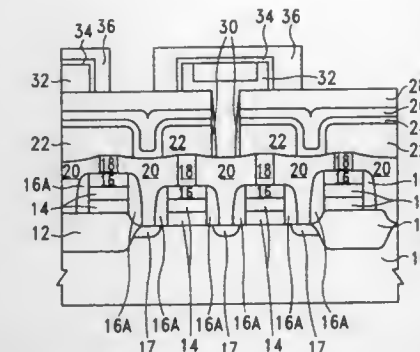
Int. Cl.⁶ H01L 21/8242

U.S. Cl. 438—253

18 Claims

1. A method for fabricating a semiconductor memory cell in a DRAM, said method comprising:

forming isolation regions on a substrate;



forming gate electrodes on said substrate and said isolation regions;

forming first spacers on the sidewalls of said gate electrodes; forming source/drain regions in the surface of said substrate;

forming a first dielectric layer on said source/drain regions and said gate electrodes;

patterning and etching said first dielectric layer to expose a portion of said source/drain regions to form first contact holes;

forming a first conductive layer on said first dielectric layer and in said first contact holes;

removing said first conductive layer over said first dielectric layer to form inter plugs;

forming a second dielectric layer on said first conductive layer and said first dielectric layer;

patterning and etching said third dielectric layer, said second conductive layer, and said second dielectric layer until a portion of said first conductive layer is exposed to form a pre-third contact hole;

forming second spacers on the sidewalls of said pre-third contact hole to form a third contact hole;

forming a third conductive layer on said third dielectric layer and in said third contact hole;

patterning and etching said third conductive layer to form a storage node of a capacitor;

forming a capacitor insulating film over said storage node; and forming a plate of said capacitor over said capacitor insulating film.

5,780,340

METHOD OF FORMING TRENCH TRANSISTOR AND ISOLATION TRENCH

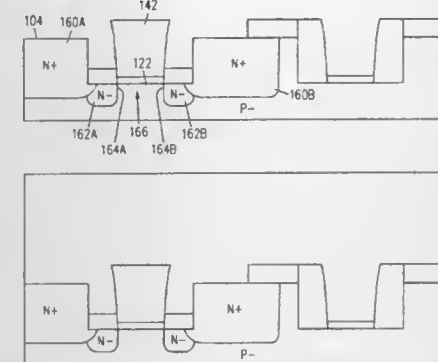
Mark I. Gardner, Cedar Creek; Daniel Kadosh, Austin, and Jon D. Cheek, Round Rock, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 30, 1996, Ser. No. 739,566

Int. Cl.⁶ H01L 21/336

U.S. Cl. 438—259

25 Claims



1. A method of forming an IGFET and an isolation trench, comprising the steps of:

simultaneously forming a transistor trench and an isolation trench in a substrate, wherein

the transistor trench includes first and second opposing sidewalls and a first bottom surface, and the isolation trench includes third and fourth opposing sidewalls and a second bottom surface;

forming first and second spacers adjacent to the first and second sidewalls, respectively;

forming a gate insulator on the first bottom surface;

forming a gate electrode on the gate insulator and the spacers;

and

forming a source and a drain in the substrate and adjacent to the first bottom surface.

5,780,341

LOW VOLTAGE EEPROM/NVRAM TRANSISTORS AND MAKING METHOD

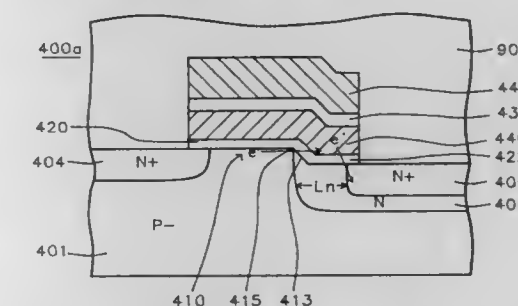
Seiki Ogura, Wappingers Falls, N.Y., assignor to Halo LSI Design & Device Technology, Inc., Wappingers Falls, N.Y.

Filed Dec. 6, 1996, Ser. No. 762,212

Int. Cl.⁶ H01L 21/8247

U.S. Cl. 438—259

32 Claims



1. A method for fabricating an electrically programmable memory device which has efficiency of electron injection from the channel to floating gate comprising:

providing a substrate having source and drain region with a channel therebetween;

providing a floating gate structure over portions of said source and drain regions and said channel, which structure includes a dielectric layer and a conductor layer thereover;

said channel under said floating gate has both horizontal and vertical components; and

after forming said vertical and horizontal components, an N-drain region is formed in self-alignment with the vertical channel step region's edge;

wherein the depth of said N-drain region is greater than said source region.

5,780,342

METHOD FOR FABRICATING DIELECTRIC FILMS FOR NON-VOLATILE ELECTRICALLY ERASABLE MEMORIES

Ping-Wei Wang, Hsinchu, Taiwan, assignor to Winbond Electronics Corporation, Taipei, Taiwan

Filed Dec. 5, 1996, Ser. No. 760,474

Int. Cl.⁶ H01L 21/316

U.S. Cl. 438—260

9 Claims

1. A method for fabricating dielectric films for non-volatile electrically erasable memories, comprising:

forming a thin silicon film on a silicon substrate, wherein the silicon film contains amorphous silicon regions and crystalline silicon micrograin regions;

thermally oxidizing the thin film for a first reaction time, such that

the crystalline silicon micrograin regions are transformed into silicon-enriched silicon dioxide regions and

then silicon precipitates are formed in the silicon-enriched silicon dioxide regions and a plurality of mild microtips are

5,780,348

METHOD OF MAKING A SELF-ALIGNED SILICIDE COMPONENT

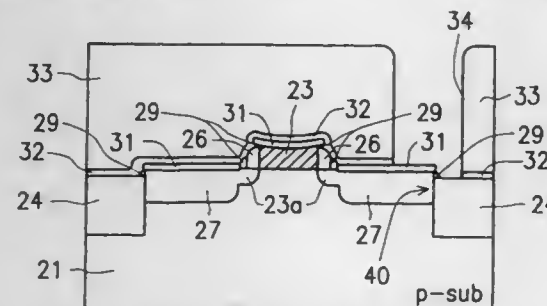
Tony Lin, Kao Hsiung Hsien, Water Lur, and Shih-Wei Sun, both of Taipei, all of Taiwan, assignors to United Microelectronics Corporation, Taiwan

Filed Jul. 14, 1997, Ser. No. 892,314

Int. Cl.⁶ H01L 21/283; 21/336

U.S. Cl. 438—303

15 Claims



1. A method of manufacturing a self-aligned silicide component, comprising:

providing a substrate of a first conductivity type having at least a MOS component region thereabove, with the MOS component region including a gate region, lightly doped regions and component isolating regions;

depositing a first insulating layer above a surface of the substrate;

anisotropic overetching the first insulating layer to remove the first insulating layer and form spacers on respective sidewalls of the gate region, and to remove a portion of an upper layer of the component isolating regions;

implanting ions of a second conductivity type into the MOS component region, using the spacers and gate region as masks, to form a plurality of source/drain regions in the substrate on each side of the gate region;

forming a second insulating layer over a surface of the substrate, the MOS component region and the spacers;

anisotropic overetching the second insulating layer to form a plurality of parasitic spacers located at a side of an upper surface of the component isolating regions, at a bottom portion of a side of the spacers, and at an exposed portion of a side of the gate region, respectively;

forming a metallic layer over a surface of the substrate, the MOS component region, the spacers and the parasitic spacers;

performing rapid thermal processing to cause the metallic layer to react with a silicon on a top surface of the gate region and the source/drain regions and form a metal silicide layer; subsequent to said performing, selectively etching to remove any unreacted portion of the metallic layer;

sequentially forming a third insulating layer and a dielectric layer above a surface of the substrate, the MOS component region, the spacers, the parasitic spacers, and the metal silicide layer;

patterning the dielectric layer, using the third insulating layer as an etching stop, to form a plurality of wide border contact windows; and

removing the third insulating layer through the wide border contact windows so as to expose the metal silicide layer.

5,780,349

SELF-ALIGNED MOSFET GATE/SOURCE/DRAIN SALICIDE FORMATION

Abdalla Aly Naem, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

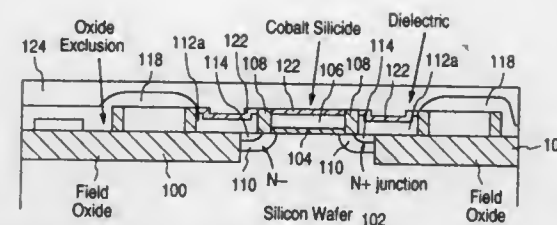
Filed Feb. 20, 1997, Ser. No. 803,259

Int. Cl.⁶ H01L 21/336; 21/3205

U.S. Cl. 438—305

7 Claims

1. A method of fabricating a MOSFET device structure in a silicon substrate, wherein the MOSFET device structure includes



planarized trench isolation field oxide regions formed in the substrate, a layer of gate oxide formed on the substrate to electrically insulate a polysilicon gate from the substrate, oxide sidewall spacers formed on sidewalls of the polysilicon gate and the gate oxide, LDD N- regions formed in the substrate adjacent the field oxide regions and beneath the sidewall spacers to define a channel region in the substrate beneath the polysilicon gate, the method comprising the steps of:

depositing a layer of polysilicon on the above-defined structure; performing a chemical mechanical polishing (CMP) step to form raised source/drain polysilicon regions that are self-aligned to the LDD N- regions;

implanting N-type dopant into the polysilicon gate and into the raised source/drain polysilicon regions;

performing a first rapid thermal processing (RTP) step to activate the N-type dopant implant and to diffuse N-type dopant from the raised source/drain polysilicon regions into the underlying LDD N- regions;

depositing a layer of cobalt on the polysilicon gate and on the raised source/drain polysilicon regions;

implanting heavy ions into the cobalt layer to mix the cobalt and silicon at the interface of the cobalt layer and the underlying polysilicon;

depositing a TiN film on the cobalt layer;

performing a second RTP step to form cobalt silicide on the raised source/drain polysilicon regions and on the polysilicon gate;

removing unreacted cobalt;

forming a layer of dielectric material on the structure resulting from the above-recited steps;

forming contact openings in the dielectric layer to expose the cobalt silicide on the raised source/drain polysilicon regions and on the polysilicon gate;

forming a conductive contact layer in the contact opening, and in electrical contact with the cobalt silicide on the raised source/drain polysilicon regions and on the polysilicon gate.

5,780,350

MOSFET DEVICE WITH IMPROVED LDD REGION AND METHOD OF MAKING SAME

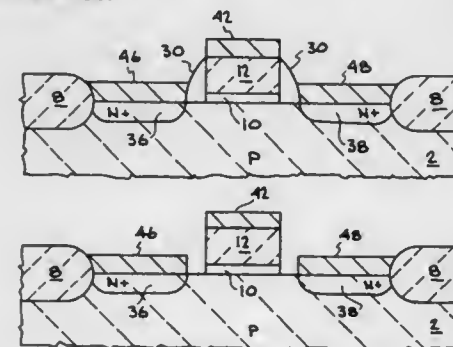
Ashok K. Kapoor, Palo Alto, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jan. 30, 1997, Ser. No. 791,283

Int. Cl.⁶ H01L 21/331; 21/8222

U.S. Cl. 438—305

15 Claims



1. A process for forming in a semiconductor substrate a MOSFET device with lightly doped drain (LDD) regions which comprises:

a) forming a gate oxide over a portion of an exposed region of said semiconductor substrate at least partially surrounded by insulation, and a gate electrode over said gate oxide;

b) forming decomposable spacers on the sidewalls of said gate electrode;

c) implanting exposed portions of said semiconductor substrate with either P+ or N+ dopant to implant source/drain regions in said substrate;

d) heating said substrate sufficiently to anneal and activate said dopant implanted into said substrate to form said source/drain regions;

e) removing said decomposable spacers from said sidewalls of said gate electrode after formation of said source/drain regions by heating said decomposable spacers to a temperature at which said spacers decompose, and maintaining that temperature until said spacers are removed; and

f) then implanting the portions of said semiconductor substrate exposed by removal of said spacers with a P- or N- dopant to form said LDD regions between said source/drain regions and a channel region in said substrate below said gate oxide; whereby said dopant in said LDD regions is not exposed to the heat used to anneal and activate the dopant in said source/drain regions during the formation of said source/drain regions.

5,780,351

SEMICONDUCTOR DEVICE HAVING CAPACITOR AND MANUFACTURING METHOD THEREOF

Koji Arita, Osaka; Eiji Fujii, Ibaraki; Yasuhiro Shimada, Mishima-gun; Yasuhiro Uemoto, Otsu; Toru Nasu, Kyoto; Akihiro Matsuda, Suita; Yoshihisa Nagano, Suita; Atsuo Inoue, Otokuni-gun; Taketoshi Matsuura, and Tatsuo Otsuki, both of Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 284,984, Aug. 4, 1994, Pat. No. 5,624,864.

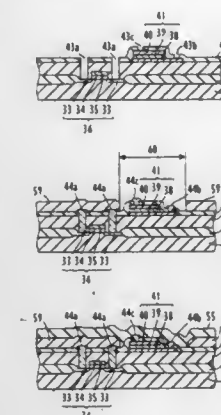
This application Apr. 28, 1997, Ser. No. 844,108

Claims priority, application Japan, Aug. 5, 1993, 5-194617; Aug. 5, 1993, 5-194618; Feb. 24, 1994, 6-026514; Mar. 25, 1994, 6-055552

Int. Cl.⁶ H01L 21/20; 21/8242; 21/00

U.S. Cl. 438—396

6 Claims



1. A method of manufacturing a semiconductor device comprising the steps of:

forming a capacitor comprising,

a bottom electrode having a conductive layer,

a capacitor dielectric layer having one of a ferroelectric layer and a high dielectric layer formed on the bottom electrode, and

a top electrode having a conductive layer formed on the capacitor dielectric layer, on an insulating layer of a semiconductor substrate in which an integrated circuit is fabricated;

forming an interlayer insulating layer by covering the capacitor; forming contact holes reaching the integrated circuit, top electrode and bottom electrode of the capacitor, through the insulating layer and interlayer insulating layer;

forming interconnections to be electrically connected with the integrated circuit and capacitor through the contact holes;

forming a second interlayer insulating layer by covering the interconnections;

removing the second interlayer insulating layer above the capacitor, after the step of forming interconnections;

heating the capacitor; and

forming a passivation layer by covering the interconnections.

5,780,352

METHOD OF FORMING AN ISOLATION OXIDE FOR SILICON-ON-INSULATOR TECHNOLOGY

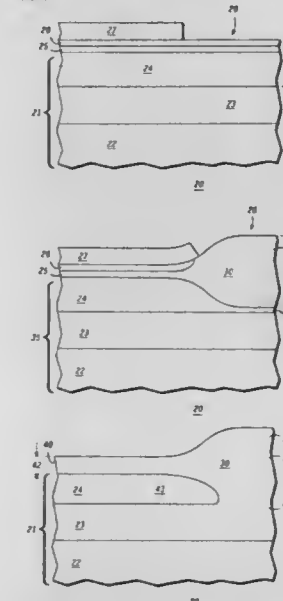
Heemyong Park, Gilbert; Wen-Ling Margaret Huang, Phoenix; Juergen Foerstner, Mesa, and Marco Racanelli, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 23, 1995, Ser. No. 553,801

Int. Cl.⁶ H01L 21/76

U.S. Cl. 438—404

18 Claims



1. A method of forming a semiconductor device comprising: providing a silicon-on-insulator substrate with an insulator layer beneath a silicon layer, the silicon layer having a thickness; disposing a mask layer over a first region of the silicon layer; forming a first portion of the isolation oxide in a second region of the silicon layer after disposing the mask layer, the first portion of the isolation oxide formed to a depth into the silicon layer of less than or equal to the thickness of the silicon layer;

removing the mask layer after forming the first portion of the isolation oxide; and

forming a second portion of the isolation oxide in the second region of the silicon layer after removing the mask layer wherein the second portion of the isolation oxide contacts the first portion of the isolation oxide.

5,780,353

METHOD OF DOPING TRENCH SIDEWALLS BEFORE TRENCH ETCHING

Farrokh Omid-Zohoor, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

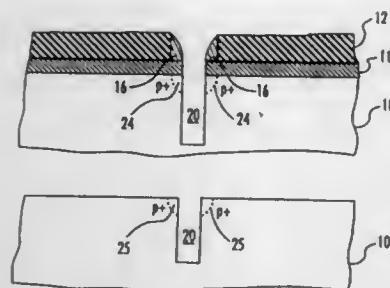
Filed Mar. 28, 1996, Ser. No. 623,636

Int. Cl.⁶ H01L 21/761

U.S. Cl. 438—433

17 Claims

1. A method of suppressing formation of a parasitic edge transistor at upper edges of an isolation structure formed in a region of a substrate of an integrated circuit, said method comprising the sequential steps of:



depositing a first insulating layer on a semiconductor substrate; forming at least one opening having sidewalls separated by a width in said first insulating layer; depositing a second insulating layer of a conformal material on said first insulating layer and in said opening; anisotropically etching said second insulating layer to form spacers on the sidewalls of said opening and a reduced opening of a lesser width in the first insulating layer; implanting impurities of the same type as the semiconductor substrate but of higher concentration in the semiconductor substrate through said reduced opening and then annealing to laterally diffuse the impurities under said spacers; removing a vertical portion of the semiconductor substrate aligned with said reduced opening to form a trench in said substrate of a width of essentially the same width as said lesser width; and filling said trench with a material to form an isolation structure with high concentration impurity regions abutting the upper edges of the trench at and near the surface of the semiconductor substrate.

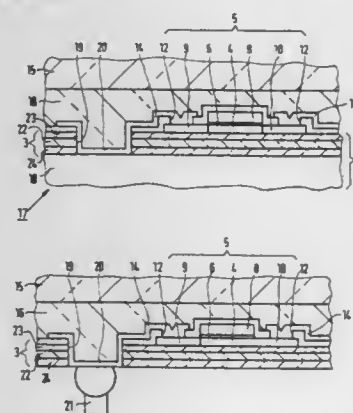
5,780,354
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES WITH SEMICONDUCTOR ELEMENTS FORMED IN A LAYER OF SEMICONDUCTOR MATERIAL GLUED ON A SUPPORT WAFER
Ronald Dekker, Henricus G.R. Maas, both of Eindhoven, Netherlands, and Steffen Wilhelm Hahn, Neu Wulmstorf, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1995, Ser. No. 576,538
Claims priority, application European Pat. Off., Dec. 23, 1994, 94203751

Int. Cl.⁶ H04L 21/46

U.S. Cl. 438—459

20 Claims



13. A method of manufacturing a semiconductor device, said method comprising the steps of:

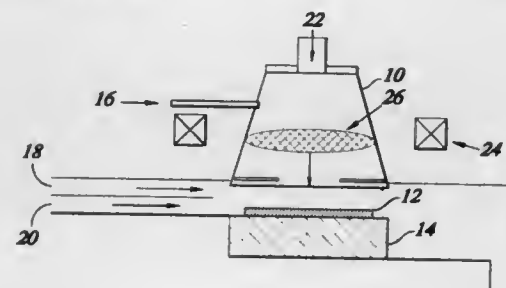
providing a semiconductor wafer having a first side and a second opposite side, the first side having a top layer of semiconductor material situated on a first layer, said first layer being (i) electrically insulating and (ii) passivating so that it is highly scratch resistant and practically impermeable to moisture and alkali atoms;

forming a semiconductor element and a conductor track on the top layer of semiconductor material; gluing the top layer of semiconductor material having the semiconductor element and conductor track thereon to a support wafer; removing material from the second side of the semiconductor wafer until the first, insulating and passivating layer has been exposed.

5,780,355
UV ASSISTED GALLIUM NITRIDE GROWTH
Umesh Kumar Mishra, Santa Barbara; Steven P. DenBaars, and Stacia Keller, both of Goleta, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.
Filed Nov. 27, 1996, Ser. No. 757,873
Int. Cl.⁶ H01L 21/205

U.S. Cl. 438—483

8 Claims



1. A method of growing a nitride layer on a substrate, comprising the steps of:

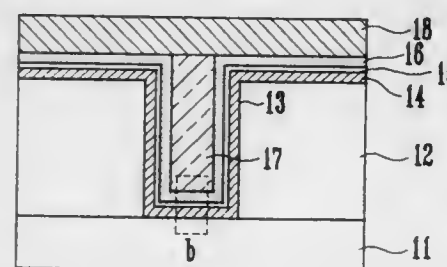
adding a plasma gas, the gas selected from a group consisting of mercury, argon, neon, and xenon, to a chamber containing a nitrogen-bearing molecule; exposing the nitrogen-bearing molecule and plasma gas to microwave energy, therein generating an emission of light from the plasma gas within the chamber; exposing the nitrogen-bearing molecule to the emission of light from the plasma gas, thereby disassociating a nitrogen ion from the nitrogen-bearing molecule; and placing the nitrogen ion in close proximity to a Group III receptor ion, such that the Group III receptor ion and the nitrogen ion combine to form a nitride on the substrate.

5,780,356
METHOD FOR FORMING METAL WIRE OF SEMICONDUCTOR DEVICE
Jeong Tae Kim, Ichon, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Ichon, Rep. of Korea
Filed Dec. 13, 1996, Ser. No. 764,218
Claims priority, application Rep. of Korea, Dec. 15, 1995, 1995-50454

Int. Cl.⁶ H01L 21/283

U.S. Cl. 438—627

10 Claims



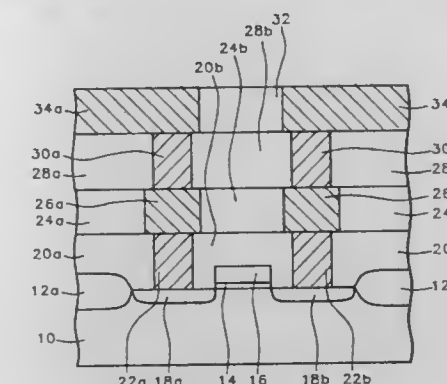
1. A method for forming a metal wire of a semiconductor device, comprising:
providing a semiconductor substrate;

forming an insulating layer having a contact hole over the semiconductor substrate;
forming a high melting point metal film over exposed surfaces of the contact hole and the insulating layer;
plasma treating the high melting point metal film to form a dense lower high melting point metal nitride film over the high melting point metal film;
forming an upper high melting point metal nitride film over the dense lower high melting point metal nitride film in a chemical vapor deposition process;
forming a tungsten layer on the upper high melting point metal nitride film within the contact hole so as to fill the contact hole; and
forming a conductive metal film over the tungsten layer and the upper high melting point metal nitride film.

5,780,358
METHOD FOR CHEMICAL-MECHANICAL POLISH (CMP) PLANARIZING OF COOPER CONTAINING CONDUCTOR LAYERS
Mei Sheng Zhou, and Chu Ron-Fu, both of Singapore, Singapore, assignors to Chartered Semiconductor Manufacturing Ltd., Singapore, Singapore
Filed Apr. 8, 1996, Ser. No. 630,112
Int. Cl.⁶ H01L 21/44

U.S. Cl. 438—645

12 Claims



5,780,357
DEPOSITION PROCESS FOR COATING OR FILLING RE-ENTRY SHAPED CONTACT HOLES
Zheng Xu, Foster City, and Hoa Kieu, Sunnyvale, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 356,928, Dec. 14, 1994, abandoned.
This application Jun. 2, 1997, Ser. No. 867,276

Int. Cl.⁶ H01L 21/28

U.S. Cl. 438—639

16 Claims

PHASE I Deposition:
circulate coolant through platform to cool substrate during deposition
coherently deposit material onto surface of substrate
concurrently with coherent deposition, reverse sputter the deposited material on the substrate
continue coherent deposition + reverse sputtering until a first predetermined thickness of material is deposited

PHASE II Deposition:
deposit material onto previously deposited layer of material
while depositing material, bombard surface of substrate with electrons to heat the deposited layer
while depositing material, heat platform to cause reflow of deposited material
continue above deposition + electron bombardment + heating until a second predetermined thickness of material is deposited

1. A method for depositing material within contact holes formed within a surface of a semiconductor substrate, comprising:
depositing a first thickness of the material onto the surface of the substrate so as to partially fill the holes;
reverse sputtering the deposited material so as to coat the sidewalls of the contact holes with the deposited material;
after the first thickness of said material is deposited onto the surface of the substrate, depositing a second thickness of said material onto the surface of the substrate; and
while depositing the second thickness of said material onto the surface of the substrate, heating the substrate to enhance reflow of the material being deposited, wherein the step of heating comprises biasing the substrate to a positive voltage relative to ground and bombarding the substrate with electrons.

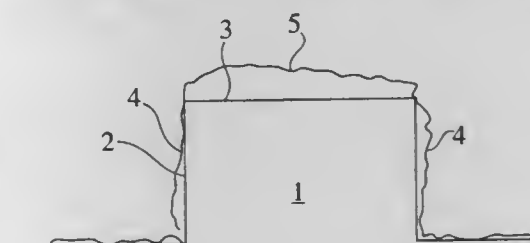
5,780,359
POLYMER REMOVAL FROM TOP SURFACES AND SIDEWALLS OF A SEMICONDUCTOR WAFER
William Brown, San Jose; Harald Herchen, Fremont; Walter Merry, Santa Clara, and Michael Welch, Livermore, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Dec. 11, 1995, Ser. No. 570,058

Int. Cl.⁶ H01L 21/302

U.S. Cl. 438—659

12 Claims



1. In a process chamber, a process for stripping photoresist and polymer residues from top surfaces and side walls of a post-metal etch semiconductor wafer, comprising the steps of:
initiating a flow of feed gas comprising fluorine-containing gases upstream from said process chamber;
applying to said feed gas means for producing a plasma;
supplying effluents of said plasma in the form of reactive species separated from said plasma to said process chamber;
applying radio frequency energy to said wafer in said process chamber to generate a lower intensity plasma therein and accompanying wafer self-biasing;

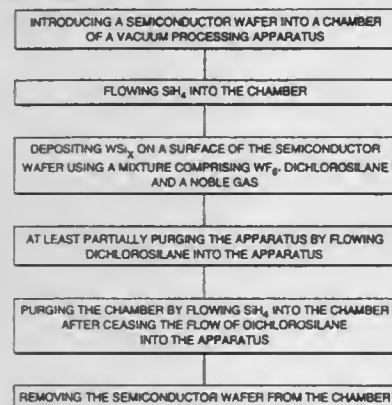
applying a magnetic field that rotates slowly in the horizontal plane to said process chamber during said step of applying radio frequency energy to said wafer to enhance plasma generation; and
stripping said photoresist and polymer residues from the top surfaces and side walls of said post metal-etch wafer with said reactive species and said lower intensity plasma wherein the pressure in said process chamber is greater than 100 miliTorr.

5,780,360
PURGE IN SILICIDE DEPOSITION PROCESSES
DICHLOROSILANE

Jennifer Meng Chu Tseng; Mei Chang, both of Saratoga; Ramanujapuram A. Srinivas, San Jose; Klaus-Dieter Rin-
nen, Palo Alto, all of Calif.; Moshe Eizenberg, Haifa, Israel, and Susan Weiher Telford, Untergruppenbach, Germany, assignors to Applied Materials, Inc., Santa Clara, Calif.
Division of Ser. No. 314,161, Sep. 27, 1994, abandoned. This application Jun. 20, 1996, Ser. No. 666,976
Int. Cl.⁶ H01L 21/28

U.S. Cl. 438—680

13 Claims



1. A method of processing a substrate in a chamber of a vacuum processing apparatus, comprising the steps of:
(i) depositing a silicide on a surface of said substrate, and
(ii) purging said chamber of residual gases remaining from said deposition step by flowing dichlorosilane, DCS, into said chamber.

5,780,361
SALICIDE PROCESS FOR SELECTIVELY FORMING A MONOCOBALT DISILICIDE FILM ON A SILICON REGION

Ken Inoue, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

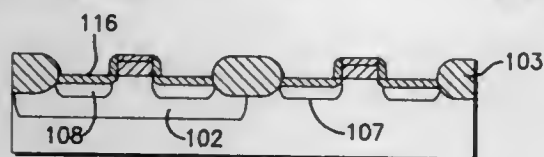
Filed Jun. 21, 1996, Ser. No. 667,647

Claims priority, application Japan, Jun. 23, 1995, 7-180755

Int. Cl.⁶ H01L 21/44

U.S. Cl. 438—683

61 Claims



1. A method of selectively forming a monocobalt disilicide film on a substrate having a surface including both an insulation region containing silicon and a silicon region, said method comprising the steps of:
depositing cobalt on said substrate, wherein said substrate is heated up and maintained at a first temperature, in the range

of 200° C. through 500° C., thereby causing cobalt deposited on said silicon region to react with silicon in said silicon region and preventing cobalt deposited on said insulation region from reacting with silicon in said insulation region, and forming by silicidation reaction only on said silicon region one selected from the group consisting of dicobalt monosilicide and monocobalt monosilicide, while only cobalt unreacted with silicon remains deposited on said insulation region; subjecting said substrate to a wet etching process for selective removal of cobalt unreacted with silicon thereby exposing said insulation region, while said silicon region remains covered by said one selected from the group consisting of dicobalt monosilicide and monocobalt monosilicide; and subjecting said substrate to a heat treatment at a second temperature which is higher than said first temperature thereby causing a phase transition from dicobalt monosilicide or monocobalt monosilicide into monocobalt disilicide so as to form a monocobalt disilicide film on said silicon region except on said insulation region.

5,780,362

COSI, SALICIDE METHOD

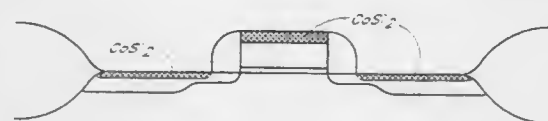
Qingfeng Wang, 1310 Electronics Dr., MS 2238, Carrollton, Tex. 75006, and Karen Irma Josef Maex, A. Rulenslaan 31, B-3020, Herent, Belgium

Filed Jun. 4, 1996, Ser. No. 658,182

Int. Cl.⁶ H01L 21/44

U.S. Cl. 438—683

11 Claims



1. A method for forming self-aligned polycrystalline cobalt disilicide on a metal oxide semiconductor transistor in a silicon substrate, said transistor having an actual gate length of about 0.18 μ m or smaller and having a source region, a drain region, and a gate region, comprising the steps of:
defining an active area within said silicon substrate;
growing an oxide on said substrate;
depositing a polysilicon layer on said oxide;
defining said gate region said source region, and said draining region of said transistor within said active area;
depositing a cobalt layer on said substrate;
thereafter depositing a refractory metal layer on said cobalt layer;
thereafter heating said silicon substrate whereby forming a polycrystalline cobalt disilicide layer on said gate region, said source region, and said drain region of said MOS transistor, said heating step comprising the substeps of a first and a second heating step, said second heating step being performed at a higher temperature than said first heating step; and
selectively etching, using a H_2SO_4 solution and a NH_4OH solution as etchants, in between said first and said second heating step the remaining nonsilicide cobalt and said refractory metal from said substrate except from said gate region, said source region, and said drain region.

5,780,363

ETCHING COMPOSITION AND USE THEREOF

Donald John Delehanty, Wappingers Falls, N.Y.; Rangarajan Jagannathan, South Burlington, Vt.; Kenneth John McCullough, Fishkill, N.Y.; Donna Diane Miura, Hopewell Junction, N.Y.; George F. Ouimet, Jr., Millbrook, N.Y.; David Lee Rath, Stromville, N.Y.; Bryan Newton Rhoads, Pine Bush, N.Y., and Frank John Schmidt, Jr., Highland Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

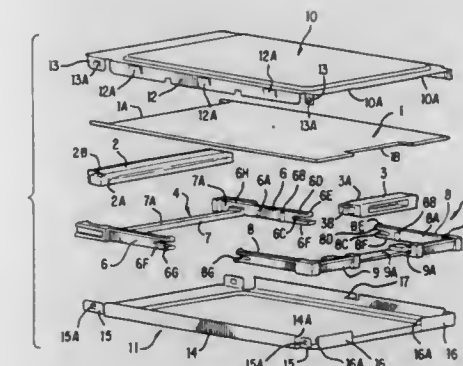
Filed Apr. 4, 1997, Ser. No. 832,999

Int. Cl.⁶ C23F 1/10

U.S. Cl. 438—748

19 Claims

1. A method for removing polymer residue from a substrate which comprises contacting said substrate with an aqueous solution containing about 0.01 to about 15 percent by weight of sulfuric acid and about 0.01 to about 20 percent by weight of hydrogen peroxide, or containing about 0.01 to about 15 percent by weight of sulfuric acid and about 1 to about 30 ppm of ozone.



a pair of upper and lower metal panels able to be joined together for completely covering upper and lower sides of said board assembly;
engaging means for preventing separation of said metal panels; and
each of said frames has a pair of side beams and a lateral beam for linking said side beams, wherein a slot is provided on an inside end of each said side beams to form an upper flexible arm and a lower arm, each of said upper flexible arms for biasing said metal panels in opposite directions to minimize play of said metal panels.

5,780,364

METHOD TO CURE MOBILE ION CONTAMINATION IN SEMICONDUCTOR PROCESSING

Randhir P. S. Thakur, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

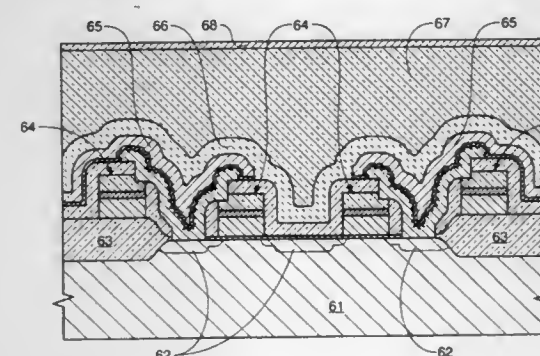
Continuation of Ser. No. 353,768, Dec. 12, 1994, abandoned.

This application Nov. 27, 1996, Ser. No. 759,152

Int. Cl.⁶ H01L 21/31

U.S. Cl. 438—775

46 Claims



1. A method to reduce mobile ion contamination in a semiconductor device during semiconductor processing, said method comprising the steps of:
forming active field effect transistors in a starting substrate;
forming a first insulating layer over said field effect transistors;
forming a second insulating layer over said first insulating layer;
and
forming a single nitride layer, said single nitride layer being formed over either one of said first and second insulating layers by performing a single annealing step in a nitrogen containing gas ambient prior to exposing said first and second insulating layers to mobile ion impurities.

5,780,365

PC CARD FRAME KIT AND PC CARD

Daisuke Nogami, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1996, Ser. No. 754,402

Claims priority, application Japan, Nov. 30, 1995, 7-334341

Int. Cl.⁶ H01R 9/09

U.S. Cl. 439—76.1

4 Claims

1. A PC card frame kit comprising:
an insulating front frame and an insulating rear frame constitute a frame holder for supporting a board assembly;

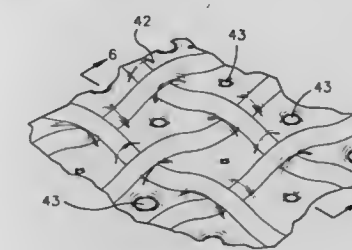
5,780,366
TECHNIQUE FOR FORMING RESIN-IMPREGNATED FIBERGLASS SHEETS USING MULTIPLE RESINS
Bernd Karl Appelt, Apalachin; Robert Maynard Japp, Vestal; Kostantinos Papatthomas, Endicott, and William John Rudik, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 10, 1996, Ser. No. 716,813

Int. Cl.⁶ B32B 31/08; 7/00

U.S. Cl. 442—19

9 Claims

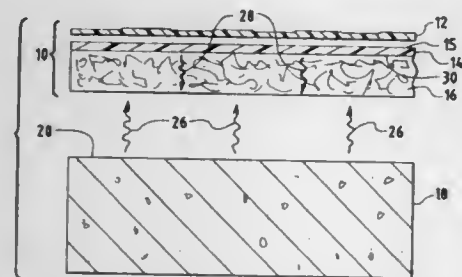


1. A resin impregnated layer of cloth comprising,
a sheet of cloth having fibers and interstices between the fibers,
a first coating of a first selected thermosetting resin surrounding said fibers, and filling some, but not all, of said interstices,
a second coating of a second selected thermosetting resin different from said first thermosetting resin disposed over said first coating and with said first coating essentially filling all of said interstices unfilled by said first coating of resin,
said first coating being cured sufficiently beyond B stage cure so that it has not dissolved in the uncured resin of the second coating,
said second coating being B stage cured,
a transition zone between said first and second coatings that is smooth, substantially continuous with crosslinking between said first and second coatings providing an essentially continuous polymer of two layers; and
said first coating having better adhesion to cloth fibers than said second coating, and said second coating having better adhesion to metal than said first coating.

5,780,367
REFLECTIVE SUMMER CURE BLANKET FOR CONCRETE

Gary Handwerker, 2311 Burr Oak Rd., Northfield, Ill. 60093
Filed Jan. 16, 1997, Ser. No. 784,913

U.S. Cl. 442—235 27 Claims
Int. Cl.⁶ B32B 3/00



1. A lightweight reflective concrete blanket for overlaying wet curing concrete and like materials, the blanket comprising:
a film-like moisture-impervious first layer;
an opaque heat reflective woven fabric layer, the woven fabric layer having a lower opaque surface and a top reflective surface opposite thereof, the top reflective surface disposed adjacent to the first layer, the woven fabric layer adapted to reflect heat radiating from the surface of the curing concrete;
a porous batting layer, the batting layer having an upper portion, the lower opaque surface of the woven fabric layer disposed adjacent to the upper portion of the batting layer, the first layer, woven fabric layer, and batting layer operatively sealed so the blanket is impervious to moisture.

5,780,368
SPRAY PROCESSES USING A GASEOUS FLOW FOR PREPARING BIODEGRADABLE FIBRILS, NONWOVEN FABRICS COMPRISING BIODEGRADABLE FIBRILS, AND ARTICLES COMPRISING SUCH NONWOVEN FABRICS

Isao Noda; Reinhold August Lampe, and Michael Matthew Satkowski, all of The Procter & Gamble Company, Miami Valley Laboratories, P.O. Box 398707, Cincinnati, Ohio 45239-8707

Continuation-in-part of Ser. No. 187,969, Jan. 28, 1994, abandoned, Ser. No. 188,271, Jan. 28, 1994, abandoned, and Ser. No. 189,029, Jan. 28, 1994, abandoned. This application Feb. 28, 1994, Ser. No. 203,260
Int. Cl.⁶ B32B 27/00

U.S. Cl. 442—334 16 Claims
1. Biodegradable fibrils made by a process for preparing biodegradable fibrils from one or more biodegradable homopolymeric or copolymeric resins, said process comprising:
a) forming a liquid resin mixture by melting or solvating the resin or resins;
and
b) introducing the liquid resin mixture to a flow of a gaseous substance.

5,780,369
SATURATED CELLULOSIC SUBSTRATE

John Patrick Allison, Marietta, and Russell Lynn Dolsey, Roswell, both of Ga., assignors to Kimberly-Clark Worldwide, Inc.

Filed Jun. 30, 1997, Ser. No. 885,654
U.S. Cl. 442—384 33 Claims
Int. Cl.⁶ B32B 5/06

1. A saturated hydroentangled fibrous web comprising:

a fibrous web having a plurality of hydroentanglement loci as a consequence of subjecting the web to high pressure fluid jets, the fibrous web being comprised of fibers, in which from about 20 to 100 percent by weight, based on the total weight of the fibers, are cellulosic fibers;
from 0 to about 70 percent by weight, based on the total weight of the fibers, are mercerized cellulosic fibers;
from about 80 to 0 percent by weight of the fibers, based on the total weight of the fibers, are synthetic polymer fibers; and
at least 10 percent by weight of the fibers are mercerized cellulosic fibers, synthetic polymer fibers, or a mixture thereof; and
a saturant which is present in the saturated fibrous web at a level of from about 25 to about 100 percent, based on the dry weight of the fibers.

5,780,370
SELECTIVE INFRARED LINE EMITTERS

Zheng Chen, Auburn University; Millard Franklin Rose, and Peter L. Adair, both of Auburn, all of Ala., assignors to Auburn University, Auburn University, Ala.

Filed Aug. 19, 1996, Ser. No. 699,509
Int. Cl.⁶ B32B 18/00

U.S. Cl. 442—414 24 Claims
1. A selective infrared line emitter comprising a non-woven composite of fibers of at least one rare earth metal oxide and at least one structure-forming material selected from the group consisting of alumina, silica, yttrium oxide and zirconium oxide, where the rare earth metal oxide fibers are dispersed and interlocked in a network of the structure forming fibers, and where the fibers are adhesively connected at a multiplicity of crossing points by a ceramic bonding agent.

5,780,371
REINFORCED GLASS SUBSTRATE

Francoise Rifqi, Paris; Stephanie Koch, Asnieres, and Didier Jousse, St Leu La Foret, all of France, assignors to Saint-Gobain Vitrage S.A., Courbevoie, France

PCT No. PCT/FR95/01296, § 371 Date Aug. 19, 1996, § 102(e) Date Aug. 19, 1996, PCT Pub. No. WO96/11888, PCT Pub. Date Apr. 25, 1996
PCT Filed Oct. 5, 1995, Ser. No. 652,590
Claims priority, application France, Oct. 13, 1994, 94 12209; Nov. 30, 1994, 94 14352
Int. Cl.⁶ C03C 3/093; 15/02; 21/00

U.S. Cl. 501—67 19 Claims
1. A glass substrate, obtained by (1) forming a base glass having a composition comprising the following constituents in the weight percentages given below:

SiO ₂	45–65%
Al ₂ O ₃	0–20%
B ₂ O ₃	0–5%
Na ₂ O	4–12%
K ₂ O	3.5–12%
MgO	0–8%
CaO	0–13%
ZrO ₂	0–20%

wherein the sum of SiO₂, Al₂O₃, and ZrO₂ is less than or equal to 70% by weight, wherein $0.22 \leq \text{Na}_2\text{O}/(\text{Na}_2\text{O} + \text{K}_2\text{O}) \leq 0.60$, wherein BaO, SrO, or a mixture thereof are optionally present, and wherein $11 \text{ wt. \%} \leq \text{MgO} + \text{CaO} + \text{BaO} + \text{SrO} \leq 24 \text{ wt. \%}$, (2) polishing said base glass to form a polished base glass, and (3) reinforcing said polished base glass by a surface ion exchange.

5,780,372
COLORED GLASS COMPOSITIONS

Paige L. Higby, Maumee, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Jan. 10, 1997, Ser. No. 781,428
Int. Cl.⁶ C03C 3/087

U.S. Cl. 501—70 16 Claims
1. A soda-lime-silica glass having a base glass composition comprising on a weight percent basis: 60–80% SiO₂, 10–20% Na₂O, 5–15% CaO, 0–10% MgO, 0–5% Al₂O₃, 0–5% K₂O, 0–10% BaO, and 0–5% B₂O₃, and colorants consisting essentially of from about 1 to about 3 weight percent Fe₂O₃ (total iron), from about 0.1 to about 1.0 weight percent TiO₂, from about 0 to about 500 ppm Cl₂O₄, and having a ferrous value of about 10% to about 37%, said glass having an Illuminant A visible light transmittance of about 10% to about 70% at a nominal thickness of about 4 mm and a dominant wavelength below 565 nm.

5,780,373
GLASS COMPOSITION AND SUBSTRATE FOR PLASMA DISPLAY

Osamu Yanagisawa; Kenji Oda; Naoki Sugimoto, all of Yokohama; Yoshio Takegawa, Kawasaki; Akira Takada, Yokohama; Hideyo Osada, Yokohama; Haruo Aizawa, Yokohama, and Koji Miura, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 528,265, Sep. 14, 1995, Pat. No. 5,631,195. This application Dec. 20, 1996, Ser. No. 777,701
Claims priority, application Japan, Sep. 14, 1994, 6-220376
Int. Cl.⁶ C03C 3/078; 3/085; 3/087

U.S. Cl. 501—72 9 Claims
1. A glass composition comprising from 50 to 66 wt % of SiO₂, from 0 to 15 wt % of Al₂O₃, from 0 to 13.4 wt % of K₂O, from 10 to 24 wt % of Li₂O+Na₂O+K₂O, from 0 to 7 wt % of BaO, from 14 to 26 wt % of CaO+MgO+SrO+BaO+ZnO, and from 0 to 1 wt % of SO₃+Sb₂O₃, said glass composition containing substantially no zirconia containing substantially no fluorine and having a strain point of at least 560° C. and a linear thermal expansion coefficient of at least $80 \times 10^{-7}/^\circ\text{C}$. within a temperature range of from 50° to 350° C.

5,780,374
HIGH-STRENGTH POROUS SILICON NITRIDE BODY AND PROCESS FOR PRODUCING THE SAME

Chihiro Kawai; Takahiro Matsuura, and Akira Yamakawa, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Dec. 30, 1996, Ser. No. 774,612
Claims priority, application Japan, Jan. 9, 1996, 8-001120; Jan. 9, 1996, 8-001121; Dec. 3, 1996, 8-322420
Int. Cl.⁶ C04B 35/584

U.S. Cl. 501—97.1 11 Claims
1. A high-strength porous silicon nitride body comprising columnar silicon nitride grains and an oxide bond phase and having a three-dimensionally entangled structure made up of said columnar silicon nitride grains and said oxide bond phase wherein said oxide bond phase comprises 2 to 15 wt. %, in terms of oxide based on silicon nitride, of at least one rare earth element and said porous silicon nitride body has an SiO₂/(SiO₂+rare earth element oxide) weight ratio of 0.012 to 0.65, an average pore size of at most 3 μm, and porosity x (vol. %) and three-point flexural strength y (MPa) satisfying the relationship:
 $-14.4x + 1300 \geq y \geq -8.1x + 610$ (provided that $50 \leq x \leq 30$)
 $-14.4x + 1300 \geq y \geq -6.5x + 530$ (provided that $68 \leq x \leq 50$).

5,780,375
THICK FILM COMPOSITION FOR MODIFYING THE ELECTRICAL PROPERTIES OF A DIELECTRIC LAYER

Lorri Potvin Drozdyk, Hillsborough, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 635,796, Apr. 22, 1996, abandoned, which is a continuation of Ser. No. 510,923, Aug. 3, 1995, abandoned, which is a continuation of Ser. No. 335,520, Nov. 7, 1994, abandoned, which is a continuation of Ser. No. 139,360, Oct. 19, 1993, abandoned. This application Jun. 28, 1996, Ser. No. 671,868
Int. Cl.⁶ C04B 35/46

U.S. Cl. 501—137 6 Claims
1. A capacitor dielectric thick film composition comprising, by weight percent: (1) 32–98% BaTiO₃, (2) 2–60% zinc barium borate frit consisting of the oxides of zinc, barium and boron, and (3) 0–8% Bi₂O₃.

5,780,376
ORGANOCLAY COMPOSITIONS

Antonio Gonzales, Moulton, Tex.; Kevin L. Nichols, Midland, Mich.; Clois E. Powell, Seguin, Tex., and Bruce P. Thill, Midland, Mich., assignors to Southern Clay Products, Inc., Gonzales, Tex., and The Dow Chemical Company, Midland, Mich.

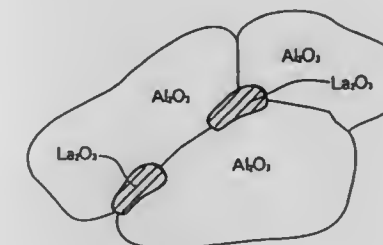
Filed Feb. 20, 1997, Ser. No. 802,758
Int. Cl.⁶ C09C 1/42

U.S. Cl. 501—146 8 Claims
1. An organoclay composition comprising a reaction product of a smectite clay having an ion exchange capacity of at least 50 meq. wt. per 100 g. clay (active basis), and a mixture of a first quaternary ammonium compound with either a second quaternary ammonium compound containing a carbon-carbon double bond, or a chain transfer agent which is a thiol, α-methylketone, or a halogen compound.

5,780,377
LIGHT-TRANSMISSIVE CERAMICS AND METHOD OF MANUFACTURING SAME

Naohito Wajima; Tetsuaki Bundo, and Koichi Hayashi, all of Fukuoka, Japan, assignors to Toto Ltd., Fukuoka, Japan
Filed May 2, 1995, Ser. No. 433,235
Int. Cl.⁶ C04B 35/10; 35/50; 35/645

U.S. Cl. 501—152 11 Claims



1. A light-transmissive ceramic consisting essentially of a plurality of oxides, each oxide in the ceramic having a negative standard Gibbs energy of formation (ΔG_f°) having an absolute value greater than 1581.9 KJ/mol, said light-transmissive ceramic being produced by subjecting the oxides to hot isostatic pressing at a high temperature under a high pressure.

5,780,378

SOLID TITANIUM CATALYST COMPONENT FOR OLEFIN POLYMERIZATION, PROCESS FOR PREPARING THE SAME, CATALYST FOR OLEFIN POLYMERIZATION AND PROCESS FOR OLEFIN POLYMERIZATION

Tetsuya Toida; Tetsunori Shinozaki, and Mamoru Kioka, all of Kuga-gun, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 113,677, Aug. 31, 1993, abandoned.

This application Sep. 6, 1995, Ser. No. 523,946

Claims priority, application Japan, Aug. 31, 1992, 4-231732; Apr. 1, 1993, 5-075513; Aug. 20, 1993, 5-206345

Int. Cl.⁶ C08F 4/651; 4/654; 10/00

U.S. Cl. 502—126

12 Claims

1. A solid titanium catalyst component for olefin polymerization comprising as essential components:

- (a) from 10 to 28% by weight of magnesium;
- (b) from 0.8 to 6% by weight of titanium;
- (c) from 38 to 72% by weight of a halogen;
- (d) from 3 to 25% by weight of a compound having at least two ether linkages existing through a plurality of atoms, said plurality of atoms comprising at least one atom selected from the group consisting of carbon, silicon, oxygen, nitrogen, phosphorous, boron and sulfur atoms;
- (e) from 2 to 10% by weight of a hydrocarbon; and
- (f) from 0.15 to 4% by weight of an electron donor other than the compound (d),

wherein the solid titanium catalyst component is the product obtained by:

- (A) contacting in a hydrocarbon solvent, a halogenated magnesium compound with an electron donor compound selected from the group consisting of alcohol, ether and ester, wherein the amount of the electron donor is from 1 to 40 mole per mole of halogenated magnesium compound and the amount of hydrocarbon solvent is from 1 to 30 mole per mole of halogenated magnesium compound, to obtain a magnesium compound solution;
- (B) contacting the magnesium solution with the compound (d) in an amount of from 0.01 to 1.0 mol per mole of halogenated magnesium compound, to obtain magnesium polyether solution;
- (C) contacting the magnesium polyether solution with a liquid titanium compound in an amount of from 2 to 100 gram atoms per gram atom of magnesium in the magnesium polyether solution,

wherein said electron donor compound used to prepare the magnesium compound solution is different from said compound (d).

5,780,379

PROCESS FOR THE STEREOSPECIFIC POLYMERIZATION OF ALPHA-OLEFINS AND CATALYST SYSTEM WHICH CAN BE EMPLOYED FOR THIS POLYMERIZATION

Paul Fiasse, Brussels, Belgium, assignor to Solvay Polyolefins Europe-Belgium (Société Anonyme), Brussels, Belgium

Continuation of Ser. No. 487,339, Jun. 7, 1995, abandoned, which is a division of Ser. No. 879,444, May 1, 1992, abandoned, which is a continuation of Ser. No. 309,083, Feb. 10, 1989, abandoned, which is a continuation of Ser. No. 423,044, Oct. 18, 1989, abandoned, which is a continuation of Ser. No. 184,572, Apr. 21, 1988, abandoned, which is a continuation of Ser. No. 101,860, Sep. 25, 1987, abandoned. This application May 13, 1997, Ser. No. 855,509

Claims priority, application France, Mar. 9, 1988, 88 03160

Int. Cl.⁶ C08F 4/44; 4/02; B01J 31/00; 37/00

U.S. Cl. 502—132

15 Claims

1. A catalytic composition for the polymerization of alpha-olefins, consisting essentially of:

- (1) a solid comprising complexed titanium trichloride obtained by a process comprising reducing a titanium compound

selected from the group consisting of tetrahalides, tetrahydrocarbyloxides and mixtures thereof to obtain a reduced solid, treating said reduced solid with at least one complexing agent selected from the group consisting of aliphatic ethers and, combining with or following this treatment, activating said reduced solid with at least one agent selected from the group consisting of inorganic halogen compounds, organic halogen compounds, interhalogen compounds and halogens, wherein said solid has been brought into contact with a preactivator comprising a product of reaction of an organoaluminum compound (a) selected from the group consisting of trialkylaluminums and alkylaluminum chlorides with a compound (b) selected from the group consisting of hydroxyaromatic compounds whose hydroxyl group is sterically hindered to obtain a preactivated solid which is then isolated from a medium in which it was formed;

- (2) an organometallic composition selected from the group consisting of the compounds of formula AlR'_mX_{3-m} , where R' is a hydrocarbon radical containing from 1 to 18 carbon atoms, X is a halogen selected from the group consisting of fluorine, chlorine, bromine and iodine, and m is any number such that $1.5 \leq m \leq 2.5$; and

- (3) an electron-donor organic compound selected from the group consisting of organic compounds containing oxygen, organic compounds containing nitrogen, organic compounds containing phosphorus and organic compounds containing sulphur and having a molar ratio of the electron-donor compound (3) to the organometallic composition (2) between 0.005 and 1.

5,780,380

PHOTOCATALYST COMPOSITION AND PROCESS FOR ITS PRODUCTION, AND PHOTOCATALYST COMPOSITION-ATTACHED SUBSTRATE

Eiji Endoh, and Takeshi Morimoto, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Dec. 19, 1996, Ser. No. 770,731

Claims priority, application Japan, Dec. 21, 1995, 7-333673

Int. Cl.⁶ B01J 23/00

U.S. Cl. 502—300

10 Claims

1. A photocatalyst composition comprising a semiconducting photocatalytic substance and fine oxide particles dispersed in the semiconducting photocatalytic substance, said photocatalyst composition having a band gap which is larger by at least 0.05 eV than the band gap of the semiconducting photocatalytic substance per se.

5. A process for producing a photocatalyst composition, which comprises coating on a substrate a coating liquid for forming a photocatalyst composition, comprising a material capable of forming a semiconducting photocatalytic substance and fine oxide particles dispersed in the material, to form a thin film, and then applying heat treatment thereto to obtain a photocatalyst composition having a band gap which is larger by at least 0.05 eV than the band gap of the semiconducting photocatalytic substance per se.

7. A photocatalyst composition-attached substrate comprising a substrate and a photocatalyst composition formed on the substrate, wherein the photocatalyst composition comprises a semiconducting photocatalytic substance and fine oxide particles dispersed in the semiconducting photocatalytic substance, and the photocatalyst composition has a band gap which is larger by at least 0.05 eV than the band gap of the semiconducting photocatalytic substance per se.

5,780,381

COBALT/MOLYBDENUM/ZIRCONIUM CATALYST FOR FISCHER-TROPSCH SYNTHESIS

Geoffrey Robert Wilson, Kit Tanning, and Norman Loren Carr, Wexford, both of Pa., assignors to Syncrude Technology Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 356,697, Dec. 15, 1994, abandoned, and Ser. No. 485,351, Jun. 7, 1995, Pat. No. 5,639,798.

This application Sep. 10, 1996, Ser. No. 711,972

Int. Cl.⁶ B01J 23/28

U.S. Cl. 502—308

15 Claims

1. A catalyst useful for Fischer-Tropsch synthesis by conversion, at reaction conditions, of a mixture of carbon monoxide and hydrogen to hydrocarbons predominately in the carbon number range of C₅ plus in a slurry catalytic reaction process, said catalyst comprising from about 2% to 35% by weight, based on the total weight of catalyst, cobalt and from about 0.1% to 10% by weight of a metal component or components selected from the group consisting of zirconium, molybdenum and both zirconium and molybdenum supported on an alumina support wherein the alumina support is an anhydrous alumina derived from LaRoche VERSAL alumina, and is in the form of microspheres.

5,780,382

METHOD FOR PREPARING A MODIFIED SOLID OXIDE
Clarence D. Chang, Princeton; Frank T. DiGiuseppi, Bordentown, both of N.J., and Jose G. Santiesteban, Yardley, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 136,838, Oct. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 95,884, Jul. 22, 1993, abandoned. This application Jul. 31, 1995, Ser. No. 509,717

Int. Cl.⁶ B01J 23/16; 23/22; 23/24; 23/30

U.S. Cl. 502—309

18 Claims

1. A method for preparing an acidic solid comprising a Group IVB metal oxide modified with an oxyanion of a Group VIB metal, said method comprising the steps of:

- (a) contacting a hydrated oxide of a Group IVB metal with an aqueous solution having a pH of at least 7 under reflux conditions at a temperature of about 80° C. to 100° C.;
- (b) contacting the hydrated oxide of step (a) with an aqueous solution comprising an oxyanion of a Group VIB metal under conditions sufficient to form a solid material comprising oxygen, Group IVB metal and Group VIB metal;
- (c) drying the solid material; and
- (d) calcining the solid material of step (c) at a temperature greater than about 500° C.

5,780,383

SOLID SUPERACID CATALYST COMPRISING GROUP VII METAL AND HAVING H₀ LESS THAN -18

Elmer J. Hollstein, Wilmington, Del.; James T. Wei, Ridge-wood, N.J., and Chao-Yang Hsu, Media, Pa., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Continuation of Ser. No. 686,713, Apr. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 565,588, Aug. 9, 1990, abandoned. This application Dec. 10, 1992, Ser. No. 989,729

The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.

Int. Cl.⁶ B01J 23/32; 27/053; C01B 17/74

U.S. Cl. 502—324

2 Claims

1. Solid superacid catalyst having acid strength H₀ less than -18 and comprising Group VII metal or compounds thereof.

5,780,384

HYDRATED MANGANESE DIOXIDE OXIDATION CATALYSTS AND PROCESS OF PRODUCING SAME

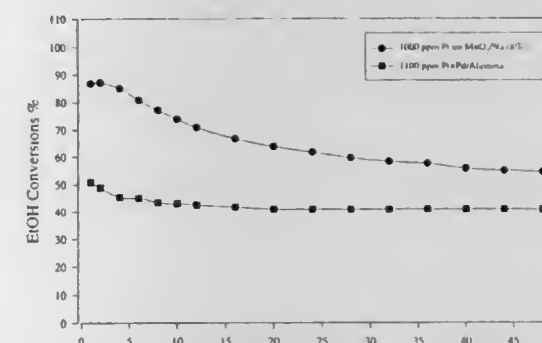
Douglas Charles Tomczak, Bethesda, Md.; Cristian Libanati, Washington, D.C., and Jean Willem Beeckman, Columbia, Md., assignors to Megtec Systems, Inc., De Pere, Wis.

Filed Jan. 3, 1997, Ser. No. 778,935

Int. Cl.⁶ B01J 23/00; 23/32; 8/00; 8/02

U.S. Cl. 502—324

30 Claims

Accelerated Aging Studies

1. A catalyst for oxidizing volatile organic compounds (VOCs), in particular, oxygen containing VOCs, to carbon dioxide and water comprising an inert support having deposited on the surface thereof a delta manganese dioxide hydrate, and a catalytically effective amount of at least one noble metal, wherein the delta manganese dioxide hydrate has the formula



where x is 0.1 to 2, y is 0.1 to 5, A is alkali metal cation or NR_4^+ , and R is H or an alkyl group having 1 to 6 carbon atoms, and wherein said catalyst resists poisoning by sulfur containing catalytic poisoning species.

5,780,385

FELINE URINARY TRACT DISEASE-DETECTING PAPER CAT LITTER AND METHOD

Carl V. Santioemmo, Highland Heights, Ohio, and James P. Humphries, Frisco, Tex., assignors to Ranpak Corp., Concord Township, Ohio

Division of Ser. No. 345,524, Nov. 28, 1994, and a continuation-in-part of Ser. No. 153,360, Nov. 16, 1993, abandoned, and Ser. No. 125,310, Sep. 22, 1993, abandoned, said Ser. No. 345,524 is a continuation-in-part of Ser. No. 153,360, Nov. 16, 1993, abandoned, and Ser. No. 153,491, Nov. 17, 1993, and Ser. No. 125,310, Sep. 22, 1993, abandoned, said Ser. No. 153,360 is a continuation-in-part of Ser. No. 861,225, Mar. 31, 1992, abandoned, said Ser. No. 153,491 is a continuation-in-part of Ser. No. 861,225, Mar. 31, 1992, abandoned. This application May 19, 1995, Ser. No. 444,956

Int. Cl.⁶ B01J 20/22

U.S. Cl. 502—401

14 Claims

1. A method of producing a cat litter, for detecting a feline disease which is indicated by a predetermined characteristic of cat urine, which comprises a porous and resilient paper product, said method comprising the steps of:

- providing a web of paper material having a tendency to resist folding and including an indicator selected such that the paper material exhibits a marked color change when wetted with cat urine having the predetermined characteristic;
- cutting the web into a plurality of longitudinal strips;
- folding said strips transversely into generally zig-zag shapes; and
- treating the paper material with a sizing, in an amount sufficient to permit the litter to wet from bottom upwards, when a cat urinates on the top of the litter.

5,780,386

METALLIC SUPPORT

Masayoshi Usui, Numazu, Japan, assignor to Usui Kokusai Sangyo Kaisha, Ltd., Shizuoka, Japan
PCT No. PCT/JP94/01485, § 371 Date May 15, 1996, § 102(e)
Date May 15, 1996, PCT Pub. No. WO95/07143, PCT Pub.
Date Mar. 16, 1995

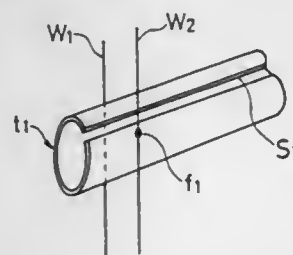
PCT Filed Sep. 8, 1994, Ser. No. 596,191

Claims priority, application Japan, Sep. 9, 1993, 5-247305

Int. Cl.⁶ B01J 21/04; B01D 50/00

U.S. Cl. 502—439

7 Claims



1. A metallic support for an exhaust gas cleaning catalyst, comprising:

- (i) a cylindrical metal casing;
- (ii) a plurality of small-diameter open tubes, each arranged within the metal casing, each of said open tubes having at least one slot which extends axially along the full length of the tube to permit a stream of gas to exit therefrom and to be agitated and made turbulent between the individual small-diameter tubes; and
- (iii) metal wires fixing the small-diameter open tubes in an array within the metal casing.

5,780,387

REVERSIBLE THERMOSENSITIVE RECORDING MEDIUM

Shigeyuki Harada, Mishima, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

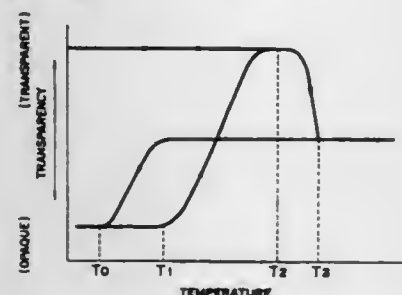
Filed Aug. 22, 1996, Ser. No. 700,784

Claims priority, application Japan, Aug. 22, 1995, 7-234642;
Aug. 12, 1996, 8-227380

Int. Cl.⁶ B41M 5/40

U.S. Cl. 503—226

18 Claims



1. A reversible thermosensitive recording medium comprising:
a support material;

a thermosensitive recording layer whose transparency is reversibly changeable depending upon the temperature thereof, which is provided on said support material and comprises a low-molecular-weight organic compound and a resin matrix in which said organic low-molecular-weight compound is dispersed; and

an overcoat layer provided at said thermosensitive recording layer, said overcoat layer having a pencil hardness of 1H or more and comprising at the surface thereof at least three protrusions with a height of 0.05 μm or more per area of 125 μm×125 μm of the surface of said overcoat layer.

5,780,388

HEAT SENSITIVE RECORDING MATERIAL

Minoru Wada, and Kotaro Nakamura, both of Shizuoka-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

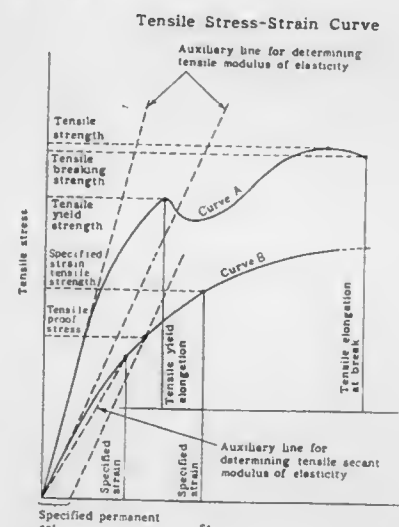
Filed Nov. 14, 1996, Ser. No. 748,839

Claims priority, application Japan, Nov. 16, 1995, 7-298160

Int. Cl.⁶ B41M 5/40

U.S. Cl. 503—226

14 Claims



1. A heat sensitive recording material having a heat sensitive recording layer disposed on a support, wherein an intermediate layer having a tensile modulus of elasticity of from 1×10^8 to 1×10^{10} (dyne/cm²) as measured according to JIS K 7127 is disposed between the support and the heat sensitive recording layer.

5,780,389

MICROENCAPSULATED PLANT PROTECTION AGENTS COMPRISING DIBENZYL TOLUENES AS SOLVENT, A PROCESS FOR THEIR PREPARATION, AND THEIR USE

Hans-Peter Krause; Thomas Maier, both of Hofheim; Jean-Paul Schoeni, Wiesbaden, and Anna Waltersdorfer, Frankfurt, all of Germany, assignors to Hoechst Schering AgrEvo GmbH, Berlin, Germany

Filed Sep. 26, 1995, Ser. No. 534,234

Claims priority, application Germany, Sep. 28, 1994, 44 34 638.7

Int. Cl.⁶ A01N 25/02; 25/28

U.S. Cl. 504—116

7 Claims

1. A microcapsule containing a water-insoluble component, which component comprises a solid or liquid active plant protection ingredient or a mixture thereof and a mixture of isomeric dibenzyltoluenes as solvent.

5,780,390

AGRICULTURAL SPRAY ADJUVANT COMPRISING COCONUT DIETHANOLAMIDE AND POLYALKYLENE GLYCOL

Sherwin David Hintz, and Julio Jose Bordas, both of Miami, Fla., assignors to GB Biosciences Corporation, Wilmington, Del.

Filed Nov. 22, 1995, Ser. No. 562,521

Int. Cl.⁶ A01N 25/30; B01F 17/16

U.S. Cl. 504—116

17 Claims

1. A method for applying an agricultural agent to a crop comprising applying to a crop by spraying from an aircraft or a ground applicator a composition comprising water, an agricultural agent polyalkylene glycol, and coconut diethanolamide.

5,780,391

Patent Not Issued For This Number

5,780,392

HETEROCYCLYL-1,3,4-THIADIAZOLYLOXYACETAMIDES AND THEIR USE AS HERBICIDES

Heinz Förster, Kadenbach; Hans-Joachim Diehr, Wuppertal; Hans-Joachim Santel, and Markus Dollinger, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 4, 1996, Ser. No. 721,981

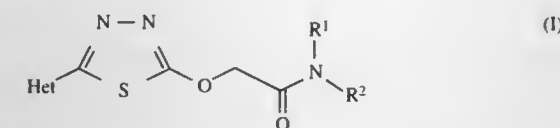
Claims priority, application Germany, Apr. 11, 1994, 44 12 328.0

Int. Cl.⁶ C07D 417/04; A01L 43/824

U.S. Cl. 504—263

8 Claims

1. A heterocyclyl-1,3,4-thiadiazolyloxyacetamides of the formula (I)



in which

R¹ represents hydrogen, C₁–C₈-alkyl optionally substituted by fluorine, chlorine, cyano or C₁–C₄-alkoxy, C₂–C₈-alkenyl optionally substituted by fluorine or chlorine, C₂–C₈-alkinyl or benzyl optionally substituted by fluorine, chlorine, C₁–C₄-alkyl or C₁–C₄-alkoxy,

R² represents C₁–C₈-alkyl optionally substituted by fluorine, chlorine, cyano or C₁–C₄-alkoxy, C₂–C₈-alkenyl optionally substituted by fluorine or chlorine, C₂–C₈-alkinyl, C₃–C₆-cycloalkyl optionally substituted by chlorine or C₁–C₃-alkyl, C₅- or C₆-cycloalkenyl, benzyl optionally substituted by fluorine, chlorine, C₁–C₄-alkyl or C₁–C₄-alkoxy, phenyl optionally substituted by fluorine, chlorine, bromine, iodine, cyano, nitro, C₁–C₄-alkyl, trifluoromethyl, C₁–C₄-alkoxy or C₁–C₄-alkylthio, C₁–C₈-alkoxy optionally substituted by C₁–C₄-alkoxy, or C₃–C₄-alkenyloxy, or

R¹ and R² together with the nitrogen atom to which they are bound form a saturated or unsaturated five- to seven-membered nitrogen heterocycle which is optionally monosubstituted to trisubstituted by C₁–C₃-alkyl and can additionally contain oxygen and is optionally benzo-fused, and

Het represents in each case unsubstituted or substituted furyl, benzofuryl, tetrahydrofuryl, pyrrolyl, benzopyrrolyl, tetrahydropyrrolyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, oxadiazolyl, thiadiazolyl, pyridyl, pyrimidyl, triazinyl or tetrahydropyranlyl, the substituents being selected from the group consisting of

fluorine, chlorine, bromine, cyano in each case optionally fluorine- or chlorine-substituted methyl, ethyl n- or i-propyl, n-, i-, s- or t-butyl, methoxy, ethoxy n- or i-propoxy, methylthio, ethylthio, n- or i-propylthio, methylsulphanyl, ethylsulphanyl, n- or i-propylsulphanyl, methylsulphonyl, ethylsulphonyl, n- or i-propylsulphonyl.

5,780,393

HERBICIDAL ISOXAZOLE AND ISOTHIAZOLE-5-CARBOXAMIDES

Trevor W. Newton, Schwabenheim, Germany, assignor to American Cyanamid Company, Madison, N.J.

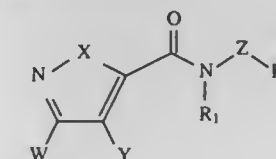
Filed Aug. 23, 1996, Ser. No. 702,779

Int. Cl.⁶ A01N 43/74; C07D 261/18

U.S. Cl. 504—271

20 Claims

1. A compound of formula I



wherein

W represents an optionally substituted alkyl, alkenyl, cycloalkyl, dialkylamino, aryl, heteroaryl or aralkyl group;

Y represents a hydrogen atom; a halogen atom, or an optionally substituted alkyl group;

R₁ represents a hydrogen atom, an optionally substituted alkyl group, or an optionally substituted acyl group;

Z represents an C₁₋₄ alkylene group being optionally substituted by a group selected from halogen atoms, and phenyl, nitro, hydroxyl, C₁₋₄ alkoxy, C₁₋₄ alkyl, C₁₋₄ haloalkoxy, (C₁₋₄ alkoxy) carbonyl groups, amino, alkyl- and phenyl-sulphonyl, -sulphenyl and -sulphonyl groups, and mono- or di(C₁₋₄alkyl) amino groups; and

R₂ represents an aryl or heteroaryl group being optionally substituted by a group selected from halogen atoms, and nitro, cyano, amino, C₁₋₄ alkyl, C₁₋₄ haloalkyl, C₁₋₄ alkoxy and C₁₋₄ haloalkoxy groups;

with the proviso that when Z represents an unsubstituted methylene group, then R₂ does not represent an unsubstituted phenyl group; or

the N-oxides thereof; or
the optical isomers thereof.

5,780,394

3-HYDROXY-4-ARYL-5-OXO-PYRAZOLINE DERIVATIVES

Bernd-Wieland Krüger, Bergisch-Gladbach; Reiner Fischer, Monheim; Heinz-Jürgen Bertram, Holzwinden; Thomas Bretschneider, Siegburg; Stefan Böhm, Leverkusen; Andreas Krebs, Odenthal-Holz; Thomas Schenke, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen; Klaus Lurssen; Robert R. Schmidt, both of Bergisch Gladbach; Christoph Erdelen, Leichlingen; Ulrike Wachendorf-Neumann, Monheim, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Division of Ser. No. 476,171, Jun. 7, 1995, Pat. No. 5,661,110, which is a division of Ser. No. 233,911, Apr. 28, 1994, Pat. No. 5,474,974, which is a division of Ser. No. 999,058, Dec. 31, 1992, Pat. No. 5,358,924, which is a continuation-in-part of Ser. No. 849,863, Mar. 12, 1992, abandoned. This application
Jan. 23, 1997, Ser. No. 788,715

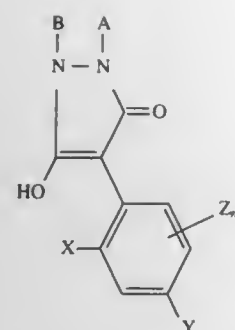
Claims priority, application Germany, Mar. 21, 1991, 41 09 208.2

Int. Cl.⁶ A01N 43/56; C07D 487/04

U.S. Cl. 504—281

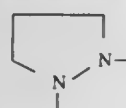
11 Claims

1. A 3-hydroxy-4-aryl-5-oxo-pyrazoline derivative of the formula



in which

A and B together with the two nitrogen atoms of the pyrazoline ring represent a monosubstituted or polysubstituted group of the formula



wherein the substituent is C_1-C_{20} -alkyl, X represents C_1-C_6 -alkyl, halogen or C_1-C_6 -alkoxy, Y represents hydrogen, C_1-C_6 -alkyl, halogen, C_1-C_6 -alkoxy or C_1-C_3 -halogenoalkyl, Z represents C_1-C_6 -alkyl, halogen or C_1-C_6 -alkoxy, n represents a number 0, 1, 2 or 3.

5,780,395

FOAM FOR IMPROVING SWEEP EFFICIENCY IN SUBTERRANEAN OIL-BEARING FORMATIONS

Robert D. Sydanski, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 566,027, Aug. 10, 1990, Pat. No. 5,105,884. This application Feb. 21, 1992, Ser. No. 839,640

Int. Cl.⁶ C08J 9/06

U.S. Cl. 507—202

5 Claims

1. A foam composition for improving sweep efficiency in a subterranean oil-bearing formation comprising:
 - a synthetic polymer selected from polyacrylamide, partially hydrolyzed polyacrylamide, copolymers of acrylamide and acrylate, carboxylate-containing terpolymers of acrylamide, or mixtures thereof;
 - a trivalent chromium-containing crosslinking agent;
 - a surfactant;
 - an aqueous liquid solvent, the combination of said synthetic polymer, said crosslinking agent and said surfactant in said solvent defining a liquid foaming composition; and
 - a foaming gas.

5,780,396

SLIDING MEMBER

Tadashi Tanaka, Hidehiko Tamura, and Takahiro Niwa, all of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Jan. 23, 1996, Ser. No. 590,208

Claims priority, application Japan, Feb. 1, 1995, 7-037606

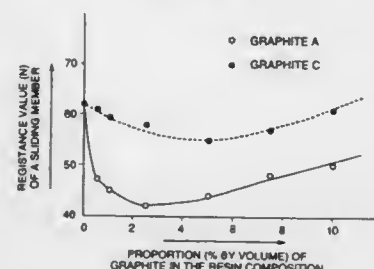
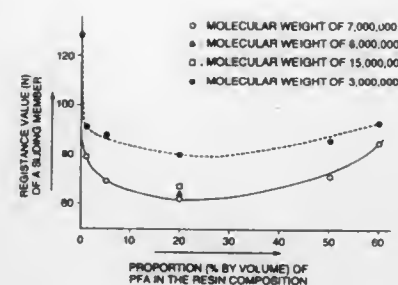
Int. Cl.⁶ C10M 111/04; 147/02

U.S. Cl. 508—104

16 Claims

1. A sliding member having a sliding surface which is composed of a resin composition comprising a tetrafluoroethylene-perfluoroalkyl vinyl ether copolymer resin and a polytetrafluoroethylene having a molecular weight of 5,000,000 to 15,000,000, the

(I)



proportion of the tetrafluoroethylene-perfluoroalkyl vinyl ether copolymer resin being 1 to 50% by volume based on the volume of the resin composition.

5,780,397

EXTREME PRESSURE ADDITIVE

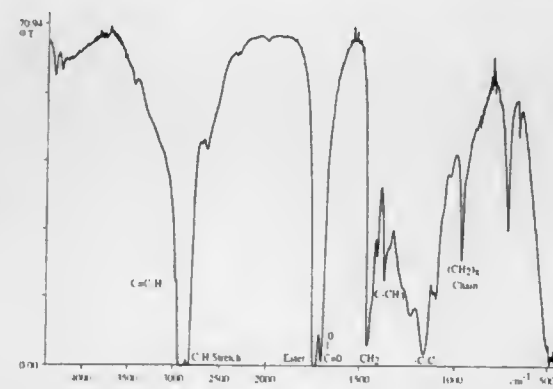
Phillip S. Landis, Alexandria, Va.; Blaine N. Rhodes, Vancouver, and Will F. Williamson, Seattle, both of Wash., assignors to International Lubricants, Inc., Seattle, Wash.

Filed Sep. 25, 1996, Ser. No. 719,355

Int. Cl.⁶ C10M 129/68

U.S. Cl. 508—346

6 Claims



1. An extreme pressure additive composition comprising the reaction product of a base oil with from about 0.01% to about 10.0% by weight of a phosphorus/sulfur compound under anaerobic conditions at temperatures from about 150° C. to about 250° C. for at least two hours but no longer than 48 hours, wherein the base oil is selected from the group consisting of triglyceride oils having at least an alkenyl chain (branched or straight), wax esters having from about 6 to about 22 carbon atom chains (branched or straight) on either side of the ester group and containing at least one carbon-carbon double bond, and telomer oils characterized in having an aliphatic ring structure formed by a Diels Alder reaction having at least one carbon-carbon double bond in each triglyceride monomer in an aliphatic ring structure, and wherein the phosphorus/sulfur compound is selected from the group consisting of phosphorus pentasulfide (P_2S_5) and its dimer P_4S_{10} , P_4S_3 , P_4S_7 , and P_4S_7 .

5,780,398 HIGH OVERBASED ALKYOXY AROMATIC SULFONATE-CARBOXYLATES AS LUBE OIL ADDITIVES

William F. King, Novato; Richard J. Nelson, Pinole; Robert H. Wollenberg, Orinda, and Steven G. Lockett, San Rafael, all of Calif., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation of Ser. No. 775,065, Dec. 27, 1996, abandoned.

This application Jul. 24, 1997, Ser. No. 900,061

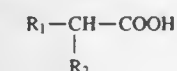
Int. Cl.⁶ C10M 159/24; 159/22

U.S. Cl. 508—401

24 Claims

1. An additive produced by reacting at elevated temperatures in the presence of at least one light hydrocarbon solvent and promoter:

- (a) an alkyl oxy aromatic sulfonate, wherein the oxy is selected from the group consisting of hydroxy, methoxy, ethoxy, propoxy, butoxy, pentoxy, and hexoxy;
- (b) an alkaline earth metal base;
- (c) carbon dioxide; and
- (d) an acid component selected from the group consisting of a carboxylic acid, an acid anhydride, an acid chloride, and ester thereof, said acid component having a molecular weight of less than 500 and having the following structure:



wherein R_1 is a C_{10} to C_{24} alkyl or alkenyl group; wherein R_2 is hydrogen, a C_1 to C_4 alkyl group, or a CH_2COOH group; and wherein the acid component provides from 2 to 40 weight % of the additive,

wherein:

- (1) if the alkyl oxy aromatic sulfonate is in the acidic form, the acid component is in the acidic form;
- (2) if the alkyl oxy aromatic sulfonate is in the neutralized form, the acid component is in the neutralized form; and
- (3) if the alkyl oxy aromatic sulfonate is in the overbased form, the acid component is either in the acidic form or in the neutralized form.

5,780,399

OIL-SOLUBLE POLYESTER, ADDITIVE FOR LUBRICATING OIL, AND LUBRICATING OIL COMPOSITION

Yoshihide Ishikawa, Himeji; Shinsuke Hasegawa, Katou-gun; Michio Miyamoto, Kakogawa; Shizuo Kitahara, Kawaguchi; Yutaka Shikata, Kawasaki, and Jinichi Igarashi, Tokyo, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo; Harima Chemicals, Inc., Kakogawa, and Nippon Oil Company, Ltd., Tokyo, all of Japan

Filed Feb. 12, 1996, Ser. No. 598,605

Claims priority, application Japan, Feb. 10, 1995, 7-045037

Int. Cl.⁶ C10M 145/22

U.S. Cl. 508—452

16 Claims

1. An oil-soluble polyester having a weight average molecular weight of 10,000 to 1,000,000, prepared by polycondensing the following components:

- (A) a refined polymerized fatty acid comprising at least 60% by weight, based on the weight of the polymerized fatty acid, of a dimer acid, or a hydrogenated product of the polymerized fatty acid,
- (B) a glycol represented by the following formula:



wherein R^1 and R^2 independently represent a linear or branched alkyl group, and the sum of carbon numbers in R^1 and R^2 is at least three, and

(C) 0.1 to 15 mole %, based on the total moles of components (A) and (B), of at least one component selected from the group consisting of a polycarboxylic acid and a polycarboxy alcohol.

9. A lubricating oil composition comprising the oil soluble polyester as claimed in claim 1, and a base oil; the amount of the oil soluble polyester being 0.1 to 40% by weight based on the weight of the lubricating oil composition.

16. An additive concentrate solution for lubricating oil comprising 100 parts by weight of an oil-soluble polyester as claimed in claim 1, and 10 to 500 parts by weight of a diluent oil.

5,780,400

CHLORINE-FREE EXTREME PRESSURE FLUID ADDITIVE

James MacNeil, New Philadelphia; Donald R. Stevenson, Dover; Barbara A. Wade, Dalton, and Joseph C. Fette, New Philadelphia, all of Ohio, assignors to Dover Chemical Corp., Dover, Ohio

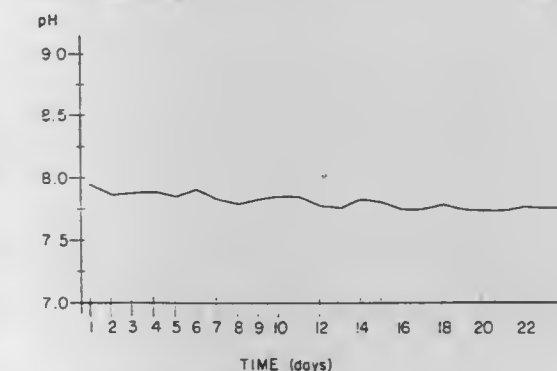
Continuation of Ser. No. 726,046, Oct. 7, 1996, abandoned.

This application Jul. 21, 1997, Ser. No. 897,382

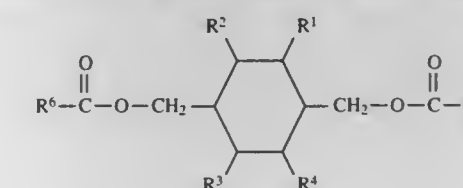
Int. Cl.⁶ C10M 129/72

U.S. Cl. 508—496

-8 Claims



1. A composition comprising:
 - a major amount of an oil of lubricating viscosity; and
 - a minor amount of an ester of generic description shown below;



wherein R^1 through R^4 are independently selected from the group hydrogen and C_{1-24} hydrocarbyl groups; and R^5 and R^6 are independently selected from the group C_{3-6} hydrocarbyl groups.

5,780,401

NON-FLATING SLIP-ENHANCING ADDITIVES FOR COATINGS

Thomas F. Steckel, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Mar. 14, 1997, Ser. No. 818,043

Int. Cl.⁶ C10M 133/16

U.S. Cl. 508—551

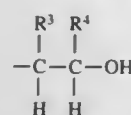
21 Claims

1. A coating composition comprising:

- A. a film-forming resin; and
- B. a non-flating slip-enhancing additive comprising the non cross-linked reaction product of:
 - (a) an amine represented by the formula:

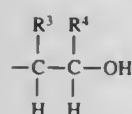
(i) NR¹R²H

wherein R¹ and R² are independently selected from the group consisting of hydrocarbyl groups and hydroxyalkyl groups represented by the formula



wherein R³ and R⁴ are independently hydrogen or a hydrocarbyl group; or

(ii) D—(NGH)_y, wherein D is a multivalent organic radical having 2 to about 30 carbon atoms; each G independently is hydrogen, a hydrocarbyl group, or hydroxyalkyl group represented by the formula



wherein R³ and R⁴ are defined as above; and y is at least 2; provided that if D is an organic radical containing 2 carbon atoms and y is 2, at least one G must be a hydrocarbyl group of 1 to 30 carbon atoms; and

(b) a carboxylic acid of the formula B—(COOH)_z, or a reactive equivalent thereof, wherein B is a direct link between two COOH groups, a mono- or a multivalent organic radical, and z is 1–5; provided that if the carboxylic acid is a monocarboxylic acid represented by the formula RCOOH, wherein R is a hydrocarbyl group, said hydrocarbyl group is free of heteroatoms;

wherein the resulting product of (a) and (b) contains at least 2 hydrocarbyl groups each having about 12 to about 30 carbon atoms.

5,780,402

ALKYLATED THIOPHENOL LUBRICANTS

Leslie R. Rudnick, 5 Winthrop Rd., Lawrenceville, N.J. 08648

Filed Aug. 22, 1991, Ser. No. 748,730

Int. Cl.⁶ C10M 135/28; 105/72; C07C 319/20; 2/66

U.S. Cl. 508—573

7 Claims

1. A process for the preparation of a high-temperature stable lubricant fluid or lubricant additive comprising reacting (1) an olefinic hydrocarbon containing from 3 to about 500 carbons and optionally containing S, N, O, P, F, and (2) a diphenyl disulfide in the presence of a zeolite catalyst thereby forming a monoalkylated thiophenol wherein the reaction temperature varies from ambient to about 350° C., the molar ratio of olefinic hydrocarbon to diphenyl disulfide varies from 1:1 to about 10:1 and the amount of catalyst varies from 5 to about 100 grams of catalyst to about 1 mole of diphenyl disulfide.

5,780,403

ASH-FREE DETERGENTS THEIR PREPARATION AND USE IN LUBRICATING OIL COMPOSITIONS

David J. Moreton, Hull, United Kingdom, assignor to BP Chemicals (Additives) Limited, London, England

Filed Feb. 6, 1996, Ser. No. 597,184

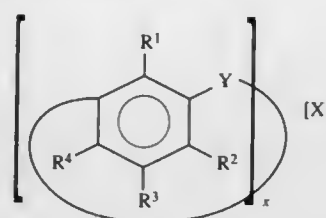
Claims priority, application United Kingdom, Feb. 15, 1995, 9502972

Int. Cl.⁶ C10M 133/00; 133/22; 129/16; C07C 43/11

U.S. Cl. 508—580

10 Claims

1. A compound of the formula (III)



wherein R¹⁰ is either hydrogen, a hydrocarbyl group or a hetero-substituted hydrocarbyl group; Y is a divalent bridging group; either R² and R⁴ are both —OR⁵ or one of R² and R⁴ is —OR⁵ and the other is OH;

R³ is hydrogen, hydrocarbyl or a hetero-substituted hydrocarbyl group;

R⁵ is —(Z)_nR⁶ in which Z is at least one alkylene oxide group, R⁶ is hydrocarbyl or hetero-substituted hydrocarbyl and n is an integer in the range from 1 to 10;

x is an integer in the range from 3 to 12; and

X is a guanidium or ammonium salt.

5,780,404

DETERGENT COMPOSITIONS CONTAINING ENDURING PERFUME

Dennis Ray Bacon, Milford; Alex Haejoon Chung, West Chester, and Toan Trinh, Maineville, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 26, 1996, Ser. No. 605,480

Int. Cl.⁶ C11D 3/10

U.S. Cl. 510—101

21 Claims

1. A detergent composition comprising: about 0.001% to about 10% by weight of an enduring perfume composition selected from the group consisting of perfume B which consists of geranyl acetate, beta-lonone, cis-jasmone, methyl dihydrojasmonate, suzural T, para-tert-butyl cyclohexyl acetate, amyl cinnamic aldehyde, iso-amyl salicylate, benzophenone, cedrol, cedryl formate, hexyl cinnamic aldehyde, musk indanone, patchouli alcohol, phenyl hexanol, ylangene, benzyl acetate, linalool, linalyl acetate, perfume C which consists of gamma-nonalactone, tonalid, vertenex, Verdor, allyl cyclohexane propionate, amyl benzoate, amyl cinnamic aldehyde dimethyl acetal, auranol, dodecalactone, ethylene brassylate, ethyl methyl phenyl glycidate, galaxolide, hexyl cinnamic aldehyde, hexyl salicylate, linal, undecavertol, allyl caproate, fructose, perfume D which consists of dimethyl benzyl carbinyl acetate, phenyl ethyl dimethyl carbinol, phenyl ethyl dimethyl carbinyl acetate, isoamyl salicylate, benzophenone, cyclamen aldehyde, diphenyl oxide, geranyl phenyl acetate, hexyl cinnamic aldehyde, gamma-n-methyl ionone, linal, phenyl hexanol, phenyl heptanol, phenyl ethyl alcohol, alpha-terpineol or Perfume E which consists of alpha-lonone, gamma-lonone, koavone, methyl dihydrojasmonate, phenyl ethyl iso-butyrate, tonalid, ambrettolide, ambrox, exaltolide, galaxolide, hexadecanolid, gamma-n-methyl ionone, iso e super, musk indanone, musk tibetine, patchouli alcohol, vetiveryl acetate, cetanol, and coumarin; (B) from about 0.01% to about 95% by weight of a surfactant.

5,780,405

BAR COMPOSITION COMPRISING COPOLYMER MILDNESS ACTIVES

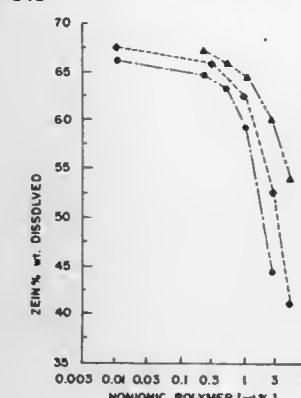
Mengtao He, Wayne; Michael Fair, Hackensack, both of N.J., and Michael Massaro, Congers, N.Y., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Mar. 18, 1996, Ser. No. 616,942

Int. Cl.⁶ C11D 9/26

U.S. Cl. 510—141

8 Claims



1. A bar composition comprising

(a) 10% to 70% by weight of total composition of a surfactant system selected from the group consisting of anionic surfactants, nonionic surfactants other than the nonionic polymer surfactant of item (c) below, cationic surfactants, amphoteric surfactants and mixtures thereof, wherein the anionic surfactant comprises 50% or greater of the surfactant system, and wherein anionic comprises no more than about 40% by wt. of the total composition.

(b) 20% to 85% by wt. of the composition of a bar structurant selected from the group consisting of alkylene oxide components having a molecular weight of from about 2,000 to about 25,000; and C₈–C₂₂ free fatty acids; C₂ to C₂₀ alkanols, paraffin waxes; water-soluble starches; and

(c) 3% to 10% by wt. total composition of a polyoxyethylene polyoxypropylene nonionic polymer surfactant (EO-PO polymer) wherein ratio by weight total composition of anionic surfactant to EO-PO polymer is between 2.5:1 to 10:1.

5,780,406

NON-CORROSIVE CLEANING COMPOSITION FOR REMOVING PLASMA ETCHING RESIDUES

Kenji Honda, 8 Plymouth Dr., Barrington, R.I. 02806, and Eugene F. Rothgery, 28 Bailey Dr., North Branford, Conn. 06471

Filed Sep. 6, 1996, Ser. No. 709,053

Int. Cl.⁶ C11D 7/26; 7/32; 7/60; B08B 3/08

U.S. Cl. 510—175

10 Claims

1. A cleaning composition useful for removing residues formed during plasma etching and having a pH from 2 to 6 and comprising in effective amounts:

(A) water;

(B) at least one acidic hydroxylammonium compound selected from the group consisting of hydroxylammonium salts of the formula:



wherein R₁, R₂ and R₃ are individually selected from hydrogen, lower alkyl groups having 1 to 4 carbon atoms, lower alkoxy groups having 1 to 4 carbon atoms, hydroxyl and hydroxyl-substituted lower alkyl groups having 1 to 4 carbon atoms, with the proviso that at least two of R₁, R₂ and R₃ are

hydrogen, lower alkyl group or lower alkoxy group; and wherein X is an anionic moiety that is soluble in water and compatible with said amines or quaternary ammonium hydroxides; and n is the valence of X and is from 1 to 3; and (C) at least one basic compound selected from amines and quaternary ammonium hydroxides.

5,780,407

SOLVENT SOAPS AND METHODS EMPLOYING SAME

Donald C. Van Slyke, Brea, Calif., assignor to Union Oil Company of California, El Segundo, Calif.

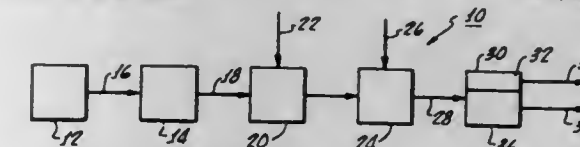
Continuation of Ser. No. 614,030, Mar. 12, 1996, Pat. No. 5,723,423, which is a division of Ser. No. 210,144, Mar. 17, 1994, Pat. No. 5,634,984, which is a continuation-in-part of Ser. No. 172,429, Dec. 22, 1993, abandoned. This application

Jun. 26, 1997, Ser. No. 883,523

Int. Cl.⁶ C09D 9/00

U.S. Cl. 510—188

34 Claims



1. A composition comprising:

(a) at least two different types of surfactants, where each type of surfactant has a HLB value of at least 8 and a mixture of the surfactants would have a HLB value of at least 11;

(b) at least one diluent oil; and

(c) less than about 5 volume percent water (the volume percent being based on the total amount of surfactant, diluent oil, and water present in the composition).

5,780,408

BODY MOULDING SOLUTION

Mark John Russell; Michael John Rickhuss, and Zygmunt Joseph Zielinski, all of Queensland, Australia, assignors to MMZ Solutions Pty. Ltd., Queensland, Australia

Continuation of Ser. No. 327,921, Oct. 24, 1994, abandoned, which is a continuation-in-part of Ser. No. 85,881, Jun. 30, 1993, Pat. No. 5,376,299. This application May 23, 1996, Ser. No. 652,125

Int. Cl.⁶ C11D 7/50; 7/24; 7/60

U.S. Cl. 510—200

8 Claims

1. A solution for use in removing adhesive tape from motor vehicles mouldings consisting essentially of polyurethane, said solution consisting essentially of:

(a) 80–95% by weight of kerosene

(b) 3–15% by weight of oil of turpentine

(c) 1–10% by weight of a surface active agent selected from the group consisting of linseed oil and castor oil, and

(d) about 0.1% to about 3% by weight of a perfume.

5,780,409

WATER-IN-OIL EMULSION HAVING AQUEOUS PHASE EVAPORATION RETARDED WITH WAX IR 3323D

John Distaso, Bensalem, Pa., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 286,021, Aug. 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 111,812, Aug. 25, 1993, Pat. No. 5,387,363, which is a continuation-in-part of Ser. No. 892,458, Jun. 2, 1992, abandoned. This application Sep. 3, 1996, Ser. No. 707,261

Int. Cl.⁶ C09D 9/00; B05D 3/02; B32B 15/00; C08K 5/01

U.S. Cl. 510—207

4 Claims

1. An acidic paint stripper formulation with a retarded rate of water evaporation from the water phase, said formulation compris-

ing a water-in oil emulsion having (a) a water phase comprising water and formic acid and (b) a continuous organic phase comprising paraffin wax and benzyl formate, the paraffin wax being slightly in excess of that which would saturate the organic phase.

5,780,410

DETERGENT COMPOSITIONS CONTAINING PERCARBONATE AND MAKING PROCESSES THEREOF

Gerard Marcel Baillely, Newcastle upon Tyne, United Kingdom; Paul Amaat Raymond G. France, Bertem, and Carole Patricia D. Wilkinson, Bruxelles, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US94/07877, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO95/02724, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 13, 1994, Ser. No. 581,554

Claims priority, application European Pat. Off., Jul. 14, 1993, 93870139

Int. Cl.⁶ D06L 3/02; C11D 3/12; 3/39; 3/395

U.S. Cl. 510—220

8 Claims

1. A granulated detergent composition comprising an alkali metal percarbonate, wherein said percarbonate has a mean particle size of from 250 to 900 micrometers, and that said composition comprises a hydrophobic material, selected from hydrophobic silica, talc, zeolite DAY and hydrotalcit, in a weight ratio of alkali metal percarbonate to hydrophobic material of from 4:1 to 40:1 wherein said percarbonate particles are coated with a first coat of a water soluble alkali metal salt, wherein further said percarbonate particles are coated with a nonionic surfactant after coating with said first coat and said hydrophobic material is present as a final coat on said nonionic surfactant.

5,780,411

HIGH FOAMING NONIONIC SURFACTANT BASED LIQUID DETERGENT

Rita Erilli, Liege, Belgium, assignor to Colgate-Palmolive Company, Piscataway, N.J.

Continuation-in-part of Ser. No. 412,322, Apr. 3, 1995, abandoned. This application Jun. 9, 1997, Ser. No. 871,484

Int. Cl.⁶ C11D 1/02; 1/29; 1/72; 1/90

U.S. Cl. 510—237

9 Claims

1. A high foaming, nonionic surfactant based, light duty, liquid detergent composition comprising approximately, by weight,

- (a) 10% to 30% of a water-soluble nonionic surfactant;
- (b) 1% to 10% of an alkyl sulfate surfactant;
- (c) 0.5% to 10% of an alkyl betaine surfactant;
- (d) 0.5% to 3% of an ethylene glycol distearate;
- (e) 0.2% to 3% of a mixture of a (CH₂)_xEO_y surfactant and a C₁₂₋₁₄ fatty acid monoalkanol amide, wherein the (CH₂)_xEO_y surfactant is different from the water soluble nonionic surfactant and the weight ratio of (CH₂)_xEO_y surfactant to said C₁₂₋₁₄ fatty acid monoalkanol amide is about 3:1 to about 1:3 and x is 10 to 14 and y is 8 to 12;

(f) 0.5% to 3.0% of an ethoxylated alkyl ether sulfate surfactant; and

(g) the balance being water wherein the composition exhibits a pearlescence appearance and excluded from the compositions are cetearyl alcohol, tricetyl methyl ammonium chloride, a silicone conditioning agent such as polydimethyl siloxane, polyalkyl siloxane, polyaryl siloxane, polyalkylaryl siloxane, polyether siloxane copolymer, peroxy oxidizing agents such as hydrogen peroxide and sodium percarbonate, sodium perborate and perbenzoic acid, and selenium sulfide.

5,780,412

ALKALINE-STABLE HARD SURFACE CLEANING COMPOUNDS COMBINED WITH ALKALI-METAL ORGANOSILICONATES

Victoria D. Scarborough, and Leonard R. Clark, both of Memphis, Tenn., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Aug. 9, 1995, Ser. No. 513,077

Int. Cl.⁶ C11D 3/20; 3/395; 1/75; C09K 3/18

U.S. Cl. 510—240

8 Claims

1. A one-step cleaner and water repellent composition for porous inorganic surfaces consisting essentially of:

- (a) an alkaline-stable cleaning composition consisting essentially of
 - (i) at least one bleach selected from chlorine bleach and oxygen bleach;
 - (ii) at least one surfactant; and
 - (iii) at least one pH stabilizer, wherein the pH of said alkaline-stable cleaning solution is in the range of 10 to 14;
- (b) an alkali metal alkylsiliconate, and
- (c) water;

wherein the alkaline-stable cleaning composition and the alkali metal alkylsiliconate are compatible in water, and wherein said one-step cleaner and water repellent composition cleans said surface and imparts water repellency to said surface upon application to said surface.

5,780,413

Patent Not Issued For This Number

5,780,414

METHOD OF REMOVING OILY SUBSTANCES WITH HYDROGEN-TERMINATED FLUOROPOLYETHERS

Rossella Silvani, Lentate sul Seveso; Gianfranco Spataro, Lissone, and Giuseppe Marchionni, Milan, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Mar. 5, 1997, Ser. No. 810,771

Claims priority, application Italy, Mar. 7, 1996, MI96A0442

Int. Cl.⁶ B08B 3/04; C23G 5/032; C11D 7/26

U.S. Cl. 510—365

11 Claims

1. A method of removing oily substances from a substrate, without solubilizing them, comprising contacting the oily substances with a composition consisting essentially of a compound having the general formula



wherein n and m are integers comprised between 0 and 20, excluding when m and n are contemporaneously 0, and having a boiling point from 30° to 200° C. and a molar ratio O/C comprised between 0.5–1.

5,780,415

STABLE MICROEMULSION CLEANING COMPOSITION

Isabelle Leonard, Mons, and Julien Drapier, Seraing, both of Belgium, assignors to Colgate-Palmolive Company, Piscataway, N.J.

Filed Feb. 10, 1997, Ser. No. 797,080

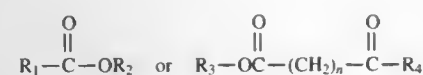
Int. Cl.⁶ C11D 1/83; 3/20; 3/32

U.S. Cl. 510—417

6 Claims

1. A composition comprising approximately by weight:

- a) 6 to 50% of at least one anionic surfactant;
- b) 0.7% to 8% of organic ester compound, wherein said organic ester is an aliphatic ester having the formulas of



wherein R₁, R₃ and R₄ are C₂ to C₈ alkyl groups, and R₂ is a C₃ to C₈ alkyl group, and n is a number from 3 to 8;

- c) 0 to 22% of a solubilizing agent;
- d) 0.5 to 15% of at least one glycol ether cosurfactant;
- e) 0.5% to 6% of urea; and
- f) the balance being water, wherein the composition has a pH of about 1 to 11 and is optically clear having at least 90% light transmission.

5,780,416

ACIDIC HARD SURFACE CLEANING FORMULATIONS COMPRISING APG AND PROPOXYLATED-ETHOXYLATED FATTY ALCOHOL ETHER

Eva Kiewert, Duesseldorf; Ronald Menke, Mettmann, and Birgit Middelhaue, Monheim, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP95/00357, § 371 Date Oct. 10, 1996, § 102(e) Date Oct. 10, 1996, PCT Pub. No. WO95/21905, PCT Pub. Date Aug. 17, 1995

PCT Filed Feb. 1, 1995, Ser. No. 687,553

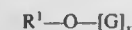
Claims priority, application Germany, Feb. 10, 1994, 44 04 199.3

Int. Cl.⁶ C11D 1/722; 1/825; 3/22

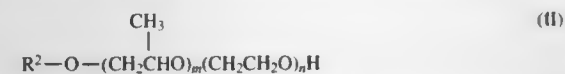
U.S. Cl. 510—422

12 Claims

1. A water-containing cleaning composition having a pH value of 3.0 to 6.5 consisting essentially of 0.1% to 50% by weight of at least one alkyl glycoside corresponding to formula (I):



wherein R¹ is a branched or linear, saturated or unsaturated alkyl group containing 6 to 11 carbon atoms, G is a glucose or xylose unit and x is a number of 1 to 10, 0.1% to 30% by weight of at least one fatty alcohol ether corresponding to formula (II):



in which R² is an alkyl radical containing 6 to 12 carbon atoms, m is a number of 0.5 to 3.0 and n is a number of 4.0 to 12.0, based on the weight of said composition, said pH value having been adjusted with a mixture of an organic or inorganic acid and a salt thereof.

5,780,417

LIGHT DUTY LIQUID CLEANING COMPOSITIONS

Philip A. Gorlin, Monmouth Junction, N.J., assignor to Colgate-Palmolive Company, Piscataway, N.J.

Filed Jul. 31, 1997, Ser. No. 904,162

Int. Cl.⁶ C11D 1/83; A61K 7/50

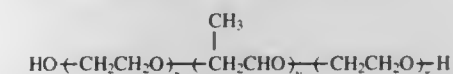
U.S. Cl. 510—426

4 Claims

1. A clear light duty liquid cleaning composition which consisting of approximately by weight:

- (a) 5% to 15% of an alkali metal or ammonium salt of a C₈₋₁₈ ethoxylated alkyl ether sulfate;
- (b) 5% to 15% of an alkaline earth metal salt of a sulfonate surfactant selected from the group consisting of C₁₀₋₁₆ alkyl benzene sulfonate and/or C₁₀₋₁₆ paraffin sulfonate surfactant;
- (c) 1% to 20% of an alkali metal salt of a sulfonate surfactant selected from the group consisting of C₁₀₋₁₆ alkyl benzene sulfonate and/or C₁₀₋₁₆ paraffin sulfonate surfactant;
- (d) 3% to 20% of an alkyl polyglucoside surfactant;

(e) 0.1% to 6% of an ethoxylated/propoxylated nonionic polymeric surfactant wherein the ethoxylated/propoxylated nonionic polymer surfactant has the structure:



wherein x equals about 90 to about 150 and y equals about 15 to about 65; and

(f) the balance being water, wherein said composition does not contain a nonionic surfactant containing a fatty alcohol or an alkanol amide.

5,780,418

BATHING PREPARATION

Kouichi Niinaka; Katsuhiko Takeuchi; Tetsuro Kamiya, and Hidenori Yorozu, all of Tochigi, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Oct. 9, 1996, Ser. No. 728,499

Claims priority, application Japan, Oct. 11, 1995, 7-262721

Int. Cl.⁶ C11D 17/04

U.S. Cl. 510—439

8 Claims

1. A packaged bathing preparation comprising bathing agent components packed in a bag which is made of a laminate sheet comprising a nonwoven or woven fabric consisting of a water soluble, polyvinyl alcohol polymer fiber on the outside and a water soluble film on the inside.

5,780,419

DETERGENT POWDER COMPOSITIONS COMPRISING METAL ION-CHELANT COMPLEX AND ANIONIC FUNCTIONAL POLYMER

Achille Jules Edmond Doumen, Merchtem; Luc Goovaerts, Haacht, and Jose Luis Vega, Strombeek-Bever, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US95/04799, § 371 Date Oct. 18, 1996, § 102(e) Date Oct. 18, 1996, PCT Pub. No. WO95/29216, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 20, 1995, Ser. No. 722,090

Claims priority, application European Pat. Off., Apr. 20, 1994, 94201092

Int. Cl.⁶ C11D 17/06; 3/37; 3/60; 10/02

U.S. Cl. 510—452

20 Claims

1. A free-flowing detergent powder prepared by spray drying, comprising (a) from 10% to 90%, by weight, of a complex of a chelating agent and a metal ion selected from the group consisting of magnesium, calcium, strontium, zinc, aluminum and mixtures thereof, and (b) from 10% to 90%, by weight, of a polymer comprising anionic functional groups, wherein the detergent powder comprises less than 20%, by weight, on an anhydrous basis, of inorganic components other than the metal ion.

5,780,420

SILICATE-BASED BUILDERS AND THEIR USE IN DETERGENTS AND MULTICOMPONENT MIXTURES FOR USE IN THIS FIELD

Wolfgang Breuer, Korschbroich; Volker Bauer, Duesseldorf; Joerg Poethkow, Duesseldorf; Beatrix Kottwitz, Duesseldorf; Jochen Jacobs, Wuppertal; Hans Dolhaine, Duesseldorf; Wolfgang Seiter, Neuss; Birgit Stevermann, Gelsenkirchen, and Horst Upadek, Ratingen, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/04322, § 371 Date Aug. 5, 1996, § 102(e) Date Aug. 5, 1996, PCT Pub. No. WO95/18766, PCT Pub. Date Jul. 13, 1995

PCT Filed Dec. 27, 1994, Ser. No. 666,309

Claims priority, application Germany, Jan. 3, 1994, 44 00 024.3

Int. Cl.⁶ C11D 3/38; 17/00; 14/02

U.S. Cl. 510—466

24 Claims

1. Sodium silicates having a molar ratio of SiO₂ to Na₂O of 1.3 to 4 in the form of an absorbent, fine-particle solid in shard form having the property of reducing incrustation when used as a builder component in a detergent composition, said sodium silicates further being in the form of an X-ray amorphous overdried material with a water content below 15% by weight and having an apparent density of 500 g/l or lower which has been produced by drying of a water-containing sodium silicate composition using a hot gas phase as the drying medium or by heating of a spray-dried sodium silicate having a water content of at least 15% by weight at a temperature of 120° C. to 450° C., accompanied or followed by the application of forces to the sodium silicates to produce the shard structure, said sodium silicates having a specific BET surface of at least 5 M²/g, and a cumulative volume of at least 100 mm³/g.

5,780,421

SULFATED/SULFONATED SURFACTANTS

Richard A. Winstanley, Broad Axe, and Harald P. Wulff, Bryn Mawr, both of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed May 13, 1996, Ser. No. 647,611

Int. Cl.⁶ C11D 3/37

U.S. Cl. 510—472

9 Claims

1. A process for making a surfactant product having both anionic and nonionic properties comprising:

- (1) providing a solid water-free sugar surfactant;
- (2) providing a co-reactant selected from the group consisting of alpha-olefins, internal olefins, linear alkylbenzene, branched alkylbenzene, secondary alkanes, tall oil, naphthalene, xylene, cumene, toluene, dodecylbenzene, and mixtures thereof;
- (3) dispersing or dissolving the solid water-free sugar surfactant in the co-reactant to form a feed mixture; and
- (4) sulfating/sulfonating the feed mixture to form a surfactant product.

5,780,422

DETERGENT COMPOSITION COMPRISING A CELLULASE CONTAINING CELL-FREE FERMENTATE PRODUCED FROM MICROORGANISM ATCC 55702 OR MUTANT THEREOF

H. Craig Dees, Lenoir City, Tenn., assignor to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.

Division of Ser. No. 528,178, Sep. 14, 1995. This application Oct. 8, 1996, Ser. No. 729,818

Int. Cl.⁶ D06M 16/00; C12N 9/42; 1/20; 9/24; C11D 1/47

U.S. Cl. 510—530

1 Claim

1. A detergent composition comprising a cellulase-containing cell-free fermentate produced from the microorganism ATCC 55702, or a mutant strain thereof, possessing all of the identifying characteristics of said microorganism, and a surfactant and a builder.

5,780,423

Patent Not Issued For This Number

5,780,424

PURIFIED RIBOSOMAL FRACTIONS SEPARATED FROM THE NONPHOTOSYNTHETIC FILAMENTOUS BACTERIA BEGGIATOALES

Nathalie Pineau, Poitiers; Lionel Breton, Versailles, and Richard Martin, Rochecorbon, all of France, assignors to Société L'Oréal S.A., Paris, France

Filed Sep. 30, 1996, Ser. No. 723,760

Claims priority, application France, Sep. 28, 1995, 95 11404

Int. Cl.⁶ A61K 38/00; 31/70; 39/02; 9/14

U.S. Cl. 514—2

11 Claims

1. A composition consisting essentially of a purified ribosomal fraction separated from a bacterium or a mixture of bacteria belonging to the order Beggiatoales.

5,780,425

Patent Not Issued For This Number

5,780,426

FIVEMER CYCLIC PEPTIDE INHIBITORS OF DISEASES INVOLVING $\alpha_v\beta_3$

Michael A. Palladino, Olivenhain; Bruce A. Lee; William D. Huse, both of San Diego, and Judith A. Varner, Encinitas, all of Calif., assignors to IXSYS, Incorporated, San Diego, Calif.

Filed Jun. 7, 1995, Ser. No. 482,107

Int. Cl.⁶ A61K 38/12; C07K 7/52

U.S. Cl. 514—9

9 Claims

1. A physiologically acceptable non-RGD peptide of five to thirty amino acid moieties, which peptide comprises the sequence (SEQ ID NO:10 from amino acid 13 to 18)-Arg-Cys-Asp-Gly-X_i-Cys, wherein X_i is any amino acid moiety and wherein the peptide includes a five-amino-acid cyclic portion which binds to the $\alpha_v\beta_3$ integrin receptor, and which five-amino-acid cyclic portion comprises the sequence Cys-Asp-Gly-X_i-Cys present in the sequence (SEQ ID NO:10 from amino acid 13 to 18) Arg-Cys-Asp-Gly-X_i-Cys.

5,780,427

Patent Not Issued For This Number

5,780,428

Patent Not Issued For This Number

5,780,429

ANTI-LPS FACTOR FROM HORSESHOE CRABS AND METHODS OF USE

Norman R. Walnwright, Falmouth, Mass., assignor to Marine Biological Laboratory, Woods Hole, Mass.

Filed Dec. 22, 1995, Ser. No. 577,464

Int. Cl.⁶ A61K 38/00

U.S. Cl. 514—12

6 Claims

4. The method of preserving a cosmetic or skin or hair preparation, comprising adding an effective amount of one or more anti-

LPS factor proteins as a broad spectrum antimicrobial preservative, either alone or in combination with one or more preservatives.

5,780,430

Patent Not Issued For This Number

5,780,431

PHARMACEUTICAL FORMULATIONS OF CORTICOTROPIN RELEASING FACTOR HAVING IMPROVED STABILITY IN LIQUID FORM

Bert Ho, Lafayette; Behzad Khosrovi, El Cerrito, and Pamela G. Hirtzer, Piedmont, all of Calif., assignors to Neurobiological Technologies, Inc., Richmond, Calif.

Filed Sep. 20, 1996, Ser. No. 717,306

Int. Cl.⁶ A61K 38/35; 38/00; 38/22; C07K 14/575

U.S. Cl. 514—12

39 Claims

1. A pharmaceutically acceptable formulation of corticotropin releasing factor (CRF) comprising (a) a pharmaceutically effective amount of CRF, (b) a buffer at a concentration of from about 1 mM to about 50 mM which functions to maintain the pH of said formulation between about 2.0 to about 5.0 or between about 6.0 to about 9.0 when said formulation is in liquid form, wherein the anion of said buffer is selected from the group consisting of acetate, phosphate, carbonate, succinate, citrate, borate, tartrate, fumarate and lactate and (c) an alcohol, in a concentration of from about 1% to about 10%, wherein said alcohol is selected from the group consisting of mannitol, sorbitol, ribitol, arabitol, xylitol, inositol, galactitol, methanol, ethanol and glycerol.

5,780,432

THERAPEUTIC METHOD FOR TREATMENT OF CARCINOMA OR AUTOIMMUNE DISEASES

Michael Zeppezauer, Auf den Hutten, Germany, and Reiner Class, Drexel Hill, Pa., assignors to Allegheny University of the Health Sciences, Philadelphia, Pa.

Continuation-in-part of Ser. No. 310,378, Sep. 22, 1994, Pat. No. 5,578,571, which is a continuation of Ser. No. 635,709,

Dec. 28, 1990, abandoned. This application Nov. 22, 1996, Ser.

No. 755,147

Claims priority, application Germany, Jan. 4, 1990, 40 00 154.7

Int. Cl.⁶ A61K 38/00; 38/02; C07K 5/00; 7/00

U.S. Cl. 514—12

4 Claims

1. A therapeutic method for treatment of carcinoma or autoimmune diseases of a patient, which comprises administering to said patient a biologically active composition which comprises a therapeutically acceptable carrier and, in a quantity having a therapeutic effect, two active substances comprising a pure cytostatic drug as the first active substance and a biologically active pure histone selected from the group consisting of H1, H2A, H2B, H2A:H2B, and H3 as the second active substance, providing a synergistic action of both of said active substances at a site of pathogenic process of said patient.

5,780,433

USE OF α -CONOTOXIN MII TO TREAT DISORDERS RESULTING FROM NICOTINE STIMULATED DOPAMINE RELEASE

J. Michael McIntosh; Jennifer M. Kulak; Doju Yoshikami, and Baldomero M. Olivera, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Dec. 6, 1996, Ser. No. 761,674

Int. Cl.⁶ A61K 38/00

U.S. Cl. 514—13

5 Claims

1. A method to aid a person who smokes nicotine containing products to quit smoking said nicotine containing products wherein said method comprises a step of administering α -conotoxin MII to said person wherein said α -conotoxin MII is administered in an amount which is effective to aid said person to quit smoking said nicotine containing products.

5,780,434

COMPOSITION FOR ORAL ADMINISTRATION OF PEPTIDES

Anne Fjellestad-Paulsen, Paris, France, assignor to Ferring B.V., Netherlands

PCT No. PCT/SE94/00244, § 371 Date Sep. 19, 1995, § 102(e) Date Sep. 19, 1995, PCT Pub. No. WO94/21286, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 18, 1994, Ser. No. 525,584

Claims priority, application Sweden, Mar. 19, 1993, 9300937

Int. Cl.⁶ A61K 9/20; 9/48; 38/11; 47/42

U.S. Cl. 514—15

10 Claims

1. A pharmaceutical composition comprising a mixture of: a peptide selected from the group consisting of DDAVP (Desmopressin), atosiban, carbetocin, vasopressin, oxytocin, gonadorelin, and triptorelin; a protease inhibitor; and a pharmaceutically acceptable carrier which comprises a buffering agent, buffering at a pH of about 5.0,

wherein said mixture is in the form of spheres each having a diameter smaller than about 2 mm, said spheres being coated with an enteric coat selected from polymers having dissociable carboxyl groups, making them readily soluble in gastric juice of about pH 5.0 and higher but not readily soluble at a substantially lower pH, said coated spheres being filled into capsules or tablets, and said capsules or tablets being readily disintegrable in the stomach.

5,780,435

METHODS FOR TREATING PROSTATE CANCER WITH LHRH-R ANTAGONISTS

Marc B. Garnick; Christopher J. Moliniaux, both of Brookline, and Malcolm L. Gefter, Lincoln, all of Mass., assignors to Praecis Pharmaceuticals Incorporated, Cambridge, Mass.

Filed Dec. 15, 1995, Ser. No. 573,109

Int. Cl.⁶ A61K 38/00

U.S. Cl. 514—15

22 Claims

1. A method for treating prostate cancer in a subject in need of such treatment, comprising: administering to the subject an LHRH-R antagonist; and performing a procedure on the subject that removes or destroys prostatic tumor tissue.

- i) an osmotic agent which comprises a mixture of peptides obtained by the action of a proteolytic enzyme on a protein source selected from casein and whey proteins;
- ii) a buffering agent which comprises bicarbonate ions; and
- iii) at least one cation selected from the group consisting of Ca^{2+} and Mg^{2+} .

5,780,439

WHEY PROTEIN HYDROLYSATES AND MIXTURES THEREOF WITH CASEIN AND/OR SOY PROTEIN HYDROLYSATES

Francois Mendy, Boulogne; Jean-Maurice Kahn, Berne, and Loic Roger, Chantepie, all of France, assignors to Novartis Nutrition AG, Berne, Switzerland

Continuation of Ser. No. 353,652, Dec. 9, 1994, abandoned, which is a continuation of Ser. No. 960,143, Oct. 13, 1992, abandoned, which is a continuation of Ser. No. 591,593, Oct. 2, 1990, abandoned. This application Aug. 9, 1996, Ser. No. 693,653

Claims priority, application United Kingdom, Oct. 2, 1989, 8922181; Oct. 16, 1989, 8923290

Int. Cl.⁶ A23C 21/02; 21/04; 21/06; A61K 38/01

U.S. Cl. 514—21

19 Claims

1. A protein hydrolysate comprising a whey protein hydrolysate obtainable by subjecting a whey protein fraction which is substantially free of proteins having a molecular weight of more than 60,000 to the process comprising the steps of:

- (a) heating a solution of said whey protein fraction in water to $43 \pm 4^\circ \text{C}$. and subjecting said solution to pepsin prehydrolysis at pH between 2.0 and 3.0;
- (b) adjusting the pH of the solution of step a) at a temperature in the range of from 35° to 50° to a pH between 7.0 and 9.0 and submitting said solution to an enzymatic trypsin-chymotrypsin hydrolysis in the presence of a cationic serine endoprotease type 2 elastase; and
- (c) pasteurizing the solution of step b), subjecting said solution to an ultrafiltration, and drying the resulting permeate; in admixture with a hydrolysate of casein of which the glycoprotein fraction has been eliminated.

5,780,440

TREATMENT OF PULMONARY DISEASE WITH PROTEASE INHIBITORS

John Lezdey, Collingswood, N.J.; Allan Wachter, Tempe, Ariz., and Barry Starcher, Bullard, Tex., assignors to Protease Sciences Inc., Voorhees, N.J.

Continuation-in-part of Ser. No. 665,314, Jun. 17, 1996, abandoned. This application Oct. 11, 1996, Ser. No. 731,255

Int. Cl.⁶ A61K 38/00; 38/46

U.S. Cl. 514—21

10 Claims

1. A method for the treatment of patients suffering from elevated elastase levels in airways such as respiratory distress syndrome which comprises the administration directly into the lungs an effective amount of a composition comprising particles or droplets of a) at least one protease inhibitor which inhibits the activation of inflammatory cascades in combination with b) an oxygen metabolite scavenger, said particle or droplets having a size of about 0.5 to 5 microns.

5,780,441 SPHINGOGLYCOLIPID COMPOUNDS AND THERAPEUTIC USES THEREOF

Tatsuo Higa, Naha; Takenori Natori, Takasaki; Yasuhiko Koezuka, Takasaki, and Kazuhiro Motoki, Takasaki, all of Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo-To, Japan

PCT No. PCT/JP94/00625, § 371 Date May 7, 1996, § 102(e) Date May 7, 1996, PCT Pub. No. WO94/24142, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 14, 1994, Ser. No. 530,126

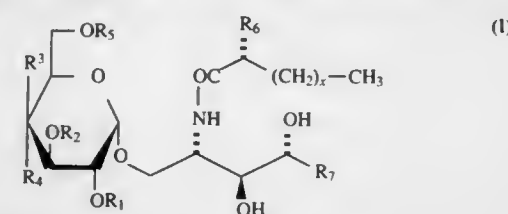
Claims priority, application Japan, Apr. 15, 1993, 5-088630

Int. Cl.⁶ C07H 15/00; A61K 31/70

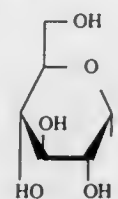
U.S. Cl. 514—25

13 Claims

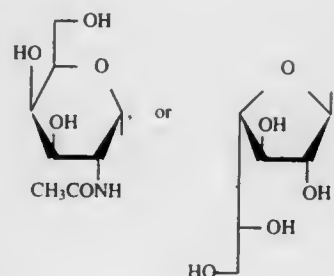
1. A sphingoglycolipid represented by the formula (I):



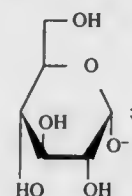
wherein R_1 represents H or



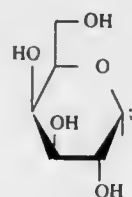
R_2 represents H,



R_3 and R_4 represent H or OH, respectively; R_5 represents H, OH, or



R_5 represents H or



X denotes an integer from 19 to 23; and

R_7 represents any one of the following groups (a)–(g):

(a) $-(\text{CH}_2)_{11}-\text{CH}_3$,

- (b) $-(\text{CH}_2)_{12}-\text{CH}_3$,
- (c) $-(\text{CH}_2)_{13}-\text{CH}_3$,
- (d) $-(\text{CH}_2)_9-\text{CH}(\text{CH}_3)_2$,
- (e) $-(\text{CH}_2)_{10}-\text{CH}(\text{CH}_3)_2$,
- (f) $-(\text{CH}_2)_{11}-\text{CH}(\text{CH}_3)_2$,
- (g) $-(\text{CH}_2)_{11}-\text{CH}(\text{CH}_3)-\text{C}_2\text{H}_5$,

wherein at least one of R_1 , R_2 , R_4 and R_5 is a glycosyl moiety.

5,780,442

ORTHOSOMYCINS FROM MICROMONOSPORA CARBONACEA

Ronald A. Mierzwa, Bloomfield; Min Chu, Union; John K. Jenkins, Chatham, and Mahesh G. Patel, Verona, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

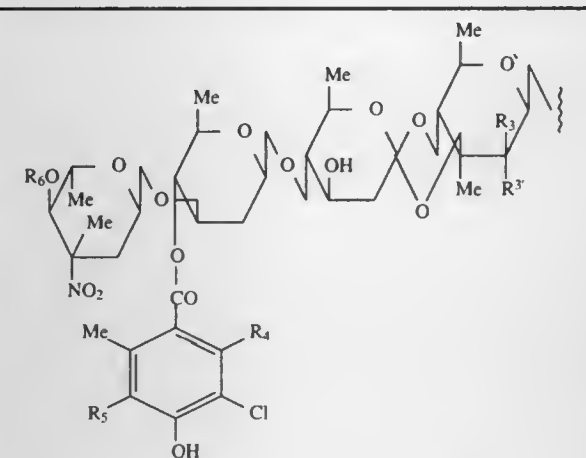
Filed Feb. 21, 1996, Ser. No. 604,692

Int. Cl.⁶ A61K 31/71; C07H 15/00

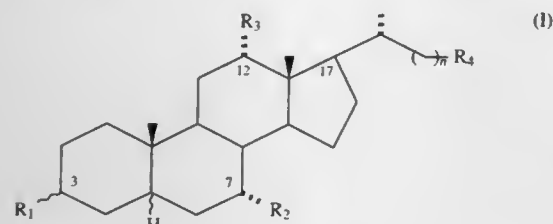
U.S. Cl. 514—25

15 Claims

1. A compound of the formula



(a) contacting a cell with the nucleic acid to be introduced in the presence of a fusogenic lipid and a compound of the formula (I):



in which

R₁ can be an H, OH, OR₅, NH₂, NHR₆ or NR₆R₇;

R₂ and R₃ may be the same or different and can be an H, OH or OR₅;

R₄ can be CONH₂, CONHR₆, CONR₆R₇, CH₂NH₂, CH₂NHR₆, CH₂NR₆R₇, CO₂—Y—NH₂, CO₂—Y—NHR₆, or CO₂—Y—NR₆R₇;

R₅ is a protected or unprotected glycosyl moiety comprising 1–10 monosaccharide units in which the glycosidic linkage at the anomeric carbon atom of each monosaccharide unit is independently alpha or beta;

NH₂, NHR₆, and NR₆R₇ represent an unsubstituted amino group, a monosubstituted amino group, and a disubstituted amino group, respectively, in which R₆ and R₇ may be the same or different and represent a hydrocarbon group comprising 1–15 carbon atoms substituted with one or more unsubstituted, monosubstituted or disubstituted amino groups;

Y represents a linear or branched alkylene group comprising 1–10 carbon atoms;

n is an integer from 0–10;

or its acid addition or quaternary ammonium salt; and

(b) allowing said nucleic acid to remain in contact with said cell in the presence of said compound for a period of time sufficient to effect the introduction of said nucleic acid to said cell.

5,780,445

TOCOPHERYL GLYCOSIDES, THEIR PREPARATION, AND THEIR USE AS SURFACTANTS, AS ANTIOXIDANTS AND AS THE ACTIVE SUBSTANCE PREVENTING CELL AGEING IN COSMETIC OR PHARMACEUTICAL PREPARATIONS

Günther Schneider; Joachim Thiem, and Martina Lahmann, all of Hamburg, Germany, assignors to Beiersdorf AG, Hamburg, Germany

Filed Feb. 2, 1996, Ser. No. 594,619

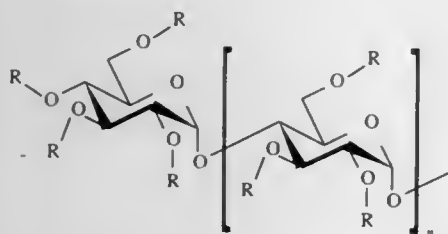
Claims priority, application Germany, Feb. 10, 1995, 195 04 398.7

Int. Cl.⁶ A61K 31/70

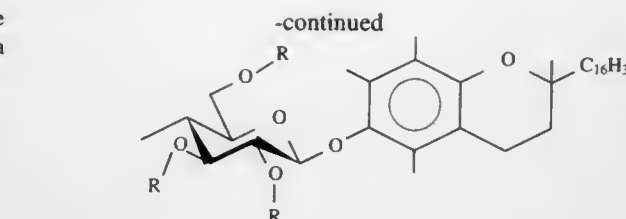
U.S. Cl. 514—27

9 Claims

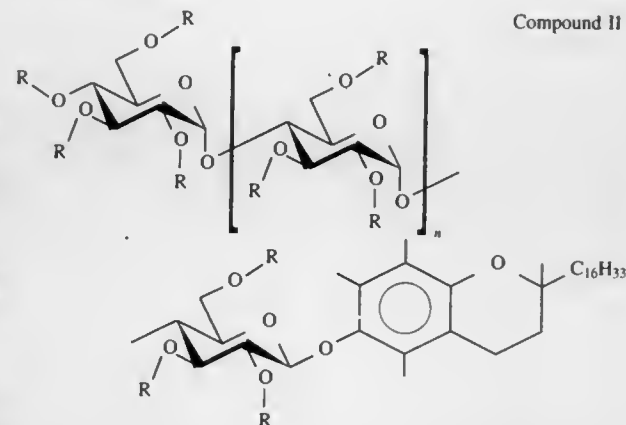
1. A method for the treatment of skin therapeutically to reduce alterations induced by oxidation processes which comprises applying thereto an amount effective thereof of tocopheryl glycosides of the formula



Compound I



or of the formula



Compound II

where n can adopt values of 0–8 and where R represents a radical selected from the group consisting of H, branched and unbranched alkyl of 1–18 carbon atoms, branched and unbranched acyl of 1–18 carbon atoms, and where R within one molecule can be identical in all positions of the glycosyl groups, but can also adopt different meanings within one molecule, such that it is possible within one molecule to choose any desired combinations of the radicals represented.

5,780,446

FORMULATIONS OF VESICANT DRUGS AND METHODS OF USE THEREOF

Avner Ramu, Houston, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Filed Jul. 9, 1996, Ser. No. 700,742

Int. Cl.⁶ A61K 31/70;31/525

U.S. Cl. 514—34

41 Claims

1. A method of treatment of extravasation injury, comprising:

- providing:
 - a subject; and
 - a formulation comprising a photoinactivation inducing compound; and
- administering intravenously said formulation to said subject; and
- exposing the intravenous administration site to UVA light.

5,780,447

RECOMBINANT ADENO-ASSOCIATED VIRAL VECTORS

Arthur W. Nienhuis, Memphis, Tenn., assignor to St. Jude Children's Research Hospital, Memphis, Tenn.

Filed Jun. 14, 1996, Ser. No. 663,947

Int. Cl.⁶ A01N 63/00; A61K 48/00; C12N 5/00;15/00

U.S. Cl. 514—44

39 Claims

1. A vector for stable integration and long term expression of a nucleic acid comprising an enhancer element and a nuclear matrix association region inserted between an inverted terminal repeat of adeno-associated virus.

5,780,448

DNA-BASED VACCINATION OF FISH

Heather L. Davis, Ottawa, Canada, assignor to Ottawa Civic Hospital Loeb Research, Ottawa, Canada

Filed Nov. 4, 1996, Ser. No. 740,805

Int. Cl.⁶ C12N 15/00; A61K 39/12;39/29; A01N 43/04

U.S. Cl. 514—44

83 Claims

1. A composition for inducing an immune response in finfish comprising:

an expression vector having an expression control sequence capable of directing expression in finfish of at least one immunogenic polypeptide and a polypeptide-encoding DNA sequence encoding at least one immunogenic polypeptide from a fish pathogen.

5,780,449

CATHEPSIN G-INHIBITING APTAMERS

Franzpet Bracht, Düsseldorf, and Karsten Schrör, Frechen-Königsdorf, both of Germany, assignors to Crinos Industria Farmacobiologica S.P.A., Villa Guardia, Italy

Filed Nov. 19, 1996, Ser. No. 753,054

Claims priority, application Germany, Nov. 24, 1995, 195 43 750.0

Int. Cl.⁶ A61K 31/70; C07H 21/04

U.S. Cl. 514—44

3 Claims

1. An oligonucleotide consisting of a nucleotide sequence selected from the group consisting of:

a) the sequence:

GGGTTGAGGGTGGATTACGCCACGT

GGAGCTCGGATCCACATCCAGG,

which has been designated SEQ ID NO.: 3; and

b) the consensus sequences:

GGN₁₋₇GGN₈₋₁₄GGN₁₋₆GGN₁₋₇GGN₁₋₆GG; and
GGN₁₀₋₁₃GGN₁₋₅GGN₁₋₅GGN₃₋₆GGN₂₋₇GG,

which have been designated SEQ ID NO.: 1 and SEQ ID NO.: 2, respectively;

wherein the Ns are identical or different and each represents a nucleotide independently selected from the group consisting of dA, dC, dT and dG;

and wherein the subscript figures indicate the number of times that N appears consecutively at the indicated positions within the nucleotide sequence.

2. A pharmaceutical composition comprising an amount of an oligonucleotide according to claim 1, said amount being effective to inhibit cathepsin-G, and a pharmaceutically acceptable carrier.

3. A method of inhibiting cathepsin G in a patient in need thereof, comprising administering to said patient an amount of an oligonucleotide according to claim 1, said amount being effective to inhibit cathepsin-G.

5,780,450

USE OF ADENOSINE UPTAKE INHIBITORS FOR TREATING RETINAL OR OPTIC NERVE HEAD DAMAGE

Debra L. Shade, Arlington, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Nov. 21, 1995, Ser. No. 560,776

Int. Cl.⁶ A61K 31/70;31/505

U.S. Cl. 514—46

6 Claims

1. A method for the treatment of acute or chronic retinal or optic nerve head damage resulting from glaucoma, edema, ischemia, hypoxia or trauma, which comprises administering to a human patient a composition comprising an effective amount of at least one adenosine uptake inhibitor selected from the group consisting of:

dipyridamole,

propentofylline,

dilazep,

nitrobenzylthioinosine,

S-(4-nitrobenzyl)-6-thioguanosine,

S-(4-nitrobenzyl)-6-thioinosine,

iodohydroxy-nitrobenzylthioinosine,

and analogs, esters, amides and prodrugs thereof, and pharmaceutically acceptable salts thereof; in a pharmaceutically acceptable carrier.

5,780,451

NUTRITIONAL PRODUCT FOR A PERSON HAVING ULCERATIVE COLITIS

Stephen Joseph DeMichele, Dublin; Keith Allen Garleb, Powell; John William McEwen, Gahanna, and Martha Kay Fuller, Westerville, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Apr. 1, 1994, Ser. No. 221,349

Int. Cl.⁶ A61K 31/715; A23G 3/00;9/00

U.S. Cl. 514—54

18 Claims

1. A nutritional product for enteral feeding comprising in combination:

(a) a source of indigestible carbohydrate which is metabolized to short chain fatty acids by microorganisms present in the human colon and which comprises at least one material selected from the group consisting of indigestible oligosaccharides; and

(b) an oil blend characterized by a fatty acid profile, expressed as percentages by weight of total fatty acids in the oil blend, as follows:

FATTY ACID	% OF TOTAL FATTY ACIDS
Oleic acid (18:1n9)	11.5–15.7
Linoleic acid (18:2n6)	6.6–9.0
Alpha-Linolenic acid (18:3n3)	1.5–2.1
Eicosapentaenoic acid (20:5n3)	15.1–20.5
Docosahexaenoic acid (22:6n3)	6.3–8.6.

5,780,452

ANTIMALARIAL DRUG

Ivan Havlik, Johannesburg, South Africa; Yutaro Kaneko; Tohru Mimura, both of Tokyo, Japan, and Goro Chihara, Yokohama, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

PCT No. PCT/JP94/01544, § 371 Date Sep. 7, 1995, § 102(e) Date Sep. 7, 1995, PCT Pub. No. WO95/08334, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 20, 1994, Ser. No. 424,493

Claims priority, application Japan, Sep. 20, 1993, 5-233296

Int. Cl.⁶ A61K 31/715;31/73;31/725

U.S. Cl. 514—54

2 Claims

1. A method for treating malaria in a patient, comprising administering to said patient an effective amount of a sulfated curdlan or a pharmaceutically acceptable salt thereof.

5,780,453

USES OF ALOE PRODUCTS IN THE TREATMENT OF MULTIPLE SCLEROSIS

Bill H. McAnally, Grand Prairie; Robert H. Carpenter, Bastrop, and Harley R. McDaniel, Dallas, all of Tex., assignors to Carrington Laboratories, Inc., Irving, Tex.
Division of Ser. No. 159,830, Dec. 1, 1993, Pat. No. 5,441,943, which is a division of Ser. No. 864,583, Apr. 7, 1992, Pat. No. 5,308,838, which is a division of Ser. No. 558,905, Jul. 27, 1990, Pat. No. 5,118,673, which is a continuation-in-part of Ser. No. 229,164, Aug. 5, 1988, Pat. No. 5,106,616, which is a continuation-in-part of Ser. No. 144,872, Jan. 14, 1988, Pat. No. 4,851,224, which is a continuation-in-part of Ser. No. 869,261, Jun. 5, 1986, Pat. No. 4,735,935, which is a continuation-in-part of Ser. No. 810,025, Dec. 17, 1985, abandoned, which is a continuation-in-part of Ser. No. 754,859, Jul. 12, 1985, abandoned, which is a continuation-in-part of Ser. No. 750,321, Jun. 28, 1985, abandoned, which is a continuation-in-part of Ser. No. 649,967, Sep. 12, 1984, abandoned, which is a continuation of Ser. No. 375,720, May 7, 1982, abandoned. This application Jun. 5, 1995, Ser. No. 464,550

Int. Cl.⁶ A61K 31/715; C07H 1/08; 1/300

U.S. Cl. 514—54 2 Claims

1. A method for reducing symptoms associated with multiple sclerosis in an animal comprising:
administering to said animal an amount of acetylated polymeric mannan derivative sufficient to reduce plaque formation in said animal.

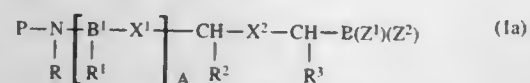
5,780,454

BORONIC ESTER AND ACID COMPOUNDS

Julian Adams, Brookline; Yu-Ting Ma, Needham; Ross Stein, Sudbury; Matthew Baevsky, Jamaica Plains; Louis Grenier, and Louis Plamondon, both of Belmont, all of Mass., assignors to ProScript, Inc., Cambridge, Mass.
Continuation-in-part of Ser. No. 442,581, May 16, 1995, which is a continuation-in-part of Ser. No. 330,525, Oct. 28, 1994, abandoned. This application Oct. 27, 1995, Ser. No. 549,318

Int. Cl.⁶ C07F 5/02; 5/04; A61K 31/69
U.S. Cl. 514—64 22 Claims

1. A compound having the formula:



or a pharmaceutically acceptable salt thereof; wherein
P is R⁷-C(O)- or R⁷-SO₂-, where R⁷ is pyrazinyl;
X² is -C(O)-NH-;
R is hydrogen or alkyl;
R² and R³ are independently hydrogen, alkyl, cycloalkyl, aryl, or -CH₂-R⁵;
R⁵, in each instance, is one of aryl, aralkyl, alkaryl, cycloalkyl, or -W-R⁶, where W is a chalcogen and R⁶ is alkyl;
where the ring portion of any of said aryl, aralkyl, or alkaryl in R², R³ and R⁵ can be optionally substituted by one or two substituents independently selected from the group consisting of C₁₋₆ alkyl, C₃₋₈ cycloalkyl, C₁₋₆ alkyl(C₃₋₈)cycloalkyl, C₂₋₈ alkenyl, C₂₋₈ alkynyl, cyano, amino, C₁₋₆ alkylamino, di(C₁₋₆)alkylamino, benzylamino, dibenzylamino, nitro, carboxy, carbo(C₁₋₆)alkoxy, trifluoromethyl, halogen, C₁₋₆ alkoxy, C₆₋₁₀ aryl, C₆₋₁₀ aryl(C₁₋₆)alkyl, C₆₋₁₀ aryl(C₁₋₆)alkoxy, hydroxy, C₁₋₆ alkylthio, C₁₋₆ alkylsulfinyl, C₁₋₆ alkylsulfonyl, C₆₋₁₀ arylthio, C₆₋₁₀ arylsulfinyl, C₆₋₁₀ arylsulfonyl, C₆₋₁₀ aryl, C₁₋₆ alkyl(C₆₋₁₀) aryl, and halo(C₆₋₁₀)aryl;
Z¹ and Z² are independently one of hydroxy, alkoxy, or aryloxy, or together Z¹ and Z² form a moiety derived from a dihydroxy compound having at least two hydroxy groups separated by at

least two connecting atoms in a chain or ring, said chain or ring comprising carbon atoms, and optionally, a heteroatom or heteroatoms which can be N, S, or O; and
A is zero.

5,780,455

INTRAVENOUS ALENDRONATE FORMULATIONS

Gerald S. Brenner, Norristown, and Musa M. Ghannam, Phoenixville, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 24, 1994, Ser. No. 296,192

Int. Cl.⁶ A61R 31/66

U.S. Cl. 514—108 3 Claims

1. An alendronate pharmaceutical composition for intravenous applications; having a pH in the range of 4 to 6 and being isotonic with human blood comprising:

Alendronate	0.5–10.0 mg
Sodium Citrate	5–50 mg
Citric Acid	1–15 mg
Sodium Chloride	1–8 mg
Water for Injection	q.s. 1 mL

5,780,456

USE OF SALICYLIC ACID FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY

Roy Lonnie Blank, Spring Valley, N.Y., assignor to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 791,241, Jan. 30, 1997, abandoned, which is a continuation of Ser. No. 689,470, Aug. 7, 1996, Pat. No. 5,629,965, which is a continuation of Ser. No. 465,027, Jun. 5, 1995, Pat. No. 5,573,759, which is a division of Ser. No. 434,250, May 3, 1995, abandoned, which is a continuation of Ser. No. 28,756, Mar. 9, 1993, abandoned, which is a continuation of Ser. No. 796,750, Nov. 25, 1991, abandoned. This application Oct. 14, 1997, Ser. No. 949,540

Int. Cl.⁶ A61K 31/60; 7/42; 7/44; 7/00

U.S. Cl. 514—159 24 Claims

1. A method for regulating wrinkles or atrophy in mammalian skin comprising treating the skin with a safe and effective amount of a composition comprising:

- a safe and effective amount of salicylic acid;
- a safe and effective amount of a skin protectant selected from the group consisting of allantoin, aluminum hydroxide gel, bismuth subnitrate, boric acid, calamine, cocoa butter, corn starch, demethicone, glycerin, kaolin, live yeast cell derivative, petrolatum, shark liver oil, sodium bicarbonate, sulfur, tannic acid, white petrolatum, zinc acetate, zinc carbonate, and zinc oxide, alpha-hydroxybutyric acid, alpha-hydroxyisobutyric acid, alpha-hydroxyisocaproic acid, alpha-hydroxyisovaleric acid, atrolactic acid, beta-hydroxybutyric acid, beta-phenyl-lactic acid, beta-phenylpyruvic acid, citric acid, ethyl pyruvate, galacturonic acid, glucosaminic acid, glucopheptono 1,4-lactone, gluconic acid, gluconolactone, glucuronic acid, glucuronolactone, glycolic acid, isopropyl pyruvate, lactic acid, malic acid, mandelic acid, methyl pyruvate, mucic acid, pyruvic acid, saccharic acid, saccharic acid 1,4-lactone, tartaric acid, tartronic acid, and mixtures thereof; and

(c) a pharmaceutically-acceptable carrier.

5,780,457

USE OF SALICYLIC ACID FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY

Roy Lonnie Blank, Spring Valley, N.Y., assignor to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 805,513, Feb. 26, 1997, abandoned, which is a continuation of Ser. No. 641,296, Apr. 30, 1996, Pat. No. 5,616,572, which is a continuation of Ser. No. 434,250, May 3, 1995, abandoned, which is a continuation of Ser. No. 28,756, Mar. 9, 1993, abandoned, which is a continuation of Ser. No. 796,750, Nov. 25, 1991, abandoned. This application Oct. 21, 1997, Ser. No. 955,468

Int. Cl.⁶ A61K 31/60; 7/42; 7/44; 7/00

U.S. Cl. 514—159 22 Claims

1. A method for regulating wrinkles or atrophy in mammalian skin comprising treating the skin with a safe and effective amount of a composition comprising:

- a safe and effective amount of salicylic acid;
- a safe and effective amount of a sunscreensing agent; and
- a pharmaceutically-acceptable carrier.

5,780,458

USE OF SALICYLIC ACID FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY

Roy Lonnie Blank, Spring Valley, N.Y., assignor to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 770,214, Dec. 19, 1996, abandoned, which is a continuation of Ser. No. 693,385, Aug. 6, 1996, Pat. No. 5,629,301, which is a continuation of Ser. No. 465,027, Jun. 5, 1995, Pat. No. 5,573,759, which is a division of Ser. No. 434,250, May 3, 1995, abandoned, which is a continuation of Ser. No. 28,756, Mar. 9, 1993, abandoned, which is a continuation of Ser. No. 796,750, Nov. 25, 1991, abandoned. This application Oct. 29, 1997, Ser. No. 967,233

Int. Cl.⁶ A61K 31/60; 7/42; 7/44; 7/00

U.S. Cl. 514—159 23 Claims

1. A method for preventing, retarding, arresting, or reversing wrinkles or atrophy in mammalian skin comprising treating the skin with a safe and effective amount of a composition comprising:

- a safe and effective amount of salicylic acid,
- a surfactant, and
- a pharmaceutically-acceptable carrier.

5,780,459

COMPOSITIONS FOR REGULATING SKIN WRINKLES AND OR SKIN ATROPHY

Roy Lonnie Blank, Spring Valley, N.Y.; Darrell Gene Doughty, Orange, and Carlos Gabriel Linares, Stamford, both of Conn., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 767,533, Dec. 16, 1996, abandoned, which is a continuation of Ser. No. 342,673, Nov. 21, 1994, Pat. No. 5,605,894, which is a continuation of Ser. No. 47,602, Apr. 14, 1993, abandoned, which is a continuation of Ser. No. 796,749, Nov. 25, 1991, abandoned. This application Aug. 29, 1997, Ser. No. 921,424

Int. Cl.⁶ A61K 31/60; 7/42; 7/44; 7/00

U.S. Cl. 514—159 11 Claims

1. A composition for regulating wrinkles or atrophy in mammalian skin comprising:

- a safe and effective amount of salicylic acid;
- a chelating agent; and
- a pharmaceutically-acceptable carrier.

5,780,460

THERAPEUTIC METHODS AND DELIVERY SYSTEMS UTILIZING SEX STEROID PRECURSORS

Fernand Labrie, Quebec, Canada, assignor to Endorecherche, Inc., Quebec, Canada

Division of Ser. No. 5,619, Jan. 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 488,392

Int. Cl.⁶ A61K 31/56

U.S. Cl. 514—178 2 Claims

1. A method for inhibiting the development of or the treatment of hypogonadism comprising administering to a patient in need thereof an effective amount of at least one sex steroid precursor selected from the group consisting of dehydroepiandrosterone, dehydroepiandrosterone sulphate, and compounds converted in vivo to either of the foregoing.

5,780,461

THERAPEUTIC TREATMENT OF CANCER WITH PROTEIN KINASE C INHIBITORS

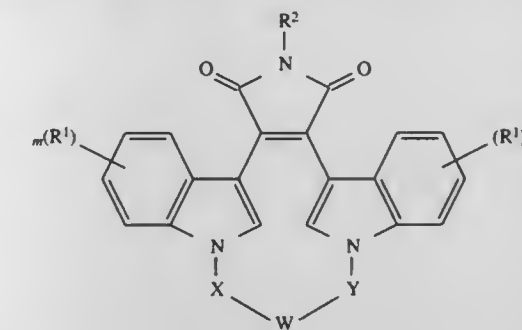
William F. Heath, Jr., Fishers; Michael R. Jirousek, Indianapolis; John H. McDonald, III, Carmel, and Christopher J. Rito, Mooresville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 413,735, Mar. 30, 1995, Pat. No. 5,624,949, which is a continuation-in-part of Ser. No. 316,973, Oct. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 163,060, Dec. 7, 1993, abandoned. This application May 6, 1996, Ser. No. 643,710

Int. Cl.⁶ A61K 31/40; C07D 498/22

U.S. Cl. 514—183 18 Claims

1. A method for treating cancer and inhibiting tumor growth, which comprises administering to a mammal in need of such treatment a therapeutic amount of a compound of the following formula:



wherein:

W is —O—, —S—, —SO—, —SO₂—, —CO—, C₂–C₆ alkylene, substituted alkylene, C₂–C₆ alkenylene, -aryl-, -aryl(CH₂)_mO—, -heterocycle-, -heterocycle-(CH₂)_mO—, -fused bicyclic-, -fused bicyclic-(CH₂)_mO—, —NR₃—, —NOR₃—, —CONH—, or —NHCO—;
X and Y are independently C₁–C₄ alkylene, substituted alkylene, or together X, Y, and W combine to form (CH₂)_n—AA—;
R₁ is independently hydrogen, halo, C₁–C₄ alkyl, hydroxy, C₁–C₄ alkoxy, haloalkyl, nitro NR₄R₅, or —NHCO(C₁–C₄ alkyl);
R₂ is hydrogen, CH₃CO—, NH₂, or hydroxy;
R₃ is hydrogen, (CH₂)_maryl, C₁–C₄ alkyl, —COO(C₁–C₄ alkyl), —CONR₄ R₅, —(C=NH)NH₂, —SO(C₁–C₄ alkyl), —SO₂ (NR₄R₅), or —SO₂ (C₁–C₄ alkyl);
R₄ and R₅ are independently hydrogen, C₁–C₄ alkyl, phenyl, benzyl, or combine to the nitrogen to which they are bonded to form a saturated or unsaturated 5 or 6 member ring;
AA is an amino acid residue;
m is independently 0, 1, 2, or 3; and
n is independently 2, 3, 4, or 5; or
a pharmaceutically acceptable salt or solvate thereof.

5,780,462

WATER SOLUBLE RAPAMYCIN ESTERS

Hyuk-Koo Lee, Plattsburgh, and Tianmin Zhu, Monroe, both of N.Y., assignors to American Home Products Corporation, Madison, N.J.

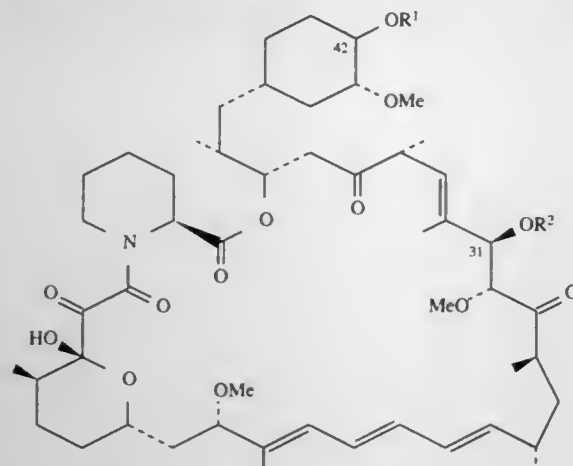
Filed Dec. 11, 1996, Ser. No. 763,768

Int. Cl.⁶ A61K 31/33

U.S. Cl. 514—183

9 Claims

1. A compound of the structure



wherein R¹ and R² are each, independently, hydrogen or —COCH₂—S—CH₂CH₂—O—CH₂—(CH₂OCH₂)_n—CH₂—O—CH₂CH₂—OCH₃; and n=8–450; with the proviso that R¹ and R² are not both hydrogen.

5,780,463

Patent Not Issued For This Number

5,780,464

ENTERIC COATED COMPOSITIONS OF 1,5-BENZODIAZEPINE DERIVATIVES HAVING CCK ANTAGONISTIC OR AGONISTIC ACTIVITY

Elizabeth Ellen Sugg, Durham, N.C., assignor to Glaxo Wellcome Inc., Research Triangle Park, N.C.

PCT No. PCT/US95/12829, § 371 Date Apr. 14, 1997, § 102(e)

Date Apr. 14, 1997, PCT Pub. No. WO96/11701, PCT Pub.

Date Apr. 25, 1996

PCT Filed Oct. 13, 1995, Ser. No. 817,364

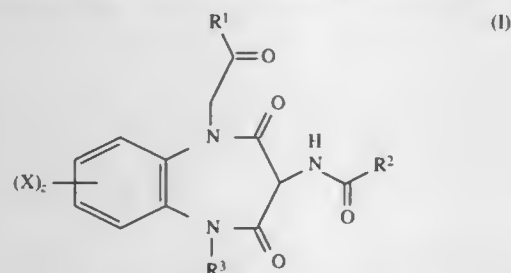
Claims priority, application United Kingdom, Oct. 14, 1994, 9420748

Int. Cl.⁶ A61K 31/55

U.S. Cl. 514—221

10 Claims

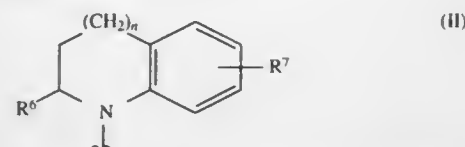
1. A pharmaceutical formulation in solid dosage form for oral administration which comprises a compound of Formula (I)



or physiologically acceptable salts or solvates thereof wherein:

X is either hydrogen, trifluoromethyl, alkyl, C₁₋₄alkylthio, —O(C₁₋₄alkyl) or halogen;

R¹ is either Formula II or —NR⁴R⁵;



R² is either:

(1) a heterocycle linked at its 2- position and selected from pyrrole, tetrahydropyrrole, indole, benzofuran, thiophene, benzothiophene, indoline, quinoline or 4-oxobenzopyran and wherein said pyrrole, tetrahydropyrrole, indole or indoline may optionally be substituted on the ring nitrogen thereof by the group R⁸ as defined hereunder and said indole, indoline, quinoline, benzofuran, benzothiophene or 4-oxo-benzopyran may optionally be substituted in the benzo ring thereof by the group R⁹ as defined hereunder or

(2) phenyl or phenyl mono- or disubstituted independently with halogen, hydroxy, cyano, carboxy, —O(C₁₋₄alkyl), —O(CH₂C₆H₅), —COO(C₁₋₄alkyl), amino, dimethylamino, —NHR¹⁰, 1-pyrrolidinyl or tetrazolyl; or

(3) pyridine or pyridinyl mono- or disubstituted independently with halogen, methyl, hydroxy, nitro, cyano, carboxy, —O(C₁₋₄alkyl), —O(CH₂C₆H₅), —COO(C₁₋₄alkyl), amino or dimethylamino; or

(4) —NHR¹¹ where R¹¹ is defined hereinunder or R¹¹ is 7-indazolyl containing a group R¹⁰ at the N-1 position;

R³ is hydrogen, C₁₋₄alkyl, C₃₋₆cycloalkyl, phenyl or phenyl mono- or disubstituted independently with halogen;

R⁴ is independently C₃₋₆alkyl, C₃₋₆cycloalkyl, C₃₋₆alkenyl, phenyl, —(CH₂)_nCN or —(CH₂)_nCOO(C₁₋₄alkyl) and R⁵ is independently C₃₋₆alkyl, C₃₋₆cycloalkyl, C₃₋₆alkenyl, benzyl, phenyl or phenyl mono- or disubstituted independently with C₁₋₃alkyl, cyano, hydroxy, dimethylamino, —O(C₁₋₄alkyl), —O(CH₂C₆H₅), —NH(C₁₋₄alkyl), —COO(C₁₋₄alkyl), —N(C₁₋₄alkyl)₂ pyrrolidino, morpholino or halogen or R⁴ is C₁₋₂alkyl and

R⁵ is phenyl substituted at the 2- or 4- position with chloro, methyl, methoxy or methoxycarbonyl;

R⁶ is hydrogen or methyl;

R⁷ is hydrogen, hydroxy, fluoro, dimethylamino, —O(C₁₋₄alkyl) or —O(CH₂C₆H₅);

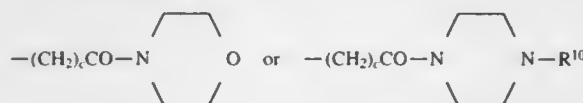
R⁸ is —(CH₂)_nCOOH;

R⁹ is methyl, chloro, nitro, hydroxy, methoxy or —NHR¹⁰;

R¹⁰ is hydrogen, acetyl, C₁₋₄alkyl, —SO₃H, —SO₂CH₃, —SO₂CF₃, —SO₂C₆H₅, or C₁₋₄alkoxycarbonyl;

R¹¹ is phenyl or phenyl mono- or disubstituted independently with fluorine, trifluoromethoxy, C₁₋₄alkylthio, —(CH₂)_nCOOH, —(CH₂)_nCOO(C₁₋₄alkyl), —(CH₂)_nSCH₃, —(CH₂)_nSOCH₃, —(CH₂)_nSO₂CH₃, —(CH₂)_nCONH₂, —SCH₂COOH, —CONH(SO₂CH₃), —CONH(SO₂CF₃), —(CH₂)_nN(C₁₋₄alkyl)₂, —(CH₂)_nNH(SO₂CF₃), —(CH₂)_nN(SO₂CF₃)(C₁₋₄alkyl), —(CH₂)_nSO₂NHCO(C₁₋₄alkyl), —(CH₂)_nSO₂N(C₁₋₄alkyl)CO(C₁₋₄alkyl), —(CH₂)_nCONHSO₂(C₁₋₄alkyl), —(CH₂)_nCON(C₁₋₄alkyl)SO₂(C₁₋₄alkyl), —(CH₂)_nOR¹², —(CH₂)_nNHR¹⁰ or phenyl monosubstituted with —(CH₂)_n(tetrazolyl), —(CH₂)_n(carboxamidotetrazolyl) or —(CH₂)_n(pyrrolidinyl) or R¹¹ is selected from pyridine and pyridinyl mono- or disubstituted independently with halogen, methyl, hydroxy, nitro, cyano, carboxy, —O(C₁₋₄alkyl), amino, dimethylamino, or —NHR¹⁰;

R¹² is hydrogen, C₁₋₄alkyl, C₃₋₆cycloalkyl, —CH₂C₆H₅, —CH₂COOH, —CH₂CONH₂, —CH₂CONH(C₁₋₄alkyl), —CH₂CON(C₁₋₄alkyl)₂ or



z is 1 or 2;

n is 1 or 2;

p is an integer from 1–4;

b is an integer from 0–3; and
c is 0 or 1;

together with one or more pharmaceutically acceptable carriers wherein the formulation is encased in an enteric coating or capsule.

5,780,465

4-SUBSTITUTED 5-POLYCYCLYLPIRIMIDINE HERBICIDES

Lowell D. Markley, Zionsville; Kim E. Arndt, Indianapolis; Patricia G. Ray, Carmel; Terry W. Balko, Greenfield; Erik N. K. Cressman, Indianapolis; David G. Ouse, Indianapolis; Johnny L. Jackson, Indianapolis, and Jacob Secor, Zionsville, all of Ind., assignors to Dow AgroSciences LLC, Indianapolis, Ind.

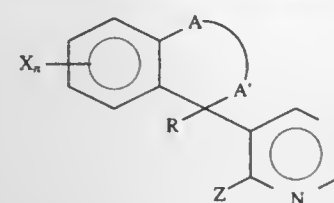
Filed Apr. 3, 1997, Ser. No. 833,065

Int. Cl.⁶ A01N 43/54; C07D 239/04

U.S. Cl. 514—224.2

47 Claims

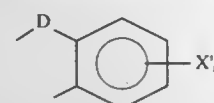
1. A 5-polycyclylpyrimidine compound of the formula:



wherein
the moiety



represents a 2 or 3 unit chain having a maximum of 3 chain atoms, the units of which are selected from —CR'— (which may contain up to 3 units) and —CR'=CR'—, —O—, —S—, —NH—, —N(C₁₋₄alkyl)—, —C(O)—, or —S(O)— (which may contain up to 1 unit) or represents a chain of the formula:



wherein D represents —O—CR'—O— or —CR'—CR'—; each R' independently represents H, C₁₋₃alkyl or phenyl or two R' located on the same carbon atom or on adjacent carbons together represent —(CH₂)— (2-5);

R represents H, OH, F, Cl, Br, C₁₋₃alkyl, or C₁₋₃alkoxy; Z represents L(C₁₋₄alkyl) optionally substituted with one or two substituents selected from Cl, Br, CN, OH, O(C₁₋₃alkyl), SO₂(C₁₋₃alkyl), N(C₁₋₃alkyl)₂, CO₂(C₁₋₄alkyl), CO₂H, or with up to the maximum possible number of F, or with a phenyl or pyridinyl moiety each optionally substituted with up to 3 compatible substituents selected from F, Cl, Br, NO₂, CF₃, CH₃, OCH₃, SO₂CH₃, CN, and CO₂(C₁₋₄alkyl); L(C₃₋₄alkenyl) optionally substituted with one or two substituents selected from Cl, Br, CN, O(C₁₋₃alkyl), SO₂(C₁₋₃alkyl), CO₂(C₁₋₄alkyl), CO₂H, and phenyl or with up to the maximum possible number of F; L(C₃₋₄alkynyl) optionally mono-substituted with CO₂(C₁₋₄alkyl) or C₆H₅; L(phenyl) optionally substituted with up to 3 compatible substituents selected from F, Cl, Br, NO₂, CF₃, CH₃, OCH₃, SO₂CH₃, CN, and CO₂(C₁₋₄alkyl); CN, CO₂(C₁₋₄alkyl), CONH₂, CONH(C₁₋₄alkyl), CON(C₁₋₄alkyl)₂, CO₂H, NH₂, NHSO₂(C₁₋₄alkyl), N(C₁₋₄alkyl)-SO₂(C₁₋₄alkyl), SH, F, Cl, or Br; L represents —, O, SO₂, SO₂NH, SO₂N(C₁₋₄alkyl), NH, or N(C₁₋₄alkyl);

X and X' each independently represents F, Cl, Br, CN, CO₂(C₁₋₄alkyl), NO₂, NH(C₁₋₃alkyl), N(C₁₋₃alkyl)₂, NH₂, NHCO(C₁₋₃alkyl), NHSO₂(C₁₋₃alkyl), or N(SO₂(C₁₋₃alkyl))₂; or represents C₁₋₃alkyl, O(C₁₋₃alkyl), SO₂(C₁₋₃alkyl), or CO(C₁₋₃alkyl) each alkyl of which is optionally singly to completely fluorinated; or two adjacent X or X' together represent —OCH₂O— optionally substituted with one or two fluorine atoms; n and n' each independently represents 0, 1, 2, or 3; and each m independently represents 0, 1, or 2; or an N-oxide derivative thereof.

5,780,466

SUBSTITUTED HETEROCYCLIC COMPOUNDS METHOD OF PREPARING THEM AND PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Xavier Emonds-Alt, Combailaux; Isabelle Grossriether, Uzes; Patrick Gueule, Teyran; Vincenzo Proietto, Saint Georges D'Orques; Didier Van Broeck, Murviel les Montpellier, and Joëlle Taillades, Montpellier, all of France, assignors to Sanofi, Paris, France

Continuation-in-part of Ser. No. 593,938, Jan. 30, 1996, Pat. No. 5,641,777. This application Aug. 27, 1996, Ser. No. 703,729

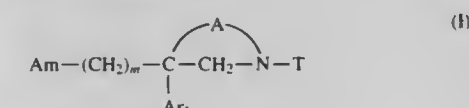
Claims priority, application France, Jan. 30, 1995, 95 01016; Jul. 4, 1995, 95 08046; Nov. 3, 1995, 95 13005; Jul. 26, 1996, 96 09439

Int. Cl.⁶ A61K 31/445; 31/535; C07D 413/06; 471/06

U.S. Cl. 514—228.2

10 Claims

1. A compound of the formula



in which:

A is a divalent radical selected from:

- A₁) —O—CO—
- A₂) —CH₂—O—CO—
- A₃) —O—CH₂—CO—
- A₄) —O—CH₂—CH₂—
- A₅) —N(R₁)—CO—
- A₆) —N(R₁)—CO—CO—
- A₇) —N(R₁)—CH₂—CH₂—
- A₈) —O—CH₂—

in which R₁ is a hydrogen or a (C₁₋₄)-alkyl;

m is 2 or 3;

Ar₁ is a phenyl which is unsubstituted or monosubstituted or polysubstituted by a substituent selected from a halogen atom, a hydroxyl, a (C₁₋₄)-alkoxy, a (C₁₋₄)-alkyl, a trifluoromethyl and a methylenedioxy, said substituents being identical or different; a thienyl which is unsubstituted or substituted by a halogen atom; a benzothiophenyl which is unsubstituted or substituted by a halogen atom; a naphthyl which is unsubstituted or substituted by a halogen atom; an indolyl which is unsubstituted or N-substituted by a (C₁₋₄)-alkyl or a benzyl; an imidazolyl which is unsubstituted or substituted by a halogen atom; a pyridyl which is unsubstituted or substituted by a halogen atom; or a biphenyl;

T is a group selected from CH₂—Z, —CH(C₆H₅)₂ and —C(C₆H₅)₃; T can also be the group —CO—B—Z if A is a divalent radical selected from —O—CH₂—CH₂—, —N(R₁)—CH₂—CH₂— and —O—CH₂—;

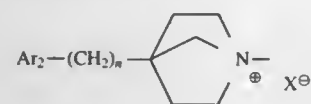
B is a direct bond or a methylene;

Z is an optionally substituted mono-, di- or tricyclic aromatic or heteroaromatic group; and

Ar₂ is a pyridyl; a phenyl which is unsubstituted or monosubstituted or polysubstituted by a substituent selected from a halogen atom, a hydroxyl, a (C₁₋₄)-alkoxy, a (C₁₋₄)-alkyl, a trifluoromethyl, a nitro and a methylenedioxy, said substitu-

ents being identical or different; a thienyl; a pyrimidyl; or an imidazolyl which is unsubstituted or substituted by a (C₁-C₄)-alkyl; and

Am is: (i) a group Am₄ of the formula



in which:

Ar₂ is as defined above;

n is 0 or 1; and

X[⊖] is an anion;

and the salts thereof with mineral or organic acids.

5,780,467

MORPHOLINE COMPOUNDS ARE PRODRUGS USEFUL AS TACHYKININ RECEPTOR ANTAGONISTS

Conrad P. Dorn, Plainfield; Jeffrey J. Hale, Westfield; Malcolm Maccoss, Freehold, and Sander G. Mills, Woodbridge, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

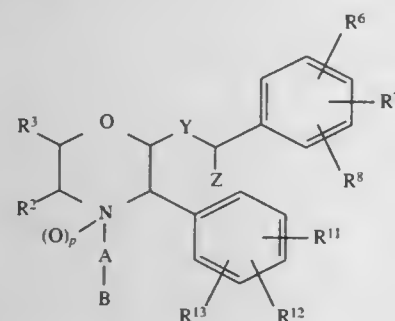
Division of Ser. No. 525,870, Sep. 8, 1995, Pat. No. 5,691,336, which is a continuation-in-part of Ser. No. 206,771, Mar. 4, 1994, abandoned. This application Aug. 8, 1997, Ser. No. 907,738

Int. Cl.⁶ A61K 31/535

U.S. Cl. 514—236.2

19 Claims

1. A method for the treatment or prevention of a condition selected from the group consisting of: diabetic neuropathy; peripheral neuropathy; AIDS related neuropathy; chemotherapy-induced neuropathy; neuralgia; depression; anxiety; psychosis; schizophrenia; pruritis; rhinitis; ulcerative colitis; irritable bowel syndrome; incontinence; cystic fibrosis; and rheumatoid arthritis, in a mammal in need thereof which comprises the administration to the mammal of an effective amount of a compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein:

R² and R³ are independently selected from the group consisting of:

- (1) hydrogen,
- (2) C₁₋₆ alkyl, unsubstituted or substituted with one or more of the substituents selected from:
 - (a) hydroxy,
 - (b) oxo,
 - (c) C₁₋₆ alkoxy,
 - (d) phenyl-C₁₋₃ alkoxy,
 - (e) phenyl,
 - (f) —CN,
 - (g) halo,
 - (h) —NR⁹R¹⁰, wherein R⁹ and R¹⁰ are independently selected from:
 - (i) hydrogen,
 - (ii) C₁₋₆ alkyl,
 - (iii) hydroxy-C₁₋₆ alkyl, and
 - (iv) phenyl,
 - (i) —NR⁹COR¹⁰,

- (j) —NR⁹CO₂R¹⁰,
- (k) —CONR⁹R¹⁰,
- (l) —COR⁹, and
- (m) —CO₂R⁹;

(3) C₂₋₆ alkenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:

- (a) hydroxy,
- (b) oxo,
- (c) C₁₋₆ alkoxy,
- (d) phenyl-C₁₋₃ alkoxy,
- (e) phenyl,
- (f) —CN,
- (g) halo,
- (h) —CONR⁹R¹⁰,
- (i) —COR⁹,
- (j) —CO₂R⁹;

(4) C₂₋₆ alkynyl;

(5) phenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:

- (a) hydroxy,
- (b) C₁₋₆ alkoxy,
- (c) C₁₋₆ alkyl,
- (d) C₂₋₅ alkenyl,
- (e) halo,
- (f) —CN,
- (g) —NO₂,
- (h) —CF₃,
- (i) —(CH₂)_m—NR⁹R¹⁰, wherein m is 0, 1 or 2,
- (j) —NR⁹COR¹⁰,
- (k) —NR⁹CO₂R¹⁰,
- (l) —CONR⁹R¹⁰,
- (m) —CO₂NR⁹R¹⁰,
- (n) —COR⁹, and
- (o) —CO₂R⁹;

or the groups R² and R³ are joined together to form a carbocyclic ring selected from the group consisting of:

- (a) cyclopentyl,
- (b) cyclohexyl,
- (c) phenyl,

and wherein the carbocyclic ring is unsubstituted or substituted with one or more substituents selected from:

- (i) C₁₋₆ alkyl,
- (ii) C₁₋₆ alkoxy,
- (iii) —NR⁹R¹⁰,
- (iv) halo, and
- (v) trifluoromethyl;

or the groups R² and R³ are joined together to form a heterocyclic ring selected from the group consisting of:

- (a) pyrrolidinyl,
- (b) piperidinyl,
- (c) pyrrolyl,
- (d) pyridinyl,
- (e) imidazolyl,
- (f) furanyl,
- (g) oxazolyl,
- (h) thienyl, and
- (i) thiazolyl,

and wherein the heterocyclic ring is unsubstituted or substituted with one or more substituent(s) selected from:

- (i) C₁₋₆ alkyl,
- (ii) oxo,
- (iii) C₁₋₆ alkoxy,
- (iv) —NR⁹R¹⁰,
- (v) halo, and
- (vi) trifluoromethyl;

R⁶, R⁷ and R⁸ are independently selected from the group consisting of:

- (1) hydrogen;
- (2) C₁₋₆ alkyl, unsubstituted or substituted with one or more of the substituents selected from:
 - (a) hydroxy,
 - (b) oxo,
 - (c) C₁₋₆ alkoxy,
 - (d) phenyl-C₁₋₃ alkoxy,

(e) phenyl,

(f) —CN,

(g) halo,

(h) —NR⁹R¹⁰,

(i) —NR⁹COR¹⁰,

(j) —NR⁹CO₂R¹⁰,

(k) —CONR⁹R¹⁰,

(l) —COR⁹, and

(m) —CO₂R⁹;

(3) C₂₋₆ alkenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:

- (a) hydroxy,
- (b) oxo,
- (c) C₁₋₆ alkoxy,
- (d) phenyl-C₁₋₃ alkoxy,
- (e) phenyl,
- (f) —CN,
- (g) halo,
- (h) —CONR⁹R¹⁰,
- (i) —COR⁹, and
- (j) —CO₂R⁹;

(4) C₂₋₆ alkynyl;

(5) phenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:

- (a) hydroxy,
- (b) C₁₋₆ alkoxy,
- (c) C₁₋₆ alkyl,
- (d) C₂₋₅ alkenyl,
- (e) halo,
- (f) —CN,
- (g) —NO₂,
- (h) —CF₃,
- (i) —(CH₂)_m—NR⁹R¹⁰,
- (j) —NR⁹COR¹⁰,
- (k) —NR⁹CO₂R¹⁰,
- (l) —CONR⁹R¹⁰,
- (m) —CO₂NR⁹R¹⁰,
- (n) —COR⁹, and
- (o) —CO₂R⁹;

(6) halo,

(7) —CN,

(8) —CF₃,

(9) —NO₂,

(10) —SR¹⁴, wherein R¹⁴ is hydrogen or C₁₋₅ alkyl,

(11) —SOR¹⁴,

(12) —SO₂R¹⁴,

(13) NR⁹COR¹⁰,

(14) CONR⁹COR¹⁰,

(15) NR⁹R¹⁰,

(16) NR⁹CO₂R¹⁰,

(17) hydroxy,

(18) C₁₋₆ alkoxy,

(19) COR⁹,

(20) CO₂R⁹,

(21) 2-pyridyl,

(22) 3-pyridyl,

(23) 4-pyridyl,

(24) 5-tetrazolyl,

(25) 2-oxazolyl, and

(26) 2-thiazolyl;

R¹¹, R¹² and R¹³ are independently selected from the definitions of R⁶, R⁷ and R⁸, or —OX;

A is selected from the group consisting of:

- (1) C₁₋₆ alkyl, unsubstituted or substituted with one or more of the substituents selected from:
 - (a) hydroxy,
 - (b) oxo,
 - (c) C₁₋₆ alkoxy,
 - (d) phenyl-C₁₋₃ alkoxy,
 - (e) phenyl,
 - (f) —CN,
 - (g) halo, wherein halo is fluoro, chloro, bromo or iodo,
 - (h) —NR⁹R¹⁰,
 - (i) —NR⁹COR¹⁰,
 - (j) —NR⁹CO₂R¹⁰,

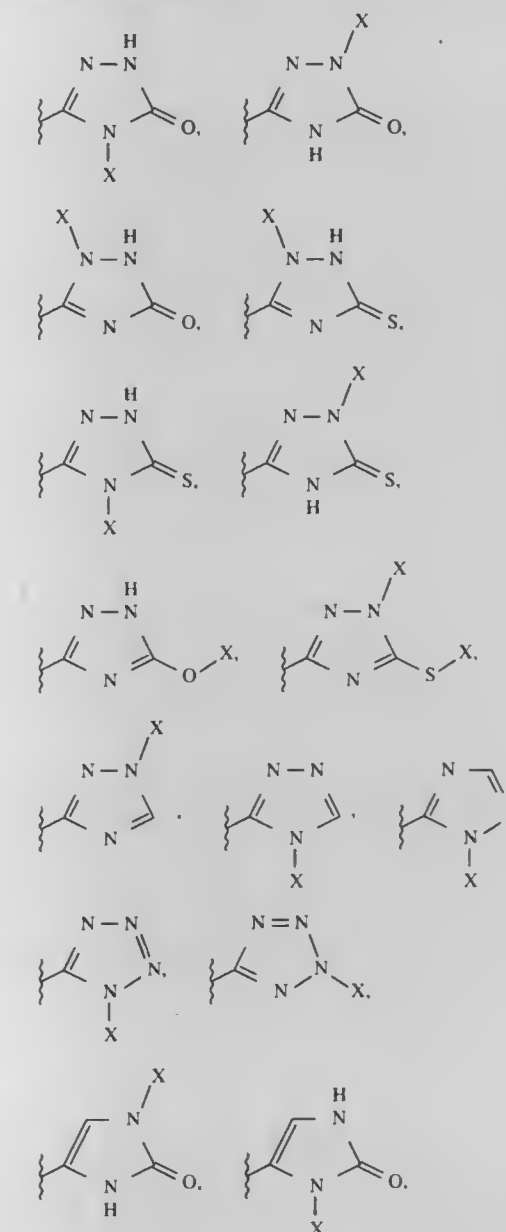
- (k) —CONR⁹R¹⁰,
- (l) —COR⁹, and
- (m) —CO₂R⁹;

(2) C₂₋₆ alkenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:

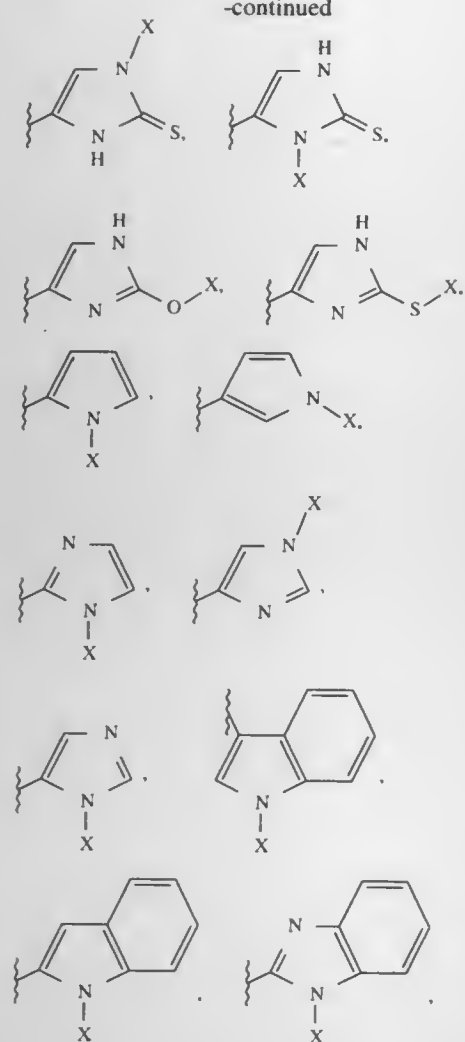
- (a) hydroxy,
- (b) oxo,
- (c) C₁₋₆ alkoxy,
- (d) phenyl-C₁₋₃ alkoxy,
- (e) phenyl,
- (f) —CN,
- (g) halo,
- (h) —CONR⁹R¹⁰,
- (i) —COR⁹, and
- (j) —CO₂R⁹; and

(3) C₂₋₆ alkynyl;

B is a heterocycle, wherein the heterocycle is selected from the group consisting of:



-continued



and wherein the heterocycle is substituted in addition to —X with one or more substituent(s) selected from:

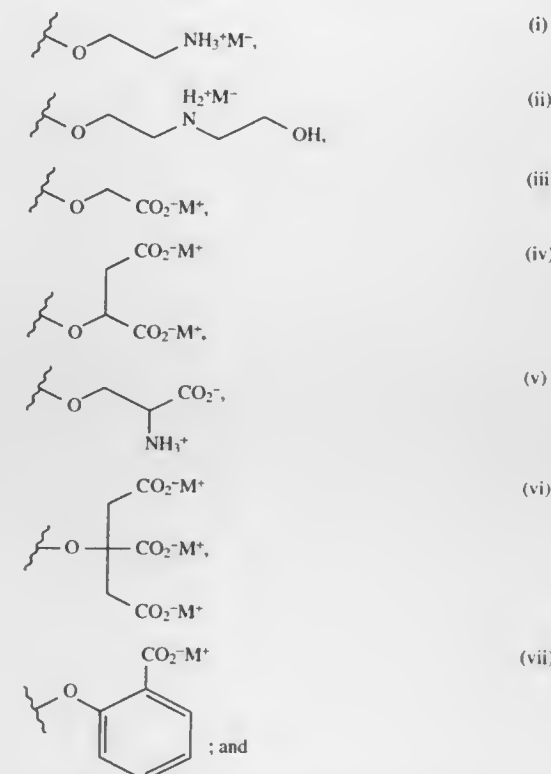
- (i) hydrogen;
- (ii) C₁₋₆ alkyl, unsubstituted or substituted with halo, —CF₃, —OCH₃, or phenyl;
- (iii) C₁₋₆ alkoxy;
- (iv) oxo;
- (v) hydroxy;
- (vi) thioxy;
- (vii) —SR²;
- (viii) halo;
- (ix) cyano;
- (x) phenyl;
- (xi) trifluoromethyl;
- (xii) —(CH₂)_m—NR⁹R¹⁰;
- (xiii) —NR⁹COR¹⁰;
- (xiv) —CONR⁹R¹⁰;
- (xv) —CO₂R⁹; and
- (xvi) —(CH₂)_m—OR⁹;

p is 0 or 1;

X is selected from:

- (a) —PO(OH)O⁻.M⁺, wherein M⁺ is a pharmaceutically acceptable monovalent counterion;
- (b) —PO(O⁻)₂.2M⁺;
- (c) —PO(O⁻)₂.D²⁺, wherein D²⁺ is a pharmaceutically acceptable divalent counterion;
- (d) —CH(R⁴)—PO(OH)O⁻.M⁺, wherein R⁴ is hydrogen or C₁₋₃ alkyl;
- (e) —CH(R⁴)—PO(O⁻)₂.2M⁺;
- (f) —CH(R⁴)—PO(O⁻)₂.D²⁺;
- (g) —SO₃⁻.M⁺;
- (h) —CH(R⁴)—SO₃⁻.M⁺;

- (i) —CO—CH₂CH₂—CO₂⁻.M⁺;
- (j) —CH(CH₃)—O—CO—R⁵, wherein R⁵ is selected from the group consisting of:



- (k) hydrogen, with the proviso that if p is 0 and none of R¹¹, R¹² or R¹³ are —OX, then X is other than hydrogen;
- Y is selected from the group consisting of:

- (1) a single bond;
- (2) —O—;
- (3) —S—;
- (4) —CO—;
- (5) —CH₂—;
- (6) —CHR¹⁵—; and
- (7) —CR¹⁵R¹⁶—, wherein R¹⁵ and R¹⁶ are independently selected from the group consisting of:
 - (a) C₁₋₆ alkyl, unsubstituted or substituted with one or more of the substituents selected from:
 - (i) hydroxy;
 - (ii) oxo;
 - (iii) C₁₋₆ alkoxy;
 - (iv) phenyl-C₁₋₃ alkoxy;
 - (v) phenyl;
 - (vi) —CN;
 - (vii) halo;
 - (viii) —NR⁹R¹⁰;
 - (ix) —NR⁹COR¹⁰;
 - (x) —NR⁹CO₂R¹⁰;
 - (xi) —CONR⁹R¹⁰;
 - (xii) —COR⁹; and
 - (xiii) —CO₂R⁹;
 - (b) phenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:
 - (i) hydroxy;
 - (ii) C₁₋₆ alkoxy;
 - (iii) C₁₋₆ alkyl;
 - (iv) C₂₋₅ alkenyl;
 - (v) halo;
 - (vi) —CN;
 - (vii) —NO₂;
 - (viii) —CF₃;
 - (ix) —(CH₂)_m—NR⁹R¹⁰;
 - (x) —NR⁹COR¹⁰;
 - (xi) —NR⁹CO₂R¹⁰;
 - (xii) —CONR⁹R¹⁰;

- (xiii) —CO₂NR⁹R¹⁰;
- (xiv) —COR⁹; and
- (xv) —CO₂R⁹;

Z is selected from:

- (1) hydrogen;
 - (2) C₁₋₆ alkyl; and
 - (3) hydroxy, with the proviso that if Y is —O—, then Z is other than hydroxy;
- and with the further proviso that if Y is —CHR¹⁵—, then Z and R¹⁵ may be joined together to form a double bond between the two carbon atoms.

5,780,468

HETEROCYCLIC DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THEIR THERAPEUTIC USE

André Bernat, Cugnaud; Jean-Marc Herbert, Plaisance Du Touch, and Gérard Valette, Lacroix, all of France, assignors to Sanofi, Paris, France

Division of Ser. No. 111,732, Aug. 25, 1993, Pat. No. 5,470,855, which is a continuation of Ser. No. 743,309, Aug. 26, 1991, abandoned. This application Aug. 4, 1995, Ser. No. 511,468

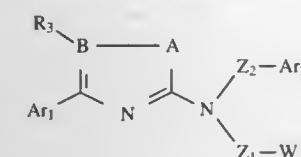
Claims priority, application France, Dec. 29, 1989, 89 17491

Int. Cl. A61K 31/535; C07D 417/02; 417/12; 277/18

U.S. Cl. 514—236.8

11 Claims

1. Compound of formula:



in which

- A is S;
B is C, and
R₃ is selected from the group consisting of H, C₁₋₈ alkyl and halogen;
Z₁ is selected from the group consisting of C₁₋₄ alkylene and phenylene;
Z₂ is C₁₋₄ alkylene;
W is NR₁R₂, in which R₁ is selected from the group consisting of H and C₁₋₄ alkyl and R₂ is COQ₃ in which Q₃ is C₁₋₄ alkyl or W is selected from the group consisting of —CONQ₁Q₂; —CNSQ₁Q₂ in which Q₁ and Q₂ are independently selected from the group consisting of H and C₁₋₄ alkyl; pyridyl, imidazolyl; and —COOQ₅ in which Q₅ is C₁₋₅ alkyl;
Ar₁ is phenyl optionally substituted by one or more groups selected from halogen, C₁₋₄ alkyl, alkoxy and thioalkoxy, hydroxy, carboxy, COOQ₆, COSQ₆, and CSOQ₆ in which Q₆ is C₁₋₄ alkyl, carboxamido, cyano, amino, acetamido, nitro, or trifluoromethyl, or Ar₁ is selected from the group consisting of an aromatic heterocycle thienyl, furyl, and indolyl;
Ar₂ is selected from the group consisting of a nitrogenous aromatic heterocycle quinolyl, isoquinolyl and pyridyl, optionally substituted by C₁₋₃ alkyl or alkoxy or halogen; or a pharmaceutically acceptable salt, thereof.

5,780,469

CROP PROTECTION PRODUCTS

Wilhelm Ruess, Pfeffingen, Switzerland, assignor to Novartis Finance Corporation, New York, N.Y.

Filed Dec. 6, 1996, Ser. No. 761,543

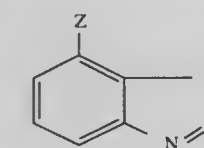
Claims priority, application Switzerland, Dec. 11, 1995, 3495/

Int. Cl. A01N 43/82; A61K 31/535

U.S. Cl. 514—237.5

7 Claims

I. A plant-protecting composition having synergistic action against disease infestation, comprising synergistic, fungicidally effective amounts of at least two active ingredient components together with a suitable carrier, wherein component I is a compound of formula I



wherein Z is —CO—SC₁₋₄ alkyl

and wherein component II is

4-[3-(4-chlorophenyl)-3-(3,4-dimethoxyphenyl)acryloyl]morpholine wherein the ratio by weight of I:II is from 1:30 to 1:1.

5,780,470

MELATONERGIC INDANYL PIPERAZINES

Ronald J. Mattson, Meriden, and John D. Catt, Southington, both of Conn., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

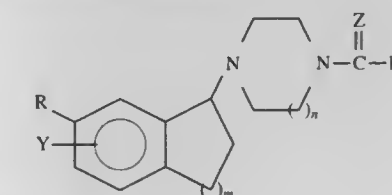
Continuation-in-part of Ser. No. 458,925, Jun. 2, 1995, abandoned. This application Apr. 18, 1996, Ser. No. 634,329

Int. Cl. A01N 43/60; A61K 31/495

U.S. Cl. 514—247

21 Claims

I. A compound of Formula 1:



wherein:

- R is H, C₁₋₄ alkyl, or C₁₋₉ alkoxy;
m is 1;
n is 1 or 2;
Y is H, C₁₋₄ alkoxy, or halogen;
Z is O or S; and
R¹ is C₁₋₆ alkyl (straight or branched), C₁₋₆ haloalkyl, C₁₋₄ thioalkoxy substituted C₁₋₄ alkyl, C₁₋₆ alkoxy substituted C₁₋₄ alkyl, C₂₋₂₀ alkenyl (straight or branched), C₃₋₆ cycloalkyl, phenyl, thienyl, pyrrolyl, furanyl, thiadiazolyl, indolyl, substituted phenyl, thienyl, pyrrolyl or furanyl wherein the substituent is selected from group consisting of hydroxy, chloro, bromo and methyl or NR²R³ wherein R² and R³ are independently hydrogen, C₁₋₃ alkyl or C₃₋₆ cycloalkyl.

5,780,471

TRICYCLIC BENZAZEPINE VASOPRESSIN
ANTAGONISTS

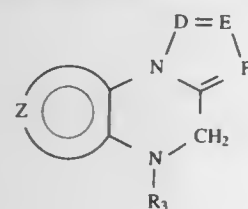
Aranapakam M. Venkatesan, Elmhurst; Jay D. Albright, Nanuet, and George T. Grosu, Pearl River, all of N.Y., assignors to American Cyanamid Company, Madison, N.J. Division of Ser. No. 373,125, Jan. 17, 1995, Pat. No. 5,521,173. This application May 23, 1996, Ser. No. 652,198

Int. Cl.⁶ A61K 31/495; 31/50; C07D 241/36; 471/00

U.S. Cl. 514—250

10 Claims

1. A compound selected from Formula I:

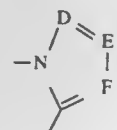


Formula I

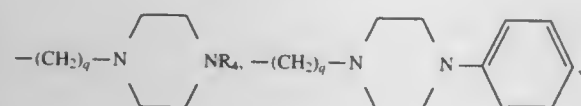
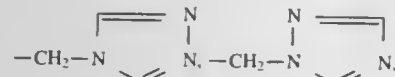
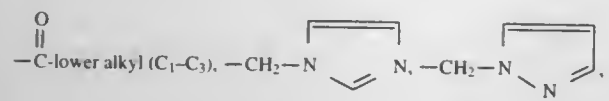
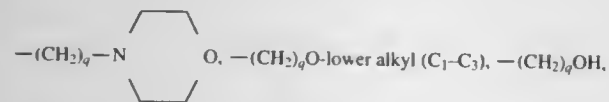
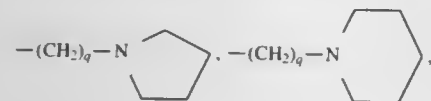
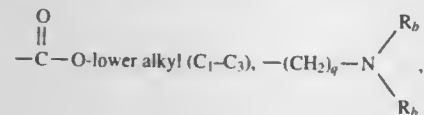
wherein:
the moiety:



is a fused phenyl ring optionally substituted by one or two substituents selected from (C₁–C₃) lower alkyl, halogen, amino, (C₁–C₃) lower alkoxy, or (C₁–C₃) lower alkyl amino; the moiety



is a five membered aromatic (unsaturated) nitrogen containing heterocyclic ring wherein D, E, and F are selected from carbon and nitrogen and wherein the carbon atoms may be optionally substituted by a substituent selected from halogen, (C₁–C₃) lower alkyl, hydroxy, —COCl₃, —COCF₃,



—CHO, amino, (C₁–C₃) lower alkoxy, (C₁–C₃) lower alkylamino, CONH— lower alkyl (C₁–C₃), —CON[lower alkyl (C₁–C₃)]₂;

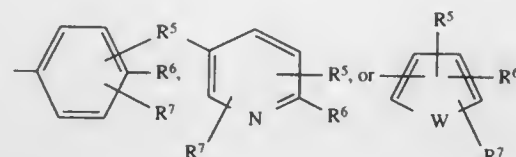
q is one or two;

R_q is independently selected from H, —CH₃, or —C₂H₅;

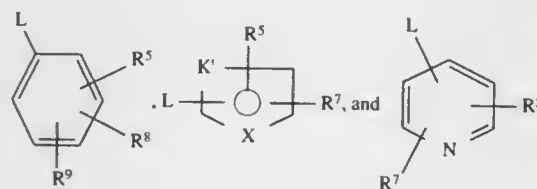
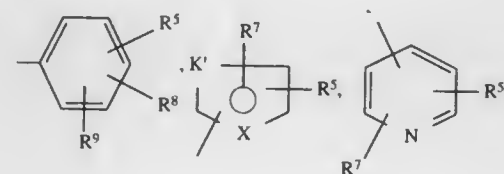
R₃ is a moiety of the formula



wherein Ar is a moiety selected from the group



wherein R⁶ is selected from



wherein

L is —O—, —S—, SO, —SO₂—, —CO—, —CH₂—, or —C≡C—;

K' is CH or N;

W' is selected from O, S, NH, N-lower alkyl (C₁–C₃), and N-benzyl;

R⁴ is selected from H, lower alkyl (C₁–C₃), and —CO— lower alkyl (C₁–C₃);

R⁵ is selected from H, lower alkyl (C₁–C₃), lower alkoxy (C₁–C₃), —O—CH₂—CH₂—CH₂— and halogen;

R⁷ is selected from H, lower alkyl (C₁–C₃), —O—lower alkyl (C₁–C₃), —CF₃ and halogen;

R⁸ and R⁹ are independently selected from H, lower alkyl (C₁–C₃), —S—lower alkyl (C₁–C₃), halogen, —NH—lower alkyl (C₁–C₃), —OCF₃, —OH, —CN, —S—CF₃, —NO₂, —NH₂, —O—lower alkyl (C₁–C₃), —CO—lower alkyl (C₁–C₃), and —CF₃;

or a pharmaceutically acceptable salt, ester or pro-drug form thereof.

5,780,472

PIPERAZINE DERIVATIVES AND METHODS FOR THE
PREPARATION THEREOF AND COMPOSITIONS
CONTAINING THE SAME

Eui-Hwan Cho; Sun-Gan Chung, both of Seoul; Joong-Ypoung Kim, Suweon; Sun-Hwan Lee, Songtan; Ho-Seok Kwon, Suweon; Byung-Chul Kim, Songtan; Jae-Myeong Kong, Suweon; Jea-Eung Lee, Hanam, and Dong-Wook Kang, JinJu, all of Rep. of Korea, assignors to Samjin Pharmaceutical Co., Ltd., Seoul, Rep. of Korea

PCT No. PCT/KR96/00005, § 371 Date Jul. 15, 1996, § 102(e) Date Jul. 15, 1996, PCT Pub. No. WO90/21648, PCT Pub. Date Jul. 18, 1996

PCT Filed Jan. 10, 1996, Ser. No. 676,174

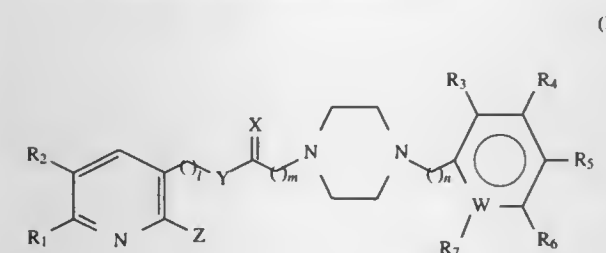
Claims priority, application Rep. of Korea, Jan. 11, 1995, 1995-399; Nov. 24, 1995, 1995-43607

Int. Cl.⁶ A61K 31/495; C07D 401/12; 401/14

U.S. Cl. 514—252

6 Claims

1. A compound of the general formula (I)



(I)

wherein

R₁ and R₂ are independently selected from the group consisting of hydrogen, and C₁–C₈ alkyl;

R₃, R₄, R₅, R₆ and R₇ are independently selected from the group consisting of hydrogen, halogen, hydroxy, nitro, —OCOC₁–C₄ lower alkyl, C₁–C₄ lower alkyl, C₁–C₄ lower alkoxy, phenyl, and —NR^aR^b, wherein R^a and R^b are independently selected from the group consisting of hydrogen, C₁–C₄ lower alkyl, C₂–C₄ unsaturated lower alkyl, phenyl and benzyl;

l is an integer of 0, 1, 2, 3, 4, 5, 6 or 7;

m and n are independently an integer of 0 or 1;

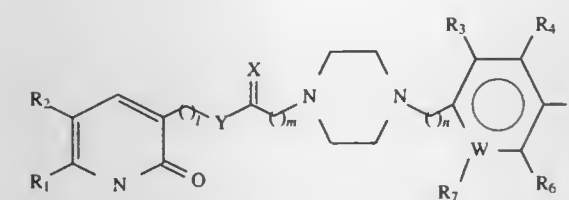
W is carbon or nitrogen;

X is selected from the group consisting of oxygen and sulfur;

Y is NH or oxygen; and

Z is selected from the group consisting of C₁–C₈ alkoxy, phenoxy, C₁–C₄ alkylamine and oxo group, provided that when Z is an oxo group the compound is of the general formula (I')

(I')



wherein R₁, R₂, R₃, R₄, R₅, R₆, R₇, l, m, n, W, X and Y are as defined above; or

a pharmaceutically acceptable acid addition salt thereof.

5,780,473

SUBSTITUTED BIPHENYL SULFONAMIDE
ENDOTHELIN ANTAGONISTS

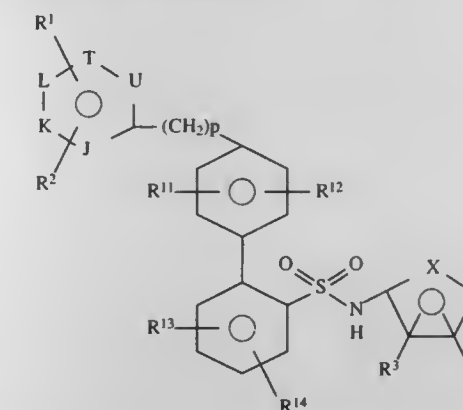
Natesan Murugesan, Princeton Junction, N.J.; Joel C. Barrish, Holland, Pa., and Philip D. Stein, Pennington, N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J. Continuation-in-part of Ser. No. 587,076, Jan. 16, 1996, abandoned, which is a continuation-in-part of Ser. No. 384,066, Feb. 6, 1995. This application Jul. 25, 1996, Ser. No. 692,869

Int. Cl.⁶ A61K 31/525; 31/505; C07D 405/00; 409/00

U.S. Cl. 514—252

34 Claims

1. A compound of the formula



or an enantiomer, diastereomer or pharmaceutically acceptable salt thereof,

wherein:

one of X and Y is N and the other is O;

R¹ and R² are each directly bonded to a ring carbon and are each independently

- (a) hydrogen;
- (b) alkyl or alkoxy;
- (c) hydroxyl;
- (d) halo; or
- (e) amino;

R³ and R⁴ are each directly bonded to a ring carbon and are each independently

- (a) hydrogen;
- (b) alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, aryloxy, aralkyl or aralkoxy, any of which may be substituted with Z¹, Z² and Z³;
- (c) halo;
- (d) hydroxyl;
- (e) cyano;
- (f) nitro;
- (g) —C(O)H or —C(O)R⁵;
- (h) —CO₂H or —CO₂R⁵;
- (i) —Z⁴—NR⁶R⁷; or
- (j) —Z⁴—N(R¹⁰)—Z⁵—NR⁸R⁹; or

(k) R³ and R⁴ together may also be alkylene or alkenylene, either of which may be substituted with Z¹, Z² and Z³, completing a 4- to 8-membered saturated, unsaturated or aromatic ring together with the carbon atoms to which they are attached;

R⁵ is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl or aralkyl, any of which may be substituted with Z¹, Z² and Z³;

R⁶, R⁷, R⁸, R⁹ and R¹⁰ are each independently

- (a) hydrogen; or
- (b) alkyl, cycloalkyl, cycloalkylalkyl, cycloalkenylalkyl, aryl or aralkyl, any of which may be substituted with Z¹, Z² and Z³; or

R⁶ and R⁷ together may be alkylene or alkenylene, either of which may be substituted with Z¹, Z² and Z³, completing a 3- to 8-membered saturated or unsaturated ring together with the nitrogen atom to which they are attached; or any two of R⁸, R⁹ and R¹⁰ together are alkylene or alkenylene, either of which may be substituted with Z¹, Z² and Z³, completing a 3-

to 8-membered saturated or unsaturated ring together with the atoms to which they are attached;

R^{11} , R^{12} , R^{13} and R^{14} are each independently

(a) hydrogen;

(b) alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, aryloxy, aralkyl or aralkoxy, any of which may be substituted with Z^1 , Z^2 and Z^3 ;

(c) heterocycle, substituted heterocycle or heterocycloxy;

(d) halo;

(e) hydroxyl;

(f) cyano;

(g) nitro;

(h) $-C(O)H$ or $-C(O)R^5$;

(i) $-CO_2H$ or $-CO_2R^5$;

(j) $-SH$, $-S(O)_mR^5$, $-S(O)_mOH$, $-S(O)_mOR^5$, $-O-S(O)_mOR^5$, $-O-S(O)_mOH$ or $-O-S(O)_mOR^5$;

(k) $-Z^4-NR^6R^7$; or

(l) $-Z^4-N(R^{10})-Z^5-NR^8R^9$;

Z^1 , Z^2 and Z^3 are each independently

(a) hydrogen;

(b) halo;

(c) hydroxy;

(d) alkyl;

(e) alkenyl;

(f) aryl;

(g) aralkyl;

(h) alkoxy;

(i) aryloxy;

(j) aralkoxy;

(k) heterocycle, substituted heterocycle or heterocycloxy;

(l) $-SH$, $-S(O)_mZ^6$, $-S(O)_mOH$, $-S(O)_mOZ^6$, $-O-S(O)_mZ^6$, $-O-S(O)_mOH$ or $-O-S(O)_mOZ^6$;

(m) oxo;

(n) nitro;

(o) cyano;

(p) $-C(O)H$ or $-C(O)Z^6$;

(q) $-CO_2H$ or $-CO_2Z^6$;

(r) $-Z^4-NZ^7Z^8$;

(s) $-Z^4-N(Z^{11})-Z^5-H$;

(t) $-Z^4-N(Z^{11})-Z^5-Z^6$; or

(u) $-Z^4-N(Z^{11})-Z^5-NZ^7Z^8$;

Z^4 and Z^5 are each independently

(a) a single bond;

(b) $-Z^9-S(O)_m-Z^{10}-$;

(c) $-Z^9-C(O)-Z^{10}-$;

(d) $-Z^9-C(S)-Z^{10}-$;

(e) $-Z^9-O-Z^{10}-$;

(f) $-Z^9-S-Z^{10}-$;

(g) $-Z^9-O-C(O)-Z^{10}-$; or

(h) $-Z^9-C(O)-O-Z^{10}-$;

Z^6 is alkyl; alkyl substituted with one to three groups selected from halogen, aryl, aryloxy and alkoxy; alkenyl; alkynyl; cycloalkyl; cycloalkyl substituted with one to three groups selected from alkyl, aryl, alkenyl and alkoxyaryl; cycloalkyl to which is fused a benzene ring; aryloxy substituted with one or two halogens; cycloalkylalkyl; cycloalkenyl; cycloalkenylalkyl; aryl; aryl substituted with methylenedioxy or one to four groups selected from alkyl, dialkylamino, cyano, halogen, trihaloalkyl, alkoxy and trihaloalkoxy; or heterocycle or substituted heterocycle;

Z^7 and Z^8 are each independently hydrogen, alkyl, cycloalkyl, cycloalkylalkyl, cycloalkenylalkyl, aryl or aralkyl, or Z^7 and Z^8 together are alkylene or alkenylene, completing a 3- to 8-membered saturated or unsaturated ring together with the nitrogen atom to which they are attached;

Z^9 and Z^{10} are each independently a single bond, alkylene, alkenylene or alkynylene;

Z^{11} is

(a) hydrogen; or

(b) alkyl, alkyl substituted with one, two or three halogens, cycloalkyl, cycloalkylalkyl, cycloalkenylalkyl, aryl or aralkyl;

or any two of Z^7 , Z^8 and Z^{11} together are alkylene or alkenylene, completing a 3- to 8-membered saturated or unsaturated ring together with the atoms to which they are attached;

J, K, L, T and U are each independently N or C, provided that at least one is N, and at most two are N; and when only one of J, K, L, T and U is N, the N may be substituted with $-O^-$ so that an N-oxide is formed;

each m is independently 1 or 2;

each n is independently 0, 1 or 2; and

p is 0 or an integer from 1 to 2.

5,780,474

3-(PIPERID-4-YL)-1,2-BENZISOXAZOLE AND 3-(PIPERAZIN-4-YL)-1,2-BENZISOXAZOLE COMPOUNDS

Jean-Louis Peglion, Le Vesinet; Mark Millan, Le Pecq; Maurice Brocco, Paris, and Valérie Audinot, Poissy, all of France, assignors to Adir et Compagnie, Courbevoie, France
Filed Jun. 3, 1997, Ser. No. 868,116

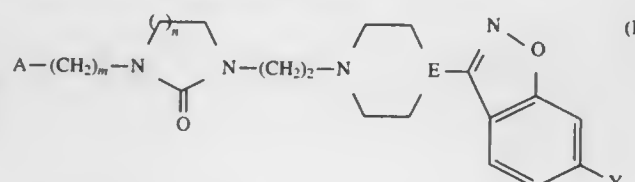
Claims priority, application France, Jun. 4, 1996, 96 06866

Int. Cl.⁶ A61K 31/495; 31/44; C07D 413/14

U.S. Cl. 514—254

6 Claims

1. A compound selected from the group consisting of 1,2-Benzisoxazole compounds of formula I



wherein:

A is selected from the group consisting of linear and branched alkyl having from 1 to 10 carbon atoms inclusive, unsubstituted phenyl, halophenyl, hydroxyphenyl, and (lower alkoxy)phenyl;

m is selected from zero and 1,

n is selected from 1 and 2,

E is selected from the group consisting of N and CH, and

Y is selected from the group consisting of hydrogen, halogen, and alkoxy having from 1 to 5 carbon atoms inclusive, optical isomers thereof, and addition salts thereof with a pharmaceutically-acceptable acid.

5,780,475

ANTIPSYCHOTIC INDAZOLE DERIVATIVES

Raymond Baker, Green Ty; Janusz Jozef Kulagowski, Bishops Stortford; Paul David Leeson, Cambridge, and Adrian Leonard Smith, Bishops Stortford, all of Great Britain, assignors to Merck, Sharp & Dohme Limited, Hoddesdon, England

PCT No. PCT/GB94/00504, § 371 Date Dec. 29, 1995, § 102(e)

Date Dec. 29, 1995, PCT Pub. No. WO94/21630, PCT Pub.

Date Sep. 29, 1994

PCT Filed Mar. 14, 1994, Ser. No. 525,629

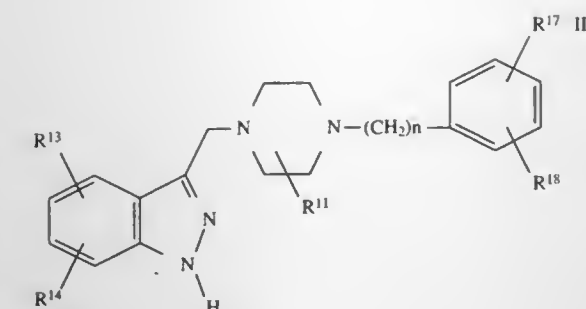
Claims priority, application United Kingdom, Mar. 18, 1993, 9305623

Int. Cl.⁶ A61K 31/495; 31/44; 31/415

U.S. Cl. 514—255

7 Claims

1. A method for the treatment of psychotic disorders which comprises administering to a patient in need thereof an effective amount of a dopamine antagonist compound of formula IIA, and pharmaceutically acceptable salts thereof:



wherein

n is zero, 1, 2 or 3;

R^{11} represents hydrogen or C_{1-6} alkyl;

R^{13} and R^{14} independently represent hydrogen, halogen, cyano, nitro, trifluoromethyl, amino, C_{1-6} alkylamino, di(C_{1-6})alkylamino, C_{1-6} alkyl, C_{1-6} alkoxy, aryl(C_{1-6})alkoxy or C_{2-6} alkylcarbonyl; and

R^{17} and R^{18} independently represent hydrogen, halogen, cyano, nitro, trifluoromethyl, amino, C_{1-6} alkylamino, di(C_{1-6})alkylamino, C_{1-6} alkyl, C_{1-6} alkoxy, aryl(C_{1-6})alkoxy or C_{2-6} alkylcarbonyl, or R^{17} and R^{18} , when situated on adjacent carbon atoms, together represent methylenedioxy.

5,780,476

HYDROXYL-CONTAINING XANTHINE COMPOUNDS

Gail E. Underiner, Brier; David Porubek, Seattle; J. Peter Klein, Vashon Island, and Paul Woodson, Edmonds, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.
Division of Ser. No. 153,256, Nov. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 976,353, Nov. 16, 1992, Pat. No. 5,473,070. This application Jun. 6, 1995, Ser. No. 468,660

Int. Cl.⁶ A61K 31/52; C07D 473/04

U.S. Cl. 514—263

11 Claims

1. A method for treating a disease, said disease being a member selected from the group consisting of:

acute and chronic inflammatory diseases, allergies due to degranulation of mast cells and basophils, atherosclerosis, autoimmune thyroiditis, coronary artery disease, inflammatory bowel disease, lupus, multiple sclerosis, organ or hematopoietic injury in response to cytotoxic therapy, osteoarthritis, periodontal disease, psoriasis, restenosis, rheumatoid arthritis, septic shock, sepsis syndrome, scleroderma, and transplant rejection in a mammal in need of such treatment, the method comprising:

administering an effective amount of a compound or a pharmaceutical composition thereof, having the formula:

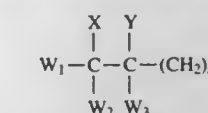
(R)_j - (core moiety),

including resolved enantiomers, diastereomers, hydrates, salts, solvates and mixtures thereof,

wherein j is an integer from one to three,

the core moiety comprises a xanthinyl or xanthinyl derivative, R being a member selected from the group consisting of hydrogen, halogen, hydroxyl, amino, substituted or unsubstituted benzyl, C_{1-6} alkyl or C_{1-6} alkenyl, C_{1-6} alkyl or C_{1-6} alkenyl interrupted by an oxygen atom or substituted by a member selected from the group consisting of hydroxyl, halogen and dimethylamino, and

at least one R has the formula I:



wherein n is an integer from seven to twenty,

at least one of X or Y is $-OH$, another of X or Y, which is not $-OH$, being selected from the group consisting of hydrogen, CH_3- , CH_3-CH_2- , $CH_3-(CH_2)_2-$, and $(CH_3)_2-CH_2-$, and

each W_1 , W_2 , and W_3 is independently selected from the group consisting of hydrogen, CH_3- , CH_3-CH_2- , $CH_3-(CH_2)_2-$, and $(CH_3)_2-CH_2-$, said X, Y, W_1 , W_2 , or W_3 alkyl groups being unsubstituted or substituted by an hydroxyl, halo or dimethylamino group.

5,780,477

TRISUBSTITUTED PHENYL DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

John Clifford Head, Windsor; Graham John Warrellow, Northwood, and Rikki Peter Alexander, High Wycombe, all of United Kingdom, assignors to Celtech Therapeutics, Limited, Sough, United Kingdom

Filed Jun. 21, 1995, Ser. No. 492,974

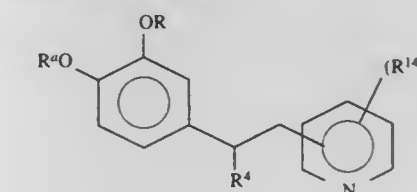
Claims priority, application United Kingdom, Jun. 22, 1994, 9412573

Int. Cl.⁶ A61K 31/44; C07D 213/30; 213/36

U.S. Cl. 514—277

24 Claims

1. A compound of the formula



wherein:

x is 0, 1 or 2;

R^4 is an optionally substituted, straight or branched alkyl group;

R is an optionally substituted cycloalkyl group;

R^4 is $-O-(Alk^2)_x(O)_y(Alk^3)_zR^{12}$, wherein

r, s and t are 0 or 1;

Alk^2 and Alk^3 are optionally substituted, straight or branched C_{1-6} alkylene groups;

and

R^{12} is hydrogen, an optionally substituted C_{3-8} cycloaliphatic group or an optionally substituted monocyclic or bicyclic C_{6-12} aryl group; and

R^{14} is halogen;

with the provisos that when one of r, s and t is 0, then at least one of the other of r, s and t is 1, and when s is 1, then r is 1; and the pharmaceutically acceptable salts, solvates, hydrates and N-oxides thereof.

5,780,478

TETRA-SUBSTITUTED PHENYL DERIVATIVES

Rikki Peter Alexander, High Wycombe, and Graham John Warrellow, Northwood, both of United Kingdom, assignors to Celltech Therapeutics, Limited, Slough, United Kingdom
Filed Jun. 21, 1995, Ser. No. 493,264

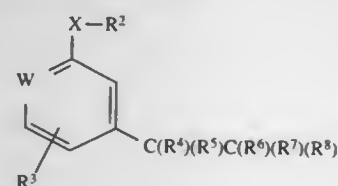
Claims priority, application United Kingdom, Jun. 22, 1994, 9412571

Int. Cl.⁶ A61K 31/44; C07D 213/30; 213/34; 213/64

U.S. Cl. 514—277

18 Claims

1. A compound of formula (1)



wherein:

=W— is =C(Y)—;

Y is halogen or an alkyl or —XR^m group;X is —O—, —S(O)_m— or —N(R^m)—, where m is zero or an integer 1 or 2;R^m is hydrogen or an optionally substituted alkyl group;R² is an optionally substituted cycloalkyl or cycloalkenyl group;

R³ is R¹³ or —L¹R¹³, where R¹³ is an optionally substituted straight or branched chain C₂₋₆alkenyl group or an optionally substituted C₆₋₁₂ monocyclic or bicyclic aryl group and L¹ is an optionally substituted straight or branched chain C₁₋₆alkylene, C₂₋₆alkenylene or C₂₋₆alkynylene group;

R⁴ is a hydrogen atom or a group —(CH₂)_nAr where Ar is an optionally substituted monocyclic aryl group and n is zero or an integer 1, 2 or 3;

R⁵ is hydrogen;R⁶ is an optionally substituted 2-, 3- or 4-pyridyl group; and

each of R⁷ and R⁸ is independently hydrogen or an optionally substituted straight or branched alkyl group; or a pharmaceutically acceptable salt, hydrate, solvate or N-oxide thereof.

5,780,479

USE OF OPIOID ANTAGONISTS TO TREAT IMPULSE-CONTROL DISORDERS

Suck Won Kim, Edina, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Apr. 4, 1997, Ser. No. 835,080

Int. Cl.⁶ A61K 31/445

U.S. Cl. 514—282

31 Claims

1. A therapeutic method of treating an impulse-control disorder, with the exception of trichotillomania, comprising administering to an individual afflicted with an impulse-control disorder an amount of at least one opioid receptor antagonist effective to reduce or eliminate at least one of the symptoms of the impulse-control disorder.

5,780,480

FIBRINOGEN RECEPTOR ANTAGONISTS

John Wai, Harleysville; Mark E. Duggan, Schwenksville; Thorsten E. Fisher, Hatfield; George D. Hartman, Lansdale, and James J. Perkins, Churchville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

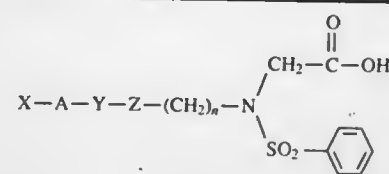
Filed Feb. 26, 1997, Ser. No. 807,843

Int. Cl.⁶ A01N 43/42; C07D 471/00; 211/32

U.S. Cl. 514—292

11 Claims

1. The compound having the formula VII wherein X-A, Y, Z and n are defined as follows:



VII

X-A	Y	Z	n
a)	—C(O)NH—	1,4-phenyl	0;
b)	—C(O)NH—	1,4-phenyl	0;
c)	—C(O)NH—	1,4-phenyl	0;
d)	—(CH ₂) ₂ —		1; and
e)	—(CH ₂) ₃ —O—	1,4-phenyl	1.

5,780,481

METHOD FOR INHIBITING ACTIVATION OF THE HUMAN A3 ADENOSINE RECEPTOR TO TREAT ASTHMA

Marlene A. Jacobson, Elkins Park, Pa.; Richard Norton, Somers, and Prasun K. Chakravarty, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

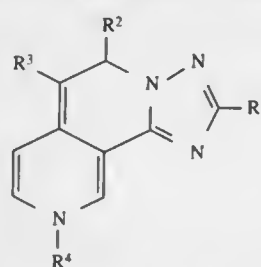
Filed Aug. 8, 1996, Ser. No. 694,061

Int. Cl.⁶ A61K 31/44; 31/41; 31/34

U.S. Cl. 514—293

5 Claims

1. A method for treating or preventing asthma in a patient comprising administering to the patient a compound of the formula



and pharmaceutically acceptable salts, wherein

R¹ is

(a) phenyl or pyrimidyl optionally substituted with one or two substituents selected from the group consisting essentially of C₁₋₄-alkyl, bromo, chloro, fluoro, CF₃, C₁₋₄-alkoxy and phenyl, or

(b) furyl, thiophenyl or thiazolyl optionally substituted with C₁₋₄-alkyl or phenyl;

R² is hydrogen, C₁₋₄-alkyl or phenyl;

R³ is —CN, —COOC₁₋₄ alkyl, —CONH₂, —COOH, —CONHSO₂R⁵ or 5-tetrazolyl;

R⁴ is

—C₁₋₄-alkyl optionally substituted with —COOC₁₋₄ alkyl, —CONH₂, COOH or phenyl optionally substituted with one or two substituents selected from the group consisting essen-

tially of C₁₋₄-alkyl, bromo, chloro, fluoro, CF₃, C₁₋₄-alkoxy and phenyl; and

R⁵ is

—C₁₋₄-alkyl or phenyl optionally substituted with one or two substituents selected from the group consisting essentially of C₁₋₄-alkyl, bromo, chloro, fluoro, CF₃, C₁₋₄-alkoxy and phenyl.

5,780,482

CONDENSED 4-AMINOPYRIDINES WITH ANTIRHEUMATIC ACTIVITY

Bernard John Armitage; Bruce William Leslie; Thomas Kerr Miller, and Christopher Morley, all of Nottingham, Great Britain, assignors to Knoll Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/01923, § 371 Date Dec. 21, 1995, § 102(e)

Date Dec. 21, 1995, PCT Pub. No. WO95/00511, PCT Pub.

Date Jan. 5, 1995

PCT Filed Jun. 10, 1994, Ser. No. 564,154

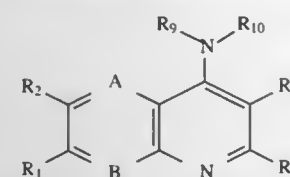
Claims priority, application United Kingdom, Jun. 22, 1993, 9312891

Int. Cl.⁶ A61K 31/435; C07D 471/04

U.S. Cl. 514—300

14 Claims

1. Compounds of formula I



and pharmaceutically acceptable salts thereof in which one of A or B represents N and the other represents C—R₃;

R₁ represents hydrogen, halo, a C₁₋₆ alkyl group, hydroxy, a carboxy C₂₋₄ alkenyl group, a C₂₋₆ alkoxy carbonyl C₂₋₄ alkenyl group, a hydroxy C₁₋₆ alkyl group, a carboxy C₁₋₄ alkyl group, a C₂₋₆ alkoxy carbonyl C₁₋₄ alkyl group, a C₁₋₆ alkoxy group, a halogenated C₁₋₆ alkyl group, a carboxy group, a C₂₋₆ alkoxy carbonyl group, a C₁₋₆ alkanoylamino group or a carbamoyl C₂₋₄ alkenyl group;

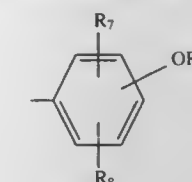
R₂ represents a C₁₋₆ alkoxy group, hydroxy, a C₁₋₆ alkanoyloxy group (which may be substituted by a C₁₋₆ alkanoyloxy group), or a phenoxy group (optionally substituted by a C₁₋₄ alkyl group, halo or a C₁₋₄ alkoxy group);

R₃ represents hydrogen or a C₁₋₄ alkyl group;

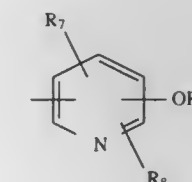
R₄ represents hydrogen, halo, a C₂₋₇ alkoxy carbonyl group, cyano, a benzyloxycarbonyl group (optionally substituted by a C₁₋₄ alkyl group, halo or a C₁₋₄ alkoxy group), a C₁₋₆ alkanoyl group, a benzoyl group (optionally substituted by a C₁₋₄ alkyl group, halo or a C₁₋₄ alkoxy group), a C₁₋₆ alkyl group (optionally substituted by one or more hydroxy groups and/or an amino group of formula —NR₂R₃ (in which R₂ and R₃ independently represent hydrogen or a C₁₋₄ alkyl group or R₂ and R₃ together with the nitrogen atom to which they are attached form a pyrrolidine ring, a morpholine ring or a piperidine ring)), a carboxy group, a C₁₋₆ alkylthio group or a carbamoyl group of formula —CONR₂R₃ (in which R₂ and R₃ independently represent hydrogen, a C₁₋₆ alkyl group (optionally substituted by an amino group of formula —NR₂R₃ in which R₂ and R₃ independently represent hydrogen or a C₁₋₄ alkyl group or R₂ and R₃ together with the nitrogen atom to which they are attached form a pyrrolidine ring, a morpholine ring or a piperidine ring));

R₅ represents hydrogen or a C₁₋₄ alkyl group;

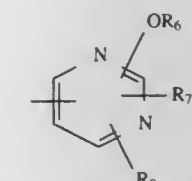
R₆ represents hydrogen or a C₁₋₄ alkyl group;

R₁₀ represents a group of formula 1, 2 or 3:

(1)



(2)



(3)

in which

R₆ represents hydrogen, a C₁₋₆ alkyl group (optionally substituted by one or more of the following: hydroxy, halo, an amino group of formula —NR₁₂R₁₃ (in which R₁₂ and R₁₃ independently represent hydrogen or a C₁₋₄ alkyl group or R₁₂ and R₁₃ together with the nitrogen atom to which they are attached form a pyrrolidine ring, a morpholine ring or a piperidine ring), a C₂₋₇ alkoxy carbonyl group or a carbamoyl group of formula CONR₁₄R₁₅ (in which R₁₄ and R₁₅ independently represent hydrogen or a C₁₋₆ alkyl group or R₁₄ and R₁₅ together with the nitrogen to which they are attached form a pyrrolidine ring, a morpholine ring or piperidine ring)); a C₃₋₁₂ alicyclic hydrocarbon group, a phenyl group (optionally substituted by a C₁₋₄ alkyl group, halo or a C₁₋₄ alkoxy group), a C₃₋₆ cycloalkyl C₁₋₄ alkyl group or an arylalkyl group (optionally substituted by a C₁₋₄ alkyl group, halo or a C₁₋₄ alkoxy group); a pyridyl group (optionally substituted by one or more of the following: a C₁₋₄ alkyl group, a C₁₋₄ alkoxy group, hydroxy or halo);

or when R₁₀ represents a group of formula (1) OR₆ represents a monosaccharide group or a disaccharide group (optionally derivatised by one or more of the following: oxidation; oxidation followed by esterification; esterification or acetalisation); and

R₇ and R₈ independently represent hydrogen, hydroxy, halo, trifluoromethyl, trifluoromethoxy, a C₁₋₆ alkyl group, a carboxy group, a C₁₋₆ alkoxy group, or a C₂₋₇ alkoxy carbonyl group;

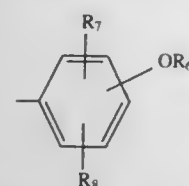
with a first proviso that when

R₁ represents hydrogen, a C₁₋₆ alkyl group, hydroxy, a carboxy C₂₋₄ alkenyl group, a C₂₋₆ alkoxy carbonyl C₂₋₄ alkenyl group, a hydroxy C₁₋₆ alkyl group, a carboxy C₁₋₄ alkyl group, a C₂₋₆ alkoxy carbonyl C₁₋₄ alkyl group, a C₁₋₆ alkoxy group, a halogenated C₁₋₆ alkyl group, a carboxy group, a C₂₋₆ alkoxy carbonyl group or a C₁₋₆ alkanoylamino group; and

R₂ represents hydrogen, halo, a C₁₋₆ alkoxy group, hydroxy, a C₁₋₆ alkanoyloxy group, or a phenoxy group (optionally substituted by a C₁₋₄ alkyl group, halo or a C₁₋₄ alkoxy group); and

R₄ represents hydrogen, halo, a C₂₋₇ alkoxy carbonyl group, a benzyloxycarbonyl group (optionally substituted by a C₁₋₄ alkyl group, halo or a C₁₋₄ alkoxy group), a C₁₋₆ alkanoyl group, a benzoyl group (optionally substituted by a C₁₋₄ alkyl group, halo or a C₁₋₄ alkoxy group), carbamoyl, a C₁₋₆ alkyl group, a carboxy group, a C₁₋₆ hydroxyalkyl group or a C₁₋₆ alkylthio group; and

R₅ represents hydrogen or a C₁₋₄ alkyl group; and R₁₀ represents a group of formula (1)



in which

R₆ represents hydrogen, a C₁₋₆ alkyl group (optionally substituted by one or more of the following: hydroxy, halo or an amino group of formula—NR₁₂R₁₃ (in which R₁₂ and R₁₃ independently represent hydrogen or a C₁₋₄ alkyl group or R₁₂ and R₁₃ together with the nitrogen atom to which they are attached form a pyrrolidine ring, a morpholine ring or a piperidine ring)), a C₃₋₁₂ alicyclic hydrocarbon group, a phenyl group (optionally substituted by a C₁₋₄ alkyl group, halo or a C₁₋₄ alkoxy group), a C₃₋₆ cycloalkyl C₁₋₄ alkyl group or a benzyl group (optionally substituted by a C₁₋₄ alkyl group, halo or a C₁₋₄ alkoxy group); and

R₇ represents hydrogen, halo, trifluoromethyl, trifluoromethoxy, a C₁₋₆ alkyl group, a carboxy group, or a C₁₋₆ alkoxy group; and

R₈ represents hydrogen, halo, trifluoromethyl, trifluoromethoxy, a C₁₋₆ alkyl group or a C₁₋₆ alkoxy group; and R₉ represents hydrogen or a C₁₋₄ alkyl group and B represents N then A is other than CR₃ in which R₃ represents hydrogen or a C₁₋₄ alkyl group

and a second proviso that when A represents N and B represents CH; R₁ represents halo or a halogenated C₁₋₆ alkyl group; R₂, R₄, R₅ and R₉ each represent hydrogen then R₁₀ is other than 4-hydroxyphenyl.

5,780,483

IL-8 RECEPTOR ANTAGONISTS

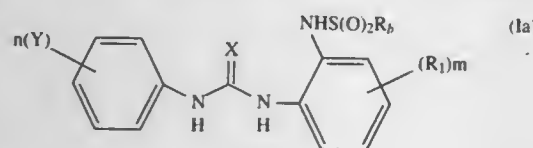
Katherine Louisa Widdowson, King of Prussia; Daniel Frank Veber, Ambler; Anthony Joseph Jurewicz, Royersford; Robert Philip Hertzberg, Downingtown, and Melvin Clarence Rutledge, Jr., Lansdale, all of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 641,990, Mar. 20, 1996, which is a continuation-in-part of Ser. No. 390,260, Feb. 17, 1995, abandoned. This application Aug. 21, 1996, Ser. No. 701,299

Int. Cl.⁶ A61K 31/47; 31/425; 31/38; 31/17 U.S. Cl. 514—311

12 Claims

1. A method of treating a chemokine mediated disease in a mammal in need thereof, wherein the chemokine binds to an IL-8 a or b receptor, which method comprises administering to said mammal an effective amount of a compound of the formula:



wherein

X is oxygen or sulfur;

R₉ is an alkyl, aryl, arylC₁₋₄alkyl, heteroaryl, heteroaryl C₁₋₄alkyl, heterocyclic, or a heterocyclic C₁₋₄alkyl moiety, all of which may be optionally substituted;

R₆ is a NR₁₂R₁₃, alkyl, aryl, arylC₁₋₄alkyl, aryl C₂₋₄alkenyl, heteroaryl, heteroarylC₁₋₄alkyl, heteroarylC₂₋₄alkenyl, heterocyclic, or heterocyclic C₁₋₄alkyl, or a heterocyclic C₂₋₄alkenyl moiety, camphor, all of which may be optionally substituted one to three times independently by halogen; nitro; halosubstituted C₁₋₄ alkyl; C₁₋₄ alkyl; C₁₋₄ alkoxy; NR₁₂C(O)R₁₃, S(O)_mR₁₀, C(O)NR₁₂R₁₃, S(O)₃H, or C(O)OC₁₋₄ alkyl;

R₆ and R₇ are independently hydrogen, or a C₁₋₄ alkyl group, or R₆ and R₇ together with the nitrogen to which they are attached form a 5 to 7 member ring which ring may optionally contain an additional heteroatom which heteroatom is selected from oxygen, nitrogen or sulfur, which ring may be optionally substituted;

R₉ is hydrogen or a C₁₋₄ alkyl;

R₁ is independently selected from hydrogen; halogen; nitro; cyano; C₁₋₁₀ alkyl; halosubstituted C₁₋₁₀ alkyl; C₂₋₁₀ alkenyl; C₁₋₁₀ alkoxy; halosubstituted C₁₋₁₀alkoxy; azide; (CR₈R₉)q S(O)_tR₄; hydroxy; hydroxy substituted C₁₋₄alkyl; aryl; aryl C₁₋₄ alkyl; aryl C₂₋₁₀ alkenyl; aryloxy; aryl C₁₋₄ alkoxy; heteroaryl; heteroarylalkyl; heteroaryl C₂₋₁₀ alkenyl; heteroaryl C₁₋₄ alkoxy; heterocyclic, heterocyclic C₁₋₄alkyl; heterocyclicC₁₋₄alkoxy; heterocyclicC₂₋₁₀ alkenyl; (CR₈R₉)q NR₄R₅; (CR₈R₉)q C(O)NR₄R₅; C₂₋₁₀ alkenyl C(O)NR₄R₅; (CR₈R₉)q C(O)NR₄R₁₀; S(O)₃R₈; (CR₈R₉)q C(O)R₁₁; C₂₋₁₀ alkenyl C(O)R₁₁; C₂₋₁₀ alkenyl C(O)OR₁₁; (CR₈R₉)q C(O)OR₁₁; CP₄R₉)q C(O)OR₁₂; (CR₈R₉)qOC(O)R₁₁; (CR₈R₉)qNR₄C(O)R₁₁; (CR₈R₉)q C(NR₄)NR₄R₅; (CR₈R₉)q NR₄C(NR₅)R₁₁; (CR₈R₉)q NHS(O)₂R₁₃; (CR₈R₉)q S(O)₂NR₄R₅, or two R₁ moieties together may form O—(CH₂)_q— or a 5 to 6 membered unsaturated ring, and wherein the alkyl, aryl, arylalkyl, heteroaryl, heteroaryl alkyl, heterocyclic and heterocyclic alkyl moieties may be optionally substituted;

t is 0, or an integer having a value of 1 or 2;

s is an integer having a value of 1 to 3;

R₄ and R₅ are independently hydrogen, optionally substituted C₁₋₄ alkyl, optionally substituted aryl, optionally substituted aryl C₁₋₄alkyl, optionally substituted heteroaryl, optionally substituted heteroaryl C₁₋₄alkyl, heterocyclic, heterocyclicC₁₋₄ alkyl, or R₄ and R₅ together with the nitrogen to which they are attached form a 5 to 7 member ring which may optionally comprise an additional heteroatom selected from O/N/S;

Y is hydrogen; halogen; nitro; cyano; halosubstituted C₁₋₁₀ alkyl; C₁₋₁₀ alkyl; C₂₋₁₀ alkenyl; C₁₋₁₀ alkoxy; halosubstituted C₁₋₁₀ alkoxy; azide; (CR₈R₉)qS(O)_tR₄; (CR₈R₉)qOR₄; hydroxy; hydroxy substituted C₁₋₄alkyl; aryl; aryl C₁₋₄ alkyl; aryloxy; arylC₁₋₄ alkoxy; aryl C₂₋₁₀ alkenyl; heteroaryl; heteroarylalkyl; heteroaryl C₁₋₄ alkoxy; heteroaryl C₂₋₁₀ alkenyl; heterocyclic, heterocyclic C₁₋₄alkyl; heterocyclicC₂₋₁₀ alkenyl; (CR₈R₉)qNR₄R₅; C₂₋₁₀ alkenyl C(O)NR₄R₅; (CR₈R₉)qC(O)NR₄R₅; (CR₈R₉)q C(O)NR₄R₁₀; S(O)₃R₈; (CR₈R₉)qC(O)R₁₁; C₂₋₁₀ alkenylC(O)R₁₁; (CR₈R₉)qC(O)OR₁₁; C₂₋₁₀alkenylC(O)OR₁₁; (CR₈R₉)qOC(O)R₁₁; (CR₈R₉)qNR₄C(O)R₁₁; (CR₈R₉)q NHS(O)₂R₁₃; (CR₈R₉)q S(O)₂NR₄R₅; (CR₈R₉)qC(NR₄)NR₄R₅; (CR₈R₉)q NR₄C(NR₅)R₁₁; or two moieties together may form O—(CH₂)_q— or a 5 to 6 membered unsaturated ring; and wherein the alkyl, aryl, arylalkyl, heteroaryl, heteroaryl alkyl, heterocyclic, heterocyclicalkyl groups may be optionally substituted;

q is 0 or an integer having a value of 1 to 10;

n is an integer having a value of 1 to 3;

m is an integer having a value of 1 to 3;

m' is 0 or an integer having a value of 1 or 2;

R₈ is hydrogen or C₁₋₄ alkyl;

R₁₀ is C₁₋₁₀ alkyl C(O)₂R₈;

R₁₁ is hydrogen, optionally substituted C₁₋₄ alkyl, optionally substituted aryl, optionally substituted aryl C₁₋₄alkyl, optionally substituted heteroaryl, optionally substituted heteroarylC₁₋₄alkyl, optionally substituted heterocyclic, or optionally substituted heterocyclicC₁₋₄alkyl;

R₁₂ is hydrogen, C₁₋₁₀ alkyl, optionally substituted aryl or optionally substituted arylalkyl;

R₁₃ is C₁₋₄ alkyl, aryl, aryl C₁₋₄ alkyl, heteroaryl, heteroaryl C₁₋₄alkyl, heterocyclic, or heterocyclicC₁₋₄alkyl; or a pharmaceutically acceptable salt thereof.

5,780,484

METHODS FOR STIMULATING NEURITE GROWTH WITH PIPERIDINE COMPOUNDS

Robert E. Zelle, Stow, and Michael Su, Newton, both of Mass., assignors to Vertex Pharmaceuticals Incorporated, Cambridge, Mass.

Filed Nov. 13, 1996, Ser. No. 749,114

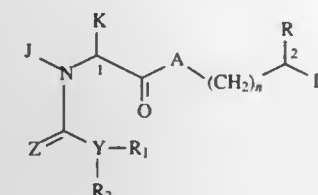
Int. Cl.⁶ A61K 31/445; 31/535; 31/47; 38/18

U.S. Cl. 514—316

14 Claims

1. A method for stimulating neurite growth in a patient or in an ex vivo nerve cell comprising the step of administering to said patient or said nerve cell a neurotrophic amount of a compound having the formula (I):

Formula (I)



and pharmaceutically acceptable derivatives thereof, wherein:

A is oxygen;

R₁, B and D are independently:

hydrogen, Ar, (C1-C6) straight or branched alkyl, (C2-C6) straight or branched alkenyl or alkynyl, (C5-C7) cycloalkyl-substituted (C1-C6) straight or branched alkyl, (C5-C7) cycloalkyl-substituted (C3-C6) straight or branched alkenyl or alkynyl, (C5-C7) cycloalkenyl-substituted (C1-C6) straight or branched alkyl, (C5-C7) cycloalkenyl-substituted (C3-C6) straight or branched alkenyl or alkynyl, Ar-substituted (C1-C6) straight or branched alkyl, or Ar-substituted (C3-C6) straight or branched alkenyl or alkynyl;

wherein any one of the CH₂ groups of said alkyl chain in R₁, B and D is optionally replaced by O, S, SO₂ or NR; wherein R is hydrogen, (C1-C4) straight or branched alkyl, (C3-C4) straight or branched alkenyl or alkynyl, or (C1-C4) bridging-alkyl wherein a bridge is formed between the nitrogen and a carbon atom of said alkyl chain to form a ring, and wherein said ring is optionally fused to Ar;

J and K are taken together with the nitrogen and carbon atoms to which they are respectively bound to form a piperidine ring;

Z is O or S;

Y is O or N; wherein

when Y is O, then R₁ is a lone pair and R₂ is selected from Ar, (C1-C6)-straight or branched alkyl, and (C3-C6)-straight or branched alkenyl or alkynyl; and when Y is N, then R₁ and R₂ are independently selected from the group consisting of Ar, (C1-C6)-straight or branched alkyl, and (C3-C6)-straight or branched alkenyl or alkynyl; or R₁ and R₂ are taken together to form a heterocyclic 5-6 membered ring selected from the group consisting of pyrrolidine, imidazolidine, pyrazolidine, piperidine, and piperazine;

wherein Ar is a carboxylic aromatic group selected from the group consisting of phenyl, 1-naphthyl, 2-naphthyl, indenyl, azulenyl, fluorenyl, anthracenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, pyrrolyl, oxazolyl, thiazolyl, imidazolyl, pyrazolyl, 2-pyrazolyl, pyrazolidinyl, isoxazolyl, isotriazolyl, 1,2,3-oxadiazolyl, 1,2,3-triazolyl, 1,3,4-thiadiazolyl, pyridazinyl, pyrimidinyl, pyrazinyl, 1,3,5-triazinyl, 1,3,5-trithianyl, indolizinyl, indolyl, isoindolyl, 3H-indolyl, indolyl, benzo[b]furanyl, benzo[b]thiophenyl, 1H-indazolyl, benzimidazolyl, benzthiazolyl, purinyl, 4H-quinoliziny, quinolyl, 1,2,3,4-tetrahydro-quinolyl, isoquinolyl, 1,2,3,4-tetrahydro-isoquinolyl, cinolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, 1,8-naphthyridinyl, pteridinyl, carbazolyl, acridinyl, phenazinyl, phenothiazinyl, or phenoxazinyl;

wherein Ar is optionally substituted with one to three substituents which are independently selected from hydrogen, halogen, hydroxyl, nitro, —SO₃H, trifluoromethyl, trifluoromethoxy, (C1-C6)-straight or branched alkyl, (C2-C6)-straight or branched alkenyl, O-[(C1-C6)-straight or branched alkyl], O-[(C3-C4)-straight or branched alkenyl], O-benzyl, O-phenyl, 1,2-methylenedioxy, —NR₄R₅, carboxyl, N-(C1-C5 -straight or branched alkyl or C3-C5-straight or branched alkenyl) carboxamides, N,N-di-(C1-C5-straight or branched alkyl or C3-C5-straight or branched alkenyl) carboxamides, morpholinyl, piperidinyl, O—Z-, CH₂—(CH₂)_q—Z', O-(CH₂)_q—Z', (CH₂)_q—Z'—O—Z', or CH=CH—Z';

wherein R₃ and R₄ are independently selected from (C1-C6)-straight or branched alkyl, (C3-C6) straight or branched alkenyl or alkynyl, hydrogen or benzyl; or wherein R₃ and R₄ are taken together to form a 5-6 membered heterocyclic ring;

wherein Z' is selected from 4-methoxyphenyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, pyrazyl, quinolyl, 3,5-dimethylisoxazolyl, isoxazolyl, 2-methylthiazolyl, thiazolyl, 2-thienyl, 3-thienyl, or pyrimidinyl;

wherein q is 0-2; and

n is 0 or 1.

5,780,485

USE OF α_{1C} SPECIFIC COMPOUNDS TO TREAT BENIGN PROSTATIC HYPERPLASIA

Charles Gluchowski, Wayne; Carlos C. Forray, Waldwick; George Chlu, Bridgewater; Theresa A. Brancheck, Teaneck; John M. Wetzel, Elmwood Park, and Paul R. Hartig, Princeton, all of N.J., assignors to Synaptic Pharmaceutical Corporation, Paramus, N.J.

Continuation of Ser. No. 975,867, Nov. 13, 1992, Pat. No.

5,403,847. This application Apr. 3, 1995, Ser. No. 415,681

Int. Cl.⁶ A61K 31/445; 31/135

U.S. Cl. 514—318

56 Claims

1. A method of treating benign prostatic hyperplasia in a subject which comprises administering to the subject a therapeutically effective amount of an antagonist which binds to a human α_{1C} adrenergic receptor with a binding affinity at least 48-fold higher than the binding affinity with which the antagonist binds to a human α_{1B} adrenergic receptor.

5,780,486

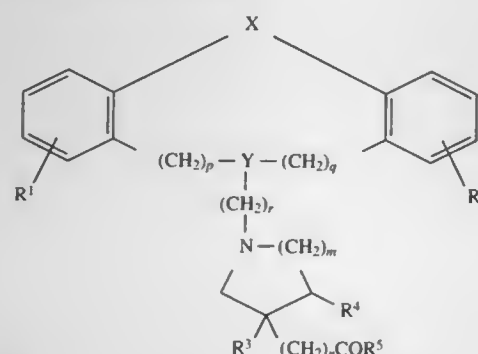
HETEROCYCLIC COMPOUNDS

Tine Krogh Jørgensen, Herlev; Knud Erik Andersen, Smørum; Henrik Sune Andersen, København; Rolf Hohlweg, Kvistgaard; Peter Madsen, Bagsvaerd, and Uffe Bang Olsen, Valensbæk, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 623,807, Mar. 29, 1996, Pat. No. 5,698,551. This application May 27, 1997, Ser. No. 863,257
Claims priority, application Denmark, Apr. 7, 1995, 0403/95; Sep. 11, 1995, 1006/95

Int. Cl.⁶ A61K 31/445; C07D 211/60; 327/08; 339/00
U.S. Cl. 514—325 18 Claims

1. A compound of formula I



wherein

R¹ and R² independently are hydrogen, halogen, trifluoromethyl, hydroxy, C₁₋₆-alkyl or C₁₋₆-alkoxy;

Y is —CH=CH—CH₂—, —CH₂—C=CH—, —CH₂—CH—CH₂—, —CH₂—C=CH—, —CH=CH—CH₂—, —O—CH—CH₂—, —CH₂—CH—O—, —S—CH—CH₂— or —CH₂—CH—S— wherein only the underscored atoms participate in the ring system;

X is —O—, —S—, —C(R⁶R⁷)—, —CH₂CH₂—, —CH=CH—CH₂—, —CH₂—CH=CH—, —CH₂—(C=O)—, —(C=O)—CH₂—, —CH₂CH₂CH₂—, —CH=CH—, —O—CH₂—, —CH₂—O—, —S—CH₂—, —CH₂—S—, —(C=O)—, or —(S=O)— wherein R⁶ and R⁷ independently are hydrogen or C₁₋₆-alkyl;

q is 0 or 1;

p is 0 or 1;

r is 1, 2 or 3;

m is 1 or 2;

n is 1 when m is 1 and n is 0 when m is 2;

R³ and R⁴ each represents hydrogen or may—when m is 2—together represent a bond; and

R⁵ is —OH or C₁₋₆-alkoxy; or

a pharmaceutically acceptable salt thereof.

5,780,487

S-2'-[2-(1-METHYL-2-PIPERIDYL) ETHYL] CINNAMANILIDE

Moh. Samir Amer, 877 Sandpoint Rd., Carpinteria, Calif. 93013

Continuation-in-part of Ser. No. 512,235, Aug. 7, 1995, Pat. No. 5,605,902. This application Feb. 28, 1997, Ser. No. 810,503

Int. Cl.⁶ A61K 31/445; C07D 211/32
U.S. Cl. 514—331 19 Claims
1. S-[2-(o-aminophenethyl)-1-methylpiperidine-dibenzoyl-L-tartrate salt] (S-APEMP-DBLT).

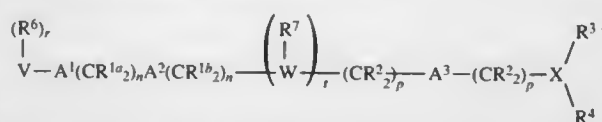
5,780,488

INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

Jeffrey Bergman, Telford, and Christopher Dinsmore, Schwenksville, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 26, 1997, Ser. No. 824,588
Int. Cl.⁶ C07D 233/54; 213/02; A61K 31/44; 31/415
U.S. Cl. 514—357 31 Claims

1. A compound represented by formula I:



or a pharmaceutically acceptable salt thereof, wherein:

R^{1a}, R^{1b} and R² are independently selected from the group consisting of: hydrogen, aryl, heterocyclyl, C₃—C₁₀ cycloalkyl, C₂—C₆ alkenyl, C₂—C₆ alkynyl, R⁸O—, R⁸S(O)_m—, (R⁸)₂NC(O)—, R⁸C(O)NR⁸—, CN, NO₂, (R⁸)₂NC(NR⁸)—, R⁸C(O)—, R⁸OC(O)—, N₃, —N(R⁸)₂, R⁹OC(O)NR⁸— and C₁—C₆ alkyl, unsubstituted or substituted by 1–3 groups selected from the group consisting of: halo, aryl, heterocyclyl, C₃—C₁₀ cycloalkyl, C₂—C₆ alkenyl, C₂—C₆ alkynyl, R⁸O—, R⁸S(O)_m—, R⁸C(O)NR⁸—, CN, (R⁸)₂NC(NR⁸)—, R⁸C(O)—, R⁸OC(O)—, N₃, —N(R⁸)₂, and R⁹OC(O)NR⁸—;

R³ and R⁴ are independently selected from the group consisting of: H, F, Cl, Br, —NR⁸, CF₃, NO₂, R⁸O—, R⁸S(O)_m—, (R⁸)₂NC(O)—, R⁸C(O)NH—, H₂NC(NH)—, R⁸C(O)—, R⁸OC(O)—, N₃, CN, R⁹OC(O)NR⁸—, C₁—C₂₀ alkyl, substituted or unsubstituted aryl and substituted or unsubstituted heterocyclyl;

A³ is selected from: —NR⁸S(O)_m— or —S(O)_mNR⁸—, with m equal to 0, 1 or 2, and R⁵ selected from the group consisting of: hydrogen, unsubstituted or substituted aryl, unsubstituted or substituted heterocyclyl, unsubstituted or substituted C₃—C₁₀ cycloalkyl, and C₁—C₆ alkyl, unsubstituted or substituted with 1–3 members selected from the group consisting of: unsubstituted or substituted aryl, unsubstituted or substituted heterocyclyl, unsubstituted or substituted C₃—C₁₀ cycloalkyl, —N(R⁸)₂, —CF₃, —NO₂, (R⁸)O—, (R⁸)S(O)_m—, (R⁸)C(O)NH—, H₂NC(NH)—, (R⁸)C(O)—, (R⁸)OC(O)—, N₃, CN and (R⁹)OC(O)NR⁸—;

R⁶ and R⁷ are independently selected from the group consisting of: hydrogen, aryl, heterocyclyl, C₃—C₁₀ cycloalkyl, C₂—C₆ alkenyl, C₂—C₆ alkynyl, C₁₋₆ perfluoroalkyl, F, Cl, Br, R⁸O—, R⁸S(O)_m—, R⁸C(O)NR⁸—, CN, NO₂, (R⁸)₂NC(NR⁸)—, R⁸C(O)—, R⁸OC(O)—, N₃, —N(R⁸)₂, R⁹OC(O)NR⁸— and C₁—C₆ alkyl unsubstituted or substituted by 1–3 groups selected from: aryl, heterocyclyl, C₃—C₁₀ cycloalkyl, C₂—C₆ alkenyl, C₂—C₆ alkynyl, perfluoroalkyl, F, Cl, Br, R⁸O—, R⁸S(O)_m—, R⁸C(O)NR⁸—, CN, (R⁸)₂NC(NR⁸)—, R⁸C(O)—, R⁸OC(O)—, N₃, —N(R⁸)₂ and R⁹OC(O)NR⁸—;

each R⁸ is independently selected from hydrogen, C₁—C₆ alkyl, aryl and aralkyl;

each R⁹ is independently selected from C₁—C₆ alkyl and aryl; A¹ and A² are independently selected from the group consisting of: a bond, —CH=CH—, —C≡C—, —C(O)—, —C(O)NR⁸—, —NR⁸C(O)—, —O—, —N(R⁸)—, —S(O)₂N(R⁸)—, —N(R⁸)S(O)₂—, and S(O)_m—;

X represents aryl or heteroaryl;

V is selected from the group consisting of: hydrogen, heterocyclyl, aryl, C₁—C₂₀ alkyl wherein from 0 to 4 carbon atoms are replaced with a heteroatom selected from O, S, and N, and C₂—C₂₀ alkenyl, provided that V is not hydrogen if A¹ is S(O)_m and V is not hydrogen if A¹ is a bond, n is 0 and A² is S(O)_m;

W represents heterocyclyl;

each n and p independently represents 0, 1, 2, 3 or 4; r is 0 to 5, provided that r is 0 when V is hydrogen, and t is 1.

5,780,489

METHOD FOR TREATING AMYOTROPHIC LATERAL SCLEROSIS

Benjamin Rix Brooks, 4818 Fond Du Lac Trail, Madison, Wis. 53705

Filed Aug. 21, 1996, Ser. No. 697,157
Int. Cl.⁶ A01N 43/78

U.S. Cl. 514—369 22 Claims

1. A method for treating a patient having amyotrophic lateral sclerosis which comprises administering to the patient an effective amount of a non-cysteine glutathione precursor so as to increase the intracellular glutathione levels and alleviate a symptom of amyotrophic lateral sclerosis.

5,780,490

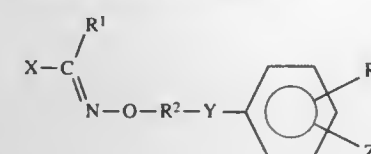
OXIME DERIVATIVES, THEIR PREPARATION AND THEIR THERAPEUTIC USE

Hiroaki Yanagisawa; Takashi Fujita; Koichi Fujimoto; Takao Yoshioka; Kunio Wada; Minoru Oguchi; Toshihiko Fujiwara, and Hiroyoshi Horikoshi, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan
Division of Ser. No. 539,541, Oct. 5, 1995, Pat. No. 5,703,096.
This application Jun. 18, 1997, Ser. No. 878,219

Claims priority, application Japan, Oct. 7, 1994, 6-243876; Jun. 2, 1995, 7-136788

Int. Cl.⁶ A61K 31/425; C07D 277/04
U.S. Cl. 514—369 50 Claims

1. A compound of formula (I):



wherein:

R¹ represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms;

R² represents an alkylene group having from 2 to 6 carbon atoms; R³ represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, an alkylthio group having from 1 to 4 carbon atoms, a halogen atom, a nitro group, an amino group, a monoalkylamino group having from 1 to 4 carbon atoms, a dialkylamino group whose alkyl groups are the same or different and each has from 1 to 4 carbon atoms, an aryl group having from 6 to 10 carbon atoms in a carbocyclic ring which is unsubstituted or is substituted by at least one of the following substituents α, or an aralkyl group in which an alkyl group having from 1 to 4 carbon atoms is substituted by an aryl group as defined above;

X represents an aryl group having from 6 to 10 carbon atoms in a carbocyclic ring which is unsubstituted or is substituted by at least one of the following substituents α,

said substituents α are selected from the group consisting of:

alkyl groups having from 1 to 6 carbon atoms; halogenated alkyl groups having from 1 to 4 carbon atoms; hydroxy groups; acyloxy groups having from 1 to 4 carbon atoms; alkoxy groups having from 1 to 4 carbon atoms; alkylenedioxy groups having from 1 to 4 carbon atoms; aralkyloxy groups in which an alkoxy group having from 1 to 4 carbon atoms is substituted by an aryl group having from 6 to 10 carbon atoms in a carbocyclic ring which is unsubstituted or is substituted by at least one of the following substituents β; alkylthio groups having from 1 to 4 carbon atoms; alkylsulfonyl groups having from 1 to 4 carbon atoms; halogen atoms; nitro groups; amino groups; monoalkylamino groups having from 1 to 4 carbon atoms;

dialkylamino groups, whose alkyl groups are the same or different and each is an alkyl group having from 1 to 4 carbon atoms;

aryl groups in which an alkyl group having from 1 to 4 carbon atoms is substituted by an aryl group having from 6 to 10 carbon atoms in a carbocyclic ring which is unsubstituted or is substituted by at least one of the following substituents β;

aryl groups having from 6 to 10 carbon atoms in a carbocyclic ring which is unsubstituted or is substituted by at least one of the following substituents β;

aryloxy groups in which the aryl part has from 6 to 10 carbon atoms in a carbocyclic ring which is unsubstituted or is substituted by at least one of the following substituents β;

arylthio groups in which the aryl part has from 6 to 10 carbon atoms in a carbocyclic ring which is unsubstituted or is substituted by at least one of the following substituents β;

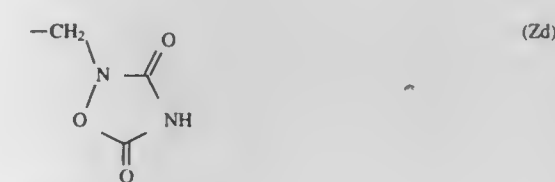
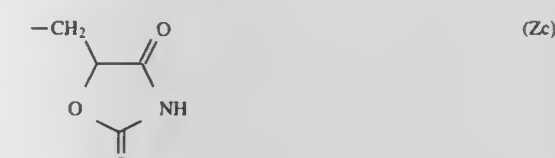
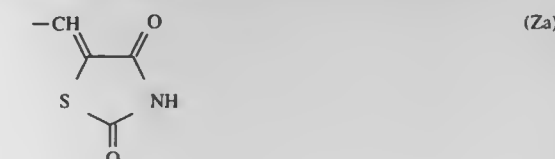
arylsulfonyl groups in which the aryl part has from 6 to 10 carbon atoms in a carbocyclic ring which is unsubstituted or is substituted by at least one of the following substituents β;

arylsulfonylamino groups in which the aryl part has from 6 to 10 carbon atoms in a carbocyclic ring which is unsubstituted or is substituted by at least one of the following substituents β, and in which the nitrogen atom is unsubstituted or is substituted by an alkyl group having from 1 to 6 carbon atoms;

said substituents β are selected from the group consisting of alkyl groups having from 1 to 6 carbon atoms, halogenated alkyl groups having from 1 to 4 carbon atoms, alkoxy groups having from 1 to 4 carbon atoms, halogen atoms, and alkylenedioxy groups having from 1 to 4 carbon atoms;

Y represents an oxygen atom, a sulfur atom or a group of formula >N—R⁴, in which R⁴ represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or an acyl group having from 1 to 8 carbon atoms; and

Z represents a group of formula (Za), (Zb), (Zc) or (Zd):



and salts thereof.

5,780,491

Patent Not Issued For This Number

5,780,492

INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE
Christopher J. Dinsmore, North Wales, and Theresa M. Williams, Harleysville, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

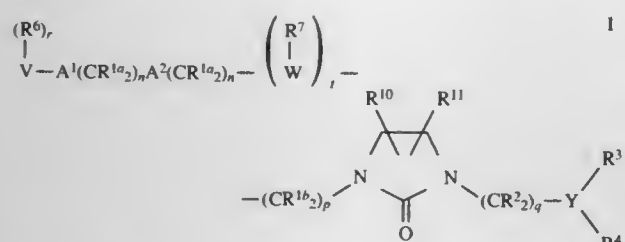
Filed Mar. 27, 1997, Ser. No. 826,317

Int. Cl.⁶ A61K 31/415; C07D 403/06; 403/08; 403/10; 403/02; 233/61

U.S. Cl. 514—397

26 Claims

1. A compound which inhibits farnesyl-protein transferase of the formula I:



wherein:

R^{1a}, R^{1b} and R² are independently selected from:

- hydrogen,
 - aryl, heterocycle, C₃-C₁₀ cycloalkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, R⁵O—, R⁵S(O)_m—, R⁵C(O)NR⁸—, CN, NO₂, (R⁵)₂N—C(NR⁸)—, R⁵C(O)—, R⁵OC(O)—, N₃, —N(R⁸)₂, or R⁵OC(O)NR⁸—,
 - C₁-C₆ alkyl unsubstituted or substituted by aryl, heterocyclic, C₃-C₁₀ cycloalkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, R⁵O—, R⁵S(O)_m—, R⁵C(O)NR⁸—, CN, (R⁵)₂N—C(NR⁸)—, R⁵C(O)—, R⁵OC(O)—, N₃, —N(R⁸)₂, or R⁵OC(O)NR⁸—;
- R³ and R⁴ are independently selected from F, Cl, Br, N(R⁸)₂, CF₃, NO₂, (R⁵)O—, (R⁵)S(O)_m—, (R⁵)C(O)NH—, H₂N—C(NH)—, (R⁵)C(O)—, (R⁵)OC(O)—, N₃, CN, CF₃(CH₂)_nO—, (R⁵)OC(O)NR⁸—, C₁-C₂₀ alkyl, substituted or unsubstituted aryl and substituted or unsubstituted heterocycle;

R⁶ is independently selected from:

- hydrogen,
- aryl, heterocycle, C₃-C₁₀ cycloalkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, perfluoroalkyl, F, Cl, Br, R⁵O—, R⁵S(O)_m—, R⁵C(O)NR⁸—, CN, NO₂, R⁵N—C(NR⁸)—, R⁵C(O)—, R⁵OC(O)—, N₃, —N(R⁸)₂, or R⁵OC(O)NR⁸—, and
- C₁-C₆ alkyl unsubstituted or substituted by aryl, heterocycle, C₃-C₁₀ cycloalkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, perfluoroalkyl, F, Cl, Br, R⁵O—, R⁵S(O)_m—, R⁵C(O)NH—, CN, H₂N—C(NH)—, R⁵C(O)—, R⁵OC(O)—, N₃, —N(R⁸)₂, or R⁵OC(O)NR⁸—;

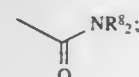
R⁷ is selected from:

- hydrogen,
- C₂-C₆ alkenyl, C₂-C₆ alkynyl, perfluoroalkyl, F, Cl, Br, R⁵O—, R⁵S(O)_m—, R⁵C(O)NR⁸—, CN, NO₂, (R⁵)₂N—C(NR⁸)—, R⁵C(O)—, R⁵OC(O)—, N₃, —N(R⁸)₂, or R⁵OC(O)NR⁸—, and
- C₁-C₆ alkyl unsubstituted or substituted by perfluoroalkyl, F, Cl, Br, R⁵O—, R⁵S(O)_m—, R⁵C(O)NR⁸—, CN, (R⁵)₂N—C(NR⁸)—, R⁵C(O)—, R⁵OC(O)—, N₃, —N(R⁸)₂, or R⁵OC(O)NR⁸—;

R⁸ is independently selected from hydrogen, C₁-C₆ alkyl, benzyl and aryl;

R⁹ is independently selected from C₁-C₆ alkyl and aryl;

R¹⁰ and R¹¹ are independently selected from: H;

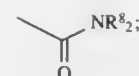


or

C₁₋₅ alkyl, unbranched or branched, unsubstituted or substituted with one or more of:

- aryl,
- heterocycle,
- OR⁸,

- SR⁹, SO₂R⁹, or
-



A¹ and A² are independently selected from: a bond, —CH=CH—, —C≡C—, —C(O)—, —C(O)NR⁸—, —NR⁸C(O)—, O, —N(R⁸)—, —S(O)₂N(R⁸)—, —N(R⁸)S(O)₂—, or S(O)_m;

V is selected from:

- hydrogen,
- heterocycle,
- aryl,
- C₁-C₂₀ alkyl wherein from 0 to 4 carbon atoms are replaced with a heteroatom selected from O, S, and N, and
- C₂-C₂₀ alkenyl,

provided that V is not hydrogen if A¹ is S(O)_m and V is not hydrogen if A² is a bond, n is 0 and A² is S(O)_m;

W is a heterocycle;

Y is aryl or heteroaryl;

m is 0, 1 or 2;

n is 0, 1, 2, 3 or 4;

p is 0, 1, 2, 3 or 4;

q is 0, 1, 2, 3 or 4;

r is 0 to 5, provided that r is 0 when V is hydrogen; and

t is 0 or 1;

provided that when W is imidazolyl, then the substituent (R⁶)—V—A¹(CR^{1a})_nA²(CR^{1a})_n— is not H, C₁-C₆ alkyl or a nitrogen protecting group;

or a pharmaceutically acceptable salt thereof.

8. A pharmaceutical composition comprising a pharmaceutical carrier, and dispersed therein, a therapeutically effective amount of a compound of claim 1.

12. A method for inhibiting farnesyl-protein transferase which comprises administering to a mammal in need thereof a therapeutically effective amount of a composition of claim 8.

5,780,493

AMPA ANTAGONISTS AND METHOD OF TREATMENT THEREWITH

Frank Watjen, Herlev, and Jorgen Drejer, Vaerlose, both of Denmark, assignors to NeuroSearch A/S, Glostrup, Denmark

PCT No. PCT/EP94/01492, § 371 Date Jan. 4, 1996, § 102(e) Date Jan. 4, 1996, PCT Pub. No. WO94/26747, PCT Pub. Date Nov. 24, 1994

Continuation of Ser. No. 545,763, Jan. 4, 1996, abandoned.

This PCT application May 9, 1994, Ser. No. 951,821

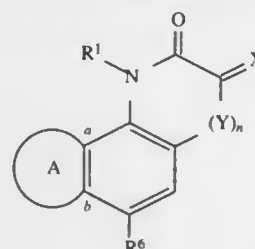
Claims priority, application Denmark, May 13, 1993, 0558/93; Feb. 2, 1994, 0138/94

Int. Cl.⁶ A61K 31/40; 31/44; C07D 487/02; 401/00

U.S. Cl. 514—411

11 Claims

1. A compound selected from those having the formula



and a pharmaceutically-acceptable salt thereof wherein

R¹ is hydrogen or alkyl;

X is O or NOR², wherein R² is hydrogen or alkyl;

Y is N—R⁴ wherein R⁴ is hydrogen, OH, or alkyl;

n is 0;

R⁶ is

phenyl,
naphthyl,
thienyl, or
pyridyl,

all of which may be substituted one or more times with a substituent selected from the group consisting of halogen, CF₃, NO₂, amino, alkyl, alkoxy, and phenyl;

A is a ring of five to seven atoms fused with the benzo ring at the positions marked a and b, and formed by one of the following bivalent radicals;

- NR¹²—CH₂—CH₂—b
- CH₂—CH₂—NR¹²—b
- CH₂—NR¹²—CH₂—b
- CH₂—CH₂—NR¹²—CH₂—b
- CH₂—NR¹²—CH₂—CH₂—b
- CH₂—CH₂—CH₂—NR¹²—b
- NR¹²—CH₂—CH₂—CH₂—b
- CH₂—CH₂—NR¹²—CH₂—CH₂—b
- CH₂—CH₂—CH₂—NR¹²—CH₂—b
- CH₂—NR¹²—CH₂—CH₂—CH₂—b
- CH₂—CH₂—CH₂—CH₂—NR¹²—b
- NR¹²—CH₂—CH₂—CH₂—CH₂—b,

wherein

R¹² is hydrogen or alkyl.

5,780,494

PIPERIDINYL-TERMINATED ALKYLAMINO ETHYNYL ALANINE AMINO DIOL COMPOUNDS FOR TREATMENT OF HYPERTENSION

Gunnar J. Hanson, Skokie, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

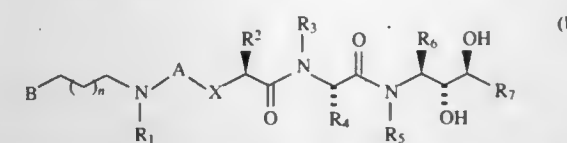
Continuation of Ser. No. 671,425, Jun. 27, 1996, abandoned, which is a continuation of Ser. No. 339,114, Nov. 14, 1994, abandoned. This application Apr. 23, 1997, Ser. No. 841,536

Int. Cl.⁶ A61K 31/405; 31/40; C07D 209/08; 207/06

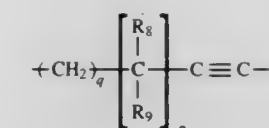
U.S. Cl. 514—412

26 Claims

1. A compound of Formula I:



wherein A is selected from CO and SO₂; wherein X is selected from oxygen atom and methylene; wherein R₁ is selected from hydrido and alkyl; wherein B is a heterocyclic ring system of five to ten ring members with one ring member being a nitrogen atom that is a member of a five-membered ring and there are no other azabicyclic ring systems having more than five ring members, wherein said ring system may be monocyclic or bicyclic and may be fully saturated or partially saturated and may be fused to a benzene or cyclohexane ring, wherein the point of attachment of B to the backbone of the structure of Formula I is through a bond to any substitutable position on said heterocyclic ring system of B and wherein any substitutable position of B is optionally substituted with one or more radicals selected from alkyl, alkoxy, alkenyl, halo, trifluoromethyl, oxo, cyano and phenyl, and wherein the said heterocyclic ring nitrogen atom may be combined with oxygen to form an N-oxide; wherein R₂ is selected from alkyl, cycloalkylalkyl, acylaminoalkyl, phenylalkyl and naphthylalkyl, and wherein the cyclic portion of any of said phenylalkyl, cycloalkylalkyl and naphthylalkyl groups may be substituted by one or more radicals selected from halo, hydroxy, alkoxy and alkyl; wherein each of R₃ and R₄ is independently selected from hydrido and alkyl; wherein R₄ is selected from



wherein V is selected from hydrido, alkyl, benzyl and phenyl; wherein each of R₈ and R₉ is a radical independently selected from hydrido, alkyl, alkenyl and phenyl; wherein R₆ is selected from alkyl, cycloalkylalkyl and phenylalkyl, any one of which may be substituted with one or more groups selected from alkyl, hydroxy and alkoxy; wherein R₇ is selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, hydroxyalkyl and alkenyl; wherein p is a number selected from zero through five, inclusive; wherein q is a number selected from zero through five, inclusive; and wherein n is a number selected from zero through five, inclusive; or a pharmaceutically-acceptable salt thereof.

5,780,495

NITRIC ESTERS HAVING ANTI-INFLAMMATORY AND/OR ANALGESIC ACTIVITY AND PROCESS FOR THEIR PREPARATION

Piero Del Soldato, Monza, Italy, assignor to Nicox S.A., Paris, France

Division of Ser. No. 624,508, Apr. 5, 1996, Pat. No. 5,700,947.

This application Jul. 29, 1997, Ser. No. 902,570

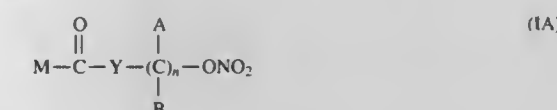
Claims priority, application United Kingdom, Oct. 6, 1993, 9320599; Italy, May 10, 1994, MI94A000916

Int. Cl.⁶ A61K 31/40; C07D 209/10

U.S. Cl. 514—413

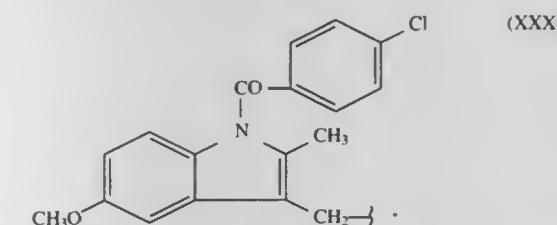
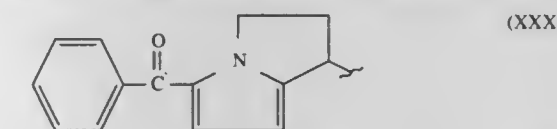
9 Claims

1. Compounds of, 1-(p-chlorobenzoyl)-5-methoxy-2-methyl-3-indolylacetic acid, and 5-benzoyl-1,2-dihydro-3H-pyrrolo[1,2-a]pyrrole-1-carboxylic acid, which have the following general formula:



where:

A and B are chosen from hydrogen, linear or branched, substituted or non substituted alkyl chains, M is chosen from:



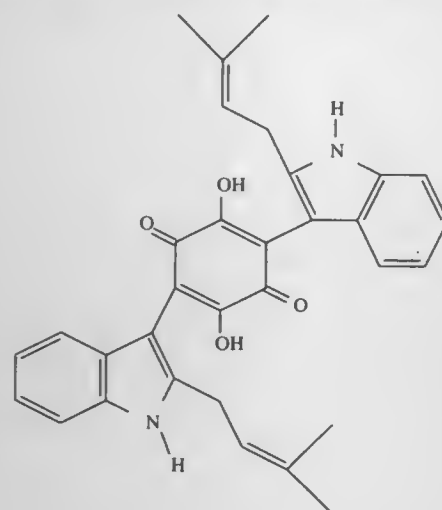
Y is chosen among oxygen, NH, NR₁, where R₁ is a linear or branched alkyl group, and n is an integer from 1 and 10.

5,780,496

METHOD AND COMPOSITIONS FOR INHIBITION OF
ADAPTOR PROTEIN/TYROSINE KINASE
INTERACTIONSPeng Cho Tang, Moraga; Gerald McMahon, and G. Davis
Harris, both of San Francisco, all of Calif., assignors to
Sugen, Inc., Redwood City, Calif.Continuation-in-part of Ser. No. 476,136, Jun. 7, 1995. This
application Jun. 5, 1996, Ser. No. 658,337Int. Cl.⁶ A61K 31/40; C07D 209/04

U.S. Cl. 514—414

27 Claims

1. A pharmaceutical composition suitable for administration to
humans which comprises the compound of the formula:or a pharmaceutically salt thereof; and a pharmaceutically accept-
able carrier.

5,780,497

2-PHENYL-1-[4-(AMINO-1-YL-ALK-1-YNYL)-BENZYL]-
1H-INDOL-5-OLS AS ESTROGENIC AGENTSChris P. Miller, Strafford; Michael D. Collini, Clifton Heights,
and Bach D. Tran, Media, all of Pa., assignors to American
Home Products Corporation, Madison, N.J.

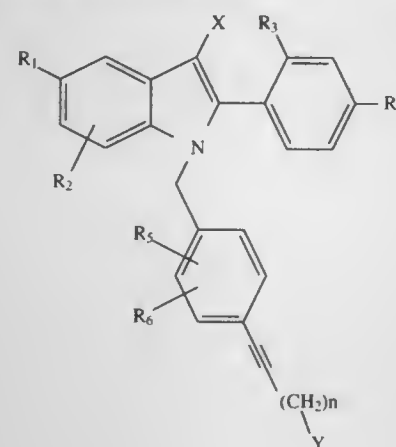
Filed Apr. 14, 1997, Ser. No. 832,701

Int. Cl.⁶ A61K 31/40; 31/405; 31/445; 31/41; 31/425; 31/415; C07D
209/04; 209/02

U.S. Cl. 514—414

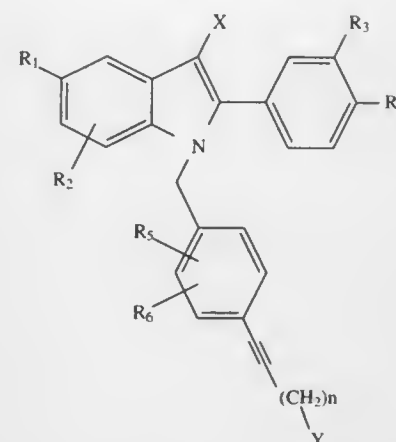
10 Claims

1. A compound having the structure:



or

-continued



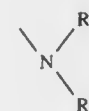
wherein:

R₁ is selected from H, OH, the C₁-C₄ esters or alkyl ethers
thereof or halogen;R₂, R₃, R₄, R₅, and R₆ are independently selected from H, OH or
the C₁-C₄ esters or alkyl ethers thereof, halogen, cyano,
C₁-C₆ alkyl, or trifluoromethyl, with the proviso that, when
R₁ is H, R₂ is not OH;X is selected from H, C₁-C₆ alkyl, cyano, nitro, trifluoromethyl,
or halogen;

n is 2 or 3;

Y is selected from:

a) the moiety:

wherein R₇ and R₈ are independently selected from the
group of H, C₁-C₆ alkyl, phenyl; orb) a five-membered saturated, unsaturated or partially unsat-
urated heterocycle containing up to two heteroatoms
selected from the group consisting of —O—, —NH—,
—N(C₁C₄ alkyl)—, —N=, and —S(O)_m—, wherein m is an
integer of from 0-2, optionally substituted with 1-3 sub-
stituents independently selected from the group consisting
of hydrogen, hydroxyl, halo, C₁-C₄ alkyl, trihalomethyl,
C₁-C₄ alkoxy, trihalomethoxy, C₁-C₄ acyloxy, C₁-C₄ alky-
lthio, C₁-C₄ alkylsulfinyl, C₁-C₄ alkylsulfonyl, hydroxy
(C₁-C₄)alkyl, phenyl optionally substituted with 1-3
(C₁-C₄)alkyl, —CO₂H—, —CN, —CONHR¹, —NH₂, C₁-
C₄ alkylamino, C₁-C₄ dialkylamino, —NHSO₂R¹—,
—NHCOR¹—, —NO₂—;

or a pharmaceutically acceptable salt thereof.

5,780,498

ENDOTHELIN RECEPTOR ANTAGONISTS

Hideyuki Saika, Kobe; Toshiki Murata, Ikoma, both of Japan;
Thomas Pitterna, Basel; Thomas Früh, Magden, both of
Switzerland; Lene D. Svensson, Hellerup, Denmark; Yoshi-
hiro Urade, Nakagyo-ku, Japan; Takaki Yamamura, Nishi-
nomiya, Japan, and Toshikazu Okada, Takarazuka, Japan,
assignors to Ciba-Geigy Japan Limited, Hyogo-ken, Japan
PCT No. PCT/EP94/03418, § 371 Date Apr. 30, 1996, § 102(e)
Date Apr. 30, 1996, PCT Pub. No. WO95/12611, PCT Pub.
Date May 11, 1995

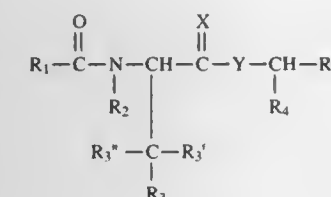
PCT Filed Oct. 17, 1994, Ser. No. 637,720

Claims priority, application European Pat. Off., Nov. 1, 1993,
93810760Int. Cl.⁶ A61K 31/40; 31/47; 31/44; C07D 401/12; 215/38; 209/
12; 333/02; C07C 233/00

U.S. Cl. 514—419

15 Claims

1. A compound of the formula I:



wherein

R₁ is phenyl substituted by halogen or C₁-C₄ alkyl;R₂ is C₁-C₄ alkyl;R₃ is phenyl, biphenyl, naphthyl, thienyl, furyl, tetrazolyl, imi-
dazolyl, pyridyl, quinolyl, pyridyl-phenyl, thienyl-phenyl, furyl-
phenyl, imidazolyl-phenyl or isoxazolyl-phenyl, each of said
radicals being unsubstituted or substituted by a substituent
selected from the group consisting of C₁-C₄ alkyl, C₁-C₄
alkoxy, phenyl-lower alkoxy, halogen, CF₃, hydroxy, cyano,
cyano-C₂-C₅ alkanoyl or nitro;R₃¹ is hydrogen, phenyl or phenyl substituted by C₁-C₄ alkyl;R₃² is hydrogen;

C(=X) is C(=O) or C(=S) and Y is NH or methylene; or

C(=X) is CHOH and Y is methylene;

R₄ is —(CH₂)_s—Ar¹ wherein s is the integer 1 and Ar¹ is phenyl,
naphthyl, biphenyl, indol-3-yl, 1-C₁-C₄-alkyl-indol-3-yl or
quinolyl, each of said radicals being unsubstituted or substi-
tuted by a substituent selected from the group consisting of
C₁-C₄ alkyl, C₁-C₄ alkoxy, halogen, CF₃, hydroxy or nitro; and
R₅ is carboxy;

or a pharmaceutically acceptable salt thereof.

5,780,499

Patent Not Issued For This Number

5,780,500

ANTI-NEURODEGENERATIVELY ACTIVE

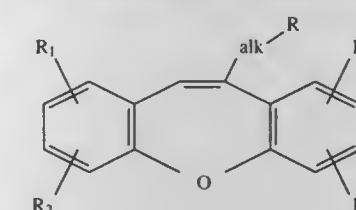
10-AMINOALIPHATYL-DIBENZI [B,F] OXEPINES

Claudia Betschart, Takarazuka, Japan, and Kaspar Zimmer-
mann, Riehen, Switzerland, assignors to Novartis Corpora-
tion, Summit, N.J.Division of Ser. No. 594,215, Jan. 31, 1996, abandoned. This
application Apr. 18, 1997, Ser. No. 844,135Claims priority, application Switzerland, Feb. 8, 1995, 367/
95Int. Cl.⁶ A61K 31/335; C07D 313/14

U.S. Cl. 514—450

4 Claims

1. A 10-aminoalipharyl-dibenz[b,f]oxepine of formula I



(I)

wherein

alk is a divalent aliphatic radical,

R is an amino group that is mono or di-substituted by monova-
lent aliphatic groups at least one monovalent radical being a
substituted or unsubstituted lower alkynyl group, andR₁, R₂, R₃ and R₄ are each, independently of the others, hydro-
gen, lower alkyl, lower alkoxy, halogen or trifluoromethyl
or a salt thereof.

5,780,501

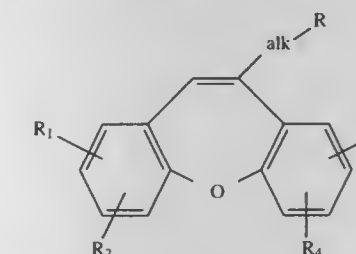
TREATMENT METHOD USING ANTI-
NEURODEGENERATIVELY ACTIVE

10-AMINOALIPHATYL-DIBENZI [B,F] OXEPINES

Claudia Betschart, Takarazuka, Japan, and Kaspar Zimmer-
mann, Riehen, Switzerland, assignors to Novartis Corpora-
tion, Summit, N.J.Division of Ser. No. 594,215, Jan. 31, 1996, abandoned. This
application Jul. 8, 1997, Ser. No. 889,769Claims priority, application Switzerland, Feb. 8, 1995, 367/
95Int. Cl.⁶ A61K 31/335

U.S. Cl. 514—450

2 Claims

1. A method of treating neurodegenerative disease, which com-
prises administering an anti-neurodegeneratively effective amount
of a compound of formula I

wherein

alk is a divalent aliphatic radical,

R is an amino group that is mono- or di-substituted by monova-
lent aliphatic at least one monovalent radical being a substi-
tuted or unsubstituted lower alkynyl group, andR₁, R₂, R₃ and R₄ are each, independently of the others, hydro-
gen, lower alkyl, lower alkoxy, halogen or trifluoromethyl,
or a pharmaceutically acceptable salt thereof to a warm-blooded
organism in need of such treatment.

5,780,502

USE OF 3,4-DIPHENYL CHROMANS FOR THE
MANUFACTURE OF A PHARMACEUTICAL
COMPOSITION FOR INHIBITING ONE OR MORE
SYMPTOMS OF PREMENSTRUAL SYNDROME

Birgitte Hjort Guldhammer, Hillerød, Denmark, assignor to
Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Jul. 8, 1997, Ser. No. 889,670

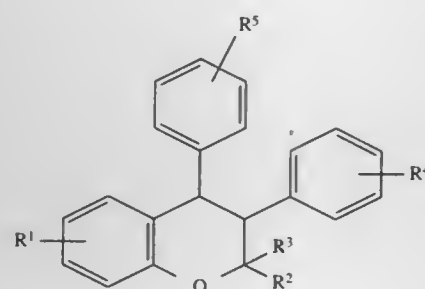
Claims priority, application Denmark, Jul. 12, 1996, 0784/96
Int. Cl.⁶ A61K 31/35; 31/40

U.S. Cl. 514—456

16 Claims

1. A method of inhibiting one or more symptoms of premenstrual syndrome comprising administering to a patient in need thereof a clinically effective amount of a compound of formula I

(I)



wherein R¹, R⁴ and R⁵ are individually hydrogen, hydroxy, halo, trifluoromethyl, C₁₋₆ alkyl, C₁₋₆ alkoxy or (tertiary amino)(C₁₋₆ alkoxy), and R² and R³ are individually hydrogen or C₁₋₆ alkyl; or a pharmaceutically acceptable salt thereof.

5,780,503

COMPOUNDS AND METHODS FOR THE TREATMENT
OF CARDIOVASCULAR, INFLAMMATORY AND
IMMUNE DISORDERS

Tesfaye Biftu, Belmont; Ralph Scannell, Hopkinton; Xiong Cai, Framingham, and Sajjat Hussain, Lexington, all of Mass., assignors to Cytomed, Inc., Cambridge, Mass.

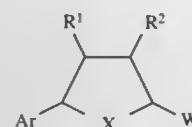
Continuation of Ser. No. 265,656, Jun. 27, 1994. This application Jun. 7, 1995, Ser. No. 474,444

Int. Cl.⁶ A61K 31/34; 31/38; 31/47; 31/44

U.S. Cl. 514—471

6 Claims

1. The method for the treatment of inflammatory disorders in a host, comprising administering an effective amount of a compound of the formula:



wherein:

Ar is an aryl or heteroaryl group that is optionally substituted with at least one group selected from the group consisting of halo, lower alkoxy, lower aryloxy, W, cyano, or R³ but when W is -A-B, Ar is substituted at least once with -AN(OM)C(O)N(R³)R⁴, -AN(R³)C(O)N(OM)R⁴, -AN(OM)C(O)R⁴ or -AC(O)N(OM)R⁴, and is optionally substituted with halo, lower alkoxy, lower aryloxy, A-B, cyano, or R³;

W is independently -AN(OM)C(O)N(R³)R⁴, -AN(R³)C(O)N(OM)R⁴, -AN(OM)C(O)R⁴, or -AC(O)N(OM)R⁴, or where R is a straight chain C₂ to C₁₈ alkyl group.

-AC(O)N(OM)R⁴, or -A-B; but when W is -A-B, Ar is substituted at least once with -AN(OM)C(O)N(R³)R⁴, -AN(R³)C(O)N(OM)R⁴, -AN(OM)C(O)R⁴, or -AC(O)N(OM)R⁴, and is optionally substituted with halo, lower alkoxy, lower aryloxy, A-B, cyano, or R³;

A is lower alkynyl, wherein one or more carbons optionally can be replaced by O, N, or S; (with valence completed with hydrogen or oxygen as necessary), provided -A- does not form two adjacent heteroatoms;

B is selected from the group consisting of pyridylimidazole and benzimidazole, either of which is optionally substituted with R₃;

M is hydrogen, a pharmaceutically acceptable cation, or a metabolically cleavable leaving group;

X is O, S, S(O), NR⁵, or CHR⁵;

R¹ and R² are independently hydrogen, lower alkyl; C₃₋₈ cycloalkyl, halo lower alkyl, halo; and -COOH;

R³ and R⁴ are independently hydrogen or alkyl, alkenyl, alkynyl, aryl, aralkyl, alkaryl, C₁₋₆ alkoxy-C₁₋₁₀ alkyl, C₁₋₆ alkylthio-C₁₋₁₀ alkyl, heteroaryl, or heteroarylalkyl; and

R⁵ is hydrogen, lower alkyl, lower alkenyl, lower alkynyl, alkaryl, -AN(OM)C(O)N(R³)R⁴, -AN(R³)C(O)N(OM)R⁴, -AN(OM)C(O)R⁴, -AC(O)N(OM)R⁴, -AS(O)_nR³, -AS(O)_nCH₂C(O)R³, -AS(O)_nCH₂CH(OH)R³, AC(O)NHR³; wherein n is 0-2, or

(b) the compound of (a), wherein Ar is selected from the group consisting of pyridyl, dimethoxypyridyl, quinolyl, 3-quinolyl, furyl, imidazolyl, and thienyl;

X is selected from O, CH₂, S and NH;

R¹ and R² are hydrogen; and

W is selected from -C≡CCH₂N(OH)C(O)NH₂, and -C≡CCH(CH₃)N(OH)C(O)NH₂, or a pharmaceutically acceptable salt thereof,

with the proviso that Ar is not phenyl optionally substituted with at least one group selected from the group consisting of halo, lower alkoxy, lower aryloxy, W, cyano or R³.

5,780,504

TOPICAL ALKYL-2-O-L-ASCORBYL-PHOSPHATES

Dmitri Ptchelintsev, Mahwah, N.J., assignor to Avon Products, Inc., New York, N.Y.

Continuation of Ser. No. 487,957, Apr. 7, 1995, Pat. No.

5,602,968. This application Feb. 28, 1997, Ser. No. 808,251

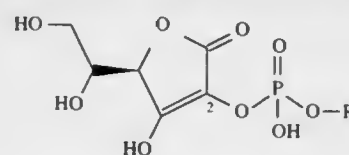
The portion of the term of this patent subsequent to Jun. 7, 2015, has been disclaimed.

Int. Cl.⁶ A01N 43/08; A61K 31/34

U.S. Cl. 514—474

11 Claims

1. A topical composition comprising a suitable topical vehicle and a compound having the following structure or a salt thereof:



5,780,505

SUBSTITUTED N-ARYLMETHYLAMINO DERIVATIVES
OF CYCLOBUTENE-3, 4-DIONES

Madelene M. Antane, Lawrenceville, N.J.; David R. Herbst, Wayne, Pa.; Geraldine R. McFarlane, Monmouth Junction; Eric G. Gundersen, Plainsboro, both of N.J.; Bradford H. Hirth, Littleton, Mass.; Dominick A. Quagliato, Bridgewater, N.J.; Russell F. Graceffa, Plainsboro, N.J., and John A. Butera, Clarksburg, N.J., assignors to American Home Products Corporation, Madison, N.J.

Filed Jul. 7, 1997, Ser. No. 889,166

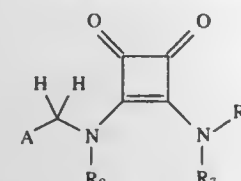
Int. Cl.⁶ A61K 31/275

U.S. Cl. 514—522

35 Claims

1. A compound of the formula

(I)

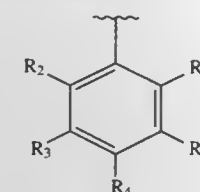


wherein:

R₁ is straight chain alkyl of 1 to 10 carbon atoms, branched chain alkyl of 3 to 10 carbon atoms, cycloalkyl of 3 to 10 carbon atoms, hydroxyalkyl of 2 to 10 carbon atoms, fluoroalkyl of 1 to 10 carbon atoms or polyfluoroalkyl of 1 to 10 carbon atoms;

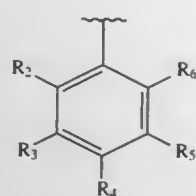
R₇ and R₈ are, independently, hydrogen or an acyl substituent selected from the group consisting of formyl, alkanoyl of 2 to 7 carbon atoms, alkenoyl of 3 to 7 carbon atoms, straight chain alkoxycarbonyl of 2 to 11 carbon atoms, branched chain alkoxycarbonyl of 4 to 11 carbon atoms, cycloalkoxycarbonyl of 4 to 11 carbon atoms, alkenoxycarbonyl of 2 to 11 carbon atoms, aralkoxycarbonyl of 6 to 12 carbon atoms, alkylsulfonyl of 1 to 7 carbon atoms, aroyl of 7 to 12 carbon atoms, arylalkenoyl of 9 to 20 carbon atoms, arylsulfonyl of 6 to 12 carbon atoms, arylalkanoyl of 8 to 12 carbon atoms or arylalkylsulfonyl of 7 to 12 carbon atoms; with the proviso that when R₈ is straight chain alkoxycarbonyl of 2 to 11 carbon atoms, branched chain alkoxycarbonyl of 4 to 11 carbon atoms, cycloalkoxycarbonyl of 4 to 11 carbon atoms, alkenoxycarbonyl of 2 to 11 carbon atoms or aralkoxycarbonyl of 6 to 12 carbon atoms, R₇ must be hydrogen;

A is a phenyl group with either two or three substituents of the following formula:



wherein:

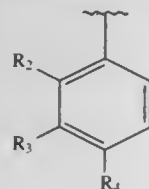
the positions of substitution are R₂, R₃, R₄, R₅, R₆, R₇, R₈, R₉, R₁₀, R₁₁, R₁₂, R₁₃, R₁₄, R₁₅, R₁₆, R₁₇, R₁₈, R₁₉, R₂₀, R₂₁, R₂₂, R₂₃, R₂₄, R₂₅, R₂₆, R₂₇, R₂₈, R₂₉, R₃₀, R₃₁, R₃₂, R₃₃, R₃₄, R₃₅, R₃₆, R₃₇, R₃₈, R₃₉, R₄₀, R₄₁, R₄₂, R₄₃, R₄₄, R₄₅, R₄₆, R₄₇, R₄₈, R₄₉, R₅₀, R₅₁, R₅₂, R₅₃, R₅₄, R₅₅, R₅₆, R₅₇, R₅₈, R₅₉, R₆₀, R₆₁, R₆₂, R₆₃, R₆₄, R₆₅, R₆₆, R₆₇, R₆₈, R₆₉, R₇₀, R₇₁, R₇₂, R₇₃, R₇₄, R₇₅, R₇₆, R₇₇, R₇₈, R₇₉, R₈₀, R₈₁, R₈₂, R₈₃, R₈₄, R₈₅, R₈₆, R₈₇, R₈₈, R₈₉, R₉₀, R₉₁, R₉₂, R₉₃, R₉₄, R₉₅, R₉₆, R₉₇, R₉₈, R₉₉, R₁₀₀, R₁₀₁, R₁₀₂, R₁₀₃, R₁₀₄, R₁₀₅, R₁₀₆, R₁₀₇, R₁₀₈, R₁₀₉, R₁₁₀, R₁₁₁, R₁₁₂, R₁₁₃, R₁₁₄, R₁₁₅, R₁₁₆, R₁₁₇, R₁₁₈, R₁₁₉, R₁₂₀, R₁₂₁, R₁₂₂, R₁₂₃, R₁₂₄, R₁₂₅, R₁₂₆, R₁₂₇, R₁₂₈, R₁₂₉, R₁₃₀, R₁₃₁, R₁₃₂, R₁₃₃, R₁₃₄, R₁₃₅, R₁₃₆, R₁₃₇, R₁₃₈, R₁₃₉, R₁₄₀, R₁₄₁, R₁₄₂, R₁₄₃, R₁₄₄, R₁₄₅, R₁₄₆, R₁₄₇, R₁₄₈, R₁₄₉, R₁₅₀, R₁₅₁, R₁₅₂, R₁₅₃, R₁₅₄, R₁₅₅, R₁₅₆, R₁₅₇, R₁₅₈, R₁₅₉, R₁₆₀, R₁₆₁, R₁₆₂, R₁₆₃, R₁₆₄, R₁₆₅, R₁₆₆, R₁₆₇, R₁₆₈, R₁₆₉, R₁₇₀, R₁₇₁, R₁₇₂, R₁₇₃, R₁₇₄, R₁₇₅, R₁₇₆, R₁₇₇, R₁₇₈, R₁₇₉, R₁₈₀, R₁₈₁, R₁₈₂, R₁₈₃, R₁₈₄, R₁₈₅, R₁₈₆, R₁₈₇, R₁₈₈, R₁₈₉, R₁₉₀, R₁₉₁, R₁₉₂, R₁₉₃, R₁₉₄, R₁₉₅, R₁₉₆, R₁₉₇, R₁₉₈, R₁₉₉, R₂₀₀, R₂₀₁, R₂₀₂, R₂₀₃, R₂₀₄, R₂₀₅, R₂₀₆, R₂₀₇, R₂₀₈, R₂₀₉, R₂₁₀, R₂₁₁, R₂₁₂, R₂₁₃, R₂₁₄, R₂₁₅, R₂₁₆, R₂₁₇, R₂₁₈, R₂₁₉, R₂₂₀, R₂₂₁, R₂₂₂, R₂₂₃, R₂₂₄, R₂₂₅, R₂₂₆, R₂₂₇, R₂₂₈, R₂₂₉, R₂₃₀, R₂₃₁, R₂₃₂, R₂₃₃, R₂₃₄, R₂₃₅, R₂₃₆, R₂₃₇, R₂₃₈, R₂₃₉, R₂₄₀, R₂₄₁, R₂₄₂, R₂₄₃, R₂₄₄, R₂₄₅, R₂₄₆, R₂₄₇, R₂₄₈, R₂₄₉, R₂₅₀, R₂₅₁, R₂₅₂, R₂₅₃, R₂₅₄, R₂₅₅, R₂₅₆, R₂₅₇, R₂₅₈, R₂₅₉, R₂₆₀, R₂₆₁, R₂₆₂, R₂₆₃, R₂₆₄, R₂₆₅, R₂₆₆, R₂₆₇, R₂₆₈, R₂₆₉, R₂₇₀, R₂₇₁, R₂₇₂, R₂₇₃, R₂₇₄, R₂₇₅, R₂₇₆, R₂₇₇, R₂₇₈, R₂₇₉, R₂₈₀, R₂₈₁, R₂₈₂, R₂₈₃, R₂₈₄, R₂₈₅, R₂₈₆, R₂₈₇, R₂₈₈, R₂₈₉, R₂₉₀, R₂₉₁, R₂₉₂, R₂₉₃, R₂₉₄, R₂₉₅, R₂₉₆, R₂₉₇, R₂₉₈, R₂₉₉, R₃₀₀, R₃₀₁, R₃₀₂, R₃₀₃, R₃₀₄, R₃₀₅, R₃₀₆, R₃₀₇, R₃₀₈, R₃₀₉, R₃₁₀, R₃₁₁, R₃₁₂, R₃₁₃, R₃₁₄, R₃₁₅, R₃₁₆, R₃₁₇, R₃₁₈, R₃₁₉, R₃₂₀, R₃₂₁, R₃₂₂, R₃₂₃, R₃₂₄, R₃₂₅, R₃₂₆, R₃₂₇, R₃₂₈, R₃₂₉, R₃₃₀, R₃₃₁, R₃₃₂, R₃₃₃, R₃₃₄, R₃₃₅, R₃₃₆, R₃₃₇, R₃₃₈, R₃₃₉, R₃₄₀, R₃₄₁, R₃₄₂, R₃₄₃, R₃₄₄, R₃₄₅, R₃₄₆, R₃₄₇, R₃₄₈, R₃₄₉, R₃₅₀, R₃₅₁, R₃₅₂, R₃₅₃, R₃₅₄, R₃₅₅, R₃₅₆, R₃₅₇, R₃₅₈, R₃₅₉, R₃₆₀, R₃₆₁, R₃₆₂, R₃₆₃, R₃₆₄, R₃₆₅, R₃₆₆, R₃₆₇, R₃₆₈, R₃₆₉, R₃₇₀, R₃₇₁, R₃₇₂, R₃₇₃, R₃₇₄, R₃₇₅, R₃₇₆, R₃₇₇, R₃₇₈, R₃₇₉, R₃₈₀, R₃₈₁, R₃₈₂, R₃₈₃, R₃₈₄, R₃₈₅, R₃₈₆, R₃₈₇, R₃₈₈, R₃₈₉, R₃₉₀, R₃₉₁, R₃₉₂, R₃₉₃, R₃₉₄, R₃₉₅, R₃₉₆, R₃₉₇, R₃₉₈, R₃₉₉, R₄₀₀, R₄₀₁, R₄₀₂, R₄₀₃, R₄₀₄, R₄₀₅, R₄₀₆, R₄₀₇, R₄₀₈, R₄₀₉, R₄₁₀, R₄₁₁, R₄₁₂, R₄₁₃, R₄₁₄, R₄₁₅, R₄₁₆, R₄₁₇, R₄₁₈, R₄₁₉, R₄₂₀, R₄₂₁, R₄₂₂, R₄₂₃, R₄₂₄, R₄₂₅, R₄₂₆, R₄₂₇, R₄₂₈, R₄₂₉, R₄₃₀, R₄₃₁, R₄₃₂, R₄₃₃, R₄₃₄, R₄₃₅, R₄₃₆, R₄₃₇, R₄₃₈, R₄₃₉, R₄₄₀, R₄₄₁, R₄₄₂, R₄₄₃, R₄₄₄, R₄₄₅, R₄₄₆, R₄₄₇, R₄₄₈, R₄₄₉, R₄₅₀, R₄₅₁, R₄₅₂, R₄₅₃, R₄₅₄, R₄₅₅, R₄₅₆, R₄₅₇, R₄₅₈, R₄₅₉, R₄₆₀, R₄₆₁, R₄₆₂, R₄₆₃, R₄₆₄, R₄₆₅, R₄₆₆, R₄₆₇, R₄₆₈, R₄₆₉, R₄₇₀, R₄₇₁, R₄₇₂, R₄₇₃, R₄₇₄, R₄₇₅, R₄₇₆, R₄₇₇, R₄₇₈, R₄₇₉, R₄₈₀, R₄₈₁, R₄₈₂, R₄₈₃, R₄₈₄, R₄₈₅, R₄₈₆, R₄₈₇, R₄₈₈, R₄₈₉, R₄₉₀, R₄₉₁, R₄₉₂, R₄₉₃, R₄₉₄, R₄₉₅, R₄₉₆, R₄₉₇, R₄₉₈, R₄₉₉, R₅₀₀, R₅₀₁, R₅₀₂, R₅₀₃, R₅₀₄, R₅₀₅, R₅₀₆, R₅₀₇, R₅₀₈, R₅₀₉, R₅₁₀, R₅₁₁, R₅₁₂, R₅₁₃, R₅₁₄, R₅₁₅, R₅₁₆, R₅₁₇, R₅₁₈, R₅₁₉, R₅₂₀, R₅₂₁, R₅₂₂, R₅₂₃, R₅₂₄, R₅₂₅, R₅₂₆, R₅₂₇, R₅₂₈, R₅₂₉, R₅₃₀, R₅₃₁, R₅₃₂, R₅₃₃, R₅₃₄, R₅₃₅, R₅₃₆, R₅₃₇, R₅₃₈, R₅₃₉, R₅₄₀, R₅₄₁, R₅₄₂, R₅₄₃, R₅₄₄, R₅₄₅, R₅₄₆, R₅₄₇, R₅₄₈, R₅₄₉, R₅₅₀, R₅₅₁, R₅₅₂, R₅₅₃, R₅₅₄, R₅₅₅, R₅₅₆, R₅₅₇, R₅₅₈, R₅₅₉, R₅₆₀, R₅₆₁, R₅₆₂, R₅₆₃, R₅₆₄, R₅₆₅, R₅₆₆, R₅₆₇, R₅₆₈, R₅₆₉, R₅₇₀, R₅₇₁, R₅₇₂, R₅₇₃, R₅₇₄, R₅₇₅, R₅₇₆, R₅₇₇, R₅₇₈, R₅₇₉, R₅₈₀, R₅₈₁, R₅₈₂, R₅₈₃, R₅₈₄, R₅₈₅, R₅₈₆, R₅₈₇, R₅₈₈, R₅₈₉, R₅₉₀, R₅₉₁, R₅₉₂, R₅₉₃, R₅₉₄, R₅₉₅, R₅₉₆, R₅₉₇, R₅₉₈, R₅₉₉, R₆₀₀, R₆₀₁, R₆₀₂, R₆₀₃, R₆₀₄, R₆₀₅, R₆₀₆, R₆₀₇, R₆₀₈, R₆₀₉, R₆₁₀, R₆₁₁, R₆₁₂, R₆₁₃, R₆₁₄, R₆₁₅, R₆₁₆, R₆₁₇, R₆₁₈, R₆₁₉, R₆₂₀, R₆₂₁, R₆₂₂, R₆₂₃, R₆₂₄, R₆₂₅, R₆₂₆, R₆₂₇, R₆₂₈, R₆₂₉, R₆₃₀, R₆₃₁, R₆₃₂, R₆₃₃, R₆₃₄, R₆₃₅, R₆₃₆, R₆₃₇, R₆₃₈, R₆₃₉, R₆₄₀, R₆₄₁, R₆₄₂, R₆₄₃, R₆₄₄, R₆₄₅, R₆₄₆, R₆₄₇, R₆₄₈, R₆₄₉, R₆₅₀, R₆₅₁, R₆₅₂, R₆₅₃, R₆₅₄, R₆₅₅, R₆₅₆, R₆₅₇, R₆₅₈, R₆₅₉, R₆₆₀, R₆₆₁, R₆₆₂, R₆₆₃, R₆₆₄, R₆₆₅



wherein:

the positions of substitution are R_2, R_3, R_4, R_5, R_6 , R_3, R_4, R_5 , and R_2, R_4, R_5 positions and R_2 is methyl, ethyl or chloro; R_3 is methyl ethyl or chloro; R_4 is methyl, bromo or cyano; R_5 is cyano, chloro, or methyl; R_6 is methyl or chloro; or a pharmaceutically acceptable salt thereof; or, wherein

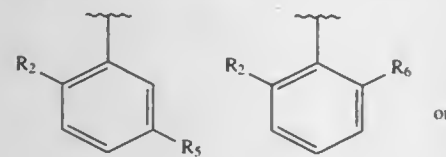
R_1 is straight chain alkyl of 1 to 10 carbon atoms, branched chain alkyl of 3 to 10 carbon atoms, fluoroalkyl of 1 to 10 carbon atoms or perfluoroalkyl of 1 to 10 carbon atoms; R_7 and R_8 are, independently, hydrogen, alkanoyl of 2 to 7 carbon atoms, alkenoyl of 3 to 7 carbon atoms, aroyl of 7 to 12 carbon atoms, arylalkenyl of 9 to 20 carbon atoms; straight chain alkoxy carbonyl of 2 to 7 carbon atoms, branched chain alkoxy carbonyl of 4 to 7 carbon atoms, alkenoxy carbonyl of 4 to 7 carbon atoms, or aralkoxy carbonyl of 6 to 12 carbon atoms; with the proviso that when R_8 is straight chain alkoxy carbonyl of 2 to 7 carbon atoms, branched chain alkoxy carbonyl of 4 to 7 carbon atoms, alkenoxy carbonyl of 4 to 7 carbon atoms, or aralkoxy carbonyl of 6 to 12 carbon atoms, R_7 must be hydrogen; A is a group of the formula:



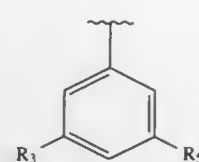
where the substitutional variations are at position combinations R_2, R_4 or R_3, R_4 and

R_2 is trifluoromethyl, fluoro or chloro; R_3 is fluoro or chloro; R_4 is fluoro; or a pharmaceutically acceptable salt thereof; or wherein

R_1 is straight chain alkyl of 1 to 10 carbon atoms, branched chain alkyl of 3 to 10 carbon atoms, fluoroalkyl of 1 to 10 carbon atoms or perfluoroalkyl of 1 to 10 carbon atoms; R_7 and R_8 are, independently, hydrogen, alkanoyl of 2 to 7 carbon atoms, alkenoyl of 3 to 7 carbon atoms, aroyl of 7 to 12 carbon atoms, arylalkenyl of 9 to 20 carbon atoms; straight chain alkoxy carbonyl of 2 to 7 carbon atoms, branched chain alkoxy carbonyl of 4 to 7 carbon atoms, alkenoxy carbonyl of 4 to 7 carbon atoms, or aralkoxy carbonyl of 6 to 12 carbon atoms; with the proviso that when R_8 is straight chain alkoxy carbonyl of 2 to 7 carbon atoms, branched chain alkoxy carbonyl of 4 to 7 carbon atoms, alkenoxy carbonyl of 4 to 7 carbon atoms, or aralkoxy carbonyl of 6 to 12 carbon atoms, R_7 must be hydrogen; A is a group of the formula:



-continued



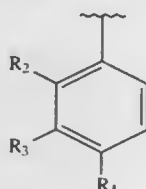
where the substitutional variations are at position combinations R_2, R_5 , R_2, R_6 or R_3, R_5 and

R_2 is methyl, fluoro or chloro; R_3 is fluoro; R_5 is fluoro or trifluoromethyl; R_6 is fluoro; or a pharmaceutically acceptable salt thereof; or where

R_1 is a straight chain alkyl of 1 to 10 carbon atoms; branched chain alkyl of 3 to 10 carbon atoms or fluoroalkyl of 1 to 10 carbon atoms; R_7 is hydrogen;

R_8 is hydrogen, alkanoyl of 2 to 7 carbon atoms or alkenoyl of 3 to 7 carbon atoms, straight chain alkoxy carbonyl of 3 or 5 carbon atoms, branched chain alkoxy carbonyl of 5 carbon atoms, alkenoxy carbonyl of 4 carbon atoms, or aralkoxy carbonyl of 8 carbon atoms;

A is a phenyl group with either two or three substituents of the following formula, in which the positions of substitution are R_2, R_3, R_4, R_5 or R_2, R_4, R_6 :



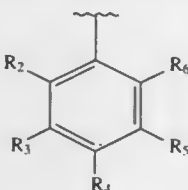
where

R_2 is methyl, ethyl or chloro; R_3 is methyl or chloro; R_4 is methyl, bromo or cyano; R_6 is methyl or chloro; or a pharmaceutically acceptable salt thereof; or where

R_1 is a straight chain alkyl of 1 to 10 carbon atoms, branched chain alkyl of 3 to 10 carbon atoms or fluoroalkyl of 1 to 10 carbon atoms; R_7 is hydrogen;

R_8 is hydrogen, alkanoyl of 2 to 7 carbon atoms or alkenoyl of 3 to 7 carbon atoms, straight chain alkoxy carbonyl of 3 or 5 carbon atoms, branched chain alkoxy carbonyl of 5 carbon atoms, alkenoxy carbonyl of 4 carbon atoms, or aralkoxy carbonyl of 8 carbon atoms;

A is a phenyl group with either two or three substituents of the following formula, in which the positions of substitution are R_3, R_4, R_5, R_6 , R_2, R_5 , or R_2, R_6 :



where

R_2 is methyl or chloro; R_3 is methyl, ethyl or chloro; R_4 is cyano or methyl; R_5 is cyano, chloro, or methyl; R_6 is methyl or chloro; or a pharmaceutically acceptable salt thereof.

5,780,506

PHENYLACETIC ACID DERIVATIVES, AND USE AS FUNGICIDES

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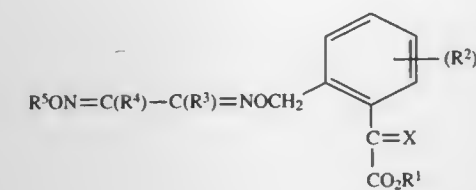
PCT No. PCT/EP95/00013, § 371 Date Jul. 31, 1996, § 102(e) Date Jul. 31, 1996, PCT Pub. No. WO95/21153, PCT Pub. Date Aug. 10, 1995

PCT Filed Jan. 3, 1995, Ser. No. 682,760

Claims priority, application Germany, Feb. 4, 1994, 44 03 447.4; Jun. 17, 1994, 44 21 480.5

Int. Cl.⁶ A61K 31/215; 31/19; C07C 229/56; C07D 239/34 U.S. Cl. 514—538 9 Claims

1. A phenylacetic acid derivative of the formula



where the substituents and the index have the following meanings:

X is NOCH_3 , CHOCH_3 , CHCH_3 , or CHCH_2CH_3 ;

R^1 is hydrogen or $\text{C}_1\text{--C}_4$ alkyl;

R^2 is cyano, nitro, trifluoromethyl, halogen, $\text{C}_1\text{--C}_4$ alkyl or $\text{C}_1\text{--C}_4$ alkoxy;

m is 0, 1 or 2, it being possible for the R^2 radicals to be different if m is 2;

R^3 is hydrogen, cyano, nitro, hydroxyl, amino, halogen, $\text{C}_1\text{--C}_4$ alkyl, $\text{C}_1\text{--C}_4$ haloalkyl, $\text{C}_1\text{--C}_4$ alkoxy, $\text{C}_1\text{--C}_4$ haloalkoxy, $\text{C}_1\text{--C}_4$ alkylthio; $\text{C}_1\text{--C}_4$ alkylamino or di- $\text{C}_1\text{--C}_4$ alkylamino;

R^4 is hydrogen, cyano, nitro, hydroxyl, amino, halogen, $\text{C}_1\text{--C}_6$ alkyl, $\text{C}_1\text{--C}_6$ alkoxy, $\text{C}_1\text{--C}_6$ alkylthio, $\text{C}_1\text{--C}_6$ alkylamino, di- $\text{C}_1\text{--C}_6$ alkylamino, $\text{C}_2\text{--C}_6$ alkenyloxy, $\text{C}_2\text{--C}_6$ alkenylthio, $\text{C}_2\text{--C}_6$ alkenylamino, $\text{N--C}_2\text{--C}_6$ alkenyl- $\text{N--C}_1\text{--C}_6$ alkylamino, $\text{C}_2\text{--C}_6$ alkynyl, $\text{C}_2\text{--C}_6$ alkynylthio, $\text{C}_2\text{--C}_6$ alkynylamino, $\text{N--C}_2\text{--C}_6$ alkynyl- $\text{N--C}_1\text{--C}_6$ alkylamino, it being possible for the hydrocarbon radicals of these groups to be partly or completely hydrogenated or to carry one to three of the following radicals: cyano, nitro, hydroxyl, mercapto, amino, carboxyl, aminocarbonyl, aminothiocarbonyl, halogen, $\text{C}_1\text{--C}_6$ alkylaminocarbonyl, di- $\text{C}_1\text{--C}_6$ alkylaminocarbonyl, $\text{C}_1\text{--C}_6$ alkylaminothiocarbonyl, di- $\text{C}_1\text{--C}_6$ alkylaminothiocarbonyl, $\text{C}_1\text{--C}_6$ alkylsulfonyl, $\text{C}_1\text{--C}_6$ alkylsulfoxyl, $\text{C}_1\text{--C}_6$ alkoxy, $\text{C}_1\text{--C}_6$ haloalkoxy, $\text{C}_1\text{--C}_6$ alkoxy carbonyl, $\text{C}_1\text{--C}_6$ alkylthio, $\text{C}_1\text{--C}_6$ alkylamino, di- $\text{C}_1\text{--C}_6$ alkylamino, $\text{C}_2\text{--C}_6$ alkenyloxy, $\text{C}_3\text{--C}_6$ cycloalkyl, $\text{C}_3\text{--C}_6$ cycloalkoxy, heterocyclyl, heterocyclyloxy, aryl, aryloxy, aryl- $\text{C}_1\text{--C}_4$ alkoxy, arylthio, aryl- $\text{C}_1\text{--C}_4$ alkylthio, hetaryl, hetaryloxy, hetaryl- $\text{C}_1\text{--C}_4$ alkoxy, hetarylthio, hetaryl- $\text{C}_1\text{--C}_4$ alkylthio, it being possible for the cyclic radicals in turn to be partly or completely halogenated or to carry one to three of the following groups: cyano, nitro, hydroxyl, mercapto,

amino, carboxyl, aminocarbonyl, aminothiocarbonyl, $\text{C}_1\text{--C}_6$ alkyl, $\text{C}_1\text{--C}_6$ haloalkyl, $\text{C}_1\text{--C}_6$ alkylsulfonyl, $\text{C}_1\text{--C}_6$ alkylsulfoxyl, $\text{C}_3\text{--C}_6$ cycloalkyl, $\text{C}_1\text{--C}_6$ alkoxy, $\text{C}_1\text{--C}_6$ haloalkoxy, $\text{C}_1\text{--C}_6$ alkoxy carbonyl, $\text{C}_1\text{--C}_6$ alkylthio, $\text{C}_1\text{--C}_6$ alkylamino, di- $\text{C}_1\text{--C}_6$ alkylamino, $\text{C}_1\text{--C}_6$ alkylaminocarbonyl, di- $\text{C}_1\text{--C}_6$ alkylaminocarbonyl, $\text{C}_1\text{--C}_6$ alkylaminothiocarbonyl, di- $\text{C}_1\text{--C}_6$ alkylaminothiocarbonyl, $\text{C}_2\text{--C}_6$ alkenyl, $\text{C}_2\text{--C}_6$ alkenyloxy, benzyl, benzyloxy, aryl, aryloxy, arylthio, hetaryl, hetaryloxy, hetarylthio and $\text{C}(=\text{NOR}^6)\text{--R}^7$;

$\text{C}_3\text{--C}_6$ cycloalkyl, $\text{C}_3\text{--C}_6$ cycloalkoxy, $\text{C}_3\text{--C}_6$ cycloalkylthio, $\text{C}_3\text{--C}_6$ cycloalkylamino, $\text{N--C}_3\text{--C}_6$ cycloalkyl- $\text{N--C}_1\text{--C}_6$ alkylamino, $\text{C}_3\text{--C}_6$ cycloalkenyl, $\text{C}_3\text{--C}_6$ cycloalkenyloxy, $\text{C}_3\text{--C}_6$ cycloalkenylthio, $\text{C}_3\text{--C}_6$ cycloalkenylamino, $\text{N--C}_3\text{--C}_6$ cycloalkenyl- $\text{N--C}_1\text{--C}_6$ alkylamino, heterocyclyl, heterocyclyloxy, heterocyclylthio, heterocyclylamino, $\text{N--heterocyclyl-}\text{N--C}_1\text{--C}_6$ alkylamino, aryl, aryloxy, arylthio, arylamino, $\text{N--aryl-}\text{N--C}_1\text{--C}_6$ alkylamino, hetaryl, hetaryloxy, hetarylthio, hetarylamino, $\text{N--hetaryl-}\text{N--C}_1\text{--C}_6$ alkylamino, it being possible for the cyclic radicals to be partly or completely halogenated or to carry one to three of the following groups: cyano, nitro, hydroxyl, mercapto, amino, carboxyl, aminocarbonyl, aminothiocarbonyl, halogen, $\text{C}_1\text{--C}_6$ alkyl, $\text{C}_1\text{--C}_6$ haloalkyl, $\text{C}_1\text{--C}_6$ alkylsulfonyl, $\text{C}_1\text{--C}_6$ alkylsulfoxyl, $\text{C}_3\text{--C}_6$ cycloalkyl, $\text{C}_1\text{--C}_6$ alkoxy, $\text{C}_1\text{--C}_6$ haloalkoxy, $\text{C}_1\text{--C}_6$ alkoxy carbonyl, $\text{C}_1\text{--C}_6$ alkylthio, $\text{C}_1\text{--C}_6$ alkylamino, di- $\text{C}_1\text{--C}_6$ alkylamino, $\text{C}_1\text{--C}_6$ alkylaminocarbonyl, di- $\text{C}_1\text{--C}_6$ alkylaminocarbonyl, $\text{C}_1\text{--C}_6$ alkylaminothiocarbonyl, di- $\text{C}_1\text{--C}_6$ alkylaminothiocarbonyl, $\text{C}_2\text{--C}_6$ alkenyl, $\text{C}_2\text{--C}_6$ alkenyloxy, benzyl, benzyloxy, aryl, aryloxy, hetaryl and hetaryloxy;

R^5 is hydrogen,

$\text{C}_1\text{--C}_{10}$ alkyl, $\text{C}_3\text{--C}_6$ cycloalkyl, $\text{C}_2\text{--C}_{10}$ alkenyl, $\text{C}_2\text{--C}_{10}$ alkynyl, $\text{C}_1\text{--C}_{10}$ alkylcarbonyl, $\text{C}_2\text{--C}_{10}$ alkenylcarbonyl, $\text{C}_3\text{--C}_{10}$ alkynylcarbonyl or $\text{C}_1\text{--C}_{10}$ alkylsulfonyl, it being possible for these radicals to be partly or completely halogenated or to carry one to three of the following groups: cyano, nitro, hydroxyl, mercapto, amino, carboxyl, aminocarbonyl, aminothiocarbonyl, halogen, $\text{C}_1\text{--C}_6$ alkyl, $\text{C}_1\text{--C}_6$ haloalkyl, $\text{C}_1\text{--C}_6$ alkylsulfonyl, $\text{C}_1\text{--C}_6$ alkylsulfoxyl, $\text{C}_1\text{--C}_6$ alkoxy, $\text{C}_1\text{--C}_6$ haloalkoxy, $\text{C}_1\text{--C}_6$ alkoxy carbonyl, $\text{C}_1\text{--C}_6$ alkylthio, $\text{C}_1\text{--C}_6$ alkylamino, di- $\text{C}_1\text{--C}_6$ alkylamino, $\text{C}_1\text{--C}_6$ alkylaminocarbonyl, di- $\text{C}_1\text{--C}_6$ alkylaminocarbonyl, $\text{C}_1\text{--C}_6$ alkylaminothiocarbonyl, di- $\text{C}_1\text{--C}_6$ alkylaminothiocarbonyl, $\text{C}_2\text{--C}_6$ alkenyl, $\text{C}_2\text{--C}_6$ alkenyloxy, $\text{C}_3\text{--C}_6$ cycloalkyl, $\text{C}_3\text{--C}_6$ cycloalkoxy, heterocyclyl, heterocyclyloxy, benzyl, benzyloxy, aryl, aryloxy, arylthio, hetaryl, hetaryloxy and hetarylthio, it being possible for the cyclic groups in turn to be partly or completely halogenated or to carry one to three of the following groups: cyano, nitro, hydroxyl, mercapto, amino, carboxyl, aminocarbonyl, aminothiocarbonyl, halogen, $\text{C}_1\text{--C}_6$ alkyl, $\text{C}_1\text{--C}_6$ haloalkyl, $\text{C}_1\text{--C}_6$ alkylsulfonyl, $\text{C}_1\text{--C}_6$ alkylsulfoxyl, $\text{C}_3\text{--C}_6$ cycloalkyl, $\text{C}_1\text{--C}_6$ alkoxy, $\text{C}_1\text{--C}_6$ haloalkoxy, $\text{C}_1\text{--C}_6$ alkoxy carbonyl, $\text{C}_1\text{--C}_6$ alkylthio, $\text{C}_1\text{--C}_6$ alkylamino, di- $\text{C}_1\text{--C}_6$ alkylamino, $\text{C}_1\text{--C}_6$ alkylaminocarbonyl, di- $\text{C}_1\text{--C}_6$ alkylaminocarbonyl, $\text{C}_1\text{--C}_6$ alkylaminothiocarbonyl, di- $\text{C}_1\text{--C}_6$ alkylaminothiocarbonyl, $\text{C}_2\text{--C}_6$ alkenyl, $\text{C}_2\text{--C}_6$ alkenyloxy, $\text{C}_3\text{--C}_6$ cycloalkyl, $\text{C}_3\text{--C}_6$ cycloalkoxy, heterocyclyl, heterocyclyloxy, benzyl, benzyloxy, aryl, aryloxy, arylthio, hetaryl, hetaryloxy and hetarylthio, it being possible for the cyclic groups in turn to be partly or completely halogenated or to carry one to three of the following groups: cyano, nitro, hydroxyl, mercapto,

alkenyloxy, benzyl, benzyloxy, aryl, aryloxy, arylthio, hetaryl, hetaryloxy, hetarylthio or $C(=NOR^6)-A_n-R^7$; aryl, arylcarbonyl, arylsulfonyl, hetaryl, hetarylcarbonyl or hetarylsulfonyl, it being possible for these radicals to be partly or completely halogenated or to carry one to three of the following groups: cyano, nitro, hydroxyl, mercapto, amino, carboxyl, aminocarbonyl, aminothiocarbonyl, halogen, C_1-C_6 -alkyl, C_1-C_6 -haloalkyl, C_1-C_6 -alkylcarbonyl, C_1-C_6 -alkylsulfonyl, C_1-C_6 -alkylsulfoxy, C_3-C_6 -cycloalkyl, C_1-C_6 -alkoxy, C_1-C_6 -haloalkoxy, C_1-C_6 -alkoxycarbonyl, C_1-C_6 -alkylthio, C_1-C_6 -alkylamino, di- C_1-C_6 -alkylamino, C_1-C_6 -alkylaminocarbonyl, di- C_1-C_6 -alkylaminocarbonyl, C_1-C_6 -alkylaminothiocarbonyl, C_2-C_6 -alkenyloxy, benzyl, benzyloxy, aryl, aryloxy, hetaryl, hetaryloxy or $C(=NOR^6)-A_n-R^7$;

where

A is oxygen, sulfur or nitrogen and where the nitrogen carries hydrogen or C_1-C_6 -alkyl;

n is 0 or 1;

R^6 is hydrogen or C_1-C_6 -alkyl and

R^7 is hydrogen or C_1-C_6 -alkyl, wherein heterocyclyl is a member selected from the group consisting of three- to six-membered, saturated or partly unsaturated mono- or polycyclic heterocycles, which contain one to three heteroatoms selected from a group consisting of oxygen, nitrogen and sulfur; aryl is a member selected from the group consisting of aromatic mono- or polycyclic hydrocarbon radicals; and hetaryl is a member selected from the group consisting of aromatic mono- or polycyclic radicals which, in addition to carbon ring members, contain one to four nitrogen atoms or one to three nitrogen atoms and an oxygen or a sulfur atom or an oxygen or a sulfur atom, where X is not $CHOCH_3$ if R^3 is hydrogen and R^5 is C_1-C_{10} -alkyl, and its salts.

5,780,507

Patent Not Issued For This Number

5,780,508

PHARMACOLOGICAL PREPARATIONS COMPRISING A CYSTINE DERIVATIVE

Carl-Magnus Alexander Andersson; Håkan Sten Axel Bergstrand; Anders Rudolf Hallberg, all of Lund; Bengt Olof Särnstrand, Bjärred, and Anders Per Sigvard Tunek, Malmö, all of Sweden, assignors to Astra Aktiebolag, Södertälje, Sweden

Continuation of Ser. No. 949,648, Dec. 4, 1992, Pat. No. 5,441,976. This application Jun. 1, 1995, Ser. No. 457,004

Claims priority, application Sweden, Jun. 8, 1990, 9002067; Jun. 28, 1990, 9002275

Int. Cl.⁶ A61K 31/195; C07C 321/04

U.S. Cl. 514—562

2 Claims

I. A peroral or parenteral pharmaceutical preparation for the treatment of diseases wherein an immunostimulating substance is effective, consisting essentially of N,N'-diacetyl-L-cystine or a physiologically acceptable salt thereof as active ingredient and a pharmaceutically acceptable carrier.

5,780,509

COMPOUND BEARING TWO, 2,6-DIIODOPHENOL-4-YL GROUPS AND DIAGNOSTIC DRUG FOR IODINE ALLERGY

Yoshiki Sugihara, Tsukuba; Hiroshi Shionoya, Tokorozawa, and Kiyomi Yamatsu, Kamakura, all of Japan, assignors to Muromachi Kagaku Kogyo Kaisha, Ltd., Japan

PCT No. PCT/JP95/00997, § 371 Date Jan. 29, 1997, § 102(e) Date Jan. 29, 1997, PCT Pub. No. WO95/32173, PCT Pub. Date Nov. 30, 1995

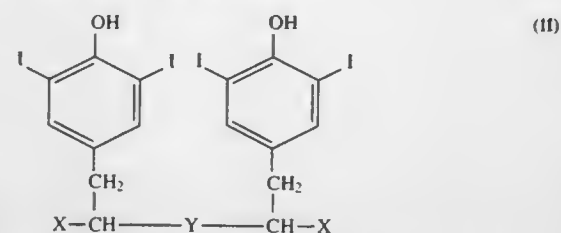
PCT Filed May 24, 1995, Ser. No. 737,625

Claims priority, application Japan, May 24, 1994, 6-109374 Int. Cl.⁶ A61K 31/195; C07C 229/24

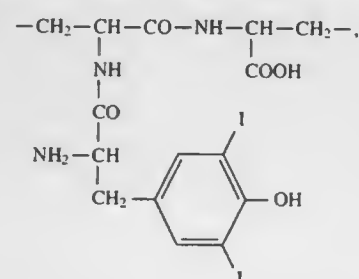
U.S. Cl. 514—563

15 Claims

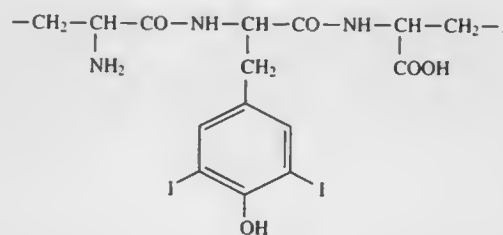
I. A compound having the formula:



wherein X is the same or different and represents an atom or radical of one valence, and Y is



or



5,780,510

2,4-DISULFO PHENYL BUTYL NITRONE, ITS SALTS AND THEIR USE AS PHARMACEUTICALS

John M. Carney, Lexington, Ky., assignor to Oklahoma Medical Research Foundation, Oklahoma City, Okla., and University of Kentucky Research Foundation, Lexington, Ky.

PCT No. PCT/US94/14545, § 371 Date Jun. 19, 1997, § 102(e) Date Jun. 19, 1997, PCT Pub. No. WO95/17876, PCT Pub. Date Jul. 6, 1995

Continuation-in-part of Ser. No. 173,579, Dec. 23, 1993, Pat. No. 5,488,145. This PCT application Dec. 22, 1994, Ser. No. 663,316

Int. Cl.⁶ A61K 31/185

U.S. Cl. 514—576

40 Claims

I. A method for treating a patient who has suffered a concussion comprising administering to said patient an effective concussion treating amount of a pharmaceutical composition comprising the compound 2,4-disulfo alpha-phenyl tertiary butyl nitron in a pharmaceutically acceptable carrier.

5,780,511

Patent Not Issued For This Number

5,780,512

ALKYLATED (HETERO) CYCLIC COMPOUNDS

Daniel Lesieur, Gondecourt; Eric Fourmaintraux, St Martin/Boulogne S/MER; Patrick Depreux, Armentieres; Philippe Delagrang, Issy-les-Moulineaux; Pierre Renard, Versailles, and Béatrice Guardiola-Lemaitre, Saint-Cloud, all of France, assignors to Adir et Compagnie, Courbevoie, France

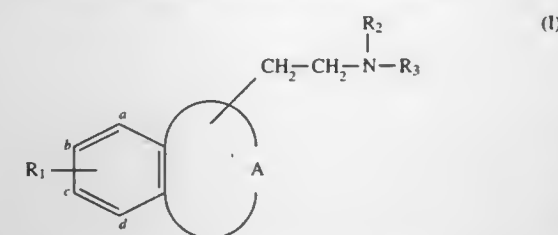
Division of Ser. No. 584,465, Jan. 10, 1996. This application Mar. 26, 1997, Ser. No. 826,340

Claims priority, application France, Jan. 11, 1995, 95.00238 Int. Cl.⁶ A61K 31/165; C07C 233/04

U.S. Cl. 514—624

9 Claims

I. A compound selected from those of formula (I):



in which:

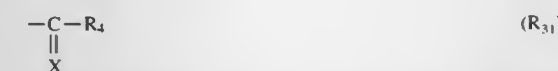
R_1 represents a group chosen from alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, cycloalkylalkyl, and substituted cycloalkylalkyl,

A forms, with the benzene ring to which it is attached, a cyclic group chosen from tetrahydronaphthalene, dihydronaphthalene, and naphthalene,

R_2 represents hydrogen or alkyl,

R_3 represents:

a group R_{31} :



with X representing sulfur or oxygen and R_4 representing a group R_{41} chosen from alkyl, substituted alkyl, alkenyl, alkynyl, cycloalkyl, substituted cycloalkyl, cycloalkylalkyl, and substituted cycloalkylalkyl,

or a group of formula (R_{32}):



with X' representing sulfur or oxygen and R_5 representing hydrogen or group chosen from alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, cycloalkylalkyl, and substituted cycloalkylalkyl,

it being understood that in the description of formula (I), and except where otherwise mentioned: the term "alkyl" denotes a linear or branched group containing 1 to 6 carbon atoms, inclusive, the terms "alkenyl" and "alkynyl" denote linear or branched groups containing 2 to 6 atoms, inclusive, the term "cycloalkyl" denotes a group of 3 to 8 carbon atoms, inclusive, the term "substituted" associated with the alkyl group means that this group is substituted with one or more substituents chosen from halogen, alkyl, hydroxyl, and alkoxy, containing 1 to 6 carbon atoms, inclusive, the term "substituted" associated with the "cycloalkyl" and "cycloalkylalkyl" group means that this group is substituted with one or more groups chosen from halogen, alkyl, and oxo, and the enantiomers and diastereoisomers thereof.

5,780,513

METHOD OF INHIBITING THE RELEASE OF BIOACTIVE IL-1

Michael L. McDaniel; Jeanette R. Hill, and John A. Corbett, all of St. Louis, Mo., assignors to Washington University, St. Louis, Mo.

Filed Aug. 22, 1996, Ser. No. 701,574

Int. Cl.⁶ A61K 31/155

U.S. Cl. 514—634

5 Claims

I. A method for inhibiting IL-1 bioactivity in a individual afflicted with a condition resulting from IL-1 bioactivity released from IL-1 producing cells comprising administering an inhibitory effective amount of aminoguanidine wherein said condition is acute hypotension or acute hypoglycemia induced by endotoxin shock, acute myeloblastic leukemia, chronic myelogenous leukemia, chronic juvenile granulocytic leukemia, progressive degenerative effects of Alzheimer's disease, neuropathological changes in Down's syndrome, or bone degeneration due to estrogen deficiency.

5,780,514

ANTIPROTOZOAL MEDICAMENTS

Winston Edward Gutteridge; Alan Thomas Hudson; Victoria Susan Latter, and Mary Pudney, all of Beckenham, England, assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Division of Ser. No. 335,990, Nov. 8, 1994, Pat. No. 5,559,156, which is a continuation of Ser. No. 104,034, Sep. 30, 1993, Pat. No. 5,561,164. This application Jul. 16, 1996, Ser. No. 680,835

Claims priority, application United Kingdom, Dec. 18, 1991, 9126874

Int. Cl.⁶ A61K 31/12

U.S. Cl. 514—682

20 Claims

I. A method of treating an animal having an infection caused by Leishmania species which comprises administering to said infected animal an effective Leishmania species treatment amount of 2-[4-(4-chlorophenyl)cyclohexyl]-3-hydroxy-1,4-naphthoquinone or a physiologically acceptable salt thereof.

5,780,515

BENZOQUINONE AND HYDROQUINONE DERIVATIVES FOR USE AS INSECT FEEDING DETERRENTS

Don E. Gibbs, Kansas City, Mo., assignor to Rockhurst University, Kansas City, Mo.

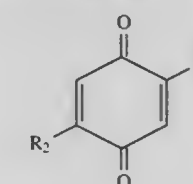
Filed Mar. 20, 1997, Ser. No. 820,841

Int. Cl.⁶ A01N 31/08; 35/00

U.S. Cl. 514—690

36 Claims

I. A method of deterring the feeding activity of insects on plant and crop material comprising the step of: (a) applying to said material an insect feeding deterrent effective amount of an active compound of the formula:



where R_1 is a C_4 or C_5 alkyl group and R_2 is H, OH or a C_4 or C_5 alkyl group.

5,780,516

MATERIAL AND METHODS FOR INHIBITING BACTERIAL CELL WALL BIOSYNTHESIS
Charles M. Allen, and Harry S. Nick, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Filed Mar. 28, 1997, Ser. No. 827,521
Int. Cl.⁶ A61K 31/075

U.S. Cl. 514—715

10 Claims

1. A method for inhibiting bacterial growth which comprises administering to said bacteria an effective amount of a compound which interferes with the enzymatic conversion of undecaprenol to undecaprenyl phosphate.

5,780,517

SOLID LIPOPHILIC COMPOSITION AND PROCESS FOR ITS PREPARATION

Isaac D. Cohen, Brooklyn; Andrew J. Bevacqua, East Setauket; Daniela Toma, Floral Park, and Konstantinos M. Lahanas, No. Babylon, all of N.Y., assignors to Estee Lauder Inc., New York, N.Y.

Division of Ser. No. 365,810, Dec. 29, 1994, Pat. No. 5,610,199, which is a continuation-in-part of Ser. No. 216,151, Mar. 22, 1994, abandoned. This application Jan. 8, 1997, Ser. No. 780,287

Int. Cl.⁶ A61K 31/075;7/42

U.S. Cl. 514—721

6 Claims

1. A method for preparing a solid lipophilic composition comprising the steps of:

- mixing DBMSA with one or more lipophilic materials at a temperature and for a period of time sufficient to dissolve the DBMSA in the lipophilic material;
- mixing a cosmetic material selected from the group consisting of colorants, fragrances, sunscreens, dermatologic agents and mixtures thereof with the admixture of DBMSA and one or more lipophilic materials, the amounts of the materials being adjusted such that the resulting mixture contains from about 1.5% by weight to about 30% by weight DBMSA, from about 70% by weight to about 98.0% by weight of lipophilic material, and from about 0.5% by weight to about 28.5% by weight of cosmetic material; and
- cooling the mixture to ambient temperature.

5,780,518

PROCESSING WASTE RUBBER BY STEAM PYROLYSIS
Valery Vladimirovich Mulyarchik; Vladimir Nikolaevich Drozdov; Anatoly Shzoresovich Grebenkov; Gennady Ivanovich Shzuravsky; Leonid Michailovich Vinogradov; Valery Grigorjevich Konstantinov, and Anatoly Vasiljevich Kuharev, all of Minsk, Belarus, assignors to Science-Technical and Product-Innovative Center "Tokema", Belarus

PCT No. PCT/BY94/00004, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO95/15840, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 8, 1994, Ser. No. 500,850

Claims priority, application Belarus, Dec. 9, 1993, 0104601
Int. Cl.⁶ C08J 11/14

U.S. Cl. 521—45

1 Claim

- A method for processing waste rubber comprising:
 - pyrolyzing waste rubber at a temperature of 400° C. to 500° C. using superheated water vapor to obtain solids, gases of decomposition and water vapor, wherein the amount of superheated water vapor is 18–110% of the mass of waste rubber to be pyrolyzed;
 - separating the solids of step a), and grinding the solids to particles of 0.001 mm to 0.210 mm;
 - condensing the gases of decomposition and water vapor of step a) to obtain liquid, and incondensable gas;
 - burning the incondensable gas to maintain the pyrolysis of step a); and

- mixing the liquid formed in step c) with 23.0 to 55.8 mass percent of the ground solid phase of step b).

5,780,519

LIGHT WEIGHT LIGNOCELLULOSIC MOLDING PRODUCTS

Saburo Imoto, 2-6-8, Nakayamadai, Takarazuka-shi, Hyogo, Japan

Filed Mar. 28, 1997, Ser. No. 828,332

Int. Cl.⁶ C08J 9/28

U.S. Cl. 521—68

2 Claims

2. Light weight lignocellulosic molding product having apparent density 0.6% g/cm³ or less four components, which are

- lignocellulose,
- 0.5 to 1.0 wt parts of water soluble polymer containing not less than two OH groups in a molecule and having the film properties of tensile strength 10 to 300 MPa and surface tension 30 to 65 mN/m in 0.4 wt % aqueous solution at 20° C.,
- 1 to 20 wt parts of water soluble polymer containing not less than two carboxyl groups and/or anionic surfactant
- 5 to 150 wt parts of polymer having the film properties of tensile strength 0.1 to 10 MPa and ultimate elongation 200 to 2000%, second transition point -40° to 30° C. and cohesion energy density 30 to 200 cal/cc.

5,780,520

LEACHING CONTAMINANTS FROM POST-CONSUMER FOR REUSE IN FOOD-CONTACT APPLICATIONS

Billy J. Reeves, Surgoinville; Michael P. Ekart, Kingsport; William H. Heise, Kingsport; Johnny W. Shadden, Kingsport, and Candace M. Stipe, Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation of Ser. No. 386,243, Feb. 9, 1995, abandoned.

This application Dec. 23, 1996, Ser. No. 772,236

Int. Cl.⁶ C08J 11/04

U.S. Cl. 521—48.5

17 Claims

- A process comprising:
 - contacting contaminated post consumer polyester with at least one extraction solvent selected from the group consisting of acetone, butanone, ethyl acetate, n-propyl acetate, corn oil and a mixed acid triglyceride of fractionated coconut fatty acids C₈–C₁₀, having a fatty acid composition of up to 2% caproic acid (C₆), 50–65% caprylic acid (C₈), 30–45% capric acid (C₁₀) and up to 3% lauric acid (C₁₂), at a temperature sufficient to allow rapid diffusion of contaminant from said polyester; and
 - separating said extraction solvent containing said contaminants from said polyester to produce a polyester which is suitable for food contact applications.

5,780,521

EXTRUDED, OPEN-CELL MICROCELLULAR ALKENYL AROMATIC POLYMER FOAMS, PROCESS FOR MAKING, AND ARTICLES MADE THEREFROM

Creston D. Shmidt, Nashport; Daniel D. Imeopkaria, Pickerington; Kyung W. Suh; Bruce A. Malone, both of Granville, and Ken Franklin, Gahanna, all of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 736,454, Oct. 24, 1996, abandoned, which is a continuation of Ser. No. 595,696, Feb. 2, 1996, abandoned, which is a continuation-in-part of Ser. No. 430,783, Apr. 27, 1995. This application Sep. 17, 1997, Ser. No. 932,031

Int. Cl.⁶ C08J 9/08

U.S. Cl. 521—79

26 Claims

1. A process for making an extruded, open-cell microcellular alkenyl aromatic polymer foam having an open cell content of

5,780,524

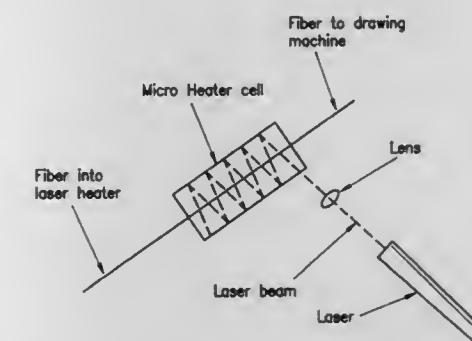
MICRO HEATING APPARATUS FOR SYNTHETIC FIBERS AND RELATED METHODS

Don E. Olsen, 405 Talbert Ave., Simi Valley, Calif. 93065-5249
Filed May 14, 1996, Ser. No. 647,474

Int. Cl.⁶ C08J 3/28

U.S. Cl. 522—2

2 Claims



about 70 percent or more and having an average cell size of about 70 micrometers or less and a density of about 16 to 100 kilograms per cubic meter, comprising:

- heating an alkenyl aromatic polymer material comprising greater than 50 weight percent alkenyl aromatic monomeric units;
- incorporating into the melt polymer material a nucleating agent additive at from about 0.01 to about 5 parts by weight based upon the weight of the polymer material;
- incorporating into the melt polymer material at an elevated pressure to form a foamable gel a blowing agent of which about 50 mole percent or more is selected from the group consisting of 1,1-difluoroethane, 1,1,1-trifluoroethane, 1,1,1,2-tetrafluoro-ethane, chlorodifluoromethane, carbon dioxide, and mixtures of any of the foregoing based upon the total number of moles of blowing agent, the blowing agent being present at about 0.06 to 0.17 gram-moles per kilogram of polymer material;
- cooling the foamable gel to a foaming temperature sufficient to form a form having 70 percent or more open cell content; and
- extruding the foamable gel through a die into a region of lower pressure to form the form.

5,780,522

Patent Not Issued For This Number

5,780,523

FOAMED PRESSURE SENSITIVE TAPES

Dominique Petit, Housse, and Michel Ladang, Herve, both of Belgium, assignors to Norton Performance Plastics Corporation, Wayne, N.J.

Continuation of Ser. No. 356,100, Dec. 15, 1994, abandoned.

This application Jun. 17, 1997, Ser. No. 877,060

Int. Cl.⁶ C08L 75/00

U.S. Cl. 521—137

17 Claims

1. A pressure sensitive adhesive foam having a density that is less than about 70% of the theoretical density, and consisting of a foamed adhesive polymer composition comprising:

- from about 5 to about 94% by weight of a composition selected from the group consisting of acrylate polymer, polyisobutylene, butyl rubber or silicone based pressure sensitive adhesive;
 - from about 5 to about 70% by weight of a polymer comprising a polymer backbone selected from the group consisting of diene polymers and copolymers, olefin polymers and copolymers, polyesters, polyethers and mixtures thereof, wherein the polymer contains at least 2 active hydrogens available for reacting with an isocyanate;
 - an isocyanate in an amount sufficient to give a ratio of isocyanate groups to active hydrogens in component b) of from about 0.25 to about 1.75; and
 - an effective amount of an expandable particulate material comprising a polymeric shell and a volatilizable fluid core to yield a compression set under constant deflection of less than about 60 percent, and
- wherein the foam has an intrinsic adhesion of greater than about 1 N/cm.

5,780,525

PHOTOCURABLE COMPOSITION FOR ELECTRICAL INSULATION

Hong-Son Ryang, Camarillo, Calif.; Joseph T. Snyder, II, Chesterland, and An-Mio J. Sung, Euclid, both of Ohio, assignors to Reliance Electric Industrial Company, Cleveland, Ohio

Filed Feb. 14, 1997, Ser. No. 801,832

Int. Cl.⁶ C08K 2/46

U.S. Cl. 522—81

18 Claims

1. A process for providing a metal oxide-containing insulation coating on a compatible substrate, the coating being transparent to a photocuring source output and upon cure being resistant to electrical stress, the process comprising:

- preparing a precursor composition comprising a mixture of a stabilizer and a metal oxide sol precursor material, wherein the stabilizer is a chelating compound containing at least one photocurable functional group and at least one chelating functional group;
- combining the stabilizer/metal oxide sol precursor material mixture with a photocurable base resin without high shear mixing to achieve a homogeneous, transparent composition;
- coating the substrate material with the transparent composition; and
- photocuring the coated substrate bearing the transparent composition, wherein the cured coating is homogenous and transparent.

5,780,526

ULTRAVIOLET-CURING LIQUID UNDERCOATING COMPOSITION FOR METALLIZING FRP, COATING METHOD, AND AUTOMOTIVE REFLECTOR

Sakae Matsui, Takatsuki; Hiroyuki Nakamura, Yao; Shizuo Kudo, Osaka, and Hiroaki Konse, Tokyo, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

PCT No. PCT/JP95/00984, § 371 Date Nov. 14, 1996, § 102(e) Date Nov. 14, 1996, PCT Pub. No. WO95/32250, PCT Pub. Date Nov. 30, 1995

PCT Filed May 23, 1995, Ser. No. 737,243

Claims priority, application Japan, May 24, 1994, 6-135167

Int. Cl.⁶ C08J 3/28; C08L 61/20; 67/08

U.S. Cl. 522—93

12 Claims

1. An ultraviolet-curing liquid undercoating composition for metallizing fiber-reinforced plastics (FRP) which comprises

20 to 80 parts by weight of a compound(s) containing at least two (meth)acryloyl groups per molecule,

80 to 20 parts by weight of oil-modified alkyd resin(s), and

2 to 15 parts by weight of a sensitizer, based on 100 parts by weight of said compound(s) containing at least two (meth)acryloyl groups per molecule and said oil-modified alkyd resin(s).

5,780,527

PERFUMING DEVICE FOR PERFUMING AND SANITIZING AMBIENT AIR

Nicholas O'Leary, Slough, United Kingdom, assignor to Firmenich SA, Geneva, Switzerland

PCT No. PCT/IB95/00621, § 371 Date Apr. 3, 1996, § 102(e) Date Apr. 3, 1996, PCT Pub. No. WO96/05870, PCT Pub. Date Feb. 9, 1996

PCT Filed Aug. 8, 1995, Ser. No. 624,463

Claims priority, application Switzerland, Aug. 19, 1994, 2561/94

Int. Cl.⁶ A61L 9/04

U.S. Cl. 523—102

13 Claims

1. An anhydrous gel element comprising the cross-linked reaction product of

a polymer selected from the group consisting of a functionalized liquid polymer and a copolymer of ethylene and maleic anhydride, and

a cross-linking agent having at least one complementary functional group.

in the presence of a perfume component comprising a perfume base, a deodorizing base, a sanitizing base, or a surfactant, wherein the functionalized liquid polymer is maleinized polybutadiene or maleinized polyisoprene, and the polymer is sufficiently cross-linked by the cross-linking agent in the presence of the perfume component to encapsulate a portion of the perfume component.

5,780,528

ISOCYANATE-DERIVED COLORED RESINS FOR USE IN PHASE CHANGE INK JET INKS

Donald R. Titterington, Tualatin; Jeffery H. Banning, Hillsboro, both of Oreg.; Loc V. Bui, Valencia, Calif., and Clifford R. King, Salem, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jun. 28, 1996, Ser. No. 672,617

Int. Cl.⁶ C09D 5/00

U.S. Cl. 523—161

35 Claims

1. An isocyanate-derived colored resin comprising the reaction product of:

(a) an isocyanate; and

(b) at least one chromogen-containing nucleophile.

5,780,529

Patent Not Issued For This Number

5,780,530

THERMOSETTING RESIN COMPOSITION

Keita Mizutani, Suita; Saori Yoshimatsu, Toyonaka, and Kinya Yamakawa, Nishinomiya, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Mar. 18, 1997, Ser. No. 820,674

Claims priority, application Japan, Mar. 19, 1996, 8-090132; Aug. 28, 1996, 8-247013; Aug. 28, 1996, 8-247014

Int. Cl.⁶ C08K 9/06; C08L 83/06; B05D 3/02

U.S. Cl. 523—209

14 Claims

1. A thermosetting resin composition comprising:

(a) a film-forming polyol resin having a plurality of alcoholic hydroxyl groups corresponding to a hydroxyl number from 5 to 300 and a number average molecular weight from 500 to 20,000;

(b) a curing agent reactive with said resin (a) selected from the group consisting of a blocked polyisocyanate and an amino-plast resin;

(c) a hydrolyzate/polycondensate comprising reactive ultrafine silica particles having an inertial radius of 10 angstrom or less when determined by the small angle X-ray scattering method, produced by the hydrolysis and polycondensation reaction of tetramethoxysilane or an oligomer thereof in the presence of an amount of water greater than required to achieve 100% hydrolysis in theory; and

(d) a catalyst for promoting the reaction between said resin (a) and said curing agent (b).

5,780,531

SURFACE-MODIFIED, OXIDIC OR SILICEOUS FILLERS AND THEIR USE

Thomas Scholl, Bergisch Gladbach, Germany, assignor to Bayer AG, Leverkusen, Germany

Filed Jun. 17, 1996, Ser. No. 665,313

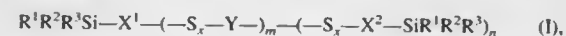
Claims priority, application Germany, Jun. 28, 1995, 195 23 470.7; Dec. 28, 1995, 195 49 034.7

Int. Cl.⁶ C08K 9/06; C08G 77/04

U.S. Cl. 523—213

16 Claims

1. Surface-treated oxidic or siliceous fillers for rubber compounds and vulcanizates obtained by reaction of an oxidic or siliceous filler with a silane of the formula (I)



wherein

R¹, R² and R³ are the same or different and represent C₁-C₁₈ alkyl, C₁-C₁₈ alkoxy, which can optionally be interrupted by oxygen, nitrogen or sulphur atoms, C₆-C₁₂ aryl or aryloxy or C₇-C₁₈ alkylaryl or alkylaryloxy, provided that at least one of the groups R¹ to R³ is an alkoxy, aryloxy or alkylaryloxy group;X¹ and X² are the same or different and stand for linear, branched or cyclic, optionally unsaturated C₁-C₁₂ alkylene groups,Y stands for linear, branched or cyclic, optionally unsaturated C₁-C₁₈ alkylene groups, which optionally are substituted with C₆-C₁₂ aryl, C₁-C₈ alkoxy or hydroxy groups and may optionally be interrupted by oxygen, sulphur or nitrogen atoms or aromatic C₆-C₁₂ groups, as well as for C₆-C₁₂ arylene groups or heteroarylene groups,

m stands for a whole number from 2 to 20,

n stands for a whole number from 1 to 6 and

x represents a number from 1 to 8,

at temperatures of 50° to 220° C., optionally in vacuum, wherein 0.1 to 25 wt. %, relative to oxidic or siliceous filler, of silanes of formula (I) are used.

5,780,532

AQUEOUS COATING OF CARBOXYL ACRYLIC RESIN- EPOXY RESIN PRODUCT

Sumio Noda; Seiji Takami; Haruo Inoue, and Kaoru Morita, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Limited, Hyogo-ken, Japan

Filed Aug. 7, 1996, Ser. No. 693,706

Claims priority, application Japan, Sep. 18, 1995, 7-238218

Int. Cl.⁶ C08K 5/04; C08L 33/02; 63/02

U.S. Cl. 523—412

6 Claims

1. An aqueous coating composition comprising a carboxyl-containing reaction product neutralized and dispersed in an aqueous medium, the reaction product being produced by the esterification reaction of a carboxyl-containing acrylic resin (A) and an epoxy resin (B), the resin (A) comprising a carboxyl-containing polymerizable unsaturated monomer (a) and another polymerizable unsaturated monomer (b) as monomer components, the acid value of the carboxyl-containing acrylic resin (A) at a higher molecular weight region with respect to its weight average molecular weight being higher by at least 80 mg KOH/g than at a lower molecular weight region, the carboxyl-containing acrylic resin (A) being prepared by stepwise polymerization in which the monomer component of the acrylic resin (A) is divided into at least two monomer portions, and the monomer portion(s) other than a first monomer portion is added starting from a second monomer portion in the presence of the first monomer portion, the amount of the carboxyl-containing polymerizable unsaturated monomer (a) in the monomer portion to be finally added being less than the combined amount of the monomer (a) in the monomer portions already added prior to the final stage.

5,780,533

Patent Not Issued For This Number

5,780,534

FLAMEPROOFED POLYESTER MOLDING COMPOSITION

Hans-Jerg Kleiner, Kronberg; Winfried Budzinsky, and Günther Kirsch, both of Bad Soden, all of Germany, assignors to Ticona GmbH, Germany

Continuation of Ser. No. 520,728, Aug. 29, 1995, abandoned.

This application Jan. 8, 1997, Ser. No. 780,345

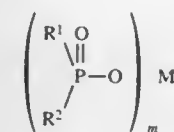
Claims priority, application Germany, Aug. 31, 1994, 44 30 932.5

Int. Cl.⁶ C08K 5/5313

U.S. Cl. 524—133

9 Claims

1. A polyethylene or terephthalate polybutylene terephthalate polyester molding composition comprising a phosphinic acid salt of the formula (I)



wherein

R₁ and R₂ are identical or different and represent C₁-C₄-alkyl, which is linear or branched;

M represents calcium ion or aluminum ion;

m is 2 or 3; in a flame retardant amount.

5,780,535

RUBBER COMPOSITIONS FOR USE IN TIRE TREAD

Masayuki Ohashi, and Eiji Nakamura, both of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 29, 1996, Ser. No. 654,895

Claims priority, application Japan, Jun. 6, 1995, 7-161523

Int. Cl.⁶ L08J 5/49

U.S. Cl. 524—147

5 Claims

1. A rubber composition for use in a tire tread comprising 70–120 parts by weight in total of carbon black and silica and 35–70 parts by weight of a softening agent containing not more than 10 parts by weight of an ester plasticizer, based on 100 parts by weight of a diene rubber containing at least one emulsion-polymerized styrene-butadiene rubber and at least one solution-polymerized styrene-butadiene rubber with a blending ratio of emulsion-polymerized rubber to solution-polymerized rubber of 70/30–30/70 and having a total bound styrene content of 30–40% by weight and a total vinyl bond content of 15–25% by weight, in which an amount of silica based on the total amount of carbon black and silica is 20–80% by weight and a silane coupling agent is included in an amount corresponding to a total of 5–20% by weight of silica amount and 1–5% by weight of carbon black amount, and having a ratio of storage modulus at 100° C. to storage modulus at 30° C. after vulcanization of not less than 0.43 and a hysteresis loss at 150% strain of not less than 0.3.

5,780,536

JOINING MEMBER AND METHOD FOR DISINTERGRATING JOINED STRUCTURE

Sadahiko Yokoyama, and Masatoshi Iji, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

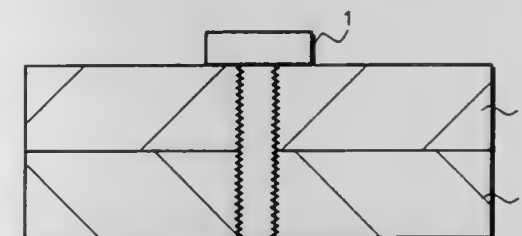
Filed Jul. 24, 1996, Ser. No. 685,665

Claims priority, application Japan, Jul. 25, 1996, 7-188735

Int. Cl.⁶ C08K 3/00

U.S. Cl. 524—439

9 Claims



1. A joining member for joining two parts, a part and a base material, or two base materials, said joining member comprising: a matrix material; and a heating assistant contained in said matrix material, wherein said matrix material and said heating assistant constitute a composite material, wherein said joining member is adapted to be inserted through an abutting assembly of the parts, and wherein said heating assistant enables the joining member to be melted upon application of externally applied energy such that the joining member flows out by gravity and the assembled parts can be readily disassembled.

5,780,537

SILICA-FILLED RUBBER COMPOSITION CONTAINING TWO DIFFERENT CARBON BLACKS AND TIRE WITH TREAD MADE THEREFROM

Richard Robinson Smith, Cuyahoga Falls; Kevin James Pyle, Unlontown; William Paul Francik, Bath, and Paul Harry Sandstrom, Tallmadge, all of Ohio, assignors to The Good-year Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 667,691, Jun. 21, 1996. This application Aug. 21, 1997, Ser. No. 915,838

Int. Cl.⁶ C08K 3/00; 3/04; C08L 7/00

U.S. Cl. 524—493

12 Claims

1. A rubber composition which comprises (A) about 100 parts by weight of at least one diene-based elastomer selected from the group consisting of at least cis 1,4-polyisoprene rubber, 3,4-polyisoprene rubber, styrene/butadiene copolymer rubbers, isoprene/butadiene copolymer rubbers, styrene/isoprene copolymer rubbers, styrene/isoprene/butadiene terpolymer rubbers, cis 1,4-polybutadiene rubber, trans 1,4-polybutadiene rubber (70–95 percent trans), low vinyl polybutadiene rubber (10–30 percent vinyl), medium vinyl polybutadiene rubber (30–50 percent vinyl) and high vinyl polybutadiene rubber (50–90 percent vinyl), (B) about 50 to about 100 phr of particulate reinforcing filler consisting of silica and carbon black wherein said filler is comprised of (i) about 25 to about 50 phr of precipitated silica and (ii) about 25 to about 50 phr particulate carbon black wherein said carbon black further comprises a mixture of two carbon blacks, wherein the first carbon black has a DBP absorption value in a range of about 100 to about 140 cc/100 gm with a corresponding Iodine Number in a range of about 45 to about 70 g/kg, and the second carbon black has a DBP absorption value in a range of about 100 to about 140 cc/100 gm with a corresponding Iodine Number in a range of about 100 to about 140 g/kg; and (C) a silica coupling agent having a moiety characterized by being reactive with the surface of the silica and another moiety characterized by being interactive with elastomers having carbon-to-carbon double bonds and the weight ratio of silica coupling agent to precipitated silica ranging from 1:2 to 1:100.

5,780,538

SILICA REINFORCED RUBBER COMPOSITION AND TIRE WITH TREAD

Martin Paul Cohen, Fairlawn; Raymond Benjamin Roennau, Stow, and Cheryl Ann Losey, Kent, all of Ohio, assignors to The Good Year Tire & Rubber Company, Akron, Ohio

Filed Mar. 11, 1996, Ser. No. 613,654

Int. Cl.⁶ C08K 3/36; 5/54

U.S. Cl. 524—494

8 Claims

1. A rubber composition consisting essentially of (A) 100 parts by weight of elastomer consisting of at least one diene-based elastomer wherein the diene based elastomer is selected from at least one of cis 1,4-polyisoprene rubber, 3,4-polyisoprene rubber, styrene/butadiene copolymer rubbers, isoprene/butadiene copolymer rubbers, styrene/isoprene copolymer rubbers, styrene/isoprene/butadiene terpolymer rubbers, cis 1,4-polybutadiene rubber, trans 1,4-polybutadiene rubber (70–95 percent trans), low vinyl polybutadiene rubber (10–30 percent vinyl), medium vinyl polybutadiene rubber (30–50 percent vinyl), high vinyl polybutadiene rubber (50–90 percent vinyl) and emulsion polymerization prepared styrene/butadiene/acrylonitrile terpolymer rubber and butadiene/acrylonitrile copolymer rubber (B) about 30 to about 100 phr particulate reinforcing filler composed of silica and carbon black, composed of about 30 to about 100 phr of precipitated silica and correspondingly up to about 50 phr of carbon black, wherein the weight ratio of silica to carbon black is at least about 1/1, (C) at least one silica coupler having a moiety reactive with said silica and a moiety reactive with said elastomer(s) wherein the silica coupler is a bis-(trialkoxysilylorgano) polysulfide containing from about 2 to about 8 sulfur atoms in the polysulfide bridge, (D) about 0.5 to about 10 phr of silica-reactive, silane containing hydrophobating agent wherein the molar ratio based on silane functionality of hydrophobating agent to silica coupler is in a range of about

0.1/1 to 2/1; wherein said hydrophobating agent is selected from the group consisting of n-octyl triethoxysilane, n-hexadecyl triethoxysilane, n-octadecyl trimethoxysilane, n-octadecyl triethoxysilane, and methyl n-octyl diethoxysilane.

5,780,539

GLASS FIBER FILLED POLYESTER POLYMERS

Deborah Ann Snell Tung, Tallmadge, Ohio, assignor to Shell Oil Company, Houston, Tex.

Filed May 23, 1997, Ser. No. 862,504

Int. Cl.⁶ C08L 67/02

U.S. Cl. 524—494

27 Claims

1. A filled polyester polymer comprising a polyester polymer and microglass fibers having an aspect ratio of greater than 1000 and a mean diameter of 2 microns or less.

5,780,540

DISPERSANTS AND DISPERSANT VISCOSITY INDEX IMPROVERS FROM SELECTIVELY HYDROGENATED POLYMERS

Ellen Bernice Brandes, Princeton; Wan-Li Liu, Belle Mead, and Frederick Charles Loveless, Princeton, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 488,046, Jun. 7, 1995, Pat. No. 5,633,415, which is a continuation-in-part of Ser. No. 382,814, Feb. 3, 1995, Pat. No. 5,545,783, which is a division of Ser. No. 179,051, Jan. 7, 1994, Pat. No. 5,387,730, which is a division of Ser. No. 992,341, Dec. 17, 1992, Pat. No. 5,288,937, which is a continuation of Ser. No. 907,959, Aug. 6, 1992, Pat. No. 5,210,359, which is a division of Ser. No. 466,135, Jan. 16, 1990, Pat. No. 5,149,895. This application

Oct. 22, 1996, Ser. No. 734,982

Int. Cl.⁶ C08F 8/32

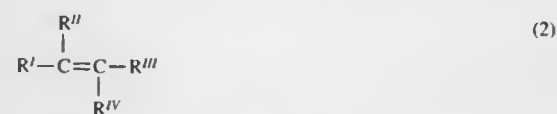
U.S. Cl. 524—572

57 Claims

1. A dispersant substance for modifying the dispersancy or viscometric properties of a fluid, comprising: a copolymer of a first conjugated diene and a second conjugated diene, wherein: said first conjugated diene comprises at least one relatively more substituted conjugated diene having at least five carbon atoms and the formula

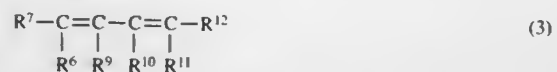


wherein R¹—R⁶ are each hydrogen or a hydrocarbyl group, provided that at least one of R¹—R⁶ is a hydrocarbyl group, provided that after polymerization, the unsaturation of the polymerized conjugated diene of formula (1) has the formula:



wherein R', R'', R''' and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R' and R'' are hydrocarbyl groups or both R''' and R^{IV} are hydrocarbyl groups; and

said second conjugated diene comprises at least one relatively less substituted conjugated diene different from the first conjugated diene and having at least four carbon atoms and the formula:



wherein R⁹—R¹¹ are each hydrogen or a hydrocarbyl group, provided that after polymerization, the unsaturation of the

polymerized conjugated diene of formula (3) has the formula:



wherein R^V, R^{VI}, R^{VII} and R^{VIII} are each hydrogen or a hydrocarbyl group, provided that one of R^V or R^{VI} is hydrogen, one of R^{VII} or R^{VIII} is hydrogen, and at least one of R^V, R^{VI}, R^{VII} and R^{VIII} is a hydrocarbyl group; and

wherein said copolymer has been functionalized by a method comprising:

selectively hydrogenating said copolymer to provide a selectively hydrogenated copolymer; and

functionalizing said selectively hydrogenated copolymer to provide a functionalized copolymer having at least one polar functional group and modifying the functionalized copolymer by reaction with a Lewis base selected from the group consisting of a monoamine, polyamine, polyhydroxy compound, reactive polyether, or a combination thereof.

5,780,541

NONAQUEOUS PAINTS

Peter Mayenfels; Georg Wigger, both of Münster; Fritz Bartol, Hamm; Ulrike Röckrath, Senden, and Ulrich Poth, Münster, all of Germany, assignors to BASF Lacke + Farbén, AG, Muenster-Hiltrup, Germany

PCT No. PCT/EP94/02236, § 371 Date Feb. 20, 1996, § 102(e) Date Feb. 20, 1996, PCT Pub. No. WO95/03367, PCT Pub. Date Feb. 2, 1995

PCT Filed Jul. 7, 1994, Ser. No. 578,650

Claims priority, application Germany, Jul. 24, 1993, 43 24 947.7

Int. Cl.⁶ C08J 3/00; C08K 3/20; C08L 75/00; C08F 8/30

U.S. Cl. 524—590

9 Claims

1. Nonaqueous pigmented paints comprising

(A) a hydroxyl group-containing synthetic resin or a mixture of hydroxyl group-containing synthetic resins present in an amount of from 50 to 90% by weight,

(B) an amino resin or a mixture of amino resins present in an amount of from 5 to 45% by weight,

(C) a blocked polyisocyanate or a mixture of blocked polyisocyanates present in an amount of from 5 to 45% by weight, and

(D) a pigment or a mixture of pigments present in an amount of from 1 to 25% by weight, the percentages by weight being based on (A)+(B)+(C)+(D)=100% by weight,

characterized in that component (C) contains both isocyanate groups blocked with a blocking agent (I) and isocyanate groups blocked with a blocking agent (II), in which context the blocking agent (I) is dialkyl malonate or a mixture of dialkyl malonates,

the blocking agent (II) is a blocking agent which is different from (I) and contains active methylene groups, or is an oxime, or is a mixture of these blocking agents, and

the ratio of equivalents between the isocyanate groups blocked with (I) and the isocyanate groups blocked with (II) is between 1.0:1.0 and 9.0:1.0.

5,780,542

WATER-EMULSIFIABLE POLYISOCYANATES

Brigitta Huckestein, Schifferstadt; Hans Renz, Meckenheim; Stephan Kothrade, Limburgerhof, and Karl Häberle, Speyer, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jul. 12, 1996, Ser. No. 679,112

Claims priority, application Germany, Jul. 18, 1995, 195 26 079.1

Int. Cl.⁶ C08J 83/00; 75/00; C08F 283/04

U.S. Cl. 524—590

5 Claims

1. A non-emulsified water-emulsifiable polyisocyanate composition, spontaneously emulsifiable in water, comprising:

a) an aliphatic, cycloaliphatic or aromatic polyisocyanate and
b) a reaction product of the above mentioned polyisocyanate with a polyvinylpyrrolidone which has 1 to 2 functional groups which are reactive with isocyanate, prepared by reacting an isocyanate group of the polyisocyanate with an isocyanate reactive functional group of the polyvinylpyrrolidone in the presence of a solvent inert to NCO or in the absence of a solvent, an isocyanate reactive functional group of the polyvinyl pyrrolidone being a primary or secondary amino group or a hydroxyl group, the reaction product (b) being present in the composition in an amount such that the polyvinylpyrrolidone content is from 1 to 20% by weight based on (a) and (b).

5,780,543

METHOD FOR THE PREPARATION OF ONE-PACKAGE ROOM-TEMPERATURE-CURABLE SILICONE ELASTOMER COMPOSITIONS

Hiroshi Adachi, and Toshio Saruyama, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1996, Ser. No. 622,790

Claims priority, application Japan, Mar. 31, 1995, 7-099501

Int. Cl.⁶ C08L 83/08; 83/06

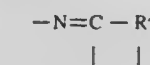
U.S. Cl. 524—789

5 Claims

1. A method for the preparation of room-temperature-curable silicone elastomer compositions comprising mixing

(A) 0.5 to 75 parts by weight of the reaction mixture of (a) and (b) or composition (b) prepared from

(a) 0 to 55 parts by weight hydroxyl-terminated diorganopolysiloxane with a viscosity at 25° C. of 0.5 to 300 Pa.s and
(b) an alkyl-containing oximosilane with the formula R¹Si(OX)₃ in which R¹ represents an alkyl group and X is an organic group of the formula —N=CR²R³ in which each R² and R³ represents a monovalent hydrocarbon groups having no more than 6 carbon atoms; an organic group of the formula



in which R⁴ represents a divalent hydrocarbon group having no more than 10 carbon atoms; or a C₁ to C₄ monovalent hydrocarbon group, wherein C₁ to C₄ monovalent hydrocarbon groups make up no more than 30 mole % of X, wherein the amount of the said component (b) is within the range of 0.5 to 20 parts by weight for each 100 parts by weight of the total weight of component (a) in components (A) and (B) and the total number of moles of oximo groups in component (b) exceeds the total number of moles of hydroxyl groups in component (a) with

(B) 45.5 to 120 parts by weight of the reaction mixture of
(a) 45 to 100 parts by weight hydroxyl-terminated diorganopolysiloxane with a viscosity at 25° C. of 0.5 to 300 Pa.s, with the proviso that the total amount of component (a) used in components (A) and (B) is 100 parts by weight and
(c) vinyl-functional oximosilane with the formula CH₂=CHSi(OX)₃ in which X is defined above, wherein the amount of said component (c) is within the range of 0.5 to 20 parts by weight for each 100 parts by weight of the total weight of component (a) in components (A) and (B)

and the total number of moles of oximo groups in this component exceeds the total number of moles of hydroxyl groups in component (a); and
by thereafter blending in
(C) 1 to 200 parts by weight inorganic filler.

5,780,544

HEAT SENSITIZABLE LATEX

Fabienne Arlette Francoise Rouviere, Choisel, and Pascale Francine Jeanne Muller, Bullion, both of France, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 5, 1997, Ser. No. 811,479
Int. Cl.⁶ C08L 35/04

U.S. Cl. 524—832

34 Claims

1. A latex which can be rendered heat sensitizable which is comprised of (1) at least one rubbery polymer, (2) water and (3) an emulsifier system which is comprised of a fatty ethoxylated monomaleate and optionally an alkyl monomaleate, with the proviso that the emulsifier system is void of anionic emulsifiers.

5,780,545

STABLE RELEASE AGENTS

Jiann Hsing Chen; Robert Albert Guistina, both of Rochester, and William Bernard Vreeland, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 8, 1996, Ser. No. 611,338
Int. Cl.⁶ C08K 5/00

U.S. Cl. 524—860

14 Claims

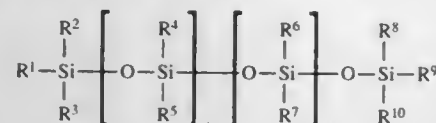
1. A release agent for use with a toner fuser member, said release agent comprising a blend of:

about 85% to 99.4% by weight based on 100% by weight of the blend of a non-poly(alkylene oxide)-functionalized poly(organosiloxane) fluid;

about 0.5% to 5% by weight based on 100% by weight of the blend of a poly(alkylene oxide)-functionalized poly(organosiloxane); and

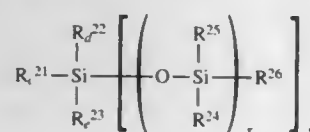
about 0.1% to 10% by weight based on 100% by weight of the blend of an antioxidant;

wherein said non-poly(alkylene oxide)-functionalized poly(organosiloxane) fluid has the structure

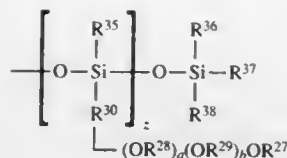


where R^1 to R^{10} are each independently hydrogen, an alkyl group having from 1 to 18 carbons, an aryl group having from 6 to 18 carbons, a mercaptoalkyl group having from 1 to 18 carbons, an aminoalkyl group having from 1 to 10 carbons, a trifluoroalkyl group having from 1 to 18 carbons, or a trifluoroaryl group having from 6 to 18 carbons, n is from 0 to 300, and m is from 1 to 300; and

wherein said poly(alkylene oxide)-functionalized poly(organosiloxane) has the structure



where R^{21} , R^{22} , R^{23} , R^{24} , and R^{25} are each independently alkyl, aryl, or alkylaryl groups having 1 to 18 carbons, x is 7 to 100 and y is 1 to 3; c , d , and e are 0 or 1; c , d , e , and y together equal 4; and R^{26} is a polyalkylene oxide group having the structure $-(OR^{28})_a(OR^{29})_bOR^{27}$, or



where R^{28} , R^{29} and R^{30} are each independently alkylene groups having from 2 to 20 carbons, a is from 1 to 200, b is from 1 to 200, R^{27} is hydrogen or an alkyl group having 1 to 20 carbons, R^{35} , R^{36} , R^{37} and R^{38} are each independently alkyl, aryl, or alkylaryl groups having 1 to 18 carbons, and z is 1 to 5.

5,780,546

BISPHENOL-A BASED POLYMERS HAVING LOW ORGANIC EMISSIONS

Joseph Pugach, Allegheny County; Thomas W. Smeal, Westmoreland County, and Ronald A. Andrekanic, Allegheny County, all of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.
Filed Dec. 9, 1996, Ser. No. 762,112
Int. Cl.⁶ C08G 18/04; 61/12; 63/133

U.S. Cl. 525—28

13 Claims

1. A composition comprising:

(a) about 20 to 50 wt % of at least one alkoxyethylated bisphenol-A diester urethane dimethacrylate hybrid resin;

(b) about 25 to 45 wt % of at least one alkoxyethylated bisphenol-A diacrylate or dimethacrylate;

(c) about 10 to 20 wt % of ethylene glycol dimethacrylate; and
(d) about 5 to 20 wt % of at least one vinyl monomer.

5,780,547

DISPERSING STABILIZER FOR SUSPENSION POLYMERIZATION OF VINYL CHLORIDE

Masaru Saeki, Kobe; Kizo Onishi, Hirakata, and Shunro Hayashi, Shiga-ken, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 924,466, Aug. 4, 1992, abandoned.
This application Mar. 17, 1995, Ser. No. 407,048
Claims priority, application Japan, Aug. 6, 1991, 3-222055
Int. Cl.⁶ C08F 8/12; 2/20

U.S. Cl. 525—61

3 Claims

1. A dispersing stabilizer for suspension homopolymerization or copolymerization of vinyl chloride, comprising a polyvinyl alcohol having a degree of hydrolysis of 75 to 85% by mole, an absorbance of not less than 0.1 measured at a wavelength of 280 mμ with respect to a 0.1% by weight aqueous solution, a content of carboxyl group of 0.01 to 0.08% by mole and a cloud point of not less than 50° C. measured with respect to the 0.1% by weight aqueous solution.

5,780,548

POLYPHENYLENE ETHER RESIN COMPOSITION

Akifumi Oshima, Utsunomiya; Hiromi Ishida, and Toshihiko Shinohara, both of Moka, all of Japan, assignors to General Electric Company, Pittsfield, Mass.
Filed Nov. 6, 1996, Ser. No. 743,695
Claims priority, application Japan, Nov. 6, 1995, 7-311559
Int. Cl.⁶ C08G 63/00; 65/38; C08L 51/00

U.S. Cl. 525—63

21 Claims

1. A resin composition comprising:

(A) 5 to 90 percent by weight of a polyphenylene ether resin;

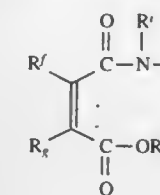
(B) 95 to 10 percent by weight of a thermoplastic polyester resin;

(C) 0.01 to 30 parts by weight, per 100 parts by weight of (A) and (B), of a compound comprising:

(a) a residue of a compound selected from the group consisting of maleic acid esters, maleimide, maleinamic acid esters, and derivatives thereof, and

(b) a residue of a compound selected from the group consisting of oxazoline, oxazine, oxazolone, oxazinone, and derivatives thereof;

wherein component (C) comprises a residue of the formula



wherein each R^f , R^g , and R^h is independently selected from the group consisting of hydrogen atoms, alkyl groups containing one to 20 carbon atoms, and aryl groups containing six to 14 carbon atoms, and R^h is a selected from among the group consisting of alkyl groups containing one to 20 carbon atoms and aryl groups containing six to 14 carbon atoms; and

(D) 0.01 to 3 parts by weight, per 100 parts by weight of (A) and (B), of an organic peroxide which has a half life of one minute at temperatures ranging from 100° to 270° C.

5,780,549

POLYBUTENE POLYMERS AS MODIFIERS FOR PVC
Paul Anthony Ludwig, Parkersburg, W. Va., assignor to General Electric Company, Pittsfield, Mass.
Filed Jul. 29, 1996, Ser. No. 681,752
Int. Cl.⁶ C08L 27/06; 51/04; 55/02

U.S. Cl. 525—84

17 Claims

1. A composition comprising a poly(vinyl chloride), a polybutene polymer and a graft copolymer resin comprising a rubbery polymeric substrate and a rigid polymeric superstrate, wherein said graft copolymer resin is at least one resin selected from the group consisting of acrylonitrile-butadiene-styrene resins, acrylonitrile-ethylene-propylene-styrene copolymers, acrylic graft copolymers, methyl methacrylate-acrylonitrile-butadiene-styrene copolymers, methacrylate-butadiene-styrene copolymers, styrene-acrylate copolymers, and acrylonitrile-styrene-acrylate copolymers.

5,780,550

Patent Not Issued For This Number

5,780,551

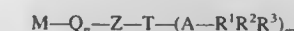
TELECHELIC POLYMERS FROM MIXED INITIATOR
John F. Engel, Belmont; James A. Schwindeman, Lincoln, both of N.C.; Roderic P. Quirk, Akron, Ohio, and Conrad W. Kamienski, Gastonia, N.C., assignors to FMC Corporation, Philadelphia, Pa.
Filed Jun. 3, 1996, Ser. No. 657,084
Int. Cl.⁶ C08F 297/04

U.S. Cl. 525—236

72 Claims

1. A process for the preparation of linear and multi-arm polymers possessing dissimilarly protected telechelic functionalities comprising polymerizing, one or more conjugated dienes or one or more alkenylaromatic compounds or mixtures thereof, in a liquid reaction medium, at a temperature of -30° C. to 150° C., for a period of at least one hour, with at least two protected functional-

ized initiators, each of which contains a differently protected hydroxyl, amino, alkylamino, or sulfhydryl group, having the formula



wherein M is an alkali metal; Q is an unsaturated hydrocarbon group derived by incorporation of one or more conjugated diene hydrocarbons, one or more alkenylaromatic compounds, or mixtures of one or more dienes with one or more alkenylaromatic compounds into the $M-Z$ linkage; Z is a branched or straight chain hydrocarbon connecting group which contains 3-25 carbon atoms; T is oxygen, sulfur, or nitrogen; $(AR^1R^2R^3)_m$ is a protecting group, in which A is an element selected from Group IVa of the Periodic Table of the Elements; R^1 , R^2 , and R^3 are independently defined as hydrogen, alkyl, substituted alkyl groups containing lower alkyl, lower alkylthio, and lower dialkylamino groups, aryl or substituted aryl groups containing lower alkyl, lower alkylthio, lower dialkylamino groups, or cycloalkyl and substituted cycloalkyl groups containing 5 to 12 carbon atoms; n is an integer from 0 to 5; and m is 1 when T is oxygen or sulfur, and 2 when T is nitrogen, to produce "living" polymer anions which are reacted with at least one compound selected from the group consisting of di- and polyfunctional linking agents to produce dissimilarly protected telechelically functionalized linear or multi-arm polymers, and optionally hydrogenating the resulting polymers.

5,780,552

FLUOROPOLYMERS HAVING CORE/SHELL STRUCTURE WITH FUNCTIONAL UNITS IN THE SHELL

Dewey Lynn Kerbow, Landenberg, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Sep. 13, 1996, Ser. No. 710,218
Int. Cl.⁶ C08F 259/08

U.S. Cl. 525—276

12 Claims

1. Particles consisting essentially of melt-flowable fluorinated polymer, said particles having a shell of fluorinated copolymer containing copolymerized units of polar functional monomer, said particles having a melt flowable fluoropolymer core.

5,780,553

HETEROGENEOUS POLYMERIZATIONS IN CARBON DIOXIDE

Joseph M. DeSimone, Chapel Hill; Timothy J. Romack, Durham; Dorian A. Canelas, Chapel Hill, all of N.C., and Katherine A. Shaffer, Erie, Pa., assignors to University of North Carolina at Chapel Hill, Chapel Hill, N.C.
Continuation of Ser. No. 544,264, Oct. 17, 1995, abandoned, which is a continuation-in-part of Ser. No. 443,478, May 18, 1995, Pat. No. 5,589,105, which is a division of Ser. No. 378,550, Jan. 25, 1995, Pat. No. 5,506,317, which is a division of Ser. No. 299,516, Sep. 1, 1994, Pat. No. 5,451,633, which is a division of Ser. No. 198,224, Feb. 17, 1994, Pat. No. 5,382,623, which is a division of Ser. No. 99,905, Jul. 30, 1993, Pat. No. 5,312,882. This application Apr. 30, 1997, Ser. No. 846,822
Int. Cl.⁶ C08F 259/00; 275/00

U.S. Cl. 525—276

20 Claims

1. A method of carrying out the polymerization of a monomer, the method comprising:

(a) providing a reaction mixture comprising a monomer, a stabilizer precursor, and a polymerization initiator in a polymerization medium comprising carbon dioxide; and then

(b) polymerizing said monomer and said stabilizer precursor in said polymerization medium to form a heterogenous reaction mixture comprising a polymer in said polymerization medium;

and wherein said stabilizer precursor is covalently bound to said polymer to provide an intrinsic surfactant in said polymer, which surfactant stabilizes said polymer in said heterogeneous reaction mixture.

5,780,554

SATURATED POLYOLEFINS HAVING TERMINAL ALDEHYDE OR HYDROXY SUBSTITUENTS AND DERIVATIVES THEREOF

Jacob Emert, Brooklyn, N.Y.; Istvan T. Horvath, High Bridge, N.J.; Richard H. Schlosberg, Bridgewater, N.J.; Warren A. Thaler, Flemington, N.J.; David A. Young, Seattle, Wash., and Stephen Zushma, Clinton, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 206,993, Mar. 7, 1994, abandoned.

This application Nov. 1, 1996, Ser. No. 742,957

Int. Cl.⁶ C08F 8/32

U.S. Cl. 525—370

8 Claims

I. A method of producing a polymeric hydroformylation product comprising:

reacting a polyolefin having terminal unsaturation and an \bar{M}_n of about 300 to 10,000, the polyolefin being derived from a monomer or mixture of monomers of the formula $H_2C=CHR^4$, wherein R^4 is hydrogen or a straight or branched chain alkyl radical;

hydrogen and

carbon monoxide in the presence of a hydroformylation catalyst, under hydroformylation conditions.

5,780,555

EPOXY RESIN SYSTEM

Larry Steven Corley, Houston; Kalyan Ghosh, Richmond; Joseph Michael Hunter; Derek Scott Kincaid, both of Houston; Leo Meilus, Cypress, and Daniel James Weinmann, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 452,188, May 25, 1995, abandoned, which is a division of Ser. No. 290,649, Aug. 15, 1994, abandoned. This application Sep. 16, 1996, Ser. No. 715,258

Int. Cl.⁶ C08G 65/32

U.S. Cl. 525—407

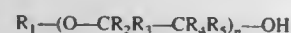
21 Claims

I. A curable epoxy resin composition comprising:

(a) one or more epoxy resins,

(b) one or more polyamine curing agent for epoxy resins having at least 2 nitrogen atoms and at least 2 amine hydrogen atoms, and

(c) from about 1 to about 300 weight percent, based on the polyamine, of a diluent comprising an aliphatic alcohol-alkylene oxide adduct, solubilized in said one or more epoxy resins, having the formula:



wherein R_1 is a hydrocarbyl group having 7 to 22 carbon atoms, $R_{2,5}$ are independently hydrogen or C_{1-4} alkyl groups and n is a number having an average value of 1 to 5.

5,780,556

THERMOSET COATING COMPOSITIONS HAVING IMPROVED HARDNESS AND CURING PROPERTIES

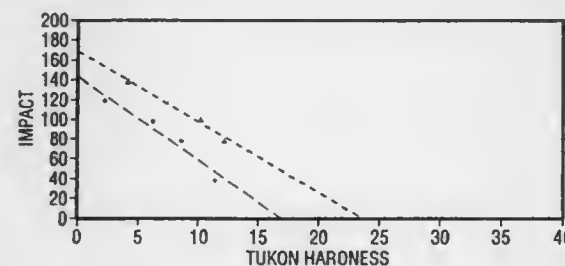
Albert Ilya Yezrielev, Houston, Tex.; Konstantinos R. Rigopoulos, Baton Rouge, La., and Vijay Swarup, Houston, Tex., assignors to Exxon Chemical Patents Inc., Houston, Tex.

Filed Jun. 7, 1995, Ser. No. 480,076

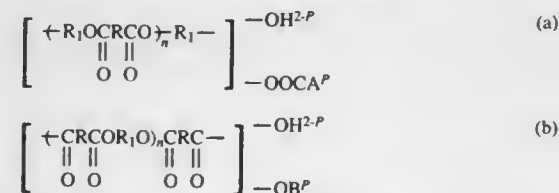
Int. Cl.⁶ C08F 20/00; C08G 63/68

U.S. Cl. 525—437

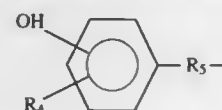
14 Claims



I. A crosslinkable polyester oligomer composition comprising one or a mixture of polyester oligomers (a) and (b):



wherein R is the residue of at least one aliphatic, cycloaliphatic or mixed aliphatic/aromatic polycarboxylic acid having from 2 to about 20 carbon atoms, R_1 is the residue of at least one aliphatic, cycloaliphatic or mixed aliphatic/cycloaliphatic polyol having from 2 to about 20 carbon atoms, A is a radical of the formula:



B is a radical of the formula:



wherein R_4 is H, OH, halogen or an organic radical containing 1 to 4 carbon atoms, R_5 is a direct bond or an organic radical containing 1 to 20 carbon atoms and R_6 is an organic radical containing 2 to 20 carbon atoms, n is a number averaging from greater than 0 up to less than 2 and P is a number averaging from about 0.5 up to less than 2, said polyester oligomer further characterized by a number average molecular weight in the range of from about 250 to about 1,000 and a polydispersity of less than about 2.0.

5,780,557

Patent Not Issued For This Number

5,780,558

PROCESS FOR MAKING DICYCLOPENTADIENE POLYETHERESTER RESINS

Jeffrey A. Klang, Exton, Pa., and Lau S. Yang, Wilmington, Del., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Filed Sep. 25, 1997, Ser. No. 937,778

Int. Cl.⁶ C08F 20/00; C08G 63/42

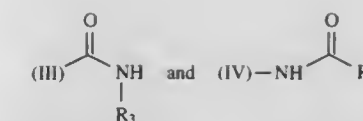
U.S. Cl. 525—445

26 Claims

I. A process which comprises:

(a) heating a polyether, dicyclopentadiene (DCPD), a diol, an insertion catalyst, and a carboxylic acid derivative selected from the group consisting of anhydrides and dicarboxylic acids, at a temperature within the range of about 25° C. to about 160° C. to produce a mixture that contains the polyether, catalyst, and a DCPD-diester adduct; and

(b) heating the mixture at a higher temperature within the range of about 120° C. to about 300° C. under conditions effective to promote insertion of the DCPD-diester adduct into carbon-oxygen bonds of the polyether to produce a DCPD polyetherester resin.



wherein R_3 is hydrogen or lower alkyl having 1 to 4 carbon atoms; and (e) mixtures of more than one of (a), (b), (c) and (d); and

(ii) an aminoplast crosslinking agent containing methylol and/or methylol ether groups, present in the film-forming composition in amounts of about 25 to 55 percent by weight based on the total weight of resin solids in the film-forming composition; wherein prior to curing, the film-forming composition has a theoretical hydroxyl value less than about 50 based on total resin solid weight of the film-forming composition, excluding any hydroxyl functionality associated with N-methylol groups.

5,780,560

EPOXY POWDER COATING WITH WRINKLE FINISH

Owen H. Decker, West Reading; Jeno Muthiah, Wernersville, and David A. Mountz, Birdsboro, all of Pa., assignors to Morton International, Inc., Chicago, Ill.

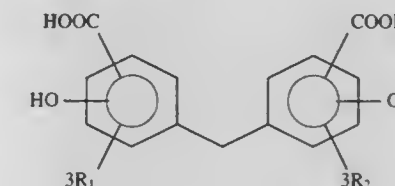
Division of Ser. No. 650,081, May 17, 1996, Pat. No. 5,688,878. This application Feb. 19, 1997, Ser. No. 802,697

Int. Cl.⁶ C08G 59/14; C08L 63/00

U.S. Cl. 525—533

17 Claims

I. In a powdered coating composition for providing a wrinkled finish, said composition comprising an epoxy resin, a curing agent and a catalyst, wherein said curing agent comprises a compound other than methylenedisalicylic acid, and has a structure in general accordance with the formula



wherein each R_1 is selected from the group consisting of H, C_1 – C_{20} alkyl groups, C_6 – C_{10} aryl groups and aryl substituted methylene groups and wherein each R is selected from the group consisting of H, C_1 – C_{20} alkyl groups, C_6 – C_{10} aryl groups and aryl substituted methylene groups.

5,780,561

MIXTURES OF POLYARYLENE SULFONES WITH POLYARYLENE SULFOXIDES AND POLYARYLENE SULFIDES

Helmut Scheckenbach, Langen; Andreas Schleicher, Einhausen, and Jürgen Kulpe, Frankfurt, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 390,060, Feb. 17, 1995, abandoned.

This application Sep. 24, 1996, Ser. No. 718,669

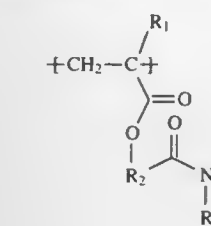
Claims priority, application Germany, Feb. 22, 1994, 44 05 536.6

Int. Cl.⁶ C08F 283/00

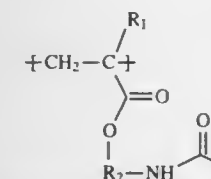
U.S. Cl. 525—534

13 Claims

I. A polymer mixture comprising a component (A), a component (B) and a component (C); or component (A) and component (B); or component (A) and component (C), where component (A) is 33 to 99% by weight of at least one partially crystalline polyarylene sulfone which cannot be processed thermoplastically, component

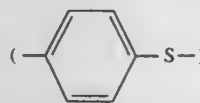


and



wherein R_1 is hydrogen or methyl, R_2 is a divalent linking group having about 1 to 30 carbon atoms when the group is of Structure I, or R_2 is alkylene having about 2 to 13 carbon atoms when the group is of structure II, and R_3 is hydrogen or lower alkyl having 1 to 4 carbon atoms; (b) a polyester polymer or oligomer; (c) a polyurethane polymer or oligomer; (d) a polyether polymer or oligomer, wherein (b), (c) and (d) each have a plurality of terminal amide groups of at least one of the structures:

(B) is from 1 to 67% by weight of at least one polyarylene sulfide, and component (C) is from 1 to 40% by weight of a polyarylene sulfide having recurring units of the formula (VI)



and where the sum of the components (A), (B) and (C) in the mixture is 100%.

5,780,562

OLEFIN POLYMERIZATION CATALYST AND POLYOLEFIN

Hiroyuki Shimizu; Akira Sano, both of Tokyo; Kazuo Matsura, Yokohama, and Yuuji Washio, Niigata, all of Japan, assignors to Nippon Oil Co., Ltd., and Mizusawa Industrial, both of Tokyo, Japan

Filed Aug. 21, 1995, Ser. No. 517,336

Claims priority, application Japan, Aug. 23, 1994, 6-231972

Int. Cl.⁶ C08F 4/645

U.S. Cl. 526—129

12 Claims

1. A solid catalyst for olefin polymerization, characterized in that said solid catalyst is prepared by contacting the following components (1) to (5) with one another:

(1) a compound represented by the general formula $\text{Me}^1\text{R}^1_p(\text{OR}^2)_q\text{X}^1_{4-p-q}$, where Me^1 is Zr, Ti or Hf, R^1 and R^2 are each independently a hydrocarbon group having 1 to 24 carbon atoms, X^1 is a halogen atom, p and q are each an integer falling under the ranges of $0 \leq p < 4$ or $0 \leq q < 4$, provided $0 \leq p+q \leq 4$;

(2) a compound represented by the general formula $\text{Me}^2\text{R}^3_m(\text{OR}^4)_n\text{X}^2_{z-m-n}$, where, where Me^2 is a Group I-III element of the Periodic Table, R^3 and R^4 are each independently a hydrocarbon group having 1 to 24 carbon atoms, X^2 is a halogen atom or a hydrogen atom, provided when X^2 is a hydrogen atom, Me^2 is a Group III element in the Periodic Table, z is the valence of Me^2 , m and n are each an integer falling under the ranges of $0 < m < z$ or $0 \leq n \leq z$ provided $0 \leq m+n \leq z$;

(3) an organocyclic compound having conjugated double bonds in the ring;

(4) a modified organoaluminum compound having Al—O—Al bond(s); and

(5) a silicon oxide and/or an aluminum oxide both satisfying the following characteristics (A) to (E):

(A) An average particle diameter as measured by the sieving method is in the range of 20 to 150 μm ;

(B) A specific surface area as measured by the BET method is in the range of 150 to 600 m^2/g ;

(C) The volume of pores ranging in pore radius from 18 to 1,000 Angstroms as measured by the mercury penetration method is in the range of 0.3 to 2.0 cm^3/g , and the ratio of the volume of pores ranging in pore radius from 50 to 500 Å to the volume of pores ranging in pore radius from 18 to 1,000 Å is not less than 50%;

(D) An apparent specific gravity as measured according to JIS K6220-6.8 is not lower than 0.32;

(E) After any particles classified in the range of 53 to 75 μm by the sieving method have been subjected to an ultrasonic disintegration treatment in water at 40 KHz, 35W, for 20 minutes, the proportion of 50 μm or smaller particles, (the degree of ultrasonic disintegration), is not more than 30%.

5,780,563

SUPPORTED LEWIS ACID CATALYSTS DERIVED FROM SUPERACIDS USEFUL FOR HYDROCARBON CONVERSION REACTIONS

Frank Joung-yei Chen, Edison, N.J.; Alain Guyot, Lyons; Thierry Hamaide, Vienne, both of France, and Christophe Le Deore, Edison, N.J., assignors to Exxon Chemical Patents Inc, Linden, N.J.

Division of Ser. No. 680,073, Jul. 15, 1996, Pat. No. 5,607,890, which is a continuation of Ser. No. 220,769, Mar. 31, 1994, abandoned. This application Jan. 24, 1997, Ser. No. 788,315 Int. Cl.⁶ C08F 4/18

U.S. Cl. 526—130

8 Claims

1. A process for cationically polymerizing olefin monomers, which comprises contacting one or more olefin monomers olefin monomer under cationic polymerization reaction conditions with a catalytically effective amount of a supported Lewis acid catalyst system comprising an inorganic oxide substrate having immobilized thereon a catalytically effective amount of at least one strong Lewis acid comprising at least one metal salt of a strong Bronsted acid wherein said metal is selected from the group consisting of aluminum, boron gallium, antimony, tantalum, niobium, yttrium, cobalt, nickel, iron, tin, zinc, magnesium barium strontium, calcium, tungsten, molybdenum and the metals of the lanthanide series and wherein said strong Bronsted acid is selected from the group consisting of mineral and organic acids having a Hammett acidity value of minus 13 or lower.

5,780,564

METHOD OF PREPARING A HOMO-OR COPOLYMER OF VINYL CHLORIDE CONTAINING α -OLEFINS

Hannu Harjuhahto, Porvoo, Finland, assignor to Topvin Oy, Porvoo, Finland

Filed Mar. 7, 1996, Ser. No. 612,063

Claims priority, application Finland, Dec. 31, 1991, 91/6/90

Int. Cl.⁶ C08F 2/20; 2/14/06

U.S. Cl. 526—201

6 Claims

1. A method of preparing a homo- or copolymer of vinyl chloride containing 0.01–50% of a trimer, tetramer or pentamer oligomer of 1-decene, or mixture thereof, comprising adding said oligomer to a polymerization reactor containing vinyl chloride monomer at the beginning of or during the polymerization reaction and polymerizing said vinyl chloride monomer to form a homo- or copolymer of vinyl chloride containing said oligomer.

5,780,565

SUPERSATOSPHERIC REACTION

Robert S. Clough, Oakdale; Cheryl L. Senger, Woodbury, and John E. Gozum, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn. PCT No. PCT/US95/08559, § 371 Date Nov. 28, 1995, § 102(e) Date Nov. 28, 1995, PCT Pub. No. WO96/01851, PCT Pub. Date Jan. 25, 1996

Continuation-in-part of Ser. No. 272,779, Jul. 8, 1994, abandoned. This PCT application Jul. 7, 1995, Ser. No. 553,286

Int. Cl.⁶ C08F 2/00

U.S. Cl. 526—206

22 Claims

1. A process of making a polymer, comprising the steps:

a) providing a polymerizing system comprising

1) a homogeneous reaction mixture comprising

(A) at least one fluid, said fluid being a gas at standard temperature and pressure, held at a pressure greater than atmospheric pressure such that said fluid is a liquid or a supercritical fluid, said fluid being carbon dioxide, a hydrofluorocarbon a perfluorocarbon or a mixture of any of the foregoing,

(B) at least one monomer that polymerizes by chain polymerization, and

(C) an effective amount of at least one of a polymerization initiator and catalyst; and

2) a dispersing agent for a polymer formed from said at least one monomer; and

b) allowing said at least one monomer to polymerize to form said polymer, said polymer being insoluble in said reaction mixture, wherein said dispersing agent allows a kinetically stable dispersion of said polymer to be formed in said polymerizing system.

5,780,566

POLYMERS CONTAINING PROTECTED STYRENE AND UNPROTECTED HYDROXYBENZYL (METH)ACRYLAMIDES

Carl-Lorenz Mertesdorf, Bad Krozingen, Germany, assignor to Olin Microelectronic Chemicals, Inc., Norwalk, Conn.

Filed Oct. 26, 1995, Ser. No. 548,421

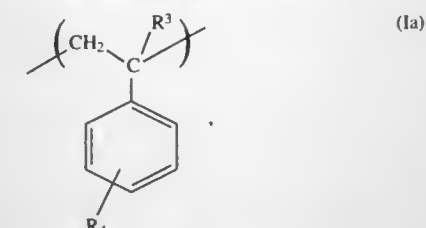
Claims priority, application Switzerland, Oct. 26, 1994, 3202/94; Oct. 27, 1994, 3220/94

Int. Cl.⁶ C08F 20/60

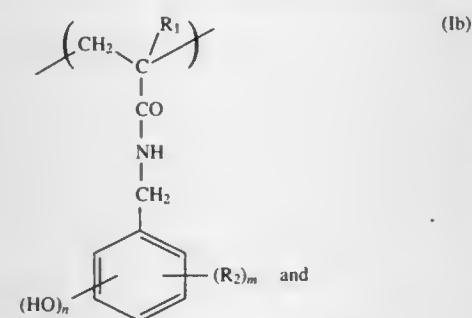
U.S. Cl. 526—262

6 Claims

1. A novel polymer having a molecular weight of 10^3 to 10^6 , determined by gel permeation chromatography, comprising, based on the total amount of structural units present in the polymer, 90 to 10 mol % of the structural repeating unit of formula 1a



90 to 10 mol % of the structural repeating unit of formula 1b,



0 to 40 mol % of the structural repeating unit of formula 1c



wherein

R_1 is H, C_1 – C_4 alkyl, halo- C_1 – C_4 alkyl, halogen or CN,

R_2 is independently H, C_1 – C_4 alkoxy or halogen,

R_3 is H or CH_3 ,

R_4 is a group containing an acid-removable O—C— or O—Si bond,

R_5 is H or CH_3 ,

R_6 is H, COOH or CN,

R_7 is H or CH_3 ,

R_8 is H, CN, COOH, COOR₁₀ or aryl,

R_{10} is C_1 – C_6 alkyl,

n is 1, 2 or 3, and

m is 0, 1, 2 or 3,

and the sum of the percentages is always 100%.

5,780,567

SYNDIOTACTIC TERPOLYMERS OF STYRENE

Riccardo Pó, Leghorn, and Nicoletta Cardì, Novara, both of Italy, assignors to Enichem S.p.A., Milan, Italy

Filed May 17, 1996, Ser. No. 649,320

Claims priority, application Italy, Jun. 1, 1995; M195A1138 Int. Cl.⁶ C08F 212/08; 4/643

U.S. Cl. 526—347

11 Claims

1. Syndiotactic terpolymers of styrene comprising repetitive units deriving from:

a) 99.5–60% in moles of styrene; and

b) 0.5–40% in moles of vinyltoluene having a weight average molecular weight of more than 20,000 and less than or equal to 500,000 and a stereoregularity of the syndiotactic type of more than 90%.

4. Process for reducing the melting point of the syndiotactic homopolymer of styrene which consists in the copolymerization of styrene with vinyltoluene in the presence of a catalytic system comprising a catalyst selected from titanium, zirconium and hafnium, in any oxidation state, and a co-catalyst selected from aluminum and a compound of boron having the formula



(I),

wherein X_1 , X_2 and X_3 , the same or different, represent a C_1 – C_{20} perfluorinated hydrocarbon radical, said process producing a syndiotactic terpolymer.

5,780,568

STARCH DERIVATIVES GRAFTED WITH ALIPHATIC POLYESTER, PROCEDURE FOR THEIR PRODUCTION AND THEIR USE

Jani Vuorenmaa, Helsinki; Soili Peltonen, Rajamäki, and Jukka Seppälä, Helsinki, all of Finland, assignors to Valtion Teknillinen Tutkimuskeskus, Finland

PCT No. PCT/FI95/00148, § 371 Date Nov. 27, 1996, § 102(e) Date Nov. 27, 1996, PCT Pub. No. WO95/25750, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 21, 1995, Ser. No. 716,433

Claims priority, application Finland, Mar. 21, 1994, 941318 Int. Cl.⁶ C08B 31/02; C08G 63/08; C09J 103/06; D21H 17/28 U.S. Cl. 527—300

26 Claims

1. A procedure for producing a grafted starch derivative, in which procedure a cyclic ester is allowed to react with starch or a starch derivative to form a starch derivative grafted with an aliphatic polyester, wherein a graft-copolymerization is carried out as mass polymerization so that the proportion of aliphatic polyester is at least 26%.

5,780,569

LINEAR CARBORANE-(SILOXANE OR SILANE)-ACETYLENE BASED COPOLYMERS

Teddy M. Keller, and David Y. Son, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

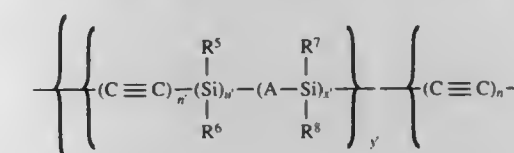
Filed Nov. 7, 1994, Ser. No. 337,012

Int. Cl.⁶ C08G 77/56

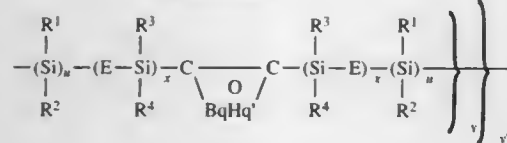
U.S. Cl. 528—5

21 Claims

1. An organoboron polymer with a backbone having a repeating unit comprising at least one carboranyl group, at least two acetylenic groups, and one or more silyl or siloxanyl groups wherein said repeating unit is represented by the formula:

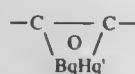


-continued



wherein:

- (1) n and n' are integers from 1 to 12 and u, u', y, y' and y'' are positive integers wherein the ratio of y'/y is between about 0.01 to about 50;
- (2) $-(\text{C}\equiv\text{C})_n-$ and $-(\text{C}=\text{C})_{n'}$ represent unconjugated acetylenic moieties or conjugated acetylenic moieties when n and n' are integers greater than 1, respectively;
- (3) R¹, R², R³, R⁴, R⁵, R⁶, R⁷ and R⁸ are selected from the group consisting of saturated aliphatic, unsaturated aliphatic, aromatic, fluorocarbon moieties, and mixtures thereof;
- (4)



- represents said carboranyl group; and
- (5) q and q' are integers from 3 to 16;
- (6) x and x' represent integers greater than or equal to zero;
- (7) A is selected from the group consisting of O, an aliphatic bridge, an aryl bridge and mixtures thereof;
- (8) E is selected from the group consisting of O, an aliphatic bridge, an aryl bridge and mixtures thereof; and
- (9) wherein E and A may be the same or different.

5,780,570

PROCESS FOR THE PREPARATION OF POLYMERIC MIXTURES BASED ON EP (D) M ELASTOMER COPOLYMERS

Tiziano Tanaglia, Bologna, Italy, assignor to Enichem S.p.A., Milan, Italy

Filed Mar. 27, 1997, Ser. No. 826,423

Claims priority, application Italy, Apr. 11, 1996, M196A0692
Int. Cl.⁶ C08F 4/68; 2/14

U.S. Cl. 526—86 15 Claims

1. A process of at least two steps for the preparation in suspension of a mixture of ethylene-propylene (EPM) elastomer copolymers or a mixture of ethylene-propylene-diene (EPDM) elastomer terpolymers comprising the steps of:

- a) polymerizing in a first step monomers for the first step in the presence of a catalyst of Vanadium, a cocatalyst and optionally an activator to a conversion degree of at least 1,000 grams of polymer per gram of Vanadium;

wherein said catalyst of Vanadium consists essentially of a compound of Vanadium or a compound of Vanadium supported on an inert carrier;

wherein said cocatalyst consists essentially of an Aluminum alkyl having the formula:



where R is a C₁–C₂₀ alkyl radical, X is a halogen, m+n=3, m is an integer from 0 to 2; and wherein the molar ratio of cocatalyst/Vanadium is from 5 to 500; and obtaining a polymer suspension in a liquid phase;

- b) admixing with said polymer suspension obtained in step (a) monomers for step (b) and polymerizing said monomers for step (b) in a second or subsequent steps together with further activator in order to have a molar ratio between activator, sum of the optional activator of step (a) and the activator of step (b), and Vanadium of from 4 to 50; and with further cocatalyst so as to have a ratio between the cocatalyst of step (b) and Vanadium of step (a) of from 5 to 500; wherein a polymer-

ization reaction is continued up to a conversion of at least 3000 grams of polymer per gram of catalyst.

5,780,571

NAPHTHALENE RING-CONTAINING RESINS, RESIN COMPOSITIONS AND CURED PRODUCTS THEREOF

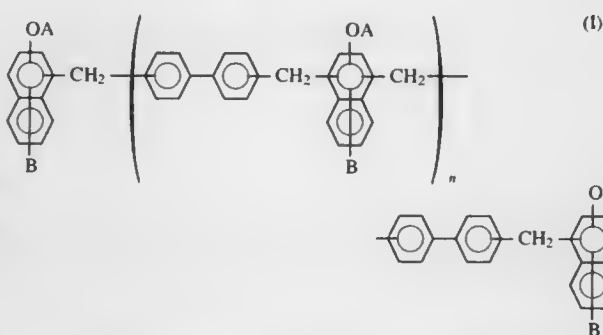
Hiroaki Ohno, Tokyo; Hiromi Morita, Urawa; Shigeru Motei, Annaka, and Yasumasa Akatsuka, Urawa, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 631,906, Apr. 12, 1996, abandoned, which is a continuation of Ser. No. 343,527, Feb. 6, 1995, abandoned. This application Jun. 19, 1997, Ser. No. 879,080
Claims priority, application Japan, Mar. 22, 1993, 5-90955
Int. Cl.⁶ C08G 59/14

U.S. Cl. 528—97

14 Claims

1. A resin represented by formula (I):



wherein A represents a hydrogen atom or a glycidyl group; B each independently represents a hydrogen atom, halogen atom, hydroxyl group, glycidyloxy group, or lower alkyl or lower alkoxy group containing 5 or less carbon atoms; and n represents a mean value and ranges from 0 to 10.

5,780,572

METHOD OF INCREASING POLYANILINE CONDUCTIVITY

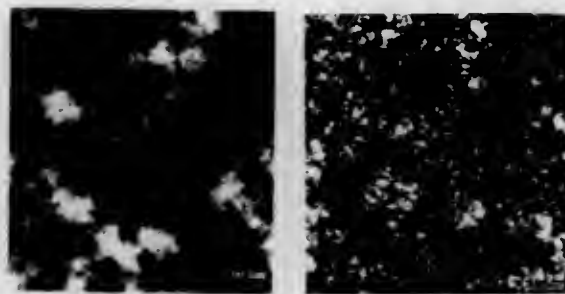
Charles R. Graham, St. Peters, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 26, 1996, Ser. No. 686,518

Int. Cl.⁶ C08G 65/38

U.S. Cl. 528—210

12 Claims



1. A method for increasing the conductivity of a composition containing an organic acid salt of polyaniline comprising processing the composition into a useful form while maintaining the organic acid salt of polyaniline in contact with an excess of the organic acid; and contacting the useful form with a polar organic solvent in which the organic acid is soluble, whereupon the conductivity of the composition is increased by a factor of at least about 10.

5,780,573

THERMOPLASTIC POLYURETHANES AND MOLDED ARTICLES COMPRISING THEM

Shizuo Iwata, Saijou; Shinya Katoh, Kurashiki; Kimio Nakayama, Kurashiki; Tetsuya Ashida, Kurashiki; Hisao Yoneda, Kurashiki; Michihiro Ishiguro, Kurashiki, and Koji Hirai, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed May 23, 1996, Ser. No. 652,131

Claims priority, application Japan, Jun. 13, 1995, 7-146042;
Jul. 11, 1995, 7-174593; Aug. 7, 1995, 7-219423
Int. Cl.⁶ C08C 75/04

U.S. Cl. 528—272

3 Claims

1. A thermoplastic polyurethane obtained by reacting (a) a polyester-polyol that satisfies all the following requirements (1) to (4):

- (1) its ester group content (number of ester bonds/number of all carbon atoms) is from 0.08 to 0.17;
 - (2) it has hydroxyl groups of from 2.01 to 2.08 per one molecule;
 - (3) it has a number average molecular weight of from 1000 to 7000; and
 - (4) it has a crystallization enthalpy (ΔH) of 70 J/g or less,
- (b) an organic diisocyanate and (c) a chain extender at a ratio that satisfies the following numerical formula (i):

$$1.00 \leq b/(a+c) \leq 1.10 \quad (i)$$

where a indicates the number of mols of the polyester-polyol, b indicates the number of mols of the organic diisocyanate, and c indicates the number of mols of the chain extender.

5,780,574

FLAME-RETARDANT POLYESTER RESIN COMPOSITION

Kazuhito Hanabusa, Shizuoka, Japan, assignor to Polyplastics Co., Ltd., Japan

Filed Mar. 12, 1997, Ser. No. 816,450

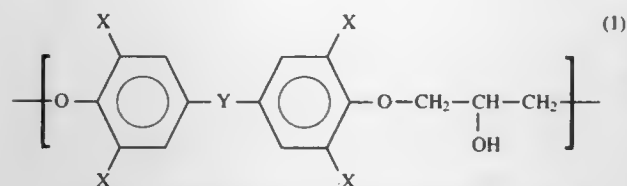
Claims priority, application Japan, Mar. 14, 1996, 8-057225
Int. Cl.⁶ C08G 63/00

U.S. Cl. 528—272

5 Claims

1. A flame-retardant polyester resin composition comprising:

- (A) 100 parts by weight of a polyester resin selected from (a1) polybutylene terephthalate resin comprised of terephthalic acid and butanediol, or (a2) a polybutylene naphthalate resin comprised of naphthalenedicarboxylic acid and butanediol, each end of said polyester resin being substituted with a monofunctional compound having carboxyl group or a hydroxyl group, the amount of the hydroxyl end group being 40 meq/kg or less,
- (B) 1 to 50 parts by weight of a halogenated phenoxy compound having repeating units represented by the formula (1), the number-average degree of polymerization thereof being 6 to 50:



wherein X represents Br or Cl, and Y represents C₁₋₁₀ alkylene group, C₁₋₁₀ alkylidene group, C₃₋₁₀ cycloalkane group, carbonyl group, $-\text{O}-$, $-\text{S}-$ or $-\text{SO}_2-$,

- (C) 0.1 to 30 parts by weight of an antimony compound, and
- (D) 0 to 150 parts by weight of an inorganic filler.

5,780,575

THERMALLY STABLE POLYESTERS FORMED UTILIZING ANTIMONY COMPOUND AS CATALYSTS

Andrew Edwin Brink; Wayne Payton Pruett; Clinton Cherry, all of Kingsport, and Kay Hunt Shackelford, Johnson City, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation of Ser. No. 557,758, Nov. 13, 1995. This application Dec. 5, 1996, Ser. No. 760,830
Int. Cl.⁶ C08G 63/78

U.S. Cl. 528—285

38 Claims

1. A thermally stable polyester, comprising:

- a) a polyester resin prepared by adding a dicarboxylic acid to a glycol compound, said dicarboxylic acid selected from the group consisting of aliphatic dicarboxylic acids having a total of from 3 to 16 carbon atoms, alicyclic dicarboxylic acids having from 7 to 12 carbon atoms, aromatic dicarboxylic acids containing a total of from 8 to 16 carbon atoms, and combinations thereof, and wherein said glycol is selected from the group consisting of glycols having from 2 to 12 carbon atoms, glycol ethers having from 4 to 12 carbon atoms, and combinations thereof,

said polyester resin having been prepared in the presence of a catalyst system consisting essentially of one or more anti-mony compounds which is not reacted with a-hydroxy carboxylic acids, a,b-dicarboxylic acids or derivatives thereof, and said polyester having been prepared in the presence of a stabilizer in the amount of from 0 to 2.8 ppm.

5,780,576

THERMOPLASTIC MOLDING MATERIALS BASED ON PARTLY AROMATIC POLY-AMIDES AND POLYETHERIMIDES

Martin Weber, Neustadt; Herbert Fisch, Wachenheim; Gunter Pipper, Bad Dürkheim, and Axel Gottschalk, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 12, 1996, Ser. No. 631,096

Claims priority, application Germany, Apr. 12, 1995, 195 13 848.1
Int. Cl.⁶ C08G 69/08; 73/10; C08L 77/06

U.S. Cl. 528—310

7 Claims

1. A thermoplastic molding composition containing

- A) from 1 to 99% by weight of a partly aromatic copolyamide composed of
 - a₁) from 30 to 44 mol % of units which are derived from terephthalic acid,
 - a₂) from 6 to 25 mol % of units which are derived from isophthalic acid,
 - a₃) from 43 to 49.5 mol % of units which are derived from hexamethylenediamine and
 - a₄) from 0.5 to 7 mol % of units which are derived from aliphatic cyclic diamines of 6 to 30 carbon atoms,

the molar percentages of components a₁) to a₄) together giving 100%.

- B) from 1 to 99% by weight of a polyetherimide,
- C) from 0 to 30% by weight of a polymeric component having OH groups,
- D) from 0 to 60% by weight of fibrous or particulate fillers or mixtures thereof,
- E) from 0 to 40% by weight of rubber impact modifiers and
- F) from 0 to 40% by weight of conventional additives and processing assistants.

5,780,577

POLYAMIDE RESIN COMPOSITION

Yutaka Yamaguchi, Yamaguchi, Japan, assignor to Ube Industries, Ltd., Yamaguchi, Japan

Filed Nov. 1, 1996, Ser. No. 743,448

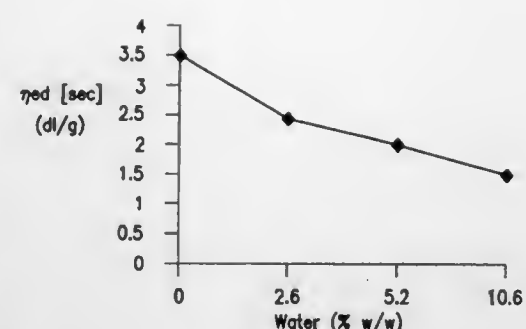
Claims priority, application Japan, Nov. 2, 1995, 7-285698; Sep. 5, 1996, 8-234877

Int. Cl.⁶ C08G 69/08; 73/10; C08L 77/00

U.S. Cl. 528—310

5 Claims

1. A polyamide resin composition comprising:
- (1) 93 to 99.5% by weight of a polyamide resin and
 - (2) 0.5 to 7% by weight of an unsaturated carboxylic acid added resin, said unsaturated carboxylic acid added resin being produced from the addition of 0.5 to 5 parts by weight of an unsaturated carboxylic acid to 100 parts by weight of an ethylene-vinyl acetate copolymer having a vinyl acetate content of 20 to 50% by weight partially saponified to have a degree of saponification of 50 to 95 mol %.



and/or an amount of alcohol of less than or equal to 3000 mol % relative to the NCAs; and
varying the amount of water and/or alcohol introduced in the polymerization medium, in order to control the molecular weight of the final polymers.

5,780,578

SYNTHETIC POLYMER EXHIBITING HYDROLYTIC ACTIVITY, ITS PREPARATION AND USE FOR CONVERSION OF ESTERS AND AMIDES TO THE CORRESPONDING ALCOHOL AND AMINE

Raghunath Anant Mashelkar; Mohan Gopalkishna Kulkarni, and Rohini Nitin Karmalkar, all of Maharashtra, India, assignors to Council Of Scientific & Industrial Research, New Delhi, India

Filed Mar. 14, 1996, Ser. No. 616,094

Claims priority, application India, Jun. 14, 1995, 1094/Del/95; Jun. 14, 1995, 1095/Del/95

Int. Cl.⁶ C08G 73/18; 69/44

U.S. Cl. 528—327

29 Claims

1. A synthetic polymer which can hydrolyze a substrate containing an ester or amide group to the corresponding alcohol or amine; the polymer having the general formula A_xB_yC_z, wherein A is a vinyl monomer containing a hydroxyl group, B is a vinyl monomer containing a carboxyl group, and C is a vinyl monomer containing an imidazole group; and x, y, z represent the mole fraction of each of the respective monomers wherein x+y+z=1 and x,y can vary such that 0<x,y,z<1; the vinyl monomers A, B and C being adjacent to each other by complexation with a transition metal ion and polymerization with a crosslinking monomer, wherein the polymer will selectively bind with and hydrolyze the substrate.

5,780,579

METHOD FOR THE PREPARATION OF POLYAMINO ACIDS

Gérard Soula, Meyzieu; Jean-Michel Grosselin; Rafaël Jorda, both of Ste Foy Le Lyon, and Catherine Castan, Brignais, all of France, assignors to Flamel Technologies (Societe Anonyme), Venissieux Cedex, France

PCT No. PCT/FR94/00992, § 371 Date Mar. 28, 1996, § 102(e) Date Mar. 28, 1996, PCT Pub. No. WO95/04772, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 9, 1994, Ser. No. 592,299

Claims priority, application France, Aug. 10, 1993, 93 09991 Int. Cl.⁶ C08G 69/26

U.S. Cl. 528—332

16 Claims

1. A method for the preparation of polyamino acids, with controlled molecular weights, by polymerization of N-carboxyanhydrides (NCAs) of at least one amino acid, using at least one alkaline initiator in liquid medium, wherein the improvement comprises using an initiator chosen from tertiary phosphines and/or amines; introducing into the polymerization medium: an amount of water of between 0.1 and 50% by weight relative to the rest of the liquid medium,

5,780,580

FUNCTIONALIZED CRYSTALLINE POLYLACTONES AS TOUGHENERS FOR THERMOSETTING RESINS

Shalaby W. Shalaby, Anderson, S.C., and Lance A. Monroe, Boynton Beach, Fla., assignors to Clemson University, Clemson, S.C.

Division of Ser. No. 567,843, Dec. 6, 1995, Pat. No. 5,691,444

This application Aug. 15, 1997, Ser. No. 911,450

Int. Cl.⁶ C08G 63/08

U.S. Cl. 528—354

8 Claims

1. A toughener for use with a thermosetting resin capable of undergoing ring opening polymerization, comprising a crystalline polylactone having one or more carboxylic groups per chain, said functionalized polylactone having an average molecular weight of at least about 1000.

5,780,581

PLATEABLE STRUCTURAL ADHESIVE FOR CYANATE ESTER COMPOSITES

Ralph D. Hermansen, Northridge; Brian M. Punsly, Torrance, and Wai-Cheng Seetoo, Monterey Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 27, 1995, Ser. No. 549,139

Int. Cl.⁶ C08G 59/00; 63/00; C08L 67/00; 63/00

U.S. Cl. 528—363

15 Claims

1. A plateable adhesive for bonding cyanate ester composites together comprising a combination of the following components:
- (a) a polymer mixture comprising:
 - (i) at least one polyepoxide resin, and
 - (ii) a substantially stoichiometric amount of curing agent; and
 - (b) a filler comprising cured cyanate ester polymer,
- wherein said adhesive is curable within 24 hours at a temperature of less than about 110° C.

5,780,582

HYDROXY-FUNCTIONALIZED POLYESTER AND POLY(ESTER ETHER) OLIGOMERS

David S. Wang, Lake Jackson, Tex.; Michael N. Mang, Midland, Mich.; Jerry E. White, and John M. Beckerdite, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 31, 1996, Ser. No. 775,657

Int. Cl.⁶ C08G 59/00

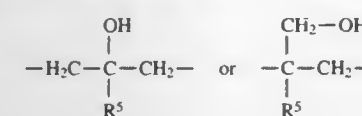
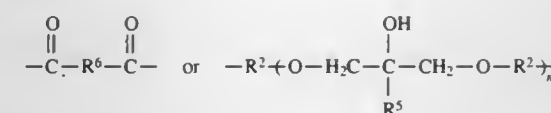
U.S. Cl. 528—365

19 Claims

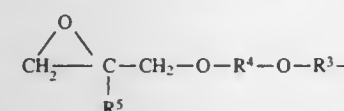
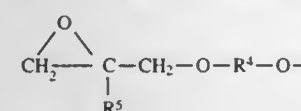
1. A polyester or poly(ester ether) oligomer having repeating units represented by the formula:



wherein z has a value of 10 or less, R¹ is an arylene moiety or an aliphatic moiety having from 1 to 8 carbons; R³ is:

and R⁴ is:

wherein R² is independently a divalent organic moiety which is primarily hydrocarbon; R⁵ is hydrogen or alkyl; R⁶ is an arylene moiety or an aliphatic moiety having from 1 to 8 carbons and n is from 0 to 100; A is hydrogen or:

wherein R³, R⁴ and R⁵ are as previously defined; and B is:wherein R⁴ and R⁵ are as previously defined.

5,780,583

REACTIVE POLYARYLENE SULFIDE OLIGOMERS
Hyman R. Lubowitz, Rolling Hills Estates, Calif., and Clyde H. Sheppard, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jan. 9, 1991, Ser. No. 639,051

Int. Cl.⁶ C08G 75/14; B32B 27/06

U.S. Cl. 528—388

41 Claims

1. A process for the preparation of a crosslinkable poly(arylene sulfide) oligomer, comprising reacting:
- n equivalents of a dihaloaromatic compound;
 - n+1 equivalents of a sulfur compound that is reactive with halo organic compounds to form thioethers; and
 - 2 equivalents of an end cap monomer corresponding to the formula:



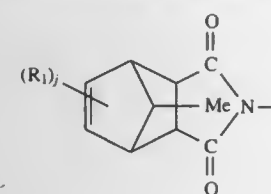
wherein:

X is halogeno;

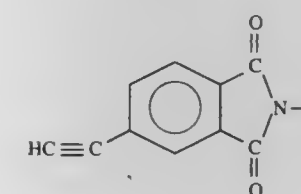
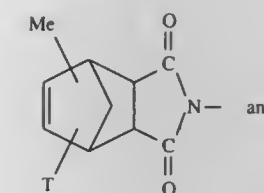
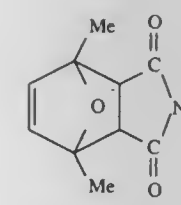
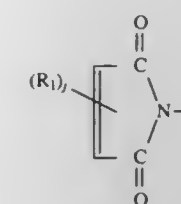
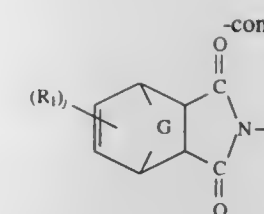
Ar is arylene;

i is 1 or 2;

A is selected from the group consisting of



-continued



Me is Methyl;

G is —O—, —SO₂—, —CH₂—, or —S—;

T is allyl or methylallyl;

R₁ is lower alkoxy, aryl, substituted aryl, lower alkyl, substituted alkyl, aryloxy, or halogen; and

j is 0, 1 or 2.

5,780,584

HIGHLY ACTIVE DOUBLE METAL CYANIDE COMPLEX CATALYSTS

Bi Le-Khac, West Chester, Pa.; Harry R. Hinney, Cross Lanes, and Paul T. Bowman, Hurricane, both of W. Va., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Division of Ser. No. 505,938, Jul. 24, 1995, Pat. No. 5,627,122.

This application Jan. 7, 1997, Ser. No. 780,659

Int. Cl.⁶ C07C 41/03; 43/10; C08G 59/68

U.S. Cl. 528—410

3 Claims

1. A process for making an epoxide polymer, said process comprising polymerizing a 1,2-epoxide in the presence of a catalyst which comprises zinc hexacyanocobaltate, tert-butyl alcohol, and zinc chloride, wherein the catalyst is substantially crystalline by powder X-ray diffraction and contains less than about 0.2 moles of zinc chloride per mole of zinc hexacyanocobaltate.

5,780,585

BACTERIAL NITROREDUCTASE FOR THE REDUCTION OF CB 1954 AND ANALOGUES THEREOF TO A CYTOTOXIC FORM

Gillian Anlezark; Roger Melton; Roger Sherwood, all of Salisbury; Thomas Connors, Carshalton; Frank Friedlos, Sutton; Michael Jarman, Sutton; Richard Knox, Sutton, all of United Kingdom; Anthony Mauger, Kensington, Md., and Caroline Joy Springer, Sutton, United Kingdom, assignors to Cancer Research Campaign Technology Limited, London, England

Division of Ser. No. 232,018, Jul. 27, 1994, Pat. No. 5,633,158.

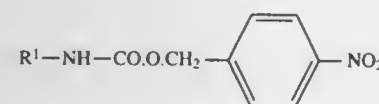
This application Jun. 7, 1995, Ser. No. 504,047

Claims priority, application United Kingdom, Oct. 23, 1991, 9122464; Oct. 23, 1991, 9122496

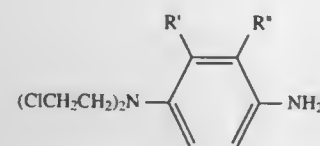
Int. Cl.⁶ C07K 7/56; C07H 15/24; C07D 487/14; C07C 271/28; 269/04; 69/96; 68/00

U.S. Cl. 530—317

1. A compound of the formula (I):

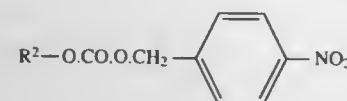


where R¹ is a group such that the compound R¹NH₂ represents a nitrogen mustard of the formula (IV):



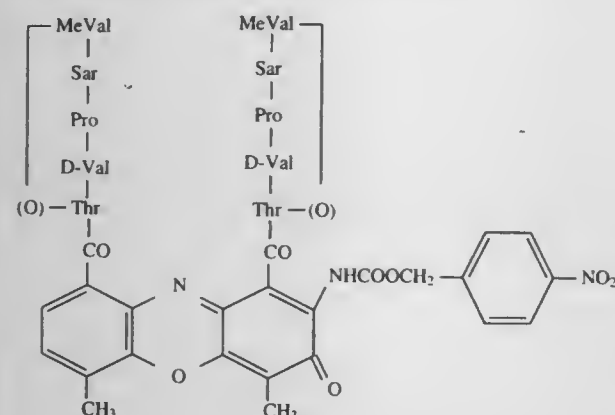
where R' and R'' are H, F, or CH₃.

2. A compound of the formula (II):



where R² is a group such that the compound R²OH is a phenolic nitrogen mustard.

5. A compound of the formula (V), (VI), VII):



V

VI

VII

VIII

IX

X

XI

XII

XIII

XIV

XV

XVI

XVII

XVIII

XIX

XX

XXI

XXII

XXIII

XXIV

XXV

XXVI

XXVII

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5,780,590

**ANTITHROMBOTIC AZACYCLOALKYLALKANOYL
PEPTIDES AND PSEUDOPEPTIDES**

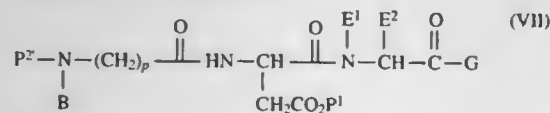
Scott I. Klein, Norristown, Pa.; Bruce F. Molino, Lexington, Ky.; Mark Czekaj, Sellersville, and Charles J. Gardner, Royersford, both of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation-in-part of Ser. No. 476,750, Jun. 7, 1995, which is a continuation of Ser. No. 628,648, Oct. 17, 1994, which is a continuation-in-part of Ser. No. 138,820, Oct. 15, 1993, abandoned. This application Aug. 21, 1996, Ser. No. 700,950

Int. Cl.⁶ A61K 38/06

U.S. Cl. 530—331

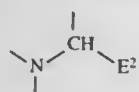
1. A compound of the formula VII,



wherein

B is alkyl, cycloalkyl, cycloalkylalkyl, alkylcycloalkyl, alkylcycloalkylalkyl, aryl, aralkyl, alkylaryl, or alkylaralkyl;

E¹ is H or, in combination with the



moiety, forms a 4-, 5-, 6-, or 7-membered azacycloalkane ring;

E² is an α -carbon side chain of a naturally occurring α -amino acid, H, alkyl, cycloalkyl, cycloalkylalkyl, alkylcycloalkyl, alkylcycloalkylalkyl, aryl, substituted aryl, aralkyl, substituted aralkyl, heterocyclyl, substituted heterocyclyl, heterocyclylalkyl, substituted heterocyclylalkyl;

G is OR¹ or NR¹R²;

R¹ and R² are independently H, alkyl, cycloalkyl, cycloalkylalkyl, alkylcycloalkyl, alkylcycloalkylalkyl, aryl, aralkyl, alkylaryl, or alkylaralkyl;

p is 1 to 4;

P¹ is a hydrogenation labile acid protecting group; and

P², is P² or TFA·H—; and

P² is an acid labile amine protecting group.

5,780,591

**PROTEIN OF LEISHMANIA WHICH IS EXPRESSED AT
AN INCREASED LEVEL IN THE AMASTIGOTE FORM**

Gregory Matlashewski, 2571 Chestnut Circle, St-Lazare, Quebec, Canada, J0P 1V0, and Hugues Charest, 1930 Sommet-Trinite, St-Bruno, Quebec, Canada, H3V 4P6

Continuation of Ser. No. 302,463, Sep. 12, 1994, abandoned, which is a division of Ser. No. 115,987, Sep. 3, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 460,746

Int. Cl.⁶ C07K 14/44; A61K 39/008

U.S. Cl. 530—350

2 Claims

2. An isolated and purified protein of Leishmania having the amino acid sequence:

Met Lys Ile Arg Ser Val Arg Pro Leu Val Val Leu Leu Val Cys Val
1 5 10 15

Ala Ala Val Leu Ala Leu Ser Ala Ser Ala Glu Pro His Lys Ala Ala
20 25 30

Val Asp Val Gly Pro Leu Ser Val Gly Pro Gln Ser Val Gly Pro Leu
35 40 45

Ser Val Gly Pro Gln Ala Val Gly Pro Leu Ser Val Gly Pro Gln Ser
50 55 60

Val Gly Pro Leu Ser Val Gly Pro Gln Ala Val Gly Pro Leu Ser Val
65 70 75 80

Gly Pro Gln Ser Val Gly Pro Leu Ser Val Gly Pro Leu Ser Val Gly
85 90 95

Pro Gln Ser Val Gly Pro Leu Ser Val Gly Ser Gln Ser Val Gly Pro
100 105 110

Leu Ser Val Gly Pro Gln Ser Val Gly Pro Leu Ser Val Gly Pro Gln
115 120 125

Ala Val Gly Pro Leu Ser Val Gly Pro Gln Ser Val Gly Pro Leu Ser
130 135 140

Val Gly Pro Gln Ala Val Gly Pro Leu Ser Val Gly Pro Gln Ser Val
145 150 155 160

Gly Pro Leu Ser Val Gly Pro Gln Ser Val Gly Pro Leu Ser Val Gly
165 170 175

Ser Gln Ser Val Gly Pro Leu Ser Val Gly Pro Gln Ser Val Gly Pro
180 185 190

Leu Ser Val Gly Pro Gln Ser Val Gly Pro Leu Ser Val Gly Pro Gln
195 200 205

Ser Val Gly Pro Leu Ser Val Gly Pro Gln Ser Val Gly Pro Leu Ser
210 215 220

Val Gly Pro Gln Ser Val Asp Val Ser Pro Val Ser
225 230 235

5,780,592

**COMPOSITIONS COMPRISING LIPOPROTEINS AND
CROTONAMIDE DERIVATIVES**

Stefan Müller, Hochheim; Axel Hofmann, Frankfurt; Karin Saar, Biebesheim; Hans-Ulrich Schorlemmer, Marburg, and Robert Bartlett, Darmstadt, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 10, 1996, Ser. No. 761,335

Claims priority, application Germany, Dec. 20, 1995, 195 47 648.4

Int. Cl.⁶ C07K 1/00; A61K 31/42; 31/275

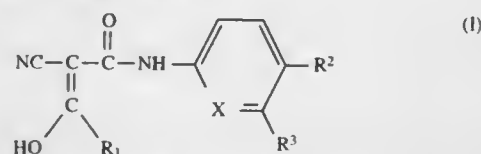
U.S. Cl. 530—359

21 Claims

1. A composition comprising

1) a lipoprotein, and

2) a compound of the formula I



or a stereoisomeric form of the compound of formula I, or a salt thereof, wherein

R¹ is

- a) (C₁-C₄)-alkyl,
- b) (C₃-C₅)-cycloalkyl,
- c) (C₂-C₆)-alkenyl or
- d) (C₂-C₆)-alkynyl,

R² is

- a) —CF₃,
- b) —O—CF₃,
- c) —S—CF₃,
- d) —OH,
- e) —NO₂,
- f) halogen,
- g) benzyl,
- h) phenyl,
- i) —O-phenyl,
- k) —CN or
- l) —O-phenyl, mono- or polysubstituted by
- 1) (C₁-C₄)-alkyl,

5,780,595

PLATELET AGGREGATION INHIBITORS

Robert M. Scarborough, Belmont, Calif., assignor to COR Therapeutics, Inc., South San Francisco, Calif.

Continuation of Ser. No. 806,558, Dec. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 586,610, Sep. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 542,488, Jun. 22, 1990, abandoned, which is a continuation-in-part of Ser. No. 483,229, Feb. 20, 1990, Pat. No. 5,318,899, which is a continuation-in-part of Ser. No. 418,028, Oct. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 367,509, Jun. 16, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 460,869

Int. Cl.⁶ C07K 16/00

U.S. Cl. 530—387.9

3 Claims

1. An antibody specifically immunoreactive with a peptide selected from the group consisting of:

PA1 80	Mpr-P-Har-G-D-W-P-C-NH ₂	(SEQ ID No:1)
PA1 81	Mpr-G-Har-G-D-W-P-C-NH ₂	(SEQ ID No:2)
PA1 82	Mpr-A-Har-G-D-W-P-C-NH ₂	(SEQ ID No:3)
PA1 83	Mpr-Aib-Har-G-D-W-P-C-NH ₂	(SEQ ID No:4)
PA1 84	Mpr-(N-Me-Arg)-Har-G-D-W-P-C-NH ₂	(SEQ ID No:5)
PA1 85	Mpr-(N-Me-Ser)-Har-G-D-W-P-C-NH ₂	(SEQ ID No:6)
PA1 86	Mpr-(D-Ala)-Har-G-D-W-P-C-NH ₂	(SEQ ID No:7)
PA1 87	Mpr-(β-Ala)-Har-G-D-W-P-C-NH ₂	(SEQ ID No:8)
PA1 88	Mpr-(N-Me-Leu)-Har-G-D-W-P-C-NH ₂	(SEQ ID No:9)
PA1 89	Mpr-(N-Me-Ala)-Har-G-D-W-P-C-NH ₂	(SEQ ID No:10)
PA1 90	Mpr-Sar-Har-G-D-W-P-C-NH ₂	(SEQ ID No:11)
PA1 91	Mpr-V-Har-G-D-W-P-C-NH ₂	(SEQ ID No:12)
PA1 92	Mpr-S-Har-G-D-W-P-C-NH ₂	(SEQ ID No:13)
PA1 93	Mpr-Har-G-D-W-P-A-C-NH ₂	(SEQ ID No:14)
PA1 94	Mpr-Har-G-D-W-P-(N-Me-Ala)-C-NH ₂	(SEQ ID No:15)
PA1 95	Mpr-Har-G-D-W-P-G-C-NH ₂	(SEQ ID No:16)
PA1 96	Mpr-Har-G-D-W-P-(D-Ala)-C-NH ₂	(SEQ ID No:17)
PA1 97	Mpr-Har-G-D-W-P-P-C-NH ₂	(SEQ ID No:18)
PA1 98	Mpr-Har-G-D-W-P-(Sar)-C-NH ₂	(SEQ ID No:19)
PA1 99	Mpr-Har-G-D-W-P-(Aib)-C-NH ₂	(SEQ ID No:20)
PA1 100	Mpr-A-(Har)-G-D-W-P-Pen-NH ₂	(SEQ ID No:21)
PA1 101	Mpr-A-K-G-D-W-P-Pen-NH ₂	(SEQ ID No:22), and
PA1 102	Mpr-D-(Har)-G-D-W-P-Pen-NH ₂	(SEQ ID No:23).

5,780,596

**BINDING PROTEINS TO MALIGNANT CELL TYPE
MARKERS OF THE INTERIOR NUCLEAR MATRIX**

Gary Toukatly, Amhurst, N.H., and Graham P. Lidgard, Wellesley, Mass., assignors to MatriTech, Inc., Newton, Mass.

Division of Ser. No. 195,487, Feb. 14, 1994, which is a continuation of Ser. No. 901,701, Jun. 22, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 467,781

Int. Cl.⁶ C07K 16/18; A61K 39/395

U.S. Cl. 530—387.9

10 Claims

1. A composition comprising an isolated binding protein selected from the group consisting of an antibody, an antigen binding fragment thereof, and a biosynthetic antibody binding site that binds specifically to a protein comprising the amino acid sequence defined by SEQ ID NO: 2.

- 2) halogen,
 - 3) —O—CF₃ or
 - 4) —O—CH₃,
- R³ is
- a) (C₁-C₄)-alkyl,
 - b) halogen, or
 - c) a hydrogen atom, and
- X is
- a) a —CH group or
 - b) a nitrogen atom.

5,780,593

**METHOD OF ISOLATING BIOMOLECULES BY ION
EXCHANGE**

Allan Otto Fog Lihme, Birkerød; Margit Irene Aagesen, Copenhagen; Claus Gammelgård-Larsen, Skanderborg, and Katrine Hvid Ellegård, Århus N, all of Denmark, assignors to Kem-En-Tec A/S, Copenhagen O, and Md Foods Amba, Viby J, both of Denmark

PCT No. PCT/DK93/00299, § 371 Date Jul. 12, 1995, § 102(e) Date Jul. 12, 1995, PCT Pub. No. WO94/10622, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 17, 1993, Ser. No. 403,807

Claims priority, application Denmark, Sep. 17, 1992, 1143/92 Int. Cl.⁶ C07K 16/00; B01D 15/08

U.S. Cl. 530—361

35 Claims

1. A method of isolating a biomolecule consisting of a protein or a peptide from a medium containing biomolecules by ion exchange wherein an eluate contains a low salt concentration so that a desalination treatment can be avoided, which method comprises the steps of:

- a) packing a column with an ion exchange material consisting of a material having ion exchanging groups which can be transformed from a charged form to an uncharged form;
 - b) applying the medium containing biomolecules to the ion exchange material;
 - c) binding said biomolecules to be isolated to the ion exchange material; and
 - d) eluting the bound biomolecules from the ion exchange material by an eluant comprising a charge neutralizing acid or base which transforms the ion exchanging groups from the charged form to the uncharged form;
- wherein that the charge neutralizing acid or base has a concentration in the eluant which is up to twice the concentration of the ion exchanging groups of the ion exchange material; and said ion exchange material is in a packed, hydrated state.

5,780,594

**BIOLOGICALLY ACTIVE PROTEIN FRAGMENTS
CONTAINING SPECIFIC BINDING REGIONS OF SERUM
ALBUMIN OR RELATED PROTEINS**

Daniel C. Carter, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 24,547, Mar. 1, 1993, abandoned.

This application May 23, 1995, Ser. No. 448,196

Int. Cl.⁶ C07K 14/76

U.S. Cl. 530—363

11 Claims

1. A serum albumin protein fragment consisting of at least one serum albumin binding region selected from the group consisting of binding region subdomain IIA and binding region subdomain IIIA.

5,780,597

MONOCLONAL ANTIBODIES TO CYTOTOXIC LYMPHOCYTE MATURATION FACTOR

Maurice Kent Gately, Montville; Ulrich Andreas Gubler, Glen Ridge; Jeffrey David Hulmes, Ringwood, all of N.J.; Frank John Podlaski, New City, N.Y.; Alvin Seth Stern, Passaic Park, N.J.; Richard Anthony Chizzonite, South Kent, Conn., and Yu-Ching Eugene Pan, Pine Brook, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 205,011, Mar. 2, 1994, abandoned, which is a division of Ser. No. 857,023, Mar. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 572,284, Aug. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 520,935, May 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 455,708, Dec. 22, 1989, abandoned. This application Jun. 2, 1995, Ser. No. 460,061

Int. Cl.⁶ C07K 16/24; C12P 21/08

U.S. Cl. 530—388.23

3 Claims

1. An isolated antibody which binds specifically to cytotoxic lymphocyte maturation factor (CLMF) and neutralizes CLMF induced proliferation by more than 50% in a CLMF dependent T cell growth assay, said factor being a heterodimeric protein having a molecular weight band of about 75 kD as determined by SDS-polyacrylamide gel electrophoresis (SDS-PAGE) under non-reducing conditions and under reducing conditions providing a first subunit having a molecular weight band of about 40 kD and a second subunit having a molecular weight of about 35 kD each as determined by SDS-Page.

5,780,598

Patent Not Issued For This Number

5,780,599

GROWTH HORMONE CRYSTALS AND A PROCESS FOR PRODUCTION OF GROWTH HORMONE CRYSTALS

Flemming Junker, Humlebæk, and Claus Friss Theisen, København, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 222,515, Apr. 1, 1994, abandoned, which is a continuation of Ser. No. 961,932, Jan. 13, 1993, abandoned. This application Dec. 7, 1994, Ser. No. 350,758

Claims priority, application Denmark, Jul. 13, 1990, 1687/90

Int. Cl.⁶ A61K 38/27

U.S. Cl. 530—399

23 Claims

1. A process for production of divalent cation crystals of growth hormone (GH) or derivative thereof, comprising the following steps:

- adding to a solution of growth hormone (GH) or derivative thereof, divalent inorganic cations and organic solvents or a mixture of organic solvents at a pH between 5.8 and 6.5 to obtain crystals of GH;
- growing of crystals of step (a) at a temperature from about 0° C. to about 30° C., and
- isolating said crystals grown at step (b).

5,780,600

PURIFIED CILIARY NEUROTROPHIC FACTOR

Franklin D. Collins; Leu-Fen Lin; Drzislav Mismar, and Christine Ko, all of Boulder, Colo., assignors to Amgen Inc., Thousand Oaks, Calif.

Division of Ser. No. 400,439, Mar. 2, 1995, which is a continuation of Ser. No. 76,282, Jun. 11, 1993, abandoned, which is a continuation of Ser. No. 857,544, Mar. 24, 1992, abandoned, which is a continuation of Ser. No. 458,564, Dec. 28, 1989, Pat. No. 5,141,856, and a continuation-in-part of Ser. No. 404,533, Sep. 8, 1989, Pat. No. 4,997,929, said Ser. No. 458,564 is a continuation-in-part of Ser. No. 293,851, Jan. 5, 1989, Pat. No. 5,011,914. This application May 24, 1995, Ser. No. 448,909

Int. Cl.⁶ C07K 14/475

U.S. Cl. 530—399

9 Claims

1. Purified CNTF having the amino acid sequence set forth in FIG. 11.

5,780,601

METHOD FOR PURIFICATION OF PROTEIN "E" FROM HAEMOPHILUS INFLUENZAE

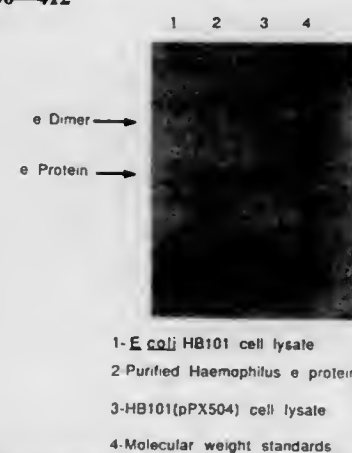
Bruce A. Green, Pittsford, and Gary W. Zlotnick, Penfield, both of N.Y., assignors to Praxis Biologics, Inc., Rochester, N.Y.

Division of Ser. No. 491,466, Mar. 9, 1990, Pat. No. 5,601,831, which is a continuation-in-part of Ser. No. 320,971, Mar. 9, 1989, abandoned. This application May 23, 1995, Ser. No. 447,653

Int. Cl.⁶ C07K 1/04

U.S. Cl. 530—412

1 Claim



1. A method of purifying protein "e" of *Haemophilus influenzae*, comprising:

- disrupting *H. influenzae* cells;
- subjecting the disrupted cells to differential sedimentation to obtain a total cell membrane fraction;
- fractionating the total cell membrane into inner and outer membrane components by density gradient sedimentation or by differential solubilization of the inner membrane component with detergents selected from the group consisting of polyoxyethyleneoctylphenol and N-lauroyl sarcosine, sodium salt;
- obtaining a subfraction of the preparation of the outer membrane components which is enriched in protein "e" by extraction with an aqueous solution of 0.1–2.0% N-lauroyl sarcosine, sodium salt;
- solubilizing the protein "e" from the subfraction of step (d) by a two-step differential solubilization process with sulfobetaine detergents, by first extracting the subfraction of step (d) with an aqueous solution of 0.1–10% (w/v) dodecylsulfobetaine to remove outer membrane proteins other than protein "e", and then extracting the residual insoluble components with an aqueous solution of tetradecyl- or hexadecylsulfobetaine; and
- recovering the purified protein "e".

5,780,602

DYESTUFF MIXTURES OF FIBER-REACTIVE AZO DYESTUFFS AND THEIR USE FOR DYEING FIBER MATERIAL CONTAINING HYDROXYL AND/OR CARBOXYAMIDE GROUPS

Christian Schumacher, Kelkheim, and Werner Hubert Russ, Flörsheim, both of Germany, assignors to Pystar Textilfarben GmbH & Co. KG, Deutschland, Germany

Filed Sep. 5, 1997, Ser. No. 924,746

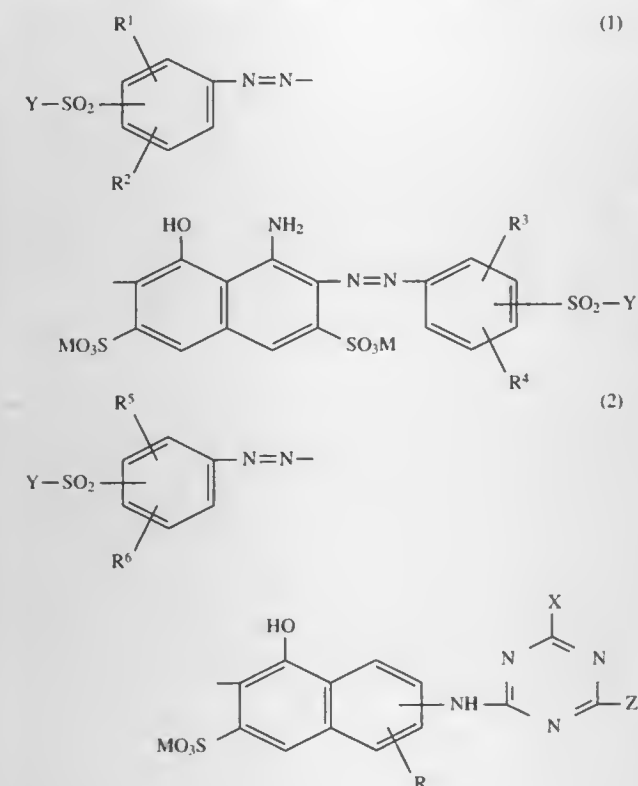
Claims priority, application Germany, Sep. 5, 1996, 196 35 999.6

Int. Cl.⁶ C09B 62/51; 67/22; D06P 1/384

U.S. Cl. 534—642

21 Claims

1. A dyestuff mixture containing one or more disazo dyestuffs corresponding to the formula (1) and of one or more monoazo dyestuffs corresponding to the formula (2) with a proportion of the dyestuff or dyestuffs (2) of at least 3 mol %, based on the total amount of the dyestuffs (1) and (2) in the dyestuff mixture



in which:

M is hydrogen or an alkali metal;
 R^1 is hydrogen, methyl, ethyl, methoxy, ethoxy or sulfo;
 R^2 is hydrogen, methyl, ethyl, methoxy or ethoxy;
 R^3 is hydrogen, methyl, ethyl, methoxy, ethoxy or sulfo;
 R^4 is hydrogen, methyl, ethyl, methoxy or ethoxy;
 R^5 is hydrogen, methyl, ethyl, methoxy, ethoxy or sulfo;
 R^6 is hydrogen, methyl, ethyl, methoxy or ethoxy;
 Y is in each case independently of one another vinyl, β -chloroethyl, β -thiosulfatoethyl or β -sulfatoethyl;
 R is bonded in the 3- or 4-position on the 6-sulfo-8-hydroxy-naphth-7-yl radical and is hydrogen or sulfo;
 X is chlorine or hydroxy;
 Z is chlorine or hydroxy;
the triazinylamino group in formula (2) is bonded in the 2- or 3-position on the 6-sulfo-8-hydroxy-naphth-7-yl radical if R is hydrogen, and bonded in the 1- or 3-position on the 6-sulfo-8-hydroxy-naphth-7-yl radical if R is 4-sulfo, and bonded in the 1-position on the 6-sulfo-8-hydroxy-naphth-7-yl radical if R is 3-sulfo;
if X and Z are both chlorine, the mixture necessarily comprises at least one further dyestuff of the formula (2) where X or Z is hydroxy.

5,780,603

COMBINATORIAL SYNTHESIS OF CARBOHYDRATE LIBRARIES

Ole Hindsgaul, Edmonton, Canada, assignor to Synsorb Biotech, Inc., Alberta, Canada

Filed Nov. 15, 1996, Ser. No. 751,231

Int. Cl.⁶ C07H 15/14; A61K 31/70

U.S. Cl. 536—4.1

11 Claims

1. A method for synthesizing a thiosaccharide derivative, which method comprises:

- providing a thiosaccharide;
- providing at least a stoichiometric amount of a coupling reagent selected from the group consisting of Michael acceptors and α -halocarbonyl compounds; and
- contacting the thiosaccharide and the coupling reagent under conditions which provide for a thiosaccharide carbonyl compound.

5,780,604

11,12-CYCLIC PHOSPHITE OR PHOSPHATE DERIVATIVES OF ERYTHROMYCIN AND RELATED MACROLIDES

Yat Sun Or, Libertyville; Richard F. Clark, Mundelein, both of Ill., and Daniel T. Chu, Santa Clara, Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

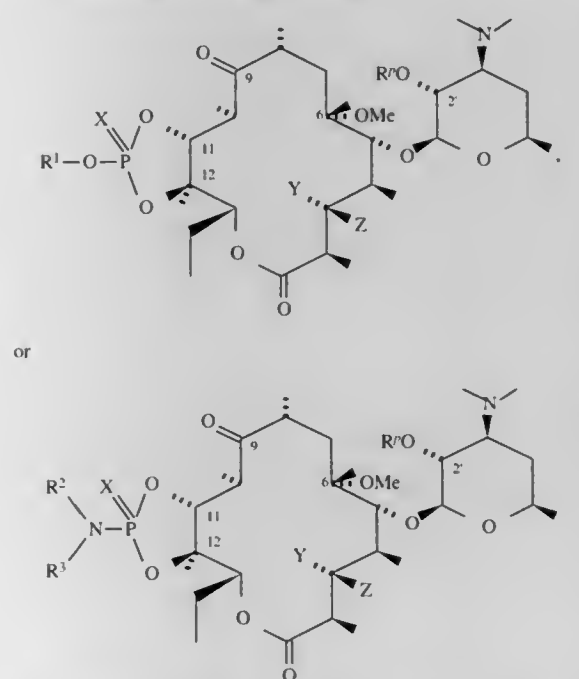
Filed Sep. 26, 1997, Ser. No. 938,143

Int. Cl.⁶ C07H 17/08

U.S. Cl. 536—7.3

13 Claims

1. A compound having the formula:



or pharmaceutically acceptable salts and esters thereof, wherein:
 R^1 is hydrogen, C_1 – C_{10} alkyl, C_1 – C_{12} alkenyl, or C_1 – C_{12} alkynyl, each of which may be optionally substituted with aryl, substituted aryl, heteroaryl, or substituted heteroaryl;
 X is O or absent;
 R^2 is hydrogen or hydroxy protecting group;
 R^2 and R^3 are hydrogen, C_1 – C_{10} alkyl, C_1 – C_{12} alkenyl, or C_1 – C_{12} alkynyl, each of which may be optionally substituted with aryl, substituted aryl, heteroaryl, or substituted heteroaryl; or R^2 and R^3 taken together with the atom to which they are attached form a 3–10 membered heterocycloalkyl ring; and
 Y is hydrogen, Z is cladinose or Y and Z taken together form an oxo group.

5,780,605

6,9-BRIDGED ERYTHROMYCIN DERIVATIVES

Yat Sun Or, Libertyville; Richard F. Clark, Mundelein, both of Ill.; Daniel T. Chu, Santa Clara, Calif., and Jacob J. Plattner, Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

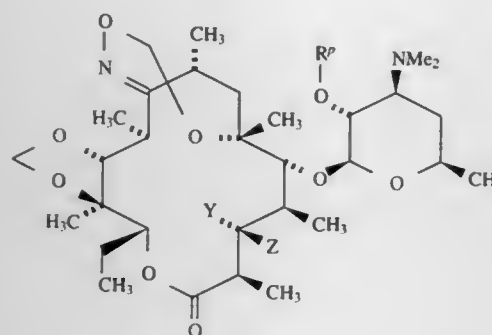
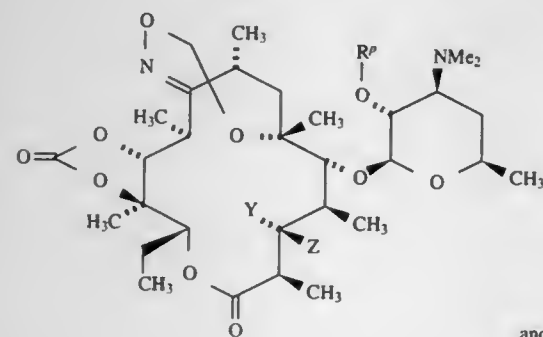
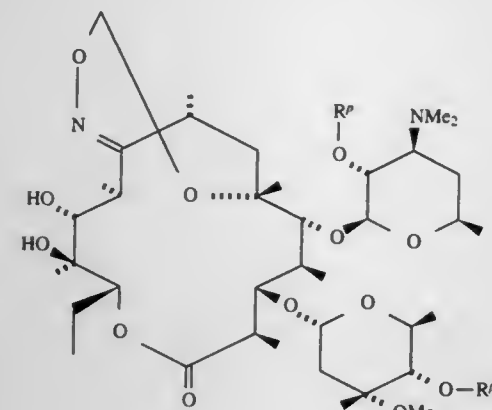
Filed Sep. 8, 1997, Ser. No. 925,582

Int. Cl.⁶ C07H 17/08; A61K 31/70

U.S. Cl. 536—7.2

9 Claims

1. A compound selected from the group consisting of:



as well as the pharmaceutically acceptable salts, esters and prodrugs thereof, wherein

R^p is hydrogen or a hydroxy protecting group; one of Y and Z is H and the other is selected from the group consisting of hydrogen, hydroxy, protected hydroxy and —O-cladinosyl, or

Y and Z are taken together with the atom to which they are attached to form an oxo group.

5,780,606

NEISSERIA MENINGITIDIS CAPSULAR POLYSACCHARIDE CONJUGATES

Ali Kandil, Willowdale; Pele Chong, Richmond Hill, and Michel H. Klein, Willowdale, all of Canada, assignors to Connaught Laboratories Limited, Willowdale, Canada

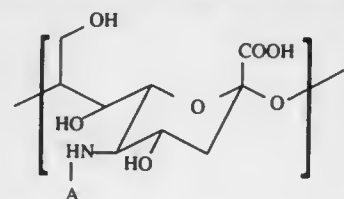
Filed Jun. 7, 1995, Ser. No. 474,392

Int. Cl.⁶ C08B 37/00; A61K 31/715

U.S. Cl. 536—18.7

10 Claims

1. A capsular polysaccharide containing multiple sialic acid moieties, modified to contain at least one moiety of the formula (I):



wherein A is a heterobifunctional linker molecule.

5,780,607

ANTISENSE OLIGOMERS

Robert Alan Goodnow, Jr., Basking Ridge, and Steve Yik-Kai Tam, West Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

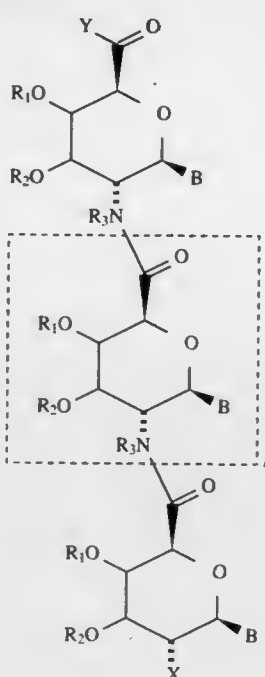
Filed Oct. 8, 1996, Ser. No. 727,685

Int. Cl.⁶ C07H 19/00; 21/04

U.S. Cl. 536—22.1

17 Claims

1. An oligomer of formula



wherein

R₁, R₂ and R₄ are independently hydrogen, lower alkyl or acyl; R₃ is hydrogen or lower alkyl;

B is a nucleobase or a protected nucleobase, such that said oligomer has a sequence of bases complementary to a selected RNA;

n is 5 to 30;

X is NR₃R₄; and

Y is OR₃, or NHR₃;

or pharmaceutically acceptable salts thereof.

5,780,608

Patent Not Issued For This Number

5,780,609

DNA SEQUENCE OF HUMAN RP-105

Lisa A. Marshall, Wyndmoor, and Amy K. Roshak, East Norriton, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed Oct. 16, 1996, Ser. No. 730,771

Int. Cl.⁶ C07H 21/04; C12N 15/63

U.S. Cl. 536—23.5

3 Claims

1. A cDNA clone of American Type Culture Collection Deposit No. 69902 comprising SEQ ID NO: 1.

5,780,610

REDUCTION OF NONSPECIFIC HYBRIDIZATION BY USING NOVEL BASE-PAIRING SCHEMES

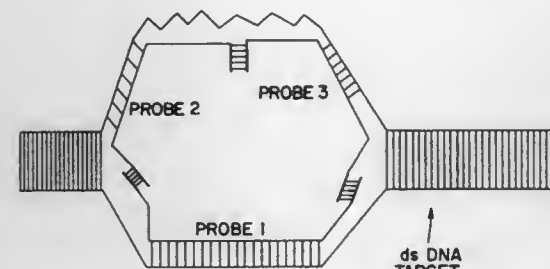
Mark L. Collins, 2991 Santos La., Apt. 301, Walnut Creek, Calif. 94507; Thomas Horn, 876 Spruce St., Berkeley, Calif. 94707; Patrick J. Sheridan, 2008 Horne St., San Leandro, Calif. 94577; Brian D. Warner, 1034 Alhambra Ave., Martinez, Calif. 94553, and Michael S. Urdea, 100 Buncle Meadow Rd., Alamo, Calif. 94507

Continuation of Ser. No. 435,547, May 5, 1995, abandoned, which is a continuation of Ser. No. 298,073, Aug. 30, 1994, Pat. No. 5,681,702. This application Feb. 3, 1997, Ser. No. 794,153

Int. Cl.⁶ C07H 21/04; 21/02; C12Q 1/68; C12P 19/34

U.S. Cl. 536—24.5

7 Claims



1. An oligonucleotide aptamer, comprising an intramolecular oligonucleotide hybrid complex containing a plurality of complementary base pairs at least one of which comprises complementary nonnatural nucleotidic units that will not effectively base pair with adenosine (A), thymidine (T), cytidine (C), guanosine (G) or uridine (U) under conditions in which A-T and G-C base pairs are normally formed, and wherein the nonnatural nucleotidic unit is contained within an oligonucleotide segment in which specificity of the base pairs is not required for maintaining secondary structure of the aptamer.

5,780,611

OLIGOMERS WHICH INHIBIT EXPRESSION OF COLLAGEN GENES

Ramareddy V. Guntaka; Karl Theodore Weber, both of Columbia; Attila Kovacs, St. Louis, and Jagannadhachari Kandala, Columbia, all of Mo., assignors to Ramareddy Venkata Guntaka, Columbia, Mo.

Continuation-in-part of Ser. No. 712,357, Sep. 11, 1996, which is a continuation-in-part of Ser. No. 528,836, Sep. 15, 1995, abandoned. This application Feb. 18, 1997, Ser. No. 802,547

Int. Cl.⁶ C12Q 1/68; C07H 21/04

U.S. Cl. 536—24.5

6 Claims

1. The oligonucleotide of SEQ. ID No. 14.

5,780,612

OLIGONUCLEOTIDES SPECIFIC FOR CYTOKINE SIGNAL TRANSDUCER GP130 MRNA

Kathleen Ann Becherer; Nanibhushan Dattagupta, both of San Diego, Calif., and Yathi M. Naidu, Park Ridge, Ill., assignors to Gen-Probe Incorporated, San Diego, Calif.

Continuation of Ser. No. 476,634, Jun. 7, 1995, Pat. No. 5,674,995. This application Oct. 3, 1997, Ser. No. 943,834

Int. Cl.⁶ C12N 15/00; C07H 21/00; C12Q 1/68

U.S. Cl. 536—24.5

23 Claims

1. An oligonucleotide for inhibiting or reducing cytokine-induced cellular proliferation of cells, said oligonucleotide being up to 100 nucleotide bases in length and comprising a contiguous nucleotide base sequence selected from the group consisting of:

SEQ. ID. NO. 1	GGCCAGCGC GACTCCGCG GCCTT.
SEQ. ID. NO. 2	CCTGTAGATT CAGTGGTGAG.
SEQ. ID. NO. 3	ACACAACTG CAGTGAATT AGAATG.
SEQ. ID. NO. 4	TACATGAAA TAATCCATAC ATT.
SEQ. ID. NO. 5	GTTTATGATA GTATATTGCT CCTTA.
SEQ. ID. NO. 6	CCATAACATT CTGTTCAAGC TGTC.
SEQ. ID. NO. 7	TGCCCATTC AATTATAAG TGAAG.
SEQ. ID. NO. 8	GCTTTGCAAT CAGCAAACTT GTGTGT.
SEQ. ID. NO. 9	TACAGGATCA AAATTGATAT GATCTGATG AAC.
SEQ. ID. NO. 10	GGCATCTTTG GTCCTATATT G.
SEQ. ID. NO. 11	AGGATCTGGA ACATTAGGC, and
SEQ. ID. NO. 12	GCTCGAAGTG TTTTGTGAAG.

5,780,613

COVALENT LOCK FOR SELF-ASSEMBLED OLIGONUCLEOTIDE CONSTRUCTS

Robert L. Letsinger, Wilmette, Ill., and Mathias K. Herrlein, Frankfurt, Germany, assignors to Northwestern University, Evanston, Ill.

Filed Aug. 1, 1995, Ser. No. 509,858

Int. Cl.⁶ C07H 21/04; C12Q 1/68

U.S. Cl. 536—25.33

10 Claims

1. A method of covalently autoligating self-assembled oligonucleotide segments by displacing a 5' displaceable group by a 3' thiophosphoryl group to spontaneously form an —OP (O) (O³¹) S— internucleoside linkage.

5,780,614

Patent Not Issued For This Number

5,780,615

GLYCOSYLATION OF LIPIDS AND LIPID-CONTAINING PARTICLES AND DIAGNOSTIC AND THERAPEUTIC METHODS AND MATERIALS DERIVED THEREFROM
Richard J. Bucala, New York; Helen Vlassara, and Anthony Cerami, both of Shelter Island, all of N.Y., assignors to The Picower Institute For Medical Research, Manhasset, N.Y.
Division of Ser. No. 29,417, Mar. 11, 1993, which is a continuation-in-part of Ser. No. 887,279, May 21, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,605
Int. Cl.⁶ C07H 5/04; A61K 31/70

U.S. Cl. 536—29.1

10 Claims

1. An AGE-lipid comprised of the non-enzymatic reaction product of a lipid containing a primary amino group, said lipid selected from the group consisting of amine-containing lipids; lipoproteins; and apolipoproteins, which is reacted with a reducing sugar or with a compound that is derived from a reducing sugar.

5,780,616

CATIONIC POLYMER

Giancarlo Fornasari, Pescara; Giangiacomo Torri, Milan, and Giovanni Carlucci, Chieti, all of Italy, assignors to The Procter & Gamble Company, Cincinnati, Ohio
PCT No. PCT/US95/14679, § 371 Date Jul. 10, 1997, § 102(e) Date Jul. 10, 1997, PCT Pub. No. WO96/15154, PCT Pub. Date May 23, 1996

PCT Filed Nov. 13, 1995, Ser. No. 836,297

Claims priority, application Italy, Nov. 10, 1994, T094A0891

Int. Cl.⁶ C08B 11/14; 15/10

U.S. Cl. 536—30

26 Claims

1. A cationic polysaccharide having superabsorbent characteristics, the polysaccharide being substituted by quaternary ammonium groups and having a ds of at least 0.5, and the polysaccharide being cross-linked to a sufficient extent that it remains insoluble in water.

5,780,617

SYNTHESIS OF LIPONUCLEOTIDES

Henk van den Bosch, Maarn; Gysbert M. T. van Wijk, Utrecht, both of Netherlands; Raj Kumar, San Diego, and Karl Y. Hostettler, Del Mar, both of Calif., assignors to NeXstar Pharmaceuticals, Inc., Boulder, Colo.

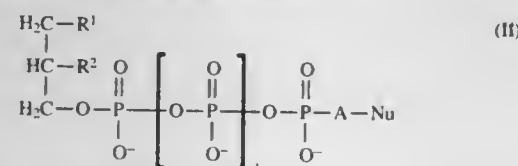
Continuation of Ser. No. 706,873, May 29, 1991, abandoned, which is a continuation of Ser. No. 530,556, May 29, 1990, abandoned. This application May 31, 1994, Ser. No. 251,018

Int. Cl.⁶ C07H 1/02; C07F 9/02; 9/06; 9/28

U.S. Cl. 536—55.3

24 Claims

1. A process for the preparation of a glyceride di- or triphosphate nucleoside derivative having the formula:



wherein A is oxygen, sulfur, or methylene

R¹ and R² are independently hydroxyl or branched or unbranched aliphatic groups joined through a carbon-carbon, ether, ester, thioether, or thioester linkage and having from 1 to 24 carbon atoms and 0 to 6 sites of unsaturation,

k is 0 or 1, and Nu is a nucleoside selected from an adenine guanine, cytosine, uracil, inosine, or thymine moiety linked to

a ribose or 2'-deoxyribose 5-carbon cyclic sugar moiety, or a nucleoside analogue selected from:

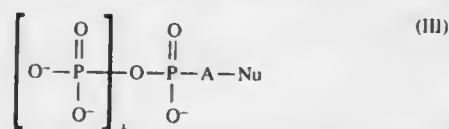
(1) a purine or pyrimidine base analogue linked to a ribose or 2'-deoxyribose 5-carbon cyclic sugar moiety;

(2) a naturally occurring purine or pyrimidine base linked to a ribose analogue; or

(3) a purine or pyrimidine base analogue linked to a ribose analogue; wherein

said purine or pyrimidine analogue differs from the naturally occurring purine or pyrimidine by substitution, or by deletion or replacement of substituents; and said ribose analogue differs from the naturally occurring ribose by substitution, or deletion or replacement of substituents, by acyclization, or by having a different stereochemistry

and salts thereof, comprising the step of: reacting a phospholipid of Formula (I) as defined in claim 1, with a mono- or diphosphate having the formula



wherein A, Nu, and k, are as hereinabove defined, in a molar ratio of phospholipid:mono- or diphosphate of at least about 1:1 in the presence of a basic catalyst, under anhydrous conditions, whereby said glyceride di- or triphosphate nucleoside is formed,

providing that when A is oxygen, and k is O, said phospholipid derivative is not a 1-O-alkyl-2-O-acylglycero-3-phosphate morpholidate when said second compound comprises an adenine, cytosine, 5-fluorouracil, 5-azacytosine, 6-mercaptopurine, or 7-deazaadenine group attached to a pentose which is a ribose or arabinose.

5,780,618

OXIDIZED CELLULOSE

Gilbert S. Banker, Iowa City, and Vijay Kumar, Coralville, both of Iowa, assignors to Biocontrol Incorporated, Iowa City, Iowa

Division of Ser. No. 101,184, Aug. 3, 1993, Pat. No. 5,414,079.

This application Apr. 28, 1995, Ser. No. 430,819

Int. Cl.⁶ C08B 11/00; C07H 15/04

U.S. Cl. 536—56

5 Claims

1. A method of forming a stable colloidal or near colloidal dispersion, comprising:

reacting the cellulose material with a hypochlorite solution having an active chlorine content of between about 4% and 6%, at a temperature ranging from about 60° C. to about 80° C, and a pH ranging from about 9.5 to about 14 for a period of time effective to convert the cellulose material into the oxidized cellulose product;

isolating the oxidized cellulose product by filtration;

washing the oxidized cellulose product in an aqueous solution of an antichlor agent;

rinsing the oxidized cellulose product with methanol or acetone and

agitating the oxidized cellulose product in water using a mechanical stirrer.

5,780,619

STARCH GRAFT POLY(METH)ACRYLATE BLAST MEDIA

Ruben Lenz, Laval Sur le Lac, Canada, assignor to U.S. Technology Corporation, Canton, Ohio

Filed Jun. 26, 1996, Ser. No. 670,894

Int. Cl.⁶ C07H 1/00; 1/06

U.S. Cl. 536—123.1

18 Claims

1. A polymeric blast media comprising: a starch polymer backbone;

5,780,622

METHOD OF SYNTHESIZING 5,15-DIARYLBENZOPORPHYRIN-7-ONE COMPOUNDS
David Dolphin, and Ross Boyle, both of Vancouver, Canada, assignors to The University of British Columbia, Vancouver, Canada

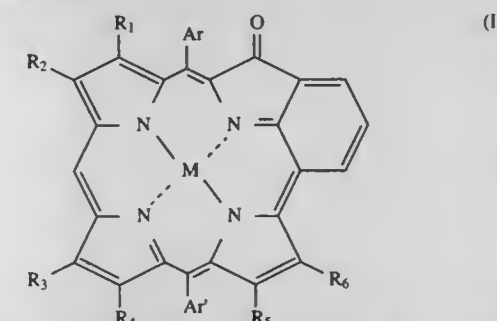
Division of Ser. No. 235,174, Apr. 29, 1994, Pat. No. 5,656,756. This application Aug. 11, 1997, Ser. No. 909,136

Int. Cl.⁶ C07D 487/22

U.S. Cl. 540—472

11 Claims

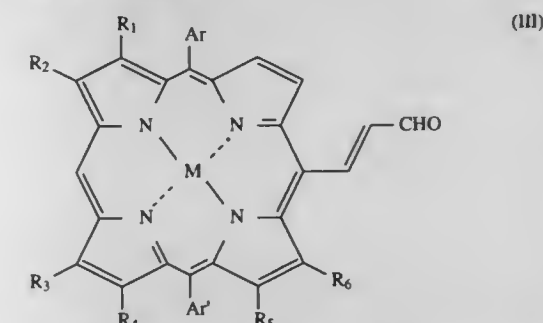
1. A method for synthesizing a 5,15-diarylbenzochlorin-7-one having the formula



or the demetallated form thereof wherein M is a metal selected from the group consisting of Ni(II), Cu(II), Zn, Sn, Ge, Si, Ga and Al;

each of R₁ through R₆ is independently a hydrogen atom, a lower alkyl group, a lower alkyl carboxylic acid or acid ester group or, taken together with another ring, ring substituent, or meso-substituent, forms a fused 5- or 6-membered ring; and Ar and Ar' are aromatic rings, which may be the same or different; comprising the steps of:

a. cyclizing a meso-(formylvinyl) 5,15-diarylporphyrin having the formula (III)



or a demetallated form thereof to form a cyclization reaction mixture; and
b. oxidizing said cyclization reaction mixture to form the 5,15-diarylbenzochlorin-7-one of formula (I) or said demetallated form.

5,780,623

PROCESS TO PREPARE ε-CAPROLACTAM FROM 6-AMINOCAPROIC ACID

Rudolf P.M. Guit, Maastricht, Netherlands; Samuel L. Lane, Beaumont, Tex., and Wim Buijs, Schinnen, Netherlands, assignors to DSM N.V., Heerlen, Netherlands

Filed Feb. 23, 1996, Ser. No. 605,883

Int. Cl.⁶ C07D 201/08

U.S. Cl. 540—538

9 Claims

1. A process for the preparation of ε-caprolactam by cyclization of 6-aminocaproic acid, said process comprising the combination of steps of:

providing a first liquid aqueous mixture comprising an alcohol and said 6-aminocaproic acid, separating said alcohol from said first liquid aqueous mixture to yield a second liquid aqueous mixture comprising

an acrylic polymer which is grafted onto the starch polymer backbone,

said blast media having a Shore D hardness of from about 65 to about 90,

said acrylic polymer which is grafted onto the starch polymer backbone being of defined molecular weight.

5,780,620

NON-REDUCING OLIGOSACCHARIDES AND THEIR PRODUCTION AND USE

Takahiko Mandal; Takashi Shibuya; Toshiyuki Sugimoto, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Continuation of Ser. No. 267,134, Jun. 28, 1994, abandoned.

This application Dec. 10, 1996, Ser. No. 762,940

Claims priority, application Japan, Jun. 28, 1993, 5-178623; Mar. 1, 1994, 6-054377

Int. Cl.⁶ C07H 1/00; C12P 19/14; A61K 31/715

U.S. Cl. 536—123.1

15 Claims

1. A non-reducing oligosaccharide which is alpha-D-oligoglucosyl alpha-D-oligoglucoside represented by the formula of "Gm-T-Gn" where "G" and "T" mean a glucose residue and an alpha, alpha-trehalose residue, respectively, which glucose residues are linked to each other and to the trehalose residue via alpha-1,4 or alpha-1,6 linkages, and each of "m" and "n" is an integer of 1-8.

5,780,621

ALUMINUM PHTHALOCYANINE REACTIVE DYES

Wolfgang Harms; Karl-Josef Herd, both of Odenthal, and Willi Brust, Wermelskirchen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Aug. 8, 1996, Ser. No. 694,041

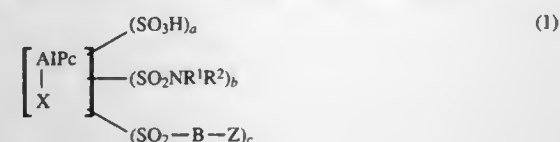
Claims priority, application Germany, Aug. 14, 1995, 195 29 853.5

Int. Cl.⁶ C07D 487/22; C09B 62/26

U.S. Cl. 540—140

14 Claims

1. An aluminum phthalocyanine reactive dye which, in the form of the free acid, corresponds to the following structure



in which

a is a number from 0 to 3,

b is a number from 0 to 2,

c is a number from 0.5 to 3,

Pc is a phthalocyanine radical,

R¹ and R² independently of one another are H, C₁-C₆-alkyl, substituted C₁-C₆-alkyl, phenyl, substituted phenyl or a fiber-reactive radical with a sulfonyl group, or NR¹R² together is the radical of a saturated heterocyclic ring system,

B is an N-containing bridge member which is linked to the SO₂ radical via an N atom,

Z is a fiber-reactive radical,

X is OH, OR³, a phthalocyanine radical linked via a bonding member or an anion and

R³ is C₁-C₆-alkyl, substituted C₁-C₆-alkyl, phenyl or substituted phenyl.

6-aminocaproic acid so that the concentration of said alcohol in said second liquid aqueous mixture is less than about 1%, cyclizing said 6-aminocaproic acid of said second liquid aqueous mixture at an elevated temperature to yield a third liquid aqueous mixture comprising said ϵ -caprolactam.

5,780,624

PREPARATION OF OXIME ETHERS

Horst Wingert, Mannheim, and Michael Keil, Freinsheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/04580, § 371 Date May 20, 1997, § 102(e) Date May 20, 1997, PCT Pub. No. WO96/16932, PCT Pub. Date Jun. 6, 1996

PCT Filed Nov. 21, 1995, Ser. No. 836,885

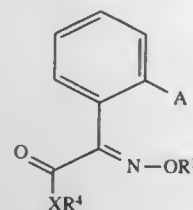
Claims priority, application Germany, Dec. 1, 1994, 44 42 730.1

Int. Cl.⁶ C07D 291/00; C07C 229/00; 59/40; 233/00

U.S. Cl. 544—1

13 Claims

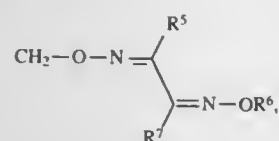
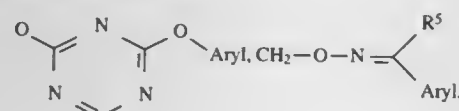
1. A process for preparing oxime ethers of the formula Ia



where

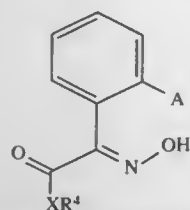
R^3 , R^4 are, identically or differently, C_1 - C_6 -alkyl and R^4 is additionally hydrogen, and X is oxygen and NH, and A is the following radicals:

CH_3 , O-Aryl, CH_2 -O-Aryl,



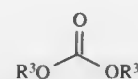
where

R^5 - R^7 are, identically or differently, hydrogen, C_1 - C_4 -alkyl, aryl and hetaryl, with the proviso that aryl is phenyl and naphthyl and can be substituted by from one to three of the following radicals: halogen, cyano, nitro, C_1 - C_4 -alkyl, C_1 - C_4 -alkoxy, C_1 - C_4 -haloalkyl, C_1 - C_4 -haloalkoxy, C_1 - C_4 -alkoximino, C_1 - C_4 -alkyl, aryl, aryloxy, benzyl, benzyloxy, hetaryl, hetaryloxy, C_3 - C_6 -cycloalkyl, C_1 - C_4 -dialkylamino, CO_2CH_3 , $CO_2C_2H_5$, formyl and acetyl, and that hetaryl is an unsubstituted or substituted aromatic five or six-membered heterocycle, which comprises converting an oxime of the formula IIa



where the substituents have the abovementioned meanings, in the presence or absence of an organic diluent, with a base into the

corresponding salt, and reacting the latter with a dialkyl carbonate of the formula III



where R^3 has the abovementioned meanings.

5,780,625

4-AMINOPHENOL DERIVATIVES

Suruliappa Gowper Jegannathan, and Christophe Bulliard, both of Fribourg, Switzerland, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

Filed Nov. 25, 1996, Ser. No. 756,222

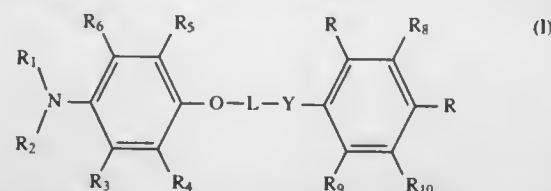
Claims priority, application Switzerland, Nov. 27, 1995, 3361/95; Jan. 8, 1996, 48/96

Int. Cl.⁶ C07D 265/30; 279/12

U.S. Cl. 544—58.2

22 Claims

1. A compound of the general formula I



in which one R is the group-OH and the other R is the group R_7 , and in which:

L is a direct bond or a bridging link of the formulae:

$-CO-(C_1-C_{18}alkylene)_m-$ or
 $-C_1-C_{18}alkylene-Q-C_1-C_{18}alkylene-O-CO-$
 $(C_1-C_{18}alkylene)_m-$, or a bridging link of the formula

$-(CH_2)_q-CH(OR_{12})-R_{13}-$

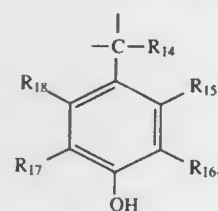
in which:

Q is a direct bond or is $-CH(R_0)-$,

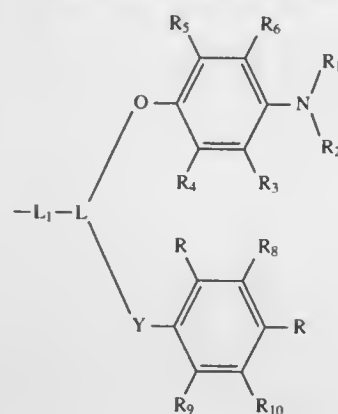
m is zero or 1, and

q is an integer from 1 to 18;

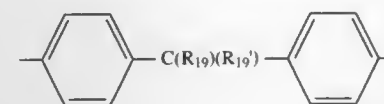
Y is a divalent bridging link of the formula



R_0 is C_1 - $C_{18}alkyl$ or is C_2 - $C_{24}alkyl$ containing one or more O atoms in the chain, or is a group of the formula



in which L_1 is C_2 - $C_{18}alkylene$ or

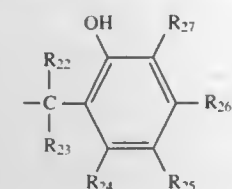


and is connected to the remainder of the molecule by way of a radical L which includes $Q(CHR_0)$ or CHR_0 , R_1 and R_2 together form a ring including the divalent group of the formula

$-(CH_2)_k-Z-(CH_2)_k-$

in which each index k, independently of the other, is an integer from 1 to 3, and Z is the group $-O-$, $-S-$, $-SO-$, $-SO_2-$, $-N(R_{11})-$, $-CH_2-$, $-O-SO-$, $O-$, $-O-B(R_{20})-$, $-O-P(R_{21})-O-$ or $-N(R_{11})-(CH_2)_g-N(R_{11})-$, where g is an integer from 1 to 3;

R_3 to R_{10} independently of one another are H, C_1 - $C_{18}alkyl$, C_1 - $C_{18}alkenyl$, C_1 - $C_{12}alkoxy$, C_5 - C_6 cycloalkyl, unsubstituted or substituted aryl, or halogen, where R_8 and R_{10} independently of one another may also be a group of the formula



R_{11} and R_{11}' independently of one another are H, C_1 - $C_{18}alkyl$, C_2 - $C_{18}alkenyl$, unsubstituted or substituted aryl or a group $-COR_{28}$;

R_{12} is H, C_1 - $C_{18}alkyl$, C_2 - $C_{18}alkenyl$ or a group of the formula $-COR_{28}$;

R_{13} is a divalent bridging link of the formula $-(O)_m$, C_1 - $C_{18}alkylene-(O)_m$,

$-O-C_1-C_{18}alkylene-O-CO-$, or $-O-C_1-C_{18}alkylene-O-CO-$ $(C_1-C_{18}alkylene)_m$;

R_{14} is H, C_1 - $C_{18}alkyl$, C_2 - $C_{18}alkenyl$, C_3 - C_6 cycloalkyl, C_3 - $C_{24}alkyl$ interrupted by one O atoms, unsubstituted or substituted aryl, an unsubstituted or substituted heterocycle, or a group of the formula $-C_1-C_{12}alkylene-COO-R_{29}$ or $-C_1-C_{12}alkylene-CO-NR_{11}R_{11}'$;

R_{15} to R_{18} independently of one another are H, C_1 - $C_{18}alkyl$, C_2 - $C_{18}alkenyl$, C_1 - $C_{12}alkoxy$,

C_5 - C_6 cycloalkyl, unsubstituted or substituted aryl, or halogen;

R_{19} and R_{19}' independently of one another are H, C_1 - $C_{18}alkyl$, C_2 - $C_{18}alkenyl$ or unsubstituted or substituted aryl;

R_{20} and R_{21} are C_1 - $C_{18}alkyl$ or unsubstituted or substituted aryl;

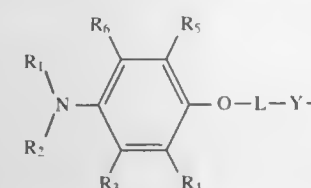
R_{22} and R_{23} independently of one another are H, C_1 - $C_{18}alkyl$, C_3 - $C_{24}alkyl$ interrupted by one or more O atoms;

C_2 - $C_{18}alkenyl$; C_5 - C_6 cycloalkyl; unsubstituted or substituted aryl or a group of the formula $-C_1-C_{12}alkylene-COO-R_{18}$;

R_{24} to R_{27} independently of one another are H, C_1 - $C_{18}alkyl$, C_2 - $C_{18}alkenyl$, C_1 - $C_{12}alkoxy$,

C_5 - C_6 cycloalkyl, unsubstituted or substituted aryl, halogen or a group of the formula $-C_1-C_{12}alkylene-COO-R_{29}$;

R_{28} and R_{29} independently of one another are C_1 - $C_{18}alkyl$, C_2 - $C_{18}alkenyl$, C_5 - C_6 cycloalkyl or unsubstituted or substituted aryl, and R_{29} is otherwise a group of the formula



provided that R_{25} is a group of the formula

$-C_1-C_{12}alkylene-COO-R_{29}$

in which and the other symbols R_1 , R_2 , R_3 , R_4 , R_5 , R_6 and L are as defined.

5,780,626

OXAZINE COMPOUNDS

Shy-Fuy Lee, Sunnyvale, Calif., assignor to Sandoz, Ltd, Basel, Switzerland

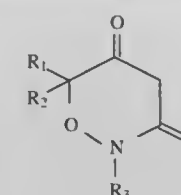
Continuation of Ser. No. 232,919, Apr. 25, 1994, which is a division of Ser. No. 994,048, Dec. 14, 1992, Pat. No. 5,336,662, which is a continuation of Ser. No. 902,609, Jun. 23, 1992, abandoned, which is a continuation of Ser. No. 604,708, Oct. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 497,154, Mar. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 343,093, Apr. 25, 1989, abandoned. This application May 26, 1995, Ser. No. 451,279

Int. Cl.⁶ C07D 265/02

U.S. Cl. 544—63

11 Claims

1. A compound of formula III



wherein

R_1 , R_2 and R_3 are independently hydrogen; C_1 - C_8 alkyl; carboxyl; C_1 - C_8 alkoxycarbonyl; phenyl or substituted phenyl wherein the substituents include one to three groups of C_1 - C_8 alkyl optionally substituted by 1 to 6 halogen atoms, C_1 - C_8 alkoxy optionally substituted by 1 to 6 halogen atoms, C_1 - C_8 alkylcarbonyl, C_1 - C_8 alkoxycarbonyl, NR_7R_8 , $O_nS(O)_nR_{10}$, $NR_7SO_2R_8$, halogen, cyano or nitro or

R_1 and R_2 together form a C_{3-6} alkylene bridge;

R_7 and R_8 are independently hydrogen or C_1 - C_4 alkyl;

R_{10} is C_1 - C_8 alkyl optionally substituted by 1 to 6 halogen atoms; n is 0 or 1 and

n' is 0, 1 or 2

with the proviso that when R_1 and R_2 are hydrogen, R_1 is not phenyl.

5,780,627

FLUORESCENT DIOXAZINE PIGMENTS

Zhimin Hao, Marly; John S. Zambounis, Murten, and Abul Iqbal, Arconciel, all of Switzerland, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

Division of Ser. No. 319,399, Oct. 6, 1994, Pat. No. 5,561,232.

This application Jul. 9, 1996, Ser. No. 677,287

Claims priority, application Switzerland, Oct. 13, 1993, 3080/93; Nov. 18, 1993, 3442/93

Int. Cl.⁶ C07D 471/04

U.S. Cl. 544—74

4 Claims

1. A compound of formula

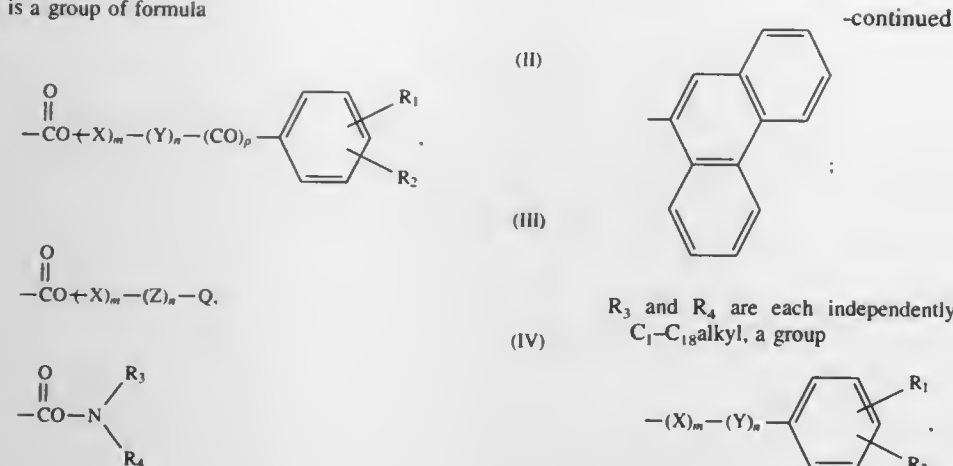
$A(B)_x$,

(I).

wherein x is an integer from 1 to 4.

A is the radical of a chromophore of a triphenyldioxazine series, which radical contains x' N-atoms attached to C-atoms of the triphenyldioxazine ring systems, to which N-atoms the groups B are attached.

B is a group of formula



or hydrogen, with the proviso that at least one B is formula (II), (III) or (IV),

m, n and p are each independently of one another 0 or 1,

X is C₁-C₄alkylene or C₂-C₈alkenylene,

Y is a group -V-(CH₂)_q-,

Z is a group -V-(CH₂)_r-,

V is C₃-C₆cycloalkylene,

q is an integer from 1 to 6, and

r is an integer from 0 to 6,

R₁ and R₂ are each independently of the other hydrogen,

C₁-C₆alkyl, C₁-C₄alkoxy, halogen, CN, NO₂, unsubstituted

phenyl or phenoxy or phenyl or phenoxy which are substituted

by C₁-C₄alkyl,

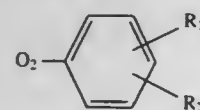
C₁-C₄alkoxy or halogen,

Q is hydrogen, CN, Si(R₁)₃;

a group C(R₅)(R₆)(R₇), wherein R₅, R₆ and R₇ are each independently

of one another hydrogen or halogen and at least one

of R₅, R₆ and R₇ is halogen; a group



wherein R₁ and R₂ are as defined above;

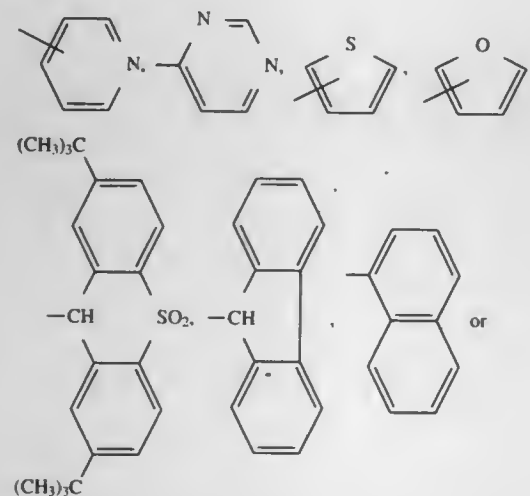
a group SO₂R₈ or SR₈, wherein R₈ is C₁-C₄alkyl;

a group CH(R₉)₂, wherein R₉ is unsubstituted phenyl or phenyl

which is substituted by C₁-C₄alkyl, C₁-C₄alkoxy or halogen;

or

a group of formula



wherein X, Y, R₁, R₂, m and n are as defined above, or R₃ and R₄, together with the linking nitrogen atom, form a pyrrolidinyl, piperidinyl or morpholinyl radical.

5,780,628

PROCESS FOR PRODUCING DIOXOQUINAZOLINES
Masashi Komatsu, Shinji Nishii, and Hiroshi Ueda, all of
Osaka, Japan, assignors to Sumitomo Chemical Company,
Limited, Osaka, Japan

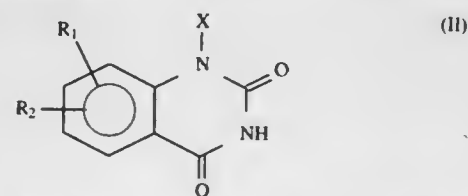
Filed Jan. 31, 1997, Ser. No. 791,551

Claims priority, application Japan, Feb. 1, 1996, 8-016650
Int. Cl.⁶ C07D 239/96

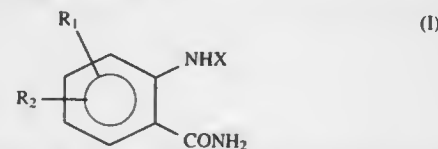
U.S. Cl. 544-285

12 Claims

1. A process for producing an dioxoquinazoline represented by the following formula (II):



wherein R₁ and R₂ independently represent a hydrogen atom, a halogen atom, a nitro group, a lower alkyl group which is optionally substituted with one or more halogen atoms, an aralkyl group which is optionally substituted with one or more halogen atoms, an alkoxy group which is optionally substituted with one or more halogen atoms, an alkoxycarbonyl group which is optionally substituted with one or more halogen atoms or a group represented by YNR₃R₄, wherein Y represents a direct bond, a lower alkylene group or a carbonyl group, and R₃ and R₄ independently represent a lower alkyl group or N, R₃ and R₄ may bond together to form a five- or six-membered heterocycle which optionally contains another hetero atom, said heterocycle being optionally substituted, and X represents a hydrogen atom, a lower alkyl group which is optionally substituted with one or more halogen atoms, an aralkyl group which is optionally substituted with one or more halogen atoms or a group represented by ZCO₂R₅, wherein Z represents a lower alkylene group and R₅ represents a lower alkyl group or an aralkyl group which comprises reacting an anthranilamide represented by the following formula (I):



wherein X, R₁ and R₂ are as defined above, with a reaction product of a pyridine and phosgene.

5,780,629

POLYMERIZABLE, CHIRAL COMPOUNDS AND THEIR USE

Karl-Heinz Eitzbach, Frankenthal; Paul Delavie, Ludwigshafen; Karl Siemensmeyer, Frankenthal; Gerhard Wagenblast, Wachenheim; Lothar Laupichler, Heidelberg, and Volkmar Vill, Hamburg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/04055, § 371 Date Jun. 6, 1996, § 102(e)
Date Jun. 6, 1996, PCT Pub. No. WO95/16007, PCT Pub.
Date Jun. 15, 1995

PCT Filed Dec. 6, 1994, Ser. No. 647,900

Claims priority, application Germany, Dec. 11, 1993, 43 42
280.2

Int. Cl.⁶ C07D 239/26; 239/36; 407/04; 493/04

U.S. Cl. 544-296

7 Claims

1. A compound of the formula



where, in each case independently of one another,

A is a spacer,

M is a group of the formula (T-Y¹)-T,

Y is a direct bond, O, S, COO, OCO, CON(R) or N(R)CO,

Z is a polymerizable group,

n is a number from 2 to 6,

X is a chiral furan or bi-furan radical,

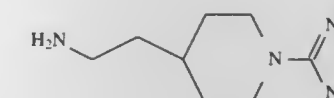
R is C₁- to C₄-alkyl or hydrogen,

T is cycloalkylene, an aromatic radical or a pyrimidine radical,

Y¹ is O, COO, OCO, CH₂O, OCH₂, CH=N, N=CH or a direct

bond, and

r is from 0 to 3.



or a protected form thereof, wherein the amidino group is either mono- or diprotected at the nitrogens or a salt thereof.

5,780,632

IMIDE DERIVATIVES AND THEIR PRODUCTION AND USE

Ikutaro Saji; Masayuki Muto; Norihiko Tanno, and Mayumi Yoshigi, all of Osaka, Japan, assignors to Sumitomo Pharmaceuticals Company, Limited, Osaka, Japan

Division of Ser. No. 113,320, Aug. 30, 1993, Pat. No.

5,532,372, which is a continuation of Ser. No. 726,172, Jul. 5,

1991, abandoned. This application Apr. 18, 1996, Ser. No.

634,738

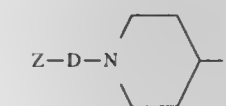
Claims priority, application Japan, Jun. 7, 1990, 2-180271

Int. Cl.⁶ C07D 405/14; 413/14; A61K 31/445

U.S. Cl. 546-15

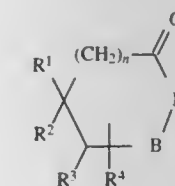
14 Claims

1. An imide compound of formula:



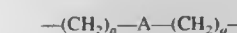
wherein

Z is a group of the formula:



in which B is a carbonyl group or a sulfonyl group, R¹, R², R³ and R⁴ are each a hydrogen atom or an alkyl group having 1-4 carbon atoms with a proviso that R¹ and R² or R¹ and R³ are combined together to make a non-aromatic hydrocarbon ring having at most 7 carbon atoms and being unsubstituted or substituted with at least one alkyl group having 1-4 carbon atoms, and n is an integer of 0 or 1;

D is a group of the formula:



in which A is a non-aromatic hydrocarbon ring having at most 7 carbon atoms or a non-aromatic hydrocarbon ring having at most 7 carbon atoms which is bridged with an alkylene group having not more than 3 carbon atoms or an oxygen atom, and p and q are each an integer of 0, 1 or 2; and

Ar is a benzisoxazolyl group or a benzofuryl group; or a pharmaceutically acceptable acid addition salt thereof.

5,780,630

INTERMEDIATE USEFUL IN THE SYNTHESIS OF PESTICIDAL URACILS

John W. Lyga, Basking Ridge, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed May 30, 1997, Ser. No. 866,363

Int. Cl.⁶ C07D 239/557

U.S. Cl. 544-309

1 Claim

1. The compound 1-methyl-6-trifluoromethyl-2,4(1H,3H)-pyrimidinedione.

5,780,631

STARTING MATERIALS IN THE SYNTHESIS OF THROMBIN AND KININOGENASE INHIBITORS

Karl Thomas Antonsson, Lindome; Ruth Elvy Bylund, Västra Frölunda; Nils David Gustafsson, Kullavik, and Nils Olov Ingemar Nilsson, Fjärås, all of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden

Continuation of Ser. No. 382,036, Aug. 19, 1994. This applica-

tion Jun. 6, 1995, Ser. No. 465,916

Claims priority, application Sweden, Jun. 3, 1993, 9301916

Int. Cl.⁶ C07D 213/00

U.S. Cl. 546-1

4 Claims

1. The compound of the formula:

5,780,633

PROCESS FOR THE PREPARATION OF INDOLIZINE DERIVATIVES

Satoshi Okada, Kyoto; Kozo Sawada, Tsukuba; Akio Kuroda, Tsukuba; Shinya Watanabe, Tsukuba, and Hirokazu Tanaka, Takarazuka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP94/01465, § 371 Date May 6, 1996, § 102(e) Date May 6, 1996, PCT Pub. No. WO95/07279, PCT Pub. Date Mar. 16, 1995

PCT Filed Sep. 6, 1994, Ser. No. 592,309

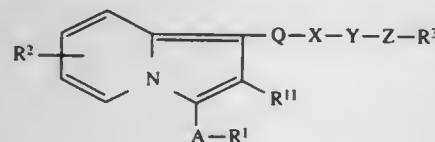
Claims priority, application United Kingdom, Sep. 10, 1993, 9318790

Int. Cl.⁶ C07D 221/04; 471/04; 209/02

U.S. Cl. 546—112

15 Claims

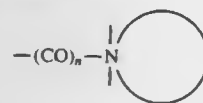
1. A process for preparing a compound of the formula:



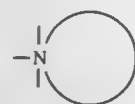
wherein R¹ is carboxy or protected carboxy,

R² is hydrogen, lower alkyl or halogen,

R³ is aryl or ar(lower)alkyl, each of which may be optionally substituted; or carbamoyl(lower)alkyl, in which the carbamoyl moiety is substituted by 1 or 2 substituent(s) selected from the group consisting of lower alkyl and lower alkyl phenyl; or a group of the formula:



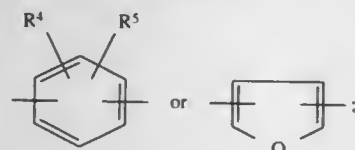
in which



is a heterocyclic group containing nitrogen, and n is 0 or 1, R¹¹ is hydrogen or lower alkyl,

A is lower alkylene which may be substituted by oxo or lower alkylene,

Q is carbonyl or lower alkylene, X is

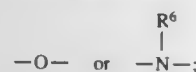


in which R⁴ is hydrogen or lower alkyl, and

R⁵ is hydrogen, lower alkyl or Y—Z—R³,

Y is a direct bond or lower alkylene, and

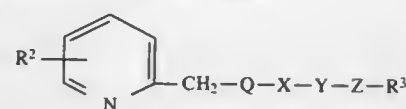
Z is lower alkylene, lower alkenylene,



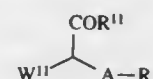
in which R⁶ is hydrogen, lower alkyl, or ar(lower)alkyl which may be optionally substituted or an amino protective group, or a salt thereof,

which process comprises:

reacting a compound of the formula:



wherein R², R³, Q, X, Y and Z are each as defined above, or a salt thereof, with a compound of the formula:



wherein R¹, R¹¹ and A are each as defined above, and W¹¹ is halogen or acyloxy, or a salt thereof.

5,780,634

PROCESS FOR PRODUCING 2-(CARBOXYPHENYL)-4-QUINOLINECARBOXYLIC ACID COMPOUNDS

Yoshihisa Inoue; Hajime Ebisu; Naomichi Ishida; Norifumi Nakamura, all of Osaka; Jun Sasaki, Kanagawa; Takashi Okazoe, Kanagawa; Yoshitomi Morizawa, Kanagawa; Arata Yasuda, Kanagawa; Shuzhong Wang, Kanagawa, and Tomoko Ito, Kanagawa, all of Japan, assignors to The Green Cross Corporation, Osaka, and Asahi Glass Co., Ltd., Tokyo, both of Japan

Continuation-in-part of Ser. No. 55,873, May 4, 1993, Pat. No. 5,478,832, and a continuation-in-part of Ser. No. 541,965, Oct. 10, 1995, Pat. No. 5,665,881, which is a division of Ser. No. 55,873, May 4, 1993, Pat. No. 5,478,832. This application Oct. 27, 1995, Ser. No. 549,142

Claims priority, application Japan, May 8, 1992, 4-143407; Jun. 10, 1992, 4-176188; Oct. 27, 1994, 6-264121; Oct. 27, 1994, 6-264122

Int. Cl.⁶ C07D 215/14

U.S. Cl. 546—173

15 Claims

1. A process for producing quinolin-2-yl benzoic acids comprising decarboxylating 2-(carboxyphenyl)-4-quinolinecarboxylic acids in which a carboxyl group bonded to a phenyl group is esterified, while a carboxyl group bonded to a quinoline ring is not esterified, and both rings may have one or more substituents inert to the decarboxylation reaction.

5,780,635

PYRIDINE BASE SYNTHESIS

Colin Hugh McAteer; Douglas Clifford Brown, both of Indianapolis, and Robert Drummond Davis, Sr., Greencastle, all of Ind., assignors to Reilly Industries, Inc., Indianapolis, Ind.

Filed Jun. 21, 1996, Ser. No. 668,580

Int. Cl.⁶ C07D 213/09; 213/10

U.S. Cl. 546—251

25 Claims

1. A base synthesis process for the preparation of pyridine or its alkylpyridine derivatives comprising reacting one or more aldehydes and/or ketones or mixtures thereof containing from 1 to about 5 carbon atoms, with at least one reactant having more than 1 carbon atom, with ammonia in the gas phase and in the presence of an effective amount of a zeolite catalyst having a first dimension having channels formed by twelve-membered rings, and a second dimension having channels formed by ten- or twelve-membered rings, said zeolite catalyst having been prepared with a silica to alumina ratio of at least 15.

5,780,636

PROCESS FOR THIOPYRANS

Philippe Pitchen, and David Michael Thompson, both of Dagenham, United Kingdom, assignors to Rhone-Poulenc Rorer Limited, Eastbourne, England

Filed Jan. 5, 1996, Ser. No. 583,363

Claims priority, application United Kingdom, Jul. 8, 1993, 9314133

Int. Cl.⁶ C07D 409/04

U.S. Cl. 546—280.1

36 Claims

1. (R)-6-(3-pyridyl)-3,4-dihydro-2H-thiopyran 1-oxide.

5,780,637

Patent Not Issued For This Number

5,780,638

PROCESS FOR THE PREPARATION OF 5-HYDROXYMETHYLTHIAZOLE

Helmut Kraus, Odenthal, and Helmut Fiege, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 9, 1996, Ser. No. 762,625

Claims priority, application Germany, Dec. 18, 1995, 195 47 076.1

Int. Cl.⁶ C07D 277/24

U.S. Cl. 548—203

11 Claims

1. A process for the preparation of 5-hydroxymethylthiazole, which comprises reacting a 2-halomalonaldehyde compound of the formula

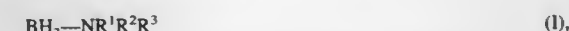


in which

R represents hydrogen, an alkali metal or an equivalent of an alkaline earth metal and

X is fluorine, chlorine, bromine or iodine,

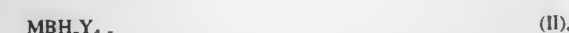
with thioformamide in the presence of less than 5% by weight of water to obtain 5-formylthiazole, reducing the 5-formylthiazole using a borane compound, wherein the borane compound employed is an aminoborane of the formula



in which

R¹, R² and R³ are identical or different and each represent hydrogen, C₁-C₁₆-alkyl or phenyl or

wherein the borane compound employed is a borohydride of the formula



in which

M represents an alkali metal or one equivalent of an alkali earth metal,

Y represents cyano, C₁-C₄-alkoxy or C₁-C₄-carboxy and

x represents 2, or 3.

5,780,639

SILICONE MONOMERS AND OLIGOMERS HAVING A CARBOXYL FUNCTIONAL GROUP THEREON

Abe Berger, Summit, and Dennis L. Fost, Ringwood, both of N.J., assignors to Mona Industries, Inc., Paterson, N.J.

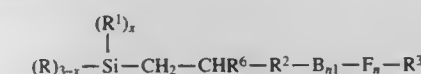
Filed Aug. 14, 1997, Ser. No. 911,382

Int. Cl.⁶ C07D 207/24

U.S. Cl. 548—110

10 Claims

1. Organosilane and organosiloxane monomers having at least one carboxylic ester functional group that is represented by the formula:



wherein:

R which can be the same or different are hydrolyzable groups; R¹ which can be the same or different, are selected from substituted or unsubstituted alkyl, cycloalkyl, substituted or unsubstituted aryl, alkenyl, alkynyl or —OSi(R¹)₃;

x is zero to 3;

R² is linear or branched alkylene of 1–12 carbon atoms;

B is —NR⁶, sulfur or oxygen;

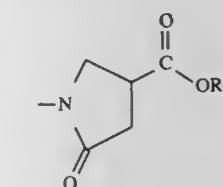
R⁶ is hydrogen or alkyl;

n¹ is zero or 1;

F is linear or branched alkylene of 1–10 carbon atoms;

n is zero or 1, with the proviso that if n¹ is 1, n is 1 and if n¹ is 0, n is 0;

R³ is



R₅ is alkyl or trialkylsilyl.

5,780,640

PROCESS FOR THE BIOTECHNOLOGICAL PREPARATION OF L-THIENYLALANINES IN ENANTIOMERICALLY PURE FORM FROM 2-HYDROXY-3-THIENYLACRYLIC ACIDS AND THEIR USE

Gerhard Kretschmar, Eschborn; Johannes Meiwes, Idstein; Manfred Schudok, Hattersheim/Main; Peter Hammann, Babenhausen; Ulrich Lerch, Hofheim/Taunus, and Susanne Grabley, Königstein/Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 99,352, Jul. 29, 1993, Pat. No. 5,480,786.

This application Jun. 5, 1995, Ser. No. 465,311

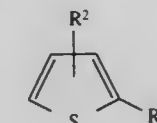
Claims priority, application Germany, Jul. 31, 1992, 42 25 280.6

Int. Cl.⁶ C07D 239/10; 233/64; 333/04

U.S. Cl. 548—315.1

2 Claims

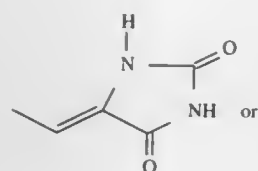
1. A compound of the formula III



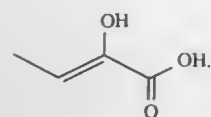
in which

R² is 4-bromo, 5-bromo, 3-methyl, 5-methyl or 5-nitro and R³ has one of the following meanings

a)



b)



5,780,641

STABILIZATION OF HALOGENATED DIALKYL
HYDANTOINSMoshe Yerushalmi; Zvi Vainberger; Shimon Herbet, and
James Rasco, all of Beer-Sheva, Israel, assignors to Bromine
Compounds Ltd., Beer-Sheva, Israel

Filed Dec. 19, 1996, Ser. No. 769,542

Claims priority, application Israel, Dec. 25, 1995, 116545
Int. Cl.⁶ C07D 233/84; 233/86; D06L 3/00; A62D 5/00; C11D
7/00; 7/32

U.S. Cl. 548—320.5

22 Claims

1. Method for stabilizing halogenated hydantoin, comprising
mixing the hydantoin with dry calcium hydroxide.14. Stabilized halogenated hydantoin composition, comprising
an halogenated hydantoin and Ca(OH)₂.

5,780,642

IMIDAZOLE DERIVATIVES AS THERAPEUTIC AGENTS

David John Calderwood; Adrian John Fisher; James Edward
Jeffery; Colin Gerhart Pryce Jones, and Paul Rafferty, all of
Nottingham, Great Britain, assignors to KNOLL Aktiengesellschaft,
Ludwigshafen, Germany

Continuation of Ser. No. 578,713, Dec. 21, 1995, abandoned.

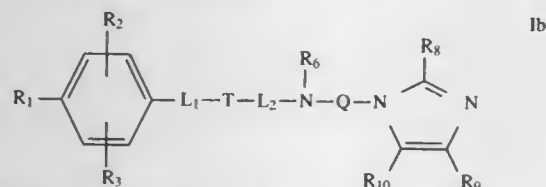
This application Jan. 23, 1997, Ser. No. 786,960

Claims priority, application United Kingdom, Jun. 22, 1993,
9312893Int. Cl.⁶ C07D 233/61; 233/64; A61K 31/415

U.S. Cl. 548—338.1

7 Claims

1. A compound of formula IIb



or pharmaceutically acceptable salts thereof in which

R₂ and R₃ are each hydrogen;—L₁—T—L₂— is —C(R₄)(R₅)— in which R₄ and R₅ indepen-
dently are hydrogen or a C₁₋₄alkyl group;R₆ is hydrogen or a C₁₋₄alkyl group;

Q is trimethylene;

R₈ and R₁₀ are each hydrogen; and eithera) R₁ is a group of formula —(O)_z—L₃G in which z is 0 and L₃
is a C₁₋₄alkylene chain, and G is a group of formula—NR₂₂R₂₃, where R₂₂ is hydrogen or a C₁₋₄alkyl group and
R₂₃ is a C₁₋₆alkanoyl group, phenylsulfonyl or benzoyl, or Gis a group of formula CONR₂₇R₂₈ in which R₂₇ is hydrogen
and R₂₈ is a C₁₋₆alkyl group; and R₉ is hydrogen; orb) R₉ is a group of formula —L₅—N—(R₄₀)R₄₁ in which L₅ is
a C₁₋₄alkylene chain, R₄₀ is hydrogen or a C₁₋₄alkyl group and
R₄₁ is hydrogen, a group of formula SO₂R₄₂, where R₄₂ is a
C₁₋₆alkyl group or phenyl, or R₄₁ is a group of formula
COR₄₃, where R₄₃ is a C₁₋₆alkyl group or phenyl; and R₁ is
hydrogen or chloro.6. A method of treating inflammatory or allergic conditions or
diseases with an immunological association in a mammal in need
of such treatment comprising administering a therapeutically effective
amount of a compound according to claim 1 to said mammal.

5,780,643

MEADOWFOAM IMIDAZOLINES

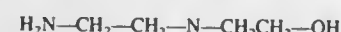
Anthony J. O'Lenick, Jr., Lilburn, Ga., assignor to Fan Tech
Ltd., Chicago, Ill.Continuation-in-part of Ser. No. 516,138, Aug. 17, 1995, Pat.
No. 5,646,321. This application Mar. 17, 1997, Ser. No.

819,555

Int. Cl.⁶ C07D 233/14; B10M 133/44

U.S. Cl. 548—350.1

5 Claims

1. An imidazoline prepared by the reaction of aminoethyletha-
nolamine which conforms to the following structure:

and

a meadowfoam compound selected from the group consisting of
meadowfoam oil, meadowfoam methyl ester and meadowfoam
acid.

5,780,644

BRANCHED POLYOXAALKYL MACROMOLECULES

Luigia Gozzini; Monica Muttoni, and Christoph DeHaën, all of
Milano, Italy, assignors to Dibra S.p.A., Italy

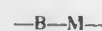
Filed Mar. 15, 1995, Ser. No. 404,259

Claims priority, application Italy, Mar. 18, 1994, MI94 A
0512Int. Cl.⁶ C07D 209/48; 315/00; C07C 303/00; 43/11

U.S. Cl. 548—478

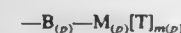
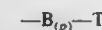
8 Claims

1. Dendrimeric macromolecules of the formula:

having r number of structures G_(1-p) in the dendrimer per structure
where:A is a polyfunctional/polyvalent central nucleus, or core, which
is an aliphatic open chain, branched or unbranched, or an
alicyclic, or a heterocyclic group containing N, O and/or S, or
an aromatic or a heteroaromatic group and which contains
terminal group to which polyoxaalkylene chains of a first
generation shell are attached;r is an integer from 2 to 10 representing the functionality of the
core A and, as a consequence, also the total number of dendra,
in whichG_(1-p) is a single dendron linked to A.[G_(1-p)]_r represents the branched structure of the macromol-
ecule comprising p levels of generation shells from the first
one G₍₁₎ to the last one G_(p), in which the total number of
said generation shells p can range from 1 to 20 and in
which the different generation shells may contain the same
repetition units, and in which:(a) each generation G_(i), except for the last G_(p), comprises
repeating units, which are represented by a functional group
of formula

where:

B is a polyoxaethylene or polyoxapropylene chain of formula:

in which n can range from 0 to 25 and may differ from
generation to generation and in which in at least one genera-
tion shell of the macromolecule, n is other than 0,M represents a branching point which is a polyvalent aliphatic
group comprising m reactive functional groups for the linking
of the polyoxaalkylene chains of the next generation shell, in
whichm is an integer ranging from 2 to 5 and m may differ from one
generation shell to another;(b) the last generation shell G_(p) comprises functional groups of
formula:where B_(p), M_(p), m_(p) defined analogously to B, M, and m,
with all the m_(p) reactive groups of M_(p) connected to groups
T, in whichT is a terminal group that is either H or halo, hydroxyl, amino,
thiol, —O-tosyl, —O-mesyl, —O-tresyl, —O-brosyl, trifluo-
romethanesulfonyl, aldehyde, carboxy or an amido group,
said terminal group T being free, either dissociated or undis-
sociated, or protected by a protective group, orM_(p) is a single bond, no branching exists and the last generation
shell G_(p) is formed by groups of formula:where B_(p) and T are as above defined, and(c) when p=1 the macromolecule contains only one generation
shell, G₍₁₎ which corresponds to G_(i) and has the formula:where B₍₁₎, M₍₁₎, m₍₁₎ and T are defined analogously to B_(p),
M_(p), m_(p) and T, said macromolecule optionally labeled with
an isotope.6. A dendrimeric type macromolecule which is a member
selected from the group consisting ofa) BI: 1,4,7,11,14,17-hexaoxa-1,17-bis(oxan-2-yl)-9,9-
-bis[2,5,8-trioxa-8-oxan-2-yl]octyl]heptadecane;b) BII,III: 1,4,7,10,14,17,20,23-octaoxa-1,23-bis(oxan-2-yl)-
12,12-bis[2,5,8,11-tetraoxa-11-(oxan-2-yl) undecyl]tricosane;c) BIV,V: 1,4,7,10,13,17,20,23,26,29-decaoxa-1,29-bis(oxan-2-yl)-
15,15-bis[2,5,8,11,14-pentaoxa-14-(oxan-2-yl)tetradecyl]nonacosane;d) CI: 3,6,10,13-tetraoxa-8,8-bis(2,5-dioxa-7-
-hydroxyheptyl)pentadecan-1,15-diol;e) CII: 3,6,10,13,16,19-hexaoxa-11,11-bis(2,5,8-trioxa-10-
-hydroxydecyl)enicosan-1,21-diol;f) CIII: 14,14-bis(2,5,8,11-tetraoxa-13-hydroxydecyl)-
3,6,9,12,16,19,22,25-octaoxaheptacosan-1,27-diol;g) GI: 3,6,10,13-tetraoxa-8,8-bis(2,5-dioxa-7-
-bromoheptyl)pentadecan-1,15-dibromide;h) DI: 1,4,7,11,14,17-hexaoxa-1,17-bis(p-toluenesulfonyl)-9,9-
bis[2,5,8-trioxa-8-(p-toluenesulfonyl)octyl] heptadecane;i) DII: 1,4,7,10,14,17,20,23-octaoxa-1,23-bis(p-
toluenesulfonyl)-12,12-bis[2,5,8,11-tetraoxa-11-(p-
toluenesulfonyl)undecyl]tricosane;j) DIII: 15,15-bis[2,5,8,11,14-pentaoxa-14-(p-
toluenesulfonyl)tetradecyl]-1,29-bis(p-toluenesulfonyl)-
1,4,7,10,13,17,20,23,26,29-decaosonacosane;k) EI: 3,6,10,13-tetraoxa-1,15-bis(phthalimido)-8,8-bis[2,5-
dioxa-7-(phthalimido)heptyl] pentadecane;l) EII: 3,6,9,13,16,19-hexaoxa-1,21-bis(phthalimido)-11,11-
bis[2,5,8-trioxa-10-(phthalimido) decyl]enicosane;m) FI: 3,6,10,13-tetraoxa-8,8-bis(2,5-dioxa-7-
-aminoheptyl)pentadecan-1,15-diamine;n) HI: 4,7,10,14,17,20-hexaoxa-2,2,22,22-
-tetra(hydroxymethyl)-12,12-bis[2,5,8-trioxa-10,10-
-bis(hydroxymethyl)-11-hydroxyundecyl]tricosan-1,23-diol;o) HII: 18,18-bis[2,5,8,11,14-pentaoxa-16,16-
-bis(hydroxymethyl)-17-hydroxyheptadecyl]-2,2,34,34-
tetra(hydroxymethyl)-4,7,10,13,16,20,23,26,29,32-
decaoxapentatriacontan-1,35-diol;p) LI: 1,23-di(p-toluenesulfonyloxy)-12,12-bis[11-(p-
toluenesulfonyloxy)-10,10-bis(p-toluenesulfonyloxymethyl)-
2,5,8-trioxaundecyl]-2,2,22,22-tetra(p-
toluenesulfonyloxymethyl)-4,7,10,14,17,20-
hexaoxatricosane;q) MI: 1,23-dibromo-12,12-bis[11-bromo-10,10-
-bis(dibromomethyl)-2,5,8-trioxaundecyl]-2,2,22,22-
-tetrabromomethyl-4,7,10,14,17,20-exaoxatricosane;r) NI: 1,35-di(oxan-2-yl-oxy)-18,18-bis[17-(oxan-2-yl-oxy)-
10,10-bis(7-(oxan-2-yl-oxy)-2,5-dioxaheptyl)-2,5,8,12,15-
pentaoxaheptadecyl]-8,8,28,28-tetra[(7-oxan-2-yl-oxy)-2,5-
dioxaheptyl]-3,6,10,13,16,20,23,26,30,33-
decaoxapentatricosane.8. A dendrimeric macromolecule consisting of a core, and at
least two cascade branched chains linked to said core, wherein said
core is a polyvalent organic molecule and said branched chains
comprise a plurality of repeating units, said units being the same or
different from one generation shell to another, each of said units
consisting of

(a) a polyoxaalkylene chain, and

(b) a polyvalent branched aliphatic group having further branch-
ing points attached to it;said dendrimeric macromolecule having at the most 20 generation
shells of said repeating units, the last of said generation shells
having mono- or polyvalent functional terminal groups; and said
polyoxaalkylene chain consists of n oxyalkylene group wherein n
is an integer ranging from 0 to 25 and is the same or different from
one generation shell to another and at least in one of said genera-
tion shells is other than 0.

5,780,645

PROCEDURE FOR ALKYLATION OF IMIDES

Marcello Notari, Parma; Franco Mizia, S. Donato Milanese,
and Franco Rivetti, Milan, all of Italy, assignors to Enichem
S.p.A., Milan, Italy

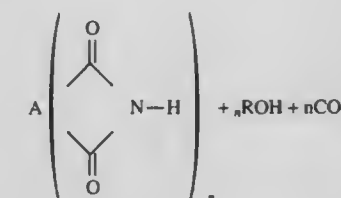
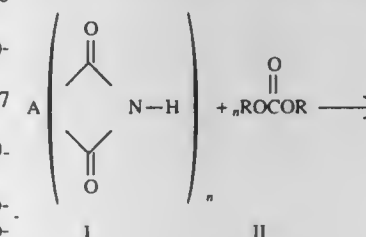
Filed Dec. 31, 1996, Ser. No. 775,800

Claims priority, application Italy, Jan. 19, 1996, MI96A0079

Int. Cl.⁶ C07D 207/40; 207/404

U.S. Cl. 548—530

22 Claims

1. A process for the alkylation of imides comprising reacting
imides of formula I with a dialkyl carbonate of formula II, in the
liquid state, at a temperature of between 100° C. and 250° C. and
at a pressure of between 0 to 60 atmospheres in the presence of a
basic catalyst according to the equation:

in which R is an alkyl radical; A is an organic radical, containing up to 30 carbon atoms, and which may also contain oxygen, nitrogen and sulphur atoms and halogens; the imide of formula I can be cyclic or acyclic; when it is cyclic, n is equal to 1 or 2 and A is a bivalent or tetravalent organic radical; when it is acyclic n is equal to 1 and A consists of two monovalent organic radicals.

5,780,646

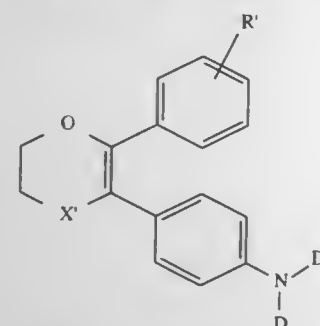
CYCLIC ETHER COMPOUNDS

Sharat Singh, San Jose, and Edwin F. Ullman, Atherton, both of Calif., assignors to Behringwerke AG, Marburg, Germany
Continuation of Ser. No. 471,131, Jun. 6, 1995, Pat. No. 5,536,834, which is a division of Ser. No. 156,181, Nov. 22, 1993, Pat. No. 5,578,498, which is a continuation-in-part of Ser. No. 704,569, May 22, 1991. This application Jun. 6, 1996, Ser. No. 660,029

Int. Cl.⁶ C07D 327/06

U.S. Cl. 549—14

1. A compound of the formula:



wherein X' is S and D and D' are CH₃ or (CH₂)₂CH₃ and R' is (CH₂)₆CH₃ or (CH₂)₇CH₃.

3 Claims

5,780,648

BENZOTHIOPHENE COMPOUNDS, AND USES FORMULATIONS THEREOF

David Thompson Berg, Beech Grove; George Joseph Cullinan, Trafalgar; Brian William Grinnell, Indianapolis, and Mark Alan Richardson, Bloomington, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

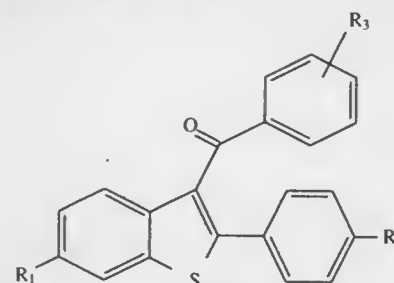
Filed Jun. 25, 1997, Ser. No. 882,674

Int. Cl.⁶ C07D 333/56; 333/64; A61K 31/38

U.S. Cl. 549—57

5 Claims

1. A compound of formula Ia:



wherein R₁ and R₂ are independently —OH, —OCO(C₁–C₆ alkyl), —O(CO)O(C₁–C₆ alkyl), —OCO—Ar, where Ar is phenyl or substituted phenyl, or —O(CO)Ophenyl; and R₃ is a substituent in the 3 or 4 position of the phenyl ring selected from the group of —H, —Cl, —Br, —CH₃, or —CH₂CH₃;

or a pharmaceutically acceptable salt or solvate thereof, with the proviso that when R₁ and R₂ are both hydroxy, R₃ is not —H, —CH₃, or —CH₂CH₃.

5,780,649

PROCESS FOR PREPARING OPTICALLY ACTIVE CYCLIC COMPOUNDS

Yoshifumi Yuasa; Masao Konno, and Noboru Sano, all of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Sep. 4, 1996, Ser. No. 706,282

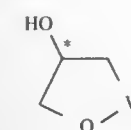
Claims priority, application Japan, Sep. 8, 1995, 7-255840

Int. Cl.⁶ C07D 307/32; 307/02

U.S. Cl. 549—313

7 Claims

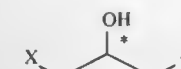
1. A process for preparing an optically active cyclic compound represented by formula (I):



(I)

wherein W represents a keto group when Q in the following formula (II) is a lower alkoxy carbonyl group or W represents a methylene group when Q in the following formula (II) is a hydroxymethyl group; and the asterisk * means an asymmetric carbon atom,

comprising cyclizing an optically active compound represented by formula (II):



(II)

wherein Q represents a lower alkoxy carbonyl group or a hydroxymethyl group; X represents a halogen atom; and the asterisk * means an asymmetric carbon atom, wherein said cyclizing is conducted by adding an aqueous acid solution to the compound of formula (II) and subjecting the compound of formula (II) to cyclization under an acidic condition, wherein the aqueous acid solution has a pH of 2.0 or lower and is added in an amount 1 to 10 times the weight of the compound of formula (II).

5,780,650

PROCESS FOR PREPARATION OF 1,4-BENZODIOXANE DERIVATIVE

Yoshiro Furukawa, Osaka; Kazuhiro Kitaori, and Keishi Takenaka, both of Hyogo, all of Japan, assignors to Daiso Co., Ltd., Osaka, Japan

PCT No. PCT/JP96/00727, § 371 Date Sep. 24, 1997, § 102(e) Date Sep. 24, 1997, PCT Pub. No. WO96/30360, PCT Pub. Date Mar. 10, 1996

PCT Filed Mar. 21, 1996, Ser. No. 913,882

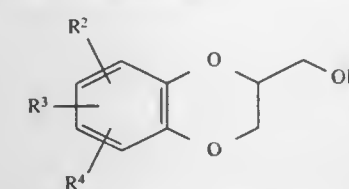
Claims priority, application Japan, Mar. 24, 1995, 7-066270; Feb. 27, 1996, 8-039458

Int. Cl.⁶ C07D 493/00; 319/14

U.S. Cl. 549—361

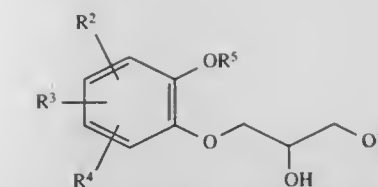
8 Claims

1. A process for preparing a 1,4-benzodioxane derivative as shown by the following formula (1)



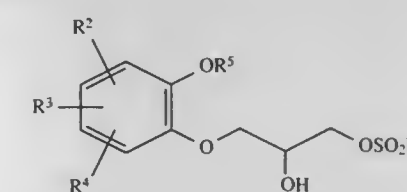
(1)

wherein R¹ is hydrogen atom or RSO₂ in which R is C₁–C₄ alkyl, or phenyl which may be substituted by C₁–C₄ alkyl, R², R³ and R⁴ are respectively hydrogen, halogen, hydroxy, nitro, cyano, formyl, carboxyl, alkoxy, alkoxy carbonyloxy having 1–4 carbon atoms in the alkyl portion, C₁–C₄ alkoxy, C₁–C₄ haloalkyl, N,N-di C₁–C₄ alkylamino, alkylcarbonyl having 1–4 carbon atoms in the alkyl portion or phenyl which may be substituted by C₁–C₄ alkyl, or two groups among R², R³, and R⁴ may be combined together to constitute methylenedioxy on adjacent carbon atoms, or two groups among R², R³ and R⁴ may be combined together to constitute phenyl on adjacent carbon atoms, wherein a diol compound as shown by the following formula (2)

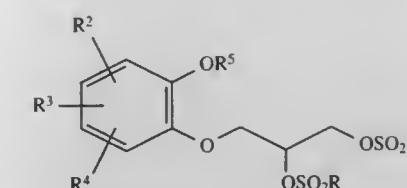


(2)

wherein R², R³ and R⁴ are same as defined above, R⁵ is benzyl, allyl, o-nitrobenzyl, t-butyl dimethylsilyl or benzyloxycarbonyl, or R⁵ may be constituted methylenedioxy, isopropylidenedioxy, cyclohexylidenedioxy or diphenylmethylenedioxy together with oxygen atom in the hydroxy or the R⁵O-group, provided that when any one of R², R³ and R⁴ is hydroxy and the hydroxy is bound on the carbon atom adjacent to the carbon atom substituted by R⁵O-group, is reacted with a sulfonyl halide in the presence of a base to obtain a sulfonated compound as shown by the following formulae (3) and/or (4)



(3)



(4)

wherein R, R¹, R², R³, R⁴, and R⁵ are the same as defined above, and after elimination of the protective group R⁵ of the sulfonated compound, the compound is cyclized by treating with a base.

5,780,651

PROCESS FOR CHROMAN CARBOXYLATES

Robert Eugene Hormann, Philadelphia, Pa., assignor to Rohm and Haas Company, Phila., Pa.

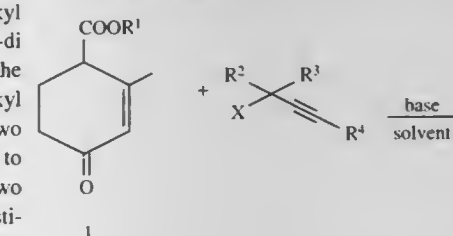
Continuation-in-part of Ser. No. 744,198, Nov. 5, 1996, Pat. No. 5,698,716. This application Jul. 9, 1997, Ser. No. 890,249 Int. Cl.⁶ C07D 311/58

U.S. Cl. 549—405

7 Claims

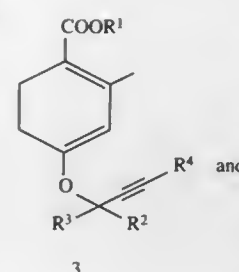
1. A process to produce chroman esters which comprises the two steps of

a. reacting a Hagemann's ester (1) with a propargyl derivative (2) in the presence of a base and a solvent to produce a propargyl ether (3)

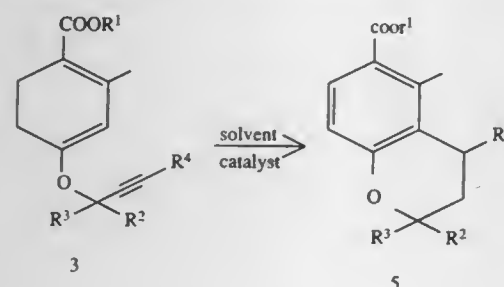


1

-continued



b. rearranging the propargyl ether (3) by application of heat with a suitable catalyst and solvent being present, to produce a chroman ester (5)



wherein

R¹ is a straight or branched (C₁-C₃)alkyl,
R², R³ and R⁴ are each independently a straight or branched (C₁-C₃)alkyl
or a hydrogen atom,
X is chloro, bromo, iodo, OSO₂R or OCOR, and
R is alkyl or aryl.

5,780,652

PROCESS FOR CHROMAN CARBOXYLATES

Robert Eugene Hormann, Philadelphia, Pa., assignor to Rohm and Haas Company, Phila., Pa.

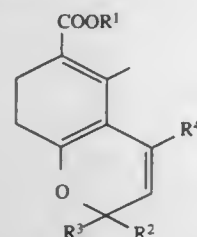
Continuation-in-part of Ser. No. 744,198, Nov. 5, 1996, Pat. No. 5,698,716. This application Jul. 9, 1997, Ser. No. 890,251

Int. Cl.⁶ C07D 311/58

U.S. Cl. 549—405

3 Claims

1. A compound of the formula



wherein

R¹ is a straight or branched (C₁-C₃)alkyl and
R², R³ and R⁴ are each independently a straight or branched (C₁-C₃)alkyl or a hydrogen atom.

5,780,653

NITROPHENYL, 10-DEACETYLATED SUBSTITUTED TAXOL DERIVATIVES AS DUAL FUNCTIONAL CYTOTOXIC/RADIOSENSITIZERS

Chunlin Tao; Neil P. Desai; Patrick Soon-Shiong, and Paul A. Sandford, all of Los Angeles, Calif., assignors to Vivorx Pharmaceuticals, Inc., Santa Monica, Calif.

Filed Jun. 7, 1995, Ser. No. 485,496

Int. Cl.⁶ C07D 305/00; 413/00; 233/02; A61K 51/04

U.S. Cl. 549—510

4 Claims

1. A dual functional compound having both cytotoxic properties and radiosensitizing properties, wherein said compound is selected from the group consisting of:

3'-Desphenyl-3'-(4-nitrophenyl)-N-debenzoyl-N-(t-butoxycarbonyl)-10-deacetyltaxol;
3'-Desphenyl-3'-(4-nitrophenyl)-N-debenzoyl-N-(isopropoxycarbonyl)-10-deacetyltaxol;
3'-Desphenyl-3'-(4-nitrophenyl)-N-debenzoyl-N-(isobutoxycarbonyl)-10-deacetyltaxol.

5,780,654

TITANOSTANNOSILICALITES: EPOXIDATION OF OLEFINS

Laszlo Nemeth, Palatine; Gregory J. Lewis, Mt. Prospect, and Richard R. Rosin, Arlington Heights, all of Ill., assignors to UOP LLC, Des Plaines, Ill.

Filed Apr. 22, 1997, Ser. No. 840,531

Int. Cl.⁶ C07D 301/12

U.S. Cl. 549—531

17 Claims

1. A process for the epoxidation of a carbon-carbon double bond in an olefinic compound comprising reacting under epoxide-forming conditions the olefinic compound in a feedstock with a hydroperoxide in the presence of a crystalline titanostannosilicalite molecular sieve composition, where the tin and silicon are present as framework tetrahedral oxide units, said sieve having a unit empirical formula on an anhydrous basis of (Ti_xSn_ySi_z)O₂, where x has a value between about 0.0005 and about 0.03, y has a value between about 0.0001 and about 0.01, and (x+y+z)=1.

5,780,655

EPOXIDATION PROCESS USING A PHOSPHATE-STABILIZED PEROXOTUNGSTATE COMPOUND AS CATALYST

Wilfred Po-sun Shum, West Chester, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Filed May 5, 1997, Ser. No. 850,983

Int. Cl.⁶ C07D 301/12

U.S. Cl. 549—531

20 Claims

1. An epoxidation process comprising contacting an olefin with hydrogen peroxide in a substantially organic single liquid phase reaction system in the presence of a catalytically effective amount of a compound in salt or acid form comprising a species corresponding to [PW₂O₁₃(OH)]⁻² for a time and at a temperature effective to form an epoxide corresponding to the olefin.

5,780,656

ETHYLENE OXIDE CATALYST AND PROCESS

Nabil Rizkalla, Riverdale; Rita Klein, Westwood, and Stephen Milne, Wayne, all of N.J., assignors to Scientific Design Company, Inc., Little Ferry, N.J.

Filed Apr. 14, 1997, Ser. No. 837,116

Int. Cl.⁶ C07D 301/10; B01J 23/66; 27/055; 23/50

U.S. Cl. 549—534

6 Claims

1. A catalyst for the oxidation of ethylene to ethylene oxide which is essentially free of rhenium and transition metal components comprised of silver on a solid support and containing a promoter combination consisting essentially of (1) an alkali metal

component in amount not greater than 80 ppm, (2) a sulfur component in amount of 5–300 ppm and (3) a fluorine component in amount of 10–30 ppm.

5,780,657

PROPYLENE EPOXIDATION USING CHLORIDE-CONTAINING SILVER CATALYSTS

Bernard Cooker, Malvern; Anne M. Gaffney, West Chester; Jennifer D. Jewson, Pottstown, and Wilson H. Onimus, Holmes, all of Pa., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Filed Jun. 23, 1997, Ser. No. 880,905

Int. Cl.⁶ C07D 301/10

U.S. Cl. 549—534

15 Claims

1. A process for propylene epoxidation comprising contacting a feedstream comprising propylene and oxygen with a supported silver catalyst comprised of:

(a) a support comprised of an alkaline earth metal compound selected from the group consisting of alkaline earth metal carbonates, alkaline earth metal titanates, and mixtures thereof;
(b) a catalytically effective amount of metallic silver;
(c) a promoting amount of an inorganic chloride promoter; and
(d) a promoting amount of a potassium promoter derived from a potassium salt comprising potassium cation and a nitrogen oxyanion or precursor thereof.

5,780,658

PROCESS FOR THE SYNTHESIS OF CATIONIC SURFACTANTS COMPRISING ESTERIFICATION WITH BASIC CHARACTER AMINO ACIDS

Marta Rosa Infante Martinez-Pardo; Augustin Contijoch Mestres, and Pilar Erra Serrabasa, all of Barcelona, Spain, assignors to Laboratorios Miret, S.A., Barcelona, Spain

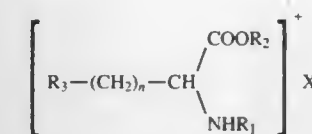
Filed Sep. 10, 1996, Ser. No. 704,684

Claims priority, application Spain, Jan. 10, 1995, 9500061
Int. Cl.⁶ C07C 277/08; 231/02; 279/14; A23L 3/35; A61K 7/075; 7/32

U.S. Cl. 554—51

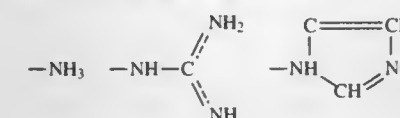
15 Claims

1. A process for the synthesis of cationic surfactants derived from the condensation of fatty acids with esterified basic character amino acids, of formula:



wherein:

X⁻ is selected from the group consisting of Br⁻, Cl⁻, or HSO₄⁻;
R₁ is a linear alkyl chain of a saturated fatty acid or hydroxy acid having from 8 to 14 carbon atoms, wherein said alkyl chain is linked to the α-amino group of the amino acid via an amide bond.
R₂ is a linear or branched alkyl radical having from 1 to 12 carbon atoms or is an aromatic radical; and
R₃ is selected from the group consisting of:



wherein n varies from 0 to 4, said process comprising a first step of esterification of an amino acid with C₁-C₁₂ alcohols, comprising adding thionyl chloride to a suspension of arginine in alcohol at room temperature to produce an esterified basic character amino acid derivative, said process further

5,780,659

SUBSTITUTED INDENYL UNBRIDGED METALLOCENES

Claudia Schmid; Helmut G. Alt, both of Bayreuth, Germany, and M. Bruce Welch, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 29, 1996, Ser. No. 622,907

Int. Cl.⁶ C07F 7/00; 7/28; 17/00; C08F 4/44

U.S. Cl. 556—11

10 Claims

1. An unbridged metallocene of the formula (In)(Cp)MQ₂ wherein In is a substituted indenyl radical having a substituent in at least one of the 1, 2, or 3 positions, said substituents being selected from phenyl radical, alkyl radicals having 1 to 10 carbon atoms and trialkylsilyl radicals wherein the alkyl groups have 1 to 4 carbons; Cp is an unsubstituted cyclopentadienyl radical; M is a transition metal selected from the group consisting of titanium, zirconium, and hafnium; and each Q is the same or different and is selected from the group consisting of hydrocarbyl radicals having 1 to 12 carbon atoms, alkoxy radicals having 1 to 12 carbon atoms, aryloxy radicals having 6 to 12 carbon atoms, hydrogen, and halides.

5,780,660

ZIRCONOCENE ISMERIZATION PROCESS

Ronny W. Lin; Troy E. DeSoto, and John F. Balhoff, all of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Nov. 7, 1996, Ser. No. 744,334

Int. Cl.⁶ C07F 17/00; 7/00

U.S. Cl. 556—11

33 Claims

1. A process for treating a mixture of meso and racemic forms of a bridged zirconocene so as to produce a product enriched in racemic bridged zirconocene, which process comprises:

a) combining (i) said mixture of meso and racemic forms of a bridged zirconocene, and (ii) a liquid ether-containing isomerization medium so as to form a mixture of (i) and (ii); and
b) maintaining mixture of (i) and (ii) from a) at, or subjecting mixture of (i) and (ii) from a) to, one or more temperatures and for a period of time such that isomerization of meso bridged zirconocene to racemic bridged zirconocene takes place in said isomerization medium whereby a zirconocene enriched in racemic bridged zirconocene is formed.

5,780,661

PROCESS FOR PREPARING ALLYLSILANE COMPOUND DERIVATIVES

Mitsuhiro Iwata, Saitama-ken; Hideki Sakurai, Miyagi-ken, and Takanobu Sanji, Chiba-ken, all of Japan, assignors to Dow Corning Asia, Ltd., Tokyo, Japan

Filed Jun. 5, 1997, Ser. No. 869,697

Int. Cl.⁶ C07F 7/08

U.S. Cl. 556—429

4 Claims

1. A composition comprising:



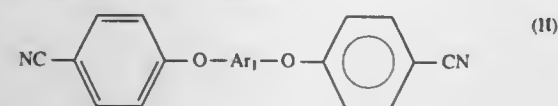
5,780,662
NAPHTHYL AND ETHER CHAIN-CONTAINING
CARBOXYL DERIVATIVES

Guey-Sheng Liou, Hsinchu; Sheng-Huei Hsiao, and Jen-Chang Yang, both of Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Taipei, Taiwan

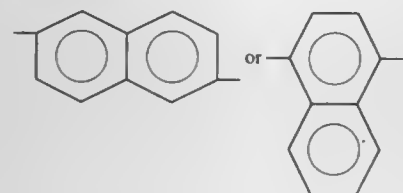
Division of Ser. No. 702,388, Aug. 14, 1996, Pat. No. 5,712,409. This application Sep. 24, 1997, Ser. No. 936,686
Claims priority, application Taiwan, Jun. 27, 1996, 85107751
Int. Cl.⁶ C07C 255/04

U.S. Cl. 558—420

1. A compound of the formula (II):



wherein Ar₁ represents:



3 Claims

A which is at least one element selected from potassium, rubidium and cesium, wherein bismuth, iron and component A are, respectively, present in amounts of from 0.1 to 6, from 0.1 to 8 and from 0.01 to 0.5 in terms of atomic ratios relative to twelve atoms of molybdenum, said ammoxidation catalyst composition being one which has been prepared by providing a slurry comprised of a silica sol and sources of component metallic elements of said oxide catalyst, and spray-drying said slurry, followed by calcination, the improvement in which said silica sol has an aluminum content of 0.04 or less in terms of an atomic ratio relative to 100 atoms of silicon.

5,780,665

PREPARATION OF HALOMETHYLBENZOYL CYANIDES

Heinz Isak, Böhl-Iggelheim; Michael Keil, Freinsheim; Bernd Wolf, Fussgönheim; Horst Wingert, Mannheim, and Thomas Wettling, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/04463, § 371 Date May 6, 1997, § 102(e)
Date May 6, 1997, PCT Pub. No. WO96/16023, PCT Pub.
Date May 30, 1996

PCT Filed Nov. 14, 1995, Ser. No. 836,209

Claims priority, application Germany, Nov. 24, 1994, 44 41 824.8

Int. Cl.⁶ C07C 253/14; 253/30

U.S. Cl. 558—342

8 Claims

1. A process for preparing halomethylbenzoyl cyanides of the formula I ps



where PH is phenyl which is substituted by chloromethyl or bromomethyl and which may carry from 1 to 4 further radicals which are inert in the reaction, from halobenzoyl chlorides of the formula II



wherein II is reacted with a cyanide-donating compound in the presence of a Lewis acid.

5,780,664

AMMOXIDATION CATALYST COMPOSITION

Kunitoshi Aoki, Tokyo, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP94/01356, § 371 Date Sep. 12, 1996, § 102(e)
Date Sep. 12, 1996, PCT Pub. No. WO95/05241, PCT Pub.
Date Feb. 23, 1995

PCT Filed Aug. 16, 1993, Ser. No. 583,028

Claims priority, application Japan, Aug. 17, 1993, 5-222745
Int. Cl.⁶ B01J 21/08; 21/12; 27/192; C07C 253/26

U.S. Cl. 558—323

4 Claims

1. In an ammoxidation catalyst composition for use in producing acrylonitrile from propylene, or methacrylonitrile from isobutylene, by ammoxidation of said propylene or of said isobutylene, comprising an oxide catalyst and a silica carrier having said oxide catalyst supported thereon, wherein said silica carrier is present in an amount of from 40 to 60% by weight, based on the total weight of said oxide catalyst and said silica carrier, said oxide catalyst comprising oxides of molybdenum, bismuth, iron, and component

5,780,666

PROCESS FOR THE PREPARATION OF AN OPTICALLY
PURE AMINOALCOHOL

Marcel Descamps, Lherm; Joël Radisson, Saubens, and Anne-Archaud Gilles, Toulouse, all of France, assignors to Sanofi, Paris, France

Division of Ser. No. 294,035, Aug. 24, 1994, Pat. No.

5,512,680, which is a continuation-in-part of Ser. No. 202,027,
Feb. 25, 1994, abandoned. This application Feb. 7, 1996, Ser.
No. 598,001

Claims priority, application France, Feb. 25, 1993, 93 02262
Int. Cl.⁶ C07C 255/19

U.S. Cl. 558—406

1 Claim

1. (−)-3-Cyano-3-(3,4-dichlorophenyl)propionic acid or its salts, substantially free of its (+) enantiomer.

5,780,667

COMPOUNDS, COMPOSITIONS AND TREATMENT OF
ALLERGIES AND INFLAMMATION THEREWITH

Siegfried Benjamin Christensen, IV, Philadelphia, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.
PCT No. PCT/US94/10798, § 371 Date May 27, 1996, § 102(e)
Date May 27, 1996, PCT Pub. No. WO95/09627, PCT Pub.
Date Apr. 13, 1995

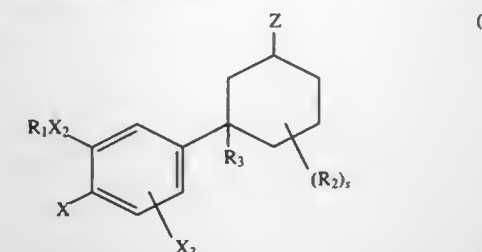
PCT Filed Sep. 23, 1994, Ser. No. 619,711

Int. Cl.⁶ C07C 255/50

U.S. Cl. 558—426

8 Claims

1. A compound of Formula (I):



wherein:

R₁ is —(CR₄R₅)_nC(O)O(CR₄R₅)_mR₆, —(CR₄R₅)_nC(O)NR₄ (CR₄R₅)_mR₆, —(CR₄R₅)_nO(CR₄R₅)_mR₆, or —(CR₄R₅)_nR₆, wherein the alkyl moieties may be optionally substituted with one or more halogens;

m is 0 to 2;

n is 1 to 4;

r is 0 to 6;

R₄ and R₅ are independently selected from hydrogen or a C₁₋₂ alkyl;

R₆ is hydrogen, methyl, hydroxyl, aryl, halo substituted aryl, aryloxyC₁₋₃ alkyl, halo substituted aryloxyC₁₋₃ alkyl, indanyl, indenyl, C₇₋₁₁ polycycloalkyl, C₃₋₆ cycloalkyl, or a C₄₋₆ cycloalkyl containing one or two unsaturated bonds, wherein the cycloalkyl and heterocyclic moieties may be optionally substituted by 1 to 3 methyl groups or one ethyl group;

provided that:

a) when R₆ is hydroxyl, then m is 2; or

b) when R₆ is hydroxyl, then r is 2 to 6; or

c) when n is 1 and m is 0, then R₆ is other than H in —(CR₄R₅)_nO(CR₄R₅)_mR₆;

X is YR₂, halogen, nitro, NR₄R₅, or formyl amine;

Y is O or S(O)_m;

m' is a number having a value of 0, 1, or 2;

X₂ is O or NR₈;

X₃ is hydrogen or X;

R₂ is independently selected from —CH₃ or —CH₂CH₃, optionally substituted by 1 or more halogens;

s is 0 to 4;

R₃ is CN;

Z' is O, NR₈, NOR₈, NCN, C(—CN)₂, CR₈CN, CR₈NO₂, CR₈C(O)OR₈, CR₈C(O)NR₈R₉, C(—CN)NO₂, C(—CN)C(O)OR₉, or C(—CN)C(O)NR₈R₉; Z is OR₁₄, OR₁₅, SR₁₄, S(O)_mR₇, S(O)₂NR₁₀R₁₄, NR₁₀R₁₄, NR₁₄C(O)R₉, NR₁₀C(Y')R₁₄, NR₁₀C(O)OR₇, NR₁₀C(Y')NR₁₀R₁₄, NR₁₀S(O)₂NR₁₀, NR₁₀C(NCN)NR₁₀R₁₄, NR₁₀S(O)₂R₇, NR₁₀C(CR₄NO₂)NR₁₀R₁₄, NR₁₀C(NCN)SR₉, NR₁₀C(CR₄NO₂)SR₉, NR₁₀C(NR₁₀)NR₁₀R₁₄, NR₁₀C(O)C(O)NR₁₀R₁₄, or NR₁₀C(O)C(O)OR₁₄;

Y' is O or S;

R₇ is —(CR₄R₅)_nR₁₂ or C₁₋₆ alkyl wherein the R₁₂ or C₁₋₆ alkyl group is optionally substituted one or more times by C₁₋₂ alkyl optionally substituted by one to three fluorines, —F, —Br, —Cl, —NO₂, —NR₁₀R₁₁, —C(O)R₈, —C(O)OR₈, —OR₈, —CN, —C(O)NR₁₀R₁₁, —OC(O)NR₁₀R₁₁, —OC(O)R₈, —NR₁₀C(O)NR₁₀R₁₁, —NR₁₀C(O)R₁₁, —NR₁₀C(O)OR₈, —C(NR₁₀)NR₁₀R₁₁, —C(NCN)NR₁₀R₁₁, —C(NCN)SR₉, —NR₁₀C(NCN)SR₉, —NR₁₀C(NCN)NR₁₀R₁₁, —NR₁₀S(O)₂R₉, —S(O)_mR₉, —NR₁₀C(O)C(O)NR₁₀R₁₁, —NR₁₀C(O)C(O)R₁₀;

q is 0, 1, or 2;

R₁₂ is C₃₋₇ cycloalkyl, naphthyl, or phenyl;

R₉ is independently selected from hydrogen or R₉;

R₈ is R₈ or fluorine;

R₉ is C₁₋₄ alkyl optionally substituted by one to three fluorines;

R₁₀ is OR₈ or R₁₁;

R₁₁ is hydrogen, or C₁₋₄ alkyl optionally substituted by one to three fluorines;

R₁₄ is hydrogen or R₇;

R₁₅ is C(O)R₁₄, C(O)NR₄R₁₄, S(O)₂R₇, or S(O)₂NR₄R₁₄; provided that:

d) when Z is —NH₂, NH(C₁₋₃ alkyl), N(C₁₋₃ alkyl)₂, NH(CH₂)₂₋₅C(O)Ar where Ar is naphthyl or phenyl then R₁X₂ is not C₁₋₃ alkoxy and N is not halogen, methoxy, ethoxy methylthio or ethylthio;

or a pharmaceutically acceptable salts thereof.

5,780,668

X-RAY OPAQUE DENTAL MATERIALS

Volker Rheinberger, Vaduz; Norbert Moszner, Eschen, both of Liechtenstein, and Ulrich Salz, Weissensberg, Germany, assignors to Ivoclar AG, Schaan, Liechtenstein

Filed May 25, 1995, Ser. No. 450,812

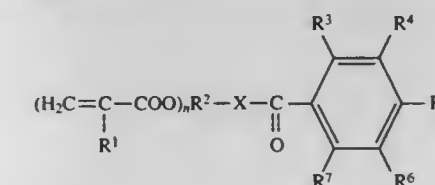
Claims priority, application Germany, May 30, 1994, 44 19 386.6

Int. Cl.⁶ C07C 69/767; 235/88; 235/42; A61C 5/08

U.S. Cl. 560—113

16 Claims

1. X-ray opaque esters or amides of iodinated benzoic acid according to the formula



in which

R¹=hydrogen or C₁ to C₃ alkyl;

R²=straight-chain or branched C₁ to C₆ alkylene, oxyalkylene or arylene.

X=O or NH;

R³-R⁷=at least 3 iodine substituents, and the other groups are hydrogen, C₁ to C₆ alkyl, C₁ to C₆ alkoxy, —Cl, —Br, —OH, —NH₂, —N(C₁ to C₆ alkyl)₂ or —NH—CO—(C₁ to C₆ alkyl);

n=1, 2 or 3

wherein said X-ray opaque esters or amides are polymerizable to produce a polymer having a molecular weight of greater than 58,900 g/mol.

5,780,669

SELECTIVE DEHALOGENATION PROCESS

Toshifumi Akiba; Takanobu Ikeya; Hirofumi Kawanishi; Yusuke Yukimoto; Shinji Kamihara, and Tsutomu Ebata, all of Tokyo, Japan, assignors to Daiichi Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01280, § 371 Date Feb. 1, 1996, § 102(e)
Date Feb. 1, 1996, PCT Pub. No. WO95/04712, PCT Pub.
Date Feb. 16, 1995

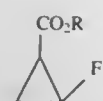
PCT Filed Aug. 3, 1994, Ser. No. 592,402

Claims priority, application Japan, Aug. 5, 1993, 5-194423
Int. Cl.⁶ C07C 69/74

U.S. Cl. 560—124

9 Claims

1. A process for producing a compound represented by the following formula (2):



wherein R represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms; which comprises subjecting a compound represented by the following formula (1):



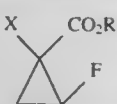
wherein R is as defined above; and X represents a chlorine or bromine atom;

to a catalytic hydrogenolysis reaction in the presence of a base, wherein the reaction proceeds with a retention of stereoconfiguration of the compound represented by the formula (2) reacted in the compound represented by the formula (1) produced.

2. A process for producing a compound represented by the following formula (2):



wherein R represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms; which comprises subjecting a compound represented by the following formula (3):



wherein R is as defined above; and X represents a chlorine or bromine atom;

to a catalytic hydrogenolysis reaction in the presence of a base, wherein the reaction proceeds with a retention of stereoconfiguration of the compound represented by the formula (3) reacted in the compound represented by the formula (2) produced.

5,780,670

DTPA DERIVATIVES MODIFIED WITH NON-ESTER BOND AND A PROCESS FOR SYNTHESIZING THEM
Yoshinori Yamamoto, Sendai, and Hisao Nemoto, Tokushima, both of Japan, assignors to Tohoku University, Sendai, Japan

Filed Jul. 16, 1996, Ser. No. 680,611

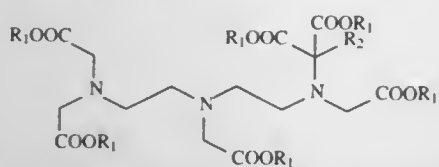
Claims priority, application Japan, Jul. 21, 1995, 7-185306

Int. Cl.⁶ C07C 229/00

U.S. Cl. 560—169

10 Claims

1. A diethylenetriamine pentaacetic acid derivative represented by the following formula (1):



wherein R₁ is a hydrogen or a lower alkyl group. R₂ is hydrogen, or 2-alkenyl group.

5,780,671

Patent Not Issued For This Number

5,780,672
PROCESS FOR THE SELECTIVE PREPARATION OF MONOFLUORO DERIVATIVES
Sergej Pasenok, Liederbach, and Wolfgang Appel, Kelkheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Jul. 11, 1996, Ser. No. 678,734

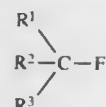
Claims priority, application Germany, Jul. 14, 1995, 195 25 727.8

Int. Cl.⁶ C07C 69/63; 51/58; 45/00; 19/08

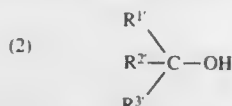
U.S. Cl. 560—227

6 Claims

1. A process for the preparation of compounds of the formula (1)



in which R¹, R² and R³ independently of each other are H, C₁–C₁₂-alkyl, PhCH₂, CH₂=CH–CH₂, C₅–C₇-cycloalkyl, C₆–C₁₂-aryl, C₆F₅–, –CO₂C₂H₅ or where two of the radicals R¹, R² or R³ together are = O which comprises reacting alcohols or carboxylic acids of the formula (2).



in which R¹, R² and R³ independently of each other are H, C₁–C₁₂-alkyl, PhCH₂, CH₂=CH–CH₂, C₅–C₇-cycloalkyl, C₆–C₁₂-aryl, C₆F₅–, –CO₂C₂H₅ or where two of the radicals R¹, R² or R³ together are = O with a fluorinating agent of the formula (3)



where X=P, N, P(NR₂)₃ or As and R=C₁–C₄-alkyl.

5,780,673

PROCESS FOR THE PREPARATION OF ALKYL HALODIFLUOROACETATES

Jean-Philippe Gillet, Brignais, and Christophe Rupp, Pierre-Benite, both of France, assignors to Elf Atochem S.A., Puteaux, France

Filed May 29, 1997, Ser. No. 864,782

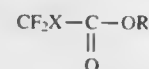
Claims priority, application France, May 29, 1996, 96 06602

Int. Cl.⁶ C07C 69/63

U.S. Cl. 560—227

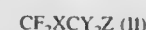
20 Claims

1. A process for the preparation of an alkyl halodifluoroacetate of formula:



in which X represents a fluorine, chlorine, bromine or iodine atom, R represents a linear or branched aliphatic hydrocarbon radical having a carbon number ranging from 1 to 10, said process comprising:

1/ placing a 1,1-difluorotetrahaloethane of formula:



in which X has the same meaning as in formula (I), Y and Z, which may be identical or different, represent a bromine, chlorine or iodine atom, in contact with an alcohol ROR (III). R having the same meaning as in formula (I), in the presence of oxygen and a sufficient molar amount p of at least one chemical free-radical initiator;

2/ heating the reaction medium obtained in step 1/ to a temperature at least equal to 40° C.;
3/ introducing continuously or by successive additions, while at the same time maintaining a temperature of at least 40° C. and in the presence of oxygen and a molar amount q greater than molar amount p, of at least one chemical free-radical initiator such that the overall molar ratio p+q/CF₂XCY₂Z of the reaction is between 0.01 and 0.2 so as to form the alkyl halodifluoroacetate.

5,780,674

SULFONATED PHOSPHINES, PROCESSES FOR THEIR PREPARATION, AND USE THEREOF AS CONSTITUENTS OF CATALYST SYSTEMS

Guido Albanese, München; Rainer Manetsberger, Wielenbach, and Wolfgang A. Herrmann, Freising, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Division of Ser. No. 538,190, Oct. 2, 1995, Pat. No. 5,663,426.

This application Feb. 18, 1997, Ser. No. 801,150

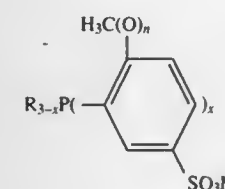
Claims priority, application Germany, Sep. 30, 1994, 44 35 189.5

Int. Cl.⁶ C07F 9/28

5 Claims

U.S. Cl. 562—35

1. A process for the preparation of a complex of the phosphine of the formula



wherein R is independently selected from the group consisting of cyclohexyl and alkyls having 1 to 4 carbon atoms, M is hydrogen, ammonium, alkyl substituted ammonium, aryl substituted ammonium, a monovalent metal, and a chemical equivalent of a polyvalent metal, x is 1, 2, or 3, and n is 0 or 1 with a metal comprising contacting said metal, in elemental form or as a compound, with said phosphine.

5,780,675

DEOXYGOSSYLIC COMPOUNDS

Robert D. Royer, Bosque Farms; Lorraine M. Deck, and David L. VanderJagt, both of Albuquerque, all of N. Mex., assignors to The University of New Mexico, Albuquerque, N. Mex.

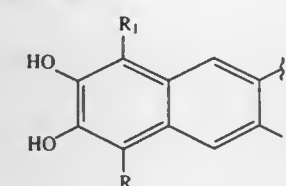
Filed Apr. 28, 1995, Ser. No. 431,294

Int. Cl.⁶ C07C 63/34

U.S. Cl. 562—467

28 Claims

1. A compound of the formula:



wherein R and R' are independently H or substituted or unsubstituted C₁–C₄-alkyl; R₁ is —C—OH or —C—H; and n is 2.

5,780,676
COMPOUNDS HAVING SELECTIVE ACTIVITY FOR RETINOID X RECEPTORS, AND MEANS FOR MODULATION OF PROCESSES MEDIATED BY RETINOID X RECEPTORS

Marcus F. Boehm, San Diego; Richard A. Heyman, Encinitas; Lin Zhi, San Diego; Chan Kou Hwang, San Diego; Steve White, San Diego, and Alex Nadzan, San Diego, all of Calif., assignors to Ligand Pharmaceuticals Incorporated, San Diego, Calif.

Continuation of Ser. No. 141,246, Oct. 22, 1993, which is a continuation-in-part of Ser. No. 52,050, Apr. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 27,747, Mar. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 3,223, Jan. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 944,783, Sep. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 872,707, Apr. 22, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 485,386

Int. Cl.⁶ C07C 63/36

U.S. Cl. 562—490

23 Claims

1. A pharmaceutical composition comprising in a pharmaceutically acceptable vehicle suitable for enteral, parenteral, or topical administration, one or more compound, or a pharmaceutically acceptable ester, amide or salt thereof, said compound selected from the group consisting of:

3-methyl-7-ethyl-9-(2,6,6-trimethyl-1-cyclohexen-1-yl)-2E,4E,6Z,8E-nonatetraenoic acid,
3-methyl-7-propyl-9-(2,6,6-trimethyl-1-cyclohexen-1-yl)-2E,4E,6Z,8E-nonatetraenoic acid,
3-methyl-7-isopropyl-9-(2,6,6-trimethyl-1-cyclohexen-1-yl)-2E,4E,6Z,8E-nonatetraenoic acid,
3,6,7-trimethyl-9-(2,6,6-trimethyl-1-cyclohexen-1-yl)-2E,4E,6Z,8E-nonatetraenoic acid,
3-methyl-7-t-butyl-9-(2,6,6-trimethyl-1-cyclohexen-1-yl)-2E,4E,6Z,8E-nonatetraenoic acid,
3-methyl-5-{2-[2-(2,6,6-trimethylcyclohexen-1-yl)ethenyl]phenyl}-2E,4E-pentadienoic acid,
3-methyl-5-{2-[2-(2,6,6-trimethylcyclohexen-1-yl)ethenyl]cyclohexyl}-2E,4E-pentadienoic acid,
(2E,4E)-3-methyl-6-{1-[2,6,6-trimethyl-1-cyclohexenyl]ethenyl}cyclopropyl}-2,4-hexadienoic acid,
(2E,4E,6Z)-7-(5,5,8,8-tetramethyl-5,6,7,8-tetrahydro-2-naphthyl)-3,8-dimethyl-nona-2,4,6-trienoic acid, and
(2E,4E,6Z)-7-(3,5,5,8,8-pentamethyl-5,6,7,8-tetrahydro-2-naphthyl)-3-methyl-octa-2,4,6-trienoic acid.

5,780,677

PROCESS FOR PRODUCING GLUTAMINE DERIVATIVE
Kazumi Amatsu, Yoshiyuki Yamada; Yoshikazu Mori; Shoichi Mizutaki, all of Osaka; Masaji Kasai, Kanagawa, and Shinji Tomioka, Wakayama, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Japan

Continuation of Ser. No. 418,469, Apr. 7, 1995, abandoned.

This application Apr. 4, 1997, Ser. No. 833,001

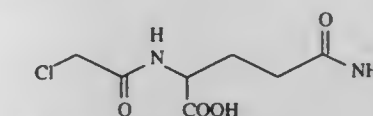
Claims priority, application Japan, Apr. 18, 1994, 6-078718

Int. Cl.⁶ C07C 229/00

U.S. Cl. 562—561

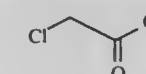
1 Claim

1. A process for producing N-chloroacetylglutamine represented by formula (I):



consisting the steps of:

(a) reacting chloroacetyl chloride represented by formula (II):



with an alkaline aqueous solution of glutamine in the presence of a water immiscible organic solvent;

- (b) separating an aqueous layer by liquid-liquid separation; and
(c) after seeding the aqueous layer crystallizing N-chloroacetylglutamine from said aqueous layer under acidic conditions.

5,780,678

LACTIC ACID PRODUCTION, SEPARATION AND/OR RECOVERY PROCESS

Avraham M. Baniel; Aharon M. Eyal, both of Jerusalem; Joseph Mizrahi, Haifa; Betty Hazan, Jerusalem, all of Israel; Rod R. Fisher, Eden Prairie, Minn.; Jeffrey J. Kolstad, Wayzata, Minn., and Brenda F. Stewart, White Bear Lake, Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Continuation of Ser. No. 207,773, Mar. 8, 1994, Pat. No. 5,510,526, which is a continuation-in-part of Ser. No. 84,810, Jun. 29, 1993, abandoned. This application Jan. 16, 1996, Ser. No. 587,216

Int. Cl.⁶ C07C 51/48

U.S. Cl. 562—580

23 Claims

1. A process for isolating lactic acid; said process including the steps of:

- (a) forming a system including a first aqueous phase and a second water-immiscible liquid phase;
(i) said first aqueous phase including lactate salt;
(ii) said water-immiscible liquid phase including a trialkyl amine;
(b) extracting said first aqueous phase with said water-immiscible liquid phase;
(i) said step of extracting including a step of acidifying at least one of said first aqueous phase and said water-immiscible liquid phase with CO₂;
(c) separating a resulting water-immiscible liquid phase from a resulting aqueous phase after said step of extracting; and
(d) generating lactic acid from said resulting water-immiscible liquid phase.

5,780,679

SEPARATION OF (METH)ACRYLIC ACID FROM THE REACTION GAS MIXTURE FORMED IN THE CATALYTIC GAS PHASE OXIDATION OF C3/C4 COMPOUNDS

Horst Egly, Böhl-Iggelheim; Volker Diehl, Ellerstadt, and Klaus Jörg, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 10, 1995, Ser. No. 541,425

Int. Cl.⁶ C07C 51/42

U.S. Cl. 562—600

11 Claims

1. A process for the separation of (meth)acrylic acid from a reaction gas mixture formed by catalytic gas phase oxidation, by countercurrent absorption using a high-boiling inert, hydrophobic organic liquid, in which the reaction gas mixture is passed through an absorption column counter-currently to the descending high-boiling, inert, hydrophobic organic liquid and (meth)acrylic acid is subsequently fractionally separated from the liquid effluent leaving the absorption column and containing (meth)acrylic acid, wherein a rectifying process is superimposed on the absorption process occurring naturally in the absorption column by withdrawing a portion of the descending liquid phase at a point along the absorption column, cooling said withdrawn portion and subsequently recycling the cooled fluid to the absorption column at a point along the absorption column between the point of withdrawal and the feed point of the high-boiling hydrophobic absorbent.

5,780,680

PREPARATION OF AMINES FROM OLEFINS OVER MESOPOROUS OXIDES HAVING A HIGH SURFACE AREA

Karsten Eller, Ludwigshafen; Rudolf Kummer, Frankenthal, and Ulrich Müller, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 18, 1997, Ser. No. 839,800

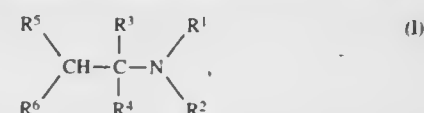
Claims priority, application Germany, Apr. 19, 1996, 196 15 482.0

Int. Cl.⁶ C07C 209/60

U.S. Cl. 564—485

11 Claims

1. A process for preparing amines of the formula I

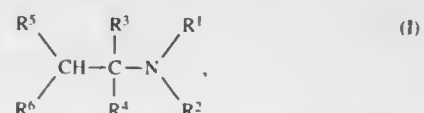


where

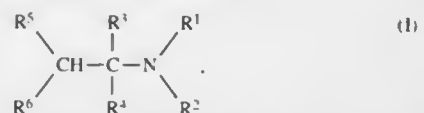
R¹, R², R³, R⁴, R⁵, R⁶ are hydrogen, C₁–C₂₀-alkyl, C₂–C₂₀-alkenyl, C₂–C₂₀-alkynyl, C₃–C₂₀-cycloalkyl, C₄–C₂₀-alkyl-cycloalkyl, C₄–C₂₀-cycloalkyl-alkyl, aryl, C₇–C₂₀-alkylaryl or C₇–C₂₀-aralkyl.

R¹ and R² together form a saturated or unsaturated, divalent C₃–C₉-alkylene chain and

R³ and R⁵ are C₂₁–C₂₀₀-alkyl, C₂₁–C₂₀₀-alkenyl or together form a divalent C₂–C₁₂-alkylene chain, by reacting olefins of the formula II



where R¹, R⁴, R⁵ and R⁶ are as defined above, with ammonia or primary or secondary amines of the formula III



where R¹ and R² are as defined above, at from 200° to 350° C. and a pressure of from 100 to 300 bar in the presence of a heterogeneous catalyst, wherein the heterogeneous catalysts are mesoporous oxides having a high surface area, having a characteristic step in the relative pressure range of p/p°=0.2–0.4 in an isotherm measured by means of nitrogen adsorption (77K); having mesopores present in the range of 2 to 6 nm; having X-ray crystallographic reflections in the 2-theta range from 2° to 6°, and having a surface area in the powder form of from 400 to 1400 m²g^{−1} determined by the BET method.

5,780,681

PREPARATION OF AMINES FROM OLEFINS OVER OXIDES OF GROUP IVB OR VIB OR MIXTURES THEREOF ON CARRIERS

Karsten Eller, Ludwigshafen; Rudolf Kummer, Frankenthal, and Michael Hesse, Worms, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jun. 5, 1997, Ser. No. 869,759

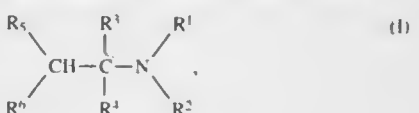
Claims priority, application Germany, Jun. 18, 1996, 19624206.1

Int. Cl.⁶ C07C 209/02

U.S. Cl. 564—485

11 Claims

1. A process for the preparation of amines of the formula I

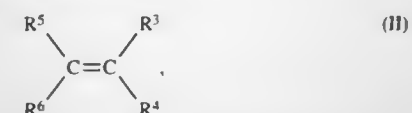


where

R¹, R², R³, R⁴, R⁵ and R⁶ are each hydrogen, C₁–C₂₀-alkyl, C₂–C₂₀-alkenyl, C₂–C₂₀-alkynyl, C₃–C₂₀-cycloalkyl, C₄–C₂₀-alkylcycloalkyl, C₄–C₂₀-cycloalkylalkyl, aryl, C₇–C₂₀-alkylaryl or C₇–C₂₀-aralkyl.

R¹ and R² together form a saturated or unsaturated C₃–C₉-alkylene chain and

R³ or R⁵ is C₂₁–C₂₀₀-alkyl or C₂₁–C₂₀₀-alkenyl, or R³ and R⁵ together form a C₂–C₁₂-alkylene chain, by reacting an olefin of the formula II



where R³, R⁴, R⁵ and R⁶ have the abovementioned meanings, with ammonia or a primary or secondary amine of the formula III



where R¹ and R² have the abovementioned meanings, at from 200° to 350° C. and from 100 to 300 bar in the presence of a heterogeneous catalyst, wherein the heterogeneous catalyst used is an oxide of group IVB or VIB or a mixture thereof on a carrier.

5,780,682

PROCESS FOR THE SYNTHESIS OF FLUORINATED ALKYL SULFONYL HALIDES

John Zavilla, Vedæk, and Sven Ivar Hommeltoft, Hillerød, both of Denmark, assignors to Haldor Topsoe A/S, Lyngby, Denmark

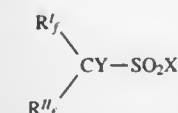
Continuation-in-part of Ser. No. 626,324, Apr. 2, 1996, abandoned. This application Sep. 19, 1997, Ser. No. 934,204

Claims priority, application Denmark, Apr. 4, 1995, 0383/95 Int. Cl.⁶ C07C 315/04

U.S. Cl. 568—35

13 Claims

1. A method for the preparation of fluorinated alkyl sulphonyl halides having the generic formula:



where R' is a fluorinated alkyl group and R'' is a fluorinated alkyl group or fluorine, X is a halogen atom, and Y is a proton, a halogen atom, or a fluorinated alkyl group.

comprising reacting a corresponding fluorinated unsaturated hydrocarbon with sulphonyl halide, wherein the reaction is carried out in the presence of at least catalytic amounts of a fluoride in a solvent comprising an alkyl sulphonyl or alkyl sulfoxide compound wherein the total number of carbon atoms in the alkyl sulfoxide compound is at least 3.

5,780,683

CYCLOHEXANE OXIDATION

Marvin I. Greene, Wyckoff; Charles Sumner, Livingston, and Robert J. Gartside, Summit, all of N.J., assignors to ABB Lummus Global Inc., Bloomfield, N.J.

Filed Sep. 11, 1996, Ser. No. 712,478

Int. Cl.⁶ C07C 45/33

U.S. Cl. 568—358

12 Claims

1. A method for the production of cyclohexanol and cyclohexanone by the catalytic oxidation of cyclohexane comprising the steps of:

- a. oxidizing said cyclohexane in the liquid phase in the presence of an oxidation catalyst at a temperature in the range of 80° to

160° C. using an oxygen-enriched oxidizing gas stream bubbled into said liquid phase and containing at least 90% oxygen thereby producing a product stream containing said cyclohexanol and cyclohexanone and precursors thereof; and
b. maintaining said product stream at said temperature and immediately hydrogenating said product stream at said temperature and in the presence of a noble metal catalyst deposited on an inert carrier thereby converting at least a portion of said precursors to additional cyclohexanol and cyclohexanone.

5,780,684

HYDROFORMYLATION REACTIONS

Eit Drent, and Willem Wabe Jager, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 15, 1997, Ser. No. 783,966

Claims priority, application European Pat. Off., Jan. 16, 1996, 96200100

Int. Cl.⁶ C07C 45/50

U.S. Cl. 568—454

27 Claims

1. A process for hydroformylating olefins with carbon monoxide and a hydrogen atom source in the presence of a catalyst system comprising combining (a) a source of a Group VIII metal cation, (b) a compound acting as bidentate ligand of the formula R¹R²M¹—R—M²R³R⁴, wherein M¹ and M² independently are P, As or Sb, R represents a bivalent substituted or non-substituted bridging group containing from 1 to 5 atoms in the bridge, R¹ and R² together are a substituted or non-substituted bivalent group whereby the two free valencies are linked to M¹, and R³ and R⁴ together are a substituted or non-substituted bivalent group whereby the two free valencies are linked to M² or R³ and R⁴ independently are substituted or non-substituted hydrocarbyl groups, and (c) a source of anions; wherein the hydrogen atom source comprises water or a primary or secondary alcohol free of added hydrogen gas.

5,780,685

Patent Not Issued For This Number

5,780,686

PROCESS FOR PREPARING 4-OXA-AMINES

Wolfgang Hölderich, Frankenthal; Marcus Paczkowski, Darmstadt, and Dieter Heinz, Meerbusch, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed May 27, 1997, Ser. No. 863,259

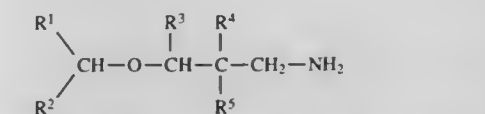
Claims priority, application Germany, May 30, 1996, 196 21 704.0

Int. Cl.⁶ C07C 209/00

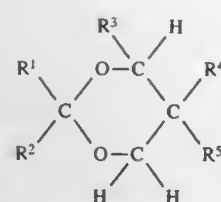
U.S. Cl. 564—413

21 Claims

1. A process for preparing 4-oxa-amines of the formula of the formula



wherein R¹, R², R⁴ and R⁵ are individually selected from the group consisting of a) hydrogen, b) alkyl, alkenyl and alkynyl up to 18 carbon atoms, c) cycloalkyl and cycloalkenyl of 5 to 8 carbon atoms, d) aryl, alkylaryl, aralkyl, aralkenyl and alkenylaryl of 6 to 16 carbon atoms and e) heterocyclics or R¹ and R² and/or R⁴ and R⁵ together with the carbon atom to which they are bound can form a cycloalkane, cycloalkene or a heterocycle, R¹, R², R⁴ and R⁵ optionally have substituents which are inert under the reaction conditions, and R³ is hydrogen or alkyl comprising reacting 1,3-dioxanes of the formula



wherein R^1 , R^2 , R^3 , R^4 and R^5 are as defined above, with hydrogen and ammonia at pressures of 0.1 to 35 MPa and temperatures of 40° to 500° C. in the presence of a hydrogenation catalyst.

5,780,687

PROCESS FOR PREPARING 3-OXYALKYLPROPAN-1-OLS

Wolfgang Holderich, Frankenthal; Marcus Paczkowski, Darmstadt; Dieter Heinz, Meerbusch, and Thomas Kaiser, Kelheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed May 27, 1997, Ser. No. 863,258

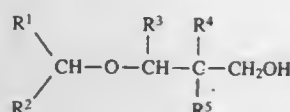
Claims priority, application Germany, May 30, 1996, 196 21 703.2

Int. Cl.⁶ C07C 41/03

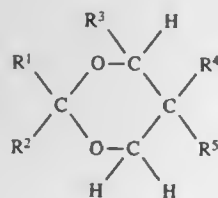
U.S. Cl. 568—678

20 Claims

1. A process for preparing 3-oxyalkyl-propan-1-ols of the formula



comprising hydrogenating 1,3-dioxanes of the formula



wherein R^1 , R^2 , R^4 and R^5 are individually selected from the group consisting of a) hydrogen, b) straight-chain or branched alkyl, alkenyl and alkynyl of up to 18 carbon atoms, c) cycloalkyl and cycloalkenyl of 5 to 8 carbon atoms, d) aryl, alkylaryl, aralkyl, aralkenyl and alkenylaryl of 6 to 16 carbon atoms and e) heterocyclics or R^1 and R^2 and/or R^4 and R^5 together with the carbon atom to which they are attached form a cycloalkane, cycloalkene or heterocycle of 5 to 7 ring atoms, R^1 , R^2 , R^4 and R^5 optionally substituted with an inert member under the reaction conditions, and R^3 is hydrogen or a straight-chain or branched alkyl, at pressures of from 0.1 to 35 MPa and temperatures of from 40° to 500° C. in the presence of catalysts, wherein the catalysts comprise at least one metal selected from the group consisting of group IB of the Periodic Table of the Elements, with the exception of chromium and nickel, as hydrogenation-active component and an acid support.

II

5,780,688

SUPPORTED-CATALYST AND USE OF SAME

Ulrich Hoffmann, Northelm; Ulrich Kunz, Clausthal; Hartmut Bruderreck, Borken; Klaus Gottlieb, Herdecke; Kuno Schädlich, Essen, and Stefan Becker, Bochum, all of Germany, assignors to Veba Oel AG, Gelsenkirchen, Germany

PCT No. PCT/EP93/02696, § 371 Date Apr. 5, 1996, § 102(e) Date Apr. 5, 1996, PCT Pub. No. WO94/08713, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 2, 1993, Ser. No. 407,024

Claims priority, application Germany, Oct. 10, 1992, 42 34 779.3

Int. Cl.⁶ C07C 29/04; 2/04; 2/56; 41/00

U.S. Cl. 568—697

40 Claims

1. Supported catalyst having a shape of a packing, and comprising an open porous support material having external and internal surfaces, said external and internal surfaces having affixed thereto a macro-porous ion exchange resin, produced by impregnating or completely covering the support material with a mixture of (a) polymerizable monomers for forming the ion exchange resin and (b) at least one of a solvent therefor and a material for forming pores in the ion exchange resin, and carrying out polymerization.

29. Process for carrying out a chemical reaction, comprising introducing chemical reactants into the presence of the supported catalyst according to claim 1 or 2 and carrying out the chemical reaction, the chemical reaction being at least one selected from the group consisting of etherification, esterification, hydrogenation, dimerization, hydration, alkylation and oligomerization.

5,780,689

SUPERACIDIC CATALYSTS FOR THE SYNTHESIS OF METHYL-TERT-BUTYL ETHER (MTBE)

Raymond Le Van Mao, Québec, Canada, assignor to Societe Quebecoise D'Initiatives Petrolières, Québec, Canada

Division of Ser. No. 728,157, Jul. 10, 1991, abandoned. This application Aug. 30, 1995, Ser. No. 520,821

Int. Cl.⁶ C07C 41/00

U.S. Cl. 568—698

17 Claims

1. A method of preparing methyl-t-butyl-ether (MTBE) from isobutene and methanol, said method comprising the steps of:

reacting said isobutene and methanol at a temperature of about 80° C. to about 100° C. at a pressure of at least about 200 psig, in the presence of a catalyst comprising an acid-form Y-zeolite catalyst base having incorporated thereon about 0.5 to 7 wt % of trifluoromethanesulfonic acid.

5,780,690

BISPHENOL SYNTHESIS ON MODIFIED ION-EXCHANGE RESINS USING SPECIALLY PURIFIED CARBONYL COMPOUNDS

Klaus Berg, Krefeld; Gerhard Fennhoff, Willich; Ralf Pakull, Köln; Hans-Josef Buysch, Krefeld; Bernhard Wehrle, Langenfeld; Alfred Eitel, Dormagen; Claus Wulff, Krefeld, and Jürgen Kirsch, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 501,986, Jul. 12, 1995, abandoned.

This application Apr. 8, 1997, Ser. No. 831,543

Int. Cl.⁶ C07C 37/20

U.S. Cl. 568—727

5 Claims

1. A process for synthesizing a bis-(4-hydroxyphenyl)-alkane comprising reacting a monophenol with a carbonyl compound selected from the group consisting of aldehyde and ketone in the presence of a sulphonic acid groups-containing ion-exchange material, wherein up to 11.5 mol-% of said groups are occupied by 2-aminoethyl mercaptan, characterized in that said monophenol and carbonyl compound first undergo purification to limit the content of alkylating substances in said monophenol and carbonyl compound to a positive amount of less than 0.01% relative to their weight, wherein said alkylating substances is at least one member

selected from the group consisting of methanol, ethanol, 1,2-propanol, 1,3-propanol, isomers of butanol and cyclohexanol, said purification consisting of at least one of distillation, recrystallization, extraction and using molecular sieves.

5,780,691

PROCESS FOR PRODUCING 1,1,1,2,3,3,3-HEPTAFLUOROPRANE

Hsueh Sung Tung, Getzville, and Lois Anne Ellis, Orchard Park, both of N.Y., assignors to Allied Signal Inc., Morristown, N.J.

Filed Dec. 23, 1996, Ser. No. 772,683

Int. Cl.⁶ C07C 17/06; 19/08

U.S. Cl. 570—134

18 Claims

1. A process for the production of 1,1,1,2,3,3,3-heptafluoropropane comprising the step of reacting 1,1,1,3,3,3-hexafluoropropane with an effective amount of elemental fluorine in an inert gas under conditions suitable to produce a 1,1,1,2,3,3,3-heptafluoropropane product.

5,780,692

PROCESS FOR PRODUCING OPTICALLY ACTIVE BENZHYDROL COMPOUNDS

Minzo Sakaguchi; Takashi Imai; Takashi Miura, and Tetsuro Yamazaki, all of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Dec. 24, 1996, Ser. No. 772,525

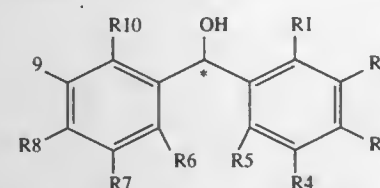
Claims priority, application Japan, Dec. 28, 1995, 7-343199

Int. Cl.⁶ C07C 33/46; 33/34; 35/21; 35/22

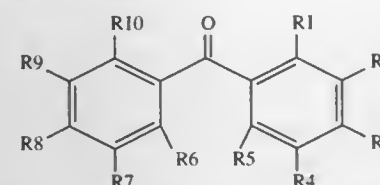
U.S. Cl. 568—814

6 Claims

1. A process for producing an optically active benzhydrol compound represented by formula (II):



wherein R^1 , R^5 , R^6 and R^{10} are the same or different and each represents a hydrogen atom, a halogen atom, a hydroxyl group, a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxy group having 1 to 4 carbon atoms or a lower alkanoyl group having 1 to 5 carbon atoms; R^2 , R^3 , R^4 , R^7 , R^8 and R^9 are the same or different and each represents a hydrogen atom, a halogen atom, a hydroxyl group, a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxy group having 1 to 4 carbon atoms, a lower alkanoyl group having 1 to 5 carbon atoms or an amino group optionally substituted by a lower alkyl group, a lower alkanoyl group or a lower alkoxycarbonyl group, R^2 and R^3 , and R^8 and R^9 may be bonded to each other to thereby form $-\text{CH}=\text{CH}-\text{CH}=\text{CH}-$, and any two of R^1 to R^9 adjacent to each other may be bonded to thereby form $-\text{OCH}_2\text{O}-$ or $-(\text{CH}_2)_3-$; and * shows the location of an asymmetric carbon atom; which comprises hydrogenating a benzophenone compound represented by formula (I):



wherein R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , R^9 and R^{10} are each as defined above:

in the presence of a hydrogenation catalyst consisting of a transition metal complex represented by the following general formulae (III), (IV), (V) or (VI):



wherein X represents a halogen atom; L represents an optically active phosphine ligand; and A represents a tertiary amine;



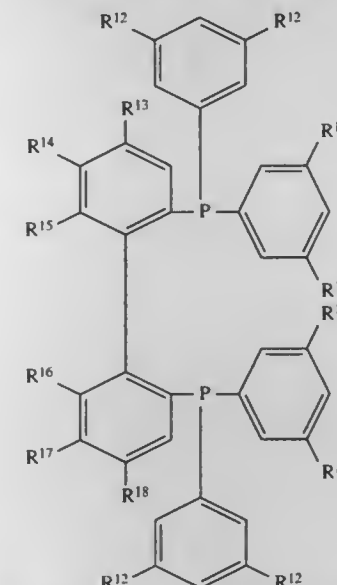
wherein X and L are each as defined above; and E represents an optionally substituted benzene or p-cymene;



wherein L is as defined above; and G represents a halogen atom or an acetoxy group; or



wherein X and L are each as defined above; and J^- represents BF_4^- , ClO_4^- , PF_6^- or BPh_4^- wherein Ph represents a phenyl group, base and an optically active diamine compound, a said optically active phosphine ligand being represented by formula (VII):



wherein R^{12} represents a lower alkyl group having 1 to 4 carbon atoms; R^{13} , R^{14} , R^{15} , R^{16} , R^{17} and R^{18} are the same or different and each represents a hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxy group having 1 to 4 carbon atoms or a halogen atom, or R^4 and R^{15} and R^{16} and R^{17} may be bonded to each other to thereby form a ring.

5,780,693

PROCESS FOR THE MANUFACTURING OF ZEAXANTHIN FROM LUTEIN

Kurt Bernhard, Lupsingen, and Alfred Giger, Möhlin, both of Switzerland, assignors to Roche Vitamins Inc., Parsippany, N.J.

Filed Sep. 22, 1997, Ser. No. 935,262

Claims priority, application European Pat. Off., Oct. 4, 1996, 961159084

Int. Cl.⁶ C07C 35/21

U.S. Cl. 568—816

17 Claims

1. A process for the production of zeaxanthin from lutein or an ester thereof which process comprises heating a mixture which contains:

- a) a lutein-containing material comprising lutein or an ester thereof,
 b) an aqueous solution of an alkali hydroxide wherein the alkali hydroxide is present in the solution at a concentration of at least 3 M, and
 c) a solvent selected from the group consisting of dimethyl sulphoxide and a liquid aliphatic or aromatic hydrocarbon, at a temperature in the range from about 50° C. to about 120° C., whereby said zeaxanthin is produced from said lutein or ester thereof, with the proviso that when the solvent is the liquid aliphatic or aromatic hydrocarbon, the mixture further comprises an effective amount of a phase transfer catalyst.

5,780,694

DIMERIZED ALCOHOL COMPOSITIONS AND BIODEGRADIBLE SURFACTANTS MADE THEREFROM HAVING COLD WATER DETERGENCY

David M. Singleton, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 26, 1996, Ser. No. 755,827

Int. Cl.⁶ C07C 27/20

U.S. Cl. 568—909

23 Claims

1. A process for the manufacture of a branched C₁₃–C₂₁ alcohol composition having an average number of branches ranging from 0.9 to 2.0, comprising:

- a) dimerizing, in the presence of a homogeneous dimerization catalyst under dimerization conditions, an olefin feed comprised of C₆–C₁₀ olefins, to obtain C₁₂–C₂₀ olefins; and
 b) converting said C₁₂–C₂₀ olefins to alcohols.

5,780,695

PROCESS FOR THE SELECTIVE SATURATION OF OLEFIN-CONTAINING HALOGENATED ORGANIC STREAMS

Tom N. Kalnes, Des Plaines, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 348,416, Dec. 2, 1994, Pat. No. 5,637,782. This application Oct. 31, 1995, Ser. No. 741,810

Int. Cl.⁶ C07C 17/38; 19/08

U.S. Cl. 570—262

8 Claims

1. A process for saturating an olefin-containing halogenated organic stream to produce saturated halogenated organic compounds which process comprises the steps of:

- (a) contacting said olefin-containing halogenated organic stream with a hydrogen-rich gaseous stream and a liquid recycle stream comprising a saturated halogenated organic stream;
 (b) contacting the resulting admixture from step (a) with a hydrogenation catalyst in a hydrogenation reaction zone at selective hydrogenation conditions;
 (c) cooling and condensing at least a portion of the resulting effluent from said hydrogenation reaction zone to produce a saturated halogenated organic stream and a vapor stream comprising hydrogen, saturated halogenated organic compounds and hydrogen halide;
 (d) recycling at least a portion of said saturated halogenated organic stream from step (c) to provide at least a portion of said liquid recycle stream in step (a); and
 (e) recovering at least a portion of said saturated halogenated organic stream.

5,780,696

PROCESS FOR RECYCLING PLASTIC WASTE

Siegfried Bauer, Graefelfing, Germany, assignor to Solvay (Société Anonyme), Brussels, Belgium

Filed Feb. 24, 1997, Ser. No. 804,577

Claims priority, application Belgium, Feb. 29, 1996, 09600175

Int. Cl.⁶ C07C 1/00; 4/04; C10G 1/00; 51/02

U.S. Cl. 585—241

8 Claims

1. A process for recycling waste which consists essentially of one or more plastics comprising polyvinyl chloride (PVC), in which

- (a) mixing the waste with a heavy oil to achieve a ratio of the weight of the waste to the volume of heavy oil from 0.15 to 1.2 kg/l, in a reactor under an inert atmosphere, at an internal temperature of at least 300° C., and collecting hydrogen chloride (HCl) which is evolved;
 (b) cracking the contents of the reactor at a cracking temperature of at least 400° C., said cracking temperature being 20° to 100° C. higher than said internal temperature at the end of step (a), and extracting at least part of the gases which are evolved from the reactor;
 (c) cooling the contents of the reactor and collecting the residual solid product.

5,780,697

TRIALKYL ALUMINUM DISPLACEMENT PROCESS

Ronny Wen-Long Lin; Richard Andrew Holub, both of Baton Rouge, La., and Richard Neil Hollenshead, Houston, Tex., assignors to Amoco Corporation, Chicago, Ill.

Filed Jun. 17, 1997, Ser. No. 877,756

Int. Cl.⁶ C07C 2/88; 6/00

U.S. Cl. 585—328

17 Claims

1. A process for deactivating a displacement catalyst selected from the group consisting of nickel, cobalt and mixtures thereof during a reaction wherein an alkyl group is displaced from a trialkyl aluminum compound in a reaction mixture containing said catalyst comprising adding to the reaction mixture a deactivating amount of a catalyst poison containing a member selected from the group consisting of silver, thallium, and mixtures thereof after the displacement has proceeded to the desired extent.

5,780,698

OLEFIN OLIGOMERIZATION CATALYST AND PROCESS EMPLOYING AND PREPARING SAME

Eduardo J. Baralt, Kingwood, Tex.; Michael J. Carney, Eldersburg, Md., and Jana B. Cole, Houston, Tex., assignors to Chevron Chemical Company, San Ramon, Calif.

Filed Mar. 31, 1997, Ser. No. 831,281

Int. Cl.⁶ C07C 2/02; B01J 31/00

U.S. Cl. 585—521

18 Claims

1. A catalyst which is represented by the formula [RC(YR')₂]₂CrX, wherein R and R' are individually selected from the group consisting of carbyl and carbylsilyl groups; Y is N, C or P; and X is a halogen, halogen alkyl, Si, alkylsilyl or a carbyl group.

9. An oligomerization process comprising reacting an olefin feed comprising at least one olefin with a catalyst and a cocatalyst under oligomerization conditions to form an olefin product:

wherein the catalyst is represented by the formula [RC(YR')₂]₂CrX, wherein R and R' are individually selected from the group consisting of carbyl and carbylsilyl groups; Y is N, C or P; and X is a halogen, halogen alkyl, Si, alkylsilyl or a carbyl group; and

wherein the cocatalyst is an alkali hydrocarbyl silyl compound or a hydrocarbyl aluminum compound.

5,780,699

SYNTHETIC BASESTOCKS AND PROCESS FOR PRODUCING SAME

Odyr Do Coutto Filho, and Noemi Tatizawa, both of Rio de Janeiro, Brazil, assignors to Petroleo Brasileiro S.A.-Petrobras, Rio de Janeiro, Brazil

Continuation of Ser. No. 355,346, Dec. 12, 1994, abandoned.

This application Aug. 26, 1996, Ser. No. 701,535

Claims priority, application Brazil, Jan. 12, 1994, 9400079-4

Int. Cl.⁶ C07C 2/08; 2/74

U.S. Cl. 585—532

11 Claims

1. A process for producing a synthetic basestock having a flash point of from 150° to 280° C., a kinematic viscosity at 40° C. of from 10 to 250 cSt, a kinematic viscosity at 100° C. of from 3 to 30 cSt, a viscosity index of from 120 to 200 and a pour point of from 0° to less than -33° C., by oligomerizing an α -olefin feedstock, wherein the process comprises the steps of:

- (a) contacting an AlCl₃ cationic catalyst with an α -olefin feedstock, so as to oligomerize said feedstock, wherein said α -olefin feedstock comprises a mixture of α -olefin containing 7 to 30 carbon atoms, an olefin content of from 30 to 60 volume % and a terminal olefin carbon content of from 3.0 to 15 mole % and wherein said AlCl₃ cationic catalyst is a soluble catalyst complex of AlCl₃/ α , α -trichlorotoluene dissolved in toluene, wherein the relative amount of AlCl₃ to α , α -trichlorotoluene is from 0.5:1 to 1.2:1;
 (b) distilling out a light fraction cut under reduced pressure from the resulting product of step (a);
 (c) contacting the light fraction cut of step (b) with a hydrogenation catalyst so as to hydrogenate the light fraction cut; and
 (d) recovering the resulting synthetic basestock from step (c).

5,780,700

CATALYTIC OXIDATIVE DEHYDROGENATION OF ALKYLAROMATICS AND PARAFFINS

Alfred Hagemeyer; Thomas Lautensack; Otto Watzemberger, all of Ludwigshafen, and Axel Delmling, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 13, 1995, Ser. No. 527,683

Int. Cl.⁶ C07C 5/09

U.S. Cl. 585—617

11 Claims

1. A process for the preparation of olefinically unsaturated compounds by catalytic oxidation/oxidative dehydrogenation by transferring oxygen from a previously oxidized oxygen carrier acting as catalyst, in the absence of molecular oxygen, the catalyst being regenerated after exhaustion, wherein, during the operating phase of the catalyst (oxidation/dehydration partial step), the residence time, space velocity, and/or temperature of the reactants in the reactor is/are continuously, or in discrete steps, adapted to the momentary state of activity of the redox catalyst such that the residence time of the reactants in the freshly regenerated catalyst (ie at the commencement of the reaction) is adjusted to a shorter value or the space velocity is adjusted to a higher value, and/or the temperature is adjusted to a lower value than the corresponding parameter(s) in the partially reduced catalyst, said adjustments being effected continuously or in steps.

5,780,701

PROCESS FOR ALKANE GROUP DEHYDROGENATION WITH ORGANOMETALLIC CATALYST

William C. Kaska, Goleta, Calif., and Craig M. Jensen, Kailua, Hi., assignors to The Regents of the University of California, Oakland, Calif., and University of Hawaii, Honolulu, Hi.

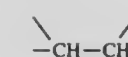
Filed Jul. 26, 1996, Ser. No. 687,717

Int. Cl.⁶ C07C 5/327; 5/373; 5/333; C07F 15/02

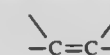
U.S. Cl. 585—654

20 Claims

1. An improved process to remove hydrogen from an allyl-containing organic compound having at least one

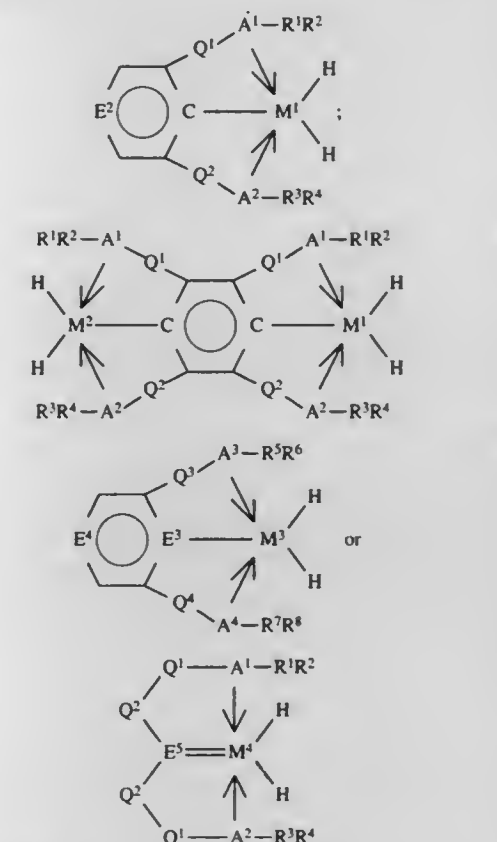


group to produce an alkene compound having at least one



group, and hydrogen which process comprises:

(a) contacting the alkyl-containing compound with a soluble complex of structure A, which structure is selected from structure I:



wherein:

A¹, A², A³, and A⁴ are each independently P, As or N;

E² is independently C or N;

E³ is independently C, Si, or Ge;

E⁴ is independently C, Si, or Ge;

and E⁵ is independently C, Si or Ge,

M¹, M², M³, and M⁴ each is a metal atom independently selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium and platinum;

Q¹, Q², Q³, and Q⁴ are each independently a direct bond, —CH₂—, —CH₂CH₂—, —CH=CH—;

in structure I, structure II or structure IV, R¹, R², R³, and R⁴ are each independently selected from alkyl, alkenyl, cycloalkyl, and aryl, or R¹ and R² together and R³ and R⁴ together form a ring structure having from 4 to 10 carbon atoms, or

in structure III, R⁵, R⁶, R⁷, and R⁸ are each independently selected from alkyl, alkenyl, cycloalkyl, and aryl, or R⁵ and R⁶ together and R⁷ and R⁸ together form a ring structure having from 4 to 10 carbon atoms;

at a temperature of between about 100° and 250° C. for between about 1 hr and 300 days in the absence of N₂.

5,780,702

PROCESS FOR DISPLACING THE DOUBLE BOND IN OLEFINS USING A CATALYTIC COMPOSITION BASED ON TRANSITION METAL COMPLEXES

Yves Chauvin, Le Pecq, France; Lothar Mussmann, Hanau Wolfgang, Germany, and Hélène Olivier, Rueil Malmaison, France, assignors to Institut Français du Pétrole, France

Filed Jun. 17, 1996, Ser. No. 664,561

Claims priority, application France, Jun. 16, 1995, 95 07329

Int. Cl.⁶ C07C 5/23; 5/25

U.S. Cl. 585—664

21 Claims

1. A process for the double-bond isomerisation of olefins, comprising contacting an olefin in an isomerisation reactor under double-bond isomerizing condition with a catalytic composition comprising at least one compound of at least one transition metal from groups 8, 9 and 10 at least partially dissolved in at least one molten salt selected from the group consisting of a quaternary ammonium and phosphonium salt, said salt being of the formula Q⁺A⁻ where Q⁺ represent a quaternary ammonium or quaternary phosphonium cation and A⁻ represents an anion selected from the group consisting of tetrafluoroborate, tetrachloroborate, hexafluorophosphate, hexafluoroantimonate, hexafluoroarsenate, dichlorocuprate, tetrachloroaluminate, trifluoromethylsulphonate, fluoro-sulphonate and trichlorozincate, resulting in products wherein any hydrogenated olefin constitutes a minor amount compared to double-bond isomerized olefin.

5,780,703

PROCESS FOR PRODUCING LOW AROMATIC DIESEL FUEL WITH HIGH CETANE INDEX

Clarence D. Chang, Princeton, N.J.; Stuart D. Hellring, Yardley, Pa.; David O. Marler, Deptford, N.J.; Jose G. Santiesteban, Yardley, and James C. Vartuli, West Chester, both of Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 236,073, May 21, 1994, Pat. No. 5,510,309. This application Aug. 9, 1995, Ser. No. 513,107

Int. Cl.⁶ C07C 2/58; C10G 35/04

U.S. Cl. 585—732

16 Claims

1. A process for converting a feedstock comprising at least one olefin and at least one isoparaffin to a product comprising distillate which comprises contacting said feedstock under conversion conditions with a catalyst composition which comprises an acidic solid comprising iron or manganese and a Group IVB metal oxide modified with an oxyanion of a Group VIB metal.

5,780,704

PROCESS FOR TREATING PLASTIC PRODUCT

Masanobu Ajioka, Kanagawa-ken; Katashi Enomoto, Fukuoka-ken; Akihiro Yamaguchi, and Kazuhiko Suzuki, both of Kanagawa-ken, all of Japan, assignors to Mitsui Chemicals, Inc., Tokyo, Japan

Filed May 28, 1993, Ser. No. 68,085

Claims priority, application Japan, Jun. 4, 1992, 4-143940

Int. Cl.⁶ A62D 3/00

U.S. Cl. 588—218

15 Claims

1. A process for decomposing a thermoplastic polymer composition consisting essentially of a homopolymer or copolymer of hydroxycarboxylic acid selected from the group consisting of lactic acid, glycolic acid and 6-hydroxycaproic acid and having a weight average molecular weight of 10,000 to 1,000,000 comprising contacting the polymer composition with an alkaline solution of pH 10 or more whereby the homopolymer or copolymer is decomposed to produce hydroxycarboxylic acid and recovering the hydroxycarboxylic acid from the solution.

5,780,705

INBRED CORN LINE ZS01301

David Witherspoon, 923 Stone Haven, and Jim Deutsch, R.R. 4, Box 302, both of Marshall, Mo. 65340

Filed Mar. 29, 1996, Ser. No. 630,404

Int. Cl.⁶ A01H 5/00; 4/00; 1/00; C12N 5/04

U.S. Cl. 800—200

12 Claims

1. Inbred corn seed designated ZS01301, some of said seed deposited in the ATCC and carry accession number 209110.

5,780,706

Patent Not Issued For This Number

5,780,707

Patent Not Issued For This Number

5,780,708

FERTILE TRANSGENIC CORN PLANTS

Ronald C. Lundquist, Minnetonka, and David A. Walters, Bloomington, both of Minn., assignors to Dekalb Genetics Corporation, Dekalb, Ill.

Division of Ser. No. 285,488, Aug. 3, 1994, Pat. No. 5,508,468, which is a continuation of Ser. No. 636,089, Dec. 28, 1990, abandoned, which is a continuation-in-part of Ser. No.

508,045, Apr. 11, 1990, Pat. No. 5,484,956, which is a continuation-in-part of Ser. No. 974,379, Nov. 10, 1992, Pat. No. 5,538,877, which is a continuation of Ser. No. 467,983, Jan. 22, 1990, abandoned. This application Mar. 20, 1996, Ser. No. 618,749

Int. Cl.⁶ A01H 4/00; C12N 15/06

U.S. Cl. 800—205

8 Claims

1. A fertile transgenic *Zea mays* plant comprising isolated DNA encoding 2,2-dichloropropionic acid dehalogenase, wherein the DNA is expressed so that said transgenic *Zea mays* plant exhibits tolerance or resistance to normally toxic levels of 2,2-dichloropropionic acid, and wherein said preselected DNA is heritable.

5,780,709

TRANSGENIC MAIZE WITH INCREASED MANNITOL CONTENT

Thomas R. Adams, North Stonington, Conn.; Paul C. Anderson, West Des Moines, Iowa; Richard J. Daines, Ledyard, Conn.; William Gordon-Kamm, Urbandale, Iowa; Albert P. Kausch, Stonington, Conn.; Michael T. Mann, Mystic, Conn.; Peter M. Orr, Pawcatuck, Conn., and David C. Warner, Wakefield, R.I., assignors to Dekalb Genetics Corporation, Dekalb, Ill.

Continuation-in-part of Ser. No. 113,561, Aug. 25, 1993. This application Jan. 19, 1996, Ser. No. 594,861

Int. Cl.⁶ A01H 5/00; C12N 15/00; 15/05

U.S. Cl. 800—205

24 Claims

1. A method to increase water stress resistance or tolerance in a monocot plant, comprising:

- introducing into cells of a monocot plant an expression cassette comprising a preselected DNA segment comprising an mtlD gene, operably linked to a promoter functional in the monocot plant cells, to yield transformed monocot plant cells; and
- regenerating a differentiated fertile plant from said transformed cells, wherein the mtlD gene is expressed in the cells of the plant so as to render the transformed monocot plant

substantially tolerant or resistant to a reduction in water availability that inhibits the growth of an untransformed monocot plant.

17. A transformed monocot plant, which plant is substantially tolerant or resistant to a reduction in water availability, the cells of which comprise a recombinant DNA segment comprising a preselected DNA segment comprising an mtlD gene, and wherein the mtlD gene is expressed so as to confer tolerance or resistance to the transformed plant to a reduction in water availability that inhibits the growth of the corresponding untransformed plant.

19. A fertile transgenic *Zea mays* plant comprising a recombinant DNA segment comprising a promoter operably linked to a first DNA segment comprising an mtlD gene, wherein the level of mannitol-1-phosphate dehydrogenase expressed from the mtlD gene in the cells of the transgenic *Zea mays* plant is substantially increased above the level in the cells of a *Zea mays* plant which only differ from the cells of the transgenic *Zea mays* plant in which the recombinant DNA segment is absent, and wherein the recombinant DNA segment is transmitted through a complete normal sexual cycle of the transgenic plant to the next generation.

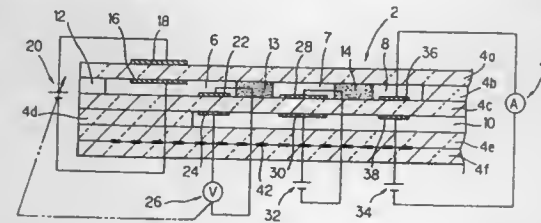
ELECTRICAL

5,780,710
GAS ANALYZER AND METHOD OF CALIBRATING
SAID GAS ANALYZER
Takao Murase, Konan; Jun Usami, Nukata-gun, and Masao
Kon, Nagoya, all of Japan, assignors to NGK Insulators,
Ltd., Japan

Filed May 27, 1997, Ser. No. 863,617
Claims priority, application Japan, May 30, 1996, 8-136610;
Apr. 23, 1997, 9-106167

Int. Cl.⁶ G01N 27/409
U.S. Cl. 73—1.06

11 Claims



1. A gas analyzer comprising:

- a gas sensor in which after a gas to be measured containing a gas component to be measured having bound oxygen to be measured is introduced into a first processing zone under a predetermined diffusion resistance, and an oxygen partial pressure in the atmosphere within said first processing zone is controlled to a predetermined oxygen partial pressure due to the pumping action of oxygen by the first electro-chemical pump cell in said first processing zone, the gas to be measured is introduced into a second processing zone under a predetermined diffusion resistance, and oxygen is pumped out by the second electro-chemical pump cell in the second processing zone, so that the oxygen partial pressure in said atmosphere is controlled to a low oxygen partial pressure value that does not substantially influence the measurement of the amount of the gas component to be measured, and thereafter the gas to be measured is introduced into a third processing zone, and said gas component to be measured in the atmosphere introduced from said second processing zone is reduced or decomposed in said third processing zone, and oxygen generated at that time is pumped out by a third electro-chemical pump cell to detect a pumping current flowing in said third electro-chemical pump cell;
- a drive section for pumping oxygen from said first to third processing zones in said gas sensor;
- an operating section for operating the pumping current flowing in said third electro-chemical pump cell into a value of the gas to be measured;
- a display output section for displaying the value operated by said operating section, or outputting the value to an external as an electric output; and
- a heater drive section for heating said gas sensor to a predetermined temperature.

5,780,711
PRESSURE INDICATOR WITH RELATIVELY MOVABLE
SCREEN AND DIAL

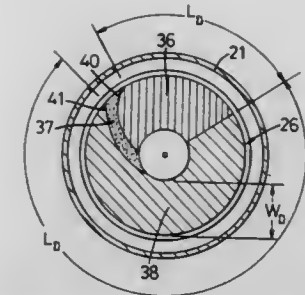
Richard Glazebrook, Derbyshire, United Kingdom, assignor to
Gaslow International Limited, United Kingdom
PCT No. PCT/GB95/00217, § 371 Date Dec. 18, 1996, § 102(e)
Date Dec. 18, 1996, PCT Pub. No. WO95/27891, PCT Pub.
Date Oct. 19, 1995

PCT Filed Feb. 3, 1995, Ser. No. 722,007
Claims priority, application United Kingdom, Apr. 6, 1994,
9406817

Int. Cl.⁶ G01C 17/38; G01L 19/10
U.S. Cl. 73—1.71

10 Claims

- 1. A pressure gauge including indicating means and pressure sensing means, the indicating means including an opaque screen and an indicator dial which are relatively movable, the screen and dial being relatively moved along a path of movement between first and second limits of movement in a progressive manner in



response to variation of pressure sensed by the sensing means, the screen being arranged to mask the dial from view and being provided with a window through which a portion of the dial can be viewed during said relative movement along said path, the dial having two visibly distinct regions on its surface which is visible through the window, the visibly distinct regions being juxtaposed to one another along the path of movement, a first of said regions being arranged to be in registry with the window when the pressure sensed by the sensing means is at or above a first predetermined pressure and a second of said regions being arranged to be in registry with the window when the pressure sensed by the sensing means is at or below a second predetermined pressure which is lower than the first predetermined pressure.

5,780,712

Patent Not Issued For This Number

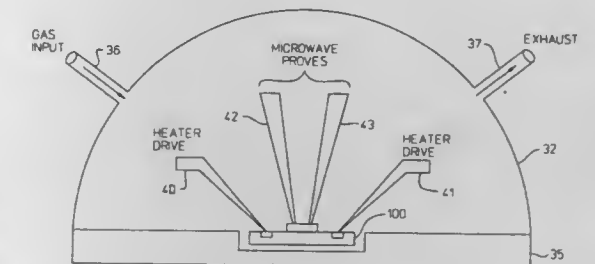
5,780,713
POST-FABRICATION TUNING OF ACOUSTIC
RESONATORS

Richard C. Ruby, Menlo Park, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 19, 1996, Ser. No. 752,702
Int. Cl.⁶ C25D 5/00

U.S. Cl. 73—1.82

21 Claims



- 1. A process of tuning a resonance frequency of a thin film acoustic resonator to a desired frequency after the resonator is fabricated, comprising the steps of:

- (A) introducing a gas having at least a metal element into a substantial vacuum chamber that houses the resonator;
- (B) heating an electrode layer of the resonator to an elevated temperature at which the gas adjacent to the electrode layer decomposes to selectively grow a metal layer on the electrode layer;
- (C) controlling growth of the metal layer by controlling heating of the electrode layer such that an acoustic path of the resonator is adjusted to obtain the desired frequency.

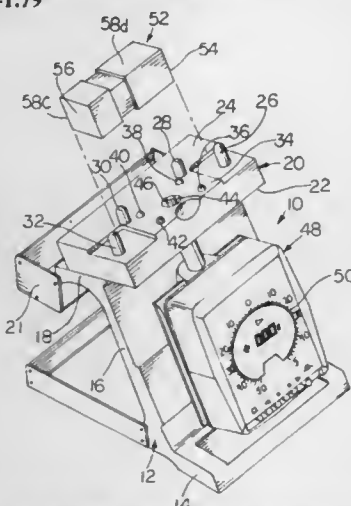
5,780,714
CALIBRATION APPARATUS AND METHOD FOR SHOT
BLASTING INTENSITY MEASUREMENT
Jack Champaigne, South Bend, Ind., assignor to Electronics,
Incorporated, Mishawaka, Ind.

Filed Apr. 3, 1997, Ser. No. 832,038

Int. Cl.⁶ G01B 3/30

U.S. Cl. 73—1.79

12 Claims



1. Method of calibrating shot blasting test gage used to measure intensity of shot blasting against an elongated test strip, aid gage including a stand carrying a platform defining a test surface, locators extending from said test surface for locating said test strip in a measuring location on said test surface, an indicator mounted on said stand for measuring deflection of said strip at a measurement position between said locators, and a test block having a substantially flat surface and a recess of a measurement depth in and extending from said flat surface, said method including the steps of placing said test block between said locators with the flat surface at said measurement position, zeroing out said indicator with the flat surface at the measurement location, shifting said test block to bring said recess to said measurement position, using said flat surface to support said test block on the test surface with the recess in the measurement position whereby the same flat surface used to zero out the indicator is used to support the recess in the measurement position, and reading a calibration measurement on said indicator.

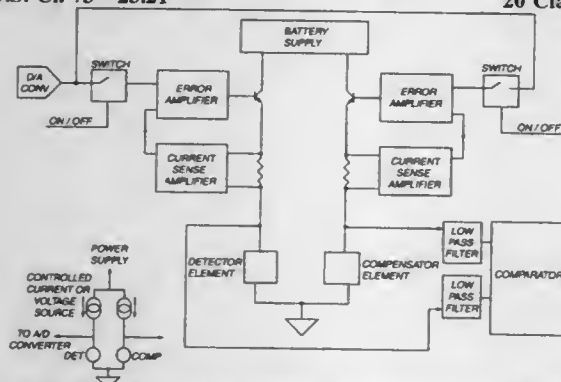
5,780,715
COMBUSTIBLE GAS MEASURING SENSOR CIRCUIT
Gregory G. Imblum, Monroeville, Pa., assignor to Mine Safety
Appliances Company, Pittsburgh, Pa.

Filed Oct. 23, 1996, Ser. No. 735,631

Int. Cl.⁶ G01N 27/04

U.S. Cl. 73—23.21

20 Claims



1. An electrical circuit for measuring the concentration level of a combustible gas comprising:

- a) a detector
- b) a compensator

- c) at least a pair of first electrical circuits, one of the pair electrically connected to the detector and the other of the pair electrically connected to the compensator, each circuit independently controlling the amount of electrical current passing through the detector or the compensator to which it is connected;
- d) a second electrical circuit electrically connected to both the detector and the compensator for comparing an electrical output from each to measure the amount of combustible gas; and
- e) a third electrical circuit electrically connected to the pair of first electrical circuits for individually operating each first electrical circuit.

5,780,716
GAS ANALYZING APPARATUS
Naohito Shimizu; Shigeyuki Akiyama; Masahiko Fujiwara;
Satoshi Inoue, and Takuji Oida, all of Miyahogashi-machi,
Japan, assignors to Horiba, Ltd., Kyoto, Japan

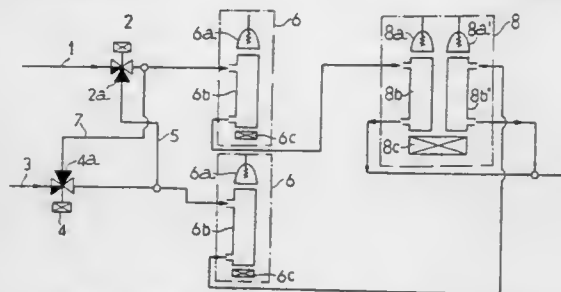
Filed Aug. 22, 1996, Ser. No. 702,756

Claims priority, application Japan, Aug. 24, 1995, 7-240651

Int. Cl.⁶ G01N 21/00

U.S. Cl. 73—23.2

5 Claims



3. A gas analyzing apparatus capable of selectively supplying a sample gas and a reference gas to a gas analyzer, the gas analyzing apparatus comprising:

- a sample gas line for receiving a sample gas;
 - a reference gas line for receiving a reference gas;
 - a sample line valve disposed in the sample gas line and including a port, the sample line valve for selectively supplying the sample gas to the sample gas line downstream of the sample line valve or to the port of the sample line valve;
 - a reference line valve disposed in the reference gas line and including a port, the reference line valve for selectively supplying the reference gas to the reference gas line downstream of the reference line valve or to the port of the reference line valve;
 - a first line having an inlet connected to the port of the sample line valve and an outlet connected to the reference gas line downstream of the reference line valve;
 - a second line having an inlet connected to the port of the reference line valve and an outlet connected to the sample gas line downstream of the sample line valve;
 - a first gas analyzer including a sample cell having an inlet connected to the sample gas line downstream of the outlet of the second line, the sample cell having an outlet; and
 - a second gas analyzer including:
 - a first sample cell having an inlet connected to the outlet of the sample cell of the first gas analyzer, the first sample cell having an outlet; and
 - a second sample cell having an inlet connected to the reference gas line downstream of the outlet of the first line, the second sample cell having an outlet;
- whereby the sample line valve is capable of selectively supplying the sample gas directly to the second sample cell of the second gas analyzer and indirectly to the first sample cell of the second gas analyzer via the first gas analyzer; and
- whereby the reference line valve is capable of selectively supplying the reference gas directly to the second sample cell of

the second gas analyzer and indirectly to the first sample cell of the second gas analyzer via the first gas analyzer.

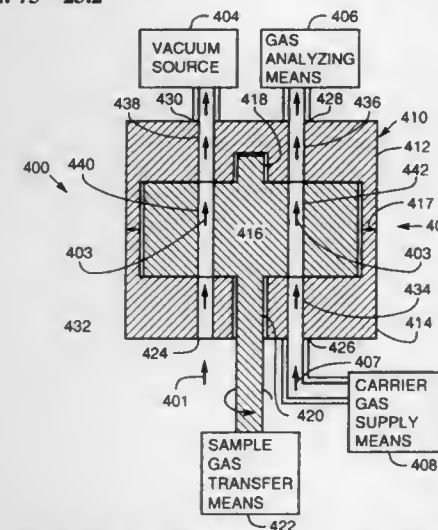
5,780,717
IN-LINE REAL TIME AIR MONITOR
Marcus B. Wise, Kingston, and Cyril V. Thompson, Knoxville,
both of Tenn., assignors to Lockheed Martin Energy
Research Corporation, Oak Ridge, Tenn.

Filed Apr. 23, 1997, Ser. No. 838,954

Int. Cl.⁶ G01N 30/14; 9/32:27/16; H01J 49/04

U.S. Cl. 73—23.2

20 Claims



1. A continuous in-line gas monitoring system capable of accurate gas composition analysis even under strong applied vacuum conditions comprising: an in-line monitor, a source of sample gas, a carrier gas supply having a carrier gas outlet port and a supply of carrier gas, a gas analyzer having a gas inlet port and a vacuum source having a gas inlet port;

said in-line monitor comprising:

- a sample gas passage having a gas inlet port and a gas outlet port,
- a carrier gas passage having a gas inlet port and a gas outlet port,
- a gas analyzer passage having a gas outlet port and a gas inlet port,
- a vacuum passage having a gas outlet port and a gas inlet port;
- a first gas mixing passage having a gas inlet port and a gas outlet port,
- a second gas mixing passage having a gas inlet port and a gas outlet port and
- a sample gas transfer means for simultaneous positioning said first gas mixing passage and said second gas mixing passage from a first position to a second position,

said first position causes positioning and connecting of said first gas mixing passage with said sample gas passage and said vacuum passage and said second gas mixing passage with said carrier gas passage and said gas analyzer passage,

said second position causes positioning and connecting of said first gas mixing passage with said carrier gas passage and said gas analyzer passage and said second gas mixing passage with said sample gas passage and said vacuum passage,

said positioning and connecting of said first gas mixing passage with said sample gas passage and said vacuum passage provides for said sample gas to be transferred into and through said sample gas passage, said first gas mixing passage and said vacuum passage by said vacuum source filling said first gas mixing passage with said sample gas at a reduced pressure,

said positioning and connecting of said second gas mixing passage with said carrier gas passage and said gas analyzer passage provides for said carrier gas from said carrier gas source to be transferred into and through said carrier gas passage, said second gas mixing passage and said gas ana-

lyzer passage filling said second gas mixing passage with said carrier gas at a pressure greater than said reduced pressure of said sample gas contained in said first gas mixing passage,

said simultaneous positioning of said first gas mixing passage and said second gas mixing passage from a first position to a second position causes said sample gas contained in said first gas mixing passage to mix with said carrier gas flowing through said carrier gas passage into said first gas mixing passage containing said sample gas and through said gas analyzer passage into said gas analyzer and causes said carrier gas contained in said second gas mixing passage to mix with said sample gas flowing through said sample gas passage into said second gas mixing passage containing said carrier gas and through said vacuum passage into said vacuum source, a reciprocating of said simultaneous positioning of said first gas mixing passage and said second gas mixing passage through a sufficient duty cycle rate that causes a mixing of said sample gas with said carrier gas forming a sample gas mixture because of a difference in said gas pressure of said sample gas and said gas pressure of said carrier gas,

at said first position said sample gas is in communication with said inlet port of said sample gas passage, said gas outlet port of said sample gas passage is connected to said gas inlet port of said first gas mixing passage, said gas outlet port of said first gas mixing passage is connected to said gas inlet port of said vacuum passage and said gas outlet port of said vacuum passage is connected to said gas inlet port of said vacuum source and said gas inlet port of said carrier gas passage is connected to said gas outlet port of said supply of carrier gas, said gas inlet port of said second gas mixing passage is connected to said gas outlet port of said carrier gas passage, said outlet port of said second gas mixing passage is connected to said gas inlet port of said gas analyzer passage, said gas outlet port of said gas analyzer passage is connected to said gas inlet port of said gas analyzer,

at said second position said sample gas is in communication with said inlet port of said sample gas passage, said gas outlet port of said sample gas passage is connected to said gas inlet port of said second gas mixing passage, said gas outlet port of said second gas mixing passage is connected to said gas inlet port of said vacuum passage and said gas outlet port of said vacuum passage is connected to said gas inlet port of said vacuum source and said gas inlet port of said carrier gas passage is connected to said gas outlet port of said supply of carrier gas, said gas inlet port of said first gas mixing passage is connected to said gas outlet port of said carrier gas passage, said outlet port of said first gas mixing passage is connected to said gas inlet port of said gas analyzer passage, said gas outlet port of said gas analyzer passage is connected to said gas inlet port of said gas analyzer.

5,780,718
MOISTURE SENSOR

Klaus Weber, Kronberg, Germany, assignor to VDO Adolf
Schindling AG, Frankfurt, Germany

Filed May 17, 1996, Ser. No. 650,095

Claims priority, application Germany, Jul. 8, 1995, 195 24 943.7

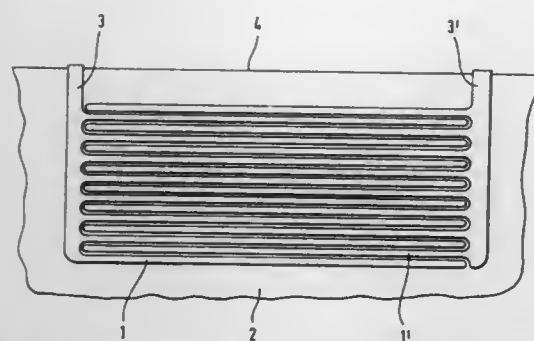
Int. Cl.⁶ H01G 5/20; G08B 21/00; B60S 1/08; G01R 27/26

U.S. Cl. 73—29.01

26 Claims

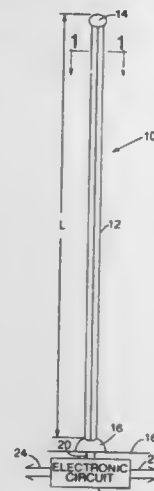
14. A method of constructing a sensor for detecting moisture on a non-conductive pane of glass, in particular the windshield of a motor vehicle, the sensor comprising one or more electrically conductive layers which are arranged in a given pattern upon the outer surface of the pane of glass, the method comprising steps of:

- producing a conductive paste;
- applying said conductive paste on a side of a support sheet in said pattern, and drying said paste;
- covering the paste and the side of the support sheet bearing the conductive paste with a flexible foil layer wherein an adher-



ence of the foil layer to the conductive-paste pattern is greater than an adherence of the support sheet to the conductive-paste pattern;
separating said support sheet from said foil layer and said conductive-paste pattern, the later adhering to and being borne by said foil layer;
applying said foil layer with said paste pattern on an outer surface of the pane of glass with said paste contacting the pane of glass; and
heating said foil layer and said paste together with said pane of glass to accomplish a burning away of said foil layer and a sintering of the conductive paste on the pane of glass.

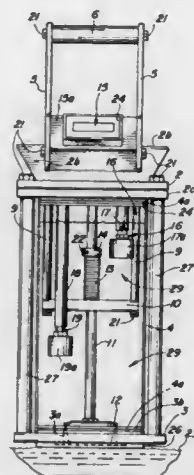
5,780,719
WINDSHIELD WIPER RAIN SENSOR SYSTEM
Scott A. VanDam, 18 Olive St., Newington, Conn. 06111-2576
Filed Jan. 22, 1997, Ser. No. 786,266
Int. Cl.⁶ B60S 1/08; H02P 3/00; G01R 27/26
U.S. Cl. 73—29.01



1. A rain sensor system for automatically controlling windshield wiper action, the rain sensor system comprising:
first and second electrical conductors uniformly spaced in parallel relationship with one another and having first and second exposed conductive surfaces respectively, and each conductor having an elongated shape;
a voltage divider circuit coupled to a DC supply voltage for imposing on the first conductor an applied voltage having a magnitude between that of the DC supply voltage and ground potential, the second conductor being coupled to ground potential; and
an electrical insulator interposed between and coextensive with the first and second parallel, elongated conductors such that the first and second conductors and the insulator together form a thin elongated body resembling in shape a whip-type antenna for a vehicle, the insulator having an exposed insulating surface located between the first and second exposed conductive surfaces of the respective first and second conductors;

means for mounting the conductors and insulator to project outwardly from a vehicle exterior surface in an unobstructed location into oncoming airflow such that the airflow parts and flows around the conductors and insulator and airborne raindrops temporarily adhere to the exposed insulating surface to electrically couple the first and second conductive surfaces and lower the electrical resistance between the conductors, whereby the magnitude of the applied voltage changes in relation to the intensity of rainfall or raindrops adhering to the first and second conductors; and
wiper control means coupled to the first conductor for generating a wiper control signal in accordance with the magnitude of the applied voltage and intensity of the rainfall.

5,780,720
OUTFLOW METER
Jon M. Swain, 3145 Holloway Rd., Ruston, La. 71270
Filed Aug. 30, 1996, Ser. No. 708,088
Int. Cl.⁶ G01N 15/08
U.S. Cl. 73—38



1. An outflow meter for resting on a pavement surface and measuring the time of drainage of water from the pavement, comprising a generally elongated, cylindrical water discharge tube having an upper filling end and a lower discharge end for containing a selected volume of water; base means sealingly mounted in said discharge end for supporting said water discharge tube in upstanding relationship on the pavement surface and having a discharge opening generally concentric with said discharge end for discharging water from said discharge tube; seal means carried by said base for resting on the pavement surface; cap means sealingly mounted on the upper end of said water discharge tube for sealing said upper end of said water discharge tube and a pair of substantially diametrically-opposed supports extending between said base means and said cap means for stabilizing said cap means on said water discharge tube; an electronic timer carried by said cap means for measuring the time of said discharging water; plunger means reversibly sealing said discharge opening; a first float support mounted in said water discharge tube and a first float slidably mounted on said first float support adjacent to said discharge end of said water discharge tube; and a second float support mounted in said tube means and a second float mounted on said second float support adjacent to said upper end of said water discharge tube, whereby gravity displacement of said second float on said second float support responsive to said discharging water starts said timer and gravity displacement of said first float on said first float support responsive to said discharging water stops said timer.

4 Claims

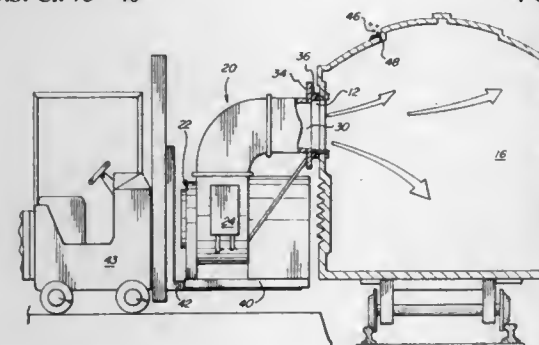
5,780,721
COMPOSITE CONSTRUCTION FOR DETECTION OF CHEMICAL LEAKS
Dennis L. Levens, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 3, 1996, Ser. No. 659,032
Int. Cl.⁶ G01M 3/04
U.S. Cl. 73—40



1. A composite construction, useful for detecting chemical leaks, comprising:
(a) a first layer comprising a visual indicator; and
(b) a second layer comprising a foam, which overlays said first layer to conceal said visual indicator, wherein at least a portion of said second layer becomes transparent in the presence of a chemical to be detected to expose said visual indicator through said transparent portion of said second layer.

23 Claims

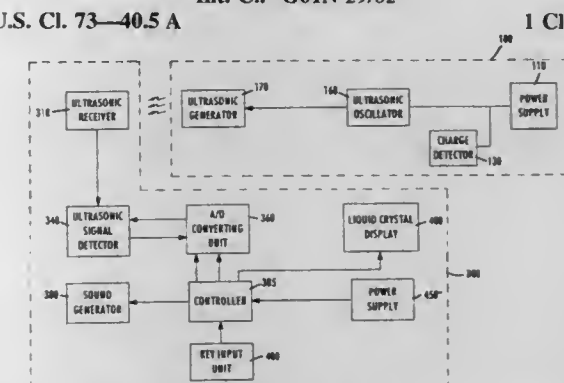
5,780,722
METHOD AND APPARATUS FOR TESTING WATERTIGHTNESS OF A RAILCAR
Paul Kovacs, Trenton, N.J., assignor to ABB Traction, Inc., Elmira Heights, N.Y.
Continuation of Ser. No. 612,166, Mar. 7, 1996, abandoned.
This application Sep. 11, 1997, Ser. No. 927,856
Int. Cl.⁶ G01M 3/06
U.S. Cl. 73—40



1. A method of testing watertightness of a passenger railcar, comprising:
locating an air blower adjacent the passenger railcar with an outlet of said blower communicating in a generally airtight manner with an aperture of the passenger railcar;
applying a liquid solution, having the ability to form bubbles, to an exterior surface of said railcar;
continuously operating said blower to provide an airflow of at least 5.300 cfm to said railcar to provide a pressure differential of from between about 1.0 to about 2.5 inches H₂O between an interior of said railcar and an exterior of said railcar although the railcar may not be airtight even without any leaks;
detecting bubbles formed in said liquid solution by escape of air from said railcar through leakage points; and
marking said railcar at said leakage points where said bubbles are formed by escape of air from said railcar.

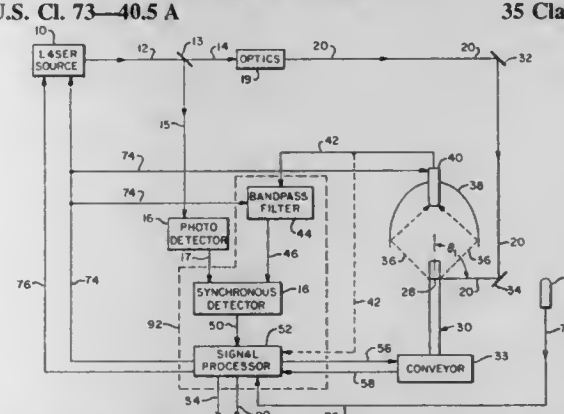
4 Claims

5,780,723
SEALING QUALITY TESTER AND ITS CONTROL METHOD FOR A CAR
Ja-Hoi Koo, Kyoungki-do, Rep. of Korea, assignor to Kia Motors Corporation, Seoul, Rep. of Korea, a part interest
Filed Jan. 19, 1996, Ser. No. 591,428
Claims priority, application Rep. of Korea, Sep. 19, 1995, 1995-30795
Int. Cl.⁶ G01N 29/02
U.S. Cl. 73—40.5 A



1. A sealing quality tester of the car including:
a separate ultrasonic transmitting means comprising a power supply, a charge detector for a supplementary power supply, an ultrasonic oscillator and an ultrasonic generator; and
a separate ultrasonic receiving means comprising an ultrasonic receiver, an ultrasonic signal detector, an A/D converting unit, a controller, a power supply, a key input unit, a sound generator and a liquid crystal display
wherein the ultrasonic oscillator in said ultrasonic transmitting means includes: a crystal oscillator which oscillates by 4 MHz when the voltage is applied to both ends of its electrode; a CMOS inverter which amplifies the reference voltage and applied to the crystal oscillator to the desired extent; a variable capacitor which regulates the oscillation frequency from the crystal oscillator; a blocking capacitor which blocks the harmonic components oscillated from the crystal oscillator; and a frequency divider which divides the oscillation frequency of the signal from the crystal oscillator by a hundredth ratio.

5,780,724
PHOTO-AcoustIC LEAK DETECTOR WITH IMPROVED SIGNAL-TO-NOISE RESPONSE
Frederick T. Olender, 7 Boboliak La., Somers, Conn. 06071; Bernard A. Woody, 279 Sugar Hill Rd., Tolland, Conn. 06084, and Leon A. Newman, 75 Cotswold Close, Glastonbury, Conn. 06033
Filed Mar. 27, 1997, Ser. No. 824,948
Int. Cl.⁶ G01M 3/20; G01N 21/17
U.S. Cl. 73—40.5 A



1. A photo-acoustic leak detection system for detecting a gas leaking from a component, comprising:

35 Claims

at least one laser beam for optically exciting the gas, wherein said beam is incident on at least a portion of the component and having a wavelength which is absorbed by the gas, the gas emitting a photo-acoustic signal when the gas absorbs light from said beam;

said beam being pulsed at a pulse frequency, said pulse frequency selected such that the magnitude of background acoustic noise at said pulse frequency is at a predetermined low level, wherein said predetermined low level of background acoustic noise creates a photo-acoustic signal to background acoustic noise ratio which is greater than one-to-one, said pulse frequency being related to a detection frequency of said photo-acoustic signal;

acoustic sensor means, for receiving said photo-acoustic signal and for providing a sensor signal indicative of said photo-acoustic signal; and

a signal processor, which receives said sensor signal and provides an output signal indicative of the leak in the component.

5,780,725

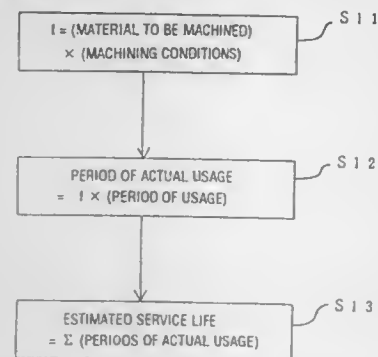
METHOD OF ESTIMATING SERVICE LIFE OF CUTTER
Kunio Tanaka, Akishima, Japan, assignor to Fanuc, Ltd., Yamanashi, Japan

Continuation of Ser. No. 593,279, Jan. 29, 1996, abandoned, which is a division of Ser. No. 403,771, Mar. 24, 1995, Pat. No. 5,571,957. This application Feb. 19, 1997, Ser. No. 802,851

Claims priority, application Japan, Aug. 9, 1993, 5-197119
Int. Cl.⁶ G01N 3/58

U.S. Cl. 73-104

3 Claims



1. A method of estimating the service life of a cutter, comprising the steps of:

- determining disturbant load torques imposed on the cutter with an observer; and
- using the determined disturbant load torques thereby to estimate the service life of the cutter, wherein determined disturbant load torques are integrated thereby to estimate the service life of the cutter.

5,780,726

METHOD OF DETERMINING SLOPE ANGLES OF IMPRESSION WALLS AND DEPTHS OF IMPRESSIONS ON AN EMBOSSED SHEET SURFACE

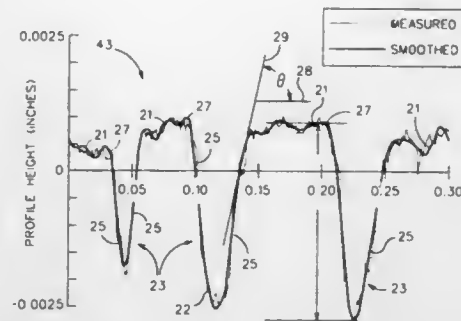
Adel F. Bastawros, and John G. Speer, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation
Division of Ser. No. 409,219, Mar. 23, 1995, Pat. No. 5,552,235. This application Aug. 28, 1996, Ser. No. 697,562
Int. Cl.⁶ G01N 33/20

U.S. Cl. 73-105

1 Claim

1. A method of determining slope angles θ of impression walls and depths D of impressions on the surface of an embossed sheet, the method comprising the steps of:

- a) providing an embossed sheet;
- b) measuring the surface profile of the embossed sheet by measuring the vertical displacement of a stylus passed over



the embossed surface of the sheet thereby determining a measured profile signal;

- c) obtaining a smoothed signal by numerically filtering out of the measured profile signal fine surface details which do not substantially contribute to the determination of depth D and slope θ thereby eliminating such details from the measured profile signal; and
- d) determining the depth D of impressions, and slope angles θ of impression walls of the embossed surface using the smoothed signal.

5,780,727

ELECTROMECHANICAL TRANSDUCER

James K. Gimzewski, Rueschlikon; R  to R. Schlittler, Schoenenberg, both of Switzerland, and Mark E. Welland, Cambridge, Great Britain, assignors to International Business Machines Corporation, Armonk, N.Y.

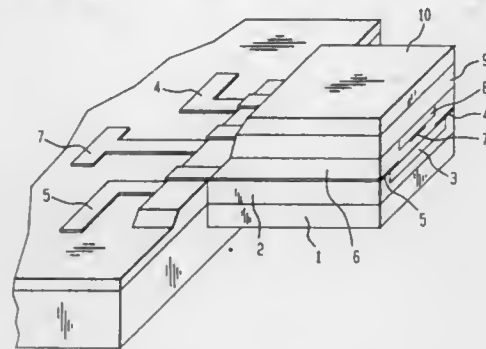
PCT No. PCT/EP95/03052, \S 371 Date Mar. 5, 1997, \S 102(e) Date Mar. 5, 1997, PCT Pub. No. WO96/08701, PCT Pub. Date Mar. 21, 1996

PCT Filed Sep. 12, 1994, Ser. No. 793,788

Int. Cl.⁶ G01H 1/06; G01L 9/00

U.S. Cl. 73-105

16 Claims



- 1. Electromechanical transducer comprising: at least one flexible element; voltage generating means for responding to deflections of said flexible element; and an amplifying circuit which with the voltage generating means is incorporated in said electromechanical transducer with said flexible element as a unitary structure, said amplifying circuit means having at least one field-effect transistor with a gate electrode operable by said voltage generating means for measuring deflections of said flexible element and having protection means against breakthrough voltage.

5,780,728

DIAGNOSIS APPARATUS AND METHOD FOR AN EVAPO-PURGE SYSTEM

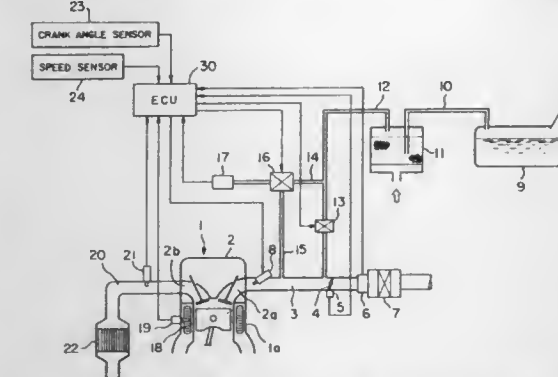
Katsuhito Takamori, Mitaka, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 429,245

Claims priority, application Japan, Apr. 27, 1994, 6-090328
Int. Cl.⁶ G01M 15/00

U.S. Cl. 73-116

23 Claims



1. A diagnosis apparatus for an evapo-purge system having a canister for storing an evaporated fuel generated from a fuel tank, an intake pipe connected to an engine for inducing air thereof, and a purge line connected to said canister, comprising:

- a purge control valve installed in the purge line for controlling purge flow rate;
- a directional valve connected between the intake pipe and the purge line via a first tube diverged from the intake pipe and a second tube diverged from the purge line;
- a pressure sensor, in a general mode, communicated with the intake pipe through the first diverged tube by switching the directional valve and measuring a pressure in the intake pipe and, in an evapo-purge mode, communicated with the purge line through the second diverged tube by switching the directional valve and measuring pressures in the purge line when the purge control valve is closed and open; and
- discriminating means for discriminating the state of the evapo-purge system;

wherein when the evapo-purge system is concluded to be normal, the measured value of pressure in the purge line produced when the purge control valve is closed can be regarded as equivalent to atmospheric pressure so that the measured value is adapted for some other control of the engine, and is concluded to be abnormal when the measured values are of a difference falling outside a predetermined range between pressure in the purge line produced when the purge control valve is closed and pressure in the purge line produced when the purge control valve is open.

5,780,729

FUEL DELIVERY SYSTEM

Michael J. Escobar, Newport, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

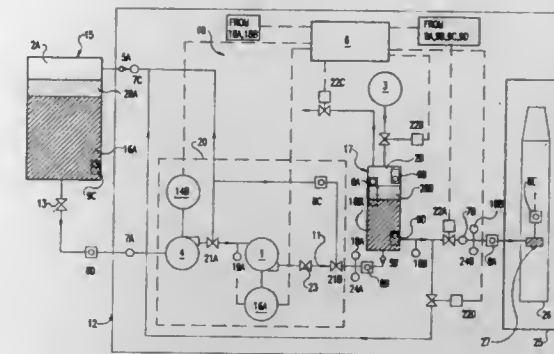
Filed Jul. 24, 1996, Ser. No. 696,587

Int. Cl.⁶ F02C 7/22

U.S. Cl. 73-117.1

13 Claims

- 1. An engine fuel delivery system for a test cell, comprising: a primary storage tank located outside said test cell for holding monopropellant fuel at ambient pressure outside said test cell; a fuel support cell located outside said test cell; a pumping system located inside said fuel support cell having an input and an output and said input being joined to said primary storage tank for providing said monopropellant fuel at a predetermined pressure; an intermediate storage tank having an input and an output, said intermediate storage tank being located inside said fuel support cell and intermediate storage tank input in fluid commu-



nication with said pumping system output for storing a quantity of said monopropellant fuel at said predetermined pressure, said intermediate storage tank output being in fluid communication with said test cell;

a pressure sensor positioned in fluid communication between said pumping system and said intermediate storage tank and capable of detecting the output pressure of said pumping system; and

a control means joined to said primary storage tank, said pumping system, said pressure sensor and said intermediate storage tank and controllably limiting the quantity of monopropellant fuel provided to said intermediate storage tank and said test cell at said predetermined pressure.

5,780,730

COLD ENGINE TESTING

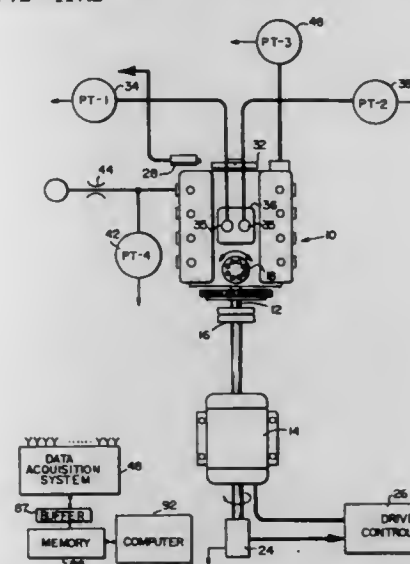
George Scourtes, Clearwater, Fla.; John P. Gagneur, Westland, and Elliott Yush, Ann Arbor, both of Mich., assignors to Assembly Technology & Test, Inc., Springfield, Mo.

Division of Ser. No. 960,232, Oct. 13, 1992, Pat. No. 5,355,713, which is a continuation of Ser. No. 650,918, Feb. 5, 1991, abandoned. This application Jul. 8, 1994, Ser. No. 271,904

Int. Cl.⁶ G01M 15/00

U.S. Cl. 72-117.2

2 Claims



1. A method of testing an internal combustion engine having an intake, plurality of cylinders and an operating cycle, said method comprising the steps of:

- rotating said engine without internal combustion, through said operating cycle at a speed sufficient to cause vacuum variations in the intake related to each cylinder;
- measuring pressure waveforms defined as the vacuum variations in the intake with respect to said engine operating cycle;
- converting said pressure waveforms to digital data;

comparing characteristics of said digital data with characteristics of digital data for a normal engine; and indicating as abnormal any engine whose digital data comparison with a normal engine is beyond tolerance limits, wherein said comparing step comprises comparing digital data characteristics of each cylinder with the corresponding digital data characteristics of each cylinder of a normal engine, and said indicating step comprises indicating as abnormal any cylinder whose digital data comparison with a corresponding cylinder of a normal engine is beyond tolerance limits, wherein said characteristic is amplitude of vacuum variations, wherein excessive intake valve lash is a condition to be determined, said pressure waveform includes a relative maxima and a relative minima for each cylinder, said amplitude of vacuum variations comprises a difference between said relative maxima and said relative minima, and in said comparing step, an amplitude less than the amplitude of a normal engine is an indication of said excessive intake valve lash condition.

5,780,731

METHOD FOR JUDGING THE LOCKED STATE OF AUXILIARIES FOR AUTOMOBILES

Hirohito Matsui, Nishio; Yasushi Yamanaka, Nakashima-gun; Yoshiaki Takano, Obu, and Hiroshi Kishita, Anjo, all of Japan, assignors to Denso Corporation, Kariya, and Nippon Soken, Inc., Nishio, both of Japan

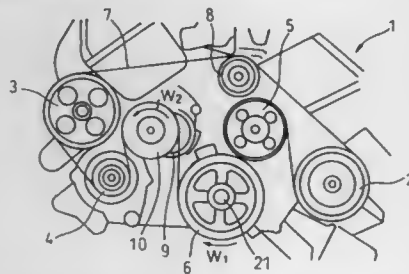
Filed Apr. 11, 1997, Ser. No. 834,483

Claims priority, application Japan, Apr. 11, 1996, 8-089639

Int. Cl.⁶ G01M 19/00

U.S. Cl. 73—118.1

4 Claims



1. A method for judging a locked state of auxiliaries of an automobile in a belt driving system having a drive shaft pulley provided in an engine and rotated by said engine and having auxiliary pulleys driven simultaneously by a single belt wound upon said drive shaft pulley corresponding to a plurality of auxiliaries including at least an air-conditioner refrigerant compressor, comprising:

- measuring a first auxiliary torque when the air-conditioner is operating by an auxiliary torque detection system,
- disengaging a clutch of said air-conditioner refrigerant compressor when said first auxiliary torque exceeds a first predetermined value,
- measuring a second auxiliary torque in a state where the clutch of said refrigerant compressor is disengaged,
- comparing said first auxiliary torque and said second auxiliary torque, and
- judging that said refrigerant compressor is in a locked state when a difference between them exceeds a second predetermined value.

5,780,732 METHOD FOR THE VERIFICATION OF ELECTRICAL CONNECTIONS FOR AN ANTILOCK BRAKING SYSTEM OF A VEHICLE

Axel Gieseler, Hanover; Klaus Lindemann, Gehrden; Johannes Möller, Lehrte/Arpke; Henrich Riedemann, Hanover; Gerhard Ruhnau, Neustadt; Manfred Saba, Ronnenberg, and Ulrich Weihe, Hanover, all of Germany, assignors to Wabco Vermögensverwaltungs GmbH, Hanover, Germany

Continuation of Ser. No. 520,156, Aug. 28, 1995, abandoned.

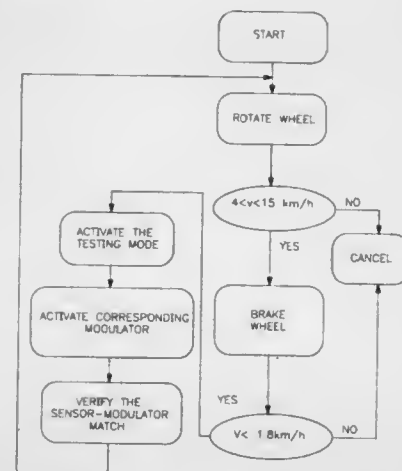
This application May 5, 1997, Ser. No. 850,447

Claims priority, application Germany, Aug. 30, 1994, 44 30 782.9

Int. Cl.⁶ G01L 5/28

U.S. Cl. 73—121

19 Claims



1. A method for verifying correct connections among components of an antilock braking system (ABS) in a vehicle, said antilock braking system comprising a plurality of wheels, sensors associated with said wheels, brake pressure modulators associated with said wheels, and an ABS electronic controller to which said sensors and modulators are connected, said method comprising the steps of:

- a) rotating only one of said sensed wheels and subsequently stopping rotation of said sensed wheel,
- b) initiating a test mode in said ABS electronic controller,
- c) emitting an actuation signal from said ABS electronic controller to a modulator associated with said sensed wheel,
- d) determining from the response of said sensed wheel or said actuated modulator whether said actuated modulator is connected to said sensed wheel which has been rotated.

5,780,733

TIRE COLD STATE DETECTION AND MONITORING METHODS

André Meunier, Lempdes, France, assignor to Compagnie Generale des Etablissements Michelin-Michelin & CIE, Clermont-Ferrand Cedex, France

Filed Feb. 26, 1997, Ser. No. 806,449

Claims priority, application France, Mar. 6, 1996, 96 03004

Int. Cl.⁶ B60C 23/02

U.S. Cl. 73—146.2

6 Claims

1. A method of processing signals in a system for the monitoring of the tires of a vehicle, said system delivering an ambient temperature measurement and, for each tire, at least one measurement of the inflation pressure of said tire and one measurement of the temperature in the environment of said tire, in which:

- (a) upon each stopping of the system, at least one ambient temperature measurement as well as one environmental temperature measurement for each tire is stored in non-volatile memory;
- (b) upon each starting of the system, the stop time of the system is compared with a critical time which itself is variable as a

5,780,735

AIR FLOW RATE MEASUREMENT APPARATUS

Takashi Kadohira, Hitachinaka; Shinya Igarashi, Naka-machi; Tadao Suzuki, Hitachi; Mamoru Tsumagari, Minori-machi, and Takayuki Saito, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., and Hitachi Car Engineering Co., Ltd., both of Japan

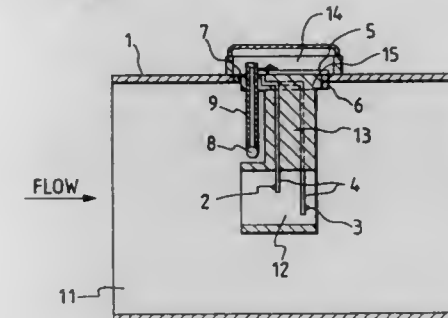
Filed Feb. 15, 1996, Ser. No. 602,163

Claims priority, application Japan, Feb. 15, 1995, 7-026442

Int. Cl.⁶ G01F 1/68

U.S. Cl. 73—202.5

33 Claims



1. An air flow rate measurement apparatus comprising:

a heating resistor and a temperature sensing resistor for detecting an intake-air flow rate in an internal combustion engine, and

a circuit module for outputting an electric signal corresponding to said intake air flow rate, said module being electrically connected to said heating resistor and said temperature sensing resistor, characterized in that said heating resistor and said temperature sensing resistor are inserted together with a separate element for measuring an intake air temperature through an opening formed in the wall of an air passage so that said three elements are located in said air passage and the module is fixed to the air passage.

5,780,734

TIRE INFLATOR-GAGE WITH SYSTEM PRESSURE RELEASE MEANS

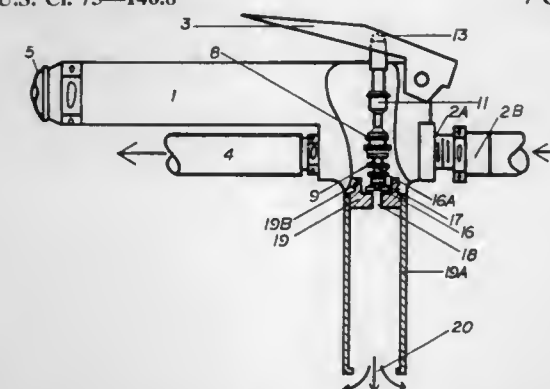
Oriz Wickline Johnson, 7086 Butterwood Dr., Cincinnati, Ohio 45241-1035

Filed Feb. 11, 1997, Ser. No. 798,557

Int. Cl.⁶ B60C 29/00

U.S. Cl. 73—146.8

7 Claims



1. A device for reducing high air pressure in compressed air systems comprising improvements to a conventional hand-held tire inflator gage for use in said compressed air systems, wherein the improvements to said gage comprise:

- an air pressure release port 18 being spring-biased to an open position wherein said pressure release port in the open position releases pressurized air from an interior high pressure multi-ported section of the gage thru said pressure release port assembly 19 to atmosphere; and,
 - pressure release control means 16 for controlling the release of high air pressure;
- whereby high air pressure levels are automatically released from the compressed air system when the inflator gage is not in use.

5,780,736

AXIAL THERMAL MASS FLOWMETER

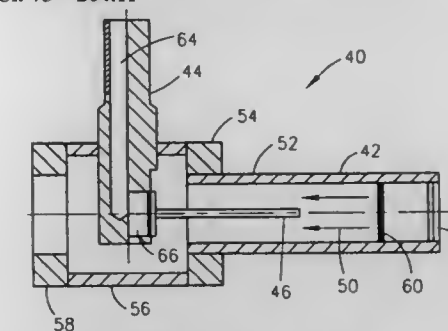
Gary A. Russell, Pacific Grove, Calif., assignor to Sierra Instruments, Inc., Monterey, Calif.

Filed Nov. 27, 1996, Ser. No. 757,934

Int. Cl.⁶ G01F 1/68

U.S. Cl. 73—204.11

2 Claims



1. A thermal mass flow meter comprising:

- a conduit defining a fluid flow path having a general direction along which fluid flows in use;
- an elongated thermal mass flow sensor having a longitudinal axis, the thermal mass flow sensor being coupled to the conduit with the longitudinal axis of the thermal mass flow sensor aligned substantially parallel to the general direction of fluid flow within the conduit for reducing the sensitivity of the mass flow sensor to external temperature differences or for reducing particle buildup along the length of the mass flow sensor thereby to maintain the convection interaction between the fluid flow and the mass flow sensor essentially unchanged; and

an elongated temperature sensor mounted in the conduit adjacent to the thermal mass flow sensor, for providing an output of the temperature of the fluid flow in use, the temperature sensor having a longitudinal axis, the longitudinal axis of the temperature sensor being substantially aligned with the general direction of the fluid flow for reducing the sensitivity of the temperature sensor to external temperature differences or for reducing particle buildup along the length of the temperature sensor thereby to maintain the convection interaction between the fluid flow and the temperature sensor essentially unchanged.

5,780,737

THERMAL FLUID FLOW SENSOR

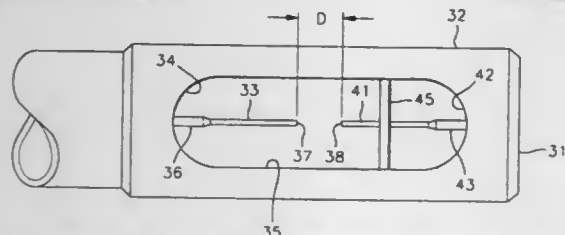
Eric J. Wible, Encinitas; Fritz J. Stumpges, Vista, and Glenn S. Oberholtz, Cardiff, all of Calif., assignors to Fluid Components Intl, San Marcos, Calif.

Filed Feb. 11, 1997, Ser. No. 798,635

Int. Cl.⁶ G01F 1/68

U.S. Cl. 73—204.22

21 Claims



1. A thermal fluid flow sensor for determining mass flow of a fluid in a conduit, said sensor comprising:
a probe adapted to project laterally into the fluid flow conduit, said probe having a longitudinal axis, a proximal end and a distal end;
an opening transversely through said probe adjacent said distal end thereof;
a reference sensor disposed substantially on said longitudinal axis of said probe and projecting into said opening; and
an active sensor disposed substantially on said longitudinal axis of said probe and projecting into said opening;
said reference sensor and said active sensor being secured to opposite sides of said opening, their distal ends being spaced within said opening.

5,780,738

SURFACE JET ANGULAR RATE SENSOR

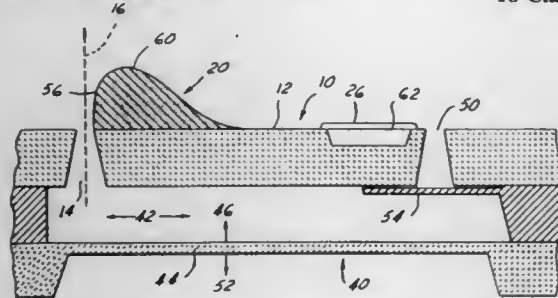
Steven E. Saunders, Cupertino, Calif., assignor to Interval Research Corporation, Palo Alto, Calif.

Filed Mar. 27, 1995, Ser. No. 410,855

Int. Cl.⁶ G01P 3/26

U.S. Cl. 73—504.06

18 Claims



1. An apparatus for sensing an angular rate of motion, the apparatus comprising:
a body which defines a surface having a substantially flat portion, the body defining an orifice through the surface through which a fluid jet is directed along an initial jet axis, the surface including a portion proximate the orifice which curves

away from the initial jet axis to direct a portion of the fluid jet in a path along the surface due to the Coanda effect; and
at least one sensor having at least a portion thereof attached to the substantially flat portion of the surface for sensing a lateral position of the fluid jet relative to the body caused by the angular rate of motion of the body, the at least one sensor producing an indication of the angular rate of motion of the body based upon the lateral position.

5,780,739

TUNING FORK TYPE GYROSCOPE

Myung-seok Kang, Chungcheongnam-do; Young-ho Cho, Daejeon; Ci-moo Song, Sungnam, and Sung-kie Youn, Daejeon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, and Korea Advanced Institute of Science and Technology, Taejeon, both of Rep. of Korea

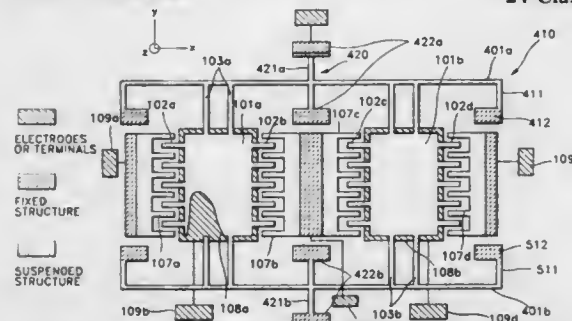
Filed May 24, 1996, Ser. No. 653,235

Claims priority, application Rep. of Korea, May 25, 1995, 95-13258

Int. Cl.⁶ G01P 9/04

U.S. Cl. 73—504.16

24 Claims



1. A tuning fork type gyroscope comprising plate members spaced apart from each other, vibration means for vibrating said plate members, suspension means for suspending said plate members, and electrodes arranged in the lower portion of said plate members, wherein said suspension means comprises:
main bars;
fixing means connected to both ends of each of said main bars so as to support said main bars and reduce a restoring tensile force along the length of said main bars; and
supporting means connected to a central portion of each of said main bars so as to support said main bars; wherein said plate members are connected to said main bars at a portion on said main bars intermediate to the ends of said main bars and said supporting means.

5,780,740

VIBRATORY STRUCTURE, METHOD FOR CONTROLLING NATURAL FREQUENCY THEREOF, AND ACTUATOR, SENSOR, ACCELERATOR, GYROSCOPE AND GYROSCOPE NATURAL FREQUENCY CONTROLLING METHOD USING VIBRATORY STRUCTURE

Ki Bang Lee, Seoul; Byung-leul Lee, Yongin; Young-ho Cho, Daejeon, and Ci-moo Song, Sungnam, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, and Korea Advanced Institute of Science and Technology, Taejeon, both of Rep. of Korea

Filed Oct. 23, 1996, Ser. No. 735,695

Claims priority, application Rep. of Korea, Oct. 27, 1995, 95-37626

Int. Cl.⁶ G01P 9/00

U.S. Cl. 73—504.12

14 Claims

12. A gyroscope comprising:
a substrate having a plane of a first axis and a second axis;
a support end supported by said substrate;

5,780,742

MECHANICAL RESONANCE, SILICON ACCELEROMETER

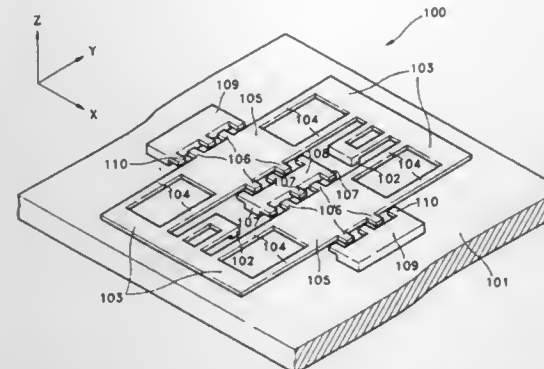
David W. Burns, Minneapolis, Minn., and Richard H. Frische, Phoenix, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 403,560, Mar. 13, 1995, abandoned, which is a continuation-in-part of Ser. No. 198,332, Feb. 18, 1994, abandoned, which is a division of Ser. No. 48,096, Apr. 15, 1993, Pat. No. 5,396,798. This application Feb. 10, 1997, Ser. No. 799,587

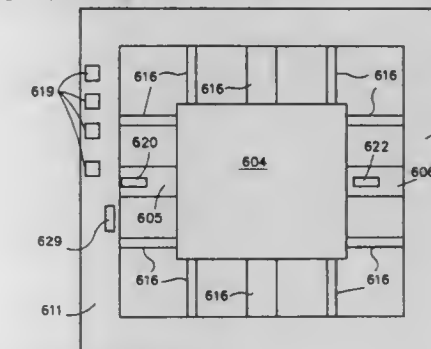
Int. Cl.⁶ G01P 15/08

U.S. Cl. 73—514.29

28 Claims



- an elastic member supported by said support and extended in said first- and second-axis directions;
an inertial object for vibrating in said first axis direction and a third axis direction;
a finger electrode formed integrally into said inertial object;
a driving unit having a finger to be engaged with said finger electrode of said inertial object, for applying an electric force to said inertial object in said first axis direction;
detector means for detecting vibration of said inertial object in said first- and third-axis directions;
an effective stiffness controlling electrode disposed to face said inertial object on said substrate to control the third-axis directional natural frequency of said inertial object; and
a power supplier for applying a voltage to said effective stiffness controlling electrode and said finger electrode of said inertial object.



1. A sensor comprising:
a supporting frame having an opening therein;
a mass disposed in the opening and moveable in directions approximately parallel to a first axis; and
a flexure coupled between the frame and the mass; and
wherein:
the first axis is perpendicular to a plane parallel to the perimeter of said supporting frame; and
a second axis is parallel to the plane;
said flexure supports said mass relative to said supporting frame;
said flexure bends a first way upon movement of said mass in a first direction approximately parallel to the first axis; and
said flexure bends a second way upon movement of said mass in a second direction approximately parallel to the first axis; and
a vibratory beam formed on said flexure; and
wherein:
said vibratory beam is stretched in a direction approximately parallel to the second axis when said flexure bends the first way;
said vibratory beam is compressed in a direction approximately parallel to the second axis when said flexure bends the second way;
said vibratory beam has a resonant frequency;
the resonant frequency changes when said vibratory beam is stretched;
the resonant frequency changes when said vibratory beam is compressed; and
the resonant frequency is indicative of a magnitude and direction of acceleration affecting said mass in a direction approximately parallel to the first axis.

5,780,741

SENSOR EMPLOYING A SLIDING MAGNET SUSPENDED ON FERROFLUID

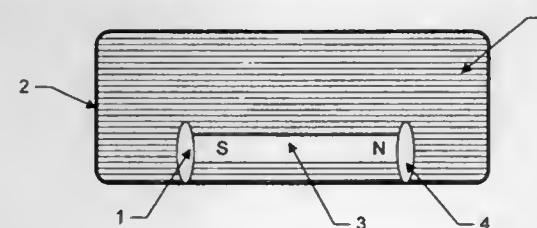
Kuldip Raj, Merrimack, N.H., assignor to Ferrofluidics Corporation, Nashua, N.H.

Filed Feb. 11, 1997, Ser. No. 799,121

Int. Cl.⁶ G01P 15/08

U.S. Cl. 73—514.08

20 Claims



1. A ferrofluid sensor comprising:
a hermetic housing having an inner wall with an inside dimension, the inner wall being coated with a material which is nonwetting with ferrofluid;
a permanent magnet having a pole for generating a magnetic field, the magnet being movable within the housing;
a ferrofluid ring located at the magnet pole, the ferrofluid ring being comprised of ferrofluid held in place by the magnetic field and having an outer dimension less than the inner wall inside dimension so that the ferrofluid ring does not seal the magnet pole to the housing; and
a detector which detects a position of the magnet within the housing.

5,780,743

RESONANCE IDENTIFICATION IN HYDRAULIC CYLINDER PISTON POSITION SENSING

Dennis E. Morgan, San Diego, Calif., assignor to Caterpillar Inc., Peoria, Ill.

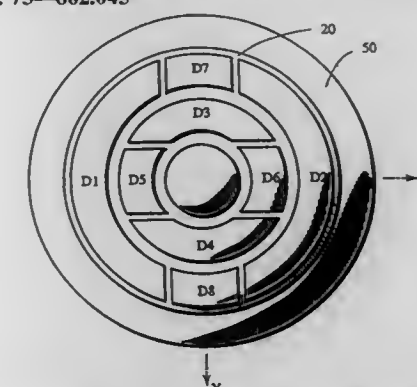
Filed Feb. 13, 1997, Ser. No. 798,750

Int. Cl.⁶ G01R 27/04

U.S. Cl. 73—597

8 Claims

1. In a hydraulic cylinder piston position sensing system of the type wherein frequency standing wave resonances are established in the oil of the cylinder by transmission of a swept frequency



1. A force sensor using piezoelectric elements comprising:
four detection elements composed of a piezoelectric element in a plate form, an upper electrode formed on an upper surface of said piezoelectric element and a lower electrode formed on a lower surface of said piezoelectric element;
a working body in which a force is produced on the basis of a physical action exerted from an external source;
supporting means for supporting said four detection elements on XY-plane of an XYZ three dimensional coordinate system having an X-axis, Y-axis and Z-axis so that a first detection element, a second detection element, a third detection element

and a fourth detection element are respectively arranged in a negative region on the X-axis, in a positive region on the X-axis, in a negative region on the Y-axis and in a positive region on the Y-axis, respectively; and connecting means for connecting said working body and said four detection elements so that an X-axis force component produced in said working body in the X-axis direction is transmitted to said first and second detection elements to cause a mechanical deformation therein and a Y-axis force component produced in said working body in the Y-axis direction is transmitted to said third and fourth detection elements to cause a mechanical deformation therein; wherein the X-axis force component is detected on the basis of charges produced in the first detection element and the second detection element, and the Y-axis force component is detected on the basis of charges produced in the third detection element and the fourth detection element; and wherein either a group of plural lower electrodes of a group of plural upper electrodes is constituted by a single electrode layer.

5,780,750

Patent Not Issued For This Number

5,780,751

DEVICE FOR MEASURING TORQUES, ESPECIALLY FOR REDUCTION GEARING FOR ACTIVATING A FUNCTIONAL MEMBER OF A MOTOR VEHICLE
Hervé-Marcel Nomerange, and Marie-Anne Gabrielle Lempriere, both of Caen, France, assignors to Meritor Light Vehicle Systems, France

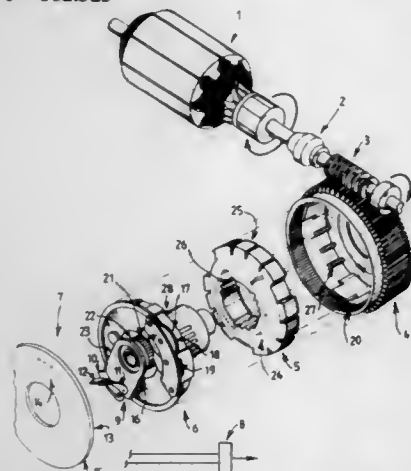
Filed Jul. 11, 1996, Ser. No. 679,499

Claims priority, application France, Jul. 11, 1995, 95 08388

Int. Cl.⁶ G01L 3/10

U.S. Cl. 73—862.325

8 Claims



1. A device for measuring torques, especially in a reduction gearing adapted for activating a functional member of a motor vehicle, said device comprising an electric motor, wherein said motor includes an output shaft, said output shaft being connected to a worm associated with a wheel, said wheel connected through an elastically deformable damper to an output member of the reduction gearing wherein said elastically deformable damper permits angular displacement between said wheel and said output member in response to a resistive torque being applied to said output member, wherein said torque measuring device includes means for determining angular displacement of the wheel relative to the output member, said displacement determining means being connected to means for determining the resistive torque applied to the output member as a function of the relative angular displacement between the wheel and the output member, wherein the

means for determining the displacements comprise a pair of angular position encoders, one said encoder associated with the wheel and the other said encoder associated with the output member.

5,780,752

LIQUID HOLDING DEVICE

Akio Okubo, and Takao Fukuoka, both of Kyoto, Japan, assignors to Kyoto Daiichi Kagaku Co., Ltd., Kyoto, Japan

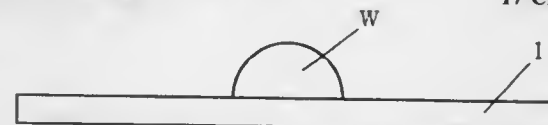
Filed Aug. 7, 1996, Ser. No. 693,965

Claims priority, application Japan, Aug. 9, 1995, 7-225699; Jun. 14, 1996, 8-175657

Int. Cl.⁶ C12M 1/18

U.S. Cl. 73—863

17 Claims



1. A device for holding a liquid sample for analysis, said device comprising:

- a member composed of an organic macromolecule, said member having a surface divided into at least two areas;
 - a first defined area having a relatively small contact angle α with the surface of a liquid in contact with said first area so that said liquid will adhere to said first area and form a liquid sample; and
 - a second area adjacent to said first area and having a relatively large contact angle β with the surface of that same liquid in contact with said second area so that the liquid will not adhere to the second area;
- said first and second areas to said surface being coplanar.

5,780,753

Patent Not Issued For This Number

5,780,754

ANALYSIS METHOD AND ANALYSIS APPARATUS
Bo Karlberg, Söllerö, and Ole Ploug, Allerød, both of Sweden, assignors to Danfoss A/S, Nordborg, Denmark
PCT No. PCT/DK95/00139, § 371 Date Nov. 21, 1996, § 102(e) Date Nov. 21, 1996, PCT Pub. No. WO95/27211, PCT Pub. Date Oct. 12, 1995

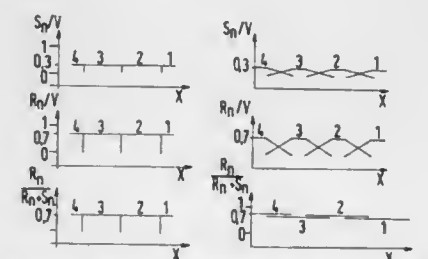
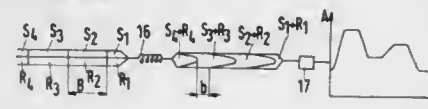
PCT Filed Mar. 29, 1995, Ser. No. 718,480

Claims priority, application Germany, Mar. 31, 1994, 44 11 266.1

Int. Cl.⁶ G01N 35/08

U.S. Cl. 73—864.81

16 Claims



1. An analysis method comprising the steps of passing several samples in succession through a reaction channel without separation.

tion, introducing at least one reagent into the reaction channel for reaction with the samples, such that each sample and its associated reagent is introduced in a controlled manner into the reaction channel so that they form a block, along the length of which a local volume ratio between sample and reagent, averaged over a segment of predetermined length, is substantially constant, the length of the segment being substantially shorter than half the length of the block, and passing said blocks with said segments to a detector.

5,780,755

SPUTTERING TARGET WITH ULTRA-FINE, ORIENTED GRAINS AND METHOD OF MAKING SAME

John Alden Dunlop, Veradale, Wash.; Jun Yuan, Santa Clara, Calif.; Janine Kiyabu Kardokus, Otis Orchards, Wash., and Roger Alan Emigh, Post Falls, Id., assignors to Johnson Matthey Electronics, Inc., Spokane, Wash.

Division of Ser. No. 363,397, Dec. 23, 1994, Pat. No.

5,590,389. This application Oct. 30, 1995, Ser. No. 544,971

Int. Cl.⁶ C22C 1/04; 21/00

U.S. Cl. 75—249

8 Claims

Liquid Dynamic Compaction
100x



Al + 0.5% Zr

1. A sputtering target comprising a body of aluminum, which may be alloyed with at least one metal selected from the group consisting of copper, silicon, zirconium, titanium, tungsten, rhenium, scandium, cobalt, molybdenum, platinum, gold, niobium, hafnium, and alloys thereof, in which substantially all aluminum grains measure less than about 20 microns in said body.

5,780,756

SUPPORT FOR SHOULDER-ENGAGEABLE MUSICAL INSTRUMENT

Nathaniel D. Babb, 28 Fawndale Rd., Apt. 1R, Roslindale, Mass. 02131

Filed Nov. 17, 1995, Ser. No. 560,301

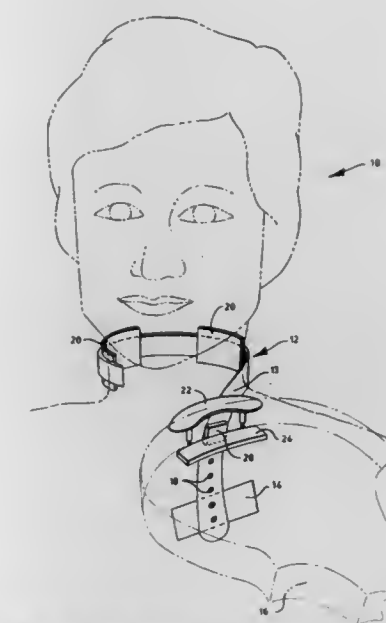
Int. Cl.⁶ G10D 1/02

U.S. Cl. 84—280

12 Claims

1. A support assembly for a shoulder-engageable musical instrument, comprising:

- A. a brace adapted for resting engagement against a portion of a user's body, said brace including an upper bearing portion and a lower bearing portion, and
- B. an attachment assembly for removably attaching said instrument to said brace at one end of the instrument, wherein during use said instrument is disposed in said support assembly in a predetermined orientation relative to said user, wherein said upper bearing portion of said brace is adapted for resting engagement with a portion of said user's neck, and wherein said upper bearing portion further includes at least one spacer element disposed between said upper bearing



portion and said user's neck, wherein said brace exerts substantially no pressure on the vertebrae in said user's neck.

5,780,757

ACOUSTICAL RING AND BELL SOUND SYSTEM
Konstantin L. Valtchev, and Harold Gomez, both of Ontario, Canada, assignors to Valgon Sound, Canada

Filed Apr. 22, 1997, Ser. No. 837,757

Int. Cl.⁶ G10D 7/00

U.S. Cl. 84—380 R

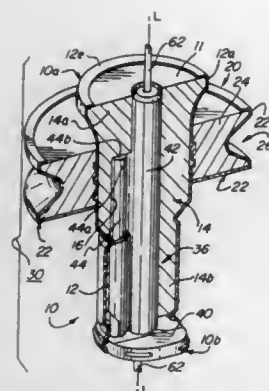
20 Claims



1. An acoustical ring and bell sound system for engagement with distal and proximal ends of a variety of musical wind instruments wherein the sound system comprises:

- a pair of hollow housing members dimensioned to surround the distal and proximal ends of said musical wind instrument wherein each hollow housing member is provided with a plurality of shoe elements which are engaging a selected portion of the periphery of the distal and proximal ends of said musical instrument.

- a housing;
- an explosive primer charge contained within the housing and disposed at least within the accessory section of the device;
- and

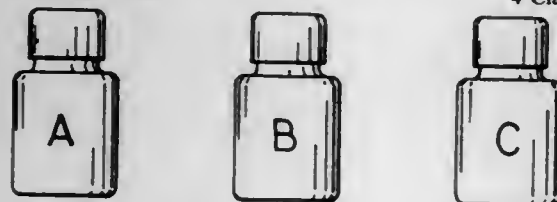


external mounting means on the housing dimensioned and configured to receive thereon an explosive accessory charge disposed circumferentially about the device at the accessory section thereof.

5,780,765 PYROGEN COMPOUND KIT FOR AN ELECTRICAL MODEL ROCKET IGNITOR

Jerry F. Dyben, 541 Kirkmore Dr., New Haven, Ind. 46774
Filed Feb. 18, 1997, Ser. No. 801,486
Int. Cl.⁶ F42B 4/00; D03D 23/00

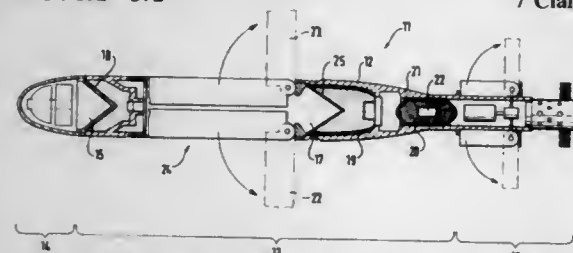
U.S. Cl. 102—355



1. A pyrogen compound kit for an ignitor used with a model rocket, said kit comprising:
an electrical ignitor for the model rocket;
a first bottle with a compound therein consisting essentially of a plastic dip, magnesium, titanium and lacquer thinner;
a second bottle with a compound therein consisting essentially of potassium perchlorate and amorphous fumed silicon dioxide; and
a third bottle with a compound therein consisting essentially of lacquer thinner.

5,780,766
GUIDED MISSILE DEPLOYABLE AS MORTAR
PROJECTILE
Werner Schröppel, Wendelstein, Germany, assignor to Diehl GmbH & Co., Nuremberg, Germany
Filed Apr. 2, 1997, Ser. No. 832,557
Claims priority, application Germany, Apr. 30, 1996, 196 17 221.7

Int. Cl.⁶ F42B 12/18; 15/00
U.S. Cl. 102—372



1. A guided missile consisting of a mortar projectile for crisis reaction forces utilized against varied types of target including concrete shelters and hard-armored vehicles, comprising: a bottle-

shaped tail end including a mortar propellant charge; a forward end including a target-seeking head; overcaliber-sized extendable tail end rudders including a control system for guidance towards a target; centrally arranged overcaliber-sized extendable glide vanes for increasing the range of flight of said missile; a forward hollow charge located rearwardly of the seeking head and a boring charge insert for the forming of a compact jet; a main hollow charge including a cutting charge-insert being arranged therebehind for the forming of an extended jet; a holder for a subcaliber-sized secondary-effect follow-up charge which is axially forwardly acceleratable responsive to a delay caused by impact against a target, including a time-delayed fuze for an explosive and fragmentation effect after penetration through a hole formed in a concrete plate by the boring charge insert; wherein the holder for the subcaliber-sized follow-up charge is arranged rearwardly of the cutting charge-insert.

5,780,767
GAS GENERANT COMPOSITION
Naoki Matsuda, Norimasa Hirata, and Shuzo Iyoshi, all of Hyogo, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan
Filed Dec. 27, 1995, Ser. No. 580,433

Claims priority, application Japan, Dec. 27, 1994, 6-324815; Dec. 14, 1995, 7-325589

Int. Cl.⁶ C06B 45/00

U.S. Cl. 149—2

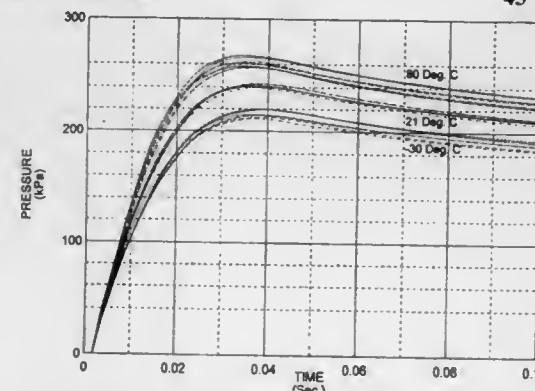
2 Claims

1. A gas generant composition comprising a fuel source selected from the group consisting of an organic compound; an oxidizing agent; and at least one additive selected from the group consisting of a ceramic whisker and fiber, said additive having a heat conductivity of 100 W/mK or less, a length of 5 to 500 μ m, a diameter of 0.1 to 10 μ m, and an aspect ratio of 3 to 2000; and wherein one of the ceramic whisker or fiber is at least an aluminum borate whisker.

5,780,768
GAS GENERATING COMPOSITIONS
Gregory D. Knowlton, Chandler; Christopher P. Ludwig, Scottsdale, and Daniel Haun, Chandler, all of Ariz., assignors to Talley Defense Systems, Inc., Mesa, Ariz.
Continuation-in-part of Ser. No. 402,103, Mar. 10, 1995, Pat. No. 5,551,725. This application Aug. 30, 1996, Ser. No. 706,198

Int. Cl.⁶ C06B 42/08; 31/00; 31/12; 29/16
U.S. Cl. 149—36

43 Claims



1. A low-solids gas generating composition, comprising a mixture of a fuel selected for the group consisting of guanidine nitrate, nitroguanidine, and mixtures thereof, and an oxidizer selected from the group consisting of ceric ammonium nitrate, lithium nitrate, lithium perchlorate, sodium perchlorate, a mixture of ammonium perchlorate and at least one alkali metal salt, and mixtures thereof, wherein the oxidizer-fuel mixture is within about 4 percent of

stoichiometric balance, and produces no more than about 30 percent solids on combustion.

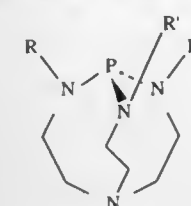
5,780,769 THERMAL STABILIZATION OF N,N-DINITRAMIDE SALTS

Thomas P. Russell, Manassas Park, Va., and Indu B. Mishra, Columbia, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 26, 1996, Ser. No. 708,001

Int. Cl.⁶ C06B 31/00; 25/34; C01B 21/20; C07C 111/00
U.S. Cl. 149—45

27 Claims

1. A composition comprising an N,N-dinitramide salt of the formula $M^+[N(NO_2)_2]^-$ where M^+ is a nitrogen-containing cation, and a prophosphatane compound of the formula



where R, R' and R'' are the same or different and are aryl or alkyl.

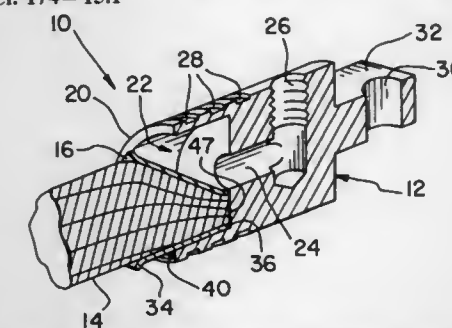
5,780,770 FLUID COOLED ELECTRICAL CONDUCTOR ASSEMBLY

Jan Christianson, Berrien Springs; Ed Walton, Big Rapids, and Erwin Kroulik, Edmore, all of Mich., assignors to Flex-Cable, Inc., Morley, Mich.

Filed Nov. 18, 1996, Ser. No. 744,854
Int. Cl.⁶ H02G 3/03; H05K 7/20

U.S. Cl. 174—15.1

10 Claims



1. A fluid cooled electrical conductor assembly, comprising:
an electrical conductor having a longitudinal direction and an end;
a terminal having an open end, a fluid passage in communication with said open end, and an inside face disposed between said fluid passage and said open end, said inside face oriented transverse to said longitudinal direction;
a sleeve at least partially received within said open end of said terminal, said sleeve and said conductor end being metallurgically bonded to said inside face of said terminal, said sleeve having a flared end disposed around said conductor and a distal end disposed adjacent to said conductor end, said sleeve being increasingly narrow from said flared end to said distal end, said sleeve having a longitudinally extending groove which is in communication with said fluid passage in said terminal; and
a casing connected to said terminal and surrounding said conductor to thereby define a fluid passageway at a periphery of said conductor.

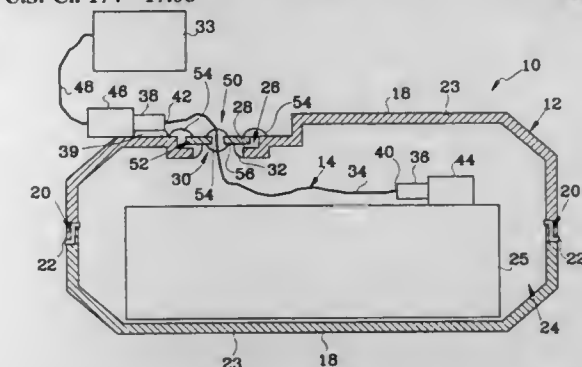
5,780,771 HERMETICALLY SEALED HOUSING HAVING A FLEX TAPE ELECTRICAL CONNECTOR

Timothy A. Beckwith, Coon Rapids, and Kathryn M. Lehmeyer, St. Anthony, both of Minn., assignors to Honeywell, Minneapolis, Minn.

Filed Aug. 28, 1996, Ser. No. 704,824
Int. Cl.⁶ H05K 5/06

U.S. Cl. 174—17.08

17 Claims



1. A hermetically sealed housing assembly for protecting electrical equipment, comprising:
a hermetically sealed housing member having an exterior wall defining an interior region for containing electrical equipment, the exterior wall having an opening extending therethrough that forms a passageway between the interior region and a region exterior to the housing member; and
an electrical connector device for transmitting electrical signals between electrical equipment in the interior region and electrical components in the region exterior to the housing member, the electrical connector device including:
a flex tape electrical signal conductor that extends through the opening and is coupled to said electrical equipment in the interior region and to said electrical components in the region exterior to the housing member; and
means joining the flex tape electrical signal conductor to the exterior wall at the opening to hermetically seal the conductor to the housing member to define the hermetically sealed housing assembly including:
an epoxy sealant; and
a filler element that bridges any gaps among an edge wall of the opening in the exterior wall of the housing member, the flex tape electrical signal conductor, and the sealant; and wherein the sealant hermetically seals the flex tape conductor to the filler element and the filler element to the edge wall of the opening in the exterior wall of the housing member to define the hermetically sealed housing assembly.

5,780,772 SOLUTION TO MOLD WIRE SWEEP IN FINE PITCH DEVICES

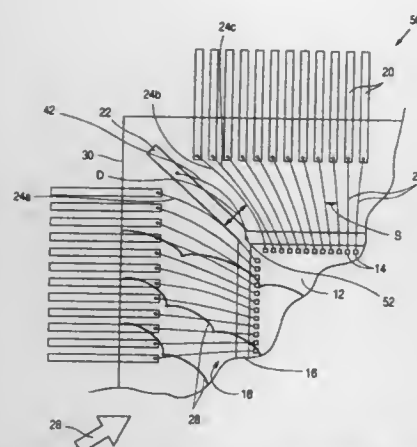
Inderjit Singh, San Jose, and Jaime A. Bayan, Palo Alto, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 24, 1997, Ser. No. 788,546
Int. Cl.⁶ H01L 23/28

U.S. Cl. 174—52.2

2 Claims

2. An integrated circuit package comprising:
an integrated circuit die including a plurality of die input/output terminal pads;
a lead frame including an array of electrically conductive leads for electrically connecting the package to other electrical elements, a die attach pad for supporting the die, and at least one tie bar for supporting the die attach pad in a predetermined location relative to the leads;
a plurality of functional bonding wires electrically connecting certain ones of the input/output terminal pads to associated ones of the electrically conductive leads such that the func-



tional bonding wires have a predetermined pitch which defines an approximate minimum desired spacing between adjacent functional bonding wires, the plurality of functional bonding wires including two widely spaced functional bonding wires which are spaced apart from one another by a distance substantially greater than the predetermined minimum desired spacing, the two widely spaced functional bonding wires being located on opposite sides of the tie bar; at least one additional non-functional bonding wire located between the two widely spaced functional bonding wires for restricting the flow of the encapsulating material in the area between the two widely spaced functional bonding wires during an encapsulating process of the package thereby preventing excessive, non-uniform bonding wire sweep of either of the two widely spaced functional bonding wires during the encapsulating process, one end of the non-functional bonding wire being connected to the tie bar and the other end of the non-functional bonding wire being connected to the die attach pad; and an encapsulating material surrounding the die, the plurality of functional bonding wires, the encapsulating material flow restricting element, and at least portions of the leads.

5,780,773 CABLE SUPPORTING MEMBER

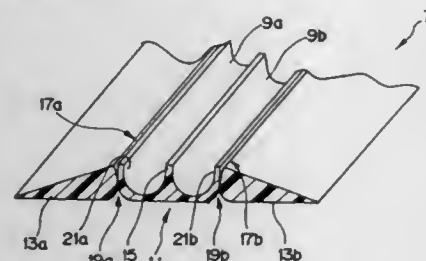
Toshio Wakamatsu, 2-598-1-203 Kushibikicyou, Oomiya-shi Saitama-ken, Japan

Filed Mar. 11, 1997, Ser. No. 814,229

Int. Cl.⁶ H01B 7/08; H02G 9/04

U.S. Cl. 174-72 C

6 Claims



1. A cable supporting member comprising:
 - a supporting section defining a groove formed in an upper surface thereof, said groove having a cross section which is arc-shaped such that a round cable having a substantially circular cross section can be received therein; and
 - a pair of side sections formed integrally with said supporting section, each of said side sections having an outer longitudinal edge portion, an inner longitudinal side surface which is connected to said supporting section, and an upper surface which is inclined upwardly from said outer longitudinal edge portion toward said inner longitudinal side surface such that a thickness of each of said side sections gradually decreases in a direction away from said supporting section,

wherein said supporting section and said pair of side sections are formed of elastic material, and a first cut is formed between said supporting section and one of said side sections and a second cut is formed between said supporting section and the other of said side sections such that each side section is separable from said supporting section.

5,780,774 CONNECTION STRUCTURE OF ELECTRIC WIRE AND FLAT CABLE

Hidehiro Ichikawa, and Satoshi Ishikawa, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan

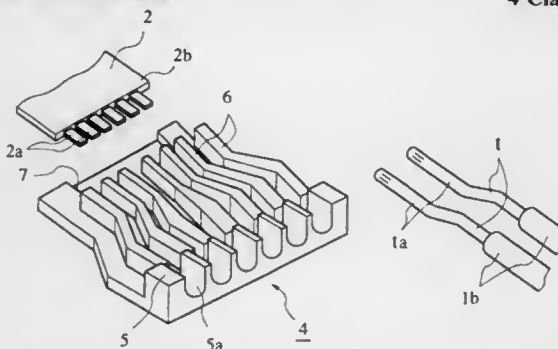
Filed May 29, 1996, Ser. No. 654,881

Claims priority, application Japan, May 30, 1995, 7-131886

Int. Cl.⁶ H01R 9/07

U.S. Cl. 174-88 R

4 Claims



1. A connection structure between an electric wire and a flat cable for connecting exposed forward ends of conductors of the electric wire and the conductors of a flat cable to each other, wherein:

the conductors of the electric wire, set to a length adapted for being overlaid on the conductors of the flat cable, are held in an overlaid relation with the conductors of the flat cable between insulating partitioning walls formed on an upper surface of a holder for isolating pairs of adjacent conductors of the electric wire, and overlaid portions of the conductors of the electric wire and the flat cable are connected and held in said overlaid relation and insert-molded.

5,780,775 POWER STRIP WITH INSPECTION WINDOW

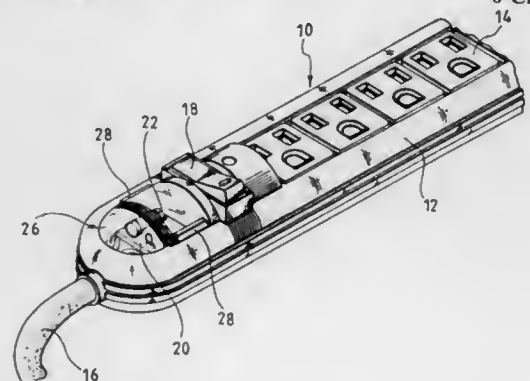
Tsung-I Yu, No. 4, Alley 2, Lane 23, Sec. 3, Pa-Te Road, PanChiao City, Taipei Hsien, Taiwan

Filed Mar. 20, 1997, Ser. No. 821,340

Int. Cl.⁶ H01R 25/00

U.S. Cl. 174-135

6 Claims



2. A power strip structure, comprising:
 - an insulation casing having at least one outlet hole defined thereby and defining an inspection opening; and
 - electric elements including a fuse or a circuit board mounted therein,

wherein said inspection opening is positioned above the electric elements inside the casing such that the electric elements are viewable from the outside of the casing through the inspection opening.

5,780,776 MULTILAYER CIRCUIT BOARD UNIT

Yuji Noda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

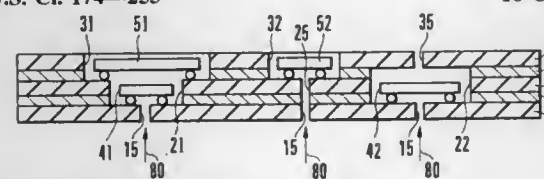
Filed May 30, 1997, Ser. No. 866,315

Claims priority, application Japan, May 31, 1996, 7-139276

Int. Cl.⁶ H05K 1/03

U.S. Cl. 174-255

10 Claims



1. A multilayer circuit board unit comprising:
 - a plurality of printed boards having printed circuits on surfaces thereof and stacked on each other;
 - an electronic component mounted on at least one of said printed boards and arranged between said one of said printed boards and an adjacent one of said printed boards;
 - an anisotropic conductive film sandwiched between each adjoining pair of said printed boards for electrically connecting said printed circuits of said printed boards to each other; and
 - a notched hole through said adjacent printed board and at least one adjoining said anisotropic film to make a space for said electronic component.

5,780,777 COMPENSATION FOR HYSTERESIS EFFECTS IN FORCE TRANSDUCERS

Klaus Peter Selig, Hechingen, Germany, assignor to Bizerba GmbH & Co. KG, Balingen, Germany

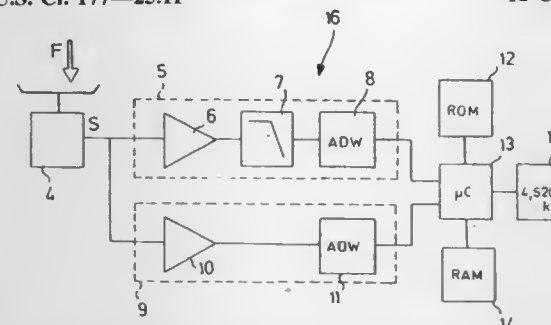
Filed Mar. 6, 1997, Ser. No. 813,793

Claims priority, application Germany, Sep. 9, 1994, 44 32 109.0

Int. Cl.⁶ G01G 3/00

U.S. Cl. 177-25.11

12 Claims



1. A weighing device including in combination
 - means comprising an elastically deformable transducer for providing a signal indicative of the gravitational force on an item to be weighed, said transducer having residual material hysteresis, first means responsive to said signal for providing a high resolution representation of the magnitude of the signal, said first means having a relatively low sampling frequency, second means responsive to said signal for providing a low resolution representation of the magnitude of the signal, said second means having a relatively high sampling frequency, and means responsive to said low resolution representation for correcting errors in said high resolution representation caused by hysteresis in the transducer.

5,780,778 ELECTRONIC POSTAGE SCALE SYSTEM AND METHOD

Robert G. Schwartz, Branford; Allen A. Crowe, Prospect; James S. Emmett, Derby; Fetneh Eskandari, Middletown; Martin F. Palange, Monroe; Mark E. Simcik, Bloomfield; Robert Swanbery, Fairfield; Robert J. Japenga, Simsbury; Joseph L. Lehman, Canton; William A. Weirsmann, Orange, and George P. Rahgo, Milford, all of Conn., assignors to Ascom Hasler Mailing Systems, Inc., Shelton, Conn.

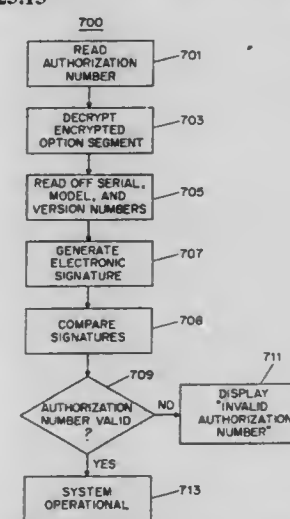
Division of Ser. No. 139,898, Oct. 14, 1993. This application

Jun. 7, 1995, Ser. No. 485,270

Int. Cl.⁶ G01G 19/22; 19/52; 7/00; G07D 7/00

U.S. Cl. 177-25.13

32 Claims



1. An electronic shipping scale system, comprising:
 - a display having a screen;
 - a weight evaluator for providing a data signal representing the weight of an item;
 - a keyboard having a plurality of keys;
 - a memory for storing data, including data relating to shipping rates and data containing a system number which uniquely characterizes said electronic shipping scale system;
 - a processor operating under a program and responsive to said weight data signal, said keyboard and said shipping rate data for computing shipping cost, and for providing display data;
 - means for receiving from said keyboard an encrypted authorization number comprising an encrypted electronic signature number and an encrypted option number, wherein said encrypted electronic signature number is formed by encrypting a configuration number and an option number using a first encryption algorithm, and wherein said encrypted option number is formed by encrypting said option number using a second encryption algorithm;
 - means for determining said option number by decrypting said encrypted option number using a decryption algorithm inverse to said second encryption algorithm;
 - means for retrieving from said memory said data containing said system number and for determining said system number;
 - means for combining said system number with said option number to form a system electronic signature number;
 - means for forming an encrypted system electronic signature number by encrypting said system electronic signature number using said first encryption algorithm;
 - means for comparing said encrypted electronic signature number from said encrypted authorization number with said encrypted system electronic signature number and for determining whether said encrypted electronic signature number is identical to said encrypted system electronic signature number; and
 - means for preventing said electronic shipping scale system from operating unless said encrypted electronic signature number is identical to said encrypted system electronic signature number.

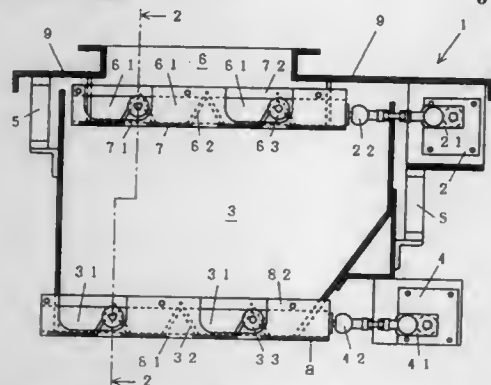
5,780,779
GRANULE GATE AND GRANULE WEIGHING MACHINE
INCORPORATING THE SAME

Masao Kitamura, Kyoto, and Hiroyuki Fujimoto, Ikeda, both of Japan, assignors to Kyoji Co., Ltd., Japan
Filed Sep. 10, 1996, Ser. No. 709,821

Claims priority, application Japan, Sep. 11, 1995, 7-259226
Int. Cl.⁶ G01G 13/18; 13/02

U.S. Cl. 177—105

6 Claims



1. A weighing machine for measuring the weight of granule, the machine comprising:

- a weighing container for containing the granule;
- a drive source;
- a fixed gate fixed above the weighing container, the fixed gate having multiple feeder holes arranged such that granule can pass through;
- a movable gate slidable across the fixed gate and positioned under the fixed gate to be exposed to the top of the weighing container, the movable gate having multiple openings spaced at the same pitch as the feeder holes, thereby allowing granule to pass through to be fed into the weighing container when said openings are aligned with said feeder holes and causing leveling of granule mound peaks when the weighing container is substantially filled; and
- a power transmission mechanism for transmitting a driving force from the drive source to slide the movable gate.

5,780,780
WEIGHING VIBRATORY APPARATUS AND METHOD

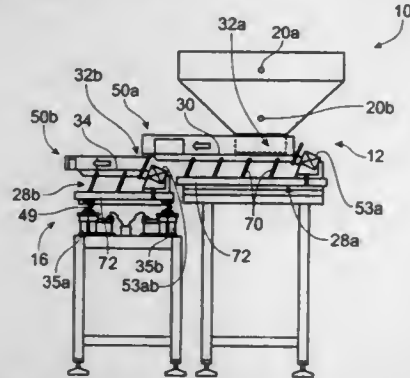
Gulzar Ahmed, 9775 SW. Pawnee Path, Tualatin, Oreg. 97062

Filed Jan. 17, 1997, Ser. No. 782,441

Int. Cl.⁶ G01G 13/02; 23/10; 21/10

U.S. Cl. 177—119

17 Claims



1. A vibratory apparatus for weighing one or more objects supported thereby, comprising:

- a vibratory element for supporting the objects to be weighed;
- a first oscillatory drive mechanism operably connected to said vibratory element, said oscillatory drive mechanism being adapted to cause periodic movements of said vibratory element; and
- a weighing mechanism, operably connected to said vibratory element for determining the weight of the objects on said

vibratory element, said weighing mechanism being adapted to weigh the objects while said periodic movements are occurring.

5,780,781

DEVICE FOR WEIGHING A PERSON CONFINED TO BED

Antoine Berger, Pommerol, and Serge Esteveny, Saint Just Saint Rembert, both of France, assignors to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement S.A., France

PCT No. PCT/FR94/00099, § 371 Date Oct. 10, 1995, § 102(e) Date Oct. 10, 1995, PCT Pub. No. WO94/17376, PCT Pub. Date Aug. 4, 1994

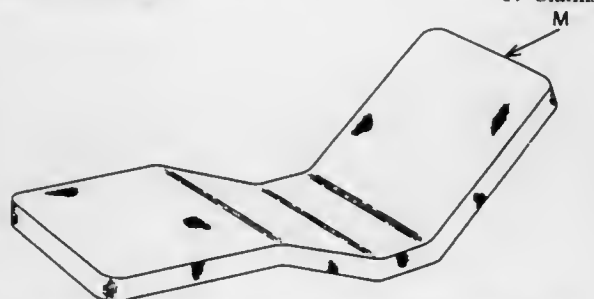
PCT Filed Jan. 27, 1994, Ser. No. 403,740

Claims priority, application France, Jan. 28, 1993, 93-01252

Int. Cl.⁶ G01G 21/00; 19/52; 21/28; 21/22

U.S. Cl. 177—126

17 Claims



1. A device for weighing a person confined to an articulating bed that includes an articulating bed frame, comprising a plurality of discrete modules; each module including a covering having a top and a bottom exterior surface, and an at least one weight sensor (2), each weight sensor including a means for generating an electrical signal representative of a weight supported by said weight sensor; wherein said modules are articulately connected to each other, and wherein a shape of the articulately connected modules is congruent to a shape of said articulating bed frame.

5,780,782
ON-BOARD SCALE WITH REMOTE SENSOR PROCESSING

James O. O'Dea, San Clemente, Calif., assignor to Hi-Tech Transport Electronics, Inc., Eugene, Oreg.

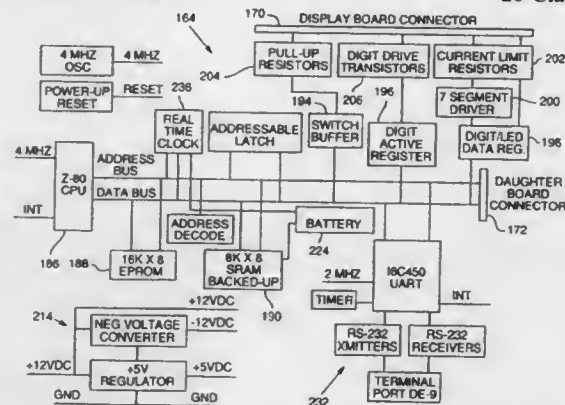
Continuation of Ser. No. 388,954, Feb. 15, 1995, abandoned.

This application Nov. 17, 1997, Ser. No. 971,759

Int. Cl.⁶ G01G 19/08; 19/52

U.S. Cl. 177—136

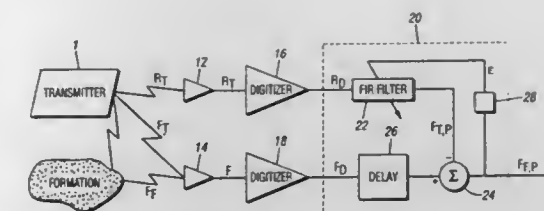
20 Claims



1. An on-board weighing apparatus for a vehicle having at least one weight-supporting suspension group, comprising:
at least one sensor being mountable on the vehicle and associated in a one-to-one relationship to the at least one suspension

group, each of the at least one sensor being operative to generate a signal related to a weight supported on its respective suspension group;

at least one remote sensor processing unit mountable on the vehicle and associated in a one-to-one relationship to the at least one sensor, each of the remote sensor processing unit being operative to store signal-to-weight conversion parameters related to its respective sensor, the signal-to-weight conversion parameters characterizing a conversion of the weight related signal to a weight of the vehicle at the respective suspension group associated with the at least one sensor; a host processing unit mounted on the vehicle and in communication with the at least one remote sensor processing unit, the host processing unit being operative to receive the signal generated by each of the at least one sensor, to read the signal-to-weight conversion parameters from each of the at least one remote sensor processing unit, and to generate weight data for each of the at least one suspension group as a function of the signal-to-weight conversion parameters and the signal from its respective sensor and remote sensor processing unit; and
a display for providing a visual indication of the weight data.



measuring a second tool mode signal at a second receiver; processing said second tool mode signal to obtain a predicted value for the tool mode portion of the first signal; subtracting said predicted value from the first signal; whereby the balance of the first signal comprises its calculated formation mode portion.

5,780,785

ACOUSTIC ABSORPTION DEVICE AND AN ASSEMBLY OF SUCH DEVICES

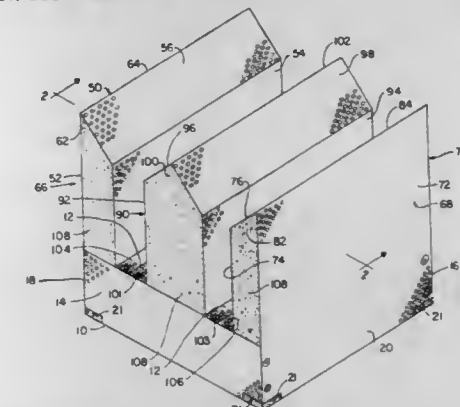
Alan Eckel, 10 Hildreth St., Westford, Mass. 01886

Filed Mar. 12, 1997, Ser. No. 815,883

Int. Cl.⁶ E04B 1/82

U.S. Cl. 181—295

26 Claims



1. An acoustic absorption device comprising:
a platform having a rectangularly-shaped top surface and four side surfaces, each of said surfaces comprising a perforated material; and
a plurality of spires upstanding from said top surface, said spires extending from a first to an opposite second of said sides; a first of said spires having a wall surface comprising a continuation of a third of said platform side surfaces to form a device first planar end; and
a second of said spires having a wall surface comprising a continuation of a fourth of said platform side surfaces to form a device second planar end;
said spires being spaced one from another to form a channel between neighboring ones of said spires;
said spires being at least in part covered with the perforated material; and
said platform and said spires each housing a body of sound absorbing material.

5,780,784

CANCELLATION OF TOOL MODE SIGNAL FROM COMBINED SIGNAL

Carl A. Robbins, Tomball, Tex., assignor to Halliburton Energy Services, Inc., Houston, Tex.

Filed Oct. 17, 1996, Ser. No. 733,367

Int. Cl.⁶ G01V 1/40

U.S. Cl. 181—102

15 Claims

1. A method for extracting a formation signal from a first signal comprising both tool and formation signals received at a first receiver, comprising the steps of:

5,780,786

CONTROL APPARATUS FOR USE IN AN ELEVATOR

Yoshio Miyamishi, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1996, Ser. No. 721,718

Claims priority, application Japan, Mar. 29, 1996, 8-077472

Int. Cl.⁶ B66B 5/14; 1/28; 1/34

U.S. Cl. 187—293

11 Claims

1. A control apparatus for an elevator comprising:

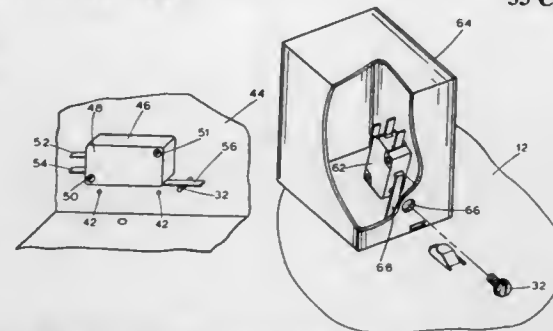
power converter means for converting an alternating current into an alternating current of arbitrary frequency and voltage;

a generally rectangular subframe adapted to be mounted upon a supporting surface, said subframe having opposed sides;
a pair of generally rectangular spaced apart, modular sidewalls adapted to be secured to said subframe sides, each sidewall having a top and a bottom;
first and second elongated, parallel interior grooves defined in each sidewall;

fastener means captivated within said first grooves for engaging said subframe sides to secure said sidewalls;
top and bottom covers extending between said sidewalls at their tops and bottoms;
at least one generally planar faceplate captivated between said sidewall second interior grooves;
at least one clip extending generally between said sidewalls a front channel defined in each at least one clip for captivating at least a portion of a faceplate, said clip comprising an elongated rear channel parallel with and spaced apart from said front channel;
a bracket extending between said sidewalls for securing said at least one clip said bracket comprising a lip for engaging said clip rear channel; and
at least one elevator control comprising a switch, display indicator or the like accessible through or disposed upon said faceplate.

5,780,792
INTERLOCK SWITCH FOR APPLIANCES
Rex E. Fritts; John D. Robeson, both of Cedar Rapids, and Randy J. Furler, South Amana, all of Iowa, assignors to Amana Company L.P., Amana, Iowa
Filed Jun. 21, 1996, Ser. No. 668,193
Int. Cl.⁶ H01H 9/22; 5/00; 9/20; 3/16
U.S. Cl. 200—50.02

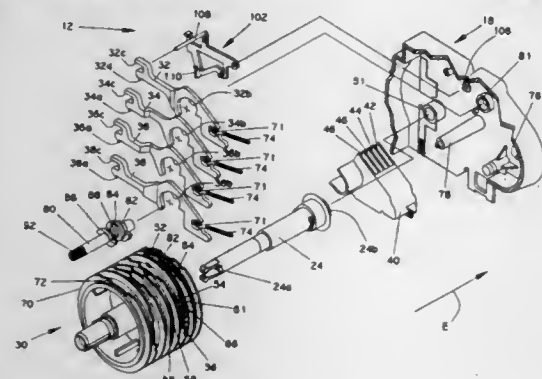
35 Claims



1. An interlock switch which opens when an appliance cover is removed comprising:
a switch, wherein the switch is arranged to control power to an appliance; and
removable fastening means for fastening a cover to the appliance, for holding the switch closed when the cover is fastened by the removable fastening means to the appliance, and for allowing the switch to open when the cover is unfastened from the appliance, wherein the removable fastening means is removable from both the cover and the appliance when the cover is unfastened from the appliance by the removable fastening means.

5,780,791
TIMER FOR CONTROLLING AN APPLIANCE HAVING A PLURALITY OF PAWLS WHICH ROTATE A CAMSTACK
Ronald Eugene Cole, Johnson County, Ind., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Feb. 24, 1997, Ser. No. 806,007
Int. Cl.⁶ H01H 43/10
U.S. Cl. 200—38 R

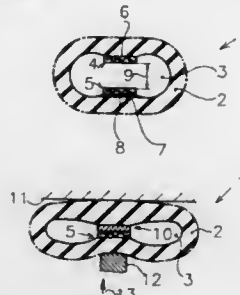
26 Claims



1. A timer for controlling an appliance, comprising:
a motor having an output shaft;
a camstack; and
a plurality of pawls each which are mechanically coupled to said output shaft of said motor, wherein said plurality of pawls includes a first pawl and a second pawl which cooperate to (1) continuously rotate said camstack when said timer is operated in a first mode of operation, and (2) interruptedly rotate said camstack when said timer is operated in a second mode of operation, wherein said first pawl and said second pawl are each advanced by said motor to contact said camstack and cause rotation thereof when said timer is operated in said first mode of operation, and wherein said first pawl only causes rotation of said camstack by being advanced into contact therewith by said motor when said timer is operated in said second mode of operation.

5,780,793
SAFETY SWITCH HAVING A CARBON FIBER CONDUCTOR
Hans-Volker Buchholz, Hildesheim, and Wolfgang Opitz, Bockenem, both of Germany, assignors to Meteor Gummierwerke K. H. Bädje GmbH & Co., Bockenem, Germany
PCT No. PCT/EP94/00255, § 371 Date Oct. 10, 1995, § 102(e) Date Oct. 10, 1995, PCT Pub. No. WO94/25972, PCT Pub. Date Nov. 10, 1994
PCT Filed Jan. 29, 1994, Ser. No. 535,130
Claims priority, application Germany, Apr. 30, 1993, 43 14 193.5
Int. Cl.⁶ H01H 3/16; 1/02
U.S. Cl. 200—61.44

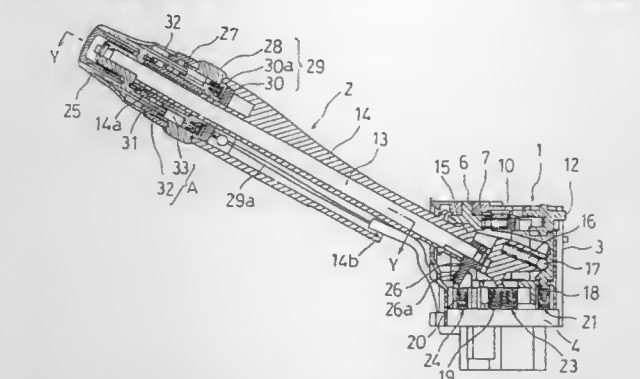
20 Claims



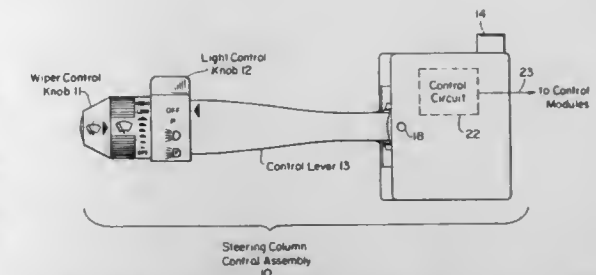
1. A safety switch comprising:
a flexible support shaped to form an internal elongate cavity;
two elongate approximately parallel electrical conductors arranged on said support within said cavity, said switch having a rest position wherein said two conductors are spaced and electrically insulated from one another;
at least one of said electrical conductors consisting essentially of carbon fibers; and
said support being reversibly deformable by the application of an external force in such a manner that the electrical conductors, in an operational condition, come into contact with each other and produce and electrical signal indicative of the operational condition.

5,780,794
COMPOSITE SWITCH LEVER FOR AUTOMOBILES WITH MECHANICALLY-COUPLED SWITCH KNOBS
Norio Uchiyama, and Toshiaki Yokoyama, both of Tokyo, Japan, assignors to Niles Parts Co., Ltd., Japan
Filed Jan. 17, 1997, Ser. No. 785,000
Claims priority, application Japan, Jan. 18, 1996, 8-024680
Int. Cl.⁶ H01H 9/00; 9/26
U.S. Cl. 200—61.54

12 Claims



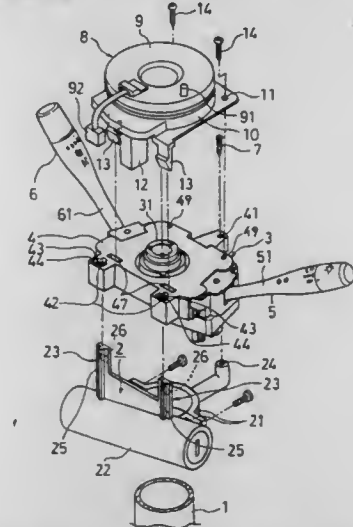
1. A composite switch lever assembly for automobiles, comprising:
a composite switch lever (2) having a base portion swingably mounted on a base block (1) for mounting on a steering column of an automobile; and
a plurality of rotary switches coupled to said composite switch lever (2);
wherein a first rotary switch knob having ON and OFF positions for actuating a first switch group ON and OFF and a second rotary switch knob having ON and OFF positions for actuating a second switch group ON and OFF are rotatably mounted on said composite switch lever (2) with a common axis, and said first rotary switch knob and said second rotary switch knob are mechanically coupled with each other through a related operation mechanism with a predetermined idle angle in a rotation direction, said related operation mechanism comprising a connecting projection extending from said first rotary switch knob and an interfering hole formed in said second rotary switch knob for receiving said connecting projection, said connecting projection being movable over said predetermined idle angle within said interfering hole, said connecting projection being movable with said first rotary switch knob into engagement with a first side of said interfering hole for rotating said second rotary switch knob to its OFF position upon rotation of said first rotary switch knob to its OFF position, and a second side of said interfering hole being movable with said second rotary switch knob into engagement with said connecting projection for rotating said first rotary switch knob to its ON position upon rotation of said second rotary switch knob to its ON position.



mechanical controls comprising said control lever and said first control knob having selectable positions for controlling functions of the vehicle,
the mechanical controls having shutters connected to the control lever and first control knob and constructed and arranged to control the electrical output signals of the optical switches based on the positions of the control lever and first control knob.

5,780,796
MOUNTING CONSTRUCTION OF A COMBINATION SWITCH
Norio Uchiyama, and Yoshio Hattori, both of Tokyo, Japan, assignors to Niles Parts Co., Ltd., Japan
Filed Apr. 25, 1997, Ser. No. 845,459
Claims priority, application Japan, May 13, 1996, 8-141133
Int. Cl.⁶ H01H 9/00
U.S. Cl. 200—61.54

10 Claims



1. A mounting construction for mounting a combination switch to a steering column, comprising:
a bracket fixed to the steering column and having a fastening hole and fastening projections, the fastening hole and the fastening projections extending longitudinally parallel to the steering column;
a combination switch having fitting holes and an insertion hole formed in a base thereof, said fastening projections of said bracket extending into the fitting holes of the combination switch, and the insertion hole of the combination switch corresponding to the fastening hole of the bracket; and
a fastening member inserted through the insertion hole of the combination switch and fastened to the fastening hole of the bracket.

5,780,795
CONTACTLESS SWITCHING AND ENCODING
Michael O'Reilly, Holliston, Mass., assignor to Cole Hersee Company, South Boston, Mass.
Filed Feb. 20, 1997, Ser. No. 803,542
Int. Cl.⁶ B60K 35/00; H01H 9/00
U.S. Cl. 200—61.54

7 Claims

1. Apparatus for use with a vehicle, comprising:
a steering column control assembly having a control lever having a control lever axis and pivotally attached at one end and a first control knob rotatable supported about the control lever and the control lever axis,
a plurality of optical switches coupled to said control lever and said first control knob configured to furnish a corresponding plurality of electrical output signals representative of respective positions of said control lever and said control knob; and

5,780,797

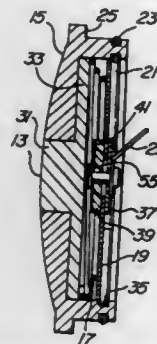
HORN BUTTON SWITCHAlan Budnik, 17951 Whitford La., Huntington Beach, Calif.
92649

Filed Oct. 23, 1996, Ser. No. 731,946

Int. Cl.⁶ H01H 9/00; 13/52

U.S. Cl. 200—61.55

28 Claims



1. The horn actuator apparatus comprising:
 - a housing having an opening in a top surface thereof, an interior chamber of uniform cross-sectional contour, and an open rear end;
 - an actuator element including a plate portion having a top surface and a bottom surface, said bottom surface having an outer periphery, said plate portion further having an outer edge shaped to match the cross-sectional contour of said chamber, said plate portion being slideably mounted in said chamber, said actuator element further including a raised surface portion extending upwardly from the top surface of said plate portion, said raised surface portion having a periphery conforming in shape to the shape of said opening;
 - a rear plate means for closing the open rear end of said chamber and slideably insertable manually into and out of said chamber;
 - a spring means sandwiched between said rear plate means and said actuator element and having an upper portion thereof shaped to engage the outer periphery of the bottom surface of said plate portion of said actuator element for stably positioning said actuator element with respect to said housing and such that said raised surface portion is located within said opening and is manually depressible against a bias supplied by said spring means; and
 - a retainer means manually insertable into said housing for holding said rear plate means in place, thereby retaining said spring means in place between said rear plate means and said actuator element while also retaining said raised surface portion located in said opening.

5,780,798

BED OCCUPANT SENSING DEVICE

John Alan Hall-Jackson, Kirk Hammerton Hall, York, North Yorkshire YO5 8DA, United Kingdom

Continuation of Ser. No. 399,759, Mar. 7, 1995, abandoned.

This application Aug. 15, 1996, Ser. No. 698,116

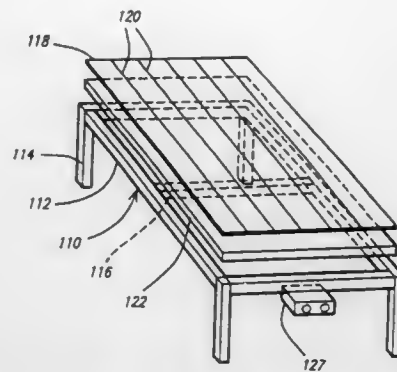
Claims priority, application United Kingdom, Mar. 9, 1994, 9404531; Dec. 8, 1994, 9424735

Int. Cl.⁶ H01H 3/02

U.S. Cl. 200—85 R

1 Claim

1. A portable sensing device for placement in a bed to monitor the presence of an occupant in the bed, comprising:
 - (a) a rigid lower member having lower member ends,
 - (b) a planar upper member in the form of a rigid plate having opposed sides and opposed ends which are respectively adjacent said lower member ends and which upper member is in spaced and generally parallel relation with the lower member,
 - (c) a plurality of spacer means spacing the opposed ends of the plate with respect to the respective lower member ends but leaving a substantial portion of the opposed sides unsupported



- so that the center of the plate and its sides are free to flex relative to the support means under the weight of the occupant of the bed,
- (d) a sensor located between the plate and the lower member and centrally between the spacer means without contacting any of the plurality of spacer means so as to be sensitive to flexing of the plate under the weight of the occupant of the bed, and
- (e) said sensor comprising a limit switch or transducer actuated by the relative movement between said plate and said rigid lower member.

5,780,799

REDUCED AUTOCOMPRESSION CIRCUIT-BREAKER
Renaud David, Chuzelles, France, assignor to GEC Alsthom T & D SA, Paris, France

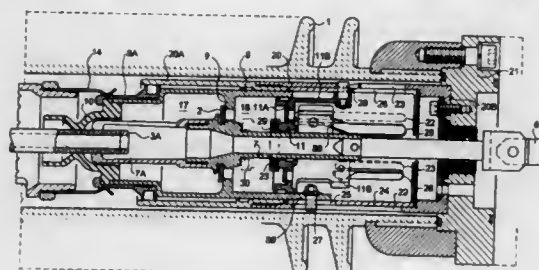
Filed Mar. 7, 1997, Ser. No. 813,090

Claims priority, application France, Mar. 11, 1996, 96 03033

Int. Cl.⁶ H01H 33/14; 33/88; 9/30

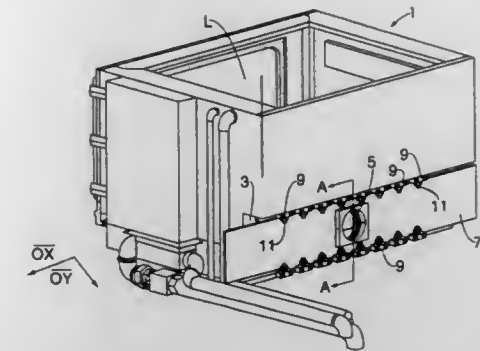
U.S. Cl. 218—57

8 Claims



1. A circuit-breaker of the self-blasting type comprising a jacket filled with a pressurized dielectric gas, two cooperating arc contacts at least one of which is part of a mobile contact assembly attached to a maneuvering member and adapted to be displaced axially in the jacket between a closed position and an open position, and vice versa, the mobile contact assembly comprising a first tube carrying the mobile arc contact at its end and a second tube coaxial with the first tube to delimit on respective opposite sides of a ring joining the first and second tubes a constant volume expansion chamber closed by a blast nozzle and a compression chamber communicating with the expansion chamber and closed by a semi-mobile piston, the second tube sliding in a fixed tube and the circuit-breaker including means for immobilizing the piston during a first part of displacement of the mobile contact assembly between the closed position and the open position and for displacing the piston axially during a second portion of the displacement of the mobile contact assembly and an arrangement for coupling the second tube and the piston during the second part of the movement, wherein said means comprise:
 - at least one first longitudinal slot and at least one second longitudinal slot on said fixed tube,
 - a freely rotatable locking tube carried by said fixed tube, aligned with said slots thereof and including at least one first longitudinal slot and at least one second longitudinal slot,

- at least one pin carried by said second tube and penetrating said first slot of said fixed tube and said first slot of said locking tube,
- at least one pin carried by said piston and penetrating said second slot of said fixed tube and said second slot of said locking tube,
- said slots being shaped to immobilize said piston during said first part of said movement and to procure axial movement of said piston during said second part of said movement.



5,780,800

CIRCUIT BREAKER CONTACT ARM AND SPRING SHIELD

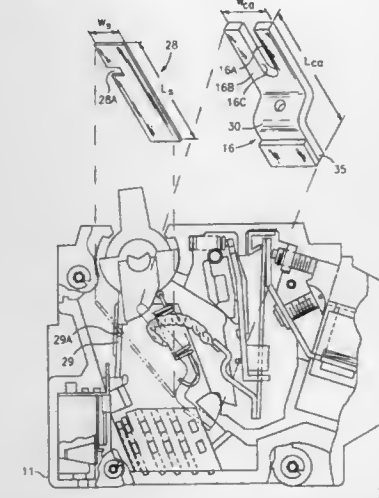
Joseph M. Palmieri, Southington; J. Peter McCuin, Bristol, and George J. Boucher, Plainville, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Aug. 7, 1996, Ser. No. 693,420

Int. Cl.⁶ H01H 9/30

U.S. Cl. 218—147

14 Claims



1. An arc shield for circuit breakers having a moveable contact arm, a case and a cover comprising:
 - a strap of electrically-insulating material having a width and a length defining a rectangle;
 - a slot within one side of said rectangle, said slot is positioned along said length defining a top part and a bottom part to said rectangle, said top part being of shorter length than said bottom part for promoting flex of said arc shield in transport with said contact arm from overcurrent to quiescent conditions; and
 - a bottom end of said rectangle arranged for abutting said circuit breaker movable contact arm whereby said rectangle moves in unison with said contact arm to protect said contact arm from arc-generated debris when said contact arm moves in response to severe overcurrent conditions through said contact arm.

5,780,801

SEMI-WATERTIGHT STRUCTURE FOR SEALING PLATE OF AN IMMERSION WIRE ELECTRIC DISCHARGE MACHINE

Javier Maidagan, Vizcaya, Spain, assignor to Ona Electro-Erosion, S.A., Spain

Filed Jul. 30, 1996, Ser. No. 688,377

Claims priority, application Spain, May 6, 1996, 9601191

Int. Cl.⁶ B23H 7/02; 7/36

U.S. Cl. 219—69.14

2 Claims

1. In an electroerosion machine having a tank (1) with a window (2) in a rear wall (3) of said tank, said window being covered by a sliding plate (7) in which a hole (5) has been machined, said hole

providing passage for an electrode-holder arm (b) into said tank, the improvement comprising:

- a) a semi-watertight block (4) that comprises:
 - a1) a semi-watertight coupling (6) in peripheral contact with said arm (b) for making a semi-watertight watertight contact between said arm (b) and said block (4), and
 - a2) said sliding plate (7) which is longer and wider than the dimensions of said window (2) of said rear wall (3) of said tank, said sliding plate being made of plastic of low coefficient of friction,
- b) a plastic frame (8) of low coefficient of friction placed around said window and fastened to said rear wall of said tank;
- c) a series of tightening elements (9, 10, 11) for holding said plate (7) in a semi-watertight arrangement against said plastic frame (8), said tightening elements being affixed to said rear wall (3) and positioned above and below said window, each said tightening element comprising a bearing (11) which presses against said plate (7) and rotates upon movement of said plate (7) each of said tightening elements being adjustable so as to vary pressure against said plate (7) and control said semi-watertight arrangement between said plate (7) and said frame (8), thereby providing a semi-watertight arrangement between said rear wall (3) and arm (b).

5,780,802

PROCESS FOR MACHINING AND BUTT-WELDING AT LEAST ONE EDGE OF A SHEET METAL PLATE

Rüdiger A. Gnann, Ravensburg, and Michael Strobel, Ostrach, both of Germany, assignors to Maschinenfabrik, Karl H. Arnold GmbH & Co. KG, Ravensburg, Germany

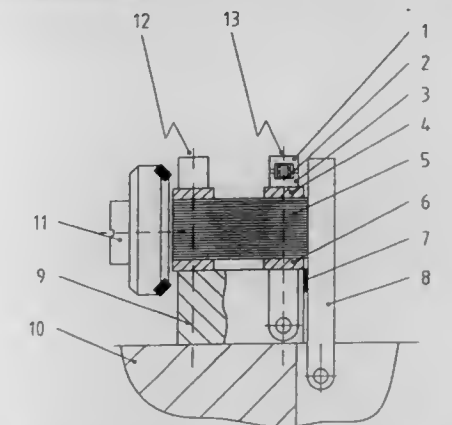
Filed Nov. 10, 1995, Ser. No. 558,075

Claims priority, application Germany, Nov. 11, 1994, 44 40 365.8

Int. Cl.⁶ B23K 15/00; 26/00

U.S. Cl. 219—121.14

6 Claims



1. A process of butt-welding together sheet metal plates by means of beam welding to produce tailored blanks comprising:
 - a) collecting a plurality of sheet metal plates into a sheet metal stack

- b) aligning at least one edge of each of the sheets along a side of the sheet metal stack to be machined
- c) clamping the aligned sheet metal stack between clamping and supporting means with wearing bars interposed between the stack and the clamping and supporting means on the side of the stack to be machined such that the wearing bars support the edge of the stack and are positioned to be machined by a machining tool during machining of the aligned-edge side of the sheet metal stack
- d) machining the aligned edge side of the sheet metal stack
- e) abutting the machined edges of sheet metal plates machined according to step d) and
- f) welding together the sheet metal plates at the abutted edges.

5,780,803

PROCESS FOR THE STABILIZATION OF PLASMA GENERATION BY MEANS OF ELECTRON BEAM VAPORIZER

Klaus Goedicke; Volker Kirchhoff; Christoph Metzner, and Bert Scheffel, all of Dresden, Germany, assignors to Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V., Munich, Germany

Continuation of Ser. No. 505,267, Oct. 4, 1995, abandoned.

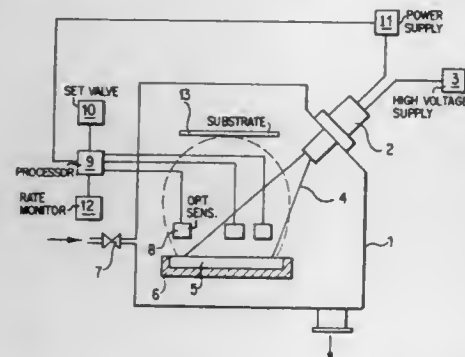
This application Mar. 20, 1997, Ser. No. 821,030

Claims priority, application Germany, Feb. 16, 1994, 43 04 613.4

Int. Cl.⁶ B23K 10/00; 15/00

U.S. Cl. 219—121.43

8 Claims



1. In a physical vapor deposition of a coating material in a vaporization chamber by means of an electron beam vaporizer having at least one axial electron gun with a high vaporization rate, an electron beam of the electron gun being deflected in a programmed manner by a beam guidance and focussing system onto the coating material which is vaporized thereby, a method for stabilizing plasma generation comprising the steps of:

setting a vaporization rate of the electron beam vaporizer at a predetermined level, whereby power of said electron beam is partially absorbed by vapor in said vaporization chamber, creating a plasma which generates optical emission;

measuring intensity of said optical emissions; and

controlling at least one operating parameter of said at least one electron gun as a function of measured intensity of the optical emissions, whereby the optical emissions and energy absorption in the vaporization chamber remain constant.

5,780,804 APPARATUS AND METHOD FOR MAKING STRUCTURAL FILLET WELDS

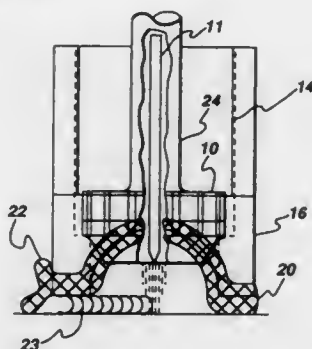
Raymond Alan White, Schenectady, N.Y., and Eric Russell Willis, San Jose, Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 27, 1996, Ser. No. 757,182

Int. Cl.⁶ B23K 10/00

U.S. Cl. 219—121.46

10 Claims



1. An apparatus for underwater welding angular joints comprising:

a welding torch having a nozzle constructed to fit in an angled space of an angled workpiece for providing gas and heat to said angled workpiece underwater to form a weld bead;

a gas lens shield mounted over the torch, with a lower end that is in close proximity to said angled workpiece, and having at least one positioning means on the outer surface of said gas lens shield for contact with an upper end of an angled underwater exclusion device;

the angled underwater exclusion device having a gas permeable skirt along an outer perimeter on a lower end of said exclusion device in contact with the angled workpiece, where said skirt has a flexible trailing tail piece hinged on a rear portion that travels over the weld bead, and said exclusion device being tension mounted over the gas lens shield by the positioning means; and

a means for providing gas under pressure to the underwater exclusion device from at least the nozzle of the torch.

5,780,805

PATTERN SHIFTING LASER CUTTER

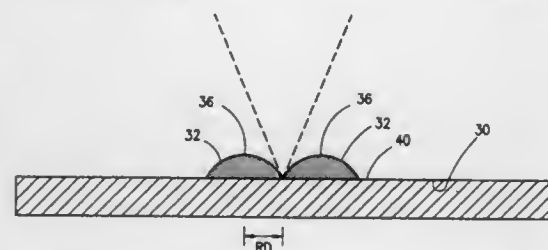
Marvin H. Duncan, Jr., and Michael I. Silvergate, both of Marblehead, Mass., assignors to Gerber Garment Technology, Inc., Tolland, Conn.

Filed May 3, 1995, Ser. No. 433,704

Int. Cl.⁶ B23K 26/00

U.S. Cl. 219—121.68

6 Claims



1. A method of ablating debris from a support surface during repeated cuttings of segments of a material along a common cutting path, comprising:

(a) positioning the common cutting path in a first position with respect to the support surface;

(b) directing a laser along the common cutting path in a first cutting to cut a first segment of the material and form a first adjacent debris ridge;

- (c) disposing a second segment of the sheet material on the support surface; and
- (d) displacing the common cutting path for a second cutting to a second position positioned over a portion of the first adjacent debris ridge such that upon directing the laser along the portion of the common cutting path in the second cutting, the laser penetrates the second segment of the sheet material and contacts the portion of the first adjacent debris ridge to substantially ablate the debris.

5,780,806

LASER ABLATION SYSTEM, AND METHOD OF DECONTAMINATING SURFACES

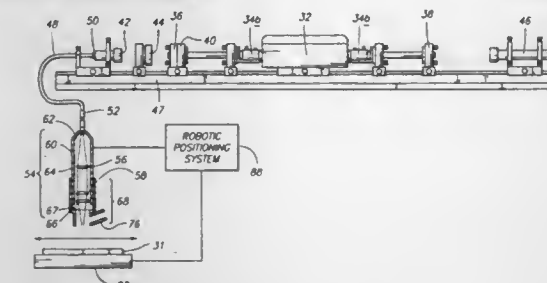
Russell L. Ferguson, Idaho Falls, Id.; Martin C. Edelson, and Ho-ming Pang, both of Ames, Iowa, assignors to Lockheed Idaho Technologies Company, Idaho Falls, Id.

Filed Jul. 25, 1995, Ser. No. 506,585

Int. Cl.⁶ B23K 26/00; 26/16

U.S. Cl. 219—121.68

49 Claims



49. A laser system comprising:

a Nd:YAG laser head providing a laser output;

a flexible fiber optic cable having a first end optically coupled to the laser output, and having a second end;

an acousto-optic Q-switch coupled between the laser head and the first end of the fiber optic cable and configured to switch the laser output of the laser head to provide a controlled laser output to the first end of the fiber optic cable with a repetition rate between 3 and 7 kHz, and an irradiance greater than 1×10^7 w/cm²; and

an output optics assembly optically coupled to the second end of the fiber optic cable.

5,780,807

METHOD AND APPARATUS FOR DIRECT LASER CUTTING OF METAL STENTS

Richard J. Saunders, Redwood City, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

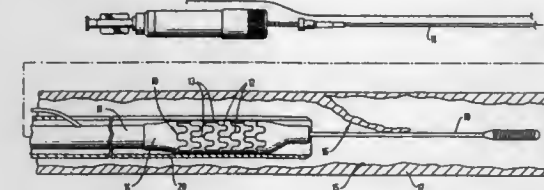
Continuation of Ser. No. 345,501, Nov. 28, 1994, abandoned.

This application Jan. 15, 1997, Ser. No. 783,698

Int. Cl.⁶ B23K 26/00

U.S. Cl. 219—121.71

28 Claims



1. A method of producing a stent, comprising the steps of: providing a generally tubular member having a working outer tube surface, an inner tube surface defining an inside diameter of said generally tubular member, and a tubular wall between said working outer tube surface and said inner tube surface; providing a protective mandrel within said generally tubular member, said mandrel having an outer surface defining an outer diameter that is smaller than said inside diameter of said tubular member;

supporting said generally tubular member, with said protective mandrel therewithin, in operative association with a laser beam;

moving said generally tubular member linearly and rotationally relative to, said laser beam, thereby causing said protective mandrel to roll on a portion of said inner tube surface such that a space is formed between said inner tube surface and said outer surface of said mandrel; and

impinging said laser beam upon said working outer tube surface while said generally tubular member is moving linearly and rotationally relative to said laser beam, thereby causing said laser beam to cut a desired stent pattern through said tubular wall, then pass through said space and then contact said protective mandrel such that said laser beam is prevented from contacting said portion of said inner tube surface upon which said protective mandrel is rolling.

5,780,808

ARC SENSING METHOD IN AUTOMATED WELDING

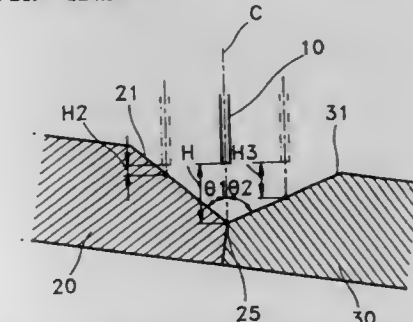
Seung-bin Moon, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 28, 1997, Ser. No. 808,428

Int. Cl.⁶ B23K 9/127

U.S. Cl. 219—124.34

2 Claims



1. An arc sensing method in an automated welding process for accurately adjusting a position of a weaving center of a welding torch with respect to a welding center line on the basis of a change in an arc current according to the change in distance between a lower end of said welding torch and a welding surface during weaving of said welding torch, said arc sensing method comprising the steps of:

determining derivative values of the arc current; and

detecting the position of the weaving center of said welding torch with respect to the welding center line on the basis of the determined derivative values of the arc current.

5,780,809

WATER RESISTANT WELDING ROD

Eugene Landrio, Johnstown, N.Y., and Frank R. Landrio, Simpsonville, N.C., assignors to Metaltone USA, Inc., Johnstown, N.Y.

Continuation of Ser. No. 495,111, Jun. 27, 1995, abandoned,

which is a continuation of Ser. No. 277,152, Jul. 19, 1994,

abandoned. This application Mar. 11, 1996, Ser. No. 613,973

Int. Cl.⁶ B23K 35/22

U.S. Cl. 219—145.23

14 Claims

1. A water resistant composition of matter in combination with a welding rod comprising: a mixture of metallic flakes; and a binding

the basket assembly having two baskets rotatable together as a unit in the chamber while the air mover causes hot gas flow from the outlet through the basket assembly; a drive shaft having a front end adjacent the back of the chamber and a first connector at the front; the two baskets including an upper basket and a lower basket, the baskets having front and rear ends, and the upper basket having a mounting shaft with a front end and a rear end and a second connector adjacent the rear end of the mounting shaft engaging the first connector and connecting the mounting shaft to the drive shaft, the mounting shaft extending out beyond both ends of the lower basket.

5,780,816

Patent Not Issued For This Number

5,780,817

RETROFITTABLE GLASS-TOP ELECTRIC STOVE ELEMENT

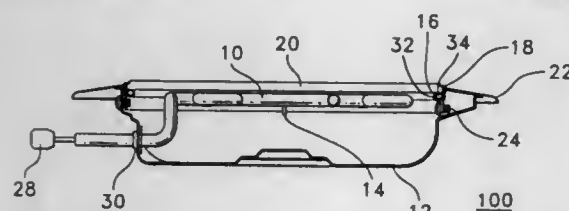
Hanford L. Eckman, 401 Millington Rd., Shavertown, Pa. 18708, and Charles M. Eckman, 11 Rice Dr., Dallas, Pa. 18612

Filed Feb. 27, 1996, Ser. No. 608,066

Int. Cl.⁶ H05B 3/68

U.S. Cl. 219—458

17 Claims



1. A metal-oxide-containing, retrofittable electrical resistance stove element which is capable of replacing an existing plug-in-type sheathed element in a stove top, comprising:

housing bowl means having a cavity defined therein;

a self-contained metal oxide-containing cooking top mounted to and providing a protective cover for said housing bowl said cooking top having an upper cooking surface and a lower surface;

a sheathed resistance heating element spaced from said lower surface of said cooking top; and

terminal means comprising plug-in-type terminal end portions for selectively connecting said retrofittable stove element to a stove top female terminal block for supplying electric power, said plug-in-type terminal end portions designed to prevent a rotation of said retrofittable stove element in said stove top.

5,780,818

METHOD OF AUTOMATICALLY COOKING FOOD WITH FORCED HOT AIR

Bengt H. Hansson, Hults Gata 73, S-436 44 Askim, Sweden
PCT No. PCT/SE95/00380, § 371 Date Jan. 13, 1997, § 102(e)
Date Jan. 13, 1997, PCT Pub. No. WO95/27399, PCT Pub. Date Oct. 19, 1995

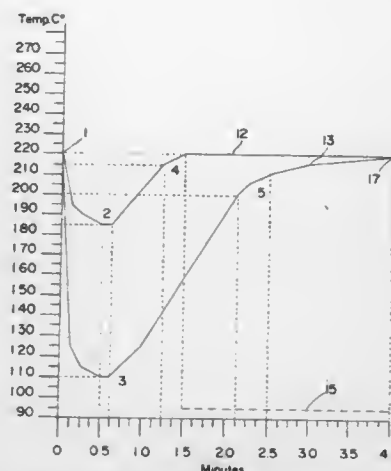
PCT Filed Apr. 7, 1995, Ser. No. 727,490

Claims priority, application Sweden, Apr. 7, 1994, 9401155-8
Int. Cl.⁶ H05B 1/02

U.S. Cl. 219—494

11 Claims

1. An automated method for controlling, in a forced air oven which uses heated air as a heat transport medium, a process for cooking and heating a food product placed within said oven, said process automatically adjusted according to characteristic parameters of the food product, said oven comprising an oven compartment,



ment, a fan for forcibly blowing air through said compartment, at least one heating element for supplying heat to the air, a ventilator connected to said oven compartment for communicating said air out of said oven compartment when said ventilator is in an open position and for retaining said air when in a closed position, a plurality of temperature detecting devices positioned within said oven compartment along a flow path of said hot air, said devices for measuring at least the air temperature of air displaced from said fan and after passage over and through said food product, and a control unit operably connected to each of said ventilator, temperature detecting devices and heating elements, said control unit including a multitude of pre-programmed temperature curves for different kinds of food products, wherein each of said respective temperature curves includes at least two phase-change points, one of said phase-change points defined as a sensed temperature where ice is converted to water and the second phase-change point defined as a sensed temperature where water is converted into steam, comprising the steps of:

closing said ventilator for retaining residual humidity within said oven compartment;

activating the fan and heating elements to force said saturated air to circulate about said oven compartment, whereby said heating elements heat said air to a desired temperature before said air is passed over said food product, said desired temperature a maximum temperature for said food product;

continuously measuring the temperature of the air at the points in the flow path immediately after the heating elements and immediately after said air has passed over the food product;

sending the measured temperatures in signal form to said control unit for comparing said measured temperatures to said temperatures two phase-change points on said pre-programmed temperature curve for the kind of food product being cooked; maintaining the activation of the heating element if the measured temperature is not equal to at least one of the phase-change point temperatures;

opening said ventilator when said measured air temperature of the air which has passed over said food product is equal to said predetermined second phase-change point temperature, whereby said control unit ends said cooking process by deactivating said fan and heating elements.

5,780,819

HEATER FOR SHAVING CREAM CONTAINERS WITH DOME-SHAPED SUPPORT AND HEATING SURFACE

Marvin Fabrikant, and Patricia Fabrikant, both of 5149 Tilden St., NW., Washington, D.C. 20016

Continuation of Ser. No. 499,575, Jul. 7, 1995, abandoned.

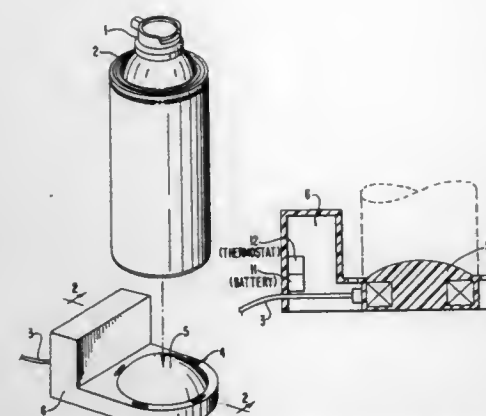
This application Jan. 3, 1997, Ser. No. 774,717

Int. Cl.⁶ H05B 1/00; B67D 5/62

U.S. Cl. 219—535

15 Claims

1. A device for heating shaving cream comprising:
(a) a base having a top surface;



(b) a substantially dome-shaped heating element disposed on the top surface of said base; and

(c) a shaving cream container containing shaving cream having a non-detachable inverted dome-shaped bottom which contacts substantially all of the substantially dome-shaped heating element to directly pass heat across substantially all of said inverted dome-shaped bottom.

5,780,820

FILM-LIKE HEATER MADE OF HIGH CRYSTALLINE GRAPHITE FILM

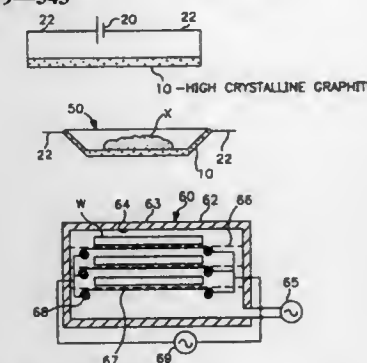
Daido Komyoji, Ikoma; Takao Inoue, Hirakata; Naomi Nishiki, Kyoto, and Junji Ikeda, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 7, 1996, Ser. No. 612,176

Claims priority, application Japan, Mar. 8, 1995, 7-048443

Int. Cl.⁶ H05B 3/20

U.S. Cl. 219—543

14 Claims



1. A film heater which comprises:

(a) at least one thin face heating element made of a crystalline graphite film, having a thickness of 5 to 200 μm in which graphite crystals are oriented in a direction extending parallel to the film surface, having in said direction a thermal conductivity substantially unchanged in greater or lesser degrees of the film thickness and a flexibility, based on the orientation of the graphite crystals of less than 20° with respect to Rocking characteristic, and

(b) a current supply coupled to said heating element.

5,780,821

METHOD OF CONTROLLING FOOD THAWING AND COOKING OPERATIONS OF A MICROWAVE OVEN

Won-Woo Choi, and Seok-Weon Hong, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

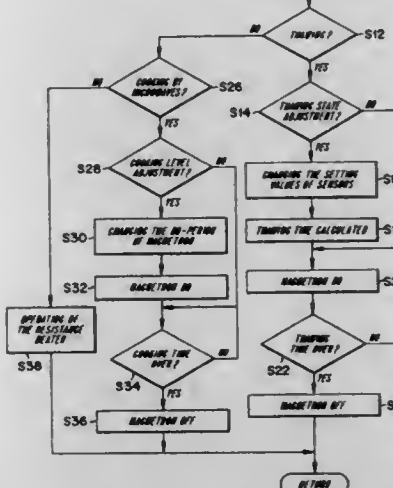
Filed Feb. 21, 1997, Ser. No. 803,130

Claims priority, application Rep. of Korea, Feb. 23, 1996, 1996-4366

Int. Cl.⁶ H05B 6/68

U.S. Cl. 219—703

7 Claims



1. A method of automatically controlling a food-thawing operation of a microwave oven, the oven including a cooking chamber, a magnetron, and manual input means for selecting among various food-thawing states; the method comprising the steps of:

A) automatically determining whether a thawing mode has been selected by a user;

B) automatically determining whether a food-thawing state has been selected by the user from among a plurality of keys directed to respective thawing states comprised of a standard thawing state and non-standard thawing states, when a thawing mode has been selected in step A;

C) automatically setting a standard thawing parameter for achieving a standard food-thawing state when a standard food-thawing state is selected in step B;

D) automatically determining and setting a variation in the standard thawing parameter for achieving one of the non-standard food-thawing states if a non-standard food-thawing state is selected in step B; and

E) automatically energizing the magnetron to perform a food-thawing operation until the thawing parameter for achieving the food thawing state selected in step B is reached.

5,780,822

APPARATUS AND METHOD FOR COOLING THERMOPILE OF MICROWAVE OVEN

Geun Hyoung Lee, Kyungnam-do, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed May 20, 1996, Ser. No. 650,805

Claims priority, application Rep. of Korea, Nov. 28, 1994, 1994 31532

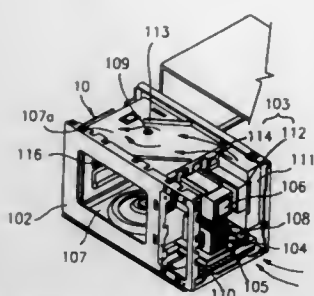
Int. Cl.⁶ H05B 6/68

U.S. Cl. 219—710

7 Claims

1. An apparatus for cooling a thermopile provided at an upper surface of a heating chamber of a microwave oven, the apparatus comprising:

a cooling fan provided at a bottom portion of an electrical component mounting compartment in the microwave oven for supplying cooling air into the microwave oven;



an air duct in communication with the heating chamber and the electrical component mounting compartment, the air duct provided above the cooling fan, for selectively guiding outside air drawn in by the cooling fan through a suction inlet to an inside of the electrical component mounting compartment, or to an upper portion of the heating chamber; and a cooling air flow guide provided on the upper portion of the air duct, for guiding cooling air to the upper portion of the heating chamber toward the thermopile for maintaining a temperature of the thermopile at a predetermined level; and a thermostat provided at the cooling air flow guide for sensing a temperature around the thermopile.

5,780,823

COOKING METHOD USING A MICROWAVE OVEN
Hiroyuki Uehashi, Koka-gun, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

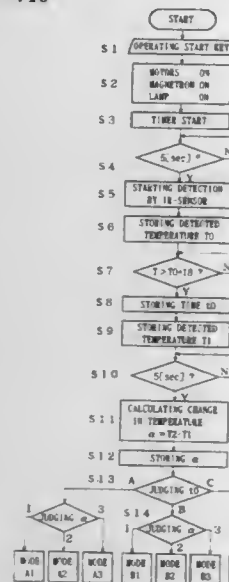
Filed Feb. 24, 1997, Ser. No. 804,539

Claims priority, application Japan, Feb. 29, 1996, 8-071506

Int. Cl.⁶ H05B 6/68

U.S. Cl. 219—710

14 Claims



1. A cooking method using a microwave oven having means for heating by microwave an object contained in a container with a lid and means for detecting a temperature at a top of the lid of the container, the cooking method comprising the steps of:

calculating a first parameter representing a degree of rise in the temperature detected by the temperature detecting means in an initial phase of a heating of the object;
calculating a second parameter representing a degree of rise in the temperature detected by the temperature detecting means after calculating the first parameter; and controlling the heating means based on the first and second parameters.

5,780,824 EXPANDABLE AND SELF-VENTING NOVELTY CONTAINER FOR COOKING MICROWAVABLE POPCORN

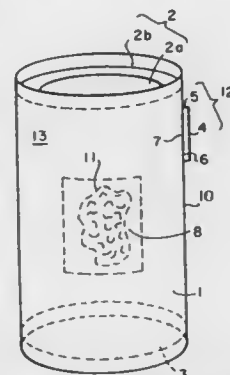
Jose R. Matos, Plano, Tex., assignor to Lulirama International, Inc., Dallas, Tex.

Filed Feb. 7, 1997, Ser. No. 796,980

Int. Cl.⁶ H05B 6/80; B65D 81/34

U.S. Cl. 219—727

6 Claims



1. A sealed, self-venting, expandable container for cooking a microwavable food in a microwave oven comprising:

an expandable casing consisting of a substantially microwave transparent, grease resistant, inner flexible panel and an outer flexible paper ply surrounding and affixed to said flexible panel;

a pull-tab lid, having an arcuate outer periphery, attached to said casing, said lid and casing together defining a sealed inner cavity;

an edge defining a vent-hole in a removable portion of said pull-tab lid;

a vent-hole cover comprising a sheet base and an adhesive interposed said sheet base and said edge defining a vent-hole, said vent-hole cover completely covering the vent hole;

a steam generating microwavable food charge disposed within said inner cavity, said microwavable food charge comprising corn kernels which expand to form popcorn when exposed to microwaves;

said casing expanding when said food charge is exposed to microwaves in a microwave oven;

said container being shaped as a cylinder, can, animal, person, building, caricature, vehicle or weapon,

said vent-hole cover automatically venting said inner cavity upon sufficient steam generation by said food charge; and

said pull-tab lid having a removable portion to permit access to said inner cavity.

5,780,825

AUTOMATIC TELLER MACHINE INCLUDING A HALT REQUESTING MECHANISM IN A DURSS PERIOD

Ryoko Sato, Ibaraki-ken; Masao Okayama, Ryugasaki; Yoshio Fukudome, and Masuo Furutono, both of Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1996, Ser. No. 753,760

Claims priority, application Japan, Nov. 29, 1995, 7-310232

Int. Cl.⁶ G06F 17/60

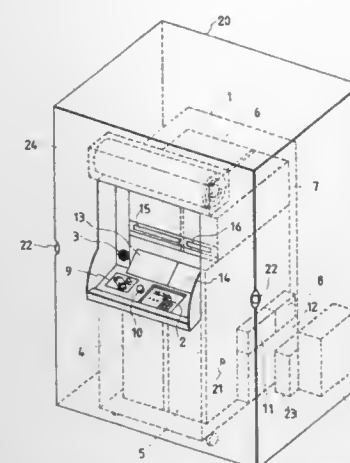
U.S. Cl. 235—379

15 Claims

1. An automatic teller machine comprising:

transaction medium handling means for handling transaction media; and

halt requesting means for requesting suspension of processing of the transaction media;



wherein the transaction medium handling means is responsive to the halt requesting means for suspending release of the transaction media.

5,780,826

CONTAINER HANDLING APPARATUS AND MANAGEMENT SYSTEM

Soichi Hareyama, Abiko; Takao Serizawa; Hideki Hamada, both of Ushiku, and Takayuki Ban, Ryugasaki, all of Japan, assignors to Toyo Umpanki Co., Ltd., Osaka, Japan

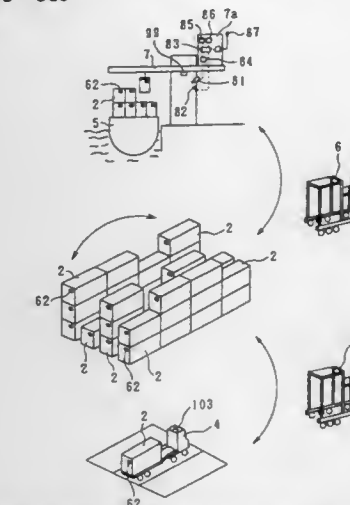
PCT No. PCT/JP95/00598, § 371 Date Dec. 16, 1996, § 102(e) Date Dec. 16, 1996, PCT Pub. No. WO96/30288, PCT Pub. Date Oct. 3, 1996

PCT Filed Mar. 27, 1995, Ser. No. 750,474

Int. Cl.⁶ G06F 17/60; G06K 7/10; E04H 6/00; G01S 3/02

U.S. Cl. 235—385

19 Claims



1. A self-propelled container handling apparatus for handling a container in a container yard, comprising:

means for reading a container identification code borne on the container;

a lift capable of vertically shifting the container so that the container can be stacked;

a horizontal position sensing means for sensing a horizontal two-dimensional position of the container, on the basis of sensing of a position of the container handling apparatus itself by signals from artificial satellites;

a vertical position sensing means for sensing a vertical position of the container, on the basis of sensing of a vertical shifting distance of the container vertically shifted by the lift;

means for assessing the position sensing precision of the horizontal position sensing means; and

a second horizontal position sensing means for sensing the horizontal two-dimensional position of the container, on the

basis of sensing of the position of the container handling apparatus itself; wherein

this self-propelled container handling apparatus can sense the stocking position of the container to be carried at the container yard and read the identification code of the container at the stocking position in the container yard; wherein

the position of the container handling apparatus itself can be sensed by the second horizontal position sensing means, when the first horizontal position sensing means fails in the position sensing precision; wherein

the second horizontal position sensing means senses the position of the container handling apparatus itself, by using an azimuth sensor and a self-propelling distance sensing apparatus provided in the container handling apparatus itself; wherein

means for assessing the position sensing precision of the second horizontal position sensing means is provided, this means assesses the precision on the basis of whether the position sensing time exceeds a preset time or not; and wherein

the second horizontal position sensing means can sense the position of the container handling apparatus itself, by using a reference position information readable at a known reference position as an initial value, when both the first horizontal position sensing means and the second horizontal position sensing means fail in position sensing precision.

5,780,827

LANDING CONTACT MECHANISM AND CARD LATCH FOR SMART CARD READER/WRITER

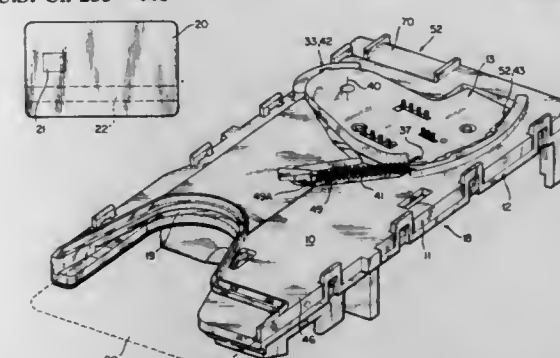
John Zolkos, Fremont, Calif., and Lance S. Nakamura, Pearl City, Hi., assignors to Verifone, Inc., Santa Clara, Calif.

Filed Oct. 16, 1996, Ser. No. 729,366

Int. Cl.⁶ G06K 7/06

U.S. Cl. 235—441

6 Claims



1. In a reader/writer apparatus for a contact-type smart card and having a frame forming a card slot for receiving a smart card,

a landing contact mechanism carried on said frame for making electrical contact with contact pads on said smart card when inserted in said card slot and comprising:

a connector carriage carrying a card contact set thereon facing said card slot;

means mounting said connector carriage to said frame on a pivot axis defined thereon such that said connector carriage rotates generally in a plane parallel to said card slot,

drive means formed on said connector carriage and arranged to contact a leading edge of a smart card inserted in said card slot to rotate said connector carriage through a prearranged angle as said card moves to a predetermined read position within said card slot,

cooperative screw thread means being formed on said connector carriage and said frame for moving said connector carriage a predetermined distance into said card slot as the connector carriage rotates through said prearranged angle to thereby bring said connector carriage to a read position with said card contact set in contact with said smart card.

5,780,828

INTERACTIVE VIDEO SYSTEMS

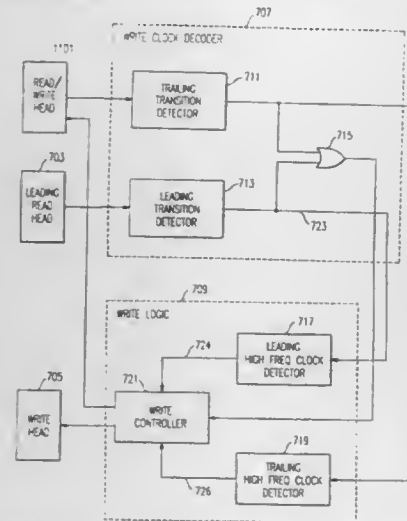
Robert Mos, and Clay Von Mueller, both of San Diego, Calif., assignors to DH Technology, Inc., San Diego, Calif.

Filed Feb. 15, 1996, Ser. No. 602,247

Int. Cl.⁶ G06K 7/08; 7/00; G11B 5/127

U.S. Cl. 235—449

16 Claims



1. An apparatus for reading and writing data on a magnetic medium, comprising:

- (a) a first read head having an output;
 - (b) a second read head having an output, spaced an odd integer multiple of one half a bit cell from first read head;
 - (c) a write head, spaced a known distance from the second read head;
 - (d) a write clock decoder having an output, and a first and second input, the first input being coupled to the first read head and the second input being coupled to the second read head, the write clock decoder comprising:
 - (1) a first transition detector having an input and an output, the input being coupled to the first read head;
 - (2) a second transition detector having an input and an output, the input being coupled to the second read head; and
 - (3) a logical OR-gate having an output, and a first and second input, the first input being coupled to the output of the first transition detector, and the second input being coupled to the output of the second transition detector; and
 - (e) write logic coupled to the write head and the output of the write clock decoder;
- whereby the output from the write clock decoder synchronizes write operations controlled by the write logic and performed by the write head.

5,780,829

FLAT-PLATE SCANNER HAVING A BEAM-SPLITTING PRISM/MIRROR AND TWO LIGHT EMITTING SOURCES

Jenn-Tsair Tsai, Tao-Yung, and Si-Min Chen, Hsin-Chu, both of Taiwan, assignors to Mustek Systems Inc., Hsin-Chu, Taiwan

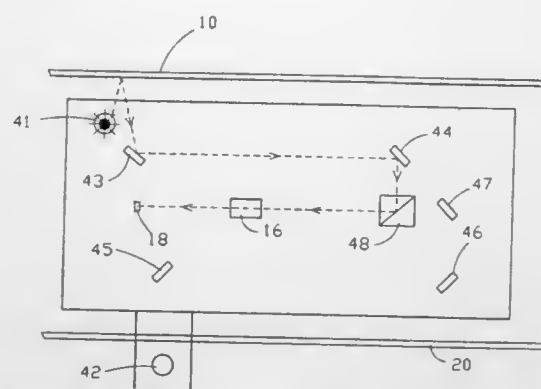
Filed Jan. 31, 1997, Ser. No. 792,216

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—454

4 Claims

- 1. A flat-plate scanner with two lamps comprising:
 - a first light source for use while scanning reflective image;
 - a second light source for use while scanning transparent image, which is disposed in a the same carriage space as said first light source;
 - a beam-splitting mean by which incident light is reflected partially and transmitted partially;
 - a first reflecting mirror set which guides a reflected image of said reflective image to said beam-splitting mean;



a second reflecting mirror set which guides a transmitted image of said transparent image to said beam-splitting mean;

a focusing element for focusing the incident light from said beam-splitting mean; and

an image-capturing element for capturing the incident light from said focusing element.

5,780,830

METHOD AND SYSTEM FOR DECODING DISTORTED IMAGE AND SYMBOLOGY DATA

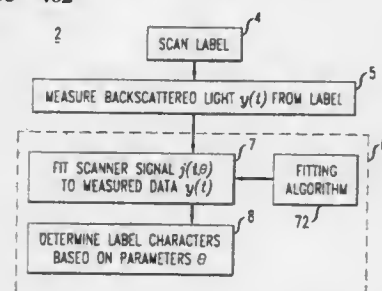
Robert Albert Boie, Westfield, and William Turin, East Brunswick, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 24, 1996, Ser. No. 687,124

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—462

19 Claims



11. A method for reading bar code labels, said bar code labels having symbology information encoded therein, said method comprising the steps of:

- projecting a source of light across said bar code label;
- photodetecting light backscattered from said bar code label, said backscattered light having a time-varying intensity corresponding to said bar code label;
- converting said backscattered light into a corresponding time-varying measured data signal $y(t)$;
- fitting a scanned signal model $j(t, \theta)$ having a plurality of parameters θ to said measured data signal $y(t)$ by adjusting the values of at least one of said parameters θ , said fitting step determining the values of at least one of said plurality of parameters θ using a DEM algorithm, said scanned signal model $j(t, \theta)$ capable of having a nonlinear relationship to said plurality of parameters θ ; and
- determining, based on said scanned signal model $j(t, \theta)$ and the values of said plurality of parameters θ therein, said symbology information encoded in said bar code label.

5,780,831

ONE-DIMENSIONAL AND TWO-DIMENSIONAL DATA SYMBOL READER

Shuzo Seo; Nobuhiro Tani; Takeharu Shin; Makoto Nukui, and Yukihiro Ishizuka, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

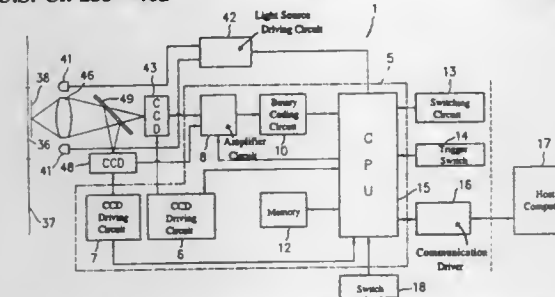
Filed Jul. 3, 1996, Ser. No. 674,835

Claims priority, application Japan, Jul. 12, 1995, 7-199054; Jul. 14, 1995, 7-201564

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—462

14 Claims



1. A data symbol reader for reading a one-dimensional data symbol and a two-dimensional data symbol, comprising:

- a first image pickup device having a light receiving surface to receive light reflected from said one-dimensional data symbol;
- a second image pickup device having a light receiving surface to receive light reflected from said two-dimensional data symbol;
- an optical system to respectively converge images of said one-dimensional data symbol onto said light receiving surface of said first image pickup device and of said two-dimensional data symbol onto said light receiving surface of said second image pickup device; and
- signal processing means for decoding said one-dimensional data symbol and said two-dimensional data symbol according to outputs of said first image pickup device and said second image pickup device wherein said optical system comprises:
 - a first converging optical system to converge one of said image of said one-dimensional data symbol and said image of said two-dimensional data symbol onto said light receiving surface of said first image pickup device, and to set a magnification of said image converged onto said first image pickup image; and
 - a second converging optical system to converge one of said image of said one-dimensional data symbol and said image of said two-dimensional data symbol onto said light receiving surface of said second image pickup device, and to set a magnification of said image converged onto said second image pickup device, a part of an optical path of said first converging optical system being commonly used as a part of an optical path of said second converging optical system.

5,780,832

BAR CODE READING APPARATUS

Mitsuo Watanabe, and Ichiro Shinoda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 5, 1996, Ser. No. 677,373

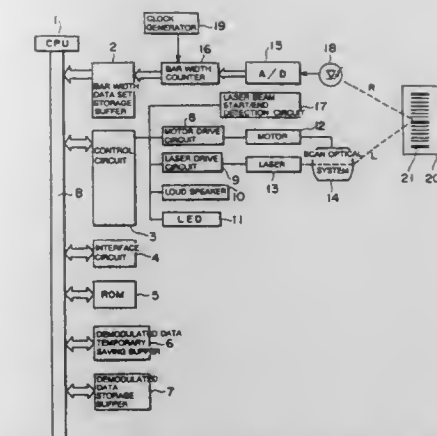
Claims priority, application Japan, Dec. 5, 1995, 7-316648

Int. Cl.⁶ G06F 7/10

U.S. Cl. 235—462

13 Claims

- 1. A bar code reading apparatus comprising:
 - scanning means for scanning a surface repeatedly to detect bright/dark patterns along scan trajectories on the surface;
 - start-of-scan detecting means for detecting a start of each scan performed by said scanning means;
 - end-of-scan detecting means for detecting an end of each scan performed by said scanning means;
 - demodulating means for demodulating each bright/dark pattern that is detected by said scanning means during a period from



a timing when said start-of-scan detecting means detects the start of each scan to a timing when said end-of-scan detecting means detects the end of each scan to output a series of demodulated data;

effective data extracting means for extracting, as effective data, only a portion having a possibility of corresponding to a bar code from a series of demodulated data that is outputted by said demodulating means; and

synthesizing means for synthesizing plural pieces of the effective data for a plurality of scan that are extracted by said effective data extracting means to reproduce data encoded in the bar code.

5,780,833

Patent Not Issued For This Number

5,780,834

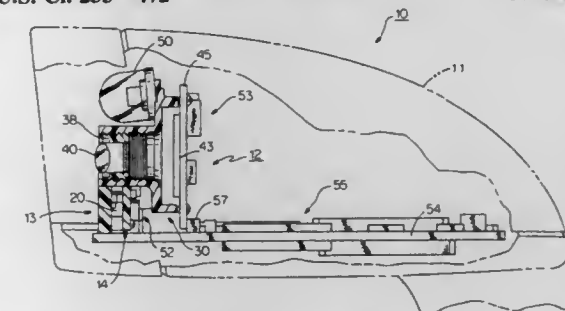
IMAGING AND ILLUMINATION OPTICS ASSEMBLY
William H. Havens; Charles M. Hammond, Jr., both of Skaneateles; Robert J. Hennick, Auburn; Robert C. Hinkley, Skaneateles; Robert J. Wood, Sr., Syracuse; Tanya A. Onori, Auburn, and Thomas W. Karpen, Skaneateles, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Continuation-in-part of Ser. No. 805,739, Feb. 25, 1997, which is a continuation of Ser. No. 441,037, May 15, 1995, abandoned. This application May 14, 1996, Ser. No. 649,126

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—472

17 Claims



1. A low profile optical unit for use in an optical reader which has illumination and optical axes that are generally parallel to one another, and which is adapted to illuminate and read target indicia that are disposed in target regions that are oriented roughly perpendicular to said axes including, in combination:

- a plurality of low profile LEDs for emitting light;
- a light redirecting panel having a front face and a back face and having a plurality of contoured openings passing there-through, said contoured openings having light reflecting surfaces for receiving light emitted by respective LEDs and directing said light toward said target region;

an LED board mounted in parallel alignment with said panel behind the back face of said panel for supporting said LEDs in proximity to respective ones of said openings;

an imager housing including a recessed chamber that opens through the back of said housing and a hollow lens barrel extending forward of said recessed chamber through coaxially aligned holes in said panel and said LED board;

an imager board mounted in parallel alignment with said panel and said LED Board and having a solid state two dimensional (2D) imager mounted on the front face thereof, said imager board being secured to said housing with said 2D imager positioned in said recessed chamber; and

a lens assembly disposed in said lens barrel for focusing an illuminated image of said target region upon said 2D imager; wherein said light redirecting panel, said LED board, and said imager board are all oriented generally perpendicular to said axes, and are located in such proximity to one another that the dimensions of said optical unit in directions parallel to said axes are small in relation to the dimensions of said unit in directions perpendicular to said axes.

5,780,835

Patent Not Issued For This Number

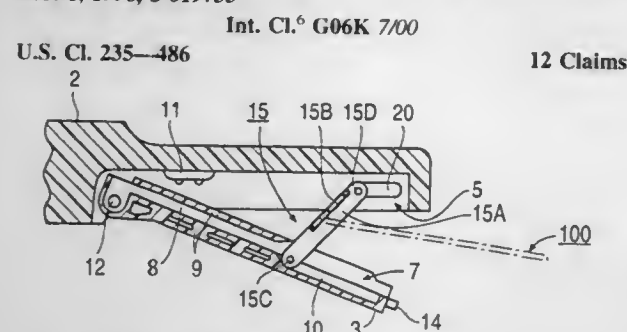
5,780,836

IC CARD FOR PORTABLE TYPE ELECTRONIC APPARATUS AND CARD INSERTION METHOD

Shinichi Iguchi, and Yoshihito Hirata, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1996, Ser. No. 731,583

Claims priority, application Japan, Oct. 16, 1995, 7-266619; Feb. 6, 1996, 8-019755



1. A portable electronic apparatus, comprising:

a flat apparatus body having input keys, a display and an apparatus side contact,

a card holder having one end freely rotatably attached to a rear surface of the apparatus body via axles, and having guide channels for guiding an IC card to a specified position, whereby a connection contact of the IC card comes into contact with the apparatus side contact, and

a stopper, having a wall pivotally connected at edges thereof to the apparatus body and the card holder, wherein when said card holder is rotated, the wall is pivoted and unfolded between the apparatus body and the card holder.

5,780,837

STANDARD CARD HAVING AN EMBEDDED MINI CHIP CARD

Andres Garcia, Barcelona, Spain, assignor to Giesecke & Devrient GmbH, Munich, Germany

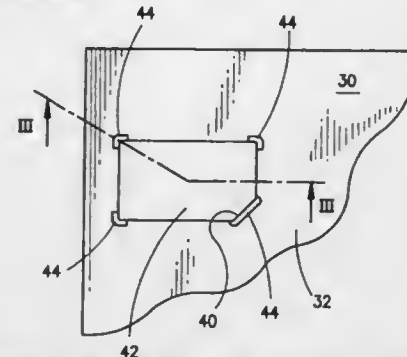
Filed Jun. 14, 1996, Ser. No. 663,730

Claims priority, application Germany, Jun. 14, 1995, 295 09 736.1

Int. Cl.⁶ G06K 19/06

U.S. Cl. 235—492

20 Claims



1. A standard card having a main body and a mini chip card bounded by a peripheral edge embedded in the main body, the mini chip card including an electronic module and being totally separated from the main body in certain areas by slots extending over a small part only of the peripheral edge relative to the total peripheral edge and connected with the main body by connecting areas along the remaining peripheral edge, the connecting areas consisting of largely severed sections of the main body extending along the remaining peripheral edge of the mini chip card.

5,780,838

LASER CROSSBODY TRACKING SYSTEM AND METHOD

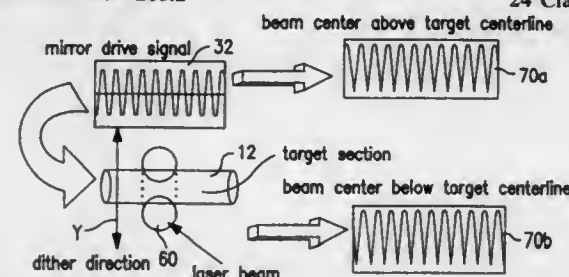
Peter M. Livingston, Palos Verdes Estates, and Alvin D. Schnurr, Los Angeles, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Apr. 2, 1996, Ser. No. 631,645

Int. Cl.⁶ G01S 17/66

U.S. Cl. 250—203.2

24 Claims



1. A tracking system for tracking a moving object with laser energy, said tracking system comprising:

a laser generator for generating a beam of laser energy;

a beam steerer for steering the beam of laser energy; a first dither generator for causing said beam steerer to dither the beam of laser energy in a first direction according to a first frequency;

a second dither generator for causing said beam steerer to dither the beam of laser energy in a second direction according to a second frequency;

a laser energy detector for detecting laser energy reflected from a targeted object;

an image derotator connected between said first and second dither generators and said beam steerer that derotates first and second dither frequency signals output from said first and second dither generators so that the first and second dither frequency signals are parallel and perpendicular, respectively, to a target reference axis; and

means for generating a bias signal to cause the beam steerer to steer the beam of laser energy so as to track the targeted object in response to the detected laser energy.

5,780,839

LASER CROSSBODY AND FEATURE CURVATURE TRACKER

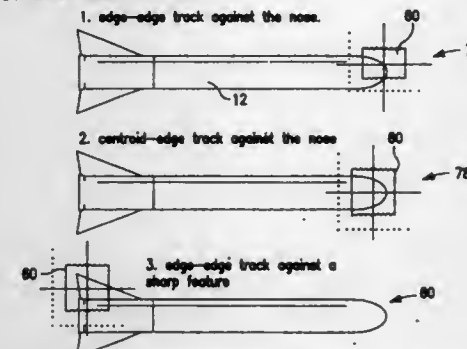
Peter M. Livingston, Palos Verdes Estate, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 631,645, Apr. 2, 1996. This application Dec. 4, 1996, Ser. No. 760,434

Int. Cl.⁶ G01S 17/66

U.S. Cl. 250—203.2

17 Claims



1. A laser tracking system for tracking a target and a feature on the target, said tracking system comprising:

a laser generator for generating a beam of laser energy;

a beam steerer for steering the beam of laser energy and for causing the beam steerer to move the beam of laser energy within a search field;

a laser energy detector for detecting laser energy reflected from a targeted object; and

means for detecting, from the reflected laser energy, a feature of the targeted object having a high compound curvature, said means for detecting also generating a bias signal to cause the beam steerer to steer the beam of laser energy so as to track the feature having the high compound curvature.

5,780,840

CLOSE CONTACT TYPE IMAGE SENSOR HAVING INTEGRALLY MODED REFLECTIVE SURFACES

Young-Jae Lee, Seoul; Seung-Shik Jung, and Dong-Choul Yang, both of Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

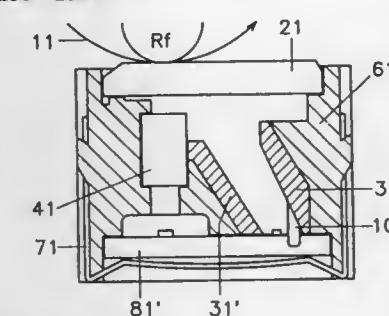
Filed Jul. 9, 1996, Ser. No. 677,817

Claims priority, application Rep. of Korea, Oct. 12, 1995, 1995-35204

Int. Cl.⁶ G01J 1/04

U.S. Cl. 250—208.1

12 Claims



1. An image sensor comprising:

a light source;

a body having a structural portion made of a plastic material and a reflecting piece made of a second plastic material integrally molded with the structural portion, the reflecting piece having

a non-metallic reflective surface aligned to reflect light from the light source through an opening in the body and onto an image surface; and

a light detector for receiving light reflected off the image surface and back through the opening.

5,780,841

DOCUMENT-IMAGE CAMERA MOUNTED ON REVERSIBLE CLAMP

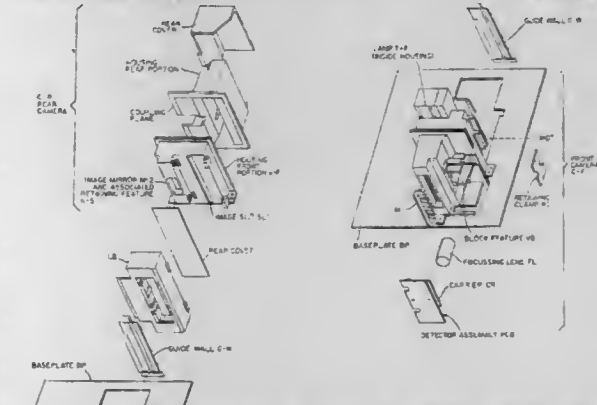
Johan P. Bakker, West Bloomfield; Clive E. Catchpole, Birmingham; David B. Tratar, Dearborn, and John D. Vala, Plymouth, all of Mich., assignors to Unisys Corp., Blue Bell, Pa.

Division of Ser. No. 562,480, Nov. 24, 1995, Pat. No. 5,591,961, which is a division of Ser. No. 304,328, Sep. 12, 1994, Pat. No. 5,471,048, which is a division of Ser. No. 89,818, Jul. 12, 1993, Pat. No. 5,371,356, which is a division of Ser. No. 873,956, Apr. 27, 1992, Pat. No. 5,272,331. This application Jan. 7, 1997, Ser. No. 779,584

Int. Cl.⁶ G01N 9/04

U.S. Cl. 250—208.1

4 Claims



1. In an arrangement for an object-processing system wherein objects are serially, continuously transported past one or more imaging stations, each station having prescribed illumination means which projects illumination-beams to the respective said station to develop an object image at a respective associated imaging-site thereat, so that the so-illuminated object-image is projected along a respective imaging-path including lens means and camera means, to be captured by the associated camera means; wherein said clamp means is made to include reversing-position holder means having a simple, planar mount-face on one side and having protruding rim means on the opposite side thereof for selectably mounting said camera means on either side to thereby automatically position the camera means at one of two associated fixed distances, either closer to, or farther from, said lens means.

5,780,842

ITEM DISPENSING CONTROL SYSTEM FOR USE IN VENDING DEVICES

James D. Murphey, 2438 W. Butler, Phoenix, Ariz. 85021

Continuation of Ser. No. 630,784, Apr. 10, 1996, abandoned.

This application Aug. 11, 1997, Ser. No. 909,295

Int. Cl.⁶ H01J 40/14

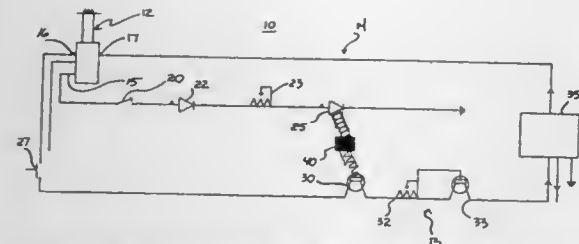
U.S. Cl. 250—222.1

16 Claims

1. A dispensing device comprising:

a light source coupled to a currency collector, supplying a beam of light having a first set of characteristics when currency is inserted in the currency collector;

a light modifying device positioned on an item to be dispensed to receive the beam of light from the light source, the light modifying device receiving the beam of light and transmitting a beam of light having a second set of characteristics wherein



at least one characteristic of the second set differs from a corresponding characteristic of the first set;
a light detector acting as a switch and limited to only sensing light including the second set of characteristics and positioned to receive the beam of light from the light modifying device; and
a dispensing circuit coupled to the light detector for dispensing the item when the circuit is completed by the actuation of the light detector.

5,780,843

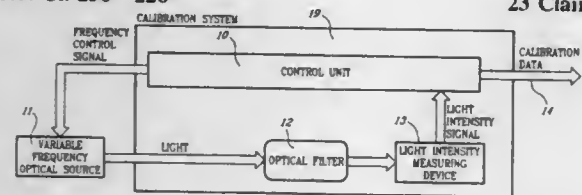
ABSOLUTE OPTICAL FREQUENCY CALIBRATOR FOR A VARIABLE FREQUENCY OPTICAL SOURCE

Jean-François Cliche, Charlesbourg; Michel Têtu, Cap-Rouge, and Christine Latrasse, Dolbeau, all of Canada, assignors to Université Laval, Quebec City, Canada

Filed Jul. 16, 1996, Ser. No. 680,870

Int. Cl.⁶ G01J 3/51

U.S. Cl. 250—226



1. A method of performing the frequency calibration of a variable frequency optical source to operate at a predetermined operating frequency, said source producing light at an optical frequency within a range of frequencies in response to a frequency control signal, comprising the steps of;

- scanning said frequency control signal through a range of values to cause said variable frequency optical source to emit light through at least a part of said range of frequencies;
- passing at least a part of the light generated by said variable frequency optical source through an optical filter means having a plurality of known, unambiguously identifiable frequency dependent transmission features at fixed optical frequencies within said part of said range of frequencies;
- measuring an intensity of the light transmitted through said filter means to determine at least two reference values of said frequency control signal responsible for generating optical frequencies from said source corresponding to said plurality of known transmission features at fixed optical frequencies; and
- determining a calibrated value for said frequency control signal at which said optical source produces light at said predetermined operating frequency by assessing said reference values of said frequency control signal determined in the previous step.

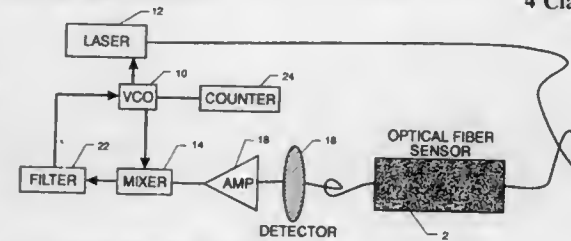
5,780,844
STRAIN INSENSITIVE OPTICAL PHASE LOCKED LOOP
Claudio O. Egalon, Hampton, and Robert S. Rogowski, Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 23, 1996, Ser. No. 644,655

Int. Cl.⁶ G01B 5/30; G02B 6/16

U.S. Cl. 250—227.14

4 Claims



1. A strain sensor comprising:
an optical phase locked loop comprising a strain sensitive arm; the strain sensitive arm of the optical phase locked loop comprising:
a strain sensitive, multimode optical fiber, and
at least one strain insensitive, multimode optical fiber disposed to transmit light passing through said strain sensitive, multimode optical fiber.

5,780,845

OPTICAL CURRENT TRANSFORMER

Hideobu Koide, Kawasaki, and Toshihiko Yoshino, Urayasu, both of Japan, assignors to Toshihiko Yoshino, Chiba, and Fuji Electric Co., Ltd., Kanagawa, both of Japan

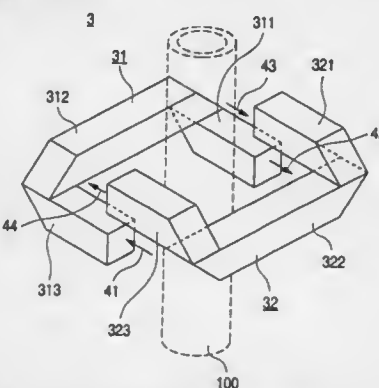
Filed Apr. 23, 1996, Ser. No. 635,155

Claims priority, application Japan, Apr. 25, 1995, 7-099075; Apr. 25, 1996, 8-104891

Int. Cl.⁶ G01R 15/07

U.S. Cl. 250—227.17

23 Claims



1. An optical current transformer comprising:
an optical sensor made up of Faraday effect glass bars, thus forming a rectangular optical path which surrounds a conductor in which a current to be measured flows;
a light emitting unit for emitting a light beam, the light beam being converted into a linearly polarized light beam through a polarizer and being applied to said optical sensor; and
a detector which receives an emergent light beam through an analyzer from said optical sensor, and outputs an electrical signal proportional to the current to be measured, wherein the optical path is divided into parts, said optical sensor including at least two optical sensor units which form the parts of the optical path thus divided, a linearly polarized light beam is applied to each optical sensor unit, and
polarized components proportional to the current which are included in the output light beams of said optical sensor units are subjected to addition, to obtain a measurement signal.

5,780,846
DEVICE IN PEN FORM WITH MEANS FOR MEASURING A LENGTH
Bruno Angilella; Sandro Bocci, and Massimo Gallorini, all of Arezzo, Italy, assignors to A.B.G. S.r.l., Arezzo, Italy
PCT No. PCT/IT94/00076, § 371 Date Apr. 1, 1996, § 102(e) Date Apr. 1, 1996, PCT Pub. No. WO94/29668, PCT Pub. Date Dec. 22, 1994

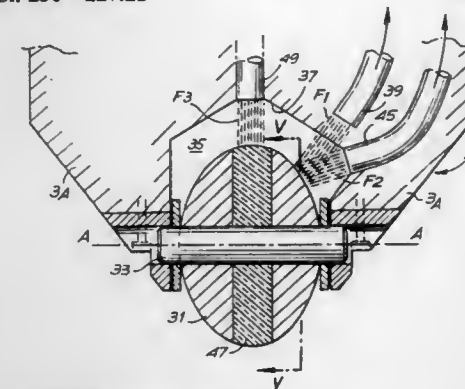
PCT Filed Jun. 1, 1994, Ser. No. 553,674

Claims priority, application Italy, Jun. 3, 1993, FI93A0107

Int. Cl.⁶ G01B 3/12

U.S. Cl. 250—227.21

23 Claims



1. A measuring device comprising:
a measuring head;
a movable body positioned in said measuring head, said movable body being contactable with a length to be measured, motion of said movable body being proportional to the length to be measured, said movable body being a solid of revolution supported rotatably about its axis of symmetry, said movable body being rollable along the length to be measured, said movable body including a central transparent portion;
electromagnetic radiation means for generation of electromagnetic radiation;
a first optical fiber conveying said electromagnetic radiation from said electromagnetic radiation means to said movable body;
a plurality of markings on said movable body, said plurality of markings modulating said electromagnetic radiation from said first optical fiber in relation to motion of said movable body along the length said modulated electromagnetic radiation containing information relating to a rotation of said movable body;
a second optical fiber conveying modulated electromagnetic radiation away from said movable body;
processing means receiving said modulated electromagnetic radiation from said second optical fiber and for determining a measurement of the length from said modulated electromagnetic radiation;
illumination means provided in said measuring head for conveying light radiation to said central transparent portion to illuminate the length to be measured.

5,780,847

VERDET CONSTANT TEMPERATURE-COMPENSATED CURRENT SENSOR

Jay W. Dawson, Round Rock, and Trevor W. MacDougall, Cedar Park, both of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 539,059, Oct. 4, 1995, abandoned.

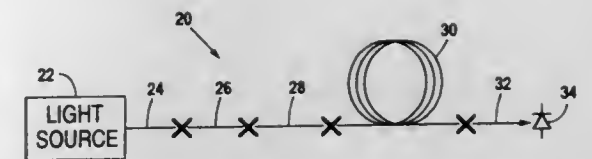
This application Mar. 24, 1997, Ser. No. 822,894

Int. Cl.⁶ G02F 1/05; 1/09; G01R 15/00

U.S. Cl. 250—227.17

20 Claims

1. A device for detecting change in any electrical current flowing through a conductor, the device comprising:
a light source;
a Faraday effect sensing coil having an input, an output, and a temperature-dependent Verdet constant;



first means for coupling said light source to said input of said sensing coil such that a linearly polarized signal may be transmitted to said input;
an optical detector; and
second means for coupling said output of said sensing coil to said optical detector, said second coupling means including means compensating for changes in the sensitivity of said sensing coil caused by temperature-induced variations of said Verdet constant.

5,780,848

SYSTEM AND METHOD FOR INDICATING AN ANGULAR POSITION OF AN OBJECT USING A LEVEL DETECTION DEVICE

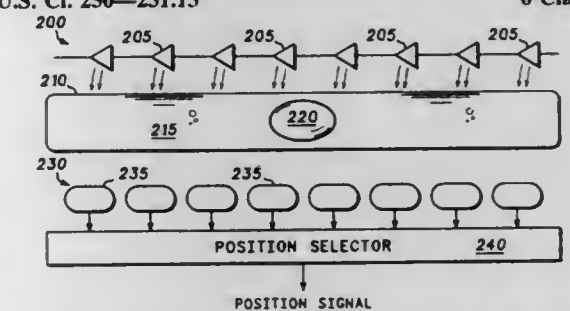
Danny L. Thompson, and Jeanine L. Thompson, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 29, 1996, Ser. No. 757,603

Int. Cl.⁶ G01C 9/24

U.S. Cl. 250—231.13

6 Claims

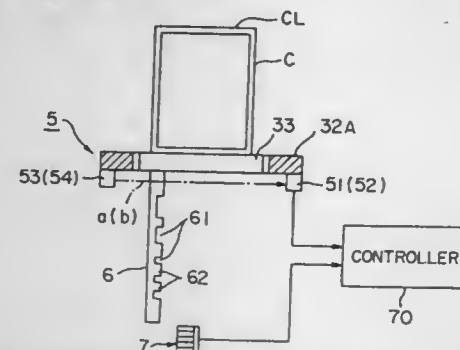


1. A system for controlling an angular position of an object, comprising:
a photoemitter array having one or more photoemitters, each producing radiation;
a level detection device containing a medium and having a movable body within the medium, the movable body occupying a location dependent on a gravitational angle of the object and having a different degree of absorption than the medium, the movable body including a transparent bubble and the medium including an opaque fluid;
a photodetector array having a plurality of photodetectors and positioned such that the level detection device is between the photoemitter array and the photodetector array, each of the plurality of photodetectors detecting an amount of the radiation produced by the photoemitter array, a nearest photodetector to the movable body detecting a different amount of the radiation than other photodetectors of the plurality of photodetectors, and the nearest photodetector detecting a greater amount of the light than other photodetectors in the photodetector array and producing a photodetector signal; and
a position controller, coupled to the photodetector array and to the object, and controlling the angular position of the object based on the photodetector signal received from the photodetector array.

5,780,849

APPARATUS FOR DETECTING OBJECTS TO BE TRANSFERRED FOR USE IN SEMICONDUCTOR DEVICE FABRICATION APPARATUS
 Hisashi Kikuchi, Esashi, Japan, assignor to Tokyo Electron, Ltd., Tokyo-to, Japan
 Continuation of Ser. No. 595,285, Feb. 1, 1996, abandoned.
 This application Nov. 20, 1997, Ser. No. 975,293
 Claims priority, application Japan, Feb. 6, 1995, 7-041233
 Int. Cl.⁶ G01D 5/34
 U.S. Cl. 250—231.13

2 Claims



1. An apparatus for detecting objects that are held in a wafer carrier which is movable up and down by a lifting means, and that are to be transferred to a vertical heat treatment apparatus, the wafer carrier holding the objects-to-be-transferred on respective wafer holding grooves having an equal vertical length of 6.35 mm one above another at a vertical interval, said detecting apparatus comprising:

indication means for indicating vertical positions of a wafer carrier disposed on the lifting means, said indication means including optical elements that have optical characteristics which differ from each other, and which are arranged vertically with respect to each other, a combination of light-passing portions and non-light-passing portions, and means defining a lift passage; and

reading means for reading indications by the optical elements of said indication means, said reading means defining optical axes that traverse the lift passage of the indication means, said reading means including five photo-emitting means and five detecting means arranged vertically with an equal vertical length of 6.35 mm, wherein a vertical length of the light-passing portions and non-light-passing portions is an integral multiple of the vertical length of each of the photo-emitting means, whereby said indications of said indication means read by said reading means indicate vertical positions of the wafer carrier in a detection region of said detecting apparatus.

5,780,850

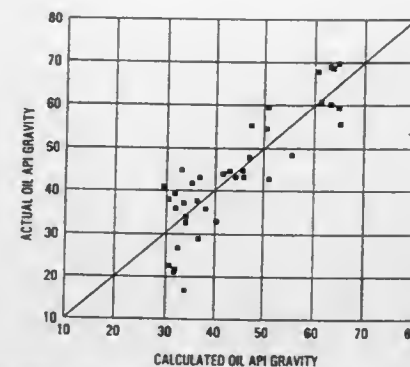
API ESTIMATE USING MULTIPLE FLUORESCENCE MEASUREMENTS
 Patrick Lee DeLaune; Kerry Kennedy Spilker, both of Houston, and Alan Cameron Wright, Bellaire, all of Tex., assignors to Texaco Inc., White Plains, N.Y.
 Filed Jun. 17, 1996, Ser. No. 664,485
 Int. Cl.⁶ G01V 5/00

U.S. Cl. 250—255

12 Claims

1. A method for evaluating in the field the API gravity at wt. % oil of a sample of an underground formation which comprises the steps of:

adding a known volume of an underground formation sample in a known volume of a solvent to form a solvated sample;
 exciting said solvated sample by irradiating with a single fixed excitation wavelength of ultra violet radiation and



quantitatively measuring with a changeable filter portable fluorometer the emission fluorescence of said solvated sample and measuring its emission intensities at two separate wavelengths;
 characterizing the oil by the ratio of said two measured emission intensities;
 determining a calculated concentration of sample in the underground formation;
 applying regression analysis to a data base of concentration of formation oils to obtain an equation which results in a calculated value of API gravity of said sample; and
 determining from said calculated value of API gravity of said sample an estimate of API gravity and wt. % of in situ oil in the earth formation from which said sample is obtained.

5,780,851

METHOD OF FORMING A DIAMOND ON THE POINTED TIP

Jeong-Sook Ha, Daejeon; Wan-Soo Yun, Kyunggi-Do, and Kang-Ho Park, Daejeon, all of Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

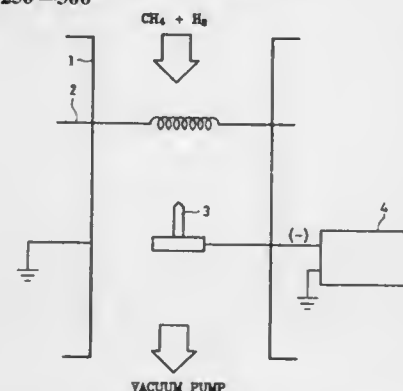
Filed Jul. 31, 1997, Ser. No. 903,796

Claims priority, application Rep. of Korea, Nov. 12, 1996, 95-53536

U.S. Cl. 250—306

Int. Cl.⁶ H01J 37/26

5 Claims



1. A method for forming a diamond on a topmost part of a pointed tip by a chemical vapor deposition (CVD) system, comprising the steps of:

forming a reactant species by decomposing of reactant gas including methane and hydrogen; and
 inducting and impacting a positive ions of said decomposed reactant species toward said topmost part of a pointed tip by applying a negative voltage.

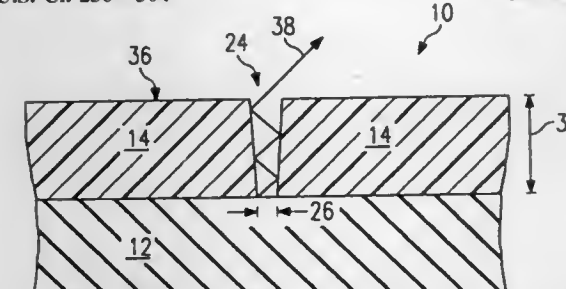
5,780,852

DIMENSION MEASUREMENT OF A SEMICONDUCTOR DEVICE
 Jing-Shing Shu, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 26, 1997, Ser. No. 824,856
 Int. Cl.⁶ G01N 1/32; 23/225

U.S. Cl. 250—304

20 Claims



1. A method for measuring a dimension of a feature formed in a photoresist having a photoresist thickness, comprising:
 forming a filler in the feature;
 removing portions of the filler and the photoresist to reduce the photoresist thickness;
 removing the filler in the feature; and
 measuring the dimension of the feature.

5,780,853

SCANNING ELECTRON MICROSCOPE
 Futoshi Mori, Kanagawa-ken; Kazuhiko Fukazawa, Tokyo; Hiroshi Hirose, and Yoshiaki Kohama, both of Kanagawa-ken, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 540,032, Oct. 6, 1995, Pat. No. 5,646,403.

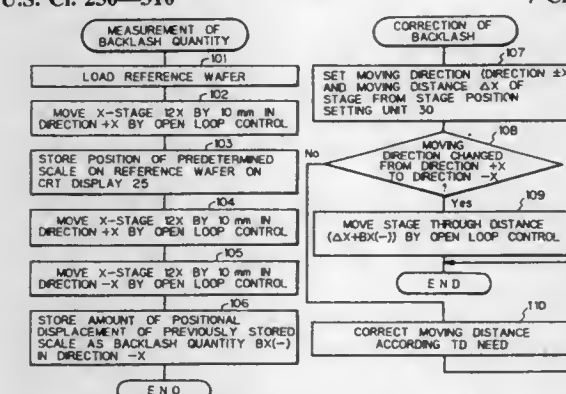
This application Nov. 14, 1996, Ser. No. 749,214

Claims priority, application Japan, Oct. 28, 1994, 6-264792; Oct. 28, 1994, 6-264793; Dec. 21, 1994, 6-318250; Dec. 21, 1994, 6-318251

Int. Cl.⁶ H01J 37/20

U.S. Cl. 250—310

7 Claims



1. A scanning electron microscope in which a surface of a sample is scanned with an electron beam, and an image in a predetermined observation field on said sample is displayed on an image display device by using an image signal obtained by detecting secondary electrons emitted from said sample, said scanning electron microscope comprising:

a feed screw-driven stage for two-dimensionally moving said sample on a plane which is scanned with said electron beam; two pulse motors for rotationally driving two feed screws, respectively, of said stage;
 a micro-step drive controller for driving said two pulse motors by a micro-step drive control method;
 a backlash memory for storing an amount of backlash observed when a moving direction of said stage is reversed; and

a field movement control unit which, when said observation field is to be moved by a predetermined amount on said sample, corrects said predetermined amount of movement on the basis of (1) a moving direction of said stage immediately prior to the present time; (2) a stage moving direction to be taken subsequently; and (3) storage contents of said backlash memory, and which drives said pulse motors through an angle corresponding to the corrected amount of movement through said micro-step drive controller.

5,780,854

STRUCTURE FOR AN INFRARED PHOTOELECTRIC DEVICE

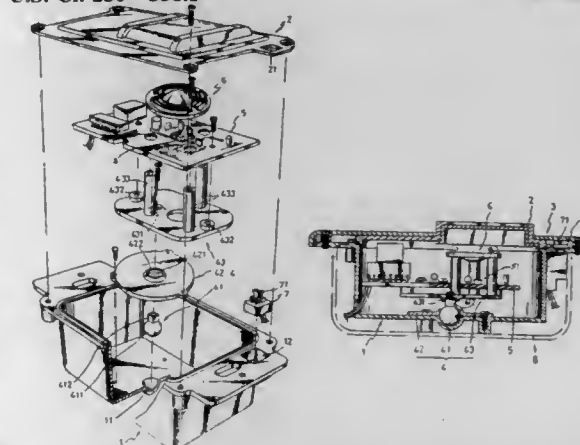
Edward Lin, 1F, 359 Chung-Yang N. Road, Sec. 2, Pei-Tou, Taipei, Taiwan

Continuation-in-part of Ser. No. 583,717, Jan. 5, 1996, abandoned. This application Jun. 6, 1997, Ser. No. 870,620

Int. Cl.⁶ G01J 5/04; 5/08; G08B 13/02

U.S. Cl. 250—338.1

10 Claims



1. A structure for an infrared photoelectric device comprising a casing covered with a face panel, said casing having a half-round recess;

an adjusting frame assembly mounted inside said casing, said adjusting frame assembly includes

a connecting device, said connecting device includes a ball resting in said half-round recess of said casing and a square projecting rod extending from said ball,

a locating plate fixed to the inside of said casing by fastening elements to hold down said ball of said connecting device in said half-round recess of said casing, said locating plate having a center hole passing therethrough in communication with said square projecting rod of said connecting device and a convex portion around said center hole and fitting over said ball,

a rack having a square bottom recess coupled to said square projecting rod of said connecting device,

a plurality of circuit board supports connected to and extending from said rack, and

a plurality of lens mounting posts connected to and extending from said rack;

a circuit board attached to said plurality of circuit board supports, said circuit board having an infrared photoelectric element; and

a lens disposed above said circuit board and attached to said plurality of lens mounting posts.

5,780,855

GAMMA CAMERA WITH AN IMPROVED PATIENT CARRIER BED

Christian Pierre Pare, Plaisir; Quang Trung Nguyen, Paris, and Gérard Mercier, Limours, all of France, assignors to SMV International, Buc Cedex, France

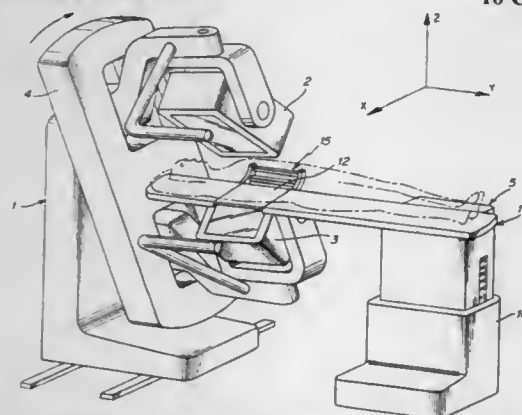
Filed Sep. 4, 1996, Ser. No. 706,458

Claims priority, application France, Sep. 8, 1995, 95 10795

Int. Cl.⁶ A61B 6/04; G01T 1/166

U.S. Cl. 250—363.02

16 Claims



1. A gamma camera equipped with at least two radiation detectors inclined in relation to each other and a patient-carrier bed including a platform which includes a window more transparent to radiation than the rest of the platform, wherein the platform includes two parts defining the window therebetween and connected to each other by a lateral arch, the arch having a curvature with a change of curvature in relation to a curvature of the platform, the change of curvature occurring at a defined distance from an edge of the platform.

5,780,856

RADIATION DETECTOR AND METHOD OF DETECTING RADIATION

Toru Oka; Kazunori Ikegami, and Kiyoshi Yoda, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

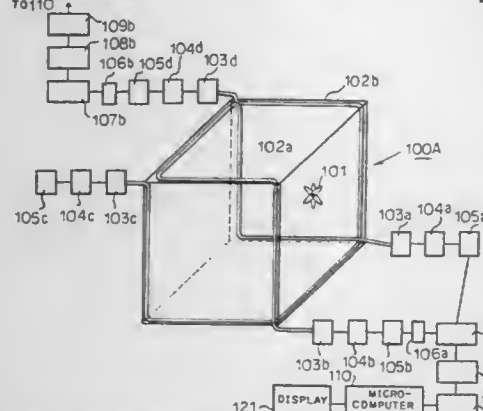
Filed Apr. 18, 1996, Ser. No. 634,677

Claims priority, application Japan, Apr. 27, 1995, 7-104363; Apr. 4, 1996, 8-082844

Int. Cl.⁶ G01T 1/20

U.S. Cl. 250—367

15 Claims



8. A method of detecting radiation, used in a radiation detector including:

- photo detectors to convert into electric pulses light pulses propagated in two directions from scintillation fibers to detect radiation and generate the light pulses;
- radiation analyzers to find an incident position of the radiation and a radiation dose rate at the incident position depending

upon a difference in arrival time between the electric pulses from the photo detectors and the number of electric pulses; and

analyzing means for carrying out inverse problem analysis depending upon the found incident position of radiation and the found radiation dose rate at the incident position, and estimating a radiation source distribution or a spatial radiation intensity distribution.

the method comprising the steps of:

measuring a radiation intensity distribution around an object area divided into a plurality of elements so as to create a pattern vector according to the radiation intensity distribution;

calculating a calculation pattern vector of a radiation intensity distribution which must be measured assuming that a radiation source exists at a center of each of the elements;

determining a position of a radiation source which is assumed when the calculation pattern vector is generated to have a direction proximate to a direction of the pattern vector according to the measured radiation intensity distribution; and

creating a two-dimensional or three-dimensional radiation source distribution in the object area depending upon the determined positions of the radiation sources.

5,780,857

APPARATUS FOR IMAGING BIOCHEMICAL SAMPLES ON SUBSTRATES

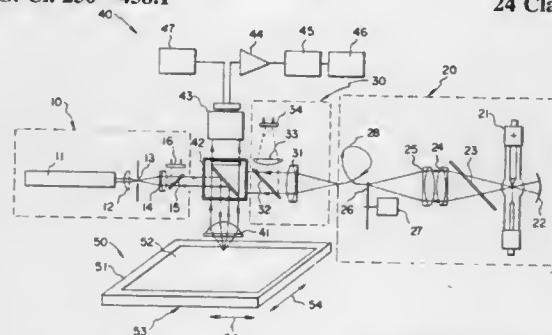
Raimo Harju, Turku, and Mikko Väisälä, Piikkiö, both of Finland, assignors to Wallac Oy, Turku, Finland

Filed Oct. 4, 1996, Ser. No. 726,467

Int. Cl.⁶ G03B 42/00

U.S. Cl. 250—458.1

24 Claims



2. An imaging apparatus of an optical scanner type for measuring biochemical samples on substrates, the apparatus being a multipurpose optical scanner to operate in a measurement mode selected from phosphor image plate reading, fluorescence reading or colored plate sample reading; the apparatus comprising:

a sample support plate supporting a sample,

a measurement head being movable to scan the sample,

a light source being a remote light source equipped with an optical guiding means for guiding light from the light source to the measurement head;

said measurement head having

a detector being connected to detection electronics with a computer interface, and

an objective lens being adapted for focusing stimulating light from the light source on to the sample and for collecting light emitted from the sample into the detector, which emitted light is caused by the stimulating light;

wherein in the imaging apparatus

said measurement head comprises a holder for an interchangeable optical part, the holder having mechanical attachments and optical paths for the interchangeable optical part.

in the holder of said measurement head is placed one interchangeable optical part,

said interchangeable optical part comprising

corresponding mechanical attachments and optical paths for the mechanical attachments and the optical paths of the holder,

a specific combination of optical components to determine the imaging apparatus for operating a specific measurement mode, and

said apparatus having means for storing interchangeable optical parts.

5,780,858

ELECTROMAGNETIC RADIATION IMAGING DEVICE USING DUAL GATE THIN FILM TRANSISTORS

David Waechter, Brampton, and Surendra Singh, Waterloo, both of Canada, assignors to Litton Systems Canada Limited, Ontario, Canada

PCT No. PCT/CA94/00077, § 371 Date Oct. 4, 1996, § 102(e)

Date Oct. 4, 1996, PCT Pub. No. WO95/22176, PCT Pub.

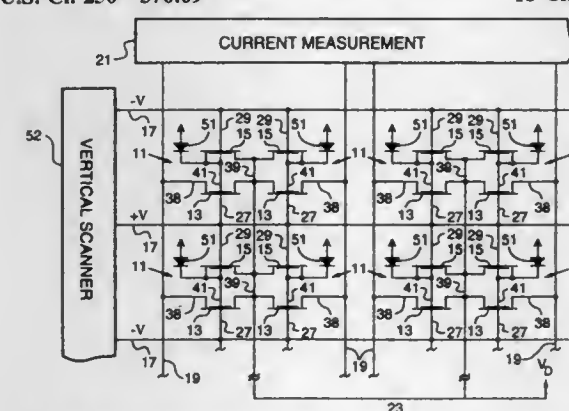
Date Aug. 17, 1995

PCT Filed Feb. 11, 1994, Ser. No. 693,184

Int. Cl.⁶ H01L 27/146; G01T 1/24

U.S. Cl. 250—370.09

13 Claims



1. An electromagnetic radiation imaging device comprising:

a) a substrate;

b) a first plurality of thin film transistors deposited on said substrate, each one of said transistors having a semiconductor channel, a lower gate electrode underlying said semiconductor channel for periodically enabling a respective row of said transistors, an upper gate electrode overlying said semiconductor channel for regulating current flowing through said semiconductor channel when said respective row of said transistors is enabled, a drain electrode and a source electrode, each said drain electrode of said plurality of thin film transistors being interconnected to form an output line, and each said source electrode of said plurality of thin film transistors being interconnected to form a data line;

c) an energy absorbing layer overlying said plurality of thin film transistors for generating charge in response to being exposed to electromagnetic radiation;

d) a top electrode connected to a source of potential, said top electrode overlying said energy absorbing layer such that a potential difference causes said charge to be collected on each upper gate electrode thereby regulating said current flowing through each semiconductor channel in proportion to intensity of said electromagnetic radiation;

e) means connected to each said data line for measuring said current and thereby detecting said intensity of electromagnetic radiation; and

f) a second plurality of thin film transistors adjacent respective ones of said first plurality of thin film transistors and sharing said upper gate electrodes therewith for discharging said charge collected on said upper gate electrodes after said respective ones of said first plurality of thin film transistors has been enabled.

5,780,859

ELECTROSTATIC-MAGNETIC LENS ARRANGEMENT

Hans-Peter Feuerbaum, München; Jürgen Frosien, Riemerling; Koshi Ueda, Munich; Toshimichi Iwai, Munich, and Gerald Schönecker, Munich, all of Germany, assignors to ACT Advanced Circuit Testing Gesellschaft, Munich, Germany

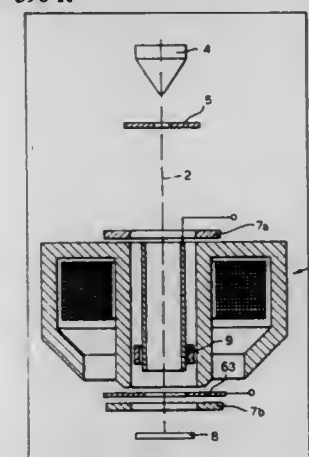
Filed Jan. 29, 1997, Ser. No. 791,091

Claims priority, application Germany, Feb. 16, 1996, 196 05 855.4; European Pat. Off., Jul. 3, 1996, 96110765

Int. Cl.⁶ H01J 49/06

U.S. Cl. 250—396 R

22 Claims



1. Charged particle beam device comprising:

a) a source for generating a charged particle beam,

b) an electrostatic-magnetic lens assembly for focusing the charged particle beam, said lens assembly having a single-pole magnetic lens, an electrostatic lens incorporated into said magnetic lens and a deflector incorporated into said magnetic lens for deflecting the focused charged particle beam, and

c) at least one detector for detecting secondary and/or back-scattered particles emitted from a specimen.

5,780,860

UV WATER DISINFECTOR

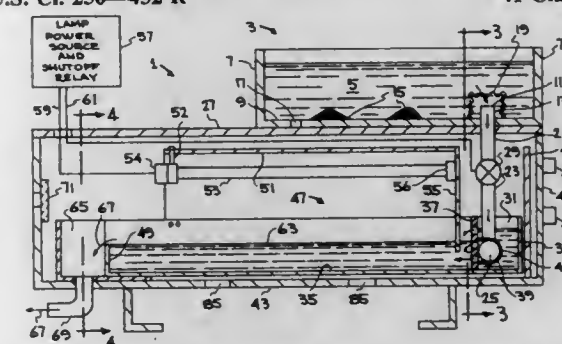
Ashok Gadgil, El Cerrito, Calif., and Vikas Garud, Bombay, India, assignors to The Regents of the University of California, Oakland, Calif.

Filed Aug. 6, 1996, Ser. No. 692,558

Int. Cl.⁶ A61L 2/10

U.S. Cl. 250—432 R

41 Claims



1. A UV disinfector providing a narrow distribution of feed water residence time and UV dose, comprising:

a) a gravity driven feed water delivery system,

b) a baffle wall downstream of the feed water delivery system, the baffle wall having a plurality of spaced perforations,

c) an air-suspended UV lamp,

d) a treatment chamber beneath the UV lamp downstream of the baffle wall, and

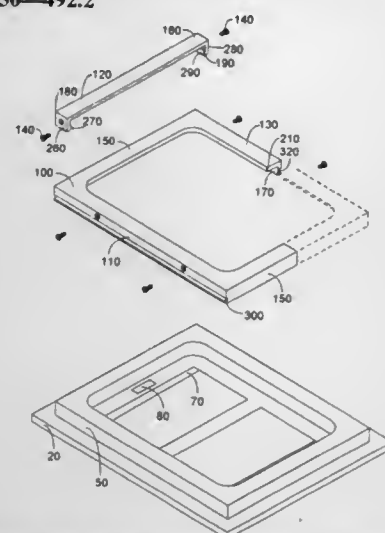
e) an outlet weir at the end of the treatment chamber, the outlet weir defining approximately equal water flow paths through the treatment chamber from each of the perforations.

5,780,861

ADJUSTABLE BLADE RETICLE ASSEMBLY
Eric M. Apelgren, and Darrell A. Harris, both of Austin, Tex.,
assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Nov. 26, 1996, Ser. No. 756,494
Int. Cl.⁶ G21K 5/00

U.S. Cl. 250—492.2

23 Claims



1. An assembly for preventing an undesired reticle feature from printing on semiconductor material, comprising:
 - a reticle having a surface;
 - a pellicle frame attached to the reticle;
 - a pellicle drawn across the pellicle frame, the pellicle being adapted to prevent contaminant particles from contacting the reticle;
 - a frame attachment connected to the pellicle frame, the frame attachment comprising a first section and a second section, the first section and second section each having a top and a side, and wherein at least a portion of the first section is substantially parallel to at least a portion of the second section; and
 - a blade comprising a first end and a second end, the blade being at least substantially opaque to ultraviolet light and extending across the frame attachment such that the first end of the blade is engaged with the frame attachment proximate the first section and the second end of the blade is engaged with the frame attachment proximate the second section, and wherein the blade is adapted to move in a direction substantially parallel to the first section and the second section.

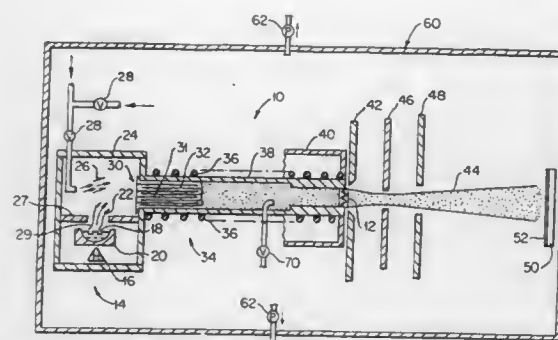
5,780,862

METHOD AND APPARATUS FOR GENERATING IONS
Harold E. Siess, 8629 Welbeck Way, Gaithersburg, Md. 20879
Continuation-in-part of Ser. No. 179,710, Jan. 11, 1994, Pat.
No. 5,420,437, Ser. No. 452,487, May 30, 1995, abandoned,
and Ser. No. 663,543, Jun. 13, 1996, abandoned. This applica-
tion Feb. 12, 1997, Ser. No. 797,954
Int. Cl.⁶ H01J 27/00

U.S. Cl. 250—492.3

30 Claims

1. Apparatus for generating ions, said apparatus comprising container means for containing material to be ionized, vaporizing means for vaporizing said material, a mixing chamber and a passageway connected thereto for transporting said vaporized material from said container and through said mixing chamber, means for introducing reactant means into said mixing chamber and said passageway for creating molecules having a high electron affinity, a surface ion source located downstream of said passage-



way for ionizing said molecules, and means for causing said ionized molecules to emerge from said surface ion source.

5,780,863

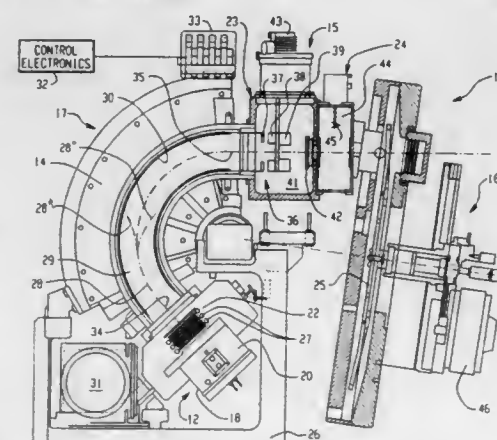
ACCELERATOR-DECELERATOR ELECTROSTATIC LENS FOR VARIABLY FOCUSING AND MASS RESOLVING AN ION BEAM IN AN ION IMPLANTER
Victor M. Benveniste, Gloucester, and Peter L. Kellerman, Essex, both of Mass., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 29, 1997, Ser. No. 841,725

Int. Cl.⁶ H01J 37/10; 37/317

U.S. Cl. 250—492.21

30 Claims



1. An ion implantation system (10) comprising:
 - a terminal (17) for emitting an ion beam;
 - a beamline section (15) for guiding the ion beam emitted by the terminal; and
 - a target station (15) for receiving the ion beam guided by said beamline section, said beamline section (15) including an electrostatic lens (36) for adjustably mass resolving the ion beam in a first plane and for adjustably focusing the ion beam in the first plane and an orthogonal second plane, said lens (36) comprising:
 - (i) a terminal electrode (37) having first and second portions (37A, 37B) with a gap (d37) therebetween through which the ion beam passes;
 - (ii) a resolving electrode (39) having first and second portions (39A, 39B) defining a gap (d39) therebetween through which the ion beam passes; and
 - (iii) a suppression electrode (38), to which a variable voltage may be applied, disposed between said terminal and resolving electrodes and having first and second portions (38A, 38B) defining a gap (d38) therebetween through which the ion beam passes; and
 - (iv) a movement mechanism (60, 62) for imparting simultaneous movement of said first portions of said suppression and resolving electrodes (38A, 39A) toward and away from said second portions of said suppression and resolving electrodes (39B, 39B), respectively.

5,780,864

Patent Not Issued For This Number

5,780,865

APPARATUS FOR DETECTING IMAGES OF PARTICULATES IN LIQUID

Ryosuke Miura, Tokyo-to; Kiyoshi Taguchi, Sapporo, and Kazuyuki Ito, Tokyo-to, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

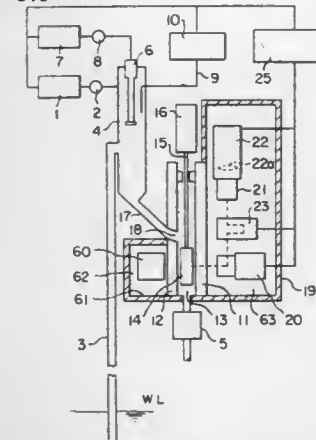
Filed Aug. 9, 1996, Ser. No. 694,783

Claims priority, application Japan, Aug. 11, 1995, 7-205772

Int. Cl.⁶ G01N 15/06

U.S. Cl. 250—573

10 Claims



1. An apparatus for detecting images of particulates in liquid comprising:
 - a sample chamber defined by a pair of opposed glass windows, for holding sample liquid containing particulates;
 - a zoom magnifying glass disposed adjacent to one of the glass windows and having variable magnifications;
 - a camera having a camera lens, disposed adjacent to the zoom magnifying glass, for receiving light from the sample liquid via the zoom magnifying glass and producing image information of the sample liquid;
 - an optical path angle changing means disposed between the sample chamber and the zoom magnifying glass, for changing an optical path of the light from the sample liquid; and
 - image control means for, based on the image information of the sample liquid from the camera, controlling the optical path angle changing means so that an image of a particulate in the sample liquid is shifted to the center of the camera lens, and setting the zoom magnifying glass at a required magnification.

5,780,866

METHOD AND APPARATUS FOR AUTOMATIC FOCUSING AND A METHOD AND APPARATUS FOR THREE DIMENSIONAL PROFILE DETECTION

Hisae Yamamura; Yukio Matsuyama, both of Yokohama; Takanori Ninomiya, Matoi Hiratsuka, and Hideaki Sasazawa, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 17, 1995, Ser. No. 559,946

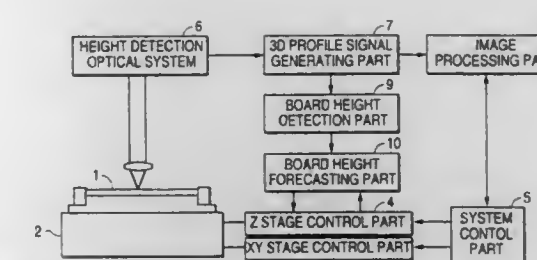
Claims priority, application Japan, Nov. 18, 1994, 6-285165; May 9, 1995, 7-109856

Int. Cl.⁶ G01N 21/84; G01B 11/24

U.S. Cl. 250—559.22

26 Claims

2. An automatic focusing apparatus for a height detection optical system, in which a stage scanning region is set on a part-mounted board supported on a support stage and a three dimensional profile of the part-mounted board is detected by scanning said stage scanning region, comprising: a control means for controlling two dimensional scanning of said support stage to scan said part-



mounted board in a plurality of windows; a board height detection means for detecting and memorizing a board surface height in said plurality of windows, which are set in the stage scanning region controlled by said control means, from a three dimensional profile signal of the part-mounted board detected by said height detection optical system; a board height forecasting means for forecasting the board surface height or inclination in a next window based on said board surface height in a plurality of windows already detected and memorized by said board height detection means; and a stage height control means for controlling speed or height of a Z-stage in a Z direction according to a feedforward method so as that the board surface and a focal plane of said height detection optical system are made to coincide, based on the board surface height or inclination in the next window forecasted by said board height forecasting means.

5,780,867

BROADBAND LIGHT-EMITTING DIODE

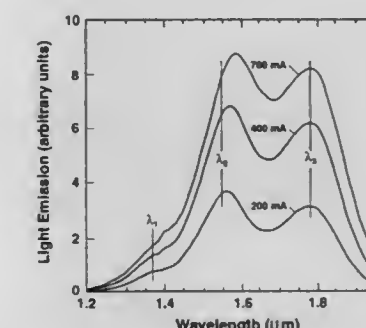
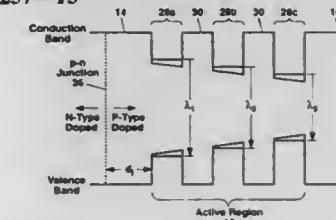
Ian J. Fritz, Albuquerque; John F. Klem, Sandia Park, and Michael J. Hafich, Albuquerque, all of N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Mar. 7, 1996, Ser. No. 612,361

Int. Cl.⁶ H01L 33/00; 29/15

U.S. Cl. 257—13

53 Claims



1. A broadband light-emitting diode (LED) comprising:
 - (a) a plurality of III-V compound-semiconductor layers grown on a substrate, the semiconductor layers including a pair of cladding layers sandwiched about a strained-quantum-well active region having a plurality of different energy bandgaps; and
 - (b) electrodes formed above and below the strained-quantum-well active region for electrically activating the LED and generating light within a wavelength range of about 1.3–2 μm.

5,780,868

Patent Not Issued For This Number

5,780,869

SEMICONDUCTOR INTEGRATED CIRCUIT MEANS COMPRISING CONDUCTIVE PROTEIN ON INSULATING FILM OF CALCIUM PHOSPHATE

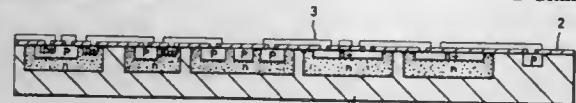
Shuji Sakuma; Kiminori Atsumi, and Tsutomu Ishizaki, all of Tokyo, Japan, assignors to Kabushiki Kaisha Sangi, Tokyo, Japan

Filed Mar. 22, 1995, Ser. No. 408,257

Int. Cl.⁶ H01L 29/45; 29/51

U.S. Cl. 257—40

2 Claims



1. A semiconductor circuit means comprising an electrode of a conductive protein retained on an insulating film of calcium phosphate deposited on a smooth substrate of a silicon monocystal, wherein said conductive protein is cytochrome C.

5,780,870

SEMICONDUCTOR DEVICE AND A PROCESS OF MANUFACTURING THE SAME

Hitoshi Maeda; Yukinori Hirose, and Yuichi Yokoyama, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

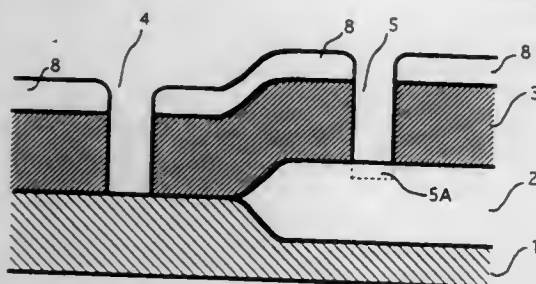
Filed Sep. 30, 1996, Ser. No. 723,366

Claims priority, application Japan, Mar. 28, 1996, 8-073568

Int. Cl.⁶ H01L 23/48; 29/04

U.S. Cl. 257—48

15 Claims



1. A semiconductor device comprising:
a test layer and a target layer, wherein said test layer is formed on a wafer on a first area of the wafer that is different from a second area of the wafer on which the target layer is formed, wherein said target layer is a layer in a semiconductor product and said first area does not provide a semiconductor function in the semiconductor device;
wherein said test layer is formed on a first layer, and on a second layer interposed between a portion of said test layer and a portion of said first layer and in contact with said test layer and said first layer and said first layer are in contact with each other where the second layer is not interposed, wherein the following is true:
said first layer has etching characteristics different from said etching characteristics of said target layer and said second layer has etching characteristics that are the same as said etching characteristics of said target layer;
and wherein said test layer is formed concurrently with said target layer and under identical formation conditions;

wherein said test layer has holes formed by etching respectively through said test layer to said first and second layers, concurrently with formation of a hole in said target layer and under identical hole formation conditions as used in hole formation in said target layer of said semiconductor product;

wherein an etched state of said target layer of said semiconductor product is confirmed by comparing etched states of said holes in said test layer on said first and second layers.

5,780,871

TFT STRUCTURE INCLUDING A PHOT-IMAGEABLE INSULATING LAYER FOR USE WITH LCDs AND IMAGE SENSORS

Willem den Boer; John Z. Z. Zhong, and Tieer Gu, all of Troy, Mich., assignors to OIS Optical Imaging Systems, Inc., Northville, Mich.

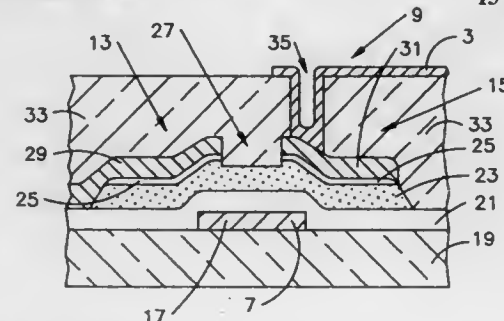
Continuation of Ser. No. 631,455, Apr. 12, 1996, Pat. No. 5,641,974, which is a continuation-in-part of Ser. No. 470,271,

Jun. 6, 1995, Pat. No. 5,689,119. This application Apr. 2, 1997, Ser. No. 832,345

Int. Cl.⁶ H01L 29/04; 31/036; 31/0376; 31/20

U.S. Cl. 257—59

13 Claims



1. A thin film transistor or (TFT) structure comprising:
a first substrate;
an array of conductive electrodes for permitting image data to be forwarded to a viewer;
a plurality of gate lines and TFT gate electrodes formed on said first substrate;
a semiconductor layer formed on said first substrate and disposed over said gate lines and said gate electrodes, said semiconductor layer being patterned so as to remain in an array of TFT areas;
a source electrode and a drain electrode formed on said first substrate over said semiconductor layer in each of said TFT areas, a TFT channel being defined between the corresponding source and drain electrodes in each TFT area thereby forming an array of TFTs on said first substrate;
a plurality of drain lines connected to corresponding ones of said drain electrodes;
wherein a plurality of said conductive electrodes overlap at least one of a gate and a drain line thereby increasing the aperture ratio of the structure;
a substantially transparent photo-imageable insulating layer which is a resist, said photo-imageable resist insulating layer being disposed on said first substrate between (i) said conductive electrodes, and (ii) at least one of said drain and gate lines so as to insulate said electrodes from said lines; and
wherein said substantially transparent resist insulating layer has a dielectric constant of less than about 5.0.

5,780,872

LIQUID CRYSTAL DEVICE, PROJECTION TYPE COLOR DISPLAY DEVICE AND DRIVING CIRCUITToshiyuki Misawa, and Hiroyuki Oshima, both of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Continuation of Ser. No. 439,411, May 11, 1995, Pat. No. 5,648,685, which is a continuation of Ser. No. 402,376, Mar. 13, 1995, Pat. No. 5,583,347, which is a continuation of Ser. No. 142,892, Oct. 25, 1993, abandoned, which is a continuation of Ser. No. 924,695, Jul. 31, 1992, abandoned, which is a division of Ser. No. 351,758, May 15, 1989, Pat. No. 5,250,931.

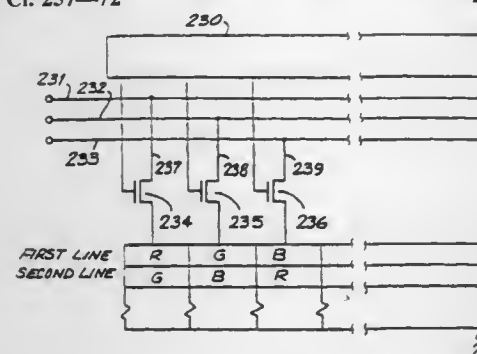
This application Jan. 31, 1997, Ser. No. 792,228

Claims priority, application Japan, May 17, 1988, 119919

Int. Cl.⁶ H01L 29/786; 23/528; 23/535

U.S. Cl. 257—72

23 Claims



1. A liquid crystal device for an electro-optical device comprising:
a picture element matrix including a plurality of source lines and a plurality of picture elements coupled to the plurality of source lines; and

a source line driving circuit coupled to the picture element matrix through the plurality of source lines, the source line driving circuit comprising a plurality of signal buses and a plurality of sample-hold circuits coupled to the plurality of signal buses through a plurality of connecting lines, wherein a distance between one of the signal buses and one of the sample-hold circuits is different from a distance between another one of the signal buses and another one of the sample-hold circuits, and the resistance of the connecting line for connecting the one of the signal buses to the one of the sample-hold circuits is substantially equal to the resistance of the connecting line for connecting the another one of the signal buses to the another one of sample-hold circuits.

5,780,873

SEMICONDUCTOR DEVICE CAPABLE OF EASILY FORMING CAVITY AND ITS MANUFACTURING METHODKazuhiko Itaya, Yokohama; Masahiro Yamamoto, Sagami-hara; Masaaki Onomura; Hidetoshi Fujimoto, both of Kawasaki; Genichi Hatakoshi, Yokohama; Hideto Sugawara, Kawasaki; Masayuki Ishikawa, Yokohama; John Rennie, Tokyo, and Shinji Saito, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 13, 1996, Ser. No. 689,689

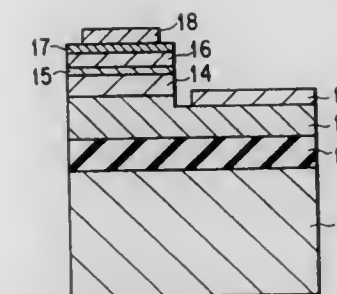
Claims priority, application Japan, Sep. 1, 1995, 7-225381; Feb. 26, 1996, 8-038118

Int. Cl.⁶ H01L 33/00; 29/04; 31/036

U.S. Cl. 257—521

14 Claims

1. A semiconductor device comprising:
a device section having a semiconductor of a hexagonal type; and



a crystal section of a cubic type combined into the device section and to be cleaved.

5,780,874

PROCESS FOR FORMING FLUORINATED RESIN OR AMORPHOUS CARBON LAYER AND DEVICES CONTAINING SAME

Hiroshi Kudo, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 107,167, Aug. 17, 1993, Pat. No. 5,599,654. This application Nov. 4, 1996, Ser. No. 744,072

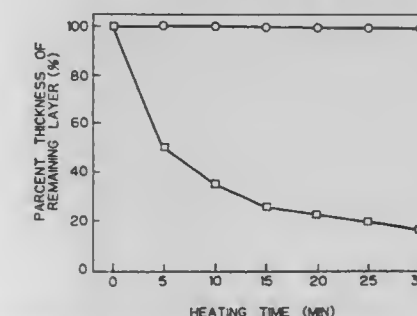
Claims priority, application Japan, Aug. 21, 1992, 4-222893

Int. Cl.⁶ H01L 31/0312

U.S. Cl. 257—77

2 Claims

—○— F₂ GAS TREATMENT
—□— F PLASMA TREATMENT



1. A semiconductor device comprising a semiconductor substrate and a wiring structure provided over the semiconductor substrate, said wiring structure comprising a first insulating layer of a first resin, an electrically conductive layer on the first insulating layer, and a second insulating layer of a second resin on the electrically conductive layer, wherein at least one of said first and second resins is fluorinated in a major portion of the layer except for a thin region adjacent to the bottom thereof.

5,780,875

HYBRID OPTICAL INTEGRATION ASSEMBLY USING OPTICAL PLATFORM

Shinji Tsuji, Hidaka; Ryuta Takahashi, Hitachi; Masato Shishikura, Hachioji; Satoru Kikuchi, Kokubunji, and Satoshi Aoki, Chigasaki, all of Japan, assignors to Hitachi, Ltd.; Hitachi Cable, Ltd., both of Tokyo; Hitachi Tohbu Semiconductor, Ltd., Saitama-ken, and Nippon Telegraph and Telephone Corporation, Tokyo, all of Japan

Filed Aug. 29, 1996, Ser. No. 705,524

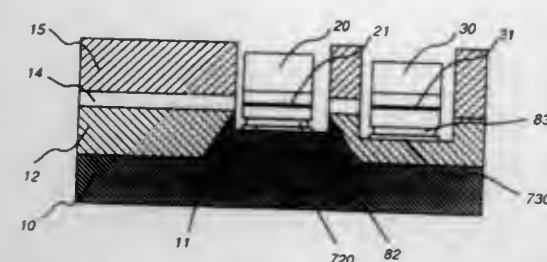
Claims priority, application Japan, Aug. 30, 1995, 7-221433

Int. Cl.⁶ H01L 27/15

U.S. Cl. 257—81

26 Claims

1. An optical assembly, comprising:
a semiconductor substrate;
a semiconductor light emitting element mounted on said semiconductor substrate; and
a semiconductor light receiving element mounted on said semiconductor substrate.



wherein said semiconductor light emitting element is mounted on said semiconductor substrate directly or through a thin film layer,
said semiconductor light receiving element is mounted on said semiconductor substrate through a dielectric layer,
said semiconductor substrate includes an optical waveguide formed thereon, said optical waveguide having said dielectric layer,
wherein a material inserted between said semiconductor light receiving element and said semiconductor substrate has a thickness which is greater than the thickness of a material inserted between said semiconductor light emitting element and said semiconductor substrate, and
said optical waveguide has its optical axis adjusted to the optical axis of said semiconductor light emitting element, and said optical waveguide has its optical axis adjusted to the optical axis of said semiconductor light receiving element.

5,780,876

COMPOUND SEMICONDUCTOR LIGHT EMITTING DEVICE AND MANUFACTURING METHOD THEREOF
Toshio Hata, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

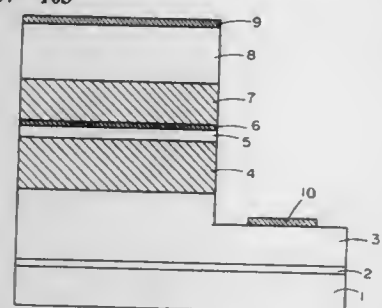
Filed Apr. 22, 1996, Ser. No. 635,648

Claims priority, application Japan, Apr. 24, 1995, 7-098633

Int. Cl.⁶ H01L 29/205; 33/00

U.S. Cl. 257—103

5 Claims



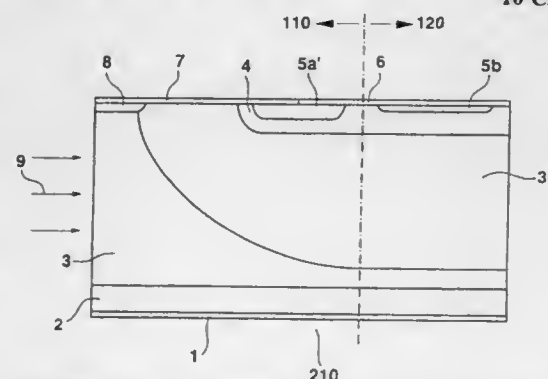
1. A compound semiconductor light emitting device, comprising:
a substrate;
a lower cladding layer formed on said substrate;
an active layer including indium formed on said lower cladding layer;
an evaporation preventing layer formed on said active layer; and
an upper cladding layer formed on said evaporation preventing layer,
wherein said evaporation preventing layer includes $\text{Al}_{0.4}\text{Ga}_{0.6}\text{N}$.

5,780,877
BREAK-OVER PHOTODIODE
Bernd Bireckoven, Kusterdingen; Dirk Hoheisel, and Ning Qu, both of Reutlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Feb. 6, 1997, Ser. No. 795,624
Claims priority, application Germany, Feb. 10, 1996, 196 04 890.7

Int. Cl.⁶ H01L 29/74

U.S. Cl. 257—113

10 Claims



1. A break-over photodiode having an edge zone and a central zone, the break-over photodiode comprising:
an anode metal plating;
a p-region area connected to the anode metal plating;
at least one n-region area following the p-region area;
a p-region gate embedded in the n-region area and having a first gate resistivity area and a second gate resistivity area;
a cathode metal plating;
an edge emitter formed by an adjacent plurality of the at least one n-region area in the edge zone positioned above the first gate resistivity area;
an internal emitter formed by the adjacent plurality of the at least one n-region area in a central zone above the second gate resistivity area, the edge and internal emitters being embedded in the p-region gate, the edge emitter, the internal emitter and the p-region gate being short-circuited using the cathode metal plating;
an edge-gate-cathode resistivity area having a first edge resistivity and provided between the at least one n-region area and the edge emitter, the first edge resistivity determined by a first gate resistivity of the first gate resistivity area; and
a center-gate-cathode resistivity area having a second center resistivity and provided between the n-region area and the internal emitter, the second center resistivity determined by a second gate resistivity of the second gate resistivity area, the first edge resistivity being greater than the second center resistivity;
wherein the break-over photodiode is stackable with a second break-over photodiode by serially connecting the break-over photodiode to the second break-over photodiode for representing a high-voltage break-over diode, and
wherein the break-over photodiode is triggerable using a lateral illumination at the edge zone.

5,780,878

LATERAL GATE, VERTICAL DRIFT REGION TRANSISTOR

Mohit Bhatnagar, and Charles E. Weitzel, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

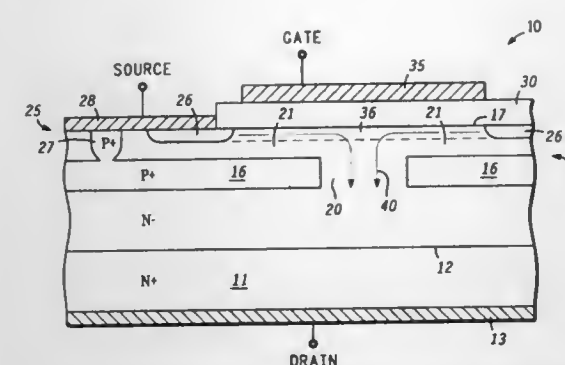
Filed Jul. 29, 1996, Ser. No. 681,684

Int. Cl.⁶ H01L 29/76

U.S. Cl. 257—139

10 Claims

1. A lateral gate, vertical drift region transistor comprising:
a semiconductor substrate having a first surface and an opposite surface with a first current terminal positioned on the opposite surface;



a doped structure having a buried region positioned therein, the doped structure being positioned on the first surface of the substrate and defining a surface parallel with and spaced from the first surface of the substrate, the buried region being positioned in the doped structure so as to define a drift region in the doped structure extending from and generally perpendicular to the first surface of the substrate, the buried region being further positioned in the doped structure so as to define a doped region in communication with the drift region and adjacent the surface of the doped structure, and the substrate and doped structure having a first conductivity and the buried region having an opposite conductivity;
a second current terminal positioned on the doped structure in communication with the doped region;
an insulating layer positioned on the surface of the doped structure overlying the doped region; and
a control terminal positioned on the insulating layer so as to define an accumulation region in the doped region, the accumulation region extending laterally adjacent the control terminal and communicating with the drift region and the second current terminal.

5,780,881

FIELD-EFFECT TRANSISTOR AND METHOD OF MANUFACTURING THE SAME

Kosei Unoza, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

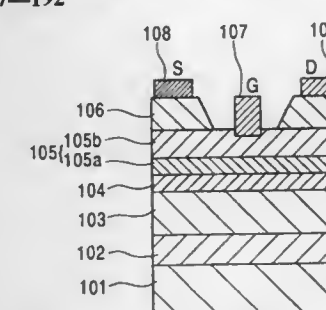
Filed May 30, 1997, Ser. No. 866,267

Claims priority, application Japan, May 30, 1996, 8-136513

Int. Cl.⁶ H01L 31/0328

U.S. Cl. 257—192

8 Claims



1. A field-effect transistor comprising a semi-insulating GaAs substrate, a buffer layer essentially consisting of a high-resistance semiconductor crystal exhibiting lattice matching with GaAs and formed on said semi-insulating GaAs substrate, a first graded layer essentially consisting of an $(\text{Al,Ga})_{1-x}\text{In}_x\text{P}$ semiconductor crystal and formed on said buffer layer such that an In content is gradually increased with distance from said buffer layer, a channel layer essentially consisting of an InGaAs semiconductor crystal and formed on said first graded layer, a second graded layer essentially consisting of an $(\text{Al,Ga})_{1-x}\text{In}_x\text{P}$ semiconductor crystal and formed on said channel layer such that an In content is gradually decreased with distance from said channel layer, a cap layer consisting of GaAs and formed on said second graded layer, source

and drain electrodes formed on said cap layer, and a gate electrode formed between said source and drain electrodes by removing said cap layer, wherein an Al content z of said first and second graded layers falls within a range of 0 to 0.5, and an In content y of said channel layer falls within a range of 0.2 to 0.6.

5,780,880

HIGH INJECTION BIPOLAR TRANSISTOR

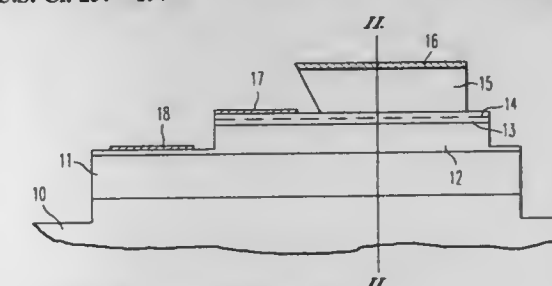
Paul M. Enquist, Cary, N.C., assignor to Research Triangle Institute, Research Triangle Park, N.C.

Filed May 22, 1996, Ser. No. 651,396

Int. Cl.⁶ H01L 31/0328; 31/0336; 31/072; 31/109

U.S. Cl. 257—197

17 Claims



1. A bipolar transistor, comprising:
a collector layer;
an emitter layer; and
a base layer having a region of reduced bandgap energy wherein said region having a reduced bandgap energy is disposed closer to said emitter layer than to said collector layer.

5,780,881

GATE ARRAY DRIVEN BY SOURCE VOLTAGES AND ELECTRONIC EQUIPMENT USING THE SAME

Hiromichi Matsuda, and Masayuki Oshima, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

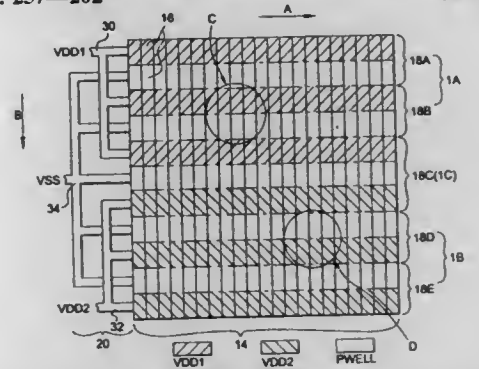
Filed Mar. 27, 1996, Ser. No. 622,369

Claims priority, application Japan, Mar. 30, 1995, 7-074262; Mar. 25, 1996, 8-094823

Int. Cl.⁶ H01L 27/10

U.S. Cl. 257—202

20 Claims



1. A gate array driven by a plurality of source voltages, comprising:
a plurality of basic cell trains, each of which includes a plurality of basic cells arranged in a first direction, said plurality of basic cell trains being arranged in a second direction perpendicular to said first direction;
a first source wiring layer for supplying a first source voltage to a first basic cell train which includes at least one of said basic cell trains and outputs a first data voltage;
a second source wiring layer for supplying a second source voltage different in voltage level from said first source voltage to a second basic cell train which includes at least one of said basic cell trains and outputs a second data voltage;

a voltage level shifter having a third basic cell train which includes at least one of said basic cell trains for shifting the first and the second data voltages outputted from each respective one of said first and second basic cell trains to a level adapted to an operation of the other of said first and second basic cell trains; and

a wiring layer for connecting said first basic cell train with said second basic cell train through said voltage level shifter.

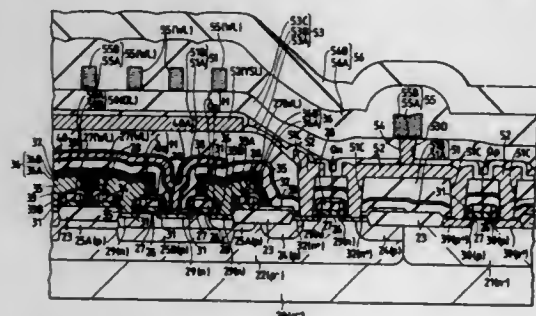
5,780,882

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE, PROCESS FOR FABRICATING THE SAME, AND APPARATUS FOR FABRICATING THE SAME

Jun Sugiura, Musashino; Osamu Tsuchiya, Ohme; Makoto Ogasawara, Ohme; Fumio Ootsuka, Ohme; Kazuyoshi Torii, Kodaira; Isamu Asano; Nobuo Owada, both of Ohme; Mitsuki Horiuchi, Hachioji; Tsuyoshi Tamaru; Hideo Aoki, both of Ohme; Nobuhiro Otsuka, Kokubunji; Seiichirou Shirai, Hamura-machi; Masakazu Sagawa, Ohme; Yoshihiro Ikeda, Ohme; Masatoshi Tsuneoka, Ohme; Toru Kaga, Urawa; Tomotsugu Shimmyo, Kawagoe; Hidetsugu Ogishi, Hachioji; Osamu Kasahara, Hinode-machi; Hiromichi Enami, Tachikawa; Atsushi Wakahara, Ohme; Hiroyuki Akimori, Ohme; Sinichi Suzuki, Ohme; Keisuke Funatsu, Ohme; Yoshinao Kawasaki, Yamaguchi; Tunekiko Tubone, Kudamatsu; Takayoshi Kogano, Iruma, and Ken Tsugane, Ohme, all of Japan, assignors to Hitachi, Ltd., and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Division of Ser. No. 230,021, Apr. 19, 1994, Pat. No. 5,557,147, which is a division of Ser. No. 954,142, Sep. 30, 1992, Pat. No. 5,331,191, which is a division of Ser. No. 496,330, Mar. 20, 1990, Pat. No. 5,202,275. This application Jun. 1, 1995, Ser. No. 456,788

Claims priority, application Japan, Mar. 20, 1989, 1-65849
Int. Cl.⁶ H01L 27/02
U.S. Cl. 257—203



1. A method of forming a semiconductor integrated circuit device having a memory array, direct peripheral circuitry and an output buffer circuit, said direct peripheral circuitry including a first MISFET to which a first operating voltage is applied, and said output buffer circuit including a second MISFET to which a second operating voltage, higher than the first operating voltage, is applied, said method comprising the steps of:

- providing a semiconductor substrate having a main surface, the semiconductor substrate including a first portion for said first MISFET and a second portion for said second MISFET;
- forming a first gate insulating film in said first portion and a second gate insulating film in said second portion;
- forming a first gate electrode on said first gate insulating film in said first portion and a second gate electrode on said second gate insulating film in said second portion, said first and second gate electrodes having side surfaces;
- introducing first impurities of a first conductivity type into said first and second portions in a self-aligned manner with said first and second gate electrodes, respectively;
- forming sidewall spacers on said side surfaces of said first and second gate electrodes, said sidewall spacers on said side surfaces of the first gate electrode having a same width as a

width of the sidewall spacers on the side surfaces of the second gate electrode; and

introducing second impurities of the first conductivity type into said first and second portions in a self-aligned manner with said sidewall spacers, wherein a length of the second gate electrode is longer than that of said first gate electrode.

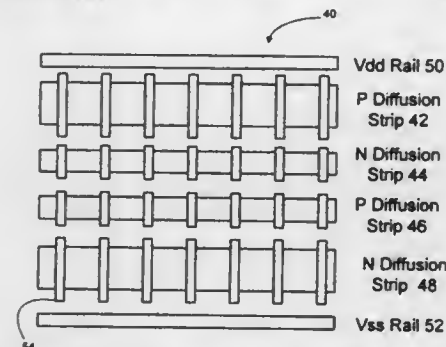
5,780,883 GATE ARRAY ARCHITECTURE FOR MULTIPLEXER BASED CIRCUITS

Dzung Joseph Tran, and Mark Warren Acuff, both of Hillsboro, Oreg., assignors to TransLogic Technology, Inc., Beaverton, Oreg.

Filed Feb. 28, 1997, Ser. No. 808,249
Int. Cl.⁶ H01L 27/10

U.S. Cl. 257—206

16 Claims



16. A gate array device comprising a plurality of base rows of transistors, at least one of the base rows including first and second voltage rails and at least four rows of transistors between the rails, the four rows being parallel to the first and second voltage rails and alternating between P-channel and N-channel transistors and having no other voltage rails between the first and second voltage rails.

5,780,884

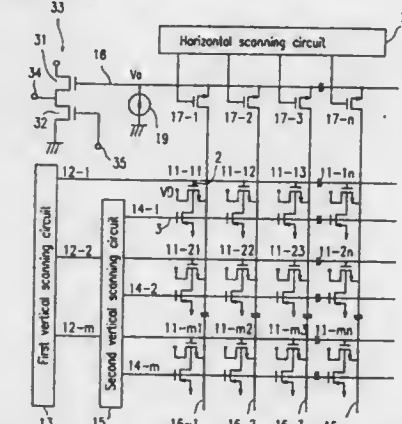
AMPLIFICATION TYPE SOLID-STATE IMAGING DEVICE

Kazuya Kumagai, Tenri, and Hiroaki Kudo, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 6, 1996, Ser. No. 744,618
Claims priority, application Japan, Mar. 13, 1996, 8-056578
Int. Cl.⁶ H01L 29/78

U.S. Cl. 257—236

3 Claims



1. An amplification type solid-state imaging device comprising: a plurality of amplification type photoelectric converting elements arranged in a matrix, an output impedance converting section connected to the photoelectric converting elements which sequentially receives the output signals from the amplification type photoelectric converting elements, the output impedance converting section

including a driving transistor driven with the output signals and a load transistor; and

further comprising a scanning section which allows the respective amplification type photoelectric converting elements to output the output signals and the output signals to be sequentially guided to the output impedance converting section, wherein a threshold voltage of the driving transistor of the output impedance converting section is smaller than a threshold voltage of a transistor used for the scanning section.

5,780,885

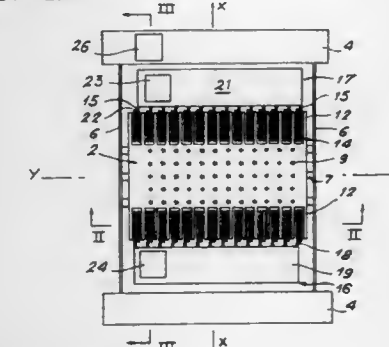
ACCELEROMETERS USING SILICON ON INSULATOR TECHNOLOGY

Bernard Diem, Echirrolles, and Marie-Therese Delaye, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 172,827, Dec. 27, 1993, Pat. No. 5,576,250. This application Aug. 15, 1996, Ser. No. 698,066

U.S. Cl. 257—254

7 Claims



1. An accelerometer comprising: a monocrystalline silicon film; a silicon substrate; an insulating layer; and moving elements etched through said monocrystalline silicon film; said insulating layer separating the monocrystalline silicon film from the silicon substrate, and portions of the insulating film being removed in order to free the moving elements, wherein at least one first moving element of said monocrystalline silicon film has a sensitive axis perpendicular to the substrate and at least one second moving element of said monocrystalline silicon film has a sensitive axis parallel to the substrate.

5,780,886

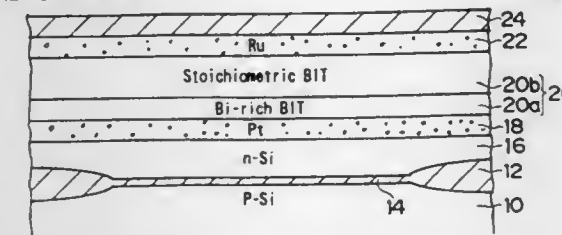
NON-VOLATILE SEMICONDUCTOR MEMORY CELL AND METHOD FOR PRODUCTION THEREOF

Tomomi Yamanobe, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 16, 1997, Ser. No. 857,254
Claims priority, application Japan, May 30, 1996, 8-137245
Int. Cl.⁶ H01L 29/76; 29/94; 31/062; 31/113

U.S. Cl. 257—295

11 Claims



1. A non-volatile semiconductor memory cell comprising: a field effect transistor further comprising:

5,780,887

CONDUCTIVITY MODULATED MOSFET

Akio Nakagawa, Hiratsuka; Hiromichi Ohashi, Yokohama; Yoshihiro Yamaguchi, Urawa; Kiminori Watanabe, Kawasaki, and Thunee Thukakoshi, Zushi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

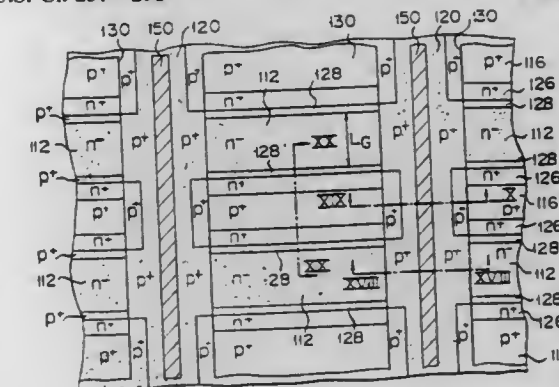
Continuation of Ser. No. 29,624, Mar. 11, 1993, abandoned, which is a continuation of Ser. No. 799,311, Nov. 27, 1991, Pat. No. 5,286,984, which is a continuation of Ser. No. 712,997, Jun. 10, 1991, Pat. No. 5,086,323, which is a continuation of Ser. No. 532,366, Jun. 4, 1990, abandoned, which is a continuation of Ser. No. 249,822, Sep. 27, 1988, abandoned, which is a continuation of Ser. No. 116,357, Nov. 4, 1987, Pat. No. 4,881,120, which is a continuation of Ser. No. 19,337, Feb. 26, 1987, Pat. No. 4,782,372, which is a continuation of Ser. No. 738,188, May 28, 1985, Pat. No. 4,672,407. This application Jun. 14, 1994, Ser. No. 261,254

Claims priority, application Japan, May 30, 1984, 59-110244; Sep. 29, 1984, 59-204427; Nov. 20, 1984, 59-244811

Int. Cl.⁶ H01L 27/108; 29/76; 29/94; 31/119

U.S. Cl. 257—298

4 Claims



1. A conductivity modulated metal oxide semiconductor field effect bipolar transistor, comprising:

- a first conductivity type region having a first surface;
- a high resistance semiconductor region of a second conductivity type having a second surface formed on said first conductivity type region;
- a plurality of base regions of the first conductivity type each of which is formed in the second surface of said high resistance semiconductor region;
- a plurality of source regions of the second conductivity type each of which is formed in an associated base region;
- a gate electrode provided on an associated gate insulating film which is formed on a channel region formed in one of said base regions;
- a source electrode contacting said source and base regions;
- a drain electrode formed on said first surface of said first conductivity type region; and
- a semiconductor region of the first conductivity type connected to said base region in which said channel region is formed, said semiconductor region and said plurality of base regions surrounding said high resistance semiconductor region to constitute rectangular island regions of said high resistance semiconductor region in said second surface, an impurity concentration of said semiconductor region being higher than that of said channel region, at least one of said rectangular island regions in said second surface being arranged adjacent said

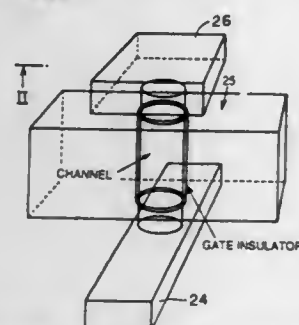
channel region and having a width sufficiently small such that a latch-up current density is larger than a saturation current density.

5,780,888

SEMICONDUCTOR DEVICE WITH STORAGE NODE
Shigenobu Maeda; Yasuo Inoue; Hirotada Kuriyama; Shigeto Maegawa; Kyoze Kanamoto, and Toshiaki Iwamatsu, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 648,828, May 16, 1996, Pat. No. 5,627,390, which is a continuation of Ser. No. 313,472, Sep. 27, 1994, abandoned. This application Dec. 2, 1996, Ser. No. 758,841

Claims priority, application Japan, May 26, 1994, 6-112997
Int. Cl.⁶ H01L 27/108; 29/76; 29/94; 31/119
U.S. Cl. 257—302 11 Claims



1. A semiconductor device, in which a gate transistor is operable to store information in a capacitor formed of a storage node, which is arranged at a crossing between a bit line and a word line, a capacitor insulating film and a cell plate electrode, comprising:
 - a substrate on which a dielectric layer and a semiconductor layer are formed successively;
 - a first impurity diffusion layer of a first conductivity type, which is disposed in said semiconductor layer and contains impurity of a first conductivity type implanted thereto, said first impurity diffusion layer forming one of source/drain regions and forming said bit line;
 - a first interlayer insulating film disposed on said substrate and covering said first impurity diffusion layer;
 - a gate electrode disposed on said first interlayer insulating film, forming also said word line and having upper and lower surfaces;
 - a second interlayer insulating film disposed on said first interlayer insulating film and covering said gate electrode;
 - a contact hole penetrating said first interlayer insulating film, said gate electrode and said second interlayer insulating film and provided for exposing a portion of a surface of said first impurity diffusion layer;
 - a gate insulating film covering a side wall of said contact hole;
 - a first semiconductor layer of the first conductivity type formed in said contact hole, said first semiconductor layer being in contact with the surface of said first impurity diffusion layer and extending from the surface of said first impurity diffusion layer to the substantially same level as said lower surface of said gate electrode;
 - a channel semiconductor layer disposed in said contact hole, said channel semiconductor layer being in contact with a surface of said first semiconductor layer and extending from the surface of said first semiconductor layer to the substantially same level as said upper surface of said gate electrode;
 - a second conductive layer of the first conductivity type disposed on said channel semiconductor layer, said second conductive layer being in contact with a surface of said channel semiconductor layer and forming the other of said source/drain regions as well as said storage node;
 - a capacitor insulating film disposed on said second conductive layer; and

a cell plate electrode disposed on said storage node with said capacitor insulating film therebetween.

5,780,889

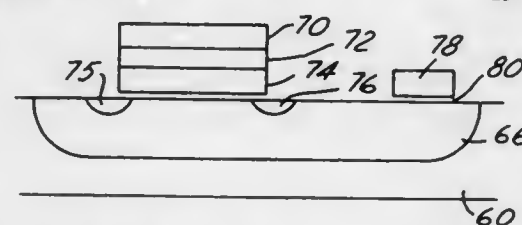
GATE OVERLAP DRAIN SOURCE FLASH STRUCTURE
Rakesh B. Sethi, Campbell, Calif., assignor to Cypress Semiconductor Corp., San Jose, Calif.

Filed Nov. 22, 1995, Ser. No. 562,183

Int. Cl.⁶ H01L 29/76; 29/788

U.S. Cl. 257—316

13 Claims



1. A non-volatile memory cell comprising:
 - a semiconductor substrate of a first conductivity type;
 - a source region having a second conductivity type opposite said first conductivity type in said substrate;
 - a drain region having said second conductivity type formed in said substrate;
 - a layer of a first dielectric material substantially uniform in thickness formed over said substrate, said layer of the first dielectric material extending substantially horizontally over at least a portion of said source region and said drain region, said first dielectric material layer permits FN tunneling programming of said memory cell;
 - a floating gate formed of a material of said first conductivity type overlapping each of said source region and said drain region and disposed on the layer of said first dielectric material;
 - a layer of a second dielectric material disposed on said floating gate; and
 - a control gate formed of a material of said second conductivity type disposed on said layer of said second dielectric material.

5,780,890

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE AND A METHOD OF WRITING DATA IN THE SAME
Katsuki Hazama, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 576,691

Claims priority, application Japan, Dec. 26, 1994, 6-337221; Dec. 26, 1994, 6-337222

Int. Cl.⁶ G11C 16/02; 16/04

U.S. Cl. 257—316

15 Claims

1. A nonvolatile semiconductor memory device comprising:
 - a semiconductor substrate;
 - an array of a plurality of memory cells formed on said semiconductor substrate and arranged in a matrix of columns and rows, each memory cell having a source, a drain and a composite gate structure including a floating gate and a control gate, wherein adjacent two memory cells arranged in each row have a common impurity diffusion layer which serves as the source or drain of each of the two memory cells and said memory cell array is divided into a plurality of blocks in a direction of the column so that 2n (n is a positive integer) memory cells are included in one of the column in each of the blocks;
 - word lines, each being formed to include the control gates of the memory cells arranged in one of the rows;
 - a plurality of sub-bit lines provided in each of the blocks, wherein each of the sub-bit lines includes one continuous layer formed in said substrate and impurity diffusion layers serving as the drains of the memory cells arranged in a

5,780,892

FLASH E²PROM CELL STRUCTURE WITH POLY FLOATING AND CONTROL GATES

Yi-Shi Chen, Hsinchu, Taiwan, assignor to Winbond Electronics Corporation, Hsinchu, Taiwan

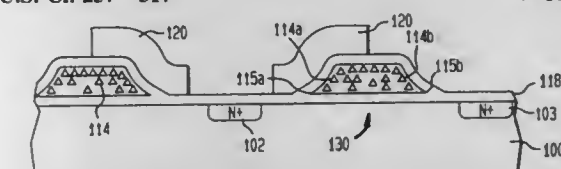
Continuation of Ser. No. 407,896, Mar. 21, 1995, abandoned.

This application Nov. 27, 1996, Ser. No. 758,057

Int. Cl.⁶ H01L 29/788

U.S. Cl. 257—317

9 Claims



1. An E²PROM cell comprising:
 - a poly silicon floating gate substantially entirely disposed on a gate oxide formed above a substrate, the floating gate having a pointed, bird's beak shaped edge,
 - a poly oxide disposed on said pointed, bird's beak shaped edge of said poly floating gate,
 - a select gate disposed on said poly oxide and overlapping only a part of said floating gate including said pointed, bird's beak shaped edge, and
 - a channel in a vicinity of said floating gate;
 wherein said pointed, curved edge of said poly floating gate, said poly oxide, and said select gate cooperate to erase the floating gate in a manner that electrons tunnel from said pointed, bird's beak shaped edge of said floating gate to said select gate, and to write into the floating gate by injecting channel hot electrons from said channel into said floating gate, and wherein the area between said floating gate and said select gate being less than the area between said floating gate and said substrate.

5,780,893

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE INCLUDING MEMORY TRANSISTOR WITH A COMPOSITE GATE STRUCTURE

Fumitaka Sugaya, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

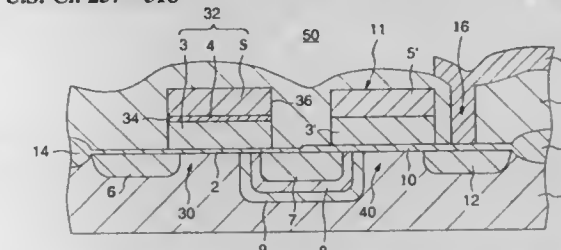
Filed Dec. 19, 1996, Ser. No. 769,351

Claims priority, application Japan, Dec. 28, 1995, 7-353489

Int. Cl.⁶ H01L 29/76; 29/788

U.S. Cl. 257—318

38 Claims



1. A non-volatile semiconductor memory device comprising:
 - a composite gate structure formed on a surface of a semiconductor substrate with a first insulating film interposed therebetween and including a laminate of a floating gate electrode, a second insulating film and a control gate electrode; and
 - a pair of impurity diffusion layers formed in the semiconductor substrate at its regions on both sides of the composite gate structure, at least one of said impurity diffusion layers having an extension region extending to a part of the semiconductor substrate disposed under the composite gate structure, so that said one impurity diffusion layer and said composite gate structure overlap with each other at said extension region of said one impurity diffusion layer, the extension region having

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NONVOLATILE FLOATING GATE MEMORY WITH IMPROVED INTERPOLY DIELECTRIC

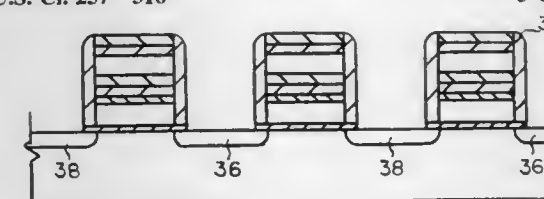
Ralph Kauffman, and Roger Lee, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 349,745, Dec. 5, 1994, abandoned. This application Apr. 17, 1996, Ser. No. 634,118

Int. Cl.⁶ H01L 29/34

U.S. Cl. 257—316

3 Claims



1. A floating gate memory device, comprising:
 - a. a floating gate;
 - b. a control gate over the floating gate; and
 - c. a dielectric disposed between the control gate and the floating gate, the dielectric comprising a layer of silicon oxide and a discrete layer of silicon oxynitride formed on the layer of silicon oxide, the layer of oxynitride having a refractory index of between 1.84 and 1.95.

first, second and third layers, wherein the first and second layers include first and second impurities at first and second different concentrations, respectively, and the third layer includes a third impurity at a third concentration higher than any of the first and second concentrations, said first, second and third impurities being of the same conductivity type.

5,780,894

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING STACKED-GATE TYPE TRANSISTOR

Katsuki Hazama, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

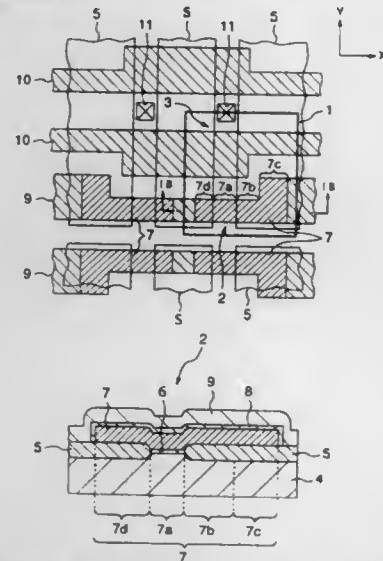
Filed Feb. 21, 1997, Ser. No. 802,946

Claims priority, application Japan, Feb. 23, 1996, 8-061866

Int. Cl.⁶ H07L 29/788

U.S. Cl. 257—326

20 Claims



1. A nonvolatile semiconductor memory device comprising:
 - a semiconductor substrate having at least one active region defined between two adjacent element-isolation regions and extending in a first direction;
 - a first insulation film formed on a surface of said semiconductor substrate at said active region; and
 - at least one memory cell transistor having a stacked gate structure including a floating gate and a control gate formed on said first insulation film and extending in a second direction intersecting said first direction,
- wherein said floating gate has a center portion disposed on said active region, a first portion disposed adjacent to said center portion and extending in said second direction over one of said two adjacent element-isolation regions and a second portion disposed adjacent to said center portion and extending in said second direction over the other of said two adjacent element-isolation regions,
- wherein said center portion and said first portion have a substantially uniform width as measured in said first direction while said second portion includes a part having a width larger than that of said first portion, and
- wherein a plurality of said memory cell transistors are arrayed in said second direction, and the floating gates of two adjacent memory cell transistors are shaped symmetrically to each other relative to a boundary between said two memory cell transistors.

5,780,895

FORWARD OVERVOLTAGE PROTECTION CIRCUIT FOR A VERTICAL SEMICONDUCTOR COMPONENT

Jean Barret, Egulles, and Daniel Quessada, Pourrieres, both of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis, France

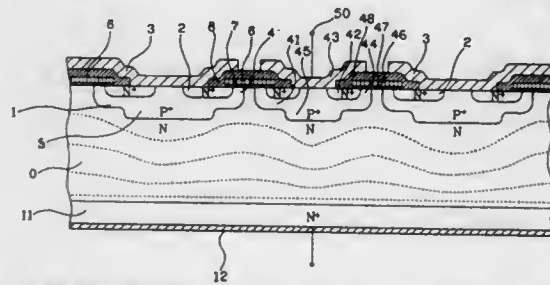
Continuation of Ser. No. 157,362, Nov. 23, 1993, Pat. No. 5,543,645. This application Dec. 15, 1995, Ser. No. 573,300

Claims priority, application France, Oct. 24, 1992, 92 14478

Int. Cl.⁶ H01L 29/76; 29/94

U.S. Cl. 257—328

8 Claims



2. A MOS or IGBT-type vertical power transistor comprising:
 - a semiconductor substrate having a bottom surface including a first electrode;
 - a number of identical transistor cells formed within a top surface of the semiconductor substrate which are connected in parallel between the first electrode, a second electrode and a control electrode, both the second electrode and control electrode being formed on the top surface of said semiconductor substrate;
 - at least one additional transistor cell, disposed between the first electrode and the control electrode of the number of identical transistor cells and formed in the substrate, the at least one additional transistor cell having a same structure as said number of identical transistor cells but having proportions which are a fraction of the size of the number of identical transistor cells so that the at least one additional cell has an avalanche threshold lower than an avalanche threshold of the number of identical transistor cells.

5,780,896

SEMICONDUCTOR DEVICE HAVING SHALLOW IMPURITY REGION WITHOUT SHORT-CIRCUIT BETWEEN GATE ELECTRODE AND SOURCE AND DRAIN REGIONS AND PROCESS OF FABRICATION THEREOF

Atsuki Ono, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

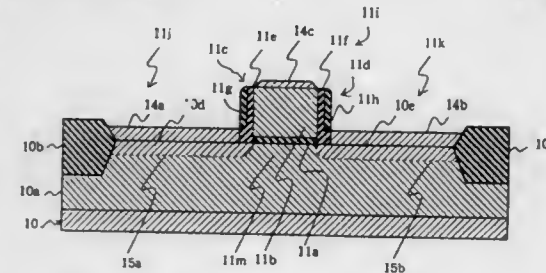
Filed Dec. 19, 1996, Ser. No. 769,423

Claims priority, application Japan, Dec. 21, 1995, 7-333177

Int. Cl.⁶ H01L 29/78; 29/60

U.S. Cl. 257—344

4 Claims



1. A semiconductor device having a field effect transistor formed on a semiconductor base layer, said field effect transistor comprising:
 - a gate insulating layer formed on a first area of said semiconductor base layer;
 - a gate electrode formed on said gate insulating layer;

side wall spacers formed on second areas of said semiconductor base layer on both sides of said first area, and held in contact with side surfaces of said gate electrode, said side wall spacers including

pad layers formed of a first insulating material and respectively having first bottom surfaces respectively held in contact with said second areas, first upper surfaces and first side surfaces, and

spacing layers formed of a second insulating material and respectively having second bottom surfaces respectively held in contact with said first upper surfaces of said pad layers; and

source and drain regions including

conductive layers formed of a semiconductor material epitaxially grown on third areas on opposite sides of said second areas to said first area and having second side surfaces respectively held in contact with said first side surfaces, said semiconductor material having a small selectivity of epitaxial growth to said first insulating material and a large selectivity of epitaxial growth to said second insulating material, and

impurity portions of said semiconductor base layer respectively providing said third areas overlain by said conductive layers and opposed to each other through said first area.

5,780,897

ESD PROTECTION CLAMP FOR MIXED VOLTAGE I/O STAGES USING NMOS TRANSISTORS

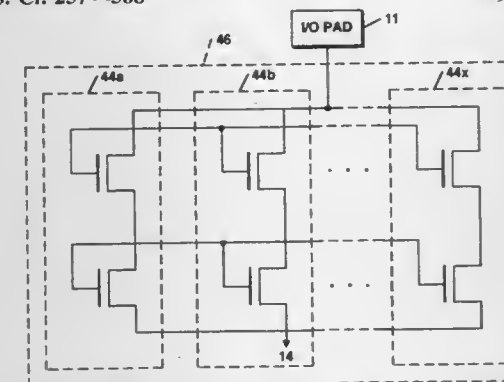
David Benjamin Krakauer, Cambridge, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 13, 1995, Ser. No. 555,463

Int. Cl.⁶ H01L 29/76

U.S. Cl. 257—368

9 Claims



1. An electrostatic discharge protection device for coupling to a mixed voltage integrated circuit to protect said integrated circuit against damage from electrostatic discharge comprising:
 - at least one cascode configured transistor pair, each of said pairs comprising:
 - a first NMOS transistor having a gate region, a source region, and a drain region, said drain region coupled to said mixed voltage integrated circuit, said gate region coupled to a low power supply of said mixed voltage integrated circuit;
 - a second NMOS transistor, merged into the same active area as said first transistor, having a gate region, a source region, and a drain region, said gate region and said source region of said second NMOS transistor coupled to a ground plane of said mixed voltage integrated circuit;
 - a shared diffusion region coupling the source region of said first NMOS transistor to the drain region of said second NMOS

5,780,898

SEMICONDUCTOR DEVICE WITH A VERTICAL FIELD EFFECT TRANSISTOR AND METHOD OF MANUFACTURING THE SAME

Tokuhiro Tamaki, Tatsuo Sugiyama, and Hiroaki Nakaoka, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

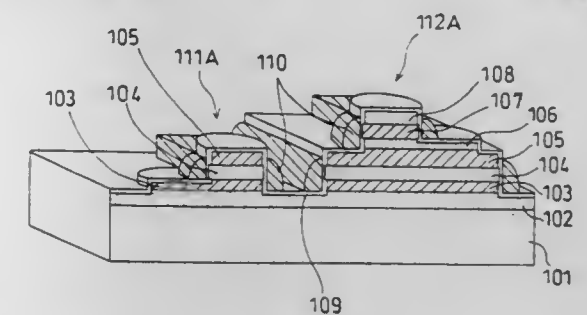
Continuation of Ser. No. 518,973, Aug. 24, 1995, Pat. No. 5,670,810. This application May 15, 1997, Ser. No. 856,697

Claims priority, application Japan, Aug. 25, 1994, 6-200656; Jun. 8, 1995, 7-142005

Int. Cl.⁶ H01L 29/76; 29/74; 31/062

U.S. Cl. 257—331

1 Claim



1. A semiconductor device comprising:
 - a semiconductor substrate;
 - a first insular multilayered portion formed on said semiconductor substrate and including, in a successively layered fashion, a first semiconductor layer doped with impurity of a first conductivity type and forming a source or a drain, a second semiconductor layer doped with impurity of a second conductivity type and forming a channel, and a third semiconductor layer doped with impurity of the first conductivity type and forming the drain or the source;
 - a second insular multilayered portion formed on said semiconductor substrate and including, in a successively layered fashion, a fourth semiconductor layer doped with impurity of the second conductivity type and forming a source or a drain, a fifth semiconductor layer doped with impurity of the first conductivity type and forming a channel, and a sixth semiconductor layer doped with impurity of the second conductivity type and forming the drain or the source;
 - a first gate electrode formed on a side surface of said second semiconductor layer with a first gate insulating film therebetween; and
 - a second gate electrode formed on a side surface of said fifth semiconductor layer with a second gate insulating film therebetween,
- wherein
- said first semiconductor layer has a first projection projected beyond said second semiconductor layer in a surface direction of said substrate;
- said fourth semiconductor layer has a second projection projected beyond said fifth semiconductor layer in the surface direction of said substrate;
- the thickness of said first projection is smaller than the thickness of said third semiconductor layer; and
- the thickness of said second projection is smaller than the thickness of said sixth semiconductor layer.

5,780,899

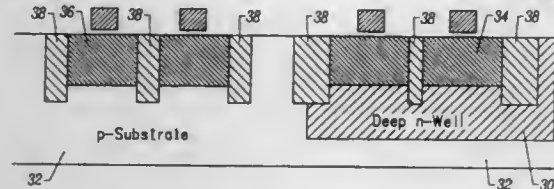
DELTA DOPED AND COUNTER DOPED DYNAMIC THRESHOLD VOLTAGE MOSFET FOR ULTRA-LOW VOLTAGE OPERATION

Chenming Hu, Alamo, and Hsing-Jen Wann, Albany, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 297,995, Aug. 30, 1994, Pat. No. 5,559,368. This application Sep. 27, 1995, Ser. No. 534,527 Int. Cl.⁶ H01L 29/76; 29/94; 27/01

U.S. Cl. 257—335

4 Claims



1. For use in an integrated circuit operable at a power supply voltage of 0.6 volt or less, a dynamic threshold insulated gate field effect transistor comprising

- a semiconductor substrate having dopant of first conductivity type and first concentration and having a surface,
- a first doped well in said substrate and abutting said surface, said first doped well having dopant of second conductivity type and second concentration greater than said first concentration,
- a second doped well in said first doped well and abutting said surface, said second doped well having dopant of said first conductivity type and third concentration greater than said second concentration,
- a source region and a drain region of said second conductivity formed in said second doped well and abutting said surface, said source region and said drain region being spaced apart with a channel therebetween,
- an insulative layer on said surface over said channel region,
- a gate contact on said insulative layer and over said channel,
- a connector interconnecting said gate contact and said channel region, and
- a plurality of trenches etched from said surface through at least said second well to provide electrical isolation for said transistor.

5,780,900

THIN FILM SILICON-ON-INSULATOR TRANSISTOR HAVING AN IMPROVED POWER DISSIPATION, A HIGH BREAK DOWN VOLTAGE, AND A LOW ON RESISTANCE

Yuji Suzuki, Osaka; Hitomichi Takano, Takatsuki; Masahiko Suzumura, Otsu; Yoshiki Hayasaki, Osaka; Takashi Kishida, and Yoshifumi Shira, both of Hirakata, all of Japan, assignors to Matsushita Electric Works, Inc., Kadoma, Japan

Filed Oct. 17, 1996, Ser. No. 733,164

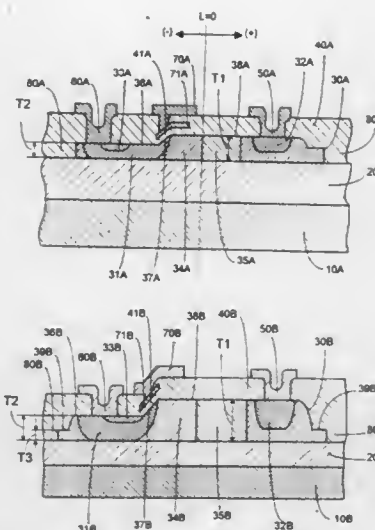
Claims priority, application Japan, Jan. 26, 1996, 8-012172; Jan. 26, 1996, 8-012173

Int. Cl.⁶ H01L 29/10

U.S. Cl. 257—335

9 Claims

1. A thin film transistor of silicon-on-insulator type comprising:
- a buried oxide layer formed on a semiconductor substrate;
 - a silicon layer of a first conductive type formed on said buried oxide layer, said silicon layer having a body region of a second conductive type, source region of said first conductive type, drain region of said first conductive type, and a drift region of said first conductive type formed between said source and drain regions, said source region being formed in said body region to be spaced from said buried oxide layer, and said drift region being formed with a lateral linear doping region;
 - an upper oxide layer formed on said silicon layer;



- a source electrode contacting both of said body region and said source region;
 - a drain electrode contacting said drain region; and
 - a gate electrode disposed between said source and drain electrodes and spaced from said silicon layer by a thin oxide layer, said gate electrode having a field plate which is short-circuited to said gate electrode, and said gate electrode and field plate extending laterally in a spaced relation from said silicon layer without overlying said linear doping region,
- wherein said silicon layer is formed with a first portion of a thickness (T1) in which said drift region is formed, and a second portion of a thickness (T2) in which said body region is formed to reach said buried oxide layer, and wherein said thicknesses (T1) and (T2) are determined so as to satisfy the following relationships:

$$0.4 \mu\text{m} < T1$$

$$0.4 \mu\text{m} \leq T2 \leq 1.5 \mu\text{m}$$

$$T2 < T1.$$

5,780,901

SEMICONDUCTOR DEVICE WITH SIDE WALL CONDUCTOR FILM

Takashi Yoshitomi, Kamakura; Hiroshi Iwai, Kawasaki; Masanobu Saito, Chiba; Hisayo Momose, Tokyo-to; Tatsuya Ohguro, and Mizuki Ono, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

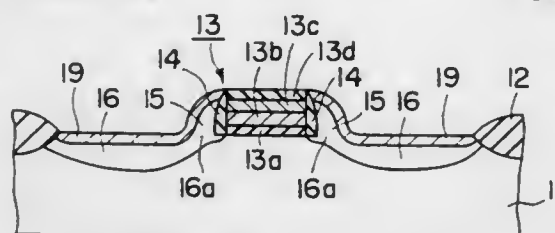
Filed Jun. 30, 1995, Ser. No. 497,554

Claims priority, application Japan, Jun. 30, 1994, 6-148398; May 18, 1995, 7-120229

Int. Cl.⁶ H01L 27/088

U.S. Cl. 257—336

11 Claims

**SECTION A—A'**

1. A semiconductor device comprising:
- a semiconductor substrate;
 - a gate insulating film formed on a surface of said substrate;
 - a gate electrode formed on said gate insulating film;

- a side wall insulating film formed along sides of said gate insulating film as well as of said gate electrode;
 - a side wall conductor film formed adjacent to said side wall insulating film; and
 - source and drain regions formed in said side wall conductor film on respective sides of said gate electrode, in a surface region of said substrate under said side wall conductor film and in a surface region of said substrate adjacent to said side wall conductor film,
- wherein an impurity concentration in a depthwise direction of said substrate exhibits one maximum value at a predetermined depth from an upper surface of said side wall conductor film but does not increase in a portion deeper than the predetermined depth.

5,780,902

SEMICONDUCTOR DEVICE HAVING LDD STRUCTURE WITH POCKET ON DRAIN SIDE

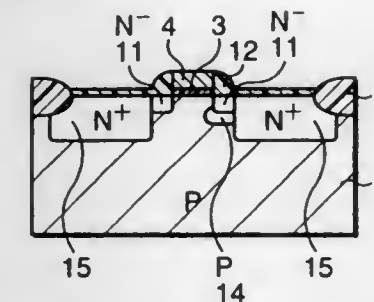
Toshio Komuro, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 6, 1996, Ser. No. 764,105

Claims priority, application Japan, Dec. 25, 1995, 7-336277 Int. Cl.⁶ H01L 31/113

U.S. Cl. 257—344

4 Claims



1. A semiconductor device comprising:
- an LDD structure type MOS transistor including a gate electrode formed on a semiconductor layer of a first conductivity type;
 - a source/drain region formed in said semiconductor layer and having a high impurity concentration region and a low impurity concentration region of a second conductivity type; and
 - a low impurity concentration region pocket of said first conductivity type formed only on a drain region side, said pocket being effective to suppress short channel effect as well as hot carrier generation, without reducing current capacity.

5,780,903

METHOD OF FABRICATING A LIGHTLY DOPED DRAIN THIN-FILM TRANSISTOR

Hsiung-Kuang Tsai, Taipei Hsien, and Sheng-Kai Hwang, Hsinchu, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

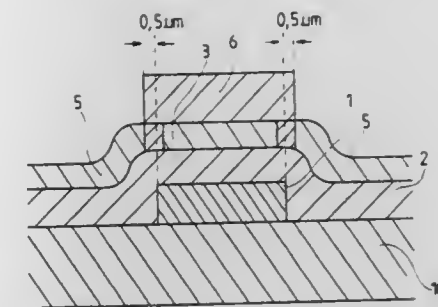
Division of Ser. No. 620,020, Mar. 21, 1996, Pat. No. 5,637,519. This application Jan. 27, 1997, Ser. No. 789,553

Int. Cl.⁶ H01L 29/04; 29/76; 27/01

U.S. Cl. 257—344

5 Claims

1. A thin-film transistor having a lightly doped drain comprising:
- a glass substrate;
 - a gate formed on said substrate;
 - an insulating layer deposited on top of said substrate and said gate;
 - a semiconductor layer established on top of said insulating layer, said semiconductor layer including a heavily doped outer region on each side of said gate, a lightly doped middle region on each side of said gate, and an un-doped central region directly above said gate, said central region being slightly smaller than said gate, and said middle region being extended



- from said central region to an area slightly larger than said gate and connected to said outer region;
 - a drain formed on one end of said semiconductor layer, said drain covering a portion of said outer region on one side of said gate, extending outwards and covering a portion of said insulating layer; and
 - a source formed on an opposite end of said semiconductor layer, said source covering a portion of said outer region on an opposite side of said gate, extending outwards and covering a portion of said insulating layer;
- wherein the width of said lightly doped middle region on each side of said gate is from 0.5 to 2 μm.

5,780,904

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE FOR OBTAINING EXTREMELY SMALL CONSTANT CURRENT AND TIMER CIRCUIT USING CONSTANT CURRENT CIRCUIT

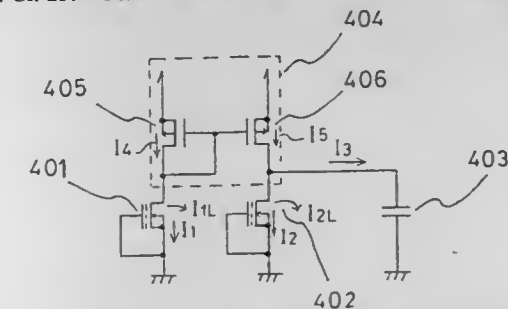
Haruo Konishi; Masanao Hamaguchi, and Masanori Miyagi, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Jun. 28, 1996, Ser. No. 671,941

Int. Cl.⁶ H01L 27/06

U.S. Cl. 257—369

32 Claims



1. A semiconductor integrated circuit device having a constant-current circuit comprising:
- a first constant-current source for producing a first constant current;
 - a second constant-current source connected to the first constant-current source for producing a second constant current having a value different from that of the first current; and
 - an output terminal connected to at least one of the first and second constant-current sources from which a third constant current equal to the difference between the first and second constant currents is output.

5,780,905

ASYMMETRICAL, BIDIRECTIONAL TRIGGERING ESD STRUCTURE

Wayne T. Chen, Plano; Ross E. Teggatz, McKinney, and Julian Z. Chen, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 17, 1996, Ser. No. 768,358

Int. Cl.⁶ H01L 23/62

U.S. Cl. 257—355

16 Claims

1. An ESD protection structure which comprises:

5,780,910

SRAM WITH STACKED CAPACITOR SPACED FROM GATE ELECTRODES

Naotaka Hashimoto, Koganei; Yutaka Hoshino, Higashimurayama, and Shuji Ikeda, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

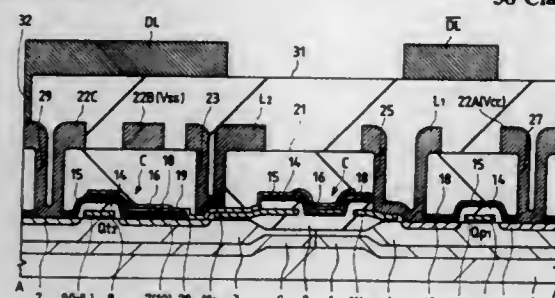
Filed Jul. 17, 1996, Ser. No. 682,243

Claims priority, application Japan, Jul. 18, 1995, 7-181513

Int. Cl.⁶ H01L 27/11; 23/62; G11C 11/00; 7/00

U.S. Cl. 257—393

38 Claims



1. A semiconductor integrated circuit device comprising:
 - a first n-channel MISFET and a second n-channel MISFET, each having a gate electrode formed over a principal surface of a substrate;
 - a first p-channel MISFET and a second p-channel MISFET, each having a gate electrode formed over said principal surface;
 - a first insulating film formed over said gate electrodes of said first and second n-channel MISFETs and said first and second p-channel MISFETs; and
 - a capacitor element formed over said first insulating film, wherein said capacitor element is comprised of a first conductive film formed over said first insulating film, a second conductive film formed over said first conductive film, and a dielectric film formed between said first conductive film and said second conductive film,
- wherein said first conductive film is electrically connected to a source-drain path of said first n-channel MISFET, a source-drain path of said first p-channel MISFET, and said gate electrodes of both said second n-channel MISFET and said second p-channel MISFET, and
- wherein said second conductive film is electrically connected to a source-drain path of said second n-channel MISFET, a source-drain path of said second p-channel MISFET, and said gate electrodes of both said first n-channel MISFET and said first p-channel MISFET.

5,780,911

THIN FILM TRANSISTOR AND METHOD FOR FABRICATING THE SAME

Joon Young Park, Chungcheongbuk-do; Gyoung Seon Gil, Jeonbuk-do, and Seok Won Cho, Chungcheongbuk-do, all of Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Nov. 26, 1996, Ser. No. 756,451

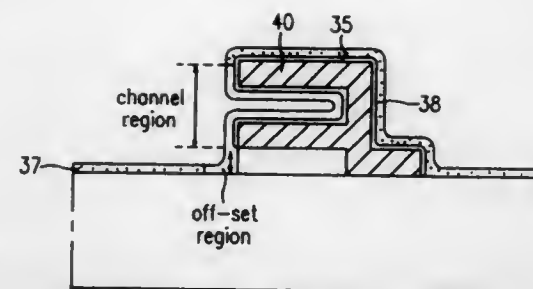
Claims priority, application Rep. of Korea, Nov. 29, 1995, 44972/1995; Nov. 29, 1995, 44973/1995

Int. Cl.⁶ H01L 29/76; 29/94; 31/062; 31/113

U.S. Cl. 257—401

17 Claims

1. A thin film transistor comprising:
 - a substrate;
 - a first section of a gate electrode formed on a predetermined region of the substrate;
 - a second section of the gate electrode formed on a predetermined portion of the first section of the gate electrode;
 - a third section of the gate electrode formed on the second section of the gate electrode parallel to, and spaced from the first section of the gate electrode, wherein the first and third sections are parallel to the substrate;
 - a gate insulating film formed on exposed surfaces of the first, second and third sections;



- a semiconductor layer formed on the gate insulating film and the substrate;
- a first impurity region formed in the semiconductor layer on one side of the first section; and
- a second impurity region formed in the semiconductor layer on the second and third sections and on the other side of the first section.

5,780,912

ASYMMETRIC LOW POWER MOS DEVICES

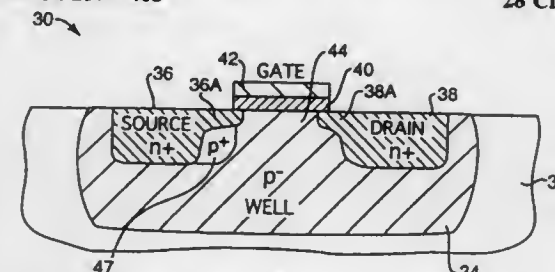
James B. Burr, Foster City, and Michael P. Brassington, Sunnyvale, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 357,436, Dec. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 292,513, Aug. 18, 1994. This application Jul. 5, 1996, Ser. No. 675,804

Int. Cl.⁶ H01L 29/76; 29/788; 29/94

U.S. Cl. 257—408

28 Claims



1. An asymmetric MOS device on a semiconductor substrate, the MOS device comprising:
 - a bulk region having an average dopant concentration of a first conductivity type;
 - source and drain regions positioned within said bulk region and separated by a channel region, the source and drain regions having a dopant concentration of a second conductivity type;
 - an asymmetric halo region having a dopant concentration of the first conductivity type, and abutting one of said source and drain regions and proximate said channel region effectively creating two pseudo-metal oxide semiconductor devices connected in series, a first pseudo device disposed away from the asymmetric halo region and having a first threshold voltage and a second pseudo device located proximate the asymmetric halo region and having a second threshold voltage which is higher in magnitude than the first threshold voltage, wherein the second pseudo device has a second effective channel length that is shorter than a first effective channel length of the first pseudo device and a substantial number of carriers can be transported across the channel of said second pseudo device ballistically; and
 - a single gate electrode positioned over the channel region, wherein the device has a gate threshold voltage of at most about ± 150 mV.

5,780,913

PHOTOELECTRIC TUBE USING ELECTRON BEAM IRRADIATION DIODE AS ANODE

Masaharu Muramatsu; Motohiro Suyama, and Koei Yamamoto, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka-ken, Japan

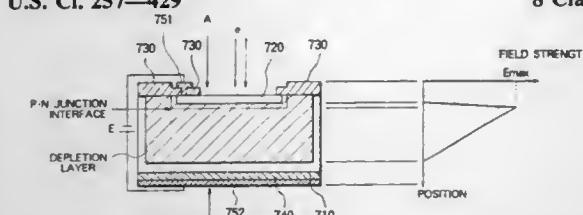
Continuation of Ser. No. 557,328, Nov. 14, 1995, abandoned.

This application Oct. 27, 1997, Ser. No. 954,616

Int. Cl.⁶ H01L 31/115; H01J 31/49

U.S. Cl. 257—429

8 Claims



5. An electron tube in which a semiconductor electron beam detector is sealed, said semiconductor electron beam detector comprising:
 - a silicon substrate having a first conductivity type and having first and second main surfaces which are opposite through the substrate itself;
 - a first heavily doped impurity layer formed in a first region of said first main surface of said silicon substrate and having a second conductivity type;
 - a lightly doped impurity layer formed in a second region surrounding said first region of said first main surface of said silicon substrate and on a surface of said first heavily doped impurity layer and having the second conductivity type;
 - a semiconductive isolation layer formed in a region surrounding said lightly doped impurity layer on said first main surface of said silicon substrate and having the first conductivity type;
 - a second heavily doped impurity layer formed on a surface of said lightly doped impurity layer and having the second conductivity type, said lightly doped impurity layer receiving an electron through said second heavily doped layer, said lightly doped impurity layer receiving an electron through said second heavily doped layer;
 - a first electrode electrically contacting said second heavily doped impurity layer;
 - a second electrode provided at a position opposite to said second heavily doped impurity layer through said substrate; and
 - a silicon oxide film formed on a surface of said isolation layer and in a region including a portion near a periphery of a surface of said second heavily doped layer.

- a light sensory region having a light sensory element formed on a silicon wafer;
- a peripheral circuit region having a plurality of shift transistors and flip flops formed on a top portion of said silicon wafer excluding said light sensory region;
- a light shielding layer formed on the peripheral circuit and an exposed light region formed on said silicon wafer, said light shielding layer provided for preventing carriers from transferring to the light sensory region; and
- an ion implanted region disposed under said light sensory region to prevent carriers from transferring to said light sensory region in said silicon wafer.

5,780,915

SEMICONDUCTOR DEVICE HAVING SPIRAL ELECTRODE PATTERN

Seung-Ho Lee, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

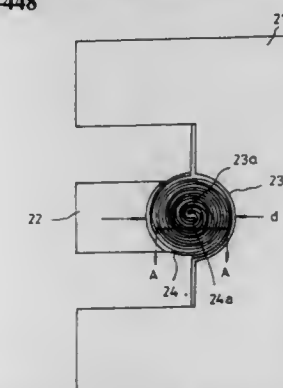
Filed Dec. 23, 1996, Ser. No. 772,288

Claims priority, application Rep. of Korea, Dec. 30, 1995, 68667/1995; Nov. 21, 1996, 56007/1996

Int. Cl.⁶ H01L 31/00

U.S. Cl. 257—448

8 Claims



1. A semiconductor device having a spiral electrode pattern, comprising:
 - an undoped semiconductor substrate;
 - a first and a second probing pads formed on the substrate; and
 - a pair of electrode fingers extending spirally toward a concentric center from the respective first and second probing pads and the electrode fingers being interdigitated with each other, wherein a thickness of the electrode fingers on the substrate is approximately 1850 Å.

5,780,914

CONTACT IMAGE SENSOR WHOSE SENSORY ELEMENTS HAVE IDENTICAL OUTPUT LEVELS

Yo-Joung Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

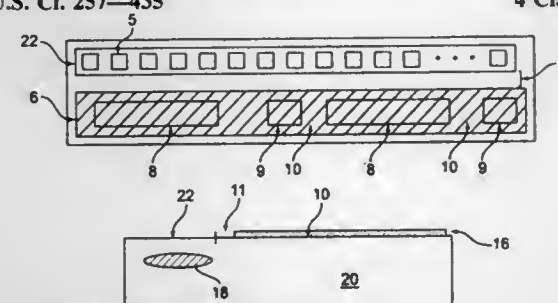
Filed Nov. 18, 1996, Ser. No. 752,170

Claims priority, application Rep. of Korea, Nov. 17, 1995, 1995-41881

Int. Cl.⁶ H01L 31/0232

U.S. Cl. 257—435

4 Claims



1. A contact image sensor comprising:
 - a substrate;
 - a first section of a gate electrode formed on a predetermined region of the substrate;
 - a second section of the gate electrode formed on a predetermined portion of the first section of the gate electrode;
 - a third section of the gate electrode formed on the second section of the gate electrode parallel to, and spaced from the first section of the gate electrode, wherein the first and third sections are parallel to the substrate;
 - a gate insulating film formed on exposed surfaces of the first, second and third sections;

179-283 O.G. - 98 - 26 : QL 3

5,780,916

ASYMMETRIC CONTACTED METAL-SEMICONDUCTOR-METAL PHOTODETECTORS

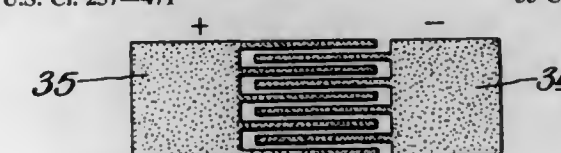
Paul R. Berger, Newark, Del., and Wei Gao, Woburn, Mass., assignors to University of Delaware, Newark, Del.

Filed Oct. 10, 1995, Ser. No. 541,417

Int. Cl.⁶ H01L 21/095; 29/47

U.S. Cl. 257—471

35 Claims



1. A photodetector comprising:
 - a semiconductor substrate having an active region on one surface thereof;
 - a first set of electrodes deposited on the active region of the substrate made from a first material;
 - a second set of electrodes deposited on the active region of the substrate made of a second material, wherein the first set and

1. A bipolar transistor constant voltage source circuit comprising:

an input stage current path circuit having, in order, a first resistor, a first bipolar transistor and a second resistor, connected in series between a power supply voltage and a reference potential point, said first bipolar transistor having a base connected to receive a reference voltage;

an intermediate stage current path circuit having, in order, a second bipolar transistor, a third resistor and a fourth resistor, connected in series between said power supply voltage and said reference potential point, said second bipolar transistor having a base connected to a collector of said first bipolar transistor;

an output stage current path circuit having, in order, a fifth resistor, a third bipolar transistor and a sixth resistor, connected in series between said power supply voltage and said reference potential point, said third bipolar transistor having a base connected to a connection node between said third and fourth resistors; and

an output terminal connected to a collector of said third bipolar transistor to supply a constant voltage outputted from said collector of said third bipolar transistor.

5,780,922

ULTRA-LOW PHASE NOISE GE MOSFETS

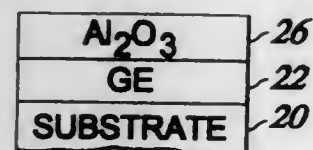
Umesh Kumar Mishra, Santa Barbara, and Steven P. Den-Baars, Goleta, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Nov. 27, 1996, Ser. No. 757,281

Int. Cl.⁶ H01L 29/267; 29/12

U.S. Cl. 257—616

35 Claims



1. A germanium field effect semiconductor device, comprising:

an aluminum oxide passivation layer;

a germanium channel region deposited over the passivation layer;

a gate oxide layer, the gate oxide layer being a layer of aluminum oxide, formed over the channel region; and

a controlling layer in contact with the passivation layer for controlling excess arsenic atoms in the passivation layer.

5,780,923

MODIFIED BUS BAR WITH KAPTON™ TAPE OR INSULATIVE MATERIAL ON LOC PACKAGED PART

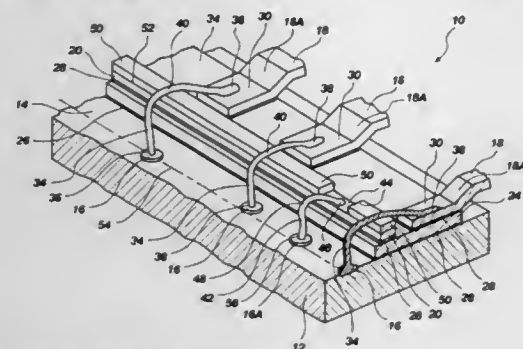
Robert W. Courtenay, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 10, 1997, Ser. No. 872,403

Int. Cl.⁶ H01L 23/495

U.S. Cl. 257—666

37 Claims



1. A semiconductor assembly, comprising:

a semiconductor die having an active surface with an array of bond pads located thereon;

a first layer of insulative material overcovering a portion of said active surface of said semiconductor die and adhesively bonded thereto;

a lead frame having a portion thereof attached to a portion of said first layer of insulative material, said lead frame having a plurality of conductive leads, said plurality of conductive leads including inwardly extending lead fingers, outwardly extending terminal portions, and at least one conductive bus bar for electrical connection to at least one bond pad of the said array of said bond pads, said bus bar interposed between a bond pad of the plurality of said bond pads of said semiconductor die and a lead of the plurality of leads of said lead frame;

at least one conductive wire connecting at least one of bond pad of said array of bond pads to at least one lead finger of said lead fingers, the at least one conductive wire spanning a portion of the bus bar;

at least one conductive wire connecting at least one bond pad of said array of said bond pads to said bus bar; and

a second layer of electrically insulative material secured to the portion of the upper surface of said bus bar spanned by said at least one wire, said second layer of insulative material is applied to said bus bar as one of a tape.

5,780,924

INTEGRATED CIRCUIT UNDERFILL RESERVOIR

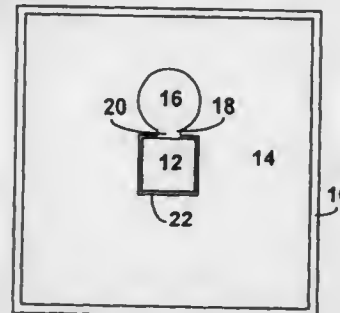
John P. McCormick, Redwood City, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed May 7, 1996, Ser. No. 644,000

Int. Cl.⁶ H01L 23/495

U.S. Cl. 257—667

13 Claims



9. An underfilled integrated circuit having a top surface and a bottom surface, the integrated circuit comprising:

an integrated circuit connected to a substrate with attachment structures disposed between the bottom surface of the integrated circuit and the substrate, the attachment structures separating and creating a gap between the bottom surface of the integrated circuit and the substrate,

a reservoir body fixedly applied to the substrate, the reservoir body and substrate defining at least one reservoir and at least one flow gate, and the reservoir body, substrate, and integrated circuit defining a flow ring which extends at least partially around the circumference of the integrated circuit, and

a compound disposed between the bottom surface of the integrated circuit and the substrate, the compound filling the gap between the bottom surface of the integrated circuit and the substrate, the compound also forming a fillet in the flow ring.

5,780,925

LEAD FRAME PACKAGE FOR ELECTRONIC DEVICES

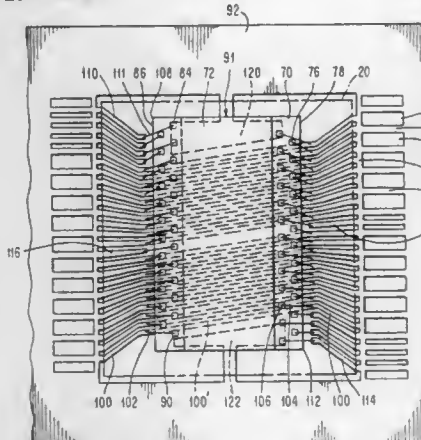
Thomas Mario Cipolla, Katonah, and Paul William Coteus, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 171,890, Dec. 22, 1993, abandoned, which is a continuation of Ser. No. 968,084, Oct. 28, 1992, abandoned. This application Dec. 8, 1995, Ser. No. 569,561

Int. Cl.⁶ H01L 23/495

U.S. Cl. 257—676

11 Claims



1. A structure comprising:

a first electronic device;

a second electronic device;

a lead frame;

said first electronic device and said second electronic device have an output rotational symmetry about an axis perpendicular to said first and said second electronic devices;

said first electronic device is disposed on said lead frame;

said second electronic device is disposed on said first electronic device to form a stack;

said lead frame has a rotational symmetry corresponding to said output rotational symmetry;

said first electronic device has a plurality of first contact locations in the vicinity of an edge of said first electronic device;

a part of said plurality of leads is disposed under said stack; and

individual ones of said leads electrically interconnect outputs on each of said first electronic device and said second electronic device having a common function;

means for electrically interconnecting said first contact locations and said second contact locations to said leads.

5,780,926

MULTICHIP PACKAGE DEVICE HAVING A LEAD FRAME WITH STACKED PATTERNED METALLIZATION LAYERS AND INSULATION LAYERS

Jeong Woo Seo, Asan, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 14, 1997, Ser. No. 799,355

Claims priority, application Rep. of Korea, Feb. 17, 1996, 96-3953

Int. Cl.⁶ H01L 23/495; 23/02; 23/34

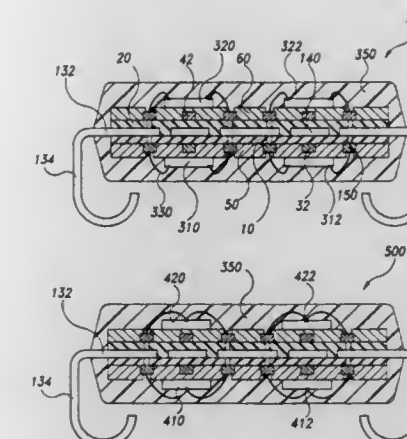
U.S. Cl. 257—676

9 Claims

1. A multichip package device comprising:

a lead frame having supporting portions and lead portions, said lead portions comprising inner leads and outer leads for electrically connecting the multichip package with an external electronic device;

first and second inner insulation layers deposited on lower and upper surfaces of the lead frame, respectively;



via holes formed through the first and the second inner insulation layers;

first and second metallization layers deposited and patterned on lower and upper surfaces of the first and the second inner insulation layers, respectively;

first and second outer insulation layers deposited on lower and upper surfaces of the first and the second patterned metallization layers, respectively;

a plurality of chips, each having an active surface on which a plurality of bonding pads are formed, and wherein backsides of the chips are attached to lower and upper surfaces of the first and second outer insulation layers;

a plurality of bonding wires connected between the plurality of bonding pads and the inner leads through the via holes and the first and second patterned metallization layers; and

an encapsulant for encapsulating the chips, the supporting portions and the inner leads of the lead portions.

5,780,927

SEMICONDUCTOR DEVICE WITH LONG LIFETIME

Yukio Nomura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

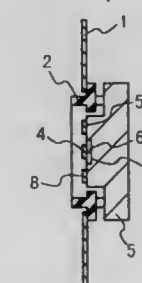
Filed Apr. 9, 1997, Ser. No. 832,677

Claims priority, application Japan, Apr. 10, 1996, 8-088159

Int. Cl.⁶ H01L 23/10; 23/34

U.S. Cl. 257—706

15 Claims



1. A semiconductor device comprising:

a heat radiator having a convex portion;

a reinforcement plate having a thermal conductivity and soldered on a portion of said convex portion of said heat radiator; and

a semiconductor element soldered on said reinforcement plate by a solder having a melting point lower than a silver copper solder; wherein

said heat radiator has a concave portion in said convex portion corresponding to said reinforcement plate, and wherein said reinforcement plate is soldered in said concave portion.

5,780,928

ELECTRONIC SYSTEM HAVING FLUID-FILLED AND GAS-FILLED THERMAL COOLING OF ITS SEMICONDUCTOR DEVICES

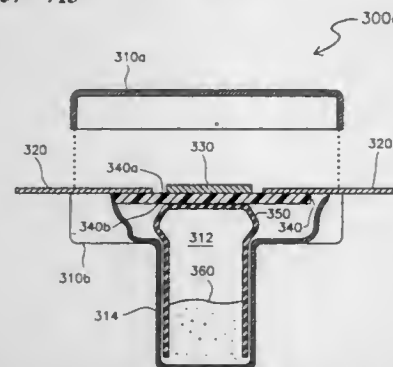
Michael D. Rostoker, Boulder Creek; Mark R. Schneider, San Jose, and Nicholas F. Pasch, Pacifica, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 207,493, Mar. 7, 1994. This application Apr. 9, 1996, Ser. No. 631,704

Int. Cl.⁶ H01L 23/34

U.S. Cl. 257—713

21 Claims



1. An electronic system having at least one packaged semiconductor device that is independent of the positional orientation of the device and gravity, said system comprising:

a semiconductor device package having top and bottom portions creating a cavity in which a die-receiving area is formed therein;

conductive leads having first ends outside the device package and second ends inside the device package die-receiving area; at least one semiconductor die having top and bottom surfaces and located within the die-receiving area;

the at least one semiconductor die connected to the second ends of the conductive leads inside the device package die-receiving area;

a first wick having a first portion thereof proximate to the top surface of the at least one die and in thermal communication therewith, the first wick having a second portion thereof in the top portion of the package body;

a second wick having a first portion thereof proximate to the bottom surface of the at least one die and in thermal communication therewith, the second wick having a second portion thereof in the bottom portion of the package body; and

an evaporative coolant at least partially filling the cavity formed by the top and bottom portions of the package body, wherein the evaporative coolant evaporates from the first portions of the first and second wicks proximate to the top and bottom surfaces, respectively, of the at least one semiconductor die, the evaporated coolant then condenses at the top and bottom portions of the package body and flows through the second portions of the first and second wicks to the first portions of the first and second wicks proximate to the top and bottom surfaces, respectively, of the at least one semiconductor die.

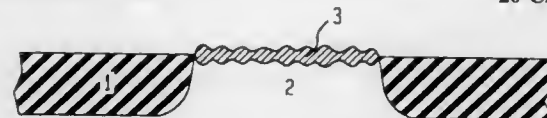
5,780,929 FORMATION OF SILICIDED JUNCTIONS IN DEEP SUBMICRON MOSFETS BY DEFECT ENHANCED COSI₂ FORMATION

Heinrich Zeininger, Obermichelbach; Christoph Zeller, Ottobrunn; Udo Schwalke, Heldenstein; Uwe Doeblner, Berlin, all of Germany, and Wilfried Haensch, Charlotte, Vt., assignors to Siemens Aktiengesellschaft, Munich, Germany
Continuation of Ser. No. 615,370, Mar. 14, 1996, abandoned, which is a continuation of Ser. No. 503,297, Jul. 17, 1995, abandoned, which is a continuation of Ser. No. 252,014, Jun. 19, 1994, abandoned, which is a division of Ser. No. 26,944, Mar. 5, 1993, Pat. No. 5,344,793. This application Nov. 5, 1996, Ser. No. 744,132

Int. Cl.⁶ H01L 23/52; 29/43

U.S. Cl. 257—751

20 Claims



1. A MOSFET semiconductor device, comprising:
a silicon substrate having a surface with a plurality of monolayers of silicon intentionally damaged by low energy in bombardment;
a defect enhanced cobalt silicide layer having no overlying barrier layer associated with said damaged silicon surface; and
at least one silicided junction less than 1500 Angstroms in depth.

5,780,930

METHOD FOR DIRECT ATTACHMENT OF AN ON-CHIP BYPASS CAPACITOR IN AN INTEGRATED CIRCUIT

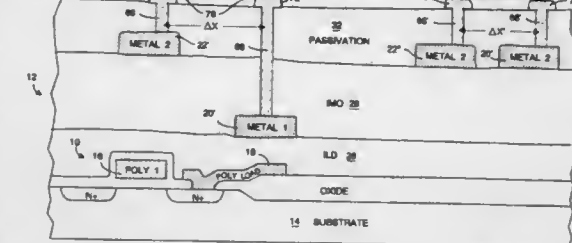
Deviprasad Malladi, Campbell; Shahid S. Ansari, Milpitas, and Eric Bogatin, San Jose, all of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Continuation of Ser. No. 353,439, Dec. 9, 1994, abandoned. This application Jan. 31, 1997, Ser. No. 792,088

Int. Cl.⁶ H01L 23/48; 23/52; 29/40; H01G 4/005

U.S. Cl. 257—777

20 Claims

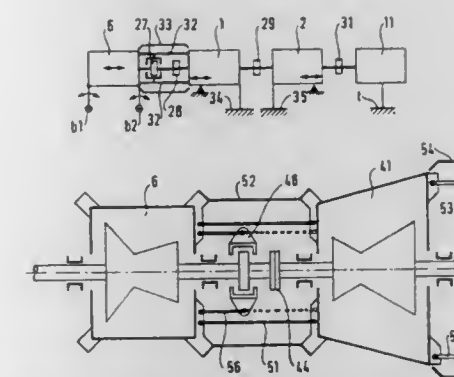


16. An integrated circuit (IC) including a V_{DD} pad and a first conductive trace coupled thereto, and a V_{SS} pad and a second conductive trace coupled thereto, and further including a first commercially available bypass capacitor having first and second connecting pads spaced-apart laterally a distance ΔX_1 , and a second commercially available bypass capacitor having first and second connecting pads spaced-apart laterally a distance ΔX_2 , said IC including:

a first pair of columnar electrically conductive elements, spaced-apart laterally from one another by said distance ΔX_1 , one of said first pair of elements making electrical contact with said first trace and the other of said first pair of elements making electrical contact with said second trace, each of said first pair of elements having an end extending upward to at least an uppermost surface of said IC;

a second pair of columnar electrically conductive elements, spaced-apart laterally from one another by said distance ΔX_2 , one of said first pair of elements making electrical contact with said first trace and the other of said first pair of elements making electrical contact with said second trace, each of said

first pair of elements having an end extending upward to at least an uppermost surface of said IC;
said first bypass capacitor, mounted on said uppermost surface directly over said IC such that said first and second connecting pads directly overlie and make electrical contact with respective first ends of said first pair of columnar electrically conductive elements such that electrical contact to said first bypass capacitor is made without laterally extending said uppermost regions of said first pair of columnar electrically conductive elements; and
said second bypass capacitor, mounted on said uppermost surface directly over said IC such that said first and second connecting pads of said second bypass capacitor directly overlie and make electrical contact with respective first ends of said second pair of columnar electrically conductive elements such that said electrical contact to said second bypass capacitor is made without laterally extending said uppermost regions of said second pair of columnar electrically conductive elements.



move in axial translation with the rear stator portion of the stator of the gas turbine or with the front stator portion of the stator of the hot module (1; 41) of the steam turbine, the rear stator portion of the gas turbine (6) and the front stator portion of the hot module (1; 41) of the steam turbine being connected together via at least two links (32; 51), said electricity generating unit being characterized in that said links (32, 51), the rear end of the rotor of the gas turbine (6), and the front end of the rotor of the hot module (1; 41) of the steam turbine are enclosed in an enclosure (33; 52) filled with a heat-conducting fluid, and in that the rear stator portion of the stator of that module (1, 42) of the steam turbine which precedes the cold module thereof is connected to the foundations via a fixed point, the stator of the cold module being connected to the foundations via another fixed point.

5,780,931

SURFACE MOUNTING SEMICONDUCTOR DEVICE AND SEMICONDUCTOR MOUNTING COMPONENT

Hiroshi Shimoda; Toshihiro Okajima, and Hiroshi Kurokawa, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

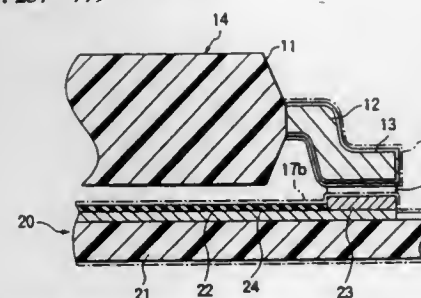
Filed Jun. 5, 1996, Ser. No. 655,239

Claims priority, application Japan, Jun. 9, 1995, 7-143047; May 28, 1996, 8-133833

Int. Cl.⁶ H01L 23/48; 23/52; 29/40; 23/12

U.S. Cl. 257—779

4 Claims



1. A surface mounting semiconductor device including a mounting surface for mounting of an external lead by soldering, the mounting surface including a metal coated with a metal carbonate.

5,780,932

ELECTRICITY GENERATING UNIT HAVING A COMBINED CYCLE AND INCLUDING A GAS TURBINE AND A STEAM TURBINE HAVING A PLURALITY OF MODULES

Patrick Laffont, Montrouge, France, assignor to GEC Alsthom Electromecanique SA, Montrouge, France

PCT No. PCT/FR95/00561, § 371 Date Dec. 14, 1995, § 102(e) Date Dec. 14, 1995, PCT Pub. No. WO95/30078, PCT Pub. Date Nov. 9, 1995

PCT Filed Apr. 28, 1995, Ser. No. 574,587

Claims priority, application France, May 3, 1994, 95 05 389 Int. Cl.⁶ F01D 15/10; F02C 6/00; H02K 7/18; H02D 9/04

U.S. Cl. 290—52

3 Claims

1. An electricity generating unit having a combined cycle, and comprising, from the front to the rear, mounted on foundations, a gas turbine (6) followed by a steam turbine having at least one hot module (1; 41) and a cold module (2; 43), followed by an electricity generator (11), the rotors of the gas turbine (6), of the steam turbine and of the electricity generator (11) forming a common line of shafts via rigid couplings (28, 29, 31; 44-47), the stator of the gas turbine (6) being mounted to move in axial translation, the line of shafts being provided with an abutment (27; 48) constrained to

5,780,933

SUBSTRATE FOR SEMICONDUCTOR DEVICE AND SEMICONDUCTOR DEVICE USING THE SAME

Jun Ohmori, Tokyo; Hiroshi Iwasaki, and Takanori Jin, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-Ken, Japan

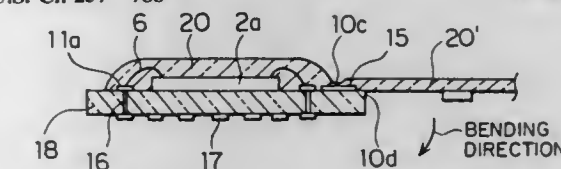
Filed May 10, 1996, Ser. No. 644,897

Claims priority, application Japan, May 12, 1995, 7-114559

Int. Cl.⁶ H01L 23/29; 23/02; 23/28; 23/04

U.S. Cl. 257—788

4 Claims



1. A substrate for a one-sided sealed semiconductor device comprising:

a substrate proper for a one-sided resin mold,
a wiring circuit including connection parts for a semiconductor element on a first main surface of the substrate proper,
flat-type external connection terminals led out on a second main surface of the substrate proper via through holes, and
a metallic layer formed on the first main surface independently of the wiring circuit and outside an area of the wiring circuit.

5,780,934

STARTER WITH PINION REGULATING CLAW AND SPRING

Tetsuo Imanishi, Chita-gun, and Nobuyuki Hayashi, Nagoya, both of Japan, assignors to Denso Corporation

Filed Dec. 24, 1996, Ser. No. 773,319

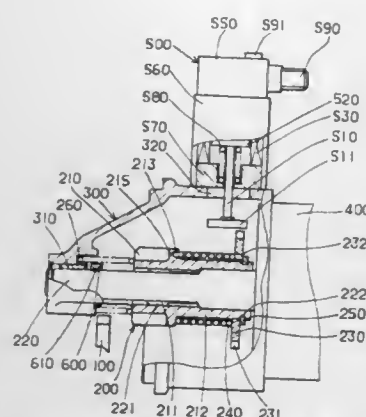
Claims priority, application Japan, Dec. 26, 1995, 7-339558

Int. Cl.⁶ F02N 11/00

U.S. Cl. 290—38 R

9 Claims

1. A starter for starting an engine having a ring gear, comprising:
a starter motor;
an output shaft to be driven by the starter motor;



first moving means movably coupled with the output shaft by means of a helical spline and having a pinion gear engageable with the ring gear;
second moving means positioned closer to the starter motor than the pinion gear is and movable along the output shaft;
elastic means connected with the first moving means at one end thereof and connected with the second moving means at the other end thereof and elastic in a rotational direction of the output shaft; and
regulation means movable to contact with and regulate a rotation of the second moving means thereby to move the first moving means toward the ring gear together with the second moving means and the elastic means by a rotation of the output shaft, wherein the first moving means is constructed to be rotatable by more than $\frac{1}{2}$ pitch of the pinion gear with respect to the second moving means by a flexing of the elastic means in the rotational direction of the output shaft, when the pinion gear contacts the ring gear.

5,780,935

HYDROPOWERED TURBINE SYSTEM

David T. Kao, Ames, Iowa, assignor to Iowa State University

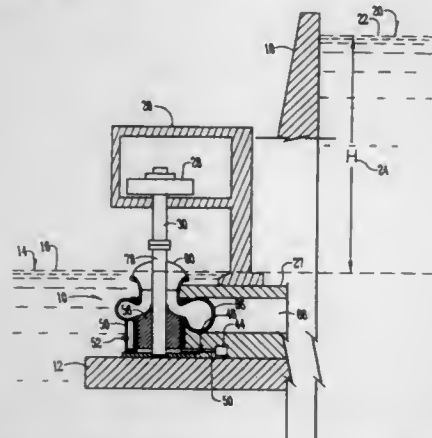
Research Foundation, Inc., Ames, Iowa

Filed Dec. 26, 1996, Ser. No. 773,389

Int. Cl.⁶ F01D 15/00

U.S. Cl. 290—52

8 Claims



1. A method of generating hydroelectric power with a hydroelectric turbine having a water inlet connected to a head water source, and a discharge outlet adjacent a horizontal tailwater surface located at an elevation lower than said head water source, wherein said turbine has a vertically disposed generator shaft having blades secured thereto and positioned adjacent said discharge outlet wherein water from said head water source moving upwardly through said discharge outlet will impinge on said blades to impart rotational motion to said generator shaft, comprising, positioning said turbine with respect to said tail water surface so that said blades will be partially submerged below said tail water surface,

and partially extending above said tailwater surface wherein said blades will cause water droplets to be propelled upwardly and outwardly over the tailwater surface surrounding said discharge outlet while at the same time causing turbulent water mixing below the tailwater surface around said discharge outlet to aerate such turbulent mixed water and to aerate the water droplets being discharged and to mix the droplets in the water around the discharge outlet.

5,780,936

APPARATUS FOR CONTROLLING MOBILE EQUIPMENT

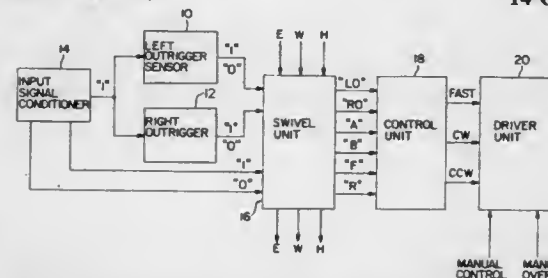
Paul S. Cardello, 69 Roberts Rd., Newtown Square, Pa. 19073

Filed Oct. 24, 1996, Ser. No. 738,974

Int. Cl.⁶ B66C 23/84

U.S. Cl. 307—9.1

14 Claims



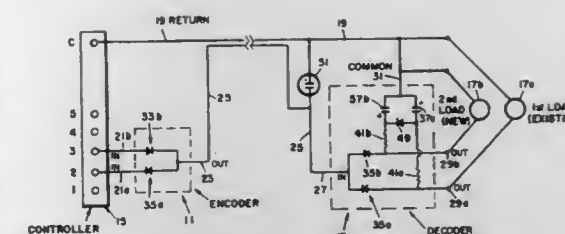
1. A rotation position sensor unit comprising:
a first multi-segment ring having:
(a) a first electrically conductive segment extending over a first arc length and to which a first input signal is supplied, and
(b) a second electrically conductive segment extending over a second arc length and to which a second input signal is supplied,
said first electrically conductive segment electrically isolated from said second electrically conductive segment;

a second ring having first, second, third, and fourth electrical contacts electrically isolated from each other and from which output signals are delivered:

(a) said first and said second electrical contacts positioned on said second ring for:
(1) contact of said first electrical contact with said first electrically conductive segment of said first multi-segment ring and contact of said second electrical contact with said second electrically conductive segment of said first multi-segment ring for a first range of rotational positions of said second ring relative to said first multi-segment ring,
(2) contact of said first electrical contact with said first electrically conductive segment of said first multi-segment ring and contact of said second electrical contact with said second electrically conductive segment of said first multi-segment ring for a second range of rotational positions, extending beyond said first range of rotational positions, of said second ring relative to said first multi-segment ring, and
(3) no contact of said first electrical contact with said first electrically conductive segment of said first multi-segment ring and contact of said second electrical contact with said second electrically conductive segment of said first multi-segment ring for a third range of rotational positions, extending beyond said second range of rotational positions, of said second ring relative to said first multi-segment ring, and
(b) said third and said fourth electrical contacts positioned on said second ring for:

(1) contact of said third electrical contact with said second electrically conductive segment of said first multi-segment ring and contact of said fourth electrical contact with said second electrically conductive segment of said first multi-segment ring for said first range of rotational positions of said second ring relative to said first multi-segment ring,

(2) contact of said third electrical contact with said second electrically conductive segment of said first multi-segment ring and no contact of said fourth electrical contact with said second electrically conductive segment of said first multi-segment ring for said second range of rotational positions of said second ring relative to said first multi-segment ring, and
(3) contact of said third electrical contact with said second electrically conductive segment of said first multi-segment ring and no contact of said fourth electrical contact with said second electrically conductive segment of said first multi-segment ring for said third range of rotational positions of said second ring relative to said first multi-segment ring; and
means for mounting said first multi-segment ring and said second ring for relative rotation between said first multi-segment ring and said second ring.



decoder means having first and second outputs for connection to the first and second loads, respectively,
said encoder means having a single output,
said decoder means having a single input,
conductor means connected between said single input and said single output, and
common conduction means connected between said first and second sources and said first and second loads.

5,780,937

SAFETY MANAGEMENT SYSTEM FOR A MOTOR VEHICLE

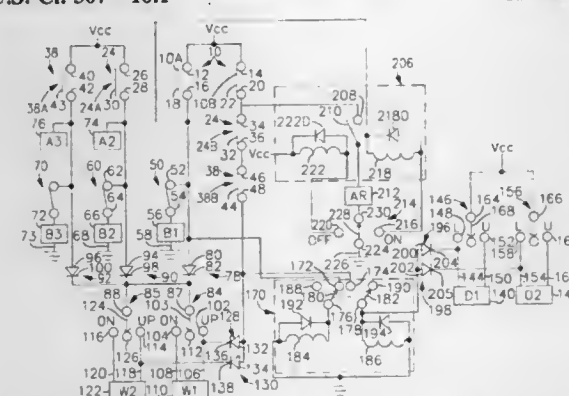
Yu Wei Kong, 6288 Pride La., Las Vegas, Nev. 89103

Filed Feb. 10, 1997, Ser. No. 796,781

Int. Cl.⁶ B60R 25/00

U.S. Cl. 307—10.1

12 Claims



1. A safety system for a motor vehicle with an electrically operated window and a door that has an electric door lock, comprising:
security means for generating a vehicle empty security signal in response to seats of said vehicle being unoccupied;
means for causing said window to close in response to said vehicle empty security signal;
driver present means for generating a driver present signal in response to a driver's seat of said vehicle being occupied; and
a double pole double throw latching relay that is connected to said door lock, said security means and said driver present means, said latching relay being conditioned by said driver present signal to provide a pulse to said door lock in response to said vehicle empty security signal.

5,780,938

DUPLEX ENCODER/DECODER FOR ALTERNATING CURRENT SYSTEMS

Walter J. Edwards, Floreat, Australia, assignor to RCO Parts, Inc., Pleasanton, Calif.

Filed Dec. 19, 1996, Ser. No. 770,708

Int. Cl.⁶ H02J 3/38

U.S. Cl. 307—18

17 Claims

1. An interfacing network for respectively interconnecting first and second sources with first and second loads with a two conductor connection, comprising
encoder means having first and second inputs for connection to the first and second sources, respectively;

5,780,939

METHOD AND APPARATUS FOR DETERMINING ORDERS OF NON-CHARACTERISTIC HARMONIC CURRENTS, AND FOR COMPENSATION OF THE NONCHARACTERISTIC HARMONIC CURRENTS

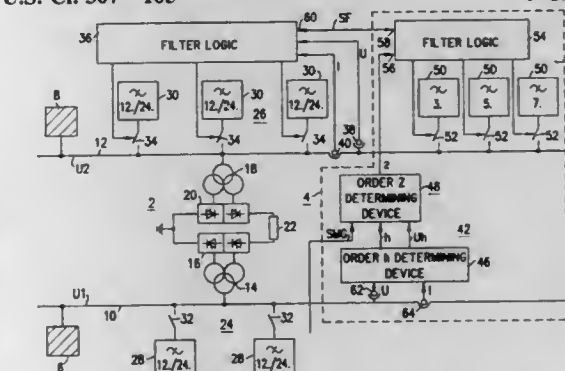
Norbert Christl, Herzogenaurach; Peter Lützelberger, Nürnberg, and Kadry Sadek, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
PCT No. PCT/DE92/01063, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO94/14220, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 10, 1992, Ser. No. 446,654

Int. Cl.⁶ H02J 1/02

U.S. Cl. 307—105

9 Claims



1. A method for determining an order of non-characteristic harmonic currents of a second power supply grid which is coupled to a first power supply grid by a short coupling including a high-voltage DC transmission system, and for compensating for the non-characteristic harmonic currents, which are produced as a result of distortion of a supply voltage, which distortion exists in the first power supply grid because of a low-frequency harmonic and which distortion passes through the short coupling, comprising steps of:

a) determining an order of initial distortion of the voltage of the first power supply grid based on at least one of a voltage and a current measurement;
b) determining an order of a lowest non-characteristic harmonic on a DC side of the system as a function of a determined order of a provided voltage-symmetry signal;
c) determining an order of a lowest non-characteristic harmonic on the second three-phase side of the system as a function of the determined order of the non-characteristic harmonic on the DC side of the short coupling and of the provided voltage-symmetry signal; and
d) activating at least a part of a compensation system on the basis of the determined orders of non-characteristic harmonic currents in the second power supply grid.

5,780,940

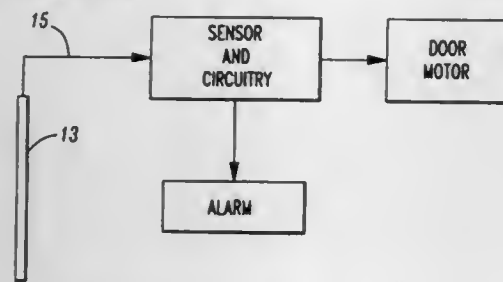
HOT WIRE SAFETY SWITCH

Gerald Gauvreau, Jr., Levittown, and Raymond McClintic, Bensalem, both of Pa., assignors to Air Check Corp., Levittown, Pa.

Filed Sep. 12, 1996, Ser. No. 713,221
Int. Cl.⁶ H02P 7/29

U.S. Cl. 307—118

11 Claims



1. A remote sensor, comprising:
a flow generator;
conduit means in fluid communication with said flow generator at a first end of said conduit means;
hot wire sensing means connected to a second end of said conduit means such that said sensing means receives fluid flow through an unsealed pneumatic circuit from said flow generator; and
switch means electrically connected to and activated by said sensing means when flow is sensed, whereby the actuation of said switch means initiates a signal.

5,780,941

CONTROL CIRCUIT

Jan F. Pauve, Espoo, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

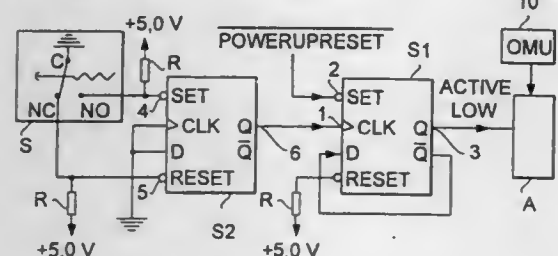
PCT No. PCT/FI95/00311, § 371 Date Feb. 12, 1997, § 102(e) Date Feb. 12, 1997, PCT Pub. No. WO95/34131, PCT Pub. Date Dec. 14, 1995

PCT Filed Jun. 1, 1995, Ser. No. 750,057

Claims priority, application Finland, Jun. 3, 1994, 942636
Int. Cl.⁶ H01H 3/00

U.S. Cl. 307—139

5 Claims



1. A control circuit for manual, forced control of a unit, comprising:
a non-locking, manually operated switch which returns to an initial position when actuating force directed thereto has ended; said manually operated switch including a break circuit and a make circuit;
a first switch means, comprising:
le. 5sq a first input for receiving a control pulse actuated by applying actuating force to said manually operated switch; a set input for receiving a predetermined set signal; and an output to said unit, for causing said unit to change state to a predetermined set state in response to provision to said unit of said set signal, and to change state between said set state and an alternative state in response to provision to said unit of said control pulse, and to remain in a same state until provision to said unit by said output of a respective following control pulse or set signal; and
a second switch means having a set input which is responsive to said make circuit of said manually operated switch, a reset input which is responsive to said break circuit of said manu-

ally operated switch, and for feeding a control pulse to said first input of said first switch means from when said make circuit of said manually operated switch is closed, until said break circuit of said manually operated switch is closed.

5,780,942

INPUT CIRCUIT AND SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE INCLUDING SAME

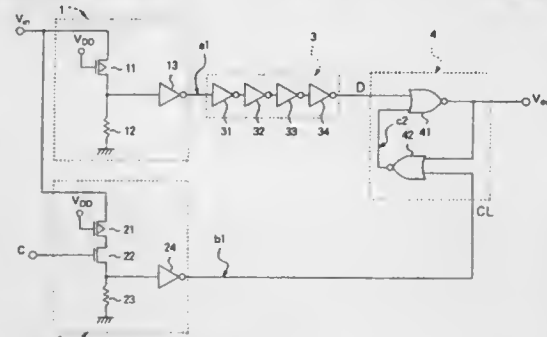
Takao Nakajima, Ebina, and Kenichi Nakamura, Sumida-Ku, both of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Apr. 25, 1996, Ser. No. 638,928

Claims priority, application Japan, Apr. 28, 1995, 7-105939
Int. Cl.⁶ H01H 7/00

U.S. Cl. 307—141

16 Claims



1. An input circuit, comprising:
a signal input terminal for applying an external input signal;
a first input potential detecting circuit for comparing a potential of the input signal with a predetermined reference potential to detect a potential difference between the two;
a second input potential detecting circuit activated in response to a control signal, for comparing the potential of the input signal with the predetermined reference potential to detect the potential difference between the two;
a delay circuit for delaying an output of said first input potential detecting circuit by a predetermined delay time;
a latch circuit for inputting an output signal of said delay circuit as data and an output signal of said second input potential detecting circuit as a clock, to generate an output signal according to potentials of these two inputted signals; and
a signal output terminal for outputting the output signal of said latch circuit.

5,780,943

EXPOSURE APPARATUS AND METHOD

Kazuya Ono, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Apr. 2, 1997, Ser. No. 831,940

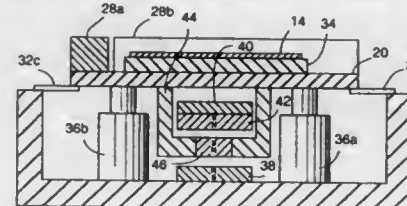
Claims priority, application Japan, Apr. 4, 1996, 8-108575;
May 31, 1996, 8-161171

Int. Cl.⁶ H02K 41/00; F16F 15/03

U.S. Cl. 310—12

31 Claims

1. A driving apparatus for controlling a position of an object by



driving a second member relative to a first member using a magnetic force, the driving apparatus comprising:

- a first magnet and a second magnet spaced from said first magnet, coupled to one of said first member and said second member,
a magnetic flux driver coupled to the other of said first member and said second member and disposed between said first magnet and said second magnet said magnetic flux driver generating a magnetic flux having opposite poles at opposite sides of said magnetic flux driver, and
a driver holder coupled to said magnetic flux driver, said driver holder being substantially U-shaped.

5,780,944

TWO-PHASE PERMANENT-MAGNET ELECTRIC ROTATING MACHINE

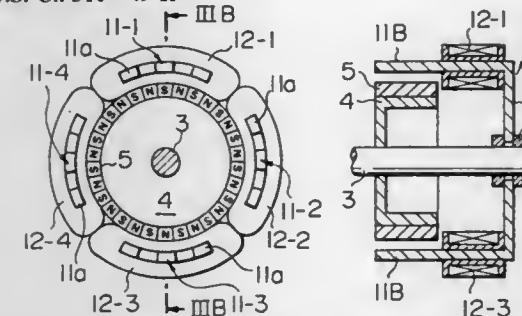
Masafumi Sakamoto, Kiryu, Japan, assignor to Japan Servo Co., Ltd., Tokyo-to, Japan

Filed Apr. 16, 1996, Ser. No. 633,060

Claims priority, application Japan, Apr. 19, 1995, 7-116621
Int. Cl.⁶ H02K 37/12; 1/22; 37/14

U.S. Cl. 310—49 R

7 Claims



1. An inner-rotor or outer-rotor type two-phase permanent-magnet electric rotating machine comprising: a stator including a stator iron core made from a magnetic substance in a predetermined shape having a disc portion and 2ⁿ main poles (n being an integer satisfying a condition n ≥ 2) erected perpendicularly from the outer circumference of said disc portion, and excitation windings each formed to have a predetermined width, said excitation windings being provided on said main poles respectively, each of said main poles extending out of corresponding one of said windings so as to be formed into numbers of projecting portions which extend axially and parallel to each other to form comb teeth at an extended end of each of said main poles; and a cylindrical rotor having a plurality of permanent magnets formed in a manner so that N (north) and S (south) poles equal in number of said permanent magnets are alternately disposed in a direction of rotation of said rotor, said rotor being supported so as to be rotatable relative to said stator with a predetermined air gap between surfaces of said main poles and surfaces of said permanent magnets; wherein said main poles are arranged in a manner so that 2ⁿ⁻¹ alternate ones of said main poles are made to be in-phase and that a half of said in-phase main poles have a polarity which is opposite to a polarity of the other half of said in-phase main poles.

5,780,945

SWITCHED RELUCTANCE MACHINE BALANCING SYSTEM: MATERIAL REMOVAL APPROACH AND MATERIAL ADDITION APPROACH

Antonio P. Caviglia, St. Louis, Mo., and Don Williams, Andover, United Kingdom, assignors to Emerson Electric Co., St. Louis, Mo.

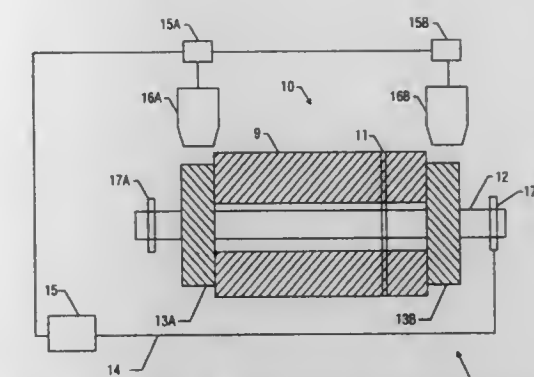
Filed Mar. 24, 1997, Ser. No. 822,067

Int. Cl.⁶ H02K 5/24

U.S. Cl. 310—51

30 Claims

1. A method of balancing a rotor of a reluctance machine, the method comprising the acts of:
a) positioning a disk to one side of the rotor; and



- b) selectively removing material from the disk to balance the rotor.

5,780,946

AIR-COOLED TYPE ELECTRIC MOTOR

Kosei Nakamura, Yukio Katsuzawa, and Yasuyuki Nakazawa, all of Yamanashi, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

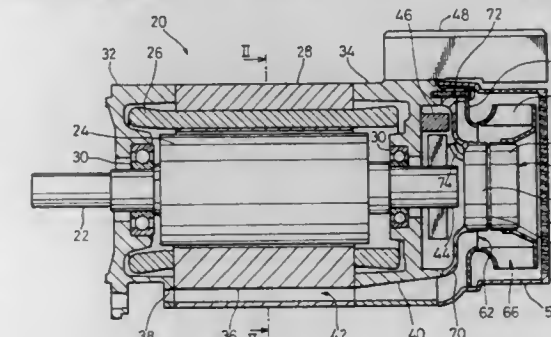
Continuation of Ser. No. 535,064, Nov. 2, 1995, abandoned.

This application Jun. 13, 1997, Ser. No. 874,885

Claims priority, application Japan, Mar. 3, 1994, 6-033757
Int. Cl.⁶ H02K 1/32; 9/06

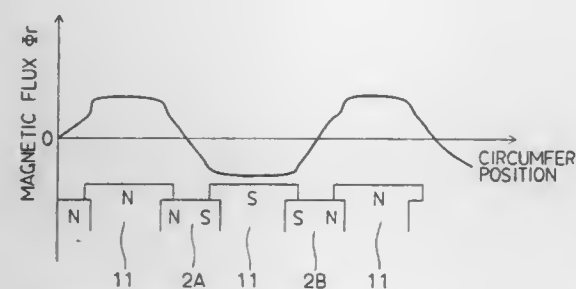
U.S. Cl. 310—58

4 Claims



1. An air-cooled type electric motor comprising:
a rotor having a shaft;
a stator encircling said rotor through an air gap;
a pair of support members arranged at both axial ends of said stator rotatably supporting said shaft of said rotor and fixedly supporting said stator;
plural air passages provided in a core of said stator to generally axially penetrate through said core, said air passages continuously extending in a generally axial direction through each of said core of said stator and said pair of support members;
a separate centrifugal blower unit directly supported by one of said support members and independent of said shaft of said rotor, said blower unit forcing air surrounding the motor to flow into said air passages, a separate drive section for driving an impeller of said centrifugal blower unit, wherein said drive section comprises a drive section case, and wherein said drive section case h as a radially extending case part, said case part being directly fixed to said one of said support members and closing an end of said one of said support members and covering an end of said shaft of said rotor, said centrifugal blower unit being a centrifugal fan having backward curved vanes, and wherein an exhaust direction of said centrifugal blower unit can be switched by exchanging said impeller;
a casing attached to said one of said support members and covering said separate centrifugal blower unit; and
an external terminal supported by one of said support members and used to electrically connect the motor with outside apparatuses, an electric wire for said drive section extending through an interior space of the motor and being connected to said external terminal.

1. An alternator comprising:
a stator having a stator coil;
a rotor comprising:
a rotor coil;



Lundell type magnetic poles which are disposed on an outer periphery of said rotor and along a circumferential direction of said rotor, said Lundell type magnetic poles being polarized by said rotor coil to alternately different polarities; permanent magnets disposed between said Lundell type magnetic poles, respectively, so that side faces of each of said permanent magnets in said circumferential direction are polarized to opposite polarities, and said Lundell type magnetic poles and side faces of said permanent magnets which are adjacent to each other have the same polarity to thereby exhibit smooth variations of magnetic flux directed toward said stator coil along said circumferential direction; wherein said Lundell type magnetic poles have flanges which project at least circumferentially from side edges thereof and abut on an outer peripheral surface of said permanent magnets, and a magnetic force intensity of each of said side faces of said permanent magnets is substantially equal to a magnetic force intensity developed in each of said Lundell type magnetic poles which is respectively adjacent thereto; and a rectifier constructed using a MOS type transistor that converts an alternating current generated by said stator coil to a direct current, wherein said MOS type transistor is formed using as a base material a monocrystalline SiC that is a compound of silicon (Si) and carbon (C) and is smaller in resistivity than Si.

5,780,954

THERMIONIC ELECTRIC CONVERTERS

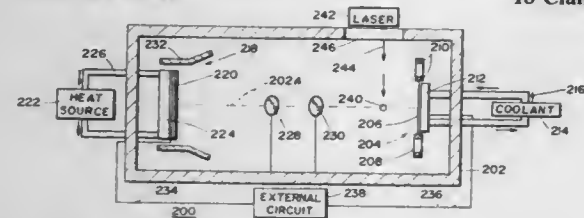
Edwin D. Davis, 1350 S. Peninsula Dr., Daytona Beach, Fla. 32118

Filed Jan. 22, 1997, Ser. No. 787,476

Int. Cl.⁶ H01J 45/00; H02N 3/00

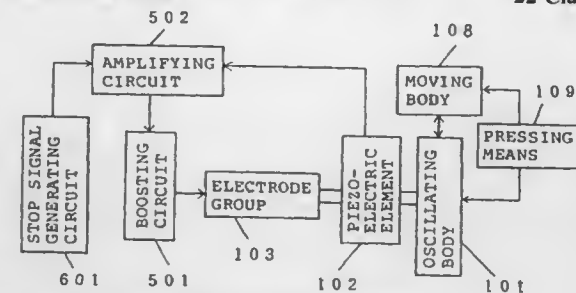
U.S. Cl. 310—306

18 Claims



1. A thermionic electric converter comprising:
a casing member;
a cathode within the casing member operable when heated to serve as a source of electrons; and
an anode within the casing member operable to receive electrons emitted from the cathode; and wherein the cathode is a wire grid having wires going in at least two directions that are transverse to each other; and further comprising a laser operable to hit electrons between the cathode and anode.

5,780,955
ULTRASONIC MOTOR DEVICE
Akihiro Iino; Masao Kasuga; Makoto Suzuki; Kenji Suzuki, and Tomosumi Saruwatari, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan
Filed Sep. 30, 1996, Ser. No. 723,114
Claims priority, application Japan, Oct. 2, 1995, 7-255269; Aug. 29, 1996, 8-228750
Int. Cl.⁶ H01L 41/08
U.S. Cl. 310—316
22 Claims



1. An ultrasonic motor device comprising:
a vibrating body to which a piezo-electric element is fixed;
a moving body movably disposed on the vibrating body and frictionally driven by ultrasonic vibration of the vibrating body;
pressing means for pressing the moving body into pressure contact with the vibrating body; and
a self-excited vibration circuit having a piezo-electric element having a first surface and a second surface, at least one group of electrodes disposed on the first surface of the piezo-electric element, an amplifying circuit for receiving a voltage generated on the second surface of the piezo-electric element and amplifying the received voltage to a predetermined voltage level, and a boosting circuit for boosting an output voltage of the amplifying circuit and vibrationally driving the group of electrodes disposed on the first surface of the piezo-electric element.

5,780,956

ROTARY PIEZOELECTRIC MOTOR FOR VEHICLE APPLICATIONS

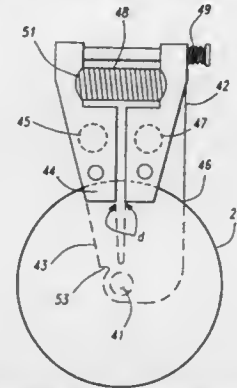
John R. Oliver, Newbury Park; Ramakar R. Neurgaonkar; Jeffrey G. Nelson, both of Thousand Oaks, all of Calif., and Carlo Bertolini, Feucherolles, France, assignors to Meritor Light Vehicle Systems, Inc., Troy, Mich.

Filed Nov. 12, 1996, Ser. No. 747,140

Int. Cl.⁶ H02N 2/00; H01L 41/08

U.S. Cl. 310—323

19 Claims



1. A vehicle component and drive comprising:
a vehicle component;
a rotating element for moving said vehicle component;
a piezoelectric drive system for rotating said rotating element, said drive system includes a pair of fingers spaced circumferentially about said rotating element, expanding and contracting piezoelectric actuators being associated with each of said fingers such that said fingers may be selectively brought into

clamping contact with said rotating element, or moved to a position spaced from said rotating element.

5,780,957
MOVING LINEAR PIEZOELECTRIC MOTOR FOR VEHICLE APPLICATIONS

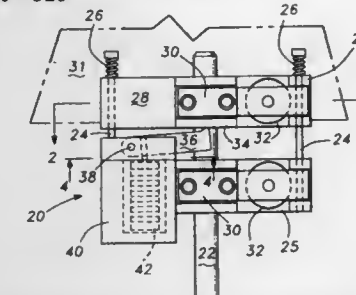
John R. Oliver, Newbury Park; Ratnakar R. Neurgaonkar; Jeffrey G. Nelson, both of Thousand Oaks, all of Calif., and Carlo Bertolini, Feucherolles, France, assignors to Meritor Light Vehicle Systems, Inc., Troy, Mich.

Filed Nov. 12, 1996, Ser. No. 747,138

Int. Cl.⁶ H01L 41/08

U.S. Cl. 310—328

10 Claims



1. A vehicle component drive system comprising:
a vehicle component movable between two linearly spaced positions;
a drive for moving said component including a piezoelectric motor for causing said movement between said two linearly spaced positions, said motor including structure for alternately clamping and releasing portions of said motor to said component, and a spring for biasing and moving said component in conjunction with said clamping and releasing; said piezoelectric motor including at least two piezoelectric actuators causing linear movement which is then transmitted to said vehicle component, said piezoelectric motor includes two-spaced blocks each having an associated one of said piezoelectric actuators, said blocks being movable along a guide shaft, said vehicle component being fixed to move with one of said blocks, and said blocks being selectively actuatable to move between positions where they are clamped on said guide shaft, and where they are unclamped on said guide shaft such that said blocks move axially along said guide shaft, a third piezoelectric actuator associated with said motor and actuatable between expanded and contracted positions to force one of the blocks axially along said guide shaft, and at least one pin fixed to one of said blocks and movable relative to the other of said blocks and a spring positioned on said pin for biasing said two blocks together.

5,780,958

PIEZOELECTRIC VIBRATING DEVICE

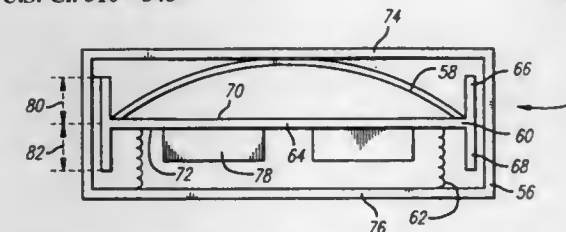
Michael G. Strugach, Calabasas, and Andrei Szilagyi, Rancho Palos Verdes, both of Calif., assignors to Aura Systems, Inc., El Segundo, Calif.

Filed Nov. 3, 1995, Ser. No. 552,370

Int. Cl.⁶ H01L 41/08; B06B 1/06

U.S. Cl. 310—348

2 Claims



2. A piezoelectric vibrating device comprising:

a case having a first compartment, said first compartment defining a vertical axis and having a first compartment height along said vertical axis;
a bender element fabricated from an electroactive material, said bender element disposed within said first compartment and further wherein at least a portion of said bender element being axially moveable within said first compartment;
a motion limiter disposed within said case for preventing damage to said bender element, said motion limiter having a first portion that abuts against said case to prevent said first compartment height from axially compressing beyond a predetermined first compartment minimal height; and
a spring disposed intermediate said motion limiter and said case.

5,780,959

CATHODE STRUCTURE FOR CATHODE RAY TUBE

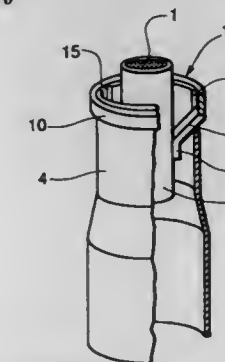
Jean-Claude Pruvost, and Jean-Rémy Adamski, both of Dijon, France, assignors to Thomson Tubes and Displays, S.A., Paris, France

Filed Dec. 3, 1996, Ser. No. 759,348

Int. Cl.⁶ H01J 1/20

U.S. Cl. 313—270

1 Claim



1. In a cathode structure for a cathode ray tube including a first metal tube adapted to receive an emitting part and a heating element, a second metal tube surrounding said first metal tube, and means for retaining the first tube positioned inside the second tube, the improvement comprising
the retaining means being a single metal piece, said single metal piece including a crown having a plurality of branches extending in the direction of the axis of said crown, said crown being fixed to said second metal tube and being located on the outside surface of said second tube, and said second metal tube having perforated notches through which said branches extend toward the inside of said second tube.

5,780,960

MICRO-MACHINED FIELD EMISSION MICROTIPS

Kenneth G. Vickers, Whitesboro, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

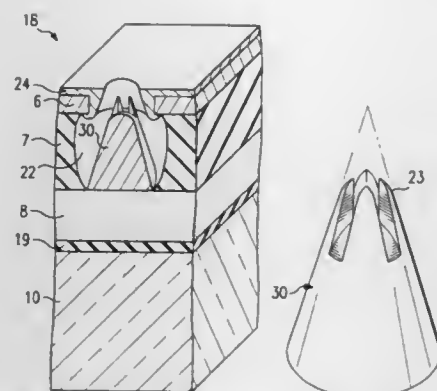
Filed Dec. 18, 1996, Ser. No. 768,551

Int. Cl.⁶ H01J 1/30

U.S. Cl. 313—310

7 Claims

7. An electron emission apparatus comprising:
a gate emitter formed as a conductive plate having an aperture;
and
an electron emission structure formed within said aperture;
wherein said electron emission structure is shaped as an elongated wedge having a channel formed within upwardly



extending region of said elongated wedge, said channel providing two knife-edged electron emission surfaces.

5,780,961
GROUND PLANE INSULATING COATING FOR PROXIMITY FOCUSED DEVICES

Gary D. Power, Manteca, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed Mar. 5, 1993, Ser. No. 26,797

Int. Cl.⁶ H01J 43/04

U.S. Cl. 313—376

20 Claims



1. In a microchannel plate, the improvement comprising: a layer of dielectric material on the ground plane of the microchannel plate; said layer of dielectric material being provided with openings which align with without covering holes in the microchannel plate.

5,780,962
COLOR SELECTION ELECTRODE MOUNTING STRUCTURE

Bunichiro Fujii; Kenichi Ozawa; Koji Saita, all of Kanagawa; Tsunenari Saito, Tokyo, and Hajime Minegishi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 18, 1996, Ser. No. 683,212

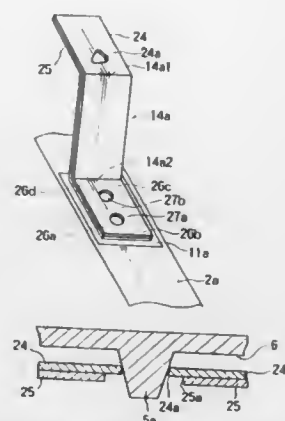
Claims priority, application Japan, Jul. 20, 1995, 7-184508

Int. Cl.⁶ H01J 29/07

U.S. Cl. 313—402

12 Claims

1. A cathode ray tube comprising: a fluorescent glass panel; a plurality of pins provided on a surface of said fluorescent glass panel; a frame member; a color selection electrode system supported by said frame member; and a plurality of supporting members, each supporting member having a first end fixed to a portion of said frame member and a second end fixed by a first of said plurality of pins to



- support said frame member and said color selection electrode system to said surface of said fluorescent glass panel, each of said plurality of supporting members comprising a first plate spring member and a second plate spring member having an outer shape substantially equal to an outer shape of said first plate spring member, said first plate spring member and said second plate spring member having predetermined spring characteristics for supporting said color selection electrode system to said surface of said fluorescent glass panel at a predetermined spring force, said first plate spring member having a first opening into which said first pin is fittingly inserted, said second plate spring member having a second opening larger than said first opening, into which said first pin is inserted, said first end of each supporting member comprising first ends of both said first and second plate spring members, said first pin fittingly inserted into said first opening of said first spring member and inserted into said second opening of said second spring member at second ends of both said first and second plate spring members.

5,780,963
DEFLECTION YOKE

Makoto Matsuoka, Kouchi, and Takasuke Koga, Moriyamachi, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

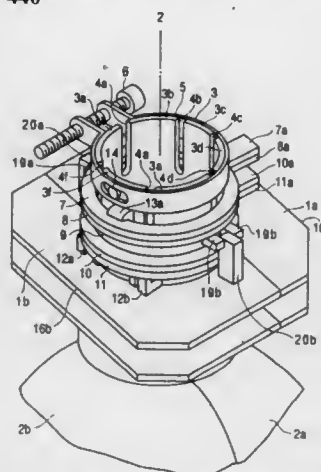
Filed Feb. 27, 1997, Ser. No. 806,736

Claims priority, application Japan, Feb. 29, 1996, 8-071001

Int. Cl.⁶ H01J 29/76

U.S. Cl. 313—440

9 Claims



1. A deflection yoke for a cathode ray tube comprising: separator means formed in a funnel shape for supporting components of said deflection yoke and for interposing between a horizontal coil and a vertical coil, said separator means having front and rear portions, said front portion being adapted to face a screen of said cathode ray tube when said deflection yoke is mounted on said cathode ray tube;

- flange means provided in said rear portion of said separator means and having a substantially flat panel shape;
- a flexible cylindrical neck formed on said separator means;
- a clamp adapted to be mounted on said flexible cylindrical neck for fixing said deflection yoke to said cathode ray tube by tightening said flexible cylindrical neck when said clamp is tightened;
- a plurality of magnetic rings mounted on said flexible cylindrical neck for tuning magnetic characteristics of said deflection yoke;
- a spacer having a first engaging means, said spacer being installed on said flexible cylindrical neck and positioned between said plurality of magnetic rings; and
- second engaging means formed on said flange means for engaging with said first engaging means of said spacer and restricting rotation of said spacer, whereby said flange means is not subject to deformation of said flexible cylindrical neck caused by tightening of said clamp.

5,780,964

Patent Not Issued For This Number

5,780,965
THREE DIMENSIONAL ELECTROLUMINESCENT DISPLAY

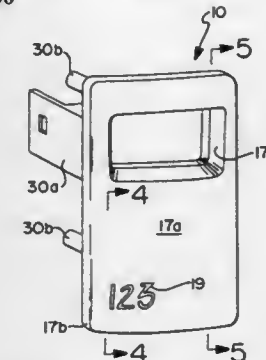
Michael W. Cass, Lenox, Mich.; Rodney T. Eckersley, Tempe, Ariz.; Robert J. Krafek; Walter J. Paclorek, both of Phoenix, Ariz., and Ramona R. Fecbter, West Bend, Wis., assignors to Key Plastics, Inc., Novi, Mich.

Filed Dec. 9, 1993, Ser. No. 164,142

Int. Cl.⁶ H05B 33/00

U.S. Cl. 313—506

14 Claims



1. A three dimensional electroluminescent display comprising: a transparent sheet; a translucent layer placed on at least one side of said sheet; at least one electroluminescent (EL) lamp placed directly behind said translucent layer and covering at least a portion on one side of said sheet; and a substrate molded to said EL lamp and said sheet on the one side thereof to form an integral, three dimensional EL display having a curved and contoured outer surface.

5,780,966
ELECTROLUMINESCENT DEVICE WITH IMPROVED BLUE COLOR PURITY

Akira Kato, Kariya; Masayuki Katayama, Handa; Nobuei Ito, Chiryu, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

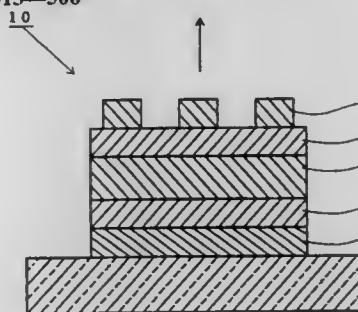
Filed Apr. 19, 1996, Ser. No. 633,998

Claims priority, application Japan, Apr. 20, 1995, 7-095215; Apr. 27, 1995, 7-103846

Int. Cl.⁶ H05B 33/14

U.S. Cl. 313—506

5 Claims



1. An electroluminescent device comprising: a pair of electrodes; and a luminescent layer disposed between said electrodes, said luminescent layer comprising CaGa_2S_4 with Ce incorporated as a luminescent center and having a film quality which presents a ratio of an X-ray diffraction peak intensity for a (200) reflection of CaS to an X-ray diffraction peak intensity for a (400) reflection of CaGa_2S_4 that is 0.1 or less.

5,780,967
ELECTRON TUBE WITH A SEMICONDUCTOR ANODE OUTPUTTING A DISTORTION FREE ELECTRICAL SIGNAL

Motohiro Suyama; Kimitsugu Nakamura, and Masuo Ito, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka-ken, Japan

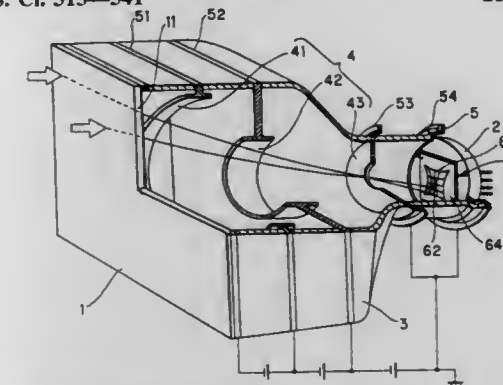
Filed Aug. 30, 1996, Ser. No. 705,678

Claims priority, application Japan, Aug. 31, 1995, 7-223612

Int. Cl.⁶ H01J 40/16

U.S. Cl. 313—541

21 Claims



1. An electron tube comprising: a tubular sidewall having first and second ends in a longitudinal direction and a center axis in the longitudinal direction; a faceplate hermetically sealed to said first end of said tubular sidewall and having a surface and a center on the surface, said faceplate being a planar shape having an outer profile; a stem hermetically sealed to said second end of said tubular sidewall and having a surface, said tubular sidewall, said faceplate and said stem forming an airtight chamber with the surface of said faceplate and the surface of said stem both being directed inwardly of said airtight chamber;

a photocathode formed on said surface of said faceplate, which produces electrons in response to incident radiation thereon; an electrode assembly provided within the airtight chamber, for developing an electric field when said electrode assembly is applied with voltages, the electric field acting as an electron lens when the electrons pass therethrough, wherein the electrons are subject to locus distortion by the electron lens; and a semiconductor device attached to the surface of said stem and having a window confronting said photocathode for bombardment of the electrons that have passed through the electron lens, the window having such an outer profile that cancels the locus distortion of the electrons received thereat, said semiconductor device multiplying the electrons and producing an output signal representative of the radiation incident on said photocathode.

5,780,968

Patent Not Issued For This Number

5,780,969

GYROTRON APPARATUS INCLUDING REFLECTING CYLINDERS WHICH PROVIDE UNDESIRABLE WAVE ABSORPTION

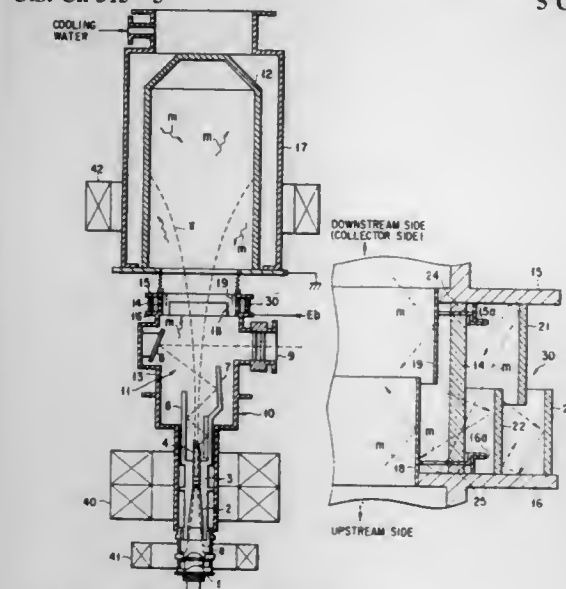
Keishi Sakamoto, Katsuta; Masaki Tsuneoka; Atsushi Kasugai, both of Ibaraki-ken, and Tsuyoshi Kariya, Otawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, and Japan Atomic Energy Research Institute, Tokyo, both of Japan

Filed Aug. 3, 1995, Ser. No. 510,655
Claims priority, application Japan, Aug. 5, 1994, 6-184868; Jul. 17, 1995, 7-180134

Int. Cl.⁶ H01J 25/00; 23/54

U.S. Cl. 315-5

5 Claims



1. A gyrotron apparatus comprising: an electron gun for generating an electron beam; a metal housing that defines a cavity resonator in which microwaves are generated by the electron beam interacting with a microwave electric field in a magnetic field provided therein; a microwave outputting portion for outputting microwaves generated in the cavity resonator; and a microwave reflecting-transmitting portion having a plurality of high-frequency mirrors for directing the microwaves from said cavity resonator in a direction different from a traveling direction of the electron beam and reflecting and transmitting the microwaves to the microwave outputting portion;

a collector for collecting the electron beam that travels from the electron gun through said microwave reflecting-transmitting portion; an insulation cylinder for electrically insulating said microwave reflecting-transmitting portion from the collector, said insulating cylinder constituting a part of a vacuum chamber; a microwave absorbing portion provided in an outer periphery of said insulation cylinder; a first microwave reflecting cylinder for reflecting the microwaves directed thereon having a first free end and being electrically connected to the collector proximate to an end thereof opposed to said first free end; and a second microwave reflecting cylinder for reflecting the microwaves directed thereon having a second free end and being electrically connected to the metal housing proximate to an end thereof opposed to said second free end, wherein the first and second microwave reflecting cylinders are disposed substantially coaxially in opposing axial directions such that they define an interior space for the electron beam to pass through said interior space, said first free end being electrically isolated from said second free end.

5,780,970

MULTI-STAGE DEPRESSED COLLECTOR FOR SMALL ORBIT GYROTRONS

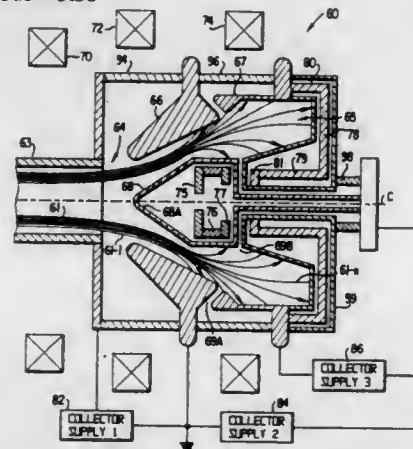
Amarjit Singh, Greenbelt, Md.; R. Lawrence Ives, Saratoga, Calif.; Richard V. Schumacher, Campbell, Calif., and Yosuke M. Mizuhara, Palo Alto, Calif., assignors to University of Maryland, College Park, Md., and Calabasas Creek Research Center, Inc., Saratoga, Calif.

Filed Oct. 28, 1996, Ser. No. 740,108

Int. Cl.⁶ H01J 23/027

U.S. Cl. 315-5.38

21 Claims



16. A depressed collector for a small orbit gyrotron generating a beam of electrons having varying energies, said beam centrally located about an axis of the collector for recovering energy therefrom, comprising means for receiving the individual electrons in accordance with their respective energies comprising a plurality of stages, said stages being arranged so that electrons with the lowest energy impinge on a first stage closest to the beam radially outwardly thereof; electrons of a next higher energy impinging on a second stage located centrally of the beam; and electrons of yet higher energy impinging on a third stage downstream of the first and second stages; magnetic field generating means for producing a magnetic field when energized; each of said plurality of stages including an electrode for producing, when energized, an electric field; and magnetic pole pieces for altering magnetic fields produced in the collector to result in the impingement of electrons according to their respective energies.

5,780,971

METHOD AND APPARATUS FOR GENERATING RADIATION UTILIZING DC TO AC CONVERSION WITH A CONDUCTIVE FRONT

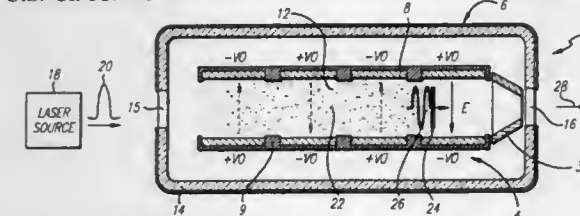
John M. Dawson, Pacific Palisades; Warren B. Mori, Hermosa Beach; Chih-Hsiang Lai, So. Pasadena, and Thomas C. Katsouleas, Malibu, all of Calif., assignors to Univ. of So. Calif., Los Angeles, and The Regents of the Univ. of Calif., Oakland, both of Calif.

Filed Jun. 6, 1994, Ser. No. 254,410

Int. Cl.⁶ H03B 7/10; 17/00

U.S. Cl. 315-39

34 Claims



25. Apparatus for generating radiation, comprising: a gas-filled capacitor array; a DC bias voltage applied to said array to produce a static DC electric field within said array; and a laser source for propagating laser radiation pulses through said electric field to ionize said gas within said array and produce a phased discharge current across said array, said current generating electromagnetic radiation which is emitted from said array.

5,780,972

Patent Not Issued For This Number

5,780,973

VEHICLE WINDSHIELD WIPER-LIGHT CONTROL SYSTEM INCORPORATING DAYTIME RUNNING LIGHT MODE

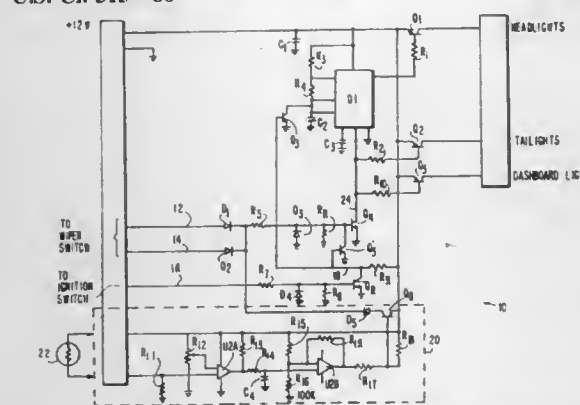
Joseph M. Lively, 110 Willard Ave., Farmingdale, N.Y. 11735; Ronald Koppel, 44 Glades Way, Huntington, N.Y. 11743, and Edwin Kirchmeier, 35 Falcon Dr., Hauppauge, N.Y. 11788

Filed Jun. 28, 1996, Ser. No. 671,605

Int. Cl.⁶ B60Q 1/26

U.S. Cl. 315-80

11 Claims



1. An apparatus for controlling the headlights of a vehicle, said vehicle having a power supply, a main power switch, and a windshield wiper control switch, comprising: pulse generator means coupled to said power supply and to said headlights for providing a pulsed voltage to the headlights to energize said headlights at a low running light power level; and switching means coupled to said pulse generator, said main power switch and said windshield wiper control switch to

deactivate said pulse generator means and engage said headlights at full power concurrently with activation of said windshield wiper control switch.

5,780,974

DAYTIME RUNNING LIGHTS

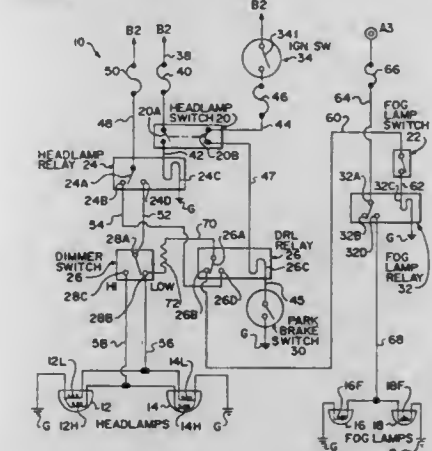
Parmjit S. Pabla, Fort Wayne, and Merrill D. Miller, Huntington, both of Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Aug. 7, 1996, Ser. No. 694,006

Int. Cl.⁶ B60Q 1/02

U.S. Cl. 315-82

16 Claims



1. An automotive vehicle headlamp circuit that is powered from a voltage source of a vehicle and includes daytime running illumination, said circuit comprising in combination: a) a right headlamp on a right side of a vehicle and a left headlamp on a left side of a vehicle; b) a headlamp switch that is selectively operable to off and on positions for selectively turning the headlamps off and on; c) a main headlamp circuit controlled by said headlamp switch for operating said headlamps substantially at nominally rated operating voltage when said headlamp switch is operated to on position; and d) a daytime running control for operating said headlamps at less than nominally rated operating voltage to provide daytime running illumination intensity during vehicle running when said headlamp switch is in off position; e) a daytime running headlamp circuit that is under control of said daytime running control and comprises voltage dropping resistance in series with said headlamps for causing said headlamps to operate at less than nominally rated operating voltage and thereby provide daytime running illumination intensity when said daytime running control is operating said headlamps; and f) wherein said resistance comprises plural insulated resistance wires connected in mutually parallel circuit relationship in a wiring harness.

5,780,975

LOW COST INVERTER WITH BOTH DISCRETE AND INTEGRATED POWER SWITCHES

Robert J. Krafcik, Phoenix, Ariz., assignor to Duell Corporation, Chandler, Ariz.

Filed Oct. 9, 1996, Ser. No. 731,063

Int. Cl.⁶ G09G 3/12; 19/32

U.S. Cl. 315-169.3

4 Claims

1. An inverter for converting a low voltage direct current into a high voltage alternating current, said inverter comprising: a supply terminal; a ground terminal; an inductor having a first terminal and a second terminal;

5,780,988

METHOD FOR DETECTING THE POSITION, DIRECTION OF ROTATION AND ROTATIONAL SPEED OF A ROTATABLY SEATED PART

Roland Kalb, Rossach, and Jurgen Seeberger, Rattelsdorf, both of Germany, assignors to Brose Fahrzeugteile GmbH & Co. KG, Coburg, Germany

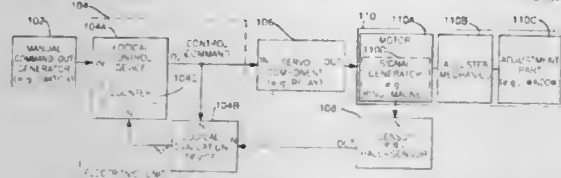
Continuation of Ser. No. 240,932, May 11, 1994, abandoned. This application Mar. 25, 1996, Ser. No. 622,186

Claims priority, application Germany, May 11, 1993, 43 15 637.1

Int. Cl.⁶ G05B 19/29

U.S. Cl. 318—603

5 Claims



1. A method for detecting the position of a part and the direction of movement of a motor moving the part using a single position sensor which provides a single train of digitized signals and a logical evaluation device, comprising the steps of counting assigned signal edges with a counter up and down based on the assignment of the signal edges to indicate position of the part, and evaluating, using the logical evaluation device, signal edges of the digitized signals, control commands and a state of movement of the motor.

said step of evaluation comprising the step of either assigning, for counting, high signal edges of said digitized signals to one direction of motor movement and low signal edges of said digitized signals to the other direction of motor movement, dependent on a direction of motor movement given by the control commands and a length of the control commands, or

assigning, for counting, one of the high or low signal edges of the motor together with a signal level of said digitized signals at start up time and reversal time of the motor,

said step of assigning comprising the further steps of assigning, for counting, the high and low signal edges dependent on i) a minimum after-running time t_{min} of the motor, which after-running time t_{min} is a result of a time difference between a time t_1 , which is the time of occurrence of one of said control commands for a change in motor movement, and a time t_2 before which substantially no reversal of direction of movement of the motor is possible due to the motion impetus of the motor, and ii) a maximum after-running time t_{max} of the motor which is a result of a time difference between the time t_1 and a time t_3 , time t_3 being the time before which a reversal of the direction of movement of the motor must have occurred.

5,780,989

METHOD AND APPARATUS FOR AC SERVO MOTOR CONTROL

Kaname Matsumoto, Yamanashi, Japan, assignor to Fanuc, Ltd., Yamanashi, Japan

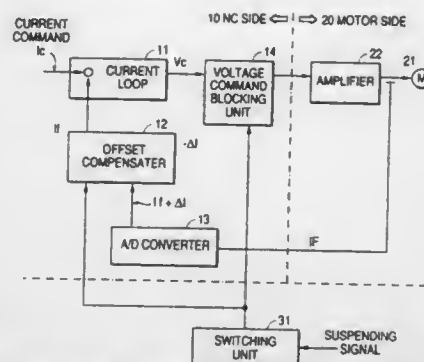
Continuation of Ser. No. 505,534, Jul. 21, 1995, abandoned. This application Jul. 7, 1997, Ser. No. 889,045

Claims priority, application Japan, Aug. 4, 1994, 6-201551 Int. Cl.⁶ G05D 23/275

U.S. Cl. 318—632

8 Claims

1. An apparatus for AC servo motor control in which an actual motor current is used as a feedback current, comprising: a current control loop receiving a current command and a compensated current to produce and output a voltage command based on a deviation between the received current command and the compensated current; voltage command blocking means, provided between the current loop and an AC servo motor, which upon reception of a



blocking signal, inhibits the transfer of the voltage command to the AC servo motor; switching means for sending out the blocking signal to said voltage command blocking means; offset calculation means for calculating an average deviation in the feedback current over a predetermined period of time, while the switching means sends out the blocking signal; offset storage means for storing the average deviation in the feedback current; and offset compensation means for producing the compensated current by removing from the feedback current the average deviation in the feedback current as stored in the offset storage means, and delivering the compensated current to said current control loop.

5,780,990

PARASYNCHRONOUS INDUCTION MOTOR CONTROL METHOD AND APPARATUS

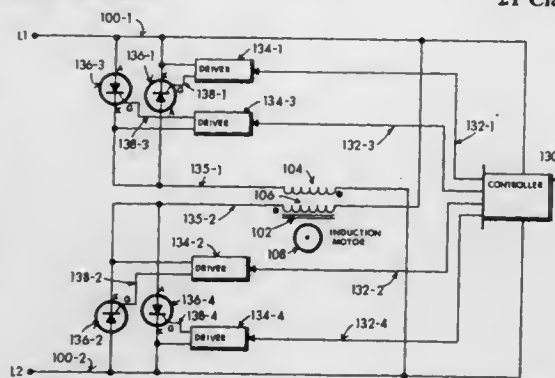
Harold J. Weber, P.O. Box 6161, Holliston, Mass. 01746

Filed Mar. 6, 1997, Ser. No. 813,791

Int. Cl.⁶ H02P 7/00

U.S. Cl. 318—807

21 Claims



1. Parasyncronous control method for an electric induction motor comprising steps of:

securing circuit coupling with a source of prime frequency alternating current (AC) electric power comprising a continuum of bipolar AC power cycles implicating a first polarity half-cycle power signal portion alternating with a second polarity half-cycle power signal portion;

quadrisectioning the bipolar AC power cycle whereby the first polarity half-cycle power signal portion is bisected into a first power signal quadrant portion and the second power signal quadrant portion, and the second polarity half-cycle power signal portion is bisected into a third power signal quadrant portion and a fourth power signal quadrant portion;

selective first polarity coupling of the first power signal quadrant portion and the third power signal quadrant portion with a field excitation winding of an AC induction motor to establish a first magnetomotive direction of current flow therethrough;

selective second polarity coupling of the second power signal quadrant portion and the fourth power signal quadrant portion with the field excitation winding to establish a second magnetomotive direction of current flow therethrough; and,

reversing the field excitation winding's induced sense of NORTH and SOUTH pole magnetic field polarity at a suprafrequency rate in response to a nexus of quadrant by quadrant alternation of said first magnetomotive direction of current flow and said second magnetomotive direction of current flow;

whereby, an induced parasyncronous motor output member rotational speed is obtained in a frequency-cum-rotation suprasynchronous range between:

$$\text{RPM} > 1.5 \times ((\text{PLF} \times 60) / \text{NP})$$

and

$$\text{RPM} < 2 \times ((\text{PLF} \times 60) / \text{NP})$$

where:

PLF=AC electric power source prime line frequency, Hertz;

NP=Number of motor field poles,

RPM=Motor output member speed.

5,780,991

MULTIPLE STATION CHARGING APPARATUS WITH SINGLE CHARGING POWER SUPPLY FOR PARALLEL CHARGING

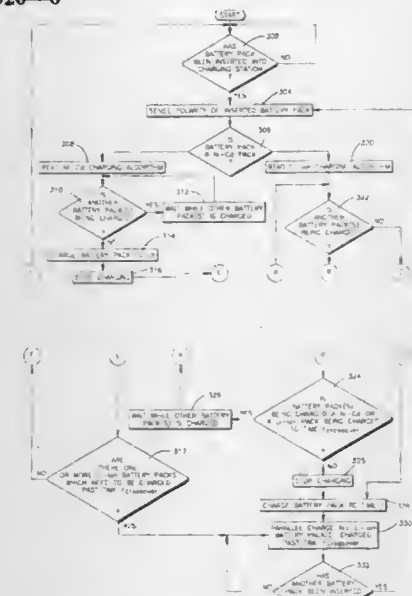
Clifford Brake, Wadsworth, and Lee Leppo, Tallmadge, both of Ohio, assignors to Telxon Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 686,676, Jul. 26, 1996. This application Jul. 31, 1996, Ser. No. 690,554

Int. Cl.⁶ H01M 10/46; 10/44

U.S. Cl. 320—6

19 Claims



1. A charging apparatus for charging a plurality of rechargeable battery packs, the apparatus comprising:

a) a housing defining a plurality of charging stations and an interior region supporting apparatus electronics, each of the charging stations having an opening sized to receive a battery pack;

b) the apparatus electronics including a power supply and a microprocessor electrically coupled to the power supply and the plurality of charging stations, the microprocessor controlling the power supplied to each charging station;

c) each of the plurality of charging stations including electrical circuitry to electrically couple a battery pack inserted in the charging station to the apparatus electronics to charge the battery pack;

d) the microprocessor controlling the power supplied to each charging station to:

5,780,992

RECHARGEABLE BATTERY SYSTEM ADAPTABLE TO A PLURALITY OF BATTERY TYPES

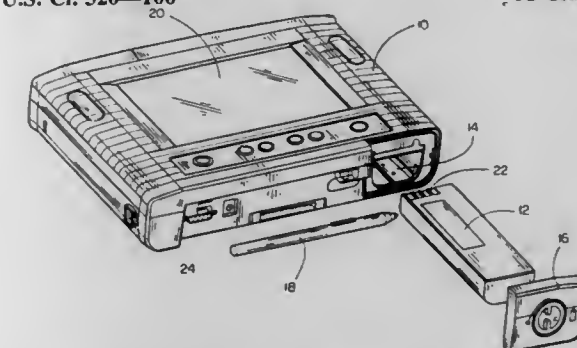
Paul Beard, Milpitas, Calif., assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Aug. 9, 1996, Ser. No. 695,838

Int. Cl.⁶ H01M 10/46; 10/48

U.S. Cl. 320—106

32 Claims



8. In a portable electronic battery system, a method for adaptively utilizing a rechargeable battery pack comprising:

(a) inserting a rechargeable battery to be adaptively utilized into the battery cavity of a portable battery powered electronic device;

(b) reading the characteristic battery parameter data and information including the electrochemical cell composition of the battery from electronic storage means contained within the rechargeable battery pack when the characteristic battery parameter data and information is stored therein;

(c) determining the characteristic battery parameter data and information including the electrochemical cell composition of the battery with battery information determining means when the characteristic battery parameter data and information is not stored therein or when the characteristic battery parameter data and information is unreadable; and

(d) configuring and operating the portable battery powered electronic device to optimally utilize the rechargeable battery pack according to the characteristic battery parameter data and information thereof.

5,780,993

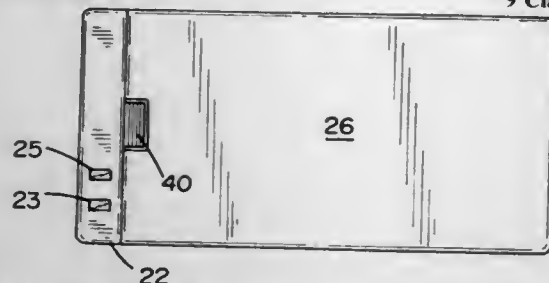
COMBINATION BATTERY CHARGER AND POWER SOURCE FOR ELECTRICALLY POWERED DEVICES
John Moong Hung Tsang, 5947 King Hill Dr., Farmington, N.Y. 14425

Filed Nov. 17, 1995, Ser. No. 560,322

Int. Cl.⁶ H01M 10/46

U.S. Cl. 320-111

9 Claims



9. A combination charger and power source for an electrically powered device having a removable battery pack that includes one or more batteries enclosed within a case having a mechanical connector for removably mechanically attaching the battery pack to the device, and an electrical connector for electrically connecting the batteries to the device when the battery pack is mechanically attached to the device, comprising:

a case having a mechanical connector adapted to engage the mechanical connector of the battery pack to attach the battery pack to the charger;

an electrical connector adapted to make an electrical connection to the battery pack when the battery pack is attached to the charger;

a recess in the case; and

an integral plug in the recess pivotally attached to the case for movement between an extended position permitting the charger to be plugged directly into a conventional AC connector, in a recessed position substantially within the recess, wherein the integral plug comprises a plug having flat bedded connectors for attachment to a US style electrical connector, and also comprising an adapter having a female connector adapted to receive the integral plug, and a male connector adapted to be plugged into a European style electrical outlet, the adapter being sized to be received in the recess of the case of the combination charger and power source while attached to the integral plug when the plug is in the recessed position.

5,780,994

DETECTION OF INFLECTION POINT IN SECONDARY BATTERY CHARGING PROCESS BY MATCHING VOLTAGE RESPONSE TO FIRST DERIVATIVE OF BATTERY'S CHARACTERISTIC CURVE

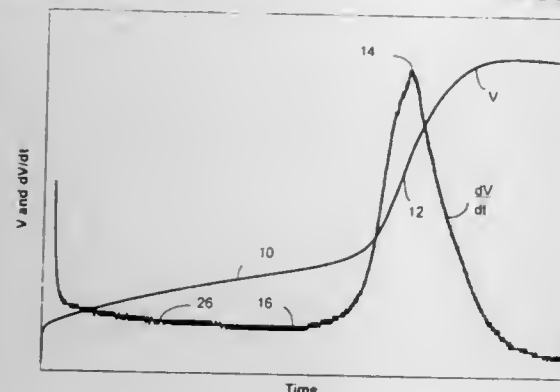
Christopher S. Sisemore, Tucson, Ariz., assignor to Secura-plane Technologies, L.L.C., Tucson, Ariz.

Filed Mar. 21, 1997, Ser. No. 823,324

Int. Cl.⁶ H01M 10/44

U.S. Cl. 320-156

20 Claims



13. A circuit for controlling a charging voltage produced by a voltage generator and applied to a battery, the circuit comprising: regulating circuitry coupled with the voltage generator, the regulating circuitry further coupled with the battery by a battery sense line and operable to detect the charging voltage applied to the battery, the regulating circuitry adjusting operation of the voltage generator to provide an approximately constant, regulated value of the charging voltage;

a control circuit coupled with the battery sense line and operable to detect a break in the battery sense line, the control circuit operable to provide a voltage approximately equal to the regulated value of the charging voltage to the regulating circuitry.

**5,780,995
AUTOMOTIVE VOLTAGE REGULATOR AND CHARGING SYSTEM**

Giampietro Maggioni, Agrate Brianza, and Mirco Contucci, Sant' Arcangelo, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

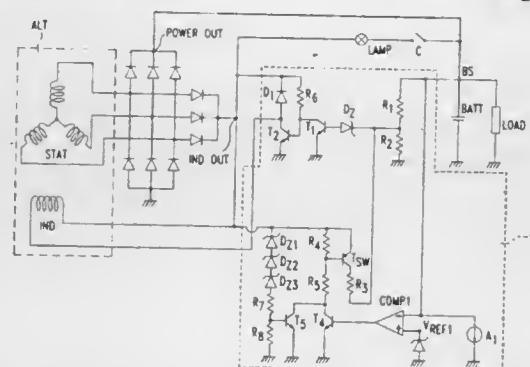
Filed Oct. 31, 1995, Ser. No. 550,690

Claims priority, application European Pat. Off., Oct. 31, 1994, 94830520

Int. Cl.⁶ H02J 7/14

U.S. Cl. 322-8

19 Claims



5,780,996

ALTERNATING CURRENT GENERATOR AND SCHOTTKY BARRIER DIODE

Shin Kusase, Obu; Atsushi Umeda, Anjo, and Makoto Taniguchi, Obu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

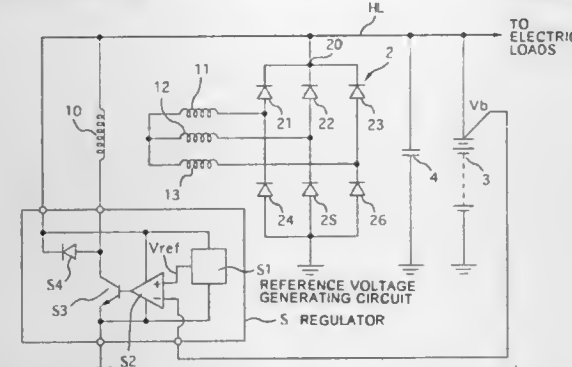
Filed Jun. 21, 1996, Ser. No. 667,307

Claims priority, application Japan, Jun. 23, 1995, 7-158124

Int. Cl.⁶ H02P 9/00

U.S. Cl. 322-28

14 Claims



1. An alternator comprising:

alternating current generating means for generating polyphase alternating current, having output terminals connected to polyphase armature windings;

a full-wave rectifier including first rectifying elements on a high potential side, anodes of which are connected individually to said respective output terminals of said polyphase armature windings and cathodes of which are connected individually to a high potential terminal of a battery, and second rectifying elements on a low potential side, cathodes of which are connected individually to said respective output terminals of said polyphase armature windings and anodes of which are connected individually to a low potential terminal of said battery,

wherein at least one of said first and second rectifying elements is constituted by Schottky barrier diodes; and

a surge voltage absorbing device disposed in parallel to said Schottky barrier diodes for absorbing surge voltage applied from said polyphase armature windings to said Schottky barrier diodes when said polyphase armature windings generate said surge voltage.

5,780,997

VARIABLE RELUCTANCE ALTERNATING CURRENT GENERATOR

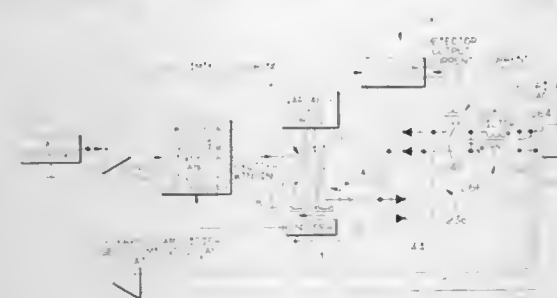
Thomas A. Sutrina, and David W. Lefavour, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 3, 1996, Ser. No. 723,627

Int. Cl.⁶ H02P 9/44

U.S. Cl. 322-29

22 Claims



1. A switched reluctance generator for producing alternating current at a fundamental frequency independent of a rotational speed at which the generator is driven comprising:

a rotor having a plurality of salient poles disposed around a circumference and projecting radially outward from an axis of rotation;

a stator having a plurality of salient poles disposed about an inner circumference and projecting radially inward toward the rotor;

at least one stator phase winding wound on the stator for outputting the electrical power at the fundamental frequency;

an exciter winding wound on the stator;

an electrical load coupled to the at least one stator phase winding;

a position detector for providing a rotor position signal representing a rotary position of the rotor;

a first switching circuit, responsive to the position signal, for applying time varying excitation current containing the fundamental frequency to the exciter winding in a series of pulses of varying magnitude which define the fundamental frequency or a multiple thereof and are produced by current flow through the exciter winding by switching of the first switching circuit to cause the current flow in each current pulse and each pulse being timed in relation to an occurrence of a lowest reluctance rotary position of the salient poles of the rotor and stator during rotation of the salient poles of the rotor between adjacent salient poles of the stator so as to generate a pulse on the at least one stator phase winding in response to a pulse on the exciter winding and rotation of the rotor away from the low reluctance rotary position;

a current sensor, coupled to the electrical load, for detecting a direction of current flow in the electrical load; and

a second switching circuit, coupled to the at least one stator phase winding and to the electrical load and responsive to the current sensor for controlling a direction of current flow through the electrical load so that each pulse applied to the exciter winding produces a corresponding pulse in the electrical load without allowing a reversed current flow, thereby preventing motor operation.

5,780,998

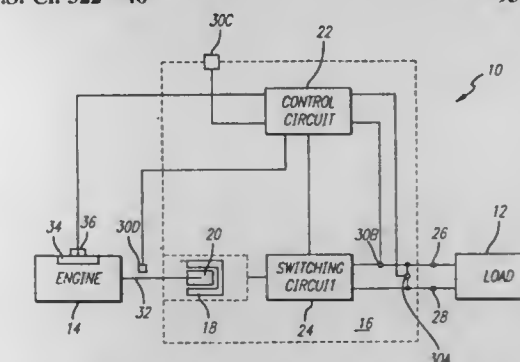
MULTIMODE POWER CONVERTER

Harold C. Scott; Chiping Sun; Kandarp I. Pandya, all of Boulder, Colo., and William Anderson, Alamogordo, N. Mex., assignors to Coleman Powermate, Inc., Kearney, Nebr. Continuation-in-part of Ser. No. 306,120, Sep. 14, 1994, Pat. No. 5,705,917, and a continuation-in-part of Ser. No. 370,577, Jan. 9, 1995, Pat. No. 5,625,276, which is a continuation-in-part of Ser. No. 322,012, Oct. 11, 1994, abandoned. This application Aug. 12, 1996, Ser. No. 695,558

Int. Cl.⁶ H02P 9/44

U.S. Cl. 322-46

93 Claims



1. Apparatus for producing a signal simulating a desired AC waveform, comprising:

first and second converter output terminals;

a juncture node, at a voltage of predetermined polarity and variable magnitude relative to a common rail;

a converter circuit, responsive to respective control signals applied thereto, for selectively effecting current paths between the juncture node and one of the first and second converter

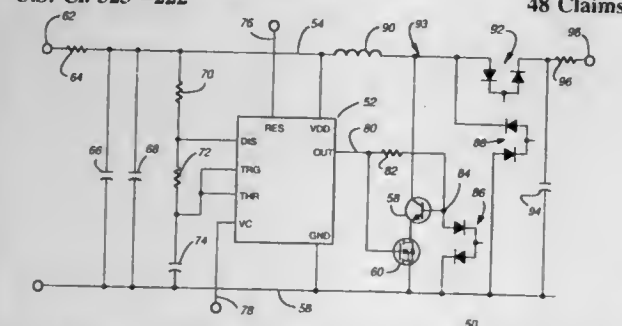
output terminals and between the common rail and the other of the first and second converter output terminals; means, responsive to control signals applied thereto, for controllably varying the magnitude of the junction node voltage; and a controller for selectively generating the control signals to the converter circuit and to the means for varying the magnitude of the junction node voltage, to create a predetermined waveform at the converter output terminals simulating the desired AC waveform.

5,780,999
VOLTAGE CONVERSION CIRCUIT FOR A LASER BASED DISTANCE MEASUREMENT AND RANGING INSTRUMENT

Jeremy G. Dunne, Littleton, Colo., assignor to Laser Technology, Inc., Englewood, Colo.

Filed Aug. 23, 1996, Ser. No. 702,366
Int. Cl.⁶ G05F 1/10

U.S. Cl. 323—222



1. A voltage conversion circuit for transforming an input voltage level at an input voltage node to a relatively higher output voltage level at an output voltage node with respect to a common reference voltage node, said circuit comprising:

- an inductance coupling said input voltage node to said output voltage node;
- a signal source supplying an output signal having alternating first and second states thereof;
- a bipolar switch having first and second current carrying terminals and a control terminal thereof, said first current carrying terminal being coupled to said output voltage node and said control terminal being electrically isolated from said output voltage node and coupled to receive said output signal from said signal source;
- a MOS switch having first and second voltage carrying terminals and a gate terminal thereof, said first voltage carrying terminal being coupled to said common reference voltage node, said second voltage carrying terminal being coupled to said second current carrying terminal of said bipolar switch and said gate terminal being coupled to receive said output signal from said signal source; and

at least one first diode coupling said control terminal of said bipolar switch to said common reference voltage node.

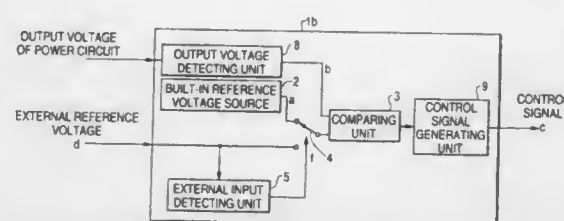
5,781,000
POWER CONTROL UNIT LOADING TEST METHOD
Mitsuo Saeki, Kouichi Matsuda, Hidetoshi Yano, and Hidekiyo Ozawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 17, 1996, Ser. No. 664,497
Claims priority, application Japan, Jun. 16, 1995, 7-150495
Int. Cl.⁶ G05F 1/10; 1/40

U.S. Cl. 323—234

23 Claims

1. A power control unit controlling an output voltage of a power circuit, comprising:
output voltage detecting unit for detecting the output voltage of said power circuit as a control voltage;



a built-in reference voltage source for supplying an internal reference voltage;

a selector, coupled to the built-in reference voltage source, selecting one of said internal reference voltage supplied from said built-in reference voltage source and an external reference voltage applied externally to said power control unit as a selected reference voltage to be compared with said control voltage detected by said output voltage detecting unit; and
control signal generating unit for generating a control signal for adjusting the output voltage of said power circuit to a voltage corresponding to the selected reference voltage on the basis of the comparison result of said selected reference voltage selected by said selector and said control voltage detected by said output voltage detecting means.

5,781,001
DISPLAY-DRIVING VOLTAGE GENERATING APPARATUS

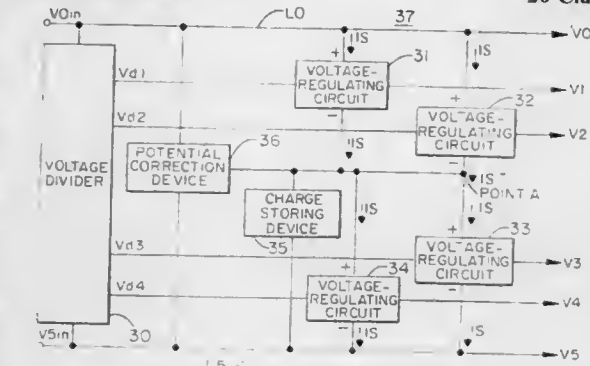
Masato Takemoto, Ayama-gun, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 4, 1996, Ser. No. 725,987

Claims priority, application Japan, Oct. 4, 1995, 7-257926
Int. Cl.⁶ G05F 1/577; 1/68; H03K 19/0175

U.S. Cl. 323—267

20 Claims



1. A display drive voltage generating apparatus which generates a plurality of types of drive voltage required for AC-driving a display apparatus by dividing an input voltage supplied from a DC power supply, the apparatus comprising:

- potential correction means for correcting an intermediate voltage to about one-half of the input voltage;
- charge storing means for holding an output voltage of the potential correction means by controlling variation of the output voltage caused by repeated current flow-in and flow-out;
- high-potential side drive voltage regulating means for regulating a drive voltage between a high-potential side voltage and the intermediate voltage, connected between the high-potential side of the input voltage and an output side of the potential correction means; and
- low-potential side drive voltage regulating means for regulating a drive voltage between the intermediate voltage and the low-potential side voltage, connected between the output side of the potential correction means and a low-potential side of the input voltage.

5,781,002
ANTI-LATCH CIRCUIT FOR LOW DROPOUT DUAL SUPPLY VOLTAGE REGULATOR

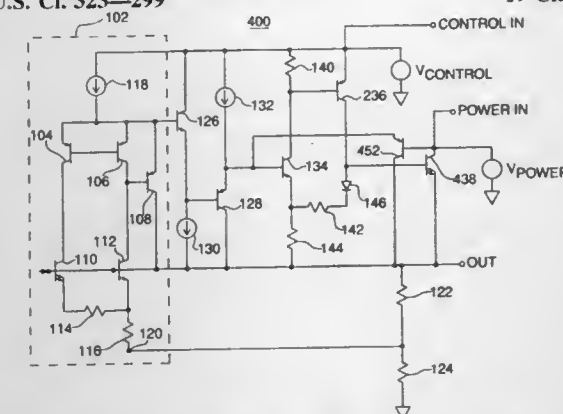
Dennis P. O'Neill, San Carlos, Calif., assignor to Linear Technology Corporation, Milpitas, Calif.

Continuation of Ser. No. 604,749, Feb. 23, 1996, abandoned.
This application Aug. 7, 1997, Ser. No. 908,293

Int. Cl.⁶ G05F 5/00

U.S. Cl. 323—299

19 Claims



1. A very low dropout dual supply voltage regulator circuit comprising:

- a control input node that receives control power;
- a power input node that receives output power, said power input node being isolated from said control input node;
- an output node;
- a drive circuit that provides drive current in response to said control power, said drive circuit being coupled to said control node;
- an output circuit coupled between said power input node and said output node; and
- an anti-latch circuit coupled to said power input node and to said drive circuit, said anti-latch circuit inhibiting said drive circuit from providing said drive current to said output circuit when said anti-latch circuit senses that said power input node is low; wherein
said anti-latch circuit is a PNP transistor having a base coupled to said power input node, a collector coupled to said output node, and an emitter coupled to said drive circuit.

5,781,003
ELECTRIC FIELD SENSOR
Michikazu Kondo, Sendai, Japan, assignor to Tokin Corporation, Miyagi, Japan

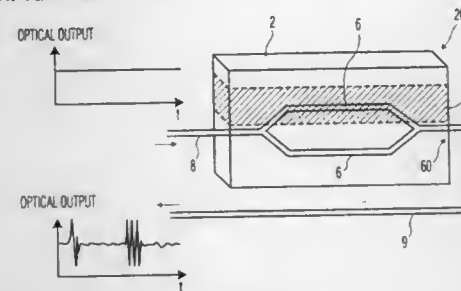
Division of Ser. No. 397,082, Mar. 7, 1995, abandoned. This application Aug. 27, 1996, Ser. No. 703,617

Claims priority, application Japan, Jul. 7, 1993, 5-168018; Oct. 8, 1993, 5-253318; Mar. 18, 1994, 5-48843

Int. Cl.⁶ G01R 23/16

U.S. Cl. 324—96

1 Claim



1. An electric field sensor comprising:
a sensor head for producing a transmitted light wave having an intensity which varies in dependence upon an intensity of an electric field applied thereto;
a light source for producing a light wave;

a first optical fiber for delivering said light wave from said light source to said sensor head;
a photoelectric transducer for converting an input light wave into an electric signal; and
a second optical fiber for delivering to said photoelectric transducer, as said input light wave, said transmitted light wave of said sensor head;
said sensor head being located out of contact with a measurement object for detecting, as a variation in light intensity, said electric field applied by said measurement object;

wherein:
said sensor head is an electrodeless sensor head which comprises a substrate; and a branch interference type optical waveguide arranged on said substrate and including first and second branched optical waveguides having refractive indexes which vary in dependence upon the intensity of said electric field applied thereto;
said branch interference type optical waveguide is responsive to said light wave incident from said first optical fiber for branching said light wave by said first and said second branched optical waveguides into branch waves which are combined to be emitted to said second optical fiber;
said substrate of said sensor head is made of a ferroelectric crystal; and
at least a part of an area of said substrate, in which one of said first and said second branched optical waveguides is formed, has a polarization direction substantially opposite to another polarization direction of a remaining area of said substrate.

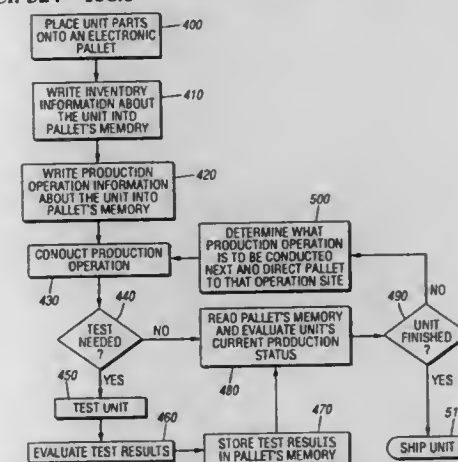
5,781,004
METHOD OF PRODUCTION USING AN ELECTRONIC ASSEMBLY PALLET

Jorge Robinson Gaete, Seabrook, Tex., assignor to PFI Vacuum Forming, Inc., Houston, Tex.

Filed Jul. 10, 1996, Ser. No. 677,497
Int. Cl.⁶ G07C 3/00

U.S. Cl. 324—158.1

5 Claims



1. A process for using an electronic pallet comprising the steps of:

- securing a product unit onto an electronic pallet;
- writing inventory information about said unit to said pallet;
- storing said inventory message in a storage memory in said pallet;
- writing production operation information about said unit to said pallet;
- storing said production operation information in said storage memory of said pallet;
- placing said pallet on a conveyer system;
- moving said pallet to a first location for a first production operation;
- writing documentary information to said pallet with a router;
- storing said documentary information in said storage memory of said pallet;

reading said documentary information from said pallet with a router;
writing modified production information about said unit to said pallet from said router; and
moving said pallet to a second location for a second production operation on said unit based upon said documentary information read by said router;
moving said pallet to a testing location;
connecting said unit to first electrical terminals on said pallet;
connecting factory electrical terminals to second electrical terminals on said pallet in order to establish electrical connections from said factory to said unit; and
testing said unit.

5,781,005

HALL-EFFECT FERROMAGNETIC-ARTICLE-PROXIMITY SENSOR

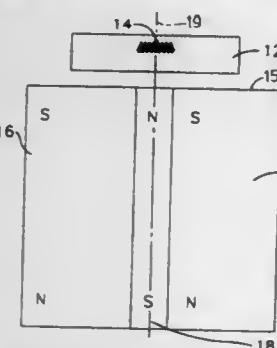
Ravi Vig, and Teri L. Tu, both of Bow, N.H., assignors to Allegro Microsystems, Inc., Worcester, Mass.

Filed Jun. 7, 1995, Ser. No. 485,697

Int. Cl.⁶ G01P 3/48; 3/54; G01B 7/14

U.S. Cl. 324—207.2

14 Claims



1. A magnetic-field sensor for detecting the presence of passing ferromagnetic articles comprising:

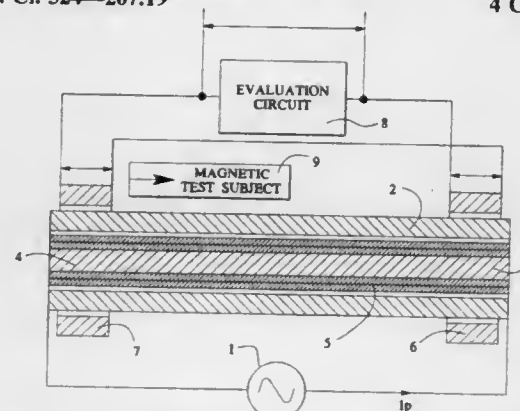
a) an integrated circuit chip 12 including a magnetic field sensor element 14 for generating an output voltage that is proportional to the ambient magnetic field; and

b) a magnet structure comprised of a central pole piece 18, a first high magnetic permeability pole piece 16 abutting one side of said magnet 18 and a second high magnetic permeability pole piece 17 abutting the opposite side of said magnet 18, an end of each of at least said first and second pole pieces lying in and defining said front face 15f of said magnet structure 15, said central pole piece being for presenting a magnetic field of one polarity at said front face and said first and second pole pieces being respectively for presenting magnetic fields of the opposite polarity at said front face, said sensor element being centrally mounted to said magnet structure at said front face;

so that the absolute value of magnetic flux sensed by said magnetic-sensor element is low when there is no passing ferromagnetic article in the vicinity of said sensor element, a high amplitude of flux is sensed by said magnetic-field sensor element at moments when a ferromagnetic article is proximate said magnetic-field sensor element and at moments when the valley between two passing ferromagnetic articles is proximate said magnetic-field sensor element a low value magnetic flux is sensed that is almost independent of the air gap dimension between said sensor element and the passing articles.

5,781,006
MAGNETIC SENSOR FOR IDENTIFYING THE POSITION OF A TEST SUBJECT
Johannes Beichler, Rodgau, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Jul. 11, 1995, Ser. No. 499,893
Claims priority, application Germany, Jul. 21, 1994, 44 25 904.2

Int. Cl.⁶ G01B 7/14; 5/20; H01F 1/153
U.S. Cl. 324—207.19 4 Claims



1. A magnetic distance sensor for identifying the position of a test subject, comprising:

an elongated soft-magnetic core having a length which includes a distance to be measured, said magnetic core being composed of an elongated strip of soft-magnetic crystalline material and at least one strip of amorphous material;

a measuring winding, having an inductive impedance, wound around said magnetic core completely along said distance to be measured;

a magnetic test subject movable along said magnetic core over said measuring winding and spaced from said magnetic core and said measuring winding, said test subject saturating said magnetic core at a location adjacent to said test subject and thereby generating a virtual air gap at that location;

first and second coils connected in series and respectively disposed at opposite ends of said magnetic core;

evaluation means connected to said first and second coils for measuring an inducted differential voltage between said first and second coils; and constant current source means connected to said measuring winding for generating an alternating current of constant amplitude independently of the inductive impedance of the measuring winding and independently of a position of said test subject along said magnetic core for producing a linear relationship between said differential voltage and said position of said test subject over an entirety of said distance.

5,781,007
PORTABLE THREE AXIS SCANNER TO INSPECT A GAS TURBINE ENGINE SPOOL BY EDDY CURRENT OR ULTRASONIC INSPECTION

Mark Partika, Middletown; Michael L. Dziech, Cincinnati; Jon R. Dierdorf, Okeana, all of Ohio; Scott A. Whitlow, Salem, Oreg.; Fred L. Perrin, Jr., Kennewick, and Richard W. Smith, Richland, both of Wash., assignors to General Electric Company, Cincinnati, Ohio

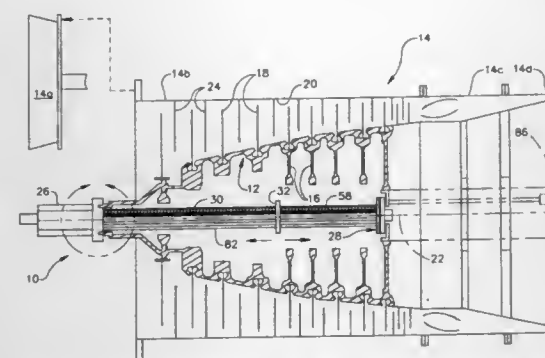
Filed Oct. 23, 1996, Ser. No. 735,940

Int. Cl.⁶ G01N 27/90; G01H 1/02

U.S. Cl. 324—220

20 Claims

1. A scanner for inspecting the inside of a spool comprising:
a forward drive assembly being fixedly mountable to a forward end of said spool;
an aft support assembly being fixedly mountable to an aft end of said spool;
a support beam extending between said drive and support assemblies; and



a carriage assembly mounted on said support beam and including a probe support for mounting a removable scanner probe for inspecting said spool;

said drive assembly including means for axially translating said carriage assembly along a longitudinal axis extending from said drive assembly to said support assembly, means for rotating said carriage assembly circumferentially about said longitudinal axis, and means for radially translating said probe support on said carriage assembly so that said probe support has three-axis movement including axial, circumferential, and radial, respectively, for being selectively positioned inside said spool between said forward and aft ends thereof for inspecting said spool.

5,781,008

INSTANTANEOUS SLAG THICKNESS MEASURING DEVICE

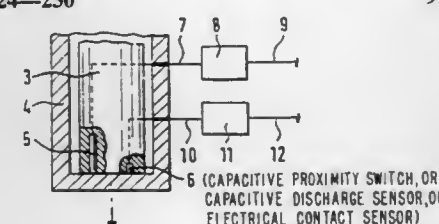
Joachim Muller, and Hartmut Haubrich, both of Aachen, Germany, assignors to Amepa Engineering GmbH, Aachen, Germany

Continuation-in-part of Ser. No. 378,232, Jan. 25, 1995, abandoned. This application Aug. 30, 1996, Ser. No. 705,991

Claims priority, application Germany, Jan. 28, 1994, 44 02 463.0

Int. Cl.⁶ G01B 7/06; G01R 33/12
U.S. Cl. 324—230

9 Claims

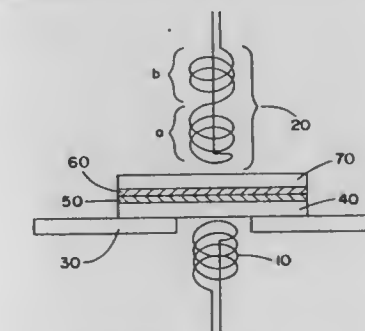


1. An apparatus for instantaneously determining the thickness of a hot slag layer on a metal melt in a metallurgical vessel, the improvement comprising a lance manually shiftable toward said melt, a sensor arrangement comprising two sensors mounted on said lance proximate the lance tip, a first said sensor being constructed as an inductive eddy current type of proximity sensor for generating a signal indicating the distance of said first sensor to the metal melt, and a second sensor in predetermined spatial relation to said first sensor, said second sensor being adapted to emit a signal when said second sensor reaches a predetermined distance relative to the slag layer and to trigger said first sensor when said second sensor emits its signal, and evaluation means for receiving the signals of said first and second sensors and deriving the thickness of said slag layer as a function of the signals of said first and second sensors.

5,781,009
TWO-COIL APPARATUS FOR MEASURING THE ABSOLUTE VALUE OF MAGNETIC PENETRATION DEPTH λ OF SUPERCONDUCTOR FILMS
JuYoung Lee; Sang Sam Choi, both of Seoul, and Taek-Sang Hahn, Kyungki-Do, all of Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea
Filed Sep. 25, 1996, Ser. No. 720,195

Claims priority, application Rep. of Korea, Oct. 2, 1995, 1995 33693

Int. Cl.⁶ G01R 33/035; 33/12
U.S. Cl. 324—239 10 Claims



1. In a two-coil apparatus for measuring the absolute value of magnetic penetration depth of a large area high temperature superconductor (HTS) film, said two-coil apparatus comprising:

a drive coil;
a receive coil oppositely spaced-apart from the drive coil;
sample holders disposed at the left- and right-sides of the receive coil;

a large area low temperature superconductor film attached on the sample holder between the drive coil and the receive coil; and
a large area high temperature superconductor film attached on the large area low temperature superconductor film between the drive coil and the receive coil.

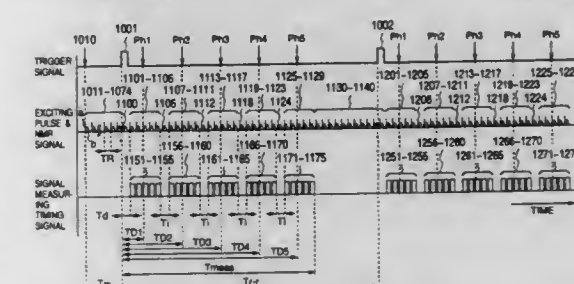
5,781,010
METHOD AND APPARATUS FOR MR IMAGING WITHOUT A FLASHING PHENOMENON OF AN OBJECT HAVING PERIODICAL MOTION

Shinji Kawasaki, Matsudo, and Hiroshi Nishimura, Kashiwa, both of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Jul. 29, 1996, Ser. No. 690,448

Claims priority, application Japan, Jul. 31, 1995, 7-195374
Int. Cl.⁶ A61B 5/055

U.S. Cl. 324—309 10 Claims



179-283 O.G.- 98 - 27 : QL 3

are not fitted with each other, said slider being movable upon fitting movement of said first and second connector housings to be displaced from said original position by a sliding force developed by said first and second connector housings fitting one within the other,

means for biasing said slider to return to said original position upon complete fitting between said first and second connector housings; and

a plurality of fitting detection terminals mounted on said first connector housing and said slider, said fitting detection terminals capable of coming into contact with each other when the slider is in said original position and coming out of contact with each other when said slider leaves said original position.

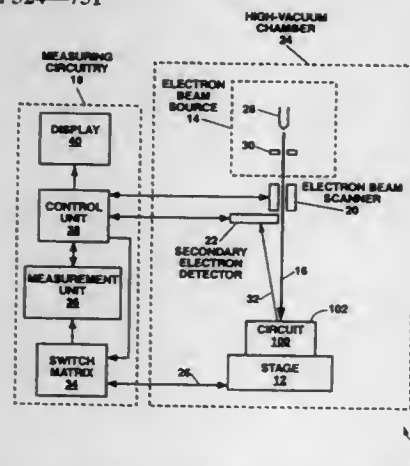
5,781,017 CAPACITIVE CHARGE GENERATION APPARATUS AND METHOD FOR TESTING CIRCUITS

Edward I. Cole, Jr.; Kenneth A. Peterson, and Daniel L. Barton, all of Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Apr. 26, 1996, Ser. No. 638,519
Int. Cl.⁶ G01R 31/302

U.S. Cl. 324—751

28 Claims



I. An electron beam apparatus for testing a circuit to determine a conduction state of at least one electrical conductor therein, comprising:

- a) an electron beam incident on an outer surface of an insulating layer overlying the electrical conductor resulting in an electrical potential thereon; and
- b) a measurement unit connected to the electrical conductor adapted to measure an electrical signal capacitively coupled from the outer surface to the electrical conductor in response to the electrical potential.

5,781,018

NEAR-FIELD RESISTIVITY MICROSCOPE

Dan Davidov, Jerusalem, and Michael Golosovsky, Ma'ale Adumim, both of Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Israel

Continuation of Ser. No. 526,659, Sep. 11, 1995, abandoned.
This application Jul. 23, 1997, Ser. No. 898,804

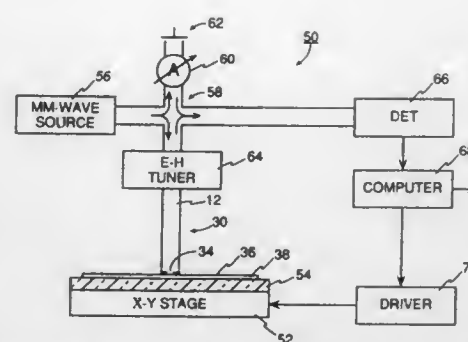
Int. Cl.⁶ G01N 22/00

U.S. Cl. 324—637

31 Claims

I. A microwave microscope for characterizing a surface, comprising:

- a source of electromagnetic radiation;
- a microwave waveguide receiving said electromagnetic radiation from said source on a first end; and
- an aperture formed into said microwave waveguide and having a first dimension extending along a first direction of said



waveguide and being nearly resonant with said electromagnetic radiation and having a second dimension extending along a second direction different from said first direction and being substantially smaller than said first dimension;

wherein a surface to be tested by said microscope is positioned adjacent to said aperture by a distance substantially less than said first dimension so as to be in a near field of said microwave radiation emanating from said aperture.

5,781,019

PROBE FOR USE IN TIME DOMAIN REFLECTOMETRY

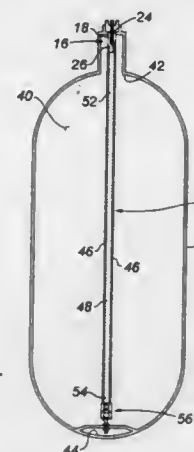
Bert Jan Telder, 2517-78 St., Edmonton, Alberta, Canada, T6K 3W5

Filed Aug. 9, 1996, Ser. No. 694,663

Int. Cl.⁶ G01R 27/04

U.S. Cl. 324—643

5 Claims



I. In combination:

- a liquid container having a liquid receiving interior cavity with a top and a bottom;
- a probe for use in time domain reflectometry, comprising:

- an upper body having a conductive portion and an insulated portion, the upper body being secured to the top of the liquid receiving interior cavity of the liquid container;
- a lower body secured to the bottom of the liquid receiving interior cavity of the liquid container;
- flexible conductive wire placed in tension between the upper body and the lower body to form a conductive loop having a first end and a second end, the first end being secured in the insulated portion of the upper body, the second end being secured in the conductive portion of the upper body, thereby shorting and grounding the conductive loop; and
- means for coupling the first end of the conductive loop to time domain reflectometry instrumentation.

5,781,020

METHOD OF CALCULATING AN IMPEDANCE OF AN ELECTROMAGNETIC PART TO WHICH ROTATIONAL BODY SHAPE APPROXIMATION IS APPLIED, AND AN APPARATUS FOR THE SAME

Tetsuya Imai, Moriguchi, and Kazuyuki Sakiyama, Shijonawate, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

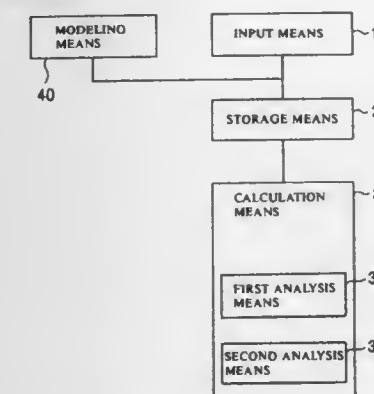
Filed Apr. 24, 1996, Ser. No. 638,999

Claims priority, application Japan, Apr. 24, 1995, 7-098195

Int. Cl.⁶ H05B 6/02; G01F 17/00

U.S. Cl. 324—649

14 Claims



6. An impedance calculation apparatus for calculating an impedance of an analysis object comprising a member having a substantially rotational body shape and a member having a nonrotational body shape, said apparatus comprising:

first analysis means for conducting first impedance analysis to determine a first result on a first analyzed model which is configured by said member having the substantially rotational body shape;

second analysis means for conducting second impedance analysis to determine a second result on a second analyzed model which is configured by said member having the substantially rotational body shape and a rotational body including said member having the nonrotational body shape, said rotational body having an axis of rotation coincident with an axis of rotation of said member having the substantially rotational body shape; and

calculation means for calculating the impedance of said analysis object by using the first and second results obtained by said first and second analysis means, respectively.

5,781,021

UNIVERSAL FIXTURELESS TEST EQUIPMENT

Avner Ilani, Kiron, Israel, assignor to Key Solutions Ltd., Kiron, Israel

Continuation-in-part of Ser. No. 370,067, Jan. 9, 1995, Pat. No. 5,633,596. This application Oct. 30, 1996, Ser. No. 740,514
Claims priority, application Israel, Jan. 11, 1994, 107550/2; Jan. 11, 1994, 107550/3; Aug. 24, 1994, 107550/4

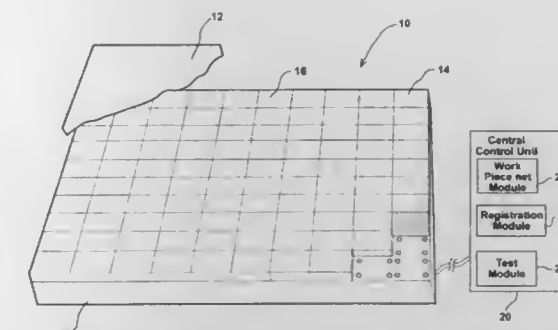
Int. Cl.⁶ G01R 31/02

U.S. Cl. 324—754

21 Claims

I. A test equipment including at least one test area for testing the functionality of a workpiece placed in an arbitrary position and orientation on the test area, for contacting conductive elements of said workpiece, regardless of pitch and configurations of the conductive elements of the workpiece, the test area comprising:

- (a) a base plate;
- (b) at least one test module mounted on said base plate, said test module having compressible means on a surface facing said base plate, such that when mounting said test module on said test plate, said compressible means lies between said test module and said base plate, said test module including:
 - (1) at least one semiconductor die, said die including integrated electronic circuitry including an array of selectable memorized switching cells, each said switching cell termi-



nated by a conductive terminal pad, said conductive terminal pad functioning as an input/output contact, said terminal pads matrixed on a surface of said semiconductor die, such die having said electronic circuitry integrated in the remainder area unoccupied by said pads, said terminal pads having bumps of conductive material at ends of said terminal pads;

- (2) a plurality of conductors for use as test electrodes, arrayed in a parallel manner such as to produce a 3-dimensional multi-electrode adapter/pitch translator, having first and second conductive cross-section surfaces, first ends of said electrodes on first surface of said adapter/pitch translator being matrixed and pitched to correspond to said bumped terminal pads of said semiconductor die, second ends of said electrodes on said second surface of said adapter/pitch translator being pitched and matrixed such as to guarantee that each conductive element of the workpiece will be contacted by at least one test electrode for any arbitrary positioning angle of the workpiece on the test area; and
- (3) said bumped semiconductor die, being flipped and permanently mounted on a corresponding conductive cross-section surface of said adapter/pitch translator such that each bumped pad of said die is in direct contact with a corresponding test electrode of said adapter/pitch translator, whereby each test electrode is connected to a selectable memorized switching cell of the semiconductor die.

5,781,022

SUBSTRATE HAVING SELF LIMITING CONTACTS FOR ESTABLISHING AN ELECTRICAL CONNECTION WITH A SEMICONDUCTOR DIE

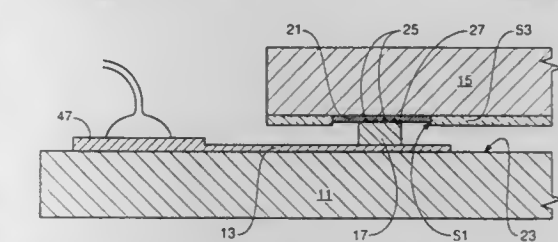
Alan G. Wood; Trung Tri Doan, both of Boise; Warren M. Farnworth, Nampa, and Tim J. Corbett, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 406,637, Mar. 20, 1995, Pat. No. 5,585,282, which is a continuation of Ser. No. 137,675, Oct. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 709,858, Jun. 4, 1991, abandoned, Ser. No. 788,065, Nov. 5, 1991, Pat. No. 5,440,240, and Ser. No. 981,956, Nov. 24, 1993, Pat. No. 5,539,324. This application Sep. 23, 1996, Ser. No. 717,846

Int. Cl.⁶ G01R 1/04

U.S. Cl. 324—757

18 Claims



5. An apparatus for establishing electrical contact with a contact location on a semiconductor die, comprising:

- a substrate having a first surface;
- a raised contact on the first surface of the substrate, the raised contact comprising a second surface with a plurality of raised

portions thereon configured to electrically engage the contact location, the contact having a first height measured from the first surface to the second surface of from 20 μm to 75 μm ; and the raised portions comprising elongated ridges projecting from the second surface with a second height of from 2 \AA to 1.5 μm , the raised portions configured to penetrate the contact location to a penetration depth that is less than a thickness of the contact location while the second surface limits the penetration depth into the contact location and maintains a clearance between the die and the substrate equal to the first height.

5,781,023

HOLLOW PLUNGER TEST PROBE

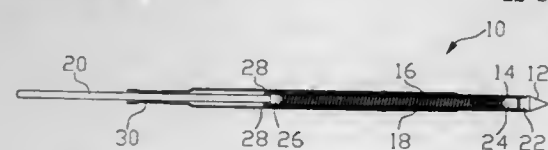
Mark A. Swart, Anaheim Hills; Gordon A. Vinther, Ontario; Byron C. Sanderson, Upland, and Charles J. Johnston, Walnut, all of Calif., assignors to Delaware Capital Formation, Inc., Wilmington, Del.

Filed Jan. 31, 1997, Ser. No. 792,658

Int. Cl.⁶ G01R 31/02

U.S. Cl. 324—761

22 Claims



1. A spring probe assembly for performing tests on an electrical device, the spring probe assembly comprising:
- a tubular electrically conductive probe receptacle;
 - an elongated plunger having an opening extending axially through the plunger wherein the plunger is adapted to be axially slidable within the probe receptacle through a first end of the receptacle;
 - a probe tip disposed within the opening at a first end of the plunger;
 - a post fixedly disposed within the probe receptacle at an opposite end of the receptacle, the post having a head portion extending into the opening of the plunger through an opposite second end of the plunger;
 - a spring disposed within the opening of the plunger between the probe tip and the head portion of the post; and
 - means for providing releasable attachment of the head portion of the post with the second end of the plunger, the means being integral with the second end of the plunger and being adapted to accommodate relative travel between the receptacle and the plunger during spring biased reciprocating travel of the plunger.

5,781,024

INSTRUMENT PERFORMANCE VERIFICATION SYSTEM

Scott E. Blomberg, Madison, Wis.; James D. Kurkowski, and David J. DeRoode, both of Minnetonka, Minn., assignors to Diametrics Medical, Inc., Roseville, Minn.

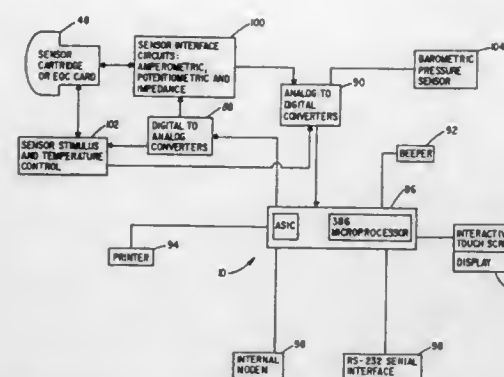
Filed Jul. 26, 1996, Ser. No. 687,687

Int. Cl.⁶ G01R 31/02; 35/00

U.S. Cl. 324—763

28 Claims

1. A portable analytical instrument having a verification system for verifying the performance of the instrument, said instrument comprising:
- (a) a housing;
 - (b) a multi-channel connector for receiving and electrically connecting to a disposable sensor device attached to said housing;
 - (c) electronic circuit means for operating said instrument, wherein said electronic circuit means is electrically coupled to said multi-channel connector and a power supply, said electronic circuit means being contained within said housing;



- (d) instrument performance verification system contained within said housing including signal generating means for producing internally generated test signals and means for processing performance output signals corresponding to said internally generated test signals, said performance output signals being indicative of the performance of at least one of the group consisting of said multi-channel connector and components of said electronic circuit means, said instrument performance verification system being coupled to said electronic circuit means; and

- (e) output means in said housing connected to transmit test result signals related to said performance output signals and indicative of results obtained from tests using said instrument performance verification system.

5,781,025

METHOD FOR TESTING AN ELECTRONIC CIRCUIT BY LOGICALLY COMBINING CLOCK SIGNALS, AND AN ELECTRONIC CIRCUIT PROVIDED WITH FACILITIES FOR SUCH TESTING

Manoj Sachdev, and Botjo Atzema, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

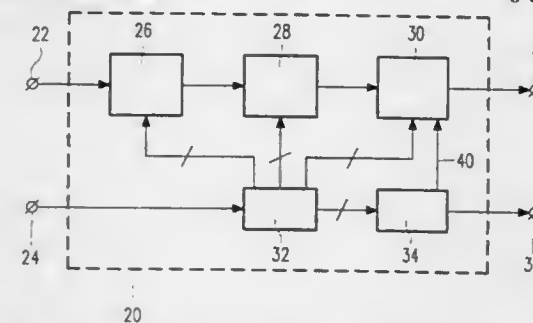
Filed Jul. 2, 1996, Ser. No. 674,523

Claims priority, application European Pat. Off., Jul. 6, 1995, 95201853

Int. Cl.⁶ G01R 25/00

U.S. Cl. 326—116

6 Claims



3. An electronic circuit with a plurality of respective nodes at which a plurality of respective clock signals are present in operational use of the circuit, characterized in that: the circuit includes logic circuitry having inputs connected to the nodes and having an output to provide a pulse train for testing a predetermined timing relationship amongst the clock signals, said logic circuitry including a plurality of subsets of logic gates, each subset receiving an associated subset of the clock signals and outputting a logic signal in response to a predetermined relationship existing between the clock signals of the subset of clock signals, and said pulse train comprising the logic signals output by said subsets of logic gates.

5,781,026

CMOS LEVEL SHIFTER WITH STEADY-STATE AND TRANSIENT DRIVERS

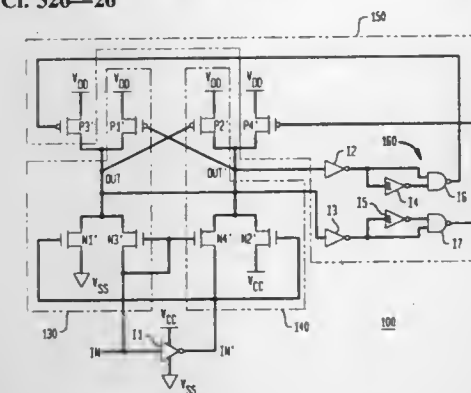
Hwang-Cherng Chow, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Mar. 28, 1996, Ser. No. 623,310

Int. Cl.⁶ H03K 19/0185

U.S. Cl. 326—26

8 Claims



1. A level shifter comprising:

first and second steady-state drivers, each comprising a low enable input, a high enable input and an output which outputs a low voltage level signal when an enabling voltage level is received at said low enable input and a disabling voltage is received at said high enable input, and which outputs a first high voltage level signal, that is higher than a second high voltage level of an input signal, when a disabling voltage level is received at said low enable input and an enabling high voltage level is received at said high enable input, said high enable input of said first driver being connected to said output of said second driver, said high enable input of said second driver being connected to said output of said first driver, said input of said first driver receiving a complement of said input signal and said input of said second driver receiving said input signal, and

transient driver circuitry, which responds to a transition in input signal voltage level by driving said output of one of said first and second drivers to said first high voltage level, for a certain time period, said transient driver circuitry being enabled to drive said output with a maximum driving capacity throughout said certain time period, said transient driver circuitry including enabling circuitry which comprises:

- a first voltage level detector, receiving said output of said first driver and generating a first value indicating that said voltage level of said output of said first driver is below a trip level of said first voltage level detector,
- a second voltage level detector, receiving said output of said second driver and generating a second value indicating that said voltage level of said output of said second driver is below a trip level of said second voltage level detector, and
- at least one logic circuit, receiving said voltage level of said outputs of said first and second drivers and said first and second values from said first and second voltage level detectors, and enabling said transient driver circuitry to drive said output of said first driver if said voltage level of said output of said second driver is falling and so long as said second value is received, and enabling said transient driver circuitry to drive said output of said second driver if said voltage level of said output of said first driver is falling and so long as said first value is received.

5,781,027

Patent Not Issued For This Number

5,781,028

SYSTEM AND METHOD FOR A SWITCHED DATA BUS TERMINATION

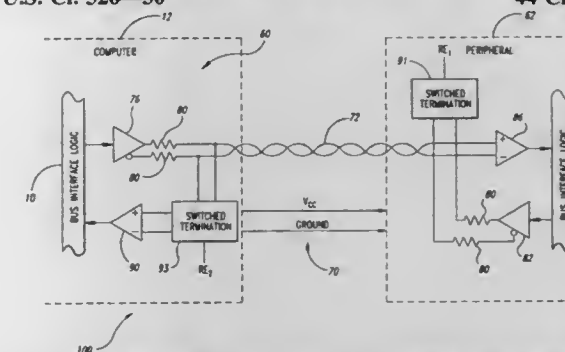
Joseph C. Decuir, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jun. 21, 1996, Ser. No. 668,287

Int. Cl.⁶ H03K 17/16

U.S. Cl. 326—30

44 Claims



1. A system for the termination of a universal serial data bus between first and second devices having transmitting and receiving modes, the system comprising:

- a bidirectional data bus, including a two-wire twisted pair data cable with first and second wires having first and second ends, said data cable first end coupled to the first device and said data cable second end coupled to the second device;
- a first bus driver having a driver input to receive data and a differential driver output coupled to said data cable first end, said first bus driver transmitting a first data signal from said data cable first end to said data cable second end when the universal serial data bus is in the transmitting mode;
- a first bus receiver having a differential receiver input coupled to said data cable first end to receive data and a first receiver output, said first bus receiver receiving a second data signal from said data cable second end when the universal serial data bus is in the receiving mode;
- a second bus driver having a driver input to receive data and a differential driver output coupled to said data cable second end, said second bus driver transmitting said second data signal from said data cable second end to said data cable first end when the universal serial data bus is in the receiving mode;
- a second bus receiver having a differential receiver input coupled to said data cable second end to receive said first data signal and a second receiver output, said second bus receiver receiving said first data signal from said data cable first end when the universal serial data bus is in the transmitting mode;
- a first termination coupled to said data cable first end and selectively activated when the universal serial data bus is in the receiving mode to terminate said data cable first end; and
- a second termination coupled to said data cable second end and selectively activated when the universal serial data bus is in the transmitting mode to terminate said data cable second end.

5,781,029

BROADBAND MATCHING TECHNIQUE FOR HIGH SPEED LOGIC AND HIGH RESOLUTION VIDEO SIGNALS

Jozef B. Baran, Irvine, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed Sep. 3, 1996, Ser. No. 706,816

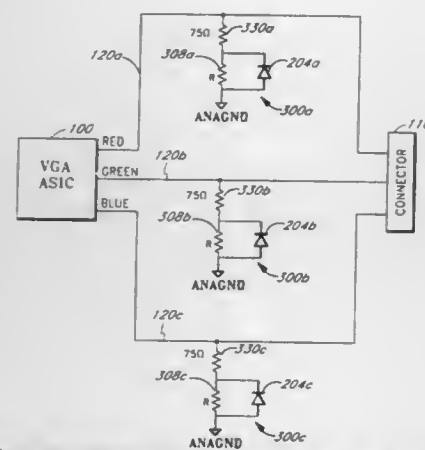
Int. Cl.⁶ G09G 5/12; H03K 17/16

U.S. Cl. 326—30

11 Claims

6. A method of providing a substantially constant AC termination impedance on a transmission line over a wide range of frequencies, comprising the steps of:

selecting a diode which approximates a short circuit over a range of signal frequencies, said range of signal frequencies encom-



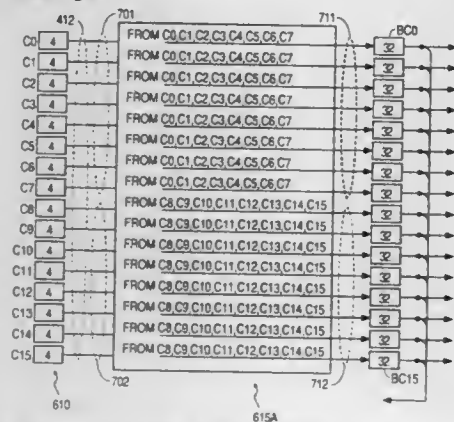
passing all frequency components that are susceptible to reflection within the transmission signals provided on said transmission line;
forming a transmission line termination circuit by connecting said diode across at least a first resistance to form a parallel combination, and by connecting said parallel combination in series with an AC termination circuit; and
connecting said transmission line termination circuit to said transmission line such that said diode is reverse biased when a DC voltage is provided on said transmission line.

5,781,030
PROGRAMMABLE UNIFORM SYMMETRICAL DISTRIBUTION LOGIC ALLOCATOR FOR A HIGH-DENSITY COMPLEX PLD
Om P. Agrawal, Los Altos, and Bradley A. Sharpe-Geisler, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 2, 1995, Ser. No. 459,234
Int. Cl.⁶ H03K 7/38; 19/177

U.S. Cl. 326—39

7 Claims



1. In an integrated circuit, a programmable uniform distribution logic allocator comprising:
 - a plurality of N input lines where N is an integer;
 - a plurality of M output lines where M is an integer;
 - a first plurality of logic gates wherein each logic gate in said first plurality of logic gates includes:
 - a plurality of M/2 input terminals; and
 - an output terminal coupled to one output line in said plurality of M output lines;
 - a first plurality of programmable demultiplexers wherein each programmable demultiplexer includes:
 - an input terminal connected to an input line in said plurality of N input lines;
 - a plurality of M/2 output terminals wherein each output terminal in said plurality of M/2 output terminals is connected to an input terminal of a different logic gate in said first plurality of logic gates so that each output line coupled

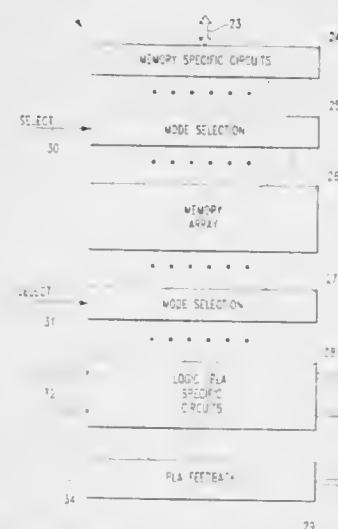
to one of said logic gates in said first plurality of logic gates has access to signals on each input terminal of said first plurality of programmable demultiplexers; and
said input terminal is programmably connectable to and disconnectable from said plurality of M/2 output terminals, and upon programmably connecting said input terminal to one of said plurality of M/2 output terminals, said input terminal is disconnected from all other output terminals in said plurality of M/2 output terminals;
a second plurality of logic gates wherein each logic gate in said second plurality of logic gates includes:
a plurality of M/2 input terminals; and
an output terminal coupled to one output line in said plurality of M output lines of said programmable uniform distribution logic allocator; and
a second plurality of programmable demultiplexers wherein each programmable demultiplexer includes:
an input terminal connected to an input line in said plurality of N input lines;
a plurality of M/2 output terminals wherein each output terminal in said plurality of M/2 output terminals is connected to an input terminal of a different logic gate in said second plurality of logic gates so that each output line coupled to one of said logic gates in said second plurality of logic gates has access to signals on each input terminal of said second plurality of programmable demultiplexers; and
said input terminal is programmably connectable to and disconnectable from said plurality of M/2 output terminals wherein upon programmably connecting said input terminal to one of said plurality of M/2 output terminals, said input terminal is disconnected from all other output terminals in said plurality of M/2 output terminals.

5,781,031
PROGRAMMABLE LOGIC ARRAY
Claude Louis Bertin, Burlington, and John Edward Cronin, Milton, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1995, Ser. No. 560,250
Int. Cl.⁶ H03K 19/177; H01L 23/02

U.S. Cl. 326—39

42 Claims



12. A programmable logic array (PLA), comprising:
 - a plurality of memory cells and memory circuits, wherein said memory circuits allow operation of said memory cells for storage apart from said PLA;
 - PLA logic circuitry coupled to at least some of said plurality of memory cells, said PLA logic circuitry comprising a plurality of inputs, a plurality of outputs, and a feedback connection

between at least one of said plurality of outputs and at least one of said plurality of inputs; and
a plurality of drivers for driving said plurality of memory cells.

5,781,032
PROGRAMMABLE INVERTER CIRCUIT USED IN A PROGRAMMABLE LOGIC CELL

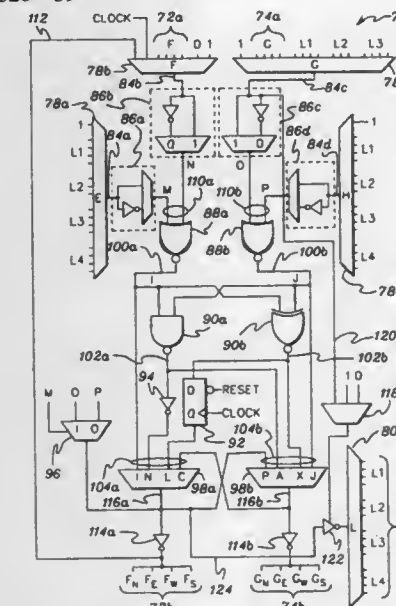
Allan Robert Bertolet, Williston; Kim P.N. Clinton, Essex Junction; Christine Marie Fuller, Williston; Scott Whitney Gould, South Burlington; Steven Paul Hartman, Jericho; Joseph Andrew Iadanza, Hinesburg; Frank Ray Keyser, Colchester; Eric Ernest Millham, St. George; Timothy Shawn Reny, Underhill Center; Brian A. Worth, Milton; Gulson Yasar, South Burlington, and Terrance John Zitritsch, Williston, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 9, 1996, Ser. No. 707,839

Int. Cl.⁶ H03K 7/38; 19/21

U.S. Cl. 326—39

4 Claims



means for biasing said gate terminal of said pullup p-channel transistor using a voltage level signal of the pad so as to produce said output signal on said pad in a logic high state having a magnitude that is reduced relative to said predetermined voltage level, said biasing means being configured to place said pullup p-channel transistor in conductive and non-conductive states in response to said input signal in first and second logic states, respectively.

5,781,035

DUAL-DIFFERENTIAL-PAIR EMITTER-COUPLED LOGIC COMPLEMENTARY-OUTPUT CIRCUIT

Masakazu Tashibu, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

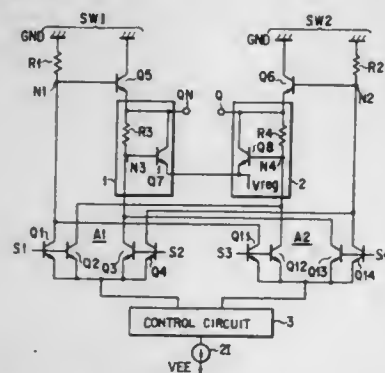
Filed Jul. 11, 1996, Ser. No. 678,780

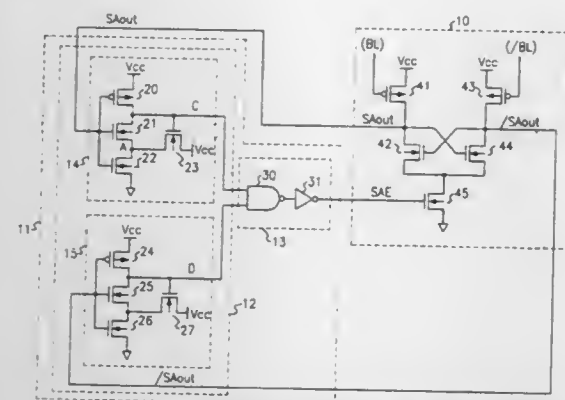
Claims priority, application Japan, Jul. 12, 1995, 7-176028

Int. Cl.⁶ H03K 19/006; 19/013

U.S. Cl. 326—126

11 Claims





a control means for enabling/disabling the sense amplifier in response to output signals from the first and second detecting means,

whereby the sense amplifier is disabled when a voltage difference between the first output and the second output increases up to a predetermined voltage level.

5,781,042

MODAL TRANSITION IMBALANCE DETECTOR

Peter J. Jung, Eagan, Minn., assignor to VTC Inc., Bloomington, Minn.

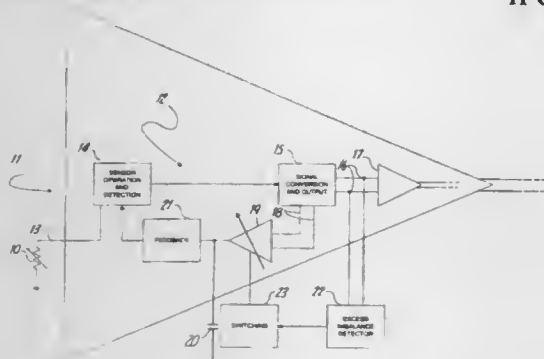
Continuation of Ser. No. 531,192, Sep. 19, 1995, abandoned.

This application Apr. 24, 1997, Ser. No. 847,304

Int. Cl.⁶ G11B 5/02

U.S. Cl. 327—67

11 Claims



1. A sensing system including a magnetoresistive sensor and a preamplifier subject to being directed into modal transitions between differing operating states therefor said system comprising: said magnetoresistive sensor;

said preamplifier electrically connected to said magnetoresistive sensor at a terminal thereof to provide in a sensor operation and signal conversion subsystem therein, electrical current through said magnetoresistive sensor and conversions of resistance changes in said magnetoresistive sensor due to varying magnetic fields thereabout to differential output signals at a pair of subsystem outputs based on a capacitance therein charged by a variable amplification amplifier therein but also subject to providing said differential output signals at said pair of subsystem outputs of relatively larger magnitudes during modal transitions than during said conversions absent said modal transitions due to said capacitance;

an excess imbalance detector having a pair of inputs electrically connected to said pair of subsystem outputs and having an output, said excess imbalance detector for detecting, between said differential output signals each occurring on one of said pair of inputs thereof, magnitude differences reaching selected threshold values therein to provide an output signal on said output thereof indicating when such differences have been detected by being in one logic state and being in an alternative logic state absent such differences being detected, and further

for changing said selected threshold values therein following detection of such differences; and

a switch having an input coupled to said excess imbalance detector output and having an output coupled to said variable amplification amplifier in said preamplifier, said switch for providing an output signal at said output thereof selecting an amplification value for said amplifier if said excess imbalance detector output signal is in said one logic state and selecting another amplification value for said amplifier if said excess imbalance detector output signal is in said alternative logic state.

5,781,043

DIRECT CURRENT SUM BANDGAP VOLTAGE COMPARATOR

William Carl Slemmer, Dallas, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 606,233, Feb. 23, 1996, abandoned,

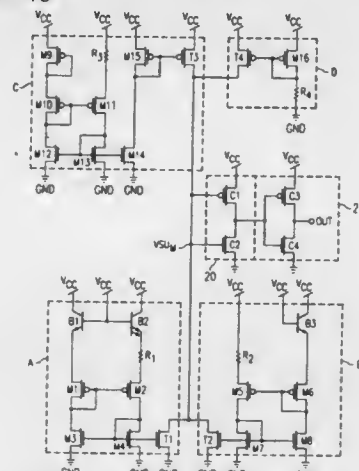
which is a continuation of Ser. No. 56,301, Apr. 30, 1993,

abandoned. This application Sep. 18, 1997, Ser. No. 932,930

Int. Cl.⁶ H03K 5/22

U.S. Cl. 327—78

23 Claims



1. A direct current sum bandgap voltage comparator comprising: a summing node;

a plurality of current sources connected to the summing node, each current source further comprising at least one transistor, and each current source supplying a current to the summing node and being connected to a power supply voltage, wherein the currents sources supply currents according to a bandgap equation:

$$K_1(V_{CC}-V_T)+K_1V_T=K_2V_{BE}+K_3(kT/q)$$

where V_{CC} is the power supply voltage, V_T is a predetermined threshold voltage of a transistor in a first current source within the plurality of current sources, V_{BE} is a base emitter voltage of a transistor in a second current source within the plurality of current sources, k is Boltzman's constant, T is a temperature in kelvin of a transistor in a third current source within the plurality of current sources, q is an electronic charge constant, and K_1 , K_2 , and K_3 are constants determined by a resistance and a transistor length in the first, second, and third current sources, respectively; and

an indicator circuit having an input connected to the summing node and generating a logical signal at an output, responsive to voltage changes in the summing node.

5,781,044

DELTA-SIGMA FRACTIONAL-N FREQUENCY SYNTHESIZER AND FREQUENCY DISCRIMINATOR SUITABLE FOR USE THEREIN

Thomas A. D. Riley, Osgoode, and Miles A. Copeland, Ottawa, both of Canada, assignors to Northern Telecom Limited, Brampton, Canada

PCT No. PCT/CA95/00271, § 371 Date Nov. 8, 1996, § 102(e)

Date Nov. 8, 1996, PCT Pub. No. WO95/31861, PCT Pub.

Date Nov. 23, 1995

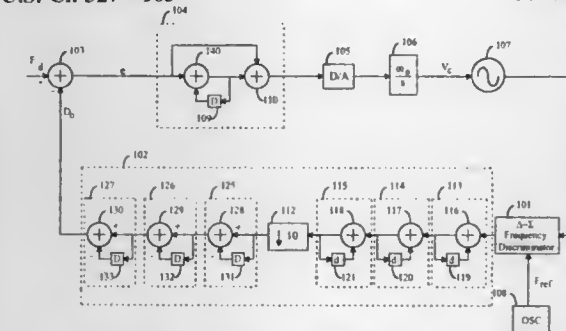
PCT Filed May 12, 1995, Ser. No. 737,370

Claims priority, application Canada, May 12, 1994, 2123477

Int. Cl.⁶ H03B 21/00

U.S. Cl. 327—105

23 Claims



1. A frequency synthesizer comprising a voltage controlled oscillator responsive to a control voltage to generate an output signal having a particular frequency, frequency discrimination means responsive to the output signal and a reference signal having a predetermined reference frequency to generate a digital signal representing said particular frequency, differencing means responsive to the digital representation signal and to a digital input signal representing a desired output frequency to provide an error signal and means responsive to the error signal to provide said control voltage, the frequency discrimination means comprising phase-locked loop means phase-locked to the output signal.

5,781,045

METHOD AND APPARATUS FOR PREDRIVING A DRIVER CIRCUIT FOR A RELATIVELY HIGH CURRENT LOAD

Rajan Walia, Singapore, Singapore, and Billy E. Thayer, Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

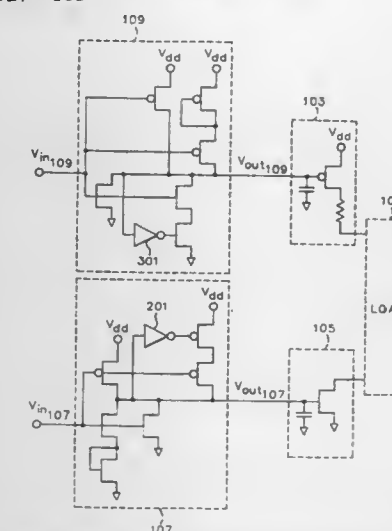
Continuation of Ser. No. 412,421, Mar. 29, 1995, abandoned.

This application Aug. 30, 1996, Ser. No. 706,377

Int. Cl.⁶ H03K 3/00

U.S. Cl. 327—108

8 Claims



1. A circuit for providing controlled shut down of an electronic

device, the circuit comprising:

an input line;

a first transistor having a first current flow capacity, the input line being connected to the gate of the first transistor;

a second transistor having a greater second current flow capacity, the input line being connected to the gate of the second transistor;

an output line connected to the respective drains of the first and second transistors;

current limiting means connected between the source of the second transistor and a ground line, for conducting current between the second transistor and the ground line at a first rate when a voltage above a preselected threshold voltage is applied between the input line and the ground line, and for limiting current flow between the second transistor and the ground line to a second rate less than the first rate when a voltage less than the preselected threshold is applied, the input of the current limiting means connected to the source of the second transistor; and

the ground line also being connected to the source of the first transistor.

5,781,046

PUSH-AND-PULL DRIVER CIRCUIT FOR DRIVING AN H-BRIDGE COUPLED TO A TWO-TERMINAL INDUCTIVE LOAD

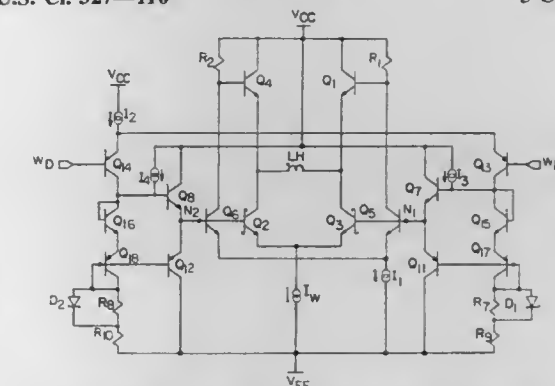
Tuan V. Ngo, Eden Prairie, and Raymond E. Barnett, Burnsville, both of Minn., assignors to VTC, Inc., Bloomington, Minn.

Filed Mar. 22, 1995, Ser. No. 408,219

Int. Cl.⁶ H03K 3/00

U.S. Cl. 327—110

5 Claims



1. A write driver switching system for supplying current to a two-terminal inductive load, comprising:

a switching circuit having first and second switching transistors each connected between a first supply terminal and respective first and second load terminals, the first and second load terminals for connecting to the inductive load, the first and second switching transistors being responsive to write signals at respective first and second control nodes for driving current in first and second directions through the inductive load;

a driver circuit having a first drive transistor coupled between the first control node and the first supply terminal and a second drive transistor coupled between the first control node and a second supply terminal;

a bias circuit for maintaining the second drive transistor in a conductive state during operation of the switching circuit, the bias circuit coupled to a control terminal of the second drive transistor and the first and second supply terminals and, the bias circuit including:

first and second diodes connected in series between respective control terminals of the first and second drive transistors; and

a bias current source connected between the first diode and the second supply terminal;

control means responsive to write signals for alternately operating the first and second drive transistors to selectively charge and discharge a capacitance of the first switching transistor; and
a third diode parallel-coupled to a resistor, the resistor connected between the second diode and the first supply terminal.

5,781,047

IGNITION COIL DRIVER MODULE

John Robert Shreve, and Lester Wilkinson, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

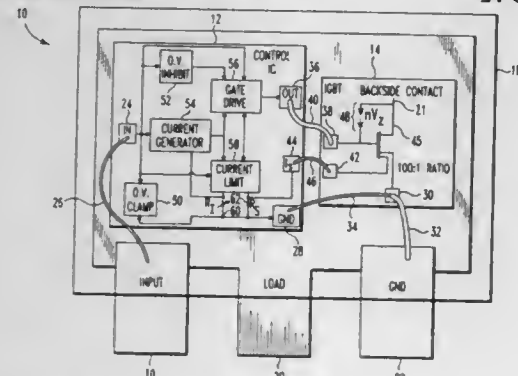
Continuation of Ser. No. 522,982, Jul. 31, 1995, abandoned.

This application May 27, 1997, Ser. No. 863,173

Int. Cl.⁶ H03B 1/00

U.S. Cl. 327—110

24 Claims



1. A high current load driver module comprising:
 - a control circuit responsive to a low voltage control signal to provide a low voltage drive signal, said control circuit formed of a low voltage semiconductor material arranged as a first integrated circuit;
 - a high current load driver circuit responsive to said low voltage drive signal to energize a high current load, said high current load driver circuit formed of a high voltage semiconductor material arranged as a second integrated circuit separate from said first integrated circuit; and
 - a housing having a first terminal extending therein and forming an integrated circuit mount within said housing, said first integrated circuit having a substrate attached to said mount yet electrically insulated therefrom via an electrically insulating circuit mount medium separate from said integrated circuit mount, said second integrated circuit having a substrate attached and electrically connected to said mount via an electrically conductive circuit mount medium separate from said integrated circuit mount.

5,781,048

SYNCHRONOUS CIRCUIT CAPABLE OF PROPERLY REMOVING IN-PHASE NOISE

Takehiko Nakao, and Shinichi Yoshioka, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Aug. 16, 1996, Ser. No. 698,892

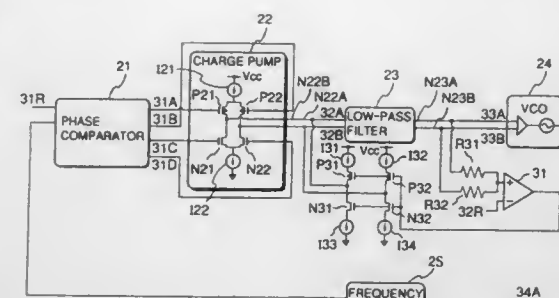
Claims priority, application Japan, Aug. 23, 1995, 7-214584

Int. Cl.⁶ H03K 5/13; 5/00

U.S. Cl. 327—157

12 Claims

1. A synchronous circuit comprising:
 - a phase comparator for comparing a feedback signal with an input reference signal to detect a phase difference and for outputting a phase difference signal corresponding to the phase difference;
 - a charge pump for outputting charge/discharge signals on the basis of the phase difference signal output from said phase comparator;
 - a low-pass filter for changing a charge amount accumulated in a capacitor on the basis of the charge/discharge signals output



- from said charge pump and for outputting control signals corresponding to the charge amount as differential signals;
- a voltage-controlled oscillator for changing an oscillation frequency of an output on the basis of the control signals output from said low-pass filter;
 - a frequency divider for dividing the output from said voltage-controlled oscillator in order to output the feedback signal;
 - intermediate value generation means for generating an intermediate value between the control signals output from said low-pass filter;
 - a comparator for comparing the intermediate value output from said intermediate value generation means with an externally input reference value and for outputting a comparison result; and
 - control means for receiving the comparison result output by said comparator and for controlling levels of the charge/discharge signals output from said charge pump so that the intermediate value is made to match the externally input reference value.

5,781,049

METHOD OF TRANSMITTING CLOCK SIGNAL AND DEVICE EMPLOYING THE SAME

Masatoshi Fugo, Yamagata, Japan, assignor to NEC Corporation, Tokyo, Japan

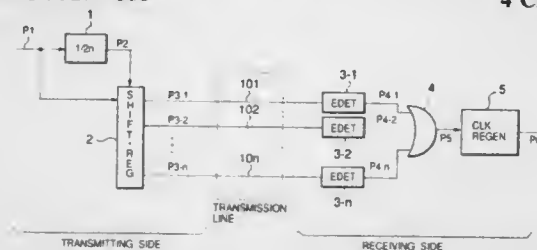
Filed Apr. 25, 1997, Ser. No. 844,697

Claims priority, application Japan, May 21, 1996, 8-125777

Int. Cl.⁶ H03K 5/15

U.S. Cl. 327—166

4 Claims



1. A clock signal transmission equipment for transmitting a clock signal of period T from a transmitting side to a receiving side, wherein,
 - said transmitting side comprises:
 - frequency dividing means which generates a first pulse signal of duty ratio 50% and pulse width nT (n being nonzero positive integer) obtained by dividing the frequency of said clock signal of period T by 2n; and
 - transmission pulse generating means which generates n pieces of second pulse signals by giving delays of 0, T, 2T, . . . and (n-1)T to said first pulse signal, and said receiving side comprises:
 - pulse detecting means which receives respective members of said n pieces of second pulse signals, detects the leading edge and the trailing edge of these n pieces of second pulse signals, and generates a third pulse signal which shows the leading edges and the trailing edges of all of these n pieces of second pulse signals; and
 - clock regenerating means which regenerates said clock signal of period T based on said third pulse signal.

5,781,050

OPEN DRAIN OUTPUT DRIVER HAVING DIGITAL SLEW RATE CONTROL

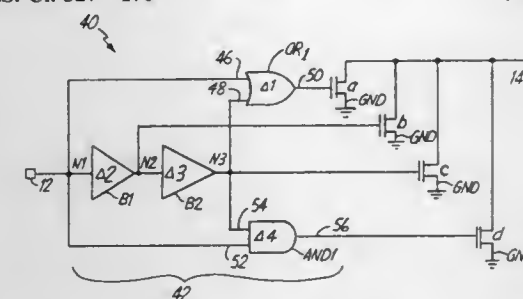
Matthew Russell, Burnsville, Minn., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Nov. 15, 1996, Ser. No. 751,086

Int. Cl.⁶ H03K 5/12; 17/16

U.S. Cl. 327—170

12 Claims



1. An open drain driver circuit comprising:
 - an input terminal and an output terminal;
 - a supply terminal;
 - first and second NMOS driver transistors, each transistor having a drain coupled to the output terminal, a source coupled to the supply terminal, and a gate;
 - a delay circuit having an input coupled to the input terminal and having an output;
 - a first OR gate having first and second inputs and an output, wherein the first input of the first OR gate is coupled to the input terminal, the second input of the first OR gate is coupled to the output of the delay circuit and the output of the first OR gate is coupled to the gate of the first NMOS transistor; and
 - a first AND gate having first and second inputs and an output, wherein the first input of the first AND gate is coupled to the input terminal, the second input of the first AND gate is coupled to the output of the delay circuit and the output of the first AND gate is coupled to the gate of the second NMOS transistor.

5,781,051

POWER-UP DETECTOR FOR LOW POWER SYSTEMS

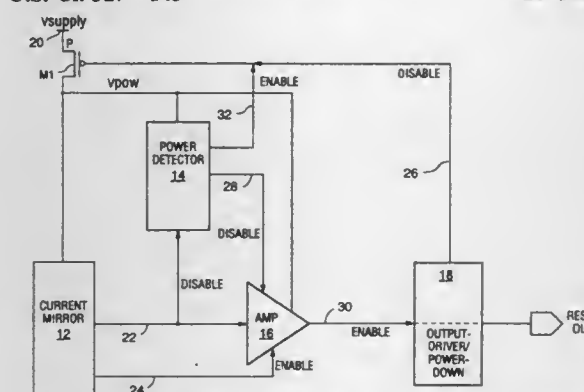
Bal S. Sandhu, Fremont, Calif., assignor to Exel Microelectronics, Inc., San Jose, Calif.

Filed Jul. 26, 1996, Ser. No. 687,763

Int. Cl.⁶ H03L 7/00

U.S. Cl. 327—143

20 Claims



1. A device for detecting power-up on a supply voltage line comprising
 - a power detect circuit coupled to the supply voltage line and which provides a disable signal when operating power is initially applied to the supply voltage line;
 - a current mirror coupled to control the power detect circuit, wherein the current mirror provides a control signal and an output signal which disable the power detect circuit and

which exceeds a predetermined control level when a voltage on the supply voltage line exceeds a predetermined threshold level; and
an output circuit controlled by the disable signal and the control signal, and coupled to receive the current mirror output signal, wherein the output circuit provides a drive signal proportional to the current mirror output signal.

5,781,052

STATIC LATCHES WITH ONE-PHASE CONTROL SIGNAL

Ulrich Kleine, Helmstedt, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

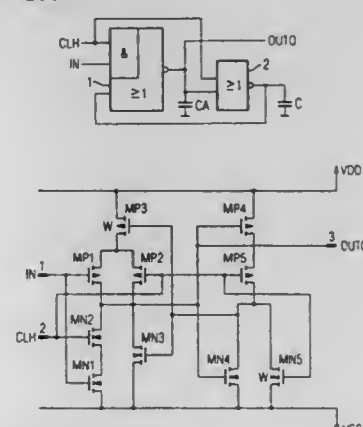
Filed Jan. 16, 1997, Ser. No. 784,950

Claims priority, application Germany, Jan. 16, 1996, 196 01 370.4

Int. Cl.⁶ H03K 3/356; 19/20

U.S. Cl. 327—208

4 Claims



1. A static latch, comprising:
 - an ANDNOR gate and a NOR gate;
 - a first AND input of the ANDNOR gate being connected with an input of the latch, and a further AND input of the ANDNOR gate being connected with a control signal input;
 - an output of the ANDNOR gate forming an output of the latch and being connected with a first input of the NOR gate;
 - a second input of the NOR gate being connected with the control signal input;
 - an output of the NOR gate being connected with a NOR input of the ANDNOR gate;
 - the ANDNOR gate comprising a first, a second and a third n-channel MOS field-effect transistor, as well as a first, a second and a third p-channel MOS transistor;
 - the output of the latch being connected with a supply voltage via a series circuit of the first and third p-channel MOS transistors, as well as via a series circuit of the second and third p-channel MOS transistors, and the output being connected with reference potential via a series circuit of the first and second n-channel MOS transistors, as well as via the third n-channel MOS transistor;
 - gates of the first n-channel and first p-channel transistors being connected with the input of the latch, gates of the second p-channel and n-channel MOS transistors being connected with the control signal input, and gates of the third p-channel and third n-channel MOS transistor being connected with the output of the NOR gate;
 - the NOR gate comprising fourth and fifth n-channel MOS transistors as well as fourth and fifth p-channel MOS transistors;
 - the output of the NOR gate being connected with the supply voltage via a series circuit of the fourth and fifth p-channel MOS transistors and being connected with the reference potential via a parallel circuit of the fourth and fifth n-channel MOS transistors;
 - gates of the fourth n-channel MOS transistor and fourth p-channel MOS transistor being connected with the output of the latch; and

- a buffer amplifier for supplying test signals having predetermined voltage levels;
- a first diode bridge connected to a first voltage source for providing a first voltage level to an input of said buffer amplifier, said first diode bridge having an upper node and a lower node for flowing bridge current therethrough;
- a second diode bridge connected to a second voltage source for providing a second voltage level to said input of said buffer amplifier, said second diode bridge having an upper node and a lower node for flowing bridge current therethrough;
- a third diode bridge connected to a third voltage source for providing a third voltage level to said input of said buffer amplifier, said third diode bridge having an upper node and a lower node for flowing bridge current therethrough;
- a fourth diode bridge connected between said first voltage source and said lower node of said third diode bridge; and
- a fifth diode bridge connected between said second voltage source and said upper node of said third diode bridge.

5,781,060

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING A VARIABLE CURRENT SOURCE CONTROLLED BY A SHIFT REGISTER

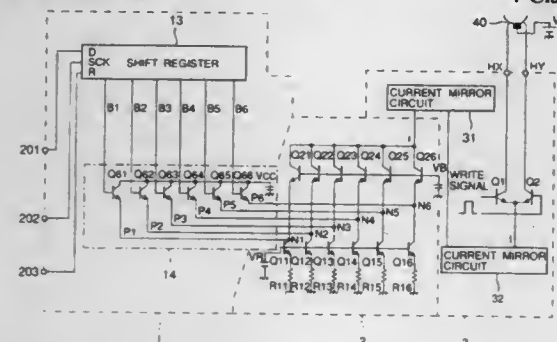
Mitsutoshi Sugawara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 27, 1997, Ser. No. 827,418

Claims priority, application Japan, Mar. 29, 1996, 8-076087 Int. Cl.⁶ H03K 17/62

U.S. Cl. 327-407

4 Claims



1. A semiconductor integrated circuit device comprising a variable current source producing a variable current, a shift register receiving control data in serial and producing a set of control signals in a parallel form, and a control circuit responding to said set of control signals and causing said variable current source to change a value of said variable current.

5,781,061

CURRENT MIRROR CIRCUIT AND SIGNAL PROCESSING CIRCUIT HAVING IMPROVED RESISTANCE TO CURRENT OUTPUT TERMINAL VOLTAGE VARIATION

Miyo Miyashita, and Kazuya Yamamoto, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

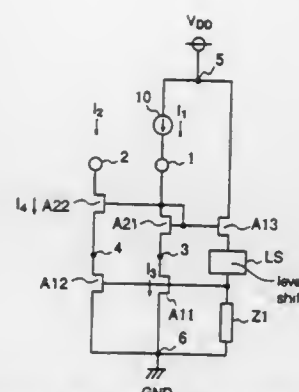
Filed Aug. 13, 1996, Ser. No. 696,093

Claims priority, application Japan, Feb. 26, 1996, 8-037623 Int. Cl.⁶ G05F 3/02

U.S. Cl. 327-543

7 Claims

1. A current mirror circuit comprising:
- a positive power supply terminal;
 - a negative power supply terminal;
 - a current input terminal;
 - a current source connected between the positive power supply terminal and the current input terminal;
 - a first field effect transistor and a second field effect transistor, each of the first and second field effect transistors having a



- gate terminal, a drain terminal, and a source terminal, the gate terminal of the first field effect transistor being connected to the gate terminal of the second field effect transistor, the source terminals of the first field effect transistor and the second field effect transistor being connected to each other and to the negative power supply terminal;
- a resistor having a first end connected to the source terminal of the first field effect transistor and a second end connected to the gate terminal of the first field effect transistor;
- a level shift circuit having a low potential end connected to the gate terminal of the first field effect transistor, and a high potential end;
- a third field effect transistor having a source terminal connected to the drain terminal of the first field effect transistor, and a drain terminal and a gate terminal connected to each other and to the current input terminal;
- a fourth field effect transistor having a source terminal connected to the drain terminal of the second field effect transistor, a gate terminal connected to the gate terminal of the third field effect transistor, and a drain terminal serving as a current output terminal; and
- a fifth field effect transistor having a source terminal connected to the high potential end of the level shift circuit, a gate terminal connected to the gate terminal of the third field effect transistor, and a drain terminal connected to the positive power supply terminal.

5,781,062

SEMICONDUCTOR INTEGRATED CIRCUIT

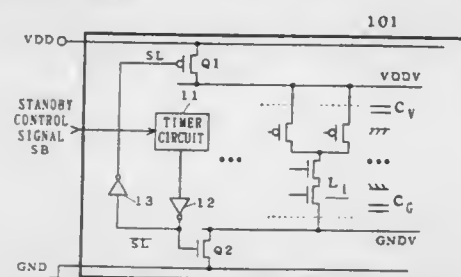
Koichiro Mashiko; Kimio Ueda; Hiroaki Suzuki, and Hiroyuki Morinaka, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1996, Ser. No. 582,416

Claims priority, application Japan, Aug. 21, 1995, 7-211772 Int. Cl.⁶ G05F 1/10

U.S. Cl. 327-544

22 Claims



1. A semiconductor integrated circuit comprising:
- a first power supply;
 - a first power supply line;
 - a first switch having a first end connected to said first power supply, and a second end connected to said first power supply line; and
 - at least one logic circuit including a sequential circuit connected to said second end of said first switch through said first power supply line,

wherein said first switch is constantly conducting during a first period over which said logic circuit is active, and said first switch is intermittently conducting during a second period over which said logic circuit is on standby.

5,781,063

CONTINUOUS-TIME ADAPTIVE LEARNING CIRCUIT

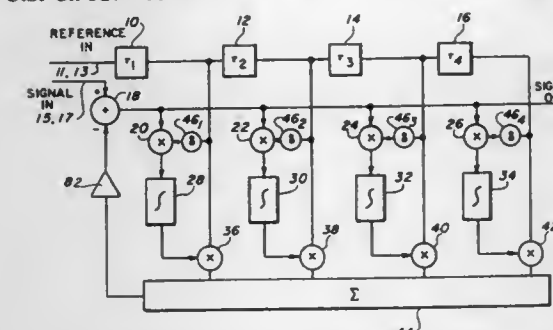
Francis J. Kub, Arnold, and Eric W. Justh, Rockville, both of Md., assignors to United States as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 6, 1995, Ser. No. 554,160

Int. Cl.⁶ H03K 5/00; G06F 7/38

U.S. Cl. 327-552

15 Claims



1. A multiplier-integrator-multiplier circuit comprising:
- a first multiplier;
 - an integrator adapted to receive the output of said multiplier; and
 - a second multiplier adapted to receive the output of said integrator;
- wherein said integrator comprises:
- a difference amplifier;
 - an integrating capacitor in parallel with said difference amplifier; and
 - a transistor, the output of said transistor disposed to constitute the input of said difference amplifier;
- wherein said circuit further comprises an auto-zero circuit, said auto-zero circuit comprising:
- means for isolating said capacitor and isolating the input to said difference amplifier; and
 - a further capacitor disposed in parallel with the output of said input of said difference amplifier, and said output of said integrator.

5,781,064

DIGITAL FILTERING SYSTEM FOR FILTERING DIGITAL OUTPUTS OF A FOUR LEVEL FSK DEMODULATOR

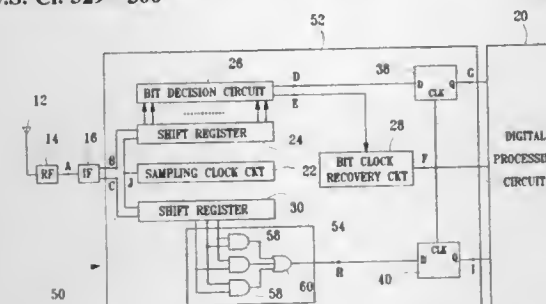
Chen Chang-An, and Hsieh Bing-Yi, both of Taipei, Taiwan, assignors to Ginjet Technology Corporation, Taipei, Taiwan

Filed Mar. 18, 1997, Ser. No. 819,057

Int. Cl.⁶ H03D 3/00; H04L 27/14

U.S. Cl. 329-300

8 Claims



1. A digital filtering system for filtering a first and a second digital signals inputted from a FSK (frequency-shift-keying)

demodulator to generate a first and a second filtered digital signals, said FSK demodulator being used for demodulating a four level FSK signal into said first and second digital signals, said system comprising:

- (1) a first shift register for recording the first digital signal as a series of digital samples;
- (2) a first bit decision circuit for determining a first voltage level according to the digital samples stored in the first shift register and generating a pulse signal at a leading edge of the first digital signal if the voltage level of the first digital signal is different from a digital signal inputted immediately before the first digital signal;
- (3) a bit clock recovery circuit for generating a bit clock signal in a predetermined frequency which is synchronized by the pulse signal of the first digital filter;
- (4) a first D flip-flop for storing the first voltage level determined by the first bit decision circuit when the bit clock signal occurs and generating the first filtered digital signal;
- (5) a second shift register for recording the second digital signal as a series of digital samples;
- (6) a second bit decision circuit for determining a second voltage level according to a plurality of predetermined digital samples stored in the second shift register; and
- (7) a second D flip-flop for storing the second voltage level determined by the second bit decision circuit when the bit clock signal occurs and generating the second filtered digital signal.

5,781,065

CIRCUIT FOR CAUSING FPLL TO LOCK IN DESIRED PHASE

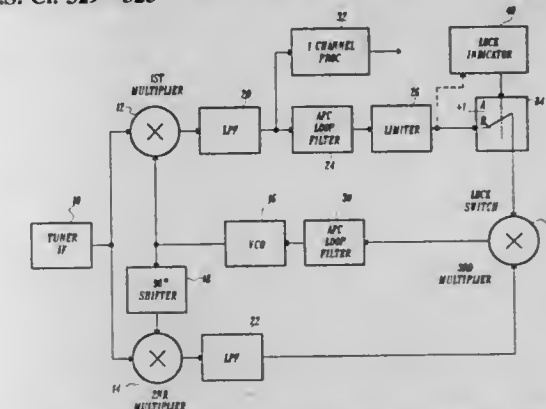
Victor G. Mycnek, and Leif W. Otto, both of Des Plaines, Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 13, 1996, Ser. No. 696,427

Int. Cl.⁶ H03D 3/00; H03L 7/087; 7/095

U.S. Cl. 329-325

10 Claims



1. In a biphasic stable FPLL of the type including means for demodulating an input signal with a pair of ninety degrees phase displaced oscillatory signals, an AFC low pass filter and a limiter, and means for supplying an output signal having either of two polarities, the improvement comprising:
- automatic phase locking means for forcing the FPLL to lock up such that said output signal has a selected one of said two polarities.

5,781,066

PULSE WAVEFORM GENERATOR

Samuel J. Parisi, Townsend, and Edward D. Ostroff, Sudbury, both of Mass., assignors to The Mitre Corporation, Bedford, Mass.

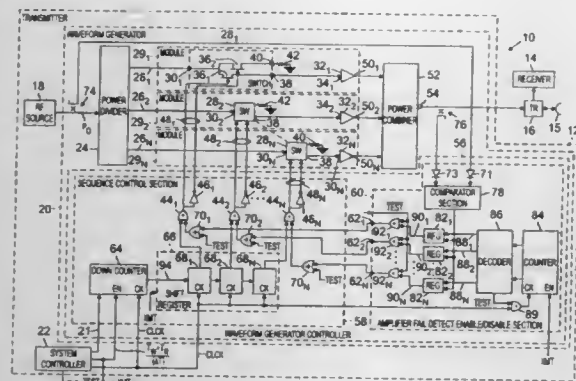
Filed Mar. 11, 1996, Ser. No. 613,477

Int. Cl.⁶ H03F 3/68

U.S. Cl. 330-2

22 Claims

1. A waveform generator, comprising:



- a power divider for dividing power from a signal source fed thereto to a plurality of output terminals;
a plurality of amplifiers;
a power combiner for combining power fed thereto;
a plurality of switches, each one thereof being coupled to a corresponding one of the plurality of amplifiers, for coupling the power at the plurality of output terminals to the power combiner through a selected one, or ones of the plurality of switches and the corresponding one, or ones of the amplifiers coupled thereto, in accordance with control signals fed to the plurality of switches;
a controller, comprising a shift register section having a plurality of successively coupled storage stages, each stage providing one of the control signals for a corresponding one of the plurality of switches.

5,781,067

ELECTRONIC INDUCTIVE SWITCHING POWER AMPLIFIER

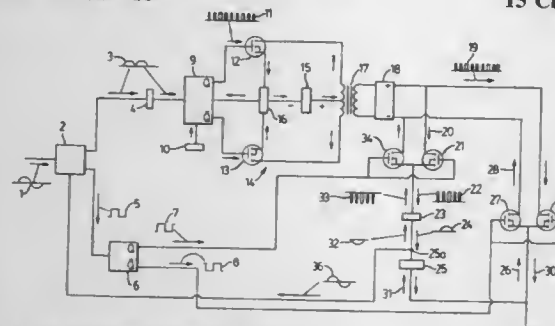
Tasleem Tota, 213A Clarke Road, Penal, Trinidad, St. Kitts/Nevis

Filed Apr. 26, 1996, Ser. No. 638,136

Int. Cl.⁶ H03F 3/38

U.S. Cl. 330—10

15 Claims



- I. An Electronic Inductive Switching Power Amplifier in combination with a Direct current power source comprising,
(a) An electronic pulse width modulator circuitry in electrical communication with primary semiconductor switches in further communication with a high frequency switching transformer;
(b) A direct current primary power source electrically connected to the said pulse width modulator, further connected to primary winding on said high frequency switching transformer and to the said primary semiconductor switches through a current sensing circuit;
(c) A thermal sensing circuit in thermal communication with the said semiconductor switches and electrically connected to shutdown said pulse width modulator when thermal limits are exceeded;
(d) A multifunction preamplifier electrically connected to an input signal source and further connected to a direct current power source;

- (e) The said multifunction preamplifier providing two output signals, one connected to an electrical signal isolator and the second output connected to an output driver circuit;
(f) Said signal isolator is electrically connected to input of said pulse width modulator;
(g) A secondary winding on said high frequency switching transformer is in electrical communication with a full wave rectifier in further communication with output semiconductor switches;
(h) An electronic low pass filter circuit connected to an electrical power take off point receiving signal from said output semiconductor switches and thereby connected;
(i) Said output driver circuit producing complimentary outputs electrically operates said output semiconductor switches alternately switching signal from said power take off point through said low pass filter to further operate an electrical load; and
(j) An electrical feedback signal from said power take off point connected to said multifunction preamplifier for further stability and linearity of signal amplification.

5,781,068

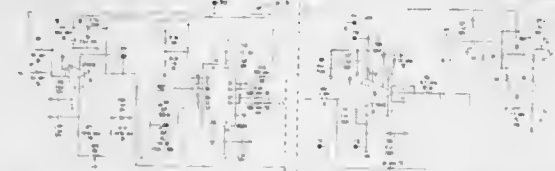
TRANSADMITTANCE AMPLIFIER FOR A MOTOR
Mark K. Takita, Mountain View, Calif., assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 14, 1996, Ser. No. 618,235

Int. Cl.⁶ H03F 1/34

U.S. Cl. 330—85

12 Claims



1. An amplifier for driving a load, the amplifier comprising:
a drive amplifier having first and second input terminals and an output terminal, the output terminal providing an output current proportional to an input voltage level on the first input terminal; and
a feedback network including:
a difference amplifier having a first differential input terminal and an output terminal, the output terminal of the difference amplifier being connected to the second input terminal of the drive amplifier; and
a current sensor having a first terminal connected to the output terminal of the drive amplifier and to the first input terminal of the difference amplifier and a second terminal connected to the load and to a second input terminal of the difference amplifier, the current sensor thereby providing the difference amplifier with an indication of the output current from the output terminal of the drive amplifier;
wherein the drive amplifier comprises an integrating amplifier having a feedback capacitance and a switch connected in parallel with the feedback capacitance, wherein the switch is configured to provide zero voltage across the feedback capacitance when the integrating amplifier is inactive.

5,781,069

PRE-POST DISTORTION AMPLIFIER

Brian L. Baskin, Cupertino, Calif., assignor to Xemod, Inc., Sunnyvale, Calif.

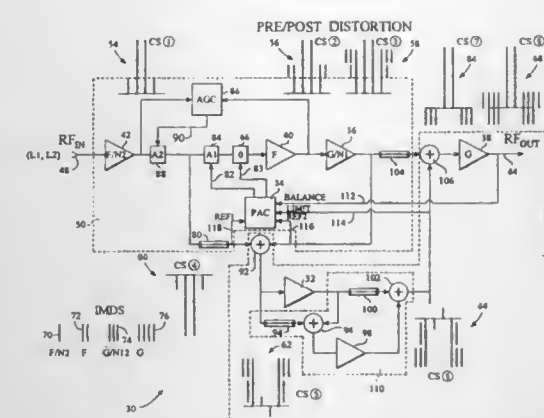
Filed May 16, 1996, Ser. No. 649,841

Int. Cl.⁶ H03F 1/26

U.S. Cl. 330—149

10 Claims

1. A pre-post distortion apparatus for eliminating non-linear distortions generated by propagation of at least two radio-frequency (RF) signals L1 and L2 through said pre-post distortion apparatus; said pre-post distortion apparatus comprising:
an inner loop means comprising:



- a first non-linear low level driver amplifier means F/N2, wherein said first non-linear low level amplifier means F/N2, while amplifying said at least two input RF signals (L1, L2), introduces in first approximation a first intermod signal $\alpha(F/N2)(L1, L2)$ of said two input signals (L1, L2), α being a parameter of expansion in series, and wherein said first non-linear low level driver amplifier means F/N2 outputs a first composite signal CS1 comprising said two input signals (L1, L2) and said first intermod signal $\alpha(F/N2)(L1, L2)$;
a first non-linear high level power amplifier means F connected to said first non-linear low level amplifier means F/N2, wherein said first non-linear high level amplifier means F, while amplifying said first composite signal CS1 generated by said first non-linear low level amplifier F/N2, introduces in the first approximation a second non-linear intermod signal $\alpha(F)(L1, L2)$ of said two input signals (L1, L2), and wherein said first non-linear high level power amplifier means F outputs a second composite signal CS2 comprising said two input signals (L1, L2), said first intermod signal $\alpha(F/N2)(L1, L2)$, and said second intermod signal $\alpha(F)(L1, L2)$;
a second non-linear low level driver amplifier means G/N1 connected to said first high level amplifier means F, wherein said second nonlinear low level amplifier means G/N1, while amplifying said second composite signal CS2 comprising said two input signals (L1, L2), said first intermod signal $\alpha(F/N2)(L1, L2)$, and said second intermod signal $\alpha(F)(L1, L2)$, introduces in first approximation a third intermod signal $\alpha(G/N1)(L1, L2)$, and wherein said second non-linear low level driver amplifier means G/N1 outputs a third composite signal CS3 comprising said two input signals (L1, L2), said first intermod signal $\alpha(F/N2)(L1, L2)$, said second intermod signal $\alpha(F)(L1, L2)$, and said third intermod signal $\alpha(G/N1)(L1, L2)$;
a first delay means connected to said F/N2 amplifier means for delaying said first composite signal CS1 and for inverting the phase of said first composite signal CS1, wherein said first delay means generates a fourth composite signal CS4;
a phase-amplitude comparator (PAC) means connected to said second high level amplifier means G and connected to said first low level amplifier means F/N2 for amplitude-comparing an eighth composite signal CS8 and said fourth composite signal CS4, and wherein said PAC means generates a first amplitude error signal Amplitude-Error1;
a first amplitude adjuster means A1 connected to said first low level non-linear amplifier means F/N2 and connected to said PAC means, wherein said first amplitude adjuster means A1 utilizes said first amplitude error signal Amplitude-Error1 generated by said PAC means for amplitude-adjusting of said first composite signal CS1 and for closing said inner loop;
an automatic gain control circuit (AGC) means connected to said first low level amplifier means F/N2 and connected to said first high level amplifier means F for automatically controlling the power levels of said first low level amplifier

F/N2 and said first high level amplifier F, for ensuring that the power output of said high level amplifier means F is proportional to the power output of said first low level amplifier means F/N2, and for generating a second Amplitude-Error2 signal; and

a second amplitude adjuster means A2 connected to said AGC means and connected to said first low level amplifier means F/N2, wherein said second amplitude adjuster means A2 utilizes said second Amplitude-Error2 signal for adjusting the power level of said composite signal CS1 generated by said low level amplifier F/N2; and

an outer loop means connected to said inner loop means, said outer loop means comprising:

- a first adder means connected to said first delay means and connected to said second low level amplifier means G/N1 for summing said fourth composite signal CS4 and said third composite signal CS3 up to the second approximation, wherein said first adder means outputs a fifth composite signal CS5 comprising said second intermod signal $\alpha(F)(L1, L2)$, said third intermod signal $\alpha(G/N1)(L1, L2)$, and a second approximation component $\alpha^2\text{Adder}(L1, L2)$;
an error amplifier means connected to said first adder means for amplifying and inverting said fifth composite signal CS5, wherein said error amplifier outputs a sixth composite signal CS6 comprising in the second approximation an increased and inverted second intermod signal $(-\beta)\alpha(F)(L1, L2)$, an increased and inverted third intermod signal $(-\beta)\alpha(G/N1)(L1, L2)$, and an increased and inverted second approximation component $(-\beta)\alpha^2\text{Adder}(L1, L2)$, wherein β is an increase factor that optimizes the compensation;
a second delay means connected to said second low level amplifier means G/N1 for delaying said third composite signal CS3 in order to equalize the electrical paths of said third composite signal CS3 and said sixth composite signal CS6 generated by said error amplifier means;
a second adder means connected to said error amplifier means and connected to said second delay means for summing said delayed third composite signal CS3 and said sixth composite signal CS6, wherein said second adder means outputs a seventh composite signal CS7 comprising in the first approximation said two input signals (L1, L2), and an inverted third intermod signal $(-\alpha)(G/N1)(L1, L2)$;
a second non-linear high level power amplifier means G connected to said second adder means, wherein said second non-linear high level amplifier means G, while amplifying said seventh composite signal CS7 generated by said second adder means, introduces in the first approximation a fourth non-linear intermod signal $\alpha(G)(L1, L2)$ of said two input signals (L1, L2), and wherein said second non-linear high level power amplifier means G outputs said eighth composite signal CS8 comprising said two input signals (L1, L2), said inverted third intermod signal $(-\alpha)(G/N1)(L1, L2)$, and said fourth intermod signal $\alpha(G)(L1, L2)$, and wherein said inverted third intermod signal $(-\alpha)(G/N1)(L1, L2)$ and said fourth intermod signal $\alpha(G)(L1, L2)$ cancel each other out in the first approximation; and
wherein said eighth composite signal CS8 is fed back to said PAC means to compensate for gain variation of said second high level driver amplifier means G and to properly scale the output power of said second low level driver amplifier G/N1 and said second high level power amplifier G; and
wherein said first low level driver amplifier F/N2 is post distorted; and
wherein said second high level power amplifier G is pre-distorted, yielding an output signal with high spectral purity.

5,781,070

Patent Not Issued For This Number

5,781,071

TRANSFORMERS AND AMPLIFIERS

Shigeo Kusunoki, Kanagawa, Japan, assignor to Sony Corporation, Japan

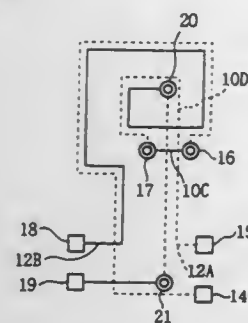
Filed Dec. 8, 1995, Ser. No. 569,297

Claims priority, application Japan, Dec. 17, 1994, 6-334004; Mar. 27, 1995, 7-093051

Int. Cl.⁶ H03F 3/26; H01F 27/28

U.S. Cl. 330—269

12 Claims



1. A transformer having an inductively coupled primary inductor and secondary inductor formed by integrated circuit techniques on opposite surfaces of an insulating layer formed on a semiconductor substrate, the transformer comprising:

- an electrically insulating layer having first and second surfaces thereof;
- a primary inductor comprising a spiral-form primary coil formed on one of said first and second surfaces of said insulating layer, a first primary terminal on said one surface connected to a first end of said primary coil on said one surface and a second primary terminal on said one surface connected to a second end of said primary coil on said one surface, at least a portion of said primary coil including a first primary coil through-hole, a primary coil crossover on the other of said first and second surfaces of said insulating layer, and a second primary coil through-hole; and
- a secondary inductor comprising a spiral-form secondary coil formed on the other of said first and second surfaces of said insulating layer, a first secondary terminal on said other surface connected to a first end of said secondary coil on said other surface and a second secondary terminal on said other surface connected to a second end of said secondary coil on said other surface, at least a portion of said secondary coil including a first secondary coil through-hole, a secondary coil crossover on the one surface of said insulating layer, and a second secondary coil through-hole.

5,781,072

DUAL PUSH-PULL AMPLIFIER CIRCUIT AND METHOD

Robert S. Kaltenecker, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

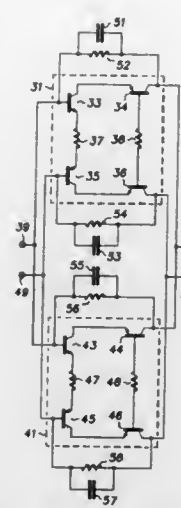
Filed Sep. 20, 1996, Ser. No. 717,026

Int. Cl.⁶ H03F 3/26

U.S. Cl. 330—271

20 Claims

11. A method for generating first and second output signals, comprising the steps of:
- amplifying a first input signal and a second input signal to form a first amplified input signal and a second amplified input signal, the second input signal having a phase difference with respect to the first input signal;
 - amplifying the first input signal and the second input signal to form a third amplified input signal and a fourth amplified input signal;
 - summing the first and third amplified input signals to form the first output signal;
 - summing the second and fourth amplified input signals to form the second output signal;
 - feeding a portion of the first output signal as a first feedback signal to the first input signal; and



feeding a portion of the second output signal as a second feedback signal to the second input signal.

5,781,073

TEMPERATURE COMPENSATION METHOD FOR AN OUTPUT FREQUENCY DRIFT OF AN OSCILLATOR

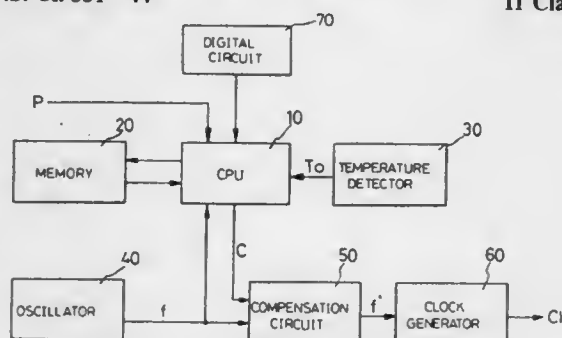
Adam Mii, 3 Fl., No. 1, Fuhshing N. Rd., Taipei, Taiwan

Filed Jul. 24, 1996, Ser. No. 685,684

Int. Cl.⁶ H03L 1/00

U.S. Cl. 331—44

11 Claims



1. A temperature compensation method for an output frequency drift of an oscillator comprising the steps of:

- a) selecting a rating frequency of said oscillator;
- b) measuring the output frequencies at various temperatures of said oscillator to determine the relationship between output frequencies and the various temperatures so as to establish a frequency compensation lookup table;
- c) continuously detecting the changes in the environmental temperature;
- d) acquiring a corresponding frequency compensation value from the frequency compensation table based on the presently-detected environmental temperature;
- e) converting the acquired compensation value into a corresponding compensation signal; and
- f) determining whether the compensation signal is positive or negative, if the compensation signal is positive, then a corresponding number of output pulses of the oscillator is deleted and if the compensation signal is negative, then a corresponding number of pulses are added to the output pulses of the oscillator, thereby compensating for a deviation between the present output frequency and said preselected rating frequency of the oscillator.

5,781,074

LOW ELECTROMAGNETIC INTERFERENCE CLOCK OSCILLATOR MODULE

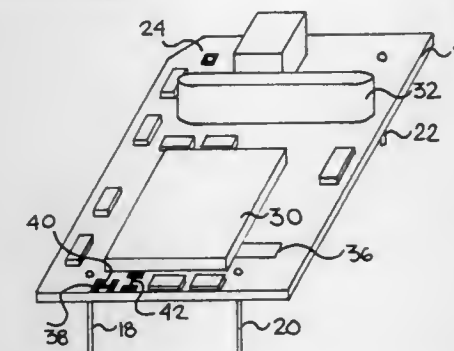
Chuong Dinh Nguyen, 708 San Conrado #2, Sunnyvale, Calif. 94086, and James John Levante, 769 Lakeview Way, Redwood City, Calif. 94062

Filed Aug. 9, 1996, Ser. No. 689,457

Int. Cl.⁶ H03B 1/04; 5/32

U.S. Cl. 331—105

9 Claims



1. A low noise clock oscillator for plugging into a standard multipin DIP clock oscillator socket on the motherboard of a host device, comprising:

- a printed circuit board having a plurality of conductive traces and which is separate from the motherboard;
- a spread spectrum clock generator having a plurality of terminals coupled to predetermined ones of said conductive traces for generating a spread spectrum clock signal;
- a crystal coupled to predetermined ones of said conductive traces;
- a plurality of pins mechanically and electrically coupled to predetermined ones of said conductive traces of said printed circuit board, said pins spaced so as to engage specific pin receptacles on said DIP clock oscillator socket on said motherboard so as to provide electrical connections to couple Vcc power source and ground source conductive traces on said motherboard to said spread spectrum clock generator and to electrically couple said spread spectrum clock signal to a clock bus on said motherboard, said pins being long enough that said electrical connections can be made with said printed circuit board above and not in contact with any conductive traces on said motherboard, said electrical connection to a ground source conductive trace on said motherboard via a single pin;
- a plurality of EMC filters coupling each of said pins to predetermined terminals of said spread spectrum clock generator.

5,781,075

TEMPERATURE SENSING APPARATUS

Jerry T. Bolton, Jr., and Frederick L. Martin, both of Plantation, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

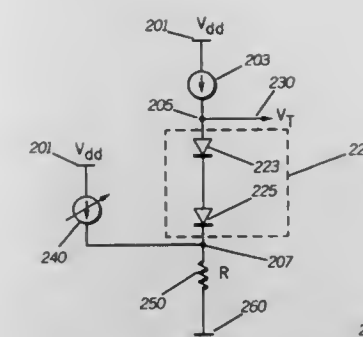
Filed Nov. 1, 1996, Ser. No. 742,989

Int. Cl.⁶ G01K 7/01; H03L 1/02

U.S. Cl. 331—176

16 Claims

1. An apparatus for sensing temperature, comprising:
- a temperature sensor having first and second terminals;
 - a constant current source coupled to the first terminal of the temperature sensor and providing a biasing current; and



a voltage source coupled to the second terminal of the temperature sensor, wherein the voltage source is programmable and temperature independent.

5,781,076

DIGITAL QUADRATURE AMPLITUDE MODULATORS

Takanori Iwamatsu, and Mitsuo Kakuishi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

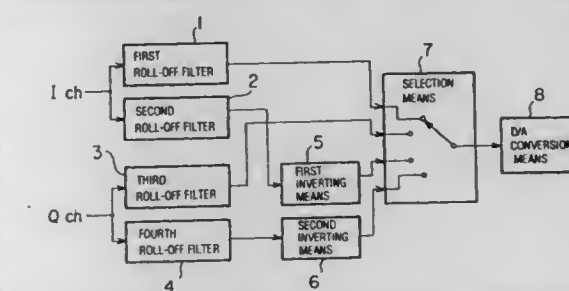
Filed Dec. 13, 1996, Ser. No. 764,969

Claims priority, application Japan, Jul. 2, 1996, 8-172220

Int. Cl.⁶ H04L 27/36

U.S. Cl. 332—103

7 Claims



1. A digital modulator with a quadrature amplitude modulation scheme, comprising:

- a first and a second roll-off filters operating at a first predetermined clock frequency for transmitting a desired frequency range of a return-to-zero coded I-channel baseband signal;
- a third and a fourth roll-off filters operating at the first predetermined clock frequency for transmitting a desired frequency range of a return-to-zero coded Q-channel baseband signal;
- first inverting means operating at the first predetermined clock frequency for inverting an output of said second roll-off filter;
- second inverting means operating at the first predetermined clock frequency for inverting an output of said fourth roll-off filter;
- selection means operating at a second predetermined clock frequency for successively selecting one of a first to fourth input signals, wherein said second predetermined clock frequency is four times as high as the first predetermined clock frequency;
- said first input signal is an output of said first roll-off filter;
- said second input signal is an output of said third roll-off filter;
- said third input signal is an output of said first inverting means; and
- said fourth input signal is an output of said second inverting means; and
- D/A conversion means operating at the second predetermined clock frequency for converting an output of said selection means into an analog signal.

5,781,077

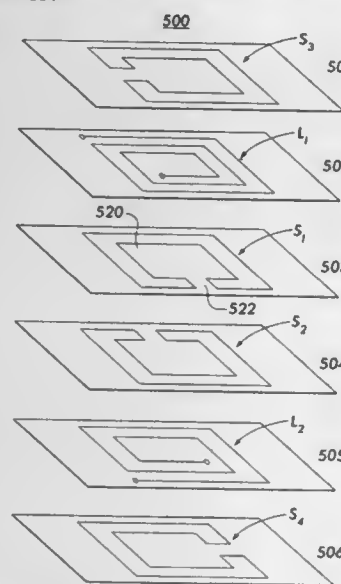
REDUCING TRANSFORMER INTERWINDING CAPACITANCE

Jim Rodger Lelch, Glasgow, and Andrew Notman, Lothian, both of Wales, assignors to Burr-Brown Corporation, Tucson, Ariz.

Filed Jan. 28, 1997, Ser. No. 790,158

Int. Cl.⁶ H01F 27/28; H02H 1/04; H03C 3/00; H03D 3/00
U.S. Cl. 332—117

23 Claims



1. A transformer, comprising:

- (a) a first winding;
- (b) a first conducting surface adjacent to the first winding;
- (c) a second winding;
- (d) a second conducting surface adjacent to the second winding; wherein the first conducting surface is coupled to a first ground and the second conducting surface is coupled to a second ground.

5,781,078

FILTER ENHANCEMENT USING INPUT-TO-OUTPUT GROUND ISOLATION AND SHIELDING

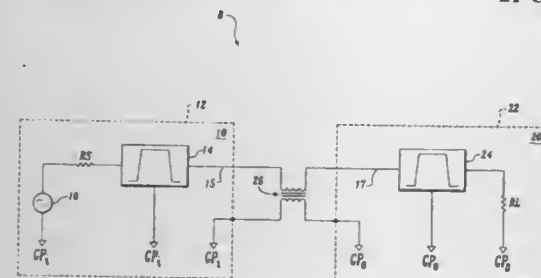
Theron L. Jones, Quincy, Ill., assignor to Glenayre Electronics, Inc., Charlotte, N.C.

Filed Dec. 5, 1996, Ser. No. 759,624

Int. Cl.⁶ H03H 7/01

U.S. Cl. 333—12

21 Claims



1. An electrical system for filter enhancement comprising:

- (a) an input circuit including:
 - (i) a signal source for generating a source signal having a predetermined frequency; and
 - (ii) a filter coupled to said signal source for receiving signals related to said source signal and producing a first filtered signal;
- (b) an output circuit having a filter, said output circuit for receiving signals related to said first filtered signal and producing a second filtered signal;

- (c) a choke balun coupling said input circuit to said output circuit to prevent the conductive coupling of stopband signals from said input circuit and said output circuit;
- (d) an input conductive enclosure enclosing said input circuit to prevent field coupling between said input circuit and said output circuit; and
- (e) An output conductive enclosure enclosing said output circuit to prevent field coupling between said output circuit and said input circuit.

5,781,079

MAGNETOSTATIC WAVE DEVICE

Takekazu Okada; Satoru Shimura, and Fumio Kanaya, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

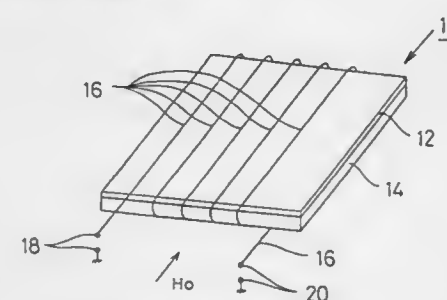
Filed Nov. 15, 1995, Ser. No. 559,446

Claims priority, application Japan, Nov. 17, 1994, 6-309995

Int. Cl.⁶ H01P 1/215

U.S. Cl. 333—24.1

19 Claims



1. A magnetostatic wave device comprising:

- a ferromagnetic base comprising YIG and having two opposed major surfaces and being adapted for having a DC magnetic field applied thereto;
- a first transducer having a portion arranged at a first major surface of said ferromagnetic base and another portion arranged at a second major surface of said ferromagnetic base;
- an input terminal connected to one end of said first transducer; and
- an output terminal connected to the other end of said first transducer; wherein said DC magnetic field is adapted to be applied along a direction parallel to said major surfaces of said ferromagnetic base and parallel to said transducer.

5,781,080

DIELECTRIC DUPLEXER

Masamichi Ando, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 321,518, Oct. 12, 1994, abandoned.

This application Feb. 10, 1997, Ser. No. 797,337

Claims priority, application Japan, Oct. 15, 1993, 5-282062

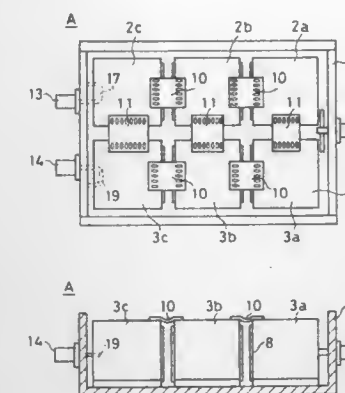
Int. Cl.⁶ H01P 5/12; 1/213; 1/20

U.S. Cl. 333—126

7 Claims

1. A dielectric duplexer comprising:

- a first filter having a first frequency pass band including at least a first dielectric resonator for passing through signals within the first frequency pass band;
- a second filter having a second frequency pass band including at least a second dielectric resonator for passing through signals within the second frequency pass band;
- said first and said second dielectric resonator each having a respective inner dielectric body and a corresponding conductive box having openings therein for coupling with input/output connectors or with an adjacent resonator to be coupled, and wherein the inner respective dielectric body is disposed in the corresponding conductive box;



a conductive casing for storing said first dielectric resonator and said second dielectric resonator, said conductive casing electrically connected with each of said conductive boxes;

at least one separate conductive member, electrically connecting only said conductive boxes of the first and second dielectric resonators and not being connected to said conductive casing to eliminate electromagnetic coupling between said first and second dielectric resonators; and

first, second and third input/output connectors attached to said conductive casing said first input/output connector being in electromagnetic communication with said first filter, said second input/output connector being in electromagnetic communication with said second filter, and said third input/output connector being in electromagnetic communication with said both of said first and second filters; wherein said first dielectric resonator and said second dielectric resonator are stored in a common chamber of said conductive casing, said first dielectric resonator and said second dielectric resonator being arranged adjacently, and said conductive boxes of said first dielectric resonator and said second dielectric resonator are connected to ground.

5,781,081

LC-TYPE DIELECTRIC FILTER HAVING AN INDUCTOR ON THE OUTERMOST LAYER AND FREQUENCY ADJUSTING METHOD THEREFOR

Michiya Arakawa; Tatsuya Takemura, both of Kani; Kazumasa Koike, Konan, and Hideaki Tanaka, Gifu, all of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

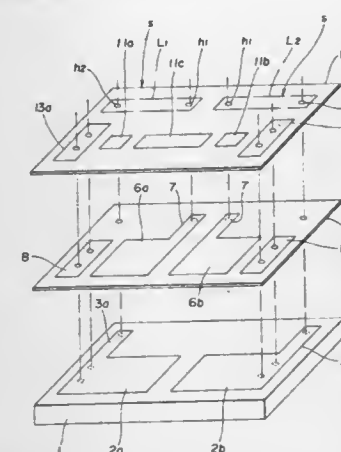
Filed Aug. 28, 1996, Ser. No. 703,946

Claims priority, application Japan, Sep. 1, 1995, 7-248854; Oct. 12, 1995, 7-292036

Int. Cl.⁶ H03H 7/01

U.S. Cl. 333—185

7 Claims



1. An LC-type dielectric filter comprising: an insulation substrate;

a lower electrode doubling as an earth electrode, formed on said insulation substrate;

a first dielectric layer formed on said lower electrode and said insulation substrate in such a manner as to cover a side surface of said insulation substrate on which said lower electrode is formed, substantially entirely;

an upper electrode formed on said first dielectric layer in such a manner as to stand opposite said lower electrode;

said lower electrode, said upper electrode and a portion of said first dielectric layer interposed between said lower electrode and said upper electrode cooperating with each other to constitute a resonant capacitor;

a second dielectric layer formed on said upper electrode and said first dielectric layer in such a manner as to cover a side surface of said first dielectric layer on which said upper electrode is formed, substantially entirely;

a resonant inductor formed on said second dielectric layer at a predetermined side surface area thereof;

first electrical connection means provided through said first and second dielectric layers for electrically connecting one of opposite end portions of said resonant inductor to said lower electrode; and

second electrical connection means provided through said second dielectric layer for electrically connecting the other of said opposite end portions of said resonant inductor to said upper electrode.

5,781,082

POWER SUPPLY FILTER FOR PREVENTING NOISE SIGNAL FROM ENTERING POWER SUPPLY CIRCUIT

Yoshihide Gunji; Hideaki Matsuzaki, and Hiroshi Ohsawa, all of Ohsato-gun, Japan, assignors to Zexel Corporation, Tokyo, Japan

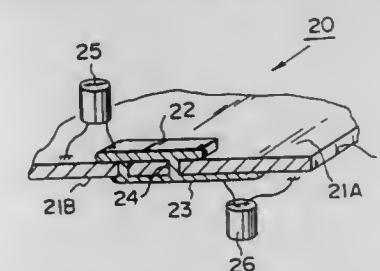
Filed Aug. 30, 1995, Ser. No. 521,441

Claims priority, application Japan, Sep. 14, 1994, 6-244851

Int. Cl.⁶ H03H 7/06

U.S. Cl. 333—172

20 Claims



1. A resistance-capacitance type power supply filter for preventing a high-frequency noise signal from entering a power supply through its output circuit, said filter comprising:

a circuit component connected in series with the output circuit to provide a resistive element for said filter; and

a capacitive element connected between one terminal of said circuit component and ground; wherein said filter is fabricated on a printed circuit board,

wherein said circuit component comprises a conductive member connected in series with the output circuit to act as a resistive element for said filter, wherein said conductive member comprises a first printed conductor on one side of said circuit board, a second printed conductor on another side of said circuit board, and at least one through-hole connecting said first and second printed conductors, the resistance value of said at least one through-hole being set to a desired value by a diameter thereof selected to prevent said entry of the noise signal, and

wherein said capacitive element is connected between said conductive member and ground.

5,781,083

SURFACE WAVE RESONATOR HAVING A PLURALITY OF RESONANCE FREQUENCIES

Hideya Horiuchi; Michio Kadota, both of Kyoto, and Junya Ago, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

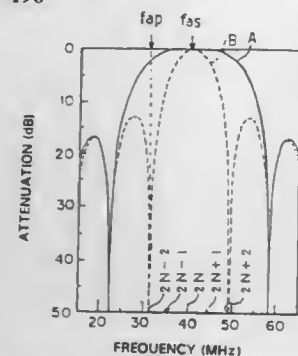
Filed Mar. 8, 1996, Ser. No. 613,074

Claims priority, application Japan, Mar. 8, 1995, 7-048159

Int. Cl.⁶ H03H 9/00; 9/64

U.S. Cl. 333—196

5 Claims



1. A free edge reflective-type surface wave resonator for reflecting SH-type surface waves between two confronting free edges of a piezoelectric substrate, the free edge reflective-type surface wave resonator comprising:

a piezoelectric substrate having two confronting free edges; and an interdigital transducer provided on said piezoelectric substrate and having a plurality of interdigitated electrode fingers that are weighted so that two attenuation poles of a main lobe of a resonance frequency spectrum obtained by said interdigital transducer are located outside of two attenuation poles of a main lobe of a frequency spectrum obtained in the case where an unweighted interdigital transducer having the same number of electrode finger pairs as said interdigital transducer is provided on said piezoelectric substrate.

5,781,084

MICROWAVE REFLECTION FILTER INCLUDING A LADDER NETWORK OF RESONATORS HAVING PROGRESSIVELY SMALLER Q VALUES

John David Rhodes, Guiseley, United Kingdom, assignor to Filtronic Comtek PLC, West Yorkshire, England

PCT No. PCT/GB94/02747, § 371 Date Jun. 10, 1996, § 102(e) Date Jun. 10, 1996, PCT Pub. No. WO95/17023, PCT Pub. Date Jun. 22, 1995

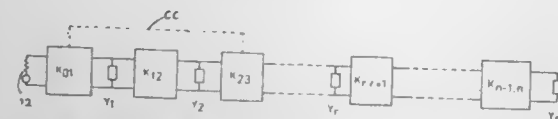
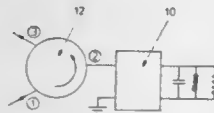
PCT Filed Dec. 15, 1994, Ser. No. 663,145

Claims priority, application United Kingdom, Dec. 15, 1993, 9325661

Int. Cl.⁶ H01P 1/20

U.S. Cl. 333—202

12 Claims



1. A microwave reflection mode filter, comprising:

a circulator device having first, second and third ports, said first port forming a signal input port and said third port forming a signal output port; and

a one-port filter connected to and terminating said second port of said circulator, said filter including a ladder network of resonators, successive of said resonators having progressively reducing Q values.

5,781,085

POLARITY REVERSAL NETWORK

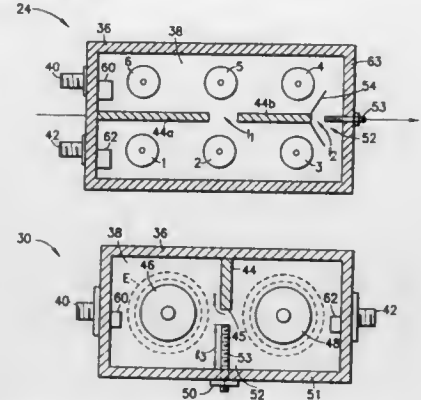
William H. Harrison, Payson, Ariz., assignor to L-3 Communications Narda Microwave West, Rancho Cordova, Calif.

Filed Nov. 27, 1996, Ser. No. 758,051

Int. Cl.⁶ H01P 1/20; 1/205

U.S. Cl. 333—202

28 Claims



1. A polarity reversal network for a microwave filter, said microwave filter including a plurality of resonators, said network comprising:

coupling means, at least a portion of said coupling means extending within an iris of said microwave filter between a pair of said resonators, said coupling means having a resonant frequency tuned below a passband frequency of said microwave filter, said coupling means inductively coupling a signal from a first one of said pair of resonators to a second one of said pair of resonators, and reversing a polarity of said signal to a polarity which resembles that of a capacitively-coupled signal.

5,781,086

NRD GUIDE CIRCUIT, RADAR MODULE AND RADAR APPARATUS

Shigeki Kato; Hiroshi Uematsu, both of Saitama-ken; Ken-ichi Ogawa, Wako, and Tatsuya Hattori, Saitama-ken, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

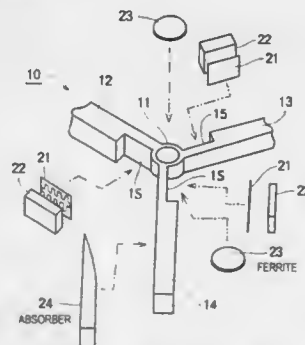
Filed Oct. 24, 1995, Ser. No. 547,375

Claims priority, application Japan, Oct. 25, 1994, 6-260705; Jul. 12, 1995, 7-176503

Int. Cl.⁶ H01P 3/16

U.S. Cl. 333—248

3 Claims



1. An NRD guide circuit comprising a pair of parallel, opposed conductive plates, and one or more dielectric circuit component parts held between said conductive plates, wherein said dielectric circuit component parts are molded from a thermoplastic resin material having a melting point not greater than 300° C., and wherein said thermoplastic resin material comprises an injection-moldable high polymer material containing fluorine, and said dielectric circuit component parts are injection-molded from said high polymer material.

5,781,087

LOW COST RECTANGULAR WAVEGUIDE ROTARY JOINT HAVING LOW FRICTION SPACER SYSTEM

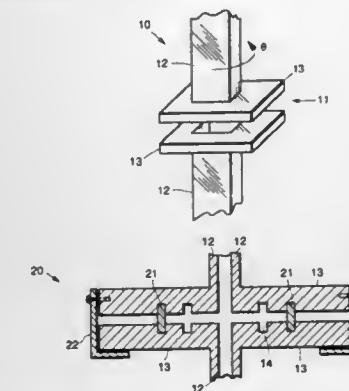
William W. Milroy, Playa del Rey, and Shane H. Hunter, Huntington Beach, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 27, 1995, Ser. No. 580,400

Int. Cl.⁶ H01P 1/06

U.S. Cl. 333—257

4 Claims

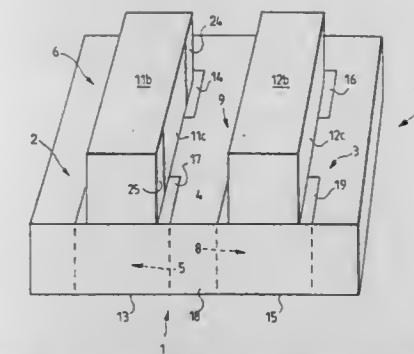


4. A rectangular waveguide rotary joint comprising:

a first rectangular waveguide having a first waveguide flange; a second rectangular waveguide having a second waveguide flange, wherein the second waveguide flange is disposed adjacent to the first waveguide flange with an air gap disposed therebetween and wherein the first and second waveguide flanges have adjacent planar surfaces;

RF chokes disposed in the respective waveguide flanges for reducing RF leakage caused by the air gap; and

a low friction spacer system for separating the first and second waveguides to maintain relative alignment of the waveguides during axial rotation of the waveguides relative to each other and maintain a substantially constant separation between the waveguides, said spacer system comprising means for securing the first waveguide flange and rotational means that permits the second waveguide flange to rotate relative to the first waveguide flange, comprising a substantially frictionless insert ring and a ring bracket that is attached to the first planar waveguide flange to keep the first planar waveguide flange from moving an while the second planar waveguide flange is free to rotate relative to the first waveguide flange, and wherein the insert ring is disposed between the adjacent planar surfaces of the first and second waveguide flanges.



between the opposite ends, a conductivity of the conductive coating being sufficiently more than a conductivity of the body for effective inductance means.

5,781,089

ELECTROMAGNETIC RELAY

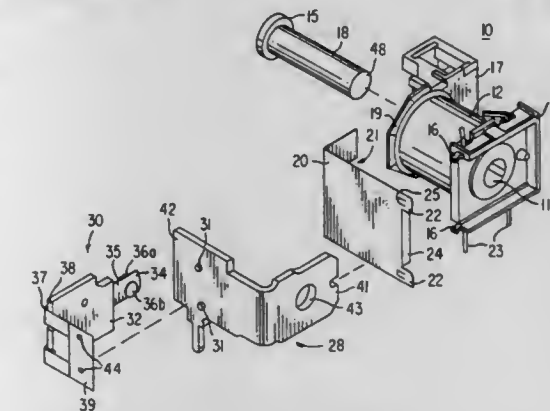
Jeffrey A. Donehue, Lawrenceville, Ill., assignor to Siemens Electromechanical Components, Inc., Princeton, Ind.

Filed Nov. 21, 1996, Ser. No. 754,737

Int. Cl.⁶ H01H 51/22; 67/02; 7/03

U.S. Cl. 335—78

14 Claims



11. An electromagnetic relay, comprising:

a winding; an end plate mounted at a first end of said winding, said end plate including at least one post extending from a side portion thereof;

a dielectric insulating sheet folded about a portion of said winding, and having first and second sides, wherein said at least one post extends through said first side of said insulating sheet to secure said insulating sheet to said end plate, said insulating sheet operative to reduce voltage breakdown between said winding and other electrically conductive components of said relay;

a magnetic core having a body of a first cross-sectional area disposed within said winding and a head of a second, larger cross-sectional area trapping the second side of said insulating sheet proximal to the second end of said winding;

an armature mounted for movement at the second end of said winding such that the second side of said insulating sheet is between said armature and the second end of said winding;

at least one movable circuit contact operably associated with said armature and movable with respect to at least one stationary contact mounted in said relay responsive to motion of said armature; and

an outer frame fastened to said end plate and covering at least a portion of said insulating sheet.

5,781,088

LUMPED-CONSTANT RESONATOR STRUCTURE AND METHOD FOR ADJUSTING IT

Aimo Turunen, and Heli Jantunen, both of Oulu, Finland, assignors to ADC Solitron Oy, Kempele, Finland

PCT No. PCT/FI94/00489, § 371 Date Apr. 29, 1996, § 102(e) Date Apr. 29, 1996, PCT Pub. No. WO95/12903, PCT Pub. Date May 11, 1995

PCT Filed Nov. 1, 1994, Ser. No. 637,619

Claims priority, application Finland, Nov. 1, 1993, 934828

Int. Cl.⁶ H03H 1/00

U.S. Cl. 334—45

14 Claims

1. A lumped constant resonator comprising:

at least one non-conductive substrate having a surface;

at least one lumpedconstant capacitance means for capacitance through the substrate from a location on the surface; and

at least one lumpedconstant inductance means for inductance, wherein the capacitance means and inductance means are located separately but operatively connected, and

wherein the inductance means comprises a bar-like body mounted to the surface, elongated to extend longitudinally along the surface between opposite ends of the body and having a first area with a conductive coating extending

5,781,090

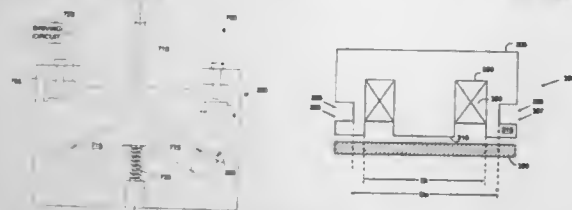
LATCHING ELECTROMAGNET

C. Nickolas Goloff, Secor, and Rodney L. Rolfs, East Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Continuation of Ser. No. 244,071, Apr. 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 69,797, Jun. 1, 1993, abandoned. This application Mar. 26, 1997, Ser. No. 824,583

Int. Cl.⁶ H01F 7/08

U.S. Cl. 335—276

8 Claims



1. A control mechanism, comprising:
a housing;
a lever being disposed in the housing and having pivotal movement between a neutral and a predetermined position, the lever defining an arm;
a latching electromagnet being secured to the housing and including:
an outer portion of the core defining a pole face;
a coil of windings disposed in the core;
an armature being rigidly attached to the arm;
wherein the core defines a saturation region to provide for a saturated magnetic flux density, the saturation region having a cross sectional area, A, with the following relationship:

$$A = \frac{\pi}{4} \times (D_o^2 - D_i^2)$$

where D_o represents the outer diameter of the saturation region and D_i represents the inner diameter of the saturation region; and means for supplying electrical energy to the coil in response to the lever being positioned at a predetermined position, the coil responsively energizing and producing an electromagnetic force that causes the lever to latch at the predetermined position;
wherein the core has a circular shape and defines an inner and outer portion that is separated by an annular channel, the core further defining an annular groove that is located on the outer surface of the core to provide a saturated magnetic flux density, the saturation region being disposed between the annular groove and annular channel.

5,781,091

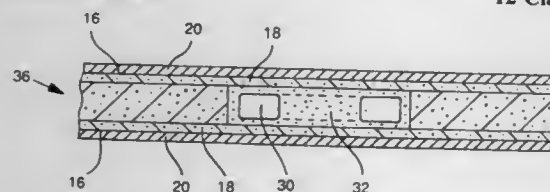
ELECTRONIC INDUCTIVE DEVICE AND METHOD FOR MANUFACTURING

Kenneth P. Krone, and John F. Trites, both of San Diego, Calif., assignors to Autosplince Systems Inc., San Diego, Calif.
Filed Jul. 24, 1995, Ser. No. 505,955

Int. Cl.⁶ H01F 5/00

U.S. Cl. 336—200

12 Claims



1. A ferromagnetic device comprising:
(a) an assembly of at least outer conductive first and second elements and an inner insulated non-magnetic third element,
(b) said conductive first elements forming conductive first traces on the inner third element,

- (c) said conductive second elements forming conductive second traces on the inner third element,
(d) a discrete ferromagnetic element having an annular body with a hole positioned in a cavity in the inner third element with insulating filler material encapsulating the ferromagnetic element in the cavity and filling the hole,
(e) conductive first vias extending through said assembly along the outer side of and through the filled hole of the ferromagnetic element and between and connected to the conductive first and second traces,
(f) said conductive vias forming with its connected conductive first and second traces at least an electrical first winding constituted of at least a single winding turn surrounding the annular body of the ferromagnetic element,
(g) terminal connections to at least the ends of the electrical first winding.

5,781,092

IGNITION COIL FOR AN INTERNAL COMBUSTION ENGINE

Kazutaka Nakamichi; Kouji Yoshikawa, both of Obu; Katsuji Ishikawa, Hekinan; Toshiro Suzuki, Nissin, and Hitoshi Takeuchi, Chita, all of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

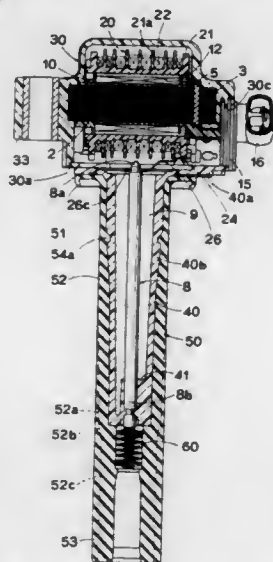
Filed Jun. 5, 1996, Ser. No. 658,377

Claims priority, application Japan, Jun. 9, 1995, 7-168325; Jun. 15, 1995, 7-172853

Int. Cl.⁶ H01F 77/04

U.S. Cl. 336—96

7 Claims



1. An ignition coil for an internal combustion engine comprising:
a first case having a box-like configuration with at least an opening portion at a bottom of said first case;
a primary winding and a second winding received in said first case;
a secondary terminal electrically connected to said secondary winding and placed within said first case in the vicinity of the opening portion at the bottom of said first case;
a second case having a cover portion connected with the opening portion at the bottom of said first case for closing the opening portion, and a cylindrical portion extending from said cover portion;
a high-tension terminal having a shaft held on a central axis of said cylindrical portion of said second case, one end portion of said shaft being electrically connected to said secondary terminal in the vicinity of the opening portion of said first case; and
a synthetic resin filled in said first case and said second case connected therewith for fixing and insulating said primary winding, said secondary winding, said secondary terminal and

said high-tension terminal, said synthetic resin molding therein at least the one end portion of said shaft electrically connected to said secondary terminal.

5,781,093

PLANAR TRANSFORMER

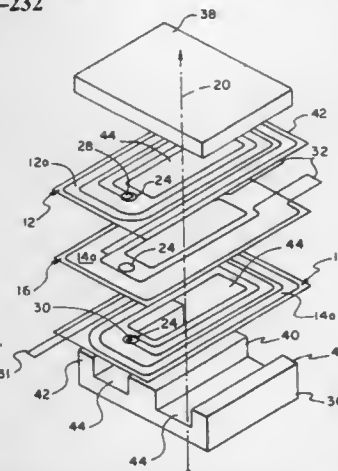
Paul E. Grandmont, Whitman; Qun Lu, Lexington, and Fei Ma, Malden, all of Mass., assignors to International Power Devices, Inc., Boston, Mass.

Filed Aug. 5, 1996, Ser. No. 693,878

Int. Cl.⁶ H01F 27/28; 5/00

U.S. Cl. 336—232

19 Claims



1. A planar winding assembly comprising:
first and second windings, each winding having an axis and including:
a pair of insulative sheet layers, the layers being laminated together, at least one of each of the pairs of insulative sheets having a hole; and
a metal strip conductor sealed between the laminated insulative sheet layers and having a portion projecting into the hole, the metal strip conductor wound about the axis of its winding and having a tab that projects into the hole and is exposed by the hole;
the metal strip conductor of the first winding electrically connected to the metal strip conductor of the second winding through the holes of the insulative sheets.

5,781,094

SECONDARY SHORT PREVENTING MECHANISM OF FUSE

Goro Nakamura, and Kenji Muramatsu, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

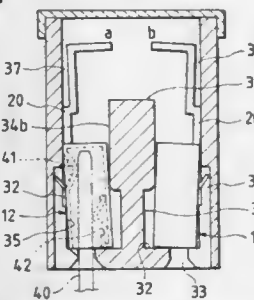
Filed Nov. 22, 1996, Ser. No. 754,139

Claims priority, application Japan, Nov. 24, 1995, 7-305869

Int. Cl.⁶ H01H 85/36

U.S. Cl. 337—238

4 Claims



1. A secondary short preventing mechanism of a fuse, comprising:
a pair of female terminal portions including male terminal receiving portions at one ends of said female terminal por-

tions respectively in a longitudinal direction, said male terminal receiving portions being to be engaged with and electrically connected to male terminal portions respectively, and a fuse fusing portion at the other ends of said female terminal portions in the longitudinal direction, said fuse fusing portion having a fusible conductor connecting said other ends to each other; and
a housing for housing said female terminal portions, said housing including a vertically extending insulation partition for horizontally separating said male terminal receiving portions from each other in a loosely fitted state;
wherein each of said male terminal receiving portions includes an upper raised pressing contact portion and a lower raised pressing contact portion which oppose to each other at different levels of upper and lower positions in the longitudinal direction,
said upper raised pressing contact portion is directed toward said insulation partition, and
at least one of said raised upper and lower pressing contact portions has elasticity.

5,781,095

BLOWN FUSE INDICATOR FOR ELECTRICAL FUSE

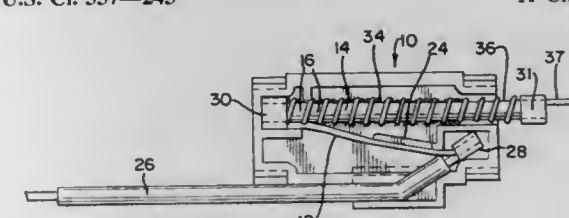
G. Todd Dietsch, Park Ridge; Joseph W. Kowalik, Skokie; Heraclio R. Gomez, Northbrook, and Cesar T. Herbias, Calumet City, all of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.

Filed Apr. 25, 1997, Ser. No. 842,964

Int. Cl.⁶ H01H 85/30

U.S. Cl. 337—243

11 Claims



1. A blown fuse indicator, comprising:
a. an insulating element;
b. a current-carrying element overlaying said insulating element;
c. a transparent window;
d. a chemical composition, said chemical composition coating at least a portion of said insulating element; and
e. a meltable link in generally parallel proximity to said insulating element;
said meltable link melting to open a circuit of said blown fuse indicator upon predetermined temperature conditions.

5,781,096

PLANAR FUSE AND METHOD FOR MAKING THE SAME

Jun Yasukuni; Hidemi Tanigawa, and Yutaka Furuno, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Dec. 4, 1996, Ser. No. 759,530

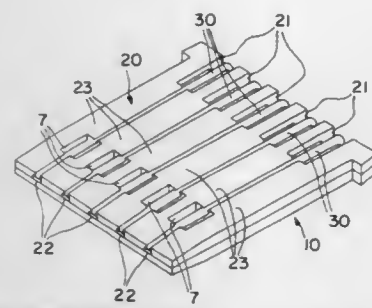
Claims priority, application Japan, Dec. 5, 1995, 7-344959

Int. Cl.⁶ H01H 85/12

U.S. Cl. 337—297

8 Claims

1. A planar fuse comprising an insulative base (20) having a plurality of parallel grooves (22) spaced apart laterally from each other, said grooves (22) extending from a front edge (8) to a rear edge (9), a fusible strip (30) in each said groove (22), a retaining projection (6) on said insulative base (20) adjacent one of said



grooves (22), said retaining projection overlying at least a part of said fusible strip (30), thereby securing said strip (30) in said groove (22).

5,781,097

DUAL CALIBRATION THERMOSTATIC SWITCH HAVING A WIDE OPERATING RANGE

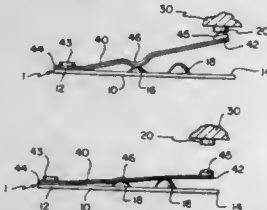
Omar R. Givler, North Canton, Ohio, assignor to Portage Electric Products, Inc., North Canton, Ohio

Filed Mar. 1, 1996, Ser. No. 609,285

Int. Cl.⁶ H01H 37/00; 37/54

U.S. Cl. 337—367

8 Claims



1. A thermostatic switch having means to calibrate both actuation temperature and reset temperature, comprising:
a fixed contact;

a bimetal blade having a fixed end, a free end, and a snap acting depression located between said fixed end and said free end, said snap acting depression being in an undeformed, dished configuration when said switch is at an operating temperature and in a deformed configuration when said switch is at an actuation temperature above said operating temperature;

a movable contact connected to said free end of said bimetal blade;

a base surface spaced apart from said fixed contact and having first and second ends, said fixed contact facing said first end of said base surface, said fixed end of said blade being mounted in a cantilevered manner on said second end of said base surface so that when said snap acting depression of said blade is in its initial, undeformed state, said movable contact is located against said fixed contact, and when said snap acting depression of said blade is in its deformed state, said movable contact is spaced from said fixed contact and approaches, without contacting, said first end of said base surface;

an actuation projection in said base surface positioned to bear against said snap acting depression to cause said depression to snap to said deformed state upon reaching an actuation temperature; and

a reset projection in said base surface positioned between said first end of said base surface and said actuation projection, said reset projection being positioned to bear against a portion of said blade between said free end of said blade and said snap acting depression to cause said snap acting depression to return to said undeformed state upon reaching a reset temperature.

5,781,098 THERMISTOR TYPE TEMPERATURE SENSOR WITH ADJUSTABLE OUTPUT SIGNAL INDICATIVE OF TEMPERATURE

Masamichi Shibata, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

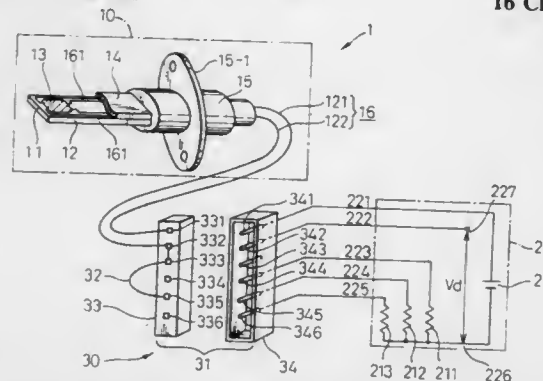
Filed Feb. 22, 1996, Ser. No. 605,662

Claims priority, application Japan, Feb. 23, 1995, 7-061635; Sep. 19, 1995, 7-266298

Int. Cl.⁶ H01C 3/04

U.S. Cl. 338—28

16 Claims



1. A thermistor type sensor comprising:
a thermistor generating an electrical signal indicative of a temperature of a medium in contact therewith;
an outside electric circuit for controlling said electrical signal from the thermistor;
connector means having a thermistor-side connector on a thermistor side of the connector means and an electric-circuit-side connector on an electric circuit side of the connector means, said electric-circuit-side connector being connectable to said thermistor-side connector so as to electrically connect the thermistor to the outside electrical circuit; and
adjusting means for obtaining a desired adjustment of the electrical signal from the thermistor, the adjusting means being located on the thermistor-side connector.

5,781,099

TRIMMER RESISTOR

Thomas Joschika, Neumarkt, Austria, and Werner Till, Grosskarolinenfeld, Germany, assignors to Wilhelm Ruf KG, Munich, Germany

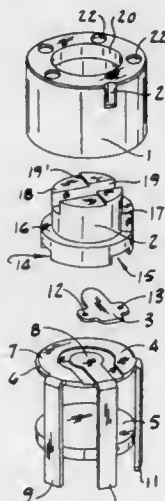
Filed Aug. 19, 1996, Ser. No. 699,239

Claims priority, application Germany, Aug. 24, 1995, 295 13 640 U

Int. Cl.⁶ H01C 10/32

U.S. Cl. 338—162

14 Claims



1. A trimmer resistor comprising:

a housing, wherein the housing is substantially cylindrical, including an enlargement,
a rotating driver and a wiper held on the same which both can be turned in the housing around a turning axis,
a flexible film of electrically insulating material comprising a resistor carrier, wherein the film of the resistor carrier comprises a substantially circular disk which is positioned perpendicular to the turning axis and has a resistive path deposited thereon and oblong solder contacts attached to the same, wherein the wiper electrically contacts the resistive path, and a closing disk which is contained in the enlargement for closing the housing,

wherein the solder contacts are a single piece of the film of electrically insulating material bent away by approximately 90° from a plane of the circular disk of the resistor carrier and coated with electrically conductive material, and
wherein the enlargement of the housing includes recesses which extend generally parallel to the turning axis and pass the closing disk, wherein sections of the solder contacts are accommodated in the recesses and partly arranged between the closing disk and the housing and project generally parallel to the turning axis within said recesses and out of the housing.

5,781,100

RESISTOR SUBSTRATE CONTAINING CARBON FIBERS AND HAVING A SMOOTH SURFACE

Hisasi Komatsu, Miyagi-ken, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

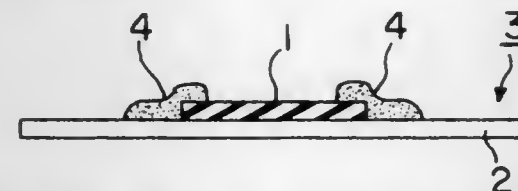
Continuation of Ser. No. 400,170, Mar. 7, 1995. This application Apr. 9, 1997, Ser. No. 838,790

Claims priority, application Japan, Mar. 16, 1994, 6-046000

Int. Cl.⁶ H01L 1/02

U.S. Cl. 338—252

4 Claims



1. A variable resistor for use in a potentiometer having a movable wiper, the resistor comprising:

a wiper
an insulation substrate formed from heat resistant thermosetting molding material; and
a resistor layer molded and imbedded in said insulation substrate and positioned such that it has a surface contacted by the movable wiper, said resistor layer having an electroconductive powder and carbon fibers dispersed in a heat resistant resin;
wherein said surface of the resistor layer contoured by the movable wiper has a surface roughness foremost of said surface which is less than or equal to 0.5 μm ; and
wherein said carbon fibers have a length in the range of 21–100 μm , a diameter in the range of 5–40 μm , and a length to diameter ratio which is greater than or equal to 30:7.

5,781,101

VEHICULAR EMERGENCY MESSAGE SYSTEM ACTIVATION DIAGNOSTICS RECORDER

Garth Stephen, Walled Lake; Walter Alfred Dorfstaetter, Farmington, and Mark James Timm, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

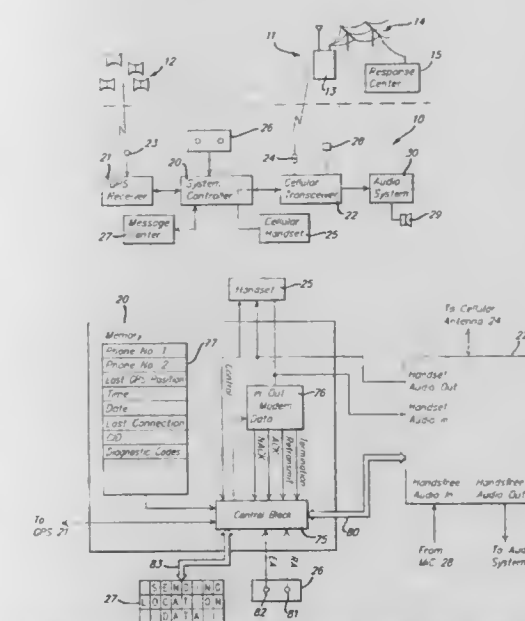
Filed Oct. 28, 1996, Ser. No. 740,179

Int. Cl.⁶ G08B 9/00

U.S. Cl. 340—286.02

4 Claims

3. A vehicular emergency message system in a mobile vehicle for communicating with a response center, comprising:



a transceiver for communicating with a response center;
a locating system for determining the position of said mobile vehicle;

a controller coupled to said transceiver for controlling said transceiver to communicate with said response center in a predetermined manner, including the transmission of said position and the establishment of two-way voice communication;

an activation unit coupled to said controller responsive to a manual activation to send an activating signal to said controller to cause said controller to initiate communication with said response center; and

a diagnostic memory comprising a circular queue storing predetermined information during each respective activation, wherein a first group of said predetermined information is written to said diagnostic memory at a first time and a second group of said predetermined information is written to said diagnostic memory at a second time after said first time, and wherein said diagnostic memory includes a status flag that is written with a first value at said first time and is rewritten with a second value at said second time.

5,781,102

SECURITY ALARM SYSTEM

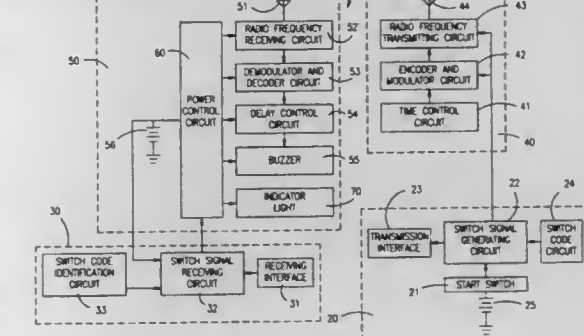
Dennis Huang, SF, No. 10, La. 9, Ningpo E. St., Taipei, Taiwan

Filed Jan. 31, 1997, Ser. No. 792,213

Int. Cl.⁶ B60R 25/10

U.S. Cl. 340—426

11 Claims



1. A security alarm system comprising:

i) at least one code signal generator, said code signal generator comprising a start switch, a switch signal generating circuit, a transmission interface, and a switch code circuit, said start switch comprising an ON switch and an OFF switch con-

trolled to produce an ON signal and an OFF signal respectively, and to send the signals to said switch signal generating circuit, said switch code circuit being controlled to input a switch code into said switch signal generating circuit, said switch signal generating circuit being controlled to transmit a switch signal from said start switch and the switch code from said switch code circuit to said transmission interface;

ii) at least one code signal receiver, each of said at least one code signal receiver comprising a receiving interface, a switch signal receiving circuit, and a switch code identification circuit, said receiving interface receiving the switch signal and the switch code from said transmission interface, and then transmitting the signals to said switch signal receiving circuit and said switch code identification circuit respectively, said switch signal receiving circuit and said switch code identification circuit comparing and identifying the switch signal and the switch code transmitted from said receiving interface, and controlling the operation of a power control circuit subject to the instruction of the switch signal;

(iii) a transmitter, said transmitter comprising an encoder and modulator circuit, a radio frequency transmitter circuit, and a transmitting antenna, said encoder and modulator circuit being controlled to encode and modulate a set of code signal, and then to send the modulated signal to said radio frequency transmitting circuit, said radio frequency transmitting circuit processing the modulated signal from said encoder and modulator circuit into a high frequency signal, permitting the high frequency signal to be driven out of said transmitting antenna; and

(iv) at least one alarm, each of said at least one alarm comprising a receiving antenna, a radio frequency receiving circuit, a demodulator and decoder circuit, a delay control circuit, a buzzer, and said power control circuit, said power control circuit being controlled by said switch signal receiving circuit to provide the necessary working power supply to said alarm, said receiving antenna receiving the signal transmitted from said transmitting antenna and then sending the received signal to said radio frequency receiving circuit, said radio frequency receiving circuit receiving the signal from said receiving antenna and then sending the receiving signal to said demodulator and decoder circuit, said demodulator and decoder circuit demodulating and identifying the signal received from said radio frequency receiving circuit and then sending the signal to said delay control circuit, said delay control circuit driving said buzzer to buzz when receiving no signal from said demodulator and decoder circuit after a predetermined length of time.

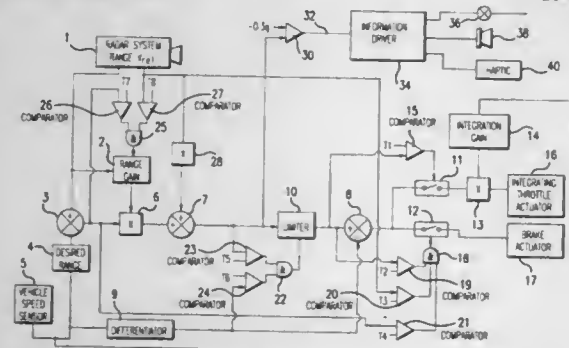
5,781,103

APPARATUS AND METHOD FOR CRUISE CONTROL
Simon Peter Gilling, Milton Keynes, England, assignor to Lucas Industries Public Limited Company, Solihull, England
Filed Nov. 29, 1995, Ser. No. 563,121

Claims priority, application United Kingdom, Dec. 1, 1994, 9424266

Int. Cl.⁶ B60Q 1/00
U.S. Cl. 340—441

2 Claims



1. A cruise control system for a road vehicle comprising:

a brake actuator applying a braking force to implement road vehicle deceleration;

a control portion determining and supplying a braking control signal to the brake actuator, said braking control signal having a level determining the level of the braking force applied by the brake actuator and corresponding road vehicle deceleration; and

a braking control signal level monitoring and warning portion, said braking control signal level monitoring and warning portion comprising:

a first comparator having a first input connected to a first reference source to receive a first predetermined reference level and a second input connected to the control portion to receive the braking control signal, said first comparator providing a first trigger signal when the level of the braking control signal exceeds the first predetermined reference level;

a start warning portion connected to the first comparator to receive the first trigger signal, said start warning portion responding to any received first trigger signals to supply a first warning control signal to a warning generator portion to control said warning generator portion to provide a first distinctive warning output to an operator of the road vehicle, said first distinctive warning output indicating that a maximum permitted road vehicle deceleration is imminent;

a second comparator having a first input connected to a second reference source to receive a second predetermined reference level and a second input connected to the control portion to receive the braking control signal, said second comparator providing a second trigger signal when the level of the braking control signal exceeds the second predetermined reference level; and

a maximum level warning portion connected to the second comparator to receive the second trigger signal, said maximum level warning portion responding to any received second trigger signals to supply a second warning control signal to the warning generator portion to discontinue the first distinctive warning output and to substitute a second distinctive warning output to the operator of the road vehicle, said second distinctive warning output indicating that the maximum permitted road vehicle deceleration has been reached.

5,781,104

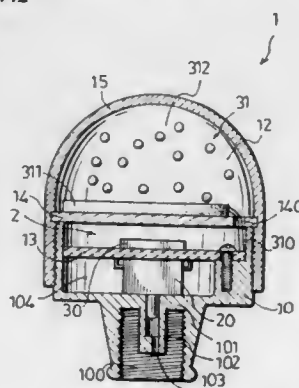
PRESSURE GAUGE WITH SELF-GENERATING POWER CAPABILITY FOR A TIRE PRESSURE INDICATOR
Tien-Tsai Huang, No. 4, Lane 30, Wu-Chuan St., Pan-Chiao City, Taipei Hsien, Taiwan

Continuation-in-part of Ser. No. 773,000, Dec. 23, 1996, Pat. No. 5,694,111, and a continuation-in-part of Ser. No. 806,408, Feb. 26, 1997. This application Jul. 22, 1997, Ser. No. 898,435

Int. Cl.⁶ B60C 23/00

U.S. Cl. 340—442

14 Claims



1. A pressure gauge adapted to be used with a receiver device of a tire pressure indicator for indicating pressure condition of a pneumatic tire, said pressure gauge comprising:

a casing formed with an aperture and adapted to be mounted on the pneumatic tire such that pressure in the pneumatic tire enters into said casing via said aperture;

5,781,106

DEVICE AND METHOD FOR THE TELECONTROL OF AN OBJECT

René Liger, Limetz-Villetz, France, assignor to Inmed B.V., Re Delft, Netherlands

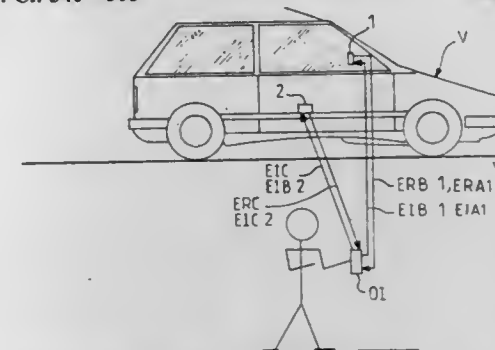
PCT No. PCT/FR95/01145, § 371 Date Mar. 11, 1997, § 102(e) Date Mar. 11, 1997, PCT Pub. No. WO96/08802, PCT Pub. Date Mar. 21, 1996

PCT Filed Sep. 4, 1995, Ser. No. 793,296

Claims priority, application France, Sep. 16, 1994, 94 11095 Int. Cl.⁶ G08B 26/00; H04Q 7/00

U.S. Cl. 340—505

16 Claims



1. Device for the telecontrol of an object (V), of the type comprising an interrogator unit (OI) capable of effecting a primary interrogation using waves (EIB1, EIA1) so as selectively to interrogate at least one primary receiver/transmitter cell (1) housed in or on said object (V) and containing in primary storage means (M1) a first code (C1), and of receiving using waves from said primary cell (1) a primary response (ERB1, ERA1) able to represent a part at least of this first code,

characterized in that it furthermore comprises at least one secondary receiver/transmitter cell (2) housed in or on said object (V) and containing in secondary storage means (M2) a second code (C2) and a first representation (FR1) of a part at least of the first code (C1), and capable of transmitting, in response to a secondary interrogation (EIB2), a secondary response (ERB2) able to represent a part at least of this second code (C2), as well as of transmitting, after a primary interrogation of the primary cell (EIB1, EIA1) and a secondary interrogation of the secondary cell (EIB2), at least one complementary response (ERC) in response to a complementary interrogation (EIC) effected by the interrogator unit (OI), said complementary interrogation (EIC) containing a second representation (SR2) of a part at least of the first and second codes transmitted respectively by said primary (1) and secondary (2) cells in response to the primary and secondary interrogations (EIB1, EIA1 and EIB2).

this allowing the secondary cell (2) to effect a complementary response (ERC) depending on the primary and secondary responses of the primary (1) and secondary (2) cells, respectively.

5,781,107

ALARM DEVICE FOR AUTOMATIC GARAGE DOOR

Wen Shu Ji, 7303 Toll Dr., Rosemead, Calif. 91770

Filed Aug. 29, 1996, Ser. No. 697,685

Int. Cl.⁶ G08B 13/08

U.S. Cl. 340—545

25 Claims

1. An alarm device for an automatic garage door of a garage, comprising

a detecting circuit, which comprises at least a detector installed to said garage door, for outputting a single negative pulse signal when said detector detects an opening motion of said garage door;

an alarm controlling circuit, which is electrically connected with said detecting circuit, for receiving said single negative pulse signal from said detecting circuit and producing a warning signal;

a signal generating device disposed in said casing and capable of transmitting wirelessly a pressure signal to be received by the receiver device when the pressure in the pneumatic tire is not within a predetermined normal operating pressure range; and

a power supplying device disposed in said casing and connected electrically to said signal generating device so as to supply electric power for operating said signal generating device, said power supplying device including a self-generating voltage unit which has a piezoelectric unit and an impact unit that is capable of continuously striking against said piezoelectric unit when the pneumatic tire to which said casing is mounted is in motion so as to enable said piezoelectric unit to generate a voltage output, a rechargeable cell unit, and a rectifying-and-charging unit which interconnects said self-generating voltage unit and said rechargeable cell unit to permit charging of said rechargeable cell unit with said voltage output from said self-generating voltage unit.

5,781,105

LIGHT MANAGEMENT SYSTEM FOR A VEHICLE

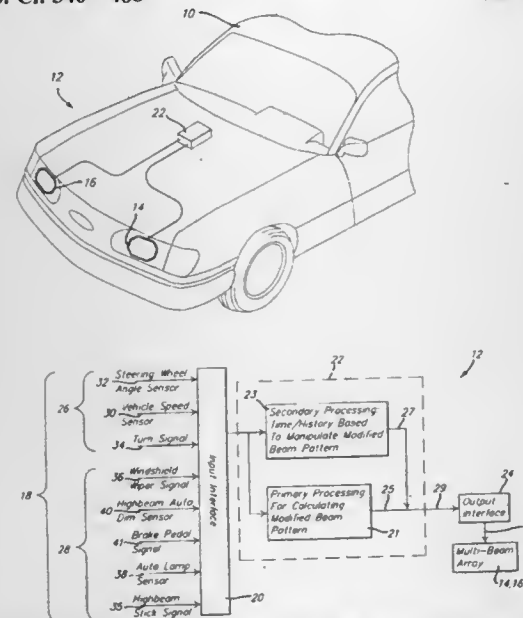
Sami Bitar, Ann Arbor; Babman Samimy, Inkster; John David Russell, Farmington Hills; Kevin Michael Glass, Ann Arbor; Marie Therese-Brodner Malecki, Novi, and Timothy Lino Cardanha, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 9, 1997, Ser. No. 831,589

Int. Cl.⁶ B60Q 1/26

U.S. Cl. 340—468

20 Claims



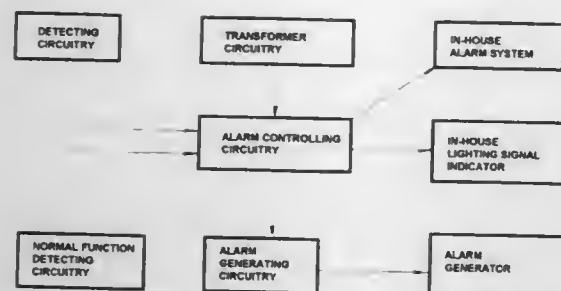
1. A light management system for an automotive vehicle, comprising:

vehicle sensing means for sensing at least one vehicle condition representing a state of the vehicle and providing a state of the vehicle signal therefor;

environmental sensing means for sensing at least one environmental condition representing a state of the environment and providing a state of the environment signal therefor;

a microprocessor controller for primary processing of said state of the vehicle signal and said state of the environment signal and for providing a modified beam pattern thereby, said microprocessor controller further for secondary processing of said state of the vehicle signal and said state of the environment signal and manipulating the modified beam pattern thereby and providing a light distribution signal for a final beam pattern therefrom; and

a forward lighting array for receiving the light distribution signal for a final beam pattern therefrom and illuminating a roadway thereupon.



a "normal function" detecting circuit connecting to a garage door "normal operation" signal generating source which generates a "normal opening" signal to activate said "normal function" detecting circuit when said garage door is normally opened in a predetermined manner, said "normal opening" signal being then changed to a "shut off alarm" signal provided to said alarm controlling circuit for preventing the production of said alarm signal by said alarm controlling circuit;

an alarm generating circuit connecting with at least an alarm generator for generating a warning alarm when said alarm signal from said alarm controlling circuit is received; and
a transformer circuit for providing a low DC voltage for said detecting circuit, said alarm controlling circuit, said "normal function" detecting circuit, and said alarm generating circuit, which are electrically connected to form a whole alarm circuit of said alarm device.

5,781,108

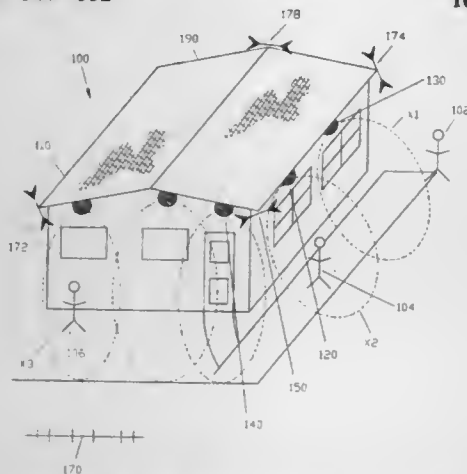
AUTOMATED DETECTION AND MONITORING (ADAM)
Robert C. Jacob, and Jeffrey S. Stewart, both of Melbourne, Fla., assignors to Future Tech Systems, Inc., Melbourne, Fla.

Filed Nov. 14, 1995, Ser. No. 557,285

Int. Cl.⁶ G08B 13/18

U.S. Cl. 340—552

10 Claims



1. A system for automatically detecting and monitoring moving objects outside and inside of a building comprising:

- (a) exterior sensing means for detecting a person approaching an entrance way to a building and providing a first signal when the person is within a first preselected range;
- (b) exterior audio means for generating a greeting voice message to the visitor in response to the first signal;
- (c) interior audio means for alerting a building occupant in response to the first signal, the interior audio means chosen from at least one of a voice message and a doorbell; and
- (d) interior sensor means for detecting the building occupant entering a room to activate an electrical device in the room and for deactivating the electrical device when the occupant exits the room.

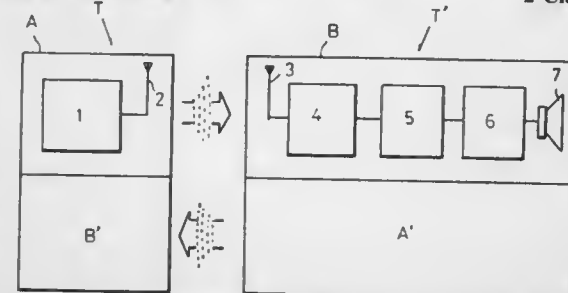
5,781,109
ALARM SYSTEM FOR PREVENTING LOSS OF PERSONAL PROPERTY
Shozo Nakajima, 11-3, Shinbori 1-Chome, Niiza-City, Saitama 353, Japan

Filed Sep. 5, 1996, Ser. No. 707,748

Int. Cl.⁶ G08B 13/14

U.S. Cl. 340—568

2 Claims



1. An alarm system for preventing loss of personal property, comprising:

- a pair of radio signal transmission/alarm units that each includes a sending component having a signal oscillator; and
- a receiving/alarm component comprising a tuner for selecting a signal from the sending component and receiving the signal as an electrical current; an amplifier for amplifying the signal current; an alarm; and a switcher that switches off the alarm when the amplified signal current is above a prescribed level and switches on the alarm when the amplified signal current does not exceed a prescribed level;

wherein the signal of each sending component is tuned to the receiving/alarm component tuner of the other transmission/alarm unit, and each receiving/alarm component is tuned to the signal of the sending component of the other transmission/alarm unit.

5,781,110

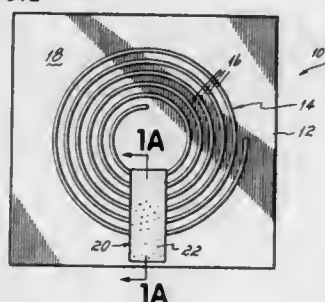
ELECTRONIC ARTICLE SURVEILLANCE TAG
PRODUCT AND METHOD OF MANUFACTURING SAME
Charles C. Habeger, Jr., Milford, and Kenneth A. Pollart, Mason, both of Ohio, assignors to James River Paper Company, Inc., Milford, Ohio

Filed May 1, 1996, Ser. No. 640,463

Int. Cl.⁶ G08B 13/14

U.S. Cl. 340—572

45 Claims



1. An electronic article surveillance tag comprising:

- a substrate having a face surface;
- a first element positioned on the face surface and operable for having electrically inductive properties when an electrical signal is applied thereto, the first element having spaced portions;
- a second element positioned on the face surface to contact said first element spaced portions and span therebetween, the contacting first element spaced portions and second element operable for having electrically capacitive properties when said electrical signal is applied thereto;
- the first and second elements being operably coupled together to form a resonant circuit which resonates when an electrical signal of a predetermined resonant frequency is applied to the tag;

the second element comprising a dielectric ink substance on the substrate, the dielectric ink substance being characterized by a high dielectric constant for producing the desired resonant circuit on a single face surface of the substrate.

5,781,111
APPARATUS FOR DEACTIVATION OF ELECTRONIC ARTICLE SURVEILLANCE TAGS

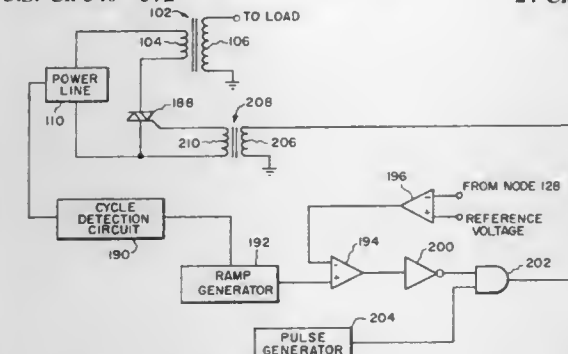
Ronald B. Easter, Parkland, and Steven W. Embling, Pompano Beach, both of Fla., assignors to Sensormatic Electronics Corporation, Boca Raton, Fla.

Filed Sep. 26, 1996, Ser. No. 721,125

Int. Cl.⁶ G08B 13/14

U.S. Cl. 340—572

24 Claims



1. An apparatus for deactivating electronic article surveillance tags, said apparatus comprising: a deactivation coil; a capacitor; charging means connected to said capacitor for charging said capacitor; and a first electronic switch connected to said capacitor and said deactivation coil so that when said first electronic switch is open said deactivation coil is disconnected from said capacitor so that said capacitor can be charged by said charging means without any current flowing through said deactivation coil and when said first electronic switch is closed said deactivation coil is connected to said capacitor so that said capacitor can discharge through said deactivation coil thereby creating an alternating decreasing magnetic field; wherein said charging means comprises synchronizing means for synchronizing the operation of said second electronic switch with the beginning and ending of each half cycle of a charging power line signal.

5,781,112

ELECTRONIC TAGGING DEVICE FOR IDENTIFYING TRANSPORTED PRODUCTS

Wayne W. Shymko, 34 Dvoras Cove, Winnipeg, Manitoba, Canada, R2W 2Z2, and Gilbert R. Emond, 90 Willowmead Bay, Winnipeg, Manitoba, Canada, R2M 4P3

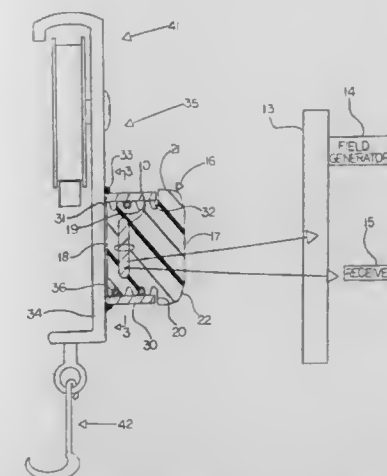
Filed Feb. 3, 1997, Ser. No. 794,642

Int. Cl.⁶ G08B 13/14

U.S. Cl. 340—572

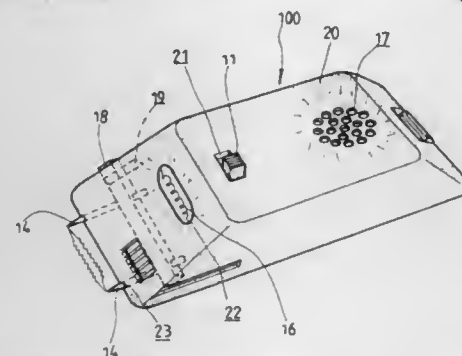
20 Claims

- 1. An electronic tagging apparatus comprising: an electronic transmitter for transmitting an electronic code signal providing an identification code substantially unique to the transmitter;
- and a housing arranged for mounting the transmitter on an object to be tagged and arranged such that the housing encloses the transmitter and protects the transmitter from heat, water, corrosive materials and trauma, the housing comprising: a substantially rigid mounting member for attachment to the object;
- a body enclosing the transmitter;
- and means mounting the body on the mounting member; the body being formed by molding from an elastomeric material with the transmitter embedded within the material during molding so as to be fully encapsulated by the elastomeric material and so that all outer surfaces of the body are maintained at a spaced position from the transmitter.



5,781,114
RECHARGEABLE BATTERY SET WITH RESCUE
ALARM AND ELECTRIC SHOCK FUNCTIONS
 Hshiu-Fang Chang, No. 65, Sec. 4, PaTe Road, Taipei City,
 Taiwan, assignor to Hshiu-Fang Chang, Taipei, Taiwan
 Filed Oct. 28, 1996, Ser. No. 741,871
 Int. Cl.⁶ G08B 15/00; 13/02
 U.S. Cl. 340—574

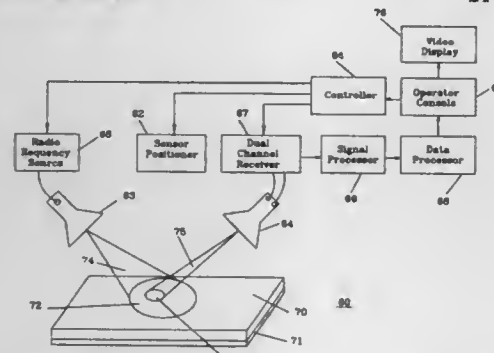
6 Claims



1. A rechargeable battery set comprising a power supply encased within a housing, an alarm generator disposed within the housing and in electrical connection with the power supply via a manually actuable switch to generate an audio signal via an audio signal generator when the switch is turned on and a pair of electrodes retractably disposed within the housing and manually extendable out of the housing, the electrodes being electrically connected to the power supply via a high voltage generator which is in turn connected to the power supply via the switch so that when the switch is turned, a high voltage is supplied to the electrodes to generate an electrical shock therebetween, wherein the electrodes are further fixed to and supported on a bar made of insulation material and movably received within the housing, the bar having an end extending out of the housing to be manually movable so as to selectively move the electrodes out of the housing through openings formed on the housing.

5,781,115
APPARATUS AND METHOD FOR DETECTION AND
THICKNESS MEASUREMENT OF COATINGS OVER A
SURFACE
 Donald F. Shea, Plano, Tex., assignor to Target Microwave,
 Plano, Tex.
 Filed Apr. 3, 1995, Ser. No. 415,415
 Int. Cl.⁶ G08B 19/02
 U.S. Cl. 340—580

21 Claims

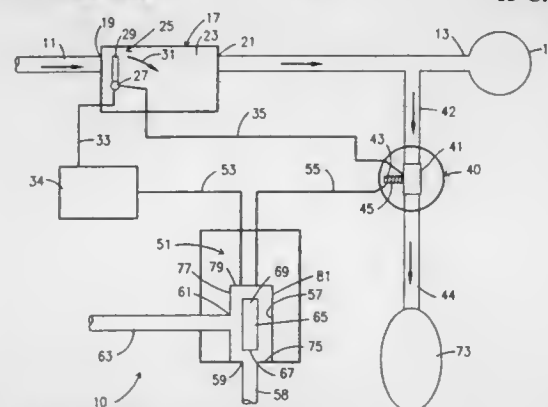


1. A system for determining the thickness of a material on a conductive surface, comprising:
 a generator for producing a Radio Frequency signal;
 a first antenna for transmitting a polarized Radio Frequency signal;
 a second antenna for receiving both components of a de-polarized reflected Radio Frequency signal after said signal is reflected from a conductive surface having a material thereon;

a vector analyzer and processor for producing an output vector signal indicative of the thickness and permittivity of the material on the conductive surface based upon the de-polarized reflected signal; and
 a display for showing the location and thickness of the material on the conductive surface.

5,781,116
CATALYST FLOW ALARM
 Thomas A. Hedger, and Scott McGehee, both of Largo, Fla.,
 assignors to Graves Spray Supply, Inc., Clearwater, Fla.
 Filed Dec. 31, 1996, Ser. No. 775,646
 Int. Cl.⁶ G08B 21/00
 U.S. Cl. 340—606

15 Claims

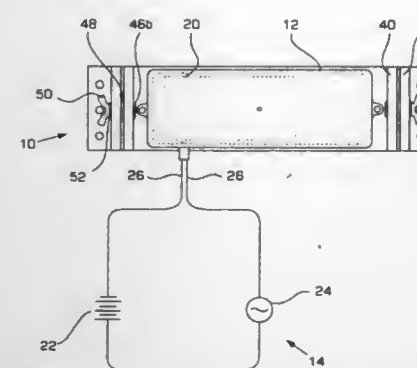


1. A catalyst flow alarm, comprising:
 a) an air conduit having an inlet and an outlet and an air flow switch in said conduit closed by air flow above a pre-set rate, said outlet being fluidly connected to a pneumatic indicator via a normally closed valve;
 b) a catalyst flow tube comprising a chamber having an inlet and an outlet, said chamber inlet opening downwardly and said chamber outlet opening in a wall adjacent said chamber inlet;
 c) a normally open magnetically actuable switch mounted outside an opposite chamber wall;
 d) a permanent magnet contained within said chamber and biased toward said chamber inlet by force of gravity;
 e) said air flow switch and magnetically actuable switch being included in an electrical circuit including an actuator for said valve, whereby, when said air flow switch is closed responsive to air flowing through said conduit and catalyst is flowing through said chamber at sufficient flow rate to cause said magnet to rise to a location adjacent said opposite chamber wall, said magnetically actuable switch remains open and said valve remains closed, and, whereby, when said catalyst flow rate drops below a pre-set threshold, said magnet drops away from said opposite chamber wall and said magnetically actuable switch closes, thereby closing said circuit and causing said valve actuator to open said valve and allow air to be supplied to said pneumatic indicator to indicate flow of catalyst below said pre-set threshold.

5,781,117
WATER LEVEL DETECTOR ALARM DEVICE
 Thomas L. Rish, 2405 Formosa Dr., Tallahassee, Fla. 32308
 Filed Nov. 22, 1996, Ser. No. 753,276
 Int. Cl.⁶ G08B 21/00
 U.S. Cl. 340—618

21 Claims

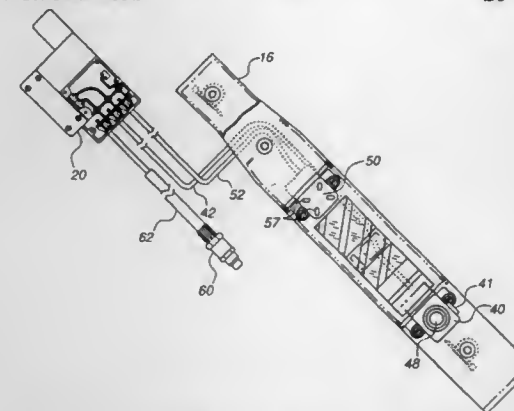
1. An alarm device for detecting a predetermined level of water comprising:
 a liquid sensor switch device contained within a protective housing;
 a warning means and power supply coupled to a liquid sensor switch;



a pivot means;
 a mounting means maintains said housing and said mounting means provides pivotal and rotational movement of said housing via said pivot means for enabling said housing and said liquid sensor switch device to be mechanically adjusted and positioned level and horizontal with respect to the water surface, said pivot means enables mechanical positioning of said mounting means for providing pivotal and rotatable positioning of said housing and said liquid sensor switch device, and said pivot means provides for said mounting means to be in a fixed and secured position; and
 an attaching means attaches said mounting means to a surface.

5,781,118
SELF-CONTAINED BREATHING APPARATUS HAVING A
PERSONAL ALERT SAFETY SYSTEM INTEGRATED
THEREWITH
 Layton A. Wise, Washington, Pa., and Peter A. Frank, London,
 United Kingdom, assignors to Mine Safety Appliances Com-
 pany, Pittsburgh, Pa.
 Filed Nov. 30, 1995, Ser. No. 565,531
 Int. Cl.⁶ G08B 23/00
 U.S. Cl. 340—632

20 Claims

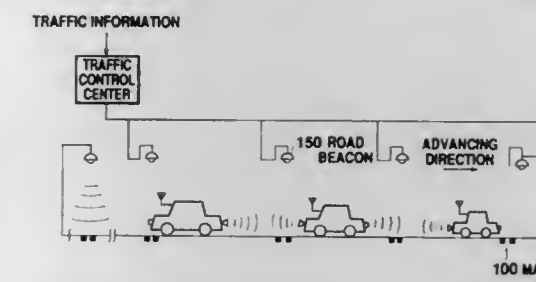


1. In a self-contained breathing apparatus ("SCBA") having a facepiece and a frame, an air supply cylinder disposed on the frame, and a flow system coupling the air supply cylinder to the facepiece, the improvement wherein a personal alert safety system ("PASS") device is fully integrated with the SCBA such that the PASS device comprises:

a main assembly, including a motion sensor and electronic control circuitry, disposed within the frame of the SCBA and protected by the air supply cylinder;
 a separate remote control assembly accessible and visible to a wearer and connected to the main assembly by a waterproof connection assembly; and
 a switch assembly connected between the flow system and the main assembly for automatically activating the PASS device when a valve on the air supply cylinder is opened.

5,781,119
VEHICLE GUIDING SYSTEM
 Masanobu Yamashita, Toyota; Akihide Tachibana, and Keiji Aoki, both of Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
 Filed Feb. 28, 1996, Ser. No. 608,167
 Claims priority, application Japan, Mar. 14, 1995, HEI 7-054271; Jun. 21, 1995, HEI 7-154857
 Int. Cl.⁶ G08G 1/16
 U.S. Cl. 340—903

4 Claims

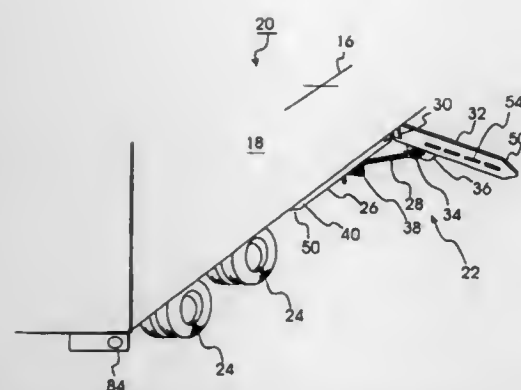


1. A vehicle guiding system for enabling a plurality of vehicles to run in a platoon, the system comprising:
 (a) sensor means installed on a front running vehicle in the platoon, the sensor means detecting a relative displacement of the front running vehicle from a base line of a road;
 (b) calculation means installed on the front running vehicle the calculation means calculating, on the basis of the detected relative displacement, control variables for enabling the front running vehicle to run along the base line;
 (c) transmitting means installed on the front running vehicle, the transmitting means transmitting the control variable data from the calculation means to a vehicle following the front running vehicle;
 (d) receiving means installed on the following vehicle, the receiving means receiving the control variable data from the transmitting means;
 (e) storage means installed on the following vehicle, the storage means storing the control variable data received via the receiving means;
 (f) control means installed on the following vehicle, the control means determining a correction amount on the basis of the received control variable data when the following vehicle reaches a position where the front running vehicle transmitted the control variable data, and controlling the following vehicle on the basis of the correction amount; and
 (g) signaling means which is installed along the road, detects a vehicle running alone and notifies the presence of the vehicle to a base station,
 wherein the base station guides a lead vehicle in front of the vehicle running alone, and enables the lead vehicle to function as the front running vehicle.

5,781,120
PNEUMATICALLY OPERATED SAFETY GATE
 Michael Kucik, 4603 Hazelwood Ave., Baltimore, Md. 21206
 Filed Mar. 25, 1997, Ser. No. 819,711
 Int. Cl.⁶ B60Q 1/00
 U.S. Cl. 340—425.5

15 Claims

1. A vehicular traffic indicator, comprising:
 a first elongate member positionable within a linear gap between a fifth wheel and a plurality of rear wheels of a road trailer to engage an underside of the road trailer with a first major surface of said first elongate member oriented to depend vertically downwardly from the underside of the road trailer, with said first major surface terminating in a first end;
 a second elongate member exhibiting an elongated second major surface terminating at a second end;
 a hinge pivotally joining said second end to said first elongate member with said second major surface lying adjacent to said first major surface while said second elongate member is in a retracted position; and



an actuator pivotably coupled to said first elongate member and articulately coupled to said second elongate member, to drive said second elongate member to move between said retracted position with said second major surface in juxtaposition to said first major surface and a deployed position with said second major surface being obliquely oriented relative to said first major surface and fully exposing indicia borne by said second major surface.

5,781,121

SECURITY SYSTEM AND METHOD THEREFOR

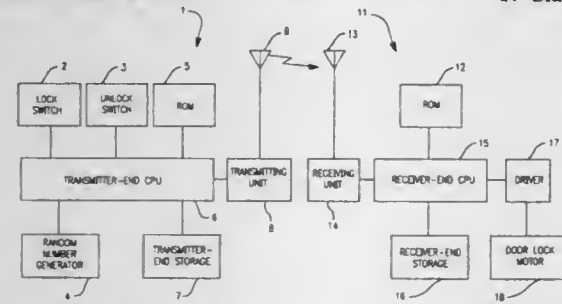
Yukio Kawamura, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Mar. 22, 1996, Ser. No. 621,113

Claims priority, application Japan, Mar. 24, 1995, 7-066032
Int. Cl.⁶ G06F 7/04; H04B 1/02; G08C 19/00

U.S. Cl. 340—825.31

17 Claims



1. A security system for an automotive vehicle, which comprises a transmitter (1) and a receiver (11) that cooperate to produce a control signal for actuating a security device, and wherein the transmitter (1) comprises:

a number generator (4) for sequentially generating numbers a_i , a_{i+1} ,

a transmitter-end calculation unit (6) for sequentially calculating transmitter variables d_i , d_{i+1} , based on a predetermined operational expression using the respective numbers a_i , a_{i+1} , as a constant, and

a transmitting unit (8,9) for sequentially transmitting data to the receiver (11), wherein the data comprises a transmitter variable code obtained by encoding the transmitter variable d_i and a constant code obtained by encoding the next generated number a_{i+1} , and

wherein the receiver (11) comprises:

a receiving unit (14, 13) for receiving the data from the transmitter (1),

a receiver-end calculation unit (15) for sequentially calculating receiver variables e_i , e_{i+1} , based on the predetermined operational expression, using, respectively the sequentially received numbers a_i , a_{i+1} , represented by the constant code in the data received from the transmitter (1), and

a controller means (15) for comparing the calculated receiver variable e_i with the transmitter variable d_i represented by the transmitter variable code in the received data, and for outputting a control signal, in response to an affirmative comparison, for actuating the security device.

5,781,122
INDIVIDUAL SELECTIVE CALL RECEIVING APPARATUS AND METHOD FOR DISPLAYING MESSAGE

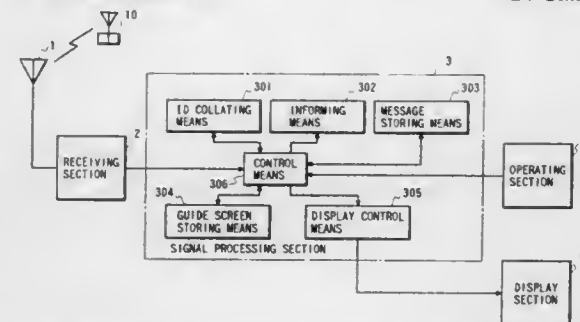
Atsushi Katagiri, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 28, 1995, Ser. No. 578,870

Claims priority, application Japan, Dec. 28, 1994, 6-326905
Int. Cl.⁶ H04Q 7/14

U.S. Cl. 340—825.44

24 Claims



1. An individual selective call receiving apparatus comprising: a receiving section for receiving a signal transmitted from a base station through an antenna and demodulating the received signal;

a signal processing section for processing the signal received through said receiving section;

an operating section for allowing a user to instruct desired processing to said signal processing section; and

a display section for displaying a message involved in the received signal processed in said signal processing section, said display section further displaying a specific image for requesting the user's confirmation to said instruction entered through said operating section before executing said instruction and displaying content of the processing performed in said signal processing section including interim progress thereof after finishing part of said processing.

5,781,123

OPERATOR CONTROL LOGGING DEVICE FOR AN ELECTRICAL DEVICE

Winfried Koenig, Pfalz, and Christa Heiland-Franzen, Eggenstein-Leopoldshafen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 16, 1995, Ser. No. 543,680

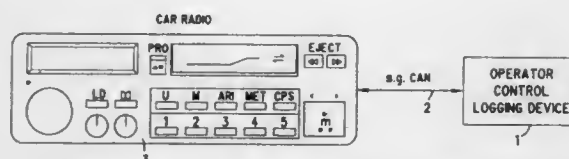
Claims priority, application Germany, Oct. 14, 1994, 44 36 734.1

Int. Cl.⁶ H04B 1/00

U.S. Cl. 340—825.62

15 Claims

EXTERNAL OPERATOR CONTROL LOGGING DEVICE



1. A device for registering a frequency by which a user of an electrical device manually enters each of a plurality of operator control functions of the electrical device, comprising:

a control device, the control device separately counting, up to a maximum value, a number of times that each of the operator control functions is entered by the user within a predetermined time period, providing a weighting factor for each of the operator control functions as a function of the count for each of the operator control functions and outputting the frequency by which the user of the electrical device enters each of the operator control functions as a function of the weighting factors; and

a display device coupled to the control device for displaying each of the operator control functions.

5,781,124

ELECTRICALLY CONFIGURABLE CONNECTION MATRIX BETWEEN LINES OF AT LEAST ONE INPUT/OUTPUT PORT FOR ELECTRICAL SIGNALS

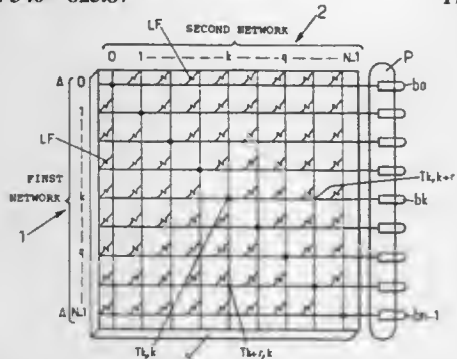
Philippe Chouteau, Rennes, France, assignor to Transpac, Paris, France

Filed Apr. 18, 1995, Ser. No. 424,779

Claims priority, application France, Apr. 18, 1994, 94 04598
Int. Cl.⁶ H04Q 1/18

U.S. Cl. 340—825.87

17 Claims



1. An electrically configurable connection matrix between lines of at least one input/output port with N pins, comprising:

a dielectric support,

a first plurality of N distinct electrical lines on said support, forming a first network, each electrical line of said first network being connected to a pin of said input/output port, and

a second plurality of N distinct electrical lines on said support forming a second network, distinct from the first network, each electrical line of rank k, $k \in \{0, N-1\}$ of said first network being electrically connected by a permanent electrical connection to the electrical line of same rank k of said second network, and each electrical line of rank q=k of said first network being electrically connected by a configurable on/off electrical connection to said electrical line of rank k of said second network, said electrical lines of said first and second networks being formed on the same face of said support, the electrical lines of said first and second networks being separated by a layer of electrically insulating material, said permanent electrical connections being formed by through-holes furnished with a metallization and the configurable electrical connections being formed by fusible electrical links for which switching to an off state is obtained by energizing the links with a current of a strength greater than a specified threshold value, said electrical lines of the first network being substantially parallel to one another, the electrical lines of the second network being substantially parallel to one another, and the electrical lines of said first network being substantially transverse to the electrical lines of said second network, each line of said first and of said second network being labeled by its rank k, k+r even or odd with $k \in \{0, N-1\}$ and $r \neq 0 \in \{1-N, N-1\}$, electrical interconnections between two adjacent or non-adjacent lines of rank k and k+r of said first network being obtained for a logic relation:

$A_{k,k+r}$ if $T_{k,k}$ AND $T_{k+r,k+r}$ OR $T_{k,k+r}$ AND $T_{k+r,k}$ in which: $A_{k,k+r}$ denotes the true logic value of interconnections of the lines A of ranks k and k+r, respectively, of said first network, and the first index and the second index respectively denoting the ranks of the lines of said first and second networks, $T_{k,k}$ and $T_{k+r,k+r}$ denotes the true logic value of permanent electrical connections with addresses k, k and k+r, k+r respectively, between electrical lines of the same rank of said first and second networks, and $T_{k,k+r}$ and $T_{k+r,k}$ denotes the true logic value of the on state of the configurable electrical connections with corresponding

addresses k, k+r and k+r, k between electrical lines of said first and second networks, all the other configurable electrical connections connected to interconnected electrical lines of rank k, k+r of said first network being at the complemented logic value of the off state, for an interconnection of said only lines of rank k, k+r of said first network.

thereby providing, through control the states of a plurality of said configurable electrical connections, an electrical link between two adjacent or non-adjacent electrical lines of said first network, with any other adjacent or non-adjacent lines of rank different from rank k and k+r being disconnected after said electrical link is provided.

5,781,125

ARRANGEMENT FOR THE WIRELESS EXCHANGE OF DATA BETWEEN A SERVICING DEVICE AND A CONTROL UNIT IN A MOTOR VEHICLE

Ralf Godau, Puchheim; Eberhard Dammann, Baldham, and Fritz Penzenstadler, Moosinning, all of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany

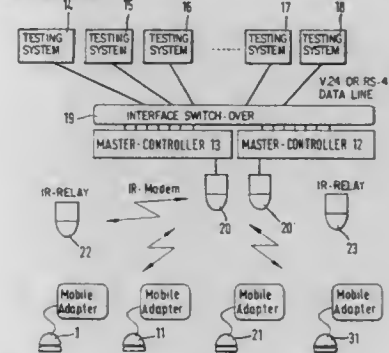
Filed Aug. 12, 1996, Ser. No. 694,413

Claims priority, application Germany, Aug. 12, 1995, 195 29 741.5

Int. Cl.⁶ G08C 17/00; 19/16

U.S. Cl. 340—870.01

8 Claims



1. A wireless coupling device for different types of motor vehicles, comprising:

a universal transmitting and receiving device adapted to be removably mounted on, and operable with, said different types of motor vehicles;

wherein said universal transmitting and receiving device is electrically connected with at least one control unit in a particular motor vehicle when mounted thereon, said universal transmitting and receiving device wirelessly exchanging data from the at least one control unit via a transmission path with at least one servicing device; and

wherein several servicing devices are arranged in a field and communicate with the transmitting and receiving device of a motor vehicle situated in the field.

5,781,126

GROUND PROXIMITY WARNING SYSTEM AND METHODS FOR ROTARY WING AIRCRAFT

Noel S. Paterson, Woodinville; Gary A. Ostrom, Bellevue, and Alden L. Loos, Seattle, all of Wash., assignors to AlliedSignal Inc., Morristown, N.J.

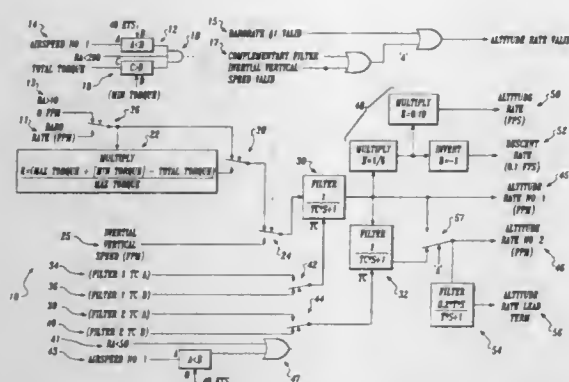
Filed Apr. 29, 1997, Ser. No. 844,117

Int. Cl.⁶ G08B 23/00

U.S. Cl. 340—970

24 Claims

1. A warning system for aircraft comprising: a barometric altitude rate detector disposed to detect the barometric altitude of the aircraft and to generate signals representative of the barometric altitude rate; and a controller coupled to said detector for receiving said barometric altitude rate signals and including means for providing signals indicative of ground effects, the controller adjusting



the barometric altitude rate signals based on said signals indicative of ground effects.

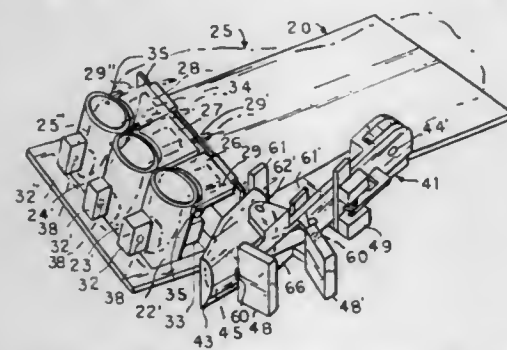
5,781,127 KEYBOARD

Robert E. Kleve, 1103 24th Ave. S., Grand Forks, N. Dak. 58201

Filed Jul. 17, 1996, Ser. No. 682,261
Int. Cl.⁶ G01C 9/00

U.S. Cl. 341—22

18 Claims



17. A keyboard comprising a framework, a thumb carrying plate movably mounted on said framework to carry a thumb of an operator's hand thereon, a thumb receptacle at the forward end of said plate to receive the forward outer end of the thumb, said receptacle being movable laterally back and forth on said carrying plate when said thumb is moved laterally back and forth by the operator, switch means in the path of movement of the receptacle actuatable by the engagement of the receptacle to the switch means.

5,781,128 DATA COMPRESSION SYSTEM AND METHOD

Eyal Shlomot, Irvine, Calif., assignor to Rockwell International Corporation, Newport Beach, Calif.

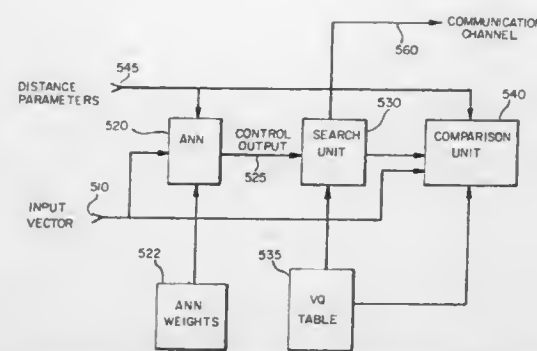
Filed Feb. 18, 1997, Ser. No. 801,890
Int. Cl.⁶ H03M 7/00

U.S. Cl. 341—51

16 Claims

1. A method for encoding an input signal for storage or transmission over a communications channel by transforming successive input vectors of parameters of the input signal into a corresponding succession of index signals, each index signal being associated with a quantized vector that corresponds to an ordered set of values of the input signal parameters, said method comprising:

- supplying the input vectors to an artificial neural network for causing the artificial neural network to produce at least one control output signal;
- providing a vector quantization system composed of: at least one table having a first plurality of storage locations, each storage location storing a representative vector and having an address



represented by a respective index signal; and search means for comparing each representative vector with each input signal parameter value;

applying the at least one control output signal to the vector quantization system for identifying a second plurality of the storage locations, which second plurality is a subset of the first plurality of storage locations;

searching, in said search means, over the second plurality of storage locations to locate that storage location of the second plurality which most closely approximates the input vector according to a criterion utilizing the set of distance parameters; and

outputting the index of the storage location which is found to most closely approximate the input vector.

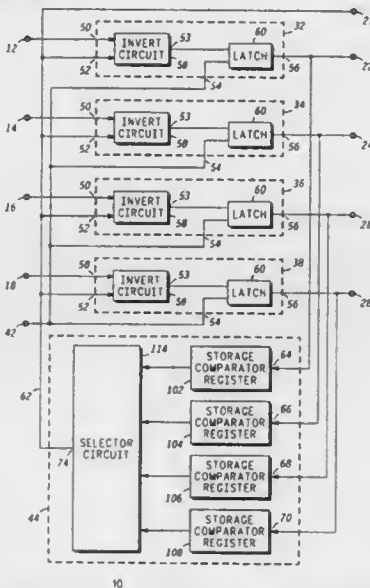
5,781,129 ADAPTIVE ENCODER CIRCUIT FOR MULTIPLE DATA CHANNELS AND METHOD OF ENCODING

Daniel B. Schwartz, Apache Junction, and Ray D. Sundstrom, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 3, 1997, Ser. No. 811,062
Int. Cl.⁶ H03M 7/00

U.S. Cl. 341—51

19 Claims



1. An adaptive encoder circuit for multiple data channels, comprising:

- a first invert circuit having a first input, a second input, and an output, the first input coupled for receiving a first data bit;
- a second invert circuit having a first input, a second input, and an output, the first input coupled for receiving a second data bit;
- a first storage comparator register having an input and an output, wherein the input of the first storage comparator register is coupled to the output of the first invert circuit;

a second storage comparator register having an input and an output, wherein the input of the second storage comparator register is coupled to the output of the second invert circuit; and

a selector circuit having a first input, a second input, and an output, wherein the first input of the selector circuit is coupled to the output of the first storage comparator register, the second input of the selector circuit is coupled to the output of the second storage comparator register, and the output of the selector circuit is coupled to the second input of the first invert circuit and to the second input of the second invert circuit.

5,781,130

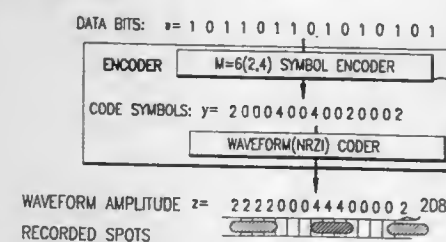
M-ARY (D,K) RUNLENGTH LIMITED CODING FOR MULTI-LEVEL DATA

Steven W. McLaughlin, Rochester, N.Y.; John M. Gerpeide, Silver Spring, Md., and Allen Earman, Fairport, N.Y., assignors to Optex Corporation, Rockville, Md.

Filed May 12, 1995, Ser. No. 440,557
Int. Cl.⁶ H03M 7/00

U.S. Cl. 341—56

18 Claims



1. A system for encoding digital data with an M-ary (d,k) code to provide multi-level coded data where M>2, comprising:

an M-ary (d,k) encoder for accepting digital input data and encoding the digital input data to produce a plurality of code symbols, wherein each code symbol is at one of M levels and each pair of non-zero code symbols is separated by at least d but no more than k zeros; and

a waveform encoder for converting said code symbols into waveform signal amplitudes compatible with a multi-level channel, wherein each said waveform signal amplitude is generated by modulo M addition of a current code symbol with a previous waveform signal amplitude.

5,781,131

DATA ENCODING METHOD AND DATA DECODING METHOD

Yoshihide Shimpuku, and Toshiyuki Nakagawa, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
PCT No. PCT/JP95/02542, § 371 Date Oct. 7, 1996, § 102(e) Date Oct. 7, 1996, PCT Pub. No. WO96/19044, PCT Pub. Date Jun. 20, 1996

PCT Filed Dec. 12, 1995, Ser. No. 693,083

Claims priority, application Japan, Dec. 12, 1994, 6-306754; Sep. 5, 1995, 7-228391

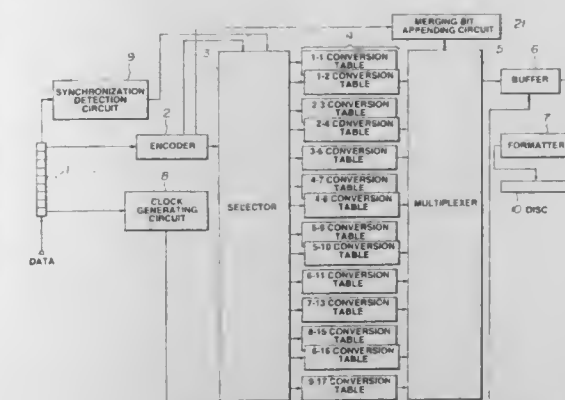
Int. Cl.⁶ H03M 5/00

U.S. Cl. 341—58

32 Claims

1. A data encoding method for converting an m bit data word into an n bit based codeword, where m and n are numbers with n>m, said method comprising:

- a step of receiving an m bit data word;
- a step of determining a constraint length specifying a length of a data word which is to be converted and which is a constituent of the m bit data word;
- a step of finding a bit of said m bit data word, which is a leading end bit of the data word;



a step of selecting one of a plurality of conversion tables based on the constraint length and the end bit, said conversion tables comprised of variable length tables at least satisfying a minimum run length d; and

a step of generating a codeword corresponding to the data word, in accordance with the selected conversion table.

5,781,132

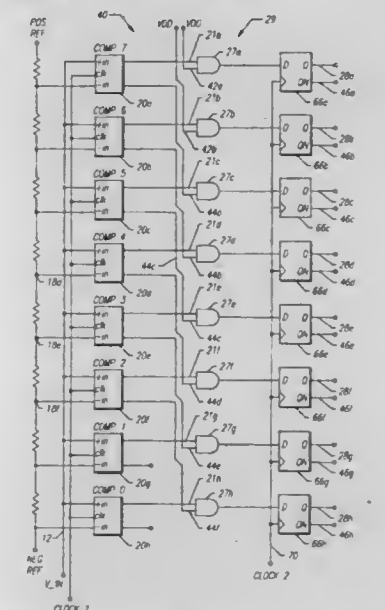
ERROR CORRECTING DECODER

Lanny L. Lewyn, Laguna Beach, Calif., assignor to Brooktree Corporation, San Diego, Calif.

Filed Jan. 17, 1996, Ser. No. 587,755
Int. Cl.⁶ H03M 1/36

U.S. Cl. 341—159

46 Claims



1. In a flash type of analog-to-digital converter, means for providing an input voltage, means for providing a reference voltage, means including terminals for dividing the reference voltage into progressive increments in the reference voltage,

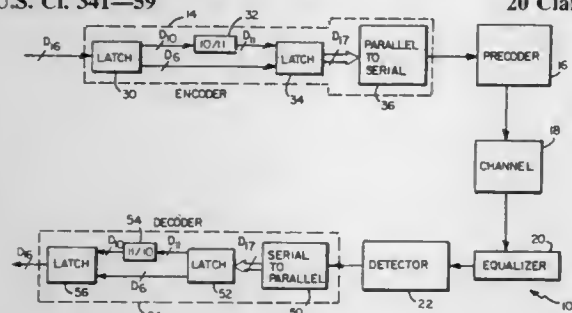
comparator means each operative to compare the relative magnitudes of the input voltage and the reference voltage at an individual one of the terminals, each of the comparator means having two output terminals one indicative of a first result in the comparison and the other indicative of an opposite result in the comparison, and

elements in a logical network, each of the elements being responsive to the voltage on the first output terminal of an individual one of the comparators and to the second output terminal of another comparator non-consecutive to the individual one of the comparators to provide the comparison of the input voltage to the progressive increments of the reference voltage, each of the elements being responsive to pro-

vide the comparison of the input voltage to the progressive increments of the reference voltage without being responsive to the output from the comparator consecutive with the individual one of the comparators.

5,781,133
METHOD AND APPARATUS FOR IMPLEMENTING RUN LENGTH LIMITED CODES
Kihng Paul Tsang, Plymouth, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.
Filed Jan. 30, 1997, Ser. No. 792,194
Int. Cl.⁶ H03M 7/46

U.S. Cl. 341—59 20 Claims



1. An apparatus for encoding data blocks into code blocks, each data block containing a number of data symbols, and each code block containing a number of code symbols, the number of code symbols greater than the number of data symbols, the apparatus comprising:

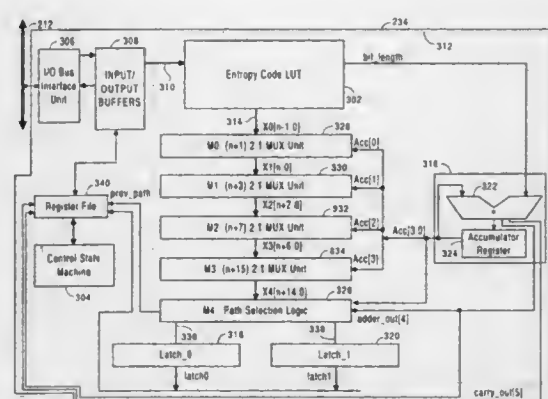
- a data block latch, for receiving individual data blocks and for dividing each data block into a first data sub-block and a second data sub-block;
- an encoder, coupled to the data block latch, for receiving the first data sub-block and for encoding the first data sub-block into a first code sub-block; and
- an interleaver, coupled to the encoder and the data block latch, for combining data symbols in each second data sub-block with code symbols in each first code sub-block to produce each code block, the code blocks such that when concatenated with each other to produce a string of code symbols no more than five consecutive occurrences of a first code symbol are present in the string of code symbols.

5,781,134
SYSTEM FOR VARIABLE LENGTH CODE DATA STREAM POSITION ARRANGEMENT
Jae Cheol Son, Cupertino, Calif., assignor to Samsung Electronics Company, Ltd., Seoul, Rep. of Korea
Filed Oct. 18, 1996, Ser. No. 731,338
Int. Cl.⁶ H03M 7/00

U.S. Cl. 341—67 32 Claims

1. An apparatus to arrange variable length code words in a storage device, each variable length code word having a predetermined bit length, the apparatus comprising:

- a variable length code position arrangement module, the variable length code position arrangement module comprising:
- an arithmetic module having an adder and an accumulator register, wherein the arithmetic module receives predetermined variable length code bit length signals for each variable length code word, the accumulator accumulates variable length code bit length information, and the adder sums accumulated variable length code bit length information and a current variable bit code length; and
- a multi-stage data processing module having an input node to receive an n-bit signal and an input node to receive accumulated variable length code bit length information, wherein the n-bit signal includes a variable length code word, and the multi-stage processing module arranges the



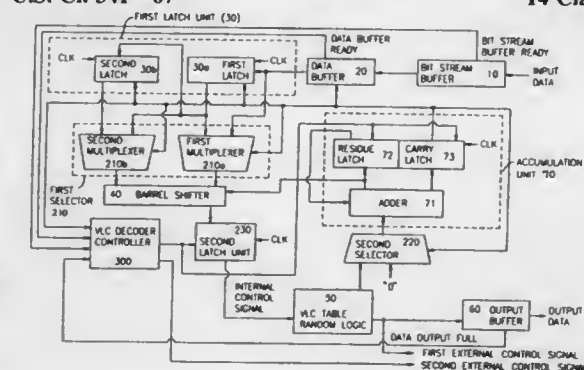
n-bit signal within an m-bit signal, an arranged m-bit signal having a number of spacing bits equal to the accumulated variable length code bit length information preceding the n-bit signal;

- a storage device; and
- a path selection module, coupled to the storage device and to an output node of the multi-stage data processing module, the path selection module being capable of combining the arranged m-bit signal with any unconveyed contents of the storage device, wherein the most significant, non-spacing bits of the m-bit signal follow any unconveyed variable length code words in the storage device.

5,781,135
HIGH SPEED VARIABLE LENGTH CODE DECODER
Su Hwan Kim, Seoul, and Seong Ok Bae, Kyungki-Do, both of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Nov. 15, 1996, Ser. No. 749,564
Claims priority, application Rep. of Korea, Nov. 15, 1995, 1995-41557

Int. Cl.⁶ H03M 7/40 14 Claims



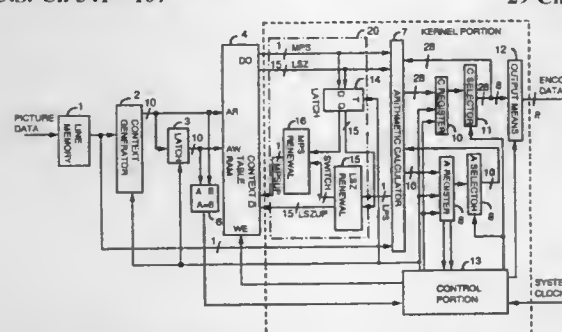
1. A high speed variable length code (VLC) decoder, comprising:
- a bit stream buffer for storing therein an externally applied variable bit stream data, configuring the stored data into 32-bit parallel data, and outputting therefrom the configured data, but outputting therefrom a bit empty signal when there is no data stored therein;
- a data buffer for sequentially storing therein 32-bit data applied thereto from the bit stream buffer in accordance with a read signal but outputting therefrom a bit empty signal when there is no data stored therein;

- a first latch unit for temporarily storing therein the data applied thereto from the data buffer and outputting therefrom the stored data in accordance with the read signal;
- a first selector for outputting therefrom the data applied thereto from the first latch unit in accordance with the read signal;
- a barrel shifter for outputting therefrom a certain number of bits stored therein, after being shifted by a shift signal;
- a second latch unit for temporarily storing the data applied thereto from the barrel shifter and outputting therefrom the stored data in accordance with an internal control signal;
- a VLC table random logic for decoding the data applied thereto from the second latch unit and outputting a code word and a bit length value in the code word;
- an output buffer for storing and outputting therefrom the value applied thereto from the VLC table random logic and a ready-set value "0", each in accordance with the read signal;
- an accumulator for receiving the value applied thereto from the second selector, generating the read signal and transmitting a shift signal to the barrel shifter; and
- a VLC decoder controller for receiving the read signal, the bit empty signal, the data empty signal and the data full signal, respectively, and outputting an internal control signal to each of the accumulator and the second latch for properly controlling the data flow.

5,781,136
DIGITAL INFORMATION ENCODING DEVICE, DIGITAL INFORMATION DECODING DEVICE, DIGITAL INFORMATION ENCODING/DECODING DEVICE, DIGITAL INFORMATION ENCODING METHOD, AND DIGITAL INFORMATION DECODING METHOD
Yoshifumi Imanaka, and Yoshiko Iku, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1996, Ser. No. 768,732
Claims priority, application Japan, Jun. 19, 1996, 8-158198
Int. Cl.⁶ H04N 1/44

U.S. Cl. 341—107 29 Claims

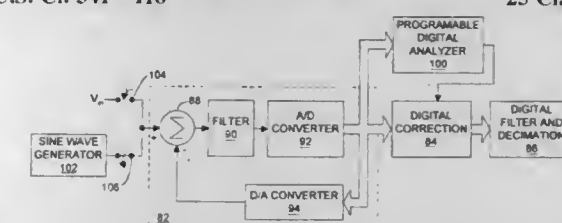


1. A digital information encoding device comprising:
- a context generation means for extracting a reference pixel from an inputted picture data according to a template model to generate a context for a target coding pixel;
- a context storage means for temporarily storing the context for the target coding pixel which is received from the context generation means;
- a context table storage means for storing a plurality of storing data of plurality of bits comprising a prediction symbol and an LSZ data which is a part of a probability estimating data and indicates a mismatching probability, and outputting a predetermined storing data from the stored plurality of storing data according to a context from the context generation means, wherein any of storing data among the stored plurality of storing data is written on a renewal data having a plurality of bits comprising a prediction symbol and an LSZ data which is a part of a probability estimating data and indicates a mismatching probability, according to the context temporarily

- stored in the context storage means, if renormalizing processing is required for the target coding pixel;
- an arithmetic calculation means for receiving a picture data for the target coding pixel, a storing data from the context table storage means, an A data indicating the size of the current interval for a pixel which immediately precedes the target coding pixel, and a C data indicating the trailing bits of the code stream for a pixel which immediately precedes the target coding pixel, conducting a predetermined arithmetic processing, and outputting an A data indicating the size of the current interval for the target coding pixel and a C data indicating the trailing bits of the code stream for the target coding pixel, and a prediction conversion signal indicating whether or not a picture data for the target coding pixel matches with a prediction symbol of the storing data; and
- a renewal data generation means for receiving the prediction conversion signal from the arithmetic calculation means and the storing data from the context table storage means and for generating the renewal data to be written on the context table storage means.

5,781,137
SYSTEM AND METHOD FOR REDUCING ERRORS IN A DELTA-SIGMA CONVERTER
Niels Knudsen, Austin, Tex., assignor to National Instruments Corporation, Austin, Tex.

Filed Dec. 23, 1996, Ser. No. 771,480
Int. Cl.⁶ H03M 1/06 23 Claims



1. A method for performing analog to digital conversion in a multi-bit delta-sigma converter, the method comprising:
- applying an analog signal to an input of the multi-bit delta-sigma converter;
- converting the analog signal into a first digital signal using the multi-bit delta-sigma converter, wherein the first digital signal includes first linearity errors;
- translating the first digital signal into a second digital signal, wherein said translating compensates for linear errors in the first digital signal, where the second digital signal has reduced linearity errors when compared to the first linearity errors in the first digital signal, wherein said translating comprises indexing into a look-up table, wherein the look-up table stores a plurality of second digital signals,
- wherein the plurality of second digital signals in the look-up table are generated as follows:
- applying an analog waveform to the delta-sigma converter, wherein the delta-sigma converter generates output digital signals representative thereof;
- recording a plurality of the output digital signals;
- generating linearity error information from the plurality of the output digital signals;
- calculating linearity error correction coefficients c(m) as a function of the linearity error information; and
- generating the plurality of second digital signals from the linearity error correction coefficients c(m).

5,781,138

SYSTEM AND METHOD FOR GENERATING A SIGMA-DELTA CORRECTION CIRCUIT

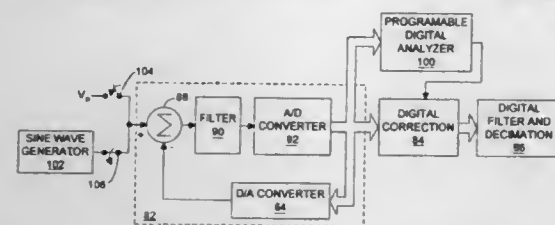
Niels Knudsen, Austin, Tex., assignor to National Instruments Corporation, Austin, Tex.

Filed Dec. 23, 1996, Ser. No. 772,785

Int. Cl.⁶ H03M 1/06

U.S. Cl. 341-143

59 Claims



1. A method of constructing a linear error correction circuit for use in a delta-sigma converter, wherein the delta-sigma converter includes a delta-sigma modulator, wherein the delta-sigma modulator includes a D/A converter, the method comprising:

- applying an analog waveform to the delta-sigma modulator, wherein the delta-sigma modulator generates digital signals representative thereof;
- recording a plurality of the digital signals;
- applying a frequency domain transform to the plurality of digital signals to generate a frequency domain representation thereof;
- extracting a net linearity error spectrum from the frequency domain representation of the plurality of digital signals;
- applying an inverse frequency domain transform to the net linearity error spectrum to generate a net linearity error E;
- sorting the plurality of digital signals into n sub-sets, each digital signal in a particular sub-set corresponding to a particular active state of a generator internal to the D/A converter in the delta-sigma modulator;
- applying a frequency domain transform to each of the sub-sets of digital signals to generate a frequency domain representation thereof;
- extracting a specific linearity error spectrum from each of the frequency domain representations of the sub-sets of digital signals;
- generating specific linearity errors a(m) by applying an inverse frequency domain transform to each of the specific linearity error spectrums;
- calculating linearity error correction coefficients c(m) as a function of E and a(m);
- constructing said linear error correction circuit using the calculated linearity error correction coefficients c(m), wherein said linear error correction circuit is operable to correct linear errors in the delta-sigma modulator.

5,781,139

SWITCHED CAPACITOR DIGITAL-TO ANALOG CONVERTER

Sherman Weisbrod, Skillman, N.J., assignor to Thomson multimedia S.A., Boulogne, France

Filed Mar. 19, 1996, Ser. No. 618,222

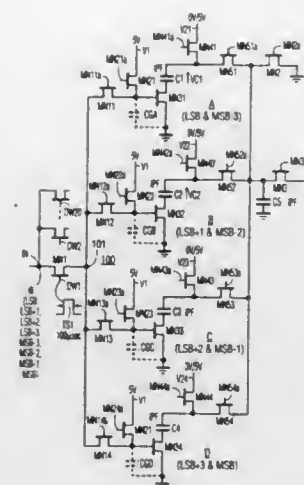
Int. Cl.⁶ H03M 1/66

U.S. Cl. 341-150

9 Claims

1. A digital-to-analog converter, comprising:

- a source of an input data word having a plurality of bits representing different weights;
- a plurality of capacitors of equal capacitance value including a first capacitor; and
- a switching network, coupled to said capacitors and responsive to said plurality of bits, for initializing a charge in a respective capacitor of said plurality of capacitors that is associated with a given step of a plurality of steps, during a first interval of said given step, said switching network developing a charge in said charge initialized, associated capacitor, in accordance with a corresponding bit, during a second interval of said given step and said switching network coupling, during a third



interval of said given step, said associated capacitor to said first capacitor to combine in said first capacitor a charge of said first capacitor with said charge that is developed during said second interval, in said associated capacitor, such that a length of said second interval is unequal to a length of one of said first and third intervals.

5,781,140

TWO-SEGMENT LADDER CIRCUIT AND DIGITAL-TO-ANALOG CONVERTER

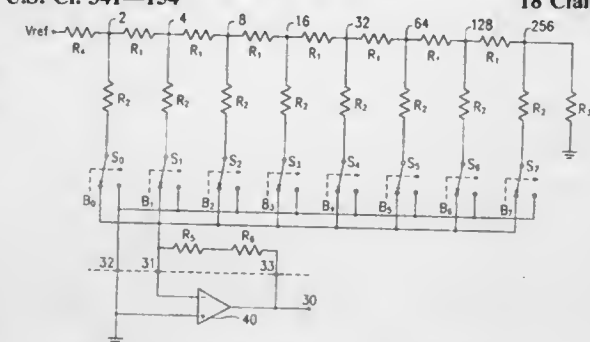
Hsueh-Wu Kao, Nan-Tou Hsien, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 18, 1996, Ser. No. 634,214

Int. Cl.⁶ H03M 1/78

U.S. Cl. 341-154

18 Claims



1. A two-segment ladder integrated circuit, comprising:

- a front-end resistor forming a first segment for reducing a reference voltage to an internal voltage, the front-end resistor being made from a first semiconductor material type;
- a resistor network including a plurality of resistors receiving the internal voltage and generating a plurality of branch currents having magnitudes that form terms of a geometrical series with a common ratio of 1/2,
- wherein the plurality of resistors of the resistor network are made from a second semiconductor material type different from the first semiconductor material type; and
- a terminating resistor for terminating the resistor network, wherein the resistor network and the terminating resistor form a second segment.

5,781,141

DIGITAL-TO-ANALOG CONVERTER AND SENSOR-CHARACTERISTIC ADJUSTMENT CIRCUIT

Toshio Ikuta, Handa, and Seichirou Otake, Hazu-gun, both of Japan, assignors to Denso Corporation, Kariya, Japan

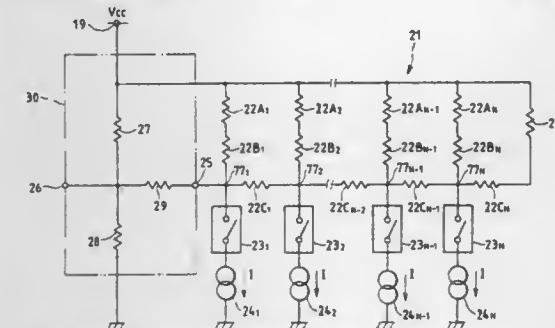
Filed Oct. 18, 1996, Ser. No. 733,741

Claims priority, application Japan, Oct. 20, 1995, 7-272474

Int. Cl.⁶ H03M 1/00

U.S. Cl. 341-154

8 Claims



1. A digital-to-analog converter comprising:

- an R-2R resistive ladder network having resistors coupled in a ladder form in correspondence with a number of bits of a digital input signal, the R-2R resistive ladder network having an output terminal;
- a positive and a negative dc-power-supply terminal both coupled to the R-2R resistive ladder network and the terminals subjected to first and second predetermined voltage references respectively, the first and second predetermined voltage references being different from each other;
- means for controlling currents flowing between the R-2R resistive ladder network and one of the positive and negative dc-power-supply terminals in response to the bits of the digital input signal to generate an analog voltage signal at the output terminal of the R-2R resistive ladder network on the basis of the first and second predetermined voltage references, the analog voltage signal depending on the digital input signal;
- a first resistor and a second resistor located outside the R-2R resistive ladder network and coupled in series between the positive and negative dc-power-supply terminals to receive the first and second predetermined voltage references;
- a third resistor located outside the R-2R resistive ladder network and coupled between the output terminal of the R-2R resistive ladder network and the second resistor located outside the R-2R resistive ladder network; and
- a conversion output terminal coupled to a junction between the second and third resistors located outside the R-2R resistive ladder network.

5,781,142

METHOD AND APPARATUS FOR CONVERTING AN ANALOG MEASUREMENT SIGNAL TO A DIGITAL SIGNAL HAVING REDUCED CONVERSION ERROR

Toru Onodera, and Tomio Tsunoda, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 11, 1996, Ser. No. 584,756

Claims priority, application Japan, Jan. 11, 1995, 7-002919

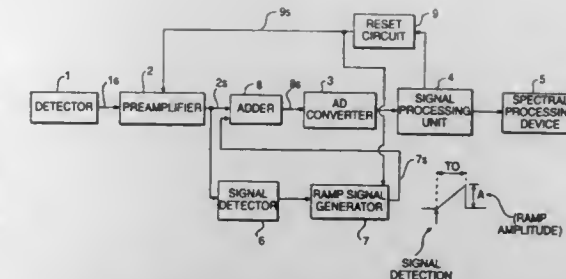
Int. Cl.⁶ H03M 1/56

U.S. Cl. 341-169

10 Claims

1. A measurement device comprising:

- detection means for outputting an electrical signal indicative of a condition magnitude;
- means for generating a ramp signal;
- means for adding said electrical signal and said ramp signal and for outputting a sum signal to an analog/digital conversion means for converting said sum signal to a digital signal; and
- signal processing means for integrating said digital signal and for determining an average digital value of said digital signal



by dividing the integrated digital signal by a corresponding integration period, said average digital value indicative of the condition magnitude.

5,781,143

AUTO-ACQUIRE OF TRANSMITTER ID BY RECEIVER

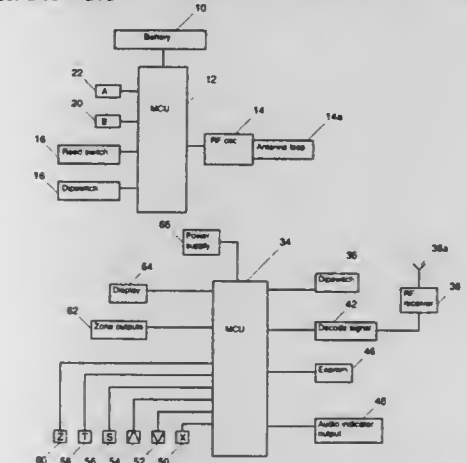
John A. Rossin, 520 N. 8th St., Lompoc, Calif. 93436

Filed Jan. 24, 1997, Ser. No. 794,201

Int. Cl.⁶ G08C 19/12; H04L 17/02

U.S. Cl. 341-173

2 Claims



1. A method for programming a receiver control permanent memory with a plurality of unique identity codes of wireless transmitters, comprising:

- (a) establishing in said receiver control the quantity of said transmitters said receiver control will accept;
- (b) causing said transmitters to transmit unique identity code along with a wider preamble than normally transmitted;
- (c) temporarily storing each received identity code in said receiver control;
- (d) comparing temporarily stored identity code to identity code stored in said receiver control permanent memory and if no match found store temporarily stored identity code to said receiver control permanent memory;
- (e) subtracting one from total quantity of said transmitters specified as each said transmitter identity code is programmed into said receiver control until zero is reached;
- (f) disabling storing of identity code by said receiver control when zero count is reached.

5,781,144

WIDE BAND VIDEO SIGNAL DENOISER AND METHOD FOR DENOISING

Chen Hwa, Fremont, Calif., assignor to Litton Applied Technology, San Jose, Calif.

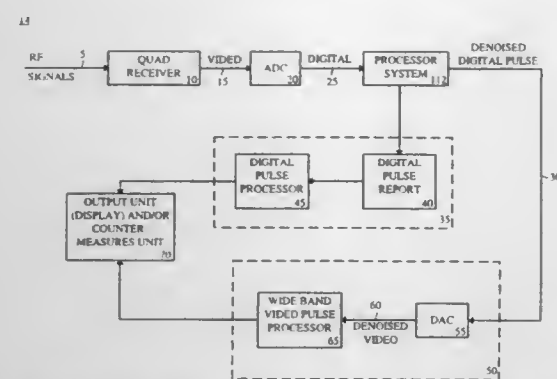
Filed Jul. 3, 1996, Ser. No. 675,682

Int. Cl.⁶ G01S 7/28; 7/40

U.S. Cl. 342-13

29 Claims

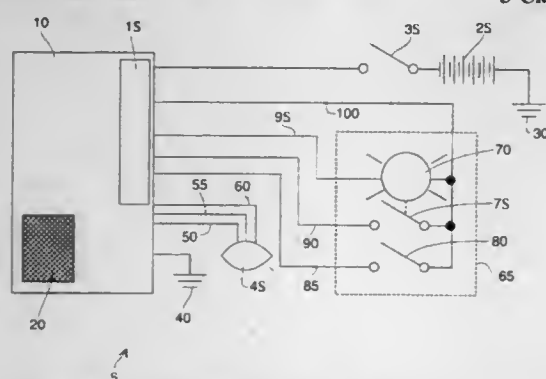
1. In a radar warning receiver, a method for denoising an input wide band video signal window, said method comprising the steps of:



- selecting a plurality of wavelet basis functions that represent expected signal waveforms of said input wide band video signal window, each of said plurality of wavelet basis functions composed of values of either "1" or "-1";
- performing high speed real-time convolution of said input wide band video signal window against said plurality of wavelet basis functions to generate a plurality of correlation coefficients wherein groups of correlation coefficients share a common frequency resolution level, said step b) of performing high speed convolution being performed without multiplication functions to determine said plurality of correlation coefficients;
- thresholding said plurality of correlation coefficient to select those correlation coefficients that most efficiently package the energy of the input wide band video signal window;
- discarding correlation coefficients not thresholded by step c); and
- generating a denoised version of said input wide band video signal window by performing a high speed real-time wavelet reconstruction based on correlation coefficients thresholded by step c).

5,781,145
MOTORCYCLE MOUNTED RADAR/LASER SPEED DETECTION COUNTERMEASURE DEVICE
Robert B. Williams, HC67, Box 697, Clayton, Id. 83227, and Stanley Carter, 574 Apex La., Challis, Id. 83226
Filed Apr. 15, 1996, Ser. No. 632,095
Int. Cl.⁶ G01S 7/40

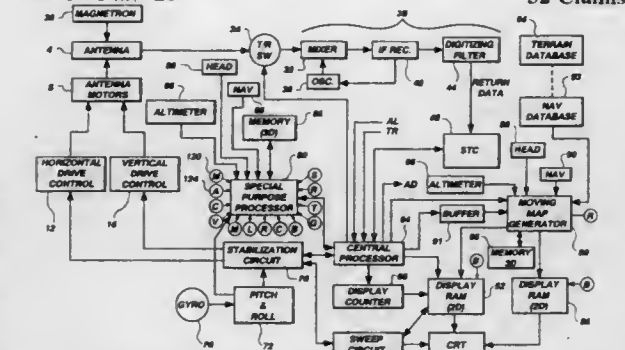
U.S. Cl. 342-20 3 Claims



- A radar and laser detection device including:
 - a sensing means for detecting radar and laser speed detection beams;
 - an audible alarm means for providing an audible indication that a speed detection beam has been detected;
 - a visible alarm means for providing a visible indication that a speed detection beam has been detected; and
 - a switch connected to a face cover of the visible alarm means, the switch configured to change a status of the audible alarm means between on and off each time the face cover is pushed.

5,781,146
AUTOMATIC HORIZONTAL AND VERTICAL SCANNING RADAR WITH TERRAIN DISPLAY
Philip R. Frederick, Salt Lake City, Utah, assignor to Imaging Accessories, Inc., Salt Lake City, Utah
Filed Mar. 11, 1996, Ser. No. 613,017
Int. Cl.⁶ G01S 13/95; 7/04

U.S. Cl. 342-26 32 Claims

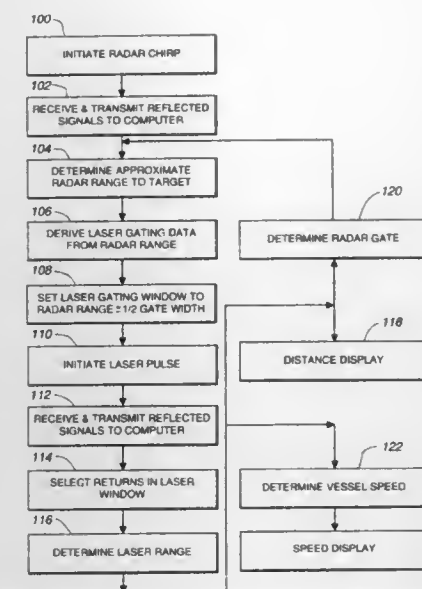


- A weather radar and terrain map display system for aircraft comprising
 - means for transmitting radar signals out from the aircraft and for receiving back reflected radar signals,
 - means for digitizing the reflected radar signals received by the transmitting and receiving means,
 - means for calculating the latitude and longitude coordinates of the locations from which the reflected radar signals were reflected,
 - first means for storing the digitized signals and the latitude and longitude coordinates calculated for the reflected radar signals,
 - second means for storing terrain elevation data referenced to latitude and longitude coordinates of the ground over which the aircraft will travel, and
 - display means, responsive to the first and second storing means, for simultaneously displaying a plan view image over a horizontal range (a) of weather, represented by digitized reflected radar signals, relative to the calculated latitude and longitude coordinates, and (b) terrain elevation data relative to the latitude and longitude coordinates of that data, said weather display and terrain data display being superimposed over one another.

5,781,147
FOG PIERCING RANGING APPARATUS AND METHOD
Scott Elliott; Eric A. Miller, both of Englewood, and Jeremy G. Dunne, Littleton, all of Colo., assignors to Laser Technology, Inc., Englewood, Colo.
Continuation-in-part of Ser. No. 788,426, Jan. 28, 1997, abandoned. This application May 9, 1997, Ser. No. 853,609
Int. Cl.⁶ G01S 13/86

U.S. Cl. 342-54 20 Claims

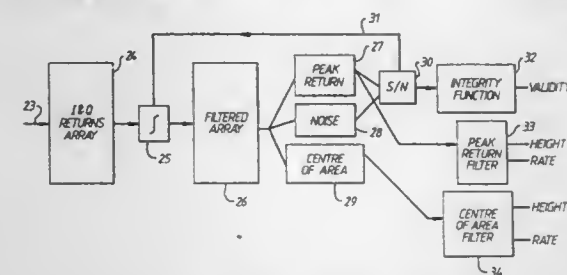
- An apparatus for range finding comprising:
 - a radar transceiver adapted to send a radio frequency signal toward said target and receive at least one reflected signal from said target and produce radar data representative of said transmitted and reflected radar signals;
 - a laser transceiver adapted to transmit a laser light signal toward an expected target, receive at least one reflected laser light signal and produce laser data representative of said transmitted and reflected laser signals; and
 - a computer coupled to said laser transceiver and to said radar transceiver receiving said radar data and said laser range data, wherein said computer determines an approximate range from said radar data and utilizes said approximate range to provide



a laser gating window to determine a laser range from said laser data.

5,781,148
CONTINUOUS WAVE RADAR ALTIMETER
Robert Anthony Severwright, Hockley, United Kingdom, assignor to GEC Marconi Limited, Stanmore, United Kingdom
Filed May 20, 1988, Ser. No. 199,885
Claims priority, application United Kingdom, May 21, 1987, 8712061

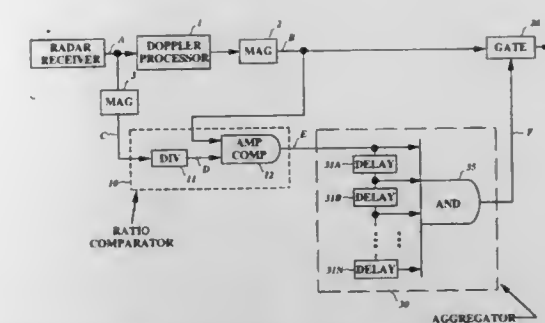
Int. Cl.⁶ G01S 13/26 5 Claims
U.S. Cl. 342-120



- A continuous wave radar altimeter comprising a memory, means for storing in the memory in digital form an array of return signals representative of the variation of reflected amplitude with path length, means for addressing the memory for identifying a peak return representative of the highest object on the terrain and determining the height at which the peak return occurs, means responsive to the array in the memory for determining a "centre of area" height for any significant return signals representing a path length greater than that at which said peak return occurs, said "centre of area" height being representative of the lowest surface on the terrain, and output means for providing a simultaneous indication of the height at which the peak occurs and the "centre of area" height.

5,781,149
DOPPLER RADAR CLUTTER SPIKE REJECTOR
Maurice W. Long, 1036 Somerset Dr. NW., Atlanta, Ga. 30327
Filed May 13, 1997, Ser. No. 855,278
Int. Cl.⁶ G01S 13/534

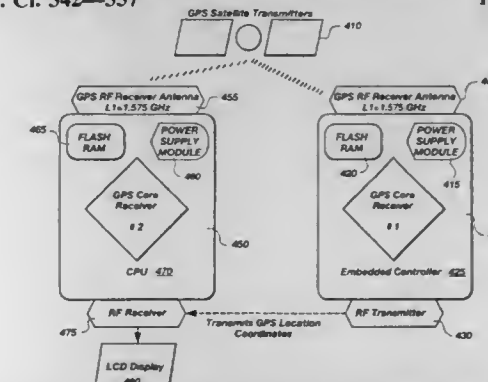
U.S. Cl. 342-160 16 Claims
1. A doppler radar system for processing the received signal from a radar receiver to detect moving targets and suppressing



clutter, said clutter being radar echo signals from stationary and slowly moving objects having doppler frequencies at and near zero, comprising:

- doppler processor means for frequency filtering the received signal to suppress doppler frequencies at and near zero and for providing at least one filtered signal in response to said received signal;
- target channel means connected to said doppler processor means for providing a target channel signal with magnitude in response to the magnitude of said received signal;
- reference channel means connected to said radar receiver comprising attenuation means for providing a reference signal having doppler frequencies at and near zero with magnitude in response to the magnitude of said received signal;
- ratio comparator means for providing a ratio comparator output signal of a first level when the ratio of the target channel signal magnitude to the reference signal magnitude is less than a predetermined value and of a second level when the magnitude of said ratio exceeds the predetermined value, said predetermined value being established by said attenuation means; and
- aggregator means for providing an aggregator output signal at a radar range cell for distinguishing moving target signals from clutter, said aggregator comprising integrator means for integrating said comparator output signal.

5,781,150
GPS RELATIVE POSITION DETECTION SYSTEM
Elwood G. Norris, Poway, Calif., assignor to American Technology Corporation, Poway, Calif.
Continuation-in-part of Ser. No. 377,973, Jan. 25, 1995, Pat. No. 5,689,269. This application Oct. 13, 1995, Ser. No. 542,799
Int. Cl.⁶ H04B 7/185; G01S 5/02
U.S. Cl. 342-357 13 Claims



- A device for displaying a position of an object relative to the device and being responsive to data communicated from the orbiting Global Positioning System (GPS) satellite network, said device comprising:
 - means for receiving and processing GPS signals from the orbiting GPS satellites,
 - means for determining a geographical location of the device from the GPS signals, and for correlating the geographical location of the device to be coincident with a point of origin on a visual display means,

means for receiving and processing telemetry data containing a geographical location of the object,
means for calculating the position of the object relative to the device so as to provide an approximate direction of travel and distance to the object from the device, and
the visual display means for graphically displaying the relative position of the object with respect to 1) any physical orientation of the graphical display means of the device which is in a generally horizontal plane relative to the earth, and 2) the point of origin on the visual display means, and wherein the relative position of the object is displayed utilizing at least a direction indicating symbol to portray the relative position information.

5,781,151

INTERFEROMETRIC TRAJECTORY RECONSTRUCTION TECHNIQUE FOR FLIGHT INSPECTION OF RADIO NAVIGATION AIDS

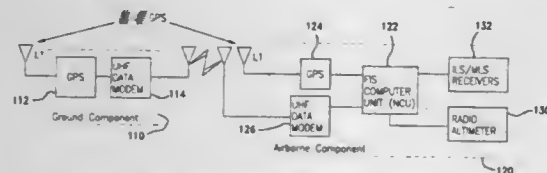
Donald A. Stratton, Westbury, N.Y., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Sep. 19, 1996, Ser. No. 716,015

Int. Cl.⁶ G01S 5/02; H04B 7/185

U.S. Cl. 342—357

5 Claims



1. A method for determining the trajectory of an airborne antenna with respect to a ground-based antenna in a satellite-based trajectory system, comprising the steps of:

making carrier phase measurements based on the reception of a carrier signal from each of a plurality of N satellites, where N is the minimum number of satellites needed to compute the relative position of the airborne antenna;

deriving from the carrier phase measurements an initial set of potential solutions for the trajectory, wherein the initial set of potential solutions all fall within a region of uncertainty defined by a centroid, and wherein multiple potential solutions arise because of whole cycle ambiguity in the carrier signal;

positioning the ground-based antenna at a predetermined first location relative to the trajectory;

making a measurement of the vertical position of the airborne antenna at a predetermined second location; and
generating solutions with improved accuracy in trajectory.

5,781,152

METHOD AND CIRCUIT FOR THE RECEPTION OF SIGNALS FOR POSITIONING BY SATELLITE WITH ELIMINATION OF MULTIPLE-PATH ERRORS

Alain Renard, Chabeuil, and Bernard Fouilland, Fauconnieres, both of France, assignors to Sextant Avionique, Velizy Villacoublay, France

Filed Dec. 16, 1996, Ser. No. 767,428

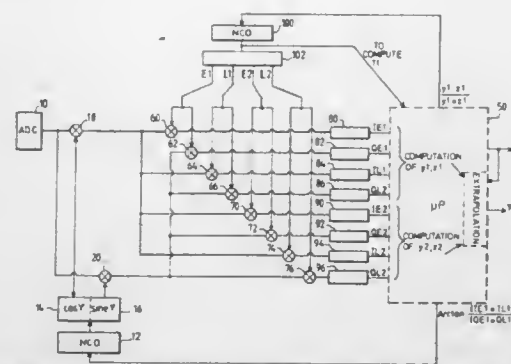
Claims priority, application France, Dec. 15, 1995, 95 14917

Int. Cl.⁶ H04B 7/185; G01S 5/02

U.S. Cl. 342—357

7 Claims

1. A method to eliminate the influence of radio frequency wave multiple paths between a satellite and a receiver for determining a position by satellite in which there is used a correlation by means of at least four pseudo-random codes E1, L1, E2, L2 which are the replicas of a code received from a satellite, the codes E1 and L1 being respectively early and late by a duration d with respect to a punctual code P1 and the codes E2 and L2 being respectively early and late by a duration k.d. with respect to a punctual code P2 wherein, in order to deduce the position of the receiver from the



temporal position of the code received without error due to multiple paths, measurements are made of correlation energy values and/or of received time, firstly with the replica codes E1, L1 that are early and late by d, and secondly with the replica codes E2, L2 that are early and late by k.d and, on the basis of these two sets of measurements, a computation is carried out, by a simple extrapolation computation, of the temporal position corresponding to k=0 that defines the temporal position of the received code.

5,781,153

Patent Not Issued For This Number

5,781,154

Patent Not Issued For This Number

5,781,155

NAVIGATION WRISTWEAR

Arthur N. Woo, Cupertino; Kiyoko M. Mura-Smith, Los Altos Hills, both of Calif., and Gregory T. Janky, Bellingham, Wash., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Continuation of Ser. No. 563,568, Nov. 30, 1995, Pat. No. 5,627,548. This application Apr. 8, 1997, Ser. No. 833,680

Int. Cl.⁶ G01S 5/02

U.S. Cl. 342—357

17 Claims



1. A navigation wristwear device, comprising a wrist watch type housing comprising a navigation processor configured to receive corrected ranging and timing information and to compute position information from said received corrected ranging and timing information, said housing further comprising a display that displays the position information.

5,781,156

GPS RECEIVER AND METHOD FOR PROCESSING GPS SIGNALS

Norman F. Krasner, San Carlos, Calif., assignor to SnapTrack, Inc., San Jose, Calif.

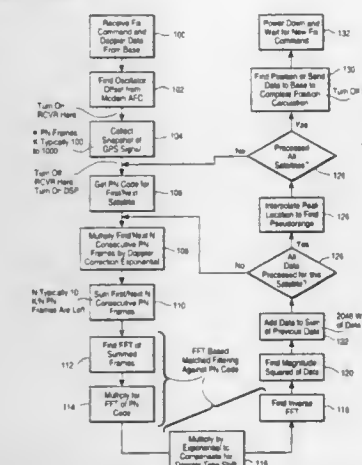
Division of Ser. No. 612,669, Mar. 8, 1996, Pat. No. 5,663,734.

This application Apr. 23, 1997, Ser. No. 844,948

Int. Cl.⁶ G01S 5/02; H04B 7/185

U.S. Cl. 342—357

22 Claims



12. A computer readable medium containing an executable computer program for use in a digital processing system, said executable computer program when executed in said digital processing system causing said digital processing system to perform the steps of:

performing a plurality of convolutions on a corresponding plurality of blocks of sampled GPS signals to provide a plurality of corresponding results of each convolution;

summing a plurality of mathematical representations of said plurality of corresponding results to obtain a first position information.

5,781,157

MULTIPLE BEAM RADAR SYSTEM WITH ENHANCED SIDELOBE SUPPRESSION

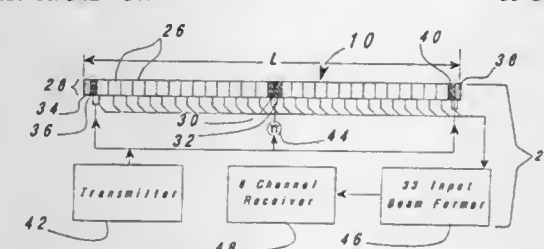
James G. Laird, Laguna Beach, Calif., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.

Filed Aug. 5, 1996, Ser. No. 693,907

Int. Cl.⁶ G01S 3/16; 13/00

U.S. Cl. 342—379

11 Claims



1. A system for use with a radar apparatus for producing multiple narrow transmit beams with reduced sidelobes including a transmitter and a multi-channel receiver, wherein said system comprises:

a phased array antenna for transmitting and receiving radar signals wherein said phased array antenna comprises:

a plurality of subarrays for transmitting and receiving radar signals, wherein said plurality of subarrays includes reception subarrays configured to only receive radar signals, transmission subarrays configured to only transmit radar signals and transmission/reception subarrays configured to both transmit and receive radar signals, said plurality of subarrays arranged such that said phased array antenna includes:

a first antenna section including a transmission subarray and a transmission/reception subarray;

a second antenna section including a transmission subarray and a transmission/reception subarray;

a third antenna section including at least two transmission/reception subarrays, wherein said third antenna section is located intermediate said first and second antenna sections, such that said first, second, and third antenna sections have equal length and phase centers which are equally spaced;

transmitter connecting means for interconnecting the transmitter with the transmission subarrays and the transmission/reception subarrays of the first, second, and third antenna sections such that the resulting transmission pattern generated by said antenna sections includes multiple narrow transmission interferometer lobes;

phase inversion means connected to the transmission/reception subarrays of the third antenna section and the transmitter connecting means for inverting a transmission signal to said transmitting and receiving subarrays of said third antenna section;

beam forming means connected to the reception subarrays and the transmission/reception subarrays for receiving signals from said reception and transmission/reception subarrays and for forming multiple reception patterns which are different than the transmission pattern; and

means interconnecting the beam forming means outputs with the multi-channel receiver.

5,781,158

ELECTRIC/MAGNETIC MICROSTRIP ANTENNA

Young Hoek Ko, #102-1504, Raindongsan Apt, Hwajeong-3 Dong, Seo-Ku, Rep. of Korea, and Hasebe Nozmu, Dgibagen, Japan, assignors to Young Hoek Ko, Seo-ku, Kwangju, Rep. of Korea

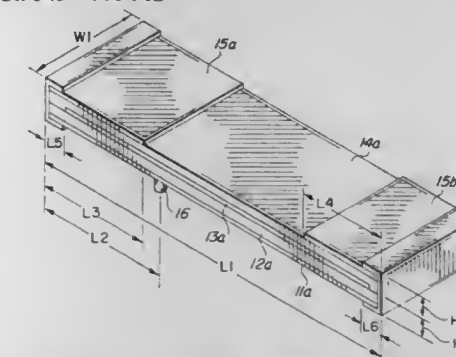
Continuation-in-part of Ser. No. 558,233, Nov. 17, 1995, abandoned. This application Jul. 30, 1996, Ser. No. 688,619

Claims priority, application Rep. of Korea, Apr. 25, 1995, 95-9761; Apr. 25, 1995, 95-9762

Int. Cl.⁶ H01Q 1/38

U.S. Cl. 343—700 MS

8 Claims



1. Electric/magnetic microstrip antenna comprising:
a ground plate having first and second opposite ends;
a first dielectric substrate and a patch radiator sequentially stacked on the ground plate; and
a second dielectric substrate and a pair of parallel plates which are spaced from each other, sequentially stacked on the patch radiator to form a capacitance between the patch radiator and the respective parallel plates;
wherein the ground plate and the patch radiator have the same width, and wherein the pair of parallel plates are respectively connected to the first and second opposite ends of the ground plate such that the size of the electric/magnetic microstrip antenna is reduced while the range of electric lines of force between the patch radiator and the ground plate is not restricted.

5,781,159

PLANAR ANTENNA WITH INTEGRAL IMPEDANCE MATCHING

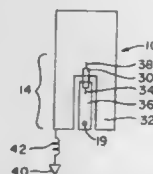
Glenn J. Desargant, Brea, Calif., assignor to Boeing North American, Inc., Seal Beach, Calif.

Filed Sep. 27, 1996, Ser. No. 721,496

Int. Cl.⁶ H01Q 1/24; 1/38

U.S. Cl. 343—700 MS

7 Claims



1. An article of manufacture comprising:
 - (a) a planar antenna having an elongated axis;
 - (b) a planar transmission line matching section within the planar antenna; and
 - (c) an active circuit within or on the transmission line matching section; and
 - (d) a counterpoise external to the planar antenna and adjacent to the transmission line matching section;
 wherein the transmission line matching section includes a broadened section for capacitively coupling to the counterpoise, the counterpoise having a plane perpendicular to the axis of the antenna, the article of manufacture further comprising an RF choke within or on the transmission line matching section, in a power supply loop driving the active circuit, the RF choke being situated and constructed to simultaneously:
 - (1) allow a dc bias to be applied to the active circuits; and
 - (2) prevent RF from escaping from or into the power supply loop.

5,781,160

INDEPENDENTLY FED AM/FM HEATED WINDOW ANTENNA

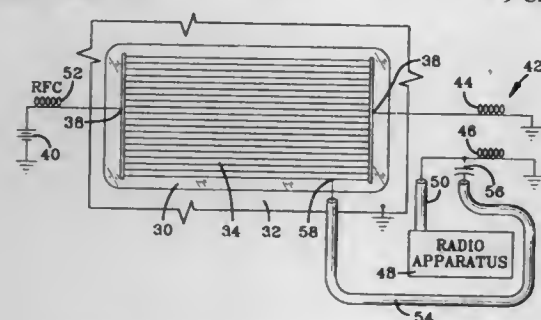
Eric K. Walton, Columbus, Ohio, assignor to The Ohio State University, Columbus, Ohio

Filed May 31, 1996, Ser. No. 656,610

Int. Cl.⁶ H01Q 1/32

U.S. Cl. 343—713

9 Claims



1. An antenna and feed circuit for coupling an electromagnetic signal to a radio apparatus and comprising:
 - a) an antenna mounted to a window formed in an aperture through a conductive sheet connected to a ground, the antenna also being a resistive heating element and having first and second terminals for connection to an electrical source of heating current;
 - b) an RF transformer capable of passing and inductively coupling RF signals, the transformer having a primary winding connected between said first antenna terminal and said ground and having a secondary winding connected between said ground and said radio apparatus for feeding lower frequency signals; and

- c) a transmission line connected through a capacitor between said antenna and said radio apparatus for feeding higher frequency signals.

5,781,161

WAVEGUIDE AND MICROSTRIP LINES MODE TRANSFORMER AND RECEIVING CONVERTER COMPRISING A POLARIZATION ISOLATING CONDUCTOR

Akira Kinoshita, Osaka, and Yoshikazu Yoshimura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

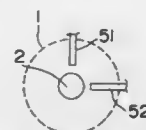
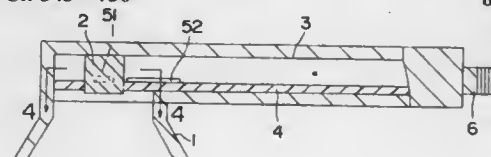
Filed Feb. 6, 1996, Ser. No. 595,954

Claims priority, application Japan, Feb. 6, 1995, 7-017400

Int. Cl.⁶ H01P 1/17; 5/107

U.S. Cl. 343—750

8 Claims



5. A receiving converter having a mode transformer for a waveguide and microstrip lines comprising:
 - a circular waveguide having an axis extending along an axial direction thereof,
 - first and second conductors disposed orthogonally relative to each other in said circular waveguide, corresponding to a horizontal polarized wave and a vertical polarized wave received by said circular waveguide, respectively, on a plane which is perpendicular to the axis of said circular waveguide, the first and second conductors corresponding to a first and second microstrip line, respectively, each of the first and second conductors having a respective end, the respective ends of the first and second conductors being closely disposed to, and physically separated from each other,
 - a converter casing situated adjacent said circular waveguide and including a receiving portion at which at least one of said horizontal polarized wave and said vertical polarized wave respectively received from said circular waveguide are directed,
 - a third conductor electrically coupled to the circular waveguide, extending along the axis of said circular waveguide, at least penetrating through the plane on which the first and second conductors are disposed and physically separated from each of the first and second conductors, and
 - a substrate on which the first and second conductors are disposed perpendicular to the axis of said circular waveguide, the substrate located in said converter casing and extending into said receiving portion of said converter casing, the substrate having an opening through which said third conductor passes.

5,781,162

PHASED ARRAY WITH INTEGRATED BANDPASS FILTER SUPERSTRUCTURE

Carl W. Peterson, Carson; Harry C. Jones, Cerritos; Mir Akbar Ali, Lomita, and Gerald W. Swift, Rolling Hills Estates, all of Calif., assignors to Hughes Electronic Corporation, Los Angeles, Calif.

Filed Jan. 12, 1996, Ser. No. 585,825

Int. Cl.⁶ H01Q 21/00

U.S. Cl. 343—853

16 Claims

1. A phased array comprising:

5,781,164

MATRIX DISPLAY SYSTEMS

Jeffrey Jacobsen, Hollister, Calif.; John C. C. Fan, Chestnut Hill, and Jack P. Salerno, Waban, both of Mass., assignors to Kopin Corporation, Taunton, Mass.

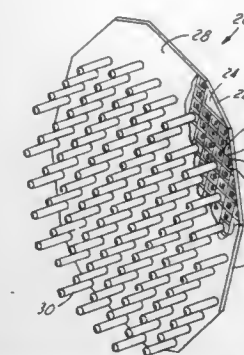
Continuation of Ser. No. 971,326, Nov. 4, 1992, abandoned.

This application May 17, 1995, Ser. No. 442,808

Int. Cl.⁶ G09G 3/36

U.S. Cl. 345—87

18 Claims



- a self-supporting superstructure including web portions and base portions defining a plurality of cavities;
- a cover plate mounting to the superstructure, the cavities and cover plate cooperating to form a plurality of cavity style filters;
- a plurality of amplifiers electrically connecting to the cavities formed by the superstructure and the cover plate; and
- a plurality of antenna elements electrically connecting to the cavities formed by the superstructure and the cover plate; wherein the web portions and base portions cooperate to form at least a portion of the cavity style filters while also cooperating to provide the primary structural support for the array.

5,781,163

LOW PROFILE HEMISPHERICAL LENS ANTENNA ARRAY ON A GROUND PLANE

Leon J. Ricardi, El Segundo, and Francis W. Cipolla, Newbury Park, both of Calif., assignors to Datron/Transco, Inc., Simi Valley, Calif.

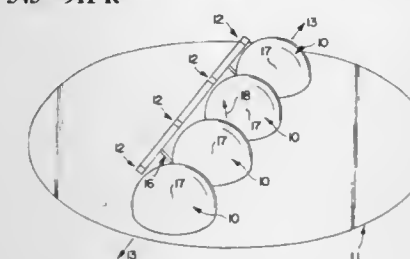
Continuation-in-part of Ser. No. 700,231, Aug. 20, 1996. This

application Dec. 6, 1996, Ser. No. 761,284

Int. Cl.⁶ H01Q 15/08

U.S. Cl. 343—911 R

12 Claims



1. An antenna comprising,
 - a ground plane having an upper surface,
 - a plurality of hemispherical lenses forming an array, each hemispherical lens having a flat side coincident with the center of the hemisphere, said flat side of each hemispherical lens being substantially adjacent to the upper surface of the ground plane,
 - a plurality of point sources, each hemispherical lens having one of the point sources located outside of the hemispherical lens and in proximity to the hemispherical surface of the lens, each point source being affixed in a hinging manner about an axis located at the center of its proximate hemispherical lens, and having the same spacial positioning relative to its proximate hemispherical lens as all of the other points sources have with respect to their respective proximate hemispherical lenses, said hinging axis being parallel to and approximately coincident with the upper surface of the ground plane.

5,781,165

IMAGE DISPLAY APPARATUS OF HEAD MOUNTED TYPE

Seiichiro Tabata, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 242,605, May 13, 1994, Pat. No.

5,579,026. This application Apr. 19, 1996, Ser. No. 635,193

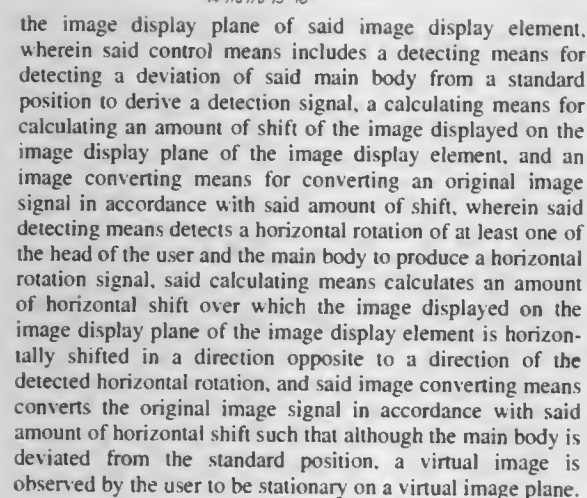
Claims priority, application Japan, May 14, 1993, 5-133155; Apr. 27, 1994, 6-089723

Int. Cl.⁶ G09G 5/00

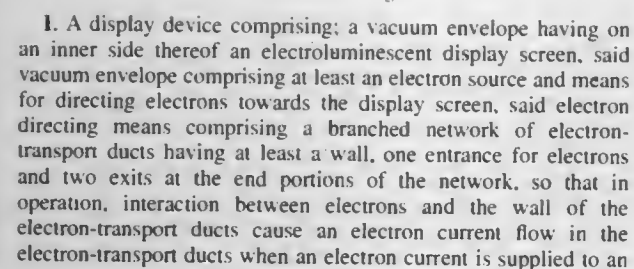
U.S. Cl. 345—8

10 Claims

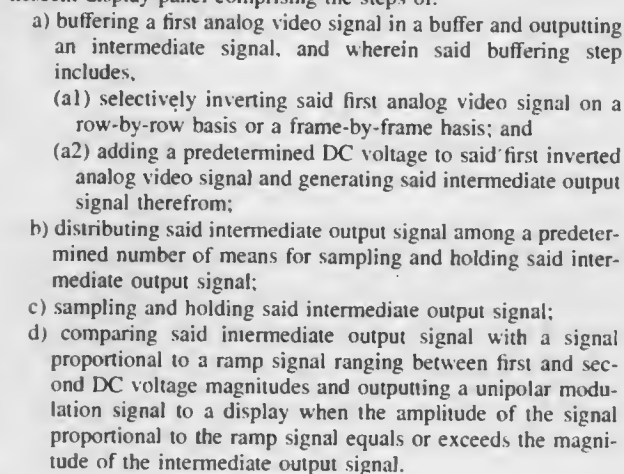
1. An image display apparatus of head mounted display type, comprising:
 - (a) an image display element displaying an image on an image display plane,
 - (b) an optical system for introducing said image displayed on said image display plane of the image display element into an eye of a user,
 - (c) a main body for being placed on a head of the user and supporting said image display element and said optical system, and
 - (d) a control means for controlling said image display element to form an image display area and an image non-display area on



22 Claims

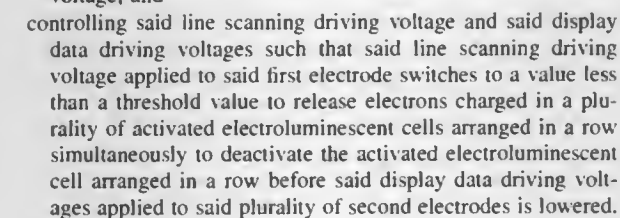


10 Claims

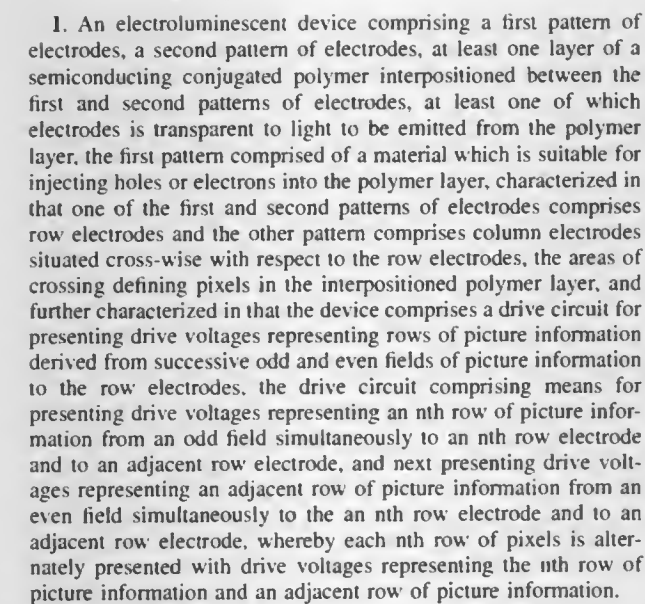


11 Claims

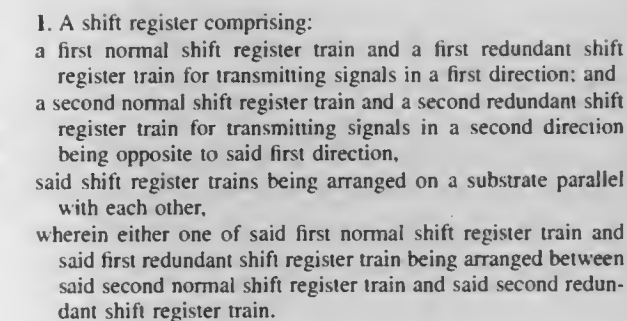
applying display data driving voltages to a plurality of second electrodes in said array of second electrodes to activate said



U.S. Cl. 345—82

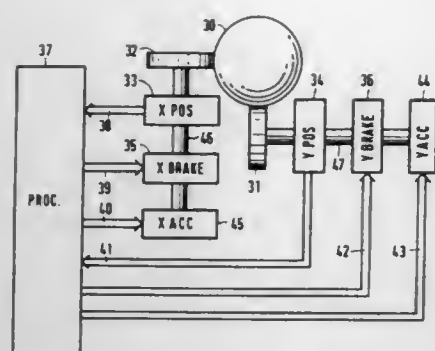


6 Claims



U.S. Cl. 345—164

a housing including a physical member having at least one axis and rotationally manipulatable in at least a first direction and a second direction opposite the first direction about the at least one axis;



sensing means responsive to a position of the physical member for transmitting the position signal to a data processing apparatus; and
control means responsive to a control signal generated by a data processing apparatus for applying a braking force and an accelerating force to the physical member in at least one of the first direction and the second direction.

5,781,173

Patent Not Issued For This Number

5,781,174

IMAGE SYNTHESIZER AND IMAGE POINTING SYSTEM

Masaru Uya, and Takuya Sayama, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 91,250, Jul. 14, 1993, abandoned.

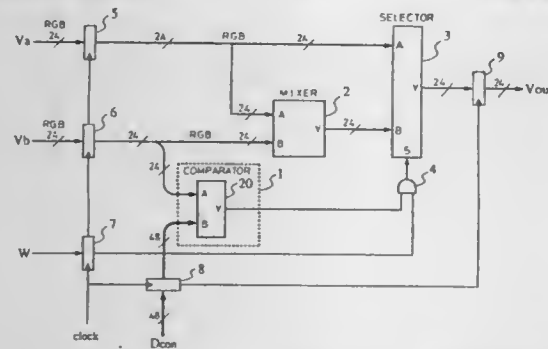
This application Jun. 5, 1996, Ser. No. 658,397

Claims priority, application Japan, Jul. 14, 1992, 4-186491

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345-113

10 Claims



1. An image synthesizer for obtaining pixel data of an image as a result of synthesis of a first image and a second image in synchronization with a clock signal, said image synthesizer comprising:

- a mixing circuit for assigning a weight to pixel data of the first image as well as to pixel data of the second image, each pixel data being fed in synchronization with a clock signal, multiplying each pixel data by its weight assigned, summing the results, and outputting resulting pixel data, said weight being greater than 0 and less than 1;
- condition detecting means for sending out a coincidence signal when a match is found between pixel data of the second image and a requirement defined by given condition data, said condition data defining an allowable color range for each color of the pixel data of said second image, and
- a data selector for performing a selective outputting function of outputting pixel data output from said mixing circuit when

said condition detecting means sends out a coincidence signal, or of outputting otherwise pixel data of the first image.

5,781,175

IMAGE SEARCH APPARATUS

Hiroyuki Hara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

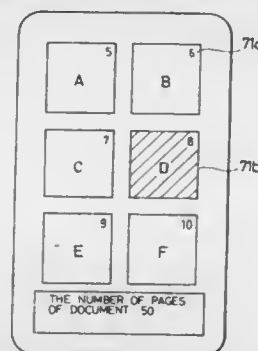
Continuation of Ser. No. 247,414, May 23, 1994, abandoned, which is a continuation of Ser. No. 747,472, Aug. 13, 1991, abandoned, which is a continuation of Ser. No. 355,116, May 18, 1989, abandoned, which is a continuation of Ser. No. 38,239, Apr. 14, 1987, abandoned. This application Aug. 22, 1996, Ser. No. 701,455

Claims priority, application Japan, Apr. 21, 1986, 61-91671; Apr. 21, 1986, 61-91672; Apr. 21, 1986, 61-91673

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345-127

19 Claims



1. An image retrieval apparatus for retrieving a desired image from a storage medium which stores a plurality of document files each comprising plural pages of images, comprising:

display means for simultaneously displaying respectively index images of the plurality of document files, the index image of each document file being a part or a reduced image of the image of each page of each document file;

input means for inputting one of a paging-back instructions for changing the displayed index image of one of the plurality of document files to the index images of the previous pages of the same document file and a paging-forward instruction for changing the displayed index image of the one of the plurality of document files to the index images of the next pages of the same document file; and

control means for selectively changing the displayed index image of the one of the plurality of document files to the index image of the previous or next page of the same document file according to the paging-back instruction or the paging-forward instruction inputted by said input means, while maintaining the displayed index images of the other document files.

5,781,176

IMAGE QUALITY IMPROVEMENT ON RASTER DISPLAY

William J. J. Rey, and Maarten Vertregt, both of Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Apr. 30, 1996, Ser. No. 643,069

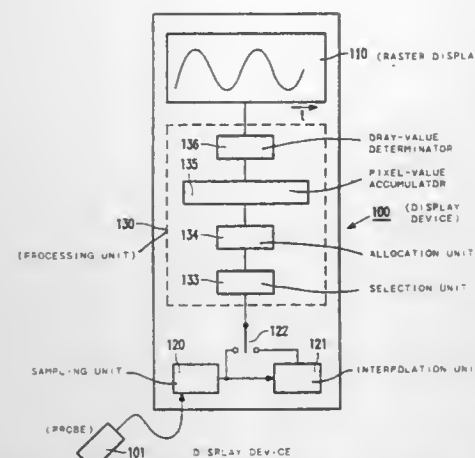
Claims priority, application European Pat. Off., May 23, 1995, 95201342

Int. Cl.⁶ G09G 1/28

U.S. Cl. 345-147

11 Claims

1. Method for displaying on a raster display a plurality of points, each described by a pair of coordinates, said raster display comprising a pixel-matrix of a number of rows and a number of columns, in which method for each pixel a respective grey-value is determined that is derived from the position of the points relative



to the pixel, characterised in that the array is displayed on such a scale that several points may fall within the same pixel;

that for each pixel a pixel-value is calculated from contributions of the points by first determining on basis of the coordinates of each point a sub-set of the pixels and subsequently adding an amount to the pixel-value of one or more pixels from said sub-set in accordance with a stochastic procedure;

and that the respective grey-values are derived from the calculated pixel-values.

5,781,177

COMBINED HIGH-SPEED AND LOW-SPEED INFRARED TRANSCEIVER ON COMPUTER DISPLAY PANEL HOUSING

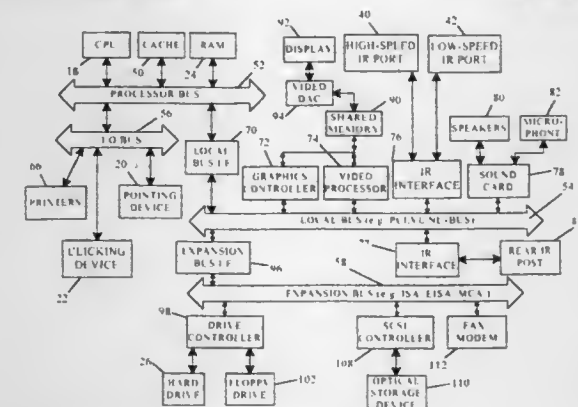
Jacques H. Helot; Michael D. Derocher, both of Corvallis; Dennis R. Esterberg, Philomath, and Peter J. Wyatt, Portland, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 29, 1996, Ser. No. 739,335

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345-156

20 Claims



1. A portable computing apparatus, comprising:
a system unit having a processing unit;

a display unit attached to the system unit, the display unit comprising a display housing and a display panel, the display unit folding relative to the system unit between an open position for viewing the display panel and a closed position at which the display panel is blocked from viewing and covers a portion of the system unit, wherein the display panel defines a viewing plane;

a first infrared transceiving port positioned at the display unit and operable at a first throughput rate; and
a second infrared sensing port positioned at the display unit and operable at a second throughput rate less than the first throughput rate.

5,781,178

WIRELESS REMOTE INPUT FOR ELECTRONIC EQUIPMENT

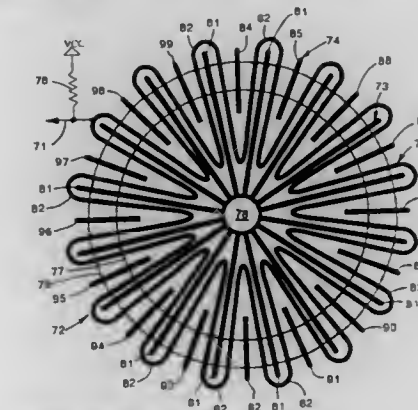
Steven Phillip Roehm, Waukesha; Alan Dean Blomeyer, Milwaukee; Brian Eugene Fischer, Muskego, and Jeffrey Alan Kautzer, Waukesha, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Jan. 3, 1996, Ser. No. 582,247

Int. Cl.⁶ G09G 5/08; G06F 3/033

U.S. Cl. 345-157

13 Claims



1. A computer input device comprising:
a substrate having a surface;
a first electrically conductive pattern formed by a plurality of first conductive elements positioned on the surface around a closed figure;
a second electrically conductive pattern on the surface and having a plurality of second conductive elements with each second conductive element positioned between two first conductive elements;
a third electrically conductive pattern on the surface of the substrate and formed by a plurality of third conductive elements each of which is positioned between one of the first conductive elements and one of the second conductive elements; and
a contact member having an electrically conductive surface which when manually operated by a user selectively connects one or more of the first conductive elements to one or more of the second conductive elements and to one or more of the third conductive elements.

5,781,179

MULTIMODAL INFORMATION INPUTTING METHOD AND APPARATUS FOR EMBODYING THE SAME

Hideharu Nakajima, and Tsuneaki Kato, both of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corp., Tokyo, Japan

Filed Sep. 5, 1996, Ser. No. 711,694

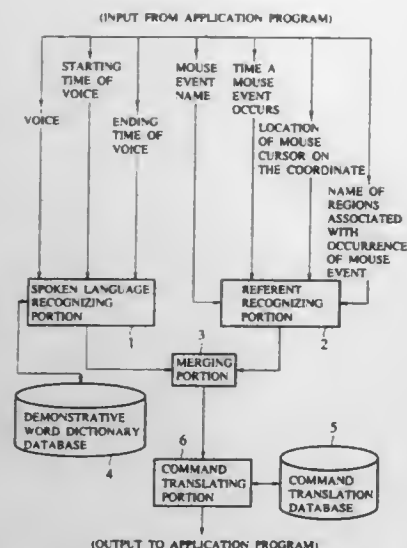
Claims priority, application Japan, Sep. 8, 1995, 7-231667

Int. Cl.⁶ G09G 5/08

U.S. Cl. 345-157

9 Claims

1. A multimodal information inputting apparatus comprising:
display means;
object-voice correspondence acquiring means for recognizing a pointed object based on both a movement of a cursor on said display means depending upon operation of said pointing device and a voice produced in parallel to said operation when a pointing device is operated to select objects being displayed on said display means; and
command generating means for generating a command for an application program based on correspondence information between said object and said voice obtained by said object-voice correspondence acquiring means, wherein said object-voice correspondence acquiring means includes:
spoken language recognizing means for recognizing a language included in said voice based on voice information



associated with said voice produced and recognizing a starting time and an ending time of said language; reference recognizing means for recognizing objects as referent candidates for said voice containing a demonstrative word based on operation information associated with operation of said pointing device; and merging means for retrieving an object corresponding to said voice containing said demonstrative word from said referent candidates, and merging information associated with said object with information associated with said voice corresponding to said object, and wherein said referent recognizing means selects said object as said referent candidate for said voice containing said demonstrative word if a moving speed of a cursor in a region of said object has a local minimum value which is less than a predetermined speed.

5,781,180

CONVERTIBLE PERIPHERAL DEVICE

Johnny D. Couch, Redwood City; Sarah Mason Richmond, Foster City; Ira L. Velinsky, Saratoga, all of Calif.; Steven Kevin Guerrero, Millford, Mass.; Gregory Hunter, Westwood, Mass.; John Gundlach, Rowley, Mass., and Masanori Kudou, Kawasaki, Japan, assignors to Sega of America, Inc., Redwood City, Calif.

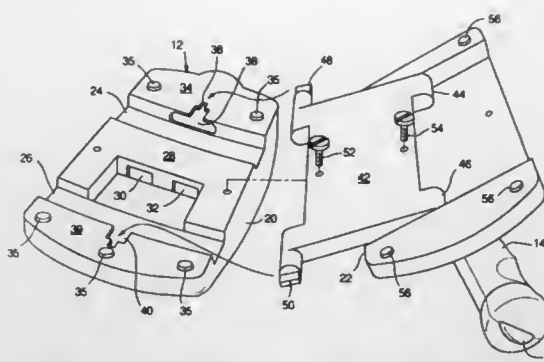
Continuation of Ser. No. 455,055, May 31, 1995, abandoned, which is a continuation-in-part of Ser. No. 36,218, Mar. 15, 1995, Pat. No. Des. 376,392, and a continuation-in-part of Ser. No. 36,221, Mar. 15, 1995, Pat. No. Des. 378,931, and a continuation-in-part of Ser. No. 36,205, Mar. 15, 1995, Pat. No. Des. 378,768, and a continuation-in-part of Ser. No. 36,220, Mar. 15, 1995, Pat. No. Des. 369,835, and a continuation-in-part of Ser. No. 36,219, Mar. 15, 1995, Pat. No. Des. 370,941. This application Nov. 14, 1996, Ser. No. 749,080

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345—161

18 Claims

1. A convertible peripheral input device which comprises:
 - a) a control pad with an upper and lower surface and left and right edges having at least one aperture in the lower surface;
 - b) a multiaxis input device with an upper and a lower surface and with at least one aperture in the lower surface;
 - c) a hinge member with a first protrusion adapted for insertion into the control pad aperture and a second protrusion adapted for insertion into the multiaxis input device aperture; wherein the hinge member is selectively and rotatably disposed between the control pad and the multiaxis input device such



that the multiaxis input device can be rotated from a position adjacent the control pad right edge to a position adjacent the control pad left edge.

5,781,181

APPARATUS AND METHOD FOR CHANGING AN OPERATION MODE OF A COORDINATE INPUT APPARATUS

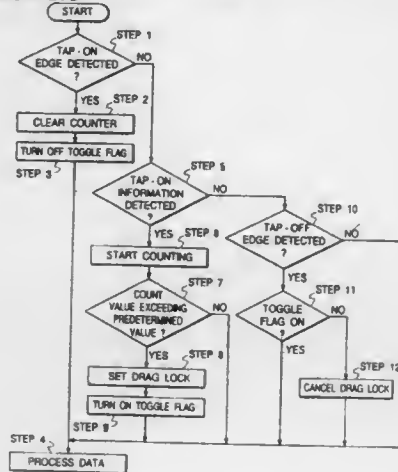
Akira Yanai, Osamu Hara, and Tsuyoshi Ogura, all of Fukushima-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1996, Ser. No. 682,057

Claims priority, application Japan, Jul. 25, 1995, 7-189368 Int. Cl.⁶ G08C 21/00

U.S. Cl. 345—173

5 Claims



2. A method for changing an operation mode of a coordinate input apparatus including a sensor substrate having a surface, the method comprising:

generating a detection signal in response to contact between a coordinate designator and the surface of the sensor substrate; extracting tap component data and slide component data from the detection signal, the tap component data indicating contact of the coordinate designator on the surface of the sensor substrate, and the slide component data indicating movement of the coordinate designator along the surface of the sensor substrate; measuring time periods during which the tap component data indicates continuous contact between the coordinate designator and the surface of the sensor substrate; changing an operation mode of the coordinate input apparatus to a first state only after first tap component data having a relatively short time period is measured and, subsequently, second tap component data having a relatively long time period is measured; and changing the operation mode of the coordinate input apparatus to a second state only after relatively long time period of the second tap component data is greater than a predetermined period of time.

5,781,182

LINE BUFFER APPARATUS WITH AN EXTENDIBLE COMMAND

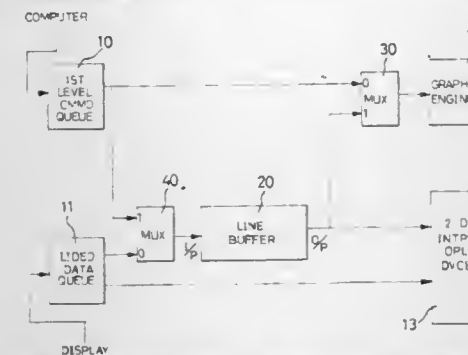
Hsiung-hao Liu, Hsinchu Hsien, and Ching-bao Hsu, Hsinchu, both of Taiwan, assignors to Winbond Electronics Corp., Taiwan, Taiwan

Filed Nov. 19, 1996, Ser. No. 752,292

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345—196

16 Claims



1. A line buffer apparatus with an extendible command queue length, comprising:
 - a first level command queue for receiving commands from a computer;
 - a line buffer for temporarily receiving video data or a command queue, the line buffer including a data input port and a data output port;
 - a first multiplexer and a second multiplexer respectively connected to the data input port and the data output port of the line buffer for operatively enabling the line buffer to receive command data coming from a first level command queue or video data coming from a memory, and to output data into a graphic engine or a two dimensional operating device;
 - a controller for controlling the two multiplexers to selectively connect the line buffer between the first level command queue and the graphic engine so as to treat the line buffer as a second level command queue, when the line buffer does not temporarily store video, thereby flexibly extending the command queue length of an video window accelerator.

5,781,183

IMAGE PROCESSING APPARATUS INCLUDING SELECTING FUNCTION FOR DISPLAYED COLORS

Mitsuhiro Takahashi, and Syuichi Tahata, both of Hokkaido, Japan, assignors to Hudson Soft Co., Ltd., Hokkaido, Japan Continuation of Ser. No. 450,187, May 25, 1995, abandoned, which is a division of Ser. No. 112,089, Aug. 26, 1993, abandoned. This application May 16, 1997, Ser. No. 857,717

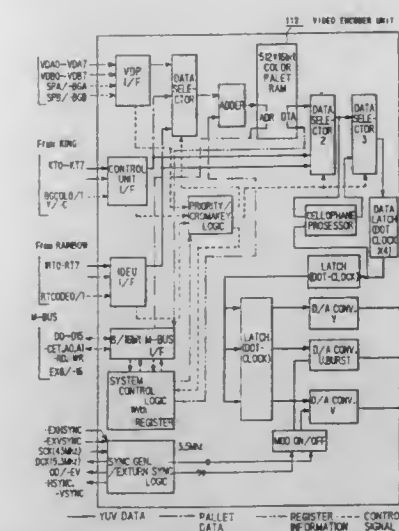
Claims priority, application Japan, Oct. 1, 1992, 4-284977; Oct. 14, 1992, 4-300670

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345—199

2 Claims

1. An image processing apparatus comprising:
 - means for storing four types of image pictures which are sprite pictures, background pictures, natural background pictures, and moving pictures, each type of said image pictures having its own offset address;
 - a color pallet table for storing preselected colors;
 - means for storing YUV data composed of brightness data and color difference data;
 - means for calculating a color pallet address for each type of said image pictures in accordance with said offset address thereof and defining colors of said image pictures based on said color pallet table and the calculated address when the number of colors of said image pictures is less than the number of said preselected colors;
 - means for defining colors of said image pictures by said YUV data when the number of colors of said image pictures is greater than the number of said preselected colors; and



displaying means for displaying said image pictures with the defined colors.

5,781,184

REAL TIME DECOMPRESSION AND POST-DECOMPRESSION MANIPULATION OF COMPRESSED FULL MOTION VIDEO

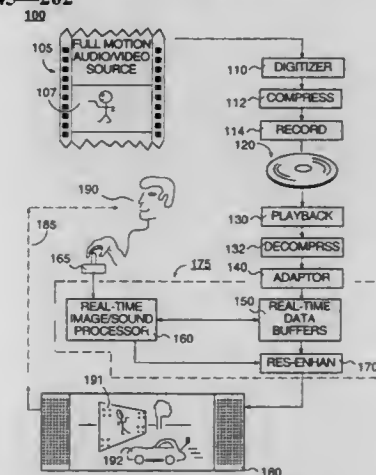
Steve C. Wasserman, 10455 N. Blaney Ave., Cupertino, Calif. 95014; Gregory G. Williams, 552 Everett Ave., #5, Palo Alto, Calif. 94301; Timothy P. Bucher, 744 Peach Ave., Sunnyvale, Calif. 94087; Curtis Pansegrau, 297 Leslie Ct., #1, Mountain View, Calif. 94043; Philippe M. Cassareau, 945 Shoreline Dr., San Mateo, Calif. 94404, and Gregory K. Wallace, 3121 Cowper St., Palo Alto, Calif. 94306

Filed Sep. 23, 1994, Ser. No. 311,192

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345—202

73 Claims



1. A full motion video system comprising:
 - (a) decompressor means for decompressing a supplied pre-compressed digital representation of a moving image portion of a full motion picture, where the decompressor means outputs in real time, a decompressed first video signal having a first format, the decompressed first video signal being representative of at least a first moving image portion of the full motion picture; and
 - (b) real-time processor means for receiving and digitally processing in real time, the first video signal or another video signal derived from the first video signal, said digital processing producing a transformed video signal representative of a transformed second moving image portion derived from the first moving image portion;wherein said real-time processor means includes:

(b.1) geometry transform means for geometrically transforming in real time the first moving image portion as represented by the decompressed first video signal or a derivative thereof to produce therefrom a geometrically transformed signal representative of the geometrically transformed first moving image portion.

5,781,185

DISPLAY DEVICE CAPABLE OF MODE DETECTION AND AUTOMATIC CENTERING

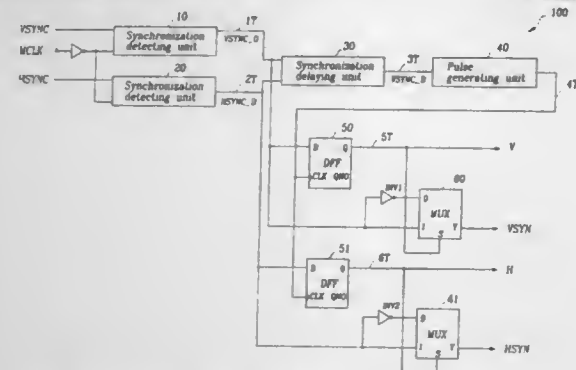
Hyeog-sang Shin, Kyonggi-do, Rep. of Korea, assignor to Samsung Electronics, Co., Ltd., Kyonggi-do, Rep. of Korea
Filed May 17, 1996, Ser. No. 649,444

Claims priority, application Rep. of Korea, May 17, 1995, 1995-12244

Int. Cl.⁶ G09G 3/00

U.S. Cl. 345—213

4 Claims



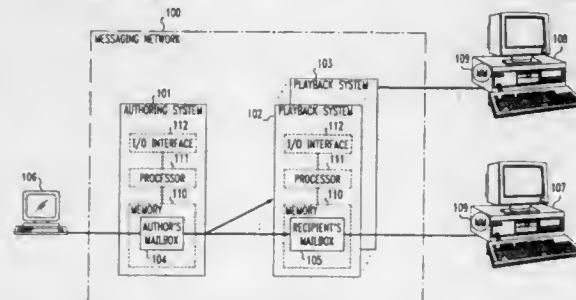
1. A display device control circuit comprising:
 - a vertical synchronization delaying unit which receives a vertical synchronization signal and a horizontal synchronization signal and outputs a delayed vertical synchronization signal;
 - a pulse generating unit which receives said delayed vertical synchronization signal and generates a pulse a predetermined number of clock periods after receiving said vertical synchronization signal;
 - first and second detecting units which each receive at a clock input said pulse and respectively receive said vertical and horizontal synchronization signals and respectively output vertical and horizontal detected signals which indicate a polarity of said respective vertical and horizontal synchronization signals at a time corresponding to generation of said pulse, said polarity of said vertical and horizontal detected signals indicating one display mode from a potential plurality of display modes and usable to perform automatic centering of data associated with said vertical and horizontal synchronization signals;
 - a first multiplexer which receives said vertical detected signal at a selector input, said vertical synchronization signal and an inverted vertical synchronization signal, said vertical detected signal being used to select for output as an output vertical synchronization signal one of said vertical synchronization signal and said inverted vertical synchronization signal so that said output vertical synchronization signal will always have the same polarity regardless of said display mode; and
 - a second multiplexer which receives said horizontal detected signal at a selector input, said horizontal synchronization signal and an inverted horizontal synchronization signal, said horizontal detected signal being used to select for output as an output horizontal synchronization signal one of said horizontal synchronization signal and said inverted horizontal synchronization signal so that said output horizontal synchronization signal will always have the same polarity regardless of said display mode.

ARRANGEMENT FOR SPECIFYING PRESENTATION OF MULTIMEDIA MESSAGE COMPONENTS

Terry Don Jennings, Westminster, Colo., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Feb. 2, 1996, Ser. No. 590,031
Int. Cl.⁶ G06T 1/00

U.S. Cl. 345—302

17 Claims



1. A messaging apparatus comprising:
 - means for storing a message comprising a header component that describes the message, a plurality of body components each carrying a portion of message information carried by the message, and a plurality of different presentation components separate from the header component and the body components, each defining an order and any concurrency of presentation of the body components to a message recipient; and
 - means responsive to invocation of an individual one of the presentation components, for presenting the body components to the message recipient in the order and with any said concurrency defined by the one presentation component.

INTERRUPT TRANSMISSION VIA SPECIALIZED BUS CYCLE WITHIN A SYMMETRICAL MULTIPROCESSING SYSTEM

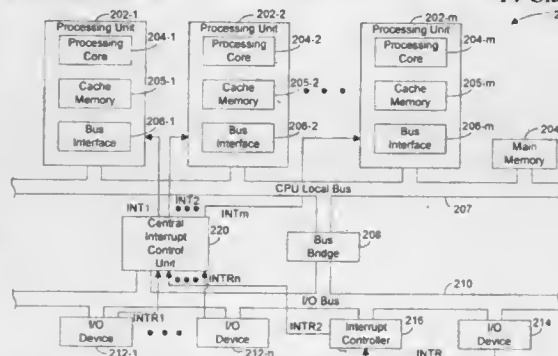
Douglas Gephardt, and Rupaka Mahalingaiah, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 683,801, Jul. 18, 1996, abandoned, which is a continuation of Ser. No. 252,281, May 31, 1994, abandoned. This application Feb. 3, 1997, Ser. No. 794,526

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—308

14 Claims



1. A multiprocessing computer system, comprising:
 - a plurality of processing units coupled to a first bus;
 - first and second I/O devices coupled to a second bus;
 - a bus bridge coupling said first bus to said second bus and configured to selectively write data to said first and second I/O devices by executing I/O write cycles on a set of lines of said second bus; and
 - an interrupt controller coupled to said second bus and configured to process a first interrupt request signal received from said first I/O device coupled to said second bus, said interrupt request signal being conveyed on a dedicated interrupt signal line;

wherein said interrupt controller is further configured to receive a second interrupt request signal from said second I/O device, wherein said second interrupt request signal is conveyed as a predetermined encoded interrupt cycle driven upon said set of lines of said second bus.

5,781,188

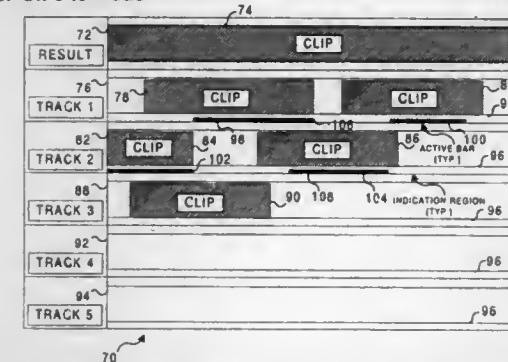
INDICATING ACTIVENESS OF CLIPS AND APPLYING EFFECTS TO CLIPS AND TRACKS IN A TIMELINE OF A MULTIMEDIA WORK

Luc R. Amiot, Boisbriand; Jacques Y. Deveau, Montreal; Michael C. Sheasby, London; Peter H. Ibrahim; Raymond Hill, both of Montreal, all of Canada, and Darryl M. Lewis, Bellevue, Wash., assignors to Softimage, Montreal, Canada
Filed Jun. 27, 1996, Ser. No. 673,223

Int. Cl.⁶ G06F 3/00

U.S. Cl. 345—328

46 Claims



1. A method for indicating activeness of a clip to a user who is composing and/or editing a multimedia work that includes a plurality of clips, comprising the steps of:
 - (a) displaying a timeline for at least a portion of the multimedia work, said timeline graphically representing the portion of the multimedia work and graphically illustrating a plurality of tracks for a time interval corresponding to that represented by the timeline;
 - (b) enabling the user to select a clip as active, indicating that said clip is to contribute to an output comprising the multimedia work; and
 - (c) marking the clip selected by the user as active with a visual indicator, so that by inspection of the visual indicator and a position of the clip on one of the plurality of tracks, the user can determine a time during which the clip contributes to a content of the multimedia work.

5,781,189

EMBEDDING INTERNET BROWSER/BUTTONS WITHIN COMPONENTS OF A NETWORK COMPONENT SYSTEM

Patrick A. Holleran, Santa Cruz; John S. Evans, Mountain View; Michael A. Cleron; Stephen Fisher, both of Menlo Park, and Timo Bruck, Mountain View, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

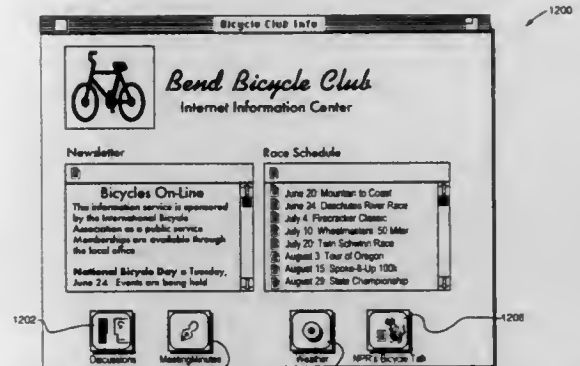
Filed May 5, 1995, Ser. No. 435,671

Int. Cl.⁶ G06F 15/00

U.S. Cl. 345—335

20 Claims

1. A method for developing a customized user interface of a computer that displays information obtained from a resource of a computer network on a display screen, the display screen having associated therewith a pointing device, the method comprising the steps of:
 - generating a document for display on the screen;
 - associating a visual object with a network entity component configured to reference the resource of the computer network;
 - embedding the network entity component within the document by dragging and dropping the visual object onto the document with the pointing device; and



clicking on the visual object with the pointing device to display the information from the resource on the screen.

5,781,190

METHOD AND SYSTEM FOR TRANSFERRING A SLIDE PRESENTATION BETWEEN COMPUTERS

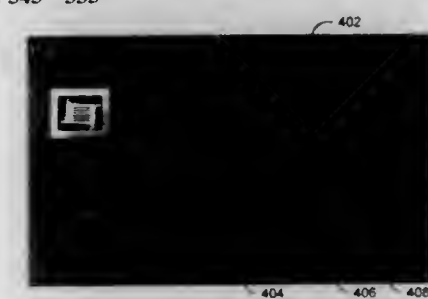
David P. H. Gorbet, San Francisco; Rosanna H. Ho, Foster City, and Imran I. Qureshi, Mountain View, all of Calif., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 5, 1996, Ser. No. 655,228

Int. Cl.⁶ G06F 3/00

U.S. Cl. 345—335

47 Claims



47. A method for transferring a slide presentation from a source computer to a destination computer by a presentation transport system in a data processing system, the method comprising:
 - receiving an indication from a user to transfer the slide presentation at the source computer, the slide presentation containing a link to linked data in an external source;
 - in response to receiving the indication and under the control of the presentation transport system,
 - identifying the external source by examining the link in the slide presentation at the source computer; and
 - transferring the slide presentation, the external source, a viewer, and an unpack program from the source computer to the destination computer, the unpack program for readying the slide presentation for use on the destination computer, the viewer for displaying the slide presentation;
 - invoking the unpack program by the user at the destination computer; and
 - under the control of the unpack program at the destination computer,
 - installing the viewer so as to render the viewer operational; and
 - automatically invoking the viewer to display the slide presentation such that the linked data of the external source is accessible via the link.

5,781,191

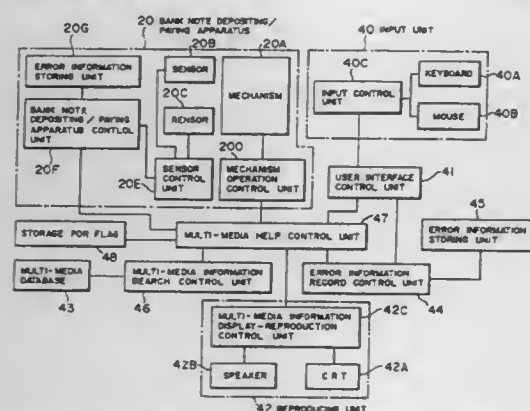
METHOD AND APPARATUS FOR REPRODUCING OPERATION GUIDANCE INFORMATION, AND METHOD AND APPARATUS FOR REPRODUCING MULTI-MEDIA INFORMATION

Tatsuya Mayuzumi; Shinji Kurihara; Syuichi Matsuda; Noriaki Negishi, and Tadashi Yoshida, all of Maebashi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jul. 28, 1995, Ser. No. 508,109

Claims priority, application Japan, Nov. 7, 1994, 6-272743
Int. Cl.⁶ G06F 17/00

U.S. Cl. 345—336

13 Claims



1. An operation guidance information reproducing method when an event requiring measures to be taken by an operator occurs in an object apparatus, comprising the steps of:

- storing in advance in a database measures information parts, which are obtained by deassembling operation guidance information for the measures to be taken by the operator into parts, each of which is a minimum unit of the measures which may be taken for said object apparatus by the operator
- reading the measures information parts from the database depending on the event;
- determining an order for reproducing the measures information parts to avoid duplicates of the measures information parts, depending on the event; and
- successively reproducing the measures information parts in said order of reproduction, notifying the operator of the operation guidance information depending on the event.

5,781,192

DATA TRANSFER SYSTEM

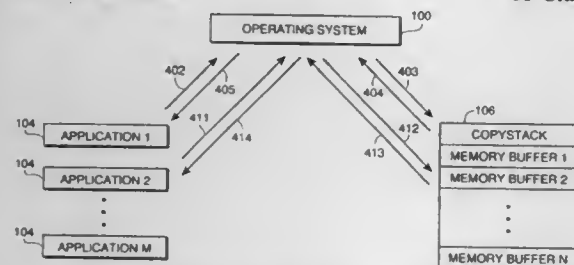
Marianne L. Kodimer, Anaheim, Calif., assignor to Canon Information Systems, Inc., Irvine, Calif.

Filed Jan. 16, 1996, Ser. No. 586,092

Int. Cl.⁶ G06F 3/00

U.S. Cl. 345—340

81 Claims



1. A computer implemented method for storing data from an instance of an application program into at least one of multiple memory buffers, comprising the steps of:

- bringing said instance of said application program into focus;
- selecting data in said instance of said application program;
- while said instance of said application program is in focus, selecting a store operation;
- while said instance of said application program is still in focus, selecting one of the memory buffers; and

automatically storing the selected data into the selected one of the memory buffers.

5,781,193

GRAPHICAL INTERFACE METHOD, APPARATUS AND APPLICATION FOR CREATING MULTIPLE VALUE LIST FROM SUPERSET LIST

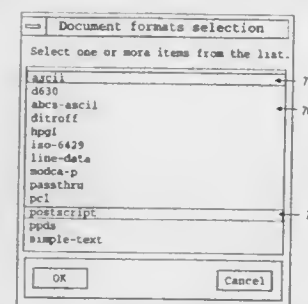
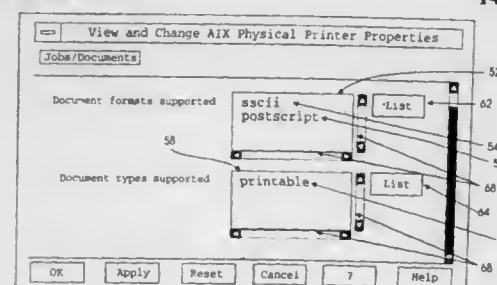
Claudia C. Alimpich; Joan Stagaman Goddard, both of Boulder, Colo.; Minh Trong Vo, Mountain View, Calif.; James Philip Wittig, Boulder, and Rachel Youngman Yang, Superior, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 14, 1996, Ser. No. 696,761

Int. Cl.⁶ G06F 3/14

U.S. Cl. 345—352

14 Claims



8. A method for creating a subset list from a superset list as controlled by a computer system having at least a visual operator interface, an operating system for controlling the operation of applications within the computer system, and memory for storing at least part of an application therein, the method comprising the steps of:

- selecting one or more entries on the superset list to be included on the subset list;
- presenting the superset list in a superset list window and the subset list in a separate subset list window, wherein each subset list entry in the subset list window is entered on a separate line with the entries forming a vertical column;
- viewing the superset list from the subset list window by selecting a pushbutton that brings up the superset list window;
- indicating in the superset list window which entries have been selected for the subset list; and
- retaining the selection indications in the superset list window even when the superset list window is closed and then re-opened.

5,781,194

REAL-TIME PROJECTION OF VOXEL-BASED OBJECT

Roman E. Ponomarev; Dmitry Y. Tolstov, and Denis A. Trofimov, all of Moscow, Russian Federation, assignors to AnimaTek International, Inc., San Mateo, Calif.

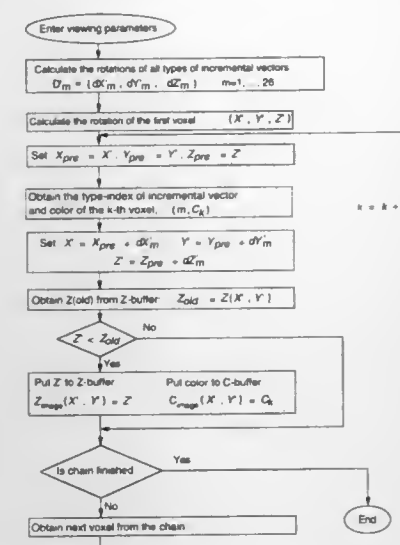
Filed Aug. 29, 1996, Ser. No. 705,401

Int. Cl.⁶ G06T 17/00

U.S. Cl. 345—424

5 Claims

1. A computer implemented method of rendering a 3-D voxel-based object from a voxel chain representation of the object stored in a computer memory the method comprising:



- a) rotating a set of incremental vectors to obtain a set of rotated incremental vectors;
- b) saving the set of rotated incremental vectors in a lookup table in the computer memory;
- c) calculating coordinates in a camera coordinate system of a first voxel in the voxel chain representation;
- d) calculating coordinates in a camera coordinate system of a second voxel of the voxel chain through the use of one of the rotated incremental vectors; and
- e) displaying a rendered image of the 3-D voxel-based object from the calculated coordinates.

5,781,195

METHOD AND SYSTEM FOR RENDERING TWO-DIMENSIONAL VIEWS OF A THREE-DIMENSIONAL SURFACE

John Marvin, Kirkland, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Apr. 16, 1996, Ser. No. 632,847

Int. Cl.⁶ G06F 15/00

U.S. Cl. 345—428

20 Claims



- 1. A method for rendering a two-dimensional view of a three-dimensional surface, comprising the steps of:
- receiving a user command defining a field of view portion of said three-dimensional surface;
- selecting a sequence of memory blocks comprising a reduced-detail three-dimensional surface corresponding to said field of view, each said memory block comprising a group of spatially-contiguous pixels of said reduced-detail three-dimensional surface, said sequence of memory blocks comprising a spatially-contiguous section of said reduced-detail three-dimensional surface;
- retrieving said section from sequentially-addressed locations within a mass-storage computer memory;
- computing a two-dimensional projection of said section; and

displaying said two-dimensional projection of said section on a display device.

5,781,196

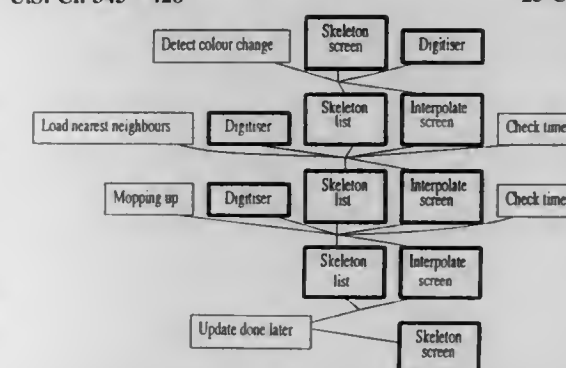
VIDEO COMPRESSION BY EXTRACTING PIXEL CHANGES EXCEEDING THRESHOLDS

Stephen B. Streater, London, United Kingdom, assignor to Eidos PLC of the Boat House, Middlesex, United Kingdom
Continuation of Ser. No. 591,396, Jan. 25, 1996, abandoned, which is a continuation of Ser. No. 39,342, Apr. 16, 1993, abandoned. This application Jan. 3, 1997, Ser. No. 779,150
Claims priority, application United Kingdom, Oct. 19, 1990, 9022761

Int. Cl.⁶ H04N 7/12

U.S. Cl. 345—428

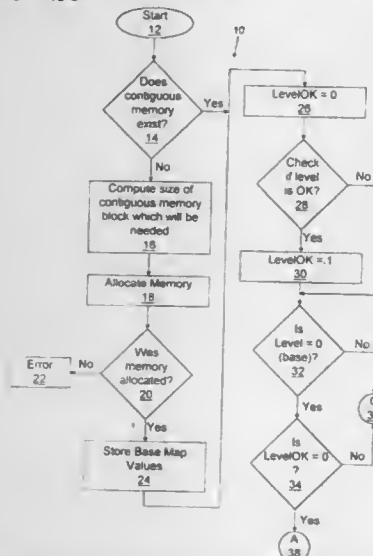
23 Claims



1. A video processing system comprising a video source, at least one microcomputer, a large capacity storage medium for storing video digital data at least representing coloured visual images; at least one conversion means for converting signals from the source into digital signals and means for selecting digital signals from the conversion means and for compressing and converting the selected signals in real time for processing within the microcomputer for storage on the storage medium, wherein the means for compressing and converting the selected digital signals comprises:

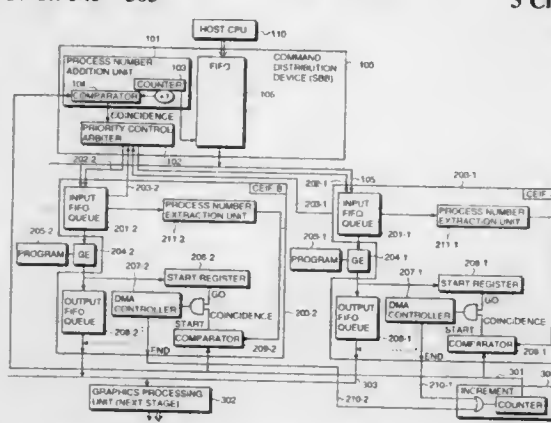
- (a) means for creating first information representing a skeleton screen which is a low-resolution subset of digital signals representing an original colour image composed of pixels present in the conversion means,
- (b) means for comparing second information derived from said first information and representing each pixel of the skeleton screen with that of a corresponding pixel in a frame of a skeleton screen of an original image which immediately precedes a current frame from which the skeleton screen pixel information is derived to detect a change outside a pre-determined range of values,
- (c) means for creating third information representing a list of pixels which are judged to have changed significantly by being outside said pre-determined range of values,
- (d) means for creating from said first, second and third information further information representing an interpolate screen which is a compressed sub-set of digital signals of the original image as the optimum low resolution version of the original image of the current frame,
- (e) means for transferring additional high resolution information pertaining to: first, the pixels adjacent to any pixel judged to have changed significantly and second, pertaining to blocks of pixels neighboring any pixel judged to have changed to supplement the first information representing the skeleton screen in one or more subsequent time periods, and
- (f) means for causing the creating, comparing and transferring means to repeat their operation to ensure the data for storage is an optimum compressed sub-set of the pixels of the original image.

1 Claim



receiving an actual background image;
receiving a current image having a background portion;
generating an image mask representing similarities and differences between said actual background image and said current image; and
generating a new image containing portions of said current image and portions of said replacement background image responsive to said image mask.

U.S. Cl. 345—505

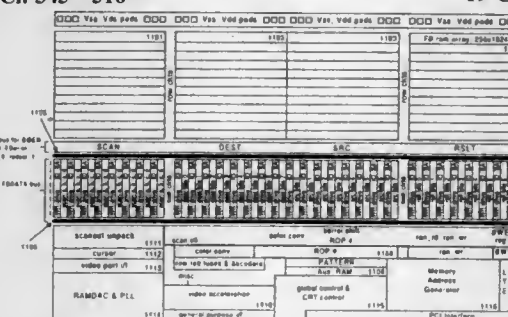


1. A parallel processing method for use with a graphics processor having a plurality of graphics command processors for parallelly processing a plurality of graphics commands from a host processor, said parallel processing method comprising the steps of: distributing a command group made of said plurality of graphics commands via a first first-in-first-out queue to a second first-in-first-out queue corresponding to each of said plurality of graphics command processors arranged in parallel; when said command group is distributed from said first first-in-first-out queue to said second first-in-first-out queues, adding an identical serial number as a command group serial number to each of said plurality of graphics commands constituting said command group to be processed by the command graphics processor corresponding to any second first-in-first-out queue which is found to be free in accordance with free status information about said second first-in-first-out queues; collecting the results of processing of said graphics commands by said graphics command processors into a third first-in-first-out queue corresponding to each of said graphics com-

23 Claims

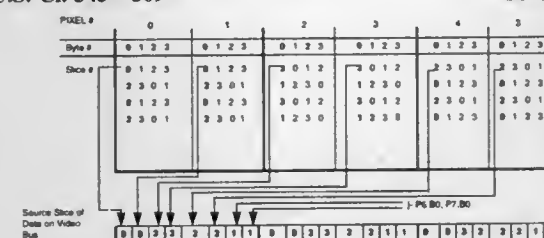
1. A method for replacing a background portion of an image with a replacement background image, said method comprising the steps of:

19 Claims



- a) receiving sequential linear addresses of pixel information, said pixel information representing information for display on a display screen;
- b) translating said linear addresses into physical addresses of a physical address space comprising arrays and rows of physical memory within said dynamic random access memory, wherein a central pixel stored in a given row of a given array has neighboring pixels on said display screen and wherein said step of translating comprises the step of assigning to said neighboring pixels only physical addresses comprising said given row of said given array or physical addresses comprising rows in arrays other than said given array; and
- c) storing said pixel information into said dynamic random access memory using said physical addresses.

U.S. Cl. 345—509



1. A method for improving the performance of a graphics system, said graphics system including a memory for storing an

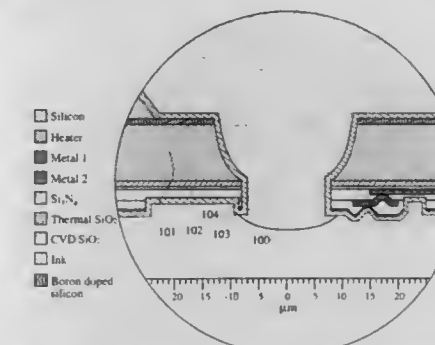
image comprising a plurality of pixels, said pixels comprising a plurality of subsets of bits of data, said memory comprising a plurality of slices, said method comprising the steps of:

storing said pixels in said memory, where a first order of the subsets of successive pixels is rearranged such that corresponding subsets of vertically and horizontally neighboring pixels are stored in different, simultaneously accessible locations of said memory.

Int. Cl.⁶ H04N 1/034

U.S. Cl. 347-3

6 Claims



1. A facsimile machine having a print head comprising:
 - (a) a plurality of drop-emitter nozzles;
 - (b) a body of ink associated with said nozzles;
 - (c) a pressurizing device adapted to subject ink in said body of ink to a pressure of at least 2% above ambient pressure, at least during drop selection and separation to form a meniscus with an air/ink interface;
 - (d) drop selection apparatus operable upon the air/ink interface to select predetermined nozzles and to generate a difference in meniscus position between ink in selected and non-selected nozzles; and
 - (e) drop separation apparatus adapted to cause ink from selected nozzles to separate as drops from the body of ink, while allowing ink to be retained in non-selected nozzles.

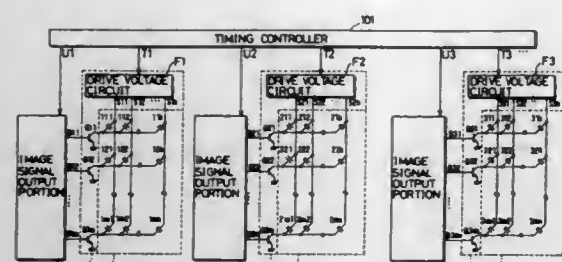
Claims priority, application Japan, Jan. 13, 1995, 7-4073;
Mar. 6, 1995, 7-45792

Int. Cl.⁶ B41J 29/38; 2/045

U.S. Cl. 347-9

19 Claims

8. An ink ejecting device for use in an ink jet printing apparatus comprising:
a number of ejecting elements, each of said ejecting elements having:
an ink chamber with a volume that is changeable;
an ejection nozzle communicating with the ink chamber;
an ink supply hole communicating with the ink chamber; and



a piezoelectric conversion element for changing said volume of said ink chamber;

the piezoelectric conversion elements of the number of ejecting elements being electrically arranged in a matrix having a first number of columns and a second number of rows;

a drive voltage circuit applying a drive voltage to said columns of said piezoelectric conversion elements via charge paths to maintain said piezoelectric conversion elements in a charged state prior to activation and successively interrupting application of said drive voltage to said columns of said piezoelectric conversion elements, one of said columns at a time, during interrupt intervals; and

an imaging driver circuit discharging selected ones of said rows of said piezoelectric conversion elements via discharge paths during said interrupt intervals such that a combination of said imaging driver circuit discharging said selected ones of said rows of said piezoelectric conversion elements and said drive voltage circuit interrupting said application of said drive voltage to said one of said columns of said piezoelectric conversion elements sufficiently discharges common ones of said piezoelectric conversion elements, common to both said selected ones of said row and said one of said columns, to expand corresponding ones of said ink chambers so that after passage of said interrupt intervals said drive voltage circuit recharges said common ones of said piezoelectric conversion elements sufficiently to contract said corresponding ones of said ink chambers to eject ink therefrom.

5,781,204

INK JET APPARATUS WITH SUCTION RECOVERY CONTROLLED ACCORDING TO HEAD TEMPERATURE AND INK DISCHARGE FREQUENCY

Daigoro Kanematsu; Naoki Otsuka; Kentaro Yano, all of Yokohama; Kiichiro Takahashi, and Osamu Iwasaki, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

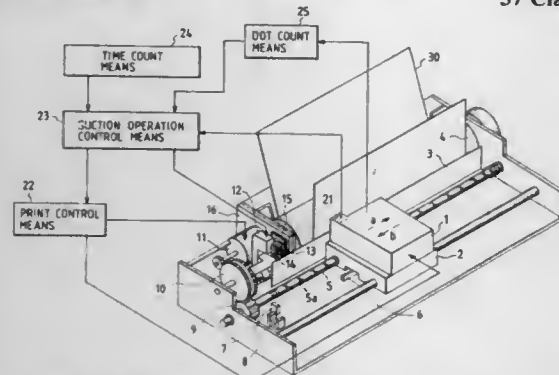
Filed Jul. 28, 1995, Ser. No. 508,677

Claims priority, application Japan, Jul. 29, 1994, 6-179065

Int. Cl.⁶ B41J 29/38; 2/165

U.S. Cl. 347—17

37 Claims



1. An ink jet apparatus having an ink jet head for discharging ink from a discharge port, and recovery means for exhausting the ink from said discharge port and recovering a discharge state of the ink, said apparatus comprising:

temperature detecting means for detecting an ambient temperature of said ink jet head;

temperature obtaining means for obtaining the temperature of said ink jet head;

count means for counting a frequency of discharge of the ink from said ink jet head; and

recovery control means, connected to said temperature detecting means, said temperature obtaining means and said count means, for determining a recovery operation of said recovery means in accordance with the difference between the temperature detected by said temperature detecting means and the temperature obtained by said temperature obtaining means and a frequency of discharge obtained by said count means.

5,781,205

HEATER POWER COMPENSATION FOR TEMPERATURE IN THERMAL PRINTING SYSTEMS

Kia Silverbrook, Leichhardt, Austria, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/US96/05024, § 371 Date Dec. 3, 1996, § 102(e) Date Dec. 3, 1996, PCT Pub. No. WO96/32275, PCT Pub. Date Oct. 17, 1996

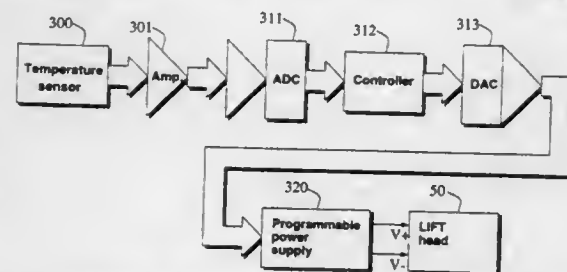
PCT Filed Apr. 9, 1996, Ser. No. 750,433

Claims priority, application Austria, Apr. 12, 1995, PN2314

Int. Cl.⁶ B41J 29/38

U.S. Cl. 347—17

14 Claims



1. In a printing apparatus having a print head with a resistive heater, a print power control system comprising:

a programmable power supply adapted to supply a voltage to said print head heater;

a temperature sensor; and

a voltage calculator coupled to said sensor and to said power supply and adapted (1) to calculate a heater power supply voltage V_H using input information from said sensor and (2) to program said power supply based on such calculations, wherein the heater power supply voltage is calculated according to the equation:

$$V_H = \sqrt{\frac{(T_E - T_A)}{R_H \cdot 1^\circ \text{C.}}} \cdot k$$

where k is a power function which depends upon the specific geometry and materials of the print head, T_E is the temperature required for drop ejection, T_A is the ambient temperature of the head as measured by the temperature sensor, and R_H is the resistance of the heater.

5,781,206

APPARATUS AND METHOD FOR RECALIBRATING A MULTI-COLOR IMAGING SYSTEM

Christopher J. Edge, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

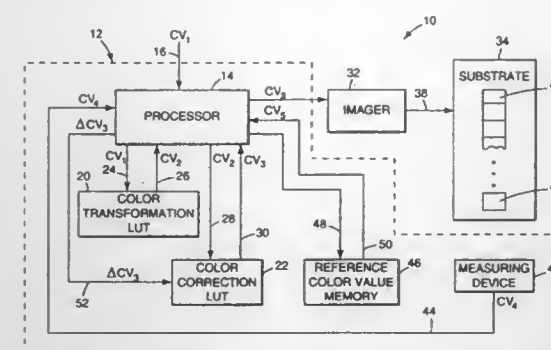
Filed May 1, 1995, Ser. No. 431,614

Int. Cl.⁶ B41J 29/393

U.S. Cl. 347—19

37 Claims

1. A method for recalibrating a multi-color imaging system, said imaging system being capable of applying a plurality of different colorants to a substrate based on a plurality of input color values, wherein said input color values control amounts of said colorants



to be applied to said substrate by said imaging system, the method comprising a plurality of steps including:

- selecting a subset of said plurality of input color values;
- forming a plurality of different color patches on said substrate by applying one or more of said different colorants to said substrate based on said subset of said plurality of input color values, wherein step (a) selects said subset of said plurality of input color values such that one or more of said different color patches is formed by application of a combination of at least two of said different colorants to said substrate;
- measuring a plurality of color values for each of said different color patches formed on said substrate;
- comparing each of the measured color values to a corresponding one of a plurality of reference color values, said reference color values representing a calibrated condition of said imaging system;
- calculating an error value representing a deviation of said measured color values from said reference color values; and
- adjusting one or more of said plurality of input color values to reduce said error value to a predetermined degree, wherein the adjustment of the input color values for one of said colorants is performed independently of the adjustment of the input color values for others of said colorants.

5,781,207

INK JET RECORDING APPARATUS

Koh Hasegawa, and Noriyuki Kikugawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

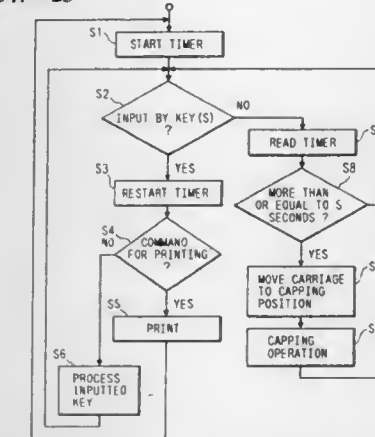
Continuation of Ser. No. 800,766, Feb. 13, 1997, abandoned, which is a continuation of Ser. No. 111,586, Aug. 25, 1993, abandoned, and a continuation of Ser. No. 707,783, May 30, 1991, abandoned. This application Oct. 9, 1997, Ser. No. 948,047

Claims priority, application Japan, Jun. 1, 1990, 2-144609

Int. Cl.⁶ B41J 2/165

U.S. Cl. 347—23

50 Claims



1. An ink jet recording apparatus comprising:
key input means for inputting information;

moving means for moving in a predetermined direction a recording head for discharging ink to record onto a recording medium in accordance with said key input means;
protection means for protecting said recording head;
selection means for selecting between a word processor mode for printing the input information onto the recording medium in response to a print key and a typewriter mode for printing the input information on a basis of every predetermined unit of character of line;

discrimination means for discriminating whether a predetermined period has passed, while measuring a period after input by a key from said key input means, said discrimination means making a discrimination as to a passage of the predetermined period when in the typewriter mode; and
execution means for carrying out protection of said recording head with said protection means based on a discrimination result by said discrimination means.

5,781,208

SEALING MECHANISM FOR AND INK-JET RECORDING HEAD

Seiichiro Karita, Yokohama; Akio Saito, Hadano, and Megumi Saito, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

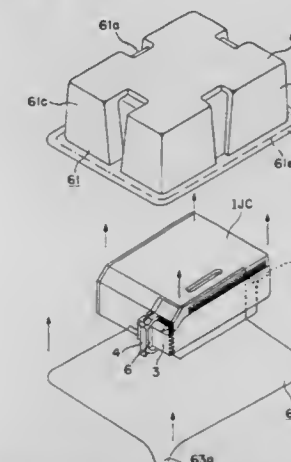
Continuation of Ser. No. 618,087, Mar. 19, 1996, abandoned, which is a continuation of Ser. No. 336,089, Nov. 7, 1994, abandoned, which is a continuation of Ser. No. 953,775, Sep. 30, 1992, abandoned, which is a division of Ser. No. 730,906, Jul. 31, 1991, abandoned. This application Feb. 25, 1997, Ser. No. 805,969

Claims priority, application Japan, Dec. 6, 1989, 1-318078; Nov. 30, 1990, 2-337905

Int. Cl.⁶ B41J 2/165

U.S. Cl. 347—29

4 Claims



1. A sealing mechanism of an ink-jet recording head, said recording head provided with an ink discharging opening portion which communicates with a storage portion for storing an ink and is open to outer air, said sealing mechanism comprising a supporting member provided with an adhesive abutting against said opening portion through said adhesive so as to seal said opening portion, wherein said adhesive consists essentially of an acrylate copolymer obtained by crosslinking an acrylic copolymer with isocyanate, and said acrylic copolymer being obtained by using at least 80 wt % of a total, content of an alkyl acrylate having an OH group and/or an alkoxy alkyl acrylate having an OH group, and an acrylate having a side chain of an alkyl or alkoxy alkyl group having 4 to 9 carbon atoms, wherein said acrylate copolymer is substantially free of any polymer or a residual monomer having a molecular weight of 10,000 or less.

5,781,209

METHOD OF PRODUCING AN INK EJECTING DEVICE

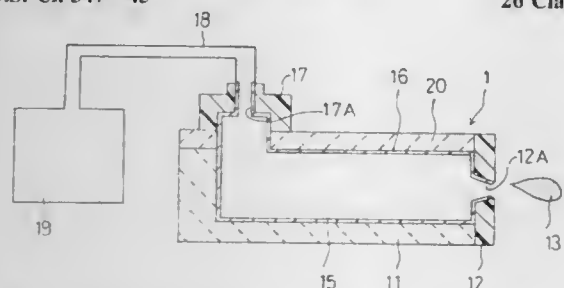
Manabu Yoshimura, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 30, 1995, Ser. No. 521,453

Claims priority, application Japan, Sep. 1, 1994, 6-208494
Int. Cl.⁶ B41J 2/16

U.S. Cl. 347-45

26 Claims



1. A method of producing an ink ejecting device made of ceramic material which accomplishes recording of characters and images using ink ejected from at least one ink flow path, said method comprising steps of:

- causing contact between surfaces of the ink flow path and a fluid containing an organic compound based dye intermediate product; and
- causing the dye intermediate product to adhere to or permeate the surfaces of the ink flow path.

5,781,210

RECORDING METHOD AND RECORDING SOLUTION

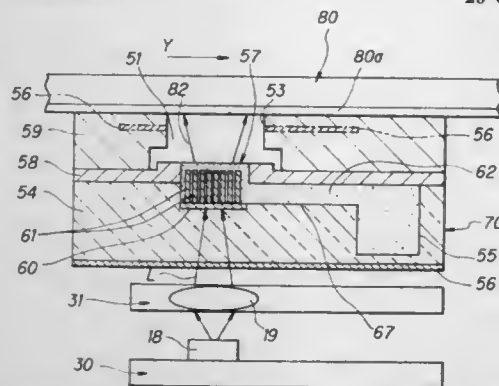
Hideki Hirano, Kanagawa; Hiroyuki Shiota, Chiba; Shuji Sato, and Kenji Shinozaki, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 16, 1996, Ser. No. 602,384

Claims priority, application Japan, Feb. 17, 1995, 7-053308
Int. Cl.⁶ B41J 2/14; 2/32; C09D 11/00

U.S. Cl. 347-51

20 Claims



1. An improved recording method including the steps of feeding a recording solution to a recording solution heating unit, heating the recording solution to change its state, making the recording solution into droplets, and transferring the droplets to a recording medium placed opposite to the recording solution heating unit, said recording solution being composed of a recording material and a substance which dissolves or disperses the recording material therein, characterized in that said recording solution heating unit has a porous structure formed on the front thereof, said porous structure being composed of fine parts whose dimension in the plane direction is 0.2-3 μm and whose dimension in the direction perpendicular to the plane direction is 2-15 μm , and that said recording solution is composed of a dye which vaporizes more than 90 wt % upon heating at a temperature above 300° C., leaving residues in an amount less than 10 wt %, and a solvent having a boiling point higher than 150° C., which dissolves or disperses the dye more than 5 wt % at a temperature below 50° C.

5,781,211

INK JET RECORDING HEAD APPARATUS

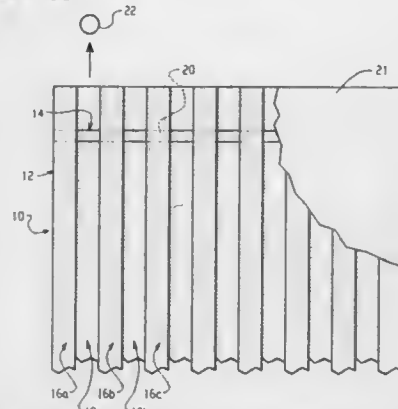
Howard H. Bobry, 18416 Olympic View Dr., Edmonds, Wash. 98020

Filed Jul. 23, 1996, Ser. No. 685,248

Int. Cl.⁶ B41J 2/05

U.S. Cl. 347-58

17 Claims



1. In an ink jet recording head including an ink reservoir, electrical elements for selectively generating discrete fluid pressure pulses to cause ink to be ejected in predetermined patterns and a plurality of taps operatively connected to said electrical elements, the improvement comprising:

- a dielectric substrate having a top face,
- a dielectric cover spaced above said top face,
- a plurality of electrical conductors disposed between said substrate and said cover, and having side faces contiguous with said substrate and said cover, each of said conductors being operatively connected to one of said taps, and
- a plurality of ink flow channels, located between said substrate and said cover and having side walls defined by the respective side faces of adjacent conductors, said electrical elements being operatively associated with said flow channels, said flow channels communicating with said ink reservoir, and one end of each respective flow channel being open to define an ink ejection nozzle.

5,781,212

PURGEABLE MULTIPLE-ORIFICE DROP-ON-DEMAND INK JET PRINT HEAD HAVING IMPROVED JETTING PERFORMANCE AND METHODS OF OPERATING IT

Ronald F. Burr, Wilsonville, Oreg., and Laurent A. Regimbal, Boise, Id., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 140,344, Oct. 20, 1993, abandoned.

This application Apr. 22, 1997, Ser. No. 844,802

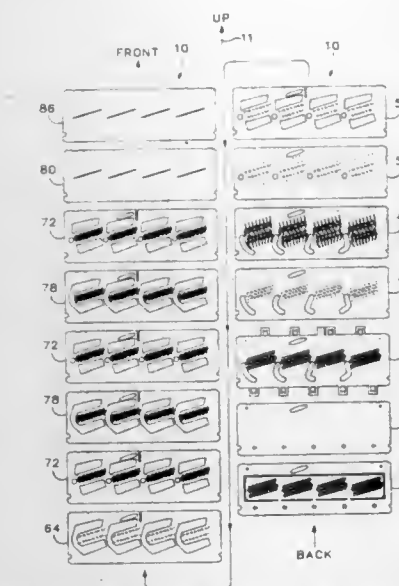
Int. Cl.⁶ B41J 2/17

U.S. Cl. 347-84

30 Claims

1. An ink jet print head having multiple printing nozzles in fluid connection with a supply channel for transporting liquid ink to the print head, comprising:

- at least one group of inlet channels connected to the supply channel;
- at least one group of pressure chambers, each in fluid connection with a respective one of the inlet channels and operable by action of transducers to cause discharge of liquid ink through one of the nozzles and by the action of transducers to cause the liquid ink to refill the pressure chambers;
- at least one manifold in fluid connection between the supply channel and the group of inlet channels, the group of inlet channels opening on the manifold; and
- at least one damping structure located between the supply channel and the manifold and defining plural fluid passageways between the supply channel and the manifold, the fluid passageways having a fluid aspect ratio w/h , greater than about 5 so that h , is sufficiently small such that bubbles entrained in the ink passing through the passageways between the supply channel and the manifold are reduced in size to thereby



readily diffuse into the ink to improve purging performance of the print head wherein the damping structure comprises a baffle structure and w represents a width of the baffle structure transverse to a direction of flow of the liquid ink and h , represents a height of a baffle flow passage.

5,781,213

LIQUID STORING CONTAINER HAVING FILTER INTERFACE FOR RECORDING APPARATUS

Toshihiko Ujita, Yamato; Koji Yamakawa; Masanori Takenouchi, both of Yokohama; Sadayuki Sugama, Tsukuba; Kenjiro Watanabe, Tokyo; Torachika Osada; Kazuhiro Nakajima, both of Yokohama; Takayoshi Tsutsumi; Hidemi Kubota, both of Tokyo; Yasuo Kotaki, Yokohama; Keiichi Tsukuda, Kawasaki, and Yohei Sato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

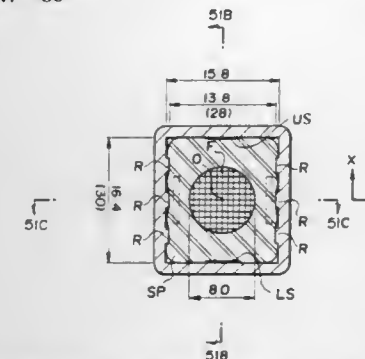
Continuation of Ser. No. 444,863, May 19, 1995, abandoned, which is a division of Ser. No. 98,872, Jul. 29, 1993, Pat. No. 5,583,549. This application Dec. 2, 1996, Ser. No. 757,273

Claims priority, application Japan, Jul. 31, 1992, 4-205106; Aug. 31, 1992, 4-230797; Aug. 31, 1992, 4-231788; Oct. 20, 1992, 4-271867; Nov. 2, 1992, 4-294309; Jan. 19, 1993, 5-006931; Jan. 19, 1993, 5-006933; Feb. 18, 1993, 5-029429

Int. Cl.⁶ B41J 2/175

U.S. Cl. 347-86

6 Claims



1. A liquid storing container having a liquid feed portion, the container comprising:

- a substantially rectangular receiving case as viewed from said liquid feed portion in which a porous member having a large number of pores in communication with each other therein is received in a compressed state under an atmospheric pressure introduced through an atmospheric air intake port formed on said receiving case, said atmospheric air intake port having a small diameter; and

a circular end filter to which liquid is fed from a contact portion of said porous member where said porous member is compressed by said circular end filter, wherein

said receiving case has two pairs of symmetrical surfaces with respect to a center of said circular end filter at the contact portion, such that a center of said receiving case substantially coincides with the center of said circular end filter, each of said pairs of symmetrical surfaces coinciding with two parallel wall surfaces of said receiving case located opposite to each other while extending in a longitudinal direction, so that said circular end filter is centrally located with respect to the wall surfaces in a first direction orthogonal to the longitudinal direction and in a second direction orthogonal to the first direction, and

a shortest distance as measured from a periphery of the contact portion to said symmetrical surfaces in both the first direction and the second direction is less than a diameter of a contact range where said circular end filter contacts said porous member, whereby the contact portion controls the feeding of liquid from said porous member.

5,781,214

METHOD OF PREVENTING CLOGGING OF NOZZLES

Jiri Vonasek, deceased, late of Kungälv, Sweden, by Tor Erik Nygren, executor; Mats Tunius, and Klas Rydinge, both of Göteborg, Sweden, assignors to Markpoint Development AB, Göteborg, Sweden

PCT No. PCT/EP93/02005, § 371 Date Mar. 6, 1995, § 102(e) Date Mar. 6, 1995, PCT Pub. No. WO94/03546, PCT Pub. Date Feb. 17, 1994

Continuation of Ser. No. 374,571, Mar. 6, 1995, abandoned.

This PCT application Jul. 27, 1993, Ser. No. 861,758

Claims priority, application Sweden, Jul. 28, 1992, 9202243
Int. Cl.⁶ B41J 2/01

U.S. Cl. 347-95

5 Claims

1. A method of preventing clogging of nozzles in ink jet printers during intervals when no ink flows through the nozzles, which comprises the steps of:

- providing an essentially non-absorbent surface; and
- applying an ink composition intended for recording permanent information on the essentially non-absorbent surface, said ink composition comprising:
 - (a) at least one volatile organic solvent;
 - (b) a non-, or low volatile liquid or solution miscible to a certain extent in said at least one solvent (a), and
 - (c) at least one colorant which is soluble and/or dispersible in a mixture of (a) and (b), but insoluble in (b) solely; the relative quantities of components (a), (b) and (c) being such that when flow is terminated in the nozzles and a portion of component (a) evaporates, a concentration of components (b) and (c) builds up in the nozzles, thereby causing component (c) to migrate further within the nozzles into an environment in which an affinity for component (c) is greater, in which said component (a) is selected from the group consisting of methyl ethyl ketone, ethyl acetate, ethanol, acetone, propanol, and a combination thereof; in which said component (b) is selected from the group consisting of one or more hygroscopic salts and/or one or more low- or very low-volatile or hygroscopic organic or hygroscopic inorganic components including water, polyhydric alcohols, glycol ethers, ethanalamines, amides, calcium chloride and magnesium chloride; and in which said component (c) is selected from the group consisting of one or more organic and/or inorganic pigments and/or dyes or any other colour-generating component.

5,781,215

INK JET RECORDING METHOD

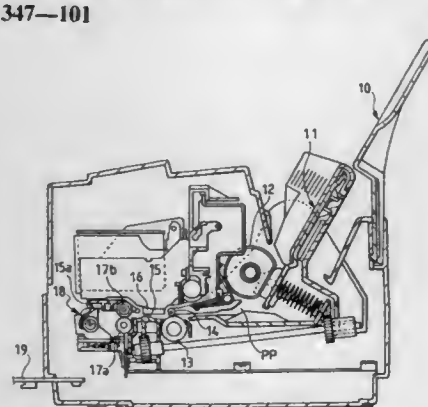
Hiroynki Onishi; Akio Owatari, and Junichi Iida, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Apr. 5, 1996, Ser. No. 628,351

Claims priority, application Japan, Apr. 7, 1995, 7-108326; Apr. 2, 1996, 8-104556

Int. Cl.⁶ B41J 2/01; G01D 9/42

U.S. Cl. 347—101



8 Claims

1. An ink jet recording method comprising the steps of: holding a sheet-like recording medium having a glossy surface between a driving roller disposed on a back surface side of said sheet-like recording medium and a notched roller having a thickness in a range of 0.05 to 0.5 mm and pressing said glossy surface with pressing force in a range of 5 to 30 g against said driving roller;

carrying said sheet-like recording medium; and ejecting ink onto said glossy surface so that an image is recorded by dots of the ink on said glossy surface.

5,781,216

INK-JET PRINTING CLOTH, TEXTILE PRINTING METHOD OF THE SAME AND PRINT RESULTING THEREFROM

Masahiro Haruta, Tokyo; Shoji Koike; Makoto Aoki, both of Yokohama; Koromo Shirota, Kawasaki; Aya Yoshihira, Yokohama; Tomoya Yamamoto, and Mariko Suzuki, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

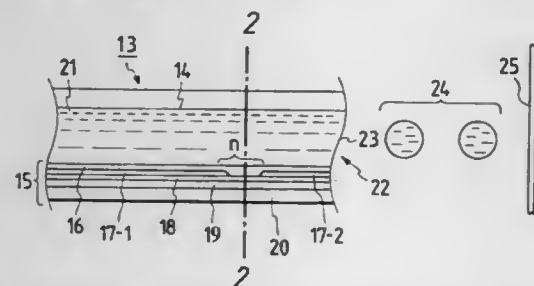
Filed Oct. 26, 1995, Ser. No. 548,621

Claims priority, application Japan, Oct. 28, 1994, 6-265216; Oct. 31, 1994, 6-266589; Dec. 2, 1994, 6-299631

Int. Cl.⁶ B41J 2/01

U.S. Cl. 347—106

17 Claims



1. A textile printing method comprising the steps of: applying an ink by an ink-jet system to an ink-jet printing cloth containing a polyethylene oxide having a viscosity average molecular weight of not less than 100,000 in an amount of from 0.1 to 30% by weight; subjecting the cloth to a fixing treatment; and washing and drying the cloth.

5,781,217

DEVICE FOR DIRECT ELECTROSTATIC PRINTING (DEP) COMPRISING AN INTERMEDIATE IMAGE RECEIVING MEMBER

Guido Desie, Herent, Belgium, assignor to Agfa-Gevaert, N.V., Mortsel, Belgium

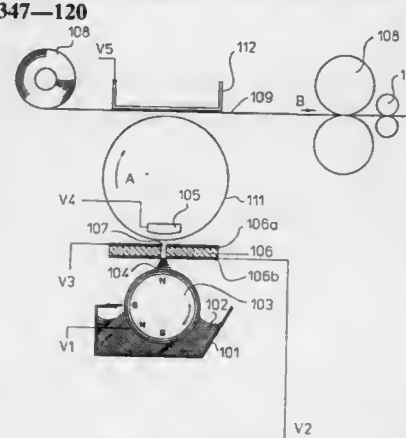
Filed May 2, 1996, Ser. No. 641,689

Claims priority, application European Pat. Off., May 15, 1995, 95201262

Int. Cl.⁶ B41J 2/415; 2/39; 2/395; 2/06

U.S. Cl. 347—120

20 Claims



1. In a device for direct electrostatic printing comprising: a back electrode having a first electrical potential; a magnetic brush for delivering toner particles and having a surface carrying magnetic carrier particles and charged toner particles, said surface being at a second electrical potential, different from said first electrical potential, whereby a flow of charged toner particles is formed from said surface toward said back electrode;

an intermediate image receiving member having an outer surface, said member interposed between said back electrode and said magnetic brush;

means for moving said intermediate image receiving member in a first direction;

a printhead structure interposed between said intermediate image receiving member and said magnetic brush, said printhead structure having printing apertures and control electrodes for image-wise modulating said flow of toner particles and depositing a toner image on said intermediate image receiving member; and

a transport for conveying a final image receiving substrate near said intermediate image receiving member and a transfer member for attracting said toner image from said intermediate image receiving member to said final image receiving substrate;

the improvement wherein said outer surface of said intermediate image-receiving member has a surface energy lower than 40 mN/m and surface roughness Ra smaller than 3.0 μm.

5,781,218

IMAGE FORMING APPARATUS

Shirou Wakahara, Osaka, and Kazuya Masuda, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 4, 1997, Ser. No. 800,651

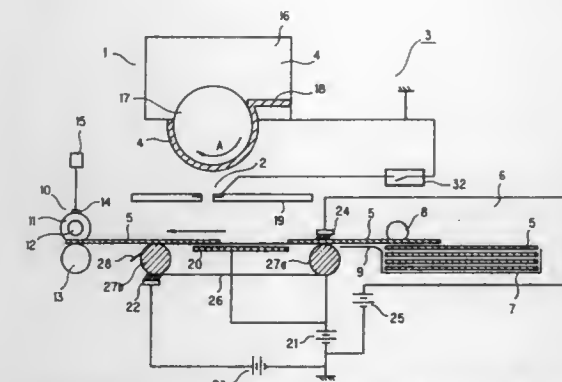
Claims priority, application Japan, Feb. 6, 1996, 8-019690; Feb. 6, 1996, 8-019691

Int. Cl.⁶ B41J 2/39; 2/395

U.S. Cl. 347—141

5 Claims

1. An image forming apparatus comprising: a supporting means for supporting developer particles; an opposing electrode disposed facing the supporting means; a control electrode disposed between the supporting means and the opposing electrode and having a plurality of gates which form passages for the developer particles;



a recording medium which is conveyed between the control electrode and the opposing electrode and is recorded with an image; and

a controlling means which generates a predetermined potential difference between the supporting means and the opposing electrode and, by varying the potential applied to the control electrode, controls passage of the gates for the developer particles so as to create the image on the recording medium which is conveyed between the control electrode and the opposing electrode,

wherein a plurality of voltage supplying means are provided to supply voltages to the control electrodes, where each voltage supplying means has a maximum current supplying capacity of under 70 mA.

5,781,219

INK SHEET AND THERMAL TRANSFER TYPE COLOR PRINTER

Fumio Kouzai, and Syoichiro Hayashi, both of Hiroshima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

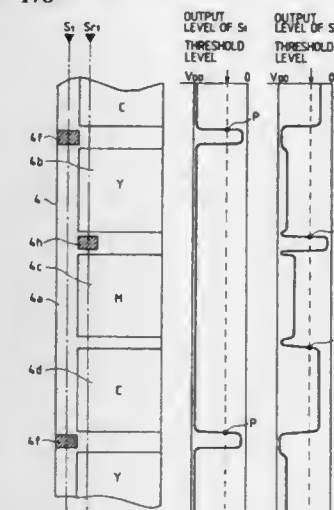
Filed Feb. 21, 1995, Ser. No. 391,457

Claims priority, application Japan, Feb. 22, 1994, 6-024274; Oct. 28, 1994, 6-265351

Int. Cl.⁶ B41J 31/00

U.S. Cl. 347—178

10 Claims



3. A thermal transfer type color printer using an ink sheet, said ink sheet comprising: a set of transfer colorants including 3 colors of yellow, magenta and cyan or 4 colors of yellow, magenta, cyan and black, said transfer colorants being successively coated or printed on a transparent base film corresponding to an area of a print sheet while a transparent portion is left on one side of the base film; head sensor marks provided only at positions in the transparent portion on the base film, said positions each corresponding to a boundary between the yellow colorant which is the lead color, and the cyan or black colorant which is the last color of

each color set; and identification sensor marks provided only at boundaries between the yellow and magenta colorants, said color printer comprising:

a red light sensor for detecting said identification sensor marks to control a conveyance of said ink sheet; and an infrared light sensor for detecting said head sensor marks, said infrared light sensor being arranged in parallel with said red light sensor.

5,781,220

THERMAL HEAD

Atsuo Nishizono; Hideo Noguchi; Keijiro Minami; Shinji Hirata; Hitoshi Takao; Koji Kato; Tetsuji Hyodo, and Kazuyuki Itaki, all of Aira-gun, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 471,049, Jun. 6, 1995, abandoned.

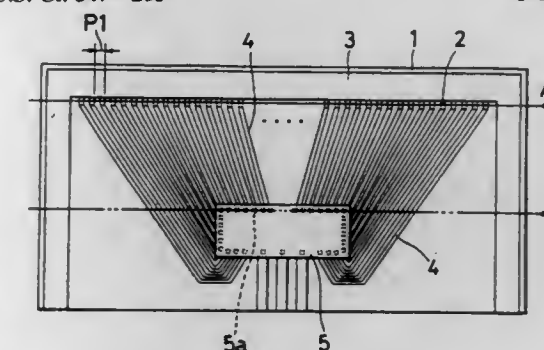
This application Nov. 20, 1996, Ser. No. 752,554

Claims priority, application Japan, Jul. 29, 1994, 6-179110; Sep. 22, 1994, 6-227620

Int. Cl.⁶ B41J 2/345

U.S. Cl. 347—208

8 Claims



1. A thermal head comprising:

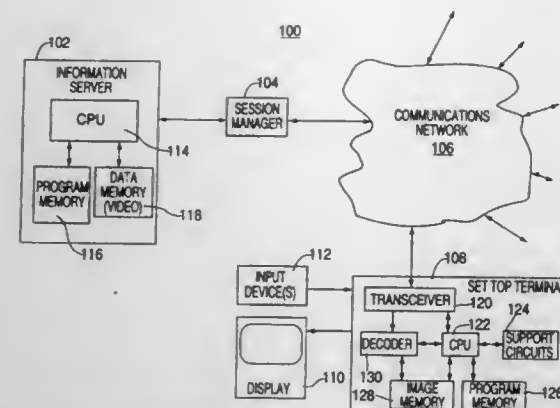
an electrically insulating substrate having a surface, a plurality of heating elements arranged at substantially regular intervals on the surface of the electrically insulating substrate, the plurality of heating elements defining a direction, each heating element having a first end and a second end, a common electrode connected to the first end of each heating element,

a plurality of lead wires, each one of the plurality of lead wires being connected to a second end of a corresponding one of the plurality of heating elements, each lead wire having at least a length section which extends at a lead wire angle relative to the direction of the heating elements, each lead wire angle having a corresponding sine value, the plurality of lead wires including a first lead wire and a second lead wire, the lead wire angle of the length section of the first lead wire having a first sine value, and the lead wire angle of the length section of the second lead wire having a second sine value different from the first sine value and

a driving integrated circuit including a plurality of connecting pads arranged substantially parallel to the direction of the heating elements, wherein adjacent connecting pads define an interval therebetween, the interval between adjacent connecting pads being smaller than the interval at which the heating elements are arranged, each of the connecting pads being connected to a corresponding one of the lead wires, the plurality of connecting pads including a first connecting pad connected to the first lead wire and a second connecting pad connected to the second lead wire, and

wherein the interval between the first connecting pad and a connecting pad adjacent the first connecting pad is determined by the first sine value, and the interval between the second connecting pad and a connecting pad adjacent the second connecting pad is determined by the second sine value.

1. In a set top terminal used for decoding and displaying imagery associated with information streams transmitted to said set



top terminal via an information distribution system, a method for masking latency within said information distribution system, where said latency occurs while transitioning from a first information stream to a second information stream, said method comprising the steps of:

- responding to a user command entered into said set top terminal and, simultaneously, sending an upstream data command to the information distribution system to implement said user command;
- recalling a predefined image from an image memory;
- fading at least a portion of imagery decoded from said first information stream into said predefined image;
- resetting a signal decoder within said set top terminal;
- fading from said predefined image into imagery decoded from said second information stream; and
- displaying said imagery from said second information stream.

5,781,228

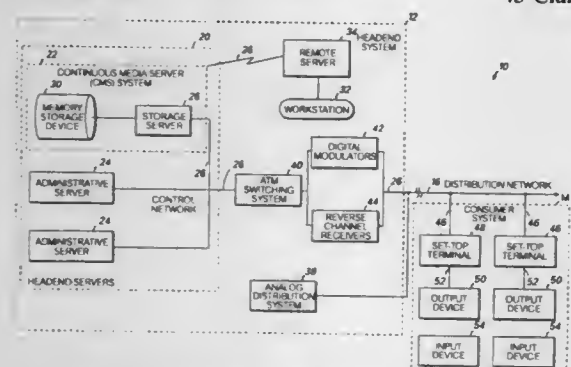
METHOD AND SYSTEM FOR DISPLAYING AN INTERACTIVE PROGRAM WITH INTERVENING INFORMATIONAL SEGMENTS

Jonathan N. Sposato, Issaquah, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Sep. 7, 1995, Ser. No. 524,619
Int. Cl.⁶ H04N 7/173

U.S. Cl. 348—13

43 Claims



1. A method for displaying an interactive program with intervening informational segments on a display screen, comprising the steps of:

- predetermining return points in the interactive program by pre-processing the interactive program to identify natural breaks in the audio or video of the interactive program;
- displaying the interactive program on the display screen;
- displaying at least one additional information marker on the display screen during the display of the interactive program;
- accepting the selection of one of the additional information markers from a user of the interactive program;
- terminating the interactive program after accepting the selection of one of the additional information markers;

displaying an intervening informational segment on the display screen associated with the selected additional information marker;

upon termination of the intervening informational segment, redisplaying the interactive program beginning at one of said predetermined return points.

5,781,229

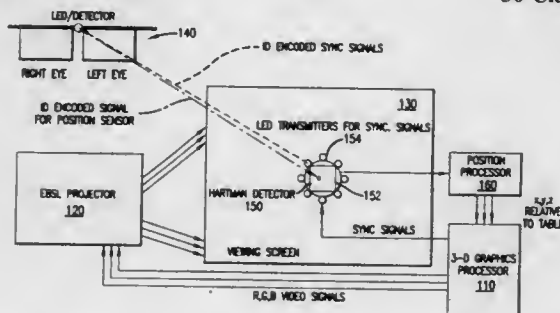
MULTI-VIEWER THREE DIMENSIONAL (3-D) VIRTUAL DISPLAY SYSTEM AND OPERATING METHOD THEREFOR

Mark S. Zediker, Florissant; Alan J. Bacon, Oakville, and Robert R. Rice, Chesterfield, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Feb. 18, 1997, Ser. No. 802,901
Int. Cl.⁶ H04N 13/04

U.S. Cl. 348—51

30 Claims



1. A video signal driving a high-brightness, substantially zero-persistence image projector generating N three-dimensional (3-D) virtual images from image pairs including left and right images, said video signal comprising NxM of said image pairs, wherein: N is an integer greater than 1; M is an integer equal to a number of image pairs per second applied to the high-brightness, substantially zero persistence image projector required to produce a flicker-free one of said 3-D virtual images;
- NxM is a total number of image pairs transmitted and applied to the high-brightness, substantially zero persistence image projector during a one second period; and
- said NxM image pairs are multiplexed such that the M image pairs generating an Nth one of the 3-D virtual images are separated from one another by at least one of said NxM image pairs generating a (N-1)th one of the 3-D virtual images.

5,781,230

METHOD AND APPARATUS FOR ILLUMINATING TRANSLUCENT AND SEMI-TRANSPARENT MATERIAL

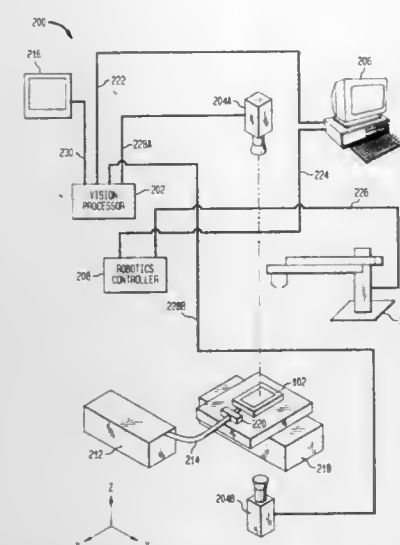
Hung Ngoc Nguyen, Bensalem, Pa., and Ralph A. Treder, Ewing, N.J., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Continuation of Ser. No. 358,482, Dec. 19, 1994, abandoned.
This application Jan. 29, 1997, Ser. No. 790,481
Int. Cl.⁶ H04N 7/18

U.S. Cl. 348—128

15 Claims

1. An apparatus for imaging a translucent article comprising a translucent metal oxide substrate and an opaque metallic film on an imaged surface of the substrate, the apparatus comprising: image capturing means trained on said imaged surface of the translucent article for capturing all image thereof; and illuminating means for directing a light ray at a first sidewall of the translucent article, said illuminating means being below a plane of the imaged surface, wherein said light ray enters the translucent article and illuminates said imaged surface, thus making said imaged surface capable of being distinctly imaged by said image capturing means, and



wherein no light ray is directed at the imaged surface or a surface directly opposite said imaged surface.

5,781,231

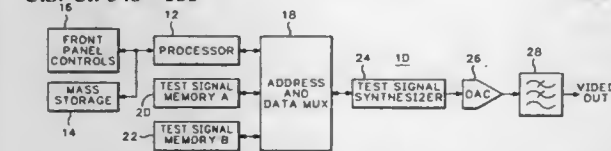
REAL-TIME PARAMETER ADJUSTMENT OF DIGITALLY SYNTHESIZED VIDEO TEST SIGNALS

John C. Reynolds, Beaverton, Ore., assignor to Tektronix, Inc., Wilsonville, Ore.

Filed Jan. 22, 1996, Ser. No. 589,696
Int. Cl.⁶ H04N 17/02

U.S. Cl. 348—181

2 Claims



1. A test signal generator of the type that digitally synthesizes a test signal from data contained in a memory further comprising: first and second test signal memories;
- a test signal synthesizer for digitally generating the test signal from data contained in one of the first and second test signal memories at a time;
- a processor;
- means for selectively coupling the processor and test signal synthesizer to the first and second test signal memories; and
- means coupled to the processor for varying parameters of the test signal so that, while the first test signal memory is coupled to the test signal synthesizer by the coupling means, the processor loads the second test signal memory with data representing the test signal with the varying parameters and causes the coupling means to switch the second test signal memory to the test signal synthesizer in lieu of the first test signal memory.

5,781,233

MOSFET CAMERA CHIP AND METHODS OF MANUFACTURE AND OPERATION THEREOF

Jie Liang, Choa Chin Kang, and Siang-Tze Wee, Singapore, both of Singapore, assignors to TriTech Microelectronics, Ltd., Singapore, Singapore

Filed Mar. 14, 1996, Ser. No. 615,460
Int. Cl.⁶ H04N 3/14; 5/335

U.S. Cl. 348—302

22 Claims

1. An integrated circuit which functions as an image detector which provides an output signal representing the detected image, said integrated circuit comprising: a two dimensional array of sensor cells formed in rows and columns;
- digital timing control means with outputs therefrom for providing timing signals;
- an address encoder, coupled to receive timing control signals from said digital timing control means;
- each said sensor cell having a photodiode and a first transistor having a first gate and having a source/drain circuit for

5,781,246

**ELECTRONIC TELEVISION PROGRAM GUIDE
SCHEDULE SYSTEM AND METHOD**

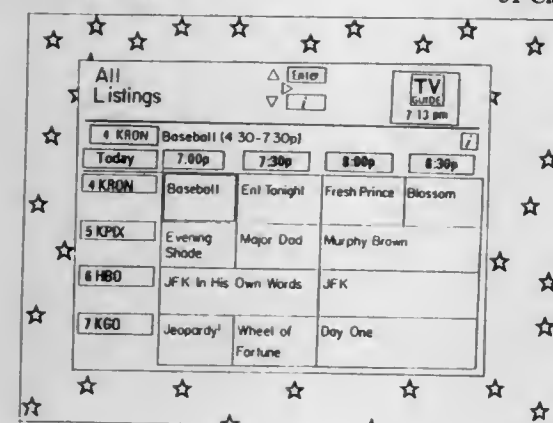
Jerry Allen, 10 Wynnedale Cir., Norberth, Pa. 19072; Bruce Davis, 5505 Preserve Pkwy. South, Greenwood Village, Colo. 80121; Michael Morris, 30 Whistling Swan La., Downingtown, Pa. 19355, and Roger Youman, 752 Mancil Rd., Wayne, Pa. 19087

Continuation-in-part of Ser. No. 119,367, Sep. 9, 1993, Pat. No. 5,585,866. This application May 20, 1994, Ser. No. 247,101

Int. Cl.⁶ H04N 5/50; 5/445

U.S. Cl. 348—569

31 Claims



20. A process for providing an interactive electronic program guide comprising:

- storing in a memory program schedule information for a plurality of programs;
- receiving background views including graphical portions;
- controlling a video display generator using control commands from a data processor;
- selecting one of said received background views for display automatically with the data processor; and
- displaying, in response to a user control command to display program schedule information, a portion of said program schedule information in partial overlaying relationship with said selected background view.

5,781,247

**CUSTOMIZABLE MENU FOR A TELEVISION
RECEIVER ACCESSED VIA A REMOTE CONTROL
KEYBOARD**

Keith Reynolds Wehmeyer, Fishers; Jeffrey Philip Reavis; Robert Howard Miller, both of Indianapolis, and Foy Edward Wilkey, Fishers, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

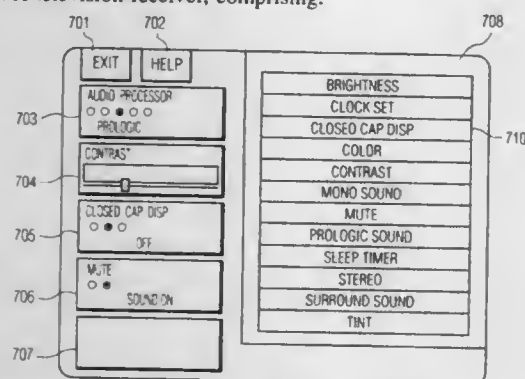
Filed Apr. 5, 1995, Ser. No. 419,859

Int. Cl.⁶ H04N 5/50

U.S. Cl. 348—569

20 Claims

1. A television receiver, comprising:



a first processor for generating a graphics signal;

a second processor for processing an input video signal to produce a processed video signal, for coupling said processed video signal to an output during a first mode of operation for providing an output signal suitable for coupling to a display device, and for coupling said graphics signal to said output during a second mode of operation for providing said output signal; and

a data input device coupled to said first and second processors and including:

- a first key for initiating said second mode of operation upon actuation; said output signal including graphics information representing a menu of selected ones of a plurality of controllable features of said television receiver;
- a second key for initiating a third mode of operation upon actuation during said second mode of operation, said graphics signal being coupled to said output during said third mode of operation for including in said output signal graphics information representing a list of said plurality of controllable features of said television receiver; and
- a third key for controlling navigation within said list of said plurality of controllable features, said menu being modified to include a feature from said list of said plurality of controllable features in response to actuation of said first key during navigation within said list, said second processor returning to said first mode of operation for coupling said video signal to said output upon re-actuation of said first key.

5,781,248

**MULTIPOINT RECEIVING AND DATA PROCESSING
APPARATUS**

Makoto Chida, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 972,203, Nov. 5, 1992, abandoned.

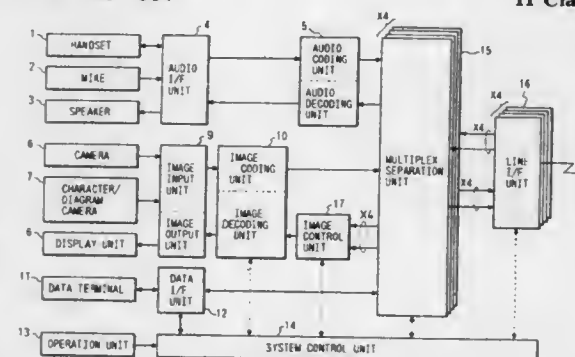
This application May 16, 1995, Ser. No. 441,949

Claims priority, application Japan, Nov. 7, 1991, 3-291695

Int. Cl.⁶ H04N 7/12

U.S. Cl. 348—584

11 Claims



1. A data processing apparatus comprising:

- a) input means for inputting image data from a maximum N (N is an integer of 2 or larger) terminals through a plurality of lines, wherein said input means inputs an image plane of a predetermined size which is block-coded by using L/N blocks (L is a value which is an integral number of times as large as the value of N, L≠N), from each terminal, wherein an image plane of the predetermined size comprises data of L blocks, and wherein one block comprises a plurality of pixel data; and
- b) control means for controlling a display position when the block-coded data input by said input means is displayed in the image plane of the predetermined sizes, wherein head data which corresponds to the display position controlled when the coded data is displayed is added to the coded data from each terminal and said control means controls the display position of the coded data from each terminal by changing the head data.

5,781,249

**FULL OR PARTIAL SEARCH BLOCK MATCHING
DEPENDENT ON CANDIDATE VECTOR PREDICTION
DISTORTION**

Duck-Dong Hwang, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

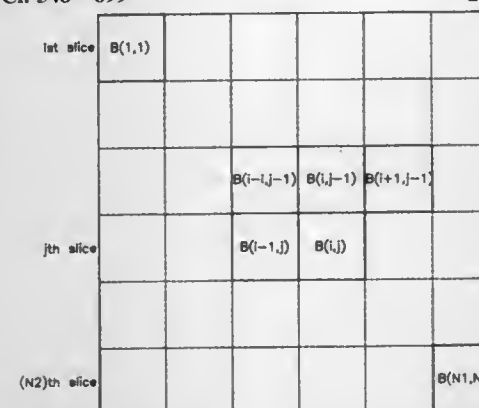
Filed Nov. 7, 1996, Ser. No. 743,785

Claims priority, application Rep. of Korea, Nov. 8, 1995, 95-40332

Int. Cl.⁶ H04N 7/32

U.S. Cl. 348—699

20 Claims



1. A method for determining a motion vector of a search block included in a search frame of a video signal by using motion vectors of processed neighboring blocks, wherein the search frame is divided into a multiplicity of blocks which include a set of processed blocks whose motion vectors have been determined, and the set of processed blocks contain the processed neighboring blocks which are the blocks neighboring the search block, the method comprising the steps of:

- (a) selecting an X-vector and a Y-vector among the motion vectors of the processed neighboring blocks, wherein the X-vector is a vector which is most similar to a horizontal vector and the Y-vector is a vector which is most similar to a vertical vector, the horizontal and the vertical vectors referring to vectors whose y component and x component are 0's, respectively, to thereby provide a group of candidate vectors which include the X-vector, the Y-vector and a 0 vector;
- (b) deciding a candidate motion vector among the group of candidate vectors; and
- (c) providing the candidate motion vector as the motion vector of the search block in case a distortion between the search block and a predicted block corresponding to the candidate motion vector is smaller than a predetermined threshold value, and determining the motion vector of the search block by using a full search block matching method in case the distortion is not smaller than the predetermined threshold value, wherein the predicted block corresponding to the candidate motion vector is a block of a reference frame displaced from the search block by the candidate motion vector.

5,781,250

**INPUT SIGNAL SWITCHING CIRCUIT OF A MONITOR
AND SWITCHING METHOD THEREOF**

Il Jin Jun, Kyoungsangbuk-Do, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed Nov. 15, 1996, Ser. No. 751,174

Claims priority, application Rep. of Korea, Apr. 16, 1996, 1996-11427

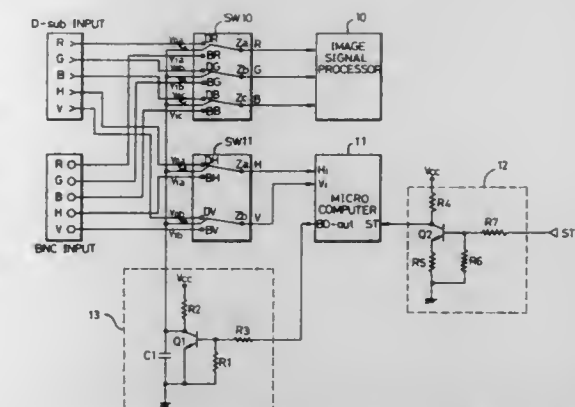
Int. Cl.⁶ H04N 5/268

U.S. Cl. 348—706

8 Claims

1. An automatic input signal switching circuit of a monitor having a BNC signal terminal and a D-sub signal terminal, said circuit comprising:

- a video signal switching part receiving a video signal from said BNC signal terminal and a video signal from said D-sub signal terminal;



a video signal processing part receiving one of said video signal from said BNC signal terminal and said video signal from said D-sub signal terminal, said received video signal being selected at said video signal switching part;

a synchronization signal switching part receiving a vertical synchronization signal and a horizontal synchronization signal from said BNC signal terminal and a vertical synchronization signal and a horizontal synchronization signal from said D-sub signal terminal;

a detecting part receiving a detection signal representing a connection state between said D-sub signal terminal and a personal computer;

a microcomputer receiving an output of said detecting part, for generating a control signal; and

a switching control part receiving said control signal, for controlling said video signal switching part and said synchronization signal switching part.

5,781,251

**METHOD AND APPARATUS FOR OPTICAL SCANNING
FOR SINGLE PANEL COLOR PROJECTION VIDEO
DISPLAY**

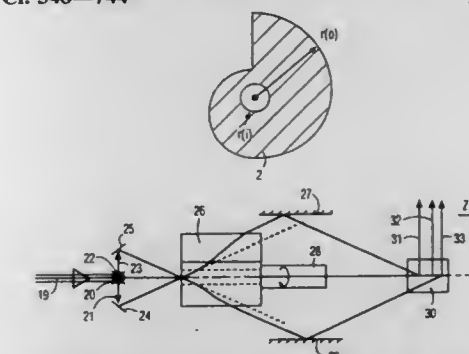
Detlev Otto, Spokane County, Wash., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 28, 1995, Ser. No. 579,704

Int. Cl.⁶ H04N 9/31

U.S. Cl. 348—744

19 Claims



1. A single panel projector system, for projecting images having a plurality of color components, comprising:

- a deflector for deflecting light into a plurality of directions; and
- a light panel for receiving said light-deflected by said deflector, said deflector comprising a cylindrical transparent optical medium having an axis, a central opening along said axis, a curved exterior surface and a cross-sectional thickness extending from said axis to said exterior surface, such that said cross-sectional thickness comprises a nonuniform thickness, wherein beams of said light enter through said center opening of said medium and exit at areas along said exterior surface of said medium.

5,781,252

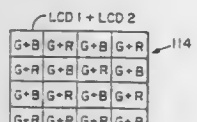
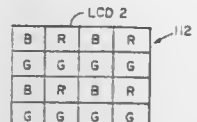
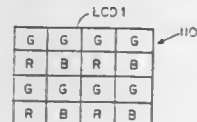
DUAL LIGHT VALVE COLOR PROJECTOR SYSTEM
Ronald P. Gale, Sharon, Mass., assignor to Kopin Corporation, Taunton, Mass.

Filed Apr. 2, 1996, Ser. No. 627,727

Int. Cl.⁶ G02F 1/1335

U.S. Cl. 349—8

20 Claims



1. A light valve projection system comprising:
a light source;
an optical splitter positioned to receive light from the source and to separate the light along first and second optical paths;
a first light valve and a second light valve, the first light valve positioned on the first optical path to receive light from the source having a first plurality of colors and the second light valve being positioned on the second optical path to receive a second plurality of colors, the second plurality of colors having a different distribution from the first plurality of colors;
an optical combiner that combines a pair of images generated by the first light valve and the second light valve; and
a projection lens positioned to receive light directed through the combiner and to project the light onto a viewing surface.

5,781,253

LIQUID CRYSTAL DISPLAY HAVING ELECTROSTATIC DISCHARGE PROTECTION AND METHOD FOR MANUFACTURING THE SAME

Tetsushi Koike, Sagami-hara; Manabu Kodate, Yokohama, and Mitsuru Ikezaki, Sagami-hara, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

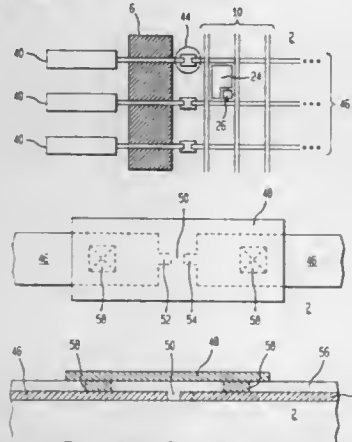
Filed Oct. 25, 1996, Ser. No. 735,906

Claims priority, application Japan, Oct. 31, 1995, 7-283180

Int. Cl.⁶ G02F 1/136

U.S. Cl. 349—40

11 Claims



1. An active matrix liquid crystal display in which switching elements are formed on a substrate in a pixel area of the liquid crystal display, said liquid crystal display comprising:

a set of first metal wires formed on said substrate with static electricity discharge means in the form of an area electrical disconnection therein to protect against damage due to electrical discharge occurring during a portion of the manufacturing process of the liquid crystal display;

an insulation layer formed on said first metal wires so as to fill in said area of electrical disconnection, and having through holes formed in said insulating layer to said first metal wires on both sides of said area; and

a set of second metal wires formed on said insulation layer so as to fill in said through holes, said second metal wires being electrically connected to said first metal wires to bridge the area of electrical disconnection.

5,781,254

ACTIVE MATRIX LCD HAVING A NON-CONDUCTIVE LIGHT SHIELD LAYER

Jeong Hyun Kim, and Chan Hee Hong, both of Kyungki-do, Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Continuation of Ser. No. 588,847, Jan. 19, 1996, abandoned.

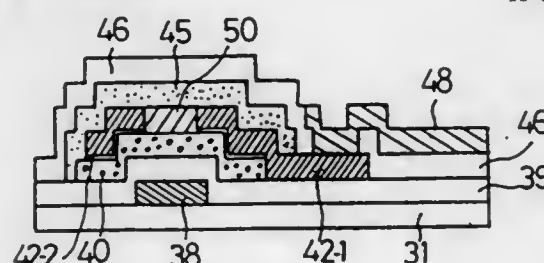
This application Jul. 3, 1997, Ser. No. 886,283

Claims priority, application Rep. of Korea, Aug. 29, 1995, 1995 26998

Int. Cl.⁶ G02F 1/136; 1/1333

U.S. Cl. 349—44

13 Claims



1. A liquid crystal display device comprising:
a substrate having a primary surface;
a plurality of gate bus lines and a plurality of data bus lines disposed in a matrix arrangement on said primary surface of said substrate;
a plurality of thin film transistors formed on said primary surface of said substrate, each having a gate electrode, a source electrode, and a drain electrode, said plurality of thin film transistors being respectively provided at intersections of said gate bus lines and said data bus lines;
an opaque non-conductive layer formed on said plurality of gate bus lines and said plurality of data bus lines, said non-conductive opaque layer shielding said plurality of gate bus lines and said plurality of data bus lines from light;
a protective layer formed on said opaque non-conductive layer and having a plurality of contact holes provided in correspondence with said drain electrode of each of said plurality of thin film transistors; and
a plurality of pixel electrodes formed on said primary surface of said substrate and coupled to corresponding ones of said drain electrodes via said plurality of contact holes.

5,781,255

ACTIVE MATRIX DISPLAY DEVICE USING ALUMINUM ALLOY IN SCANNING SIGNAL LINE OR VIDEO SIGNAL LINE

Hideaki Yamamoto, Tokorozawa; Haruo Matsumaru, Tokyo; Tetsuaki Suzuki, Mobara; Mitsuo Nakatani, Mobara; Michio Tsukii, Mobara; Akira Sasano, Tokyo; Saburo Oikawa, Hitachi, and Ryoji Oritsuki, Chiba-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

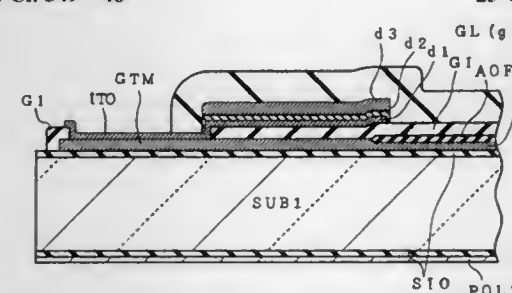
Continuation of Ser. No. 467,967, Jun. 6, 1995, Pat. No. 5,589,962, which is a continuation of Ser. No. 72,966, Jun. 8, 1993, abandoned. This application Oct. 4, 1996, Ser. No. 725,256

Claims priority, application Japan, Jun. 8, 1992, 4-147120

Int. Cl.⁶ G02F 1/136; 1/1343

U.S. Cl. 349—46

23 Claims



1. An active matrix display device comprising a plurality of scanning signal lines extending in a first direction, a plurality of video signal lines extending in a second direction, and pixels each including a pixel electrode and a thin film transistor, each pixel being disposed in a region surrounded by one of said plurality of scanning signal lines, a scanning signal line adjacent thereto, one of said plurality of video signal lines and a video signal line adjacent thereto,

said thin film transistor having its gate electrode, source electrode and drain electrode electrically connected to a corresponding scanning signal line, a corresponding pixel electrode and a corresponding video signal line, respectively,

said scanning signal line and said gate electrode being each made of a metal containing Al as the main constituent, and an anodized oxide film of said scanning signal line or said gate electrode being formed over the surface of at least one of said scanning signal line and said gate electrode,

wherein a metal containing Al as the main constituent is used as a material of a gate terminal connected with said scanning signal line, wherein an upper surface of said gate terminal is covered with a transparent conductive film and wherein a side wall surface of said gate terminal is covered with an insulating material different than said anodized oxide film.

5,781,256

NONLINEAR RESISTANCE ELEMENT AND FABRICATION METHOD THEREOF IN WHICH TUNGSTEN ATOMS ARE DISTRIBUTED CONTINUOUSLY WITHIN THE INSULATING FILMTakashi Inoue, and Nagamasa Ono, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
PCT No. PCT/JP96/00113, § 371 Date Sep. 23, 1996, § 102(e) Date Sep. 23, 1996, PCT Pub. No. WO96/23246, PCT Pub. Date Aug. 1, 1996

PCT Filed Jan. 23, 1996, Ser. No. 716,175

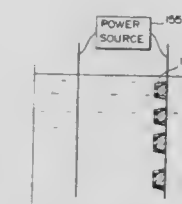
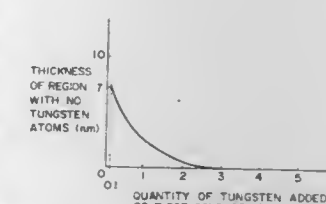
Claims priority, application Japan, Jan. 23, 1995, 7/8149

Int. Cl.⁶ G02F 1/136

U.S. Cl. 349—51

26 Claims

1. A nonlinear resistance element comprising a first conductive film, an insulating film, and a second conductive film deposited in sequence on a substrate; wherein:



tungsten atoms are distributed continuously within said insulating film in the film thickness direction of said insulating film.

5,781,257

FLAT PANEL DISPLAY

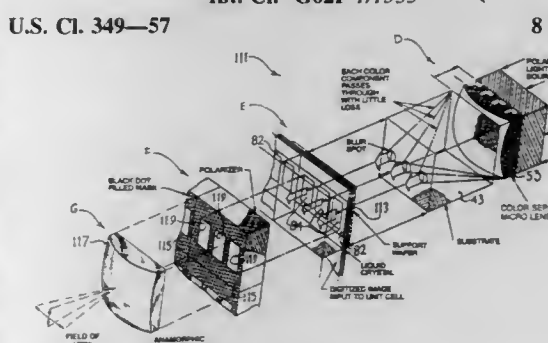
George Gal, Palo Alto, and Bruce J. Herman, Mountainview, both of Calif., assignors to Lockheed Martin Missiles & Space Co., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 380,109, Jan. 30, 1995, Pat. No. 5,600,486. This application Mar. 20, 1995, Ser. No. 406,720

Int. Cl.⁶ G02F 1/1335

U.S. Cl. 349—57

8 Claims



1. A flat panel display for displaying color images and comprising,

back illuminating light source means for supplying a collimated spectral band of illuminating light,

polarizing means for polarizing at least a portion of the illuminating light to a single polarization,

unit cell train array means for receiving the single polarized light from the polarizing means and for providing an array of pixels in the flat panel display,

said unit cell train array means comprising a plurality of individual unit cell trains, each individual cell train comprising,

(a) a unitary, color separation microlens which separates colors of the spectral band by diffraction orders and which focuses the separated colors in separate, distinct spots in a common plane,

(b) a liquid crystal unit cell positioned at said common plane and having a separate liquid crystal element at each said distinct spot of separate color, each said separate liquid crystal element being selectively controllable to modulate the transmission of the separated color from said spot, and

(c) a mask for viewing the color or colors transmitted from said spots of separated colors through said separate liquid crystal elements, and wherein the flat panel display displays a color image in the array of elements without the use of color filters.

5,781,258

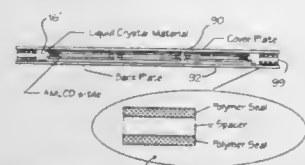
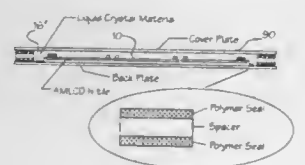
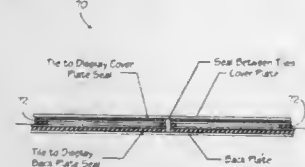
ASSEMBLING AND SEALING LARGE, HERMETIC AND SEMI-HERMETIC, H-TILED, FLAT-PANELED DISPLAYS
Sanjay Dabral, Milpitas, Calif.; Raymond G. Greene, Ovid, N.Y.; John P. Koons, Warrenton, Va.; Donald P. Seraphim, Vestal, N.Y., and Boris Yost, Ithaca, N.Y., assignors to Rain-bow Displays, Inc., Endicott, N.Y.

Filed Jun. 13, 1996, Ser. No. 662,618

Int. Cl.⁶ G02F 1/133; 1/1339

U.S. Cl. 349—73

12 Claims



1. A sealed panel display comprising a mosaic of individual, unsealed half-tiles (h-tiles), each of said h-tiles having a boundary around the periphery thereof, and each comprising an individual bottom plate, and wherein said mosaic of tiles further comprises a common cover plate shared with all of said h-tiles, said mosaic of tiles further sharing a common environment having common elements, including two, unsealed, parallel plates, said display comprising a non-permeable material deposited on each of said two, unsealed, parallel plates, and wherein solderable metal is overlaid on said non-permeable material, said display further comprising metallized, non-permeable spacer/connection means laid between said solderable metal, between said plates for hermetically sealing the perimeter of said display, said tiles being disposed adjacent one another, so that said boundaries of adjacent tiles are proximate one another forming a minimized seam region between tiles and facilitating visually imperceptible seams therebetween.

5,781,259

LIQUID CRYSTAL DISPLAY APPARATUS

Tokihiko Shinomiya, Nara; Kohichi Fujimori, Nabari, and Tomoaki Kuratate, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 630,197, Apr. 10, 1996, abandoned, which is a continuation of Ser. No. 253,930, Jun. 3, 1994, abandoned. This application Jul. 30, 1996, Ser. No. 688,553

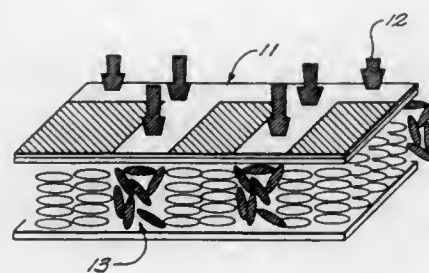
Claims priority, application Japan, Jun. 4, 1993, 5-134347

Int. Cl.⁶ G02F 1/133

U.S. Cl. 349—88

8 Claims

1. A liquid crystal display apparatus comprising:
a pair of transparent substrates which consists of a driving side substrate and an opposite side substrate;
transparent pixels formed in a matrix on said driving side substrate;
a transparent counter electrode formed on said opposite side substrate;
orientation films provided on each of said substrates;
a shielding layer provided at least on the boundary line of each of said transparent pixels and formed on the outside and/or



inside of each said transparent pixels either between said driving side substrate and said transparent pixels or between said transparent pixels and said orientation film;
said pair of transparent substrates being located opposite to each other to form a cell in which a liquid crystal layer includes polymer portions at non-pixel regions and liquid crystal portions at pixel portions said liquid crystal layer being formed by selectively irradiating with a light a mixture comprising a liquid crystal, photosetting polymer precursor and its polymerization initiator, said liquid crystal portions being substantially free of polymer.

5,781,260

LIQUID CRYSTAL DISPLAY DEVICE HAVING LIGHT SHADING FILM

Yoshinaga Miyazawa, Hino, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

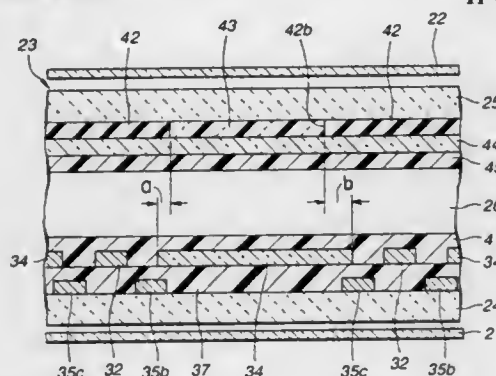
Filed Sep. 21, 1995, Ser. No. 531,731

Claims priority, application Japan, Sep. 30, 1994, 6-259817

Int. Cl.⁶ G02F 1/133; 1/136; 1/1343

U.S. Cl. 349—111

11 Claims



1. A liquid crystal display device comprising:
a first substrate;
a second substrate;
a picture element electrode having an approximately square share, said picture element electrode being formed on the first substrate on a side of a surface of the first substrate opposed to the second substrate;
a pair of signal lines and a pair of scanning lines, said signal lines and said scanning lines being arranged at predetermined spaces apart from peripheral edges of the picture element electrode;
a first alignment layer on which an alignment treatment is applied in a first alignment direction, said first alignment layer covering the picture element electrode, the signal lines and the scanning lines;
a counter electrode formed on the second substrate on a side of a surface of the second substrate opposed to the first substrate;
a second alignment layer on which an alignment treatment is applied in a second alignment direction which is different from the first alignment layer, said second alignment layer covering the counter electrode;
a liquid crystal disposed between the first and second alignment layers; and

a light shading film formed on one of the first substrate and the second substrate along one of the signal lines and the scanning lines, wherein: (i) the light shading film includes an opening with a size smaller than a size of the picture element electrode, (ii) an edge of the opening is situated inside an edge of the picture element electrode, and (iii) a distance between the edge of the opening and the one of the signal lines and the scanning lines along which the light shading film is formed, on a side corresponding to a side of the picture element electrode at which an optical leakage caused by disclination of the liquid crystal appears largest, is larger than a distance on a remaining three sides corresponding to a remaining three sides of the picture element electrode at which an optical leakage caused by disclination of the liquid crystal appears smaller.

5,781,261

ACTIVE MATRIX TYPE LCD HAVING LIGHT SHIELD LAYERS AND COUNTER ELECTRODES MADE OF THE SAME MATERIAL

Masuyuki Ohta; Kazuhiko Yanagawa, both of Mobara; Katsumi Kondo, Hitachinaka, and Masahito Ohe, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

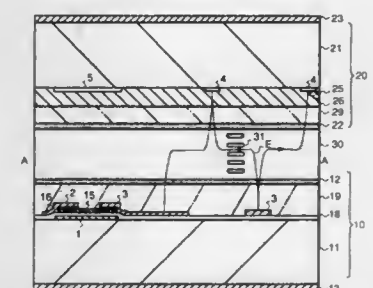
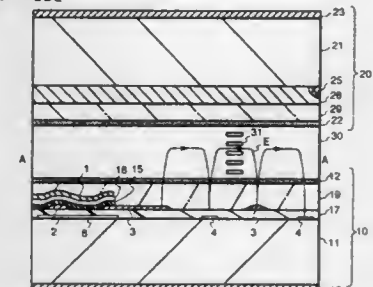
Filed Jul. 8, 1996, Ser. No. 677,716

Claims priority, application Japan, Jul. 17, 1995, 7-179908

Int. Cl.⁶ G02F 1/136; 1/133; 1/1343

U.S. Cl. 349—111

4 Claims



1. An active matrix type liquid crystal display which comprises:
a liquid crystal layer containing liquid crystal molecules;
a pair of substrates arranged to face each other with said liquid crystal layer being interposed therebetween;
a pair of polarizers arranged outside said substrates;
active elements composed of semiconductor active layers and insulating layers, having scanning electrodes and signal electrodes which are arranged between one of said pair of substrates and said liquid crystal layer;
pixel electrodes formed between one of said pair of substrates and said liquid crystal layer and being connected to said active elements;
light shielding layers arranged between one of said pair of substrates and said active elements in a manner facing the scanning electrode of said active elements for preventing said active elements from being illuminated by incident light; and
counter electrodes arranged on the same plane as said light shielding layers;
wherein said counter electrodes and the light shielding layers are composed of the same metallic material.

4. An active matrix type liquid crystal display which comprises:

5,781,262

LIQUID CRYSTAL DISPLAY CELL

Masayoshi Suzuki; Ken-ichi Takatori; Ken Sumiyoshi; Setsuo Kaneko; Teruaki Suzuki; Hideo Shibahara, and Yoshihiko Hirai, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

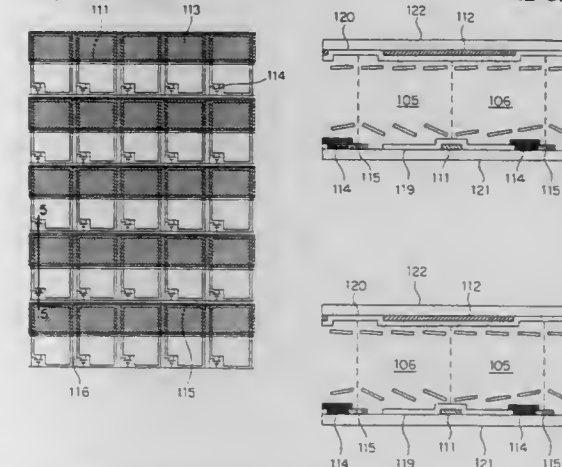
Filed Apr. 19, 1995, Ser. No. 424,123

Claims priority, application Japan, Apr. 19, 1994, 6-079089; Sep. 28, 1994, 6-233354; Nov. 10, 1994, 6-301336; Nov. 14, 1994, 6-278833; Jan. 18, 1995, 7-005871; Jan. 18, 1995, 7-005874; Jan. 18, 1995, 7-005877

Int. Cl.⁶ G02F 1/133; 1/133; 1/1343

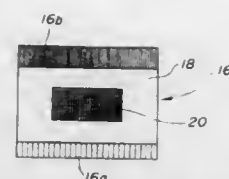
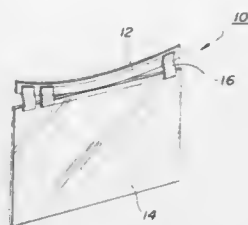
U.S. Cl. 349—128

42 Claims



1. A liquid crystal display cell comprising:
first and second substrates opposed to each other;
an array of pixel electrodes overlying said first substrate, each of said pixel electrodes defining a pixel area and having an active element for applying a voltage to said pixel electrode;
at least one counter electrode overlying said second substrate and opposing said array of pixel electrodes;
a first and a second orientation film overlying said pixel electrode and said counter electrode, respectively, said first orientation film having a first area and a second area subjected to a divided orientation alignment in different directions to divide each pixel area, said second orientation film being subjected to a uniform orientation alignment; and
a liquid crystal interposed between said first orientation film and said second orientation film, said first area and said second area defining a first domain and a second domain, respectively, for said liquid crystal, said liquid crystal having a

splay-type deformation structure in said first domain and a deformation structure other than said splay-type deformation structure in said second domain, said liquid crystal having a first pre-tilt angle in said first domain and a second pre-tilt angle in said second domain in the vicinity of said first orientation film, said first pre-tilt angle being larger than said second pre-tilt angle.



wiring board is positioned so that said one of said warp and weft glass yarns of said glass fiber woven fabric is disposed along an edge of said liquid crystal panel glass board.

5,781,263

LIQUID CRYSTAL DISPLAY DEVICE WHEREIN DRIVING FREQUENCY IS 200 OR LESS AND 50 THRESHOLD VOLTAGE IS 1.5 V OR LESS

Jun Kawagoe, Tokyo; Satoru Ihara, Amagasaki, and Hitoshi Ooaku, Chigasaki, all of Japan, assignors to Optrex Corporation, Tokyo, Japan

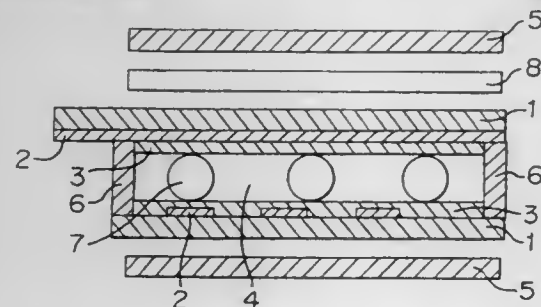
Filed Mar. 13, 1997, Ser. No. 816,895

Claims priority, application Japan, Mar. 14, 1996, 8-057954

Int. Cl.⁶ G02F 1/141; 1/1337; C09K 19/02; G09G 3/36

U.S. Cl. 349—135

7 Claims



1. A liquid crystal display device comprising a nematic liquid crystal composition of positive dielectric anisotropy sealed between two substrates each provided with a transparent electrode and an aligning layer formed on the electrode, and a polarizer disposed outside of at least one of the substrates, wherein the crossing angle formed between the directions of alignment in the aligning layers is 80°–300° and a low frequency of 200 or less in terms of the number of polarity inversion per second is applied for driving, the liquid crystal display device being characterized in that the value of a voltage corresponding to 50% threshold value is 1.5 V or less, and the aligning layers are composed of a fluorine-containing polymer material.

5,781,264

LIQUID CRYSTAL DISPLAY DEVICE

Masayuki Noda, Hikone; Yutaka Yamaguchi, Kusatsu; Minoru Yonekura, Hikone, and Hiroyuki Yamanaka, Shiga-ken, all of Japan, assignors to Shin-Kobe Electric Machinery Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1996, Ser. No. 620,120

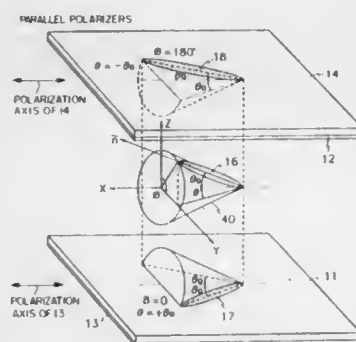
Claims priority, application Japan, Mar. 24, 1995, 7-065850; Jun. 2, 1995, 7-136369

Int. Cl.⁶ G02F 1/1345; H05K 1/18

U.S. Cl. 349—150

8 Claims

1. A liquid crystal display device comprising a multilayer printed wiring board having an insulation layer of glass fiber woven fabric impregnated with a resin, a liquid crystal panel glass board and tabs connecting said multilayer printed wiring board and said liquid crystal panel glass board, characterized in that said glass fiber woven fabric is formed of a warp and a weft having warp and weft glass yarns of a composition different from each other, one of said warp and said weft glass yarns having a coefficient of thermal expansion of 4 ppm/°C. or less, which is less than that of the other of said warp and weft glass yarns, and that said multilayer printed



1. A liquid crystal display comprising:
a first transparent electrode;
a second transparent electrode opposite the first electrode; and
a non-chiral smectic C liquid crystal disposed between the first and the second electrodes, the liquid crystal having a plurality of smectic layers perpendicular to the first and the second electrodes, and a molecular director which twists on going from the first electrode to the second electrode.

5,781,265

NON-CHIRAL SMECTIC C LIQUID CRYSTAL DISPLAY

Sin-Doo Lee, Seoul, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

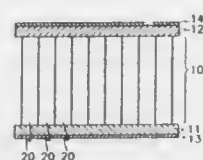
Filed Oct. 22, 1996, Ser. No. 736,200

Claims priority, application Rep. of Korea, Oct. 24, 1995, 95-36688

Int. Cl.⁶ G02F 1/139; 1/1335; 1/1337

U.S. Cl. 349—171

19 Claims



5,781,266

FERROELECTRIC LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR PRODUCING THE SAME

Kenji Nakao, Kadoma; Hiroyuki Ohnishi, Takarazuka; Naohide Wakita, Osaka; Kazuya Nagao, Kawagoe, and Naomi Takada, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan, and Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

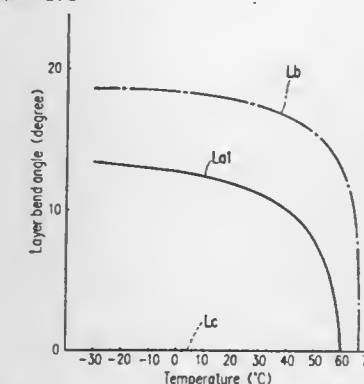
Filed Sep. 26, 1994, Ser. No. 312,410

Claims priority, application Japan, Sep. 27, 1993, 5-239900; Sep. 27, 1993, 5-240086

Int. Cl.⁶ G02F 1/141

U.S. Cl. 349—172

22 Claims



1. A ferroelectric liquid crystal display device comprising:
a pair of substrates;
a ferroelectric liquid crystal layer provided between the pair of substrates; and
an electrode for applying a voltage to the ferroelectric liquid crystal layer,
wherein the ferroelectric liquid crystal layer includes bent smectic layers, and an effective bend angle $\theta_L(T)$ of the bent smectic layers at a temperature (T) satisfies a relationship:
 $\theta_{Leff}(T) > \theta_L(T) > 0^\circ$ at the temperature (T) in an entire temperature range in which the ferroelectric liquid crystal display device is stored, where $\theta_{Leff}(T)$ is an effective bend angle of the smectic layers in a first state at the temperature (T), the first state being obtained by cooling the ferroelectric liquid crystal layer from a temperature higher than a phase transition temperature of a chiral smectic C phase—a smectic A phase to a temperature not higher than the phase transition temperature of the chiral smectic C phase—the smectic A phase, and the temperature range is maintained lower than the phase transition temperature, and the $\theta_{Leff}(T)$ and $\theta_L(T)$ are functions of the temperature (T).

5,781,267

ANTI-FERROELECTRIC LIQUID CRYSTAL WITH BLACK DISPLAY IN ONE FRAME, WHITE IN OTHER AND RATIO GIVING GREY SCALE

Akio Takimoto; Junichi Hibino, both of Neyagawa, and Hisahito Ogawa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 787,324, Jan. 28, 1997, abandoned, which is a continuation of Ser. No. 431,324, Apr. 28, 1995, abandoned. This application Oct. 14, 1997, Ser. No. 950,310

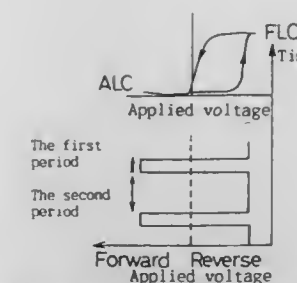
Claims priority, application Japan, May 2, 1994, 6-093191

Int. Cl.⁶ G02F 1/13

U.S. Cl. 349—174

20 Claims

1. A spatial light modulator comprising:
a photoconductor having current rectifying function;
a liquid crystal layer having an antiferroelectric phase as a phase of the liquid crystal;
a conductor reflection layer comprising a multilayer of thin films having different conductivities located between said photoconductor and said liquid crystal layer and
a pair of transparent electrodes,



wherein said photoconductor and said liquid crystal layer are located between said transparent electrodes.

5,781,268

POLARIZATION-INSENSITIVE FABRY-PEROT TUNABLE FILTER

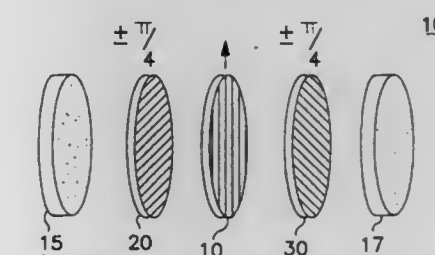
Jian-Yu Liu; Charles S. Wong, both of Boulder; Kristina M. Johnson, Longmont, and Gary D. Sharp, Boulder, all of Colo., assignors to Board of Regents of the University of Colorado, Boulder, Colo.

Filed Apr. 9, 1996, Ser. No. 629,976

Int. Cl.⁶ G02F 1/1335; 1/139

U.S. Cl. 349—198

26 Claims



1. A polarization-independent Fabry-Perot filter which comprises:
a Fabry-Perot cavity formed by two opposed reflective surfaces, a first and a second quarter wave plate within said Fabry-Perot cavity and a phase modulator between said first and second quarter wave plates wherein the optic axes of said first and second quarter-wave plates are oriented perpendicular to each other and at an angle of $\pm 45^\circ$ ($\pi/4$) to the optic axis of the phase modulator.

5,781,269

DISTANCE MEASURING METHOD AND DISTANCE SENSOR

Masami Ito; Kanji Nishii, both of Osaka; Tsuyoshi Nomura, Kyoto, and Seiji Hamano, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

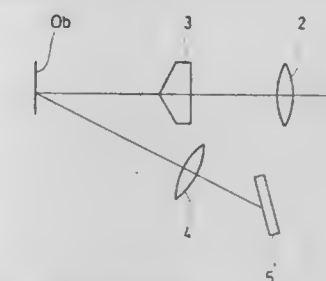
Filed Apr. 22, 1997, Ser. No. 847,991

Claims priority, application Japan, Apr. 23, 1996, 8-101347

Int. Cl.⁶ G01B 11/00

U.S. Cl. 356—375

13 Claims



2. A distance sensor comprising:

a light emitting element for emitting a light having a single wavelength;
 a collimator lens for changing the light emitted from the light emitting element to a parallel light, and for emitting the parallel light;
 a projection unit for emitting, toward a surface of an object to be measured, the parallel light emitted from the collimator lens which has been changed or is being changed to such a beam as to keep a small beam diameter for a long distance;
 a condenser lens for collecting the light diffused from the surface of the object to be measured; and
 a position detecting element for detecting a position of the light collected by the condenser lens.

5,781,270

FRAME FOR SPECTACLES WITHOUT SURROUND

Paolo Fortini, Florence, Italy, assignor to Bottega D'Arte In Firenze S.r.l., Florence, Italy

PCT No. PCT/IT95/00001, § 371 Date Mar. 5, 1996, § 102(e) Date Mar. 5, 1996, PCT Pub. No. WO96/02014, PCT Pub. Date Jan. 25, 1996

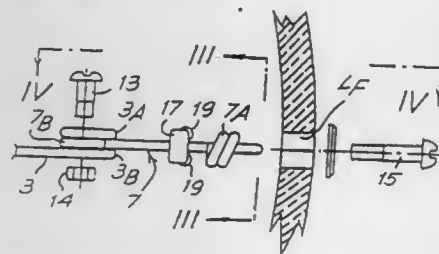
PCT Filed Jan. 4, 1995, Ser. No. 615,276

Claims priority, application Italy, Jul. 11, 1994, F194U0077; Nov. 17, 1994, F194U0122

Int. Cl.⁶ G02C 1/02; 5/22

U.S. Cl. 351—110

28 Claims



1. A frame for spectacles without a surround for the two lenses, including:

- a pair of arms;
- arm connecting elements, each of said arm connecting elements connecting an associated one of said arms to the respective lens of the two lenses;
- an intermediate bridge;
- a pair of pads;
- bridge locking means for locking the bridge to the respective lenses;
- connecting element locking means for locking said connecting elements to the respective lenses; and
- wherein said connecting elements each include a first bent end forming a helical spring inserted in a corresponding hole of the respective lens, said connecting element locking means comprising, for each lens, a screw inserted coaxially in said spring.

5,781,271

PORTABLE SAFETY SIDESHIELDS FOR EYE GLASSES

Richard R. Wheeler, Katy, Tex., assignor to Richard Randolph Wheeler, Katy, Tex.

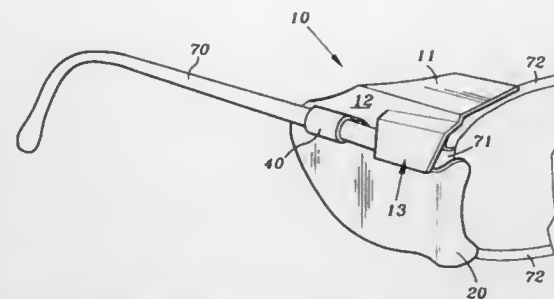
Filed Jan. 28, 1997, Ser. No. 790,027

Int. Cl.⁶ G02C 5/14

U.S. Cl. 351—121

14 Claims

1. A portable safety side shield for safety glasses having portability among glasses of different types, sizes, and shapes, and having an eye glass frame for lenses, an ear piece, and a hinge for connecting said ear piece to said eye glass frame, which comprises: an upper flap portion folded inward to cover an upper surface of said eye glass frame;



a forward flap portion folded inward to partially cover a front portion of said eye glass frame;
 a hinge cover for overlapping said hinge;
 a fastening arm for securing said portable safety side shield to said ear piece; and
 a side surface portion connected to said upper flap portion, said forward flap portion, said hinge cover and said fastening arm to form a barrier against foreign objects.

5,781,272

EYESIGHT PROTECTION APPARATUS WITH ATTACHED EARPLUGS

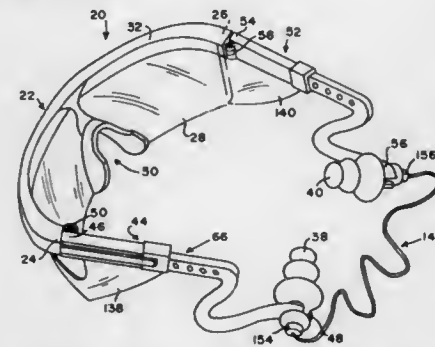
Aaron Lee Bright, and Robert W. Green, both of Memphis, Tenn., assignors to Safety+Plus, Inc., Memphis, Tenn.

Filed Jun. 6, 1997, Ser. No. 870,433

Int. Cl.⁶ G02C 5/20; 1/00; 5/14

U.S. Cl. 351—123

10 Claims



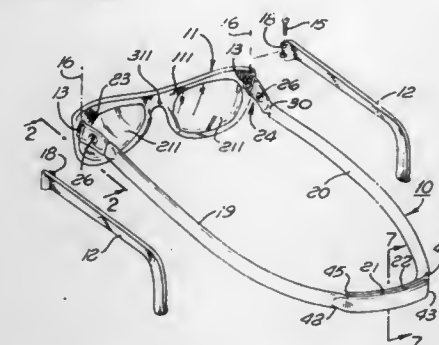
2. An eyesight and hearing safety apparatus for use by a human being, said apparatus comprising:

- (a) a front guard portion including a front transparent panel for protecting the eyesight of a human being and having a left front guard portion end and a right front guard portion end;
- (b) a left temple being attached to said left front guard portion end, said left temple including a substantially fixed-length left shape-retaining member;
- (c) a right temple being attached to said right front guard portion end, said right temple including a substantially fixed-length right shape-retaining member; and
- (d) a left and a right earplug, said left and right earplugs being for supporting said front guard portion from respective left and right auditory canals of the human being when the human being is wearing said apparatus, said left earplug being attached to said left shape-retaining member in fixed relation thereto and said right earplug being attached to said right shape-retaining member in fixed relation thereto.

5,781,273
RETAINER SYSTEM FOR REPLACING EXISTING EYEGLASS TEMPLES
 Robert O. Boden, 1580 Gaywood Dr., Altadena, Calif. 91001
 Filed Dec. 27, 1996, Ser. No. 777,283
 Int. Cl.⁶ G02C 3/00

U.S. Cl. 351—156

22 Claims



1. An eyewear retainer to be substituted for the temples of an eyeglass assembly, which assembly initially includes a forward structure having lenses and a first pair of hinge elements containing openings, and also initially includes a second pair of hinge elements containing openings and carried by the temples for initial attachment of the temples to the forward structure by fasteners extending through said openings in the first and second hinge elements, said retainer comprising:

- elongated, hermetically sealed elements to extend rearwardly from said forward structure at opposite sides of a user's head and filled with a gas; and
- connectors carried by said elongated elements at forward ends thereof and having projections adapted to be inserted through said openings in said first hinge elements and be retained therein to attach said elongated elements to said forward structure, whereby said temples may be detached from said forward structure and said projections engaged with said hinge elements to attach the connectors to the forward structure.

5,781,274

DEVICE FOR EXERCISING THE CILIARY MUSCLE

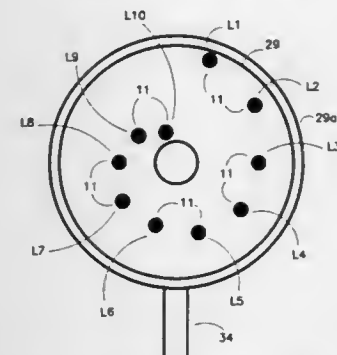
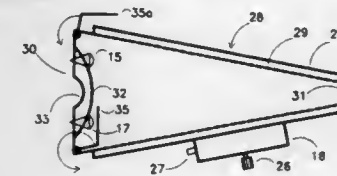
Gil G. Moreno, 4106 Dellbrook Dr., Tampa, Fla. 33624

Filed Jun. 18, 1997, Ser. No. 897,497

Int. Cl.⁶ A61B 3/00

U.S. Cl. 351—203

11 Claims



1. A device for exercising the ciliary muscle comprising in combination:

a first tubular enclosure with one end being open and the other end being closed;
 a plurality of light sources disposed and mounted on the inner surface of said first tubular enclosure, at different distances from the open end, and aimed toward the open end;
 a second tubular enclosure that surrounds said first tubular enclosure;
 an space between said first and second tubular enclosures for electrical conductors;
 an electronic circuitry to control said plurality of light sources;
 an electric battery;
 a casing to house said electronic circuitry and electric battery;
 a handle.

5,781,275

EYE REFRACTOMETER AND EYE REFRACTIVE POWER MEASURING APPARATUS FOR ELECTRO-OPTICALLY MEASURING THE REFRACTIVE POWER OF THE EYE

Yoshimi Kohayakawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

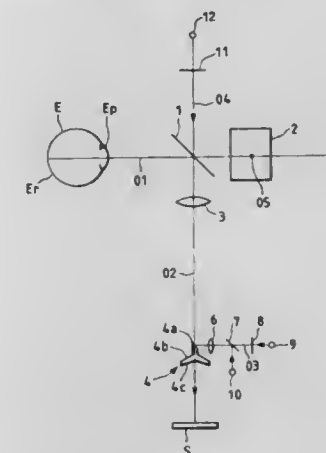
Filed Mar. 21, 1996, Ser. No. 619,333

Claims priority, application Japan, Mar. 24, 1995, 7-091376

Int. Cl.⁶ A61B 3/10

U.S. Cl. 351—211

11 Claims



1. An eye refractometer, comprising:
 a beam splitter arranged in front of an eye to be examined for splitting an optical path from the eye to be examined into an optical path for eye observing and an optical path for eye refracting;
 an eye observing optical system for observing the eye to be examined from a direction oblique to the viewing direction of the eye to be examined with a magnifying optical system by way of said beam splitter; and
 an eye refracting system for electro-optically measuring the refractive power of the eye to be examined by projecting a light beam to the eye receiving a light beam from the eye by way of said beam splitter.

wherein said predetermined infrared ray irradiating said half mirror is projected onto said object by way of said half mirror and said objective lens group.

1. A distance measurement device comprising: distance measurement means for measuring a distance to an object; setting means for dividing the full distance measurement range of the distance measurement means into a plurality of measurement zones of predetermined distance; judging means for judging which of the plurality of measurement zones a distance measurement result of the distance measurement means belongs to; storing means for storing a distance measurement result; movement detection means for comparing a current distance measurement result with a preceding distance measurement result stored in the storing means and determining, in accordance with the comparison, whether the object has moved further away from, closer to, or has remained in a stationary position with respect to the distance measurement means; and output means for generating a first output signal in accordance with a judgment result of the judging means and a second output signal in accordance with a comparison result of the movement detection means; wherein the movement detection means includes means for determining movement of the object only when a difference between the current distance measurement result and the preceding distance measurement result is greater than a predetermined value.

5,781,283

PROCESS AND ARRANGEMENT FOR THE MEASUREMENT OF PHYSICAL VALUES OF LIGHT SCATTERING MOVING PARTICLES BY MEANS OF A LASER DOPPLER ANEMOMETER

Ehrhard Dammann, and Juergen Bauer, both of Jena, Germany, assignors to Jenoptik AG, Jena, Germany

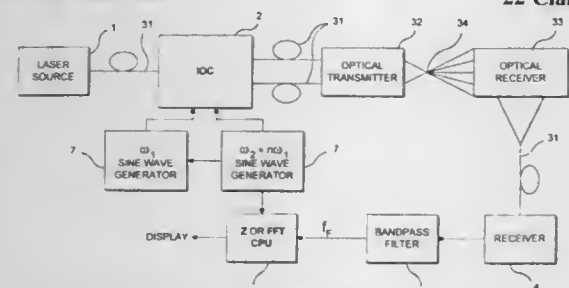
Filed May 10, 1996, Ser. No. 644,334

Claims priority, application Germany, Oct. 10, 1995, 195 37 647.1

Int. Cl.⁶ G01P 3/36

U.S. Cl. 356—28.5

22 Claims



1. A process for the measurement of physical values of light-scattering moving particles by means of a laser Doppler anemometer in which the light from at least a pair of coherent partial beams is superimposed in a measurement point of a measured volume after at least one of the partial beams has traversed a phase modulator and in which, when scattering particles are present in the measured volume, at least components of the partial beams reach at least one receiver as scattered light and are converted into electrical output signals which are analyzed with respect to the magnitude of the Doppler shift, comprising the steps of:

driving the phase modulator by two sinusoidal driving signals with different frequencies (ω_1 , ω_2) and amplitudes which are coupled so as to be fixed with respect to phase and frequency, wherein one frequency (ω_2) is an integer multiple of the other frequency (ω_1);

filtering a filter frequency (f_c) containing a common multiple of the two frequencies (ω_1 , ω_2) and having a bandwidth which detects the maximum anticipated Doppler shift from the output signal of the receiver by a bandpass filter; and

adjusting the driving signals with respect to the magnitude of their amplitude so that one of the two sidebands occurring in the signal which is filtered out is extensively suppressed and the other sideband is used for evaluating the Doppler shift.

5,781,284

SYSTEM FOR DETECTING IMPURITIES CONTAINED IN A FLUID MEDIUM

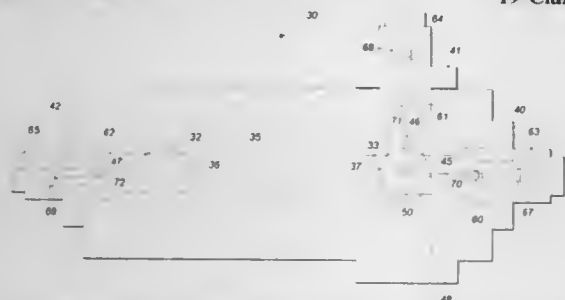
David A. Infante, 1285 Brooks Rd., Pendergrass, Ga. 30567

Filed Apr. 24, 1996, Ser. No. 640,286

Int. Cl.⁶ G01N 33/28; 21/00

U.S. Cl. 356—73

19 Claims



1. An apparatus for detecting impurities contained in a fluid medium being transported through a pipeline, said apparatus comprising:

a spectrometer;

a probe for insertion into the fluid medium, said probe defining a fluid flow path from a fluid inlet through a hollow bore to at least one fluid outlet for allowing fluid to flow through said probe;

at least one reflector for reflecting light projected into said probe toward said first end of said first fiber optic cable said reflector being within said fluid flow path;

a light wave generator for generating a light wave;

a first fiber optic cable connected on a first end to said probe and on a second end to said spectrometer;

a second fiber optic cable connected on a first end to said probe and on a second end to said light wave generator, wherein said light wave generator projects light into said second end of said fiber optic cable, wherein said first ends of said fiber optic cables are disposed in said probe in contact with the fluid medium; and

a computer connected to said spectrometer for receiving information generated by said spectrometer, wherein light projected into said second fiber optic cable is reflected inside said probe by impurities contained in the fluid medium such that the light reflected by the impurities is reflected into the first end of said first fiber optic cable and transmitted by said first fiber optic cable to said spectrometer, wherein said spectrometer analyzes the light transmitted thereto by said first fiber optic cable and outputs said information to said computer which determines the types and amounts of impurities contained in the fluid medium.

5,781,285

METHOD AND APPARATUS FOR MONITORING PRESENCE AND DIRECTION OF LIGHT IN OPTICAL FIBERS

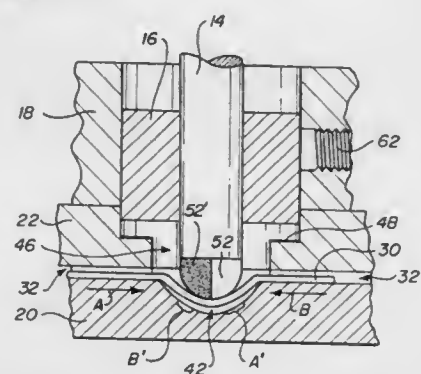
Paul Mampaey, Tremelo, and Mark DeMuyter, Aalst, both of Belgium, assignors to NuVisions International, Inc., Shohola, Pa.

Filed Dec. 23, 1996, Ser. No. 771,968

Int. Cl.⁶ G01N 21/84

U.S. Cl. 356—73.1

21 Claims



1. The method of determining the presence or absence and direction of light traveling through an optical fiber, said method comprising:

a) forming a macro bend in said fiber to cause a portion of the light carried by said fiber, if any to pass out of the fiber to impinge upon first and second, spaced, surface areas when said light is traveling in first and second directions, respectively, wherein said surface areas are mutually distinct portions of a continuous, concave surface and said macro bend extends toward said surface;

b) reflecting light impinging upon said first and second surface areas along first and second paths, respectively;

c) positioning light-sensitive means in said first path to provide an indication of whether or not light is traveling through said fiber in said first direction, and, if not;

d) positioning light-sensitive means in said second path to provide an indication of whether or not light is traveling through said fiber in said second direction.

5,781,286

METHOD AND APPARATUS FOR MEASUREMENT OF AXLE AND WHEEL POSITIONS OF MOTOR VEHICLES

Anton Knestel, Hopferbach, Germany, assignor to Knestel Elektronik GmbH, Germany

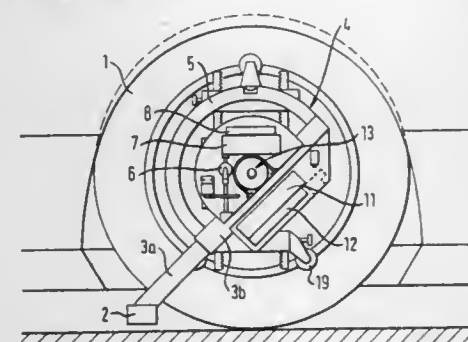
Filed Apr. 16, 1996, Ser. No. 633,153

Claims priority, application European Pat. Off., Nov. 14, 1995, 95117953

Int. Cl.⁶ G01B 11/26; 5/24

U.S. Cl. 356—139.09

25 Claims



1. A method for measuring the wheel positions of double-track motor vehicles, the method comprising the steps of:

detecting the relevant wheel angles, such as the track, the king pin inclination, the inclination of the steering knuckle pivot, the axle pin rake, the eccentricity and the like by means of measuring heads mounted on the wheel rims of the vehicle wheels, each measuring head being pivotable around the extension of the axis of rotation of the respectively related vehicle wheel;

coupling the measuring data of the wheel positions from said detecting step to processing means;

evaluating and displaying the measuring data by the processing means; and

holding the measuring heads in their predetermined measuring positions when the vehicle wheels are rotationally driven by means of a position control.

5,781,287

COIL BODY FOR MINIATURE RELAYS AND THE LIKE

Alfred Heinzl, and Heinz Stadler, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

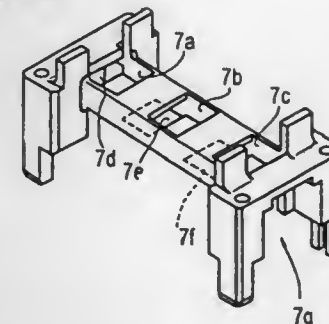
Filed May 6, 1996, Ser. No. 642,881

Claims priority, application Germany, May 18, 1995, 19518349.5

Int. Cl.⁶ H01F 27/29; 27/30

U.S. Cl. 336—192

12 Claims



1. A one-piece insulative coil body comprising:

a coil tube having opposed end segments, at least two opposite sides extending between the end segments, and a central axis, the coil tube being adapted for bearing windings;

a pair of one-piece flanges, one of the flanges respectively formed integrally on each end segment of the coil tube;

at least one radial recess extending between the end segments, each formed radially into one of the opposite sides to a depth beyond the central axis;

a first recess formed axially adjacent one of the at least one radial recesses and radially into one of the opposite sides and one of the end segments to a depth beyond the central axis;

a second recess formed axially adjacent one of the at least one radial recesses and radially into one of the opposite sides and another of the end segments to a depth beyond the central axis;

each recess being formed into an alternatingly opposite side of the coil tube relative to each adjacent recess; and

an axially continuous core opening extending completely through the coil tube and shaped to receive a winding spindle, the core opening formed by the depth of each of the adjacent recesses.

5,781,288

METHOD OF INSPECTING LOCATION OF OPTICAL FILM AND SYSTEM FOR CARRYING OUT THE METHOD

Motoh Asakura; Kazuya Kobayashi, both of Matsusaka, and Shinji Nishikawa, Ise, all of Japan, assignors to Central Glass Company, Limited, Yamaguchi, Japan

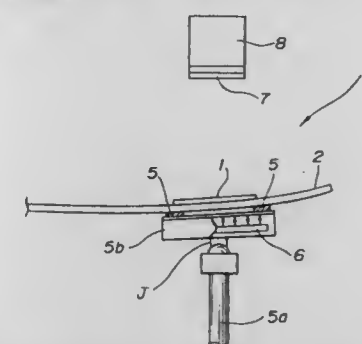
Filed Sep. 25, 1996, Ser. No. 719,373

Claims priority, application Japan, Sep. 27, 1995, 7-249287; Jun. 26, 1996, 8-166435; Jul. 29, 1996, 8-198879

Int. Cl.⁶ G01N 21/00

U.S. Cl. 356—239

14 Claims



1. A method of inspecting a location of an optical film relative to a transparent plate at a predetermined position, comprising the following steps:

disposing an inspection plate to face a surface of said transparent plate and at a standard position at which said inspection plate includes an optically functioning section which has inner and outer peripheries, in section, defining therebetween an area corresponding to a permissible range for location of a peripheral edge of said optical film; and

observing a locational relationship between the peripheral edge of said optical film and said area of said inspection plate under action of light reaching said optically functioning section so as to make a judgment as to whether the peripheral edge of said optical film is within said allowable range.

5,781,289

METHOD AND APPARATUS FOR RAPID IN SITU ANALYSIS OF PRESELECTED COMPONENTS OF HOMOGENEOUS SOLID COMPOSITIONS, ESPECIALLY PHARMACEUTICAL COMPOSITIONS

Mohamad Sabsabi, 453 Darontal, #417, Boucherville, Québec, Canada, J4B 6J4, and Jean F. Bussiere, 1000 Des Tilleuls, #4, St. Bruno, Québec, Canada, J3V 5N8

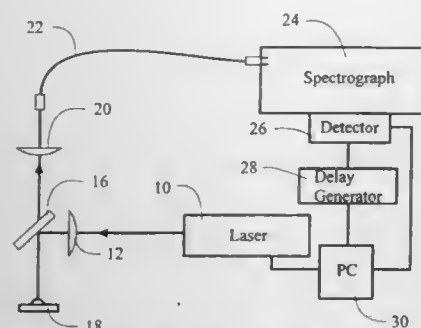
Filed Nov. 5, 1996, Ser. No. 744,213

Int. Cl.⁶ G01N 21/63

U.S. Cl. 356—318

5 Claims

1. A method of in-situ measuring the content of a predetermined molecular component of a solid chemical composition, the molecular component being dispersed substantially homogeneously within a matrix, the method comprising:



emitting laser pulses from a laser energy emitter, focusing said pulses on a sample of said solid composition to generate a plasma containing elemental radiation derived from separate chemical elements of said molecular component

measuring the radiation intensity of a wavelength of the radiation which is representative of a selected chemical element which is present in said molecular component at a different concentration than in the matrix of said composition, and determining the content of said predetermined component in said composition as a function of said radiation intensity.

5,781,290

SPECTRAL APPARATUS OF THE CONCENTRIC TYPE HAVING A FERY PRISM

Reinhold Bittner, Schwäbisch Gmünd, Germany; Yves Delclaud, Callian, France; Guy Cerutti-Maori, Cannes La Bocca, France, and Jean-Yves Labandibar, Theoule Sur Mer, France, assignors to Aérospatiale Société Nationale Industrielle, Paris, France, and Carl-Zeiss-Stiftung, Heidenheim, Germany

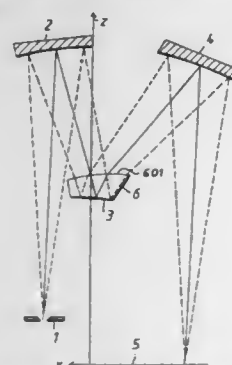
Filed Oct. 15, 1996, Ser. No. 730,710

Claims priority, application Germany, Oct. 12, 1995, 195 37 949.7

Int. Cl.⁶ G01J 3/28

U.S. Cl. 356—326

27 Claims



1. A spectral apparatus defining an optical beam path along which a beam can travel and comprising:

- an entry slit arranged on said optical beam path;
- a first concave mirror mounted on said beam path downstream of said entry slit for deflecting said beam;
- a prismatic unit arranged on said beam path downstream of said first concave mirror and including at least one curved prism for dispersing said beam;
- a second concave mirror arranged on said beam path for receiving and deflecting the dispersed beam; and,
- an image surface receiving the deflected and dispersed beam to provide a spectral image thereof.

5,781,291 SMOKE DETECTORS UTILIZING A HYDROPHILIC SUBSTANCE

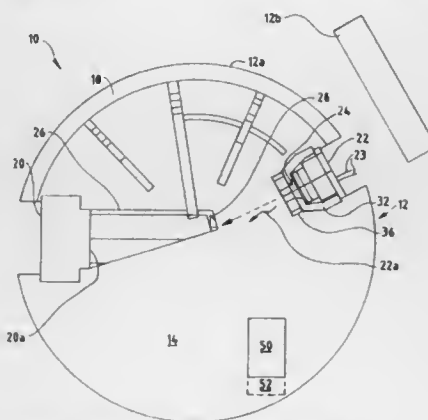
Bernard Y.C. So, Wheaton; George A. Schoenfelder, Batavia, both of Ill., and Juliette C. Daly, Pleasanton, Calif., assignors to Pittway Corporation, Chicago, Ill.

Filed Oct. 22, 1996, Ser. No. 734,897

Int. Cl.⁶ G01N 21/00; G08B 17/10

U.S. Cl. 356—338

24 Claims



1. An ambient condition detector comprising: a housing which defines a sensing region; a source for projecting a beam of radiant energy into the region; a sensor carried by said housing for converting scattered radiant energy incident thereon to a corresponding electrical signal wherein the housing carries an element which is selected from a class which includes a surfactant containing plastic, a surfactant coated plastic, and a porous plastic which incorporates a hydrophilic substance.

5,781,292

SHORT PATH SCANNING INTERFEROMETER

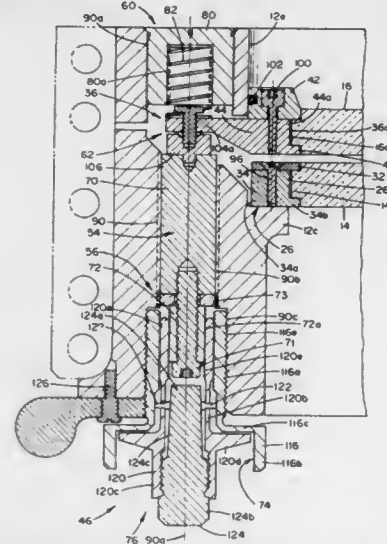
Edwin G. Haas, Sayville; Theodore W. Hilgeman, Centerport, and Robert E. Ryan, Levittown, all of N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 473,059, Jun. 7, 1995. This application Aug. 28, 1997, Ser. No. 919,837

Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—345

23 Claims



1. A short path scanning interferometer comprising: a base forming an interior; a first optical member located in the interior of the base; a first retainer assembly connecting the first optical member to the base;

a second optical member located in the interior of the base at a distance from the first optical member; and translation means for moving the second optical member relative to the first optical member to vary said distance between a minimum spacing of zero to a maximum spacing thereby allowing short path scanning over a wide optical bandwidth; and a second retainer assembly connecting the second optical member to the translation means.

5,781,293

FOURIER TRANSFORM SPECTROMETER UTILIZING A BIREFRINGENT OPTICAL COMPONENT

John Miles Padgett, Boarhills, Scotland; Alan James Duncan, Dunblane, United Kingdom; Wilson Sibbett, and Andrew Robert Harvey, both of St. Andrews, Scotland, assignors to Siemens Plc., Berkshire, England

PCT No. PCT/GB94/01499, § 371 Date Apr. 17, 1996, § 102(e) Date Apr. 17, 1996, PCT Pub. No. WO95/02171, PCT Pub. Date Jan. 19, 1995

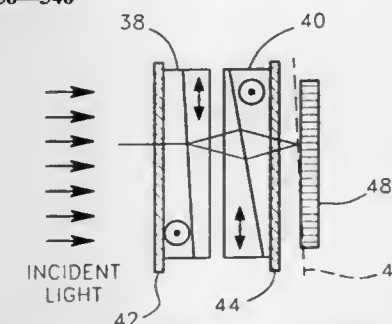
PCT Filed Jul. 11, 1994, Ser. No. 586,671

Claims priority, application United Kingdom, Jul. 10, 1993, 9314302

Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—346

12 Claims



1. A Fourier-transform spectrometer arrangement comprising an aperture through which light from an extended source passes, a birefringent optical component interposed between first and second polarisers, the polarisation axes of which are aligned so that they are positioned at substantially 45° to the optical axis of the birefringent optical component, characterised in that:

the birefringent optical component comprises a plurality of juxtapositioned birefringent prisms which are arranged to form therebetween at least two interfaces, the optic axis of each of said birefringent prisms which form each of said at least two interfaces being substantially perpendicular to each other and an internal angle of each of said interfaces being different with respect to one another and arranged such that a first of said at least two interfaces and a subsequent of said at least two interfaces are inclined in like senses to the light incident thereon, wherein light from the extended source passes through a first of said birefringent prisms, is caused to diverge by the first of said at least two interfaces, and after passing through a second of said birefringent prisms is caused to converge by the subsequent of said at least two interfaces so as to form a spatially dispersed interferogram on a detector array disposed proximate an exit face of a further of said birefringent prisms, thereby eliminating a need for an imaging lens.

5,781,294

METHOD AND APPARATUS FOR DETECTING PHOTOACOUSTIC SIGNAL TO DETECT SURFACE AND SUBSURFACE INFORMATION OF THE SPECIMEN

Toshihiko Nakata; Takanori Ninomiya, both of Hiratsuka; Hilario Haruomi Kobayashi, Yokohama, and Kazushi Yoshimura, Kamakura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

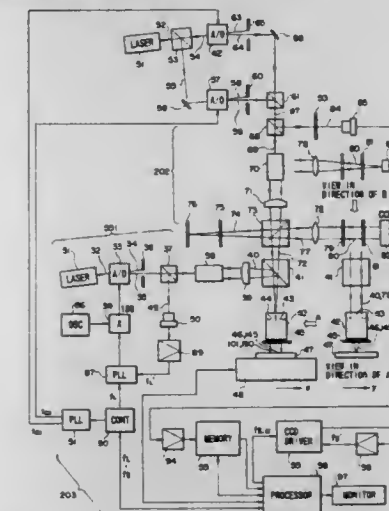
Continuation-in-part of Ser. No. 994,150, Dec. 21, 1992, Pat. No. 5,479,259, which is a continuation-in-part of Ser. No. 886,014, May 20, 1992, Pat. No. 5,377,006. This application Oct. 25, 1995, Ser. No. 548,015

Claims priority, application Japan, Dec. 24, 1991, 3-340646; Dec. 24, 1991, 3-340647; Mar. 17, 1992, 4-060130; Aug. 23, 1995, 7-214424

Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—349

25 Claims



1. A photoacoustic signal detection method comprising: irradiating an excitation light focused by a focusing optical system in a state of at least one dimensional linear shape simultaneously, intensity modulated by a desired frequency, to an at least one dimensional linear shape portion being measured on the surface of a sample simultaneously; irradiating at least one dimensional linear shape probe light to said one dimensional linear shape portion being measured on the surface of the sample simultaneously; detecting at least one dimensional linear shape interference light simultaneously caused by interference between a reflected light of said at least one dimensional linear shape probe light and a specified at least one dimensional linear shape reference light with a detector in conjugate relation with said surface of said sample, said detector provided with a plurality of photoelectric converting elements in the state of the at least one dimensional linear shape corresponding to said one dimensional linear shape portion being measured; detecting at least one dimensional linear shape thermal distortions obtained by each of said plurality of frequency components equal to said intensity-modulated frequency at each of a plurality of points along said at least one dimensional linear shape portion being measured in accordance with variation with time on said at least one dimensional linear shape interference light comprising intensity signals detected by said each of photoelectric converting elements of said detector; and detecting information relative to the surface and a subsurface at each of the plurality of points along said at least one dimensional linear shape portion being measured of the sample from said at least one dimensional linear shape thermal distortion obtained by each of the plurality of said frequency components at each of the plurality of points along said at least one dimensional linear shape portion.

5,781,295

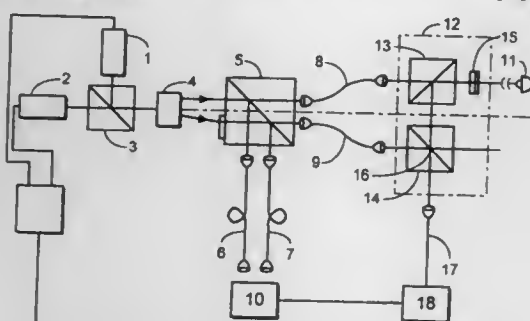
INTERFEROMETER FOR ABSOLUTE DISTANCE MEASUREMENT

Werner Fuchs, Cospeda; Andreas Wolfram, Karlsburg; Karl-Heinz Bechstein, Jena, and Klaus Dieter Salewski, Greifswald, all of Germany, assignors to Carl Zeiss Jena GmbH, Jena, Germany

Filed Aug. 8, 1996, Ser. No. 693,624
Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—349

3 Claims



1. An interferometer assembly for absolute distance measurement, comprising:

two lasers producing respective light beams of different frequencies, at least one of said lasers being tunable to produce light beams having a variable frequency;

an optical device for collinear superposition of the light beams of the two lasers to produce a superimposed light beam;

exactly one acousto-optical modulator disposed downstream of said optical devices for receiving said superimposed light beam;

a first interferometer unit disposed downstream of said acousto-optical modulator for generating heterodyne or beat output signals from which periodic signals can be produced after electronic mixing and filtering, said periodic signals, during continuous variation of the frequency of said one of said lasers, undergoing phase angle changes proportional to optical path lengths in said first interferometer unit;

a second interferometer unit serving as a reference or comparison interferometer, said second interferometer unit having an optical path length different from the optical path lengths in said first interferometer unit, said second interferometer unit producing respective output signals;

mixing and filtering stages for combining or linking the output signals of said first interferometer unit and said second interferometer unit so that said periodic signals can be generated which, independently of the frequencies of the light beams of said lasers, indicate all phase angle changes which are caused by variation in laser frequency and are dependent on optical path lengths in said first interferometer unit and said second interferometer unit;

electronic analog-to-digital converters which receive or register the periodic signals during laser tuning and transmit said signals to a microcomputer for evaluating signal waveforms over time;

a beam splitter disposed between said acousto-optical modulator on an upstream side and said first interferometer unit and said second interferometer unit on a downstream side; and

light conducting elements disposed between said two lasers and said acousto-optical modulator, between said acousto-optical modulator and said beam splitter, between at least one light output of said beam splitter and a light input of at least one of said first interferometer unit and said second interferometer unit, and within said first interferometer unit and said second

interferometer unit, the light conducting elements being provided for beam guidance so that an identical beam geometry is ensured for any said superimposed light beam.

5,781,296

CLOSED LOOP TYPE FIBER OPTIC GYROSCOPE FOR MEASURING ABSOLUTE ROTATION BY DELTA SERRODYNE WAVE PHASE MODULATION

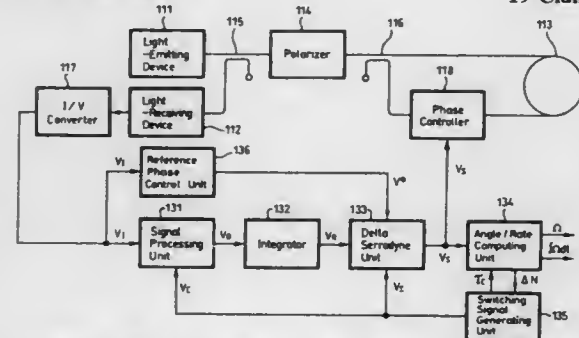
Kanshi Yamamoto; Shinichi Kawada; Takeshi Hojo, all of Kuroiso; Yoshiyuki Okada, Ujite-machi, and Isao Masuzawa, Kuroiso, all of Japan, assignors to Tokimec Inc., Tokyo, Japan

Filed Jul. 23, 1996, Ser. No. 686,365
Claims priority, application Japan, Jul. 28, 1995, 7-193357;
Dec. 8, 1995, 7-320645

Int. Cl.⁶ G01C 19/64

U.S. Cl. 356—350

19 Claims



1. A fiber optic gyro comprising a light source; an optical fiber loop; means for producing a control voltage input signal having a triangular wave form including an up slope linear portion corresponding to a first time T_A and a down slope linear portion corresponding to a second time T_B , said input signal having a constant period T where $T=T_A+T_B$; a first propagating beam and a second propagating beam propagating along said optical fiber loop in opposite directions; a phase controller for receiving said control voltage input signal and adjusting a phase differential between said first and second propagating beams according to said control voltage input signal; a light receiving device for detecting an interference between said first and second propagating beam, converting said interference into a interference light intensity signal I and outputting said signal; said phase controller generating a reference phase difference $\Delta\beta$ and a ramp phase difference $\Delta\sigma$ in said interference light intensity signal I , said reference phase difference $\Delta\beta$ having a first reference phase difference portion $\Delta\beta_A$ corresponding to first time T_A and a second reference phase difference portion $\Delta\beta_B$ corresponding to second time T_B , said first and second reference phase difference portions having opposite polarities and equal absolute values, means for receiving said light intensity signal I and detecting from said signal a difference between a Sagnac phase difference $\Delta\theta$ and said ramp phase difference $\Delta\sigma$; said ramp phase difference $\Delta\sigma$ having a first inclination corresponding to a phase difference $\Delta\beta_A+\sigma$ during said first time T_A and a second inclination corresponding to a phase difference $\Delta\beta_B$ during said second time T_B , one of said first and second inclinations having a positive value and the other having a negative value, thereby producing a delta serrodyne wave signal having a waveform that inclines at every time T_A and T_B ; means for controlling said times T_A and T_B so as to thereby retain a mean value of said triangular wave within a predetermined amplitude, whereby a rotation rate Ω is obtained from the Sagnac phase difference $\Delta\theta$ generated in said interference light intensity signal I when said optical fiber is rotated around a central axis of said loop at said rotation rate Ω .

5,781,297

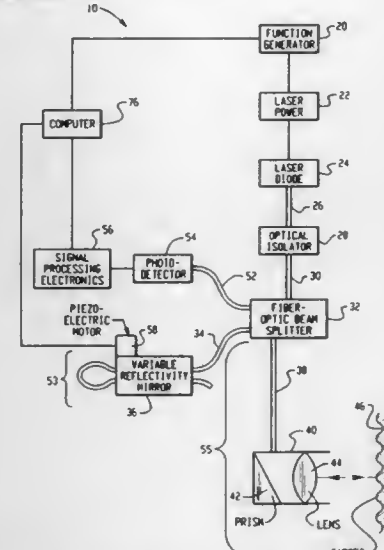
MIXED FREQUENCY AND AMPLITUDE MODULATED FIBER OPTIC HETERODYNE INTERFEROMETER FOR DISTANCE MEASUREMENT

Glen Castore, Roseville, Minn., assignor to M&M Precision Systems Corporation, West Carrollton, Ohio

Filed Aug. 23, 1996, Ser. No. 702,284
Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—349

20 Claims



1. A frequency-modulated heterodyne interferometric system for high precision metrology of a target, wherein a beat frequency is produced on a photodetector as a result of combining on said photodetector, a reference optical signal and a target optical signal, the target optical signal being reflected from the target, the system comprising:

signal intensity detection means for accommodating variable reflectivity and variable alignment of the target with respect to the interferometric system by maintaining the amplitude of the beat frequency relative to the reference optical signal, and for estimating the signal-to-noise ratio of the beat frequency by measuring the relative intensity of the reference optical signal and the target optical signal, and

a fiber optic path for conveying the reference optical signal to the photodetector, the fiber optic path having a variable intensity fiber optic coupler interposed therein, the variable intensity fiber optic coupler having an actuator for selecting a level of intensity of the reference optical signal conveyed to the photodetector.

5,781,298

LIGHT MIXING TECHNIQUE FOR ISOLATION AND AMPLIFICATION OF LASER SIGNAL FROM BACKGROUND NOISE DUE TO SCATTERING IN TURBID MEDIA

Nancy L. Swanson, Colonial Beach, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 26, 1996, Ser. No. 755,819
Int. Cl.⁶ G01B 9/02

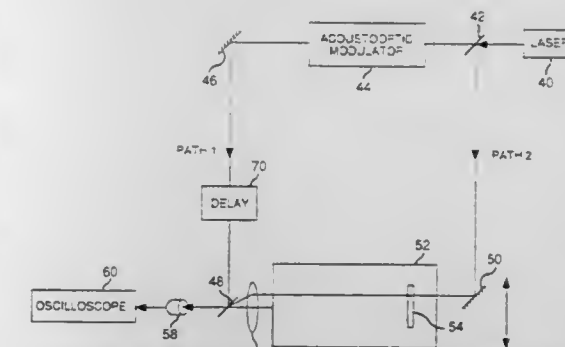
U.S. Cl. 356—349

8 Claims

1. A system for detecting an object in a turbid medium, comprising:

a coherent light source for producing a coherent light beam; a first beam splitter arranged to receive the coherent light beam and produce a first optical signal directed along a first optical path and a second optical signal directed along a second optical path;

a modulator placed in the first optical path for modulating the first optical signal at a frequency Ω ;



a light reflector arranged to receive the second optical signal and direct a reflected beam toward the object; scanning means for moving the light reflector to scan the reflected beam across the object; a light collector arranged to collect portions of the second optical signal that have impinged upon the object; and an optical signal combiner arranged to heterodyne optical signals output from the modulator and the portions of the second optical signal that have impinged upon the object and that have been collected by the light collector to produce a signal indicative of the shape of the object.

5,781,299

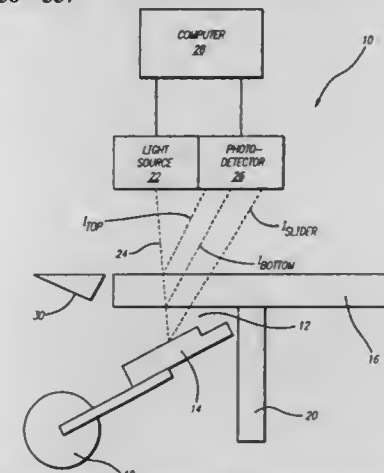
DETERMINING THE COMPLEX REFRACTIVE INDEX PHASE OFFSET IN INTERFEROMETRIC FLYING HEIGHT TESTING

Kenneth H. Womack, San Diego, and L. Allan Butler, Carlsbad, both of Calif., assignors to Phase Metrics, San Diego, Calif.

Filed Sep. 24, 1996, Ser. No. 719,252
Int. Cl.⁶ G01B 11/02; G01N 21/41

U.S. Cl. 356—357

34 Claims



1. An apparatus that measures a space between an essentially transparent member and a reflective member which has a reflectance and a real index of refraction, comprising:

a light source that directs a light beam through the transparent member and the space to reflect off the transparent member and the reflective member to create an interference pattern; a detector that detects the interference pattern of the reflected light beam;

a computer that computes the reflectance of the reflective member from the reflected light beam and computes the real index of refraction from the reflectance in accordance with a predetermined correlation between the reflectance and the real index of refraction, said computer further computes the space from the reflectance and the real index of refraction.

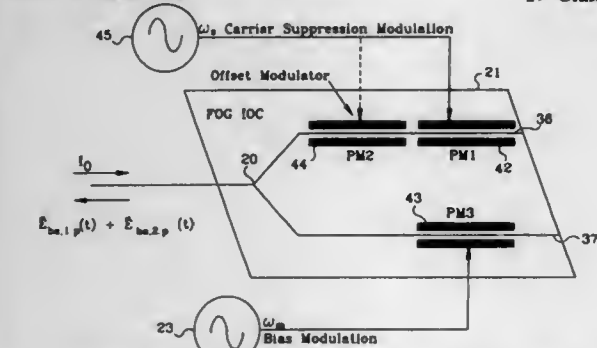
5,781,300

BACKSCATTER ERROR REDUCER FOR INTERFEROMETRIC FIBER OPTIC GYROSCOPE
Lee K. Strandjord, Tonka Bay, Minn.; Glen A. Sanders, Scottsdale, Ark.; Bogdan Szafraniec, Cave Creek, Ark., and Ralph A. Bergh, Phoenix, Ark., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 31, 1996, Ser. No. 741,464
Int. Cl.⁶ G01C 19/72

U.S. Cl. 356—350

19 Claims



1. A backscatter error reducer for an interferometric fiber optic gyroscope, comprising:

- first source means for providing primary waves of light;
- a splitting means, connected to said first source means, for splitting the primary waves of light into first and second beams of primary waves of light;
- optical fiber loop means, connected to said splitting means, for receiving the first beam of primary waves of light that propagates through said optical fiber loop means in a clockwise direction, and receiving the second beam of primary waves of light that propagates through said optical fiber loop in a counterclockwise direction;
- detecting means, situated proximate to said splitting means, for detecting the first and second beams of primary waves of light that are received and converting phase relationships among the waves of light into rotation rate information;
- second source means for providing a first phase modulation signal having a first amplitude and a first frequency;
- third source means for providing a second phase modulation signal having a second amplitude that is sufficient for removing backscatter induced rotation rate sensing error from the rotation rate information of the detector and a second frequency that is approximately equal to a harmonic of a proper frequency of the sensing loop; and
- modulator means, connected to said splitting means, for phase modulating at least one beam of the first and second beams of light, in accordance with the first and second phase modulation signals.

5,781,301

THERMALLY SYMMETRIC, CROSSOVER-FREE FIBER OPTIC SENSOR COILS AND METHOD FOR WINDING THEM

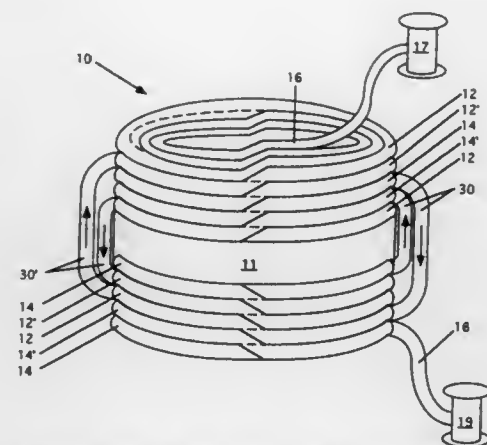
Paul B. Ruffin, Toney, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 31, 1997, Ser. No. 829,266
Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—350

20 Claims

- 1. A substantially cylindrical symmetrically wound coil for a fiber optic rotation sensor, comprising:
 - a) a centrally disposed flat cylindrical disc disposed in the center of the coil, having an aperture and an inner diameter at the center thereof;
 - b) a continuous optical fiber of substantially uniform cross section comprising two segments of substantially symmetrical configurations with respect to said disc and extending through said aperture;



- c) a spirally wound first fake of a first segment of said fiber disposed on one side of said disc in a helical spiral extending from said inner diameter of said disc to its outer circumference in closely spaced spiral loops;
- d) a spirally wound first fake of a second segment of said fiber disposed on the other side of said disc in a helical spiral extending from said inner diameter of said disc to its outer circumference in closely spaced spiral loops;
- e) a first connecting portion of said first segment of said fiber extending from said outer circumference of said one side of said disc across the outer circumference of said disc and said first fake of said second segment of said fiber;
- f) a spirally wound second fake of said first segment of said fiber juxtaposed on the surface of said first fake of said second segment of said fiber in a helical spiral extending from the outer circumference of said disc to the inner diameter of said disc;
- g) a first connecting portion of said second segment of said fiber extending from said outer circumference of said one side of said disc across the outer circumference of said disc and said first fake of said first segment of said fiber;
- h) a spirally wound second fake of said second segment of said fiber juxtaposed on the surface of said first fake of said first segment of said fiber in a helical spiral extending from the outer circumference of said disc to the inner diameter of said disc;
- i) a spirally wound third fake of said first segment of said fiber juxtaposed on the surface of said second fake of said first segment of said fiber in a helical spiral extending from said inner diameter of said disc to its outer circumference in closely spaced spiral loops;
- j) a spirally wound third fake of said second segment of said fiber juxtaposed on the surface of said second fake of said second segment of said fiber in a helical spiral extending from said inner diameter of said disc to its outer circumference in closely spaced spiral loops; and
- k) the ends of each of said segments of said fiber being adapted for connection to a fiber optic rotation sensor.

5,781,302

NON-CONTACT SHAPE METER FOR FLATNESS MEASUREMENTS

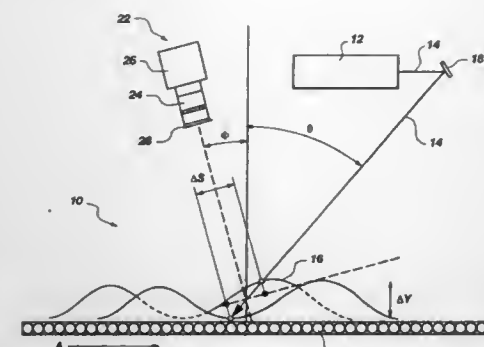
Robert J. Grow, Sandy; Richard W. Grow, Salt Lake City, and Robert E. Benner, Holladay, all of Utah, assignors to Geneva Steel, Provo, Utah

Filed Jul. 22, 1996, Ser. No. 681,166
Int. Cl.⁶ G01B 11/30

U.S. Cl. 356—371

10 Claims

- 1. A shape meter for measuring the deviation from flatness of a moving rolled steel plate comprising:
 - a laser source for generating a laser signal which can be detected in the presence of background radiation emitted by the steel plate;



means for directing the laser signal on the moving steel plate at an angle θ relative to a line perpendicular to the direction the steel plate is moving, wherein the laser signal forms a laser illuminated spot on the steel plate;

- a detector comprising an optical filter, an optical lens, and a lateral effect diode sensor for measuring light scattered from the illuminated spot at an angle Φ relative to a line perpendicular to direction the steel plate is moving; and
- a computer for calculating and reporting the deviation from flatness of a moving rolled steel plate based on the scattered light measured with the lateral effect diode sensor according to the following equation:

$$\Delta Y = \frac{\Delta S \cos \theta}{\cos(90 - \Phi - \theta)}$$

wherein ΔY is the amount of vertical displacement of the moving steel plate and ΔS is the position of the laser-illuminated spot on the steel plate.

5,781,303

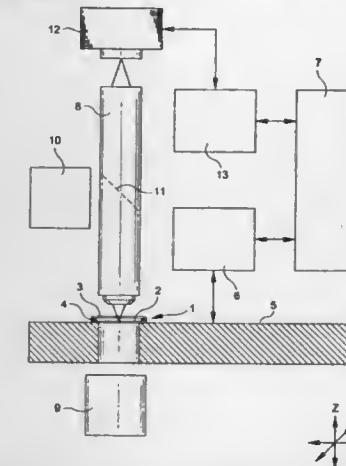
METHOD FOR DETERMINING THE THICKNESS OF AN OPTICAL SAMPLE

Klaus W. Berndt, Timonium, Md., assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 29, 1997, Ser. No. 920,500
Int. Cl.⁶ G01B 11/06; G02B 7/04

U.S. Cl. 356—381

7 Claims



- 1. A method for precisely determining the thickness of optical samples at the time an absorbance measurement or other spectroscopic measurements are performed on said sample(s), comprising:
 - a) providing a sample container comprising a first and a second optically transparent window, whereby the inner surface of the first window has first optical markers, and the inner surface of the second window has second optical markers;
 - b) depositing an optical sample into the sample container;
 - c) loading the sample container into an optical microscope;
 - d) moving the sample container until one of the first optical markers is identified and located within the field of view, and

5,781,304

LASER ULTRASONICS-BASED MATERIAL ANALYSIS SYSTEM AND METHOD

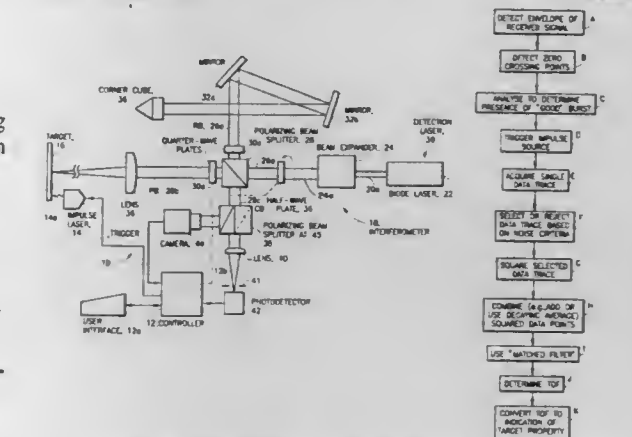
Petros Amestis Kotidis, Framingham; James Frederick Cunningham, Lincoln; Paul Fred Gozewski, Haverhill; Charles Borsody, Winchester; Daniel Edward Klimek, Lexington, and Jaime A. Woodroffe, North Reading, all of Mass., assignors to Textron Systems Corporation, Wilmington, Mass.

Division of Ser. No. 482,782, Jun. 7, 1995, Pat. No. 5,604,592, which is a division of Ser. No. 308,372, Sep. 19, 1994, abandoned. This application Feb. 14, 1997, Ser. No. 800,836

Int. Cl.⁶ G01B 9/02

U.S. Cl. 356—432 T

1 Claim



- 1. A system for determining a characteristic of a target, comprising:
 - impulse means for generating an impulse beam and for directing said impulse beam over a target path distance to a surface of the target for launching an elastic wave within the target;
 - interferometer means for detecting a displacement of the surface of the target in response to the launched elastic wave, said interferometer means including a semiconductor laser diode generating an output beam;
 - means for generating a target probe beam and a reference beam from said output beam;
 - means for determining a time varying characteristic of said elastic wave within the target from said detected displacement;
 - means for correlating said determined time varying characteristic with a property of interest of the target; and
 - means for substantially equalizing a path length of said target probe beam to a path length of said reference beam to compensate for frequency jitter in said output beam.

5,781,305

FIBER OPTIC TRANSMISSOMETER

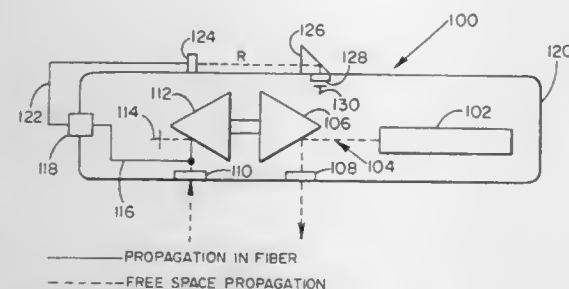
Philip Downes, 15525 Grinnell Ter., Rockville, Md. 20855
Continuation-in-part of Ser. No. 595,161, Feb. 1, 1996. This application Apr. 18, 1997, Ser. No. 839,364

Int. Cl.⁶ G01N 21/59

U.S. Cl. 356—435

62 Claims

- 1. A transmissometer for measuring a volume attenuation coefficient of a column of water, comprising:



a transmissometer housing;

light source means for producing light, splitting the light into two beams within said transmissometer housing, and routing the two beams in two optical fibers, outside said transmissometer housing;

two collimators, collimating two outputs of the two optical fibers prior to transmission through the column of water;

a reflecting prism, reflecting the two outputs of said two collimators back into said transmissometer housing via a sensor view port, wherein a distance between a first of said two collimators and said reflecting prism is R1 and a distance between a second of said two collimators and said reflecting prism is R2;

two detectors, detecting intensities I1 and I2 of the two outputs reflected by said reflecting prism; and processing means for determining the volume attenuation coefficient of the column of water according to:

$$\alpha = \Delta R^{-1} \ln(I_2/I_1)$$

where

α =volume attenuation coefficient of the column of water;

ΔR =In water path length difference (R1-R2);

I1=Intensity at the first of said two detectors; and

I2=Intensity at the second of said two detectors.

5,781,306

MEASURING APPARATUS FOR GAS ANALYSIS

Wolfgang Hartig, Waldkirch, and Jürgen Kaufmann, Denzlingen, both of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Waldkirch/Breisgau, Germany

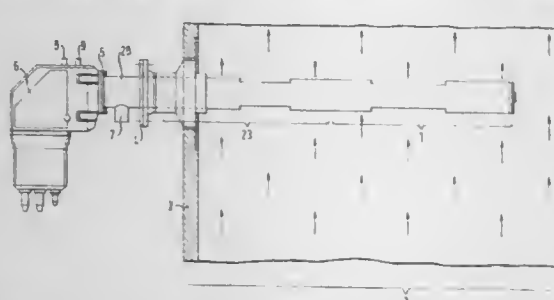
Filed Nov. 30, 1995, Ser. No. 565,396

Claims priority, application Germany, Dec. 2, 1994, 44 43 016.7

Int. Cl.⁶ G01N 21/00

U.S. Cl. 356—436

27 Claims



1. A spectrometric gas measuring apparatus for determining the presence of gases in a spatial region, the apparatus comprising:

a spectrometric measurement head that is mountable at the spatial region including an irradiation source and an analyzer, the irradiation source transmitting measurement beams having spectral ranges required for the determination of the gases into the spatial region;

a measurement reflector at the spatial region that reflects light that has passed through at least a portion of the spatial region back to the measurement head, the light being spectrally broken down in the analyzer;

a photoreceiver arrangement that receives the spectrally broken down light from the analyzer and generates electrical signals

that are respectively associated with a specific wavelength, the electrical signals being applied to an electronic evaluation circuit that determines the presence of the gases; and

a measurement tube in the spatial region through which the measurement radiation passes, the measurement tube extending in a direction of light propagation and having a transverse throughflow opening communicating with the surrounding spatial region, the measurement tube being closed at an end remote from the measurement head and accommodating the measurement reflector, the measurement tube being supplied at both ends of the transverse throughflow opening with a spectrally neutral flushing gas relative to a spectral measurement range at a slightly higher pressure relative to the spatial region.

5,781,307

Patent Not Issued For This Number

5,781,308

HIGH SPEED SYSTEM FOR THRESHOLD MATRIX ALIGNMENT AND TILING, DURING CREATION OF A BINARY HALF-TONE IMAGE

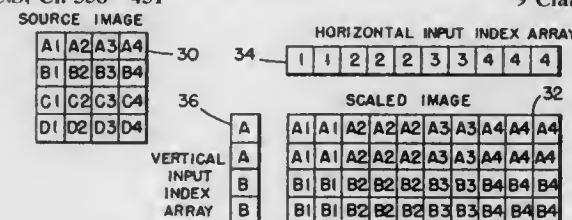
David B. Fujii, and Robert A. Rust, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 4, 1996, Ser. No. 610,683

Int. Cl.⁶ H04N 1/40

U.S. Cl. 358—451

9 Claims



1. A system for converting a source image including source pixels arranged in a first resolution of rows and columns, each source pixel manifesting a multi-bit grey level value, to a destination image of binary pixels arranged in a second resolution of rows and columns, said system comprising:

memory means for storing at least a portion of a row of said source pixels, a matrix comprising plural rows of matrix pixel values, each row including at least W matrix pixel values, where W is an integer and >1, and an anchor value identifying an initial pixel location of a row of said destination image; scale register means for storing N source multi-bit grey level pixel values, where N is an integer >1 and may differ from W; threshold register means for storing a row of W matrix pixel values and outputting, in parallel, up to N said matrix pixel values;

alignment logic means coupled between said memory means and said threshold register means for controllably entering said row of W matrix pixel values from said memory means into said threshold register means; and

control means coupled to said alignment logic means, and responsive to said values of W and N, for controlling said alignment logic means to enter said W matrix pixel values into N contiguous storage positions in said threshold register means, and if W>N, to enable entry of excess ones of said W matrix pixel values into contiguous storage positions in said threshold register means after (W-N) previously entered matrix pixel values have been outputted.

5,781,309

Patent Not Issued For This Number

5,781,310

COPYING SYSTEM HAVING IMAGE INPUTTING UNIT AND IMAGE OUTPUTTING UNIT SHARED WITH OTHER IMAGE PROCESSING SYSTEMS

Haruka Nakamura, Mishima; Kazutaka Nagata, Tokyo; Yasutoshi Hiroe, Yokohama; Tomoaki Enokida, Tokyo; Kei Sato, Atsugi; Koji Kuwata, Yokohama, and Kyouji Omi, Kawasaki, all of Japan, assignors to Ricoh Company Ltd., Japan

Continuation of Ser. No. 216,545, Mar. 23, 1994, abandoned.

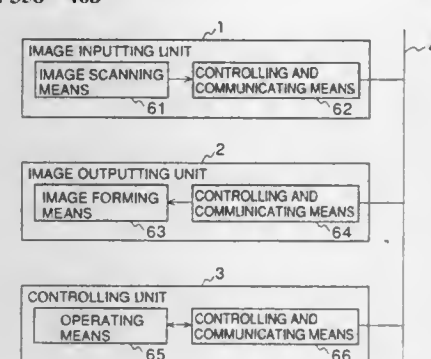
This application Apr. 14, 1997, Ser. No. 839,408

Claims priority, application Japan, Mar. 25, 1993, 5-90668; Jun. 17, 1993, 5-171111

Int. Cl.⁶ H04N 1/32

U.S. Cl. 358—468

30 Claims



1. A copying system comprising:

a shared transmission path for transmitting image data and command signals;

an image inputting unit connected to said transmission path for inputting image data, said image inputting unit including a scanning portion for scanning an original image so as to generate said image data and a first communicating portion for bidirectionally communicating, via said transmission path, so as to transfer said image data and to transmit and receive command signals;

an image outputting unit connected to said transmission path for outputting an output image, said image outputting unit including an image forming portion for forming said output image on a recording sheet and a second communicating portion for bidirectionally communicating via said transmission path so as to receive said image data and to transmit and receive command signals; and

a controlling unit for controlling a copying operation performed by said copying system, said controlling unit including an operating unit for inputting operating condition information to said copying system and a third communicating portion for bidirectionally communicating via said transmission path so as to transmit and receive command signals to/from said image inputting unit and said image outputting unit, said controlling unit initiating said copying operation by sending a predetermined set of said command signals, via said transmission path, to said image inputting unit to initiate a scanning operation and to said image outputting unit to initiate an image forming operation, wherein said image data is transferred directly from said image inputting unit to said image outputting unit, via said transmission path, after said copying operation is initiated, and said scanning operation performed by said scanning portion is performed in synchronism with said image forming operation performed by said image forming portion.

5,781,311

PLANAR LIGHT SOURCE AND IMAGE READING DEVICE

Osamu Inoue, and Yoshiyuki Takeda, both of Kanagawa-ken, Japan, assignors to Nikon Corporation, Tokyo, Japan

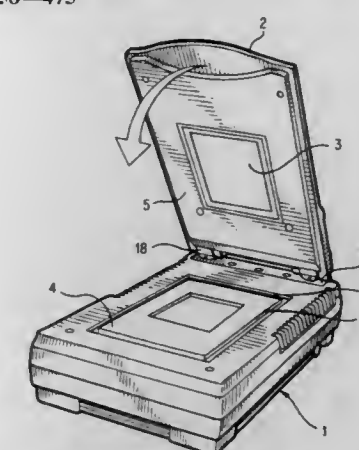
Division of Ser. No. 427,235, Apr. 24, 1995. This application Feb. 13, 1996, Ser. No. 600,894

Claims priority, application Japan, Aug. 24, 1994, 6-199869; Sep. 9, 1994, 6-215136

Int. Cl.⁶ H04N 1/04; 1/40; 1/46; G03B 27/54

U.S. Cl. 358—475

11 Claims



10. An image reading device, comprising: a document table for supporting an original document; planar light-emitting means having a plate-like shape for emitting light from one surface toward the document table; photoelectric conversion means for converting an image of an original document into an electrical image signal; shading correction means for performing shading correction on the image signal, the shading correction including electrical correction of the image signal; and a document placement frame on the document table corresponding to a region of the planar light-emitting means that emits a quantity of light sufficient for shading correction by the shading correction means, wherein the document placement frame delineates 60% of maximum luminosity of the planar light-emitting means.

5,781,312

IMAGE INPUT METHOD AND APPARATUS

Satoshi Noda, Ebina, Japan, assignor to Fuji Xerox, Co. Ltd., Tokyo, Japan

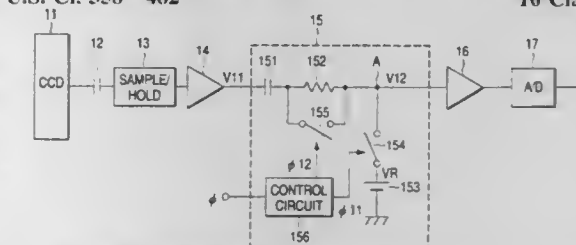
Filed Dec. 11, 1995, Ser. No. 570,527

Claims priority, application Japan, Dec. 16, 1994, 6-312828

Int. Cl.⁶ H04N 1/04

U.S. Cl. 358—482

10 Claims



1. An image input apparatus comprising: photoelectric converting means for converting an optical image resulting from exposing a subject to light into an electrical signal; direct-current component eliminating means for eliminating direct-current components from the electric current received from said photoelectric converting means to output a resultant signal to a circuit in a poststage; reference voltage feeding means for feeding a reference voltage;

a first switch being connected at one end thereof to a signal line between said direct-current component eliminating means and the circuit in the postage and connected at the other end thereof to said reference voltage feeding means; and eliminating means for eliminating noise developing when said first switch becomes open.

5,781,313

FLAT BED SCANNER

Yoshitaka Nose, Kyoto, and Koji Yamamoto, Nagaokakyo, both of Japan, assignors to Murata Kikai Kabushiki Kaishi, Kyoto, Japan

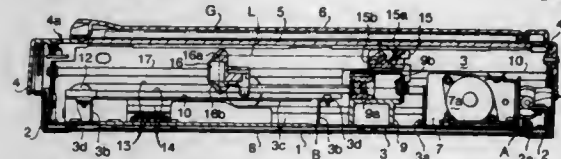
Filed Nov. 27, 1996, Ser. No. 757,506

Claims priority, application Japan, Nov. 29, 1995, 7-310375

Int. Cl.⁶ H04N 1/04

U.S. Cl. 358—497

7 Claims



1. A flat bed scanner comprising:
 - a main control board;
 - a fixed optical unit;
 - a power source;
 - a harness for connecting the power source to the main control board;
 - means for housing the main control board, fixed optical unit and power source, the housing means having an open top;
 - a middle cover provided in the housing means and extending over the main control board, fixed optical unit and power source;
 - optical scanning means positioned inside the housing means above the middle cover; and
 - a scanning glass extending over the optical scanning means and closing the top of the housing means for scanning a material loaded on the scanning glass; and
 - two spaced rigid tubular segments housing the harness so that a portion of the harness is exposed between the two tubular segments and the two tubular segments can bend at the exposed portion of the harness.

5,781,314

COLOR IMAGE READING APPARATUS AND METHOD

Masahiro Mochizuki, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

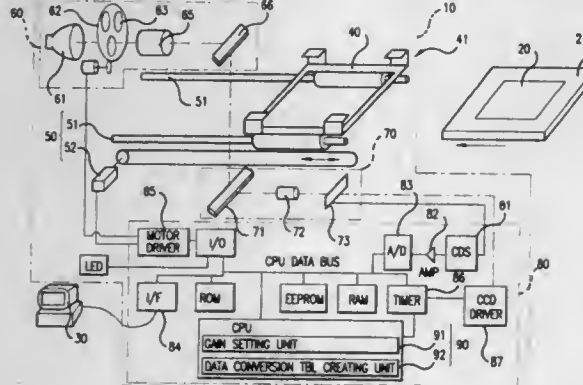
Filed Jun. 14, 1996, Ser. No. 662,260

Claims priority, application Japan, Jun. 15, 1995, 7-148452

Int. Cl.⁶ H04N 1/40; 1/04; 1/46

U.S. Cl. 358—509

27 Claims



1. A scanning device for scanning original media, comprising:
 - illuminating means for radiating a light onto an original medium;
 - color separating means for separating a plurality of color component images from an image of said original medium by using said light;
 - image reading means for reading said plurality of color component images and outputting a plurality of color component image signals;
 - carrying means for relatively moving said original medium and said image reading means;
 - amplifying means for amplifying all of said plurality of color component image signals output from said image reading means by using a single adjustable gain during a period in which said image reading means is reading said plurality of color component images of said original medium;
 - gain setting means for setting a value of said single adjustable gain of said amplifying means such that all of said plurality of color component image signals are amplified using said single adjustable gain; and
 - absolute light amount measuring means for measuring an absolute light amount ratio of the plurality of color component images;
- wherein the gain setting means sets the value of the single, adjustable gain of the amplifying means based on the measured absolute light amount ratio.

5,781,315

IMAGE PROCESSING METHOD FOR PHOTOGRAPHIC PRINTER

Hiroshi Yamaguchi, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

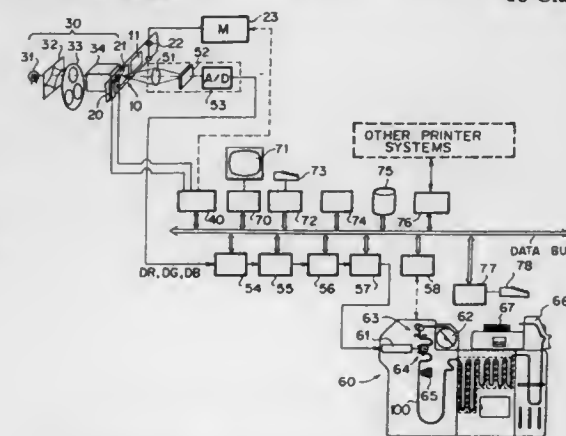
Filed Nov. 8, 1996, Ser. No. 746,387

Claims priority, application Japan, Nov. 9, 1995, 7-290758; Jan. 16, 1996, 8-004711

Int. Cl.⁶ G03F 3/08; H04N 1/46; G06K 9/40

U.S. Cl. 358—520

16 Claims



1. In a photographic printer in which red, green and blue light beams are modulated respectively according to red, green and blue image signals DR, DG and DB each made up of image signal components CR, CG and CB representing densities of the corresponding color of respective picture elements obtained by reading out an image recorded on a color photographic film, and a color image is recorded on a color photosensitive material by scanning the photosensitive material with the modulated light beams, an image processing method comprising the steps of

- carrying out on the red, green and blue image signals DR, DG and DB a calibration processing for substantially equalizing the gray scales for the respective colors,
- carrying out on the processed red, green and blue image signals DR, DG and DB a gray balance adjustment for adjusting image signal components CR, CG and CB of the red, green and blue image signals DR, DG and DB representing a gray object to represent the same density,
- carrying out a processing for determining an exposure condition of the color photographic film on the basis of the red, green and blue image signals DR, DG and DB,
- carrying out on the gray-balance-adjusted red, green and blue image signals DR, DG and DB a processing for compensating for nonlinearity of the exposure-color-forming density characteristics of the color film according to the determined exposure condition of the color film, and
- carrying out on the thus processed red, green and blue image signals DR, DG and DB a processing for adjusting the brightness of the print according to predetermined characteristics determined on the basis of the scene of photography.

5,781,316

SEMI-TRANSPARENT REFLECTIVE HOLOGRAM AND METHOD OF PRODUCING SAME

Guenter H. Strahl, Brick, and David H. Bates, Freehold, both of N.J., assignors to Transfer Print Fols, Inc., East Brunswick, N.J.

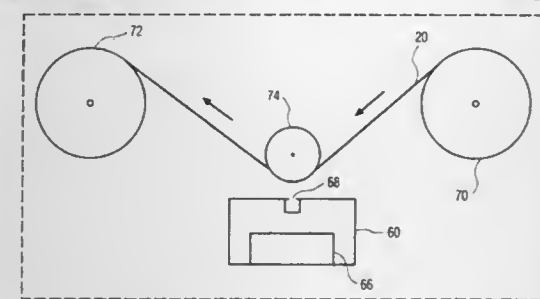
Continuation of Ser. No. 395,793, Feb. 28, 1995, abandoned.

This application Dec. 16, 1996, Ser. No. 771,377

Int. Cl.⁶ G03H 1/02

U.S. Cl. 359—3

11 Claims



1. A method of making a holographic security device having a semi-transparent holographic layer, comprising the steps of:
 - establishing an embossable coating on a carrier layer to thereby form a transfer film, said embossable coating adapted to retain the impression of a holographically embossed image;
 - providing an enclosure with an escape slot, said enclosure containing a zinc sulfide solid;
 - converting said zinc sulfide solid into a zinc sulfide gas which travels out of said enclosure through said slot;
 - passing said transfer film over said slot wherein said zinc sulfide gas passing through said slot condenses onto said transfer film as it passes over said slot, said condensed zinc sulfide gas forming a reflective layer of zinc sulfide over said embossable coating for reflecting said holographically embossed image;
 - forming a surface relief pattern over said reflective layer and said embossable coating to generate said holographically embossed image, wherein said reflective layer of zinc sulfide is partially transparent to thereby also allow viewing through said holographic image.

5,781,317

METHOD OF PRODUCING HOLOGRAPHIC OPTICAL ELEMENT AND DEVICE THEREFOR

Naoyuki Kawazoe, Yokkaichi; Hiroshi Ando; Tetsuo Kimura, both of Nagoya; Satoshi Koike, and Sadahisa Onimaru, both of Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, and Nippon Soken Inc., Nishio, both of Japan

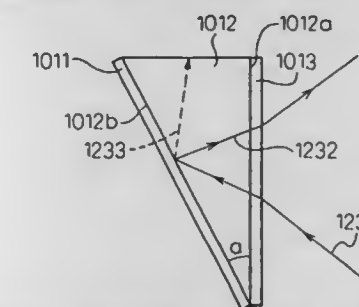
Filed Sep. 14, 1994, Ser. No. 306,487

Claims priority, application Japan, Sep. 14, 1993, 5-252629; Sep. 14, 1993, 5-252631; Sep. 29, 1993, 5-268177; Oct. 1, 1993, 5-246922; Feb. 15, 1994, 6-018599; Mar. 1, 1994, 6-031417

Int. Cl.⁶ G03H 1/20

U.S. Cl. 359—12

39 Claims



1. A method of producing a holographic optical element by copying a master holographic image, comprising steps of:
 - providing a prism having a base surface and a first surface, a first hologram recording film, and a second hologram recording film, said prism being made of a transparent material having a first refractive index which is nearly equal to a second refractive index of said first hologram recording film;
 - adhering intimately said prism to a front surface of said first hologram recording film for recording said master holographic image;
 - projecting said master holographic image to said first hologram recording film by permitting a recording beam to fall on said base surface of said prism and on a back surface of said first hologram recording film;
 - recording said master holographic image in said first hologram recording film to thereby form said master holographic optical element;
 - adhering intimately said formed master holographic optical element to said first surface of said prism and said second hologram recording film to said base surface of said prism for copying said master holographic image; and
 - copying said master holographic image by permitting a copying beam to fall on said second hologram recording film, thereby forming a copy holographic optical element;
- said prism having a vertical angle so that said copy holographic optical element is tilted with respect to said master holographic optical element to prevent reflected light between said prism and said master holographic optical element from falling on said copy holographic optical element while allowing a diffracted beam from said master holographic optical element to fall on said copy holographic optical element.

5,781,318

CIRCUIT AND METHOD OF TESTING FOR SILENT FAULTS IN A BI-DIRECTIONAL OPTICAL COMMUNICATION SYSTEM

Yves Tremblay, Nepean, Canada, assignor to Fitel Photomatrix, Nepean, Canada

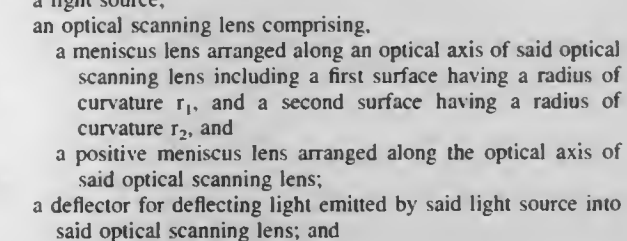
Filed Aug. 2, 1996, Ser. No. 691,538

Int. Cl.⁶ H04B 10/12

U.S. Cl. 359—113

20 Claims

1. An optical communications system comprising:
 - a bi-directional communications path having first and second terminus ends, said first and second terminus ends being coupled to first transmission and receiving paths and second transmission and receiving paths respectively;



an image surface for capturing an image focused by said optical scanning lens;

wherein:

said meniscus lens has a focal length of f_1 ;

said positive meniscus lens is arranged sequentially after said meniscus lens and has a focal length of f_2 ; and

said meniscus lens and said positive meniscus lens have an $f\theta$ function and correct a field curvature in a main scan direction, and satisfy the relationship:

$$-0.25 < f_2/f_1 < 0.11$$

$$0.8 < r_1/r_2 < 1.25$$

5,781,325

OPTICAL SCANNING APPARATUS

Yoshihito Sekikawa, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

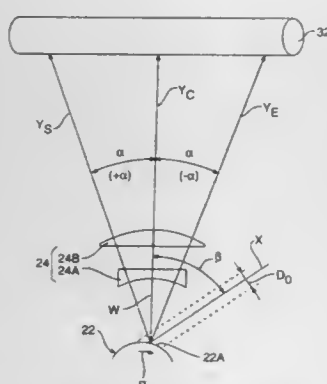
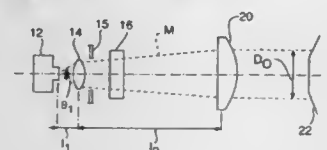
Filed Dec. 18, 1995, Ser. No. 574,032

Claims priority, application Japan, Dec. 19, 1994, 6-315089; Dec. 19, 1994, 6-315091

Int. Cl.⁶ G02B 26/08

U.S. Cl. 359—216

3 Claims



1. An optical scanning apparatus, comprising:
a light source;

a rotational polygonal mirror having a plurality of reflecting surfaces parallel with said rotational axis, a luminous flux emergent from said light source being deflected on said reflecting surfaces in a predetermined direction at a substantially constant angular velocity;

a first overfilled type optical system for forming the luminous flux emergent from said light source into a linear image which is long in a direction corresponding to a primary scanning direction in such a manner that said linear image always strides said reflecting surfaces of said rotational polygonal mirror at any rotational angle of said rotational polygonal mirror and including a collimator lens arranged in an emergent direction of said light source such that said light source is arranged inside a focal position of said collimator lens; and
a second optical system for converging the deflected luminous flux upon a surface to be scanned so that scanning can be conducted by a spot of light at a substantially constant speed, wherein said first overfilled type optical system, said rotational polygonal mirror and said second optical system are composed to satisfy the following expressions:

$$(\cos((\beta+\alpha)+2))+(\cos((\beta-\alpha)+2))\geq 0.75, \text{ and } 0^\circ < \beta < 90^\circ$$

where α is a maximum deflection angle of the deflected luminous flux with respect to an optical axis of said second optical system, and β is an angle formed between an optical axis of said first overfilled type optical system projected on a plane substantially perpendicular to each of said reflecting surfaces of said rotational polygonal mirror, and the optical axis of said second optical system.

5,781,326

APPARATUS FOR SHAPING BINARY OPTICAL SIGNALS, AND USE THEREOF TO MODIFY SAID SIGNALS

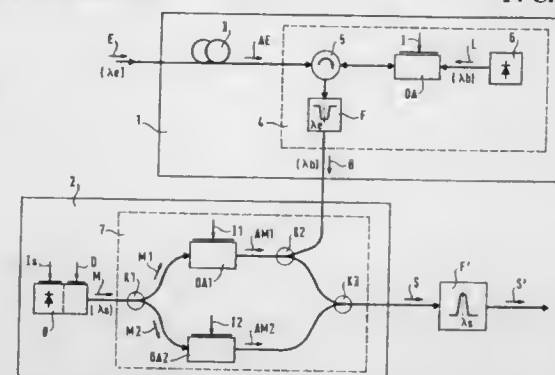
Dominique Chiaroni, Antony; Michel Sotom, Paris, and Dominique De Bouard, St Genevieve, all of France, assignors to Alcatel Alsthom Compagnie Generale D'Electricite, Paris, France

Filed Jun. 13, 1997, Ser. No. 874,580

Claims priority, application France, Jun. 14, 1996, 96 07 421 Int. Cl.⁶ G02B 26/00; H04B 10/02

U.S. Cl. 359—237

14 Claims



1. Apparatus for shaping an input optical signal in the form of a first light wave modulated between low and high power levels, wherein the apparatus comprises:

a first stage for delivering a modulating optical signal as a function of said input signal, the modulating signal being in the form of a second light wave of determined wavelength and being modulated between first and second power levels, the high level of said first and second levels being stabilized so as to be substantially independent of fluctuations of said low and high levels of the input signal; and

a second stage comprising an interferometer structure coupled to said first stage to receive said modulating signal and deliver an output signal that is the result of constructive interference between first and second auxiliary waves when the power of the modulating signal is equal to said first power level and the result of destructive interference between said first and second auxiliary waves when the power of the modulating signal is equal to said second level.

5,781,327

OPTICALLY EFFICIENT HIGH DYNAMIC RANGE ELECTRO-OPTIC MODULATOR

John C. Brock, Redondo Beach, and Michael G. Wickham, Rancho Palos Verdes, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 19, 1996, Ser. No. 699,427

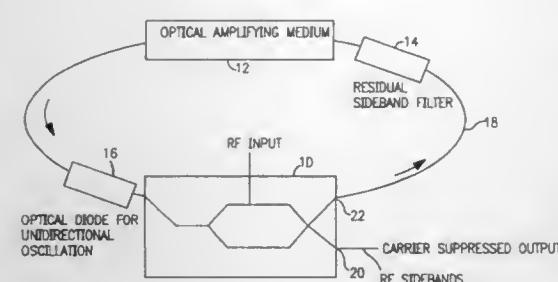
Int. Cl.⁶ G02F 1/03; 1/01; H04B 10/02; 1/06

U.S. Cl. 359—249

10 Claims

1. An electro-optic modulator system providing high optical efficiency and high dynamic range, comprising:

a first electro-optic modulator having an electrical input port for input of a radio-frequency (rf) input signal, an optical input port for input of an optical carrier signal, a first optical output port for output of a modulated signal in which the carrier is



suppressed, and a second optical output port for output of a recirculated carrier signal

a second electro-optic modulator functionally identical to the first, having an electrical input port for input of a time-delayed and phase-inverted form of the same rf signal that is input to the first modulator, and also having an optical input port connected to the second optical output port of the first modulator, a first optical output port for output of any residual rf signal components, and a second optical output port for output of a recirculated carrier signal that has had any residual rf components removed; and

an optical amplifying medium for amplifying the recirculated carrier signal;

wherein the carrier is recovered from the first and second modulators, amplified, and reintroduced to the first modulator, but without introducing any unwanted resonances.

5,781,328

ELECTRO-OPTICAL MODULATOR

Jean-Paul Salvestrini, and Marc Fontana, both of Metz, France, assignors to Universite de Metz, Metz, France

PCT No. PCT/FR95/00169, § 371 Date Aug. 12, 1996, § 102(e)

Date Aug. 12, 1996, PCT Pub. No. WO95/22781, PCT Pub.

Date Aug. 24, 1995

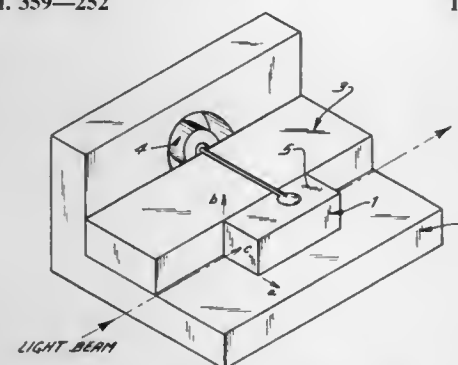
PCT Filed Feb. 14, 1995, Ser. No. 693,318

Claims priority, application France, Feb. 17, 1994, 94 02015

Int. Cl.⁶ G02F 1/01

U.S. Cl. 359—252

16 Claims



1. An electro-optical modulator comprising 1) an electro-optical crystal wherein the electro-optical crystal is in the form of solid-solution compound of the formula: $(\text{NH}_4)_{1-x}\text{Rb}_{1-x}\text{H}_{1-x}\text{D}_3\text{SeO}_4$, x and y being concentration coefficients varying from 0 to 1, and 2) means for supplying a small control voltage to said crystal in order to modify the polarization, the phase or the intensity of an incident light beam.

5,781,329

ELECTROCHROMIC DISPLAY DEVICE FOR OPTICAL PICK UP APPARATUS

Man Hyung Lee; Kyung Chan Park, both of Seoul; Yoon Kwon Lee, Kyungki-Do, and Byung Gil Ryu, Seoul, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

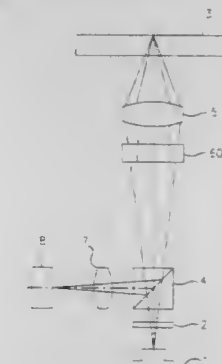
Filed Dec. 20, 1996, Ser. No. 770,273

Claims priority, application Rep. of Korea, Dec. 20, 1995, 1995/52887; Apr. 20, 1996, 1996/12113

Int. Cl.⁶ G02B 1/53

U.S. Cl. 359—270

20 Claims



1. An electrochromic device (ECD) for an optical pick-up apparatus, comprising:

first and second transparent substrates disposed with a predetermined interval therebetween;

first and second transparent electrodes formed on inner surfaces of the first and second transparent substrates;

an electrochromic layer formed on an inner surface of the second transparent electrode;

a counter electrode layer formed on an inner surface of the first transparent electrode; and

an electrolytic layer formed between the counter electrode layer and the electrochromic layer.

5,781,330

HIGH EFFICIENCY OPTICAL SWITCHING AND DISPLAY DEVICES

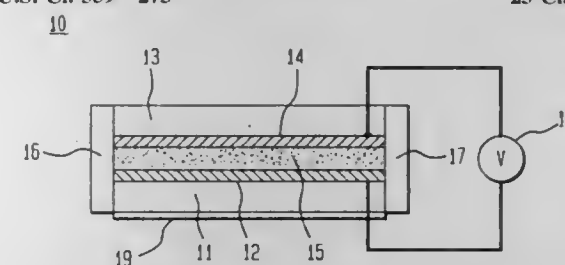
Paul Robert Kolodner, Hoboken, and Denis Lawrence Rousseau, Summit, both of N.J., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Apr. 5, 1996, Ser. No. 628,392

Int. Cl.⁶ G02F 1/153

U.S. Cl. 359—273

23 Claims



1. An optical switching device for changing color upon application of voltage consisting of:

a backwall; a transparent front wall; a layer of electrochromic protein disposed between said back wall and said front wall, and a pair of electrodes for applying a voltage to said layer, thereby changing the absorption peak of said layer of electrochromic protein to effect color changes in response to the application of voltage.

5,781,331

OPTICAL MICROSHUTTER ARRAY

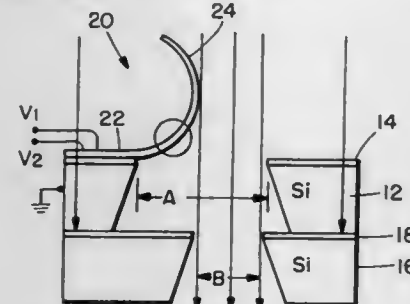
William N. Carr, Montclair, and Xi-qing Sun, Kearny, both of N.J., assignors to Roxburgh Ltd., Isle of Man

Filed Jan. 24, 1997, Ser. No. 787,307

Int. Cl.⁶ G02F 1/01

U.S. Cl. 359—288

20 Claims



1. An optical shutter apparatus comprising:
 a source of illumination;
 a first aperture plate positioned in a path of light from said source of illumination and including plural apertures;
 a cantilever shutter positioned at each of said apertures, each cantilever shutter comprising:
 at least two bonded layers including a first, electrically resistive layer exhibiting a first thermal coefficient of expansion (TCE) and a second layer exhibiting a second TCE that is different from said first TCE;
 a proximal end attached to said aperture plate adjacent an aperture and a distal portion sized to cover said aperture when in position thereover; and
 control means for applying a signal to said first electrically resistive layer to cause a heating of said layers and a resultant unequal expansion thereof to cause a flexure therein which moves said distal portion to either cover or uncover said aperture, when uncovered, allowing transmission of said illumination therethrough.

5,781,332

VARIABLE WAVELENGTH OPTICAL FILTER

Takaaki Ogata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

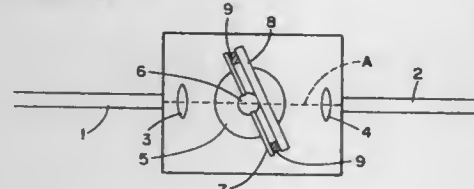
Filed Sep. 4, 1996, Ser. No. 707,526

Claims priority, application Japan, Sep. 4, 1995, 7-226584

Int. Cl.⁶ G02F 1/33

U.S. Cl. 359—308

1 Claim



- A : OPTICAL AXIS
 1, 2 : OPTICAL FIBER
 3, 4 : LENS
 5 : SERVO MOTOR
 6 : OUTPUT SHAFT
 7 : ROTARY PLATE
 8 : DIELECTRIC LAMINATE FILM OPTICAL FILTER
 9 : PIEZOELECTRIC ELEMENT

1. A variable wavelength optical filter including a servo motor whose rotation angle is controlled by an electric signal and a dielectric interference optical filter mounted on a rotary plate affixed to an output shaft of said servo motor, and capable of tuning a transmission center wavelength, said filter comprising two piezoelectric elements located between said rotary plate and said dielectric interference optical filter for applying oscillation to said dielec-

tric interference optical filter in a direction of said rotation angle by feeding a control signal.

5,781,333

PIEZOELECTRIC LIGHT SHUTTER

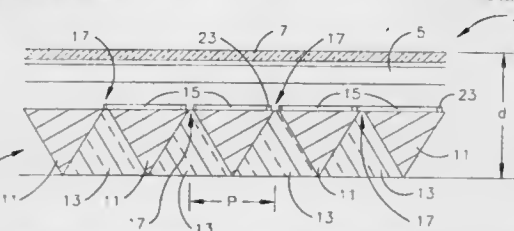
John Lanzillotta, 3113 N. Trinidad St., Arlington, Va. 22213, and Kevin Wimsatt, 1753 Christiana Dr., Gamber, Md. 21048

Filed Aug. 20, 1996, Ser. No. 699,870

Int. Cl.⁶ G02F 1/29

U.S. Cl. 359—316

12 Claims



1. A piezoelectric transmissive light shutter device for controlling the transmission of light from a source through an array of pixel apertures, the piezoelectric light shutter device comprising:
 a light source for emitting visible light rays toward the array of pixel apertures;
 a substrate supporting a plurality of opaque portions for blocking light and the array of pixel apertures for transmitting light, each pixel aperture in the array being defined between or within at least one of said opaque portions;
 an array of piezoelectric opaque light shutters, each shutter including piezoelectric means for moving laterally in its plane for selectively opening and closing a corresponding pixel aperture, one of said piezoelectric shutters being provided for each pixel aperture in the array so that light transmission from said source through a given pixel aperture is blocked when the corresponding shutter is in a closed position and permitted when the corresponding shutter is moved laterally in its plane to an opened position; and
 wherein each of said piezoelectric light shutters is selectively controlled between opened and closed positions by way of the selective application of voltage to each said light shutter.

5,781,334

STABILIZED MULTI-FREQUENCY LIGHT SOURCE AND METHOD OF GENERATING SYNTHETIC LIGHT WAVELENGTHS

René Daendliker, Corcelles, and Rudolf Thalmann, Guemmenen, both of Switzerland, assignors to Leica AG, Heerbrugg, Switzerland

PCT No. PCT/EP95/03237, § 371 Date Feb. 19, 1997, § 102(e) Date Feb. 19, 1997, PCT Pub. No. WO96/06472, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 16, 1995, Ser. No. 793,141

Claims priority, application Switzerland, Aug. 19, 1994, 2555/94

Int. Cl.⁶ G02F 2/02

U.S. Cl. 359—326

10 Claims

1. A stabilized multi-frequency light source for generating synthetic light wavelengths, having

at least three light sources (D_i with $i=1 \dots N$ and $N \geq 3$) for emitting coherent light, on an assigned light path (L_i) in each case, at an assigned frequency (ν_i) which can be set and tuned as a function of an electric feed signal (s_i) fed to the light source (D_i),

a common light path section ($L_{G1}, L_{G2}, L_{G3}, L_{G4}$) on which is a Fabry-Perot resonator (R) with a resonance length (L_R) suitable for resonance at said frequencies (ν_i),

5,781,335

CIRCUIT ARRANGEMENT FOR OPTICAL FREQUENCY CONVERSION

Frowin Derr, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 587,994, Jan. 17, 1996, abandoned.

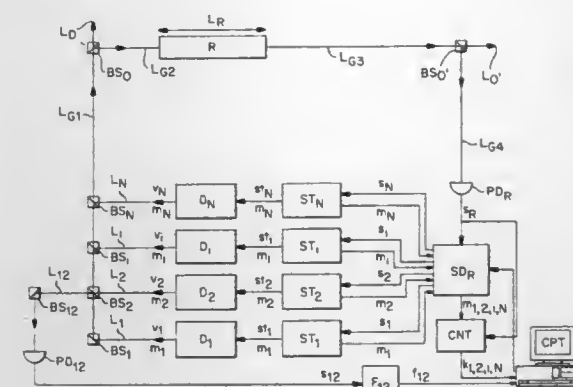
This application Apr. 15, 1997, Ser. No. 843,314

Claims priority, application Germany, Feb. 16, 1995, 195 05 291.9

Int. Cl.⁶ G02F 1/35

U.S. Cl. 359—326

4 Claims



semireflecting optical elements (BS_i), which are assigned to one light source (D_i) each and are used on the light path (L_i) thereof in order to couple the light thereof into the common light path section (L_{G1}),

electric controllers (ST_i), to which one characteristic modulation frequency (m_i) each is assigned and which are electrically connected to an individual assigned light source (D_i) each and generate for the latter in each case a feed signal (s_i) which sets the frequency (ν_i) of the light from this light source (D_i) as a function of an electric control signal (s_i) fed to the controller (ST_i) and modulates this frequency (ν_i) about the mean value (theighty) thereof with the modulation frequency (m_i),

an optoelectronic detector (PD_R) for receiving light circulating in the common light path section (L_{G4}) and for generating an electric detector signal (s_R) as a function of an intensity of the light thus received,

an electronic signal discriminator (SD_R) which is electrically connected to the detector (PD_R) and the controllers (ST_i) in order to receive the detector signal (s_R) from the detector (PD_R) and a signal from each controller (ST_i) carrying the respective modulation frequency (m_i), and which generates from the signals thus obtained by means of synchronous demodulation of the detector signal (s_R) with the respective modulation frequency (m_i) the respective control signal (s_i) for the respective controller (ST_i) and outputs it to this controller (ST_i),

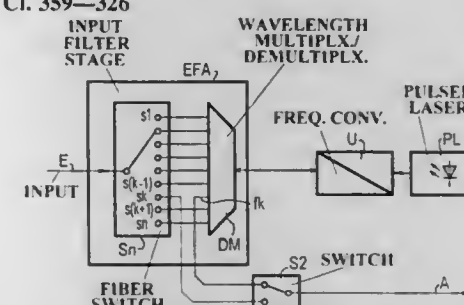
the electric controller (ST_i) corresponding to a light source (D_i), the optoelectronic detector (PD_R) and the signal discriminator (SD_R) forming a tracking controller for locking the frequency (ν_i) of the light from this light source (D_i) with a resonant frequency of the Fabry-Perot resonator (R),

wherein

an element (BS_2) selected from the semireflecting optical elements (BS_i) is arranged such that it combines light from only two selected light sources (D_1, D_2) and couples a portion of this combined light out of the assigned light paths (L_1, L_2) and directs it to a branching light path (L_{12}),

a second optoelectronic detector (PD_{12}) is provided for receiving the light circulating on the branching light path (L_{12}) and for generating a second electric detector signal (s_{12}) as a function of an intensity of the light thus received, and

an electronic frequency measuring device (F_{12}) is provided which is electrically connected to the second detector (PD_{12}) in order to receive the second detector signal (s_{12}) from the latter and to generate therefrom an electric measured frequency value (f_{12}) which can be fed to an evaluation device (CPT), the measured frequency value (f_{12}) corresponding to a beat frequency ($\Delta\nu_{12}$) between the frequencies (ν_1, ν_2) of the light of the selected two light sources (D_1, D_2).



1. A circuit for converting a frequency of an optical input signal from a first frequency to a second frequency, comprising:

an optical fiber switch having an input to which an input optical signal having a first frequency is supplied and having n outputs respectively corresponding to different frequency ranges including one output having a range encompassing a second frequency to which said optical input signal is to be converted;

a wavelength multiplexer/demultiplexer comprising n wavelength channel filters respectively corresponding to said different frequency ranges of said optical fiber switch and having $n-1$ first ports respectively connecting said wavelength channel filters to said n outputs, except said one output, of said optical fiber switch, a free port connected to one of said wavelength channel filters encompassing said second frequency, and a second port, said wavelength multiplexer/demultiplexer being operable in a multiplexing direction to pass said optical input signal through to said second port;

a pulsed laser which generates a pulsed laser signal at said second frequency;

frequency converter means supplied with said pulsed laser signal from said pulsed laser and with said input optical signal from said second port of said wavelength multiplexer/demultiplexer for converting said optical input signal into an output optical signal having said second frequency and for supplying said output signal to said second port of said wavelength multiplexer/demultiplexer; and

said wavelength multiplexer/demultiplexer being operable in an opposite demultiplexing direction for passing said output optical signal through said one of said wavelength channel filters encompassing said second frequency and for emitting said output signal at said free port.

5,781,336

METHOD AND SYSTEM FOR MULTI-SPECTRAL IMAGING IN THE VISIBLE AND INFRARED SPECTRUMS

Bryan Coon, Hicksville, N.Y.; John F. McGee, III, Allen, Tex.; Neil Sherman, Huntington Bay, and Lou Montulli, West Babylon, both of N.Y., assignors to Lockheed Martin Corporation, Syosset, N.Y.

Filed Nov. 28, 1995, Ser. No. 563,656

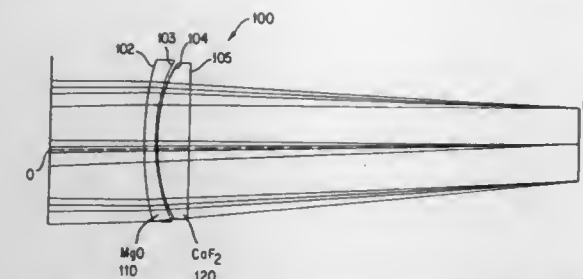
Int. Cl.⁶ G02B 13/14; 9/04; 9/00; 9/34

U.S. Cl. 359—355

21 Claims

1. A multi-spectral objective lens system for imaging light in a wavelength range which includes visible and infrared wavelengths, comprising:

a first lens made of magnesium oxide; and



a second lens made of calcium fluoride, wherein said first lens has first and second surfaces and said second lens has third and fourth surfaces, said first lens and said second lens having the following prescription:

Surface	Radius (in.)	Thickness (in.)	Material
first	3.377785	0.1330925	MgO
second	2.155341	0.01330925	air
third	2.086584	0.3327312	CaF ₂
fourth	134.0277	4	air

5,781,337

OBJECT HOLDER FOR THIN SLIDES

Gerhard Pfeifer, Solms, Germany, assignor to Leica Mikroskopie und Systeme GmbH, Wetzlar, Germany
PCT No. PCT/DE96/01404, § 371 Date Mar. 20, 1997, § 102(e) Date Mar. 20, 1997, PCT Pub. No. WO97/05516, PCT Pub. Date Feb. 13, 1997

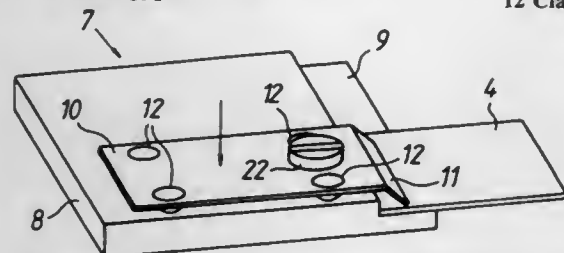
PCT Filed Jul. 29, 1996, Ser. No. 793,804

Claims priority, application Germany, Jul. 31, 1995, 195 27 722.8

Int. Cl.⁶ G02B 21/26; G01N 33/52

U.S. Cl. 359—391

12 Claims



1. An object holder (7) for thin slides (4), characterized in that the object holder (7) has a baseplate (8) as well as a lower lying supporting surface (9) as a receptacle for the slide (4), a spring steel (10) is arranged on the baseplate (8), the spring steel (10) having a knife edge (11) and this knife edge (11) projecting beyond the baseplate (8) onto the lower lying supporting surface (9), the slide (4) being fixed via a clamp between the knife edge (11) and the supporting surface (9).

5,781,338

MICROSCOPE STAGE

Hans-Georg Kapitza, and Claus Lichtenberg, both of Oberkochen, Germany, assignors to Carl Zeiss Stiftung, Heidenheim, Germany

Filed Nov. 17, 1995, Ser. No. 579,024

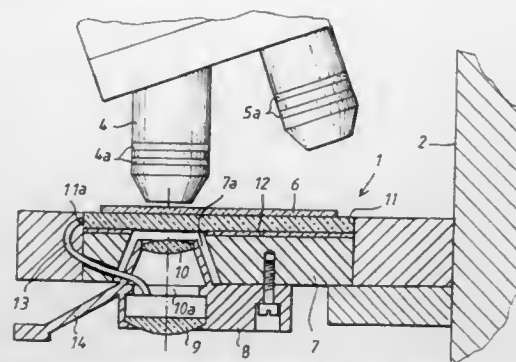
Claims priority, application Germany, Nov. 17, 1994, 44 40 913.3

Int. Cl.⁶ G01N 21/01; G02B 21/26

U.S. Cl. 359—398

1. A microscope stage comprising:
a base portion,

10 Claims



a transparent ceramic glass portion having an upper side for placing specimens at least in a partial region on said upper side, and

a brightly colored, light-scattering layer between said transparent ceramic glass portion and said base portion.

5,781,339

OPTICAL DEVICE FOR DEFLECTING LIGHT

Yoshiki Kino, Tokyo; Shoichi Shimura, Yokohama; Takashi Kai, Hadano, and Naoki Kobayashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 94,315, Jul. 21, 1993, abandoned.

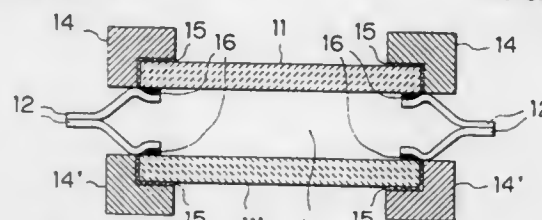
This application Oct. 13, 1995, Ser. No. 542,785

Claims priority, application Japan, Jul. 24, 1992, 4-198659

Int. Cl.⁶ G02B 27/64; 5/06

U.S. Cl. 359—557

23 Claims



1. An optical device capable of varying an angle formed by a pair of optical elements comprising:

a pair of support members having portions for preventing the optical elements from slipping outwardly, and for supporting the optical elements, each of the pair of optical elements and each of said pair of support members having a surface facing another of the pair of optical elements and another of said pair of support members, wherein the facing surfaces formed by the optical elements and said support members are substantially flat surfaces;

a connection member for forming a watertight space, each end portion of said connection member being adhesively secured to each of said facing surfaces of said pair of optical elements through an adhesive layer and being deformable, and each end portion of said connection member being thermally secured to each of said facing surfaces of said pair of support members; and

a transparent substance filling said watertight space.

5,781,340

GAUSS LENS WITH IMAGE STABILIZING FUNCTION
Kenzaburo Suzuki, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jan. 18, 1996, Ser. No. 587,273

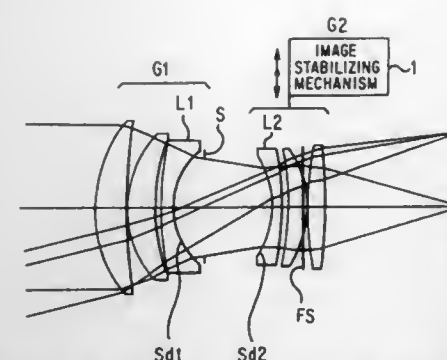
Claims priority, application Japan, Feb. 10, 1995, 7-046334

Int. Cl.⁶ G02B 27/64; 15/14

U.S. Cl. 359—557

20 Claims

1. A Gauss lens system having a plurality of lens groups and an aperture stop positioned along an optical axis from an object side



to an image side, the lens system having an image stabilizing function, and comprising:

a first lens group adjacent the object side, with positive refractive power, the first lens group comprising a negative lens component having a first divergent surface and a convex surface facing the object side and placed closest to the image side;

a second lens group with positive refractive power on the image side of the first lens group, the second lens group comprising a negative lens component having a second divergent surface and a convex surface facing the image side and placed adjacent to the image side of the aperture stop; and

a displacement mechanism that moves the second lens group in a direction substantially perpendicular to the optical axis to prevent vibration, wherein a focal length f2 of the second lens group and a focal length f of the lens system are related such that image stabilization can be achieved;

wherein a height Hex at which light rays farthest from the optical axis pass through a surface having refractive power closest to the image side of the lens system, a height Hin at which light rays farthest from the optical axis pass through a surface having refractive power closest to the object side, a refractive power $\phi 1$ of the first divergent surface, and a refractive power $\phi 2$ of the second divergent surface satisfy $0.2 < Hex/Hin < 1.0$ and $0.6 < \phi 1/\phi 2 < 5.0$.

5,781,341

MOTORIZED TUNABLE FILTER AND MOTORIZED VARIABLE ATTENUATOR

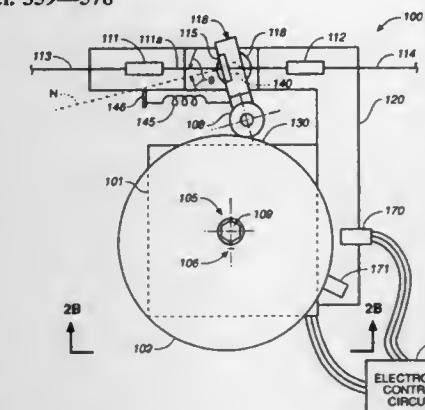
Ho-Shang Lee, El Sobrante, Calif., assignor to Dicon Fiberoptics, Inc., Berkeley, Calif.

Filed Jan. 24, 1996, Ser. No. 590,840

Int. Cl.⁶ G02B 27/00; 6/00

U.S. Cl. 359—578

16 Claims



15. An tunable filtering device for filtering an incident light beam, comprising:

filter means for passing only light in the incident light beam within a predetermined characteristic wavelength band, wherein said characteristic wavelength band is a function of angle of incidence of the beam with respect to a surface normal of the filter means;

a motor for rotating the filter means in order to alter the angle of incidence of the beam with respect to the surface normal of the filter means; and

a controller controlling the motor to rotate the filter by an amount so that the filter has a desired characteristic wavelength band and so that the center wavelength of the characteristic wavelength band is tunable to a resolution of 0.01 nm.

5,781,342

HIGH LIGHT DIFFUSIVE AND LOW LIGHT ABSORBENT MATERIAL AND METHOD FOR MAKING AND USING SAME

Gregory E. Hannon, Newark, Del.; Gordon L. McGregor, Landenberg, Pa., and Raymond B. Minor, Elkton, Md., assignors to W.L. Gore & Associates, Inc., Newark, Del.

Continuation-in-part of Ser. No. 369,850, Jan. 6, 1995, Pat.

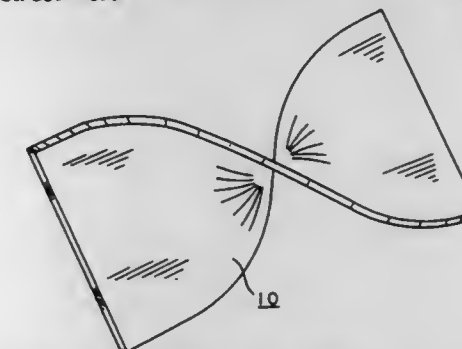
No. 5,596,450. This application Nov. 27, 1995, Ser. No.

562,651

Int. Cl.⁶ F21V 7/00

U.S. Cl. 359—599

18 Claims



1. A method of redirecting light comprising providing a light redirecting material comprising an expanded polytetrafluoroethylene having polymeric nodes interconnected by fibrils defining microporous voids therein; mounting the light redirecting material to cause light energy to contact the material and transfect from it; whereby the light redirecting material provides diffuse transfectivity of the light energy contacting the material, with greater than 90% of the light energy contacting the material being transacted from it; placing the light redirecting material next to a second light reflectant material; and causing light from a light source to pass through the light redirecting material and reflect from the second light reflectant material.

5,781,343

ADJUSTABLE WINDOW TINTING SYSTEM

Jeffrey D. Cook, 114 Jib Dr., Stafford, Va. 22554

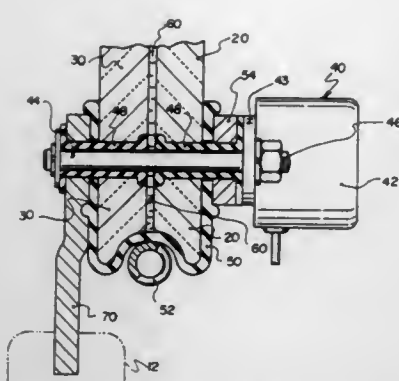
Filed Aug. 19, 1996, Ser. No. 699,502

Int. Cl.⁶ G02B 5/08; 5/24; 26/02

U.S. Cl. 359—608

12 Claims

1. An adjustable window tinting system comprising:
a substantially rigid exterior glass pane having an outer perimeter edge;
substantially rigid interior glass pane having an outer perimeter edge and being positioned substantially parallel to the exterior glass pane;
moving means for moving said glass panes between a separated condition wherein said panes have a space therebetween and an adjacent condition wherein said panes are substantially in contact with each other;
a sealing boot secured to and joining the outer perimeter edges of the exterior glass pane and the interior glass pane, said



sealing boot forming a reservoir about the perimeter of the glass panes in fluid communication with a space between said glass panes; and

an opaque fluid movable between the reservoir in said sealing boot and a space between said glass panes;

wherein movement of said glass panes toward said separated condition by said moving means creates a space therebetween to pull said opaque fluid from said reservoir into the space between said glass panes to thereby resist passage of light between said glass panes, and wherein movement of said glass panes toward said adjacent condition by said moving means collapses the space between said glass panes to force said opaque fluid into the reservoir in said sealing boot to thereby permit passage of light between said glass panes;

wherein the moving means includes:

a plurality of solenoids mounted to one of said glass panes; each said solenoid having a solenoid rod projecting therefrom and being selectively movable between inward and outward positions relative to said solenoid, said solenoid rod being slidably movable through said glass pane on which said solenoid is mounted, and said solenoid rod having a distal end opposite said solenoid, said distal end being secured to the other said glass pane to move said glass panes toward said separated condition when said solenoid rod is moved toward said outward position and to move said glass panes toward said adjacent condition when said solenoid is moved toward said inward position.

5,781,344

LIGHT TRANSMITTING AND DISPERSING FILTER HAVING LOW REFLECTANCE

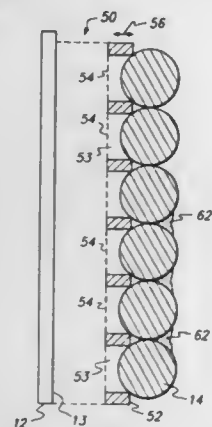
Dennis W. Vance, Paso Robles, Calif., assignor to Jenmar Visual Systems, Sunnyvale, Calif.

Continuation of Ser. No. 117,250, Sep. 3, 1993, Pat. No. 5,563,738. This application Oct. 8, 1996, Ser. No. 729,803

Int. Cl.⁶ G02B 27/00; 21/60

U.S. Cl. 359—614

29 Claims



1. A light filter, comprising:

a light transmitting material having a front surface and a back surface;

a light absorbing layer of material having a front surface and a back surface, wherein the back surface of the light transmitting material is affixed to the front surface of the light absorbing layer of material;

a plurality of beads of light transmitting material arranged in a single-layer array, the beads being supported in the light absorbing layer of material, perforating the front surface of the light absorbing layer of material, and protruding through the back surface of the light absorbing layer of material; and a layer of light transmitting material, having a selected thickness, affixed to the back surface of the light absorbing layer of material in interstices between the beads.

5,781,345

GRADED DIELECTRIC COMBINER AND ASSOCIATED FABRICATION METHOD

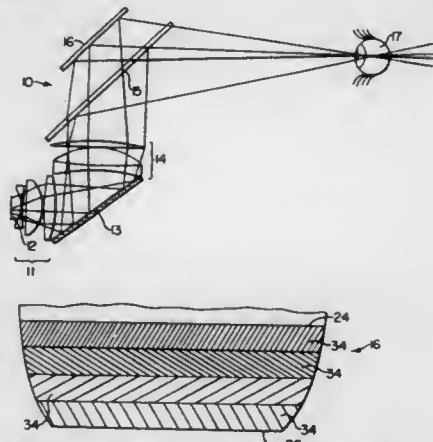
Ronald Alfred Ferrante, Corona, Calif.; Rudolf Herman Ott, Batchtown, Ill., and Gordon Harold Burkhart, St. Louis, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Feb. 11, 1997, Ser. No. 798,794

Int. Cl.⁶ G02B 27/14

U.S. Cl. 359—633

22 Claims



1. A dual heads up display combiner comprising: first and second dielectric combiners positioned to define an overlap region relative to a predetermined design eye, each of said first and second dielectric combiners comprising: a substrate for transmitting light therethrough; and a predetermined number of dielectric layers disposed upon the substrate for reflecting a predetermined spectrum of light and otherwise transmitting light therethrough, wherein each dielectric layer has a uniform thickness across the substrate; wherein a portion of at least one of said first and second dielectric combiners is graded within the overlap region such that the number of dielectric layers disposed upon the substrate varies across the graded portion of said combiner.

5,781,346

MAGNIFICATION CORRECTION FOR SMALL FIELD SCANNING

Paul C. Allen, and Ronald D. Voisin, both of Beaverton, Oreg., assignors to Etec System, Inc., Beaverton, Oreg.

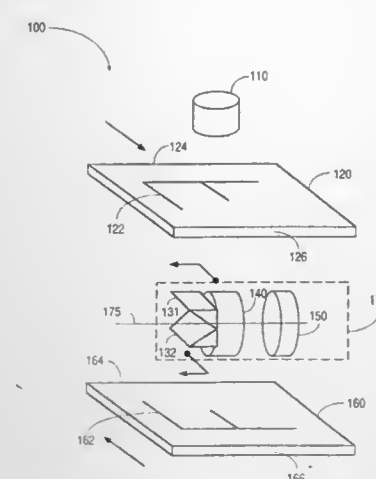
Division of Ser. No. 409,251, Mar. 22, 1995. This application Aug. 2, 1996, Ser. No. 691,754

Int. Cl.⁶ G02B 3/00; 17/00; 15/14

U.S. Cl. 359—649

6 Claims

1. A method for scanning a field with an image from a one-to-one projection lens, comprising the steps of: providing a first optical magnification correction to an image incident on the one-to-one projection lens;



passing the magnification corrected image through at least a portion of the one-to-one projection lens; providing a second optical magnification correction to the image after the step of passing; and scanning the field with the image having the second optical magnification correction.

5,781,347

OPTICAL DEVICE

Nobuhiro Fukushima, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

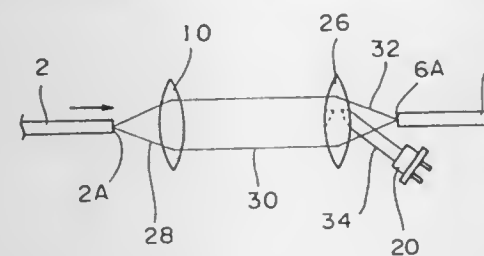
Filed Aug. 19, 1996, Ser. No. 699,041

Claims priority, application Japan, Feb. 7, 1996, 8-021446

Int. Cl.⁶ G02B 6/26; 6/32

U.S. Cl. 359—674

8 Claims



1. An optical device comprising: a first port having a first aperture; a second port having a second aperture; a lens located between said first port and said second port; and a photodetector having a photodetecting surface located in the vicinity of said second port; said lens having a converging portion for converting a light beam so as to couple said first aperture and said second aperture, and a deflecting portion for deflecting a part of a light beam from said first port to make said part incident on said photodetecting surface.

5,781,348

ZOOM LENS SYSTEM

Motoyuki Ohtake, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Aug. 6, 1996, Ser. No. 692,747

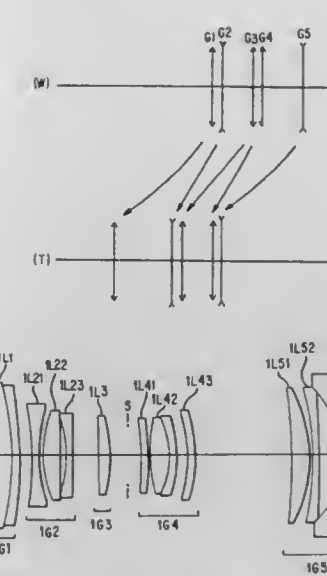
Claims priority, application Japan, Sep. 26, 1995, 7-271855; Sep. 28, 1995, 7-274736

Int. Cl.⁶ G02B 15/14; 27/64

U.S. Cl. 359—676

15 Claims

1. A zoom lens system, in order from an object side of the zoom lens system, comprising: a first lens group having a positive refractive power;



a second lens group having a negative refractive power; a third lens group having a positive refractive power; a fourth lens group having a positive refractive power; and a fifth lens group having a negative refractive power; during zooming from a maximum wide-angle state to a maximum telephoto state, at least the first lens group and the fifth lens group move toward the object side and a distance between the first lens group and the second lens group increases; a distance between the second lens group and the third lens group decreases; a distance between the third lens group and the fourth lens group increases; and a distance between the fourth lens group and the fifth lens group decreases;

at least one lens element of the fourth lens group is a shift lens subgroup that moves in a direction substantially perpendicular to an optical axis of the zoom lens system to shift an image; and

the zoom lens system satisfies conditions:

$$2.5 < (1 - \beta_{at}) \cdot \beta_{bt} < 5$$

$$-0.1 < f_{t/fc} < -0.005$$

where β_{at} is a lateral magnification of the shift lens group at a maximum telephoto state, β_{bt} is a lateral magnification at a maximum telephoto state of a lens group on an image side of the shift lens group, f_t is a focal length of the zoom lens system at a maximum telephoto state, and f_{ct} is a combined focal length at a maximum telephoto state of lens groups positioned on an object side of the shift lens group.

5,781,349

ZOOM LENS

Saburo Sugawara, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1995, Ser. No. 509,933

Claims priority, application Japan, Aug. 5, 1994, 6-204264; Jul. 4, 1995, 7-191269

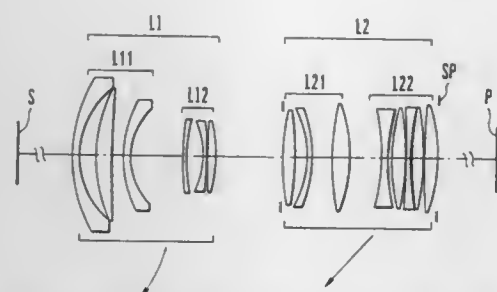
Int. Cl.⁶ G02B 15/14; 3/02

U.S. Cl. 359—691

8 Claims

1. A zoom lens comprising, in order from a first conjugate point of a longer distance to a second conjugate point of a shorter distance:

a first lens unit of negative refractive power, said first lens unit including a first front lens sub-unit having at least one positive lens and at least one negative lens and, after a largest air separation in said first lens unit, a first rear lens sub-unit having at least one positive lens and at least one negative lens; and



a second lens unit of positive refractive power, said second lens unit including a second front lens sub-unit having at least one positive lens and at least one negative lens and, after a largest air separation in said second lens unit, a second rear lens sub-unit having at least one positive lens and at least one negative lens.

wherein zooming is performed by varying a separation between said first lens unit and said second lens unit,

wherein both in said first lens unit and in said second lens unit, the air space between the lenses constituting the lens units is constant, and said first front lens sub-unit and said second lens unit each have at least one aspheric surface, and

wherein said first front lens sub-unit comprises, in order from the first conjugate point, a negative lens of meniscus form convex toward the first conjugate point, a positive lens having a convex surface of strong refractive power facing the first conjugate point, and a negative lens of meniscus form convex toward the first conjugate point.

5,781,350

OBJECTIVE LENS FOR ENDSCOPE

Satoru Tachihara, and Takashi Koeda, both of Tokyo, Japan, assigns to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 377,331, Jan. 24, 1995, abandoned.

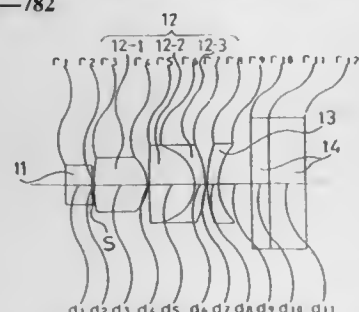
This application Oct. 28, 1996, Ser. No. 738,704

Claims priority, application Japan, Jan. 27, 1994, 6-007911

Int. Cl.⁶ G02B 9/58; 21/02; 9/00

U.S. Cl. 359—782

12 Claims



1. An objective lens for an endoscope, comprising:
a first lens group consisting of a negative lens;
a second lens group having a positive power;
a third lens group having a negative power; and
an aperture stop that defines the f number of the objective lens,
wherein said first lens group, said aperture stop, and said second lens group are arranged in this order from an object side of said objective lens, wherein said negative lens is positioned closest to said object side of said objective lens, and wherein no optical elements are positioned between said first lens group and said aperture stop and between said aperture stop and said second lens group.

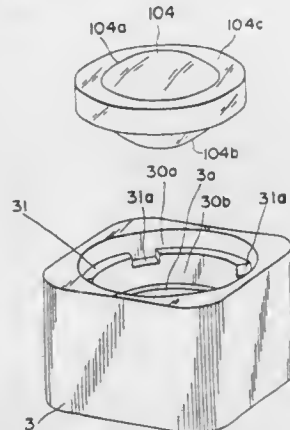
5,781,351
MOUNTING STRUCTURE OF OBJECTIVE LENS FOR OPTICAL PICK-UP USED FOR OPTICAL DISK DEVICE
Yutaka Murakami, Hirakata; Takao Hayashi, and Tomotada Kamei, both of Takatsuki, all of Japan, assigns to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 31, 1996, Ser. No. 657,740

Claims priority, application Japan, Jun. 2, 1995, 7-136460; Jul. 11, 1995, 7-174684

Int. Cl.⁶ G02B 7/02

U.S. Cl. 359—808

15 Claims



1. An objective lens holding structure for an optical pick-up, comprising at least:

an objective lens for focusing a light beam, said objective lens having a curvature and having an outer ring with a flat surface around the outside circumference of the lens curvature; and
a lens holder having a hole into which the objective lens is inserted; and

at the bottom of said hole, an annular member having plural recesses and having an inside diameter greater than the diameter of the inside circumference of said outer ring,
wherein the objective lens is inserted into said hole and is supported by the annular member, and
wherein the outer ring is fastened to the lens holder with adhesive.

5,781,352

OBJECTIVE LENS SUPPORTING DEVICE

Masahiko Ujiie; Toshinori Chino; Rikio Tsuchiya, and Hiroshi Sugiura, all of Shizuoka, Japan, assigns to Minebea Co., Ltd., Nagano, Japan

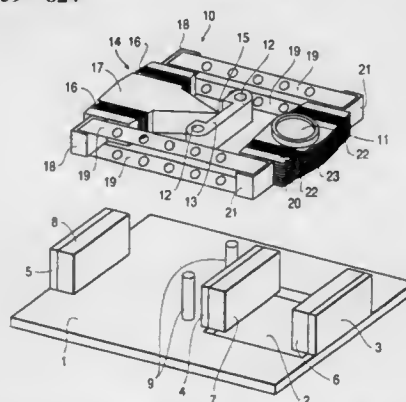
Filed Aug. 12, 1996, Ser. No. 695,937

Claims priority, application Japan, Aug. 11, 1995, 7-205993

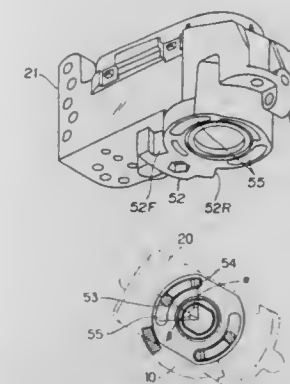
Int. Cl.⁶ G02B 7/02

U.S. Cl. 359—824

6 Claims



1. An objective lens supporting device for an optical pickup capable of controlling drive of an objective lens supported on a moving portion in the tracking direction and in the direction of the optical axis of said objective lens, comprising:



a lens retaining member to retain said objective lens;
support means for supporting said lens retaining member for movement along the optical axis of said objective lens; and
a supporting base to support said support means, said supporting base being rotatably supported on a bed plate by a hinge portion, and allowing said lens retaining member to move in the tracking direction;

wherein the center of gravity of the entire body of the moving portion supported by said hinge portion is positioned on the axial line of said hinge portion and the center of gravity of said lens retaining member is positioned on the optical axis of said objective lens.

5,781,353

EXTERIOR REARVIEW MIRROR

Richard Seubert, Brückenstrasse 19, Bürgstadt, Germany, D-63927, and Karl-Josef Marks, Am Dreispitz 18, Collenberg, Germany, D-97903

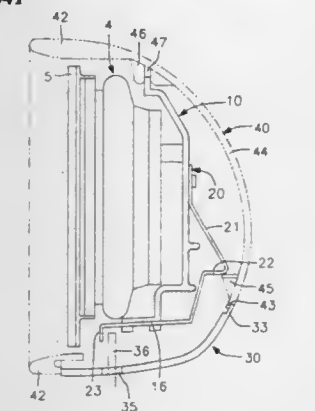
Filed Dec. 18, 1995, Ser. No. 574,180

Claims priority, application Germany, Dec. 17, 1994, 9420273 U

Int. Cl.⁶ G02B 7/182; B60R 1/06

U.S. Cl. 359—841

8 Claims



1. An external mirror for a motor vehicle, said external mirror comprising:

a mirror base fixable to a body of the motor vehicle,
a mirror housing swingable with respect to the mirror base and surrounding a mirror glass on all sides and projecting rearwardly of the mirror glass to form an encircling edge bead structure.

a mounting plate bearing the mirror glass, said mounting plate being within said mirror housing,

wherein said mirror housing includes
a cap part releasably fixable to the mounting plate, and
a base part,

wherein said cap part is mountable over said mounting plate from above said mounting plate, and said cap part is fixed to said mounting plate by two holding elements, said cap part projecting rearwardly beyond a plane of the mirror glass, said cap part including a rearwardly projecting portion forming at least a substantial part of said encircling edge bead structure.

5,781,354

POSITIONING DEVICE FOR CAR SIDEVIEW MIRROR

Ikuo Sakata, Yamato, Japan, assignor to Ichikoh Industries, Ltd., Tokyo, Japan

Filed Sep. 20, 1996, Ser. No. 710,768

Claims priority, application Japan, Sep. 22, 1995, 7-244401

Int. Cl.⁶ B60R 1/08

U.S. Cl. 359—841

6 Claims

1. A positioning device for a car sideview mirror having a base which is to be fixed to a car body and a housing having a mirror unit assembled therein,

said positioning device designed to turn the housing to a viewing position where the housing protrudes laterally from the car body, a rear parking position where the housing is directed toward the rear end of the car body while the mirror side of the housing faces directly the lateral side of the car body, and to a front parking position where the housing is directed toward the front end of the car body while the rear side of the housing faces directly the lateral side of the car body,

said positioning device, comprising:

a stationary member coupled to the base and having a shaft;
a rotary member coupled to the housing; and
a mechanism disposed between the stationary and rotary members to turn the rotary member about the shaft of the stationary member;

there being provided on the stationary and rotary members a stopping mechanism to limit the turn angle of the housing to a predetermined range;

the rotary member turning mechanism comprising a pair of arcuate grooves formed in the stationary member, each having a central angle corresponding to the predetermined angle of the rearward turn of the housing from the viewing position, a pair of arcuate grooves formed in the rotary member oppositely to, and on a substantially same circumference as that of, the pair of arcuate grooves in the stationary member, each having a central angle corresponding to a predetermined angle of turn extending from the predetermined angle of rearward turn of the housing, and a pair of balls disposed between the stationary and rotary members so as to roll circumferentially of the arcuate grooves in the members.

5,781,355

STRESS-FREE SUPPORT

Hans-Jürgen Meier, Aalen, Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed Feb. 20, 1997, Ser. No. 802,927

Claims priority, application Germany, Feb. 21, 1996, 296 03 024.4 U

Int. Cl.⁶ G02B 7/182; F16M 13/00

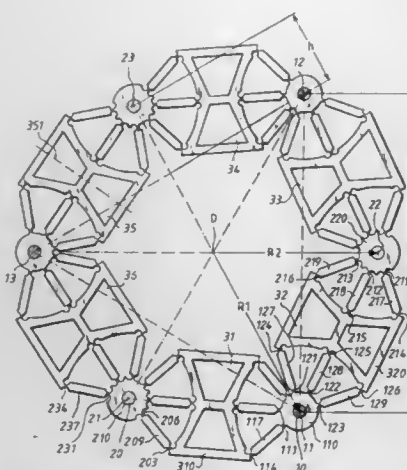
U.S. Cl. 359—871

7 Claims

1. A stress-free support comprising:

a first part having a first linear thermal expansion coefficient (α_1) and having three first rotational bearings;
said three first rotational bearings being arranged on a first circle having a first radius (R1) and defining respective first rotational axes perpendicular to said first circle;
a second part having a second linear thermal expansion coefficient (α_2) and having three second rotational bearings;
said three second rotational bearings being arranged on a second circle having a second radius (R2) and defining respective second rotational axes perpendicular to said second circle;
said first rotational bearings and said second rotational bearings all being disposed in one plane;

six strut units pairwise having the same length and having a third linear thermal expansion coefficient (α_3); and,



each of said six strut units connecting one of said first rotational bearings to one of said second rotational bearings.

5,781,356

LEVELNESS ADJUSTING DEVICE OF AN ACTUATOR UNIT FOR A REARVIEW MIRROR

Kazunori Okada, Shizuokashi; Toshihiro Mochizuki, Fujiedashi; Kazunari Yamauchi, Fujieda, and Masahiko Ito, Hamamatsu, all of Japan, assignors to Murakami Kaimeido Co., Ltd., Shizuoka-ken, Japan

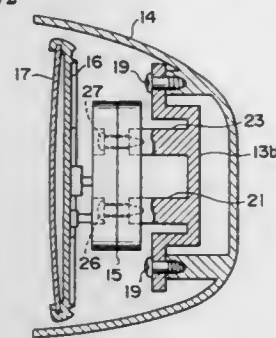
Filed Apr. 3, 1996, Ser. No. 625,599

Claims priority, application Japan, Apr. 4, 1995, 7-101642

Int. Cl.⁶ G02B 7/182; 5/08

U.S. Cl. 359—872

2 Claims



1. A levelness adjusting device for a foldable mirror having a mirror body, the device comprising a base; a shaft arranged on said base for erecting and foldably rotating the mirror body; a frame for fixing the mirror body and rotatably supported on said shaft, said frame having a front portion with a support surface; an actuator unit secured on said support surface and having a peripheral edge with a screw hole; a mirror holder; a mirror element tiltably mounted on a front side of said actuator unit via said mirror holder; and positioning means including a base boss provided on said support surface, a base screw hole provided on an end surface of said base boss to provide a support point, an adjusting boss provided at a position having a predetermined distance from said base boss on said front portion, several adjusting screw holes provided on the end surface of said adjusting boss to correspond to an inclination of said shaft at the time of assembling said mirror body, said adjusting screw holes are located on an arc of a circle centering of said base screw hole having a close distance each other, and several joint screws penetrating into screw holes formed on said peripheral edge of said actuator unit so as to penetrate into said base screw hole and selected one of said adjusting screw holes, respectively.

5,781,357

Patent Not Issued For This Number

5,781,358

MAGNETIC RECORDING APPARATUS WITH NON-LINEAR BIT SHIFT MEASUREMENT

Toshiyuki Hasegawa, Tokyo, Japan, assignor to NEC Corporation, Japan

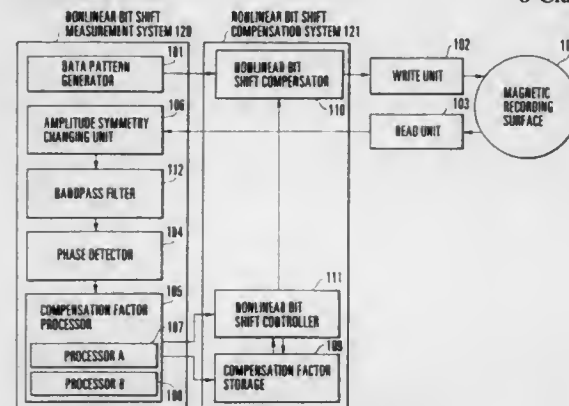
Filed Jul. 31, 1996, Ser. No. 690,127

Claims priority, application Japan, Jul. 31, 1995, 7-194673

Int. Cl.⁶ G11B 5/09

U.S. Cl. 360—51

8 Claims



1. A magnetic recording apparatus comprising:

generation means for generating a composite data pattern of a basic period having a central adjacent bit pair between isolated bits and an isolated data pattern having the same basic period as that of the composite data pattern and only an isolated bit;

writing means for writing the composite and isolated data patterns generated by said generation means on a magnetic recording medium;

reading means for reading out the composite and isolated data patterns written on said magnetic recording medium;

detection means for detecting phases of frequency components of the composite and isolated data patterns read out by said reading means; and

processing means for converting a difference between the phases of the frequency components of the composite and isolated data patterns, detected by said detection means, into a nonlinear bit shift compensation factor.

5,781,359

TAPE SLACK ELIMINATING DEVICE FOR A CASSETTE TAPE PLAYER

Akira Otsuki, and Yoichi Watanabe, both of Iwaki, Japan, assignors to Alpine Electronics, Inc., Japan

Filed Apr. 12, 1996, Ser. No. 631,461

Claims priority, application Japan, Apr. 17, 1995, 7-091105; Apr. 17, 1995, 7-091106; Apr. 17, 1995, 7-091107; Apr. 17, 1995, 7-091108

Int. Cl.⁶ G11B 15/43; 15/48

U.S. Cl. 360—71

24 Claims

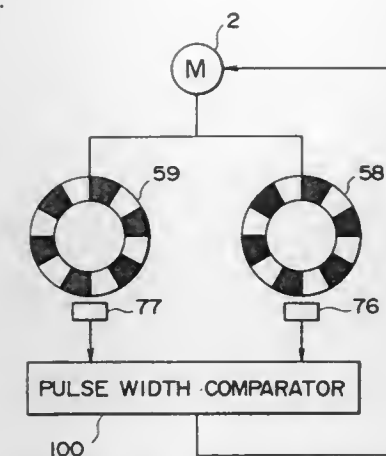
1. A cassette tape player comprising:

two reel bases each of which couples with one of the reels of a cassette tape located in a hold position of said player;

a drive motor which drives said two reel bases to rotate;

a tape slack eliminating mechanism which rotates each said two reel bases in its own tape winding direction;

two pulse generators which output pulse signals indicating the rotational states of said two reel bases, one pulse generator being associated with each of said two reel bases;



a pulse width comparator which detects whether pulse widths of the pulse signals from said pulse generators exceed a prescribed value; and

a controller which during operation of said tape slack eliminating mechanism, when the pulse width of the pulse signal of at least one of said pulse generators exceeds said prescribed value indicating that the tape slack has been removed, terminates the operation of said tape slack eliminating mechanism.

5,781,360

METHOD AND APPARATUS FOR DETECTING DATA TRACK MISREGISTRATION

Rosser S. Wilson, Menlo Park, and Peter Butler, Santa Clara, both of Calif., assignors to Maxtor Corporation, Longmont, Colo.

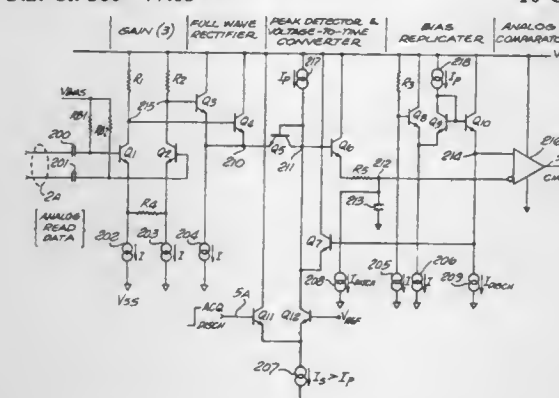
Continuation of Ser. No. 722,118, Jun. 26, 1991, abandoned.

This application Jan. 17, 1995, Ser. No. 373,461

Int. Cl.⁶ G11B 5/596

U.S. Cl. 360—77.08

10 Claims



1. An apparatus for detecting data track misregistration comprising:

a servo denodulator for receiving a differential analog input from a data channelling means, and for receiving a first control signal from a microprocessor; said demodulator for providing a first binary signal;

said microprocessor for receiving said first binary signal from said demodulator, and for receiving a status signal and a plurality of pulses from a dedicated servo system; and for providing a command signal to said servo system; said microprocessor for providing an automatic gain control hold signal to said data channelling means, and for providing said first control signal to said demodulator; said microprocessor coupled to a data controlling means;

said data controlling means receiving said pulses from said servo system; said data controlling means coupled to said data channelling means to transmit and receive a data signal and to provide a clock signal; said data controlling means coupled to

a device interface; said data controlling means and said microprocessor comprising an interface controller for governing communication between a disk file and said device interface;

said disk file having at least one data surface and a servo position reference surface; each one of said data surfaces containing at least one misregistration calibration area;

a data head positioned adjacent each one of said data surfaces for reading data from said data surface and writing data to said data surface; said data head coupled through an amplifying means to said channelling means;

a servo head positioned adjacent said servo position reference surface for reading servo position information from said servo position reference surface; said servo head coupled through a servo amplifying means to said servo system;

a head positioning system for supporting and positioning said data heads and said servo head in a synchronized fashion in response to a positioning signal received from said servo system;

wherein said misregistration calibration area comprises:

a first signal burst centered on disk track, K;

a second signal burst following said first signal burst, overlapping one-half of said track K and one-half of an adjacent outer track, K-1;

a third signal burst following said second signal burst, overlapping one-half of said track K and one-half of an adjacent inner track, K+1;

wherein a plurality of said misregistration calibration areas form an offset calibration track; at least one of said offset calibration tracks disposed at fixed inner and outer radii on all of said data surfaces;

wherein said microprocessor contains a timing means; said timing means initiated by said first control signal and stopped by said first binary signal; said timing means containing a time value, T.

5,781,361

METHOD AND APPARATUS FOR GENERATING SERVO INFORMATION

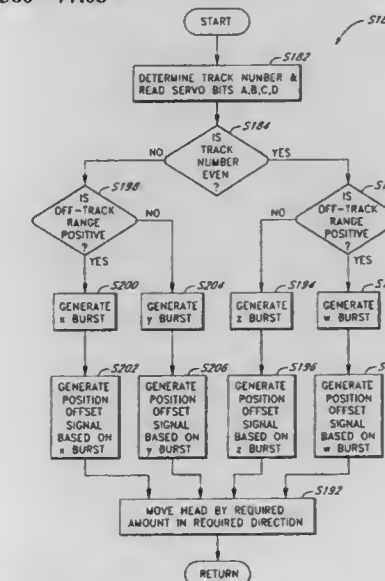
Me Van Le, Milpitas, and Jong-Ming Lin, Cupertino, both of Calif., assignors to Samsung Electronics, Ltd., Suwon, Rep. of Korea

Filed May 1, 1996, Ser. No. 641,686

Int. Cl.⁶ G11B 5/596

U.S. Cl. 360—77.08

20 Claims



1. A hard disk drive, comprising:

a housing;

an actuator arm mounted to said housing;

a head mounted to said actuator arm;

a spin motor mounted to said housing; and
a disk attached to said spin motor, said disk having a plurality of tracks, one of said tracks having a servo field with a plurality of servo bits, wherein the servo bits include an A bit, a B bit, a C bit and a D bit, where the A bit and the B bit have a common boundary located at the track centerline and where the C bit and the D bit have a common boundary; and
a servo controller coupled to said head for controlling reading of the servo bits, said servo controller generating a servo signal based on (1) a selected one of a sum or a difference of (a) the difference between the A and the B bits and (b) the difference between the C and the D bits, and (2) an offset, the plurality of servo bits used for positioning said head.

5,781,362

SERVO CONTROL SYSTEM FOR DRIVING A VOICE COIL MOTOR WITH PULSE WIDTH AND GAIN CONTROL

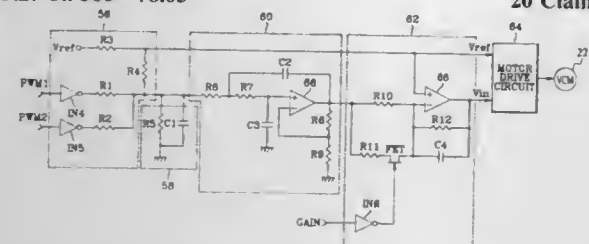
Ho-Yul Bang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Dec. 19, 1996, Ser. No. 769,440

Claims priority, application Rep. of Korea, Dec. 20, 1995, 1995-52593

Int. Cl. G11B 5/596

U.S. Cl. 360—78.05

20 Claims



1. A servo control system for a voice coil motor in a disk drive, said servo control system comprising:

voice coil motor drive means for driving said voice coil motor to position a transducer head over a disk by a control current generated in response to a drive voltage and adjusted to one of a high current and a low current in response to gain switching data;

data controller means for generating control data containing gain control data for generation of said gain switching data, and level control data to variably adjust the level of said drive voltage in accordance with a servo control mode of operation; counter means for repeatedly counting clock pulses of a given frequency from an initial value to a last value within a count range to generate count data;

latch means for latching said control data to produce said gain control data, said level control data, and delayed data at each time of said initial value is reached by said counter means;

gain switching generator means for generating said gain switching data for adjustment of said control current to one of said high current and said low current in response to reception of said delayed data latched by said latch means at each time said count data corresponds to said delayed data; and

pulse width modulated signal generator means for generating as said drive voltage a pulse width modulated signal having a duty corresponding to the value of said level control data latched by said latch means at a period of said count range.

5,781,363

SERVO-FREE VELOCITY ESTIMATOR FOR COIL DRIVEN ACTUATOR ARM IN A DATA STORAGE DRIVE

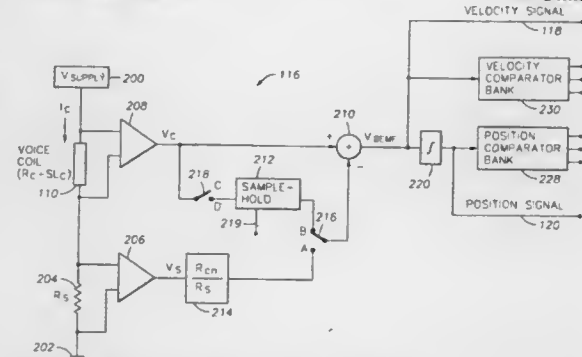
Bryan S. Rowan, and Louis Joseph Serrano, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1996, Ser. No. 732,554

Int. Cl. G11B 5/596

U.S. Cl. 360—78.09

16 Claims



9. A disk drive storage mechanism, comprising:
a head actuator assembly, comprising:

an actuator arm;
a motor coil secured to the actuator arm; and
a coil magnet mounted proximate the coil in a predetermined orientation thereto;

a servo controller, to generate a selected electrical current in the coil;

an analog coil sensor to measure analog voltage across the coil; a sample-and-hold unit coupled to the analog coil sensor and responsive to receipt of a sample-activation signal to store an analog voltage signal representative of analog voltage measured by the coil sensor; and

an analog summer having a first input coupled to the sample-and-hold unit, having a second input coupled to the coil sensor, the summer also having a summer output, said summer providing on the summer output an analog estimated velocity signal representative of the voltage being measured by the coil sensor reduced by the voltage signal being stored by the sample-and-hold unit.

5,781,364

COARSE AND FINE HEAD POSITIONS APPARATUS WHICH USES A SLIPABLE SHAFT IN A MOTOR

Akira Hashimoto; Kazuo Hasegawa, and Masao Sato, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 519,923, Aug. 28, 1995, abandoned, which is a continuation of Ser. No. 157,898, Nov. 24, 1993, Pat. No. 5,519,553. This application Feb. 3, 1997, Ser. No. 794,683

Claims priority, application Japan, Feb. 5, 1993, 5-018521

Int. Cl. G11B 5/55

U.S. Cl. 360—78.05

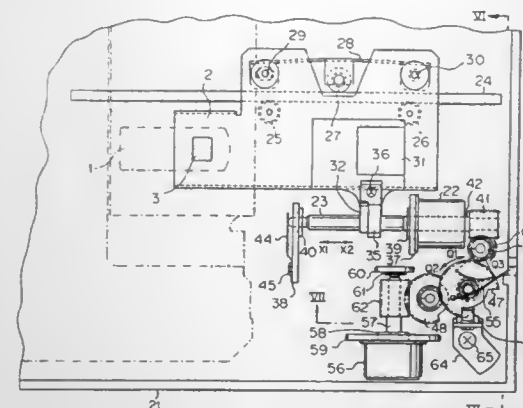
13 Claims

1. A head positioning apparatus for moving and radially positioning head over a medium, comprising:

(a) a carriage for mounting the head;

(b) a motor having a shaft supporting a lead screw having an axis for rotation, said lead screw disposed to a first side of the motor and engaging with the carriage, wherein translational movement of the lead screw along the axis of the lead screw, and rotation of the lead screw by the motor each are transmitted through the engagement with the carriage to cause the carriage to move in a radial direction with respect to the medium;

(c) a cylindrical rack attached to the shaft supporting the lead screw and disposed to a second side of the motor away from the lead screw;



(d) a gear, rotatable about a post, the gear engaging with the cylindrical rack; and
(e) drive means for driving the gear to move the cylindrical rack bi-directionally along the axis of the lead screw, whereby the carriage is moved radially with respect to the medium.

5,781,365

SLIDING MODE CONTROL OF A MAGNETORESISTIVE READ HEAD FOR MAGNETIC RECORDING

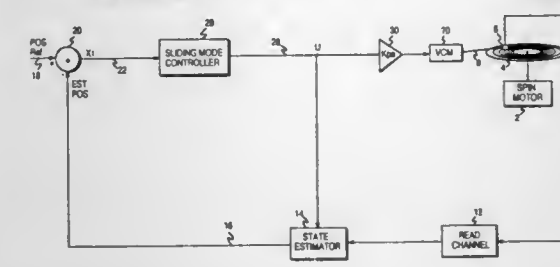
Paul M. Romano, and Louis Supino, both of Boulder, Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 435,416, May 10, 1995, which is a continuation of Ser. No. 400,073, Mar. 7, 1995, abandoned. This application Jul. 14, 1995, Ser. No. 502,410

Int. Cl. G11B 5/596

U.S. Cl. 360—78.06

23 Claims



1. A magnetic disk drive storage system for recording digital data, comprising:

(a) at least one rotating magnetic disk comprising a plurality of concentric data tracks recorded thereon, wherein the data tracks comprise user data and servo data;

(b) a magnetoresistive (MR) read head positioned over the magnetic disk, for reading the digital data from the magnetic disk;

(c) an actuator connected to the MR read head, for positioning the MR read head over a selected track;

(d) a motor connected to the actuator and having an input for receiving a motor control signal, the motor for controlling the motion of the actuator;

(e) a phase state generator, responsive to the servo data, for generating at least one phase state signal; and

(f) a sliding mode controller, responsive to the at least one phase state signal, for generating and outputting the motor control signal, wherein the sliding mode controller operates in a seek mode to move the MR read head from a current track to a selected track and in a tracking mode to keep the MR read head substantially aligned over a centerline of the selected track while reading the user data; wherein:

(a) the magnetic disk drive storage system has at least two phase states;

(b) the sliding mode controller switches between a first and a second structure;

(c) the first structure causes the two phase states to change relative to a phase plane to follow a first phase trajectory;

(d) the second structure causes the two phase states to change relative to the phase plane to follow a second phase trajectory;

(e) the first and second phase trajectories intersect in opposite directions in at least part of the phase plane;

(f) by switching between the first and second structures the sliding mode controller causes the two phase states to change relative to the phase plane to substantially follow a predetermined third phase trajectory; and

(g) the third phase trajectory is within the part of the phase plane where the first and second phase trajectories intersect.

5,781,366

TAPE LOADING DEVICE

Hidetoshi Matsuoka, Tokyo, Japan, assignor to Cannon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 341,446, Nov. 16, 1994, abandoned, which is a continuation of Ser. No. 827,288, Jan. 29, 1992, abandoned. This application Nov. 21, 1996, Ser. No. 753,256

Claims priority, application Japan, Feb. 8, 1991, 3-017504; Mar. 11, 1991, 3-044878

Int. Cl. G11B 5/027

U.S. Cl. 360—85

21 Claims



1. A tape loading device for wrapping a tape around a rotary drum to a given degree of angle, comprising:

a) a guide member moved in a direction along the rotary drum for wrapping the tape around the rotary drum to the given degree of angle; and

b) a plurality of rail defining members for defining edge parts of a rail slot which is guided said guide member, said plurality of rail defining members including first, second, third and fourth rail defining members, the first and second rail defining members adjacent to one another and forming one edge part of the rail slot guiding said guide member in loading the tape, the third and fourth rail defining members adjacent to one another and forming another edge part of the rail slot guiding said guide member in unloading the tape, the first rail defining member being opposite to the third rail defining member, the second rail defining member being opposite to the fourth rail defining member, a plurality of joints formed between the respective adjacent rail defining members of said plurality of rail defining members, each joint being provided with a stepped level difference corresponding to the direction in which a force acting on said guide member is exerted,

said guide member sliding by contact with the one edge part of the rail slot in loading the tape and said guide member sliding by contact with the another edge part of the rail slot in unloading the tape, the edge part of the first rail defining member being shifted to the edge part of the second rail defining member, the edge part of the third rail defining member being shifted to the edge part of the fourth rail defining member in the same direction relative to the direction where the edge part of the first rail defining member is being shifted to the edge part of the second rail defining member.

5,781,367

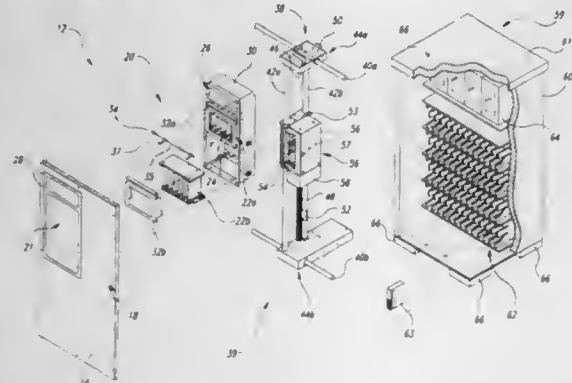
LIBRARY FOR STORING DATA-STORAGE MEDIA
Nathan H. Searle, Snohomish, and Allen E. Fleckenstein, Bellevue, both of Wash., assignors to Advanced Digital Information Corporation, Redmond, Wash.

Filed Nov. 13, 1995, Ser. No. 561,076

Int. Cl.⁶ G11B 15/68

U.S. Cl. 360—92

17 Claims



1. A library for storing a cartridge of data-storage media, comprising:

- a chassis having first and second walls, said first wall spaced apart from and substantially parallel to said second wall;
- a plurality of cartridge storage cells arranged in rows and mounted inside said chassis to said second wall, each of said cells having a cell opening that faces said first wall;
- a cartridge mailbox mounted within an opening in said first wall and having a slot with a first slot opening that faces inside said chassis and toward said second wall and a second slot opening that faces outside said chassis and away from said second wall, said slot constructed to allow insertion of said cartridge into said slot via said first and said second slot openings and to allow removal of said cartridge from said slot via said first and said second slot openings;
- an x-y drive assembly mounted within said chassis between said first and second walls and operable to move in a plane that is substantially parallel to said first and second walls;
- a cartridge picker mounted to said drive assembly and having a jaw assembly, a first picker port, and a second picker port, said picker operable to retrieve said cartridge from and provide said cartridge to said mailbox slot via said first slot opening and said first picker port, said picker operable to retrieve said cartridge from and provide said cartridge to a desired one of said storage cells via said cell opening of said desired storage cell and said second picker port, said cartridge picker operable to extend said jaw assembly out from said first picker port, said extended jaw assembly operable to grasp said cartridge while said cartridge is in said mailbox slot, and said cartridge picker operable to retract said jaw assembly and said grasped cartridge in through said first picker port, said cartridge picker also operable to extend said jaw assembly and grasped cartridge out from said second picker port such that said extended jaw assembly inserts said cartridge into said storage cell, said cartridge picker is operable to move said cartridge out from said first or second picker port and partway into said mailbox slot or storage cell, respectively, and then to push said cartridge a remaining way into said mailbox slot or storage cell by extending said jaw assembly out from said first or second picker port, respectively, wherein said jaw assembly is operable to assume a closed position before said cartridge picker extends said jaw assembly to push said cartridge, whereby bidirectional movement of said grasped cartridge between said second picker port and said first picker port, through said cartridge picker, occurs in a single plane relative to said second picker port and said first picker port.

5,781,368

MAGNETIC TAPE DEVICE AND AUTOMATIC CLEANING METHOD FOR USE IN THE SAME
Yoshio Kotaki, and Yukio Katou, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

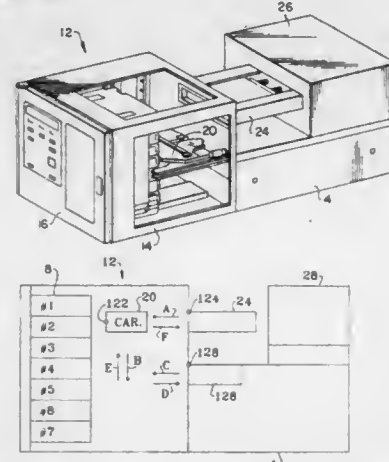
Continuation of Ser. No. 603,507, Feb. 20, 1996, abandoned, which is a continuation of Ser. No. 276,533, Jul. 18, 1994, abandoned. This application Dec. 30, 1996, Ser. No. 774,436

Claims priority, application Japan, Jul. 28, 1993, 5-185705

Int. Cl.⁶ G11B 15/68

U.S. Cl. 360—92

13 Claims



1. A storage device having a cartridge auto loader for removing and replacing cartridges stored in a magazine and for introducing the cartridges into a main body of said storage device, said main body containing a recording/reproducing device, said storage device comprising:

- a housing located adjacent to said main body, said main body being external from said housing;
- a door which can be opened and closed relative to said housing;
- a magazine tray having a tray portion on which said magazine is placed, said magazine tray being slidable relative to a bottom portion of said housing between a first position where said tray portion is inside said housing when said door is closed and a second position where said tray portion is outside said housing when said door is open;
- a cleaning cell for housing a cleaning cartridge used for cleaning a recording/reproducing head of said main body, wherein said cleaning cell is separate from both said magazine and said magazine tray, wherein said magazine is independently movable relative to said cleaning cell;
- a carrier portion for transferring said cleaning cartridge between said main body and said cleaning cell and transferring said cartridges between said magazine and said main body; and
- an elevator means for moving said carrier portion in a stacking-up direction of said cartridges in said magazine.

5,781,369

MAGNETIC TAPE APPARATUS WITH AN AUXILIARY ENTRY/EXIT MECHANISM

Katsumi Inazawa, Kengo Yamakawa, and Hiroyuki Sugihara, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 283,275, Jul. 29, 1994, abandoned.

This application Feb. 28, 1997, Ser. No. 807,346

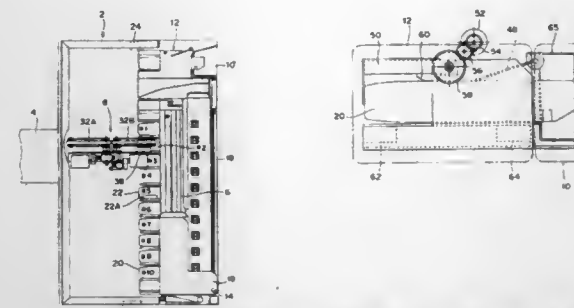
Claims priority, application Japan, Nov. 10, 1993, 5-280941

Int. Cl.⁶ G11B 15/68; 17/22

U.S. Cl. 360—92

23 Claims

1. A magnetic tape apparatus comprising:
- a recording/reproducing unit for recording data on and reproducing data from a cartridge-type recording medium; and
 - an automatic loading mechanism, disposed in front of said recording/reproducing unit, for automatically loading a cartridge-type recording medium, said automatic loading mechanism including:



- a magazine detachably disposed within said automatic loading mechanism and having an array of bins for storing cartridge-type recording mediums, said magazine being configured for entry and removal of cartridge-type recording mediums into and from said automatic loading mechanism;
- an accessor movable along said array of bins between said recording/reproducing unit and said magazine for transferring a cartridge-type recording medium between said recording/reproducing unit and said magazine, said accessor having a feeder mechanism for feeding a cartridge-type recording medium along a line perpendicular to said array of bins;
- an auxiliary entry/exit mechanism disposed within said automatic loading mechanism for entering and discharging a cartridge-type recording medium;
- positioning means for positioning a cartridge-type recording medium entered into said auxiliary entry/exit mechanism in a first position in which said entered cartridge-type recording medium can be received by said accessor and for positioning a cartridge-type recording medium returned to said auxiliary entry/exit mechanism by said accessor in a second position in which said returned cartridge-type recording medium can be picked up by an operator, said positioning means including:
- a stopper for stopping said entered cartridge-type recording medium in said first position;
- a first sensor for detecting when said entered cartridge-type recording medium has arrived at said first position where said feeder mechanism can feed said entered cartridge-type recording medium into said accessor;
- means for moving said stopper to a position which enables said feeder mechanism to feed said entered cartridge-type recording medium into said accessor, in accordance with a detection from said first sensor; and
- a second sensor for detecting when a cartridge-type recording medium has been fed to said second position; and
- said accessor being configured for directly transferring a cartridge-type recording medium among said auxiliary entry/exit mechanism, said recording/reproducing unit, and said magazine.

5,781,370

TAPE CASSETTE HOLDER SEPERATING MECHANISM OF MAGNETIC RECORDING AND REPRODUCING APPARATUS HAVING MULTIPLE THREAD WORM FOR PERMITTING MOVING OF THE CASSETTE HOLDER WHEN UNPOWERED

Jeong Don Choi, In Ki Cheon, both of Seoul; Geun Hyuk Song, Kyungki-do, and Hee Yoon Park, Seoul, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 494,762, Jun. 26, 1995, abandoned, which is a continuation of Ser. No. 155,155, Nov. 19, 1993, abandoned. This application Jan. 8, 1997, Ser. No. 780,384

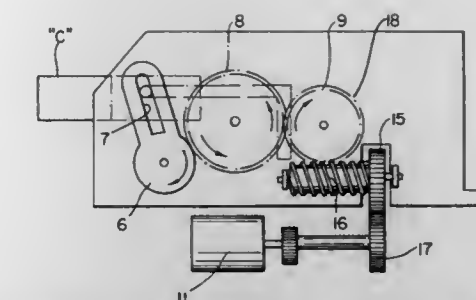
Claims priority, application Rep. of Korea, Nov. 21, 1992, 1992 23012

Int. Cl.⁶ G11B 15/675

U.S. Cl. 360—96.5

6 Claims

1. A gear/worm arrangement in a front loading device of a magnetic recording and reproducing apparatus having a cassette holder for receiving a cassette thereon, comprising:
- an arm gear connected to the cassette holder by means of a guide pin guided through a guide opening;



- a plurality of gears meshed with each other, a first gear of said plurality of gears meshing with said arm gear; and
- a multiple threaded worm, having a wide lead angle, connected to a reversible motor and meshed with a second gear of said plurality of gears, whereby a rotational force of the reversible motor generated when power is supplied thereto is transferred through said multiple threaded worm and said plurality of gears to said arm gear for moving the cassette holder;
- said arm gear, said plurality of gears, said multiple threaded worm, and the reversible motor being rotatable in response to the force of manual insertion of the cassette onto the cassette holder when power is not supplied to the reversible motor so as to prevent damage to said gear/worm arrangement.

5,781,371

CASSETTE LOADING MACHANISM

Naka Shibata, Saitama, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 568,455, Dec. 7, 1995, Pat. No. 5,615,066,

which is a continuation of Ser. No. 209,206, Mar. 4, 1994,

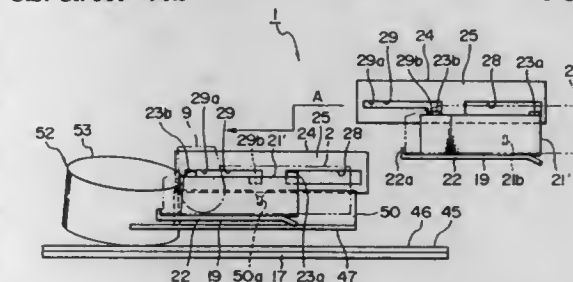
abandoned. This application Mar. 20, 1997, Ser. No. 822,288

Claims priority, application Japan, Mar. 8, 1993, 5-070728

Int. Cl.⁶ G11B 15/675

U.S. Cl. 360—96.5

1 Claim



1. A cassette loading mechanism of a linear skating type comprising:

- a cassette holder disposed in a horizontal plane for detachably accommodating a tape cassette, said cassette holder being provided on a side thereof with first and second projecting portions;
- a cassette holder holding member for holding said cassette holder, said cassette holder holding member being formed on a side thereof with a third projecting portion and a first grooved portion formed of a slit portion and a stopper portion for engagement with said first projecting portion formed on said cassette holder, when said first projecting portion engages said slit portion said cassette holder and said cassette holder holding member are movably connected with each other for relative movement in a horizontal plane and when said first projecting portion engages said stopper portion said cassette holder and said cassette holder holding member are fixedly connected for preventing relative movement in the horizontal plane;
- a fixed chassis having a support wall formed with a second grooved portion for engagement with said first projecting portion of said cassette holder that extends through said first grooved portion formed in said cassette holder holding member, said support wall being further formed with a third grooved portion for engaging said third projecting portion of

said cassette holder holding member and extending horizontally and vertically so that said cassette holder holding member is guided for movement in the horizontal plane and in a vertical plane; and

a slide chassis mounted on said fixed chassis, said cassette holder holding member and said slide chassis being horizontally and vertically movable relative to said fixed chassis, said slide chassis having a vertically arranged fourth grooved portion for receiving therein said second projecting portion formed on said cassette holder, so that when said third projecting portion of said cassette holder holding member moves along a horizontal portion of said third grooved portion of said support wall said cassette holder and said cassette holder holding member move together with said first projecting portion of said cassette holder engaging said stopper portion of said first grooved portion of said cassette holder holding member, and when said cassette holder holding member moves along a vertical portion of said third grooved portion of said support wall and said second projecting portion of said cassette holder engages said fourth grooved portion of said slide chassis and reaches a bottom end of said fourth grooved portion, said first projecting portion of said cassette holder is disengaged from said stopper portion of said first grooved portion of said cassette holder holding member and said cassette holder is fixedly connected to said slide chassis by said second projecting portion engaging said fourth grooved portion, whereby said cassette holder and said slide chassis move together in a horizontal plane relative to said cassette holder holding member; further comprising:

a cassette lid opening member pivotally secured on said cassette holder, said cassette lid opening member being engaged with a lid of a tape cassette to be opened in operative association with a vertical movement of said cassette holder.

5,781,372

AXIAL RESONANCE ATTENUATING APPARATUS FOR ROTATION DRUM APPARATUS HAVING FLEXIBLE ROD-SHAPED LINKING MEMBERS

Toshiharu Miyago, Yumi Matsui, and Yoshikazu Nishida, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

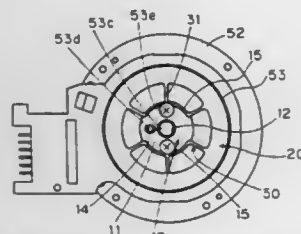
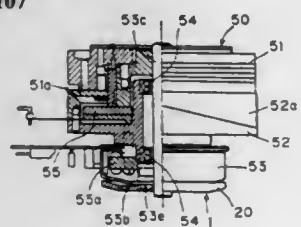
Filed Apr. 30, 1996, Ser. No. 641,174

Claims priority, application Japan, May 16, 1995, 7-117075

Int. Cl.⁶ G11B 5/53; 5/027

U.S. Cl. 360—107

4 Claims



1. A rotation drum apparatus for a magnetic recording and reproducing apparatus of a helical scanning system comprising: a rotation drum including a head for recording and reproducing a signal on a tape within the magnetic recording and reproducing apparatus; a rotary shaft including one end to which said rotation drum is fixed;

a rotor of a motor for rotating said rotation drum, said rotor being connected to a second end of said rotary shaft opposite said one end; and

axial resonance attenuating means for suppressing axial resonance generated within the rotation drum apparatus when said rotary shaft rotates, said axial resonance attenuating means comprising

an attaching member fixed to said rotor or said rotary shaft, a weight disposed away from said attaching member, a gap being formed between said attaching member and said weight, and

one or more flexible webs linking said attaching member and said weight such that said axial resonance attenuating means has a resonance frequency which matches a main resonance frequency of the remainder of the rotation drum apparatus,

said attaching member, said weight and said one or more flexible webs being formed as one substantially coplanar unit in a radial direction,

said weight having a larger specific gravity than said attaching member and said one or more flexible webs, and said attaching member having a larger creep strength than said weight and said one or more flexible webs.

5,781,373

ACOUSTIC NOISE REDUCTION SYSTEM FOR A DISK DRIVE

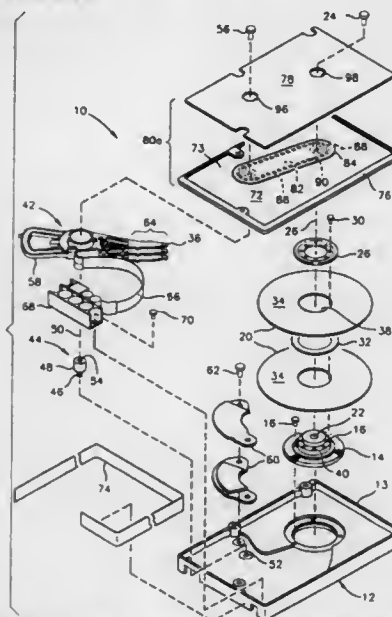
Nils Eric Larson, San Jose, and Ajit Fathailal Sancheti, Redwood City, both of Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed Mar. 14, 1997, Ser. No. 816,099

Int. Cl.⁶ G11B 33/08

U.S. Cl. 360—97.02

7 Claims



1. A disk drive having reduced operational acoustic noise, the disk drive comprising:

a base with a substantially continuous sidewall;

an inner cover that is substantially flat and that has a periphery joined to the base to form a head-disk assembly (HDA) chamber, the inner cover including a first layer of rigid material with an open region that is spaced from the periphery and that is bounded by an open-region edge;

a pivot bearing assembly having a pivot journal;

the pivot journal having a first pivot end and a second pivot end, the first pivot end being fixed to the base to define a pivot axis disposed within the open region of the inner cover;

a head stack assembly rotatably supported by the pivot bearing assembly, the head stack assembly being a source of undesirable acoustic vibration energy;

a spindle motor having a spindle journal;

the spindle journal having a first spindle end and a second spindle end, the first spindle end being fixed to the base to define a spindle axis in parallel relationship with the pivot axis;

an interface member having a free end, the interface member disposed within the open region substantially coplanar to the open region edge;

the interface member being attached to the second end of the pivot journal and to the second end of the spindle journal to fix and stabilize the parallel relationship of the spindle axis and the pivot axis, with the free end being spaced from the open-region edge by an air gap to provide isolation of the free end to reduce transfer of acoustic vibration energy;

pivot-to-interface attachment means for attaching the free end to the second end of the pivot journal;

means for supporting the interface member and attaching the interface member to the second end of the spindle journal;

an outer plate fixed to the inner cover and including a second layer of rigid material; and

a soft metal member disposed between the interface member and the outer plate to surround the open region;

a layer of viscoelastic material constrained between the soft metal member and the second rigid material layer whereby acoustic vibration from the interface member is dissipated within the constrained viscoelastic material; and

the pivot-to-interface attachment means including a fastener and an aperture in the outer plate through which the fastener extends into the second end of the pivot journal without contacting the outer plate so as to maintain the isolation of the free end.

5,781,374

DISC CENTERING DEVICE FOR A DISC DRIVE

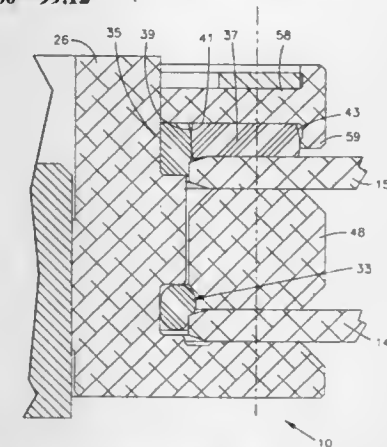
Michael Bruce Moir, Newbury Park, and Richard Gene Krum, Thousand Oaks, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Dec. 17, 1996, Ser. No. 768,745

Int. Cl.⁶ G11B 17/022; 17/038

U.S. Cl. 360—99.12

4 Claims



1. A disc pack assembly comprising:

a spindle motor assembly rotatable about a central axis, said spindle motor assembly having a spindle hub, said spindle hub having at least one ring receiving portion;

at least one information storage disc stacked on said spindle hub; a resilient spacer ring stacked on top of said information storage disc;

a second resilient ring located in said ring receiving portion of said spindle hub and adjacent the inner diameter of said information storage disc and

a disc clamp to apply an axial force to center and secure said information storage disc to said spindle hub,

a portion of said axial force compressing said second resilient ring and forcing the outer surface of said second resilient ring to apply a radial force to said information storage disc and

a portion of said axial force compressing said resilient spacer ring and forcing the inner surface of said resilient spacer ring to apply a radial force to said second resilient ring, forcing said second resilient ring to further apply radial force to said information storage disc.

5,781,375

INFORMATION RECORDING DISK CHUCK MECHANISM

Kazuo Honma, Kanagawa-ken, Japan, assignor to Hitachi Electronics Engineering Co., Ltd., Tokyo, Japan

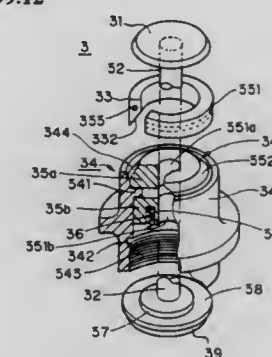
Filed Apr. 1, 1997, Ser. No. 831,742

Claims priority, application Japan, Apr. 3, 1996, 8-106364

Int. Cl.⁶ G11B 17/02

U.S. Cl. 360—99.12

10 Claims



1. A disk chuck mechanism comprising:

a cylinder having an annular groove provided in a peripheral portion of a disk receiving upper surface of said cylinder and having a diameter substantially equal to or slightly larger than an inner diameter of said disk and a conical boss portion provided inside said annular groove and a through-hole provided in a center portion of said cylinder;

a rod penetrating said through-hole and slidable therealong;

a circular plate provided in either an upper end of said rod or a front end of it, said circular plate protruding on the side of said conical boss portion and having a diameter corresponding to the inner diameter of said disk;

a plate member provided in an opposite end portion of said rod to said circular plate;

a partially discontinuous resilient ring member provided between said circular plate and said conical boss portion and having a diameter smaller than the diameter of said annular groove; and

a biasing member mounted between said plate member and either a lower portion of said cylinder or a rear portion of it for biasing said rod in a direction away from a rear portion of said cylinder, wherein said ring member has an inclined surface abutting to said conical boss portion and chucks said disk by pushing a side surface of said center opening of said disk with its side surface when it fits in said annular groove by a downward movement of said rod from said cylinder by said biasing member.

5,781,376

MAGNETIC HEAD WITH POLYCRYSTALLINE SILICON LAYER ON SLIDE RUNNING SURFACE
Yuji Tsukamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

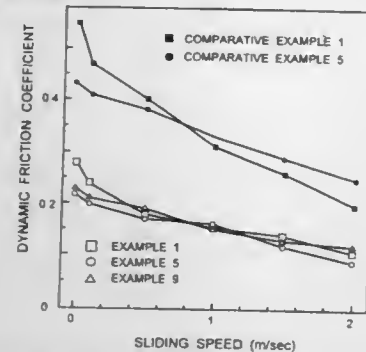
Filed Dec. 29, 1995, Ser. No. 580,820

Claims priority, application Japan, Jan. 5, 1995, 7-000301

Int. Cl.⁶ G11B 5/60

U.S. Cl. 360—103

6 Claims



1. A magnetic head having a slider, said slider comprising: a magnetic transducer carried by said slider for recording, reproducing, and erasing information recorded on a magnetic recording medium; running surface on said slider at which a contact-sliding is made with respect to said magnetic recording medium; and a polycrystalline silicon film which is provided on said running surface of said slider whereby improved wear resistance and chemical stability with increased frictional efficiency at low speed is accomplished.

5,781,377

SLIDER WITH PROTECTIVE DLC OR NONHYGROSCOPIC COATING ON THE TRAILING EDGE FACE

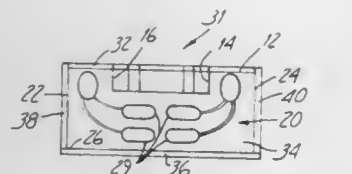
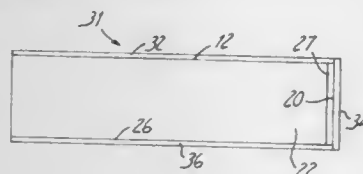
Venkat R. Koka, Vadnais Heights, and Ramesh Sundaram, Eden Prairie, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jul. 2, 1996, Ser. No. 675,377

Int. Cl.⁶ G11B 5/60; 5/187; 21/21

U.S. Cl. 360—103

8 Claims



1. A magnetic head slider for supporting a magnetic head above a magnetic disc, the magnetic head slider comprising: a slider structure having leading and trailing end surfaces and an air bearing surface, wherein the slider structure further comprises a top surface substantially parallel to the air bearing surface, a first side surface substantially perpendicular to the air bearing surface and to the trailing end surface, and a second side surface substantially parallel to the first side surface, the magnetic head slider further comprising a diamond like carbon coating on at least one of the top surface, the first side surface and the second side surface alumina encapsulating the magnetic head provided on the trailing end surface of the magnetic head slider; and

a diamond like carbon coating on at least portions of the air bearing surface and on at least portions of the trailing end surface, wherein the diamond like carbon coating on at least portions of the air bearing surface and on at least portions of the trailing end surface act to minimize swelling of alumina of the magnetic head slider toward the magnetic disc, wherein the diamond like carbon coating on the trailing end surface of the slider structure has a thickness of less than about 200 Å so that an increase in weight of the magnetic head slider caused by the diamond like carbon coating on the trailing end surface is minimized, and wherein the diamond like carbon coating on the trailing end surface covers substantially all of the trailing end surface except for portions of the trailing end surface corresponding to locations of bond pads.

5,781,378

FLEXURE HAVING DISPLACED GIMBAL BOND TONGUE WITH END TERMINATED HEADS

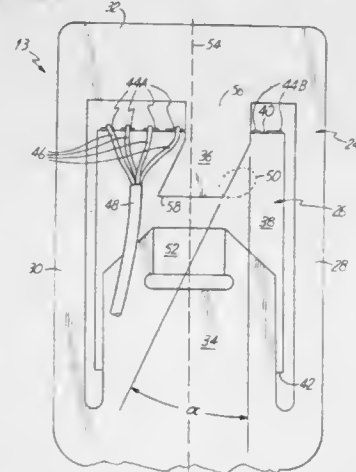
Gary L. Heitkamp, Plymouth; Lee A. Northouse, Bloomington, and Lyle G. Johnson, Mayer, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jun. 14, 1996, Ser. No. 662,246

Int. Cl.⁶ G11B 5/60

U.S. Cl. 360—104

19 Claims



1. A head gimbal assembly, comprising: a gimbal having a first strut with a first end and a second end, a second strut having a first end and a second end, a crossmember connected generally between the first ends of the first and second struts, and a gimbal bond tongue having a first end connected to the crossmember and a second end extending from the crossmember, the gimbal having a central axis located substantially parallel to and centrally between the first and second struts, the first end of the gimbal bond tongue having a central portion thereof, measured in a direction generally parallel to the crossmember, offset from the central axis in a direction toward the first strut along the crossmember, and a central region of the second end of the gimbal bond tongue, measured in a direction substantially parallel to the crossmember, is substantially aligned with the central axis; a slider coupled to the second end of the gimbal bond tongue; and a transducer coupled to the slider.

5,781,379

SINGLE BEAM FLEXURE FOR A HEAD GIMBAL ASSEMBLY

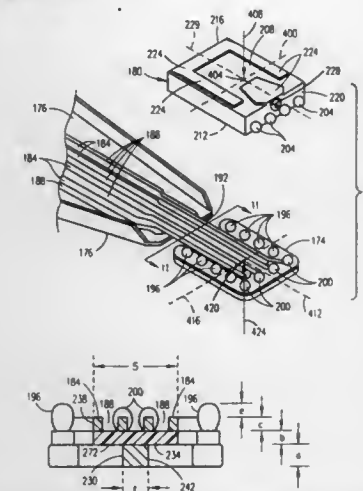
A. David Erpelding; Oscar J. Ruiz; Darrell D. Palmer, and Surya Pattanaik, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 648,312, May 13, 1996, abandoned, which is a continuation of Ser. No. 353,175, Dec. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 270,928, Jul. 5, 1994, abandoned, which is a continuation-in-part of Ser. No. 213,913, Mar. 15, 1994, abandoned. This application Mar. 13, 1997, Ser. No. 816,976

Int. Cl.⁶ G11B 5/48

U.S. Cl. 360—104

25 Claims



1. A suspension for supporting a read/write slider comprising: a slider support member; a load beam comprising a first layer comprised of a metal, a second layer comprised of a dielectric material and positioned over the first layer, and a third layer comprised of a high strength electrically conductive material and positioned over the second layer, the load beam having a distal end with the first layer having a width "v" measured at the distal end; and a flexure that connects the load beam to the slider support member, the flexure comprising a single elongated beam comprised of a first flexure layer which is part of the first layer and which has a width "r" greater than zero, a second flexure layer which is part of the second layer and a third flexure layer which is part of the third layer, the third flexure layer having a width "s" which is greater than the width "r", the single elongated beam having less stiffness than the load beam, and the width "r" always being less than the width "v".

5,781,380

SWING-TYPE ACTUATOR ASSEMBLY HAVING INTERNAL CONDUCTORS

Keith R. Berding; Shawn E. Casey, both of San Jose, and Charles B. Mountain, Irvine, all of Calif., assignors to Western Digital Corporation, Irvine, Calif.

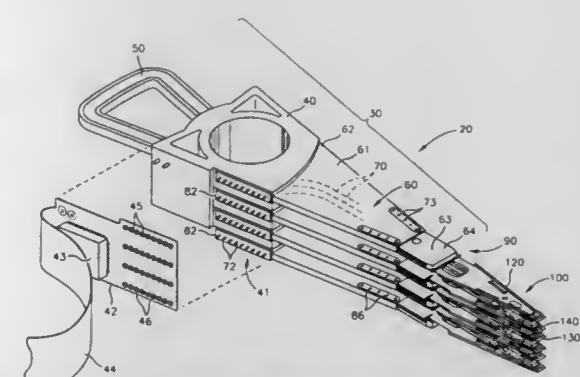
Filed Apr. 1, 1997, Ser. No. 831,986

Int. Cl.⁶ G11B 5/48

U.S. Cl. 360—104

28 Claims

1. A head stack assembly for a magnetic disk drive comprising: a molded actuator body having a pivot axis and an exterior surface defining a mounting site, the mounting site defining a plane substantially parallel to the pivot axis; a flex circuit cable having a portion thereof supported on the mounting site; a motive means for swinging the actuator body about the pivot axis; and an actuator arm cantilevered from the actuator body;



a head gimbal assembly cantilevered from the arm; the head gimbal assembly including a head and an HGA electrical terminal electrically connected to the head; the arm comprising a molded, elongated arm body; a plurality of conductors, each conductor including a head-terminal defining an exterior surface of the arm body, a body-terminal, and defining a conductive path extending between the head-terminal and the body-terminal, each body terminal projecting from the mounting site and being electrically connected to the flex circuit cable; the molded, elongated arm body and the molded actuator body completely covering each conductive path extending from the head-terminal to the body terminal, and further including means for electrically connecting the head-terminal to the HGA electrical terminal.

5,781,381

DOUBLE-DRIVING HEAD ACTUATOR

Shinji Koganezawa, and Yoshifumi Mizoshita, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

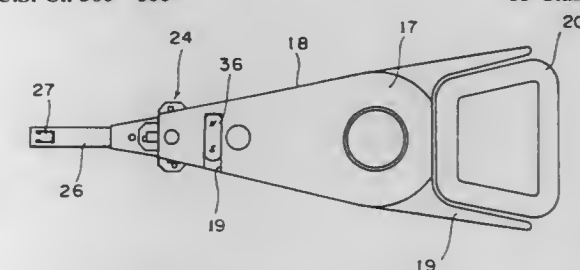
Filed Oct. 9, 1996, Ser. No. 728,079

Claims priority, application Japan, Dec. 4, 1995, 7-315671

Int. Cl.⁶ G11B 5/55

U.S. Cl. 360—106

33 Claims



1. A head actuator in a disk drive having a base, comprising: an actuator arm rotatably mounted on said base; a first driving means for rotating said actuator arm; a load beam for supporting at a front end portion thereof a slider carrying a head; a connecting means for elastically connecting a front end portion of said actuator arm and a base end portion of said load beam; and a second driving means for swinging said load beam with respect to said actuator arm.

5,781,382

ROTARY HEAD DRUM FOR A VCR HAVING AN IMPROVED CONNECTION STRUCTURE BETWEEN A VCR HEAD AND A ROTARY TRANSFORMER

Yeo-Uk Joe, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

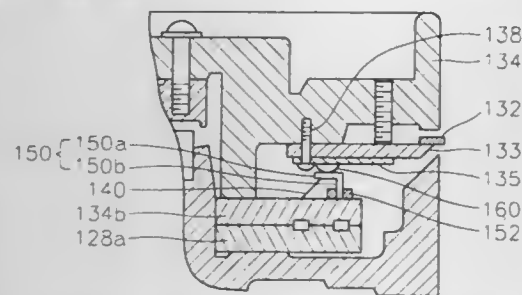
Filed Oct. 28, 1996, Ser. No. 738,865

Claims priority, application Rep. of Korea, Oct. 31, 1995, 1995-31872

Int. Cl.⁶ G11B 5/52

U.S. Cl. 360—108

12 Claims



1. A rotary head drum for a video cassette recorder comprising:
 - a cylindrical lower drum;
 - a cylindrical upper drum installed on the lower drum and rotatably supported by the lower drum;
 - a video head provided at an outer lower portion of the upper drum for recording or reproducing a video signal to or from a magnetic tape;
 - a head base for securing the video head to a bottom surface of the upper drum;
 - a printed circuit board attached to a bottom surface of the head base, the printed circuit board having first and second ends, the first end of the printed circuit board being connected to the video head, the printed circuit board including an electroconductive pattern for receiving or transmitting the video signal from or to the video head;
 - a lower rotary transformer disposed in an inner upper portion of the lower drum;
 - an upper rotary transformer positioned over the lower rotary transformer for transmitting the video signal from the video head to the lower rotary transformer;
 - a connecting wire electrically connected to both the upper rotary transformer and the second end of the printed circuit board in order to transmit the video signal from the printed circuit board to the upper rotary transformer; and
 - a fixing plate supporting the connecting wire, the fixing plate having a reverse-L shape and including a horizontal portion and a vertical portion, the connecting wire extending from the upper rotary transformer and being fixed to a bottom surface of the horizontal portion.

5,781,383

MAGNETIC HEAD FOR STABLE TIP TO TAPE CONTACT PRESSURE DESPITE HEAD WEAR AND TAPE TENSION VARIATION

Steinar J. Strand, Langhus, Norway, assignor to Tandberg Data Storage AS, Oslo, Norway

Continuation of Ser. No. 817,234, Jan. 6, 1992, abandoned.

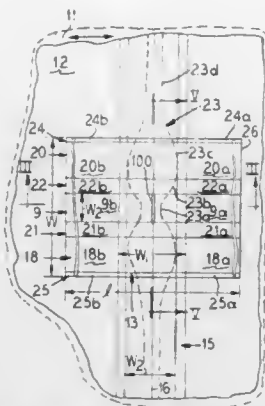
This application Oct. 18, 1993, Ser. No. 136,997

Int. Cl.⁶ G11B 5/187

U.S. Cl. 360—122

15 Claims

12. A magnetic head for contacting magnetic tape, comprising:
 - a ferromagnetic body having a protruding rail defined by sides and having a top surface defining a maximum tape contacting surface area between the sides;
 - a ferromagnetic core in a recess in said ferromagnetic body and having pole tips forming a tape contact surface, said pole tips extending at said top surface in a tape running direction beyond both sides of said rail up to and in abutting contact



with sidewalls of said recess which are perpendicular to a tape running direction; and

material means adjacent to the ferromagnetic core pole tips in said recess for causing the tape contact surface of the magnetic core pole tips to protrude relative to a tape contact surface of the adjacent material means as a result of tape wear, said material means comprising a non-magnetic bonding region directly adjacent and only at both opposite sides of the pole tips, said non-magnetic bonding regions being parallel to the tape running direction, and a non-magnetic material flanking region directly adjacent each of the bonding regions, the pole tips comprising a material having a greater wear resistance than the bonding and flanking regions and the flanking region wear resistance being greater than the wear resistance of the bonding region.

5,781,384

RESETTABLE SINGLE PLAY TAPE CASSETTE

John David Wiedemer, 930 W. Forest Dr., Houston, Tex. 77079

Division of Ser. No. 175,165, Dec. 29, 1993, Pat. No.

5,473,688, which is a continuation-in-part of Ser. No. 900,230,

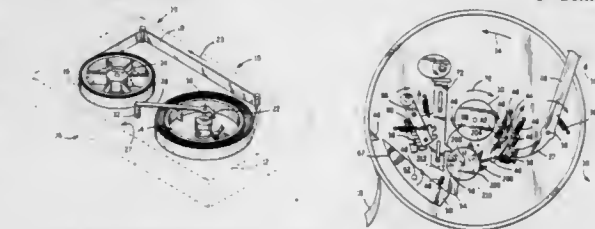
Jun. 17, 1992, abandoned. This application Aug. 2, 1995, Ser.

No. 510,245

Int. Cl.⁶ G11B 23/087; 23/28

U.S. Cl. 360—132

5 Claims



1. In a cassette holding a supply reel and a take-up reel, the supply reel being fully wound with magnetic tape in a starting state, the cassette permitting movement of the magnetic tape from the supply reel to the take-up reel when playing and permitting movement of the magnetic tape from the take-up reel to the supply reel when rewinding, an improvement comprising:
 - a disabling means for preventing the playing when set and allowing the playing when reset; and
 - a reset means for moving to reset the disabling means;
 - a lock mechanism for preventing movement of the reset means when locked and hence an unauthorized resetting of the cassette; the lock mechanism further including:
 - a pin;
 - a maze attached to the reset means and having a serpentine channel for receiving the pin for allowing movement of the reset means only when the pin is successfully navigated through the maze; and
 - a linkage attached to the pin for moving the pin and the reset means to navigate the pin through the maze to permit resetting of the disabling means.

5,781,385

METHOD AND APPARATUS FOR PROTECTING AN ADJUSTABLE IMPEDANCE ELEMENT CONTROLLING THE POWER SUPPLY TO AN ELECTRIC MOTOR, IN PARTICULAR IN A MOTOR VEHICLE

Alfred Permuy, Reuil Malmaison, France, assignor to Valeo Electrique, Creteil, France

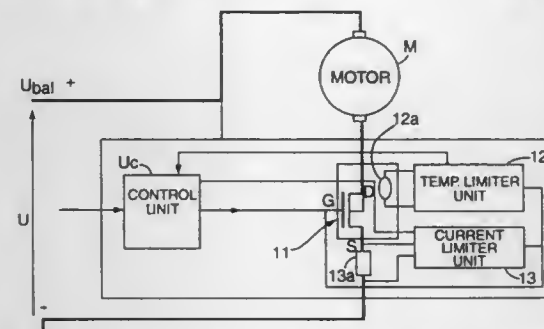
Filed Dec. 27, 1996, Ser. No. 777,291

Claims priority, application France, Dec. 29, 1995, 95 15730

Int. Cl.⁶ H02H 5/04

U.S. Cl. 361—30

20 Claims



1. In a motor vehicle, a method of protecting an adjustable impedance element (11) controlling the power supply of an electric motor (M), the impedance element having a variable current threshold which is an increasing function of the voltage (Um) across the terminals of a motor (M), in which the control of said adjustable impedance element (11) is modified when the current passing through it exceeds the given threshold.

5,781,386

LOW LEVEL GROUND CONDITIONING (GCL)

Norman F. Muellemann, Cary, Ill., assignor to Powervar, Inc., Lake Forest, Ill.

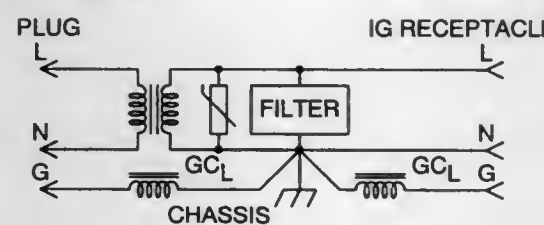
Continuation-in-part of Ser. No. 461,499, Jun. 5, 1995, Pat.

No. 5,666,255. This application Jul. 30, 1996, Ser. No. 692,928

Int. Cl.⁶ H02H 9/08

U.S. Cl. 361—43

6 Claims



1. A device for suppressing transient currents on a ground line of a power distribution system, the power distribution system having a power line and a neutral line, the device comprising:
 - inductor means for attenuating a surge current propagating on the ground line, said inductor means located between an input terminal and an output terminal of the ground line, said surge current being supplied to the ground line by a coupling with the ground line, said inductor means having a primary winding on a saturable core of a predetermined inductive reactance value; and
 - a resistor connected in parallel with said inductor means between said input and said output terminals of the ground wire;
 whereby said inductor means and said resistor isolate the ground line from the power line between said input and said output terminals of the ground wire thereby forming a ground impedance for suppressing transient currents on the ground line, and wherein said coupling of said surge current to the ground line is an injection coupling whereby an electronic device is coupled between the power line and the ground line and said device supplies said surge current.

5,781,387

SHOCK HAZARD PROTECTION SYSTEM

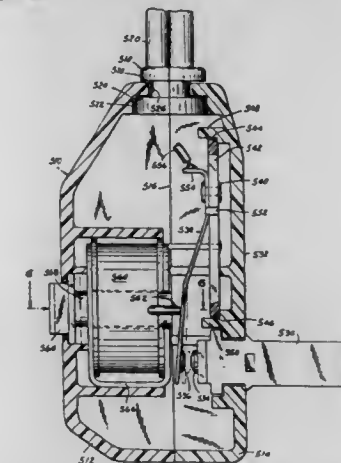
Richard C. Doyle, Greenlawn, and Lester Rivera, Glendale, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 419,582, Apr. 10, 1995, Pat. No. 5,546,263, which is a continuation of Ser. No. 190,720, Feb. 1, 1994, Pat. No. 5,406,436, which is a continuation of Ser. No. 977,304, Nov. 16, 1992, abandoned, which is a continuation of Ser. No. 814,304, Dec. 23, 1991, Pat. No. 5,184,271, which is a continuation of Ser. No. 654,715, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 544,769, Jun. 27, 1990, abandoned, which is a continuation of Ser. No. 416,618, Oct. 3, 1989, abandoned, which is a continuation of Ser. No. 323,451, Mar. 14, 1989, abandoned, which is a continuation of Ser. No. 177,726, Apr. 5, 1988, abandoned, which is a continuation of Ser. No. 2,833, Jan. 9, 1987, abandoned, which is a continuation of Ser. No. 885,114, Jul. 14, 1986, abandoned, which is a continuation of Ser. No. 558,262, Dec. 5, 1983, abandoned. This application Jul. 24, 1996, Ser. No. 698,694

Int. Cl.⁶ H02H 3/16

U.S. Cl. 361—49

7 Claims



1. A protective device for interrupting the flow of current to an electrical device in the presence of a water-related shock hazard condition comprising:
 - a) housing means for supporting and protecting the device components, said housing means having base means, and cover means and having a cavity there-between;
 - b) two flexible, resilient arms having a first end and a second end, mounted to said base means adjacent said first end and having a movable electrical contact adjacent said second end;
 - c) two blade means anchored to said base means and extending therethrough to permit said device to be connected to a source of AC power;
 - d) two fixed electrical contacts, one coupled to each of said blade means;
 - e) plunger means having cross-bar means having a first end to engage a first of said arms and a second end to engage the second of said arms, said plunger means selectively operable from a first position where said cross-bar means ends do not engage said arms to a second position where said arms are engaged;
 - f) a phase line of an AC power source connected to one of said fixed electrical contacts to apply current to said electrical device when said movable contact is made to engage its associated fixed contact;
 - g) a neutral line of an AC power source connected to the other of said fixed electrical contacts to apply current to said electrical device when said movable contact is made to engage its associated fixed contact;
 - h) coil means surrounding said plunger means, said coil means having a first end connected to said phase line and a second end connected to said neutral line, said coil means maintaining said plunger means in said second position when AC power is applied to said coil means;

- i) selectively operable reset means coupled to said plunger means, said reset means when selectively operated moves said plunger means from said first position to said second position and causes each of said two movable electrical contacts to engage its associated one of said two fixed electrical contacts and apply AC power to said electrical device and to said coil means.

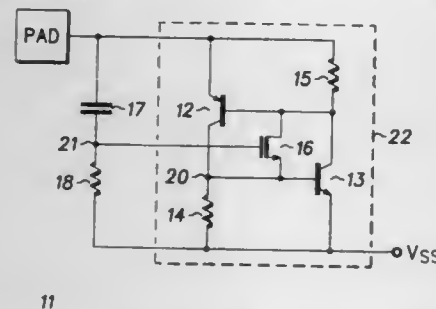
5,781,388

NON-BREAKDOWN TRIGGERED ELECTROSTATIC DISCHARGE PROTECTION CIRCUIT FOR AN INTEGRATED CIRCUIT AND METHOD THEREOF
John H. Quigley, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 3, 1996, Ser. No. 706,868
Int. Cl.⁶ H02H 9/00

U.S. Cl. 361—56

16 Claims



10. A circuit for enabling a silicon controlled rectifier (SCR) to shunt an electrostatic discharge (ESD) event, the SCR being coupled between a pad of an integrated circuit and a power supply terminal, the circuit comprising:

- a capacitor having a first terminal coupled to the pad and a second terminal;
- a resistor having a first terminal coupled to said second terminal of said capacitor and a second terminal coupled to the power supply terminal wherein a transient voltage applied to the pad enables the SCR, said transient voltage exceeding a predetermined voltage less than a maximum transient voltage of the integrated circuit, and wherein values of said capacitor and resistor are calculated to trigger the SCR at a frequency corresponding to a worst case electrostatic discharge event; and
- a transistor having a first electrode coupled a first control input of the SCR, a control electrode coupled to the second terminal of the capacitor, and a second electrode coupled to a second control input of the SCR.

5,781,389

TRANSISTOR PROTECTION CIRCUIT

Shinnichi Fukuzako, and Yasuhiro Fukuda, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 518,795, Aug. 24, 1995, abandoned.

This application Jun. 3, 1997, Ser. No. 868,475

Claims priority, application Japan, Sep. 14, 1994, 6-219943; May 10, 1995, 7-111599

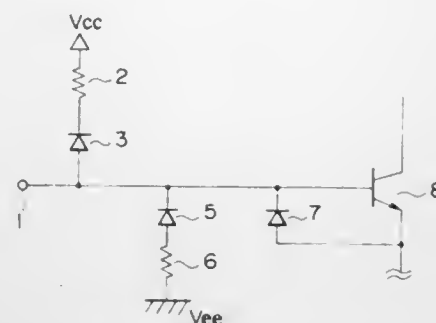
Int. Cl.⁶ H02H 9/00

U.S. Cl. 361—56

32 Claims

1. A transistor protection circuit for protecting a bipolar transistor including at least one terminal, said bipolar transistor biasing an emitter-base junction thereof in the reverse direction when an electrostatic discharge is externally applied to said at least one terminal, comprising:

- a protection device operatively directly coupled across the emitter-base junction so that the protection device protects the emitter-base junction against a negative electrostatic dis-



charge, and the emitter-base junction protects the protection device against a positive electrostatic discharge.

5,781,390

INTEGRATED SUPPLY PROTECTION

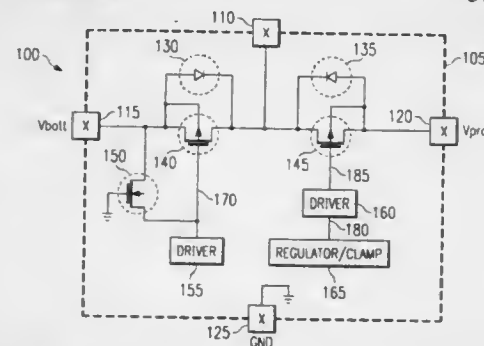
Joseph Notaro, Northville, and David Frank Swanson, Howell, both of Mich., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 21, 1996, Ser. No. 771,644

Int. Cl.⁶ H02H 3/18

U.S. Cl. 361—84

37 Claims



1. An electrical power protection circuit that provides protection against overvoltage and reverse battery voltage conditions, comprising:

- a reverse battery condition protection element, supplied with a battery power source, that protects against a reverse battery condition of the battery power source; and
 - an overvoltage protection element coupled to the reverse battery condition protection device that protects against an overvoltage condition of the battery power source and produces a protected power output, wherein the reverse battery condition protection element comprises:
 - a first transistor device;
 - a first driver device coupled to the first transistor device that provides a constant voltage to the first transistor device during a normal operating condition of the electrical power protection circuit; and
 - a switch coupled to the first transistor device and to the first driver device,
- wherein during the reverse battery condition of the battery power source, the first transistor device is turned off and the reverse battery condition protection element is inoperative so that no current flows from the battery power source to the overvoltage protection element thereby isolating the protected power output from the battery power source.

5,781,391

IC HAVING BUILT-IN OVER VOLTAGE PROTECTING CIRCUIT

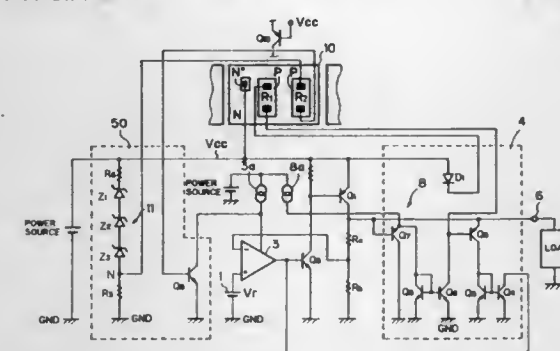
Yuzo Ide, and Koichi Inoue, both of Ukyo-ku, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Feb. 13, 1997, Ser. No. 799,840

Claims priority, application Japan, Feb. 14, 1996, 8-050874
Int. Cl.⁶ H02H 3/20

U.S. Cl. 361—91

8 Claims



1. An IC having a built-in over voltage protecting circuit comprising:

- a first operating circuit having a first resistor connected to a terminal a voltage of which varies depending on a voltage at a first terminal;
- a second operating circuit;
- a protecting circuit having a second resistor, which receives a detection signal via said second resistor and controls the operation of said second operating circuit therewith to thereby protect the operation of said second operating circuit, wherein said first resistor and said second resistor are formed adjacently in a device-isolated common resistor forming land as regions having different conductivity type from that of the resistor forming land, the potential of the resistor forming land is set at a predetermined voltage which is different from the voltage at said first terminal, and the detection signal is generated, when a transistor which is composed by said first resistor, said second resistor and the resistor forming land is turned ON in response to a variation of the voltage at said first terminal by a value more than a predetermined value.

5,781,392

BALANCED OVERVOLTAGE PROTECTOR FOR A DUAL-WIRE SYSTEM

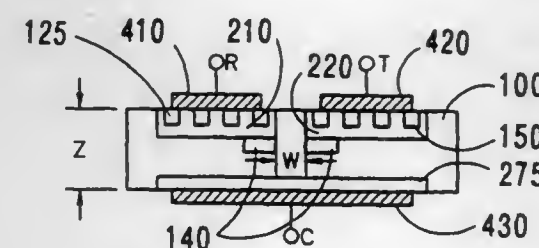
Lowell E. Clark, Scottsdale, Ariz., assignor to TI Industries, Inc., Copiague, N.Y.

Filed May 12, 1997, Ser. No. 854,844

Int. Cl.⁶ H02H 9/00

U.S. Cl. 361—111

9 Claims



1. A semiconductor overvoltage protector for limiting the voltage between a first protected wire, a second protected wire and a common wire, comprising:

- a first thyristor and a second thyristor facing each other in a common semiconductor substrate, each thyristor having a breakover voltage equal to V_{BO} , the voltage protection threshold, and

means for firing the second thyristor at a voltage less than V_{BO} in response to breakover firing of the first thyristor.

5,781,393

SURGE ARRESTER

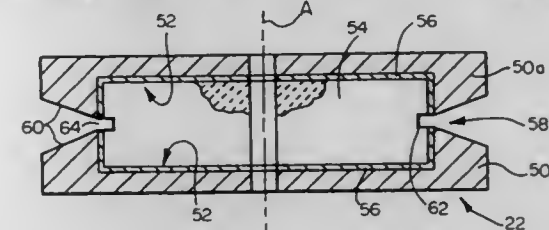
Masood Tabib-Azar, Cleveland Heights; John C. Glass, Twinsburg; Mark R. DeGuire, Cleveland Heights, and Kenneth A. Golonka, Richmond Heights, all of Ohio, assignors to Erico International Corporation, Solon, Ohio

Filed Apr. 16, 1996, Ser. No. 633,204

Int. Cl.⁶ H02H 1/00

U.S. Cl. 361—118

30 Claims



1. A surge arrester, comprising:
a pair of spaced metal electrodes; and
a semiconductor element interposed between the metal electrodes and in contact with at least one of the metal electrodes, the semiconductor element having a peripheral edge functioning at least to partially bridge a gap between the metal electrodes with such gap serving as a current path between the metal electrodes in the event a voltage applied across the metal electrodes exceeds a firing voltage of the surge arrester, wherein the semiconductor element includes a metal coating on at least a substantial portion of its outer surface which is in contact with the at least one metal electrode, the metal coating extending generally parallel to the current path on the peripheral edge towards the gap.

5,781,394

SURGE SUPPRESSING DEVICE

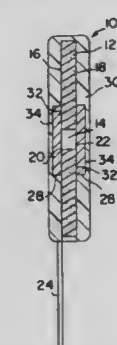
Ronald N. Lorenz, and Frederick Parker, both of San Diego, Calif., assignors to Fiskars Inc., Madison, Wis.

Filed Mar. 10, 1997, Ser. No. 813,981

Int. Cl.⁶ H02H 1/00

U.S. Cl. 361—124

28 Claims



1. An electrical transient surge suppressing device comprising:
a voltage-dependent resistor having a conductive first side, a conductive second side and an opening physically disposed between and communicating the first side with the second side, a voltage-dependent resistive material physically disposed between the first and second sides;
a first lead attached to the first side and a second lead attached to the second side; and
an electrically conductive material having a predetermined melting point, the conductive material being electrically connected with at least one of the sides proximate the opening;

wherein the electrically conductive material flows through the opening creating an electrical short between the first side and the second side when the resistor is heated in response to excessive leakage current flowing through the device.

5,781,395

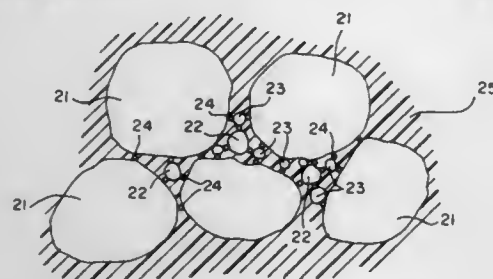
ELECTRICAL OVERSTRESS PULSE PROTECTION
Hugh M. Hyatt, Camarillo, Calif., assignor to G & H Technology, Inc., Camarillo, Calif.

Division of Ser. No. 612,432, Nov. 14, 1990, abandoned, which is a continuation of Ser. No. 273,020, Nov. 18, 1988, Pat. No. 4,992,333. This application Mar. 24, 1993, Ser. No. 36,244

Int. Cl.⁶ H02H 1/00

U.S. Cl. 361—127

5 Claims



1. An overvoltage protection apparatus comprising:
an elongated axial conductor;

a moldable concentric member formed from nanosecond responsive overvoltage protection material, said member positioned contiguous with said elongated axial conductor, said member composed of a matrix formed of only closely spaced, homogeneously distributed, conductive particles, said particles being in the range of submicron to hundred microns and spaced in the range of 20 angstroms to 200 angstroms to provide quantum mechanical tunneling therebetween and a binder selected to provide a quantum mechanical tunneling media and predetermined resistance between said conductive particles; and

a conductor jacket contiguous with said member, said conductor jacket connected to ground, whereby excessive voltage on said elongated axial conductor generates a nanosecond responsive quantum mechanical tunneling within said overvoltage protection material, thereby switching said material from a high-resistance state to a low-resistance state and largely clamping said voltage while shunting excess current from said elongated axial conductor to ground.

5,781,396

ARRANGEMENT FOR THE CONTROL OF AN ELECTROMAGNET

Markus Fritsch, Koelliken, and Hans-Peter Meili, Seon, both of Switzerland, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Jan. 19, 1996, Ser. No. 588,787

Claims priority, application Switzerland, Feb. 9, 1995, 374/95

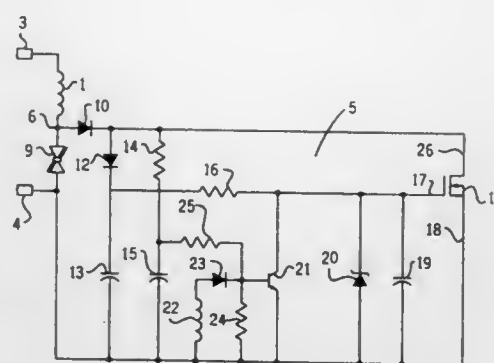
Int. Cl.⁶ H01H 47/04

U.S. Cl. 361—143

7 Claims

1. A magnetically responsive switching circuit for an electromagnetic device comprising a stationary core, a pickup coil, a holding coil and an armature arranged to move relative to the stationary core to produce an air gap therebetween, the magnetically responsive switching circuit comprising:

a sensor coil arranged to sense a change in magnetic field density in the air gap and produce an output signal; and



a semi-conductor element coupled in series with the pickup coil, the semi-conductor element switching to a non-conductive state in response to the output signal.

5,781,397

METHOD FOR ADAPTING THE CONTROL OF AN ELECTROMAGNETIC ACTUATOR TO OPERATION-DICTATED CHANGES

Ekkehard Schrey, Aachen, Germany, assignor to FEV Motortechnik GmbH & Co KG, Aachen, Germany

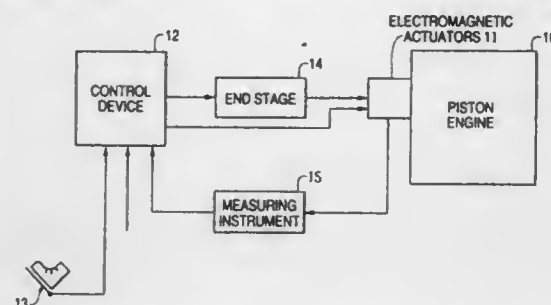
Filed Aug. 12, 1996, Ser. No. 694,423

Claims priority, application Germany, Aug. 26, 1995, 195 31 435.2

Int. Cl.⁶ H01H 47/32

U.S. Cl. 361—154

4 Claims



1. A method for adapting a control for an electromagnetic actuator for actuating a cylinder valve in a piston engine to operation-dictated changes in the electromagnetic actuator, the electromagnetic actuator including at least one electromagnet, at least one restoring spring, an armature operatively coupled to the cylinder valve and disposed for movement counter to the restoring spring, the method comprising the steps of:

energizing the electromagnet, during a no-load running phase of the engine, with a current having a course deviating from a normal current in a normal mode of operation;

detecting at least portions of a course over time of current through the electromagnet;

comparing the detected course over time of the current with a predetermined curve; and

adapting the control for the normal mode of operation of the electromagnet if there are deviations between the detected course over time of the current and the predetermined curve.

5,781,398

DUAL FAULT TOLERANT ACTUATOR CONTROL SYSTEM

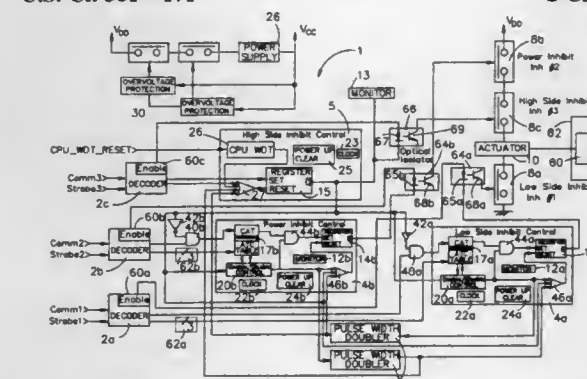
Allen J. Fenske, Seminole, and Hendrik C. Gelderloos, Largo, both of Fla., assignors to Honeywell Inc., Minneapolis, Minn. Continuation of Ser. No. 233,841, Apr. 26, 1994, abandoned.

This application Jan. 21, 1997, Ser. No. 787,516

Int. Cl.⁶ B64G 1/24

U.S. Cl. 361—171

2 Claims



1. Apparatus for controlling the firing of engine on a space craft, characterized by:

actuator means for activating the engine;

first controller means for containing a plurality of stored engine burn times, for receiving a first encoded signal to recall one of said stored engine burn times and for providing a first switch signal with a duration of said one of said stored engine burn times;

second controller means for containing said plurality of stored engine burn times, for receiving a second encoded signal to recall said one of said engine burn times and for providing a second switch signal with a duration of said one of said stored engine burn times;

third controller means for receiving a third encoded signal specifying a desired engine burn time providing a third switch signal for the duration of said desired burn time; and

first, second and third switches in series for applying power to the actuator to activate the engine, the first switch being conductive in response to the first switch signal, the second switch being conductive in response to the second switch signal and the third switch being conductive to the third switch signal.

5,781,399

ENERGY EFFICIENT CONTROL CIRCUIT FOR SOLENOID ACTUATED LOCKING DEVICE

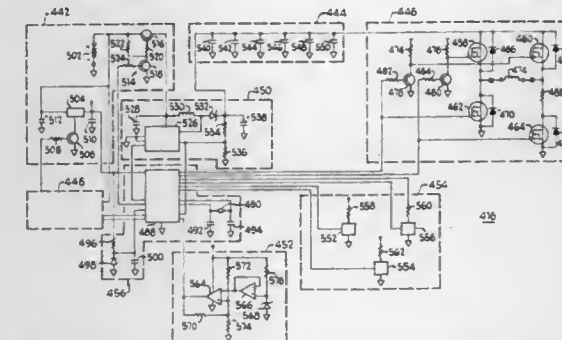
William P. Lanigan, 16946 Blue Heron Dr., and James B. Davis, 9200 Christine Ct., both of Orland Park, Ill. 60462

Filed Aug. 5, 1996, Ser. No. 692,374

Int. Cl.⁶ H01H 47/02

U.S. Cl. 361—172

20 Claims



10. A solenoid actuated locking device, comprising:

a lock actuation member operatively coupled with a solenoid, the solenoid being adapted to move the lock actuation member to either of a locked state and an unlocked state;

solenoid driver circuit coupled to the solenoid for selectively energizing the solenoid, the solenoid driver circuit coupled to receive electrical energy from an energy storage circuit;

a power supply coupled to selectively provide electrical power to at least one of the solenoid driver circuit and the energy storage circuit;

an input interface adapted to receive a user signal and to provide an output signal in response thereto;

a controller, the controller coupled to the input interface, the power supply, the energy storage circuit and the solenoid driver circuit to cause selective energization of the solenoid in response to the output signal; and

a sensor coupled to detect an environmental condition of the lock actuation member and to provide a signal to the controller indicative of the environmental condition.

5,781,400

ELECTROSTATICALLY ATTRACTING ELECTRODE AND A METHOD OF MANUFACTURE THEREOF

Kazuo Takahashi; Youichi Itou, both of Kudamatsu; Saburo Kanai, Hikari, and Seichiro Kanno, Chiyoda-Machi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

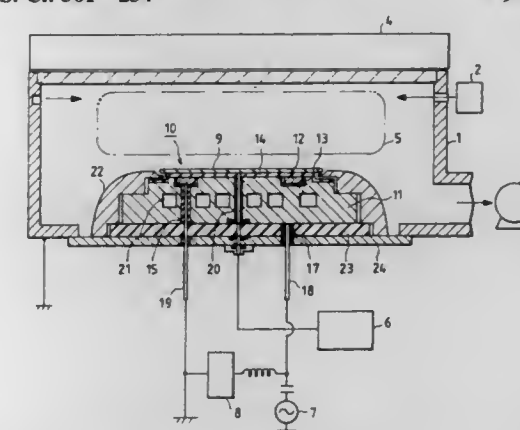
Filed Sep. 18, 1996, Ser. No. 710,514

Claims priority, application Japan, Sep. 20, 1995, 7-241261; Sep. 20, 1995, 7-241268

Int. Cl.⁶ H02N 13/00

U.S. Cl. 361—234

9 Claims



1. An electrostatic chuck for holding a substrate comprising:
an electrode block which serves as an electrode for electrostatic attraction;

a plurality of electrostatic attraction members arranged with respect to a surface of the electrode blocks, the electrostatic attraction members being disposed so as to attract the substrate electrostatically and to come in contact with the substrate; and

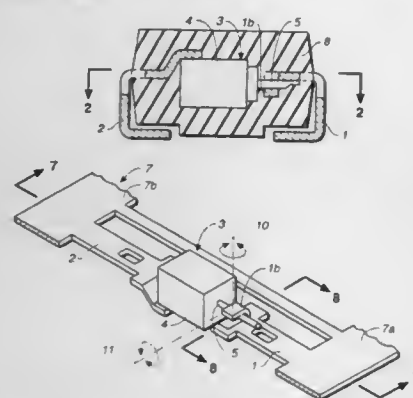
an insulating material covering the surface of the electrode block except for attraction surfaces of the electrostatic attraction members.

5,781,401

**ENCAPSULATED SOLID ELECTROLYTIC CAPACITORS
AND METHOD OF PRODUCING SAME**Tomohiro Tomiyasu, and Yasuo Kanetake, both of Kyoto,
Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Nov. 21, 1996, Ser. No. 754,309Claims priority, application Japan, Nov. 21, 1995, 7-303185;
Nov. 21, 1995, 7303184Int. Cl.⁶ H01G 4/005; 4/00

U.S. Cl. 361—303

10 Claims



1. An encapsulated solid electrolytic capacitor comprising:
an anode lead terminal;
a cathode lead terminal;
a capacitor element; and
a mold which is made of a synthetic resin material and encapsulates said capacitor element entirely, said capacitor element having an anode bar protruding longitudinally from a main body, said capacitor element being disposed between said anode lead terminal and said cathode lead terminal, said main body being electrically connected to said cathode lead terminal, said anode bar having a tip part and a middle part between said tip part and said main body, said anode bar being welded to said anode lead terminal at said tip part, said anode lead terminal having integrally formed therewith a raised part which is L-shaped as seen longitudinally and is capable of having said anode bar inserted under said middle part.

5,781,402

**CONDUCTING THICK FILM COMPOSITION, THICK
FILM ELECTRODE, CERAMIC ELECTRONIC
COMPONENT AND LAMINATED CERAMIC
CAPACITOR**Masaki Fujiyama, Moriyama; Yukio Sanada, Fukui, and Shuji
Mushimoto, deceased, late of Nagaokakyo, all of Japan, by
Yumi Mushimoto, Ryuichi Mushimoto, Hideshi Mushimoto,
legal representatives, assignors to Murata Manufacturing
Co., Ltd., Japan

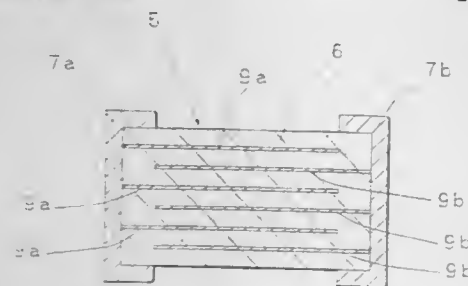
Filed Dec. 26, 1995, Ser. No. 578,105

Claims priority, application Japan, Dec. 26, 1994, 6-322815

Int. Cl.⁶ H01G 4/06; 4/008; B22F 7/04; 1/00

U.S. Cl. 361—321.4

21 Claims



1. A conducting thick film composition comprising powder consisting of Cu metal, glass powder and organic vehicle wherein

the Cu powder comprises about 30 to about 90 wt % spherical powder and about 10 to about 70 wt % scaly-shaped powder.

5,781,403

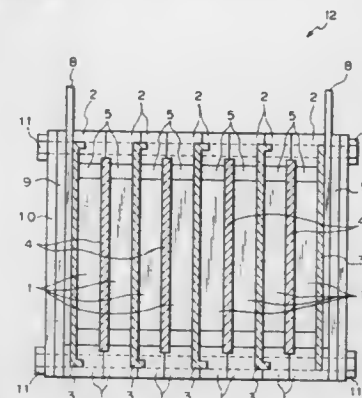
**ELECTRIC DOUBLE LAYER CAPACITOR HAVING
HYDROPHOBIC POWDERY ACTIVATED CHARCOAL**Munekazu Aoki; Masako Inagawa, and Keitaro Katsu, all of
Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jul. 30, 1997, Ser. No. 903,428

Claims priority, application Japan, Jul. 30, 1999, 7-200703

Int. Cl.⁶ H01G 9/00

U.S. Cl. 361—502

3 Claims



1. In an electric double layer capacitor having a stack of unit cells, said unit cells each comprising:
a porous separator;
a pair of activated charcoal electrodes facing each other with the intermediary of said porous separator;
a pair of current collecting members each being positioned on a surface of one of the activated charcoal electrodes opposite to a surface contacting said porous separator; and
hydrophobic powdery activated charcoal for adsorbing gases and arranged around said activated charcoal electrodes.

5,781,404

**ELECTRODE INTERFACE FOR HIGH-DIELECTRIC-
CONSTANT MATERIALS**Scott R. Summerfelt, Dallas, and Howard Roy Beratan, Rich-
ardson, both of Tex., assignors to Texas Instruments Incor-
porated, Dallas, Tex.

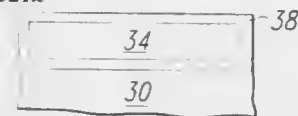
Division of Ser. No. 41,025, Mar. 31, 1993, Pat. No. 5,471,364.

This application Jun. 7, 1995, Ser. No. 485,856

Int. Cl.⁶ H01G 4/10

U.S. Cl. 361—321.5

20 Claims



1. A microelectronic structure on a semiconductor substrate comprising:
a first thin dielectric buffer layer of a first leakage-current-density material with a first dielectric-constant;
a high-dielectric-constant layer of a second leakage-current-density material overlying said first thin dielectric buffer layer; and

a second thin dielectric buffer layer of a third leakage-current-density material with a second dielectric-constant overlying said high-dielectric-constant layer, wherein said first and third leakage-current-density materials have substantially lower leakage-current-densities than said second leakage-current-density material, and said first and said second thin dielectric buffer layers are thin to the extent that they are less than one-tenth the thickness of said high-dielectric-constant layer, whereby said first and second thin dielectric buffer layers substantially limit the leakage-current-density of the structure, with only modest degradation of the dielectric constant of the structure.

5,781,405

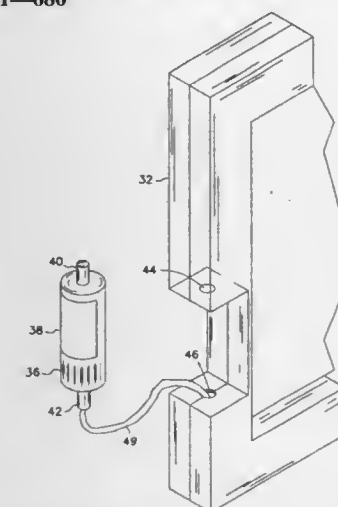
**ELECTRONIC DEVICE HAVING ROTATABLY
MOUNTED INFRARED DEVICE WITH A PAIR OF PEGS
FITTING INTO A PAIR OF HOLES**Stephen P. Vossler, Sioux Falls, S. Dak., assignor to Gateway
2000, Inc., North Sioux City, S. Dak.

Filed Sep. 30, 1996, Ser. No. 720,460

Int. Cl.⁶ G06F 1/16; H05K 7/16

U.S. Cl. 361—686

7 Claims



1. An electronic device comprising:
a housing having a pair of holes, each hole defined within a surface of the housing parallel to the surface of the housing within which the other hole is defined;
a casing having a pair of pegs, each peg protruding from a surface of the casing in a parallel but opposite direction to the direction of the other peg, the casing mounted in a rotatably adjustable manner to the housing via the pair of pegs fitting into the pair of holes within the housing to permit rotation of the casing about an axis of rotation independent of movement of the housing; and
an infrared device contained within the casing.

5,781,406

**COMPUTER DESKTOP KEYBOARD COVER WITH
BUILT-IN MONITOR SCREEN & WRIST-SUPPORT
ACCESSORY**

Stanley G. Hunte, 1235 S. 13th Ave., Maywood, Ill. 60153

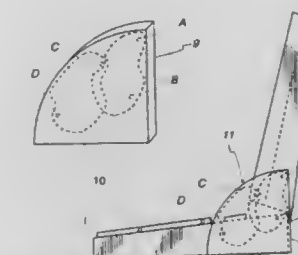
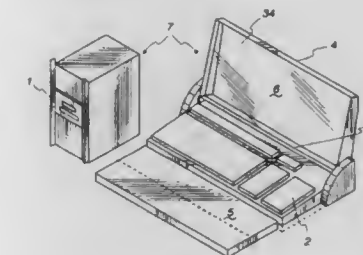
Filed Mar. 5, 1996, Ser. No. 611,201

Int. Cl.⁶ G06F 1/16; H05K 5/03

U.S. Cl. 361—680

1 Claim

1. In a desktop computer system wherein the desktop computer system has a main body containing a central processing unit therein and a stand alone keyboard electrically connected to the main body, said keyboard having front and back edges and left and right ends and is supported on a surface, the keyboard further having a keyboard attachment device comprising:



- two metal housings being bolted to said left and right ends of the keyboard, each of said metal housings having a pair of double-acting articulating hinge arm members located therein, said hinge arm members rotate in parallel paths of opposite direction;
a cover portion hingedly supported between said two metal housings, said cover portion having an interior side, an exterior side, a front end and a base end, said interior side including a recessed cavity containing a flat panel display;
the cover portion being foldable between an open and closed position;
the open position being vertical to said keyboard support surface wherein said base end of said cover portion rests against said back edge of said keyboard to provide support to said keyboard attachment device in the open position, said flat panel display being visible in the open position;
the closed position being placed over said keyboard to provide protection to the keyboard when not in use, said front end having a cabinet lock positioned therein to lock the cover to the keyboard when in the closed position;
the cover portion of said keyboard attachment device being electrically connected to said main body of said desktop computer system.

5,781,407

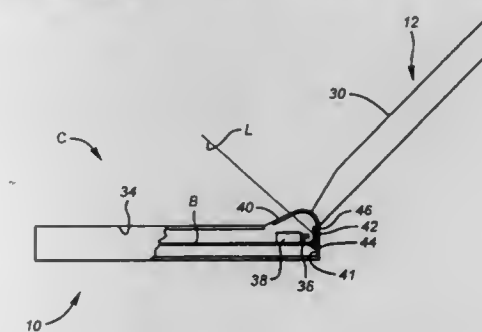
**PORTABLE PERSONAL COMPUTERS WITH MULTI-
DIRECTIONAL INFRARED COMMUNICATION**Eric S. Brauel, Spring, Tex., assignor to Compaq Computer
Corporation, Houston, Tex.

Filed Jun. 24, 1996, Ser. No. 668,848

Int. Cl.⁶ G06F 1/16; H05K 7/00

U.S. Cl. 361—683

13 Claims



1. A personal computer system with infrared light communication capability, comprising:
a processor;

a data entry input mechanism for entry of data into said processor;
 a housing containing said processor and having said data entry input mechanism mounted on a data entry surface thereof;
 an infrared light sensor for receiving infrared communications for said processor;
 an infrared receiving port coupled to said infrared light sensor and formed in said data entry surface of said housing for passage of infrared light to said infrared sensor; and
 a light reflective mechanism moveable to selectively block and pass light between said infrared port and said infrared sensor.

5,781,408

COMPUTER SYSTEM HAVING A MOTORIZED DOOR MECHANISM

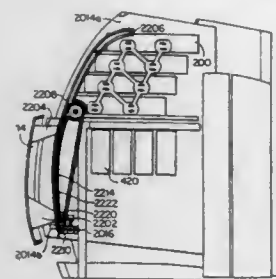
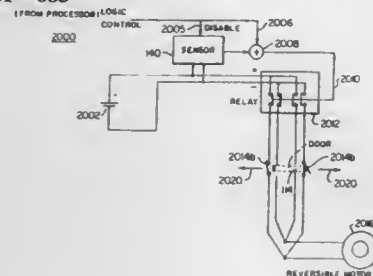
Stanford W. Crane, Jr.; Maria M. Portuondo, both of Boca Raton, Fla.; Edward V. Cruz, Newbury Park, Calif.; Vincent R. Razo, Granada Hills, Calif., and Shaun Fynn, West Hollywood, Calif., assignors to The Panda Project, Boca Raton, Fla.

Division of Ser. No. 237,366, May 3, 1994, Pat. No. 5,576,931.
 This application Jul. 24, 1996, Ser. No. 685,547

Int. Cl.⁶ H05K 5/00

U.S. Cl. 361—683

23 Claims



1. A computer system having a door mechanism connected to an outer casing of the computer system and covering an opening in the casing, comprising:

- a door for sliding relative to the casing to cover and uncover the opening in the casing, the door having a shape to correspond to an arc of the casing;
- sensing means for sensing a user's indication that the door should be moved; and
- means, connected to the indicating means and to the door, for slidably moving the door relative to the opening in the casing to cover and uncover the opening.

5,781,409

HEAT DISSIPATING LID HINGE STRUCTURE WITH LATERALLY OFFSET HEAT PIPE END PORTIONS

Henry E. McCreedy, III, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

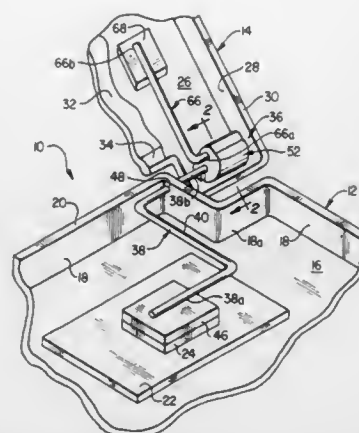
Filed Dec. 19, 1996, Ser. No. 769,795

Int. Cl.⁶ G06F 1/20; H05K 7/20; F28D 15/02

U.S. Cl. 361—687

21 Claims

6. A heat dissipating hinge structure comprising:



a first heat pipe having an end portion extending along an axis and defining a first hinge structure section;
 a second hinge structure section formed of a heat conductive material, said second hinge structure section rotatably receiving said first hinge structure section and being in a heat conductive relationship therewith; and
 a second heat pipe having an end portion secured to said second hinge structure section at a location laterally offset from said axis, in a heat conductive relationship therewith, for rotation with said second hinge structure section relative to said first hinge structure section about said axis.

5,781,410

DENSELY PACKED TELECOMMUNICATIONS EQUIPMENT ENCLOSURE

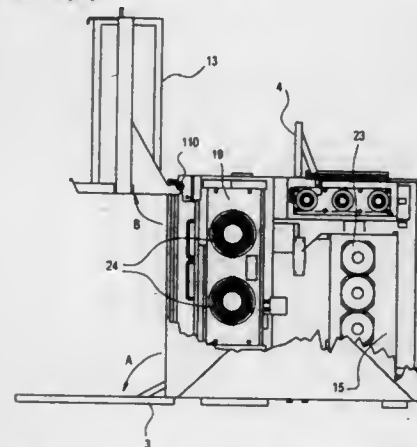
Mark Sherman Keown, Forest Grove; Casey Martin Bardue; John Reed Hannig, both of Portland, and William R. Olsen, Hillsboro, all of Oreg., assignors to NEC America, Inc., Melville, N.Y.

Filed Jan. 17, 1996, Ser. No. 587,974

Int. Cl.⁶ H05K 7/20

U.S. Cl. 361—690

34 Claims



1. A telecommunications equipment enclosure comprising:

- a housing;
- a fixed rack within said housing mounting a first plurality of telecommunications equipment;
- a swing rack mounted swingably within said housing mounting a second plurality of telecommunications equipment, said swing rack pivotally attached to said housing and having an extended position and a retracted position, said swing rack being disposed within said housing when it is in the retracted position, and being disposed outside said housing when it is in the extended position thereby providing complete access to a rear portion of said second plurality of telecommunications equipment mounted on said swing rack and simultaneously providing access to a rear portion of said first plurality of telecommunications equipment mounted on said fixed rack;

cooling means, mounted within said housing, for circulating air within said housing;
 battery plant means, fixedly mounted to an external surface of said housing, for providing backup power to said first and second pluralities of telecommunications equipment.

5,781,411

HEAT SINK UTILIZING THE CHIMNEY EFFECT

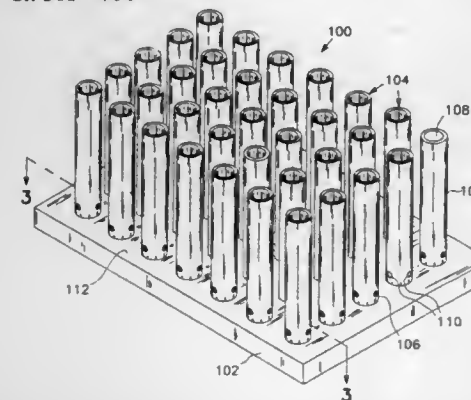
Sean D. Feenstra, South Sioux City, Nebr., assignor to Gateway 2000, Inc., North Sioux City, S. Dak.

Filed Sep. 19, 1996, Ser. No. 710,579

Int. Cl.⁶ H05K 7/20

U.S. Cl. 361—704

12 Claims



1. A heat sink for cooling an electronic component which generates heat, the heat sink comprising:

- a base, the base having a predetermined thickness; and
- at least one pipe wherein the pipe comprises a side wall, a foundation coupled to the base and an outlet opposite the foundation, the pipe having material removed from the side wall only near the base to form at least one air flow inlet so that when the heat sink is coupled to the electronic component, the heat is dissipated by a flow of air.

5,781,412

CONDUCTIVE COOLING OF A HEAT-GENERATING ELECTRONIC COMPONENT USING A CURED-IN-PLACE, THERMALLY-CONDUCTIVE INTERLAYER HAVING A FILLER OF CONTROLLED PARTICLE SIZE

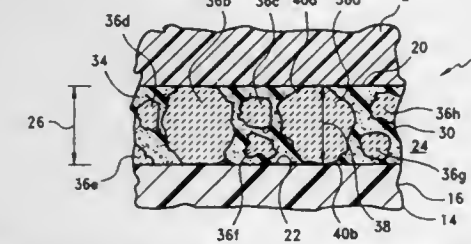
Miksa de Sorgo, Windham, N.H., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Nov. 22, 1996, Ser. No. 755,081

Int. Cl.⁶ H05K 7/20

U.S. Cl. 361—704

24 Claims



16. A conductively-cooled electrical assembly comprising:

- a thermal dissipation member having an outer surface;
- a heat-generating electronic component disposed in spaced-apart adjacency with said surface of said thermal dissipation member to define a gap of a predetermined width therebetween; and
- a cured-in-place interlayer disposed within said gap in conductive heat transfer contact with said electronic component and the surface of said thermal dissipation member, said interlayer comprising a continuous phase of an electrically-insulating

polymeric binder and a dispersed phase of thermally-conductive, electrically-insulating filler particles dispersed therein said continuous phase, said particles having a thermal conductivity of between about 25–50 W/m-K and at least a portion thereof being of a maximum average diameter about equal to the predetermined width of the gap and substantially directly contacting said electronic component and the surface of said thermal dissipation member to establish heat transfer pathways from said electronic component to said thermal dissipation member.

5,781,413

METHOD AND APPARATUS FOR DIRECTING THE INPUT/OUTPUT CONNECTION OF INTEGRATED CIRCUIT CHIP CUBE CONFIGURATIONS

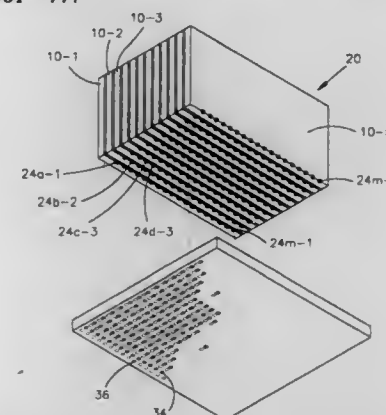
Wayne John Howell, Williston, Vt.; John Steven Kresge, Binghamton, N.Y.; David Brian Stone, Owego, N.Y., and James Robert Wilcox, Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1996, Ser. No. 719,826

Int. Cl.⁶ H05K 7/02

U.S. Cl. 361—777

8 Claims



1. An IC chip assembly comprising

an array of IC chips stacked in front-to-back relationship to form a cube of chips with one side of each of said chips together forming a connection face of said cube,

each of said chips having a set of electrical connectors arranged in a given pattern on said connection face of said cube, and wherein there are X+Y number of chips in said array, wherein X and Y are integers, and wherein there is at least X number of functioning chips,

a dielectric interposer having a cube mounting face and an output face, said output face having X number of sets of output pads formed thereon, said interposer having at least X number of conducting vias extending therethrough, said cube mounting face of said interposer having X+Y number of sets of attachment pads positioned to correspond to said connectors on said cube face.

each of said connections of each set on said cube face being connected to a corresponding attachment pad on said cube mounting face of said interposer,

a first set of electrical connections on said cube mounting face connecting each attachment pad of each set of contacts corresponding to the electrical conductors of said X number of functioning chips to a set of vias,

a second set of electrical connections on said output face connecting said output pads to said set of vias, whereby any set of X number of functioning chips provide the output to said X number of sets of output pads.

5,781,414
EXPANSION CARD STABILIZER FOR A CIRCUIT BOARD EDGE CONNECTOR

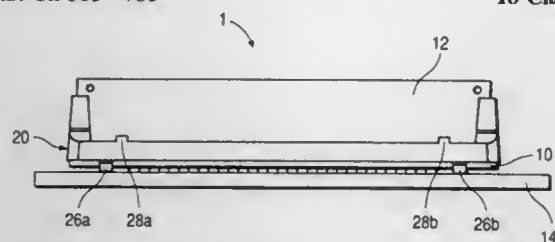
Richard S. Mills; Jerry D. Gandre, and Steven L. Sands, all of Austin, Tex., assignors to Dell USA, L.P., Round Rock, Tex.

Filed Mar. 23, 1995, Ser. No. 409,764

Int. Cl.⁶ H01R 23/68; H05K 7/14

U.S. Cl. 361—786

18 Claims



1. A card stabilizer for stabilizing an expansion card inserted along a plane of insertion in an edge connector mounted on a circuit board, the stabilizer comprising:

- a frame member extending around the edge connector;
- a locking means locking the frame member relative to the edge connector, the locking means including at least one spring tab disposed on the frame member and engaging the edge connector and locking the frame member against movement relative to the edge connector in a first direction in the plane of insertion, wherein said spring tab engages said board and supports said edge connector by holding said edge connector in an elevated position relative to said board; and
- a guide means disposed on the frame member for receiving at least one end portion of the expansion card and for preventing movement of the expansion card out of the plane of insertion.

5,781,415
SEMICONDUCTOR PACKAGE AND MOUNTING METHOD

Nobuyuki Itoh, Tokyo, Japan, assignor to NEC Corporation, Japan

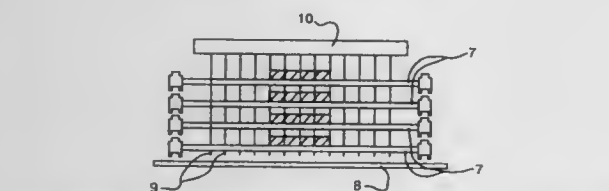
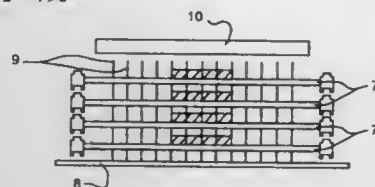
Filed Jul. 9, 1996, Ser. No. 677,642

Claims priority, application Japan, Aug. 10, 1995, 7-204672

Int. Cl.⁶ H01L 25/00

U.S. Cl. 361—790

10 Claims



1. A semiconductor package comprising:
a tape film having a wiring pattern of conductive material formed on a surface of said tape film;
and having a chip electrically connected to one end of said wiring pattern, and having holes provided on the other end of said wiring pattern for insertion of leads;
wherein said semiconductor package is electrically connectable with another electrical component by way of said leads;
and also wherein at least a position of obverse and reverse surfaces of the semiconductor package, excepting the holes are insulated.

5,781,416
SELF-ADJUSTING STATIC DISSIPATIVE SHELF ASSEMBLY

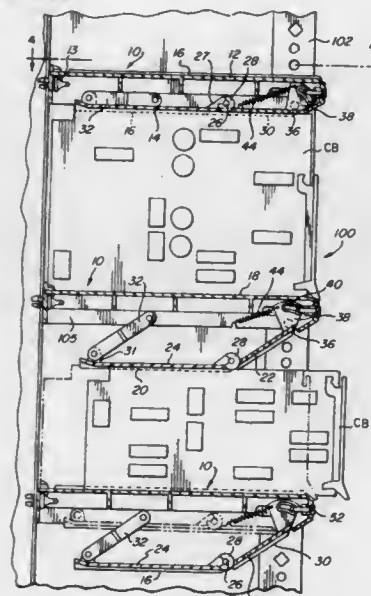
Ralf P. Maroney, 785 Oak Tree Rd., Orange, Conn. 06477

Filed Apr. 13, 1994, Ser. No. 227,051

Int. Cl.⁶ H05K 7/14

U.S. Cl. 361—800

22 Claims



1. Apparatus for adjustably supporting electronic circuit boards in a conductive storage chamber having side walls comprising:

- at least one pair of spaced shelf assemblies each having a first and relatively movable second unit formed from static dissipative material, the first unit of each shelf assembly being adapted to be fixed to the side walls of said chamber so that the second unit of one of said shelf assemblies faces the first unit of the other of said pair of shelf assemblies,
- a plurality of corresponding located, parallel grooves defined by spaced rail pairs of on the facing surfaces of the first and second units of the pair of shelf assemblies, and
- means on each shelf assembly mounting the second unit of the assembly with respect to the first unit for movement so that at least a portion of said second shelf unit remains parallel to said fixed first shelf unit as the distance between said first and second units is adjusted,
- said mounting means including biasing means for forcing said second unit away from said first unit to self-adjust the distance between said second unit of one of said shelf assemblies and the facing first fixed unit of the adjacent shelf assembly, whereby upon insertion of an electric circuit board into corresponding grooves on the facing surfaces of said shelf assemblies, the surface of said second unit having said grooves may move relative to the fixed first unit of said other shelf assembly provided with said grooves to accommodate the height of and restrain a circuit board inserted therebetween.

5,781,417
CIRCUIT BOARD RETAINER

David Joseph Albani, Holden; Robert John McCaffrey, Dracut; David Wilfred Tardiff, Tyngsborough, all of Mass., and Yun-Long Tun, Tu-Cheng, Taiwan, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 27, 1996, Ser. No. 670,166

Int. Cl.⁶ H05K 7/14

U.S. Cl. 361—801

18 Claims

9. A system for guiding and securing a circuit board within an enclosure comprising:

- a circuit board retainer mounted to the enclosure, the circuit board retainer including (a) a guide portion having an upper rail and a lower rail extending along an edge of the circuit

5,781,419
SOFT SWITCHING DC-TO-DC CONVERTER WITH COUPLED INDUCTORS

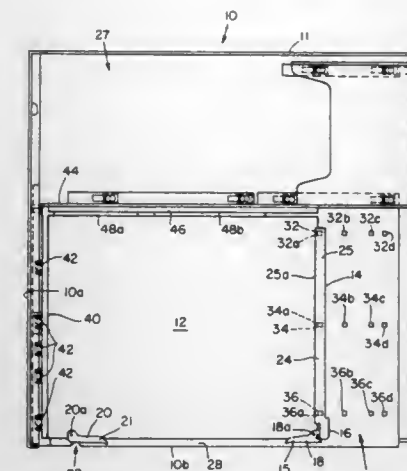
Nassar H. Kutkut, and Deepakraj M. Divan, both of Madison, Wis., assignors to Soft Switching Technologies, Inc., Middleton, Wis.

Filed Apr. 12, 1996, Ser. No. 631,324

Int. Cl.⁶ H02M 3/335; 7/5387

U.S. Cl. 363—17

27 Claims



board retainer to form a slot therebetween for guiding a first side of the circuit board during insertion and (b) a latching portion positioned adjacent to the guide portion;

- a first ejector lever pivotably connected to the circuit board near the first side of the circuit board for engaging the latching portion of the circuit board retainer, the first ejector lever being capable of locking the first side of the circuit board in place relative to the circuit board retainer; and
- a second ejector lever pivotably connected to the circuit board near a second side of the circuit board for engaging a latching slot formed in the enclosure, the second ejector lever being capable of locking the second side of the circuit board in place relative to the enclosure, the first and second ejector levers securing the circuit board within the enclosure.

5,781,418
SWITCHING SCHEME FOR POWER SUPPLY HAVING A VOLTAGE-FED INVERTER

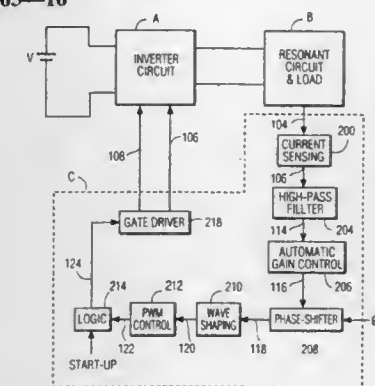
Chin Chang, Ossining, N.Y., and Joseph En-Cheng Chang, New Haven, Conn., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 23, 1996, Ser. No. 773,243

Int. Cl.⁶ H02M 3/335; G05F 1/00

U.S. Cl. 363—16

19 Claims



1. A power supply, which comprises:

- a resonant circuit;
- a voltage-fed inverter producing a voltage at an output coupled to the resonant circuit, the inverter responsive to a driving signal; and
- a driving circuit having an input representing a sensed current flowing through the resonant circuit and including phase-shifting circuitry, the driving circuit producing the driving signal based on a phase-shift of the sensed current by the phase-shifting circuitry.

- 1. A DC-to-DC converter, comprising:
 - (a) a first input side converter bridge circuit including first DC bus lines adapted to be connected to a DC voltage source, a first switching device and a first diode connected together in series at a first pole of the first input side circuit and between the first DC bus lines, and a second switching device and second diode connected together in series at a second pole of the first input side circuit and between the first DC bus lines such that when the first and second switching devices are turned on a DC voltage applied on the first DC bus lines is applied between the first and second poles of the first input side circuit;
 - (b) a second input side converter bridge circuit including second DC bus lines adapted to be connected to a DC voltage source, a third switching device and a third diode connected together in series at a first pole of the second input side circuit and between the second DC bus lines, and a fourth switching device and fourth diode connected together in series at a second pole of the second input side circuit and between the second DC bus lines such that when the third and fourth switching devices are turned on a DC voltage applied on the second DC bus lines is applied between the first and second poles of the second input side circuit;
 - (c) a first coupled inductor coupling the first pole of the first input side circuit to the second pole of the second input side circuit;
 - (d) a second coupled inductor coupling the second pole of the first input side circuit to the first pole of the second input side circuit;
 - (e) a transformer having a secondary winding and a first primary winding connected between the first and second poles of the first input side circuit and a second primary winding connected in opposite polarity to the first primary winding between the first and second poles of the second input side circuit;
 - (f) an output side converter circuit having output terminals and connected to the secondary of the transformer and including means for converting an AC signal on the secondary of the transformer to a DC output signal on the output terminals; and
 - (g) a converter controller including switching device control means for turning on and off the first, second, third, and fourth switching devices in a sequence to alternately connect the first DC bus lines to the first primary winding of the transformer and the second DC bus lines to the second primary winding of the transformer, the switching device control means including means for delaying the turn on of a switching device in a one of the input side circuits following the turn off

of a switching device in the other of the input side circuits until a voltage across the switching device being turned on is reduced to zero by energy stored in a one of the coupled inductors such that the switching device is turned on under zero voltage switching conditions.

5,781,420

SINGLE ENDED FORWARD DC-TO-DC CONVERTER PROVIDING ENHANCED RESETTING FOR SYNCHRONOUS RECTIFICATION

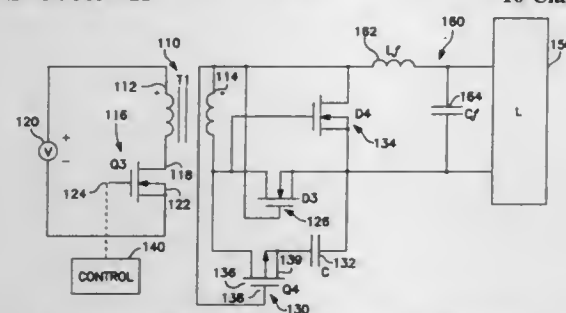
Gang Xia, Bedford, and Fei Ma, Malden, both of Mass., assignors to International Power Devices, Inc., Boston, Mass.

Filed Oct. 11, 1996, Ser. No. 730,684

Int. Cl.⁶ H02M 3/335

U.S. Cl. 363—21

10 Claims



1. A self-driven single-ended DC converter comprising:
 - a transformer comprising a primary winding and a secondary winding, the secondary winding having a first terminal and a second terminal;
 - a primary switch in electrical communication with said primary winding, said primary switch being active upon application of an input;
 - a secondary switch having a first terminal, and a second terminal, and having a control terminal in electrical communication with said second terminal of said secondary winding;
 - a capacitor having a first terminal in electrical communication with said second terminal of said secondary switch and having a second terminal, one of said second terminal of said capacitor and said first terminal of said secondary switch in electrical communication with said secondary winding;
 - whereby when a first voltage appears at said secondary winding, said secondary switch is non-conductive, and when a second voltage of opposite polarity to said first voltage appears at said secondary winding, said secondary switch becomes conductive and said capacitor clamps said secondary winding at a constant voltage, causing the resetting of said transformer.

5,781,421

HIGH-FREQUENCY, HIGH-EFFICIENCY CONVERTER WITH RECIRCULATING ENERGY CONTROL FOR HIGH-DENSITY POWER CONVERSION

Robert Louis Steigerwald, Burnt Hills, and Sriram Ramakrishnan, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

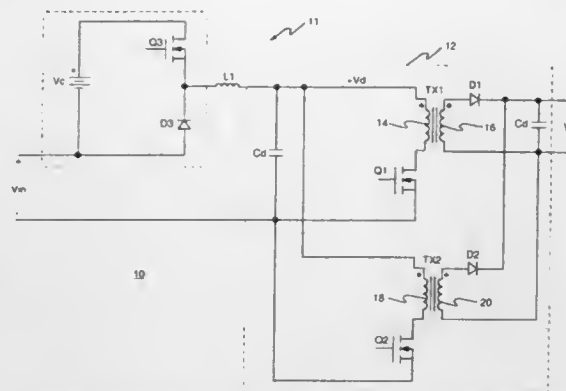
Filed Dec. 16, 1996, Ser. No. 767,463

Int. Cl.⁶ H02M 3/335; 7/00; 7/537

U.S. Cl. 363—21

15 Claims

1. A dc-to-dc converter, comprising:
 - a main dc-to-dc switching converter for converting a dc link voltage to an output dc voltage; and
 - a front-end converter for regulating the dc link voltage such that the output dc voltage is regulated, the front-end converter comprising a controlled auxiliary voltage having a value equivalent to a portion of the output voltage, the dc link



voltage being derived from the auxiliary voltage in conjunction with the input voltage, the auxiliary voltage being derived by recirculating energy from the main converter.

5,781,422

UNINTERRUPTIBLE POWER SUPPLY WITH AC AND DC POWER INPUTS

James Vincent Lavin, Glasgow, and Neil Glachan, Fife, both of Scotland, assignors to Magnum Power Solutions Limited, Livingston, Scotland

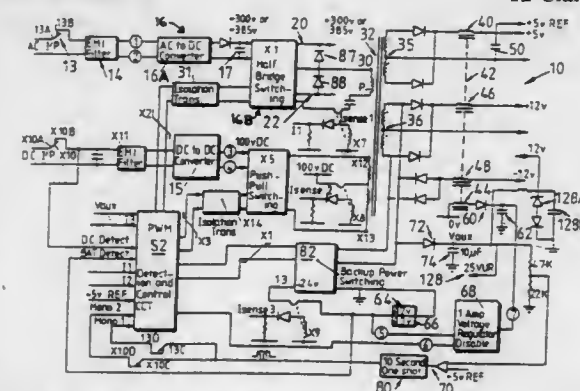
Filed Dec. 30, 1996, Ser. No. 669,552

Claims priority, application United Kingdom, Jan. 12, 1994, 9400499

Int. Cl.⁶ H02M 5/45; 3/335; H02J 7/00

U.S. Cl. 363—37

12 Claims



1. An uninterruptible power supply having an output comprising:
 - first and second power inputs for receiving AC and DC power respectively;
 - first and second switching circuits each having a switching circuit input and a switching circuit output, the switching circuit inputs of the first and second switching circuits being coupled to and receiving power from the first and second power inputs respectively;
 - an auxiliary power supply coupled to said first and second inputs;
 - a transformer having a primary winding coupled to the output of the first switching circuit, a tertiary winding coupled to the output of the second switching circuit, and at least one secondary winding providing power at a regulated DC voltage to the output of the uninterruptible power supply;
 - a selection circuit selectively providing power from at least one of the first switching circuit, the second switching circuit, and the auxiliary power supply, to the output of the uninterruptible power supply;
 - an AC to DC converter having an input coupled to the first power input and an output coupled to the first switching circuit, the AC to DC converter generating an output voltage at the output of the AC to DC converter when power is available at the input of the AC to DC converter; and

a hold-up capacitor connected to the output of the AC to DC converter and arranged to maintain the output voltage at the AC to DC converter at an operational level for a predetermined time after an AC input voltage at the first input falls below a selected level, the first switching circuit being arranged to couple power from the transformer to the hold-up capacitor for storage on the hold-up capacitor in response to power received by the transformer from the output of the second switching circuit.

5,781,423

PULSE WIDTH MODULATION CONTROL SYSTEM FOR ELECTRIC POWER CONVERTER

Satoru Inarida, Hitachinaka; Kiyoshi Nakata, Nishiibaraki-gun; Kouji Yasuda, Hitachinaka; Masato Suzuki, Naka-gun, and Wataru Miyake, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

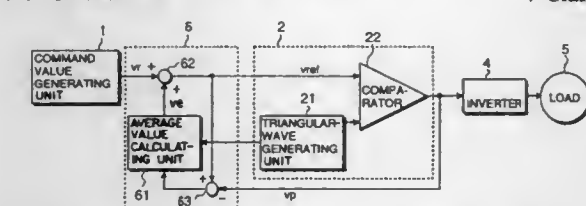
Filed Feb. 7, 1997, Ser. No. 797,621

Claims priority, application Japan, Jan. 3, 1996, 8-44460

Int. Cl.⁶ H02M 1/12

U.S. Cl. 363—41

7 Claims



1. A pulse width modulation control system for an electric power converter in which pulse width modulation pulses for driving semiconductor elements in an electric converter are calculated by comparing a command signal received from a command value generating means with a carrier signal having a continuous triangular-wave and a constant period, which system comprises:
 - means for separately calculating a time product of a command value of said command signal received from said command value generating means and a time product of said pulse width modulation pulses and for calculating a difference value representing a difference between both time products, said pulse width modulation pulse being calculated using said difference value to compensate said command signal received from said command value generating means.

5,781,424

STATIC CONVERTER FOR AN INCANDESCENT LAMP HAVING A DELAYED START

Marcel J. M. Bucks, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 112,738, Aug. 26, 1993, abandoned.

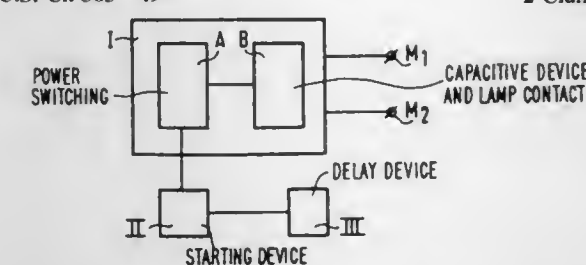
This application Jan. 10, 1996, Ser. No. 848,085

Claims priority, application Netherlands, Aug. 26, 1992, 92202598

Int. Cl.⁶ H02M 7/517

U.S. Cl. 363—49

2 Claims



1. A circuit arrangement for operating an incandescent lamp with a current of periodically changing polarity, which circuit comprises:
 - a static converter suitable for connection to a supply source, said static converter comprising a first circuit comprising power switching means for generating the current of periodically changing polarity from the connected supply source, and a second circuit comprising lamp connection terminals for connection to the incandescent lamp and capacitive means which controls the voltage across the incandescent lamp;
 - starting means for starting the static converter; and
 - delay means for delaying the start of the static converter after connection of the supply source to allow the voltage across the lamp to decay to a level below that existing upon the connection of the supply source.

5,781,425

METHOD AND DEVICE FOR CONTROL OF A CONVERTER INSTALLATION

Torbjörn Karlsson, Ludvika, Sweden, assignor to Asea Brown Boveri AB, Västerås, Sweden

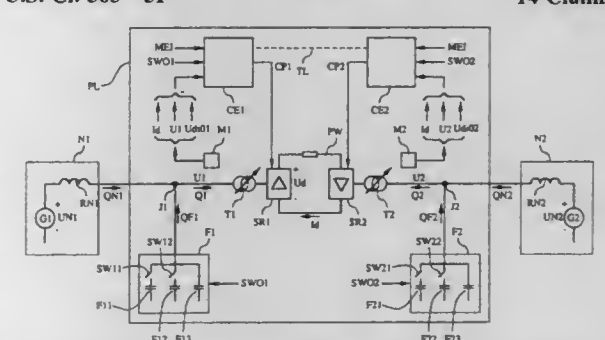
Filed Mar. 25, 1997, Ser. No. 823,763

Claims priority, application Sweden, Mar. 26, 1996, 9601146

Int. Cl.⁶ H02H 7/00

U.S. Cl. 363—51

14 Claims



1. A method for determining short-circuit power (SCC1, SCC2) in an electric power network (N1, N2) for alternating current, which at a connection point (J1, J2) is connected to a converter installation (PL) for transmission of high-voltage direct current, wherein a converter (SR1, SR2) comprised in the converter installation is connected to the power network, said converter operating with a control angle ($\alpha 1$, $\alpha 2$) in dependence on an ordered control angle (AO1, AO2), ordered by control equipment (CE1, CE2), wherein
 - at a first calculating time (t_0), a first power value ($MQ(t_0)$), of reactive power (Q1, Q2) consumed by the converter, is formed and stored, the voltage (U1, U2) of the power network at the connection point is sensed, and a first voltage value ($MU(t_0)$) of said voltage is formed and stored;
 - at at least one second calculating time (t_k , t_n), a second power value ($MQ(t_k)$, $MQ(t_n)$) is formed and stored, the voltage of the power network at the connection point is sensed and a second voltage value ($MU(t_k)$, $MU(t_n)$) of said voltage is formed and stored, whereby the second calculating time lies in a calculating interval (t_0-t_n) between the first and a last calculating time (t_n), and
 - during a measurement interval ($t1-t2$) between a first measurement time ($t1$) and a second measurement time ($t2$), which measurement interval at least partly coincides with the calculating interval, the control angle ($\alpha 1$, $\alpha 2$) of the converter is given a control-angle addition ($\Delta \alpha 1$, $\Delta \alpha 2$),
 - a first power difference (ΔQ_k) is formed in dependence on the difference of the first and second power values,
 - a first voltage difference (ΔU_k) is formed in dependence on the difference of the first and second voltage values, and
 - a measured value (MSSC1, MSSC2) of the short-circuit power of the power network is formed in dependence on the first power difference and the first voltage difference.

5,781,426

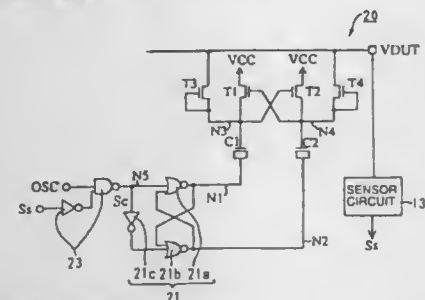
BOOSTER CIRCUIT AND METHOD OF DRIVING THE SAME

Yuichi Matsushita, Miyasaki-pref., Japan, assignor to Oki Electric Industry Company, Ltd., Tokyo, Japan
Filed Mar. 31, 1997, Ser. No. 829,175

Claims priority, application Japan, May 28, 1996, 8-133122
Int. Cl.⁶ H02M 7/00

U.S. Cl. 363—60

13 Claims



1. A booster circuit comprising:
a first capacitor having first and second electrodes;
a second capacitor having first and second electrodes;
a switching circuit for transferring boosted potential appearing on each first electrode of the first and second capacitors to a boosting potential output node;
a precharge circuit for precharging each first electrode of the first and second capacitors;
a logic circuit for setting a potential level of the second electrode of the first capacitor to a first potential level and setting a potential level of the second electrode of the second capacitor to a second potential level which is higher than the first potential level, respectively upon reception of a control signal having a first state, and for setting the potential level of the second electrode of the first capacitor to the second potential level, and setting the potential level of the second electrode of the second capacitor to the first potential level, respectively upon reception of a control signal having a second state;
a detector circuit for outputting a detecting signal having a first state when a potential level of the boosting potential output node is lower than a given value, and outputting a detecting signal having a second state when the potential level of the boosting potential output node is higher than the given level; and
a control signal generator circuit for alternately outputting the control signals having the first and second states in response to an oscillation signal upon reception of the detecting signal having the first state, and for outputting either of the control signal having the first state or the control signal having the second state irrespective of the oscillation signal upon reception of the detecting signal having the second state.

5,781,427

MULTISTANDARD RECTIFIED POWER SUPPLY CIRCUIT WITH POWER FACTOR CORRECTION OPTION

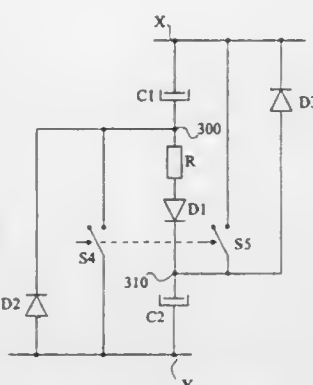
Jean-Michel Moreau, Grenoble, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France
Filed Oct. 29, 1996, Ser. No. 740,418

Claims priority, application France, Oct. 30, 1995, 95 13040
Int. Cl.⁶ H02M 7/06

U.S. Cl. 363—61

8 Claims

1. A multistandard rectified supply circuit comprising, across a full wave rectifying bridge;
least one storing means;
a charge path, associated with the storing means, including a first unidirectional conductive means of a first polarity;
a discharge path, associated with the storing means, including a second unidirectional conductive means of a second polarity, so that the storing means is differently charged and discharged; and



switching means for cancelling the effect of at least one of the first and second unidirectional conductive means so that the storing means is charged and discharged through a same path.

5,781,428

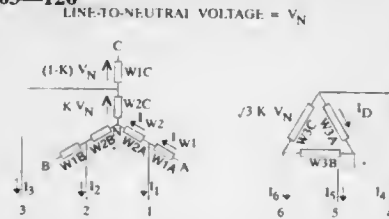
TRANSFORMER FOR 12-PULSE SERIES CONNECTION OF CONVERTERS

Derek A. Paice, 114 Rosewood Ct., Palm Harbor, Fla. 34685
Filed Mar. 3, 1997, Ser. No. 810,482

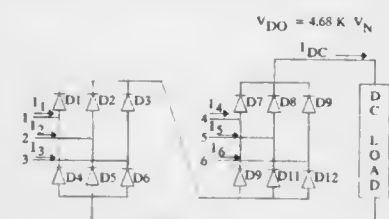
Int. Cl.⁶ H02M 7/00; I1/2; 7/06

U.S. Cl. 363—126

6 Claims



FOR K=0.5, TRANSFORMER VA = 0.58 DC LOAD W



1. A multiple AC/DC converter system comprising a three-phase wye connected transformer having a minimum of three windings on each phase with two windings being connected in series to provide a tapped coil with one section of the coil being connected to form a neutral with the same coils from the other phases; with the end of the coil which is remote from the tapping and the neutral being connected to one of the three power source lines; with the same connections on the other phases such that each of the lines of the three-phase source are connected to each transformer phase; with one winding from each phase being connected in series with the same winding from each of the other phases to produce a closed delta connection isolated from the first two windings; wherein the winding electrically connected to the neutral is called the OUTPUT winding; the winding electrically connected to the end of the output winding is called the MAIN winding, the winding connected to form an isolated closed path with other windings is called the DELTA winding; wherein the MAIN winding includes a fraction (1-K) of the sum of the turns in the main and output windings; with the OUTPUT winding including a fraction K of the sum of the turns in the main and output winding; with the DELTA winding incorporating nominally 1.73 times the turns in the OUTPUT winding; wherein the factor K is any positive number not exceeding unity.

5,781,429

PULSE CHARGING APPARATUS USING ELECTRON TUBE FOR SWITCHING CONTROL

Kazutaka Tomimatsu; Yasutoshi Ueda, both of Hyogo-ken; Osamu Kawabata, and Shunsuke Kamei, both of Tokyo, all of Japan, assignors to Mitsubishi Heavy Industries, Ltd., Tokyo, Japan

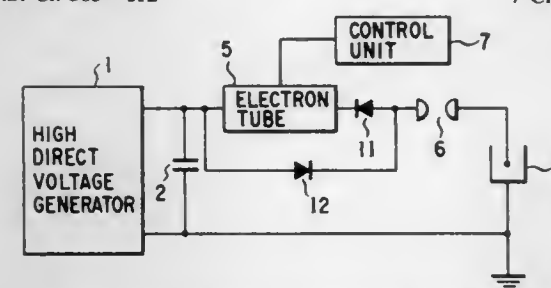
Filed Jun. 6, 1997, Ser. No. 870,519

Claims priority, application Japan, Jun. 11, 1996, 8-149323; Jan. 7, 1997, 9-000781

Int. Cl.⁶ H02M 7/26

U.S. Cl. 363—112

7 Claims



7. A pulse charging apparatus for providing pulse charges based on a DC high voltage to a load comprising:
a DC high-voltage generator;
a capacitor that is charged by a DC high voltage output from the DC high-voltage generator;
switching means having a series combination of a first electron tube and a stationary gap for switching charges stored on the capacitor to provide a pulse-like high voltage to the load;
a first magnetic assist circuit connected in series with the first electron tube and functioning as a time delay element only for current flow in the reverse direction through the first electron tube;
a first bias circuit for saturating the first magnetic assist circuit so that it will function as the delay element;
a second electron tube connected in parallel with the series combination of the first electron tube and the first magnetic assist circuit, the first and second electron tubes being arranged so that they are opposite in polarity with respect to each other;
a second magnetic assist circuit connected in series with the second electron tube and functioning as a time delay element only for current flow in the reverse direction through the second electron tube;
a second bias circuit for saturating the second magnetic assist circuit so that it will function as the delay element; and
a control unit for controlling the first and second electron tubes.

5,781,430

OPTIMIZATION METHOD AND SYSTEM HAVING MULTIPLE INPUTS AND MULTIPLE OUTPUT-RESPONSES

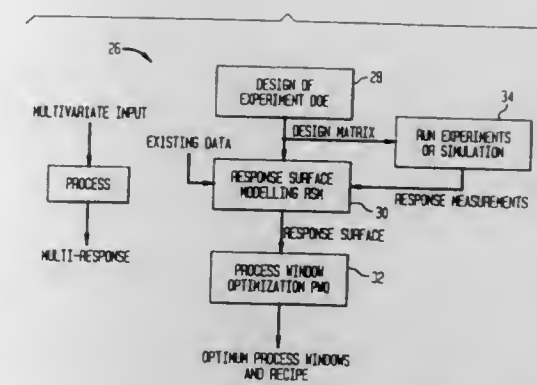
Roger Yen-Luen Tsai, Croton-on-Hudson, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 27, 1996, Ser. No. 671,286

Int. Cl.⁶ G05B 13/04

U.S. Cl. 364—148

7 Claims

1. A computer performed process for optimizing a steady-state performance of a physical process having multiple inputs and multiple output-responses, the method comprising the steps of:
1) inputting to the computer a mathematical model of the physical process or input data values to build a mathematical model of the physical process;
2) specifying three types of objectives wherein:
(i) objective Type I comprises finding inputs that enable the responses of the physical process to satisfy a set of constraints;
(ii) objective Type II comprises finding inputs such that the yield of the physical process is maximized, with yield being



- the probability of satisfying the constraints on multiple responses given random variations of inputs;
(iii) objective Type III comprises finding inputs such that multiple mutually conflicting objectives are satisfied; and
3) generating an optimized solution satisfying simultaneously all three types of objectives;
4) modifying the steady state performance of a physical process by applying the optimized solution in step 3 to the physical process.

5,781,431

PROCESS AND APPARATUS FOR HIGH SPEED ON THE FLY SUPPLY OF INFORMATION NECESSARY FOR ROUTING DATA STRUCTURES

Christian Duret, Chatillon, and Lionel Pelamourgues, Paris, both of France, assignors to France Telecom Etablissement autonome de droit public, Paris, France

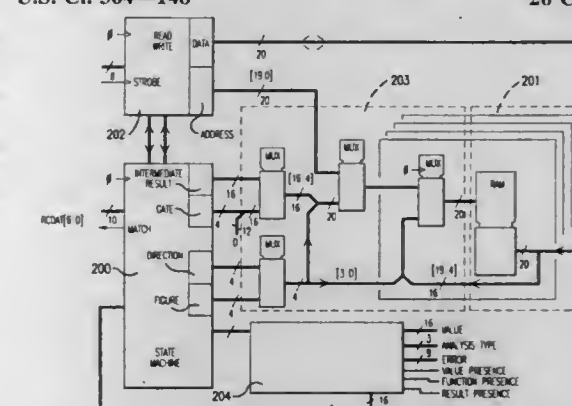
Continuation of Ser. No. 269,027, Jun. 30, 1994, abandoned.

This application Dec. 23, 1996, Ser. No. 774,077

Claims priority, application France, Jul. 12, 1993, 93 08558
Int. Cl.⁶ G06F 17/00

U.S. Cl. 364—148

26 Claims



18. An apparatus for analysis of information contained in a data sequence in order to supply an external system with information needed either for routing or further processing of said data sequence, comprising:
a computer readable memory configured as a TRIE array and connected to a data path;
a read write control module connected to said data path and connected to address lines;
a check sum verification module for verification of different check sums;
a state machine; and
a results module connected to said data path and providing data read from at least one of said state machine and said computer readable memory including a value, an analysis type, a possible error, a presence of a value, a presence of a function, and a presence of a result to an external device;

said state machine connected to said data path and operating on data input from said data sequence and data retrieved from said computer readable memory to provide output signals comprising:
outputs provided to said computer readable memory including an intermediate result, a gate register, and a direction, said outputs being combined with signals on said data and address lines of said read write control module to provide addressing and data to said computer readable memory, and result outputs provided to said results module;
said TRIE array, based upon at least one of the outputs provided to said computer readable memory, operating to determine an intermediate result causing a state change in said state machine prior to completely receiving said data sequence.

5,781,432

METHOD AND APPARATUS FOR ANALYZING A NEURAL NETWORK WITHIN DESIRED OPERATING PARAMETER CONSTRAINTS

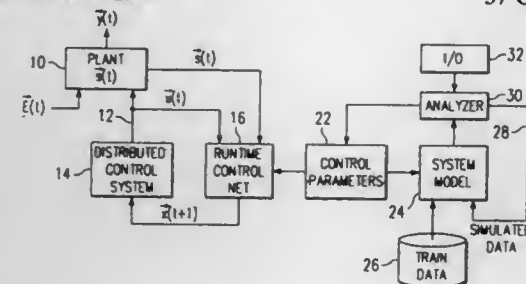
James David Keeler, and Eric Jon Hartman, both of Austin, Tex., assignors to Pavilion Technologies, Inc., Austin, Tex.
Continuation of Ser. No. 25,184, Mar. 2, 1993, abandoned.

This application Dec. 4, 1996, Ser. No. 759,539

Int. Cl.⁶ G05B 13/02

U.S. Cl. 364-164

37 Claims



1. A control system for controlling the operation of a plant, comprising:

a predictive network having an input layer for receiving control inputs for the plant, an output layer for outputting predicted outputs representing a prediction of the output of the plant and a mapping layer for mapping said input layer to said output layer through a stored representation of the plant;

an optimality device for receiving at least two of said predicted outputs or said control inputs as input properties as either the combination of at least one of said predicted outputs and one of said control inputs or the combination of at least two of said predicted outputs and operable to apply an optimality function to each of said input properties, the combination of said optimality functions operating such that extremization thereof corresponds to a user-defined desired behavior of said associated input property, said user-defined behavior not the same for each of said optimality functions, said optimality function for each of said input properties having a user-defined behavior that is comprised of an associated weighting factor and a desired value, wherein said weighting factor is applied to a function of the difference between the predicted value of said associated input property and said desired value and said weighting factor is a variable value that is a function of predetermined limits, such that when said actual value of said input property exceeds said limit, the value of said weighting factor changes; and

a predictive system for generating updated control inputs that extremize said system optimality value in accordance with said optimality function.

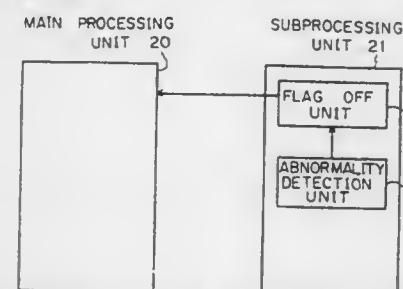
**5,781,433
SYSTEM FOR DETECTING FAILURE IN INFORMATION PROCESSING DEVICE**

Kenichi Nabeya, and Tatsumi Nakada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Mar. 17, 1995, Ser. No. 406,075

Claims priority, application Japan, Mar. 17, 1994, 6-047547
Int. Cl.⁶ G05B 9/02

U.S. Cl. 364-184

18 Claims



1. An information processing device including a main processor which issues processing operations of a subprocessor as subprocessor instructions and a subprocessor which executes processing for said subprocessor instructions from said main processor and writes the results of said processing into registers in said main processor, said device comprising:

an abnormality detection means, provided in said subprocessor, for detecting at least one of abnormalities of an undefined subprocessor instruction and an instruction execution error;

flag-off means, provided in said subprocessor, for turning off a flag indicating that processing is being performed when abnormality is detected, and

means, provided in said main processor for deciding that abnormality has occurred when registers to be written into according to said subprocessor instruction remain unwritten and said flag is turned off.

5,781,434

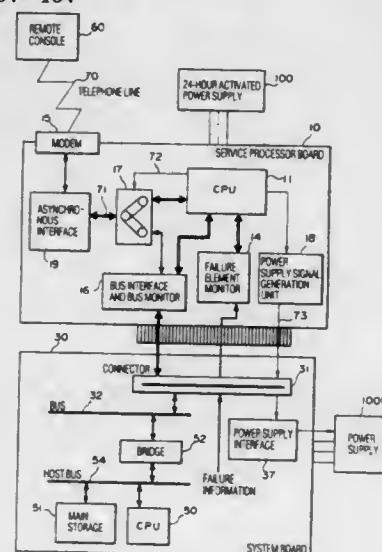
CONTROL SYSTEM FOR COMMUNICATION APPARATUS

Tsunehiro Tobita; Yukihiko Seki; Ryuichi Hattori, all of Yokohama; Yuji Miyagawa, Owariasahi; Shigeru Sakurai, Kasugai; Michiyuki Suzuki, Nissin, and Ichiro Ote, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Chubu Software, Ltd., Aichi-ken, both of Japan
Filed Oct. 13, 1995, Ser. No. 543,145

Claims priority, application Japan, Oct. 19, 1994, 6-253206
Int. Cl.⁶ G05B 19/10

U.S. Cl. 364-184

23 Claims



1. An information processing system comprising:
a communication apparatus for communicating with an external terminal through a communication line;
an information processing apparatus for communicating with said external terminal through said communication apparatus; processing means for managing said information processing apparatus;
a processing means power supply for continuously supplying a power to said communication apparatus and said processing means;
an information processing apparatus power supply for supplying a power to said information processing apparatus;
on/off processing means for turning on and off the power from said information processing apparatus power supply to said information processing apparatus by a command from said processing means; and
switching means for connecting said communication apparatus to said processing means or said information processing apparatus in accordance with a switching signal from said processing means;
said processing means controlling said switching means to connect said communication apparatus to said processing means when said information processing apparatus power supply is in the off state;
said processing means outputting a power-on command to said on/off processing means when said processing means receives a power-on request of said information processing apparatus power supply from the external terminal through said communication line and said communication apparatus and manipulating said switching means to connect said communication apparatus to said information processing apparatus when the execution of the power-on command is completed.

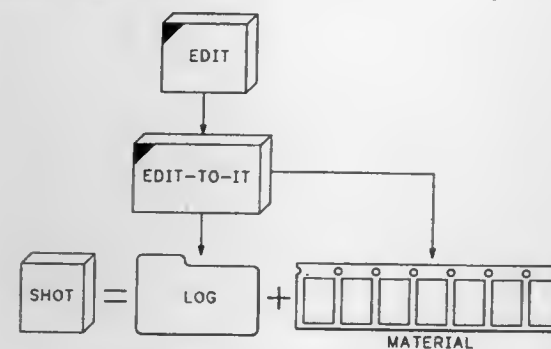
5,781,435
EDIT-TO-IT

Delwyn Holroyd, Saith Erw, Gresford Road, Hope, Wrexham, Clwyd LL12 9PW, Wales, Wales; John Child, 46 Pembury Road, Tonbridge, Kent TN9 2JE, England, England, and Anita J. Sinclair, 48a Highbury Hill, London, NS, England
Filed Apr. 12, 1996, Ser. No. 631,401

Int. Cl.⁶ G11B 27/00

U.S. Cl. 364-192

1 Claim

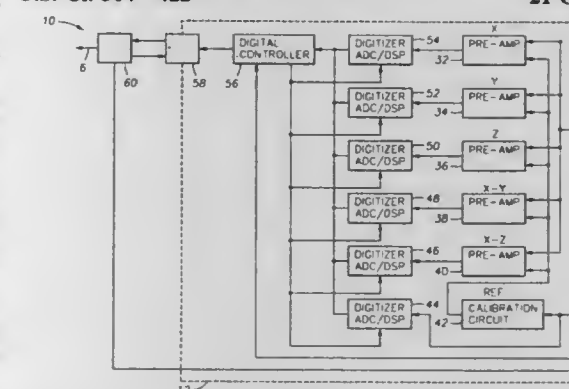


1. A method of editing comprising the steps of:
initiating an edit-to-it file when material from a linear source is required as a source for an edit;
identifying an initial point for a shot on the linear source; prerolling the linear source until the initial point for the shot is reached;
laying the shot into the edit;
simultaneously recording the material from the linear source into a storage unit starting from a handle prior to the initial point until an end point of the material defining the end of the shot is reached when the edit-to-it file indicates that the shot has not been previously digitized; and
updating the edit-to-it file to indicate the portion of the linear source that is recorded in the storage unit.

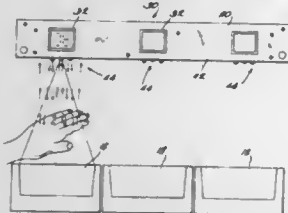
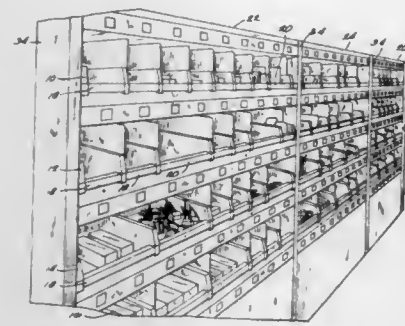
**5,781,436
METHOD AND APPARATUS FOR TRANSVERSE ELECTROMAGNETIC INDUCTION WELL LOGGING**
Stanislav Forgang, Houston; Otto N. Fanini, Stafford, and Leonty A. Tabarovsky, Houston, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.
Filed Jul. 26, 1996, Ser. No. 686,848
Int. Cl.⁶ G06F 19/00

U.S. Cl. 364-422

21 Claims



a frame structure adapted to define a plurality of bins located adjacent one another in at least one row;



a plurality of sensor means associated with preselected bins, said sensor means being adapted to detect the presence and duration of access by a hand in an area of said associated bin, said sensor means generating an electrical signal responsive to a hand being detected;

a plurality of display means associated with preselected bins, said display means being adapted to provide a visual display of component quantities responsive to electrical signals being received, said display means being adapted to provide said visual display in at least first and second display modes upon activation;

processing means adapted to receive said signals from said sensor means and generate said signals and apply the same to said display means, and having a communication port for connecting a programming means to program said processing means so that a predetermined quantity is initially displayed at predetermined bins, said display means at each predetermined bin changing from said first display mode to said second display mode responsive to a hand being initially detected, said display means operating in said second display mode for a predetermined time that is directly proportional to the quantity visually displayed for each bin.

5,781,444

DISTRIBUTED PROCESSING UNIT CONNECTABLE TO EXTERNAL PROCESSING MEANS

Takeshi Ishida, Sakado; Yuichi Sakamoto, Higashi-matsuyama, and Genzo Yoshizawa, Tokyo, all of Japan, assignors to Kabushiki Kaisha Nippon Conlux, Japan

PCT No. PCT/JP95/00913, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO95/31797, PCT Pub. Date Nov. 23, 1995

PCT Filed May 12, 1995, Ser. No. 592,329

Claims priority, application Japan, May 13, 1994, 6-100160

Int. Cl.⁶ G06F 17/00; 7/00; G07F 5/00
U.S. Cl. 364-479.02 9 Claims

1. A distributed processing unit including:

a main controller;

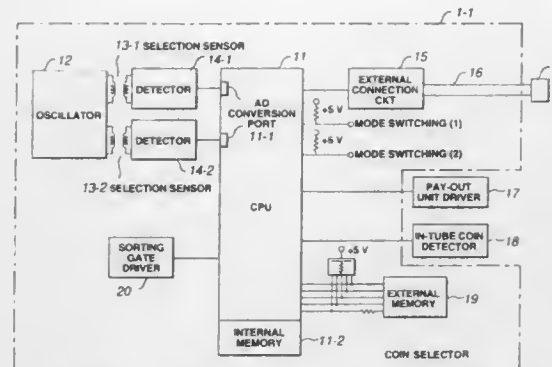
a bus line connected to the main controller; and at least one processor connected to the bus line through a connector, which communicates with the main controller through the connector and the bus line to perform specified processes, wherein

the processor comprises:

a memory for storing set data for performing the specified processes;

a control unit for performing the specified processes on the basis of the set data stored in the memory;

a first terminal connected to a connection line which connects the memory and the control unit;



a second terminal connected to the control unit; and connecting means for connecting the first and second terminals to external processing means, and wherein the control unit comprises:

first control means for prohibiting access to the memory by the control unit in response to signals applied to the second terminal from the external processing means while allowing direct access to the memory by the external processing means through the first terminal when the external processing means is connected to the first and second terminals by the connecting means.

5,781,445

PLASMA DAMAGE MONITOR

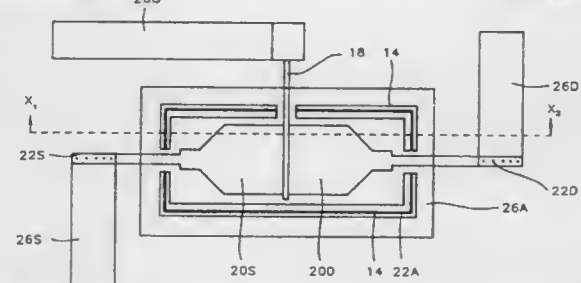
Ruey-Yun Shiue, Hsin-Chu, and Sung-Mu Hsu, I-Lan, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Aug. 22, 1996, Ser. No. 701,361

Int. Cl.⁶ H01L 21/02; 21/8249

U.S. Cl. 364-481

22 Claims



22. A method of testing shielded MOSFET test structures for damage incurred during plasma processing comprising:

providing a first shielded MOSFET test structure formed on a silicon substrate, said test structure comprising a first MOSFET surrounded and insulated from a first conductive wall which forms a continuous perimeter around said first MOSFET, said first conductive wall further being ohmically grounded to said silicon substrate at all points along its base and having a first continuous top conductive plate with no internal boundaries formed from a first level of metallization, said first top conductive plate contacting all points along the top of said first conductive wall except for a first set of three openings where through component leads from source, drain, and gate elements of said first MOSFET pass through and are insulated from said first conductive wall terminating at a first set of test pads;

connecting test probes to said first set of test pads and to a substrate ground;

measuring a first pre-stress value of threshold voltage and a first pre-stress value of drive-saturation-current;

applying a first gate current stress;

measuring a first post-stress value of threshold voltage and a first post-stress value of drive-saturation-current;

computing a first threshold voltage shift and a first drive-saturation-current shift by subtracting the respective first pre-stress values from the first post-stress values;

providing a second fully shielded MOSFET test structure formed on a silicon substrate, said test structure comprising a second MOSFET surrounded and insulated from a second conductive wall which forms a continuous perimeter around said second MOSFET, said second conductive wall further being ohmically grounded to said silicon substrate at all points along its base and having a second continuous top conductive plate with no internal boundaries formed from a second level of metallization, said second top conductive plate contacting all points along the top of said second conductive wall except for a second set of three openings where through component leads from source, drain, and gate elements of said second MOSFET pass through and are insulated from said second conductive wall terminating at a second set of test pads; connecting test probes to said second set of test pads and to a substrate ground;

measuring a second pre-stress value of threshold voltage and a second pre-stress value of drive-saturation-current;

applying a second gate current stress;

measuring a second post-stress value of threshold voltage and a second post-stress value of drive-saturation-current;

computing a second threshold voltage shift and a second drive-saturation-current shift by subtracting the respective second pre-stress values from the second post-stress values; and

comparing said second threshold voltage shift with said first threshold voltage shift and said second drive-saturation-current shift with said first drive-saturation-current shift, an increase in either quantity indicating plasma damage has occurred during the intervening processing steps between the formation of the top conductive plates of the first and second shielded MOSFETs.

5,781,446

SYSTEM AND METHOD FOR MULTI-CONSTRAINT DOMAIN ELECTRONIC SYSTEM DESIGN MAPPING

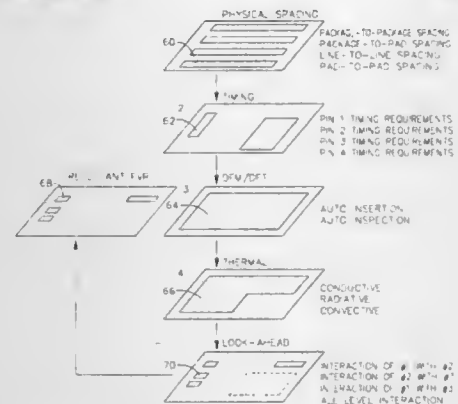
Tom J. Wu, Del Mar, Calif., assignor to Flexible Solutions, Inc., San Diego, Calif.

Filed May 7, 1996, Ser. No. 648,302

Int. Cl.⁶ G06F 17/50

U.S. Cl. 364-489

20 Claims



1. A system for computer aided design of a higher level electronic system which is constructed of a multiplicity of lower level entities the relative placement positions of each of which is limited by a multiplicity of dissimilar constraints defining an n-dimensional constraint domain, the system comprising:

a multiplicity of dissimilar input indicia sets, each indicia set representing a particular one of a corresponding set of dissimilar entity-to-entity layout spacing rules; and

a multiplicity of design spaces, each design space defining a respective one of the multiplicity of dissimilar constraint domains and comprising violation free regions defining those areas in which an entity may be placed without violating an entity-to-entity spacing rule, each design space associated with a particular one of the multiplicity of dissimilar input indicia sets, the violation free regions of each design space constructed in accordance with the particular input indicia set associated with that design space.

5,781,447

SYSTEM FOR RECREATING A PRINTED CIRCUIT BOARD FROM DISJOINTLY FORMATTED DATA

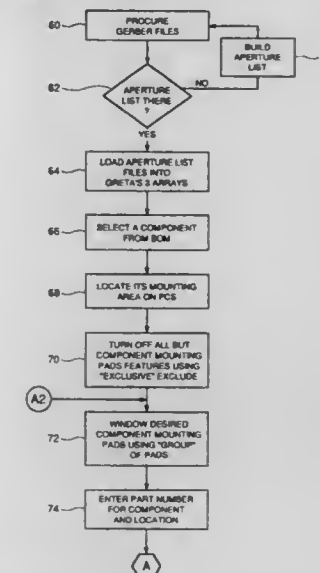
Henry D. Gerdes, Melba, Id., assignor to Micron Electronics, Inc., Nampa, Id.

Continuation of Ser. No. 373,512, Jan. 12, 1995, abandoned, which is a continuation of Ser. No. 106,249, Aug. 13, 1993, abandoned. This application Oct. 7, 1996, Ser. No. 727,707

Int. Cl.⁶ G06F 15/60

U.S. Cl. 364-489

20 Claims



1. A method of recreating a populated Printed Circuit Board (PCB) in electronic form from disjointly formatted data, comprising the steps of:

a) accessing from a computer data storage medium a stored Gerber file and aperture list having data descriptive of a circuit layer without component information for partially recreating said PCB;

b) displaying on a computer display screen a graphical representation of said circuit layer of said PCB by interpreting said descriptive data stored in said accessed Gerber file and aperture list;

c) selecting a mounting location on said graphically displayed PCB for an identified component, wherein said component is identified from disjointly formatted data relative to said data descriptive of a circuit layer;

d) storing component identification data to said storage medium for said identified component and selected mounting location, said identification data obtained from said disjointly formatted data; and

e) associating said component identification data, Gerber file and aperture list data together in a database on said storage medium for accessing purposes.

5,781,448

CONTROL SYSTEM AND CONTROL METHOD FOR UNINTERRUPTIBLE POWER SUPPLY

Yoichi Nakamura, Takashi Saito, both of Kanagawa, Japan; Phil Coldwell, and Nigel Hart, both of Birmingham, United Kingdom, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan, and Apricot Computers Limited, Birmingham, England

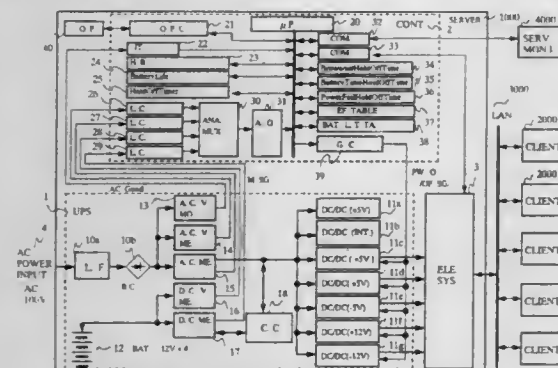
Filed Nov. 2, 1995, Ser. No. 556,807

Claims priority, application United Kingdom, Aug. 2, 1995, 9515864

Int. Cl.⁶ G06F 1/26; H02J 9/06

U.S. Cl. 364—492

21 Claims



1. An uninterruptible power supply system comprising:

- (a) an uninterruptible power supply including a battery for supplying direct current (DC), for receiving alternating current (AC) from an alternating current power supply, converting the alternating current into direct current and outputting the direct current as one of the direct current converted from the alternating current and the direct current supplied by the battery;
- (b) an electronic system having an input to receive the direct current output from the uninterruptible power supply; and
- (c) a controller for calculating a value of power consumption of the electronic system based on AC parameters while the electronic system is operated by the direct current converted from the alternating current, for calculating a life time of the battery based on residual charging capacity of the battery, the value of power consumption, and a time needed to safely shutdown the electronic system when the electronic system starts operation by power from the battery, and for outputting the life time to the electronic system.

5,781,449

RESPONSE TIME MEASUREMENT APPARATUS AND METHOD

James M. Rosborough, Lakewood, Colo., assignor to Advanced System Technologies, Inc., Englewood, Colo.

Filed Aug. 10, 1995, Ser. No. 513,435

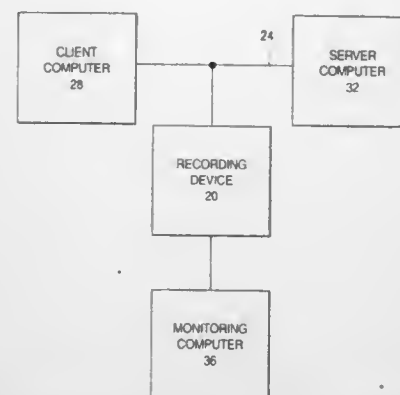
Int. Cl.⁶ G06F 17/00

U.S. Cl. 364—514 R

31 Claims

1. A method for identifying one or more occurrences of a transaction included in a plurality of service packets communicated between a first node and one or more second nodes, comprising: providing a communications data set including information relating to an ordering of a collection of said service packets, wherein said service packets are communicated on a communications line between the first node and the one or more second nodes;

forming a pattern characterization data set using data related to a grouping of at least some of the plurality of service packets corresponding to an occurrence of the transaction; and comparing said communications data set with the pattern characterization data set to determine whether at least some of the



collection of said plurality of service packets correspond to an occurrence of said transaction.

5,781,450

OBJECT INSPECTION SYSTEM AND METHOD

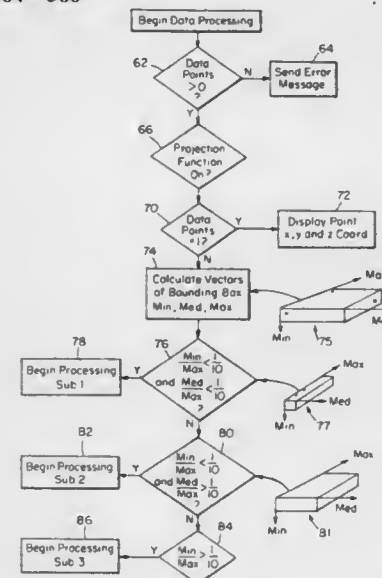
J. Peter Glasson, Portsmouth, N.H., assignor to Metronics, Inc., Bedford, N.H.

Continuation-in-part of Ser. No. 558,767, Nov. 15, 1995, Pat. No. 5,590,060, which is a continuation of Ser. No. 258,123, Jun. 10, 1994, abandoned. This application Dec. 2, 1996, Ser. No. 758,966

Int. Cl.⁶ G01B 5/24

U.S. Cl. 364—560

58 Claims



1. An object inspection system comprising:

- a coordinate measuring device including a touch probe for inspecting an object having one or more feature types;
- a computer subsystem connected to said coordinate measuring device, said computer subsystem including:
 - means for storing the direction of movement of said probe at each contact of the probe with a feature on the object;
 - means for storing the coordinates of the probe at each contact of the probe with a feature on the object;
 - processing means for automatically determining, from the direction of movement of the probe and said coordinates, the feature type defined by the coordinates, said processing means including means for calculating the length of the vectors of a bounding box which includes all said coordinates.

5,781,451

METHOD AND APPARATUS FOR TRACKING THE MOTION OF AN IMAGING MEMBER WITH A LINE WRITING DEVICE USING A RATIONAL ELECTRONIC GEARBOX

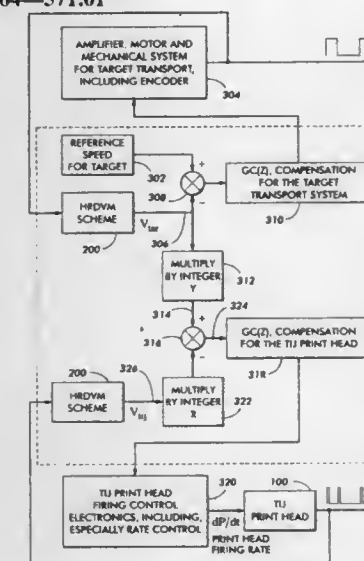
Robert M. Loftus, Honeoye Falls, and Stuart A. Schweid, Henrietta, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 21, 1997, Ser. No. 787,186

Int. Cl.⁶ G01C 25/00

U.S. Cl. 364—571.01

19 Claims



1. A microcontroller for transmitting data from a tracking system being monitored by a tracking device that has a tracking effective spatial resolution, in a pattern that is at least partially dependent upon the motion of a moving target system which is monitored by a targeting device that has a target effective spatial resolution, comprising:

- a target system measurement apparatus which determines an actual target velocity and positioning value for the target system;
- an ideal target velocity and positioning reference value;
- a target system correction device which alters said actual target velocity and positioning value to match said ideal target velocity and positioning reference value;
- a target system integer scaler which multiplies said actual target velocity and positioning value by the tracking effective spatial resolution;
- a controller which sends said scaled actual target velocity and positioning value to the tracking system for use as a scaled reference frequency value;
- a tracking system measurement apparatus which determines an actual tracking velocity and positioning value for the tracking system;
- a tracking system integer scaler which multiplies said actual tracking velocity and positioning reference value by the target effective spatial resolution to create a scaled actual frequency value; and
- a tracking system correction device which alters said scaled actual frequency value to match said scaled reference frequency value.

5,781,452

METHOD AND APPARATUS FOR EFFICIENT DECOMPRESSION OF HIGH QUALITY DIGITAL AUDIO

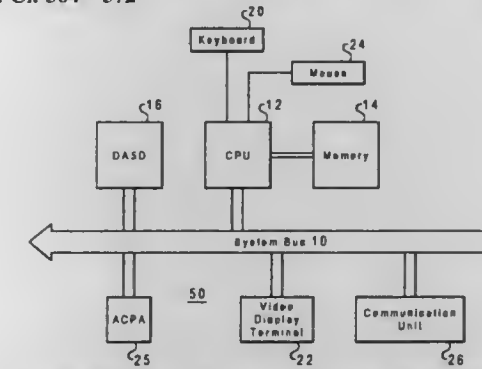
Don Hoon Lee, Stamford, Conn., and Subramania Sudharasan, Shrewsbury, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1995, Ser. No. 408,430

Int. Cl.⁶ H03M 13/00

U.S. Cl. 364—572

7 Claims



3. An apparatus for processing a digital data stream digital including a plurality of samples representing an audio signal, comprising:

- requantizing means for requantizing the plurality of samples; and
- filter means for performing subband synthesis on the plurality of requantized samples using a fast Fourier transform, wherein pulse code modulated samples are created from the plurality of requantized samples, wherein the filter means implements a real valued fast Fourier transform to create pulse modulated samples from the plurality of requantized samples aid includes a polyphase filter bank.

5,781,453

Patent Not Issued For This Number

5,781,454

PROCESS MODELING TECHNIQUE

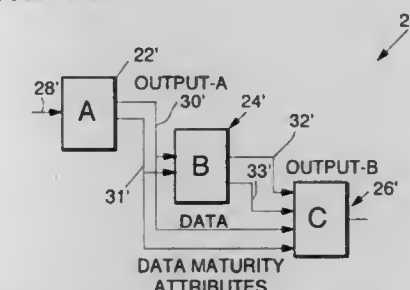
Gilbert W. Alexander, Los Angeles, Calif., assignor to Raytheon Company, Los Angeles, Calif.

Filed Mar. 25, 1996, Ser. No. 618,050

Int. Cl.⁶ G06F 17/60

U.S. Cl. 364—578

8 Claims



representing a transfer of a data maturity attribute along with said preliminary information from a representation of a first activity step to a representation of a second activity step and running said model on a computer program.

5,781,455

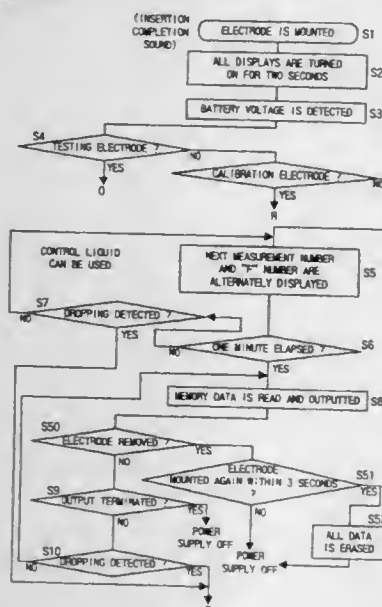
**ARTICLE OF MANUFACTURE COMPRISING
COMPUTER USABLE MEDIUM FOR A PORTABLE
BLOOD SUGAR VALUE MEASURING APPARATUS**

Hiroshi Hyodo, Kyoto, Japan, assignor to Kyoto Daiichi Kagaku Co., Ltd., Kyoto-fu, Japan

Continuation-in-part of Ser. No. 331,813, Oct. 31, 1994, Pat. No. 5,589,045. This application Aug. 14, 1996, Ser. No. 696,742

Claims priority, application Japan, Nov. 2, 1993, 5-274228
Int. Cl.⁶ G05B 23/02

U.S. Cl. 364—579



1. An article of manufacture comprising:

- a computer usable medium, including computer-readable program code means embodied therein, for causing a computer to manage data in a measuring apparatus, the computer-readable program code means in the article of manufacture comprising: computer-readable program code detecting means for causing the computer to detect whether an electrode has been mounted on the measuring apparatus;
- computer-readable program code characteristic measuring means for causing the computer to measure a characteristic of the electrode to determine what type of electrode has been mounted on the measuring apparatus;
- computer-readable program code clocking means for causing the computer to clock a first period of time after the computer has measured the characteristic of the electrode;
- computer-readable program code determining means for causing the computer to determine whether an execution for clocking the first period of time has been switched over to an execution for measuring density of an element included in a biological body fluid before a termination point of the first period of time;
- computer-readable program code density measuring means for causing the computer to measure density of the element included in the biological body fluid which has been placed on the electrode when the execution for the first period of time has been switched over to the execution for measuring density of the element included in the biological body fluid before a termination point of the first period of time;

computer-readable program code density storing means for causing the computer to store a measured density of the element included in the biological body fluid in a storing means; and computer-readable program code read out and output means for causing the computer to read out measured density data stored in the storing means and then output the measured density data read out from the storing means when the first period of time has reached a termination point without being switched over to the execution for measuring density of the element included in the biological body fluid.

5,781,456

SOFTWARE SELECT AND TEST

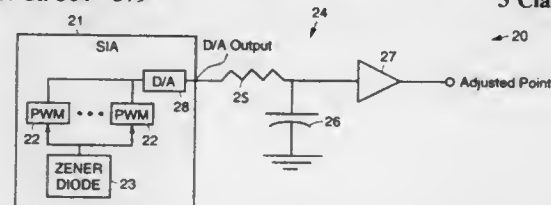
Robert W. Dodd, Palo Alto, Calif., assignor to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed Jul. 11, 1997, Ser. No. 891,491

Int. Cl.⁶ G05B 23/02

15 Claims

U.S. Cl. 364—579



3 Claims

1. A software-controlled select and test system for use with a spacecraft having a communications link containing a plurality of amplifiers, said system comprising:

- a plurality of control circuits that each comprise control voltage input for receiving a control voltage;
- a plurality of serial interface adapters that are individually coupled to respective ones of the control circuits, and that each comprise a plurality of controllable pulse width modulators that vary their output in a controlled manner using software, and wherein control of the pulse width modulators provides for an output voltage that adjusts an operating point of the respective amplifier by way of the respective control circuit.

5,781,457

**MERGE/MASK, ROTATE/SHIFT, AND BOOLEAN
OPERATIONS FROM TWO INSTRUCTION SETS
EXECUTED IN A VECTORED MUX ON A DUAL-ALU**

Earl T. Cohen, Fremont, Calif., assignor to Exponential Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 609,908, Feb. 29, 1996, which is a continuation-in-part of Ser. No. 444,814, May 18, 1995, Pat. No. 5,497,341, which is a continuation of Ser. No. 207,751, Mar. 8, 1994, Pat. No. 4,442,577. This application May 14, 1996, Ser. No. 649,116

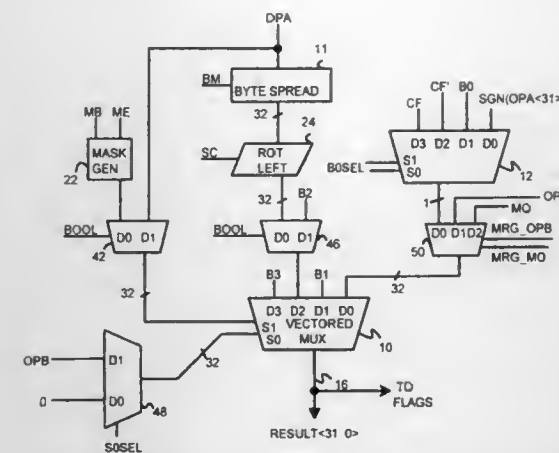
Int. Cl.⁶ G06F 7/38

U.S. Cl. 364—716.02

16 Claims

1. A logic-instruction execution unit for executing Boolean operations and merge operations, the logic-instruction execution unit comprising:

- a vectored mux for outputting a result of a Boolean operation of a merge operation, the vectored mux comprising a plurality of individual mux cells, each mux cell having data inputs and select control inputs and an output driving one bit-position of the result, the select control inputs controlling which data input is coupled to drive the output independently of other data inputs;
- a first operand input comprising a plurality of electrical signals representing a first operand;
- a second operand input comprising a plurality of electrical signals representing a second operand;



operand-spread means, receiving the first operand input, for extending the first operand from a reduced-width operand to a full-width operand by duplicating the reduced-width operand to fill bit-positions in a full-width operand beyond the reduced-width operand, the operand-spread means outputting a spread first operand to a first data input of the vectored mux when the first operand is a reduced-width operand;

Boolean control means for applying the first operand input and the second operand input to the select control inputs of the vectored mux when a Boolean operation is executed;

truth-table inputs comprising electrical signals representing a truth table for the Boolean operation, the truth-table inputs varying for different Boolean operations;

the Boolean control means including means for applying the truth-table inputs to the data inputs of the vectored mux when a Boolean operation is executed;

merge control means for applying the spread first operand to the first data input on the vectored mux and for applying the second operand input to a second data input on the vectored mux when a merge operation is executed;

a mask generator for generating a mask indicating a first portion of the result from the first operand and a second portion of the result from the second operand, the first portion and the second portion not overlapping;

the merge control means including means for applying the mask to a select control input of the vectored mux when a merge operation is executed, wherein the mask causes the vectored mux to select the first portion of the first operand applied to the first data input and the second portion of the second operand applied to the second data input,

whereby the vectored mux executes both merge operations and Boolean operations, the operands applied to the data inputs for merge operations but applied to the select control inputs for Boolean operations.

5,781,458

**METHOD AND APPARATUS FOR GENERATING TRULY
RANDOM NUMBERS**

James E. Gilley, Lincoln, Nebr., assignor to Transcript International, Inc., Lincoln, Nebr.

Filed Mar. 5, 1997, Ser. No. 811,425

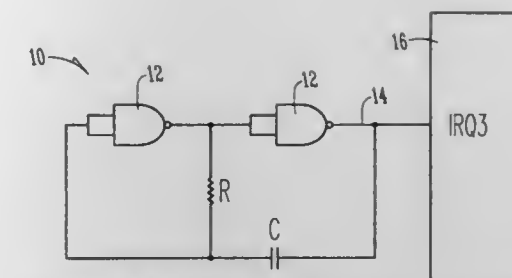
Int. Cl.⁶ G06F 1/02

U.S. Cl. 364—717.06

29 Claims

1. A method of generating random numbers comprising the steps of:

- generating a signal from an RC oscillating circuit to provide a source of entropy;
- providing software which performs the processing steps of: extracting entropy data from the signal generated by the RC oscillating circuit, and



processing the data to reduce any cycle-to-cycle data correlation.

5,781,459

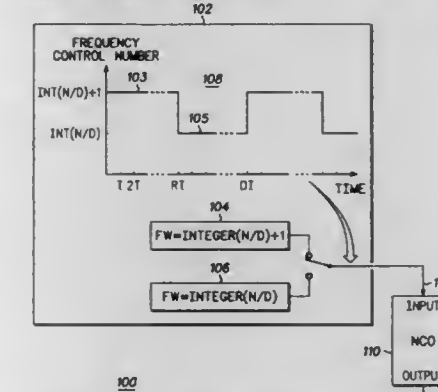
**METHOD AND SYSTEM FOR RATIONAL FREQUENCY
SYNTHESIS USING A NUMERICALLY CONTROLLED
OSCILLATOR**

Richard Alan Bienz, 1830 W. Alamo Dr., Chandler, Ariz. 85224
Filed Apr. 16, 1996, Ser. No. 639,040

Int. Cl.⁶ G06F 1/02; H03K 3/017; 5/04; 7/08

U.S. Cl. 364—718.02

16 Claims



1. A method for synthesizing a time-averaged rational frequency which is proportional to a rational number using a numerically controlled oscillator (NCO) in a frequency control loop, comprising the steps of:

- inputting frequency control numbers to said numerically controlled oscillator using an output from a loop filter in said frequency control loop;
- alternating said frequency control numbers between numerically adjacent values using a first toggling pattern; and
- outputting said time-averaged rational frequency in response to said frequency control numbers, wherein at least one spurious frequency is minimized by using said first toggling pattern.

5,781,460

**SYSTEM AND METHOD FOR CHAOTIC SIGNAL
IDENTIFICATION**

Chung T. Nguyen, Bristol; Francis J. O'Brien, Jr., Newport; Sherry E. Hammel, Little Compton; Bruce J. Bates, Portsmouth, and Steven C. Nardone, Narragansett, all of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

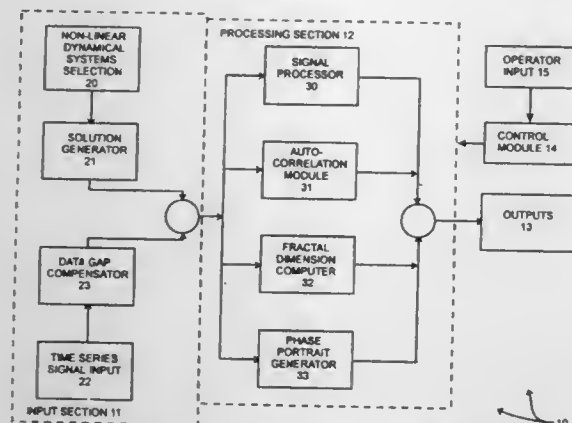
Filed Jun. 28, 1996, Ser. No. 682,896

Int. Cl.⁶ G06F 17/10; H04B 1/02

U.S. Cl. 364—724.011

15 Claims

1. A chaotic signal processing system for receiving an input signal provided by a sensor in a chaotic environment and performing a processing operation in connection therewith to provide an output useful in identifying one of a plurality of chaotic processes in said chaotic environment, said system comprising:



input means responsive to input data selection information for providing a digital data stream selectively representative of the input signal provided by said sensor or a synthetic input representative of a selected chaotic process;

processing means including a plurality of processing module means each for receiving the digital data stream from said input means and for generating therefrom an output useful in identifying one of a plurality of chaotic processes, the processing means being responsive to processing selection information to select one of said plurality of processing module means to provide the output; and

control means for generating said input data selection information and said processing selection information in response to inputs provided by an operator.

5,781,461

DIGITAL SIGNAL PROCESSING SYSTEM AND METHOD FOR GENERATING MUSICAL LEGATO USING MULTITAP DELAY LINE WITH CROSSFADER

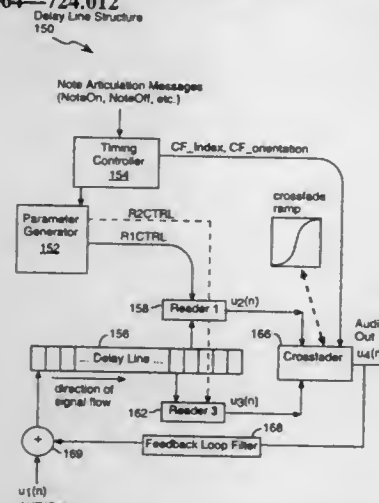
David A. Jaffe, Berkeley, and Julius O. Smith, III, Palo Alto, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Continuation-in-part of Ser. No. 647,296, May 9, 1996. This application Sep. 4, 1996, Ser. No. 697,955

Int. Cl.⁶ G06F 17/10

U.S. Cl. 364—724.012

18 Claims



1. A sampled data, delay line structure, comprising:

a sampled data delay line having a multiplicity of integer positions at which data is stored;

two readers, each for reading data at a corresponding position of the delay line and generating a corresponding output;

a crossfader that smoothly crossfades between the outputs of the two readers so as to generate an output signal that corresponds to a delay line position that transitions from a first delay line position to a second delay line position; the output signal produced by the crossfader representing a legato transition

between a first musical note corresponding to the first delay line position and a second musical note corresponding to the second delay line position; and

a controller that assigns to each reader a respective delay line position and that controls when the delay line position read by each reader is updated and also controls when the crossfader begins crossfading from the output of one of said readers to the other of said readers.

5,781,462

MULTIPLIER CIRCUITRY WITH IMPROVED STORAGE AND TRANSFER OF BOOTH CONTROL COEFFICIENTS

Kazuya Yamanaka, and Sumitaka Takeuchi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

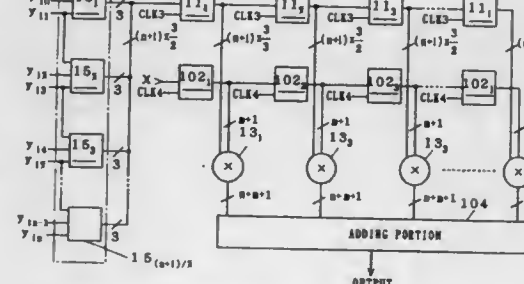
Filed Sep. 19, 1995, Ser. No. 530,580

Claims priority, application Japan, Nov. 29, 1994, 6-294109

Int. Cl.⁶ G06F 17/10; 7/52

U.S. Cl. 364—724.16

2 Claims



1. A digital filter comprising:

a source of coefficient data;

a Booth decoder provided with a plurality of Booth decoding portions providing a set of three coefficient control signals relative to three bits of coefficient data supplied to each Booth decoding portion, wherein at least one coefficient data bit supplied to each adjacent Booth decoding portion is supplied in common;

plural sets of Booth control coefficient storage elements, each set of Booth control coefficient storage elements equal in number to the Booth decoding portions, with a Booth control coefficient output from Booth decoding portions being connected to inputs of each set of the Booth control coefficient storage elements, wherein each Booth control coefficient storage element has a control input;

a multiplicand data source;

a plurality of second data storage elements equal in number to the plural sets of Booth control coefficient storage elements, with each of the plurality of second data storage elements being connected to receive multiplicand data from the multiplicand data source, wherein each second data storage element has a control input;

a plurality of multiplier circuit portions equal in number to the plurality of second data storage elements, said plurality of multiplier circuit portions each being connected to an output from each of the second data storage elements and to an output from each of the Booth control coefficient storage elements;

a control signal generator producing control signals and being connected to the control input of each Booth control coefficient storage element and the control input of each of the second data storage elements to enable transfer of plural sets of Booth control coefficient data from the Booth decoder portions to the plural sets of Booth control coefficient storage elements and a subsequent parallel transfer of the plural sets of Booth control coefficient data from each set of the Booth control coefficient storage elements to each of the multiplier circuit portions and to enable parallel transfer of multiplicand data from each of the second data storage elements to each of multiplier circuit portions to form partial products; and

an adding circuit connected to the multiplier circuit portions to form a sum of outputs from the multiplier circuit portions.

5,781,463

ADAPTIVE DIGITAL FILTER WITH HIGH SPEED AND HIGH PRECISION COEFFICIENT SEQUENCE GENERATION

Tetsuya Ogawa; Naoki Kato, both of Chiba, and Shinya Akashi, Tokyo, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

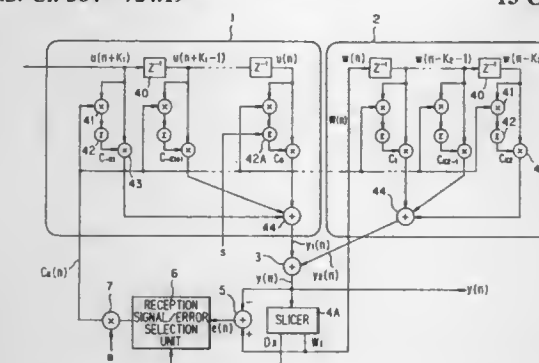
Filed Oct. 11, 1996, Ser. No. 731,235

Claims priority, application Japan, Mar. 29, 1996, 8-077284

Int. Cl.⁶ G06F 17/10

U.S. Cl. 364—724.19

13 Claims



1. An adaptive digital filter for removing intersymbol interference generated in a code sequence in a transmission path, comprising:

finite impulse response digital filter means for performing a convolution calculation by multiplying the code sequence with a coefficient sequence; and

coefficient calculation means for generating, when a calculation result from said finite impulse response digital filter means belongs to a predetermined numerical value region other than a plurality of numerical value regions which are defined in advance in correspondence with code values of the code sequence, the coefficient sequence on the basis of a predetermined value which belongs to one of the plurality of numerical value regions closest to the predetermined numerical value region.

5,781,464

APPARATUS AND METHOD FOR INCREMENTING FLOATING-POINT NUMBERS REPRESENTED IN DIFFERENT PRECISION MODES

Anup S. Mehta, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

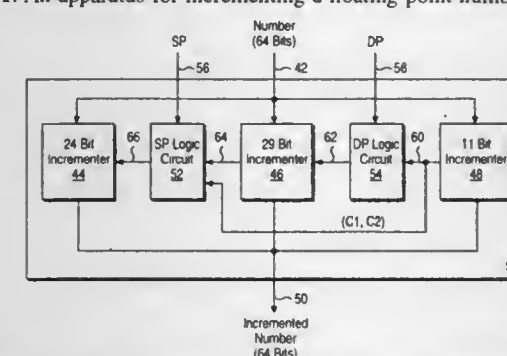
Filed Dec. 20, 1995, Ser. No. 575,881

Int. Cl.⁶ G06F 7/50

U.S. Cl. 364—748.01

18 Claims

1. An apparatus for incrementing a floating-point number represented in one of a plurality of precision modes, said apparatus comprising:



sented in one of a plurality of precision modes, said apparatus comprising:

a plurality of incrementers coupled to one another, each incrementer being associated with at least one of said plurality of precision modes; circuitry coupled to said plurality of incre-

menters to partition said floating-point number into a plurality of bit segments, each bit segment having an associated number; and

a logic circuit coupled between a pair of said incrementers for controlling incrementing of said bit segments.

5,781,465

METHOD AND APPARATUS FOR FAST CARRY GENERATION DETECTION AND COMPARISON

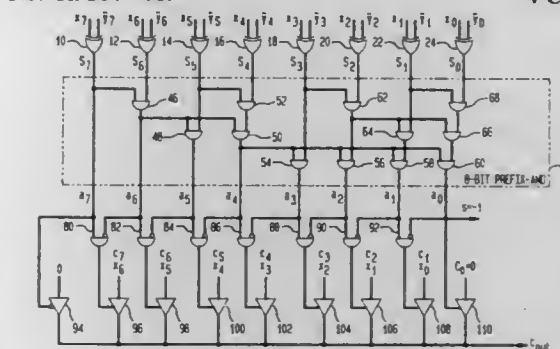
David R. Lutz, and D. N. Jayasimha, both of Columbus, Ohio, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 22, 1995, Ser. No. 577,952

Int. Cl.⁶ G06F 7/02

U.S. Cl. 364—769

4 Claims



1. An apparatus for comparing a first n bit two's complement binary number $x_{n-1}, x_{n-2}, \dots, x_0$ and a second n bit two's complement binary number $y_{n-1}, y_{n-2}, \dots, y_0$, comprising:

means for forming a sum word S by performing a bit wise EXCLUSIVE-OR of the first number and a one's complement of the second number, the sum word S having a plurality of bits in the form $s_{n-1}, s_{n-2}, \dots, s_0$, where s_0 is a lowest order s bit;

means for determining a value i corresponding to a lowest order consecutive set bit s_i ;

means for selecting a carry bit c_i , where c_i is defined by:

$c_i = 0$ when $s_{i-1} = 0$, and when $i \neq 0$ and $s_{i-1} \neq 0$, c_i is defined by least one of

a) $c_i = x_{i-1}$

b) $c_i = y_{i-1}$

c) $c_i = x_{i-1} \cap y_{i-1}$; and

means for EXCLUSIVE-ORING x_{n-1}, y_{n-1} and c_i to produce a sign bit, the first and second numbers being equal when $i=0$, the first number being greater than the second number when the sign bit=1 and $i \neq 0$, and the first number being less than the second number when the sign bit=0 and $i \neq 0$.

5,781,466

SEMICONDUCTOR MEMORY WITH BUILT-IN CACHE

Yasuhiro Tanaka; Tetsuya Tanabe, and Satoru Tanol, all of Tokyo, Japan, assignors to Oki Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 365,970, Dec. 29, 1994, Pat. No.

5,596,521. This application Oct. 30, 1996, Ser. No. 739,970

Claims priority, application Japan, Jan. 6, 1994, 6-000210;

Jan. 11, 1994, 6-001298

Int. Cl.⁶ G11C 15/00

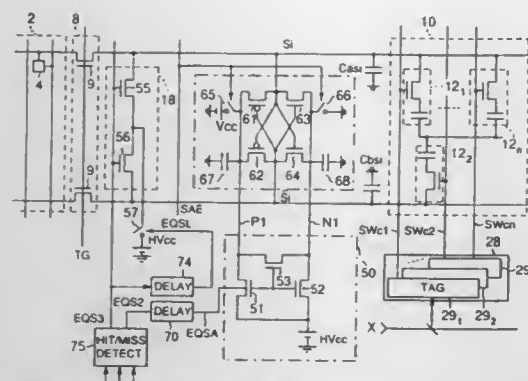
U.S. Cl. 365—49

25 Claims

1. A semiconductor memory device, comprising:

a memory cell array for storing data, having a plurality of memory cells;

a plurality of pairs of bit lines extending parallel to each other and coupled to the memory cells, to transfer data to and from the memory cells, each of said pairs of bit lines including a first bit line and a second bit line;



- a plurality of word lines extending perpendicular to said bit line pairs and coupled to the memory cells, for controlling the transfer of data to and from the memory cells via said bit line pairs;
- a plurality of first switching elements coupled to said bit line pairs, respectively;
- a plurality of pairs of sense lines coupled to said bit line pairs via said first switching elements, respectively;
- a plurality of sense amplifiers coupled to said sense line pairs, for amplifying data on said sense line pairs, each of said sense amplifiers being supplied with a first potential and a second potential for use in amplifying data on said sense lines;
- a plurality of sense line equalizing circuits, each of which is coupled to one of said sense line pairs for coupling one sense line of one of said sense line pairs to the other sense line thereof in response to a first control signal;
- a signal generating circuit for producing a second control signal which has a timing delayed from the first control signal;
- a plurality of sense line charging circuits each of which is coupled to one of said sense line pairs for charging one of said sense line pairs to a third potential which is intermediate between the first and second potentials in response to the second control signal; and
- a plurality of cache cells coupled to said pairs of sense lines for temporarily storing data, each of said cache cells including a third switching element coupled to one of the sense lines of said sense line pairs and a storage capacitor having a first terminal, coupled to the third switching element, and a second terminal.

5,781,467

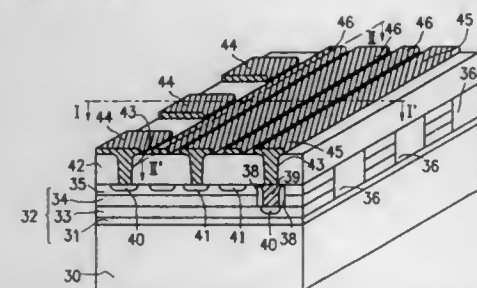
DECODING METHOD FOR ROM MATRIX HAVING A SILICON CONTROLLED RECTIFIER STRUCTURE
Jemmy Wen, Hsinchu City, Taiwan, assignor to United Integrated Circuits Corp., Hsinchu City, Taiwan

Filed Aug. 6, 1997, Ser. No. 907,004

Claims priority, application Taiwan, May 13, 1997, 86106329
Int. Cl.⁶ G11C 13/00

U.S. Cl. 365—103

8 Claims



I. A decoding method for a silicon controlled rectifier ROM matrix comprised of at least a column of memory units and at least a row of memory units, wherein memory units of a respective row are electrically coupled to a common triggering word line electrode and each row of memory units is electrically coupled to a respective triggering word line electrode, and wherein memory units of a

respective column are electrically coupled to a common bit line electrode and each column is coupled to a respective bit line electrode,

wherein each memory unit comprises a first PNP transistor having a base terminal electrically coupled to a triggering word line electrode and emitter terminal electrically coupled to a bit line electrode, and a second NPN transistor having an emitter terminal electrically coupled to a common emitter terminal electrode,

comprising steps of:

- selecting a memory unit for memory read by applying a first voltage to a triggering word line electrode connected to a particular memory unit while applying a second voltage to triggering word line electrodes connected to memory units other than the particular memory unit, wherein the second voltage is greater than the first voltage;
- applying the first voltage to a bit line electrode connected to the particular memory unit while applying a third voltage to bit line electrodes of memory units other than the particular memory unit, wherein the third voltage is less than both the first and the second voltages;
- applying the third voltage to the common electrode; and
- decoding by sensing current flowing in the common electrode.

5,781,468

SEMICONDUCTOR MEMORY DEVICE COMPRISING TWO KINDS OF MEMORY CELLS OPERATING IN DIFFERENT ACCESS SPEEDS AND METHODS OF OPERATING AND MANUFACTURING THE SAME

Ryuichi Matsuo; Tomohisa Wada; Kazutoshi Hirayama, and Shigeki Ohbayashi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 469,161, Jun. 6, 1995, Pat. No. 5,663,905.

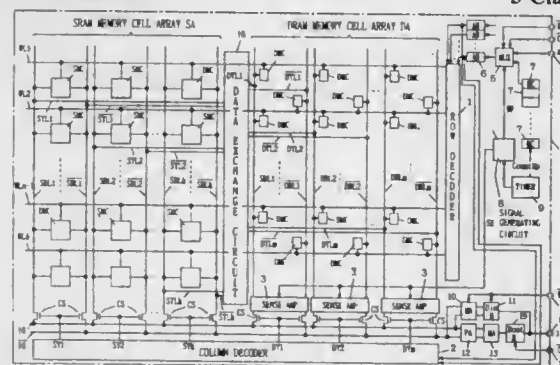
This application May 6, 1997, Ser. No. 851,757

Claims priority, application Japan, Aug. 30, 1994, 6-205340;
Oct. 31, 1994, 6-267752; Jan. 18, 1995, 7-6069

Int. Cl.⁶ G11C 11/24

U.S. Cl. 365—149

3 Claims



I. A method of operating a semiconductor memory device comprising:

- a plurality of word lines arranged in a plurality of rows;
 - a plurality of first bit line pairs arranged in a plurality of columns;
 - a plurality of first memory cells arranged corresponding to any intersecting points of said plurality of word lines and said plurality of first bit line pairs, each having a first access rate and connected to a corresponding word line and a corresponding first bit line pair;
 - a second bit line pair arranged crossing said plurality of word lines;
 - a plurality of second memory cells arranged corresponding to any intersecting points of said plurality of word lines and said second bit line pair, each having a second access rate faster than said first access rate and connected to the corresponding word line and the second bit line pair;
- said method comprising the steps of:
- selecting any one of said plurality of word lines;

- latching data read to said second bit line pair from the second memory cell connected to said selected word line;
- latching data read to said plurality of first bit line pairs from the plurality of first memory cells connected to said selected word line;
- selecting one data from said latched data of the plurality of first memory cells;
- transferring said selected data to said second bit line pair; and
- transferring said latched data of the second memory cell to one of said plurality of first bit line pairs.

5,781,469

BITLINE LOAD AND PRECHARGE STRUCTURE FOR AN SRAM MEMORY

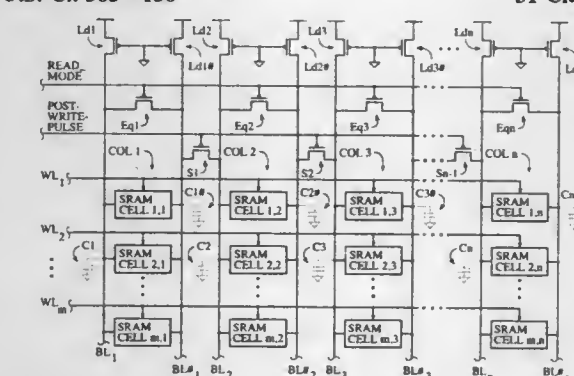
Saroj Pathak, Los Altos Hills, and James E. Payne, Boulder Creek, both of Calif., assignors to Atmel Corporation, San Jose, Calif.

Filed Jan. 24, 1997, Ser. No. 788,523

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—156

31 Claims



1. A memory array of memory cells comprising: multiple rows and at least four columns of memory cells; at least one respective bitline per each of said columns of memory cells, said bitlines being divided into a first group and a second group, said first group of bitlines including at least 75% of all bitlines and further being coupled to a reference power rail having a first voltage potential, said second group of bitlines including the remaining bitlines not in said first group, said second group of bitlines having a second voltage potential different from said first voltage potential, each of said bitlines having an intrinsic capacitance; and switching means for selectively coupling together all of said bit lines in said first and second group of bitlines.

5,781,470

PROTECTED WRITING METHOD FOR AN INTEGRATED MEMORY CIRCUIT AND A CORRESPONDING INTEGRATED CIRCUIT

Laurent Sourgen, Aix-en-Provence, and Sylvie Wuidart, Pourrieres, both of France, assignors to SGS-Thomson Microelectronics, S.A., France

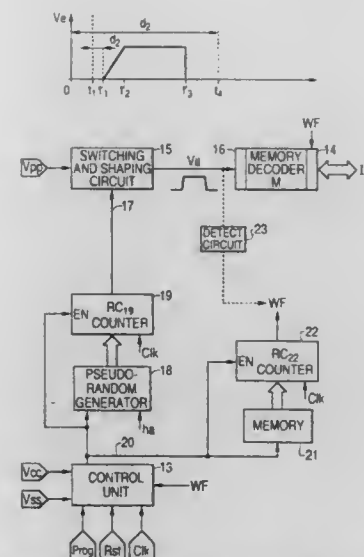
Filed Mar. 21, 1996, Ser. No. 621,185

Claims priority, application France, Mar. 21, 1995, 95 03294
Int. Cl.⁶ G11C 11/34

U.S. Cl. 365—185.04

20 Claims

1. A method for operating a portable data module which includes a programmable non-volatile memory, comprising the steps of:



5,781,471

PMOS NON-VOLATILE LATCH FOR STORAGE OF REDUNDANCY ADDRESSES

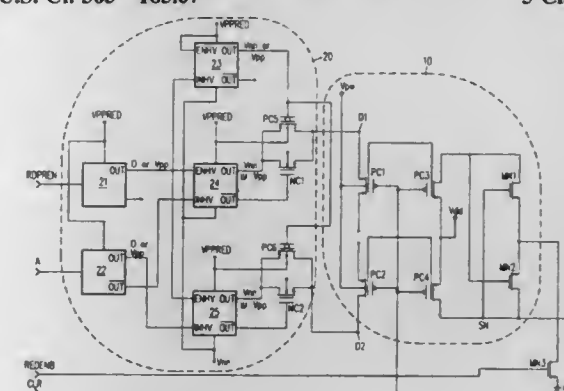
Vikram Kowshik, San Jose, and Andy Teng-Feng Yu, Palo Alto, both of Calif., assignors to Programmable Microelectronics Corporation, San Jose, Calif.

Filed Aug. 15, 1997, Ser. No. 911,816

Int. Cl.⁶ G11C 13/00

U.S. Cl. 365—185.07

5 Claims



1. A non-volatile latch comprising: a first PMOS memory cell; a second PMOS memory cell; and a cross-coupled static latch comprising third and fourth PMOS memory cells and first and second NMOS transistors, wherein the floating gates of said first and third PMOS memory cells are coupled together and the floating gates of said second and fourth PMOS memory cells are coupled together.

5,781,472

BIT MAP ADDRESSING SCHEMES FOR FLASH/ MEMORY

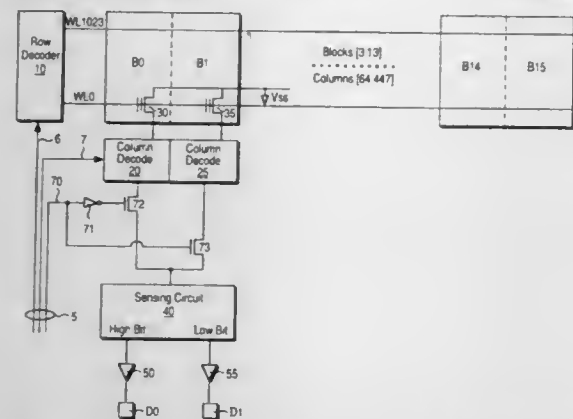
Sherif Sweha, El Dorado Hills, and Mark E. Bauer, Cameron Park, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 749,835, Nov. 15, 1996, abandoned, which is a continuation of Ser. No. 423,547, Apr. 12, 1995, abandoned, which is a division of Ser. No. 253,902, Jun. 2, 1994, Pat. No. 5,497,354. This application May 2, 1997, Ser. No. 851,104

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—185.11

5 Claims



1. In a memory device, a write path circuit for writing data received at n inputs to a selected memory cell that stores n bits, where n is greater than 1, the write path circuit comprising:

- first column decode circuit for addressing a first memory cell in response to an address;
- a second column decode circuit for addressing a second memory cell in response to the address;
- a control engine for encoding the n bits of data received at the n inputs and for providing at least one programming pulse corresponding to the encoded n bits of data to the selected memory cell; and
- a selector circuit for selecting the first column decode circuit to receive the at least one programming pulse in response to a portion of the address such that the first memory cell stores the n bits.

5,781,473

VARIABLE STAGE CHARGE PUMP

Jahanshir J. Javanifard, Sacramento; Kerry D. Tedrow, Orangevale; Jin-Lien Lin, Rancho Cordova; Jeffrey J. Evertt, Orangevale, and Gregory E. Atwood, San Jose, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

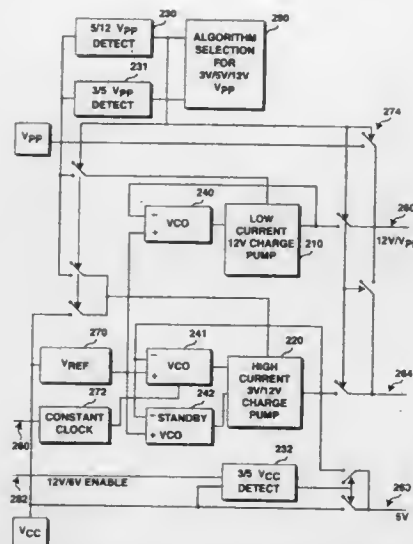
Division of Ser. No. 537,233, Sep. 29, 1995, Pat. No. 5,602,794. This application Oct. 4, 1996, Ser. No. 720,944

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—185.18

5 Claims

- 1. A memory device comprising:
 - an array of memory cells;
 - a variable stage charge pump comprising:
 - a first charge pump;
 - a second charge pump;
 - a first switch coupling an output of the first charge pump to an input of the second charge pump;
 - a second switch coupling an input of the first charge pump to the input of the second charge pump;



wherein the first and second charge pumps are series-coupled to selected memory cells of the array of memory cells when the first switch is in a first position and the second switch is in a second position, wherein the first and second charge pumps are parallel-coupled to the selected memory cells when the first switch is in the second position and the second switch is in the first position.

5,781,474

PARALLEL PROGRAMMING METHOD OF MEMORY WORDS AND CORRESPONDING CIRCUIT

Mauro Sali; Fabio Tassan Caser, both of Milan, and Stefan Schippers, Peschiera Del Garda, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy.

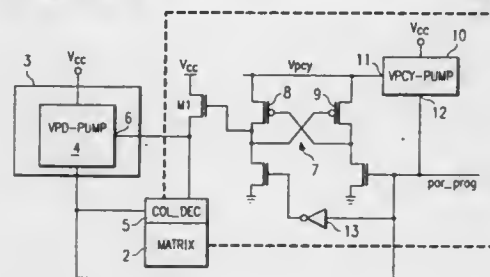
Filed Sep. 30, 1996, Ser. No. 722,378

Claims priority, application European Pat. Off., Sep. 29, 1995, 95830406

Int. Cl.⁶ G11C 11/34

U.S. Cl. 365—185.18

20 Claims



- 7. A method for programming electrically programmable non-volatile semiconductor memory devices having a matrix of memory cells, comprising the steps of:
 - connecting a source terminal of each cell to be programmed to a first reference voltage;
 - connecting a control gate terminal of each cell to be programmed with a second reference voltage;
 - if a single byte is to be programmed, then connecting a drain terminal of each cell with a boosted voltage; and

if multiple bytes are to be programmed in parallel, then connecting said drain terminal of each cell to be programmed with a supply voltage;

wherein said boosted voltage is higher than said supply voltage.

5,781,475

SIMPLIFIED PAGE MODE PROGRAMMING CIRCUIT FOR EEPROM REQUIRING ONLY ONE HIGH VOLTAGE LINE FOR SELECTING BIT LINES

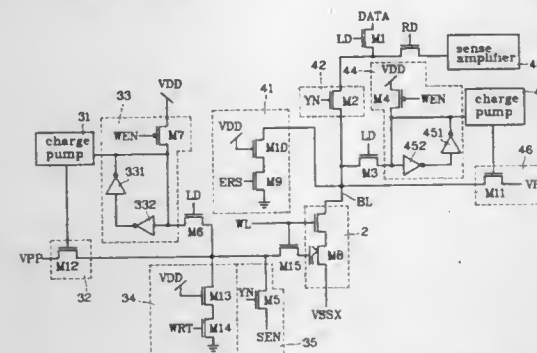
Fu-Chung Wang, and Shao-Yi Wu, both of Hsinchu, Taiwan, assignors to Holtek Microelectronics, Inc., Hsinchu, Taiwan

Filed May 15, 1997, Ser. No. 856,917

Int. Cl.⁶ G11C 16/04

U.S. Cl. 365—185.18

2 Claims



1. An apparatus for page mode programming of an EEPROM cell array, comprising:

- a gate potential control means connected to a control gate of said EEPROM cell, wherein said gate potential control means comprises a first charge pump for providing a first high voltage to said control gate of said EEPROM cell;
- a bit line potential control means connected to a plurality of bit lines of said EEPROM cell, wherein said bit line potential control means comprises a second charge pump for providing a second high voltage to the bit lines of said EEPROM cell; further wherein said gate potential control means comprises:
 - a load write buffer having first and second ends, said first end of said load write buffer is connected to said first charge pump which is controlled by an enable signal, while said second end of said load write buffer is connected to a word line of said EEPROM cell through a first transistor which is controlled by a latch signal;

an erase control means comprising a second transistor, when data latched in said load write buffer is logical "1", said second transistor is not conducting, thus said first charge pump is turned off to keep said EEPROM cell standing by, on the other hand, when data latched in said load write buffer is logical "0", said second transistor is conducting which turns on said first charge pump to send a high voltage of about 21V into said control gate of said EEPROM cell, therefore said EEPROM cell performs erasing;

- a write control means which is controlled by a write control signal to send a logical "0" into said word line of said EEPROM cell for writing; and
- a word line path control means which is controlled by a control gate control signal to determine whether or not to send a control gate control signal SEN into said word line of said EEPROM cell.

5,781,476

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE
Koichi Seki, Hino; Takeshi Wada, Akishima; Tadashi Muto, Iruma; Kazuyoshi Shoji; Yasuro Kubota, both of Akishima, and Hitoshi Kume, Musashino, all of Japan, assignors to Hitachi, Ltd., and Hitachi ULSI Engineering Co., Ltd., both of Tokyo, Japan

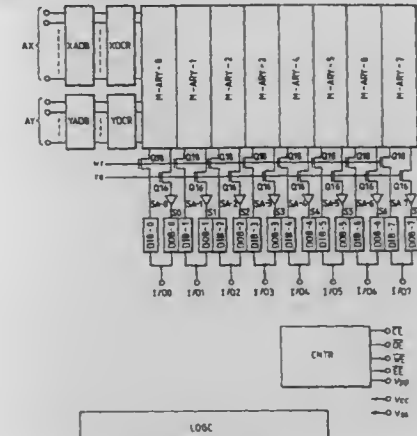
Continuation of Ser. No. 249,899, May 26, 1994, which is a continuation-in-part of Ser. No. 144,500, Nov. 2, 1993, abandoned, and Ser. No. 888,447, May 28, 1992, abandoned, which is a continuation of Ser. No. 567,391, Aug. 14, 1990, abandoned, said Ser. No. 144,500 is a continuation of Ser. No. 474,994, Feb. 5, 1990, abandoned. This application Jun. 1, 1995, Ser. No. 456,797

Claims priority, application Japan, Aug. 15, 1989, 1-210262; Dec. 8, 1989, 1-317477; Jan. 25, 1990, 2-13614

Int. Cl.⁶ G11C 11/34

U.S. Cl. 365—185.22

37 Claims



1. A semiconductor nonvolatile memory device, formed on a semiconductor chip, in which external address signals are supplied from first external terminals, comprising:

- a plurality of nonvolatile memory cells; and
- a circuit including:
 - a verify address generating circuit for sequentially generating verify address signals which indicate predetermined ones of said plurality of nonvolatile memory cells;
 - an erasing control circuit responsive to an external instruction supplied from second external terminals of the device for executing an erase operation and an erase verifying operation for the nonvolatile memory cells indicated by the verify address signals to guarantee an adequate erase margin; and
 - an output circuit for outputting an indication of an internal condition of the device including the status of the erase verifying operation to outside of the semiconductor non-volatile memory device.

5,781,477

FLASH MEMORY SYSTEM HAVING FAST ERASE OPERATION

Darrell D. Rinerson, Cupertino, Calif.; Roger R. Lee, Boise, Id., and Christophe J. Chevallier, Palo Alto, Calif., assignors to Micron Quantum Devices, Inc., Santa Clara, Calif.

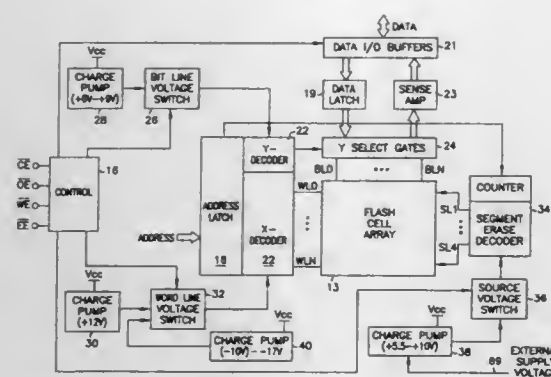
Filed Feb. 23, 1996, Ser. No. 604,815

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—185.29

46 Claims

- 1. A flash memory system powered by an external primary voltage source, the system including:
 - an array of flash memory cells arranged in rows and columns, with each of the cells including a source, a drain, a channel region intermediate the drain and source, a floating gate disposed over the channel region and a control gate disposed over the floating gate, with the cells located in one of the array columns having their drains connected to a common bit



line and with the cells in one of the rows having their control gates connected to a common word line;

a controller operably coupled to the array of flash cells, said controller being configured to control the operation of the memory system, said controller comprising

(a) read circuitry configured to read the flash memory cells; (b) program circuitry configured to program the flash cells; and

(c) erase circuitry configured to erase the flash cells, with the erase circuitry including a first voltage source configured to apply a negative voltage, with respect to a memory circuit common, to the word line associated with the cells to be erased and a second voltage source configured to apply a positive voltage, with respect to the memory circuit common, to the source of the cells to be erased, with the positive voltage having a magnitude which is greater than a magnitude of the primary voltage source and with the second voltage source including a charge pump circuit powered by the primary voltage source which is configured to generate the positive voltage source and with the erase circuitry further including a sequencer configured to control the first and second voltage sources such that the negative and positive voltages are applied to the cells to be erased at different times.

5,781,478

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Ken Takeuchi, Tokyo, and Tomoharu Tanaka, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 747,823, Nov. 13, 1996, abandoned. This application Aug. 28, 1997, Ser. No. 919,470

Claims priority, application Japan, Nov. 13, 1995, 7-294057; Nov. 14, 1995, 7-295137; Apr. 19, 1996, 8-098626

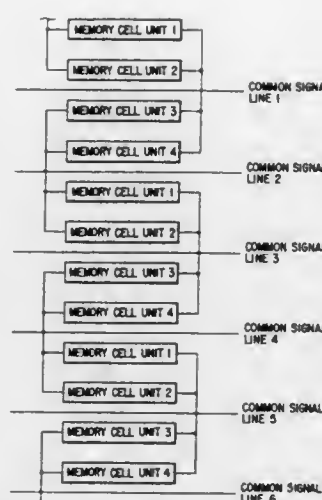
Int. Cl.⁶ G11C 16/00

U.S. Cl. 365—185.11

34 Claims

1. A non-volatile semiconductor memory device comprising: a memory cell array in which a plurality of memory cell units are arranged in a matrix form, said memory cell units each having a memory cell section and one or a plurality of select MOS transistors, said memory cell section having one or a plurality of non-volatile memory cells, and said select MOS transistors allowing said memory cell section to be electrically conducted to a common signal line, wherein one end of each of said memory cell units is connected to a first common signal line in a state that said plurality of $2n$ ($n > 2$) memory cell units, sharing a word line, have a contact in common; and

the other end of each of said memory cell units is connected to a second common signal line in a state that n memory cell units, sharing a word line and having no contact in common at one end of said memory cell unit, have a contact in common,



and n memory cell units, sharing a contact at one end of said memory cell unit, have a contact in common.

5,781,479

MEMORY DEVICE

Koichi Kimura, Yokohama; Toshihiko Ogura, Ebina; Hiroaki Aotsu, Yokohama; Mitsuru Ikegami, Yamakitamachi; Tadashi Kuwahara, Yokohama; Hiromichi Enomoto, and Tadashi Kyoda, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 694,599, Aug. 9, 1996, which is a continuation of Ser. No. 582,906, Jan. 4, 1996, Pat. No.

5,615,155, which is a continuation of Ser. No. 435,959, May 5, 1995, Pat. No. 5,493,528, which is a continuation of Ser. No. 294,407, Aug. 23, 1994, Pat. No. 5,448,519, which is a continuation of Ser. No. 855,843, Mar. 20, 1992, Pat. No. 5,450,342, which is a continuation-in-part of Ser. No. 349,403, May 8, 1989, Pat. No. 5,175,838, which is a continuation of Ser. No. 240,380, Aug. 29, 1988, Pat. No. 4,868,781, which is a continuation of Ser. No. 779,676, Sep. 24, 1985, abandoned, said Ser. No. 855,843 is a continuation-in-part of Ser. No. 816,583, Jan. 3, 1992, abandoned, which is a continuation of Ser. No.

314,238, Feb. 22, 1989, Pat. No. 5,113,487, which is a continuation of Ser. No. 864,502, May 19, 1986, abandoned, said Ser. No. 816,583 is a continuation-in-part of Ser. No. 349,403, May 8, 1989, Pat. No. 5,175,383, which is a continuation-in-part of Ser. No. 240,380, Aug. 29, 1988, Pat. No. 4,868,781, which is a continuation of Ser. No. 779,676, Sep. 24, 1985, abandoned.

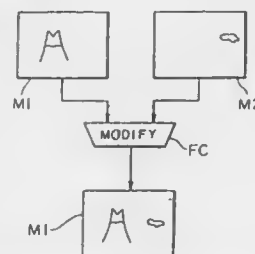
This application May 9, 1997, Ser. No. 853,713

Claims priority, application Japan, Oct. 5, 1984, 59-208266; May 20, 1985, 60-105844; May 20, 1985, 60-105845; May 20, 1985, 60-105847; May 20, 1985, 60-105850

Int. Cl.⁶ G11C 13/00

U.S. Cl. 365—189.01

5 Claims



1. A semiconductor memory device comprising: a first external terminal and a second external terminal; a memory unit including a plurality of random access memory elements; and

an access unit coupled with said first external terminal, said second external terminal and said memory unit, wherein said access unit accesses said memory unit during a bus cycle,

wherein data supplied from an external bus by said first external terminal is written into said memory unit during a bus cycle of a data write operation,

wherein one mode of a plurality of data write operation modes is designated in said access unit in accordance with an external control signal supplied from said external bus by said second external terminal,

wherein during a mode designation bus cycle before said bus cycle of said data write operation, data supplied by said first external terminal is not written into said memory unit, but said one mode of said plurality of data write operation modes is designated in said access unit in accordance with said external control signal supplied by said second external terminal, and

wherein during said bus cycle of said data write operation after said mode designation bus cycle, said data of said bus cycle of said data write operation being supplied from said external bus by said first external terminal is written into said memory unit in accordance with said one mode designated previously in said mode designation bus cycle.

5,781,480

PIPELINED DUAL PORT INTEGRATED CIRCUIT MEMORY

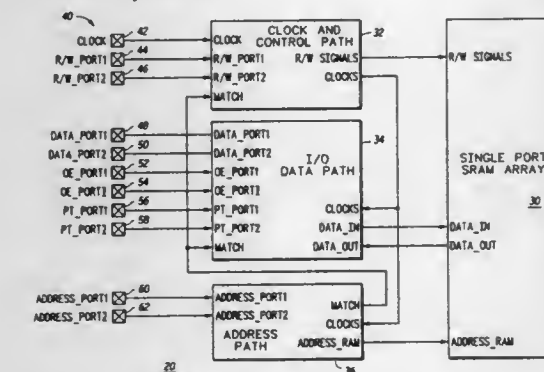
Scott George Nogle; Alan S. Roth, and Shuang Li Ho, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 29, 1997, Ser. No. 902,009

Int. Cl.⁶ G11C 16/04

U.S. Cl. 365—189.04

19 Claims



1: An integrated circuit memory, comprising:

a plurality of memory cells, each of the plurality of memory cells being coupled to a single word line and to a single bit line pair;

an address decoder, coupled to the plurality of memory cells, for selecting a memory cell of the plurality of memory cells in response to receiving an address;

a first address port, coupled to the address decoder, for providing a first address to the address decoder for accessing the plurality of memory cells;

a second address port, coupled to the address decoder, for providing a second address to the address decoder for accessing the plurality of memory cells;

a read data port, coupled to the plurality of memory cells, for reading data from the plurality of memory cells in response to either the first or the second address;

a write data port, coupled to the plurality of memory cells, for writing data to the plurality of memory cells in response to either the first or the second address; and

a control circuit, coupled to the address decoder, to the first and second address ports, and to the read and write data ports, the control circuit for controlling access to the plurality of memory cells, wherein substantially simultaneous requests for access to the plurality of memory cells are serviced sequentially within a single clock cycle of a clock signal of a data processor accessing the integrated circuit memory.

5,781,481

SEMICONDUCTOR MEMORY DEVICE WITH REDUCED LEAKAGE CURRENT AND IMPROVED DATA RETENTION

Itsuro Iwakiri, Miyazaki, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

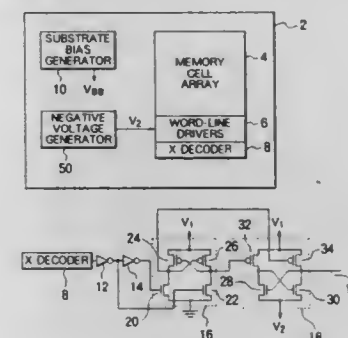
Filed Oct. 30, 1996, Ser. No. 742,181

Claims priority, application Japan, Nov. 7, 1995, 7-288790

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—189.11

14 Claims



1. A semiconductor memory device having a substrate, data storage elements in which data are represented by a first voltage level and a second voltage level higher than the first voltage level, transfer transistors formed in said substrate for controlling access to said data storage elements, word lines for controlling said transfer transistors, word-line drivers for driving respective word lines, a decoder for selecting said word lines, and a substrate bias generator for generating a third voltage level lower than said first voltage level and supplying said third voltage level to said substrate, comprising:

a negative voltage generator coupled to said word-line drivers, for generating a fourth voltage level substantially lower than said third voltage level and supplying said fourth voltage level to said word-line drivers, said voltage generator being independent of said substrate bias generator; wherein

each of said word-line drivers has a level-shifting circuit for receiving a signal from said decoder and supplying said fourth voltage level to a corresponding one of said word lines, thereby turning off a corresponding one of said transfer transistors, responsive to the signal received from said decoder.

5,781,482

SEMICONDUCTOR MEMORY DEVICE

Toshikazu Sakata, Miyazaki, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1997, Ser. No. 829,284

Claims priority, application Japan, Jul. 8, 1996, 8-177836

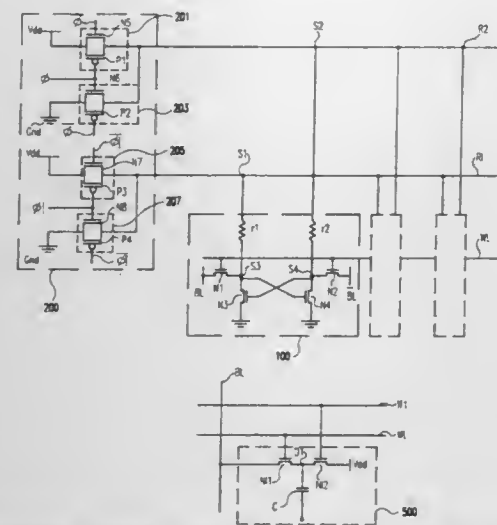
Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—189.11

17 Claims

1. A semiconductor memory device comprising:

a plurality of word lines; a plurality of bit lines; a plurality of set/reset lines;



a plurality of switch circuits each of which is coupled to one of said set/reset lines for applying either a first potential or a second potential in response to a control signal; and
a plurality of memory cells for storing data therein, each of said memory cells having
a first node coupled to one of said word lines,
a second node coupled to one of said bit lines,
a third node coupled to receive the first potential, and
a fourth node coupled to one of said set/reset lines.

5,781,483

DEVICE AND METHOD FOR REPAIRING A MEMORY ARRAY BY STORING EACH BIT IN MULTIPLE MEMORY CELLS IN THE ARRAY

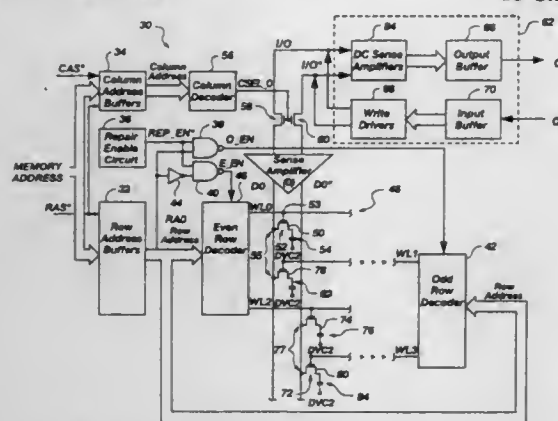
Michael A. Shore, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Dec. 31, 1996, Ser. No. 775,510

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—200

18 Claims



1. An apparatus for repairing a memory array including a pair of complementary digit lines through which a plurality of memory cells activated by a plurality of word lines selected in accordance with row addresses may be accessed, the apparatus comprising:
enabling circuitry for enabling repair of the memory array; and
word line energizing circuitry coupled to the enabling circuitry for energizing more than one of the word lines in the memory array in accordance with each row address in response to the enabling circuitry enabling repair of the array so more than one of the memory cells accessible through the pair of complementary digit lines may be accessed for each row address.

5,781,484
SEMICONDUCTOR MEMORY DEVICE
Koji Tanaka; Mikio Asakura, and Kenichi Yasuda, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

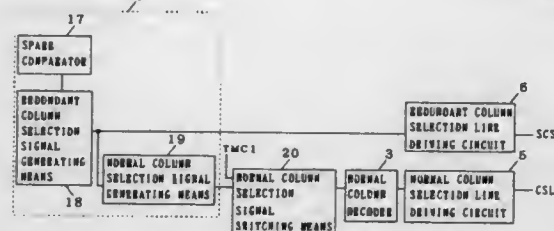
Filed May 7, 1997, Ser. No. 852,643

Claims priority, application Japan, Dec. 12, 1996, 8-332064

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—200

13 Claims



1. A semiconductor memory device, comprising:
a plurality of first signal lines used to select normal memory cells;
a decoder for selecting one of said plurality of first signal lines to be active in response to an address signal;
a plurality of second signal lines each capable of being used to replace one of said plurality of first signal lines which is connected to a defective normal memory cell to select a spare memory cell for replacement of said defective normal memory cell;
a plurality of spare comparators provided correspondingly to said plurality of second signal lines, each capable of being used to detect an address signal associated with said replaced one of said plurality of first signal lines;
a plurality of spare selection signal generating means each capable of being used to generate a spare selection signal, for enabling activation of one of said plurality of second signal lines related to said address signal associated with said replaced one of said plurality of first signal lines when one of said plurality of spare comparators detects said address signal associated with said replaced one of said plurality of first signal lines;
normal selection signal generating means for generating a normal selection signal to disable said decoder so that said plurality of first signal lines do not become active when said one of said plurality of spare comparators detects said address signal associated with said replaced one of said plurality of first signal lines; and
selection signal switching means for inverting said normal selection signal in response to a test-mode signal, wherein said replaced one of first signal lines is enabled to be active in response to said test-mode signal while said one of said plurality of second signal lines corresponding to said replaced one of said plurality of first signal lines is enabled to be active by one of said plurality of spare selection signal generating means in a test operation.

5,781,485

APPARATUS AND METHOD FOR CONTROLLING OPERATING MODE IN SEMICONDUCTOR MEMORY DEVICE

Ki-Jun Lee, and Jin-Ki Kim, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Nov. 30, 1995, Ser. No. 563,404

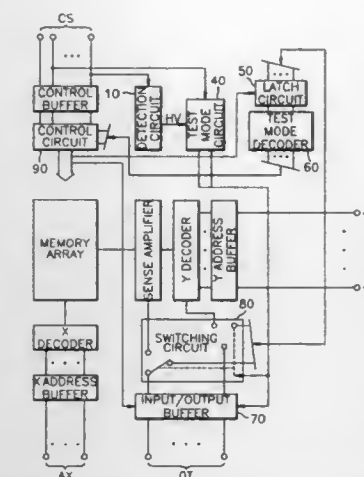
Claims priority, application Rep. of Korea, Nov. 30, 1994, 1994-32089

Int. Cl.⁶ G11C 13/00

U.S. Cl. 365—201

16 Claims

1. An operating mode controller for a semiconductor memory device having a user mode during which said semiconductor memory device performs user mode operations in response to user mode selection signals, and having a test mode during which said



semiconductor memory device performs test mode operations in response to test mode selection signals, said operating mode controller comprising:

- a user mode circuit for selectably supplying said user mode selection signals to said semiconductor memory device in accordance with user mode commands received from an external source;
- a test mode circuit for selectably supplying said test mode selection signals to said semiconductor memory device in accordance with test mode commands received from said external source; and
- a fusible circuit which disables said test mode circuit from supplying said test mode selection signals to said semiconductor memory device after said test mode is performed even when said test mode commands are received from said external source.

5,781,486

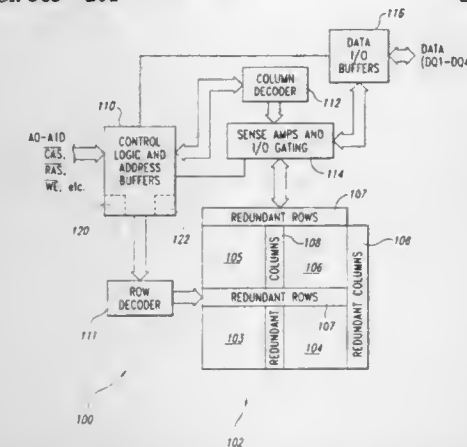
APPARATUS FOR TESTING REDUNDANT ELEMENTS IN A PACKAGED SEMICONDUCTOR MEMORY DEVICE
Todd A. Merritt, Boise, Id., assignor to Micron Technology Corporation, Boise, Id.

Filed Apr. 16, 1996, Ser. No. 633,133

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—201

15 Claims



1. A packaged semiconductor device having a die and a plurality of electrically conductive leads coupled to the die and extending from the packaged chip, the leads including address terminals for receiving address signals, the packaged semiconductor device comprising:

- a semiconductor circuit formed on the die and having a plurality of primary circuit elements and a plurality of redundant circuit elements, the plurality of primary and at least some of the redundant circuit elements being addressable by electrically conductive row and column lines based on an address

word applied to the address leads, the address word having a predetermined address bit length;
control and addressing circuitry coupled to the leads and the electrically conductive row and column lines for permitting communication with the plurality of primary and redundant circuit elements;
a test mode circuit formed on the die and coupled to the control and addressing circuitry to receive a predetermined signal applied to at least one of the leads to initiate an address compress test mode for the semiconductor circuit; and
a redundant element addressing circuit coupled to the control and addressing circuitry and at least one of the addressing leads to receive an element select signal externally applied to the at least one of the addressing leads, wherein the externally applied element select signal has a bit length less than the predetermined address bit length, wherein the redundant element addressing circuit outputs to the control and addressing circuitry a redundant element select signal in response to the externally applied element select signal, wherein the redundant element select signal instructs the control and addressing circuitry to access at least some of the plurality of redundant elements during the address compress test mode previously initiated by the test mode circuits, and wherein the control and addressing circuitry receives an address applied to a remainder of the addressing leads to address the at least some of the plurality of redundant elements.

5,781,487

BIT LINE SELECTION CIRCUIT

Seong Jin Jang, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

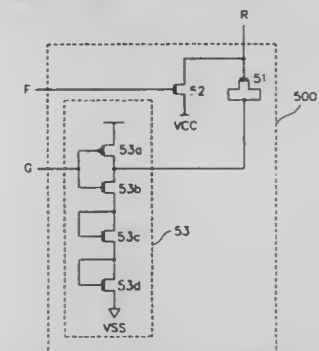
Filed Apr. 26, 1996, Ser. No. 637,917

Claims priority, application Rep. of Korea, Apr. 27, 1995, 10122/1995; Oct. 16, 1995, 35542/1995

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—204

19 Claims



10. A charging unit for sharing a prescribed amount of charges at a node of a selection circuit of a memory device, comprising:
a first transistor for preventing a potential at the node from falling below a first potential level; and
a capacitor for storing charges coupled between the node and a second potential level.

5,781,488

DRAM WITH NEW I/O DATA PATH CONFIGURATION
Lawrence C. Liu, Menlo Park, Calif.; Michael A. Murray, Bellevue, Wash., and Li-Chun Li, Los Gatos, Calif., assignors to Mosel Vitelic Corporation, San Jose, Calif.

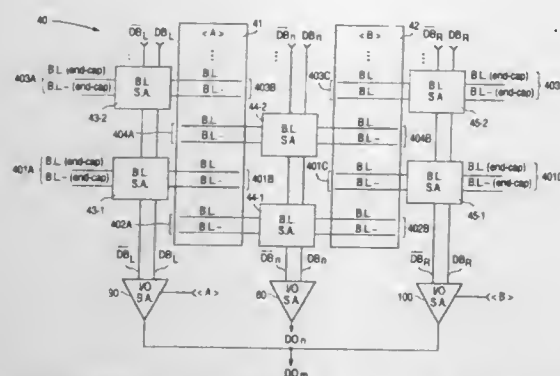
Filed Apr. 18, 1997, Ser. No. 844,541

Int. Cl.⁶ G11C 7/02

U.S. Cl. 365—207

21 Claims

1. A memory device comprising:
a first memory array and a second memory array;
a first column decoding circuit and a second column decoding circuit; and



a first external sense amplifier and a second external sense amplifier each having an input terminal and an output terminal, said input terminal of said first external sense amplifier receiving a first signal corresponding to the state of a memory cell selected from said first memory array via said first column decoding circuit, said input terminal of said second external sense amplifier receiving a second signal corresponding to the state of a memory cell selected from said second memory array via said second column decoding circuit, and said output terminal of said first and second external sense amplifiers being arranged to drive the same output node, wherein said first and second external sense amplifiers are capable of being placed in tristate, and in each read cycle a memory cell in one of said first and second memory arrays is selected and the external sense amplifier corresponding to the memory array in which no memory cell is selected is placed in tristate to eliminate data contention on said output node.

5,781,489

SEMICONDUCTOR STORAGE DEVICE

Toshiharu Okamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

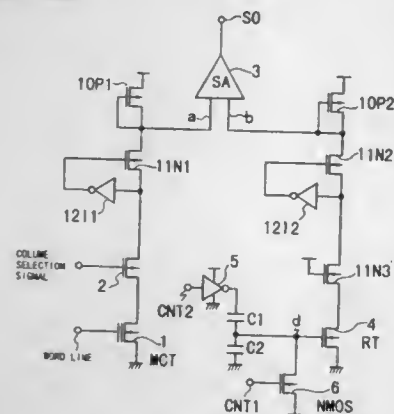
Filed May 30, 1997, Ser. No. 866,270

Claims priority, application Japan, May 30, 1996, 8-137148

Int. Cl.⁶ G11C 7/02

U.S. Cl. 365—208

4 Claims



1. A semiconductor storage device, comprising:
a memory cell transistor formed from an NMOS transistor of the stack gate type having a floating gate, a word line signal being supplied to the gate of said memory cell transistor;
a column selection transistor connected to said memory cell transistor, a column selection signal being supplied to the gate of said column selection transistor;
first and second capacitance elements connected in series between a power supply and the ground;
a reference transistor formed from an NMOS transistor of the single gate type, a potential at a junction between said first and second capacitance elements being supplied to the gate of said reference transistor in order to obtain a reference voltage from said reference transistor;

a discharge transistor connected to the gate of said reference transistor; and
a sense amplifier for comparing a voltage on said memory cell transistor side received via said column selection transistor with a voltage on said reference transistor side to differentially amplify the voltage on said memory cell transistor side; said first and second capacitance elements having capacitances which have a ratio substantially equal to a capacitance ratio of said memory cell transistor.

5,781,490

MULTIPLE STAGED POWER UP OF INTEGRATED CIRCUIT

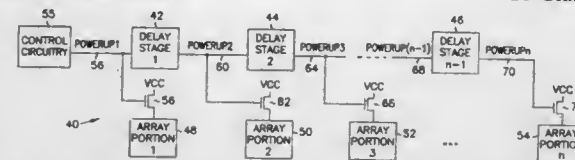
Manny K. F. Ma, and Troy A. Manning, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jul. 3, 1996, Ser. No. 675,007

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—226

21 Claims



8. A complementary metal-oxide semiconductor (CMOS) integrated circuit being powered by a supply voltage, the CMOS integrated circuit comprising:

a circuit portions including a first circuit portion and a second circuit portion;

control circuitry generating a first powerup control signal when the supply voltage is first applied to the CMOS integrated circuit, and further generating a second powerup control signal which is active a selected time delay after the first powerup control signal is active;

a first switch responsive to the first powerup control signal to couple the supply voltage to the first circuit portion when the first powerup control signal is active; and

a second switch responsive to the second powerup control signal to couple the supply voltage to the second circuit portion when the second powerup control signal is active.

5,781,491

MEMORY DEVICE HAVING DIVIDED CELL ARRAY BLOCKS TO WHICH DIFFERENT VOLTAGE LEVELS ARE APPLIED

Joo Sock Lee; Nho Kyung Park, both of Kyoungki-Do; Kyun Hyon Tchah, Seoul, and Dong Min Lee, Kyoungki-Do, all of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

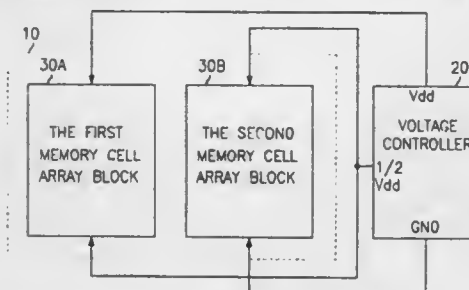
Filed Apr. 9, 1997, Ser. No. 835,621

Claims priority, application Rep. of Korea, Apr. 10, 1996, 1996-10844

Int. Cl.⁶ G11C 5/14

U.S. Cl. 365—227

6 Claims



1. A semiconductor memory device comprising:

a memory cell array including a plurality of N (integer, $N \geq 2$) cell array blocks, wherein the cell array blocks comprise a precharge means for providing a constant voltage for a pair of bit lines; and

a voltage control means for dividing a main supply voltage level vdd applied to the device into N sub-voltage levels, wherein a voltage difference between a supply voltage level of each of the cell array blocks and a ground voltage level of each of the cell array blocks is $(1/N) \times V_{dd}$ voltage.

5,781,492

SYSTEM AND METHOD FOR MAPPING MEMORY TO DRAM AFTER SYSTEM BOOT FROM NON-VOLATILE MEMORY

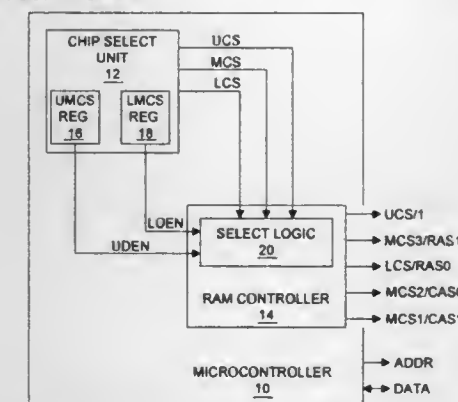
Robert P. Gittinger; Ronald W. Stence, and John P. Hansen, all of Austin, Tex., assignors to Advanced Micro Devices, Inc.

Filed Feb. 4, 1997, Ser. No. 808,609

Int. Cl.⁶ G11C 13/00

U.S. Cl. 365—230.01

17 Claims



1. A computer system, comprising:

a non-volatile memory containing a program to initiate the computer system;

a chip select unit coupled to dispatch a chip select signal to the non-volatile memory device during initiation of the computer system;

a pair of random access memory devices, wherein one of said pair of random access memory devices receives at least a portion of the program immediately after initiation; and

a random access memory controller coupled between the chip select unit and the non-volatile memory as well between the chip select unit and the random access memory devices, wherein the memory controller deactivates the chip select signal to the non-volatile memory while activating control signals to one of said pair of random access memory devices during a time after which the other of said pair of random access memory devices receives the copy.

5,781,493

SEMICONDUCTOR MEMORY DEVICE HAVING BLOCK WRITE FUNCTION

Shotaro Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 22, 1996, Ser. No. 754,368

Claims priority, application Japan, Nov. 24, 1995, 7-329961

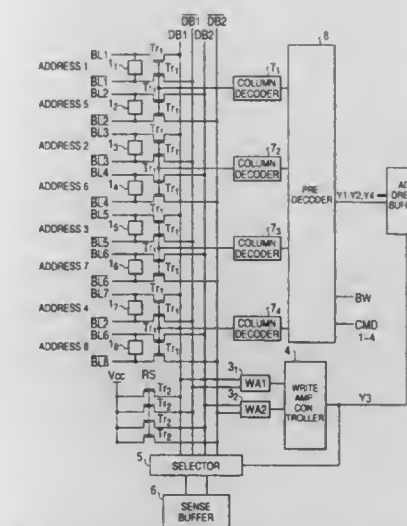
Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—230.03

4 Claims

1. A semiconductor memory device comprising:

a first data line;
a second data line;
a plurality of first bit lines respectively connected to said first data line through a plurality of first transfer gates;
a plurality of second bit lines respectively connected to a second data line through a plurality of second transfer gates;



a plurality of column select lines, each of said column select lines connected to a respective one of said first plurality of transfer gates and a respective one of said second plurality of transfer gates; an address buffer circuit for supplying all but prescribed bits of a supplied address as an input address; and a decoder circuit for simultaneously activating multiple column select lines corresponding to an input address when a block write signal is activated, and for activating a single column select line corresponding to said input address when said block write signal is not activated.

5,781,494

VOLTAGE PUMPING CIRCUIT FOR SEMICONDUCTOR MEMORY DEVICE

Yong-Cheol Bae; Sei-Seung Yoon, both of Seoul, and Dong-II Seo, Suwon, all of Rep. of Korea, assignors to Samsung Electric, Co., Ltd., Suwon, Rep. of Korea

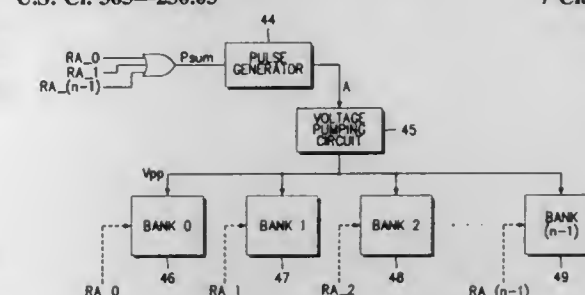
Filed Dec. 27, 1996, Ser. No. 782,896

Claims priority, application Rep. of Korea, Dec. 27, 1995, 95-59414

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—230.03

7 Claims



1. A semiconductor memory device comprising:
a memory cell array including at least two banks;
a desired number of voltage pumping circuits each for pumping an input voltage to a desired level;
said voltage pumping circuits being driven in response to at least two bank selection control signals received from a control circuit, the control circuit including:
a multi-pulse generation circuit for generating a sequential pulse signal if at least one of said banks is selected; and
a counter for generating a count signal in response to an output signal from said multi-pulse generation circuit.

5,781,495

SEMICONDUCTOR MEMORY DEVICE FOR MULTI-BIT OR MULTI-BANK ARCHITECTURES

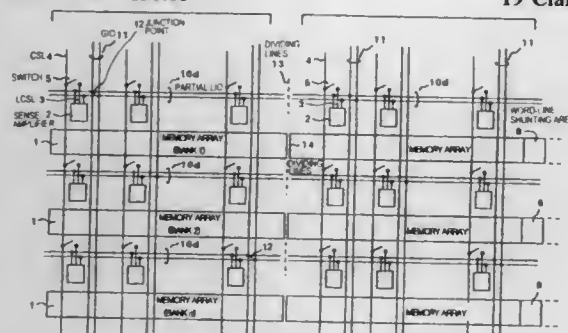
Kazutani Arimoto, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1997, Ser. No. 787,483

Claims priority, application Japan, Jul. 23, 1996, 8-193757
Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—230.03

19 Claims



1. A semiconductor memory device comprising:
 - a plurality of memory-cell arrays each comprising a plurality of memory cells arranged to form a matrix having rows and columns;
 - a plurality of sense amplifiers associated with each column of said memory-cell arrays;
 - a plurality of column-select lines each extending through said memory-cell arrays in each of said columns, said column-select lines associated with said sense amplifiers in each of said columns; and
 - a plurality of global input/output signal line pairs each disposed on said memory-cell arrays in each of said columns and coupled commonly to said sense amplifiers in said columns of said memory-cell arrays.

5,781,496

BLOCK WRITE POWER REDUCTION MEMORY WITH REDUCED POWER CONSUMPTION DURING BLOCK WRITE MODE

Ray Pinkham, Los Gatos, and Cheow F. Yeo, San Jose, both of Calif., assignors to Hyundai Electronics America, Inc., San Jose, Calif.

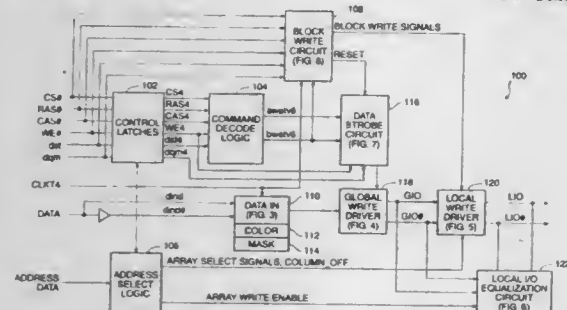
Continuation of Ser. No. 649,399, May 17, 1996, abandoned.

This application May 28, 1997, Ser. No. 864,267

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—230.03

36 Claims



1. A video memory device of the type having a normal write mode for writing to a single memory word per write cycle and a block write mode capable of writing to multiple memory words within a single write cycle, the memory device comprising:
 - a global write driver driving global input/output (I/O) lines;
 - a plurality of local write drivers, each driving local I/O lines, each of said local I/O lines coupled to write data to a number of memory cells;
 - control circuitry, coupled to said global write driver and to said plurality of local write drivers, adapted to generate block write control signals and normal write control signals;

said block write control signals causing said global I/O lines to freeze during a block write cycle and thereby suppress pre-charging of said global I/O lines as compared to said normal write mode.

5,781,497

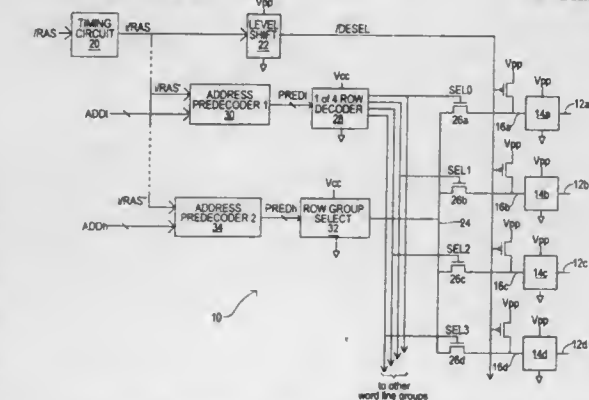
RANDOM ACCESS MEMORY WORD LINE SELECT CIRCUIT HAVING RAPID DYNAMIC DESELECT
Vipul Patel, San Jose, and Chitranjan N. Reddy, Los Altos Hills, both of Calif., assignors to Alliance Semiconductor Corp., San Jose, Calif.

Filed Aug. 2, 1996, Ser. No. 695,064

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—230.06

16 Claims



1. In a random access memory having at least one array of memory cells, a word line driver circuit, comprising:
 - a plurality of word lines;
 - a driver stage coupled to each word line, each driver stage including a first transistor of a first conductivity type having a source-drain path coupled between a word line and a first voltage and a second transistor of a second conductivity type having a source-drain path coupled between the word line and a reference voltage, the control gates of the first and second transistors being commonly coupled to a drive node;
 - a select circuit including
 - a passgate transistor associated with each drive stage, each passgate transistor having a source-drain path coupled between the drive node of its associated driver stage and a decode node, and
 - a pre-charge circuit coupled between the decode node and a second voltage, the second voltage being less than the first voltage,
 - said select circuit being responsive to at least one decode signal; and
 - a dynamic de-select circuit including a pull-up circuit coupled between the drive node and the first voltage and responsive to a first control signal.

5,781,498

SUB WORD LINE DRIVING CIRCUIT AND A SEMICONDUCTOR MEMORY DEVICE USING THE SAME

Jung Won Suh, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Ichon-shi, Rep. of Korea

Filed Dec. 6, 1996, Ser. No. 764,083

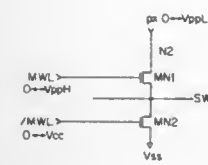
Claims priority, application Rep. of Korea, Dec. 8, 1995, 95-48041

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—230.06

17 Claims

1. In a semiconductor memory device having a hierarchical word line structure, a sub word line driving circuit comprising:
 - a pull-up driver that receives a word line boosting signal, is coupled to a sub word line, and has a gate directly connected to a main word line; and



a pull-down driver that is coupled between said sub word line and a ground voltage, and has a gate coupled to a main word line bar.

5,781,499

SEMICONDUCTOR MEMORY DEVICE

Yasuji Koshikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

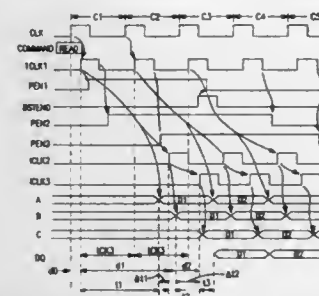
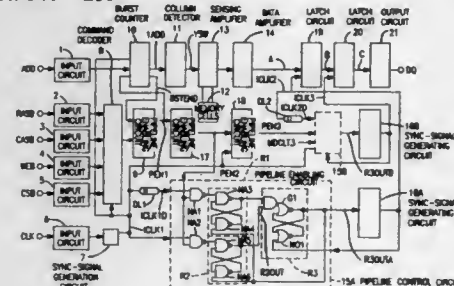
Filed Oct. 30, 1996, Ser. No. 741,285

Claims priority, application Japan, Nov. 10, 1995, 7-292919

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—233

12 Claims



1. A semiconductor memory device comprising at least:
 - first sync-signal generation circuit means that generates and outputs a first sync-signal in synchronization with any of a first clock inputted from the outside and a second and third clock inputted following said first clock;
 - first delay circuit means that delays said first sync-signal a prescribed time interval and outputs the result as a second sync-signal;
 - first latch circuit means that latches said second sync-signal;
 - second latch circuit means that latches said first sync-signal;
 - and third latch circuit means that detects that said first and second latch circuit means both latch said second sync-signal and said first sync-signal, respectively, and latches this detection;
- wherein output of said third latch circuit means controls a pipeline circuit.

5,781,500

METHOD AND CIRCUIT FOR GENERATING INTERNAL PULSE SIGNALS IN SYNCHRONOUS MEMORY

Jong Hoon Oh, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

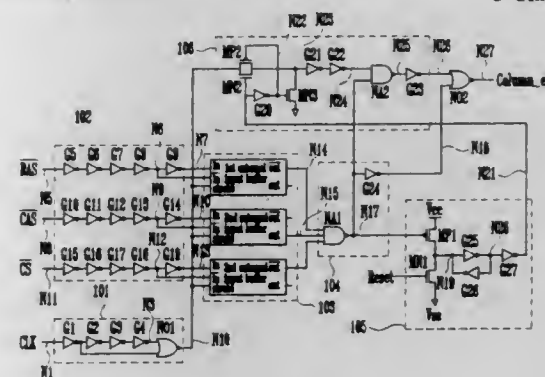
Filed May 2, 1997, Ser. No. 850,247

Claims priority, application Rep. of Korea, May 6, 1996, 1996-14688

Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—233

5 Claims



1. A method for generating internal pulse signals in a synchronous memory, comprising the steps of:
 - (a) generating a first pulse signal in response to a burst mode command to transfer an external column address to an internal column address line;
 - (b) generating a second pulse signal after the generation of said first pulse signal at said step (a) to transfer an internal column address from an internal column address counter to said internal column address line in each clock cycle until said burst mode operation is advanced by a predetermined burst length; and
 - (c) generating said first pulse signal and suppressing the generation of said second pulse signal, when a burst interrupt is generated in burst mode operation to perform said burst mode operation in response to a new external column address.

5,781,501

CIRCUIT AND METHOD FOR SECURING WRITE RECOVERY OPERATION IN A SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE

Kee Woo Park, and Seung Yeub Yang, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Ichon-shi, Rep. of Korea

Filed Jun. 26, 1997, Ser. No. 883,379

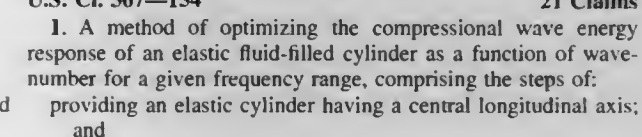
Claims priority, application Rep. of Korea, Jun. 27, 1996, 1996 24279

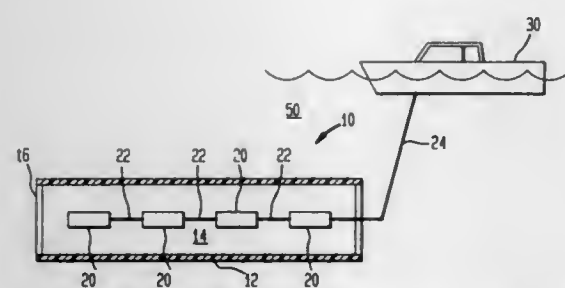
Int. Cl.⁶ G11C 8/00

U.S. Cl. 365—233

6 Claims

1. A write recovery security circuit for a semiconductor memory device, comprising:
 - external signal output means for outputting an external signal in response to a pulse signal, a external enable signal and a write recovery signal;
 - external signal latch means for performing a latch operation in response to said pulse signal, said external enable signal and said write recovery signal to latch an inverted one of said external signal from said external signal output means while a write recovery operation is performed; and
 - pulse generation means for supplying said pulse signal to said external signal output means and said external signal latch means in response to said write recovery signal and transferring said inverted external signal from said external signal output means to said external signal latch means in response to said pulse signal;





selecting a fluid to fill said elastic cylinder based on a fluid density ρ , and a dilatational wave phase velocity c , thereof to provide a first radial resonance frequency of said elastic cylinder such that, when said elastic cylinder so-filled is immersed in a fluid environment and subjected to a compressional wave having a magnitude P_0 propagating in said fluid environment such that a pressure field in said fluid is generated that includes at least one of a breathing wave response, an extensional wave response and a fluid P-wave response, the relationship

$$10 \log \left(\frac{P_r(r_1)}{P_0} \right)^2 \geq 0$$

is satisfied for said given frequency range where P_r is the magnitude of said pressure field in said fluid at a point within said fluid defined by a distance r_1 from said central longitudinal axis, and control at least one of said breathing wave response, said extensional wave response and said fluid P-wave response.

5,781,509

WIDE BEAM ARRAY WITH SHARP CUTOFF

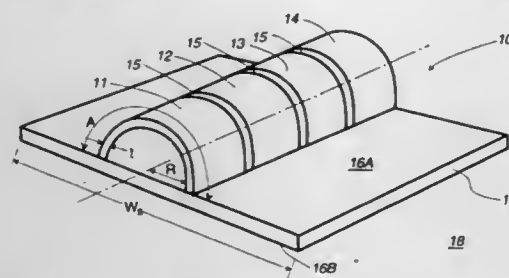
William J. Zehner, Lynn Haven, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 28, 1996, Ser. No. 668,456

Int. Cl.⁶ H04R 17/00

U.S. Cl. 367—159

8 Claims



1. A transducer array comprising:
 - a planar baffle of a construction that prevents the passage of acoustic energy therethrough; and
 - a constant semicircular arc length portion of a right circular cylindrical shell of piezoelectric transduction material mounted on said planar baffle such that the convex curvature of said constant arc length portion faces away from said planar baffle, said right circular cylindrical shell having a radius and a central axis, wherein the width of said planar baffle perpendicular to said central axis is at least three times said radius of said right circular cylindrical shell, said constant semicircular arc length portion being segmented evenly along the length thereof to define a plurality of transducers, wherein acoustic radiation produced by said plurality of transducers is prevented from radiating around said planar baffle.

5,781,510 HYDROPHONE HOUSING FOR A SOLID MARINE SEISMIC CABLE

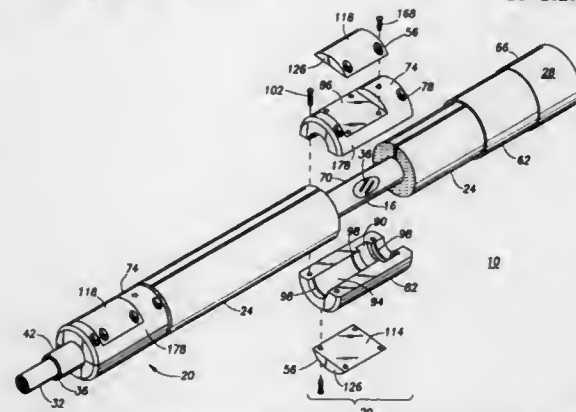
Win Chang, Houston; Algernon S. Badger, Bernard; Richard H. Luce, Katy; David S. Lamance, Wallis; Hoan P. Nguyen, Houston, and Christopher A. Neighbors, Alvin, all of Tex., assignors to Input/Output, Inc., Stafford, Tex.

Filed Jan. 17, 1997, Ser. No. 784,978

Int. Cl.⁶ G01V 1/38:1/16

U.S. Cl. 367—188

10 Claims



1. A hydrophone housing for use with a solid marine seismic cable, the seismic cable containing data-transmitting wires, the hydrophone housing comprising a first portion and a second portion, wherein one of the first and second portions has a receiving recess on which a hydrophone module affixes, the hydrophone module having lead wires, and wherein the first and the second portions clamp together around a solid marine seismic cable, and wherein the portion which contains a receiving recess further includes a wire-clearance recess, the wire-clearance recess of sufficient size to receive connections between the lead wires and the data-transmitting wires.

5,781,511

WRIST-WORN PORTABLE ELECTRONIC DEVICE

Naoaki Yasukawa; Akira Shinbo, both of Suwa; Masayuki Kawata, and Kazumi Sakamoto, both of Chiba, all of Japan, assignors to Seiko Epson Corporation, Tokyo, and Seiko Instruments, Inc., Chiba, both of Japan

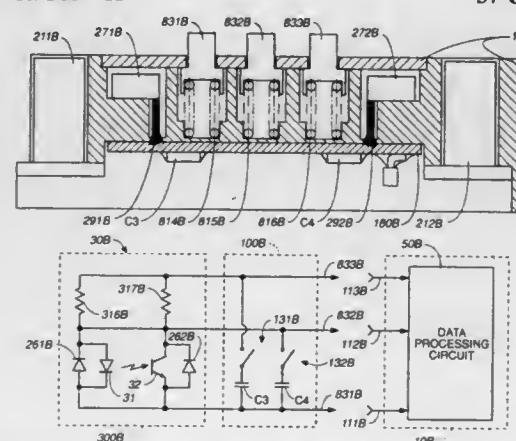
Filed Mar. 7, 1996, Ser. No. 612,145

Claims priority, application Japan, Mar. 9, 1995, 7-050172; May 12, 1995, 7-114964; Jun. 22, 1995, 7-156524

Int. Cl.⁶ G04B 47/06

U.S. Cl. 368—11

37 Claims



1. A wrist-worn portable electronic device, comprising:
 - a main unit having a display member for displaying information including time;
 - a wrist band, connected to said main unit, for allowing a user to wear said main unit on a wrist; and

- a connector for allowing signals to be input to said main unit, said connector comprising:
 - a connector member disposed on an edge of said main unit at one of a 6 o'clock and a 12 o'clock position of said main unit, said connector member including a first terminal group comprising a plurality of terminals, and
 - a connector piece for removably coupling to said connector member, said connector piece including a second terminal up comprising a plurality of terminals for electrically connecting to said first terminal group, said second terminal group receiving signals for inputting to said main unit;
- wherein said connector further includes latching means for attaching said connector piece to said connector member when said connector piece is slid on said connector member in a predetermined sliding direction and holding said connector piece and connector member together in a latched condition, said latching means releasing said connector piece and connector member from the latched condition when said connector piece is slid in an opposite direction from said sliding direction; and
- wherein on at least a first surface of one of said connector member and said connector piece which faces a second surface of the other one of said connector member and said connector piece, a first area around the terminals of one of said first and second terminal groups is hydrophobic relative to a second area and has as a material characteristic a first contact angle of water, and said second area surrounding said first area is hydrophilic relative to said first area and has as a material characteristic a second contact angle of water that is less than said first contact angle.

5,781,512

POCKET AND TABLE WATCH WITH A SUSPENSION AND SUPPORT DEVICE

Laurent Pantet, Nods, Switzerland, assignor to Eta SA Fabriques d'Ebauches, Grenchen, Switzerland

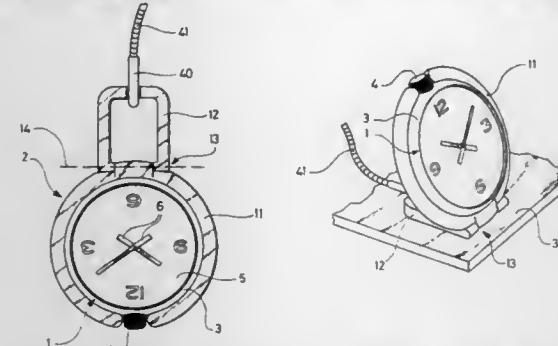
Filed Jan. 13, 1997, Ser. No. 782,942

Claims priority, application Switzerland, Jan. 26, 1996, 0020796

Int. Cl.⁶ G04B 37/00; A47F 7/00

U.S. Cl. 368—316

10 Claims



1. A pocket and table watch, comprising a watch case and a suspension and support device mounted on said case, said device comprising a hinge allowing the watch to be placed selectively in a suspension position and in a table position in which, when the watch is placed on a substantially horizontal surface, said device holds said case in a standing or inclined position with respect to said surface, said suspension and support device comprising two parts attached to each other by said hinge, namely a first part mounted on the periphery of said case and a second substantially flat part provided with a suspension means, said two parts abutting against each other to stop said first part at an acute angle with respect to said second part in said table position, wherein said case has a continuous or discontinuous groove on its periphery and a

median plane, and wherein said first part is secured to said case in a removable manner and comprises an open ring extending along the periphery of said case substantially in said median plane, said ring being resilient in its plane in order to be secured to said case by elasticity and comprising catching means arranged to engage in said groove.

5,781,513

MAGNETIC-FIELD MODULATION RECORDING METHOD AND DEVICE FOR PREVENTING RESIDUAL INFORMATION FROM REMAINING AFTER OVERWRITING

Hiroshi Fuji, Kyoto, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

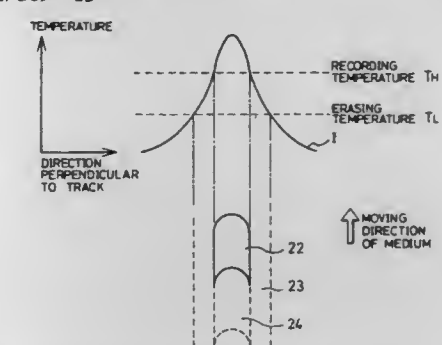
Filed Feb. 2, 1996, Ser. No. 595,842

Claims priority, application Japan, Feb. 27, 1995, 7-038700; Dec. 25, 1995, 7-337298

Int. Cl.⁶ G11B 11/00

U.S. Cl. 369—13

13 Claims



1. A magnetic-field modulation recording method comprising the steps of:
 - preventing residual information from remaining on a magneto-optical recording medium after recording by applying to the magneto-optical recording medium a recording magnetic field whose direction is reversed according to recording information while irradiating a light beam whose power is uniform at every information recording position on said magneto-optical recording medium so that a center of a light-beam irradiated region of said magnetic-optical recording medium becomes a high-temperature portion and a periphery of said high-temperature portion becomes a medium temperature portion whose temperature is lower than a temperature of said high-temperature portion; and
 - recording a direction of magnetization so that a direction of magnetization in said high-temperature portion is recorded according to a direction of said recording magnetic field and a direction of magnetization in said medium-temperature portion is recorded only in one direction irrespectively of the direction of said recording magnetic field.

5,781,514

Patent Not Issued For This Number

5,781,515

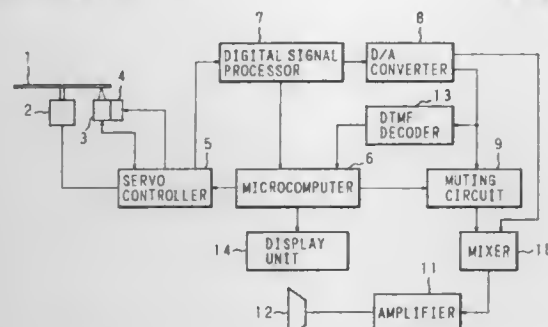
DISK INFORMATION REPRODUCTION APPARATUS
AND METHOD USING AVOID BAND CONTROL
SIGNALSHitoshi Ogata, Sakai; Masanao Yoshida, Osaka, and Tokuo
Yokota, Kobe, all of Japan, assignors to Sanyo Electric Co.,
Ltd., Moriguchi, Japan

Filed Dec. 4, 1995, Ser. No. 566,908

Claims priority, application Japan, Dec. 20, 1994, 6-317009;
Dec. 28, 1994, 6-329021Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—32

8 Claims



1. A method for disk information reproduction, comprising the steps of:

playing back of a first portion of acoustic information recorded on a disk;

reading an audio band signal recorded adjacent to an end of the first portion of the acoustic information; and

controlling a second playback to jump to a second portion of the acoustic information on the disk based on the audio band signal which includes a pause plus conditional jump instruction based on a response from the user after said playback of the first portion of the acoustic information to cause the second playback to jump to the second portion of the acoustic information, a pause plus conditional jump instruction based on the response to cause the second playback to jump to one of multiple portions of the acoustic information, and an unconditional jump instruction to cause the second playback to jump to the second portion of the acoustic information.

5,781,516

MULTIPLANE OPTICAL DISC APPARATUS AND
ACCESS CONTROL METHOD THEREOFMinoru Yamada, Tokyo, Japan, assignor to NEC Corporation,
Tokyo, Japan

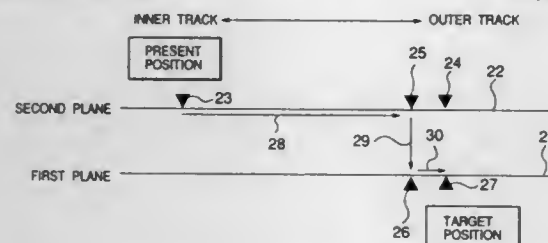
Filed Apr. 9, 1997, Ser. No. 835,616

Claims priority, application Japan, Apr. 15, 1996, 8-092160

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—32

8 Claims



1. A multiplane optical disc apparatus wherein an optical pickup reads and writes data on a multiplane optical disc provided with at least two planes capable of data recording independently of each other, said apparatus comprising:

focus jump means for conducting focus jump of said optical pickup between the planes of said multiplane optical disc;

address acquiring means for acquiring an address of a present position of said optical pickup;

access length calculating means for calculating a length from said present position acquired by said address acquiring means to a target position indicated from a host apparatus;

coarse seek means for conducting coarse seek on a length from said present position to a position closer to said target position, said length corresponding to the length calculated by said access length calculating means; and

fine seek means for conducting fine seek from a position, at which said optical pickup is positioned after the coarse seek, to said target position; and

wherein said access length calculating means has a virtual target position calculating function for calculating a length to a position on a plane of said present position, said length being in the radial direction of said target position, if the plane of said target position differs from a position of said present position acquired by said address acquiring means, and said coarse seek means has a present plane coarse seek function for coarsely seeking a length of the plane of said present position, said length corresponding to the length calculated by said virtual target position calculating function.

5,781,517

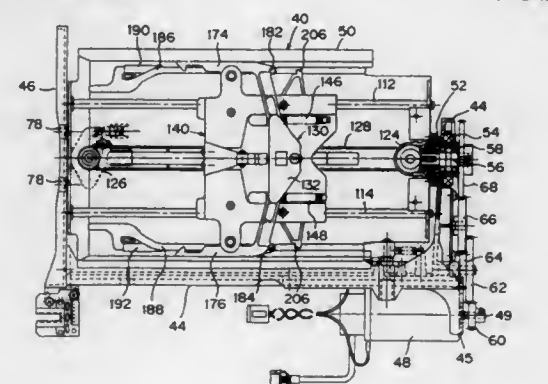
ACCESSOR HAND MECHANISM HAVING GROOVES
FOR OPENING AND CLOSING FINGERSKenji Nakajima, Kawasaki, Japan, assignor to Fujitsu Limited,
Kawasaki, Japan

Filed Jul. 18, 1995, Ser. No. 503,717

Claims priority, application Japan, Oct. 31, 1994, 6-266509;
Dec. 15, 1994, 6-311699Int. Cl.⁶ G11B 7/00; 17/04

U.S. Cl. 369—38

22 Claims



1. An accessor hand mechanism in a library device, comprising:

a base;

a carrier frame rotatably mounted on said base;

a pair of parallel slide shafts fixed to said carrier frame;

a first slider slidably mounted on said slide shafts;

a second slider slidably mounted on said slide shafts;

first driving means for moving said first slider along said slide shafts;

connecting means for elastically connecting said first slider and said second slider;

a pair of fingers each having a front end portion formed with a cartridge gripping portion, a rear end portion and pivotably connected to said second slider; and

first biasing means for biasing said pair of fingers in a closing direction thereof;

said carrier frame having a pair of finger open/close grooves in which projections of said fingers are respectively engaged;

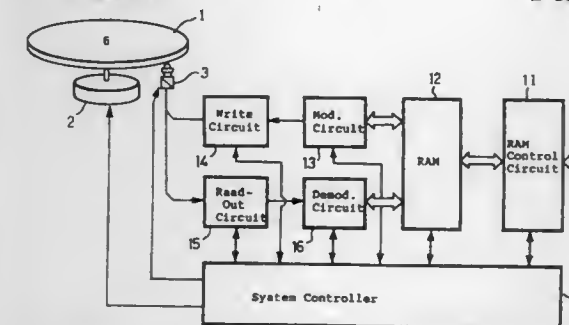
said pair of finger grooves being configured such that the finger projections are advanced in a first of said pair of grooves and retracted in a second of said pair of grooves when said finger projections are advanced to at least a predetermined point in said first groove.

5,781,518

DISC RECORDING METHOD WHEREIN A SEGMENT IS
RECORDED WITH REFERENCE DATA TO CONTROL
THE PHASE OF A DATA CLOCKTamotsu Yamagami, Kanagawa; Tetsu Watanabe, Tokyo, and
Yoichiro Sako, Chiba, all of Japan, assignors to Sony Corporation,
Tokyo, JapanContinuation of Ser. No. 565,846, Dec. 1, 1995, abandoned,
which is a division of Ser. No. 348,751, Dec. 2, 1994, Pat. No.
5,592,465, which is a continuation of Ser. No. 969,144, Feb.
10, 1993, abandoned. This application Aug. 18, 1997, Ser. No.
914,203Claims priority, application Japan, Jun. 17, 1991, 3-144836;
Aug. 20, 1991, 3-218155Int. Cl.⁶ G11B 20/12

U.S. Cl. 369—47

2 Claims



1. A method of recording data on a disc, comprising the steps of: providing a disc pre-recorded with servo control data, with the servo control data being pre-recorded in the form of pie-pits at intervals along substantially concentric tracks of the disc;

dividing the disc into a plurality of zones in the radial direction, wherein each of the zones includes subsets of the servo control data, and each of the subsets in said each of the zones is aligned radially;

dividing the tracks into a plurality of sectors, and each of the sectors into a plurality of segments such that within each of the zones there is an equal number of segments in each of the tracks in said each of the zones and such that a portion of the servo control data is recorded at a head position of each of the segments;

recording reference data on at least one segment of the plurality of segments in each of the sectors, wherein said at least one segment includes a head segment of said each of the sectors, amplitude of the reference data upon playback of the disc determines necessary gain adjustment upon said playback, and phase of the reference data upon said playback of the disc determines a phase of a data clock upon said playback; and

recording digital data on at least one segment of the plurality of segments in each of the zones, with the digital data being recorded while the disc is rotated at a constant angular velocity and with the constant angular velocity being different for said each of the zones.

5,781,519

OPTICAL HEAD APPARATUS FOR READING
DIFFERENT TYPES OF RECORDING MEDIUMSSo Ishika, Yokohama, and Yuichi Nakamura, Minato-ku, both
of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki,
Japan

Filed Feb. 6, 1997, Ser. No. 795,862

Claims priority, application Japan, Feb. 7, 1996, 8-021289

Int. Cl.⁶ G11B 7/00

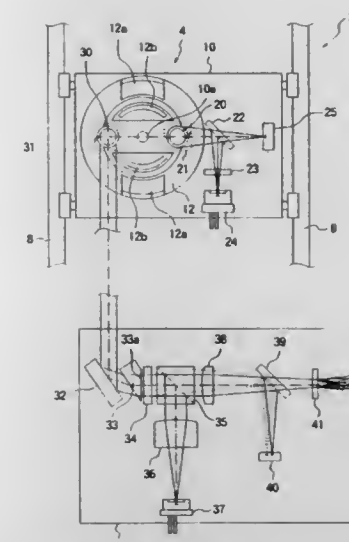
U.S. Cl. 369—58

6 Claims

1. An optical head apparatus comprising:

a movable optical system movable radially with respect to a recording medium, the movable optical system comprising:

a first light source,



a first lens having a first focal length configured to focus light radiated by the first light source on a recording surface of the recording medium,

a second lens having a second focal length,

a first photoelectric converting device constructed and arranged to receive the light radiated from the first light source after the light reflects off of the recording surface of the recording medium and convert the light into an electric signal, and

a lens holder having the first lens and the second lens mounted thereon, the lens holder being constructed and arranged to be moved in a focusing direction; a fixed optical system comprising:

a second light source, the second lens being configured to focus light radiated by the second light source on the record surface of the record medium, and

a second photoelectric converting device constructed and arranged to receive the light radiated from the second light source after the light reflects off the recording surface of the recording medium and convert the light to an electric signal; and

a selecting device configured to select a first optical arrangement or a second optical arrangement, the first optical arrangement comprising the first light source, the first lens, and the first photoelectric converting device, the second optical arrangement comprising the second light source, the second lens, and the second photoelectric converting device.

5,781,520

Patent Not Issued For This Number

5,781,521

OPTICAL DISK RECORDING/REPRODUCING
APPARATUS

Dae Young Kim, Seoul, Rep. of Korea, assignor to LG Electronics, Inc., Seoul, Rep. of Korea

Filed Nov. 19, 1996, Ser. No. 752,594

Claims priority, application Rep. of Korea, Jan. 5, 1996, 84/1996

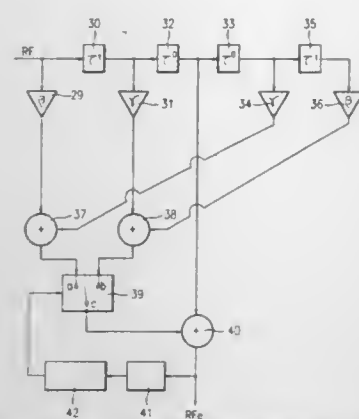
Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—59

25 Claims

1. An optical disk recording/reproducing apparatus comprising: an optical pickup recording information onto a disk and reproducing information from the disk;

a playback signal processing unit coupled to the optical pickup and receiving electrical signals from the optical pickup, the



playback signal processing unit outputting a focus control signal, a tracking control signal, and a high-frequency playback signal;

an asymmetric equalizer coupled to the playback signal processing unit and equalizing the high-frequency playback signal from the playback signal processing unit to compensate for an asymmetric playback characteristic of the optical pickup; and a channel bit signal playback unit coupled to the asymmetric equalizer and receiving the equalized high-frequency playback signal, bit signal playback unit outputting a channel bit signal string.

5,781,522

Patent Not Issued For This Number

5,781,523

DISK REPRODUCING APPARATUS CAPABLE OF TAKING MULTI-INCLINED POSTURES

Tsugutaro Ozawa, Mito, and Shinro Inui, Hitachinaka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

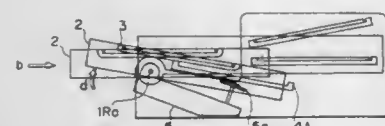
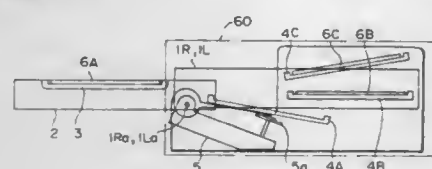
Filed Apr. 3, 1996, Ser. No. 626,998

Claims priority, application Japan, Apr. 5, 1995, 7-080426; Aug. 30, 1995, 7-221426

Int. Cl.⁶ G11B 17/28; 17/04

U.S. Cl. 369—77.1

6 Claims



4. A disk reproducing apparatus comprising:

a drawer having a disk mounting portion thereon, the drawer being capable of disposing a disk thereon while positioned outside of the disk reproducing apparatus when the disk is not disposed on the drawer and being translationally movable between a first position where the disk is removed from the drawer and a second position within the disk reproducing apparatus, the drawer being capable of selectively taking plural inclined postures of plural kinds of angles relative to a direction parallel to a depthwise direction of the disk reproducing apparatus.

disk reproducing means being positioned near the second position, the disk reproducing means being capable of reproduc-

ing the disk when the drawer, on which the disk is disposed, is present in the second position, and

a stocker having plural disk receiving layers capable of storing therein plural disks substantially in a laminar form in a thickness direction of the disks and being positioned at a location adjacent to the second position within the disk reproducing apparatus, the stocker being interlockingly pivoted in response to the change of the inclined postures of the drawer, one specified disk receiving layer, among the disk receiving layers, in response to the selected inclined postures of the drawer, being parallel and close to the disk mounting portion of the drawer thereby allowing delivering and receiving of the disk to be performed between the disk mounting portion of the drawer and the stocker,

wherein the drawer being inclined clockwise or counterclockwise to an angle equal to an inclined angle of a subject disk which is received in a predetermined position of the stocker and is taken out from the predetermined position of the stocker, relative to a direction parallel to a depthwise direction of the disk reproducing apparatus, simultaneously with or halfway through a translational movement between the first position and the second position when storing the subject disk in the stocker and taking out the subject disk from the stocker, the stocker being inclined counterclockwise or clockwise by an angle equal to the inclined angle of the subject disk relative to a direction parallel to the depthwise direction of the disk reproducing apparatus simultaneously with the movement of the drawer, whereby the subject disk is adapted to be movable between the first position and the second position and capable of reproducing the disk by the disk reproducing means while remaining in the inclined posture so as to enable the reduction of the vertical size of the disk reproducing apparatus.

5,781,524

HIGH DENSITY OPTICAL HEAD ASSEMBLY

Masatsugu Ogawa, Tokyo, Japan, assignor to NEC Corporation, Japan

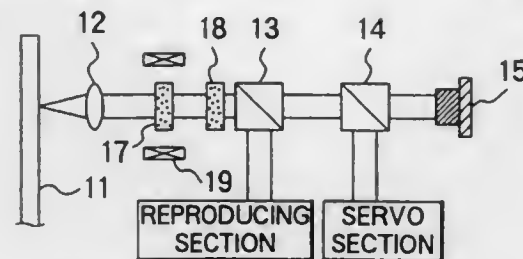
Filed Jan. 13, 1997, Ser. No. 785,169

Claims priority, application Japan, Jan. 19, 1996, 8-007858

Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—112

8 Claims



1. A high density optical head assembly for an optical disk having at least one guide groove, said optical head assembly comprising a light emitting element for emitting first light having a first light component polarized in a first direction, a half-wavelength plate selectively inserted into or extracted from a first location in an optical path of the first light, for selectively rotating by 90° the direction of polarization of or transmitting unchanged the first light component depending upon whether said plate is inserted into or extracted from said first location so as to generate second light, an objective lens for focusing the second light onto the optical disk, the optical disk reflecting the second light so as to provide reflected light to a first beam splitter through said objective lens and first location, and a reproducing section for reproducing data recorded on the optical disk, said first beam splitter for deflecting to said reproducing section a second light component of the reflected light polarized in the first direction, said first location being between said objective lens and said first beam splitter.

5,781,525

RECORD OPTIMIZER SYSTEM AND METHOD OF UTILIZATION

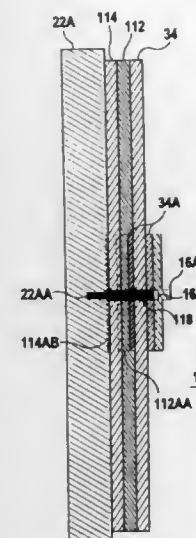
Samuel Neulinger, 14 North Dr., Flushing, N.Y. 11357

Filed Apr. 2, 1997, Ser. No. 829,360

Int. Cl.⁶ G11B 17/028; 17/32

U.S. Cl. 369—270

9 Claims



1. A record optimizer system (10) which functions to adjust a height of a phonograph record (34) which maximizes fidelity reception from a turntable tone arm with mounted cartridge (32A) of a turntable (32), the record optimizer system (10) comprising:

A) a measuring spindle (118, 218, 318) which comprises a measuring spindle post (118A, 218A, 318A) securely attached to a measuring spindle post screw (118AA, 218AA, 318AA) which is removably attachable into a measuring base platter spindle receptacle (22AA) of a measuring base platter (22A) of a measuring base (22);

B) a standard optimizing disc (114, 214, 314) which comprises a standard optimizing disc platter (114A, 214A, 314A) having a standard optimizing disc platter opening (114AA, 214AA, 314AA) and a standard optimizing disc platter label recess (114AB, 214AB, 314A) centrally positioned therein and thereon, respectively, the standard optimizing disc (114, 214, 314) is positioned upon the measuring base platter (22A), the measuring spindle post (118A, 218A, 318A) is positioned within the standard optimizing disc platter opening (114AA, 214AA, 314AA);

C) a selected center label cut out optimizing disc (112, 212) which comprises a center label cut out optimizing disc platter (112A, 212A) having a center label cut out optimizing disc platter opening (112AA, 212AA) centrally positioned therein, the selected center label cut out optimizing disc (112, 212) is positioned upon the standard optimizing disc (114, 214, 314), a phonograph record (34) is positioned on the selected center label cut out optimizing disc (112, 212);

D) a weight disc (16) removably positioned on top of the phonograph record (34) which is positioned on top of the standard optimizing disc (114, 214, 314), the weight disc (16) comprises a weight disc platter (16A) having a weight disc platter spindle opening (16AA) and protrusion (16AB) on underside centrally positioned therein, the measuring spindle post (118A, 218A, 318A) is positioned within the weight disc platter spindle opening;

E) a tuning disc set which is positioned between the standard optimizing disc and the phonograph record; and

F) a fine tuning disc set positioned between the tuning disc set and the phonograph record.

5,781,526

OPTICAL RECORDING MEDIUM HAVING A DISC WITH DEFORMED PITTS

Akira Nishizawa, Yokohama, and Kanji Kayanuma, Hadano, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 544,134, Oct. 17, 1995, Pat. No.

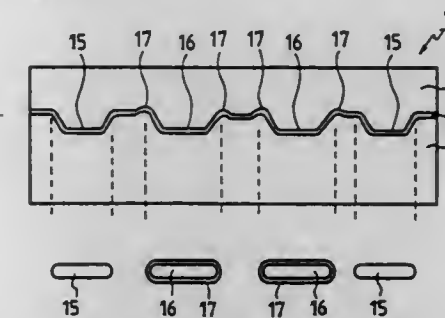
5,617,408. This application Feb. 14, 1997, Ser. No. 800,330

Claims priority, application Japan, Oct. 21, 1994, 6-282558

Int. Cl.⁶ G11B 7/24

U.S. Cl. 369—275.3

9 Claims



1. An optical recording medium comprising:

a track of pits representing key information and secret code words of main information, the key information relating to a method of decoding the secret code words into the main information; and

a label surface on which management information is recorded, the management information depending on the key information.

5,781,527

INTEGRATED MULTI-FABRIC DIGITAL CROSS-CONNECT INTEGRATED OFFICE LINKS

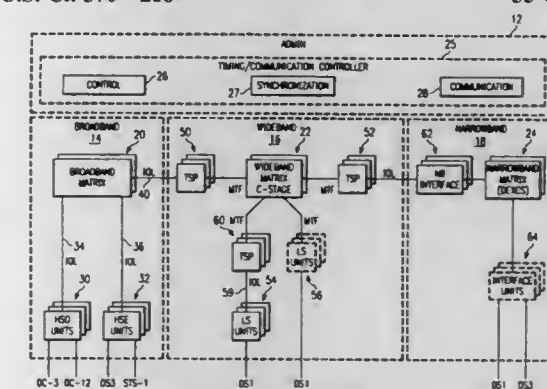
E. Lawrence Read, Plano; Steven D. Sensel, The Colony; Gary D. Hanson; Richard Schroder, both of Plano; Edward P. Traupman, McKinney, and Gregory L. Mayhan, Richardson, all of Tex., assignors to DSC Communications Corporation, Plano, Tex.

Continuation-in-part of Ser. No. 304,510, Sep. 12, 1994, abandoned. This application Feb. 22, 1996, Ser. No. 604,890

Int. Cl.⁶ H04Q 11/04; H04L 12/26

U.S. Cl. 370—216

35 Claims



1. A cross-connect system comprising:

a broadband matrix; at least one high speed line terminating equipment coupled to a telecommunications network;

an integrated office link interconnecting said broadband matrix and high speed line terminating equipment, said integrated office link carrying duplex transmission of an IOL-N signal of N multiplexed STS-1P optical signals at an OC-N rate; and said broadband matrix and said high speed line terminating equipment each including an optical interface circuitry coupled to said integrated office link and receiving and transmitting said STS-1P optical signals and further converting

between said N multiplexed STS-IP optical signals and N demultiplexed STS-IP electrical signals, said IOL-N signal including payload and overhead fields carrying control information and fault coverage data, said IOL-N overhead fields include a channel identification code associated with each of said STS-IP signal indicative of a cross connection channel in said broadband matrix, and a parity code indicative of a parity value of said STS-IP signal.

5,781,528

PATH SWITCHING SYSTEM AND METHOD

Yasuyuki Sato, Iwate-gun; Keiji Miyazaki, Kawasaki; Yasuki Fujii, Kawasaki; Mitsuhiro Azuma, Kawasaki, and Takafumi Chujo, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

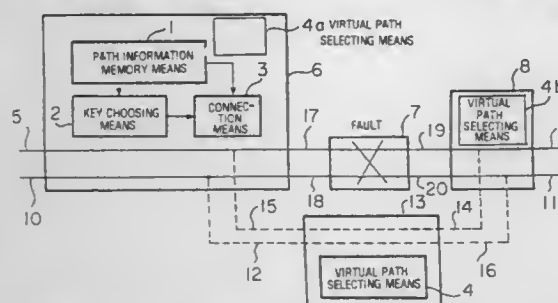
Filed Oct. 13, 1995, Ser. No. 543,025

Claims priority, application Japan, Jan. 13, 1995, 7-003867

Int. Cl.⁶ H04L 1/00

U.S. Cl. 370-218

8 Claims



1. A path switching system for restoring a communications path that has been lost due to a trouble occurred in an ATM network including a plurality of nodes interconnecting a plurality of virtual paths, by connecting a pair of isolated routes via a bypass route that replaces a failed route which became inoperative due to the trouble, the path switching system comprising:

path information memory means disposed in each of the plurality of nodes for storing path information for an active route in service of communications, which is descriptive of a partial linkage structure within at least two-node distance from the node;

key choosing means disposed in each of the plurality of nodes for choosing one of constituents of the failed route as a routing key in reference to the path information corresponding thereto; and

connection means, disposed in each of the plurality of nodes and activated in a pair of nodes located at both ends of the failed route, for finding one of the isolated routes whose path information stored in said path information memory means contains the routing key chosen by said key choosing means and for changing an interconnection between virtual paths so as to connect the bypass route to the isolated route that is found.

5,781,529

SYSTEMS AND METHODS FOR ROUTING ATM SWITCHED VIRTUAL CIRCUIT CALLS

Chung C. Liang, Naugatuck; Javier R. Rojas, Danbury, and Kuldip S. Bains, Middlebury, all of Conn., assignors to General DataComm, Inc., Middlebury, Conn.

Filed Mar. 27, 1996, Ser. No. 624,812

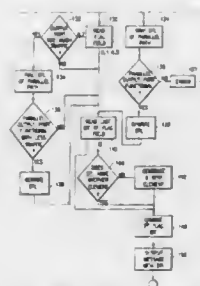
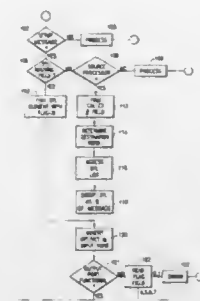
Int. Cl.⁶ H04L 12/56

U.S. Cl. 370-218

30 Claims

1. Apparatus at a source node of an ATM telecommunications network, comprising:

a) switching means including a plurality of input ports and a plurality of output ports for receiving a message at one of said plurality of input ports, and switching said message to one of said plurality of output ports;



b) memory means for storing a plurality of designated transit lists (DTLs), each designated transit list (DTL) including a plurality of list elements with each list element including a node identification and an output port identification, each DTL identifying a route from said source node to a destination in said ATM telecommunications network; and

c) processor means coupled to said switching means and to said memory means for processing said message, for attaching an appropriate one of said plurality of DTLs to a CALL SETUP message upon one of said plurality of input ports receiving said CALL SETUP message with a called address, and for providing in a list element of said appropriate DTL a field for receiving one of an input port value and a VPI/VCI value.

5,781,530

REDUNDANT LOCAL AREA NETWORK

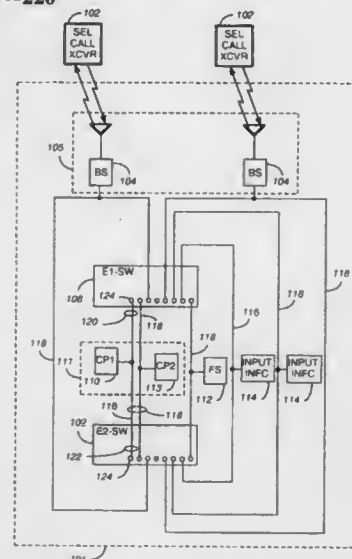
Niranjan Nath Segal, Arlington, Tex., assignor to Motorola, Inc.

Filed Apr. 1, 1996, Ser. No. 627,719

Int. Cl.⁶ H04L 1/22

U.S. Cl. 370-220

15 Claims



1. A local area network (LAN) having an architecture for providing communication redundancy, the LAN comprising:

at least two data communication paths for linking data communications between at least two data communication devices, a data communication path having a first end coupled to a port

of a first intelligent data routing switch and a second end coupled to a port of a second intelligent data routing switch, the data communication path also coupled to a data communication device at a point between the first and second ends; the first intelligent data routing switch, comprising a first plurality of ports; the second intelligent data routing switch, comprising a second plurality of ports; and the at least two data communication devices, wherein the first and second intelligent data routing switches are programmed such that both the first and second intelligent data routing switches do not simultaneously route the data communications of a data communication path.

5,781,531

METHOD AND APPARATUS FOR HIERARCHICAL RELATIVE ERROR SCHEDULING

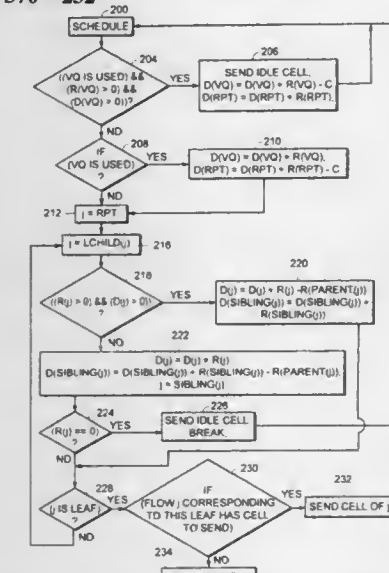
Anna Charny, Sudbury, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 27, 1995, Ser. No. 578,932

Int. Cl.⁶ H04J 3/02

U.S. Cl. 370-232

4 Claims



1. A method of scheduling data flows in a shared resource in a computer system, each of the data flows containing data cells, comprising the steps of:

receiving the data flows, each of the data flows containing an assigned flow rate and a relative error rate;

transmitting, each of the data flows such that each of the data flows is maintained at its assigned flow rate, comprising the steps of:

applying a relative error method to a virtual queue and to a root of a proportional tree structure in a memory to determine whether a real flow or a virtual flow should be scheduled;

sending an idle cell if the virtual queue is scheduled by the relative error method;

applying the relative error method to a root of a proportional tree in the memory to determine which branch of the proportional tree to schedule;

applying the relative error method to each of the two children of a node in the proportional tree which is chosen for transmission;

applying the relative error method to the two children such that a link capacity of a left child flow rate and a right child flow rate is equal to a flow rate of the parent.

5,781,532

DATA LINK INTERFACE FOR PACKET-SWITCHED NETWORK

James Watt, Kanata, Canada, assignor to Newbridge Networks Corporation, Kanata, Canada

PCT No. PCT/CA94/00724, § 371 Date Aug. 2, 1996, § 102(e) Date Aug. 2, 1996, PCT Pub. No. WO95/17788, PCT Pub. Date Jun. 29, 1995

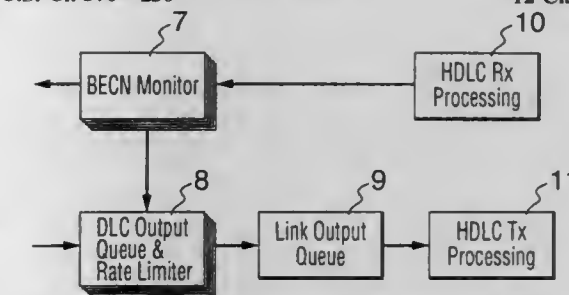
PCT Filed Dec. 22, 1994, Ser. No. 666,335

Claims priority, application United Kingdom, Dec. 23, 1993, 9326276

Int. Cl.⁶ H04L 12/56

U.S. Cl. 370-236

12 Claims



1. A data link interface for sending and receiving data over a virtual connection on a common link in a packet-switched network, comprising means for detecting congestion in the network, means for enqueueing packets for transmission over said virtual connection, means for adjusting the transmission rate in response to the detection of said congestion so as to reduce congestion in the network, means for sorting traffic by conversation between two endpoints and re-ordering packets from different conversations on said common link while maintaining the order of transmission for each conversation in order to achieve fair allocation of bandwidth among different conversations when the detected congestion exceeds a predetermined mild congestion threshold, and means for dropping packets when the detected congestion exceeds a predetermined severe congestion threshold.

5,781,533

LINK BUFFER SHARING METHOD AND APPARATUS

Thomas A. Manning, Northboro; Stephen A. Hauser, Burlington; Stephen A. Caldara, Sudbury; Raymond L. Strouble, Charlton, and Douglas H. Hunt, Sudbury, all of Mass., assignors to Fujitsu Network Communications, Inc., Richardson, Tex., and Fujitsu Limited, Kawasaki, Japan

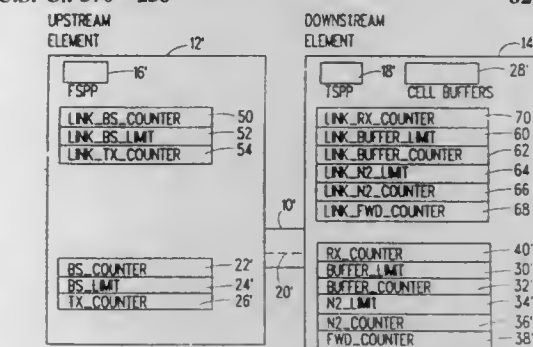
Continuation of Ser. No. 609,500, Mar. 1, 1996, abandoned.

This application Apr. 22, 1997, Ser. No. 847,658

Int. Cl.⁶ H04L 12/56

U.S. Cl. 370-236

82 Claims



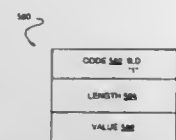
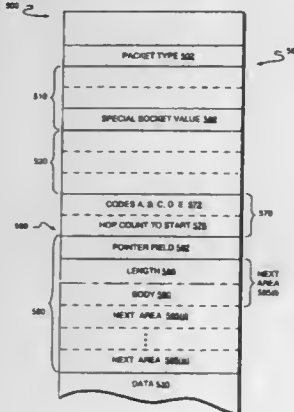
45. A link-level buffer sharing apparatus, comprising: a communications link for supporting a plurality of connections thereon and having a transmitter end and a receiver end; a transmitter at said transmitter end of said link for transmitting data cells over said link; and a receiver at said receiver end of said link, said receiver having a plurality of buffers for storing data cells received from said

transmitter via said link for said connections, said plurality of buffers comprising collectively a buffer pool, wherein said receiver provides total buffer occupancy status information at the link level to said transmitter as data cells are received from said transmitter.

5,781,534
METHOD AND APPARATUS FOR DETERMINING CHARACTERISTICS OF A PATH
Radia J. Perlman, Acton, Mass., and Neal D. Castagnoli, Morgan Hill, Calif., assignors to Novell, Inc., Provo, Utah
Filed Oct. 31, 1995, Ser. No. 550,981
Int. Cl.⁶ H04L 12/56

U.S. Cl. 370—248

12 Claims



1. A memory device, comprising:

- a probe packet for efficiently acquiring information about a path interconnecting a source and a destination in a computer network having routers coupled thereto, the probe packet including a network layer header, the probe packet comprising
- a source instruction area appended to the header for storing network parameter information to be acquired and a list of routers for providing the network parameter information; and
 - a recording area appended to the source instruction area for providing locations for the routers to record the network parameter information.

5,781,535
IMPLEMENTATION PROTOCOL FOR SHN-BASED ALGORITHM RESTORATION PLATFORM
Will L. Russ, Sridhar Alagar, both of Dallas; Sig Harold Badt, Jr., Richardson; Lee D. Bengston, Murphy; Tim T. Chao, Plano; Fred Ellefson, Allen; Bryan J. McGlade; Mark W. Sees, both of Plano, and Clint Allen Wagner, Allen, all of Tex., assignors to MCI Communications Corp., Washington, D.C.

Filed Jun. 14, 1996, Ser. No. 665,177

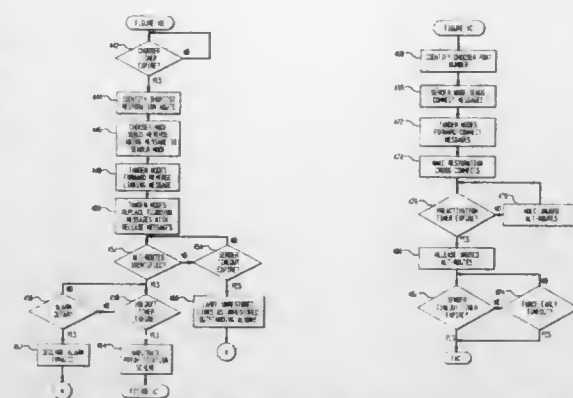
Int. Cl.⁶ H04J 1/16

U.S. Cl. 370—248

19 Claims

19. A method of restoring communication between at least one pair of nodes in a network having a plurality of nodes and a plurality of links interconnecting the nodes, comprising the steps of:

- (1) detecting a failed link;
- (2) inserting an incoming signal failure (ISF) signal downstream from said failed link to quiet downstream links in alarm;



- (3) after an alarm validation timer has expired, sending by a sender node a flooding message, said flooding message comprising a sender node ID field, an index field, a chooser node ID field and a hop count field, on one spare link on each logical span between said sender node and any of the plurality of nodes in the network connected to said sender node;
- (4) after a chooser timer has expired, selecting by said chooser node a shortest restoration route and sending a reverse linking message on said shortest restoration route, wherein said reverse linking message comprises a sender node ID field, an index field, and a chooser node ID field;
- (5) identifying by said sender node a link restoration route based on a received reverse linking message and sending release messages on all other spare links separate from said link restoration route;
- (6) after a holdoff timer expires, sending by said sender node a connect message to said chooser node, wherein said connect message comprises a restore from field that identifies said link to said chooser node for correct cross connection; and
- (7) after a preactivation timer expires, releasing by said sender node any reserved and unused restoration routes.

5,781,536
ALLOCATION METHOD AND APPARATUS FOR REUSING NETWORK RESOURCES IN A WIRELESS COMMUNICATION SYSTEM

Hamid Ahmadi, Somers; David Bantz, Chappaqua, both of N.Y.; Frederic Bauchot, Saint Jeannet, France; Colin Harrison, Brookfield, Conn.; Arvind Krishna, Briarcliff Manor, N.Y.; Jose Luis Martinez, Antibes, France; Kadathur Narayanan, Millwood, N.Y., and Michelle Wetterwald, Cagnes Sur Mer, France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1995, Ser. No. 468,155

Claims priority, application European Pat. Off., Oct. 26, 1994, 94480114

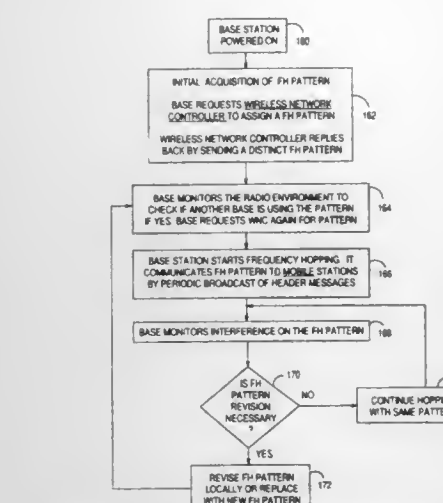
Int. Cl.⁶ H04B 1/13; H04L 12/28; H04Q 7/36

U.S. Cl. 370—252

15 Claims

1. A method for reusing a limited number of network resources in communication network comprised of a local area network (116) connected to a plurality of base stations (118, 120), each base station (118) having a geographic area, defined as a cell, within which remote stations (128, 132, 136) are within reception range with said each base station, said each base station being capable of performing bidirectional communication over a shared communication media with one or more of said remote stations under control of a controller (110) connected to said local area network, said method comprising the steps of:

- sending a request by a given base station to said controller, for assignment by said controller one of said network resources; and
- selecting and assigning by said controller one of said network resources, already assigned to other base stations, in response to said request wherein selection being based on the computation by said controller of a distance index between said given base station and said other base stations and the resource assigned to said given base



station being the one already assigned to one of said other base stations with the highest distance index to said given base station.

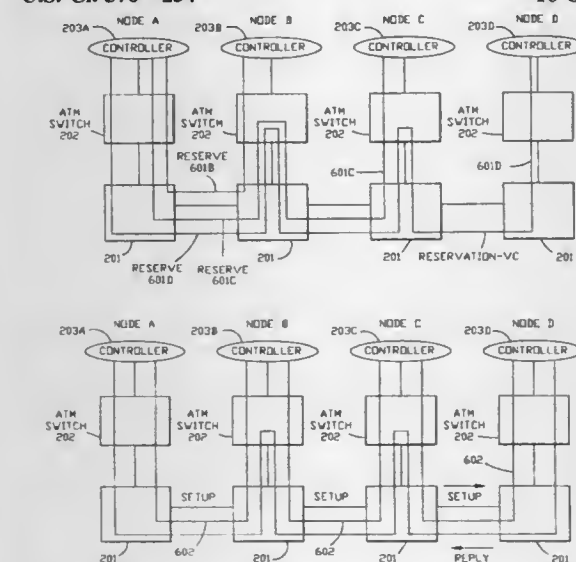
5,781,537
SETTING UP, TAKING DOWN AND MAINTAINING CONNECTIONS IN A COMMUNICATIONS NETWORK
Rajiv Ramaswami, Ossining, N.Y., and Adrian Segall, Haifa, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 7, 1995, Ser. No. 499,781

Int. Cl.⁶ H04M 7/00

U.S. Cl. 370—254

10 Claims



1. In a communications network having a plurality of switching nodes interconnected by a plurality of links, each of said switching nodes having a switch and an associated controller which controls the configuration of said switch, a method of establishing a desired connection between an originating switching node of said switching nodes and a destination node of said switching nodes, said method comprising:

- computing a path in a controller of the originating node, the path comprising a set of said links interconnecting a set of said nodes needed to establish said desired connection from said originating node to said destination node;
- sending reservation requests from the controller of the originating node simultaneously through separate channels to each node of said set of nodes interconnecting by said path to reserve and determine if said set of links is available to establish said desired connection along said path; and

(c) upon receiving an acknowledgement from said set of nodes that said set of links is available and have been reserved, transmitting a setup message sequentially between adjacent nodes starting from said originating node to each node of said set of nodes along said path until said setup message reaches said destination node, where said setup message is transmitted only between two adjacent nodes at any given time, and where each node of said set of nodes changes its switch configuration in response to said setup message so as to interconnect said set of links to establish said desired connection.

5,781,538
SUBSCRIBER UNIT IN A WIRELESS PERSONAL COMMUNICATION SYSTEM

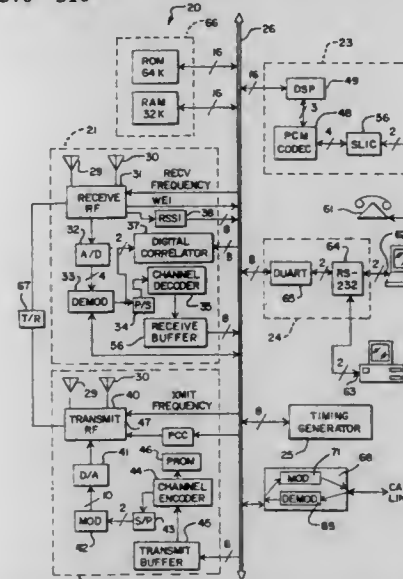
Kalyan Ganesan, Germantown; Ranjan Pant; Victor Liao, both of Gaithersburg; Tayyab Khan, Germantown; Desmond Coughlin, Ijamsville, all of Md., and Harry Johnson, Springfield, Va., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 344,272, Nov. 23, 1994. This application Jun. 7, 1995, Ser. No. 482,273

Int. Cl.⁶ H04J 3/00

U.S. Cl. 370—310

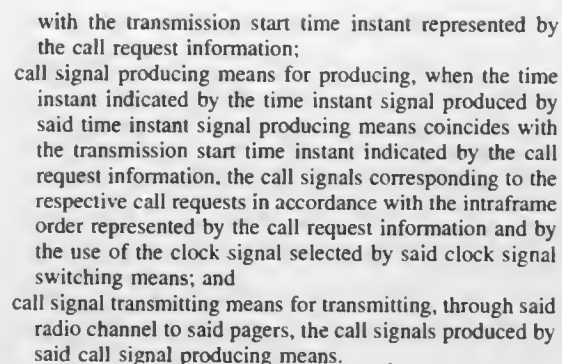
15 Claims



1. A subscriber unit for receiving and transmitting digital information in a wireless communication system, said subscriber unit comprising:

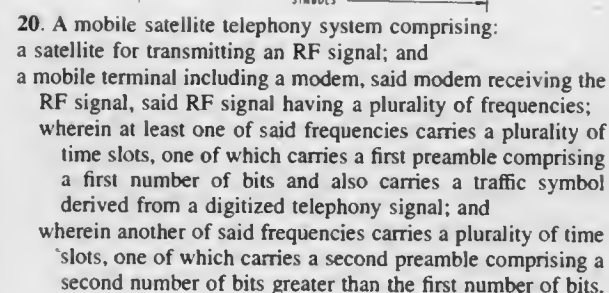
- a plurality of antennas;
- an RF receive section including a diversity selection unit for receiving input signals from each of the antennas;
- an RF transmit section for generating an output signal to be transmitted over at least one of the antennas;
- means for modelessly coupling digital signals between a first external processing device, the RF receive section, and the RF transmit section such that the subscriber unit is adapted to communicate data between the first external processing device and a second external processing device;
- a circuit for downconverting radio frequency signals, the circuit including (a) a first mixer connected to a first local oscillator for producing an adjustable first local oscillator frequency; (b) a second mixer connected to a second local oscillator centered at a predetermined second local oscillator frequency; and (c) a third mixer connected to a third local oscillator centered at a predetermined third local oscillator frequency; and
- a databus interconnecting said RF receive section, said RF transmit section, and said modeless coupling means.

5 Claims



U.S. Cl. 370—321

21 Claims



U.S. Cl. 370—335

51 Claims

1. A paging system, comprising:

- a central station which includes:
 - call request receiving means for receiving call requests for pagers using any of a plurality of predetermined bit rates;
 - frame unit classifying means supplied with the call requests received by said call request receiving means for classifying the call requests into every unit to be contained in each signal frame as a transmission unit upon transmission of call signals for calling said pagers through a radio channel;
 - intraframe order setting means supplied with those call requests to be contained in each signal frame for ordering those call requests within each signal frame in accordance with the order of the predetermined bit rates;
 - bit rate switch timing calculating means for calculating, when the call signals corresponding to the call requests are produced in the order determined by said intraframe order setting means, a timing of transition of the bit rates for each transition point with a leading edge of the signal frame used as a reference point;
 - timer means for delivering a current time instant;
 - transmission start time setting means for setting, with reference to the current time instant delivered from said timer means, a transmission start time instant to start transmission of each signal frame through said radio channel; and
 - call request information broadcasting means for broadcasting call request information including those call requests classified for each signal frame in correspondence to the order within the signal frame, the bit rate switch timing, and the transmission start time instant of the signal frame; and
- a plurality of base stations each of which includes:
 - call request information receiving means for receiving the call request information transmitted from said central station;
 - clock signal producing means for producing clock signals having frequencies corresponding to the respective bit rates possibly used by said pagers;
 - time instant signal producing means for producing a time instant signal coincident with the current time instant delivered from said timer means in said central station; and
 - clock signal switching means for switching the clock signals in accordance with the order of the predetermined bit rates to select a clock signal, the switching operation being carried out every time when the bit rate switch timing indicated by the call request information comes with respect to a reference time point at which the time instant represented by the time instant signal produced by said time instant signal producing means coincides

47. In a communications system providing wireless communications services to a plurality of subscriber stations in an urban serving area, the communications system comprising at least one base station and a plurality of antennas spatially distributed around said urban serving area, a method for providing spread spectrum-processed information signals to said urban serving area comprising the steps of:

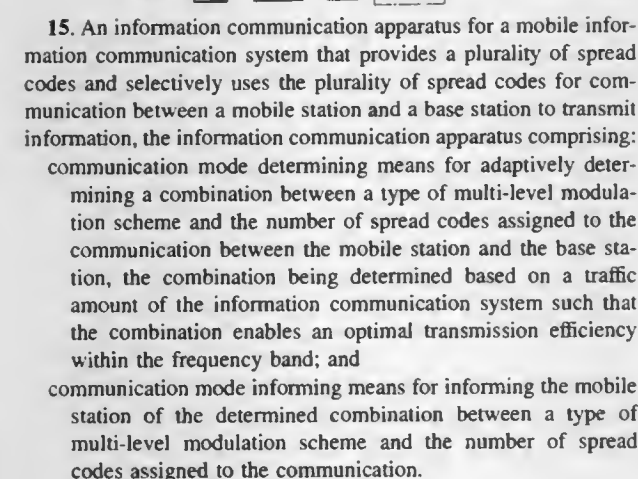
outputting a spread spectrum-processed information signal from said at least one base station;

successively supplying said spread spectrum-processed information signal to said antennas at corresponding delay intervals greater than said chip interval and less than a base station sequence offset of said at least one base station; and transmitting the spread spectrum signals from the respective antennas into the urban serving area to form overlapping coverage regions that minimize shadowing effects.

Int. Cl.⁶ H04B 7/216

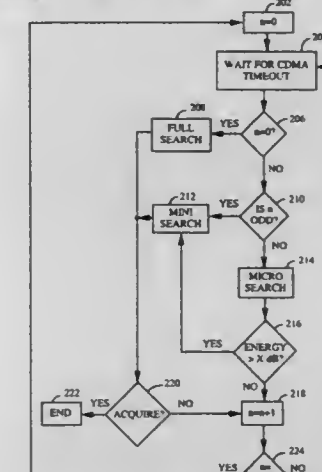
U.S. Cl. 370—342

19 Claims



U.S. Cl. 370—342

6 Claims



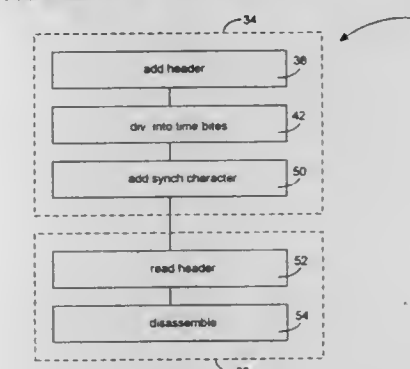
1. A method for acquiring, in a wireless communication device, a code division multiple access (CDMA) pilot signal having a pilot pseudonoise (PN) code offset, said wireless communication device receiving a signal, said method comprising the steps of:

- (a) correlating said received signal with a first set of PN code offset hypotheses to produce a first set of correlation metrics;
- (b) analyzing said first set of correlation metrics to determine whether one of said first set of PN code offset hypotheses matches said pilot PN code offset;
- (c) waiting for a first period if said pilot PN code offset does not match one of said first set of PN code offset hypotheses;
- (d) correlating said received signal with a second set of PN code offset hypotheses after step (c) to produce a second set of correlation metrics, said second set of PN code offset hypotheses being a subset of said first set of PN code offset hypotheses; and
- (e) analyzing said second set of correlation metrics to determine whether one of said second set of PN code offset hypotheses matches said pilot PN code offset.

Int. Cl.⁶ H04J 3/06

U.S. Cl. 370—389

13 Claims



1. A method for transmitting data streams of dissimilar packet structure across a serial communication link, comprising:
dividing each of the data streams into a plurality of sequences of data bits of dissimilar length and time duration, wherein at least one of the sequences of data bits comprise a partial byte; adding a synchronization character proximate to one of said sequences of data bits which has a length and time duration dissimilar from that of the other of said sequences of data bits to provide synchronization to and indication of the dissimilar length and associated time duration thereof; and interleaving the sequences of data bits into a serial data stream, wherein each of the sequences of data bits is selected without regard to the format of the individual data streams.

5,781,545

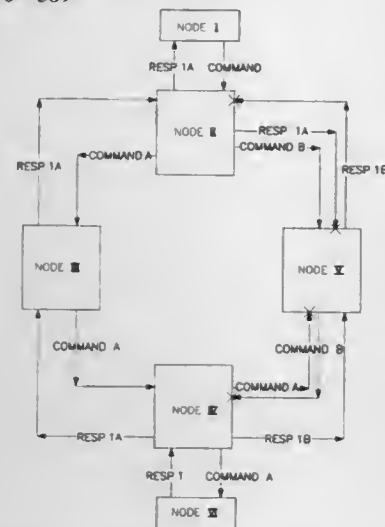
PACKET SOURCE EXCLUSION METHOD

Richard Dean Matthew, San Carlos, Calif., assignor to Harris Corporation, Melbourne, Fla.

Filed May 22, 1996, Ser. No. 651,567

Int. Cl.⁶ H04J 3/00

U.S. Cl. 370—389



1. A method of communicating information packets among plural nodes connected in a loop, each of the nodes having plural ports for receiving and transmitting the packets in the loop, the method comprising the steps of:

- initially transmitting each of plural information packets in both directions around the loop;
- providing each of the transmitted packets with its respective source node address; and
- at each of the nodes, when receiving each one of the transmitted packets,
 - start timing a period that is a maximum loop propagation delay, t_{MAX} ;
 - retransmitting the received packet from all ports of the receiving node, except the receiving port, and
 - until expiration of t_{MAX} , not permitting reception on ports other than the receiving port of ones of the transmitted packets having a source node address which is the same as the source node address of the received packet, and permitting reception thereof after expiration of t_{MAX} .

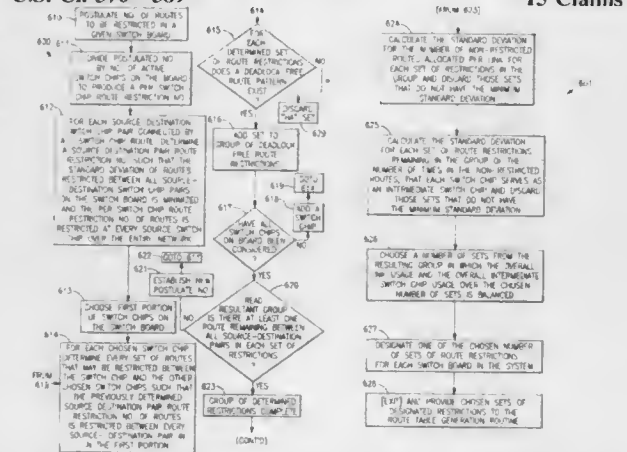
5,781,546
ROUTE RESTRICTIONS FOR DEADLOCK FREE ROUTING WITH INCREASED BANDWIDTH IN A MULTI-STAGE CROSS POINT PACKET SWITCH

Harish Sethu, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1996, Ser. No. 673,706

Int. Cl.⁶ H04L 12/28

U.S. Cl. 370—389



15. A program storage device readable by a machine, tangibly embodying a series of data structures representing a group of one or more sets of route restrictions, said route restrictions enabling the definition of one or more sets of prescribed routes for permitting communication between a source node and a destination node within network of nodes in said machine, and wherein each of said prescribed routes includes a link between a source node and one or more intermediate nodes and a link between the one or more intermediate nodes and a destination node, said data structures enabling the machine to define a global routing table by performing the method steps of:

- reading each of the route restrictions from said program storage device;
- defining said sets of prescribed routes by inhibiting communication over the network via the routes in the one or more sets of route restrictions;
- initializing a weight for each of the links traversed by the prescribed routes to zero;
- choosing, based upon the defined prescribed routes a set of prescribed routes having the fewest links which connect one of said source nodes to every one of said destination nodes in the network;
- incrementing the weight associated with each of said links in said chosen set of defined prescribed routes by one;
- writing the chosen set of defined prescribed routes for said one source node to said global routing table;
- repeating steps D through F until the chosen sets of defined prescribed routes for each of said source nodes have been written to said global routing table.

5,781,547

ROUTER AND METHOD FOR USE IN A COMMUNICATION SYSTEM

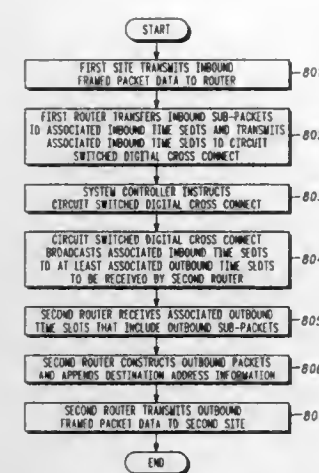
Christopher H. Wilson, Lake Zurich, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 29, 1996, Ser. No. 609,257

Int. Cl.⁶ H04L 12/56

U.S. Cl. 370—395

15 Claims
1. A router comprising
a packet-switched interface that receives inbound framed packet-data to provide inbound packets and that transmits outbound framed packet-data comprising outbound packets, the inbound framed packet-data including inbound address information that is not included with the inbound packets, the outbound framed packet-data including outbound address



information not included with the outbound packets, the inbound packets comprising inbound sub-packets, and the outbound packets comprising outbound sub-packets;
a circuit-switched, time-division multiplexed interface that transmits the inbound sub-packets in associated inbound time slots and that receives the outbound sub-packets from associated outbound time slots; and
a router controller, coupled to the packet-switched interface and the circuit-switched time-division multiplexed interface, that routes the inbound sub-packets to the associated inbound time slots based on the inbound address information and that constructs the outbound packets from the outbound sub-packets and routes the outbound packets with the outbound address information based on identifications of the associated outbound time slots, wherein a routing table of the router controller describes a one-to-one correspondence between the inbound address information and the associated inbound time slots, and between the outbound address information and the identifications of the associated outbound time slots.

5,781,548

Patent Not Issued For This Number

5,781,549

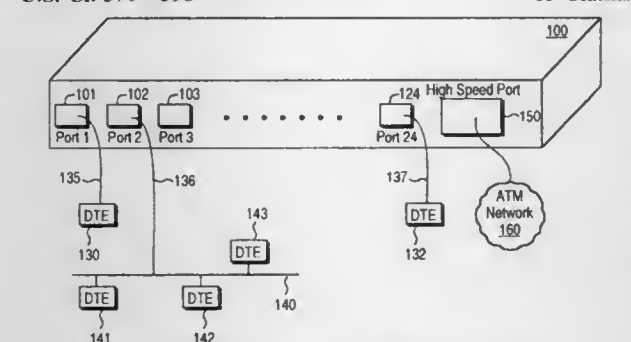
METHOD AND APPARATUS FOR SWITCHING DATA PACKETS IN A DATA NETWORK

William Dai, San Jose, Calif., assignor to Allied Telesyn International Corp., Sunnyvale, Calif.

Filed Feb. 23, 1996, Ser. No. 603,576

Int. Cl.⁶ H04L 12/56

U.S. Cl. 370—398



15 Claims
1. A network data communication apparatus comprising:
a first port coupled to receive an incoming network data packet;
a data packet segmentation unit in communication with said first port for segmenting said incoming data packet into a plurality of fixed-size data cells;

a cell bus in communication with said data packet segmentation unit for conveying said fixed-size data cells;
a data packet reassembly unit in communication with said cell bus for receiving said data cells and for reassembling said data cells into a network data packet;
a second port in communication with said data packet reassembly unit for transmitting said network data packet from said data communication apparatus;
a first additional plurality of ports each in communication with said data packet segmentation unit, said first additional plurality of ports coupled to receive incoming network data packets from a plurality of network source addresses;
a second additional plurality of ports each in communication with said data packet reassembly unit, said second additional plurality of ports coupled to transmit reassembled data packets to a plurality of network destination addresses;
a routing control unit in communication with said cell bus for monitoring data cell traffic on said cell bus and determining an output port(s) for network data packets, said routing control unit providing destination control packets for said data packet reassembly unit;
a routing table memory in communication with said routing control unit, said routing table memory for storing a data table of said network source addresses and the ports associated with said source addresses;
a control bus in communication with all of said ports of said network data communication apparatus for receiving port status data cells relating to activity associated with each of said ports;
a port status counter coupled to said control bus for accumulating said port status data cells;
an I/O bus;
bus bridging circuitry coupled between said I/O bus and said cell bus for conveying data traffic therebetween;
a high-speed network controller coupled to said I/O bus; and
a high-speed network interface coupled to said high-speed network controller for coupling said network data communication apparatus to a high-speed network.

5,781,550

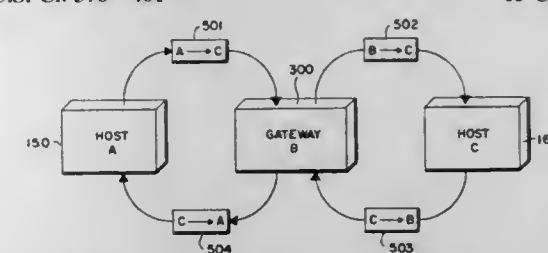
TRANSPARENT AND SECURE NETWORK GATEWAY
Fred L. Templin, Los Altos, Calif.; Gregory D. Skinner, both of Mountain View, Calif., and Dermot Matthew Tynan, Knocknacarra, Ireland, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 2, 1996, Ser. No. 594,632

Int. Cl.⁶ H04L 12/56

U.S. Cl. 370—401

15 Claims



1. A computer implemented method for communicating packets between a trusted computer and an untrusted computer connected by a gateway having a gateway address, each packet including a source address, a destination address and a payload, comprising the steps of:
receiving in the gateway, a first packet having a source address of the trusted computer, the destination address, and a first payload and excluding the gateway address; and in response sending, from the gateway, a second packet having a source address of the gateway, a destination address of the untrusted computer and the first payload unchanged, if the first packet has the destination address of the untrusted computer to enable the trusted computer to securely communicate with the untrusted computer.

5,781,551

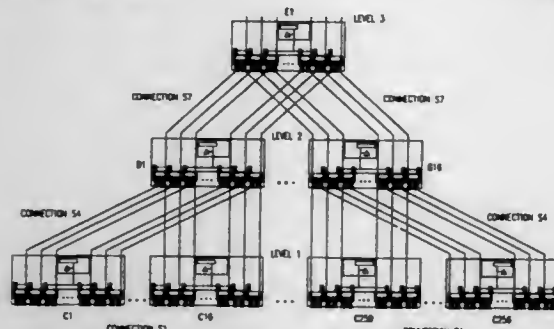
COMPUTER COMMUNICATIONS SYSTEM WITH TREE ARCHITECTURE AND COMMUNICATIONS METHOD
Eng C. Born, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 15, 1994, Ser. No. 306,557

Int. Cl.⁶ H04L 12/56

U.S. Cl. 370-408

17 Claims



1. A computer communications system containing multiple levels, said system comprising:
- a first level with at least 4 circuit boards, and
 - a second level with at least 1 circuit board connected to said first level, wherein each said circuit board of said first level and said second level include:
 - a. at least 4 output subcircuit boards;
 - b. a connecting subcircuit board;
 - c. a global postmaster; and
 - d. 2 parallel ring connections connecting said at least 4 output subcircuit boards, said connecting subcircuit board, and said global postmaster.

5,781,552

AUTOMATIC ADDRESS SETTER CAPABLE OF DETERMINING A NETWORK ADDRESS OF A HOST STATION

Akira Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

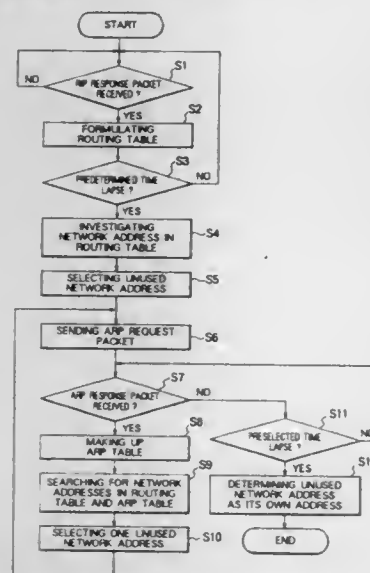
Filed Mar. 16, 1995, Ser. No. 404,988

Claims priority, application Japan, Mar. 16, 1994, 6-072667

Int. Cl.⁶ H04J 3/24

U.S. Cl. 370-447

9 Claims



1. An automatic network address setting circuit included in a host station connected to a local area network to allocate said automatic network address setting circuit's own network address to said host station, said automatic setting circuit comprising:

routing information reception means for receiving a routing information signal transmitted through said local area network;

memory means for memorizing said routing information signal received through said routing information reception means;

extracting means for extracting an unused address with reference to contents of said routing information signal stored in said memory means to determine said unused address as an extracted address;

confirming means for confirming whether or not another host station assigned with said extracted address is present; and

determining means for determining the own network address on the basis of a result of said confirmation.

5,781,553

DIGITAL WIRELESS PRIVATE BRANCH EXCHANGE SYSTEM

Sang-jun Choi, and Sung-tae Choi, both of Kyunggi-do, Rep. of Korea, assignors to LG Information & Communications, Ltd., Seoul, Rep. of Korea

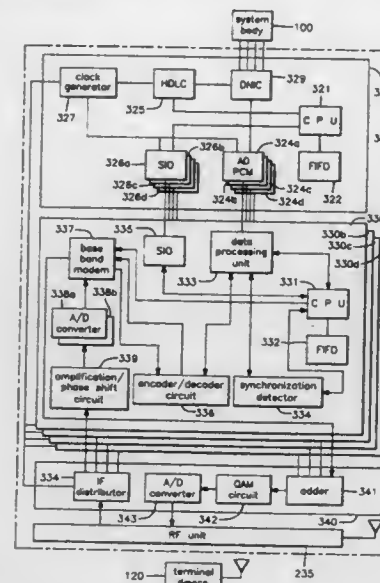
Filed Dec. 28, 1995, Ser. No. 579,686

Claims priority, application Rep. of Korea, Dec. 30, 1994, 94-39444; Dec. 30, 1994, 94-39455; Japan, Nov. 30, 1995, 95-45902

Int. Cl.⁶ H04J 13/02

U.S. Cl. 370-464

14 Claims



1. A digital wireless private branch exchange system comprising a system body for transmitting and receiving voice data and control data with pulse code modulation data formats, a terminal device for transmitting and receiving a radio frequency signal through a radio channel and a base station for converting the voice data and control data from said system body into a radio frequency signal, transmitting the radio frequency signal to said terminal device through said radio channel, receiving the radio frequency signal from said terminal device through said radio channel, extracting the voice data and control data from the received radio frequency signal and transmitting the extracted voice data and control data to said system body, wherein said base station comprises:

radio frequency transmission/reception means for modulating an analog intermediate frequency signal to convert it into the radio frequency signal, transmitting the radio frequency signal to said terminal device through said radio channel, receiving the radio frequency signal from said terminal device through said radio channel, demodulating the received radio frequency signal to convert it into an analog intermediate frequency signal and transferring the analog intermediate frequency signal;

5,781,556

Patent Not Issued For This Number

5,781,557

MEMORY TEST MODE FOR WORDLINE RESISTIVE DEFECTS

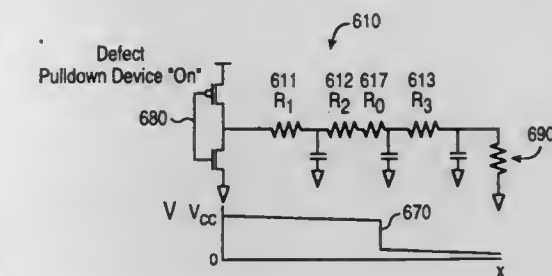
Jeffrey K. Greason, Portland, and Daniel R. Grumbling, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 31, 1996, Ser. No. 775,574

Int. Cl.⁶ G11C 29/00

U.S. Cl. 371-21.1

18 Claims



1. A method for detecting defects in a memory comprising: placing a pulldown device at an end of a wordline, wherein said pulldown device is located at said end of said wordline opposite a wordline driver, said pulldown device having a selected on resistance;
- turning said pulldown device on; and
- determining the voltage drop on said wordline.

5,781,554

METHOD AND APPARATUS FOR COMMUNICATING BETWEEN NODES IN A COMMUNICATIONS NETWORK
Rupert J. Organ, London, Great Britain, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB95/00108, § 371 Date Aug. 15, 1996, § 102(e) Date Aug. 15, 1996, PCT Pub. No. WO95/21497, PCT Pub. Date Aug. 10, 1995

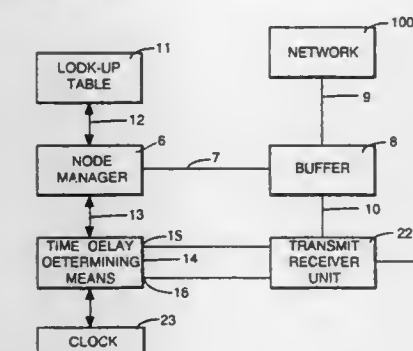
PCT Filed Jan. 20, 1995, Ser. No. 687,386

Claims priority, application United Kingdom, Feb. 4, 1994, 9402210

Int. Cl.⁶ H04J 3/24

U.S. Cl. 370-474

14 Claims



1. A method of communicating data in blocks between first and second nodes in a communications network, the method comprising:
- determining a time delay between transmission and reception of data blocks between the nodes,
- communicating the data blocks, the amount of data in each of which is controlled in accordance with the time delay thus determined,
- the amount of data in each block being controlled to be larger for smaller delays and smaller for larger delays, and
- the blocks being communicated within respective data cells which all have the same data-carrying capacity so that the fill factor of each cell is higher for smaller delays and lower for larger delays.

5,781,555

Patent Not Issued For This Number

5,781,558

DIAGNOSTIC MEMORY ACCESS

Graham Donald Inglis, Altrincham, and Barry Gordon Radley, Glossop, both of England, assignors to International Computers Limited, London, United Kingdom

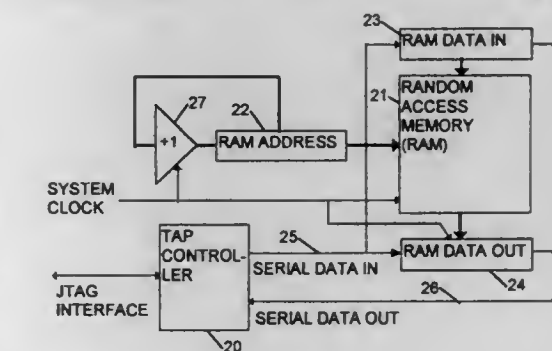
Filed May 13, 1997, Ser. No. 854,976

Claims priority, application United Kingdom, Aug. 14, 1996, 9617033

Int. Cl.⁶ G06F 11/00

U.S. Cl. 371-21.1

9 Claims



1. A data processing system comprising:
- (a) at least one processing module containing at least one block of memory, a plurality of internal registers, and a diagnostic interface allowing diagnostic access to said internal registers;
 - (b) a clock module for distributing system clock signals to each said processing module, and having a diagnostic interface by way of which the operation of said clock module can be controlled to selectively generate a single-shot clock pulse; and
 - (c) a diagnostic control unit connected to said diagnostic interfaces, said diagnostic control unit being operable to control said diagnostic interfaces to synchronise said single-shot clock pulse

from the clock module with a diagnostic access in said processing module, to thereby effect line-by-line loading or dumping of said block of memory.

5,781,559

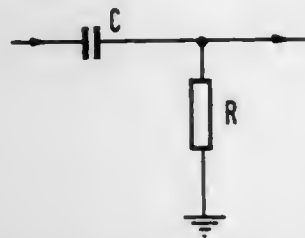
TESTABLE CIRCUIT

Mathias N. M. Muris; Franciscus G. M. De Jong; Johannes De Wilde, and Rodger F. Schuttert, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 18, 1996, Ser. No. 734,009
Claims priority, application European Pat. Off., Oct. 20, 1995, 95202835

Int. Cl.⁶ G01R 31/28

U.S. Cl. 371—22.31

15 Claims



1. A testable circuit which can be switched between a normal operating mode and a test mode, said circuit comprising: a first and a second signal path, connection means to couple the first signal path functionally to an input of the second signal path in the normal operating mode and to decouple the first signal path functionally from the input of the second signal path in the test mode; a detector for converting an analog signal on a test point into a digital signal; a register for storing the digital signal from the detector in the test mode, said register being readable via an output of the circuit; signal-generating means operative in the test mode to generate a test signal, on an input of the second signal path, containing a level transition; the test point being coupled to an output of the second signal path and the second signal path having a time-dependent response behavior, and the detector detecting whether a signal level on the test point has exceeded a threshold level at any instant during a predetermined time interval after the level transition, and signalling this occurrence by way of the digital signal.

5,781,560

SYSTEM TESTING DEVICE AND METHOD USING JTAG CIRCUIT FOR TESTING HIGH-PACKAGE DENSITY PRINTED CIRCUIT BOARDS

Kayoko Kawano; Yasushi Takaki, both of Kawasaki; Shinichi Sutou, Yokohama, and Kazuhiro Hara, Kiso-gun, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 395,973, Feb. 28, 1995, abandoned.

This application Jul. 30, 1997, Ser. No. 902,950

Claims priority, application Japan, Mar. 17, 1994, 6-046706

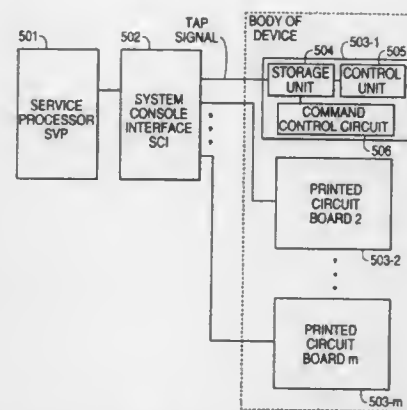
Int. Cl.⁶ G01R 31/28

U.S. Cl. 371—22.32

13 Claims

1. A device for testing a system including an integrated circuit disposed on a board, connected to an interface to receive via a bus a scan test signal, the system further including test logic comprising the device and system logic for performing normal operation of the system, the device being disposed on the board, and comprising:

storing means for, storing a command and data used to test the system logic;
controlling means for selectively inputting/outputting the command and data to said storing means; and



command control means for receiving the command and data from said storing means, analyzing the command, transferring the command and data to the system logic of the system to be tested in accordance with a result of the analysis, and receiving data from the system logic to read out a state of the system logic as a result of a test.

5,781,561

ENCODING APPARATUS FOR HIERARCHICALLY ENCODING IMAGE SIGNAL AND DECODING APPARATUS FOR DECODING THE IMAGE SIGNAL HIERARCHICALLY ENCODED BY THE ENCODING APPARATUS

Yutaka Machida, and Koji Imura, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

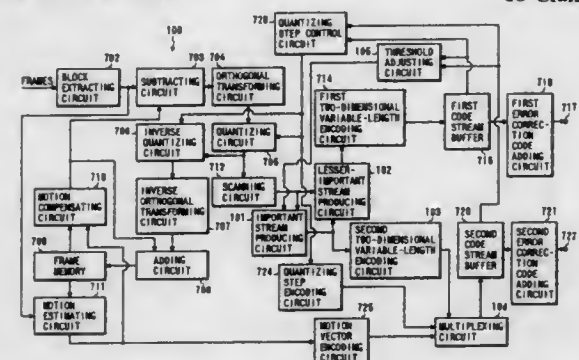
Filed Mar. 15, 1996, Ser. No. 616,423

Claims priority, application Japan, Mar. 16, 1995, 7-083522; Oct. 25, 1995, 7-299317

Int. Cl.⁶ H03M 13/00; H04N 1/415

U.S. Cl. 371—37.01

18 Claims

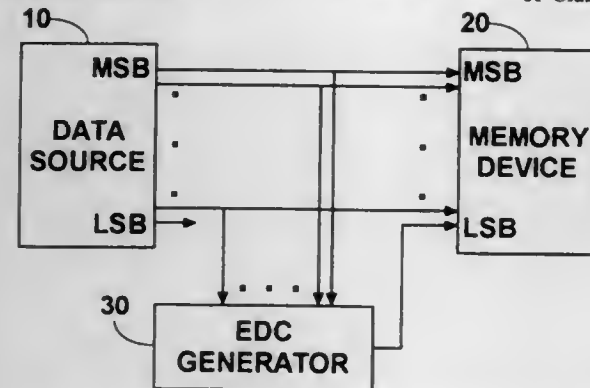


5,781,564
METHOD AND APPARATUS FOR DETECTING AND CONCEALING DATA ERRORS IN STORED DIGITAL DATA

Eric Carl Peterson, Baldwinsville, N.Y., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Filed Jun. 5, 1996, Ser. No. 658,797
Int. Cl.⁶ G06F 11/00; H03M 13/00

U.S. Cl. 371—31

11 Claims



1. A method for concealing errors in stored digital samples, comprising the steps of:
 - receiving a multibit digital input sample;
 - calculating an error detecting code, corresponding to the input sample, containing a predetermined number of bits;
 - forming a multibit digital storage sample by substituting the predetermined number of error detecting code bits for the predetermined number of least significant bits of the input sample;
 - storing the storage sample in a memory device;
 - retrieving a previously stored sample from the memory device;
 - examining the retrieved sample to detect an error;
 - if an error is detected, producing a substitute sample for the retrieved sample, otherwise producing the retrieved sample.

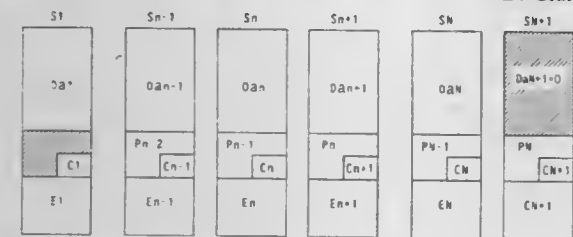
5,781,565
DATA RECORDING/REPRODUCING METHOD, DATA REPRODUCING APPARATUS AND RECORDING MEDIUM

Yoichiro Sako, Chiba; Tamotsu Yamagami; Satoshi Otsuka, both of Kanagawa, and Minoru Tobita, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
PCT No. PCT/JP95/01766, § 371 Date May 8, 1996, § 102(e) Date May 8, 1996, PCT Pub. No. WO96/08010, PCT Pub. Date Mar. 14, 1996

PCT Filed Sep. 6, 1995, Ser. No. 637,798
Claims priority, application Japan, Sep. 9, 1994, 6-216315
Int. Cl.⁶ G11B 20/18

U.S. Cl. 371—37.4

24 Claims



1. A data recording method comprising the steps of:
 - (a) generating a first error-correcting code with respect to a series of data of a predetermined amount;
 - (b) generating a second error-correcting code with respect to said series of data of said predetermined amount;
 - (c) generating data of respective recording units by adding said first error-correcting code to said data of said predetermined amount from which said first error-correcting code is gener-

ated and by adding said second error-correcting code to data of said predetermined amount other than said data of said predetermined amount from which said second error-correcting code is generated; and
(d) recording said data of said respective recording units on a recording medium.

5,781,566
CYCLIC REDUNDANCY CODER

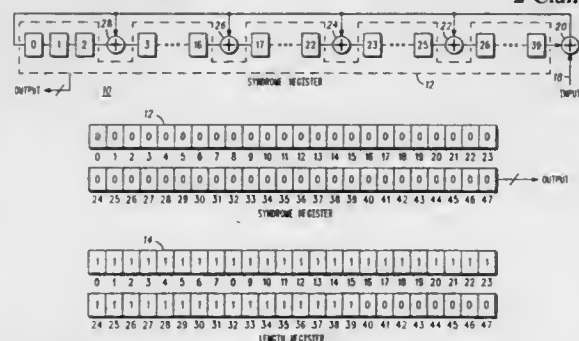
Irwin Bennett, Swindon; Barry King, Peatmoor; Andrew Page, and Paul Golding, both of Swindon, all of United Kingdom, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 24, 1996, Ser. No. 669,671

Int. Cl.⁶ H03M 13/00

U.S. Cl. 371—37.07

2 Claims



1. A cyclic redundancy coder comprising:
 - a shift register having a plurality of storage elements each for storing a bit of a cyclic redundancy code word;
 - a tap register for storing a tap position indicator indicative of tap positions in the cyclic redundancy code word that are subject to a logical operation;
 - an input for providing input data to the cyclic redundancy coder;
 - a logic feedback network coupled to receive the input data and arranged to provide the logical operation; the logic feedback network providing a plurality of data bits generated in response to the input data and each bit contained in each storage element identified by the tap position indicator, and producing the cyclic redundancy code word by applying at least one of the plurality of data bits to the storage element that is adjacent a tap position; and
 - a length register for storing a length indicator, the length register being logically coupled to the shift register whereby the length indicator sets a length of the shift register corresponding to a length of the cyclic redundancy code word, the length of the cyclic redundancy code word being programmable during operation of the cyclic redundancy coder.

5,781,567
DIGITAL CODING METHOD AND APPARATUS FOR THE CORRECTION OF BURST ERRORS

Yoichiro Sako, Chiba; Satoshi Otsuka, and Tamotsu Yamagami, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

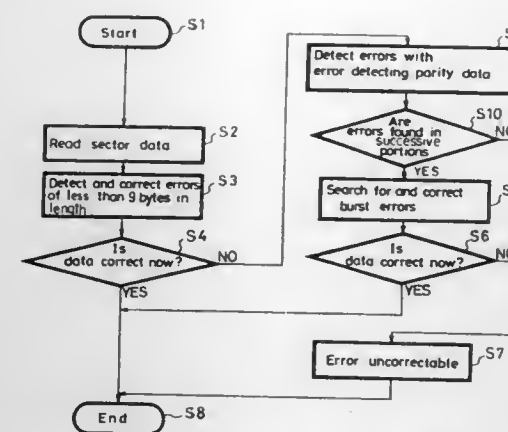
Filed Oct. 20, 1995, Ser. No. 546,147

Claims priority, application Japan, Oct. 24, 1994, 6-258523
Int. Cl.⁶ H03M 13/00

U.S. Cl. 371—39.1

17 Claims

1. An error-correcting apparatus for detecting and correcting a burst error affecting a plurality of reproduced signals representing adjacent data words comprising:



grouping means for dividing the reproduced signals into groups of signals, each group containing a predetermined number of adjacent data words and sharing at least one data word with another group;

calculating means, responsive to said groups of signals, for producing a plurality of syndrome signals representing a plurality of syndromes calculated for each group of signals; determining means for determining the position of an error of less than a predetermined length, if any, in each group of signals as a function of the syndrome signals; and burst error detecting means for detecting a burst error of greater than or equal to said predetermined length in the reproduced signals as a function of the determined positions of a plurality of errors.

5,781,568
ERROR DETECTION AND CORRECTION METHOD AND APPARATUS FOR COMPUTER MEMORY

Michael Ming-Cheng Hsieh, San Jose, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

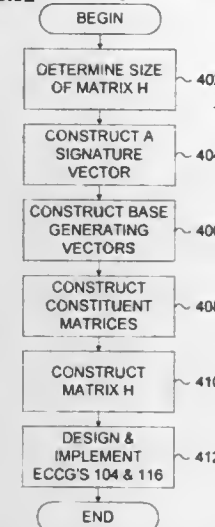
Continuation of Ser. No. 608,530, Feb. 28, 1996, abandoned.

This application Aug. 15, 1997, Ser. No. 921,766

Int. Cl.⁶ G11C 29/00; H03M 13/00

U.S. Cl. 371—40.12

85 Claims



1. A method of constructing error correction code generating circuitry in a memory, the method comprising:

(A) constructing a signature vector;
(B) constructing two or more mutually distinct base generating vectors, each of which has an odd weight if the signature vector has even weight or has an even weight if the signature vector has odd weight;

(C) for one or more combinations of two of the two or more base generating vectors, performing the following steps:

- (i) constructing a building block vector from the signature vector and the two base generating vectors; and
- (ii) constructing a constituent matrix which includes one or more vectors each of which:

(1) includes a concatenation of one or more instances of the building block vector and one or more instances of at least one of the two base generating vectors; and
(2) is distinct from all others of the one or more vectors of the constituent matrix;

(D) combining the one or more constituent matrices with an identity matrix to form a check matrix; and

(E) assigning a fixed value to a check vector, which is the matrix product of the check matrix and a composite vector which in turn includes subject data bits and associated parity bits, to define relationships between various states of subject data stored in the memory and valid parity data which corresponds to each of the states and which is stored in the memory;

wherein the signature vector is unique with respect to each of the building block vectors and with respect to each of the base generating vectors.

5,781,569
DIFFERENTIAL TRELLIS DECODING FOR CONVOLUTIONAL CODES

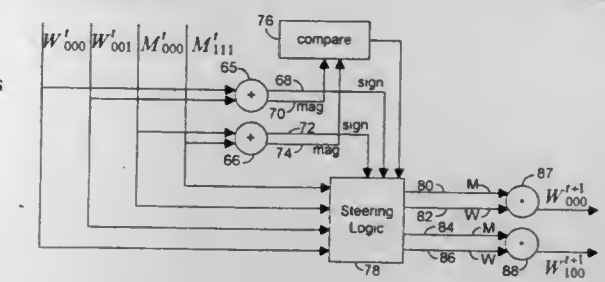
Marc P. C. Fossorier; Shu Lin, both of Honolulu, Hi., and Dojun Rhee, San Jose, Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 28, 1996, Ser. No. 738,261

Int. Cl.⁶ H03M 13/12

U.S. Cl. 371—43.7

15 Claims



6. A convolutional decoder apparatus coupled to receive a digital signal from a discrete-time channel during a time interval in which one of a plurality of code words is configured for transmission, and thereafter compare said digital signal to said plurality of code words to determine a plurality of metrics having a correspondence with a plurality of possible transitions, said convolutional decoder comprises:

a memory media configured to store a plurality of weighting factors associated with a plurality of possible current encoder states; and

an execution unit coupled to said memory media to determine a first difference between two of the plurality of weighting factors, to determine a second difference between two of the plurality of metrics, and thereafter compare said first difference and said second difference to determine a weighting factor and a surviving transition for said subsequent encoder state.

5,781,570

ERROR PROCESSING METHOD OF ADPCM VOICE TRANSMISSION SYSTEM AND APPARATUS THEREFOR
Takeshi Hattori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

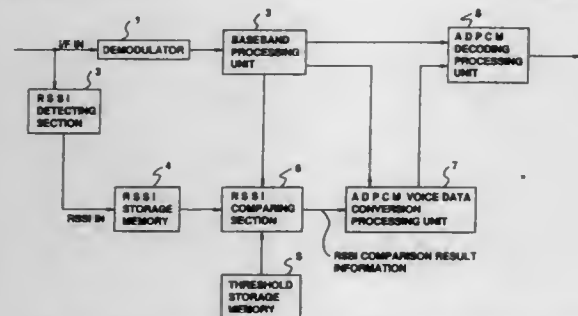
Filed Apr. 10, 1996, Ser. No. 629,471

Claims priority, application Japan, Apr. 12, 1995, 7-110235

Int. Cl.⁶ H04L 1/00; 1/20

U.S. Cl. 371-53

4 Claims



1. An error processing method of an ADPCM voice transmission system where a transmission frame including voice data subjected to differential quantization in ADPCM system, unique words checking establishment of synchronization and cyclic redundancy check codes is transmitted, and the voice data are decoded by a decoding section at the reception side, said method comprising the steps of:

- detecting whether error of the unique words exists or not and whether error of the cyclic redundancy check codes exists or not from said received transmission frame;
- detecting the reception signal strength of the ADPCM voice data in the received transmission frame in every ADPCM voice data;
- effecting decision whether the detected reception signal strength is less than a predetermined value or not when error of the unique word or error of the cyclic redundancy check codes being detected; and
- converting the difference value of the ADPCM voice data and inputting the converted value to said decoding section, when error of the unique words or error of the redundancy check codes is detected and the reception signal strength is less than the predetermined value.

5,781,571

OPTICAL PARAMETRIC OSCILLATOR WITH PORRO PRISM CAVITY

C. David Nabors, Sunnyvale, and George Frangineas, Fremont, both of Calif., assignors to Coherent, Inc., Santa Clara, Calif.

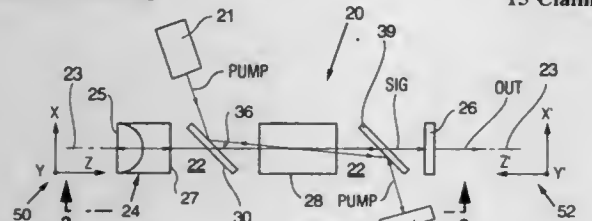
Continuation of Ser. No. 657,104, Jun. 3, 1996, abandoned.

This application Oct. 6, 1997, Ser. No. 944,250

Int. Cl.⁶ H01S 3/10; G02F 1/35

U.S. Cl. 372-21

15 Claims



1. An optical parametric oscillator, comprising a resonant cavity for signal light and a parametric gain medium disposed in said resonant cavity for converting pump light to signal light, said resonant cavity being terminated at one end thereof by a Porro prism, and said resonant cavity arranged such that said signal light resonates along a longitudinal axis of said resonant cavity; and

means for directing said pump light to make generally longitudinally counterpropagating initial and return passes through said gain medium along a path noncolinear with said longitudinal axis.

5,781,572

OPTICAL WAVELENGTH STABILIZING SYSTEM
Yoko Tahara; Yoshinori Ohkuma; Masaru Onishi, and Toshiyuki Masuko, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

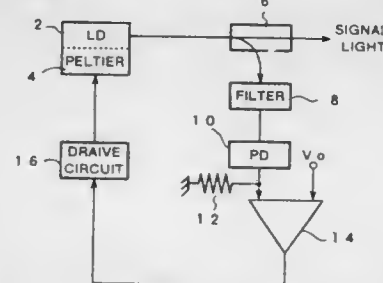
Filed May 6, 1996, Ser. No. 643,491

Claims priority, application Japan, Oct. 25, 1995, 7-277366

Int. Cl.⁶ H01S 3/04

U.S. Cl. 372-34

10 Claims



1. An optical wavelength stabilizing system comprising:
- a laser diode for emitting signal light;
 - a Peltier element for controlling a temperature of said laser diode;
 - a driving means for driving said Peltier element;
 - an optical branching means for branching said signal light into two components;
 - an optical filter inserted in an optical path of one of said two components obtained by said optical branching means, said optical filter having a portion whose transmittance changes with changes in wavelength;
 - a photodetector for detecting said one component passed through said portion of said optical filter;
 - a converting means for converting a current output from said photodetector into a voltage; and
 - a comparator for comparing said voltage obtained by said converting means and a reference voltage to output a voltage difference between said voltage and said reference voltage to said driving means.

5,781,573

HIGH POWER SOLID STATE LASER AND METHOD OF INCREASING POWER USING SAME

Santanu Basu, Rancho Palos Verdes, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

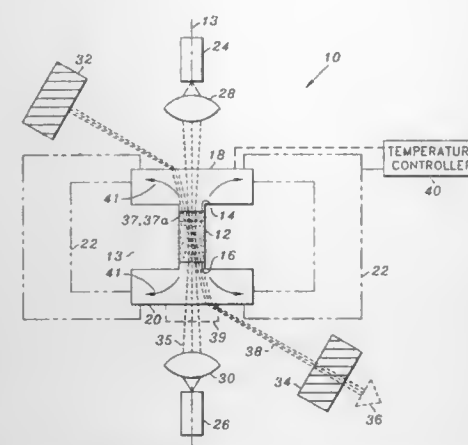
Filed Dec. 5, 1996, Ser. No. 760,546

Int. Cl.⁶ H01S 3/04

U.S. Cl. 372-34

39 Claims

1. A high power solid state laser, said laser comprising:
- a) a solid state laser medium having two ends and a longitudinal axis extending between the two ends;
 - b) at least one laser diode configured to end pump the laser medium;
 - c) a resonator in optical alignment with the laser medium;
 - d) a transparent and thermally conductive end cap disposed at each end of the laser medium and in thermal communication therewith; and
 - e) at least one heat sink in thermal communication with the end caps;
 - f) wherein the end caps and the heat sink(s) cooperate to effect heat flow from the laser medium such that a substantial component of the heat flow is along the longitudinal axis of the laser medium, thus mitigating undesirable transverse tem-



perature gradients within the laser medium and enhancing average power output therefrom.

20. A method for increasing average output power of an end pumped solid state laser, said method comprising the steps of:

- a) conductively cooling a solid state laser medium, the step of conductively cooling the laser medium comprising the steps of:
 - i) physically constraining heat flux within the laser medium to have a major component thereof along a longitudinal axis of the laser medium;
 - ii) removing heat from the laser medium at at least one end thereof;
- b) wherein physically constraining heat flux within the laser medium to have a major component thereof along a longitudinal axis minimizes an angle between pumping of the laser medium and heat flux therethrough so as to mitigate focusing and depolarization of laser radiation generated thereby.

5,781,574

LIQUID CIRCULATION SYSTEM FOR COOLING A LASER HEAD

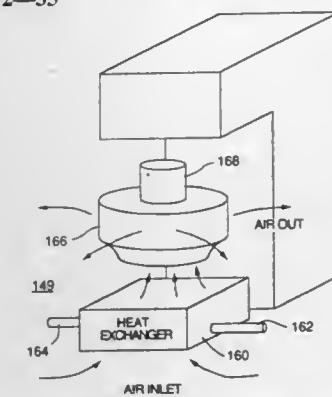
Kevin P. Connors, Sunnyvale; James L. Hohart, Los Altos Hills; Edward D. Reed, Sunnyvale; David Trost, San Francisco, all of Calif.; Kenneth J. Bossie, Tucson, Ariz.; Thomas William McCurnin, Tucson, Ariz.; Gerald M. Mitchell, Tucson, Ariz., and J. Michael Yarborough, Tucson, Ariz., assignors to Coherent, Inc., Santa Clara, Calif.

Division of Ser. No. 331,359, Oct. 27, 1994, Pat. No. 5,659,563, which is a division of Ser. No. 57,084, May 5, 1993, Pat. No. 5,375,132. This application Jun. 12, 1997, Ser. No. 873,823

Int. Cl.⁶ H01S 3/04

U.S. Cl. 372-35

8 Claims



1. A liquid circulation system for cooling a laser head comprising:
- main storage tank for holding a cooling liquid;
 - a pump for circulating the liquid from the tank through the laser head and back into the tank; and
 - a heat exchanger for cooling the liquid, said heat exchanger including liquid carrying coils, said heat exchanger further

including an impeller fan rotatable about an axis, said fan being located adjacent said coils for drawing air across said coils in an axial direction with respect to the fan and for expelling the air radially with respect to the fan.

5,781,575

SURFACE EMITTING LASER DEVICE WITH A VERTICAL CAVITY

Olle Nilsson, Apelvägen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

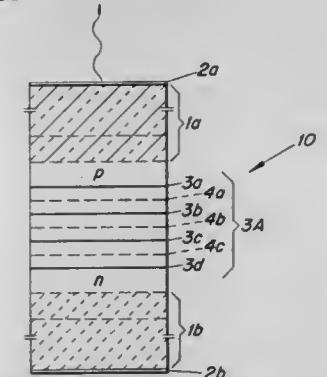
Division of Ser. No. 303,623, Sep. 9, 1994, abandoned. This application Jan. 2, 1997, Ser. No. 775,886

Claims priority, application Sweden, Oct. 9, 1993, 9302950

Int. Cl.⁶ H01S 3/19

U.S. Cl. 372-50

18 Claims



1. A surface emitting laser device with at least two active regions in one optical cavity, the optical cavity being vertical and vertically substantially confined by or limited by two dielectric reflecting devices, wherein a vertical optical standing wave pattern is created in the optical cavity, the active regions are electrically connected in series and arranged in horizontal planes corresponding to maximum electro-optical field strength and the voltage drop across the active regions is proportional to the number of active regions of the device, electrical contact regions are arranged in horizontal planes corresponding to minimum electro-optical field strength, and the device emits laser light generated in one single beam that comprises only one mode.

5,781,576

SEMICONDUCTOR LASER DEVICE AND OPTICAL DISK DRIVE

Katsuhiko Kimura; Shozo Saegusa, both of Ibaraki-ken, and Masaru Muranishi, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

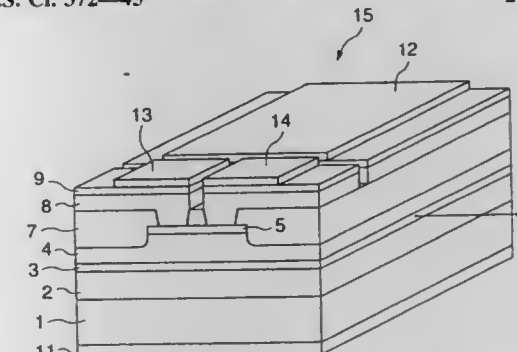
Filed Aug. 16, 1996, Ser. No. 697,002

Claims priority, application Japan, Sep. 19, 1995, 7-239411

Int. Cl.⁶ H01S 3/18

U.S. Cl. 372-45

2 Claims



2. An optical disk drive having an optical disk, a semiconductor laser light source for emitting a laser beam, an optical focussing system for focussing the laser beam from said semiconductor laser

light source on said optical disk, and an optical detecting system for detecting the laser beam reflected from said optical disk, characterized in that:

said semiconductor laser light source includes a semiconductor laser device made of semiconductor crystals having an active layer for performing light amplification through current injection and guiding light in waveguide, a reflection member for reflecting light into said active layer, and a top electrode and a bottom electrode used for current injection to said active layer, wherein said top electrode is divided into a plurality of electrodes, and current is independently injected from each of the plurality of divided electrodes to said bottom electrode to emit laser radiation in the direction along the optical axis of the waveguide in said active layer;

wherein said optical disk drive further comprises:

aberration detecting means for detecting an aberration generated at said optical focussing system and said optical disk; and correction means for correcting said aberration by controlling injection current to said semiconductor laser device and changing the shape of a laser radiation wave front in accordance with an output of said aberration detecting means.

5,781,577

SEMICONDUCTOR LASER

Yutaka Nagai, and Akihiro Shima, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

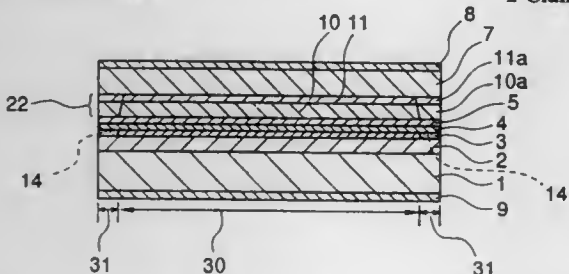
Filed Jan. 17, 1996, Ser. No. 586,155

Claims priority, application Japan, Mar. 2, 1995, 7-042775

Int. Cl.⁶ H01S 3/18

U.S. Cl. 372-46

2 Claims



1. A semiconductor laser having resonator facets and comprising:

- a first conductivity type semiconductor substrate;
- a first conductivity type lower cladding layer disposed on said first conductivity type semiconductor substrate;
- a quantum well structure active layer comprising alternately laminated barrier layers and well layers, disposed on said lower cladding layer, disordered regions in said quantum well structure active layer extending between the resonator facets and sandwiching a central region of said quantum well structure active layer;
- a second conductivity type first upper cladding layer disposed on said quantum well structure active layer;
- a ridge structure disposed on said first upper cladding layer opposite the central region of said quantum well structure active layer, extending in a resonator length direction, and reaching the resonator facets, said ridge structure having a first region, other than proximate the laser resonator facets, comprising a second conductivity type second upper cladding layer and a second conductivity type first contact layer, disposed on said second upper cladding layer, and a second region, adjacent a resonator facet, comprising a first conductivity type first semiconductor layer of the same material and thickness as said second upper cladding layer and a first conductivity type second semiconductor layer of the same material as said first contact layer and disposed on said first semiconductor layer, said first contact layer being a different material from said second upper cladding layer;

a first conductivity type current blocking layer having an energy band gap larger than that of said second upper cladding layer, disposed on said first upper cladding layer, and burying said ridge structure; and

a second conductivity type second contact layer disposed on said current blocking layer and said ridge structure.

5,781,578

OPTICAL SEMICONDUCTOR DEVICE

Kazuhisa Takagi, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

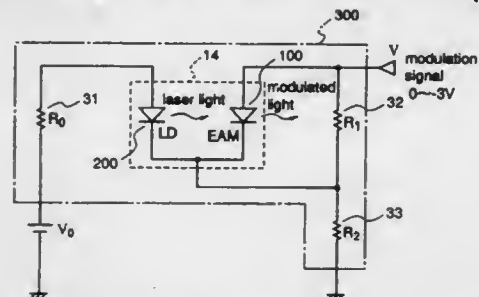
Filed Oct. 18, 1996, Ser. No. 735,080

Claims priority, application Japan, Jul. 29, 1996, 8-198783

Int. Cl.⁶ H01S 3/096

U.S. Cl. 372-50

4 Claims



1. An optical semiconductor device comprising:

- a semiconductor laser diode having a first electrode for receiving a current for driving the laser diode and a second electrode;
- a modulator for modulating light emitted from the semiconductor laser diode, the modulator having a third electrode for receiving a current for driving the modulator, and a fourth electrode connected to and common with the second electrode of the semiconductor laser diode;
- a first resistor having a terminal connected to the first electrode;
- a second resistor connected to the third electrode and directly to the fourth electrode; and
- a third resistor having a first terminal connected to the fourth electrode and a second terminal connected to ground.

5,781,579

MICROWAVE EXCITED GAS LASER APPARATUS

Doukei Choo, Amagasaki; Shigeki Yamane, Kobe, and Daiji Narita, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

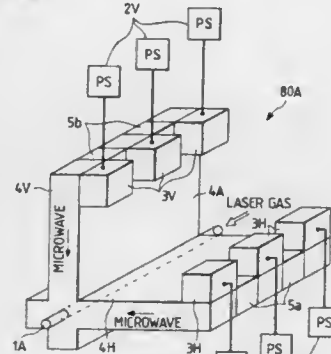
Filed Jan. 24, 1997, Ser. No. 787,709

Claims priority, application Japan, Jan. 25, 1996, 8-032953

Int. Cl.⁶ H01S 3/03

U.S. Cl. 372-64

9 Claims



1. A microwave excited gas laser apparatus comprising:

- a single unit having at least first, second, third, and fourth waveguides, the first and second waveguides meeting at a first intersection, the third and fourth waveguides meeting at a second intersection;

a discharge tube containing a laser medium gas and extending through the first and second intersections; and means for radiating microwaves into the first, second, third, and fourth waveguides;

wherein the discharge tube in the first intersection is exposed to a microwave propagated along the first waveguide and a microwave propagated along the second waveguide, and the discharge tube in the second intersection is exposed to a microwave propagated along the third waveguide and a microwave propagated along the fourth waveguide.

5,781,580

DIODE PUMPING MODULE

Michael Winik, Mazkeret Batia, Israel, assignor to Elop Electro-Optics Industries Ltd., Rehovot, Israel

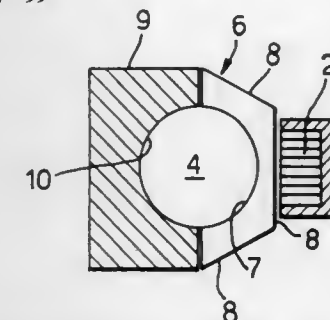
Filed Nov. 14, 1996, Ser. No. 749,233

Claims priority, application Israel, Nov. 23, 1995, 116106

Int. Cl.⁶ H01S 3/08

U.S. Cl. 372-99

11 Claims



1. A diode pumping module for a laser system, comprising:

- a laser rod and a diode light source for excitation of said laser rod, said diode source being constituted by at least one diode array;
- a dual-function optical coupler/heat conductor, made of a transparent material, located on one side of said laser rod between said at least one diode array and said laser rod and attached to said rod, said optical coupler/heat conductor being operative to guide light from said diode light source into said rod while adjusting the angular spread of said light and also serving as a heat conductor to conduct heat away from said rod; and
- a dual-function heat conductor/light reflector, made of a non-transparent material, located on a side of said laser rod opposite to said one side and attached to said rod, said heat conductor/reflector being operative to conduct heat away from said laser rod and to reflect unabsorbed diode light back into said rod.

5,781,581

INDUCTION HEATING AND MELTING APPARATUS WITH SUPERCONDUCTIVE COIL AND REMOVABLE CRUCIBLE

Oleg Fishman, Maple Glen, Pa., and Robert C. Turner, Edgewater Park, N.J., assignors to Inductotherm Industries, Inc., Rancocas, N.J.

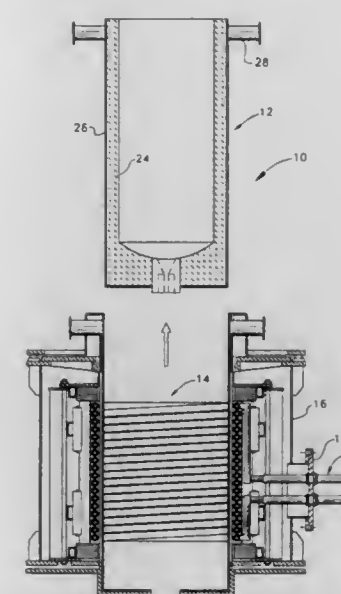
Filed Apr. 8, 1996, Ser. No. 629,203

Int. Cl.⁶ H05B 6/22

U.S. Cl. 373-152

10 Claims

1. An induction heating apparatus comprising a refractory vessel for holding a quantity of material to be heated by the apparatus, the vessel being surrounded by and spaced apart from an induction coil



comprising a plurality of helical turns, the exterior surface of the induction coil is provided with a layer of high-temperature superconducting material.

5,781,582

FREQUENCY AGILE TRANSCEIVER WITH MULTIPLE FREQUENCY SYNTHESIZERS PER TRANSCEIVER

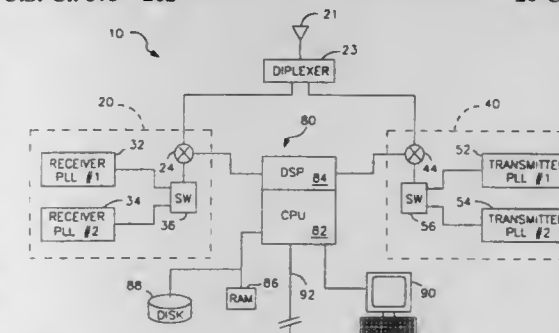
Gerald F. Sage, Mountain View, and Gurbux S. Msutta, San Jose, both of Calif., assignors to InterWAVE Communications International Ltd., Hamilton, Bermuda

Filed May 4, 1995, Ser. No. 434,597

Int. Cl.⁶ H04K 1/04; H04L 27/26; H04B 1/38

U.S. Cl. 375-202

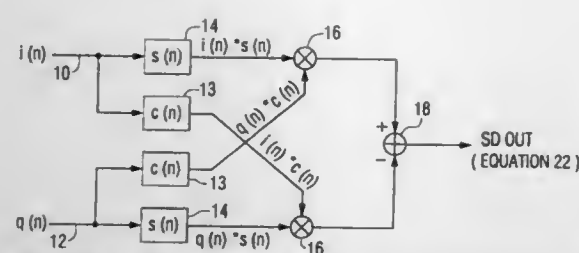
26 Claims



24. A method of communicating over a cellular network between a mobile station and a base station having a receiver containing a first controllable receiver frequency source and a second controllable receiver frequency source, and a processor, said method comprising the steps of:

- receiving inbound information from the mobile station at a first time on a first predetermined frequency associated with the first receiver frequency source and at a second time on a second predetermined frequency associated with the second receiver frequency source;
- decoding said inbound information;
- error-correcting the inbound information;
- storing error statistics regarding the errors detected in said error-correcting step; and
- when the error statistics exceed a predetermined threshold, modifying the first predetermined frequency.

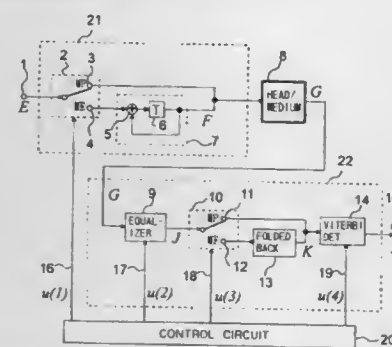
1. A digital slope detector operating in baseband for comparing signal output powers of upper and lower sidebands of a received passband signal, said digital slope detector being in a quadrature amplitude modulation (QAM) radio system and comprising a first pair of in-phase and quadrature filters for providing convolutions of a demodulated I-channel baseband signal on $p(n)\cos(Bn)$ and on $p(n)\sin(Bn)$, and a second pair of in-phase and quadrature filters for providing convolutions of a demodulated Q-channel baseband signal on $p(n)\cos(Bn)$ and on $p(n)\sin(Bn)$, where $p(n)$ is an impulse response of a low pass filter centered on baseband, and B



5,781,590
PARTIAL RESPONSE MAXIMUM LIKELIHOOD (PRML) SIGNAL PROCESSING APPARATUS
Masato Shiokawa, and Hiromi Honma, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Apr. 21, 1997, Ser. No. 844,660
Claims priority, application Japan, Apr. 19, 1996, 8-098344
Int. Cl.⁶ H04L 27/06

U.S. Cl. 375—341

9 Claims



1. A signal processing apparatus which performs PRML (Partial Response Maximum Likelihood) signal processing for a reproduction signal from a recording medium, comprising an equalizer to which the reproduction signal is inputted and which equalizes the reproduction signal with equalizer transfer characteristics, the equalizer transfer characteristics being settable;

a first memory storing the equalizer transfer characteristics for MP (mark position) recording;

a second memory storing the equalizer transfer characteristics for ME (mark edge) recording;

a folded back value calculation circuit for folding back an input signal thereto with reference to a predetermined level to output a folded back calculation circuit output signal corresponding to an absolute value of a difference between the predetermined level and the input signal;

a Viterbi detector having a path memory and performing a Viterbi detection with reference amplitudes, the reference amplitude being settable;

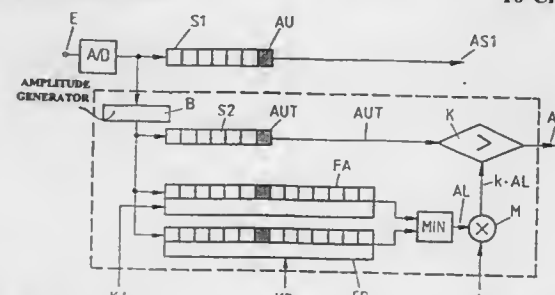
a third memory storing the reference amplitudes for the MP recording; and

a fourth memory storing the reference amplitudes for the ME recording;

said path memory being constructed based on a structure of a trellis for a signal recorded by the MP recording; wherein when the reproduction signal based on the MP recording is reproduced, the equalizer transfer characteristics for the MP recording are set to the equalizer, the reference amplitude for the MP recording are set to the Viterbi detector, and the output of the equalizer is directly supplied to the Viterbi detector, and when the reproduction signal based on the ME recording is reproduced, the equalizer transfer characteristics for the ME recording are set to the equalizer, the reference amplitude for the ME recording are set to the Viterbi detector, and the output of the equalizer is supplied to the Viterbi detector via the folded back value calculation circuit.

5,781,591
DIGITAL METHOD FOR DETECTING PULSES OF SHORT DURATION AND ARRANGEMENT FOR IMPLEMENTING THE METHOD
Günther Wolf, Neu-Ulm, Germany, assignor to Daimler-Benz Aerospace AG, Munich, Germany
Filed Nov. 29, 1996, Ser. No. 758,433
Claims priority, application Germany, Dec. 2, 1995, 195 45 022.1

Int. Cl.⁶ H04L 27/06; G01R 23/06; H03K 9/02
U.S. Cl. 375—342 10 Claims



1. A digital method for detecting pulses of short duration, comprising the following steps:

providing an input signal which is comprised of digital samples; examining each sample of the input signal to determine whether the sample belongs to a pulse to be detected; and detecting only those pulses whose pulse length is smaller than an associated predetermined pulse length threshold value and whose pulse height is larger than an associated predetermined amplitude threshold value, with said step of detecting including:

generating amplitude values (A(n)) associated with the samples, by an amplitude generator;

supplying the generated amplitude values to at least one FIR filter having a predetermined number of filter stages;

setting a window mask having a predetermined width as well as a frame mask in the at least one FIR filter, using at least one set of filter coefficients with the frame mask surrounding the window mask but not overlapping it;

passing the amplitude values (A(n)) through the frame mask and the window mask at the same time;

for an amplitude value under test (AUT), to which a predetermined position is allocated within the window mask, determining an amplitude value magnitude (AL) by a minimum comparator (MIN) between the frame masked value and the window masked value provided by the at least one FIR filter, multiplying the determined amplitude value magnitude (AL) by a predetermined weighting factor (k) to form an amplitude threshold value (SW); and

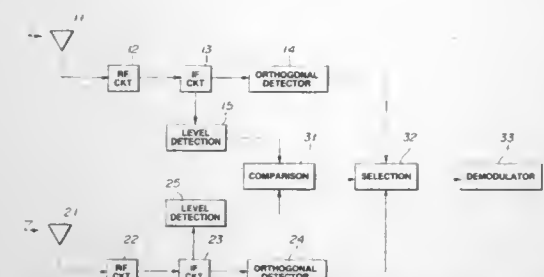
marking all samples whose amplitude is larger than the amplitude value (SW).

5,781,592
SELECTIVE DIVERSITY SYSTEM
Atsushi Masuda, Sagami, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
PCT No. PCT/JP94/01599, § 371 Date Mar. 27, 1996, § 102(e) Date Mar. 27, 1996, PCT Pub. No. WO95/09495, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 28, 1994, Ser. No. 619,760
Claims priority, application Japan, Sep. 28, 1993, 5-241566
Int. Cl.⁶ H04B 7/08; H04L 1/02
U.S. Cl. 375—347 4 Claims

1. A selective diversity apparatus comprising:

a plurality of antennas;

a plurality of receiving circuit branches, respectively provided in association with the plurality of antennas, for receiving reception signals of the respective antennas, each signal communi-



cated over a time slot, each time slot including a preamble signal period, and a guard time period being disposed between the time slots;

a plurality of level detection means for detecting reception levels of the respective receiving circuit branches;

judgment means for judging which one of the receiving circuit branches has a largest reception level based on detection outputs of the plurality of level detection means;

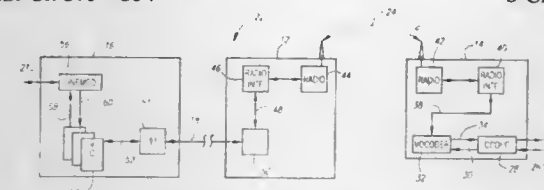
selection means for selecting the one of the plurality of receiving circuit branches based on a judgment output of the judgment means; and

enabling means responsive to the selection means for enabling the judgement means in the preamble period and for enabling the selection means in the guard time period.

5,781,593
METHODS AND APPARATUS FOR VOCODER SYNCHRONIZATION IN MOBILE COMMUNICATION NETWORK
Bryan K. Petch, Elbert, and Charles L. Lindsay, Monument, both of Colo., assignors to Ominpoint Corporation, Colorado Springs, Colo.
Filed Nov. 14, 1996, Ser. No. 746,700
Int. Cl.⁶ H04L 7/00

U.S. Cl. 375—354

8 Claims



1. A method for synchronizing a remote station vocoder with a base station vocoder in a communication network, comprising the steps of:

obtaining a synchronized over-the-air transmission slot between a radio interface of the respective remote station and a radio interface of the respective base station;

transmitting a remote station voice frame, including both remote station synchronization data and bearer data, respectively, from the remote station vocoder to the remote station radio interface;

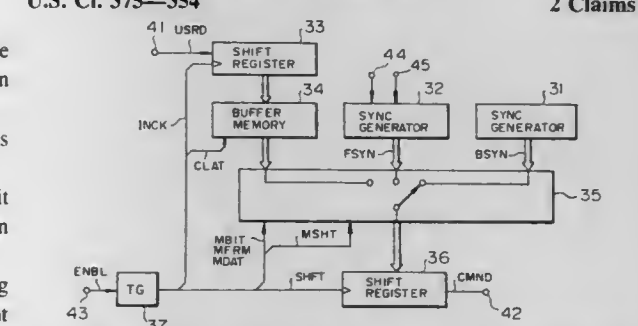
removing the remote station synchronization data from the remote station voice frame at the remote station radio interface;

transmitting the bearer data from the remote station radio interface to the base station radio interface in the over-the-air transmission slot;

appending base station synchronization data to the bearer data at the base station radio interface to thereby form a base station voice frame; and

transmitting the base station voice frame to the base station vocoder.

5,781,594
DATA TRANSFER CIRCUIT FOR USE WITH A BASE UNIT OR A HANDSET OR A TELEPHONE SYSTEM
Nobuo Hareyama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Division of Ser. No. 598,945, Feb. 9, 1996, Pat. No. 5,657,464.
This application Mar. 28, 1997, Ser. No. 827,227
Claims priority, application Japan, Feb. 20, 1995, 7-055169
Int. Cl.⁶ H04L 7/00 2 Claims



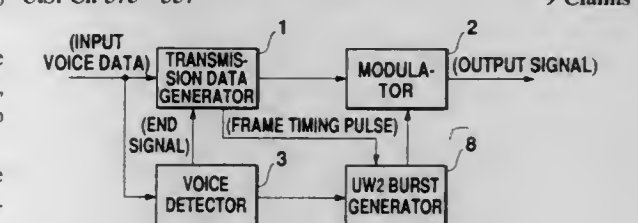
1. A data transfer circuit for use with a base unit or a handset of a telephone system for generating a signal formed of fixed data and input data, said fixed data and said input data being represented by respective sets of data bits, and said circuit comprising:

a switch circuit for selecting parallel input data or parallel fixed data formed with each bit of each parallel fixed data being connected to a high-level signal line or a low-level signal line and for supplying the selected data as a parallel output, said switch circuit being connected to inputs indicating whether the data transfer circuit is connected to a base unit or a handset for modifying the parallel fixed data in response to the indication; and

a shift register responsive to said parallel output and having a first mode for loading the selected data in parallel and a second mode for supplying the loaded, selected data as a series output; and

a timing generator responsive to an enabling signal for generating clock pulses for timing said switch circuit and said shift register.

5,781,595
VOICE TRANSMITTING APPARATUS AND VOICE RECEIVING APPARATUS USING UNIQUE WORD PATTERNS
Tsuoyoshi Fuji, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 16, 1995, Ser. No. 491,224
Claims priority, application Japan, Jun. 29, 1994, 6-147875
Int. Cl.⁶ H04L 7/00 9 Claims



1. A voice transmitting apparatus comprising:

a voice detector for receiving voice data in cycles of frames to detect the presence or absence of any voice data in said frames and generating an end signal when the state of said frames has changed from a state containing voice data to a state of silence not containing voice data;

a transmission data generator for inserting a preamble pattern immediately before the leading edge of the first frame of input voice data which have changed into the state of utterance, said

transmission data generator inserting first unique word patterns into the heads of said frames in the presence of voice; a unique word burst generator for generating, in response to the output of said end signal, a second unique word pattern different from said first unique word pattern in synchronism with a frame timing pulse fed from said transmission data generator; and a modulator for inserting into said frames either said first unique word burst or said second unique word pattern as generated by said unique word generator, and transmitting the resultant signal over a transmission medium.

5,781,596

DESYNCHRONISING VIDEO INFORMATION FROM SYNCHRONOUS NETWORK TO A PLESIOCHRONOUS TRIBUTARY WITH CONSTANT RATE OF CHANGE IN THE LEAK RATE

James Alexander Shields, Carrickfergus, Northern Ireland, assignor to Northern Telecom Limited, Montreal, Canada
Continuation of Ser. No. 335,263, Nov. 7, 1994, abandoned.

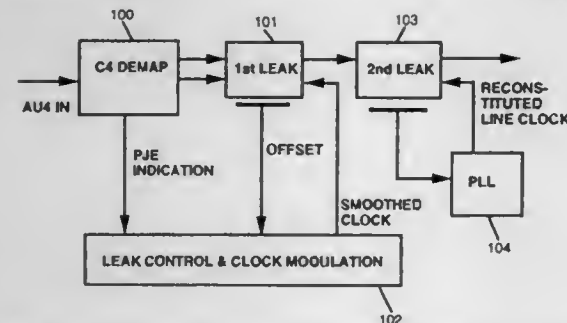
This application Sep. 17, 1997, Ser. No. 932,728

Claims priority, application United Kingdom, Nov. 10, 1993, 9323187; May 24, 1994, 9410374

Int. Cl.⁶ H04L 7/00

U.S. Cl. 375—371

4 Claims



1. A method of desynchronising pointer information contained in a video signal at the exit of a synchronous transport network to a plesiochronous tributary by controlling the leak rate of a primary buffer in which the pointer information is temporarily stored, the video signal within the synchronous network being conveyed as bits in virtual containers disposed in frames and each said virtual container being identified within a said frame by a respective pointer, the method comprising demapping the video information bits from the synchronous network to the primary buffer at a rate determined by a first clock, the fill of the primary buffer having irregular framing gaps corresponding to those of an incoming frame and displacements corresponding to incoming pointer justification events, deriving a second variable rate clock whose successive periods comprise successive time intervals stored in a look-up table, and leaking video information bits from the first buffer at a variable rate controlled by the second clock into a secondary buffer forming part of an analogue phase locked loop arranged to attenuate high frequency signal components resulting from synchronous framing and to provide a reconstituted clock signal for video information output from said second buffer, the rate of the second clock determining a corresponding increase or decrease of the rate at which said video information bits are leaked from the primary buffer to the secondary buffer so as to compensate for a temporary deficit or surplus respectively of video information bits, and wherein the absolute rate of change at which said bits are leaked from the primary buffer to the secondary buffer is maintained constant during a said increase or decrease of the leak rate.

5,781,597 SYNCHRONOUS DIGITAL TRANSMISSION SYSTEM HAVING JUSTIFICATION CIRCUIT THAT COUNTS FRAME BYTES, CALCULATES OFFSETS, COMPARES THRESHOLDS, AND INITIATES JUSTIFICATION ACTION

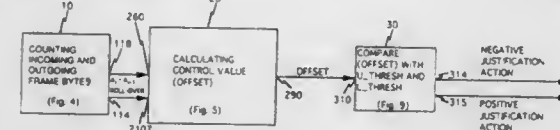
Henry W. L. Owen, III, Smyrna, Ga., and Peter E. Sholander, North Merrick, N.Y., assignors to Alcatel SEL Aktiengesellschaft, Stuttgart, Germany

Filed Feb. 16, 1995, Ser. No. 389,308

Int. Cl.⁶ H04J 3/07; H04L 7/00

U.S. Cl. 375—372

9 Claims



5. A method of initiating justification actions in a synchronous digital transmission system,

wherein each network node has at least one justification device that initiates positive or negative justification actions,

wherein a memory device stores payload bytes of a frame of an incoming signal at a clock rate of a preceding network node, and

wherein the payload bytes are output from the memory device at a respective internal clock rate of each network node, so that a signal transmitted by each network node has the respective internal clock rate thereof, characterized in that

first means (10) counts the frame bytes of the incoming signal and the frame bytes of the transmitted signal to calculate therefrom, at sampling instants (T_i), an instantaneous difference value (Δ_i) between counts of incoming frame bytes to be stored and counts of outgoing frame bytes to be read, and determining an instantaneous differential value ($\Delta_i - \Delta_{i-1}$) between the instantaneous difference value (Δ_i) and a delayed difference value (Δ_{i-1}) stored in a storage means, second means (20) calculates a differential control value (OFFSET) which is dependent on the instantaneous differential value ($\Delta_i - \Delta_{i-1}$) and on a correction factor (LEAK), and

at the sampling instants (T_i), third means (30) compares the differential control value (OFFSET) with an upper threshold (U_THRESH) and a lower threshold (L_THRESH) so as to initiate a positive justification action if the differential control value (OFFSET) is less than the lower threshold (L_THRESH), and to initiate a negative justification action if the differential control value (OFFSET) is greater than the upper threshold (U_THRESH).

5,781,598

SYSTEM AND METHOD OF ASYNCHRONOUS DATA TRANSFER THROUGH A PLURALITY OF MODEMS

Harmon S. Hardy, III, 2934 Shady Lake Cir., Carrollton, Tex. 75006

Filed Aug. 14, 1996, Ser. No. 696,507

Int. Cl.⁶ H04L 7/00; 25/36; 25/40

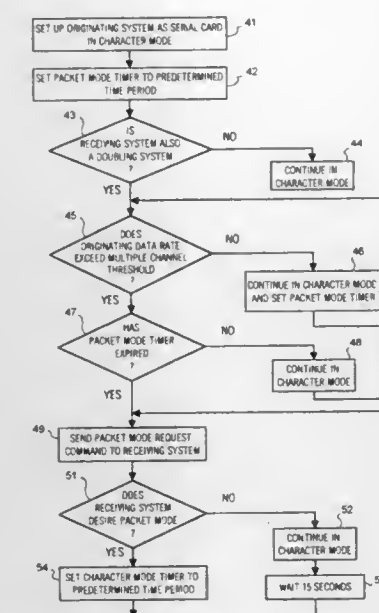
U.S. Cl. 375—372

22 Claims

1. A method of asynchronously transmitting data from an originating system to a receiving system over first and second channels, said method comprising the steps of:

determining an originating data rate at said originating system; setting a threshold data rate;

transmitting data in character mode on said first channel when said originating data rate is below said threshold data rate; and



transmitting data in packet mode on said first and second channels when said originating data rate is above said threshold data rate.

5,781,599

PACKET RECEIVING DEVICE

Tomohisa Shiga, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

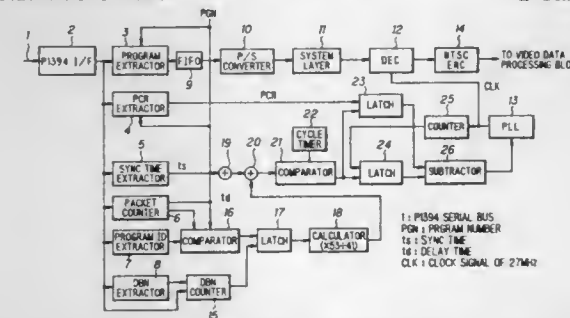
Filed Sep. 6, 1995, Ser. No. 524,214

Claims priority, application Japan, Sep. 22, 1994, 6-254687

Int. Cl.⁶ H03D 3/24

U.S. Cl. 375—376

2 Claims



5,781,602

PGNAA SYSTEM FOR NON-INVASIVELY INSPECTING RPV WELD METAL IN SITU, TO DETERMINE THE PRESENCE AND AMOUNT OF TRACE EMBRITTLEMENT-ENHANCING ELEMENT

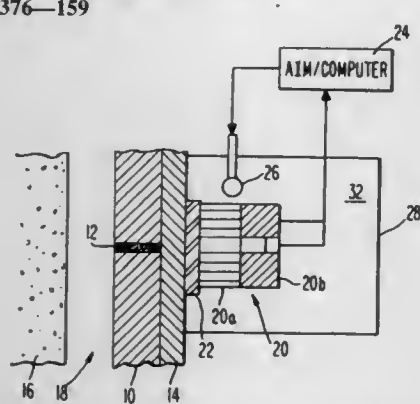
Arnold H. Fero, Kensington; Stanwood L. Anderson, Pittsburgh; Thomas V. Congedo, Pittsburgh; Abdul R. Dulloo, Pittsburgh, and Francis H. Ruddy, Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 17, 1996, Ser. No. 649,370

Int. Cl.⁶ G21C 17/003

U.S. Cl. 376—159

26 Claims



1. A method for analyzing a weld of a reactor pressure vessel (RPV), comprising the steps of:

- irradiating said weld with a neutron burst from a neutron source, said burst characterized by an intensity and pulse width and duty cycle, and thereby effecting an emission of fast and thermal neutron-induced gamma radiation from said weld;
- acquiring gamma radiation data indicative of the number or intensity of gamma rays and energies of said gamma rays during a predetermined time interval, said acquiring step including a separate identification of fast neutron-induced and thermal neutron-induced gamma rays, and wherein said gamma radiation is collected over only a fraction of said duty cycle; and
- analyzing said gamma data to detect the presence and determine the amount of a prescribed constituent element in said weld.

5,781,603

METHOD AND APPARATUS FOR REPAIR OF NUCLEAR REACTOR SHROUD

Adrian Peter Wivagg, Tolland, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 505,785, Jul. 21, 1995, Pat. No. 5,623,526. This application Jan. 17, 1997, Ser. No. 785,023

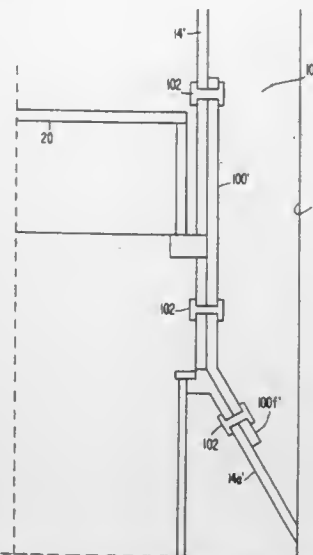
Int. Cl.⁶ G21C 9/00; B23P 15/26

U.S. Cl. 376—260

27 Claims

1. A repair apparatus for a nuclear reactor having an essentially cylindrically-shaped shroud formed of a plurality of annular segments which are welded to one another comprising:

an elongate strap which is longer than it is wide, which extends essentially parallel to a central longitudinal axis of said cylindrically-shaped shroud, and which is securely fastened at least at its both ends by fastening means to an external surface of the shroud, said strap being arranged to span at least two welds which interconnect the annular segments of said



shroud, said strap withstanding bending, shearing and tension forces which are applied to said shroud.

5,781,604

INITIAL CORE AND FUEL ASSEMBLY

Katsumasa Haikawa, Jyuu-machi; Akihiro Yamanaka; Akiko Kanda, both of Hitachi; Motoo Aoyama, Mito; Yoko Yuchi, and Junichi Yamashita, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

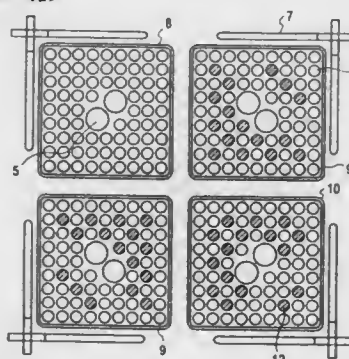
Filed Oct. 8, 1996, Ser. No. 727,008

Claims priority, application Japan, Oct. 11, 1995, 7-262940

Int. Cl.⁶ G21C 3/00; 3/328

U.S. Cl. 376—419

11 Claims



1. An initial core comprising a plurality of fuel assemblies having a substantially square outer shape and different average enrichment factors, and a plurality of cross-shaped control rods, characterized in that

a low enrichment fuel assembly having the lowest average enrichment factor and three fuel assemblies having a higher average enrichment factor than that of the low enrichment fuel assembly are arranged in a square shape, said control rods are arranged at each of four corners of said square shape to constitute a unit loading pattern, a plurality of said unit loading patterns are provided in the central region of the core, at least two of the fuel assemblies having the higher average enrichment factor are divided by a diagonal line into a first region of the side of the control rods and a second region of the side opposite to the control rods, and the number of gadolinia-containing fuel rods is greater in the second region by at least two than in the first region.

5,781,605

IMAGE RECONSTRUCTION METHOD AND ARITHMETIC UNIT FOR A COMPUTED TOMOGRAPHY APPARATUS

Juergen Wohlrab, Forchheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

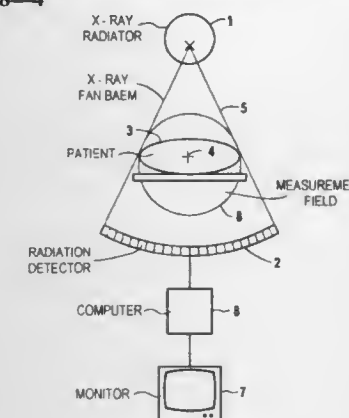
Filed Apr. 17, 1997, Ser. No. 840,870

Claims priority, application Germany, Apr. 29, 1996, 196 17 162.8

Int. Cl.⁶ A61B 6/03

U.S. Cl. 378—4

5 Claims



1. A method for weighting a plurality of randomly-distributed supporting points in frequency space for applying a 3D gridding procedure to said supporting points in a 3D Fourier image reconstruction in a computed tomography apparatus, said method comprising the steps of:

conducting a 3D pre-gridding of said supporting points for producing a real weighting cube in a Cartesian grid having x, y and z directions by assigning an initial function value of 1.0 to each supporting point and determining respective subsequent function values for each supporting point representing distribution inhomogeneities of the supporting points, each supporting point contributing N values in each of the x, y and z directions to said weighting cube, with said N values in each of the x, y and z directions representing a spacing between a point in the weighting cube and the supporting point which produced said point in the weighting cube by applying respective interpolation tables to each supporting point for each of the x, y and z directions; and

assigning a weighting for each supporting point from said points in said weighting cube produced by that supporting point which lie in a selected 3D interpolation window in a 3D gridding procedure, by multiplying each of the points in the weighting cube for a given supporting point by respective interpolation weightings in each of the x, y and z directions to obtain an interpolation result in each direction, and adding said interpolation results.

5. A computed tomography apparatus comprising computer means for three-dimensional Fourier reconstruction of an image from measured data, said means for reconstructing an image including an arithmetic unit having a parallel arrangement of a plurality of ASICs, each ASIC having a memory associated therewith, for supplementing formation of contributions to a Cartesian frequency cube obtained from supporting points in said measured data by parallel processing with a division of said supporting points respectively among said plurality of ASICs.

5,781,606

X-RAY TOMOGRAPHY SYSTEM WITH SUBSTANTIALLY CONTINUOUS RADIATION DETECTION ZONE

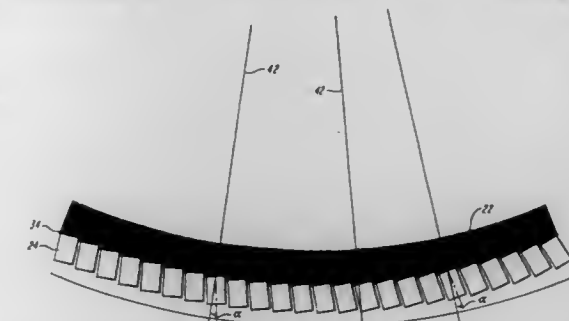
John Dobbs, Hamilton, and Ruvin Deych, Burlington, both of Mass., assignors to Analogic Corporation, Peabody, Mass.

Filed Jul. 25, 1996, Ser. No. 687,747

Int. Cl.⁶ A61B 6/06

U.S. Cl. 378—19

13 Claims



1. An x-ray tomography scanning system of the type including (a) an x-ray source for defining a focal spot from which a beam of radiation is emitted, (b) means for supporting the x-ray source for rotation about a rotation axis, and (c) an x-ray detector assembly including a plurality of x-ray detectors cooperative with said x-ray source so as to define the beam of radiation from the focal spot to all of the detectors, said x-ray detector assembly including a plurality of detecting regions and non-detecting regions, said x-ray tomography scanning system further comprising:

means for fixedly positioning said detectors so that the detectors are always oriented relative to said focal spot and to one another so as to establish a substantially continuous radiation detection zone within said beam of radiation during a tomographic scan, wherein substantially all radiation within said beam passing through said detector assembly always passes through a portion of at least one detecting region.

5,781,607

MEMBRANE MASK STRUCTURE, FABRICATION AND USE

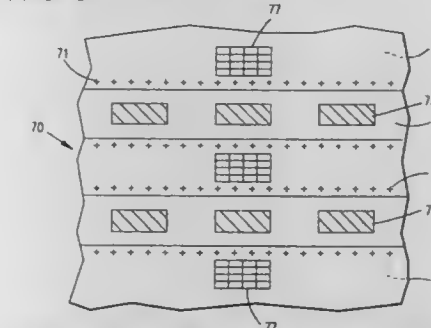
Raul Edmundo Acosta, White Plain, and Raman Gobichettipalayam Viswanathan, Briarcliff Manor, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Oct. 16, 1996, Ser. No. 731,536

Int. Cl.⁶ G21K 5/10

U.S. Cl. 378—34

33 Claims



1. A membrane mask for use in creating a pattern of mask features positioned on said membrane to an adjacent material by irradiating said material from a radiation source comprising:

a plurality of mask membrane pattern sections including membrane areas of material transparent to said irradiating and each having less than all of said pattern of mask features of feature material opaque to said irradiating; and a plurality of mask membrane support sections interleaved with said pattern sections, each of said plurality of support sections comprising membrane sections having underlying support members of material opaque to said irradiating; and

a plurality of e-beam reference markers provided at said mask membrane aligned to said support sections.

5,781,608

X-RAY EXPOSURE SYSTEM

Toshibisa Tomie; Hideaki Shimizu, and Toshikazu Majima, all of Tsukuba, Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Continuation of Ser. No. 615,107, Mar. 14, 1996, abandoned.

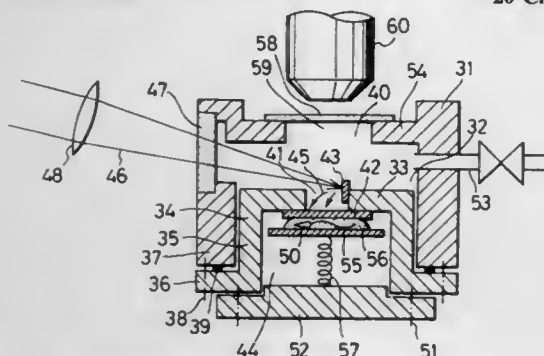
This application Oct. 9, 1997, Ser. No. 948,241

Claims priority, application Japan, Jun. 14, 1995, 7-147760

Int. Cl.⁶ H05G 2/00

U.S. Cl. 378—119

20 Claims



1. An x-ray exposure system comprising:

a cover member for hermetically sealing an opening of an internal chamber of a vacuum vessel that can be evacuated via an evacuation pipe, the cover member being detachably attached to the opening,

an x-ray irradiation window formed by a through-hole in the cover member,

an x-ray transmission member that maintains the hermetic seal of the internal chamber by closing the through-hole but transmits x-rays,

an x-ray generation target in the internal chamber, disposed within or in the vicinity of the x-ray irradiation window through-hole,

a laser beam entry window provided in a portion of the vacuum vessel via which the target in the internal chamber can be irradiated by a blast of laser beam generated outside the vacuum vessel without breaking the hermetic seal, and

a containment portion for holding a sample to be exposed to x-rays positioned outside the cover member, facing the x-ray beam entry window, wherein the distance between the target and the sample is less than 10 mm.

5,781,609

DRIVE DEVICE FOR A ROTARY ANODE OF AN X-RAY TUBE

Dieter Gerling, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1996, Ser. No. 759,659

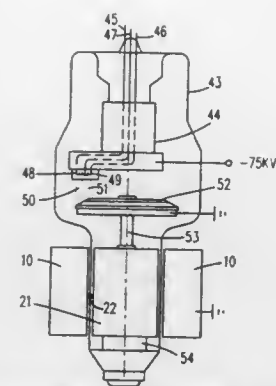
Claims priority, application Germany, Dec. 23, 1995, 195 48 693.5; May 30, 1996, 196 21 707.5

Int. Cl.⁶ H01J 35/10

U.S. Cl. 378—131

11 Claims

1. A drive device for a rotary anode of an X-ray tube comprising a drive motor with a stator and a rotor, the stator and the rotor being separated by a gap, the stator having slots with a circumferential length falling within a range between about 8 mm and 25



mm and the gap between the stator and the rotor falling within a range between about 15% to 35% of the circumferential length.

5,781,610

PORTABLE X-RAY DEVICE

Dale A. Miles, 13201 Brookshire Pky., Carmel, Ind. 46033

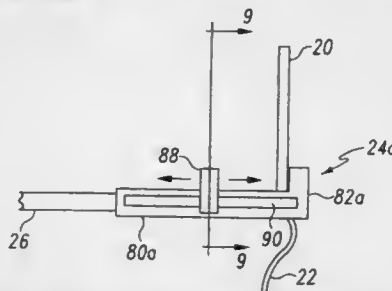
Division of Ser. No. 574,768, Dec. 18, 1995, Pat. No.

5,631,943. This application Feb. 13, 1997, Ser. No. 799,437

Int. Cl.⁶ A61B 6/17

U.S. Cl. 378—168

2 Claims



1. An X-ray image receptor holder adapted to be coupled to a source of X-rays, the holder comprising:

an image receptor holder coupled to a collimated tube, the holder comprising:

a horizontal member having proximal and distal ends;

a vertical member attached to the horizontal member distal end and extending transversely thereto; and

a transverse sliding member mounted to the horizontal member and operative to slide thereon in a longitudinal direction;

wherein an X-ray image receptor may be held between the vertical member and the sliding member.

5,781,611

METHOD AND APPARATUS FOR MONITORING STATUS OF SPEECH CONNECTION BETWEEN CENTRAL OFFICE LINES

Seong-Kue Park, Gumi, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 13, 1996, Ser. No. 662,526

Claims priority, application Rep. of Korea, Jun. 13, 1995, 1995 15576

Int. Cl.⁶ H04M 1/24; 3/08; 3/22

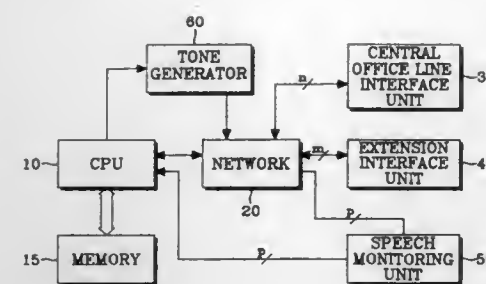
U.S. Cl. 379—34

8 Claims

1. An apparatus for monitoring the status of a speech connection between the two of a plurality of central office lines in a private exchange system, comprising:

a controlling unit for controlling a connection between a network and a corresponding central office line to perform a speech connection between first and second central office lines;

a line interface unit for interfacing the first and second central office lines under the control of said controlling unit;



a network unit for connecting said first and second central office lines to each other under the control of said controlling unit; and

a speech monitoring unit for monitoring the status of said speech connection during the connection of said first and second central office lines, by directly detecting the presence or absence of a signal from said first and second central office lines received through said network unit without interrupting the connection between said first and second central office lines and for providing an indication of said speech connection status to said controlling unit, said first and second central office lines being disconnected in the absence of said signal for a predetermined period of time.

5,781,612

RADIO TERMINAL INTERFACES FOR VOICE AND DATA TELECOMMUNICATIONS, AND METHODS FOR THEIR OPERATION

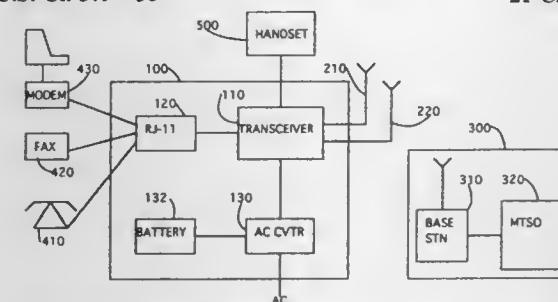
David Choi, Kanata, Canada, and Kishore John Raj, Plano, Tex., assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 10, 1995, Ser. No. 402,049

Int. Cl.⁶ H04Q 7/20

U.S. Cl. 379—58

21 Claims



16. A radio communications system, comprising:

at least one radio terminal transceiver operable in a digital mode to receive and transmit digital radio signals over a digital radio channel and operable in an analog mode to receive and transmit analog radio signals over an analog radio channel, the radio terminal transceiver being responsive to page requests specifying a first terminal identifier to transmit a page response specifying the first terminal identifier and being responsive to page requests specifying a second terminal identifier to transmit a page response specifying the second terminal identifier;

at least one base station transceiver operable in a digital mode to receive and transmit digital radio signals over a digital radio channel and operable in an analog mode to receive and transmit analog radio signals over an analog radio channel; and

at least one base station controller operable to allocate one of an analog radio channel and preferably a digital radio channel for communication between the radio terminal transceiver and the base station transceiver upon receipt of a page response specifying the first terminal identifier and operable to always allocate an available analog radio channel for communication between the radio terminal transceiver and the base station

transceiver upon receipt of a page response specifying the second terminal identifier.

5,781,613

TELEPHONE ANSWERING DEVICE AND METHOD FOR SCREENING INCOMING TELEPHONE CALLS WITH BLOCKED CALLING PARTY IDENTIFICATION INFORMATION

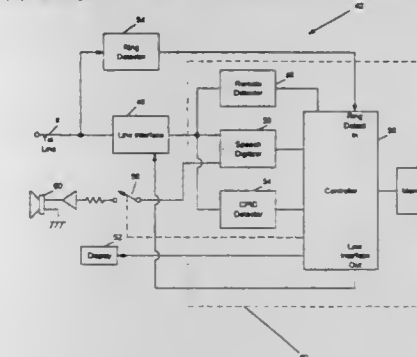
Stephen B. Knuth, Mission Viejo, and Mark J. Karnowski, Huntington Beach, both of Calif., assignors to Casio Phone-Mate, Inc., Torrance, Calif.

Filed Jun. 17, 1996, Ser. No. 664,528

Int. Cl.⁶ H04M 1/56

U.S. Cl. 379—67

19 Claims



1. A telephone answering device comprising:

a line interface for connecting the telephone answering device to a telephone line;

a ring detector coupled to the telephone line for detecting ringing signals sent from a telephone company central office;

a calling party identification detector, coupled to the telephone line, for detecting calling party identification information; and

a controller, coupled to the line interface, to the ring detector and to the calling party identification detector for controlling the line interface to seize the telephone line and to answer an incoming call after the ring detector detects a first predetermined number of rings on the telephone line and immediately after the calling party identification detector detects that the calling party identification information has been blocked, and to answer an incoming call when the ring detector detects a second predetermined number of rings on the telephone line and the calling party identification detector detects that the calling party identification information has not been blocked.

5,781,614

MESSAGE RETRIEVAL VIA ALTERNATIVE ACCESS

Gordon Richards Brunson, Broomfield, Colo., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 19, 1996, Ser. No. 588,954

Int. Cl.⁶ H04M 1/64

U.S. Cl. 379—88

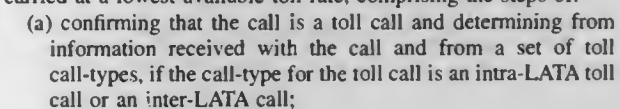
54 Claims

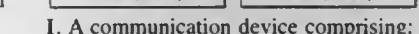
1. A method of providing access to a message by a recipient of the message, comprising the steps of:

in response to a message sender requesting a messaging system in which a message is stored to send the message to a message recipient, determining whether the message recipient would receive the message at a destination of the recipient;

in response to determining that the message recipient would receive the message at the destination, sending the message from the messaging system to the destination of the recipient;

in response to determining that the message recipient would not receive the message at the destination, sending to the recipient



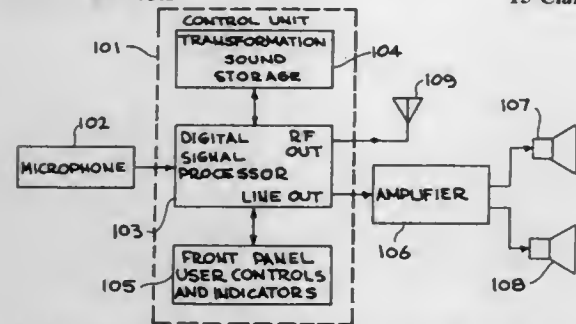




5,781,640

ADAPTIVE NOISE TRANSFORMATION SYSTEM
Sam J. Nicolino, Jr., 19784 Seagull Ct., Saratoga, Calif. 95070
Filed Jun. 7, 1995, Ser. No. 472,260
Int. Cl.⁶ H03B 29/00; A61F 11/06
U.S. Cl. 381—73.1

15 Claims



1. A system for suppressing the undesirable effects of a noise source by transforming the noise emitted by the source into replacement sounds in which said effects are alleviated, said system comprising:

detecting means for detecting the noise emitted by said noise source and producing noise signals in response thereto;
storage means for storing a plurality of signals to generate transformation sounds which, when combined with the noise emitted by said noise source, produce replacement sounds in which said effects are alleviated;
processor means communicative with said detecting means and said storage means, said processor means receiving said noise signals from said detecting means and dynamically monitoring said noise signals, said processor means further selecting and receiving transformation sound signals from said storage means in response to said noise signals such that the combination of said noise and the transformation sounds generated by said selected transformation sound signals produces replacement sounds in which said effects are alleviated; and
loudspeaker means for emitting said transformation sounds to combine said sounds with said noise, said loudspeaker means being communicative with said processor means, such that said processor means controls said loudspeaker means to cause said transformation sounds to be emitted and combined with said noise.

5,781,641

Patent Not Issued For This Number

5,781,642

SPEAKER SYSTEM

Shoji Tanaka, Kobe, and Katsuhiko Iimura, Higashiosaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 24, 1997, Ser. No. 842,442
Claims priority, application Japan, Apr. 24, 1996, 8-102390
Int. Cl.⁶ H04R 25/00

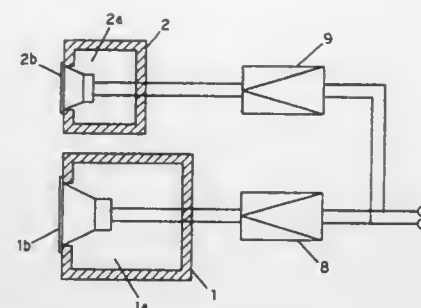
U.S. Cl. 381—159

9 Claims

1. A speaker system comprising:
a first speaker containing a first speaker unit in a first cavity;
and a second speaker containing a second speaker unit in a second cavity;
wherein the following condition is satisfied, supposing the fundamental resonance frequency of the first speaker is f_1 , the resonance sharpness is Q_1 , the fundamental resonance frequency of the second speaker is f_2 , and the crossover frequency of the first speaker and second speaker is f_c :

$$1.4 \leq Q_1 \leq 10$$

$$f_1 \leq f_2$$



$$f_1 \leq f_c \leq f_2 \times \{(Q_1^2 + 1.2 \times Q_1) / (Q_1^2 - 2.5)\}^{0.5 \times k}$$

$$1 \leq k \leq \{(Q_1 / Q_1 - 1.4)\}^{2.5}$$

5,781,643

MICROPHONE PLOSIVE EFFECTS REDUCTION TECHNIQUES

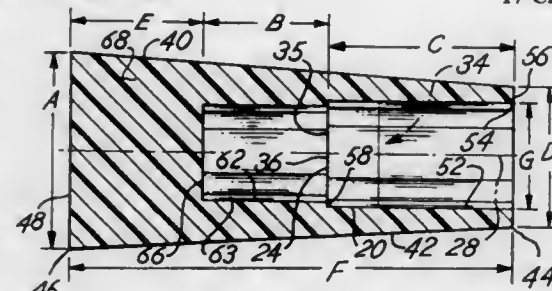
Carl Roger Anderson, Wilmette, Ill., assignor to Shure Brothers Incorporated, Evanston, Ill.

Filed Aug. 16, 1996, Ser. No. 698,957

Int. Cl.⁶ H04R 25/00

U.S. Cl. 381—168

17 Claims



1. In a microphone for generating an electrical audio signal corresponding to speech of a user; improved apparatus for reducing distortion of said audio signal due to wind or plosive sounds emitted by the user comprising in combination:

a microphone cartridge for generating said audio signal, said cartridge defining a perimeter, a front entry, a rear entry, a central axis generally perpendicular to said front entry and said rear entry and a cylinder generally contiguous with said perimeter having a longitudinal axis collinear with said central axis;

first means for defining a first acoustical path to said rear entry through said cylinder having an acoustical first resistance;
second means for defining a second acoustical path to said front entry through said cylinder having an acoustical second resistance;

third means for defining a second acoustical path to said front entry along said central axis having an acoustical third resistance greater than said first resistance* and greater than said second resistance, whereby distortion of said audio signal is reduced, said first means, second means and third means comprising integrally formed porous material.

5,781,644

PICK-UP DEVICE FOR A MICROPHONE

Ching-Lu Chang, No. 39, Lane 29, Shih-Chia Rd., Tung Dist., Taichung City, Taiwan

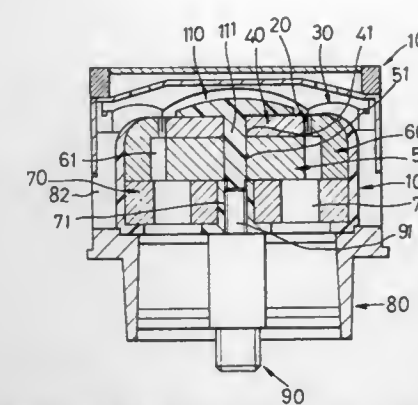
Filed Jun. 20, 1997, Ser. No. 879,547

Int. Cl.⁶ H04R 25/00

U.S. Cl. 381—177

4 Claims

1. A pick-up device for a microphone, comprising:
a front cover;
a diaphragm incorporating a voice coil disposed posteriorly of said front cover;



a front flux shield plate disposed posteriorly of said diaphragm and having a first hole substantially at the center thereof;
a magnet disposed at a back side of said front flux shield plate and having a second hole aligned with said first hole;
a yoke disposed around and spaced apart from both said front flux shield plate and said magnet and confining a first air passage with both said front flux shield plate and said magnet;
a rear flux shield plate disposed at the back sides of said magnet and said yoke and having a third hole which is aligned with said second hole and which is threaded, said rear flux shield plate further having a second air passage which is radially spaced apart from said third hole and which is communicated with said first air passage;
an encapsulation to encompass said yoke and said rear flux shield plate;
a rear cap disposed posteriorly of said rear flux shield plate and having surrounding wall parts which project forwardly to encompass said encapsulation and said rear flux shield plate;
a screw rod passing through said rear cap and having a front end threadedly engaged with said third hole, thereby closing said third hole; and
a high frequency resonance pad provided in front of said front flux shield plate and having a securing portion which extends into at least said first and second holes, said high frequency resonance pad being formed via an in-situ forming process.

5,781,645

LOUDSPEAKER SYSTEM

Christopher John Beale, Tamworth, England, assignor to SSE Hire Limited, England

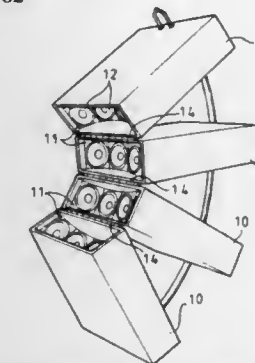
Filed Mar. 28, 1996, Ser. No. 623,197

Claims priority, application United Kingdom, Mar. 28, 1995, 9506263

Int. Cl.⁶ H04R 25/00

U.S. Cl. 381—182

3 Claims



1. A loudspeaker system for providing uniform sound field in a listening area comprising a concave array of identical cells, each having at least one loudspeaker driver unit arranged to direct acoustic energy along an axis of the driver unit of the cell, the driver units being arranged with their axes converging in the direction of propagation of the acoustic energy, each of their axes of the cells converging and intersecting at a common point between the array and a listening area, and the cells lying equidis-

tant from the common point, the array being constructed and arranged to reduce interference between the driver units in a field inside the listening area, and provide information from the array as if it were emanating from a single cell;

wherein the array is formed of a plurality of multi-cell units, the cells of each unit being rigidly connected together with the axes of such cells in a common plane, the multi-cell units being connected together with the common planes of the respective units inclined to one another.

5,781,646

MULTI-SEGMENTED HIGH DEFORMATION PIEZOELECTRIC ARRAY

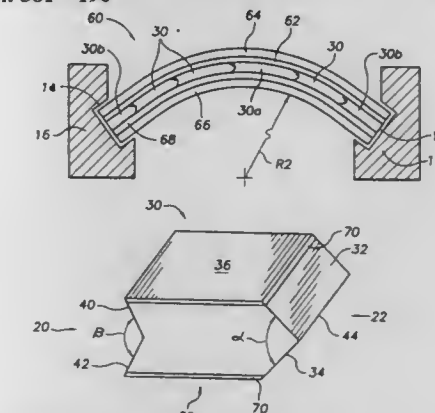
Samuel A. Face, P.O. Box 6389, Norfolk, Va. 23508

Filed May 9, 1997, Ser. No. 854,080

Int. Cl.⁶ H04R 25/00

U.S. Cl. 381—190

10 Claims



1. A flextensional transducer comprising:

a deformable member having first and second ends, said deformable member comprising:
a first electroactive member;

wherein said first electroactive member has opposing first and second major faces;

and wherein said first electroactive member has opposing first and second minor surfaces, said first minor surface of said first electroactive member being substantially concave;

said first electroactive member comprising a first electrode disposed on said first major face of said first electroactive member;

and said first electroactive member comprising a second electrode disposed on said second major face of said first electroactive member;

a second electroactive member;

wherein said second electroactive member has first and second opposing major faces;

and wherein said second electroactive member has first and second opposing minor surfaces, said second minor surface of said second electroactive member being substantially convex;

said second electroactive member comprising a third electrode disposed on said first major face of said second electroactive member;

and said second electroactive member comprising a fourth electrode disposed on said fourth major face of said second electroactive member;

wherein said first minor surface of said first electroactive member is engaged with said second minor surface of said second electroactive member.

5,781,647

GAMBLING CHIP RECOGNITION SYSTEM

Glenn M. Fishbine, Eden Prairie, and Jack Klingert, Minnetonka, both of Minn., assignors to Digital Biometrics, Inc., Minnetonka, Minn.

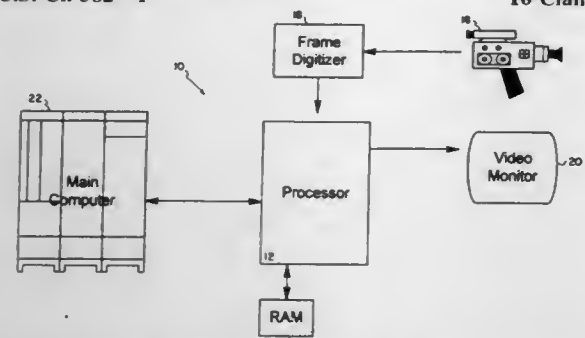
Continuation of Ser. No. 539,779, Oct. 5, 1995, abandoned.

This application Oct. 27, 1997, Ser. No. 962,915

Int. Cl.⁶ G06K 9/00

U.S. Cl. 382—1

16 Claims



1. A computer implemented gambling chip recognition system for automatically determining the number of chips and the value of each chip within a stacked pile of one or more chips comprising: an imager for generating an image of at least one chip; data storage electrically interconnected to said imager for storing at least a portion of said image; said data storage storing a plurality of predetermined chip representations, wherein said plurality of predetermined chip representations define a gambling chip value classification system with each predetermined chip representation having a gambling chip value assigned thereto; and a processor electrically interconnected to said data storage for processing said image to determine the number of chips within the stacked pile and generate a chip representation for each chip, said processor determining the number of chips within the stacked pile by identifying chip edges for each chip within said image.

5,781,648

PULSE DOMAIN NEUROMORPHIC INTEGRATED CIRCUIT FOR COMPUTING MOTION

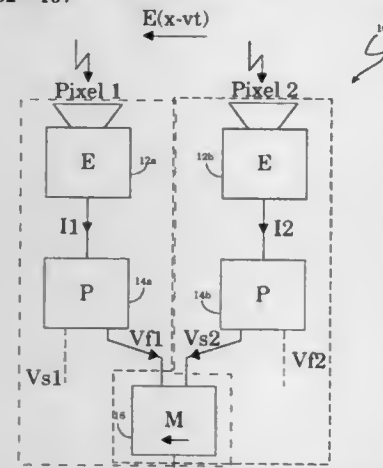
Rahul Sarpeshkar, Pasadena; Jörg Kramer, Los Angeles, and Christof Koch, Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 7, 1995, Ser. No. 418,287

Int. Cl.⁶ G06K 9/00

U.S. Cl. 382—107

19 Claims



2. A circuit for providing pulses in a motion sensor, the circuit comprising: a first circuit for coupling to receive a first signal representative of a brightness distribution of an image feature at a position

and for providing a first pulse representative of the onset of detection of the image feature at the position; and a second circuit coupled to the first circuit to receive the first pulse, the second circuit providing a second pulse, the second pulse being invariant to image contrast and representative of a time lapse from a detection of the image feature at the position;

wherein the first circuit comprises a first transistor of a first conductivity type, and a second transistor of a second conductivity type, the first and second transistors each having a source, a drain and a gate, the drains of the first and second transistors being coupled together and to the second circuit, the gate of the first transistor being coupled to receive the first signal, and the gate of the second transistor being coupled to the second circuit; and

wherein the second circuit comprises a third transistor of a conductivity type having a source, a drain and a gate, the gate being coupled to the drains of the first and second transistors of the first circuit, a first exponential element coupled to the source of the third transistor, a second exponential element coupled to the first exponential element and to the gate of the second transistor of the first circuit and a capacitor coupled to the source of the third transistor.

5,781,649

SURFACE INSPECTION OF A DISK BY DIFFRACTION PATTERN SAMPLING

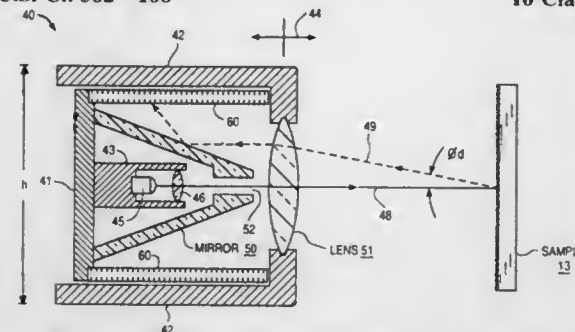
Blasius Brezoczky, San Jose, Calif., assignor to Phase Metrics, Inc.

Filed Apr. 15, 1996, Ser. No. 632,246

Int. Cl.⁶ G06T 7/00

U.S. Cl. 382—108

10 Claims



1. An apparatus for inspecting the surface of a sample for an anomaly comprising: a base; a conical mirror attached to the base, the conical mirror having a central opening to a cavity; a laser providing a light beam with a characteristic wavelength, the laser beam being mounted to the base with the cavity such that the light beam emerges through the central opening along a longitudinal axis; a lens; a lens mount movably attached to the base to position the lens along the longitudinal axis, the light beam emerging through the central opening and passing through the lens, the lens forming the light beam into a convergent beam directed upon the surface of the sample; and an array of photodetection elements arranged circumferentially around the conical mirror, the photodetection elements extending in a direction substantially parallel to the longitudinal axis, wherein a reflection of the convergent beam is diffracted as it is reflected from the surface of the sample with a diffraction pattern that corresponds to a scale of the anomaly, the diffraction pattern producing an electrical response from the array of photodetection elements indicative of a characteristic of the diffraction pattern.

5,781,650

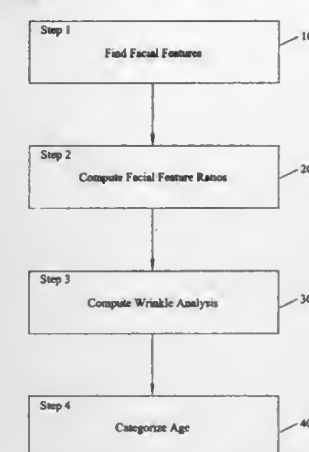
AUTOMATIC FEATURE DETECTION AND AGE CLASSIFICATION OF HUMAN FACES IN DIGITAL IMAGES

Niels Lobo, and Young Kwon, both of Orlando, Fla., assignors to University of Central Florida, Orlando, Fla.

Continuation of Ser. No. 448,721, May 25, 1995, abandoned, which is a continuation-in-part of Ser. No. 261,947, Jun. 17, 1994, which is a continuation-in-part of Ser. No. 198,816, Feb. 18, 1994, abandoned. This application Aug. 28, 1997, Ser. No. 922,117

Int. Cl.⁶ G06K 9/00; 9/46; G01S 15/00; G06G 7/48
U.S. Cl. 382—118

15 Claims



1. A method of detecting facial features and classifying a human face from a two-dimensional digital image comprising the steps, executed by a computer, of:

- (a) detecting a two-dimensional digital image using a computer;
- (b) locating facial features representing a human face in the two-dimensional digital image by:
 - (i) dropping preselected snakelet-curves onto the digital image;
 - (ii) aligning the snakelet-curves and using a Hough Transform voting process to find the facial features in the digital image; and
- (c) classifying the located facial features of the human face into at least one of three age categories.

5,781,651

COMPACT FINGERPRINT RECOGNIZING APPARATUS ILLUMINATED WITH ELECTROLUMINESCENT DEVICE

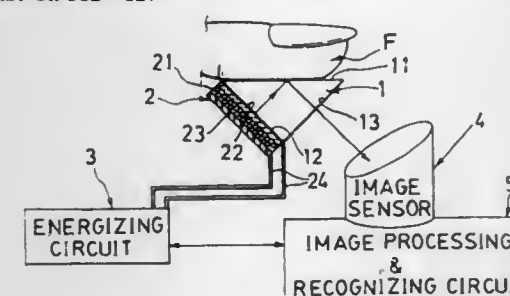
Pei-Yung Hsiao, Taipei, Taiwan, and Paul-Waie Shew, Jalan Istimewa, Singapore, assignors to Aetex Biometric Corporation, Taipei, Taiwan

Filed Apr. 15, 1996, Ser. No. 632,608

Int. Cl.⁶ G06K 9/62

U.S. Cl. 382—127

1 Claim



1. A fingerprint recognizing apparatus comprising: a polygonal prism (1) having a light-reflective side for laying a finger to be detected thereon, a light-incoming side disposed at a first side of said light-reflective side for entering an

incident light through said light-incoming side, and a light-outgoing side disposed at a second side of said light-reflective side for projecting light as reflected from said light-reflective side outwardly through said light-outgoing side;

an electroluminescent device (ELD) (2) formed as a strip and secured on said light-incoming side of said prism (1) for emitting light entering into said prism (1) through said light-incoming side of said prism (1) and projecting the light towards a finger surface of said finger laid on said light-reflective side of said prism (1) for reflecting a fingerprint image from said finger;

an energizing circuit (3) electrically connected to said ELD (2) and operatively powering and driving said electroluminescent device (2) for illumination thereof for emitting light projecting into said prism (1) and said finger to be detected;

an image sensor (4) facing said light-outgoing side of said prism (1) for picking up an image signal of said fingerprint image as reflected from said light-reflective side of said prism (1) and converting the image signal to a voltage signal; and

an image processing and recognizing circuit (5) electrically connected to said image sensor (4) for receiving said voltage signal from said image sensor (4) and operatively processing and recognizing said voltage signal for an identification of the fingerprint as sensed from the finger to be detected;

said ELD (2) including at least an electroluminescent emission layer (21) sandwiched in between a transparent conductive layer (22) and a substrate conductive layer (23) having an insulative bottom layer coated on a bottom of said substrate conductive layer, said transparent conductive layer (22) adhered on said light-incoming side of said prism (1), and said two conductive layers (22, 23) electrically connected to said energizing circuit (3) for driving said electroluminescent device (2) for illumination thereof;

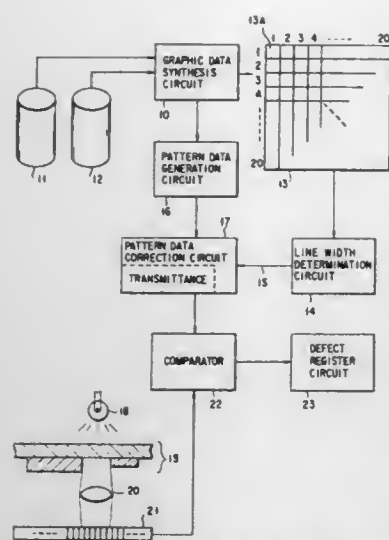
said energizing circuit (3) connected with a brightness adjusting circuit (7), said brightness adjusting circuit (7) operatively adjusting a voltage and frequency value of said energizing circuit (3) for adjusting a brightness of said ELD (2) as deteriorated with the lapse of time, said ELD (2) having two conductive layers electrically connected with the brightness adjusting circuit (7);

said energizing circuit (3) including a transistor (Q1) having a base electrically connected to a micro-controller (51) of an image processing and recognizing circuit (5) for receiving an input signal from the micro-controller (51), a collector of the transistor (Q1) electrically connected to a primary winding of a transformer (T1) operatively self-exciting an input voltage (Vin) to increase an output energizing voltage to drive the ELD (2), and an emitter of the transistor (Q1) grounded; and the transformer (T1) having a secondary winding coupled to the primary winding of the transformer (T1) and having two opposite ends of the secondary winding of the transformer (T1) electrically connected to two conductive layers (22, 23) of the ELD (2) for outputting the energizing voltage to the ELD (2); and

said micro-controller operatively adjusting a frequency of a squarewave input to said transistor (Q1) for adjusting a frequency of an output current from said transformer (T1) for adjusting a brightness of said ELD (2); and

said brightness adjusting circuit (7) including a variable resistor having variable resistance (Ra) and a fixed-resistance resistor (Rc) connected in series across two ends of the secondary winding of the transformer (T1) of the energizing circuit (3), said two resistors (Ra, Rc) parallelly connected to two said conductive layers (22, 23) disposed on two sides of said electroluminescent emission layer (21) of said ELD (2), whereby upon varying of said variable resistor (Ra) to change an output voltage of said energizing circuit (3), a brightness of said ELD (2) as driven by said energizing circuit (3) is adjusted.

1. A pattern inspection apparatus comprising:
a phase shift mask including a transparent substrate and patterns formed on said transparent substrate, said patterns being constituted by a light-shielding film and a semitransparent film;
means for radiating a beam on said phase shift mask;
converting means for converting a beam passed through said phase shift mask into an electrical signal, and for outputting first pattern data corresponding to said electrical signal;
storing means for storing graphic data for forming patterns constituted by said light-shielding film and said semitransparent film;



generating means for generating second pattern data using said graphic data supplied from the storing means, said second pattern data corresponding to locations of said phase shift mask where light is transmitted and not transmitted; determining means for determining a pattern width of said second pattern data generated by said generating means on the basis of said graphic data supplied from said storing means, wherein said determining means determines said second pattern data having said pattern width as said semitransparent film when said pattern width is not more than a predetermined value, and for outputting a correction request signal; correcting means in which a transmittance value of the semitransparent film is stored, said correcting means correcting said second pattern data output from said generating means on the basis of said transmittance value to account for light transmitted through said semitransparent film when said correction request signal is supplied from said determining means; and comparing means for comparing said corrected second pattern data output from said correcting means with said first pattern data output from said converting means, said comparing means detecting a defect in said patterns formed on said phase shift mask on the basis of differences between said corrected second pattern data output from said generating means and said first pattern data output from said converting means.

5,781,658

METHOD OF THRESHOLDING DOCUMENT IMAGES
Lawrence Patrick O'Gorman, Madison, N.J., assignor to Lucent Technologies, Inc., Murray Hill, N.J.

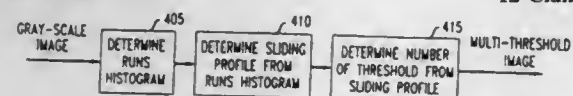
Continuation of Ser. No. 224,446, Apr. 7, 1994, abandoned.

This application Aug. 9, 1996, Ser. No. 694,807

Int. Cl.⁶ G06T 5/40

U.S. Cl. 382—172

12 Claims



1. A method of thresholding a gray-scale image to obtain an image having at least two levels, the gray-scale image being realized from a digital image, said digital image being retrieved from a memory associated with a document system, said document system electrically storing a plurality of digital images which represent one or more documents, the gray-scale image being comprised of a plurality of pixels, each pixel having an intensity value, the method comprising the following steps performed by said document system:

identifying local groups of connected pixels within said gray-scale image having intensity values above a given intensity value, said identification determined for each intensity value contained in the gray-scale image;

compiling a global representation of the entire gray-scale image which represents the number of groups of connected pixels at each intensity value; identifying intensity ranges within the global representation in which the number of the groups of pixels remain substantially constant; determining the number of threshold levels to be equal to the number of ranges in the representation; identifying a threshold value within each intensity range identified in the global representation which represents the most constant portion of the intensity range; and performing said thresholding of said gray-scale image utilizing the identified threshold values such that an image is obtained which closely resembles an original document for which the image represents.

5,781,659

OCR CLASSIFICATION BASED ON TRANSITION GROUND DATA

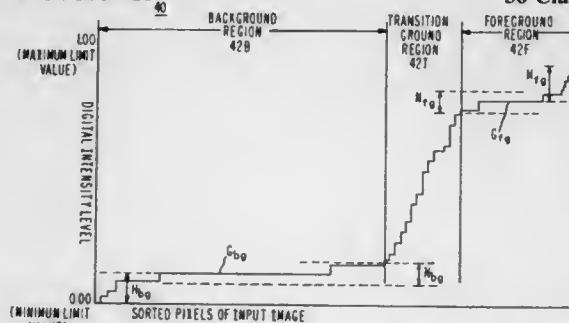
Roger D. Melen, Los Altos Hills, and Hadar Avi-Itzhak, Mountain View, both of Calif., assignors to Canon Inc., Tokyo, Japan

Continuation of Ser. No. 430,109, Apr. 27, 1995, abandoned, which is a continuation of Ser. No. 112,133, Aug. 26, 1993, abandoned. This application Feb. 4, 1997, Ser. No. 794,964

Int. Cl.⁶ G06K 9/00; 9/62; 9/48

U.S. Cl. 382—187

36 Claims



1. An OCR (optical character recognition) method of classifying an input image vector of an unclassified whole character with respect to a library of template image vectors of pre-classified characters, said method comprising the steps of:

providing a library of template image vectors of pre-classified characters each in the form of a sequence of template elements, each template element having a numerical value representing the image intensity level of a corresponding element within the pre-classified character defined by the template vector, said template elements including image background elements, image foreground elements, and image transition ground elements that are situated between image background elements and image foreground elements and are caused by a progressive change from background intensity level to foreground intensity level;

providing an input image vector of an unclassified whole character in the form of a sequence of input elements, each input element having a numerical value representing an image intensity level signal component corresponding to an element within the unclassified character, said input elements being from the group of elements comprising image background elements, image foreground elements, and image ground elements that are situated between image background elements and image foreground elements and are caused by a progressive change from background intensity level to foreground intensity level;

entering the input vector and at least one of the template vectors into a classifier means; and

classifying the input vector with respect to the entered template vectors by comparing numerical values of elements of the input vector with numerical values of elements of entered template vectors.

5,781,660

IMAGE PROCESSING METHOD AND APPARATUS
Takashi Nitta, and Mikio Aoki, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

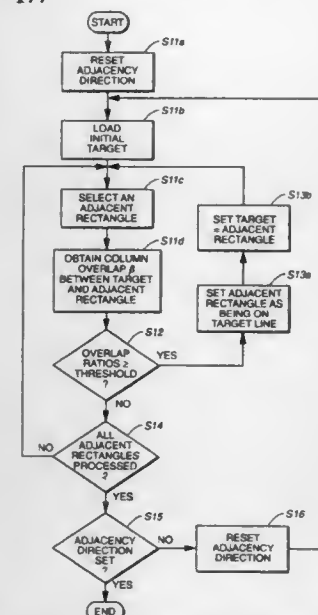
Filed Jul. 28, 1995, Ser. No. 508,860

Claims priority, application Japan, Jul. 28, 1995, 6-177130

Int. Cl.⁶ G06K 9/34; 9/46; 9/48; 9/66

U.S. Cl. 382—177

38 Claims



1. An image processing method for processing a document image including plural meandering text lines obtained through scanning a text document into a form enabling character extraction and character recognition thereof, the method comprising the steps of:

extracting a plurality of character images from a center area of the document image, the center area including a row-wise center line of the document image; obtaining columnwise overlap between each extracted character image and character images adjacent thereto; sequentially comparing the columnwise overlap ratios for the extracted character images against a minimum overlap threshold; and compiling a line image containing adjacent extracted characters whose respective columnwise overlap exceeds the minimum overlap threshold.

5,781,661

HANDWRITING INFORMATION DETECTION METHOD AND APPARATUS DETACHABLY HOLDING WRITING TOOL

Akira Hiraiwa, Yokosuka; Masaaki Fukumoto, Yokohama; Tadasu Uchiyama, Yokosuka; Noboru Sonehara, Zushi, and Shigeru Oikawa, Yokosuka, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jun. 28, 1995, Ser. No. 495,837

Claims priority, application Japan, Jun. 29, 1994, 6-147415; Jul. 8, 1994, 6-156969; Jul. 25, 1994, 6-172756

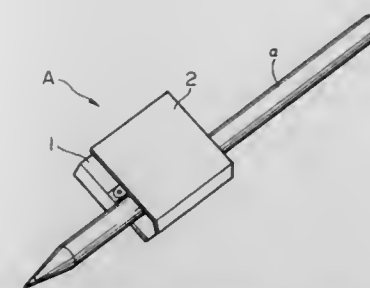
Int. Cl.⁶ G06K 9/00

U.S. Cl. 382—188

37 Claims

1. A handwriting information detecting method comprising the steps of:

detachably holding a user selectable writing tool in a writing tool holder comprising at least one acceleration sensor; detecting a motion of the writing tool, held by the writing tool holder, based on at least one acceleration signal output from the at least one acceleration sensor when the writing tool is grasped by fingers; and



recognizing handwriting information of a character or a figure written by the writing tool according to the detected motion thereof, and outputting the information.

5,781,662

INFORMATION PROCESSING APPARATUS AND METHOD THEREFOR

Shigeki Mori, Koshigaya; Kazutoshi Shimada, Yokosuka; Eisaku Tatsumi, Kawasaki; Kazuhiro Matsubayashi, Yokohama; Shinichi Sunakawa, Kawasaki; Takashi Harada, Yokohama; Katsuhiko Nagasaki, Ichikawa, and Ryoji Fukuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

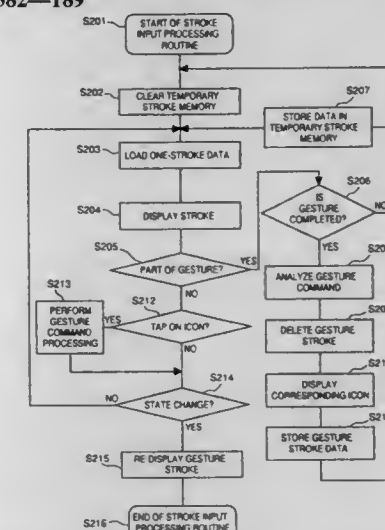
Filed Jun. 7, 1995, Ser. No. 473,361

Claims priority, application Japan, Jun. 21, 1994, 6-138577

Int. Cl.⁶ G06K 9/00; 9/18; 9/03

U.S. Cl. 382—189

24 Claims



1. An information processing apparatus capable of processing handwritten information, comprising:

means for storing gesture strokes and corresponding icons indicating commands specified by corresponding gesture strokes; means for inputting handwritten stroke data; recognition means for recognizing that a stroke included in the handwritten stroke data is identical to one of the gesture strokes; means for displaying a stored icon corresponding to the recognized gesture stroke at a position where the recognized gesture stroke was input on a display screen; judging means for judging the presence or absence of a selection of the displayed icon, at the position where the icon is displayed; and selection means for selecting, in accordance with the judgment, to execute a command specified by the displayed icon.

5,781,663 SYSTEM FOR RECOGNIZING VARIOUS INPUT DATA TYPES

Katsuhiko Sakaguchi, Kawasaki; Tsunekazu Arai, Tama; Eiji Takasu, Yokohama, and Hiroto Yoshii, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

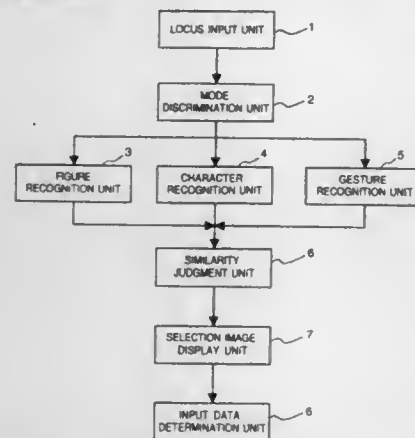
Filed Jun. 27, 1995, Ser. No. 495,102

Claims priority, application Japan, Jun. 30, 1994, 6-149422

Int. Cl.⁶ G06K 9/00; 9/18; 9/62; 9/74

U.S. Cl. 382—189

50 Claims



1. An image recognition apparatus for recognizing an input locus, comprising:

locus input means for inputting a locus;

recognition means for recognizing an input image constituted by the locus inputted by said locus input means in a plurality of recognition modes and for obtaining first candidates of a recognition result in each of the plurality of recognition modes as a plurality of functions;

determination means for determining similarities of the first candidates so as to obtain second candidates of a recognition result, the second candidates having similar shapes to one another; and

selection means for selecting one of the second candidates from the plurality of functions as the recognition result.

5,781,664 HIGHLY EFFICIENT METHOD AND STRUCTURE FOR MOTION COMPENSATION IN A VIDEO DECOMPRESSION SYSTEM

Hemant Bheda, Cupertino, and Partha Srinivasan, Fremont, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

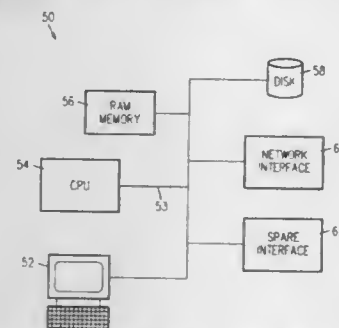
Continuation of Ser. No. 526,533, Sep. 11, 1995, abandoned.

This application Oct. 10, 1997, Ser. No. 949,019

Int. Cl.⁶ G06K 9/36

U.S. Cl. 382—233

12 Claims



1. A method of decompressing video information including performing one-dimensional half pixel filtering in horizontal direction and block averaging for bidirectional block using a computer with a memory storing procedures and a processor having an $n \times m$ bit data bus executing the procedures, said method comprising the steps of:

receiving said video information in said processor via said data bus, wherein said video information includes a first plurality of n bit words, each representing a pixel, that forms a first $n \times m$ bit word, and a second plurality of n bit words, each representing a pixel, that forms a second $n \times m$ bit word;

setting the least significant bits of each of said first plurality of n bit words forming said first $n \times m$ bit word to zero;

shifting said first $n \times m$ bit word one position to the right, while filling the most significant bit of said first $n \times m$ bit word with a zero thereby forming a first MSB word;

setting the least significant bits of each of said second plurality of n bit words forming said second $n \times m$ bit word to zero;

shifting said second $n \times m$ bit word one position to the right, while filling the most significant bit of said second $n \times m$ bit word with a zero, thereby forming a second MSB word; and

logically combining said first MSB word and said second MSB word to create a resultant MSB word, wherein said resultant MSB word represents one-dimensional half pixel filtered in horizontal direction and block averaged for bidirectional block video data.

5,781,665 APPARATUS AND METHOD FOR CROPPING AN IMAGE

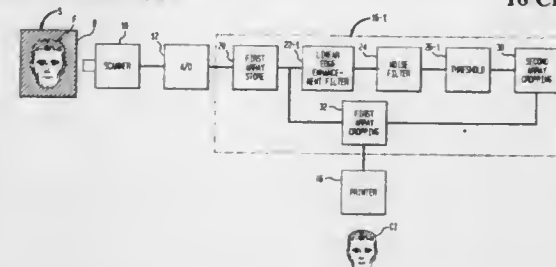
Mark F. Cullen, Bethany, Conn., and Mayur N. Patel, Los Angeles, Calif., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 28, 1995, Ser. No. 519,903

Int. Cl.⁶ G06K 9/00; 9/34; 9/38; 9/40

U.S. Cl. 382—254

16 Claims



1. A method of cropping an image, said image being represented as a first digital array of pixel values, said method comprising the steps of:

a) processing said first digital array to produce a second digital array of pixel values, said processing including applying an edge enhancement transformation to said first digital array;

b) partitioning said second digital array into predetermined segments;

c) summing pixel values for each of said segments to obtain a brightness sum for each of said segments;

d) dividing said segments into first and second groups in accordance with predetermined criteria relating to said brightness sums;

e) identifying a group of said first digital array corresponding to said first group of said second digital array;

f) outputting at least a part of said group of said first digital array to generate a cropped image.

5,781,666 IMAGE PROCESSING METHOD AND APPARATUS SUITABLE FOR BOTH HIGH-RESOLUTION AND LOW-RESOLUTION IMAGE DATA

Yasuhisa Ishizawa, Yokohama; Yoshitsugu Yamanashi, Kawasaki; Hiroshi Nonoshita, Fujisawa, and Kenjiro Chyo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

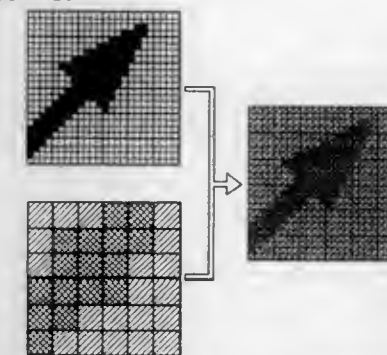
Continuation of Ser. No. 87,552, Jul. 8, 1993, abandoned, which is a continuation of Ser. No. 686,170, Apr. 16, 1991, abandoned. This application Jan. 31, 1995, Ser. No. 380,940

Claims priority, application Japan, Apr. 17, 1990, 2-101218; Apr. 17, 1990, 2-101219; Apr. 17, 1990, 2-101220; May 8, 1990, 2-116966; May 8, 1990, 2-116967

Int. Cl.⁶ G06K 9/00

U.S. Cl. 382—284

10 Claims



1. An image data processing apparatus comprising:

first storage means for storing image data as contour data of a first resolution;

second storage means for storing the image data as color data of a resolution lower than the first resolution, the color data corresponding to a plurality of the contour data;

reading out means for reading a first number of data which are adjacent to each other of the contour data stored in said first storage means and a second number of data which are adjacent to each other of the color data including the color data corresponding to the plurality of the contour data stored in said second storage means;

selection means for selecting one color data from among the read second number of the color data at the position of each of the read first number of the contour data; and

generating means for generating a value of an area surrounded by the contour data by repeating reading out of data by said reading out means and selection of data by said selection means.

5,781,667 APPARATUS FOR HIGH SPEED MORPHOLOGICAL PROCESSING

Robert C. Schmidt, Redmond; Shih-Jong J. Lee, Bellevue, and James A. Stephanick, Seattle, all of Wash., assignors to NeoPath, Inc., Redmond, Wash.

Filed Jul. 31, 1995, Ser. No. 509,154

Int. Cl.⁶ G06K 9/56; 9/60

U.S. Cl. 382—308

7 Claims

1. A method for high speed morphological processing in a computerized image processing system, the method comprising:

(a) acquiring a binary image;

(b) selecting feature and height values for a desired morphological processing of the binary image;

(c) scanning the binary image in a raster scanning sequence so as to produce a scanned image including a plurality of pixels;

(d) performing a sequential labeling transformation on each of the plurality of pixels of the scanned image so as to produce a transformed image by transforming each pixel of the plurality of pixels according to the following relationships: $dt(i,j)=height$; if $B(i,j)=feature$ $dt(i,j)=max\{0, \{dt(h,k)-m(h,k) \text{ for all } (h,k) \text{ in } M(i,j)\} \}$ elsewhere, where $B(i,j)$ represents an

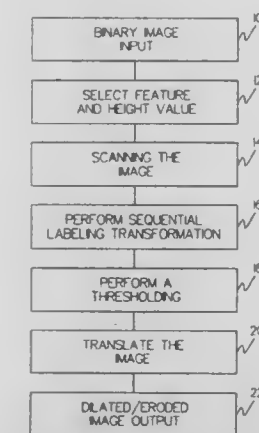


image pixel at an i^{th} row and j^{th} column of the binary image. $M(i,j)$ is a neighborhood kernel of a set of pixels around $B(i,j)$, $m(h,k)$ is a predetermined weight of a pixel (h,k) in $M(i,j)$ and $dt(i,j)$ is a pixel at the i^{th} row and j^{th} column of a resulting sequentially labelled image;

(e) performing a thresholding operation on the transformed image so as to generate a thresholded image; and

(f) translating the thresholded image.

5,781,668 METHOD AND APPARATUS FOR IMPROVED IMAGE GENERATION USING SCANNING DEVICES

Gary K. Starkweather, Saratoga, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

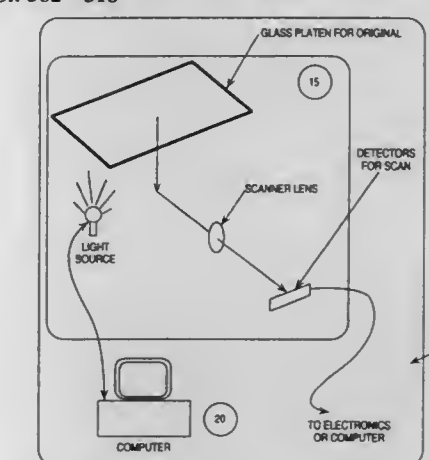
Continuation of Ser. No. 955,560, Oct. 1, 1992, abandoned.

This application Jun. 6, 1995, Ser. No. 469,758

Int. Cl.⁶ G06K 9/00

U.S. Cl. 382—318

18 Claims



1. In an image processing system comprising a scanner with multiple exposure levels and a computer means for storing and processing serial binary image data generated by the scanner, a method for improving the quality of the image captured by the scanner, the method comprising the steps of:

scanning an image for a first time with the scanner, the serial binary data generated by the scanner during this first scan being stored in the computer means;

scanning the image for a second time with the scanner, the serial binary data generated by the scanner during this second scan being stored in the computer means;

scanning the image for a third time with the scanner, the serial binary data generated by the scanner during the third scan being stored in the computer means;

selecting from the serial binary data obtained in the third scan a first set of values, said first set of values being all gray scale values above a first predetermined threshold;

selecting from the serial binary data obtained in the second scan a second set of values, said second set of values being all gray scale values below a second predetermined threshold;
selecting from the serial binary data obtained in the first scan a third set of values, said third set of values being all gray scale values between the first and second predetermined thresholds; and
storing a composite digital image of the image with serial binary data including said first, second and third sets of values, wherein the serial binary data of the composite digital image includes values originally selected from at least one of the first, second and third scanning steps and wherein for each pixel in said composite digital image, a pixel value is specified by only one of said first, second and third set of values.

5,781,669

ACOUSTOOPTICAL WAVEGUIDE DEVICE FOR WAVELENGTH SELECTION AND PROCESS FOR MAKING SAME

Steffen Schmid, Monza, and Sergio Bosso, Assago, both of Italy, assignors to Pirelli Cavi S.p.A., Italy

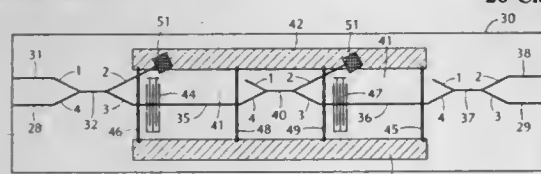
Filed Apr. 1, 1996, Ser. No. 625,367

Claims priority, application Italy, Apr. 14, 1995, MI95A0771

Int. Cl.⁶ G02F 1/335; H01L 21/70

U.S. Cl. 385—7

26 Claims



1. An acoustooptical waveguide device for wavelength selection, comprising one substrate of a birefringent and photoelastic material on which are formed:

- a first acoustooptical rotation stage means for converting the polarization plane of an optical signal in a first wavelength interval and including at least one optical waveguide traveled over by said signal;
- a second acoustooptical rotation stage means for converting the polarization plane of an optical signal in a second wavelength interval and including at least one optical waveguide traveled over by said signal;
- at least one optical waveguide, connecting said first and second acoustooptical stage means and including a polarizer, wherein said polarizer comprises an evanescent-wave polarization coupler; and
- at least one optical waveguide, downstream of said second acoustooptical stage means and including a polarization-selective element.

22. A process for making an acoustooptical waveguide device for wavelength selection, comprising the following steps:

- forming at least one acoustic waveguide on a substrate made of a birefringent and photoelastic material, by diffusion of a first metal within said substrate;
- forming first and a second evanescent-wave polarization couplers on said substrate, by photolithographic deposition and subsequent diffusion of a second metal within the substrate itself, as well as at least one optical waveguide for connection between said polarization couplers, which optical waveguide is at least partly included in said acoustic waveguide;
- forming a polarizer along said optical connection waveguide;
- forming an electroacoustic transducer comprising interdigitated electrodes, within at least one of said acoustic waveguides, by photolithographic deposition of a third metal onto said substrate;

characterized in that said step of forming a polarizer is included in said step of forming said first and second polarization couplers and said optical connection waveguide, and includes forming a third evanescent-wave polarization coupler.

5,781,670 OPTICAL FREQUENCY CHANNEL SELECTION FILTER WITH ELECTRONICALLY-CONTROLLED GRATING STRUCTURES

David A. G. Deacon, Los Altos; Michael J. Brinkman, Redwood City; William K. Bischel, and Simon J. Field, both of Menlo Park, all of Calif., assignors to Gemfire Corporation (a California corporation), Palo Alto, Calif.

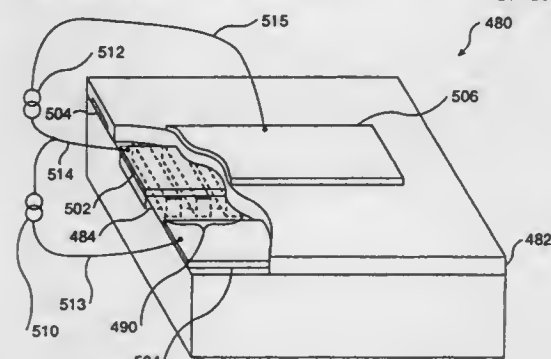
Division of Ser. No. 303,854, Sep. 9, 1994, Pat. No. 5,581,642.

This application May 10, 1996, Ser. No. 644,769

Int. Cl.⁶ G02B 6/34

U.S. Cl. 385—10

15 Claims



12. A patterned poled dielectric device for adjustably tuning a frequency of interaction with an optical beam comprising:

- a solid dielectric material, said solid dielectric material having a pattern of differing domains, at least a first type of said domains being an electro-optically active structure and forming at least two elements alternating with a second type of said domains, said at least two elements being spaced along an optical axis to form a patterned structure of varying index of refraction in the presence of an electric field;
- a waveguide along said optical axis through said patterned structure;
- an electro-optic material disposed confronting said waveguide as a cladding;
- at least a first electrically-conductive material forming a first electrode, said first electrode confronting said cladding;
- at least a second electrically-conductive material forming a second electrode, said second electrode being disposed between said dielectric material and said cladding; and
- means for creating a first electric field through said cladding using said first electrode structure and for creating a second electric field through said dielectric material.

5,781,671

FREE-SPACE ANGLE-MULTIPLEXED OPTICAL INTERCONNECT NETWORK

Yao Li, Monmouth Junction; Richard A. Linke, and Ting Wang, both of Princeton, all of N.J., assignors to NEC Research Institute, Inc., Princeton, N.J.

Filed Oct. 4, 1995, Ser. No. 539,154

Int. Cl.⁶ G11C 11/42

U.S. Cl. 385—17

5 Claims

1. A point-to-point optical interconnection network for coupling a predetermined transmitting element contained within an array of arrays of transmitting elements with a predetermined receiving element contained within an array of receiving elements, said interconnection network comprising:

- a two-dimensional coplanar chip array (12) of coplanar two-dimensional arrays (13) of vertical cavity surface emitting lasers (14);
- a coplanar two-dimensional array of photodetectors (18); said photodetectors (18) being positionally associated with said lasers such that a laser at the j, k position in any of said arrays (13) corresponds with a photodetector at the j, k position in said array of photodetectors (18); and a holographic imager, disposed between said coplanar two-dimensional chip array

5,781,673

WDM OPTICAL FIBER COMMUNICATION SYSTEM WITH IMPROVED DISPERSION COMPENSATION

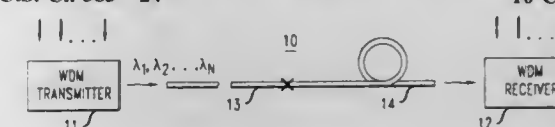
William Alfred Reed, Summit, and Ashish Madhukar Vengsarkar, Berkeley Heights, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 5, 1997, Ser. No. 796,004

Int. Cl.⁶ G02B 6/28

U.S. Cl. 385—24

10 Claims



and said two-dimensional coplanar array of photodetectors such that light emitted from the laser at the j, k position in any of said two-dimensional arrays (13) of vertical cavity surface emitting lasers (14) is received only at the photodetector in the j, k positions of said array of photodetectors.

5,781,672

LOW PROFILE OPTICAL FIBER SWITCH

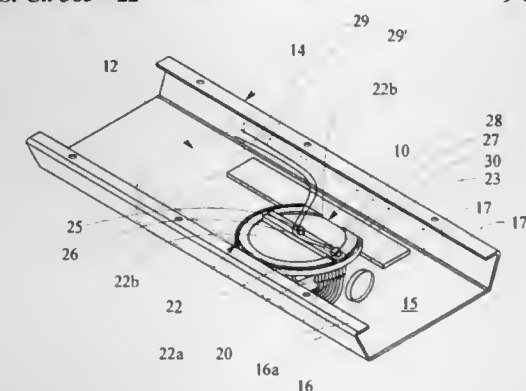
Timothy Philip Cutts, Ottawa, Canada, assignor to JDSFillet Inc., Nepean, Canada

Filed Dec. 3, 1996, Ser. No. 754,031

Int. Cl.⁶ G02B 6/35

U.S. Cl. 385—22

9 Claims



1. An optical switching device comprising:

- a motor having a shaft,
- an array of first optical fibers each having a fixed fiber end portion, the fixed fiber end portions being disposed in spaced-apart predetermined positions and having axes defining a substantially cylindrical imaginary surface co-axial with said shaft,
- a further optical fiber having a movable fiber end portion, carrier leans mounted on said shaft and carrying said movable fiber end portion along a circular path co-axial with said shaft and adjacent said fixed fiber end portions,
- wherein said movable fiber end portion extends largely radially relative to the shaft axis, and wherein light redirecting means are mounted on said carrier means adjacent said movable fiber end portion so as to re-direct light between said movable fiber end portion and an adjacent fixed fiber end portion,
- said motor for rotating said shaft to provide relative indexing movement of said movable fiber end portion along said path so that light can be transmitted between said movable fiber end portion and selected ones of the fixed fiber end portions.

5,781,674

FERRULE FOR OPTICAL FIBER CONNECTOR

Akio Asai, Adachi, Japan, assignor to Adamant Kogyo Company Ltd., Tokyo, Japan

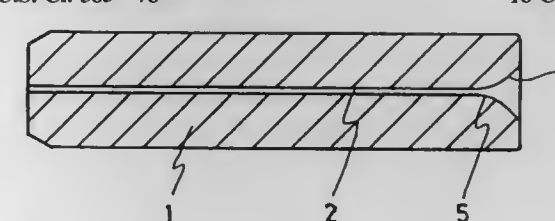
Filed Dec. 27, 1994, Ser. No. 363,837

Claims priority, application Japan, Dec. 28, 1993, 5-353238

Int. Cl.⁶ G02B 6/38

U.S. Cl. 385—78

18 Claims



1. A ferrule for an optical fiber connector formed from ceramic material, through which an end of an optical fiber to be connected is inserted to fix the optical fiber thereto, wherein a boundary part between an optical fiber-inserting hole and an optical fiber-inserting opening is formed into a convex continuously curved surface, wherein the entire inner surface defining the optical fiber-inserting hole is an unabraded surface comprising a slightly irregular grain surface composed of particles of the ceramic material as calcined from which the connector is formed.

5,781,675

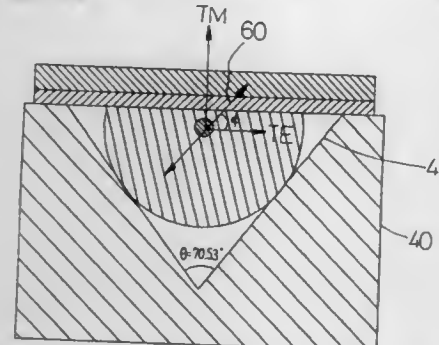
METHOD FOR PREPARING FIBER-OPTIC POLARIZER
Shiao-Min Tseng; Ssu-Pin Ma; Kun-Fa Chen, and Kuang-Yu Hsu, all of Hsinchu, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Mar. 14, 1997, Ser. No. 818,097

Int. Cl.⁶ G02B 6/26

U.S. Cl. 385—30

6 Claims



1. A method for preparing a fiber-optic polarizer, said method comprising the steps of:

- forming one or a plurality of parallel arcuate recesses on a polishing substrate;
- securing by an adhesive one single-mode optical fiber to each one of said recesses of said substrate such that one section of a cladding layer of said single-mode optical fiber is exposed;
- polishing the exposed section of said cladding layer to form a polished planar surface contiguous to a core region of said single-mode optical fiber; and
- forming a buffer dielectric film on said planar surface of said single-mode optical fiber and then forming on said buffer dielectric film a metal layer thicker than its skin depth; or forming on said planar surface a thin metal layer thinner than its skin depth and then optionally forming by vacuum sputtering on said thin metal layer a dielectric thin film capable of protecting said thin metal layer from atmospheric oxidation and finally forming thereon a buffer dielectric material having a refractive index which matches the single-mode optical fiber;

wherein said polishing substrate is a semiconductor substrate have a planar face, and said one or a plurality of arcuate recesses are formed by forming an etching mask having one or a plurality of slits on said planar face, etching the masked planar face of said semiconductor substrate so that one or a plurality of V-shaped recesses parallel to one another and having a curvature radius ranging between 200 centimeters and 2000 centimeters are formed.

5,781,676

WAVEGUIDE INTEGRATED OPTICAL PICKUP DEVICE AND OPTICAL WAVEGUIDE ELEMENT

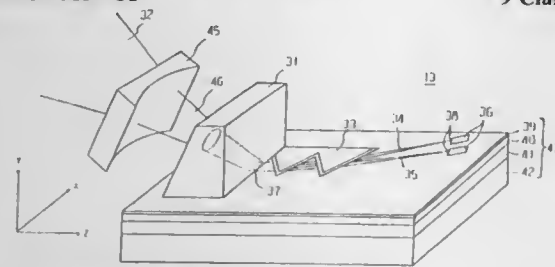
Kuniaki Okada, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 30, 1996, Ser. No. 739,932

Claims priority, application Japan, Oct. 30, 1995, 7-281523
Int. Cl.⁶ G02B 6/34

U.S. Cl. 385—31

9 Claims



1. An optical pickup device comprising:
a light source for generating a light beam;

an objective lens for converging the light beam onto a recording medium;

a beam splitter for splitting the light beam which has been converged and reflected from the recording medium into two light beams;

an optical waveguide element for detecting an information signal in accordance with one of the two converged light beams split by the beam splitter, the optical waveguide element including a prism coupler, a waveguide layer, and a photodetecting portion; and

an optical element, disposed between the beam splitter and the optical waveguide element, for providing the one of the two converged light beams with astigmatism,

wherein the optical waveguide element and the optical element are arranged to position a first focal line of the one of the two converged light beams within a plane of the waveguide layer, to position a first focal point at one edge of the prism coupler and to position a second focal point on the photodetecting portion.

5,781,677

MAGNETICALLY TUNABLE OPTICAL FIBER GRATINGS

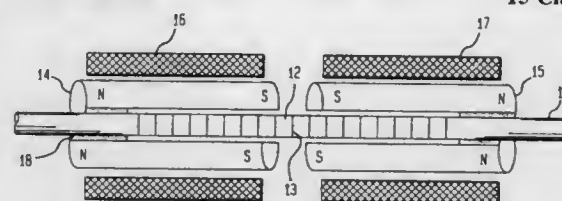
Sungbo Jin, Millington; Paul Joseph Lemaire, Madison, and Thomas A. Strasser, Chatham, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 29, 1997, Ser. No. 791,081

Int. Cl.⁶ G02B 6/34

U.S. Cl. 385—37

15 Claims



1. A tunable optical fiber grating device comprising:
a length of optical fiber including an optical grating along a portion of its length;
a pair of magnets secured to said fiber on opposite sides of said grating;
an electromagnet for applying a magnetic field to said magnets, thereby inducing force between said magnets and creating strain across said grating, the magnets of said pair maintaining a remanent strain in said grating.

5,781,678

OPTICAL FIBER PATH JOINT MEMBER AND METHOD OF BLOWING OPTICAL FIBER

Hiroaki Sano; Hiroki Ishikawa; Tsuyoshi Imaizumi, all of Kanagawa; Kazuo Hogari, and Osamu Kawata, both of Ibaraki, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, and Nippon Telegraph & Telephone Corporation, Tokyo, both of Japan

Filed Jan. 25, 1996, Ser. No. 591,370

Claims priority, application Japan, Jan. 25, 1995, 7-009857;
Dec. 5, 1995, 7-316477

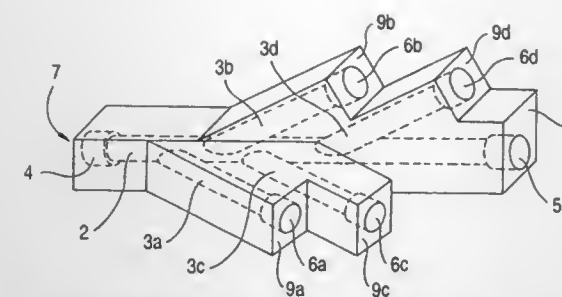
Int. Cl.⁶ G02B 6/26; 6/42

U.S. Cl. 385—45

8 Claims

1. A method of blowing an optical fiber into a pipe comprising the steps of:

- providing an optical fiber path joint member defining a main path, the joint member having an inlet and an outlet at respective ends thereof and at least one joint path joining to said main path at an angle of equal to or less than 45°;
- connecting a first portion of the pipe to said outlet,
- connecting a second portion of the pipe to said inlet, and



introducing said optical fiber into said joint path and blowing it therethrough and into the pipe via said main path.

5,781,679

LIGHT DISPERSIVE OPTICAL FIBER

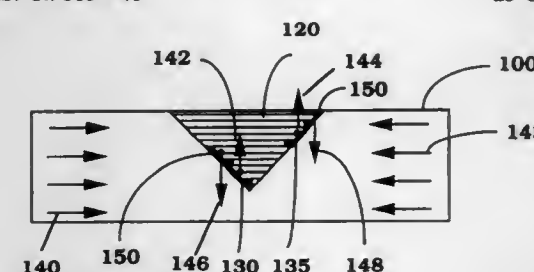
Yao Li, Monmouth Junction, and Ting Wang, Princeton, both of N.J., assignors to NEC Research Institute, Inc., Princeton, N.J.

Filed May 9, 1997, Ser. No. 853,274

Int. Cl.⁶ G02B 6/26

U.S. Cl. 385—48

23 Claims



22. A light dispersive optical fiber for distributing and dispersing light traversing an optical fiber comprising:

- one or more mirrors, positioned within the optical fiber such that a desirable portion of the light traversing the optical fiber strikes the mirror and is deflected out a side of the optical fiber wherein said mirrors are constructed by cutting the optical fiber and removing a portion of the optical fiber such and a mirror region is created and said mirror region is subsequently refilled with a suitable material;
- dispersive elements positioned within the cut portion such that the deflected light strikes the dispersive elements and is dispersed before exiting the side of the optical fiber; and
- an array of selectively addressable light shutters, affixed to the light exiting side of the optical fiber, such that the exiting light must pass through the light shutter array.

5,781,680

SEALED OPTICAL FIBER CONNECTOR ADAPTER
Michele René Womack, Carrollton; Michael de Jong, Fort Worth, and David T. Underwood, N. Richland Hills, all of Tex., assignors to Siecor Corporation, Hickory, N.C.

Filed Jun. 25, 1996, Ser. No. 670,374

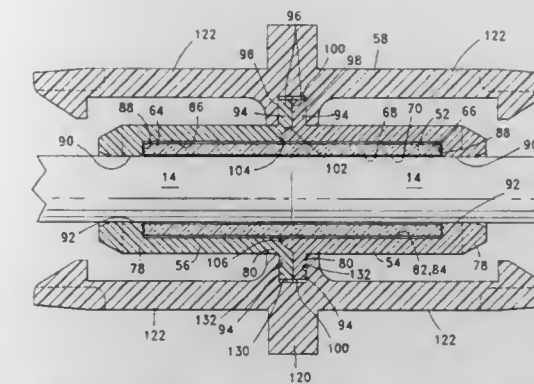
Int. Cl.⁶ G02B 6/38

U.S. Cl. 385—53

8 Claims

1. An adapter for receiving optical fiber connectors in mating relationship, the connectors each having a ferrule having a first end with an end face for abutting with an end face of another connector, a second end opposite thereto defining a longitudinal axis extending from the first end to the second end, and an outside surface, the adapter comprising:

- two seal sleeve halves joined together to create a sealing sleeve that defines a passageway therethrough, each seal sleeve half defining a seal surface sized to circumferentially seal around a ferrule when the ferrule is inserted into the



adapter, each seal sleeve half defining a flange with a first surface for sealingly mating with the first surface of the other flange

- (b) an alignment sleeve sized located generally co-axially within the two seal sleeve halves and longitudinally between the seal surfaces, the alignment sleeve sized for receiving and operatively aligning the end faces of two connectors therein, the ferrule sleeve having a first end and a second end opposite thereto;
- (c) a retainer for retaining the flanges of the two seal sleeve halves biased together in a face seal relationship.

5,781,681

BEND LIMITING STRAIN RELIEF BOOT

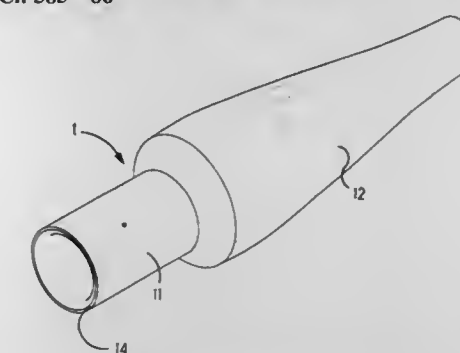
Randy Marshall Manning, New Cumberland, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 14, 1996, Ser. No. 748,761

Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—86

5 Claims



1. A bend relief boot (1) comprising a tubular length of polymeric material disposed at a distal end of a connector, the tubular length having a neutral center axis (9) characterized in that:

- an outer diameter ($d_o(\theta)$) of the boot varies as a function of its distance from said distal end of the connector in its fully deflected state following the relationship,

$$d_o(\theta) = \left[d_i^4 + \frac{64 \cdot F \cdot p^2 \cdot (1 - \cos(\theta))}{E \cdot \pi} \right]^{1/4}$$

wherein d_i is the inner diameter of the boot, F is the maximum applied load, p is the desired minimum radius of curvature, θ is the angle of the applied load relative to said neutral axis, and E is the modulus of elasticity of the selected material.

I. A housing of the type for receiving optical fibers therein, the optical fibers being connectable to connectors, the optical fibers having a minimum bend radius to avoid signal degeneration in the optical fibers, comprising:

```

graph TD
    A[read next line from script] --> B{is the first character "0"}
    B -- no --> C[prepare lines for rendering]
    B -- yes --> D[clear back page]
    D --> E[wait for "off" time to arrive]
    E --> F[swap pages]
    F --> G[render on to back page]
    G --> H[wait for "on" time to arrive]
    H --> I[swap pages]
    I --> J[record "off" time for this graphic]
    J --> K[read "on" and "next" times for graphic]
  
```

(f) combining said first video signal with said second video signal.

5,781,688

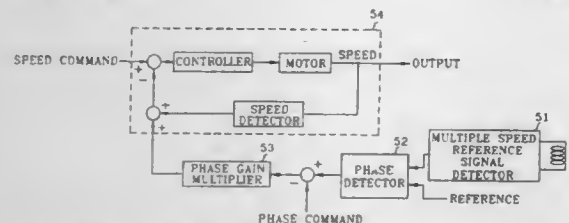
METHOD AND APPARATUS FOR REPRODUCING A COMPRESSED DIGITAL VIDEO SIGNAL AT MULTIPLE SPEEDGoan-soo Seong, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Oct. 24, 1996, Ser. No. 736,484

Claims priority, application Rep. of Korea, Oct. 24, 1995, 95-36840

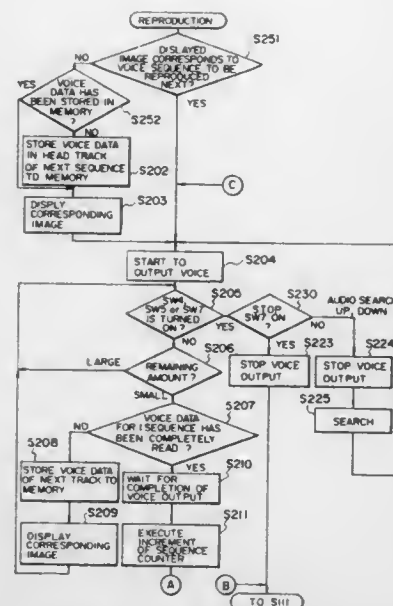
Int. Cl.⁶ H04N 5/91

U.S. Cl. 386—79

9 Claims



1. A multiple speed reproduction method for a video signal, the multiple speed reproduction method comprising the steps of: altering a duty ratio of a control signal which is recorded on a control track according to a position of an I frame which is hierarchically recorded on a track; generating a phase reference signal for a multiple speed reproduction which indicates a start position of a head for multiple speed reproduction; recording the phase reference signal for the multiple speed reproduction on the control track; reproducing the phase reference signal for the multiple speed reproduction during the multiple speed reproduction; and detecting a phase of the phase reference signal for the multiple speed reproduction using a sync reference signal of a drum.



area is one of the image signals, for reproducing the respective audio signal corresponding to the one image signal recorded in the selected recording area and storing the reproduced audio signal in the memory, then reproducing the one image signal, and then reading out the reproduced audio signal from the memory.

5,781,690

VIDEO SIGNAL RECORDER HAVING A FRAME CODER

Tatsuro Juri, Osaka; Yuji Fujiwara, Nishinomiya; Masakazu Nishino, Kashiwara; Toyohiko Matsuta, Katano, and Shigeru Awamoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 213,538, Mar. 16, 1994, abandoned.

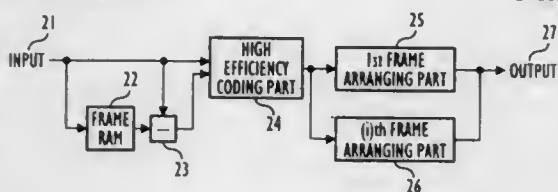
This application Feb. 3, 1997, Ser. No. 794,407

Claims priority, application Japan, Mar. 17, 1993, 5-056824; Jun. 1, 1993, 5-130839; Jun. 18, 1993, 5-147344

Int. Cl.⁶ H04N 5/76

U.S. Cl. 386—111

2 Claims



1. A video signal recording apparatus for recording video signals on a video tape comprising:

- a group means for grouping input moving video signals every K frames (K is an integer larger than 1);
- a high efficiency coding means for highly efficiently coding a first frame in a group with data within said first frame and 2nd to Kth frames in said group in a manner such that a total data length including a data length of said first frame is fixed at a predetermined data length corresponding to S×L recording tracks (S is an integer equal to or larger than 2 and L is an integer larger than 1);
- a block forming means for dividing coded data of said first frame into a predetermined number n of compression blocks, each having a variable data length;
- a first arranging means for allocating n recording blocks each having a fixed data length at predetermined positions on said S×L recording tracks and arranging data of each compression

5,781,692

QUARTZ LAMP HEATER ASSEMBLY FOR THIN FILM DEPOSITION APPARATUS

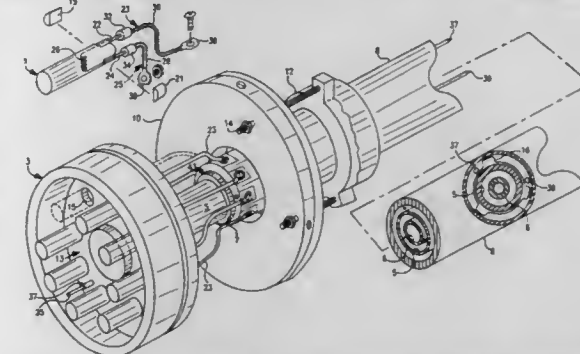
Mark K. Wagner, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jun. 4, 1997, Ser. No. 855,545

Int. Cl.⁶ H05B 1/00; H01R 33/02

U.S. Cl. 392—411

15 Claims



1. A heater assembly for a vapor deposition apparatus comprising:

- a plurality of quartz lamps;
- said lamps comprising a gas proof light transmissive envelope confining a xenon gas and a tungsten filament, and containing at least a pair of electrical conductors extending through said gas proof envelope in gas sealed relationship therewith, said conductors being connected electrically, internal of said envelope, to opposite ends of said tungsten filament;
- a first elongate electrical lead, comprising a flexible stranded electrical wire;
- a second elongate electrical lead, shorter than said first, comprising a flexible stranded electrical wire;
- a pair of Inconel crimping sleeves;
- said first Inconel crimping sleeve engaging an end of said first elongate electrical lead and an end of said lamp electrical conductor for crimping said leads together, wherein said first elongate electrical lead is pressed into direct contact with said lamp electrical lead;
- said second Inconel crimping sleeve engaging an end of said second elongate electrical lead and an end of said second lamp electrical conductor for crimping said leads together, wherein said second elongate electrical lead is pressed into direct contact with said lamp electrical lead to provide an oxidizing atmosphere resistant electrical contact;
- first and second fiberglass sleeves for providing electrical insulation over said respective conductors and electrical leads;
- a terminal connector member on the remaining end of said first lead, and another terminal connector member on the remaining end of said second elongated electrical lead;
- metal lamp support means; said lamp support means comprising a hollow cylindrical member having an axis, and a disk shaped end wall portion at a front end, said end wall portion having a radiant energy reflecting surface, and having a plurality of lamp receiving cylindrical openings through said end wall portion, said plurality being equal in number to the number of lamps in said plurality of lamps;
- said openings being symmetrically positioned in said front wall portion, evenly angularly spaced about said axis at a predetermined radial distance therefrom;
- first and second semi-cylindrical insert members, said cylindrical portion being of a diameter adapted to fit within and conform to the cylindrical wall of said lamp opening, and each said insert member having a flat end for engaging a portion of said lamp; said insert members being positioned on each side of said lamp envelope and within said lamp opening with the flat side of said insert member engaging said lamp envelope;
- said lamp housing member having an annular metal member coaxially positioned on said rear surface;
- a plurality of terminal fastening means extending from said annular member, said terminal fastening means being symmetrically positioned about said annulus; said terminals of

5,781,691

HAND HELD STEAM DISPENSING HAIR-CARE APPARATUS

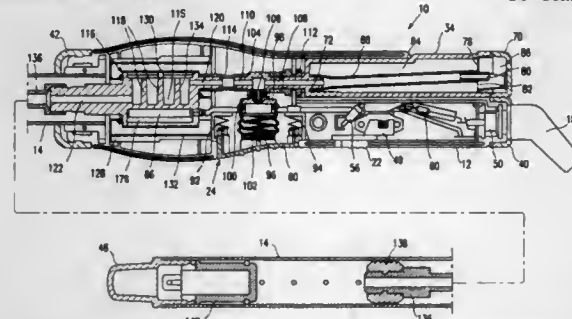
Daniel S. C. Kwok, 61 Pau Chung Street, Tokwawan, Kowloon, Hong Kong

Filed Jun. 24, 1996, Ser. No. 684,768

Int. Cl.⁶ A61H 33/12; A45D 1/04; 6/06

U.S. Cl. 392—405

10 Claims



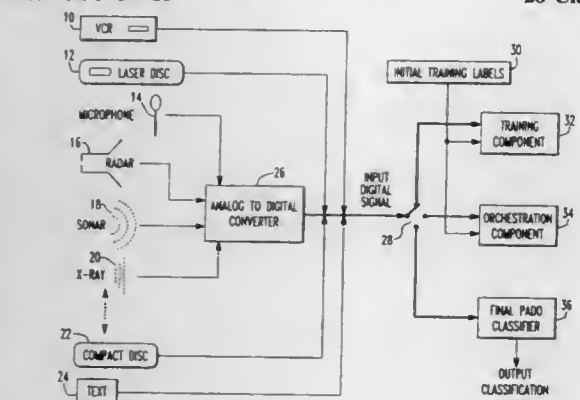
- 1. A hand-held steam dispensing hair-care apparatus comprising:
- a handle housing;
- a tube connected to said handle housing, said tube having a plurality of radial openings;
- means connected to said handle housing for communicating with a source of electric power;
- a water reservoir removably connected to said handle housing, said reservoir including an inlet port, an outlet port and means positioned within the reservoir for dividing said reservoir into a large chamber and a small chamber, said dividing means having an outlet port and a conically shaped inlet port;
- means connected to said handle housing for forming a heating enclosure;
- means connected to said handle housing for communicating water from said water reservoir to said heating enclosure means;
- means connected to said handle housing and said electric power communicating means for heating said heating enclosure means; and
- means connected to said handle housing for communicating heated water vapor from said heating enclosure means to said tube whereby a user of said apparatus is able to provide heated water vapor to his/her hair in a safe and convenient manner.

5,781,698

METHOD OF AUTONOMOUS MACHINE LEARNING
Astro (Eric) Teller, and Manuela Veloso, both of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.
Filed Oct. 31, 1995, Ser. No. 551,154
Int. Cl.⁶ G06F 15/18

U.S. Cl. 395—13

28 Claims



1. A method of generating a classifier for signal classification based on a plurality of classification programs, comprising the steps of:

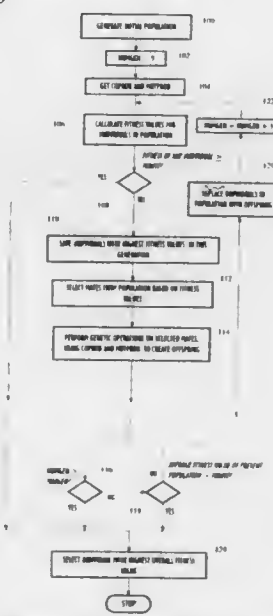
- operating on a plurality of C types of input signals, each having a known label, with a plurality of classification programs from a population of classification programs to produce a plurality of output values classifying said C types of input signals;
- measuring errors in said plurality of output values relative to said known labels;
- distributing said plurality of classification programs among C groups where each of said C groups is the best able to classify one of the C types of input signals from other of the C types of input signals;
- placing said distributed classification programs into a new population of classification programs in accordance with a first predetermined function;
- modifying certain of said plurality of classification programs in said new population;
- repeating steps (a) through (e) for a predetermined number of iterations based on predetermined criteria;
- selecting those programs from each group that are the best able to classify said input signals associated with said group from all other input signals for inclusion in a hierarchy of C systems, default weights being assigned to each of said selected programs and each of the C systems;
- operating on an input signal having a known label with said selected programs to produce a plurality of output values;
- determining an output value for each of said C systems by combining the output values from said selected programs within each of said C systems according to a second predetermined function of said output values and the weights of said selected programs;
- determining a signal classification output value by combining each of said output values from each of said C systems according to a third predetermined function of said output values and the weights of said C systems;
- measuring errors in the output values of said selected programs and said output values of said C systems relative to said known label;
- adjusting the weights assigned to each of said selected programs and each of said systems in accordance with the errors relative to said known labels; and
- repeating steps (h) through (l) for a number of iterations based on predetermined criteria to generate a classifier.

5,781,699

METHOD FOR OPTIMIZATION OF CHANNEL PARAMETERS IN A DATA STORAGE DEVICE
Mark Dittmar, Westminster, and James Alexander, Boulder, both of Colo., assignors to Maxtor Corporation, Longmont, Colo.
Filed Oct. 21, 1996, Ser. No. 731,827
Int. Cl.⁶ G06F 15/18

U.S. Cl. 395—13

32 Claims



32. A method for tuning a channel in a data storage device, wherein said channel transfers data between a storage medium and an exterior environment, said method comprising the steps of:

- generating a first plurality of parameter value strings, each parameter value string including a value for each of a plurality of predetermined channel parameters;
- separately applying each of said first plurality of parameter value strings to said channel to determine a plurality of performance characteristics for said channel;
- determining fitness values for parameter value strings in said first plurality using said plurality of performance characteristics, each fitness value being indicative of the desirability of a corresponding parameter value string;
- selecting mates from said first plurality of parameter value strings using said fitness values determined in said step of determining, wherein a probability that a parameter value string will be selected is approximately proportional to the magnitude of a corresponding fitness value;
- performing a genetic operation on said selected mates to generate a second plurality of parameter value strings;
- repeating said steps of applying, determining, selecting, and performing for said second plurality of parameter value strings; and
- choosing a parameter value string that produces a best fitness value.

5,781,700

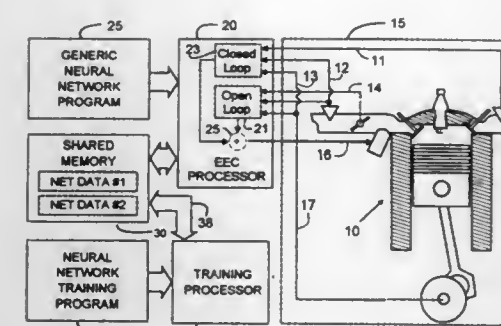
TRAINED NEURAL NETWORK AIR/FUEL CONTROL SYSTEM

Gintaras Vincent Puskorius, Redford; Lee Albert Feldkamp, Plymouth, and Leighton Ira Davis, Ann Arbor, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Feb. 5, 1996, Ser. No. 597,080
Int. Cl.⁶ G06F 15/00; 15/18

U.S. Cl. 395—20

13 Claims

1. Apparatus for controlling the air/fuel mixture ratio of the combustibles delivered to an internal combustion vehicle engine, said apparatus comprising, in combination:



a plurality of sensors coupled to said engine for producing a plurality of input signal values each indicative of a predetermined variable engine operating condition, a first one of said input signal values being indicative of the oxygen level in the exhaust gases produced by said engine;

a electronic engine control processor coupled to said sensors and programmed to execute at least one neural network signal translation algorithm for converting said input signal values into a plurality of intermediate node output values and an output signal value indicating a controlled fuel command in accordance with network weight values,

fuel delivery control means responsive to said output signal value for adjusting the rate at which fuel is delivered to said engine to achieve said controlled air/fuel mixture ratio;

data storage means coupled to said control processor for storing said input signal values, said intermediate node output values, said output signal value, and said weight values; and

a training processor external to said control processor and coupled to said data storage means for modifying said weight values, said training processor including:

monitoring means responsive to said input signal values for comparing said controlled air/fuel mixture ratio with a predetermined desired air/fuel mixture ratio which provides substantially stoichiometric engine operation, and means responsive to said monitoring means for varying at least selected ones of said weight values such that said controlled air/fuel mixture ratio more nearly matches said predetermined desired air/fuel mixture ratio.

5,781,701

NEURAL NETWORK AND METHOD OF USING SAME
Shay-Ping Thomas Wang, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

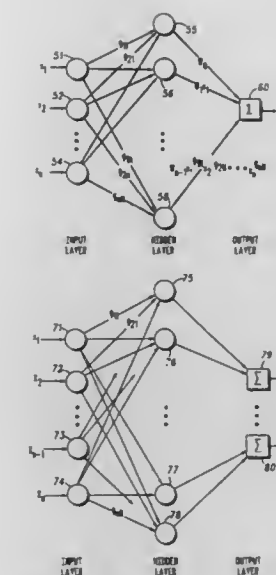
Division of Ser. No. 76,601, Jun. 14, 1993, Pat. No. 5,517,667.
This application Apr. 17, 1995, Ser. No. 422,469
Int. Cl.⁶ G06F 15/18

U.S. Cl. 395—24

14 Claims

1. A method of operating a neural network having a plurality of hidden layer neurons, said method comprising the following steps:

- distributing network inputs to said hidden layer neurons without performing a non-linear transformation on said network inputs;
- said hidden layer neurons applying a plurality of gating functions to said neural network inputs to produce a plurality of gated inputs;
- said hidden layer neurons multiplying said gated inputs together to generate a plurality of products;
- said hidden layer neurons multiplying said plurality of products by a weight value to generate a plurality of non-binary neuron outputs without using a non-linear sigmoid function; and



(e) summing ones of said non-binary neuron outputs of a first group of said plurality of hidden layer neurons to generate a first network output; and

(f) summing ones of said non-binary neuron outputs of a second group of said plurality of hidden layer neurons to generate a second network output.

5,781,702

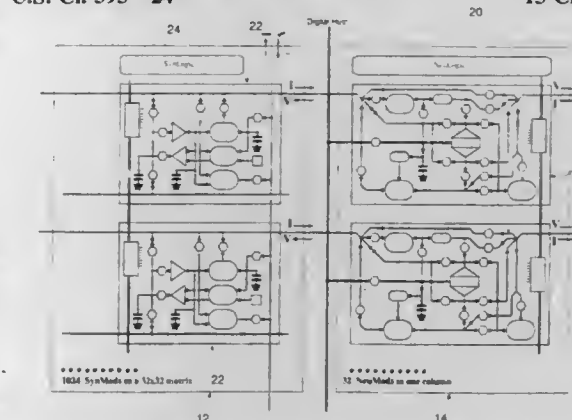
HYBRID CHIP-SET ARCHITECTURE FOR ARTIFICIAL NEURAL NETWORK SYSTEM

Bassem A. Alhalabi, P.O. Box 54594, Lafayette, La. 70505

Filed Jun. 7, 1995, Ser. No. 477,676
Int. Cl.⁶ G06F 15/18

U.S. Cl. 395—24

13 Claims



1. A Hybrid chip-set architecture for artificial neural network systems comprising:

- a two chip set based on mixed analog and digital technologies comprising:
 - a Synaptic Chip having an array of at least 32x32 analog synapse modules, a synapse logic control block, a voltage reference block having at least 16 levels and an array of at least 32 reference modules;
 - a Neural Chip having an array of at least 32 analog neuron modules and a neural logic control block, mateably connectable to said Synaptic chip; and
- a DataAdd, bus means for connecting said Neural and Synaptic chips to a host computer.

5,781,703

INTELLIGENT REMOTE AGENT FOR COMPUTER PERFORMANCE MONITORING

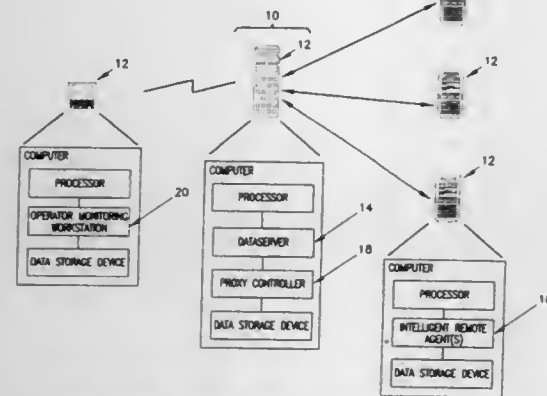
Arun K. Desai, Thousand Oaks; Scott Alan Bender, Westlake Village, and Gregory William Modster, Los Angeles, all of Calif., assignors to Candle Distributed Solutions, Inc., Santa Monica, Calif.

Filed Sep. 6, 1996, Ser. No. 708,234

Int. Cl.⁶ G06F 11/34

U.S. Cl. 395—54

78 Claims



1. A network monitoring system, comprising:
 - (a) a network interconnecting a plurality of computer systems;
 - (b) one or more intelligent remote agents, each executed by one of the computer systems in the network, for receiving commands for collecting performance data on the agent's associated computer system, for collecting the performance data in accordance with the received commands, and for responding to the commands with the collected performance data, wherein the commands comprise predicates for filtering the performance data;
 - (c) a data server, executed by one of the computer systems in the network, for generating requests for performance data and for storing the collected performance data returned in response to the requests; and
 - (d) a proxy controller, executed by one of the computer systems in the network, for translating the requests generated by the data server into the commands for the intelligent remote agents, for transmitting the commands to the intelligent remote agents, for accumulating the collected performance data returned from the intelligent remote agents in response to the transmitted commands, and for forwarding the collected performance data to the data server for storage therein.

5,781,704

EXPERT SYSTEM METHOD OF PERFORMING CRIME SITE ANALYSIS

Darcy Kim Rossmo, Vancouver, Canada, assignor to Environmental Criminology Research, Inc., Canada

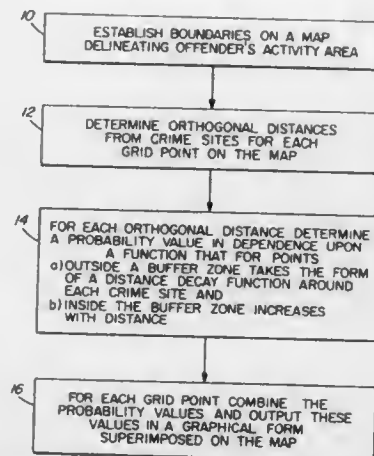
Filed Oct. 11, 1996, Ser. No. 730,465

Int. Cl.⁶ G06F 17/00

U.S. Cl. 395—75

10 Claims

1. An expert system method of analyzing crime site data for determining a base of criminal activity, comprising the steps of:
 - locating a plurality of related crime sites on an area map;
 - converting said plurality of related crime scene location data into signals representing discrete crime sites;
 - delineating a criminal activity area on the area map in dependence upon spacing between the plurality of crime sites;
 - establishing an x-y grid having a plurality of grid points within the criminal activity area;
 - for each grid point, determining a distance to each of the plurality of related crime sites;
 - for each grid point, determining a first probability value in dependence upon each distance, then combining first probability values to determine a second probability value; and



outputting a signal representing a center of criminal activity in dependence upon second probability values for the criminal activity area.

5,781,705

METHOD AND APPARATUS FOR CONTROLLING THE MOTION OF A REDUNDANCY MANIPULATOR

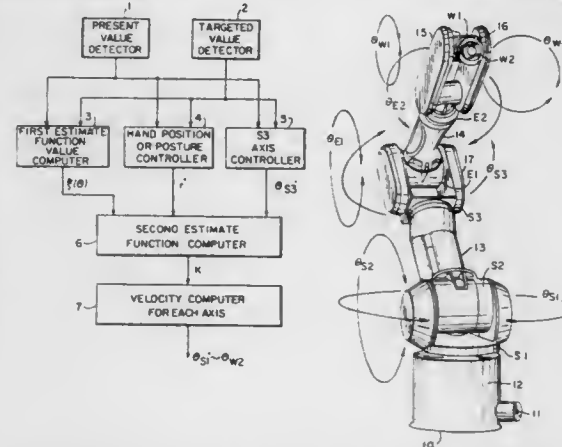
Noriko Endo, Hyogo-ken, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Oct. 9, 1996, Ser. No. 723,470

Claims priority, application Japan, Oct. 11, 1995, 7-263054
Int. Cl.⁶ G05B 13/00; 13/02

U.S. Cl. 395—97

11 Claims



1. Apparatus for controlling the movement of an end effector of a redundant manipulator from a present position to a target position, said manipulator having at least seven axes of motion including a key redundancy axis, said apparatus comprising:
 - a first detector for detecting the values for the present positions of said end effector and of each of said axes of said manipulator and providing first output signals corresponding to said respective present positions;
 - a second detector for detecting the values for said target positions for said end effector and for each of said axes of said manipulator and providing second output signals corresponding to said target positions;
 - a first computer responsive to said first and second output signals for providing a third output signal in the form of a seven-dimensional vector corresponding to the target positions for each of said seven axes;
 - an end effector controller responsive to said first and second output signals for providing a fourth output signal corresponding to end effector velocity for each axis as said end effector is moved to its target position;
 - a key redundancy axis controller responsive to said first and second output signals and for providing a fifth output signal

5,781,707

METHOD AND APPARATUS FOR PREVENTING PRINT OVERRUNS BY CONTROLLING PRINT ENGINE SPEED

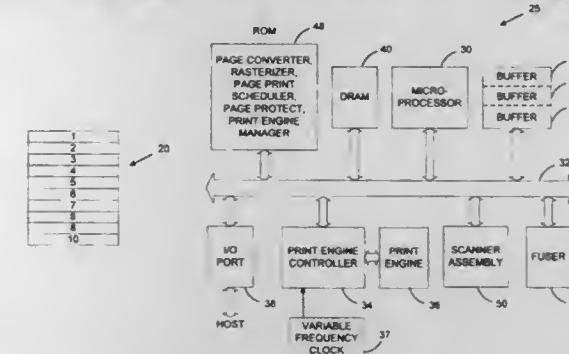
Robert J. Kunz, and David Alan Bartle, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 24, 1996, Ser. No. 673,455

Int. Cl.⁶ G06F 15/00; H04N 1/00; 1/36

U.S. Cl. 395—105

21 Claims

**REDUCING MEMORY CAPACITY REQUIREMENTS IN IMAGE OUTPUT WHILE MAINTAINING OUTPUT SPEED**

Masami Kashiwazaki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 154,112, Nov. 18, 1993, abandoned.

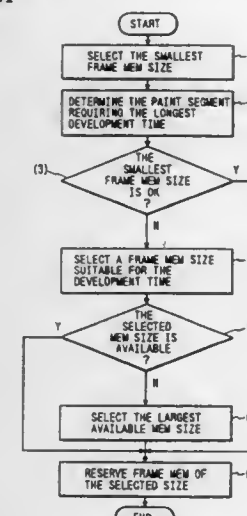
This application Nov. 1, 1995, Ser. No. 551,445

Claims priority, application Japan, Nov. 20, 1992, 4-333750

Int. Cl.⁶ G06F 15/00

U.S. Cl. 395—101

20 Claims



1. An output apparatus for outputting image data to printing means, said output apparatus comprising:
 - drawing means for drawing a pattern divided into a plurality of segments by a segment unit in a variable size of area of a memory, wherein the pattern corresponds to one page of input data;
 - calculating means for calculating, for each pattern segment, a time required to draw the pattern segment in a predetermined size of memory area, prior to pattern drawing by said drawing means;
 - deriving means for deriving a second size greater than the predetermined size based on the required time calculated by said calculating means if the calculated time is greater than a predetermined time for at least one pattern segment; and
 - control means for controlling said drawing means to draw the pattern by the segment unit in the second size of memory area derived by said deriving means when the calculated time is greater than the predetermined time for at least one pattern segment.

5,781,708

INTEGRAL BAR CODE PRINTER AND READER SYSTEM AND METHOD OF OPERATION

Pixie A. Austin, Everett; Duane M. Fox, Snohomish, and Dzung A. Dang, Marysville, all of Wash., assignors to Intermec Technology, Inc., Everett, Wash.

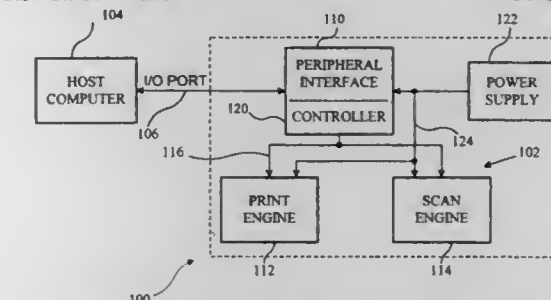
Continuation of Ser. No. 305,255, Sep. 13, 1994, abandoned.

This application Dec. 4, 1996, Ser. No. 760,321

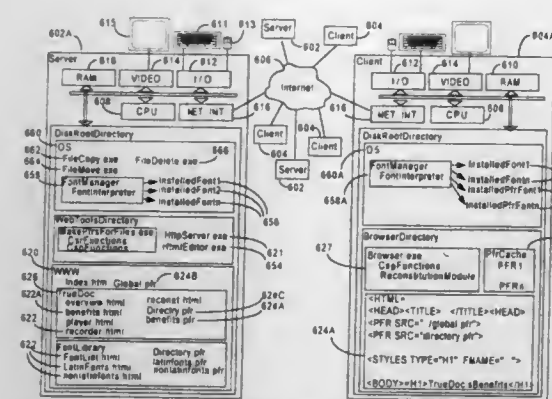
Int. Cl.⁶ G06F 15/00

U.S. Cl. 395—106

14 Claims



1. A method using an integrated printer-reader system for printing and reading symbologies using a host computer, the method comprising the steps of:
 - coupling the system to the host computer using an interface port;
 - receiving print commands to print symbologies using a printer, said printer printing said symbologies in response to said print commands and in accordance with a plurality of alterable printer parameters;
 - reading printed symbologies using a reader and generating commands represented by said symbologies read by said reader; and
 - using an integrated controller coupled to said interface port, said printer, and said reader to provide integrated control of printer and reader operation by receiving and processing said commands and, if one of said commands is related to said printer operating parameters, altering said printer operating parameters in accordance with said one command and, if said one command is related to a host computer function, transmitting said one command to the host computer using said interface port.



bination, which new font description describes the shape of the combination as a sequence of outline segments according to a new font description language, wherein said step of generating new font descriptions for a given character-font combination includes the steps of:

modeling the given character-font shape defined by the given pre-defined font description associated with that shape, said modeling including the steps of:

identifying description-independent segmentation points in the one or more outlines represented by the outline segments of the given pre-defined font description, the location of which description-independent points is a function of each such outline's shape, independently of the sequence or segmentation of the outline segments included in the pre-defined font description;

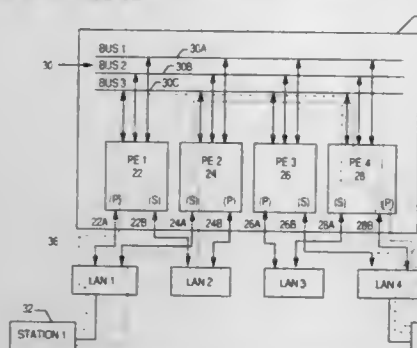
approximating the shape of the outline defined by the pre-defined font description between adjacent description-independent points with new segments bounded at those adjacent description-independent points; and

generating a given one of said new font descriptions in which the sequence of outline segments includes said new segments; and

installing said new font descriptions created by said generating step into the operating system of a computer;

calling said operating system to have said computer use said installed new font descriptions to render the character-font shapes the new font descriptions represent.

5,781,715
FAULT-TOLERANT BRIDGE/ROUTER WITH A DISTRIBUTED SWITCH-OVER MECHANISM
Tsang-Ling Sheu, Cary, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 13, 1992, Ser. No. 958,418
Int. Cl.⁶ G01K 31/08; G06F 11/00
U.S. Cl. 395—182.02



1. An apparatus for providing fault-tolerant communication between a plurality of stations connected thereto, said apparatus comprising:

a plurality of primary processing elements (PEs) and partner PEs, each primary PE having a primary interface for being

connected to a station, and each primary PE having a partner PE having a secondary interface for being connected to said same station;

means, connected to said primary PEs and said partner PEs, for conveying data therebetween;

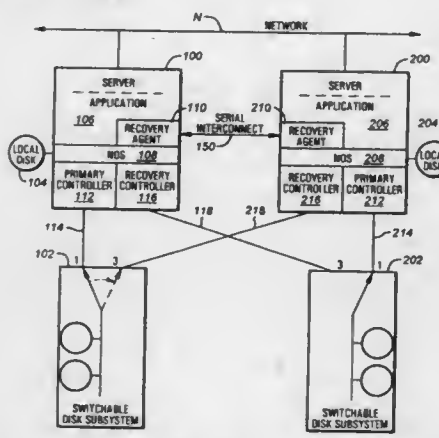
each primary PE further having means for receiving data from said primary interface and from said conveying means, having means for processing received data, and having means for sending processed data to said primary interface and said conveying means;

each partner PE further having means for receiving data from said secondary interface and from said conveying means, having means for storing received data, having means for retrieving stored data from said storing means and for processing retrieved data, and having means for sending processed data to said secondary interface and said conveying means;

means, connected to said primary PEs, for determining a primary PE failure; and

means responsive to said determining means determination of a primary PE failure for activating said partner PE retrieving, processing and sending means of the partner PE of said failed primary PE.

5,781,716
FAULT TOLERANT MULTIPLE NETWORK SERVERS
John M. Hemphill, Spring; Gregory Mart Stewart, and Thomas S. Lawler, both of Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Continuation of Ser. No. 491,738, Jun. 19, 1995, Pat. No. 5,696,895, which is a continuation-in-part of Ser. No. 445,283, May 19, 1995, Pat. No. 5,675,723. This application Feb. 19, 1997, Ser. No. 802,644
Int. Cl.⁶ G06F 11/34
U.S. Cl. 395—182.02



1. An active server for use with a partner active server coupled to a second storage system in a network, the partner active server providing network data to the second storage system via a partner network operating system, the active server comprising:

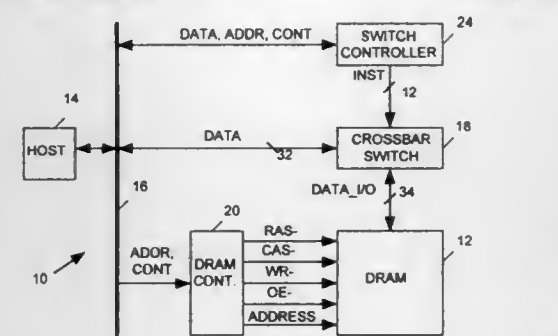
a connection for a first storage system, the active server providing network data to said first storage system via a network operating system;

a recovery agent for providing and receiving heartbeat messages to and from the partner active server, said recovery agent sending a switch command upon a failure to receive the heartbeat message from the partner active server; and

a connection for the second storage system, the active server providing network data to the second storage system via the network operating system upon receipt by the second storage system of said switch command,

wherein the network data provided to said first storage system by said active server is different from the network data provided to said second storage system by said partner active server.

5,781,717
DYNAMIC SPARE COLUMN REPLACEMENT MEMORY SYSTEM
Chun-Chu Archie Wu, Mountain View, and Chun Chiu Daniel Wong, Palo Alto, both of Calif., assignors to I-Cube, Inc., Campbell, Calif.
Filed Sep. 19, 1996, Ser. No. 710,571
Int. Cl.⁶ G06F 11/20
U.S. Cl. 395—182.06



1. A dynamic spare column replacement memory system for storing an input N-bit data word (where N is greater than 0) at an address indicated by an input address word, comprising:

memory means, having a plurality of N+S bit addressable data storage locations (where S is greater than 0), for receiving the input address word and an input N+S bit data word and for storing the input N+S data word in any one of said plurality of storage locations addressed by the address word;

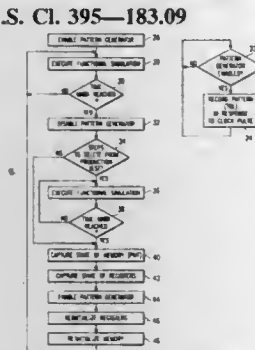
an N+S line data bus for conveying said N+S bit data word to said memory means;

switch means having N first ports, each for receiving a separate bit of said input N-bit data word, and having N+S second ports, each connected to a separate line of said N+S line data bus, and having means for interconnecting each of said first ports to a separate one of said second ports selected in response to an input switch instruction;

switch control means having a plurality of storage cells, each for storing a separate address value and a corresponding switch instruction; and

means for receiving said input address word and for transmitting the switch instruction stored in any one storage cell of said storage cells when the input address word matches an address value stored in said storage cell.

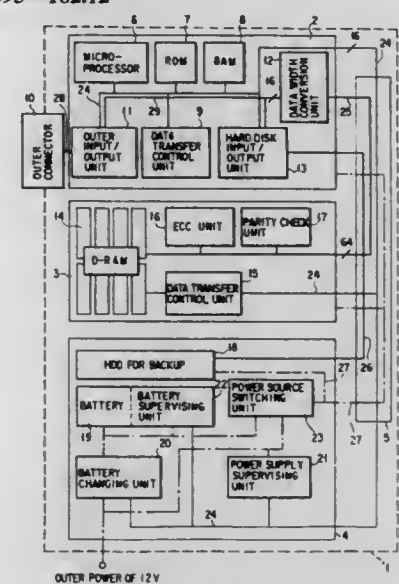
5,781,718
METHOD FOR GENERATING TEST PATTERN SETS DURING A FUNCTIONAL SIMULATION AND APPARATUS
Van Minh Nguyen, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 19, 1994, Ser. No. 293,535
Int. Cl.⁶ G06F 11/00
U.S. Cl. 395—183.09



1. A method for generating modular test pattern sets during a functional simulation of a digital circuit, comprising the steps of: enabling a pattern generator;

executing said functional simulation until a first time mark; disabling said pattern generator; capturing the contents of registers in said circuit and storing said contents in a first memory; re-enabling said pattern generator; reinitializing said register from said first memory; performing said functional simulation until a second time mark; and storing a pattern in response to a clock controlling said circuit while said pattern generator is enabled, said pattern representing inputs and outputs of said circuit.

5,781,719
SEMICONDUCTOR DISK DEVICE HAVING A LARGE CAPACITY OF QUICK-ACCESS MEMORY AND HARD DISK FOR BACKUP AND ITS DATA STORAGE METHOD
Susumu Hirofuji, Hiroyuki Kaneko, and Tadashi Yoneyama, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 17, 1996, Ser. No. 682,166
Claims priority, application Japan, Jul. 20, 1995, 7-184288
Int. Cl.⁶ G06F 11/00
U.S. Cl. 395—182.12



1. A semiconductor disk device for storing or outputting data in accordance with a write or read request from/to an outer unit, comprising:

a volatile memory for writing input data from the outer unit and for storing data to be read in the outer unit;

a battery for supplying power to said semiconductor disk device when a power supply of said semiconductor disk device is interrupted;

nonvolatile storing means for outputting initially stored data to said volatile memory when said power supply is input, and operating with power supplied from said battery when said power supply is interrupted, thereby storing data stored in said volatile memory to save said stored data;

detecting means for detecting whether or not said battery can supply power; and

a write-through setting means for changing a write-path of said input data from the outer unit to a write-through path where said input data is written onto not only said volatile memory but also said storing means when it is detected by said detecting means that said battery cannot supply power.

5,781,720

AUTOMATED GUI INTERFACE TESTING

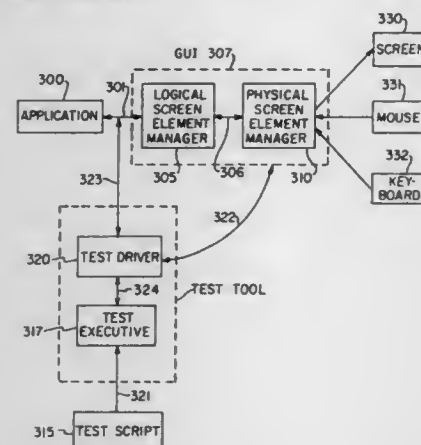
Marsten Hugh Parker, Reading; Laurence Ralph Kepple, West Newton; Leah Ruth Sklar, Auburndale, all of Mass., and David Christopher Laroche, Hampton, N.H., assignors to Segue Software, Inc., Newton Centre, Mass.

Continuation of Ser. No. 978,936, Nov. 19, 1992. This application Aug. 21, 1996, Ser. No. 697,262

Int. Cl.⁶ G06F 11/00

U.S. Cl. 395—183.14

32 Claims



1. A method of testing an application program's use of a first Graphical User Interface (GUI), said application program and a test script executing concurrently, said test script containing a sequence of test instructions, said method comprising:

- simulating a user action directly to said first GUI in response to said test instructions;
- monitoring said GUI for actual alterations in one or more logical screen elements, said logical screen elements originating from said execution of said application program;
- comparing said actual alterations to expected alterations; and
- reporting an error if said actual alterations are not equal to said expected alteration.

5,781,721

METHOD AND APPARATUS FOR TESTING CACHE RAM RESIDING ON A MICROPROCESSOR

Norman M. Hayes, Sunnyvale, Calif.; Adam Malamy, Winchester, Mass., and Rajiv N. Patel, San Jose, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 449,533, May 24, 1995, abandoned, which is a continuation of Ser. No. 264,245, Jun. 22, 1994, abandoned, which is a continuation of Ser. No. 890,439, May 28, 1992, abandoned. This application Sep. 16, 1996, Ser. No. 714,515

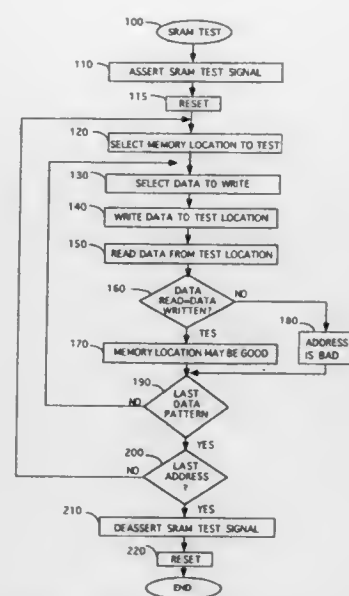
Int. Cl.⁶ G11C 29/00

U.S. Cl. 395—183.18

19 Claims

1. In a microprocessor chip having an instruction execution circuit, a tag portion and a data portion of an on-board cache of a first word size and a cache controller means which is coupled to said instruction execution circuit and said on-board cache for controlling said on-board cache during a normal operating mode and is adapted to interface with a static random access memory ("SRAM") test device of a second word size, a method for testing said on-board cache within said microprocessor chip comprises the steps of:

- a) placing said microprocessor chip from the normal operating mode into a static random access memory (SRAM) test mode by at least providing a SRAM test signal to the cache controller means to cause the cache controller means to operate as a conduit;
- b) writing test data to said tag portion and said data portion of said on-board cache from the SRAM test device through said



cache controller means when said cache controller means detects said microprocessor chip being placed in said SRAM test mode;

- c) reading test data previously written to said tag portion and said data portion of said on-board cache by the SRAM test device by transferring said written test data through said cache controller means to the SRAM test device when said cache controller means detects said microprocessor chip being placed in said SRAM test mode;
- d) determining by the SRAM test device if said written test data being read from said tag portion and said data portion of said on-board cache is equal to said test data being written into said tag portion and said data portion of said on-board cache when said microprocessor chip is in said SRAM test mode; and
- e) configuring said cache controller to fit said test data of said second word size into said on-board cache of said first word size.

5,781,722

METHOD FOR DIAGNOSIS AND REPAIR OF COMPRESSED VOLUMES UTILIZING A BITMAP

David M. Buches, Jr., Woodland Hills, Calif., assignor to Symantec Corporation, Cupertino, Calif.

Filed May 10, 1996, Ser. No. 643,310

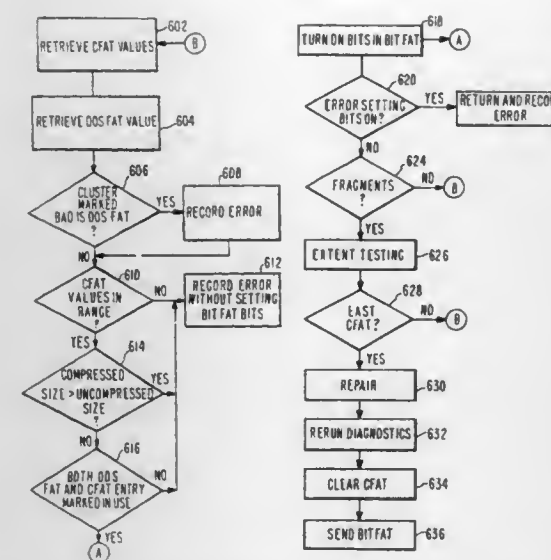
Int. Cl.⁶ G06F 13/00; 12/00

U.S. Cl. 395—185.07

8 Claims

1. A method for diagnosing errors in compressed volume files recorded on a recording medium, the method comprising the steps of:

- analyzing each entry in a compressed file allocation table for at least one invalid condition, said invalid condition being from the group of invalid conditions comprising a first invalid condition indicative of a range error in said entry, and a second invalid condition indicative of a cross-link error between at least two of said entries, said entry being indicative of a corresponding compressed volume file on the recording medium;
- setting a bit in a bit file allocation table when the analysis of said entry is indicative of a valid entry, the bit being indicative of a sector of the recording medium corresponding to a location of said compressed volume file on the recording medium;
- repairing an entry of the compressed file allocation table when said analyzing is indicative of an invalid entry;
- reanalyzing each entry in the compressed file allocation table; and



resetting a bit in the bit file allocation table when the reanalysis of said entry is indicative of a valid entry.

5,781,723

SYSTEM AND METHOD FOR SELF-IDENTIFYING A PORTABLE INFORMATION DEVICE TO A COMPUTING UNIT

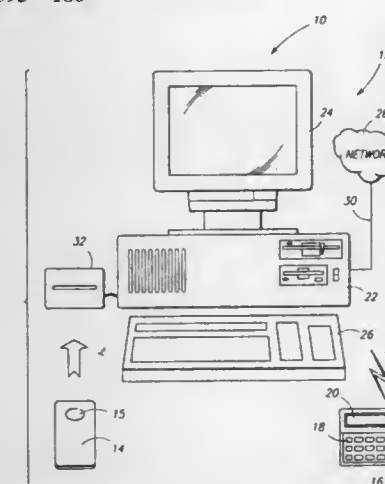
Bennet Yee, San Diego, Calif., and Josh Benaloh, Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 3, 1996, Ser. No. 657,354

Int. Cl.⁶ H04K 1/00

U.S. Cl. 395—186

38 Claims



1. A method for conducting a transaction between an electronic portable information device and a communicating agent, the portable information device having processing capabilities, memory, and an I/O interface, the portable information device further having a device class tag stored thereon which is indicative of a type of the portable information device, the method comprising the following steps:

- forming an output string at the portable information device, the output string including at least a portion that is a result of a mathematical function involving the device class tag in which the device class tag is computationally difficult to deduce from the result;
- exporting the output string from the portable information device to the communicating agent; and
- identifying the type of the portable information device using the exported output string.

5,781,724
METHOD AND SYSTEM FOR INTEGRATING ADDITIONAL FUNCTIONALITY INTO A LOGIN SYSTEM

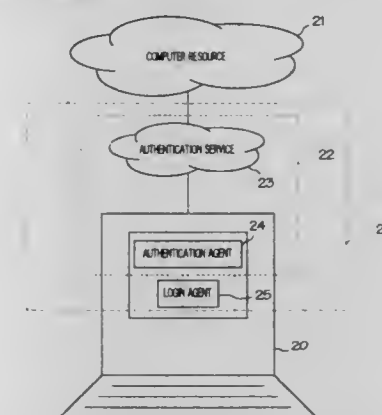
Carlos A. Nevarez, Orem, and Kenneth Paul White, Sandy, both of Utah, assignors to Novell, Inc., Provo, Utah

Filed Nov. 1, 1996, Ser. No. 742,506

Int. Cl.⁶ G01F 11/00

U.S. Cl. 395—186

18 Claims



1. In a computer-implemented login system having event driven functionality, a method for integrating additional functionality into the login system, the method comprising:

- (a) establishing a plurality of events, each event corresponding to a predetermined activity in the login process;
- (b) registering with the login system a first login extension operative to receive notification of at least some of the events and operative to one of provide functionality in response to a received notification and take no action with regard to the received notification;
- (c) initiating the registered first login extension;
- (d) determining if the registered first login extension is a valid registered login extension, and if it is valid:
 - (i) enabling interaction with the registered first login extension, and
 - (ii) communicating the notification of the event to the registered first login extension, and if it is not valid:
 - (i) prohibiting interaction with the registered first login extension.

5,781,725

COMPUTER NETWORK SYSTEM HAVING A SMALL OF AMOUNT OF DATA IN A NETWORK

Katsumi Saito, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

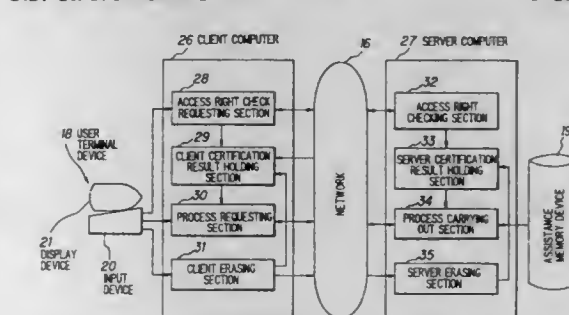
Filed May 23, 1996, Ser. No. 651,467

Claims priority, application Japan, May 23, 1995, 7-148268

Int. Cl.⁶ G06F 13/14

U.S. Cl. 395—187.01

5 Claims



1. A computer network system which comprises a first computer for requesting a process as a client computer, a second computer for carrying out, as a server computer, said process requested by

wherein step (1) comprises the steps of:

- receiving from said user information identifying a particular clip;
- retrieving from said foundation information database digitized frames corresponding to said particular clip;
- presenting said digitized frames corresponding to said particular clip to said user to enable said user to decide whether to modify said personalized version of said movie with any of said digitized frames corresponding to said particular clip; and

- (d) providing the data to a database depository, wherein the data is transported to the database depository by a network facility;
- (e) manipulating the data to produce a report describing management and financial characteristics of the network based on user defined report characteristics;
- (f) receiving a user request for the report;
- (g) transmitting the report to an end-user location over a second network; and
- (h) presenting the report to the user.

5,781,736

METHOD FOR OBTAINING THE STATE OF NETWORK RESOURCES IN A DISTRIBUTED COMPUTING ENVIRONMENT BY UTILIZING A PROVIDER ASSOCIATED WITH INDICATORS OF RESOURCE STATES

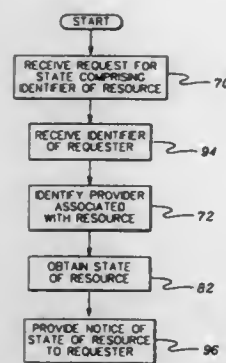
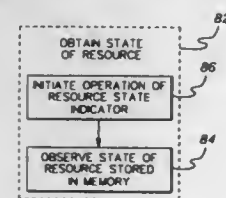
Michael Anthony Schmidt, Stone Ridge, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1996, Ser. No. 640,306

Int. Cl.⁶ G06F 15/177

U.S. Cl. 395—200.54

7 Claims



I. In a network of computers, a method for processing a request from a requester for a state of a prespecified network resource in a distributed computing environment, the method comprising:

- receiving a request for a state of a resource, said request comprising an identifier of a prespecified network resource; and
- identifying a provider associated with an indicator of states of said resource, said indicator indicating the states of said resource and said provider obtaining the states from said indicator and providing it to said requester, said states being provided to said requester irrespective of whether the resource has changed location in the network;
- initiating the operation of said indicator such that said indicator places said state in a memory device shared with said provider so that it may be observed by said provider;
- observing by said provider, said state in said shared memory device for obtaining a state of said resource from said indicator.

5,781,737 SYSTEM FOR PROCESSING REQUESTS FOR NOTICE OF EVENTS

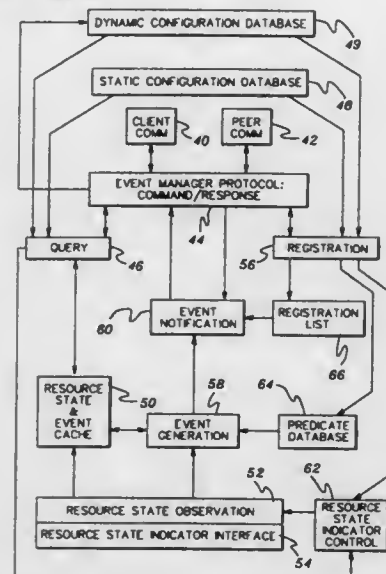
Michael Anthony Schmidt, Stone Ridge, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1996, Ser. No. 640,421

Int. Cl.⁶ G06F 15/16

U.S. Cl. 395—200.54

28 Claims



I. In a network of computers, a system for processing a request for notice of occurrence of an event in a distributed computing environment, the event characterized by a state of a network resource, the system comprising:

- means for receiving a request from a client for notice of the occurrence of an event characterized by a state of a resource, said request comprising an identifier of a prespecified network resource; and
- means for identifying a monitor associated with an indicator of states of said resource and registering the event from said client irrespective of whether the resource has changed location in the network.

5,781,738

PROCEDURE FOR SAFELY TERMINATING NETWORK PROGRAMS DURING NETWORK LOGOFF

Vance Edward Corn, and Steven Michael French, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 269,336, Jun. 30, 1994, Pat. No. 5,564,017. This application Jul. 24, 1996, Ser. No. 685,739

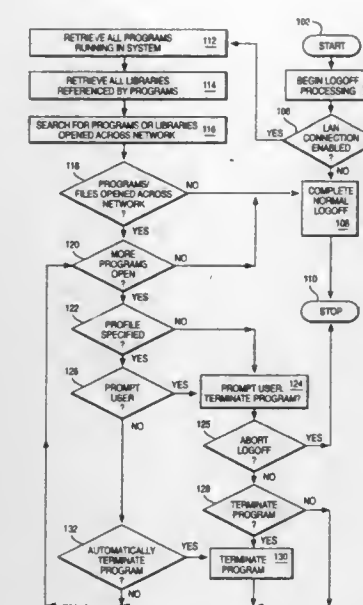
Int. Cl.⁶ G06F 9/00

U.S. Cl. 395—200.57

4 Claims

I. A method of terminating a network connection between a first computer system and a second computer system with controlled termination of programs running in said first computer system and loaded across a network, the method comprising the steps of:

- receiving a signal to terminate a network connection;
- testing said first computer system to determine all programs running on said first computer system;
- testing to determine which of said programs running on said first computer system have one or more programs or libraries open across the network on said second computer system;
- determining whether each of said determined programs on said first computer system should be automatically terminated; and



terminating said determined programs prior to terminating the network connection.

5,781,739

IMS/WWW MAPPING SYSTEM

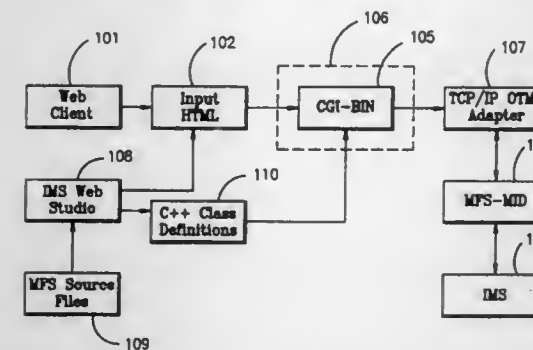
Mark Alan Bach; In Ha Chung; Judith E. Hill; Steve T. Kuo; Theresa H. Lai; Allen G. Lee, all of San Jose, and Richard S. Uyehara, Cupertino, all of Calif., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 31, 1996, Ser. No. 775,606

Int. Cl.⁶ G06F 17/30

U.S. Cl. 395—200.57

19 Claims



I. A computer-based method of linking a World Wide Web transaction-based process to a IMS application environment comprising:

- defining at least a first TCP/IP connection within said transaction-based process;
- defining an input HTML form;
- entering IMS request data into said HTML form;
- determining at least one message input descriptor for said IMS request data;
- formatting said IMS request data based on said message input descriptor;
- routing said formatted IMS request to said IMS application environment;
- processing the IMS request;
- determining at least one message output descriptor for said processed IMS request, and returning said processed IMS request from said IMS application environment, formatted with said output descriptors, to said TCP/IP connection.

5,781,740

MULTIMEDIA COMMUNICATION SYSTEM

Mitsumasa Tanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

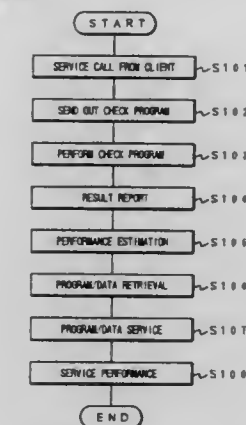
Filed Feb. 6, 1996, Ser. No. 597,191

Claims priority, application Japan, Feb. 6, 1995, 7-017592

Int. Cl.⁶ G06F 13/00; 11/30

U.S. Cl. 395—200.59

7 Claims



I. A multimedia communication system comprising:

a plurality of client terminals, at least one of said client terminals having means for informing a server station of said at least one client terminal's CPU performance; and

means provided in said server station for delivering, to each of said client terminals with said informing means, data most suitable for each of said client terminals with said informing means, based on each of said client terminal's CPU performance, among data called from each of said client terminals.

5,781,741

MESSAGE COMMUNICATIONS SYSTEM IN A PARALLEL COMPUTER

Nobutaka Imamura, and Hiroaki Ishihata, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

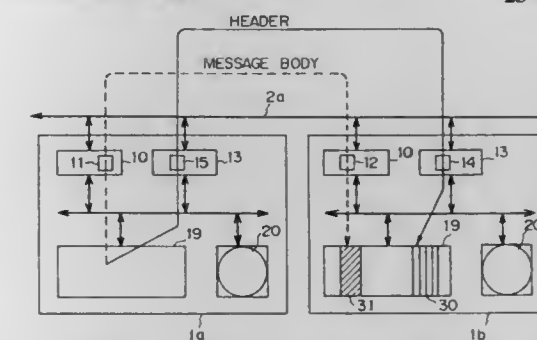
Filed Jun. 29, 1995, Ser. No. 496,781

Claims priority, application Japan, Jun. 29, 1994, 6-147370

Int. Cl.⁶ G06F 15/16; 13/38

U.S. Cl. 395—200.66

23 Claims



I. A method for message communications between multiple processor elements in a parallel computer, comprising the steps of:

directly writing a message body comprising message information of a message from a transmitting processor element into a shared memory area in a memory of a receiving processor element by remote writing means;

transmitting a header separate from the message body comprising identifier information and pointer information for said message from said transmitting processor element to message receiving means of said receiving processor element; and

writing said header into a local memory area in said memory in the order of arrival of headers by said message receiving means of said receiving processor element.

5,781,742

DATA TRANSFER SYSTEM INTERCONNECTING A COMPUTER AND A DISPLAY DEVICE

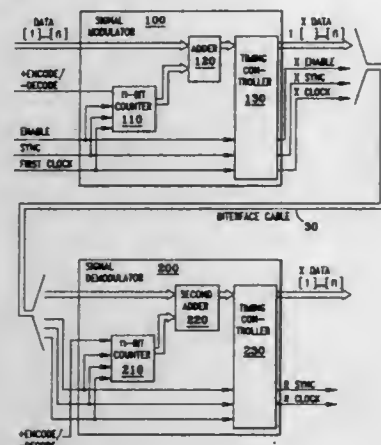
Takeshi Asano, Atsugi, and Shinichi Ikami, Yamato, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1995, Ser. No. 522,205

Claims priority, application Japan, Aug. 30, 1994, 6-205093
Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—280

8 Claims



5. A computer system, comprising:
- a data generator for a display device;
 - a bus having a plurality of data lines for carrying data;
 - a circuit for selectively modulating the data so that signal waveforms for modulated data on a first data line differ from signal waveforms for modulated data on a second data line more than signal waveforms for unmodulated data on the first data line differ from signal waveforms for unmodulated data on the second data line
 - a demodulator for demodulating the modulated data; and
 - a display device coupled to the demodulator.

5,781,743

SYSTEM AND METHOD FOR DISTRIBUTED DATA PROCESSING USING DIFFERENT SERVER SYSTEM SPECIFICATIONS

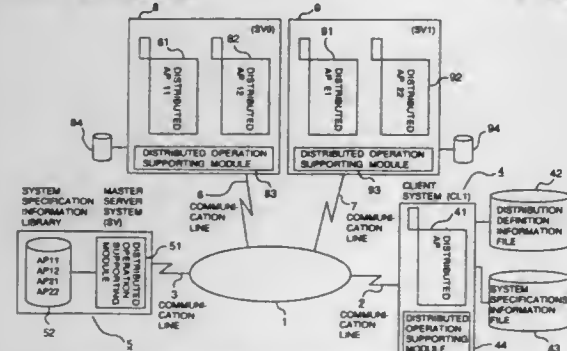
Hideki Matsuno, Osaka; Kazuhiro Katayama, Takarazuka, and Hiromichi Ishikawa, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 17, 1995, Ser. No. 390,501

Claims priority, application Japan, Feb. 18, 1994, 6-020896
Int. Cl.⁶ G06F 13/00; 15/16

U.S. Cl. 395—200.58

8 Claims



1. A distributed application program system, comprising:
- a data transmission line;
 - a plurality of server systems connected to said data transmission line and a database and each including at least one application program for executing data processing by running one of said application programs;

a client system connected to said data transmission line and including at least one application program for executing data processing by running said application program; and

a master server system including a library for storing system specifications of each of said server system and corresponding system specifications of said client system for outputting one of said system specifications in response to a request received via said data transmission line;

wherein said client system includes a table for storing the system specifications of one of server systems received from said master server system, means for converting data to a data format which conforms with the system specifications stored in said table, and means for transmitting data resulting from said conversion and an identifier designating a data processing application program to said one server system;

wherein one server system includes means for processing the data received from said client system by running the application program designated by said identifier and sending back data resulting from said data processing to said client system; and

wherein when the application program designated by said system identifier contained in the data received from said client system is in an overload state, said one server system transfers said data to another one of said plurality of server systems for allowing said another one server system to process said data and send back the processed data to said client system.

5,781,744

METHOD AND APPARATUS FOR ENSURING SAFE PERIPHERAL CONNECTION

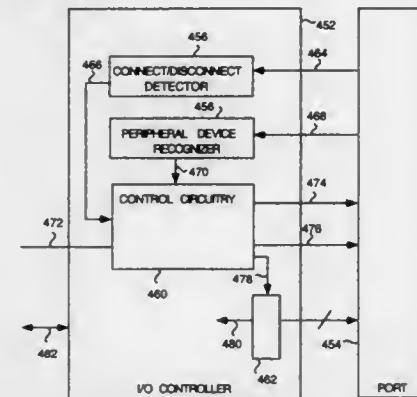
Mary B. Johnson; Lesley A. Bird; Robert Bailey, all of San Jose; Krishna Viswanadham, Mountain View, and Mark Seibert, Cupertino, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 25, 1995, Ser. No. 519,505

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—283

45 Claims



1. An input/output interface apparatus for a peripheral port of a data processing system, a peripheral device connects to the data processing system by coupling to the peripheral port, said apparatus comprising:
- a connect/disconnect detector for determining whether a device has been connected to or disconnected from the peripheral port;
 - a peripheral device recognizer for recognizing a type of the device that has been connected to the peripheral port; and
 - control circuitry, operatively connected to said connect/disconnect detector and said peripheral device recognizer, for supplying power to the peripheral port for the device that has been connected to the peripheral port only after the type of the device is recognized by said peripheral device recognizer and for withdrawing power from the peripheral port whenever the device is disconnected from the peripheral port,
- wherein the data processing system is a docking station, and the peripheral port is a docking port.

5,781,745

HIGH SPEED COMMUNICATION BUS

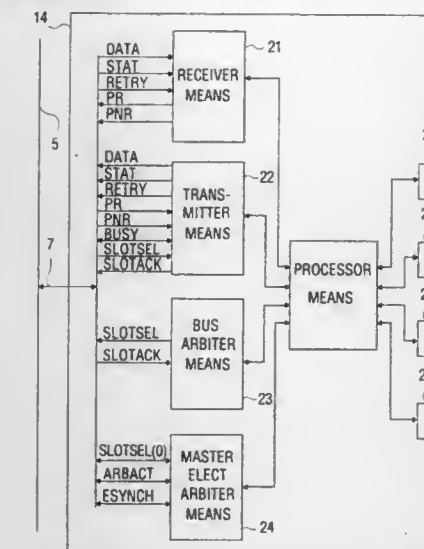
Brian Ramelson, Brighton; Frank Itkowsky, Leominster; Peter Driscoll, Holliston; Cary Robins, Newton; Gary Lorenz, Littleton, and Andreas Bovopoulos, Framingham, all of Mass., assignors to 3Com Corporation, Santa Clara, Calif.

Filed May 20, 1996, Ser. No. 651,804

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—293

28 Claims



1. A computer network concentrator system, comprising:
- a backplane with a DATA line, a BUSY line parallel with said DATA line and a SLOTSSEL line parallel with said DATA line;
 - a plurality of modules connected to said DATA, BUSY, and SLOTSSEL lines, each of said plurality of modules having a unique slot ID, said SLOTSSEL line being capable of transmitting any one of said unique slot ID's, one of said plurality of modules being an active arbitration module and having a Bus Arbiter means for selecting which of said plurality of modules will transmit data onto said DATA line, said Bus Arbiter means transmitting said unique slot ID of one of said modules onto said SLOTSSEL line;
 - each of said plurality of modules including a Transmitter means for monitoring said SLOTSSEL line for a respective unique slot ID on said SLOTSSEL line, monitoring said BUSY line for a BUSY signal, said Transmitter means transmitting a BUSY signal onto said BUSY line and subsequently transmitting a packet onto said DATA line upon said Transmitter means detecting that said BUSY line does not have a BUSY signal, detecting that said SLOTSSEL line has said unique slot ID and a detecting that a respective module associated with said Transmitter means has said packet to transmit onto said DATA line.

5,781,746

MICROPROCESSOR WITH MULTIPLE BUS CONFIGURATIONS

Rod Fleck, Frisco, Tex., assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 447,770, May 23, 1995, abandoned, which is a continuation-in-part of Ser. No. 208,078, Mar. 9, 1994, abandoned, which is a continuation of Ser. No. 734,209, Jul. 22, 1991, abandoned. This application May 12, 1997, Ser. No. 854,371

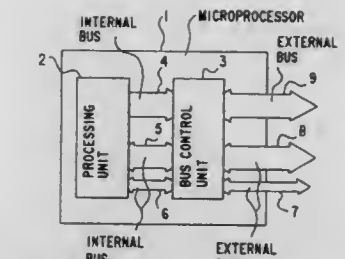
Claims priority, application Germany, Jul. 20, 1990, 90-113991.5

Int. Cl.⁶ G06F 13/40

U.S. Cl. 395—306

12 Claims

1. A microprocessor, comprising an internal bus having data lines, address lines and control lines, an external bus having a plurality of external lines for exchanging address information and



- data information between a peripheral device and said microprocessor, and programmable bus control means connected between said internal bus and said external bus for connecting a plurality of said external lines with said internal bus.
- said microprocessor addressing said peripheral device via said external lines to send and to receive data via said external lines,
- said bus control means operative for selectively defining sets of the external lines for one of a multiplexed and a non-multiplexed mode, wherein
- said bus control means include defining means and control means, whereby the control means are connected to said external bus and to said internal bus, and the defining means are connected to the control means,
- said defining means include at least a first register connected to the bus control means for indicating the control function for said external bus, whereby the control function in the multiplexed mode operates to first drive a first set of said external lines with address signals, and to drive at least one of said external lines as a control line to indicate to the peripheral device that the address signals must be latched, and next drive said first set of said external lines with data signals,
- and in the non-multiplexed mode the central function operates to define a second set of external lines as address lines and a third set of said external lines as data lines and to drive said address signals on said address lines and said data signals on said data lines,
- said defining means further including at least a second register which is connected to the control means for indicating the data bus width of said external bus, whereby the control means define in response to programming signals from said microprocessor a fourth set of said external lines as data lines, and driving said data signals on said data lines.

5,781,747

METHOD AND APPARATUS FOR EXTENDING THE SIGNAL PATH OF A PERIPHERAL COMPONENT INTERCONNECT BUS TO A REMOTE LOCATION

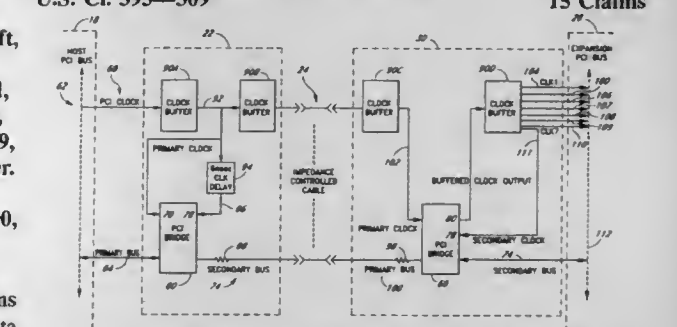
Paul Smith, San Diego, and Edward Romascan, La Jolla, both of Calif., assignors to Mesa Ridge Technologies, Inc., San Diego, Calif.

Filed Nov. 14, 1995, Ser. No. 557,233

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—309

15 Claims



1. A system for extending a signal path of a host PCI bus comprising:

- a first bus interface communicating with said host PCI bus, the first bus interface presenting only a single load to the host PCI bus;
- a transmission medium having a first and second end, said first end electrically connected to said first bus interface;
- a second bus interface electrically connected to said second end of said transmission medium; and
- a second PCI bus communicating with said second bus interface, wherein the first bus interface comprises:
- an expansion board;
 - a PCI bridge connected to said expansion board;
 - a primary bus having a primary bus signal connected to said PCI bridge;
 - a primary clock input connected so as to receive a clock signal from said host PCI bus;
 - a secondary bus electrically connected to receive said primary bus signal from said primary bus to generate a secondary bus signal; and
 - a secondary clock input connected so as to receive a delayed clock signal from said host PCI bus, wherein the secondary bus signal is the primary bus signal delayed by the delayed clock signal.

5,781,748

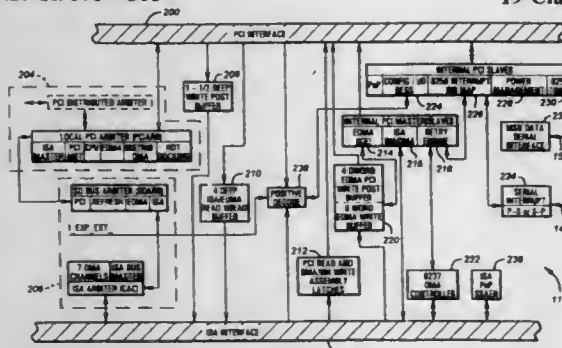
COMPUTER SYSTEM UTILIZING TWO ISA BUSES COUPLED TO A MEZZANINE BUS

Gregory N. Santos, Cypress; David J. Maguire, Spring; Dwight D. Riley, Houston, all of Tex., and James R. Edwards, Longmont, Colo., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jul. 19, 1996, Ser. No. 671,316
Int. Cl.⁶ H01J 13/00

U.S. Cl. 395—308

19 Claims



1. A computer system, comprising:
- a processor for providing bus cycles to an industry standard architecture (ISA) bus;
 - a mezzanine bus coupled to said processor, where the mezzanine bus is comprised of a first and second portion connectable by a connector;
 - a first ISA bus having input/output devices attached thereto for providing and receiving bus cycles;
 - a second ISA bus having input/output devices attached and attachable thereto for providing and receiving bus cycles;
 - a first bridge coupled between the first portion of the mezzanine bus and said first ISA bus, said first bridge decoding bus cycles intended for said input/output devices of said first ISA bus and passing said bus cycles to said input/output devices of said first ISA bus; and
 - a second bridge coupled between the second portion of the mezzanine bus and said second ISA bus, said second bridge decoding bus cycles intended for said input/output devices of said second ISA bus and passing said bus cycles to said input/output devices of said second ISA bus, said second bridge decoding bus cycles from said second ISA bus

intended for the second portion of the mezzanine bus and passing said bus cycles to the second portion of the mezzanine bus.

5,781,749

CONTROLLER FOR MULTIPLE DATA TRANSFER BETWEEN A PLURALITY OF MEMORIES AND A COMPUTER BUS

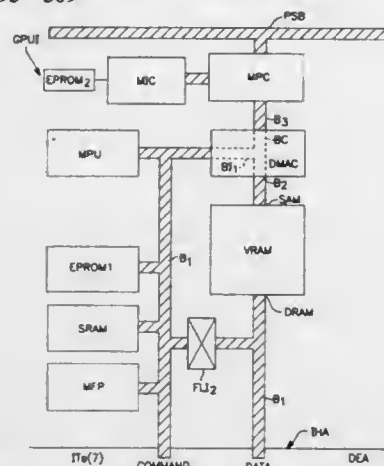
Patrick Le Quere, Villebon sur Yvette, France, assignor to Bull S.A., France

Continuation of Ser. No. 244,892, Jun. 20, 1994, abandoned.
This application Jul. 15, 1996, Ser. No. 683,047

Claims priority, application France, Dec. 19, 1991, 91 15814
Int. Cl.⁶ G06F 13/38

U.S. Cl. 395—309

3 Claims



1. A controller for multiple transfer of data packets between a plurality of memories, at least one of which is connected with a microprocessor, and a computer bus to which the controller is connected by an interface of the computer bus, said multiple transfer being effected over a first data output channel, and a second data input channel, said first and second channels being connected respectively with a first and a second set of registers said microprocessor being operable to write information in said registers which enables organization of said multiple transfer over each of the first and second channels, said controller comprising:

a central bus connected by a first interface to said interface of the computer bus and to an internal bus of the microprocessor by a second interface and to each of the memories by a third interface, said first and second set of registers being connected to said central bus;

a first and a second channel controller for controlling the first and the second channels, respectively, and connected to the first and second set of registers respectively;

means for switching data transfer between the computer bus and each of the memories according to predefined priorities, said means for switching including an arbitration device and a multiplexer;

said arbitration device being connected to the microprocessor by the second interface and to each of the channel controllers, the arbitration device functioning to arbitrate allocation of each of the channels to a data route connected to the various memories of the microprocessor in accordance with predefined priorities, the channel controllers for each channel controlling writing access of the microprocessor to the first and second set of registers, and a transfer of data in direct memory access to each of said plurality of memories;

said multiplexer being operable to temporally multiplex the data packets, said multiplexer being connected to said interface of the computer bus and to said first and second channel controllers;

wherein said controller is connected in series between said interface of the computer bus and one of said plurality of

memories such that transfer of data between the interface and said one of said plurality of memories must traverse said controller;

and further wherein the first channel controller includes a slave condition machine and a master condition machine (CCIM), the slave condition machine managing writing accesses of the microprocessor to said first and second sets of registers and performing error indication management in a register connected to said first channel;

and further wherein the controller functions in the descriptor chain mode, including automatically transferring a train of n data packets one after another from and to the memories, the n data packets each having a data packet descriptor, said descriptors being written into a memory connected with the microprocessor through said internal bus;

wherein each descriptor includes two portions, a first portion including a data packet count indicating a length, corresponding to a number of binary information bits that each data packet includes, and a second portion including an address to which said data packet is to be sent; and

wherein for each channel, registers connected therewith comprise:

a channel control register containing parameters required by the channel controllers that indicate a selection between a normal DMA transfer mode and in an automatic array chaining mode;

a channel condition register indicating an operating condition of the channel;

a base transfer counting register indicating a number of descriptors in the channel, when the controller is operating in the array chaining mode;

a memory transfer counting register indicating a length of the transfer of a data packet;

a base address register indicating a location in the memory (SRAM) of each descriptor when the array chaining mode is employed;

a memory address register containing an address of a location of the memory for a predetermined data packet;

a master condition machine of the first channel controller managing operations including searching for information in the descriptors, when the array chaining mode is employed; and

a master condition machine of the second channel for managing operations, including searching for information in the descriptors when in the array chaining mode.

5,781,750

DUAL-INSTRUCTION-SET ARCHITECTURE CPU WITH HIDDEN SOFTWARE EMULATION MODE

James S. Blomgren, and David E. Richter, both of San Jose, Calif., assignors to Exponential Technology, Inc., San Jose, Calif.

Filed Jan. 11, 1994, Ser. No. 179,926
Int. Cl.⁶ G06F 9/455

U.S. Cl. 395—385

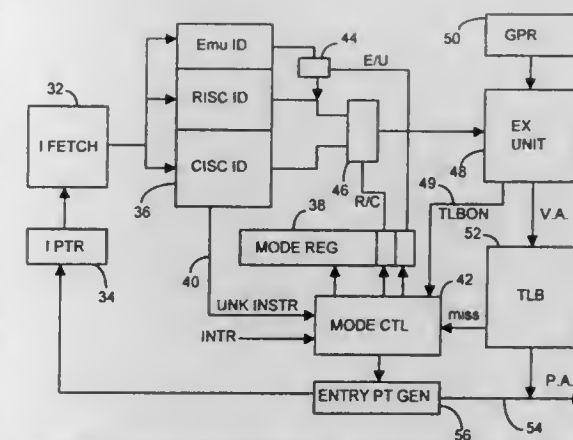
20 Claims

1. A central processing unit (CPU) for processing instructions from two separate instruction sets, said CPU comprising:

first instruction decode means for decoding instructions from a first instruction set, said first instruction set having a first encoding of instructions;

second instruction decode means for decoding only a subset of instructions from a second instruction set, said second instruction set having a second encoding of instructions, said first encoding of instructions independent from said second encoding of instructions;

select means, coupled to said first instruction decode means and said second instruction decode means, for selecting said decoded instruction from either said first instruction decode means or from said second instruction decode means; and
execute means for executing decoded instructions selected by said select means,



whereby instructions from both said first instruction set and said second instruction set are executed by said CPU.

5,781,751

Patent Not Issued For This Number

5,781,752

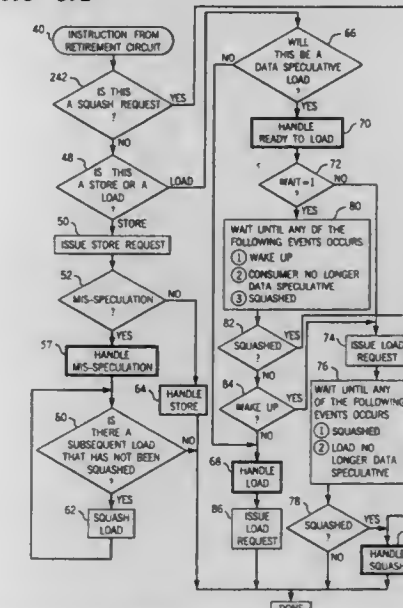
TABLE BASED DATA SPECULATION CIRCUIT FOR PARALLEL PROCESSING COMPUTER

Andreas I. Moshovos; Scott E. Breach; Terani N. Vijaykumar, and Gurindar S. Sohi, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 26, 1996, Ser. No. 773,992
Int. Cl.⁶ G06F 9/38

U.S. Cl. 395—392

9 Claims



1. In a processor capable of executing program instructions in an execution order differing from their program order, the processor further having a data speculation circuit for detecting data dependence between instructions and detecting a mis-speculation where a data consuming instruction dependent for its data on a data producing instruction of earlier program order, is in fact executed before the data producing instruction, a data speculation decision circuit comprising:

a) a predictor receiving a mis-speculation indication from the data speculation circuit to produce a prediction associated with the particular data consuming instruction and based on the mis-speculation indication; and

- b) a prediction threshold detector preventing data speculation for instructions having a prediction within a predetermined range.

5,781,753

SEMI-AUTONOMOUS RISC PIPELINES FOR OVERLAPPED EXECUTION OF RISC-LIKE INSTRUCTIONS WITHIN THE MULTIPLE SUPERSCALAR EXECUTION UNITS OF A PROCESSOR HAVING DISTRIBUTED PIPELINE CONTROL FOR SPECULATIVE AND OUT-OF-ORDER EXECUTION OF COMPLEX INSTRUCTIONS

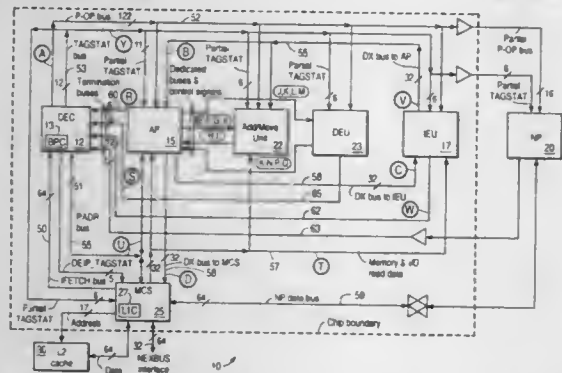
Harold L. McFarland; David R. Stiles, both of Los Gatos; Korbina S. Van Dyke, Fremont; Shrenik Mehta; John Gregory Favor, both of San Jose; Dale R. Greenley, Los Gatos, all of Calif., and Robert A. Cargnoni, Austin, Tex., assignors to Advanced Micro Devices, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 25,439, Mar. 3, 1993, Pat. No. 5,442,757, which is a continuation of Ser. No. 483,223, Feb. 21, 1990, Pat. No. 5,226,126, which is a continuation-in-part of Ser. No. 315,358, Feb. 24, 1989, abandoned. This application Mar. 13, 1995, Ser. No. 403,988

Int. Cl.⁶ G06F 9/38

U.S. Cl. 395—394

61 Claims



1. A method of operating a microprocessor to execute a binary program, said program being compatible with a CISC architecture, comprising:

decoding a first and second CISC instruction, said second instruction having a program order after said first instruction; translating each of said CISC instructions into at least one packet of operation commands, at least one of which packets comprises multiple operation commands, wherein any packet contains operation commands of only one CISC instruction; issuing said packets to a plurality of pipelined RISC-like execution units, each of said packets being referred to as an outstanding packet upon being issued, said units having a plurality of interacting pipelines, at least one of said pipelines having pipeline interlock logic, said execution units being capable of superscalar pipelined execution, portions of at least two operation commands within at least one of said packets being issued in a same machine cycle; speculatively executing a plurality of said operation commands associated with said second instruction in a plurality of said execution units, terminating within a first machine cycle; executing a plurality of said operation commands associated with said first instruction in a plurality of said execution units, terminating within a second machine cycle, said second machine cycle occurring later in time than said first machine cycle; and retiring one of said packets of operation commands as a unit, thereby causing said one packet to cease being an outstanding packet, all operation commands within said one packet having terminated.

5,781,754 REORDER BUFFER HAVING A FUTURE FILE FOR STORING SPECULATIVE INSTRUCTION EXECUTION RESULTS

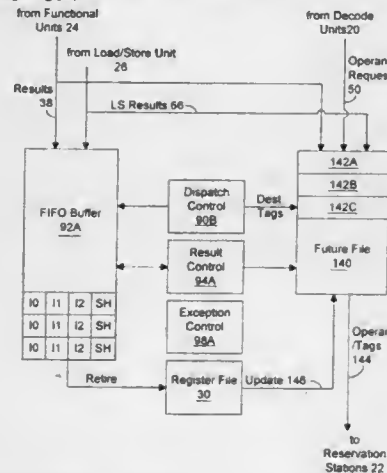
Thang M. Tran, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 26, 1996, Ser. No. 690,370

Int. Cl.⁶ G06F 9/38

U.S. Cl. 395—394

19 Claims



1. A reorder buffer comprising:

an instruction storage configured to store instruction results corresponding to instructions, wherein said instruction results are stored in lines of storage, and wherein a line of storage is configured to store instruction results corresponding to a maximum number of concurrently dispatchable instructions, and wherein a first line of storage is allocated upon dispatch of at least one instruction regardless of a number of instructions concurrently dispatched;

a future file configured to store a reorder buffer tag corresponding to a particular instruction, wherein said particular instruction is last, in program order, of the instructions represented within said instruction storage having a particular register as a destination operand, and wherein said future file is further configured to store a particular instruction result corresponding to said particular instruction when said particular instruction result is provided; and

a control unit coupled to said instruction storage and to said future file, wherein said control unit is configured to allocate said first line of storage for said at least one instruction, and wherein said control unit is further configured to update said future file if said at least one instruction has said particular register as a destination operand.

5,781,755

INITIAL PROGRAM LOADING OF VIRTUAL MACHINE

Minoru Uchino, Numazu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 498,647, Jul. 6, 1995, abandoned, which is a continuation of Ser. No. 705,561, May 24, 1991, abandoned. This application Jan. 23, 1997, Ser. No. 788,029

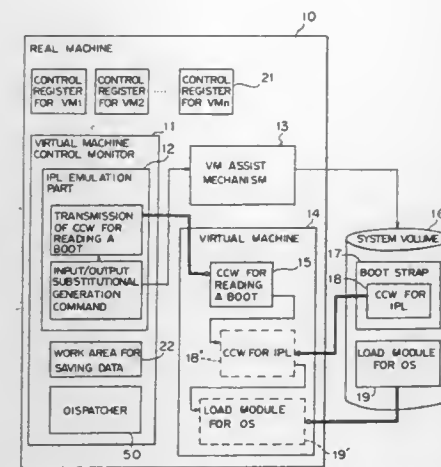
Claims priority, application Japan, May 25, 1990, 2-136851

Int. Cl.⁶ G06F 9/46

U.S. Cl. 395—406 R

9 Claims

1. A virtual machine initial program loading system, including:
- a CPU;
 - a memory storing data and being allocated to a plurality of virtual machines;
 - a virtual machine monitor for controlling said virtual machines; and
 - an external storage unit storing operating system programs for said virtual machines wherein:
- a data transmission between said memory and said external storage unit is carried out by execution of channel command words in said memory;



the program which has requested said data transmission is interrupted when the data transmission is completed, said channel command words are combined and are continuously carried out when a combination command word in said channel command words is used in said virtual machine monitor or in a virtual machine area, and said external storage unit storing initial program-loading channel command words; and a virtual machine assist mechanism transmitting data between a virtual machine area specified by said virtual machine and said external storage in accordance with said channel command word in said virtual machine area, and interrupting said virtual machine memory when said virtual machine assist mechanism is interrupted by said external storage unit, wherein said virtual machine monitor performs the steps of:

- (1) transmitting a BOOT channel command word to said virtual machine area;
- (2) requesting the virtual machine assist mechanism to perform said BOOT channel command word in the virtual machine area;
- (3) waiting until being interrupted by said virtual machine assist mechanism; and
- (4) starting said initial program of said operating system loaded into said virtual machine area, wherein said BOOT channel command words including a first read command word and a combination command word; said first read command word reads said initial program-loading channel command words stored in said external storage, into said virtual machine area; said combination command word combines said first read command word and said initial program-loading channel command words to make a command chain; and said initial program loading channel command words including a second read command word for reading an initial program of the operating system stored in said external storage unit.

5,781,756

PROGRAMMABLE LOGIC DEVICE WITH PARTIALLY CONFIGURABLE MEMORY CELLS AND A METHOD FOR CONFIGURATION

Lawrence C. Hung, Los Gatos, Calif., assignor to Xilinx, Inc., San Jose, Calif.

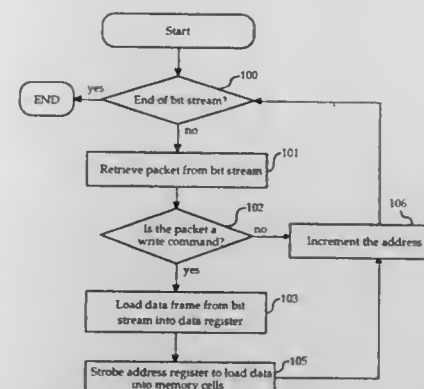
Filed Apr. 1, 1994, Ser. No. 222,141

Int. Cl.⁶ G06F 9/26

U.S. Cl. 395—430

15 Claims

1. In a programmable logic device having a plurality of memory cells, an apparatus for partially configuring the memory cells, the apparatus comprising:
- an address register for identifying memory cells into which data are to be loaded, the address register having an increment input terminal, and at least one address output terminal coupled to the memory cells;



a memory configuration device for recognizing a command in a bit stream including a skip command and a write command and having means for, in response to a skip command, applying an increment signal to the address register increment input terminal without loading a plurality of data bits from the bit stream; and means for, in response to a write command, loading a plurality of data bits from the bit stream into a plurality of memory cells addressed on the at least one address output terminal of the address register, and applying an increment signal to the address register increment input terminal; a data register for storing data to be loaded into the memory cells, the data register having a data input terminal, a clock input terminal, and at least one data output terminal coupled to the memory cells; and wherein the memory configuration device has means for, in response to the write command, applying a clock signal to the data register clock input terminal, and shifting the plurality of data bits from the bit stream into the data register.

5,781,757

ADAPTIVE SCALABLE CACHE COHERENCE NETWORK FOR A MULTIPROCESSOR DATA PROCESSING SYSTEM

Sanjay Raghunath Deshpande, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

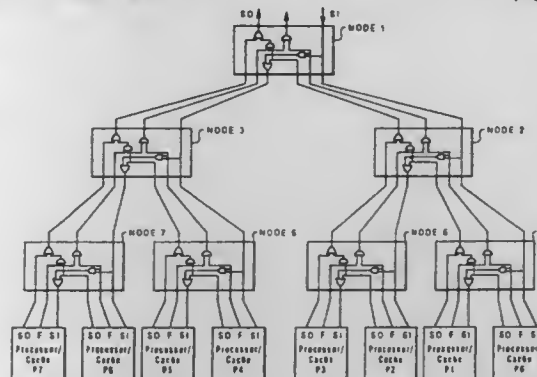
Continuation of Ser. No. 320,484, Oct. 11, 1994, abandoned.

This application Nov. 13, 1996, Ser. No. 747,587

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—473

7 Claims



1. A cache coherence network for transferring coherence messages between processor caches in a multiprocessor data processing system, the cache coherence network comprising:

a plurality of processor caches that are each associated with a respective one of a plurality of processors, each processor cache having a snoop-in input, a snoop-out output, and a forward output, wherein the snoop-in input receives coherence messages and the snoop-out output transmits, at the most, one coherence message per current cycle of the network timing, wherein a processor cache among said plurality of processor caches asserts a forward signal on the forward

output when the cache is not transmitting a coherence message on the snoop-out output and negates the forward signal on the forward output when the cache is transmitting a coherence message during the current cycle, wherein the processor cache generates coherence messages according to a coherency protocol, and, further, wherein the processor cache stores coherence messages received on the snoop-in input and outputs coherence messages on the snoop-out output, after determining any response coherence message based on the received coherence message;

an M-ary logic tree circuit having a plurality of nodes connected in a tree structure, starting at a top root node and having multiple branches formed of branch nodes positioned at multiple levels of a branch, and each branch node having a snoop-in connection, a snoop-out connection, and a forward connection connected to each of a next higher level node and M lower level nodes, such that a branch node is connected to a higher node at a next higher level of the tree structure, and to M lower nodes at a next lower level of the logic tree circuit, and wherein a forward signal on a forward connection indicates that the associated node is outputting a coherence message on the snoop-out connection to the higher node during the current cycle, and wherein each branch ends with multiple connections to a processor cache among said plurality of processor caches at a processor cache's snoop-in input, snoop-out output, and forward output, wherein the processor cache forms a bottom level node; and

wherein said cache coherence network adapts in response to a number of coherence messages being transferred such that said M-ary logic tree circuit routes coherence messages between said plurality of processor caches substantially in a ring-network if the number of coherence messages is relatively high and routes coherence messages between said plurality of processor caches substantially in a broadcast-network if the number of coherence messages is relatively low.

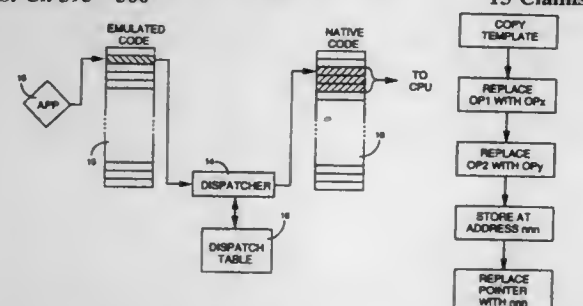
5,781,758

SOFTWARE EMULATION SYSTEM WITH REDUCED MEMORY REQUIREMENTS

John E. Morley, Kapas, Hi., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 23, 1995, Ser. No. 408,845
Int. Cl.⁶ G06F 3/00; 12/00

U.S. Cl. 395—500



1. An emulator for emulating the functions of a first processor which executes a first set of instructions, each instruction of said first set of instructions having a type of operation and one or more associated operands, on a second processor which executes a second, different set of instructions, comprising:

- a set of static semantic routines in said second set of instructions, where each semantic routine emulates one instruction from said first set of instructions;
- a semantic routine generator in said second set of instructions which copies one of said static semantic routines and substitutes at least one different operand for an operand associated with the copied routine, to generate a new semantic routine; and
- a dispatch table which maps instructions in said first set of instructions to semantic routines in said second set of instructions, such that each instruction of a particular type in said

first set which has a corresponding static semantic routine in said second set of instructions is mapped to its corresponding routine, and all other instructions of the same type are mapped to said semantic routine generator.

5,781,759

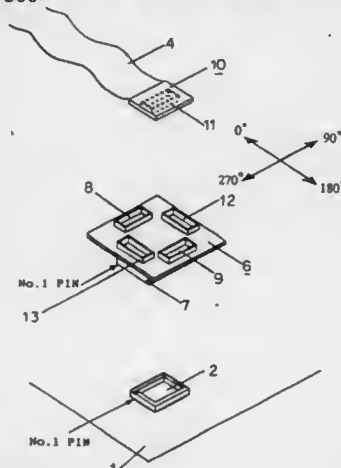
EMULATOR PROBE MOUNTABLE TO A TARGET BOARD AT DIFFERENT ORIENTATION ANGLES

Naokazu Kashiwabara, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Mitsubishi Electric Semiconductor Software Co., Ltd., Hyogo, both of Japan
Filed Jun. 5, 1995, Ser. No. 463,415

Claims priority, application Japan, Jan. 31, 1995, 7-014023
Int. Cl.⁶ H01R 9/09; G01R 31/02

U.S. Cl. 395—500

10 Claims



1. An emulator probe comprising:

- a user target board;
- an IC socket mounted on said user target board;
- a direction changing board having a lower surface and an upper surface;
- a lower connector fixed to the lower surface of said direction changing board, and having terminals, said lower connector being to be coupled to said IC socket;
- a plurality of upper connectors contacting the upper surface of said direction changing board, said upper connectors having terminals electrically connected to the terminals of said lower connector, said upper connectors being fixed to the upper surface with different orientation angles to each other; and
- a cable mounting board fixed to an end of an emulator cable and having a connector to be coupled to one of said upper connectors.

5,781,760

METHODS OF SIMULATING AN ELECTRONIC CIRCUIT DESIGN AND FORMING AN INTEGRATED CIRCUIT

Marlan L. Winter; Kenneth P. Tumin, and Steven P. Lindquist, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 16, 1995, Ser. No. 558,451

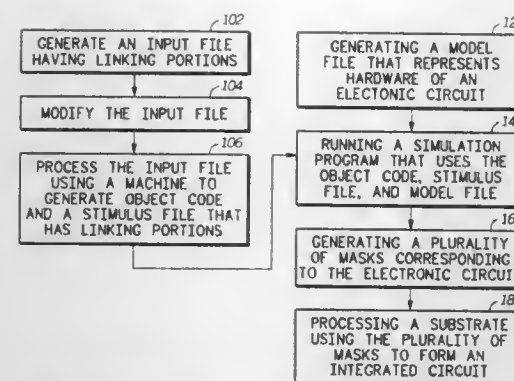
Int. Cl.⁶ G06F 9/30

U.S. Cl. 395—500

29 Claims

1. A method of simulating an electronic circuit design that represents an electronic circuit, the method comprising the steps of:

- generating an input file having an instruction section and a stimulus section, wherein:
 - the instruction section is capable of testing the electronic circuit design;
 - the stimulus section includes a stimulus;



the stimulus represents a signal input to the electronic circuit in order to monitor a response of the electrical circuit; the instruction section has a first instruction that is a linking instruction to indicate an occurrence of a second instruction;

the stimulus section has a first stimulus section linking portion, wherein:

the first stimulus section linking portion is capable of providing the stimulus in response to an execution of the first instruction; and

an execution of the second instruction is capable of being altered in response to the stimulus; and

the first instruction and the first stimulus section linking portion form a first linking pair and are related to the second instruction; and

processing the input file using a machine to generate object code and a stimulus file, wherein the stimulus file has a first stimulus file linking portion that corresponds to the first stimulus section linking portion.

5,781,761

Patent Not Issued For This Number

5,781,762

PARALLEL PROXIMITY DETECTION FOR COMPUTER SIMULATIONS

Jeffrey S. Steinman, Chatsworth, Calif., and Frederick P. Wieland, Spotsylvania, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

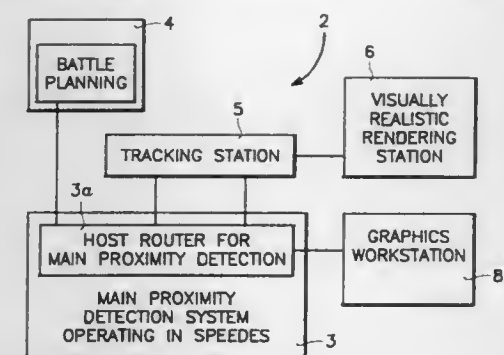
Division of Ser. No. 425,751, Apr. 10, 1995, Pat. No. 5,652,871.

This application Mar. 7, 1997, Ser. No. 813,531

Int. Cl.⁶ G06F 17/50

U.S. Cl. 395—500

22 Claims



1. In a system of interconnected processor nodes operating on a parallel processing system, a method of performing proximity detection of sensors and movers in grids that model simulated space by processing events comprising discrete simulation objects

defined by said sensors, said movers, and said grids distributed among said nodes as a sequence of discrete sensor, mover, and grid events, comprising the steps of:

generating current equations of motion for each mover and providing each of said equation of motion to each of said sensor within a coverage area;

processing said respective equations of motion; and

determining the exact positions of all movers by said sensors that are in said sensors coverage area from said equations of motion of said movers to create a logically correct solution without approximations.

5,781,763

INDEPENDENT CONTROL OF DMA AND I/O RESOURCES FOR MIXED-ENDIAN COMPUTING SYSTEMS

Bruce Leroy Beukema, Hayfield; Gary Scott Delp, Rochester; Larry Wayne Loen, Rochester; Daniel Frank Moertl, Rochester, and Michael R. Trombley, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

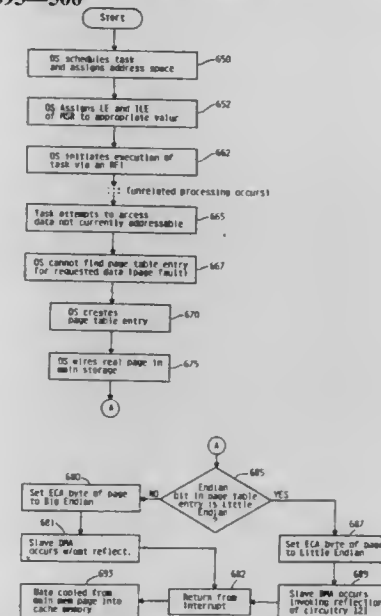
Continuation of Ser. No. 419,076, Apr. 7, 1995, abandoned.

This application May 22, 1997, Ser. No. 861,914

Int. Cl.⁶ G06F 13/28

U.S. Cl. 395—500

9 Claims



1. An apparatus for transferring data, comprising:

Direct Memory Access (DMA) logic, wherein the DMA logic connects a first bus, wherein the first bus is a memory bus, and a second bus, wherein the DMA logic comprises a reflection bias indicator, and wherein the DMA logic performs DMA data transfer between the first and second buses with reflection when the reflection bias indicator is on and performs DMA data transfer between the first and second buses without reflection when the reflection bias indicator is off; and an operating system that controls big-endian programs and little-endian programs, the big-endian programs executing as big-endian tasks and the little-endian programs executing as little-endian tasks on a task-for-task basis on a mixed-endian processor, wherein the operating system requests DMA operations of the DMA logic on behalf of the big-endian programs and the little-endian programs, and wherein the operating system further comprises a slave DMA control program that sets an endian indicator in memory, wherein the reflection bias indicator is set based on the endian indicator in memory, and wherein the memory is connected to the memory bus.

5,781,764

METHOD AND APPARATUS FOR GENERATION A SYSTEM COMPONENT MODEL AND FOR EVALUATION SYSTEM PARAMETERS IN RELATION TO SUCH MODEL

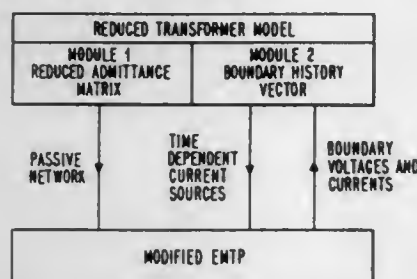
Robert C. Degeneff, Niskayuna, and Moises R. Gutierrez, Troy, both of N.Y., assignors to ABB Power T & D Company Inc., Raleigh, N.C.

Continuation of Ser. No. 689,551, Aug. 9, 1996, abandoned, which is a continuation of Ser. No. 332,732, Oct. 13, 1994, abandoned, which is a continuation of Ser. No. 936,828, Aug. 28, 1992, abandoned. This application Jun. 18, 1997, Ser. No. 878,255

Int. Cl.⁶ G06F 15/00

U.S. Cl. 395—500

5 Claims



1. A system for generating a reduced computer model of a component of a system for use in analyzing said component, wherein said reduced model is derived on the basis of an equation model of said component, said system comprising:

a computer;

a computer-readable storage medium operatively coupled to said computer and containing:

(1) first code means for modifying said equation model by integrating said equation model, whereby a first matrix model is formed, wherein said first matrix model contains parameter values and is representative of said equation model, and wherein certain of said parameter values define historical parameter values accounting for historical parameter information; and

(2) second code means for reordering said parameter values and reducing said first matrix model by eliminating certain of said parameter values, whereby said reduced model is formed; and

means for providing input to reduced computer model, said input being representative of an excitation signal.

5,781,765

SYSTEM FOR DATA SYNCHRONIZATION BETWEEN TWO DEVICES USING FOUR TIME DOMAINS

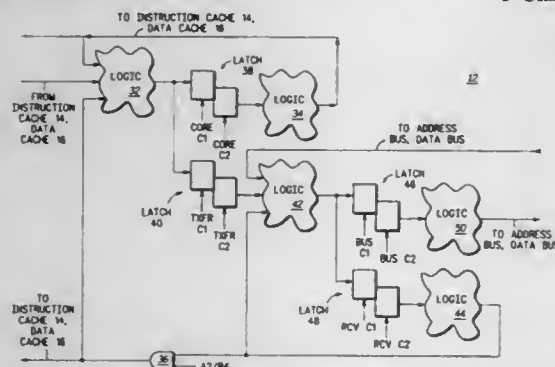
Michael C. Alexander, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1995, Ser. No. 552,657

Int. Cl.⁶ G06F 1/04

U.S. Cl. 395—551

5 Claims



1. A data synchronization system for use with a first device and a second device, the first device operating according to a first clock

signal oscillating at a first frequency, the second device operating at according to a second clock signal oscillating at a second frequency, the first frequency greater than the second frequency, the data synchronization system comprising:

a transfer latch, an input thereof receiving an output of the first device, the transfer latch capturing a data bit at the input thereof responsive to a TXFR C1 signal, the transfer latch launching the data bit responsive to a TXFR C2 signal;

a bus latch, an input thereof receiving an output of the transfer latch, an output thereof coupled to the second device, the bus latch capturing the data bit at the input thereof responsive to a BUS C1 signal, the BUS latch launching the data bit responsive to a BUS C2 signal;

a receive latch, an input thereof coupled to the output of the second device, an output thereof coupled to the first device, the receive latch capturing the data bit at the input thereof responsive to a RCV C1 signal, the receive latch launching the data bit responsive to a RCV C2 signal;

a core latch, an input thereof coupled to the output of the first device, an output thereof coupled to the first device, the core latch capturing the data bit at the input thereof responsive to a CORE C1 signal, the core latch launching the data bit responsive to a CORE C2 signal and wherein the clock generation circuitry generates the CORE C1 and CORE C2 signals; and clock generation circuitry generating the TXFR C1, TXFR C2, BUS C1, BUS C2, RCV C1, and RCV C2 signals.

5,781,766

PROGRAMMABLE COMPENSATING DEVICE TO OPTIMIZE PERFORMANCE IN A DRAM CONTROLLER CHIPSET

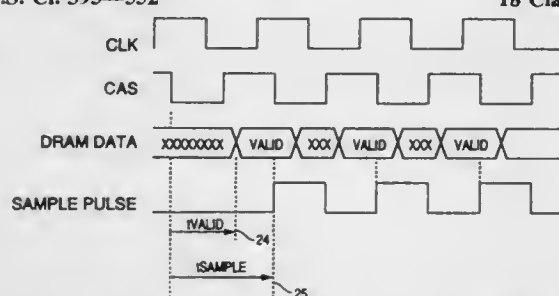
Ian E. Davis, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 13, 1996, Ser. No. 647,615

Int. Cl.⁶ G06F 1/16

U.S. Cl. 395—552

18 Claims



1. A computer system that includes a central processing unit for controlling the computer system and a plurality of integrated circuits coupled to the central processing unit, the computer system comprising: a compensating device coupled to each of said integrated circuits, the compensating device including

a process monitor connected to each of said integrated circuits for measuring process speed of each of said integrated circuits;

evaluation means for comparing the process speeds of said integrated circuits to identify a slowest integrated circuit among said plurality of integrated circuits;

delay module means for reducing the process speeds of each of said plurality of integrated circuits other than said slowest integrated circuit such that the reduced process speed of each of said plurality of integrated circuits matches the process speed of said slowest integrated circuit.

5,781,767

PACKAGE BLOCKING METHOD FOR A STORAGE SYSTEM HAVING A BUS COMMON TO A PLURALITY OF KINDS OF GROUPS OF PACKAGES

Mitsuru Inoue, Odawara, and Hiroyuki Kurosawa, Hiratsuka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

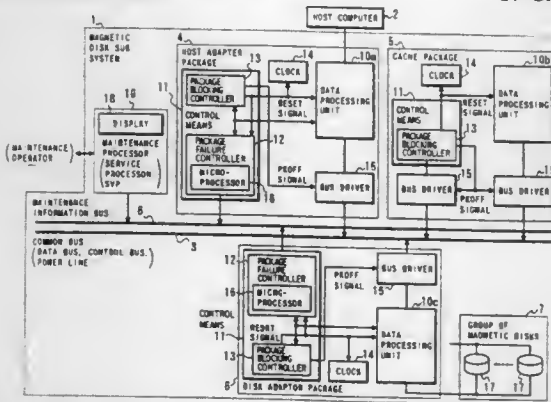
Continuation of Ser. No. 346,440, Nov. 29, 1994, Pat. No. 5,588,144. This application Oct. 31, 1996, Ser. No. 741,442

Claims priority, application Japan, Dec. 3, 1993, 5-303775

Int. Cl.⁶ G06F 1/14

U.S. Cl. 395—555

17 Claims



1. A package blocking method of a storage system comprising a common bus, at least two packages each connected to said common bus via a bus driver and having an independent clock circuit for supplying a clock to the circuit therein and a control means for controlling said circuit therein and said clock circuit, and a management means for managing information on said packages, comprising the steps of:

- detecting a failure which occurs in one of said packages by said control means thereof;
- outputting a signal for stopping said clock circuit and a signal for stopping said bus driver by said control means;
- blocking said package in which said detected failure occurs due to a stop of said clock circuit and bus driver; and
- informing said management means of blocking of said faulty package by said control means of said other package.

5,781,768

GRAPHICS CONTROLLER UTILIZING A VARIABLE FREQUENCY CLOCK

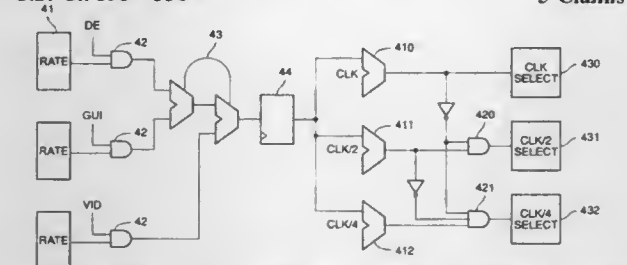
Morris E. Jones, Jr., Saratoga, Calif., assignor to Chips and Technologies, Inc., San Jose, Calif.

Filed Mar. 29, 1996, Ser. No. 625,732

Int. Cl.⁶ G06F 1/06

U.S. Cl. 395—556

5 Claims



1. A memory clock system for a graphics controller having functional units which includes: a plurality of clock pulse generators, a clock controller including,

input lines having a state, said state being determined by the activity of said functional units,

clock control logic circuitry responsive to the state of said input lines,

an output signal line, said output signal line connected to each of said plurality of clock pulse generators wherein the clock control logic circuitry sends a signal on the output signal line, the signal indicating which of the clock pulse generators is to

5,781,769

METHOD AND APPARATUS FOR USING A CONTENT ADDRESSABLE MEMORY FOR TIME TAGGED EVENT PROCESSING

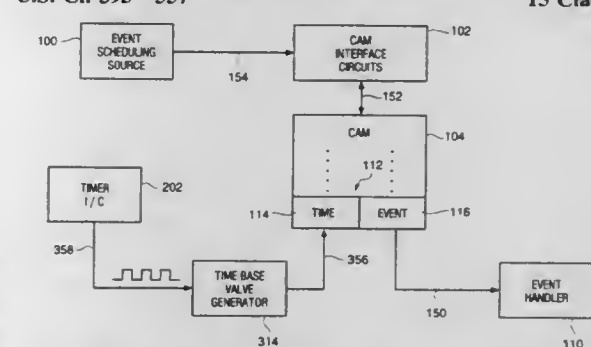
David M. Weber, Monument, Colo., assignor to Symbios, Inc., Fort Collins, Colo.

Filed Dec. 29, 1995, Ser. No. 580,110

Int. Cl.⁶ G06F 1/04

U.S. Cl. 395—557

15 Claims



15. A general purpose computer connected to a content addressable memory programmed to process timed events according to any of methods 11 through 14.

5,781,770

METHOD AND CONTROLLER FOR CONTROLLING SHUTDOWN OF A PROCESSING UNIT

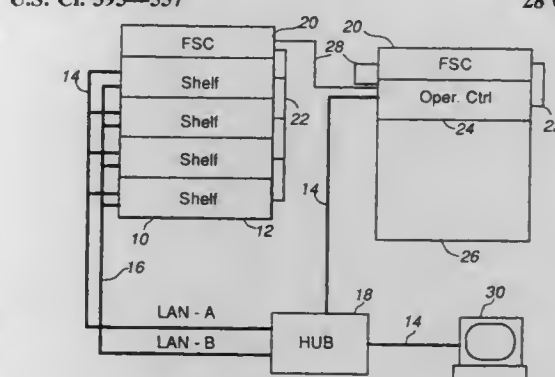
Russell Francis Byers; Joseph Marcel Gilles Duchaine; Michael Leonard Schuett, all of Ottawa, Canada, and Cornelius Jacob Grootenboer, Bishop's Stortford, United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 251,991, Jun. 1, 1994, Pat. No. 5,594,893. This application Oct. 24, 1996, Ser. No. 739,077

Int. Cl.⁶ G06F 1/14

U.S. Cl. 395—557

28 Claims



2. A method for controlling shutdown of a processing unit, communicatively coupled to which is a controller unit, comprising the steps of, at the controller unit:

- sending a shutdown signal to the processing unit and initiating a timer; and
- responsive to the timer measuring a predetermined time interval, resetting or powering off the processing unit.

5,781,771

Patent Not Issued For This Number

5,781,772

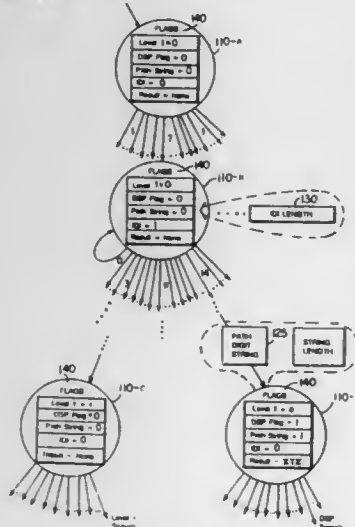
COMPRESSED PREFIX MATCHING DATABASE
SEARCHINGHugh M. Wilkinson, III, Newton; George Varghese, Bradford,
and Nigel T. Poole, Natick, all of Mass., assignors to Digital
Equipment Corporation, Maynard, Mass.Continuation of Ser. No. 16,659, Feb. 10, 1993, which is a
continuation of Ser. No. 378,718, Jul. 12, 1989, abandoned.

This application May 15, 1995, Ser. No. 441,253

Int. Cl.⁶ G06F 7/04

U.S. Cl. 395—600

6 Claims



5,781,777 OPTIMIZATION METHOD FOR COMPUTATION PARTITIONING ORIENTED TO A DISTRIBUTED MEMORY

Makoto Sato, Sagami-hara, and Kiyomi Umehara, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

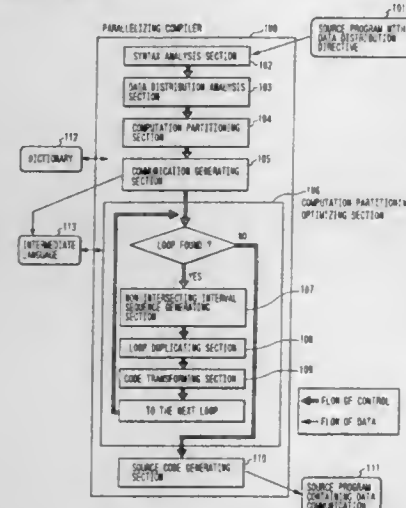
Filed May 3, 1996, Ser. No. 642,676

Claims priority, application Japan, May 9, 1995, 7-110473

Int. Cl.⁶ G06F 9/45

U.S. Cl. 395—709

11 Claims



1. A method of optimizing computation partitioning for compiling a program having data distribution directives into a parallel program that runs on a plurality of processes by use of an electronic computer, comprising the steps of:

- analyzing said program having data distribution directives to determine a relationship between array elements and processes to which said array elements are assigned;
- based on a rule for relating an array and a statement and a relationship between an array subscript and a loop induction variable, determining for each of the processes a statement execution range which is a range of values of said loop induction variable for executing the statement in a loop in own process for each statement;
- performing for each of the processes non-intersecting interval sequence generation for generating a non-intersecting interval sequence composed of a plurality of intervals not overlapping each other, a union of said plurality of intervals including a union of said statement execution ranges;
- performing loop duplicating processing by setting each of the plurality of intervals of said non-intersecting interval sequence to a loop execution range and generating statements in the loop by duplicating an original loop; and
- performing code transforming processing for transforming a code for each statement in the loop by use of said loop execution range and said statement execution range.

5,781,778 METHOD AND SYSTEM FOR DEBUGGING PARALLEL AND DISTRIBUTED APPLICATIONS

Michael S. Meier, Newark, and Hsin Pan, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

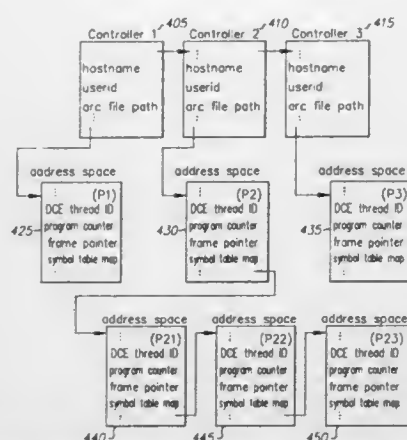
Continuation of Ser. No. 483,215, Jun. 7, 1995, abandoned, which is a division of Ser. No. 314,839, Sep. 29, 1994, abandoned. This application Jun. 5, 1997, Ser. No. 869,661

Int. Cl.⁶ G06F 11/00

U.S. Cl. 395—704

5 Claims

1. An article of manufacture for use in a computer system for debugging a distributed computer program comprising a plurality of processes, by a distributed debugger comprising a front end and a back end, said article of manufacture comprising a computer-



readable storage medium having a computer program embodied in said medium which causes the computer system to:

- allocate an address-space data structure associated with each of the plurality of processes monitored by the back end, the address-space data structure storing a run-time state of the associated process wherein the run-time state comprises a value from a register or location in memory of the associated process;
- allocate by the front end a controller data structure for each back end, the controller data structure pointing to the address-space data structure associated with the process monitored by the back end;
- request by the front end the run-time state of the monitored process from the back end monitoring the monitored process;
- store the run-time state of the monitored process in the address-space data structure; and
- access the address-space data structure via the controller data structure by a debug engine to display the run-time state.

5,781,779 TOOLS FOR EFFICIENT SPARSE MATRIX COMPUTATION

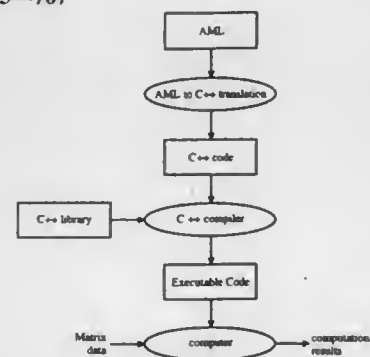
John R. Gilbert, Palo Alto; John O. Lamping, Los Altos; Anurag Mendhekar, Mountain View, all of Calif., and Tatiana Shpeisman, Adelphi, Mass., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1995, Ser. No. 573,707

Int. Cl.⁶ G06F 9/45

U.S. Cl. 395—707

4 Claims



1. A method for generating computationally efficient computer program code for carrying out computer computations on a plurality of different matrix data types, said method comprising the steps of

writing a program in a relatively high-level language which includes programmer specifiable constructs for manipulating said matrix data types and parts thereof; at least certain of said constructs permitting annotations specifying programmer selected data structures for alternative implementations of

matrix data types and programmer selected operations on said data structures for program implementation of the respective constructs;

translating the high-level program into a relatively low-level language using low-level language routines that provide a compilable representation of the program, including all programmer selected data structures and all programmer selected operations on said data structures;

compiling the low-level language representation of said program to generate computer executable code for implementing said program, including all programmer selected data structures and all programmer selected operations on said data structures.

5,781,780 POWER MANAGEMENT SUPPLY INTERFACE CIRCUITRY, SYSTEMS AND METHODS

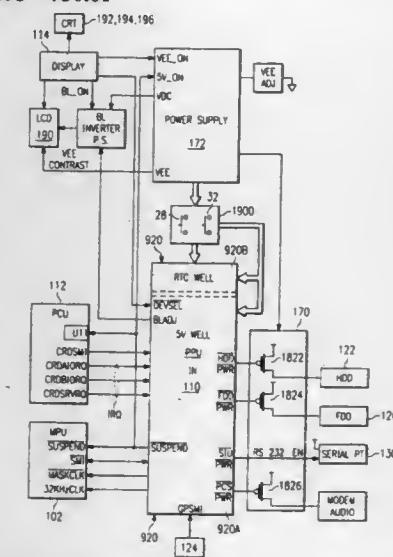
James J. Walsh, Plano, and Weiyeun Kau, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

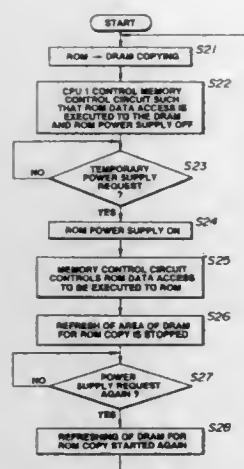
Division of Ser. No. 363,098, Dec. 22, 1994, abandoned. This application Jul. 17, 1996, Ser. No. 682,460

Int. Cl.⁶ G06F 1/32

U.S. Cl. 395—750.01

9 Claims





tion and in response to power-on and for providing power to the read only memory in response to a request for suspending of operation.

5,781,783

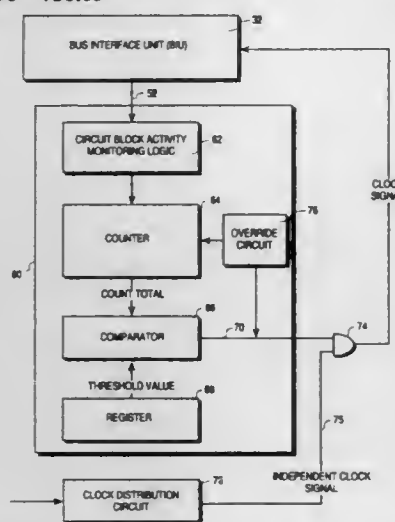
METHOD AND APPARATUS FOR DYNAMICALLY ADJUSTING THE POWER CONSUMPTION OF A CIRCUIT BLOCK WITHIN AN INTEGRATED CIRCUIT
Stephen H. Gunther, Folsom; Stanley J. Domen, Roseville, and Dileep R. Idate, Folsom, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 28, 1996, Ser. No. 672,544

Int. Cl.⁶ G06F 1/32

U.S. Cl. 395—750.03

29 Claims



1. A method of dynamically adjusting the power consumption of a circuit block within an integrated circuit, the method comprising the steps of:

- incrementing a count total maintained by a counter on the occurrence of a first type of trigger event, and detecting the occurrence of a predetermined event when the count total maintained by the counter equals, or transcends, a predetermined threshold value, the predetermined event providing a speculative indication of a future state of activity of the circuit block by reason of a predicted proximity of the predetermined event to the future state of activity of the circuit block; and
- adjusting the power consumption of the circuit block in response to the occurrence of the predetermined event.

5,781,784 DYNAMIC POWER MANAGEMENT OF SOLID STATE MEMORIES

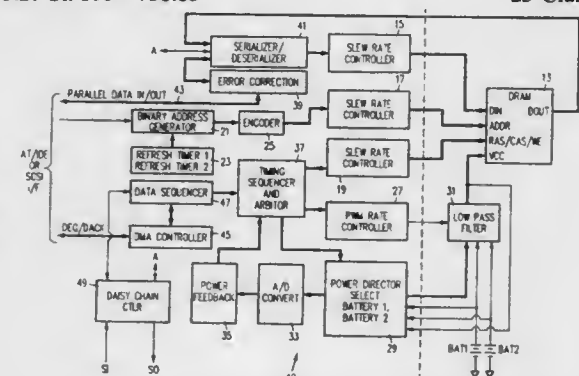
David E. McKinley, San Jose, Calif., assignor to Zilog, Inc., Campbell, Calif.

Continuation of Ser. No. 368,577, Jan. 4, 1995, abandoned, which is a continuation of Ser. No. 910,213, Jul. 9, 1992, abandoned. This application Aug. 25, 1997, Ser. No. 918,745

Int. Cl.⁶ G06F 1/32

U.S. Cl. 395—750.03

23 Claims



1. A dynamic power management device for supplying power to a solid state memory integrated circuit, said device comprising: power control means for supplying a variable voltage to said memory integrated circuit; and logic control means for generating address and control signals for said memory integrated circuit and for controlling said power control means;

wherein the power control means supply power to said memory integrated circuit, said power being supplied to the memory integrated circuit at a first variable voltage level during periods of no data access activity and at a second variable voltage level during periods of data access activity, the variable voltage supplied at said first variable voltage level being less than the variable voltage supplied at said second variable voltage level,

wherein the power supplied at the first level is sufficient to preserve information stored in the integrated memory circuit and the power supplied at the second level is sufficient to read and write information in the integrated memory circuit.

5,781,785

METHOD AND APPARATUS FOR PROVIDING AN OPTIMIZED DOCUMENT FILE OF MULTIPLE PAGES

Edward R. Rowe, 701 W. 32nd St., #14, Los Angeles, Calif. 90007, and Eswar Priyadarshan, 1054 Heatherston Ave., Sunnyvale, Calif. 94087

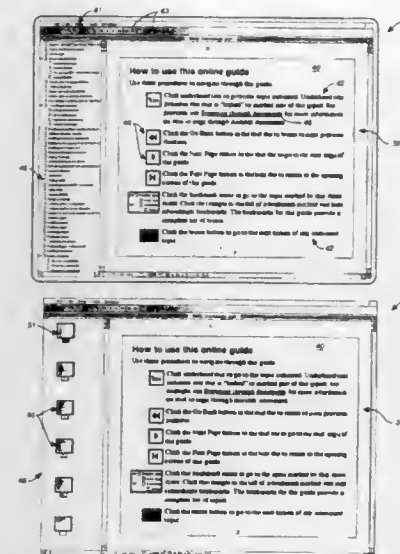
Filed Sep. 26, 1995, Ser. No. 533,875

Int. Cl.⁶ G06F 17/21

U.S. Cl. 395—774

26 Claims

1. A method for providing a computer-readable document file for a multi-page document, comprising: writing appearance-defining elements defining the appearance of a specific page of the multi-page document into a computer-readable document file in a non-contiguous manner; and writing page offset hints into the document file, page offset hints indicating the location in the document file of the non-contiguous appearance-defining elements of the specific page,



5,781,786

Patent Not Issued For This Number

5,781,787

PARALLEL PROGRAM EXECUTION TIME WITH MESSAGE CONSOLIDATION

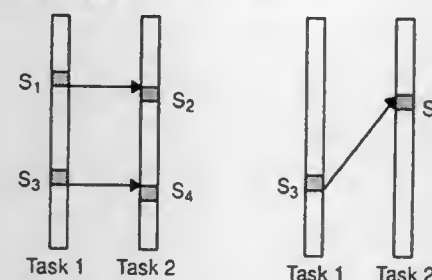
Stephen Ray Shafer, Endicott, and Kanad Ghose, Vestal, both of N.Y., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed Apr. 21, 1995, Ser. No. 426,805

Int. Cl.⁶ G06F 7/00

U.S. Cl. 395—800

7 Claims



2. A method carried out on a computer of merging two or more messages of a program for a distributed memory parallel processor system, so that the messages can be sent as one message to reduce the overall computation time and bus loading of the system while running the program, after the program that has been scheduled, comprising the steps of:

- determining regions in the program code allocated to each processor, where new regions begin at the receive statements of entering messages;
- estimating start time of each region based on whether it takes longer for the execution of the previous region to be completed than for the message to arrive which defines the beginning of the region, or if it takes longer for the message to arrive which defines the beginning of the region than the time the previous region takes to complete its execution;
- identifying two consecutive outgoing messages from a first processor to a second processor, where outgoing messages will be consecutive when considering only messages going to the second processor;

(d) checking if the two consecutive messages are crossed, with crossed messages having a first receive statement whose message is sent first from the first processor, the first receive statement being located after the receive statement which is to receive the outgoing message from the second consecutive outgoing message; and

(e) determining for non-crossed messages whether there is a chain that originates between the two receive statements and terminates between the two send statements for the consecutive messages being considered for merging and not merging the messages if such a path is found, thereby avoiding dead-lock.

5,781,788

FULL DUPLEX SINGLE CLIP VIDEO CODEC

Beng-Yu Woo, Los Altos Hills, Calif.; Xiaoming Li, Yorktown Heights, N.Y., and Vivian Hsiun, Palo Alto, Calif., assignors to AVC Technology, Inc., Cupertino, Calif.

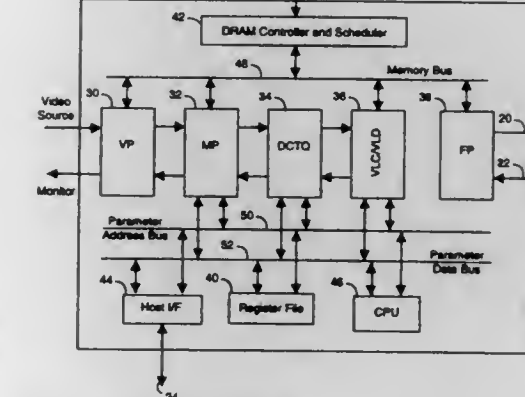
Continuation of Ser. No. 437,276, May 8, 1995, abandoned.

This application Sep. 29, 1997, Ser. No. 939,997

Int. Cl.⁶ G06F 1/30

U.S. Cl. 395—800.01

12 Claims



12. A video codec, comprising:

a single semiconductor chip providing for a video input connection from a camera and a video output connection to a monitor of decompressed data, and a transmit channel and a receive channel of compressed data;

an interface connected to the chip for external connection to a separate frame memory dynamic random access memory (DRAM) and provides for interim storage of incoming and outgoing video data;

a video compressor/decompressor disposed fully within the chip and connected to compress video information received from said video input connection to be output on said transmit channel, and connected to decompress video information received from said receive channel to be output on said video output connection;

wherein, said compression of video information is by spatial de-correlation of intraframe information, and temporal de-correlation of interframe information, and said transmit and receive channels have communication channel bit rates reduced by quantization and variable length coding;

wherein, the video compressor/decompressor includes decoding that is the opposite of encoding;

wherein a bit stream received on said receive channel is variable-length coded, and the length of each code-word is determined, segmented and decoded;

wherein, a frame start, a group-of-block start and a macroblock start are used for triggers;

wherein, intra-type macroblocks are decoded using inverse zig-zag, inverse quantizer and inverse discrete cosine transform and sent out and stored in said frame memory DRAM;

wherein, inter-type macroblocks include a decoded motion vector used for motion-compensation of a macroblock in a previous frame "t-1", and simultaneously the differences

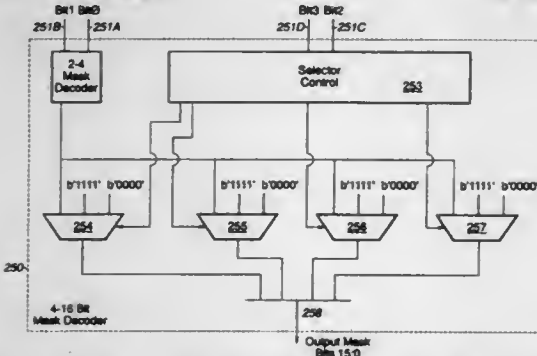
between "t" and "t-1" are decoded using inverse quantizer, zigzag and discrete cosine transform; and wherein, said decoded differences are added to a motion-compensated macroblock, to reconstruct a macroblock for a current frame "t" and stored in said frame memory DRAM for reconstructing a next frame "t+1".

5,781,789
SUPERSCALER MICROPROCESSOR EMPLOYING A
PARALLEL MASK DECODER
Rammohan Narayan, Austin, Tex., assignor to Advanced Micro
Devices, Inc., Sunnyvale, Calif.

Filed Aug. 31, 1995, Ser. No. 524,975
Int. Cl.⁶ G06F 9/30

U.S. Cl. 395—800.23

18 Claims



1. A superscaler microprocessor comprising an instruction cache, wherein said instruction cache includes:
- an input bus configured to convey a value indicative of a byte position within an instruction cache line wherein said value comprises a plurality of bits;
 - a first control unit coupled to said input bus wherein said first control unit is configured to receive at least two of said plurality of bits, and wherein said first control unit is configured to generate a submask according to said at least two of said plurality of bits; and
 - a second control unit coupled to said input bus wherein said second control unit is configured to receive the remaining ones of said plurality of bits, and wherein said second control unit is configured to generate a mask for masking start and end bit information from said submask according to said remaining ones of said plurality of bits.

5,781,790
METHOD AND APPARATUS FOR PERFORMING
FLOATING POINT TO INTEGER TRANSFERS AND VICE
VERSA

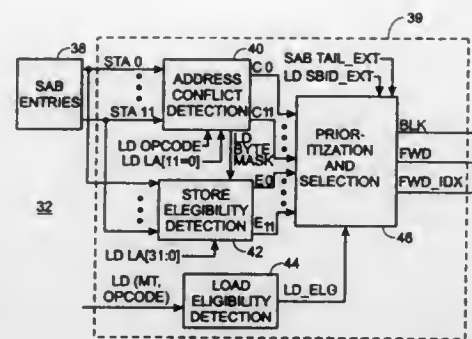
Jeffrey M. Abramson, Aloha, and Kris G. Konigsfeld, Portland,
both of Oreg., assignors to Intel Corporation, Santa Clara,
Calif.

Filed Dec. 29, 1995, Ser. No. 580,751
Int. Cl.⁶ G06F 9/30

U.S. Cl. 395—800.23

21 Claims

1. A processor fabricated on an integrated circuit, said processor comprising:
- an integer execution data path;
 - a floating point execution data path; and
 - a memory execution unit coupled to the integer execution data path and to the floating point execution data path, said memory execution unit performing integer-to-floating point transfers and floating point-to-integer transfers between the integer and floating point execution data paths, wherein the memory execution unit executes a load operation and a store



operation to accomplish the transforms without dispatching the load operation and the store operation to memory.

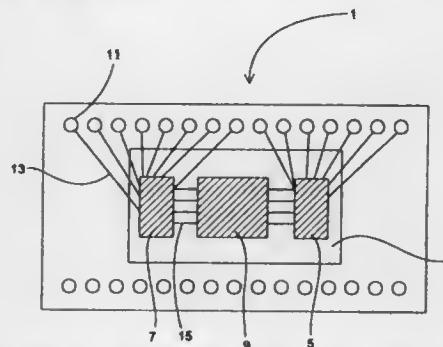
5,781,791
DIGITAL MICROELECTRONIC CIRCUIT PACKAGE
USING BUFFER DIES AND PROGRAMMABLE DEVICE
OR MEMORY DIES

Michael A. Dukes, Austin, Tex.; Kenneth J. Keyes, Jr., Long
Branch, and Gerald T. Michael, Ocean, both of N.J., assign-
ors to The United States of America as represented by the
Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1996, Ser. No. 636,996
Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—800.32

12 Claims



1. A replacement digital microelectronic circuit package for replacing an original microelectronic circuit package on a circuit board, comprising:
- pin means for operably connecting to said circuit board;
 - at least one substrate;
 - at least one buffer die mounted on said substrate, said buffer die being operably connected to said pin means; and,
 - at least one programmable device mounted on said substrate, said programmable device being operably connected to said buffer die, whereby said buffer die performs at least one of the functions of voltage-matching, impedance-matching, or delay-matching.

5,781,792
CPU WITH DSP HAVING DECODER THAT DETECTS
AND CONVERTS INSTRUCTION SEQUENCES
INTENDED TO PERFORM DSP FUNCTION INTO DSP
FUNCTION IDENTIFIER

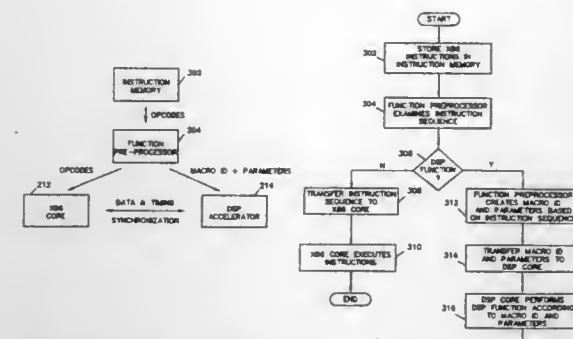
Saf Asghar, Mark Ireton, and John Bartkowiak, all of Austin,
Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale,
Calif.

Filed Mar. 18, 1996, Ser. No. 618,000
Int. Cl.⁶ G06F 9/30; 15/163

U.S. Cl. 395—800.35

16 Claims

1. A central processing unit which includes general purpose execution units and digital signal processing execution units, comprising:



- an instruction memory for storing a plurality of instructions, wherein said instruction memory stores one or more sequences of instructions which implement a digital signal processing function;
- an instruction decoder coupled to the instruction memory which examines said one or more sequences of instructions stored in said instruction memory and determines whether a sequence of instructions in said instruction memory implements a digital signal processing function, wherein said instruction decoder converts a sequence of instructions in said instruction memory which implements a digital signal processing function into a digital signal processing function identifier;
- one or more general purpose execution units coupled to the instruction decoder for executing instructions in said instruction memory;
- one or more digital signal processing execution units coupled to the instruction decoder for performing digital signal processing functions in response to a received digital signal processing function identifier;
- wherein the instruction decoder transfers instructions which do not implement a digital signal processing function to the one or more general purpose execution units; and
- wherein the one or more digital signal processing execution units receive said digital signal processing function identifiers and perform digital signal processing functions in response to said received digital signal processing function identifiers.

5,781,793
APPARATUS FOR PREVENTING CHANGES OF
COMPUTER CONFIGURATION DATA BY
UNAUTHORIZED USERS

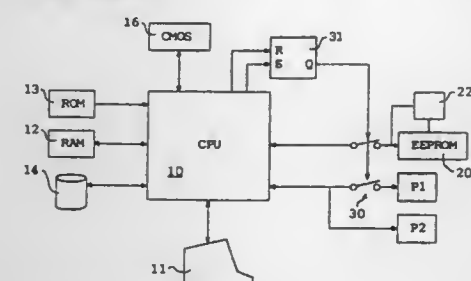
Jean-François Larvoire, Meylan; Thierry Ribollet, Grenoble,
and Bertrand Hays, Echirrolles, all of France, assignors to
Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 264,840, Jun. 23, 1994, Pat. No.
5,535,409, which is a continuation of Ser. No. 868,499, Apr.
15, 1992, abandoned. This application Jan. 30, 1996, Ser. No.
594,007

Claims priority, application France, Apr. 16, 1991, 91 04898
Int. Cl.⁶ G06F 12/00

U.S. Cl. 395—800.37

4 Claims



1. A computer comprising:

- a first memory of a type which is conventionally provided for storing computer configuration data including user-defined configuration data;
- a non-volatile second memory;
- a programmer for reprogramming the non-volatile second memory, the second memory storing said computer configuration data and user-defined confidential data; and
- a central processing unit coupled with the first and second memories and the programmer the first memory being accessible by the central processing unit in a standard memory-access manner and the second memory being accessible by the central processing unit in a memory-access manner different from the standard memory-access manner of the first memory, the central processing unit being operative during power on of the computer to copy into the first memory the computer configuration data but not the user-defined confidential data stored in the non-volatile second memory, the computer configuration data adjusting the computer configuration so the computer is correctly coupled with its peripheral devices.

5,781,794
DATA PROCESSING SYSTEM HAVING AN ADDITION
UNIT FOR PREPARING NEW CONTROL TABLES FOR
NEW HARDWARE MODULES AND DYNAMICALLY
ADDING THE TABLES TO THE PRESENT CONTROL
TABLES

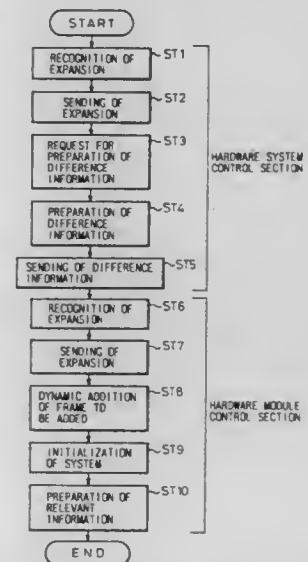
Kotaro Okazaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 20, 1994, Ser. No. 309,031

Claims priority, application Japan, Dec. 1, 1993, 5-301637
Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—822

10 Claims



1. A data processing system formed by one or more kinds of hardware modules, such as processor modules, magnetic disk apparatuses, networks, and so forth, connected through a system bus, and additional hardware modules being added by connecting a frame containing one or more hardware modules to be added in accordance with a request of a user, each of said processor modules comprising:

- a detection means for detecting the request of addition of the frame containing the hardware modules to be added;
- a specifying means operatively connected to the detection means for specifying a structure of hardware modules to be added when detecting the request;
- an addition means operatively connected to the specifying means for preparing new control tables for the hardware modules to be added based on the structure information in the specifying means, and dynamically adding the new control

tables to the present control tables which are already provided for the present hardware modules; and an initializing means operatively connected to the specifying means for initializing the hardware modules to be added.

5,781,795

COMPUTER SYSTEM HAVING MEANS FOR SETTING KEYBOARD CONTROL INFORMATION AT SYSTEM INSTALLATION

Naoki Izuta, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 900,354, Jun. 18, 1992, abandoned.

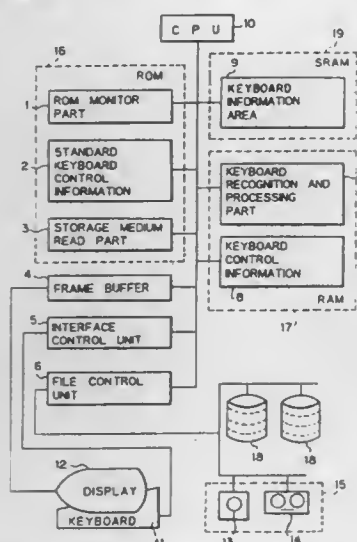
This application May 8, 1995, Ser. No. 436,640

Claims priority, application Japan, Jun. 19, 1991, 3-174417

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—828

11 Claims



1. A computer system having a means for setting keyboard control information at system installation when system programs are replaced, said computer system comprising:

- a keyboard;
- a ROM having a ROM installation part which indicates a key to be pushed on a keyboard to activate a system installation processing on the computer system;
- a random access memory (RAM) which temporarily stores the data generated in the computer system;
- an external storage medium which stores installation information required for the installation processing;
- an internal storage medium which stores keyboard control information and corresponding keyboard identifications (IDs); and
- a keyboard recognition and processing unit which is formed in said RAM and which during system installation a) reads said keyboard ID of said keyboard directly from said keyboard when power is turned on and, b) when recognizing that said keyboard ID does not coincide with the keyboard ID stored in the internal storage medium, reads the keyboard control information corresponding to the keyboard ID from said RAM and stores the read keyboard control information in the internal storage medium, and

said ROM installation part accesses said keyboard control information stored inside said internal storage medium and starts the inherent installation processing based upon said stored keyboard control information.

5,781,796 SYSTEM FOR AUTOMATIC CONFIGURATION OF I/O BASE ADDRESS WITHOUT CONFIGURATION PROGRAM USING READOUT DATA ON COMMON BUS BY RESPONDING DEVICE

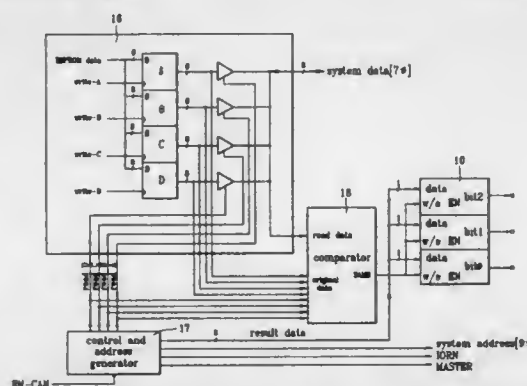
Dong Hoon Lee, Kyungki-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Jun. 6, 1995, Ser. No. 466,997

Int. Cl.⁶ G06F 13/42; 13/368

U.S. Cl. 395—828

13 Claims



1. An automatic configuration apparatus of an input/output base address comprising:

- a plurality of registers for storing a plurality of predetermined data transmitted from a memory according to a write enable signal;
- a plurality of tri-state buffers for buffering each of the plurality of predetermined data according to a read enable signal;
- a control and address generator for outputting a plurality of system control signals, a system address signal, a predetermined I/O base address signal and the read enable signal;
- synthesizer means for combining each of the plurality of predetermined data and system data to produce combination data;
- compare means for comparing the plurality of each predetermined data with said combination data; and
- a configuration register for receiving information representing the predetermined I/O base address according to an output of the compare means.

5,781,797

METHOD AND SYSTEM FOR CONFIGURING DEVICE DRIVER BY SELECTING A PLURALITY OF COMPONENT DRIVERS TO BE INCLUDED IN THE DEVICE DRIVER

Andrew P. R. Crick; Mike Glass, both of Woodinville, Wash.; Thomas J. Shea, Santa Clara, and Shishir Shah, Irvine, both of Calif., assignors to Microsoft Corporation, Redmond, Wash.

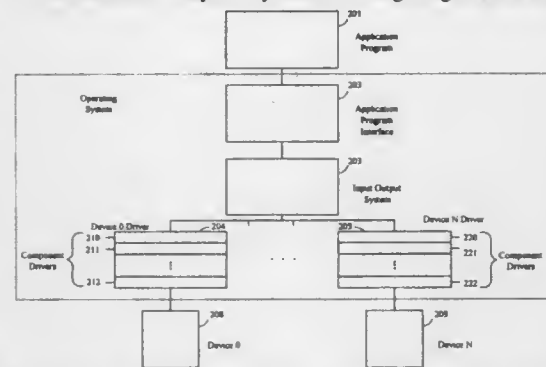
Filed Sep. 30, 1992, Ser. No. 954,920

Int. Cl.⁶ G06F 15/02

U.S. Cl. 395—830

28 Claims

1. A method in a computer system of configuring a device driver



for controlling access to a device, the method comprising the computer-implemented steps of:

defining a multiplicity of component drivers, each component driver for performing a function of a device driver; and with the computer system, selecting a plurality of the component drivers to be included in the device driver, wherein the selected component drivers compose a configured device driver.

5,781,798

METHOD AND APPARATUS FOR PROVIDING HOT SWAPPING CAPABILITY IN A COMPUTER SYSTEM WITH STATIC PERIPHERAL DRIVER SOFTWARE

Dana Lynn Beatty; Richard E. Hamm, both of Boca Raton, Fla., and Yoshi Nishida, Kew Gardens, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

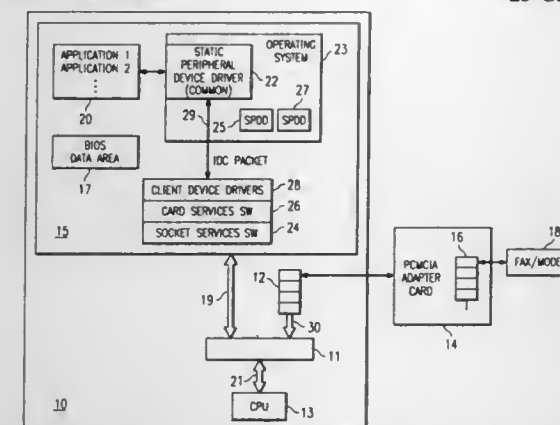
Continuation of Ser. No. 176,104, Dec. 30, 1993, abandoned.

This application Nov. 18, 1996, Ser. No. 751,256

Int. Cl.⁶ G06F 15/40

U.S. Cl. 395—830

25 Claims



1. Apparatus for providing hot swapping capability in a computer system having an adapter card coupled, thereto the adapter card having a plurality of adapter slots and a peripheral device coupled to one of the adapter slots, the apparatus comprising:

- a static peripheral device driver, stored in a memory of the computer, the static peripheral device driver for managing system resources associated with the peripheral device, the static peripheral device driver having a common portion and a device specific portion, wherein the common portion of the static peripheral device driver is normally operative to identify the peripheral device coupled to the computer system only during system initialization;

means for monitoring each of the plurality of adapter slots and for detecting when the peripheral device has been connected to the adapter slot and for detecting when the peripheral device has been disconnected from the adapter slot;

means cooperating with the monitoring means for generating a first inter-device communications data packet when the peripheral device has been connected to the adapter slot and for generating a second inter-device communications data packet when the peripheral device has been disconnected from the adapter slot; and

means for sending the first and second inter-device communications data packets to the common portion of said static peripheral device driver wherein:

in response to the first inter-device communications data packets the common portion of the static peripheral device driver installs system resources after system initialization has taken place; and

in response to the second inter-device communications data packet, the common portion of the static peripheral device driver releases system resources after system initialization has taken place.

5,781,799

DMA CONTROLLER ARRANGEMENT HAVING PLURALITY OF DMA CONTROLLERS AND BUFFER POOL HAVING PLURALITY OF BUFFERS ACCESSIBLE TO EACH OF THE CHANNELS OF THE CONTROLLERS

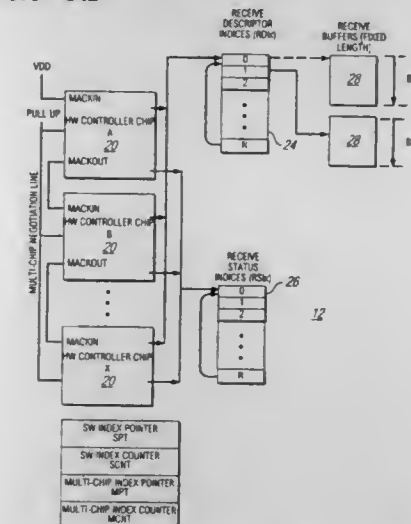
Geary Leger, Fremont; Bhoopal R. Benjaram, Sunnyvale; Peter R. Carpenter, Watsonville; Gary L. Schaps, Fremont, all of Calif., and John Andrew Wishneusky, Bolton, Mass., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Sep. 29, 1995, Ser. No. 536,729

Int. Cl.⁶ G06F 15/02

U.S. Cl. 395—842

36 Claims



motor in the second rotating direction to one of the cartridge spool and the magnetic recording device; and
a second power transfer device that transfers rotation of the second motor in the first rotating direction of the second motor to the winding spool, the second power transfer device transferring rotation of the second motor in the second rotating direction of the second motor to one of the magnetic recording device and the cartridge spool, one of the first motor and the second motor making the magnetic recording device ready for magnetic recording, wherein the one of the first motor and the second motor drives a single sun gear in one direction to supply the film from the cartridge spool and the winding spool and drives the single sun gear in opposite direction of the one direction to touch and withdraw the magnetic recording device from the film.

5,781,811

SHOCK ABSORBER OF MIRROR IN SINGLE LENS REFLEX CAMERA

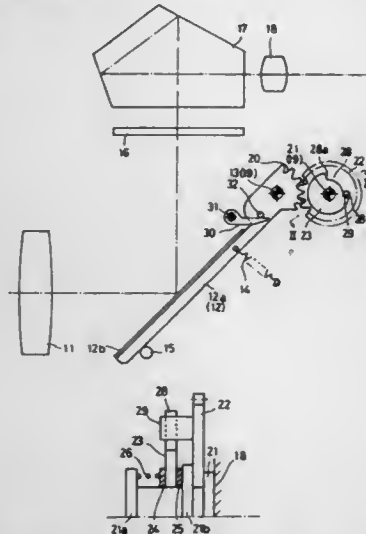
Tetsuji Shono, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1997, Ser. No. 832,195

Claims priority, application Japan, Apr. 9, 1996, 8-086609
Int. Cl.⁶ G03B 19/12

U.S. Cl. 396—358

16 Claims



1. A shock absorber of a mirror in a single lens reflex camera having a mirror which rotates about a shaft to move between a viewing position in which light transmitted through a photographing lens reaches a finder system, and a retracted position in which the mirror is retracted from a light path between said photographing lens and an exposure plane, said shock absorber comprising:

a rotating member which rotates together with the mirror about an axis spaced from a mirror rotation axis;
a brake member which is rotatable about a brake shaft;
a friction member which resists the rotation of the brake member; and

an association member provided on the rotating member to rotate the brake member together with the rotating member and decelerate the mirror when the rotating member rotates in one of the forward and reverse direction, at one of the termination of the upward movement of the mirror from the viewing position to the retracted position and the termination of the downward movement of the mirror from the retracted position to the viewing position.

5,781,812

METHOD AND DEVICE FOR COUPLING A FILM STRIP TO A PROCESSING LEADER SHEET

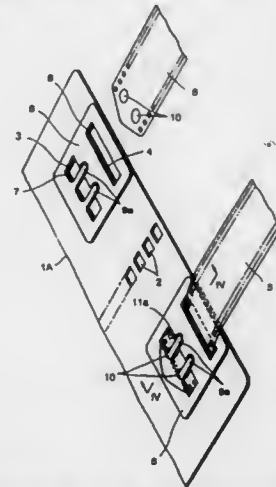
Shigeru Masuda, and Kelgo Arimoto, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Sep. 18, 1996, Ser. No. 715,143

Claims priority, application Japan, Sep. 18, 1995, 7-238233
Int. Cl.⁶ G03D 13/10

U.S. Cl. 396—411

12 Claims



1. A film coupling device for coupling a film strip having a coupler hole formed in a leading section of the film strip for leading the film strip through a processing path of an automatic processing apparatus, said film coupling device comprising:

a leader sheet having transverse front and rear slots spaced apart in a longitudinal direction of said leader sheet and a coupler tongue which extends across the front slot and is engaged by the coupler hole of the film strip so as to couple the film strip to said leader sheet;

a table having a flat top surface for receiving the leader sheet, said table including

film guide means defined by a curved surface formed in the table so as to form an aperture in the flat top surface of the table for guiding the film strip inserted through the rear slot of the leader sheet toward the front slot of the leader sheet, said aperture being shaped such that, when the leader sheet is placed in a specified position on the flat top surface of the table, a rear edge of the front slot of the leader sheet lays above the aperture and is located in close proximity to a front edge of the aperture and a rear edge of the rear slot of the leader sheet is in close proximity to a rear edge of the aperture.

5,781,813

Patent Not Issued For This Number

5,781,814

CAMERA CRANE ARM

Leonard T. Chapman, North Hollywood, Calif., assignor to Chapman/Leonard Studio Equipment, North Hollywood, Calif.

Filed Aug. 14, 1995, Ser. No. 514,831

Int. Cl.⁶ G03B 17/00
U.S. Cl. 396—419

7 Claims

1. A camera crane arm comprising:

a frame;

a central beam section pivotally supported on the frame;

5,781,816

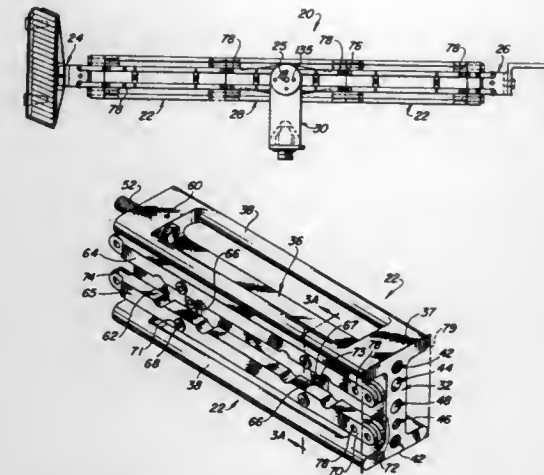
ELECTROMAGNETIC DEVICE FOR PROVIDING A HARD STOP FOR MOVING BLADE APERTURE SYSTEMS

Edward P. Furlani, Lancaster, and Bijan Barzideh, Rush, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 18, 1996, Ser. No. 751,597

Int. Cl.⁶ G03B 9/02; 9/08
U.S. Cl. 396—455

9 Claims

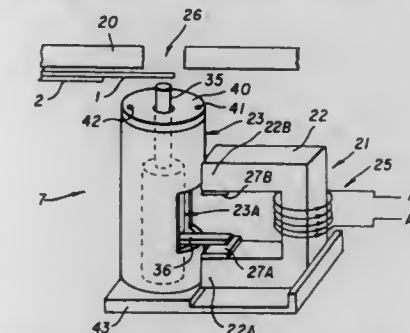


a plurality of outer beam sections spaced apart from the central beam section and forming a crane arm envelope space, the central beam sections and the outer beam sections forming an I-shaped beam;

a camera platform pivotally attached to a first end of the central beam section;

a counterweight platform pivotally attached to a second end of the central beam section; and

a leveling system including leveling rods positioned entirely within the crane arm envelope space and fixed to the frame and pivotally linked to the camera platform, to the counterweight platform, and to an external surface of the central beam section with the leveling rods extending alongside of the entire length of the central beam section.



1. A hard stop for use with an aperture mechanism that has at least one blade moveable along a path between a closed position and at least one open position, and at least one hard stop piston that is moveable between a first position, out of the blade path, and a second position, in the blade path, to position the blade in the open position when an edge of the blade contacts the hard stop piston, wherein the hard stop is comprised of:

a nonmagnetic piston;

electromagnet means including a ferromagnetic C-core, having first and second pole tips, a magnet attached to the piston and a coil wrapped around the midportion of the C-core such that when current is applied in one direction through the coil it causes the magnet and attached piston to move in a first direction to the first position and held in such position by the attraction of the magnet to the first pole tip of the C-core and causes the magnet and attached piston to move to the second position when current is applied in an opposite direction to the coil where it is held in such position by the attraction of the magnet to the second pole tip of the C-core.

5,781,815

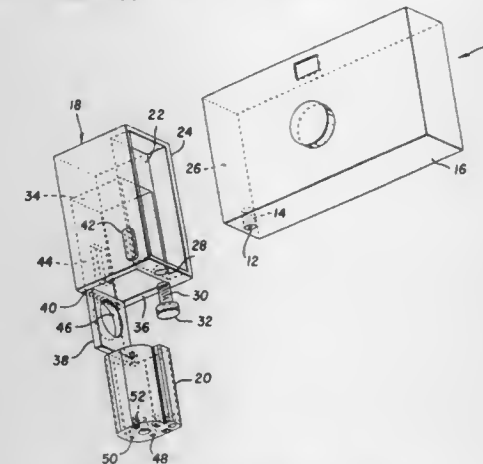
CARTRIDGE HOLDER ATTACHABLE TO CAMERA

John Gasper, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 7, 1997, Ser. No. 852,717

Int. Cl.⁶ G03B 17/24
U.S. Cl. 396—422

8 Claims



1. A camera having a built-in support socket, and a cartridge holder for a film cartridge, are characterized in that:

said cartridge holder is configured to mate with said camera in order to permit the camera to make use of the film cartridge and includes a fastener configured to be received in said support socket to attach the cartridge holder directly to said camera when the cartridge holder mates with the camera.

5,781,817

EXPOSURE CONTROLLING DEVICE AND ENCODER FOR CAMERA

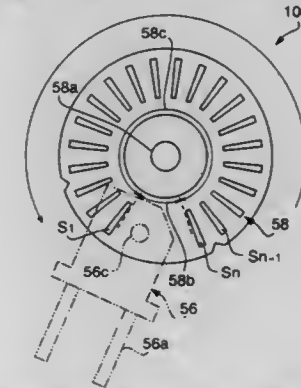
Hiroshi Nomura; Kazuyoshi Azegami, and Takamitsu Sasaki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1996, Ser. No. 773,929

Claims priority, application Japan, Jan. 26, 1996, 8-012317; Feb. 14, 1996, 8-027135; Feb. 16, 1996, 8-029488; Mar. 14, 1996, 8-057879

Int. Cl.⁶ G03B 9/02
U.S. Cl. 396—508

48 Claims



1. An exposure controlling device of a camera having an aperture diaphragm, said exposure controlling device comprising:

a motorized driving mechanism to open and close said aperture diaphragm;
 an encoder for detecting an actuation of said motorized driving mechanism, said encoder comprising:
 a sensor; and
 a rotating disk mounted in connection with said sensor, said rotating disk rotating by less than one revolution in correspondence with the actuation of said motorized driving mechanism, wherein said rotating disk has a first angular range in which an output signal from said sensor does not vary as said rotating disk rotates and a second angular range in which the output signal from said sensor varies in accordance with the rotation of said rotating disk, and wherein said sensor faces said first angular range when said aperture diaphragm is set at a predetermined initial position;
 a detent mechanism that positions said rotating disk at said initial position; and
 a controlling unit that controls said motorized driving mechanism to drive said aperture diaphragm in accordance with signals received from said sensor.

5,781,818

SYSTEM FOR COMMUNICATION BETWEEN CAMERA AND ACCESSORY

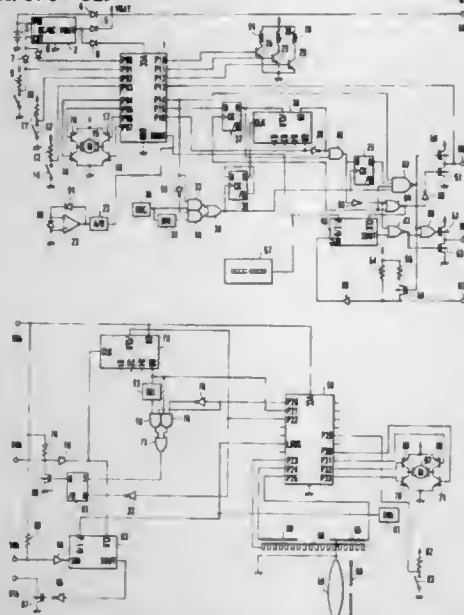
Ryuichi Kobayashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1997, Ser. No. 845,768

Claims priority, application Japan, May 10, 1996, 8-139674
 Int. Cl.⁶ G03B 17/14

U.S. Cl. 396—529

42 Claims



1. A camera system arranged to communicate information between a camera and an accessory mounted on said camera by a first communication method and a second communication method, comprising:

- a determination circuit which determines a type of said accessory mounted on said camera;
- a communication circuit which performs communication by the first communication method when being in a first state and performs communication by the second communication method when being in a second state; and
- a selection circuit which, in accordance with a determination result provided by said determination circuit, selects a state of said communication circuit and selects a frequency of a communication clock signal.

5,781,819
 DEVICE FOR FEEDING FILM CARTRIDGES
 Jürgen Brunner, München; Helmut Zangeneh, Puchheim; Reinhart Wuerfel, München, and Peter Effenberger, Tegernsee, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

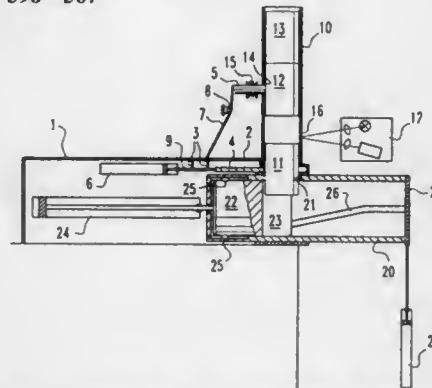
Filed Oct. 25, 1996, Ser. No. 738,674

Claims priority, application Germany, Oct. 25, 1995, 195 39 732.0

Int. Cl.⁶ G03B 13/00

U.S. Cl. 396—567

17 Claims



1. A device for feeding film cartridges, each having a longitudinal axis, in a film handling device, comprising:
 a first feed channel for guiding film cartridges, disposed so that a cartridge in the first channel moves through this channel in the direction of its longitudinal axis by its own weight;
 means for separating adjacent cartridges in the direction of their longitudinal axis, by selectively holding an upper cartridge within the first channel secure by frictional engagement, while allowing a lower cartridge to advance; and
 a second feed channel disposed beneath the first channel for receiving the lower cartridge and guiding the lower cartridge to a feed point, remote from said first channel.

5,781,820

PHOTOGRAPHIC PROCESSOR AND METHOD OF OPERATION

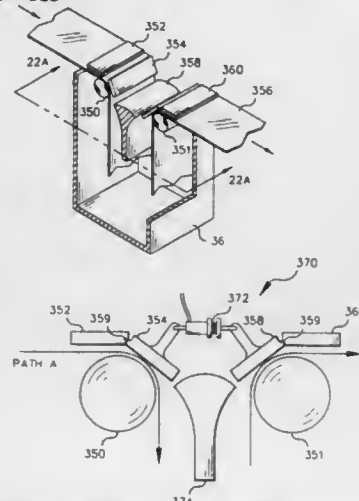
John Howard Rosenburgh, Hilton; David George Foster, West Henrietta, and Edgar Preston Gates, Honeoye, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 30, 1996, Ser. No. 723,798

Int. Cl.⁶ G03D 3/08; 13/04

U.S. Cl. 396—615

8 Claims



1. A modular photographic processor for processing a photosensitive material comprising:
 a processing section containing at least one removable processing tank for holding a processing solution therein, said at least one removable processing tank having an outlet port and an

inlet port, a modular recirculation system having a first end and a second end, said first end of said recirculation system being connected to said inlet port of said at least one removable processing tank by a first fluid connection, and said second end of said recirculation system being connected to said outlet port of said at least one removable processing tank by a second fluid connection, said processing section having at least two distinct photosensitive processing paths, a first processing path of said at least two paths being designed to process photosensitive material according to first processing chemicals and a second processing path of said at least two processing paths being designed to process photosensitive material according to second processing chemicals, said at least one processing tank having two fluid containing sections each capable of containing a different processing solution; and means for diverting the photosensitive material into or by the at least one removable processing tank

wherein said at least one removable processing tank comprises an entrance and an exit, said means for diverting the photosensitive material comprises a first guide roller positioned adjacent the entrance of said at least one removable processing tank, a second guide roller positioned adjacent the exit of said at least one removable processing tank, first and second guide members positioned opposite the first guide roller, third and fourth guide members positioned opposite said second guide roller, a diverting member positioned between the first and second guide rollers, and moving means for moving one of said first and second guide members and one of said third and fourth guide members between a first position and a second position, such that when said one of said first and second guide members and said one of said third and fourth guide members are in the first position the photosensitive material will be guided into and out of the processing tank and when in the second position the photosensitive material will be guided past the at least one removable processing tank.

5,781,821

DEVELOPING APPARATUS HAVING FLOAT SENSOR SYSTEM FOR REPLENISHING TANK

Yoshihiko Nakashima, and Togo Kinoshita, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

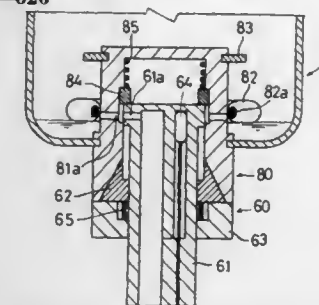
Filed Oct. 24, 1996, Ser. No. 736,574

Claims priority, application Japan, Oct. 26, 1995, 7-279014; Oct. 21, 1996, 8-277817

Int. Cl.⁶ G03D 3/06

U.S. Cl. 396—626

13 Claims



1. A float sensor system for a replenishing tank having an injection nozzle attachable to a liquid feeding nozzle of a replenishing device for replenishing processing liquid to a development processing tank unit, the system comprising:

- a float mounted to the injection nozzle of the replenishing tank and movable between a first position and a second position; and
- a float detecting sensor attached to the liquid feeding nozzle; wherein the float is moved to the first position when an amount of liquid held within the replenishing tank mounted to the liquid feeding nozzle exceeds a predetermined value, whereas, when the liquid amount is smaller than the predeter-

mined value, the float is moved to the second position and also the float detecting sensor outputs a float detection signal.

5,781,822

IMAGE FORMING APPARATUS PROVIDED WITH IMAGE ERASER

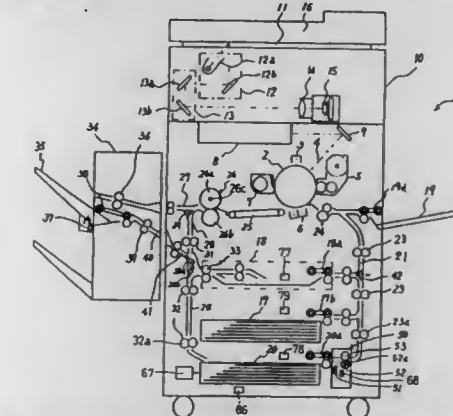
Haruo Nishiyama, Nara; Masanori Matsumoto, Kashiwara; Shigeru Watase, Yamatokoriyama, and Takao Horiuchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 17, 1997, Ser. No. 843,846

Claims priority, application Japan, Apr. 17, 1996, 8-095323
 Int. Cl.⁶ G03G 21/00

U.S. Cl. 399—1

10 Claims



1. An image forming apparatus in which an image formed on a record medium is transferred onto a sheet transported to place and from which the resultant sheet is discharged, the image forming apparatus comprising:

- a tray for image erasure for receiving unnecessary copies;
- sheet feeding means for feeding the unnecessary copies from the tray for image erasure;
- an image eraser for erasing an image, disposed in a passage for transporting the unnecessary copies fed by the sheet feeding means;
- idle-period detecting means for detecting a period when the image forming apparatus is idling; and
- erasure control means in response to a detection signal from the idle-period detecting means, for actuating the image eraser to send the unnecessary copies from the tray for image erasure and execute an image erasure operation.

5,781,823

IMAGE FORMING APPARATUS HAVING A PLURALITY OF IMAGE FORMING SECTIONS EACH HAVING DIFFERENT MEANS OF FORMING IMAGES

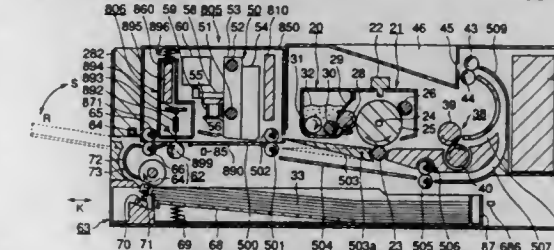
Minoru Isobe, and Noboru Otaki, both of Tokyo, Japan, assignors to Oki Data Corporation, Tokyo, Japan

Filed Mar. 19, 1996, Ser. No. 616,498

Claims priority, application Japan, Mar. 27, 1995, 7-068342
 Int. Cl.⁶ G03G 21/00

U.S. Cl. 399—2

38 Claims



1. A recording apparatus, comprising:
 a medium-feeding mechanism for feeding a medium into a first path;

1. In xerographic developer apparatus having a supply of toner and a hollow and rotatable development roller having magnetic field generating means therein, said development roller having an outer surface operating to carry a quantity of said toner supply to a moving electrostatic latent image that passes adjacent to said development roller, the improvement comprising;
said outer surface of said development roller having an electrodeless Nickel-Phosphorus layer thereon,
said Nickel-Phosphorus layer having a Phosphorus content so as to render said Nickel-Phosphorus layer essentially nonmagnetic.

5,781,831

DEVELOPING APPARATUS, PROCESS CARTRIDGE, IMAGE FORMING APPARATUS AND ASSEMBLY METHOD FOR PROCESS CARTRIDGES

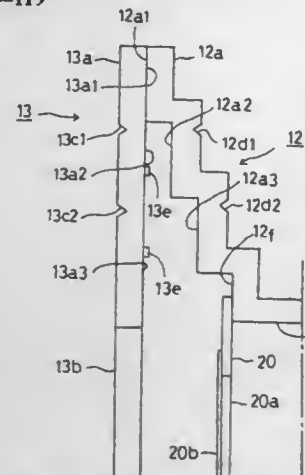
Hiroomi Matsuzaki, Kawasaki; Toshiyuki Karakama, Tokyo, and Kazunori Kobayashi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Continuation of Ser. No. 683,917, Jul. 19, 1996, abandoned, which is a continuation of Ser. No. 345,459, Nov. 21, 1994, abandoned. This application Jan. 15, 1997, Ser. No. 783,795 Claims priority, application Japan, Oct. 24, 1994, 6-258169; Nov. 26, 1994, 5-296410

Int. Cl.⁶ G03G 15/04

U.S. Cl. 399—119

72 Claims



1. A developer casing for an image forming apparatus in which an electrostatic latent image carried on an electrophotographic photosensitive member is developed with developer by developing means, said developer casing comprising:

- a toner container for containing developer, said toner container including a connecting portion having a plurality of first connecting faces serially arranged and separable one-by-one; and
- a developing frame for detachably supporting developing means for developing a latent image carried on an electrophotographic photosensitive member, said developing frame including a connecting portion having a plurality of second connecting faces serially arranged and separable one-by-one, wherein said developing frame and said toner container are connectable to each other by coupling a single second connecting face selected from said plurality of second connecting faces on said developing frame and a single first connecting face selected from said plurality of first connecting faces on said toner container, and said single first and single second connecting faces used for connection are separable from the other of said first and second connecting faces.

5,781,832

IMAGE FORMING APPARATUS IN WHICH RESIDUAL TONER IS RECOVERED BY DEVELOPING MEANS

Ryo Inoue, Musashino; Kenichiro Waki, Kawasaki, and Hiroyuki Suzuki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

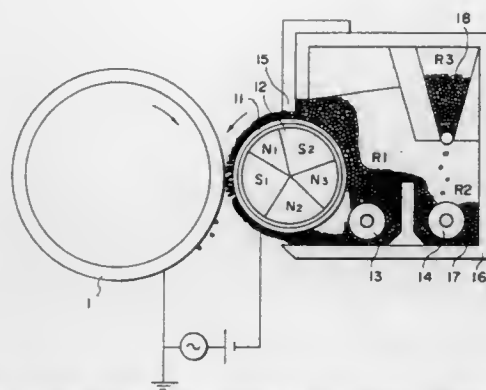
Continuation of Ser. No. 469,678, Jun. 6, 1995, abandoned. This application May 2, 1997, Ser. No. 850,863

Claims priority, application Japan, Jun. 7, 1994, 6-125508 Int. Cl.⁶ G03G 15/06; 21/00

U.S. Cl. 399—149

8 Claims

1. An image forming apparatus comprising:
- an image bearing member;
 - charging means for uniformly charging said image bearing member;
 - exposure means for image-exposing said image bearing member charged by said charging means to form an electrostatic image;



developing means for developing the electrostatic image on said image bearing member with a toner and a recovering residual toner on said image bearing member, said developing means including a developing electrode and voltage applying means for applying a bias voltage having AC component to said developing electrode;

feeding means for feeding a transfer medium; and transferring means for transferring the toner image to the transfer medium,

wherein upon re-operation after a jam, at least one full rotation of said image bearing member effects the recovery of the toner on said image bearing member with stopping said charging of said charging means while a recovering bias voltage is applied to said developing electrode by said voltage applying means, and wherein a center value of said bias voltage upon developing has a polarity the same as the toner but a center value of said bias voltage upon recovery has a polarity reversed to that of the toner.

5,781,833

SEALED LIQUID CHARGING APPARATUS

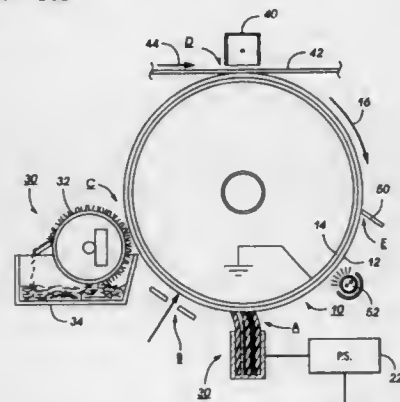
Richard B. Lewis, Williamson, and Michael J. Levy, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1995, Ser. No. 566,241

Int. Cl.⁶ G03G 15/02

U.S. Cl. 399—168

27 Claims



1. An apparatus for applying an electrical charge to a member to be charged, comprising:

- a donor member positioned in contact with the member to be charged for placing an ionically conductive liquid in contact therewith, said donor member including
- a hydrophilic material layer containing the ionically conductive liquid;
- a pair of elastomeric blade elements, each situated on opposite sides of said hydrophilic material layer for preventing escape of the ionically conductive liquid along elongated sides of said donor member; and
- a pair of hydrophobic end segments each situated at opposite ends of said pair of elastomeric blade elements and inter-

posed therebetween for preventing escape of the ionically conductive liquid from said hydrophilic material layer along opposed ends of said donor member; and means for applying an electrical bias to said ionically conductive liquid for inducing transport of ions therethrough to the member to be charged.

5,781,834

APPARATUS AND METHOD FOR REMOVING DEVELOPER LIQUID FROM AN IMAGING SUBSTRATE

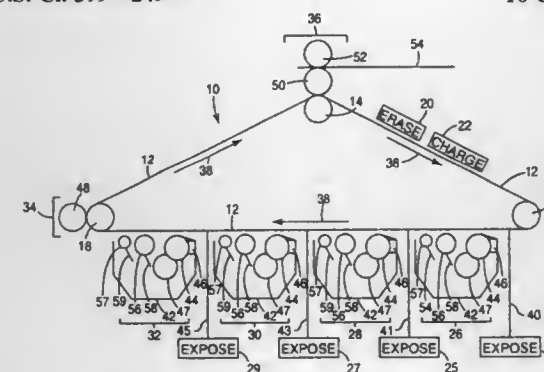
Brian P. Teschendorf; W. Blake Kolb, both of St. Paul, and Thomas M. Milbourn, Mahtomedi, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 876,828, Jun. 16, 1997. This application Aug. 26, 1997, Ser. No. 918,490

Int. Cl.⁶ G03G 15/10

U.S. Cl. 399—249

16 Claims



16. An apparatus for removing developer liquid from an imaging substrate, the apparatus comprising:

- a squeegee roller positioned such that the squeegee roller is driven by the imaging substrate in a first direction, wherein the squeegee roller removes from an imaging region of the imaging substrate a first excess volume of developer liquid; and
- a mechanism that drives the squeegee roller in a second direction opposite to the first direction upon movement of a non-imaging region of the imaging substrate past the squeegee roller to remove from the imaging substrate a second excess volume of developer liquid.

5,781,835

DEVELOPING DEVICE COMPRISING A MAGNETIC MEMBER

Keiji Okano, Tokyo; Takahiro Inoue, Yokohama; Masaki Ojima, Inagi, and Seiji Yamaguchi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

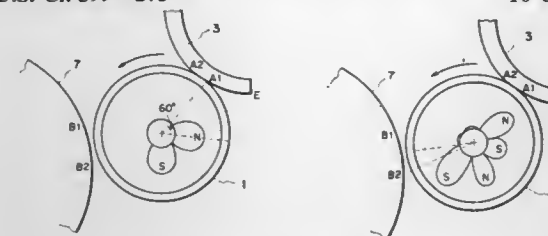
Filed Nov. 13, 1995, Ser. No. 556,697

Claims priority, application Japan, Nov. 11, 1994, 6-301638

Int. Cl.⁶ G03G 15/08; 21/00

U.S. Cl. 399—275

10 Claims



1. A developing device comprising:

- a developer container for accommodating one component magnetic toner;

a rotatable toner carrying member, faced to an image bearing member for bearing an electrostatic image to form a developing zone therebetween, for carrying the toner in said container;

a regulating member, elastically urged to said toner carrying member to form a nip therebetween for regulating a toner layer thickness on said toner carrying member;

a magnet member in said toner carrying member, wherein said magnet member has a magnetic pole, upstream of the nip with respect to a movement direction of said toner carrying member, for supplying the toner in said container to said toner carrying member;

wherein a magnetic flux density in a normal line direction on said toner carrying member in a range from an upstream end of the nip to a downstream end of the developing zone is not more than 20 mT.

5,781,836

DEVELOPING DEVICE HAVING REGULATING ROTARY MEMBER FOR REGULATING TONER AMOUNT

Tatsuya Tada, Yokohama, and Isami Itoh, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

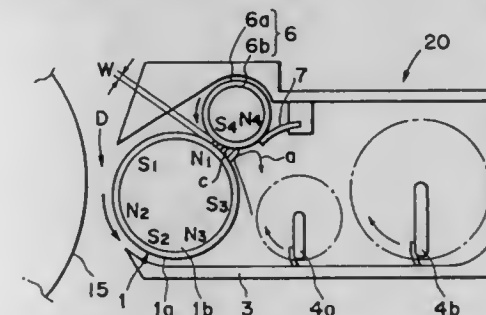
Continuation of Ser. No. 348,222, Nov. 28, 1994, abandoned.

This application Nov. 25, 1996, Ser. No. 755,598

Int. Cl.⁶ G03G 15/09

U.S. Cl. 399—275

4 Claims



1. A developing device comprising:

- a toner carrier, having a magnet therein, for carrying a magnetic toner;
- a regulating rotary member, having a magnet therein, for regulating an amount of toner on said toner carrier, said regulating rotary member being provided to be spaced apart from the surface of said toner carrier by a predetermined distance; and
- magnetic field generating means for applying a magnetic force to said regulating rotary member from a side of said regulating rotary member opposite said toner carrier, said magnetic field generating means applying the magnetic force in a direction substantially opposite to a direction of a magnetic force received by said regulating rotary member from the magnet in said toner carrier.

5,781,837

MAGNETIC FLEXIBLE BELT FOR NON-INTERACTIVE AGITATED MAGNETIC BRUSH DEVELOPMENT

Frank C. Genovese, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

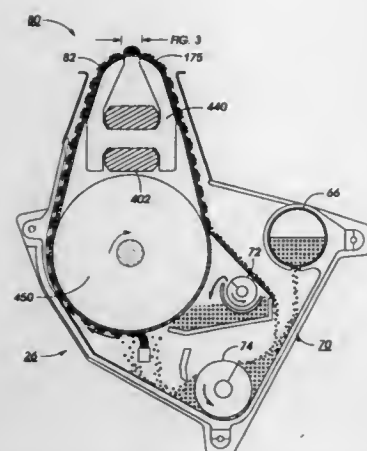
Filed Jun. 30, 1997, Ser. No. 886,165

Int. Cl.⁶ G03G 15/09

U.S. Cl. 399—278

8 Claims

1. In a development system including a member for depositing developer material on an imaging surface having an electrostatic latent image thereon, said development system comprising:



an endless web having a static magnetic field for transporting developer material to a development zone;
means for generating an alternating magnetic field to agitate developer material in said development zone; and
a belt assembly for moving said endless web in a predetermined direction.

5,781,838

TONER SUPPLYING DEVICE FOR USE IN IMAGE FORMING APPARATUS

Tsuyoshi Suzuki, Owariasahi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

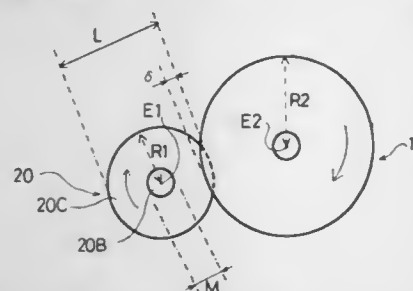
Filed May 23, 1997, Ser. No. 862,705

Claims priority, application Japan, May 27, 1996, 8-131596

Int. Cl. G03G 15/08

U.S. Cl. 399—281

10 Claims



1. A toner supplying device for developing an electrostatic latent image formed on an outer peripheral surface of a photosensitive drum by supplying toner to the image, and then transferring the developed image onto a sheet to form a resultant image, the toner supplying device comprising:

a toner storing member;

a toner supply roller for supplying toner transported from the toner storing member, constructed of a roller shaft and a porous elastomer covering a periphery of the roller shaft, an outer diameter of the toner supply roller being set in a range of 10–13 mm and an outer diameter of the roller shaft being set in a range of 4.5–6.5 mm; and

a developing roller for supplying the toner supplied from the toner supply roller to the electrostatic latent image formed on the surface of the photosensitive drum to develop the image, a distance between a rotating center of the toner supply roller and a rotating center of the developing roller being set shorter by 0.5 mm–0.8 mm than a sum of a radius of the toner supply roller and a radius of the developing roller.

5,781,839

MULTICOLOR IMAGE FORMING APPARATUS

Shinsuke Kikui, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

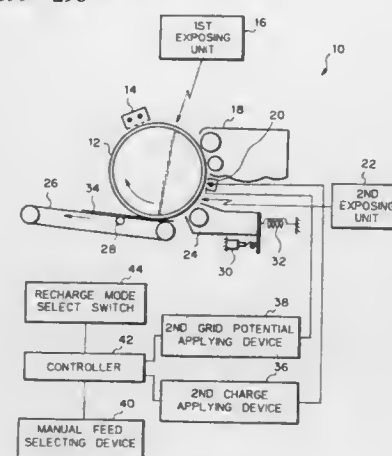
Filed Mar. 5, 1997, Ser. No. 811,950

Claims priority, application Japan, Mar. 5, 1996, 8-073050; Jul. 15, 1996, 8-185044; Jan. 10, 1997, 9-003159

Int. Cl. G03G 15/16

U.S. Cl. 399—296

19 Claims



1. An image forming apparatus comprising:

a plurality of chargers sequentially arranged in a direction of rotation of a photoconductive element, each for charging said photoconductive element;

a plurality of developing units sequentially arranged in said direction, each for forming a toner image of particular color on said photoconductive element;

a contact type transfer device for transferring the toner image from said photoconductive element to a recording medium; and

control means for selectively operating said plurality of chargers and said plurality of developing units to thereby form either a monochrome toner image or a multicolor toner image on said photoconductive element, and for causing, when the monochrome toner image is to be formed, a downstream one of said plurality of chargers in said direction to recharge, before transfer by said transfer device, the toner image formed by an upstream one of said plurality of chargers in said direction and an upstream one of said plurality of developing units in said direction.

5,781,840

PROCESS FOR FUSING A TONER IMAGE TO A SUBSTRATE USING A WICKING AGENT

Jiann H. Chen, Fairport; Tsang J. Chen, Rochester, and Ricki W. Burger, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 6, 1996, Ser. No. 761,254

Int. Cl. G03G 15/20

U.S. Cl. 399—324

28 Claims

21. A wicking agent for use with a fuser member having a surface comprising sites reactive to binding with Si—H functional groups to fuse a toner image to a substrate, said wicking agent comprising:

an organopolysiloxane comprising Si—H functional groups; and at least about 1×10⁻⁶ weight percent of a metal compound that is effective for promoting reaction between said fuser member surface and said organopolysiloxane Si—H functional groups.

5,781,841

TONER COLLECTOR AND IMAGE FORMING UNIT HAVING TONER COLLECTOR BAG

Moriyuki Kouroku, Higashimurayama; Tatsumi Shimanari, Fussa; Takao Yorifuji; Noriki Ono, both of Higashiyama, and Yoshiharu Abe, Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., and Casio Electronics Manufacturing Co., Ltd., both of Tokyo, Japan

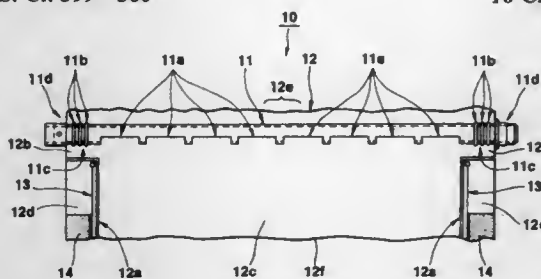
Filed Apr. 11, 1997, Ser. No. 837,923

Claims priority, application Japan, Apr. 11, 1996, 8-092500

Int. Cl. G03G 00/00

U.S. Cl. 399—360

16 Claims



1. A toner collector comprising:

a tube having at least one opening in an intermediate portion between both end portions thereof, one of the both end portions being closed;

a toner collecting bag covering the tube, and connected to the tube at the both end portions of the tube; and

a waste toner transfer member, connected to the other of the both end portions of the tube, for transferring toner to the other of the both end portions from an outer side of the tube.

5,781,842

IMAGE FORMING APPARATUS CAPABLE OF AUTOMATICALLY INTERLEAVING NORMAL IMAGE COPIES BETWEEN CORRESPONDING TRANSPARENCY IMAGE COPIES

Hiroyasu Ito, Okazaki; Tomokazu Kato, and Eiichi Yoshida, both of Toyokawa, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed May 24, 1996, Ser. No. 653,525

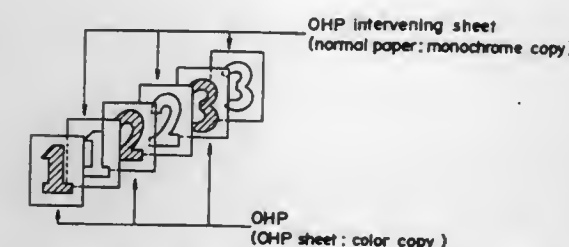
Claims priority, application Japan, May 25, 1995, 7-152197

Int. Cl. G03G 15/00

U.S. Cl. 399—382

7 Claims

output paper on non-sort bin



1. An image forming apparatus capable of forming a color image, comprising:

an image forming means for forming an image;

a setting means for setting an intervening sheet mode, said intervening sheet mode being set by one operation of an input key;

a copy operation control means for controlling a copy operation sequence, when the intervening sheet mode is set, to alternately discharge transparent sheets and corresponding intervening sheets, each transparent sheet being copied from an

original document image and each corresponding intervening sheet being copied from the same original document image, so as to pile on each other; and

an image forming control means for controlling the image forming means, under said copy operation sequence in the intervening sheet mode, to form color copy images on the transparent sheets and to form monochrome copy images on the intervening sheets.

5,781,843

PERMANENT MAGNETS AND METHODS FOR THEIR FABRICATION

Richard L. Anderson, Marengo, Ill., and Fred G. Jones, Alma, Mich., assignors to The Arnold Engineering Company, Marengo, Ill.

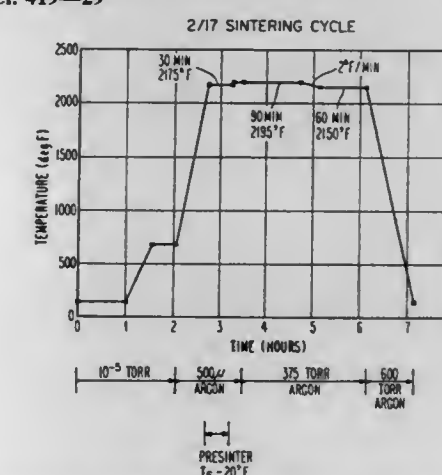
Division of Ser. No. 868,030, Apr. 13, 1992, Pat. No. 5,382,303.

This application Oct. 20, 1994, Ser. No. 326,522

Int. Cl. B22F 3/12; 3/24

U.S. Cl. 419—29

8 Claims



1. A process for producing a permanent magnet having a crystal structure characteristic of Sm₂Co₁₇ and consisting essentially of: from about 25.0 to about 26.3% by weight samarium; from about 47.9 to about 49.6% by weight cobalt; from about 17.0 to about 17.7% by weight iron; from about 4.9 to about 5.2% by weight copper; and from about 2.7 to about 3.3% by weight zirconium; said process comprising:

a. providing a powder compact prepared from at least one melted samarium cobalt metal alloy;

b. selecting a sintering temperature of from about 2050 to about 2300 degrees Fahrenheit;

c. presintering said compact at a temperature of from about 5 to about 50 degrees Fahrenheit less than said preselected sintering temperature for from about 10 to about 90 minutes;

d. sintering said compact at said sintering temperature for from about 30 to about 270 minutes;

e. homogenizing the compact at a temperature lower than the sintering temperature, and between about 2000 and about 2295 degrees Fahrenheit, for from about 20 to about 180 minutes;

f. subjecting said compact to solution thermal treatment; and

g. subjecting said compact to an aging thermal treatment to provide said magnet having a second quadrant loop squareness of at least about 12 KOe.

18. A live voice device for use between a portable cellular telephone and a vehicle with a radio receiver and tape player with

cessor over which the control processor communicates control information with telephone interfaces circuits to which telephone sets are connected via telephone links, comprising:

interface links connected to the first set of the plurality of base stations;

an interface circuit connected directly to the communication medium;

a controller for providing telecommunication service to the assigned wireless telephones by communicating with the control processor exclusively via the medium and interface circuit, the controller emulating an interface circuit in its connection to the medium and emulating a telephone set in its communications with the control processor;

the controller responsive to a first control message for an incoming call received from the control processor for one of the assigned wireless telephones with one of the assigned wireless telephones registered on one of a second set of base stations connected to a second wireless switch for communicating the first control message to the second wireless switch via the communication medium and the interface circuit; and the controller further responsive to a second control message for the incoming call received from the second wireless switch via communication medium and the interface circuit for communicating the second control message to the control processor.

5,781,855

METHOD AND APPARATUS FOR IDENTIFYING CALL RECORDS FOR A CALL IN A CELLULAR COMMUNICATION NETWORK

Martti Reuhkala, Vesterby, Finland; John Hayes, Woking Surrey, England, and Aarne Lindroos, Stockholm, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

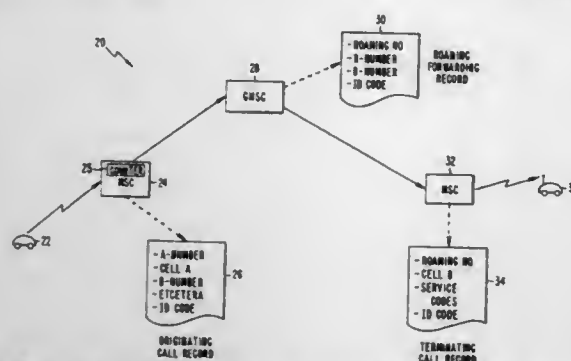
Continuation of Ser. No. 189,564, Feb. 1, 1994, abandoned.

This application Jun. 11, 1996, Ser. No. 661,704

Int. Cl.⁶ H04Q 7/38

U.S. Cl. 455—403

46 Claims



20. A system for identifying call records for a call in at least one cellular communication network, comprising:

means for assigning each call a unique identification code for identifying the call when the call is set up;

means for generating, at a first node, an originating call record comprising a first portion of call related information;

storing means for storing said identification code in a field in said originating call record in a first node;

means for forwarding said identification code to at least a second node in the network when the call is forwarded through at least the second node;

means for generating, at said at least one second node, at least one subsequent call record comprising subsequent portion of call related information; and

storing means for storing said identification code in a field in call records generated by at least said second node, wherein all call records for the call in the network are identifiable by at least a portion of the identification code so as to enable identification of said originating call record and at least one

subsequent call record as relating to the same call at postprocessing of call records generated at said first node and said at least one second node.

5,781,856

CONCENTRATED SUBSCRIBER SYSTEM FOR WIRELESS LOCAL LOOP

Paul E. Jacobs, La Jolla; Juan Faus, and Martin N. Chang, both of San Diego, all of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

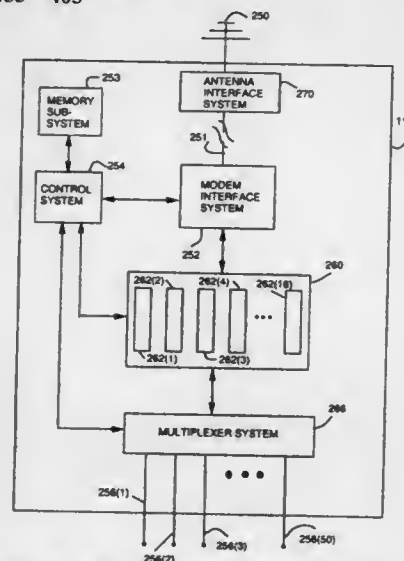
Continuation of Ser. No. 384,291, Jan. 31, 1995, abandoned.

This application May 5, 1997, Ser. No. 850,952

Int. Cl.⁶ H04Q 7/20; 7/30

U.S. Cl. 455—403

22 Claims



1. A concentrated subscriber system for providing telecommunications service to a set of subscriber units comprising: an RF transceiver system for transmitting and receiving radio wave frequency signals;

a set of modems for interfacing said set of subscriber units with said RF transceiver system, said set of modems having fewer modems than said set of subscriber units has subscriber units; a control system for, receiving paging information including an intended subscriber unit from one of said set of modems, determining if said intended subscriber unit is part of said concentrated subscriber system, supplying encoding information associated with said intended subscriber unit to a modem from said set of modems, coupling said modem to said intended subscriber unit using said multiplexer; and providing a modem from said set of modems with page monitoring information, wherein

said modem monitors for a page message generated in accordance with said page monitoring information.

5,781,857

METHOD OF ESTABLISHING AN EMAIL MONITOR RESPONSIVE TO A WIRELESS COMMUNICATIONS SYSTEM USER

Yeou H. Hwang, Naperville, and Jonathan R. Engelsma, South Elgin, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

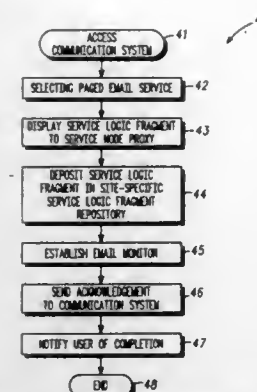
Filed Jun. 28, 1996, Ser. No. 675,505

Int. Cl.⁶ H04M 11/00; G05B 23/02

U.S. Cl. 455—412

2 Claims

1. For use in providing services to a user of a wireless communication system, a method of establishing an email monitor external to the wireless communication system comprising: accessing the wireless communication system; selecting an email service option;



dispatching a service logic block from the wireless communication system to an email system external to the wireless communication system; depositing said service logic block in a site-specific service logic block repository of said email system, said service logic block monitoring for predetermined parameters; establishing said email monitor for said email system; and sending an acknowledgement of the establishment of said email monitor to said communication system; and notifying a user of receipt of the acknowledgment; in response to said service logic block detecting said predetermined parameters, said email monitor notifying the wireless communication system when an email message arrives at said email system.

5,781,858

METHOD AND ARRANGEMENT FOR HANDLING AND INSPECTING SUPPLEMENTARY SERVICES INTENDED FOR A MOBILE TELEPHONE UNIT

Jörgen Lantto; Ola Stille, both of Stockholm; Mats Gandils, Älvsjö; Bo Åström, Hagersten; Arne Pehrsson, Huddinge, all of Sweden, and Ari Peltonen, Aachen, Germany, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE95/00090, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO95/21509, PCT Pub. Date Aug. 10, 1995

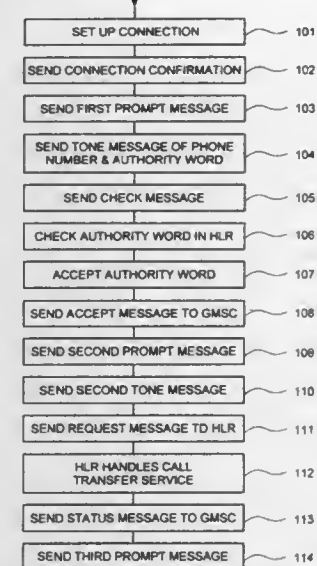
PCT Filed Jan. 31, 1995, Ser. No. 530,161

Claims priority, application Sweden, Feb. 1, 1994, 9400313

Int. Cl.⁶ H04Q 7/22

U.S. Cl. 455—414

16 Claims



1. A method of handling supplementary services for a mobile unit in a telecommunications system, wherein the telecommunications system includes a public land mobile network to which the mobile unit is subscribed and a main switch to which a home

location register is connected and in which the mobile unit's supplementary services are stored, the method comprising the steps of:

setting up a non-call related connection for handling the supplementary services between any chosen telephone unit in the telecommunications system and the home location register;

sending an authority word belonging to the mobile unit and an identification of the mobile unit to the home location register from the chosen telephone unit telecommunications system via a telephone connection intended for handling supplementary;

checking the sent authority word by comparing the sent authority word with an authority word known to the home location register;

accepting the sent authority word received from the telephone unit, if authorized;

sending a specification for handling a supplementary service from the telephone unit to the home location register; and performing the specified handling of the supplementary service.

5,781,859

RF REPEATER ARRANGEMENT WITH IMPROVED FREQUENCY REUSE FOR WIRELESS TELEPHONES

Andrew Beasley, Lake Errock, Canada, assignor to PCS Solutions, LLC, Englewood Cliffs, N.J.

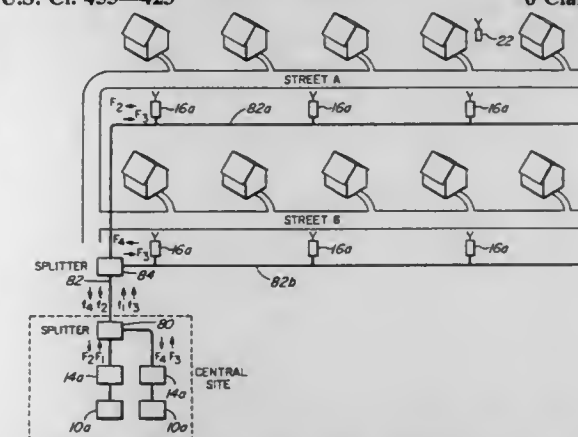
Continuation of Ser. No. 622,934, Mar. 27, 1996, which is a continuation of Ser. No. 188,752, Jan. 31, 1994, abandoned.

This application Sep. 26, 1996, Ser. No. 720,224

Int. Cl.⁶ H04Q 7/20

U.S. Cl. 455—423

6 Claims



1. An RF repeater for transmitting a transmit signal within a wireless telephone system incident to receiving a receive signal from a geographically proximate mobile handset, the RF repeater comprising:

a transmit section for broadcasting the transmit signal as a radio signal from the RF repeater to the mobile handset;

a receive section for receiving at the RF repeater the receive signal broadcast as a radio signal by the mobile handset;

a signal energy detector associated with the receive section and responsive to energy levels of the received signal below a predetermined threshold level to provide an inhibit output; and

a control device associated with the transmit section and responsive to the inhibit output for inhibiting the broadcast of the transmit signal by the transmit section.

wherein the control device comprises a synchronous circuit for performing a logical and operation on the inhibit output and a timing signal to inhibit the broadcast of the transmit signal by the transmit section.

5,781,860

METHOD FOR CONTROLLING SUBSCRIBER STATIONS IN A RADIO-TELECOMMUNICATIONS SYSTEM

Jussi Loppönen, Helsinki, and Mika Heiskari, Espoo, both of Finland, assignors to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI94/00374, § 371 Date Apr. 22, 1996, § 102(e) Date Apr. 22, 1996, PCT Pub. No. WO95/06395, PCT Pub. Date Mar. 2, 1995

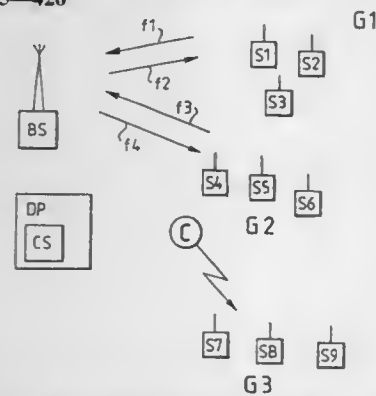
PCT Filed Aug. 25, 1994, Ser. No. 601,037

Claims priority, application Finland, Aug. 26, 1993, 933764

Int. Cl.⁶ H04B 1/00; H04M 1/00

U.S. Cl. 455-426

9 Claims



1. A method for controlling subscriber stations in a trunked radiotelecommunications system which includes at least one exchange, at least one base station, and a plurality of subscriber stations sharing radio channels, the subscriber stations having respective user interfaces in which system at least some of the subscriber stations can communicate with one another on a same direct mode channel having a channel identifier, the method comprising the steps of:

directing at least some of the subscriber stations to said direct mode channel, by transmitting a command that contains the channel identifier of said direct mode channel to the respective said subscriber stations,

in response to receiving said command, the respective said subscriber stations moving to said direct mode channel indicated by said channel identifier, whereby each respective said subscriber station is able to directly communicate with the others of the respective said subscriber stations directed to said direct mode channel, and

informing the user of each subscriber station directed to the direct mode channel via the user interface of the respective said subscriber station that the respective said subscriber station can communicate on said direct mode channel.

5,781,861

METHOD FOR SHEDDING TRAFFIC LOAD IN CODE DIVISION MULTIPLE ACCESS MOBILE COMMUNICATION SYSTEM

Chang-Soon Kang, Seo-ku; Seon-Ho Hwang, Yusong-ku; Young-Nam Han, Yusong-ku; Myoung-Jin Kim, Yusong-ku, and Hun Lee, Yusong-ku, all of Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Sep. 10, 1996, Ser. No. 709,842

Claims priority, application Rep. of Korea, Dec. 6, 1995, 47061

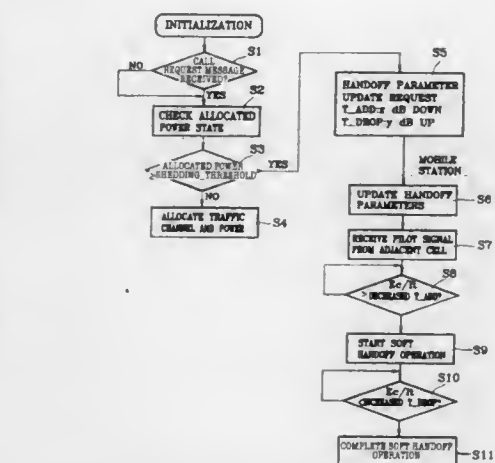
Int. Cl.⁶ H04B 7/26

U.S. Cl. 455-442

6 Claims

1. A method for shedding traffic load in a code division multiple access mobile communication system, said method performing a soft handoff operation using the ratio of a forward link pilot signal power to the sum of all interference signals power to transfer a portion of traffic load in the present serving cell with a high traffic density to an adjacent cell with a low traffic density, comprising the steps of:

(a) checking the total amount of power allocated to forward code division multiple access channels and requesting all mobile



stations in the present serving cell to update first and second handoff parameters, if the total amount of allocated power exceeds a threshold value of power which can be allocated to said mobile stations in the present serving cell;

(b) updating the first handoff parameters of said mobile stations by decreasing them by a first predetermined value received from a network and the second handoff parameters of said mobile stations by increasing them by a second predetermined value received from said network and starting the soft handoff operation from a part of said mobile stations in the present serving cell to the adjacent cell if the a pilot signal power received from the adjacent cell to the sum of powers of all interference signals power is higher than said updated first handoff parameter; and

(c) completing the soft handoff operation from said part of said mobile stations in the present serving cell to the adjacent cell if the ratio of the a pilot signal power received from the present serving cell to the sum of all interference signals power is lower than said updated second handoff parameter; whereby the amount of traffic load in the present serving cell with the high traffic density can effectively be shed to the adjacent cell with the low traffic density.

5,781,862

METHOD FOR CONTROLLING FUNCTIONS FOR CHANGING RADIO AREAS OF COMMUNICATIONS TERMINAL DEVICES

Mauricio Da Silva, Dortmund, and Ulrich Leimkoetter, Gelsenkirchen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

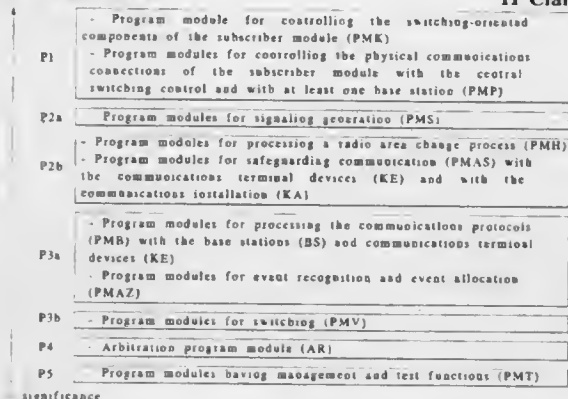
Filed Apr. 12, 1996, Ser. No. 631,552

Claims priority, application Germany, Apr. 12, 1995, 195 13 959.3

Int. Cl.⁶ H04Q 7/20

U.S. Cl. 455-436

11 Claims



1. A method for controlling functions for change of radio area of communications terminal devices in a program module structure of a subscriber module of a wireless communications system, the

subscriber module being connected at a subscriber side with at least one base station for wireless connection of at least one communications terminal device, and at a switching side said subscriber module being connected with a central communications installation for creation of access to a communications network, comprising the steps of:

assigning a highest priority to program modules for controlling hardware components of the subscriber module and to program modules for controlling physical communications connections of the subscriber module with a central switching control and with the at least one base station;

assigning a second highest priority to program modules for signaling generation of tone and call signals, to program modules for processing of a radio area change process of a communications terminal device connected tirelessly to a base station, to program modules for safeguarding communication with the communications terminal devices, and with the central communications installation;

assigning a third highest priority to program modules for processing communications protocols with the base stations and the communications terminal devices, to program modules for event recognition and event allocation of events transmitted by the communications terminal devices, and to program modules for switching;

assigning a fourth-highest priority to an arbitration program module for reading out of safeguarded and allocated events and for calling up of a program module designated by a located event;

assigning a lowest priority to program modules having management and test functions; and

processing the program modules according to said assigned priorities.

5,781,863

PRE-LOCATION OF AUTHENTICATION INFORMATION IN A PERSONAL COMMUNICATION NETWORK

Bruce Merrill Bales, Louisville, and Stephen Max Thieler, Boulder, both of Colo., assignors to Lucent Technologies Inc., Murray Hill, N.J.

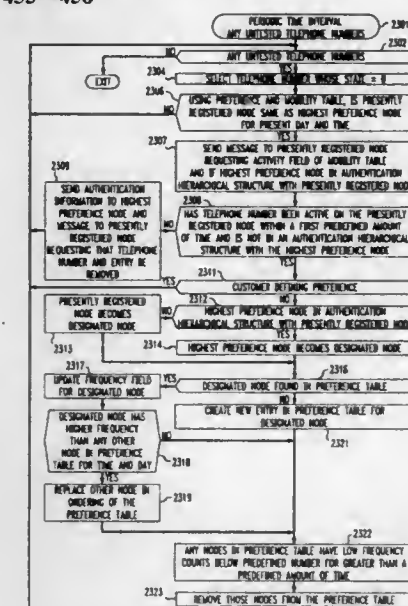
Continuation of Ser. No. 269,258, Jun. 30, 1994, abandoned.

This application Sep. 5, 1997, Ser. No. 924,249

Int. Cl.⁶ H04Q 7/38

U.S. Cl. 455-456

18 Claims



1. A method of pre-locating authentication information to a highest preference switching node before a mobile telephone registers on the highest preference switching node, comprising the steps of:

determining the highest preference switching node to receive pre-location of authentication information; and transmitting a copy of the authentication information to the highest preference switching node upon the mobile telephone being registered on a resident switching node.

5,781,864

CELLULAR SYSTEM CONDITIONER WHICH OVERRIDES A DISCONNECT FOR ACTIVE RADIOS WIRELESSLY COMMUNICATING WITH MOBILES LOCATED IN PRE-IDENTIFIED TERRITORIAL POSITIONS

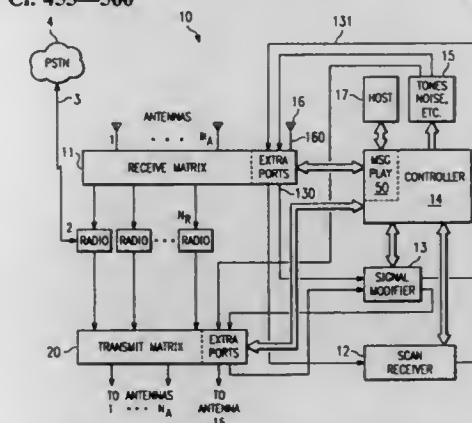
Douglas O. Roudink, Bellevue, Wash., assignor to Metawave Communications Corporation, Redmond, Wash.

Filed May 20, 1996, Ser. No. 651,980

Int. Cl.⁶ H04B 1/00; 7/00; 1/60; 1/702

U.S. Cl. 455-560

48 Claims

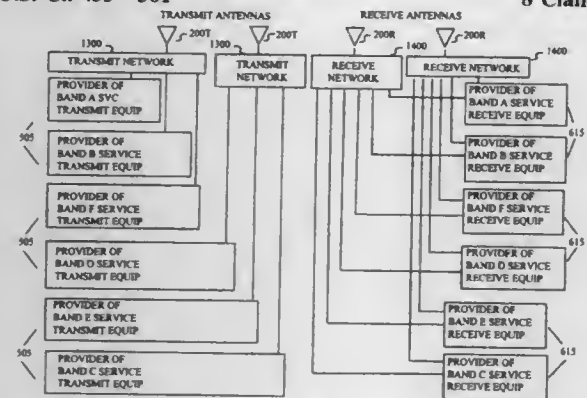


1. A radio signal conditioning system, comprising: at least one matrix switch; a plurality of antennas, the antennas in information communication with each matrix switch; at least one active radio, the at least one active radio also in information communication with each matrix switch; each active radio is also in information communication with a remote party through a land line. a scan receiver, the scan receiver also in information communication with each switch matrix, the scan receiver monitoring prevailing radio conditions at ones of the antennas and ones of the radios; a controller, the controller in information communication with each matrix switch and with the scan receiver, the controller receiving information regarding prevailing radio signal conditions from one or more information sources, said information sources including the scan receiver, the controller instructing each matrix switch to connect the at least one active radio to ones of the antennas according to said received radio condition signal information; a disconnect means, said disconnect means disposed to automatically disconnect ones of said remote parties from active radios that, for a predetermined period of time, receive radio signals below a predetermined power level; and the controller is disposed to override ones of said disconnects for active radios wirelessly communicating with mobiles located in pre-identified territorial positions.

5,781,865
PCS CELL SITE SYSTEM FOR ALLOWING A PLURALITY OF PCS PROVIDERS TO SHARE CELL SITE ANTENNAS
 R. Keith Gammon, Kennesaw, Ga., assignor to Scientific Research Corporation, Atlanta, Ga.
 Filed May 20, 1996, Ser. No. 650,618
 Int. Cl.⁶ H04B 1/38

U.S. Cl. 455—561

8 Claims



5. A transmitter system for allowing the transmission of a plurality of frequency bands at a PCS cell site, said transmitter system comprising:

- a first transmitter adapted to transmit signals in a first frequency band;
- a second transmitter adapted to transmit signals in a second frequency band which is non-adjacent to said first frequency band;
- a first transmitter network coupled to said first and second transmitters, wherein said first transmitter network is adapted to filter said first and second non-adjacent frequency bands;
- a first transmit antenna coupled to said first transmitter network, wherein said first transmit antenna is adapted to transmit said first and second non-adjacent frequency bands in a particular direction at a certain beamwidth;
- a second transmitter network coupled to said first and second transmitters, wherein said second transmitter network is adapted to filter said first and second non-adjacent frequency bands; and
- a second transmit antenna coupled to said second transmitter network wherein said second transmit antenna is adapted to transmit said first and second non-adjacent frequency bands in a direction different than that of said first transmit antenna.

5,781,866

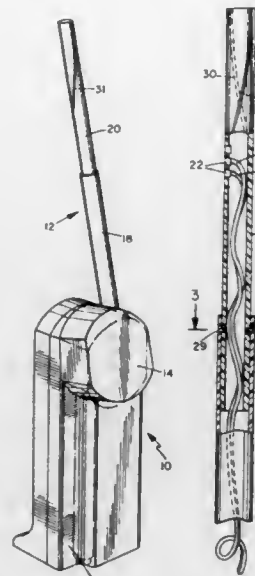
Patent Not Issued For This Number

5,781,867
TELESCOPING MAST ANTENNA FOR WIRELESS DEVICES HAVING ROTATING MAST
 Stephen B. Tidwell, Carlsbad, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.
 Filed May 30, 1996, Ser. No. 655,173
 Int. Cl.⁶ H04B 1/38

U.S. Cl. 455—575

13 Claims

1. A telescoping antenna assembly, comprising: a tubular base for securing to a wireless telephone handset; an extendible mast telescopically mounted on the tubular base for movement between an extended position extending out of the tubular base and a retracted position in which at least a portion of the mast is retracted within the tubular base; the tubular base having a cylindrical inner surface and the mast having an opposing cylindrical outer surface for fitting within the tubular base in the retracted position; and



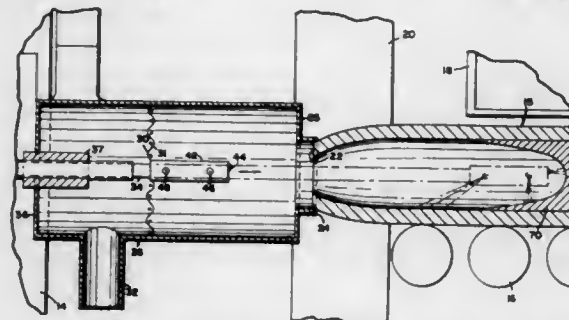
one of the opposing cylindrical surfaces of the base and mast having a helical groove extending along at least part of its length, and the other cylindrical surface having at least one pin for sliding engagement in the groove, whereby the engagement of the pin in the helical groove causes the mast to rotate relative to the base in a first direction as the mast is moved from the retracted to the extended position, and in a second direction as the mast is moved from the extended to the retracted position.

5,781,868

HIGH PRESSURE WASHOUT OF CHEMICAL AGENTS
 Paul L. Miller, Minnetonka; Heather L. Getty, Plymouth, and Millard M. Garrison, Edina, all of Minn., assignors to Alliant Techsystems Inc., Hopkins, Minn.
 Continuation of Ser. No. 365,860, Dec. 29, 1994, abandoned.
 This application Oct. 10, 1996, Ser. No. 728,668

Int. Cl.⁶ D62D 3/00
 U.S. Cl. 588—200

20 Claims



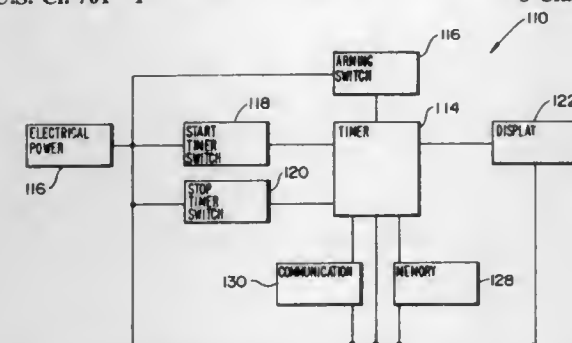
1. A method for the removal of chemical agents from chemical munitions comprising:

- supplying fluid from a fluid supply means;
- pressurizing the fluid to high pressures using a pressurizing means which pressurizes the fluid from about 1,500 psi to about 45,000 psi;
- projecting the fluid onto the chemical agent contained in a chemical munition using a directing means inserted or withdrawn at a rate of more than 0 to about 200 inches/minute whereby the chemical agent is removed from the interior of the body of the chemical munition; the directing means having a hollow lance, a nozzle and a plurality of orifices through which the fluid is projected, each of the plurality of orifices having a diameter in the range of about 0.001" to about 0.250".

5,781,869
VEHICLE REACTION TIMER
 John K. Parlett, Jr., P. O. Box 126 6820 New Market Turner Rd., Mechanicsville, Md. 30136-6113, and Helmut R. Forren, Duluth, Ga., assignors to John K. Parlett, Jr., Mechanicsville, Md.
 Filed Jan. 29, 1997, Ser. No. 790,714
 Int. Cl.⁶ G06F 19/00

U.S. Cl. 701—1

8 Claims



1. A system for measuring reaction time of a vehicle wherein the vehicle has a source of electricity, said system comprising:

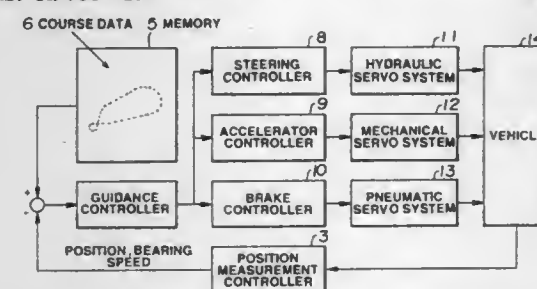
- a timer;
- first means in operative relationship with said timer and with said vehicle's source of electricity for providing electricity to said timer;
- second means in operative relationship with said vehicle, with said timer and with said first means for starting said timer when the vehicle driver acts on said vehicle to start forward motion of said vehicle;
- third means in operative relationship with said vehicle, with said timer and with said first means for stopping said timer when said vehicle attains a predetermined forward acceleration; and
- display means in operative relationship with said timer and with said first means for displaying the time elapsed from said starting of said timer to said stopping of said timer.

5,781,870

VEHICLE STEERING ANGLE CONTROL DEVICE
 Yukio Okawa, Yokohama, Japan, assignor to Komatsu Ltd., Tokyo, Japan
 PCT No. PCT/JP95/02297, § 371 Date May 8, 1997, § 102(e) Date May 8, 1997, PCT Pub. No. WO96/15483, PCT Pub. Date May 23, 1996
 PCT Filed Nov. 10, 1995, Ser. No. 836,133
 Claims priority, application Japan, Nov. 10, 1994, 6-276670
 Int. Cl.⁶ G06F 165/00; G05D 1/02

U.S. Cl. 701—25

3 Claims



1. A vehicle guidance system for storing position data pertaining to a predetermined driving course and for guiding the vehicle along the predetermined driving course by controlling the steering angle of the vehicle on the basis of this position data, comprising: memory means for storing, for each point on the aforementioned predetermined driving course, data indicating the coordinate position for the point in question and the direction in which the vehicle should advance; position detection means for detecting the current coordinate position of the vehicle;

speed detection means for detecting the current speed of the vehicle; selection means for selecting from the memory contents of the memory means coordinate position data for the point on the predetermined driving course that is closest to the current coordinate position detected by the position detection means and direction of advance data for this closest point; deviation calculation means for calculating the current deviation of vehicle position in the direction perpendicular to the direction of vehicle advance corresponding to the selected direction of advance data on the basis of the coordinate position data and direction of advance data selected by the selection means and the current coordinate position detected by the position detection means; steering angle calculation means for calculating the vehicle steering angle so as to decrease with increased detected travel speed on the basis of the deviation calculated by the deviation calculation means and the current speed detected by the speed detection means in order to reduce deviation to zero; and control means for controlling the steering angle of the vehicle on the basis of the vehicle steering angle calculated by the steering angle calculation means.

5,781,871

METHOD OF DETERMINING DIAGNOSTIC THRESHOLD VALUES FOR A PARTICULAR MOTOR VEHICLE TYPE AND ELECTRONIC COMPUTING UNIT FOR A MOTOR VEHICLE

Manfred Mezger, Markgroeningen, and Klaus Ries-Mueller, Bad Rappenau, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

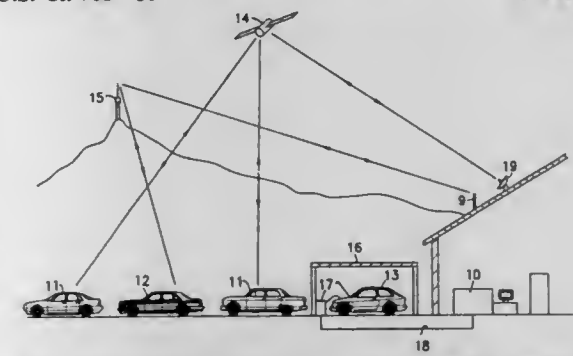
Filed Oct. 23, 1995, Ser. No. 546,854

Claims priority, application Germany, Nov. 18, 1994, 44 41 101.4

Int. Cl.⁶ G07C 5/08

U.S. Cl. 701—33

13 Claims



1. A method of determining a diagnostic threshold value for a preselected vehicle type, each of a plurality of motor vehicles of the preselected motor vehicle type having at least one electronic computing unit, each of the computing units having a programmable memory storing at least one diagnostic threshold value, a microcomputer for comparing at least one diagnostic data item to the at least one diagnostic threshold value and an interface for data communication with an external central computer, the method comprising the steps of:

- transmitting the at least one diagnostic data item from each of a plurality of the computing units to the external central computer;
- storing the diagnostic data items in a database of the external central computer;
- forming a statistical distribution for the diagnostic items within the external central computer; and
- establishing a new value for the at least one diagnostic threshold value as a function of the statistical distribution.

5,781,872

ON-VEHICLE DATA PROCESSING AND DISPLAY SYSTEM RESPONSIVE TO A VEHICLE MODE OF OPERATION

Masanori Konishi; Shinji Kubota, both of Suwa; Hisatomo Ohki, and Kazuyuki Tomita, both of Atsugi, all of Japan, assignors to Seiko Epson Corporation, Tokyo, and Unisia Jecs Corp., Atsugi, both of Japan

PCT No. PCT/JP94/01659, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO95/10026, PCT Pub. Date Apr. 13, 1995

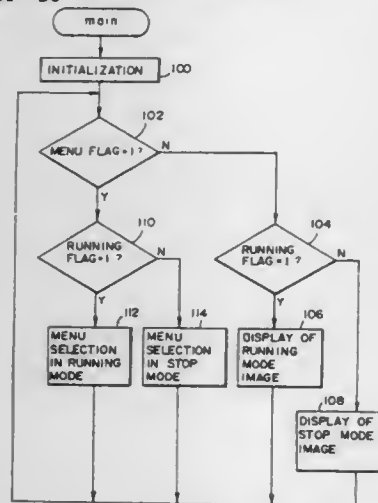
PCT Filed Oct. 4, 1994, Ser. No. 448,447

Claims priority, application Japan, Oct. 4, 1993, 5-273194

Int. Cl.⁶ B60Q 9/00

U.S. Cl. 701—36

16 Claims



12. An on-vehicle data processing system, comprising: on-vehicle data display means; means for sensing a driving speed of a vehicle, wherein said on-vehicle data display means displays on-vehicle data of a first information type when said driving speed is greater than a predetermined driving speed and displays on-vehicle data of a second information type when said driving speed is less than said predetermined driving speed while an engine is running, and wherein the first information type is displayed using elements larger than said second information type.

5,781,873

APPARATUS AND METHOD FOR CONTROLLING DAMPING FORCE CHARACTERISTIC OF VEHICULAR SUSPENSION SYSTEM

Mitsuo Sasaki, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

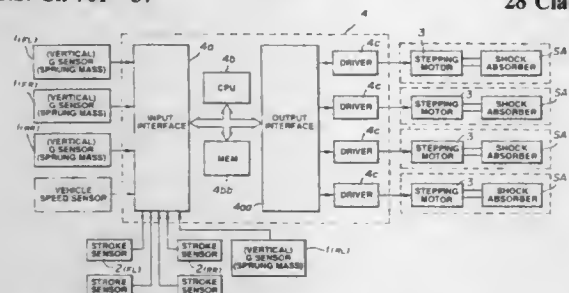
Filed Sep. 29, 1995, Ser. No. 536,751

Claims priority, application Japan, Sep. 29, 1994, 6-235468

Int. Cl.⁶ B60G 17/015

U.S. Cl. 701—37

28 Claims



24. A method for controlling a damping force characteristic of a vehicular suspension system, said vehicular suspension system having a shock absorber which is interposed between a sprung

mass of a vehicle body and an unsprung mass of a corresponding one of road wheels, said method comprising the steps of:

- a) detecting a behavior of the vehicle body as the sprung mass and outputting a first signal indicating the behavior of the vehicle body;
- b) converting the first signal outputted by said detecting step a) into a second signal indicating a sprung mass vertical velocity of the sprung mass;
- c) detecting a relative displacement between the sprung mass and unsprung mass and outputting a third signal indicating a relative velocity between the sprung mass and unsprung mass on the basis of the detected relative displacement therebetween; and
- d) generating and outputting the control signal according to the second signal outputted at said step b) and third signal outputted at said step c), said control signal being supplied to an actuator so that the damping force exerted by said shock absorber is controlled, wherein said actuator is a low responsive characteristic actuator, and wherein at said step d) the control signal in a predetermined low frequency band is formed such that a duty ratio between a drive and hold of a drive command generated according to the control signal to said actuator becomes small when no variation in said control signal occurs and becomes half even when a variation in said control signal becomes large, so that actuator follows the variation of said control signal.

5,781,874

CONTROL SYSTEM FOR A COMPACTION ROLLER VIBRATORY MECHANISM

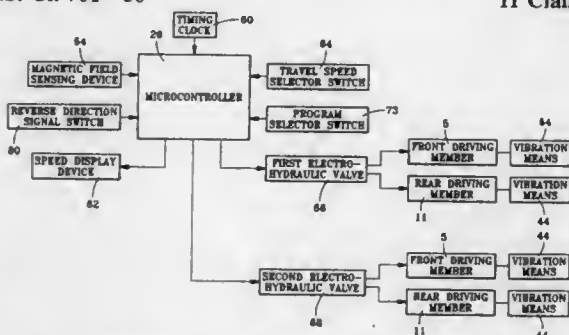
G. Louis Troppman, Maugansville, Md., and Kenneth E. Gasper, Chambersburg, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 28, 1995, Ser. No. 563,693

Int. Cl.⁶ E01C 19/28

U.S. Cl. 701—50

11 Claims



1. A system for controlling a vibratory mechanism on a vibratory compaction vehicle comprising:

- (a) a first vehicle frame portion mounted on a front driving member rotatably connected to a first transverse axle;
- (b) a second vehicle frame portion mounted on a rear driving member rotatably connected to a second transverse axle parallel to said first axle, said first and second frame portions being connected together;
- (c) propulsion means for propelling said vehicle including a first hydraulic motor means for rotating one of said driving members;
- (d) vibration means mounted on said one driving member for causing vibratory impacts to be transmitted by said one driving member to material to be compacted thereunder;
- (e) means for determining a longitudinal speed of movement of said vehicle; and
- (f) means for automatically turning said vibration means on, when said longitudinal speed is within a preselected range.

5,781,875

FUEL METERING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hidetaka Maki; Shusuke Akazaki; Yusuke Hasegawa, and Isao Komoriya, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

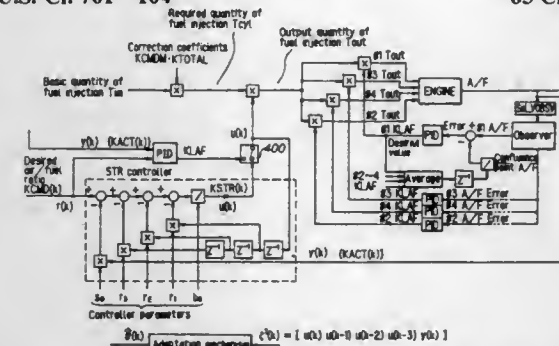
Filed Feb. 23, 1996, Ser. No. 606,384

Claims priority, application Japan, Feb. 25, 1995, 7-061663

Int. Cl.⁶ G06G 7/70

U.S. Cl. 701—104

63 Claims



1. A system for controlling fuel metering for an internal combustion engine having a plurality of cylinders and an exhaust system, said system comprising:

- an air/fuel ratio sensor installed in said exhaust system of the engine for detecting an air/fuel ratio of the engine;
- engine operating condition detecting means for detecting engine operating conditions including at least engine speed and engine load;
- fuel injection quantity determining means, operatively coupled to said engine operating condition detecting means, for determining a quantity of fuel injection for a cylinder of the engine based on at least the detected engine operating conditions;
- a first feedback loop means having a first controller means for calculating a first feedback correction coefficient, using a control law expressed in a recursion formula, to correct the quantity of fuel injection, such that a controlled variable obtained based on at least the detected air/fuel ratio detected by said air/fuel ratio sensor is brought to a desired value;
- a second feedback loop means having a second controller means for calculating a second feedback correction coefficient, using a control law whose control response is less than that of the first control law, to correct the quantity of fuel injection such that the controlled variable is brought to the desired value;
- a third feedback loop means having a third controller means for calculating a third feedback correction coefficient using a control constant, to correct the quantity of fuel injection for individual cylinders, such that air/fuel ratio variance among the cylinders decreases;
- selecting means for selecting one of the first feedback correction coefficient and the second feedback correction coefficient in response to the detected engine operating conditions;
- output fuel injection quantity determining means operatively coupled to said fuel injection quantity determining means, said first feedback loop means, said second feedback loop means, and said third feedback loop means, for correcting the quantity of fuel injection based on the selected feedback correction coefficient and the third feedback correction coefficient to determine an output quantity of fuel injection; and
- a fuel injector means operatively coupled to said output fuel injection quantity determining means, for injecting fuel in the cylinder of the engine based on the determined output quantity of fuel injection;

wherein:

- coefficient discriminating means are operatively coupled to said selecting means for discriminating which of the first feedback correction coefficient and the second feedback correction coefficient is selected; and
- said third controller means determines the control constant to calculate the third feedback correction coefficient based on the selected feedback correction coefficient.

5,781,876

CRUISE CONTROL ROAD SPEED CONTROL DEVICE, ESPECIALLY FOR A DIESEL-POWERED VEHICLE

Joerg Saur, Eislingen, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

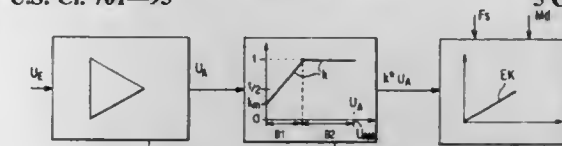
Filed Nov. 3, 1995, Ser. No. 552,875

Claims priority, application Germany, Nov. 4, 1994, 44 39 424.1

Int. Cl.⁶ B60K 31/04

U.S. Cl. 701—93

5 Claims



creating a succession of Wiener Filters in which the signal spectrum entering the initial said Wiener Filter includes a noise power spectrum estimate;

at each present iteration stage, determining the best current estimates of speech power spectrum and noise power spectrum, and summing the two said estimates to form a current said Wiener Filter; and

summing a large fraction of the output of said current Wiener Filter with a small amount equal to 1 minus said large fraction of the unfiltered said incoming signal to create an input to the next said Wiener Filter;

during said iteration sequence, for each iteration smoothing said Line Spectral Pair root positions generated for said past data frames, with the Line Spectral Pair root position of said current frame, using values of Line Spectral Pair root positions calculated for the current iteration of said sequence;

creating estimates of said incoming speech power spectrum from the output of a succession of said iteration sequences of said current frames;

forming a noise-reduced speech signal based on said incoming speech power spectrum estimates; and

transmitting said noise-reduced speech signal to said telecommunications network.

5,781,884

GRAPHEME-TO-PHONEME CONVERSION OF DIGIT STRINGS USING WEIGHTED FINITE STATE TRANSDUCERS TO APPLY GRAMMAR TO POWERS OF A NUMBER BASIS

Fernando Carlos Neves Pereira, Westfield, N.J.; Michael Dennis Riley, New York, N.Y., and Richard William Sproat, Berkeley Heights, N.J., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

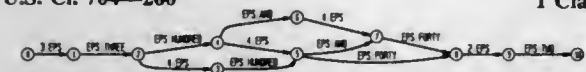
Continuation of Ser. No. 410,170, Mar. 24, 1995, abandoned.

This application Nov. 22, 1996, Ser. No. 755,041

Int. Cl.⁶ G10L 9/18

U.S. Cl. 704—260

1 Claim



1. A method of expanding a string of one or more digits to form a verbal equivalent, the method comprising the steps of:

- providing a grammatical description that expands the string into a numeric concept represented by a sum of powers of a base number system;
- compiling said grammatical description into a first weighted finite state transducer (WFST);
- providing a language specific grammatical description for verbally expressing the numeric concept;
- compiling the language specific grammatical description into a second WFST;
- composing said first and second WFSTs to form a third WFST from which the verbal equivalent of the string can be synthesized; and
- synthesizing the verbal equivalent from the third WFST.

5,781,885

COMPRESSION/EXPANSION METHOD OF TIME-SCALE OF SOUND SIGNAL

Takeo Inoue, and Shozo Sugishita, both of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 303,349, Sep. 9, 1994, abandoned.

This application Jul. 7, 1997, Ser. No. 888,527

Claims priority, application Japan, Sep. 9, 1993, 5-224451;

Dec. 24, 1993, 5-327898; May 10, 1994, 6-096530

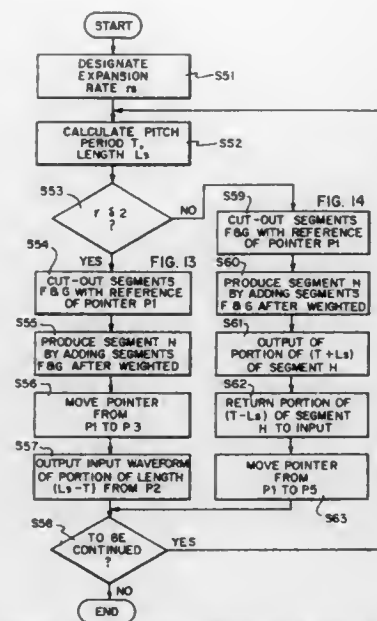
Int. Cl.⁶ G10L 5/02

U.S. Cl. 704—267

7 Claims

1. A compression/expansion method for a time-scale of a sound signal, comprising:

- a compression process (A) including the steps of



(a-1) cutting-out two sound waveform segments each having a length that is a single pitch period irrespective of a compression rate from an input sound signal with one of said segments commencing at a first time point represented by a current pointer and the other of said two segments commencing at a second time point advanced from the first time point by the single pitch period, respectively,

(a-2) producing a single sound waveform segment that is obtained through compression of the two sound waveform segments by adding the two sound waveform segments to each other with suitable weights,

(a-3) moving the pointer to a fifth time point according to a compression rate, and outputting an input sound waveform segment from a time point advanced from the second time point by the single pitch period to the fifth time point as it is, the sound waveform segment produced in the step (a-2) being followed by the input sound waveform segment, or

(a-4) moving the pointer to a fifth time point according to the compression rate, and outputting a portion of the waveform segment produced in the step (a-2) as it is, and

(a-5) repeating the steps (a-1)-(a-3) or the steps (a-1), (a-2) and (a-4) as necessary; and

an expansion process (B) including the steps of

(b-1) receiving the sound waveform being compressed by the compression process (A) as an input sound signal,

(b-2) cutting-out two sound waveform segments each having a length that is N times (N is an integer more than 2) the single pitch period irrespective of an expansion rate from the input sound signal with one of said two segments commencing at a third time point represented by the current pointer and the other of said two segments commencing at a fourth time point delayed from the third time point by the single pitch period, respectively,

(b-3) producing a single synthesized sound waveform segment that is obtained through synthesization of the two sound waveform segments by adding the two sound waveform segments to each other after each is weighted in an opposite manner over the duration of each segment,

(b-4) moving the pointer to a sixth time point and in response to an expansion rate equal to or below a first value, outputting an input sound waveform segment from a time point advanced from the third time point by (N-1) times the single pitch period to the sixth time point as it is, the sound waveform segment produced in the step (b-3) being followed by the input sound waveform segment, or

(b-5) in response to the expansion rate being greater than said first value moving the pointer to a sixth time point and outputting a portion of the waveform segment, produced in the step (b-3) as it is, and

(b-6) repeating the steps (b-2)-(b-4) or the steps (b-2), (b-3) and (b-5) as necessary.

5,781,886

VOICE RESPONSE APPARATUS

Hidetoshi Tsujiuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

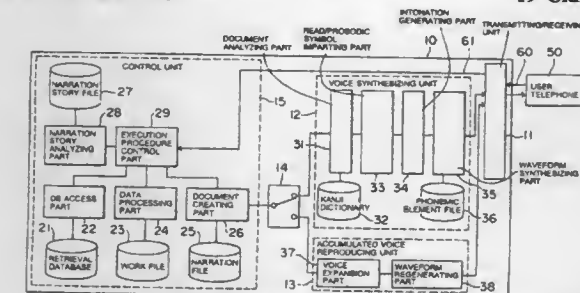
Filed Dec. 29, 1995, Ser. No. 581,332

Claims priority, application Japan, Apr. 20, 1995, 7-095066

Int. Cl.⁶ G10L 3/00

U.S. Cl. 704—275

19 Claims



1. A voice response apparatus connected via a communication line to a user telephone, said apparatus comprising: storage means for storing narrative information; transmitting means for generating a voice signal corresponding to the narrative information stored in said storage means and transmitting the generated voice signal to said user telephone via the communication line; and

control means for monitoring said communication line for input of position specifying data from the user telephone occurring during the transmission of the narrative information by said transmitting means, and for causing said transmitting means to interrupt the transmission of the narrative information and to resume the transmission of the narrative information from a position specified by the position specifying data.

5,781,887

SPEECH RECOGNITION METHOD WITH ERROR RESET COMMANDS

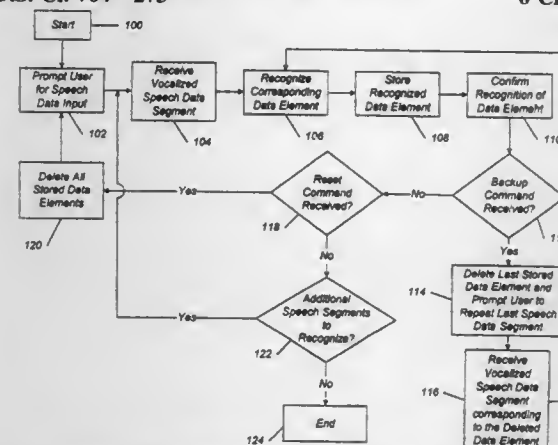
Bling-Hwang Juang, Warren, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 9, 1996, Ser. No. 728,012

Int. Cl.⁶ G10L 7/08; 9/00

U.S. Cl. 704—275

6 Claims



1. A method for enabling selective revision of at least one data element identified from user vocalized speech data by an automated speech recognition apparatus through use of predetermined spoken commands issued by a user, comprising the steps of:

- prompting by the apparatus for user input of vocalized speech data comprising a plurality of speech data segments each representative of a data element;

(b) receiving by the apparatus one of the user vocalized speech data segments of said plural speech data segments;

(c) analyzing in the apparatus the received vocalized speech data segment to identify a data element corresponding to the received vocalized speech data segment;

(d) storing the identified data element in a memory of the apparatus;

(e) after storing of the identified data element in the memory of the apparatus,

(1) deleting by the apparatus the identified data element stored at said step (d) and returning to said step (b) for said one user vocalized speech data segment when a first spoken command, representing a user-vocalized request that input of said one user-vocalized speech data segment is to be repeated, is issued by the user and received by the apparatus; and

(2) deleting by the apparatus all identified data elements previously stored in the memory of the apparatus and returning to said step (a) when a second spoken command, representing a user-vocalized request that input of all previously stored identified data elements is to be repeated, is issued by the user and received by the apparatus; and

(f) after said step (d) and absent receipt of said first and second user-issued commands, determining by the apparatus whether all speech data segments of said plural data segments have been analyzed, and returning to said step (b) if all speech data segments of said plural data segments have not been analyzed.

5,781,888

PERCEPTUAL NOISE SHAPING IN THE TIME DOMAIN VIA LPC PREDICTION IN THE FREQUENCY DOMAIN

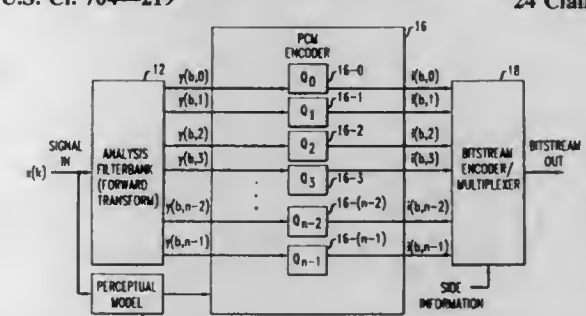
Juergen Heinrich Herre, Basking Ridge, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 16, 1996, Ser. No. 585,086

Int. Cl.⁶ G10L 3/02; 9/00

U.S. Cl. 704—219

24 Claims



1. A method of encoding an audio signal to generate an encoded signal, the encoding based on a perceptual model, the method comprising the steps of:

- performing a spectral decomposition of the audio signal into a plurality of spectral component signals;
- generating a prediction signal representative of a prediction of one of said spectral component signals, said prediction based on one or more other ones of said spectral component signals;
- comparing the prediction signal with said one of said spectral component signals to generate a prediction error signal;
- coding said one of said spectral component signals to generate a coded spectral component signal, said coding based on the prediction error signal and further based on the perceptual model; and
- generating the encoded signal based on the coded spectral component signal.

5,781,889

COMPUTER JUKEBOX AND JUKEBOX NETWORK

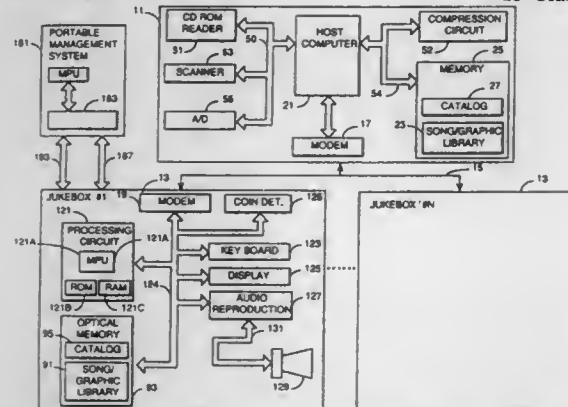
John R. Martin, 5635 Nebeshones La.; Michael L. Tillery, 4919 Spring Brook Rd., and Samuel N. Zammuto, 2308 24th St., all of Rockford, Ill. 61103

Continuation of Ser. No. 268,782, Jun. 30, 1994, abandoned, which is a division of Ser. No. 846,707, Mar. 6, 1992, Pat. No. 5,355,302, which is a continuation-in-part of Ser. No. 538,981, Jun. 15, 1990, abandoned. This application Jan. 11, 1996, Ser. No. 584,253

Int. Cl.⁶ G06F 17/60

U.S. Cl. 705—1

13 Claims



1. An improved computer jukebox for playing songs selected by users of the computer jukebox from a library of songs that have been digitally compressed and stored in the computer jukebox, where the selectable songs stored in the computer jukebox are capable of being updated upon the receipt of compressed song digital data, which represents at least one song, as well as song identity data, which represents the identity of each such song, the computer jukebox comprising:

a communication interface for receiving the compressed song digital data and the song identity data;

computer memory storing the received compressed song data and the received song identity data for each of the songs stored;

means for displaying, to prospective users of the computer jukebox, information that identifies the songs for which song digital data is stored in the computer memory and that is based on song identity data;

means for permitting a user of the computer jukebox to select at least one song to be played on the computer jukebox from the song identity information displayed on the display means and for generating a signal representing the song selected by the user;

at least one audio speaker;

means for decompressing compressed song digital data;

a digital to analog converter coupled between the decompressing means and the audio speaker to convert song digital data to analog signal coupled to the speaker; and means for processing and accessing song digital data, in response to a song selection signal, from the computer memory so that the accessed song digital data corresponds to the song selected by the user and for applying the accessed song digital data to the decompressing means and to the digital to analog converter so that the song selected is played on the computer jukebox as a result of the corresponding stored song digital data being decompressed and converted by the decompression means and the digital to analog converters, respectively, with the processing means also being responsive to compressed song digital data and to song identity data, which may be received by the communication interface of the computer jukebox, to control the storage of the received compressed song digital data and the received song identity data in the computer memory so as to update the library of songs stored in the computer jukebox.

5,781,890

METHOD FOR MANAGING CLUSTERED MEDICAL DATA AND MEDICAL DATA FILING SYSTEM IN CLUSTERED FORM

Mohammad Ali Nematbakhsh, Anaheim, Calif., and Shinichi Tsubura, Tochigiken, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Division of Ser. No. 474,143, Jun. 7, 1995, Pat. No. 5,572,422, which is a continuation of Ser. No. 46,180, Apr. 14, 1993, abandoned, which is a continuation of Ser. No. 961,840, Oct. 16, 1992, abandoned. This application Aug. 27, 1996, Ser. No. 703,696

Claims priority, application Japan, Oct. 16, 1991, 3-267524; Oct. 15, 1992, 4-277110

Int. Cl.⁶ G06F 159/00

U.S. Cl. 705—3

20 Claims

CLUSTER NO.	OPTICAL DISK NO.	EXAMINATION TERM
1	10 11 12	1991. 10. 1 ~ 1991. 12. 31
2	13 14 15	1992. 1. 1 ~ 1992. 3. 31
3	16 17 18	1992. 4. 1 ~ 1992. 6. 30
4	19 20 21	1992. 7. 1 ~ 1992. 9. 30

1. A method for managing medical data comprising the steps of: sequentially acquiring a plurality of medical data about a biological body under medical examination;

classifying said plurality of medical data based upon at least one of medical classification items to obtain a plurality of classified medical data; and

sequentially storing said plurality of classified medical data into a plurality of data storage mediums in such a manner that said plurality of classified medical data belonging to the same classification item are stored in the same data storage medium.

5,781,891

MEDICAL TRANSCRIPTION SYSTEM WITH TEXT EXPANSION

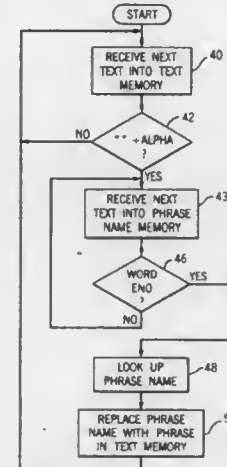
Carl D. Dvorak, and Anthony C. Brummel, both of Madison, Wis., assignors to Epic Systems Corporation, Madison, Wis.

Filed Jan. 29, 1996, Ser. No. 593,223

Int. Cl.⁶ G06F 17/28

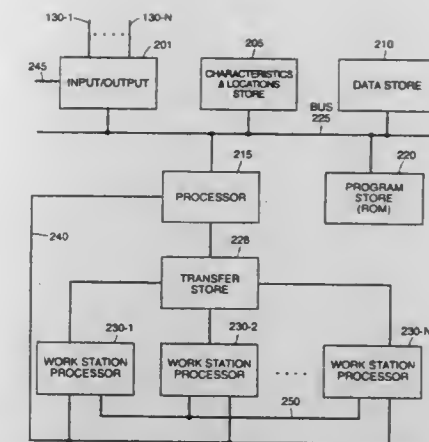
U.S. Cl. 705—2

9 Claims



1. A computer program for transcription on an electronic computer communicating with computer memory and a keyboard and a computer display, the program instructing the computer to:

- (1) receive a transcription including a series of characters from the keyboard;
- (2) monitor the series of characters for a predetermined non-space character prefix;
- (3) when the predetermined non-space character prefix is detected, match at least a subset of a string of subsequent characters to one of a library of phrase names stored in memory, each phrase name linked to a longer phrase also stored in memory; and
- (4) store in computer memory the transcription of a series of characters replacing the predetermined string of characters with the phrase.



5,781,892

METHOD AND APPARATUS FOR INTERACTING WITH A COMPUTER RESERVATION SYSTEM

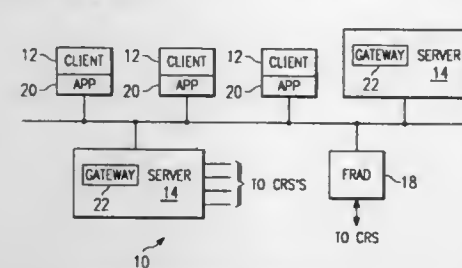
Douglas J. Hunt, Seattle; George A. Smith, Kent, both of Wash., and Wayne L. Flake, Plano, Tex., assignors to Electronic Data Systems Corporation, Plano, Tex.

Filed Nov. 13, 1995, Ser. No. 557,508

Int. Cl.⁶ G06F 17/30

U.S. Cl. 705—5

27 Claims



1. A reservation system, comprising:

a client application running on a first client computer and operable to generate a command comprising an application program interface call specifying desired reservation data;

a server gateway application running on a first server computer wherein the first server computer is a different computer than the first client computer, the server application comprising a first computer reservation system interface connected to a first computer reservation system;

a normalization module comprising a plurality of application program interfaces, at least one application program interface operable to process the command, to interact with the first computer reservation system through the first computer reservation system interface, and to receive a first set of reservation data responsive to the command from the first computer reservation system, the at least one application program interface further operable to return selected portions of the first set of reservation data comprising the desired reservation data to the client application in a normalized format, and to facilitate selection from the desired reservation data.

5,781,893

SYSTEM FOR ESTIMATING PRODUCT DISTRIBUTION

Mark Andrew Felthaus, Merion; Preston L. McHenry, Blue Bell; Harold Joseph Petrimoux, Phoenixville, and Jeffrey Brian Schott, Chalfont, all of Pa., assignors to Duns Licensing Associates, L.P., Switzerland

Continuation of Ser. No. 42,518, Apr. 5, 1993, Pat. No. 5,420,786. This application Apr. 24, 1995, Ser. No. 426,968

Int. Cl.⁶ G06F 17/60

U.S. Cl. 705—210

14 Claims

1. A system for estimating distribution of a product at a plurality of distribution sites comprising:
means for receiving distribution information from selected ones of the plurality of the distribution sites; and

an information processing unit including a plurality of processors and a network for exchanging information among the plurality of processors,
wherein at least one of the plurality of processors forms first signals each characterizing one the plurality of distribution sites and second signals each corresponding to a distance between a pair of the distribution sites, and
wherein said plurality of processors combines the distribution information, the distance corresponding signals, the characterizing signals and the information from the information exchange network to form a signal representing an estimate of the product distribution of the plurality of distribution locations.

5,781,894

METHOD AND SYSTEM FOR ADVERTISING ON PERSONAL COMPUTERS

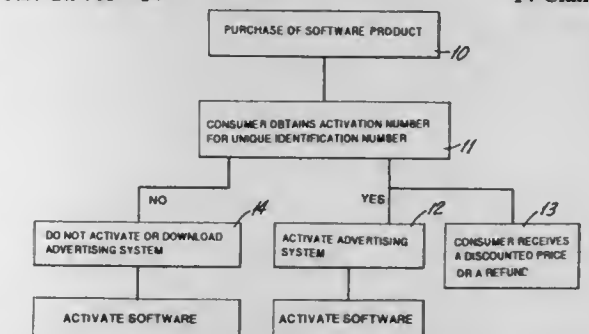
Anthony Petrecca, 142 Washington Ave.; Michael Kollar, 2400 Hudson Terrace 2N, both of Fort Lee, N.J. 07024, and Robin Whitney, 1127 Washington St., Hoboken, N.J. 07030

Filed Aug. 11, 1995, Ser. No. 514,223

Int. Cl.⁶ G06F 17/60

U.S. Cl. 705—14

14 Claims



1. An advertising system for personal computer (PC) systems comprising:

memory digital data storage means for storing one or more software programs and at least one advertising message and message presentation controller means for determining if a computer will present said advertising message to a user wherein said means for determining if the computer will present said advertising message comprises a unique identifier number associated with said one or more software programs and also associated with two activation numbers, one of which activates both said software programs and said advertising message, and one of which activates only said software programs.

5,781,895

Patent Not Issued For This Number

5,781,896

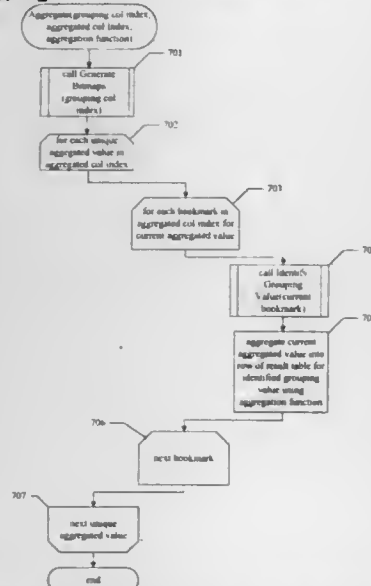
METHOD AND SYSTEM FOR EFFICIENTLY PERFORMING DATABASE TABLE AGGREGATION USING AN AGGREGATION INDEX

Ketan Dalal, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 268,231, Jun. 30, 1994, Pat. No. 5,537,589. This application Apr. 23, 1996, Ser. No. 636,235
Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—2

9 Claims



1. A method in a computer system for aggregating an aggregated value for each of a number of records based upon a grouping value for each record, the method comprising the steps of:

- maintaining a first index on the grouping value for each record, the first index constituting a mapping between grouping values and records having the grouping values;
- maintaining a second index on the aggregated value for each record, the second index constituting a mapping between aggregated values and records having the aggregated values;
- using the second index to identify the aggregated value for each record;
- using the first index to identify the grouping value for each record; and
- for each record, aggregating the identified aggregated value into a result value for the identified grouping value.

5,781,897

METHOD AND SYSTEM FOR PERFORMING RECORD SEARCHES IN A DATABASE WITHIN A COMPUTER PERIPHERAL STORAGE DEVICE

Wen-Tzer Thomas Chen, and Renato John Recio, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

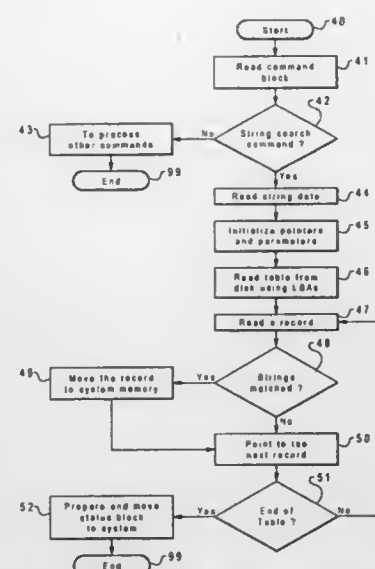
Filed Apr. 18, 1996, Ser. No. 634,511
Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—3

11 Claims

1. A method for record searching in a database within a computer system, wherein said computer system includes a main processor, a main memory, and a peripheral storage device having a secondary processor, said method comprising the step of:

- preparing a command block specifying a search string for record searching in at least one database table of said database;
- issuing said command block from said main processor to said secondary processor within said peripheral storage device of said computer system;
- utilizing said secondary processor within said peripheral storage device to read said at least one database table into a memory within said peripheral storage device, in response to a receipt of said command block;



comparing said search string in said command block to each record of said at least one database table within said memory of said peripheral storage device to identify all records which contain said search string; and

moving all identified records which contain said search string from said memory of said peripheral storage device to said main memory within said computer system, wherein said database record searching is performed in a more efficient manner.

5,781,898

DATA RETRIEVAL CONDITION SETTING METHOD

Juniko Fukatsu, and Hiromi Kato, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

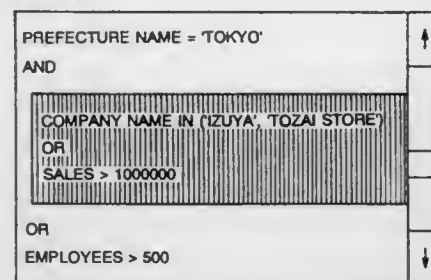
Continuation of Ser. No. 418,600, Apr. 6, 1995, abandoned.

This application Sep. 30, 1997, Ser. No. 941,108

Claims priority, application Japan, Jun. 29, 1994, 6-147474
Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—4

7 Claims



1. A method of setting a data retrieval condition for retrieving data from a database, said method comprising the steps of:

- displaying unit retrieval conditions separated by logic symbols which logically associate said unit retrieval conditions with each other, on a display device;
- receiving specific information for specifying one of said logic symbols based on which priority-given retrieval is executed;
- highlighting with color or display density the logic symbol indicated by said received specific information and the unit retrieval conditions displayed adjacent to said logic symbol from other unit retrieval conditions or other logic symbols; and
- logically building said data retrieval condition based on said unit retrieval conditions, said logic symbols and said specific information.

5,781,899

IMAGE INDEX PRODUCTION METHOD AND IMAGE INDEX PRODUCTION SYSTEM FOR IMAGE STORAGE AND MANAGEMENT SYSTEM

Kyoji Hirata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

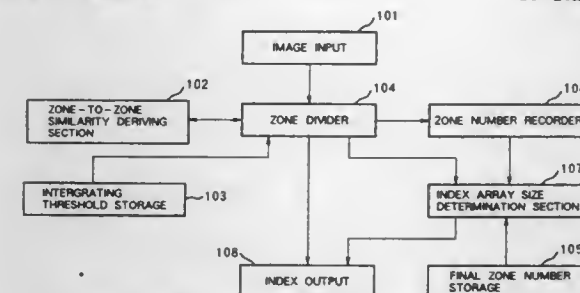
Filed Oct. 26, 1995, Ser. No. 548,728

Claims priority, application Japan, Oct. 27, 1994, 6-263756; Apr. 26, 1995, 7-101979

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—6

15 Claims



1. An image index production method comprising the steps of: receiving an image for new registration and producing an image index;

receiving a candidate image index for new registration, receiving the image index information on original images, calculating a distance from the candidate image index for new registration, and inducing an image index, which is similar to the image index for new registration at a level exceeding the threshold which indicates the upper limit of the similarity indicating a distance between image indexes;

receiving the image index for new registration and the image index which is similar to the image index for new registration at a level exceeding said threshold, receiving original image information corresponding to said image index, and changing an array size to prevent said distance from exceeding the threshold; and

receiving the changed image index and renews the image index.

5,781,900

FLEXIBLE HYPERLINK ASSOCIATION SYSTEM

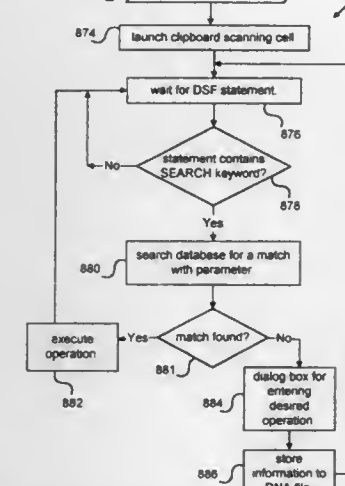
Wataru Shoji, Daisuke Tabuchi, Ichiro Nakajima, all of Tokyo, Japan, and Gabriele Gramlich, Leverkusen, Germany, assignors to Sofmap Future Design, Inc., Tokyo, Japan

Filed Jan. 2, 1996, Ser. No. 582,004

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—6

11 Claims



1. A method for a computer to perform an operation associated with data on a display device and chosen by a user, comprising the steps of:

providing a file having data intended to be displayed on said display device, at least a portion of said data containing no embedded link to other files;

displaying said data of said file on said display device, said portion of said data being displayed in a manner indicating lack of said embedded link;

providing a database containing a list of data and a list of program modules, members of said list of data being associated with members of said list of program modules;

highlighting, by said user, desired data associated with said portion on said display device;

comparing said highlighted data with said members in said list of data; and

if a match is found, executing said program module associated with said matched member.

5,781,901

TRANSMITTING ELECTRONIC MAIL ATTACHMENT OVER A NETWORK USING A E-MAIL PAGE

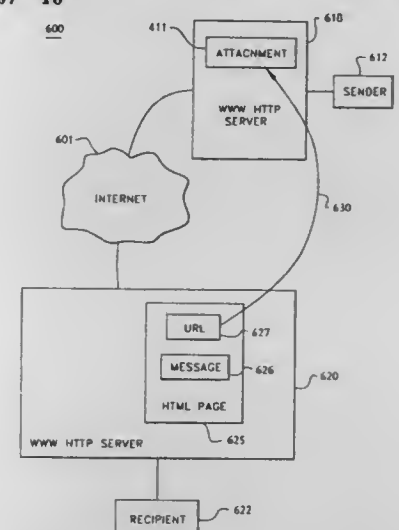
Andrew J. Kuzma, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 21, 1995, Ser. No. 576,580

Int. Cl.⁶ G06F 17/30

U.S. Cl. 707—10

19 Claims



1. A method for transmitting e-mail attachments from a sender of a network to a recipient of the network, the method comprising the steps of:

- storing an attachment in a storage means visible to the network and relatively local to the sender, the attachment having a unique network address;
- requesting, with the sender, an e-mail page from the recipient, the e-mail page being adapted to receive a text message and an attachment reference comprising the network address of the attachment;
- providing the e-mail page to the sender in response to the request; and
- adding, with the sender, the attachment reference and the message to the e-mail page.

encapsulating the retrieved data in one or more datastore persistent objects, wherein the datastore persistent objects are materialized in the memory of the computer as members of a

sending the changes to the destination site;
 applying the changes at the destination site;
 if the changes are successfully applied before the failure, then making the changes permanent at the destination site; and adding a record to a set of records at the destination site, wherein the record indicates that the changes were made permanent at the destination site;
 after a failure, using the set of records at the destination site to determine which changes must be sent from the source site to the destination site after the failure; and
 wherein the step of making the changes permanent at the source site is performed without the source site being informed as to whether the changes were successfully applied at the destination site.

5,781,913

WEARABLE HYPERMEDIUM SYSTEM

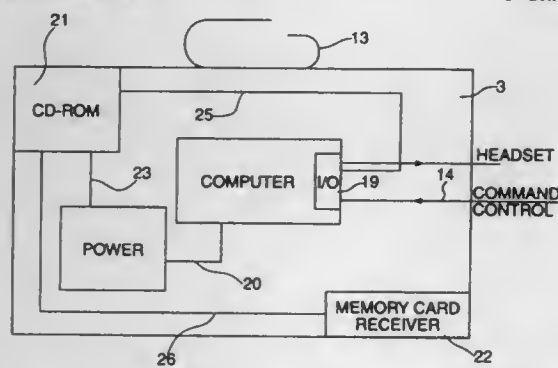
Lee Felsenstein, 2490 Greer Rd., Palo Alto, Calif. 94303; Liz Rich, 151 E. 83rd St., New York, N.Y. 10028, and William Mason, 419 Wheeler St., Seattle, Wash. 98109

Continuation-in-part of Ser. No. 413,366, Mar. 30, 1995, abandoned, which is a continuation of Ser. No. 732,047, Jul. 18, 1991, Pat. No. 5,450,596. This application Jun. 18, 1996, Ser. No. 664,918

Int. Cl.⁶ G06F 3/47; G11B 33/12

U.S. Cl. 707—501

3 Claims



1. A wearable hypermedium information retrieval system for displaying predetermined digitized data, comprising:

- a computer having I/O port means;
- a large capacity information storage and retrieval device interfaced with said I/O port means adapted to receive a memory medium containing the predetermined digitized data, said storage and retrieval device being adapted to access the data on said memory medium and to provide said data to said I/O port means, said predetermined digitized data being further organized in a hypermedium format for hypermedium access and retrieval;
- a virtually hands-free command control device presenting no interference to ordinary use of the hands of the user to provide input commands from the user to said computer via said I/O port means;
- a headset adapted to be worn by said user and a head mounted image display supported by said headset comprising virtual image display means comprising an eye-piece adapted to be positioned in front of one eye of the user and to display video display information from said computer; and
- further comprising at least one PCMCIA card slot.

5,781,914

CONVERTING DOCUMENTS, WITH LINKS TO OTHER ELECTRONIC INFORMATION, BETWEEN HARDCOPY AND ELECTRONIC FORMATS

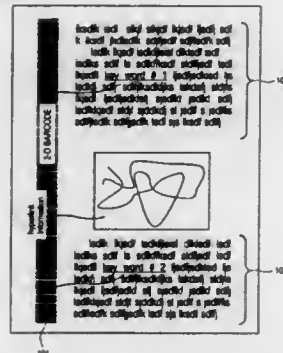
David G. Stork, Stanford, and K. Vankatesh Prasad, Cupertino, both of Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan, and Ricoh Corporation, Menlo Park, Calif.

Filed Jun. 30, 1995, Ser. No. 497,985

Int. Cl.⁶ G06F 17/40

U.S. Cl. 707—506

23 Claims



1. A method of converting a hardcopy document to an electronic document comprising the steps of:

- scanning a hardcopy document containing encoded link information and one or more regions designated to be active associated with said encoded link information;
- decoding the encoded link information to obtain the link information associated with said one or more regions;
- locating said one or more regions in a scanned-in version of the hardcopy document, wherein the step of locating comprises searching a bit map of the scanned hardcopy document using a template stored in the encoded link information and obtained when decoding the encoded link information; and
- creating an electronic version of the hardcopy document having said one or more regions linked to electronic information, such that selection of any of said one or more regions accesses linked electronic information.

5,781,915

DOCUMENT PROCESSING APPARATUS THAT DETERMINES WHETHER A DOCUMENT HAS BEEN CONFIRMED BY ANOTHER USER

Akihiro Kohno, and Tadashi Yamakawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

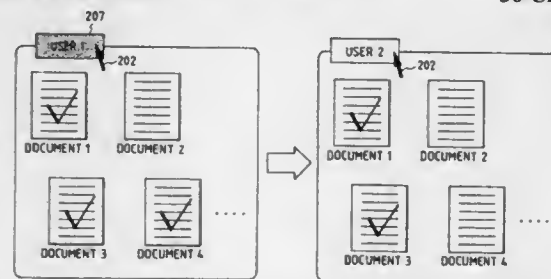
Filed Aug. 4, 1995, Ser. No. 504,077

Claims priority, application Japan, Aug. 5, 1994, 6-184950; Aug. 24, 1994, 6-199456; Aug. 24, 1994, 6-199457

Int. Cl.⁶ G06F 7/02

U.S. Cl. 707—511

36 Claims



1. A document processing apparatus comprising:
- holding means for holding a plurality of documents, each of the documents being provided with respective update time data;
 - storage means for storing respectively, for each of a plurality of users, reference time data for the plurality of documents held by said holding means;
 - reading means for reading the plurality of documents from said holding means; and

control means for reading, for one of the plurality of users, the reference time data for the one user from said storage means, for comparing, for each of the plurality of documents, the respective update time data with the read reference time data to determine whether or not the one user has confirmed any of the plurality of documents after a previous updating of that document and, in response to the determination, displaying the plurality of documents with any confirmed documents being displayed distinguishably from the rest of the documents.

5,781,916

CACHE CONTROL CIRCUITRY AND METHOD THEREFOR

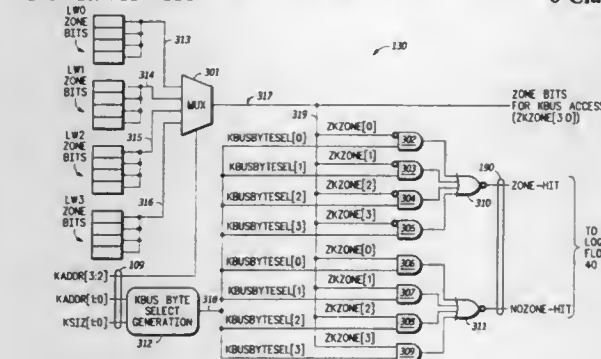
James N. Hardage, Jr., Kyle, and Glen A. Harris, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 25, 1996, Ser. No. 621,274

Int. Cl.⁶ G06F 12/08

U.S. Cl. 711—118

6 Claims



1. A processor comprising:

- a processor core;
- a cache array;
- a bus interface unit;
- a data path coupling said bus interface unit to said cache array and coupling said bus interface unit to said processor core; and
- control circuitry, coupled to said processor core and to said cache array, wherein said control circuitry comprises:
 - circuitry for receiving a zone write of information from said processor core to said cache array;
 - circuitry for initiating a cache fill operation to said cache array of a remainder of a cache line corresponding to said information zone written from said processor core to said cache array;
 - circuitry for receiving a read access from said processor core for a portion of a cache line presently filling to said cache array; and
 - circuitry for sending said portion of said cache line to said processor core before said cache-filling operation is completed and for responding to said read access by reading said portion of said cache line from said cache array when said portion of said cache line is part of information previously zone written from said processor core to said cache array and for determining that said read access results in a zone hit, wherein said determining circuitry comprises:
 - a multiplexer having its inputs coupled to zone bits associated with said cache line in said cache array, said multiplexer controlled by a first portion of an address associated with said read access;
 - logic circuitry for producing a logic signal in response to receipt of a second portion of said address associated with said read access, wherein said logic signal corresponds to said portion of said cache line requested by said read access; and
 - a set of logic gates receiving an output of said multiplexer and receiving said logic signal, wherein said set of logic

gates produce a zone-hit signal indicating whether said read access has resulted in said zone hit.

5,781,917

Patent Not Issued For This Number

5,781,918

MEMORY SYSTEM AND METHOD FOR SELECTING A DIFFERENT NUMBER OF DATA CHANNELS DEPENDING ON BUS SIZE

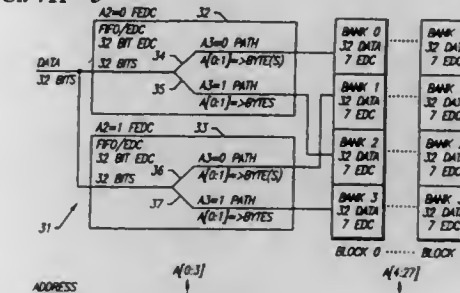
Donald A. Lieberman, San Jose, and John J. Nemec, Santa Clara, both of Calif., assignors to Cypress Semiconductor Corp., San Jose, Calif.

Division of Ser. No. 539,305, Oct. 3, 1995, abandoned, which is a continuation of Ser. No. 229,357, Apr. 18, 1994, abandoned, which is a division of Ser. No. 747,202, Aug. 16, 1991, abandoned. This application Nov. 27, 1996, Ser. No. 758,218

Int. Cl.⁶ G06F 12/00; 12/04; 13/00; 13/40

U.S. Cl. 711—5

16 Claims



1. A memory system coupled to a system bus, said memory system comprising:

- a memory including at least one block, said at least one block including a plurality of banks;
- a plurality of data channels, each of said data channels coupling a plurality of data bits between said system bus and at least one of said plurality of banks; and
- a controller coupled to said system bus and to said plurality of data channels for receiving address and control signals from said system bus and for controlling the transfer of data between said memory and said system bus in response to one or more addresses specified by said address and control signals, said controller selecting a number of said plurality of data channels for transferring said data between said system bus and said memory based on said addresses, the number of data channels selected depending on the size of said system bus.

5,781,919

Patent Not Issued For This Number

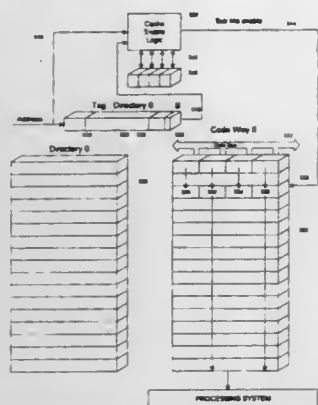
a cache memory controller coupled to said cache memory and said processor, said cache memory controller providing a cache enable signal to the chip enable input of said cache memory, the cache memory controller deasserting the cache enable signal when the processor asserts the processor address strobe if the address strobe is for the address of a pipelined burst operation following another burst operation.

5,781,926

METHOD AND APPARATUS FOR SUB CACHE LINE ACCESS AND STORAGE ALLOWING ACCESS TO SUB CACHE LINES BEFORE COMPLETION OF LINE FILL
Darius Gaskins, and Glenn Henry, both of Austin, Tex., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.
Filed May 20, 1996, Ser. No. 650,733
Int. Cl.⁶ G06F 12/12

U.S. Cl. 711—145

43 Claims



1. A computer memory system for storing data, and for providing the data to a processing system, the computer memory system comprising:

main memory, connected to the processing system, for storing the data, and for providing the data to the processing system;
a cache memory system, connected to the processing system, and to said main memory, also for storing the data, and for providing the data to said processing system, said cache memory system comprising:

a cache memory array, having a plurality of cache lines, each of said cache lines having a plurality of sub cache line locations, said sub cache line locations for storing the data;
a cache directory, associated with said cache memory array, for storing tag information associated with the data stored in said cache memory array; and

a cache enable system, connected to said cache memory array, to said cache directory, and to the processing system, said cache enable system comprising:

a plurality of sub cache line enable bits associated with said sub cache line locations within any one of said cache lines, allowing said sub cache line locations within said cache lines to be directly written into from said main memory without requiring intermediate storage in a cache buffer; and

cache enable logic, for reading said tag information and said plurality of sub cache line enable bits to determine whether specific data requested by the processing system is stored in said cache memory array, and for allowing said cache memory array to provide said specific data to the processing system wherein said specific data is provided when said cache line is not completely filled.

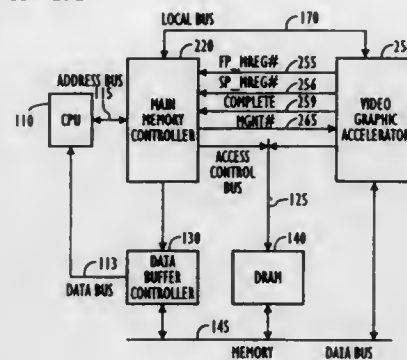
5,781,927

MAIN MEMORY ARBITRATION WITH PRIORITY SCHEDULING CAPABILITY INCLUDING MULTIPLE PRIORITY SIGNAL CONNECTIONS

Wen-Yi Wu, Hsinchu Hsien, and Gene Yang, Tao Yuan Hsien, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan
Filed Jan. 30, 1996, Ser. No. 593,804
Int. Cl.⁶ G06F 13/00; 13/366

U.S. Cl. 711—151

8 Claims



1. A main memory arbitration arrangement having priority scheduling capability for a computer system having a CPU, a main memory, and a peripheral system, the arbitration arrangement comprising:

a main memory controller, coupled to both the CPU and the main memory, for controlling access to the main memory;
a first connection and a second connection, connecting the peripheral system and the main memory controller and for transmitting signals from the peripheral system to the main memory;

means, within the peripheral system which is coupled to the main memory for issuing a first memory request signal priority level request for main memory usage to the main memory controller via the first connection and a second memory request signal indicative of a second highest priority level request for main memory usage to the main memory controller via the second connection, the first and second memory request signals being issued based on the urgency of the need of the peripheral system to use the main memory;

means, within the main memory controller, for yielding control of the main memory unit to the peripheral system upon receiving the first memory request signal, and

means, within the main memory controller, for determining whether to yield control of the main memory unit to the peripheral system based on urgency of a current operating condition of the CPU upon receiving the second memory request signal.

DESIGNS

JULY 14, 1998

395,935

FROZEN CONFECTION

Franco Albino Luigi Grigoli, Milan, Italy, assignor to S.I.D.A.M. Stampi Industria Dolciaria Affini Milano S.r.l., Cormano, Italy
Filed Jun. 30, 1995, Ser. No. 40,951
Term of patent 14 years
LOC (6) Cl. 01 - 01

U.S. Cl. D1—102

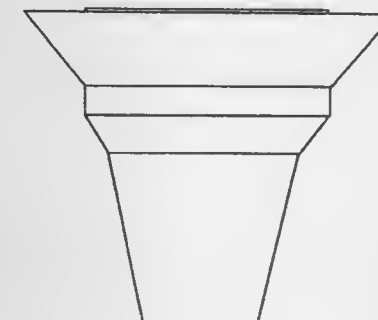


395,936

ICE CREAM CONE

Simone H. Zada, c/o Bottom Line Technologies, Inc., 1 Yonge Street, Suite 1801, Toronto, Ontario, Canada, M5E 1W7
Filed Dec. 2, 1994, Ser. No. 32,084
Claims priority, application Canada, Jun. 20, 1994, 1994-1191
Term of patent 14 years
LOC (6) Cl. 01 - 01

U.S. Cl. D1—118

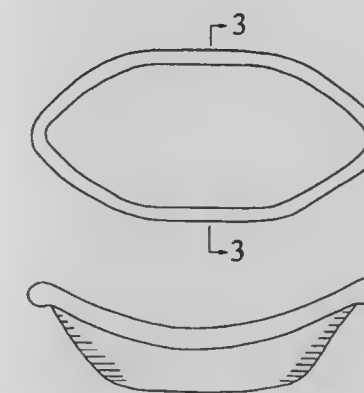


395,937

PIZZA

Simone H. Zada, c/o Bottom Line Technologies Inc., 1 Yonge Street, Suite 1801, Toronto, Ontario, Canada, M5E 1W7
Filed Dec. 23, 1994, Ser. No. 32,691
Claims priority, application Canada, Jun. 30, 1994, 1994-1244
Term of patent 14 years
LOC (6) Cl. 01 - 01

U.S. Cl. D1—122



395,938

FRENCH FRY

John W. Downs, Jr., 52 Endicott St., Salem, Mass. 01970
Filed Aug. 29, 1996, Ser. No. 58,985
Term of patent 14 years
LOC (6) Cl. 01 - 02

U.S. Cl. D1—199



395,939

GARDENING PANTS

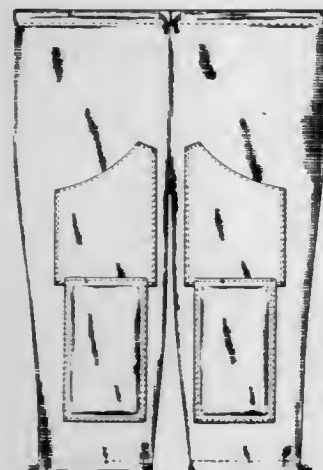
Lisa M. DeFino, 5444 S. Twin Spruce Dr., Evergreen, Colo. 80439

Filed May 8, 1997, Ser. No. 71,866

Term of patent 14 years

LOC (6) Cl. 02 - 02

U.S. Cl. D2—742



395,941

COMBINED BIB AND BOTTLE SUPPORT

Elizabeth R. Cameron, 13145 Bromont Ave., Sylmar, Calif. 91342

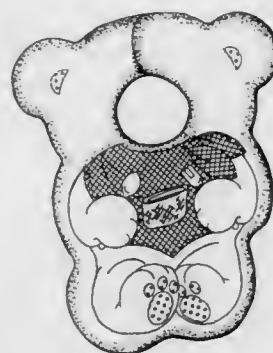
Division of Ser. No. 80,186, Jun. 12, 1995. This application

Apr. 7, 1997, Ser. No. 67,917

Term of patent 14 years

LOC (6) Cl. 02 - 02

U.S. Cl. D2—863



395,940

COMBINED BIB AND BOTTLE SUPPORT

Elizabeth R. Cameron, 13145 Bromont Ave., Sylmar, Calif. 91342

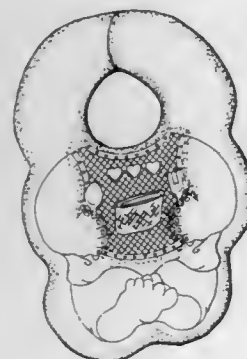
Division of Ser. No. 40,186, Jun. 12, 1995. This application

Apr. 7, 1997, Ser. No. 67,912

Term of patent 14 years

LOC (6) Cl. 02 - 02

U.S. Cl. D2—863



395,942

PORTION OF A SOLE BOTTOM SURFACE

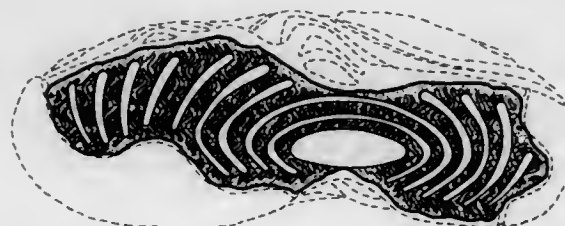
Wilson W. Smith, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jun. 7, 1996, Ser. No. 55,603

Term of patent 14 years

LOC (6) Cl. 02 - 04

U.S. Cl. D2—956



395,943

SHOE UPPER

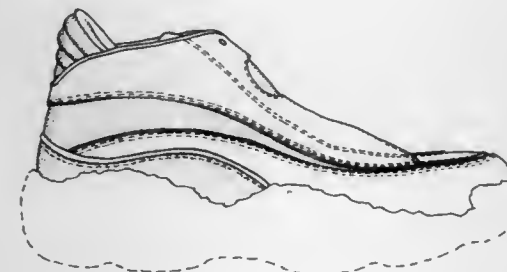
Scott Hewett, Quincy, and Todd K. Krinsky, Chestnut Hill, both of Mass., assignors to Reebok International Ltd., Stoughton, Mass.

Filed Apr. 15, 1997, Ser. No. 69,426

Term of patent 14 years

LOC (6) Cl. 02 - 04

U.S. Cl. D2—969



395,945

PORTION OF A SHOE UPPER

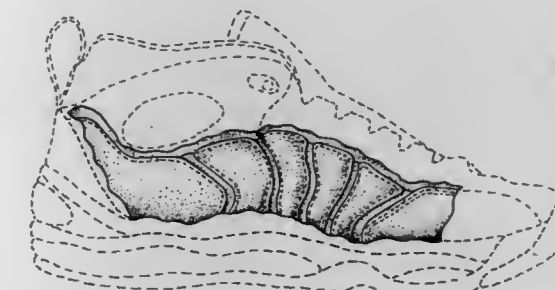
Michael Mankowski, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jul. 17, 1997, Ser. No. 77,004

Term of patent 14 years

LOC (6) Cl. 02 - 99

U.S. Cl. D2—972



395,944

PORTION OF A SHOE UPPER

Eric P. Avar, Aloha, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jun. 25, 1997, Ser. No. 75,364

Term of patent 14 years

LOC (6) Cl. 02 - 99

U.S. Cl. D2—972



395,946

SIDE PORTION OF A SHOE UPPER

Eric P. Avar, Aloha, and Aaron Alexander Carroll Cooper, Portland, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.

Filed Oct. 29, 1997, Ser. No. 78,558

Term of patent 14 years

LOC (6) Cl. 02 - 99

U.S. Cl. D2—972



395,947

PORTION OF A SHOE UPPER

Alan S. Hardy, Lake Oswego, Oreg., assignor to Nike, Inc.,
Beaverton, Oreg.

Filed Oct. 28, 1997, Ser. No. 78,584

Term of patent 14 years

LOC (6) Cl. 02 - 99

U.S. Cl. D2—972



395,948

WIND INSTRUMENT TRANSPORTING PACK

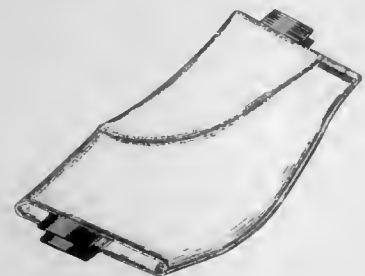
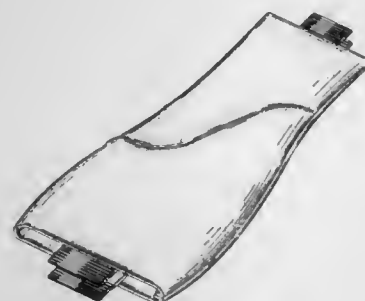
JoAnn Funk, P.O. Box 25343, Woodbury, Minn. 55125-0343

Filed Apr. 4, 1995, Ser. No. 37,108

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—204



395,949

NOVELTY GOLF BAG ASHTRAY AND KEY CHAIN

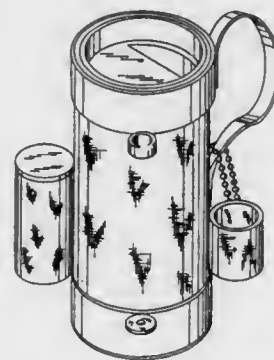
Daniel R. Dye, 2944 N. 19th St., Milwaukee, Wis. 53206

Filed May 6, 1997, Ser. No. 70,322

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—211



395,950

CORD DISPENSER

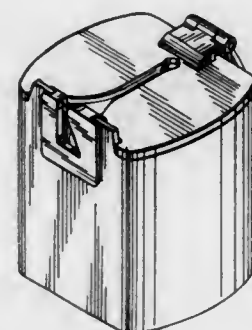
Linda Friedman, Staten Island, N.Y., assignor to J. R. Duffy
Inc., Great Neck, N.Y.

Filed Aug. 12, 1996, Ser. No. 58,326

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—215



395,951

BEVERAGE CONTAINER

Kevin Gianatiempo, 10826 Daisy Ridge Rd., Sandy, Utah
84070-5264

Filed Mar. 4, 1997, Ser. No. 67,767

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—229



395,952

CONTAINER

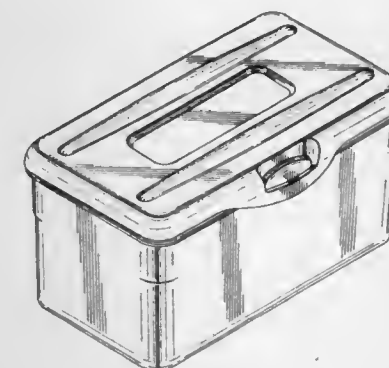
Carey Alix Buczwinski; Todd Christopher Larson; Annamaria
Serbiak, all of Appleton, Wis.; Alfred Jack Astoreca, Annan-
dale; Peter Anthony Piscopo, Medford, both of N.J., and
Richard Herman Seager, Mystic, Conn., assignors to
Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Jun. 4, 1997, Ser. No. 71,678

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—294



395,953

SEPARATING DEVICE

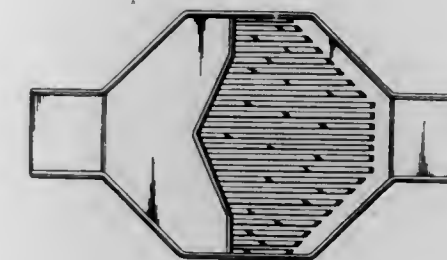
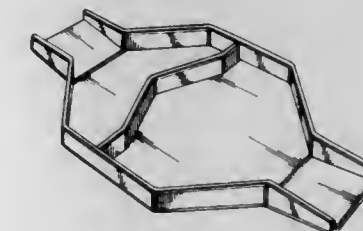
Dennis L. Weyrauch, 14503 E. 40th Ter., Independence, Mo.
64055, and Charles D. Miller, Jr., 703 Piute, Independence,
Mo. 64056

Filed Aug. 15, 1996, Ser. No. 58,450

Term of patent 14 years

LOC (6) Cl. 03 - 01

U.S. Cl. D3—313



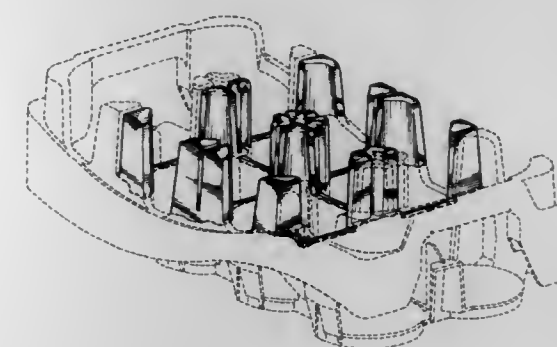
395,954

UPPER SURFACE OF A COMPARTMENT DIVIDER
STRUCTURE OF A BOTTLE CASEWilliam P. Apps, Alpharetta, and Gerald R. Koefelda, Atlanta,
both of Ga., assignors to Rehrg Pacific Co., Inc., Los Ange-
les, Calif.Division of Ser. No. 39,952, Jun. 7, 1995, Pat. No. Des.
378,249, which is a continuation-in-part of Ser. No. 37,469,
Apr. 13, 1995, Pat. No. Des. 380,901, which is a continuation-
in-part of Ser. No. 18,317, Feb. 3, 1994, Pat. No. Des. 361,431,
and Ser. No. 34,317, Feb. 1, 1995, Pat. No. Des. 379,717,
which is a continuation-in-part of Ser. No. 919,376, Jul. 29,
1992, Pat. No. 5,529,176. This application Feb. 28, 1997, Ser.
No. 67,185

Term of patent 14 years

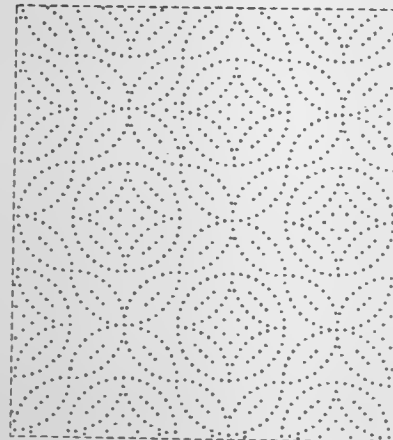
LOC (6) Cl. 03 - 01

U.S. Cl. D3—318



395,955

PATTERN FOR ABSORBENT SHEET MATERIAL
 Carol Lefebvre du Grosriez, Maisons Laffitte, France, assignor
 to Kayserberg, S.A., Kayserberg, France
 Division of Ser. No. 45,658, Oct. 25, 1995, Pat. No. Des.
 381,811. This application Feb. 3, 1997, Ser. No. 66,028
 Term of patent 14 years
 LOC (6) Cl. 05 - 06
 U.S. Cl. D5—57

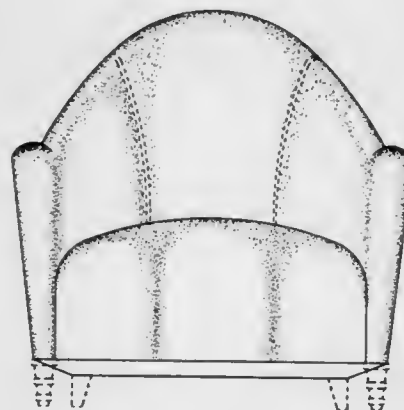


395,957

CLOTHES HANGER ADAPTED FOR MOUNTING ON A VERTICAL WALL
 Peter Günthert, Munich, Germany, assignor to M. Lange &
 Co.GmbH, Munich, Germany
 Filed Dec. 2, 1996, Ser. No. 63,234
 Claims priority, application Germany, May 30, 1996, M 96
 04 758.5
 Term of patent 14 years
 LOC (6) Cl. 06 - 08
 U.S. Cl. D6—320

395,958
CHAIR

John Hutton, New York, N.Y., assignor to Donghia Furniture
 Co., Ltd., New York, N.Y.
 Filed Jan. 10, 1997, Ser. No. 64,789
 Term of patent 14 years
 LOC (6) Cl. 06 - 01
 U.S. Cl. D6—334



395,956

CHEVAL MIRROR
 Paul Zaidman, Winnipeg, Canada, assignor to Palliser Furni-
 ture Ltd., Winnipeg, Canada
 Filed Feb. 28, 1997, Ser. No. 66,717
 Term of patent 14 years
 LOC (6) Cl. 06 - 07
 U.S. Cl. D6—312



395,959

SEAT

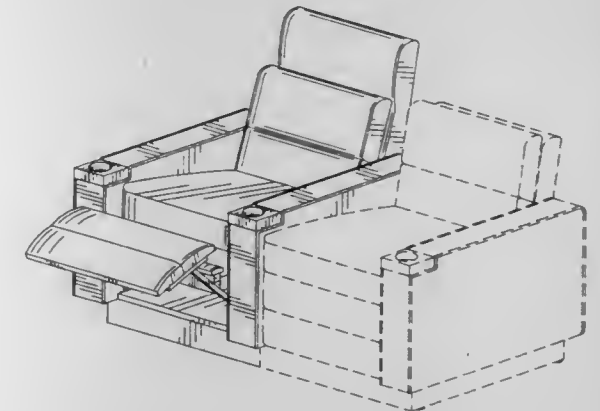
Peter Maly, Hamburg, Germany, assignor to Roset S.A., Jeffrey W. Smith, 12564 NE. 14th Ave., N. Miami, Fla. 33161
 France
 Filed May 20, 1997, Ser. No. 71,831
 Term of patent 14 years
 LOC (6) Cl. 06 - 01
 U.S. Cl. D6—334



395,961

RECLINING THEATRE SEAT

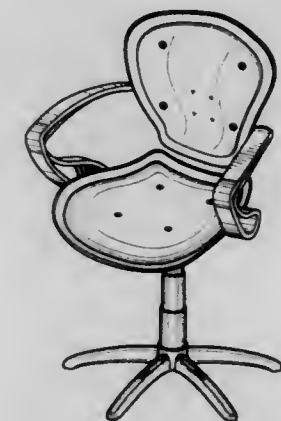
Peter Maly, Hamburg, Germany, assignor to Roset S.A., Jeffrey W. Smith, 12564 NE. 14th Ave., N. Miami, Fla. 33161
 Filed Mar. 26, 1997, Ser. No. 68,285
 Term of patent 14 years
 LOC (6) Cl. 06 - 01
 U.S. Cl. D6—360



395,962

SWIVEL OFFICE CHAIR, ESPECIALLY FOR OFFICE USE

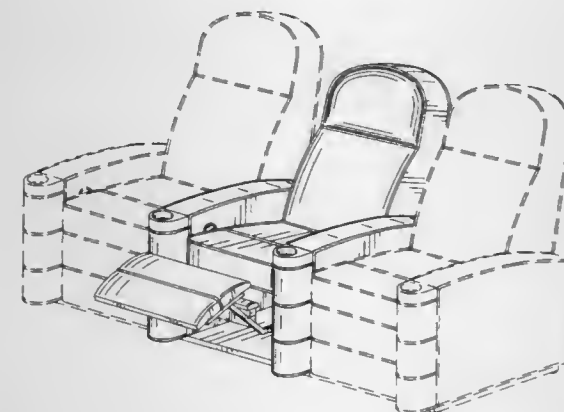
Arrigo Buffon, Bigolino Di Valdobbadiene, Italy, assignor to
 Brado S.R.L., Bigolino Di Valdobbadiene, Italy
 Filed Nov. 20, 1996, Ser. No. 63,006
 Claims priority, application Italy, May 20, 1996, TV96A0031
 Term of patent 14 years
 LOC (6) Cl. 06 - 01
 U.S. Cl. D6—366



395,960

RECLINING THEATRE SEAT

Jeffrey W. Smith, 12564 NE. 14th Ave., N. Miami, Fla. 33161
 Filed Mar. 26, 1997, Ser. No. 68,284
 Term of patent 14 years
 LOC (6) Cl. 06 - 01
 U.S. Cl. D6—360



395,963

CHAIR

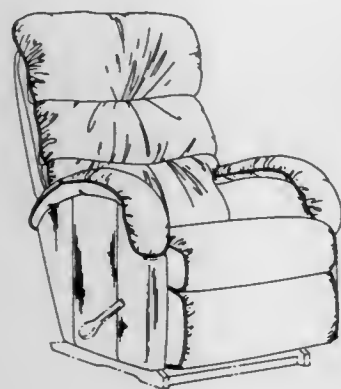
Jack R. Lewis, and Debra E. Spurlock, both of Monroe, Mich.,
assignors to La-Z-Boy, Incorporated, Monroe, Mich.

Filed Jun. 17, 1997, Ser. No. 72,449

Term of patent 14 years

LOC (6) Cl. 06 - 01

U.S. Cl. D6—367



395,965

BED

John Hutton, New York, N.Y., assignor to Donghia Furniture
Company, Ltd., New York, N.Y.

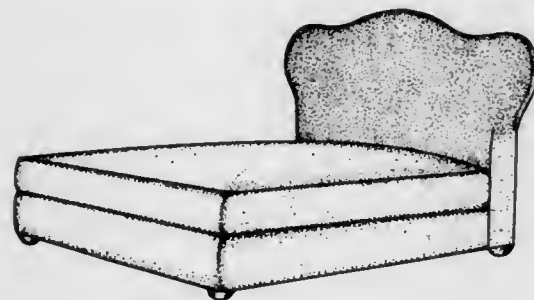
Filed May 17, 1996, Ser. No. 54,658

The portion of the term of this patent subsequent to Feb. 10,
2012, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 06 - 01

U.S. Cl. D6—393



395,964

CAPTAIN'S SLEIGH BED

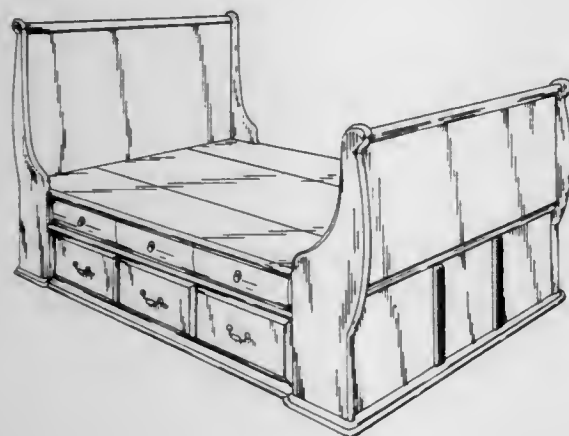
Marion W. Bell, Jr., Moreno Valley, Calif., assignor to Black-
hawk Furniture, Riverside, Calif.

Filed Sep. 5, 1997, Ser. No. 76,612

Term of patent 14 years

LOC (6) Cl. 06 - 01

U.S. Cl. D6—384



395,966

STORAGE LOCKER

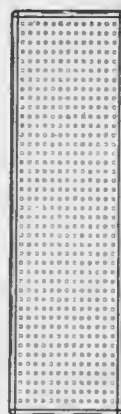
Thomas A. Tisbo, Barrington Hills; Torrence Anderson, and
Michael G. Uffner, both of Naperville, Ill., assignors to
Suncoast Corporation, Batavia, Ill.

Filed Nov. 11, 1996, Ser. No. 64,080

Term of patent 14 years

LOC (6) Cl. 06 - 04

U.S. Cl. D6—434



395,967

CHAIR BACK

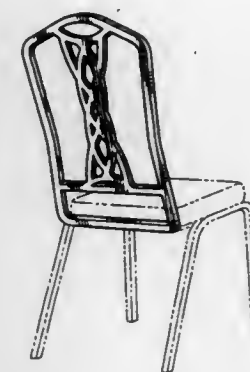
Philip P. Swy, Temperance, Mich., assignor to Michigan Tube
Swagers & Fabricators, Inc., Temperance, Mich.

Filed May 13, 1997, Ser. No. 70,640

Term of patent 14 years

LOC (6) Cl. 06 - 06

U.S. Cl. D6—502



395,969

FURNITURE TOP

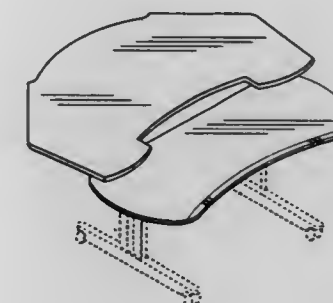
Stephen Barlow-Lawson, 129 W. 22nd, New York, N.Y. 10011

Filed Mar. 5, 1997, Ser. No. 67,383

Term of patent 14 years

LOC (6) Cl. 06 - 04

U.S. Cl. D6—511



395,968

DISPLAY CASE DOOR

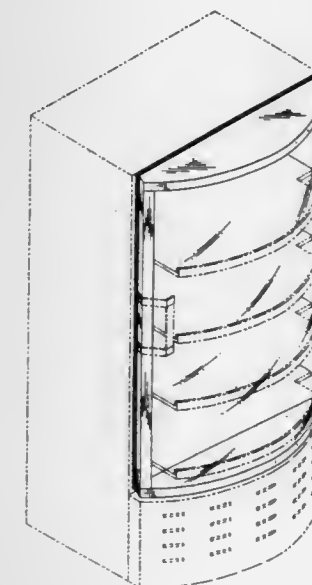
Robert A. Shappell, Washington, N.J., assignor to Pike
Machine Products, Inc., Elizabeth, N.J.

Filed May 5, 1997, Ser. No. 69,868

Term of patent 14 years

LOC (6) Cl. 06 - 04

U.S. Cl. D6—509



395,970

COFFEE PACKET DISPENSER

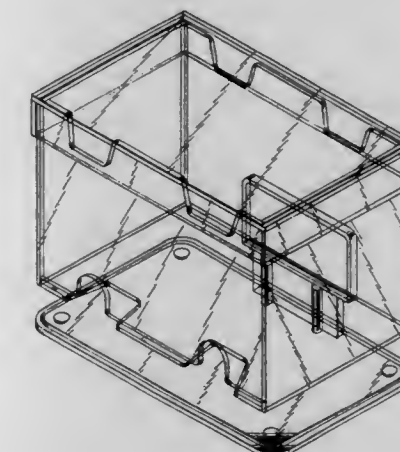
John C. Curry, P.O. Box 427, Port Richey, Fla. 34673-0427

Filed Mar. 14, 1997, Ser. No. 68,009

Term of patent 14 years

LOC (6) Cl. 06 - 04

U.S. Cl. D6—515



395,971

WIRE SHOWER CADDY

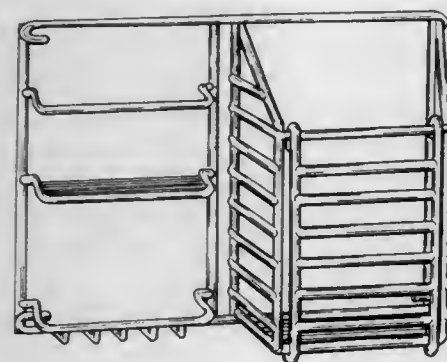
James A. Hofman, Hockessin, Del., assignor to Zenith Products Corp., New Castle, Del.

Filed Sep. 4, 1997, Ser. No. 76,169

Term of patent 14 years

LOC (6) Cl. 06 - 04

U.S. Cl. D6—525



395,973

CORD PULL

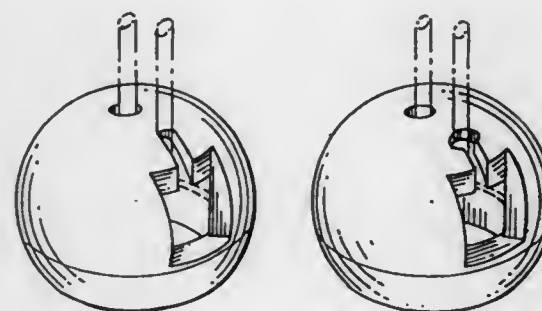
Chung-Chen Huang, Taipei, Taiwan, assignor to Teh Yor Industrial Co., Ltd., Taipei, Taiwan

Filed Apr. 14, 1997, Ser. No. 69,186

Term of patent 14 years

LOC (6) Cl. 06 - 10

U.S. Cl. D6—581



395,972

COMBINED DISPLAY AND DISPENSING UNIT

Eliezer Levy, Kasteelstraat 49, Beersel, Belgium

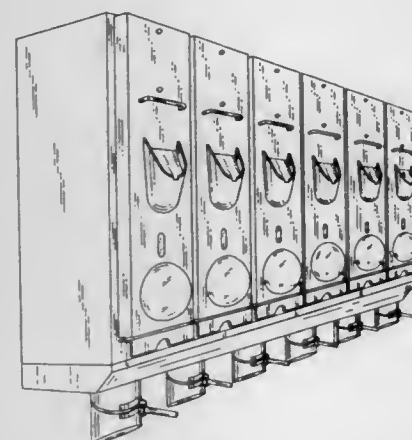
Filed Dec. 17, 1996, Ser. No. 63,830

Claims priority, application WIPO, Jun. 19, 1996, DM/036714

Term of patent 14 years

LOC (6) Cl. 23 - 02

U.S. Cl. D6—515



395,974

COMFORTER HAVING A STITCH PATTERN

Juliette M. Mansfield, Seattle, Wash., assignor to Pacific Coast Feather Company, Seattle, Wash.

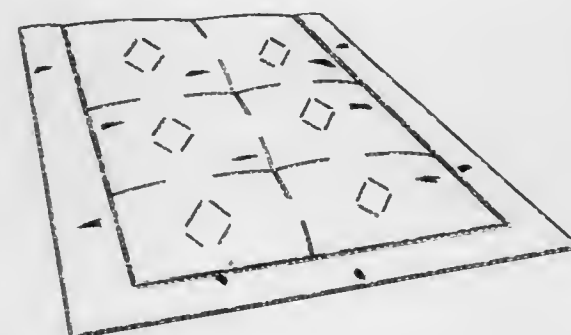
Filed Jul. 3, 1996, Ser. No. 56,621

The portion of the term of this patent subsequent to Mar. 24, 2012, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 06 - 13

U.S. Cl. D6—603



395,975

COFFEE MACHINE

Rafael Viguer Munoz, L'Hospitalet de Llobregat, Spain, assignor to Gaggia Espanola, S.A., Barcelona, Spain

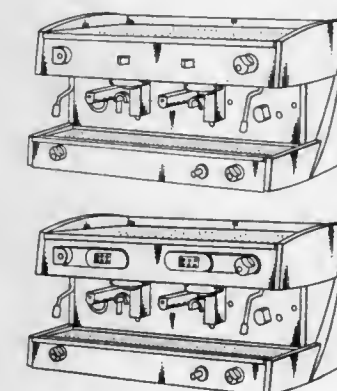
Filed Jun. 25, 1996, Ser. No. 56,167

Claims priority, application Spain, Dec. 29, 1995, 136565

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—308



395,977

TOASTER

Oscar Enrique Pena Angarita, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

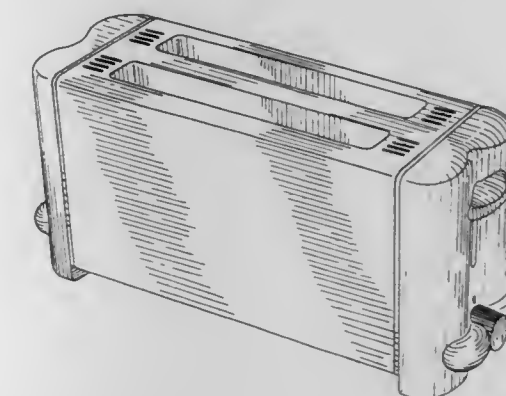
Filed Apr. 24, 1996, Ser. No. 53,580

Claims priority, application Hague Agreement, Oct. 25, 1995, DM/035712

Term of patent 14 years

LOC (6) Cl. 07 - 02

U.S. Cl. D7—330



395,976

ESPRESSO MACHINE

Florian Seiffert, and Hartwig Kahlcke, both of Wiesbaden, Germany, assignors to Robert Krups GmbH & Co. KG, Solingen, Germany

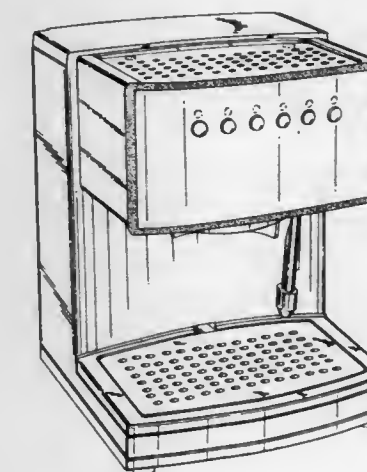
Filed Dec. 5, 1996, Ser. No. 63,323

Claims priority, application France, Jun. 5, 1996, 963309

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—309



395,978

TOASTER

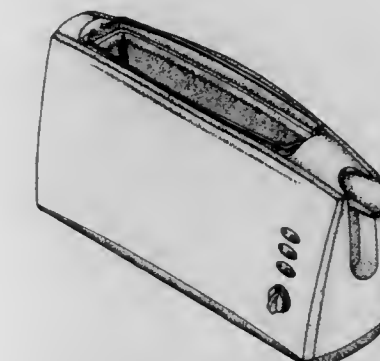
Yu-Yuan Lin, No. 72-1, Shin-Lo Rd., Tainan, Taiwan

Filed Mar. 18, 1997, Ser. No. 69,042

Term of patent 14 years

LOC (6) Cl. 07 - 02

U.S. Cl. D7—330



395,979
GRILL

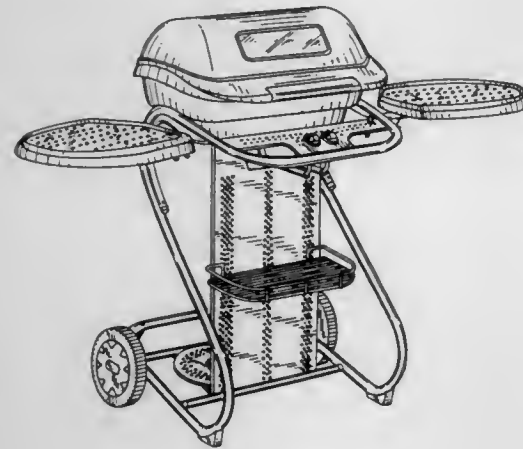
Augusto A. Picozza, Crystal Lake, and Henning J. Speyer, Downers Grove, both of Ill., assignors to Sunbeam Products, Inc., Delray Beach, Fla.

Filed Oct. 29, 1996, Ser. No. 61,692

Term of patent 14 years

LOC (6) Cl. 07 - 02

U.S. Cl. D7—334

395,981
MUG DECORATION

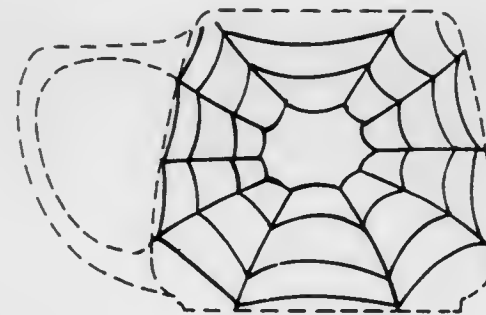
Morry Karp, 1295 Tower Grove Dr., Beverly Hills, Calif. 90210

Filed Sep. 5, 1997, Ser. No. 76,235

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—396.4

395,982
BARBECUE GRILL COVER SHAPED LIKE AN
AUTOMOBILE

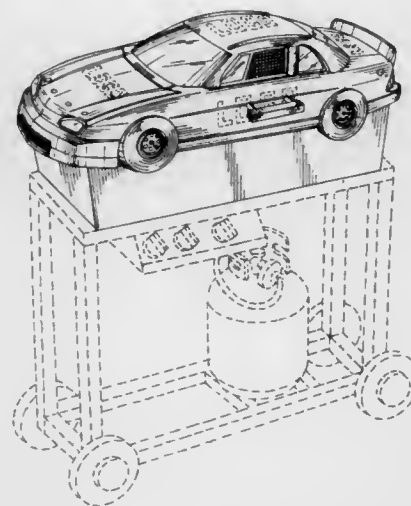
Gregory S. Dunn, 32A Heritage Dr., Windsor, Conn. 06095; Stylianos S. Manousos, 12420 Plantation Ln., North Palm Beach, Fla. 33408, and Edward J. Kennedy, 201 Bayou Ct., Coppell, Tex. 75013

Filed Jan. 30, 1997, Ser. No. 65,612

Term of patent 14 years

LOC (6) Cl. 07 - 02

U.S. Cl. D7—402

395,980
FRYER

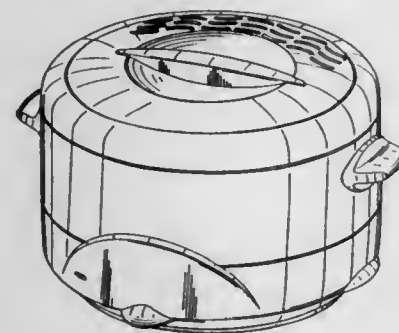
Pierre Boisselier, Selongey, France, assignor to SEB, Selongey, France

Filed Jun. 30, 1997, Ser. No. 72,801

Term of patent 14 years

LOC (6) Cl. 07 - 02

U.S. Cl. D7—354



395,983

SERVING TRAY

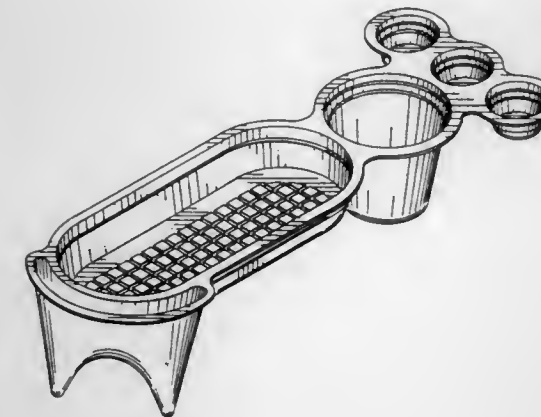
Hector Virgilio Panta Chica, Guayaquil, Ecuador, assignor to Pantalimentos, Cia. Ltda., Ecuador

Filed Sep. 8, 1995, Ser. No. 43,633

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—553



395,985

FOOD CONTAINER

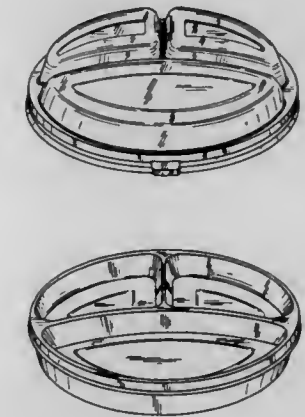
Calvin S. Krupa, Medina, and Robert Knoss, Anoka, both of Minn., assignors to Ultra Pac, Inc., Rogers, Minn.

Filed Apr. 18, 1997, Ser. No. 70,002

Term of patent 14 years

LOC (6) Cl. 07 - 01

U.S. Cl. D7—629



395,986

ELECTRIC ICE CREAM SCOOP

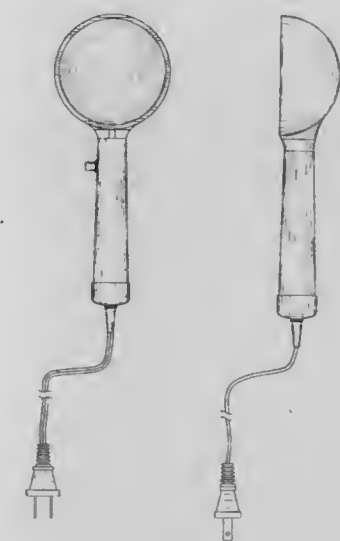
Robert R. Jones, 900 NE. 49th St., Ocala, Fla. 34479

Filed Jul. 10, 1997, Ser. No. 73,444

Term of patent 14 years

LOC (6) Cl. 07 - 99

U.S. Cl. D7—681



395,984

PEPPER CONTAINER

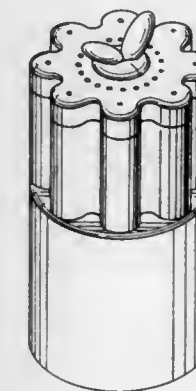
Heng-Te Yang, P.O. Box 90, Tainan City 704, Taiwan

Filed Mar. 31, 1997, Ser. No. 68,824

Term of patent 14 years

LOC (6) Cl. 07 - 06

U.S. Cl. D7—591



395,987

HANDHELD COFFEE GROUND PACKER

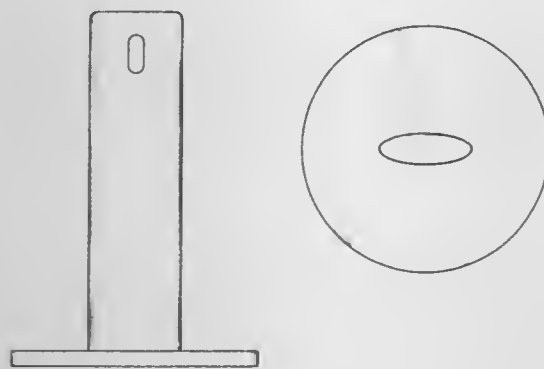
David G. Loughhead, and Sharon L. Loughhead, both of 2 N. Sibley Ave., Stockton, Calif. 95215

Filed Sep. 18, 1997, Ser. No. 76,712

Term of patent 14 years

LOC (6) Cl. 07 - 04

U.S. Cl. D7—682



395,989

MULTIBLADE WHISK

Mary-Elizabeth Proshan, 301 N. Harrison St., Princeton, N.J. 08540

Filed Nov. 25, 1996, Ser. No. 63,066

Term of patent 14 years

LOC (6) Cl. 07 - 02

U.S. Cl. D7—688



395,990

CUTTING OPENER FOR PLASTIC PAILS

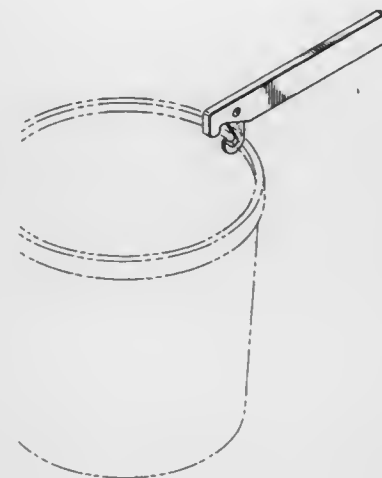
Charles H. Willis, 823 Olympic Blvd., Everett, Wash. 98203

Filed Jul. 29, 1993, Ser. No. 11,201

Term of patent 14 years

LOC (6) Cl. 07 - 99

U.S. Cl. D8—41



395,988

WIENER STICK

William Clifton Badour, 3 Orchard Drive, Barrie, Ontario, Canada, L4M-1N5

Filed Jul. 31, 1997, Ser. No. 74,326

Term of patent 14 years

LOC (6) Cl. 07 - 06

U.S. Cl. D7—683



395,991

SCISSORS

Bruno Gstadler, Poissy, France, assignor to Manufacture d'Articles de Precision, Et de Dessin, France

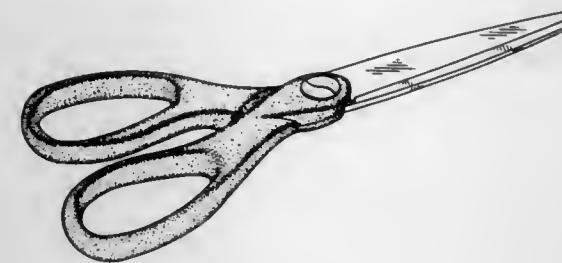
Filed Aug. 30, 1996, Ser. No. 59,047

Claims priority, application WIPO, Mar. 22, 1996, DM/035905

Term of patent 14 years

LOC (6) Cl. 08 - 03

U.S. Cl. D8—57



395,993

CLAMP FOR A POWER TOOL

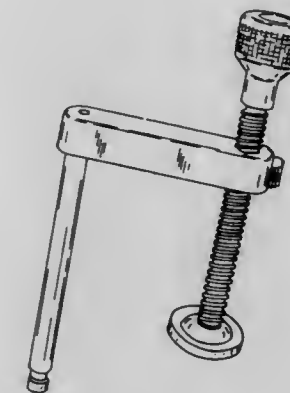
Scott D. Price, Singapore, and William R. Stumpf, Kingsville, Md., assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 29, 1997, Ser. No. 65,567

Term of patent 14 years

LOC (6) Cl. 08 - 05

U.S. Cl. D8—72



395,992

SCISSORS

Kyle M. Bennett, Wausau, and Robert W. Cornell, Schofield, both of Wis., assignors to Fiskars Oy AB, Helsinki, Finland

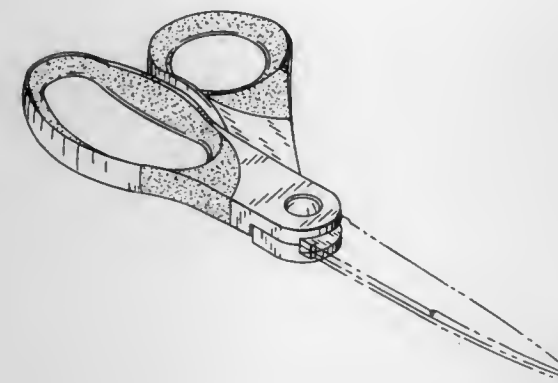
Continuation-in-part of Ser. No. 47,807, Nov. 6, 1995, Pat. No. Des. 383,957, which is a continuation-in-part of Ser. No. 28,298, Sep. 12, 1994, Pat. No. Des. 363,866. This application

Filed Jan. 18, 1997, Ser. No. 74,377

Term of patent 14 years

LOC (6) Cl. 08 - 03

U.S. Cl. D8—57



395,994

CAM LATCH EXTRUSION FOR TRAILER DOOR

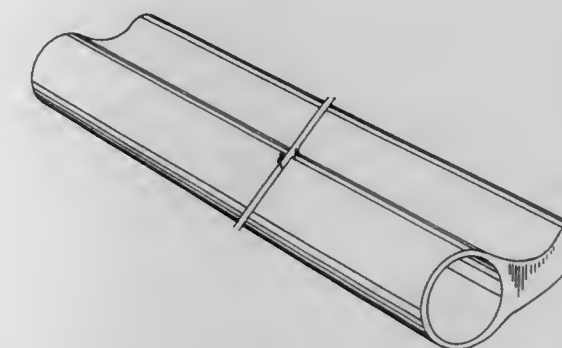
Roland K. Hall, Jr., Bokchito, Okla., assignor to Sundowner Trailers, Inc., Coleman, Okla.

Filed Jan. 23, 1997, Ser. No. 65,210

Term of patent 14 years

LOC (6) Cl. 08 - 07

U.S. Cl. D8—343



395,995

**CHECKING MECHANISM FOR RECIPROCATING
OPERATIVE DEVICES INCLUDING DOOR CLOSER
SYSTEMS**

Ricardo Alonso, 111 S. Perry St., Denver, Colo. 80219

Filed May 12, 1997, Ser. No. 70,924

Term of patent 14 years

LOC (6) Cl. 08 - 07

U.S. Cl. D8—343



395,997

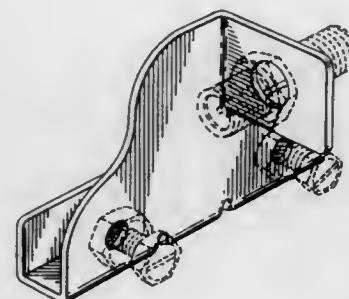
ELECTRICAL GROUND BRACKET FOR METER PANEL
Gene Coll, Cranford, N.J., and Cong Thanh Dinh, Montreal,
Canada, assignors to Diamond Communication Products,
Inc., Garwood, N.J.

Filed Apr. 30, 1997, Ser. No. 70,387

Term of patent 14 years

LOC (6) Cl. 08 - 05

U.S. Cl. D8—354



395,998

CARGO STRAP RETAINING APPARATUS

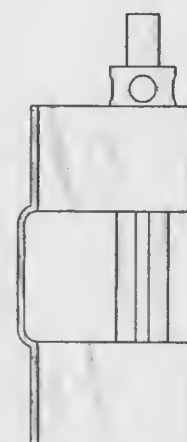
David Ballinger, Rte. 1 Box 24-B, Thomasville, Ala. 36784

Filed Apr. 24, 1997, Ser. No. 69,793

Term of patent 14 years

LOC (6) Cl. 08 - 05

U.S. Cl. D8—358



395,996

ROTOR PLATE FOR BRACKET ASSEMBLY

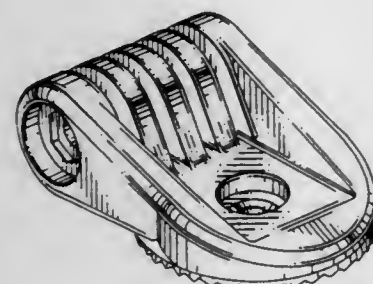
Roy Fischer, 7641 E. Gray Rd., Scottsdale, Ariz. 85260

Filed Jun. 6, 1997, Ser. No. 71,766

Term of patent 14 years

LOC (6) Cl. 08 - 05

U.S. Cl. D8—349



395,999

EXTENSION CORD ORGANIZING APPARATUS

Glen Schmidt, 41667 Windsor Rd, Freeport, Minn. 56331

Filed May 8, 1997, Ser. No. 70,472

Term of patent 14 years

LOC (6) Cl. 08 - 05

U.S. Cl. D8—358



396,001

FIREPLACE DRAFT GUARD

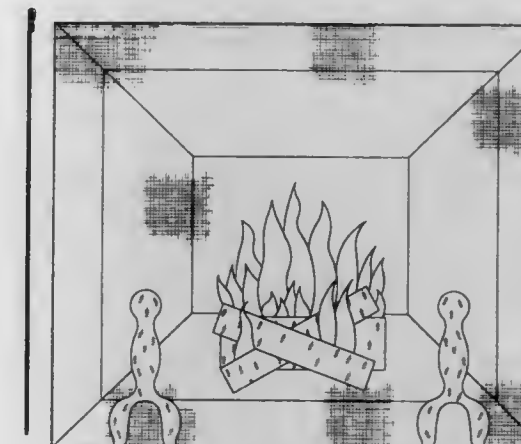
Pauline S. Crumpler, 312 Silo Dr., Lenoir City, Tenn. 37772

Filed Feb. 28, 1997, Ser. No. 67,398

Term of patent 14 years

LOC (6) Cl. 07 - 08

U.S. Cl. D23—406



396,000

ORNAMENT HANGEREmily A. Cornelius, Albuquerque, N. Mex., assignor to Dandy
Design, Inc., Albuquerque, N. Mex.Continuation-in-part of Ser. No. 273, Oct. 9, 1992, aban-
doned. This application Aug. 8, 1994, Ser. No. 26,868

Term of patent 14 years

LOC (6) Cl. 08 - 08

U.S. Cl. D8—373



396,002

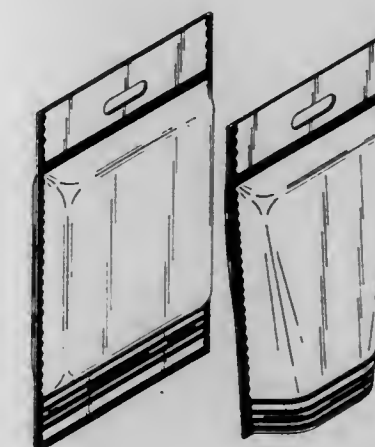
BAG FOR DISTRIBUTING MATERIALGary M. Bell, Crystal, Minn., assignor to Kapak Corporation,
St. Louis Park, Minn.

Filed Jun. 2, 1997, Ser. No. 71,546

Term of patent 14 years

LOC (6) Cl. 09 - 05

U.S. Cl. D9—305



396,003
BOTTLE

Russell Rowan Fenton, and Elmer (Chuck) H. Goss, both of East Amherst, N.Y., assignors to FWJ Plastic Packaging, Inc., Tonawanda, N.Y.

Filed Oct. 7, 1997, Ser. No. 77,733

Term of patent 14 years

LOC (6) Cl. 09 - 01

U.S. Cl. D9—337

396,005
COLLAPSIBLE CONTAINER SLEEVE

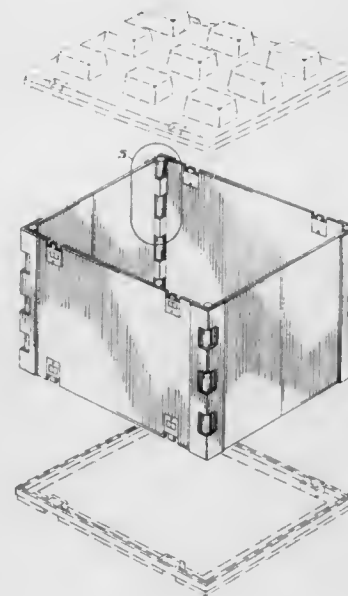
William G. Teags, Cave Creek, Ariz., assignor to Advanced Package Engineering, Inc., Phoenix, Ariz.

Filed Dec. 10, 1996, Ser. No. 63,555

Term of patent 14 years

LOC (6) Cl. 09 - 07

U.S. Cl. D9—434

396,004
JEWELRY BOX

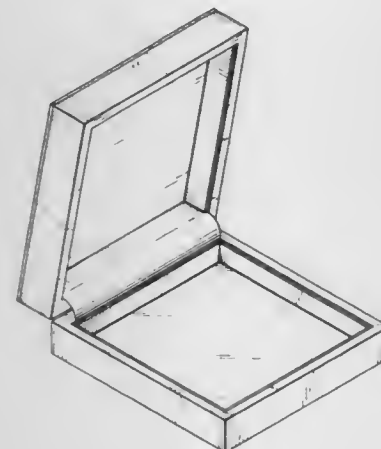
Sanaie Srinual, Bangpong THX, assignor to Cosmo Group PCL, Bangkok THX

Filed Jul. 24, 1996, Ser. No. 57,386

Term of patent 14 years

LOC (6) Cl. 09 - 07

U.S. Cl. D9—423

396,006
OIL BOTTLE MOUTH EXPANDER

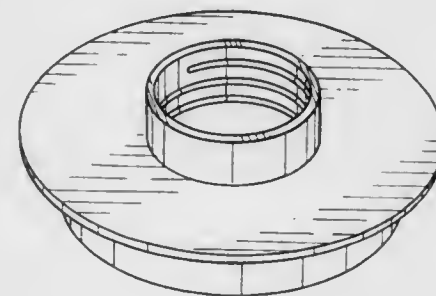
Virgil Harris, P.O. Box 124, Point Marion, Pa. 15474

Filed Jan. 6, 1997, Ser. No. 64,592

Term of patent 14 years

LOC (6) Cl. 09 - 07

U.S. Cl. D9—447

396,007
NOZZLE

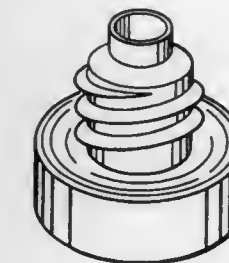
Nathan Palestrant, 5120 N. 79th Pl., Scottsdale, Ariz. 85250

Filed Mar. 19, 1997, Ser. No. 68,037

Term of patent 14 years

LOC (6) Cl. 09 - 07

U.S. Cl. D9—447

396,009
NOTCHED DISPENSER BOTTLE

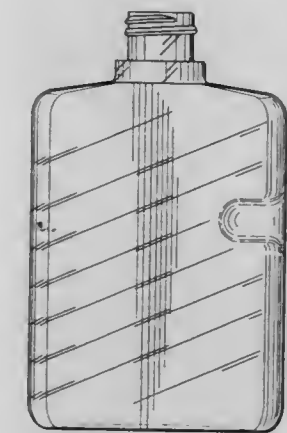
Jay Reubens, Wayland, Mass., assignor to Ultracenz Corporation, Boston, Mass.

Filed May 1, 1996, Ser. No. 53,875

Term of patent 14 years

LOC (6) Cl. 09 - 01

U.S. Cl. D9—530

396,008
DRUM SUPPORT

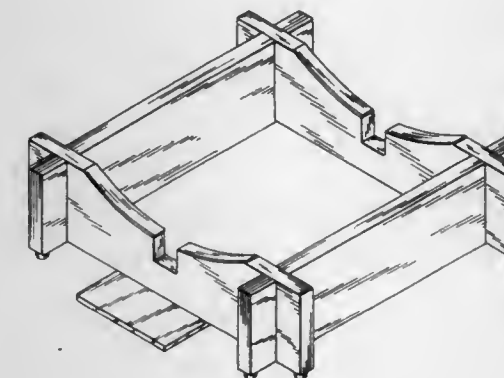
David Hay, 2564 Cherry St., Central Lake, Mich. 49622

Continuation-in-part of Ser. No. 41,101, Jul. 6, 1995, abandoned. This application Jul. 3, 1996, Ser. No. 56,639

Term of patent 14 years

LOC (6) Cl. 09 - 07

U.S. Cl. D9—455

396,010
WRISTWATCH

Severin S. Wunderman, Irvine, Calif., assignor to Severin Montres AG (Severin Montres SA) (Severin Montres Ltd.), Lengnau, Switzerland

Filed Mar. 25, 1996, Ser. No. 52,157

Claims priority, application WIPO, Sep. 25, 1995, DMA/003072

Term of patent 14 years

LOC (6) Cl. 10 - 02

U.S. Cl. D10—39



396,011

MEASURE FOR HOUSEHOLD USE

Kjell Henriksson, Bredaryd, Sweden, assignor to AB Thomas M. Luebke, Menomonee Falls, Wis., assignor to Mekanoverken, Forsheda, Sweden

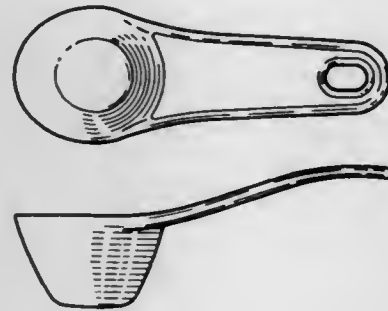
Filed Jul. 1, 1997, Ser. No. 73,822

Claims priority, application Sweden, Jan. 7, 1997, 97-0035

Term of patent 14 years

LOC (6) Cl. 10 - 04

U.S. Cl. D10—46.2



396,013

PLUG-IN ELECTRICAL INSTRUMENT

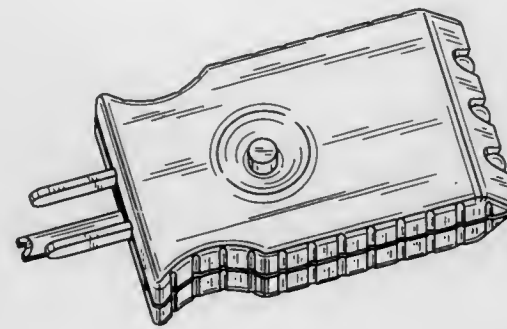
Applied Power Inc., Butler, Wis.

Filed Jan. 9, 1997, Ser. No. 64,746

Term of patent 14 years

LOC (6) Cl. 10 - 04

U.S. Cl. D10—78



396,012

FISH TAPE HANDLE

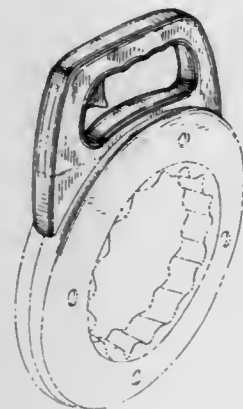
Dean R. Walsten, Slinger, Wis., assignor to Applied Power Inc., Butler, Wis.

Filed Aug. 8, 1997, Ser. No. 75,210

Term of patent 14 years

LOC (6) Cl. 10 - 04

U.S. Cl. D10—74



396,014

PEAK EXPIRATORY FLOW METER

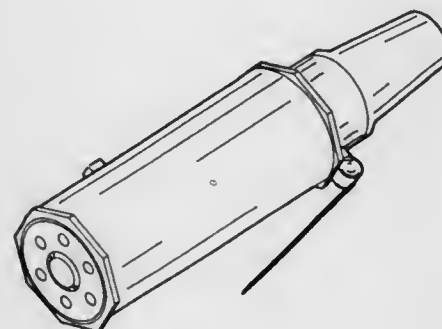
Warren V. Bigelow, 5712 Auto Club Cir., Bloomington, Minn. 55437

Filed Mar. 5, 1997, Ser. No. 67,095

Term of patent 14 years

LOC (6) Cl. 10 - 04

U.S. Cl. D10—96



396,015

EAR MOUNTED SLEEP PREVENTION ALARM

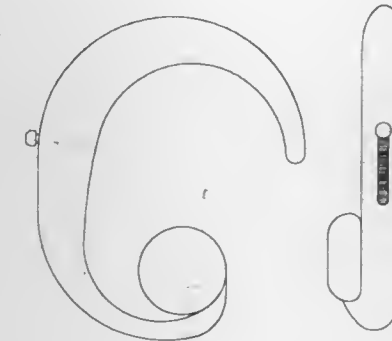
Frederick Beavers, 811 Forest Dr. South, Oxon Hill, Md. 20745

Filed Jul. 21, 1997, Ser. No. 73,290

Term of patent 14 years

LOC (6) Cl. 10 - 05

U.S. Cl. D10—106



396,017

Patent Not Issued For This Number

396,018

INTERIOR TREE

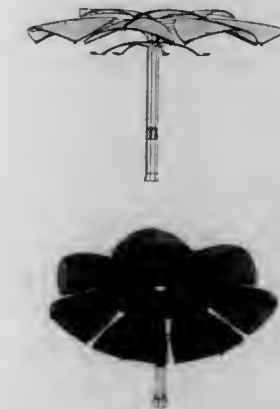
David R. Stover, Evanston; Merritt W. Seymour, Chicago; Robert J. Surra, Wheaton; Alan C. Wendt, Barrington, all of Ill., and Merle Lindby-Young, Bartonville, Tex., assignors to USC Interiors, Inc., Libertyville, Ill.

Filed Feb. 10, 1997, Ser. No. 66,290

Term of patent 14 years

LOC (6) Cl. 11 - 02

U.S. Cl. D11—118



396,016

BRACELET

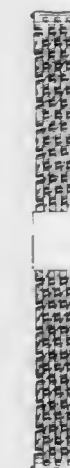
Eddy Schoepfer, Gorgier, Switzerland, assignor to Breitling S.A., Grenchen, Switzerland

Filed Oct. 15, 1996, Ser. No. 61,369

Term of patent 14 years

LOC (6) Cl. 11 - 01

U.S. Cl. D11—25



396,019

HANGING BASKET

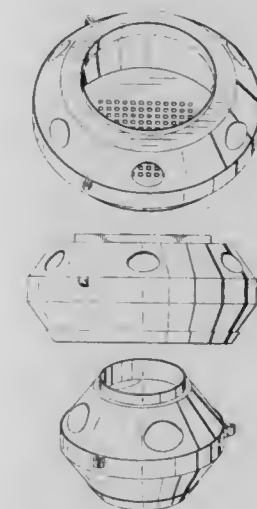
Howard E. Moss, Rte. 1 Box 325B, Miami, Okla. 64354, and Gary Cox, P.O. Box 421, Joplin, Mo. 64802

Filed Mar. 14, 1997, Ser. No. 68,141

Term of patent 14 years

LOC (6) Cl. 11 - 02

U.S. Cl. D11—152



396,020

AUTOMOBILE

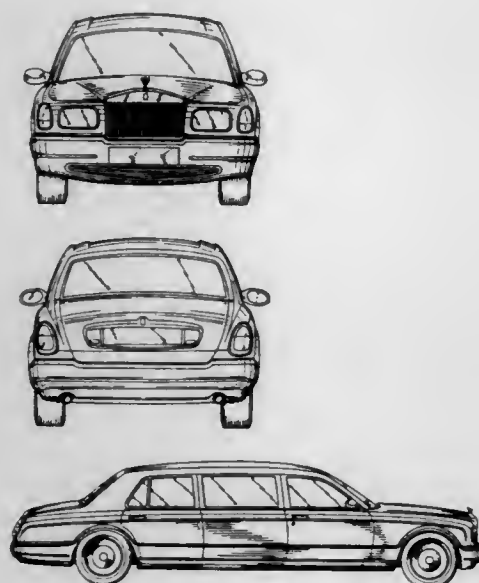
Richard David Hamblin, Solihull, United Kingdom, assignor to
Rolls-Royce Motor Cars Limited, Cheshire, England
Filed Nov. 21, 1996, Ser. No. 62,698

Claims priority, application United Kingdom, May 23, 1996,
2056491

Term of patent 14 years

LOC (6) Cl. 12 - 08

U.S. Cl. D12—92



396,022

AUTOMOBILE

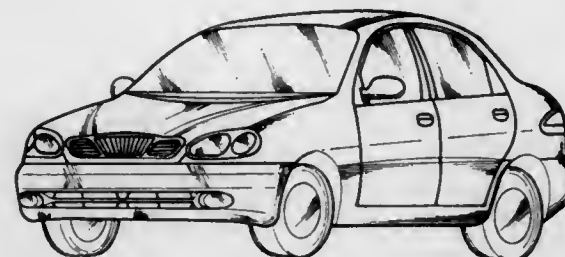
Jong-Pil Kim, Incheon, Rep. of Korea, assignor to Daewoo
Motor Co., Ltd., Incheon, Rep. of Korea
Filed Mar. 22, 1997, Ser. No. 67,850

Claims priority, application Rep. of Korea, Sep. 25, 1996,
96-20627; Sep. 25, 1996, 96-20633

Term of patent 14 years

LOC (6) Cl. 12 - 08

U.S. Cl. D12—92



396,021

AUTOMOBILE

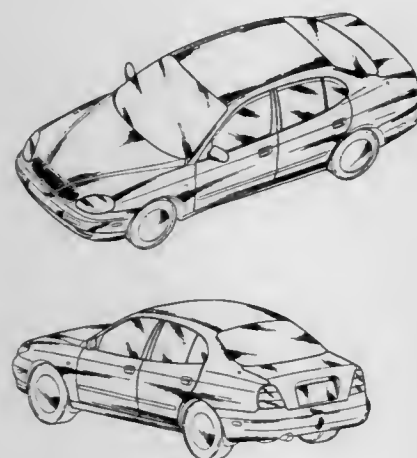
Hie-Dong Kim, Incheon, Rep. of Korea, assignor to Daewoo
Motor Co., Ltd., Incheon, Rep. of Korea
Filed Mar. 22, 1997, Ser. No. 67,847

Claims priority, application Rep. of Korea, Sep. 25, 1996,
96-20631

Term of patent 14 years

LOC (6) Cl. 12 - 08

U.S. Cl. D12—92



396,023

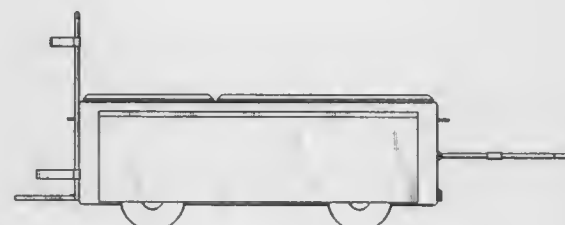
BEACH CART

Joyce Mello, 234 Bartlett Ave., Sharon Hill, Pa. 19079
Filed Jun. 5, 1997, Ser. No. 71,666

Term of patent 14 years

LOC (6) Cl. 12 - 10

U.S. Cl. D12—105



396,024

MOTORCYCLE MONOBODY WITH GAS TANK

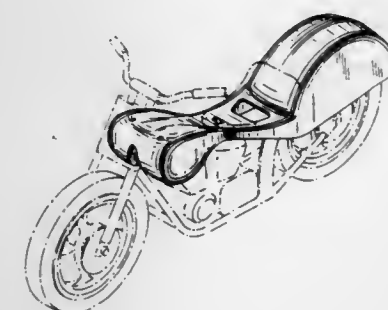
Ralph Gorham, Brooklyn, N.Y., assignor to Susan A. Povich, Marian Arvai, c/o Alpine Auto Collision 87 Ashley Street,
P.C., New York, N.Y.

Filed Feb. 14, 1997, Ser. No. 66,679

Term of patent 14 years

LOC (6) Cl. 12 - 11

U.S. Cl. D12—117



396,026

BABY STROLLER

Lisa Kunzman, Kenneth Kunzman, both of 1186 Queen La. #8,
West Chester, Pa. 19382; Anne James, and Albert James,
both of 96 W. 4TH St., Bayonne, N.J. 07002

Filed May 30, 1997, Ser. No. 71,502

Term of patent 14 years

LOC (6) Cl. 12 - 12

U.S. Cl. D12—129



396,027

CHILDREN'S WAGON

Lisa Kunzman, Kenneth Kunzman, both of 1186 Queen La. #8,
West Chester, Pa. 19382; Anne James, and Albert James,
both of 96 W. 4TH St., Bayonne, N.J. 07002

Filed Jun. 26, 1997, Ser. No. 72,965

Term of patent 14 years

LOC (6) Cl. 12 - 12

U.S. Cl. D12—129

396,025

COMBINED INFANT SEAT AND STROLLER

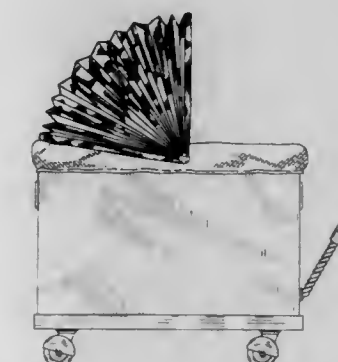
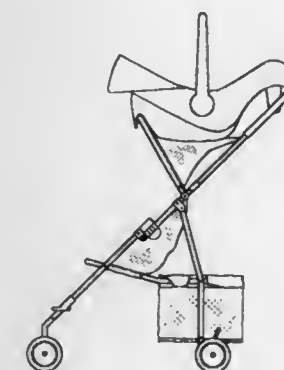
Cat Morrone, 1048 Redtail Rd., Audubon, Pa. 19403

Filed Mar. 20, 1997, Ser. No. 68,213

Term of patent 14 years

LOC (6) Cl. 12 - 12

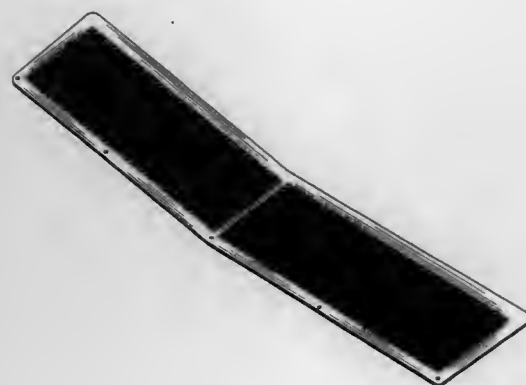
U.S. Cl. D12—129



396,028
AUTOMOBILE GRILL

Gregg J. Needham, 15 Morgan St., Worcester, Mass. 01606
Filed Apr. 25, 1997, Ser. No. 69,921
Term of patent 14 years
LOC (6) Cl. 12 - 16

U.S. Cl. D12—163

396,030
WORKSTATION CONTROLLER FOR A DATA
PROCESSING SYSTEM

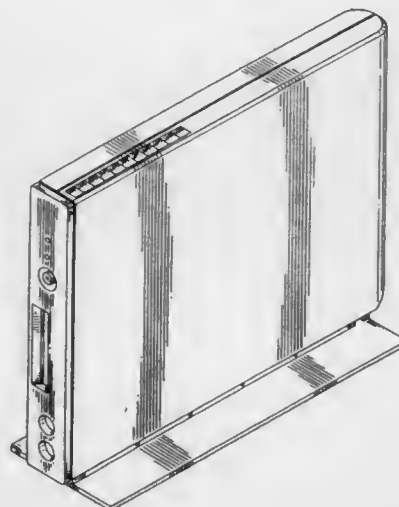
Tim Kerry Murphy, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 4, 1996, Ser. No. 60,738

The portion of the term of this patent subsequent to Jan. 13, 2012, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—100

396,029
SUPPORT MEMBER FOR A VEHICLE ARTICLE
CARRIER

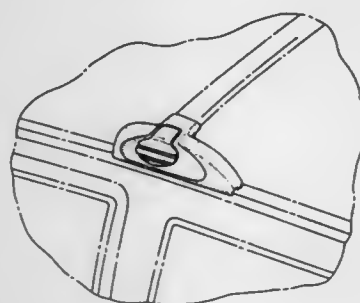
John S. Cucheran, Lake Orion; Victor M. Bogdan, Northville, and Jon D. Sparham, Waterford, all of Mich., assignors to JAC Products, Inc., Ann Arbor, Mich.

Filed Apr. 29, 1996, Ser. No. 53,669

Term of patent 14 years

LOC (6) Cl. 12 - 16

U.S. Cl. D12—414

396,031
COMPUTER HOUSING

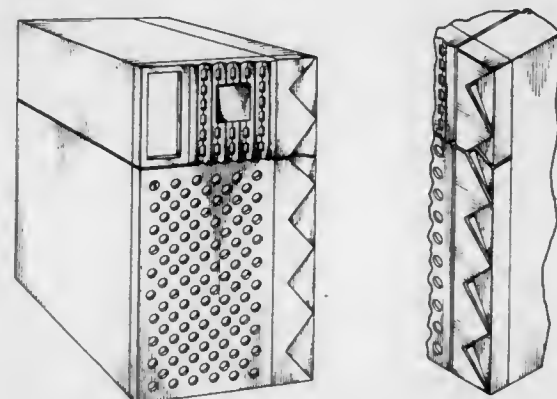
Chris Chiodo, Andover, Mass.; Alison Armstrong, San Francisco, Calif.; Anita Patel, Palo Alto, Calif.; Herbert Pfeifer, San Francisco, Calif., and Paul Montgomery, Kentfield, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 15, 1997, Ser. No. 70,760

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—102

396,032
ELECTRONIC COMPUTER

Osamu Kondo, Tokyo, and Masaaki Iino, Saitama-ken, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 57,746, Jul. 31, 1996. This application

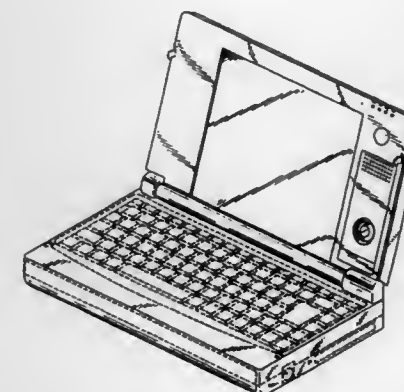
May 13, 1997, Ser. No. 70,686

Claims priority, application Japan, Mar. 27, 1996, 8-8187

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—106

396,034
COMPUTER MOUSE

Vernon N. Whiteing, 413 S. Van Dorn St., Apt. 201, Alexandria, Va. 22304

Filed Nov. 8, 1996, Ser. No. 62,147

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—114

396,033
BASE UNIT FOR RECEIVING AN ARTICLE

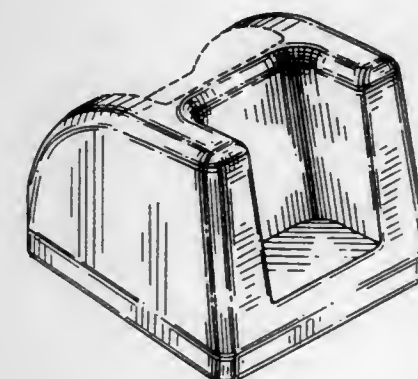
Kevin J. Ahearn, Matthews; Lawrence R. Ober, Pineville; Michiel Rehnier Auems, Charlotte, and Alan Lee Morris, Matthews, all of N.C., assignors to Hand Held Products, Inc., Charlotte, N.C.

Filed Sep. 12, 1996, Ser. No. 59,554

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—114

396,035
DISPLAY SCREEN WITH AN ICON

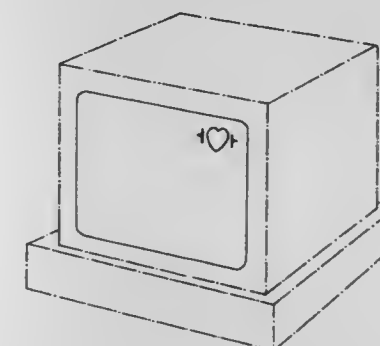
Armando M. Cappa, Reseda; Jeffrey D. Konopka, Northridge, and Warren R. Heer, La Palma, all of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Jan. 22, 1996, Ser. No. 49,296

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—114.5



396,036

DISPLAY SCREEN WITH AN ICON

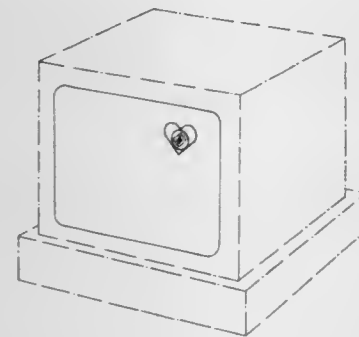
Armando M. Cappa, Reseda; Jeffrey D. Konopka, Northridge, and Warren R. Heer, La Palma, all of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Jan. 24, 1996, Ser. No. 49,412

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—11.5



396,038

TELEVISION RECEIVER

Toshikazu Asanuma; Hiroyuki Maeno; Muncyuki Nagai, all of Osaka, and Masakazu Nakamura, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

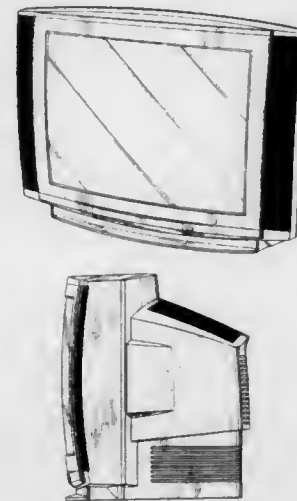
Filed Mar. 7, 1997, Ser. No. 67,587

Claims priority, application Japan, Sep. 9, 1996, 8-26932

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14—126



396,039

PORTABLE RADIO TELEPHONE

Tae-Min Park, Kwacheon, Rep. of Korea, assignor to LG Information & Communications, Ltd., Seoul, Rep. of Korea

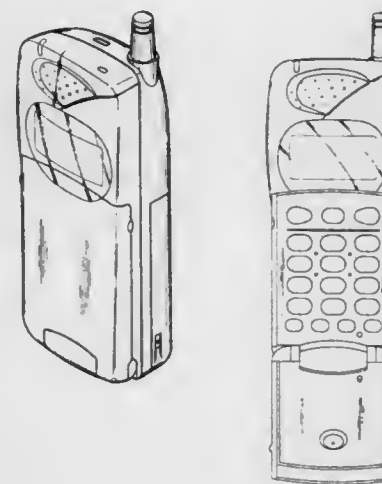
Filed Jul. 1, 1997, Ser. No. 73,844

Claims priority, application Rep. of Korea, Apr. 7, 1997, 97-6658

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14—138



396,037

DISPLAY SCREEN WITH AN ICON

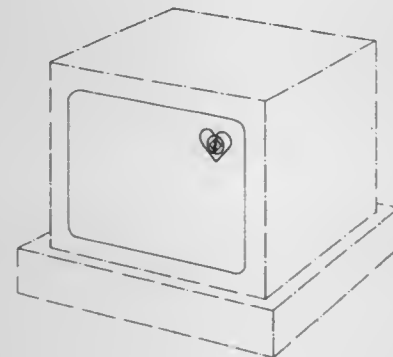
Armando M. Cappa, Reseda; Jeffrey D. Konopka, Northridge, and Warren R. Heer, La Palma, all of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Jan. 24, 1996, Ser. No. 49,413

Term of patent 14 years

LOC (6) Cl. 14 - 02

U.S. Cl. D14—114.5



396,040

WIRELESS LOCAL LOOP PHONE

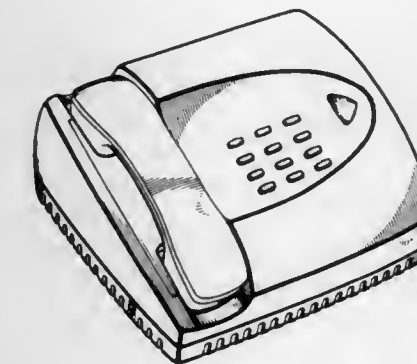
James H. Muir, and Christopher J. Muir, both of Indiatlantic, Fla., assignors to Bright Technologies, Inc., Norcross, Ga.

Filed Dec. 2, 1996, Ser. No. 63,226

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14—151



396,042

HANDLE GRIP

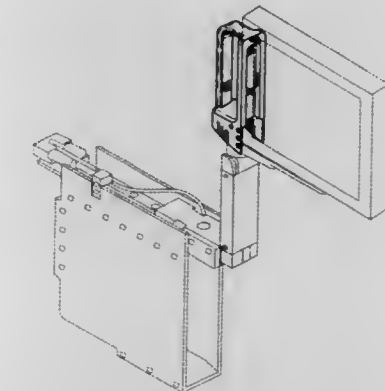
John B. Rosen, Eugene, Oreg., assignor to Advanced Multimedia Products Corporation, Eugene, Oreg.

Filed Mar. 14, 1997, Ser. No. 68,014

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14—239



396,041

WIRELESS ANTENNA STAND

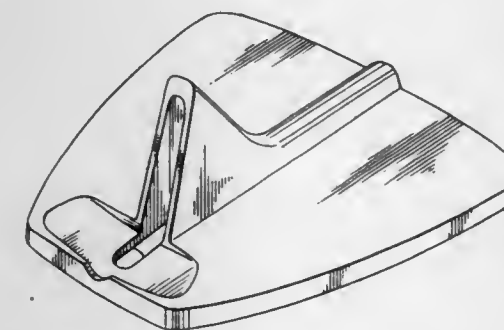
Clifford D. Read, Stittsville, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jan. 13, 1997, Ser. No. 64,889

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14—238



396,043

MODEM

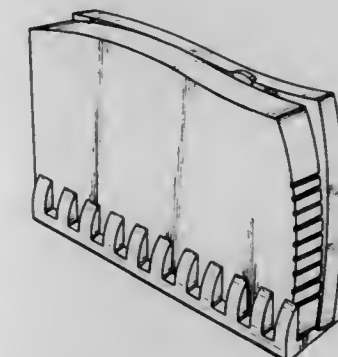
Lien-Hsin Liao, 4F, No. 539-2, Chung-Cheng Rd., Hsin-Tien City, Taipei, Taiwan

Filed Feb. 27, 1997, Ser. No. 67,105

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14—242



396,044
MODEM

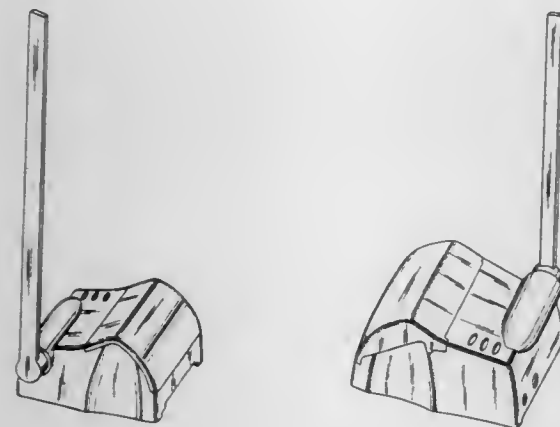
Paul King, and John Van Akkeren, both of Chicago, Ill., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Mar. 4, 1997, Ser. No. 67,344

Term of patent 14 years

LOC (6) Cl. 14 - 03

U.S. Cl. D14—242

396,046
STEER DEVICE FOR AN OUTBOARD MOTOR

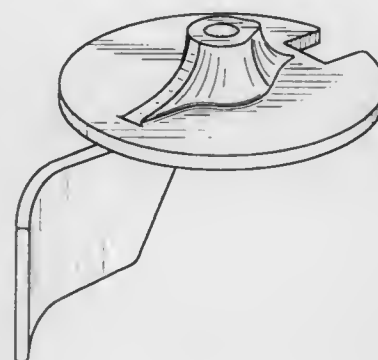
Allen Scheel, 534 Reiley Rd., and Steven Scheel, 300 Guadalupe River Dr., both of Seguin, Tex. 78155

Filed Oct. 24, 1996, Ser. No. 61,497

Term of patent 14 years

LOC (6) Cl. 15 - 01

U.S. Cl. D15—4

396,045
INTERNAL COMBUSTION ENGINE

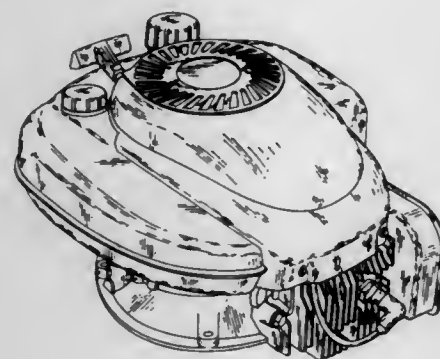
Brian D. Neeley, Nix, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Dec. 1, 1995, Ser. No. 47,355

Term of patent 14 years

LOC (6) Cl. 15 - 01

U.S. Cl. D15—1

396,047
VEHICLE FUELING POSITION

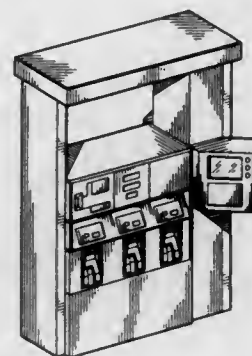
Donald R. Krone, and Robert R. Lake, both of P.O. Box 14129, Oklahoma City, Okla. 73113

Filed Mar. 14, 1997, Ser. No. 68,836

Term of patent 14 years

LOC (6) Cl. 15 - 02

U.S. Cl. D15—9.1

396,048
MECHANISE COOLER WITH TRANSPARENT COVER

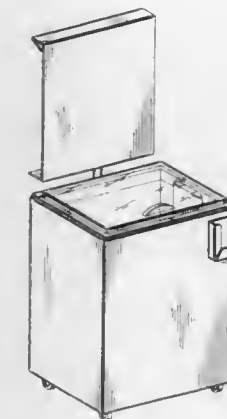
Thomas P. Meehan, Minneapolis, Minn., assignor to The Mike Meehan Company, Plymouth, Minn.

Filed Jan. 16, 1997, Ser. No. 64,992

Term of patent 14 years

LOC (6) Cl. 15 - 07

U.S. Cl. D15—83

396,050
CONTROL HOUSING FOR A SCROLL SAW

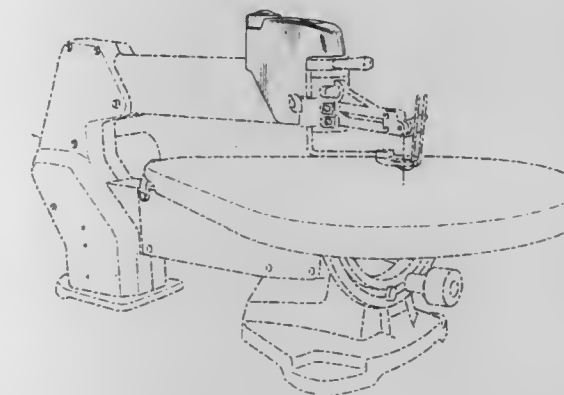
Robert P. Welsh, Hunt Valley, Md., assignor to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 62,012, Nov. 5, 1996, which is a continuation of Ser. No. 51,852, Mar. 1, 1996, abandoned. This application Jul. 16, 1997, Ser. No. 73,716

Term of patent 14 years

LOC (6) Cl. 15 - 09

U.S. Cl. D15—133

396,051
ELECTRONIC STILL CAMERA

Yasuki Mori, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

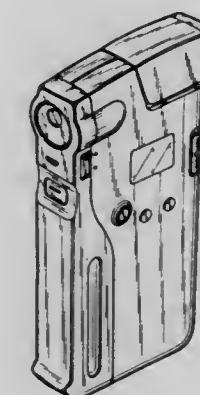
Filed Apr. 29, 1997, Ser. No. 69,927

Claims priority, application Japan, Nov. 8, 1996, 8-33858

Term of patent 14 years

LOC (6) Cl. 16 - 01

U.S. Cl. D16—202

396,049
CAN COMPACTOR REFUSE CONTAINER LID

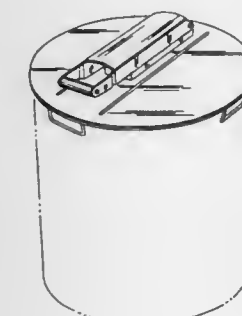
William H. Chadwick, Thousand Oaks, Calif., assignor to Pacific Fabrication, Inc., Ontario, Calif.

Filed Nov. 22, 1996, Ser. No. 62,728

Term of patent 14 years

LOC (6) Cl. 15 - 09

U.S. Cl. D15—123



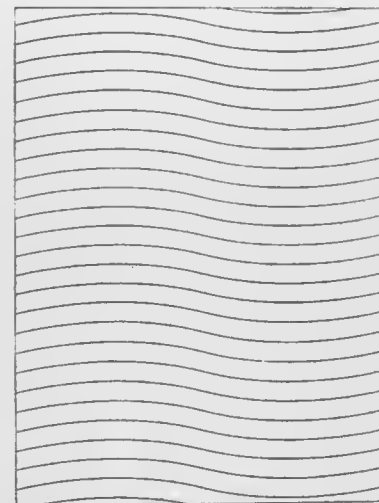
396,052
COMBINED EYE WEAR AND FLEXIBLE STRAP
TEMPLES
Jill L. Stolt, 31 Edmonds St., Rochester, N.Y. 14607
Division of Ser. No. 35,433, Feb. 21, 1995, Pat. No. Des.
377,037. This application Sep. 5, 1996, Ser. No. 59,210
Term of patent 14 years
LOC (6) Cl. 16 - 06
U.S. Cl. D16—306



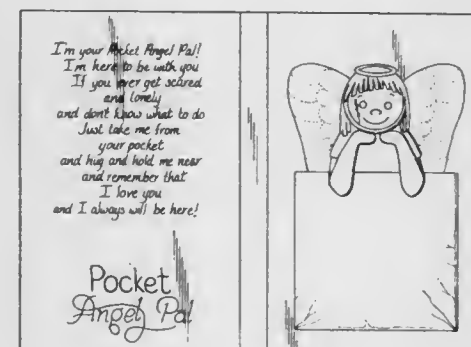
396,053
PRINTER
David Carl Bishop; John Wayne Gassett; Peter Joseph Mendel; Thomas Eugene Pangburn, all of Lexington, Ky., and Bernard Lee Wilzbach, Melissa, Tex., assignors to Lexmark International, Inc., Lexington, Ky.
Filed Feb. 24, 1997, Ser. No. 66,875
Term of patent 14 years
LOC (6) Cl. 14 - 02
U.S. Cl. D18—50



396,054
PAGE FOR AN EXERCISE BOOK
Giuliano Mazzuoli, Via B.Cellini, 50028 Tavarnelle Val Di Pesa, Firenze, Italy
Filed Jul. 22, 1996, Ser. No. 57,253
Claims priority, application Italy, Jan. 25, 1996, F19600007
Term of patent 14 years
LOC (6) Cl. 19 - 01
U.S. Cl. D19—5



396,055
GIFT CARD WITH REMOVABLE PERSONALIZED
ANGEL DOLL
Vickie C. Ritchey, 13640 N. County Rd., 845, East Westport, Ind. 47283
Filed Aug. 22, 1997, Ser. No. 75,519
Term of patent 14 years
LOC (6) Cl. 19 - 04
U.S. Cl. D19—29



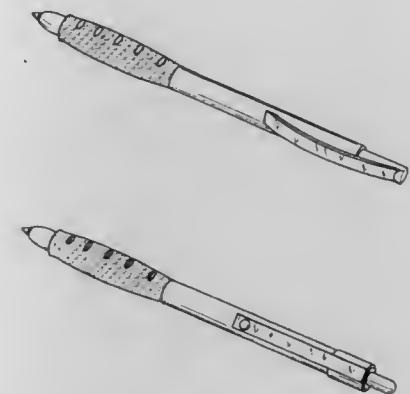
396,056
WRITING INSTRUMENT
Alain-Dominique Perrin, Rueil Malmaison, and Jacques Diltor, Villeneuve-la-Garenne, both of France, assignors to Cartier International B.V., Amsterdam-C, Netherlands
Filed Aug. 10, 1995, Ser. No. 42,425
Claims priority, application France, Feb. 10, 1995, 95 0833
Term of patent 14 years
LOC (6) Cl. 19 - 06
U.S. Cl. D19—49



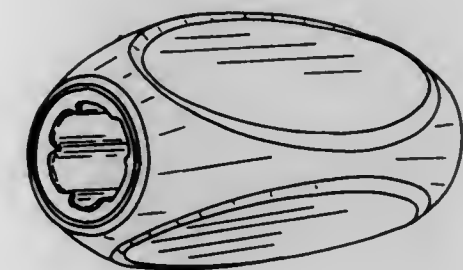
396,057
WRITING INSTRUMENT
Carl Bistrack, 10013 Jeanes St. #2, Philadelphia, Pa. 19116
Filed May 1, 1997, Ser. No. 70,162
Term of patent 14 years
LOC (6) Cl. 19 - 06
U.S. Cl. D19—50



396,058
BALL POINT PEN
Roland Schmidt, and Klaus Lackner, both of Heidelberg, Germany, assignors to Klio-Eterna Schreibgeräte GmbH & Co. KG, Wolfach, Germany
Filed May 12, 1997, Ser. No. 70,611
Claims priority, application Germany, Nov. 13, 1996, M96 09 971.2
Term of patent 14 years
LOC (6) Cl. 19 - 06
U.S. Cl. D19—51



396,059
PEN AND PENCIL CUSHION
Jeffrey S. Plantz, Seven Hills, and Nicholas E. Stanca, Westlake, both of Ohio, assignors to Magic American Corporation, Cleveland, Ohio
Filed Aug. 11, 1997, Ser. No. 75,018
Term of patent 14 years
LOC (6) Cl. 19 - 06
U.S. Cl. D19—55



396,060

SHEET MATERIAL WITH THE PERIODIC CIRCLE OF THE ELEMENTS

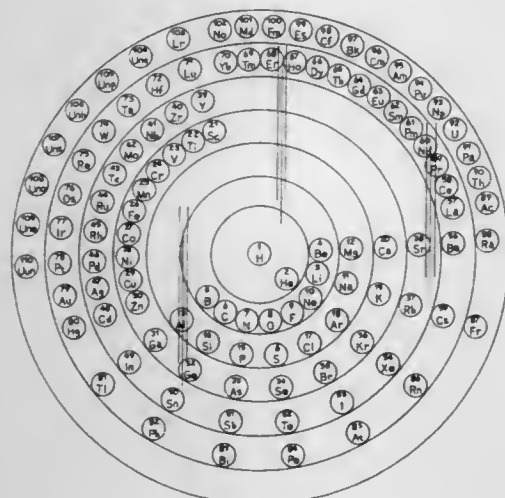
Richard G. Gilbride, P.O. Box 1034, West Tisbury, Mass. 02575

Filed May 2, 1996, Ser. No. 53,991

Term of patent 14 years

LOC (6) Cl. 19 - 07

U.S. Cl. D19—59



396,062

ELECTRIC PENCIL SHARPENER

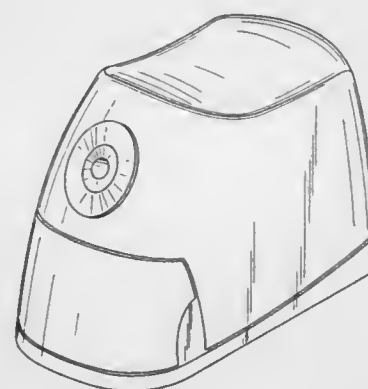
Colin White, East Greenwich, R.I., and Wells D. Haberstich, Rocky Hill, Conn., assignors to Stanley-Bostitch, Inc., East Greenwich, R.I.

Filed Jan. 13, 1997, Ser. No. 64,884

Term of patent 14 years

LOC (6) Cl. 19 - 06

U.S. Cl. D19—73



396,061

ADHESIVE TAPE TRANSFER APPLICATOR

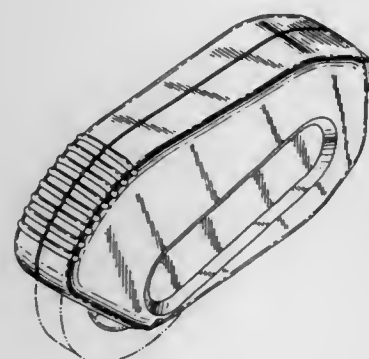
Craig D. Thompson, Inver Grove Heights, Minn., and Robert A. Luhman, New Richmond, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 29, 1997, Ser. No. 77,232

Term of patent 14 years

LOC (6) Cl. 19 - 02

U.S. Cl. D19—69



396,063

CARD CARRYING BOX WITH LID

Gary J. Elmer, and Robert V. Wayman, both of 15541 Product La., Huntington Bch., Calif. 92649

Continuation-in-part of Ser. No. 67,066, Feb. 24, 1997. This application Sep. 22, 1997, Ser. No. 76,765

Term of patent 14 years

LOC (6) Cl. 19 - 02

U.S. Cl. D19—75



396,064

DECAL

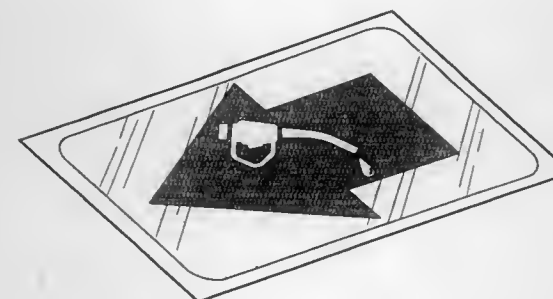
Lance Eugene Beebe, 8308 Mountainview Dr., Dalls, Tex. 75249

Filed Dec. 29, 1995, Ser. No. 48,504

Term of patent 14 years

LOC (6) Cl. 19 - 08

U.S. Cl. D20—11



396,066

SURFACE ORNAMENTATION FOR A SUPER STAR MONEY GAME

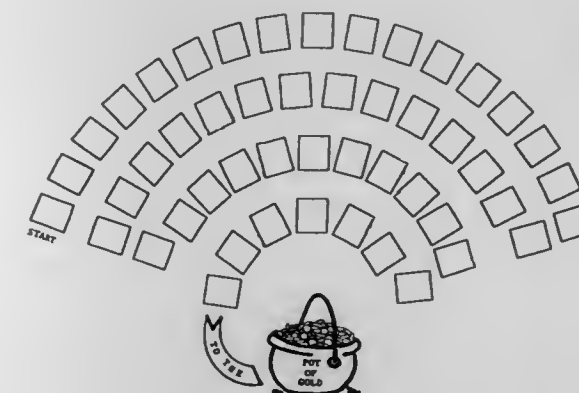
John T. Devin, Jr., 74 Holly Ridge Dr., Sandwich, Mass. 02563

Filed Oct. 5, 1995, Ser. No. 44,992

Term of patent 14 years

LOC (6) Cl. 21 - 01

U.S. Cl. D21—25



396,065

PLACARD DISPLAY STAND

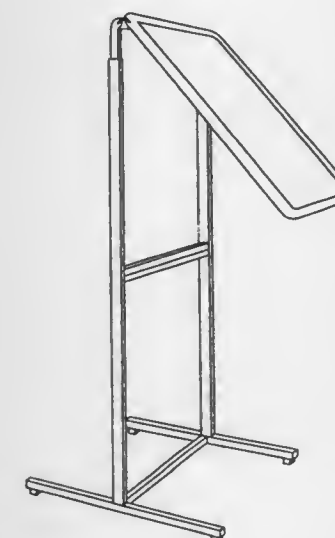
Paul C. Johnson, 1250 Mead Rd., Binghamton, N.Y. 13901, and Donald Johnson, 131 Whitney Beach, 6700 Gulf of Mexico Dr., Longboat Key, Fla. 34228

Filed Feb. 20, 1996, Ser. No. 50,423

Term of patent 14 years

LOC (6) Cl. 20 - 02

U.S. Cl. D20—41



396,067

GAME MACHINE

Isao Uehara, Zama, Japan, assignor to Konami Co., Ltd., Hyogo-ken, Japan

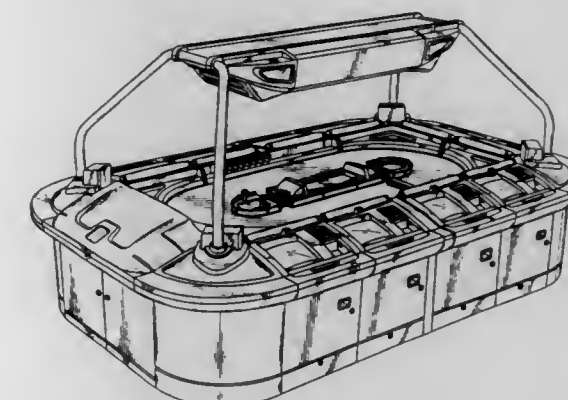
Filed Feb. 12, 1997, Ser. No. 66,515

Claims priority, application Japan, Aug. 30, 1996, 8-26064

Term of patent 14 years

LOC (6) Cl. 21 - 02

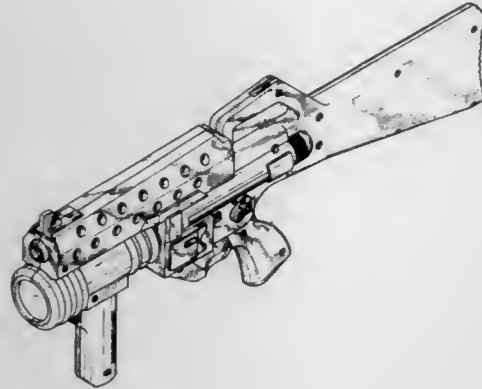
U.S. Cl. D21—37



396,068

OPTICAL BEAM GUN FOR A GAME MACHINE
 Noriyoshi Chikui, and Hirofumi Fujimoto, both of Kobe, Japan, assignors to Konami Co., Ltd., Hyogo-ken, Japan
 Filed Jun. 3, 1997, Ser. No. 71,593
 Claims priority, application Japan, Dec. 6, 1996, 8-037040(D)
 Term of patent 14 years
 LOC (6) Cl. 21 - 01

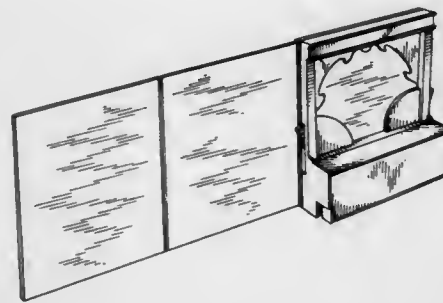
U.S. Cl. D21—48



396,070

GARDEN PLAYSET WITH PANELS FOR DECORATION
 Allison Katzman, Evanston; Randall Jon Klimpert, Wilmette; Dianne Elizabeth Lauble, Chicago; Michael John Lichodziejewski, Schaumburg; Craig Dennis Sellers, and Paula Yurkovic, both of Chicago, all of Ill., assignors to Meyer/Glass Design, Ltd., Chicago, Ill.
 Filed Jul. 11, 1997, Ser. No. 73,383
 Term of patent 14 years
 LOC (6) Cl. 21 - 01

U.S. Cl. D21—109



396,071

VETERINARY PLAYSET WITH PANELS FOR DECORATION

Allison Katzman, Evanston; Randall Jon Klimpert, Wilmette; Dianne Elizabeth Lauble, Chicago; Michael John Lichodziejewski, Schaumburg; Craig Dennis Sellers, and Paula Yurkovic, both of Chicago, all of Ill., assignors to Meyer/Glass Design, Ltd., Chicago, Ill.

Filed Jul. 11, 1997, Ser. No. 73,464
 Term of patent 14 years
 LOC (6) Cl. 21 - 01

U.S. Cl. D21—109

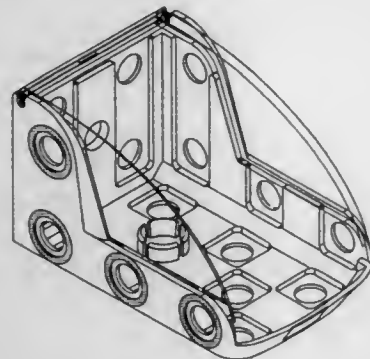


396,069

TOY CABIN AND WINDSHIELD COMPONENT
 Jean-Jacques Urvoy, Paris, France, assignor to Meccano, S.A., Calais, France
 Filed Mar. 12, 1997, Ser. No. 67,482
 Claims priority, application WIPO, Sep. 23, 1996, DM/037613

Term of patent 14 years
 LOC (6) Cl. 21 - 01

U.S. Cl. D21—108

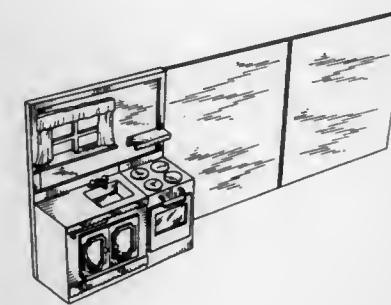


396,072

KITCHEN PLAYSET WITH PANELS FOR DECORATION
 Allison Katzman, Evanston; Randall Jon Klimpert, Wilmette; Dianne Elizabeth Lauble, Chicago; Michael John Lichodziejewski, Schaumburg; Craig Dennis Sellers, and Paula Yurkovic, both of Chicago, all of Ill., assignors to Meyer/Glass Design, Ltd., Chicago, Ill.

Filed Jul. 11, 1997, Ser. No. 73,381
 Term of patent 14 years
 LOC (6) Cl. 21 - 01

U.S. Cl. D21—121



396,074

TOY ANIMAL

Akihiro Mogi, Frederiksberg, Denmark, assignor to INTER-LEGO AG, Baar, Switzerland

Filed Sep. 18, 1997, Ser. No. 76,738
 Term of patent 14 years
 LOC (6) Cl. 21 - 01

U.S. Cl. D21—163



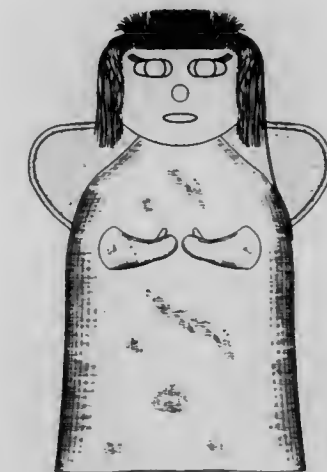
396,075

ANGEL DOLL

M. Jeannette Moore; Richard F. E. Kusch, and Cheryl L. Kusch, all of 178 Athenia Dr., Stone Creek, Ontario, Canada, L8J 1V8

Filed Mar. 20, 1997, Ser. No. 68,220
 Term of patent 14 years
 LOC (6) Cl. 21 - 01

U.S. Cl. D21—169



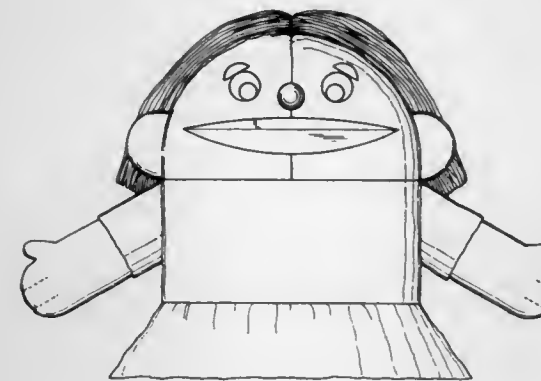
396,073

PUPPET

John Taylor, and Kami Taylor, both of 130 Highway 332, Pelham, Ala. 35124

Filed May 13, 1997, Ser. No. 70,668
 Term of patent 14 years
 LOC (6) Cl. 21 - 01

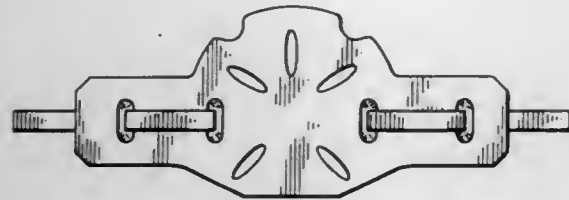
U.S. Cl. D21—153



396,076

FRONT AND BACK OF A WATER EXERCISE BELT
Ghada Muasher, P.O. Box 7711, Amman, Jordan
Filed May 21, 1996, Ser. No. 54,780
Term of patent 14 years
LOC (6) Cl. 21 - 02

U.S. Cl. D21—191



396,078

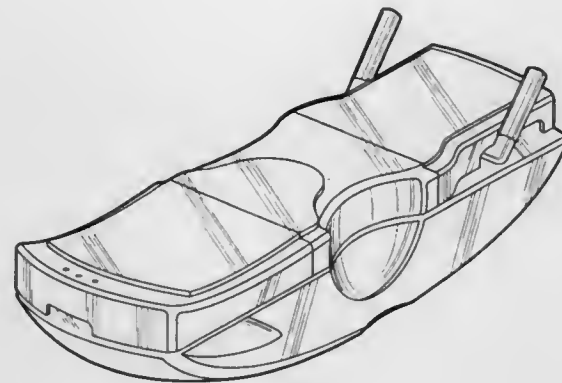
ABDOMINAL AND OBLIQUE MUSCLE EXERCISER
George Atashkarian, Mill Valley, Calif.; Mark A. Pacini, Lauderdale, Fla.; Jeffrey A. Smith, Lauderdale, Fla., and John D. Payne, Lauderdale, Fla., assignors to Fitness Solutions, Inc., Fort Lauderdale, Fla.

Filed Apr. 3, 1997, Ser. No. 69,902

Term of patent 14 years

LOC (6) Cl. 21 - 02

U.S. Cl. D21—191



396,079

HOOP AND ROD GAME

William E. Coon, 2163 Holiday La., Evansville, Ind. 47711

Filed Jun. 5, 1997, Ser. No. 71,713

Term of patent 14 years

LOC (6) Cl. 21 - 99

U.S. Cl. D21—210

396,077

EXERCISE DEVICE

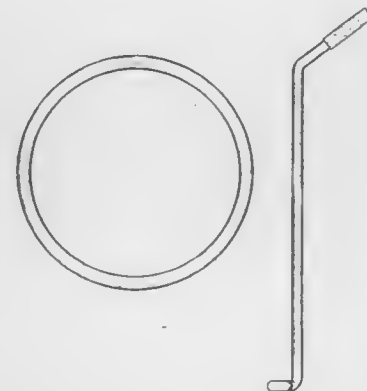
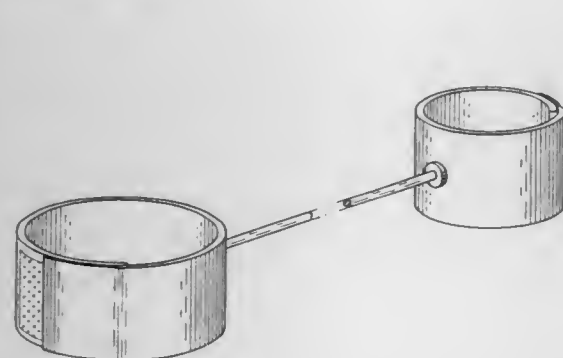
Alan J. Heine, 4069 Ridge St., Fair Oaks, Calif. 95628

Filed Oct. 31, 1996, Ser. No. 61,831

Term of patent 14 years

LOC (6) Cl. 21 - 02

U.S. Cl. D21—191



396,080

GOLF PUTTER HEAD

Robert A. Bottema, Carlsbad, Calif., assignor to Tommy Jeffrey D. Sheets, 12 Southwood Dr., Wilbraham, Mass. 01095
Armour Golf Company, Morton Grove, Ill.

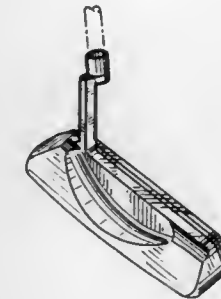
Continuation of Ser. No. 52,489, Jun. 5, 1996, abandoned.

This application Jan. 27, 1997, Ser. No. 65,373

Term of patent 14 years

LOC (6) Cl. 21 - 02

U.S. Cl. D21—217



396,082

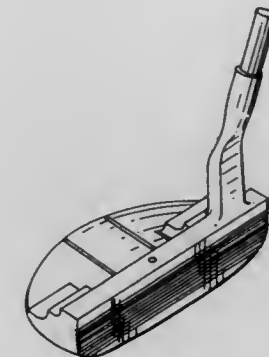
GOLF CLUB PUTTER HEAD

Jeffrey D. Sheets, 12 Southwood Dr., Wilbraham, Mass. 01095
Filed Jan. 23, 1997, Ser. No. 65,308

Term of patent 14 years

LOC (6) Cl. 21 - 02

U.S. Cl. D21—219



396,081

GOLF CLUB PUTTER HEAD

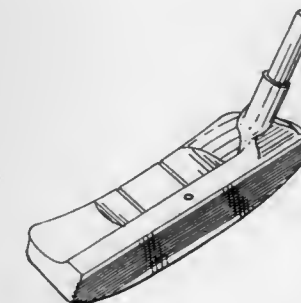
Jeffrey D. Sheets, Wilbraham, Mass., assignor to Lisco Inc., Tampa, Fla.

Filed Jan. 23, 1997, Ser. No. 65,307

Term of patent 14 years

LOC (6) Cl. 21 - 02

U.S. Cl. D21—219



396,083

GOLF CLUB PUTTER HEAD

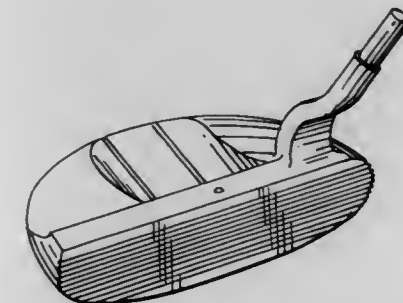
Jeffrey D. Sheets, 12 Southwood Dr., Wilbraham, Mass. 01095

Filed Jan. 23, 1997, Ser. No. 65,312

Term of patent 14 years

LOC (6) Cl. 21 - 02

U.S. Cl. D21—219



396,084

SKATE BLADE ASSEMBLY

M. Raymond Laberge, Montreal, and F. Kenneth Hall, Beaconsfield, both of Canada, assignors to TropSport Acquisitions Inc., Lachine, Canada

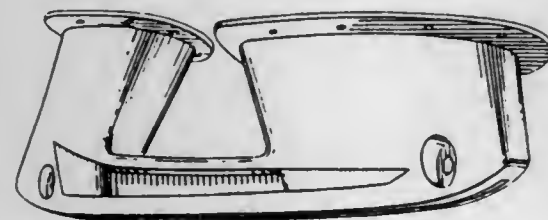
Filed Jun. 5, 1997, Ser. No. 71,652

Claims priority, application Canada, Apr. 17, 1997, 1997-0936

Term of patent 14 years

LOC (6) Cl. 21 - 02

U.S. Cl. D21—225



396,086

SINGLE PERSON SHELTER

Robert R. Cantwell, Leslie, Mo., assignor to American Recreation Products, New Haven, Mo.

Continuation-in-part of Ser. No. 36,591, Mar. 23, 1995. This application Mar. 26, 1996, Ser. No. 52,464

Term of patent 14 years

LOC (6) Cl. 21 - 02

U.S. Cl. D21—253



396,085

GOLF TEE TOOL

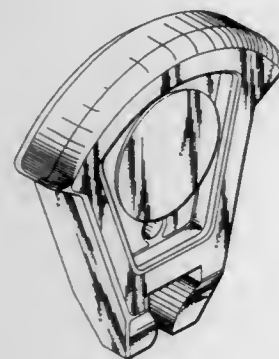
James E. Boelling, Des Moines, Iowa, assignor to Wy-Tech, Inc., Des Moines, Iowa

Filed Jun. 3, 1997, Ser. No. 71,619

Term of patent 14 years

LOC (6) Cl. 21 - 02

U.S. Cl. D21—234



396,087

AIR-PUMPED TENT

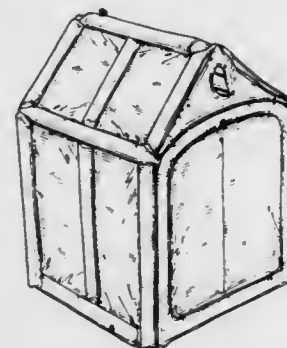
Chang-Hsiung Liu, No. 8, Shang 4 Fu, Yang-Mei Town, Tao-Yuan Hsien, Taiwan

Filed Mar. 11, 1997, Ser. No. 67,757

Term of patent 14 years

LOC (6) Cl. 21 - 04

U.S. Cl. D21—253



396,088

WATER FILTER

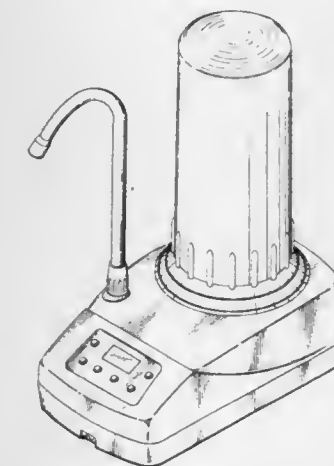
Chao Fou Hsu, 109, Lane 316, Dah Shuenn 3th Rd., Kaohsiung, Taiwan

Filed Jul. 18, 1997, Ser. No. 73,868

Term of patent 14 years

LOC (6) Cl. 23 - 01

U.S. Cl. D23—209



396,089

ADVERTISING CARRYING BODY FOR USE ON A FILLER GUN

Øyvind Alvern, Hjeltestad, Norway, assignor to Alvern Norway ASA, Norway

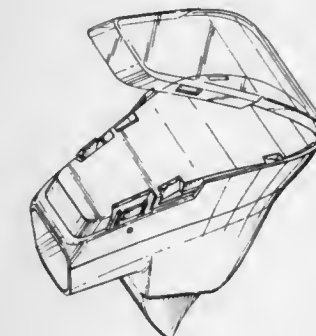
Filed May 12, 1997, Ser. No. 70,572

Claims priority, application Norway, Nov. 15, 1996, 960834

Term of patent 14 years

LOC (6) Cl. 23 - 01

U.S. Cl. D23—227



396,090

FLUSH VALVE COVER

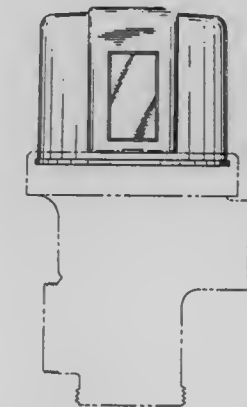
Martin E. Marcichow, Hoffman Estates, Ill.; Joel S. Novak, Sudbury, and Natan E. Parsons, Brookline, both of Mass., assignors to Arichell Technologies Inc., West Newton, Mass.

Filed Jan. 23, 1997, Ser. No. 65,477

Term of patent 14 years

LOC (6) Cl. 23 - 01

U.S. Cl. D23—233



396,091

FLAP VALVE ACTUATOR FOR A TOILET TANK

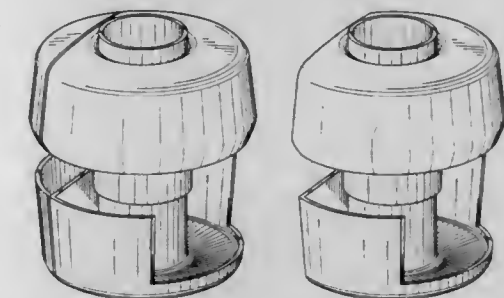
Mohamed Ahmed Jomha, 15355 - 116 Avenue, Edmonton, Alberta, Canada, T5M 3Z5

Filed Sep. 8, 1995, Ser. No. 43,624

Term of patent 14 years

LOC (6) Cl. 23 - 01

U.S. Cl. D23—258

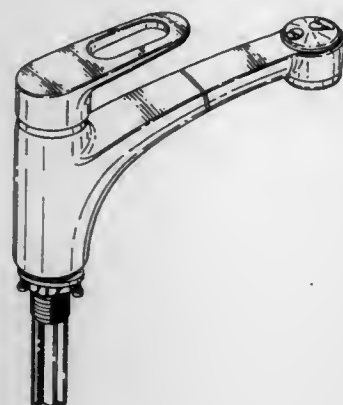


396,092

FAUCET WITH AN EXTENDABLE WATER OUTLET
 Andreas Haug, and Thomas Schoenherr, both of Stuttgart, Germany, assignors to Hans Grohe GmbH & Co. KG, Germany

Filed May 16, 1996, Ser. No. 54,548
 Claims priority, application Germany, Nov. 16, 1995, M 95 09 243.9

Term of patent 14 years
 LOC (6) Cl. 23 - 01
 U.S. Cl. D23—238

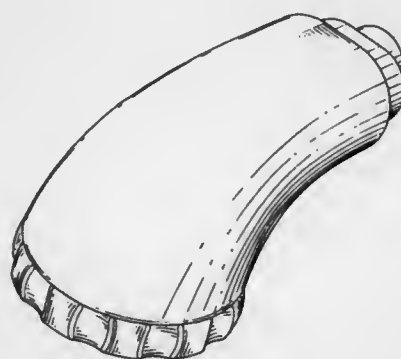


396,094

PULL-OUT SPOUT FOR FAUCET
 Frederic C. Doughty, South Pasadena, and Darren M. Mark, Valencia, both of Calif., assignors to Emhart Inc., Newark, Del.

Filed Mar. 5, 1997, Ser. No. 67,507
 Term of patent 14 years
 LOC (6) Cl. 23 - 01

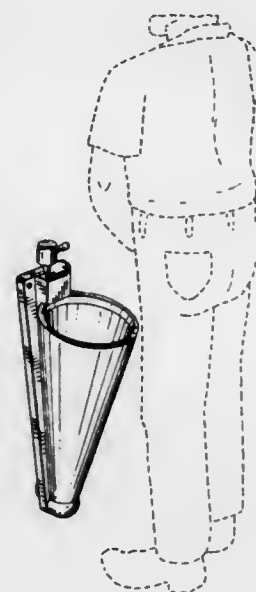
U.S. Cl. D23—255

396,095
URINAL

Roger H. Tilton, and Robert Hynes, both of Seattle, Wash., assignors to Tilton & Madison, Ltd., Seattle, Wash.

Filed Jun. 4, 1997, Ser. No. 71,680
 Term of patent 14 years
 LOC (6) Cl. 23 - 02

U.S. Cl. D23—302



396,093

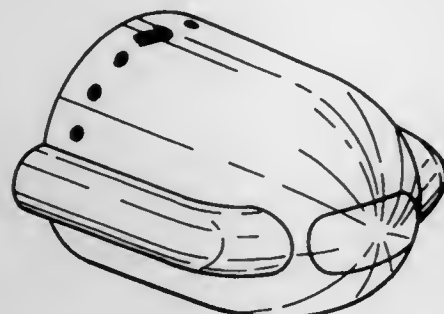
FAUCET HANDLE

Hans Lobermeier, Menden, Germany, assignor to Friedrich Grohe AG, Hemer, Germany

Filed May 8, 1997, Ser. No. 70,447
 Claims priority, application Germany, Nov. 19, 1996, M 96 09 977.1

Term of patent 14 years
 LOC (6) Cl. 23 - 01

U.S. Cl. D23—250



396,096

DIFFUSER STAND

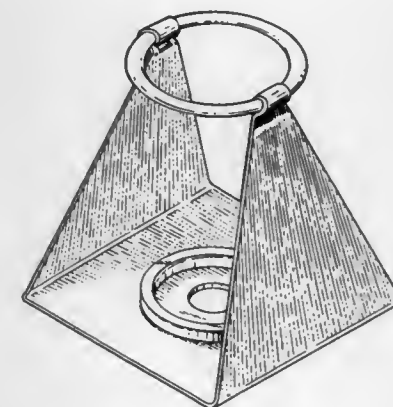
Cheryl Corbitt, Forth Worth, Tex., assignor to Humco Holding Group, Inc., Texarkana, Tex.

Filed Dec. 30, 1996, Ser. No. 64,372

Term of patent 14 years

LOC (6) Cl. 23 - 04

U.S. Cl. D23—363



396,097

AIR PURIFIER

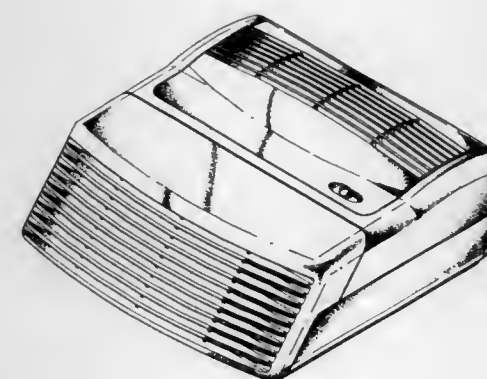
James Thomas, Memphis, and Masao Tsuji, Germantown, both of Tenn., assignors to Hunter Fan Company, Memphis, Tenn.

Division of Ser. No. 64,679, Jan. 8, 1997. This application Sep. 11, 1997, Ser. No. 76,439

Term of patent 14 years

LOC (6) Cl. 23 - 04

U.S. Cl. D23—364



396,098

CONICAL FILTER

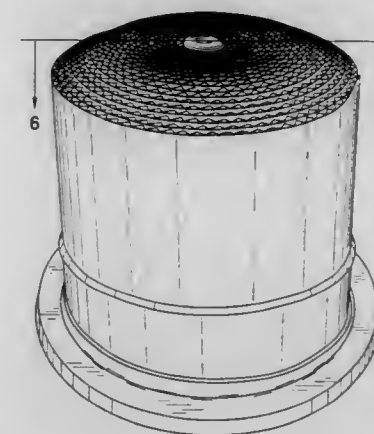
Gary R. Gillingham, Prior Lake; Wayne M. Wagner; Joseph C. Tokar, both of Apple Valley; Daniel T. Risch; Jim C. Rothman, both of Burnsville, and Steven A. Carter, Eagan, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 53,683, Apr. 26, 1996. This application Jan. 7, 1997, Ser. No. 64,621

Term of patent 14 years

LOC (6) Cl. 23 - 04

U.S. Cl. D23—365



396,099

COOLING FAN HOUSING

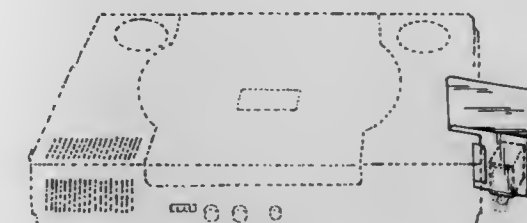
Philip Graves, P.O. Box 2263, North Mankato, Minn. 56002

Filed Mar. 7, 1997, Ser. No. 67,432

Term of patent 14 years

LOC (6) Cl. 23 - 04

U.S. Cl. D23—370



396,100

CHIMNEY TOP

Daryl J. Brummer, 1704 W. Lake Shore Dr., Delafield, Wis. 53018

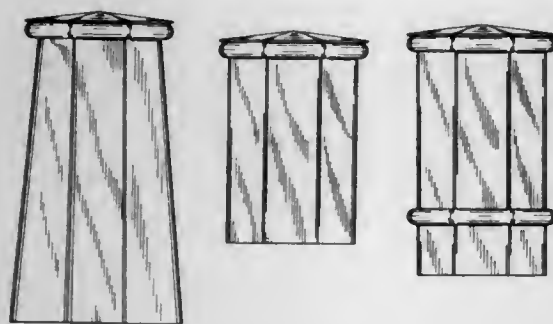
Division of Ser. No. 39,903, Jun. 7, 1995. This application

Sep. 17, 1997, Ser. No. 76,823

Term of patent 14 years

LOC (6) Cl. 23 - 04

U.S. Cl. D23—374



396,101

COMBINED CEILING FAN AND LIGHT FIXTURE

Jan Jaspers-Fayer, Idyllwild, Calif., assignor to Minka Lighting Inc., Corona, Calif.

Filed Mar. 1, 1995, Ser. No. 35,518

Term of patent 14 years

LOC (6) Cl. 23 - 04

U.S. Cl. D23—377



396,102

COMBINED CEILING FAN AND LIGHT FIXTURE

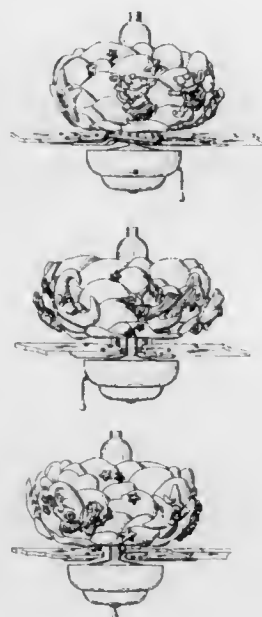
Mark Pickett, Rancho Palos Verdes, Calif., assignor to Minka Lighting, Inc., Corona, Calif.

Filed Nov. 7, 1996, Ser. No. 62,129

Term of patent 14 years

LOC (6) Cl. 23 - 04

U.S. Cl. D23—377



396,103

COMBINED DRAGONFLY AND LIGHTING BUG
CEILING FAN AND LIGHT

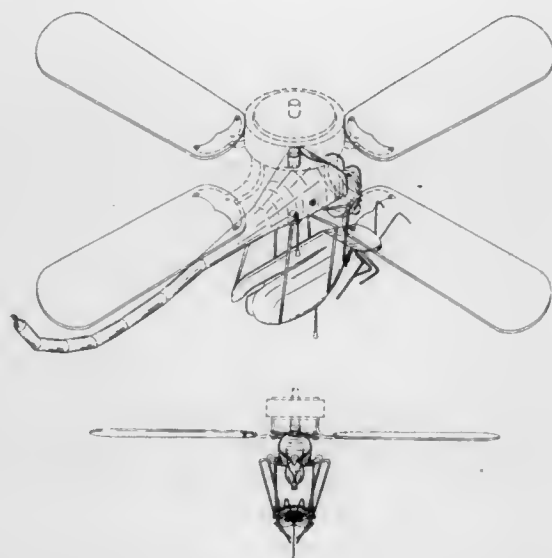
William Alan Secunda, 160 Portman Rd., Butler, Pa. 16001

Filed Jun. 2, 1997, Ser. No. 72,994

Term of patent 14 years

LOC (6) Cl. 23 - 04

U.S. Cl. D23—377



396,104

PORTABLE FAN WITH AN ELONGATE AND FLEXIBLE
NECK

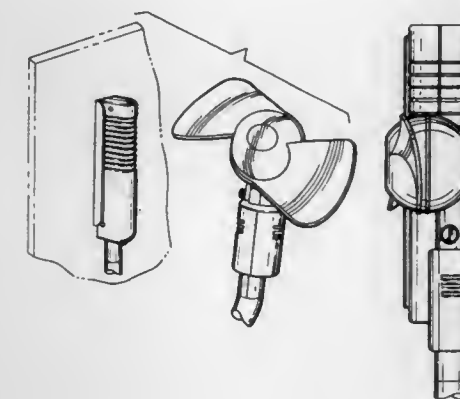
Lee Radtke, Lake Zurich, Ill., assignor to Circular, Inc., Niles, Ill.

Filed Jul. 16, 1997, Ser. No. 73,706

Term of patent 14 years

LOC (6) Cl. 23 - 04

U.S. Cl. D23—379



396,106

LOWER HOUSING FOR A CEILING FAN

Jack W. Gee, II, Huntsville, Ala., and Masao Tsuji, Germantown, Tenn., assignors to Hunter Fan Company, Memphis, Tenn.

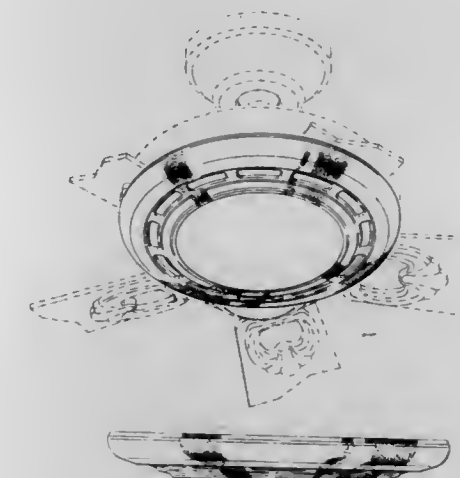
Division of Ser. No. 58,246, Aug. 9, 1996, Pat. No. Des.

392,035. This application Aug. 5, 1997, Ser. No. 74,530

Term of patent 14 years

LOC (6) Cl. 23 - 04

U.S. Cl. D23—411



396,105

BLADE MEDALLION FOR A CEILING FAN

Jack W. Gee, II, Huntsville, Ala., and Masao Tsuji, Germantown, Tenn., assignors to Hunter Fan Company, Memphis, Tenn.

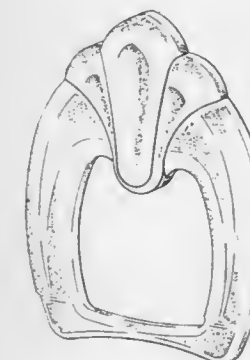
Division of Ser. No. 58,261, Aug. 9, 1996. This application

Aug. 5, 1997, Ser. No. 74,528

Term of patent 14 years

LOC (6) Cl. 23 - 04

U.S. Cl. D23—411



396,107

HOLDER FOR A CATHETER

Jan Mikael Roy Utas, Kungsbacka, and Magnus Karemyr, Stenkullen, both of Sweden, assignors to Astra Aktiebolag, Södertälje, Sweden

Continuation of Ser. No. 47,992, Dec. 18, 1995, abandoned.

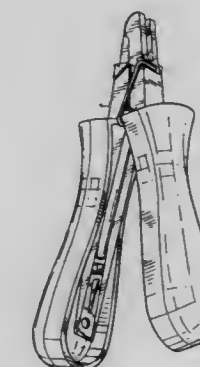
This application Jul. 15, 1997, Ser. No. 73,684

Claims priority, application United Kingdom, Jun. 28, 1995, 2048448

Term of patent 14 years

LOC (6) Cl. 24 - 02

U.S. Cl. D24—143

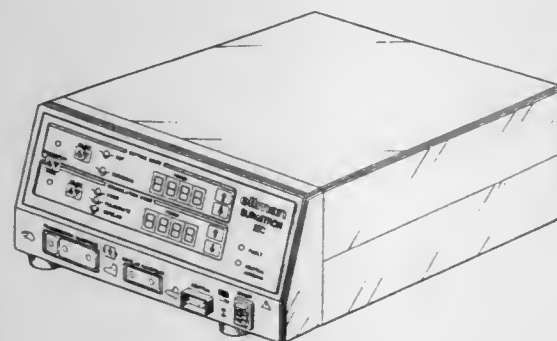


396,108

ELECTROSURGICAL CONTROL CONSOLE FOR USE IN
DENTAL, MEDICAL AND VETERINARIAN FIELDS
Jon C. Garito, and Alan G. Ellman, both of 1135 Railroad Ave.,
Hewlett, N.Y. 11557

Filed Feb. 20, 1996, Ser. No. 50,658
Term of patent 14 years
LOC (6) Cl. 24 - 02

U.S. Cl. D24—144



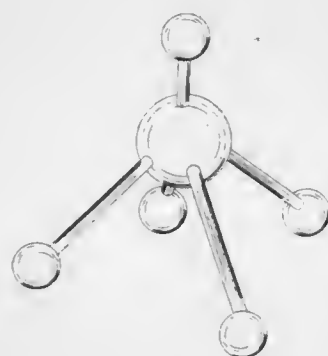
396,110

MASSAGER

John M. Kang, 518 Manhasset Woods Rd., Manhasset, N.Y.
11030

Filed May 22, 1996, Ser. No. 54,793
Term of patent 14 years
LOC (6) Cl. 24 - 04

U.S. Cl. D24—211



396,109

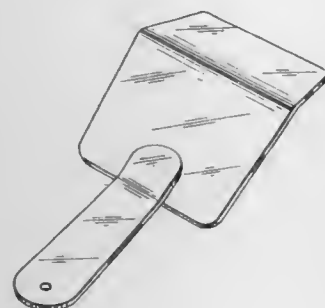
DENTAL EYE-PROTECTIVE SCREEN

Jean Piche, 6100 Deacon, apt. 5L, Montreal Quebec, Canada,
H3S 2V6, and Martine Belanger, 9331 Perras, apt. 4, Mont-
real Quebec, Canada, H1E 6L8

Filed Jul. 11, 1994, Ser. No. 25,713
Claims priority, application Canada, Jan. 19, 1994, 1994-
0091

Term of patent 14 years
LOC (6) Cl. 24 - 02

U.S. Cl. D24—152



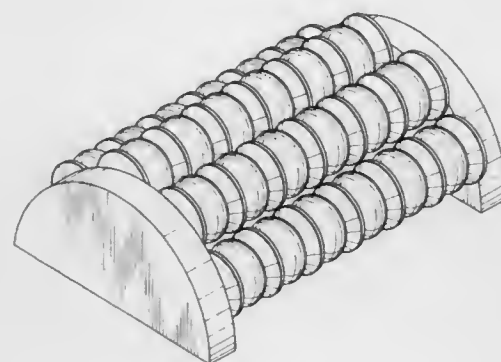
396,111

FOOT MASSAGER

Kuo-Ching Chien, No. 7 Lane 74 Gong 5 Road Lungtan
Hsiang, Taoyuan Hsien, Taiwan

Filed Mar. 7, 1997, Ser. No. 67,590
Term of patent 14 years
LOC (6) Cl. 24 - 04

U.S. Cl. D24—211



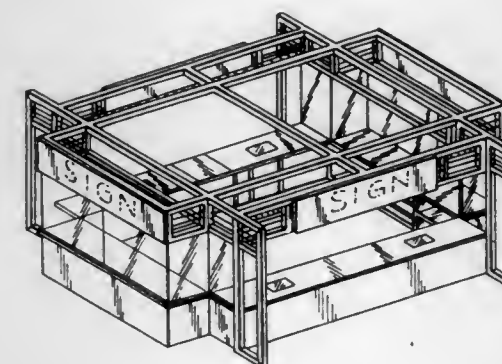
396,112

TRAVEL CENTER KIOSK

Catherine F. Devlin, Jr., 7 Park Dr., Mt. Kisco, N.Y. 10549
Filed Nov. 5, 1996, Ser. No. 61,994

Term of patent 14 years
LOC (6) Cl. 25 - 03

U.S. Cl. D25—16



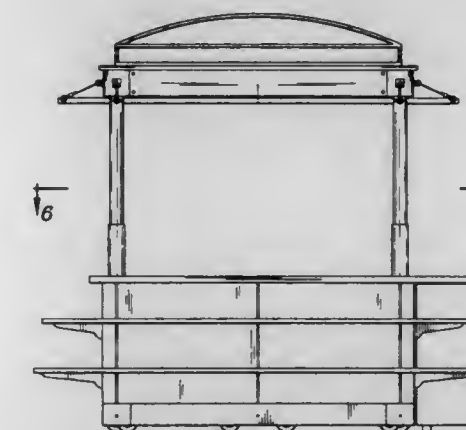
396,114

KIOSK

Tony L. Horton, Dallas, Tex., assignor to T L Horton Design,
Inc., Dallas, Tex.

Filed Oct. 21, 1997, Ser. No. 78,193
Term of patent 14 years
LOC (6) Cl. 25 - 03

U.S. Cl. D25—16



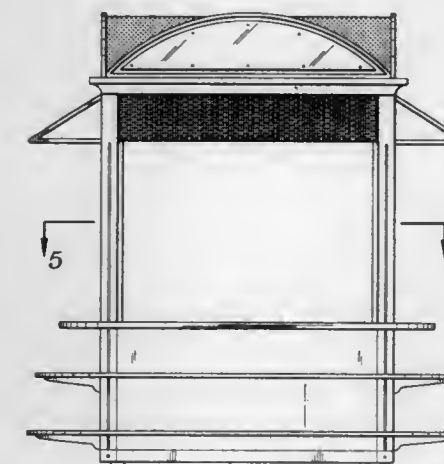
396,113

KIOSK

Tony L. Horton, Dallas, Tex., assignor to T L Horton Design,
Inc., Dallas, Tex.

Filed Oct. 3, 1997, Ser. No. 77,550
Term of patent 14 years
LOC (6) Cl. 25 - 03

U.S. Cl. D25—16



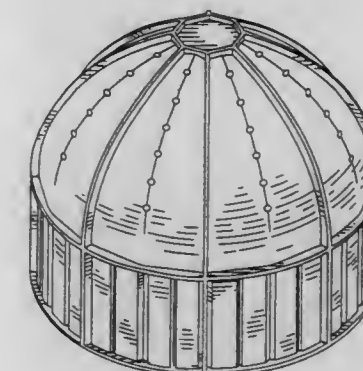
396,115

PROJECTION DOME

Richard W. Zobel, Jr., Raleigh, N.C., assignor to Alternate
Realities Corporation, Morrisville, N.C.

Filed Jan. 29, 1996, Ser. No. 49,679
Term of patent 14 years
LOC (6) Cl. 25 - 03

U.S. Cl. D25—19



396,116

WINDOW COMPONENT EXTRUSION

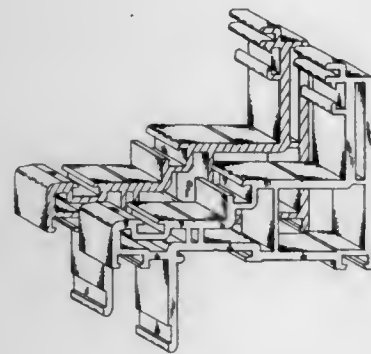
Kevin P. Tyra, Puyallup, Wash., assignor to Mikron Industries, Inc., Kent, Wash.

Filed Mar. 20, 1997, Ser. No. 69,251

Term of patent 14 years

LOC (6) Cl. 25 - 01

U.S. Cl. D25—124



396,118

TILE ROOFING SHEET

Pekka Saarenko, Siiviläkuja, Finland, assignor to Samesor SMT International Oy, Kuopio, Finland

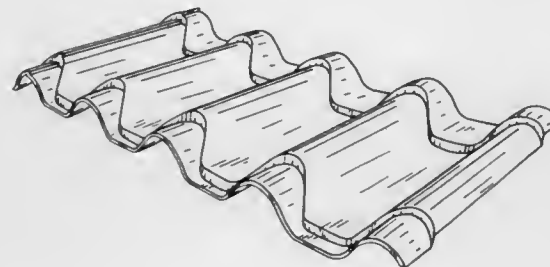
Filed Jun. 2, 1997, Ser. No. 71,737

Claims priority, application Finland, Dec. 2, 1996, 809/96

Term of patent 14 years

LOC (6) Cl. 25 - 01

U.S. Cl. D25—140



396,117

COMBINED FASCIA AND SOFFIT MEMBER

Richard J. Zaccagni, Algonquin, Ill., assignor to ZMC, Inc., Addison, Ill.

Filed Aug. 20, 1997, Ser. No. 75,433

Term of patent 14 years

LOC (6) Cl. 25 - 01

U.S. Cl. D25—125



396,119

SAFE JACK-O'-LANTERN CANDLE STAND

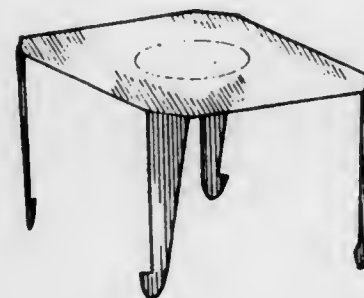
Ian T. Allison, P.O. Box 1705, Santa Rosa, Calif. 95402

Filed Jul. 31, 1995, Ser. No. 42,009

Term of patent 14 years

LOC (6) Cl. 26 - 01

U.S. Cl. D26—23



396,120

REPLICA CARD LIGHT

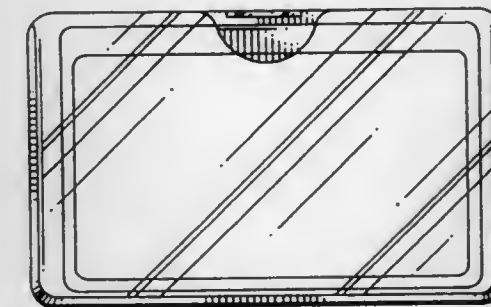
Thomas G. Petruzzi, 5118 Belleville Ave., Orlando, Fla. 32812

Division of Ser. No. 42,321, Aug. 7, 1995, Pat. No. Des. 383,228. This application Aug. 27, 1997, Ser. No. 75,931

Term of patent 14 years

LOC (6) Cl. 26 - 06

U.S. Cl. D26—37



396,122

FLUORESCENT LAMP

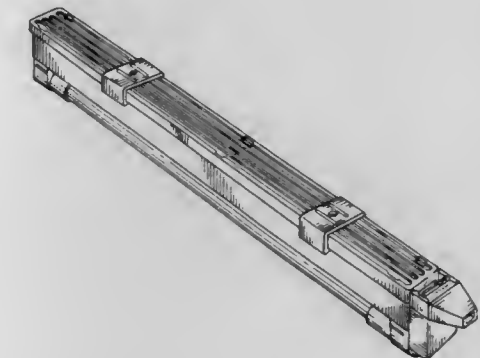
Shi Youl Noh, Seoul, Rep. of Korea, assignor to Boam R & D Co., Ltd., Kyonggi-do, Rep. of Korea

Division of Ser. No. 801,404, Feb. 20, 1997. This application Apr. 16, 1997, Ser. No. 70,400

Term of patent 14 years

LOC (6) Cl. 26 - 05

U.S. Cl. D26—76



396,123

TORCHIERE LAMP WITH SINGLE FLEX ARM TASK LIGHT

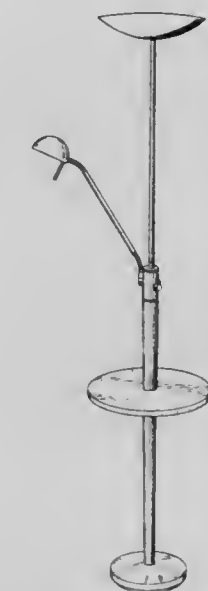
Dennis K. Swanson, Woodland Hills, Calif., assignor to Lamps Plus, Inc., Chatsworth, Calif.

Filed Jan. 31, 1996, Ser. No. 49,794

Term of patent 14 years

LOC (6) Cl. 26 - 05

U.S. Cl. D26—102



396,121

GARDEN LIGHTING FIXTURE

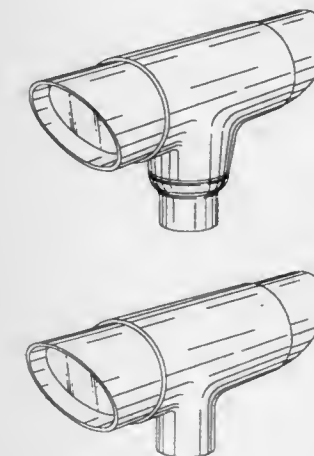
Mark West, 1388 Calle Violeta, Thousand Oaks, Calif. 91360

Filed Feb. 21, 1997, Ser. No. 66,808

Term of patent 14 years

LOC (6) Cl. 26 - 05

U.S. Cl. D26—67



396,124

CAST ARM FOR LIGHT FIXTURE

Luis Esteban Lopez Fraile, Valencia, Spain, assignor to Quorum International, Fort Worth, Tex.

Filed Jul. 9, 1997, Ser. No. 73,545

Term of patent 14 years

LOC (6) Cl. 26 - 99

U.S. Cl. D26—145



396,126

LIQUID APPLICATOR

Susann G. Ohmart, 2327 Carleton St., Berkeley, Calif. 94704

Filed Jun. 26, 1997, Ser. No. 72,959

Term of patent 14 years

LOC (6) Cl. 28 - 03

U.S. Cl. D28—7



396,127

HAIR DRYER BARREL WITH A FLOW CONTROL MECHANISM

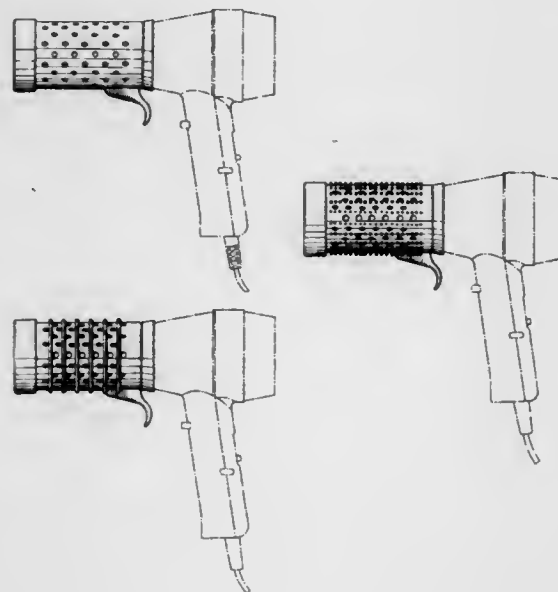
Natale Schepisi, Mamaroneck, N.Y., assignor to Vital Hair Tools, LLC, Mamaroneck, N.Y.

Filed Dec. 21, 1995, Ser. No. 48,164

Term of patent 14 years

LOC (6) Cl. 28 - 03

U.S. Cl. D28—18



396,125

CIGAR CUTTER

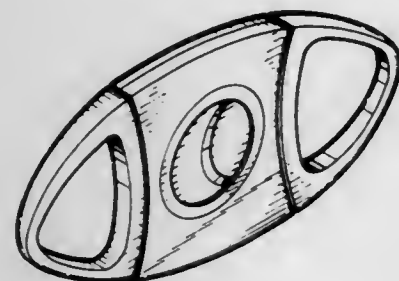
Shu-fen Chen, No. 2, Lane 320, Te Feng Road, Section 1, Ta Li City, Taichung Hsien, Taiwan

Filed Jun. 27, 1996, Ser. No. 56,338

Term of patent 14 years

LOC (6) Cl. 27 - 06

U.S. Cl. D27—195



396,128

HAIR BAND

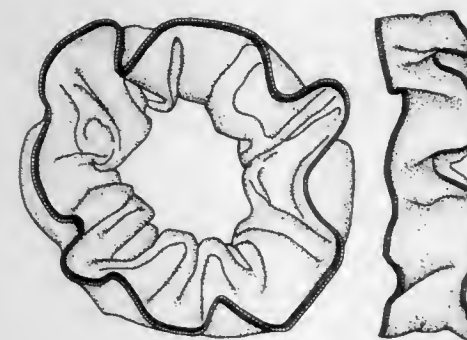
Nicola Fergusson, Santa Monica, Calif., assignor to Elasty, Inc., Los Angeles, Calif.

Filed Jun. 27, 1997, Ser. No. 73,025

Term of patent 14 years

LOC (6) Cl. 28 - 03

U.S. Cl. D28—41



396,130

COMBINED SET OF ARTIFICIAL NAILS AND SUPPORT THEREFOR

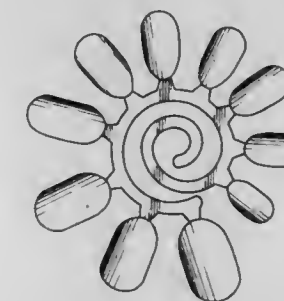
Paul R. Shilinsky, and Ross McCay, both of Reno, Nev., assignors to Cosmar Corporation, Garden Grove, Calif.

Filed Sep. 24, 1996, Ser. No. 60,189

Term of patent 14 years

LOC (6) Cl. 28 - 03

U.S. Cl. D28—56



396,129

RAZOR

Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Apr. 10, 1996, Ser. No. 52,878

Term of patent 14 years

LOC (6) Cl. 28 - 03

U.S. Cl. D28—46



396,131

COMBINED DISPOSABLE CUTICLE REMOVER TOOL AND CAP THEREFOR

Gloria Wiggins, 8100 Shore Front Pkwy., Apt. L.F., Rockaway Beach, N.Y. 11693

Filed Apr. 4, 1997, Ser. No. 69,689

Term of patent 14 years

LOC (6) Cl. 28 - 03

U.S. Cl. D28—57



396,132

DENTAL FLOSS HOLDER

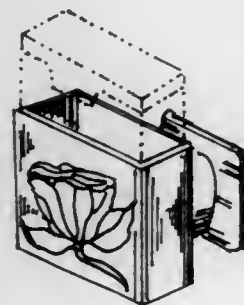
Lamont Powell, 1302 Wembley Dr., Upper Marlboro, Md.
20772, assignor to Lamont Powell, Upper Marlboro, Md.

Filed Aug. 13, 1993, Ser. No. 13,712

Term of patent 14 years

LOC (6) Cl. 00 - 00

U.S. Cl. D28—64



396,134

SET OF GOALIE PAD

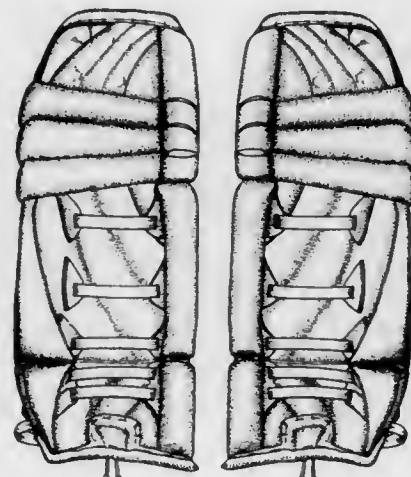
Brian H. Shikatani, Milton, Canada, assignor to Gauer Inc.,
Montreal, Canada

Filed Nov. 15, 1996, Ser. No. 62,440

Term of patent 14 years

LOC (6) Cl. 29 - 02

U.S. Cl. D29—120



396,133

DEVICE FOR MAKE-UP CONTAINERS

Boaz Stein, 37/1 Kehilat Lodj St., Tel Aviv, Israel

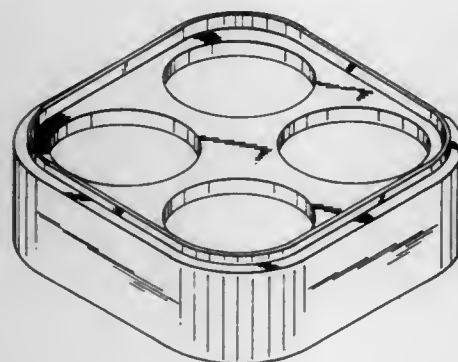
Filed Jul. 12, 1996, Ser. No. 56,941

Claims priority, application Israel, Apr. 2, 1996, 26107

Term of patent 14 years

LOC (6) Cl. 28 - 03

U.S. Cl. D28—73



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 14th DAY OF JULY, 1998

NOTE—Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- A.B.G. S.r.l.: *See—*
Angilella, Bruno; Bocci, Sandro; and Gallorini, Massimo, 5,780,846, Cl. 250-227.210.
- A. Friedr. Flender AG: *See—*
Chun, Gil-Hwan, 5,779,126, Cl. 226-187.000.
- A/S MODULEX: *See—*
Rath, Klaus Peter, 5,778,582, Cl. 40-611.000.
- Aagesen, Margit Irene: *See—*
Lihme, Allan Otto Fog; Aagesen, Margit Irene; Gammelgård-Larsen, Claus; and Ellegård, Katrine Hvid, 5,780,593, Cl. 530-361.000.
- Aalto, Esa; Kyytsönen, Markku; Mannio, Aaron; and Mikkonen, Silvo, to Valmet Corporation. Method and device for finishing the surface layers of the machine reel that is formed during reeling of the web. 5,779,183, Cl. 242-547.000.
- AB IDL Immunodevelop Lab: *See—*
Silén, Åke; and Wiklund, Bo, 5,780,032, Cl. 424-178.100.
- ABB Lummus Global Inc.: *See—*
Greene, Marvin I.; Sumner, Charles; and Gartside, Robert J., 5,780,683, Cl. 568-358.000.
- ABB Power T & D Company Inc.: *See—*
Degeneff, Robert C.; and Gutierrez, Moises R., 5,781,764, Cl. 395-500.000.
- ABB Research Ltd.: *See—*
Wilfert, Günter, 5,779,438, Cl. 415-115.000.
- ABB Traction, Inc.: *See—*
Kovacs, Paul, 5,780,722, Cl. 73-40.000.
- Abbas, Nacer E.: *See—*
Lupski, James R.; Pentao, Liu; Roa, Benjamin B.; Abbas, Nacer E.; and Patel, Pragna L., 5,780,223, Cl. 435-6.000.
- Abbott Laboratories: *See—*
Ching, ShanFun; and Gordon, Julian, 5,780,308, Cl. 436-514.000.
- DeMichele, Stephen Joseph; Garleb, Keith Allen; McEwen, John William; and Fuller, Martha Kay, 5,780,451, Cl. 514-54.000.
- Grabenkort, Richard W., 5,779,668, Cl. 604-89.000.
- Or, Yat Sun; Clark, Richard F.; and Chu, Daniel T., 5,780,604, Cl. 536-7.300.
- Or, Yat Sun; Clark, Richard F.; Chu, Daniel T.; and Plattner, Jacob J., 5,780,605, Cl. 536-7.200.
- Wang, Nai-Yi; and Hu, Roger C., 5,780,249, Cl. 435-7.930.
- Abdel-Messeh, William; Tibbott, Ian; and Arora, Subhash, to Pratt & Whitney Canada Inc. Cooling passages for airfoil leading edge. 5,779,437, Cl. 415-115.000.
- Abe, Akira: *See—*
Miyadera, Tatsuo; Yoshida, Kiyohide; Saito, Mika; Irite, Naoko; Abe, Akira; and Furuyama, Masataka, 5,780,002, Cl. 423-239.100.
- Abe, Katsuaki; Kishigami, Takaaki; Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Yamaki, Yoichi; Tsumura, Toshiyuki; and Katayama, Hiroshi, to Matsushita Electric Industrial Co., Ltd. FSK signal receiver. 5,781,588, Cl. 375-334.000.
- Abe, Kensaku: *See—*
Hosaka, Akihiko; Kito, Kazuhisa; and Abe, Kensaku, 5,781,638, Cl. 381-69.000.
- Abe, Kimihiro: *See—*
Okabe, Toshiaki; Abe, Kimihiro; Yamamoto, Toshihiko; and Hatagishi, Yuji, 5,779,506, Cl. 439-752.000.
- Abe, Shin: *See—*
Kurusu, Toru; Wada, Hidekazu; and Abe, Shin, 5,780,072, Cl. 425-195.000.
- Abe, Yoshiharu: *See—*
Kouroku, Moriyuki; Shimanari, Tatsumi; Yorifuji, Takao; Ono, Noriki; and Abe, Yoshiharu, 5,781,841, Cl. 399-360.000.
- Abrahamian, Sandra L. Nail polish kit for mixing nail polish. 5,778,901, Cl. 132-74.500.
- Abrams, Ned Hyman. Modular wall unit, system and method for making storage containers and barriers. 5,778,618, Cl. 52-264.000.
- Abramson, Jeffrey M.; and Konigsfeld, Kris G., to Intel Corporation. Method and apparatus for performing floating point to integer transfers and vice versa. 5,781,790, Cl. 395-800.230.
- ABT, Inc.: *See—*
Gunter, Charles E., 5,779,393, Cl. 405-121.000.
- ACCO Brands, Inc.: *See—*
Drzewiecki, James J.; and D'Amore, Michael J., 5,778,750, Cl. 83-628.000.
- Acosta, Raul Edmundo; and Viswanathan, Raman Gobichettipalayam, to IBM Corporation. Membrane mask structure, fabrication and use. 5,781,607, Cl. 378-34.000.
- Acree, William M.: *See—*
Dale, Beverly; Yamanaka, Miles; Acree, William M.; and Chavez, Lloyd G., Jr., 5,780,266, Cl. 435-69.300.
- ACT Advanced Circuit Testing Gesellschaft: *See—*
Feuerbaum, Hans-Peter; Frosien, Jürgen; Ueda, Koshi; Iwai, Toshimichi; and Schönecker, Gerald, 5,780,859, Cl. 250-396.00R.
- Actel Corporation: *See—*
Forouhi, Abdul R.; Hawley, Frank W.; McCollum, John L.; and Yen, Yeouchung, 5,780,323, Cl. 438-131.000.
- Galbraith, Douglas C.; El Gamal, Abbas; and Greene, Jonathan W., 5,781,033, Cl. 326-39.000.
- Acuff, Mark Warren: *See—*
Tran, Dzong Joseph; and Acuff, Mark Warren, 5,780,883, Cl. 257-206.000.
- Acushnet Company: *See—*
Mello, Kathryn M.; and Semiao, Matthew M., 5,778,793, Cl. 101-494.000.
- Acuson Corporation: *See—*
Holley, Gregory L.; and Guracar, Ismayil M., 5,779,640, Cl. 600-447.000.
- Adachi, Hiroshi; and Saruyama, Toshio, to Dow Corning Toray Silicone Co., Ltd. Method for the preparation of one-package room-temperature-curable silicone elastomer compositions. 5,780,543, Cl. 524-789.000.
- Adachi, Keisuke; Kuwayama, Michihiro; Kamo, Momoki; Yoshida, Masakazu; Yoshida, Tsutomu; and Miki, Norio, to Kawasaki Steel Corporation; and Kawasaki Refractories Co., Ltd. Method of casting castable refractories of vessel for molten metal. 5,779,947, Cl. 264-30.000.
- Adachi, Shuhei: *See—*
Inami, Junichi; and Adachi, Shuhei, 5,778,531, Cl. 29-888.060.
- Adair, Peter L.: *See—*
Chen, Zheng; Rose, Millard Franklin; and Adair, Peter L., 5,780,370, Cl. 442-414.000.
- Adam, Helen Koshaba. Volume hairpin. 5,778,905, Cl. 132-284.000.
- Adamant Kogyo Company Ltd.: *See—*
Asai, Akio, 5,781,674, Cl. 385-78.000.
- Adams, Byron H., to Adams Golf. Fairway wood for tight lies. 5,779,565, Cl. 473-328.000.
- Adams, Elroy. Lighted hood ornament. 5,779,345, Cl. 362-80.000.
- Adams Golf: *See—*
Adams, Byron H., 5,779,565, Cl. 473-328.000.
- Adams, Julian; Ma, Yu-Ting; Stein, Ross; Baevsky, Matthew; Grenier, Louis; and Plamondon, Louis, to ProScript, Inc. Boronic ester and acid compounds. 5,780,454, Cl. 514-64.000.
- Adams, Mark D.: *See—*
Hastings, Gregg A.; and Adams, Mark D., 5,780,263, Cl. 435-69.100.
- Adams, Thomas R.; Anderson, Paul C.; Daines, Richard J.; Gordon-Kamm, William; Kausch, Albert P.; Mann, Michael T.; Orr, Peter M.; and Warner, David C., to Dekalb Genetics Corporation. Transgenic maize with increased mannitol content. 5,780,709, Cl. 800-205.000.
- Adams, William, to Object Technology Licensing Corp. Framework for constructing shared documents that can be collaboratively accessed by multiple users. 5,781,732, Cl. 395-200.350.
- Adamski, Jean-Rémy: *See—*
Pruvost, Jean-Claude; and Adamski, Jean-Rémy, 5,780,959, Cl. 313-270.000.
- Adamy, Jurgen, to Siemens Aktiengesellschaft. Process and device for monitoring the cross-sectional profile of a continuously produced web of material. 5,781,440, Cl. 364-469.010.
- Adaptec, Inc.: *See—*
Krakirian, Shahe H., 5,781,803, Cl. 395-894.000.
- ADC Solitra Oy: *See—*
Turunen, Aimo; and Jantunen, Heli, 5,781,088, Cl. 334-45.000.
- Addway Engineering Limited: *See—*
Shek, Kwok-Nam, 5,778,474, Cl. 15-22.100.
- Adey, Walter H.; and Purgason, Richard, to Aquatic BioEnhancement Systems. Method of raising fish by use of algal turf. 5,778,823, Cl. 119-215.000.
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Lesieur, Daniel; Fourmaintraux, Eric; Depreux, Patrick; Delagrange, Philippe; Renard, Pierre; and Guardiola-Lemaître, Béatrice, 5,780,512, Cl. 514-624.000.
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- Shade, Debra L.: 5,780,450, Cl. 514-46.000.
- ALD Vacuum Technologies GmbH: See—
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- Head, John Clifford; Warello, Graham John; and Alexander, Rikki Peter, 5,780,477, Cl. 514-277.000.
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- Borgström, Leonard; Brehmer, Patrik; Carlsson, Claes-Göran; Franzén, Peter; Inge, Claes; Lagerstedt, Torgny; and Moberg, Hans, 5,779,619, Cl. 494-56.000.
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Daftari, Reza E.; and Le, Bao G., 5,779,502, Cl. 439-620.000.
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Baran, Jozef B., 5,781,029, Cl. 326-30.000.
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Pathak, Saroj; and Payne, James E., 5,781,469, Cl. 365-156.000.
ATMI EcoSys Corporation: See—
Tom, Glenn M., 5,779,998, Cl. 423-210.000.
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Yewey, Gerald L.; Krinick, Nancy L.; Dunn, Richard L.; Radomsky, Michael L.; Brouwer, Gerbrand; and Tipton, Arthur J., 5,780,044, Cl. 424-426.000.
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Javanifard, Jahanshir J.; Tedrow, Kerry D.; Lin, Jin-Lien; Evertt, Jeffrey J.; and Atwood, Gregory E., 5,781,473, Cl. 365-185.180.
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Sachdev, Manoj; and Atzema, Botjo, 5,781,025, Cl. 326-16.000.
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Peglion, Jean-Louis; Millan, Mark; Brocco, Mauricette; and Audinot, Valérie, 5,780,474, Cl. 514-254.000.
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LePage, Michael; Morrison, Keith; Schmin, Ronald; and Chauvin, Paul, 5,779,057, Cl. 206-722.000.
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Aura Systems, Inc.: See—
Strugach, Michael G.; and Szilagyi, Andrei, 5,780,958, Cl. 310-348.000.
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Dear, Aiden R.; Denham, Keith; and Seewraj, Angraj K., 5,778,516, Cl. 29-707.000.
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- Hyde, Robert William; Holzworth, William Terry; Baden, Bradley John; and Riebe, Gary Charles, 5,779,006, Cl. 188-250.00D.
- Babb, Nathaniel D. Support for shoulder-engageable musical instrument. 5,780,756, Cl. 84-280.000.
- Babij, Hugo: *See—*
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- Bach, Mark Alan; Chung, In Ha; Hill, Judith E.; Kuo, Steve T.; Lai, Theresa H.; Lee, Allen G.; and Ueyehara, Richard S., to International Business Machines Corp. IMS/WWW mapping system. 5,781,739, Cl. 395-200.570.
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- Backes, Peter William: *See—*
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- Badger Air Brush Co.: *See—*
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- Badger, Algernon S.: *See—*
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- Badillo, Paul, to Ralph's Industrial Sewing Machine Company. Sewing and material removal assembly. 5,778,806, Cl. 112-68.000.
- Badt, Sig Harold, Jr.: *See—*
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- Bae, Sang Il: *See—*
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- Baer, Austin R. Continuous hinge with a longitudinally supported portion and a longitudinally free end. 5,778,491, Cl. 16-354.000.
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- Bagheri, Hamid: *See—*
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- Bailey, Elena, to Enviroquip, Inc. Multi-ductor system. 5,779,890, Cl. 210-197.000.
- Bailey, James David. Changeable numeric signs. 5,778,577, Cl. 40-450.000.
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- Bailey, Morris W. Inflatable display apparatus. 5,778,581, Cl. 40-610.000.
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- Bains, Kuldip S.: *See—*
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- Baitelli, Gian Mario: *See—*
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- Baker, DeLoy T. Earth stabilization structure and method for making and using thereof. 5,778,622, Cl. 52-405.300.
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- Baker Manufacturing Co.: *See—*
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- Baker, Mark R., to Lubrizol Corporation. The Acylated nitrogen compounds useful as additives for lubricating oil and fuel compositions. 5,779,742, Cl. 44-330.000.
- Baker, Peter D.; and Neal, Karen, to NB Networks. System and method for general purpose network analysis. 5,781,729, Cl. 395-200.600.
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- Balko, Terry W.: *See—*
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- Ball, Norman H. Travel Hanger. 5,779,111, Cl. 223-87.000.
- Ball, Robert Edward: *See—*
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- Ballance, David S.; Bierman, Benjamin; and Tietz, James V., to Applied Materials, Inc. Gas introduction showerhead for an RTP chamber with upper and lower transparent plates and gas flow therebetween. 5,781,693, Cl. 392-416.000.
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- Balog, John S.: *See—*
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- Boutin, Raymond. Two-plane stacking container for liquids, 5,779,051, Cl. 206-504.000.
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- Murugesan, Natesan; Barrish, Joel C.; and Stein, Philip D., 5,780,473, Cl. 514-252.000.
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- Brooks Automation Inc.: *See—*
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- Brooks, Benjamin Rix. Method for treating amyotrophic lateral sclerosis, 5,780,489, Cl. 514-369.000.
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Antane, Madeline M.; Herbst, David R.; McFarlane, Geraldine R.; Gundersen, Eric G.; Hirth, Bradford H.; Quagliato, Dominick A.; Graceffa, Russell F.; and Butera, John A., 5,780,505, Cl. 514-522.000.

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Hara, Hiroyuki, 5,781,175, Cl. 345-127.000.

Haruta, Masahiro; Koike, Shoji; Aoki, Makoto; Shirota, Koromo; Yoshihira, Aya; Yamamoto, Tomoya; and Suzuki, Mariko, 5,781,216, Cl. 347-106.000.

Hasegawa, Koh; and Kikugawa, Noriyuki, 5,781,207, Cl. 347-23.000.

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Kanematsu, Daigoro; Otsuka, Naoji; Yano, Kentaro; Takahashi, Kiichiro; and Iwasaki, Osamu, 5,781,204, Cl. 347-17.000.

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Kino, Yoshiki; Shimura, Shoichi; Kai, Takashi; and Kobayashi, Naoki, 5,781,339, Cl. 359-557.000.

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Kobayakawa, Yoshimi, 5,781,275, Cl. 351-211.000.

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Mori, Shigeki; Shimada, Kazutoshi; Tatsumi, Eisaku; Matsubayashi, Kazuhiro; Sunakawa, Shinichi; Harada, Takashi; Nagasaki, Katsuhiko; and Fukuda, Ryoji, 5,781,662, Cl. 382-189.000.

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Giffin, James Wesley; Allison, Ronald William; and Carnahan, Joe Benton, 5,778,822, Cl. 119-165.000.
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Caser, Fabio Tassan: *See—*
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Castan, Catherine: *See—*
Soula, Gérard; Grosselin, Jean-Michel; Jorda, Rafael; and Castan, Catherine, 5,780,579, Cl. 528-332.000.
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Goto, Takeshi, 5,779,656, Cl. 602-6.000.
Caster Lighting Inc.: *See—*
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Castore, Glen, to M&M Precision Systems Corporation. Mixed frequency and amplitude modulated fiber optic heterodyne interferometer for distance measurement. 5,781,297, Cl. 356-349.000.
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Hearn, Dennis; and Putman, Hugh M., 5,779,883, Cl. 208-213.000.
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Goloff, C. Nickolas; and Rolfs, Rodney L., 5,781,090, Cl. 335-276.000.
Lukavich, Paul J.; Holtz, Thomas D.; and McDaniel, Charles L., Jr., 5,778,572, Cl. 37-460.000.
Morgan, Dennis E., 5,780,743, Cl. 73-597.000.
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Underiner, Gail E.; Porubek, David; Klein, J. Peter; and Woodson, Paul, 5,780,476, Cl. 514-263.000.
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Berger, Antoine; and Esteveny, Serge, 5,780,781, Cl. 177-126.000.
Cerami, Anthony: *See—*
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Jacobson, Marlene A.; Norton, Richard; and Chakravarty, Prasun K., 5,780,481, Cl. 514-293.000.
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Engleson, Joseph J.; and Chamberlain, Craig, 5,781,442, Cl. 364-478.020.
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Chan, Hugo Wai-Kung, to TRW Inc. Method of forming a high performance low thermal loss bi-temperature superconductive device. 5,780,314, Cl. 438-2.000.
Chan, Keen, to Intel Corporation. Method and apparatus for improved digital message transaction model. 5,781,635, Cl. 380-30.000.
Chan, Kwan-Ho. Apparatus and method for mixing first and second components of a bone cement in a vacuum. 5,779,356, Cl. 366-139.000.
Chan, Norman Chin-Hung: *See—*
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Chaney, John L. Penile ring gauge. 5,779,621, Cl. 600-38.000.
Chang, Cheng-Chen, to Caster Lighting Inc. Hand tool case with detachably connected working light. 5,779,350, Cl. 362-154.000.
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Chang, Joseph En-Cheng: *See—*
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Soo, Chang Hak, 5,780,747, Cl. 73-861.290.
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Charny, Anna, to Digital Equipment Corporation. Method and apparatus for hierarchical relative error scheduling. 5,781,531, Cl. 370-232.000.
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Chauvin, Paul: *See—*
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Chavez, Lloyd G., Jr.: *See—*
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Chaw, Steve, to United Microelectronics, Inc. Method and apparatus for an address transition detection circuit. 5,781,037, Cl. 327-18.000.
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Checkmate UK Limited: *See—*
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Chen, Chin-Jung, to Fit-Right Enterprise Co., Ltd. Multi-function exerciser. 5,779,606, Cl. 482-130.000.
Chen, Eddie, to C Two Corporation. Method of forming a boot. 5,778,473, Cl. 12-142.00T.
Chen, Fa-Shen, to King Steel Machinery Co., Ltd. Material injection system of a plastic material injection molding machine. 5,780,078, Cl. 425-574.000.
Chen, Frank Joung-yei; Guyot, Alain; Hamaide, Thierry; and Le Deore, Christophe, to Exxon Chemical Patents Inc. Supported Lewis acid catalysts derived from superacids useful for hydrocarbon conversion reactions. 5,780,563, Cl. 526-130.000.
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Chen, Ing-Wen. Pleated curtain fixing device. 5,778,955, Cl. 160-84.060.
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de la Brousse, Fabienne Charles; and Chen, Jin-long, 5,780,258, Cl. 435-29.000.

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Kuelbs, Gregory G.; and Green, Michael J., 5,779,303, Cl. 297-215.110.

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Donovan, Timothy J., 5,781,241, Cl. 348-441.000.

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Regueiro, Jose F., 5,778,849, Cl. 123-254.000.

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Chujo, Takafumi: See—
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Chung, Sun-Gan: See—
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Bacher, Jean-Pierre; Eckhardt, Claude; and Reinehr, Dieter, 5,779,741, Cl. 8-648.000.

Hao, Zhimin; Zambounis, John S.; and Iqbal, Abul, 5,780,627, Cl. 544-74.000.

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Maier, Thomas; and Luther, Helmut, 5,780,443, Cl. 514-25.000.

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Carter, Richard Douglas; and Ciccerchi, Britt, 5,779,859, Cl. 162-183.000.

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Ricardi, Leon J.; and Cipolla, Francis W., 5,781,163, Cl. 343-911.00R.

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Leger, Geary; Benjaram, Bhoopal R.; Carpenter, Peter R.; Schaps, Gary L.; and Wislensky, John Andrew, 5,781,799, Cl. 395-842.000.

Romano, Paul M.; and Supino, Louis, 5,781,365, Cl. 360-78.060.

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Dean, Richard T.; Buttram, Scott; McBride, William; Lister-James, John; and Civitello, Edgar R., 5,780,007, Cl. 424-1.690.

Clapp, Todd E.; and Costello, John J. Method and device for monitoring web bagginess. 5,778,724, Cl. 73-159.000.

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Wakefield, Timothy A.; Clark, David L.; and Lockstead, A. B., 5,779,830, Cl. 156-64.000.

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Rector, John J.; and Lisy, Thomas, 5,779,887, Cl. 210-159.000.

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Cline, Harvey E.: See—
Hatfield, William Thomas; and Cline, Harvey E., 5,779,641, Cl. 600-443.000.

Clinton, Kim P.N.: See—
Bertolet, Allan Robert; Clinton, Kim P.N.; Fuller, Christine Marie; Gould, Scott Whitney; Hartman, Steven Paul; Iadanza, Joseph Andrew; Keyser, Frank Ray; Millham, Eric Ernest; Reny, Timothy Shawn; Worth, Brian A.; Yasar, Gulson; and Zitritsch, Terrance John, 5,781,032, Cl. 326-39.000.

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Rucker, David L., 5,779,160, Cl. 239-466.000.

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Rello, Robert Michael; Yager, Michael; and Martinez, Ramon Antonio, 5,779,835, Cl. 156-187.000.

Coca-Cola Company, The: See—
Barrash, Marshall J., 5,779,086, Cl. 220-240.000.

Hansen, Jeffrey E.; Osakada, Kunio; and Myers, Michael J., 5,780,130, Cl. 428-35.700.

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Weigel, Scott Jeffrey; MacDougall, James Edward; Coe, Charles Gardner; Xiong, Yan Liang; Martens, Johan Adriaan; Jacobs, Pierre A.; and Webley, Paul Anthony, 5,779,766, Cl. 95-96.000.

Coen, Thomas T.: See—
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Coetzee, Etienne Eugene: See—
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Nabors, C. David; and Frangineas, George, 5,781,571, Cl. 372-21.000.

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Colato, Luca: See—
Degli Angeli, Alessandro; Conci, Valter; Eccher, Luciano; and Colato, Luca, 5,780,084, Cl. 426-242.000.

Coldwell, Phil: See—
Nakamura, Yoichi; Saito, Takashi; Coldwell, Phil; and Hart, Nigel, 5,781,448, Cl. 364-492.000.

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Goode, Christopher; Gordon, Donald; Conover, Mark D.; Illosky, Daniel; Thomas, Philip A.; and Cole, Brooks, 5,781,227, Cl. 348-7.000.

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O'Reilly, Michael, 5,780,795, Cl. 200-61.540.

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Wall, H. Davis, 5,778,830, Cl. 122-379.000.

Wivagg, Adrian Peter, 5,781,603, Cl. 376-260.000.

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Diem, Bernard; and Delaye, Marie-Therese, 5,780,885, Cl. 257-254.000.

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Keaton, Rickey Lynn, 5,778,511, Cl. 29-559.000.

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Schaeffer, Jon C.; Connor, William B.; and Field, Robert D., 5,780,110, Cl. 427-327.000.

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Randjelovic, Eriln A., 5,778,621, Cl. 52-403.100.

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Fossey, Robin Ernest, 5,779,077, Cl. 220-1.500.

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Dickinson, Thomas; and Gale, Bradley D., 5,779,070, Cl. 211-187.000.

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Chieffalo, Rodger; and Lightsey, George R., 5,779,164, Cl. 241-17.000.

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Maggioni, Giampietro; and Contucci, Mirco, 5,780,995, Cl. 322-8.000.

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Allen, Kenneth Alfred, 5,779,659, Cl. 602-75.000.

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Eadon, Desmond G.; and Wood, Pamela, 5,779,784, Cl. 106-450.000.

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Coon, Hayden G.; Ambesi-Impombato, Francesco Saverio; and Curcio, Francesco, to Human Cell Cultures Inc. Method of altering blood sugar levels using non-transformed human pancreatic cells that have been expanded in culture. 5,780,299, Cl. 435-366.000.

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Riley, Thomas A. D.; and Copeland, Miles A., 5,781,044, Cl. 327-105.000.

COR Therapeutics, Inc.: See—
Scarborough, Robert M., 5,780,595, Cl. 530-387.900.

Corbett, John A.: See—
McDaniel, Michael L.; Hill, Jeanette R.; and Corbett, John A., 5,780,513, Cl. 514-634.000.

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Wood, Alan G.; Doan, Trung Tri; Farnworth, Warren M.; and Corbett, Tim J., 5,781,022, Cl. 324-757.000.

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Leavitt, Ernest E., 5,779,731, Cl. 606-194.000.

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Clapp, Todd E.; and Costello, John J., 5,778,724, Cl. 73-159.000.

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Cipolla, Thomas Mario; and Coteus, Paul William, 5,780,925, Cl. 257-676.000.

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Ensch, Peter J.; and Counter, Louis F., 5,779,027, Cl. 198-841.000.

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Brown, John J.; and Jacobs, Michael F., 5,779,110, Cl. 222-556.000.

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Morano, James R., 5,779,805, Cl. 127-42.000.
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Crossley, Roger; Opalko, Albert; Owen, David Geraint; and Robertson, Brian, to John Wyeth & Brother, Ltd. Potassium channel modulators. 5,780,586, Cl. 530-324.000.
Crow, Joseph Michael, to Pipe Recovery Services, L.L.P. Exterior wireline cable adapter sub. 5,778,978, Cl. 166-254.200.
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CTS Corporation: See—
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Tardi, Paul G.; Swartz, Erik; Bally, Marcel B.; and Cullis, Pieter R., 5,780,054, Cl. 424-450.000.
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Alm, Stephen D.; Alm, Andrew J.; and Cullum, John M., 5,779,431, Cl. 414-786.000.
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Cunningham, Ronny L. Child safety with self-contained air bag. 5,779,304, Cl. 297-216.110.
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Hwang, Duck-Dong, 5,781,249, Cl. 348-699.000.
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- Sonntag, Josef; and Lorenz, Helmut, 5,780,981, Cl. 318-139.000.
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Hanlon, Paul C., 5,779,243, Cl. 277-216.000.

Olson, Scott M.; Wood, Gregory P.; Chernoby, Andrew, Jr.; and Swieringa, Roger D., 5,779,097, Cl. 222-39.000.

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Burke, David M., 5,779,346, Cl. 362-84.000.
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Koblish, Josef V.; Coen, Thomas T.; and Klein, George J., 5,779,646, Cl. 600-567.000.
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Suwa, Tomisaburo, 5,778,984, Cl. 169-36.000.
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Cass, Michael W.; Eckersley, Rodney T.; Krafek, Robert J.; Paciorek, Walter J.; and Fechter, Ramona R., 5,780,965, Cl. 313-506.000.
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Santos, Gregory N.; Maguire, David J.; Riley, Dwight D.; and Edwards, James R., 5,781,748, Cl. 395-308.000.
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Dulat, Bernd; and Eger, Wolfgang, 5,779,187, Cl. 244-3.160.
Egry, Horst; Diehl, Volker; and Jörg, Klaus, to BASF Aktiengesellschaft. Separation of (meth)acrylic acid from the reaction gas mixture formed in the catalytic gas phase oxidation of C3/C4 compounds. 5,780,679, Cl. 562-600.000.
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Klinkhart, Roger Dell; Klinkhart, Herman O.; and Bowman, Kenneth W., 5,778,828, Cl. 119-815.000.
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Ejiri, Kiyomi; Inaba, Hiroo; Saito, Shinji; and Hayakawa, Satoru, to Fujii Photo Film Co., Ltd. Magnetic recording medium. 5,780,141, Cl. 428-323.000.
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Kirksey, Sanford Theodore; Ekanayake, Athula; Pultinas, Edmund Paul, Jr.; Jones, Judith Ann; and Stradling, Richard Fiske, Jr., 5,780,086, Cl. 010396-330.300.
Ekart, Michael P.: See—
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Elagin, Petr Ivanovich: See—
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Ha, Jeong-Sook; Yun, Wan-Soo; and Park, Kang-Ho, 5,780,851, Cl. 250-306.000.
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Gillet, Jean-Philippe; and Rupp, Christophe, 5,780,673, Cl. 560-227.000.
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Agote, Inaki, 5,779,530, Cl. 452-12.000.
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Dorogi, Peter Ladislaus; and McCook, John Patrick, 5,778,894, Cl. 128-898.000.
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Russ, Will L.; Alagar, Sridhar; Badt, Sig Harold, Jr.; Bengston, Lee D.; Chao, Tim T.; Ellefson, Fred; McGlade, Bryan J.; Sees, Mark W.; and Wagner, Clint Allen, 5,781,535, Cl. 370-248.000.
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- Enami, Hiromichi: *See—*
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- Engstrom, John A. Variable value retail coupon system. 5,780,133, Cl. 428-40.100.
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- Firma Carl Freudenberg: *See—*
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- Firmenich SA: *See—*
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- O'Leary, Nicholas, 5,780,527, Cl. 523-102.000.
- Fisch, Herbert: *See—*
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- Fischer, Brian Eugene: *See—*
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- Fischer, Reiner: *See—*
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- Fischer, Roy K.: *See—*
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- Fishbine, Glenn M.; and Klingert, Jack, to Digital Biometrics, Inc. Gambling chip recognition system. 5,781,647, Cl. 382-1.000.
- Fisher, Adrian John: *See—*
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- Fishleigh, Robert V.: *See—*
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- Fishman, Oleg; and Turner, Robert C., to Inductotherm Industries, Inc. Induction heating and melting apparatus with superconductive coil and removable crucible. 5,781,581, Cl. 373-152.000.
- Fishman, Paul S.: *See—*
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- Fiskars Inc.: *See—*
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- Fister, Julius C.; Chen, Suzhain; and Khan, Abid A., to Olin Corporation. Tin coated electrical connector. 5,780,172, Cl. 428-647.000.
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- Fitel Photomatrix: *See—*
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- Fitzgibbon, James J.; and Moravec, John V., to Chamberlain Group, Inc., The. Barrier operator having system for detecting attempted forced entry. 5,780,987, Cl. 318-466.000.
- FitzPatrick, Catherine M.: *See—*
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- Flake, Wayne L.: *See—*
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- Flamel Technologies (Societe Anonyme): *See—*
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- Flanagan, Kevin L.; and Amott, Randy, to EMC Corporation. Method and apparatus for receive buffer management in multi-sender communication systems. 5,781,801, Cl. 395-876.000.
- Flauss, Hasso, to Saar-Gummewerke GmbH. Slit-covering profile with integrated repair solution. 5,779,297, Cl. 296-93.000.
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- Flex-Cable, Inc.: *See—*
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- Flexible Solutions, Inc.: *See—*
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- Florida Scientific Laboratories Inc.: *See—*
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- Flourware, Inc.: *See—*
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- Fluid Technologies, Inc.: *See—*
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- FM Gaming Electronics L.P.: *See—*
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- FMC Corporation: *See—*
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- Lyga, John W., 5,780,630, Cl. 544-309.000.
- Smedt, Eric De; and Verbeiren, Wim, 5,779,180, Cl. 242-528.000.
- Focal, Inc.: *See—*
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- Foley, Rita S.; and Foley, Patrick F. Clean hreath wand. 5,779,654, Cl. 601-137.000.
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- Ford, Clifton K., Sr. Apparatus and process for treating bottled liquor. 5,778,763, Cl. 99-277.200.
- Ford Global Technologies, Inc.: *See—*
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- Cullen, Michael John; Farmer, David George; Sumilla, Gopichandra; and Cok, Susan Nicole, 5,778,666, Cl. 60-274.000.
- Czekala, Michael Damian; and Jones, Thomas Evans, 5,778,855, Cl. 123-416.000.
- Deidewig, Hartmut; Chazotte, Jean-Pierre; Sabel, Gustav; and Doelling, Mathias, 5,778,728, Cl. 74-473.250.
- Fawcett, Nigel; and Knowles, Richard, 5,779,842, Cl. 156-250.000.
- Kunec, Richard J., 5,779,534, Cl. 454-52.000.
- Puskorius, Gintaras Vincent; Feldkamp, Lee Albert; and Davis, Leighton Ira, 5,781,700, Cl. 395-20.000.
- Rachel, Todd Leonard; Smithberger, Patrick Edward; Hughes, Scott Richard; Cullen, Michael John; and Marzonie, Robert Mathew, 5,781,877, Cl. 701-104.000.
- Ford, Mark: *See—*
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- Ford Motor Company: *See—*
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- Stephen, Garth; Dorfstaeter, Walter Alfred; and Timm, Mark James, 5,781,101, Cl. 340-286.020.
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- Forest, Robert. Aquarium tool. 5,779,291, Cl. 294-3.000.
- Forgang, Stanislaw; Fanini, Otto N.; and Tabarovsky, Leonty A., to Western Atlas International, Inc. Method and apparatus for transverse electromagnetic induction well logging. 5,781,436, Cl. 364-422.000.
- Forma Scientific, Inc.: *See—*
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- Fornasari, Giancarlo; Torri, Giangiacomo; and Carlucci, Giovanni, to Procter & Gamble Company. The. Cationic polymer. 5,780,616, Cl. 536-30.000.
- Forouhi, Abdul R.; Hawley, Frank W.; McCollum, John L.; and Yen, Yeouchung, to Actel Corporation. Fabrication method for metal-to-metal antifuses incorporating a tungsten via plug. 5,780,323, Cl. 438-131.000.
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- Forren, Helmut R.: *See—*
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- Förster, Heinz; Diehr, Hans-Joachim; Santel, Hans-Joachim; and Dollinger, Markus, to Bayer Aktiengesellschaft. Heterocyclyl-1,3,4-thiadiazoloxoacetamides and their use as herbicides. 5,780,392, Cl. 504-263.000.
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- Fortini, Paolo, to Bottega D'Arte In Firenze S.r.l. Frame for spectacles without surround. 5,781,270, Cl. 351-110.000.
- Fossey, Robin Ernest, to Container Design Limited. Container tank. 5,779,077, Cl. 220-1.500.
- Fossorier, Marc P. C.; Lin, Shu; and Rhee, Dojun, to LSI Logic Corporation. Differential trellis decoding for convolutional codes. 5,781,569, Cl. 371-43.700.
- Fost, Dennis L.: *See—*
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- Foster, David George: *See—*
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- Foster, George E.: *See—*
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- Fouilland, Bernard: *See—*
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- Fountain, William R. Small-shank tool for automatic lathes. 5,779,400, Cl. 407-103.000.
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Free, Gerald R. Press-on corner bead, 5,778,617, Cl. 52-255.000.
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Frezza, Pierre, to Laboratoire Aguetant. Automatic drug injector, 5,779,677, Cl. 604-134.000.
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Sawada, Hirokazu; Sakaki, Hirokazu; Kakei, Tsutomu; Uesugi, Akio; and Matsuki, Masaya, 5,779,824, Cl. 148-437.000.
Sutoh, Akio; and Seto, Yukio, 5,781,223, Cl. 347-238.000.
Takeuchi, Kiyoshi; Nakamura, Koki; Taguchi, Toshiaki; Nakamura, Koichi; and Makuta, Toshiyuki, 5,780,210, Cl. 430-435.000.
Usami, Yoshinori; Ohkubo, Akito; and Dounomae, Yoshifumi, 5,781,709, Cl. 395-109.000.
Wada, Minoru; and Nakamura, Kotaro, 5,780,388, Cl. 503-226.000.
Yamaguchi, Hiroshi, 5,781,315, Cl. 358-520.000.
Yamashita, Seiji, 5,780,209, Cl. 430-399.000.
Fuji Photo Optical Co., Ltd.: *See—*
Kondo, Mituo, 5,779,626, Cl. 600-130.000.
Miyano, Hitoshi, 5,781,281, Cl. 356-40.100.
Sasaki, Tadashi, 5,781,808, Cl. 396-81.000.
Fuji, Tsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Voice transmitting apparatus and voice receiving apparatus using unique word patterns, 5,781,595, Cl. 375-357.000.
Fuji Xerox Co., Ltd.: *See—*
Ide, Osamu, 5,780,191, Cl. 430-45.000.
Koue, Toshiaki, 5,781,626, Cl. 379-361.000.
Noda, Satoshi, 5,781,312, Cl. 358-482.000.
Sekikawa, Yoshihito, 5,781,325, Cl. 359-216.000.
Fujii, Bunichi; Ozawa, Kenichi; Saita, Koji; Saito, Tsunenari; and Minegishi, Hajime, to Sony Corporation. Color selection electrode mounting structure, 5,780,962, Cl. 313-402.000.
Fujii, David B.; and Rust, Robert A., to Hewlett-Packard Company. High speed system for threshold matrix alignment and tiling, during creation of a binary half-tone image, 5,781,308, Cl. 358-451.000.
Fujii, Eiji: *See—*
Arta, Koji; Fujii, Eiji; Shimada, Yasuhiro; Uemoto, Yasuhiro; Nasu, Toru; Matsuda, Akihiro; Nagano, Yoshihisa; Inoue, Atsuo; Matsura, Taketoshi; and Otsuki, Tatsuo, 5,780,351, Cl. 438-396.000.
Fujii, Haruhiko, to Ando Electric Co., Ltd. Variable delay circuit, 5,781,056, Cl. 327-276.000.
Fujii, Kazuhiro, to Shimano, Inc. Top pull front derailleur, 5,779,581, Cl. 474-82.000.
Fujii, Kazutoshi: *See—*
Imanaka, Tadayuki; Terada, Yoshinobu; Takaha, Takeshi; Yanase, Michiyo; Okada, Shigetaka; Takata, Hiroki; Nakamura, Hiroyasu; and Fujii, Kazutoshi, 5,780,267, Cl. 435-72.000.
Fujii, Takahiro: *See—*
Kito, Satoru; Ito, Masahito; Matuda, Fuminori; Takeshima, Eiki; Tanaka, Yasuji; Fujii, Takahiro; and Izutani, Kenjiro, 5,779,872, Cl. 205-149.000.
Fujii, Tetsuya: *See—*
Totani, Chiharu; Ueno, Shigehiro; Fujii, Tetsuya; and Furuta, Kenichi, 5,779,262, Cl. 280-728.300.
Fujii, Yasuki: *See—*
Sato, Yasuyuki; Miyazaki, Keiji; Fujii, Yasuki; Azuma, Mitsuhiro; and Chujo, Takafumi, 5,781,528, Cl. 370-218.000.
Fujimori, Kohichi: *See—*
Shinomiya, Tokihiko; Fujimori, Kohichi; and Kuratate, Tomoaki, 5,781,259, Cl. 349-88.000.
Fujimori, Yasuhiro: *See—*
Kondo, Tetsujiro; Fujimori, Yasuhiro; Takahashi, Kenji; and Kawaguchi, Kunio, 5,781,238, Cl. 348-405.000.
Fujimoto, Hidetoshi: *See—*
Itaya, Kazuhiko; Yamamoto, Masahiro; Onomura, Masaaki; Fujimoto, Hidetoshi; Hatakoshi, Genichi; Sugawara, Hideto; Ishikawa, Masayuki; Rennie, John; and Saito, Shinji, 5,780,873, Cl. 257-521.000.
Fujimoto, Hiroyuki: *See—*
Ikuta, Nobuo; Ueno, Kouji; Shishido, Kouji; Fukutani, Yutaka; Arayama, Youji; Nakayama, Tomohiro; Shiga, Takanori; Kimura, Masakazu; Fujimoto, Hiroyuki; and Fujita, Yoshiyuki, 5,781,627, Cl. 380-3.000.
Kitamura, Masao; and Fujimoto, Hiroyuki, 5,780,779, Cl. 177-105.000.
Fujimoto, Koichi: *See—*
Yanagisawa, Hiroaki; Fujita, Takashi; Fujimoto, Koichi; Yoshioka, Takao; Wada, Kunio; Oguchi, Minoru; Fujiwara, Toshihiko; and Horikoshi, Hiroyoshi, 5,780,490, Cl. 514-369.000.
Fujimoto, Koji: *See—*
Furusawa, Yoshinori; Ikemoto, Yoshihiro; Fujimoto, Koji; Nakagawa, Koji; Miyake, Toshifumi; and Shogase, Toshikazu, 5,778,745, Cl. 82-1.110.
Fujimoto, Yukari: *See—*

Higashii, Takayuki; Fujimoto, Yukari; Matsumoto, Tsutomu; Minai, Masayoshi; Sekine, Chizu; Endo, Kyoko; and Fujisawa, Koichi, 5,779,934, Cl. 252-299.610.
Fujimura, Toshiaki: *See—*
Nagahara, Shigenori; Fujimura, Toshiaki; and Tanaka, Shinichi, 5,780,202, Cl. 430-271.100.
Fujioka, Satoshi: *See—*
Kumai, Eiji; Takagi, Akira; and Fujioka, Satoshi, 5,779,377, Cl. 400-555.000.
Fujisawa, Koichi: *See—*
Higashii, Takayuki; Fujimoto, Yukari; Matsumoto, Tsutomu; Minai, Masayoshi; Sekine, Chizu; Endo, Kyoko; and Fujisawa, Koichi, 5,779,934, Cl. 252-299.610.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Okada, Satoshi; Sawada, Kozo; Kuroda, Akio; Watanabe, Shinya; and Tanaka, Hirokazu, 5,780,633, Cl. 546-112.000.
Fujita, Atsuko: *See—*
Miyazawa, Kazutoshi; Matsui, Shuichi; Fujita, Atsuko; Kondo, Tomoyuki; Goto, Yasuyuki; Nakagawa, Etsuo; and Sawada, Shinichi, 5,779,936, Cl. 252-299.630.
Fujita, Takashi: *See—*
Yanagisawa, Hiroaki; Fujita, Takashi; Fujimoto, Koichi; Yoshioka, Takao; Wada, Kunio; Oguchi, Minoru; Fujiwara, Toshihiko; and Horikoshi, Hiroyoshi, 5,780,490, Cl. 514-369.000.
Fujita, Tomoyuki: *See—*
Akahane, Koichi; Kondo, Takashi; Nakano, Motonari; Nozaki, Yoshihisa; Harada, Koichi; Fujita, Tomoyuki; and Yamaguchi, Minoru, 5,778,810, Cl. 112-470.010.
Fujita, Yoshiyuki: *See—*
Ikuta, Nobuo; Ueno, Kouji; Shishido, Kouji; Fukutani, Yutaka; Arayama, Youji; Nakayama, Tomohiro; Shiga, Takanori; Kimura, Masakazu; Fujimoto, Hiroyuki; and Fujita, Yoshiyuki, 5,781,627, Cl. 380-3.000.
Fujitsu Limited: *See—*
Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Tenuo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-Chou Vincent, 5,778,529, Cl. 29-852.000.
Ema, Taji; Itabashi, Kazuo; Ikemasa, Shinichiro; Mitani, Junichi; Yanagita, Itsuo; and Suzuki, Seiichi, 5,780,907, Cl. 257-371.000.
Fukatsu, Junko; and Kato, Hiromi, 5,781,898, Cl. 707-4.000.
Fukushima, Nobuhiro, 5,781,347, Cl. 359-674.000.
Hagino, Ichiro; and Tabara, Katsuji, 5,781,656, Cl. 382-144.000.
Hashimoto, Koichi; Kamata, Takeshi; Hikosaka, Yukinobu; and Hasegawa, Akihiro, 5,779,925, Cl. 216-67.000.
Ikuta, Nobuo; Ueno, Kouji; Shishido, Kouji; Fukutani, Yutaka; Arayama, Youji; Nakayama, Tomohiro; Shiga, Takanori; Kimura, Masakazu; Fujimoto, Hiroyuki; and Fujita, Yoshiyuki, 5,781,627, Cl. 380-3.000.
Imamoto, Takashi; Takada, Hirotoshi; Miyamaru, Toshiaki; and Hamaguchi, Akihiro, 5,779,060, Cl. 211-26.000.
Imamura, Nobutaka; and Ishihata, Hiroaki, 5,781,741, Cl. 395-200.660.
Inazawa, Katsumi; Yamakawa, Kengo; and Sugihara, Hiroyuki, 5,781,369, Cl. 360-92.000.
Iwamatsu, Takanori; and Kakuishi, Mitsuo, 5,781,076, Cl. 332-103.000.
Izuta, Naoki, 5,781,795, Cl. 395-828.000.
Kawano, Kayoko; Takaki, Yasushi; Sutou, Shinichi; and Hara, Kazuhiro, 5,781,560, Cl. 371-22.320.
Koganezawa, Shinji; and Mizoshita, Yoshifumi, 5,781,381, Cl. 360-106.000.
Kotaki, Yoshio; and Katou, Yukio, 5,781,368, Cl. 360-92.000.
Koyama, Susumu, 5,781,800, Cl. 395-860.000.
Kudo, Hiroshi, 5,780,874, Cl. 257-77.000.
Manning, Thomas A.; Hauser, Stephen A.; Caldara, Stephen A.; Strouble, Raymond L.; and Hunt, Douglas H., 5,781,533, Cl. 370-236.000.
Mayuzumi, Tatsuya; Kurihara, Shinji; Matsuda, Syuichi; Negishi, Noriaki; and Yoshida, Tadashi, 5,781,191, Cl. 345-336.000.
Nabeya, Kenichi; and Nakada, Tatsumi, 5,781,433, Cl. 364-184.000.
Nakajima, Kenji, 5,781,517, Cl. 369-38.000.
Okazaki, Kotaro, 5,781,794, Cl. 395-822.000.
Okuyama, Takeshi; Watanabe, Kouji; Chiyanobu, Tatsuo; Hashimoto, Kaoru; and Kawano, Kyoichiro, 5,779,492, Cl. 439-179.000.
Sacki, Mitsuo; Matsuda, Kouichi; Yano, Hidetoshi; and Ozawa, Hidekiyo, 5,781,000, Cl. 323-234.000.
Sato, Yasuyuki; Miyazaki, Keiji; Fujii, Yasuki; Azuma, Mitsuhiro; and Chujo, Takafumi, 5,781,528, Cl. 370-218.000.
Saxena, Nirmal R., 5,781,562, Cl. 371-27.100.
Tahara, Yoko; Ohkuma, Yoshinori; Onishi, Masaru; and Masuko, Toshiyuki, 5,781,572, Cl. 372-34.000.
Tsujuchi, Hidetoshi, 5,781,886, Cl. 704-275.000.
Uchino, Minoru, 5,781,755, Cl. 395-406.00R.
Ueno, Haruhiko, 5,781,775, Cl. 395-672.000.
Watanabe, Mitsuo; and Shinoda, Ichiro, 5,780,832, Cl. 235-462.000.
Fujitsu Network Communications, Inc.: *See—*
Manning, Thomas A.; Hauser, Stephen A.; Caldara, Stephen A.; Strouble, Raymond L.; and Hunt, Douglas H., 5,781,533, Cl. 370-236.000.
Fujiwara, Masahiko: *See—*
Shimizu, Naohito; Akiyama, Shigeyuki; Fujiwara, Masahiko; Inoue, Satoshi; and Oida, Takuji, 5,780,716, Cl. 73-23.200.

Fujiwara, Takayoshi; Sone, Yoshinori; Honjo, Takashi; Hirayama, Takuya; Kawaguchi, Syunro; and Tsunekawa, Teruhisa, to Kabushiki Kaisha Toshiba. Refrigerating apparatus having a fluid compressor. 5,779,450, Cl. 417-45.000.

Fujiwara, Toru. *See—* Tsuchiya, Kenichi; Tsubakiji, Tadashi; and Fujiwara, Toru, 5,780,810, Cl. 219-202.000.

Fujiwara, Toshihiko. *See—* Yanagisawa, Hiroaki; Fujita, Takashi; Fujimoto, Koichi; Yoshioka, Takao; Wada, Kunio; Oguchi, Minoru; Fujiwara, Toshihiko; and Horikoshi, Hiroyoshi, 5,780,490, Cl. 514-369.000.

Fujiwara, Toshimitsu; Iino, Shuji; Kanazawa, Masaharu; Ojima, Seishi; and Miyamoto, Hidetoshi, to Minolta Co., Ltd. Toner and liquid developer, liquid developer, and method of producing same. 5,780,196, Cl. 430-137.000.

Fujiwara, Yuji. *See—* Juri, Tatsuro; Fujiwara, Yuji; Nishino, Masakazu; Matsuta, Toyohiko; and Awamoto, Shigeru, 5,781,690, Cl. 386-111.000.

Fujiyama, Masaki; Sanada, Yukio; Mushimoto, Shuji, deceased (by Yumi Mushimoto, Ryuichi Mushimoto, Hideshi Mushimoto, legal representatives), to Murata Manufacturing Co., Ltd. Conducting thick film composition, thick film electrode, ceramic electronic component and laminated ceramic capacitor. 5,781,402, Cl. 361-321.400.

Fukano, Yoshihiro; Maruyama, Tetsuro; Uchino, Tadashi; Ono, Masaaki; and Okita, Yuzuru, to SMC Kabushiki Kaisha. Poppet valve. 5,779,224, Cl. 251-331.000.

Fukata, Yuriko. *See—* Yoshii, Haruo; and Fukata, Yuriko, 5,780,026, Cl. 424-130.100.

Fukatsu, Junko; and Kato, Hiromi, to Fujitsu Limited. Data retrieval condition setting method. 5,781,898, Cl. 707-4.000.

Fukazawa, Kazuhiko. *See—* Mori, Futoshi; Fukazawa, Kazuhiko; Hirose, Hiroshi; and Kohama, Yoshiaki, 5,780,853, Cl. 250-310.000.

Fuke, Hiromi. *See—* Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; Sahashi, Masashi; and Fuke, Hiromi, 5,780,176, Cl. 428-692.000.

Fukuda, Hideki, to Matsushita Electric Industrial Co., Ltd. Video coding apparatus and video coding method. 5,781,237, Cl. 348-405.000.

Fukuda, Kazushi; Yoshida, Yasuko; Hoshino, Yutaka; Hashimoto, Naotaka; Asayama, Kyoichiro; Koide, Yuuki; Yoshizumi, Keiichi; Okamoto, Eri; Haga, Satoru; and Ikeda, Shuji, to Hitachi, Ltd.; and Hitachi ULSI Engineering Co., Ltd. Process for producing semiconductor integrated circuit. 5,780,328, Cl. 438-201.000.

Fukuda, Ryoji. *See—* Mori, Shigeki; Shimada, Kazutoshi; Tatsumi, Eisaku; Matsubayashi, Kazuhiro; Sunakawa, Shinichi; Harada, Takashi; Nagasaki, Katsuhiko; and Fukuda, Ryoji, 5,781,662, Cl. 382-189.000.

Fukuda, Yasuhiro. *See—* Fukuzako, Shinnichi; and Fukuda, Yasuhiro, 5,781,389, Cl. 361-56.000.

Fukudome, Yoshio. *See—* Sato, Ryoko; Okayama, Masao; Fukudome, Yoshio; and Furutono, Masuo, 5,780,825, Cl. 235-379.000.

Fukuhisa, Kouji. *See—* Nomura, Kazuo; Fukuhisa, Kouji; and Ohara, Yozo, 5,779,555, Cl. 473-223.000.

Fukui, Wataru, to Mitsubishi Denki Kabushiki Kaisha. Ignition controller for internal combustion engine. 5,778,862, Cl. 123-631.000.

Fukumoto, Masaaki. *See—* Hiraiwa, Akira; Fukumoto, Masaaki; Uchiyama, Tadasu; Sonehara, Noboru; and Oikawa, Shigeru, 5,781,661, Cl. 382-188.000.

Fukumoto, Masayuki, to Yuugenkaisha Mediamews; and Kabushikikaisha Sanichi-Kougeisha. Indications for the visually handicapped using transparent three-dimensional ink. 5,779,482, Cl. 434-113.000.

Fukumoto, Shihou; and Nakamura, Hideki, to Hitachi Metals, Ltd. Bearing steel bearing member having excellent thermal resistance and toughness. 5,780,165, Cl. 428-472.100.

Fukumura, Kenichi. *See—* Haga, Kyosuke; Suzuki, Mikio; and Fukumura, Kenichi, 5,778,756, Cl. 91-441.000.

Fukunaga, Atsuo F.; and Fukunaga, Blanca M., to Medlis, Inc. Artificial ventilation system and methods of controlling carbon dioxide rebreathing. 5,778,872, Cl. 128-202.270.

Fukunaga, Blanca M. *See—* Fukunaga, Atsuo F.; and Fukunaga, Blanca M., 5,778,872, Cl. 128-202.270.

Fukuoka, Kodo; and Kuyama, Kouji, to Matsushita Electric Industrial Co., Ltd. Coreless motor. 5,780,947, Cl. 310-80.000.

Fukuoka, Takao. *See—* Okubo, Akio; and Fukuoka, Takao, 5,780,752, Cl. 73-863.000.

Fukushima, Nobuhiro, to Fujitsu Limited. Optical device. 5,781,347, Cl. 359-674.000.

Fukutani, Makoto. *See—* Sugawa, Akihide; Miyaguchi, Masamichi; Fukutani, Makoto; and Nishio, Fumihiko, 5,779,316, Cl. 297-423.260.

Fukutani, Yutaka. *See—* Ikuta, Nobuo; Ueno, Kouji; Shishido, Kouji; Fukutani, Yutaka; Arayama, Youji; Nakayama, Tomohiro; Shiga, Takanori; Kimura, Masakazu; Fujimoto, Hiroyuki; and Fujita, Yoshiyuki, 5,781,627, Cl. 380-3.000.

Fukuyama, Yoshitaka. *See—*

Ohtomo, Fumio; Nakata, Yuji; Fukuyama, Yoshitaka; Inomata, Asako; Shibuya, Sachio; Koga, Akinori; Ishii, Junji; Ito, Shoko; and Yamamoto, Hironobu, 5,778,657, Cl. 60-39.182.

Fukuzako, Shinnichi; and Fukuda, Yasuhiro, to Oki Electric Industry Co., Ltd. Transistor protection circuit. 5,781,389, Cl. 361-56.000.

Fuller, Christine Marie. *See—* Bertolet, Allan Robert; Clinton, Kim P.N.; Fuller, Christine Marie; Gould, Scott Whitney; Hartman, Steven Paul; Iadanza, Joseph Andrew; Keyser, Frank Ray; Millham, Eric Ernest; Reny, Timothy Shawn; Worth, Brian A.; Yasar, Gulson; and Zittritsch, Terrance John, 5,781,032, Cl. 326-39.000.

Fuller, John Michael, to Camco Drilling Group Limited of Hycalog. Drilling assembly for drilling holes in subsurface formations. 5,778,992, Cl. 175-73.000.

Fuller, Martha Kay. *See—* DeMichele, Stephen Joseph; Garleb, Keith Allen; McEwen, John William; and Fuller, Martha Kay, 5,780,451, Cl. 514-54.000.

Fultz, Timothy J. *See—* McDonough, Sherrol H.; and Fultz, Timothy J., 5,780,219, Cl. 435-5.000.

Funahashi, Akihiro. *See—* Nishizawa, Yoshifumi; Gamano, Jun; Ando, Hideo; and Funahashi, Akihiro, 5,778,807, Cl. 112-70.000.

Funahashi, Norimichi. *See—* Narukawa, Toshiki; Funahashi, Norimichi; and Usami, Hajime, 5,781,712, Cl. 395-115.000.

Funahashi, Yasuhiro. *See—* Sakoguchi, Iwao; Funahashi, Yasuhiro; and Sakoguchi, Yoshiko, 5,781,683, Cl. 386-96.000.

Funatsu, Keisuke. *See—* Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiko; Shirai, Seichiro; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsunooka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinori; Tubone, Tunekiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.

Fung, Anthony S. *See—* Chester, Arthur W.; Fung, Anthony S.; Kresge, Charles T.; and Roth, Wieslaw J., 5,779,882, Cl. 208-120.000.

Furlani, Edward P.; and Barzideh, Bijan, to Eastman Kodak Company. Electromagnetic device for providing a hard stop for moving blade aperture systems. 5,781,816, Cl. 396-455.000.

Furlani, Edward P. *See—* Chatterjee, Dilip K.; Furlani, Edward P.; and Ghosh, Syamal K., 5,779,969, Cl. 264-619.000.

Furler, Randy J. *See—* Fritts, Rex E.; Robeson, John D.; and Furler, Randy J., 5,780,792, Cl. 200-50.020.

Furukawa, Masayoshi. *See—* Kitaguchi, Tohru; Notsu, Kazuo; Takahashi, Kazushi; Furukawa, Masayoshi; Kambara, Shigeki; Majima, Osamu; and Kuwahara, Soichi, 5,780,200, Cl. 430-270.100.

Furukawa, Yoshiro; Kitaori, Kazuhiro; and Takenaka, Keishi, to Daiso Co., Ltd. Process for preparation of 1,4-benzodioxane derivative. 5,780,650, Cl. 549-361.000.

Furuno, Yutaka. *See—* Yasukuni, Jun; Tanigawa, Hidemi; and Furuno, Yutaka, 5,781,096, Cl. 337-297.000.

Furusawa, Yasuhiko. *See—* Machii, Minoru; Nanba, Nobuyoshi; Lim, Boon Keng; Sakata, Noboru; Sakurai, Nobuo; and Furusawa, Yasuhiko, 5,779,811, Cl. 134-4.000.

Furusawa, Yoshinori; Ikemoto, Yoshihiro; Fujimoto, Kouji; Nakagawa, Kouji; Miyake, Toshifumi; and Shogase, Toshikazu, to Matsushita Electric Industrial Co., Ltd. Chip-broken turning method and apparatus. 5,778,745, Cl. 82-1.110.

Furuta, Kenichi. *See—* Totani, Chiharu; Ueno, Shigehiro; Fujii, Tetsuya; and Furuta, Kenichi, 5,779,262, Cl. 280-728.300.

Furutono, Masuo. *See—* Sato, Ryoko; Okayama, Masao; Fukudome, Yoshio; and Furutono, Masuo, 5,780,825, Cl. 235-379.000.

Furuya, Hisashi. *See—* Atami, Takashi; Furuya, Hisashi; and Kida, Michio, 5,779,792, Cl. 117-214.000.

Furuyama, Masataka. *See—* Miyadera, Tatsuo; Yoshida, Kiyohide; Saito, Mika; Irite, Naoko; Abe, Akira; and Furuyama, Masataka, 5,780,002, Cl. 423-239.100.

Fuss, Gunter G.; and Yampolsky, Vladimir, to Free-Flow Packaging International, Inc. System and method for use of loose fill packing materials. 5,778,642, Cl. 53-567.000.

Fütterer, Bodo, to Maxon-Motor GmbH. Planetary gearing. 5,779,589, Cl. 475-346.000.

Future Tech Systems, Inc. *See—* Jacob, Robert C.; and Stewart, Jeffrey S., 5,781,108, Cl. 340-552.000.

Fuwa, Tetsuji; Imamaki, Teruo; and Okumura, Takashi, to Brother Kogyo Kabushiki Kaisha. Stencil stamp unit. 5,778,776, Cl. 101-125.000.

Fynn, Shaun. *See—* Crane, Stanford W., Jr.; Portuondo, Maria M.; Cruz, Edward V.; Razo, Vincent R.; and Fynn, Shaun, 5,781,408, Cl. 361-683.000.

G & H Technology, Inc. *See—*

Hyatt, Hugh M., 5,781,395, Cl. 361-127.000.

G. D. Searle & Co. *See—*

Hanson, Gunnar J., 5,780,494, Cl. 514-412.000.

G. Siempelkamp GmbH & Co. *See—*

Siempelkamp, Dieter, 5,779,955, Cl. 264-109.000.

Gadgil, Ashok; and Garud, Vikas, to University of California, The Regents of the UV water disinfectors. 5,780,860, Cl. 250-432.00R.

Gaete, Jorge Robinson, to PFI Vacuum Forming, Inc. Method of production using an electronic assembly pallet. 5,781,004, Cl. 324-158.100.

Gaffney, Anne M. *See—*

Cooker, Bernard; Gaffney, Anne M.; Jewson, Jennifer D.; and Onimus, Wilson H., 5,780,657, Cl. 549-534.000.

Gagliardi, Eugene D., Jr., to Visionary Design, Inc. Method of making chicken ribs product from whole chicken. 5,779,532, Cl. 452-149.000.

Gagne, Julio C. *See—*

Sheridan, Patrick J.; Gagne, Julio C.; and Anderson, Mary L., 5,780,227, Cl. 435-6.000.

Gagneur, John P. *See—*

Scourtes, George; Gagneur, John P.; and Yush, Elliott, 5,780,730, Cl. 72-117.200.

Gal, George; and Herman, Bruce J., to Lockheed Martin Missiles & Space Co. Flat panel display. 5,781,257, Cl. 349-57.000.

Galandrino, Agostino, to Robino & Galandrino S.p.A. Machine for applying heat-sealable pilferproof disks to bottles of wine liquor beverages in general and the like. 5,778,635, Cl. 53-306.000.

Galbraith, Douglas C.; El Gamal, Abbas; and Greene, Jonathan W., to Actel Corporation. Logic module with configurable combinational and sequential blocks. 5,781,033, Cl. 326-39.000.

Gale, Bradley D. *See—*

Dickinson, Thomas; and Gale, Bradley D., 5,779,070, Cl. 211-187.000.

Gale, Ronald P., to Kopin Corporation. Dual light valve color projector system. 5,781,252, Cl. 349-8.000.

Gallagher, John E., Jr.; Singh, Michael A.; and Pollock, Gregory T., to Arrow International, Inc. Bingo game booklet. 5,779,274, Cl. 283-49.000.

Gallo De Llanos S.L. *See—*

Molina, Ramon Gallo, 5,780,011, Cl. 424-9.410.

Gallorini, Massimo. *See—* Angilella, Bruno; Bocci, Sandro; and Gallorini, Massimo, 5,780,846, Cl. 250-227.210.

Gallotti, Angelo. *See—*

Morandi, Ervino; and Gallotti, Angelo, 5,779,905, Cl. 210-651.000.

Gallup, Douglas N. *See—*

Cullen, W. Paul; Billings, Pamela B.; and Gallup, Douglas N., 5,779,609, Cl. 483-69.000.

Gamano, Jun. *See—*

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GEC Alstom Limited: See—
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Deacon, David A. G.; Brinkman, Michael J.; Bischel, William K.; and Field, Simon J., 5,781,670, Cl. 385-10.000.
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Palmieri, Joseph M.; McCuin, J. Peter; and Boucher, George J., 5,780,800, Cl. 218-147.000.
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- Heilig, Eduard: *See—*
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- Heinz, Dieter: *See—*
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- Heinzen, Richard J.: *See—*
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- Heise, William H.: *See—*
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- Heiskari, Mika: *See—*
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- Heiss, Robert C.: *See—*
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- Heitkamp, Gary L.; Northouse, Lee A.; and Johnson, Lyle G., to Seagate Technology, Inc. Flexure having displaced gimbal bond tongue with end terminated heads. 5,781,378, Cl. 360-104,000.
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- Helfrich, Jim C. Combine yield monitor. 5,779,541, Cl. 460-6,000.
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- Helker, Heinrich, to Bayer Aktiengesellschaft. Device for supplying gas to rotary kilns. 5,779,468, Cl. 432-103,000.
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- Hellring, Stuart D.: *See—*
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- Hellsten, Mikael. Closed beam with expanded metal sections. 5,778,626, Cl. 52-731,200.
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- Hemphill, John M.; Stewart, Gregory Mart; and Lawler, Thomas S., to Compaq Computer Corporation. Fault tolerant multiple network servers. 5,781,716, Cl. 395-182,020.
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- Hendry, John James: *See—*
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- Henke, Joseph A.: *See—*
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- Henkel Corporation: *See—*
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- Henkel Kommanditgesellschaft auf Aktien: *See—*
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- Henkels, Walter Harvey; and Hwang, Wei, to International Business Machines Corporation. Method of forming a buried sidewall-strap two transistor one capacitor trench cell. 5,780,335, Cl. 438-243,000.
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- Hennings, David R.: *See—*
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- Henrob Ltd.: *See—*
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- Henry, Glenn: *See—*
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- Herbert, H. Nicholas, to Pabban Development, Inc. Surgical suction wand with filter. 5,779,649, Cl. 600-571,000.
- Herbert, Jean-Marc: *See—*
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- Herbert Schwind GmbH & Co. KG: *See—*
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- Herbet, Shimon: *See—*
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- Herbias, Cesar T.: *See—*
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- Herbst, David R.: *See—*
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- Herbst, John E.; and Benes, Joseph J., to Fellowes Manufacturing Company. Container having a box blank with removably attached lid blank. 5,779,129, Cl. 229-125,190.
- Herbstler, Horst Dieter: *See—*
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- Herchen, Harald: *See—*
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- Herd, Karl-Josef: *See—*
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- Herklotz, Henrik; Arndt, Thomas; Ohnheiser, Rainer; and Schepperle, Karl, to Carl-Zeiss-Stiftung. Coordinate measuring apparatus having a device for profile measurements and method for making said profile measurements. 5,778,551, Cl. 33-554,000.
- Herman, Bruce J.: *See—*
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- Herman, Stephen J.: *See—*
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- Hermansen, Ralph D.; Punisly, Brian M.; and Settoo, Wai-Cheng, to Hughes Aircraft Company. Plateable structural adhesive for cyanate ester composites. 5,780,581, Cl. 528-363,000.
- Herr, Arthur G. F.; Johnson, Robert W.; and Welles, Toby S., to Reynard CVC, Inc. Storage container for information-bearing disc devices. 5,779,038, Cl. 206-308,200.
- Herre, Juergen Heinrich, to Lucent Technologies Inc. Perceptual noise shaping in the time domain via LPC prediction in the frequency domain. 5,781,888, Cl. 704-219,000.
- Herring, Charles W., to Keating of Chicago, Inc. Deep fat fryer with burner tube end weld temperature protection. 5,778,871, Cl. 126-391,000.
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- Herrington, F. John, Jr., to Extrusion Dies, Inc. Adjustable coextrusion feedblock. 5,780,067, Cl. 425-131,100.
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- Herrmann, Bernd: *See—*
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- Herrmann, Wolfgang A.: *See—*
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- Herron, Matt: *See—*
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- Hertzberg, Robert Philip: *See—*

- Widdowson, Katherine Louisa; Veber, Daniel Frank; Jurewicz, Anthony Joseph; Hertzberg, Robert Philip; and Rutledge, Melvin Clarence, Jr., 5,780,483, Cl. 514-311.000.
- Herz, Robert: *See—*
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- Hesse, Michael: *See—*
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- Heuer, Arthur H.: *See—*
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- Heuer, Lutz; and Rother, Heinz-Joachim, to Bayer Aktiengesellschaft. Rooting inhibitors. 5,779,776, Cl. 106-18.320.
- Hewitt, Geoffrey F.: *See—*
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- Hewko, Barry J., to Vancouver Island Helicopters, Ltd. Patient transport system. 5,779,296, Cl. 296-19.000.
- Hewlett-Packard Company: *See—*
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- Fujii, David B.; and Rust, Robert A., 5,781,308, Cl. 358-451.000.
- Helot, Jacques H.; Derocher, Michael D.; Esterberg, Dennis R.; and Wyatt, Peter J., 5,781,177, Cl. 345-156.000.
- Hunt, Douglas B., 5,781,923, Cl. 711-128.000.
- Krames, Michael R.; and Kish, Fred A., Jr., 5,779,924, Cl. 216-24.000.
- Kunz, Robert J.; and Bartle, David Alan, 5,781,707, Cl. 395-105.000.
- Larvoire, Jean-François; Ribollet, Thierry; and Hays, Bertrand, 5,781,793, Cl. 395-800.370.
- Lum, Paul; and Verdonk, Edward, 5,779,643, Cl. 600-462.000.
- Myers, Richard C., 5,781,040, Cl. 327-44.000.
- Ruby, Richard C., 5,780,713, Cl. 73-1.820.
- Saunders, Bradley L., 5,781,197, Cl. 345-430.000.
- Seu, Preston D., 5,779,376, Cl. 400-335.000.
- Shelton, Boyd N., and Buthker, Henricus C. J., 5,780,986, Cl. 318-432.000.
- Tsung Pan, Alfred I.; Allen, Ross R.; and Hanson, Eric G., 5,779,971, Cl. 266-237.000.
- Walia, Rajan; and Thayer, Billy E., 5,781,045, Cl. 327-108.000.
- Yeung, Hubert K., 5,779,639, Cl. 600-446.000.
- Hexcel Corporation: *See—*
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- Heyman, Richard A.: *See—*
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- Hi-Tech Transport Electronics, Inc.: *See—*
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- Hibbert, Christopher T.: *See—*
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- Hibino, Junichi: *See—*
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- Hicke, Brian: *See—*
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- Hickok, Roy S.; and McGrath, Roger W., to Aquaria, Inc. Rotating biological filter system. 5,779,885, Cl. 210-150.000.
- Hidai, Masatoshi; and Miura, Tsutomu, to Rheon Automatic Machinery Co., Ltd. Sorting conveyor apparatus. 5,779,023, Cl. 198-418.100.
- Hidaka, Toshihiko: *See—*
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- Hieda, Tetsuo: *See—*
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- Higa, Tatsuo; Natori, Takenori; Koezuka, Yasuhiko; and Motoki, Kazuhiro, to Kirin Beer Kabushiki Kaisha. Sphingoglycolipid compounds and therapeutic uses thereof. 5,780,441, Cl. 514-25.000.
- Higashi, Hidehiro, to Catalysts & Chemicals Industries Co., Ltd. Process for hydrotreating heavy oil and hydrotreating apparatus. 5,779,992, Cl. 422-190.000.
- Higashii, Takayuki; Fujimoto, Yukari; Matsumoto, Tsutomu; Minai, Masayoshi; Sekine, Chizu; Endo, Kyoko; and Fujisawa, Koichi, to Sumitomo Chemical Company, Limited. Fluorine-containing optically active compound, process for preparing the same and liquid crystal mixture and liquid crystal element comprising the same. 5,779,934, Cl. 252-299.610.
- Higby, Paige L., to Libbey-Owens-Ford Co. Colored glass compositions. 5,780,372, Cl. 501-70.000.
- Higgins, George Douglas, to Parker Hannifin Pty Limited. Pneumatic or hydraulic cylinders. 5,778,753, Cl. 91-1.000.
- Higuchi, Yoshinori: *See—*
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- Hikosaka, Yukinobu: *See—*
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- Hilal, Said S.: *See—*
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- Hilbiber, David F.: *See—*
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- Hilgeman, Theodore W.: *See—*
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- Hill, Eric C.: *See—*
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- Hill, Jeanette R.: *See—*
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- Hill, Judith E.: *See—*
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- Hill, Raymond: *See—*
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- Hillman, Jennifer L.: *See—*
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- Hillsman, Cecily M.: *See—*
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- Hilti Aktiengesellschaft: *See—*
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- Kleine, Werner; Neukirchen, Axel; and Bongers, Werner, 5,779,403, Cl. 408-230.000.
- Neumaier, Anton, 5,778,989, Cl. 173-178.000.
- Hinds, Letha Margie: *See—*
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- Hinkley, Robert C.: *See—*
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- Hinney, Harry R.: *See—*
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- Hinohara, Tomoaki: *See—*
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- Hinshaw, Michael A.: *See—*
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- Hintenlang, Dieter: *See—*
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- Hintermeier, Otto; Litzel, Reinhold; and Schwöpfinger, Hans, to Man Roland Druckmaschinen AG. Former for a printing machine. 5,779,616, Cl. 493-439.000.
- Hintz, Sherwin David; and Bordas, Julio Jose, to GB Biosciences Corporation. Agricultural spray adjuvant comprising coconut diethanolamide and polyalkylene glycol. 5,780,390, Cl. 504-116.000.
- Hirabayashi, Yoshio; and Ichikawa, Shin-ichi, to Institute of Physical and Chemical Research. The. Ceramide glucosyltransferase. 5,780,284, Cl. 435-193.000.
- Hirai, Koji: *See—*
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- Hirai, Yoshihiko: *See—*
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- Hiraiwa, Akira; Fukumoto, Masaaki; Uchiyama, Tadasu; Sonohara, Noboru; and Oikawa, Shigeru, to Nippon Telegraph and Telephone Corporation. Handwriting information detection method and apparatus detachably holding writing tool. 5,781,661, Cl. 382-188.000.
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- Hirano, Hideki; Shiota, Hiroyuki; Sato, Shuji; and Shinozaki, Kenji, to Sony Corporation. Recording method and recording solution. 5,781,210, Cl. 347-51.000.
- Hirano, Takaaki: *See—*
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- Hirano, Takayuki; Itoh, Junji; and Kanemaru, Seigo, to Kobe Steel, Ltd.; and Director General Agency of Industrial Science and Technology. Cold electron emitting device and method of manufacturing same. 5,780,318, Cl. 438-20.000.

- Hirano, Yasuhiro; Akiba, Masatsugu; Shiomi, Yutaka; and Saito, Noriaki, to Sumitomo Chemical Company, Limited. Filler-containing resin composition suitable for injection molding and transfer molding. 5,780,145, Cl. 428-323.000.
- Hiraoka, Hidenori; Horiuchi, Kuniyasu; Yabuki, Yoshikazu; Koizumi, Yoshimasa; and Maruoka, Kiyoto, to Sumitomo Rubber Industries, Ltd. Golf ball. 5,780,169, Cl. 428-517.000.
- Hirata, Kyoji, to NEC Corporation. Image index production method and image index production system for image storage and management system. 5,781,899, Cl. 707-6.000.
- Hirata, Norimasa: *See—*
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- Hirata, Shinji: *See—*
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- Hirata, Takashi, to Brother Kogyo Kabushiki Kaisha. Embroidery sewing device and external memory medium for use therewith. 5,778,808, Cl. 112-102.500.
- Hirata, Yoshihito: *See—*
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- Hirayama, Kazutoshi: *See—*
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- Hirayama, Takuya: *See—*
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- Hiroe, Yasutoshi: *See—*
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- Hirofujii, Susumu; Kaneko, Hiroyuki; and Yoneyama, Tadashi, to Kabushiki Kaisha Toshiba. Semiconductor disk device having a large capacity of quick-access memory and hard disk for backup and its data storage method. 5,781,719, Cl. 395-182.120.
- Hirose Electric Co., Ltd.: *See—*
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- Hirose, Hiroshi: *See—*
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- Hirose, Yukinori: *See—*
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- Hirschman, Alan D.: *See—*
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- Hirth, Bradford H.: *See—*
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- Hirtzer, Pamela G.: *See—*
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- Hisabe, Yasushi: *See—*
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- Hitachi Cable, Ltd.: *See—*
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- Hitachi Car Engineering Co., Ltd.: *See—*
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- Hitachi Chubu Software, Ltd.: *See—*
Tobita, Tsunehiro; Seki, Yukihiko; Hattori, Ryuichi; Miyagawa, Yuji; Sakurai, Shigeru; Suzuki, Michiyuki; and Ote, Ichiro, 5,781,434, Cl. 364-184.000.
- Hitachi Electronics Engineering Co., Ltd.: *See—*
Honma, Kazuo, 5,781,375, Cl. 360-99.120.
- Hitachi, Ltd.: *See—*
Aono, Yasuhisa; Yoshinari, Akira; Kondo, Yasuo; Kaneda, Junya; Kodama, Hideyo; Kato, Takahiko; Hattori, Shigeo; and Arai, Masahiko, 5,779,822, Cl. 148-404.000.
- Awane, Satoshi; Ohno, Osamu; Morioka, Yosuke; and Noguchi, Atsuhiko, 5,781,905, Cl. 707-102.000.
- Fukuda, Kazushi; Yoshida, Yasuko; Hoshino, Yutaka; Hashimoto, Naotaka; Asayama, Kyoichiro; Koide, Yuuki; Yoshizumi, Keiichi; Okamoto, Eni; Haga, Satoru; and Ikeda, Shuji, 5,780,328, Cl. 438-201.000.
- Haikawa, Katsumasa; Yamanaka, Akihiro; Kanda, Akiko; Aoyama, Motoo; Yuchi, Yoko; and Yamashita, Junichi, 5,781,604, Cl. 376-419.000.
- Hashimoto, Naotaka; Hoshino, Yutaka; and Ikeda, Shuji, 5,780,910, Cl. 257-393.000.
- Inarida, Satoru; Nakata, Kiyoshi; Yasuda, Kouji; Suzuki, Masato; and Miyake, Wataru, 5,781,423, Cl. 363-41.000.
- Inoue, Mitsuru; and Kurosawa, Hiroyuki, 5,781,767, Cl. 395-555.000.

- Kadohira, Takashi; Igarashi, Shinya; Suzuki, Tadao; Tsumagari, Mamoru; and Saito, Takayuki, 5,780,735, Cl. 73-202.500.
- Kimura, Katsuhiko; Saegusa, Shozo; and Muranishi, Masaru, 5,781,576, Cl. 372-45.000.
- Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,781,479, Cl. 365-189.010.
- Koreeda, Hiroyuki; Kasai, Yasuhiko; Yamauchi, Tsukasa; Asuma, Hajime; Oeda, Shigeto; Ito, Jun; Tomita, Hiromi; Hasegawa, Tsukasa; Kanazawa, Rituko; Inoue, Yoshiisa; Kumai, Hiroyuki; Hataya, Shigeki; Nakajima, Akira; and Matsuda, Yasumasa, 5,781,731, Cl. 395-200.340.
- Matsuno, Hideki; Katayama, Kazuhiro; and Ishikawa, Hiromichi, 5,781,743, Cl. 395-200.580.
- Minowa, Toshimichi; Kimura, Hiroshi; Ishii, Junich; Shiraiishi, Takashi; and Ozaki, Naoyuki, 5,779,594, Cl. 477-156.000.
- Mori, Mitsuhiro, 5,780,917, Cl. 257-487.000.
- Naito, Shotaro, 5,780,980, Cl. 318-139.000.
- Nakata, Toshihiko; Ninomiya, Takanori; Kobayashi, Hilario Haruomi; and Yoshimura, Kazushi, 5,781,294, Cl. 356-349.000.
- Ohta, Masuyuki; Yanagawa, Kazuhiko; Kondo, Katsumi; and Ohe, Masahito, 5,781,261, Cl. 349-111.000.
- Oniki, Kazunori; Shiraiishi, Masahiro; Ozawa, Koji; Yamane, Keisuke; and Kimura, Shinji, 5,781,199, Cl. 345-505.000.
- Ozawa, Tsugutaro; and Inui, Shinro, 5,781,523, Cl. 369-77.100.
- Sato, Makoto; and Umehara, Kiyomi, 5,781,777, Cl. 395-709.000.
- Sato, Ryoko; Okayama, Masao; Fukudome, Yoshio; and Furutono, Masuo, 5,780,825, Cl. 235-379.000.
- Seki, Koichi; Wada, Takeshi; Muto, Tadashi; Shoji, Kazuyoshi; Kubota, Yasuro; and Kume, Hitoshi, 5,781,476, Cl. 365-185.220.
- Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichiro; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunchiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
- Takahashi, Kazuo; Ito, Youichi; Kanai, Saburo; and Kanno, Seiichiro, 5,781,400, Cl. 361-234.000.
- Tobita, Tsunehiro; Seki, Yukihiko; Hattori, Ryuichi; Miyagawa, Yuji; Sakurai, Shigeru; Suzuki, Michiyuki; and Ote, Ichiro, 5,781,434, Cl. 364-184.000.
- Tsuiji, Shinji; Takahashi, Ryuta; Shishikura, Masato; Kikuchi, Satoru; and Aoki, Satoshi, 5,780,875, Cl. 257-81.000.
- Yamamoto, Hideaki; Matsumaru, Haruo; Suzuki, Tetsuaki; Nakatani, Mitsuo; Tsukii, Michio; Sasano, Akira; Oikawa, Saburo; and Oritsuki, Ryoji, 5,781,255, Cl. 349-46.000.
- Yamamura, Hisae; Matsuyama, Yukio; Ninomiya, Takanori; and Sasazawa, Hideaki, 5,780,866, Cl. 250-559.220.
- Hitachi Medical Corporation: *See—*
Kawasaki, Shinji; and Nishimura, Hiroshi, 5,781,010, Cl. 324-309.000.
- Hitachi Metals, Ltd.: *See—*
Fukumoto, Shihou; and Nakamura, Hideki, 5,780,165, Cl. 428-472.100.
- Hitachi Tohbu Semiconductor, Ltd.: *See—*
Tsuiji, Shinji; Takahashi, Ryuta; Shishikura, Masato; Kikuchi, Satoru; and Aoki, Satoshi, 5,780,875, Cl. 257-81.000.
- Hitachi ULSI Engineering Co., Ltd.: *See—*
Fukuda, Kazushi; Yoshida, Yasuko; Hoshino, Yutaka; Hashimoto, Naotaka; Asayama, Kyoichiro; Koide, Yuuki; Yoshizumi, Keiichi; Okamoto, Eni; Haga, Satoru; and Ikeda, Shuji, 5,780,328, Cl. 438-201.000.
- Seki, Koichi; Wada, Takeshi; Muto, Tadashi; Shoji, Kazuyoshi; Kubota, Yasuro; and Kume, Hitoshi, 5,781,476, Cl. 365-185.220.
- Hitachi VLSI Engineering Corp.: *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichiro; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunchiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
- Ho, Bert; Khosrovi, Behzad; and Hirtzer, Pamela G., to Neurobiological Technologies, Inc. Pharmaceutical formulations of corticotropin releasing factor having improved stability in liquid form. 5,780,431, Cl. 514-12.000.
- Ho, Chi Fai; and Tong, Peter P. Methods and apparatus to assess and enhance a student's understanding in a subject. 5,779,486, Cl. 434-353.000.
- Ho, Rosanna H.: *See—*
Gorbet, David P. H.; Ho, Rosanna H.; and Qureshi, Imran I., 5,781,190, Cl. 345-335.000.
- Ho, Shuang Li: *See—*
Nogle, Scott George; Roth, Alan S.; and Ho, Shuang Li, 5,781,480, Cl. 365-189.040.
- Hobart, James L.: *See—*
Connors, Kevin P.; Hobart, James L.; Reed, Edward D.; Trost, David; Bossie, Kenneth J.; McCurnin, Thomas William; Mitchell, Gerald M.; and Yarbrough, J. Michael, 5,781,574, Cl. 372-35.000.
- Hock, Christopher: *See—*
Jordan, Michael P.; Ward, Alan J.; Hock, Christopher; and Rink, Linda M., 5,779,267, Cl. 280-740.000.

Hocking, Rory. Work stations. 5,779,305, Cl. 297-217.400.
Hodko, Dalibor. *See—*
Gonzalez-Martin, Anuncia; Murphy, Oliver J.; and Hodko, Dalibor, 5,779,912, Cl. 210-748.000.
Hoechst Aktiengesellschaft. *See—*
Albanese, Guido; Manetsberger, Rainer; and Herrmann, Wolfgang A., 5,780,674, Cl. 562-35.000.
Holderich, Wolfgang; Paczkowski, Marcus; and Heinz, Dieter, 5,780,686, Cl. 564-413.000.
Holderich, Wolfgang; Paczkowski, Marcus; Heinz, Dieter; and Kaiser, Thomas, 5,780,687, Cl. 568-678.000.
Kretschmar, Gerhard; Meiwes, Johannes; Schudok, Manfred; Hammann, Peter; Lertch, Ulrich; and Grabley, Susanne, 5,780,640, Cl. 548-315.100.
Müllner, Stefan; Hofmann, Axel; Saar, Karin; Schorlemmer, Hans-Ulrich; and Bartlett, Robert, 5,780,592, Cl. 530-359.000.
Nakao, Kenji; Ohnishi, Hiroyuki; Wakita, Naohide; Nagao, Kazuya; and Takada, Naomi, 5,781,266, Cl. 349-172.000.
Pasenok, Sergej; and Appel, Wolfgang, 5,780,672, Cl. 560-227.000.
Scheckenbach, Helmut; Schleicher, Andreas; and Kulpe, Jürgen, 5,780,561, Cl. 525-534.000.
Takeichi, Ayako; and Illian, Gerhard, 5,779,935, Cl. 252-299.610.
Von Der Eitz, Andreas; Russ, Werner Hubert; and Gröbel, Bengt-Thomas, 5,779,739, Cl. 8-549.000.
Hoechst Celanese Corporation. *See—*
Groeger, H. Gunter, 5,779,847, Cl. 156-308.200.
Hoechst Schering AgrEvo GmbH. *See—*
Krause, Hans-Peter; Maier, Thomas; Schoeni, Jean-Paul; and Waltersdorfer, Anna, 5,780,389, Cl. 504-116.000.
Hoene, Jochen. Sleeve for guiding, deflecting and holding a nail and process for producing this sleeve. 5,779,415, Cl. 411-358.000.
Hoffmann, Hans-Peter. *See—*
van Endert, Eike Schulz; Schröder, Klaus; and Hoffmann, Hans-Peter, 5,779,986, Cl. 422-136.000.
Hoffmann-La Roche Inc. *See—*
Gately, Maurice Kent; Gubler, Ulrich Andreas; Hulmes, Jeffrey David; Podlaski, Frank John; Stern, Alvin Seth; Chizzonite, Richard Anthony; and Pan, Yu-Ching Eugene, 5,780,597, Cl. 530-388.230.
Goodnow, Robert Alan, Jr.; and Tam, Steve Yik-Kai, 5,780,607, Cl. 536-22.100.
Hoffmann, Ulrich; Kunz, Ulrich; Bruderreck, Hartmut; Gottlieb, Klaus; Schädlich, Kuno; and Becker, Stefan, to Veba Oel AG. Supported-catalyst and use of same. 5,780,688, Cl. 568-697.000.
Hofmann, Axel. *See—*
Müllner, Stefan; Hofmann, Axel; Saar, Karin; Schorlemmer, Hans-Ulrich; and Bartlett, Robert, 5,780,592, Cl. 530-359.000.
Hofmann, Klaus; Betten, Klaus; Unrath, Nicole; and Friedrich, Horst, to Mannesmann Sachs AG. Friction clutch with carbon pressure plate. 5,779,018, Cl. 192-70.140.
Hofmeister, Christopher. *See—*
Hendrickson, Ruth Ann; Hofmeister, Christopher; and Muka, Richard S., 5,778,968, Cl. 165-80.100.
Hogari, Kazuo. *See—*
Sano, Hiroaki; Ishikawa, Hiroki; Imaizumi, Tsuyoshi; Hogari, Kazuo; and Kawata, Osamu, 5,781,678, Cl. 385-45.000.
Hoheisel, Dirk. *See—*
Bireckoven, Bernd; Hoheisel, Dirk; and Qu, Ning, 5,780,877, Cl. 257-113.000.
Hohlen, Robert D. Dual axis retractor. 5,779,629, Cl. 600-233.000.
Hohlweg, Rolf. *See—*
Jørgensen, Tine Krogh; Andersen, Knud Erik; Andersen, Henrik Sune; Hohlweg, Rolf; Madsen, Peter; and Olsen, Uffe Bang, 5,780,486, Cl. 514-325.000.
Hoiium, Stanley Oscar. *See—*
Hanson, Jay Lowell; Helgeson, Steven Bruce; and Hoiium, Stanley Oscar, 5,778,690, Cl. 62-160.000.
Hojo, Takeshi. *See—*
Yamamoto, Kanshi; Kawada, Shinichi; Hojo, Takeshi; Okada, Yoshiyuki; and Masuzawa, Isao, 5,781,296, Cl. 356-350.000.
Hokuriku Electric Industry Co., Ltd. *See—*
Nomura, Kazuo; Fukuhisa, Kouji; and Ohara, Yozo, 5,779,555, Cl. 473-223.000.
Hok-Yin, Timmy Sin, to Dual Voltage Co. Ltd. Flexible plastics vacuum cleaner core. 5,778,939, Cl. 138-120.000.
Holden, Jeffrey H. Flexible and removable leg cast/brace handle. 5,779,655, Cl. 602-5.000.
Hölderich, Wolfgang; Paczkowski, Marcus; and Heinz, Dieter, to Hoechst Aktiengesellschaft. Process for preparing 4-oxa-amines. 5,780,686, Cl. 564-413.000.
Holderich, Wolfgang; Paczkowski, Marcus; Heinz, Dieter; and Kaiser, Thomas, to Hoechst Aktiengesellschaft. Process for preparing 3-oxaalkylpropan-1-ols. 5,780,687, Cl. 568-678.000.
Holiday, Allan; and Scott, Ralph A., to Farnland Industries, Inc. Method for treating process condensate. 5,779,861, Cl. 203-11.000.
Hollenberg, David Henry; Horton, James Ellis, Jr.; and Lake, Andrew Michael, to Kimberly-Clark Worldwide, Inc. High-density absorbent structure. 5,779,860, Cl. 162-206.000.
Hollensbe, Homer D. Dimension transfer tool. 5,778,553, Cl. 33-810.000.
Hollenshead, Richard Neil. *See—*
Lin, Ronny Wen-Long; Holub, Richard Andrew; and Hollenshead, Richard Neil, 5,780,697, Cl. 585-328.000.

Holleran, Patrick A.; Evans, John S.; Cleron, Michael A.; Fisher, Stephen; and Bruck, Timo, to Apple Computer, Inc. Embedding internet browser/buttons within components of a network component system. 5,781,189, Cl. 345-335.000.
Holley, Gregory L.; and Guracar, Ismayil M., to Acuson Corporation. Ultrasound multi-beam distortion correction system and method. 5,779,640, Cl. 600-447.000.
Hollingshead, Chris J.; and Gardner, Eric E., to GenCorp Inc. Method for molding a glass run channel corner assembly. 5,779,956, Cl. 264-138.000.
Hollingworth, Keith Jeffrey; and Jones, Peter Richard, to BTR plc. Tapered plug valve. 5,779,222, Cl. 251-283.000.
Hollister, William. *See—*
Bell, Craig J.; and Hollister, William, 5,779,687, Cl. 604-265.000.
Holloman, William K.; and Kmiec, Eric B., to Thomas Jefferson University. Compositions and methods to promote homologous recombination in eukaryotic cells and organisms. 5,780,296, Cl. 435-320.100.
Hollstein, Elmer J.; Wei, James T.; and Hsu, Chao-Yang, to Sun Company, Inc. (R&M). Solid superacid catalyst comprising group VII metal and having H₂ less than -18. 5,780,383, Cl. 502-324.000.
Hollywood Engineering, Inc. *See—*
Nusbaum, Neil, 5,779,603, Cl. 482-105.000.
Holm, Christopher E.; Schwandt, Brian W.; Wagner, Brian K.; Verdegan, Barry M.; and Fallon, Stephen L., to Nelson Industries, Inc. In-situ cleanable filter with filtered cleanser. 5,779,900, Cl. 210-411.000.
Holm, Paige M. *See—*
Shieh, Chan-Long; Lee, Hsing-Chung; and Holm, Paige M., 5,780,321, Cl. 438-34.000.
Holmgren, Vilma G.; Hahn, Joseph A.; Begley, Douglas G.; and Perdue, Thomas E., Jr., to Illinois Tool Works Inc. Portable carrier for aerosol containers and method therefor. 5,779,101, Cl. 222-130.000.
Holroyd, Delwyn; Child, John; and Sinclair, Anita J. Edit-to-it. 5,781,435, Cl. 364-192.000.
Holt, Mark D.; Grim, Tracy E.; and Wyatt, Stacy L., to Royce Medical Company. Versatile orthopaedic or post-operative footwear having removable toe piece. 5,778,565, Cl. 36-110.000.
Holt, Paul Lindsay. Food separating device. 5,778,770, Cl. 99-541.000.
Holtek Microelectronics, Inc. *See—*
Wang, Fu-Chung; and Wu, Shao-Yi, 5,781,475, Cl. 365-185.180.
Holten, Lawrence H. *See—*
Heider, Leon J.; Heider, Merle J.; Heider, Dale J.; Heider, Craig J.; Holten, Lawrence H.; and Scholler, James R., 5,780,783, Cl. 177-137.000.
Holterman, Theodore J. *See—*
Binversie, Gregory J.; Heimberg, Wolfgang; Holterman, Theodore J.; Jrgens, Christopher R.; McGinnity, Francis A.; McDowell, Philip D.; Tunkiewicz, Richard T.; Woodward, Lee A.; and Hellmich, Wolfram, 5,779,454, Cl. 417-417.000.
Holtz, Thomas D. *See—*
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Holub, Richard Andrew. *See—*
Lin, Ronny Wen-Long; Holub, Richard Andrew; and Hollenshead, Richard Neil, 5,780,697, Cl. 585-328.000.
Holzer, Joseph C. *See—*
Korb, Harold W.; Chandrasekhar, Sadasivam; Falster, Robert J.; Holzer, Joseph C.; Kim, Kyong-Min; Kimbel, Steven L.; and Dralfal, Larry E., 5,779,791, Cl. 117-15.000.
Holzworth, William Terry. *See—*
Hyde, Robert William; Holzworth, William Terry; Baden, Bradley John; and Riebe, Gary Charles, 5,779,006, Cl. 188-250.000.
Hommeltoft, Sven Ivar. *See—*
Zavilla, John; and Hommeltoft, Sven Ivar, 5,780,682, Cl. 568-35.000.
Hon Industries Inc. *See—*
Machael, Jay R., 5,778,803, Cl. 108-147.000.
Honda, Atsushi. *See—*
Kono, Katsumi; Nakamura, Shinya; and Honda, Atsushi, 5,779,595, Cl. 477-174.000.
Honda Giken Kogyo Kabushiki Kaisha. *See—*
Arai, Hideaki, 5,778,854, Cl. 123-414.000.
Honda, Kiyoshi, 5,779,261, Cl. 280-728.200.
Kato, Shigeki; Uematsu, Hiroshi; Ogawa, Ken-ichi; and Hattori, Tatsuya, 5,781,086, Cl. 333-248.000.
Maki, Hidetaka; Akazaki, Shusuke; Hasegawa, Yusuke; and Komoriya, Isao, 5,781,875, Cl. 701-104.000.
Miida, Hiroshi; Ohya, Yoshihito; Hayashi, Motoaki; Okamoto, Hisanori; and Uematsu, Masahige, 5,779,219, Cl. 251-129.070.
Noda, Toshiharu; Okabe, Michio; Sato, Katsunaki; and Saka, Tsutomu, 5,779,972, Cl. 420-54.000.
Okamoto, Takafumi, 5,780,179, Cl. 429-20.000.
Okazaki, Koji; Nozawa, Yasuji; Ueyama, Masaki; Kinoshita, Masakazu; and Ozawa, Hidetaka, 5,779,231, Cl. 267-140.140.
Oki, Naohiko; Noguchi, Minoru; Demachi, Atsushi; Sato, Kenji; Komazawa, Eisuke; and Araki, Kazuhiro, 5,780,185, Cl. 429-218.000.
Tachibana, Yosuke; Wada, Toru; and Kubo, Satoru, 5,778,865, Cl. 123-675.000.
Takeuchi, Atsushi; Aoki, Osamu; Hamabe, Kenji; Itakura, Tatsuya; Ohgane, Hitoshi; and Makuta, Minoru, 5,780,125, Cl. 428-31.000.
Honda, Kenji; and Rothgery, Eugene F. Non-corrosive cleaning composition for removing plasma etching residues. 5,780,406, Cl. 510-175.000.
Honda, Kiyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle air bag retaining arrangement. 5,779,261, Cl. 280-728.200.

Honeywell. *See—*
Beckwith, Timothy A.; and Lehmeier, Kathryn M., 5,780,771, Cl. 174-17.080.
Honeywell Inc. *See—*
Burns, David W.; and Frische, Richard H., 5,780,742, Cl. 73-514.290.
Fenske, Allen J.; and Gelderloos, Hendrik C., 5,781,398, Cl. 361-171.000.
Strandjord, Lee K.; Sanders, Glen A.; Szafraniec, Bogdan; and Bergh, Ralph A., 5,781,300, Cl. 356-350.000.
Hong, Chan Hee. *See—*
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Hong, Myung-Jung; and Kim, Ju-Hwan, to Samsung Electronics Co., Ltd. Valve apparatus of enclosed reciprocating compressor. 5,779,458, Cl. 417-569.000.
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Honjo, Takashi. *See—*
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Honma, Kazuo, to Hitachi Electronics Engineering Co., Ltd. Information recording disk chuck mechanism. 5,781,375, Cl. 360-99.120.
Hood, Brian M. *See—*
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Hood, Ronnie D. *See—*
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Hoon, Douglas M. *See—*
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Hoover Company, The. *See—*
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Hoover, David L. *See—*
Baiden, Gregory R.; Young, Donald D.; Van Berkel, Lambertus H.; Hoover, David L.; and DeVlught, Paul, 5,778,987, Cl. 173-19.000.
Hoover, Timothy R. *See—*
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Hori, Seiji; Kitazawa, Yasuho; Sasaki, Sumikazu; Kato, Keiichi; Tsukiyama, Naohiro; and Matsui, Kenji, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Webbing take-up device. 5,779,176, Cl. 242-379.100.
Horiba, Ltd. *See—*
Shimizu, Naohito; Akiyama, Shigeyuki; Fujiwara, Masahiko; Inoue, Satoshi; and Oida, Takuji, 5,780,716, Cl. 73-23.200.
Hori, Hiroyuki, to Canon Kabushiki Kaisha. Apparatus for reproducing audio and image signals from different areas of a medium. 5,781,689, Cl. 386-96.000.
Horiuchi, Hiroyoshi. *See—*
Yanagisawa, Hiroaki; Fujita, Takashi; Fujimoto, Koichi; Yoshioka, Takao; Wada, Kunio; Oguchi, Minoru; Fujiwara, Toshihiko; and Horiuchi, Hiroyoshi, 5,780,490, Cl. 514-369.000.
Horiuchi, Hiroyoshi; Kadota, Michio; and Ago, Junya, to Murata Manufacturing Co., Ltd. Surface wave resonator having a plurality of resonance frequencies. 5,781,083, Cl. 333-196.000.
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Hiraoka, Hidenori; Horiuchi, Kuniyasu; Yabuki, Yoshikazu; Koizumi, Yoshimasa; and Maruoka, Kiyoto, 5,780,169, Cl. 428-517.000.
Horiuchi, Mitsuaki. *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamari, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichi; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsunoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinori; Tubone, Tunchiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
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Hormann, Robert Eugene, to Rohm and Haas Company. Process for chroman carboxylates. 5,780,651, Cl. 549-405.000.
Hormann, Robert Eugene, to Rohm and Haas Company. Process for chroman carboxylates. 5,780,652, Cl. 549-405.000.
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Horn, Thomas. *See—*
Collins, Mark L.; Horn, Thomas; Sheridan, Patrick J.; Warner, Brian D.; and Urdea, Michael S., 5,780,610, Cl. 536-24.500.
Hornig, Wolfgang. Seal for upward opening hollow containers. 5,779,088, Cl. 220-269.000.
Horton, James Ellis, Jr. *See—*
Hollenberg, David Henry; Horton, James Ellis, Jr.; and Lake, Andrew Michael, 5,779,860, Cl. 162-206.000.
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- i-STAT Corporation: *See—*
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- Iizuka, Jiro; and Miyazawa, Kiyoshi, to Sanden Company. Scroll type fluid displacement apparatus having a control system of line contacts between spiral elements. 5,779,461, Cl. 418-55.500.
- Iji, Masatoshi: *See—*
Yokoyama, Sadahiko; and Iji, Masatoshi, 5,780,536, Cl. 524-439.000.
- Ikami, Shinichi: *See—*
Asano, Takeshi; and Ikami, Shinichi, 5,781,742, Cl. 395-280.000.
- Ikeda, Junji: *See—*
Komyoji, Daido; Inoue, Takao; Nishiki, Naomi; and Ikeda, Junji, 5,780,820, Cl. 219-543.000.
- Ikeda, Kenichiro: *See—*
Nakatani, Masato; Ikeda, Kenichiro; and Uno, Nanako, 5,779,583, Cl. 474-145.000.
- Ikeda, Masao: *See—*
Tamamura, Koshi; Tsukamoto, Hironori; and Ikeda, Masao, 5,780,322, Cl. 438-45.000.
- Ikeda, Naoki: *See—*
Shibata, Nobuyoshi; and Ikeda, Naoki, 5,778,777, Cl. 101-148.000.
- Ikeda, Norimasa: *See—*
Satake, Satoru; Ito, Takafumi; and Ikeda, Norimasa, 5,779,058, Cl. 209-581.000.
- Ikeda, Shuji: *See—*
Fukuda, Kazushi; Yoshida, Yasuko; Hoshino, Yutaka; Hashimoto, Naotaka; Asayama, Kyoichiro; Koide, Yuuki; Yoshizumi, Keiichi; Okamoto, Eri; Haga, Satoru; and Ikeda, Shuji, 5,780,328, Cl. 438-201.000.
- Hashimoto, Naotaka; Hoshino, Yutaka; and Ikeda, Shuji, 5,780,910, Cl. 257-393.000.
- Ikeda, Yoshihiro: *See—*
Sugiyama, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichi; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsunoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Shinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunekiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
- Ikegami, Kazunori: *See—*
Oka, Toru; Ikegami, Kazunori; and Yoda, Kiyoshi, 5,780,856, Cl. 250-367.000.
- Ikegami, Masahomi; and Park, Hobeom, to Samsung Electro-Mechanics Co., Ltd. Key board. 5,779,030, Cl. 200-344.000.
- Ikegami, Mitsuru: *See—*

Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,781,479, Cl. 365-189.010.

Ikemasu, Shinichiro: See—
Ema, Taiji; Itabashi, Kazuo; Ikemasu, Shinichiro; Mitani, Junichi; Yanagita, Itsuo; and Suzuki, Seiichi, 5,780,907, Cl. 257-371.000.

Ikemoto, Yoshihiro: See—
Furusawa, Yoshinori; Ikemoto, Yoshihiro; Fujimoto, Koji; Nakagawa, Koji; Miyake, Toshifumi; and Shogase, Toshikazu, 5,778,745, Cl. 82-1.110.

Ikeya, Takanobu: See—
Akiba, Toshifumi; Ikeya, Takanobu; Kawanishi, Hirofumi; Yukimoto, Yusuke; Kamihara, Shinji; and Ebata, Tsutomu, 5,780,669, Cl. 560-124.000.

Ikezaki, Mitsuru: See—
Koike, Tetsushi; Kodate, Manabu; and Ikezaki, Mitsuru, 5,781,253, Cl. 349-40.000.

Ikezima, Shozo: See—
Oosuka, Kazutoyo; Kojima, Masami; and Ikezima, Shozo, 5,778,863, Cl. 123-634.000.

Iki, Kunihiro: See—
Schalamon, Friedrich; and Iki, Kunihiro, 5,781,563, Cl. 371-30.000.

Ikoma, Munehisa: See—
Okamoto, Miho; Hamada, Shinji; and Ikoma, Munehisa, 5,780,180, Cl. 429-175.000.

Ikuta, Nobuo: See—
Ueno, Kouji; Shishido, Kouji; Fukutani, Yutaka; Arayama, Youji; Nakayama, Tomohiro; Shiga, Takanori; Kimura, Masakazu; Fujimoto, Hiroyuki; and Fujita, Yoshiyuki, to Fujitsu Limited. Semiconductor integrated circuit device with copy-preventive function, 5,781,627, Cl. 380-3.000.

Ikuta, Shigeru: See—
Ueda, Shigeru; Takahashi, Mamoru; Misaki, Hideo; and Ikuta, Shigeru, 5,780,256, Cl. 435-26.000.

Ikuta, Toshio; and Otake, Seiichiro, to Denso Corporation. Digital-to-analog converter and sensor-characteristic adjustment circuit, 5,781,141, Cl. 341-154.000.

Ilani, Avner, to Key Solutions Ltd. Universal fixtureless test equipment, 5,781,021, Cl. 324-754.000.

Illenberger, Herbert: See—
Kaufmann, Bernd; and Illenberger, Herbert, 5,779,184, Cl. 242-554.200.

Illian, Gerhard: See—
Takeichi, Ayako; and Illian, Gerhard, 5,779,935, Cl. 252-299.610.

Illingworth, Moise. Knot securing device, 5,778,500, Cl. 24-712.300.

Illinois Tool Works Inc.: See—
Barth, Gerald D.; and Bechtel, Frank W., 5,779,417, Cl. 411-412.000.

Holmgren, Vilma G.; Hahn, Joseph A.; Begley, Douglas G.; and Perdue, Thomas E., Jr., 5,779,101, Cl. 222-130.000.

Jorgensen, Arne R., 5,779,372, Cl. 400-191.000.

Saito, Kazuo, 5,778,599, Cl. 49-375.000.

Spoto, Louis M., 5,778,542, Cl. 33-1.00D.

Zentmyer, Hugh J.; and Huson, Gale W., 5,779,179, Cl. 242-423.200.

Illowsky, Daniel: See—
Goode, Christopher; Gordon, Donald; Conover, Mark D.; Illowsky, Daniel; Thomas, Philip A.; and Cole, Brooks, 5,781,227, Cl. 348-7.000.

Ilomäki, Valto. Drilling apparatus, 5,778,988, Cl. 173-141.000.

Imaging Accessories, Inc.: See—
Frederick, Philip R., 5,781,146, Cl. 342-26.000.

Imaginings 3, Inc.: See—
Diamond, Sidney, 5,779,095, Cl. 221-263.000.

Imaginings 3 Int'l Ltd.: See—
Diamond, Sidney, 5,779,095, Cl. 221-263.000.

Imai, Masahiro; Nishimura, Hiroshi; Koshimizu, Masaru; Hosomi, Koichi; Nagai, Kazunobu; Nitta, Isamu; and Inagaki, Yutaka, to Kabushiki Kaisha Toshiba. Washing machine with improved drive structure for rotatable tub and agitator, 5,778,703, Cl. 68-12.020.

Imai, Takashi: See—
Sakaguchi, Minzo; Imai, Takashi; Miura, Takashi; and Yamazaki, Tetsuro, 5,780,692, Cl. 568-814.000.

Imai, Tetsuya; and Sakiyama, Kazuyuki, to Matsushita Electric Industrial Co., Ltd. Method of calculating an impedance of an electromagnetic part to which rotational body shape approximation is applied, and an apparatus for the same, 5,781,020, Cl. 324-649.000.

Imaizumi, Tsuyoshi: See—
Sano, Hiroaki; Ishikawa, Hiroki; Imaizumi, Tsuyoshi; Hogari, Kazuo; and Kawata, Osamu, 5,781,678, Cl. 385-45.000.

Imamaki, Teruo: See—
Fuwa, Tetsuji; Imamaki, Teruo; and Okumura, Takashi, 5,778,776, Cl. 101-125.000.

Imamoto, Takashi; Takada, Hirotoshi; Miyamaru, Toshiaki; and Hamaguchi, Akihiro, to Fujitsu Limited. Structure of rack, 5,779,060, Cl. 211-26.000.

Imamura, Nobutaka; and Ishihata, Hiroaki, to Fujitsu Limited. Message communications system in a parallel computer, 5,781,741, Cl. 395-200.660.

Imanaka, Tadayuki; Terada, Yoshinobu; Takaha, Takeshi; Yanase, Michiyo; Okada, Shigetaka; Takata, Hiroki; Nakamura, Hiroyasu; and Fujii, Kazutoshi, to Ezaki Glico co., Ltd. Glucan having cyclic structure and method for producing the same, 5,780,267, Cl. 435-72.000.

Imanaka, Yoshifumi; and Isu, Yoshiko, to Mitsubishi Denki Kabushiki Kaisha. Digital information encoding device, digital information decoding device, digital information encoding/decoding device, digital information encoding method, and digital information decoding method, 5,781,136, Cl. 341-107.000.

Imanishi, Tetsuo; and Hayashi, Nobuyuki, to Denso Corporation. Starter with pinion regulating claw and spring, 5,780,934, Cl. 290-38.00R.

Imashiro, Yasuo: See—
Kuwabara, Shin; Nagata, Kazuhisa; Imashiro, Yasuo; and Sasaki, Eiji, 5,779,775, Cl. 106-18.110.

Imation Corp.: See—
Anderson, James S.; Gerfast, Sten R.; Opheim, Warren W.; Tapani, Robert W.; and Tran, Hung T., 5,779,172, Cl. 242-336.000.

Bottomley, William E.; and Norman, Colin F., 5,780,167, Cl. 428-521.000.

Mohapatra, Sarat K.; Viglienzoni, Alfredo G.; and Onstad, Gregory W., 5,780,207, Cl. 430-348.000.

Imazu, Katsuhiro: See—
Saiki, Norihito; Imazu, Katsuhiro; Kobayashi, Akira; and Kobayashi, Tomomi, 5,778,722, Cl. 72-347.000.

Imber, Bryan E.: See—
Sanders, Brenda M.; Jenkins, Kenneth D.; Nichols, Jack L.; and Imber, Bryan E., 5,780,246, Cl. 435-7.210.

Imblum, Gregory G., to Mine Safety Appliances Company. Combustible gas measuring sensor circuit, 5,780,715, Cl. 73-23.210.

IMEC v.z.w.: See—
Borghs, Gustaaf Regina; and Deneffe, Kristin Johanna Leona, 5,779,802, Cl. 118-723.0MF.

Imeopkaria, Daniel D.: See—
Shmidt, Creston D.; Imeopkaria, Daniel D.; Suh, Kyung W.; Malone, Bruce A.; and Franklin, Ken, 5,780,521, Cl. 521-79.000.

Imoto, Saburo. Light weight lignocellulosic molding products, 5,780,519, Cl. 521-68.000.

Imperial Chemical Industries PLC: See—
Noakes, Timothy James; Green, Michael Leslie; Prendergast, Maurice Joseph; and Jefferies, Andrew, 5,779,162, Cl. 239-690.100.

Imran, Mir A.; Hillsman, Cecily M.; Gandhi, Deepak R.; and Brooks, Dennis L., to Intella Interventional Systems, Inc. Low profile balloon-on-a-wire catheter with shapeable and/or deflectable tip and method, 5,779,688, Cl. 604-283.000.

Ims, Dale R.: See—
Tracy, Mark D.; and Ims, Dale R., 5,780,118, Cl. 427-508.000.

Imura, Koji: See—
Machida, Yutaka; and Imura, Koji, 5,781,561, Cl. 371-37.010.

INA Wälzlager Schaeffler KG: See—
Schmidt, Dieter; and Kretschmer, Jürgen, 5,778,842, Cl. 123-90.390.

Speil, Walter, 5,778,839, Cl. 123-90.160.

Inaba, Hiroo: See—
Ejiri, Kiyomi; Inaba, Hiroo; Saito, Shinji; and Hayakawa, Satoru, 5,780,141, Cl. 428-323.000.

Inada, Tomio, to Totaku Industries, Inc. Cleaner hose, 5,778,941, Cl. 138-134.000.

Inagaki, Katsunari: See—
Satoh, Makoto; Setoh, Ritsuo; Inagaki, Katsunari; and Ohara, Jun, 5,780,168, Cl. 428-516.000.

Inagaki, Yutaka: See—
Imai, Masahiro; Nishimura, Hiroshi; Koshimizu, Masaru; Hosomi, Koichi; Nagai, Kazunobu; Nitta, Isamu; and Inagaki, Yutaka, 5,778,703, Cl. 68-12.020.

Inagawa, Hiroyasu: See—
Imura, Taichi; and Inagawa, Hiroyasu, 5,779,032, Cl. 206-6.100.

Inagawa, Masako: See—
Aoki, Munekazu; Inagawa, Masako; and Katsu, Keitaro, 5,781,403, Cl. 361-502.000.

Inami, Junichi; and Adachi, Shuhei, to Yamaha Hatsudoki Kabushiki Kaisha. Method of manufacturing cylinder head for engine, 5,778,531, Cl. 29-888.060.

Inarida, Satoru; Nakata, Kiyoshi; Yasuda, Kouji; Suzuki, Masato; and Miyake, Wataru, to Hitachi, Ltd. Pulse width modulation control system for electric power converter, 5,781,423, Cl. 363-41.000.

Inazawa, Katsumi; Yamakawa, Kengo; and Sugihara, Hiroyuki, to Fujitsu Limited. Magnetic tape apparatus with an auxiliary entry/exit mechanism, 5,781,369, Cl. 360-92.000.

Inco Limited: See—
Baiden, Gregory R.; Young, Donald D.; Van Berkel, Lambertus H.; Hoover, David L.; and DeVlugt, Paul, 5,778,987, Cl. 173-19.000.

Incyte Pharmaceuticals: See—
Coleman, Roger; Guegler, Karl J.; and Seilhamer, Jeffrey J., 5,780,268, Cl. 435-69.500.

Incyte Pharmaceuticals, Inc.: See—
Bandman, Olga; and Hillman, Jennifer L., 5,780,235, Cl. 435-6.000.

Indiana Mills and Manufacturing, Inc.: See—
Merrick, David D., 5,779,319, Cl. 297-484.000.

Indiana University Foundation: See—
Mason, Glenn M.; and Bryan, Edward M., 5,779,949, Cl. 264-40.100.

Inductotherm Industries, Inc.: See—
Fishman, Oleg; and Turner, Robert C., 5,781,581, Cl. 373-152.000.

Industrial Farmaceutica Cantabria S.A.: See—
Molina, Ramon Gallo, 5,780,011, Cl. 424-9.410.

Industrial Technology Research Institute: See—

Chen, Jui-Hsiang; Jiang, Shu-Fang; Chang, Ken-Yuan; Hwang, Ruey-Wen; and Ding, Huel-Ming, 5,780,073, Cl. 425-289.000.

Chow, Hwang-Cherng, 5,781,026, Cl. 326-26.000.

Kao, Hsueh-Wu, 5,781,140, Cl. 341-154.000.

Liou, Guey-Sheng; Hsiao, Sheng-Huei; and Yang, Jen-Chang, 5,780,662, Cl. 558-420.000.

Tsai, Hsiung-Kuang; and Hwang, Sheng-Kai, 5,780,903, Cl. 257-344.000.

Infante, David A. System for detecting impurities contained in a fluid medium, 5,781,284, Cl. 356-73.000.

Inge, Claes: See—
Borgström, Leonard; Brehmer, Patrik; Carlsson, Claes-Göran; Franzén, Peter; Inge, Claes; Lagerstedt, Torgny; and Moberg, Hans, 5,779,619, Cl. 494-56.000.

Ingersoll-Dresser Pump Company: See—
Jones, William B., Jr.; Hall, Mark L.; Hayrapetian, Vahe; and Minassian, Khajak Jack, 5,779,005, Cl. 184-6.180.

Ingersoll-Rand Company: See—
Troppman, G. Louis; and Gasper, Kenneth E., 5,781,874, Cl. 701-50.000.

Inglis, Graham Donald; and Radley, Barry Gordon, to International Computers Limited. Diagnostic memory access, 5,781,558, Cl. 371-21.100.

Inhale Therapeutic Systems: See—
Eljamel, Mohammed; and Patton, John S., 5,780,014, Cl. 424-46.000.

Inmed B.V.: See—
Liger, René, 5,781,106, Cl. 340-505.000.

Innova S.A.: See—
Baniel, Avraham Matityahu, 5,780,276, Cl. 435-136.000.

Innovata Biomed Limited: See—
Braithwaite, Philip W., 5,778,873, Cl. 128-203.150.

Innovation Ind's Inc.: See—
Benson, Tom; and England, Marion, 5,780,790, Cl. 187-395.000.

Innovative BioSystems, Inc.: See—
Stormo, Keith, 5,779,996, Cl. 422-227.000.

Inomata, Asako: See—
Ohtomo, Fumio; Nakata, Yuji; Fukuyama, Yoshitaka; Inomata, Asako; Shibuya, Sachio; Koga, Akinori; Ishii, Junji; Ito, Shoko; and Yamamoto, Hiroobu, 5,778,657, Cl. 60-39.182.

Inomata, Mitsugu, to Canon Kabushiki Kaisha. Image forming apparatus with movable member shiftable at different speeds, 5,781,826, Cl. 399-53.000.

Inouchi, Masami: See—
Aino, Mikuni; and Inouchi, Masami, 5,779,855, Cl. 156-379.600.

Inoue, Akira: See—
Satoh, Tatsuya; Matsuzawa, Yoshinori; Tanbara, Yasuo; and Inoue, Akira, 5,781,806, Cl. 396-55.000.

Inoue, Atsuo: See—
Arita, Koji; Fujii, Eiji; Shimada, Yasuhiro; Uemoto, Yasuhiro; Nasu, Toru; Matsuda, Akihiro; Nagano, Yoshihisa; Inoue, Atsuo; Matsuura, Taketoshi; and Otsuki, Tatsuo, 5,780,351, Cl. 438-396.000.

Inoue, Eiji, to Isuzu Motors Limited. Toroidal continuous variable transmission, 5,779,591, Cl. 476-42.000.

Inoue, Haruo: See—
Noda, Sumio; Takami, Seiji; Inoue, Haruo; and Morita, Kaoru, 5,780,532, Cl. 523-412.000.

Inoue, Hiroki: See—
Senba, Hideki; Inoue, Hiroki; Hayashi, Yoshiaki; Akita, Makoto; and Ito, Keisuke, 5,779,783, Cl. 106-410.000.

Inoue, Keiji; Toyoda, Inao; and Suzuki, Yasutoshi, to Denso Corporation. Method for manufacturing a photo-sensor, 5,779,918, Cl. 216-2.000.

Inoue, Ken, to NEC Corporation. Salicide process for selectively forming a monocrystalline film on a silicon region, 5,780,361, Cl. 438-683.000.

Inoue, Koichi: See—
Ide, Yuzo; and Inoue, Koichi, 5,781,391, Cl. 361-91.000.

Inoue, Masataka: See—
Ohno, Yugo; and Inoue, Masataka, 5,781,734, Cl. 395-200.470.

Inoue, Mitsuru; and Kurosawa, Hiroyuki, to Hitachi, Ltd. Package blocking method for a storage system having a bus common to a plurality of kinds of groups of packages, 5,781,767, Cl. 395-555.000.

Inoue, Nori: See—
Saka, Yuuji; Onizuka, Takahiro; Oka, Yoshito; Kobayashi, Makoto; and Inoue, Nori, 5,778,528, Cl. 29-850.000.

Inoue, Nozomu: See—
Takada, Kyu; Inoue, Nozomu; Hama, Takashi; and Nomura, Yujiro, 5,781,323, Cl. 359-206.000.

Inoue, Osamu; and Takeda, Yoshiyuki, to Nikon Corporation. Planar light source and image reading device, 5,781,311, Cl. 358-475.000.

Inoue, Ryo; Waki, Kenichiro; and Suzuki, Hiroyuki, to Canon Kabushiki Kaisha. Image forming apparatus in which residual toner is recovered by developing means, 5,781,832, Cl. 399-149.000.

Inoue, Satoshi: See—
Shimizu, Naohito; Akiyama, Shigeyuki; Fujiwara, Masahiko; Inoue, Satoshi; and Oida, Takuji, 5,780,716, Cl. 73-23.200.

Inoue, Shoji, to TDK Corporation. Ferrite core for line filters, 5,779,930, Cl. 252-62.620.

Inoue, Takahiro: See—
Okano, Keiji; Inoue, Takahiro; Ojima, Masaki; and Yamaguchi, Seiji, 5,781,835, Cl. 399-275.000.

Inoue, Takao: See—
Komyoji, Daido; Inoue, Takao; Nishiki, Naomi; and Ikeda, Junji, 5,780,820, Cl. 219-543.000.

Inoue, Takashi; and Ono, Nagamasa, to Seiko Epson Corporation. Nonlinear resistance element and fabrication method thereof in which tungsten atoms are distributed continuously within the insulating film, 5,781,256, Cl. 349-51.000.

Inoue, Takeo; and Sugishita, Shozo, to Sanyo Electric Co., Ltd. Compression/expansion method of time-scale of sound signal, 5,781,885, Cl. 704-267.000.

Inoue, Yasuo: See—
Maeda, Shigenobu; Inoue, Yasuo; Kuriyama, Hirotada; Maegawa, Shiget; Kanamoto, Kyojo; and Iwamatsu, Toshiaki, 5,780,888, Cl. 257-302.000.

Inoue, Yoshihisa; Ebisu, Hajime; Ishida, Naomichi; Nakamura, Norifumi; Sasaki, Jun; Okazoe, Takashi; Morizawa, Yoshitomi; Yasuda, Arata; Wang, Shuzhong; and Ito, Tomoko, to Green Cross Corporation, The; and Asahi Glass Co., Ltd. Process for producing 2-(carboxyphenyl)-4-quinolinecarboxylic acid compounds, 5,780,634, Cl. 546-173.000.

Inoue, Yoshiisa: See—
Koreeda, Hiroyuki; Kasai, Yasuhiko; Yamauchi, Tsukasa; Asuma, Hajime; Oeda, Shiget; Ito, Jun; Tomita, Hiromi; Hasegawa, Tsukasa; Kanazawa, Rituko; Inoue, Yoshiisa; Kumai, Hiroyuki; Hataya, Shigeki; Nakajima, Akira; and Matsuda, Yasumasa, 5,781,731, Cl. 395-200.340.

Inoue, Yoshimitsu; Aoki, Shinji; Morikawa, Toshio; Ito, Hajime; Sugi, Hikaru; and Ban, Takashi, to Denso Corporation; and Kabushiki Kaisha Toyoda Jidoshokki. Auxiliary heat source apparatus for vehicle and heating apparatus employing the same, 5,778,843, Cl. 123-142.50R.

Inoue, Yoshimitsu: See—
Okumura, Yoshihiko; Ito, Koichi; Inoue, Yoshimitsu; and Sugi, Hikaru, 5,779,141, Cl. 236-36.000.

Inouye, Masayori: See—
Inouye, Sumiko; and Inouye, Masayori, 5,780,269, Cl. 435-91.100.

Inouye, Sumiko; and Inouye, Masayori, to University of Medicine and Denistry of New Jersey, The. Hybrid molecules, 5,780,269, Cl. 435-91.100.

Input/Output, Inc.: See—
Chang, Win; Badger, Algernon S.; Luce, Richard H.; Lamance, David S.; Nguyen, Hoan P.; and Neighbors, Christopher A., 5,781,510, Cl. 367-188.000.

Inrad: See—
Ruderman, Warren; Fehner, James R.; and Zhang, Zhenyu, 5,779,904, Cl. 210-500.250.

Insituform (Netherlands) B.V.: See—
Chick, Douglas K.; and Driver, F. Thomas, 5,778,938, Cl. 138-98.000.

Institut Francais du Pétrole: See—
Becquey, Marc, 5,781,502, Cl. 367-31.000.

Chauvin, Yves; Mussmann, Lothar; and Olivier, Hélène, 5,780,702, Cl. 585-664.000.

Huvey, Michel, 5,780,075, Cl. 425-403.000.

Institut National de la Sante et de la Recherche Medicale: See—
Maroteaux, Luc, 5,780,245, Cl. 435-7.210.

Institute of Paper Science and Technology, Inc.: See—
Hall, Maclin S.; Brodeur, Pierre H.; and Jackson, Theodore G., 5,780,744, Cl. 73-597.000.

Institute of Physical and Chemical Research, The: See—
Hirabayashi, Yoshio; and Ichikawa, Shin-ichi, 5,780,284, Cl. 435-193.000.

Institute of Physical and Chemical Research (RIKEN): See—
Yamazawa, Kenji; Niino, Toshiaki; Nakagawa, Takeo; and Hayano, Seiji, 5,780,070, Cl. 425-174.400.

Instrumentation Laboratory, S.p.A.: See—
Preda, Luigi, 5,780,255, Cl. 435-23.000.

Integrated Device Technology, Inc.: See—
Choi, Jeong Yeol, 5,780,330, Cl. 438-232.000.

Gaskins, Darius; and Henry, Glenn, 5,781,926, Cl. 711-145.000.

Intel Corporation: See—
Abramson, Jeffrey M.; and Konigsfeld, Kris G., 5,781,790, Cl. 395-800.230.

Arghavani, Reza; Chau, Robert S.; Yang, Simon; and Graham, John, 5,780,346, Cl. 438-296.000.

Chan, Keen, 5,781,635, Cl. 380-30.000.

Cluff, Dean Kaye, 5,779,488, Cl. 439-73.000.

Greason, Jeffrey K.; and Grumbling, Daniel R., 5,781,557, Cl. 371-21.100.

Gunter, Stephen H.; Domen, Stanley J.; and Idete, Dileep R., 5,781,783, Cl. 395-750.030.

Javanifard, Jahanshir J.; Tedrow, Kerry D.; Lin, Jin-Lien; Evert, Jeffrey J.; and Atwood, Gregory E., 5,781,473, Cl. 365-185.180.

Korn, Rodney A., 5,781,198, Cl. 345-435.000.

Krick, Robert F., 5,781,774, Cl. 395-651.000.

Kuzma, Andrew J., 5,781,901, Cl. 707-10.000.

Mehta, Anup S., 5,781,464, Cl. 364-748.010.

Sweha, Sherif; and Bauer, Mark E., 5,781,472, Cl. 365-185.110.

Watson, Jeff R.; Goetsch, Michael N.; Noval, Jim V.; and Aspiandiar, Raiyo F., 5,779,134, Cl. 228-179.100.

Intella Interventional Systems, Inc.: See—
Imran, Mir A.; Hillsman, Cecily M.; Gandhi, Deepak R.; and Brooks, Dennis L., 5,779,688, Cl. 604-283.000.

Intellbell Ventures: See—
Towley, Carl K., III; and Olson, Gregory S., 5,779,604, Cl. 482-108.000.

Intellitex International Ltd.: See—
Conway, David W., 5,778,457, Cl. 2-406.000.

InterBOLD: See—

- Mason, Thomas S.; Brannan, Jeffrey A.; and Hoover, Timothy R., 5,779,379, Cl. 400-621.000.
Interlicchio, Joseph C. Illuminated safety shoulder strap. 5,779,348, Cl. 362-108.000.
Intermec Technology, Inc.: *See—*
Austin, Pixie A.; Fox, Duane M.; and Dang, Dzung A., 5,781,708, Cl. 395-106.000.
International Business Machines Corporation: *See—*
Delehanty, Donald John; Jagannathan, Rangarajan; McCullough, Kenneth John; Miura, Donna Diane; Ouimet, George F., Jr.; Rath, David Lee; Rhoads, Bryan Newton; and Schmidt, Frank John, Jr., 5,780,363, Cl. 438-748.000.
International Business Machines Corporation: *See—*
Aggarwal, Charu Chandra; Wolf, Joel Leonard; and Yu, Philip Shi-lung, 5,781,906, Cl. 707-102.000.
Ahmadi, Hamid; Bantz, David; Bauchot, Frederic; Harrison, Colin; Krishna, Arvind; Martinez, Jose Louis; Natarajan, Kadathur; and Wetterwald, Michelle, 5,781,536, Cl. 370-252.000.
Alimpeh, Claudia C.; Goddard, Joan Stagaman; Vo, Minh Trong; Wittig, James Philip; and Yang, Rachel Youngman, 5,781,193, Cl. 345-352.000.
Arnsden, Michael R.; Bartley, Richard A.; Huynh, Cuc; Manfredi, Paul A.; and Nadeau, Douglas P., 5,778,481, Cl. 15-230.160.
Angelopoulos, Marie; Gelorme, Jeffrey Donald; Labadie, Jeffrey William; Lewis, David Andrew; Swanson, Sally Ann; and Labianca, Nancy Carolyn, 5,780,199, Cl. 430-270.000.
Appelt, Bernd Karl; Japp, Robert Maynard; Papathomas, Kostantinos; and Rudik, William John, 5,780,366, Cl. 442-19.000.
Asano, Takeshi; and Ikami, Shinichi, 5,781,742, Cl. 395-280.000.
Bach, Mark Alan; Chung, In Ha; Hill, Judith E.; Kuo, Steve T.; Lai, Theresa H.; Lee, Allen G.; and Uyehara, Richard S., 5,781,739, Cl. 395-200.570.
Barenboim, Michael; Mino, Mark Edward; Sullivan, John Lennon, Jr.; and Watts, Kenneth Wayne, 5,778,527, Cl. 29-845.000.
Beatty, Dana Lynn; Hamm, Richard E.; and Nishida, Yoshi, 5,781,798, Cl. 395-830.000.
Bertin, Claude Louis; and Cronin, John Edward, 5,781,031, Cl. 326-39.000.
Bertolet, Allan Robert; Clinton, Kim P.N.; Fuller, Christine Marie; Gould, Scott Whitney; Hartman, Steven Paul; Iadanza, Joseph Andrew; Keyser, Frank Ray; Millham, Eric Ernest; Remy, Timothy Shawn; Worth, Brian A.; Yasar, Gulson; and Zittrich, Terrance John, 5,781,032, Cl. 326-39.000.
Beukema, Bruce Leroy; Delp, Gary Scott; Loen, Larry Wayne; Moertl, Daniel Frank; and Trombley, Michael R., 5,781,763, Cl. 395-500.000.
Blackman, Kenneth R.; and Howe, Jack L., III, 5,781,907, Cl. 707-103.000.
Bolinger, Nancy J.; Bethurum, Gary; Brower, David Campbell; Maynor, Kenneth Wayne; and Smith, Charles Lee, 5,779,496, Cl. 439-377.000.
Braceras, George M.; Goodnow, Kenneth J.; and Ventrone, Sebastian T., 5,781,922, Cl. 711-118.000.
Chen, Wen-Tzer Thomas; and Recio, Renato John, 5,781,897, Cl. 707-3.000.
Chu, Jack Oon; Hsu, Louis Lu-Chen; Mandelman, Jack Allan; Sun, Yuan-Chen; and Taur, Yuan, 5,780,327, Cl. 438-156.000.
Cipolla, Thomas Mario; and Coteus, Paul William, 5,780,925, Cl. 257-676.000.
Cohen, Mitchell Simmons; Gauvin, Marco; Johnson, Glen Walden; Kuchta, Daniel M.; Lacerte, Andre; Lee, Nicholas Anthony; Ouimet, Sylvain; Spanoudis, Stephen Louis; Tremblay, Stephane; and Trewhella, Jeannine Madelyn, 5,781,682, Cl. 385-89.000.
Corn, Vance Edward; and French, Steven Michael, 5,781,738, Cl. 395-200.570.
Deshpande, Sanjay Raghunath, 5,781,757, Cl. 395-473.000.
Erpelding, A. David; Ruiz, Oscar J.; Palmer, Darrell D.; and Pattanaik, Surya, 5,781,379, Cl. 360-104.000.
Gimzewski, James K.; Schlittler, Rato R.; and Welland, Mark E., 5,780,727, Cl. 73-105.000.
Gura, Gerald A., 5,778,692, Cl. 62-175.000.
Henkels, Walter Harvey; and Hwang, Wei, 5,780,335, Cl. 438-243.000.
Howell, Wayne John; Kresge, John Steven; Stone, David Brian; and Wilcox, James Robert, 5,781,413, Cl. 361-777.000.
Jackson, Raymond Alan; Lidestri, Kathleen Ann; Linnell, David Clyde; and Master, Raj Navinchandra, 5,779,133, Cl. 228-13.000.
Koike, Tetsushi; Kodate, Manabu; and Ikezaki, Mitsuru, 5,781,253, Cl. 349-40.000.
Krounbi, Mohamad Towfik; and Lee, James Hsi-Tang, 5,779,923, Cl. 46-22.000.
Lee, Don Hoon; and Sudharsanan, Subramania, 5,781,452, Cl. 364-572.000.
Lewis, David Andrew; Viehbeck, Alfred; and Whitehair, Stanley Joseph, 5,779,844, Cl. 156-275.500.
Meier, Michael S.; and Pan, Hsin, 5,781,778, Cl. 395-704.000.
Ramaswami, Rajiv; and Segall, Adrian, 5,781,537, Cl. 370-254.000.
Reimer, James A.; and Reinsch, Roger A., 5,781,730, Cl. 395-200.330.
Rowan, Bryan S.; and Serrano, Louis Joseph, 5,781,363, Cl. 360-78.090.
Schmidt, Michael Anthony, 5,781,736, Cl. 395-200.540.
Schmidt, Michael Anthony, 5,781,737, Cl. 395-200.540.
Sethu, Harish, 5,781,546, Cl. 370-389.000.
Sheu, Tsang-Ling, 5,781,715, Cl. 395-182.020.
Tsai, Roger Yen-Luen, 5,781,430, Cl. 364-148.000.
International Computers Limited: *See—*
Inglis, Graham Donald; and Radley, Barry Gordon, 5,781,558, Cl. 371-21.100.
International Game Technology: *See—*
Berg, David A.; Luciano, Robert A., Jr.; and Saffari, Ali, 5,779,545, Cl. 463-22.000.
International Lubricants, Inc.: *See—*
Landis, Phillip S.; Rhodes, Blaine N.; and Williamson, Will F., 5,780,397, Cl. 508-346.000.
International Paper Company: *See—*
Richardson, Paul D., 5,779,135, Cl. 229-155.000.
International Paper Emballages Liquides Sa-Ipel SA: *See—*
Guillonnet, Michel, 5,778,637, Cl. 53-412.000.
International Power Devices, Inc.: *See—*
Grandmont, Paul E.; Lu, Qun; and Ma, Fei, 5,781,093, Cl. 336-232.000.
Xia, Gang; and Ma, Fei, 5,781,420, Cl. 363-21.000.
International Technology Management Associates, Inc.: *See—*
Berlowitz-Tarrant, Laurence; Tukumoto, Toshimasa; and Shivkumar, Satya, 5,779,960, Cl. 264-176.100.
Interval Research Corporation: *See—*
Saunders, Steven E., 5,780,738, Cl. 73-504.060.
Interventional Therapeutics Corporation: *See—*
Dormandy, Ray H., Jr., 5,779,672, Cl. 604-96.000.
InterWAVE Communications International Ltd.: *See—*
Sage, Gerald F.; and Msutia, Gurbux S., 5,781,582, Cl. 375-202.000.
Inui, Shinro: *See—*
Ozawa, Tsugutaro; and Inui, Shinro, 5,781,523, Cl. 369-77.100.
Invental Laboratory, Inc.: *See—*
Miramon, Eric J., 5,779,082, Cl. 220-212.000.
Iowa State University Research Foundation: *See—*
Kraus, George A.; Carpenter, Susan L.; and Petrich, Jacob W., 5,780,287, Cl. 435-236.000.
Iowa State University Research Foundation, Inc.: *See—*
Kao, David T., 5,780,935, Cl. 290-52.000.
Thom, Andrew J.; and Akinc, Mufit, 5,779,823, Cl. 148-423.000.
Iqbal, Abul: *See—*
Hao, Zhimin; Zambounis, John S.; and Iqbal, Abul, 5,780,627, Cl. 544-74.000.
Ireland, Patrick Stephen: *See—*
Chou, Richard Tien-Hua; Ireland, Patrick Stephen; Molnar, Charles John; Lim, Hyun Sung; and Shin, Hyunkook, 5,780,153, Cl. 428-359.000.
Ireton, Mark: *See—*
Asghar, Saf; Ireton, Mark; and Bartkowiak, John, 5,781,792, Cl. 395-800.350.
Irgens, Christopher R.: *See—*
Binversie, Gregory J.; Heimberg, Wolfgang; Holterman, Theodore J.; Irgens, Christopher R.; McGinerty, Francis A.; McDowell, Philip D.; Tunkiewicz, Richard T.; Woodward, Lee A.; and Hellmich, Wolfram, 5,779,454, Cl. 417-417.000.
Irikura, Koji; and Kawada, Hirohiko, to Kanzaki Kokyukoki Mfg. Co., Ltd. Transmission for self-propelled walking mowers. 5,778,645, Cl. 56-11.800.
Irite, Naoko: *See—*
Miyadera, Tatsuo; Yoshida, Kiyohide; Saito, Mika; Irite, Naoko; Abe, Akira; and Furuyama, Masataka, 5,780,002, Cl. 423-239.100.
IRO AB: *See—*
Tholander, Lars Helge Gottfrid, 5,778,943, Cl. 139-452.000.
Irvine Biomedical, Inc.: *See—*
Tu, Hosheng, 5,779,715, Cl. 606-108.000.
Isak, Heinz; Keil, Michael; Wolf, Bernd; Wingert, Horst; and Wetling, Thomas, to BASF Aktiengesellschaft. Preparation of halomethylbenzoyl cyanides. 5,780,665, Cl. 558-342.000.
Ish, A. Buell, III, to Vectra Fitness, Incorporated. Compact multi-station exercise machine. 5,779,601, Cl. 482-100.000.
Ishida, Hiromi: *See—*
Oshima, Akifumi; Ishida, Hiromi; and Shinohara, Toshihiko, 5,780,548, Cl. 525-63.000.
Ishida, Masaji: *See—*
Okada, Kojiro; Togai, Kazuhide; and Ishida, Masaji, 5,778,856, Cl. 123-417.000.
Ishida, Naomichi: *See—*
Inoue, Yoshihisa; Ebisu, Hajime; Ishida, Naomichi; Nakamura, Norifumi; Sasaki, Jun; Okazoe, Takashi; Morizawa, Yoshitomi; Yasuda, Arata; Wang, Shuzhong; and Ito, Tomoko, 5,780,634, Cl. 546-173.000.
Ishida, Takeshi; Sakamoto, Yuichi; and Yoshizawa, Genzo, to Kabushiki Kaisha Nippon Conlux. Distributed processing unit connectable to external processing means. 5,781,444, Cl. 364-479.020.
Ishiguro, Michihiro: *See—*
Iwata, Shizuo; Katoh, Shinya; Nakayama, Kimio; Ashida, Tetsuya; Yoneda, Hisao; Ishiguro, Michihiro; and Hirai, Koji, 5,780,573, Cl. 528-272.000.
Ishihata, Hiroaki: *See—*
Imamura, Nobutaka; and Ishihata, Hiroaki, 5,781,741, Cl. 395-200.660.
Ishii, Hiroshi: *See—*
Suzuki, Akira; Yabe, Hisao; Iida, Yoshihiro; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; Ishii, Hiroshi; Kira, Jin; and Yokoi, Takeshi, 5,779,625, Cl. 600-121.000.
Ishii, Junich: *See—*
Minowa, Toshimichi; Kimura, Hiroshi; Ishii, Junich; Shiraiishi, Takashi; and Ozaki, Naoyuki, 5,779,594, Cl. 477-156.000.

- Ishii, Junji: *See—*
Ohtomo, Fumio; Nakata, Yuji; Fukuyama, Yoshitaka; Inomata, Asako; Shibuya, Sachio; Koga, Akinori; Ishii, Junji; Ito, Shoko; and Yamamoto, Hironobu, 5,778,657, Cl. 60-39.182.
Ishii, Ryuichi; Tsuda, Yoichi; and Yamada, Masayuki, to Kabushiki Kaisha Toshiba. Rotor for steam turbine and manufacturing method thereof. 5,779,821, Cl. 148-326.000.
Ishika, So; and Nakamura, Yuichi, to Kabushiki Kaisha Toshiba. Optical head apparatus for reading different types of recording mediums. 5,781,519, Cl. 369-58.000.
Ishikawa, Hiroki: *See—*
Sano, Hiroaki; Ishikawa, Hiroki; Imaizumi, Tsuyoshi; Hogari, Kazuo; and Kawata, Osamu, 5,781,678, Cl. 385-45.000.
Ishikawa, Hiromichi: *See—*
Matsuno, Hideki; Katayama, Kazuhiro; and Ishikawa, Hiromichi, 5,781,743, Cl. 395-200.580.
Ishikawa, Katsuji: *See—*
Nakamichi, Kazutaka; Yoshikawa, Kouji; Ishikawa, Katsuji; Suzuki, Toshiro; and Takeuchi, Hitoshi, 5,781,092, Cl. 336-96.000.
Ishikawa, Masao: *See—*
Komatsu, Yoshimasa; Koboshi, Shigeharu; and Ishikawa, Masao, 5,780,211, Cl. 430-465.000.
Ishikawa, Masayuki: *See—*
Itaya, Kazuhiko; Yamamoto, Masahiro; Onomura, Masaaki; Fujimoto, Hidetoshi; Hatakoshi, Genichi; Sugawara, Osamu; Hideto, Ishikawa, Masayuki; Rennie, John; and Saito, Shinji, to Kabushiki Kaisha Toshiba. Semiconductor device capable of easily forming cavity and its manufacturing method. 5,780,873, Cl. 257-521.000.
Itkowsky, Frank: *See—*
Ramelson, Brian; Itkowsky, Frank; Driscoll, Peter; Robins, Cary; Lorenz, Gary; and Bopopoulos, Andreas, 5,781,745, Cl. 395-293.000.
Ito, Hajime: *See—*
Inoue, Yoshimitsu; Aoki, Shinji; Morikawa, Toshio; Ito, Hajime; Sugi, Hikaru; and Ban, Takashi, 5,778,843, Cl. 123-142.50R.
Ito, Hideo: *See—*
Suzuki, Akira; Yabe, Hisao; Iida, Yoshihiro; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; Ishii, Hiroshi; Kira, Jin; and Yokoi, Takeshi, 5,779,625, Cl. 600-121.000.
Ito, Hiroyasu; Kato, Tomokazu; and Yoshida, Eiichi, to Minolta Co., Ltd. Image forming apparatus capable of automatically interleaving normal image copies between corresponding transparency image copies. 5,781,842, Cl. 399-382.000.
Ito, Jun: *See—*
Koreeda, Hiroyuki; Kasai, Yasuhiko; Yamauchi, Tsukasa; Asuma, Hajime; Oeda, Shiget; Ito, Jun; Tomita, Hiromi; Hasegawa, Tsukasa; Kanazawa, Rituko; Inoue, Yoshiisa; Kumai, Hiroyuki; Hataya, Shigeki; Nakajima, Akira; and Matsuda, Yasumasa, 5,781,731, Cl. 395-200.340.
Ito, Kazuyuki: *See—*
Miura, Ryosuke; Taguchi, Kiyoshi; and Ito, Kazuyuki, 5,780,865, Cl. 250-573.000.
Ito, Keisuke: *See—*
Senba, Hideki; Inoue, Hiroki; Hayashi, Yoshiaki; Akita, Makoto; and Ito, Keisuke, 5,779,783, Cl. 106-410.000.
Ito, Koichi, to Aisin Seiki Kabushiki Kaisha. Sun roof device. 5,779,301, Cl. 269-216.000.
Ito, Koichi: *See—*
Okumura, Yoshihiko; Ito, Koichi; Inoue, Yoshimitsu; and Sugi, Hikaru, 5,779,141, Cl. 236-36.000.
Ito, Masahiko: *See—*
Okada, Kazunori; Mochizuki, Toshihiro; Yamauchi, Kazunori; and Ito, Masahiko, 5,781,356, Cl. 359-872.000.
Ito, Masahito: *See—*
Kito, Satoru; Ito, Masahito; Matuda, Fuminori; Takeshima, Eiki; Tanaka, Yasuji; Fujii, Takahiro; and Izutani, Kenjiro, 5,779,872, Cl. 205-149.000.
Ito, Masami; Nishii, Kanji; Nomura, Tsuyoshi; and Hamano, Seiji, to Matsushita Electric Industrial Co., Ltd. Distance measuring method and distance sensor. 5,781,269, Cl. 356-375.000.
Ito, Masuo: *See—*
Suyama, Motohiro; Nakamura, Kimitsugu; and Ito, Masuo, 5,780,967, Cl. 313-541.000.
Ito, Mineko, to Konica Corporation. Silver halide color photographic light-sensitive material. 5,780,215, Cl. 430-531.000.
Ito, Nobue: *See—*
Kato, Akira; Katayama, Masayuki; Ito, Nobue; and Hattori, Tadashi, 5,780,966, Cl. 313-506.000.
Ito, Shoko: *See—*
Ohtomo, Fumio; Nakata, Yuji; Fukuyama, Yoshitaka; Inomata, Asako; Shibuya, Sachio; Koga, Akinori; Ishii, Junji; Ito, Shoko; and Yamamoto, Hironobu, 5,778,657, Cl. 60-39.182.
Ito, Takafumi: *See—*
Satake, Satoru; Ito, Takafumi; and Ikeda, Norimasa, 5,779,058, Cl. 209-581.000.
Ito, Tomoko: *See—*
Inoue, Yoshihisa; Ebisu, Hajime; Ishida, Naomichi; Nakamura, Norifumi; Sasaki, Jun; Okazoe, Takashi; Morizawa, Yoshitomi; Yasuda, Arata; Wang, Shuzhong; and Ito, Tomoko, 5,780,634, Cl. 546-173.000.
Ito, Yoshikazu; and Sueoka, Satoshi, to Molex Incorporated. Connector with reinforced latch. 5,779,494, Cl. 439-326.000.
Ito, Yoshiteru: *See—*
Doyama, Yoshiaki; Ozeki, Masataka; Matsui, Keizo; and Ito, Yoshiteru, 5,778,885, Cl. 128-782.000.
Ito, Yozo: *See—*
Nitta, Shoichiro; Izuo, Takashi; Mikame, Kazuhisa; Kobuki, Shinzo; Ito, Yozo; and Asayama, Kazuhiro, 5,779,770, Cl. 96-2.000.
Itoh, Isami: *See—*
Tada, Tatsuya; and Itoh, Isami, 5,781,836, Cl. 399-275.000.
Itoh, Junji: *See—*
Hirano, Takayuki; Itoh, Junji; and Kanemaru, Seigo, 5,780,318, Cl. 438-20.000.
Itoh, Nobuyuki, to NEC Corporation. Semiconductor package and mounting method. 5,781,415, Cl. 361-790.000.
Itou, Takaaki: *See—*
Kinugasa, Yukio; Itou, Takaaki; and Suzuki, Naoto, 5,778,667, Cl. 60-274.000.
Itou, Youichi: *See—*

- Takahashi, Kazue; Itou, Youichi; Kanai, Saburo; and Kanno, Seiichiro, 5,781,400, Cl. 361-234,000.
- ITT Automotive Electrical Systems, Inc.: See—
Mientus, Michael J., 5,778,693, Cl. 62-181,000.
- ITT Automotive Europe GmbH: See—
Feigel, Hans-Jörg; Neumann, Ulrich; and Schiel, Lothar, 5,779,326, Cl. 303-114,300.
- ITT Automotive, Inc.: See—
Grooters, Thomas Eugene; and Szabo, George, 5,779,278, Cl. 285-93,000.
- Kaishio, Mitsuo, 5,779,286, Cl. 285-379,000.
- ITT Manufacturing Enterprises, Inc.: See—
Grooters, Thomas Eugene; and Szabo, George, 5,779,278, Cl. 285-93,000.
- ITW De France: See—
Vasseur, Jean-Christophe; and Villerot, Alain, 5,779,411, Cl. 411-55,000.
- Iverson, Hans E.: See—
Yapel, Robert A.; Milbourn, Thomas M.; Bhawe, Aparna V.; Wallace, Lawrence B.; Norton, Daniel V.; and Iverson, Hans E., 5,780,109, Cl. 427-294,000.
- Ives, R. Lawrence: See—
Singh, Amarjit; Ives, R. Lawrence; Schumacher, Richard V.; and Mizuhara, Yosuke M., 5,780,970, Cl. 315-5,380.
- Ivoclar AG: See—
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- IVT Graphics AB: See—
Pettersson, Kjell, 5,778,788, Cl. 101-424,100.
- Iwai, Hiroshi: See—
Yoshitomi, Takashi; Iwai, Hiroshi; Saito, Masanobu; Momose, Hisayo; Ohguro, Tatsuya; and Ono, Mizuki, 5,780,901, Cl. 257-336,000.
- Iwai, Toshimichi: See—
Feuerbaum, Hans-Peter; Frosien, Jürgen; Ueda, Koshi; Iwai, Toshimichi; and Schöneck, Gerald, 5,780,859, Cl. 250-396,000.
- Iwakiri, Itsuro, to Oki Electric Industry Co., Ltd. Semiconductor memory device with reduced leakage current and improved data retention, 5,781,481, Cl. 365-189,110.
- Iwamatsu, Takanori; and Kakuishi, Mitsuo, to Fujitsu Limited. Digital quadrature amplitude modulators, 5,781,076, Cl. 332-103,000.
- Iwamatsu, Toshiaki: See—
Maeda, Shigenobu; Inoue, Yasuo; Kuriyama, Hirotada; Maegawa, Shigetō; Kanamoto, Kyoze; and Iwamatsu, Toshiaki, 5,780,888, Cl. 257-302,000.
- Iwamoto, Kazunori, to Canon Kabushiki Kaisha. Projection exposure apparatus and exposure method and semiconductor device production method therewith, 5,781,277, Cl. 355-53,000.
- Iwasaki, Hiroshi: See—
Ohmori, Jun; Iwasaki, Hiroshi; and Jin, Takanori, 5,780,933, Cl. 257-788,000.
- Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; Sahashi, Masashi; and Fuke, Hiromi, to Kabushiki Kaisha Toshiba. Magnetoresistance effect element, 5,780,176, Cl. 428-692,000.
- Iwasaki, Katsuya, to Unisia Jecs Corporation. Apparatus and method for controlling damping force characteristic of shock absorber for cab over type truck, 5,779,009, Cl. 188-299,000.
- Iwasaki, Masaki: See—
Kamiya, Tetsuro; Niinaka, Kouichi; Morioka, Keiko; Yoroze, Hidenori; Sawada, Michitaka; and Iwasaki, Masaki, 5,780,047, Cl. 424-443,000.
- Iwasaki, Masayuki: See—
Sato, Morimasa; Iwasaki, Masayuki; and Sugiyama, Takekatsu, 5,780,203, Cl. 430-294,000.
- Iwasaki, Osamu: See—
Kanematsu, Daigorō; Otsuka, Naoki; Yano, Kentaro; Takahashi, Kiihiro; and Iwasaki, Osamu, 5,781,204, Cl. 347-17,000.
- Iwata, Katsuichi: See—
Tsuchimoto, Tomonori; Iwata, Katsuichi; and Kurashima, Yoshihiko, 5,778,503, Cl. 29-33,000.
- Iwata, Mitsuhiro; Sakurai, Hideki; and Sanji, Takanobu, to Dow Corning Asia, Ltd. Process for preparing allylsilane compound derivatives, 5,780,661, Cl. 556-429,000.
- Iwata, Shizuo; Katoh, Shinya; Nakayama, Kimio; Ashida, Tetsuya; Yoneda, Hisao; Ishiguro, Michihiro; and Hirai, Koji, to Kuraray Co., Ltd. Thermoplastic polyurethanes and molded articles comprising them, 5,780,573, Cl. 528-272,000.
- Iwata, Yoshihiro, to Yoshihiro Iwata. Apparatus for manufacturing hydrous oil, 5,779,990, Cl. 422-186,040.
- IXSYS, Incorporated: See—
Palladino, Michael A.; Lee, Bruce A.; Huse, William D.; and Varner, Judith A., 5,780,426, Cl. 514-9,000.
- Iyoshi, Shuzo: See—
Matsuda, Naoki; Hirata, Norimasa; and Iyoshi, Shuzo, 5,780,767, Cl. 149-2,000.
- Izuo, Takashi: See—
Nitta, Shoichiro; Izuo, Takashi; Mikame, Kazuhisa; Kobuki, Shinzo; Ito, Yozo; and Asayama, Kazuhiro, 5,779,770, Cl. 96-2,000.
- Izuta, Naoki, to Fujitsu Limited. Computer system having means for setting keyboard control information at system installation, 5,781,795, Cl. 395-828,000.
- Izutani, Kenjiro: See—
Kito, Satoru; Ito, Masahito; Matuda, Fuminori; Takeshima, Eiki; Tanaka, Yasuji; Fujii, Takahiro; and Izutani, Kenjiro, 5,779,872, Cl. 205-149,000.
- Izutani, Kouji: See—
Tanaka, Masaaki; Yamashita, Keiichi; Izutani, Kouji; Okada, Kingo; and Takahashi, Hideto, 5,778,926, Cl. 137-508,000.
- J.D. Edwards World Source Company: See—
Williams, Thomas R.; Cape, Charles J.; and Jackson, Richard T., 5,781,908, Cl. 707-104,000.
- J.M. Huber Corporation: See—
Carter, Richard Douglas; and Ciccerchi, Britt, 5,779,859, Cl. 162-183,000.
- J-Sen Ltd. No. 32: See—
Noda, Taizo, 5,778,497, Cl. 24-504,000.
- Jackschky, Martin. Method of preparing a dietary, cholesterol-reduced whole egg or egg yolk product, and its processing into food stuffs, 5,780,095, Cl. 426-614,000.
- Jackson, Johnny L.: See—
Markley, Lowell D.; Arndt, Kim E.; Ray, Patricia G.; Balco, Terry W.; Cressman, Erik N. K.; Ouse, David G.; Jackson, Johnny L.; and Secor, Jacob, 5,780,465, Cl. 514-224,200.
- Jackson, Melvin Robert; Bewlay, Bernard Patrick; Dalpe, Dennis Joseph; Demo, Wayne Alan; and Ferrigno, Stephen Joseph, to General Electric Company. Method for providing an extension on an end of an article, 5,778,960, Cl. 164-98,000.
- Jackson, Raymond Alan; Lidestri, Kathleen Ann; Linnell, David Clyde; and Master, Raj Navinchandra, to International Business Machines Corporation. In-situ device removal for multi-chip modules, 5,779,133, Cl. 228-13,000.
- Jackson, Richard T.: See—
Williams, Thomas R.; Cape, Charles J.; and Jackson, Richard T., 5,781,908, Cl. 707-104,000.
- Jackson, Theodore G.: See—
Hall, Maclin S.; Brodeur, Pierre H.; and Jackson, Theodore G., 5,780,744, Cl. 73-597,000.
- Jacob, Robert C.; and Stewart, Jeffrey S., to Future Tech Systems, Inc. Automated detection and monitoring (ADAM), 5,781,108, Cl. 340-552,000.
- Jacobs, Jochen: See—
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- Jacobs, Michael F.: See—
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- K & R Industries, Inc.: *See—*
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- K.K.M. Inc.: *See—*
Shepherd, Charles G., 5,778,868, Cl. 124-76.000.
- K-TEC Co., Ltd.: *See—*
Komoda, Katsuchi, 5,780,183, Cl. 429-198.000.
- Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Mandai, Takahiko; Shibuya, Takashi; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,780,620, Cl. 536-123.100.
- Kabushiki Kaisha Nippon Conlux: *See—*
Ishida, Takeshi; Sakamoto, Yuichi; and Yoshizawa, Genzo, 5,781,444, Cl. 364-479.020.
- Kabushiki Kaisha Riken: *See—*
Mai, Sumitoshi, 5,778,965, Cl. 164-322.000.
- Miida, Hiroshi; Ohya, Yoshihito; Hayashi, Motoaki; Okamoto, Hisanori; and Uematsu, Masashige, 5,779,219, Cl. 251-129.070.
- Miyadera, Tatsuo; Yoshida, Kiyohide; Saito, Mika; Irite, Naoko; Abe, Akira; and Furuyama, Masataka, 5,780,002, Cl. 423-239.100.
- Kabushiki Kaisha Sangi: *See—*
Sakuma, Shuji; Atsumi, Kiminori; and Ishizaki, Tsutomu, 5,780,869, Cl. 257-40.000.
- Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See—*
Hori, Seiji; Kitazawa, Yasuo; Sasaki, Sumikazu; Kato, Keiichi; Tsukiyama, Naohiro; and Matsui, Kenji, 5,779,176, Cl. 242-379.100.
- Tanaka, Hideki, 5,779,270, Cl. 280-808.000.
- Kabushiki Kaisha Toshiba: *See—*
Ema, Takehiro; and Nishihara, Eitaro, 5,779,634, Cl. 600-407.000.
- Fujiwara, Takayoshi; Sone, Yoshinori; Honjo, Takashi; Hirayama, Takuya; Kawaguchi, Syunro; and Tsunekawa, Teruhisa, 5,779,450, Cl. 417-45.000.
- Hirofujii, Susumu; Kaneko, Hiroyuki; and Yoneyama, Tadashi, 5,781,719, Cl. 395-182.120.
- Imai, Masahiro; Nishimura, Hiroshi; Koshimizu, Masaru; Hosomi, Koichi; Nagai, Kazunobu; Nitta, Isamu; and Inagaki, Yutaka, 5,778,703, Cl. 68-12.020.
- Ishii, Ryuichi; Tsuda, Yoichi; and Yamada, Masayuki, 5,779,821, Cl. 148-326.000.
- Ishika, So; and Nakamura, Yuichi, 5,781,519, Cl. 369-58.000.
- Itaya, Kazuhiko; Yamamoto, Masahiro; Onomura, Masaki; Fujimoto, Hidetoshi; Hatakoshi, Genichi; Sugawara, Hideto; Ishikawa, Masayuki; Rennie, John; and Saito, Shinji, 5,780,873, Cl. 257-521.000.
- Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhiko; Kamiguchi, Yuzo; Sashiki, Masashi; and Fuke, Hiromi, 5,780,176, Cl. 428-692.000.
- Kanazawa, Hitoshi, 5,779,636, Cl. 600-410.000.
- Kikitsu, Akira; and Ichihara, Katsutaro, 5,780,135, Cl. 428-65.300.
- Kinoshita, Junichi, 5,780,320, Cl. 438-33.000.
- Masuda, Atsushi, 5,781,592, Cl. 375-347.000.
- Masuda, Satoshi, 5,781,657, Cl. 382-147.000.
- Miura, Ryosuke; Taguchi, Kiyoshi; and Ito, Kazuyuki, 5,780,865, Cl. 250-573.000.
- Nakagawa, Akio; Ohashi, Hiromichi; Yamaguchi, Yoshihiro; Watanabe, Kiminori; and Thukakoshi, Thunco, 5,780,887, Cl. 257-298.000.
- Nakajima, Takao; and Nakamura, Kenichi, 5,780,942, Cl. 307-141.000.
- Nakao, Takehiko; and Yoshioka, Shinichi, 5,781,048, Cl. 327-157.000.
- Nematbakhsh, Mohammad Ali; and Tsubura, Shinichi, 5,781,890, Cl. 705-3.000.
- Ohmori, Jun; Iwasaki, Hiroshi; and Jin, Takanori, 5,780,933, Cl. 257-788.000.
- Ohtomo, Fumio; Nakata, Yuji; Fukuyama, Yoshitaka; Inomata, Asako; Shibuya, Sachio; Koga, Akinori; Ishii, Junji; Ito, Shoko; and Yamamoto, Hironobu, 5,778,657, Cl. 60-39.182.
- Onodera, Toru; and Tsunoda, Tomio, 5,781,142, Cl. 341-169.000.
- Ozaki, Tohru, 5,780,332, Cl. 438-238.000.
- Saito, Masahisa, 5,781,851, Cl. 455-182.100.
- Sakamoto, Keishi; Tsuneoka, Masaki; Kasugai, Atsushi; and Kariya, Tsuyoshi, 5,780,969, Cl. 315-5.000.
- Takagi, Shiro, 5,781,920, Cl. 711-114.000.
- Takeuchi, Ken; and Tanaka, Tomoharu, 5,781,478, Cl. 365-185.110.
- Tanaka, Hirokazu; and Saito, Tatsunori, 5,781,542, Cl. 370-342.000.
- Tashibu, Masakazu, 5,781,035, Cl. 326-126.000.
- Tomita, Hiroshi; and Mizoguchi, Tetsuhiko, 5,780,177, Cl. 428-692.000.
- Yoshitomi, Takashi; Iwai, Hiroshi; Saito, Masanobu; Momose, Hisayo; Ohguro, Tatsuya; and Ono, Mizuki, 5,780,901, Cl. 257-336.000.
- Kabushiki Kaisha Toyota Jidoshokki: *See—*
Inoue, Yoshimitsu; Aoki, Shinji; Morikawa, Toshio; Ito, Hajime; Sugi, Hikaru; and Ban, Takashi, 5,778,843, Cl. 123-142.50R.
- Kabushiki Kaisha Toyota Jidoshokki Seisakusho: *See—*
Hoshino, Tatsuyuki; and Takenaka, Kenji, 5,779,004, Cl. 184-6.170.
- Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Tokito, Shizuo; Noda, Koji; and Taga, Yasunori, 5,780,174, Cl. 428-690.000.
- Kabushiki Kaisha Yanagisawa Seiki Seisakusho: *See—*
Nagai, Tomoyuki; Sunohara, Eiichi; and Hidaka, Toshihiko, 5,779,312, Cl. 297-362.130.
- Kabushiki Kaisha Yokota Seisakusho: *See—*
Yokota, Hiroshi; Tanimoto, Tetsuya; and Kawamoto, Masahiro, 5,779,445, Cl. 415-230.000.
- Kabushiki Kaisha Yutaka Giken: *See—*
Takabayashi, Akira; Sugimura, Yoshihisa; Aoki, Toshihide; Tsuchiya, Tomohiko; and Makita, Seiji, 5,778,738, Cl. 74-574.000.
- Kabushikikaisha Sanichi-Kougeisha: *See—*
Fukumoto, Masayuki, 5,779,482, Cl. 434-113.000.
- Kacheria, Nilesh P., to Fiberstars, Inc. Weather-protected lighting apparatus and method. 5,779,353, Cl. 362-293.000.
- Kaczmarek, Richard T.: *See—*
Dominiak, Robert M.; Littlejohn, Kenneth C.; Kaczmarek, Richard T.; Bradshaw, Janet A.; Haines, Wayne G.; and Bascom, Michael J., 5,779,504, Cl. 439-709.000.
- Kadohiro, Takashi; Igarashi, Shinya; Suzuki, Tadao; Tsumagari, Mamoru; and Saito, Takayuki, to Hitachi, Ltd.; and Hitachi Car Engineering Co., Ltd. Air flow rate measurement apparatus. 5,780,735, Cl. 73-202.500.
- Kadosh, Daniel: *See—*
Gardner, Mark I.; Kadosh, Daniel; and Cheek, Jon D., 5,780,340, Cl. 438-259.000.
- Kadota, Michio: *See—*
Horiuchi, Hideya; Kadota, Michio; and Ago, Junya, 5,781,083, Cl. 333-196.000.
- Kaech, Beat: *See—*
Gentinetta, René; Kaech, Beat; and Simm, Robert, 5,778,538, Cl. 30-124.000.
- Kaga, Toru: *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichiro; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunekiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
- Kahn, Jean-Maurice: *See—*
Mendy, Francois; Kahn, Jean-Maurice; and Roger, Loic, 5,780,439, Cl. 514-21.000.
- Kahne, Suzanne Walker, to Trustees of Princeton University. Compositions and methods for cell transformation. 5,780,444, Cl. 514-26.000.
- Kai, Takashi: *See—*
Kino, Yoshiki; Shimura, Shoichi; Kai, Takashi; and Kobayashi, Naoki, 5,781,339, Cl. 359-557.000.
- Kaiser, Thomas: *See—*
Holderich, Wolfgang; Paczkowski, Marcus; Heinz, Dieter; and Kaiser, Thomas, 5,780,687, Cl. 568-678.000.
- Kaishio, Mitsuo, to ITT Automotive, Inc.; and Sanoh Industrial Co., Ltd. Pipe joining construction. 5,779,286, Cl. 285-379.000.
- Kajima Corporation: *See—*
Machii, Minoru; Nanba, Nobuyoshi; Lim, Boon Keng; Sakata, Noboru; Sakurai, Nobuo; and Furusawa, Yasuhiko, 5,779,811, Cl. 134-4.000.
- Kajiyama, Hideo: *See—*
Nakae, Shun; and Kajiyama, Hideo, 5,779,181, Cl. 242-532.600.
- Kakei, Tsutomu: *See—*
Sawada, Hirokazu; Sakaki, Hirokazu; Kakei, Tsutomu; Uesugi, Akio; and Matsuki, Masaya, 5,779,824, Cl. 148-437.000.
- Kakuishi, Mitsuo: *See—*
Iwamatsu, Takanori; and Kakuishi, Mitsuo, 5,781,076, Cl. 332-103.000.
- Kalb, Roland; and Seeburger, Jürgen, to Brose Fahrzeugteile GmbH & Co. KG. Method for detecting the position, direction of rotation and rotational speed of a rotatably seated part. 5,780,988, Cl. 318-603.000.
- Kalbassi, Mohammed Ali: *See—*
Golden, Timothy Christopher; Kalbassi, Mohammed Ali; Taylor, Fred William; and Allam, Rodney John, 5,779,767, Cl. 95-96.000.
- Kallmann, Jürgen: *See—*
Broich, Wilfried; Fink, Heinz; Kallmann, Jürgen; and Leupers, Wolfgang, 5,778,650, Cl. 57-88.000.
- Kalman, Jeffery M.: *See—*
Nottingham, John R.; Spirk, John W.; McCarthy, Richard O.; Stanca, Nicholas E.; and Kalman, Jeffery M., 5,778,573, Cl. 38-103.000.
- Kalnes, Tom N., to UOP. Process for the selective saturation of olefin-containing halogenated organic streams. 5,780,695, Cl. 570-262.000.
- Kaltenacker, Robert S., to Motorola, Inc. Dual push-pull amplifier circuit and method. 5,781,072, Cl. 330-271.000.
- Kalthod, Dilip Gurudath; and Stookey, Donald Joseph, to Permea, Inc. Hollow fiber membrane device with inert filaments randomly distributed in the inter-fiber voids. 5,779,897, Cl. 210-321.800.
- Kamani, Sanjay; and Sanches, Jean, to Otis Elevator Company. Monitoring of manual elevator door systems. 5,780,787, Cl. 187-316.000.
- Kamata, Takeshi: *See—*

Hashimoto, Koichi; Kamata, Takeshi; Hikosaka, Yukinobu; and Hasegawa, Akihiro, 5,779,925, Cl. 216-67.000.
Kambara, Shigeki: *See—*
Kitaguchi, Tooru; Notsu, Kazuo; Takahashi, Kazushi; Furukawa, Masayoshi; Kambara, Shigeki; Majima, Osamu; and Kuwahara, Soichi, 5,780,200, Cl. 430-270.100.
Kameda, Eiichi, to Nippon Mektron, Ltd. Chip adhesion preventing device for preventing adhesion of chips to drill shank, 5,779,402, Cl. 408-56.000.
Kameda, Takanobu: *See—*
Takahara, Eiji; Oikawa, Hideki; Nakajima, Kenichi; Kuriyama, Hiroshi; Watanabe, Kenji; Kameda, Takanobu; Aida, Chieku; and Shimmura, Tomoyuki, 5,779,373, Cl. 400-208.000.
Kamei, Shunsuke: *See—*
Tomimatsu, Kazutaka; Ueda, Yasutoshi; Kawabata, Osamu; and Kamei, Shunsuke, 5,781,429, Cl. 363-112.000.
Kamei, Tomotada: *See—*
Murakami, Yutaka; Hayashi, Takao; and Kamei, Tomotada, 5,781,351, Cl. 359-808.000.
Kamienksi, Conrad W.: *See—*
Engel, John F.; Schwindeman, James A.; Quirk, Roderic P.; and Kamienksi, Conrad W., 5,780,551, Cl. 525-236.000.
Kamiguchi, Yuzo: *See—*
Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; Sahashi, Masashi; and Fuke, Hiromi, 5,780,176, Cl. 428-692.000.
Kamihara, Shinji: *See—*
Akiba, Toshifumi; Ikeya, Takanobu; Kawanishi, Hirofumi; Yukimoto, Yusuke; Kamihara, Shinji; and Ebata, Tsutomu, 5,780,669, Cl. 560-124.000.
Kamiya, Tetsuro; Niinaka, Kouichi; Morioka, Keiko; Yorozu, Hidenori; Sawada, Michitaka; and Iwasaki, Masaki, to Kao Corporation. Patch, 5,780,047, Cl. 424-443.000.
Kamiya, Tetsuro: *See—*
Niinaka, Kouichi; Takeuchi, Katsuhiko; Kamiya, Tetsuro; and Yorozu, Hidenori, 5,780,418, Cl. 510-439.000.
Kamiyama, Takao; and Yokoshima, Yasuhiro, to Yokoshima & Company; and Shonan Gosei-Jushi Seisakusho K.K. Tubular liner and a method for connecting ends of liner tubes, 5,780,123, Cl. 428-35.200.
Kamo, Momoki: *See—*
Adachi, Keisuke; Kuwayama, Michihiro; Kamo, Momoki; Yoshida, Masakazu; Yoshida, Tsutomu; and Miki, Norio, 5,779,947, Cl. 264-30.000.
Kanai, Saburo: *See—*
Takahashi, Kazuo; Ito, Youichi; Kanai, Saburo; and Kanno, Seiichi, 5,781,400, Cl. 361-234.000.
Kanamoto, Kyoze: *See—*
Maeda, Shigenobu; Inoue, Yasuo; Kuriyama, Hirotada; Maegawa, Shiget; Kanamoto, Kyoze; and Iwamatsu, Toshiaki, 5,780,888, Cl. 257-302.000.
Kanaya, Fumio: *See—*
Okada, Takekazu; Shinmura, Satoru; and Kanaya, Fumio, 5,781,079, Cl. 333-24.100.
Kanazawa, Hitoshi, to Kahushiki Kaisha Toshiba. Method of echo volume imaging and MRI system using the same, 5,779,636, Cl. 600-410.000.
Kanazawa, Masaharu: *See—*
Fujiwara, Toshimitsu; Iino, Shuji; Kanazawa, Masaharu; Ojima, Seishi; and Miyamoto, Hidetoshi, 5,780,196, Cl. 430-137.000.
Kanazawa, Rituko: *See—*
Koreeda, Hiroyuki; Kasai, Yasuhiko; Yamauchi, Tsukasa; Asuma, Hajime; Oeda, Shiget; Ito, Jun; Tomita, Hiromi; Hasegawa, Tsukasa; Kanazawa, Rituko; Inoue, Yoshiisa; Kumai, Hiroyuki; Hataya, Shigeki; Nakajima, Akira; and Matsuda, Yasumasa, 5,781,731, Cl. 395-200.340.
Kanda, Akiko: *See—*
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Kandala, Jagannadhachari: *See—*
Guntaka, Ramareddy V.; Weber, Karl Theodore; Kovacs, Attila; and Kandala, Jagannadhachari, 5,780,611, Cl. 536-24.500.
Kandil, Ali; Chong, Pele; and Klein, Michel H., to Connaught Laboratories Limited. Neisseria meningitidis capsular polysaccharide conjugates, 5,780,606, Cl. 536-18.700.
Kaneda, Junya: *See—*
Aono, Yasuhisa; Yoshinari, Akira; Kondo, Yasuo; Kaneda, Junya; Kodama, Hideyo; Kato, Takahiko; Hattori, Shigeo; and Arai, Masahiko, 5,779,822, Cl. 148-404.000.
Kaneko, Hiroyuki: *See—*
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Kaneko, Nariie, to Two and One Co., Ltd. Golf bag, 5,779,042, Cl. 206-315.400.
Kaneko, Setsuo: *See—*
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Kaneko, Yutaro: *See—*
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Kanemaru, Seigo: *See—*

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Kanematsu, Daigoro; Otsuka, Naoki; Yano, Kentaro; Takahashi, Kiichiro; and Iwasaki, Osamu, to Canon Kabushiki Kaisha. Ink jet apparatus with suction recovery controlled according to head temperature and ink discharge frequency, 5,781,204, Cl. 347-17.000.
Kanetake, Yasuo: *See—*
Tomiyasu, Tomohiro; and Kanetake, Yasuo, 5,781,401, Cl. 361-303.000.
Kang, Chang-Soon; Hwang, Seon-Ho; Han, Young-Nam; Kim, Myoung-Jin; and Lee, Hun, to Electronics and Telecommunications Research Institute. Method for shedding traffic load in code division multiple access mobile communication system, 5,781,861, Cl. 455-442.000.
Kang, Dong Soon. Method of making a synthetic fiber containing infrared energy powder, 5,779,950, Cl. 264-40.400.
Kang, Dong-Wook: *See—*
Cho, Eui-Hwan; Chung, Sun-Gan; Kim, Joong-Young; Lee, Sun-Hwan; Kwon, Ho-Seok; Kim, Byung-Chul; Kong, Jae-Myeong; Lee, Jea-Eung; and Kang, Dong-Wook, 5,780,472, Cl. 514-252.000.
Kang, Myung-seok; Cho, Young-ho; Song, Ci-moo; and Youn, Sung-kie, to Samsung Electronics Co., Ltd.; and Korea Advanced Institute of Science and Technology. Tuning fork type gyroscope, 5,780,739, Cl. 73-504.160.
Kang, Yun-seok: *See—*
Park, Hae-jin; Lee, Hai-min; Kim, Juong-ho; Shin, Soo-chul; Kim, Jae-in; and Kang, Yun-seok, 5,778,688, Cl. 62-89.000.
Kanno, Seiichi: *See—*
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Kano, Yuji, to Japan Crown Cork Co., Ltd. Plastic cap, 5,779,076, Cl. 215-252.000.
Kansai Paint Co., Ltd.: *See—*
Masuda, Yutaka; Nakahata, Akimasa; Yukawa, Yoshiyuki; and Yabuta, Motoshi, 5,780,113, Cl. 427-405.000.
Noda, Sumio; Takami, Seiji; Inoue, Haruo; and Morita, Kaoru, 5,780,532, Cl. 523-412.000.
Oda, Shinobu, 5,780,275, Cl. 435-135.000.
Kanzaki Kokyukoki Mfg. Co., Ltd.: *See—*
Irikura, Koji; and Kawada, Hirohiko, 5,778,645, Cl. 56-11.800.
Kao Corporation: *See—*
Kamiya, Tetsuro; Niinaka, Kouichi; Morioka, Keiko; Yorozu, Hidenori; Sawada, Michitaka; and Iwasaki, Masaki, 5,780,047, Cl. 424-443.000.
Niinaka, Kouichi; Takeuchi, Katsuhiko; Kamiya, Tetsuro; and Yorozu, Hidenori, 5,780,418, Cl. 510-439.000.
Kan, David T., to Iowa State University Research Foundation, Inc. Hydro-powered turbine system, 5,780,935, Cl. 290-52.000.
Kao, Hsueh-Wu, to Industrial Technology Research Institute. Two-segment ladder circuit and digital-to-analog converter, 5,781,140, Cl. 341-154.000.
Kapfinger, Harald: *See—*
Rueckl, Siegfried; and Kapfinger, Harald, 5,781,224, Cl. 347-248.000.
Kaplan, Michael I.; and Kosarchuk, Richard H., to Advanced Metal Components, Inc. Forming a connection to an object, 5,779,281, Cl. 285-148.190.
Kapitzka, Hans-Georg; and Lichtenberg, Claus, to Carl Zeiss Stiftung. Microscope stage, 5,781,338, Cl. 359-398.000.
Kaplan, Richard B.: *See—*
Tuffias, Robert H.; Williams, Brian E.; and Kaplan, Richard B., 5,780,157, Cl. 428-408.000.
Kapoor, Ashok K. Method of forming polysilicon local interconnects, 5,780,347, Cl. 438-301.000.
Kapoor, Ashok K., to LSI Logic Corporation. MOSFET device with improved LDD region and method of making same, 5,780,350, Cl. 438-305.000.
Karakama, Toshiyuki: *See—*
Matsuzaki, Hiroomi; Karakama, Toshiyuki; and Kobayashi, Kazunori, 5,781,831, Cl. 399-119.000.
Karatzas, Constantinos; Lazaris-Karatzas, Anthoula; and Turner, Jeffrey Donald, to Nexia Biotechnologies, Inc. Direct gene transfer into the ruminant mammary gland, 5,780,009, Cl. 424-9.100.
Kardokus, Janine Kiyabu: *See—*
Dunlop, John Alden; Yuan, Jun; Kardokus, Janine Kiyabu; and Emigh, Roger Alan, 5,780,755, Cl. 75-249.000.
Karell, Manuel L.: *See—*
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Karita, Seiichi; Saito, Akio; and Saito, Megumi, to Canon Kabushiki Kaisha. Sealing mechanism for ink-jet recording head, 5,781,208, Cl. 347-29.000.
Kariya, Tsuyoshi: *See—*
Sakamoto, Keishi; Tsuneoka, Masaki; Kasugai, Atsushi; and Kariya, Tsuyoshi, 5,780,969, Cl. 315-5.000.
Karl Fischer Industrieanlagen GmbH: *See—*
van Endert, Eike Schulz; Schröder, Klaus; and Hoffmann, Hans-Peter, 5,779,986, Cl. 422-136.000.
Karl Schaeff GmbH & Co.: *See—*
Schaeff, Hans, 5,778,569, Cl. 37-410.000.
Karlborg, Bo; and Ploug, Ole, to Danfoss A/S. Analysis method and analysis apparatus, 5,780,754, Cl. 73-864.810.
Karl-Heinz, Lory, to Lory Orthopädie Schuhtechnik Gesundheitsforum. Insert for a shoe, 5,778,562, Cl. 36-44.000.
Karlsson, Torbjörn, to Asea Brown Boveri AB. Method and device for control of a converter installation, 5,781,425, Cl. 363-51.000.
Karmalkar, Rohini Nitin: *See—*

Mashelkar, Raghunath Anant; Kulkarni, Mohan Gopalakrishna; and Karmalkar, Rohini Nitin, 5,780,578, Cl. 528-327.000.
Karniewicz, Joseph: *See—*
Wu, Jeff Zhiqiang; and Karniewicz, Joseph, 5,780,906, Cl. 257-368.000.
Karnowski, Mark J.: *See—*
Knuth, Stephen B.; and Karnowski, Mark J., 5,781,613, Cl. 379-67.000.
Karpen, Thomas W.: *See—*
Havens, William H.; Hammond, Charles M., Jr.; Hennick, Robert J.; Hinkley, Robert C.; Wood, Robert J., Sr.; Onori, Tanya A.; and Karpen, Thomas W., 5,780,834, Cl. 235-472.000.
Karpf, Hellfried: *See—*
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Kasahara, Osamu: *See—*
Sugira, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichi; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Shinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
Kasai, Masaji: *See—*
Amatsu, Kazumi; Yamada, Yoshiyuki; Mori, Yoshikazu; Mizutaki, Shochi; Kasai, Masaji; and Tomioka, Shinji, 5,780,677, Cl. 562-561.000.
Kasai, Yasuhiko: *See—*
Koreeda, Hiroyuki; Kasai, Yasuhiko; Yamauchi, Tsukasa; Asuma, Hajime; Oeda, Shiget; Ito, Jun; Tomita, Hiromi; Hasegawa, Tsukasa; Kanazawa, Rituko; Inoue, Yoshiisa; Kumai, Hiroyuki; Hataya, Shigeki; Nakajima, Akira; and Matsuda, Yasumasa, 5,781,731, Cl. 395-200.340.
Kasday, Leonard Ralph, to Lucent Technologies Inc. Manipulation aid for attachment to human body parts, 5,779,292, Cl. 294-25.000.
Kashiwabara, Naokazu, to Mitsubishi Denki Kabushiki Kaisha; and Mitsubishi Electric Semiconductor Software Co., Ltd. Emulator probe mountable to a target board at different orientation angles, 5,781,759, Cl. 395-500.000.
Kashiwazaki, Masami, to Canon Kabushiki Kaisha. Reducing memory capacity requirements in image output while maintaining output speed, 5,781,706, Cl. 395-101.000.
Kaska, William C.; and Jensen, Craig M., to University of California, The Regents of the; and University of Hawaii. Process for alkane group dehydrogenation with organometallic catalyst, 5,780,701, Cl. 585-654.000.
Kasuga, Masao: *See—*
Iino, Akihiro; Kasuga, Masao; Suzuki, Makoto; Suzuki, Kenji; and Saruwatari, Tomosumi, 5,780,955, Cl. 310-316.000.
Kasugai, Atsushi: *See—*
Sakamoto, Keishi; Tsuneoka, Masaki; Kasugai, Atsushi; and Kariya, Tsuyoshi, 5,780,969, Cl. 315-5.000.
Kasuya, Shozo: *See—*
Ozawa, Satoru; and Kasuya, Shozo, 5,778,504, Cl. 29-27.00C.
Katagiri, Atsushi, to Matsushita Electric Industrial Co., Ltd. Individual selective call receiving apparatus and method for displaying message, 5,781,122, Cl. 340-825.440.
Katahira, Kouji: *See—*
Ichikawa, Hideki; Takada, Masahiro; Katahira, Kouji; and Shibayama, Kenji, 5,778,512, Cl. 29-598.000.
Kataoka, Mitsuhiro: *See—*
Tokura, Norihito; Takahashi, Shigeki; Yamamoto, Tsuyoshi; Kataoka, Mitsuhiro; and Hara, Kunihiko, 5,780,324, Cl. 438-138.000.
Katayama, Hiroshi: *See—*
Abe, Katsuaki; Kishigami, Takaaki; Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Yamaki, Yoichi; Tsumura, Toshiyuki; and Katayama, Hiroshi, 5,781,588, Cl. 375-334.000.
Katayama, Kazuhiro: *See—*
Matsuno, Hideki; Katayama, Kazuhiro; and Ishikawa, Hiromichi, 5,781,743, Cl. 395-200.580.
Katayama, Masayuki: *See—*
Kato, Akira; Katayama, Masayuki; Ito, Nobue; and Hattori, Tadashi, 5,780,966, Cl. 313-506.000.
Katayama, Toshihiro: *See—*
Shimamoto, Toshitsugu; and Katayama, Toshihiro, 5,780,143, Cl. 428-209.000.
Kato, Akira; Katayama, Masayuki; Ito, Nobue; and Hattori, Tadashi, to Nippondenso Co., Ltd. Electroluminescent device with improved blue color purity, 5,780,966, Cl. 313-506.000.
Kato, Hayato, to Aisin Takaoka Co., Ltd. Soil conditioner, 5,779,789, Cl. 106-900.000.
Kato, Hiromi: *See—*
Fukatsu, Junko; and Kato, Hiromi, 5,781,898, Cl. 707-4.000.
Kato, Keiichi: *See—*
Hori, Seiji; Kitazawa, Yasuo; Sasaki, Sumikazu; Kato, Keiichi; Tsukiyama, Naohiro; and Matsui, Kenji, 5,779,176, Cl. 242-379.100.
Kato, Koji: *See—*
Nishizono, Atsuo; Noguchi, Hideo; Minami, Keiji; Hirata, Shinji; Takao, Hitoshi; Kato, Koji; Hyodo, Tetsuji; and Itaki, Kazuyuki, 5,781,220, Cl. 347-208.000.
Kato, Naoki: *See—*
Ogawa, Tetsuya; Kato, Naoki; and Akashi, Shinya, 5,781,463, Cl. 364-724.190.

Kato, Shigeki; Uematsu, Hiroshi; Ogawa, Ken-ichi; and Hattori, Tatsuya, to Honda Giken Kogyo Kabushiki Kaisha. NRD guide circuit, radar module and radar apparatus, 5,781,086, Cl. 333-248.000.
Kato, Shingo: *See—*
Saitoh, Shinji; Yoshikawa, Masato; Akiyama, Setsuo; and Kato, Shingo, 5,780,132, Cl. 428-36.800.
Kato, Takahiko: *See—*
Aono, Yasuhisa; Yoshinari, Akira; Kondo, Yasuo; Kaneda, Junya; Kodama, Hideyo; Kato, Takahiko; Hattori, Shigeo; and Arai, Masahiko, 5,779,822, Cl. 148-404.000.
Kato, Tomokazu: *See—*
Ito, Hiroyasu; Kato, Tomokazu; and Yoshida, Eiichi, 5,781,842, Cl. 399-382.000.
Kato, Tsuneaki: *See—*
Nakajima, Hideharu; and Kato, Tsuneaki, 5,781,179, Cl. 345-157.000.
Katoh, Kazunobu: *See—*
Goto, Takahiro; Katoh, Kazunobu; and Sakai, Minoru, 5,780,198, Cl. 404-264.000.
Katoh, Shinya: *See—*
Iwata, Shizuo; Katoh, Shinya; Nakayama, Kimio; Ashida, Tetsuya; Yoneda, Hisao; Ishiguro, Michihiro; and Hirai, Koji, 5,780,573, Cl. 528-272.000.
Katou, Yukio: *See—*
Kotaki, Yoshio; and Katou, Yukio, 5,781,368, Cl. 360-92.000.
Katsouleas, Thomas C.: *See—*
Dawson, John M.; Mori, Warren B.; Lai, Chih-Hsiang; and Katsouleas, Thomas C., 5,780,971, Cl. 315-39.000.
Katsu, Keitaro: *See—*
Aoki, Munekazu; Inagawa, Masako; and Katsu, Keitaro, 5,781,403, Cl. 361-502.000.
Katsu Manufacturing Co., Ltd.: *See—*
Tanaka, Masaru, 5,779,360, Cl. 366-286.000.
Katsukawa, Masato; Urano, Akiyoshi; Sugase, Ayako; Ihara, Mitsuo; Yamazato, Ichiro; and Nakamura, Yuka, to Mita Industrial Co., Ltd. Electrophotoreceptive material, 5,780,194, Cl. 430-83.000.
Katsuki, Hiroshi: *See—*
Saito, Hiroshi; Katsuki, Hiroshi; and Kawahara, Fumio, 5,780,301, Cl. 435-404.000.
Katsumoto, Ryuichi: *See—*
Ozaki, Kazuo; Kegasawa, Tadashi; and Katsumoto, Ryuichi, 5,780,213, Cl. 430-538.000.
Katsumura, Tatsuro; Aritsumi, Takashi; Yamazaki, Motoharu; and Yasukawa, Masahiko, to NKK Corporation. Method for manufacturing seamless pipe, 5,778,714, Cl. 72-97.000.
Katsuyama, Akiko: *See—*
Urano, Fumiyoshi; Yasuda, Takanori; Katsuyama, Akiko; and Yamashita, Kazuhiro, 5,780,206, Cl. 430-325.000.
Katsuzawa, Yukio: *See—*
Nakamura, Kosei; Katsuzawa, Yukio; and Nakazawa, Yasuyuki, 5,780,946, Cl. 310-58.000.
Kau, Wei-yuen: *See—*
Walsh, James J.; and Kau, Wei-yuen, 5,781,780, Cl. 395-750.010.
Kaub, Manfred, to Lucas Industries public limited company. Valve assembly, 5,778,754, Cl. 91-25.000.
Kauffman, Ralph; and Lee, Roger, to Micron Technology, Inc. Nonvolatile floating gate memory with improved interpoly dielectric, 5,780,891, Cl. 257-316.000.
Kaufmann, Bernd; and Illenberger, Herbert, to Voith Sulzer Papiermaschinen GmbH. Device and method for stabilizing a paper web at a time before the web is cut, 5,779,184, Cl. 242-554.200.
Kaufmann, Jürgen: *See—*
Hartig, Wolfgang; and Kaufmann, Jürgen, 5,781,306, Cl. 356-436.000.
Kaufmann, Michael A., to Boyd Gaming Corporation. Method for players to play a tournament of games where game scores are obtained, 5,779,242, Cl. 273-459.000.
Kausch, Albert P.: *See—*
Adams, Thomas R.; Anderson, Paul C.; Daines, Richard J.; Gordon-Kamm, William; Kausch, Albert P.; Mann, Michael T.; Orr, Peter M.; and Warner, David C., 5,780,709, Cl. 800-205.000.
Kauschke, Hansjoerg: *See—*
Amesbichler, Georg; and Kauschke, Hansjoerg, 5,778,517, Cl. 29-709.000.
Kautzer, Jeffrey Alan: *See—*
Roehm, Steven Phillip; Blomeyer, Alan Dean; Fischer, Brian Eugene; and Kautzer, Jeffrey Alan, 5,781,178, Cl. 345-157.000.
Kaviani, Ali, to Spencer Gifts. Novelty lamp, 5,778,576, Cl. 40-409.000.
Kavina, Vincent V.: *See—*
Freire, Ernesto; Kavina, Vincent V.; Privalov, George P.; and Privalov, Peter L., 5,779,363, Cl. 374-33.000.
Kawabata, Osamu: *See—*
Tomimatsu, Kazutaka; Ueda, Yasutoshi; Kawabata, Osamu; and Kamei, Shunsuke, 5,781,429, Cl. 363-112.000.
Kawada, Hirohiko: *See—*
Irikura, Koji; and Kawada, Hirohiko, 5,778,645, Cl. 56-11.800.
Kawada, Koji: *See—*
Konishi, Satoru; Ohta, Kazushige; Kawada, Koji; and Obata, Takashi, 5,779,339, Cl. 362-31.000.
Kawada, Shinichi: *See—*
Yamamoto, Kanishi; Kawada, Shinichi; Hojo, Takeshi; Okada, Yoshiyuki; and Masuzawa, Isao, 5,781,296, Cl. 356-350.000.

- Kawagoe, Jun; Ihara, Satoru; and Osaku, Hitoshi, to Optrex Corporation. Liquid crystal display device wherein driving frequency is 200 or less and 50% threshold voltage is 1.5 V or less. 5,781,263, Cl. 349-135.000.
- Kawaguchi, Kunio: *See—*
Kondo, Tetsujiro; Fujimori, Yasuhiro; Takahashi, Kenji; and Kawaguchi, Kunio, 5,781,238, Cl. 348-405.000.
- Kawaguchi, Syunro: *See—*
Fujiwara, Takayoshi; Sone, Yoshinori; Honjo, Takashi; Hirayama, Takuya; Kawaguchi, Syunro; and Tsunekawa, Teruhisa, 5,779,450, Cl. 417-45.000.
- Kawaguchi, Toranosuke; and Maezono, Akikazu, to Nihon Almit Co., Ltd. Solid spherical body manufacturing apparatus. 5,778,964, Cl. 164-271.000.
- Kawahara, Fumio: *See—*
Saito, Hiroshi; Katsuki, Hiroshi; and Kawahara, Fumio, 5,780,301, Cl. 435-404.000.
- Kawai, Chihoro; Matsura, Takahiro; and Yamakawa, Akira, to Sumitomo Electric Industries, Ltd. High-strength porous silicon nitride body and process for producing the same. 5,780,374, Cl. 501-97.100.
- Kawai, Noriko: *See—*
Lavash, Bruce William; Osborn, Thomas Ward, III; Olsen, Robb Eric; Mayer, Katherine Louise; Hines, Letha Margie; and Kawai, Noriko, 5,779,692, Cl. 604-387.000.
- Kawamoto, Masahiro: *See—*
Yokota, Hiroshi; Tanimoto, Tetsuya; and Kawamoto, Masahiro, 5,779,445, Cl. 415-230.000.
- Kawamura, Hideo, to Isuzu Ceramics Research Institute Co., Ltd. Electrically heated diesel particulate filter. 5,780,811, Cl. 219-205.000.
- Kawamura, Osamu: *See—*
Nakamura, Yoshikatsu; Kawamura, Osamu; Takahashi, Teruo; and Yamamoto, Shinichi, 5,778,530, Cl. 29-888.100.
- Kawamura, Yukio, to Sumitomo Wiring Systems, Ltd. Security system and method therefor. 5,781,121, Cl. 340-825.310.
- Kawanishi, Hirofumi: *See—*
Akiba, Toshifumi; Ikeya, Takanobu; Kawanishi, Hirofumi; Yukimoto, Yusuke; Kamihara, Shinji; and Ebata, Tsutomu, 5,780,669, Cl. 560-124.000.
- Kawano, Kayoko; Takaki, Yasushi; Sutou, Shinichi; and Hara, Kazuhiro, to Fujitsu Limited. System testing device and method using JTAG circuit for testing high-package density printed circuit boards. 5,781,560, Cl. 371-22.320.
- Kawano, Kyoichiro: *See—*
Okuyama, Takeshi; Watanabe, Kouji; Chiyonobu, Tatsuo; Hashimoto, Kaoru; and Kawano, Kyoichiro, 5,779,492, Cl. 439-179.000.
- Kawasaki Hydromechanics Corp.: *See—*
Takao, Masayoshi, 5,778,719, Cl. 72-296.000.
- Kawasaki, Masahiro: *See—*
Suzuki, Noboru; Toji, Shigeo; and Kawasaki, Masahiro, 5,781,809, Cl. 396-134.000.
- Kawasaki, Michihiro: *See—*
Shiomi, Kazumitsu; Nakamura, Hideo; Kondou, Akira; and Kawasaki, Michihiro, 5,779,899, Cl. 210-346.000.
- Kawasaki Refractories Co., Ltd.: *See—*
Adachi, Keisuke; Kuwayama, Michihiro; Kamo, Momoki; Yoshida, Masakazu; Yoshida, Tsutomu; and Miki, Norio, 5,779,947, Cl. 264-30.000.
- Kawasaki, Shinji; and Nishimura, Hiroshi, to Hitachi Medical Corporation. Method and apparatus for MR imaging without a flashing phenomenon of an object having periodical motion. 5,781,010, Cl. 324-309.000.
- Kawasaki Steel Corporation: *See—*
Adachi, Keisuke; Kuwayama, Michihiro; Kamo, Momoki; Yoshida, Masakazu; Yoshida, Tsutomu; and Miki, Norio, 5,779,947, Cl. 264-30.000.
- Maruyama, Takayuki; Ogino, Takao; Ishino, Yuichi; Saito, Tasuku; Haraoka, Takashi; Takagi, Kaori; and Hatano, Hitomi, 5,779,880, Cl. 208-44.000.
- Kawasaki, Toyotoshi; Ogura, Hiroyuki; and Miyano, Masaaki, to Minolta Co., Ltd. Drive transmission mechanism. 5,779,016, Cl. 192-48.920.
- Kawasaki, Yoshinao: *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seichiro; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsunoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunekiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
- Kawase, Kiyosi: *See—*
Mutaguchi, Masao; Kawase, Kiyosi; Tanida, Koji; Nakagawa, Hitoshi; Hiranishi, Yoshinobu; and Tokumura, Ichiro, 5,778,797, Cl. 105-149.100.
- Kawasyukuda, Hiroaki: *See—*
Terashima, Kanetsugu; Takeshita, Fusayuki; Yamamoto, Hitoshi; and Kawasyukuda, Hiroaki, 5,779,933, Cl. 252-299.100.
- Kawata, Masayuki: *See—*
Yasukawa, Naoki; Shinbo, Akira; Kawata, Masayuki; and Sakumoto, Kazumi, 5,781,511, Cl. 368-11.000.
- Kawata, Osamu: *See—*
Sano, Hiroaki; Ishikawa, Hiroki; Imaizumi, Tsuyoshi; Hogari, Kazuo; and Kawata, Osamu, 5,781,678, Cl. 385-45.000.
- Kawazoe, Naoyuki; Ando, Hiroshi; Kimura, Teiyuu; Koike, Satoshi; and Onimaru, Sadahisa, to Nippondenso Co., Ltd.; and Nipon Soken Inc. Method of producing holographic optical element and device therefor. 5,781,317, Cl. 359-12.000.
- Kayaba Kogyo Kabushiki Kaisha: *See—*
Nagai, Tomoyuki; Sunohara, Eizi; and Hidaka, Toshihiko, 5,779,312, Cl. 297-362.130.
- Kayanuma, Kanji: *See—*
Nishizawa, Akira; and Kayanuma, Kanji, 5,781,526, Cl. 369-275.300.
- Kayyem, Jon Faiz: *See—*
Meade, Thomas J.; Kayyem, Jon Faiz; and Fraser, Scott E., 5,780,234, Cl. 435-6.000.
- Kazantsev, Viktor Konstantinovich: *See—*
Budaev, Jury Alexeevich; Kazantsev, Viktor Konstantinovich; Shelk-ovnikov, Jury Petrovich; Grinberg, Igor Samsonovich; Kokhanovsky, Sergey; Skorniyakov, Vladimir Iliich; Elagin, Petr Ivanovich; and Ragozin, Leonid Viktorovich, 5,779,875, Cl. 205-392.000.
- Kazemzadeh, Farhad: *See—*
Kriesel, Marshall S.; Kazemzadeh, Farhad; Kriesel, Matthew B.; Feng, William W.; Barber, Steve C.; and Kluck, William J., 5,779,676, Cl. 604-132.000.
- Kazikawa, Yoshiharu; Ohara, Toshio; Torigoe, Eiichi; and Aikawa, Yasukazu, to Nippondenso Co., Ltd. Laminated type heat exchanger having small flow resistance. 5,778,974, Cl. 165-153.000.
- Keating of Chicago, Inc.: *See—*
Herring, Charles W., 5,778,871, Cl. 126-391.000.
- Keaton, Ricky Lynn, to Compact Air Products, Inc. Swing apparatus and method. 5,778,511, Cl. 29-559.000.
- Kec, Andreas: *See—*
Barth, Waldemar; Schön, Uwe; Kec, Andreas; and Christmann, Martin, 5,778,758, Cl. 92-88.000.
- Kech, Armin: *See—*
Huber, Albert; Kech, Armin; Kopp, Albert; and Spielmann, Rainer, 5,778,518, Cl. 29-736.000.
- Keeler, James David; and Hartman, Eric Jon, to Pavilion Technologies, Inc. Method and apparatus for analyzing a neural network within desired operating parameter constraints. 5,781,432, Cl. 364-164.000.
- Kegasawa, Tadahi: *See—*
Ozaki, Kazuo; Kegasawa, Tadahi; and Katsumoto, Ryuichi, 5,780,213, Cl. 430-538.000.
- Keil, Michael: *See—*
Isak, Heinz; Keil, Michael; Wolf, Bernd; Wingert, Horst; and Wettling, Thomas, 5,780,665, Cl. 558-342.000.
- Wingert, Horst; and Keil, Michael, 5,780,624, Cl. 544-1.000.
- Kellam, Keith. Laser doppler microscopy methods and instruments. 5,778,878, Cl. 128-664.000.
- Keller, Jeffrey S.; and Reid, Alexander, to General Electric Company. Tandem point cutting tool. 5,778,746, Cl. 82-112.000.
- Keller, Melvin William; Diebold, David Henry; Schmid, Steven Lawrence; Wellman, Stanley Paul; Krambeck, Frederick Carl; and Bebernes, Thomas Daryl, to Deere & Company. Crop harvesting platform having a reversible drive for the reel, cutterbar center-feed augers and conditioner rolls. 5,778,644, Cl. 56-11.200.
- Keller, Stacia: *See—*
Mishra, Umesh Kumar; DenBaars, Steven P.; and Keller, Stacia, 5,780,355, Cl. 438-483.000.
- Keller, Teddy M.; and Son, David Y., to United States of America, Navy. Linear carborane-siloxane or silane-acetylene based copolymers. 5,780,569, Cl. 528-5.000.
- Kellerman, Peter L.: *See—*
Benveniste, Victor M.; and Kellerman, Peter L., 5,780,863, Cl. 250-492.210.
- Kellock, Iain R.: *See—*
Sexton, Brendan F.; Knuijt, Hans M.; Eldrid, Sacheverel Q.; Myers, Albert; Coneybeer, Kyle E.; Johnson, David Martin; and Kellock, Iain R., 5,779,442, Cl. 415-173.200.
- Kellström, Magnus; Pettersson, Kenneth; and Rydin, Magnus, to SKF Maintenance Products B.V. Hydraulic nut for mounting conical objects. 5,779,419, Cl. 411-434.000.
- Kelly, Christopher; Lemieux, David J.; Magnussen, Haakon T., Jr.; Petrek, James S.; and Rainin, Kenneth, to Rainin Instrumental Co., Inc. Pipette tip rack and refill pack containing large maximized volume freely nestable pipette tips. 5,779,984, Cl. 422-104.000.
- Kem-En-Tec A/S: *See—*
Lihme, Allan Otto Fog; Aagesen, Margit Irene; Gammelgård-Larsen, Claus; and Ellegård, Katrine Hvid, 5,780,593, Cl. 530-361.000.
- Kemnitz, Peter, to Mahle GmbH. Method of producing a one-part cooling duct piston. 5,778,533, Cl. 29-888.049.
- Kemper, Bernard J.: *See—*
Brown, Craig E.; Brown, Robert J.; Kemper, Bernard J.; and Hays, David E., 5,779,071, Cl. 215-11.500.
- Kendall Manufacturing, Inc.: *See—*
Poole, James E., 5,779,429, Cl. 414-723.000.
- Kennedy, Stephen J., to Fem Investments Limited. Composite steel structural plastic sandwich plate systems. 5,778,813, Cl. 114-74.00A.
- Kensley Nash Corporation: *See—*
Nash, John E., 5,779,721, Cl. 606-159.000.
- Kent, Diane R.: *See—*
Hoyt, Matthew B.; Kent, Diane R.; and Bristow, James R., 5,780,156, Cl. 428-373.000.
- Kent, Donald: *See—*

- Syracuse, Anthony A.; Kent, Donald; and Taylor, Roy Y., 5,781,225, Cl. 347-258.000.
- Kenten, John Henry: *See—*
Leland, Jonathan K.; Shah, Haresh P.; Kenten, John Henry; Goodman, Jack E.; Lowe, George E.; Namba, Yuzaburo; Blackburn, Gary F.; and Massey, Richard J., 5,779,976, Cl. 422-52.000.
- Kenyon, Douglas E.: *See—*
Bowzer, James L.; Kenyon, Douglas E.; and Wadleigh, Eugene E., 5,778,977, Cl. 166-252.100.
- Keown, Mark Sherman; Bardue, Casey Martin; Hannig, John Reed; and Olsen, William R., to NEC America, Inc. Densely packed telecommunications equipment enclosure. 5,781,410, Cl. 361-690.000.
- Kepple, Laurence Ralph: *See—*
Parker, Marsten Hugh; Kepple, Laurence Ralph; Sklar, Leah Ruth; and Laroche, David Christopher, 5,781,720, Cl. 395-183.140.
- Kerboeuf, Sylvaine: *See—*
Belouet, Christian; Boccon-Gibod, Dominique; and Kerboeuf, Sylvaine, 5,780,120, Cl. 427-554.000.
- Kerbow, Dewey Lynn, to Du Pont de Nemours, E. I., and Company. Fluoropolymers having core/shell structure with functional units in the shell. 5,780,552, Cl. 525-276.000.
- Kerkar, Awdhoot Vasant: *See—*
Berke, Neal Steven; Dallaire, Michael Paul; and Kerkar, Awdhoot Vasant, 5,779,788, Cl. 106-809.000.
- Kerrick, Jon P. Method for making a printed wiring board. 5,779,836, Cl. 156-150.000.
- Kersten, Jean: *See—*
Dane, Greg; Kersten, Jean; and Delmotte, Yves, 5,780,043, Cl. 424-404.000.
- Keshavan, Madapusi K.: *See—*
Carter, Lan; Keshavan, Madapusi K.; Rai, Ghanshyam; Eason, Jimmy W.; and Hood, Vonnice D., 5,780,139, Cl. 428-217.000.
- Kettler, Robert: *See—*
Van Der Weij, Hendrikus H. M.; Kettler, Robert; and Everett, Timothy J., 5,781,245, Cl. 348-563.000.
- Kettner, Mark. Changeable shoe cover. 5,778,564, Cl. 36-101.000.
- Kettunen, Auvo K., to Ahlstrom Machinery Inc. Cooking cellulose material using high alkali concentrations and/or high pH near the end of the cook. 5,779,856, Cl. 162-34.000.
- Key Plastics, Inc.: *See—*
Cass, Michael W.; Eckersley, Rodney T.; Krafcik, Robert J.; Paciorek, Walter J.; and Fechter, Ramona R., 5,780,965, Cl. 313-506.000.
- Key Solutions Ltd.: *See—*
Ilani, Avner, 5,781,021, Cl. 324-754.000.
- Keyes, Kenneth J., Jr.: *See—*
Dukes, Michael A.; Keyes, Kenneth J., Jr.; and Michael, Gerald T., 5,781,791, Cl. 395-800.320.
- Keyser, Frank Ray: *See—*
Bertolet, Allan Robert; Clinton, Kim P.N.; Fuller, Christine Marie; Gould, Scott Whitney; Hartman, Steven Paul; Iadanza, Joseph Andrew; Keyser, Frank Ray; Millham, Eric Ernest; Reny, Timothy Shawn; Worth, Brian A.; Yasar, Gulson; and Zitritsch, Terrance John, 5,781,032, Cl. 326-39.000.
- Keystone Retaining Wall Systems, Inc.: *See—*
Knight, David W., 5,779,391, Cl. 405-20.000.
- Khakzar, Karim, to Alcatel N.V. Method of controlling an access network as well as exchange and access network. 5,781,623, Cl. 379-230.000.
- Khan, Abid A.: *See—*
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- Khan, Tayyab: *See—*
Ganesan, Kalyan; Pant, Ranjan; Liau, Victor; Khan, Tayyab; Coughlin, Desmond; and Johnson, Harry, 5,781,538, Cl. 370-310.000.
- Khare, Gyanesh P.; and Bonnell, Ralph E., to Phillips Petroleum Company. Sulfur absorbents. 5,780,001, Cl. 423-230.000.
- Khaw, Ban An; Torchilin, Vladimir P.; Narula, Jagat; and Vural, Imran, to Northeastern University. Compositions and methods useful for inhibiting cell death and for delivering an agent into a cell. 5,780,052, Cl. 424-450.000.
- Khosravi, Farhad: *See—*
Roth, Laurence A.; Herman, Stephen J.; Khosravi, Farhad; Melanson, David; Dumont, Michael; Campbell, Patrick K.; and Spiridigliozzi, John C., 5,779,673, Cl. 604-101.000.
- Khosrovi, Behzad: *See—*
Ho, Bert; Khosrovi, Behzad; and Hirtzer, Pamela G., 5,780,431, Cl. 514-12.000.
- Khwaja, Tasneem A., to PharmaPrint, Inc.; and University of Southern California. The Mistletoe extract and method. 5,780,037, Cl. 424-195.100.
- KIA Motors Corporation: *See—*
Kim, Chun-ho, 5,780,979, Cl. 318-15.000.
- Kim, Sang-ho, 5,778,534, Cl. 29-888.451.
- Koo, Ja-Hoi, 5,780,723, Cl. 73-40.50A.
- Kibler, Wendell L.: *See—*
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- Kida, Michio: *See—*
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- Kiepen, Horst F.: *See—*
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- Kieu, Hoa: *See—*
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- Kiewert, Eva; Menke, Ronald; and Middelhaue, Birgit, to Henkel Kommanditgesellschaft auf Aktien. Acidic hard surface cleaning formulations comprising APG and propoxylated-ethoxylated fatty alcohol ether. 5,780,416, Cl. 510-422.000.
- Kihara, Katsuya; and Koga, Masayuki, to Sanyo Electric Co., Ltd. Shift register, driving circuit and drive unit for display device. 5,781,171, Cl. 345-93.000.
- Kikinis, Dan, to Lexton Systems, Inc. Enhanced video projection system. 5,779,334, Cl. 353-31.000.
- Kikitsu, Akira; and Ichihara, Katsutaro, to Kabushiki Kaisha Toshiba. Magnetic disc apparatus. 5,780,135, Cl. 428-65.300.
- Kikuchi, Hisashi, to Tokyo Electron, Ltd. Apparatus for detecting objects to be transferred for use in semiconductor device fabrication apparatus. 5,780,849, Cl. 250-231.130.
- Kikuchi, Makoto; and Kodama, Kengo, to Riso Kagaku Corporation. Heat-sensitive stencil sheet perforating device. 5,781,694, Cl. 392-418.000.
- Kikuchi, Satoru: *See—*
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- Kikuchi, Shinji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Continuous form printer. 5,779,378, Cl. 400-616.200.
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Hasegawa, Koh; and Kikugawa, Noriyuki, 5,781,207, Cl. 347-23.000.
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- Kilström, Lars, to Aktiebolaget Electrolux. Adaptor for a vacuum cleaner. 5,779,745, Cl. 55-337.000.
- Kim, Andrew C. Bi-directional universal dynamic compression device. 5,779,704, Cl. 606-64.000.
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- Kim, Dae Young, to LG Electronics, Inc. Optical disk recording/reproducing apparatus. 5,781,521, Cl. 369-59.000.
- Kim, In Ki. Switch system for personal rapid transit. 5,778,796, Cl. 104-130.070.
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Park, Hae-jin; Lee, Hai-min; Kim, Juong-ho; Shin, Soo-chul; Kim, Jae-in; and Kang, Yun-seok, 5,778,688, Cl. 62-89.000.
- Kim, Jae-Kap, to Hyundai Electronics Industries Co., Ltd. Method of fabricating an analog semiconductor device having a salicide layer. 5,780,333, Cl. 438-238.000.
- Kim, Jeong Hyun; and Hong, Chan Hee, to LG Electronics Inc. Active matrix LCD having a non-conductive light shield layer. 5,781,254, Cl. 349-44.000.
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- Kim, Jin Surk, to Samsung Electronics Co., Ltd. Garbage decomposing apparatus with water removal and forced-air heating systems. 5,779,165, Cl. 241-33.000.
- Kim, Jin-Ki: *See—*
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- Kim, Ji-Seop, to Daewoo Electronics Co., Ltd. Apparatus for detachably mounting audio equipment. 5,779,197, Cl. 248-27.100.
- Kim, Jong Tae; and Park, Chan Ik. Method of making an assembly package in an air tight cavity and a product made by the method. 5,778,520, Cl. 29-827.000.
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- Kim, Kyong-Min: *See—*
Korb, Harold W.; Chandrasekhar, Sadasivam; Falster, Robert J.; Holzer, Joseph C.; Kim, Kyong-Min; Kimbel, Steven L.; and Drafall, Larry E., 5,779,791, Cl. 117-15.000.
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- Kim, Peter S.: *See—*
Schumacher, Antonius Nicolass Maria; and Kim, Peter S., 5,780,221, Cl. 435-5.000.
- Kim, Sang-ho, to Kia Motors Corporation. Method of making exhaust valves for use in automobiles. 5,778,534, Cl. 29-888.451.
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- Malcolm, James Eryx; Fraley, Daniel; Morris, Adrian; Roos, David; Swaminathan, Kumar; Kim, Seok Ho; and Marquart, Robert Carroll, 5,781,540, Cl. 370-321.000.
- Kim, Su Hwan; and Bae, Seong Ok, to LG Electronics Inc. High speed variable length code decoder. 5,781,135, Cl. 341-67.000.
- Kim, Suck Won, to University of Minnesota, Regents of the. Use of opioid antagonists to treat impulse-control disorders. 5,780,479, Cl. 514-282.000.
- Kim, Suk-Gu, to Daewoo Electronics Co., Ltd. Indicator device for a vacuum cleaner dust container which has an additional pressure controller. 5,778,486, Cl. 15-339.000.
- Kim, Tae Yong; Krause, Dennis Lyle; and Nguyen, Trac, to Lucent Technologies Inc. Thin film metallization for barium nanotitanate substrates. 5,779,929, Cl. 216-100.000.
- Kim, Yeon Jun: See—
Oh, Yung Hwan; Kim, Yeon Jun; and Bae, Jum Han, 5,781,696, Cl. 395-2.790.
- Kim, Yeong-Wook, to Hyundai Motor Company. Locking apparatus of a folding seat for vehicles. 5,779,308, Cl. 297-336.000.
- Kim, Yo-Joung, to Samsung Electronics Co., Ltd. Contact image sensor whose sensory elements have identical output levels. 5,780,914, Cl. 257-435.000.
- Kim, Young C., to Exxon Production Research Company. Method for attenuating surface wavetrains in seismic data. 5,781,503, Cl. 367-45.000.
- Kimbel, Steven L.: See—
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- Kimberly-Clark Worldwide, Inc.: See—
Allison, John Patrick; and Dolsey, Russell Lynn, 5,780,369, Cl. 442-384.000.
- Beuther, Paul Douglas; Baum, Tammy Lynn; Gambaro, Anthony Mark; Gruber, David Robert; and Lindsay, Jeffrey Dean, 5,779,965, Cl. 264-280.000.
- Hollenberg, David Henry; Horton, James Ellis, Jr.; and Lake, Andrew Michael, 5,779,860, Cl. 162-206.000.
- Jascomb, Jerald T., 5,778,889, Cl. 128-849.000.
- Kimble, Allan W.: See—
Enns, John B.; Kimble, Allan W.; Orr, Susan B.; and Vanderlaan, Douglas G., 5,779,943, Cl. 264-1.700.
- Kimura, Hiroshi: See—
Minowa, Toshimichi; Kimura, Hiroshi; Ishii, Junich; Shiraishi, Takashi; and Ozaki, Naoyuki, 5,779,594, Cl. 477-156.000.
- Kimura, Katsuhiko; Saegusa, Shozo; and Muranishi, Masaru, to Hitachi, Ltd. Semiconductor laser device and optical disk drive. 5,781,576, Cl. 372-45.000.
- Kimura, Kazuo; Murata, Haruhiko; and Aoyama, Yukihiro, to NGK Spark Plug Co., Ltd. Ceramic package lid having metallized layer with varying widths. 5,779,081, Cl. 220-200.000.
- Kimura, Koichi; Ogura, Toshihiko; Aotsu, Hiroaki; Ikegami, Mitsuru; Kuwabara, Tadashi; Enomoto, Hiromichi; and Kyoda, Tadashi, to Hitachi, Ltd. Memory device. 5,781,479, Cl. 365-189.010.
- Kimura, Masakazu: See—
Ikuta, Nobuo; Ueno, Kouji; Shishido, Kouji; Fukutani, Yutaka; Arayama, Youji; Nakayama, Tomohiro; Shiga, Takanori; Kimura, Masakazu; Fujimoto, Hiroyuki; and Fujita, Yoshiyuki, 5,781,627, Cl. 380-3.000.
- Kimura, Shinji: See—
Oniki, Kazunori; Shiraishi, Masahiro; Ozawa, Koji; Yamane, Keisuke; and Kimura, Shinji, 5,781,199, Cl. 345-505.000.
- Kimura, Shuji, to Nissan Motor Co., Ltd. Turbocharged diesel engine. 5,778,674, Cl. 60-600.000.
- Kimura, Teiyuu: See—
Kawazoe, Naoyuki; Ando, Hiroshi; Kimura, Teiyuu; Koike, Satoshi; and Onimaru, Sadahisa, 5,781,317, Cl. 359-12.000.
- Kimura, Yoshitsugu; Onoshi, Motonori; Sakaguchi, Yasuharu; and Watanabe, Keitaro, to Takenaka Corporation. Pipe joint unit. 5,779,283, Cl. 285-305.000.
- Kincade, Robert S.: See—
Rambo, James E.; Bowling, Jerry H.; and Kincade, Robert S., 5,779,190, Cl. 244-54.000.
- Kincaid, Derek Scott: See—
Corley, Larry Steven; Ghosh, Kalyan; Hunter, Joseph Michael; Kincaid, Derek Scott; Meilus, Leo; and Weinmann, Daniel James, 5,780,555, Cl. 525-407.000.
- King, Barry: See—
Bennett, Irwin; King, Barry; Page, Andrew; and Golding, Paul, 5,781,566, Cl. 371-37.070.
- King, Clifford R.: See—
Titterton, Donald R.; Banning, Jeffery H.; Bui, Loc V.; and King, Clifford R., 5,780,528, Cl. 523-161.000.
- King, James L.; and Scarf, Randy, to Kohler Co. Modular radiator for an engine-generator set. 5,778,832, Cl. 123-2.000.
- King Jim Co., Ltd.: See—
Takahara, Eiji; Oikawa, Hideki; Nakajima, Kenichi; Kuriyama, Hiroshi; Watanabe, Kenji; Kameda, Takanobu; Aida, Chieko; and Shimmura, Tomoyuki, 5,779,373, Cl. 400-208.000.
- King, Roderick Frederick Gerardus Joseph, to Marathade, Ltd. Sports drink. 5,780,094, Cl. 426-590.000.
- King Steel Machinery Co., Ltd.: See—
Chen, Fa-Shen, 5,780,078, Cl. 425-574.000.
- King, William F.; Nelson, Richard J.; Wollenberg, Robert H.; and Lockett, Steven G., to Chevron Chemical Company. High overbased alkyloxy aromatic sulfonate-carboxylates as lube oil additives. 5,780,398, Cl. 508-401.000.
- Kingsley, Gordon F.; Headley, Thomas D.; and Halpern, Lise N., to Transfusion Technologies Corporation. Blood collection and separation process. 5,779,660, Cl. 604-6.000.
- Kino, Yoshiki; Shimura, Shoichi; Kai, Takashi; and Kobayashi, Naoki, to Canon Kabushiki Kaisha. Optical device for deflecting light. 5,781,339, Cl. 359-557.000.
- Kinoshita, Akira; and Yoshimura, Yoshikazu, to Matsushita Electric Industrial Co., Ltd. Waveguide and microstrip lines mode transformer and receiving converter comprising a polarization isolating conductor. 5,781,161, Cl. 343-750.000.
- Kinoshita, Junichi, to Kabushiki Kaisha Toshiba. Method of manufacturing a semiconductor laser including two sets of dicing grooves. 5,780,320, Cl. 438-33.000.
- Kinoshita, Masakazu: See—
Okazaki, Koji; Nozawa, Yasuji; Ueyama, Masaki; Kinoshita, Masakazu; and Ozawa, Hidetaka, 5,779,231, Cl. 267-140.140.
- Kinoshita, Togo: See—
Nakashima, Yoshihiko; and Kinoshita, Togo, 5,781,821, Cl. 396-626.000.
- Kinoshita, Yoshio; Awaji, Toshio; and Miura, Takashi, to NSK-Warner Kabushiki Kaisha. One-way clutch mounting structure. 5,779,014, Cl. 192-41.00R.
- Kinugasa, Yukio; Itou, Takaaki; and Suzuki, Naoto, to Toyota Jidosha Kabushiki Kaisha. Method and a device for purifying combustion exhaust gas. 5,778,667, Cl. 60-274.000.
- Kioka, Mamoru: See—
Toida, Tetsuya; Shinozaki, Tetsunori; and Kioka, Mamoru, 5,780,378, Cl. 502-126.000.
- Kira, Jin: See—
Suzuki, Akira; Yabe, Hisao; Iida, Yoshihiro; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; Ishii, Hiroshi; Kira, Jin; and Yokoi, Takeshi, 5,779,625, Cl. 600-121.000.
- Kirchhoff, Volker: See—
Goedicke, Klaus; Kirchhoff, Volker; Metzner, Christoph; and Scheffel, Bert, 5,780,803, Cl. 219-121.430.
- Kirchmeier, Edwin: See—
Lively, Joseph M.; Koppel, Ronald; and Kirchmeier, Edwin, 5,780,973, Cl. 315-80.000.
- Kirin Beer Kabushiki Kaisha: See—
Higa, Tatsuo; Natori, Takenori; Koezuka, Yasuhiko; and Motoki, Kazuhiro, 5,780,441, Cl. 514-25.000.
- Kirksey, Sanford Theodore; Ekanayake, Athula; Pultinas, Edmund Paul, Jr.; Jones, Judith Ann; and Stradling, Richard Fiske, Jr., to Procter & Gamble Company. The Color and shelf stable beverage compositions containing tea extract. 5,780,086, Cl. 010396-330.300.
- Kirsch, Günther: See—
Kleiner, Hans-Jerg; Budzinsky, Winfried; and Kirsch, Günther, 5,780,534, Cl. 524-133.000.
- Kirsch, Jürgen: See—
Berg, Klaus; Fennhoff, Gerhard; Pakull, Ralf; Buysch, Hans-Josef; Wehrle, Bernhard; Eitel, Alfred; Wulff, Claus; and Kirsch, Jürgen, 5,780,690, Cl. 568-727.000.
- Kirschner, Ivan N.; and Berlam, Gary R., to United States of America, Navy. Assembly and method for testing an underwater gun. 5,778,725, Cl. 73-167.000.
- Kirstgen, Reinhard: See—
Bayer, Herbert; Sauter, Hubert; Müller, Ruth; Grammenos, Wassilios; Harreus, Albrecht; Kirstgen, Reinhard; Röhl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, 5,780,506, Cl. 514-538.000.
- Kiryano, John M.; and Hinshaw, Michael A., to Baker, Knapp & Tubbs, Inc. Thick veneering process and product. 5,779,845, Cl. 156-299.000.
- Kish, Fred A., Jr.: See—
Krames, Michael R.; and Kish, Fred A., Jr., 5,779,924, Cl. 216-24.000.
- Kishida, Takashi: See—
Suzuki, Yuji; Takano, Hitomichi; Suzumura, Masahiko; Hayasaki, Yoshiki; Kishida, Takashi; and Shirai, Yoshifumi, 5,780,900, Cl. 257-335.000.
- Kishigami, Takaaki: See—
Abe, Katsuaki; Kishigami, Takaaki; Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Yamaki, Yoichi; Tsumura, Toshiyuki; and Katayama, Hiroshi, 5,781,588, Cl. 375-334.000.
- Kishita, Hiroshi: See—
Matsui, Hirohito; Yamanaka, Yasushi; Takano, Yoshiaki; and Kishita, Hiroshi, 5,780,731, Cl. 73-118.100.
- Kissinger, Steven M.: See—
Kissinger, Terrance G.; and Kissinger, Steven M., 5,778,612, Cl. 52-205.000.
- Kissinger, Terrance G.; and Kissinger, Steven M. Partition panel containing data processing or communications equipment. 5,778,612, Cl. 52-205.000.
- Kitaguchi, Tohru; Notsu, Kazuo; Takahashi, Kazushi; Furukawa, Masayoshi; Kambara, Shigeki; Majima, Osamu; and Kuwahara, Soichi, to Daicel Chemical Industries, Ltd. Printing plate materials and method of producing the same. 5,780,200, Cl. 430-270.100.
- Kitahara, Shizuo: See—
Ishikawa, Yoshihide; Hasegawa, Shinsuke; Miyamoto, Michio; Kitahara, Shizuo; Shikatani, Yutaka; and Igarashi, Jinichi, 5,780,399, Cl. 508-452.000.

- Kitamura, Koichiro, to Kitamura Machinery Co., Ltd. Preload control apparatus for bearings. 5,779,369, Cl. 384-517.000.
- Kitamura Machinery Co., Ltd.: See—
Kitamura, Koichiro, 5,779,369, Cl. 384-517.000.
- Kitamura, Masao; and Fujimoto, Hiroyuki, to Kyoji Co., Ltd. Granule gate and granule weighing machine incorporating the same. 5,780,779, Cl. 177-105.000.
- Kitano Engineering Co., Ltd.: See—
Aino, Mikuni; and Inouchi, Masami, 5,779,855, Cl. 156-379.600.
- Kitano, Tomohisa, to NEC Corporation. Wafer boat for vertical diffusion and vapor growth furnace. 5,779,797, Cl. 118-500.000.
- Kitaori, Kazuhiro: See—
Furukawa, Yoshiro; Kitaori, Kazuhiro; and Takenaka, Keishi, 5,780,650, Cl. 549-361.000.
- Kitazawa, Yasuho: See—
Hori, Seiji; Kitazawa, Yasuho; Sasaki, Sumikazu; Kato, Keiichi; Tsukiyama, Naohiro; and Matsui, Kenji, 5,779,176, Cl. 242-379.100.
- Kito, Kazuhisa: See—
Hosaka, Akihiko; Kito, Kazuhisa; and Abe, Kensaku, 5,781,638, Cl. 381-69.000.
- Kito, Satoru; Ito, Masahito; Matuda, Fuminori; Takeshima, Eiki; Tanaka, Yasuji; Fujii, Takahiro; and Izutani, Kenjiro, to Toyota Jidosha Kabushiki Kaisha; and Nishin Steel. Composite material having anti-wear property and process for producing the same. 5,779,872, Cl. 205-149.000.
- Kiyama, Kentaro: See—
Akamatsu, Taku; Yasue, Ryoji; Kiyama, Kentaro; and Hara, Noboru, 5,780,056, Cl. 424-464.000.
- KKH Corp.: See—
Bear, Hillard, 5,779,570, Cl. 473-481.000.
- Klainer, Stanley M.; Coulter, Stephen L.; and Hewin, Geoffrey F., to FCI FiberChem, Inc. Ultrasensitive single-step, solid-state competitive immunoassay sensor with interference modifier and/or gel layer. 5,780,251, Cl. 435-7.930.
- Klang, Jeffrey A.; and Yang, Lau S., to Arco Chemical Technology, L.P. Process for making dicyclopentadiene polyetherester resins. 5,780,558, Cl. 525-445.000.
- Klawuhn, Manfred; Miltenberger, Christof; Müller, Roland; Peter, Andreas; and Schäfer, Gerhard, to Braun Aktiengesellschaft. Beverage brewing apparatus. 5,778,765, Cl. 99-290.000.
- Kleifges, Jürgen; Schierling, Bernhard; and Jeppe, Harald, to Fichtel & Sachs AG. Friction clutch for a motor vehicle. 5,779,017, Cl. 192-52.600.
- Klein, Edward A.: See—
Schimmel, Morry L.; deceased; Bement, Laurence J.; DuBrucq, Glenn F., Jr.; and Klein, Edward A., 5,780,763, Cl. 102-302.000.
- Klein, Enrique J.; Gross, T. Daniel; Hinojara, Tomoaki; and Vetter, James W., to Perclose, Inc. Device and method for the percutaneous suturing of a vascular puncture site. 5,779,719, Cl. 606-144.000.
- Klein, George J.: See—
Koblisch, Josef V.; Coen, Thomas T.; and Klein, George J., 5,779,646, Cl. 600-567.000.
- Klein, J. Peter: See—
Underiner, Gail E.; Porubek, David; Klein, J. Peter; and Woodson, Paul, 5,780,476, Cl. 514-263.000.
- Klein, Manfred P., to Ansimag Inc. Separable, multipartite impeller assembly for centrifugal pumps. 5,779,449, Cl. 416-244.00R.
- Klein, Michel H.: See—
Kandil, Ali; Chong, Pele; and Klein, Michel H., 5,780,606, Cl. 536-18.700.
- Klein, Rita: See—
Rizkalla, Nabil; Klein, Rita; and Milne, Stephen, 5,780,656, Cl. 549-534.000.
- Klein, Scott I.; Molino, Bruce F.; Czekaj, Mark; and Gardner, Charles J., to Rhone-Poulenc Rorer Pharmaceuticals Inc. Antithrombotic azacycloalkylalkanol peptides and pseudopeptides. 5,780,590, Cl. 530-331.000.
- Kleine, Ulrich, to Siemens Aktiengesellschaft. Static latches with one-phase control signal. 5,781,052, Cl. 327-208.000.
- Kleine, Werner; Neukirchen, Axel; and Bongers, Werner, to Hilti Aktiengesellschaft. Percussive blow assisted rotary drill. 5,779,403, Cl. 408-230.000.
- Kleiner, Hans-Jerg; Budzinsky, Winfried; and Kirsch, Günther, to Ticona GmbH. Flameproofed polyester molding composition. 5,780,534, Cl. 524-133.000.
- Klem, John F.: See—
Fritz, Ian J.; Klem, John F.; and Hafich, Michael J., 5,780,867, Cl. 257-13.000.
- Klemm, Eberhard: See—
Patzelt, Helmut; Klemm, Eberhard; Wessels, Norbert; and Schnabel, Alfred, 5,778,732, Cl. 74-512.000.
- Kleve, Robert E. Keyboard. 5,781,127, Cl. 341-22.000.
- Klevstad, Sven. Support device for potted plants and the like. 5,778,597, Cl. 47-47.000.
- Kleynhans, Herman J.: See—
Woodford, Geoffrey Reason; Aitken, Larry James; Dessels, Neville Martin; Manson, Brent Aubrey; Stoop, Casparus Johannes; Kleynhans, Herman J.; and Coetzee, Etienne Eugene, 5,779,052, Cl. 206-521.000.
- Klier, Manfred; Traupe, Bernd; Wolf, Florian; and Roeckl, Manfred, to Beiersdorf AG. Deodorising combination of agents based on alpha-omega alkane dicarboxylic acids and fatty acid partial glycerides. 5,780,019, Cl. 424-65.000.
- Klimek, Daniel Edward: See—
Kotidis, Petros Amestis; Cunningham, James Frederick; Gozewski, Paul Fred; Borsody, Charles; Klimek, Daniel Edward; and Woodroffe, Jaime A., 5,781,304, Cl. 356-432.00T.
- Klimpert, Randall Jon: See—
Gelford, Lisa; Levin, Sandra A.; Klimpert, Randall Jon; and Herbstler, Horst Dieter, 5,779,552, Cl. 472-67.000.
- Klingel, Hans; and Erlenmaier, Werner, to Trumpf GmbH & Co. Tooling machine for reshaping workpieces. 5,778,721, Cl. 72-335.000.
- Klingert, Jack: See—
Fishbine, Glenn M.; and Klingert, Jack, 5,781,647, Cl. 382-1.000.
- Klinkenberg, Klaus, to U.S. Philips Corporation. Lamp heated iron with temperature control means. 5,780,812, Cl. 219-251.000.
- Klinkhart, Herman O.: See—
Klinkhart, Roger Dell; Klinkhart, Herman O.; and Bowman, Kenneth W., 5,778,828, Cl. 119-815.000.
- Klinkhart, Roger Dell; Klinkhart, Herman O.; and Bowman, Kenneth W., to Ejay International Inc. Protective pet collar. 5,778,828, Cl. 119-815.000.
- Klopper, Rand D.: See—
Reedy, Steven W.; Klopper, Rand D.; and Myers, Randal L., 5,778,841, Cl. 123-90.340.
- Klose, Sabina Iris: See—
Chapple, Bryn Lincoln; and Klose, Sabina Iris, 5,778,464, Cl. 4-596.000.
- Kluck, William J.: See—
Kriesel, Marshall S.; Kazemzadeh, Farhad; Kriesel, Matthew B.; Feng, William W.; Barber, Steve C.; and Kluck, William J., 5,779,676, Cl. 604-132.000.
- Klug, Diana Lynn; Minor, Barbara Haviland; Patron, Donna Marie; Chisolm, Tuncen E. C.; and Sievert, Allen Capron, to Du Pont de Nemours, E. I., and Company. Azeotrope (like) compositions with difluoromethoxytetrafluoropropane and pentafluoropropane, and methods of use. 5,779,931, Cl. 252-67.000.
- Klug Kanal-, Leitungs- und Umweltsanierungs- G.m.b.H.: See—
Sündermann, Franz, 5,778,937, Cl. 138-97.000.
- Kluge, Reinhold, to Bayerische Motoren Werke Aktiengesellschaft. Device for adjusting the level of a vehicle headlight. 5,779,342, Cl. 362-66.000.
- Kluser, Remo: See—
Beck, Harald; and Kluser, Remo, 5,779,421, Cl. 411-480.000.
- Kmiec, Eric B.: See—
Holloman, William K.; and Kmiec, Eric B., 5,780,296, Cl. 435-320.100.
- Knapp, Friedrich, to Friedrich Knapp Gesellschaft M.B.H. Strip for joining components. 5,779,380, Cl. 403-331.000.
- Knapp, Michael R.: See—
Parce, J. Wallace; and Knapp, Michael R., 5,779,868, Cl. 204-604.000.
- Knestel, Anton, to Knestel Elektronik GmbH. Method and apparatus for measurement of axle and wheel positions of motor vehicles. 5,781,286, Cl. 356-139.090.
- Knestel Elektronik GmbH: See—
Knestel, Anton, 5,781,286, Cl. 356-139.090.
- Knight, David W., to Keystone Retaining Wall Systems, Inc.. Revetment block. 5,779,391, Cl. 405-20.000.
- Knodel, Bryan D.: See—
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Armitage, Bernard John; Leslie, Bruce William; Miller, Thomas Kerr; and Morley, Christopher, 5,780,482, Cl. 514-300.000.
- Calderwood, David John; Fisher, Adrian John; Jeffery, James Edward; Jones, Colin Gerhart Pryce; and Rafferty, Paul, 5,780,642, Cl. 548-338.100.
- Knorr Bremse Systeme für Nutzfahrzeuge GmbH: See—
Unger, Hans; Hatz, Wolfgang; and Tschewik, Herbert, 5,779,772, Cl. 96-137.000.
- Knowles, Richard: See—
Fawcett, Nigel; and Knowles, Richard, 5,779,842, Cl. 156-250.000.
- Knowlton, Gregory D.; Ludwig, Christopher P.; and Haun, Daniel, to Talley Defense Systems, Inc. Gas generating compositions. 5,780,768, Cl. 149-36.000.
- Knox, Richard: See—
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- Knudsen, Niels, to National Instruments Corporation. System and method for reducing errors in a delta-sigma converter. 5,781,137, Cl. 341-118.000.
- Knudsen, Niels, to National Instruments Corporation. System and method for generating a sigma-delta correction circuit. 5,781,138, Cl. 341-143.000.
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- Knutson, Erik M.: See—
Welch, Daniel P.; Ryan, Thomas D.; and Knutson, Erik M., 5,779,964, Cl. 264-255.000.
- Ko, Christine: See—
Collins, Franklin D.; Lin, Leu-Fen; Mismar, Drzislav; and Ko, Christine, 5,780,600, Cl. 530-399.000.
- Ko, Hsi-Chia, to Chung Cheng Faucet Co., Ltd. Relay controlling valve structure for twin-tap faucet. 5,778,921, Cl. 137-119.040.
- Ko, Young Hoek; and Nozmu, Hasebe, to Ko, Young Hoek. Electric/magnetic microstrip antenna. 5,781,158, Cl. 343-700.0MS.
- Kobayashi, Akira: See—
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- Kobayashi, Fumiyuki, to NEC Corporation. Portable electronic apparatus having a plurality of infrared ports. 5,781,321, Cl. 359-143.000.
- Kobayashi, Hilario Haruomi: See—
Nakata, Toshihiko; Ninomiya, Takanori; Kobayashi, Hilario Haruomi; and Yoshimura, Kazushi, 5,781,294, Cl. 356-349.000.
- Kobayashi, Kazunori: See—
Matsuzaki, Hiroomi; Karakama, Toshiyuki; and Kobayashi, Kazunori, 5,781,831, Cl. 399-119.000.
- Kobayashi, Kazuya: See—
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- Kobayashi, Makoto: See—
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- Kobayashi, Misako: See—
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- Kobayashi, Naoki: See—
Kino, Yoshiki; Shimura, Shoichi; Kai, Takashi; and Kobayashi, Naoki, 5,781,339, Cl. 359-557.000.
- Kobayashi, Ryuichi, to Canon Kabushiki Kaisha. System for communication between camera and accessory. 5,781,818, Cl. 396-529.000.
- Kobayashi, Shotaro, to NEC Corporation. Semiconductor memory device having block write function. 5,781,493, Cl. 365-230.030.
- Kobayashi, Tazo, to Tanio Koba Co., Ltd. Continuous shooting device and gun or toy gun. 5,780,762, Cl. 89-140.000.
- Kobayashi, Tomomi: See—
Saiki, Norihito; Imazu, Katsuhiko; Kobayashi, Akira; and Kobayashi, Tomomi, 5,778,722, Cl. 72-347.000.
- Kobe Steel, Ltd.: See—
Hirano, Takayuki; Itoh, Junji; and Kanemaru, Seigo, 5,780,318, Cl. 438-20.000.
- Koblish, Josef V.; Coen, Thomas T.; and Klein, George J., to E.P. Technologies Inc. Deflectable biopsy catheter. 5,779,646, Cl. 600-567.000.
- Koboshi, Shigeharu: See—
Komatsu, Yoshimasa; Koboshi, Shigeharu; and Ishikawa, Masao, 5,780,211, Cl. 430-465.000.
- Kobuki, Shinzo: See—
Nitta, Shoichiro; Izuo, Takashi; Mikame, Kazuhisa; Kobuki, Shinzo; Ito, Yozo; and Asayama, Kazuhiro, 5,779,770, Cl. 96-2.000.
- Koch, Christof: See—
Sarpeshkar, Rahul; Kramer, Jörg; and Koch, Christof, 5,781,648, Cl. 382-107.000.
- Koch, Kayong: See—
Listigovers, Nancy A.; Veregin, Richard P. N.; Yulo, Fernando P.; and Koch, Kayong, 5,780,190, Cl. 430-39.000.
- Koch, Ruben. Flexible replacement section for irrigation and water pipe. 5,778,935, Cl. 138-97.000.
- Koch, Stephanie: See—
Rifqi, Françoise; Koch, Stephanie; and Jousse, Didier, 5,780,371, Cl. 501-67.000.
- Koch, Veronika: See—
Becker, Arne; Sell, Michael; Neuenfeldt, Gerhard; Koch, Veronika; and Schindler, Hubert, 5,779,915, Cl. 210-757.000.
- Kocher, Patrick N.; and Owens, Robin D., to W. R. Grace & Co.-Conn. Lidded package having a tab to facilitate peeling. 5,779,050, Cl. 206-497.000.
- Kocher, Patrick N., to W. R. Grace & Co.-Conn. Method and apparatus for making a peelable film. 5,779,832, Cl. 156-73.100.
- Kodama, Hideyo: See—
Aono, Yasuhisa; Yoshinari, Akira; Kondo, Yasuo; Kaneda, Junya; Kodama, Hideyo; Kato, Takahiko; Hattori, Shigeo; and Arai, Masahiko, 5,779,822, Cl. 148-404.000.
- Kodama, Kengo: See—
Kikuchi, Makoto; and Kodama, Kengo, 5,781,694, Cl. 392-418.000.
- Kodate, Manabu: See—
Koike, Tetsushi; Kodate, Manabu; and Ikezaki, Mitsuru, 5,781,253, Cl. 349-40.000.
- Kodimer, Marianne L., to Canon Information Systems, Inc. Data transfer system. 5,781,192, Cl. 345-340.000.
- Koeda, Takashi: See—
Tachihara, Satoru; and Koeda, Takashi, 5,781,350, Cl. 359-782.000.
- Koenig & Bauer-Albert Aktiengesellschaft: See—
Schäfer, Karl Robert, 5,778,775, Cl. 101-141.000.
- Stiel, Jürgen Alfred, 5,778,787, Cl. 101-415.100.
- Koenig Bauer-Albert Aktiengesellschaft: See—
Ochsner, Rudolf Phillip, 5,779,232, Cl. 270-45.000.
- Koenig, Winfried; and Heiland-Franzen, Christa, to Robert Bosch GmbH. Operator control logging device for an electrical device. 5,781,123, Cl. 340-825.620.
- Koepsel, Scott: See—
Squillaci, Dominic; Koepsel, Scott; Shimkus, John; and Maekawa, Kiyoshi, 5,778,476, Cl. 15-167.100.
- Koezuka, Yasuhiko: See—
Higa, Tatsuo; Natori, Takenori; Koezuka, Yasuhiko; and Motoki, Kazuhiro, 5,780,441, Cl. 514-25.000.
- Koford, James S.: See—
Rostoker, Michael D.; Koford, James S.; Jones, Edwin R.; Boyle, Douglas B.; and Scepanovic, Ranko, 5,781,439, Cl. 364-468.280.
- Koga, Akinori: See—
Ohtomo, Fumio; Nakata, Yuji; Fukuyama, Yoshitaka; Inomata, Asako; Shibuya, Sachio; Koga, Akinori; Ishii, Junji; Ito, Shoko; and Yamamoto, Hironobu, 5,778,657, Cl. 60-39.182.
- Koga, Masayuki: See—
Kihara, Katsuya; and Koga, Masayuki, 5,781,171, Cl. 345-93.000.
- Koga, Takasuke: See—
Matsuoka, Makoto; and Koga, Takasuke, 5,780,963, Cl. 313-440.000.
- Koganeva, Masanobu: See—
Mikumo, Akira; Takahashi, Kenichi; and Koganeva, Masanobu, 5,779,864, Cl. 204-207.000.
- Koganezawa, Shinji; and Mizoshita, Yoshifumi, to Fujitsu Limited. Double-driving head actuator. 5,781,381, Cl. 360-106.000.
- Kogano, Takayoshi: See—
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichiro; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinori; Tubone, Tunekiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
- Kohama, Yoshiaki: See—
Mori, Futoshi; Fukazawa, Kazuhiko; Hirose, Hiroshi; and Kohama, Yoshiaki, 5,780,853, Cl. 250-310.000.
- Kohayakawa, Yoshimi, to Canon Kabushiki Kaisha. Eye refractometer and eye refractive power measuring apparatus for electro-optically measuring the refractive power of the eye. 5,781,275, Cl. 351-211.000.
- Kohler Co.: See—
King, James L.; and Searf, Randy, 5,778,832, Cl. 123-20.000.
- Kohno, Akihiro; and Yamakawa, Tadashi, to Canon Kabushiki Kaisha. Document processing apparatus that determines whether a document has been confirmed by another user. 5,781,915, Cl. 707-511.000.
- Kohr, William J.; Johansson, Chris; Shield, John; and Shrader, Vandy, to Geobiotics, Inc. Method for improving the heap biooxidation rate of refractory sulfide ore particles that are biooxidized using recycled bioleachate solution. 5,779,762, Cl. 75-712.000.
- Koide, Hidenobu; and Yoshino, Toshihiko, to Toshihiko Yoshino; and Fuji Electric Co., Ltd. Optical current transformer. 5,780,845, Cl. 250-227.170.
- Koide, Yuuki: See—
Fukuda, Kazushi; Yoshida, Yasuko; Hoshino, Yutaka; Hashimoto, Naotaka; Asayama, Kyoichiro; Koide, Yuuki; Yoshizumi, Keiichi; Okamoto, Eri; Haga, Satoru; and Ikeda, Shuji, 5,780,328, Cl. 438-201.000.
- Koike, Kazumasa: See—
Arakawa, Michiya; Takemura, Tatsuya; Koike, Kazumasa; and Tanaka, Hideaki, 5,781,081, Cl. 333-185.000.
- Koike, Satoshi: See—
Kawazoe, Naoyuki; Ando, Hiroshi; Kimura, Teiyuu; Koike, Satoshi; and Onimaru, Sadahisa, 5,781,317, Cl. 359-12.000.
- Koike, Shoji: See—
Haruta, Masahiro; Koike, Shoji; Aoki, Makoto; Shiota, Koromo; Yoshihira, Aya; Yamamoto, Tomoya; and Suzuki, Mariko, 5,781,216, Cl. 347-106.000.
- Koike, Tetsushi; Kodate, Manabu; and Ikezaki, Mitsuru, to International Business Machines Corporation. Liquid crystal display having electrostatic discharge protection and method for manufacturing the same. 5,781,253, Cl. 349-40.000.
- Koito Industries Ltd.: See—
Nagai, Tomoyuki; Sunohara, Eizi; and Hidaka, Toshihiko, 5,779,312, Cl. 297-362.130.
- Koito Manufacturing Co., Ltd.: See—
Maeda, Masahiro, 5,779,340, Cl. 362-61.000.
- Koizumi, Yoshimasa: See—
Hiraoka, Hidenori; Horiuchi, Kuniyasu; Yabuki, Yoshikazu; Koizumi, Yoshimasa; and Maruoka, Kiyoto, 5,780,169, Cl. 428-517.000.
- Kojima, Masami: See—
Oosuka, Kazutoyo; Kojima, Masami; and Ikezima, Shozo, 5,778,863, Cl. 123-634.000.
- Kojima, Masayuki: See—
Masuda, Shigeru; and Kojima, Masayuki, 5,779,185, Cl. 242-556.000.
- Kojima, Tetsuro: See—
Mifune, Hiroyuki; Kojima, Tetsuro; and Mitamura, Yasuhiro, 5,780,218, Cl. 430-599.000.
- Kok, Jacobus Johannus: See—

- Vermeulen, Arnoldus Nicolaas; van den Boogaart, Paul; and Kok, Jacobus Johannus, 5,780,289, Cl. 435-240.100.
- Koka, Venkat R.; and Sundaram, Ramesh, to Seagate Technology, Inc. Slider with protective DLC or nonhydroscopic coating on the trailing edge face. 5,781,377, Cl. 360-103.000.
- Kokhanovsky, Sergey: See—
Budaev, Jury Alexeevich; Kazantsev, Viktor Konstantinovich; Shelkovnikov, Jury Petrovich; Grinberg, Igor Samsonovich; Kokhanovsky, Sergey; Skornyakov, Vladimir Ilich; Elagin, Petr Ivanovich; and Ragozin, Leonid Viktorovich, 5,779,875, Cl. 205-392.000.
- Kolb, W. Blake: See—
Teschendorf, Brian P.; Kolb, W. Blake; and Milbourn, Thomas M., 5,781,834, Cl. 399-249.000.
- Kolbenschmidt Aktiengesellschaft: See—
Mielke, Siegfried, 5,778,846, Cl. 123-193.600.
- Kolcraft Enterprises, Inc.: See—
Myers, Peter Jonathan, 5,778,465, Cl. 5-99.100.
- Kollar, Michael: See—
Petrecca, Anthony; Kollar, Michael; and Whitney, Robin, 5,781,894, Cl. 705-14.000.
- Kolli, Sudhakar: See—
Panek, Bruno J.; and Kolli, Sudhakar, 5,779,272, Cl. 280-756.000.
- Kolodner, Paul Robert; and Rousseau, Denis Lawrence, to Lucent Technologies, Inc. High efficiency optical switching and display devices. 5,781,330, Cl. 359-273.000.
- Kolstad, Jeffrey J.: See—
Baniel, Abraham M.; Eyal, Aharon J.; Mizrahi, Joseph; Hazan, Betty; Fisher, Rod R.; Kolstad, Jeffrey J.; and Stewart, Brenda F., 5,780,678, Cl. 562-580.000.
- Kolt, Stanley. Static venting system. 5,779,539, Cl. 454-368.000.
- Komatsu, Hisasi, to Alps Electric Co., Ltd. Resistor substrate containing carbon fibers and having a smooth surface. 5,781,100, Cl. 338-252.000.
- Komatsu Ltd.: See—
Ishizaki, Naoki; and Akashi, Mitsumasa, 5,778,929, Cl. 137-596.000.
- Okawa, Yukio, 5,781,870, Cl. 701-25.000.
- Ondera, Yasuyuki; and Mihara, Kenji, 5,779,618, Cl. 494-5.000.
- Komatsu, Masashi; Nishii, Shinji; and Ueda, Hiroshi, to Sumitomo Chemical Company, Limited. Process for producing dioxiquinoxalines. 5,780,628, Cl. 544-285.000.
- Komatsu, Yoshimasa; Koboshi, Shigeharu; and Ishikawa, Masao, to Konica Corporation. Processing composition in the tablet form for silver halide photographic light-sensitive material. 5,780,211, Cl. 430-465.000.
- Komazawa, Eisuke: See—
Oki, Naohiko; Noguchi, Minoru; Demachi, Atsushi; Sato, Kenji; Komazawa, Eisuke; and Araki, Kazuhiro, 5,780,185, Cl. 429-218.000.
- Komoda, Katsuyuki, to Kyowa Hakko Kogyo Co., Ltd.; and K-TEC Co., Ltd. Agent for maintaining and recovering the function of lead storage battery and electrolyte for lead storage battery using the same. 5,780,183, Cl. 429-198.000.
- Komoda, Mokoyoshi, to NEC Corporation. Mobile telephone device wherein a compressor circuit performs amplitude compression that a less variable gain is given to an audio signal having a lower level range than an audio signal having a higher level range. 5,781,848, Cl. 455-72.000.
- Komorija, Isao: See—
Maki, Hidetaka; Akazaki, Shusuke; Hasegawa, Yusuke; and Komoriya, Isao, 5,781,875, Cl. 701-104.000.
- Komuro, Toshio, to NEC Corporation. Semiconductor device having LDD structure with pocket on drain side. 5,780,902, Cl. 257-344.000.
- Komyoji, Daido; Inoue, Takao; Nishiki, Naomi; and Ikeda, Junji, to Matsushita Electric Industrial Co., Ltd. Film-like heater made of high crystalline graphite film. 5,780,820, Cl. 219-543.000.
- Kon, Masao: See—
Murase, Takao; Usami, Jun; and Kon, Masao, 5,780,710, Cl. 73-1.060.
- Kondo, Katsumi: See—
Ohta, Masuyuki; Yanagawa, Kazuhiko; Kondo, Katsumi; and Ohe, Masahito, 5,781,261, Cl. 349-111.000.
- Kondo, Kazuhiko; and Takeuchi, Minoru, to Sanyo Electric Co., Ltd. Image processing apparatus and mapping method for frame memory. 5,781,242, Cl. 348-441.000.
- Kondo, Masakazu: See—
Aota, Kensaku; Toyoda, Jun; Miki, Yoshihiko; and Kondo, Masakazu, 5,779,982, Cl. 422-100.000.
- Kondo, Michikazu, to Tokin Corporation. Electric field sensor. 5,781,003, Cl. 324-96.000.
- Kondo, Mituo, to Fuji Photo Optical Co., Ltd. Endoscope. 5,779,626, Cl. 600-130.000.
- Kondo, Takashi: See—
Akahane, Koichi; Kondo, Takashi; Nakano, Motonari; Nozaki, Yoshinori; Harada, Koichi; Fujita, Tomoyuki; and Yamaguchi, Minoru, 5,778,810, Cl. 112-470.010.
- Kondo, Tetsujiro; Fujimori, Yasuhiro; Takahashi, Kenji; and Kawaguchi, Kunio, to Sony Corporation. Information signal encoding apparatus, encoding method thereof, information signal decoding method, and information signal record medium thereof. 5,781,238, Cl. 348-405.000.
- Kondo, Tomoyuki: See—
Miyazawa, Kazutoshi; Matsui, Shuichi; Fujita, Atsuko; Kondo, Tomoyuki; Goto, Yasuyuki; Nakagawa, Etsuo; and Sawada, Shinichi, 5,779,936, Cl. 252-299.630.
- Kondo, Yasuo: See—
- Aono, Yasuhisa; Yoshinari, Akira; Kondo, Yasuo; Kaneda, Junya; Kodama, Hideyo; Kato, Takahiko; Hattori, Shigeo; and Arai, Masahiko, 5,779,822, Cl. 148-404.000.
- Kondoh, Reiko: See—
Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; Sahashi, Masashi; and Fuke, Hiromi, 5,780,176, Cl. 428-692.000.
- Kondou, Akira: See—
Shiomi, Kazumitsu; Nakamura, Hideo; Kondou, Akira; and Kawasaki, Michihiro, 5,779,899, Cl. 210-346.000.
- Kong, Jae-Myeong: See—
Cho, Eui-Hwan; Chung, Sun-Gan; Kim, Joong-Ypoung; Lee, Sun-Hwan; Kwon, Ho-Seok; Kim, Byung-Chul; Kong, Jae-Myeong; Lee, Jea-Eung; and Kang, Dong-Wook, 5,780,472, Cl. 514-252.000.
- Kong, Tae-Ho, to SamSung Electronics Co., Ltd. Method of automatically printing out rapid key labels for facsimile machine. 5,781,619, Cl. 379-100.140.
- Kong, Yu Wei. Safety management system for a motor vehicle. 5,780,937, Cl. 307-10.100.
- Konica Corporation: See—
Ito, Mineko, 5,780,215, Cl. 430-531.000.
- Komatsu, Yoshimasa; Koboshi, Shigeharu; and Ishikawa, Masao, 5,780,211, Cl. 430-465.000.
- Saito, Shinichiro; Nakamura, Norio; Shono, Yasuo; Higuchi, Yoshinori; and Ohya, Atsunori, 5,779,337, Cl. 362-31.000.
- König, Martin: See—
Bredt, Hans-Günter; Martin, Manfred; Krautwurst, Bernhard; and König, Martin, 5,779,815, Cl. 134-22.100.
- Konigsfeld, Kris G.: See—
Abramson, Jeffrey M.; and Konigsfeld, Kris G., 5,781,790, Cl. 395-800.230.
- Konishi, Haruo; Hamaguchi, Masanao; and Miyagi, Masanori, to Seiko Instruments Inc. Semiconductor integrated circuit device for obtaining extremely small constant current and timer circuit using constant current circuit. 5,780,904, Cl. 257-369.000.
- Konishi, Masanori; Kubota, Shinji; Ohki, Hisatomo; and Tomita, Kazuyuki, to Seiko Epson Corporation; and Unisia Jecs Corp. On-vehicle data processing and display system responsive to a vehicle mode of operation. 5,781,872, Cl. 701-36.000.
- Konishi, Satoru; Ohta, Kazushige; Kawada, Koji; and Obata, Takashi, to Stanley Electric Co., Ltd. Surface light source apparatus. 5,779,339, Cl. 362-31.000.
- Konno, Masao: See—
Yuasa, Yoshifumi; Konno, Masao; and Sano, Noboru, 5,780,649, Cl. 549-313.000.
- Kono, Katsumi; Nakamura, Shinya; and Honda, Atsushi, to Toyota Jidosha Kabushiki Kaisha. Slip control apparatus for motor vehicle lock-up clutch. 5,779,595, Cl. 477-174.000.
- Konopleff, Oleg Alexandrovich: See—
Zaitzeva, Zinaida Nikolaevna; Konopleff, Oleg Alexandrovich; Laptev, Michael Victorovich; and Vechtomov, Andrey Alexe'evich, 5,781,924, Cl. 711-131.000.
- Konrad Friedrichs KG: See—
Friedrichs, Arno, 5,780,063, Cl. 425-131.100.
- Konse, Hiroaki: See—
Matsui, Sakae; Nakamura, Hiroyuki; Kudo, Shizuo; and Konse, Hiroaki, 5,780,526, Cl. 522-93.000.
- Konstantinov, Valery Grigorjevich: See—
Mulyarchik, Valery Vladimirovich; Drozdov, Vladimir Nikolaevich; Grebenkov, Anatoly Shzoresovich; Shzuravsky, Gennady Ivanovich; Vinogradov, Leonid Michailovich; Konstantinov, Valery Grigorjevich; and Kuharev, Anatoly Vasiljevich, 5,780,518, Cl. 521-45.000.
- Kontinen, Vesa; and Sarvas, Matti, to Finnish National Public Health Institute (KTL). The Method and system for enhanced production of commercially important exoproteins in gram-positive bacteria. 5,780,261, Cl. 435-69.100.
- Koo, Ja-Hoi, to Kia Motors Corporation. Sealing quality tester and its control method for a car. 5,780,723, Cl. 73-40.50A.
- Koons, John P.: See—
Dabral, Sanjay; Greene, Raymond G.; Koons, John P.; Seraphim, Donald P.; and Yost, Boris, 5,781,258, Cl. 349-73.000.
- Kopin Corporation: See—
Gale, Ronald P., 5,781,252, Cl. 349-8.000.
- Jacobsen, Jeffrey; Fan, John C. C.; and Salerno, Jack P., 5,781,164, Cl. 345-87.000.
- Kopolow, Stephen L., to ISP Investments Inc. Water dispersible perfluoro-ether polymer encapsulates. 5,779,944, Cl. 264-4.700.
- Kopp, Albert: See—
Huber, Albert; Kech, Armin; Kopp, Albert; and Spielmann, Rainer, 5,778,518, Cl. 29-736.000.
- Koppel, Ronald: See—
Lively, Joseph M.; Koppel, Ronald; and Kirchmeier, Edwin, 5,780,973, Cl. 315-80.000.
- Korb, Harold W.; Chandrasekhar, Sadasivam; Falster, Robert J.; Holzer, Joseph C.; Kim, Kyong-Min; Kimbel, Steven L.; and Drafall, Larry E., to MEMC Electronic Materials, Inc. Process for controlling thermal history of Czochralski-grown silicon. 5,779,791, Cl. 117-15.000.
- Korea Advanced Institute of Science and Technology: See—
Kang, Myung-seok; Cho, Young-ho; Song, Ci-moo; and Yoon, Sung-kie, 5,780,739, Cl. 73-504.160.

- Lee, Ki Bang; Lee, Byung-leul; Cho, Young-bo; and Song, Ci-moo, 5,780,740, Cl. 73-504.120.
- Lee, Ki Bang; Cho, Young-ho; and Song, Ci-moo, 5,780,948, Cl. 310-81.000.
- Korea Institute of Machinery & Materials: See—Moon, Jung-Gi, 5,779,825, Cl. 148-513.000.
- Korea Institute of Science and Technology: See—Lee, JuYoung; Choi, Sang Sam; and Hahn, Taek-Sang, 5,781,009, Cl. 324-239.000.
- Koreeda, Hiroyuki; Kasai, Yasuhiko; Yamauchi, Tsukasa; Asuma, Hajime; Oeda, Shigeto; Ito, Jun; Tomita, Hiromi; Hasegawa, Tsukasa; Kanazawa, Rituko; Inoue, Yoshiisa; Kumai, Hiroyuki; Hataya, Shigeki; Nakajima, Akira; and Matsuda, Yasumasa, to Hitachi, Ltd. Schedule management support system, 5,781,731, Cl. 395-200.340.
- Kormos, Alex L., to Hughes Electronics. Display optimization for night vision enhancement systems, 5,781,243, Cl. 348-556.000.
- Korn, Rodney A., to Intel Corporation. Method and apparatus for replacing a background portion of an image, 5,781,198, Cl. 345-435.000.
- Kornhaas, Robert: See—Mergenthaler, Rolf-Hermann; Brachert, Jost; Poggenburg, Ruediger; Witsch, Bernard; Polzin, Norbert; Kornhaas, Robert; Gottwick, Ulrich; and Braun, Thomas, 5,779,328, Cl. 303-122.120.
- Kortenbach, Juergen Andrew: See—McBrayer, Michael Sean; and Kortenbach, Juergen Andrew, 5,779,701, Cl. 606-46.000.
- Kosarchuk, Richard H.: See—Kappan, Michael I.; and Kosarchuk, Richard H., 5,779,281, Cl. 285-148.190.
- Koshikawa, Yasuji, to NEC Corporation. Semiconductor memory device, 5,781,499, Cl. 365-233.000.
- Koshimizu, Masaru: See—Imai, Masahiro; Nishimura, Hiroshi; Koshimizu, Masaru; Hosomi, Koichi; Nagai, Kazunobu; Nitta, Isamu; and Inagaki, Yutaka, 5,778,703, Cl. 68-12.020.
- Koski, Raimo: See—Ruokonen, Markku; and Koski, Raimo, 5,779,166, Cl. 241-213.000.
- Kossives, Dean Paul: See—Degani, Yinon; Dudderar, Thomas Dixon; and Kossives, Dean Paul, 5,778,913, Cl. 134-153.000.
- Kostka, Jürgen, to Volkswagen AG. Method for controlling the purification of exhaust gases from an internal combustion engine, 5,778,663, Cl. 60-274.000.
- Kotaki, Yasuo: See—Ujita, Toshihiko; Yamakawa, Koji; Takenouchi, Masanori; Sugama, Sadaaki; Watanabe, Kenjiro; Osada, Torachika; Nakajima, Kazuhiro; Tsutsumi, Takayoshi; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Kei-ichiro; and Sato, Yohei, 5,781,213, Cl. 347-86.000.
- Kotaki, Yoshio; and Katou, Yukio, to Fujitsu Limited. Magnetic tape device and automatic cleaning method for use in the same, 5,781,368, Cl. 360-92.000.
- Kotch, Andrew J., to Kotch, Andrew J. Ornamental egg display stand, 5,779,059, Cl. 211-14.000.
- Kothrade, Stephan: See—Huckestein, Brigitta; Renz, Hans; Kothrade, Stephan; and Häberle, Karl, 5,780,542, Cl. 524-590.000.
- Kotidis, Petros Amestis; Cunningham, James Frederick; Gozewski, Paul Fred; Borsody, Charles; Klimek, Daniel Edward; and Woodroffe, Jaime A., to Textron Systems Corporation. Laser ultrasonics-based material analysis system and method, 5,781,304, Cl. 356-432.00T.
- Kottwitz, Beatrix: See—Breuer, Wolfgang; Bauer, Volker; Poethkow, Joerg; Kottwitz, Beatrix; Jacobs, Jochen; Dolhaine, Hans; Seiter, Wolfgang; Stevermann, Birgit; and Upadek, Horst, 5,780,420, Cl. 510-466.000.
- Koue, Toshiaki, to Fuji Xerox Co., Ltd. Communication device capable of controlling transmission parameters of outputted DTMF signals, 5,781,626, Cl. 379-361.000.
- Kouroku, Moriyuki; Shimanari, Tatsumi; Yorifuji, Takao; Ono, Noriki; and Abe, Yoshiharu, to Casio Computer Co., Ltd.; and Casio Electronics Manufacturing Co., Ltd. Toner collector and image forming unit having toner collector bag, 5,781,841, Cl. 399-360.000.
- Kouzai, Fumio; and Hayashi, Syoichiro, to Mitsubishi Denki Kabushiki Kaisha. Ink sheet and thermal transfer type color printer, 5,781,219, Cl. 347-178.000.
- Kovacs, Attila: See—Guntaka, Ramareddy V.; Weber, Karl Theodore; Kovacs, Attila; and Kandala, Jagannadhachari, 5,780,611, Cl. 536-24.500.
- Kovacs, Paul, to ABB Traction, Inc. Method and apparatus for testing watertightness of a railcar, 5,780,722, Cl. 73-40.000.
- Kowalik, Joseph W.: See—Dietsch, G. Todd; Kowalik, Joseph W.; Gomez, Heraclio R.; and Herbias, Cesar T., 5,781,095, Cl. 337-243.000.
- Kowanz, Bernd, to Burkert Werke GmbH & Co. Valve with piezoelectric lamina and a method of producing a valve, 5,779,218, Cl. 251-129.060.
- Kowdley, Balasubramanian S.: See—Smith, Michael G.; Terhune, James Howard; May, Roy C.; Romano, George A.; and Kowdley, Balasubramanian S., 5,778,545, Cl. 33-345.000.
- Kowshik, Vikram; and Yu, Andy Teng-Feng, to Programmable Microelectronics Corporation. PMOS non-volatile latch for storage of redundancy addresses, 5,781,471, Cl. 365-185.070.
- Koyama, Kuniaki, to NEC Corporation. Method of fabricating a memory cell array area and a peripheral circuit area, 5,780,310, Cl. 437-52.000.
- Koyama, Susumu, to Fujitsu Limited. System for processing activation request of port by counting number of busy response for activation request and response of busy end association with another port, 5,781,800, Cl. 395-860.000.
- Koyama, Takeshi: See—Mori, Kenji; and Koyama, Takeshi, 5,780,663, Cl. 558-275.000.
- Krabbenhoft, Herman Otto: See—Webb, Jimmy Lynn; Krabbenhoft, Herman Otto; and Gascoyne, David Gilles, 5,779,810, Cl. 134-3.000.
- Krafeik, Robert J., to Duell Corporation. Low cost inverter with both discrete and integrated power switches, 5,780,975, Cl. 315-169.300.
- Krafeik, Robert J.: See—Cass, Michael W.; Eckersley, Rodney T.; Krafeik, Robert J.; Paciorek, Walter J.; and Fechter, Ramona R., 5,780,965, Cl. 313-506.000.
- Krafka, Jerry Lee: See—Richardson, Craig Allen; Walters, James C.; Krafka, Jerry Lee; and Goodman, Daniel J., 5,778,727, Cl. 74-60.000.
- Kraft Foods, Inc.: See—Agbo, Francis; Mori, Kazaburo; Goto, Tetsuya; Cale, Kenneth W.; Stubblefield, Twyla L.; and Dal Monte, Anna C., 5,780,092, Cl. 426-569.000.
- Krakauer, David Benjamin, to Digital Equipment Corporation. ESD protection clamp for mixed voltage I/O stages using NMOS transistors, 5,780,897, Cl. 257-368.000.
- Krakirian, Shahe H., to Adaptec, Inc. System for storing initiator, queue tag and logical block information, disconnecting from target if command is not auto transfer, reconnecting and performing data transfer, 5,781,803, Cl. 395-894.000.
- Krambeck, Frederick Carl: See—Keller, Melvin William; Diebold, David Henry; Schmid, Steven Lawrence; Wellman, Stanley Paul; Krambeck, Frederick Carl; and Bebernes, Thomas Daryl, 5,778,644, Cl. 56-11.200.
- Kramer, Jörg: See—Sarpeshkar, Rahul; Kramer, Jörg; and Koch, Christof, 5,781,648, Cl. 382-107.000.
- Kramer, Michael: See—Simon, Markus M.; Schaible, Ulrich E.; Eichmann, Klaus; Kramer, Michael; and Reinhard, Wallich, 5,780,030, Cl. 424-150.100.
- Krames, Michael R.; and Kish, Fred A., Jr., to Hewlett-Packard Company. Ordered interface texturing for a light emitting device, 5,779,924, Cl. 216-24.000.
- Krasner, Norman F., to SnapTrack, Inc. GPS receiver and method for processing GPS signals, 5,781,156, Cl. 342-357.000.
- Krateia S.r.l.: See—Ugge, Giuseppe; and Luzzio, Carmelo, 5,781,850, Cl. 455-149.000.
- Kraus, George A.; Carpenter, Susan L.; and Petrich, Jacob W., to Iowa State University Research Foundation. Photoactivated antiviral and antitumor compositions, 5,780,287, Cl. 435-236.000.
- Kraus, Helmut; and Fiege, Helmut, to Bayer Aktiengesellschaft. Process for the preparation of 5-hydroxymethylthiazole, 5,780,638, Cl. 548-203.000.
- Kraus, Stephen Anthony: See—Buck, Michael Eugene; Kraus, Stephen Anthony; and Shahood, Thomas William, 5,779,560, Cl. 473-342.000.
- Krause, Dennis Lyle: See—Kim, Tae Yong; Krause, Dennis Lyle; and Nguyen, Trac, 5,779,929, Cl. 216-100.000.
- Krause, Hans-Peter; Maier, Thomas; Schoeni, Jean-Paul; and Waltersdorfer, Anna, to Hoechst Schering AgrEvo GmbH. Microencapsulated plant protection agents comprising dibenzyltoluene as solvent, a process for their preparation, and their use, 5,780,389, Cl. 504-116.000.
- Krautwurst, Bernhard: See—Bredt, Hans-Günter; Martin, Manfred; Krautwurst, Bernhard; and König, Martin, 5,779,815, Cl. 134-22.100.
- Krebs, Andreas: See—Krüger, Bernd-Wieland; Fischer, Reiner; Bertram, Heinz-Jürgen; Bretschneider, Thomas; Böhm, Stefan; Krebs, Andreas; Schenke, Thomas; Santel, Hans-Joachim; Lürssen, Klaus; Schmidt, Robert R.; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Stendel, Wilhelm, 5,780,394, Cl. 504-281.000.
- Krebs, John D., to Owens-Illinois Closure Inc. Squeeze and turn flip top child resistant package, 5,779,072, Cl. 215-219.000.
- Kreft, Fritz-Hermann: See—Wiemer, Karl-Heinz; Kreft, Fritz-Hermann; Hedwig, Wolfgang; and Winter, Horst, 5,781,437, Cl. 364-423.000.
- Kreitman, Kristee M.: See—Oren, Timothy R.; Kreitman, Kristee M.; and Salomon, Gitta B., 5,781,904, Cl. 707-100.000.
- Kresge, Charles T.: See—Chester, Arthur W.; Fung, Anthony S.; Kresge, Charles T.; and Roth, Wieslaw J., 5,779,882, Cl. 208-120.000.
- Kresge, John Steven: See—Howell, Wayne John; Kresge, John Steven; Stone, David Brian; and Wilcox, James Robert, 5,781,413, Cl. 361-777.000.
- Kretschmer, Jürgen: See—Schmidt, Dieter; and Kretschmer, Jürgen, 5,778,842, Cl. 123-90.390.

- Kretschmar, Gerhard; Meiwes, Johannes; Schudok, Manfred; Hammann, Peter; Lerch, Ulrich; and Grabley, Susanne, to Hoechst Aktiengesellschaft. Process for the biotechnological preparation of L-thienylalanines in enantiomerically pure form from 2-hydroxy-3-thienylacrylic acids and their use, 5,780,640, Cl. 548-315.100.
- Krick, Robert F., to Intel Corporation. Processor having operating modes for an upgradeable multiprocessor computer system, 5,781,774, Cl. 395-651.000.
- Kriesel, Marshall S.; Kazemzadeh, Farhad; Kriesel, Matthew B.; Feng, William W.; Barber, Steve C.; and Kluck, William J., to Science Incorporated. Fluid delivery device with bolus injection site, 5,779,676, Cl. 604-132.000.
- Kriesel, Matthew B.: See—Kriesel, Marshall S.; Kazemzadeh, Farhad; Kriesel, Matthew B.; Feng, William W.; Barber, Steve C.; and Kluck, William J., 5,779,676, Cl. 604-132.000.
- Krietzmen, Mark H.; and Chen, Yu-Hsin. Feline exercise and play target object, 5,778,825, Cl. 119-708.000.
- Krinick, Nancy L.: See—Yewey, Gerald L.; Krinick, Nancy L.; Dunn, Richard L.; Radomsky, Michael L.; Brouwer, Gerbrand; and Tipton, Arthur J., 5,780,044, Cl. 424-426.000.
- Krishna, Arvind: See—Ahmadi, Hamid; Bantz, David; Bauchot, Frederic; Harrison, Colin; Krishna, Arvind; Martinez, Jose Luis; Natarajan, Kadathur; and Wetterwald, Michelle, 5,781,536, Cl. 370-252.000.
- Krishnan, Ramasamy; Yamat, Marilyn C.; Babji, Hugo; Palmatier, Roland T.; and Murray, Robert R., to Sun Chemical; and Heidelberg Harris. Offset lithographic printing process with a water based ink, 5,778,789, Cl. 101-450.100.
- Kristensen, Egon; and Mamsen, Kurt, to Danfoss A/S. Hydraulic axial piston machine, 5,778,757, Cl. 92-12.200.
- Kritzinger, Michiel S.; and Updegraff, Stephen A., to Kritzinger, Michiel S.; and Updegraff, Stephen D. Cornmeal flap/cap elevator, 5,779,711, Cl. 606-107.000.
- Kroft-Brakston International, Inc.: See—Armsstrong, Donn Reynolds; Borys, Stanley S.; and Anderson, Richard Paul, 5,779,761, Cl. 75-370.000.
- Krone, Kenneth P.; and Trites, John F., to Autosplice Systems Inc. Electronic inductive device and method for manufacturing, 5,781,091, Cl. 336-200.000.
- Kroulik, Erwin: See—Christianson, Jan; Walton, Ed; and Kroulik, Erwin, 5,780,770, Cl. 174-15.100.
- Krounbi, Mohamad Towfik; and Lee, James Hsi-Tang, to International Business Machines Corporation. Simplified method of making merged MR head, 5,779,923, Cl. 46-22.000.
- Krucinski, Martin: See—Rossel, Helmut; Krucinski, Martin; Strauss, Rainer; Flesch, Ulrich; and Jelinek, Dieter, 5,779,463, Cl. 418-94.000.
- Krüger, Bernd-Wieland; Fischer, Reiner; Bertram, Heinz-Jürgen; Bretschneider, Thomas; Böhm, Stefan; Krebs, Andreas; Schenke, Thomas; Santel, Hans-Joachim; Lürssen, Klaus; Schmidt, Robert R.; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. 3-hydroxy-4-aryl-5-oxo-pyrazoline derivatives, 5,780,394, Cl. 504-281.000.
- Krüger, Hartmut: See—Bauer, Monika; Krüger, Hartmut; Bräuer, Andreas; and Dannberg, Peter, 5,780,159, Cl. 428-422.800.
- Krulik, Richard J., to United States Luggage, L.P. Back pack with seat, 5,779,112, Cl. 224-155.000.
- Krum, Richard Gene: See—Moir, Michael Bruce; and Krum, Richard Gene, 5,781,374, Cl. 360-99.120.
- Kryukov, Valeri A.: See—Paton, Boris E.; Kryukov, Valeri A.; Gavrich, Sergei S.; Bulatsev, Alexandr R.; Demyanenko, Vladimir V.; Zagrebelski, Alexandr A.; Markov, Alexandr V.; Perepetchenko, Boris I.; Moreinis, Mikhail J.; and Lubomudrov, Igor G., 5,779,002, Cl. 182-222.000.
- Kub, Francis J.; and Justh, Eric W., to Navy. United States as represented by the Secretary of the. Continuous-time adaptive learning circuit, 5,781,063, Cl. 327-552.000.
- Kuberski, Lawrence Francis, to McDonnell Douglas. Rotary cutting apparatus, 5,779,399, Cl. 407-54.000.
- Kubik, Philip A. Hydraulic positioning system with internal counterbalance, 5,778,669, Cl. 60-413.000.
- Kubo, Koji: See—Asai, Takeo; Kudo, Takafumi; Kubo, Koji; Minamihira, Yukihiko; and Hasegawa, Kinji, 5,780,158, Cl. 428-412.000.
- Kubo, Masahiko: See—Murata, Shinichi; Isomoto, Jun; Kubo, Masahiko; and Hirano, Takaaki, 5,778,840, Cl. 123-90.170.
- Kubo, Satoru: See—Tachibana, Yosuke; Wada, Toru; and Kubo, Satoru, 5,778,865, Cl. 123-675.000.
- Kubota, Hidemi: See—Ujita, Toshihiko; Yamakawa, Koji; Takenouchi, Masanori; Sugama, Sadaaki; Watanabe, Kenjiro; Osada, Torachika; Nakajima, Kazuhiro; Tsutsumi, Takayoshi; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Kei-ichiro; and Sato, Yohei, 5,781,213, Cl. 347-86.000.
- Kubota, Hideyuki, to Tomoegawa Paper Co., Ltd. Electrophotographic toner and process for the production thereof, 5,780,197, Cl. 430-137.000.
- Kubota, Shinji: See—Konishi, Masanori; Kubota, Shinji; Ohki, Hisatomo; and Tomita, Kazuyuki, 5,781,872, Cl. 701-36.000.
- Kubota, Tadahiko: See—Idota, Yoshio; Mishima, Masayuki; Miyaki, Yukio; Kubota, Tadahiko; and Miyasaka, Tsutomu, 5,780,181, Cl. 429-194.000.
- Kubota, Yasuro: See—Seki, Koichi; Wada, Takeshi; Muto, Tadashi; Shoji, Kazuyoshi; Kubota, Yasuro; and Kume, Hitoshi, 5,781,476, Cl. 365-185.220.
- Kuchta, Daniel M.: See—Cohen, Mitchell Simmons; Gauvin, Marco; Johnson, Glen Walden; Kuchta, Daniel M.; Lacerte, Andre; Lee, Nicholas Anthony; Ouimet, Sylvain; Spanoudis, Stephen Louis; Tremblay, Stephane; and Tremblay, Jeannine Madelyn, 5,781,682, Cl. 385-89.000.
- Kucik, Michael. Pneumatically operated safety gate, 5,781,120, Cl. 340-425.500.
- Kudo, Hiroaki: See—Kumagai, Kazuya; and Kudo, Hiroaki, 5,780,884, Cl. 257-236.000.
- Kudo, Hiroshi, to Fujitsu Limited. Process for forming fluorinated resin or amorphous carbon layer and devices containing same, 5,780,874, Cl. 257-77.000.
- Kudo, Shizuo: See—Matsui, Sakae; Nakamura, Hiroyuki; Kudo, Shizuo; and Konse, Hiroaki, 5,780,526, Cl. 522-93.000.
- Kudo, Takafumi: See—Asai, Takeo; Kudo, Takafumi; Kubo, Koji; Minamihira, Yukihiko; and Hasegawa, Kinji, 5,780,158, Cl. 428-412.000.
- Kudou, Masanori: See—Couch, Johnny D.; Richmond, Sarah Mason; Velinsky, Ira L.; Guerrero, Steven Kevin; Hunter, Gregory; Gundlach, John; and Kudou, Masanori, 5,781,180, Cl. 345-161.000.
- Kudzuma, David: See—Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Tetsuo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-Chou Vincent, 5,778,529, Cl. 29-852.000.
- Kuelbs, Gregory G.; and Green, Michael J., to Chrome Specialties, Inc. Support bracket system for securing motorcycle backrests, 5,779,303, Cl. 297-215.110.
- Kuffer, Georg: See—Schels, Hans; Mann, Karl-Heinz; Menzler, Horst; Geissler, Leonhard; and Kuffer, Georg, 5,780,306, Cl. 436-179.000.
- Kuharev, Anatoly Vasiljevich: See—Mulyarchik, Valery Vladimirovich; Drozdov, Vladimir Nikolaevich; Grebenkov, Anatoly Shzoresovich; Shzuravsky, Gennady Ivanovich; Vinogradov, Leonid Michailovich; Konstantinov, Valery Grigorjevich; and Kuharev, Anatoly Vasiljevich, 5,780,518, Cl. 521-45.000.
- Kuijk, Karel E.; and Drenten, Ronald R., to U.S. Philips Corporation. Electroluminescent display device with semiconducting polymer, 5,781,169, Cl. 345-82.000.
- Kulagowski, Janusz Jozef: See—Baker, Raymond; Kulagowski, Janusz Jozef; Leeson, Paul David; and Smith, Adrian Leonard, 5,780,475, Cl. 514-255.000.
- Kulak, Jennifer M.: See—McIntosh, J. Michael; Kulak, Jennifer M.; Yoshikami, Doju; and Olivera, Baldomero M., 5,780,433, Cl. 514-13.000.
- Kulbida, Christopher: See—Austin, Paul R.; Kibler, Wendell L.; Kulbida, Christopher; Haehn, Steven E.; and Bunker, Keith G., 5,781,711, Cl. 395-114.000.
- Kulkarni, Mohan Gopalishna: See—Mashelkar, Raghunath Anant; Kulkarni, Mohan Gopalishna; and Karmalkar, Rohini Nitin, 5,780,578, Cl. 528-327.000.
- Kulpe, Jürgen: See—Scheckenbach, Helmut; Schleicher, Andreas; and Kulpe, Jürgen, 5,780,561, Cl. 525-534.000.
- Kumagai, Kazuya; and Kudo, Hiroaki, to Sharp Kabushiki Kaisha. Amplification type solid-state imaging device, 5,780,884, Cl. 257-236.000.
- Kumagai, Masaru; and Hukuhara, Yoshiaki, to Toua Kokyu Tugitevarubu Seizo Co. Ltd; and EF Tekuno Limited Company. Method of fusion welding resin articles difficult to melt, 5,779,843, Cl. 156-274.200.
- Kumai, Eiji; Takagi, Akira; and Fujioka, Satoshi, to Seiko Epson Corporation. Printing apparatus, 5,779,377, Cl. 400-555.000.
- Kumai, Hiroyuki: See—Koreeda, Hiroyuki; Kasai, Yasuhiko; Yamauchi, Tsukasa; Asuma, Hajime; Oeda, Shigeto; Ito, Jun; Tomita, Hiromi; Hasegawa, Tsukasa; Kanazawa, Rituko; Inoue, Yoshiisa; Kumai, Hiroyuki; Hataya, Shigeki; Nakajima, Akira; and Matsuda, Yasumasa, 5,781,731, Cl. 395-200.340.
- Kumar, Raj: See—van den Bosch, Henk; van Wijk, Gysbert M. T.; Kumar, Raj; and Hosteller, Karl Y., 5,780,617, Cl. 536-55.300.
- Kumar, Vijay: See—Banker, Gilbert S.; and Kumar, Vijay, 5,780,618, Cl. 536-56.000.
- Kume, Hitoshi: See—Seki, Koichi; Wada, Takeshi; Muto, Tadashi; Shoji, Kazuyoshi; Kubota, Yasuro; and Kume, Hitoshi, 5,781,476, Cl. 365-185.220.
- Kume, Katsuya; Takenoshita, Itsuroh; Okazaki, Katsuyuki; Kuramoto, Mitsuo; and Suzuki, Kihachi, to Nitto Denko Corporation. Pattern-forming sheet and label comprising same, 5,780,142, Cl. 428-195.000.
- Kummer, Rudolf: See—

- Eller, Karsten; Kummer, Rudolf; and Müller, Ulrich, 5,780,680, Cl. 564-485.000.
Eller, Karsten; Kummer, Rudolf; and Hesse, Michael, 5,780,681, Cl. 564-485.000.
Kunec, Richard J., to Ford Global Technologies, Inc. Multiple stage airflow diffuser apparatus for paint booth, 5,779,534, Cl. 454-52.000.
Kunz, Robert J.; and Bartle, David Alan, to Hewlett-Packard Company. Method and apparatus for preventing print overruns by controlling print engine speed, 5,781,707, Cl. 395-105.000.
Kunz, Ulrich: See—
Hoffmann, Ulrich; Kunz, Ulrich; Bruderreck, Hartmut; Gottlieb, Klaus; Schädlich, Kuno; and Becker, Stefan, 5,780,688, Cl. 568-697.000.
Kunze, Dieter, to Siemens Aktiengesellschaft. Cable with a sheath made of steel, and a method and apparatus for forming the cable, 5,778,652, Cl. 57-235.000.
Kuo, Steve T.: See—
Bach, Mark Alan; Chung, In Ha; Hill, Judith E.; Kuo, Steve T.; Lai, Theresa H.; Lee, Allen G.; and Ueyehara, Richard S., 5,781,739, Cl. 395-200.570.
Kupec, Thomas: See—
Chau, Sonny; Como-Rodriguez, Jan; and Kupec, Thomas, 5,779,647, Cl. 600-564.000.
Küpper, Kurt-Manfred; Perner, Ulrich; Bergmann-Franke, Axel; and Groos, Horst, to Bayer Aktiengesellschaft. Tubular reactor, 5,779,994, Cl. 422-197.000.
Kuramoto, Mitsuo: See—
Kume, Katsuya; Takenoshita, Itsuroh; Okazaki, Katsuyuki; Kuramoto, Mitsuo; and Suzuki, Kihachi, 5,780,142, Cl. 428-195.000.
Kuranishi, Masahisa, to Yamaha Hatsudoki Kabushiki Kaisha. Water vehicle having a "V" shaped multi-cylinder crankcase scavenging engine, 5,778,833, Cl. 123-52.400.
Kuraray Co., Ltd.: See—
Iwata, Shizuo; Katoh, Shinya; Nakayama, Kimio; Ashida, Tetsuya; Yoneda, Hisao; Ishiguro, Michihiro; and Hirai, Koji, 5,780,573, Cl. 528-272.000.
Kurashima, Yoshihiko: See—
Tsuchimoto, Tomonori; Iwata, Katsuichi; and Kurashima, Yoshihiko, 5,778,503, Cl. 29-33.00R.
Kurata, Tomoaki: See—
Shinomiya, Tokihiko; Fujimori, Kohichi; and Kurata, Tomoaki, 5,781,259, Cl. 349-88.000.
Kurihara, Shinji: See—
Mayuzumi, Tatsuya; Kurihara, Shinji; Matsuda, Syuichi; Negishi, Noriaki; and Yoshida, Tadashi, 5,781,191, Cl. 345-336.000.
Kurusu, Toru; Wada, Hidekazu; and Abe, Shin, to Murata Manufacturing Co., Ltd. Manufacturing apparatus for manufacturing TM dual mode dielectric resonator apparatus, 5,780,072, Cl. 425-195.000.
Kuriyama, Hiroshi: See—
Takahara, Eiji; Oikawa, Hideki; Nakajima, Kenichi; Kuriyama, Hiroshi; Watanabe, Kenji; Kameda, Takanobu; Aida, Chieko; and Shimmura, Tomoyuki, 5,779,373, Cl. 400-208.000.
Kuriyama, Hirotada: See—
Maeda, Shigenobu; Inoue, Yasuo; Kuriyama, Hirotada; Maegawa, Shigetou; Kanamoto, Kyoze; and Iwamatsu, Toshiaki, 5,780,888, Cl. 257-302.000.
Kurkowski, James D.: See—
Blomberg, Scott E.; Kurkowski, James D.; and DeRoode, David J., 5,781,024, Cl. 324-763.000.
Kuroda, Akio: See—
Okada, Satoshi; Sawada, Kozo; Kuroda, Akio; Watanabe, Shinya; and Tanaka, Hirokazu, 5,780,633, Cl. 546-112.000.
Kurokawa, Hiroshi: See—
Shimoda, Hiroshi; Okajima, Toshihiro; and Kurokawa, Hiroshi, 5,780,931, Cl. 257-779.000.
Kuromitsu, Yoshirou: See—
Toyoda, Seiji; Kuromitsu, Yoshirou; Sugamura, Kunio; and Nakabayashi, Akira, 5,780,162, Cl. 428-428.000.
Kurono, Yoichi; Tozawa, Shigeki; and Hosoda, Shozo, to Tokyo Electron Limited; and Tokyo Electron Yamanashi Limited. Plasma processing apparatus, 5,779,803, Cl. 118-723.00R.
Kurosawa, Hiroyuki: See—
Inoue, Mitsuru; and Kurosawa, Hiroyuki, 5,781,767, Cl. 395-555.000.
Kurtz, Richard John, to M & D Balloons, Inc. Method and apparatus for folding toy balloons, 5,779,614, Cl. 493-436.000.
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Kussick, Leon, 5,779,470, Cl. 433-6.000.
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Amatsu, Kazumi; Yamada, Yoshiyuki; Mori, Yoshikazu; Mizutaki, Shoi-chi; Kasai, Masaji; and Tomioka, Shinji, 5,780,677, Cl. 562-561.000.
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- Angelopoulos, Marie; Gelorme, Jeffrey Donald; Labadie, Jeffrey William; Lewis, David Andrew; Swanson, Sally Ann; and Labianca, Nancy Carolyn, 5,780,199, Cl. 430-270.000.
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- Lauener, Wilhelm F., to Larex A.G. Side dam for a easter having improved contact with solidifying metal. 5,778,967, Cl. 164-481.000.
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- Lazarus, Lawrence H.; Salvadori, Severo; and Temussi, Piero Andrea, to United States of America, Health and Human Services. Ultraselective opioidmimetic peptides and pharmacological and therapeutic uses thereof. 5,780,589, Cl. 530-331.000.
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- Lee, Allen G.: See—
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- Lee, Bruce A.: See—
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- Lee, Byoung-tack: See—
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- Lee, Byung-leul: See—
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- Braun, Hans-Jörg; and Mohn, Gerhard, 5,778,744, Cl. 82-1.110.
- Masco Corporation: *See—*
- Gartner, Klaus W.; Cutter, Larry I.; and Phillips, Peter J., 5,778,711, Cl. 70-277.000.
- Mashelkar, Raghunath Anant; Kulkarni, Mohan Gopalishna; and Karmalkar, Rohini Nitin, to Council Of Scientific & Industrial Research. Synthetic polymer exhibiting hydrolytic activity, its preparation and use for conversion of esters and amides to the corresponding alcohol and amine, 5,780,578, Cl. 528-327.000.
- Mashiko, Koichiro; Ueda, Kimio; Suzuki, Hiroaki; and Morinaka, Hiroyuki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor integrated circuit, 5,781,062, Cl. 327-544.000.
- Mason, Glenn M.; and Bryan, Edward M., to Indiana University Foundation. Conversion of lead-contaminated soil into ceramic products, 5,779,949, Cl. 264-40.100.
- Mason, Stephen; Percival, Michael J. L.; Merrill, Gary B.; and Doleman, Paul A., to Rolls-Royce plc. Abradable composition, a method of manufacturing an abradable composition and a gas turbine engine having an abradable seal, 5,780,146, Cl. 428-328.000.
- Mason, Thomas S.; Brannan, Jeffrey A.; and Hoover, Timothy R., to Inter-Bold. Receipt form handling system for automated banking machine, 5,779,379, Cl. 400-621.000.
- Mason, William: *See—*
- Felsenstein, Lee; Rich, Liz; and Mason, William, 5,781,913, Cl. 707-501.000.
- Massara, Andrew J., to Lear Corporation. Reclining seat for motor vehicle, 5,779,311, Cl. 297-361.100.
- Massaro, Michael: *See—*
- He, Mengtao; Fair, Michael; and Massaro, Michael, 5,780,405, Cl. 510-141.000.
- Massena, Leonard. Glue gun system with removable cartridges, 5,779,103, Cl. 222-146.500.
- Massey, Richard J.: *See—*
- Leland, Jonathan K.; Shah, Haresh P.; Kenten, John Henry; Goodman, Jack E.; Lowke, George E.; Namba, Yuzaburo; Blackburn, Gary F.; and Massey, Richard J., 5,779,976, Cl. 422-52.000.
- Master, Raj Navinchandra: *See—*

Jackson, Raymond Alan; Lidestri, Kathleen Ann; Linnell, David Clyde; and Master, Raj Navinchandra, 5,779,133, Cl. 228-13.000.
Masterman, Thomas Craig: See—
Tseng, Mingchih M.; Spencer, Jean L.; and Masterman, Thomas Craig, 5,779,471, Cl. 433-80.000.
Mastri, Dominick L.: See—
Alesi, Daniel E.; Geiste, Robert J.; Mastri, Dominick L.; Young, Wayne P.; and Toso, Kenneth E., 5,779,130, Cl. 227-176.100.
Mastro, Noreen Louise: See—
Nehl, Thomas Wolfgang; Mastro, Noreen Louise; Bircann, Raul Armando; and Palmer, Dwight Orman, 5,779,220, Cl. 251-129.150.
Mastrototaro, John J.; Lemos, Richard; Van Antwerp, Nannette M.; and Hallii, Edgardo C., to Minimed Inc. Transdermal introducer assembly, 5,779,665, Cl. 604-51.000.
Masu, Kazuya: See—
Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Masu, Kazuya, 5,779,804, Cl. 118-726.000.
Masuda, Atsushi, to Kabushiki Kaisha Toshiba. Selective diversity system, 5,781,592, Cl. 375-347.000.
Masuda, Kazuya: See—
Wakahara, Shirou; and Masuda, Kazuya, 5,781,218, Cl. 347-141.000.
Masuda, Satoshi, to Kabushiki Kaisha Toshiba. Apparatus for inspecting pattern of photomask and method therefor, 5,781,657, Cl. 382-147.000.
Masuda, Shigeru; and Kojima, Masayuki, to Noritsu Koki Co., Ltd. Film splicing device, 5,779,185, Cl. 242-556.000.
Masuda, Shigeru; and Arimoto, Keigo, to Noritsu Koki Co., Ltd. Method and device for coupling a film strip to a processing leader sheet, 5,781,812, Cl. 396-411.000.
Masuda, Steven R.: See—
Paciorek, Kazimiera J. L.; and Masuda, Steven R., 5,779,774, Cl. 106-14.410.
Masuda, Yutaka; Nakahata, Akimasa; Yukawa, Yoshiyuki; and Yabuta, Motoshi, to Kansai Paint Co., Ltd. Method for formation of coating film, 5,780,113, Cl. 427-405.000.
Masuko, Toshiyuki: See—
Tahara, Yoko; Ohkuma, Yoshinori; Onishi, Masaru; and Masuko, Toshiyuki, 5,781,572, Cl. 372-34.000.
Masuzawa, Isao: See—
Yamamoto, Kanishi; Kawada, Shinichi; Hojo, Takeshi; Okada, Yoshiyuki; and Masuzawa, Isao, 5,781,296, Cl. 356-350.000.
Matake, Kozo: See—
Nagayama, Masami; Usui, Katsuaki; Matake, Kozo; Ojima, Yoshinori; Sato, Genichi; and Hisabe, Yasushi, 5,779,453, Cl. 417-410.400.
Materiaux De Construction International: See—
Champomier, Claude; and Soukatchoff, Pascal, 5,779,957, Cl. 264-151.000.
Matlashevskii, Gregory; and Charest, Hugues. Protein of Leishmania which is expressed at an increased level in the amastigote form, 5,780,591, Cl. 530-350.000.
Matos, Jose R., to Lulirama International, Inc. Expandable and self-venting novelty container for cooking microwavable popcorn, 5,780,824, Cl. 219-727.000.
Matritsch, Inc.: See—
Toukatly, Gary; and Lidgard, Graham P., 5,780,596, Cl. 530-387.900.
Matsen, Frederick A., III. Joint replacement method and apparatus, 5,779,710, Cl. 606-102.000.
Matsubayashi, Kazuhiro: See—
Mori, Shigeki; Shimada, Kazutoshi; Tatsumi, Eisaku; Matsubayashi, Kazuhiro; Sunakawa, Shinichi; Harada, Takashi; Nagasaki, Katsuhiko; and Fukuda, Ryoji, 5,781,662, Cl. 382-189.000.
Matsuda, Akihiro: See—
Arita, Koji; Fujii, Eiji; Shimada, Yasuhiro; Uemoto, Yasuhiro; Nasu, Toru; Matsuda, Akihiro; Nagano, Yoshihisa; Inoue, Atsuo; Matsuura, Taketoshi; and Otsuki, Tatsuo, 5,780,351, Cl. 438-396.000.
Matsuda, Hiromichi; and Oshima, Masayuki, to Seiko Epson Corporation. Gate array driven by source voltages and electronic equipment using the same, 5,780,881, Cl. 257-202.000.
Matsuda, Kouichi: See—
Saeki, Mitsuo; Matsuda, Kouichi; Yano, Hidetoshi; and Ozawa, Hidekiyo, 5,781,000, Cl. 323-234.000.
Matsuda, Naoki; Hirata, Norimasa; and Iyoshi, Shuzo, to Daicel Chemical Industries, Ltd. Gas generant composition, 5,780,767, Cl. 149-2.000.
Matsuda, Syuichi: See—
Mayuzumi, Tatsuya; Kurihara, Shinji; Matsuda, Syuichi; Negishi, Noriaki; and Yoshida, Tadashi, 5,781,191, Cl. 345-336.000.
Matsuda, Yasumasa: See—
Koreeda, Hiroyuki; Kasai, Yasuhiko; Yamauchi, Tsukasa; Asuma, Hajime; Oeda, Shigetoshi; Ito, Jun; Tomita, Hiromi; Hasegawa, Tsukasa; Kanazawa, Ritsuko; Inoue, Yoshiisa; Kumai, Hiroyuki; Hataya, Shigeki; Nakajima, Akira; and Matsuda, Yasumasa, 5,781,731, Cl. 395-200.340.
Matsui, Hirohito; Yamanaka, Yasushi; Takano, Yoshiaki; and Kishita, Hiroshi, to Denso Corporation; and Nippon Soken, Inc. Method for judging the locked state of auxiliaries for automobiles, 5,780,731, Cl. 73-118.100.
Matsui, Keizo: See—
Doyama, Yoshiaki; Ozeki, Masataka; Matsui, Keizo; and Ito, Yoshiteru, 5,778,885, Cl. 128-782.000.
Matsui, Kenji: See—
Hori, Seiji; Kitazawa, Yasuho; Sasaki, Sumikazu; Kato, Keiichi; Tsukiya, Naohiro; and Matsui, Kenji, 5,779,176, Cl. 242-379.100.

Matsui, Sakae; Nakamura, Hiroyuki; Kudo, Shizuo; and Konse, Hiroaki, to Nippon Paint Co., Ltd. Ultraviolet-curing liquid undercoating composition for metallizing FRP, coating method, and automotive reflector, 5,780,526, Cl. 522-93.000.
Matsui, Shuichi: See—
Miyazawa, Kazutoshi; Matsui, Shuichi; Fujita, Atsuko; Kondo, Tomoyuki; Goto, Yasuyuki; Nakagawa, Etsuo; and Sawada, Shinichi, 5,779,936, Cl. 252-299.630.
Matsui, Yumi: See—
Miyago, Toshiharu; Matsui, Yumi; and Nishida, Yoshikazu, 5,781,372, Cl. 360-107.000.
Matsuki, Masaya: See—
Sawada, Hirokazu; Sakaki, Hirokazu; Kakei, Tsutomu; Uesugi, Akio; and Matsuki, Masaya, 5,779,824, Cl. 148-437.000.
Matsumaru, Haruo: See—
Yamamoto, Hideaki; Matsumaru, Haruo; Suzuki, Tetsuaki; Nakatani, Mitsuo; Tsukii, Michio; Sasano, Akira; Oikawa, Saburo; and Oritsuki, Ryoji, 5,781,255, Cl. 349-46.000.
Matsumoto, Kaname, to Fanuc, Ltd. Method and apparatus for AC servo motor control, 5,780,989, Cl. 318-632.000.
Matsumoto, Koichi, to Sumitomo Wiring Systems, Ltd. Method of fabricating a molded part of thermoplastic resin, 5,779,952, Cl. 264-51.000.
Matsumoto, Masanori: See—
Nishiyama, Haruo; Matsumoto, Masanori; Watase, Shigeru; and Horiuchi, Takao, 5,781,822, Cl. 399-1.000.
Matsumoto, Muneaki: See—
Osada, Masahiko; Matsumoto, Muneaki; and Yokota, Minoru, 5,781,168, Cl. 345-76.000.
Matsumoto, Toshinari: See—
Miyamoto, Yoshinori; Sato, Hidemasa; Agawa, Jiro; Yamashita, Keizo; and Matsumoto, Toshinari, 5,779,850, Cl. 156-405.100.
Matsumoto, Tsutomu: See—
Higashii, Takayuki; Fujimoto, Yukari; Matsumoto, Tsutomu; Minai, Masayoshi; Sekine, Chizu; Endo, Kyoko; and Fujisawa, Koichi, 5,779,934, Cl. 252-299.610.
Matsuno, Hideki; Katayama, Kazuhiro; and Ishikawa, Hiromichi, to Hitachi, Ltd. System and method for distributed data processing using different server system specifications, 5,781,743, Cl. 395-200.580.
Matsuno, Kenji: See—
Artavanis-Tsakonas, Spyridon; Fortini, Mark Edward; and Matsuno, Kenji, 5,780,300, Cl. 435-377.000.
Matsuo, Noritaka: See—
Nakamura, Michihisa; and Matsuo, Noritaka, 5,778,857, Cl. 123-425.000.
Matsuo, Ryuichi; Wada, Tomohisa; Hirayama, Kazutoshi; and Ohbayashi, Shigeki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device comprising two kinds of memory cells operating in different access speeds and methods of operating and manufacturing the same, 5,781,468, Cl. 365-149.000.
Matsuo, Takumi. Constant-voltage automatic charging strobe circuit, 5,780,976, Cl. 315-241.00P.
Matsuoka, Hidetoshi, to Cannon Kabushiki Kaisha. Tape loading device, 5,781,366, Cl. 360-85.000.
Matsuoka, Makoto; and Koga, Takasuke, to Victor Company of Japan, Ltd. Deflection yoke, 5,780,963, Cl. 313-440.000.
Matsushita Electric Industrial Co.: See—
Doyama, Yoshiaki; Ozeki, Masataka; Matsui, Keizo; and Ito, Yoshiteru, 5,778,885, Cl. 128-782.000.
Matsushita Electric Industrial Co., Ltd.: See—
Abe, Katsuaki; Kishigami, Takaaki; Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Yamaki, Yoichi; Tsumura, Toshiyuki; and Katayama, Hiroshi, 5,781,588, Cl. 375-334.000.
Arita, Koji; Fujii, Eiji; Shimada, Yasuhiro; Uemoto, Yasuhiro; Nasu, Toru; Matsuda, Akihiro; Nagano, Yoshihisa; Inoue, Atsuo; Matsuura, Taketoshi; and Otsuki, Tatsuo, 5,780,351, Cl. 438-396.000.
Choo, Doukei; Yamane, Shigeki; and Narita, Daiji, 5,781,579, Cl. 372-64.000.
Fukuda, Hideki, 5,781,237, Cl. 348-405.000.
Fukuoka, Kodo; and Kuyama, Kouji, 5,780,947, Cl. 310-80.000.
Furusawa, Yoshinori; Ikemoto, Yoshihiro; Fujimoto, Koji; Nakagawa, Koji; Miyake, Toshifumi; and Shogase, Toshikazu, 5,778,745, Cl. 82-1.110.
Hata, Kanji; and Yoshida, Noriaki, 5,778,525, Cl. 29-836.000.
Imai, Tetsuya; and Sakiyama, Kazuyuki, 5,781,020, Cl. 324-649.000.
Ito, Masami; Nishii, Kanji; Nomura, Tsuyoshi; and Hamano, Seiji, 5,781,269, Cl. 356-375.000.
Juri, Tatsuro; Fujiwara, Yuji; Nishino, Masakazu; Matsuta, Toyohiko; and Awamoto, Shigeru, 5,780,585, Cl. 530-317.000.
Katagiri, Atsushi, 5,781,122, Cl. 340-825.440.
Kinoshita, Akira; and Yoshimura, Yoshikazu, 5,781,161, Cl. 343-750.000.
Komyoji, Daido; Inoue, Takao; Nishiki, Naomi; and Ikeda, Junji, 5,780,820, Cl. 219-543.000.
Machida, Yutaka; and Imura, Koji, 5,781,561, Cl. 371-37.010.
Murakami, Yutaka; Hayashi, Takao; and Kamei, Tomotada, 5,781,351, Cl. 359-808.000.
Nakao, Kenji; Ohnishi, Hiroyuki; Wakita, Naohide; Nagao, Kazuya; and Takada, Naomi, 5,781,266, Cl. 349-172.000.
Nishihara, Syoujiro; and Nishinaka, Teruaki, 5,779,958, Cl. 264-161.000.

Ohtake, Tadashi; Mino, Norihisa; and Ogawa, Kazufumi, 5,780,148, Cl. 428-333.000.
Okamoto, Mibo; Hamada, Shinji; and Ikoma, Munehisa, 5,780,180, Cl. 429-175.000.
Sekiguchi, Mitsuru; and Yamanaka, Michinari, 5,780,908, Cl. 257-383.000.
Takimoto, Akio; Hibino, Junichi; and Ogawa, Hisahito, 5,781,267, Cl. 349-174.000.
Tamaki, Tokuhiko; Sugiyama, Tatsuo; and Nakaoka, Hiroaki, 5,780,898, Cl. 257-331.000.
Tanaka, Shoji; and Iimura, Katsuhiko, 5,781,642, Cl. 381-159.000.
Urano, Fumiyo; Yasuda, Takanori; Katsuyama, Akiko; and Yamashita, Kazuhiro, 5,780,206, Cl. 430-325.000.
Uya, Masaru; and Sayama, Takuya, 5,781,174, Cl. 345-113.000.
Matsushita Electric Works, Inc.: See—
Suzuki, Yuji; Takano, Hitomichi; Suzumura, Masahiko; Hayasaki, Yoshiaki; Kishida, Takashi; and Shirai, Yoshifumi, 5,780,900, Cl. 257-335.000.
Matsushita Electric Works, Ltd.: See—
Sugawa, Akihiko; Miyaguchi, Masamichi; Fukutani, Makoto; and Nishio, Fumihiko, 5,779,316, Cl. 297-423.260.
Matsushita, Yuichi, to Oki Electric Industry Company, Ltd. Booster circuit and method of driving the same, 5,781,426, Cl. 363-60.000.
Matsuta, Toyohiko: See—
Juri, Tatsuro; Fujiwara, Yuji; Nishino, Masakazu; Matsuta, Toyohiko; and Awamoto, Shigeru, 5,781,690, Cl. 386-111.000.
Matsuura, Kazuo: See—
Shimizu, Hiroyuki; Sano, Akira; Matsuura, Kazuo; and Washio, Yuji, 5,780,562, Cl. 526-129.000.
Matsuura, Takahiro: See—
Kawai, Chihoro; Matsuura, Takahiro; and Yamakawa, Akira, 5,780,374, Cl. 501-97.100.
Matsuura, Taketoshi: See—
Arita, Koji; Fujii, Eiji; Shimada, Yasuhiro; Uemoto, Yasuhiro; Nasu, Toru; Matsuda, Akihiro; Nagano, Yoshihisa; Inoue, Atsuo; Matsuura, Taketoshi; and Otsuki, Tatsuo, 5,780,351, Cl. 438-396.000.
Matsuyama, Yukio: See—
Yamamura, Hisae; Matsuyama, Yukio; Ninomiya, Takanori; and Sasazawa, Hideaki, 5,780,866, Cl. 250-559.220.
Matsuzaki, Hideaki: See—
Gunji, Yoshihide; Matsuzaki, Hideaki; and Ohnaka, Hiroshi, 5,781,082, Cl. 333-172.000.
Matsuzaki, Hiromi; Karakama, Toshiyuki; and Kobayashi, Kazunori, to Canon Kabushiki Kaisha. Developing apparatus, process cartridge, image forming apparatus and assembly method for process cartridges, 5,781,831, Cl. 399-119.000.
Matsuzawa, Hitoshi; Suenaga, Yutaka; and Kobayashi, Misako, to Nikon Corporation. Projection optical system and exposure apparatus with the same, 5,781,278, Cl. 355-53.000.
Matsuzawa, Yoshinori: See—
Sato, Tatsuya; Matsuzawa, Yoshinori; Tanbara, Yasuo; and Inoue, Akira, 5,781,806, Cl. 396-55.000.
Mattela, Venkat; and Malladi, Srinivasa, to LSI Logic Corporation. System and method for performing an optimized inverse discrete cosine transform with improved efficiency, 5,781,239, Cl. 348-415.000.
Matthew, Richard Dean, to Harris Corporation. Packet source exclusion method, 5,781,545, Cl. 370-389.000.
Matthews, David J.; Wells, James A.; and Zoller, Mark J., to Genentech, Inc. Method of selection of proteolytic cleavage sites by directed evolution and phagemid display, 5,780,279, Cl. 435-172.300.
Matthews, Michael Gordon. Intramedullary nail, 5,779,705, Cl. 606-67.000.
Mattson, Ronald J.; and Catt, John D., to Bristol-Myers Squibb Company. Melatonergic indanyl piperazines, 5,780,470, Cl. 514-247.000.
Matuda, Fuminori: See—
Kito, Satoru; Ito, Masahito; Matuda, Fuminori; Takeshima, Eiki; Tanaka, Yasuji; Fujii, Takahiro; and Izutani, Kenjiro, 5,779,872, Cl. 205-149.000.
Matuura, Shuji: See—
Satomura, Shinji; Nakamura, Kenji; and Matuura, Shuji, 5,780,247, Cl. 435-7.230.
Matzinger, David Parkes; and Daffern, George Michael, to Lifescan, Inc. Method and apparatus for analyte detection having on-strip standard, 5,780,304, Cl. 436-169.000.
Mauger, Anthony: See—
Anlezark, Gillian; Melton, Roger; Sherwood, Roger; Connors, Thomas; Friedlos, Frank; Jarman, Michael; Knox, Richard; Mauger, Anthony; and Springer, Caroline Joy, 5,780,585, Cl. 530-317.000.
Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V.: See—
Simon, Markus M.; Schaible, Ulrich E.; Eichmann, Klaus; Kramer, Michael; and Reinhard, Wallich, 5,780,030, Cl. 424-150.100.
Maxfield Wilson, Nancy; and Larue, Catherine, to Pasteur Sanofi Diagnostics. Immunoassays to detect antiphospholipid antibodies, 5,780,319, Cl. 436-518.000.
Maxim Integrated Products, Inc.: See—
Williams, Scott Lindsey; and McCarroll, Benjamin J., 5,781,036, Cl. 327-2.000.
Maxon-Motor GmbH: See—
Fütterer, Bodo, 5,779,589, Cl. 475-346.000.
Maxtor Corporation: See—
Dittmar, Mark; and Alexander, James, 5,781,699, Cl. 395-13.000.
Wilson, Rosser S.; and Butler, Peter, 5,781,360, Cl. 360-77.080.

May, Michael R.: See—
Rybicki, Matthew A.; May, Michael R.; Pendleton, Matthew A.; Johnson, Terence L.; and Molnar, Peter R., 5,781,728, Cl. 395-200.600.
May, Roy C.: See—
Smith, Michael G.; Terhune, James Howard; May, Roy C.; Romano, George A.; and Kowdley, Balasubramanian S., 5,778,545, Cl. 33-345.000.
Mayberg, Mark: See—
Howard, Matthew A.; Mayberg, Mark; Grady, M. Sean; Ritter, Rogers C.; and Gillies, George T., 5,779,694, Cl. 604-891.100.
Mayenfels, Peter; Wigger, Georg; Bartol, Fritz; Röckath, Ulrike; and Poth, Ulrich, to BASF Lacke + Farben, AG. Nonaqueous paints, 5,780,541, Cl. 524-590.000.
Mayer, Katherine Louise: See—
Lavash, Bruce William; Osborn, Thomas Ward, III; Olsen, Robb Eric; Mayer, Katherine Louise; Hines, Letha Margie; and Kawai, Noriko, 5,779,692, Cl. 604-387.000.
Mayhan, Gregory L.: See—
Read, E. Lawrence; Sensel, Steven D.; Hanson, Gary D.; Schroder, Richard; Traupman, Edward P.; and Mayhan, Gregory L., 5,781,527, Cl. 370-216.000.
Maynor, Kenneth Wayne: See—
Boling, Nancy J.; Bethurum, Gary; Brower, David Campbell; Maynor, Kenneth Wayne; and Smith, Charles Lee, 5,779,496, Cl. 439-377.000.
Mayo, Jonathan W.: See—
Sabnis, Ram W.; Mayo, Jonathan W.; Hays, Edith G.; Brewer, Terry L.; Stroder, Michael D.; Yanagimoto, Akira; Sone, Yasuhisa; Watanabe, Yoshitane; and Ema, Kiyomi, 5,780,201, Cl. 430-270.100.
Mayo, Michael A.: See—
Humbert, Leigh-Ann; Rardon, Daniel E.; Mayo, Michael A.; Barancyk, Steven V.; and O'Dwyer, James B., 5,780,559, Cl. 525-452.000.
Mayuzumi, Tatsuya; Kurihara, Shinji; Matsuda, Syuichi; Negishi, Noriaki; and Yoshida, Tadashi, to Fujitsu Limited. Method and apparatus for reproducing operation guidance information, and method and apparatus for reproducing multi-media information, 5,781,191, Cl. 345-336.000.
Mazorow, Wayne: See—
Skoufis, John; Africk, Cary; Questel, John M.; and Mazorow, Wayne, 5,780,108, Cl. 427-284.000.
McAlpine, George, to Danby of North America. Full flow winding machine, 5,778,936, Cl. 138-97.000.
McAnalley, Bill H.; Carpenter, Robert H.; and McDaniel, Harley R., to Carrington Laboratories, Inc. Uses of aloe products in the treatment of multiple sclerosis, 5,780,453, Cl. 514-54.000.
McAtee, Colin Hugh; Brown, Douglas Clifford; and Davis, Robert Drummond, Sr., to Reilly Industries, Inc. Pyridine base synthesis, 5,780,635, Cl. 546-251.000.
McBrayer, Michael Sean; and Kortenbach, Juergen Andrew, to Symbiosis Corporation. Bipolar endoscopic surgical scissor blades and instrument incorporating the same, 5,779,701, Cl. 606-46.000.
McBride, William: See—
Dean, Richard T.; Buttram, Scott; McBride, William; Lister-James, John; and Civitello, Edgar R., 5,780,007, Cl. 424-1.690.
McCabe, Dennis E.; and Heinzen, Richard J., to PowderJect Vaccines, Inc. Method and apparatus for preparing sample cartridges for particle acceleration device, 5,780,100, Cl. 427-183.000.
McCaffrey, Robert John: See—
Albani, David Joseph; McCaffrey, Robert John; Tardiff, David Wilfred; and Tun, Yun-Long, 5,781,417, Cl. 361-801.000.
McCallum, Dennis L. Braked mechanical joint assembly, 5,779,383, Cl. 403-57.000.
McCarroll, Benjamin J.: See—
Williams, Scott Lindsey; and McCarroll, Benjamin J., 5,781,036, Cl. 327-2.000.
McCarthy, Richard O.: See—
Noringham, John R.; Spirk, John W.; McCarthy, Richard O.; Stanca, Nicholas E.; and Kalman, Jeffery M., 5,778,573, Cl. 38-103.000.
McCarty, Bryan R., to Rostra Precision Controls, Inc. Seat belt retractor assembly having magnetically actuated locking mechanism, 5,779,178, Cl. 242-384.000.
McClean, John William, to Breville Pty. Ltd. In or relating to woks, 5,778,768, Cl. 99-422.000.
McClintic, Raymond: See—
Gauvreau, Gerald, Jr.; and McClintic, Raymond, 5,780,940, Cl. 307-118.000.
McClung, Robert K. Pro pumpkin carver, 5,778,541, Cl. 30-277.400.
McCollum, John L.: See—
Forouhi, Abdul R.; Hawley, Frank W.; McCollum, John L.; and Yen, Yeouchung, 5,780,323, Cl. 438-131.000.
McCombie, Alan Keith. Positive displacement pump or motor utilizing a reciprocal sliding member to operate the suction and discharge ports, 5,779,452, Cl. 417-273.000.
McCook, John Patrick: See—
Dorogi, Peter Ladislaus; and McCook, John Patrick, 5,778,894, Cl. 128-898.000.
McCorkel, Joseph H.; and Urban, Terry J., to Freightliner Corporation. Truck cab ventilation system and method, 5,779,536, Cl. 454-137.000.
McCormack, Joel J.; McNamara, Robert S.; Seiler, Larry D.; and Gianos, Christopher C., to Digital Equipment Corporation. Method for providing improved graphics performance through atypical pixel storage in video memory, 5,781,201, Cl. 345-509.000.

McCormick, John P., to LSI Logic Corporation. Integrated circuit underfill reservoir. 5,780,924, Cl. 257-667,000.
 McCoy, Todd Arden: *See—*
 Freund, Kenneth Stephen; Giles, Andrew James; McCoy, Todd Arden; Sowell, Lyles Howard; Staples, Phillip Osborne; Tucker, Leonard Ray; and Bailey, James Stephen, 5,778,494, Cl. 19-304,000.
 McCuin, J. Peter: *See—*
 Palmieri, Joseph M.; McCuin, J. Peter; and Boucher, George J., 5,780,800, Cl. 218-147,000.
 McCullough, Jason: *See—*
 McHale, John F.; Sisk, James R.; Locklear, Robert H., Jr.; McCullough, Jason; Hall, Clifford L.; and Ham, Ronald E., 5,781,617, Cl. 379-93,140.
 McCullough, Kenneth John: *See—*
 Delehanty, Donald John; Jagannathan, Rangarajan; McCullough, Kenneth John; Miura, Donna Diane; Ouimet, George F., Jr.; Rath, David Lee; Rhoads, Bryan Newton; and Schmidt, Frank John, Jr., 5,780,363, Cl. 438-748,000.
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Pierrat, Christophe, 5,780,187, Cl. 430-5.000.
Prall, Kirk; Fazan, Pierre C.; Ahmad, Aftab; Rhodes, Howard E.; Juengling, Werner; Pan, Pai-Hung; and Lowrey, Tyler, 5,780,920, Cl. 257-536.000.
Rolson, J. Brett, 5,780,188, Cl. 430-30.000.
Shore, Michael A., 5,781,483, Cl. 365-200.000.
Thakur, Randhir P. S., 5,780,364, Cl. 438-775.000.
Thompson, Curtis C., 5,779,794, Cl. 118-213.000.
Walker, Michael A.; and Robinson, Karl M., 5,779,522, Cl. 451-56.000.
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Wu, Jeff Zhiqiang; and Karniewicz, Joseph, 5,780,906, Cl. 257-368.000.
Microsoft Corporation: *See—*
Crick, Andrew P. R.; Glass, Mike; Shea, Thomas J.; and Shah, Shishir, 5,781,797, Cl. 395-830.000.
Dalal, Ketan, 5,781,896, Cl. 707-2.000.
Decuir, Joseph C., 5,781,028, Cl. 362-30.000.
Gorbet, David P. H.; Ho, Rosanna H.; and Qureshi, Imran I., 5,781,190, Cl. 345-335.000.
Marvin, John, 5,781,195, Cl. 345-428.000.
Sposato, Jonathan N., 5,781,228, Cl. 348-13.000.
Waszkiewicz, Edward Paul, 5,781,902, Cl. 707-10.000.
Yee, Bennet; and Benaloh, Josh, 5,781,723, Cl. 395-186.000.
Microtouch Systems, Inc.: *See—*
Logan, James; Carroll, Derek V.; and Call, Charles G., 5,781,909, Cl. 707-200.000.
Microwave Medical Systems, Inc.: *See—*
Carr, Kenneth L., 5,779,635, Cl. 600-407.000.
Middelhaue, Birgit: *See—*
Kiewert, Eva; Menke, Ronald; and Middelhaue, Birgit, 5,780,416, Cl. 510-422.000.
Middelmann, Volker; Meisner, Marc; and Freitag, Jürgen, to Luk Getriebe-Systeme GmbH. Hydrokinetic torque converter with lockup clutch. 5,779,012, Cl. 192-3.300.
Midwest Grain Products: *See—*
Bassi, Sukh; Murphy, Larry; Maningat, Clodualdo C.; and Nie, Li, 5,780,013, Cl. 424-45.000.
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Mierzwa, Ronald A.; Chu, Min; Jenkins, John K.; and Patel, Mahesh G., to Sehering Corporation. Orthosomycins from micromonospora carbonaceae. 5,780,442, Cl. 514-25.000.
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Nevalainen, Helena K. M.; Paloheimo, Marja T.; Miettinen-Oinonen, Aina S. K.; Torkkeli, Tuula K.; Cantrell, Michael; Piddington, Christopher S.; Rambosk, John A.; Turunen, Marja K.; and Fagerström, Richard B., 5,780,292, Cl. 435-256.800.
Mifune, Hiroyuki; Kojima, Tetsuro; and Mitamura, Yasuhiro, to Fuji Photo Film Co., Ltd. Reduction sensitization method of silver halide photographic emulsion and silver halide photographic material containing the reduction sensitized silver halide photographic emulsion. 5,780,218, Cl. 430-599.000.
Mihara, Kenji: *See—*
Onodera, Yasuyuki; and Mihara, Kenji, 5,779,618, Cl. 494-5.000.
Mii, Adam. Temperature compensation method for an output frequency drift of an oscillator. 5,781,073, Cl. 331-44.000.
Miida, Hiroshi; Ohya, Yoshihito; Hayashi, Motoaki; Okamoto, Hisanori; and Uematsu, Masashige, to Kabushiki Kaisha Riken; and Honda Giken Kogyo Kabushiki Kaisha. Solenoid valve. 5,779,219, Cl. 251-129.070.
Mikame, Kazuhisa: *See—*
Nitta, Shoichiro; Izu, Takashi; Mikame, Kazuhisa; Kobuki, Shinzo; Ito, Yozo; and Asayama, Kazuhiro, 5,779,770, Cl. 96-2.000.
Miki, Norio: *See—*
Adachi, Keisuke; Kuwayama, Michihiro; Kamo, Momoki; Yoshida, Masakazu; Yoshida, Tsutomu; and Miki, Norio, 5,779,947, Cl. 264-30.000.
Miki, Yoshihiko: *See—*
Aota, Kensaku; Toyoda, Jun; Miki, Yoshihiko; and Kondo, Masakazu, 5,779,982, Cl. 422-100.000.
Mikkaichi, Masafumi: *See—*
Maeda, Yoshimichi; Aoki, Toshio; Mikkaichi, Masafumi; and Iai, Ken-ichi, 5,778,519, Cl. 29-769.000.
Mikkelsen, Kirk J., to Flourouware, Inc. Wafer carrier. 5,780,127, Cl. 428-35.700.
Mikkonen, Silvo: *See—*
Aalto, Esa; Kyytsönen, Markku; Mannio, Aaron; and Mikkonen, Silvo, 5,779,183, Cl. 242-547.000.

Mikoshiba, Nohuo; Tsubouchi, Kazuo; and Masu, Kazuya, to Canon Kabushiki Kaisha. Gas feeding device for controlled vaporization of an organometallic compound used in deposition film formation. 5,779,804, Cl. 118-726.000.
Mikumo, Akira; Takahashi, Kenichi; and Koganeya, Masanobu, to Sumitomo Electric Industries, Ltd. Apparatus for adjusting sectional area ratio of metal-covered electric wire. 5,779,864, Cl. 204-207.000.
Milano, Arthur J., Jr.; Seitz, Jeffrey E.; and Sostarecz, Zoltan, to Seitz Corporation. Overriding clutch with reverse rotation prevention switch. 5,779,171, Cl. 242-299.000.
Milbourn, Thomas M.: *See—*
Teschendorf, Brian P.; Kolb, W. Blake; and Milbourn, Thomas M., 5,781,834, Cl. 399-249.000.
Yapel, Robert A.; Milbourn, Thomas M.; Bhavé, Apama V.; Wallace, Lawrence B.; Norton, Daniel V.; and Iverson, Hans E., 5,780,109, Cl. 427-294.000.
Milchanoski, Walter; Jonik, Milan; Reis, Kathleen J.; Bechtold, Diane E.; Davis, Linda; Setcavage, Thomas M.; and Davies, Donald M., to Ortho Diagnostic Systems, Inc. Foil sealed cassette for agglutination reactions and liner therefor. 5,780,248, Cl. 435-7.250.
Miles, Dale A. Portable X-ray device. 5,781,610, Cl. 378-168.000.
Milesky, Larry: *See—*
Michaud, Roger P.; and Milesky, Larry, 5,779,143, Cl. 237-8.00R.
Milette, Luc: *See—*
Tremblay, Edmond; Lord, Brenda; Deflandre, Yves; and Milette, Luc, 5,779,503, Cl. 439-676.000.
Milhomme, Didier, to Societe Alsacienne d'Aluminium. Cap for a corked glass bottle. 5,779,073, Cl. 215-232.000.
Millan, Mark: *See—*
Peglion, Jean-Louis; Millan, Mark; Brocco, Maurice; and Audinot, Valérie, 5,780,474, Cl. 514-254.000.
Miller, Chris P.; Collini, Michael D.; and Tran, Bach D., to American Home Products Corporation. 2-phenyl-1-[4-(amino-1-yl-alk-1-ynyl)-benzyl]-1H-indol-5-ols as estrogenic agents. 5,780,497, Cl. 514-414.000.
Miller, Edward Joseph: *See—*
Bakker, John Henry; Miller, Edward Joseph; and Welsh, Scott Duncan, 5,779,186, Cl. 242-609.100.
Miller, Eric A.: *See—*
Elliot, Scott; Miller, Eric A.; and Dunne, Jeremy G., 5,781,147, Cl. 342-54.000.
Miller, Eric R., to Archibald Bros. Fine Beverages, Inc. Flavor-injected blending apparatus. 5,778,761, Cl. 99-275.000.
Miller, Geraldine G.; Peek, Richard M., Jr.; Thompson, Stuart A.; and Blaser, Martin J., to Vanderbilt University. IceA gene and related methods. 5,780,278, Cl. 435-172.200.
Miller, Jay F., to Cordis Corporation. Balloon catheter and inflation method. 5,779,730, Cl. 606-192.000.
Miller, John Jarrett, to Stevens International. Printing press with nip adjustment. 5,778,780, Cl. 101-216.000.
Miller, Mark S.: *See—*
Tribble, E. Dean; Miller, Mark S.; Hardy, Norman; Hibbert, Christopher T.; and Hill, Eric C., 5,781,633, Cl. 380-25.000.
Miller, Merrill D.: *See—*
Pabla, Parmjit S.; and Miller, Merrill D., 5,780,974, Cl. 315-82.000.
Miller, Paul L.; Getty, Heather L.; and Garrison, Millard M., to Alliant Techsystems Inc. High pressure washout of chemical agents. 5,781,868, Cl. 588-200.000.
Miller, Richard Anthony; and George, Scott Ellery, to Eastman Chemical Company. Radiation crosslinkable branched polyester compositions which are water-dispersible and processes. 5,780,151, Cl. 428-355.00R.
Miller, Robert Howard: *See—*
Wehmeyer, Keith Reynolds; Reavis, Jeffrey Philip; Miller, Robert Howard; and Wilkey, Foy Edward, 5,781,247, Cl. 348-569.000.
Miller, Thomas Kerr: *See—*
Armitage, Bernard John; Leslie, Bruce William; Miller, Thomas Kerr; and Morley, Christopher, 5,780,482, Cl. 514-300.000.
Millham, Eric Ernest: *See—*
Bertollet, Allan Robert; Clinton, Kim P.N.; Fuller, Christine Marie; Gould, Scott Whitney; Hartman, Steven Paul; Iadanza, Joseph Andrew; Keyser, Frank Ray; Millham, Eric Ernest; Remy, Timothy Shawn; Worth, Brian A.; Yasar, Gulson; and Zitritsch, Terrance John, 5,781,032, Cl. 326-39.000.
Mills, Nigel G.: *See—*
Schroeder, Karl Siegfried; Mills, Nigel G.; and McMahon, William Howard, 5,779,370, Cl. 400-120.010.
Mills, Richard E.: *See—*
Gillen, James E.; and Mills, Richard E., 5,779,764, Cl. 95-79.000.
Mills, Richard S.; Gandre, Jerry D.; and Sands, Steven L., to Dell USA, L.P. Expansion card stabilizer for a circuit board edge connector. 5,781,414, Cl. 361-786.000.
Mills, Sander G.: *See—*
Dom, Conrad P.; Hale, Jeffrey J.; Maccoss, Malcolm; and Mills, Sander G., 5,780,467, Cl. 514-236.200.
Milne, Stephen: *See—*
Rizkalla, Nabil; Klein, Rita; and Milne, Stephen, 5,780,656, Cl. 549-534.000.
Milroy, William W.; and Hunter, Shane H., to Raytheon Company. Low cost rectangular waveguide rotary joint having low friction spacer system. 5,781,087, Cl. 333-257.000.
Miltenberger, Christof: *See—*

Klawuhn, Manfred; Miltenberger, Christof; Müller, Roland; Peter, Andreas; and Schäfer, Gerhard, 5,778,765, Cl. 99-290.000.
Miltenyi Biotec GmbH: *See—*
Miltenyi, Stefan; Buchholz, Gerard; and Herz, Robert, 5,779,892, Cl. 210-222.000.
Miltenyi, Stefan; Buchholz, Gerard; and Herz, Robert, to Miltenyi Biotec GmbH. Magnetic separator with magnetic compensated release mechanism for separating biological material. 5,779,892, Cl. 210-222.000.
Mimura, Masahiro: *See—*
Abe, Katsuaki; Kishigami, Takaaki; Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Yamaki, Yoichi; Tsumura, Toshiyuki; and Katayama, Hiroshi, 5,781,588, Cl. 375-334.000.
Mimura, Tohru: *See—*
Havlik, Ivan; Kaneko, Yutaro; Mimura, Tohru; and Chihara, Goro, 5,780,452, Cl. 514-54.000.
Min, Tae-Sik, to Daewoo Electronics Co., Ltd. Gas boiler. 5,778,829, Cl. 122-17.000.
Minai, Masayoshi: *See—*
Higashii, Takayuki; Fujimoto, Yukari; Matsumoto, Tsutomu; Minai, Masayoshi; Sekine, Chizu; Endo, Kyoko; and Fujisawa, Koichi, 5,779,934, Cl. 252-299.610.
Minami, Keiji: *See—*
Nishizono, Atsuo; Noguchi, Hideo; Minami, Keiji; Hirata, Shinji; Takao, Hitoshi; Kato, Koji; Hyodo, Tetsuji; and Itaki, Kazuyuki, 5,781,220, Cl. 347-208.000.
Minamihira, Yukihiko: *See—*
Asai, Takeo; Kudo, Takafumi; Kubo, Koji; Minamihira, Yukihiko; and Hasegawa, Kinji, 5,780,158, Cl. 428-412.000.
Minassian, Khajak Jack: *See—*
Jones, William B., Jr.; Hall, Mark L.; Hayrapedian, Vahe; and Minassian, Khajak Jack, 5,779,005, Cl. 184-6.180.
Mine, Junichi: *See—*
Mizukami, Fujio; Maeda, Kazuyuki; Niwa, Shuichi; and Mine, Junichi, 5,780,102, Cl. 427-226.000.
Mine Safety Appliances Company: *See—*
Imblum, Gregory G., 5,780,715, Cl. 73-23.210.
Wise, Layton A.; and Frank, Peter A., 5,781,118, Cl. 340-632.000.
Minebea Co., Ltd.: *See—*
Ujiie, Masahiko; Chino, Toshinori; Tsuchiya, Rikio; and Sugiura, Hiro-toshi, 5,781,352, Cl. 359-824.000.
Minegishi, Hajime: *See—*
Fuji, Bunichiro; Ozawa, Kenichi; Saita, Koji; Saito, Tsunenari; and Minegishi, Hajime, 5,780,962, Cl. 313-402.000.
Minimed Inc.: *See—*
Mastrototaro, John J.; Lemos, Richard; Van Antwerp, Nannette M.; and Halli, Edgardo C., 5,779,665, Cl. 604-51.000.
Minnesota Mining & Manufacturing: *See—*
Smith, Robert G.; Eaton, Joseph H.; Fischer, Edward M.; Visser, Larry R.; Grobelny, Venecia M.; and McVicker, Kevin D., 5,780,126, Cl. 428-34.500.
Minnesota Mining and Manufacturing Company: *See—*
Andraschko, Warren Steve; and Wilson, Bruce B., 5,779,962, Cl. 264-210.100.
Battles, Donald R., 5,780,098, Cl. 427-2.100.
Clough, Robert S.; Senger, Cheryl L.; and Gozum, John E., 5,780,565, Cl. 526-206.000.
Cohen, Mitchell Simmons; Gauvin, Marco; Johnson, Glen Walden; Kuchta, Daniel M.; Lacerte, Andre; Lee, Nicholas Anthony; Ouimet, Sylvain; Spanoudis, Stephen Louis; Tremblay, Stephane; and Trewhella, Jeannine Madelyn, 5,781,682, Cl. 385-89.000.
Dawson, Jay W.; and MacDougall, Trevor W., 5,780,847, Cl. 250-227.170.
Dietz, Timothy M.; Lu, Ying-Yuh; Uy, Rosa; and Young, Chung I., 5,779,632, Cl. 600-391.000.
Edge, Christopher J., 5,781,206, Cl. 347-19.000.
Levens, Dennis L., 5,780,721, Cl. 73-40.000.
McQuinn, Roy L.; and Barkhaus, Joan K., 5,780,045, Cl. 424-434.000.
Takaki, Shunsuke, 5,779,365, Cl. 374-161.000.
Teschendorf, Brian P.; Kolb, W. Blake; and Milbourn, Thomas M., 5,781,834, Cl. 399-249.000.
Vanderpool, Thomas R.; Lenz, Craig K.; Parro, TJ; Threlfall, John D.; and Vanderpool, Brian T., 5,781,773, Cl. 395-611.000.
Wood, William P., 5,779,743, Cl. 51-309.000.
Yapel, Robert A.; Milbourn, Thomas M.; Bhavé, Apama V.; Wallace, Lawrence B.; Norton, Daniel V.; and Iverson, Hans E., 5,780,109, Cl. 427-294.000.
Mino, Mark Edward: *See—*
Barenboim, Michael; Mino, Mark Edward; Sullivan, John Lennon, Jr.; and Watts, Kenneth Wayne, 5,778,527, Cl. 29-845.000.
Mino, Norihisa: *See—*
Ohtake, Tadashi; Mino, Norihisa; and Ogawa, Kazufumi, 5,780,148, Cl. 428-333.000.
Minolta Co., Ltd.: *See—*
Fujiwara, Toshimitsu; Iino, Shuji; Kanazawa, Masaharu; Ojima, Seishi; and Miyamoto, Hidetoshi, 5,780,196, Cl. 430-137.000.
Ito, Hiroyasu; Kato, Tomokazu; and Yoshida, Eiichi, 5,781,842, Cl. 399-382.000.
Kawasaki, Toyotoshi; Ogura, Hiroyuki; and Miyano, Masaaki, 5,779,016, Cl. 192-48.920.
Shimada, Hirokazu; and Oka, Tateki, 5,781,827, Cl. 399-55.000.
Yamada, Hirokazu, 5,781,713, Cl. 395-117.000.

Minor, Barbara Haviland: *See—*
Klug, Diana Lynn; Minor, Barbara Haviland; Patron, Donna Marie; Chisolm, Tuneen E. C.; and Sievert, Allen Capron, 5,779,931, Cl. 252-67.000.

Minor, Raymond B.: *See—*
Hannon, Gregory E.; McGregor, Gordon L.; and Minor, Raymond B., 5,781,342, Cl. 359-599.000.

Minowa, Toshimichi; Kimura, Hiroshi; Ishii, Junich; Shiraishi, Takashi; and Ozaki, Naoyuki, to Hitachi, Ltd. Driving force control system for a vehicle, 5,779,594, Cl. 477-156.000.

Mione, Peter J.: *See—*
Eswara, Amruta R.; Muni, Neal; Schneider, F. Howard; and Mione, Peter J., 5,780,051, Cl. 424-449.000.

Miramón, Eric J., to Invental Laboratory, Inc. Easily-cleaned reusable lid including an evacuating pump, 5,779,082, Cl. 220-212.000.

Miranda, Jorge: *See—*
Payton, James; Canaris, Nicholas; and Miranda, Jorge, 5,779,785, Cl. 106-487.000.

Misaki, Hideo: *See—*
Ueda, Shigeru; Takahashi, Mamoru; Misaki, Hideo; and Ikuta, Shigeru, 5,780,256, Cl. 435-26.000.

Misawa, Toshiyuki; and Oshima, Hiroyuki, to Seiko Epson Corporation. Liquid crystal device, projection type color display device and driving circuit, 5,780,872, Cl. 257-72.000.

Mishima, Masayuki: *See—*
Idota, Yoshio; Mishima, Masayuki; Miyaki, Yukio; Kubota, Tadahiko; and Miyasaka, Tsutomu, 5,780,181, Cl. 429-194.000.

Mishra, Indu B.: *See—*
Russell, Thomas P.; and Mishra, Indu B., 5,780,769, Cl. 149-45.000.

Mishra, Umesh Kumar; DenBaars, Steven P.; and Keller, Stacia, to University of California, The Regents of the. UV assisted gallium nitride growth, 5,780,355, Cl. 438-483.000.

Mishra, Umesh Kumar; and DenBaars, Steven P., to University of California, The Regents of the. Ultra-low phase noise GE MOSFETs, 5,780,922, Cl. 257-616.000.

Misner, Drzislav: *See—*
Collins, Franklin D.; Lin, Leu-Fen; Misner, Drzislav; and Ko, Christine, 5,780,600, Cl. 530-399.000.

Mita Industrial Co., Ltd.: *See—*
Katsukawa, Masato; Urano, Akiyoshi; Sugase, Ayako; Ihara, Mitsuo; Yamazato, Ichiro; and Nakamura, Yuka, 5,780,194, Cl. 430-83.000.

Uriu, Yoshiko; and Tone, Eiichi, 5,781,203, Cl. 347-9.000.

Mitac International Corp.: *See—*
Chang, Juei-Chi, 5,778,970, Cl. 165-80.300.

Mitamura, Yasuhiro: *See—*
Mifune, Hiroyuki; Kojima, Tetsuro; and Mitamura, Yasuhiro, 5,780,218, Cl. 430-599.000.

Mitani, Junichi: *See—*
Ema, Taiji; Itabashi, Kazuo; Ikemasu, Shinichiro; Mitani, Junichi; Yanagita, Itsuo; and Suzuki, Seiichi, 5,780,907, Cl. 257-371.000.

Mitchell, Gerald M.: *See—*
Connors, Kevin P.; Hobart, James L.; Reed, Edward D.; Trost, David; Bossie, Kenneth J.; McCumin, Thomas William; Mitchell, Gerald M.; and Yarborough, J. Michael, 5,781,574, Cl. 372-35.000.

Mitchell, Melvin G.: *See—*
Frederick, Tim J.; Mitchell, Melvin G.; Partin, Lee R.; Wilson, Alan K.; and Neal, Richard D., 5,779,736, Cl. 8-130.000.

Mitel Corporation: *See—*
Ouellet, Luc, 5,778,682, Cl. 62-55.500.

Mitra, Debasis; and Ziedins, Ilze, to Luceni Technologies Inc. Method for sharing network resources by virtual partitioning, 5,781,624, Cl. 379-244.000.

Mitre Corporation, The: *See—*
Parisi, Samuel J.; and Ostroff, Edward D., 5,781,066, Cl. 330-2.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Arimoto, Kazutani, 5,781,495, Cl. 365-230.030.

Fuji, Tsuyoshi, 5,781,595, Cl. 375-357.000.

Fukui, Wataru, 5,778,862, Cl. 123-631.000.

Hashimoto, Akira; Hasegawa, Kazuo; and Sato, Masao, 5,781,364, Cl. 360-78.050.

Imanaka, Yoshifumi; and Ito, Yoshiko, 5,781,136, Cl. 341-107.000.

Kashiwabara, Naokazu, 5,781,759, Cl. 395-500.000.

Kouzai, Fumio; and Hayashi, Syoichiro, 5,781,219, Cl. 347-178.000.

Maeda, Hitoshi; Hirose, Yukinori; and Yokoyama, Yuichi, 5,780,870, Cl. 257-48.000.

Maeda, Shigenobu; Inoue, Yasuo; Kuriyama, Hirotada; Maegawa, Shigeto; Kanamoto, Kyojo; and Iwamatsu, Toshiaki, 5,780,888, Cl. 257-302.000.

Mashiko, Koichiro; Ueda, Kimio; Suzuki, Hiroaki; and Morinaka, Hiroyuki, 5,781,062, Cl. 327-544.000.

Matsuo, Ryuichi; Wada, Tomohisa; Hirayama, Kazutoshi; and Ohbayashi, Shigeki, 5,781,468, Cl. 365-149.000.

Miyago, Toshiharu; Matsui, Yumi; and Nishida, Yoshikazu, 5,781,372, Cl. 360-107.000.

Miyazaki, Yoshio, 5,780,786, Cl. 187-293.000.

Miyashita, Miyo; and Yamamoto, Kazuya, 5,781,061, Cl. 327-543.000.

Nagai, Yutaka; and Shima, Akihiro, 5,781,577, Cl. 372-46.000.

Nakamura, Yoichi; Saito, Takashi; Coldwell, Phil; and Hart, Nigel, 5,781,448, Cl. 364-492.000.

Nishizawa, Yoshifumi; Gamano, Jun; Ando, Hideo; and Funahashi, Akihiro, 5,778,807, Cl. 112-70.000.

Oka, Toru; Ikegami, Kazunori; and Yoda, Kiyoshi, 5,780,856, Cl. 250-367.000.

Shimoda, Hiroshi; Okajima, Toshihiro; and Kurokawa, Hiroshi, 5,780,931, Cl. 257-779.000.

Takagi, Kazuhisa, 5,781,578, Cl. 372-50.000.

Tanaka, Koji; Asakura, Mikio; and Yasuda, Kenichi, 5,781,484, Cl. 365-200.000.

Tsuchiya, Kenichi; Tsubakiji, Tadashi; and Fujiwara, Toru, 5,780,810, Cl. 219-202.000.

Tsuji, Shintaro, 5,780,789, Cl. 187-382.000.

Yamanaka, Kazuya; and Takeuchi, Sumitaka, 5,781,462, Cl. 364-724.160.

Yasuda, Yukio, 5,781,012, Cl. 324-399.000.

Mitsubishi Electric Semiconductor Software Co., Ltd.: *See—*
Kashiwabara, Naokazu, 5,781,759, Cl. 395-500.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Watanabe, Hideaki; and Watanabe, Takayuki, 5,778,638, Cl. 53-432.000.

Mitsubishi Heavy Industries, Ltd.: *See—*
Tomimatsu, Kazutaka; Ueda, Yasutoshi; Kawabata, Osamu; and Kamei, Shunsuke, 5,781,429, Cl. 363-112.000.

Tomita, Yasuoki; and Thomsen, Lars, 5,779,447, Cl. 416-97.00R.

Mitsubishi Jidosha Engineering K.K.: *See—*
Murata, Shinichi; Isomoto, Jun; Kubo, Masahiko; and Hirano, Takaaki, 5,778,840, Cl. 123-90.170.

Mitsubishi Jidosha Kogyo K.K.: *See—*
Murata, Shinichi; Isomoto, Jun; Kubo, Masahiko; and Hirano, Takaaki, 5,778,840, Cl. 123-90.170.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Okada, Kojiro; Togai, Kazuhide; and Ishida, Masaji, 5,778,856, Cl. 123-417.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Endo, Noriko, 5,781,705, Cl. 395-97.000.

Miyamoto, Yoshinori; Sato, Hidemasa; Agawa, Jiro; Yamashita, Keizo; and Matsumoto, Toshinari, 5,779,850, Cl. 156-405.100.

Mitsubishi Materials Corporation: *See—*
Atami, Takashi; Furuya, Hisashi; and Kida, Michio, 5,779,792, Cl. 117-214.000.

Toyota, Seiji; Kuromitsu, Yoshiro; Sugamura, Kunio; and Nakabayashi, Akira, 5,780,162, Cl. 428-428.000.

Mitsubishi Materials Silicon Corporation: *See—*
Atami, Takashi; Furuya, Hisashi; and Kida, Michio, 5,779,792, Cl. 117-214.000.

Mitsubishi Semiconductor America, Inc.: *See—*
Dyson, Paul C.; and Merritt, Danny B., 5,779,428, Cl. 414-536.000.

Mitsubishi, Tsuyoshi: *See—*
Yamashita, Tetsuro; Mitsuhashi, Tsuyoshi; and Yabe, Manabu, 5,779,928, Cl. 216-92.000.

Mitsui Chemicals, Inc.: *See—*
Ajioka, Masanobu; Enomoto, Katashi; Yamaguchi, Akihiro; and Suzuki, Kazuhiko, 5,780,704, Cl. 588-218.000.

Takahashi, Akihiko; Maeda, Sunao; Ono, Yuzo; Ozawa, Masaaki; and Nakamura, Ichisaburo, 5,780,104, Cl. 427-230.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Toida, Tetsuya; Shinozaki, Tetsunori; and Kioka, Mamoru, 5,780,378, Cl. 502-126.000.

Mitsubishi, Masafumi, to NEC Corporation. Bipolar transistor constant voltage source circuit, 5,780,921, Cl. 257-578.000.

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Miura, Koji: *See—*
Yanagisawa, Osamu; Oda, Kenji; Sugimoto, Naoki; Takegawa, Yoshio; Takada, Akira; Osada, Hideyo; Aizawa, Haruo; and Miura, Koji, 5,780,373, Cl. 501-72.000.

Miura, Ryosuke; Taguchi, Kiyoshi; and Ito, Kazuyuki, to Kabushiki Kaisha Toshiba. Apparatus for detecting images of particulates in liquid, 5,780,865, Cl. 250-573.000.

Miura, Takashi: *See—*
Kinoshita, Yoshio; Awaji, Toshio; and Miura, Takashi, 5,779,014, Cl. 192-41.00R.

Sakaguchi, Minzo; Imai, Takashi; Miura, Takashi; and Yamazaki, Tetsuro, 5,780,692, Cl. 568-814.000.

Miura, Tsutomu: *See—*
Hidai, Masatoshi; and Miura, Tsutomu, 5,779,023, Cl. 198-418.100.

Miyadera, Tatsuo; Yoshida, Kiyohide; Saito, Mika; Irite, Naoko; Abe, Akira; and Furuyama, Masataka, to Jiro Hiraishi, Director-General of Agency of Industrial Science and Technology; and Kabushiki Kaisha Riken. Exhaust gas cleaner and method for cleaning exhaust gas, 5,780,002, Cl. 423-239.100.

Miyagawa, Yuji: *See—*
Tobita, Tsunehiro; Seki, Yukihiko; Hattori, Ryuichi; Miyagawa, Yuji; Sakurai, Shigeru; Suzuki, Michiyuki; and Oie, Ichiro, 5,781,434, Cl. 364-184.000.

Miyagi, Masanori: *See—*

Konishi, Haruo; Hamaguchi, Masanao; and Miyagi, Masanori, 5,780,904, Cl. 257-369.000.

Miyagi, Yoshiyuki; Hori, Moena; and Takabe, Shigeru, to Ishikawajima-Harima Heavy Industries, Co., Ltd. Pulley assembly for driven shaft, 5,779,579, Cl. 474-72.000.

Miyago, Toshiharu; Matsui, Yumi; and Nishida, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Axial resonance attenuating apparatus for rotation drum apparatus having flexible rod-shaped linking members, 5,781,372, Cl. 360-107.000.

Miyaguchi, Masamichi: *See—*
Sugawa, Akihito; Miyaguchi, Masamichi; Fukutani, Makoto; and Nishio, Fumihiko, 5,779,316, Cl. 297-423.260.

Miyake, Toshifumi: *See—*
Furusawa, Yoshinori; Ikemoto, Yoshihiro; Fujimoto, Koji; Nakagawa, Koji; Miyake, Toshifumi; and Shogase, Toshikazu, 5,778,745, Cl. 82-1.110.

Miyake, Toshio: *See—*
Mandai, Takahiko; Shibuya, Takashi; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,780,620, Cl. 536-123.100.

Miyake, Wataru: *See—*
Inarida, Satoru; Nakata, Kiyoshi; Yasuda, Kouji; Suzuki, Masato; and Miyake, Wataru, 5,781,423, Cl. 363-41.000.

Miyaki, Yukio: *See—*
Idota, Yoshio; Mishima, Masayuki; Miyaki, Yukio; Kubota, Tadahiko; and Miyasaka, Tsutomu, 5,780,181, Cl. 429-194.000.

Miyako, Michio; Takaoaka, Minoru; and Tanaka, Hiroyuki, to Tsubakimoto Chain Co. Apparatus and method for controlling rotation frequency of infinite variable-speed drive, 5,780,984, Cl. 318-268.000.

Miyamaru, Toshiaki: *See—*
Imamoto, Takashi; Takada, Hirotsugu; Miyamaru, Toshiaki; and Hamaguchi, Akihiro, 5,779,060, Cl. 211-26.000.

Miyamoto, Hidetoshi: *See—*
Fujiwara, Toshimitsu; Iino, Shuji; Kanazawa, Masaharu; Ojima, Seishi; and Miyamoto, Hidetoshi, 5,780,196, Cl. 430-137.000.

Miyamoto, Michio: *See—*
Ishikawa, Yoshihide; Hasegawa, Shinsuke; Miyamoto, Michio; Kitahara, Shinzo; Shikata, Yutaka; and Igarashi, Jinichi, 5,780,399, Cl. 508-452.000.

Miyamoto, Satoshi: *See—*
Shirahata, Seiichiro; Shinomiya, Mitsuo; Miyamoto, Satoshi; and Sobata, Tamotsu, 5,780,122, Cl. 427-601.000.

Miyamoto, Yoshinori; Sato, Hidemasa; Agawa, Jiro; Yamashita, Keizo; and Matsumoto, Toshinari, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for joining together the opposite ends of a belt-shaped member, 5,779,850, Cl. 156-405.100.

Miyazaki, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for use in an elevator, 5,780,786, Cl. 187-293.000.

Miyano, Hitoshi, to Fuji Photo Optical Co., Ltd. Distance measuring infrared projection system, 5,781,281, Cl. 356-40.100.

Miyano, Masaaki: *See—*
Kawasaki, Toyotoshi; Ogura, Hiroyuki; and Miyano, Masaaki, 5,779,016, Cl. 192-48.920.

Miyano, Yasuo: *See—*
Sato, Yukio; Yanuma, Yutaka; Ohzeki, Kazuhiko; Sekine, Ryuta; and Miyano, Yasuo, 5,779,686, Cl. 604-265.000.

Miyasaka, Tsutomu: *See—*
Idota, Yoshio; Mishima, Masayuki; Miyaki, Yukio; Kubota, Tadahiko; and Miyasaka, Tsutomu, 5,780,181, Cl. 429-194.000.

Miyashita, Akira: *See—*
Yamawaki, Takeshi; and Miyashita, Akira, 5,781,222, Cl. 347-236.000.

Miyashita, Miyo; and Yamamoto, Kazuya, to Mitsubishi Denki Kabushiki Kaisha. Current mirror circuit and signal processing circuit having improved resistance to current output terminal voltage variation, 5,781,061, Cl. 327-543.000.

Miyazaki, Keiji: *See—*
Sato, Yasuyuki; Miyazaki, Keiji; Fujii, Yasuki; Azuma, Mitsuhiro; and Chujo, Takafumi, 5,781,528, Cl. 370-218.000.

Miyazawa, Kazutoshi; Matsui, Shuichi; Fujita, Atsuko; Kondo, Tomoyuki; Goto, Yasuyuki; Nakagawa, Etsuo; and Sawada, Shinichi, to Chisso Corporation. Liquid crystalline compound and liquid crystal composition containing the same, 5,779,936, Cl. 252-299.630.

Miyazawa, Kiyoshi: *See—*
Iizuka, Jiro; and Miyazawa, Kiyoshi, 5,779,461, Cl. 418-55.500.

Miyazawa, Yoshinaga, to Casio Computer Co., Ltd. Liquid crystal display device having light shading film, 5,781,260, Cl. 349-111.000.

Mizia, Franco: *See—*
Notari, Marcello; Mizia, Franco; and Rivetti, Franco, 5,780,645, Cl. 548-530.000.

Mizoguchi, Tetsuhiko: *See—*
Tomita, Hiroshi; and Mizoguchi, Tetsuhiko, 5,780,177, Cl. 428-692.000.

Mizoguchi, Tomomichi; Takami, Masayuki; and Okazaki, Kazuhiro, to Nippondenso Co., Ltd. Apparatus and method for diagnosing degradation or malfunction of oxygen sensor, 5,781,878, Cl. 701-109.000.

Mizoshita, Yoshifumi: *See—*
Koganezawa, Shinji; and Mizoshita, Yoshifumi, 5,781,381, Cl. 360-106.000.

Mizrahi, Joseph: *See—*
Baniel, Avraham M.; Eyal, Aharon M.; Mizrahi, Joseph; Hazan, Betty; Fisher, Rod R.; Kolstad, Jeffrey J.; and Stewart, Brenda F., 5,780,678, Cl. 562-580.000.

Mizuhara, Yosuke M.: *See—*

Singh, Amarjit; Ives, R. Lawrence; Schumacher, Richard V.; and Mizuhara, Yosuke M., 5,780,970, Cl. 315-5.380.

Mizukami, Fujio; Maeda, Kazuyuki; Niwa, Shuichi; and Mine, Junichi, to Agency of Industrial Science & Technology; and Nissan Motor Company, Limited. Process for producing alumina with high specific surface area, 5,780,102, Cl. 427-226.000.

Mizusawa Industrial: *See—*
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Mizutaki, Shoichi: *See—*
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Mizutani, Keita; Yoshimatsu, Saori; and Yamakawa, Kinya, to Nippon Paint Co., Ltd. Thermosetting resin composition, 5,780,530, Cl. 523-209.000.

MMZ Solutions Pty. Ltd.: *See—*
Russell, Mark John; Rickhuss, Michael John; and Zielinski, Zygmunt Joseph, 5,780,408, Cl. 510-200.000.

Moberg, Hans: *See—*
Borgström, Leonard; Brehmer, Patrik; Carlsson, Claes-Göran; Franzén, Peter; Inge, Claes; Lagerstedt, Torgny; and Moberg, Hans, 5,779,619, Cl. 494-56.000.

Mobil Oil Corporation: *See—*
Brandes, Ellen Bernice; Liu, Wan-Li; and Loveless, Frederick Charles, 5,780,540, Cl. 524-572.000.

Buchanan, John S.; and Smalley, Christopher G., 5,779,746, Cl. 455-452.000.

Chang, Clarence D.; DiGuseppi, Frank T.; and Santiesteban, Jose G., 5,780,382, Cl. 502-309.000.

Chang, Clarence D.; Hellring, Stuart D.; Marler, David O.; Santiesteban, Jose G.; and Vartuli, James C., 5,780,703, Cl. 585-732.000.

Chester, Arthur W.; Fung, Anthony S.; Kresge, Charles T.; and Roth, Wieslaw J., 5,779,882, Cl. 208-120.000.

Mochizuki, Masahiro, to Nikon Corporation. Color image reading apparatus and method, 5,781,314, Cl. 358-509.000.

Mochizuki, Toshihiro: *See—*
Okada, Kazunori; Mochizuki, Toshihiro; Yamauchi, Kazunari; and Ito, Masahiko, 5,781,356, Cl. 359-872.000.

Modster, Gregory William: *See—*
Desai, Arun K.; Bender, Scott Alan; and Modster, Gregory William, 5,781,703, Cl. 395-54.000.

Moerd, Daniel Frank: *See—*
Beukema, Bruce Leroy; Delp, Gary Scott; Loen, Larry Wayne; Moerd, Daniel Frank; and Trombley, Michael R., 5,781,763, Cl. 395-500.000.

Mohapatra, Sarat K.; Viglienzoni, Alfredo G.; and Onstad, Gregory W., to Imation Corp. Imaging process for imaging materials, 5,780,207, Cl. 430-348.000.

Mohn, Gerhard: *See—*
Braun, Hans-Jörg; and Mohn, Gerhard, 5,778,744, Cl. 82-1.110.

Moir, Frederick Graham, to SDS Pacific PTE, Ltd. Locking a sample tube in a downhole hammer, 5,778,993, Cl. 175-215.000.

Moir, Michael Bruce; and Krum, Richard Gene, to Seagate Technology, Inc. Disc centering device for a disc drive, 5,781,374, Cl. 360-99.120.

Molex Incorporated: *See—*
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Ito, Yoshikazu; and Sueoka, Satoshi, 5,779,494, Cl. 439-326.000.

Yagi, Masanori; Shiga, Masahiro; and Maruyama, Toru, 5,779,505, Cl. 439-736.000.

Molina, Ramon Gallo, to Industrial Pharmaceutica Cantabria S.A.; and Gallo De Llanos S.L. Process of making radiological contrast for gastrointestinal exploration comprising barium sulfate and sucralate, 5,780,011, Cl. 424-9.410.

Molineaux, Christopher J.: *See—*
Garnick, Marc B.; Molineaux, Christopher J.; and Geffer, Malcolm L., 5,780,435, Cl. 514-15.000.

Molino, Bruce F.: *See—*
Klein, Scott I.; Molino, Bruce F.; Czekaj, Mark; and Gardner, Charles J., 5,780,590, Cl. 530-331.000.

Molino, Joseph L. Knee unit for above-knee prosthetic leg, 5,779,735, Cl. 623-44.000.

Moller, Heribert: *See—*
Vogelsang, Klaus; Friedrich, Jurgen; Gebhardt, Hans; and Moller, Heribert, 5,779,008, Cl. 188-296.000.

Möller, Johannes: *See—*
Gieseler, Axel; Lindemann, Klaus; Möller, Johannes; Riedemann, Henrich; Ruhnau, Gerhard; Saba, Manfred; and Weihe, Ulrich, 5,780,732, Cl. 73-121.000.

Molnar, Charles John: *See—*
Chou, Richard Tien-Hua; Ireland, Patrick Stephen; Molnar, Charles John; Lim, Hyun Sung; and Shin, Hyunkook, 5,780,153, Cl. 428-359.000.

Molnar, Peter R.: *See—*
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Molnlycke AB: *See—*
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Löfgren, Kristina; Falck, Ewa Kölbj; and Netsner, Bengt, 5,778,890, Cl. 128-849.000.

Momose, Hisayo: *See—*
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Monroe, Lance A.: See—
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Monserud, Dave: See—
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Moon, Seung-bin, to Samsung Electronics Co., Ltd. Arc sensing method in automated welding, 5,780,808, Cl. 219-124,340.
Moore, Sanders H.; and Sharpe, Brian D., to Olin Corporation. Propellant module assembly, 5,779,269, Cl. 280-741,000.
Moore, Walter A.; Rink, Karl K.; and Beus, Glenn S., to Morton International, Inc. Fluid fueled inflator with flow reversal, 5,779,266, Cl. 280-737,000.
Moraine, Gérard; Capitani, Gilles; Fernandez, André; and Hazard, Yves, to Tiag Industries. Large calibre munition container, 5,779,031, Cl. 206-3,000.
Moran, Joseph P., III, to Jomoco Products Company. Demountable brackets, 5,779,063, Cl. 211-49,100.
Morandi, Ervino; and Gallotti, Angelo, to Dibra S.p.A. Process for the depyrogenation of injectable pharmaceutical solutions, 5,779,905, Cl. 210-651,000.
Morano, James R., to Crompton & Knowles Corporation. Process for recrystallizing sugar and product thereof, 5,779,805, Cl. 127-42,000.
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Paton, Boris E.; Kryukov, Valeri A.; Gavrish, Sergei S.; Bulatsev, Alexandr R.; Demyanenko, Vladimir V.; Zagrebelskiy, Alexandr A.; Markov, Alexandr V.; Perepechenko, Boris I.; Moreinis, Mikhail J.; and Lubomudrov, Igor G., 5,779,002, Cl. 182-222,000.
Moreno, Gil G. Device for exercising the ciliary muscle, 5,781,274, Cl. 351-203,000.
Moreton, David J., to BP Chemicals (Additives) Limited. Ash-free detergents their preparation and use in lubricating oil compositions, 5,780,403, Cl. 508-580,000.
Moretti, Giuseppe; Baitelli, Gian Mario; and Pasini, Giovanni Battista, to FLLI Marzoli & C. S.p.A. Device and method for automatically replacing the feed lap packages and for preparing and joining the relative edges in a combing machine, 5,778,493, Cl. 19-115,000.
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Mori, Kenji; and Koyama, Takeshi, to JGC Corporation. Process for producing carbonic acid diester, 5,780,663, Cl. 558-275,000.
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Hwang, Yeou H.; and Engelsma, Jonathan R., 5,781,857, Cl. 455-412,000.
Kaltenecker, Robert S., 5,781,072, Cl. 330-271,000.
Lim, Cher Eng; Chua, Tiong Kee; Sohi, Satinderjit Singh; and Kwok, Luen Hin, 5,781,621, Cl. 379-142,000.
Nogle, Scott George; Roth, Alan S.; and Ho, Shuang Li, 5,781,480, Cl. 365-189,040.
Park, Heemyong; Huang, Wen-Ling Margaret; Foerstner, Juergen; and Racanelli, Marco, 5,780,352, Cl. 438-404,000.
Quigley, John H., 5,781,388, Cl. 361-56,000.
Rybicki, Mathew A.; May, Michael R.; Pendleton, Matthew A.; Johnson, Terence L.; and Molnar, Peter R., 5,781,728, Cl. 395-200,600.
Schwartz, Daniel B.; and Sundstrom, Ray D., 5,781,129, Cl. 341-51,000.
Segal, Niranjan Nath, 5,781,530, Cl. 370-220,000.
Shieh, Chan-Long; Lee, Hsing-Chung; and Holm, Paige M., 5,780,321, Cl. 438-34,000.
Thompson, Danny L.; and Thompson, Jeanine L., 5,780,848, Cl. 250-231,130.
Wang, Shay-Ping Thomas, 5,781,701, Cl. 395-24,000.
Wilson, Christopher H., 5,781,547, Cl. 370-395,000.
Winter, Marlan L.; Tumin, Kenneth P.; and Lindquist, Steven P., 5,781,760, Cl. 395-500,000.
Mott, Philip J.; Patton, Mark E.; and Ledvina, Timothy J. Chain guide with tapered side rails, 5,779,582, Cl. 474-140,000.
Moulinex S.A.: See—
Nielsen, Henrik, 5,778,764, Cl. 99-285,000.
Moulton, James P.: See—
Scott, Gerald R.; Moulton, James P.; Seyl, V. Craig; Emrich, John L.; and Peterson, Wayne L., 5,778,467, Cl. 5-613,000.
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Berding, Keith R.; Casey, Shawn E.; and Mountain, Charles B., 5,781,380, Cl. 360-104,000.
Mountz, David A.: See—
Decker, Owen H.; Muthiah, Jen; and Mountz, David A., 5,780,560, Cl. 525-533,000.
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Bannwardt, Wilhelm; Caspers, Patrick; Le Grice, Stuart; and Mous, Jan, 5,780,038, Cl. 424-208,100.
Msutta, Gurbux S.: See—
Sage, Gerald F.; and Msutta, Gurbux S., 5,781,582, Cl. 375-202,000.
Muellemann, Norman F., to Powervar, Inc. Low level ground conditioning (gcl), 5,781,386, Cl. 361-43,000.
Mueller, Clay Von: See—
Mos, Robert; and Mueller, Clay Von, 5,780,828, Cl. 235-449,000.
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Muelver, Vance J. Lockable crayon holder, 5,779,381, Cl. 401-79,000.
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Hendrickson, Ruth Ann; Hofmeister, Christopher; and Muka, Richard S., 5,778,968, Cl. 165-80,100.
Müller, Anja: See—
Gers-Barlag, Heinrich; Müller, Anja; Saueremann, Gerhard; and Uhlmann, Beate, 5,780,042, Cl. 424-401,000.
Muller, Joachim; and Haubrich, Hartmut, to Amepa Engineering GmbH. Instantaneous slag thickness measuring device, 5,781,008, Cl. 324-230,000.
Muller, Pascale Francine Jeanne: See—
Rouviere, Fabienne Arlette Francoise; and Muller, Pascale Francine Jeanne, 5,780,544, Cl. 524-832,000.
Müller, Roland; Maier, Winfried; and Schwald, Rolf, to Endress + Hauser GmbH + Co. Device for monitoring a predetermined level of a liquid in a container, 5,778,726, Cl. 73-290,00V.
Müller, Roland: See—
Klawuhn, Manfred; Miltenberger, Christof; Müller, Roland; Peter, Andreas; and Schäfer, Gerhard, 5,778,765, Cl. 99-290,000.
Müller, Ruth: See—
Bayer, Herbert; Sauter, Hubert; Müller, Ruth; Grammenos, Wassilios; Harreus, Albrecht; Kirstgen, Reinhard; Röhl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, 5,780,506, Cl. 514-538,000.

Müller, Ulrich: See—
Eller, Karsten; Kummer, Rudolf; and Müller, Ulrich, 5,780,680, Cl. 564-485,000.
Müllner, Stefan; Hofmann, Axel; Saar, Karin; Schorlemmer, Hans-Ulrich; and Bartlett, Robert, to Hoechst Aktiengesellschaft. Compositions comprising lipoproteins and crotonamide derivatives, 5,780,592, Cl. 530-359,000.
Mulyarchik, Valery Vladimirovich; Drozdov, Vladimir Nikolaevich; Grebenkov, Anatoly Shzoresovich; Shzuravsky, Gennady Ivanovich; Vinogradov, Leonid Michailovich; Konstantinov, Valery Grigorjevich; and Kuharev, Anatoly Vasiljevich, to Science-Technical and Product-Innovative Center "Tokema". Processing waste rubber by steam pyrolysis, 5,780,518, Cl. 521-45,000.
Munari, Fausto: See—
Grob, Konrad; and Munari, Fausto, 5,779,765, Cl. 95-83,000.
Muni, Neal: See—
Eswara, Amrta R.; Muni, Neal; Schneider, F. Howard; and Mione, Peter J., 5,780,051, Cl. 424-449,000.
Münster, Uwe: See—
Voigtländer, Carsten; and Münster, Uwe, 5,778,502, Cl. 28-269,000.
Murai, Toshinari; and Nagai, Naoki, to Shin-Etsu Handotai Co., Ltd. Method of manufacturing a silicon monocrystal, 5,779,790, Cl. 117-13,000.
Murakami, Hisatoshi: See—
Umeda, Hiroaki; Terada, Tsunehiko; and Murakami, Hisatoshi, 5,779,941, Cl. 252-512,000.
Murakami Kaimeido Co., Ltd.: See—
Okada, Kazunori; Mochizuki, Toshihiro; Yamauchi, Kazunari; and Ito, Masahiko, 5,781,356, Cl. 359-872,000.
Murakami, Masaaki: See—
Tomoeida, Takayuki; Murakami, Masaaki; and Nishioka, Kenichi, 5,779,796, Cl. 118-319,000.
Murakami, Yutaka; Hayashi, Takao; and Kamei, Tomotada, to Matsushita Electric Industrial Co., Ltd. Mounting structure of objective lens for optical pick-up used for optical disk device, 5,781,351, Cl. 359-808,000.
Muramatsu, Kenji: See—
Nakamura, Goro; and Muramatsu, Kenji, 5,781,094, Cl. 337-238,000.
Muramatsu, Masaharu; Suyama, Motohiro; and Yamamoto, Koei, to Hamamatsu Photonics K.K. Photoelectric tube using electron beam irradiation diode as anode, 5,780,913, Cl. 257-429,000.
Muranishi, Masaru: See—
Kimura, Katsuhiko; Saegusa, Shozo; and Muranishi, Masaru, 5,781,576, Cl. 372-45,000.
Murase, Takao; Usami, Jun; and Kon, Masao, to NGK Insulators, Ltd. Gas analyzer and method of calibrating said gas analyzer, 5,780,710, Cl. 73-1,060.
Murase, Tetsuo: See—
Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Tetsuo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-Chou Vincent, 5,778,529, Cl. 29-852,000.
Mura-Smith, Kiyoko M.: See—
Woo, Arthur N.; Mura-Smith, Kiyoko M.; and Janky, Gregory T., 5,781,155, Cl. 342-357,000.
Murata, Haruhiko: See—
Kimura, Kazuo; Murata, Haruhiko; and Aoyama, Yukihiro, 5,779,081, Cl. 220-200,000.
Murata Kikai Kabushiki Kaishi: See—
Nose, Yoshitaka; and Yamamoto, Koji, 5,781,313, Cl. 358-497,000.
Murata Manufacturing Co., Ltd.: See—
Ando, Masamichi, 5,781,080, Cl. 333-126,000.
Fujiyama, Masaki; Sanada, Yukio; Mushimoto, Shuji, deceased, 5,781,402, Cl. 361-321,400.
Horiuchi, Hideya; Kadota, Michio; and Ago, Junya, 5,781,083, Cl. 333-196,000.
Kurusu, Toru; Wada, Hidekazu; and Abe, Shin, 5,780,072, Cl. 425-195,000.
Okada, Takekazu; Shinmura, Satoru; and Kanaya, Fumio, 5,781,079, Cl. 333-24,100.
Murata, Mitsuhiro, to Denso Corporation. One-way clutch having improved spring accomodating chamber, 5,779,015, Cl. 192-42,000.
Murata, Shinichi; Isomoto, Jun; Kubo, Masahiko; and Hirano, Takaaki, to Mitsubishi Jidosha Kogyo K.K.; and Mitsubishi Jidosha Engineering K.K. Variable valve driving mechanism, 5,778,840, Cl. 123-90,170.
Murata, Toshiki: See—
Saika, Hideyuki; Murata, Toshiki; Pitterma, Thomas; Fröh, Thomas; Svensson, Lene D.; Urade, Yoshihiro; Yamamura, Takaki; and Okada, Toshikazu, 5,780,498, Cl. 514-419,000.
Muris, Mathias N. M.; De Jong, Franciscus G. M.; De Wilde, Johannes; and Schuttert, Rodger F., to U.S. Philips Corporation. Testable circuit, 5,781,559, Cl. 371-22,310.
Muromachi Kagaku Kogyo Kaisha, Ltd.: See—
Sugihara, Yoshiki; Shionoya, Hiroshi; and Yamatsu, Kiyomi, 5,780,509, Cl. 514-563,000.
Muroyama, Masakazu; and Sasaki, Masayoshi, to Sony Corporation. Method and apparatus for chemical/mechanical polishing, 5,779,521, Cl. 451-56,000.
Murphy, James D. Item dispensing control system for use in vending devices, 5,780,842, Cl. 250-222,100.
Murphy, Larry: See—
Bassi, Sukhi; Murphy, Larry; Maningat, Clodualdo C.; and Nie, Li, 5,780,013, Cl. 424-45,000.
Murphy, Oliver J.: See—

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Murray, Geoffrey Neil, to Austoil Technolgy Limited. Casing installation equipment. 5,778,976, Cl. 166-241.600.
Murray, Jeffrey R.: *See—*
O'Regan, Marie B.; Lairmore, Anne F.; Murray, Jeffrey R.; Sorriero, Louis J.; Buettner, Albert V.; and Weiss, David S., 5,780,192, Cl. 430-58.000.
Murray, Michael A.: *See—*
Liu, Lawrence C.; Murray, Michael A.; and Li, Li-Chun, 5,781,488, Cl. 365-207.000.
Murray, Robert R.: *See—*
Jones, Jackson H.; Murray, Robert R.; and Palmatier, Roland Thomas, 5,778,779, Cl. 101-216.000.
Krishnan, Ramasamy; Yamat, Marilyn C.; Babji, Hugo; Palmatier, Roland T.; and Murray, Robert R., 5,778,789, Cl. 101-450.100.
Murugesan, Natesan; Barrish, Joel C.; and Stein, Philip D., to Bristol-Myers Squibb Company. Substituted biphenyl sulfonamide endothelin antagonists. 5,780,473, Cl. 514-252.000.
Musante, Ronald Eugene; Orrell, John Kenneth; and Schade, David Arthur, to United Defense, LP. Multi-tiered ballistic air handling grille. 5,780,761, Cl. 89-36.080.
Musgrave, Gary; and Farmer, Frances L. Magnetic device and method for feeding aquatic animals. 5,778,824, Cl. 119-230.000.
Mushimoto, Shuji, deceased (by Yumi Mushimoto, Ryuichi Mushimoto, Hideshi Mushimoto, legal representatives): *See—*
Fujiyama, Masaki; Sanada, Yukio; Mushimoto, Shuji, deceased, 5,781,402, Cl. 361-321.400.
Mushimoto, Yumi, Ryuichi Mushimoto, Hideshi Mushimoto, legal representatives: *See—*
Fujiyama, Masaki; Sanada, Yukio; Mushimoto, Shuji, deceased, 5,781,402, Cl. 361-321.400.
Mussmann, Lothar: *See—*
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Musso, Donald: *See—*
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Mustek Systems Inc.: *See—*
Tsai, Jenn-Tsair; and Chen, Si-Min, 5,780,829, Cl. 235-454.000.
Mutaguchi, Masao; Kawase, Kiyosi; Tanida, Koji; Nakagawa, Hitoshi; Hiranishi, Yoshinobu; and Tokumura, Ichiro, to Nippon Cable Co., Ltd. Vibration damping arrangement for cable car. 5,778,797, Cl. 105-149.100.
Muthiah, Jen: *See—*
Decker, Owen H.; Muthiah, Jen; and Mountz, David A., 5,780,560, Cl. 525-533.000.
Muto, Masayuki: *See—*
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Muto, Tadashi: *See—*
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Muttoni, Monica: *See—*
Gozzini, Luigia; Muttoni, Monica; and DeHaën, Christoph, 5,780,644, Cl. 548-478.000.
Mycynek, Victor G.; and Otto, Leif W., to Zenith Electronics Corporation. Circuit for causing FPLL to lock in desired phase. 5,781,065, Cl. 329-325.000.
Mydata Automation AB: *See—*
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Myers, Albert: *See—*
Sexton, Brendan F.; Knuijt, Hans M.; Eldrid, Sacheverel Q.; Myers, Albert; Coneybeer, Kyle E.; Johnson, David Martin; and Kellock, Iain R., 5,779,442, Cl. 415-173.200.
Myers, James D., Jr. Gym bag for holding a basketball. 5,779,044, Cl. 206-315.900.
Myers, Michael J.: *See—*
Hansen, Jeffrey E.; Osakada, Kunio; and Myers, Michael J., 5,780,130, Cl. 428-35.700.
Myers, Peter Jonathan, to Kolcraft Enterprises, Inc. Bassinet for attachment to a child's playard. 5,778,465, Cl. 5-99.100.
Myers, Randal L.: *See—*
Reedy, Steven W.; Klopfer, Rand D.; and Myers, Randal L., 5,778,841, Cl. 123-90.340.
Myers, Richard C., to Hewlett-Packard Company. Transformer isolated driver for power transistor using frequency switching as the control signal. 5,781,040, Cl. 327-44.000.
Nabeya, Kenichi; and Nakada, Tatsumi, to Fujitsu Limited. System for detecting failure in information processing device. 5,781,433, Cl. 364-184.000.
Nabors, C. David; and Frangineas, George, to Coherent, Inc. Optical parametric oscillator with porro prism cavity. 5,781,571, Cl. 372-21.000.
Nadeau, Douglas P.: *See—*
Armsden, Michael R.; Bartley, Richard A.; Huynh, Cuc; Manfredi, Paul A.; and Nadeau, Douglas P., 5,778,481, Cl. 15-230.160.
Nadzan, Alex: *See—*
Boehm, Marcus F.; Heyman, Richard A.; Zhi, Lin; Hwang, Chan Kou; White, Steve; and Nadzan, Alex, 5,780,676, Cl. 562-490.000.
Naem, Abdalla Aly, to National Semiconductor Corporation. Self-aligned MOSFET gate/source/drain salicide formation. 5,780,349, Cl. 438-305.000.

Nafziger, Gregory W., to Owens-Brockway Glass Container Inc. Generation of needle motion profile in an individual section glassware forming system. 5,779,749, Cl. 65-29.110.
Nag, Abhijit: *See—*
Livesey, Stephen A.; del Campo, Anthony A.; Nag, Abhijit; Nichols, Ken B.; Punnno, Carmen; and Ross, David P., 5,780,295, Cl. 435-307.100.
Nagahara, Shigenori; Fujimura, Toshiaki; and Tanaka, Shinichi, to Toyo Boseki Kabushiki Kaisha. Antistatic photosensitive multilayered structure and method for producing the same. 5,780,202, Cl. 430-271.100.
Nagai, Kazunobu: *See—*
Imai, Masahiro; Nishimura, Hiroshi; Koshimizu, Masaru; Hosomi, Koichi; Nagai, Kazunobu; Nitta, Isamu; and Inagaki, Yutaka, 5,778,703, Cl. 68-12.020.
Nagai, Naoki: *See—*
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Nagai, Shigekazu; and Sugano, Koji, to SMC Corporation. Profile frame and connector. 5,779,412, Cl. 411-85.000.
Nagai, Tomoyuki; Sunohara, Eizi; and Hidaka, Toshihiko, to Kayaba Kogyo Kabushiki Kaisha; Kabushiki Kaisha Yanagisawa Seiki Seisakusho; and Koito Industries Ltd. Back-rest angle adjusting apparatus. 5,779,312, Cl. 297-362.130.
Nagai, Yutaka; and Shima, Akihiro, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor laser. 5,781,577, Cl. 372-46.000.
Nagano, Hiroyuki; and Nagata, Hideo, to Hosiden Corporation; and Nintendo Co., Ltd. Multipolar electrical connector. 5,779,491, Cl. 439-141.000.
Nagano, Yoshihisa: *See—*
Arita, Koji; Fujii, Eiji; Shimada, Yasuhiro; Uemoto, Yasuhiro; Nasu, Toru; Matsuda, Akihiro; Nagano, Yoshihisa; Inoue, Atsuo; Matsuura, Taketoshi; and Otsuki, Tatsuo, 5,780,351, Cl. 438-396.000.
Nagao, Kazuya: *See—*
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Nagasaki, Katsuhiko: *See—*
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Nagata, Hideo: *See—*
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Nagata, Kazuhisa: *See—*
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Nagata, Kazutaka: *See—*
Nakamura, Haruka; Nagata, Kazutaka; Hiroe, Yasutoshi; Enokida, Tomoaki; Sato, Kei; Kuwata, Koji; and Omi, Kyouji, 5,781,310, Cl. 358-468.000.
Nagayama, Masami; Usui, Katsuaki; Mataka, Kozo; Ojima, Yoshinori; Sato, Genichi; and Hisabe, Yasushi, to Ebara Corporation. Vacuum pump motor arrangement having reduced heat generation. 5,779,453, Cl. 417-410.400.
Nagel Maschinen-und Werkzeugfabrik GmbH: *See—*
Schmitz, H. Guenter, 5,779,518, Cl. 451-28.000.
Nagel, Thomas O.: *See—*
Thalenfeld, David R.; and Nagel, Thomas O., 5,779,065, Cl. 211-87.010.
Nagy, Christine. Hair color-stick. 5,778,902, Cl. 132-200.000.
Naidu, Yathi M.: *See—*
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Nailor Industries of Texas, Inc.: *See—*
Nailor, Lance P., 5,779,540, Cl. 454-369.000.
Nailor, Lance P., to Nailor Industries of Texas, Inc. Fluid flow control damper. 5,779,540, Cl. 454-369.000.
Naito, Shotaro, to Hitachi, Ltd. Electric car drive system provided with hybrid battery and control method. 5,780,980, Cl. 318-139.000.
Nakabayashi, Akira: *See—*
Toyoda, Seiji; Kuromitsu, Yoshirou; Sugamura, Kunio; and Nakabayashi, Akira, 5,780,162, Cl. 428-428.000.
Nakada, Tatsumi: *See—*
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Nakae, Shun; and Kajiyama, Hideo, to Lintec Corporation. Tape winding apparatus and tape winding method. 5,779,181, Cl. 242-532.600.
Nakagawa, Akio; Ohashi, Hiromichi; Yamaguchi, Yoshihiro; Watanabe, Kiminori; and Thukakoshi, Thuneo, to Kabushiki Kaisha Toshiba. Conductivity modulated MOSFET. 5,780,887, Cl. 257-298.000.
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Miyazawa, Kazutoshi; Matsui, Shuichi; Fujita, Atsuko; Kondo, Tomoyuki; Goto, Yasuyuki; Nakagawa, Etsuo; and Sawada, Shinichi, 5,779,936, Cl. 252-299.630.
Nakagawa, Hitoshi: *See—*
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Nakagawa, Toshiyuki: *See—*
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Nakajima, Akira: *See—*
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Nakajima, Hideharu; and Kato, Tsuneaki, to Nippon Telegraph and Telephone Corp. Multimodal information inputting method and apparatus for embodying the same. 5,781,179, Cl. 345-157.000.
Nakajima, Ichiro: *See—*
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Nakajima, Kazuhiro: *See—*
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Nakajima, Kenichi: *See—*
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Nakajima, Kenji, to Fujitsu Limited. Accessor hand mechanism having grooves for opening and closing fingers. 5,781,517, Cl. 369-38.000.
Nakajima, Shozo. Alarm system for preventing loss of personal property. 5,781,109, Cl. 340-568.000.
Nakajima, Takao; and Nakamura, Kenichi, to Kabushiki Kaisha Toshiba. Input circuit and semiconductor integrated circuit device including same. 5,780,942, Cl. 307-141.000.
Nakamichi, Kazutaka; Yoshikawa, Kouji; Ishikawa, Katsuji; Suzuki, Toshiro; and Takeuchi, Hitoshi, to Aisan Kogyo Kabushiki Kaisha. Ignition coil for an internal combustion engine. 5,781,092, Cl. 336-96.000.
Nakamura, Atsushi; and Yamagishi, Hisashi, to Bridgestone Sports Co., Ltd. Solid golf ball. 5,779,564, Cl. 473-377.000.
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Nakamura, Eiji: *See—*
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Nakamura, Goro; and Muramatsu, Kenji, to Yazaki Corporation. Secondary short preventing mechanism of fuse. 5,781,094, Cl. 337-238.000.
Nakamura, Haruka; Nagata, Kazutaka; Hiroe, Yasutoshi; Enokida, Tomoaki; Sato, Kei; Kuwata, Koji; and Omi, Kyouji, to Ricoh Company Ltd. Copying system having image inputting unit and image outputting unit shared with other image processing systems. 5,781,310, Cl. 358-468.000.
Nakamura, Hideki: *See—*
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Nakamura, Hideo: *See—*
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Nakamura, Hiroyasu: *See—*
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Nakamura, Hiroyuki: *See—*
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Yamazawa, Kenji; Niino, Toshiaki; Nakagawa, Takeo; and Hayano, Seiji, 5,780,070, Cl. 425-174.400.
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Ejima, Satoshi, 5,781,232, Cl. 348-233.000.
Inoue, Osamu; and Takeda, Yoshiyuki, 5,781,311, Cl. 358-475.000.
Matsuzawa, Hitoshi; Suenaga, Yutaka; and Kobayashi, Misako, 5,781,278, Cl. 355-53.000.
Mochizuki, Masahiro, 5,781,314, Cl. 358-509.000.
Mori, Futoshi; Fukazawa, Kazuhiko; Hirose, Hiroshi; and Kohama, Yoshiaki, 5,780,853, Cl. 250-310.000.
Ohtake, Motoyuki, 5,781,348, Cl. 359-676.000.
Ono, Kazuya, 5,780,943, Cl. 310-12.000.
Suzuki, Kenzaburo, 5,781,340, Cl. 359-557.000.
Takita, Mark K., 5,781,068, Cl. 330-85.000.
Wakabayashi, Tsutomu, 5,781,810, Cl. 396-320.000.
Niles Parts Co., Ltd.: *See—*
Uchiyama, Norio; and Yokoyama, Toshiaki, 5,780,794, Cl. 200-61.540.
Uchiyama, Norio; and Hattori, Yoshio, 5,780,796, Cl. 200-61.540.
Nilsen, Kevin J.: *See—*
Pyzik, Aleksander J.; Deshmukh, Uday V.; Han, Chan; Nilsen, Kevin J.; Perette, Donald J.; and Prunier, Arthur R., Jr., 5,780,164, Cl. 428-539.500.
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Nilsson, Mats, to Alfa Laval AB. Plate heat exchanger. 5,778,975, Cl. 165-167.000.
Nilsson, Nils Olov Ingemar: *See—*
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Yamamura, Hisae; Matsuyama, Yukio; Ninomiya, Takanori; and Sasazawa, Hideaki, 5,780,866, Cl. 250-559.220.
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Nagano, Hiroyuki; and Nagata, Hideo, 5,779,491, Cl. 439-141.000.
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Kawazoe, Naoyuki; Ando, Hiroshi; Kimura, Teiyuu; Koike, Satoshi; and Onimaru, Sadahisa, 5,781,317, Cl. 359-12.000.
Nippon Cable Co., Ltd.: *See—*
Mutaguchi, Masao; Kawase, Kiyosi; Tanida, Koji; Nakagawa, Hitoshi; Hiranishi, Yoshinobu; and Tokumura, Ichiro, 5,778,797, Cl. 105-149.100.
Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See—*
Saeki, Masaru; Onishi, Kizo; and Hayashi, Shunro, 5,780,547, Cl. 525-61.000.
Nippon Kayaku Kabushiki Kaisha: *See—*
Ohno, Hiroaki; Morita, Hiromi; Moteki, Shigeru; and Akatsuka, Yasumasa, 5,780,571, Cl. 528-97.000.
Nippon Mektron, Ltd.: *See—*
Kameda, Eiichi, 5,779,402, Cl. 408-56.000.
Nippon Oil Company, Ltd.: *See—*
Ishikawa, Yoshihide; Hasegawa, Shinsuke; Miyamoto, Michio; Kitahara, Shizuo; Shikatani, Yutaka; and Igarashi, Jinichi, 5,780,399, Cl. 508-452.000.
Shimizu, Hiroyuki; Sano, Akira; Matsuura, Kazuo; and Washio, Yuuji, 5,780,562, Cl. 526-129.000.
Nippon Paint Co., Ltd.: *See—*
Matsui, Sakae; Nakamura, Hiroyuki; Kudo, Shizuo; and Konse, Hiroaki, 5,780,526, Cl. 522-93.000.
Mizutani, Keita; Yoshimatsu, Saori; and Yamakawa, Kinya, 5,780,530, Cl. 523-209.000.
Shirahata, Seiichiro; Shinomiya, Mitsuo; Miyamoto, Satoshi; and Sobata, Tamotsu, 5,780,122, Cl. 427-601.000.
Nippon Piston Ring Company, Ltd.: *See—*
Nakamura, Yoshikatsu; Kawamura, Osamu; Takahashi, Teruo; and Yamamoto, Shinichi, 5,778,530, Cl. 29-888.100.
Nippon Soken, Inc.: *See—*
Matsui, Hirohito; Yamanaka, Yasushi; Takano, Yoshiaki; and Kishita, Hiroshi, 5,780,731, Cl. 73-118.100.
Nippon Steel Chemical Co., Ltd.: *See—*
Ohta, Akira, 5,780,129, Cl. 428-35.700.
Nippon Steel Corporation: *See—*
Hazama, Katsuki, 5,780,890, Cl. 257-316.000.
Hazama, Katsuki, 5,780,894, Cl. 257-326.000.
Ohta, Akira, 5,780,129, Cl. 428-35.700.
Sugaya, Fumitaka, 5,780,893, Cl. 257-318.000.

Nippon Telegraph and Telephone Corporation: *See—*
Hiraiwa, Akira; Fukumoto, Masaaki; Uchiyama, Tadasu; Sonehara, Noboru; and Oikawa, Shigeru, 5,781,661, Cl. 382-188.000.
Nakajima, Hideharu; and Kato, Tsuneaki, 5,781,179, Cl. 345-157.000.
Sano, Hiroaki; Ishikawa, Hiroki; Imaizumi, Tsuyoshi; Hogari, Kazuo; and Kawata, Osamu, 5,781,678, Cl. 385-45.000.
Tsuji, Shinji; Takahashi, Ryuta; Shishikura, Masato; Kikuchi, Satoru; and Aoki, Satoshi, 5,780,875, Cl. 257-81.000.
Uchiyama, Haruyoshi; Li, Zhixien; and Aida, Kazuo, 5,781,322, Cl. 359-161.000.
Nippon Thompson Co., Ltd.: *See—*
Obara, Kouji, 5,779,367, Cl. 384-8.000.
Nippon Zeon Co., Ltd.: *See—*
Ishikawa, Yoshihide; Hasegawa, Shinsuke; Miyamoto, Michio; Kitahara, Shizuo; Shikatani, Yutaka; and Igarashi, Jinichi, 5,780,399, Cl. 508-452.000.
Nippon Zoki Pharmaceutical Co., Ltd.: *See—*
Yoshii, Haruo; and Fukata, Yuriko, 5,780,026, Cl. 424-130.100.
Nippondenso Co., Ltd.: *See—*
Ichikawa, Hideki; Takada, Masahiro; Katahira, Kouji; and Shibayama, Keniti, 5,778,512, Cl. 29-598.000.
Kato, Akira; Katayama, Masayuki; Ito, Nobue; and Hattori, Tadashi, 5,780,966, Cl. 313-506.000.
Kawazoe, Naoyuki; Ando, Hiroshi; Kimura, Teiyuu; Koike, Satoshi; and Onimaru, Sadahisa, 5,781,317, Cl. 359-12.000.
Kazikawa, Yoshiharu; Ohara, Toshio; Torigoe, Eiichi; and Aikawa, Yasukazu, 5,778,974, Cl. 165-153.000.
Kusase, Shin; Umeda, Atsushi; and Taniguchi, Makoto, 5,780,996, Cl. 322-28.000.
Mizoguchi, Tomomichi; Takami, Masayuki; and Okazaki, Kazuhiro, 5,781,878, Cl. 701-109.000.
Okumura, Yoshihiko; Ito, Koichi; Inoue, Yoshimitsu; and Sugi, Hikaru, 5,779,141, Cl. 236-36.000.
Osada, Masahiko; Matsumoto, Muneaki; and Yokota, Minoru, 5,781,168, Cl. 345-76.000.
Setaka, Yousuke; and Banzai, Keiichi, 5,778,997, Cl. 180-65.200.
Shibata, Masamichi, 5,781,098, Cl. 338-28.000.
Tanaka, Masaaki; Yamashita, Keiichi; Izutani, Kouji; Okada, Kingo; and Takahashi, Hideto, 5,778,926, Cl. 137-508.000.
Umeda, Atsushi; Tokura, Norihito; Sato, Hirohide; Taniguchi, Makoto; and Kusase, Shin, 5,780,953, Cl. 310-263.000.
Nipponenso Co., Ltd.: *See—*
Oosuka, Kazutoyo; Kojima, Masami; and Ikezima, Shozo, 5,778,863, Cl. 123-634.000.
Nishida, Masaaki: *See—*
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; and Suzuki, Akitomo, 5,779,585, Cl. 475-128.000.
Nishida, Yoshi: *See—*
Beatty, Dana Lynn; Hamm, Richard E.; and Nishida, Yoshi, 5,781,798, Cl. 395-830.000.
Nishida, Yoshikazu: *See—*
Miyago, Toshiharu; Matsui, Yumi; and Nishida, Yoshikazu, 5,781,372, Cl. 360-107.000.
Nishihara, Eitaro: *See—*
Ema, Takehiro; and Nishihara, Eitaro, 5,779,634, Cl. 600-407.000.
Nishihara, Syoujiro; and Nishinaka, Teruaki, to Matsushita Electric Industrial Co., Ltd. Method for packaging electronic device. 5,779,958, Cl. 264-161.000.
Nishii, Kanji: *See—*
Ito, Masami; Nishii, Kanji; Nomura, Tsuyoshi; and Hamano, Seiji, 5,781,269, Cl. 356-375.000.
Nishii, Shinji: *See—*
Komatsu, Masashi; Nishii, Shinji; and Ueda, Hiroshi, 5,780,628, Cl. 544-285.000.
Nishikawa, Masahiko, to Pegasus Sewing Machine Mfg. Co., Ltd. Sewing apparatus for sewing circular rib. 5,778,812, Cl. 112-470.330.
Nishikawa, Shinji: *See—*
Asakura, Motoh; Kobayashi, Kazuya; and Nishikawa, Shinji, 5,781,288, Cl. 356-239.000.
Nishiki, Naomi: *See—*
Komyoji, Daido; Inoue, Takao; Nishiki, Naomi; and Ikeda, Junji, 5,780,820, Cl. 219-543.000.
Nishimura, Hiroshi: *See—*
Imai, Masahiro; Nishimura, Hiroshi; Koshimizu, Masaru; Hosomi, Koichi; Nagai, Kazunobu; Nitta, Isamu; and Inagaki, Yutaka, 5,778,703, Cl. 68-12.020.
Kawasaki, Shinji; and Nishimura, Hiroshi, 5,781,010, Cl. 324-309.000.
Nishina, Kiihiro, to Ricoh Company, Ltd. Optical scanning lens and optical scanner. 5,781,324, Cl. 359-206.000.
Nishinaka, Teruaki: *See—*
Nishihara, Syoujiro; and Nishinaka, Teruaki, 5,779,958, Cl. 264-161.000.
Nishino, Masakazu: *See—*
Juri, Tatsuro; Fujiwara, Yuji; Nishino, Masakazu; Matsuta, Toyohiko; and Awamoto, Shigeru, 5,781,690, Cl. 386-111.000.
Nishio, Fumihiro: *See—*
Sugawa, Akihito; Miyaguchi, Masamichi; Fukutani, Makoto; and Nishio, Fumihiro, 5,779,316, Cl. 297-423.260.
Nishioka, Kenichi: *See—*
Tomoeida, Takayuki; Murakami, Masaaki; and Nishioka, Kenichi, 5,779,796, Cl. 118-319.000.

Nishiyama, Haruo; Matsumoto, Masanori; Watase, Shigeru; and Horiuchi, Takao, to Sharp Kabushiki Kaisha. Image forming apparatus provided with image eraser. 5,781,822, Cl. 399-1.000.
Nishizawa, Akira; and Kayanuma, Kanji, to Victor Company of Japan, Ltd. Optical recording medium having a disc with deformed pits. 5,781,526, Cl. 369-275.300.
Nishizawa, Kimiyoshi: *See—*
Mori, Koichi; Toshiro, Takayuki; and Nishizawa, Kimiyoshi, 5,778,662, Cl. 60-274.000.
Nishizawa, Yoshifumi; Gamano, Jun; Ando, Hideo; and Funahashi, Akihiro, to Mitsubishi Denki Kabushiki Kaisha; and Brother Kogyo Kabushiki Kaisha. Eyelet-end buttonhole sewing machine wherein stitching data is compensated according to a designed one of compensation data sets. 5,778,807, Cl. 112-70.000.
Nishizono, Atsuo; Noguchi, Hideo; Minami, Keiji; Hirata, Shinji; Takao, Hitoshi; Kato, Koji; Hyodo, Tetsuji; and Itaki, Kazuyuki, to Kyocera Corporation. Thermal head. 5,781,220, Cl. 347-208.000.
Nissan Chemical Industries, Ltd.: *See—*
Sabnis, Ram W.; Mayo, Jonathan W.; Hays, Edith G.; Brewer, Terry L.; Stroder, Michael D.; Yanagimoto, Akira; Sone, Yasuhisa; Watanabe, Yoshitane; and Ema, Kiyomi, 5,780,201, Cl. 430-270.100.
Nissan Motor Co., Ltd.: *See—*
Kimura, Shuji, 5,778,674, Cl. 60-600.000.
Mizukami, Fujio; Maeda, Kazuyuki; Niwa, Shuichi; and Mine, Junichi, 5,780,102, Cl. 427-226.000.
Mori, Koichi; Toshiro, Takayuki; and Nishizawa, Kimiyoshi, 5,778,662, Cl. 60-274.000.
Nisshin Steel: *See—*
Kito, Satoru; Ito, Masahito; Mauda, Fuminori; Takeshima, Eiki; Tanaka, Yasuji; Fujii, Takahiro; and Izutani, Kenjiro, 5,779,872, Cl. 205-149.000.
Nisshinbo Industries, Inc.: *See—*
Kuwabara, Shin; Nagata, Kazuhisa; Imashiro, Yasuo; and Sasaki, Eiji, 5,779,775, Cl. 106-18.110.
Nissley, David M.; Harter, Harold D.; Godin, Daniel R.; and Foster, George E., to United Technologies Corporation. Gas turbine engine component. 5,780,171, Cl. 428-629.000.
Nitta, Isamu: *See—*
Imai, Masahiro; Nishimura, Hiroshi; Koshimizu, Masaru; Hosomi, Koichi; Nagai, Kazunobu; Nitta, Isamu; and Inagaki, Yutaka, 5,778,703, Cl. 68-12.020.
Nitta, Shoichiro; Izuo, Takashi; Mikame, Kazuhisa; Kobuki, Shinzo; Ito, Yozo; and Asayama, Kazuhiro, to Toyota Jidosha Kabushiki Kaisha. Magnetic field type oxygen enriched air producing apparatus. 5,779,770, Cl. 96-2.000.
Nitta, Takashi; and Aoki, Mikio, to Seiko Epson Corporation. Image processing method and apparatus. 5,781,660, Cl. 382-177.000.
Nittinger, Susan R. Dental hygienist's device. 5,778,480, Cl. 15-210.100.
Nitto Denko Corporation: *See—*
Kume, Katsuya; Takenoshita, Itsuroh; Okazaki, Katsuyuki; Kuramoto, Mitsuo; and Suzuki, Kihachi, 5,780,142, Cl. 428-195.000.
Niwa, Shuichi: *See—*
Mizukami, Fujio; Maeda, Kazuyuki; Niwa, Shuichi; and Mine, Junichi, 5,780,102, Cl. 427-226.000.
Niwa, Takahiro: *See—*
Tanaka, Tadashi; Tamura, Hidehiko; and Niwa, Takahiro, 5,780,396, Cl. 508-104.000.
NKG Co., Ltd.: *See—*
Ohsugi, Yasuhiro, 5,778,556, Cl. 34-106.000.
NKK Corporation: *See—*
Katsumura, Tatsuro; Ariizumi, Takashi; Yamazaki, Motoharu; and Yasukawa, Masahiko, 5,778,714, Cl. 72-97.000.
Noakes, Timothy James; Green, Michael Leslie; Prendergast, Maurice Joseph; and Jefferies, Andrew, to Imperial Chemical Industries PLC. Spraying device. 5,779,162, Cl. 239-690.100.
Nobel Biocare AB: *See—*
Boss, Anders, 5,779,477, Cl. 433-172.000.
Nocera, Rocco D.: *See—*
Racioppi, Pat A.; Nocera, Rocco D.; and Richards, Thomas C., 5,780,071, Cl. 425-186.000.
Noda, Isao; Lampe, Reinhold August; and Satkowski, Michael Matthew. Spray processes using a gaseous flow for preparing biodegradable fibrils, nonwoven fabrics comprising biodegradable fibrils, and articles comprising such nonwoven fabrics. 5,780,368, Cl. 442-334.000.
Noda, Koji: *See—*
Tokito, Shizuo; Noda, Koji; and Taga, Yasunori, 5,780,174, Cl. 428-690.000.
Noda, Masayuki; Yamaguchi, Yutaka; Yonekura, Minoru; and Yamanaka, Hiroyuki, to Shin-Kobe Electric Machinery Co., Ltd. Liquid crystal display device. 5,781,264, Cl. 349-150.000.
Noda, Satoshi, to Fuji Xerox, Co. Ltd. Image input method and apparatus. 5,781,312, Cl. 358-482.000.
Noda, Sumio; Takami, Seiji; Inoue, Haruo; and Morita, Kaoru, to Kansai Paint Co., Limited. Aqueous coating of carboxyl acrylic resin-epoxy resin product. 5,780,532, Cl. 523-412.000.
Noda, Taizo, to J-Sen Ltd. No. 32. Plastic clip. 5,778,497, Cl. 24-504.000.
Noda, Toshiharu; Okabe, Michio; Sato, Katsuaki; and Saka, Tsutomu, to Daido Tokushuko Kabushiki Kaisha; and Honda Giken Kogyo Kabushiki Kaisha. Heat resisting alloys, exhaust valves and knit meshes for catalyzer for exhaust gas. 5,779,972, Cl. 420-54.000.

Noda, Yuji, to NEC Corporation. Multilayer circuit board unit. 5,780,776, Cl. 174-255.000.
Nogami, Daisuke, to Hirose Electric Co., Ltd. PC card frame kit and PC card. 5,780,365, Cl. 439-76.100.
Nogami, Sumitaka: *See—*
Suzuki, Shinjiro; and Nogami, Sumitaka, 5,780,193, Cl. 430-62.000.
Nogle, Scott George; Roth, Alan S.; and Ho, Shuang Li, to Motorola, Inc. Pipelined dual port integrated circuit memory. 5,781,480, Cl. 365-189.040.
Noguchi, Atsuhiko: *See—*
Awane, Satoshi; Ohno, Osamu; Morioka, Yosuke; and Noguchi, Atsuhiko, 5,781,905, Cl. 707-102.000.
Noguchi, Hideo: *See—*
Nishizono, Atsuo; Noguchi, Hideo; Minami, Keiji; Hirata, Shinji; Takao, Hitoshi; Kato, Koji; Hyodo, Tetsuji; and Itaki, Kazuyuki, 5,781,220, Cl. 347-208.000.
Noguchi, Minoru: *See—*
Oki, Naotiko; Noguchi, Minoru; Demachi, Atsushi; Sato, Kenji; Komazawa, Eisuke; and Araki, Kazuhiro, 5,780,185, Cl. 429-218.000.
Noguchi, Tadahiko, to Bando Chemical Industries, Ltd. Transmission belt and method of manufacturing the same. 5,779,584, Cl. 474-264.000.
Nokia Mobile Phones, Ltd.: *See—*
Parkas, Tapio; Solla, Jukka; and Leppänen, Aki, 5,779,115, Cl. 224-272.000.
Nokia Telecommunications Oy: *See—*
Loppönen, Jussi; and Heiskari, Mika, 5,781,860, Cl. 455-426.000.
Pauve, Jan F., 5,780,941, Cl. 307-139.000.
Nolan, Peter E.; Cutler, Andrew H.; and Lynch, David G., to University of Arizona, Arizona Board of Regents on behalf of the. Method for producing encapsulated nanoparticles and carbon nanotubes using catalytic disproportionation of carbon monoxide. 5,780,101, Cl. 427-216.000.
Nomerange, Hervé-Marcel; and Lemperiere, Marie-Anne Gabrielle, to Meritor Light Vehicle Systems. Device for measuring torques, especially for reduction gearing for activating a functional member of a motor vehicle. 5,780,751, Cl. 73-862.325.
Nomura, Hiroshi; Azegami, Kazuyoshi; and Sasaki, Takamitsu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure controlling device and encoder for camera. 5,781,817, Cl. 396-508.000.
Nomura, Kazuo; Fukuhisa, Kouji; and Ohara, Yozo, to Hokuriku Electric Industry Co., Ltd. Swing type athletic equipment and practice apparatus therefor. 5,779,555, Cl. 473-223.000.
Nomura, Tsuyoshi: *See—*
Ito, Masami; Nishii, Kanji; Nomura, Tsuyoshi; and Hamano, Seiji, 5,781,269, Cl. 356-375.000.
Nomura, Yujiro: *See—*
Takada, Kyu; Inoue, Nozomu; Hama, Takashi; and Nomura, Yujiro, 5,781,323, Cl. 359-206.000.
Nomura, Yukio, to NEC Corporation. Semiconductor device with long lifetime. 5,780,927, Cl. 257-706.000.
Non-Invasive Technology, Inc.: *See—*
Chance, Britton, 5,779,631, Cl. 600-328.000.
Nonoshita, Hiroshi: *See—*
Ishizawa, Yasuhisa; Yamanashi, Yoshitsugu; Nonoshita, Hiroshi; and Chyo, Kenjiro, 5,781,666, Cl. 382-284.000.
Norand Corporation: *See—*
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Norderg-Lokomo Oy: *See—*
Ruokonen, Markku; and Koski, Raimo, 5,779,166, Cl. 241-213.000.
Nordischer Maschinenbau Rud. Baader GmbH & Co. KG: *See—*
Braeger, Horst; and Jürs, Michael, 5,779,531, Cl. 452-127.000.
Nordlicht, Scott M. Smoking cessation. 5,778,897, Cl. 131-279.000.
Nordx/CDT, Inc.: *See—*
Tremblay, Edmond; Lord, Brenda; Deflandre, Yves; and Milette, Luc, 5,779,503, Cl. 439-676.000.
Noritsu Koki Co., Ltd.: *See—*
Akira, Toshiro, 5,779,124, Cl. 226-2.000.
Masuda, Shigeru; and Kojima, Masayuki, 5,779,185, Cl. 242-556.000.
Masuda, Shigeru; and Arimoto, Keigo, 5,781,812, Cl. 396-411.000.
Nakashima, Yoshihiko; and Kinoshita, Togo, 5,781,821, Cl. 396-626.000.
Negoro, Hisashi; and Yamamoto, Takuya, 5,778,510, Cl. 29-434.000.
Norlander, Leif, to Stora Kopparbergs Bergslags Aktiebolag. Method for the preparation of defibred cellulose products. 5,779,857, Cl. 162-157.600.
Norman, Colin F.: *See—*
Bottomley, William E.; and Norman, Colin F., 5,780,167, Cl. 428-521.000.
Norris, Elwood G., to American Technology Corporation. GPS relative position detection system. 5,781,150, Cl. 342-357.000.
North American Manufacturing Company: *See—*
Lucas, Clive D.; Armour, Jeffrey C.; and Sabet, Ahmed I., 5,779,217, Cl. 251-30.010.
North Carolina State University: *See—*
Ristaino, Jean B., 5,780,271, Cl. 435-91.200.
Northeastern University: *See—*
Khaw, Ban An; Torchilin, Vladimir P.; Narula, Jagat; and Vural, Imran, 5,780,052, Cl. 424-450.000.
Northern Telecom Limited: *See—*
Bruce, Paul, 5,781,587, Cl. 375-293.000.
Byers, Russell Francis; Duchaine, Joseph Marcel Gilles; Schuett, Michael Leonard; and Grootenboer, Cornelius Jacob, 5,781,770, Cl. 395-557.000.
Choi, David; and Raj, Kishore John, 5,781,612, Cl. 379-58.000.

Riley, Thomas A. D.; and Copeland, Miles A., 5,781,044, Cl. 327-105,000.
Shields, James Alexander, 5,781,596, Cl. 375-371,000.
Northouse, Lee A.: *See—*
Heitkamp, Gary L.; Northouse, Lee A.; and Johnson, Lyle G., 5,781,378, Cl. 360-104,000.
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Basu, Santanu, 5,781,573, Cl. 372-34,000.
Haas, Edwin G.; Hilgeman, Theodore W.; and Ryan, Robert E., 5,781,292, Cl. 356-345,000.
Rambo, James E.; Bowling, Jerry H.; and Kincade, Robert S., 5,779,190, Cl. 244-54,000.
Rebesch, Thomas J.; and Budzilek, Russell A., 5,781,167, Cl. 345-76,000.
Northwestern University: *See—*
Ashley, Gary W.; MacDonald, Robert C.; and Shida, Miho, 5,780,053, Cl. 424-450,000.
Letsinger, Robert L.; and Herrlein, Mathias K., 5,780,613, Cl. 536-25,330.
Norton Company: *See—*
Tartaglione, John J., 5,779,528, Cl. 451-358,000.
Norton, Daniel V.: *See—*
Yapel, Robert A.; Milbourn, Thomas M.; Bhave, Aparna V.; Wallace, Lawrence B.; Norton, Daniel V.; and Iverson, Hans E., 5,780,109, Cl. 427-294,000.
Norton Performance Plastics Corporation: *See—*
Petit, Dominique; and Ladang, Michel, 5,780,523, Cl. 521-137,000.
Norton, Richard: *See—*
Jacobson, Marlene A.; Norton, Richard; and Chakravarty, Prasun K., 5,780,481, Cl. 514-293,000.
Nose, Yoshitaka; and Yamamoto, Koji, to Murata Kikai Kabushiki Kaisha. Flat bed scanner, 5,781,313, Cl. 358-497,000.
Notari, Marcello; Mizia, Franco; and Rivetti, Franco, to Enichem S.p.A. Procedure for alkylation of imides, 5,780,645, Cl. 548-530,000.
Notaro, Joseph; and Swanson, David Frank, to SGS-Thomson Microelectronics, Inc. Integrated supply protection, 5,781,390, Cl. 361-84,000.
Notman, Andrew: *See—*
Leitch, Jim Rodger; and Notman, Andrew, 5,781,077, Cl. 332-117,000.
Notsu, Kazuo: *See—*
Kitaguchi, Tohru; Notsu, Kazuo; Takahashi, Kazushi; Furukawa, Masayoshi; Kambara, Shigeki; Majima, Osamu; and Kuwahara, Soichi, 5,780,200, Cl. 430-270,100.
Nottingham, John R.; Spirk, John W.; McCarthy, Richard O.; Stanca, Nicholas E.; and Kalman, Jeffery M., to Whitney Designs, Inc. Two-way swivel bracket with ironing board assembly, 5,778,573, Cl. 38-103,000.
Noval, Jim V.: *See—*
Watson, Jeff R.; Goetsch, Michael N.; Noval, Jim V.; and Aspiandiar, Raiyo F., 5,779,134, Cl. 228-179,100.
Novartis Corporation: *See—*
Betschart, Claudia; and Zimmermann, Kaspar, 5,780,500, Cl. 514-450,000.
Betschart, Claudia; and Zimmermann, Kaspar, 5,780,501, Cl. 514-450,000.
Novartis Finance Corporation: *See—*
Ruess, Wilhelm, 5,780,469, Cl. 514-237,500.
Novartis Nutrition AG: *See—*
Greenberg, Norman A.; Kvamme, Candis; and Schmidl, Mary K., 5,780,039, Cl. 424-400,000.
Mendy, Francois; Kahn, Jean-Maurice; and Roger, Loic, 5,780,439, Cl. 514-21,000.
Novell, Inc.: *See—*
Nevarez, Carlos A.; and White, Kenneth Paul, 5,781,724, Cl. 395-186,000.
Perlman, Radia J.; and Castagnoli, Neal D., 5,781,534, Cl. 370-248,000.
Stiles, Ian J., 5,781,733, Cl. 395-200,450.
Novellus Systems, Inc.: *See—*
Kyung, Hyun-Su; Choi, Won-Song; Lee, Hueng-Jik; Kim, Sek-Young; Shin, Jung-Ho; and Choi, Chang-Hwan, 5,778,969, Cl. 165-80,100.
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Novo Nordisk A/S: *See—*
Guldhammer, Birgitte Hjort, 5,780,502, Cl. 514-456,000.
Jørgensen, Tine Krogh; Andersen, Knud Erik; Andersen, Henrik Sune; Hohlweg, Rolf; Madsen, Peter; and Olsen, Uffe Bang, 5,780,486, Cl. 514-325,000.
Junker, Flemming; and Theisen, Claus Friss, 5,780,599, Cl. 530-399,000.
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Nozaki, Yoshihisa: *See—*
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Nozawa, Yasuji: *See—*
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Nozmu, Hasebe: *See—*
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NSK Ltd.: *See—*
Morita, Kouichi; Ouchi, Hideo; and Sakamoto, Junshi, 5,779,368, Cl. 384-448,000.

NSK-Warner Kabushiki Kaisha: *See—*
Kinoshita, Yoshio; Awaji, Toshio; and Miura, Takashi, 5,779,014, Cl. 192-41,00R.
NTC Kogyo Kabushiki Kaisha: *See—*
Ueno, Yuseki, 5,779,139, Cl. 236-12,200.
Nukui, Makoto: *See—*
Seo, Shuzo; Tani, Nobuhiro; Shin, Takeharu; Nukui, Makoto; and Ishizuka, Yukihiko, 5,780,831, Cl. 235-462,000.
Nurmi, Juha Veikko: *See—*
Heikkilä, Heikki Olavi; Nurmi, Juha Veikko; and Pepper, Tammy, 5,779,806, Cl. 127-61,000.
Nurse, Harry L., Jr. Gas baffle for a waste water treatment plant effluent, 5,779,896, Cl. 210-299,000.
Nusbaum, Neil, to Hollywood Engineering, Inc. Hands-free handweights, 5,779,603, Cl. 482-105,000.
NuVisions International, Inc.: *See—*
Mampaey, Paul; and DeMuyter, Mark, 5,781,285, Cl. 356-73,100.
Nuway Manufacturing Company Limited: *See—*
Pawson, Ian Karl; and Pym, Stephen James, 5,778,609, Cl. 52-181,000.
Nyman, Bror Göran; and Hultholm, Stig-Erik, to Outokumpu Harjalvalta Metals Oy. Method for preventing the formation of jarosite and ammonium and alkali based double salts in solvent extraction circuits connected to acidic leaching processes, 5,779,997, Cl. 423-139,000.
Nyström, Jan-Christian: *See—*
Carlsson, Mats Lennart; Nyström, Jan-Christian; and Örneving, Göran, 5,781,849, Cl. 455-114,000.
Obara, Kouji, to Nippon Thompson Co., Ltd. Spline bearing with detection device, 5,779,367, Cl. 384-8,000.
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Oberholtz, Glenn S.: *See—*
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Öchsner, Rudolf Phillip, to Koenig Bauer-Albert Aktiengesellschaft. Method and device for the production of a longitudinal fold, 5,779,232, Cl. 270-45,000.
OD & ME B.V.: *See—*
Beckers, Lodewijk J. M.; Jayne, Christopher; De Nijs, Joseph P.; and Geerts, Marcellus A. C. M., 5,780,205, Cl. 430-320,000.
Oda, Hajime; and Ogihara, Masuo, to SEIKO Precision Inc. Distance measurement device, 5,781,282, Cl. 356-5,030.
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Oda, Shinobu, to Kansai Paint Co., Ltd. Coupled process of saccharide fermentation and microbial esterification, 5,780,275, Cl. 435-135,000.
Oddsen, Dennis A.: *See—*
Hale, Scot J.; Pearse, James N.; Oddsen, Dennis A.; and Tufano, Anthony C., 5,779,497, Cl. 439-419,000.
O'Dea, James O., to Hi-Tech Transport Electronics, Inc. On-board scale with remote sensor processing, 5,780,782, Cl. 177-136,000.
Odom, Gregory Glen. Method and apparatus for secured transmission of confidential data over an unsecured network, 5,781,632, Cl. 380-24,000.
O'Dwyer, James B.: *See—*
Humbert, Leigh-Ann; Rardon, Daniel E.; Mayo, Michael A.; Baranczyk, Steven V.; and O'Dwyer, James B., 5,780,559, Cl. 525-452,000.
OEA, Inc.: *See—*
Hamilton, Brian K.; and Parks, Brent A., 5,778,509, Cl. 29-428,000.
Oeda, Shigetō: *See—*
Koreeda, Hiroyuki; Kasai, Yasuhiko; Yamauchi, Tsukasa; Asuma, Hajime; Oeda, Shigetō; Ito, Jun; Tomita, Hiromi; Hasegawa, Tsukasa; Kanazawa, Rituko; Inoue, Yoshiisa; Kumai, Hiroyuki; Hataya, Shigeki; Nakajima, Akira; and Matsuda, Yasumasa, 5,781,731, Cl. 395-200,340.
Oetting, Richard Highlands; Spaulding, Thomas Lee; and Popowski, Sherry S., to Rollerblade, Inc. Wrist guard, 5,778,449, Cl. 2-16,000.
Officina Meccanica Sestese S.p.A.: *See—*
Taccchini, Franco, 5,778,643, Cl. 53-589,000.
Ogasawara, Makoto: *See—*
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Ogata, Hitoshi; Yoshida, Masanao; and Yokota, Tokuo, to Sanyo Electric Co., Ltd. Disk information reproduction apparatus and method using avoid band control signals, 5,781,515, Cl. 369-32,000.
Ogata, Takaaki, to NEC Corporation. Variable wavelength optical filter, 5,781,332, Cl. 359-308,000.
Ogawa, Hisahito: *See—*
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Ogawa, Kazufumi: *See—*
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Ogawa, Ken-ichi: *See—*
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Ogawa, Masatsugu, to NEC Corporation. High density optical head assembly, 5,781,524, Cl. 369-112,000.
Ogawa, Tetsuya; Kato, Naoki; and Akashi, Shinya, to Sharp Kabushiki Kaisha. Adaptive digital filter with high speed and high precision coefficient sequence generation, 5,781,463, Cl. 364-724,190.
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Ogino, Takao: *See—*
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O'Gorman, Lawrence Patrick, to Lucent Technologies, Inc. Method of thresholding document images, 5,781,658, Cl. 382-172,000.
Oguchi, Kazuaki: *See—*
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Oguchi, Minoru: *See—*
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Ogura, Seiki, to Halo LSI Design & Device Technology, Inc. Low voltage EEPROM/NVRAM transistors and making method, 5,780,341, Cl. 438-259,000.
Ogura, Toshihiko: *See—*
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Yanai, Akira; Hara, Osamu; and Ogura, Tsuyoshi, 5,781,181, Cl. 345-173,000.
Oh, Jong Hoon, to Hyundai Electronics Industries Co., Ltd. Method and circuit for generating internal pulse signals in synchronous memory, 5,781,500, Cl. 365-233,000.
Oh, Yung Hwan; Kim, Yeon Jun; and Bae, Jum Han, to Samsung Electronics Co., Ltd. Speed-variable audio play-back apparatus, 5,781,696, Cl. 395-2,790.
Ohanesian, Harout, to U.S. Polymers, Inc. Shutter door assembly, 5,778,598, Cl. 49-74,100.
Ohara, Jun: *See—*
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Ohara, Toshio: *See—*
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Ohashi, Hiromichi: *See—*
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Ohashi, Masayuki; and Nakamura, Eiji, to Bridgestone Corporation. Rubber compositions for use in tire tread, 5,780,535, Cl. 524-147,000.
Ohbayashi, Shigeki: *See—*
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Ohio State University, The: *See—*
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Frank, Sylvan; Löfroth, Jan-Erik; and Bostanian, Levon, 5,780,062, Cl. 424-501,000.
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Grace, Gregory J.; and Lemaster, David A., 5,779,216, Cl. 248-651,000.
Ohkawa, Teruaki: *See—*
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Ohki, Hisatomo: *See—*
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Ohkubo, Akito: *See—*
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Ohlsson, Åke. Modular chair construction, 5,779,306, Cl. 297-256,160.
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Ohmeda Inc.: *See—*
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Ohmori, Jun; Iwasaki, Hiroshi; and Jin, Takanori, to Kabushiki Kaisha Toshiba. Substrate for semiconductor device and semiconductor device using the same, 5,780,933, Cl. 257-788,000.
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Ohno, Hiroaki; Morita, Hiromi; Moteki, Shigeru; and Akatsuka, Yasumasa, to Nippon Kayaku Kabushiki Kaisha. Naphthalene ring-containing resins, resin compositions and cured products thereof, 5,780,571, Cl. 528-97,000.
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Awane, Satoshi; Ohno, Osamu; Morioka, Yosuke; and Noguchi, Atsuhiko, 5,781,905, Cl. 707-102,000.
Ohno, Yugo; and Inoue, Masataka, to NEC Corporation. System for providing audio and video services on demand, 5,781,734, Cl. 395-200,470.
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Ohsugi, Yasuhiro, to NKG Co., Ltd. Drying equipment, 5,778,556, Cl. 34-106,000.
Ohta, Akira, to Nippon Steel Chemical Co., Ltd.; and Nippon Steel Corporation. Multi-layer blow-molded article, 5,780,129, Cl. 428-35,700.
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Ohta, Masuyuki; Yanagawa, Kazuhiko; Kondo, Katsumi; and Ohe, Masahito, to Hitachi, Ltd. Active matrix type LCD having light shield layers and counter electrodes made of the same material, 5,781,261, Cl. 349-111,000.
Ohtake, Motoyuki, to Nikon Corporation. Zoom lens system, 5,781,348, Cl. 359-676,000.
Ohtake, Tadashi; Mino, Norihisa; and Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Hydrophilic thin film and method of manufacturing the same, 5,780,148, Cl. 428-333,000.
Ohtomo, Fumio; Nakata, Yuji; Fukuyama, Yoshitaka; Inomata, Asako; Shibuya, Sachio; Koga, Akinori; Ishii, Junji; Ito, Shoko; and Yamamoto, Hironobu, to Kabushiki Kaisha Toshiba. Combined cycle power plant, 5,778,657, Cl. 60-39,182.
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- Okamoto, Toshiharu, to NEC Corporation. Semiconductor storage device, 5,781,489, Cl. 365-208,000.
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- Lebkowski, Jane S.; McNally, Maureen A.; and Okarma, Thomas B., 5,780,280, Cl. 435-172,300.
- Okawa, Yukio, to Komatsu Ltd. Vehicle steering angle control device, 5,781,870, Cl. 701-25,000.
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- Iwakiri, Itsuro, 5,781,481, Cl. 365-189,110.
- Matsushita, Yuichi, 5,781,426, Cl. 363-60,000.
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- Carney, John M., 5,780,510, Cl. 514-576,000.
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- Olexa, Bruce T., Jr. Punch-out removing tool, 5,778,720, Cl. 72-325,000.
- Olexson, Steven. Tire traction apparatus, 5,779,827, Cl. 152-217,000.
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- Fister, Julius C.; Chen, Szuchain; and Khan, Abid A., 5,780,172, Cl. 428-647,000.
- Moore, Sanders H.; and Sharpe, Brian D., 5,779,269, Cl. 280-741,000.
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- Jones, Oliver David, 5,778,554, Cl. 34-58,000.
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- Towley, Carl K., III; and Olson, Gregory S., 5,779,604, Cl. 482-108,000.
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Reedy, Steven W.; Klopfer, Rand D.; and Myers, Randal L., to Cummins Engine Company, Inc. Camshaft for internal combustion engines, 5,778,841, Cl. 123-90.340.
Rees, David; and Pant, Sandeep, to Cypress Semiconductor Corporation. Reduced output swing with p-channel pullup diode connected, 5,781,034, Cl. 326-86.000.
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Reilly, David M.; Uber, Arthur E., III; Hirschman, Alan D.; and Gelblum, Eugene A., to Medrad, Inc. Front load pressure jacket system with syringe holder, 5,779,675, Cl. 604-131.000.
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Richardson, Craig Allen; Walters, James C.; Krafka, Jerry Lee; and Goodman, Daniel J., to Deere & Company. Headed spindle pin for wobble-type sickle drive, 5,778,727, Cl. 74-60.000.

Richardson, Mark Alan: *See—*
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Richwine, John Robert; Tan, Ostin H.C.; Agrawal, Purushottam Das; Seet, Tiong Boon; and Gase, Kevin Mark, to Advanced Elastomer Systems, L.P. Sports ball bladder and method of manufacture, 5,779,968, Cl. 264-515.000.

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Riley, Dwight D.: *See—*

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Robinson, Scott T.; Newman, Peter H.; Merrow, Jack K.; and Anderson, DeWayne J., to Leviton Manufacturing Co., Inc. Multi-media connection housing, 5,781,686, Cl. 385-135.000.

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Roetzer, Patrick; and Verner, Ron. Rapid adapting precision transformer for occlusal resins, 5,779,476, Cl. 433-166.000.

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Roger H. Woods Limited: *See—*
Pullman, Douglas G., 5,779,355, Cl. 366-137.000.

Roger, Loic: *See—*
Mendy, Francois; Kahn, Jean-Maurice; and Roger, Loic, 5,780,439, Cl. 514-21.000.

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Rogers, Gene R.; and Puckett, Joe R. Tool box adapter, 5,779,117, Cl. 224-403.000.

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Carter, Lan; Keshavan, Madapusi K.; Rai, Ghanshyam; Eason, Jimmy W.; and Hood, Vonnice D., 5,780,139, Cl. 428-217.000.

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- Hormann, Robert Eugene, 5,780,651, Cl. 549-405,000.
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Swartz, Andrew Joseph; and Wood, Kurt Arthur, 5,780,117, Cl. 427-493,000.
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Ide, Yuzo; and Inoue, Koichi, 5,781,391, Cl. 361-91,000.
Tomiyasu, Tomohiro; and Kanetake, Yasuo, 5,781,401, Cl. 361-303,000.
Rohwer, Gary L. Process to destroy biological activity in protein-containing feed. 5,780,288, Cl. 435-238,000.
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Liang, Chung C.; Rojas, Javier R.; and Bains, Kuldip S., 5,781,529, Cl. 370-218,000.
Rolfes, Rodney L.: See—
Goloff, C. Nickolas; and Rolfes, Rodney L., 5,781,090, Cl. 335-276,000.
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Oetting, Richard Highlands; Spaulding, Thomas Lee; and Popowski, Sherry S., 5,778,449, Cl. 2-16,000.
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Mason, Stephen; Percival, Michael J. L.; Merrill, Gary B.; and Doleman, Paul A., 5,780,146, Cl. 428-328,000.
Rolson, J. Brett, to Micron Technology, Inc. Lithographic system and method for exposing a target utilizing unequal stepping distances. 5,780,188, Cl. 430-30,000.
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Romano, George A.: See—
Smith, Michael G.; Terhune, James Howard; May, Roy C.; Romano, George A.; and Kowdley, Balasubramanian S., 5,778,545, Cl. 33-345,000.
Romano, Paul M.; and Supino, Louis, to Cirrus Logic, Inc. Sliding mode control of a magnetoresistive read head for magnetic recording. 5,781,365, Cl. 360-78,060.
Romascan, Edward: See—
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Brandl, Rudolf; and Romer, Thomas, 5,778,587, Cl. 42-70,080.
Romeri, Robert W.: See—
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Ron, Elia Z.: See—
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Malcolm, James Eryx; Fraley, Daniel; Morris, Adrian; Roos, David; Swaminathan, Kumar; Kim, Seok Ho; and Marquart, Robert Carroll, 5,781,540, Cl. 370-321,000.
Ropiak, Irene K.; and Niesdospial, John J., Jr., to Bracco Diagnostics, Inc. Flexible plastic container for the containment and delivery of diagnostic contrast media and parenteral drug formulations. 5,779,693, Cl. 604-408,000.
Rosati, Louis: See—
Mallon, Joseph J.; Farinato, Raymond S.; Rosati, Louis; and Freeman, John J., Jr., 5,779,396, Cl. 405-264,000.
Rosborough, James M., to Advanced System Technologies, Inc. Response time measurement apparatus and method. 5,781,449, Cl. 364-514,000.
Rösch, Christoph; and Seer, Mark, to HS Products AG, Systemtechnik und Produktmanagement. Apparatus for securing a load to a motor vehicle. 5,779,116, Cl. 224-324,000.
Rose, Larry D.; Lauritzen, Donald R.; and Harris, Bradley D. Reaction canister with inflator output treatment fins. 5,779,265, Cl. 280-736,000.
Rose, Millard Franklin: See—
Chen, Zheng; Rose, Millard Franklin; and Adair, Peter L., 5,780,370, Cl. 442-414,000.
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Wright, Timothy; Sillince, Mark Erich; and Rosens, Erwin Anton, 5,780,083, Cl. 426-112,000.
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Marshall, Lisa A.; and Roshak, Amy K., 5,780,609, Cl. 536-23,500.
Rosin, Richard R.: See—
Nemeth, Laszlo; Lewis, Gregory J.; and Rosin, Richard R., 5,780,654, Cl. 549-531,000.
Ross, David P.: See—
Livesey, Stephen A.; del Campo, Anthony A.; Nag, Abhijit; Nichols, Ken B.; Piuono, Carmen; and Ross, David P., 5,780,295, Cl. 435-307,100.
Ross, William T.: See—
Blonigen, Bradley J.; and Ross, William T., 5,780,074, Cl. 425-394,000.
Rosse, Meinrad, to Nestec S.A. Dosing nozzle assembly and process for dosing liquid. 5,779,147, Cl. 239-99,000.
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Stephen, Robert L.; Stöhrer, Manfred; Fontanella, Umberto; Griffith, Donald P.; Lugnani, Franco; Rossi, Cino; and Eruzzi, Silvio, 5,779,661, Cl. 604-21,000.
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Rossmo, Darcy Kim, to Environmental Criminology Research, Inc. Expert system method of performing crime site analysis. 5,781,704, Cl. 395-75,000.
Rostoker, Michael D.; Schneider, Mark R.; and Pasch, Nicholas F., to LSI Logic Corporation. Electronic system having fluid-filled and gas-filled thermal cooling of its semiconductor devices. 5,780,928, Cl. 257-713,000.
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Roth, Laurence A.; Herman, Stephen J.; Khosravi, Farhad; Melanson, David; Dumont, Michael; Campbell, Patrick K.; and Spiridigliozzi, John C., to Focal, Inc. Devices and methods for application of intraluminal photopolymerized gels. 5,779,673, Cl. 604-101,000.
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Roth, Wieslaw J.: See—
Chester, Arthur W.; Fung, Anthony S.; Kresge, Charles T.; and Roth, Wieslaw J., 5,779,882, Cl. 208-120,000.
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Roussilhe, Jacques; and Tsoi, Siu C., to Eastman Kodak Company. Photographic developing composition. 5,780,212, Cl. 430-466,000.
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Rouviere, Fabienne Arlette Francoise; and Muller, Pascale Francine Jeanne, to Goodyear Tire & Rubber Company, The. Heat sensitizable latex. 5,780,544, Cl. 524-832,000.
Rowan, Bryan S.; and Serrano, Louis Joseph, to International Business Machines Corporation. Servo-free velocity estimator for coil driven actuator arm in a data storage drive. 5,781,363, Cl. 360-78,090.
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Carr, William N.; and Sun, Xi-qing, 5,781,331, Cl. 359-288,000.
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Holt, Mark D.; Grim, Tracy E.; and Wyatt, Stacy L., 5,778,565, Cl. 36-110,000.
Royer, Robert D.; Deck, Lorraine M.; and Vanderjagt, David L., to University of New Mexico, The. Deoxygossylic compounds. 5,780,675, Cl. 562-467,000.
Rubio, Fernando M.; Lawruk, Timothy S.; and Lachman, Charles E., to Strategic Diagnostics, Inc. Immunoassay standards for polyaromatic hydrocarbon detection. 5,780,250, Cl. 435-7,930.
Ruby, Richard C., to Hewlett-Packard Company. Post-fabrication tuning of acoustic resonators. 5,780,713, Cl. 73-1,820.
Rucker, David L., to Cloud Company, Inc. Low-flow stator and method. 5,779,160, Cl. 239-466,000.
Ruckl, Siegfried; and Kapfinger, Harald, to Schablonentechnik Kufstein Aktiengesellschaft. Device for producing a screen printing stencil. 5,781,224, Cl. 347-248,000.
Ruddy, Francis H.: See—
Fero, Arnold H.; Anderson, Stanwood L.; Congedo, Thomas V.; Dullo, Abdul R.; and Ruddy, Francis H., 5,781,602, Cl. 376-159,000.

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Ruderman, Warren; Fehner, James R.; and Zhang, Zhenyu, to Inrad. Synthesis of inorganic membranes on supports. 5,779,904, Cl. 210-500,250.
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Ruffin, Paul B., to United States of America, Army. Thermally symmetric, crossover-free fiber optic sensor coils and method for winding them. 5,781,301, Cl. 356-350,000.
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Gieseler, Axel; Lindemann, Klaus; Möller, Johannes; Riedemann, Heinrich; Ruhnau, Gerhard; Saba, Manfred; and Weihe, Ulrich, 5,780,732, Cl. 73-121,000.
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Rupen, Roger J. Flotation device. 5,779,512, Cl. 441-123,000.
Rupp, Scott A. Outrigger systems for motorboats. 5,778,817, Cl. 114-255,000.
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Russ, Will L.; Alagar, Sridhar; Badt, Sig Harold, Jr.; Bengston, Lee D.; Chao, Tim T.; Ellefson, Fred; McGlade, Bryan J.; Sees, Mark W.; and Wagner, Clint Allen, to MCI Communications Corp. Implementation protocol for SHN-based algorithm restoration platform. 5,781,535, Cl. 370-248,000.
Russell, Gary A., to Sierra Instruments, Inc. Axial thermal mass flowmeter. 5,780,736, Cl. 73-204,110.
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Russell, Mark John; Rickhuss, Michael John; and Zielinski, Zygmunt Joseph, to MNZ Solutions Pty. Ltd. Body moulding solution. 5,780,408, Cl. 510-200,000.
Russell, Matthew, to LSI Logic Corporation. Open drain output driver having digital slew rate control. 5,781,050, Cl. 327-170,000.
Russell, Robert J.; and Romeri, Robert W., to Bull HN Information Systems Inc. Electrostatic discharge (ESD) protection system for shielding a printed circuit assembly during manufacture. 5,779,056, Cl. 206-709,000.
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Fujii, David B.; and Rust, Robert A., 5,781,308, Cl. 358-451,000.
Rusterholz, John T., to Cadence Design Systems, Inc. System and method for reordering lookup table entries when table address bits are inverted. 5,781,903, Cl. 707-100,000.
Ruthenberg, Meyer L.: See—
Larkin, Barry E.; and Ruthenberg, Meyer L., 5,779,617, Cl. 493-475,000.
Rutherford, William; and Denz, Kieron, to Fioris Pty Limited. Hanger bracket. 5,779,198, Cl. 248-58,000.
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Marrelli, John C.; and Rutledge, Gary L., 5,779,035, Cl. 206-233,000.
Rutledge, Melvin Clarence, Jr.: See—
Widdowson, Katherine Louisa; Veber, Daniel Frank; Jurewicz, Anthony Joseph; Hertzberg, Robert Philip; and Rutledge, Melvin Clarence, Jr., 5,780,483, Cl. 514-311,000.
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Rodan, Gideon A.; Rutledge, Su Jane; and Schmidt, Azriel, 5,780,291, Cl. 435-252,300.
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Lee, David K.; Riley, David W.; and Ryan, Frederick W., Jr., 5,781,438, Cl. 364-464,140.
Ryan, John Louis: See—
Chew, Hongzong; Cuthbert, John David; Herring, Hamlet; Ryan, John Louis; Sun, Robert Ching-I; Wolf, Thomas Michael; and Wroge, Daniel Mark, 5,780,316, Cl. 438-11,000.
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Haas, Edwin G.; Hilgeman, Theodore W.; and Ryan, Robert E., 5,781,292, Cl. 356-345,000.
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Ryang, Hong-Son; Snyder, Joseph T. II; and Sung, An-Min J., to Reliance Electric Industrial Company. Photocurable composition for electrical insulation. 5,780,525, Cl. 522-81,000.
Rybicki, Mathew A.; May, Michael R.; Pendleton, Matthew A.; Johnson, Terence L.; and Molnar, Peter R., to Motorola Inc. Flexible asymmetrical digital subscriber line ADSL transmitter, remote terminal using same, and method therefor. 5,781,728, Cl. 395-200,600.
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S. C. Johnson & Son, Inc.: See—
Babinski, Linda J.; and Limburg, James A., 5,780,022, Cl. 424-73,000.
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Saarela, Janis Edith; and Saarela, Kristi Kay, 5,778,468, Cl. 5-636,000.
Saarem, Myrli; and Dawn, Alan W., to Toro Company, The. Pop-up sprinkler with pressure regulator. 5,779,148, Cl. 239-104,000.
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Gieseler, Axel; Lindemann, Klaus; Möller, Johannes; Riedemann, Heinrich; Ruhnau, Gerhard; Saba, Manfred; and Weihe, Ulrich, 5,780,732, Cl. 73-121,000.
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Sabnis, Ram W.; Mayo, Jonathan W.; Hays, Edith G.; Brewer, Terry L.; Stroder, Michael D.; Yanagimoto, Akira; Sone, Yasuhisa; Watanabe, Yoshitane; and Ema, Kiyomi, to Brewer Science, Inc.; and Nissan Chemical Industries, Ltd. Ultra thin photolithographically imageable organic black matrix coating material. 5,780,201, Cl. 430-270,100.
Sabsabi, Mohamad; and Bussiere, Jean F. Method and apparatus for rapid in situ analysis of preselected components of homogeneous solid compositions, especially pharmaceutical compositions. 5,781,289, Cl. 356-318,000.
Saca, Ricardo E. Protective garment for the hip. 5,779,658, Cl. 602-61,000.
Sachdev, Manoj; and Atzema, Botjo, to U.S. Philips Corporation. Method for testing an electronic circuit by logically combining clock signals, and an electronic circuit provided with facilities for such testing. 5,781,025, Cl. 326-16,000.
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Kimura, Katsuhiko; Saegusa, Shozo; and Muranishi, Masaru, 5,781,576, Cl. 372-45,000.
Saeiki, Masaru; Onishi, Kizo; and Hayashi, Shunro, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Dispersing stabilizer for suspension polymerization of vinyl chloride. 5,780,547, Cl. 525-61,000.
Saeiki, Mitsuo; Matsuda, Kouichi; Yano, Hidetoshi; and Ozawa, Hidekiyo, to Fujitsu Limited. Power control unit loading test method. 5,781,000, Cl. 323-234,000.
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Bright, Aaron Lee; and Green, Robert W., 5,781,272, Cl. 351-123,000.
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Coco, Isabelle; Cocciantelli, Jean-Michel; and Villenave, Jean-Jacques, 5,780,184, Cl. 429-217.000.

Sagawa, Masakazu: *See—*

Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichiro; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tanehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.

Sage, Gerald F.; and Msutta, Gurbux S., to InterWAVE Communications International Ltd. Frequency agile transceiver with multiple frequency synthesizers per transceiver, 5,781,582, Cl. 375-202.000.

Sagem-Autoliv: *See—*

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Sahashi, Masashi: *See—*

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Saika, Hideyuki; Murata, Toshiki; Pitterna, Thomas; Fröh, Thomas; Svensson, Lene D.; Urade, Yoshihiro; Yamamura, Takaki; and Okada, Toshikazu, to Ciba-Geigy Japan Limited. Endothelin receptor antagonists, 5,780,498, Cl. 514-419.000.

Saiki, Norihito; Imazu, Katsuhiro; Kobayashi, Akira; and Kobayashi, Tomomi, to Toyo Seikan Kaisha, Ltd. Method of producing seamless cans, 5,778,722, Cl. 72-347.000.

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Saint-Gobain Vitrage S.A.: *See—*

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Saita, Koji: *See—*

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Karita, Seiichiro; Saito, Akio; and Saito, Megumi, 5,781,208, Cl. 347-29.000.

Saito, Hiroshi; Katsuki, Hiroshi; and Kawahara, Fumio, to Kyorin Pharmaceutical Co., Ltd. Serum-free medium for cultivation of postnatal central neurons, 5,780,301, Cl. 435-404.000.

Saito, Katsumi, to Hadsys, Inc. Throttle valve control device, 5,778,853, Cl. 123-396.000.

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Saito, Masahisa, to Kabushiki Kaisha Toshiba. Heterodyne receiver, 5,781,851, Cl. 455-182.100.

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Yoshitomi, Takashi; Iwai, Hiroshi; Saito, Masanobu; Momose, Hisayo; Ohguro, Tatsuya; and Ono, Mizuki, 5,780,901, Cl. 257-336.000.

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Miyadera, Tatsuo; Yoshida, Kiyohide; Saito, Mika; Irite, Naoko; Abe, Akira; and Furuyama, Masataka, 5,780,002, Cl. 423-239.100.

Saito, Noriaki: *See—*

Hirano, Yasuhiro; Akiba, Masatsugu; Shiomi, Yutaka; and Saito, Noriaki, 5,780,145, Cl. 428-323.000.

Saito, Shinichiro; Nakamura, Norio; Shono, Yasuo; Higuchi, Yoshinori; and Ohya, Atsunori, to Konica Corporation; and Toshiba Corporation. Plane light source unit and light guide used therein, 5,779,337, Cl. 362-31.000.

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Ejiri, Kiyomi; Inaba, Hiroo; Saito, Shinji; and Hayakawa, Satoru, 5,780,141, Cl. 428-323.000.

Itaya, Kazuhiko; Yamamoto, Masahiro; Onomura, Masaaki; Fujimoto, Hidetoshi; Hatakoshi, Genichi; Sugawara, Hideto; Ishikawa, Masayuki; Rennie, John; and Saito, Shinji, 5,780,873, Cl. 257-521.000.

Saito, Takashi: *See—*

Nakamura, Yoichi; Saito, Takashi; Coldwell, Phil; and Hart, Nigel, 5,781,448, Cl. 364-492.000.

Saito, Takayuki: *See—*

Kadohiro, Takashi; Igarashi, Shinya; Suzuki, Tadao; Tsumagari, Mamoru; and Saito, Takayuki, 5,780,735, Cl. 73-202.500.

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Maruyama, Takayuki; Ogino, Takao; Ishino, Yuichi; Saito, Tasuku; Haraoka, Takashi; Takagi, Kaori; and Hatano, Hitomi, 5,779,880, Cl. 208-44.000.

Saito, Tatsunori: *See—*

Tanaka, Hirokazu; and Saito, Tatsunori, 5,781,542, Cl. 370-342.000.

Saito, Tsunenari: *See—*

Fujii, Bunichiro; Ozawa, Kenichi; Saita, Koji; Saito, Tsunenari; and Minegishi, Hajime, 5,780,962, Cl. 313-402.000.

Saito, Yutaka; Anzai, Yuriko; Suzuki, Ryuichi; and Ichinose, Hiroshi, to Japan Tobacco Inc. Smoking article, 5,778,899, Cl. 131-352.000.

Saitoh, Shinji; Yoshikawa, Masato; Akiyama, Setsuo; and Kato, Shingo, to Bridgestone Corporation. Composite rubber article and method of making, 5,780,132, Cl. 428-36.800.

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Saka, Tsutomu: *See—*

Noda, Toshiharu; Okabe, Michio; Sato, Katsuaki; and Saka, Tsutomu, 5,779,972, Cl. 420-54.000.

Saka, Yuuji; Onizuka, Takahiro; Oka, Yoshito; Kobayashi, Makoto; and Inoue, Nori, to Sumitomo Wiring Systems, Ltd. Wiring construction of electrical connection box, 5,778,528, Cl. 29-850.000.

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Sakaguchi, Yasuharu: *See—*

Kimura, Yoshitsugu; Onoshi, Motonori; Sakaguchi, Yasuharu; and Watanabe, Keitaro, 5,779,283, Cl. 285-305.000.

Sakai, Minoru: *See—*

Goto, Takahiro; Katoh, Kazunobu; and Sakai, Minoru, 5,780,198, Cl. 430-264.000.

Sakaki, Hirokazu: *See—*

Sawada, Hirokazu; Sakaki, Hirokazu; Kakei, Tsutomu; Uesugi, Akio; and Matsuki, Masaya, 5,779,824, Cl. 148-437.000.

Sakakibara, Yuichiro: *See—*

Nakashima, Hiroshi; Hamada, Toshiaki; Terazawa, Tadashi; and Sakakibara, Yuichiro, 5,779,327, Cl. 303-122.120.

Sakamoto, Junshi: *See—*

Morita, Kouichi; Ouchi, Hideo; and Sakamoto, Junshi, 5,779,368, Cl. 384-448.000.

Sakamoto, Keishi; Tsuneoka, Masaki; Kasugai, Atsushi; and Kariya, Tsuyoshi, to Kabushiki Kaisha Toshiba; and Japan Atomic Energy Research Institute. Gyrotron apparatus including reflecting cylinders which provide undesired wave absorption, 5,780,969, Cl. 315-5.000.

Sakamoto, Masafumi, to Japan Servo Co., Ltd. Two-phase permanent-magnet electric rotating machine, 5,780,944, Cl. 310-49.000.

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Ishida, Takeshi; Sakamoto, Yuichi; and Yoshizawa, Genzo, 5,781,444, Cl. 364-479.020.

Sakata, Ikuo, to Ichihok Industries, Ltd. Positioning device for car sideview mirror, 5,781,354, Cl. 359-841.000.

Sakata, Noboru: *See—*

Machii, Minoru; Nanba, Nobuyoshi; Lim, Boon Keng; Sakata, Noboru; Sakurai, Nobuo; and Furusawa, Yasuhiko, 5,779,811, Cl. 134-4.000.

Sakata, Toshikazu, to Oki Electric Industry Co., Ltd. Semiconductor memory device, 5,781,482, Cl. 365-189.110.

Sakiyama, Kazuyuki: *See—*

Imai, Tetsuya; and Sakiyama, Kazuyuki, 5,781,020, Cl. 324-649.000.

Sako, Yoichiro; Yamagami, Tamotsu; Otsuka, Satoshi; and Tobita, Minoru, to Sony Corporation. Data recording/reproducing method, data reproducing apparatus and recording medium, 5,781,565, Cl. 371-37.400.

Sako, Yoichiro; Otsuka, Satoshi; and Yamagami, Tamotsu, to Sony Corporation. Digital coding method and apparatus for the correction of burst errors, 5,781,567, Cl. 371-39.100.

Sako, Yoichiro: *See—*

Yamagami, Tamotsu; Watanabe, Tetsu; and Sako, Yoichiro, 5,781,518, Cl. 369-47.000.

Sakoguchi, Iwao; Funahashi, Yasuhiro; and Sakoguchi, Yoshiko, to Brother Kogyo Kabushiki Kaisha. Video reproducing apparatus with non-repetitive selecting function, 5,781,683, Cl. 386-96.000.

Sakoguchi, Yoshiko: *See—*

Sakoguchi, Iwao; Funahashi, Yasuhiro; and Sakoguchi, Yoshiko, 5,781,683, Cl. 386-96.000.

Sakuma, Shuji; Atsumi, Kiminori; and Ishizaki, Tsutomu, to Kabushiki Kaisha Sangi. Semiconductor integrated circuit means comprising conductive protein on insulating film of calcium phosphate, 5,780,869, Cl. 257-40.000.

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Yasukawa, Naoki; Shinbo, Akira; Kawata, Masayuki; and Sakumoto, Kazumi, 5,781,511, Cl. 368-11.000.

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Iwata, Mitsuhiro; Sakurai, Hideki; and Sanji, Takanobu, 5,780,661, Cl. 556-429.000.

Sakurai, Nobuo: *See—*

Machii, Minoru; Nanba, Nobuyoshi; Lim, Boon Keng; Sakata, Noboru; Sakurai, Nobuo; and Furusawa, Yasuhiko, 5,779,811, Cl. 134-4.000.

Sakurai, Shigeru: *See—*

Tobita, Tsunehiro; Seki, Yukihiko; Hattori, Ryuichi; Miyagawa, Yuji; Sakurai, Shigeru; Suzuki, Michiyuki; and Ote, Ichiro, 5,781,434, Cl. 364-184.000.

Salerno, Jack P.: *See—*

Jacobsen, Jeffrey; Fan, John C. C.; and Salerno, Jack P., 5,781,164, Cl. 345-87.000.

Salewski, Klaus Dieter: *See—*

Fuchs, Werner; Wolfram, Andreas; Bechstein, Karl-Heinz; and Salewski, Klaus Dieter, 5,781,295, Cl. 356-349.000.

Sali, Mauro; Caser, Fabio Tassan; and Schippers, Stefan, to SGS-Thomson Microelectronics, S.r.l. Parallel programming method of memory words and corresponding circuit, 5,781,474, Cl. 365-185.180.

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Garza-Andarza, Oscar; Salinas-Peña, Gerardo; Ochoa-Rodríguez, Octavio Juan; and Carrillo-Cantú, David Hugo, 5,778,962, Cl. 164-130.000.

Salmon, Pierre; and Racine, Jean-Patrice, to Novembal. Screw cap and a tamper-proofing ring, packaging provided with such a cap, a method of manufacturing such a cap, and a method of manufacturing such packaging, 5,779,075, Cl. 215-252.000.

Salomon, Gitta B.: *See—*

Oren, Timothy R.; Kreitman, Kristee M.; and Salomon, Gitta B., 5,781,904, Cl. 707-100.000.

Salvadori, Severo: *See—*

Lazarus, Lawrence H.; Salvadori, Severo; and Temussi, Piero Andrea, 5,780,589, Cl. 530-331.000.

Salvestrini, Jean-Paul; and Fontana, Marc, to Université de Metz. Electro-optical modulator, 5,781,328, Cl. 359-252.000.

Salz, Ulrich: *See—*

Rheinberger, Volker; Moszner, Norbert; and Salz, Ulrich, 5,780,668, Cl. 560-113.000.

Sam Hausman Meat Packer, Inc.: *See—*

Pená, Daniel S., 5,779,432, Cl. 414-794.400.

Sam, Huy: *See—*

Tomita, Hiromi; Sam, Huy; Watanabe, Haruo; and Kusunoki, Misao, 5,779,909, Cl. 210-712.000.

Samimy, Bahman: *See—*

Bitar, Sami; Samimy, Bahman; Russell, John David; Glass, Kevin Michael; Malecki, Marie Therese-Brodner; and Cardanha, Timothy Lino, 5,781,105, Cl. 340-468.000.

Samjin Pharmaceutical Co., Ltd.: *See—*

Cho, Eui-Hwan; Chung, Sun-Gan; Kim, Joong-Young; Lee, Sun-Hwan; Kwon, Ho-Seok; Kim, Byung-Chul; Kong, Jae-Myeong; Lee, Jea-Eung; and Kang, Dong-Wook, 5,780,472, Cl. 514-252.000.

Samsung Display Devices Co., Ltd.: *See—*

Lee, Kil-won, 5,778,912, Cl. 134-104.200.

Samsung Electric Co., Ltd.: *See—*

Bae, Yong-Cheol; Yoon, Sei-Seung; and Seo, Dong-Il, 5,781,494, Cl. 365-230.030.

Samsung Electro-Mechanics Co., Ltd.: *See—*

Ikegami, Masahomi; and Park, Hobeom, 5,779,030, Cl. 200-344.000.

SamSung Electronics Co., Ltd.: *See—*

Baek, Nam-Dae, 5,781,618, Cl. 379-100.060.

Baek, Soon-Ki, 5,779,212, Cl. 248-371.000.

Bang, Ho-Yul, 5,781,362, Cl. 360-78.050.

Bang, Jeong-Ho, 5,780,978, Cl. 315-382.100.

Choi, Won-Woo; and Hong, Seok-Weon, 5,780,821, Cl. 219-703.000.

Hong, Myung-Jung; and Kim, Ju-Hwan, 5,779,458, Cl. 417-569.000.

Jeong, Byung Mann, 5,779,485, Cl. 434-321.000.

Jeong, Joon-Young, 5,781,697, Cl. 395-3.000.

Jeong, Seong-Wook, 5,778,694, Cl. 62-187.000.

Jun, Yong-min; Jang, Jae-man; Choi, Sang-kook; and Park, Chan-sik, 5,780,317, Cl. 438-16.000.

Kang, Myung-seok; Cho, Young-ho; Song, Ci-moo; and Yoon, Sung-kie, 5,780,739, Cl. 73-504.160.

Kim, Jin Surk, 5,779,165, Cl. 241-33.000.

Kim, Yo-Joung, 5,780,914, Cl. 257-435.000.

Kong, Tae-Ho, 5,781,619, Cl. 379-100.140.

Lee, Jae-kon, 5,781,054, Cl. 327-231.000.

Lee, Ki Bang; Lee, Byung-leul; Cho, Young-ho; and Song, Ci-moo, 5,780,740, Cl. 73-504.120.

Lee, Ki Bang; Cho, Young-ho; and Song, Ci-moo, 5,780,948, Cl. 310-81.000.

Lee, Ki-Jun; and Kim, Jin-Ki, 5,781,485, Cl. 365-201.000.

Lee, Young Su, 5,778,705, Cl. 68-196.000.

Lee, Young-Jae; Jung, Seung-Shik; and Yang, Dong-Choul, 5,780,840, Cl. 250-208.100.

Moon, Seung-bin, 5,780,808, Cl. 219-124.340.

Oh, Yung Hwan; Kim, Yeon Jun; and Bae, Jum Han, 5,781,696, Cl. 395-2.790.

Park, Hae-jin; Lee, Hai-min; Kim, Juong-ho; Shin, Soo-chul; Kim, Jae-in; and Kang, Yun-seok, 5,778,688, Cl. 62-89.000.

Park, In-sung; and Lee, Byoung-taek, 5,780,115, Cl. 427-539.000.

Park, Seong-Kue, 5,781,611, Cl. 379-34.000.

Seo, Jeong Woo, 5,780,926, Cl. 257-676.000.

Seok, Jin Oh, 5,779,347, Cl. 362-94.000.

Seong, Goan-soo, 5,781,688, Cl. 386-79.000.

Shin, Hyeog-sang, 5,781,185, Cl. 345-213.000.

Son, Jae Cheol, 5,781,134, Cl. 341-67.000.

Son, Jin-young, 5,780,336, Cl. 438-251.000.

Samsung Electronics, Ltd.: *See—*

Le, Me Van; and Lin, Jong-Ming, 5,781,361, Cl. 360-77.080.

Sanada, Yukio: *See—*

Fujiyama, Masaki; Sanada, Yukio; Mushimoto, Shuji, deceased, 5,781,402, Cl. 361-321.400.

Sanches, Jean: *See—*

Kamani, Sanjay; and Sanches, Jean, 5,780,787, Cl. 187-316.000.

Sancheti, Ajit Fathailal: *See—*

Larson, Nils Eric; and Sancheti, Ajit Fathailal, 5,781,373, Cl. 360-97.020.

Sand, Kjell, to Aplicator System AB. Device for feeding out fibres at production of thermosettable fibre reinforced products, 5,779,793, Cl. 118-36.000.

Sandell, Linda J., to University of Washington. Assays for cartilage synthesis in osteoarthritis based on detection of type IIA procollagen/propeptide, 5,780,240, Cl. 435-7.100.

Sanden Company: *See—*

Iizuka, Jiro; and Miyazawa, Kiyoshi, 5,779,461, Cl. 418-55.500.

Sanders, Brenda M.; Jenkins, Kenneth D.; Nichols, Jack L.; and Imber, Bryan E., to StressGen Biotechnology Corporation; and CA. State University, Long Beach Foundation. Accumulation of heat shock proteins for evaluating biological damage due to chronic exposure of an organism to sublethal levels of stressors, 5,780,246, Cl. 435-7.210.

- Sanoh Industrial Co., Ltd.: *See—*
Kaishio, Mitsuo, 5,779,286, Cl. 285-379,000.
- Sanshin Kogyo Kabushiki Kaisha: *See—*
Sougawa, Masafumi; Hakamata, Kyoji; and Genma, Hisanori, 5,778,836, Cl. 123-65,00P.
- Takahashi, Masanori; and Isogawa, Atsushi, 5,778,847, Cl. 123-195,00P.
- Takahashi, Masanori; and Isogawa, Atsushi, 5,778,848, Cl. 123-196,00W.
- Santel, Hans-Joachim: *See—*
Förster, Heinz; Diehr, Hans-Joachim; Santel, Hans-Joachim; and Dollinger, Markus, 5,780,392, Cl. 504-263,000.
- Krüger, Bernd-Wieland; Fischer, Reiner; Bertram, Heinz-Jürgen; Bretschneider, Thomas; Böhm, Stefan; Krebs, Andreas; Schenke, Thomas; Santel, Hans-Joachim; Lurssen, Klaus; Schmidt, Robert R.; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Stendel, Wilhelm, 5,780,394, Cl. 504-281,000.
- Santella, Andrew W. Water fortress, 5,779,240, Cl. 273-349,000.
- Santiesteban, Jose G.: *See—*
Chang, Clarence D.; DiGuseppi, Frank T.; and Santiesteban, Jose G., 5,780,382, Cl. 502-309,000.
- Chang, Clarence D.; Hellring, Stuart D.; Marler, David O.; Santiesteban, Jose G.; and Vartuli, James C., 5,780,703, Cl. 585-732,000.
- Santioemmo, Carl V.; and Humphries, James P., to Ranpak Corp. Feline urinary tract disease-detecting paper cat litter and method, 5,780,385, Cl. 502-401,000.
- Santos, Gregory N.; Maguire, David J.; Riley, Dwight D.; and Edwards, James R., to Compaq Computer Corporation. Computer system utilizing two ISA buses connected to a mezzanine bus, 5,781,748, Cl. 395-308,000.
- Sanyo Electric Co., Ltd.: *See—*
Inoue, Takeo; and Sugishita, Shozo, 5,781,885, Cl. 704-267,000.
- Kihara, Katsuya; and Koga, Masayuki, 5,781,171, Cl. 345-93,000.
- Kondo, Kazuhiko; and Takeuchi, Minoru, 5,781,242, Cl. 348-441,000.
- Ogata, Hitoshi; Yoshida, Masanao; and Yokota, Tokuo, 5,781,515, Cl. 369-32,000.
- Sano, Takeshi; Hamada, Yuji; and Shibata, Kenichi, 5,779,937, Cl. 252-301,160.
- Uehashi, Hiroyuki, 5,780,823, Cl. 219-710,000.
- Sanzo, Christopher J.; and Levin, Gedaly, to Cherry Semiconductor Corporation. Totem pole driver with cross conduction protection and default low impedance state output, 5,781,058, Cl. 327-387,000.
- Sapru, Krishna; Venkatesan, Srinivasan; Stetson, Ned T.; and Rangaswamy, Krishnaswamy, to Energy Conversion Devices, Inc. Robust metal hydride hydrogen storage system with metal hydride support structure, 5,778,972, Cl. 165-104,120.
- Särnstrand, Bengt Olof: *See—*
Andersson, Carl-Magnus Alexander; Bergstrand, Håkan Sten Axel; Hallberg, Anders Rudolf; Särnstrand, Bengt Olof; and Tunek, Anders Per Sigvard, 5,780,508, Cl. 514-562,000.
- Sarpeshkar, Rahul; Kramer, Jörg; and Koch, Christof, to California Institute of Technology. Pulse domain neuromorphic integrated circuit for computing motion, 5,781,648, Cl. 382-107,000.
- Saruwatari, Hiroshi: *See—*
Shinbori, Kenichi; Udagawa, Yoshiro; and Saruwatari, Hiroshi, 5,781,236, Cl. 348-342,000.
- Saruwatari, Tomosumi: *See—*
Iino, Akihiro; Kasuga, Masao; Suzuki, Makoto; Suzuki, Kenji; and Saruwatari, Tomosumi, 5,780,955, Cl. 310-316,000.
- Saruyama, Toshio: *See—*
Adachi, Hiroshi; and Saruyama, Toshio, 5,780,543, Cl. 524-789,000.
- Sarvas, Matti: *See—*
Kontinen, Vesa; and Sarvas, Matti, 5,780,261, Cl. 435-69,100.
- Sasaki, Eiji: *See—*
Kuwabara, Shin; Nagata, Kazuhisa; Imashiro, Yasuo; and Sasaki, Eiji, 5,779,775, Cl. 106-18,110.
- Sasaki, Jun: *See—*
Inoue, Yoshihisa; Ebisu, Hajime; Ishida, Naomichi; Nakamura, Norifumi; Sasaki, Jun; Okazoe, Takashi; Morizawa, Yoshitomi; Yasuda, Arata; Wang, Shuzhong; and Ito, Tomoko, 5,780,634, Cl. 546-173,000.
- Sasaki, Masayoshi: *See—*
Muroyama, Masakazu; and Sasaki, Masayoshi, 5,779,521, Cl. 451-56,000.
- Sasaki, Mitsuo, to Unisia Jecs Corporation. Apparatus and method for controlling damping force characteristic of vehicular suspension system, 5,781,873, Cl. 701-37,000.
- Sasaki, Sumikazu: *See—*
Hori, Seiji; Kitazawa, Yasuo; Sasaki, Sumikazu; Kato, Keiichi; Tsukiyama, Naohiro; and Matsui, Kenji, 5,779,176, Cl. 242-379,100.
- Sasaki, Tadashi, to Fuji Photo Optical Co., Ltd. Zoom-lens drive control apparatus, 5,781,808, Cl. 396-81,000.
- Sasaki, Tadashi: *See—*
Aiso, Katsuyoshi; Goto, Takeshi; Suzuki, Kenichi; and Sasaki, Tadashi, 5,779,405, Cl. 409-132,000.
- Sasaki, Takamitsu: *See—*
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- Sasano, Akira: *See—*
Yamamoto, Hideaki; Matsumaru, Haruo; Suzuki, Tetsuaki; Nakatani, Mitsuo; Tsukii, Michio; Sasano, Akira; Oikawa, Saburo; and Oritsuki, Ryoji, 5,781,255, Cl. 349-46,000.
- Sasazawa, Hideaki: *See—*
Yamamura, Hisae; Matsuyama, Yukio; Ninomiya, Takanori; and Sasazawa, Hideaki, 5,780,866, Cl. 250-559,220.
- Sassa, Robert L.: *See—*
Bucher, Richard Andrew; Sassa, Robert L.; and Lau, Tit-Keung, 5,779,795, Cl. 118-264,000.
- Satake Corporation: *See—*
Satake, Satoru; Ito, Takafumi; and Ikeda, Norimasa, 5,779,058, Cl. 209-581,000.
- Satake, Satoru; Ito, Takafumi; and Ikeda, Norimasa, to Satake Corporation. Color sorting apparatus for grains, 5,779,058, Cl. 209-581,000.
- Satkowski, Michael Matthew: *See—*
Noda, Isao; Lampe, Reinhold August; and Satkowski, Michael Matthew, 5,780,368, Cl. 442-334,000.
- Sato, Genichi: *See—*
Nagayama, Masami; Usui, Katsuaki; Mataka, Kozo; Ojima, Yoshinori; Sato, Genichi; and Hisabe, Yasushi, 5,779,453, Cl. 417-410,400.
- Sato, Hidemasa: *See—*
Miyamoto, Yoshinori; Sato, Hidemasa; Agawa, Jiro; Yamashita, Keizo; and Matsumoto, Toshinari, 5,779,850, Cl. 156-405,100.
- Sato, Hirohide: *See—*
Umeda, Atsushi; Tokura, Norihito; Sato, Hirohide; Taniguchi, Makoto; and Kusase, Shin, 5,780,953, Cl. 310-263,000.
- Sato, Katsuaki: *See—*
Noda, Toshiharu; Okabe, Michio; Sato, Katsuaki; and Saka, Tsutomu, 5,779,972, Cl. 420-54,000.
- Sato, Kei: *See—*
Nakamura, Haruka; Nagata, Kazutaka; Hiroe, Yasutoshi; Enokida, Tomoaki; Sato, Kei; Kuwata, Koji; and Omi, Kyouji, 5,781,310, Cl. 358-468,000.
- Sato, Kenji: *See—*
Oki, Naohiko; Noguchi, Minoru; Demachi, Atsushi; Sato, Kenji; Komazawa, Eisuke; and Araki, Kazuhiro, 5,780,185, Cl. 429-218,000.
- Sato, Makoto; and Umebara, Kiyomi, to Hitachi, Ltd. Optimization method for computation partitioning oriented to a distributed memory, 5,781,777, Cl. 395-709,000.
- Sato, Masao: *See—*
Hashimoto, Akira; Hasegawa, Kazuo; and Sato, Masao, 5,781,364, Cl. 360-78,050.
- Sato, Morimasa; Iwasaki, Masayuki; and Sugiyama, Takekatsu, to Fuji Photo Film Co., Ltd. Process for forming colored partial picture element and light-shielding light-sensitive resin composition used therefor, 5,780,203, Cl. 430-294,000.
- Sato, Ryoko; Okayama, Masao; Fukudome, Yoshio; and Furutono, Masuo, to Hitachi, Ltd. Automatic teller machine including a halt requesting mechanism in a durs period, 5,780,825, Cl. 235-379,000.
- Sato, Shuji: *See—*
Hirano, Hideki; Shiota, Hiroyuki; Sato, Shuji; and Shinozaki, Kenji, 5,781,210, Cl. 347-51,000.
- Sato, Yasuyuki; Miyazaki, Keiji; Fujii, Yasuki; Azuma, Mitsuhiro; and Chujo, Takafumi, to Fujitsu Limited. Path switching system and method, 5,781,528, Cl. 370-218,000.
- Sato, Yohei: *See—*
Ujita, Toshihiko; Yamakawa, Koji; Takenouchi, Masanori; Sugama, Sadaaki; Watanabe, Kenjiro; Osada, Torachika; Nakajima, Kazuhiro; Tsutsumi, Takayoshi; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Kei-ichiro; and Sato, Yohei, 5,781,213, Cl. 347-86,000.
- Sato, Yukio; Yanuma, Yutaka; Ohzeki, Kazuhiko; Sekine, Ryuta; and Miyano, Yasuo, to Olympus Optical Co., Ltd. Disposable medical instrument, 5,779,686, Cl. 604-265,000.
- Satoh, Makoto; Setoh, Ritsuo; Inagaki, Katsunari; and Ohara, Jun, to Sumitomo Chemical Company, Limited. Polypropylene composition for laminated and oriented film and laminated and oriented film thereof, 5,780,168, Cl. 428-516,000.
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- Sauermann, Gerhard: *See—*
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- Saunders, Bradley L., to Hewlett-Packard Company. Method for maintaining contiguous texture memory for cache coherency, 5,781,197, Cl. 345-430,000.
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- Saunders, Richard J., to Advanced Cardiovascular Systems, Inc. Method and apparatus for direct laser cutting of metal stents, 5,780,807, Cl. 219-121,710.
- Saunders, Steven E., to Interval Research Corporation. Surface jet angular rate sensor, 5,780,738, Cl. 73-504,060.
- Saur, Joerg, to Mercedes-Benz AG. Cruise control road speed control device, especially for a diesel-powered vehicle, 5,781,876, Cl. 701-93,000.
- Sauter, Hubert: *See—*
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- Buschmann, Michael D.; Guardo, Robert; Garon, Martin; Le Guyader, Pierre; and Savard, Pierre, 5,779,651, Cl. 600-587,000.
- Sawabe, Atsuhito: *See—*
Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; Sahashi, Masashi; and Fuke, Hiromi, 5,780,176, Cl. 428-692,000.
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- Sawada, Shinichi: *See—*
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- Saxena, Nirmal R., to Fujitsu Limited. Method, system and apparatus for efficiently generating binary numbers for testing storage devices, 5,781,562, Cl. 371-27,100.
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- Sbrigato, Charles. Spreader for cold-coat roofing tar, 5,778,482, Cl. 15-245,100.
- Scannell, Lawrence M.; Spacht, Glenn L.; Benoit, Robert L.; Fahey, William; and Rachowitz, Bernard I. Golfer's foot balance training aid, 5,779,557, Cl. 473-269,000.
- Scannell, Ralph: *See—*
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- Scarborough, Robert M., to COR Therapeutics, Inc. Platelet aggregation inhibitors, 5,780,595, Cl. 530-387,900.
- Scarborough, Victoria D.; and Clark, Leonard R., to Sherwin-Williams Company. The Alkaline-stable hard surface cleaning compounds combined with alkali-metal organosiliconates, 5,780,412, Cl. 510-240,000.
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- Schaeff, Hans, to Karl Schaeff GmbH & Co. Multi-purpose construction vehicle with at least two subframes and a self-aligning bearing between the subframes, 5,778,569, Cl. 37-410,000.
- Schaeffer, Jon C.; Connor, William B.; and Field, Robert D., to General Electric Company. Method for manufacturing thermal barrier coated articles, 5,780,110, Cl. 427-327,000.
- Schäffer, Gerhard: *See—*
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- Schäfer, Karl Robert, to Koenig & Bauer-Albert Aktiengesellschaft. Printing unit with short inking system in a rotary printing machine for direct printing using a "waterless" planographic printing plate, 5,778,775, Cl. 101-141,000.
- Schaible, Ulrich E.: *See—*
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- Schalamon, Friedrich; and Iki, Kunihiko, to Siemens Aktiengesellschaft. Substitute circuit for a plurality of functional units, 5,781,563, Cl. 371-30,000.
- Schaps, Gary L.: *See—*
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- Scheckenbach, Helmut; Schleicher, Andreas; and Kulpe, Jürgen, to Hoechst Aktiengesellschaft. Mixtures of polyarylene sulfones with polyarylene sulfoxides and polyarylene sulfides, 5,780,561, Cl. 525-534,000.
- Scheerer, Joachim: *See—*
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- Scheffel, Bert: *See—*
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- Schellhase, Torsten; Tensing, Raymond; and Pieper, Martin, to FEV Motorentechnik GmbH & Co. KG. Piston-type internal combustion engine having at least two intake valves per cylinder, 5,778,851, Cl. 123-337,000.
- Schels, Hans; Mann, Karl-Heinz; Menzler, Horst; Geissler, Leonhard; and Kuffer, Georg, to Boehringer Mannheim GmbH. Method and system for mixing liquids, 5,780,306, Cl. 436-179,000.
- Schenke, Thomas: *See—*
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- Schenkel, Howard M.: *See—*
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- Schennum, Steven M.; and Ping, Vernon S., to Procter & Gamble Company. The Decoupled liquid delivery system, 5,779,155, Cl. 239-333,000.
- Schepperle, Karl: *See—*
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- Schering Corporation: *See—*
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- Schick, Scott A.: *See—*
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- Schiell, Lothar: *See—*
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- Schierling, Bernhard: *See—*
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- Schimmel, Fern R., executrix: *See—*
Schimmel, Morry L., deceased; Benent, Laurence J.; DuBrucq, Glenn F., Jr.; and Klein, Edward A., 5,780,763, Cl. 102-302,000.
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- Schimmel, Richard, to Blue Star Wehling Corp. Reversible belt and method of manufacture, 5,778,456, Cl. 2-338,000.
- Schindler, Hubert: *See—*
Becker, Arne; Sell, Michael; Neuenfeldt, Gerhard; Koch, Veronika; and Schindler, Hubert, 5,779,915, Cl. 210-757,000.
- Schippers, Stefan: *See—*
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- SCHIPS AG Nachautomation: *See—*
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- Schijs, Helmut, to SCHIPS AG Nachautomation. Device for automatically cutting off thread formations in sewing machines, 5,778,809, Cl. 112-287,000.
- Schleicher, Andreas: *See—*
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- Schlittler, Rito R.: *See—*
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- Schlör, Ulrich; and Hintenlang, Dieter, to Firma Carl Freudenberg. Flexible folded filter insert, 5,779,747, Cl. 55-497,000.
- Schlosberg, Richard H.: *See—*
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- Schlotfeldt, Kenneth W.: *See—*
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- Schmid, Claudia; Alt, Helmut G.; and Welch, M. Bruce, to Phillips Petroleum Company. Substituted indenyl unbridged metallocenes, 5,780,659, Cl. 556-11,000.
- Schmid, Steffen; and Bosso, Sergio, to Pirelli Cavi S.p.A. Acoustooptical waveguide device for wavelength selection and process for making same, 5,781,669, Cl. 385-7,000.
- Schmid, Steven Lawrence: *See—*
Keller, Melvin William; Diebold, David Henry; Schmid, Steven Lawrence; Wellman, Stanley Paul; Krambeck, Frederick Carl; and Bebenes, Thomas Daryl, 5,778,644, Cl. 56-11,200.
- Schmidl, Mary K.: *See—*
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- Schmidt, Azriel: *See—*
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- Schmidt, Dieter; and Kretschmer, Jürgen, to INA Wälzlager Schaeffler KG. Actuating lever for a valve drive of an internal combustion engine, 5,778,842, Cl. 123-90,390.
- Schmidt, Frank John, Jr.: *See—*
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- Schmidt, Michael Anthony, to International Business Machines Corporation. Method for obtaining the state of network resources in a distributed computing environment by utilizing a provider associated with indicators of resource states, 5,781,736, Cl. 395-200,540.
- Schmidt, Michael Anthony, to International Business Machines Corporation. System for processing requests for notice of events, 5,781,737, Cl. 395-200,540.

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- Schmidt, Reinhard, to R. Schmidt GmbH. Height adjuster for vehicle safety belt. 5,779,273, Cl. 280-801.200.
- Schmidt, Robert C.; Lee, Shih-Jong J.; and Stephanick, James A., to NeoPath, Inc. Apparatus for high speed morphological processing. 5,781,667, Cl. 382-308.000.
- Schmidt, Robert R.: *See—*
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- Schmitt, Achim, to Procter & Gamble Company, The. Fastening tape for a sanitary article particularly disposable diaper. 5,779,691, Cl. 604-386.000.
- Schmitt, Ronald: *See—*
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- Schmitz, Christoph Johann, to Procter & Gamble Company, The. Method and apparatus for making an undergarment having overlapping or butt-type side seams. 5,779,831, Cl. 156-73.100.
- Schmitz, H. Guenter, to Nagel Maschinen-und Werkzeugfabrik GmbH. Superfinishing method and apparatus. 5,779,518, Cl. 451-28.000.
- Schmuck, Arno: *See—*
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- Schnabel, Alfred: *See—*
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- Schneemeyer, Lynn Frances: *See—*
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- Schneider, Alfred; and Geister, Gotz, to Bodenseewerk Geratetechnik GmbH. Inertial sensor unit. 5,778,543, Cl. 33-324.000.
- Schneider, Allan, to Bell Atlantic Network Services, Inc. CDMA system having time-distributed transmission paths for multipath reception. 5,781,541, Cl. 370-335.000.
- Schneider Electric SA: *See—*
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- Schneider, F. Howard: *See—*
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- Schneider, Günther; Thiern, Joachim; and Lahmann, Martina, to Beiersdorf AG. Tocopheryl glycosides, their preparation, and their use as surfactants, as antioxidants and as the active substance preventing cell ageing in cosmetic or pharmaceutical preparations. 5,780,445, Cl. 514-27.000.
- Schneider, Lothar: *See—*
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- Schneider, Manfred; and Staudt, Gerhard, to Wolf-Garten GmbH & Co. KG. Device for hand tools attached to a pole. 5,778,539, Cl. 30-231.000.
- Schneider, Mark R.: *See—*
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- Schnurr, Alvin D.: *See—*
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- Schoenfelder, George A.: *See—*
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- Schön, Uwe: *See—*
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- Schönauer, Paul. Device for supporting or clamping at least one article, specifically an elongate member. 5,779,387, Cl. 403-400.000.
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- Schorlemmer, Hans-Ulrich: *See—*
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- Schott, Jeffrey Brian: *See—*
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- Schoulitz, Carl Louis. Hydraulic device and system. 5,778,922, Cl. 137-208.000.
- Schrey, Ekkehard, to FEV Motorentechnik GmbH & Co KG. Method for adapting the control of an electromagnetic actuator to operation-dictated changes. 5,781,397, Cl. 361-154.000.
- Schröder, Klaus: *See—*
van Ender, Eike Schulz; Schröder, Klaus; and Hoffmann, Hans-Peter, 5,779,986, Cl. 422-136.000.
- Schroder, Richard: *See—*
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- Schröppel, Werner, to Diehl GmbH & Co. Guided missile deployable as mortar projectile. 5,780,766, Cl. 102-372.000.
- Schrör, Karsten: *See—*
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- Schudok, Manfred: *See—*
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- Schuett, Michael Leonard: *See—*
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- Schuld, Ernest R. Vacuum cleaning machine. 5,778,487, Cl. 15-352.000.
- Schuler Pressen GmbH & Co.: *See—*
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- Schultz, Ronald E.: *See—*
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- Schulze, Dale R.: *See—*
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- Schulze, Dirk; and Beyer, Wolfgang. Electrolysis cell for generating ozone and/or oxygen. 5,779,865, Cl. 204-252.000.
- Schumacher, Antonius Nicolass Maria; and Kim, Peter S., to Whitehead Institute for Biomedical Research. Identification of enantiomeric ligands. 5,780,221, Cl. 435-5.000.
- Schumacher, Christian; and Russ, Werner Hubert, to Pystar Textilfarben GmbH & Co. KG. Dye stuff mixtures of fiber-reactive azo dyestuffs and their use for dyeing fiber material containing hydroxyl and/or carboxamide groups. 5,780,602, Cl. 534-642.000.
- Schumacher, Richard V.: *See—*
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- Schuttler, Gunter: *See—*
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- Schwald, Rolf: *See—*
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- Schwalke, Udo: *See—*
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- Schwan, John G., III: *See—*
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- Schwan, T. G.: *See—*
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- Schwandt, Brian W.: *See—*
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- Schwaneckamp, Heinrich; Wilken-Trenkamp, Ludger; Hangmann, Manfred; and Leuders, Wilfried, to WilMan Polymer Filtration GmbH. Control device for filters in at least two partial fluid streams. 5,779,898, Cl. 210-324.000.
- Schwartz, Daniel B.; and Sundstrom, Ray D., to Motorola, Inc. Adaptive encoder circuit for multiple data channels and method of encoding. 5,781,129, Cl. 341-51.000.
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- Schwede, Horst, to SMB Schwede Maschinenbau GmbH. Strap guiding frame for a looping machine. 5,778,772, Cl. 100-26.000.
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- Schweiger, Joseph, to Branstal Printing Participation Establishment. Device and method for combining and processing several paper webs. 5,779,233, Cl. 270-52.070.
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- Schwind, Herbert, to Herbert Schwind GmbH & Co. KG. Device for corneal surgery. 5,779,723, Cl. 606-166.000.
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- Schwöpfinger, Hans: *See—*
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- Science-Technical and Product-Innovative Center "Tokema": *See—*
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Johnson, Mary B.; Bird, Lesley A.; Bailey, Robert; Viswanadham, Krishna; and Seibert, Mark, 5,781,744, Cl. 395-283.000.
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- Onishi, Hiroyuki; Owatari, Akio; and Iida, Junichi, 5,781,215, Cl. 347-101.000.
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Oda, Hajime; and Ogihara, Masuo, 5,781,282, Cl. 356-5.030.
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McCormack, Joel J.; McNamara, Robert S.; Seiler, Larry D.; and Gianos, Christopher C., 5,781,201, Cl. 345-509.000.
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Easter, Ronald B.; and Embling, Steven W., 5,781,111, Cl. 340-572.000.
Haney, David A.; Perez, Sergio M.; Ronan, Jeffrey J.; Buzzard, Jon D.; Schenkel, Howard M.; and Ellers, Edward P., 5,779,852, Cl. 156-577.000.
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Notaro, Joseph; and Swanson, David Frank, 5,781,390, Cl. 361-84.000.
Slemmer, William Carl, 5,781,043, Cl. 327-78.000.
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Reeves, Billy J.; Ekart, Michael P.; Heise, William H.; Shadden, Johnny W.; and Stipe, Candace M., 5,780,520, Cl. 521-48.500.
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Shah, Haresh P.: *See—*
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Shah, Shishir: *See—*
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Ichikawa, Hideki; Takada, Masahiro; Katahira, Kouji; and Shibayama, Keniti, 5,778,512, Cl. 29-598.000.
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Ohtomo, Fumio; Nakata, Yuji; Fukuyama, Yoshitaka; Inomata, Asako; Shibuya, Sachio; Koga, Akinori; Ishii, Junji; Ito, Shoko; and Yamamoto, Hironobu, 5,778,657, Cl. 60-39.182.
Shibuya, Takashi: *See—*
Mandai, Takahiko; Shibuya, Takashi; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,780,620, Cl. 536-123.100.

Shida, Miho: *See—*
Ashley, Gary W.; MacDonald, Robert C.; and Shida, Miho, 5,780,053, Cl. 424-450.000.
Shieh, Chan-Long; Lee, Hsing-Chung; and Holm, Paige M., to Motorola, Inc. LED display packaging with substrate removal and method of fabrication. 5,780,321, Cl. 438-34.000.
Shieh, Paul; Lau, Shek-Hong; and Goldberg, Esfir, to Biomedix, Inc. Dry chemistry glucose sensor. 5,779,867, Cl. 204-403.000.
Shield, John: *See—*
Kohr, William J.; Johansson, Chris; Shield, John; and Shrader, Vandy, 5,779,762, Cl. 75-712.000.
Shields, Glen E.; and Jones, Barry D., to Canpotex Shipping Services Limited. Ship hatch cover. 5,778,815, Cl. 114-201.00R.
Shields, James Alexander, to Northern Telecom Limited. Desynchronising video information from synchronous network to a plesiochronous tributary with constant rate of change in the leak rate. 5,781,596, Cl. 375-371.000.
Shiga, Masahiro: *See—*
Yagi, Masanori; Shiga, Masahiro; and Maruyama, Toru, 5,779,505, Cl. 439-736.000.
Shiga, Masanobu: *See—*
Aoyama, Masaaki; and Shiga, Masanobu, 5,780,257, Cl. 435-28.000.
Shiga, Takanori: *See—*
Ikuta, Nobuo; Ueno, Kouji; Shishido, Kouji; Fukutani, Yutaka; Arayama, Youji; Nakayama, Tomohiro; Shiga, Takanori; Kimura, Masakazu; Fujimoto, Hiroyuki; and Fujita, Yoshiyuki, 5,781,627, Cl. 380-3.000.
Shiga, Tomohisa, to Sony Corporation. Packet receiving device. 5,781,599, Cl. 375-376.000.
Shih, Chin-yao. Electrical auxiliary drive for a bicycle. 5,778,998, Cl. 180-221.000.
Shihata, Alfred. Vaginal compositions combining a spermicidal agent and a peroxygen compound. 5,778,886, Cl. 128-832.000.
Shikatani, Yutaka: *See—*
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Shima, Akihiro: *See—*
Nagai, Yutaka; and Shima, Akihiro, 5,781,577, Cl. 372-46.000.
Shimada, Hirokatsu; and Oka, Tateki, to Minolta Co., Ltd. Developing device having a bias-controlled toner discharging member. 5,781,827, Cl. 399-55.000.
Shimada, Kazutoshi: *See—*
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Arita, Koji; Fujii, Eiji; Shimada, Yasuhiro; Uemoto, Yasuhiro; Nasu, Toru; Matsuda, Akihiro; Nagano, Yoshihisa; Inoue, Atsuo; Matsura, Taketoshi; and Otsuki, Tatsuo, 5,780,351, Cl. 438-396.000.
Shimamoto, Toshitsugu; and Katayama, Toshihiro, to Tokuyama Corporation. Circuit board. 5,780,143, Cl. 428-209.000.
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Kouroku, Moriyo; Shimanari, Tatsumi; Yoriyuki, Takao; Ono, Noriki; and Abe, Yoshiharu, 5,781,841, Cl. 399-360.000.
Shimano, Inc.: *See—*
Fujii, Kazuhiro, 5,779,581, Cl. 474-82.000.
Takahama, Kimitaka, 5,778,739, Cl. 74-594.600.
Shimat Co., Ltd.: *See—*
Yamazawa, Kenji; Niino, Toshiaki; Nakagawa, Takeo; and Hayano, Seiji, 5,780,070, Cl. 425-174.400.
Shimizu, Hideaki: *See—*
Tomie, Toshihisa; Shimizu, Hideaki; and Majima, Toshikazu, 5,781,608, Cl. 378-119.000.
Shimizu, Hiroyuki; Sano, Akira; Matsura, Kazuo; and Washio, Yuuji, to Nippon Oil Co., Ltd.; and Mizusawa Industrial. Olefin polymerization catalyst and polyolefin. 5,780,562, Cl. 526-129.000.
Shimizu, Naohito; Akiyama, Shigeyuki; Fujiwara, Masahiko; Inoue, Satoshi; and Oida, Takuji, to Horiba, Ltd. Gas analyzing apparatus. 5,780,716, Cl. 73-23.200.
Shimkus, John: *See—*
Squillaci, Dominic; Koepsel, Scott; Shimkus, John; and Maekawa, Kiyoshi, 5,778,476, Cl. 15-167.100.
Shimmura, Tomoyuki: *See—*
Takahara, Eiji; Oikawa, Hideki; Nakajima, Kenichi; Kuriyama, Hiroshi; Watanabe, Kenji; Kameda, Takanobu; Aida, Chieko; and Shimmura, Tomoyuki, 5,779,373, Cl. 400-208.000.
Shimmyo, Tomotsugu: *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuo; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seichiro; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsunooka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunekiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
Shimoda, Hiroshi; Okajima, Toshihiro; and Kurokawa, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Surface mounting semiconductor device and semiconductor mounting component. 5,780,931, Cl. 257-779.000.
Shimoyama, Seiji, to Shimoyama Shoji Co., Ltd. Comfort insole. 5,778,561, Cl. 36-43.000.
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Shimpuku, Yoshihide; and Nakagawa, Toshiyuki, to Sony Corporation. Data encoding method and data decoding method. 5,781,131, Cl. 341-58.000.
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Kino, Yoshiki; Shimura, Shoichi; Kai, Takashi; and Kobayashi, Naoki, 5,781,339, Cl. 359-557.000.
Shin-Etsu Handotai Co., Ltd.: See—
Murai, Toshinari; and Nagai, Naoki, 5,779,790, Cl. 117-13.000.
Toyama, Kohei, 5,778,869, Cl. 125-16.020.
Shin, Hyeog-sang, to Samsung Electronics Co., Ltd. Display device capable of mode detection and automatic centering. 5,781,185, Cl. 345-213.000.
Shin, Hyunkook: See—
Chou, Richard Tien-Hua; Ireland, Patrick Stephen; Molnar, Charles John; Lim, Hyun Sung; and Shin, Hyunkook, 5,780,153, Cl. 428-359.000.
Shin, Jun-Chul, to Daewoo Electronics Co., Ltd. Cooling apparatus having a spirally wound conductive pipe. 5,778,973, Cl. 165-122.000.
Shin, Jung-Ho: See—
Kyung, Hyun-Su; Choi, Won-Song; Lee, Hueng-Jik; Kim, Sek-Young; Shin, Jung-Ho; and Choi, Chang-Hwan, 5,778,969, Cl. 165-80.100.
Shin-Kobe Electric Machinery Co., Ltd.: See—
Noda, Masayuki; Yamaguchi, Yutaka; Yonekura, Minoru; and Yamanaka, Hiroyuki, 5,781,264, Cl. 349-150.000.
Shin, Soo-chul: See—
Park, Hae-jin; Lee, Hai-min; Kim, Juong-ho; Shin, Soo-chul; Kim, Jae-in; and Kang, Yun-seok, 5,778,688, Cl. 62-89.000.
Shin, Takeharu: See—
Seo, Shuzo; Tani, Nobuhiro; Shin, Takeharu; Nukui, Makoto; and Ishizuka, Yukihiko, 5,780,831, Cl. 235-462.000.
Shinbo, Akira: See—
Yasukawa, Naoki; Shinbo, Akira; Kawata, Masayuki; and Sakumoto, Kazumi, 5,781,511, Cl. 368-11.000.
Shinbori, Kenichi; Udagawa, Yoshiro; and Saruwatari, Hiroshi, to Canon Kabushiki Kaisha. Image sensing apparatus and image sensing method. 5,781,236, Cl. 348-342.000.
Shinkawa, Osamu; and Uetake, Akihito, to Seiko Epson Corporation. Brushless DC motor drive apparatus. 5,780,983, Cl. 318-254.000.
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Okada, Takekazu; Shinmura, Satoru; and Kanaya, Fumio, 5,781,079, Cl. 333-24.100.
Shinoda, Ichiro: See—
Watanabe, Mitsuo; and Shinoda, Ichiro, 5,780,832, Cl. 235-462.000.
Shinohara, Masahito, to NEC Corporation. Injection mold assembly. 5,780,068, Cl. 425-168.000.
Shinohara, Toshihiko: See—
Oshima, Akifumi; Ishida, Hiromi; and Shinohara, Toshihiko, 5,780,548, Cl. 525-63.000.
Shinomiya, Mitsuo: See—
Shirahata, Seiichi; Shinomiya, Mitsuo; Miyamoto, Satoshi; and Sobata, Tamotsu, 5,780,122, Cl. 427-601.000.
Shinomiya, Tokihiko; Fujimori, Kohichi; and Kuratate, Tomoaki, to Sharp Kabushiki Kaisha. Liquid crystal display apparatus. 5,781,259, Cl. 349-88.000.
Shinozaki, Kenji: See—
Hirano, Hideki; Shiota, Hiroyuki; Sato, Shuji; and Shinozaki, Kenji, 5,781,210, Cl. 347-51.000.
Shinozaki, Tetsunori: See—
Toida, Tetsuya; Shinozaki, Tetsunori; and Kioka, Mamoru, 5,780,378, Cl. 502-126.000.
Shinya, Eiji: See—
Ichiryu, Takaharu; and Shinya, Eiji, 5,780,152, Cl. 428-357.000.
Shinyou Technologies, Inc.: See—
Sugiura, Hikoru, 5,779,361, Cl. 366-340.000.
Shiokawa, Masato; and Honma, Hiromi, to NEC Corporation. Partial response maximum likelihood (PRML) signal processing apparatus. 5,781,590, Cl. 375-341.000.
Shiomi, Kazumitsu; Nakamura, Hideo; Kondou, Akira; and Kawasaki, Michihiro, to Fuji Filter Manufacturing Co., Ltd. Filter for highly viscous fluid. 5,779,899, Cl. 210-346.000.
Shiomi, Yasuhiko. Image blur prevention apparatus. 5,781,805, Cl. 396-55.000.
Shiomi, Yutaka: See—
Hirano, Yasuhiro; Akiba, Masatsugu; Shiomi, Yutaka; and Saito, Noriaki, 5,780,145, Cl. 428-323.000.
Shionoya, Hiroshi: See—
Sugihara, Yoshiki; Shionoya, Hiroshi; and Yamatsu, Kiyomi, 5,780,509, Cl. 514-563.000.
Shiota, Hiroyuki: See—
Hirano, Hideki; Shiota, Hiroyuki; Sato, Shuji; and Shinozaki, Kenji, 5,781,210, Cl. 347-51.000.
Shiotsuka, Hiroyuki, to Advantest Corp. Driver circuit for semiconductor test system. 5,781,059, Cl. 327-407.000.
Shirahase, Reiji; Cording reel device. 5,779,175, Cl. 242-388.100.
Shirahata, Seiichi; Shinomiya, Mitsuo; Miyamoto, Satoshi; and Sobata, Tamotsu, to Nippon Paint Co., Ltd. Pretreatment method for coating on molded metal article. 5,780,122, Cl. 427-601.000.
Shirai, Seiichirou: See—

- Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunchiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
Shirai, Yoshifumi: See—
Suzuki, Yuji; Takano, Hitomichi; Suzumura, Masahiko; Hayasaki, Yoshiki; Kishida, Takashi; and Shirai, Yoshifumi, 5,780,900, Cl. 257-335.000.
Shiraishi, Masahiro: See—
Oniki, Kazunori; Shiraishi, Masahiro; Ozawa, Koji; Yamane, Keisuke; and Kimura, Shinji, 5,781,199, Cl. 345-505.000.
Shiraishi, Takashi: See—
Minowa, Toshimichi; Kimura, Hiroshi; Ishii, Junich; Shiraishi, Takashi; and Ozaki, Naoyuki, 5,779,594, Cl. 477-156.000.
Shirk, Michael Eugene: See—
Davis, Wayne Samuel; Shirk, Michael Eugene; and Whiteman, Robert Neil, Jr., 5,779,489, Cl. 439-79.000.
Shirota, Koromo: See—
Haruta, Masahiro; Koike, Shoji; Aoki, Makoto; Shirota, Koromo; Yoshihira, Aya; Yamamoto, Tomoya; and Suzuki, Mariko, 5,781,216, Cl. 347-106.000.
Shishido, Kouji: See—
Ikuta, Nobuo; Ueno, Kouji; Shishido, Kouji; Fukutani, Yutaka; Arayama, Youji; Nakayama, Tomohiro; Shiga, Takamori; Kimura, Masakazu; Fujimoto, Hiroyuki; and Fujita, Yoshiyuki, 5,781,627, Cl. 380-3.000.
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Tsuiji, Shinji; Takahashi, Ryuta; Shishikura, Masato; Kikuchi, Satoru; and Aoki, Satoshi, 5,780,875, Cl. 257-81.000.
Shiue, Ruey-Yun; and Hsu, Sung-Mu, to Taiwan Semiconductor Manufacturing Company, Ltd. Plasma damage monitor. 5,781,445, Cl. 364-481.000.
Shivkumar, Satya: See—
Berlowitz-Tarrant, Laurence; Tukumo, Toshimasa; and Shivkumar, Satya, 5,779,960, Cl. 264-176.100.
Shivvers, Inc.: See—
Parkes, Donald H.; and Schick, Scott A., 5,778,648, Cl. 56-202.000.
Shlomot, Eyal, to Rockwell International Corporation. Data compression system and method. 5,781,128, Cl. 341-51.000.
Shmidt, Creston D.; Imeopkaria, Daniel D.; Suh, Kyung W.; Malone, Bruce A.; and Franklin, Ken, to Dow Chemical Company, The. Extruded, open-cell microcellular alkenyl aromatic polymer foams, process for making, and articles made therefrom. 5,780,521, Cl. 521-79.000.
Shoemaker, Craig: See—
Jager, Willem; Barth, Roland Peter; and Shoemaker, Craig, 5,778,567, Cl. 37-235.000.
Shoemaker, Daniel Davis: See—
Dasssaert, John Lewis; Shopes, Robert James; and Shoemaker, Daniel Davis, 5,779,981, Cl. 422-99.000.
Shogase, Toshikazu: See—
Furusawa, Yoshinori; Ikemoto, Yoshihiro; Fujimoto, Koji; Nakagawa, Koji; Miyake, Toshifumi; and Shogase, Toshikazu, 5,778,745, Cl. 82-1.110.
Shoji, Kazuyoshi: See—
Seki, Koichi; Wada, Takeshi; Muto, Tadashi; Shoji, Kazuyoshi; Kubota, Yasuhiro; and Kume, Hitoshi, 5,781,476, Cl. 365-185.220.
Shoji, Wataru; Tabuchi, Daisuke; Nakajima, Ichiro; and Gramlich, Gabriele, to Sofmap Future Design, Inc. Flexible hyperlink association system. 5,781,900, Cl. 707-6.000.
Sholander, Peter E.: See—
Owen, Henry W. L., III; and Sholander, Peter E., 5,781,597, Cl. 375-372.000.
Shonan Gosei-Jushi Seisakusho K.K.: See—
Kamiyama, Takao; and Yokoshima, Yasuhiro, 5,780,123, Cl. 428-35.200.
Shono, Tetsuji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Shock absorber of mirror in single lens reflex camera. 5,781,811, Cl. 396-358.000.
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Saito, Shinichiro; Nakamura, Norio; Shono, Yasuo; Higuchi, Yoshinori; and Ohya, Atsunori, 5,779,337, Cl. 362-31.000.
Shopes, Robert James: See—
Dasssaert, John Lewis; Shopes, Robert James; and Shoemaker, Daniel Davis, 5,779,981, Cl. 422-99.000.
Shore, Michael A., to Micron Technology, Inc. Device and method for repairing a memory array by storing each bit in multiple memory cells in the array. 5,781,483, Cl. 365-200.000.
Shou, Guoliang: See—
Zhou, Changming; Shou, Guoliang; Yamamoto, Makoto; and Takatori, Sunao, 5,781,584, Cl. 375-207.000.
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Gilbert, John R.; Lamping, John O.; Mendhekar, Anurag; and Shpeisman, Tatiana, 5,781,779, Cl. 395-707.000.
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Kohr, William J.; Johansson, Chris; Shield, John; and Shrader, Vandy, 5,779,762, Cl. 75-712.000.
Shreve, John Robert; and Wilkinson, Lester, to Delco Electronics Corporation. Ignition coil driver module. 5,781,047, Cl. 327-110.000.
Shurman Cardiology Systems, Inc.: See—

- Shurman, Leonid; and Morov, Georgiy, 5,779,722, Cl. 606-159.000.
Shurman, Leonid; and Morov, Georgiy, to Shurman Cardiology Systems, Inc. Atherectomy device handle with guide wire clamp override device. 5,779,722, Cl. 606-159.000.
Shu, Jing-Shing, to Texas Instruments Incorporated. Dimension measurement of a semiconductor device. 5,780,852, Cl. 250-304.000.
Shultz, Corney. Support aid for use during a baptismal ceremony. 5,779,315, Cl. 297-423.100.
Shum, Wilfred Po-sum, to ARCO Chemical Technology, L.P. Epoxidation process using a phosphate-stabilized peroxotungstate compound as catalyst. 5,780,655, Cl. 549-531.000.
Shure Brothers Incorporated: See—
Anderson, Carl Roger, 5,781,643, Cl. 381-168.000.
Shymko, Wayne W.; and Emond, Gilbert R. Electronic tagging device for identifying transported products. 5,781,112, Cl. 340-572.000.
Shzuravsky, Gennady Ivanovich: See—
Mulyarchik, Valery Vladimirovich; Drozdov, Vladimir Nikolaevich; Grebenkov, Anatoly Shzorevovich; Shzuravsky, Gennady Ivanovich; Vinogradov, Leonid Mikhailovich; Konstantinov, Valery Grigorovich; and Kuharev, Anatoly Vasilievich, 5,780,518, Cl. 521-45.000.
Sibbett, Wilson: See—
Padgett, John Miles; Duncan, Alan James; Sibbett, Wilson; and Harvey, Andrew Robert, 5,781,293, Cl. 356-346.000.
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Womack, Michele René; de Jong, Michael; and Underwood, David T., 5,781,680, Cl. 385-53.000.
Siehl, Daniel L.; Subramanian, Venkiteswaran; and Toschi, Anne G., to Sandoz Ltd. Method for detection of herbicides. 5,780,254, Cl. 435-15.000.
Siemens Aktiengesellschaft: See—
Adamy, Jurgen, 5,781,440, Cl. 364-469.010.
Beichler, Johannes, 5,781,006, Cl. 324-207.190.
Christl, Norbert; Lützelberger, Peter; and Sadek, Kadry, 5,780,939, Cl. 307-105.000.
Da Silva, Mauricio; and Leimkoetter, Ulrich, 5,781,862, Cl. 455-436.000.
Derr, Frowin, 5,781,335, Cl. 359-326.000.
Fleck, Rod, 5,781,746, Cl. 395-306.000.
Heinzel, Alfred; and Stadler, Heinz, 5,781,287, Cl. 336-192.000.
Kleine, Ulrich, 5,781,052, Cl. 327-208.000.
Kunze, Dieter, 5,778,652, Cl. 57-235.000.
Schalamon, Friedrich; and Iki, Kunihiko, 5,781,563, Cl. 371-30.000.
Toebben, Dirk; Groteloh, Doerthe; Spindler, Oswald; and Rogalli, Michael, 5,780,103, Cl. 427-226.000.
Wohlrab, Jurgen, 5,781,605, Cl. 378-4.000.
Zeininger, Heinrich; Zeller, Christoph; Schwalke, Udo; Doeblen, Uwe; and Haensch, Wilfried, 5,780,929, Cl. 257-751.000.
Siemens Automotive Corporation: See—
Hayes, Edward James, Jr., 5,779,149, Cl. 239-124.000.
Siemens Electromechanical Components, Inc.: See—
Doneghue, Jeffrey A., 5,781,089, Cl. 335-78.000.
Siemens Plc.: See—
Padgett, John Miles; Duncan, Alan James; Sibbett, Wilson; and Harvey, Andrew Robert, 5,781,293, Cl. 356-346.000.
Siemensmeyer, Karl: See—
Eizbach, Karl-Heinz; Delavie, Paul; Siemensmeyer, Karl; Wagenblast, Gerhard; Laupichler, Lothar; and Vill, Volkmar, 5,780,629, Cl. 544-296.000.
Siempelkamp, Dieter, to G. Siempelkamp GmbH & Co. Method of making shaped bodies especially boards. 5,779,955, Cl. 264-109.000.
Sienkiewicz, Andrzej: See—
Scholes, Charles P.; and Sienkiewicz, Andrzej, 5,781,011, Cl. 324-316.000.
Siepmann, Peter; Westrich, Hermann; Gsell, Jurgen; and Fink, Wolfgang, to Barmag AG. Method and apparatus for replacing full packages with empty tubes on a takeup machine for a continuously advancing yarn. 5,779,170, Cl. 242-35.50A.
Sierra Instruments, Inc.: See—
Russell, Gary A., 5,780,736, Cl. 73-204.110.
Siess, Harold E. Method and apparatus for generating ions. 5,780,862, Cl. 250-492.300.
Sievert, Allen Capron: See—
Klug, Diana Lynn; Minor, Barbara Haviland; Patron, Donna Marie; Chisolm, Tuncen E. C.; and Sievert, Allen Capron, 5,779,931, Cl. 252-67.000.
Sigee, David C.: See—
Leifert, Carlo; Epton, Harold A. S.; and Sigee, David C., 5,780,080, Cl. 426-49.000.
Sigg, Hans-Peter, to Schweizerische Industriegesellschaft. Semiautomatic weapon. 5,778,585, Cl. 42-69.030.
Sikorsky Aircraft Corporation: See—
Manzoli, James J., 5,779,409, Cl. 411-7.000.
Silén, Åke; and Wiklund, Bo, to AB IDL Immunodevelop Lab. Method of using monoclonal antibodies to cytokeratin fragments. 5,780,032, Cl. 424-178.100.
Sileo, Gerard A.; Appleby, John W.; Narsavage, Stephen T.; Alent, Francis X.; and Davis, Charles G., to United Technologies Corporation. Method for producing an abrasible seal. 5,780,116, Cl. 427-456.000.
Sillekens, Peter Theodorus Gerardus: See—
Van Venrooij, Walter Jacobus; Sillekens, Peter Theodorus Gerardus; and Habets, Winand Johannes Antonius, 5,780,298, Cl. 435-325.000.
Sillince, Mark Erich: See—

Wright, Timothy; Sillince, Mark Erich; and Rosens, Erwin Antón, 5,780,083, Cl. 426-112.000.

Silvani, Rossella; Spataro, Gianfranco; and Marchionni, Giuseppe, to Ausimont S.p.A. Method of removing oily substances with hydrogen-terminated fluoropolyethers. 5,780,414, Cl. 510-365.000.

Silverbrook, Kia, to Eastman Kodak Company. Fax machine with concurrent drop selection and drop separation ink jet printing. 5,781,202, Cl. 347-3.000.

Silverbrook, Kia, to Eastman Kodak Company. Heater power compensation for temperature in thermal printing systems. 5,781,205, Cl. 347-17.000.

Silvergate, Michael I.: See—
Duncan, Marvin H., Jr.; and Silvergate, Michael I., 5,780,805, Cl. 219-121.680.

Simchok, Frederick, to Lucent Technologies Inc. Vacuum assisted temporary storage fixture for optical fibers. 5,781,685, Cl. 385-134.000.

Simcik, Mark E.: See—
Schwartz, Robert G.; Crowe, Allen A.; Emmett, James S.; Eskandari, Fetteh; Palange, Martin F.; Simcik, Mark E.; Swanbery, Robert; Japenga, Robert J.; Lehman, Joseph L.; Weirsmann, William A.; and Rahgo, George P., 5,780,778, Cl. 177-25.130.

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Simionato, Paolo, 5,778,641, Cl. 53-551.000.

Simm, Robert: See—
Gentinetta, René; Kaech, Beat; and Simm, Robert, 5,778,538, Cl. 30-124.000.

Simmons, James A., to Ranpak Corp. Automated cushioning producing and dispensing system. 5,778,631, Cl. 53-55.000.

Simon, Markus M.; Schaible, Ulrich E.; Eichmann, Klaus; Kramer, Michael; and Reinhard, Wallich, to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V.; and Deutsches Krebsforschungszentrum Stiftung des Öffentlichen Rechts. Passive vaccine against Lyme disease. 5,780,030, Cl. 424-150.100.

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Welsh, David E.; and Sims, Oliver Lee, 5,778,737, Cl. 74-573.00R.

Sinclair, Anita J.: See—
Holroyd, Delwyn; Child, John; and Sinclair, Anita J., 5,781,435, Cl. 364-192.000.

Singer, Daniel B.: See—
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Singh, Sharat; and Ullman, Edwin F., to Behringwerke AG. Cyclic ether compounds. 5,780,646, Cl. 549-14.000.

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Waechter, David; and Singh, Surendra, 5,780,858, Cl. 250-370.090.

Singleton, David M., to Shell Oil Company. Dimerized alcohol compositions and biodegradable surfactants made therefrom having cold water detergency. 5,780,694, Cl. 568-909.000.

Sintermetallwerk Krebsöge GmbH: See—
Gonia, Detlev; Eckhardt, Marion; and Schneider, Lothar, 5,780,170, Cl. 428-565.000.

Sircar, Shivaji: See—
Anand, Madhu; Sircar, Shivaji; and Dalton, Augustine Ivanhoe, 5,779,768, Cl. 95-99.000.

Sire, Jean-Pierre; Thivet, Gilles; and Logeais, Gilles, to VALEO. Lighter body for cigar lighter, with axially oriented protuberances allowing movement of bimetallic blades. 5,780,813, Cl. 219-265.000.

Sireix, Georges. Process for fitting the bottom of a package. 5,778,639, Cl. 53-432.000.

Sisemore, Christopher S., to Securaplane Technologies, L.L.C. Detection of infection point in secondary-battery charging process by matching voltage response to first derivative of battery's characteristic curve. 5,780,994, Cl. 320-156.000.

Sisilli, Jeffrey M., to Reynolds and Reynolds Company. The. Multi-layer business form. 5,779,543, Cl. 462-28.000.

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Skedelski, David, to Surfco, Hawaii. Surfboard leash attachment. 5,779,510, Cl. 441-75.000.

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Kellström, Magnus; Pettersson, Kenneth; and Rydin, Magnus, 5,779,419, Cl. 411-434.000.

Ski und Tennis Sportartikelfabrik KG: *See—*
Roggenkamp, Karl Heinz, 5,779,571, Cl. 473-519.000.

Skinner, Gregory D.: *See—*
Templin, Fred L.; Gupta, Ajay; Skinner, Gregory D.; and Tynan, Dermot Matthew, 5,781,550, Cl. 370-401.000.

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Parker, Marsten Hugh; Kepple, Laurence Ralph; Sklar, Leah Ruth; and Laroche, David Christopher, 5,781,720, Cl. 395-183.140.

Skogward, Richard: *See—*
Løsdahl, Claes; Stark, Stefan; and Skogward, Richard, 5,778,649, Cl. 56-236.000.

Skornyakov, Vladimir Ilich: *See—*
Budaev, Jury Alexeevich; Kazantsev, Viktor Konstantinovich; Shelkovnikov, Jury Petrovich; Grinberg, Igor Samsonovich; Kokhanovsky, Sergey; Skornyakov, Vladimir Ilich; Elagin, Petr Ivanovich; and Ragozin, Leonid Viktorovich, 5,779,875, Cl. 205-392.000.

Skoufis, John; Africk, Cary; Questel, John M.; and Mazorow, Wayne, to Texwipe Co., LLC., The. Cleaning tape with improved edge adhesive. 5,780,108, Cl. 427-284.000.

Skyba, Helmut K. Folding ladder, tree stand and securing device therefor. 5,779,001, Cl. 182-107.000.

Slemmer, William Carl, to SGS-Thomson Microelectronics, Inc. Direct current sum bandgap voltage comparator. 5,781,043, Cl. 327-78.000.

Sloan, Frank P. Containment systems for insulation, and insulation elements employing such systems. 5,779,193, Cl. 244-117.000.

Sloan, Mark L., to Boeing Company, The. Aircraft engine inlet hot gas and foreign object ingestion reduction and pitch control system. 5,779,169, Cl. 244-12.300.

Sloan, Richard A., Jr.: *See—*
Sette, Paul R.; and Sloan, Richard A., Jr., 5,779,499, Cl. 439-540.100.

Slocum, Alexander H.: *See—*
Solomon, Todd R.; and Slocum, Alexander H., 5,778,730, Cl. 74-490.040.

Smalley, Christopher G.: *See—*
Buchanan, John S.; and Smalley, Christopher G., 5,779,746, Cl. 55-452.000.

Smart Machines: *See—*
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SMB Schwede Maschinenbau GmbH: *See—*
Schwede, Horst, 5,778,772, Cl. 100-26.000.

SMC Corporation: *See—*
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SMC Kabushiki Kaisha: *See—*
Fukano, Yoshihiro; Maruyama, Tetsuro; Uchino, Tadashi; Ono, Masaaki; and Okita, Yuzuru, 5,779,224, Cl. 251-331.000.

Smeal, Thomas W.: *See—*
Pugach, Joseph; Smeal, Thomas W.; and Andrekanic, Ronald A., 5,780,546, Cl. 525-28.000.

Smedt, Eric De; and Verbeiren, Wim, to FMC Corporation. Winder for use with bag-making machine. 5,779,180, Cl. 242-528.000.

Smelser, Debbie J.: *See—*
Smelser, John L.; and Smelser, Debbie J., 5,779,298, Cl. 296-97.100.

Smelser, John L.; and Smelser, Debbie J. Sun visor, kit and method for reupholstery. 5,779,298, Cl. 296-97.100.

Smith, Adrian Leonard: *See—*
Baker, Raymond; Kulagowski, Janusz Jozef; Leeson, Paul David; and Smith, Adrian Leonard, 5,780,475, Cl. 514-255.000.

Smith, Bradley W.; Rasmussen, Kirk H.; and Snyder, Brian T., to Morton International, Inc. Stamped driver inflator base. 5,779,268, Cl. 280-741.000.

Smith, Charles Lee: *See—*
Bolinger, Nancy J.; Bethurum, Gary; Brower, David Campbell; Maynor, Kenneth Wayne; and Smith, Charles Lee, 5,779,496, Cl. 439-377.000.

Smith, Dennis. Dual compartment beverage dispenser. 5,779,102, Cl. 222-144.500.

Smith Engineering: *See—*
Smith, Jay, III; Hudson, Kevin; and Hudson, Bill, 5,779,576, Cl. 473-570.000.

Smith, George A.: *See—*
Hunt, Douglas J.; Smith, George A.; and Flake, Wayne L., 5,781,892, Cl. 705-5.000.

Smith, Jack V.: *See—*
Carter, Jesse M.; and Smith, Jack V., 5,780,239, Cl. 435-7.100.

Smith, Jay, III; Hudson, Kevin; and Hudson, Bill, to Smith Engineering. Throw-measuring football. 5,779,576, Cl. 473-570.000.

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Lunsford, John P.; Gresl, Charles; Smith, Jeffrey A.; Wallace, Daniel T.; and Chin, Albert K., 5,779,728, Cl. 606-190.000.

Smith, Julius O., III: *See—*
Jaffe, David A.; and Smith, Julius O., III, 5,781,461, Cl. 364-724.012.

Smith, Karl S.; Buttery, Roger A.; and Gutman, Richard G., to Pall Corporation. Filter assemblies and end caps for filter assemblies. 5,779,903, Cl. 210-440.000.

Smith, Lloyd M.: *See—*
Guo, Zhen; and Smith, Lloyd M., 5,780,233, Cl. 435-6.000.

Smith, Lyndon; Johnson, Charles; and Finucan, Sean. Roller skate lock. 5,779,245, Cl. 280-11.200.

Smith, Michael G.; Terhune, James Howard; May, Roy C.; Romano, George A.; and Kowdley, Balasubramanian S., to General Electric Company. Magnetically damped azimuth resolver. 5,778,545, Cl. 33-345.000.

Smith, Paul; and Romascan, Edward, to Mesa Ridge Technologies, Inc. Method and apparatus for extending the signal path of a peripheral component interconnect bus to a remote location. 5,781,747, Cl. 395-309.000.

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Partika, Mark; Dziech, Michael L.; Dierdorf, Jon R.; Whitlow, Scott A.; Perrin, Fred L., Jr.; and Smith, Richard W., 5,781,007, Cl. 324-220.000.

Smith, Robert G.; Eaton, Joseph H.; Fischer, Edward M.; Visser, Larry R.; Grobelny, Venecia M.; and McVicker, Kevin D., to Minnesota Mining & Manufacturing; and Hexcel Corporation. Filter material. 5,780,126, Cl. 428-34.500.

Smith, Wayne L.: *See—*
Vesely, Ivan; and Smith, Wayne L., 5,779,638, Cl. 600-437.000.

Smithberger, Patrick Edward: *See—*
Rachel, Todd Leonard; Smithberger, Patrick Edward; Hughes, Scott Richard; Cullen, Michael John; and Marzonie, Robert Matthew, 5,781,877, Cl. 701-104.000.

SmithKline Beecham Corporation: *See—*
Christensen, Siegfried Benjamin, IV, 5,780,667, Cl. 558-426.000.
Dillon, Patrick J.; and Vockley, Joseph G., 5,780,286, Cl. 435-227.000.
Marshall, Lisa A.; and Roshak, Amy K., 5,780,609, Cl. 536-23.500.
Widdowson, Katherine Louisa; Veber, Daniel Frank; Jurewicz, Anthony Joseph; Hertzberg, Robert Philip; and Rutledge, Melvin Clarence, Jr., 5,780,483, Cl. 514-311.000.

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Carter, Roland H. C., 5,779,678, Cl. 604-140.000.

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Bell, Craig J.; and Hollister, William, 5,779,687, Cl. 604-265.000.

SMV International: *See—*
Pare, Christian Pierre; Nguyen, Quang Trung; and Mercier, Gérard, 5,780,855, Cl. 250-363.020.

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Krasner, Norman F., 5,781,156, Cl. 342-357.000.

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Jager, Willem; Barth, Roland Peter; and Shoemaker, Craig, 5,778,567, Cl. 37-235.000.

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Snyder, James G.: *See—*
Watton, William A.; and Snyder, James G., 5,779,760, Cl. 65-497.000.

Snyder, Joseph T., II: *See—*
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So, Bernard Y.C.; Schoenfelder, George A.; and Daly, Juliette C., to Pittway Corporation. Smoke detectors utilizing a hydrophilic substance. 5,781,291, Cl. 356-338.000.

Sobata, Tamotsu: *See—*
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Sobel, Douglas O., to Georgetown University. Method for treating type I diabetes using α -interferon and/or β -interferon. 5,780,021, Cl. 424-85.400.

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Milhomme, Didier, 5,779,073, Cl. 215-232.000.

Societe d'Etude de Machines pour les Arts Graphiques: *See—*
Chiloff, Serge, 5,778,778, Cl. 101-181.000.

Societe Hispano Suiza: *See—*
Jean, Michel Christian Marie, 5,778,660, Cl. 60-226.200.
Metzeau, Emile Fabrice Henri; and Portal, Marcel Jean-Fabrice, 5,779,192, Cl. 244-110.000.

Societe Quebecoise D'Initiatives Petrolières: *See—*
Mao, Raymond Le Van, 5,780,689, Cl. 568-698.000.

Société L'Oréal S.A.: *See—*
Pineau, Nathalie; Breton, Lionel; and Martin, Richard, 5,780,424, Cl. 514-2.000.

Sofmap Future Design, Inc.: *See—*
Shoji, Wataru; Tabuchi, Daisuke; Nakajima, Ichiro; and Gramlich, Gabriele, 5,781,900, Cl. 707-6.000.

Soft Switching Technologies, Inc.: *See—*
Kutkut, Nassar H.; and Divan, Deepakraj M., 5,781,419, Cl. 363-17.000.

Softimage: *See—*
Amiot, Luc R.; Deveau, Jacques Y.; Sheasby, Michael C.; Ibrahim, Peter H.; Hill, Raymond; and Lewis, Darryl M., 5,781,188, Cl. 345-328.000.

Sohi, Gurinder S.: *See—*
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Sohi, Satinder Jit Singh: *See—*

Lim, Cher Eng; Chua, Tiong Kee; Sohi, Satinder Jit Singh; and Kwok, Luen Hin, 5,781,621, Cl. 379-142.000.

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Soldin, Steven J. Immunosuppressive drug binding proteins and use. 5,780,307, Cl. 436-503.000.

Solid Phase Sciences Corporation: *See—*
Sucholeiki, Irving, 5,779,985, Cl. 422-128.000.

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Parkas, Tapio; Solla, Jukka; and Leppänen, Aki, 5,779,115, Cl. 224-272.000.

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Solvay (Société Anonyme): *See—*
Bauer, Siegfried, 5,780,696, Cl. 585-241.000.
Tinant, Anne; and Houba, Roger, 5,779,954, Cl. 264-83.000.

Solvay Deutschland GmbH: *See—*
Gerling, Klaus-Günter; Rau, Helge; Wendler, Kornelia; Schwarz, Petra; and Uhlig, Karlheinz, 5,779,939, Cl. 252-392.000.

Solvay Polyolefins Europe-Belgium (Société Anonyme): *See—*
Fiasse, Paul, 5,780,379, Cl. 502-132.000.

Solvay Umweltchemie GmbH: *See—*
Becker, Ame; Sell, Michael; Neuenfeldt, Gerhard; Koch, Veronika; and Schindler, Hubert, 5,779,915, Cl. 210-757.000.

Somerhausen, Bernard: *See—*
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Sommer, Keith E.: *See—*
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Son, David Y.: *See—*
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Son, Jae Cheol, to Samsung Electronics Company, Ltd. System for variable length code data stream position arrangement. 5,781,134, Cl. 341-67.000.

Son, Jin-young, to Samsung Electronics Co., Ltd. Methods of forming integrated circuit memory devices having improved storage electrode contact regions therein. 5,780,336, Cl. 438-251.000.

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Sabnis, Ram W.; Mayo, Jonathan W.; Hays, Edith G.; Brewer, Terry L.; Stroder, Michael D.; Yanagimoto, Akira; Sone, Yasuhisa; Watanabe, Yoshitane; and Ema, Kiyomi, 5,780,201, Cl. 430-270.100.

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Sonehara, Noboru: *See—*
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Song, Ci-moo: *See—*
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Lee, Ki Bang; Lee, Byung-leul; Cho, Young-ho; and Song, Ci-moo, 5,780,740, Cl. 73-504.120.
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Choi, Jeong Don; Cheon, In Ki; Song, Geun Hyuk; and Park, Hee Yoon, 5,781,370, Cl. 360-96.500.

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Fujii, Bunichiro; Ozawa, Kenichi; Saita, Koji; Saito, Tsunenari; and Minegishi, Hajime, 5,780,962, Cl. 313-402.000.
Hareyama, Nobuo, 5,781,594, Cl. 375-354.000.
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Hirano, Hideki; Shiotani, Hiroyuki; Sato, Shuji; and Shinozaki, Kenji, 5,781,210, Cl. 347-51.000.
Hosaka, Akihiko; Kito, Kazuhisa; and Abe, Kensaku, 5,781,638, Cl. 381-69.000.
Kondo, Tetsujiro; Fujimori, Yasuhiro; Takahashi, Kenji; and Kawaguchi, Kunio, 5,781,238, Cl. 348-405.000.
Kusunoki, Shigeo, 5,781,071, Cl. 330-269.000.
Muroyama, Masakazu; and Sasaki, Masayoshi, 5,779,521, Cl. 451-56.000.
Sako, Yoichiro; Yamagami, Tamotsu; Otsuka, Satoshi; and Tobita, Minoru, 5,781,565, Cl. 371-37.400.
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Shibata, Naka, 5,781,371, Cl. 360-96.500.
Shiga, Tomohisa, 5,781,599, Cl. 375-376.000.
Shimpuku, Yoshitake; and Nakagawa, Toshiyuki, 5,781,131, Cl. 341-58.000.
Tamamura, Koshi; Tsukamoto, Hironori; and Ikeda, Masao, 5,780,322, Cl. 438-45.000.
Tomita, Hidemi; Sam, Huy; Watanabe, Haruo; and Kusunoki, Misao, 5,779,909, Cl. 210-712.000.
Tsutsui, Kyoya, 5,781,586, Cl. 375-241.000.

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Tao, Chunlin; Desai, Neil P.; Soon-Shiong, Patrick; and Sandford, Paul A., 5,780,653, Cl. 549-510.000.

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Sorin, Inc.: *See—*
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Southpac Trust International, Inc.: *See—*
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Sowell, Lyles Howard: *See—*
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Spacht, Glenn L.: *See—*
Scannell, Lawrence M.; Spacht, Glenn L.; Benoit, Robert L.; Fahey, William; and Rachowitz, Bernard L., 5,779,557, Cl. 473-269.000.

Spanoudis, Stephen Louis: *See—*
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Spataro, Gianfranco: *See—*
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Spatz, Edward C., to Dresser Industries, Inc. Claw tooth rotary bit. 5,778,994, Cl. 175-374.000.

Spaulding, Thomas Lee: *See—*
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Speelman, Wilma. Biodegradable and flushable bedpan liner. 5,778,458, Cl. 4-452.000.

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- Spencer, Jean L.: *See—*
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- Spielmann, Rainer: *See—*
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- Spilker, Kerry Kennedy: *See—*
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- Spindler, Oswald: *See—*
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- Spindler, Zdeněk; and Novotný, Vojtěch, to Rieter Elitex a.s. Ústí nad Orlicí: Method of, and device for, spinning-in yarn on an open-end spinning machine, 5,778,651, Cl. 57-263.000.
- Spiridigliozzi, John C.: *See—*
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- Spirk, John W.: *See—*
Nottingham, John R.; Spirk, John W.; McCarthy, Richard O.; Stanca, Nicholas E.; and Kalman, Jeffery M., 5,778,573, Cl. 38-103.000.
- Spittle, Kevin Scott, Mechanically bonded fiber mulch and process for producing same, 5,779,782, Cl. 106-164.300.
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Sugiura, Hirotoshi: *See—*
Ujii, Masahiko; Chino, Toshinori; Tsuchiya, Rikio; and Sugiura, Hirotoshi, 5,781,352, Cl. 359-824.000.

Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seichiro; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunekiko; Kogano, Takayoshi; and Tsugane, Ken, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corp. Semiconductor integrated circuit device, process for fabricating the same, and apparatus for fabricating the same. 5,780,882, Cl. 257-203.000.

Sugiyama, Takekatsu: *See—*
Sato, Morimasa; Iwasaki, Masayuki; and Sugiyama, Takekatsu, 5,780,203, Cl. 430-294.000.

Sugiyama, Tatsuo: *See—*
Tamaki, Tokuhiko; Sugiyama, Tatsuo; and Nakaoka, Hiroaki, 5,780,898, Cl. 257-331.000.

Suh, Jung Won, to Hyundai Electronics Industries Co., Ltd. Sub word line driving circuit and a semiconductor memory device using the same. 5,781,498, Cl. 365-230.060.

Suh, Kyung W.: *See—*
Shmidt, Creston D.; Imepkaria, Daniel D.; Suh, Kyung W.; Malone, Bruce A.; and Franklin, Ken, 5,780,521, Cl. 521-79.000.

Sullivan, John; and Jessup, Edward L., Jr., to W. R. Case & Sons Cutlery Company. Wallet/pocket knife holder. 5,778,954, Cl. 150-143.000.

Sullivan, John Lennon, Jr.: *See—*
Barenboim, Michael; Mino, Mark Edward; Sullivan, John Lennon, Jr.; and Watts, Kenneth Wayne, 5,778,527, Cl. 29-845.000.

Sullivan, Kevin J.: *See—*
Conlon, Dennis R.; Sullivan, Kevin J.; and Green, Robert B., 5,780,302, Cl. 436-8.000.

Sullivan, Michael J.; Nesbitt, R. Dennis; and Binette, Mark L. Golf ball and method of making same. 5,779,561, Cl. 473-373.000.

Sullivan, Michael J.: *See—*
Melvin, Terrence; Sullivan, Michael J.; and Nesbitt, R. Dennis, 5,779,562, Cl. 473-373.000.

Sultan, Michel Farid: *See—*
Harrington, Charles Robert; Harrington, Marie Irene; Sultan, Michel Farid; and Troxell, John Richard, 5,780,173, Cl. 428-661.000.

Sumitomo Chemical Company, Limited: *See—*
Higashii, Takayuki; Fujimoto, Yukari; Matsumoto, Tsutomu; Minai, Masayoshi; Sekine, Chizu; Endo, Kyoko; and Fujisawa, Koichi, 5,779,934, Cl. 252-299.610.

Hirano, Yasuhiro; Akiba, Masatsugu; Shiomi, Yutaka; and Saito, Noriaki, 5,780,145, Cl. 428-323.000.

Komatsu, Masashi; Nishii, Shinji; and Ueda, Hiroshi, 5,780,628, Cl. 544-285.000.

Sato, Makoto; Setoh, Ritsuo; Inagaki, Katsunari; and Ohara, Jun, 5,780,168, Cl. 428-516.000.

Senba, Hideki; Inoue, Hiroki; Hayashi, Yoshiaki; Akita, Makoto; and Ito, Keisuke, 5,779,783, Cl. 106-410.000.

Sumitomo Electric Industries, Ltd.: *See—*
Kawai, Chihiro; Matsura, Takahiro; and Yamakawa, Akira, 5,780,374, Cl. 501-97.100.

Mikumo, Akira; Takahashi, Kenichi; and Koganeya, Masanobu, 5,779,864, Cl. 204-207.000.

Sano, Hiroaki; Ishikawa, Hiroki; Imaizumi, Tsuyoshi; Hogari, Kazuo; and Kawata, Osamu, 5,781,678, Cl. 385-45.000.

Sumitomo Pharmaceuticals Company, Limited: *See—*
Saji, Ikutaro; Muto, Masayuki; Tanno, Norihiko; and Yoshigi, Mayumi, 5,780,632, Cl. 546-15.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Hiraoka, Hidenori; Horiuchi, Kuniyasu; Yabuki, Yoshikazu; Koizumi, Yoshimasa; and Maruoka, Kiyoto, 5,780,169, Cl. 428-517.000.

Sumitomo Wiring Systems, Ltd.: *See—*
Kawamura, Yukio, 5,781,121, Cl. 340-825.310.

Matsumoto, Koichi, 5,779,952, Cl. 264-51.000.

Saka, Yuuji; Onizuka, Takahiro; Oka, Yoshito; Kobayashi, Makoto; and Inoue, Nori, 5,778,528, Cl. 29-850.000.

Tokuwa, Koichiro; and Okumura, Hitoshi, 5,779,500, Cl. 439-557.000.

Yasukuni, Jun; Tanigawa, Hidemi; and Furuno, Yutaka, 5,781,096, Cl. 337-297.000.

Sumiyoshi, Ken: *See—*
Suzuki, Masayoshi; Takatori, Ken-Ichi; Sumiyoshi, Ken; Kaneko, Setsuo; Suzuki, Teruaki; Shibahara, Hideo; and Hirai, Yoshihiko, 5,781,262, Cl. 349-128.000.

Summerfelt, Scott R.; and Beratan, Howard Roy, to Texas Instruments Incorporated. Electrode interface for high-dielectric-constant materials. 5,781,404, Cl. 361-321.500.

Summers, Robert W.; and Summers, Tami. Remote car heating system with heater remote control sensor removably attached to the rear view mirror. 5,781,695, Cl. 392-383.000.

Summers, Tami: *See—*
Summers, Robert W.; and Summers, Tami, 5,781,695, Cl. 392-383.000.

Sumner, Charles: *See—*
Greene, Marvin I.; Sumner, Charles; and Gartside, Robert J., 5,780,683, Cl. 568-358.000.

Sun Chemical: *See—*
Krishnan, Ramasamy; Yamat, Marilyn C.; Babij, Hugo; Palmatier, Roland T.; and Murray, Robert R., 5,778,789, Cl. 101-450.100.

Sun, Chiping: *See—*

Scott, Harold C.; Sun, Chiping; Pandya, Kandarp I.; and Anderson, William, 5,780,998, Cl. 322-46.000.

Sun Company, Inc. (R&M): *See—*
Hollstein, Elmer J.; Wei, James T.; and Hsu, Chao-Yang, 5,780,383, Cl. 502-324.000.

Sun Microsystems, Inc.: *See—*
Bhagwan, Raghunand, 5,781,055, Cl. 327-270.000.

Burr, James B.; and Brassington, Michael P., 5,780,912, Cl. 257-408.000.

Hayes, Norman M.; Malamy, Adam; and Patel, Rajiv N., 5,781,721, Cl. 395-183.180.

Hsieh, Michael Ming-Cheng, 5,781,568, Cl. 371-40.120.

Malladi, Deviprasad; Ansari, Shahid S.; and Bogatin, Eric, 5,780,930, Cl. 257-777.000.

Marzolf, Philip R.; and Rogers, Alan C., 5,781,781, Cl. 395-750.010.

Tribble, E. Dean; Miller, Mark S.; Hardy, Norman; Hibbert, Christopher T.; and Hill, Eric C., 5,781,633, Cl. 380-25.000.

Zaitzeva, Zinaida Nikolaevna; Konopleff, Oleg Alexandrovich; Laptev, Michael Victorovich; and Vechtomov, Andrey Alexe'evich, 5,781,924, Cl. 711-131.000.

Sun, Robert Ching-I: *See—*
Chew, Hongzong; Cuthbert, John David; Herring, Hamlet; Ryan, John Louis; Sun, Robert Ching-I; Wolf, Thomas Michael; and Wagne, Daniel Mark, 5,780,316, Cl. 438-11.000.

Sun, Shih-Wei: *See—*
Lin, Tony; Lur, Water; and Sun, Shih-Wei, 5,780,348, Cl. 438-303.000.

Sun, Weimin; Panken, Eric J.; and Combs, William J., to Medtronic, Inc. Method and apparatus for discriminating P and R-waves. 5,778,881, Cl. 128-696.000.

Sun, Xi-qing: *See—*
Carr, William N.; and Sun, Xi-qing, 5,781,331, Cl. 359-288.000.

Sun, Yuan-Chen: *See—*
Chu, Jack Oon; Hsu, Louis Lu-Chen; Mandelman, Jack Allan; Sun, Yuan-Chen; and Taur, Yuan, 5,780,327, Cl. 438-156.000.

Sunakawa, Shinichi: *See—*
Mori, Shigeki; Shimada, Kazutoshi; Tatsumi, Eisaku; Matsubayashi, Kazuhiro; Sunakawa, Shinichi; Harada, Takashi; Nagasaki, Katsuhiko; and Fukuda, Ryoji, 5,781,662, Cl. 382-189.000.

Sundaram, Ramesh: *See—*
Koka, Venkat R.; and Sundaram, Ramesh, 5,781,377, Cl. 360-103.000.

Sundermann, Franz, to Klug Kanal-, Leitungs-und Umweltsanierungs-G.m.b.H. Method of making leakproof sites of entry of domestic connector pipes and similar feed pipes into sewers. 5,778,937, Cl. 138-97.000.

Sundstrand Corporation: *See—*
Althof, Jon B.; Tsai, Shan-Chin; and Jones, Teddy L., 5,779,446, Cl. 416-36.000.

Sutrina, Thomas A.; and Lefavour, David W., 5,780,997, Cl. 322-29.000.

Sundstrom, Ray D.: *See—*
Schwartz, Daniel B.; and Sundstrom, Ray D., 5,781,129, Cl. 341-51.000.

Sundwiger Eisenhutte Maschinenfabrik GmbH & Co.: *See—*
Berger, Bernd; and Volkenand, H. Dieter, 5,778,717, Cl. 72-205.000.

SunFiles, LLC: *See—*
Oliver, G. Brian, 5,779,519, Cl. 451-28.000.

Sung, An-Min J.: *See—*
Ryang, Hong-Son; Snyder, Joseph T., II; and Sung, An-Min J., 5,780,525, Cl. 522-81.000.

Sunohara, Eizi: *See—*
Nagai, Tomoyuki; Sunohara, Eizi; and Hidaka, Toshihiko, 5,779,312, Cl. 297-362.130.

Sunrise Medical HHG, Inc.: *See—*
Ellena, Nate; and Orchard, Rolf, 5,778,605, Cl. 135-78.000.

Sunrise Technologies International, Inc.: *See—*
Berry, Michael J.; Hennings, David R.; and Vassiliadis, Arthur V., 5,779,696, Cl. 606-16.000.

Supino, Louis: *See—*
Romano, Paul M.; and Supino, Louis, 5,781,365, Cl. 360-78.060.

Surety Technologies, Inc.: *See—*
Haber, Stuart A.; and Stornetta, W. Scott, Jr., 5,781,629, Cl. 380-23.000.

Surfco, Hawaii: *See—*
Skedelski, David, 5,779,510, Cl. 441-75.000.

Sumilla, Gopichandra: *See—*
Cullen, Michael John; Farmer, David George; Sumilla, Gopichandra; and Cok, Susan Nicole, 5,778,666, Cl. 60-274.000.

Suskey, Wesley D.; Zeier, Todd S.; and Dörner, Randall L., to Nemschoff Chairs, Inc. Supine recliner and mechanism. 5,779,310, Cl. 297-354.130.

Sutinen, Risto: *See—*
Harala, Olli; Sutinen, Risto; and Järvinen, Lassi, 5,779,953, Cl. 264-70.000.

Sutoh, Akio; and Seto, Yukio, to Fuji Photo Film Co., Ltd. Head device for printer. 5,781,223, Cl. 347-238.000.

Sutou, Shinichi: *See—*
Kawano, Kayoko; Takaki, Yasushi; Sutou, Shinichi; and Hara, Kazuhiro, 5,781,560, Cl. 371-22.320.

Sutrina, Thomas A.; and Lefavour, David W., to Sundstrand Corporation. Variable reluctance alternating current generator. 5,780,997, Cl. 322-29.000.

Suttles, J. Marshall: *See—*
Whiten, James Douglas; Suttles, J. Marshall; Parham, Dennis E.; and Burch, Reeder T., 5,779,068, Cl. 211-117.000.

Sutton, George P., to University of California, Regents of the. Stepped nozzle. 5,779,151, Cl. 239-265.150.

Suwa, Tomisaburo, to Ebisu Science Laboratory Inc. Fluid fire extinguishing agent shell for throwing. 5,778,984, Cl. 169-36.000.

Suyama, Motohiro; Nakamura, Kimitsugu; and Ito, Masuo, to Hamamatsu Photonics K.K. Electron tube with a semiconductor anode outputting a distortion free electrical signal. 5,780,967, Cl. 313-541.000.

Suyama, Motohiro: *See—*
Muramatsu, Masaharu; Suyama, Motohiro; and Yamamoto, Koei, 5,780,913, Cl. 257-429.000.

Suzuki, Akira; Yabe, Hisao; Iida, Yoshihiro; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; Ishii, Hiroshi; Kira, Jin; and Yokoi, Takeshi, to Olympus Optical Co., Ltd. Endoscope system including endoscope and protection cover. 5,779,625, Cl. 600-121.000.

Suzuki, Akitomo: *See—*
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; and Suzuki, Akitomo, 5,779,585, Cl. 475-128.000.

Suzuki, Hiroaki: *See—*
Mashiko, Koichiro; Ueda, Kimio; Suzuki, Hiroaki; and Morinaka, Hiroyuki, 5,781,062, Cl. 327-544.000.

Suzuki, Hiroyuki: *See—*
Inoue, Ryo; Waki, Kenichiro; and Suzuki, Hiroyuki, 5,781,832, Cl. 399-149.000.

Suzuki, Kazuhiko: *See—*
Ajioka, Masanobu; Enomoto, Katashi; Yamaguchi, Akihiro; and Suzuki, Kazuhiko, 5,780,704, Cl. 588-218.000.

Suzuki, Kenichi: *See—*
Aiso, Katsuyoshi; Goto, Takeshi; Suzuki, Kenichi; and Sasaki, Tadashi, 5,779,405, Cl. 409-132.000.

Suzuki, Kenji: *See—*
Iino, Akihiro; Kasuga, Masao; Suzuki, Makoto; Suzuki, Kenji; and Saruwatari, Tomosumi, 5,780,955, Cl. 310-316.000.

Suzuki, Kenzaburo, to Nikon Corporation. Gauss lens with image stabilizing function. 5,781,340, Cl. 359-557.000.

Suzuki, Kihachi: *See—*
Kume, Katsuya; Takenoshita, Itsuro; Okazaki, Katsuyuki; Kuramoto, Mitsuo; and Suzuki, Kihachi, 5,780,142, Cl. 428-195.000.

Suzuki, Makoto: *See—*
Iino, Akihiro; Kasuga, Masao; Suzuki, Makoto; Suzuki, Kenji; and Saruwatari, Tomosumi, 5,780,955, Cl. 310-316.000.

Suzuki, Mariko: *See—*
Haruta, Masahiro; Koike, Shoji; Aoki, Makoto; Shiota, Koromo; Yoshihira, Aya; Yamamoto, Tomoya; and Suzuki, Mariko, 5,781,216, Cl. 347-106.000.

Suzuki, Masato: *See—*
Inarida, Satoru; Nakata, Kiyoshi; Yasuda, Kouji; Suzuki, Masato; and Miyake, Wataru, 5,781,423, Cl. 363-41.000.

Suzuki, Masayasu: *See—*
Ishizawa, Sei; Suzuki, Masayasu; and Terada, Hirokazu, 5,780,155, Cl. 428-370.000.

Suzuki, Masayoshi; Takatori, Ken-Ichi; Sumiyoshi, Ken; Kaneko, Setsuo; Suzuki, Teruaki; Shibahara, Hideo; and Hirai, Yoshihiko, to NEC Corporation. Liquid crystal display cell. 5,781,262, Cl. 349-128.000.

Suzuki, Michiyuki: *See—*
Tobita, Tsunehiro; Seki, Yukihiro; Hattori, Ryuichi; Miyagawa, Yuji; Sakurai, Shigeru; Suzuki, Michiyuki; and Ote, Ichiro, 5,781,434, Cl. 364-184.000.

Suzuki, Mikio: *See—*
Haga, Kyosuke; Suzuki, Mikio; and Fukumura, Kenichi, 5,778,756, Cl. 91-441.000.

Suzuki, Naomi: *See—*
Tomita, Yoshinori; and Suzuki, Naomi, 5,779,493, Cl. 439-271.000.

Suzuki, Naoto: *See—*
Kinugasa, Yukio; Ito, Takaaki; and Suzuki, Naoto, 5,778,667, Cl. 60-274.000.

Suzuki, Noboru; Toji, Shigeo; and Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Image magnification control device for a camera. 5,781,809, Cl. 396-134.000.

Suzuki, Ryuichi: *See—*
Saito, Yutaka; Anzai, Yuriko; Suzuki, Ryuichi; and Ichinose, Hiroshi, 5,778,899, Cl. 131-352.000.

Suzuki, Saburo, to Frontier, Inc. Blow molding apparatus having radiant heating means for preforms. 5,780,069, Cl. 425-174.400.

Suzuki, Seiichi: *See—*
Ema, Taiji; Itabashi, Kazuo; Ikemasu, Shinichiro; Mitani, Junichi; Yanagita, Itsuo; and Suzuki, Seiichi, 5,780,907, Cl. 257-371.000.

Suzuki, Shinjiro; and Nogami, Sumitaka, to Fuji Electric Co., Ltd. Electrophotographic photoconductor with conductive boron polymer. 5,780,193, Cl. 430-62.000.

Suzuki, Sinichi: *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seichiro; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunekiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.

Suzuki, Tadao: *See—*
Kadohira, Takashi; Igarashi, Shinya; Suzuki, Tadao; Tsumagari, Mamoru; and Saito, Takayuki, 5,780,735, Cl. 73-202.500.

Suzuki, Takahisa; Takeo, Yuuji; and Ozaki, Yukikatsu, to Denso Corporation. Gas injection type heat pump apparatus. 5,778,691, Cl. 62-160.000.

- Suzuki, Teruaki: *See—*
Suzuki, Masayoshi; Takatori, Ken-Ichi; Sumiyoshi, Ken; Kaneko, Setsuo; Suzuki, Teruaki; Shibahara, Hideo; and Hirai, Yoshihiko, 5,781,262, Cl. 349-128.000.
- Suzuki, Tetsuaki: *See—*
Yamamoto, Hideaki; Matsumaru, Haruo; Suzuki, Tetsuaki; Nakatani, Mitsuo; Tsukii, Michio; Sasano, Akira; Oikawa, Saburo; and Oritsuki, Ryoji, 5,781,255, Cl. 349-46.000.
- Suzuki, Toshiro: *See—*
Nakamichi, Kazutaka; Yoshikawa, Kouji; Ishikawa, Katsuji; Suzuki, Toshiro; and Takeuchi, Hitoshi, 5,781,092, Cl. 336-96.000.
- Suzuki, Tsuyoshi, to Brother Kogyo Kabushiki Kaisha, Toner supplying device for use in image forming apparatus, 5,781,838, Cl. 399-281.000.
- Suzuki, Yasutoshi: *See—*
Inoue, Keiichi; Toyoda, Inao; and Suzuki, Yasutoshi, 5,779,918, Cl. 216-2.000.
- Suzuki, Yuji; Takano, Hitomichi; Suzumura, Masahiko; Hayasaka, Yoshiki; Kishida, Takashi; and Shirai, Yoshifumi, to Matsushita Electric Works, Inc. Thin film silicon-on-insulator transistor having an improved power dissipation, a high break down voltage, and a low on resistance, 5,780,900, Cl. 257-335.000.
- Suzumura, Masahiko: *See—*
Suzuki, Yuji; Takano, Hitomichi; Suzumura, Masahiko; Hayasaka, Yoshiki; Kishida, Takashi; and Shirai, Yoshifumi, 5,780,900, Cl. 257-335.000.
- Svedala Industries, Inc.: *See—*
Gardner, Kenneth LeRoy, 5,779,467, Cl. 432-17.000.
- Svensson, Lene D.: *See—*
Saika, Hideyuki; Murata, Toshiaki; Pitterma, Thomas; Fröh, Thomas; Svensson, Lene D.; Urade, Yoshihiro; Yamamura, Takaki; and Okada, Toshikazu, 5,780,498, Cl. 514-419.000.
- Svendlöv, Anna: *See—*
Gustafsson, Anders; Svendlöv, Anna; Widlund, Urban; and Durant, Benedicte, 5,779,690, Cl. 604-385.200.
- Swain, Jon M. Adjustable cage assembly for mobile surface abrading apparatus, 5,779,524, Cl. 541-102.000.
- Swain, Jon M. Outflow meter, 5,780,720, Cl. 73-38.000.
- Swaminathan, Kumar: *See—*
Malcolm, James Eryx; Fraley, Daniel; Morris, Adrian; Roos, David; Swaminathan, Kumar; Kim, Seok Ho; and Marquart, Robert Carroll, 5,781,540, Cl. 370-321.000.
- Swamy, Som S.: *See—*
Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Teruo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-Chou Vincent, 5,778,529, Cl. 29-852.000.
- Swanberg, Robert: *See—*
Schwartz, Robert G.; Crowe, Allen A.; Emmett, James S.; Eskandari, Fetehe; Palange, Martin F.; Simcik, Mark E.; Swanberg, Robert; Japenga, Robert J.; Lehman, Joseph L.; Weisman, William A.; and Rahgo, George P., 5,780,778, Cl. 177-25.130.
- Swanson, David Frank: *See—*
Notaro, Joseph; and Swanson, David Frank, 5,781,390, Cl. 361-84.000.
- Swanson, Jeffrey S.: *See—*
Cords, Frederick W.; Frye, David E.; and Swanson, Jeffrey S., 5,779,324, Cl. 303-7.000.
- Swanson, Nancy L., to United States of America, Navy, Light mixing technique for isolation and amplification of laser signal from background noise due to scattering in turbid media, 5,781,298, Cl. 356-349.000.
- Swanson, Sally Ann: *See—*
Angelopoulos, Marie; Gelorme, Jeffrey Donald; Labadie, Jeffrey William; Lewis, David Andrew; Swanson, Sally Ann; and Labianca, Nancy Carolyn, 5,780,199, Cl. 430-270.000.
- Swart, Mark A.; Vinther, Gordon A.; Sanderson, Byron C.; and Johnston, Charles J., to Delaware Capital Formation, Inc. Hollow plunger test probe, 5,781,023, Cl. 324-761.000.
- Swartz, Andrew Joseph; and Wood, Kurt Arthur, to Rohm and Haas Company, Dual-cure latex compositions, 5,780,117, Cl. 427-493.000.
- Swartz, Erik: *See—*
Tardi, Paul G.; Swartz, Erik; Bally, Marcel B.; and Cullis, Pieter R., 5,780,054, Cl. 424-450.000.
- Swarup, Vijay: *See—*
Yezrielev, Albert Ilya; Rigopoulos, Konstantinos R.; and Swarup, Vijay, 5,780,556, Cl. 525-437.000.
- Sweeny, Kevin M., to FCI, Inc. Quick change ledge support assembly for filling and capping machines, 5,778,633, Cl. 53-201.000.
- Sweha, Sherif; and Bauer, Mark E., to Intel Corporation, Bit map addressing schemes for flash/memory, 5,781,472, Cl. 365-185.110.
- Swieringa, Roger D.: *See—*
Olson, Scott M.; Wood, Gregory P.; Chemoby, Andrew, Jr.; and Swieringa, Roger D., 5,779,097, Cl. 222-39.000.
- Swift, Gerald W.: *See—*
Peterson, Carl W.; Jones, Harry C.; Ali, Mir Akbar; and Swift, Gerald W., 5,781,162, Cl. 343-853.000.
- Sydansk, Robert D., to Marathon Oil Company, Foam for improving sweep efficiency in subterranean oil-bearing formations, 5,780,395, Cl. 507-202.000.
- Sylvester, Mark F., to W. L. Gore & Associates, Inc. Method for controlling warp of electronic assemblies by use of package stiffener, 5,778,523, Cl. 29-831.000.
- Sylvester, Thomas Gerard: *See—*
Hamstra, Jeffrey William; and Sylvester, Thomas Gerard, 5,779,189, Cl. 244-53.000.
- Symantec Corporation: *See—*
Buches, David M., Jr., 5,781,722, Cl. 395-185.070.
- Symbios, Inc.: *See—*
Randazzo, Todd A.; and Seliskar, John J., 5,780,329, Cl. 438-202.000.
- Weber, David M., 5,781,769, Cl. 395-557.000.
- Symbiosis Corporation: *See—*
Hahnen, Kevin F.; and Turcat, Michael J., 5,779,700, Cl. 606-46.000.
- McBrayer, Michael Sean; and Kortenbach, Juergen Andrew, 5,779,701, Cl. 606-46.000.
- Synaptic Pharmaceutical Corporation: *See—*
Gluchowski, Charles; Forray, Carlos C.; Chiu, George; Brancheck, Theresa A.; Wetzel, John M.; and Hartig, Paul R., 5,780,485, Cl. 514-318.000.
- Synchrone Technology Inc.: *See—*
Wilson, Geoffrey Robert; and Carr, Norman Loren, 5,780,381, Cl. 502-308.000.
- Synsorb Biotech, Inc.: *See—*
Hindsaul, Ole, 5,780,603, Cl. 536-4.100.
- Syracuse, Anthony A.; Kent, Donald; and Taylor, Roy Y., to Eastman Kodak Company, Method and apparatus for improving electronic recording of depth images, 5,781,225, Cl. 347-258.000.
- Syracuse University: *See—*
Tavlarides, Lawrence L.; and Deorkar, Nandu, 5,779,906, Cl. 210-661.000.
- Systems Research Laboratories, Inc.: *See—*
Yu, Hao, 5,779,907, Cl. 210-695.000.
- Szabo, George: *See—*
Groeters, Thomas Eugene; and Szabo, George, 5,779,278, Cl. 285-93.000.
- Szafraniec, Bogdan: *See—*
Strandjord, Lee K.; Sanders, Glen A.; Szafraniec, Bogdan; and Bergh, Ralph A., 5,781,300, Cl. 356-350.000.
- Szalay, Andreas, to Blue Chip Music GmbH; and Yamaha Corporation, Method for pitch recognition, in particular for musical instruments which are excited by plucking or striking, 5,780,759, Cl. 84-454.000.
- Szam, Peter, to Christian Maier GmbH & Co. Maschinenfabrik, Head for conducting heat-exchange fluid to rotating system, 5,778,971, Cl. 165-90.000.
- Szczeczek, Gerald S.: *See—*
Gilligan, Sean G.; Freeman, Dermot T.; Oliphant, Larry J.; Meessmann, Jeffrey S.; Hanley, Patrick J.; and Szczeczek, Gerald S., 5,780,099, Cl. 427-175.000.
- Szczerba, Mirosław A. Nail driving apparatus, 5,779,128, Cl. 227-113.000.
- Szeles, Peter F.: *See—*
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- Szilagyi, Andrei: *See—*
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- Szupkay, Imre A.: *See—*
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- Tabarovsky, Leonty A.: *See—*
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- Tabata, Seiichi, to Olympus Optical Co., Ltd. Image display apparatus of head mounted type, 5,781,165, Cl. 345-8.000.
- Tabib-Azar, Masood; Glass, John C.; DeGuire, Mark R.; and Golonka, Kenneth A., to Erico International Corporation, Surge arrester, 5,781,393, Cl. 361-118.000.
- Tabuchi, Daisuke: *See—*
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- Tachibana, Akihiko: *See—*
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- Tachikawa, Hirohide, to Canon Kabushiki Kaisha, Electronic device with a power saving function, 5,781,782, Cl. 395-750.070.
- Tada, Tatsuya; and Itoh, Isami, to Canon Kabushiki Kaisha, Developing device having regualting rotary member for regulating toner amount, 5,781,836, Cl. 399-275.000.
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- Tagiri, Takao, to Pioneer Electronic Corporation; and Pioneer Video Corporation, Method of and apparatus for controlling rotation number of motor, 5,780,982, Cl. 318-254.000.
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- Taguchi, Toshiaki: *See—*

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- Tai, Chiao-Yen, to United Microelectronics Corporation, Method and apparatus for generating sounds with tremolo and vibrato sound effects, 5,781,636, Cl. 381-62.000.
- Taillades, Joëlle: *See—*
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- Taiwan Semiconductor Manufacturing Company, Ltd.: *See—*
Chao, Ying-Chen; and Lin, Ting-Hwang, 5,780,315, Cl. 438-8.000.
- Hsu, Sung-Mu, 5,780,161, Cl. 428-426.000.
- Liaw, Jhon-Jhy; and Lee, Jin-Yuan, 5,780,331, Cl. 438-238.000.
- Lo, Chi-Hsin, 5,779,927, Cl. 216-84.000.
- Shiue, Ruey-Yun; and Hsu, Sung-Mu, 5,781,445, Cl. 364-481.000.
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- Takabayashi, Akira; Sugimura, Yoshihisa; Aoki, Toshihide; Tsuchiya, Tomohiko; and Makita, Seiji, to Kabushiki Kaisha Yutaka Giken, Two-mass type of flywheel device, 5,778,738, Cl. 74-574.000.
- Takabe, Shigeru: *See—*
Miyagi, Yoshiyuki; Hori, Moena; and Takabe, Shigeru, 5,779,579, Cl. 474-72.000.
- Takada, Akira: *See—*
Yanagisawa, Osamu; Oda, Kenji; Sugimoto, Naoki; Takegawa, Yoshio; Takada, Akira; Osada, Hideyo; Aizawa, Haruo; and Miura, Koji, 5,780,373, Cl. 501-72.000.
- Takada, Hiroto: *See—*
Imamoto, Takashi; Takada, Hiroto; Miyamaru, Toshiaki; and Hamaguchi, Akihiro, 5,779,060, Cl. 211-26.000.
- Takada, Kyu; Inoue, Nozomu; Hama, Takashi; and Nomura, Yujiro, to Seiko Epson Corporation, Optical scanner, 5,781,323, Cl. 359-206.000.
- Takada, Masahiro: *See—*
Ichikawa, Hideki; Takada, Masahiro; Katahira, Kouji; and Shibayama, Keniti, 5,778,512, Cl. 29-598.000.
- Takada, Mitsuru, to Toyota Jidosha Kabushiki Kaisha, On-vehicle control apparatus, 5,779,593, Cl. 477-107.000.
- Takada, Naomi: *See—*
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- Takagi, Akira: *See—*
Kumai, Eiji; Takagi, Akira; and Fujioka, Satoshi, 5,779,377, Cl. 400-555.000.
- Takagi, Kaori: *See—*
Manuyama, Takayuki; Ogino, Takao; Ishino, Yuichi; Saito, Tasuku; Haraoka, Takashi; Takagi, Kaori; and Hatano, Hitomi, 5,779,880, Cl. 208-44.000.
- Takagi, Kazuhisa, to Mitsubishi Denki Kabushiki Kaisha, Optical semiconductor device, 5,781,578, Cl. 372-50.000.
- Takagi, Naoya, to Toyota Jidosha Kabushiki Kaisha, Evaporative fuel processing apparatus of internal combustion engine, 5,778,859, Cl. 123-520.000.
- Takagi, Shiro, to Kabushiki Kaisha Toshiba, Data storage apparatus having data and parity media, 5,781,920, Cl. 711-114.000.
- Takaha, Takeshi: *See—*
Imanaka, Tadayuki; Terada, Yoshinobu; Takaha, Takeshi; Yanase, Michio; Okada, Shigetaka; Takata, Hiroki; Nakamura, Hiroyasu; and Fujii, Kazutoshi, 5,780,267, Cl. 435-72.000.
- Takahama, Kimioka, to Shimano, Inc. Bicycle pedal with gap adjusting mechanism, 5,778,739, Cl. 74-594.600.
- Takahashi, Akihiko; Maeda, Sunao; Ono, Yuzo; Ozawa, Masaaki; and Nakamura, Ichisaburo, to Mitsui Chemicals, Inc. Method for preventing the inner wall surfaces of the polymerization apparatus from being fouled with scale during the polymerization of vinyl chloride, 5,780,104, Cl. 427-230.000.
- Takahashi, Hideto: *See—*
Tanaka, Masaaki; Yamashita, Keiichi; Izutani, Kouji; Okada, Kingo; and Takahashi, Hideto, 5,778,926, Cl. 137-508.000.
- Takahashi, Kazuo; Ito, Youichi; Kanai, Saburo; and Kanno, Seiichi, to Hitachi, Ltd. Electrostatically attracting electrode and a method of manufacture thereof, 5,781,400, Cl. 361-234.000.
- Takahashi, Kazushi: *See—*
Kitaguchi, Tohru; Notsu, Kazuo; Takahashi, Kazushi; Furukawa, Masayoshi; Kambara, Shigeki; Majima, Osamu; and Kuwahara, Soichi, 5,780,200, Cl. 430-270.100.
- Takahashi, Kenichi: *See—*
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- Takahashi, Kenji: *See—*
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- Takahashi, Kiichiro: *See—*
Kanematsu, Daigoro; Otsuka, Naoki; Yano, Kentaro; Takahashi, Kiichiro; and Iwasaki, Osamu, 5,781,204, Cl. 347-17.000.
- Takahashi, Mamoru: *See—*
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- Takahashi, Masanori; and Isogawa, Atsushi, to Sanshin Kogyo Kabushiki Kaisha, Four cycle outboard motor, 5,778,847, Cl. 123-195.00P.
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- Takahashi, Mitsuhiro; and Tahata, Syouchi, to Hudson Soft Co., Ltd. Image processing apparatus including selecting function for displayed colors, 5,781,183, Cl. 345-199.000.
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- Takahashi, Shigeki: *See—*
Tokura, Norihito; Takahashi, Shigeki; Yamamoto, Tsuyoshi; Kataoka, Mitsuhiro; and Hara, Kunihiko, 5,780,324, Cl. 438-138.000.
- Takahashi, Teruo: *See—*
Nakamura, Yoshikatsu; Kawamura, Osamu; Takahashi, Teruo; and Yamamoto, Shinichi, 5,778,530, Cl. 29-888.100.
- Takahashi, Tsutomu, to Fuji Jukogyo Kabushiki Kaisha, Battery management system for electric vehicle, 5,781,013, Cl. 324-426.000.
- Takaki, Shunsuke, to Minnesota Mining and Manufacturing Company, Temperature sensor for medical application, 5,779,365, Cl. 374-161.000.
- Takaki, Yasushi: *See—*
Kawano, Kayoko; Takaki, Yasushi; Sotou, Shinichi; and Hara, Kazuhiro, 5,781,560, Cl. 371-22.320.
- Takami, Masayuki: *See—*
Mizoguchi, Tomomichi; Takami, Masayuki; and Okazaki, Kazuhiro, 5,781,878, Cl. 701-109.000.
- Takami, Seiji: *See—*
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- Takamori, Katsuhito, to Fuji Jukogyo Kabushiki Kaisha, Diagnosis apparatus and method for an evapo-purge system, 5,780,728, Cl. 73-116.000.
- Takano, Hitomichi: *See—*
Suzuki, Yuji; Takano, Hitomichi; Suzumura, Masahiko; Hayasaka, Yoshiki; Kishida, Takashi; and Shirai, Yoshifumi, 5,780,900, Cl. 257-335.000.
- Takano, Yoshiaki: *See—*
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- Takao, Hitoshi: *See—*
Nishizono, Atsuo; Noguchi, Hideo; Minami, Keiji; Hirata, Shinji; Takao, Hitoshi; Kato, Koji; Hyodo, Tetsuji; and Itaki, Kazuyuki, 5,781,220, Cl. 347-208.000.
- Takao, Masayoshi, to Kawasaki Hydraulics Corp. Method of stretch-forming a channel material, 5,778,719, Cl. 72-296.000.
- Takaoka, Minoru: *See—*
Miyako, Michio; Takaoka, Minoru; and Tanaka, Hiroyuki, 5,780,984, Cl. 318-268.000.
- Takasago International Corporation: *See—*
Sakaguchi, Minzo; Imai, Takashi; Miura, Takashi; and Yamazaki, Tetsuro, 5,780,692, Cl. 568-814.000.
- Yuasa, Yoshifumi; Konno, Masao; and Sano, Noboru, 5,780,649, Cl. 549-313.000.
- Takasu, Eiji: *See—*
Sakaguchi, Katsuhiko; Arai, Tsunekazu; Takasu, Eiji; and Yoshii, Hiroto, 5,781,663, Cl. 382-189.000.
- Takata, Hiroki: *See—*
Imanaka, Tadayuki; Terada, Yoshinobu; Takaha, Takeshi; Yanase, Michio; Okada, Shigetaka; Takata, Hiroki; Nakamura, Hiroyasu; and Fujii, Kazutoshi, 5,780,267, Cl. 435-72.000.
- Takatori, Ken-Ichi: *See—*
Suzuki, Masayoshi; Takatori, Ken-Ichi; Sumiyoshi, Ken; Kaneko, Setsuo; Suzuki, Teruaki; Shibahara, Hideo; and Hirai, Yoshihiko, 5,781,262, Cl. 349-128.000.
- Takatori, Sunao: *See—*
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- Takeda, Yoshiyuki: *See—*
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- Takegawa, Yoshio: *See—*
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- Takeichi, Ayako; and Illian, Gerhard, to Hoechst Aktiengesellschaft, Ferroelectric liquid crystal mixture, 5,779,935, Cl. 252-299.610.
- Takemiya, Hirokazu; Naruse, Tasuichirou; and Hashimoto, Mitsunori, Method of improving soil body against vibration and liquefaction, 5,779,397, Cl. 405-271.000.
- Takemoto, Masato, to Sharp Kabushiki Kaisha, Display-driving voltage generating apparatus, 5,781,001, Cl. 323-267.000.
- Takemura, Tatsuya: *See—*
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- Takemura, Yasuhiko: *See—*
Yamazaki, Shunpei; Takemura, Yasuhiko; and Seo, Norihiko, 5,780,345, Cl. 438-282.000.
- Takenaka Corporation: *See—*
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- Takenaka, Keishi: *See—*
Furukawa, Yoshio; Kitaori, Kazuhiro; and Takenaka, Keishi, 5,780,650, Cl. 549-361.000.
- Takenaka, Kenji: *See—*
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- Takenoshita, Itsuroh: *See—*
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- Takenouchi, Masanori: *See—*
Ujita, Toshihiko; Yamakawa, Koji; Takenouchi, Masanori; Sugama, Sadaaki; Watanabe, Kenjiro; Osada, Torachika; Nakajima, Kazuhiro; Tsutsumi, Takayoshi; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Kei-ichiro; and Sato, Yohei, 5,781,213, Cl. 347-86.000.
- Takeo, Yuuji: *See—*
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- Takeshima, Eiki: *See—*
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- Takeshima, Sadao, to Jidosha Kiki Co., Ltd. Emergency brake system sensing pedal speed and pressure, 5,779,329, Cl. 303-155.000.
- Takeshita, Fusayuki: *See—*
Terashima, Kanetsugu; Takeshita, Fusayuki; Yamamoto, Hitoshi; and Kawasuyukuda, Hiroaki, 5,779,933, Cl. 252-299.100.
- Takeuchi, Atsushi; Aoki, Osamu; Hamabe, Kenji; Itakura, Tatsuya; Ohgane, Hitoshi; and Makuta, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Bumper made of synthetic resin for automobile, and process for producing the same, 5,780,125, Cl. 428-31.000.
- Takeuchi, Hitoshi: *See—*
Nakamichi, Kazutaka; Yoshikawa, Kouji; Ishikawa, Katsuji; Suzuki, Toshiro; and Takeuchi, Hitoshi, 5,781,092, Cl. 336-96.000.
- Takeuchi, Katsuhiko: *See—*
Niinaka, Kouichi; Takeuchi, Katsuhiko; Kamiya, Tetsuro; and Yorozu, Hidenori, 5,780,418, Cl. 510-439.000.
- Takeuchi, Ken; and Tanaka, Tomoharu, to Kabushiki Kaisha Toshiba. Non-volatile semiconductor memory device, 5,781,478, Cl. 365-185.110.
- Takeuchi, Kiyoshi; Nakamura, Koki; Taguchi, Toshiaki; Nakamura, Koichi; and Makuta, Toshiyuki, to Fujii Photo Film Co., Ltd. Color developing agent, silver halide photographic light-sensitive material and image forming method, 5,780,210, Cl. 430-435.000.
- Takeuchi, Minoru: *See—*
Kondo, Kazuhiko; and Takeuchi, Minoru, 5,781,242, Cl. 348-441.000.
- Takeuchi, Sumitaka: *See—*
Yamanaka, Kazuya; and Takeuchi, Sumitaka, 5,781,462, Cl. 364-724.160.
- Takimoto, Akio; Hibino, Junichi; and Ogawa, Hisahito, to Matsushita Electric Industrial Co., Ltd. Anti-ferroelectric liquid crystal with black display in one frame, white in other and ratio giving grey scale, 5,781,267, Cl. 349-174.000.
- Takita, Mark K., to Nikon Corporation. Transadmittance amplifier for a motor, 5,781,068, Cl. 330-85.000.
- Talbot, Mark; and Aflague, Allen. Removable wheel holder for bicycle, 5,779,119, Cl. 224-427.000.
- Talley Defense Systems, Inc.: *See—*
Knowlton, Gregory D.; Ludwig, Christopher P.; and Haun, Daniel, 5,780,768, Cl. 149-36.000.
- Tam, Steve Yik-Kai: *See—*
Goodnow, Robert Alan, Jr.; and Tam, Steve Yik-Kai, 5,780,607, Cl. 536-22.100.
- Tamada, Osamu: *See—*
Suzuki, Akira; Yabe, Hisao; Iida, Yoshihiro; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; Ishii, Hiroshi; Kira, Jin; and Yokoi, Takeshi, 5,779,625, Cl. 600-121.000.
- Tamaki, Tokuhiko; Sugiyama, Tatsuo; and Nakaoka, Hiroaki, to Matsushita Electric Industrial Co. Ltd. Semiconductor device with a vertical field effect transistor and method of manufacturing the same, 5,780,898, Cl. 257-331.000.
- Tamamura, Koshi; Tsukamoto, Hironori; and Ikeda, Masao, to Sony Corporation. Method for growing a II-VI compound semiconductor layer containing cadmium and method for fabricating a semiconductor laser, 5,780,322, Cl. 438-45.000.
- Tamaro, Frank A. Safety assembly cap for needles, 5,779,684, Cl. 604-263.000.
- Tamaru, Tsuyoshi: *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Shinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tanehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
- Tamrock Oy: *See—*
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- Tamsson, Jerome: *See—*
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- Tamura, Hidehiko: *See—*
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- Tan, Ostin H.C.: *See—*
Richwine, John Robert; Tan, Ostin H.C.; Agrawal, Purushottam Das; Seet, Tiong Boon; and Gase, Kevin Mark, 5,779,968, Cl. 264-515.000.
- Tanabe, Tetsuya: *See—*
Tanaka, Yasuhiro; Tanabe, Tetsuya; and Tanoi, Satoru, 5,781,466, Cl. 365-49.000.
- Tanaglia, Tiziano, to Enichem S.p.A. Process for the preparation of polymeric mixtures based on EP (D) M elastomer copolymers, 5,780,570, Cl. 526-86.000.
- Tanaka, Hideaki: *See—*
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- Tanaka, Hideki, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Shoulder anchor structure, 5,779,270, Cl. 280-808.000.
- Tanaka, Hirokazu; and Saito, Tatsunori, to Kabushiki Kaisha Toshiba. Information communication system using multi-code CDMA mode, 5,781,542, Cl. 370-342.000.
- Tanaka, Hirokazu: *See—*
Okada, Satoshi; Sawada, Koza; Kuroda, Akio; Watanabe, Shinya; and Tanaka, Hirokazu, 5,780,633, Cl. 546-112.000.
- Tanaka, Hironao, to NEC Corporation. Paging system capable of calling pagers of different bit rates without deterioration of an efficient use of radio channels, 5,781,539, Cl. 370-312.000.
- Tanaka, Hiroyuki: *See—*
Miyako, Michio; Takaoka, Minoru; and Tanaka, Hiroyuki, 5,780,984, Cl. 318-268.000.
- Tanaka, Koji; Asakura, Mikio; and Yasuda, Kenichi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device, 5,781,484, Cl. 365-200.000.
- Tanaka, Kunio, to Fanuc, Ltd. Method of estimating service life of cutter, 5,780,725, Cl. 73-104.000.
- Tanaka, Masaaki; Yamashita, Keiichi; Izutani, Kouji; Okada, Kingo; and Takahashi, Hideto, to Nippondenso Co., Ltd. Pressure regulating valve and fuel supply system using the same, 5,778,926, Cl. 137-508.000.
- Tanaka, Masaru, to Katsu Manufacturing Co., Ltd. Agitation apparatus including vessel having mixing blades and moveable agitator, 5,779,360, Cl. 366-286.000.
- Tanaka, Mitsumasa, to NEC Corporation. Multimedia communication system, 5,781,740, Cl. 395-200.590.
- Tanaka, Shinichi: *See—*
Nagahara, Shigenori; Fujimura, Toshiaki; and Tanaka, Shinichi, 5,780,202, Cl. 430-271.100.
- Tanaka, Shoji; and Iimura, Katsuhiko, to Matsushita Electric Industrial Co., Ltd. Speaker system, 5,781,642, Cl. 381-159.000.
- Tanaka, Tadashi; Tamura, Hidehiko; and Niwa, Takahiro, to Daido Metal Company Ltd. Sliding member, 5,780,396, Cl. 508-104.000.
- Tanaka, Tomoharu: *See—*
Takeuchi, Ken; and Tanaka, Tomoharu, 5,781,478, Cl. 365-185.110.
- Tanaka, Yasuhiro; Tanabe, Tetsuya; and Tanoi, Satoru, to Oki Electric Co., Ltd. Semiconductor memory with built-in cache, 5,781,466, Cl. 365-49.000.
- Tanaka, Yasuji: *See—*
Kito, Satoru; Ito, Masahito; Matuda, Fuminori; Takeshima, Eiki; Tanaka, Yasuji; Fujii, Takahiro; and Izutani, Kenjiro, 5,779,872, Cl. 205-149.000.
- Tanaka, Yoshio. Process for preparation of powdery chlorella extract, 5,780,096, Cl. 426-655.000.
- Tanaka, Yoshio. Process for preparation of powdery extract of shiitake mushroom, 5,780,097, Cl. 426-655.000.
- Tanaka, Yoshiyuki: *See—*
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- Tanbara, Yasuo: *See—*
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- Tandberg Data Storage AS: *See—*
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- Tang, Peng Cho; McMahon, Gerald; and Harris, G. Davis, to Sugen, Inc. Method and compositions for inhibition of adaptor protein/tyrosine kinase interactions, 5,780,496, Cl. 514-414.000.
- Tang, Weilong: *See—*
Miu, Denny K.; Tang, Weilong; and Temesvary, Viktoria A., 5,778,513, Cl. 29-602.100.
- Tani, Nobuhiro: *See—*
Seu, Shuzo; Tani, Nobuhiro; Shin, Takeharu; Nukui, Makoto; and Ishizuka, Yukihiro, 5,780,831, Cl. 235-462.000.
- Tanida, Koji: *See—*
Mutaguchi, Masao; Kawase, Kiyosi; Tanida, Koji; Nakagawa, Hitoshi; Hiranishi, Yoshinobu; and Tokumura, Ichiro, 5,778,797, Cl. 105-149.100.
- Tanigawa, Hidemi: *See—*
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- Taniguchi, Kenji: *See—*
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- Thaler, Warren A.: See—
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- Thayer, Billy E.: See—
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- Thermo King Corporation: See—
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- Thiessen, Leo Kurtis; and Graham, James Sheldon, to Johns Manville International, Inc. Scrap fiber refeed system and method. 5,778,492, Cl. 19-107.000.
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- Thomas & Betts Corporation: See—
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- Thomas J. Lipton Co., Division of Conopco, Inc.: See—
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- Thomas, Philip A.: See—
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- Thompson, Cyril V.: See—
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- Thompson, Danny L.; and Thompson, Jeanine L., to Motorola, Inc. System and method for indicating an angular position of an object using a level detection device. 5,780,848, Cl. 250-231.130.
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- Thompson, Jeanine L.: See—
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- Thomson Consumer Electronics, Inc.: See—
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- Tibbott, Ian: See—
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- Tietz, James V.: See—
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- Tiggeloven, Leonardus Jozephus Antonius: See—
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- TII Industries, Inc.: See—

- Clark, Lowell E., 5,781,392, Cl. 361-111.000.
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- Tillery, Michael L.: See—
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- Timar, Thomas, to Boeing Company, The. Ram air drive laminar flow control system. 5,779,196, Cl. 244-209.000.
- Timm, Mark James: See—
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- Tipton, Arthur J.: See—
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- Tischer, Wilhelm: See—
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- Titterington, Donald R.; Banning, Jeffery H.; Bui, Loc V.; and King, Clifford R., to Tektronix, Inc. Isocyanate-derived colored resins for use in phase change ink jet inks. 5,780,528, Cl. 523-161.000.
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- Toensing, Friedrich: See—
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- Togai, Kazuhide: See—
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- Tohoku University: See—
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- Tokin Corporation: See—
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- Transilwrap Company, Inc.: See—
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- Trinh, Tieu T. Nozzle and system for use in wafer cleaning procedures, 5,779,816, Cl. 134-23.000.
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- Trojan Manufacturing, Inc.: See—
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- Trombley, Michael R.: See—
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- Trustees of Princeton University: See—
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- Chan, Hugo Wai-Kung, 5,780,314, Cl. 438-2.000.
- Heep, Theo, 5,778,731, Cl. 74-498.000.
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- Warinner, Derek K., 5,779,007, Cl. 188-289.000.
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- Tsushimoto, Tomonori; Iwata, Katsuichi; and Kurashima, Yoshihiko, to NGK Insulators, Ltd. Apparatus for disposing of spent NaS cells, 5,778,503, Cl. 29-33.00R.
- Tsushishima, Jiro; and Chiba, Kiyotaka, to Tokyo Seimitsu Co., Ltd. Mounting structure for curing blade of dicing apparatus, 5,778,751, Cl. 83-666.000.
- Tsuchiya, Kenichi; Tsubakiji, Tadashi; and Fujiwara, Toru, to Mitsubishi Denki Kabushiki Kaisha. Alternator power supplied electric heater, 5,780,810, Cl. 219-202.000.
- Tsuchiya, Osamu: See—
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunekiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
- Tsuchiya, Rikio: See—
Ujije, Masahiko; Chino, Toshinori; Tsuchiya, Rikio; and Sugiura, Hiro-toshi, 5,781,352, Cl. 359-824.000.
- Tsuchiya, Tomohiko: See—
Takabayashi, Akira; Sugimura, Yoshihisa; Aoki, Toshihide; Tsuchiya, Tomohiko; and Makita, Seiji, 5,778,738, Cl. 74-574.000.
- Tsuda, Yoichi: See—
Ishii, Ryuichi; Tsuda, Yoichi; and Yamada, Masayuki, 5,779,821, Cl. 148-326.000.
- Tsugane, Ken: See—
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunekiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
- Tsuji, Shinji; Takahashi, Ryuta; Shishikura, Masato; Kikuchi, Satoru; and Aoki, Satoshi, to Hitachi, Ltd.; Hitachi Cable, Ltd.; Hitachi Tohbu Semiconductor, Ltd.; and Nippon Telegraph and Telephone Corporation. Hybrid optical integration assembly using optical platform, 5,780,875, Cl. 257-81.000.
- Tsuji, Shintaro, to Mitsubishi Denki Kabushiki Kaisha. Group managing system for elevator cars, 5,780,789, Cl. 187-382.000.
- Tsujiuchi, Hidetoshi, to Fujitsu Limited. Voice response apparatus, 5,781,886, Cl. 704-275.000.
- Tsukamoto, Hironori: See—
Tamamura, Koshi; Tsukamoto, Hironori; and Ikeda, Masao, 5,780,322, Cl. 438-45.000.
- Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; and Suzuki, Akitomo, to Aisin Aw. Co., Ltd. Hydraulic control apparatus for automatic transmission, 5,779,585, Cl. 475-128.000.
- Tsukamoto, Yuji, to NEC Corporation. Magnetic head with polycrystalline silicon layer on slide running surface, 5,781,376, Cl. 360-103.000.
- Tsukii, Michio: See—
Yamamoto, Hideaki; Matsumaru, Haruo; Suzuki, Tetsuaki; Nakatani, Mitsuo; Tsukii, Michio; Sasano, Akira; Oikawa, Saburo; and Oritsuki, Ryoji, 5,781,255, Cl. 349-46.000.
- Tsukiyama, Naohiro: See—
Hori, Seiji; Kitazawa, Yasuho; Sasaki, Sumikazu; Kato, Keiichi; Tsukiyama, Naohiro; and Matsui, Kenji, 5,779,176, Cl. 242-379.100.

- Tsukuda, Keiichi: *See—*
Ujita, Toshihiko; Yamakawa, Koji; Takenouchi, Masanori; Sugama, Sada-yuki; Watanabe, Kenjiro; Osada, Torachika; Nakajima, Kazuhiro; Tsutsumi, Takayoshi; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Kei-ichiro; and Sato, Yohei, 5,781,213, Cl. 347-86.000.
- Tsumagari, Mamoru: *See—*
Kadohiro, Takashi; Igarashi, Shinya; Suzuki, Tadao; Tsumagari, Mamoru; and Saito, Takayuki, 5,780,735, Cl. 73-202.500.
- Tsumura, Toshiyuki: *See—*
Abe, Katsuaki; Kishigami, Takaaki; Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Yamaki, Yoichi; Tsumura, Toshiyuki; and Katayama, Hiroshi, 5,781,588, Cl. 375-334.000.
- Tsunekawa, Teruhisa: *See—*
Fujiwara, Takayoshi; Sone, Yoshinori; Honjo, Takashi; Hirayama, Takuya; Kawaguchi, Syunro; and Tsunekawa, Teruhisa, 5,779,450, Cl. 417-45.000.
- Tsuneoka, Masaki: *See—*
Sakamoto, Keishi; Tsuneoka, Masaki; Kasugai, Atsushi; and Kariya, Tsuyoshi, 5,780,969, Cl. 315-5.000.
- Tsuneoka, Masatoshi: *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichiro; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunekiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
- Tsung Pan, Alfred I.; Allen, Ross R.; and Hanson, Eric G., to Hewlett-Packard Company, Solder jet printhead, 5,779,971, Cl. 266-237.000.
- Tsunoda, Tomio: *See—*
Onodera, Toru; and Tsunoda, Tomio, 5,781,142, Cl. 341-169.000.
- Tsutsui, Kyoya, to Sony Corporation, Method and apparatus for encoding the information, method and apparatus for decoding the information and information recording medium, 5,781,586, Cl. 375-241.000.
- Tsutsumi, Takayoshi: *See—*
Ujita, Toshihiko; Yamakawa, Koji; Takenouchi, Masanori; Sugama, Sada-yuki; Watanabe, Kenjiro; Osada, Torachika; Nakajima, Kazuhiro; Tsutsumi, Takayoshi; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Kei-ichiro; and Sato, Yohei, 5,781,213, Cl. 347-86.000.
- Tu, Hosheng, to Irvine Biomedical, Inc. Lead extraction system and methods thereof, 5,779,715, Cl. 606-108.000.
- Tu, Ming-Tsang, Body-building machine, 5,779,605, Cl. 482-122.000.
- Tu, Teri L.: *See—*
Vig, Ravi; and Tu, Teri L., 5,781,005, Cl. 324-207.200.
- Tubb, Gary Edwin: *See—*
Prakash, Amit; Gilliam, Donald Woodrow; and Tubb, Gary Edwin, 5,779,829, Cl. 152-540.000.
- Tubone, Tunekiko: *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Otsuka, Nobuhiro; Shirai, Seiichiro; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunekiko; Kogano, Takayoshi; and Tsugane, Ken, 5,780,882, Cl. 257-203.000.
- Tucker, Edwin C.; McGuire, Michael S.; Lee, Leonard G.; and Lynn, John S., to Lee Valley Tools Ltd. Router table fence system, 5,779,407, Cl. 409-218.000.
- Tucker, Leonard Ray: *See—*
Freund, Kenneth Stephen; Giles, Andrew James; McCoy, Todd Arden; Sowell, Lyles Howard; Staples, Phillip Osborne; Tucker, Leonard Ray; and Bailey, James Stephen, 5,778,494, Cl. 19-304.000.
- Tucker, Peter N.; and Ohm, George D., to HBD Industries, Inc. Combination rubber/composite hose, 5,778,940, Cl. 138-127.000.
- Tufano, Anthony C.: *See—*
Hale, Scot J.; Pearse, James N.; Oddsen, Dennis A.; and Tufano, Anthony C., 5,779,497, Cl. 439-419.000.
- Tuffias, Robert H.; Williams, Brian E.; and Kaplan, Richard B., to Ultramet, Composite structure, 5,780,157, Cl. 428-408.000.
- Tufts University School of Medicine Hospital, Inc.: *See—*
Plaut, Andrew G.; Gilbert-Rothstein, Joanne V.; and Wright, Andrew, 5,780,040, Cl. 424-234.100.
- Tukahara, Eiji; Oikawa, Hideki; Nakajima, Kenichi; Kurtyama, Hiroshi; Watanabe, Kenji; Kameda, Takanobu; Aida, Chieko; and Shimmura, Tomoyuki, to Seiko Epson Corporation; and King Jim Co., Ltd. Ribbon cartridge device for electronic equipment, 5,779,373, Cl. 400-208.000.
- Tukumo, Toshimasa: *See—*
Berlowitz-Tarrant, Laurence; Tukumo, Toshimasa; and Shivkumar, Satya, 5,779,960, Cl. 264-176.100.
- Tularik, Inc.: *See—*
de la Brousse, Fabienne Charles; and Chen, Jin-long, 5,780,258, Cl. 435-29.000.
- Tumin, Kenneth P.: *See—*
Winter, Marlan L.; Tumin, Kenneth P.; and Lindquist, Steven P., 5,781,760, Cl. 395-500.000.
- Tun, Yun-Long: *See—*
Albani, David Joseph; McCaffrey, Robert John; Tardiff, David Wilfred; and Tun, Yun-Long, 5,781,417, Cl. 361-801.000.
- Tunek, Anders Per Sigvard: *See—*
Andersson, Carl-Magnus Alexander; Bergstrand, Håkan Sten Axel; Hallberg, Anders Rudolf; Sämstrand, Bengt Olof; and Tunek, Anders Per Sigvard, 5,780,508, Cl. 514-562.000.
- Tuner, Opal: *See—*
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- Tung, Deborah Ann Snell, to Shell Oil Company, Glass fiber filled polyester polymers, 5,780,539, Cl. 524-494.000.
- Tung, Hsueh Sung; and Ellis, Lois Anne, to Allied Signal Inc. Process for producing 1,1,1,2,3,3,3-heptafluoropropane, 5,780,691, Cl. 570-124.000.
- Tuniuns, Mats: *See—*
Vonasek, Jiri, deceased; Tuniuins, Mats; and Rydinge, Klas, 5,781,214, Cl. 347-95.000.
- Tunkieicz, Richard T.: *See—*
Binversie, Gregory J.; Heimberg, Wolfgang; Holterman, Theodore J.; Irgens, Christopher R.; McGinnity, Francis A.; McDowell, Philip D.; Tunkieicz, Richard T.; Woodward, Lee A.; and Hellmich, Wolfram, 5,779,454, Cl. 417-417.000.
- Turcat, Michael J.: *See—*
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- Turin, William: *See—*
Boie, Robert Albert; and Turin, William, 5,780,830, Cl. 235-462.000.
- Turjanski, Leon; and Fabian, Carl E. Instrument for removing neurologic tumors, 5,779,713, Cl. 606-108.000.
- Turner, Hilton L.; and Turner, Opal, Portable batting training system, 5,779,568, Cl. 473-423.000.
- Turner, Jeffrey Donald: *See—*
Karatzas, Constantinos; Lazaris-Karatzas, Anthoula; and Turner, Jeffrey Donald, 5,780,009, Cl. 424-9.100.
- Turner, Robert C.: *See—*
Fishman, Oleg; and Turner, Robert C., 5,781,581, Cl. 373-152.000.
- Turunen, Aimo; and Jantunen, Heli, to ADC Solitira Oy, Lumped-constant resonator structure and method for adjusting it, 5,781,088, Cl. 334-45.000.
- Turunen, Marja K.: *See—*
Nevalainen, Helena K. M.; Paloheimo, Marja T.; Miettinen-Oninonen, Aina S. K.; Torkkeli, Tuula K.; Cantrell, Michael; Piddington, Christopher S.; Rambosek, John A.; Turunen, Marja K.; and Fagerström, Richard B., 5,780,292, Cl. 435-256.800.
- Tuttle, John R.: *See—*
Tuttle, Mark E.; Tuttle, John R.; and Lake, Rickie C., 5,779,839, Cl. 156-213.000.
- Tuttle, Mark E.; Tuttle, John R.; and Lake, Rickie C., to Micron Communications, Inc. Method of manufacturing an enclosed transceiver, 5,779,839, Cl. 156-213.000.
- Tuusinen, Jukka Tapani, Device for levelling a layer of sand, 5,779,390, Cl. 404-101.000.
- Twiflex Limited: *See—*
Diesel, Stuart Gavin, 5,779,325, Cl. 303-72.000.
- Two and One Co., Ltd.: *See—*
Kaneko, Nariie, 5,779,042, Cl. 206-315.400.
- Tye, David, to Universal Aqua Technologies, Inc. Semi-automatic bottle cap remover, 5,778,740, Cl. 81-3.200.
- Tynan, Dermot Matthew: *See—*
Templin, Fred L.; Gupta, Ajay; Skinner, Gregory D.; and Tynan, Dermot Matthew, 5,781,550, Cl. 370-401.000.
- Tyndorf, Tadeusz A.: *See—*
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- Tyrrell, Thomas E.: *See—*
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- U.K. of Gt. Britain & N. Ireland, The Ministry of Agriculture, Fisheries and Food in Her Britannic Majesty's Government of the: *See—*
Leifert, Carlo; Epton, Harold A. S.; and Sigee, David C., 5,780,080, Cl. 426-49.000.
- UAB Research Foundation: *See—*
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- Ube Industries, Ltd.: *See—*
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- Uber, Arthur E., III: *See—*
Reilly, David M.; Uber, Arthur E., III; Hirschman, Alan D.; and Gelblum, Eugene A., 5,779,675, Cl. 604-131.000.
- Uchida, Terumune, to Toyota Jidosha Kabushiki Kaisha, Fastening structure, 5,778,734, Cl. 74-552.000.
- Uchikawa, Akira, to Unisia Jecs Corporation, Air-fuel ratio detecting system of internal combustion engine, 5,778,866, Cl. 123-682.000.
- Uchino, Minoru, to Fujitsu Limited, Initial program loading of virtual machine, 5,781,755, Cl. 395-406.000.
- Uchino, Tadashi: *See—*
Fukano, Yoshihiro; Maruyama, Tetsuro; Uchino, Tadashi; Ono, Masaaki; and Okita, Yuzuru, 5,779,224, Cl. 251-331.000.
- Uchiyama, Hanyoshi; Li, Zhixien; and Aida, Kazuo, to Ando Electric Co., Ltd.; and Nippon Telegraph and Telephone Corporation, Method and apparatus for measuring the noise figure of an optical amplifier, 5,781,322, Cl. 359-161.000.
- Uchiyama, Norio; and Yokoyama, Toshiaki, to Niles Parts Co., Ltd. Composite switch lever for automobiles with mechanically-coupled switch knobs, 5,780,794, Cl. 200-61.540.
- Uchiyama, Norio; and Hattori, Yoshio, to Niles Parts Co., Ltd. Mounting construction of a combination switch, 5,780,796, Cl. 200-61.540.
- Uchiyama, Tadasu: *See—*

- Hiraiwa, Akira; Fukumoto, Masaaki; Uchiyama, Tadasu; Sonehara, Noboru; and Oikawa, Shigeru, 5,781,661, Cl. 382-188.000.
- Udagawa, Yoshiro: *See—*
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- Ueda, Hiroshi: *See—*
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- Ueda, Kimio: *See—*
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- Ueda, Koshi: *See—*
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- Ueda, Shigeru; Takahashi, Mamoru; Misaki, Hideo; and Ikuta, Shigeru, to Asahi Kasei Kogyo Kabushiki Kaisha, Method and composition for quantitative determination of ammonia, α -amino acid, or α -keto acid, 5,780,256, Cl. 435-26.000.
- Ueda, Yasutoshi: *See—*
Tomimatsu, Kazutaka; Ueda, Yasutoshi; Kawahata, Osamu; and Kamei, Shunsuke, 5,781,429, Cl. 363-112.000.
- Uehashi, Hiroyuki, to Sanyo Electric Co., Ltd. Cooking method using a microwave oven, 5,780,823, Cl. 219-710.000.
- Uematsu, Hiroshi: *See—*
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- Uematsu, Masashige: *See—*
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- Uemoto, Yasuhiro: *See—*
Arita, Koji; Fujii, Eiji; Shimada, Yasuhiro; Uemoto, Yasuhiro; Nasu, Toru; Matsuda, Akihiro; Nagano, Yoshihisa; Inoue, Atsuo; Matsura, Taketoshi; and Otsuki, Tatsuo, 5,780,351, Cl. 438-396.000.
- Ueno, Haruhiko, to Fujitsu Ltd. Parallel process scheduling method in a parallel computer and a processing apparatus for a parallel computer, 5,781,775, Cl. 395-672.000.
- Ueno, Kouji: *See—*
Ikuta, Nobuo; Ueno, Kouji; Shishido, Kouji; Fukutani, Yutaka; Arayama, Youji; Nakayama, Tomohiro; Shiga, Takanori; Kimura, Masakazu; Fujimoto, Hiroyuki; and Fujita, Yoshiyuki, 5,781,627, Cl. 380-3.000.
- Ueno, Shigehiro: *See—*
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- Ueno, Yuseki, to NTC Kogyo Kabushiki Kaisha, Automatic water combination faucet, 5,779,139, Cl. 236-12.200.
- Uesugi, Akio: *See—*
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- Uetake, Akihito: *See—*
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- Ueyama, Masaki: *See—*
Okazaki, Koji; Nozawa, Yasuji; Ueyama, Masaki; Kinoshita, Masakazu; and Ozawa, Hidetaka, 5,779,231, Cl. 267-140.140.
- Ugge', Giuseppe; and Luzzio, Carmelo, to Kratex S.r.l. Live voice device for cellular phones particularly operable in combination with radio receiver apparatus in motor vehicles, 5,781,850, Cl. 455-149.000.
- Uhlig, Karlheinz: *See—*
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- Uhlmann, Beate: *See—*
Gers-Barlag, Heinrich; Müller, Anja; Sauermann, Gerhard; and Uhlmann, Beate, 5,780,042, Cl. 424-401.000.
- Ujii, Masahiko; Chino, Toshinori; Tsuchiya, Rikio; and Sugiura, Hirotoshi, to Minebea Co., Ltd. Objective lens supporting device, 5,781,352, Cl. 359-824.000.
- Ujita, Toshihiko; Yamakawa, Koji; Takenouchi, Masanori; Sugama, Sada-yuki; Watanabe, Kenjiro; Osada, Torachika; Nakajima, Kazuhiro; Tsutsumi, Takayoshi; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Keiichi; and Sato, Yohei, to Canon Kabushiki Kaisha, Liquid storing container having filter interface for recording apparatus, 5,781,213, Cl. 347-86.000.
- Ullman, Edwin F.: *See—*
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- ULSI Systems: *See—*
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- Ultramet: *See—*
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- Umeda, Atsushi; Tokura, Norihito; Sato, Hirohide; Taniguchi, Makoto; and Kusase, Shin, to Nippondenso Co., Ltd. Alternator, 5,780,953, Cl. 310-263.000.
- Umeda, Atsushi: *See—*
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- Umeda, Hiroaki; Terada, Tsunekiko; and Murakami, Hisatoshi, to Tatsuta Electric Wire and Cable Co., Ltd. 1,2-N-acyl-N-methylene-ethylenediamine, and electroconductive paste comprising it, 5,779,941, Cl. 252-512.000.
- Umehara, Kiyomi: *See—*
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- Underiner, Gail E.; Porubek, David; Klein, J. Peter; and Woodson, Paul, to Cell Therapeutics, Inc. Hydroxyl-containing xanthine compounds, 5,780,476, Cl. 514-263.000.
- Underwood, David T.: *See—*
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- Underwood, Mark Ray; and Dwyer, Sushil V., to Deere & Company, Nylatron support bearing for cage, 5,779,542, Cl. 460-69.000.
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- Unger, Hans; Hatz, Wolfgang; and Tschewik, Herbert, to Knorr Bremse Systeme für Nutzfahrzeuge GmbH, Air drying cartridge for vehicles' compressed-air brake system, 5,779,772, Cl. 96-137.000.
- Union Camp Corporation: *See—*
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- Werby, Robert W.; Szeles, Peter F.; and Leslie, A. Cameron, 5,779,049, Cl. 206-451.000.
- Union Oil Company of California: *See—*
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- Van Slyke, Donald C., 5,780,407, Cl. 510-188.000.
- Unisia Jecs Corporation: *See—*
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- Konishi, Masanori; Kubota, Shinji; Ohki, Hisatomo; and Tomita, Kazuyuki, 5,781,872, Cl. 701-36.000.
- Onigata, Junichiro; and Kushiara, Kazuyoshi, 5,779,444, Cl. 415-206.000.
- Sasaki, Mitsuo, 5,781,873, Cl. 701-37.000.
- UchiKawa, Akira, 5,778,866, Cl. 123-682.000.
- Unisys Corp.: *See—*
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- United Container Machinery, Inc.: *See—*
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- United Defense, LP: *See—*
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- United Integrated Circuits Corp.: *See—*
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- United Microelectronics Corporation: *See—*
Huang, Hsiu-Wen, 5,780,337, Cl. 438-253.000.
- Lin, Tony; Lur, Water; and Sun, Shih-Wei, 5,780,348, Cl. 438-303.000.
- Tai, Chiao-Yen, 5,781,636, Cl. 381-62.000.
- Wu, Wen-Yi; and Yang, Gene, 5,781,927, Cl. 711-151.000.
- United Microelectronics, Inc.: *See—*
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- U.S. Divers Co., Inc.: *See—*
Morgan, Michael V.; and Winefordner, Carl, 5,778,875, Cl. 128-204.260.
- United States Luggage, L.P.: *See—*
Kruklik, Richard J., 5,779,112, Cl. 224-155.000.
- United States of America
Agriculture: *See—*
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- Army: *See—*
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- Ruffin, Paul B., 5,781,301, Cl. 356-350.000.
- Thomas, James D., 5,779,091, Cl. 220-561.000.
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- Casey, John E., Jr., 5,780,186, Cl. 429-229.000.
- Egalon, Claudio O.; and Rogowski, Robert S., 5,780,844, Cl. 250-227.140.
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- Steinman, Jeffrey S.; and Wieland, Frederick P., 5,781,762, Cl. 395-500.000.
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- Gorin, Steve, 5,778,876, Cl. 128-205.120.
- Keller, Teddy M.; and Son, David Y., 5,780,569, Cl. 528-5.000.
- Kirschner, Ivan N.; and Berlam, Gary R., 5,778,725, Cl. 73-167.000.
- Manning, Robert C.; McDonald, Robert J.; and Wilbur, Jo Ellen, 5,781,504, Cl. 367-88.000.
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- Rowland, Raymond J., 5,781,505, Cl. 367-127.000.
- Russell, Thomas P.; and Mishra, Indu B., 5,780,769, Cl. 149-45.000.
- Sanghera, Jasbinder S.; Nguyen, Vinh Q.; and Aggarwal, Ishwar D., 5,779,757, Cl. 65-389.000.
- Stricker, John G.; and Purnell, John G., 5,779,440, Cl. 415-143.000.
- Swanson, Nancy L., 5,781,298, Cl. 356-349.000.

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- Usami, Jun: *See—*
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- Walker, Michael A.; and Robinson, Karl M., to Micron Technology, Inc. Directional spray pad scrubber. 5,779,522, Cl. 451-56.000.
- Walker, Michael R.: See—
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- Wall, H. Davis, to Combustion Engineering, Inc. Closed frame sootblower with top access. 5,778,830, Cl. 122-379.000.
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- Wallace, Gregory K.: See—
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- Wallace, Lawrence B.: See—
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- Wallén, Lars, to ASSA AB. Cylinder lock/key combination, a key and a key blank therefor. 5,778,712, Cl. 70-453.000.
- Walsh, James J.; and Kau, Weiyeun, to Texas Instruments Incorporated. Power management supply interface circuitry, systems and methods. 5,781,780, Cl. 395-750.010.
- Walters, David A.: See—
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- Walters, James C.: See—
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- Wang, David S.; Mang, Michael N.; White, Jerry E.; and Beckerdite, John M., to Dow Chemical Company, The. Hydroxy-functionalized polyester and poly(ester ether) oligomers. 5,780,582, Cl. 528-365.000.
- Wang, Donglei. Automatic breadmaker having toaster oven function. 5,778,766, Cl. 99-326.000.
- Wang, Fong-Jen: See—
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- Wang, Fu-Chung; and Wu, Shao-Yi, to Holtek Microelectronics, Inc. Simplified page mode programming circuit for EEPROM requiring only one high voltage line for selecting bit lines. 5,781,475, Cl. 365-185.180.
- Wang, Li-Ming, to Vanguard International Semiconductor Corporation. Method for uniformly coating a semiconductor wafer with photoresist. 5,780,105, Cl. 427-240.000.
- Wang, Nai-Yi; and Hu, Roger C., to Abbott Laboratories. Competitive assays using chemiluminescent electron-rich aryl-substituted 1,2-dioxetanes. 5,780,249, Cl. 435-7.930.
- Wang, Ping-Wei, to Winbond Electronics Corporation. Method for fabricating dielectric films for non-volatile electrically erasable memories. 5,780,342, Cl. 438-260.000.
- Wang, Qingfeng; and Maex, Karen Irma Josef. CoSi₂ salicide method. 5,780,362, Cl. 438-683.000.
- Wang, Shay-Ping Thomas, to Motorola, Inc. Neural network and method of using same. 5,781,701, Cl. 395-24.000.
- Wang, Shuzhong: See—
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- Wang, Ting: See—
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- Wang, Wen-Chou Vincent: See—
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- Wann, Hsing-Jen: See—
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- Wehrle, Bernhard: See—
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- Welles, Toby S.: See—
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- Berding, Keith R.; Casey, Shawn E.; and Mountain, Charles B., 5,781,380, Cl. 360-104.000.
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- Westrich, Hermann: *See—*
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Inazawa, Katsumi; Yamakawa, Kengo; and Sugihara, Hiroyuki, 5,781,369, Cl. 360-92.000.

Yamakawa, Kinya: *See—*
Mizutani, Keita; Yoshimatsu, Saori; and Yamakawa, Kinya, 5,780,530, Cl. 523-209.000.

Yamakawa, Koji: *See—*
Ujita, Toshihiko; Yamakawa, Koji; Takenouchi, Masanori; Sugama, Sadayuki; Watanabe, Kenjiro; Osada, Torachika; Nakajima, Kazuhiro; Tsutsumi, Takayoshi; Kubota, Hidemi; Kotaki, Yasuo; Tsukuda, Kei-ichiro; and Sato, Yohei, 5,781,213, Cl. 347-86.000.

Yamakawa, Tadashi: *See—*
Kohno, Akihiro; and Yamakawa, Tadashi, 5,781,915, Cl. 707-511.000.

Yamaki, Yoichi: *See—*
Abe, Katsuki; Kishigami, Takaaki; Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Yamaki, Yoichi; Tsumura, Toshiyuki; and Katayama, Hiroshi, 5,781,588, Cl. 375-334.000.

Yamamoto, Albert K., to Fairchild Holding Corp. Printed circuit board retainer, 5,779,388, Cl. 403-405.100.

Yamamoto, Hideaki; Matsumaru, Haruo; Suzuki, Tetsuaki; Nakatani, Mitsuo; Tsukii, Michio; Sasano, Akira; Oikawa, Saburo; and Oritsuki, Ryoji, to Hitachi, Ltd. Active matrix display device using aluminum alloy in scanning signal line or video signal line, 5,781,255, Cl. 349-46.000.

Yamamoto, Hironobu: *See—*
Ohtomo, Fumio; Nakata, Yuji; Fukuyama, Yoshitaka; Inomata, Asako; Shibuya, Sachio; Koga, Akinori; Ishii, Junji; Ito, Shoko; and Yamamoto, Hironobu, 5,778,657, Cl. 60-39.182.

Yamamoto, Hitoshi: *See—*
Terashima, Kanetsugu; Takeshita, Fusayuki; Yamamoto, Hitoshi; and Kawasuyukuda, Hiroaki, 5,779,933, Cl. 252-299.100.

Yamamoto, Kanshi; Kawada, Shinichi; Hojo, Takeshi; Okada, Yoshiyuki; and Masuzawa, Isao, to Tokimec Inc. Closed loop type fiber optic gyroscope for measuring absolute rotation by delta serrodyne wave phase modulation, 5,781,296, Cl. 356-350.000.

Yamamoto, Kazuya: *See—*
Miyashita, Miyo; and Yamamoto, Kazuya, 5,781,061, Cl. 327-543.000.

Yamamoto, Koei: *See—*
Muramatsu, Masaharu; Suyama, Motohiro; and Yamamoto, Koei, 5,780,913, Cl. 257-429.000.

Yamamoto, Koji: *See—*
Nose, Yoshitaka; and Yamamoto, Koji, 5,781,313, Cl. 358-497.000.

Yamamoto, Makoto: *See—*
Zhou, Changming; Shou, Guoliang; Yamamoto, Makoto; and Takatori, Sunao, 5,781,584, Cl. 375-207.000.

Yamamoto, Masahiro: *See—*
Itaya, Kazuhiko; Yamamoto, Masahiro; Onomura, Masaaki; Fujimoto, Hidetoshi; Hatakoshi, Genichi; Sugawara, Hideto; Ishikawa, Masayuki; Rennie, John; and Saito, Shinji, 5,778,873, Cl. 257-521.000.

Yamamoto, Shinichi: *See—*
Nakamura, Yoshikatsu; Kawamura, Osamu; Takahashi, Teruo; and Yamamoto, Shinichi, 5,778,530, Cl. 29-888.100.

Yamamoto, Takao, to Teisan Kabushiki Kaisha. Ultra high purity nitrogen and oxygen generator unit, 5,778,698, Cl. 62-652.000.

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Negoro, Hisashi; and Yamamoto, Takuya, 5,778,510, Cl. 29-434.000.

Yamamoto, Tomoya: *See—*
Haruta, Masahiro; Koike, Shoji; Aoki, Makoto; Shiota, Koromo; Yoshi-hira, Aya; Yamamoto, Tomoya; and Suzuki, Mariko, 5,781,216, Cl. 347-106.000.

Yamamoto, Toshihiko: *See—*
Okabe, Toshiaki; Abe, Kimihiro; Yamamoto, Toshihiko; and Hatagishi, Yuji, 5,779,506, Cl. 439-752.000.

Yamamoto, Tsuyoshi: *See—*
Tokura, Norihito; Takahashi, Shigeki; Yamamoto, Tsuyoshi; Kataoka, Mitsuhiro; and Hara, Kunihiro, 5,780,324, Cl. 438-138.000.

Yamamoto, Yoshihisa: *See—*
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; and Suzuki, Akitomo, 5,779,585, Cl. 475-128.000.

Yamamoto, Yoshinori; and Nemoto, Hisao, to Tohoku University. DTPA derivatives modified with non-ester bond and a process for synthesizing them, 5,780,670, Cl. 560-169.000.

Yamamura, Hisao; Matsuyama, Yukio; Ninomiya, Takanori; and Sasazawa, Hideaki, to Hitachi, Ltd. Method and apparatus for automatic focusing and a method and apparatus for three dimensional profile detection, 5,780,866, Cl. 250-559.220.

Yamamura, Takaki: *See—*
Saika, Hideyuki; Murata, Toshiaki; Pitterna, Thomas; Fröh, Thomas; Svensson, Lene D.; Urade, Yoshihiro; Yamamura, Takaki; and Okada, Toshiyazu, 5,780,498, Cl. 514-419.000.

Yamanaka, Akihiro: *See—*
Haikawa, Katsumasa; Yamanaka, Akihiro; Kanda, Akiko; Aoyama, Motoo; Yuchi, Yoko; and Yamashita, Junichi, 5,781,604, Cl. 376-419.000.

Yamanaka, Hiroyuki: *See—*
Noda, Masayuki; Yamaguchi, Yutaka; Yonekura, Minoru; and Yamanaka, Hiroyuki, 5,781,264, Cl. 349-150.000.

Yamanaka, Kazuya; and Takeuchi, Sumitaka, to Mitsubishi Denki Kabushiki Kaisha. Multiplier circuitry with improved storage and transfer of booth control coefficients, 5,781,462, Cl. 364-724.160.

Yamanaka, Michinari: *See—*
Sekiguchi, Mitsuru; and Yamanaka, Michinari, 5,780,908, Cl. 257-383.000.

Yamanaka, Miles: *See—*
Dale, Beverly; Yamanaka, Miles; Acree, William M.; and Chavez, Lloyd G., Jr., 5,780,266, Cl. 435-69.300.

Yamanaka, Nobuo, to Yoshino Kogyosho Co., Ltd. Container having ear and a method for manufacturing the same, 5,779,841, Cl. 156-245.000.

Yamanaka, Yasushi: *See—*
Matsui, Hirohito; Yamanaka, Yasushi; Takano, Yoshiaki; and Kishita, Hiroshi, 5,780,731, Cl. 73-118.100.

Yamanashi, Yoshitsugu: *See—*
Ishizawa, Yasuhisa; Yamanashi, Yoshitsugu; Nonoshita, Hiroshi; and Chyo, Kenjiro, 5,781,666, Cl. 382-284.000.

Yamane, Keisuke: *See—*
Oniki, Kazunori; Shiraishi, Masahiro; Ozawa, Koji; Yamane, Keisuke; and Kimura, Shinji, 5,781,199, Cl. 345-505.000.

Yamane, Shigeki: *See—*
Choo, Doukei; Yamane, Shigeki; and Narita, Daiji, 5,781,579, Cl. 372-64.000.

Yamanobe, Tomomi, to Oki Electric Industry Co., Ltd. Non-volatile semiconductor memory cell and method for production thereof, 5,780,886, Cl. 257-295.000.

Yamashita, Hiroya: *See—*
Okano, Yoshio; and Yamashita, Hiroya, 5,780,154, Cl. 428-366.000.

Yamashita, Junichi: *See—*
Haikawa, Katsumasa; Yamanaka, Akihiro; Kanda, Akiko; Aoyama, Motoo; Yuchi, Yoko; and Yamashita, Junichi, 5,781,604, Cl. 376-419.000.

Yamashita, Kazuhiro: *See—*
Urano, Fumiyoshi; Yasuda, Takanori; Katsuyama, Akiko; and Yamashita, Kazuhiro, 5,780,206, Cl. 430-325.000.

Yamashita, Keiichi: *See—*
Tanaka, Masaaki; Yamashita, Keiichi; Izutani, Kouji; Okada, Kingo; and Takahashi, Hideto, 5,778,926, Cl. 137-508.000.

Yamashita, Keizo: *See—*
Miyamoto, Yoshinori; Sato, Hidemasa; Agawa, Jiro; Yamashita, Keizo; and Matsumoto, Toshinari, 5,779,850, Cl. 156-405.100.

Yamashita, Masanobu; Tachibana, Akihito; and Aoki, Keiji, to Toyota Jidosha Kabushiki Kaisha. Vehicle guiding system, 5,781,119, Cl. 340-903.000.

Yamashita, Satoru: *See—*
Sano, Kunio; and Yamashita, Satoru, 5,778,485, Cl. 15-301.000.

Yamashita, Seiji, to Fuji Photo Film Co., Ltd. Processing of photographic silver halide photosensitive material, 5,780,209, Cl. 430-399.000.

Yamashita, Tetsuro; Mitsuhashi, Tsuyoshi; and Yabe, Manabu, to Dainippon Screen Mfg. Co. Ltd. Film dissolution method of dissolving silica-based coating film formed on surface of a substrate, 5,779,928, Cl. 216-92.000.

Yamat, Marilyn C.: *See—*
Krishnan, Ramasamy; Yamat, Marilyn C.; Babji, Hugo; Palmatier, Roland T.; and Murray, Robert R., 5,778,789, Cl. 101-450.100.

Yamatsu, Kiyomi: *See—*
Sugihara, Yoshiki; Shionoya, Hiroshi; and Yamatsu, Kiyomi, 5,780,509, Cl. 514-563.000.

Yamauchi, Kazunari: *See—*
Okada, Kazunori; Mochizuki, Toshihiro; Yamauchi, Kazunari; and Ito, Masahiko, 5,781,356, Cl. 359-872.000.

- Yamauchi, Tsukasa: *See—*
Koreeda, Hiroyuki; Kasai, Yasuhiko; Yamauchi, Tsukasa; Asuma, Hajime; Oeda, Shigeto; Ito, Jun; Tomita, Hiromi; Hasegawa, Tsukasa; Kanazawa, Rituko; Inoue, Yoshiisa; Kumai, Hiroyuki; Hataya, Shigeki; Nakajima, Akira; and Matsuda, Yasumasa, 5,781,731, Cl. 395-200.340.
- Yamawaki, Takeshi; and Miyashita, Akira, to Canon Kabushiki Kaisha. Optical information recording/reproducing apparatus supplying a smaller high-frequency current to a first semiconductor laser for generating a light beam to record information than to a second semiconductor laser for reproducing recorded information. 5,781,222, Cl. 347-236.000.
- Yamazaki, Minoru: *See—*
Suzuki, Akira; Yabe, Hisao; Iida, Yoshihiro; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; Ishii, Hiroshi; Kira, Jin; and Yokoi, Takeshi, 5,779,625, Cl. 600-121.000.
- Yamazaki, Motoharu: *See—*
Katsumura, Tatsuro; Arizumi, Takashi; Yamazaki, Motoharu; and Yasukawa, Masahiko, 5,778,714, Cl. 72-97.000.
- Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Method of fabricating semiconductor device. 5,780,313, Cl. 437-235.000.
- Yamazaki, Shunpei; Takemura, Yasuhiko; and Seo, Norihiko, to Semiconductor Energy Laboratory Co., Ltd. Semiconductor device and method for forming the same. 5,780,345, Cl. 438-282.000.
- Yamazaki, Tetsuro: *See—*
Sakaguchi, Minzo; Imai, Takashi; Miura, Takashi; and Yamazaki, Tetsuro, 5,780,692, Cl. 568-814.000.
- Yamazato, Ichiro: *See—*
Katsukawa, Masato; Urano, Akiyoshi; Sugase, Ayako; Ihara, Mitsuo; Yamazato, Ichiro; and Nakamura, Yuka, 5,780,194, Cl. 430-83.000.
- Yamazawa, Kenji; Niino, Toshiki; Nakagawa, Takeo; and Hayano, Seiji, to Institute of Physical and Chemical Research (RIKEN); and Shimat Co., Ltd. Apparatus for solidifying and shaping optically cured fluid by carrying out scanning simultaneously with recoating. 5,780,070, Cl. 425-174.400.
- Yampolsky, Vladimir: *See—*
Fuss, Gunter G.; and Yampolsky, Vladimir, 5,778,642, Cl. 53-567.000.
- Yanagawa, Kazuhiko: *See—*
Ohta, Masuyuki; Yanagawa, Kazuhiko; Kondo, Katsumi; and Ohe, Masahito, 5,781,261, Cl. 349-111.000.
- Yanagihori, Takayuki: *See—*
Asai, Toshinori; and Yanagihori, Takayuki, 5,779,548, Cl. 463-31.000.
- Yanagimoto, Akira: *See—*
Sabnis, Ram W.; Mayo, Jonathan W.; Hays, Edith G.; Brewer, Terry L.; Stroder, Michael D.; Yanagimoto, Akira; Sone, Yasuhisa; Watanabe, Yoshitane; and Ema, Kiyomi, 5,780,201, Cl. 430-270.100.
- Yanagisawa, Hiroaki; Fujita, Takashi; Fujimoto, Koichi; Yoshioka, Takao; Wada, Kunio; Oguchi, Minoru; Fujiwara, Toshihiko; and Horikoshi, Hiroyoshi, to Sankey Company, Limited. Oxime derivatives, their preparation and their therapeutic use. 5,780,490, Cl. 514-369.000.
- Yanagisawa, Osamu; Oda, Kenji; Sugimoto, Naoki; Takegawa, Yoshio; Takada, Akira; Osada, Hideo; Aizawa, Haruo; and Miura, Koji, to Asahi Glass Company Ltd. Glass composition and substrate for plasma display. 5,780,373, Cl. 501-72.000.
- Yanagita, Itsuo: *See—*
Ema, Taiji; Itabashi, Kazuo; Ikemasu, Shinichiro; Mitani, Junichi; Yanagita, Itsuo; and Suzuki, Seiichi, 5,780,907, Cl. 257-371.000.
- Yanai, Akira; Hara, Osamu; and Ogura, Tsuyoshi, to Alps Electric Co., Ltd. Apparatus and method for changing an operation mode of a coordinate input apparatus. 5,781,181, Cl. 435-72.000.
- Yanase, Michio: *See—*
Imanaka, Tadayuki; Terada, Yoshinobu; Takaha, Takeshi; Yanase, Michio; Okada, Shigetaka; Takata, Hiroki; Nakamura, Hiroyasu; and Fujii, Kazutoshi, 5,780,267, Cl. 435-72.000.
- Yang, Dong-Choul: *See—*
Lee, Young-Jae; Jung, Seung-Shik; and Yang, Dong-Choul, 5,780,840, Cl. 250-208.100.
- Yang, Gene: *See—*
Wu, Wen-Yi; and Yang, Gene, 5,781,927, Cl. 711-151.000.
- Yang, Jen-Chang: *See—*
Liou, Guey-Sheng; Hsiao, Sheng-Huei; and Yang, Jen-Chang, 5,780,662, Cl. 558-420.000.
- Yang, Lau S.: *See—*
Klang, Jeffrey A.; and Yang, Lau S., 5,780,558, Cl. 525-445.000.
- Yang, Rachel Youngman: *See—*
Alimpich, Claudia C.; Goddard, Joan Stagaman; Vo, Minh Trong; Wittig, James Philip; and Yang, Rachel Youngman, 5,781,193, Cl. 345-352.000.
- Yang, Seung Yeub: *See—*
Park, Kee Woo; and Yang, Seung Yeub, 5,781,501, Cl. 365-233.000.
- Yang, Simon: *See—*
Arghavani, Reza; Chau, Robert S.; Yang, Simon; and Graham, John, 5,780,346, Cl. 438-296.000.
- Yang, Tai-Her. Co-axial magnetic circuit type compound rotor electrical machine. 5,780,950, Cl. 310-114.000.
- Yano, Hidetoshi: *See—*
Saeki, Mitsuo; Matsuda, Kouichi; Yano, Hidetoshi; and Ozawa, Hidekiyo, 5,781,000, Cl. 323-234.000.
- Yano, Kentaro: *See—*
Kanematsu, Daigorou; Otsuka, Naoki; Yano, Kentaro; Takahashi, Kiichiro; and Iwasaki, Osamu, 5,781,204, Cl. 347-17.000.
- Yanuma, Yutaka: *See—*
Sato, Yukio; Yanuma, Yutaka; Ohzeki, Kazuhiko; Sekine, Ryuta; and Miyano, Yasuo, 5,779,686, Cl. 604-265.000.
- Yapel, Robert A.; Milbourn, Thomas M.; Bhavne, Aparna V.; Wallace, Lawrence B.; Norton, Daniel V.; and Iverson, Hans E., to Minnesota Mining and Manufacturing Company. Die edge cleaning system. 5,780,109, Cl. 427-294.000.
- Yarborough, J. Michael: *See—*
Connors, Kevin P.; Hobart, James L.; Reed, Edward D.; Trost, David; Bossie, Kenneth J.; McCurnin, Thomas William; Mitchell, Gerald M.; and Yarborough, J. Michael, 5,781,574, Cl. 372-35.000.
- Yamall, Robert G., Jr.: *See—*
Yamall, Robert G., Sr.; and Yamall, Robert G., Jr., 5,781,113, Cl. 340-573.000.
- Yamall, Robert G., Sr.; and Yamall, Robert G., Jr. Electronic confinement system for animals using modulated radio waves. 5,781,113, Cl. 340-573.000.
- Yasar, Gulson: *See—*
Bertolet, Allan Robert; Clinton, Kim P.N.; Fuller, Christine Marie; Gould, Scott Whitney; Hartman, Steven Paul; Iadanza, Joseph Andrew; Keyser, Frank Ray; Millham, Eric Ernest; Reny, Timothy Shawn; Worth, Brian A.; Yasar, Gulson; and Zitritsch, Terrance John, 5,781,032, Cl. 326-39.000.
- Yasuda, Arata: *See—*
Inoue, Yoshihisa; Ebisu, Hajime; Ishida, Naomichi; Nakamura, Norifumi; Sasaki, Jun; Okazoe, Takashi; Morizawa, Yoshitomi; Yasuda, Arata; Wang, Shuzhong; and Ito, Tomoko, 5,780,634, Cl. 546-173.000.
- Yasuda, Kenichi: *See—*
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- Yasuda, Kouji: *See—*
Inarida, Satoru; Nakata, Kiyoshi; Yasuda, Kouji; Suzuki, Masato; and Miyake, Wataru, 5,781,423, Cl. 363-41.000.
- Yasuda, Takanori: *See—*
Urano, Fumiyoshi; Yasuda, Takanori; Katsuyama, Akiko; and Yamashita, Kazuhiro, 5,780,206, Cl. 430-325.000.
- Yasuda, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Ion current detecting apparatus for internal combustion engines. 5,781,012, Cl. 324-399.000.
- Yasue, Ryoji: *See—*
Akamatsu, Taku; Yasue, Ryoji; Kiyama, Kentaro; and Hara, Noboru, 5,780,056, Cl. 424-464.000.
- Yasukawa, Masahiko: *See—*
Katsumura, Tatsuro; Arizumi, Takashi; Yamazaki, Motoharu; and Yasukawa, Masahiko, 5,778,714, Cl. 72-97.000.
- Yasukawa, Naoki; Shinbo, Akira; Kawata, Masayuki; and Sakumoto, Kazumi, to Seiko Epson Corporation; and Seiko Instruments, Inc. Wrist-worn portable electronic device. 5,781,511, Cl. 368-11.000.
- Yasukawa, Robert Deane; and Cordrey, Loretta Jane, to Lockheed Martin Corporation. Method of preparing a low-density porous fused-fiber matrix. 5,780,281, Cl. 435-176.000.
- Yasukuni, Jun; Tanigawa, Hidemi; and Furuno, Yutaka, to Sumitomo Wiring Systems, Ltd. Planar fuse and method for making the same. 5,781,096, Cl. 337-297.000.
- Yazaki Corporation: *See—*
Ichikawa, Hidehiro; and Ishikawa, Satoshi, 5,780,774, Cl. 174-88.00R.
- Maeda, Akira, 5,781,016, Cl. 324-538.000.
- Nakamura, Goro; and Muramatsu, Kenji, 5,781,094, Cl. 337-238.000.
- Okabe, Toshiaki; Abe, Kimihiro; Yamamoto, Toshihiko; and Hatagishi, Yuji, 5,779,506, Cl. 439-752.000.
- Tomita, Yoshinori; and Suzuki, Naomi, 5,779,493, Cl. 439-271.000.
- Yeda Research and Development Co., Ltd.: *See—*
Cohen, Irun R.; Elias, Dana; and Markovits, Doron, 5,780,034, Cl. 424-185.100.
- Yee, Bennet; and Benaloh, Josh, to Microsoft Corporation. System and method for self-identifying a portable information device to a computing unit. 5,781,723, Cl. 395-186.000.
- Yeh, Te-Hsin. Terminal device for interface sockets. 5,779,507, Cl. 439-862.000.
- Yen, Tzu-Shih: *See—*
Jeng, Erik S.; and Yen, Tzu-Shih, 5,780,338, Cl. 438-253.000.
- Yen, Yeouchung: *See—*
Forouhi, Abdul R.; Hawley, Frank W.; McCollum, John L.; and Yen, Yeouchung, 5,780,323, Cl. 438-131.000.
- Yeo, Cheow F.: *See—*
Pinkham, Ray; and Yeo, Cheow F., 5,781,496, Cl. 365-230.030.
- Yerushalmi, Moshe; Vainberger, Zvi; Herbet, Shimon; and Rasco, James, to Bromine Compounds Ltd. Stabilization of halogenated dialkyl hydantoins. 5,780,641, Cl. 548-320.500.
- Yeung, Hubert K., to Hewlett-Packard Company. Ultrasound probe with offset angle tip. 5,779,639, Cl. 600-446.000.
- Yewey, Gerald L.; Krinick, Nancy L.; Dunn, Richard L.; Radomsky, Michael L.; Brouwer, Gerbrand; and Tipton, Arthur J., to Atrix Laboratories, Inc. Liquid delivery compositions. 5,780,044, Cl. 424-426.000.
- Yezrielev, Albert Ilya; Rigopoulos, Konstantinos R.; and Swarup, Vijay, to Exxon Chemical Patents Inc. Thermoset coating compositions having improved hardness and curing properties. 5,780,556, Cl. 525-437.000.
- Ying-Che, Lin. Quick-setting nut. 5,779,418, Cl. 411-433.000.
- YKK Corporation: *See—*
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- Yliselä, J., Seppo Antti: *See—*

- Paasonen, Jan Anders; and Yliselä, J., Seppo Antti, 5,780,131, Cl. 428-35.900.
- Yoda, Kiyoshi: *See—*
Oka, Toru; Ikegami, Kazunori; and Yoda, Kiyoshi, 5,780,856, Cl. 250-367.000.
- Yokoi, Takeshi: *See—*
Suzuki, Akira; Yabe, Hisao; Iida, Yoshihiro; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; Ishii, Hiroshi; Kira, Jin; and Yokoi, Takeshi, 5,779,625, Cl. 600-121.000.
- Yokoshima & Company: *See—*
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- Yokoshima, Yasuhiro: *See—*
Kamiyama, Takao; and Yokoshima, Yasuhiro, 5,780,123, Cl. 428-35.200.
- Yokota, Hiroshi; Tanimoto, Tetsuya; and Kawamoto, Masahiro, to Kabushiki Kaisha Yokota Seisakusho. Noncontaminative centrifugal pump. 5,779,445, Cl. 415-230.000.
- Yokota, Minoru: *See—*
Osada, Masahiko; Matsumoto, Muneaki; and Yokota, Minoru, 5,781,168, Cl. 345-76.000.
- Yokota, Tokuo: *See—*
Ogata, Hitoshi; Yoshida, Masanao; and Yokota, Tokuo, 5,781,515, Cl. 369-32.000.
- Yokoyama, Kazuaki: *See—*
Ishikawa, Tsuyoshi; Watai, Kayoko; and Yokoyama, Kazuaki, 5,779,338, Cl. 362-31.000.
- Yokoyama, Sadahiko; and Iji, Masatoshi, to NEC Corporation. Joining member and method for disintegrating joined structure. 5,780,536, Cl. 524-439.000.
- Yokoyama, Toshiaki: *See—*
Uchiyama, Norio; and Yokoyama, Toshiaki, 5,780,794, Cl. 200-61.540.
- Yokoyama, Yuichi: *See—*
Maeda, Hitoshi; Hirose, Yukinori; and Yokoyama, Yuichi, 5,780,870, Cl. 257-48.000.
- Yokozaki, Katsushi: *See—*
Abe, Katsuki; Kishigami, Takaaki; Mimura, Masahiro; Hasegawa, Makoto; Yokozaki, Katsushi; Yamaki, Yoichi; Tsumura, Toshiyuki; and Katayama, Hiroshi, 5,781,588, Cl. 375-334.000.
- Yom, Dong Hong, to Harris Corporation. Digital slope detector and method. 5,781,589, Cl. 375-340.000.
- Yoneda, Hisao: *See—*
Iwata, Shizuo; Katoh, Shinya; Nakayama, Kimio; Ashida, Tetsuya; Yoneda, Hisao; Ishiguro, Michihiro; and Hirai, Koji, 5,780,573, Cl. 528-272.000.
- Yonekura, Minoru: *See—*
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- Yoneyama, Tadashi: *See—*
Hirofujii, Susumu; Kaneko, Hiroyuki; and Yoneyama, Tadashi, 5,781,719, Cl. 395-182.120.
- Yong, Dennis: *See—*
Young, Edward T.; Yong, Dennis; Liat, Lim; Tong, James K. C.; Cheng, Viktor C. H.; and Rawls, Judy K., 5,781,911, Cl. 707-201.000.
- Yoon, In-Bae. Retractable safety needle instrument with movable safety member. 5,779,680, Cl. 604-164.000.
- Yoon, Sei-Seung: *See—*
Bae, Yoon-Cheol; Yoon, Sei-Seung; and Seo, Dong-Il, 5,781,494, Cl. 365-230.030.
- Yorifuji, Takao: *See—*
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- Yorozu, Hidenori: *See—*
Kamiya, Tetsuro; Niinaka, Kouichi; Morioka, Keiko; Yoroze, Hidenori; Sawada, Michitaka; and Iwasaki, Masaki, 5,780,047, Cl. 424-443.000.
- Niinaka, Kouichi; Takeuchi, Katsuhiko; Kamiya, Tetsuro; and Yoroze, Hidenori, 5,780,418, Cl. 510-439.000.
- Yoshida, Eiichi: *See—*
Ito, Hiroyasu; Kato, Tomokazu; and Yoshida, Eiichi, 5,781,842, Cl. 399-382.000.
- Yoshida, Kiyohide: *See—*
Miyadera, Tatsuo; Yoshida, Kiyohide; Saito, Mika; Irie, Naoko; Abe, Akira; and Furuyama, Masataka, 5,780,002, Cl. 423-239.100.
- Yoshida, Masakazu: *See—*
Adachi, Keisuke; Kuwayama, Michihiro; Kamo, Momoki; Yoshida, Masakazu; Yoshida, Tsutomu; and Miki, Norio, 5,779,947, Cl. 264-30.000.
- Yoshida, Masanao: *See—*
Ogata, Hitoshi; Yoshida, Masanao; and Yokota, Tokuo, 5,781,515, Cl. 369-32.000.
- Yoshida, Noriaki: *See—*
Hata, Kanji; and Yoshida, Noriaki, 5,778,525, Cl. 29-836.000.
- Yoshida, Tadashi: *See—*
Mayuzumi, Tatsuya; Kurihara, Shinji; Matsuda, Syuichi; Negishi, Noriaki; and Yoshida, Tadashi, 5,781,191, Cl. 345-336.000.
- Yoshida, Tsutomu: *See—*
Adachi, Keisuke; Kuwayama, Michihiro; Kamo, Momoki; Yoshida, Masakazu; Yoshida, Tsutomu; and Miki, Norio, 5,779,947, Cl. 264-30.000.
- Yoshida, Yasuko: *See—*
- Fukuda, Kazushi; Yoshida, Yasuko; Hoshino, Yutaka; Hashimoto, Naotaka; Asayama, Kyoichiro; Koide, Yuuki; Yoshizumi, Keiichi; Okamoto, Eri; Haga, Satoru; and Ikeda, Shuji, 5,780,328, Cl. 438-201.000.
- Yoshigi, Mayumi: *See—*
Saji, Ikutaro; Muto, Masayuki; Tanno, Norihiko; and Yoshigi, Mayumi, 5,780,632, Cl. 546-15.000.
- Yoshihira, Aya: *See—*
Haruta, Masahiro; Koike, Shoji; Aoki, Makoto; Shiota, Koromo; Yoshihira, Aya; Yamamoto, Tomoya; and Suzuki, Mariko, 5,781,216, Cl. 347-106.000.
- Yoshihiro Iwata: *See—*
Iwata, Yoshihiro, 5,779,990, Cl. 422-186.040.
- Yoshii, Haruo; and Fukata, Yuriko, to Nippon Zeki Pharmaceutical Co., Ltd. Immunomodulating and antiinflammatory agent. 5,780,026, Cl. 424-130.100.
- Yoshii, Hiroto: *See—*
Sakaguchi, Katsuhiko; Arai, Tsunekazu; Takasu, Eiji; and Yoshii, Hiroto, 5,781,663, Cl. 382-189.000.
- Yoshikami, Doju: *See—*
McIntosh, J. Michael; Kutak, Jennifer M.; Yoshikami, Doju; and Oliveira, Baldozero M., 5,780,433, Cl. 514-13.000.
- Yoshikawa, Kouji: *See—*
Nakamichi, Kazutaka; Yoshikawa, Kouji; Ishikawa, Katsuki; Suzuki, Toshiro; and Takeuchi, Hitoshi, 5,781,092, Cl. 336-96.000.
- Yoshikawa, Masato: *See—*
Saitoh, Shinji; Yoshikawa, Masato; Akiyama, Setsuo; and Kato, Shingo, 5,780,132, Cl. 428-36.800.
- Yoshimatsu, Saori: *See—*
Mizutani, Keita; Yoshimatsu, Saori; and Yamakawa, Kinya, 5,780,530, Cl. 523-209.000.
- Yoshimura, Kazushi: *See—*
Nakata, Toshihiko; Ninomiya, Takanori; Kobayashi, Hilario Haruomi; and Yoshimura, Kazushi, 5,781,294, Cl. 356-349.000.
- Yoshimura, Manabu, to Brother Kogyo Kabushiki Kaisha. Method of producing an ink ejecting device. 5,781,209, Cl. 347-45.000.
- Yoshimura, Yoshikazu: *See—*
Kinoshita, Akira; and Yoshimura, Yoshikazu, 5,781,161, Cl. 343-750.000.
- Yoshinari, Akira: *See—*
Aono, Yasuhisa; Yoshinari, Akira; Kondo, Yasuo; Kaneda, Junya; Kodama, Hideo; Kato, Takahiko; Hattori, Shigeo; and Arai, Masahiko, 5,779,822, Cl. 148-404.000.
- Yoshino Kogyosho Co., Ltd.: *See—*
Yamanaka, Nobuo, 5,779,841, Cl. 156-245.000.
- Yoshino, Toshihiko: *See—*
Koide, Hidenobu; and Yoshino, Toshihiko, 5,780,845, Cl. 250-227.170.
- Yoshinobu, Mitsutoshi: *See—*
Sugahara, Mikio; Yoshinobu, Mitsutoshi; and Tanaka, Yoshiyuki, 5,780,147, Cl. 428-332.000.
- Yoshio, Akira, to Sony Disc Technology Inc. Liquid supplying apparatus. 5,778,911, Cl. 134-104.200.
- Yoshioka, Shinichi: *See—*
Nakao, Takehiko; and Yoshioka, Shinichi, 5,781,048, Cl. 327-157.000.
- Yoshioka, Takao: *See—*
Yanagisawa, Hiroaki; Fujita, Takashi; Fujimoto, Koichi; Yoshioka, Takao; Wada, Kunio; Oguchi, Minoru; Fujiwara, Toshihiko; and Horikoshi, Hiroyoshi, 5,780,490, Cl. 514-369.000.
- Yoshiomi, Takashi; Iwai, Hiroshi; Saito, Masanobu; Momose, Hisayo; Ohguro, Tatsuya; and Ono, Mizuki, to Kabushiki Kaisha Toshiba. Semiconductor device with side wall conductor film. 5,780,901, Cl. 257-336.000.
- Yoshizawa, Genzo: *See—*
Ishida, Takeshi; Sakamoto, Yuichi; and Yoshizawa, Genzo, 5,781,444, Cl. 364-479.020.
- Yoshizumi, Keiichi: *See—*
Fukuda, Kazushi; Yoshida, Yasuko; Hoshino, Yutaka; Hashimoto, Naotaka; Asayama, Kyoichiro; Koide, Yuuki; Yoshizumi, Keiichi; Okamoto, Eri; Haga, Satoru; and Ikeda, Shuji, 5,780,328, Cl. 438-201.000.
- Yost, Boris: *See—*
Dabral, Sanjay; Greene, Raymond G.; Koons, John P.; Seraphim, Donald P.; and Yost, Boris, 5,781,258, Cl. 349-73.000.
- You, Chin-San. Game Racket. 5,779,573, Cl. 473-543.000.
- You, Fu Kuo, to Yu-Hau Machinery Co., Ltd. Water-jet machine for manufacturing non-woven fabric. 5,778,501, Cl. 28-104.000.
- Youman, Roger: *See—*
Alten, Jerry; Davis, Bruce; Morris, Michael; and Youman, Roger, 5,781,246, Cl. 348-569.000.
- Youn, Sung-kie: *See—*
Kang, Myung-seok; Cho, Young-ho; Song, Ci-moo; and Youn, Sung-kie, 5,780,739, Cl. 73-504.160.
- Young, Chung I.: *See—*
Dietz, Timothy M.; Lu, Ying-Yuh; Uy, Rosa; and Young, Chung I., 5,779,632, Cl. 600-391.000.
- Young, David A.: *See—*
Emert, Jacob; Horvath, Istvan T.; Schlosberg, Richard H.; Thaler, Warren A.; Young, David A.; and Zushma, Stephen, 5,780,554, Cl. 525-370.000.
- Young, Donald D.: *See—*

- Baiden, Gregory R.; Young, Donald D.; Van Berkel, Lambertus H.; Hoover, David L.; and DeVlugt, Paul, 5,778,987, Cl. 173-19.000.
- Young, Edward T.; Yong, Dennis; Liat, Lim; Tong, James K. C.; Cheng, Viktor C. H.; and Rawls, Judy K., to D2K, Incorporated. Integrated system and method of data warehousing and delivery, 5,781,911, Cl. 707-201.000.
- Young, James C.: See—
- Biskner, Charles D.; and Young, James C., 5,779,895, Cl. 210-274.000.
- Young, Wayne P.: See—
- Alesi, Daniel E.; Geiste, Robert J.; Mastri, Dominick L.; Young, Wayne P.; and Toso, Kenneth E., 5,779,130, Cl. 227-176.100.
- Youngs, Edward A.; and Marics, Monica A. System and associated method for historical dialing, 5,781,616, Cl. 379-89.000.
- Yu, Andy Teng-Feng: See—
- Kowshik, Vikram; and Yu, Andy Teng-Feng, 5,781,471, Cl. 365-185.070.
- Yu, Hao, to Systems Research Laboratories, Inc. Magnetic microplate separator, 5,779,907, Cl. 210-695.000.
- Yu-Hau Machinery Co., Ltd.: See—
- You, Fu Kuo, 5,778,501, Cl. 28-104.000.
- Yu, Jack. Ceiling fan package, 5,779,045, Cl. 206-320.000.
- Yu, Philip Shi-lung: See—
- Aggarwal, Charu Chandra; Wolf, Joel Leonard; and Yu, Philip Shi-lung, 5,781,906, Cl. 707-102.000.
- Yu, Tsung-I. Power strip with inspection window, 5,780,775, Cl. 174-135.000.
- Yuan, Jun: See—
- Dunlop, John Alden; Yuan, Jun; Kardokus, Janine Kiyabu; and Emigh, Roger Alan, 5,780,755, Cl. 75-249.000.
- Yuasa, Yoshifumi; Konno, Masao; and Sano, Noboru, to Takasago International Corporation. Process for preparing optically active cyclic compounds, 5,780,649, Cl. 549-313.000.
- Yuchi, Yoko: See—
- Haikawa, Katsumasa; Yamanaka, Akihiro; Kanda, Akiko; Aoyama, Motoo; Yuchi, Yoko; and Yamashita, Junichi, 5,781,604, Cl. 376-419.000.
- Yuda, Lawrence F. End cap for intermediate use in cylinder assembly and method, 5,778,760, Cl. 92-151.000.
- Yuen, Shu Wing. Illuminated house number, 5,778,579, Cl. 40-564.000.
- Yukawa, Yoshiyuki: See—
- Masuda, Yutaka; Nakahata, Akimasa; Yukawa, Yoshiyuki; and Yabuta, Motoshi, 5,780,113, Cl. 427-405.000.
- Yukimoto, Yusuke: See—
- Akiba, Toshifumi; Ikeya, Takanobu; Kawanishi, Hirofumi; Yukimoto, Yusuke; Kamihara, Shinji; and Ebata, Tsutomu, 5,780,669, Cl. 560-124.000.
- Yukon Pacific Corporation: See—
- Whitmore, Ward A.; and Metz, Michael C., 5,778,917, Cl. 137-13.000.
- Yulo, Fernando P.: See—
- Listigovers, Nancy A.; Veregin, Richard P. N.; Yulo, Fernando P.; and Koch, Kayong, 5,780,190, Cl. 430-39.000.
- Yun, Wan-Soo: See—
- Ha, Jeong-Sook; Yun, Wan-Soo; and Park, Kang-Ho, 5,780,851, Cl. 250-306.000.
- Yush, Elliott: See—
- Scourtes, George; Gagneur, John P.; and Yush, Elliott, 5,780,730, Cl. 72-117.200.
- Yuugenkaisha Mediamews: See—
- Fukumoto, Masayuki, 5,779,482, Cl. 434-113.000.
- Yvars, Bernard: See—
- Chappaz, Pierre; Fedorenko, Yvan; Quenin, Jacques; Trichon, François; and Yvars, Bernard, 5,779,963, Cl. 264-254.000.
- Zagrebelnii, Alexandr A.: See—
- Paton, Boris E.; Kryukov, Valeri A.; Gavrich, Sergei S.; Bulatsev, Alexandr R.; Demyanenko, Vladimir V.; Zagrebelnii, Alexandr A.; Markov, Alexandr V.; Perepechenko, Boris I.; Moreinis, Mikhail J.; and Lubomudrov, Igor G., 5,779,002, Cl. 182-222.000.
- Zahn, Wolfgang; Fuersich, Manfred; and Hartmann, Klaus-Peter, to Agfa-Gevaert AG. Printing of color film, 5,781,276, Cl. 355-41.000.
- Zaitzeva, Zinaida Nikolaevna; Konopleff, Oleg Alexandrovich; Laptev, Michael Victorovich; and Vechtomov, Andrey Alexe'evich, to Sun Microsystems, Inc. Computer caching methods and apparatus, 5,781,924, Cl. 711-131.000.
- Zambounis, John S.: See—
- Hao, Zhimin; Zambounis, John S.; and Iqbal, Abul, 5,780,627, Cl. 544-74.000.
- Zammuto, Samuel N.: See—
- Martin, John R.; Tillery, Michael L.; and Zammuto, Samuel N., 5,781,889, Cl. 705-1.000.
- Zangenfeind, Helmut: See—
- Brunner, Jürgen; Zangenfeind, Helmut; Wuerfel, Reinhart; and Effenberger, Peter, 5,781,819, Cl. 396-567.000.
- Zardi, Umberto; and Pagani, Giorgio, to Ammonia Casale, S.A.; and Zardi, Umberto. Heterogeneous synthesis method and apparatus including wall temperature protection, 5,779,988, Cl. 422-148.000.
- Zarelius, Christer. Sheet-like image carrier, 5,778,580, Cl. 40-610.000.
- Zarnack, Uwe Jens: See—
- Witt, Harro; Zarnack, Uwe Jens; and Beckhaus, Heiko, 5,779,995, Cl. 422-215.000.
- Zavilla, John; and Hommeltoft, Sven Ivar, to Haldor Topsoe A/S. Process for the synthesis of fluorinated alkyl sulphonyl halides, 5,780,682, Cl. 568-35.000.

- Zediker, Mark S.; Bacon, Alan J.; and Rice, Robert R., to McDonnell Douglas Corporation. Multi-viewer three dimensional (3-D) virtual display system and operating method therefor, 5,781,229, Cl. 348-51.000.
- Zehner, William J., to United States of America, Navy. Wide beam array with sharp cutoff, 5,781,509, Cl. 367-159.000.
- Zeier, Todd S.: See—
- Suskey, Wesley D.; Zeier, Todd S.; and Dornier, Randall L., 5,779,310, Cl. 297-354.130.
- Zeininger, Heinrich; Zeller, Christoph; Schwalke, Udo; Doebler, Uwe; and Haensch, Wilfried, to Siemens Aktiengesellschaft. Formation of silicided junctions in deep submicron MOSFETS by defect enhanced CoSi2 formation, 5,780,929, Cl. 257-751.000.
- Zelle, David A.; and Zelle, Jill J. T. Device for securing railroad tracks for train sets, 5,779,145, Cl. 238-10.00E.
- Zelle, Jill J. T.: See—
- Zelle, David A.; and Zelle, Jill J. T., 5,779,145, Cl. 238-10.00E.
- Zelle, Robert E.; and Su, Michael, to Vertex Pharmaceuticals Incorporated. Methods for stimulating neurite growth with piperidine compounds, 5,780,484, Cl. 514-316.000.
- Zeller, Christoph: See—
- Zeininger, Heinrich; Zeller, Christoph; Schwalke, Udo; Doebler, Uwe; and Haensch, Wilfried, 5,780,929, Cl. 257-751.000.
- Zeneca Limited: See—
- Gregory, Peter; and Leaver, Alan Thomas, 5,779,778, Cl. 106-31.270.
- Gregory, Peter; and Taylor, John Anthony, 5,779,780, Cl. 106-31.480.
- Gregory, Peter; and Leaver, Alan Thomas, 5,779,781, Cl. 106-31.510.
- Zenith Electronics Corporation: See—
- Mycynek, Victor G.; and Otto, Leif W., 5,781,065, Cl. 329-325.000.
- Zentan Technology Co., Ltd.: See—
- Chen, Tong-Pie, 5,778,880, Cl. 128-696.000.
- Zentmyer, Hugh J.; and Huson, Gale W., to Illinois Tool Works Inc. Manual stretch film applicator and method therefor, 5,779,179, Cl. 242-423.200.
- Zeppenzauer, Michael; and Class, Reiner, to Health Sciences, Allegheny University of the. Therapeutic method for treatment of carcinoma or autoimmune diseases, 5,780,432, Cl. 514-12.000.
- Zervos, Antonis S.: See—
- Brent, Roger; and Zervos, Antonis S., 5,780,262, Cl. 435-69.100.
- Zexel Corporation: See—
- Gunji, Yoshihide; Matsuzaki, Hideaki; and Ohsawa, Hiroshi, 5,781,082, Cl. 333-172.000.
- ZF Friedrichshafen AG: See—
- Gebhard, Wolfgang; and Heilig, Eduard, 5,779,586, Cl. 475-140.000.
- Mann, Egon; and Meisinger, Erwin, 5,779,588, Cl. 475-331.000.
- Zhang, Zhenyu: See—
- Ruderman, Warren; Fehner, James R.; and Zhang, Zhenyu, 5,779,904, Cl. 210-500.250.
- Zhao, Allen: See—
- Ma, Diana Xiaobing; Tajima, Daisuke; Zhao, Allen; Loewenhardt, Peter K.; and Webb, Timothy R., 5,779,926, Cl. 216-67.000.
- Zhao, Michael. Liquid crystal display with projecting function, 5,779,336, Cl. 353-119.000.
- Zheng, Yu, to Patent Category Corporation. Collapsible structures, 5,778,915, Cl. 135-126.000.
- Zhi, Lin: See—
- Boehm, Marcus F.; Heyman, Richard A.; Zhi, Lin; Hwang, Chan Kou; White, Steve; and Nadzan, Alex, 5,780,676, Cl. 562-490.000.
- Zhong, John Z. Z.: See—
- den Boer, Willem; Zhong, John Z. Z.; and Gu, Tieer, 5,780,871, Cl. 257-59.000.
- Zhou, Changming; Shou, Guoliang; Yamamoto, Makoto; and Takatori, Sunao, to Tozan Inc.; and Sharp Kabushiki Kaisha. Code acquisition and tracking circuit using switched matched filter and sliding correlators, 5,781,584, Cl. 375-207.000.
- Zhou, Mei Sheng; and Ron-Fu, Chu, to Chartered Semiconductor Manufacturing Ltd. Method for chemical-mechanical polish (CMP) planarizing of cooper containing conductor layers, 5,780,358, Cl. 438-645.000.
- Zhu, Tianmin: See—
- Lee, Hyuk-Koo; and Zhu, Tianmin, 5,780,462, Cl. 514-183.000.
- Zhu, Wei: See—
- Chen, Li-Han; Jin, Sungho; Zhu, Wei; and van Dover, Robert Bruce, 5,780,175, Cl. 428-692.000.
- Ziedins, Ilze: See—
- Mitra, Debasis; and Ziedins, Ilze, 5,781,624, Cl. 379-244.000.
- Ziegler, Werner: See—
- Hartmann, Paul; Ziegler, Werner; Karpf, Hellfried; and Harer, Johann, 5,779,978, Cl. 422-82.050.
- Zielinski, Zygmunt Joseph: See—
- Russell, Mark John; Rickhuss, Michael John; and Zielinski, Zygmunt Joseph, 5,780,408, Cl. 510-200.000.
- Zierenberg, Terry R.: See—
- Crosby, Gavis P.; and Zierenberg, Terry R., 5,778,708, Cl. 70-118.000.
- Ziger, David; and Leroux, Pierre, to VLSI Technology, Inc. Method and mask design to minimize reflective notching effects, 5,780,208, Cl. 430-394.000.
- Zilog, Inc.: See—
- McKinley, David E., 5,781,784, Cl. 395-750.030.
- Zimmermann, Kaspar: See—
- Betschart, Claudia; and Zimmermann, Kaspar, 5,780,500, Cl. 514-450.000.
- Betschart, Claudia; and Zimmermann, Kaspar, 5,780,501, Cl. 514-450.000.
- Zipperling Kessler & Co.: See—

- Wessling, Bernhard, 5,779,818, Cl. 148-240.000.
- Zittel, David R.; and Malchow, Steven B., to Zittel, David R. Electric motor driven abrasive roller peeler and cleaning machine, 5,780,088, Cl. 426-483.000.
- Zittrisch, Terrance John: See—
- Bertolet, Allan Robert; Clinton, Kim P.N.; Fuller, Christine Marie; Gould, Scott Whitney; Hartman, Steven Paul; Iadanza, Joseph Andrew; Keyser, Frank Ray; Millham, Eric Ernest; Reny, Timothy Shawn; Worth, Brian A.; Yasar, Gulson; and Zittrisch, Terrance John, 5,781,032, Cl. 326-39.000.
- Zlotnick, Gary W.: See—
- Green, Bruce A.; and Zlotnick, Gary W., 5,780,601, Cl. 530-412.000.
- Zolkos, John; and Nakamura, Lance S., to Verifone, Inc. Landing contact mechanism and card latch for smart card reader/writer, 5,780,827, Cl. 235-441.000.

- Zoller, Mark J.: See—
- Matthews, David J.; Wells, James A.; and Zoller, Mark J., 5,780,279, Cl. 435-172.300.
- Zuk, Peter, Jr., to HemaSure, Inc. In-line vent filter for automatically draining a biological liquid filtration device, 5,779,902, Cl. 210-436.000.
- Zushma, Stephen: See—
- Emert, Jacob; Horvath, Istvan T.; Schlosberg, Richard H.; Thaler, Warren A.; Young, David A.; and Zushma, Stephen, 5,780,554, Cl. 525-370.000.
- 3Com Corporation: See—
- Pereira, Frank R., 5,781,726, Cl. 395-200.300.
- Ramelson, Brian; Itkowsky, Frank; Driscoll, Peter; Robins, Cary; Lorenz, Gary; and Bovopoulos, Andreas, 5,781,745, Cl. 395-293.000.
- 3D Systems, Inc.: See—
- Hull, Charles W., 5,779,967, Cl. 264-401.000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 14th DAY OF JULY, 1998

NOTE—Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- Aaron, Jack, to Gradeo (Japan) Ltd. Sheet sorting apparatus. RE. 35,846, Cl. 271-293.000.
- Butera, Gaspar, to SGS-Thomson Microelectronics, Inc. RF transistor package and mounting pad. RE. 35,845, Cl. 257-702.000.
- Crowley, H. W., to Roll Systems, Inc. Paper guiding method and apparatus. RE. 35,844, Cl. 226-88.000.
- Diamond, George B.; and Helmrigh, Ralph, to Dispensing Container Corporation. Low pressure non-barrier type, valved dispensing can. RE. 35,843, Cl. 222-394.000.
- Dispensing Container Corporation: See—
Diamond, George B.; and Helmrigh, Ralph, RE. 35,843, Cl. 222-394.000.
- Ehlert, Charles W., to Lubrication Systems Company of Texas, Inc. Lubricating system. RE. 35,842, Cl. 184-6.260.
- Gradeo (Japan) Ltd.: See—
Aaron, Jack, RE. 35,846, Cl. 271-293.000.
- Helmrigh, Ralph: See—
Diamond, George B.; and Helmrigh, Ralph, RE. 35,843, Cl. 222-394.000.
- Kabushiki Kaisha Toshiba: See—
Tanaka, Shigeru, RE. 35,848, Cl. 378-16.000.
- Lee, Terry R., to Micron Technology, Inc. Self-terminating data line driver. RE. 35,847, Cl. 365-189.110.
- Lubrication Systems Company of Texas, Inc.: See—
Ehlert, Charles W., RE. 35,842, Cl. 184-6.260.
- Micron Technology, Inc.: See—
Lee, Terry R., RE. 35,847, Cl. 365-189.110.
- Roll Systems, Inc.: See—
Crowley, H. W., RE. 35,844, Cl. 226-88.000.
- SGS-Thomson Microelectronics, Inc.: See—
Butera, Gaspar, RE. 35,845, Cl. 257-702.000.
- Soehendra, Nib, to Wilson-Cook Medical, Inc. Indwelling stent. RE. 35,849, Cl. 604-8.000.
- Tanaka, Shigeru, to Kabushiki Kaisha Toshiba. X-ray CT scanner. RE. 35,848, Cl. 378-16.000.
- Wilson-Cook Medical, Inc.: See—
Soehendra, Nib, RE. 35,849, Cl. 604-8.000.

LIST OF REEXAMINATION PATENTEEES

TO WHOM

CERTIFICATES WERE ISSUED

- Advanced Cardiovascular Systems, Inc.: See—
Ainsworth, Robert D.; Cheng, Tai C.; and Wasicek, Lawrence D., B1 554,121, Cl. 604-96.000.
- Ainsworth, Robert D.; Cheng, Tai C.; and Wasicek, Lawrence D., to Advanced Cardiovascular Systems, Inc. Intraluminal catheter with high strength proximal shaft. B1 554,121, Cl. 604-96.000.
- Ammon, Stephen D., to Fila U.S.A., Inc. Method of displaying indicia on footwear. B1 393,372, Cl. 216-33.000.
- Cheng, Tai C.: See—
Ainsworth, Robert D.; Cheng, Tai C.; and Wasicek, Lawrence D., B1 554,121, Cl. 604-96.000.
- Curtis, R. Stephen, to Nike, Inc. Mid-hind foot stabilizer. B1 461,288, Cl. 602-60.000.
- Fila U.S.A., Inc.: See—
Ammon, Stephen D., B1 393,372, Cl. 216-33.000.
- Foam Innovations, Inc.: See—
Tiernan, Barbara H.; and Woogerd, Stanley M., B1 346,699, Cl. 424-405.000.
- Hiraga, Yoshihiko: See—
Shimizu, Yutaka; Otsuka, Yoshiyuki; Hiraga, Yoshihiko; Tanigawa, Atsushi; and Kobayashi, Masayuki, B1 522,970, Cl. 202-197.000.
- Japan Gore-Tex, Inc.: See—
Shimizu, Yutaka; Otsuka, Yoshiyuki; Hiraga, Yoshihiko; Tanigawa, Atsushi; and Kobayashi, Masayuki, B1 522,970, Cl. 202-197.000.
- Kobayashi, Masayuki: See—
Shimizu, Yutaka; Otsuka, Yoshiyuki; Hiraga, Yoshihiko; Tanigawa, Atsushi; and Kobayashi, Masayuki, B1 522,970, Cl. 202-197.000.
- Nike, Inc.: See—
Curtis, R. Stephen, B1 461,288, Cl. 602-60.000.
- Otsuka, Yoshiyuki: See—
Shimizu, Yutaka; Otsuka, Yoshiyuki; Hiraga, Yoshihiko; Tanigawa, Atsushi; and Kobayashi, Masayuki, B1 522,970, Cl. 202-197.000.
- Plank, Michael J., to Speed Shire Corporation. Shoring shield. B1 096,334, Cl. 405-283.000.
- Shimizu, Yutaka; Otsuka, Yoshiyuki; Hiraga, Yoshihiko; Tanigawa, Atsushi; and Kobayashi, Masayuki, to Japan Gore-Tex, Inc. Distilling tube apparatus. B1 522,970, Cl. 202-197.000.
- Speed Shore Corporation: See—
Plank, Michael J., B1 096,334, Cl. 405-283.000.
- Tanigawa, Atsushi: See—
Shimizu, Yutaka; Otsuka, Yoshiyuki; Hiraga, Yoshihiko; Tanigawa, Atsushi; and Kobayashi, Masayuki, B1 522,970, Cl. 202-197.000.
- Tiernan, Barbara H.; and Woogerd, Stanley M., to Foam Innovations, Inc. Method for controlling pests by a pesticide foam. B1 346,699, Cl. 424-405.000.
- Wasicek, Lawrence D.: See—
Ainsworth, Robert D.; Cheng, Tai C.; and Wasicek, Lawrence D., B1 554,121, Cl. 604-96.000.
- Woogerd, Stanley M.: See—
Tiernan, Barbara H.; and Woogerd, Stanley M., B1 346,699, Cl. 424-405.000.

LIST OF DESIGN PATENTEEES

- AB Mekanoverken: See—
Henriksson, Kjell, 396,011, Cl. D10-46.200.
- Advanced Multimedia Products Corporation: See—
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Wendt, Alan C.: *See—*
Stover, David R.; Seymour, Merritt W.; Surra, Robert J.; Wendt, Alan C.; and Lindby-Young, Merle, 396,018, Cl. D11-118.000.
West, Mark. Garden lighting fixture, 396,121, Cl. D26-67.000.
Weyrauch, Dennis L.; and Miller, Charles D., Jr. Separating device, 395,953, Cl. D3-313.000.
White, Colin; and Haberstick, Wells D., to Stanley-Bostitch, Inc. Electric pencil sharpener, 396,062, Cl. D19-73.000.
Whiteing, Vernon N. Computer mouse, 396,034, Cl. D14-114.000.
Wiggins, Gloria. Combined disposable cuticle remover tool and cap therefor, 396,131, Cl. D28-57.000.
Willis, Charles H. Cutting opener for plastic pails, 395,990, Cl. D8-41.000.
Wilzbach, Bernard Lee: *See—*
Bishop, David Carl; Gassett, John Wayne; Mendel, Peter Joseph; Pangburn, Thomas Eugene; and Wilzbach, Bernard Lee, 396,053, Cl. D18-50.000.
Wunderman, Severin S., to Severin Montres AG (Severin Montres SA) (Severin Montres Ltd.). Wristwatch, 396,010, Cl. D10-39.000.
Wy-Tech, Inc.: *See—*
Boelling, James E., 396,085, Cl. D21-234.000.
Yang, Heng-Te. Pepper container, 395,984, Cl. D7-591.000.
Yurkovic, Paula: *See—*
Katzman, Allison; Klimpert, Randall Jon; Lauble, Dianne Elizabeth; Lichodziejewski, Michael John; Sellers, Craig Dennis; and Yurkovic, Paula, 396,070, Cl. D21-109.000.
Katzman, Allison; Klimpert, Randall Jon; Lauble, Dianne Elizabeth; Lichodziejewski, Michael John; Sellers, Craig Dennis; and Yurkovic, Paula, 396,071, Cl. D21-109.000.
Katzman, Allison; Klimpert, Randall Jon; Lauble, Dianne Elizabeth; Lichodziejewski, Michael John; Sellers, Craig Dennis; and Yurkovic, Paula, 396,072, Cl. D21-121.000.
Zaccagni, Richard J., to ZMC, Inc. Combined fascia and soffit member, 396,117, Cl. D25-125.000.
Zada, Simone H. Ice cream cone, 395,936, Cl. D1-118.000.
Zada, Simone H. Pizza, 395,937, Cl. D1-122.000.
Zaidman, Paul, to Palliser Furniture Ltd. Cheval mirror, 395,956, Cl. D6-312.000.
Zenith Products Corp.: *See—*
Hoffman, James A., 395,971, Cl. D6-525.000.
ZMC, Inc.: *See—*
Zaccagni, Richard J., 396,117, Cl. D25-125.000.
Zobel, Richard W., Jr., to Alternate Realities Corporation. Projection dome, 396,115, Cl. D25-19.000.

LIST OF PLANT PATENTEES

- Begonia Breeders Assoc. B.V.: See—
Man, Jan, 10,505, Cl. Plt.-87.180.
Man, Jan, 10,506, Cl. Plt.-87.180.
Smaal, Andre, 10,504, Cl. Plt.-87.180.
Smaal, Andre, 10,507, Cl. Plt.-87.180.
de Ridder, Geert J. W., 10,503, Cl. Plt.-87.180.
CP (Delaware), Inc.: See—
Meilland, Alain A., 10,489, Cl. Plt.-9.000.
Creedon, John, Lilium named 'Montreux, alba', 10,494, Cl. Plt.-87.400.
Danziger "Dan" Flower Farm: See—
Danziger, Gaby, 10,495, Cl. Plt.-87.600.
Danziger, Gaby, to Danziger "Dan" Flower Farm, New Guinea Impatiens plant named 'Danimin', 10,495, Cl. Plt.-87.600.
de Ridder, Geert J. W., to Begonia Breeders Assoc. B.V. Begonia plant named 'Pinto', 10,503, Cl. Plt.-87.180.
Friday, Paul J.: See—
Friday, Paul Jan, 10,490, Cl. Plt.-43.100.
Friday, Paul Jan, to Friday, Paul J. 'P.F. 7' peach tree, 10,490, Cl. Plt.-43.100.
Gebr. Verwer: See—
Verwer, Aad, 10,496, Cl. Plt.-87.800.
Verwer, Aad, 10,497, Cl. Plt.-87.800.
Verwer, Aad, 10,498, Cl. Plt.-87.800.
Verwer, Aad, 10,499, Cl. Plt.-87.800.
Verwer, Aad, 10,500, Cl. Plt.-87.800.
Verwer, Aad, 10,501, Cl. Plt.-87.800.
Holtkamp, Reinhold, Sr., to International Plant Breeding A.G. African violet plant named Ilona, 10,492, Cl. Plt.-69.100.
Holtkamp, Reinhold, Sr., to International Plant Breeding A.G. African violet plant named Picasso, 10,493, Cl. Plt.-69.100.
International Plant Breeding A.G.: See—
Holtkamp, Reinhold, Sr., 10,492, Cl. Plt.-69.100.
Holtkamp, Reinhold, Sr., 10,493, Cl. Plt.-69.100.
John Bodger & Sons Company: See—
Lemon, David, 10,502, Cl. Plt.-87.120.
Lemon, David, to John Bodger & Sons Company, Variety of Geranium plant named 'Elyane', 10,502, Cl. Plt.-87.120.
Man, Jan, to Begonia Breeders Assoc. B.V. Begonia plant named 'Mary-Ann', 10,505, Cl. Plt.-87.180.
Man, Jan, to Begonia Breeders Assoc. B.V. Begonia plant named 'Netja Franje', 10,506, Cl. Plt.-87.180.
Meilland, Alain A., to CP (Delaware), Inc. Miniature rose plant named 'Meibrenec', 10,489, Cl. Plt.-9.000.
Paul Ecke Ranch: See—
Sorensen, Carl Aksel Kragh, 10,491, Cl. Plt.-68.100.
Smaal, Andre, to Begonia Breeders Assoc. B.V. Begonia plant named 'Cavili', 10,504, Cl. Plt.-87.180.
Smaal, Andre, to Begonia Breeders Assoc. B.V. Begonia plant named 'Deli', 10,507, Cl. Plt.-87.180.
Sorensen, Carl Aksel Kragh, to Paul Ecke Ranch, Osteospermum plant named 'Cape Daisy Namaqua', 10,491, Cl. Plt.-68.100.
Verwer, Aad, to Gebr. Verwer, Dahlia plant named 'Gallery Rembrandt', 10,496, Cl. Plt.-87.800.
Verwer, Aad, to Gebr. Verwer, Dahlia plant named 'Gallery Renoir', 10,497, Cl. Plt.-87.800.
Verwer, Aad, to Gebr. Verwer, Dahlia plant named 'Gallery Leonard', 10,498, Cl. Plt.-87.800.
Verwer, Aad, to Gebr. Verwer, Dahlia plant named 'Gallery Vermeer', 10,499, Cl. Plt.-87.800.
Verwer, Aad, to Gebr. Verwer, Dahlia plant named 'Gallery Vincent', 10,500, Cl. Plt.-87.800.
Verwer, Aad, to Gebr. Verwer, Dahlia plant named 'Gallery Salvador', 10,501, Cl. Plt.-87.800.

CLASSIFICATION OF PATENTS

ISSUED JULY 14, 1998

NOTE—First number, class; second number, subclass; third number, patent number

	CLASS 2	602.1	5,778,513		CLASS 43	204	5,778,658	29.01	5,780,718	CLASS 92	
10	5,778,448	603.14	5,778,514	17.1	5,778,591	226.1	5,778,659		5,780,719	12.2	5,778,757
16	5,778,449	707	5,778,516	21.2	5,778,592	226.2	5,778,660	38	5,780,720	88	5,778,758
49.3	5,778,450	709	5,778,517	41	5,778,593	274	5,778,662	40	5,780,721	129	5,778,759
67	5,778,451	736	5,778,518	61	5,778,594		5,778,663	40.5 A	5,780,722	151	5,778,760
69	5,778,452	827	5,778,520	132.1	5,778,596		5,778,666		5,780,723		
148	5,778,453	829	5,778,521				5,778,667	104	5,780,725	39	5,779,763
195.1	5,778,454	830	5,778,522				5,778,668	105	5,780,726	79	5,779,764
209	5,778,455	831	5,778,523	330	5,779,742	413	5,778,669		5,780,727	83	5,779,765
338	5,778,456	836	5,778,524			456	5,778,671	116	5,780,728	96	5,779,766
406	5,778,457		5,778,525	22	5,779,923	547.1	5,778,672	117.1	5,780,729		5,779,767
		840	5,778,526			577	5,778,673	118.1	5,780,731	99	5,779,768
225.1	5,778,459	845	5,778,527	47	5,778,597	600	5,778,674	121	5,780,732		
239	5,778,460	850	5,778,528			652	5,778,675	146.2	5,780,733	CLASS 95	
452	5,778,461	852	5,778,529			746	5,778,676	146.8	5,780,734		2
454	5,778,462	888.011	5,778,532	34.1	5,778,598			159	5,778,724	55	5,779,769
463	5,778,462	888.049	5,778,533	74.1	5,778,600			167	5,778,725	124	5,779,771
538	5,778,463	888.06	5,778,531	352	5,778,601	3.63	5,778,677	202.5	5,780,735	137	5,779,772
596	5,778,464	888.1	5,778,530	375	5,778,602	46.1	5,778,678	204.11	5,780,736	152	5,779,773
		888.451	5,778,534	383	5,778,601	48.2	5,778,679	204.22	5,780,737		
				449	5,778,602	50.2	5,778,681	290 V	5,780,738	CLASS 99	
99.1	5,778,465		5,778,535		CLASS 51	55.5	5,778,682	504.06	5,780,739		275
217	5,778,466	50	5,778,536	309	5,779,743	59	5,778,683	504.16	5,780,740		276
643	5,778,467	123	5,778,537			66	5,778,685	510.08	5,780,741	277.2	5,778,763
636	5,778,468	123.4	5,778,538		CLASS 52	71	5,778,686	514.29	5,780,742		5,778,764
640	5,778,469	221	5,778,539	36.2	5,778,606	78	5,778,687	597	5,780,743	285	5,778,765
645	5,778,470	232	5,778,540	66	5,778,603	89	5,778,688		5,780,744	407	5,778,767
		277.4	5,778,541	79.1	5,778,604	150	5,778,689	702	5,780,745	422	5,778,768
156	5,778,472			99.9	5,778,607	160	5,778,690	706	5,780,746	536	5,778,769
		CLASS 33			5,778,608		5,778,691	861.29	5,780,747	541	5,778,770
		1 D	5,778,542	79.9	5,778,609	175	5,778,692	861.47	5,780,748	637	5,778,771
130	5,779,736	324	5,778,543	181	5,778,610	181	5,778,693	862.043	5,780,749		
158	5,779,737	335	5,778,544	198	5,778,611	187	5,778,694	862.325	5,780,751	CLASS 100	
194	5,779,737	345	5,778,545	205	5,778,612	218	5,778,695	863	5,780,752		26
549	5,779,739	405	5,778,546	222	5,778,613	238.6	5,778,696	864.81	5,780,753		5,778,772
	5,779,740	427	5,778,547	247	5,778,616	503	5,778,697			218	5,778,773
648	5,779,741	503	5,778,548	255	5,778,617	652	5,778,698			CLASS 101	
			5,778,549	264	5,778,618	653	5,778,699	60	5,778,727		5,778,774
			5,778,550	306	5,778,620	656	5,778,700	473.25	5,778,728	125	5,778,776
142 T	5,778,473	554	5,778,551	403.1	5,778,622			489	5,778,729	28	5,778,777
		559	5,778,552	405.3	5,778,623	27	5,779,748	490.04	5,778,730	141	5,778,775
	CLASS 15	810	5,778,553	514	5,778,624	29.11	5,779,749	498	5,778,731	148	5,778,777
22.1	5,778,474			577	5,778,625	60.3	5,779,751	512	5,778,732	181	5,778,778
111	5,778,475			514	5,778,626	68	5,779,752	512	5,778,733	216	5,778,779
167.1	5,778,476	58	5,778,554	577	5,778,627	105	5,779,753	512	5,778,734	181	5,778,780
	5,778,477	71	5,778,555	731.2	5,778,628	134.4	5,779,754	572	5,778,735	226	5,778,781
202	5,778,478	106	5,778,556	749.12	5,778,629	348	5,779,755	573 R	5,778,736	220	5,778,782
210.1	5,778,480	222	5,778,557	786.11	CLASS 53	388	5,779,756	574	5,778,737	232	5,778,783
230.16	5,778,481	505	5,778,558		5,778,630	389	5,779,757	594.6	5,778,738	269	5,778,784
245.1	5,778,482	611	5,778,559	48.8	5,778,631	443	5,779,758		5,778,739	365	5,778,785
250.04	5,778,483			55	5,778,632	497	5,779,760			415.1	5,778,786
250.352	5,778,484	35 R	5,778,560	157	5,778,633			249	5,780,755		5,778,787
301	5,778,485	43	5,778,561	200	5,778,634			370	5,779,761	424.1	5,778,788
339	5,778,486	44	5,778,562	250	5,778,635	178 R	5,778,702	712	5,779,762	450.1	5,778,789
352	5,778,487	88	5,778,563	397	5,778,636					463.1	5,778,790
		101	5,778,564	412	5,778,637			CLASS 66	CLASS 81		5,778,791
		110.1	5,778,565	432	5,778,638	12.02	5,778,703	3.2	5,778,740	494	5,778,792
34	5,778,488			475	5,778,640	181 R	5,778,704	56	5,778,741		5,778,793
114 R	5,778,489			551	5,778,641	196	5,778,705	57.34	5,778,742	CLASS 102	
198	5,778,490			567	5,778,642			62	5,778,743		302
354	5,778,491			589	5,778,643						5,780,763
		235	5,778,567			14	5,778,706			318	5,780,764
		340	5,778,568			118	5,778,708	1.11	5,778,744	355	5,780,765
		415	5,778,569			209	5,778,709		5,778,745	372	5,780,766
107	5,778,492	450	5,778,570		CLASS 55	247	5,778,710	112	5,778,746	CLASS 104	
115 R	5,778,493	455	5,778,571	246	5,779,744	337	5,778,711				2
304	5,778,494	460	5,778,572	337	5,779,745	453	5,778,712			3	5,778,794
				452	5,779,746			CLASS 68	CLASS 82	130.07	5,778,795
				497	5,779,747			471.3	5,778,747		
3.12	5,778,495	103	5,778,573					529	5,778,748		
68 CD	5,778,496				CLASS 56	53	5,778,713	549	5,778,749	CLASS 105	
504	5,778,497			11.2	5,778,644	97	5,778,714	628	5,778,750		149.1
625	5,778,498	124.03	5,778,574	11.8	5,778,645	106	5,778,715	666	5,778,751	215.2	5,778,798
712	5,778,499	322	5,778,575	13.6	5,778,647	117.2	5,780,730	783	5,778,752	CLASS 106	
712.3	5,778,500	409	5,778,576	16.4	5,778,646	202	5,778,716				14.41
		450	5,778,577	202	5,778,648	205	5,778,717				5,779,774
		491	5,778,578	236	5,778,649	214	5,778,718	280	5,780,758	18.32	5,779,775
104	5,778,501	564	5,778,579			296	5,778,719	290	5,780,759	31.26	5,779,776
269	5,778,502	610	5,778,580		CLASS 57	325	5,778,720	380 R	5,780,759	31.27	5,779,777
623.4	5,778,515	611	5,778,581	88	5,778,650	335	5,778,721	454	5,780,760	31.29	5,779,778
		637	5,778,582	235	5,778,652	347	5,778,722	726		31.48	5,779,779
		800	5,778,584	263	5,778,651		5,778,723			31.51	5,779,780
				401	5,778,653			CLASS 89		31.53	5,779,781
27 C	5,778,504			413	5,778,654			36.08	5,780,761	164.1	5,779,782
33 R	5,778,503					1.06	5,780,710	140	5,780,762	410	5,779,783
34 B	5,778,505				CLASS 59	1.71	5,780,711				5,779,784
401.1	5,778,506	69.03	5,778,585		5,778,655	1.79	5,780,714	CLASS 91			5,779,785
412	5,778,507	70.07	5,778,586	31	5,778,656	1.82	5,780,713	1	5,778,753	781	5,779,786
422	5,778,509	70.08	5,778,587	78.1		23.2	5,780,716	25	5,778,754	802	5,779,787
434	5,778,510	71.02	5,778,588		CLASS 60		5,780,717	399	5,778,755	909	5,779,788
559	5,778,511	96	5,778,589	39.182	5,778,657	23.21	5,780,715	441	5,778,756	900	5,779,789
598	5,778,512										

CLASS 108		CLASS 126		CLASS 140		CLASS 166		CLASS 182		CLASS 200		CLASS 218	
7	5,778,799	391	5,778,871	53	5,778,944	241.6	5,778,976	61.54	5,780,793	752	5,779,913	49.1	5,779,963
50.11	5,778,800	557	5,780,091	115	5,778,945	252.1	5,778,977	61.54	5,780,794	754	5,779,914	59.2	5,779,964
57.25	5,778,801	CLASS 127		119	5,778,946	254.2	5,778,978	61.55	5,780,795	800	5,779,915	87.01	5,779,965
90	5,778,802	42	5,779,805	147	5,778,947	277	5,778,979	61.55	5,780,797	801	5,779,916	93.04	5,779,966
147	5,778,803	61	5,779,806	7	5,778,948	298	5,778,980	85 R	5,780,798	802	5,779,917	117	5,779,967
CLASS 109		61	5,779,806	CLASS 141		345	5,778,981	330	5,779,029	14	5,779,959	153	5,779,968
51	5,778,805	CLASS 128		387	5,778,982	344	5,779,030	344	5,779,030	16	5,779,960	187	5,779,969
CLASS 112		202.27	5,778,872	CLASS 144		CLASS 169		CLASS 202		CLASS 218		CLASS 234	
68	5,778,806	203.15	5,778,873	48.6	5,778,949	36	5,778,984	197	B1 522,970	49.1	5,779,961	59.2	5,779,962
70	5,778,807	204.22	5,778,874	36	5,778,950	CLASS 172		CLASS 203		87.01	5,779,963	93.04	5,779,964
102.5	5,778,808	205.12	5,778,875	144.1	5,778,951	378	5,778,986	11	5,779,861	89.01	5,779,965	117	5,779,966
287	5,778,809	207.17	5,778,877	253.2	5,778,952	CLASS 173		57	5,779,862	93.04	5,779,967	153	5,779,968
470.01	5,778,810	286.1	5,778,953	286.1	5,778,953	19	5,778,987	74	5,779,863	117	5,779,969	187	5,779,970
470.09	5,778,811	CLASS 148		CLASS 149		141	5,778,988	CLASS 204		CLASS 219		CLASS 235	
470.33	5,778,812	240	5,779,818	308	5,779,819	178	5,778,989	207	5,779,864	219	5,779,971	232	5,779,972
CLASS 114		325	5,779,820	326	5,779,821	CLASS 174		262	5,779,865	232	5,779,973	252	5,779,974
74 A	5,778,813	403	5,779,822	424	5,779,823	15.1	5,780,770	267	5,779,866	252	5,779,975	252	5,779,976
97	5,778,814	440	5,779,824	513	5,779,826	17.08	5,780,771	267	5,779,867	252	5,779,977	252	5,779,978
201 R	5,778,815	845	5,778,888	633	5,779,827	52.2	5,780,772	403	5,779,868	252	5,779,979	252	5,779,980
211	5,778,816	849	5,778,889	633	5,779,828	72 C	5,780,773	606	5,779,869	252	5,779,981	252	5,779,982
255	5,778,817	CLASS 116		CLASS 150		88 R	5,780,774	CLASS 205		CLASS 220		CLASS 236	
313	5,778,818	898	5,778,892	217	5,779,827	125	5,780,775	77	5,779,870	69.14	5,780,801	121.14	5,780,802
CLASS 117		3	5,778,893	540	5,779,829	25	5,780,776	116	5,779,871	121.14	5,780,803	121.14	5,780,804
13	5,779,790	2	5,778,894	143	5,779,830	27	5,778,990	149	5,779,872	121.14	5,780,805	121.14	5,780,806
15	5,779,791	36	5,778,895	217	5,779,831	61	5,778,991	271	5,779,873	121.14	5,780,807	121.14	5,780,808
214	5,779,792	CLASS 131		CLASS 152		73	5,778,992	334	5,779,874	121.14	5,780,809	121.14	5,780,810
CLASS 118		181	5,778,896	540	5,779,833	215	5,778,993	392	5,779,875	121.14	5,780,811	121.14	5,780,812
36	5,779,793	279	5,778,897	217	5,779,834	374	5,778,994	657	5,779,876	121.14	5,780,813	121.14	5,780,814
213	5,779,794	349	5,778,898	540	5,779,835	420.1	5,778,995	763	5,779,877	121.14	5,780,815	121.14	5,780,816
264	5,779,795	352	5,778,899	217	5,779,836	CLASS 156		CLASS 177		69.14	5,780,817	121.14	5,780,818
319	5,779,796	CLASS 132		CLASS 157		25.11	5,780,777	3	5,779,831	121.14	5,780,819	121.14	5,780,820
500	5,779,797	73	5,778,900	540	5,779,837	25.13	5,780,778	6.1	5,779,832	121.14	5,780,821	121.14	5,780,822
506	5,779,798	74.5	5,778,901	64	5,779,838	105	5,780,779	232	5,779,833	121.14	5,780,823	121.14	5,780,824
663	5,779,799	200	5,778,902	73.1	5,779,839	119	5,780,780	232	5,779,834	121.14	5,780,825	121.14	5,780,826
723 MP	5,779,802	726	5,779,804	89.11	5,779,840	126	5,780,781	232	5,779,835	121.14	5,780,827	121.14	5,780,828
723 R	5,779,803	275	5,778,903	93	5,779,841	136	5,780,782	292	5,779,836	121.14	5,780,829	121.14	5,780,830
726	5,779,804	284	5,778,904	93.11	5,779,842	137	5,780,783	308.1	5,779,837	121.14	5,780,831	121.14	5,780,832
CLASS 119		327	5,778,906	150	5,779,843	CLASS 180		CLASS 181		69.14	5,780,833	121.14	5,780,834
14.18	5,778,820	CLASS 134		153	5,779,844	65.1	5,778,996	310	5,779,838	121.14	5,780,835	121.14	5,780,836
53	5,778,821	1.2	5,779,807	150	5,779,845	65.2	5,778,997	315.1	5,779,839	121.14	5,780,837	121.14	5,780,838
165	5,778,822	2	5,779,808	187	5,779,846	221	5,778,998	315.4	5,779,840	121.14	5,780,839	121.14	5,780,840
215	5,778,823	3	5,779,809	195	5,779,847	CLASS 182		315.6	5,779,841	121.14	5,780,841	121.14	5,780,842
230	5,778,824	4	5,779,810	213	5,779,848	102	5,780,784	315.9	5,779,842	121.14	5,780,843	121.14	5,780,844
708	5,778,825	10	5,779,811	234	5,779,849	295	5,780,785	320	5,779,843	121.14	5,780,845	121.14	5,780,846
717	5,778,826	12	5,779,812	245	5,779,850	362.3	5,779,846	320	5,779,844	121.14	5,780,847	121.14	5,780,848
728	5,778,827	20	5,779,813	250	5,779,851	373	5,779,847	373	5,779,845	121.14	5,780,849	121.14	5,780,850
815	5,778,828	22.11	5,779,814	250	5,779,852	CLASS 184		449	5,779,846	121.14	5,780,851	121.14	5,780,852
CLASS 122		22.11	5,779,815	275.5	5,779,853	82	5,778,999	451	5,779,847	121.14	5,780,853	121.14	5,780,854
17	5,778,829	25.4	5,779,816	299	5,779,854	95	5,778,999	497	5,779,848	121.14	5,780,855	121.14	5,780,856
379	5,778,830	65	5,779,817	308.2	5,779,855	107	5,779,001	504	5,779,849	121.14	5,780,857	121.14	5,780,858
392	5,778,831	104.2	5,779,818	308.2	5,779,856	222	5,779,002	521	5,779,850	121.14	5,780,859	121.14	5,780,860
CLASS 123		123	5,778,908	308.2	5,779,857	225	5,779,003	701	5,779,851	121.14	5,780,861	121.14	5,780,862
2	5,778,832	153	5,778,913	308.2	5,779,858	CLASS 187		709	5,779,852	121.14	5,780,863	121.14	5,780,864
52.4	5,778,833	CLASS 135		308.2	5,779,859	6.17	5,779,004	722	5,779,853	121.14	5,780,865	121.14	5,780,866
55.2	5,778,834	66	5,778,914	308.2	5,779,860	6.18	5,779,005	722	5,779,854	121.14	5,780,867	121.14	5,780,868
55.5	5,778,835	78	5,778,915	308.2	5,779,861	6.26	RE. 35,842	44	5,779,880	121.14	5,780,869	121.14	5,780,870
65 P	5,778,836	126	5,778,916	308.2	5,779,862	293	5,780,786	48 AA	5,779,881	121.14	5,780,871	121.14	5,780,872
73 B	5,778,838	CLASS 136		308.2	5,779,863	316	5,780,787	120	5,779,882	121.14	5,780,873	121.14	5,780,874
90.16	5,778,839	293	5,779,817	308.2	5,779,864	382	5,780,788	213	5,779,883	121.14	5,780,875	121.14	5,780,876
90.17	5,778,840	CLASS 137		308.2	5,779,865	395	5,780,789	CLASS 209		1.5	5,779,077	4.07	5,779,078
90.34	5,778,841	13	5,779,817	308.2	5,779,866	CLASS 188		581	5,779,058	4.28	5,779,079	4.28	5,779,080
90.39	5,778,842	15	5,779,818	308.2	5,779,867	250 D	5,779,006	CLASS 210		200	5,779,081	212	5,779,082
142.5 R	5,778,843	119.04	5,779,819	308.2	5,779,868	289	5,779,007	97	5,779,884	212	5,779,083	212	5,779,084
179.6	5,778,844	208	5,778,922	308.2	5,779,869	296	5,779,008	150	5,779,885	212	5,779,085	212	5,779,086
193.6	5,778,845	226	5,778,923	308.2	5,779,870	299	5,779,009	159	5,779,886	212	5,779,087	212	5,779,088
195 P	5,778,847	269	5,778,924	308.2	5,779,871	378	5,779,010	162	5,779,887	212	5,779,089	212	5,779,090
196 W	5,778,848	493.6	5,778,925	308.2	5,779,872	3.3	5,779,012	195.1	5,779,888	212	5,779,091	212	5,779,092
254	5,778,849	508	5,778,926	308.2	5,779,873	21.5	5,779,013	198.2	5,779,889	212	5,779,093	212	5,779,094
299	5,778,850	565	5,778,927	308.2	5,779,874	41 R	5,779,014	222	5,779,890	212	5,779,095	212	5,779,096
337	5,778,851	588	5,778,928	308.2	5,779,875	42	5,779,015	232	5,779,891	212	5,779,097	212	5,779,098
359	5,778,852	596.13	5,778,929	308.2	5,779,876	48.92	5,779,016	234	5,779,892	212	5,779,099	212	5,779,100
396	5,778,853	625.65	5,778,932	308.2	5,779,877	52.6	5,779,017	234	5,779,893	212	5,779,101	212	5,779,102
414	5,778,854	CLASS 138		308.2	5,779,878	70.14	5,779,018	234	5,779,894	212	5,779,103	212	5,779,104
416	5,778,855	44	5,778,933	308.2	5,779,879	85 C	5,779,019	321.8	5,779,895	212	5,779,105	212	5,779,106
417	5,778,856	89	5,778,934	308.2	5,779,880	105 R	5,779,020	346	5,779,896	212	5,779,107	212	5,779,108
425	5,778,857	97	5,778,935	308.2	5,779,881	CLASS 192		411	5,779,897	212	5,779,109	212	5,779,110
481	5,778,858	CLASS 139		308.2	5,779,882	3.3	5,779,012	436	5,779,898	212	5,779,111	212	5,779,112
520	5,778,859	120	5,778,936	308.2	5,779,883	21.5	5,779,013	440	5,779,899	212	5,779,113	212	5,779,114
557	5,778,860	127	5,778										

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CLASSIFICATION OF PATENTS

12	5,781,078	911 R	5,781,163	135	5,781,263	CLASS 360	5,781,434	112	5,781,524
34.1	5,781,079	CLASS 345	5,781,165	150	5,781,264	51	5,781,358	192	5,781,525
126	5,781,080	8	5,781,166	171	5,781,265	71	5,781,359	422	5,781,526
172	5,781,081	76	5,781,167	172	5,781,266	77.08	5,781,360	423	5,781,527
185	5,781,081		5,781,167	174	5,781,267		5,781,361	464.14	5,781,528
196	5,781,083		5,781,168	178	5,781,268	78.05	5,781,362	468.28	5,781,529
202	5,781,084	82	5,781,169	175			5,781,363	469.01	5,781,530
	5,781,085		5,781,169	176			5,781,364	473.01	5,781,531
248	5,781,086	93	5,781,171	110	5,781,270	78.05	5,781,365	478.02	5,781,532
257	5,781,087	113	5,781,174	121	5,781,271	78.09	5,781,363	478.02	5,781,533
		127	5,781,175	120	5,781,272	85	5,781,366		5,781,534
CLASS 334		147	5,781,176	123	5,781,273	92	5,781,367	479.02	5,781,535
45	5,781,088	156	5,781,177	127	5,781,274		5,781,368	481	5,781,536
		157	5,781,178	203	5,781,275		5,781,369	489	5,781,537
			5,781,178	211	5,781,275	96.5	5,781,370		5,781,538
78	5,781,089	161	5,781,179	503	5,781,282		5,781,371	492	5,781,539
276	5,781,090	164	5,781,180	28.5	5,781,283	97.02	5,781,373	514 R	5,781,540
		173	5,781,181	40.1	5,781,284	99.12	5,781,374	560	5,781,541
		196	5,781,182	119	5,779,336		5,781,375	571.01	5,781,542
96	5,781,092	336	5,781,183	503	5,781,282	103	5,781,375	572	5,781,543
192	5,781,287	340	5,781,183	28.5	5,781,283		5,781,376	578	5,781,544
200	5,781,091	352	5,781,183	41	5,781,276	104	5,781,377	579	5,781,545
232	5,781,093	213	5,781,185	53	5,781,277		5,781,378		5,781,546
		302	5,781,186		5,781,278		5,781,379		5,781,547
CLASS 337		328	5,781,188	CLASS 355			5,781,380	716.02	5,781,548
238	5,781,094	335	5,781,189	503	5,781,282	106	5,781,381	716.06	5,781,549
243	5,781,095	336	5,781,190	28.5	5,781,283	107	5,781,382	724.01	5,781,550
297	5,781,096	340	5,781,192	40.1	5,781,284	122	5,781,383	724.16	5,781,551
367	5,781,097	352	5,781,193	73	5,781,284	132	5,781,384	724.19	5,781,552
		424	5,781,194	73.1	5,781,285		5,781,384	748.01	5,781,553
CLASS 338		428	5,781,195	139.09	5,781,286	30	5,781,385	769	5,781,554
28	5,781,098		5,781,196	239	5,781,288	43	5,781,386		5,781,555
162	5,781,099	430	5,781,197	318	5,781,289	49	5,781,387		5,781,556
252	5,781,100	435	5,781,198	326	5,781,290	56	5,781,388	49	5,781,557
		505	5,781,199	338	5,781,291		5,781,389	103	5,781,558
CLASS 340		509	5,781,200	345	5,781,292	84	5,781,390	149	5,781,559
286.02	5,781,101	516	5,781,200	346	5,781,293	91	5,781,391	156	5,781,560
426.5	5,781,102	CLASS 347		349	5,781,294	112	5,781,392	185.04	5,781,561
441	5,781,103	3	5,781,202		5,781,295	118	5,781,393	185.07	5,781,562
442	5,781,104	9	5,781,203		5,781,296	127	5,781,394	185.11	5,781,563
468	5,781,105	17	5,781,204	350	5,781,296	127	5,781,395	185.18	5,781,564
505	5,781,106		5,781,205		5,781,297	143	5,781,396		5,781,565
545	5,781,107	19	5,781,206		5,781,298	154	5,781,397		5,781,566
552	5,781,108	23	5,781,207	357	5,781,301	171	5,781,398	185.22	5,781,567
568	5,781,109	29	5,781,208	371	5,781,302	172	5,781,399	185.27	5,781,568
572	5,781,110	45	5,781,209	375	5,781,303	234	5,781,400	189.01	5,781,569
	5,781,111	51	5,781,210	381	5,781,304	303	5,781,401	189.04	5,781,570
573	5,781,112	58	5,781,211	432 T	5,781,305	321.5	5,781,402	189.11	5,781,571
574	5,781,113	84	5,781,212	435	5,781,306	502	5,781,403		5,781,572
580	5,781,114	86	5,781,213	436	5,781,306	680	5,781,406		5,781,573
606	5,781,115	95	5,781,214		5,781,306	683	5,781,407	200	5,781,574
618	5,781,116	101	5,781,215	CLASS 358			5,781,408		5,781,575
646	5,781,117	106	5,781,216	451	5,781,308		5,781,409	201	5,781,576
632	5,781,118	120	5,781,217	468	5,781,310	687	5,781,410	204	5,781,577
825.31	5,781,121	141	5,781,218	475	5,781,311	704	5,781,411	207	5,781,578
825.44	5,781,122	178	5,781,219	482	5,781,312		5,781,412	208	5,781,579
825.62	5,781,123	208	5,781,220	497	5,781,313	777	5,781,413	226	5,781,580
825.87	5,781,124	232	5,781,221	509	5,781,314	786	5,781,414	227	5,781,581
870.01	5,781,125	236	5,781,222	520	5,781,315	790	5,781,415	230.01	5,781,582
903	5,781,126	238	5,781,223	CLASS 359			5,781,416	230.03	5,781,583
970	5,781,126	248	5,781,224	3	5,781,316	801	5,781,417		5,781,584
		258	5,781,225	123	5,781,317		5,781,417		5,781,585
CLASS 341				113	5,781,318	31	5,779,337	230.06	5,779,362
22	5,781,127	CLASS 348		123	5,781,319		5,779,338		5,779,363
51	5,781,128	6	5,781,226	143	5,781,320		5,779,339	233	5,779,364
56	5,781,129	7	5,781,227	161	5,781,321	61	5,779,340		5,779,365
58	5,781,130	13	5,781,228	173	5,781,322		5,779,341		5,779,366
59	5,781,131	51	5,781,229	206	5,781,323		5,779,342		5,779,367
67	5,781,133	128	5,781,230		5,781,324	66	5,779,343		5,779,368
107	5,781,134		5,781,231	216	5,781,325		5,779,344	137	5,779,369
163	5,781,135	233	5,781,232	237	5,781,326	78	5,779,345	139	5,779,370
173	5,781,136	302	5,781,233	249	5,781,327	80	5,779,346	151.1	5,779,371
118	5,781,137	319	5,781,234	252	5,781,328	84	5,779,347	206	5,779,372
143	5,781,138	342	5,781,236	270	5,781,329	94	5,779,348	273	5,779,373
150	5,781,139	405	5,781,237	273	5,781,330	108	5,779,349	286	5,779,374
154	5,781,140		5,781,238	288	5,781,331	153.1	5,779,349	340	5,779,375
	5,781,141	415	5,781,239	308	5,781,332		5,779,350		5,779,376
159	5,781,132	441	5,781,241	316	5,781,333		5,779,351		5,779,377
169	5,781,133		5,781,242	326	5,781,334		5,779,352		5,779,378
173	5,781,143	556	5,781,243		5,781,335		5,779,353	31	5,781,502
		561	5,781,244	355	5,781,336		5,779,354	45	5,781,503
13	5,781,144	563	5,781,245	391	5,781,337		5,781,408	88	5,781,504
20	5,781,145	569	5,781,246	398	5,781,338		5,781,409	127	5,781,505
26	5,781,146		5,781,247	557	5,781,339	16	5,781,418	135	5,781,506
54	5,781,147	584	5,781,248		5,781,340	17	5,781,419	154	5,781,507
120	5,781,148	699	5,781,249	578	5,781,341	21	5,781,420	159	5,781,508
160	5,781,149	744	5,781,250	593	5,781,342	37	5,781,421	188	5,781,509
357	5,781,150		5,781,251	608	5,781,343		5,781,422		5,781,510
	5,781,151	CLASS 349		614	5,781,344		5,781,423		5,781,511
	5,781,152	8	5,781,252	633	5,781,345	49	5,781,424	11	5,781,512
	5,781,153	40	5,781,253	649	5,781,346	51	5,781,425	316	5,781,513
	5,781,154	44	5,781,254	676	5,781,347	61	5,781,426		5,781,514
379	5,781,157	46	5,781,255	691	5,781,348	112	5,781,427	13	5,781,515
		51	5,781,256	708	5,781,349	126	5,781,428	32	5,781,516
		57	5,781,257	782	5,781,350		5,781,428		5,781,517
700 MS	5,781,158	73	5,781,258	824	5,781,352		5,781,430	38	5,781,518
	5,781,159	88	5,781,259	841	5,781,353	148	5,781,431	58	5,781,519
713	5,781,160	111	5,781,260		5,781,354		5,781,432	59	5,781,520
750	5,781,161		5,781,261	871	5,781,355	164	5,781,433	77.1	5,781,521
853	5,781,162	128	5,781,262	872	5,781,356	184	5,781,434		5,781,522

271.1	5,780,202	172.2	5,780,278	540.1	5,779,499	CLASS 464	309	5,780,382	293	5,780,481	
294	5,780,203	172.3	5,780,279	557	5,779,500	66	5,779,550	324	5,780,383	300	5,780,482
312	5,780,204		5,780,280	595	5,779,501	111	5,779,551	401	5,780,384	311	5,780,483
320	5,780,205	176	5,780,281	620	5,779,502			439	5,780,385	316	5,780,484
325	5,780,206	188	5,780,283	676	5,779,503	CLASS 472	439	5,780,386	318	5,780,485	
348	5,780,207	193	5,780,284	709	5,779,504	67	5,779,552		325	5,780,486	
394	5,780,208	222	5,780,285	736	5,779,505	117	5,779,553	CLASS 503	331	5,780,487	
399	5,780,209	227	5,780,286	752	5,779,506			226	5,780,387	357	5,780,488
435	5,780,210	236	5,780,287	862	5,779,507	CLASS 473			5,780,388	369	5,780,489
465	5,780,211	238	5,780,288			54	5,779,554	CLASS 504	397	5,780,490	
466	5,780,212	240.1	5,780,289	46	5,779,508	223	5,779,555		411	5,780,491	
512	5,780,214	243	5,780,290			237	5,779,556	116	5,780,389	412	5,780,492
531	5,780,215	252.3	5,780,291	CLASS 441		269	5,779,557	263	5,780,390	419	5,780,493
538	5,780,213	256.8	5,780,292	65	5,779,509	286	5,779,558	281	5,780,392	444	5,780,494
567	5,780,216	266	5,780,293	75	5,779,510	294	5,779,559		5,780,393		
	5,780,217	297.5	5,780,294	80	5,779,511	328	5,779,565		5,780,394		
599	5,780,218	307.1	5,780,295	123	5,779,512	342	5,779,560	CLASS 507	419	5,780,497	
		320.1	5,780,296	129	5,779,513	371	5,779,563	202	5,780,395	450	5,780,500
8	5,779,465	325	5,780,298	CLASS 442		373	5,779,561				
89	5,779,466	366	5,780,299	19	5,780,366	377	5,779,562	CLASS 508	456	5,780,502	
		377	5,780,300	235	5,780,367	407	5,779,564		471	5,780,503	
		404	5,780,301	334	5,780,368	409	5,779,566	104	5,780,396	474	5,780,504
17	5,779,467	8	5,780,302	384	5,780,369	423	5,779,568	106	5,780,397	522	5,780,505
103	5,779,468	10	5,780,303	414	5,780,370	433	5,779,569	451	5,780,398	538	5,780,506
		169	5,780,304	CLASS 445		481	5,779,570	402	5,780,399	562	5,780,507
6	5,779,470	174	5,780,305	24	5,779,514	496	5,779,571	451	5,780,400	563	5,780,508
80	5,779,471	179	5,780,306	90	5,779,515	519	5,779,571	573	5,780,401	576	5,780,509
91	5,779,472	503	5,780,307	98	5,779,516	521	5,779,572	580	5,780,402	624	5,780,512
120	5,779,473	514	5,780,308	108	5,779,517	543	5,779,573		5,780,403	634	5,780,513
129	5,779,474	518	5,780,309	CLASS 446		570	5,779,574	CLASS 510		682	5,780,514
141	5,779,475		5,780,310	28	5,779,518	578	5,779,575	101	5,780,404	690	5,780,515
166	5,779,476		5,780,311	80	5,779,519	599	5,779,577	145	5,780,405	715	5,780,516
172	5,779,477	52	5,780,312	CLASS 451			5,779,578	171	5,780,406	721	5,780,517
173	5,779,480	62	5,780,313	28	5,779,518	72	5,779,579	188	5,780,407		
		235	5,780,313	41	5,779,519	80	5,779,580	200	5,780,408	45	5,780,518
				56	5,779,520	82	5,779,581	237	5,780,409	48.5	5,780,520
94	5,779,479	2	5,780,314	93	5,779,521	140	5,779,582	220	5,780,410	68	5,780,519
113	5,779,482	8	5,780,315	121	5,779,522	145	5,779,583	207	5,780,411	79	5,780,521
262	5,779,483	11	5,780,316	137	5,779,523	264	5,779,584	240	5,780,412	137	5,780,523
266	5,779,484	16	5,780,317	262	5,779,525	CLASS 475		365	5,780,414		
321	5,779,485	20	5,780,318	324	5,779,526	128	5,779,585	417	5,780,415	2	5,780,524
353	5,779,486	33	5,780,320	328	5,779,527	140	5,779,586	422	5,780,416	81	5,780,525
		34	5,780,321	358	5,779,528	146	5,779,587	426	5,780,417	93	5,780,526
		45	5,780,322	550	5,779,529	263	5,779,588	439	5,780,418		
5	5,780,219	131	5,780,323	CLASS 452		331	5,779,589	452	5,780,419	CLASS 523	
	5,780,220	138	5,780,324	12	5,779,530	346	5,779,590	472	5,780,420	102	5,780,527
	5,780,221	149	5,780,325	127	5,779,531	42	5,779,591	472	5,780,421	161	5,780,528
	5,780,222	152	5,780,326	149	5,779,532	83	5,779,592	530	5,780,422	209	5,780,529
	5,780,223	156	5,780,327	160	5,779,533	107	5,779,593	2	5,780,424	213	5,780,531
	5,780,224	201	5,780,328	CLASS 454		156	5,779,594	9	5,780,425	412	5,780,532
	5,780,225	202	5,780,329	52	5,779,534	174	5,779,595	12	5,780,426	CLASS 524	
	5,780,227	232	5,780,330	121	5,779,535	CLASS 482		13	5,780,427	133	5,780,534
	5,780,228	238	5,780,331	137	5,779,536	100	5,779,601	15	5,780,428	147	5,780,535
	5,780,229		5,780,332	174	5,779,537	104	5,779,602	18	5,780,429	178	5,780,536
	5,780,230	239	5,780,333	CLASS 455		105	5,779,603	19	5,780,430	439	5,780,537
	5,780,231	243	5,780,334	3.3	5,781,844	108	5,779,604	21	5,780,431	494	5,780,538
	5,780,232	243	5,780,335	65	5,781,845	122	5,779,605	26	5,780,432	572	5,780,539
	5,780,233	251	5,780,336	69	5,781,846	130	5,779,606	27	5,780,433	590	5,780,540
	5,780,234	253	5,780,337	72	5,781,847	140	5,779,607	34	5,780,434	789	5,780,541
	5,780,235		5,780,338	114	5,781,848	CLASS 483		38	5,780,435	832	5,780,542
	5,780,236		5,780,339	149	5,781,849	69	5,779,609	46	5,780,436	860	5,780,543
	5,780,237	259	5,780,340	182.1	5,781,851	100	5,779,610	54	5,780,437		
	5,780,238		5,780,341	331	5,781,852	104	5,779,611	25	5,780,438	CLASS 525	
	5,780,239		5,780,342	403	5,781,853	105	5,779,612	26	5,780,439	28	5,780,546
	5,780,240		5,780,343	412	5,781,854	108	5,779,613	34	5,780,440	61	5,780,547
	5,780,241		5,780,344	414	5,781,855	122	5,779,614	44	5,780,441	63	5,780,548
	5,780,242	275	5,780,345	423	5,781,856	130	5,779,615	46	5,780,442	84	5,780,549
	5,780,243	296	5,780,346	426	5,781,857	140	5,779,616	54	5,780,443	236	5,780,551
	5,780,244	301	5,780,347	433	5,781,858	CLASS 484		57	5,780,444	276	5,780,552
	5,780,245	303	5,780,348	433	5,781,859	13	5,779,617	58	5,780,445	370	5,780,553
	5,780,246	305	5,780,349	433	5,781,860	331	5,779,618	68	5,780,446	407	5,780,554
	5,780,247		5,780,350	433	5,781,861	436	5,779,619	108	5,780,447	437	5,780,555
	5,780,248		5,780,351	433	5,781,862	475	5,779,620	159	5,780,448	445	5,780,556
	5,780,249		5,780,352	433	5,781,863	5	5,779,621	221	5,780,449	532	5,780,557
	5,780,250		5,780,353	433	5,781,864	56	5,779,622	228.2	5,780,450	534	5,780,558
	5,780,251	459	5,780,354	CLASS 460		67	5,779,623	236.8	5,780,451	CLASS 526	
	5,780,252	483	5,780,355	6	5,779,541	70	5,780,372	237.5	5,780,452	86	5,780,570
	5,780,253	627	5,780,356	69	5,779,542	72	5,780,373	247	5,780,453	129	5,780,562
	5,780,254	639	5,780,357	28	5,779,543	97.1	5,780,374	250	5,780,454	130	5,780,563
	5,780,255	645	5,780,358	CLASS 462		137	5,780,375	252	5,780,455	201	5,780,564
	5,780,256	659	5,780,359	6	5,779,544	146	5,780,376	255	5,780,456	266	5,780,565
	5,780,257	680	5,780,360	69	5,779,545	152	5,780,377	255	5,780,457	267	5,780,566
	5,780,258	683	5,780,361	CLASS 463		67	5,780,378	255	5,780,458	347	5,780,567
	5,780,259		5,780,362	6	5,779,546	70	5,780,379	255	5,780,459		
	5,780,260		5,780,363	69	5,779,547	72	5,780,380	255	5,780,460	CLASS 527	
	5,780,261		5,780,364	28	5,779,548	97.1	5,780,381	255	5,780,461	300	5,780,568
69.1	5,780,262	748	5,780,365	CLASS 464		137	5,780,382	255	5,780,462		
	5,780,263	775	5,780,366	6	5,779,549	146	5,780,383				

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191 396,076	D23—	209 396,088		374 396,100		396,111		102 396,123			
396,077		227 396,089		377 396,101		396,112	D25—	145 396,124			
396,078		233 396,090		396,102		396,113		195 396,125	D27—		
210 396,079		238 396,092		396,103		396,114		7 396,126	D28—		
217 396,080		250 396,093		379 396,104		396,115		18 396,127			
219 396,081		255 396,094		406 396,001		396,116		41 396,128			
396,082		258 396,091		411 396,105		396,117		46 396,129			
396,083		302 396,095		396,106		396,118		56 396,130			
225 396,084		363 396,096	D24—	143 396,107		396,119	D26—	57 396,131			
234 396,085		364 396,097		144 396,108		396,120		64 396,132			
253 396,086		365 396,098		152 396,109		396,121		73 396,133			

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P—	9	10,489		10,493		10,505		87.6	10,495		10,499
	43.1	10,490		87.12	10,502	10,506		87.8	10,496		10,500
	68.1	10,491		87.18	10,503	10,507			10,497		10,501
	69.1	10,492		10,504		87.4	10,494		10,498		

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01 :	5,778,835	5,779,105	5,779,005	5,779,682	5,780,244	5,780,736
	5,778,891	5,779,345	5,779,029	5,779,688	5,780,246	5,780,737
	5,778,895	5,780,790	5,779,035	5,779,696	5,780,253	5,780,738
	5,779,154	5,778,452	5,779,036	5,779,704	5,780,254	5,780,743
	5,779,164	5,778,452	5,779,040	5,779,708	5,780,258	5,780,748
	5,779,190	5,778,461	5,779,046	5,779,715	5,780,265	5,780,761
	5,779,289	5,778,470	5,779,082	5,779,719	5,780,266	5,780,772
	5,779,568	5,778,471	5,779,102	5,779,728	5,780,268	5,780,782
	5,780,112	5,778,495	5,779,108	5,779,734	5,780,279	5,780,797
	5,780,370	5,778,498	5,779,151	5,779,751	5,780,280	5,780,807
	5,780,594	5,778,500	5,779,156	5,779,762	5,780,281	5,780,827
	5,781,301	5,778,513	5,779,160	5,779,763	5,780,285	5,780,828
02 :	5,778,917	5,778,514	5,779,191	5,779,766	5,780,303	5,780,838
04 :	5,778,454	5,778,521	5,779,204	5,779,774	5,780,304	5,780,839
	5,778,475	5,778,529	5,779,205	5,779,779	5,780,305	5,780,860
	5,778,575	5,778,545	5,779,276	5,779,807	5,780,314	5,780,889
	5,778,696	5,778,547	5,779,281	5,779,863	5,780,323	5,780,899
	5,778,908	5,778,554	5,779,320	5,779,867	5,780,330	5,780,912
	5,778,934	5,778,565	5,779,334	5,779,868	5,780,343	5,780,919
	5,778,958	5,778,598	5,779,336	5,779,870	5,780,347	5,780,922
	5,779,119	5,778,603	5,779,388	5,779,874	5,780,349	5,780,924
	5,779,134	5,778,604	5,779,408	5,779,885	5,780,350	5,780,928
	5,779,195	5,778,605	5,779,413	5,779,887	5,780,353	5,780,930
	5,779,203	5,778,612	5,779,436	5,779,911	5,780,355	5,780,956
	5,779,251	5,778,618	5,779,460	5,779,922	5,780,357	5,780,957
	5,779,437	5,778,625	5,779,476	5,779,923	5,780,359	5,780,958
	5,779,526	5,778,628	5,779,481	5,779,924	5,780,360	5,780,961
	5,780,101	5,778,642	5,779,486	5,779,926	5,780,398	5,780,971
	5,780,160	5,778,681	5,779,502	5,779,967	5,780,407	5,780,992
	5,780,321	5,778,711	5,779,513	5,779,971	5,780,426	5,781,002
	5,780,352	5,778,730	5,779,519	5,779,981	5,780,431	5,781,023
	5,780,588	5,778,733	5,779,543	5,779,984	5,780,436	5,781,029
	5,780,768	5,778,735	5,779,558	5,780,014	5,780,487	5,781,030
	5,780,842	5,778,740	5,779,569	5,780,025	5,780,496	5,781,033
	5,780,848	5,778,741	5,779,570	5,780,036	5,780,524	5,781,038
	5,780,878	5,778,790	5,779,576	5,780,037	5,780,525	5,781,051
	5,780,975	5,778,824	5,779,580	5,780,053	5,780,581	5,781,055
	5,780,994	5,778,825	5,779,603	5,780,058	5,780,583	5,781,068
	5,781,072	5,778,828	5,779,624	5,780,087	5,780,595	5,781,069
	5,781,085	5,778,858	5,779,630	5,780,133	5,780,610	5,781,074
	5,781,129	5,778,872	5,779,640	5,780,157	5,780,612	5,781,087
	5,781,388	5,778,875	5,779,643	5,780,204	5,780,617	5,781,091
	5,781,392	5,778,877	5,779,644	5,780,219	5,780,626	5,781,107
	5,781,459	5,778,886	5,779,645	5,780,222	5,780,646	5,781,128
	5,781,687	5,778,896	5,779,649	5,780,227	5,780,647	5,781,132
	5,781,701	5,778,903	5,779,658	5,780,234	5,780,653	5,781,134
	5,781,802	5,778,905	5,779,665	5,780,235	5,780,676	5,781,143
05 :	5,778,748	5,778,915	5,779,666	5,780,241	5,780,701	5,781,144
	5,779,048	5,778,957	5,779,672	5,780,242	5,780,713	5,781,150

5.781.155	5.781.803	5.781.506	5.781.569	5.781.643	5.779.010
5.781.156	5.781.814	5.781.508	5.781.758	5.781.727	5.779.044
5.781.157	5.781.845	5.781.529	RE. 35.847	5.781.843	5.779.056
5.781.159	5.781.847	5.781.603	5.778.996	5.781.857	5.779.093
5.781.162	5.781.856	5.781.634	5.779.211	5.781.889	5.779.174
5.781.163	5.781.867	5.781.665	5.779.522	5.778.632	5.779.236
5.781.164	5.781.880	5.779.795	5.779.577	5.778.841	5.779.247
5.781.180	5.781.890	5.779.931	5.779.794	5.779.098	5.779.392
5.781.184	5.781.904	5.780.153	5.779.799	5.779.319	5.779.471
5.781.189	5.781.907	5.780.383	5.779.839	5.779.545	5.779.528
5.781.190	5.781.911	5.780.916	5.779.849	5.779.949	5.779.557
5.781.192	5.781.912	5.781.342	5.779.920	5.779.956	5.779.561
5.781.200	5.781.913	5.780.021	5.779.996	5.779.980	5.779.602
5.781.201	5.781.914	5.780.307	5.780.093	5.780.461	5.779.635
5.781.227	5.781.918	5.780.819	5.780.187	5.780.465	5.779.639
5.781.239	BI 346.699	5.778.527	5.780.188	5.780.635	5.779.646
5.781.241	BI 554.121	5.778.536	5.780.288	5.780.648	5.779.660
5.781.243	08 : 5.778.491	5.778.546	5.780.326	5.780.714	5.779.788
5.781.257	5.778.492	5.778.588	5.780.364	5.780.765	5.779.891
5.781.258	5.778.507	5.778.593	5.780.806	5.780.791	5.779.902
5.781.273	5.778.509	5.778.606	5.780.891	5.780.974	5.779.929
5.781.299	5.778.553	5.778.611	5.780.906	5.781.047	5.779.959
5.781.327	5.778.806	5.778.620	5.780.920	5.781.247	5.779.960
5.781.341	5.778.826	5.778.629	5.780.923	5.780.986	5.779.961
5.781.344	5.778.942	5.778.761	5.780.986	5.781.010	5.779.985
5.781.345	5.778.947	5.778.817	5.781.022	5.778.644	5.779.985
5.781.360	5.778.982	5.778.876	5.781.145	5.778.648	5.780.024
5.781.361	5.779.423	5.778.887	5.781.447	5.778.672	5.780.033
5.781.363	5.779.547	5.778.935	5.781.308	5.778.727	5.780.040
5.781.373	5.779.614	5.779.298	5.781.483	5.778.803	5.780.051
5.781.374	5.779.642	5.779.364	5.781.486	5.778.991	5.780.052
5.781.379	5.780.044	5.779.475	5.781.490	5.779.823	5.780.221
5.781.380	5.780.228	5.779.484	5.781.707	5.779.895	5.780.224
5.781.394	5.780.329	5.779.559	5.778.465	5.780.099	5.779.225
5.781.395	5.780.395	5.779.631	5.778.467	5.780.287	5.779.241
5.781.439	5.780.600	5.779.662	5.778.472	5.780.618	5.779.300
5.781.442	5.780.998	5.779.667	5.778.476	5.780.783	5.779.324
5.781.446	5.780.999	5.779.697	5.778.487	5.780.792	5.779.404
5.781.454	5.781.147	5.779.700	5.778.535	5.780.429	5.779.432
5.781.456	5.781.186	5.779.701	5.778.542	5.780.435	5.779.671
5.781.457	5.779.713	5.779.713	5.778.544	5.779.111	5.779.676
5.781.461	5.781.197	5.779.730	5.778.572	5.779.542	5.779.699
5.781.464	5.781.268	5.779.731	5.778.636	5.779.722	5.779.725
5.781.469	5.781.365	5.779.771	5.778.750	5.780.013	5.779.724
5.781.471	5.781.449	5.779.832	5.778.755	5.780.074	5.779.725
5.781.472	5.781.593	5.779.858	5.778.871	5.779.094	5.779.732
5.781.473	5.781.614	5.779.866	5.778.932	5.779.243	5.779.743
5.781.477	5.781.615	5.779.943	5.778.959	5.779.436	5.779.795
5.781.488	5.781.616	5.780.116	5.778.986	5.780.805	5.778.913
5.781.496	5.781.699	5.780.124	5.779.066	5.780.863	5.778.919
5.781.497	5.781.769	5.780.144	5.779.071	5.780.897	5.779.033
5.781.543	5.781.830	5.780.150	5.779.084	5.780.990	5.779.074
5.781.544	5.781.854	5.780.239	5.779.095	5.780.045	5.779.099
5.781.545	5.780.311	5.780.311	5.779.101	5.781.066	5.779.146
5.781.549	5.781.908	5.780.316	5.779.110	5.781.093	5.779.240
5.781.550	5.781.921	5.780.390	5.779.129	5.781.252	5.779.292
5.781.562	5.780.516	5.780.516	5.779.157	5.781.304	5.779.470
5.781.568	09 : 5.778.634	5.780.730	5.779.179	5.781.417	5.779.470
5.781.571	5.778.659	5.780.954	5.779.252	5.781.420	5.779.473
5.781.573	5.778.736	5.781.075	5.779.272	5.781.531	5.779.508
5.781.574	5.778.894	5.781.108	5.779.343	5.781.533	5.779.544
5.781.582	5.778.963	5.781.111	5.779.372	5.781.534	5.779.546
5.781.589	5.779.085	5.781.116	5.779.417	5.781.606	5.779.553
5.781.613	5.779.130	5.781.117	5.779.446	5.781.714	5.779.587
5.781.631	5.779.171	5.781.274	5.779.449	5.781.720	5.779.684
5.781.633	5.779.288	5.781.398	5.779.454	5.781.745	5.779.693
5.781.637	5.779.293	5.781.408	5.779.504	5.781.772	5.779.727
5.781.640	5.779.314	5.781.428	5.779.552	5.781.801	5.779.746
5.781.648	5.781.504	5.779.396	5.779.556	5.781.906	5.779.805
5.781.649	5.779.409	5.781.509	5.779.647	5.781.909	5.779.826
5.781.659	5.779.499	5.781.650	5.779.654	BI 393.372	5.779.873
5.781.664	5.779.511	5.781.652	5.779.668	5.781.297	5.779.882
5.781.668	5.779.549	5.781.798	5.779.761	5.778.449	5.779.904
5.781.670	5.779.562	5.781.807	5.779.778	5.778.506	5.779.919
5.781.692	5.779.718	5.781.882	5.779.878	5.778.592	5.779.974
5.781.693	5.779.851	5.778.490	5.779.884	5.778.607	5.779.944
5.781.703	5.779.869	5.778.623	5.780.003	5.778.621	5.779.974
5.781.710	5.779.910	5.778.624	5.780.027	5.780.055	5.779.976
5.781.717	5.779.977	5.778.689	5.780.064	5.780.257	5.778.666
5.781.721	5.779.989	5.778.706	5.780.077	5.780.263	5.778.669
5.781.722	5.779.998	5.778.818	5.780.249	5.780.286	5.778.697
5.781.723	5.780.049	5.778.831	5.780.384	5.780.299	5.778.855
5.781.726	5.780.081	5.778.889	5.780.585	5.780.384	5.778.900
5.781.729	5.780.089	5.779.055	5.780.367	5.780.585	5.778.928
5.781.730	5.780.140	5.779.068	5.780.494	5.780.862	5.778.949
5.781.732	5.780.171	5.779.086	5.780.604	5.780.970	5.779.070
5.781.739	5.780.172	5.779.100	5.780.605	5.781.063	5.779.107
5.781.744	5.780.259	5.779.785	5.780.613	5.781.120	5.779.318
5.781.747	5.780.300	5.779.859	5.780.654	5.781.303	5.779.399
5.781.750	5.780.470	5.779.908	5.780.695	5.781.305	5.779.096
5.781.753	5.780.709	5.779.914	5.780.746	5.781.538	5.779.097
5.781.756	5.780.719	5.780.130	5.780.987	5.781.540	5.779.220
5.781.762	5.780.724	5.780.643	5.780.997	5.781.869	5.779.257
5.781.766	5.780.764	5.780.744	5.781.065	5.781.874	5.779.263
5.781.768	5.780.778	5.780.815	5.781.078	5.778.459	5.779.271
5.781.778	5.780.787	5.781.149	5.781.089	5.778.526	5.779.278
5.781.779	5.780.788	5.781.284	5.781.095	5.778.658	5.779.279
5.781.781	5.780.800	5.781.320	5.781.291	5.778.679	5.779.282
5.781.783	5.781.167	5.781.386	5.781.399	5.780.705	5.779.299
5.781.784	5.781.416	5.781.844	5.781.406	5.778.781	5.779.328
5.781.785	5.781.438	5.781.865	5.781.547	5.778.882	5.779.341
5.781.788	5.781.452	5.779.041	5.781.583	5.778.893	5.779.346
5.781.799	5.781.505	5.779.510		5.779.901	5.779.389
				5.779.923	5.779.501
				5.778.968	5.779.534
				5.781.583	5.779.566

5.779.592	5.779.541	5.780.683	5.781.151	5.779.509	5.779.650
5.779.600	5.779.862	5.780.703	5.781.221	5.779.638	5.779.675
5.779.657	5.780.041	5.780.722	5.781.225	5.779.648	5.779.681
5.779.845	5.779.629	5.780.830	5.781.292	5.779.692	5.779.716
5.779.951	5.781.411	5.781.139	5.781.336	5.779.742	5.779.721
5.779.979	5.781.458	5.781.316	5.781.387	5.779.744	5.779.752
5.780.122	5.778.515	5.781.330	5.781.418	5.779.749	5.779.767
5.780.163	5.779.033	5.781.331	5.781.421	5.779.758	5.779.768
5.780.164	5.779.148	5.781.624	5.781.430	5.779.760	5.779.827
5.780.173	5.779.242	5.781.625	5.781.451	5.779.764	5.779.835
5.780.770	5.779.291	5.781.658	5.781.525	5.779.812	5.779.840
5.780.841	5.779.545	5.781.671	5.781.536	5.779.819	5.779.999
5.780.871	5.780.182	5.781.673	5.781.537	5.779.829	5.780.071
5.780.965	5.780.251	5.781.677	5.781.546	5.779.830	5.780.220
5.781.101	5.780.937	5.781.679	5.781.564	5.779.833	5.780.238
5.781.105	5.778.591	5.781.685	5.781.607	5.779.968	5.780.250
5.781.390	5.778.774	5.781.883	5.781.629	5.779.973	5.780.291
5.781.700	5.778.779	5.781.884	5.781.654	5.780.020	5.780.381
5.781.877	5.779.087	5.781.887	5.781.682	5.780.062	5.780.409
5.778.448	5.779.123	5.781.888	5.781.684	5.780.086	5.780.421
5.778.450	5.779.239	5.781.894	5.781.711	5.780.106	5.780.432
5.778.468	5.779.244	5.780.675	5.781.736	5.780.110	5.780.455
5.778.578	5.779.294	5.780.867	5.781.737	5.780.149	5.780.480
5.778.583	5.779.560	5.781.017	5.781.764	5.780.368	5.780.481
5.778.602	5.779.669	5.778.456	5.781.787	5.780.372	5.780.488
5.778.690	5.779.673	5.778.482	5.781.804	5.780.385	5.780.492
5.778.695	5.779.687	5.778.505	5.781.815	5.780.400	5.780.497
5.778.724	5.780.007	5.778.564	5.781.816	5.780.401	5.780.546
5.778.767	5.780.596	5.778.617	5.781.820	5.780.451	5.780.552
5.778.881	5.780.741	5.778.685	5.781.828	5.780.521	5.780.558
5.778.904	5.781.005	5.778.709	5.781.829	5.780.537	5.780.559
5.779.092	5.781.412	5.778.816	5.781.833	5.780.538	5.780.560
5.779.172	5.781.450	5.778.902	5.781.837	5.780.539	5.780.584
5.779.208	5.781.846	5.778.914	5.781.840	5.780.539	5.780.584
5.779.225	RE. 35.843	5.778.960	5.781.910	5.780.734	5.780.590
5.779.241	5.778.469	5.779.013	5.778.692	5.780.991	5.780.609
5.779.300	5.778.477	5.779.038	5.778.702	5.781.007	5.780.651
5.779.324	5.778.479	5.779.112	5.778.936	5.781.097	5.780.652
5.779.604	5.778.480	5.779.122	5.778.940	5.781.110	5.780.655
5.779.632	5.778.576	5.779.133	5.779.047	5.781.160	5.780.657
5.779.671	5.778.675	5.779.215	5.779.178	5.781.393	5.780.667
5.779.676	5.778.678	5.779.248	5.779.304	5.781.465	5.780.715
5.779.699	5.778.680	5.779.250	5.779.393	5.781.776	5.780.726
5.779.722	5.778.720	5.779.259	5.779.427	5.778.586	5.780.817
5.779.734	5.778.789	5.779.348	5.779.428	5.778.749	5.780.936
5.779.735	5.778.814	5.779.359	5.779.496	5.778.933	5.780.940
5.779.732	5.778.874	5.779.386	5.779.516	5.779.063	5.781.113
5.779.743	5.778.888	5.779.442	5.779.607	5.779.117	5.781.118
5.779.836	5.778.913	5.779.497	5.779.655	5.779.161	5.781.226
5.779.964	5.778.919	5.779.512	5.779.782	5.779.227	5.781.230
5.780.039	5.779.053	5.779.539	5.779.813	5.779.787	5.781.246
5.780.045	5.779.074	5.779.582	5.779.847	5.780.001	5.781.581
5.780.085	5.779.099	5.779.609	5.779.877	5.780.659	5.781.602
5.780.098	5.779.146	5.779.633	5.780.111	5.778.953	5.781.681
5.780.109	5.779.240	5.779.641	5.780.117	5.779.383	5.781.695
5.780.126	5.779.292	5.779.652	5.780.156	5.779.488	5.781.698
5.780.127	5.779.470	5.779.670	5.780.195	5.780.346	5.781.893
5.780.207	5.779.473	5.779.735	5.780.271	5.780.528	5.781.715
5.780.319	5.779.508	5.779.786	5.780.293	5.780.780	5.778.725
5.780.479	5.779.544	5.779.809	5.780.375	5.780.883	5.779.057
5.780.565	5.779.546	5.779.810	5.780.464	5.781.036	5.779.913
5.780.678	5.779.553	5.779.844	5.780.551	5.781.040	5.780.066
5.780.708	5.779.587	5.779.906	5.780.553	5.781.045	5.780.406
5.780.742	5.779.684	5.779.934	5.780.589	5.781.177	5.780.729
5.780.771	5.779.693	5.779.969	5.780.880	5.781.198	5.781.058
5.781.042	5.779.727	5.780.029	5.781.715	5.781.212	5.781.460
5.781.046	5.779.746	5.780.067	5.781.735	5.781.231	5.778.466
5.781.050	5.779.805	5.780.091	5.778.771	5.781.346	5.778.511
5.781.133	5.779.826	5.780.092	5.781.127	5.781.410	5.778.760
5.781.206	5.779.873	5.780.103	5.778.457	5.781.557	5.779.059
5.781.297	5.779.882	5.780.118	5.778.458	5.781.635	5.779.067
5.781.300	5.779.904	5.780.128	5.778.463	5.781.774	5.779.228
5.781.377	5.779.919	5.780.192	5.778.532	5.781.760	5.779.416
5.781.378	5.779.944	5.780.199	5.778.573	5.781.901	5.779.832
5.781.647	5.779.974	5.780.225	5.778.584	RE. 35.845	5.779.948
5.781.763	5.779.983	5.780.294	5.778.631	5.778.478	5.780.580
5.781.773	5.780.015	5.780.296	5.778.633	5.778.483	5.779.351
5.781.834	5.780.046	5.780.327	5.778.671	5.778.489	5.779.472
5.781.868	5.780.108	5.780.335	5.778.676	5.778.594	5.779.711
5.781.903	5.780.175	5.780.341	5.778.693	5.778.647	5.781.405
5.778.455	5.780.230	5.780.363	5.778.737	5.778.723	5.778.474
5.778.773	5.780.248	5.780.366	5.778.746	5.778.922	5.778.577
5.778.897	5.780.269	5.780.456	5.778.798	5.778.954	5.778.830
5.779.070	5.780.382	5.780.457	5.778.999	5.778.956	5.778.938
5.779.107	5.780.402	5.780.458	5.779.006	5.779.059	5.779.083
5.779.318	5.780.405	5.780.459	5.779.072	5.779.065	5.779.269
5.779.399	5.780.417	5.780.462	5.779.089	5.779.080	5.779.315
5.779.698	5.780.437	5.780.471	5.779.131	5.779.118	5.779.317
5.779.791	5.780.440	5.780.517	5.779.132	5.779.121	5.779.321
5.779.897	5.780.442	5.780.545	5.779.135	5.779.158	5.779.431
5.780.010	5.780.444	5.780.554	5.779.145	5.779.167	5.779.709
5.780.201	5.780.467	5.780.601	5.779.152	5.779.209	5.779.736
5.780.513	5.780.473	5.780.615	5.779.155	5.779.277	5.779.838
5.780.515	5.780.485	5.780.691	5.779.186	5.779.331	5.780.151
5.780.572	5.780.504	5.780.804	5.779.202	5.779.349	5.780.232
5.780.611	5.780.505	5.780.809	5.779.216	5.779.406	5.780.278
5.780.705	5.780.540	5.780.825	5.779.217	5.779.456	5.780.283
5.780.763	5.780.563	5.780.934	5.779.274	5.779.467	5.780.412
5.780.945	5.780.597	5.780.951	5.779.285	5.779.489	5.780.447
5.780.949	5.780.607	5.780.973	5.779.370	5.779.532	5.780.520
5.781.229	5.780.630	5.780.993	5.779.379	5.779.596	5.780.575
5.779.120	5.780.639	5.781.011	5.779.429	5.779.623	5.780.717
5.779.404	5.780.656	5.781.130	5.779.464		

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GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

5,780,758	5,779,816	5,781,187	B1 461,288	5,781,620	54 :	5,778,622
5,780,760	5,779,881	5,781,271	B1 096,334	5,781,646		5,780,023
5,781,272	5,779,883	5,781,384	5,778,708	5,781,852		5,780,549
RE 35,842	5,779,890	5,781,404	5,779,265	5,781,879	55 :	5,778,523
5,778,455	5,779,912	5,781,407	5,779,266	5,778,557		5,778,683
5,778,522	5,779,917	5,781,409	5,779,267	5,778,610		5,778,743
5,778,581	5,779,938	5,781,414	5,779,268	5,778,664		5,778,804
5,778,589	5,779,993	5,781,432	5,779,661	5,778,713		5,778,832
5,778,590	5,780,000	5,781,436	5,779,674	5,778,827		5,779,907
5,778,608	5,780,048	5,781,480	5,780,050	5,779,128		5,779,001
5,778,700	5,780,119	5,781,492	5,780,139	5,779,150		5,779,020
5,778,742	5,780,167	5,781,503	5,780,433	5,779,169		5,779,026
5,778,759	5,780,186	5,781,510	5,781,146	5,779,196		5,779,027
5,778,763	5,780,208	5,781,527	5,779,226	5,779,226		5,779,206
5,778,780	5,780,223	5,781,530	5,781,724	5,779,366		5,779,254
5,778,802	5,780,295	5,781,535	5,781,733	5,779,376		5,779,290
5,778,822	5,780,340	5,781,551	5,778,481	5,779,536		5,779,310
5,778,918	5,780,362	5,781,598	5,780,929	5,779,574		5,779,381
5,778,927	5,780,376	5,781,612	5,781,031	5,779,601		5,779,384
5,778,977	5,780,446	5,781,617	5,781,032	5,779,694		5,779,385
5,778,979	5,780,450	5,781,628	5,781,413	5,779,710		5,779,621
5,778,994	5,780,453	5,781,632	5,781,922	5,780,237		5,779,703
5,779,078	5,780,555	5,781,680	5,778,640	5,780,240		5,779,860
5,779,103	5,780,556	5,781,716	5,778,784	5,780,292		5,779,900
5,779,159	5,780,582	5,781,718	5,778,823	5,780,476		5,779,921
5,779,163	5,780,623	5,781,728	5,779,049	5,780,755		5,779,962
5,779,189	5,780,694	5,781,738	5,779,149	5,781,028		5,779,965
5,779,210	5,780,698	5,781,746	5,779,430	5,781,126		5,780,022
5,779,255	5,780,784	5,781,748	5,779,554	5,781,188		5,780,088
5,779,303	5,780,824	5,781,754	5,779,567	5,781,195		5,780,100
5,779,356	5,780,847	5,781,757	5,779,702	5,781,211		5,780,229
5,779,391	5,780,850	5,781,760	5,779,946	5,781,228		5,780,233
5,779,432	5,780,852	5,781,765	5,780,178	5,781,251		5,780,236
5,779,451	5,780,861	5,781,780	5,780,243	5,781,367		5,780,270
5,779,540	5,780,905	5,781,789	5,780,397	5,781,667		5,780,489
5,779,565	5,780,960	5,781,791	5,780,569	5,781,686		5,780,721
5,779,578	5,781,004	5,781,792	5,780,769	5,781,708		5,781,024
5,779,612	5,781,043	5,781,853	5,780,844	5,781,797		5,781,178
5,779,653	5,781,053	5,781,897	5,781,298	5,781,864		5,781,419
5,779,679	5,781,115	5,781,916	5,781,333	5,781,892		5,781,443
5,779,685	5,781,137	5,781,925	5,781,343	5,781,896		5,781,752
5,779,814	5,781,138	5,781,926	5,781,541	5,781,902		5,781,891

DESIGN PATENTS

01 :	395,998	396,119	396,104	27 :	396,029	396,052	396,103
	396,073	396,121	396,117		395,948	396,065	396,062
	396,105	396,123	18 :	396,055	395,985	396,108	396,001
	396,106	396,126		396,079	395,999	396,110	396,097
04 :	395,996	396,128	19 :	396,085	396,002	396,112	396,046
	396,005	395,939	21 :	396,053	396,014	396,127	396,064
	396,007	395,995	24 :	395,993	396,030	396,131	396,096
06 :	395,940	395,982		396,015	396,048	396,033	396,113
	395,941	395,971		396,050	396,061	396,115	396,114
	395,964	395,961	25 :	395,938	396,098	396,059	395,951
	395,981	395,970		395,943	396,099	395,994	396,034
	395,987	395,986		396,009	396,086	396,047	395,974
	396,010	396,040		396,028	396,130	395,942	395,990
	396,035	396,120		396,031	34 :	395,944	396,095
	396,036	395,954		396,060		395,945	396,116
	396,037	395,966		396,066		395,997	395,949
	396,049	395,979		396,081	35 :	395,946	395,952
	396,063	396,018		396,082	36 :	395,947	395,992
	396,077	396,044		396,083		396,042	396,012
	396,078	396,070		396,129		396,006	396,013
	396,080	396,071	26 :	395,963		396,023	396,045
	396,094	396,072		395,967		396,025	396,100
	396,101	396,090		396,008		396,027	
	396,102			396,024		396,057	

PLANT PATENTS

06 :	10,502	09 :	10,494	26 :	10,490		
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